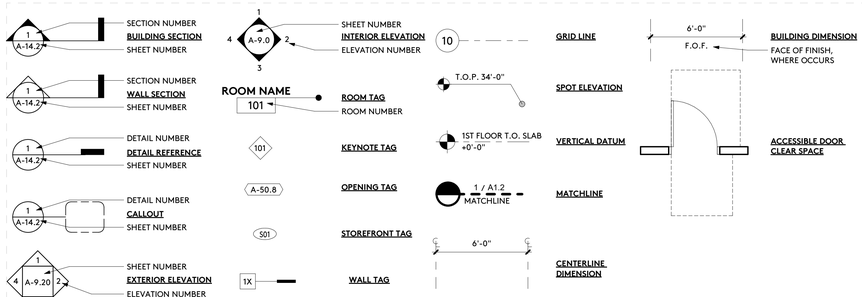
PERRIS LAKE HIGH SCHOOL
BLDG 200 ALTERATIONS

PERRIS UNION HIGH SCHOOL DISTRICT



SYMBOLS

OWNER

PERRIS UNION HIGH SCHOOL DISTRICT

155 E 4TH STREET
PERRIS CA 92570
(P) 951.943.6369 x80274,
hector.gonzalez@puhsd.org
CONTACT: HECTOR GONZALEZ

SUPERINTENDENT
GRANT BENNETT

BOARD
DR. JOSE LUIS ARAUX, PRESIDENT
EDWARD G. GARCIA JR., VICE PRESIDENT
DAVID G. NELISSEN, CLERK
ANTHONY T STAFFORD SR., MEMBER
CAROLYN A. TWYMAN, MEMBER

ARCHITECT OF RECORD

PJHM ARCHITECTS
24461 RIDGE ROUTE DR.
SUITE 100
(P) 949.496.6191 - (F) 949.496.0269
CONTACT: TOM KRUSE

PLUMBING ENGINEER

ENGINEOUS GROUP INC.
751 N. FAIR OAKS AVE., SUITE 201
PASADENA, CA 91103
(P) 626.714.7506
CONTACT: BRAD SEVERSON

ELECTRICAL ENGINEER

tk1sc
15231 LAGUNA CANYON ROAD, SUITE #100
IRVINE, CA 92618
(P) 949.751.5800 - (F) 949.751.5811
CONTACT: JERRY LEONHARDT

PROJECT CONTACT DIRECTORY

1. ALL WORK SHOULD CONFORM TO 2016 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
3. THE ARCHITECT OR ENGINEER MAY FIND DEFECTS IN THE WORK, AND IF THEY DO, THEY WILL NOTIFY THE CONTRACTOR SO THE ERROR MAY BE CORRECTED. UNDER NO CIRCUMSTANCES IS IT EVER THE INTENT FOR THE ARCHITECT OR ENGINEER TO BECOME A GUARANTOR OF THE CONTRACTOR'S PERFORMANCE BY THESE ACTIVITIES. THE FACT THAT A CONTRACTOR'S ERROR GOES UNDETECTED DURING THE VISIT TO THE SITE DOES NOT MAKE THE ARCHITECT OR ENGINEER NEGLIGENT: THE CONTRACTOR IS NEVER RELIEVED OF THE RESPONSIBILITY FOR THE DISCOVERY OF HIS OWN ERRORS AND THE CORRECTION OF THEM, NOR OF THE RESPONSIBILITY OF PROPERLY PERFORMING THE WORK.
4. THE ARCHITECT OR ENGINEER WILL MAKE VISITS TO THE JOB SITE TO OBSERVE THE PROGRESS OF THE WORK AND TO OBSERVE WHETHER OR NO IT IS, IN GENERAL, BEING PERFORMED IN ACCORDANCE WITH THEIR PLANS AND SPECIFICATIONS. THIS DOES NOT IN ANY WAY MEAN THAT THE ARCHITECT OR ENGINEER IS A GUARANTOR OF THE CONTRACTOR'S WORK: RESPONSIBILITY FOR SAFETY IN, ON OR ABOUT THE JOB SITE: IN CONTROL OF THE SAFETY OR ADEQUACY OF ANY EQUIPMENT, BUILDING COMPONENT, SCAFFOLDING,FORMS, OR OTHER WORK AIDS: OR SUPERINTENDING THE WORK.
5. FOR ALL WALL MOUNTED AND SEMI-RECESSED MOUNTED EQUIPMENT, ACCESSORIES CABINETS, HANDRAILS, MARKER BOARDS, MECHANICAL EQUIPMENT, ELECTRICAL EQUIPMENT AND ETC. PROVIDE AND INSTALL BACKING IN ACCORDANCE TO STRUCTURAL DETAILS.
6. FLOOR, WALL OR ROOF OPENINGS AS REQUIRED FOR PLUMBING, MECHANICAL, ELECTRICAL OR SIMILAR WORK SHALL BE VERIFIED FROM SHOP DRAWINGS, EQUIPMENT DATA ETC.
7. WHERE EXECUTING THE WORK SHOWN ON ANY OF THESE DRAWINGS OR CALLED FOR IN SPECIFICATIONS REQUIRES PENETRATION OF EXTERIOR WALLS OR ROOFS, SUCH WORK SHALL BE FLASHED, SEALED OR OTHERWISE MADE TIGHT AGAINST THE ENTRANCE OF AIR OR WATER
8. UNLESS OTHERWISE NOTED, ALL INTERIOR WALLS SHOWN ON THE FLOOR PLAN ARE TO EXTEND TO THE UNDERSIDE OF THE ROOF SHEATHING WITH ONE LAYER OF 5/8" THICK. TYPE "X" GYPSUM BOARD ON EACH SIDE OF STUD FACE. ALL STUD WALLS TO CONTAIN SOUND INSULATION BATTS, FULL HEIGHT.
9. DO NOT SCALE DRAWINGS. WORK TO THE DIMENSIONS INDICATED ON THE DRAWINGS. CONTRACTOR SHALL VERIFY THE DIMENSIONS AT THE JOB SITE AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES FOR PROMPT CLARIFICATION.
10. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND UTILITIES OR STRUCTURES INDICATED OR NOT ON THE DRAWING ARE OBTAINED BY SEARCH OF AVAILABLE RECORDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXACT LOCATIONS OF THE UTILITIES WITH SCHOOL DISTRICT MAINTENANCE AND OPERATION PERSONNEL. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES AND OTHER STRUCTURES. ANY DAMAGE SHALL BE PROMPTLY RESTORED TO THE SCHOOL DISTRICT'S SATISFACTION.
11. PROVIDE CONSTRUCTION BARRICADES AS REQUIRED TO PROTECT PUBLIC'S HEALTH AND SAFETY INCLUDING WORK UNDER CONSTRUCTION TO THE REQUIREMENTS OF THE SCHOOL DISTRICT. COVER OPEN TRENCHES WITH SOLID MATERIAL.
12. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTY AND STRUCTURES. ANY DAMAGE SHALL BE PROMPTLY RESTORED TO THE SATISFACTION OF THE OWNER/ARCHITECT, AT CONTRACTOR'S EXPENSE.
13. BIDDERS ARE REQUIRED TO LOOK AT ALL **DRAWINGS** AND **SPECIFICATIONS**, NOT JUST THOSE SHEETS OR SECTIONS RESPECTIVE OF THEIR TRADE.
14. UNLESS SPECIFIED ON STRUCTURAL OR ARCHITECTURAL DRAWINGS, ANY ALTERATIONS OR MODIFICATIONS TO A STRUCTURAL ELEMENT BY CUTTING, DRILLING, BORING, BRACING, WELDING, ETC. SHALL HAVE WRITTEN APPROVAL BY STRUCTURAL ENGINEER OF RECORD PRIOR TO START OF WORK.
15. ALL DETAILS CONTAINED IN THESE CONSTRUCTION DOCUMENTS ARE PART OF THE CONSTRUCTION SCOPE REGARDLESS OF THEM BEING REFERENCED IN THE SET.

GENERAL NOTES

PARTIAL LIST OF APPLICABLE CODES

2016	CALIFORNIA ADMINISTRATIVE CODE PART 1, TITLE 24, C.C.R.
2016	CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24, C.C.R. (2015 INTERNATIONAL BUILDING CODE VOLUMES 1-2 AND 2016 CALIFORNI AMENDMENTS)
2016	CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24, C.C.R. (2014 NATIONAL ELECTRICAL CODE AND 2016 CALIFORNIA AMENDMENTS)
2016	CALIFORNIA MECHANICAL CODE (CMC) , PART 4, TITLE 24, C.C.R. (2015 UNIFORM MECHANICAL CODE AND 2016 CALIFORNIA AMENDMENTS)
2016	CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24, C.C.R. (2015 UNIFORM PLUMBING CODE AND 2016 CALIFORNIA AMENDMENTS)
2016	CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24, C.C.R.
2016	CALIFORNIA FIRE CODE, PART 9, TITLE 24, C.C.R. (2015 INTERNATIONAL FIRE CODE AND 2016 CALIFORNIA AMENDMENTS)
2016	CALIFORNIA GREEN BUILDING STANDARDS CODE, PART 11, TITLE 24 C.C.R.
2016	CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R. TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
2016	ASME A17.1 (A17.1-2016 / CSA B44-16) SAFETY CODE FOR ELEVATORS AND ESCALATORS

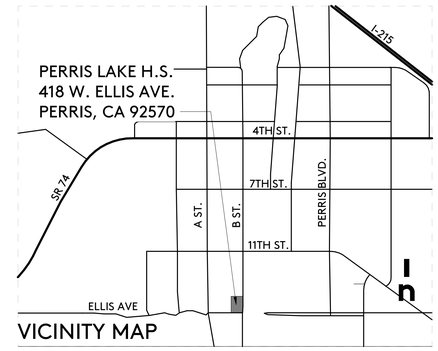
PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	AUTOMATIC SPRINKLER SYSTEMS - 2016 EDITION
NFPA 14	STANDPIPE AND HOSE SYSTEMS - 2016 EDITION
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS - 2017 EDITION
NFPA 17A	WET CHEMICAL EXTINGUISHING SYSTEMS - 2017 EDITION
NFPA 20	STATIONARY PUMPS FOR FIRE PROTECTION - 2016 EDITION
NFPA 22	WATER TANKS FOR PRIVATE FIRE PROTECTION - 2018 EDITION
NFPA 24	PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES - 2016 EDITION
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE - 2016 EDITION
NFPA 80	STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES - 2016 EDITION
NFPA 92	STANDARD FOR SMOKE CONTROL SYSTEMS - 2018 EDITION
NFPA 253	STANDARD METHOD OF TEST FOR CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS USING A RADIANT HEAT ENERGY SOURCE - 2015 EDITION
NFPA 2001	STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS - 2015 EDITION
ICC 300	STANDARD FOR BLEACHERS, FOLDING AND TELESCOPIC SEATING AND GRANDSTANDS - 2012 EDITION
UL 300	SAFETY FIRE TESTING OF FIRE EXTINGUISING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT - 2010 EDITION (INCLUDING AMENDMENTS THROUGH DECEMBER 16, 2014)
UL 464	SAFETY AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCISSORIES - 2017 EDITION
UL 521	SAFETY HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS - 2010 EDITION (INCLUDING ALL AMEDMENTS AND REVISIONS THROUGH DECEMBER 8, 2017)

NOTES:

1. SEE CBC CHAPTER 35 FOR REFERENCE STANDARDS
2. SEE CBC CHAPTER 35 FOR STATE OF CALIFORNIA AMEDMENTS TO NFPA STANDARDS

APPLICABLE CODES



VICINITY MAP

ARCHITECTURAL

CS I	COVER SHEET - SYMBOLS, NOTES & SHEET INDEX
A-1.0	SITE PLAN
A-3.1	EXISTING & NEW FLOOR & RCP PLANS
A-9.0	INTERIOR ELEVATIONS, SCHEDULES
A-9.4	INTERIOR DETAILS

ELECTRICAL

E-1.0	SYMBOL LIST
E-2.0	SITE LOCATION PLAN
E-3.0	DEMOLITION AND LIGHTING PLAN
E-4.0	DEMOLITION AND POWER PLAN
E-5.0	PANEL SCHEDULES
E-6.0	LIGHTING FIXTURE SCHEDULE
E-8.0	SPECIFICATIONS
E-8.1	SPECIFICATIONS

PLUMBING

P-0.1	PLUMBING COVER SHEET
P-1.1	PLUMBING DEMO AND FLOOR PLANS

THIS CONSTRUCTION DOCUMENT PACKAGE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING SCOPE:

1. DEMOLITION OF:
   A. SITE
   B. BUILDING - PORTIONS OF BUILDING 200
2. REMOVAL OF:
   A. SITE
   B. BUILDING
3. MODERIZATION OF:
   A. SITE
   B. BUILDING - PORTIONS OF BUILDING 200
4. NEW CONSRUCTION OF:
   A. SITE
   B. BUILDING

BRIEF PROJECT SCOPE

pjhm architects

LICENSED ARCHITECT
THOMAS W. KRUSE
Lic.# C15585
02/19
Renewal Date
STATE OF CALIFORNIA

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SD Phone: 760.730.5527 • **LA** Office: 837 Traction Avenue, #410, Los Angeles, CA 90013 • **SD** Office: 804 Pier View Way #103, Oceanside, CA 92054 • **SD** Phone: 760.730.5527

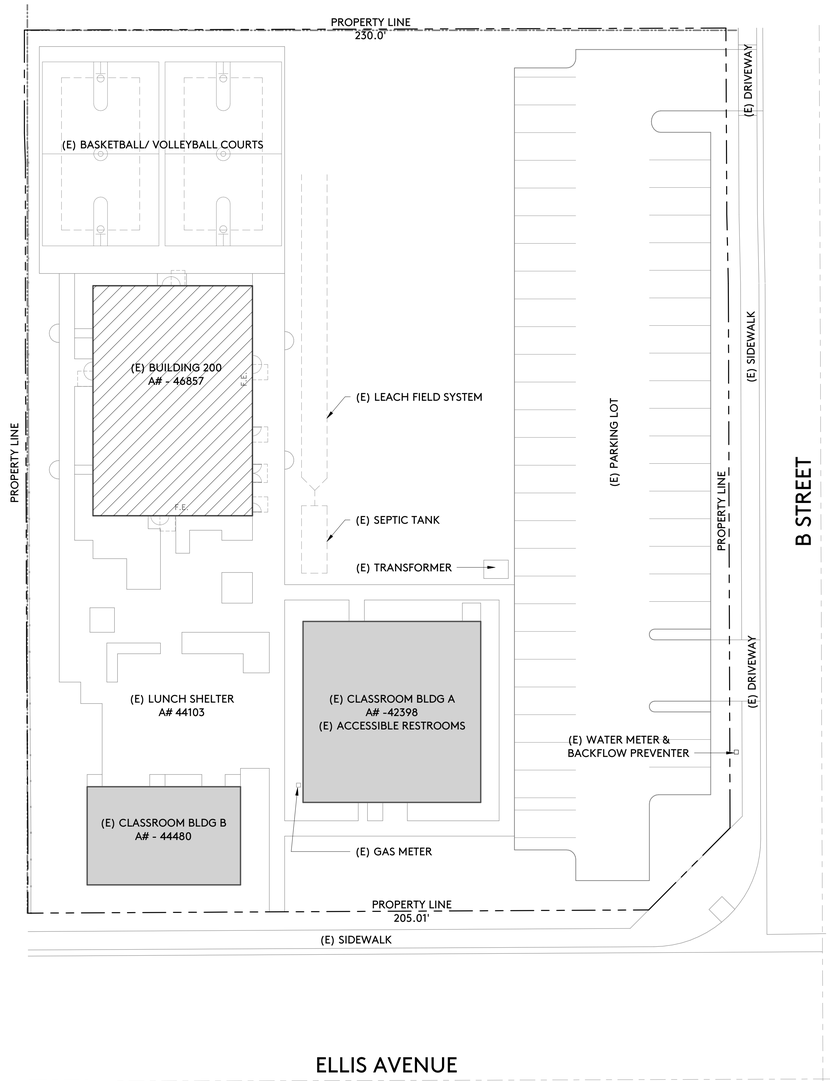
OC Office: 24461 Ridge Route Drive #100, Laguna Hills, CA 92653 • **OC** Phone: 949.496.6191 • **SD** Office: 804 Pier View Way #103, Oceanside, CA 92054 • **SD** Phone: 760.730.5527

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

COVER SHEET - SYMBOLS, NOTES & SHEET INDEX

CS I



SITE PLAN

1" = 20'-0"

◇ KEYNOTES

1. CONTRACTORS BIDDING OR PERFORMING WORK SHALL VERIFY THE CONDITIONS OF THE SITE, INCLUDING ACCESS BEFORE SUBMITTING BID OR COMMENCING WORK AND SHALL NOTIFY THE ARCHITECT OF ANY DISCREPANCIES FOR PROMPT DIRECTION.
2. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND UTILITIES OR STRUCTURES INDICTED OR NOT ON THE DRAWINGS ARE OBTAINED BY SEARCH OF AVAILABLE RECORDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXACT LOCATIONS. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES AND OTHER STRUCTURES. ANY DAMAGE SHALL BE PROMPTLY RESTORED TO THE OWNERS SATISFACTION.
3. REFERENCE CIVIL, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ALL UNDERGROUND UTILITY WORK TO BE COMPLETED IN THIS CONTRACT.
4. GENERAL CONTRACTOR TO COORDINATE ALL PHASING AND UTILITY INTERRUPTIONS OF THIS PROJECT WITH THE OWNER AND ARCHITECT AS TO DO THE LEAST POSSIBLE INTERRUPTIONS. (AS-REQ'D)
5. PROVIDE CONSTRUCTION BARRICADES AS REQUIRED TO PROTECT THE PUBLIC'S HEALTH AND SAFETY INCLUDING WORK UNDER CONSTRUCTION TO THE REQUIREMENTS OF THE OWNER. COVER OPEN TRENCHES WITH ADEQUATE SOLID MATERIAL.
6. EXCAVATION AND TRENCHING SHALL COMPLY WITH THE REQUIREMENTS OF THE TESTING LAB AND JURISDICTIONAL REQUIREMENTS AT THE TIME WORK COMMENCES AND UP TO COMPLETION OF THE WORK.
7. COMPLY WITH 2013 CALIFORNIA FIRE CODE, CHAPTER 14 FOR FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.
8. FOR GRATINGS OR STRAINERS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WAY IN THE PATH OF TRAVEL, THE MAXIMUM GRATE OR STRAINER OPENINGS SHALL NOT EXCEED 1/2" IN THE DIRECTION OF TRAFFIC FLOW.
9. TEMPORARY CONSTRUCTION FENCING TO BE SUPPLIED BY CONTRACTOR
10. ALL NEW WALK SURFACES ON P.O.T.'S SHALL HAVE FLUSH TRANSITIONS TO ALL ADJACENT NEW OR EXISTING WALK SURFACES IN P.O.T.'S
11. "**DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:** THE POT IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR **PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS**. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

    DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE 1 COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT."

SITE PLAN NOTES

(E) BUILDING FOOTPRINT W/ (N) INTERIOR SCOPE OF WORK

(E) BUILDING FOOTPRINT - NOT IN CONTRACT

SYMBOLS

PROPERTY LINE

1 / A1.2 — PLAN NUMBER / SHEET NUMBER — MATCHLINE

MATCHLINE

1 / A-14.2 — DETAIL NUMBER / SHEET NUMBER — REFERENCE BUBBLE

SG-01 — SITE GATE SCHEDULE TAG, SEE SHEET _____ FOR GATE SCHEDULE

pjhm architects

LICENSED ARCHITECT
THOMAS W. KRUSE
Lic.# C15585
02/19
Renewal Date
STATE OF CALIFORNIA

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PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

SITE PLAN

A-1.0

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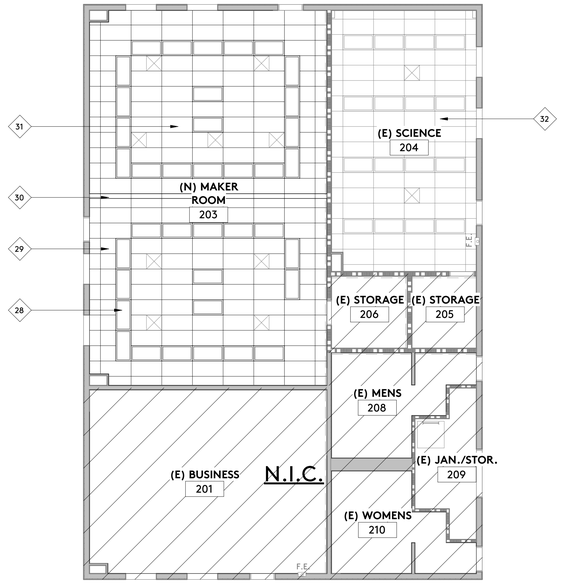
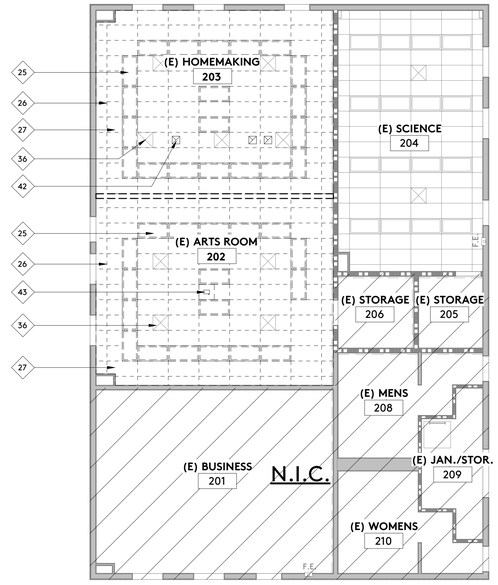


NEW REFLECTED CEILING PLAN

1/8" = 1'-0"

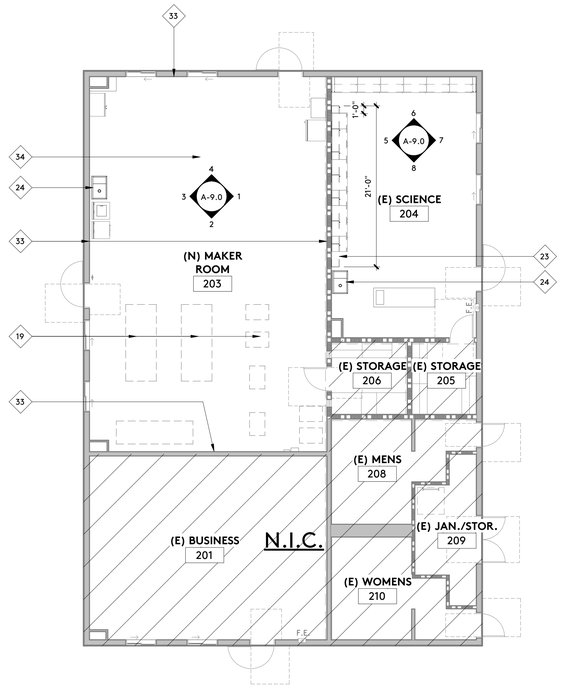


EXISTING/ DEMOLITION REFLECTED CEILING PLAN

1/8" = 1'-0"

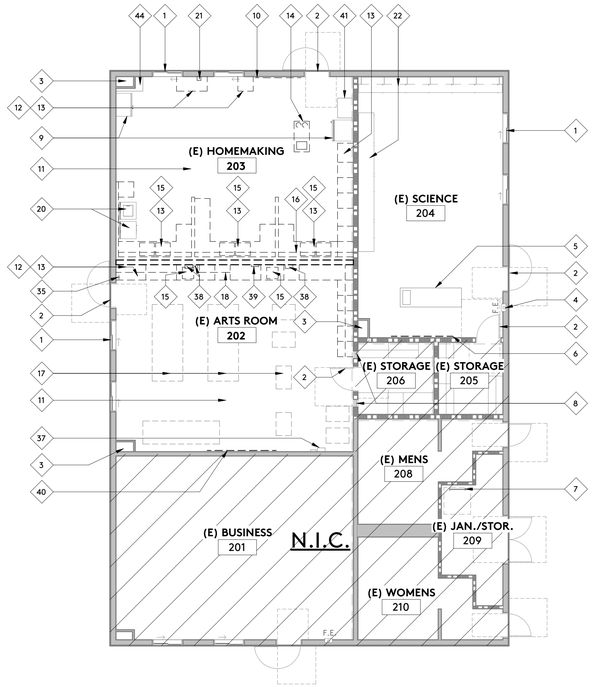
1. (E) WINDOW TO REMAIN, PROTECT IN PLACE, TYP. REMOVE (E) SHADE WHERE OCCURS
2. (E) DOOR TO REMAIN, PROTECT IN PLACE, TYP.
3. (E) MECHANICAL SHAFT TO REMAIN, PROTECT IN PLACE
4. (E) FIRE EXTINGUISHER CABINET TO REMAIN, PROTECT IN PLACE
5. (E) ISLAND & PLUMBING FIXTURE TO REMAIN, PROTECT IN PLACE
6. (E) SLIDE UP CHALK BOARD TO BE DEMOLISHED
7. (E) ROOF ACCESS LADDER
8. (E) WALL LOUVERS TO REMAIN, PROTECT IN PLACE
9. (E) REFRIGERATOR TO REMAIN, PROTECT IN PLACE
10. (E) MAP RAILS TO BE DEMOLISHED
11. (E) FLOORING TO BE DEMOLISHED
12. (E) EQUIPMENT TO BE DEMOLISHED, CONFIRM WITH OWNER
13. (E) CASEWORK TO BE DEMOLISHED
14. (E) DEMONSTRATION TABLE TO BE DEMOLISHED, TERMINATE UTILITIES AS NEEDED
15. (E) PLUMBING FIXTURE TO BE DEMOLISHED, CAP AS NEEDED
16. (E) WALL MOUNTED CABINETS TO BE REMOVED & RELOCATED
17. (E) WOOD SHOP EQUIPMENT TO BE RELOCATED PER OWNER. (E) POWER DROPS TO BE RELOCATED TO NEW LOCATION, COORDINATE W/ ELECTRICAL
18. (E) WALL MOUNTED AIR FILTER/ PURIFIER TO BE REMOVED, TERMINATE (E) POWER
19. (N) LOCATION OF (E) WOOD SHOP EQUIPMENT, COORDINATE W/ OWNER. COORDINATE W/ ELECTRICAL TO EXTEND POWER ABOVE CEILING TO (N) LOCATIONS
20. (E) WASHER & DRYER TO REMAIN, PROTECT IN PLACE
21. (E) DATA DROP TO BE REMOVED
22. (E) WALL MOUNTED CABINETS TO REMAIN
23. (N) LOCATION FOR (E) WALL MOUNTED CABINETS
24. (N) SINK, COORDINATE W/ PLUMBING
25. (E) LIGHT FIXTURE TO BE DEMOLISHED, TYP.
26. (E) CEILING SUSPENSION SYSTEM TO REMAIN, REPAINT, TYP.
27. (E) CEILING TILES TO BE DEMOLISHED
28. (N) LED LIGHT FIXTURES, MATCH (E) LIGHT FIXTURE LOCATIONS
29. (N) CEILING TILES, TYP.
30. (N) CEILING TILE SYSTEM @ DEMOLISHED WALL LOCATION
31. ADD EIGHT (N) RETRACTABLE POWER RECEPTACLES, CONFIRM NUMBER & LOCATION WITH OWNER
32. ADD FOUR (N) RETRACTABLE POWER RECEPTACLES, CONFIRM NUMBER & LOCATION WITH OWNER
33. (N) TACKABLE WALL PANELS FLOOR TO CEILING, TYP.
34. POLISH & SEAL (E) CONCRETE SLAB, TYP.
35. (E) FIRE EXTINGUISHER TO BE REMOVED & REINSTALLED AFTER TACKBOARD INSTALLATION
36. (E) DIFFUSER TO REMAIN, PROTECT IN PLACE, CLEAN AND REPAINT, TYP.
37. (E) ELECTRICAL PANEL TO REMAIN, PROTECT IN PLACE
38. (E) DISPENSORS TO BE REMOVED BY OWNER
39. (E) CLOCK TO BE RELOCATED PER OWNER, SEE ELECTRICAL DRAWINGS
40. (E) MARKER BOARD TO BE REMOVED AND REPLACED
41. (E) WALL MOUNTED LOCKER TO REMAIN, PROTECT IN PLACE
42. (E) EXHAUST TO BE DEMOLISHED, CAP ABOVE CEILING, TYP.
43. (E) PROJECTOR TO BE REMOVED, RETURNED TO OWNER
44. (E) SUPPLY CASEWORK TO REMAIN, PROTECT IN PLACE

KEYNOTES



NEW FLOOR PLAN

1/8" = 1'-0"



EXISTING/DEMOLITION FLOOR PLAN

1/8" = 1'-0"

1. INDICATED CEILING HEIGHTS ARE FROM FINISH FLOOR
2. ALL DIMENSIONS AT EXTERIOR WALLS ARE TO FACE OF SHEATHING, U.N.O. ALL OTHER DIMENSIONS ARE TO FACE OF MASONRY, FACE OF CONCRETE, FACE OF STUD & CENTERLINE OF COLUMNS, U.N.O.
3. PROVIDE CEILING ACCESS PANELS AT HARD CEILINGS WHERE REQUIRED TO ACCESS PLUMBING & MECHANICAL CONTROLS.
4. PRIOR TO THE INSTALLATION OF MECHANICAL, PLUMBING, ELECTRICAL & ARCHITECTURAL EQUIPMENT & COMPONENTS, ALL SUB-CONTRACTORS SHALL COORDINATE W/ THE CONTRACTOR & OTHER SUB-CONTRACTORS USING THE SAME SPACE TO ENSURE THAT THE INSTALLATION OF ALL COMPONENTS FIT WITHIN THE SPACE AVAILABLE.

RCP NOTES

1. ALL DIMENSIONS AT EXTERIOR WALLS ARE TO FACE OF SHEATHING, U.N.O. ALL OTHER DIMENSIONS ARE TO FACE OF MASONRY, FACE OF CONCRETE, FACE OF STUD & CENTERLINE OF COLUMNS, U.N.O.
2. PROVIDE FIRE BLOCKING IN CONCEALED SPACES OF STUD WALLS INCLUDING FURRED SPACES AT 10' MAXIMUM O.C. VERTICALLY AND HORIZONTALLY.
3. PROVIDE RATED FIRESTOPPING AT PENETRATIONS THROUGH RATED WALL, CEILING, FLOOR AND ROOF ASSEMBLIES. SEE SHEET X FOR TYPICAL DETAILS
4. STRUCTURAL COLUMNS ARE SHOWN FOR REFERENCE ONLY AND SHALL BE INDIVIDUALLY FIRE PROTECTED PER CBC SECTION 704. FOR ACTUAL SIZE AND ORIENTATION, SEE STRUCTURAL DRAWINGS.
5. PROVIDE ADDITIONAL MATCHING STRUCTURAL / GYPSUM BOARD PANELS WHERE STRUCTURAL / GYPSUM PANELS DO NOT EXTEND THE FULL LENGTH BETWEEN INTERSECTING WALLS TO PROVIDE A FLUSH WALL FINISH FREE OF OFFSETS.
6. PRIOR TO THE INSTALLATION OF MECHANICAL, PLUMBING, ELECTRICAL & ARCHITECTURAL EQUIPMENT & COMPONENTS, ALL SUB-CONTRACTORS SHALL COORDINATE W/ THE CONTRACTOR & OTHER SUB-CONTRACTORS USING THE SAME SPACE TO ENSURE THAT THE INSTALLATION OF ALL COMPONENTS FIT WITHIN THE SPACE AVAILABLE.

FLOOR PLAN NOTES

(E) NON-RATED WALL ASSEMBLY

(E) 1 HOUR RATED FIRE WALL ASSEMBLY

(E) WALL ASSEMBLY TO BE DEMOLISHED

(E) SHEAR WALL ASSEMBLY @ NON-RATED WALL ASSEMBLY

(E) SHEAR WALL ASSEMBLY @ 1 HOUR RATED WALL ASSEMBLY

FLOOR PLAN SYMBOLS

pjhm architects

LICENSED ARCHITECT THOMAS W. KRUSE Lic.# C15585 02/19 Renewal Date STATE OF CALIFORNIA

LA Office: 837 Traction Avenue, #410, Los Angeles, CA 90013 • LA Phone: 213.278.0172 • Web: pjhm.com

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PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

EXISTING & NEW FLOOR & RCP PLANS

A-3.1

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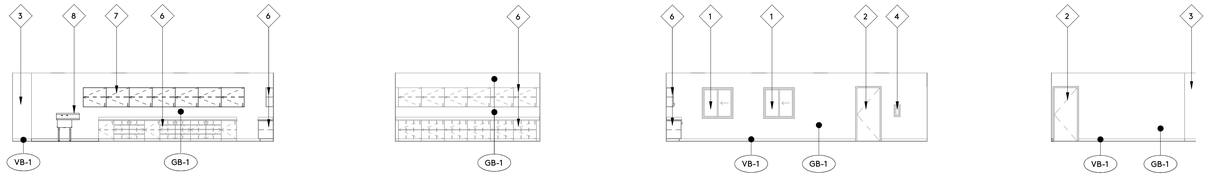
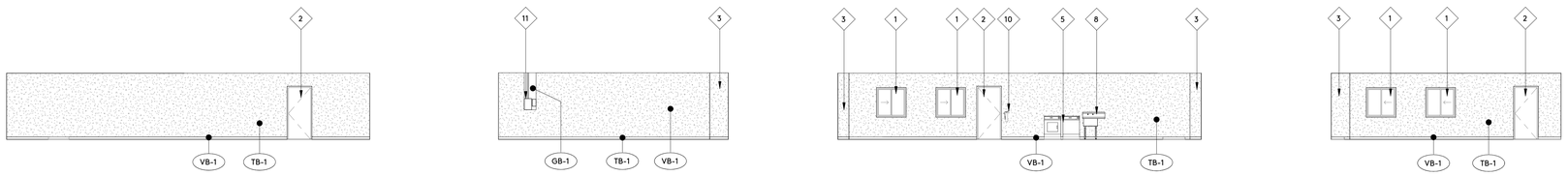
FINISH SCHEDULE

DESCRIPTION		Floor Finish	Walls/ Base				Ceiling Finish	COMMENTS
ROOM NUMBER	ROOM NAME		North	East	West	South		
201	(E) BUSINESS							(N.I.C.)
203	(N) MAKER ROOM	SC-1	TB-1/ VB-1	TB-1/ VB-1	TB-1/ VB-1	TB-1,GB-1/ VB-1	AC-1	REFER TO DETAIL 2/A-9.4 FOR TACKBOARD DETAILS
204	(E) SCIENCE	VT-1	GB-1/ VB-1	GB-1/ VB-1	GB-1/ VB-1	GB-1/ VB-1	AC-1	
205	(E) STORAGE							(N.I.C.)
206	(E) STORAGE							(N.I.C.)
208	(E) MENS							(N.I.C.)
209	(E) JAN./STOR.							(N.I.C.)
210	(E) WOMENS							(N.I.C.)



ROOM 204 - RENOVATED

1/8" = 1'-0"



ROOM 203 - NEW

1/8" = 1'-0"

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ABBREVIATIONS:

FLOORS:

CT	CERAMIC TILE
EC	EPOXY COATING
QT	QUARRY TILE
RA	RESLIENT ATHLETIC FLOORING
RC	ROLL CARPET
RF	RESINOUS FLOORING
RT	RESILIENT TILE
SC	SEALED CONCRETE
SV	SHEET VINYL
TC	TILE CARPETING
WF	WOOD FLOORING
VT	VINYL COMPOSITION TILE

BASE:

CT	CERAMIC TILE COVED BASE
QT	QUARRY TILE COVED BASE
RB	RESILIENT BASE
RF	RESINOUS FLOORING COVED BASE
VB	VINYL BASE
WB	WOOD BASE

WALLS:

CT	CERAMIC TILE
DP	DECORATIVE PANEL SYSTEM
GB	GYPSUM BOARD, PAINTED
MP	METAL PANEL SYSTEM
FP	FIBERGLASS REINFORCED PANEL
TB	TACK BOARD SURFACES

CEILING:

AC-1	ACOUSTICAL SUSPENDED CEILING SYSTEM (MINERAL FIBER PANEL)
AC-2	ACOUSTICAL SUSPENDED CEILING SYSTEM (CLEAN ROOM PANEL)
AC-3	ACOUSTICAL SUSPENDED CEILING SYSTEM (METAL PANEL)
AC-4	ACOUSTICAL SUSPENDED CEILING SYSTEM (WOOD PANEL)
CF	CEMENTITIOUS FIBER PANEL
GB	GYPSUM BOARD, PAINTED

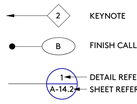
FINISH ABBREVIATIONS

1. (E) WINDOW TO REMAIN, PROTECT IN PLACE, TYP.
2. (E) DOOR TO REMAIN, PROTECT IN PLACE, TYP.
3. (E) MECHANICAL SHAFT TO REMAIN, PROTECT IN PLACE
4. (E) FIRE EXTINGUISHER CABINET TO REMAIN, PROTECT IN PLACE
5. (E) WASHER/ DRYER TO REMAIN, PROTECT IN PLACE
6. (E) CASEWORK TO REMAIN, PROTECT IN PLACE
7. (E) CASEWORK, RELOCATED FROM (E) HOMEMAKING, OWNER TO CONFIRM LOCATION AND NUMBER
8. (N) SINK, COORDINATE WITH PLUMBING
9. (N) CASEWORK TO MATCH (E) CASEWORK
10. (E) FIRE EXTINGUISHER TO BE REMOUNTED PER OWNER AFTER TACKBOARD INSTALLATION
11. (E) ELECTRICAL PANELS TO REMAIN, PROTECT IN PLACE, ALIGN TACKBOARD TO EDGE OF PANELS

ELEVATION KEYNOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS FOR CABINETS, CASEWORK, PREFAB TUBS, WINDOWS & DOORS SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION.
3. HORIZONTAL CABINET DIMENSIONS ARE FOR DESIGN INTENT ONLY
4. VERIFY ALL MANUFACTURED PRODUCT SIZES, CLEARANCES AND INSTALLATION REQUIREMENTS PRIOR TO CONSTRUCTION. INSTALLATION SHALL BE IN CONFORMANCE WITH PRODUCT LISTINGS. MANUFACTURED PRODUCT REQUIREMENTS TAKE PRIORITY OVER INFORMATION INDICATED IN DRAWINGS. CONTRACTOR TO NOTIFY ARCHITECT OF ANY CONFLICTS PRIOR TO PROCEEDING.
5. PROVIDE SOLID BACKING INSIDE WALL AS REQUIRED FOR THE SUPPORT OF CASEWORK, WINDOW COVERINGS, PLUMBING FIXTURES, LIGHT FIXTURES, GRAB BARS AND MISC. ELECTRICAL AND MECHANICAL EQUIPMENT AS OCCURS.
6. FLOOR FINISH SHALL EXTEND UNDER ALL APPLIANCES AND REMOVABLE BASE CABINETS
7. CASEWORK MODIFICATIONS:
   A. MODIFICATION NOTE
   B. MODIFICATION NOTE
   C. MODIFICATION NOTE

INTERIOR ELEVATION NOTES



SYMBOLS

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PERRIS UNION HIGH SCHOOL DISTRICT

PERRIS LAKE HIGH SCHOOL

INTERIOR ELEVATIONS, SCHEDULES

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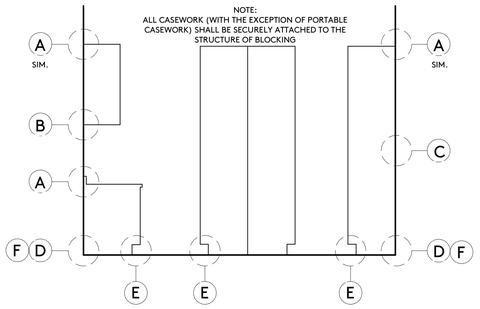

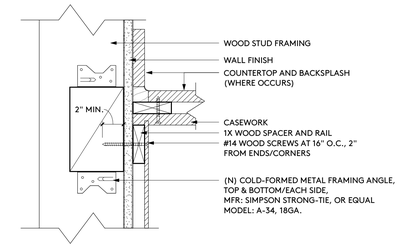

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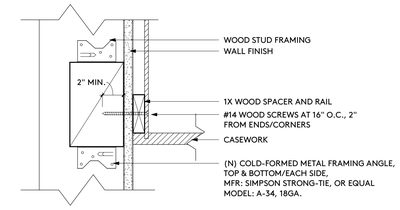

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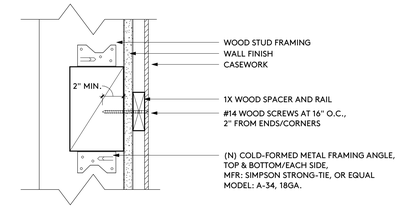

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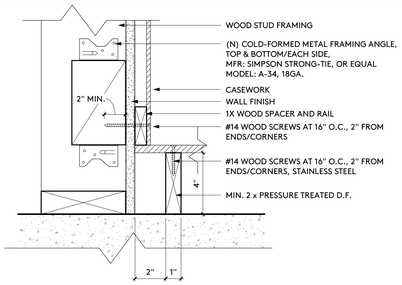

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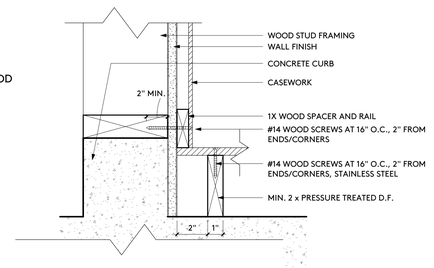
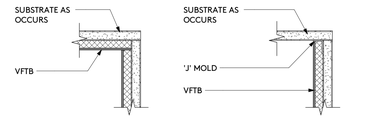
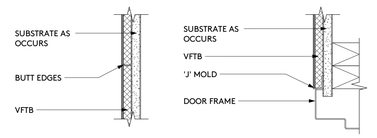


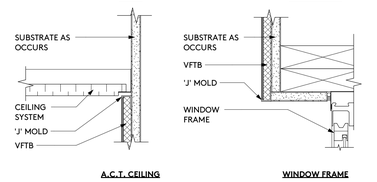
F

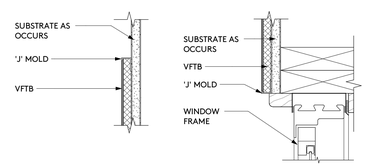
Casework Anchorage 5

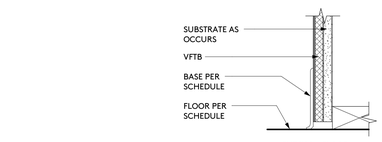
3" = 1'-0"











Vinyl Tackboard 2

3" = 1'-0"

1. FLOORING AND BASE MATERIAL SHALL EXTEND INTO AREAS WHERE SINK BOTTOM AND BASE DO NOT OCCUR. DIMENSIONS ARE TO FACE OF FINISH U.O.N.
2. FAUCET CONTROLS AND OPENING MECHANISM SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO MORE THAN 5LBS. LEVER OPERATED, PUSH TYPE AND ELECTRONICALLY CONTROLLED MECHANISMS ARE ACCEPTABLE. SELF CLOSING VALVES ARE ALLOWED IF THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS. WATER SUPPLY AND DRAIN PIPES ACCESSIBLE UNDER LAVATORIES SHALL BE INSULATED OR OTHERWISE COVERED. THERE SHALL BE NO SHARP OR ABRASIVE OBJECTS OR SURFACES UNDER LAVATORIES. SINK DEPTH FOR ADULTS SHALL BE 6-1/2" MAX. AND 4-1/2" MAX. FOR ELEMENTARY.
3. THERE SHALL BE NO SHARP EDGES OR ABRASIVE SURFACES BELOW COUNTERTOPS AT ALL ACCESSIBLE WORKSTATIONS

General Notes

1/4" = 1'-0"

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02/19
Renewal Date
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PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

INTERIOR DETAILS

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ABBREVIATIONS

4S/DP	4" SQUARE BY 2-1/8" DEEP BOX
ADA	AMERICAN WITH DISABILITIES ACT
A.F.F.	ABOVE FINISH FLOOR
A.F.G.	ABOVE FINISH GRADE
AWG	AMERICAN WIRE GAUGE
AMP, A	AMPERE
A.I.C. or AIC	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)
A.F.C. or AFC	AVAILABLE FAULT CURRENT
AF/AT	AMP FRAME, AMP TRIP
AHJ	AUTHORITY HAVING JURISDICTION
AS/AF	AMP SWITCH, AMP FUSE
ATS	AUTOMATIC TRANSFER SWITCH
AVG	AVERAGE
BJ	BONDING JUMPER
BDF	BUILDING DISTRIBUTION FRAME
BR	BRANCH
BLDG	BUILDING
CBC	CALIFORNIA BUILDING CODE
CEC	CALIFORNIA ELECTRICAL CODE
CIRC., CKT.	CIRCUIT
CB	CIRCUIT BREAKER
CSFD	COMBINATION SMOKE FIRE DAMPER
C	CONDUIT
C.O.	CONDUIT ONLY, COMPLETE WITH PULLSTRING
CONN	CONNECTED
CPT	CONTROL POWER TRANSFORMER
CLCB	CURRENT LIMITING CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
CT	CURRENT TRANSFORMER
(D)	EXISTING DEVICE TO BE DEMOLISHED
DAS	DISTRIBUTED ANTENNA SYSTEM
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
D.P.C.S.	DIMMING PANEL CONTROL STATION
E.C.	ELECTRICAL CONTRACTOR
EMS	ENERGY MANAGEMENT CONTROL SYSTEM
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NON-METALLIC TUBING
EWC	ELECTRIC WATER COOLER
E.P.O.	EMERGENCY POWER OFF
E-O-L	END-OF-LINE CIRCUIT TERMINATOR
EF	EXHAUST FAN
EGC or EG or E/G	EQUIPMENT GROUND (GREEN)
(E)	EXISTING DEVICE TO REMAIN
EP	EXPLOSION PROOF
(ER)	EXISTING DEVICE TO BE RELOCATED
FT or '	FEET
FA or F.A.	FIRE ALARM
FLA	FULL LOAD AMPS
GRD	GROUND

GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GE or GEC	GROUNDING ELECTRODE CONDUCTOR
HACR	HEATING AIR CONDITIONING REFRIGERATION
HOA	HAND-OFF-AUTO
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
H.,W.,D.,L.	HEIGHT, WIDTH, DEPTH, LENGTH
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
IN. or "	INCHES
I/G	ISOLATED GROUND
IBC	INTERNATIONAL BUILDING CODE
I.D.C.S.	INTEGRATED DIMMING CONTROL PANEL
IDF	INTERMEDIATE DISTRIBUTION FRAME
JBOX	JUNCTION BOX
K	DEGREE KELVIN
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOUR
LCL	LONG CONTINUOUS LOAD
LF, L.F.	LINEAR FEET
LTG, LTS	LIGHTING
LPS	LOW PRESSURE SODIUM
MAX.	MAXIMUM
MBJ	MAIN BONDING JUMPER
MDF	MAIN DISTRIBUTION FRAME
MOCP	MAXIMUM OVERCURRENT PROTECTION
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
M.C.	MECHANICAL CONTRACTOR
M	METER
M/M	METER MAIN
MV	MERCURY VAPOR
MH	METAL HALIDE
MIN.	MINIMUM
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILS
MCP	MOTOR CIRCUIT PROTECTOR
MFR.	MANUFACTURER
MTD	MOUNTED
MW	MICROWAVE
NATS	NON AUTOMATIC DISCONNECT
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NC	NORMALLY CLOSED

NO	NORMALLY OPENED
NF	NON-FUSED
NIC	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NL	NIGHT LIGHT
NO. or #	NUMBER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
%Z	PERCENT IMPEDANCE
PH. or ø	PHASE
PC	PHOTOCELL
P.C.	PLUMBING CONTRACTOR
P	POLE
PVC	POLY VINYL CHLORIDE
PDU	POWER DISTRIBUTION UNIT
PRIMARY	OVER 600 VOLTS
PROVIDE	FURNISH, INSTALL AND CONNECT
PT	POTENTIAL TRANSFORMER
PA	PUBLIC ADDRESS
(R)	DENOTES RELOCATED DEVICE LOCATION.
REC, RECEPT	RECEPTACLE
REF	REFRIGERATOR
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
SCC	SHORT CIRCUIT CURRENT
SCCR	SHORT CIRCUIT CURRENT RATING
SCS	STRUCTURED CABLING SYSTEM
SFD	SMOKE FIRE DAMPER
SECONDARY	600 VOLTS AND LESS
SMACNA	SHEET METAL AND AIR COND. CONTRACTOR'S NAT'L ASSOC.
SQ.	SQUARE
SSBJ	SUPPLY SIDE BONDING JUMPER
SBJ	SYSTEM BONDING JUMPER
TC	TIMECLOCK
TEL/DATA	TELEPHONE AND DATA
TV	TELEVISION
T.V.S.S.	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
U.G.P.S.	UNDERGROUND PULL SECTION
U.O.N.	UNLESS OTHERWISE NOTED
U.P.S. or UPS	UNINTERRUPTABLE POWER SYSTEM
VAV	VARIABLE AIR VOLUME
V	VOLTS
VA	VOLT AMPERES
VD	VOLTAGE DROP
WP	WEATHERPROOF
W	WIRE
XFMR	TRANSFORMER

FIRE ALARM SYSTEM SYMBOLS

SEE FIRE ALARM OR CENTRAL MONITORING SYSTEM DRAWINGS FOR FIRE ALARM SYMBOLS.

SIGNAL SYSTEM SYMBOLS

B — WALL MOUNTED CLOCK. FIELD VERIFY MOUNTING HEIGHT PRIOR TO INSTALLATION. "B" INDICATES BATTERY OPERATED CLOCK. "D" INDICATES DIGITAL CLOCK, "NO LETTER" INDICATES ANALOG CLOCK. REFER TO SPECIFICATIONS.

—C— CONCEALED CLOCK CONDUIT RUN 1/2" CONDUIT, OR AS NOTED, WITH CONDUCTORS PER SPECIFICATIONS.

TV OUTLET, WALL MOUNTED. STUB A 3/4" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE BUSHING.

TV OUTLET FLUSH CEILING MOUNTED.

—TV— CONCEALED TELEVISION CONDUIT RUN, 3/4" CONDUIT, OR AS NOTED, WITH CONDUCTORS – REFER TO SPECIFICATIONS.

MICROPHONE OUTLET, WALL MOUNTED. PROVIDE 3/4" C.O. (WITH PULL ROPE) UP TO 6" ABOVE ACCESSIBLE CEILING SPACE. PROVIDE BUSHING AT EACH END.

MICROPHONE OUTLET, FLUSH CEILING MOUNTED.

—M— CONCEALED MICROPHONE CONDUIT RUN, 3/4" CONDUIT, OR AS NOTED, WITH CONDUCTORS – REFER TO SPECIFICATIONS.

S V — SURFACE WALL MOUNTED SPEAKER, "V" INDICATES VOLUME CONTROL.

S V — SURFACE MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.

S V — FLUSH WALL MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.

S V — CEILING FLUSH MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.

SM V — ABOVE CEILING MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.

V — VOLUME CONTROL, WALL MOUNTED.

—S— CONCEALED SPEAKER CONDUIT RUN 3/4" CONDUIT, OR AS NOTED, WITH CONDUCTORS – REFER TO SPECIFICATIONS.

SECURITY ALARM SYSTEM SYMBOLS

SACP — SECURITY ALARM CONTROL PANEL – SEE SPECIFICATIONS.

SPS — SECURITY SYSTEM POWER SUPPLY – SEE SPECIFICATIONS.

ID — SECURITY ALARM PASSIVE INFRARED MOTION SENSOR – SEE SPECIFICATIONS.

DT — SECURITY ALARM DUAL TECHNOLOGY MOTION SENSOR – SEE SPECIFICATIONS.

UD — SECURITY ALARM ULTRASONIC MOTION SENSOR – SEE SPECIFICATIONS.

DC — SECURITY ALARM DOOR CONTACT – SEE SPECIFICATIONS.

PB — SECURITY ALARM PANIC BUTTON – SEE SPECIFICATIONS.

KP — SECURITY ALARM KEY PAD – SEE SPECIFICATIONS.

GB — SECURITY ALARM GLASS BREAK INDICATOR – SEE SPECIFICATIONS.

—SA— SECURITY ALARM SYSTEM BRANCH CIRCUIT PER SECURITY ALARM RISER DIAGRAM AND/OR SPECIFICATIONS.

ACCESS CONTROL SYSTEM SYMBOLS

ACCP — ACCESS CONTROL PANEL – SEE SPECIFICATIONS.

APS — ACCESS CONTROL SYSTEM POWER SUPPLY – SEE SPECIFICATIONS.

LPS — ACCESS CONTROL SYSTEM LOCK POWER SUPPLY – SEE SPECIFICATIONS.

KS — ACCESS CONTROL KEY SWITCH – SEE SPECIFICATIONS.

LA — ACCESS CONTROL LOCAL ALARM SOUNDER – SEE SPECIFICATIONS.

PR — ACCESS CONTROL PROXIMITY READER – SEE SPECIFICATIONS.

CR — ACCESS CONTROL CARD READER – SEE SPECIFICATIONS.

KP — ACCESS CONTROL KEY PAD – SEE SPECIFICATIONS.

ES — ACCESS CONTROL REQUEST TO EXIT SENSOR – SEE SPECIFICATIONS.

—AC— ACCESS CONTROL SYSTEM BRANCH CIRCUIT PER ACCESS CONTROL RISER DIAGRAM AND/OR SPECIFICATIONS.

PROJECT SPECIFIC SYMBOLS

REQUIRED SPECIFICATION DEVIATIONS

THE FOLLOWING ITEM(S) ARE REQUIRED DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS AND SHOULD BE INCLUDED AS PART OF THE BASE BID. THESE DEVIATIONS ARE AT THE DIRECTION OF THE OWNER:

NONE

ALLOWED SPECIFICATION DEVIATIONS

THE FOLLOWING ITEM(S) ARE ALLOWED DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS. THESE DEVIATIONS ARE AT THE DIRECTION OF THE OWNER:

NONE

DEDUCTIVE/ADDITIVE ALTERNATE PRICING

IN ADDITION TO ANY DEDUCTIVE OR ADDITIVE LINE ITEM PRICING CALLED FOR ON THE DRAWING OR IN THE SPECIFICATIONS, CONTRACTOR SHALL PROVIDE SEPARATE LINE ITEM DEDUCTIVE/ADDITIVE ALTERNATE PRICING FOR EACH OF THE FOLLOWING ITEM(S):

NONE

ANNOTATIONS

A — PANEL CALLOUT, "A" INDICATES PANELBOARD OR EQUIPMENT DESIGNATION.

AC 2 — MECHANICAL EQUIPMENT CALLOUT, "AC" INDICATES UNIT TYPE AND "2" INDICATES UNIT NUMBER. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS.

3 E-1 — DETAIL CALLOUT, "3" INDICATES DETAIL NUMBER "E-1" INDICATES SHEET NUMBER.

2 — PLAN NOTE REFERENCE, REFER TO NOTES ON SHEET, OR AS DIRECTED.

4 — REVISION REFERENCE.

WYE CONFIGURATION — DELTA CONFIGURATION — GROUND

CCTV SYSTEM SYMBOLS

CCVMS — VIDEO MANAGEMENT SYSTEM – CCTV HEADEND – SEE SPECIFICATIONS.

CCWS — CCTV WORKSTATION AND MONITOR – SEE SPECIFICATIONS.

CCTV FIXED POSITION CAMERA – SEE SPECIFICATIONS.

CCTV PAN/TILT CAMERA – SEE SPECIFICATIONS.

—CC— CCTV SYSTEM BRANCH CIRCUIT PER CCTV SYSTEM RISER DIAGRAM AND/OR SPECIFICATIONS.

TELEPHONE/DATA SYMBOLS

TELEPHONE OUTLET BOX, WALL MOUNTED. STUB A 1" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
"W" = WALL MOUNTED PHONE
"P" = PUBLIC (PAY) PHONE. VERIFY ALL REQUIREMENTS WITH THE TELEPHONE UTILITY COMPANY. PROVIDE 1" C.O. (MIN) TO THE MAIN TELEPHONE BACKBOARD. MOUNTING HEIGHT AS REQUIRED.

DATA OUTLET BOX, WALL MOUNTED. STUB A 1" C.O. UP 6-INCHES ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.

COMBINATION TELEPHONE AND DATA OUTLET BOX, WALL MOUNTED. STUB A 1" C.O. UP 6-INCHES ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.

TELEPHONE OUTLET BOX, FLUSH MOUNTED IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

DATA OUTLET BOX FLUSH MOUNTED IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

COMBINATION TELEPHONE AND DATA OUTLET BOX FLUSH MOUNTED IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

TELEPHONE OUTLET BOX, WALL MOUNTED 6-INCHES ABOVE COUNTER OR SPLASH. STUB A 1" C.O. UP 6-INCHES ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.

DATA OUTLET BOX, WALL MOUNTED 6-INCHES ABOVE COUNTER OR SPLASH. STUB A 1" C.O. UP 6-INCHES ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.

COMBINATION TELEPHONE AND DATA OUTLET BOX, WALL MOUNTED 6-INCHES ABOVE COUNTER OR SPLASH. STUB A 1" C.O. UP 6-INCHES ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.

COMBINATION TELEPHONE AND DATA OUTLET BOX MOUNTED IN ACCESSIBLE CEILING SPACE OR IN FLOOR BOX PER PLAN FOR FLEXIBLE CONNECTION TO FURNITURE SYSTEM. VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

COMBINATION TELEPHONE AND DATA OUTLET, WALL MOUNTED AT +18-INCHES A.F.F. FOR FLEXIBLE CONNECTION TO FURNITURE SYSTEM. PROVIDE THE FOLLOWING:

- IN A NON-RATED INSULATED WALL, OR NON-RATED UNINSULATED WALL, PROVIDE A 2-GANG MUD RING OR CADDY #RBS SERIES BOX MOUNTING BRACKET (EQUAL BY B-LINE OR RAYCO) WITH (2) 1-1/2"C.O. WITH PULL STRING TO ACCESSIBLE CEILING. PROVIDE 1-1/2" BUSHINGS AT CONDUIT ENDS. REFER TO ARCHITECTURAL PLANS FOR WALL CONSTRUCTION/TYPE AND CEILING CONDITIONS.
- IN A RATED WALL, PROVIDE (1) 4S/DP BOX WITH (2) 1-1/4" C.O. AND (1) 4S/DP BOX WITH (1) 1-1/4" C.O. WITH PULL STRINGS IN EACH CONDUIT TO ACCESSIBLE CEILING. PROVIDE 1-1/4" BUSHINGS AT CONDUIT ENDS. UTILIZE CADDY #RBS SERIES BOX MOUNTING BRACKET TO MAINTAIN BOX ALIGNMENT (EQUAL BY B-LINE OR RAYCO). UTILIZE FIRESTOPPING SYSTEM PADS RATED FOR USE ON THE INSIDE OR OUTSIDE OF THE BOX (STI OR EQUAL) AS REQUIRED TO MAINTAIN RATING OF WALL OR MEMBRANE. REFER TO ARCHITECTURAL PLANS FOR WALL CONSTRUCTION/TYPE AND CEILING CONDITIONS.

—T1— CONCEALED TELEPHONE/DATA CONDUIT RUN, 1-INCH CONDUIT ONLY (MIN). SEE TABLE FOR CONDUIT SIZE VARIATIONS.
T2 = 1-1/4" C.O. T3 = 1-1/2" C.O. T4 = 2" C.O.

FLUSH MOUNTED, LOCKABLE TERMINAL CABINET WITH TERMINAL STRIPS AS REQUIRED.

SURFACE MOUNTED, LOCKABLE TERMINAL CABINET WITH TERMINAL STRIPS AS REQUIRED.

TELEPHONE TERMINAL BACKBOARD SIZED AS NOTED, REFER TO SYSTEM GROUND DETAIL.

LIGHTING SYMBOLS

SITE LIGHTING FIXTURE SYMBOLS DEPICTED WITH CAPITAL LETTER(S) ADJACENT TO RESPECTIVE SYMBOL(S) INDICATE(S) LIGHT FIXTURE MOUNTING BASE DETAIL(S). SEE LIGHTING FIXTURE SCHEDULE FOR FIXTURE SYMBOL INFORMATION.

1a — LIGHTING FIXTURE CALL OUT, NUMBER(S) AND/OR UPPER CASE LETTER(S) (i.e. "1") INDICATES FIXTURE TYPE (REFER TO LIGHTING FIXTURE SCHEDULE). LOWER CASE LETTER (i.e. "a") ADJACENT TO FIXTURE TYPE INDICATES BALLAST OPTION (SEE GENERAL LIGHTING FIXTURE SCHEDULE NOTES).

J — INDICATES FINAL CONNECTION TO A LIGHTING FIXTURE, NUMBER OF CONDUCTORS AS REQUIRED.

LIGHTING CONTROL SYMBOLS

SEE THE DISTRIBUTED LIGHTING CONTROL SPECIFICATIONS FOR MORE INFORMATION.

LOW-VOLTAGE WIRING BETWEEN OCCUPANCY SENSORS, VACANCY SENSORS, DAY-LIGHTING CONTROLS, LOW-VOLTAGE SWITCHES, AND SWITCHPACKS. CONDUCTOR TYPE AND QUANTITY PER MANUFACTURER'S RECOMMENDATIONS AND WIRING DIAGRAMS.

WALL MOUNTED DIMMER. SEE SINGE POLE SWITCH SYMBOL FOR RELATED SUBSCRIPTS. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF DIMMERS REQUIRED. PROVIDE DIMMER TYPE TO MATCH INDICATED BALLAST TYPE AND CONTROL REQUIREMENTS.

y (y) (y,z) — WALL MOUNTED STAND ALONE OCCUPANCY SENSOR. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF RELAYS CIRCUITS REQUIRED – SEE CONTROL CONFIGURATIONS BELOW FOR MORE INFORMATION. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE.

H y,(y) — WALL MOUNTED NON-NETWORKED/INTERCONNECTED/NETWORKED, SYSTEM-BASED OCCUPANCY SENSOR. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF RELAYS/DIMMING CIRCUITS REQUIRED – SEE CONTROL CONFIGURATIONS BELOW FOR MORE INFORMATION. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE. ADJACENT UPPER CASE LETTER ("H") INDICATES CONNECTION TO HVAC SYSTEM CONTROLS.

H,DM,AV,P y,(y) — 1-WAY/2-WAY DIRECTIONAL CEILING MOUNTED, NON-NETWORKED/INTERCONNECTED/NETWORKED, SYSTEM-BASED OCCUPANCY SENSOR. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF RELAYS/DIMMING CIRCUITS REQUIRED – SEE CONTROL CONFIGURATIONS BELOW FOR MORE INFORMATION. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE. ADJACENT UPPER CASE LETTER ("H") INDICATES CONNECTION TO HVAC SYSTEM CONTROLS VIA CONTROLLED DRY-CONTACT CLOSURE. ADJACENT UPPER CASE LETTERS ("DM") INDICATES DUAL MODE CONTROL AT CORRIDORS, STAIRWELLS AND WAREHOUSE AISLEWAYS. ADJACENT UPPER CASE LETTERS ("AV") INDICATES CONNECTION TO A/V CONTROL SYSTEM. ADJACENT UPPER CASE LETTER ("P") INDICATES CONNECTION TO MOVEABLE PARTITION INTERFACE, SENSOR AND STATUS INDICATOR.

Ky Vy y DM — LOW VOLTAGE MOMENTARY SWITCHES, WALL MOUNTED, FOR MANUAL "ON/OFF SWITCHING" AND "DIMMING" (STEPPED/CONTINUOUS) CONTROL OF LIGHTING WHICH IS CONTROLLED BY CEILING MOUNTED OCCUPANCY SENSORS. ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF SWITCHLEGS TO BE CONTROLLED. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE. UPPER CASE SUBSCRIPT "K" INDICATES LOCKING SWITCH FOR THE SUBSEQUENT LOWER CASE LETTER. UPPER CASE SUBSCRIPT "V" INDICATES VANDAL RESISTANT SWITCH. UPPER CASE SUBSCRIPT "DM" INDICATES DUAL MODE CONTROL SWITCH.

(50) y+ — AUTOMATIC SWITCHING/STEP-DIMMING DAYLIGHTING CONTROLLER USED TO SWITCH OFF LIGHTS WHEN SUFFICIENT NATURAL LIGHT IS PRESENT. NUMBER IN PARENTHESIS INDICATES THE AVERAGE WORKPLANE "TARGET ILLUMINATION" SYMBOL VALUE. ADJACENT LOWER CASE LETTER(S) INDICATES SWITCH LEG(S) CONTROLLED. ADJACENT "+" INDICATES PORTION OF SWITCHLEG CONTROLLED BY SENSOR.

(50) y+ — AUTOMATIC CONTINUOUS DIMMING DAYLIGHTING CONTROLLER USED TO DIM LIGHTS WHEN SUFFICIENT NATURAL LIGHT IS PRESENT. NUMBER IN PARENTHESIS INDICATES THE AVERAGE WORKPLANE "TARGET ILLUMINATION" SYMBOL VALUE. ADJACENT LOWER CASE LETTER(S) INDICATES SWITCH LEG(S) CONTROLLED. ADJACENT "+, ++ AND *" INDICATES PORTION OF SWITCHLEG CONTROLLED BY SENSOR WHERE "+" INDICATES PRIMARY SIDELIT DAYLIT ZONE, "++" INDICATES SECONDARY SIDELIT DAYLIT ZONE, AND "*" INDICATES SKYLIT DAYLIT ZONE

CONTROL CONFIGURATIONS:

y — "y" INDICATES THAT SWITCH LEG "y" TO BE CONFIGURED IN A "AUTO ON 100% / AUTO OFF" AND BE CONTROLLED (CONTINUOUSLY DIMMED) BY THE ASSOCIATED CEILING SENSOR REMOTE SWITCH ON THE WALL.

y,(y) — "y,(y)" INDICATES THAT SWITCH LEG "y" TO BE CONFIGURED IN A "AUTO ON 50% / MANUAL ON 100% / AUTO OFF" AND BE CONTROLLED (CONTINUOUSLY DIMMED) BY THE ASSOCIATED DISTRIBUTED LIGHTING CONTROLS.

(y) — "(y)" INDICATES THAT SWITCH LEG "y" IS TO BE CONFIGURED IN A "MANUAL ON / AUTO OFF" (VACANCY SENSOR) AND BE CONTROLLED BY THE ASSOCIATED DISTRIBUTED LIGHTING CONTROLS.

MISCELLANEOUS SYSTEM SYMBOLS

ICP — INVERTER CONTROL PANEL – SEE INVERTER SPECIFICATIONS.

IAP — INVERTER ANNUNCIATOR PANEL – SEE INVERTER SPECIFICATIONS.

GAP — GENERATOR ANNUNCIATOR PANEL – SEE GENERATOR SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

IDCS — INTEGRATED DIMMING CONTROL STATION (IDCS) PANEL – WALL MOUNTED. SEE IDCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

DPCS — DIMMING PANEL CONTROL STATION (DPCS) PANEL – WALL MOUNTED. SEE DPCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

L — LIGHTING CONTROL SYSTEM LOCAL SWITCH – WALL MOUNTED. SEE LIGHTING CONTROL SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

O — LIGHTING CONTROL SYSTEM OVERRIDE SWITCH – WALL MOUNTED. SEE LIGHTING CONTROL SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

M — LIGHTING CONTROL SYSTEM MASTER SWITCH – WALL MOUNTED. SEE LIGHTING CONTROL SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

R — IDCS/DPCS SYSTEM REMOTE STATION SWITCH – WALL MOUNTED. SEE IDCS SYSTEM AND/OR DPCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

P — IDCS/DPCS SYSTEM PARTITION STATION SWITCH – WALL MOUNTED. SEE IDCS SYSTEM AND/OR DPCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

BRANCH CIRCUIT SYMBOLS

A-1,3,5 — HOME RUN TO PANEL. LETTER DESIGNATES PANEL, NUMBERS INDICATE CIRCUITS. HASH MARKS INDICATE NUMBER OF CONDUCTORS IN CONDUIT RUN, #12 AWG MINIMUM UNLESS OTHERWISE NOTED.

A-1&3&5 — HOME RUN TO PANEL. LETTER DESIGNATES PANEL, NUMBERS INDICATE CIRCUITS WITH SEPARATE NEUTRALS. "&" INDICATES SEPARATE NEUTRALS.

A-1+3+5 — HOME RUN TO PANEL. LETTER DESIGNATES PANEL, NUMBERS INDICATE CIRCUITS. "+" INDICATES SEPARATE #10 NEUTRAL THROUGHOUT BRANCH CIRCUIT. HASH MARK " " INDICATES AN ISOLATED GROUND CONDUCTOR.

CONCEALED CONDUIT OR BRANCH CIRCUIT UNLESS OTHERWISE NOTED. 1/2" CONDUIT MINIMUM, (2) #12 AWG CONDUCTORS MINIMUM.

CONDUIT OR BRANCH CIRCUIT CONCEALED BELOW GRADE, 3/4" CONDUIT MINIMUM WITH (2) 12 AWG CONDUCTORS MINIMUM AND A CODE SIZED EQUIPMENT GROUND.

SURFACE-MOUNTED CONDUIT OR BRANCH CIRCUIT UNLESS OTHERWISE NOTED. 1/2" CONDUIT MINIMUM, (2) #12 AWG CONDUCTORS MINIMUM.

TANDEM WIRING CONNECTION.

CONDUIT STUB OUT, CAP, MARK AND RECORD ON AS-BUILT DRAWINGS

CONDUIT CONTINUATION.

FLEXIBLE CONNECTION AS REQUIRED. NUMBER OF CONDUCTORS AS REQUIRED. VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN.

CONDUIT/ BRANCH CIRCUIT/FEEDER CONTINUATION DOWN WALL TO FLOOR BELOW

CONDUIT/ BRANCH CIRCUIT/FEEDER CONTINUATION UP WALL TO FLOOR ABOVE

FLOOR BOX / SPECIALTY WALL BOX / PEDESTAL BOX SYMBOLS

SINGLE SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

TWO SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

THREE SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

FOUR SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

SIX SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

AV — 7-GANG AV FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

AV — RECESSED, ADJUSTABLE DEPTH, FLAT PANEL TV/DISPLAY WALL BOX WITH FLUSH GROMMETED COVER PANEL (CHIEF #PAC525F) AND MINIMUM OF (1) 1-1/4"C.O. FROM TOP-MOUNTED L.V. CONDUIT ENTRY BOX TO ACCESSIBLE CEILING. SEE PLANS FOR ANY ADDITIONAL CONDUIT REQUIREMENTS. PROVIDE ADDITIONAL L.V. AND LINE VOLTAGE CONDUIT ENTRY BOXES AS REQUIRED TO ACCOMPLISH WALL BOX CONFIGURATION DEPICTED ON PLANS. FLUSH GROMMETED COVER SHALL BE WHITE, BLACK OR CUSTOM COLOR PER ARCHITECT. WHEN FIELD CONDITIONS PROHIBIT INSTALLATION OF THIS DEVICE (SUCH AS WALL STUD/CAVITY DEPTH OF LESS THAN 2.5" ETC), CONFIRM VIA WRITTEN RFI THE INSTALLATION OF A TRADITIONAL POWER AND DATA RECEPTACLE INSTALLATION ALONG SIDE CCTV/AV JUNCTION BOX CONSISTING OF 2-GANG DEEP JUNCTION BOX/2-GANG RING WITH 1-1/4"C.O. TO ACCESSIBLE CEILING IN ADDITION TO ANY OTHER CONDUIT REQUIREMENTS DEPICTED ON PLANS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHT.

SINGLE OR DUAL SERVICE RECESSED EXTERIOR WALL BOX – TYPE "WP-A". PROVIDE DEVICES PER PLAN. EACH LV OR UNUSED COMPARTMENT SHALL BE EQUIPPED WITH A 1"C.O. TO THE NEAREST ACCESSIBLE CEILING SPACE U.O.N. SEE EXTERIOR DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

SINGLE OR DUAL SERVICE EXTERIOR PEDESTAL – TYPE "WP-C". PROVIDE DEVICES PER PLAN. SEE EXTERIOR DETAILS AND SPECIFICATIONS FOR MORE INFORMATION. ARROW DENOTES DEVICE DOOR LOCATION.

POWER SYMBOLS

ALL RECEPTACLE OUTLETS SHOWN WITH A DIAGONAL SLASH SHALL BE CONTROLLED BY OCCUPANCY SENSOR OR LIGHTING CONTROL PANEL. SEE DISTRIBUTED LIGHTING CONTROLS FOR ADDITIONAL REQUIREMENTS. WHERE DOUBLE DUPLEX RECEPTACLE OUTLETS ARE INDICATED AS CONTROLLED, ONLY A SINGLE DUPLEX RECEPTACLE OUTLET (NON-IG, NON-GCFI TYPE) SHALL BE CONTROLLED. WITHIN ANY CONTROLLED DUPLEX RECEPTACLE OUTLET, ONLY ONE RECEPTACLE SHALL BE CONTROLLED. NOTE THAT FOR FLOOR BOXES OR POKE-THRU DEVICES, THE ASSOCIATED CONTROL RELAY MAY NEED TO BE LOCATED WITHIN THE ELECTRICAL ROOM WHERE THE CONTROLLED CIRCUIT ORIGINATES.

R a — OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM CONTROLLED RECEPTACLE RELAY. WHERE LETTER DESIGNATION "a" REPRESENTS OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM CONTROL ZONE. SEE THE DISTRIBUTED LIGHTING CONTROL SPECIFICATION FOR MORE INFORMATION.

DUPLEX RECEPTACLE, WALL MOUNTED.

DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED.

DUPLEX, GFCI RECEPTACLE, WALL MOUNTED. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.

DOUBLE DUPLEX, WALL MOUNTED, WITH (1) GFCI RECEPTACLE AND (1) DUPLEX RECEPTACLE CONNECTED ON LOAD SIDE OF GFCI. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.

DUPLEX RECEPTACLE, ONE HALF SWITCHED, WALL MOUNTED.

DUPLEX, ISOLATED GROUND RECEPTACLE, WALL MOUNTED.

1,3 / 1,3a — COMBINATION DOUBLE DUPLEX: ONE ISOLATED GROUND DUPLEX RECEPTACLE AND ONE DUPLEX RECEPTACLE, WALL MOUNTED.

COMBINATION DOUBLE DUPLEX: TWO ISOLATED GROUND RECEPTACLES, WALL MOUNTED.

SIMPLEX RECEPTACLE, WALL MOUNTED.

SPECIAL RECEPTACLE, WALL MOUNTED. REFER TO PLAN NOTES.

DUPLEX RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

DOUBLE DUPLEX RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

DUPLEX RECEPTACLE, ONE HALF SWITCHED, FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

DUPLEX, ISOLATED GROUND RECEPTACLE, FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

1,3 / 1,3a — COMBINATION DOUBLE DUPLEX: ONE ISOLATED GROUND DUPLEX RECEPTACLE AND ONE DUPLEX RECEPTACLE, MOUNTED FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN FLOOR BOX SYMBOL.

COMBINATION DOUBLE DUPLEX FLUSH IN CEILING: TWO ISOLATED GROUND RECEPTACLES – MOUNT FLUSH IN FLOOR WHEN INDICATED IN FLOOR BOX SYMBOL.

SIMPLEX RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

SPECIAL RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.

DUPLEX RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

DUPLEX, GFCI RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.

DOUBLE DUPLEX, WALL MOUNTED, WITH (1) GFCI RECEPTACLE AND (1) DUPLEX RECEPTACLE CONNECTED ON LOAD SIDE OF GFCI. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.

DUPLEX RECEPTACLE, BOTTOM HALF SWITCHED, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

DUPLEX, ISOLATED GROUND RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

1,3 / 1,3a — COMBINATION DOUBLE DUPLEX: ONE ISOLATED GROUND DUPLEX RECEPTACLE AND ONE DUPLEX RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

COMBINATION DOUBLE DUPLEX: TWO ISOLATED GROUND DUPLEX RECEPTACLES, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

SIMPLEX RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH.

SPECIAL RECEPTACLE, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH. REFER TO PLAN NOTES.

WP-B — WET LOCATION-LISTED (RAINTITE-IN-USE) RECEPTACLE – SEE ELECTRICAL SPECIFICATION FOR ADDITIONAL INFORMATION.

WP-D — DAMP LOCATION-LISTED (NOT-RAINTITE-IN-USE) RECEPTACLE – SEE ELECTRICAL SPECIFICATION FOR ADDITIONAL INFORMATION.

DUPLEX RECEPTACLES WITH TWO 5V, 3.6A USB CHARGING PORTS. PROVIDE COLOR AS REQUIRED IN 15A OR 20A CONFIGURATION AND/OR TAMPER RESISTANT AND/OR HOSPITAL GRADE AS REQUIRED BY PLANS AND THE WIRING DEVICES SECTION OF THE GENERAL ELECTRICAL SPECIFICATIONS. (PASS & SEYMOUR OR EQUAL BY HUBBELL OR LEVITON.)

QUAD RECEPTACLES WITH TWO 5V, 3.6A USB CHARGING PORTS. PROVIDE COLOR AS REQUIRED IN 15A OR 20A CONFIGURATION AND/OR TAMPER RESISTANT AND/OR HOSPITAL GRADE AS REQUIRED BY PLANS AND THE WIRING DEVICES SECTION OF THE GENERAL ELECTRICAL SPECIFICATIONS. (PASS & SEYMOUR OR EQUAL BY HUBBELL OR LEVITON.)

JUNCTION BOX, WALL MOUNTED AT +18-INCHES A.F.F. OR AS NOTED. 4S/DP MINIMUM OR AS REQUIRED BY N.E.C..

JUNCTION BOX, MOUNTED IN ACCESSIBLE CEILING FOR APPLICATION DENOTED ON PLAN. 4S/DP MINIMUM OR AS REQUIRED BY N.E.C..

JUNCTION BOX, WALL MOUNTED AT 6-INCHES ABOVE COUNTER OR SPLASH. 4S/DP MINIMUM OR AS REQUIRED BY N.E.C..

JUNCTION BOX MOUNTED IN ACCESSIBLE CEILING SPACE PER PLAN FOR FLEXIBLE CONNECTION TO PREWIRED FURNITURE SYSTEM. MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL. WHEN SHOWN WITH A DIAGONAL SLASH, THE LAST GENERAL RECEPTACLE CIRCUIT ON THE HOME-RUN CALLOUT SHALL BE CONTROLLED BY THE OCCUPANCY SENSOR. COORDINATE CONTROLLED CIRCUIT CONNECTION REQUIREMENTS WITH FURNITURE SYSTEM MANUFACTURER PRIOR TO ROUGH-IN. SEE DISTRIBUTED LIGHTING CONTROLS FOR ADDITIONAL REQUIREMENTS.

JUNCTION BOX, WALL MOUNTED AT +18-INCHES A.F.F. FOR FLEXIBLE CONNECTION TO PREWIRED FURNITURE SYSTEM. WHEN SHOWN WITH A DIAGONAL SLASH, THE LAST GENERAL RECEPTACLE CIRCUIT ON THE HOME-RUN CALLOUT SHALL BE CONTROLLED BY THE OCCUPANCY SENSOR. COORDINATE CONTROLLED CIRCUIT CONNECTION REQUIREMENTS WITH FURNITURE SYSTEM MANUFACTURER PRIOR TO ROUGH-IN. SEE DISTRIBUTED LIGHTING CONTROLS FOR ADDITIONAL REQUIREMENTS.

SURFACE MOUNTED MULTI-OUTLET ASSEMBLY. REFER TO GENERAL PRODUCT SPECIFICATIONS. PROVIDE ALL COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION.

T — THERMOSTAT OUTLET BOX, PROVIDE 1/2" C.O. TO RESPECTIVE MECHANICAL UNIT.

EXHAUST FAN, OR MOTOR LOAD. REFER TO MECHANICAL, PLUMBING OR KITCHEN DRAWINGS FOR SPECIFIC LOAD REQUIREMENTS OR AS NOTED.

FLUSH MOUNTED ELECTRICAL PANELBOARD OR LOAD CENTER. REFER TO PANEL SCHEDULE.

SURFACE MOUNTED ELECTRICAL PANELBOARD OR LOAD CENTER. REFER TO PANEL SCHEDULE.

DISTRIBUTION SWITCHBOARD. REFER TO SINGLE LINE DIAGRAM.

T — TRANSFORMER, REFER TO SINGLE LINE DIAGRAM.

F — FUSED DISCONNECT SWITCH, HP RATED, OR COMBINATION MOTOR STARTER/DISCONNECT SWITCH WITH FUSES PER EQUIPMENT MANUFACTURER AND WEATHERPROOF AS REQUIRED. PROVIDE FINAL CONNECTION TO UNIT EQUIPMENT. SEE MOTORIZED EQUIPMENT SCHEDULE FOR DISCONNECT AND STARTER SIZES.

NON-FUSED DISCONNECT SWITCH, HP RATED AND WEATHERPROOF AS REQUIRED. PROVIDE FINAL CONNECTION TO UNIT EQUIPMENT. SEE MOTORIZED EQUIPMENT SCHEDULE FOR DISCONNECT SIZES.

M — UTILITY COMPANY METER. PROVIDE "CT's" AND "PT's" AS REQUIRED, REFER TO SINGLE LINE DIAGRAM.

A B C — CIRCUIT BREAKER: "A" REPRESENTS CIRCUIT BREAKER AMPERE RATING, "B" REPRESENTS NUMBER OF POLES AND "C" REPRESENTS MISCELLANEOUS BREAKER FEATURES.
SHUNT= PROVIDE SHUNT TRIP MECHANISM
GFP= GROUND FAULT PROTECTION
CLCB= CURRENT LIMITING CIRCUIT BREAKER
SS= PROVIDE SOLID STATE CIRCUIT BREAKER
LO= PROVIDE PERMANENT LOCK-OPEN (OFF) HARDWARE
LC= PROVIDE PERMANENT LOCK-CLOSED (ON) HARDWARE

A B C D — FUSIBLE SWITCH: "A" REPRESENTS SWITCH/FRAME AMPERE RATING, "B" REPRESENTS THE FUSE AMPERE RATING, "C" INDICATES NUMBER OF POLES AND "D" REPRESENTS MISCELLANEOUS FUSE/SWITCH FEATURES.
SHUNT= PROVIDE SHUNT TRIP MECHANISM
GFP= GROUND FAULT PROTECTION
CLF= CURRENT LIMITING FUSE

GROUND CONNECTION, SIZE AS INDICATED OR AS REQUIRED.

$a,b — SINGLE POLE SWITCHES, WALL MOUNTED. SUBSCRIPTS AT SYMBOL INDICATE THE FOLLOWING:

2 – DOUBLE POLE	LV – LOW VOLTAGE	RL – ROTARY LOCK KEY TYPE
3 – THREE WAY	P – PILOT LIGHT	PB – PUSHBUTTON
4 – FOUR WAY	R – REMOTE CONTROL	S – PROJECTION SCREEN
K – KEY OPERATED	M – MOTOR STARTING	

a, b, c, ETC. – DESIGNATES QUANTITY OF SWITCHES AT EACH LOCATION.

NOTE: ALL WALL SWITCHES CONTROLLING EMERGENCY CIRCUITS SHALL BE ENGRAVED WITH "EMERGENCY".

EMERGENCY POWER OFF STATION, WALL MOUNTED PER EPO SYSTEM DETAIL.

PB , OR P — PULLBOX, SIZED PER N.E.C. OR AS NOTED.

WALL MOUNTED DEVICE MOUNTING HEIGHT NOTE:

ALL WALL-MOUNTED EQUIPMENT MOUNTING HEIGHTS SHALL BE VERIFIED PRIOR TO ROUGH-IN PER REQUIREMENTS OF THE DEVICE ALIGNMENT AND MOUNTING HEIGHT DETAILS AND SPECIFICATIONS.

2/27/2019

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tk1sc Job #: 2019-0130

REGISTERED PROFESSIONAL ENGINEER RAYMOND W. SWARTZ No. E15610 Exp. 12/31/2019 ELECTRICAL STATE OF CALIFORNIA

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

SYMBOL LIST

E-1.0

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PERRIS UNION HIGH SCHOOL DISTRICT

PERRIS LAKE HIGH SCHOOL

SITE LOCATION PLAN

E-2.0

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Project Leader - Jerry Leonhardt
Electrical Lead - Jerry Leonhardt
tk1sc Job #: 2019-0130

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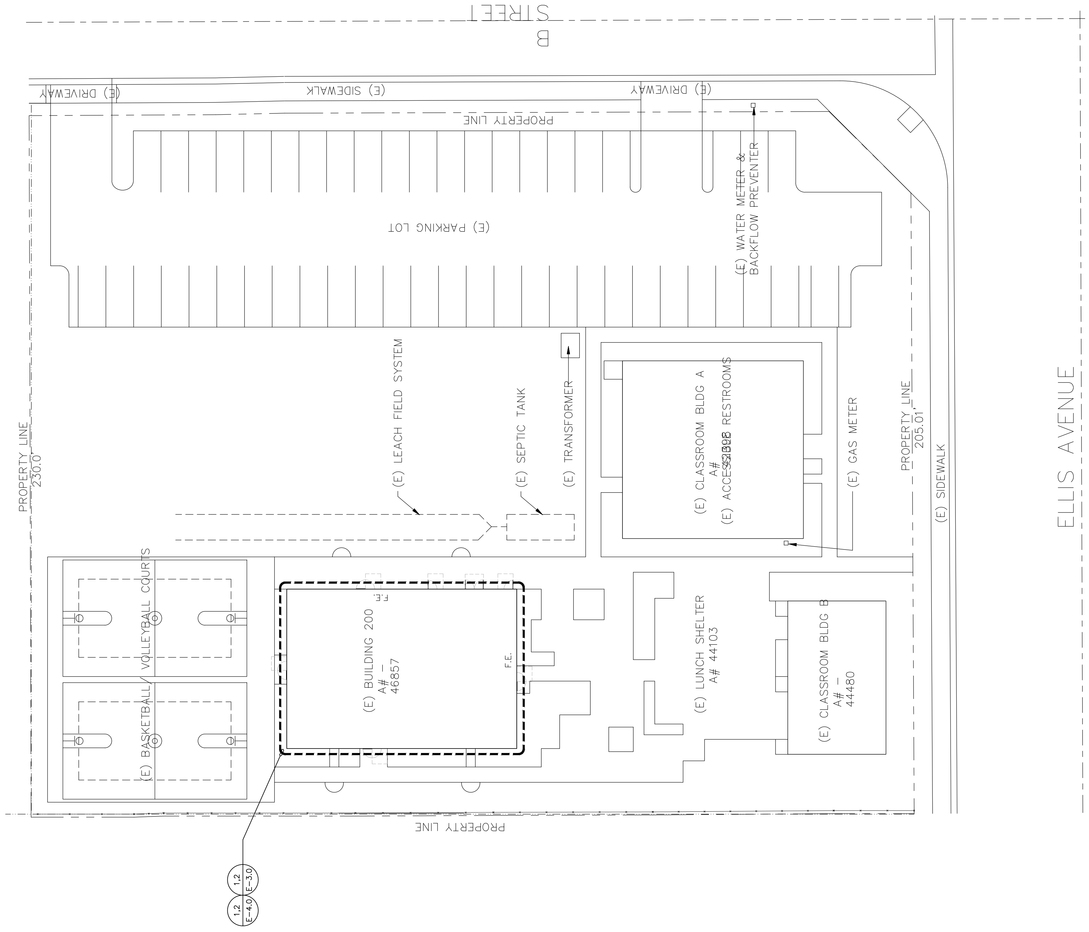
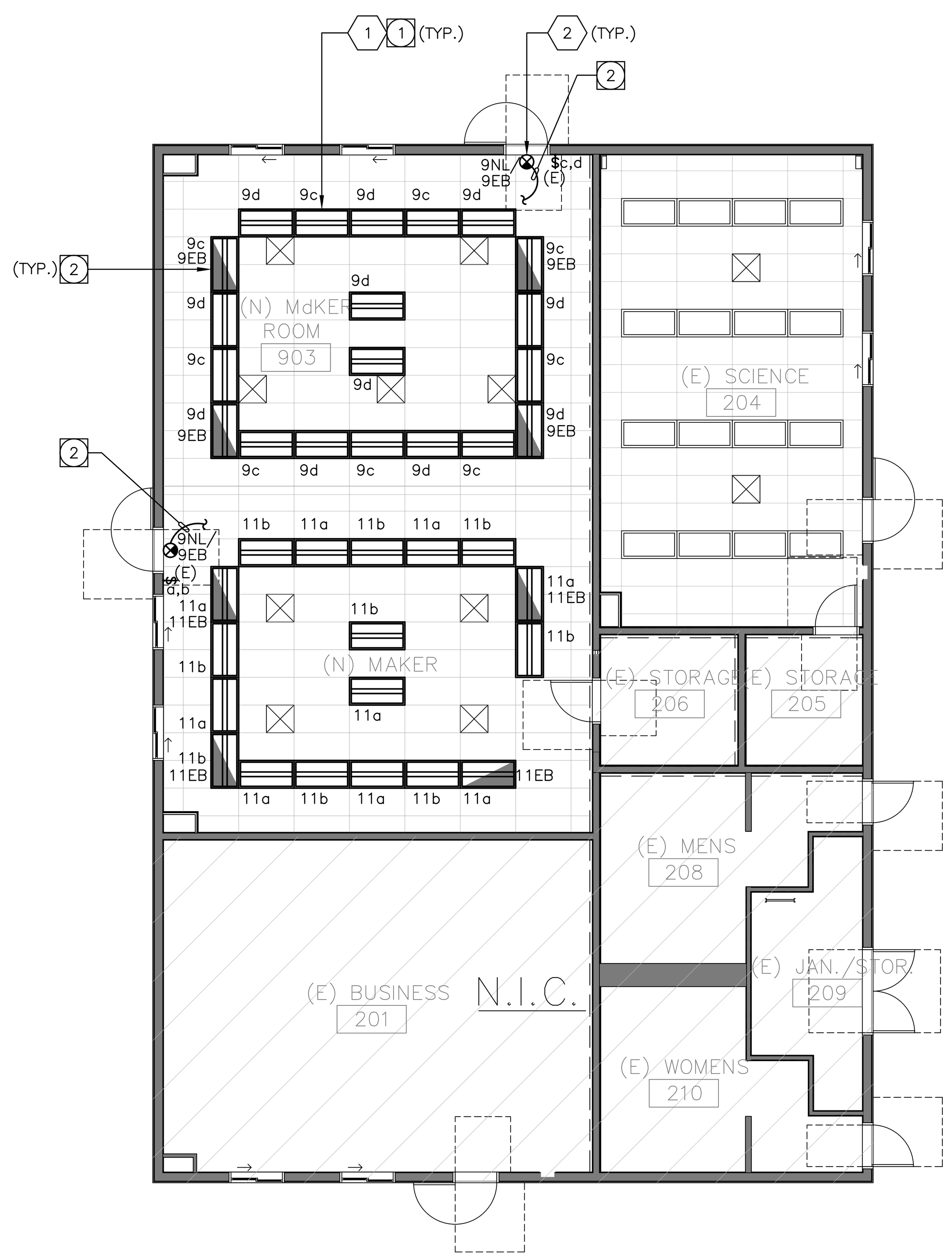


1 SITE LOCATION PLAN
1" = 20'-0"

2/27/2019



NEW LIGHTING PLAN

2

1/8" = 1'-0"

PLAN NOTES:

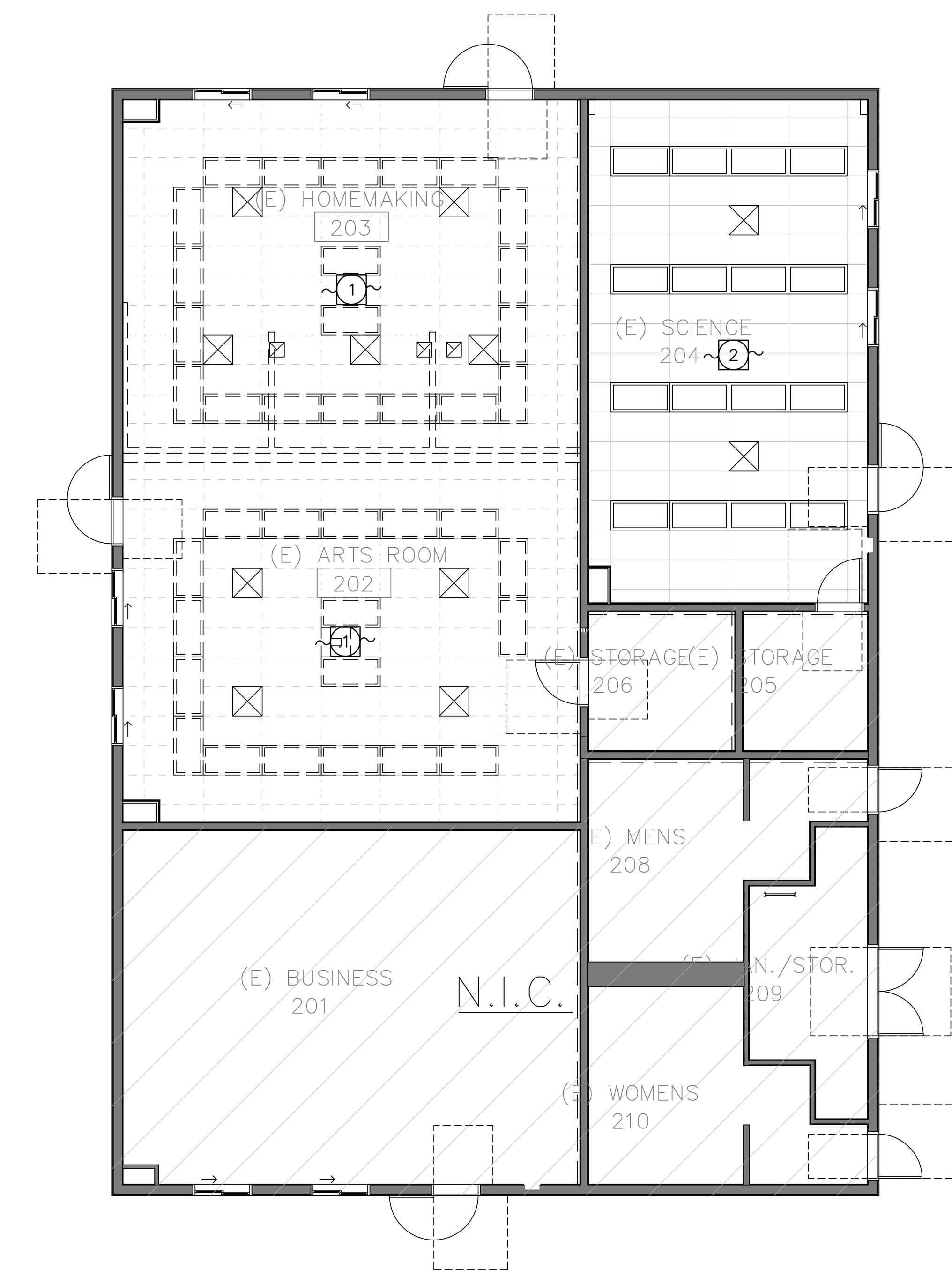
1. REPLACE LIGHTING FIXTURE WITH NEW AT SAME LOCATION. INTERCEPT EXISTING LIGHTING BRANCH CIRCUIT, CONTROL WIRE AND EXTEND AS REQUIRED.
2. PROVIDE A SEPARATE HOT WIRE OF UNSWITCHED LIGHTING CIRCUIT TO 'EMERGENCY' FIXTURE, (AND/OR EXIT SIGN), BY-PASSING ALL SWITCHING AND LIGHTING CONTROL AS REQUIRED. BOTH 'EMERGENCY' AND EXIT FIXTURES SHALL BE EQUIPPED WITH 90 MINUTE BATTERY PACKS.

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND ELEVATION OF ALL LIGHTING FIXTURES AND ALL DEVICES. ALL WALL-MOUNTED DEVICE HEIGHTS SHALL BE VERIFIED WITH THE ARCHITECT PRIOR TO ROUGH-IN.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. ALL RECESSED FIXTURES SHALL BE PROVIDED WITH ALL REQUIRED STRUCTURAL SUPPORTS AS REQUIRED BY THE CURRENTLY ADOPTED ISSUE OF THE IBC, OR CBC WHERE ADOPTED, IN ADDITION TO ANY LOCAL CODES.
4. ALL COVE MOUNTED FIXTURES SHALL EXTEND THE FULL LENGTH OF THE COVE. CONTRACTOR TO FIELD MEASURE COVE LENGTH AND ORDER QUANTITY OF FIXTURES AS REQUIRED.
5. ALL DIMMING BRANCH CIRCUITS SHALL BE PROVIDED WITH A DEDICATED NEUTRAL CONDUCTOR FOR EACH ZONE/CHANNEL.
6. ALL FLUORESCENT DIMMING ZONES/CHANNELS SHALL BE PROVIDED WITH 3 LINE VOLTAGE CONDUCTORS (NEUTRAL, DIMMED HOT, SWITCHED HOT) OR 2 LINE VOLTAGE CONDUCTORS/2 CONTROL CONDUCTORS AS REQUIRED BY THE CONTROL/BALLAST TYPE.
7. ALL EMERGENCY BATTERY PACK FIXTURES SHALL BE PROVIDED WITH A CONSTANT HOT CONNECTION TO THE CHARGING LEAD. SEE GENERAL LIGHTING FIXTURE SCHEDULE NOTES FOR MORE INFORMATION.
8. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXIT SIGN CHEVRONS AND NUMBER OF FACES PER EXIT SIGN. ANY DISCREPANCIES BETWEEN EXIT SIGNS SHOWN ON THE ELECTRICAL AND ARCHITECTURAL PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO ORDERING EXIT SIGNS.
9. WHEN EXPOSED CEILINGS OR OPEN GRID CONDITIONS OCCUR, THE CONTRACTOR WILL NEED TO PROVIDE THE FOLLOWING ITEMS:

   - ALL BRANCH CIRCUITS SHALL BE IN EMT.
   - ALL BRANCH CIRCUITS SHALL BE ROUTED, NEATLY TRAINED, AND IN PARALLEL TO STRUCTURES OR DUCT WORK. THE TERM "TRAINED" MEANS ALL PARALLEL CONDUITS SHALL MAINTAIN THE SAME SPATIAL RELATIONSHIP WITH EACH OTHER FOR ENTIRE RUN TO INCLUDE RADIUS BENDS AND SWEEPS.

   VISUALLY OBJECTIONABLE BRANCH CIRCUITS WILL BE REROUTED AT THE REQUEST OF THE ARCHITECT AT NO ADDITIONAL COST.
10. ALL LED REMOTE INDICATORS FOR DUCT DETECTORS AND FIRE/SMOKE DAMPERS REQUIRED BY THE LOCAL AHJ SHALL BE LOCATED IN CEILINGS IN COORDINATION WITH ARCHITECT PRIOR TO ANY ROUGH-IN.
11. RECESSED FIXTURES LOCATED IN A FIRE-RATED CEILING OR WALL SHALL BE PROVIDED WITH A 5-SIDED RATED ENCLOSURE SO CONSTRUCTED AS TO ALLOW CODE AND MANUFACTURER-REQUIRED CLEARANCES BETWEEN THE FIXTURE AND THE ENCLOSURE.
12. PROVIDE ADDITIONAL J-BOX NEAR PANEL FOR MULTIPLE HOMERUN CIRCUITRY.
13. UNLESS SPECIFICALLY SHOWN AS (E), (R), (ER), (D), EXISTING OR NON-BOLD, ALL ELECTRICAL DEVICES SHOWN ARE NEW.
14. REFER TO GENERAL POWER PLAN NOTES AND COMMUNICATIONS PATHWAYS GENERAL NOTES FOR ADDITIONAL REQUIREMENTS WHEN POWER AND/OR DATA DEVICES ARE SHOWN ON THIS PLAN.



EXISTING/DEMOLITION LIGHTING PLAN

1

1/8" = 1'-0"

DEMO PLAN NOTES:

1. CONTRACTOR TO DEMOLISH ALL EXISTING LIGHTING FIXTURES. ALL ASSOCIATED CIRCUITING CONTROLS TO REMAIN AND TO BE RE-USED WITH NEW LIGHTING FIXTURES.
2. ALL EXISTING LIGHTING FIXTURES AND ASSOCIATED CONTROLS TO REMAIN U.O.N.

GENERAL DEMOLITION NOTES:

1. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. DO NOT SCALE THE ELECTRICAL DRAWINGS TO DETERMINE THE LOCATION OF EQUIPMENT OR OUTLETS. SEE ARCHITECTURAL PLANS, WHERE PROVIDED ON PROJECT, FOR EXTENT OF DEMOLITION.
2. THE EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AT SITE PRIOR TO SUBMITTING BID. ALL DEMOLITION, ALTERATION, EXTENSION, RELOCATION, REHABILITATION WORK SHALL BE INCLUDED IN CONTRACT. NO ADDITIONAL ALLOWANCE OR CHANGE ORDERS WILL BE ACCEPTED.
3. CONTRACTOR IS RESPONSIBLE TO RELOCATE OR REMOVE FROM WALLS, CEILINGS, FLOOR SPACES, ETC. ANY EXISTING CONDUITS, WIRES, BOXES, FITTINGS, FIXTURES OR OTHER ELECTRICAL EQUIPMENT WHICH INTERFERES WITH PLANNED REMODEL WORK. PROVIDE CIRCUIT CONTINUATION REQUIRED FOR ALL EXISTING OUTLETS, FIXTURES, EQUIPMENT, ETC. SCHEDULED TO REMAIN.
4. NOTIFY THE ENGINEER IMMEDIATELY WHEREVER EXISTING EQUIPMENT IS ENCOUNTERED WHICH MUST BE RELOCATED DUE TO THE NEW CONSTRUCTION, OR NOT INDICATED ON "AS-BUILT" DRAWINGS OR WAS BURIED UNDERGROUND OR EMBEDDED IN STRUCTURE WALLS.
5. CAREFULLY PROTECT ALL WALLS, TRIM, FLOORS, EQUIPMENT, UTILITY LINES AND MATERIALS. WHEN WORKING ON FINISHED SURFACES, LIMIT DAMAGE TO THE SMALLER AREA IF POSSIBLE AND RESTORE TO THE ORIGINAL CONDITION ALL SURFACES WHICH ARE DAMAGED BECAUSE OF THE INSTALLATION OF THIS WORK.
6. EQUIPMENT, MATERIALS AND SUPPLIES TEMPORARILY REMOVED FOR PROTECTION SHALL BE REPLACED IN ORIGINAL LOCATIONS. ANY MATERIALS DAMAGED SHALL BE REPLACED WITH NEW MATERIALS OF LIKE KIND AND QUALITY.
7. DEMOLITION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE UNNECESSARY INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT SITE, AND NOT INTERFERE WITH ITS OPERATION. ANY DEMOLITION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE.
8. DO ALL DRILLING, CUTTING, ETC. REQUIRED TO DEMOLISH ELECTRICAL WORK AS INDICATED OR PROVIDE BLANK COVER PLATE ON ALL OUTLETS EXPOSED BY REMOVAL OF FIXTURE OF DEVICES.
9. RESEAL ALL PENETRATIONS OR OPENING THROUGH WALLS, CEILING, FLOORS, ETC., TO MAINTAIN THE RATING OF STRUCTURE.
10. ALL REMOVED MATERIALS AND EQUIPMENT WHICH IS SALVAGED MATERIALS SHALL REMAIN IN THE PROPERTY OF THE OWNER. DELIVER SUCH SALVAGED MATERIALS AND EQUIPMENT ON THE PREMISES AS DIRECTED BY OWNER AND NEATLY PILE OR STORE THEM AND PROTECT FROM DAMAGED. DISPOSE OF ALL HAZARDOUS MATERIAL PER GUIDELINE OF THE STATE OF CALIFORNIA, DEPARTMENT OF HEALTH SERVICES AND OTHER AGENCIES HAVING JURISDICTION.
11. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDUIT/WIRING RUNS, REUSE AS REQUIRE AND REMOVED ALL UNUSED CONDUIT/WIRING. UNUSED CONDUIT IN INACCESSIBLE LOCATIONS (WALLS TO REMAIN) CAN BE ABANDONED IN PLACE. REMOVE UNUSED WIRING.
12. CONTRACTOR TO VERIFY CIRCUIT NUMBER AND LOADS FOR ALL EXISTING EQUIPMENT PRIOR TO INSTALLATION OF NEW OR RELOCATED ELECTRICAL EQUIPMENT. REASSIGN CIRCUITS AND LOADS ACCORDINGLY. PROVIDE COMPLETE "AS BUILT" DRAWINGS AND TYPEWRITTEN DIRECTORIES FOR PANELS.
13. WHERE NECESSARY TO SHUT OFF UTILITY SERVICES OR CAUSE INTERRUPTION TO POWER OR SIGNAL SYSTEMS WHILE A BUILDING IS OCCUPIED OR THAT EFFECT ADJACENT BUILDINGS, SCHEDULE OUTAGES OR INTERRUPTIONS WITH THE OWNER, BUILDING OCCUPANTS AND/OR ADJACENT BUILDING OWNER(S) AND OCCUPANTS PRIOR TO CONDUCTING OUTAGE(S) OR INTERRUPTIONS.
14. REFER TO ARCHITECTURAL DEMOLITION DRAWING FOR DEMOLITION AREAS. THE SCOPE OF THE DEMOLITION SHALL INCLUDE ALL LABOR, EXISTING ELECTRICAL EQUIPMENT. VERIFY EXACT SCOPE PRIOR TO COMMENCING WORK. REFER TO DEMO PLAN FOR SPECIFIC AREAS NOT IN SCOPE THE SCOPE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
    - A. LIGHTING: CONTRACTOR TO DEMOLISH ALL EXISTING LIGHTING FIXTURES AND ASSOCIATED CONTROLS, U.O.N.
    - B. POWER: EXISTING POWER SHALL REMAIN, U.O.N.
    - C. ALL EXISTING ELECTRICAL SWITCHGEAR, PANELBOARDS, PULLBOXES, ETC. SHALL REMAIN, U.O.N.
    - D. ALL EXISTING SIGNAL SYSTEMS (CLOCKS, DATA OUTLETS, TELEPHONE OUTLETS, TELEVISION OUTLETS, SPEAKERS, ETC.) SHALL REMAIN, U.O.N.
    - E. ALL EXISTING FIRE ALARM SYSTEM AND DEVICES SHALL REMAIN, U.O.N.
    - F. ALL EXISTING EXTERIOR LIGHTING FIXTURES AND ASSOCIATED CONTROLS SHALL REMAIN, U.O.N.
    - G. ALL EXISTING EXTERIOR POWER, SIGNAL AND FIRE ALARM SYSTEM SHALL REMAIN, U.O.N.
15. WHERE NEW PARTITIONS OR OTHER CONSTRUCTION WILL COVER EXISTING, REMAINING OUTLETS MAKING THEM INACCESSIBLE, RELOCATED THESE OUTLETS AS REQUIRED, OR MAKE OTHER PROVISIONS SO THAT THE OUTLETS WILL REMAIN ACCESSIBLE AND OPERATIONAL.
16. WHERE EXISTING WALLS AND CEILINGS ARE TO REMAIN, PROVIDE BLANK COVER PLATES FOR OUTLETS WHERE EQUIPMENT OR DEVICES ARE REMOVED UNDER THIS CONTRACT. PRIME BLANK PLATES AND PAINT TO MATCH SURROUNDING AREA.
17. WHERE FIXTURES, EQUIPMENT, DEVICES, ETC. ARE SPECIFIED BY THE CONTRACT DOCUMENTS FOR REMOVAL, THE CONTRACTOR SHALL REMOVE ALL CIRCUIT CONDUCTORS/CABLING BACK TO THE NEAREST REMAINING JUNCTION BOX AND/OR POINT OF TERMINATION.
18. RELOCATE EXISTING CONDUITS AND/OR CONDUCTORS/CABLING ROUTING THROUGH AREAS WHERE NEW/REMOVED WALLS ARE SPECIFIED.
19. RELOCATION AND/OR REMOVAL OF EXISTING EQUIPMENT, DEVICES, OUTLETS BOXES, CONDUIT, WIRING, ETC. MAY AFFECT THE OPERATION OF EXISTING, REMAINING ELECTRICAL EQUIPMENT/DEVICES, THE CONTRACTOR SHALL PROVIDE ADDITIONAL MATERIALS AS REQUIRED TO MAINTAIN AND/OR RESTORE CONTINUITY OF SERVICES TO EXISTING REMAINING ELECTRICAL/DEVICES.
20. DISCONNECT ABANDONED CIRCUITS AT EXISTING PANEL BOARDS AND REMOVE WIRE TO LAST REMAINING DEVICES. LABEL ALL ABANDONED CIRCUIT BREAKERS "SPARE".

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Project Leader - Jerry Leonhardt
Electrical Lead - Jerry Leonhardt
tk1sc Job #: 2019-0130

REGISTERED PROFESSIONAL ENGINEER
RAYMOND W. SWARTZ
No. E15610
Ex. 12/31/2019
ELECTRICAL
STATE OF CALIFORNIA

[illegible]

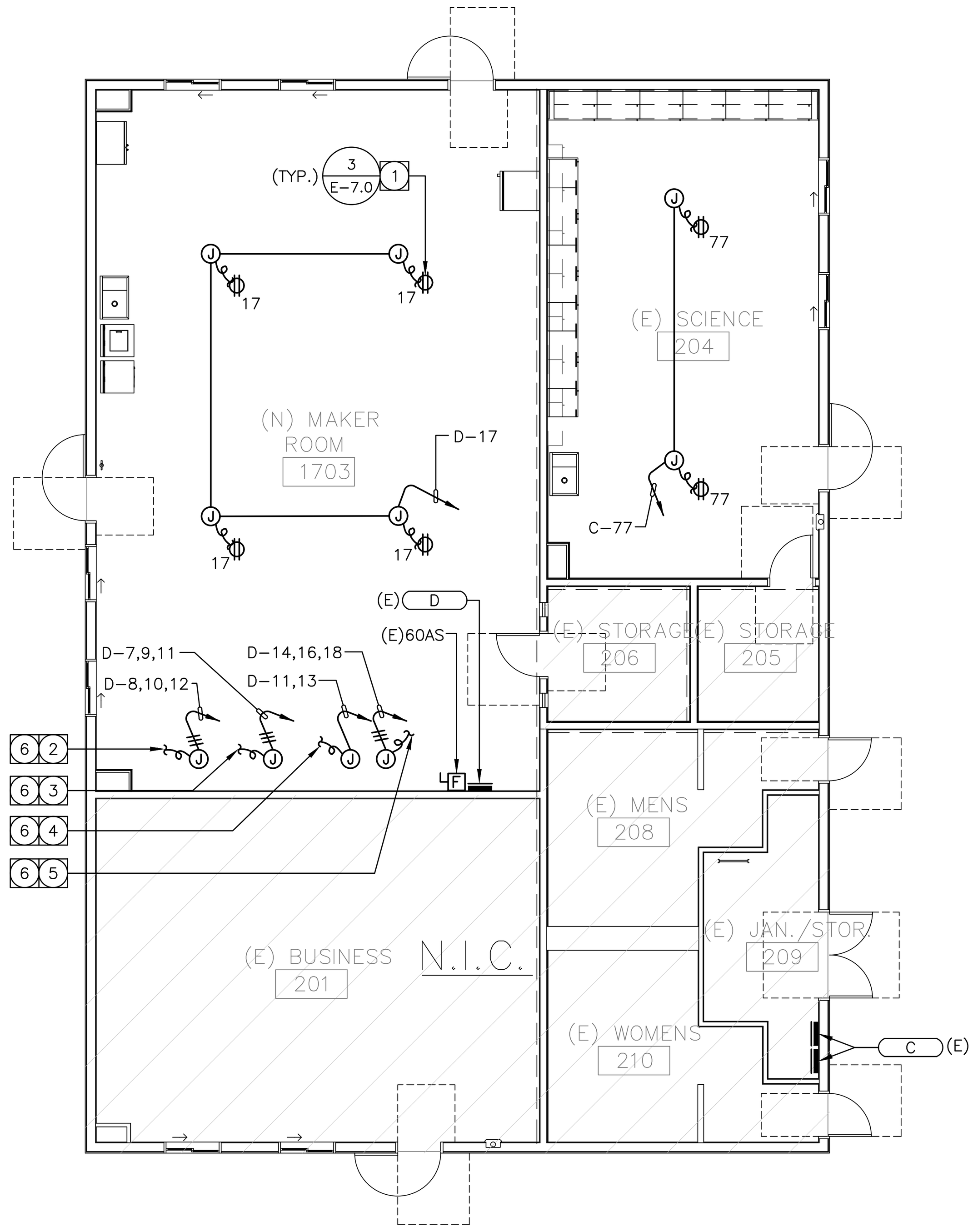
PERRIS UNION HIGH SCHOOL DISTRICT

PERRIS LAKE HIGH SCHOOL

DEMOLITION AND LIGHTING PLAN

E-3.0

2/27/2019



NEW POWER PLAN

2

1/8" = 1'-0"

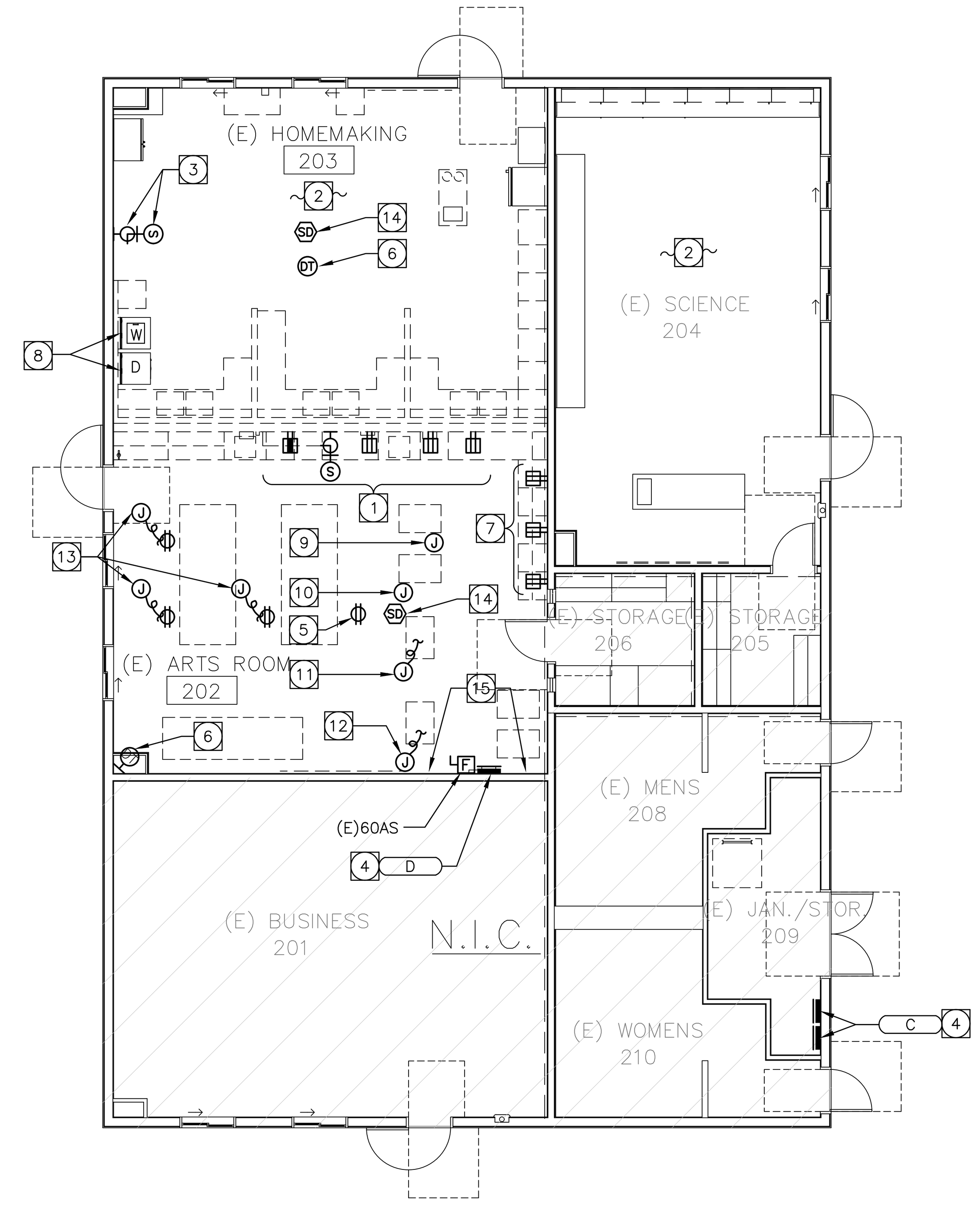
PLAN NOTES:

1. RETRACTABLE CORD REEL.
2. PROVIDE POWER TO BAND SAW. CONFIRM EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.
3. PROVIDE POWER TO DUST COLLECTOR. CONFIRM EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.
4. PROVIDE POWER TO PLANER. CONFIRM EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.
5. PROVIDE POWER TO TABLE SAW. CONFIRM EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.
6. CONDUIT DROP FROM CEILING. SEE DETAIL #4, SHEET E7.0. VERIFY LOCATION WITH OWNER PRIOR TO INSTALLATION, TYPICAL.

POWER PLAN GENERAL NOTES:

1. ALL RECEPTACLES ON COMMON WALLS SHALL BE SEPARATE BOXES AND OFFSET 24-INCHES MINIMUM.
2. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE PROTECTED FROM THE SPREAD OF FIRE WITH AN APPROVED FIRESTOP SYSTEM EQUAL OR GREATER THAN THE FIRE RATING OF THE WALL.
3. ALL WALL-MOUNTED DEVICE HEIGHTS SHALL BE VERIFIED WITH THE ARCHITECT PRIOR TO ROUGH-IN.
4. ALL FURNITURE FEED LOCATIONS TO BE VERIFIED WITH ARCHITECT AND FURNITURE VENDOR PRIOR TO ROUGH-IN.
5. ALL FURNITURE WHIPS SHALL BE TRIMMED TO REDUCE EXCESS WHIP LENGTH.
6. WHEN EXPOSED CEILINGS OR OPEN GRID CONDITIONS OCCUR, THE CONTRACTOR WILL NEED TO PROVIDE THE FOLLOWING ITEMS:
   - ALL BRANCH CIRCUITS SHALL BE IN EMT.
   - ALL BRANCH CIRCUITS SHALL BE ROUTED NEATLY AND IN PARALLEL TO STRUCTURES OR DUCT WORK.

   VISUALLY OBJECTIONABLE BRANCH CIRCUITS SHALL BE REROUTED AT THE REQUEST OF THE ARCHITECT AT NO ADDITIONAL COST.
7. EXPOSED CABLE/CONDUCTORS INSTALLED IN A PLENUM SPACE SHALL CONFORM TO NEC, OR CEC WHERE ADOPTED, **ARTICLE 300.22(C)**.
8. PROVIDE G.F.C.I. TYPE RECEPTACLE(S) OR RECEPTACLE(S) PROTECTED BY A GFCI CIRCUIT BREAKER(S) WHEN LOCATED WITHIN 6-FEET OF ANY SINK OR THERAPEUTIC TUB, LAUNDRY AREA, SERVING ANY DRINKING FOUNTAIN OR VENDING MACHINE, WITHIN ANY KITCHEN SPACE AND/OR LOCATED OUTDOORS. WHERE RECEPTACLES ARE NOT READILY ACCESSIBLE, PROVIDE GFCI CIRCUIT BREAKER(S) TO PROTECT THE RESPECTIVE BRANCH CIRCUIT AND PROVIDE ADDITIONAL NEUTRAL CONDUCTORS IN THE BRANCH CIRCUITING AS REQUIRED TO ENSURE PROPER GFCI FUNCTION.
9. PROVIDE OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM CONTROLLED RECEPTACLE RELAY(S) AS REQUIRED TO SWITCH CONTROLLED RECEPTACLES. CONNECT BRANCH CIRCUITRY AND CONTROL WIRING AS REQUIRED TO ALLOW OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM RELAY TO SWITCH STANDALONE AND/OR SYSTEMS FURNITURE CONTROLLED RECEPTACLES AS INDICATED ON PLANS. PROVIDE ADDITIONAL CONDUIT, WIRING AND PATHWAYS NECESSARY TO CONNECT BRANCH CIRCUITRY AND CONTROL WIRING TO REMOTE RELAYS TO INCLUDE RELAY(S) LOCATED ON ALTERNATE FLOORS, IN ELECTRICAL ROOMS, ETC.
10. PROVIDE ADDITIONAL J-BOX NEAR PANEL FOR MULTIPLE HOMERUN CIRCUITRY.
11. UNLESS SPECIFICALLY SHOWN AS (E), (R), (ER), (D), EXISTING OR NON-BOLD, ALL ELECTRICAL DEVICES SHOWN ARE NEW.



EXISTING/ DEMOLITION POWER PLAN

1

1/8" = 1'-0"

DEMO PLAN NOTES:

1. CONTRACTOR TO DEMOLISH ALL EXISTING POWER AFFECTED BY THE DEMO WALL. ALL OTHER EXISTING POWER IN TO REMAIN, U.O.N.
2. EXISTING POWER TO REMAIN, U.O.N.
3. EXISTING TO REMAIN CLOCKS AND SPEAKERS, CONTRACTOR TO PROTECT IN PLACE.
4. EXISTING TO REMAIN PANELBOARD, CONTRACTOR TO PROTECT IN PLACE.
5. EXISTING CEILING MOUNTED RECEPTACLE FOR PROJECTOR. CONTRACTOR TO PROTECT IN PLACE.
6. EXISTING SECURITY MOTION SENSOR, CONTRACTOR TO PROTECT IN PLACE.
7. EXISTING RECEPTACLES TO REMAIN.
8. EXISTING WASHER AND DRYER TO REMAIN.
9. CONTRACTOR TO DEMOLISH EXISTING POWER TO BAND SAW.
10. CONTRACTOR TO DEMOLISH EXISTING POWER TO DUST COLLECTOR.
11. CONTRACTOR TO DEMOLISH EXISTING POWER TO PLANER.
12. CONTRACTOR TO DEMOLISH EXISTING POWER TABLE SAW.
13. CONTRACTOR TO DEMOLISH EXISTING CORD DROPS.
14. EXISTING CEILING MOUNT SMOKE DETECTOR. CONTRACTOR TO PROTECT IN PLACE.
15. CONTRACTOR TO DEMOLISH EXISTING SURFACE MOUNTED CONDUIT.

GENERAL DEMOLITION NOTES:

1. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. DO NOT SCALE THE ELECTRICAL DRAWINGS TO DETERMINE THE LOCATION OF EQUIPMENT OR OUTLETS. SEE ARCHITECTURAL PLANS, WHERE PROVIDED ON PROJECT, FOR EXTENT OF DEMOLITION.
2. THE EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AT SITE PRIOR TO SUBMITTING BID. ALL DEMOLITION, ALTERATION, EXTENSION, RELOCATION, REHABILITATION WORK SHALL BE INCLUDED IN CONTRACT. NO ADDITIONAL ALLOWANCE OR CHANGE ORDERS WILL BE ACCEPTED.
3. CONTRACTOR IS RESPONSIBLE TO RELOCATE OR REMOVE FROM WALLS, CEILINGS, FLOOR SPACES, ETC. ANY EXISTING CONDUITS, WIRES, BOXES, FITTINGS, FIXTURES OR OTHER ELECTRICAL EQUIPMENT WHICH INTERFERES WITH PLANNED REMODEL WORK. PROVIDE CIRCUIT CONTINUATION REQUIRED FOR ALL EXISTING OUTLETS, FIXTURES, EQUIPMENT, ETC. SCHEDULED TO REMAIN.
4. NOTIFY THE ENGINEER IMMEDIATELY WHEREVER EXISTING EQUIPMENT IS ENCOUNTERED WHICH MUST BE RELOCATED DUE TO THE NEW CONSTRUCTION, OR NOT INDICATED ON "AS-BUILT" DRAWINGS OR WAS BURIED UNDERGROUND OR EMBEDDED IN STRUCTURE WALLS.
5. CAREFULLY PROTECT ALL WALLS, TRIM, FLOORS, EQUIPMENT, UTILITY LINES AND MATERIALS. WHEN WORKING ON FINISHED SURFACES, LIMIT DAMAGE TO THE SMALLER AREA IF POSSIBLE AND RESTORE TO THE ORIGINAL CONDITION ALL SURFACES WHICH ARE DAMAGED BECAUSE OF THE INSTALLATION OF THIS WORK.
6. EQUIPMENT, MATERIALS AND SUPPLIES TEMPORARILY REMOVED FOR PROTECTION SHALL BE REPLACED IN ORIGINAL LOCATIONS. ANY MATERIALS DAMAGED SHALL BE REPLACED WITH NEW MATERIALS OF LIKE KIND AND QUALITY.
7. DEMOLITION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE UNNECESSARY INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT SITE, AND NOT INTERFERE WITH ITS OPERATION. ANY DEMOLITION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE.
8. DO ALL DRILLING, CUTTING, ETC. REQUIRED TO DEMOLISH ELECTRICAL WORK AS INDICATED OR PROVIDE BLANK COVER PLATE ON ALL OUTLETS EXPOSED BY REMOVAL OF FIXTURE OF DEVICES.
9. RESEAL ALL PENETRATIONS OR OPENING THROUGH WALLS, CEILING, FLOORS, ETC., TO MAINTAIN THE RATING OF STRUCTURE.
10. ALL REMOVED MATERIALS AND EQUIPMENT WHICH IS SALVAGED MATERIALS SHALL REMAIN IN THE PROPERTY OF THE OWNER. DELIVER SUCH SALVAGED MATERIALS AND EQUIPMENT ON THE PREMISES AS DIRECTED BY OWNER AND NEATLY PILE OR STORE THEM AND PROTECT FROM DAMAGED. DISPOSE OF ALL HAZARDOUS MATERIAL PER GUIDELINE OF THE STATE OF CALIFORNIA, DEPARTMENT OF HEALTH SERVICES AND OTHER AGENCIES HAVING JURISDICTION.
11. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDUIT/WIRING RUNS, REUSE AS REQUIRE AND REMOVED ALL UNUSED CONDUIT/WIRING. UNUSED CONDUIT IN INACCESSIBLE LOCATIONS (WALLS TO REMAIN) CAN BE ABANDONED IN PLACE. REMOVE UNUSED WIRING.
12. CONTRACTOR TO VERIFY CIRCUIT NUMBER AND LOADS FOR ALL EXISTING EQUIPMENT PRIOR TO INSTALLATION OF NEW OR RELOCATED ELECTRICAL EQUIPMENT. REASSIGN CIRCUITS AND LOADS ACCORDINGLY. PROVIDE COMPLETE "AS BUILT" DRAWINGS AND TYPEWRITTEN DIRECTORIES FOR PANELS.
13. WHERE NECESSARY TO SHUT OFF UTILITY SERVICES OR CAUSE INTERRUPTION TO POWER OR SIGNAL SYSTEMS WHILE A BUILDING IS OCCUPIED OR THAT EFFECT ADJACENT BUILDINGS, SCHEDULE OUTAGES OR INTERRUPTIONS WITH THE OWNER, BUILDING OCCUPANTS AND/OR ADJACENT BUILDING OWNER(S) AND OCCUPANTS PRIOR TO CONDUCTING OUTAGE(S) OR INTERRUPTIONS.
14. REFER TO ARCHITECTURAL DEMOLITION DRAWING FOR DEMOLITION AREAS. THE SCOPE OF THE DEMOLITION SHALL INCLUDE ALL LABOR, EXISTING ELECTRICAL EQUIPMENT. VERIFY EXACT SCOPE PRIOR TO COMMENCING WORK. REFER TO DEMO PLAN FOR SPECIFIC AREAS NOT IN SCOPE THE SCOPE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
    A. LIGHTING: CONTRACTOR TO DEMOLISH ALL EXISTING LIGHTING FIXTURES AND ASSOCIATED CONTROLS, U.O.N.
    B. POWER: EXISTING POWER SHALL REMAIN, U.O.N.
    C. ALL EXISTING ELECTRICAL SWITCHGEAR, PANELBOARDS, PULLBOXES, ETC. SHALL REMAIN, U.O.N.
    D. ALL EXISTING SIGNAL SYSTEMS (CLOCKS, DATA OUTLETS, TELEPHONE OUTLETS, TELEVISION OUTLETS, SPEAKERS, ETC.) SHALL REMAIN, U.O.N.
    E. ALL EXISTING FIRE ALARM SYSTEM AND DEVICES SHALL REMAIN, U.O.N.
    F. ALL EXISTING EXTERIOR LIGHTING FIXTURES AND ASSOCIATED CONTROLS SHALL REMAIN, U.O.N.
    G. ALL EXISTING EXTERIOR POWER, SIGNAL AND FIRE ALARM SYSTEM SHALL REMAIN, U.O.N.
15. WHERE NEW PARTITIONS OR OTHER CONSTRUCTION WILL COVER EXISTING, REMAINING OUTLETS MAKING THEM INACCESSIBLE, RELOCATED THESE OUTLETS AS REQUIRED, OR MAKE OTHER PROVISIONS SO THAT THE OUTLETS WILL REMAIN ACCESSIBLE AND OPERATIONAL.
16. WHERE EXISTING WALLS AND CEILINGS ARE TO REMAIN, PROVIDE BLANK COVER PLATES FOR OUTLETS WHERE EQUIPMENT OR DEVICES ARE REMOVED UNDER THIS CONTRACT. PRIME BLANK PLATES AND PAINT TO MATCH SURROUNDING AREA.
17. WHERE FIXTURES, EQUIPMENT, DEVICES, ETC. ARE SPECIFIED BY THE CONTRACT DOCUMENTS FOR REMOVAL, THE CONTRACTOR SHALL REMOVE ALL CIRCUIT CONDUCTORS/CABLING BACK TO THE NEAREST REMAINING JUNCTION BOX AND/OR POINT OF TERMINATION.
18. RELOCATE EXISTING CONDUITS AND/OR CONDUCTORS/CABLING ROUTING THROUGH AREAS WHERE NEW/REMOVED WALLS ARE SPECIFIED.
19. RELOCATION AND/OR REMOVAL OF EXISTING EQUIPMENT, DEVICES, OUTLETS BOXES, CONDUIT, WIRING, ETC. MAY AFFECT THE OPERATION OF EXISTING, REMAINING ELECTRICAL EQUIPMENT/DEVICES, THE CONTRACTOR SHALL PROVIDE ADDITIONAL MATERIALS AS REQUIRED TO MAINTAIN AND/OR RESTORE CONTINUITY OF SERVICES TO EXISTING REMAINING ELECTRICAL/DEVICES.
20. DISCONNECT ABANDONED CIRCUITS AT EXISTING PANEL BOARDS AND REMOVE WIRE TO LAST REMAINING DEVICES. LABEL ALL ABANDONED CIRCUIT BREAKERS "SPARE".

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Project Leader - Jerry Leonhardt
Electrical Lead - Jerry Leonhardt
tk1sc Job #: 2019-0130

REGISTERED PROFESSIONAL ENGINEER
RAYMOND W. SWARTZ
No. E15610
Exp. 12/31/2019
ELECTRICAL
STATE OF CALIFORNIA

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

DEMOLITION AND POWER PLAN

E-4.0

2/27/2019

EXISTING PANEL D

MOUNTING	SURFACE	DOUBLE LUG	NO	VOLTS	120/208
NEMA 3R	NO	200% NEUTRAL	NO	PHASE	3
FEED THRU	NO	I/G BUS	NO	WIRE	4
MAIN	M.L.O.	BUS	225A	A.I.C.	10,000

NOTES	LOCATION	A	B	C	LTG	CONV	KIT	RECP	MISC	BKR	CIRC	CIRC	BKR	MISC	RECP	KIT	CONV	LTG	A	B	C	LOCATION	NOTES
	SPACE										1	2										SPACE	
	SPACE										3	4										SPACE	
	SPACE										5	6										SPACE	
(E)	PLANER 1	1200								20/3	7	8	20/3						1200			BAND SAW	(E)
(E)	----		1200							--	9	10	--							1200		----	(E)
(E)	----			1200						--	11	12	--								1200	----	(E)
(E)	PLANER 2	1000								20/2	13	14	20/3						1200			TABLE SAW	(E)
(E)	----		1000							--	15	16	--							1200		----	(E)
G	WORKBENCH DROP CORD.			720				4		20/1	17	18	--								1200	----	(E)
	SPACE										19	20										SPACE	

A= 4600 VA / PHASE A LCL= 0 VA / PHASE A W/LCL= 4600 VA
B= 4600 VA / PHASE B LCL= 0 VA / PHASE B W/LCL= 4600 VA
C= 4320 VA / PHASE C LCL= 0 VA / PHASE C W/LCL= 4320 VA
TOTAL VA= 13520 / TOTAL LCL= 0 / AMPS= **38** / TOTAL VA W/LCL= 13520 / HIGH PHASE AMPS= **38**

EXISTING PANEL C (SECTION 1)

MOUNTING	SURFACE	DOUBLE LUG	NO	VOLTS	120/208
NEMA 3R	NO	200% NEUTRAL	NO	PHASE	3
FEED THRU	NO	I/G BUS	NO	WIRE	4
MAIN	M.L.O.	BUS	225A	A.I.C.	10,000

NOTES	LOCATION	A	B	C	LTG	CONV	KIT	RECP	MISC	BKR	CIRC	CIRC	BKR	MISC	RECP	KIT	CONV	LTG	A	B	C	LOCATION	NOTES
(E)	BUSINESS 301	1080								20/1	1	2	20/1						1080			APTS. 302	(E)
(E)	BUSINESS 301		1080							20/1	3	4	20/1							1080		APTS. 302	(E)
(E)	BUSINESS 301			1080						20/1	5	6	20/1								1080	APTS. 302	(E)
(E)	HOMEMAKING 303	1080								20/1	7	8	60/3									SUB PANEL	(E)
(E)	HOMEMAKING 303		1080							20/1	9	10	--									----	(E)
(E)	HOMEMAKING 303			1080						20/1	11	12	--									----	(E)
(E)	SCIENCE 304	1080								20/1	13	14	20/1						1200			OUTSIDE LIGHTS	(E)
(E)	SCIENCE 304		1080							20/1	15	16	20/1							1000		MIGHT LIGHTS	(E)
(E)	RMS. 305 THRU 310			1080						20/1	17	18	20/1								500	SPRINKLER CONTROL	(E)
(E)	BUSINESS WALL REC.	1080								20/1	19	20	20/1						1080			BUSINESS RM UFD	(E)
(E)	BUSINESS WALL REC.		1080							20/1	21	22	20/1							1080		BUSINESS RM UFD	(E)
(E)	BUSINESS WALL REC.			1080						20/1	23	24	20/1								1080	BUSINESS RM UFD	(E)
(E)	ARTS POTTERS WHEEL	1080								20/1	25	26	20/1						1080			ARTS REC.	(E)
(E)	ARTS POTTERS WHEEL		1080							20/1	27	28	20/1							1080		ARTS REC.	(E)
(E)	ARTS POTTERS WHEEL			1080						20/1	29	30	20/1								500	EXISTING LOAD	(E)
(E)	MICROWAVE	1200								20/1	31	32	20/1						1080			HOMEMAKING REC.	(E)
(E)	FREEZER		850							20/1	33	34	20/1							1000		DISHWASHER	(E)
(E)	REFRIGERATOR			850						20/1	35	36	20/1								1080	HOMEMAKING REC.	(E)
(E)	DISPOSAL	1000								20/1	37	38	20/1						1000			GAS DRYER CONT.	(E)
(E)	HOMEMAKING REC.		1080							20/1	39	40	20/1							1000		WASHER	(E)
(E)	HOMEMAKING REC.			1080						20/1	41	42	20/1								1080	WORKTABLE REC.	(E)

A= 14120 VA / PHASE A LCL= 0 VA / PHASE A W/LCL= 14120 VA
B= 13570 VA / PHASE B LCL= 0 VA / PHASE B W/LCL= 13570 VA
C= 12650 VA / PHASE C LCL= 0 VA / PHASE C W/LCL= 12650 VA
TOTAL VA= 40340 / TOTAL LCL= 0 / AMPS= **112** / TOTAL VA W/LCL= 40340 / HIGH PHASE AMPS= **118**

EXISTING PANEL C (SECTION 2)

MOUNTING	SURFACE	DOUBLE LUG	NO	VOLTS	120/208
NEMA 3R	NO	200% NEUTRAL	NO	PHASE	3
FEED THRU	NO	I/G BUS	NO	WIRE	4
MAIN	225A	BUS	225A	A.I.C.	10,000

NOTES	LOCATION	A	B	C	LTG	CONV	KIT	RECP	MISC	BKR	CIRC	CIRC	BKR	MISC	RECP	KIT	CONV	LTG	A	B	C	LOCATION	NOTES
(E)	SEWING MACHINE & REC.	1000								20/1	43	44	20/1						1080			SCIENCE RM. REC.	(E)
(E)	SEWING MACHINE & REC.		1000							20/1	45	46	20/1							1080		SCIENCE RM. REC.	(E)
(E)	SEWING MACHINE & REC.			1000						20/1	47	48	20/1								1080	SCIENCE RM. REC.	(E)
(E)	EXISTING LOAD	500								20/1	49	50	20/1						1080			SCIENCE RM. REC.	(E)
(E)	EXISTING LOAD		500							20/1	51	52	20/1							1080		SCIENCE RM. REC.	(E)
(E)	COMP. HUB			500						20/1	53	54	20/1								1080	SCIENCE RM. REC.	(E)
(E)	RMS. 305.308,309	900								20/1	55	56	20/1						1080			SCIENCE RM. REC.	(E)
(E)	RMS. 303,309,310		900							20/1	57	58	20/1							1000		EXH. FAN EF-1	(E)
(E)	OUTSIDE REC.			1080						20/1	59	60	20/1								1000	EXH. FAN EF-2	(E)
(E)	EXISTING LOAD	500								20/1	61	62	20/1						500			INTRUSION ALARM	(E)
(E)	EXISTING LOAD		500							20/1	63	64	20/1							500		MECH. CONTROLS	(E)
(E)	EXISTING LOAD			500						20/1	65	66	15/2								500	EXISTING LOAD	(E)
(E)	DUST CONTROL UNIT	500								30/1	67	68	--						500			----	(E)
(E)	HAND DRYER		1000							15/2	69	70	70/2							4300		ELECTRIC RANGE	(E)
(E)	WOMEN'S TOILET			500						--	71	72	--								4300	----	(E)
(E)	EXISTING LOAD	500								30/2	73	74	50/3						3600			AC UNIT	(E)
(E)	EXISTING LOAD		500							--	75	76	--							3600		----	(E)
F	WORKBENCH DROP CORD.			360				2		20/1	77	78	--								3600	----	(E)
	SPACE										79	80										SPACE	
	SPACE										81	82										SPACE	
	SPACE										83	84										SPACE	

A= 11740 VA / PHASE A LCL= 0 VA / PHASE A W/LCL= 11740 VA
B= 15960 VA / PHASE B LCL= 0 VA / PHASE B W/LCL= 15960 VA
C= 15500 VA SCIENCE RM. REC. / PHASE C LCL= 0 VA SCIENCE RM. REC. / PHASE C W/LCL= 15500 VA SCIENCE RM. REC.
TOTAL VA= 43200 / TOTAL LCL= 0 / AMPS= **120** / TOTAL VA W/LCL= 43200 / HIGH PHASE AMPS= **133**

GENERAL PANEL SCHEDULE NOTES:

1. WHERE PANEL IS INDICATED TO INCLUDE FEED THRU LUGS, PROVIDE FEED THROUGH LUGS AT THE OPPOSITE END OF THE PANELBOARD FROM THE PANELBOARD MAIN LUGS.
2. WHERE PANEL IS INDICATED TO INCLUDE DOUBLE LUGS, PROVIDE A DOUBLE LUG KIT AT THE SAME END OF THE PANELBOARD AS THE PANELBOARD MAIN LUGS.
3. WHERE PANEL IS INDICATED TO INCLUDE 200% NEUTRAL, PROVIDE PANELBOARDS UL LISTED AS HAVING NEUTRAL BUSSES RATED TO CARRY 200 PERCENT OF THE CURRENT CARRYING CAPACITY OF THE PHASE BUSSING. OTHERWISE, NEUTRAL BUSSING TO BE FULL SIZE AND RECTANGULAR.
4. WHERE PANEL IS INDICATED TO INCLUDE AN I/G BUS, PROVIDE PANELBOARDS WITH AN ISOLATED GROUND BUS, DRILLED AND TAPPED FOR NUMBER OF ISOLATED GROUND CONDUCTORS SHOWN, AS WELL AS FOR ALL SPARES AND SPACES SHOWN ON THE PANELBOARD.
5. WHERE PANEL CIRCUIT BREAKER RATING IS SHOWN AS SERIES RATED, PROVIDE CIRCUIT BREAKERS IN PANELBOARD WHICH ARE SERIES RATED WITH THE UPSTREAM SYSTEM FOR THE AVAILABLE FAULT CURRENT. THE PANELBOARD SHALL BE MARKED WITH THE SERIES CONNECTED RATINGS, AS WELL AS ALL MARKING AS REQUIRED BY THE NEC, OR CEC WHERE ADOPTED, **240-83(C).**
6. WHERE PANEL IS INDICATED AS RECESSED OR FLUSH MOUNTED, PROVIDE SPARE CONDUITS STUBBED UP INTO THE ACCESSIBLE CEILING SPACE. PROVIDE ONE (1) 3/4" CONDUIT ONLY FOR EACH THREE (3) SPARES OR SPACES, MINIMUM OF TWO (2). EACH CONDUIT SHALL BE TAGGED, CAPPED AND MARKED FOR FUTURE USE.
7. ALL BUSSING SHALL BE **TIN PLATED ALUMINUM.**
8. ALL CIRCUIT BREAKERS USED AS SWITCHES SHALL BE UL LISTED AND LABELED "SWD" FOR SWITCHING DUTY.
9. PROVIDE BREAKER INTERLOCK WITH ADJACENT BREAKER(S) FOR ANY MULTI-WIRE BRANCH CIRCUIT. BREAKER INTERLOCK GROUPING SHALL BE BY BRANCH CIRCUIT GROUP (i.e. MULTIPLE CIRCUITS SHARING A COMMON NEUTRAL (NEC, OR CEC WHERE ADOPTED, **210.4(B)**,) COMMON YOKE (NEC, OR CEC WHERE ADOPTED, **210.7(B)**,) OR FURNITURE SYSTEM NEC OR CEC WHERE ADOPTED, **605.6** AND **605.7**). WHERE AN EXISTING PANEL IS BEING ALTERED OR MODIFIED IN ANY WAY, CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID TO ADD BREAKER INTERLOCKS TO EXISTING MULTI-WIRE BRANCH CIRCUITS BASED ON CONTRACTOR'S INVESTIGATION OF EXISTING CONDITIONS.
10. PROVIDE BREAKER LOCK OFF DEVICE ON ANY CIRCUIT BREAKER FEEDING A TRANSFORMER AS REQUIRED, PER NEC, OR CEC WHERE ADOPTED, **450.14**. WHERE AN EXISTING PANEL IS BEING ALTERED OR MODIFIED IN ANY WAY, CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID TO ADD BREAKER LOCK-OFF DEVICES TO EXISTING TRANSFORMER CIRCUIT BREAKERS BASED ON CONTRACTOR'S INVESTIGATION OF EXISTING CONDITIONS.
11. ALL CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE AND SHALL BE SUITABLE FOR 75 DEGREE AMPACITY CONDUCTORS.
12. PANELS SHALL BE OF THE DEAD FRONT SAFETY TYPE. PANELS SHALL BE MINIMUM 20" WIDE AND 5-3/4" DEEP UNLESS OTHERWISE NOTED ON PLAN.
13. COORDINATE WITH APPLICABLE TRADE TO INSURE RECESSED MOUNTED PANELBOARDS WILL SEAT FLUSH IN THE WALLS PROVIDED. PANEL TRIMS SHALL HAVE CONCEALED DOORS AND FASTENERS WITH FLUSH TYPE COMBINATION LOCK AND CATCH, TWO MILLED TYPE KEYS SUPPLIED WITH EACH PANEL. ALL LOCKS SHALL BE KEYED ALIKE AND EACH DOOR SHALL HAVE A PLASTIC COVERED DIRECTORY FRAME WITH A TYPED IDENTIFICATION CARD OF ALL CIRCUIT AND PANEL NUMBERS FOR BRANCH CIRCUIT PANELBOARDS.
14. UPON PROJECT COMPLETION, CONTRACTOR SHALL INSTALL TYPED AS-BUILT PANEL DIRECTORIES IN EACH PANEL WITHIN THE MFGR-PROVIDED DIRECTORY HOLDER. THE DIRECTORY SHALL CLEARLY IDENTIFY EACH CIRCUIT TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. EACH CIRCUIT IDENTITY SHALL INCLUDE SUFFICIENT DETAIL TO ALLOW EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS PER NEC, OR CEC WHERE ADOPTED, ART **408.1** AND **408.4**. HANDWRITTEN DIRECTORIES ARE UNACCEPTABLE. COPIES OF AS-BUILT PANEL SCHEDULES SHALL BE PLACED IN PANEL DIRECTORIES. E.C. TO INCLUDE ALL COSTS REQUIRED FOR LARGER-THAN-STANDARD CUSTOM PANEL DIRECTORY HOLDERS TO ACCOMMODATE COPIES OF AS-BUILT PANEL SCHEDULES.
15. PANELBOARDS SHALL BE MANUFACTURED BY G.E., CUTLER-HAMMER, SIEMENS, OR SQUARE "D". FUSED PANEL BOARDS SHALL BE BY COOPER BUSSMANN.
16. PROVIDE SHOP DRAWING SUBMITTAL PER THE ELECTRICAL SPECIFICATION SUBMITTAL REQUIREMENTS FOR EACH PANEL DEPICTING CONFORMANCE WITH THE ABOVE NOTES AND SCHEDULES.

SPECIFIC PANEL SCHEDULE NOTES:

"A" PROVIDE LOCK-ON DEVICE.
"B" PROVIDE LOCK-OFF DEVICE.
"C" PROVIDE SHUNT TRIP DEVICE.
"D" PROVIDE GFCI TYPE DEVICE.
"E" PROVIDE A RED CIRCUIT BREAKER.
"F" PROVIDE A NEW BREAKER TO MATCH THE EXISTING IN PANEL.
"G" EXISTING BREAKER WITH NEW LOAD.
"H" PROVIDE AFCI TYPE DEVICE COMPLYING WITH NEC, OR CEC WHERE ADOPTED, **210.12(A) & (B).**

AS-BUILT PANEL DIRECTORY NOTE:

BRANCH CIRCUIT LOCATIONS NOTED WITH "(E)" INDICATE EXISTING CIRCUIT(S). THE IDENTITIES OF THESE CIRCUITS ARE BASED ON EXISTING PANEL DIRECTORIES AND/OR LIMITED AS-BUILT INFORMATION. CONTRACTOR SHALL FIELD VERIFY EACH BRANCH CIRCUIT AND PROVIDE COMPLETE, TYPED AS-BUILT PANEL DIRECTORIES AS REQUIRED THAT DISTINGUISH EACH CIRCUIT PER NEC, OR CEC WHERE ADOPTED, ART **408.1** AND **408.4**. COMPLETED DIRECTORIES SHALL BE SUBMITTED TO THE ELECTRICAL INSPECTOR PRIOR TO FINAL ELECTRICAL INSPECTION. INCLUDE ALL COSTS IN BID.

EXISTING CIRCUIT BREAKER NOTE:

PROVIDE BREAKER INTERLOCK WITH ADJACENT BREAKER(S) FOR ANY MULTI-WIRE BRANCH CIRCUIT. BREAKER INTERLOCK GROUPING SHALL BE BY BRANCH CIRCUIT GROUP (i.e. MULTIPLE CIRCUITS SHARING A COMMON NEUTRAL (NEC, OR CEC WHERE ADOPTED, **210.4(B)**,) COMMON YOKE (NEC, OR CEC WHERE ADOPTED, **210.7(B)**,) OR FURNITURE SYSTEM NEC OR CEC WHERE ADOPTED, **605.6** AND **605.7**).
WHERE AN EXISTING PANEL IS BEING ALTERED OR MODIFIED IN ANY WAY, CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID TO ADD BREAKER INTERLOCKS TO EXISTING MULTI-WIRE BRANCH CIRCUITS BASED ON CONTRACTOR'S INVESTIGATION OF EXISTING CONDITIONS.

PANEL SCHEDULE INDEX

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-	-	C SECTION 2
-	-	

2/27/2019

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ELECTRICAL
STATE OF CALIFORNIA
[illegible]

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

PANEL SCHEDULES

E-5.0

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GENERAL LIGHTING FIXTURE SCHEDULE NOTES:

A. THE LIGHTING FIXTURES AND COMPONENTS FOR THIS PROJECT HAVE BEEN SPECIFIED TO INSURE THAT SPECIFIC AESTHETIC AND PERFORMANCE REQUIREMENTS WILL BE SATISFIED. THESE PRODUCTS HAVE BEEN CAREFULLY RESEARCHED AND EACH SPECIFIED ITEM HAS UNIQUE QUALITIES WHICH WERE DETERMINED TO BE ESSENTIAL IN SATISFYING THE OWNER'S, ARCHITECT'S, AND ENGINEER'S DESIGN CRITERIA, WHILE STILL FITTING WITHIN THE ESTABLISHED PROJECT BUDGET.

B. SUBSTITUTIONS OF THE SPECIFIED PRODUCTS ARE STRICTLY PROHIBITED – UNLESS APPROVED AS STATED HEREIN. LIGHTING FIXTURE AND BALLAST SUBSTITUTIONS SHALL BE FORMALLY PRESENTED TO THE ENGINEER, BY APPOINTMENT ONLY, AT LEAST TEN (10) WORKING DAYS PRIOR TO BID TIME. THE SUBMITTAL MATERIAL SHALL INCLUDE THE FOLLOWING ITEMS.

1. A COMPLETE AND OPERATING SAMPLE, WIRED FOR 120V OPERATION, WITH LAMP, CORD AND PLUG.
2. A COMPLETE PHOTOMETRIC REPORT, FOR THE PROPOSED SUBSTITUTE PRODUCT, USING THE SPECIFIED LAMP TYPE AND WATTAGE, INCLUDING TABULATED CANDLEPOWER VALUES, COEFFICIENT OF UTILIZATION, AND AN ISO–FOOT–CANDLE DIAGRAM. PRORATED DATA WILL NOT BE ACCEPTABLE. THE PHOTOMETRIC REPORT MUST BE DONE IN ACCORDANCE WITH PUBLISHED I.E.S. TESTING PROCEDURES AND CERTIFIED BY A REGISTERED ELECTRICAL ENGINEER.
3. A CURRENT ORIGINAL CATALOG DATA SHEET WITH LIGHTING FIXTURE CATALOG NUMBERS. MODIFIED DATA SHEETS WILL NOT BE ACCEPTABLE.
4. A SIGNED COPY OF THE "SUBSTITUTION COMPLIANCE FORM", LOCATED IN THE DIVISION 1 SPECIFICATION, STATING THAT IF THE PROPOSED SUBSTITUTION IS ACCEPTED, THE PROJECT SCHEDULE WILL NOT BE NEGATIVELY EFFECTED. IF THE COMPLETION OF THE PROJECT IS DELAYED BECAUSE OF THE APPROVED SUBSTITUTION, THE ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE FOR PAYMENT OF ANY ESTABLISHED LIQUIDATED DAMAGES.
5. FOR SPECIFIC INTERIOR FIXTURE SUBSTITUTIONS, WHEN DIRECTED BY THE ENGINEER, A POINT–BY–POINT SCALED COMPUTER PRINTOUT SHALL BE PROVIDED VERIFYING THE ILLUMINATION LEVELS FOR THE SPECIFIC INTERIOR AREA. IF THE SUBSTITUTED FIXTURE IS AN EMERGENCY FIXTURE, THE REPORT SHALL BE RUN IN BOTH NORMAL AND EMERGENCY MODES. THIS REPORT SHALL BE CONFIGURED WITH SPECIFIC CONSTRAINTS, AS DIRECTED BY THE ENGINEER OF RECORD. THE REPORT MUST SHOW THAT THE SUBSTITUTED FIXTURE PROVIDES PERFORMANCE EQUAL TO OR BETTER THAN THE LIGHTING LEVELS OF THE SPECIFIED PRODUCT.
6. FOR ALL EXTERIOR FIXTURE SUBSTITUTIONS, A POINT–BY–POINT SCALED COMPUTER PRINTOUT SHALL BE PROVIDED VERIFYING THE ILLUMINATION LEVELS FOR THE ENTIRE SITE PLAN BASED ON USING THE PROPOSED ALTERNATIVE FIXTURES. THE REPORT MUST SHOW THAT THE SUBSTITUTED FIXTURE PROVIDES PERFORMANCE EQUAL TO, OR BETTER THAN, THE LIGHTING LEVELS AND UNIFORMITY RATIOS (MAX:MIN AND AVG:MIN) OF THE SPECIFIED PRODUCT. THIS REPORT SHALL BE CONFIGURED WITH THE FOLLOWING CONSTRAINTS.
   a. THE SPACING INCREMENT OR POINTS ON THE VERIFICATION REPORT SHALL NOT EXCEED TEN (10) FEET IN EITHER DIRECTION.
   b. THE PRINTOUT SHALL BE BASED ON PROVIDING MAINTAINED FOOT–CANDLE LEVELS USING MEAN LAMP LUMENS AND A LIGHT LOSS FACTOR, AS DIRECTED BY THE ENGINEER OF RECORD.
   c. THE PRINTOUT SHALL SHOW ANY ADDITIONAL ENERGY AND/OR ENERGY COSTS, FOR A TEN YEAR PERIOD, AS COMPARED TO THE ORIGINALLY SPECIFIED ITEM. THE TOTAL COSTS FOR THESE EXPENSES WILL BE DEDUCTED FROM THE CONTRACT COST.

C. "?" CHARACTERS IN FIXTURE MODEL NUMBER INDICATE THAT THE FIXTURES ARE SPECIFIED IN A GENERIC MOUNTING FORMAT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND PROVIDING ALL HANGERS, CLIPS AND NECESSARY HARDWARE TO INSTALL THE FIXTURE IN THE ENVIRONMENT AS SHOWN ON THE ARCHITECTURAL PLANS. ALL FIXTURES SHALL BE PROVIDED WITH ALL REQUIRED STRUCTURAL SUPPORTS AS REQUIRED BY THE CURRENTLY ADOPTED ISSUE OF THE UNIFORM BUILDING CODE, AS WELL AS ANY LOCAL CODES.

D. CONFLICTS BETWEEN CATALOG NUMBERS AND FIXTURE DESCRIPTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, PRIOR TO BID TIME, FOR CLARIFICATION.

E. "?" CHARACTERS IN FIXTURE MODEL NUMBER INDICATE THAT ALL FIXTURE VOLTAGES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING – SEE DRAWINGS FOR BRANCH CIRCUIT INFORMATION. IT IS POSSIBLE THAT FIXTURES WILL BE REQUIRED IN VARIOUS VOLTAGES.

F. ALL FIXTURE FINISHES AND COLORS, UNLESS NOTED AS CUSTOM, SHALL BE SELECTED FROM THE FULL RANGE OF MANUFACTURER'S STANDARD COLOR OPTIONS, AS SELECTED BY THE ARCHITECT. THIS DIRECTION WILL BE PROVIDED IN THE SHOP DRAWING REVIEW PROCESS. ALL FIXTURES INDICATED WITH A CUSTOM COLOR SHALL BE PROVIDED WITH A CUSTOM COLOR PAINT PER THE ARCHITECTURAL REVIEW COMMENTS OF THE SUBMITTED SHOP DRAWINGS.

G. ALL BALLASTS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

1. "?" CHARACTERS IN FIXTURE MODEL NUMBER INDICATE THAT THE FIXTURE BALLAST TYPE AND QUANTITY MUST BE VERIFIED BY THE CONTRACTOR – USING FIXTURE CALLOUT INFORMATION AND FIXTURE SWITCHING CONFIGURATION INFORMATION. IT IS POSSIBLE THAT A SINGLE FIXTURE TYPE COULD BE REQUIRED IN VARIOUS BALLAST CONFIGURATIONS.
2. FLUORESCENT(LINEAR/COMPACT):
   a. ⟨1⟩ — NO SUFFIX — PROVIDE ELECTRONIC, INSTANT START STANDARD BALLAST WITH HIGH POWER FACTOR, MAXIMUM THD OF 20%, CLASS "A" SOUND RATING, AND ZERO DEGREE FAHRENHEIT, MINIMUM START–TEMPERATURE RATING.
   b. ACCEPTABLE MANUFACTURERS: ADVANCE, SYLVANIA, OR GE.
   c. ⟨1a⟩ — "a" SUFFIX — PROVIDE ELECTRONIC PROGRAM START BALLAST WITH 0.95 MIN. POWER FACTOR, MAXIMUM THD OF 10%, CLASS "A" SOUND RATING, AND ZERO DEGREE FAHRENHEIT, MINIMUM START–TEMPERATURE RATING.
   d. ACCEPTABLE MANUFACTURERS/MODEL FAMILY:
      ADVANCE OPTANIUM, SYLVANIA QUICKTRONIC PROFESSIONAL, OR GE ULTRASTART

      WHERE AN OPTANIUM, QUICKTRONIC PROFESSIONAL OR ULTRASTART BALLAST IS NOT MANUFACTURED FOR A PARTICULAR LAMP(S) PROVIDE:

      ADVANCE CENTIUM, SYLVANIA QUICKTRONIC HIGH EFFICIENCY, OR GE PROLINE BALLASTS.
3. MASTER–SATELLITE / INBOARD–OUTBOARD SWITCHING:
   a. WHERE FIXTURES ARE INDICATED WITH TANDEM WIRE CONNECTION, A MASTER–SATELLITE BALLAST CONFIGURATION SHALL BE PROVIDED THAT ACCOMMODATES THE INDICATED IN–BOARD / OUT–BOARD SWITCHING CONFIGURATION.
   b. SINGLE STAND ALONE FIXTURES IN THE SAME SWITCHING ZONE AS TANDEM WIRED FIXTURES SHALL BE PROVIDED WITH MULTIPLE BALLASTS TO ACCOMMODATE THE INDICATED IN–BOARD / OUT–BOARD SWITCHING CONFIGURATION.
   c. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND PROVIDING THE APPROPRIATE BALLAST TYPE AND QUANTITY – BASED UPON THE FIXTURE CALLOUT INFORMATION AND SWITCHING CONFIGURATION.
4. STEPPED DIMMING FLUORESCENT (LINEAR):
   a. ⟨1b⟩ — "b" SUFFIX — PROVIDE ELECTRONIC, PROGRAM START, STEPPED DIMMING BALLAST (0%–50%–100%) WITH 0.95 MIN. POWER FACTOR, 10% MAXIMUM THD, CLASS "A" SOUND RATING, 100% OUTPUT BALLAST FACTOR BETWEEN 0.84 – 1.00, AND 50 DEGREE FAHRENHEIT MINIMUM START–TEMPERATURE RATING. BALLAST SHALL BE COMPLIANT WITH APPLICABLE ENERGY CODE.
   b. ACCEPTABLE MANUFACTURERS:
      UNIVERSAL, PHILIPS ADVANCE, OR SYLVANIA
5. CONTINUOUS DIMMING FLUORESCENT(LINEAR/COMPACT):
   a. PROVIDE ELECTRONIC CONTINUOUS DIMMING BALLAST WITH HIGH POWER FACTOR, MAXIMUM THD OF 20%, CLASS "A" OR BETTER SOUND RATING, BALLAST FACTOR (BF) AS INDICATED, AND 50 DEGREE FAHRENHEIT RATING. BALLAST MUST BE COMPATIBLE WITH DIMMER AND/OR DIMMING SYSTEM. CONTINUOUS DIMMING BALLAST SHALL BE IDENTIFIED / PROVIDED AS FOLLOWS:

DIM 1% –	⟨?c⟩	LUTRON #H3D SERIES LUTRON #HL3 SERIES	BF = 1.0 BF = 0.95	(T8/T5/T5HO) (T4T/T4Q)
DIM 5% –	⟨?d⟩	LUTRON #H3D SERIES LUTRON #EC3 SERIES	BF = 1.0 BF = 0.95	(T8/T5/T5HO/T5TT) (T4T/T4Q)
DIM 10% –	⟨?e⟩	LUTRON #EC5 SERIES LUTRON #EC3 SERIES	BF = 0.85T8/1.0T5 BF = 0.95	(T8/T5/T5HO/T5TT) (T4T/T4Q)
DIM LV –	⟨?f⟩	ADVANCE #MARK 7 (0–10V)	BF = 1.0	(T4T/T4Q) (T8/T5/T5HO/T5TT))
DIM 2–WIRE –	⟨?g⟩	LUTRON #2W SERIES	BF = 0.95 BF = 0.85	(T4T) (T8)

   b. EQUAL BY ADVANCE, UNIVERSAL OR SYLVANIA QUICKTRONIC.
6. HIGH INTENSITY DISCHARGE (HID):
   a. ⟨1⟩ — NO SUFFIX — PROVIDE HID BALLASTS WITH HIGH POWER FACTOR, ENCAPSULATED CORE AND COIL TYPE, CORE AND COIL TYPE, OR F–CAN TYPE, WITH CLASS "A" OR BETTER SOUND RATING UP THROUGH 175W AND CLASS "B" ABOVE 175W THROUGH 400W, AND ZERO DEGREE FAHRENHEIT MINIMUM START–TEMPERATURE RATING. ELECTRONIC HID BALLASTS SHALL BE UTILIZED FOR METAL HALIDE LAMPS 150W OR LESS. ALL NEW METAL HALIDE LUMINAIRES WITH 150W TO 500W LAMPS PROVIDED ON THE PROJECT SHALL BE EQUIPPED WITH PULSE START BALLASTS TO COMPLY WITH SECTION 1602, CCR TITLE 20 APPLIANCE EFFICIENCY STANDARDS.
   b. WHEN REMOTE HID BALLASTS ARE REQUIRED, CONTRACTOR TO COORDINATE PROPER IGNITER SELECTION WITH FIXTURE MANUFACTURER BASED ON INSTALLATION–SPECIFIC DISTANCE REQUIREMENTS ON A PER FIXTURE BASIS. IF REMOTE ELECTRONIC HID BALLASTS ARE REQUIRED ON THE PROJECT AND EXCEED DISTANCE LIMITATIONS FOR ELECTRONIC HID BALLASTS, MAGNETIC BALLASTS SHALL BE PERMITTED FOR 150W AND LOWER WATTAGE HID FIXTURES.
   c. ACCEPTABLE MANUFACTURERS:
      ADVANCE, GE, SYLVANIA, UNIVERSAL OR VENTURE

H. LIGHT FIXTURES INDICATED AS EMERGENCY SHALL BE IDENTIFIED / PROVIDED AS FOLLOWS:

1. INTEGRAL BATTERY PACK (EB):
   3a/3EB – FIXTURE CONNECTED TO CIRCUIT "3", CONTROL SWITCHLEG "a" – WITH THE BATTERY CHARGING LEAD CONNECTED TO A CONSTANT HOT CIRCUIT "3".
   3NL/3EB – FIXTURE CONNECTED TO A CONSTANT HOT CIRCUIT "#3". BATTERY CHARGING LEAD CONNECTED TO A CONSTANT HOT CIRCUIT "3".
2. REMOTE BACK–UP SOURCE (EM):
   3a/3EM – ROUTED THROUGH A U.L. LISTED TRANSFER RELAY (LC & D #GR–2001E/S) FOR SWITCHED CONTROLS OR A U.L. LISTED TRANSFER SWITCH (BODINE #GTD SERIES DEVICE) FOR DIMMING CONTROLS. CONNECTED TO A CONSTANT HOT EMERGENCY CIRCUIT "3". SEE DISTRIBUTED LIGHTING CONTROL SPECIFICATIONS FOR DEVICE REQUIREMENTS WHEN CONTROLLED BY OCCUPANCY SENSORS.
   3NL/3EM – FIXTURE CONNECTED TO A CONSTANT HOT EMERGENCY CIRCUIT "3".

   REMOTE BACK–UP SOURCE (EM) NOTES:
   – ALL REMOTE BACK UP SOURCE (EM) FIXTURES SHALL BE PROVIDED WITH AN IN LINE FUSE. PROVIDE ADDITIONAL LABELING TO INDICATE FIXTURE IS PROTECTED BY A FUSE.
3. EMERGENCY BATTERY PACKS SHALL BE PROVIDED AS FOLLOWS:

LINEAR T8 FLUORESCENT LAMPS:

8FT T8	1 LAMP	1400 LUMENS	IOTA #I–320 OR BODINE #B50
5FT T8	1 LAMP	1325 LUMENS	IOTA #I–320 OR BODINE #B50
4FT T8	2/1 LAMPS	1350/1350 LUMENS	IOTA #I–320 OR BODINE #B50
3FT T8	2/1 LAMPS	1200/1100 LUMENS	IOTA #I–320 OR BODINE #B50
2FT T8	2/1 LAMPS	1125/1100 LUMENS	IOTA #I–320 OR BODINE #B50

LINEAR T5/T5HO FLUORESCENT LAMPS:

4FT T5HO	1 LAMP	1250 LUMENS	IOTA #ISL–540 OR BODINE #LP600
3FT T5HO	1 LAMP	1100 LUMENS	IOTA #ISL–540 OR BODINE #LP600
2FT T5HO	1 LAMP	700 LUMENS	IOTA #ISL–540 OR BODINE #LP600
4FT T5	1 LAMP	1200 LUMENS	IOTA #ISL–540 OR BODINE #LP600
3FT T5	1 LAMP	850 LUMENS	IOTA #ISL–540 OR BODINE #LP600
2FT T5	1 LAMP	700 LUMENS	IOTA #ISL–540 OR BODINE #LP600

HIGH LUMEN COMPACT FLUORESCENT LAMPS (BIAX):

55W BIAX	1 LAMP	1050 LUMENS	IOTA #I–320 OR BODINE #LP600STU
50W BIAX	1 LAMP	1050 LUMENS	IOTA #I–320 OR BODINE #LP600STU
40W BIAX	1 LAMP	1050 LUMENS	IOTA #I–320 – NO KNOWN EQUAL
36W BIAX	1 LAMP	1050 LUMENS	IOTA #I–320 OR BODINE #B50
24W BIAX	1 LAMP	800 LUMENS	BODINE #B84CG – NO KNOWN EQUAL
18W BIAX	1 LAMP	775 LUMENS	BODINE #B84CG – NO KNOWN EQUAL

COMPACT FLUORESCENT LAMPS:

70W CFL	1 LAMP	1200 LUMENS	BODINE #B75C – NO KNOWN EQUAL
57W CFL	1 LAMP	1160 LUMENS	IOTA #I–420 OR BODINE #B75C
42W CFL	1 LAMP	1250 LUMENS	IOTA #I–420 OR BODINE #B84CG
32W CFL	1 LAMP	1050 LUMENS	IOTA #I–420 OR BODINE #B84CG
26W CFL	1 LAMP	700 LUMENS	IOTA #I–420 OR BODINE #B84CG
18W CFL	1 LAMP	600 LUMENS	IOTA #I–420 OR BODINE #B84CG
13W CFL	1 LAMP	600 LUMENS	IOTA #I–420 OR BODINE #B84CG

LED LAMPS:

BODINE #BSL23/#BSL722 SERIES– NO KNOWN EQUAL

TO MAINTAIN UL LISTING OF LED FIXTURE, FIXTURE MANUFACTURER(S) SHALL INSTALL LED EMERGENCY BALLASTS AT THE FACTORY AND OBTAIN A UL LISTING OF THE FIXTURE WITH EMERGENCY BALLAST. FIELD–INSTALLATION OF LED EMERGENCY BALLAST(S) IS PROHIBITED. SHOULD THE SPECIFIED LED EMERGENCY BALLAST(S) NOT FIT WITHIN A GIVEN FIXTURE(S), CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID TO LOCATE/CONNECT SELF–DIAGNOSTIC MINI INVERTER(S) (IOTA #ILS SERIES OR BODINE # ELI–???–SD) REMOTELY FROM THE FIXTURE(S) IN THE NEAREST ELECTRICAL ROOM.

EMERGENCY BATTERY PACK NOTES:

– PROVIDE INTEGRAL TEST SWITCH OPTION FOR ALL EMERGENCY BALLASTS INSTALLED IN LIGHT FIXTURES.

– CONTRACTOR TO VERIFY WITH FIXTURE MANUFACTURER(S) PRIOR TO BID THAT EMERGENCY BALLASTS ARE INTEGRAL TO FIXTURE HOUSINGS. SHOULD A BALLAST(S) NOT FIT WITHIN A GIVEN FIXTURE(S), CONTRACTOR SHALL INCLUDE ALL COSTS TO LOCATE EMERGENCY BALLAST(S) REMOTELY FROM THE FIXTURE ABOVE THE NEAREST ACCESSIBLE CEILING.

– PROVIDE "DL" OPTION IN ALL DAMP LABEL INSTALLATIONS.

– EMERGENCY BALLASTS SHALL PROVIDE NOT LESS THAN 90 MINUTES OF FIXTURE OPERATION.

4. ALL RECESSED DOWNLIGHTS SUPPLIED WITH A BATTERY PACK SHALL BE PROVIDED WITH AN INTEGRAL COMBINATION TEST SWITCH / CHARGING INDICATOR LIGHT – MOUNTED INSIDE THE REFLECTOR. REMOTE TEST SWITCH / CHARGING LIGHTS ARE NOT ALLOWED. THE TEST SWITCH / CHARGING INDICATOR LIGHT SHALL BE SECURELY ATTACHED TO THE REFLECTOR WITH 18" OF SLACK LEADS FOR EASY REMOVAL OF THE REFLECTOR ASSEMBLY.
5. BATTERY PACKS ALL SHALL BE PROVIDED WITH A COMBINATION TEST SWITCH / CHARGE LIGHT.

I. ALL EXIT SIGNS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE LOCAL FIRE PREVENTION CODE AUTHORITY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY HARDWARE SUCH THAT ALL EXIT SIGNS ARE INSTALLED IN AN APPROVED VISIBLE LOCATION. THE CONTRACTOR SHALL VERIFY CHEVRONS AND NUMBER OF FACES PER EXIT SIGN WITH ARCHITECTURAL REFLECTED CEILING PLAN. ANY DISCREPANCIES BETWEEN EXIT SIGNS DEPICTED ON ARCHITECTURAL AND ELECTRICAL PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO ORDERING EXIT SIGNS.

J. ALL TRACK LIGHTING FIXTURES SHALL BE PROVIDED WITH THE APPROPRIATE TRACK SYSTEM WHICH SHALL INCLUDE ALL MISCELLANEOUS COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. TRACK LENGTH SHALL BE PER DRAWINGS.

K. "?" CHARACTERS IN THE FIXTURE MODEL NUMBER INDICATE A FIXTURE OPTION THAT THE CONTRACTOR MUST IDENTIFY PRIOR TO ORDERING / PROVIDING SUBMITTALS.

L. PROVIDE A SUBMITTAL / SHOP DRAWING SUBMITTAL PER THE GENERAL PRODUCT REQUIREMENT SECTION FOR EACH FIXTURE TYPE INCLUDING BALLAST(S). ANY LIGHTING FIXTURES SUBMITTAL SUBMITTED WITHOUT SPECIFIC FIXTURE(S) BALLAST INFORMATION SHALL BE REJECTED AS INCOMPLETE. IN ADDITION, SEE GENERAL LAMP SCHEDULE NOTES FOR SEPARATE LAMP SUBMITTAL REQUIREMENTS.

M. PROVIDE LAMPING PER LAMP SCHEDULE.

N. SOCKETS SHALL BE GENERAL ELECTRIC, BRYANT, OR EQUAL, WHITE, TWIST–TURN CONTACT TYPE. PUSH CONTACT TYPE SOCKETS WILL NOT BE ALLOWED.

O. ALL LIGHTING FIXTURES SHALL BE MOUNTED AND INDIVIDUALLY SUPPORTED IN ACCORDANCE WITH APPLICABLE INDUSTRY AND SAFETY STANDARDS AND ALL NATIONAL AND LOCAL ELECTRICAL AND SEISMIC CODES. FIXTURES SHALL BE FURNISHED AND INSTALLED WITH ALL REQUIRED MOUNTING DEVICES, HARDWARE AND ACCESSORIES.

P. LOCATIONS OF FIXTURES SHALL BE PER THE ARCHITECTURAL REFLECTED CEILING PLAN AND SHALL BE COORDINATED AT TIME OF ROUGH IN. CONFLICTS BETWEEN THE ARCHITECTURAL REFLECTED CEILING PLAN AND THE ELECTRICAL PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT, IN WRITING, PRIOR TO ORDERING FIXTURES.

Q. CONTRACTOR TO INCLUDE FIVE MINUTES OF AFTER DARK AIMING/ADJUSTING TIME (TWO HOURS MINIMUM) FOR ANY ADJUSTABLE FIXTURE AND FOR EACH INDIVIDUAL FIXTURE HEAD OR LAMP HOLDER IN A MULTI–FIXTURE / MULTI–LAMP ASSEMBLY. FIXTURES TO BE AIMED/ADJUSTED PER THE DIRECTION OF OWNER, ARCHITECT, AND ENGINEER.

R. ALL POLE MOUNTED FIXTURES, POST MOUNTED FIXTURES, AND BOLLARDS SHALL BE PROVIDED WITH A STRUCTURAL FOOTING AS DETAILED ELSEWHERE IN THE DRAWINGS. THE CAPITAL LETTER ADJACENT TO THE FIXTURE SYMBOL(S) INDICATES THE FOOTING TYPE – SEE ELECTRICAL DETAILS FOR MORE INFORMATION.

S. "NO KNOWN EQUAL" LIGHTING FIXTURE PRICING/BIDDING NOTES

1. EACH FIXTURE IDENTIFIED AS "NO KNOWN EQUAL" ON THIS PROJECT SHALL BE BID IN A "LINE ITEM" FORMAT. A PER UNIT MATERIAL COST SHALL BE PROVIDED FOR EACH "NO KNOWN EQUAL" FIXTURE. THIS PRICE SHALL INCLUDE LAMPS AS WELL AS ALL OTHER REQUIRED MATERIALS REQUIRED FOR INSTALLATION. THE FIXTURE PRICE QUOTED WILL BE UTILIZED, PRIOR TO SHOP DRAWING APPROVAL, FOR "ADDING" AND/OR "DELETING" ANY QUANTITY OF THE FIXTURE.
2. A UNIT COST SHALL BE SUBMITTED FOR EACH "NO KNOWN EQUAL" FIXTURE. SUBMIT THE PRICING AS PART OF THE BID FORM ON A SEPARATE 8–1/2" X 11" SHEET AS FOLLOWS:

"NO KNOWN EQUAL" FIXTURE TYPE	LINE ITEM/ PER UNIT MATERIAL COST
1	$ XXXXX/EACH
2	$ XXXXX/EACH
3	$ XXXXX/EACH

3. FAILURE TO SUBMIT A LINE ITEM FOR EACH "NO KNOWN EQUAL" FIXTURE MAY RESULT IN THE REJECTION, REFUSAL, OR NON–ACCEPTANCE OF THE CONTRACTORS BID.

T. "NO EQUAL – OWNER STANDARD" LIGHTING FIXTURE PRICING/BIDDING NOTES:

1. FIXTURES IDENTIFIED AS "NO EQUAL – OWNER STANDARD" ARE TO BE PROVIDED AS SPECIFIED.
2. SUBSTITUTIONS ARE STRICTLY PROHIBITED.

LIGHTING FIXTURE SCHEDULE

SYMBOL	TYPE	MANUFACTURER AND MODEL NUMBER	FIXTURE VA/ WATTS	LAMP/ LAMP OPTION	GENERAL DESCRIPTION
▭ ▨	⟨1⟩	METALUX 24CZ2–45–UNV–L835–CD – EQUAL BY: LITHONIA, PRUDENTIAL	42.9	LED/3500K	RECESSED 2'X4' LED. COLD ROLLED STEEL HOUSING. 3500K LED, 4618 LUMENS. 108LM/WATT 0–10V DIMMING. EMERGENCY FIXTURE TO BE PROVIDED WITH 90 MINUTE BATTERY BACKUP. PROVIDE WITH ALL ACCESSORIES REQUIRED FOR MOUNTING. MAX WEIGHT: 20.5LBS
⊗, ⊗ OR ⊗	⟨2⟩	SURE–LITES CX SERIES – – EQUAL BY: MC PHILBEN OR LITHONIA	14W	LED	DIE–CAST ALUMINUM EXIT SIGN WITH HINGED AND LATCHED BRUSHED ALUMINUM STENCIL FACEPLATE AND BLACK HOUSING, GREEN LETTERING, SINGLE OR DOUBLE FACE AND DIRECTIONAL ARROWS AS INDICATED ON DRAWINGS. UNIVERSAL MOUNTING, DUAL VOLTAGE, TWO CIRCUIT. –

SEE GENERAL LIGHTING FIXTURE SCHEDULE NOTES FOR CRITICAL FIXTURE SPECIFICATION AND ORDERING INFORMATION.

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STATE OF CALIFORNIA
[illegible]

PERRIS LAKE HIGH SCHOOL

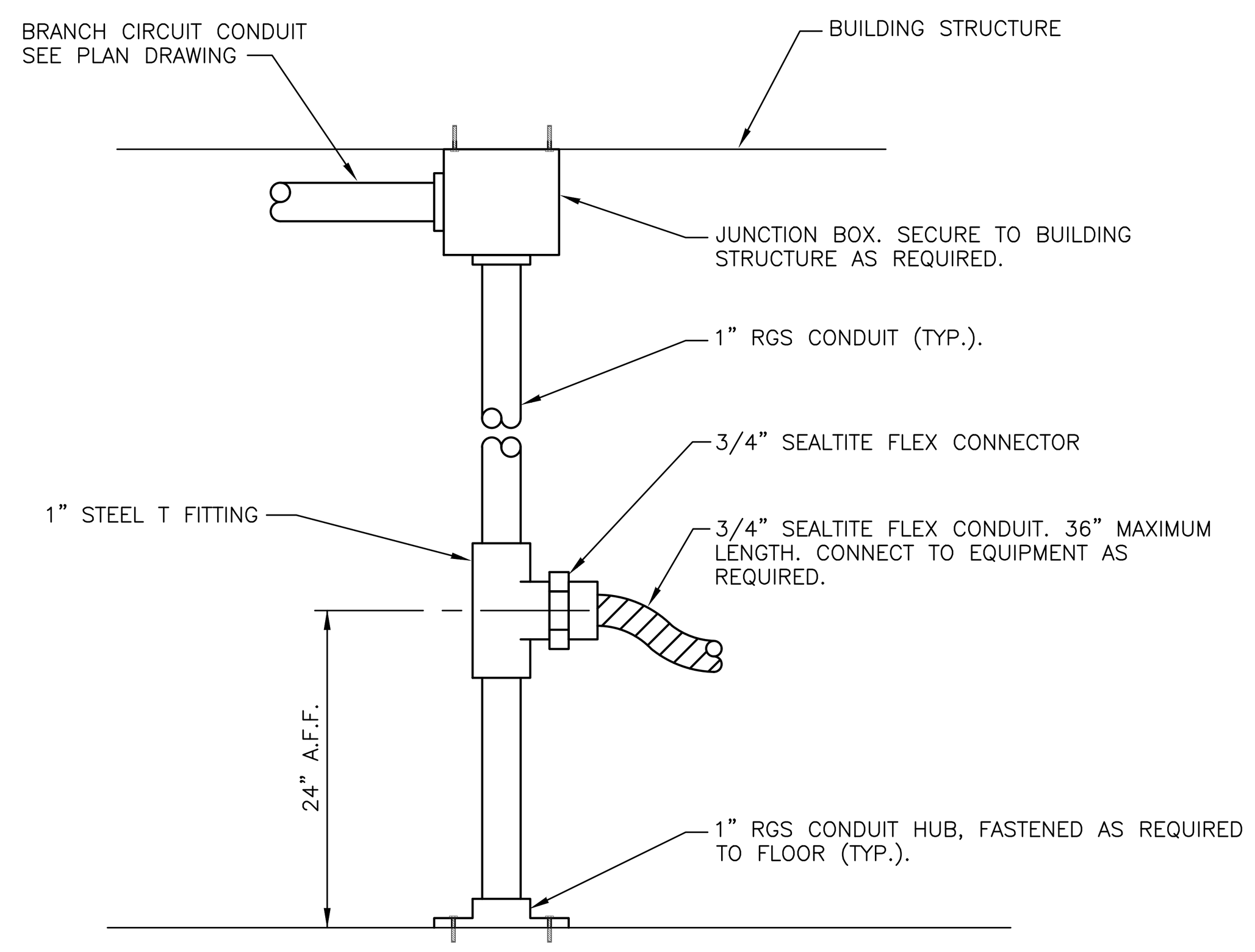
PERRIS UNION HIGH SCHOOL DISTRICT

LIGHTING FIXTURE SCHEDULE

E–6.0

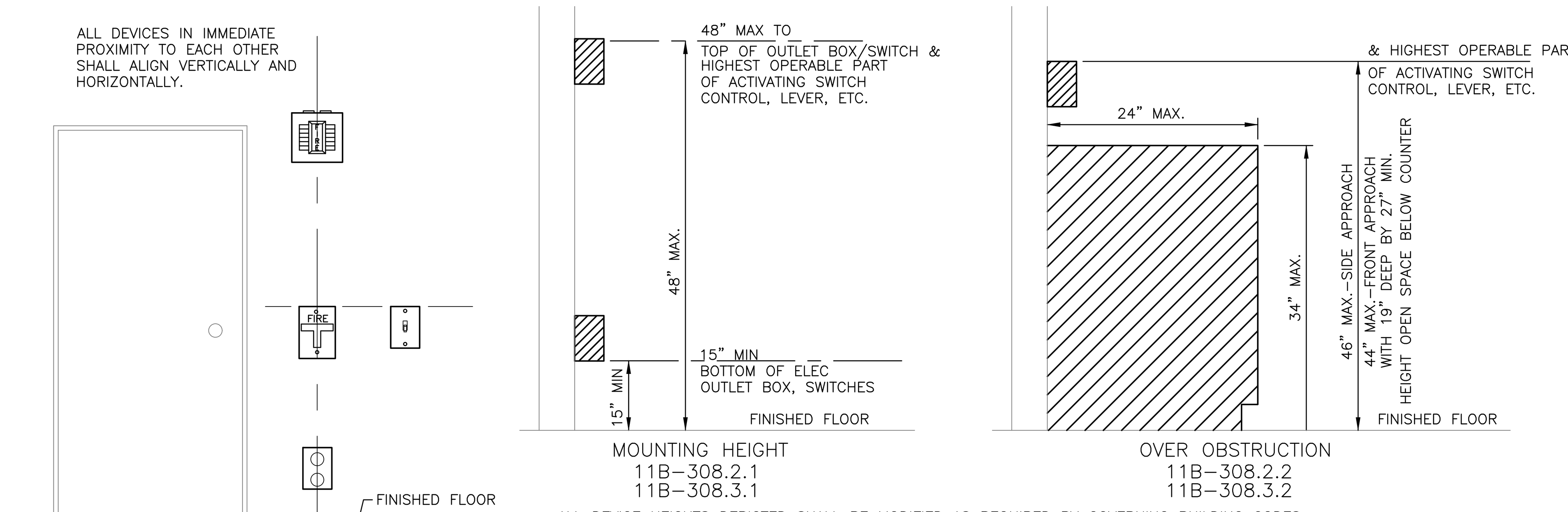
OC Office: 24461 Ridge Route Drive #100, Laguna Hills, CA 92653 • Phone: 949.496.6191 • SD Office: 804 Pier View Way #103, Oceanside, CA 92054 • Phone: 760.730.5527 • LA Office: 837 Traction Avenue, #410, Los Angeles, CA 90013 • Phone: 213.278.0172 • Web: pjhm.com

2/27/2019



CONDUIT DROP DETAIL (4)

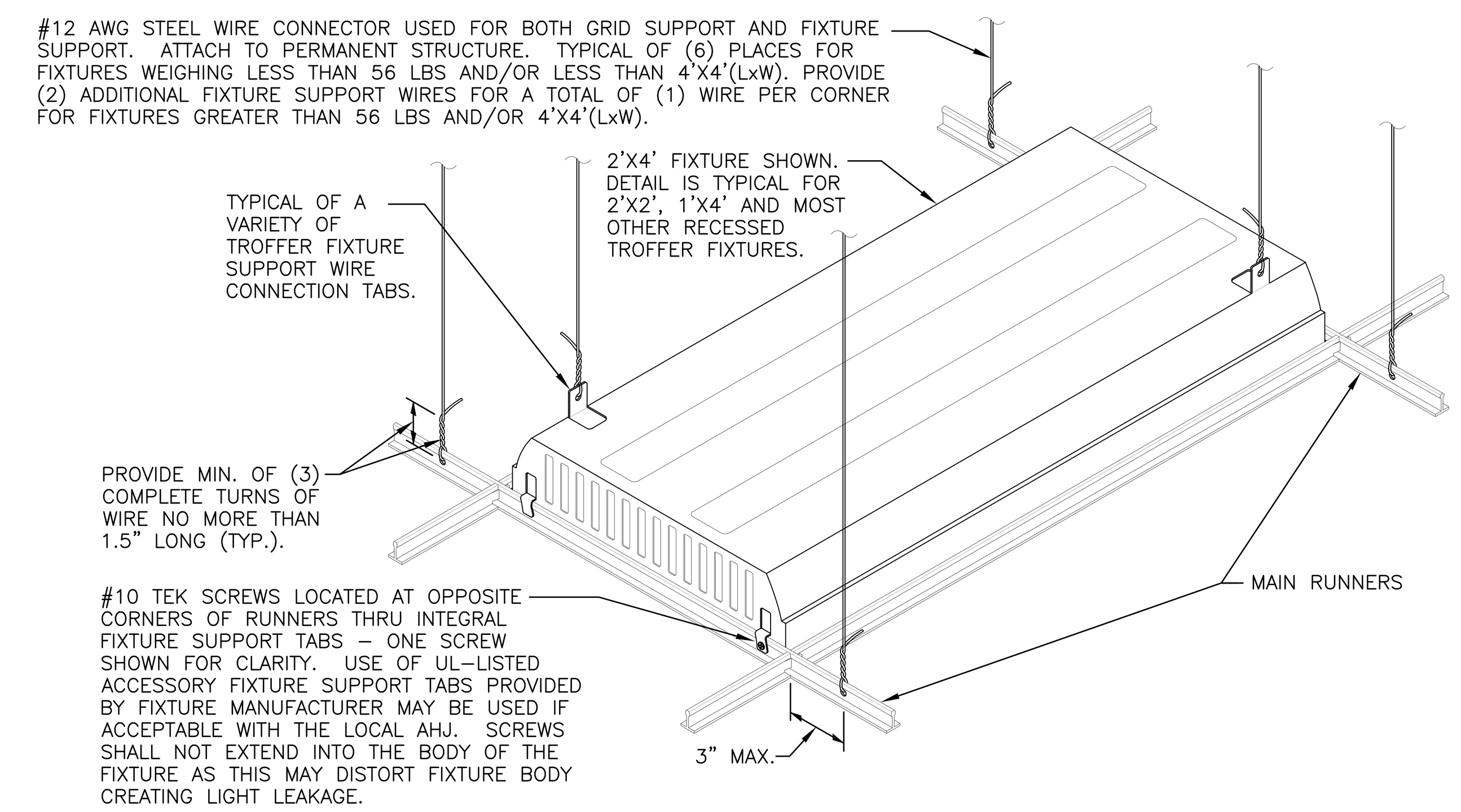
SCALE: NTS



ALL DEVICE HEIGHTS DEPICTED SHALL BE MODIFIED AS REQUIRED BY GOVERNING BUILDING CODES. CONTRACTOR TO VERIFY/RECONCILE APPLICABLE CODE REQUIREMENTS AND ANY DEVICE HEIGHT REQUIREMENTS DEPICTED ON ARCHITECTURAL OR INTERIOR DESIGN PLANS AND SPECIFICATIONS PRIOR TO DEVICE ROUGH-IN. CONFLICTS OR LACK OF MOUNTING HEIGHT SPECIFICITY ON THE ARCHITECTURAL OR INTERIOR DESIGN PLANS AND SPECIFICATIONS SHALL BE CAUSE FOR THE CONTRACTOR TO ISSUE A FORMAL WRITTEN REQUEST FOR INFORMATION (RFI) FOR RESOLUTION. DEVICE MOUNTING HEIGHT CLARIFICATIONS/SPECIFICATIONS SHALL NOT RESULT IN AN ADDITIONAL COST TO THE OWNER - CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID.

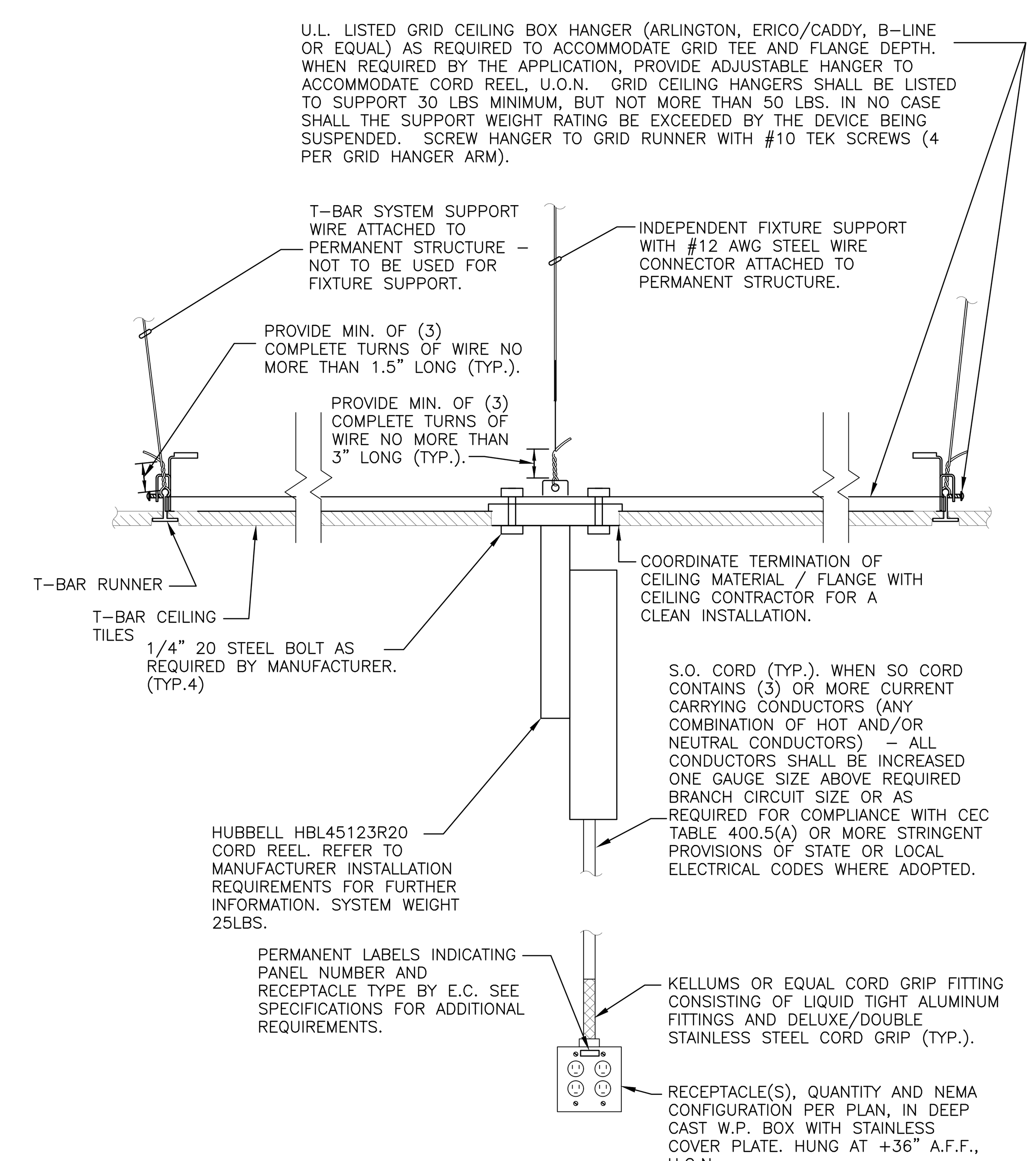
DEVICE ALIGNMENT AND MOUNTING HEIGHT OVER OBSTRUCTION DETAILS (1)

SCALE: NTS



FIXTURE SUPPORT DETAIL (2)

SCALE: NTS



CORD REEL MOUNTING DETAIL (3)

SCALE: NTS

2/27/2019

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PERRIS LAKE HIGH SCHOOL

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MISCELLANEOUS DETAILS

E-6.0

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SECTION 16010

PART 1 – GENERAL ELECTRICAL SPECIFICATIONS

1.1 WORK INCLUDED:

A. This specification shall apply to all phases of work hereinafter specified, shown on drawings, or as required to provide a complete installation of electrical systems for this project. Work required under this specification is not limited to just the Electrical drawings. Refer to Architectural, Structural, Landscape, and Mechanical/Plumbing drawings as well as all other drawings applicable to this project, which designate the scope of work to be accomplished. The intent of the Drawings and Specifications is to provide a complete and operable electrical system that includes all documents that are a part of the Contract.

1. Work Included: Furnish labor, material, services and skilled supervision necessary for the construction, erection, installation, connections, testing, and adjustment of all circuits and electrical equipment specified herein, or shown or noted on Drawings, and its delivery to the Owner complete in all respects ready for use.

2. The electrical Work includes installation or connection of certain materials and equipment furnished by others. Verify installation details, installation and rough-in locations from the actual equipment or from the equipment shop drawings.

B. Electrical Drawings: Electrical Drawings are diagrammatic, and are intended to convey the scope of work, indicating intended general arrangement of equipment, conduit and outlets. Follow Drawings in laying out Work and verify spaces for installation of materials and equipment based on actual dimensions of equipment furnished.

1.2 QUALITY ASSURANCE

A. Design, manufacture, testing and method of installation of all apparatus and materials furnished under requirements of these specifications shall conform to latest publications or standard rules of the following:

1. Institute of Electrical and Electronic Engineers – IEEE
2. National Electrical Manufacturers' Association – NEMA
3. Underwriter's Laboratories, Inc. – UL
4. National Fire Protection Association – NFPA
5. Federal Specifications – Fed. Spec.
6. American Society for Testing and Materials – ASTM
7. American National Standards Institute – ANSI
8. National Electrical Code – NEC
9. National Electrical Safety Code – NESC
10. Insulated Cable Engineers Association – ICEA
11. American Institute of Steel Construction – AISC
12. State and Municipal Codes In Force In The Specific Project Area
13. Occupational Safety and Health Administration (OSHA)
14. Electronics Industries Association/Telecommunications Industry Association (EIA/TIA)
15. California Electrical Code (where adopted)
16. Local Authority Having Jurisdiction (AHJ) Published Electrical Standards and Codes (as applicable).

B. Perform Work in accordance with the National Electrical Code, applicable building ordinances, and other applicable codes, hereinafter referred to as the "Code." The Contractor shall comply with the Code including local amendments and interpretations without added cost to the Owner. Where Contract Documents exceed minimum requirements, the Contract Documents take precedence. Where code conflicts occur, the most stringent shall apply unless variance is approved.

1. Comply with all requirements for permits, licenses, fees and codes. The Contractor, at Contractor's expense, shall obtain all permits, licenses, fees, special service costs, inspections and arrangements required for Work under this contract, unless otherwise specified.

2. Comply with requirements of the applicable utility companies serving this Project. Make all arrangements with utility companies for proper coordination of Work.

1.3 GENERAL REQUIREMENTS

A. Guarantee: Furnish a written guarantee for a period of one-year from date of acceptance.

B. Wherever a discrepancy in quantity or size of conduit, wire, equipment, devices, circuit breakers, etc., (all materials), arises on the Drawings and/or in the Specifications, the Contractor shall be responsible for providing and installing all material and services required by the strictest condition noted on Drawings and/or in Specifications to ensure complete and operable systems as required by the Owner and Engineer.

C. All Core Cutting, Drilling, and Patching:

1. For the installation of work under this Section, the aforementioned shall be performed under this Section of the Specifications and the Concrete section of the Specifications.

2. No holes will be allowed in any structural members without the written approval of the Project's Structural Engineer.

3. For penetrations of concrete slabs or concrete footings, the work shall be as directed in the Concrete Section of Specifications.

4. The Contractor shall be responsible for patching and repairing surfaces where he is required to penetrate for work under this contract.

5. Penetrations shall be sealed to meet the rated integrity of the surface required to be patched and repaired. The patched surface shall be painted or finished to match the existing surface.

D. Verifying Drawings and Job Conditions:

1. The Contractor shall examine all Drawings and Specifications in a manner to be fully cognizant of all work required under this Section.

2. The Contractor shall visit the site and verify existing conditions. Where existing conditions differ from Drawings, adjustment(s) shall be made and allowances included for all necessary equipment to complete all parts of the Drawings and Specifications.

1.4 WORK IN COOPERATION WITH OTHER TRADES

A. Examine the Drawings and Specifications and determine the work to be performed by the electrical, mechanical and other trades. Provide the type and amount of electrical materials and equipment necessary to place this work in proper operation, completely wired, tested and ready for use. This shall include all conduit, wire, disconnects, relays, and other devices for the required operation sequence of all electrical, mechanical and other systems or equipment.

B. Provide a conduit-only system for low voltage wiring required for control of mechanical and plumbing equipment described in this or other parts of the Contract Documents. Install all control housings, conduits, and backboxes required for installing conduit to the controls.

C. Install separate conduits between each heating, ventilating and air conditioning sensing device and its control panel and/or control motor. Before installing any conduit for heating, ventilating and air conditioning control wiring, verify the exact requirements from the control diagrams provided with the equipment manufacturer's shop drawings.

1.5 TESTING AND ADJUSTMENT

A. Upon completion of all electrical work, the Contractor shall test all circuits, switches, light fixtures, lighting control and dimming systems including distributed systems, UPSs, generators, SPDs, lighting inverters, transfer switches, motors, circuit breakers, motor starter(s) and their auxiliary circuits and any other electrical items to ensure perfect operation of all electrical equipment.

B. Equipment and parts in need of correction, and discovered during such testing, shall be immediately repaired or replaced with all new equipment and that part of the system shall then be retested. All such replacement or repair shall be done at no additional cost to the Owner.

C. All circuit(s) shall be tested for continuity and circuit integrity. Adjustments shall be made for circuits not complying with testing criteria.

D. All test reports, including copies of any required Energy Code Acceptance Forms (e.g. CA Title 24 Acceptance For Code Compliance Forms) should be submitted to the Engineer at completion of project.

1.6 IDENTIFICATION

A. Nameplates shall be provided for unit substations, switchgear, switchboards, distribution boards, distribution panels, panel boards, motor control centers, transformers, transfer switches, contactors, starters, disconnect switches, enclosed circuit breakers/switches, Inverters, UPSs, PDUs, RDCs, SPDs, lighting control panels, dimming panels, door releasing system panels, fire alarm/central monitoring terminal cabinets/power supplies/control panels, and all low voltage system terminal and control cabinets.

1. Nameplate inscriptions shall be identical to the equipment designations indicated in plans and specifications. Nameplates shall be engraved with the device designation/identification on the top line, source identification for the device on the 2nd line per NEC, or CEC where adopted, Art **408.4** and load designation for the device on the bottom line. Where load designation consists of a branch circuit, omit bottom line. Where device designation is not indicated on plans/specifications, Contractor shall submit a written clarification request to the Engineer.

Example: Transformer 1TA
Source Disconnecting Location: Switchboard MSA located in RM 110
Load: Panels 1LA & 1LB

2. All circuit breakers/fuses in switchgear, switchboards, distribution boards, distribution panels, UPS output circuit breakers, PDU sub-feed circuit breakers and motor control centers shall have individual nameplates located immediately adjacent to the respective device. Nameplate inscription shall identify the downstream equipment or device served by the circuit breaker or fuse.

B. Identification nameplates, unless otherwise noted (UON), shall be laminated/extruded modified acrylic that is 3/32" thick, UV-stabilized, matte finish, suitable for use in 180 deg F ambient, with beveled edges and engraved white letters 3/8" high, minimum, on 1-1/2" high black background (utility/normal and optional standby power systems) for single line of text. Where two lines of text are required, provide min. 2" high nameplate. Where three lines of text are required, provide min. 2.5" high nameplate. Provide white letters on red background for all NEC, or CEC where adopted, **Article 517** essential power systems, **Article 700** Emergency Systems, **Article 701** Legally required standby systems and **Article 708** COPS.

C. Identification nameplates for new switchgear, switchboards, distribution boards, distribution panels, panelboards and motor control centers shall be attached with switchgear manufacturer-provided screws via switchgear manufacturer factory pre-drilled holes. A factory option to rivet identification nameplates to the equipment is only acceptable if screw-fastened nameplates are not an available option from the switchgear manufacturer. Field drilling or other mechanical attachment methods that change/void the NEMA or NTRL rating of the enclosure are strictly forbidden.

D. Identification nameplates for transformers, transfer switches, disconnect switches, enclosed circuit breakers/switches, inverters, UPSs, PDUs, RDCs, SPDs, lighting control panels, dimming panels, door-releasing system panels, terminal cabinets and all circuit breakers/fuses in switchgear, switchboards, distribution boards, distribution panels, UPS output circuit breakers, PDUs, PDU sub-feed circuit breakers, and motor control centers shall be attached to the equipment by self-adhesive backing integral to the nameplates. When equipment is located outdoors, provide nameplates without self-adhesive backing and attach to equipment using weather-rated, UV-resistant epoxy. In all cases, clean surfaces before applying identification nameplates parallel to equipment lines.

E. Warning Placards, as required by General Single Line Diagram Notes for multiple power sources, or instruction placards, as required for all kirk-key interlock schemes, all UPS bypass procedures or as required elsewhere in the plans/specifications shall be engraved 1/2" high with white lettering on a red background using the same material specified for identification nameplates with a self-adhesive backing. Warning/instruction placards shall be attached to the face of the equipment directly related to the placards. Provide a formal placard submittal for review by the Engineer prior to ordering any warning/instruction placards. In all cases, clean surfaces before applying warning/instruction placards parallel to equipment lines.

F. Receptacles that are part of a UL-listed under floor computer room whip assembly, ceiling and/or cable/ladder tray-mounted receptacles used in lab, manufacturing, commercial kitchen environments or that are serving telcom/data/AV racks and cabinets shall have identification nameplates located on the wiring device plate cover. Nameplates shall be self-adhesive, 3/32" thick Micarta with beveled edges, engraved 1/4" high white lettering on black background with serving power source, circuit identification and NEMA/IEC receptacle type. Use of two (2) separate nameplates per device plate cover is acceptable. Affix nameplates to be visible when plugs are occupying receptacles.

G. See wiring device section of this specification for additional wiring device plate cover labeling requirements.

H. See drawings for panel board schedule directory installation requirements.

I. See conduit installation section of this specification for conduit labeling requirements.

1.7 FINAL INSPECTION AND ACCEPTANCE

A. After all requirements of the Specifications and/or the Drawings have been fully completed, representatives of the Owner will inspect the work. Contractor shall provide competent personnel to demonstrate the operation of any item or system to the full satisfaction of each representative.

B. Final acceptance of the work will be made by the Owner after receipt of approval and recommendation of acceptance from each representative.

1.8 RECORD DRAWINGS

A. Drawings of Record: The Contractor shall provide and keep up-to-date, a complete record set of drawings. These shall be corrected daily and show every change from the original Drawings. This set of prints shall be kept on the job site and shall be used only as a record set. This shall not be construed as authorization for the Contractor to make changes in the layout without definite instruction in each case. Upon completion of the work, a set of reproducible Contract Drawings shall be obtained from the General Contractor and all changes as noted on the record set of prints shall be incorporated thereon with black ink in a neat, legible, understandable and professional manner. Refer to the Supplementary General Conditions for complete requirements.

1.9 APPROVALS, EQUALS, SUBSTITUTIONS, ALTERNATIVES, NO KNOWN EQUAL

A. Approvals: Where the words (or similar terms) "approved", "approval", "acceptable", and "acceptance" are used, it shall be understood that acceptance by the Owner, Architect and Engineer are required.

B. Equal: Where the words (or similar terms) "equal", "approved equal", "equal to", "or equal by", "or equal" and "equivalent" are used, it shall be understood that these words are followed by the expression "in the opinion of the Owner, Architect, and Engineer". For the purposes of specifying products, the above words shall indicate the same size, made of the same construction materials, manufactured with equivalent life expectancy, having the same aesthetic appearance/style (includes craftsmanship, physical attributes, color and finish), and the same performance.

C. Substitution: For the purposes of specifying products, "substitution" shall refer to the submittal of a product not explicitly approved by the construction documents/specifications.

1. Substitutions of specified equipment shall be submitted and received by the Engineer ten (10) days prior to the bid date for review and written approval. Regulatory Agency approval for all substitutions will be the sole responsibility of the contractor. To receive consideration, requests for substitutions must be accompanied by documentary proof of its equality with the specified material. Documentary proof shall be in letter form and identify the specified values/materials alongside proposed equal values/materials. In addition, catalog brochures and samples, if requested, must be included in the submittal. ONLY PRE-BID APPROVED PRODUCTS, ISSUED VIA A FORMAL BID ADDENDUM TO ALL BIDDERS, WILL BE ALLOWED ON THE PROJECT. REGARDLESS OF THE APPROVAL ON ANY SUBSTITUTION, ALL BIDS SHALL BE BASED ON THE PRODUCTS EXACTLY AS SPECIFIED. PRICING FOR EACH APPROVED SUBSTITUTION SHALL BE INCLUDED IN THE BID SUBMITTAL AS A SEPARATE LINE ITEM.

2. In the event that written authorization is given for a substitution after award of contract, the Contractor shall submit to the Engineer quotations from suppliers/distributors of both the specified and proposed equal material for price comparison, as well as a verification of delivery dates that conform to the project schedule.

3. In the event of cost reduction, the Owner will be credited with 100 percent of the reduction, arranged by change order.

4. The Contractor warrants that substitutions proposed for specified items will fully perform the functions required.

D. Alternates/Alternatives: For the purposes of specifying products, "alternatives/alternates" may be established to enable the Owner/Architect/Engineer to compare costs where alternative materials or methods might be used. An alternate price shall be submitted in addition to the base bid for consideration. If the alternate is deemed acceptable, written authorization will be issued.

E. No Known Equal: For the purposes of specifying products, "No Known Equal" shall mean that the Owner/Architect/Engineer is not aware of an equivalent product. The Contractor will need to submit a "Substitution" item, per the requirements listed above, if a different product is proposed to be utilized.

1.10 SHOP DRAWINGS/SUBMITTALS

A. Shop Drawings/Submittals, unless required otherwise by general project specifications or instructions to bidders, shall be submitted in electronic format (PDF) to include a Letter of Transmittal (PDF), which shall give a list of the drawings submitted with dates and/or sytem(s) components contained within the submittal. Drawings and material cut sheets shall be complete in every respect and edited/marked to indicate specific items being provided. Printed/Hard copies are not acceptable.

B. The shop drawings/submittals shall be marked with the name of the project, numbered consecutively, and bear the approval of the Contractor as evidence that the Contractor has checked the drawings. Any drawings submitted without this approval will be returned to the Contractor for resubmittal.

C. If the shop drawings show variations from the requirements of the Contract because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in the Contractor's letter of transmittal. If the substitution is accepted, the Contractor shall be responsible for proper adjustment that may be caused by the substitution. Samples shall be submitted when requested.

D. Only products listed as "Equal" within the contract documents, along with formally approved "Substitutions" will be reviewed. Products not conforming to these items will not be reviewed and will be returned to the Contractor for re-submittal.

E. Review comments used in response to shop drawings/submittals are:

1. "No Exception Taken"	Product approved as submitted.
2. "Furnish as Corrected"	Re-submittal not required, although the Contractor shall provide the submitted product with corrections as noted.
3. "Revise and Resubmit"	Re-submittal required with corrections as noted.
4. "Rejected"	Re-submittal required based upon the originally specified product.

F. Shop drawings shall be submitted on the following, but not limited to:

1. Lighting fixtures, lamps and ballasts.
2. Switchgear, switchboards, distribution boards, motor control centers, panelboards, and bus ducts; complete with overcurrent device information.
3. Transformers.
4. Fire Alarm System/Central Monitoring System.
5. Wiring Devices.
6. Lighting control products/dimming system products.
7. Pull boxes and underground vaults.
8. Terminal cabinets.
9. Lighting inverters, UPSs, RDCs, PDUs, generators, transfer switches, SPD systems.
10. Cable tray, flexible cable tray and cable runway.
11. Power poles and floor boxes.
12. Arc flash, short-circuit, and coordination studies.
13. All other products called out on drawings that call for shop drawing submittal.

1.11 MAINTENANCE, SERVICING, INSTRUCTION MANUALS AND WIRING DIAGRAMS

A. Prior to final acceptance of the job, the Electrical Contractor shall furnish to the Owner at least four (4) copies of operating and maintenance and servicing instructions, as well as four (4) complete wiring diagrams for the following items or equipment:

1. Lighting control systems/dimming systems.
2. Fire Alarm System.
3. Transformers.
4. Switchgear, switchboards, distribution boards, motor control centers, panel boards, and bus ducts; complete with overcurrent device information.
5. Lighting inverters, UPSs, PDUs, generators, transfer switches, SPD systems.

B. All wiring diagrams shall specifically cover the system supplied. Typical drawings will not be accepted. Four (4) copies shall be presented to the Owner.

1.12 INTERRUPTION OF SERVICES/SERVICE SHUTDOWN

A. Any interruption of electrical services, electrical circuits, electrical feeders, signal systems, communication systems, fire alarm systems, etc., required to perform work shall meet the specific prior-approval requirements of the Owner. Such work shall be scheduled with the Owner to be performed at the Owner's convenience.

B. Interruptions/outages of any of the Owner's systems and services mentioned above shall be scheduled to occur during other than the Owner's normal business hours. Any overtime costs shall be borne by the Contractor.

C. See drawings for any additional requirements regarding outages, interruption and any temporary services required.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Materials and Equipment: All electrical materials and equipment, including custom-made equipment, shall be new and shall be listed by Underwriter's Laboratories (UL) and bear their label or be listed and certified by a Nationally Recognized Testing Lab (NRTL) that is also recognized by the local Authority-Having-Jurisdiction (AHJ).

B. Switchgear/Switchboards/Distribution Boards/Motor Control Centers:

1. See general single line diagram notes on drawings for more information.

C. Panelboards – Branch Circuit:

1. See drawings for panel board schedules and specifications.

D. Transformers:

1. See drawings for transformer schedules and specifications.

E. Lighting Fixtures:

1. See drawings for lighting fixture and lamp schedules and additional specifications. Furnish, install, and connect a lighting fixture at each outlet where a lighting fixture type symbol (designated on plans) is shown as being installed. Each fixture shall be complete with all required accessories including sockets, glassware, boxes, spacers, mounting devices, fire rating enclosure and lamps.

2. Ballasts: See lighting fixture schedule notes. All noisy ballasts shall be replaced at no cost to the Owner.

3. Lamps: See lamp/fixture schedule and lamp/lighting fixture schedule notes.

F. Wiring Devices:

1. Provide wiring devices indicated per plan. Devices shall be specification grade. Acceptable manufacturers are Leviton, Pass & Seymour and Hubbell. Provide all similar devices of same manufacturer, unless indicated otherwise. All device colors shall be selected from the full range of manufacturer standard color options as selected by the Architect. This direction will be provided in the shop drawing review process.

a. Wiring Devices (Decora)

1) Convenience Receptacle	#16252–COLOR
2) Dedicated Receptacle	#16352–COLOR
3) Convenience I.G. Receptacle	#16262–IG–COLOR
4) Dedicated IG Receptacle	#16362–IG–COLOR
5) Convenience G.F.C.I. Receptacle	#GFNT1–COLOR
6) Dedicated G.F.C.I. Receptacle	#GFNT2–COLOR
7) Convenience Hospital Grade Receptacle	#16252–HG?–COLOR
8) Dedicated Hospital Grade Receptacle	#16352–HG?–COLOR
9) Convenience G.F.C.I. Hospital Grade Receptacle	#GFNT1–HG?
10) Dedicated G.F.C.I. Hospital Grade Receptacle	#GFNT2–HG?
11) Tamper Resistant Convenience Receptacle	#TDR15–COLOR
12) Tamper Resistant Dedicated Receptacle	#TDR20–COLOR
13) Tamper Resistant GFCI Receptacle	#GFTR2–COLOR
14) Tamper Res. Conv. G.F.C.I. Hospital Grade Receptacle	#GFTR1–HG COLOR
15) Tamper Res. Ded. G.F.C.I. Hospital Grade Receptacle	#GFTR2–HG COLOR
16) Weather/Tamper Resistant GFCI Receptacle	#GFWT2–COLOR
17) Convenience Simplex Receptacle	#16251–COLOR
18) Dedicated Simplex Receptacle	#16351–COLOR
19) Recessed Clock Receptacle	#5361–CH–COLOR (Non–Decora)
20) Single Pole Switch	#5621–2–COLOR
21) Double Pole Switch	#5622–2–COLOR
22) Three Way Switch	#5623–2–COLOR
23) Four Way Switch	#5624–2–COLOR
24) Pilot Light Switch "On"	#5628–2–COLOR
25) Pilot Light Switch "Off"	#5631–2–COLOR
26) Projection Screen Switch	#5657–2–COLOR
27) Low Voltage Momentary Switch	#5657–2–COLOR
28) Keyed Switch	#1221–2L–COLOR (Non–Decora)
29) Door Jam Switch	#1865–COLOR

b. Use of dedicated receptacles is required where plans depict a branch circuit supplying only a single simplex or duplex receptacle. Use of controlled receptacles is required where depicted on plans – See controlled receptacle specifications for additional information.

2. I.G. (isolated ground) receptacle bodies shall be of a basic color specified above with an orange triangle to symbolize isolated ground.

3. H.G. (hospital grade) receptacle bodies shall be of a basic color specified above with a green circle to symbolize hospital grade.

4. When shown circuited with an I.G. conductor, all receptacles shall be of the I.G. type. As an example, a NEMA L6-30R denoted on the plans and shown circuited with an I.G. conductor shall be an I.G. version of the receptacle.

5. Wiring devices located in wood finished areas shall generally be black unless otherwise indicated by the Architect.

6. Wiring devices located in mirrors shall generally be white with stainless steel cover plates unless otherwise indicated by the architect.

7. In addition to other device requirements listed elsewhere in this specification, 125V (volt), 15A (amp) and 20A Tamper-Resistant wiring devices shall be provided as follows:

a. In dwelling units per NEC, or CEC where adopted, **Article 210.52**.

b. In pediatric care areas per NEC, or CEC where adopted, **Article 517.18 (C)**.

c. In child care or day care facilities.

d. In wet and/or exterior locations.

8. Wiring devices shall be listed "hospital grade", and so identified, in the following locations:

a. Patient bed locations within general care areas per NEC, or CEC where adopted, **Article 517.18(B)**.

b. Patient bed locations within critical care areas per NEC, or CEC where adopted, **Article 517.19(B)**.

c. In "other-than-hazardous" anesthetizing locations per NEC, or CEC where adopted, **Article 517.61(C)(2)**.

9. Wiring device cover plates located on recessed boxes shall be commercial grade nylon. Plate color shall match wiring device color UON on plans. Cover plates utilized on surface mounted boxes shall be metal. Plastic cover plates are unacceptable.

10. Except as otherwise noted, all wiring device plates on the project shall be labeled with panel and circuit number(s) utilizing a Brother P-Touch labeling system with 1/2" tape (yellow on black) or equal by Herman-Tellerman or Panduit. Locate label on the concealed side of the wiring device plate. Handwritten labels are unacceptable.

11. The Contractor shall provide duplex receptacle outlets in the appropriate configurations necessary to comply with applicable energy code requirements for controlled receptacles and as shown on plans. All wiring devices indicated to be controlled receptacles shall be NEMA-approved, electrical code-compliant with factory markings on the face of the receptacle(s) with the word "Controlled" or utilize further markings and symbols to indicate which receptacles on each outlet is/are controlled. Stickers, field-applied markings or other non-permanent markings are not acceptable. Where a GFCI receptacle outlet is required to be controlled, provide an adjacent controlled duplex receptacle outlet connected on the load side of the GFCI outlet. Generally, one receptacle in a duplex receptacle outlet is required to be controlled. It may be the lower receptacle or upper receptacle based on manufacturer offering. However, the controlled receptacle location within a controlled receptacle outlet shall remain consistent throughout the project. Where an existing duplex receptacle outlet is required to be controlled, provide a new wiring device with the appropriate control configuration necessary to comply with plans. All controlled receptacles shall be connected to a branch circuit controlled by an occupancy sensor-based or relay panel lighting control system. Acceptable manufacturers are Leviton, Pass and Seymour & Hubbell.

12. The following wiring device plates shall have custom engraving:

a. Key operated switches, switches with pilot lights, and switches for the control of motors, heaters and ventilators. Engraving shall be black and occur on the exposed side of the plate indicating the motor, heater, or ventilator controlled.

b. Receptacles on optional standby generator and/or UPS power shall have custom engraved plates with the words "Generator" or "UPS" in black letters. In addition, where located in telecommunications closets, IDFs, server rooms, data centers, labs (wet, dry or electronic) indicating panel board and circuit number.

c. For Health Care Facilities, provide custom engraved device cover plates, for all devices, indicating panel board and circuit number. Devices served by normal/utility power circuits shall have black lettering; devices served by essential electrical system power circuits shall have red lettering.

d. All stainless steel and nylon device plates shall be engraved using a rotary engraving process except for black lettering on stainless steel device plates which may be accomplished via laser etching process. All lettering shall be 3/16" high. Provide a dimensioned submittal drawing detailing a typical device faceplate with engraving.

G. Weatherproof Outlet Covers/Assemblies: All Receptacles identified as weatherproof on the drawings shall be weather-resistant, tamper-resistant, GFCI type and equipped as follows:

1. Type WP-A: Recessed wall box with a hinged, lockable, cast aluminum, self-closing, gasket-equipped door that is wet location-listed raintight while "in use". Unit shall comply with NEC, or CEC where adopted, **Article 406.9(A) and (B)**. UON on drawings, provide a minimum of 2 separate compartments suitable for installation of power receptacles, AV or communications outlets. Additionally, unless otherwise noted on drawings, provide the following:

a. A 20A Weather-resistant, tamper-resistant, GFCI duplex receptacle in the first compartment. Provide branch circuiting per plans.

b. A blank metal plate suitable for field installation of power, AV or communications devices in the second compartment.

c. Where indicated on plans as requiring data, AV, or other low voltage service outlet, provide min. 3/4" C.O. with pull string routed from the second compartment to nearest low voltage pull box. Where shown mounted in a building wall, any blank/unused compartment shall be equipped minimum 3/4" C.O. with pull string routed to the nearest accessible ceiling space.

d. See wiring device section of this specification for additional wiring device plate cover labeling requirements.

e. (1) key minimum per device (minimum of (2) per project) to the Owner's project manager upon completion of project.

f. Custom color powder coat finish as selected by Architect – Include all costs in base bid for same.

g. In locations with sufficient wall depth, provide 6" wide x 6" tall x 5-1/2" deep recessed wall box (C.W. Cole #TL310-WCS-K1-CUSTOM COLOR).

h. In locations utilizing shallow stud walls construction or other walls of insufficient depth, provide 10-3/4" wide x 7-3/8" tall x 3-7/8" deep recessed wall box (C.W. Cole #TL310-WCS-SH-K1-CUSTOM COLOR).

i. See drawings for additional details.

2. Type/Subscript WP-B: Wet location-listed raintight while "in use" cast copper-free aluminum lockable cover with baked aluminum lacquer finish and one-gang, weather-resistant, tamper-resistant GFCI receptacle. Hubbell WP26E series. Polycarbonate covers are unacceptable. Unit shall comply with NEC, or CEC where adopted, **Article 406.9(A) and (B)**. Contractor shall powder coat cover assembly to a custom color where receptacle locations are deemed by the Architect to be in aesthetically sensitive or public spaces. Custom color as selected by Architect.

3. Type WP-C: (C.W. Cole #TL310-WCS-PED-ADA-K1-CUSTOM COLOR or #TL310-WCS -PED-K1-CUSTOM COLOR) pedestal device box with a hinged, lockable, cast aluminum, self-closing, gasket-equipped door that is wet location – listed raintight while "in use". Unit shall comply with NEC, or CEC where adopted, **Article 406.9(A) and (B)**. UON on drawings, provide a minimum of 2 separate compartments suitable for installation power receptacles, AV or communications outlets. Additionally, unless otherwise noted on drawings, provide the following:

a. A 20A weather-resistant, tamper-resistant, GFCI duplex receptacle in the first compartment. Provide branch circuiting per plans.

b. A blank metal plate suitable for field installation of power, AV or communications devices in the second compartment.

c. Where indicated on plans as requiring data, AV or other LV outlet, provide min. 3/4" C.O. with pull string routed from the second compartment to nearest low voltage pull box.

d. See wiring device section of this specification for additional wiring device plate cover labeling requirements.

e. 1 key minimum per device (minimum of 2 per project) to the Owner's project manager upon completion of project.

f. Include all costs in base bid for ADA version (22.5" tall) of pedestal box. Prior to ordering material, contractor shall coordinate with architect and/or AHJ to determine which pedestal box locations do not require ADA compliance and may be changed to the standard (11.5" tall) version of the pedestal box.

g. Custom color powder coat finish as selected by Architect. Include all costs in base bid for same.

h. See drawings for additional details.

4. Type/Subscript WP-D: Damp location-listed (not-raintight-in-use) cast copper-free, pad lockable, die-cast aluminum cover with baked aluminum lacquer finish and one gang GFCI receptacle. Hubbell/rayco 502?/503? Series. Polycarbonate covers are unacceptable. Unit shall comply with NEC, or CEC where adopted, **article 406.9(A) and (B)**. Custom color powder coat finish as selected by Architect. Include all costs in base bid for same.

H. Motor Controllers/Starters: See drawings for motorized equipment schedules and specifications.

I. Circuit Breakers.

1. Service entrance circuit breakers smaller than 400A frame shall be thermal-magnetic trip with inverse time current characteristics unless otherwise indicated below. Service entrance main circuit breakers and main circuit breakers, 400A frame and larger shall be 100% rated, solid-state type as outlined in this specification. All other service entrance circuit breakers, 400A frame and larger, shall be 100% rated, solid-state type as outlined in this specification.

2. All non-service entrance circuit breakers 225A and larger shall be thermal magnetic type and have continuously adjustable instantaneous pick-ups of approximately 5 to 10 times trip rating. Breakers shall have either tamper-resistant rating dials or easily changed trip rating plugs with trip ratings as indicated on the Drawings. Rating plugs shall be interlocked so they are not interchangeable between frames. Additionally, all non-service entrance circuit breakers, 600A frame and larger, located in 480V 3 phase, 3-wire or 277/480V, 3 phase 4-wire switchgear, distribution boards, panel boards or busway plugs, shall be solid state, 100% rated. Breaker shall have built-in test points for testing long delay, short delay and instantaneous, and ground fault (where shown) functions of the breaker by means of a 120V operated test kit. Contractor shall utilize a test kit capable of testing all breakers 400A and above – at the Engineer's request.

3. All non-service entrance circuit breakers less than 225A shall be molded plastic case, air circuit breakers conforming to UL 489. Provide breakers with thermal magnetic trip units, and a common trip bar for two- or three-pole breakers, connected internally to each pole so tripping of one pole will automatically trip all poles of each breaker. Provide breakers of trip-free and trip-indicating bolt-on type, with quick-make, quick-break contacts. Provide single two- or three-pole breaker interchangeability. Provide padlocking device for circuit breakers as shown on the Drawings.

4. Where a Current Limiting Circuit Breaker (CLCB) is indicated on drawings or as required elsewhere in this specification, provide a UL listed current limiting thermal magnetic circuit breaker(s) UON. An independently operating limiter section within a molded case is not allowed. Coordinate CLCB ratings as required to protect electrical system components on the load side of the CLCB to include, but not limited to, protecting automatic transfer switches, panel boards and lighting control panels.

5. Where a solid state circuit breaker is indicated on drawings or as required elsewhere in this specification, provide a solid state circuit breaker with minimum five function complete with built-in current transformers. The five functions shall be independently adjustable and consist of Overload/Long Time Amp Rating, Long Time Delay, Short Time Delay, Short Circuit/Instantaneous Pick-up, but may also include Shunt Trip and/or Ground Fault if so indicated on the Drawings. Rating plugs shall be interlocked so they are not interchangeable between frames. Breaker shall have built-in test points for testing long delay and instantaneous, and ground fault (where shown) functions of the breaker by means of a 120V operated test kit. Contractor shall utilize a test kit capable of testing all breakers 400A and above, at the Engineer's request.

6. Circuit breakers, 1200A Frame or larger, or circuit breakers with sensors or adjustable trip settings, 1200A or larger, shall be equipped with an Energy Reducing Maintenance Switch that complies with NEC, or CEC where adopted, 240.87 (B) (3) unless specified elsewhere with an alternate arc energy reduction method allowed by this same code section.

7. Ground Fault Interrupting Breakers: Provide with molded plastic case, air circuit breakers, similar to above with ground fault circuit interrupt capability, conforming to UL Class A, Group 1.

8. Arc Fault Interrupting Breakers: Provide with molded plastic case, air circuit breakers, similar to above with arc fault circuit interrupt capability, conforming to UL 1699. Provide on all dwelling-unit circuits supplying bedrooms, sleeping quarters, etc., as required to comply with NEC, or CEC where adopted, **Article 210.12.**

9. Tandem or half-sized circuit breakers are not permitted.

10. Series-Rated Breakers: UL listed series-rated combinations of breakers can be used to obtain panelboard-interrupting ratings shown on Drawings. If series-rated breakers are used, switchboards, distribution boards and panelboards shall be appropriately labeled to indicate the use of series rated breakers. Shop drawing submittal shall include chart of UL listed devices which coordinate to provide series rating.

11. Circuit breakers shall be standard interrupting construction. Panelboards shall accept standard circuit breakers up to 100A.

12. Circuit breaker handle accessories shall provide provisions for locking handle in the on or off position.

13..Shunt trip equipped circuit breakers shall be provided on all elevator feeders.

14. Temperature compensating circuit breaker(s) shall be provided when located in outdoor enclosure(s) or when located in an enclosure subject to high ambient heat due to nearby industrial processes, etc.

15. Provide 75 degree Celsius-rated conductor lugs/lug kits as required on all circuit breakers to accept conductor quantities and sizes shown on drawings.

16. All circuit breaker terminations shall be suitable for use with 75 degree Celsius ampacity conductors. Listed, dual-rated pin terminals, straight or offset, are acceptable for use to in accommodating oversized or parallel conductor installations.

17. Circuit breakers serving Fire Alarm or Central Monitoring panels and power supplies shall be red in color and lockable in the "ON" position.

J. Disconnect Switches:

1. Non-fusible or fusible, heavy-duty, externally operated horsepower-rated, 600V A.C: Provide NEMA 3R, lockable enclosures for all switches located on roof tops, in wet or damp areas and in any area exposed to the elements.

2. Fusible switches shall be Class "R" when 600A or less, and Class "L" when greater than 600A.

3. Amperage, horsepower, voltage, and number of poles per drawings: All shall be clearly marked on the switch nameplate.

4. Provide the Owner's project manager with one (1) spare set of fuses and two (2) sets of fuse clips/fuses for every set of fuses on the project.

K. Fuses:

1. Provide fuses at all locations shown on the Drawings and as required for supplemental protection:

a. Fuses shall be manufactured by Bussmann, Shawmut or equal.

b. All fuses shall be the product of a single manufacturer.

2. Main and Feeder Protection:

a. Protective devices rated greater than 600A: Provide Bussman Hi-Cap fuses, Class L, current-limiting, having an interrupting rating of 200,000A RMS.

b. Protective devices rated 600A or less: Provide Bussman Class R fuses, Class RK series current-limiting fuses, having an interrupting rating of 200,000A RMS.

3. Motor Protection:

a. Where rating of protective device is greater than 600A: Provide Bussman Hi-Cap fuses, Class L, current-limiting, having an interrupting rating of 200,000A RMS.

b. Where rating of protective device is 600A or less: Provide Bussman Class RK series current-limiting fuses, having an interrupting rating of 200,000A RMS.

c. Where fuses feeding motors are indicated, but not sized: It shall be the responsibility of the Contractor to coordinate the fuse size with the motor to provide proper motor running protection.

d. When rejection type fuses are specified (Class RK series) the fuse holder of all switches (specified in other Sections) shall be suitable for the fuses provided.

L. Cable Tray, Flexible Cable Tray and/or Cable Runway:

1. See drawings for Cable Tray, Flexible Cable Tray and/or Cable Runway specifications.

M. Uninterruptible Power Systems (UPS):

1. See drawings for UPS schedules and specifications.

N. Power Distribution Units (PDU):

1. See drawings for PDU schedules and specifications.

O. Generator Systems:

1. See drawings for Generator schedules and specifications.

P. Transfer Switches:

1. See drawings for Transfer Switch schedules and specifications.

Q. Lighting Control/Dimming Systems:

1. See drawings for Lighting Control and/or Dimming Systems schedules and specifications.

2. Wall box dimmers shall be rocker-type as manufactured by Lutron (no known equal except as noted below). Dimmers and dimmer faceplates shall match the color of adjacent switches and faceplates. Dimmers and dimmer faceplates in wood finished areas shall generally be black unless otherwise indicated by the Architect. The Contractor shall obtain written approval of the Architect regarding final dimmer and dimmer faceplate color selection prior to ordering material. Multiple dimmers/switches shall be ganged together with a common cover plate. Provide dimmers as follows:

a. Incandescent:	Lutron DIVA DV-10P or DV-103P (3-way) (1000 Watt max.)
b. Electronic Low Voltage:	Lutron DIVA DVELV-300P or DVELV-303P-(3-way) (300 Watt)
c. Magnetic Low Voltage:	Lutron DIVA DVLV-10P or DVLV-103p (3-way) (800 Watt max.)
d. Fluorescent (3-Wire):	Lutron DIVA DVF-103P (single/3way, 8A @ 120V) or DVF-103P-277 (single/3way, 6A @ 277V)
e. Fluorescent (0-10V):	Lutron DIVA DVTV with PP-???H Power Pack
f. Fluorescent (Lutron Tu-Wire):	Lutron DIVA DVFTU-5A3P with Lutron H.P. module where required.
g. LED (0-10V):	Lutron DIVA DVTV with PP-???H Power Pack
h. Screw Base CFL/LED:	Lutron DIVA DVCL-153P
i. Fan Control:	Lutron DIVA DVFSQ-F (1.5A @ 120V max, 3 speed, single pole, 3-way)

3. Contractor shall verify if dimmer(s) requires derating when ganged. Contractor shall provide, and provide connections to, additional Lutron Power Modules, Lutron Power Packs, and/or Lutron Interface Modules where required to accommodate loads higher than dimmers standard or derated load-carrying capacity. Note – contractor may provide a Lutron recommended dimmer type (typically a #DVF-103P unit) to control the necessary power modules or interface devices.

R. Fire Alarm System/Central Monitoring System:

1. See drawings for Fire Alarm System or Central Monitoring System specifications.

S. Surge Protective Device (SPD):

1. See drawings for SPD specifications.

T. Conduit:

1. Galvanized Rigid Conduit (GRC) shall be full weight threaded type steel. Steel conduit shall be protected by overall zinc coating to inside and outside surfaces, applied by the hot dip, metallizing, or sherardizing process.

2. Intermediate Metal Conduit (IMC) shall be hot-dipped galvanized in accordance with UL 1242, and meet Federal Specification WWC-581 (latest revision).

3. Electrical Metallic Tubing (EMT) shall be zinc-coated steel with baked enamel or plastic finish on inside surfaces except as noted below. EMT shall be dipped in a chromic acid bath to chemically form a corrosion-resistant protective coating of zinc chromate over galvanized surface.

4. Flexible metal conduit shall be constructed of aluminum or hot-dipped galvanized steel strips wound spirally with interlocking edges to provide greatest flexibility with maximum strength. Interior surfaces shall be smooth and offer minimum drag to pulling in conductors. Used only as directed in writing by the Engineer with the exception of 400 Hz feeders and 400 Hz branch circuits which shall be run in flexible aluminum conduit.

5. Liquid-tight conduit (Seal-Tite) shall be galvanized steel flexible conduit as above except with moisture and oil-proof jacket, pre-cut lengths and factory-installed fittings. For outdoor installations and motor connections only unless otherwise noted on drawings.

6. Factory assembled, or off-site assembled wiring systems (such as Metal Clad (MC) Cable, Type AC Cable, Type NM Cable, Type BX Cable, etc.) shall not be used unless otherwise indicated in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing.

7. When approved for use in the Allowed Specification Deviations Section, generally located on the symbols list drawing, MC cables shall be allowed for lighting branch circuits (homeruns shall be EMT), receptacle branch circuits (homeruns shall be EMT) and poke-thru fed systems furniture homeruns. MC shall not be used where exposed, except for a maximum 6' length for final connections to light fixtures, or terminate in electrical panelboards or distribution boards. Equipment ground conductor shall be green. Isolated ground conductor shall be green with yellow stripe. Provide 600V rated aluminum or lightweight steel interlocking armor Metal Clad (MC) cable with copper conductors, THHN (90 degree C) insulation, and integral equipment grounding conductor and isolated grounding conductor as required. Type AC cable listed for use in patient care areas for non-essential electrical system branch circuits per NEC, or CEC where adopted, **Article 517.13** shall be required in such areas in lieu of MC cable. Type AC and MC cable shall not be used for essential electrical system branch circuits. MC cable shall be manufactured to Underwriters Laboratories Standard 1569. See Part 3 – Execution in this specification for additional installation requirements.

8. Nonmetallic Flexible Tubing (ENT) shall not be used unless otherwise indicated in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing. Use of ENT, if allowed, is strictly limited to use in CMU walls and parking structure decks or as directed in writing by the Engineer. See Execution section of this specification for additional installation requirements.

9. Non-Metallic Conduit:

a. Polyvinyl chloride (PVC) rigid conduit, Schedule 40, Type II for underground installation only with solvent welded joints, conforming to UL requirements, listed for exposed and direct burial application.

b. Conduit and fittings shall be produced by the same manufacturer.

10. Fire-rated MC Cable:

a. 2-hour fire-rated, polymer insulated 600V MC cable listed and conforming to UL 2196 and UL 1569 requirements for installation as an Electrical Circuit Protective System for use in complying with NEC, or CEC where adopted, **Articles 695 and 700.** Where adopted, cable sheath shall be suitable for use as a NEC or CEC equipment grounding conductor, and shall be listed for use in wet locations to 90 degrees C (Raychem or equal).

b. Cable connectors shall be brass MC connectors.

2/27/2019

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ELECTRICAL
STATE OF CALIFORNIA

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

SPECIFICATIONS

E-8.0

U. Fittings:

1. Condulet type fittings shall be smooth inside and out, taper threaded with integral insulating bushing and of the shapes, sizes and types required to facilitate installation or removal of wires and cables from the conduit and tubing system. These fittings shall be of metal, smooth inside and out, thoroughly galvanized, and sherardized cadmium plated.
2. Metallic condulet covers shall have the same finish as the fitting and shall be provided for the opening of each fitting where conductors do not pass through the cover.
3. Connector, coupling, locknut, bushings and caps used with rigid conduit shall be steel, threaded and thoroughly galvanized. Bushings shall be insulated.
4. UON all interior EMT fittings, connectors and couplings installed in concealed locations, areas not considered to be wet or damp locations by the AHJ, or areas not subject to physical damage, shall be steel, zinc or cadmium plated, threadless, compression, steel locking ring type with insulated throat. Where suitable for use, steel set screw fittings are allowed for trade sizes of 2" and smaller. Insulated throat is not required for fittings, connectors and couplings 1" and smaller.
5. All interior and exterior EMT fittings, connectors and couplings, 2" and smaller, installed in exposed or concealed locations that are considered by the AHJ to be wet or damp locations, shall be raintight–listed, steel, zinc or cadmium plated, threadless, compression, steel locking ring type with insulated throat. If raintight–listed, EMT fittings, connectors and couplings are unavailable for a given trade size or if conduit is installed in an area subject to damage – provide rigid metallic or intermediate metallic conduits, fittings, connectors and couplings as required.
6. Flexible steel conduit connectors shall be a malleable iron clamp or squeeze type or steel twist–in type with insulated throat. The finish shall be zinc or cadmium plating.
7. Conduit unions shall be "Erickson" couplings, or approved equal. The use of running threads will not be permitted.

V. 600V Conductors – Wire and Cable:

1. All conductors shall be copper. Provide stranded conductor for #10 AWG and larger or when making flexible connections to vibrating machinery. Use compression "fork" type connectors or transition to solid conductors when connecting to switches, receptacles, etc.
2. Type THHN/THWN–2 thermoplastic, 600V, UL approved, dry and wet locations rated at 90 degrees Celsius, for conductors of all sizes from #12 AWG up to and including 1000 kcmil. RHH/RHW insulation is allowed only to provide an Electrical Circuit Protective System to comply with NEC, or CEC where adopted, **Articles 695 and 700**.
3. Wire and cable shall be new, manufactured not more than six (6) months prior to installation, shall have size, type of insulation, voltage rating and manufacturer's name permanently marked on outer covering at regular intervals.
4. Wire and cable shall be factory color–coded by integral pigmentation with a separate color for each phase and neutral. Each system shall be color–coded and it shall be maintained throughout.
5. Systems Conductor Color Coding:
   a. Power 208/120V, 3PH, 4W:
      1) Phase A = Black
      2) Phase B = Red
      3) Phase C = Blue
      4) Neutral = White or White with Phase Color Tracer
      5) Switchlegs = Purple (Switchlegs shall also be identified separately by numerical tags)
      6) Travelers = Purple with Black stripe or Pink
   b. Power 480/277V, 3PH, 4W:
      1) Phase A = Brown
      2) Phase B = Orange
      3) Phase C = Yellow
      4) Neutral = Grey or Grey with Phase Color Tracer
      5) Switchlegs = Purple (Switchlegs shall also be identified separately by numerical tags).
      6) Travelers = Purple with Black stripe or Pink.
   c. Ground Conductors: Green
   d. Isolated Ground Conductors: Green with continuous Yellow stripe
   e. Fire Alarm System: As recommended by the manufacturer
6. All color–coding for #12 through #6 AWG conductor shall be as identified above. Conductors #4 AWG and larger shall be identified by utilizing phase tape at each termination.
7. No conductors carrying 120V or more shall be smaller than #12 AWG.
8. Aluminum conductors shall not be used.
9. Wire–pulling compounds used as lubricants in installing conductors in raceways shall only be "Polywater J". No oil, grease, graphite, or similar substances may be used. Pulling of #1/0 or larger conductors shall be done with an approved cable pull machine. Other methods; e.g. using vehicles or block and tackle to install conductors are not acceptable.

W. Medium Voltage Conductors (greater than 600V):

1. See drawings for Medium Voltage Cable Schedule and Specifications.

X. Junction and Pullboxes:

1. For interior dry locations, boxes shall be NEMA 1 galvanized one–piece drawn steel, knockout type, with removable, machine screw secured covers.
2. For outside, damp or surface locations, boxes shall be NEMA 3R heavy cast aluminum or cast iron with removable, gasketed, non–ferrous machine screw secured covers.
3. For in–grade applications, junction and pull boxes shall be pre–cast concrete or molded fiberglass manufactured by Christy, Brooks–Jensen, or Utility Vault Co. Fiberglass boxes shall:
   a. Be used only in landscape planter areas that are not subject to damage from lawnmowers, tractors and other machinery.
   b. Not be used in lawn or turf areas.
   c. Not exceed 11" W x 17" L in size unless required to be larger to meet code requirements.
4. All boxes shall be sized for the number and sizes of conductors and conduits entering the box and equipped with plaster rings where required.
5. All boxes located in traffic areas shall be traffic rated.

Y. Outlet Boxes:

1. For fixtures, boxes shall be galvanized, one–piece drawn steel, knockout type equipped with 3/8" fixture studs and plaster rings where required.
2. For convenience outlets, wall switches, or other devices, outlet boxes shall be galvanized one–piece drawn steel, knockout type 4" x 4" x 2–1/8" minimum size with plaster rings as required.
3. For locations where standard boxes are not suitable due to number and size of conduit to be terminated, special boxes shall be designed to fit space or meet other requirements and submitted for approval.
4. For exposure to weather, damp locations, or surface mounting, outlet boxes shall be heavy cast aluminum or cast iron with threaded hubs; covers shall be watertight with gaskets and non–ferrous screws.
5. Outlet boxes used for support of ceiling fans shall be galvanized, one–piece drawn steel, knockout type equipped with bracing bars and plaster rings where required and listed for ceiling fan support use. Such boxes shall be labeled and capable of supporting ceiling fan weights up to 70 pounds.
6. See drawings for floor box installation notes and specifications.

Z. Plywood Backboards: Where indicated for telephone or communications system terminals or other equipment assemblies, provide backboards of size indicated. Use 3/4" thick x 8' tall (length per plans), Douglas Fir, void–free, kiln–dried, fire–rated plywood finished on one side and prime coat painted on all surfaces with finish coat of enamel paint, color by architect. Leave one (1) fire–rating stamp/sheet exposed for inspection.

AA. Terminal Cabinets:

1. Terminal cabinets shall be fabricated of hot dipped galvanized code gauge sheet metal for flush or surface mounting, complete with barriered sections, a door for each vertically barriered section, and sizes as indicated on plan. Doors shall be hinged and lockable. Locks shall be keyed to match the branch circuit panelboards. Terminal cabinet trims shall match the branch circuit panels.
2. Provide each terminal cabinet with a full size mounting backplate.
3. Terminal cabinets shall be installed complete with full–length skirts of the same construction and finish as the terminal cabinet.
4. Where mounted outdoors, terminal cabinets shall be NEMA 3R, weatherproof complete with gaskets and required sealant to prevent moisture from entering the terminal cabinet.
5. All terminal cabinets and terminal cabinet barriered sections shall be labeled by the cabinet or cabinet section use (i.e. CATV, Security, etc.). Labels shall be Micarta type as specified elsewhere in these specifications. Unless otherwise noted, all termination blocks and cables shall be labeled per ANSI/EIA 606 standard.

BB. Painting: Terminal cabinets, panels, junction boxes, pull boxes, etc., and conduit installed in public view shall be painted with colors selected by the Architect to match the subject surface. Refer to painting section of the specifications for additional requirements.

CC. Seismic Design, Certification, and Anchoring of Electrical Equipment:

1. Contractor shall include all costs in the base bid for labor, materials, all special inspections and structural engineering design necessary to meet the Seismic Design Requirements for Non–structural Components **(Chapter 13, ACE SEI 7–05 Minimum Design loads for Buildings and Other Structures) as required by IBC, or CBC where adopted, Section 1708** and as related to the installation of all electrical equipment furnished under this contract. See Specific Project Site Seismic Criteria on architectural and/or structural plans which include Building Occupancy Category, Seismic Design Category, Design Spectral Response Acceleration (S_{DS}), Height factor ratio (z/h) and Site Class. Non–structural Component Importance Factor (I_p) for a particular component shall be determined based on the following criteria:
   a. I_p=1.0: Non–life safety, Non–structural Components in an Occupancy Category IV Facility not required for continued operations of the facility or in any other Occupancy Category Facility where component failure will not impair continued operation of the facility.
   b. I_p=1.5: Designated Seismic Systems are those non–structural components in any Occupancy Category IV facility (except as noted above) or that are a part of any code–defined Critical, Life Safety, Emergency and Legally Required Standby Electrical System. Additionally, those non–structural components containing hazardous materials shall be classified as Designated Seismic Systems. While Designated Seismic Systems are generally identified on the plans, they may include items such as Generators, Automatic Transfer Switches, UPS units and all associated electrical distribution equipment and components necessary for the designated seismic system to form a complete and operable system. The Contractor shall ultimately be responsible for identifying Designated Seismic Systems. For any electrical component either identified on the plans or determined by the contractor to be a Designated Seismic System, all line and load side electrical distribution systems supporting that Designated Seismic System (including, but not limited to, feeders, panel boards switchboards, transformers, all related component supports and attachments, etc.) shall be considered a part of the designated seismic system for the purposes of code–compliance and seismic certification.
   c. z/h – Height factor ratio: See plans for respective equipment locations.
2. Provide a delegated–design submittal for each of the following seismic–restraint systems to be used as required:
   a. Restraint Channel Bracings consisting of MFMA–4, shop–or field–fabricated bracing assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end, with other matching components, and with corrosion–resistant coating; rated in tension, compression, and torsion forces.
   b. Restraint Cables consisting of ASTM A 603 galvanized–steel cables. End connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service, with a minimum of two clamping bolts for cable engagement.
   c. Seismic–Restraint Accessories consisting of hanger rod/hanger rod stiffener assemblies, multifunctional steel connectors for attaching hangers to rigid channel bracings and/or restraint cables, bushings for floor and wall–mounted equipment, anchor bolts, and resilient isolation washers and bushings.
   d. Mechanical Anchor Bolts consisting of drilled–in and stud–wedge or female–wedge type in 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.
   e. Adhesive Anchor Bolts consisting of drilled–in and capsule anchor system containing resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide specific LEED–compatible, environmentally–friendly resins and adhesives on all LEED projects. 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.
3. Submittal shall include design calculations and details for selecting seismic restraints complying with performance requirements, design criteria, and analysis data signed and sealed by the contractor's structural engineer responsible for their preparation. Calculations shall include, but not be limited to, static and dynamic loading caused by equipment weight, operation, and seismic and, if applicable, wind forces required to select seismic and, if applicable, wind restraints and for designing vibration isolation bases. Provide seismic and wind–restraint detailing to support system selection, arrangement of restraints, attachment locations, methods, and spacings with all components identified to include their strengths, directions and values of forces transmitted to the structure during seismic events and association with vibration isolation devices. Sizes of components shall be selected so strength will be adequate to carry present static and seismic loads to accommodate 25% spare future capacity within specified loading limits.
4. Any pre–approval and evaluation documentation shall have a California Office of Statewide Health Planning and Development (OSHPD) Special Seismic Certification Preapproval (OSP) demonstrating horizontal and vertical load testing and analysis showing maximum seismic–restraint ratings, by ICC–ES or another agency acceptable to authorities having jurisdiction. 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) that support seismic–restraint designs must be signed and sealed by a qualified professional engineer.
5. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified elsewhere in the project specifications.
6. 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 connection is terminated to equipment that is anchored to a different structural element from the one supporting them as they approach equipment. Flexible connection limitations of the NEC, or CEC where adopted, shall apply.
7. Install seismic–restraint devices using methods approved by OSHPD or an agency acceptable to authorities having jurisdiction providing required submittals for component.
8. Multiple Raceways or Cables: Secure raceways and cables to trapeze member with clamps approved for application by OSHPD or an agency acceptable to authorities having jurisdiction.
9. The contractor shall engage a qualified testing agency to perform tests and inspections as listed in other Project Specifications, but as a minimum shall include at least four of each type and size of installed anchors and fasteners selected by Architect. Schedule tests 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. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load–spreading members as required. Test to 90 percent of rated proof load of device. Prepare and submit test and inspections reports.

DD. Trenching and Backfilling: Contractor shall be responsible for trenching and backfilling. Refer to applicable trenching and backfilling specifications for complete requirements.

PART 3 – EXECUTION

3.1 PREPARATION AND INSTALLATION

A. Installation of Conduit and Outlet Boxes:

1. All conduit installed in the dry walls or ceilings of a building shall be steel tube (EMT), aluminum tube (EMT), or intermediate Metal Conduit (IMC). Flexible conduit shall not be used in lieu of EMT, IMC or rigid conduit except as noted herein.
2. Galvanized rigid conduit (GRC) or intermediate metal conduit (IMC) shall be used as follows:
   a. When noted on the drawings.
   b. When considered exposed to damage by the local AHJ.
   c. When installed in wet or damp locations and of a trade size where listed–raintight fittings, connectors, couplings, etc. are unavailable.
   d. When required by NEC or CEC **Article 517.13**
   e. When installed in concrete and masonry. The use of ENT in CMU walls and parking structures may be allowed only as directed in writing by the Engineer. Request for ENT substitution must be made prior to bid and in accordance with pre–bid substitution request requirements of these specifications.
3. Intermediate metal conduit (IMC), is approved for use in all locations as approved for GRC or EMT and in accordance with NEC, or CEC where adopted, **Article 342**.
4. Flexible steel conduit shall only be permitted to be used at light fixture outlets and connections to vibrating electrical equipment. All flexible steel conduit runs shall be less than 6'–0". Except when concealed in walls or other structural elements, all outdoor installation shall be made using liquid–tight flex with approved fittings. Include a separate insulated green ground conductor sized per NEC in each conduit. Other uses of flexible conduit shall be allowed only as approved in writing by the Engineer.
5. Flexible liquid–tight conduit shall be installed in lieu of the flexible steel where required by NEC, or CEC where adopted, in damp and wet location, where exposed to weather, in refrigerated area (65 Deg. F or less), and/or between seismic joints. All rotating electrical equipment shall be supplied with flexible, liquid–tight conduit with appropriate slack and shall not exceed thirty–six (36) inches. Include a separate insulated green ground conductor sized per NEC in each conduit. Other uses of liquid–tight flexible conduit shall be allowed as approved in writing by the Engineer on a case by case basis.
6. Rigid metallic conduit installed underground or embedded in concrete shall be 1" trade size minimum and shall be wrapped with 20 mil polyvinyl chloride plastic tape. PVC conduit installed underground or imbedded in concrete shall be 3/4" minimum trade size.
7. Where required for providing an Electrical Circuit Protective System to comply with NEC, or CEC where adopted, **Articles 695 and 700**, utilize UL Listed 2–hour fire–rated, MC cable or UL Listed 2–hour fire–rated RHH/RHW conductors in conduit.
8. Conduit shall be run so as not to interfere with other piping, fixtures or equipment.
9. The ends of all conduits shall be cut square, carefully reamed out to full size and shall be shouldered in fitting.
10. No running threads will be permitted in locations exposed to the weather, in concrete or underground. Special union fittings shall be used in these locations.
11. Where conduit is underground, under slabs or grade, exposed to the weather, or in wet locations, make joints liquid tight and gas tight.
12. All metal conduit in masonry and concrete and where concealed under floor slabs shall have joints painted with thread compound prior to makeup.
13. PVC conduit shall not be run in walls except where approved by the Engineer prior to bid in limited instances that may include concrete or CMU walls used in site retaining, parking structures, or exterior equipment yard or enclosure walls, etc.
14. Where conductors enter a raceway or a raceway in a cabinet, pull box, junction box, or auxiliary gutter, the conductors shall be protected by a plastic bushing type fitting providing a smoothly rounded insulating surface.
15. Where conduit extends through roof to equipment on roof area, the Contractor shall provide flashing material compatible with the roofing system as required by the roofing specifications or as required by the Owner's roof warranty. This flashing shall be delivered to the roofing Contractor for installation. The actual location of all such roof penetrations and outlets shall be verified by the Architect/Owner. Contractor to verify type of flashing prior to bid and include all costs.
16. All conduit shall be supported at intervals not less than 6'–0" and within 12" from any outlet and at each side of bends and elbows. Conduit supports shall be galvanized, heavy stamped, two–hole conduit clamp properly secured.
17. Where conduit racks are used, the rack shall consist of two piece conduit clamps attached to galvanized steel slotted channels, properly secured via threaded rods attached directly to the building structure.
18. Nail–in conduit supports, one–piece set screw type conduit clamps or perforated iron for supporting conduit shall not be used.
19. Seismic Conduit Support:
   a. All conduit shall be supported in such a manner that it is securely attached to the structure of the building. Attachment is to be capable of supporting the tributary weight of conduit and contents in any direction. Maximum spacing of support and braces are to be as follows:

CONDUIT SIZE	MAXIMUM SPACING
1/2" to 3"	6'–0"
3–1/2" to 4"	8'–0"

20. All conduit runs shall be installed parallel or perpendicular to walls, structural members, or intersection of vertical planes and ceilings. Field made bends and offset shall be avoided where possible. Crushed or deformed raceway shall not be installed.
21. Open knockouts in outlet boxes only where required for inserting conduit.
22. Locate wall outlet of the same type at same level in all rooms, except where otherwise noted.
23. Outlet boxes on metal studs shall be attached to metal hangers, tack welded or screwed to studs; On wood studs attachment shall be with wood screws, nails are not acceptable.
24. Recessed boxes shall not be mounted back–to–back in any wall; minimum offset shall be 24 inches.
25. Junction Boxes that do not contain any device(s) shall be located in storage rooms, electrical closets or above accessible ceilings, not in hard lid ceilings or other forms of inaccessible ceilings. Place boxes which must be exposed to public view in a location approved by the Owner's Project Manager. Provide covers or plates to match adjacent surfaces as approved by the Owner's Project Manager.
26. Surface mounted pull boxes, terminal cabinets, junction boxes, panel boards etc., shall be attached to walls using appropriate screws, fasteners, backing plates, stud blocking, etc., as detailed on architectural and/or structural drawings. If architectural and/or structural drawings are not provided on the project, Contractor shall provide all necessary mounting hardware and backing support to comply with local building code requirements and any additional requirements imposed by the local Authority–Having–Jurisdiction.
27. Except where below grade, sleeves shall be installed where conduit passes through masonry or concrete walls and shall be 24 gauge galvanized steel no more than 1/2" greater in diameter than the outside diameter of the conduit. When located in non–rated structures, caulk conduit sleeve with stone wool. When located in fire rated structures, provide UL listed fire stopping system. See fire stopping section of this specification for additional requirements.
28. All boxes shall be covered with outlet box protector, Appleton SB–CK, or similar device/method to keep dirt/debris from entering box, conduit or panels. If dirt/debris does get in, it shall be removed prior to pulling wires.
29. All boxes installed outdoors shall be suitable for outdoor installations, gasketed, screw cover, and painted as directed by the Architect with weatherproof paint to match building.
30. All conduit entries to outdoor mounted panels, cabinets, boxes, etc., shall be made using Myers "SCRU–TITE" hubs Series ST.
31. Provide nylon or a 1/8–inch O.D. polyethylene rope, rated at 250 pounds tensile strength, in all conduits more than 5 feet in length left empty for future use. Not less than 5 feet of rope shall be left at each end of the conduit. Tag all lines with a plastic tag at each end indicating the termination/stub location of the opposite end of the conduit.
32. All multiple conduit runs within suspended ceilings shall be suspended from building structure by means of unistrut hangers/racks. Conduit shall not be allowed to lay on ceiling or be supported from ceiling suspension wires or other suspension system. Support conduit to structure above suspended ceilings 8" minimum above ceiling to allow removal of ceiling tile. Maintain two inch clearance above recessed light fixtures.
33. All exposed conduits and support hardware shall be painted to match the finish of the wall or ceiling to which it is supported.
34. Where conduits or wireways cross seismic joints, provide approved flexible conduit connection or approved expansion/deflection fitting to allow for displacement of conduit in all three axes. Connection shall allow for movement in accordance with design of seismic joint. Non–flexible raceways crossing expansion joints or other areas of possible structural movement shall make provision for 3–way movement at such points by means of expansion/deflection fittings. Fittings shall be installed in the center of their axes of movement and shall not be deflected to make part of a conduit bend, or compressed or extended to compensate for incorrect conduit length. Install flexible conduit connection(s) or approved expansion/deflection fitting(s) complete with ground jumpers. Where necessary, provide approved expansion joints to allow for thermal expansion and contraction of conduit(s). Install expansion joints complete with ground jumpers.
35. Seal all conduits where termination is subject to moisture or where conduit penetrates exterior wall, floor or roof, in refrigerated areas, classified (hazardous areas) and as indicated on the drawings.
36. Except as otherwise indicated on the drawings or elsewhere in these specifications, bends in feeder and branch circuit conduit 2 inches or larger shall have a radius or curvature of the inner edge, equal to not less than ten (10) times the internal diameter of the conduit. Except where sweeping vertically into a building where sweep radius equals ten (10) times conduit diameter, underground communications and building interconnect conduits 3 inches or larger shall have a minimum 12'–6" radius or curvature of the inner edge. For the serving utilities, radius bends shall be made per their respective specifications.
37. Tag all empty conduits at each accessible end with a permanent tag identifying the purpose of the conduit, footage end–to–end, and the location of the other end. In wet, corrosive outdoor or underground locations, use brass, bronze, or copper 16 gauge tags secured to conduit ends with #16 or larger galvanized wire. Inscribe on the tags, with steel punch dies, clear and complete identifying information.
38. The following additional requirements shall apply to underground conduits:
   a. Underground conduit shall be Schedule 40 PVC (polyvinyl chloride) unless otherwise indicated elsewhere in these specifications or as required per NEC, or CEC where adopted, **Article 517.13**.
   b. For all communications conduits 2" and larger, and feeders 100A or greater, provide with a minimum 3", (2,000 LB) concrete envelope, 2" minimum separation between conduits, installed at depth of not less than 24" below grade. (Provide concrete encasement and/or greater minimum conduit depth as required by the Utility Companies.) Conduit separation within a duct bank shall be maintained using plastic spacers located at 5'–0" intervals. Where power and communication conduits are run in a common trench, a 12" minimum separation shall be maintained between power and communication conduits or as required by Utility Companies. Where concrete encasement is not required by serving utlities for a utility–only duct bank, provide free draining sand bedding suitable to acheive 95% relative compaction based on ASTM D1557 using 6" lifts or directed by Utility Company Standards.
   c. In all cases, where any conduit(s) pass under a building slab or footing, the electrical contractor will provide a Bentonite clay or concrete barrier that conforms to the height and width of the trench excavation extending a minimum of 24" on either side of the foundation. In all cases, where conduit(s) pass through a sleeve in a footing or other foundation element, the electrical contractor will provide a Bentonite clay or concrete barrier between the sleeve and the conduit(s) surrounding the conduit(s) for the entire depth of the sleeve. The barrier is required to prevent passage of moisture under or through the slab or footing via the trench or sleeve.
   d. Where underground conduit passes under a building slab, concrete encasement may not be required, except as required above, contact the Engineer for written direction prior to omitting any encasement.
   e. Underground conduits, which terminate inside building(s) below grade, such as in a basement level, or which slope so that water might flow into interior building spaces, shall be sealed at the point of penetration with a modular conduit seal (Link–Seal or equal by Rox Systems). Conduit/conduit sealing system penetrations of waterproofing membranes/systems on existing structures shall be completely restored as required to maintain membrane/system manufacturer and installer warrantee for the installation. All conduits shall be provided with a 4% slope away from buildings. All conduits shall be installed such that the water cannot accumulate in the conduit and such that water drains into the nearest manhole, pull box or vault and not into the facility. In instances where grade changes or elevation differences prevent sloping of conduit away from a building into the nearest manhole, pull box or vault, or where accumulation of water in a manhole, pull box or vault may result in water traveling into the facility, conduits shall be sealed internally at each end of each conduit using conduit sealing bushing, sized as required for the conductors contained within the conduit (O–Z Gedney #CSBG 100psig withstand or equal). In all cases, install plugs or caps in spare (empty) conduits at both ends of each conduit (Jackmoon or equal) preventing both water and gas from entering the facility via the conduits.
   f. Include a separate insulated green ground conductor sized per NEC, or CEC where adopted, in each underground electrical feeder/branch circuit.
   g. All underground conduits with circuits rated at 40A or greater and all underground communications conduits shall be provided with a metallic marker tape located 12" below the finished grade.
   h. Where underground conduits sweep into/through slabs, utilize PVC 90 degree sweeps that transition, via female PVC adapter to GRC coupling mounted flush in slab. GRC couplings shall be 1/2 lap taped with 20 mil tape. If the distance of the conduit run between a sweep and the next connecting sweep, pullbox, vault or manhole exceeds 150 ft then the sweep shall be concrete encased. Exceptions:
      1) Communications conduits shown terminating at a finished floor shall have an additional 4" high GRC nipple equipped with a bushing, removable conduit plug, labeling tag and pull rope. Tie off pull rope to conduit plug.
      2) Utility conduit sweeps shall be installed per the requirements of the respective utility company.
   i. All PVC conduit shall be glued for a water and gas tight installation. The Contractor shall use appropriate solvent on all joints prior to gluing conduit and fittings together.
   j. All underground conduit work shall conform to the Federal, State and Local Safety Orders or Rules regarding excavations, trenches and related earthwork. For projects in California, refer to the **California Code of Regulations, Title 8, Construction Code Sections 1540 and 1541** for additional requirements.
39. Installation of Metal Clad (MC) Cable (when use is permitted in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing).
   a. Provide J–box above accessible ceiling prior to running MC cable within partitions or walls. J–box shall be permanently labeled with panel identification and circuit numbers contained within.
   b. Overhead MC cable runs shall generally follow building lines to provide a neat and workmanlike installation.
   c. Provide code–sized J–boxes to accommodate MC cable splicing in general. For systems furniture poke–through feeds utilizing MC cable, transition from MC cables to conduit and wire near the panelboard in the TI accessible ceiling space on the floor below the panel board via code–sized gutter(s). Utilize UL listed, insulated barrier strips with recessed screw heads (Ideal #89–6?? series or equal) fastened within the gutter(s), terminate MC conductors on one side of the strip(s) and individual conductors in conduit from the panel board(s) on the other side of the strip(s). Label each terminal strip(s) with panel designation. Label each phase conductor with circuit number using wire markers (ideal or equal). Wire nuts are not an acceptable alternative to the terminal strips in these underfloor transition locations. Provide (1) spare 3/4" conduit from each gutter to its respective panelboard.
   d. MC cable shall not run directly into panelboards, distribution boards or electrical rooms.
   e. MC cabling shall be provided with its own code–approved ceiling support wires, cable hangers, individual spring steel support clips, steel trapeze hangers, threaded rods or dedicated #10 AWG drop wire. Cable supports shall be fastened to concrete slabs, beams, joists or other structural members of the building. In no case shall MC cable rest on ceilings, suspended ceilings or structures. Do not support MC cable using ceiling support wires. The use of nylon cable ties to support MC cable is not allowed.
   f. Use lock or spring nut MC cable fittings.
   g. Cable runs shall be continuous from wiring device to wiring device – no intermediate splicing J–boxes allowed.
   h. When terminating or splicing at a junction, outlet, or switch box, cut the cable with an armored cable rotary cutter such that 6" of free conductors remain for connections or splices. Use screw–in or spring lock connector and ensure a proper bonding by firmly tightening the connector to both the box and cable. Insert an anti–short bushing at cable ends to protect conductors from abrasion and use insulated connectors.
   i. MC Cable bend radius shall not be less than seven (7) times the external diameter of the cable.
   j. MC cables passing through fire–rated walls or floors shall be firestopped as required with a UL listed system. See firestopping requirements outlined elsewhere in this specification for additional requirements.
   k. Installation shall not exceed code requirements for total current carrying conductors in multiple MC cable runs bundled together into a single MC cable hanger or strap, unless support device is specifically listed for such purpose. Neutrals shall be counted as current carrying conductors.
   l. Maintain MC cable clearance of at least 6" from hot water and any other high temperature pipes. Maintain at least 12" clearance between MC cable(s) and telecommunication conduits and cables. MC cable shall cross telecommunication cables and conduits at right angles.
   m. MC cabling shall not be run through exposed ceilings, where open grid conditions exist, exposed on walls, or exposed to view. See Power Plan and Lighting Plan General Notes for additional requirements.
   n. Use of MC–AP, "MC All Purpose" or MC cabling where the interlocked armor sheath forms all or a portion of the equipment grounding conductor is expressly prohibited.
40. Installation of Electrical Nonmetallic Tubing (ENT) Cable (when use is permitted in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing).
   a. When approved for use in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section, generally located on the symbols list drawing, 1/2" and 3/4" trade size ENT shall be allowed for concealed lighting branch circuits, receptacle branch circuits and miscellaneous signal system circuits within concrete floors, walls and columns within parking structures.
   b. ENT conduit shall meet the requirements of Underwriters Laboratories **Standards 1479 and 1653, NEMA TC–13**, and be UL–listed.
   c. All ENT conduit, ENT fittings, ENT boxes and ENT accessories shall be UL listed and manufactured by the same manufacturer so as to form a complete ENT system. ENT systems shall only be used if they are listed for use in fire resistance rated concrete floors and ceilings with resistance ratings as indicated elsewhere in the project plans. ENT System shall comply with NEC, or CEC where adopted, **Article 362**.
   d. All ENT fittings and ENT boxes shall be concrete–tight listed without the use of tape. Additionally, ENT fittings shall be constructed of high–impact PVC and able to resist ENT conduit pull out forces of a minimum of 175 lbs. ENT fittings with fewer than 6 locking tabs for ENT connection shall utilize manufacturer–approved glue as additional protection from fitting/conduit separation. ENT conduit to rigid conduit transition fittings shall be equipped with set screw fittings on the rigid conduit side of the fitting. ENT to metal box fittings shall be equipped with a threaded end and lock washer.
   e. Where tubing enters a box, fitting or other enclosure provide a bushing or adapter to protect conductors from abrasion unless the box, fitting, or enclosure design provides equivalent protection.
   f. ENT junction boxes shall have brass screw inserts and shall be rated to support lighting fixtures weighing less than 50 lbs.
   g. Concrete tight metal boxes shall be used to support pendant hung fixtures or fixtures over 50 lbs.
   h. ENT shall be provided in continuous lengths between junction boxes without use of in–line splices or connectors and shall be clearly marked/labeled at least every 10–feet.
   i. All ENT conduit containing electrical branch circuits shall contain a code–sized equipment ground conductor.
   j. ENT shall transition to EMT, IMC, RMC, or rigid PVC, as appropriate or as called out elsewhere in this specification, for all exposed conduits within/on/under a parking structure.
   k. ENT shall transition to appropriately sized PVC expansion joint(s) at all structure expansion or seismic joints.
   l. ENT shall be securely fastened and supported every 2 – 3 ft. and within 1 ft. of every junction box and fitting to prevent movement and sag.
   m. ENT shall be routed straight without sags, or excessive bending. Where bends are required, comply with **Table 362.24** of the NEC for minimum radius of bends. Number of bends shall not exceed quantity allowed by code where used for power and lighting branch circuit and/or feeder conductors. Where utilized for communications system conductors (phones, data cabling, etc.) number of bends shall not exceed the equivalent of (2) 90 degree bends with conduit length no more than 100 feet without installation of a TIA 569–compliant pull box.
   n. Separation of ENT from fitting(s), excessive sags or deflections in ENT runs that prevent pulling of wire, and other ENT system product or system installation failures/errors, shall be corrected by saw cutting and patching as necessary at no additional cost to the Owner. Use of surface mounted conduits and junction boxes as a repair method is unacceptable.
   o. Empty ENT runs shall be provided with a nylon pull string.
   p. Coordinate installation of raceway with structural steel and other structural members. Do not cut, notch or otherwise alter structural members without obtaining approval in writing from the Structural Engineer of Record.
   q. No more than (2) 3/4" ENT conduits may cross each other within a horizontal concrete slab without obtaining approval in writing from the Structural Engineer of Record.

B. Installation of 600V Conductors:

1. All electrical wire, including signal circuits, shall be installed in conduit.
2. All circuits and feeder wires for all systems shall be continuous from overcurrent protective device or switch to terminal or farthest outlet. No joints shall be made except in pull, junction or outlet boxes, or in panel or switchboard gutters.
   a. Utilize pre–insulated "winged" spring type connectors, 3M Company "Performance Plus" #O/B or #R/Y or equal and as required for splices and taps in conductors #6 AWG and smaller. When a spring connector is used in an underground environment or when subject to moisture, utilize a 3M Company Scotchcast 3507G epoxy resin connector sealing pack to seal the spring connector. THE USE OF PUSH–WIRE CONNECTORS (e.g. "WAGO" OR EQUIVALENT) IS STRICTLY PROHIBITED.
   b. Wires #4 AWG and larger AWG shall be joined together as follows:
      1) When located in an underground environment or when subject to moisture, the splice shall be made with compression connector and sealed by a 3M, or equal, PST cold shrink connector insulator.
      2) When located in an interior environment, the splice shall be made with an ILSCO or equal dual rated, insulated splicer–reducer connector or multi–tap connector listed for use with 75/90 degree Celsius rated conductors.
   c. Connections to busbar shall be made with dual–rated copper/aluminum one–piece compression lugs. Paralleled conductor connections shall be by mechanical lugs.
3. Thoroughly clean all conduit and wire–ways and see that all parts are perfectly dry before pulling any wires.
4. Install UL approved fixture wire from all lighting fixture lamp sockets into fixture outlet or junction box.
5. For 20A branch circuit wiring, increase #12 conductors to #10 for 120V circuits longer than 100 feet and for 277V circuits longer than 150 feet.
6. Conductor Support: Provide conductor supports as required by codes and recommended by cable manufacturer. Where required, provide cable supports in vertical conduits and provide lower end of conduit with a ventilator.

C. Grounding/Bonding:

1. Provide grounding and bonding for entire electric installation as shown on plans, as listed herein, and as required by applicable codes. Included, but not limited to, are items that require grounding/bonding:
   a. Conduit, raceways and cable trays.
   b. Neutral or identified conductors of interior wiring system.
   c. Panel boards, Distribution boards, Switchgear and Switchboards.
   d. Non–current carrying metal parts of fixed equipment.
   e. Telephone distribution equipment.
   f. Transformers, Inverters, UPS, PDU, RDC, Transfer Switch and Generator Systems.
   g. Raised Flooring.
   h. Exposed metal in maintenance holes, hand holes.
   i. Lightning Protection Systems and antennas.
   j. Metal piping installed in or attached to a building/structure.
   k. Metallically isolated structural steel.
   l. Metallically isolated underground metal water piping.
   m. Elevator hydraulic piston/lift case.
2. In multi–occupancy buildings, Contractor shall bond metal water piping systems installed in, under or attached to a building and/or structure serving individual occupancies where the piping system(s) are metallically isolated from each other. Per NEC, or CEC where adopted, **ART. 250.104(A)(2) and (3)**, the bonding conductor shall be sized per **Table 250.122** and connected to the switchboard/panelboard serving that suite/occupancy.
3. Use of Ground Rods: Furnish and install required number of 3/4" x 10' copper clad ground rods to meet specified resistance, all required grounding wires, conduit and clamps. The size of the grounding conductors shall be not less than that set forth in the latest edition of the California Code of Regulations, Title 24, State of California and NEC (or CEC where adopted), unless otherwise indicated. Rods shall be installed such that at least 10 feet of length is in contact with the soil. Where rock bottom is encountered, the electrode shall be driven at an oblique angle not to exceed 45 degrees from vertical or shall be buried in a trench that is at least 30 inches deep. The upper end of the electrode shall be flush with or below ground level unless the above ground end and the grounding electrode conductor attachments are protected against physical damage. Unless otherwise noted, connection to the grounding electrode conductor may be by compression type or exothermic process connector. Mechanical connectors shall not be used.
4. Grounding System Connection:
   a. Compression connectors shall be unplated copper, manufactured by Burndy, or approved equal, designed specifically for the intended connection.
   b. Exothermic weld–type connectors shall be 'Cadweld' manufactured by Erico Products, or approved equal, designed specifically for the intended connection.
   c. Mechanical connectors shall not be used.
5. Isolated Ground Receptacles shall have an insulated ground wire connected between the receptacle and the panelboard isolated ground bus. Unless otherwise noted, this ground wire shall not be grounded at any other point, and shall be distinguished from other ground wires by a continuous yellow stripe.
6. Provide separate green equipment ground conductor in all electrical raceways to effectively ground all fixtures, panels, controls, motors, disconnect switches, exterior lighting standards, and non current–carrying metallic enclosures. Use bonding jumpers, grounding bushings, lugs, busses, etc., for this purpose. Connect the equipment ground to the building system ground. Use the same size equipment ground conductors as phase conductors, up through #10 AWG. Use NEC (or CEC where adopted) **Table 250.122** for conductor size with phase conductors #8 and larger, if not shown on the Drawings.
7. Clean the contact surfaces of all ground connections prior to making connections.
8. Ductwork: Provide a flexible ground strap, No. 6 AWG equivalent, at each flexible duct connection at each air handler, exhaust fan, and supply fan, and install to preclude vibration.
9. Motors: Connect the ground conductor to the conduit with an approved grounding bushing, and to the metal frame with a bolted solderless lug. Bolts, screws and washers shall be bronze or cadmium plated steel.
10. Building grounding system resistance to ground shall not exceed 25 ohms unless otherwise noted and should be confirmed by testing.

D. Line Voltage and Low Voltage Power Supplies to all Mechanical Equipment Including Plumbing, Heating and Air Conditioning Units:

1. An electric power supply, including conduit, any necessary junction and/or outlet boxes and conductors and connection shall be furnished and installed by the Contractor for each item or mechanical equipment.
2. Power supplies to individual items of equipment shall be terminated in a suitable outlet or junction box adjacent to the respective item of equipment, or a junction box provided by the manufacturer or the equipment and directed by the Mechanical Contractor. Allow sufficient lengths of conductor at each location to permit connection to the individual equipment without breaking the wire run.
3. The location of all conduit terminations to the equipment is approximate. The exact location of these conduit terminations shall be located and installed as directed by the Mechanical or Plumbing Contractor.
4. Provide power supplies to all plumbing and mechanical equipment, including, but not limited to, equipment furnished and installed by Owner or Contractor, such as heating and air conditioning equipment, pumps, boilers, auto valves and water coolers, etc. The installation shall produce a complete and operable system.
5. Unless otherwise noted, the Contractor shall furnish and install all conduit, boxes, wires, etc., for line voltage wiring and low voltage wiring.
6. It is the Contractor's responsibility to verify with the drawings of other trades regarding the extent of his responsibility for mechanical equipment. The bid must include a sum sufficient to cover the cost of the installation.
7. The location of all power supply connection and/or terminations to the mechanical equipment is approximate. The exact locations of these terminations shall be verified with other trades during construction.

E. Prefabricated Equipment: Installation of all prefabricated items and equipment shall conform to the requirements of the manufacturer's specifications and installation instruction pamphlets. Where code requirements affect installation of materials and equipment, the more stringent requirements, code or manufacturer's instructions and/or specifications, shall govern the work.

F. Firestopping:

1. The Contractor shall be responsible for furnishing all material, labor, equipment, and services in conjunction with the selection and installation of a complete, fully functioning, code compliant, UL–listed, fire stop assembly/system(s) as required by project conditions.
2. Each fire stop assembly/system shall have an "F" and/or "T" rating as required by each condition requiring fire stopping. Each fire stop assembly/system shall have a current UL listing, as indicated in the latest edition of the UL Fire Resistance Directory. Contractor shall verify acceptability of all fire stopping methods and system selections with the authority having jurisdiction prior to installation. The Contractor shall install each firestop assembly/system in accordance with the manufacturer's printed instructions
3. Each fire stop assembly/system shall be labeled with fire stop manufacturer–furnished label on each side of the fire stopping systems depicting UL number, etc.

G. House Keeping Pads:

1. Provide a minimum 3" high housekeeping pad above finished floor/finished grade for all floor–mounted switchgear, switchboards, distribution boards, transformers, motor control centers, etc., flush with the face of the equipment. Located in mechanical central plant(s), other mechanical spaces, and located outdoors, pads shall be flush with the face of the equipment. Confirm pad dimensions with local inspector prior to forming pad to ensure any local code interpretations/conditions are met regarding housekeeping pads.
2. Unless otherwise noted above, provide a minimum 1–1/2" high housekeeping pad above finished floor/finished grade for all interior floor–mounted switchgear, distribution boards, transformers, motor control centers, transfer switches, etc., flush with the face of the equipment. All housekeeping pad heights are as measured from finished floor or grade. Confirm pad dimensions with local inspector prior to forming pad to ensure any local code interpretations/conditions are met regarding housekeeping pads.
3. Provide a 1–1/2" high housekeeping pad above finished floor/finished for service equipment. Prior to pad rough–in, Contractor shall verify serving utility company's maximum meter height requirements and, if necessary, adjust height of housekeeping pad to comply with those requirements. In indoor applications, the pad shall be flush with the face of the switchgear. In outdoor applications, the housekeeping pad shall extend a minimum of 4 feet from the front of switchgear's weatherproof enclosure. Confirm pad dimensions with local inspector prior to forming pad to ensure any local code interpretations/conditions are met regarding housekeeping pads.
4. All housekeeping pads located in, on, or attached to a building shall be seismically braced/connected to the building structure.

END OF SECTION

2/27/2019

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tk1sc COLLABORATIVE
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Project Leader - Jerry Leonhardt
tk1sc Job #: 2019-0130

REGISTERED PROFESSIONAL ENGINEER
RAYMOND W. SWARTZ
No. E15610
Ex. 12/31/2019
ELECTRICAL
STATE OF CALIFORNIA

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

SPECIFICATIONS

E–8.1

PLUMBING REQUIREMENTS

ALL WORK SHALL COMPLY WITH THE FOLLOWING CODES:

THE 2016 EDITION OF THE CALIFORNIA BUILDING CODE AND ITS AMENDMENTS
THE 2016 EDITION OF THE CALIFORNIA ELECTRICAL CODE AND ITS AMENDMENTS.
THE 2016 EDITION OF THE CALIFORNIA MECHANICAL CODE AND ITS AMENDMENTS.
THE 2016 EDITION OF CALIFORNIA PLUMBING CODE AND ITS AMENDMENTS.
THE 2016 EDITION OF THE CALIFORNIA FIRE CODES AND ITS AMENDMENTS.
THE 2016 EDITION OF THE CALIFORNIA ENERGY EFFICIENCY STANDARDS.

1. A. FURNISH ALL LABOR, SUPERVISION, MATERIALS, EQUIPMENT AND FACILITIES NECESSARY TO FURNISH, FABRICATE, DELIVER, STORE AND INSTALL ALL WORK NOTED ON THE DRAWINGS AND/OR SPECIFIED HEREIN.

B. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL WORK NECESSARY TO MAKE A COMPLETE SYSTEM WHETHER OR NOT SUCH DETAILS ARE MENTIONED IN THESE SPECIFICATIONS OR SHOWN ON THE PLANS, BUT WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE SYSTEM, EXCEPTING ONLY THOSE PORTIONS THAT ARE SPECIFICALLY MENTIONED HEREIN OR PLAINLY MARKED ON THE ACCOMPANYING DRAWINGS AS BEING INSTALLED UNDER ANOTHER SECTION OF THE SPECIFICATIONS.

2. WORKMANSHIP: THE WORK SHALL BE ACCOMPLISHED IN A THOROUGH AND WORKMAN-LIKE MANNER SATISFACTORY TO AND MEETING THE APPROVAL OF THE OWNER AND ARCHITECT.

3. MATERIALS: ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND THE BEST OF THEIR RESPECTIVE KIND, FREE FROM ALL DEFECTS AND OF THE MAKE AND QUALITY SPECIFIED.

4. SITE INSPECTION: CONTRACTOR SHALL VISIT THE SITE OF WORK PRIOR TO SUB-MISSION OF HIS BID AND THOROUGHLY FAMILIARIZE HIMSELF WITH THE WORKING CONDITIONS AND EXACT NATURE OF THE WORK. SUBMISSION OF A BID ACKNOWLEDGES FULL RESPONSIBILITY FOR FURNISHING A COMPLETE AND FUNCTIONAL SYSTEM. NO CHANGES IN CONTRACT WILL BE MADE TO ACCOMMODATE OR ALLOW EXTRA FUNDS FOR ANY OMISSION WHICH RESULTS FROM A FAILURE TO THOROUGHLY MAKE THE EXAMINATION.

5. CODES AND PERMITS: ALL MECHANICAL EQUIPMENT, INSTALLATION, ETC., SHALL CONFORM WITH ALL APPLICABLE CODES AND ORDINANCES AS INTERPRETED BY THE LOCAL AUTHORITY HAVING JURISDICTION, INCLUDING CALIFORNIA TITLE 24. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION REPORTS SHALL BE SUBMITTED TO THE ARCHITECT.

6. AS-BUILTS: CONTRACTOR SHALL PROVIDE A COMPLETE SET OF AS-BUILTS TRANSPARENCIES WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT AND PRIOR TO FINAL ACCEPTANCE AND PAYMENT.

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

8. SUBMITTALS: CATALOG INFORMATION AND CUTS OF ALL EQUIPMENT AND DEVICES SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW.

9. COORDINATION: THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE BEST ARRANGEMENT OF ALL DUCTS, PIPES, CONDUIT, ETC. LOCATION OF EXISTING PIPING AND DUCTWORK SHOWN IS APPROXIMATE; CONTRACTOR SHALL VERIFY THEIR LOCATION PRIOR TO BEGINNING WORK OF THIS SECTION AND SHALL MAKE MODIFICATIONS AND ADJUSTMENTS REQUIRED TO INSTALL THE WORK OF THIS SECTION.

10. CUTTING AND PATCHING: ALL CUTTING AND PATCHING REQUIRED OF THE STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.

11. CLEANUP: UPON COMPLETION OF THE WORK UNDER THIS SECTION, THE CONTRACTOR SHALL REMOVE ALL SURPLUS MATERIALS, EQUIPMENT AND DEBRIS INCIDENTAL TO THIS WORK AND LEAVE THE PREMISES CLEAN AND ORDERLY.

12. INSULATION

A. INSULATION SHALL BE U.L. LISTED IN COMPLIANCE WITH FLAME- SPREAD RATING OF NOT MORE THAN 25 AND SMOKE DENSITY NOT EXCEEDING 50, PER THE UNIFORM MECHANICAL CODE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE STATE OF CALIFORNIA ENERGY COMMISSION AND CPC REQUIREMENTS.

B. ALL HOT WATER SUPPLY AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED AS FOLLOWS:

PIPE SIZE, IN.	INSULATION THICKNESS, IN. (K=0.24 BTUH-IN/SQ.FT. F OR LESS)
1/2, 3/4, 1	1
1-1/4 THROUGH 6	1-1 1/2

C. COPPER CONDENSATE PIPING SHALL BE INSULATED WITH 3/8" FOAM PLASTIC.

D. HORIZONTAL STORM DRAIN PIPING SHALL BE INSULATED WITH 1" THICK PRE FABRICATED FIBERGLASS INSULATION WITH SERVICE JACKET.

13. PIPING:

A. WASTE, VENT AND STORM DRAIN PIPING SHALL BE STANDARD WEIGHT CAST IRON HUBLESS TYPE WITH GASKETS AND STAINLESS STEEL CLAMPS PER CISPI 310-85.

B. WATER PIPING SHALL BE TYPE "L" COPPER HARD DRAWN WITH WROUGHT COPPER FITTINGS. JOINTS SHALL BE SOLDERED WITH 95-5 OR SILVER SOLDER.

C. CONDENSATE PIPING SHALL BE TYPE "M" COPPER WITH SOLDER JOINTS, OR PVC AS REQUIRED BY MANUFACTURER.

D. GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE. FOR PIPES 2" AND SMALLER USE MALLEABLE IRON SCREWED FITTINGS, AND FOR PIPES 2-1 1/2" AND LARGER, USE LONG RADIUS WELDINGTYPE SCHEDULE 40 FITTINGS. GAS PIPING 1 POUND AND ABOVE SHALL BE WELDED REGARDLESS OF SIZE.

14. HORIZONTAL DRAINAGE PIPING SHALL BE RUN AT A UNIFORM SLOPE OF NOT LESS THAN 1/4" PER FOOT TOWARD THE POINT OF DISPOSAL. WHERE APPROVED BY THE LOCAL AUTHORITY OR INDICATED ON DRAWINGS, DRAINAGE PIPING 4", OR LARGER, MAY BE RUN AT A UNIFORM SLOPE OF 1/8" PER FOOT. ALL PIPING UNDER BUILDINGS SHALL BE SLOPED AT 1/4" PER FOOT.

15. ALL FLOOR SINKS SHALL BE FLUSHED TO THE FLOOR. ALL LINES DRAINING TO THE FLOOR SINK SHALL SLOPE A MINIMUM OF 1/4" PER FOOT AND SHALL TERMINATE AT LEAST ONE INCH ABOVE THE RIM OF THE FLOOR SINK. ALL FLOOR SINKS AND FLOOR DRAINS SHALL BE PROVIDED WITH TRAP PRIMERS.

16. EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN TEN FEET FROM OR AT LEAST THREE FEET ABOVE ANY OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE OR VENT SHAFT, AND SHALL TERMINATE NOT LESS THAN 6" ABOVE THE ROOF OR 1 FOOT FROM ANY VERTICAL SURFACE.

17. CLEAN-OUTS SHALL BE INSTALLED AS PER CPC REQUIREMENTS, SECTIONS 707 AND 719.

18. PROVIDE WATERTIGHT FLASHING WHEREVER PIPES PASS THRU EXTERIOR WALLS, ROOF AND FLOORS.

19. COORDINATE LOCATIONS OF ALL ROOF WALL OPENINGS WITH ALL RELEVANT TRADES AND PROVIDE WATERTIGHT FLASHINGS WHEREVER PENETRATIONS OCCUR. EXACT LOCATIONS AND SIZES MAY BE DEPENDENT UPON EQUIPMENT SELECTIONS;

COORDINATE SIZES AND LOCATIONS OF ALL OPENINGS WITH APPROPRIATE EQUIPMENT REQUIREMENTS.

20. PENETRATIONS: PENETRATIONS IN WALLS REQUIRING PROTECTED OPENINGS SHALL BE FIRE-STOPPED. FIRE-STOPPING SHALL BE AN APPROVED MATERIAL SECURELY INSTALLED AND CAPABLE OF MAINTAINING ITS INTEGRITY WHEN SUBJECTED TO TEST TEMPERATURE PRESCRIBED IN THE C.B.C. FOR SPECIFIC WALL OR PARTITION TYPE.

21. PROVIDE FELT WITH METAL BACKING VIBRATION ISOLATION SLEEVES OR PADS AT ALL PIPE HANGERS OR SUPPORTS AND ALL POINTS WHERE PIPING COMES IN CONTACT WITH ANY PORTION OF THE STRUCTURE.

22. LOCATIONS OF SITE UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES PRIOR TO STARTING WORK OF THIS SECTION. MAKE REQUIRED ADJUSTMENTS TO CONNECT TO EXISTING UTILITIES. IF INDICATED POINTS OF CONNECTIONS CANNOT BE MADE TO EXISTING UTILITIES AS FOUND. THE CONTRACTOR SHALL, BEFORE CONTINUING, NOTIFY THE ARCHITECT PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.

23. BEFORE STARTING ANY WORK, THE CONTRACTOR FOR THIS SECTION OF THE WORK SHALL EXAMINE A COMPLETE SET OF DRAWINGS FOR ALL TRADES, INCLUDING ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, FIRE PROTECTION AND PLUMBING. DIMENSIONS, SPACE REQUIREMENTS, AND POINTS OF CONNECTION TO ALL EQUIPMENT AND FIXTURES SHALL BE VERIFIED, AND ANY MINOR ADJUSTMENTS NECESSARY TO AVOID CONFLICT WITH THE BUILDING STRUCTURE AND THE WORK OF THE OTHER TRADES SHALL BE MADE. CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY IF ANY MAJOR CONFLICTS OCCUR.

24. VALVES SHALL BE NIBCO, CRANE, WALWORTH, STOCKHAM OR EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED.

25. PROVIDE HANGERS, SUPPORTS AND INSULATION SADDLES AS REQUIRED AND PER ANSI REQUIREMENTS. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.

26. CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE THREE COPIES OF MAINTENANCE AND OPERATING MANUALS TO THE OWNER.

27. CONTRACTOR SHALL ARRANGE FOR AND PAY FOR ALL UTILITY METERS AND UTILITY CONNECTIONS.

28. ROUGH-IN AND CONNECT EQUIPMENT PROVIDED UNDER OTHER SECTIONS OF THE WORK.

29. WATER HEATING SYSTEMS AND EQUIPMENT SHALL MEET OR EXCEED ALL APPLICABLE EFFICIENCY REQUIREMENTS AS INDICATED IN THE CALIFORNIA ENERGY COMMISSION.

30. HOT WATER CIRCULATING PUMPS SHALL HAVE A CONTROL CAPABLE OF AUTOMATICALLY TURNING OFF WHEN HOT WATER IS NOT REQUIRED.

31. GAS-FIRED EQUIPMENT SHALL BE EQUIPPED WITH A PILOTLESS ELECTRONIC INTERMITTENT IGNITION SYSTEM. GAS FIRED BOILER AND GAS FIRED AC UNITS SHALL MEET ALL SQAMD LO-NOX REQUIREMENTS.

32. LAVATORIES IN RESTROOMS OF PUBLIC FACILITIES SHALL BE EQUIPPED WITH OUTLET DEVICES THAT LIMIT THE FLOW OF HOT WATER TO A MAXIMUM OF 0.5 GALLONS PER MINUTE AND WITH CONTROLS TO LIMIT THE OUTLET TEMPERATURE TO 110°F.

33. ALL EQUIPMENT SHALL BE SECURELY FASTENED TO THE BUILDING STRUCTURE.

34. INSULATION SHALL BE PROVIDED ON ALL HOT WATER LINES AND P-TRAPS SERVING HANDICAPPED LAVATORIES AND SINKS.

35. ALL SHOWER CONTROL VALVES SHALL BE OF THE THERMOSTATIC MIXING OR PRESSURE BALANCE TYPE PER CPC 420.0 AND SHOWER HEADS AND MIXING VALVES SHALL BE INSTALLED PER CPC 412.11

36. APPROVED SPARK ARRESTORS SHALL BE PROVIDED FOR ALL CHIMINEYS PER CBC 3102.3.8.

PLUMBING SYMBOLS AND ABBREVIATIONS

———	SOIL WASTE OR SEWER ABV GRADE	S OR W
— — — —	WASTE OR SEWER BELOW GRADE	S OR W
— SD —	STORM DRAIN	S.D
----------	SANITARY VENT	
—— - ——	COLD WATER	C.W.
—— - - ——	HOT WATER	H.W.
—— - - - ——	HOT WATER RETURN	H.W.R.
— T —	TEMPERED WATER	T.W.
— 02 —	OXYGEN	02
— CA —	COMPRESSED AIR LINE	CA
— F —	FILTERED WATER	F
— G —	FUEL GAS (LOW PRESSURE)	G.
— XG —	FUEL GAS (MEDIUM PRESSURE)	XG
— DI —	DEIONIZED WATER	DI
— LV —	LAB VACUUM	LV
	SHUT-OFF VALVE	S.O.V.
	PRESSURE REDUCING VALVE	P.R.V.
	PRESSURE-TEMPERATURE RELIEF VALVE	P-T REL. V.
	CHECK VALVE	C.V.
	SHUT-OFF VALVE IN BOX	
	CLEAN OUT TO GRADE	C.O.T.G.
	WALL CLEANOUT	W.C.O.
	FLOOR CLEANOUT	F.C.O.
	HOSE BIBB	H.B.
	DROP	
	RISE	
	FIRE SPRINKLER HEAD	
	UNION	
G.C./S.O.C.	GAS COCK/SHUT OFF COCK	
BEH.	BEHIND	
V.T.R	VENT THRU ROOF	
	VALVE IN RISER	
F.H.	FIRE HYDRANT	
ABV.	ABOVE	
HDR	HEADER	
BEL.	BELOW	
A.F.F.	ABOVE FINISHED FLOOR	
CLG	CEILING	
DN	DOWN	
F.D.	FLOOR DRAIN	
F.S.	FLOOR SINK	
S.B.	SERVICE BASIN	
S.S.	SERVICE SINK	
U.N.O.	UNLESS NOTED OTHERWISE	
CLG.	CEILING	
A.B.	ACCESS BOX	
A.P.	ACCESS PANEL	
I.E.	INVERT ELEVATION	
L.K.S.	LOOSE KEY STOP	
P.O.C.	POINT OF CONNECTION	
F.G.	FINISHED GRADE	
N.I.C.	NOT IN CONTRACT	
R.I.& C.	ROUGH-IN & CONNECT	
U.O.S.	UNDER OTHER SECTION	
W.H.A.	WATER HAMMER ARRESTER	
G.P.R.	GAS PRESSURE REGULATOR	
R.D./O.D.	ROOF DRAIN/OVERFLOW DRAIN	
GD	GUTTER DRAIN	
TPS	TRAP PRIMER SUPPLY	
ASR	AUTOMATIC FIRE SPRINKLER RISER	
— GW —	GREASE WASTE	
— AW —	ACID WASTE	
— AV —	ACID VENT	
SF	EMERGENCY SHOWER & EYEWASH	
AVTR	ACID VENT THRU ROOF	
●	POC	
GHV	GARDEN HOSE VALVE	
DS	DOWNSPOUT	
B.G.	BELOW GRADE	
TMV	THERMOSTATIC MIXING VALVE	

PLUMBING FIXTURE CONNECTION SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE					MOUNTING HEIGHT	SPECIFICATION
		TRAP	W	V	CW	HW		
SK/C1	SINK	1-1/2"	2"	1-1/2"	1/2"	1/2"	34" TO TOP OF RIM	30" x 24" x 14" SINGLE COMPARTMENT SCULLERY SINK: ELKAY SS8130R2 14 GAUGE TYPE 304 STAINLESS STEEL RECEPTOR WITH DRAINBOARD, BACK LEDGE AND TWO FAUCET HOLES, LK-35 TYPE 302 STAINLESS STEEL BASKET STRAINER WITH 1-1/2" TAILPIECE; CHICAGO 445-R-L8-E2805-5 LEVER HANDLE WALL DOUBLE FAUCET WITH SWING SPOUT AND VANDALPROOF 1/2 G.P.M. FLOW CONTROL, 1006 1/2" LOOSE KEY ANGLE STOPS WITH 1/2" O.D. FLEXIBLE SUPPLIES AND BRASS WALL ESCUTCHEONS; ; CONTINUOUS BRASS DRAIN AND 1-1/2" CAST BRASS L.A. "P" TRAP.

pjhm architects

LICENSED ARCHITECT THOMAS W. KRUSE Lic.# C15585 02/19 Renewal Date STATE OF CALIFORNIA

Engineous Group, Inc. 751 N. Fair Oaks Ave., Suite 201 Pasadena, CA 91103 Phone: (626) 696-3850

REGISTERED PROFESSIONAL ENGINEER BRADLEY E. SEVERSON No. 27963 Exp. 6/30/20 MECHANICAL STATE OF CALIFORNIA

PERRIS LAKE HIGH SCHOOL

PERRIS UNION HIGH SCHOOL DISTRICT

PLUMBING COVER SHEET

P-0.1

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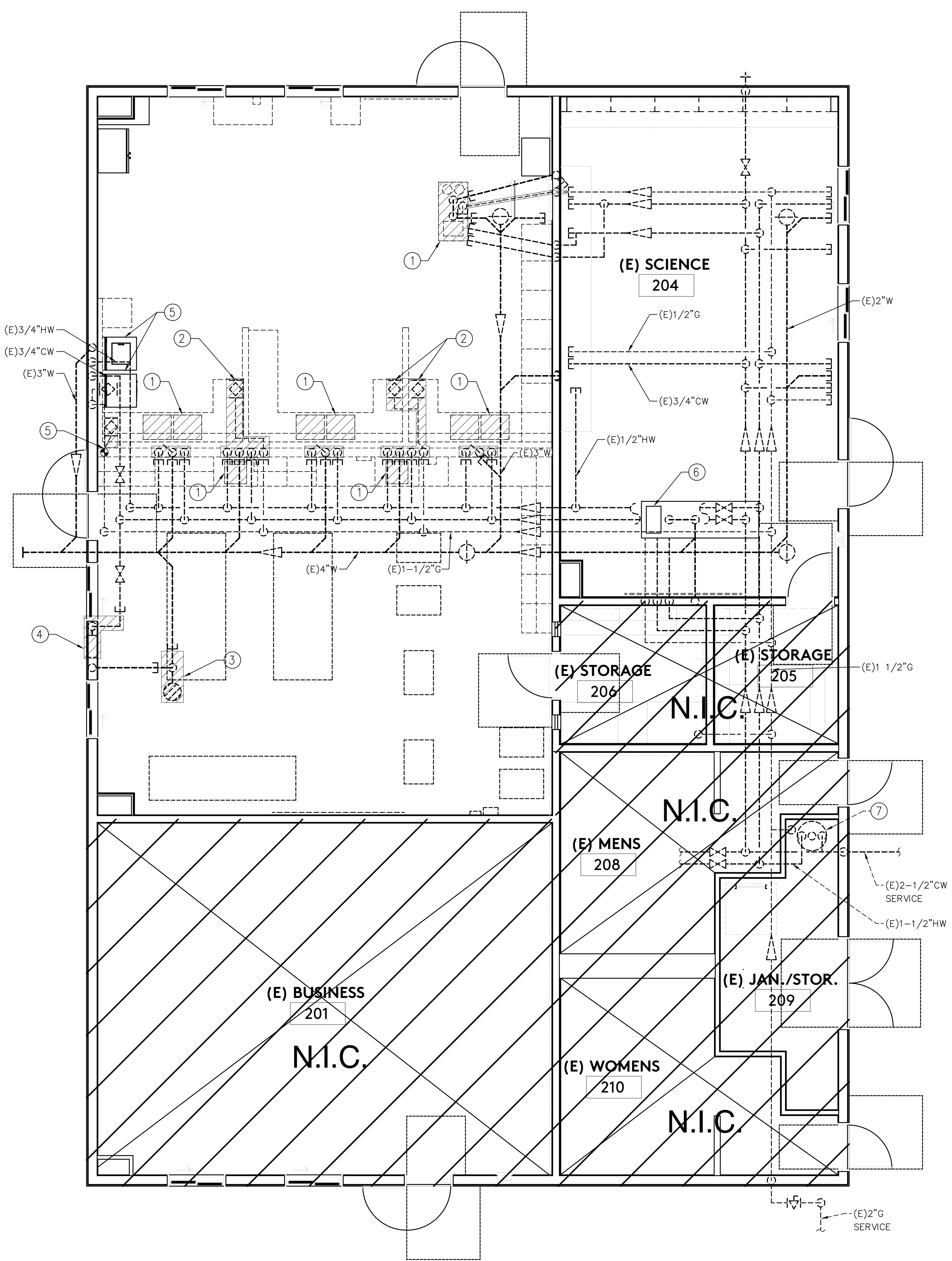
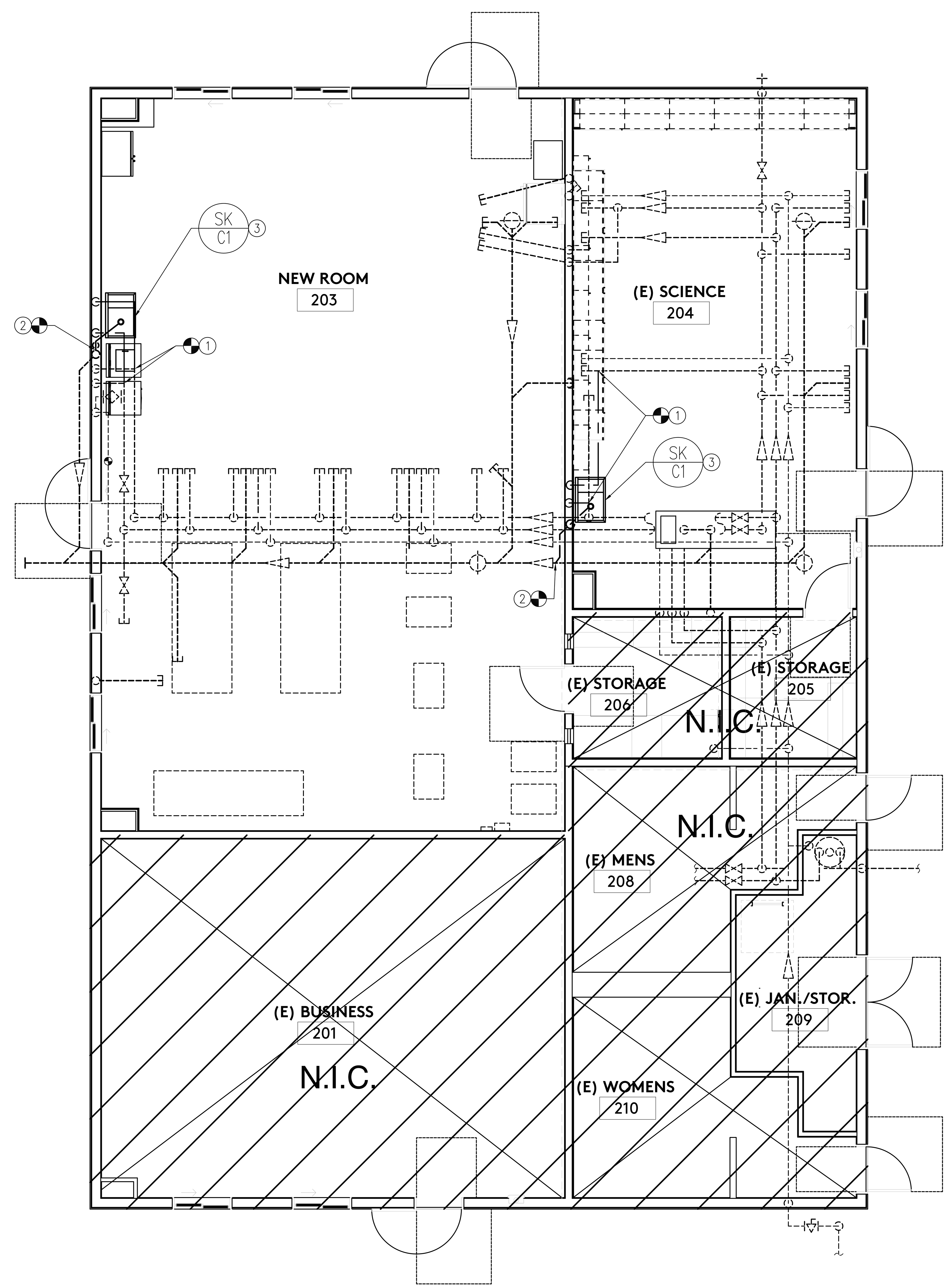


PLUMBING DEMOLITION PLAN
Scale 1/4" = 1'-0"



PLUMBING FLOOR PLAN
Scale 1/4" = 1'-0"

DEMOLITION NOTES:

1. EXISTING SINK TO BE REMOVED, AND EXISTING WASTE, VENT, AND WATER PIPING TO BE CAPPED ABOVE CEILING OR BELOW FLOOR AS APPLICABLE.
2. EXISTING GAS OUTLET TO BE REMOVED, AND ASSOCIATED PIPING TO BE CAPPED ABOVE CEILING.
3. EXISTING FLOOR DRAIN TO BE REMOVED, AND EXISTING WASTE AND VENT PIPING CAPPED BELOW FLOOR.
4. EXISTING TRAP PRIMER AND ASSOCIATED PIPING TO BE REMOVED.
5. EXISTING WASHER/DRYER AND ASSOCIATED WASTE, VENT, AND WATER PIPING TO REMAIN; EXTEND (E) GAS PIPING TO ADJACENT WALL AS INDICATED.
6. EXISTING SINK AND ASSOCIATED PIPING TO REMAIN.
7. EXISTING WATER HEATER TO REMAIN.

KEY NOTES:

1. 1/2"CW AND HW; CONNECT TO (E) CW & HW PIPING; FIELD VERIFY EXACT POC'S.
2. 2"W; CONNECT TO (E) WASTE PIPE, & EXTEND 1 1/2"V UP IN WALL AND CONNECT TO (E) VENT PIPE; FIELD VERIFY EXACT POC'S.
3. NEW SCULLERY SINK (SEE ARCH. PLANS FOR EXACT LOCATION); EXTEND 2"W, 1 1/2"V, & 1/2"CW & HW TO EXISTING PIPING.

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THOMAS W. KRUSE
Lic.# C15585
02/19
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PLUMBING DEMO AND FLOOR PLANS

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