

GENERAL 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE NOTES:

A. TESTING AND ADJUSTING OF SYSTEMS SHALL BE REQUIRED PER SECTION 5.410.4 FOR BUILDINGS WITH FLOOR AREA LESS THAN 10,000 SQUARE FEET.

B. DEVELOP A WRITTEN PLAN OF PROCEDURES FOR TESTING AND ADJUSTING SYSTEMS. SYSTEMS TO BE INCLUDED FOR TESTING AND ADJUSTING SHALL INCLUDE, AS APPLICABLE TO THE PROJECT, THE SYSTEMS LISTED IN SECTION 5.410.4.2.

C. PERFORM TESTING AND ADJUSTING PROCEDURES IN ACCORDANCE WITH INDUSTRY BEST PRACTICES AND APPLICABLE NATIONAL STANDARDS ON EACH SYSTEM.

D. BEFORE A NEW SPACE-CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, THE SYSTEM SHOULD BE BALANCED IN ACCORDANCE WITH THE PROCEDURES DEFINED BY NATIONAL STANDARDS LISTED IN SECTION 5.410.4.3.1.

E. AFTER COMPLETION OF TESTING, ADJUSTING, AND BALANCING, PROVIDE A FINAL REPORT OF TESTING SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.

F. PROVIDE THE BUILDING OWNER WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTIES/WARRANTIES FOR EACH SYSTEM PRIOR TO FINAL INSPECTION.

G. INCLUDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE ENFORCING AGENCY.

H. HVAC EQUIPMENT USED DURING CONSTRUCTION SHALL USE RETURN AIR FILTERS WITH A MERV 8, BASED UPON ASHRAE 55.2-1999, OR AN AVERAGE EFFICIENCY OF 30% BASED UPON ASHRAE 52.1-1992. ALL FILTERS SHALL BE REPLACED PRIOR TO OCCUPANCY.

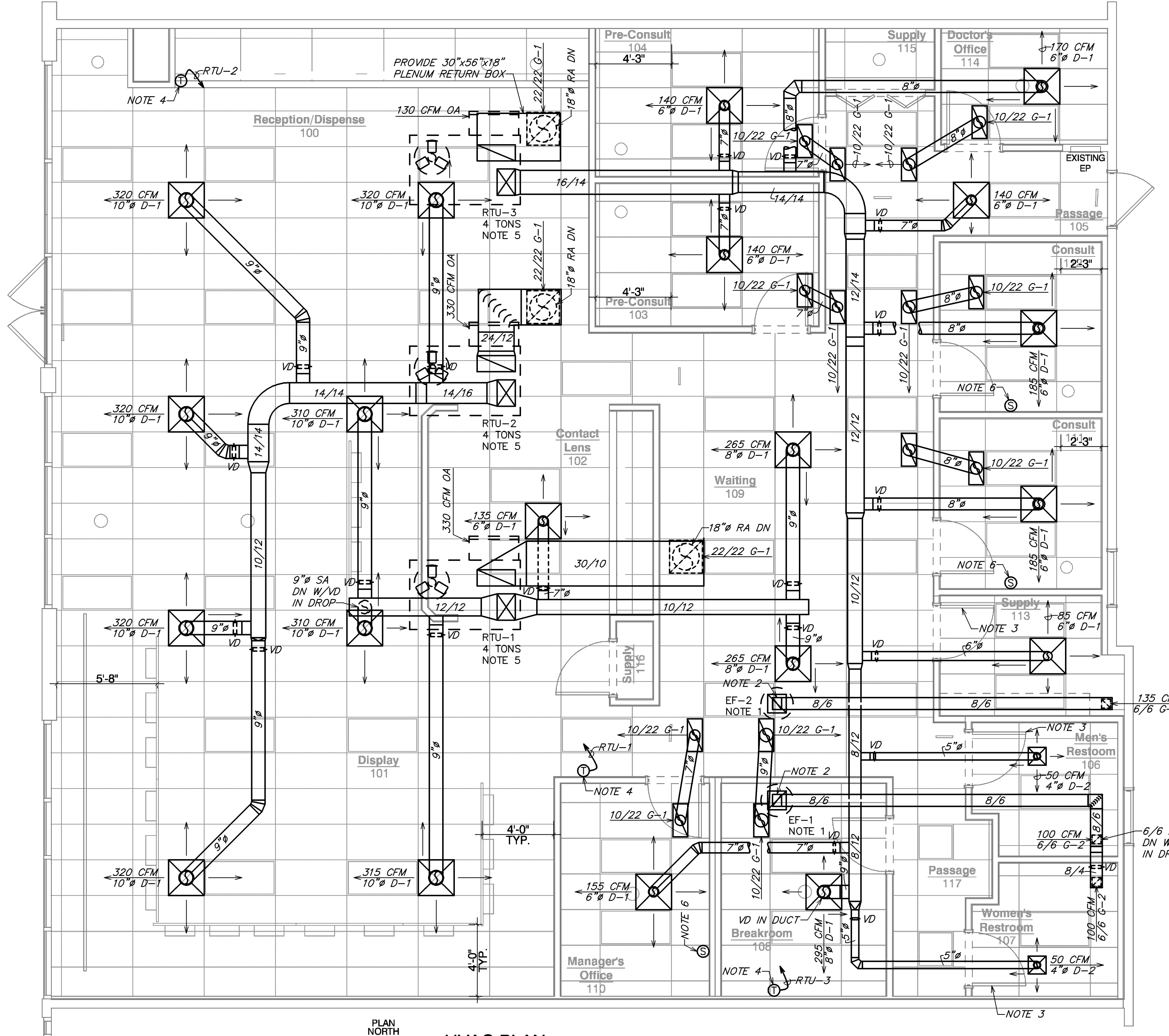
I. AT THE TIME OF ROUGH INSTALLATION OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM.

J. IN MECHANICALLY VENTILATED BUILDINGS, PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDES AT LEAST A MERV OF 11.

K. INSTALLATIONS OF HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT SHALL COMPLY WITH SECTIONS 5.508.1.1 AND 5.508.1.2.

L. INSTALL HVAC AND REFRIGERATION EQUIPMENT THAT DOES NOT CONTAIN OFCs.

M. INSTALL FIRE SUPPRESSION EQUIPMENT THAT DOES NOT CONTAIN HALONS.



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

LEGEND
 — EXISTING
 — NEW WORK
 ⊕ NEW TO EXISTING CONNECTION

HVAC GENERAL NOTES

GENERAL NOTES:

A. EXISTING CONDITIONS ARE BASED ON RECORD DRAWINGS PROVIDED BY THE OWNER AND/OR LIMITED FIELD VERIFICATION BY OTHERS. CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE PROJECT.

B. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING CONDITIONS PRIOR TO SUBMITTING HIS BID. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ANY EXTRAS DUE TO THE CONTRACTOR'S FAILURE TO VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER FOR RESOLUTION. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH DEMOLITION WORK PRIOR TO BIDDING AND START OF WORK. CONTRACTOR IS RESPONSIBLE TO DEMOLISH ALL EXISTING AS REQUIRED FOR INSTALLATION/CONSTRUCTION OF NEW WORK.

C. MECHANICAL CONTRACTOR SHALL FIELD COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL POWER REQUIREMENTS.

D. THE CONTRACTOR SHALL COOPERATE WITH THE OTHER TRADES SO THAT THE INSTALLATION OF ALL EQUIPMENT MAY BE PROPERLY COORDINATED.

E. ALL EQUIPMENT FURNISHED SHALL FIT THE SPACE AVAILABLE WITH CONNECTIONS IN THE REQUIRED LOCATIONS AND WITH ADEQUATE SPACE FOR OPERATING AND SERVICING. THE DRAWINGS ARE GENERALLY DIAGNOSTIC AND INDICATE THE INTENT OF THE INSTALLATION WHILE THE SPECIFICATIONS AND EQUIPMENT LIST DENOTE THE TYPE AND QUALITY OF MATERIAL AND WORKMANSHIP TO BE USED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE HIGHER AND/OR MORE COSTLY STANDARD WILL APPLY. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER WHOSE DECISION SHALL BE FINAL. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY IN THIS REGARD ON BEHALF OF THE CONTRACTOR AFTER AWARD OF THE CONTRACT.

F. COORDINATE DUCT ROUTING AND HEIGHTS WITH GENERAL CONTRACTOR. VERIFY ALL CLEARANCES BEFORE STARTING WORK.

G. THE CONTRACTOR SHALL INSTALL ALL PIPING, DUCTWORK AND EQUIPMENT AS REQUIRED TO CONFORM TO THE STRUCTURE. AVOID OBSTRUCTIONS, PRESERVE CEILING HEIGHTS AND HEADROOM AND MAKE ALL EQUIPMENT REQUIRING MAINTENANCE OR REPAIR ACCESSIBLE.

H. ALL DUCT CONNECTIONS TO HVAC EQUIPMENT MUST BE MADE WITH FLEXIBLE CONNECTORS.

I. DO NOT ATTACH ANYTHING TO DECK ABOVE. ATTACH TO STRUCTURE (I.E. BEAMS, JOISTS) ONLY. DUCT HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODE. ALL CONNECTIONS TO JOISTS SHALL BE MADE AT THE TOP CORNER.

J. ALL DUCT DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS. ALL SUPPLY AND UNTEMPERED OUTDOOR AIR DUCTWORK SHALL BE LINED WITH 1" ACOUSTICAL DUCT LINER OR WRAPPED WITH 1-1/2" THICK FIRE RETARDANT FIBERGLASS WITH A REINFORCED ALUMINUM FOIL JACKET AND SHALL BE APPROVED FOR USE BY SIAGMA AND NAIMA. RETURN AIR TRANSFER DUCTS AND RETURN DUCTWORK WITHIN 10 FEET OF THE UNIT FAN SHALL BE LINED WITH 1" ACOUSTICAL DUCT LINER.

K. TENANT'S CONTRACTOR SHALL BE RESPONSIBLE FOR THE FIELD VERIFICATION OF ALL UTILITY RUNS AND/OR OTHER IMPROVEMENTS LOCATED ON THE PREMISES PRIOR TO BIDDING. TENANT'S CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ALL COSTS RELATING TO THE RELOCATION OF, DAMAGE TO, REPAIR OF ANY EXISTING UTILITY RUNS AND/OR IMPROVEMENTS WHICH ARE DAMAGED AS A RESULT OF TENANT'S WORK IN OR AROUND THE PREMISES.

L. ALL ROOFING WORK SHALL BE PERFORMED BY LANDLORD'S APPROVED ROOFING CONTRACTOR AT TENANT'S EXPENSE, IF REQUIRED IN LEASE OR TENANT CRITERIA MANUAL.

M. MECHANICAL CONTRACTOR SHALL PROVIDE TENANT WITH A WRITTEN ONE (1) YEAR MANUFACTURER'S WARRANTY ON ALL HVAC EQUIPMENT PROVIDED AND / OR INSTALLED. THE WARRANTY SHALL INCLUDE ALL LABOR, MATERIALS AND THREE (3) ROUTINE SERVICES INCLUDING FILTER CHANGES DURING A ONE (1) YEAR PERIOD.

N. AT THE COMPLETION OF CONSTRUCTION AN AECB, AABC OR TABB CERTIFIED AIR BALANCE REPORT SHALL BE SUBMITTED TO THE ENGINEER AND LANDLORD. THE BALANCING MUST BE COMPLETED BY AN INDEPENDENT, THIRD PARTY CONTRACTOR WITH NO TIES TO THE INSTALLING CONTRACTORS.

MALL COORDINATION:

O. THE CONTRACTOR SHALL OBTAIN A COPY OF THE LANDLORD'S TENANT CRITERIA MANUAL. TENANT CRITERIA MANUAL IS AN INTEGRAL PART OF THIS CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH LANDLORD REQUIREMENTS AT NO ADDITIONAL COST TO THE TENANT.

P. PARTS OF THE BASE BUILDING SYSTEMS THAT FALL INTO LEASE LINE SHALL REMAIN UNDISTURBED UNLESS NOTED OTHERWISE.

Q. PROVIDE ALL NECESSARY WIRING, RELAYS, DETECTORS, COMPONENTS, ETC., FOR FIRE ALARM OR CONTROL SYSTEM INTERLOCK IF APPLICABLE. VERIFY WITH MALL PERSONNEL BEFORE BID.

HVAC PLAN NOTES

HVAC NOTES:

1. PROVIDE NEW EXHAUST FAN AS NOTED ON PLANS AND SCHEDULED ON SHEET M2. THE CONTRACTOR SHALL FIELD VERIFY THAT THE LOCATION SHOWN IS A MINIMUM OF 10'-0" FROM ANY OUTDOOR AIR INTAKE.

2. PROVIDE 8/6 EXHAUST AIR DUCT UP TO EF ON ROOF.

3. CONTRACTOR SHALL UNDERCUT DOOR 3/4".

4. PROVIDE NEW HONEYWELL "COMMERCIAL VISIONPRO 8000" FULLY DIGITAL 7 DAY PROGRAMMABLE TYPE THERMOSTAT WITH REMOTE SENSING CAPABILITIES, AUTO CHANGE OVER, AND AUTO SET BACK. MOUNT THERMOSTAT AT 48" A.F.F. COORDINATE LOCATION WITH WALL GRAPHICS LAYOUT. PROVIDE REMOTE TEMPERATURE SENSORS AS INDICATED ON PLAN. CONTRACTOR TO FIELD VERIFY CONTROLS ON EXISTING ROOFTOP UNIT AND PROVIDE ANY CONTROL MODULES/BOARDS AS REQUIRED TO INTERFACE WITH THE NEW THERMOSTATS. SUPPLY FAN OPERATION SHALL BE SET TO CONTINUOUS TO MAINTAIN CODE REQUIRED VENTILATION.

5. EXISTING ROOFTOP UNIT IN APPROXIMATE LOCATION INDICATED ON PLANS TO BE REPLACED, RE-USE EXISTING ROOF OPENING. VERIFY EXACT LOCATION IN THE FIELD. SEE SHEET M2 FOR ROOFTOP UNIT SCHEDULE.

6. PROVIDE REMOTE TEMPERATURE SENSOR FOR TEMPERATURE AVERAGING TO COMMUNICATE WITH CORRESPONDING THERMOSTAT FOR RTU SERVING THE SPACE. MOUNT SENSOR AT A MAXIMUM HEIGHT OF 48" A.F.F.

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No.	Description	Date

Sheet Title:

HVAC PLAN

Project Number: **16903_050** Sheet Number: **M1**

Drawn By: ARM

Issue Date:

08/12/2016

HVAC SPECIFICATIONS

SECTION 23000 - HVAC GENERAL CONDITIONS

- 1.01 APPLICABILITY
1.02 EXISTING CONDITIONS
1.03 CODES AND STANDARDS
1.04 PERMITS AND FEES
1.05 CONTRACT DRAWINGS
1.06 EXISTING CONDITIONS
1.07 SUBMITTALS
1.08 MANUFACTURER QUALIFICATIONS
1.09 DELIVERY, STORAGE, AND HANDLING
1.10 WARRANTY AND GUARANTEE

- 2.01 COORDINATION OF WORK
2.02 CLEANING AND REPAIR
2.03 EXAMINATION
2.04 INTERFERENCE WITH OTHER PRODUCTS
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STATE OF CALIFORNIA MECHANICAL SYSTEMS CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Mechanical Compliance Forms & Worksheets, Mandatory Measures, and HVAC System Requirements.

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STATE OF CALIFORNIA MECHANICAL SYSTEMS CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Mechanical Compliance Forms & Worksheets, Mandatory Measures, and HVAC System Requirements.

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

STATE OF CALIFORNIA HVAC SYSTEM REQUIREMENTS CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Equipment Tags and System Description, Mandatory Measures, and HVAC System Requirements.

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STATE OF CALIFORNIA MECHANICAL VENTILATION AND REHEAT CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Mechanical Ventilation and Reheat, and HVAC System Requirements.

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

STATE OF CALIFORNIA FAN POWER CONSUMPTION CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Constant Volume Fans, Variable Air Volume Fans, and Total Fan System Power Index.

STATE OF CALIFORNIA FAN POWER CONSUMPTION CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Constant Volume Fans, Variable Air Volume Fans, and Total Fan System Power Index.

STATE OF CALIFORNIA FAN POWER CONSUMPTION CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Constant Volume Fans, Variable Air Volume Fans, and Total Fan System Power Index.

STATE OF CALIFORNIA WATER HEATING SYSTEM GENERAL INFORMATION CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for General Information, Water Heating System, and Supplemental Storage.

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

STATE OF CALIFORNIA MECHANICAL SYSTEMS CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Mechanical Compliance Forms & Worksheets, Mandatory Measures, and HVAC System Requirements.

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

STATE OF CALIFORNIA MECHANICAL VENTILATION AND REHEAT CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for Mechanical Ventilation and Reheat, and HVAC System Requirements.

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

STATE OF CALIFORNIA WATER HEATING SYSTEM GENERAL INFORMATION CERTIFICATE OF COMPLIANCE. National Vision. 8/12/2016. Includes sections for General Information, Water Heating System, and Supplemental Storage.

CA Building Energy Efficiency Standards - 2013 Noveremistal Compliance May 2015

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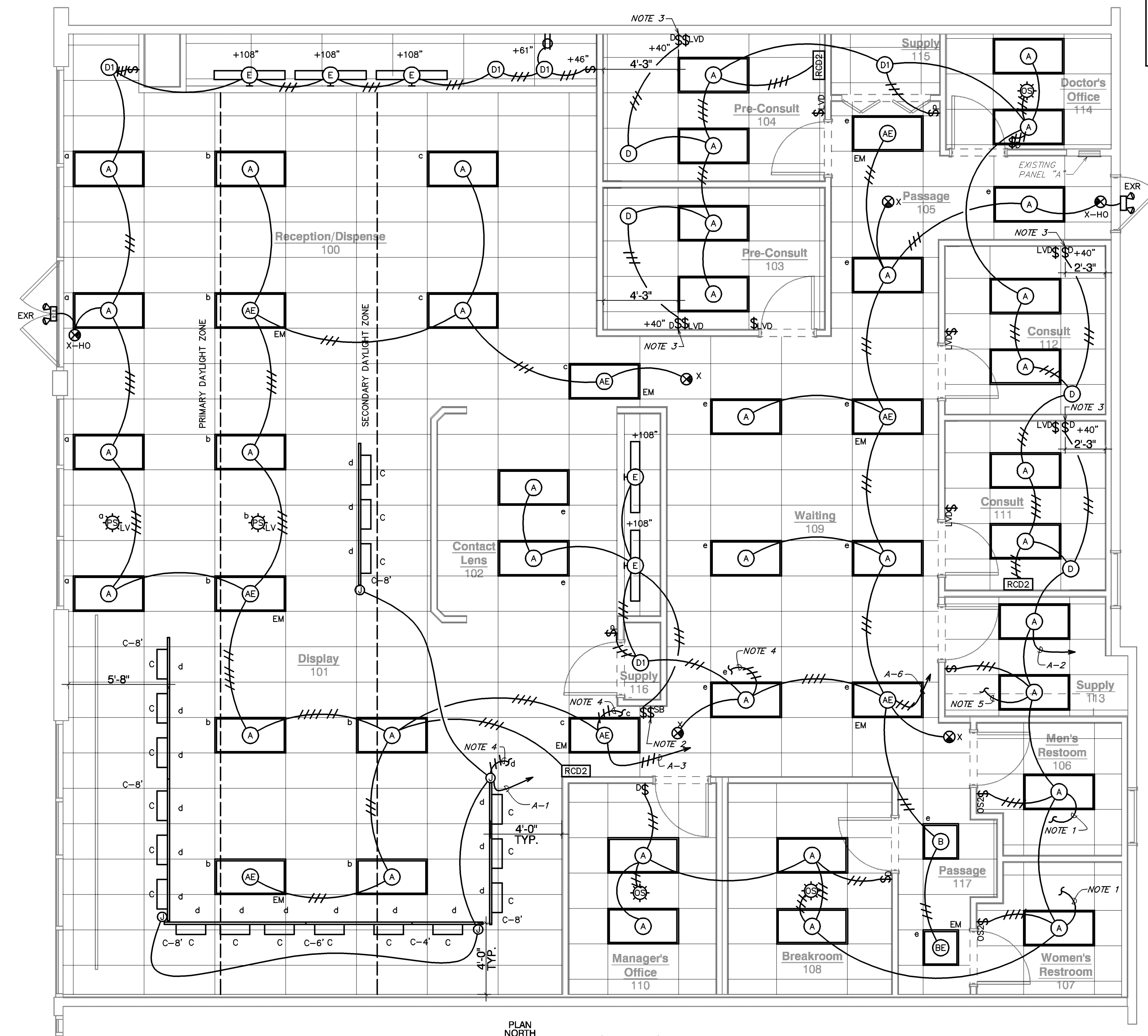
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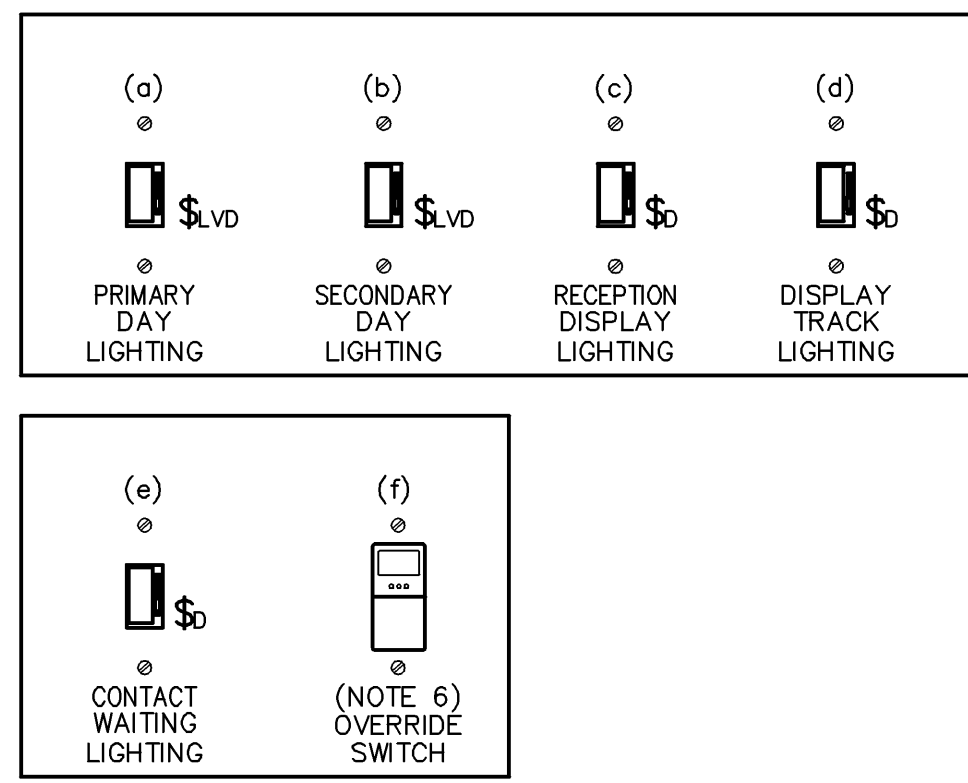
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 — NEW WORK
 ⊕ NEW TO EXISTING CONNECTION

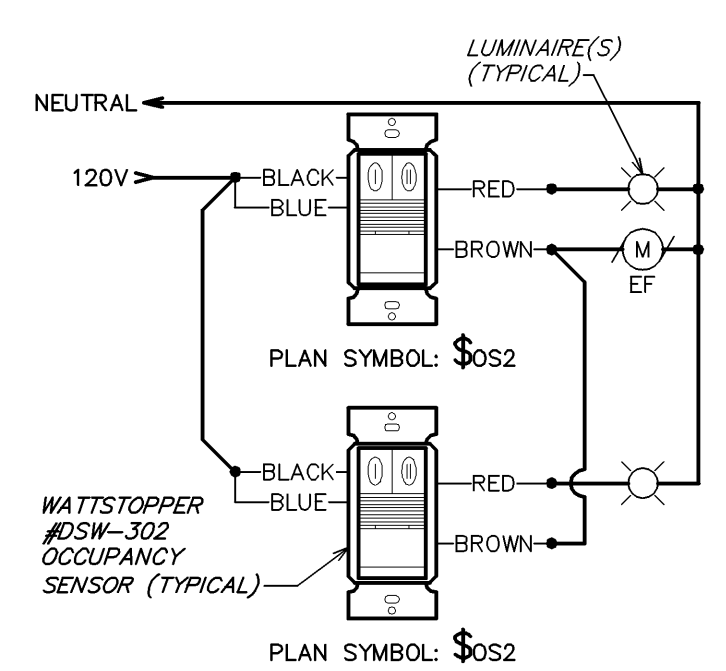


PLAN NORTH
1 LIGHTING PLAN
 SCALE: 1/4" = 1'-0"

LIGHTING SWITCHPLATE DETAIL



RESTROOM LIGHTING AND EXHAUST FAN CONTROL DETAIL



GENERAL NOTES APPLICABLE TO THIS DETAIL:
 A. CONTRACTOR SHALL SET DIP SWITCHES TO ACCOMPLISH THE FOLLOWING SEQUENCE OF OPERATION:
 1. RELAY 1 (RED WIRE) OF EACH OCCUPANCY SENSOR SHALL BE SET AS MANUAL ON TO TURN LIGHTS IN THE RESTROOM ON AND SHALL TURN LIGHTS OFF AFTER 15 MINUTES OF NOT SENSING MOTION.
 A. ONLY THE LIGHTS WITHIN THE RESTROOM ASSOCIATED WITH THE OCCUPANCY SENSOR SHALL BE ENERGIZED BY THE OCCUPANCY SENSOR.
 2. RELAY 2 (BROWN WIRE) OF EACH OCCUPANCY SENSOR SHALL BE SET AS AUTOMATIC ON TO TURN EXHAUST FAN ON UPON OCCUPANT ENTERING THE ROOM AND SHALL AUTOMATICALLY TURN EXHAUST FAN OFF AFTER 30 MINUTES OF NOT SENSING MOTION.
 A. ACTIVATION OF EITHER OCCUPANCY SENSOR SHALL ENERGIZE THE EXHAUST FAN. EXHAUST FAN SHALL ONLY TURN OFF WHEN BOTH OCCUPANCY SENSORS TIMEOUT AFTER 30 MINUTES OF NOT SENSING MOTION.
 B. EXHAUST FAN SHALL REMAIN RUNNING FOR 15 MINUTES AFTER THE OCCUPANCY SENSOR SWITCHES THE ROOM'S LIGHTING OFF.

GENERAL ELECTRICAL NOTES

- A. COORDINATE ALL DEVICE LOCATIONS AND CIRCUIT ROUTING WITHIN ANY MILLWORK WITH MILLWORK VENDOR PRIOR TO ROUGH-IN.
- B. COORDINATE THE CONNECTIONS OF ALL EQUIPMENT PROVIDED BY OTHERS WITH THE CONTRACTOR PROVIDING THE EQUIPMENT PRIOR TO ROUGH-IN. THIS INCLUDES, BUT IS NOT LIMITED TO, MECHANICAL EQUIPMENT, KITCHEN EQUIPMENT, AUDIO/VISUAL EQUIPMENT, FIRE SUPPRESSION SYSTEM EQUIPMENT, FIRE ALARM EQUIPMENT, ETC. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE DISCONNECTING MEANS FOR, AND TO MAKE THE FINAL CONNECTION TO, ANY HARDWIRED EQUIPMENT. THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE TO PROVIDE AN APPROPRIATE CORD AND PLUG FOR ANY CORD-AND-PLUG CONNECTED EQUIPMENT THAT IS NOT EQUIPPED WITH AN INTEGRAL CORD AND PLUG.
- C. SEE PANEL SCHEDULES FOR INFORMATION ON CIRCUITS THAT ARE TO BE ROUTED THROUGH CONTACTORS OR RELAYS FOR CONTROL.
- D. ALL EQUIPMENT, DEVICES, AND LUMINAIRE(S) SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED. EQUIPMENT MOUNTED OUTDOORS SHALL BE NEMA 3R. DEVICES MOUNTED IN DAMP OR WET LOCATIONS SHALL BE WEATHERPROOF. RECEPTACLES RATED 15A OR 20A-125V AND 120 VOLTS WHICH ARE LOCATED IN DAMP OR WET LOCATIONS SHALL BE GFCI PROTECTED AND EQUIPPED WITH A SUITABLE WEATHERPROOF COVERPLATE (WHILE-IN-USE IN WET LOCATIONS.)
- E. ALL LUGS, TERMINALS, ETC. IN ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE LISTED FOR A MINIMUM OF 75 DEGREE C CONDUCTORS. TERMINATIONS LISTED FOR ONLY 60 DEGREE C CONDUCTORS ARE NOT PERMITTED.
- F. CIRCUITS SERVING EMERGENCY LIGHTING EQUIPMENT SUCH AS EMERGENCY BATTERIES SHALL NOT SHARE A NEUTRAL (SHALL NOT BE PART OF A MULTIWIRE BRANCH CIRCUIT) WITH ANY OTHER CIRCUIT. PROVIDE A SEPARATE NEUTRAL FOR EVERY CIRCUIT THAT SERVES EMERGENCY LIGHTING EQUIPMENT.
- G. ALTHOUGH NOT SPECIFICALLY SHOWN, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED LOW VOLTAGE WIRING AND DATA CABLING, PER THE MANUFACTURER'S RECOMMENDATIONS, FOR A COMPLETE, FUNCTIONAL LIGHTING CONTROL SYSTEM.
- H. ALTHOUGH NOT SPECIFICALLY SHOWN, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED WIRING AND DATA CABLING, INCLUDING ALL 0-10V CONTROL WIRING WHERE APPLICABLE, PER THE MANUFACTURER'S RECOMMENDATIONS FOR A COMPLETE, FUNCTIONAL DIMMING SYSTEM.

EXISTING CONDITION NOTES

- A. ANY EXISTING CONDITIONS INDICATED IN THIS SET OF DRAWINGS ARE BASED ON INFORMATION PROVIDED BY OTHERS AND POSSIBLE LIMITED FIELD VERIFICATION. THE CONTRACTOR SHALL ADJUST FOR ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.
- B. THE CONTRACTOR SHALL VISIT THE PROJECT SITE, REVIEW EXISTING CONDITIONS AGAINST THE CONTRACT DOCUMENTS, AND FAMILIARIZE HIMSELF WITH THE WORK PRIOR TO BIDDING AND START OF THE WORK. BY SIGNING THE CONTRACT, THE CONTRACTOR ACKNOWLEDGES THE SITE VISIT HAS BEEN COMPLETED AND THE EXISTING CONDITIONS ARE ACCEPTED.
- C. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF EXISTING EQUIPMENT, DEVICES, AND LUMINAIRE(S) AS INDICATED AND/OR AS REQUIRED TO ALLOW FOR INSTALLATION AND CONSTRUCTION OF THE NEW WORK. REMOVE ALL EQUIPMENT, DEVICES, LUMINAIRE(S), CONDUITS, SUPPORTS, HANGERS, ETC. THAT ARE NOT SHOWN AND ARE REQUIRED TO BE REMOVED IN ORDER TO COMPLETE THE NEW WORK.
- D. ELECTRICAL CIRCUITS THAT ARE TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY. CONDUCTORS SHALL BE REMOVED FROM THE ITEM TO BE DEMOLISHED TO THE SOURCE OVERCURRENT DEVICE. RACEWAYS WHICH ARE INSTALLED IN OR BELOW FLOORS OR WITHIN WALLS MAY BE ABANDONED, BUT ALL OVERHEAD OR EXPOSED RACEWAYS SHALL BE REMOVED. EXPOSED RACEWAYS TO BE ABANDONED SHALL BE REMOVED AND SHALL BE CUT OR CHISELED AT LEAST 2" INTO THE WALL OR FLOOR AND THE OPENING GROUDED SMOOTH.
- E. PROVIDE TEMPORARY CIRCUITS AND CONNECTIONS TO EQUIPMENT, LUMINAIRE(S), OR DEVICES IN AREAS OF THE FACILITY THAT ARE TO REMAIN IN OPERATION AS REQUIRED TO MAINTAIN THOSE AREAS IN COMPLETE OPERATION.
- F. MAINTAIN CONTINUITY OF EXISTING CIRCUITS AS REQUIRED TO PROVIDE POWER TO REMAINING EQUIPMENT, DEVICES, AND LUMINAIRE(S) THAT ARE NOT BEING REMOVED.

KEYED NOTES

- 1. CONNECT TO EXHAUST FAN SERVING RESTROOM (EF-1). SEE SHEET E2 FOR LOCATION OF EXHAUST FAN. CONNECT FAN SUCH THAT FAN TURNS ON WHEN ANY ONE RESTROOM'S LIGHTING FIXTURES ARE TURNED ON AND ONLY TURNS OFF IF BOTH RESTROOM'S LIGHTING FIXTURES ARE TURNED OFF. PROVIDE ANY RELAYS REQUIRED TO ACCOMPLISH THIS SWITCHING. SEE RESTROOM LIGHTING AND EXHAUST FAN CONTROL DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION.
- 2. PROVIDE LIGHTING CONTROL SWITCHBANK. SEE LIGHTING SWITCHPLATE DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION. LOWERCASE LETTERS ADJACENT TO LUMINAIRE(S) ON PLANS CORRESPOND TO THE ASSOCIATED SWITCH ON THE SWITCHBANK DETAIL. CONFIRM SWITCHBANK WILL FIT WITHIN THIS DESIGNATED AREA AND STACK MULTIPLE SWITCHBANKS AT THIS LOCATION IF A SINGLE SWITCHBANK WILL NOT FIT WITHIN THIS DESIGNATED AREA.
- 3. PROVIDE LEVITON #80800 INCANDESCENT DIMMER SWITCH.
- 4. CONNECT LIGHTING CIRCUIT VIA SWITCH(ES) LOCATED IN LIGHTING CONTROL SWITCHBANK. LOWERCASE LETTERS ADJACENT TO LUMINAIRE(S) INDICATE CORRESPONDING CONTROL SWITCH.
- 5. CONNECT TO EXHAUST FAN SERVING SUPPLY ROOM(EF-2). SEE SHEET E2 FOR LOCATION OF EXHAUST FAN, LIGHTING FIXTURES AND EXHAUST FAN SHALL BE SWITCHED INDEPENDENTLY.
- 6. PROVIDE OVERRIDE SWITCH. SEE LIGHTING CONTROL DETAIL ON SHEET E5 FOR ADDITIONAL INFORMATION.

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 AUGUST 12, 2016

Project Title:

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San Juan Capistrano, CA

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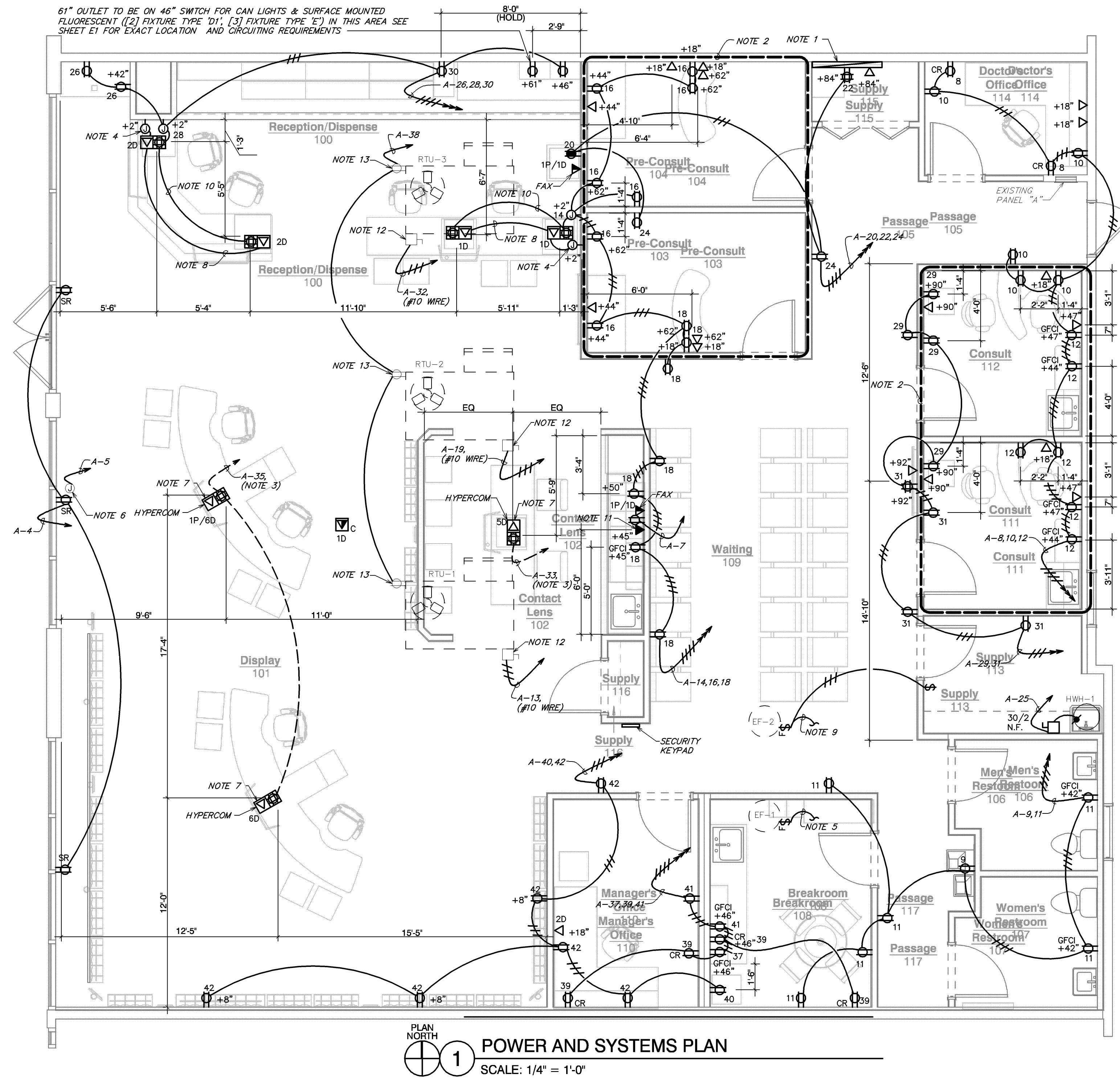
No.	Description	Date

Sheet Title:

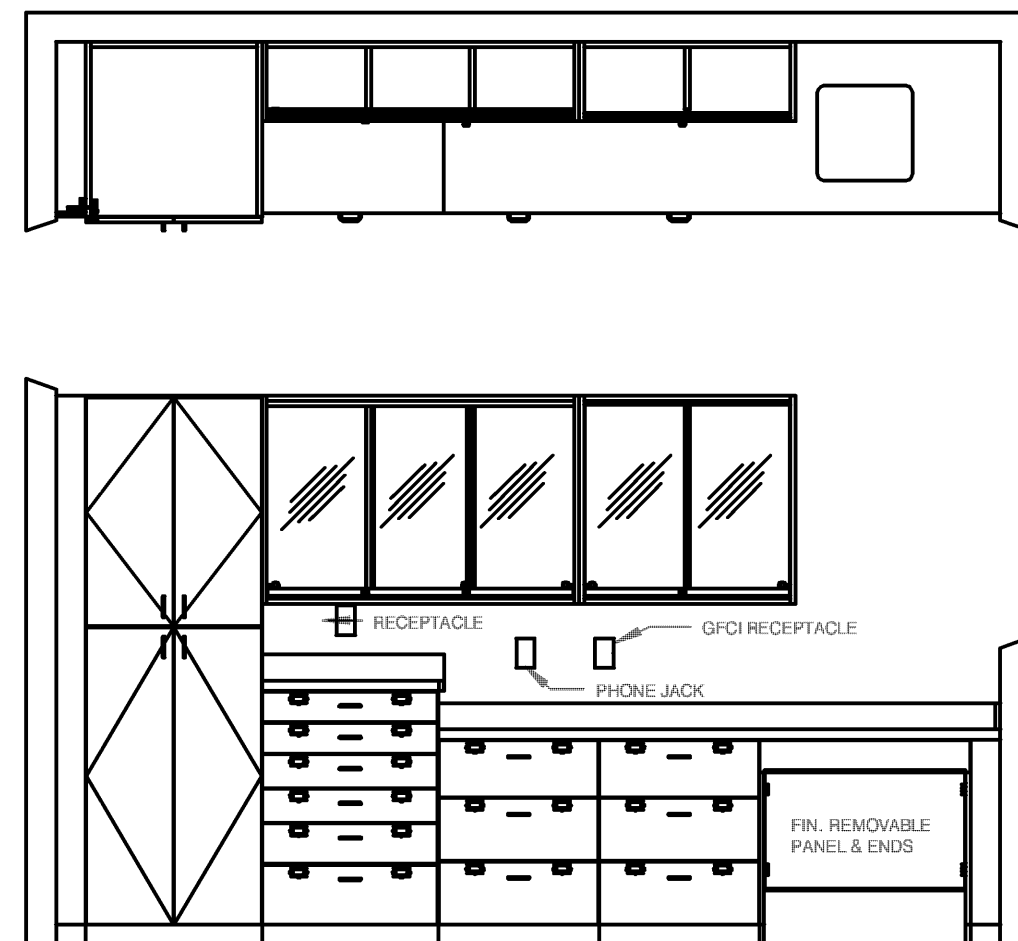
LIGHTING PLAN

Project Number: 16903_050
 Sheet Number: E1
 Drawn By: YJP
 Issue Date: 08/12/2016

61" OUTLET TO BE ON 46" SWITCH FOR CAN LIGHTS & SURFACE MOUNTED FLUORESCENT ((2) FIXTURE TYPE 'D1', (3) FIXTURE TYPE 'E') IN THIS AREA SEE SHEET E1 FOR EXACT LOCATION AND CIRCUITING REQUIREMENTS



CONTACT LENS ELEVATION



GENERAL ELECTRICAL NOTES

- COORDINATE ALL DEVICE LOCATIONS AND CIRCUIT ROUTING WITHIN ANY MILLWORK WITH MILLWORK VENDOR PRIOR TO ROUGH-IN.
- COORDINATE THE CONNECTIONS OF ALL EQUIPMENT PROVIDED BY OTHERS WITH THE CONTRACTOR PROVIDING THE EQUIPMENT PRIOR TO ROUGH-IN. THIS INCLUDES, BUT IS NOT LIMITED TO, MECHANICAL EQUIPMENT, KITCHEN EQUIPMENT, AUDIO/VISUAL EQUIPMENT, FIRE SUPPRESSION SYSTEM EQUIPMENT, FIRE ALARM EQUIPMENT, ETC. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE DISCONNECTING MEANS FOR, AND TO MAKE THE FINAL CONNECTION TO, ANY HARDWIRED EQUIPMENT. THE ELECTRICAL CONTRACTOR IS ALSO RESPONSIBLE TO PROVIDE AN APPROPRIATE CORD AND PLUG FOR ANY CORD-AND-PLUG CONNECTED EQUIPMENT THAT IS NOT EQUIPPED WITH AN INTEGRAL CORD AND PLUG.
- SEE PANEL SCHEDULES FOR INFORMATION ON CIRCUITS THAT ARE TO BE ROUTED THROUGH CONTACTORS OR RELAYS FOR CONTROL.
- ALL EQUIPMENT, DEVICES, AND LUMINAIRES SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED. EQUIPMENT MOUNTED OUTDOORS SHALL BE NEW 30. DEVICES MOUNTED IN DAMP OR WET LOCATIONS SHALL BE WEATHERPROOF. RECEPTACLES RATED 15- OR 20-AMPS AND 120 VOLTS WHICH ARE LOCATED IN DAMP OR WET LOCATIONS SHALL BE GFCI PROTECTED AND EQUIPPED WITH A SUITABLE WEATHERPROOF COVERPLATE (WHILE-IN-USE IN WET LOCATIONS).
- ALL LUGS, TERMINALS, ETC., IN ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE LISTED FOR A MINIMUM OF 75 DEGREE C CONDUCTORS. TERMINATIONS LISTED FOR ONLY 60 DEGREE C CONDUCTORS ARE NOT PERMITTED.

EXISTING CONDITION NOTES

- ANY EXISTING CONDITIONS INDICATED IN THIS SET OF DRAWINGS ARE BASED ON INFORMATION PROVIDED BY OTHERS AND POSSIBLE LIMITED FIELD VERIFICATION. THE CONTRACTOR SHALL ADJUST FOR ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.
- THE CONTRACTOR SHALL VISIT THE PROJECT SITE, REVIEW EXISTING CONDITIONS AGAINST THE CONTRACT DOCUMENTS, AND FAMILIARIZE HIMSELF WITH THE WORK PRIOR TO BIDDING AND START OF THE WORK. BY SIGNING THE CONTRACT, THE CONTRACTOR ACKNOWLEDGES THE SITE VISIT HAS BEEN COMPLETED AND THE EXISTING CONDITIONS ARE ACCEPTED.
- THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF EXISTING EQUIPMENT, DEVICES, AND LUMINAIRES AS INDICATED AND/OR AS REQUIRED TO ALLOW FOR INSTALLATION AND CONSTRUCTION OF THE NEW WORK. REMOVE ALL EQUIPMENT, DEVICES, LUMINAIRES, CONDUITS, SUPPORTS, HANGERS, ETC. THAT ARE NOT SHOWN AND ARE REQUIRED TO BE REMOVED IN ORDER TO COMPLETE THE NEW WORK.
- EXTENDED DATA/TELEPHONE CONDUIT FROM WALL AT 2" A.F.F. EXTEND DATA/TELEPHONE CABLE THROUGH CASEWORK TO PRINTER LOCATION. VERIFY LOCATIONS WITH THE ARCHITECTURAL PLANS.
- CONNECT TO SWITCHED LIGHTING CIRCUIT SERVING THE RESTROOMS. SEE RESTROOM LIGHTING AND EXHAUST FAN CONTROL DETAIL ON SHEET E1 FOR ADDITIONAL INFORMATION.
- PROVIDE FINAL CONNECTION TO SIGNAGE. COORDINATE LOCATION AND ALL REQUIREMENTS WITH SIGN CONTRACTOR PRIOR TO ROUGH-IN. PROVIDE AN APPROPRIATE LOCAL DISCONNECTING MEANS MOUNTED IN AN ACCESSIBLE, UNOCCUPIED LOCATION THAT IS WITHIN SIGHT OF THE SIGNAGE. EACH SIGN CIRCUIT SHALL HAVE A SEPARATE NEUTRAL AND SEPARATE EQUIPMENT GROUNDING CONDUCTOR.
- PROVIDE 1/2" CONDUIT UNDER SLAB FOR STUB-UP IN DESKS. VERIFY APPROVED METHOD OF SLAB PENETRATION (CORE DRILLING, SAW CUTTING, ETC.) WITH THE LANDLORD PRIOR TO ROUGH-IN. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING THE FLOOR AFTER THE WORK IS COMPLETE.
- PROVIDE 1/2" FLEXIBLE CONDUIT TO DATA AND PHONE DEVICES UNDER THE COUNTER. VERIFY EXACT LOCATIONS WITH THE ARCHITECTURAL PLANS PRIOR TO ROUGH-IN. EXTEND CONDUIT AT WALL TO ACCESSIBLE CEILING SPACE.
- CONNECT TO LIGHTING CIRCUIT SERVING SUPPLY ROOM VIA SWITCH. SEE SHEET E1 FOR LOCATION OF LIGHTING CIRCUIT AND ASSOCIATED SWITCH. LUMINAIRES AND EXHAUST FAN SHALL BE SWITCHED INDEPENDENTLY.
- PROVIDE FLEXIBLE CONDUIT TO SURFACE MOUNTED RECEPTACLES UNDER THE COUNTER. VERIFY EXACT LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO ROUGH-IN.

KEYED NOTES

- PROVIDE A 3"-8" x 8"-0" x 1/2" UL-LABELED FIRE-RETARDANT PLYWOOD BACKBOARD FOR TELECOMMUNICATIONS EQUIPMENT AT +2" A.F.F. PROVIDE GROUND BAR MOUNTED ON BACKBOARD EQUIPMENT GROUNDING CONDUCTOR CONNECTED TO POWER SYSTEM'S GROUNDING ELECTRODE SYSTEM. GENERAL CONTRACTOR TO INSTALL THE PANELED BOARD INCLUDING OUTLET AND CONDUIT WITHIN FIVE (5) DAYS OF CONSTRUCTION COMMENCEMENT. GC SHALL SEND A COMPLETION PHOTO TO CUSMAN & WAKEFIELD PROJECT MANAGER AS SOON AS INSTALLED.
- THIS AREA IS DESIGNATED A PATIENT CARE AREA AND SHALL MEET THE REQUIREMENTS SET FORTH BY NEC SECTION 517. PROVIDE THE REQUIRED EQUIPMENT GROUNDING PATH AS REQUIRED BY NEC SECTION 517.13 AND THE ELECTRICAL SPECIFICATIONS.
- ROUTE ALL CONDUITS IN A COMMON TRENCH TO NEAREST FULL HEIGHT WALL. VERIFY APPROVED METHOD OF SLAB PENETRATION (CORE DRILLING, SAW CUTTING, ETC.) WITH THE LANDLORD PRIOR TO ROUGH-IN. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING THE FLOOR AFTER THE WORK IS COMPLETE.
- EXTEND DATA/TELEPHONE CONDUIT FROM WALL AT 2" A.F.F. EXTEND DATA/TELEPHONE CABLE THROUGH CASEWORK TO PRINTER LOCATION. VERIFY LOCATIONS WITH THE ARCHITECTURAL PLANS.
- CONNECT TO SWITCHED LIGHTING CIRCUIT SERVING THE RESTROOMS. SEE RESTROOM LIGHTING AND EXHAUST FAN CONTROL DETAIL ON SHEET E1 FOR ADDITIONAL INFORMATION.
- PROVIDE FINAL CONNECTION TO SIGNAGE. COORDINATE LOCATION AND ALL REQUIREMENTS WITH SIGN CONTRACTOR PRIOR TO ROUGH-IN. PROVIDE AN APPROPRIATE LOCAL DISCONNECTING MEANS MOUNTED IN AN ACCESSIBLE, UNOCCUPIED LOCATION THAT IS WITHIN SIGHT OF THE SIGNAGE. EACH SIGN CIRCUIT SHALL HAVE A SEPARATE NEUTRAL AND SEPARATE EQUIPMENT GROUNDING CONDUCTOR.
- PROVIDE 1/2" CONDUIT UNDER SLAB FOR STUB-UP IN DESKS. VERIFY APPROVED METHOD OF SLAB PENETRATION (CORE DRILLING, SAW CUTTING, ETC.) WITH THE LANDLORD PRIOR TO ROUGH-IN. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING THE FLOOR AFTER THE WORK IS COMPLETE. ROUTE ALL CONDUITS IN A COMMON TRENCH.
- PROVIDE 1/2" FLEXIBLE CONDUIT TO DATA AND PHONE DEVICES UNDER THE COUNTER. VERIFY EXACT LOCATIONS WITH THE ARCHITECTURAL PLANS PRIOR TO ROUGH-IN. EXTEND CONDUIT AT WALL TO ACCESSIBLE CEILING SPACE.
- CONNECT TO LIGHTING CIRCUIT SERVING SUPPLY ROOM VIA SWITCH. SEE SHEET E1 FOR LOCATION OF LIGHTING CIRCUIT AND ASSOCIATED SWITCH. LUMINAIRES AND EXHAUST FAN SHALL BE SWITCHED INDEPENDENTLY.
- PROVIDE FLEXIBLE CONDUIT TO SURFACE MOUNTED RECEPTACLES UNDER THE COUNTER. VERIFY EXACT LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO ROUGH-IN.
- INSTALL TELEPHONE BOX 4 1/2" ON CENTER ABOVE THE TOP OF THE COUNTER BACKSPLASH TO PROVIDE SUFFICIENT SPACE FOR WALL MOUNTED PHONE.
- DISCONNECT SWITCH IS PROVIDED BY EQUIPMENT MANUFACTURER. INTEGRAL WITH EQUIPMENT OR EXISTING TO REMAIN. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT AND FINAL CONNECTION TO DISCONNECT SWITCH.
- WEATHERPROOF GFCI SERVICE RECEPTACLE IS PROVIDED BY EQUIPMENT MANUFACTURER. INTEGRAL WITH EQUIPMENT OR EXISTING TO REMAIN. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT AND FINAL CONNECTION TO SERVICE RECEPTACLE AS INDICATED.

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AUGUST 12, 2016**

Project Title:

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No.	Description	Date

Sheet Title:

POWER AND SYSTEMS PLAN

Project Number: 16903_050
Sheet Number: **E2**
Drawn By: YJP
Issue Date: 08/12/2016

PANELBOARD SCHEDULES

LEGEND
- EXISTING
- NEW WORK
⊕ NEW TO EXISTING CONNECTION

EXISTING LOAD CENTER "A" SCHEDULE
FED FROM: LANDLORD DISTRIBUTION POINT
VOLTAGE: 120/208V, 3 PHASE, 4 WIRE
BUS MATERIAL: EXISTING
BUS LOAD: 192 AMPS
BUS RATING: 225 AMPS
MAIN: MAIN LUG ONLY
MOUNTING: FLUSH MOUNTED
ENCLOSURE: NEMA 1
FAULT CURRENT: EXISTING
AIC RATING: MATCH EXISTING
OPTIONS*: BONDED EQUIPMENT GROUND BAR

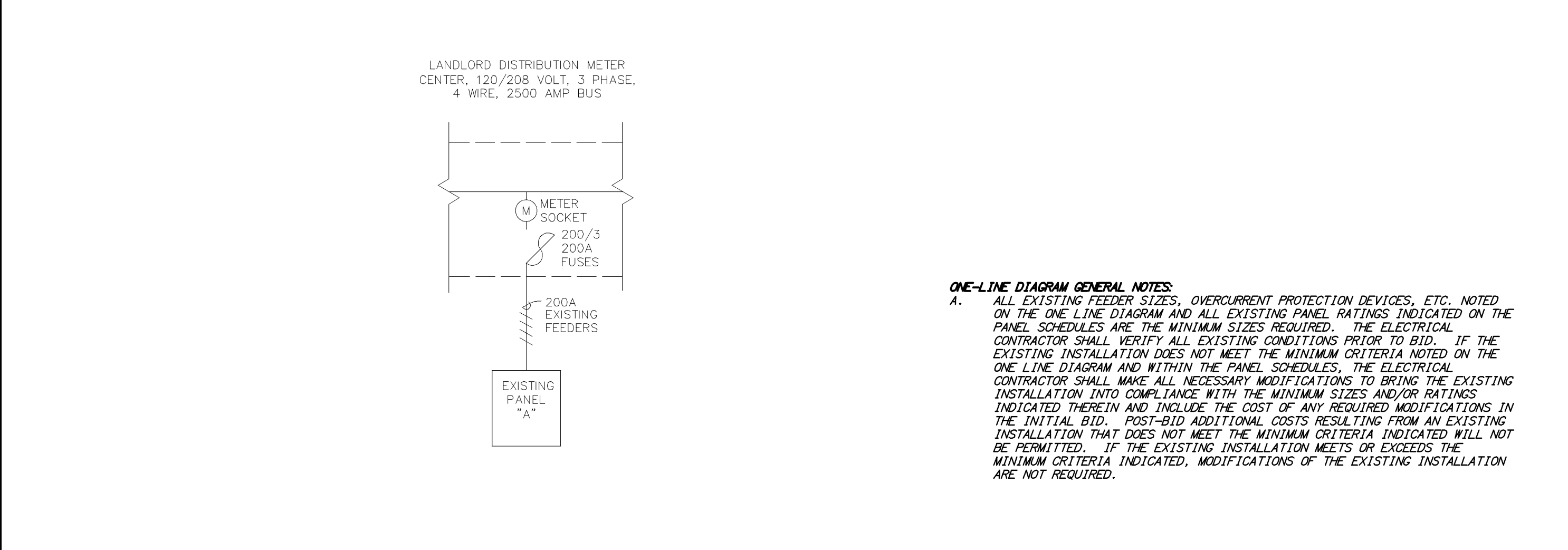
N.E.C. LOAD ANALYSIS FOR EXISTING LOAD CENTER "A" (INCLUDING SUBFEEDS)
LOAD DESCRIPTION, DEMAND FACTOR, PHASE A (VA), PHASE B (VA), PHASE C (VA), TOTAL (VA)

LIGHTING FIXTURE SCHEDULE

LUMINAIRE SCHEDULE (NOTE B)
MARK, DESCRIPTION, MANUFACTURER, CATALOG NUMBER, LAMP QUAN, LAMP DESCRIPTION, LAMP TYPE, VOLTS, VA LOAD, MOUNTING (CEILING, WALL, GRADE, UNDER-CABINET), REMARKS

LUMINAIRE SCHEDULE KEYED NOTES:
NOTE A: FL=FLUORESCENT, CFL=COMPACT FLUORESCENT, IND=INCANDESCENT, MH=METAL HALIDE, HPS=HIGH PRESSURE SODIUM,
NOTE B: GENERAL CONTRACTOR SHALL ORDER LIGHT FIXTURES THROUGH APPROVED NATIONAL VISION LIGHTING VENDOR, E SAM JONES. GENERAL CONTRACTOR TO CONTACT TERI DOBSON AT 404-351-3250 OR TDOBSON@ESAMJONES.COM
NOTE C: DUE TO WEIGHT AND SPACE OF SPECIFIED LIGHTING, TRACK FIXTURES MUST BE MECHANICALLY FASTENED TO THE GRID.

ELECTRICAL ONE-LINE DIAGRAM



ONE-LINE DIAGRAM GENERAL NOTES:
A. ALL EXISTING FEEDER SIZES, OVERCURRENT PROTECTION DEVICES, ETC., NOTED ON THE ONE-LINE DIAGRAM AND ALL EXISTING PANEL RATINGS INDICATED ON THE PANEL SCHEDULES ARE THE MINIMUM SIZES REQUIRED. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BID. IF THE EXISTING INSTALLATION DOES NOT MEET THE MINIMUM CRITERIA NOTED ON THE ONE-LINE DIAGRAM AND WITHIN THE PANEL SCHEDULES, THE ELECTRICAL CONTRACTOR SHALL MAKE ALL NECESSARY MODIFICATIONS TO BRING THE EXISTING INSTALLATION INTO COMPLIANCE WITH THE MINIMUM SIZES AND/OR RATINGS INDICATED THEREIN AND INCLUDE THE COST OF ANY REQUIRED MODIFICATIONS IN THE INITIAL BID. POST-BID ADDITIONAL COSTS RESULTING FROM AN EXISTING INSTALLATION THAT DOES NOT MEET THE MINIMUM CRITERIA INDICATED WILL NOT BE PERMITTED. IF THE EXISTING INSTALLATION MEETS OR EXCEEDS THE MINIMUM CRITERIA INDICATED, MODIFICATIONS OF THE EXISTING INSTALLATION ARE NOT REQUIRED.

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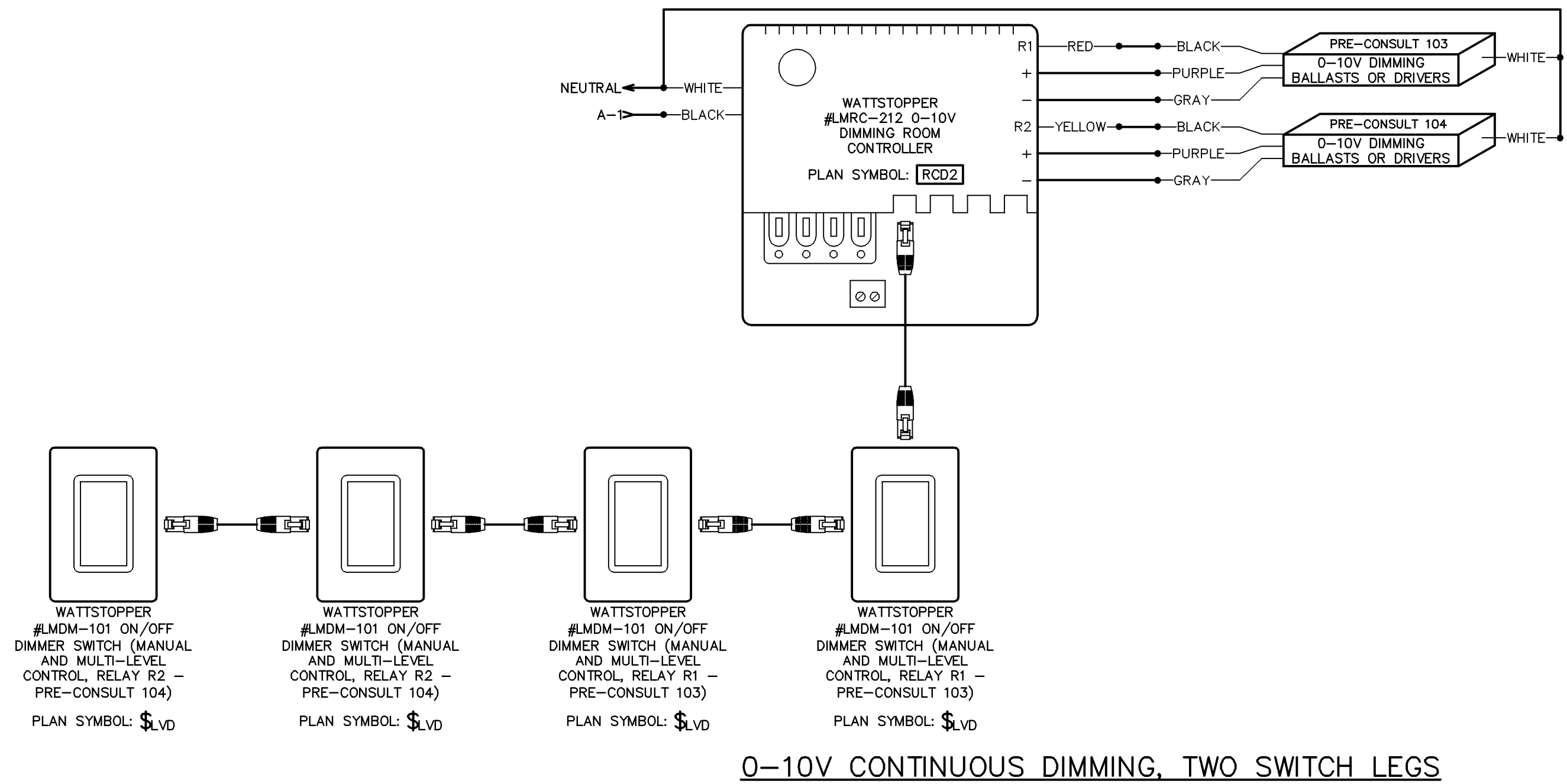
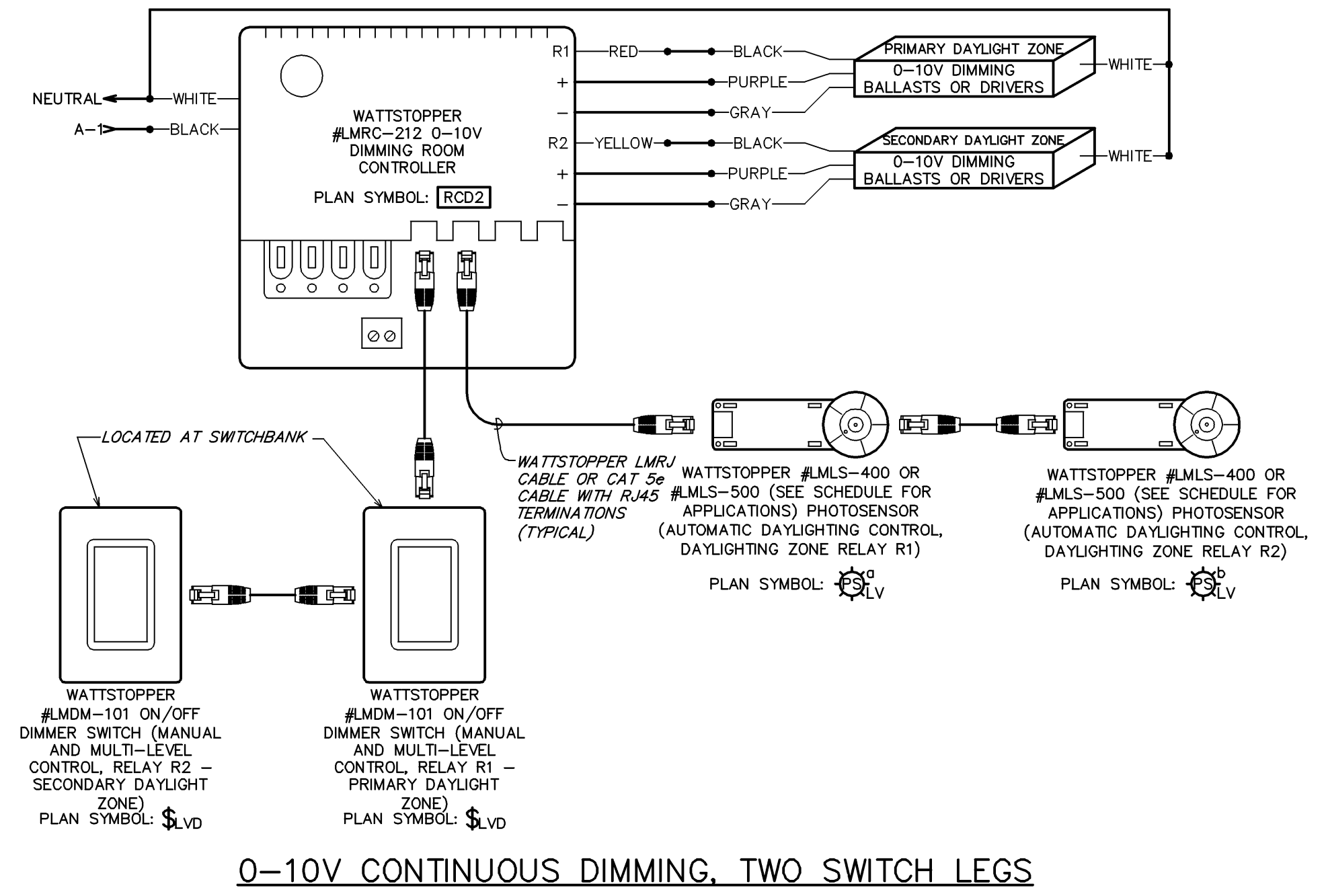
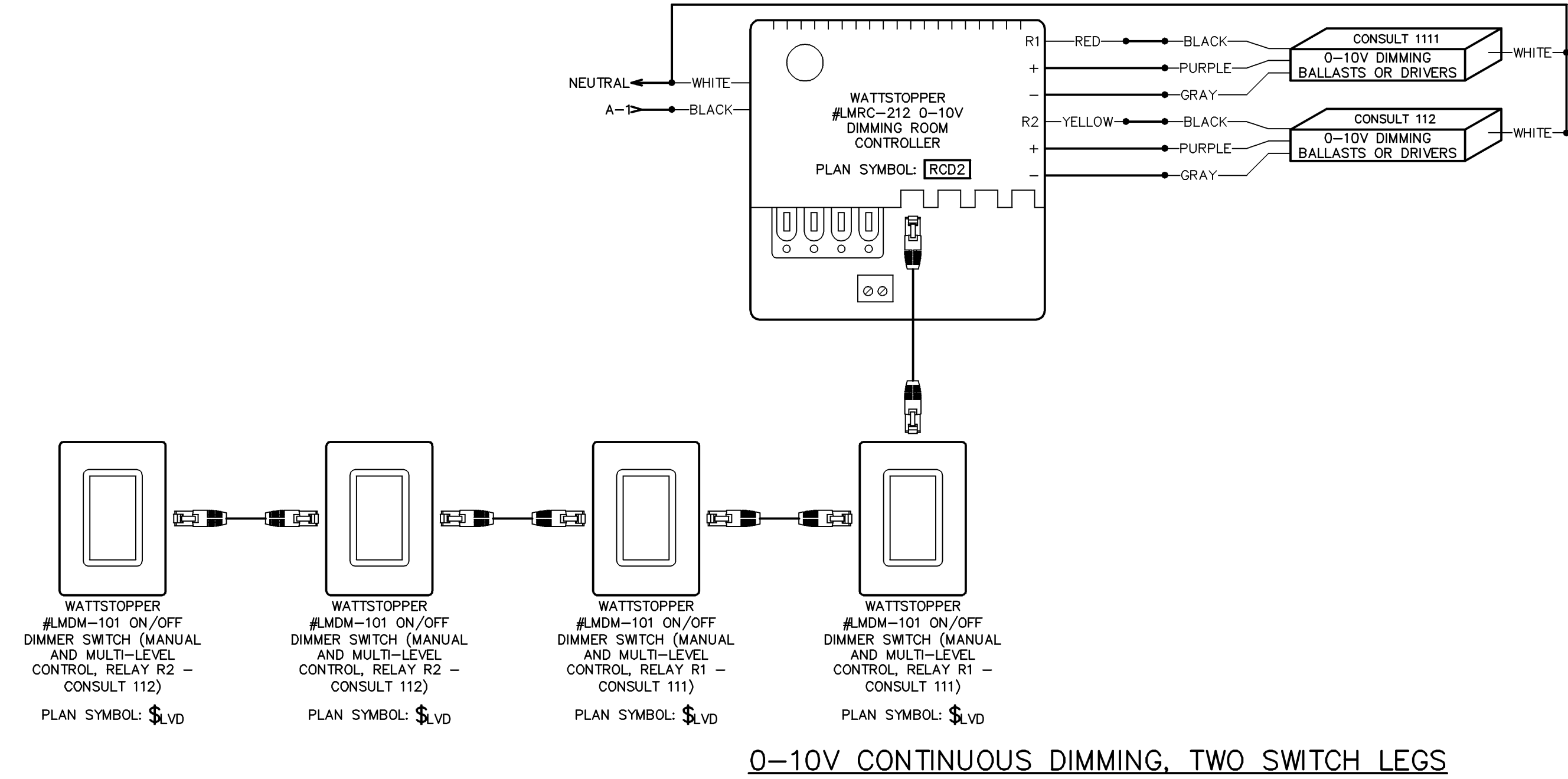
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Table with 3 columns: No., Description, Date

LIGHTING CONTROL DETAILS



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No.	Description	Date

Sheet Title:

ELECTRICAL
DETAILS

Project Number: 16903_050
Sheet Number: **E4**
Drawn By: YJP
Issue Date: 06/12/2016

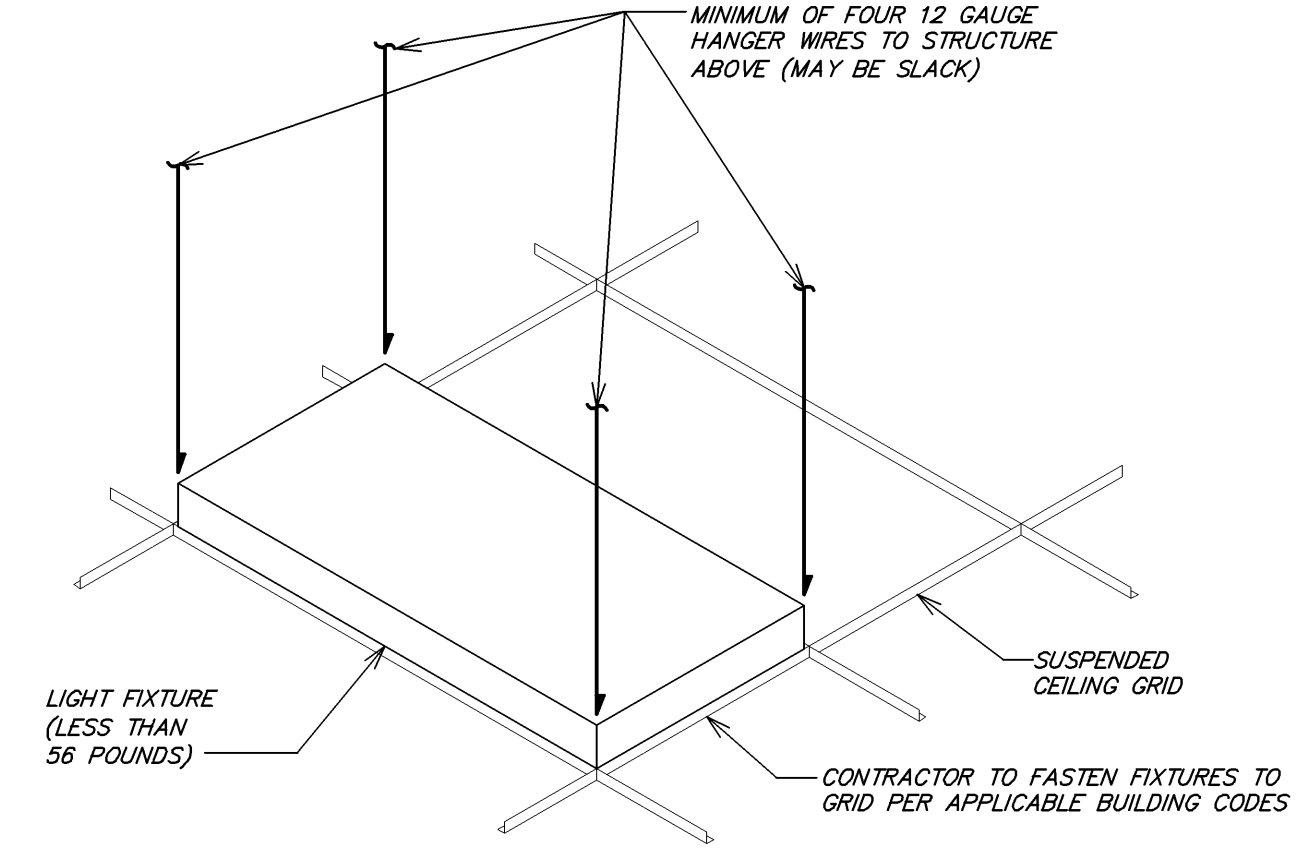
ELECTRICAL SYMBOL LEGEND

Table with 4 columns: SYMBOL, DESCRIPTION, SYMBOL, DESCRIPTION. Contains various electrical symbols and their corresponding descriptions.

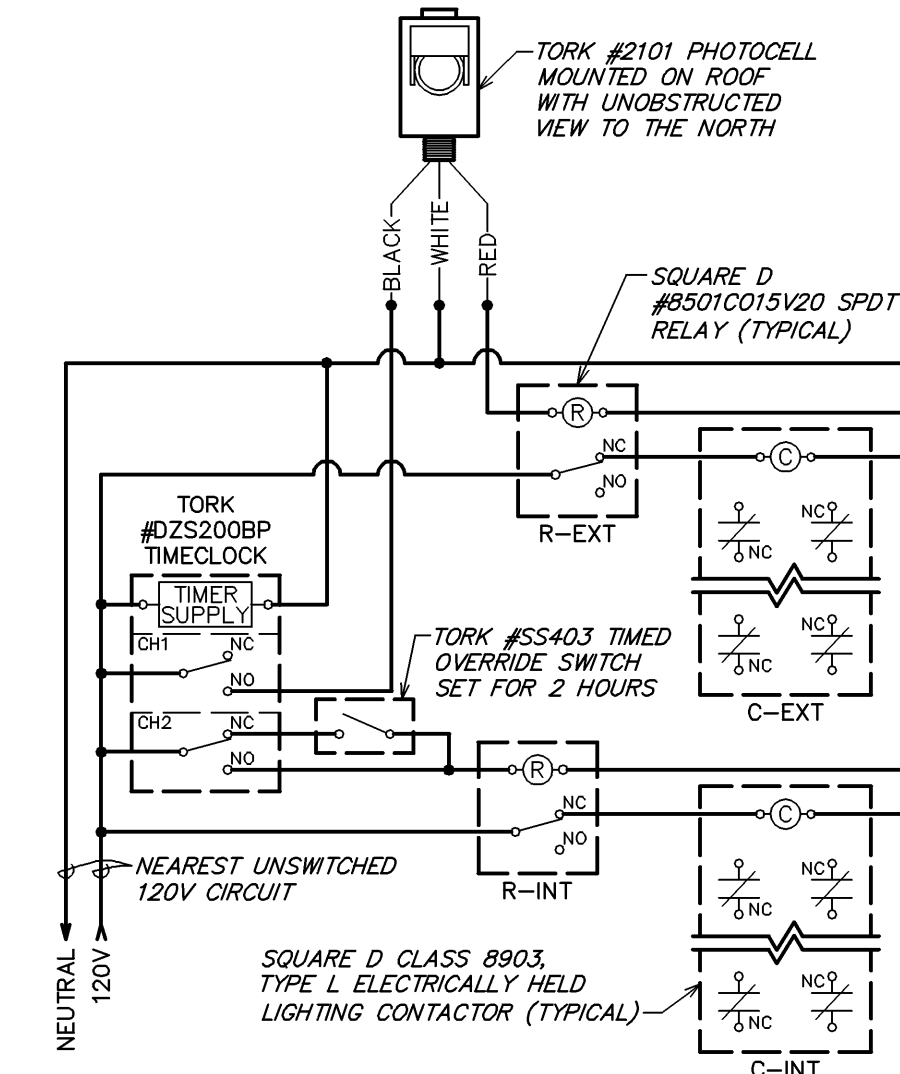
Table with 3 columns: ABBREVIATIONS AND MODIFIERS (SOME MAY NOT BE USED). Lists various abbreviations and their meanings.

Table with 4 columns: SYMBOL, GENERAL DESCRIPTION, MFR./MODEL NUMBER (UNLESS NOTED OTHERWISE) (EQUALS ARE ACCEPTABLE), DESCRIPTION/FUNCTION. Contains symbols for lighting control systems.

RECESSED TROFFER SUPPORT DETAIL



LIGHTING CONTROL DETAIL



- GENERAL NOTES APPLICABLE TO THIS DETAIL: A. SEE PANEL SCHEDULES FOR CIRCUITS THAT ARE TO BE CONTROLLED BY EACH CONTACTOR. B. EACH CONTACTOR CONSTITUTES A CONTROL ZONE...

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Project Title:

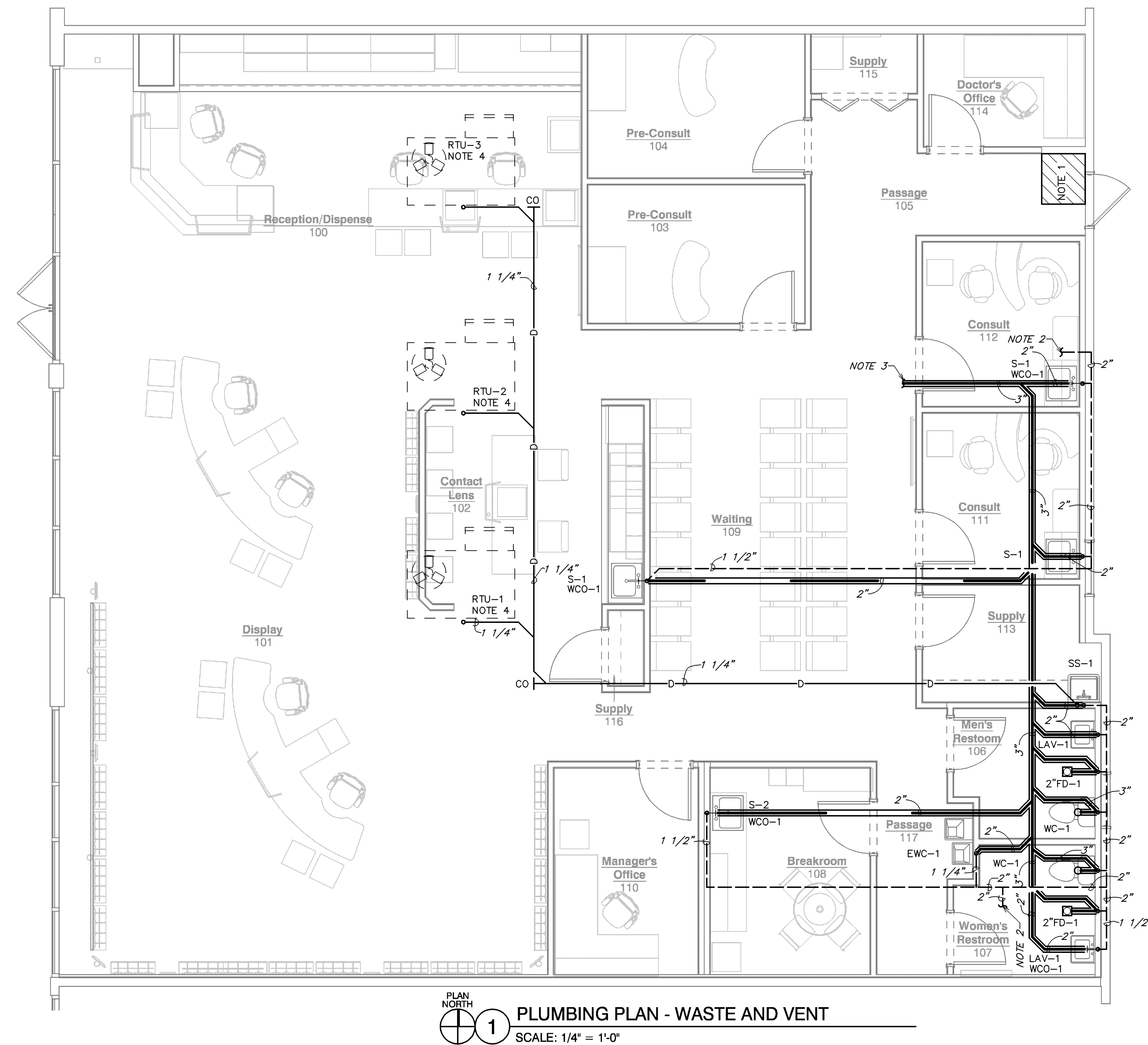
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Table with 3 columns: No., Description, Date. Intended for a schedule of materials or components.

Sheet Title: ELECTRICAL SCHEDULES AND DETAILS



PLAN NORTH
1 PLUMBING PLAN - WASTE AND VENT
 SCALE: 1/4" = 1'-0"

PLUMBING GENERAL NOTES

- A. THE EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS AND/OR LIMITED FIELD VERIFICATIONS. THE CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE PROJECT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ANY EXTRAS DUE TO THE CONTRACTOR'S FAILURE TO VISIT THE PROJECT SITE AND/OR PREDETERMINATION OF EXISTING CONDITIONS PRIOR TO SUBMITTING THE BID. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION.
- B. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE GOVERNMENTAL AND LOCAL CODE REQUIREMENTS.
- C. ALL SANITARY LINES AND PLUMBING FIXTURES ON THE PROJECT SHALL HAVE AN APPROVED MEANS OF SEWAGE BACKFLOW PREVENTION. FIXTURE SPECIFIC BACKFLOW PREVENTION INCLUDING AIR GAPS AND VACUUM BREAKERS ARE AN ACCEPTABLE MEANS OF BACKFLOW PREVENTION.
- D. COORDINATE ALL SLAB PENETRATIONS WITH GENERAL CONTRACTOR PRIOR TO CONSTRUCTION. MAINTAIN A MINIMUM OF 2" CLEARANCE FROM THE EDGE OF THE SLAB OPENING TO ANY STRUCTURAL MEMBERS AND PIPES.
- E. PIPE SIZES INDICATED ON THE PLANS ARE MINIMUM. THE CONTRACTOR SHALL PROVIDE PIPE SIZES EQUAL TO OR GREATER THAN THE SPECIFIED SIZES. THE CONTRACTOR MAY INCREASE PIPE SIZES AS REQUIRED AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- F. REFER TO THE PLUMBING FIXTURE SCHEDULE FOR INDIVIDUAL PLUMBING FIXTURE CONNECTION SIZE REQUIREMENTS.
- G. THE CONTRACTOR SHALL OBTAIN A COPY OF THE LANDLORD'S TENANT CRITERIA MANUAL PRIOR TO BIDDING. THE TENANT CRITERIA MANUAL REQUIREMENTS SHALL BE INCLUDED IN THE CONTRACTOR CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE LANDLORD REQUIREMENTS AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- H. PROVIDE TEMPORARY COVERS, CAPS, OR PLUGS ON SANITARY SEWER SYSTEM THROUGHOUT THE DURATION OF CONSTRUCTION. RAG WADS, DUCT TAPE, OR OTHER SIMILAR METHODS OF TEMPORARY COVERS SHALL NOT BE UTILIZED. UPON COMPLETION OF CONSTRUCTION, COMPLETELY REMOVE ANY AND ALL OBSTRUCTIONS INSIDE THE ENTIRE SYSTEM BY SNAKING, RODING, OR JETTING THE SYSTEM IMMEDIATELY PRIOR TO PROJECT TURNOVER TO THE OWNER.
- I. ALL BELOW GRADE SANITARY LINES SHALL BE A MINIMUM OF 2" OR IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.
- J. SANITARY TEE FITTINGS SHALL NOT BE INSTALLED IN DRAIN, WASTE, AND VENT (DWV) SYSTEMS.
- K. INSTALL SANITARY PIPING 3" OR SMALLER AT A SLOPE OF 1/4" PER FOOT AND SANITARY PIPING LARGER THAN 3" AT A SLOPE OF 1/8" PER FOOT.
- L. ALL HANDICAPPED ACCESSIBLE WATER CLOSETS SHALL HAVE THE FLUSHING HANDLE ON THE WIDE SIDE OF THE HANDICAPPED ACCESSIBLE STALL AS REQUIRED BY ADA REQUIREMENTS.

PLUMBING PLAN NOTES

1. THIS SPACE IS RESERVED FOR ELECTRICAL EQUIPMENT. NO PIPING SHALL PASS BELOW, ABOVE, OR AROUND ELECTRICAL EQUIPMENT. PROVIDE CODE REQUIRED MINIMUM CLEARANCE ABOVE ELECTRICAL EQUIPMENT ACCESS SPACE.
2. CONNECT THE NEW VENT TO THE EXISTING VENT SYSTEM TERMINATING THROUGH THE ROOF. FIELD VERIFY THE EXACT SIZE AND LOCATION OF THE EXISTING VENT THROUGH ROOF PRIOR TO SUBMITTING BID AND COMMENCING CONSTRUCTION.
3. CONNECT THE NEW SANITARY SEWER TO THE EXISTING SANITARY SEWER OF EQUAL OR GREATER SIZE. FIELD VERIFY THE EXACT LOCATION, SIZE, AND INVERT ELEVATION OF THE EXISTING SANITARY SEWER PRIOR TO CONSTRUCTION. ADJUST THE NEW SANITARY SEWER AS REQUIRED TO ALLOW FOR CONNECTION TO THE EXISTING SANITARY SEWER SYSTEM. MAINTAIN CODE MINIMUM PIPE SLOPES. ROUTE THE CONDENSATE PIPING FROM THE ROOFTOP UNIT TO THE SERVICE SINK IN THE SUPPLY ROOM. THE CONDENSATE SHALL BE CONNECTED TO THE ROOFTOP UNIT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. VERIFY CONDENSATE REMOVAL REQUIREMENTS WITH LOCAL JURISDICTION PRIOR TO INSTALLATION. IF CONFLICTS OCCUR, NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY.

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 AUGUST 12, 2016

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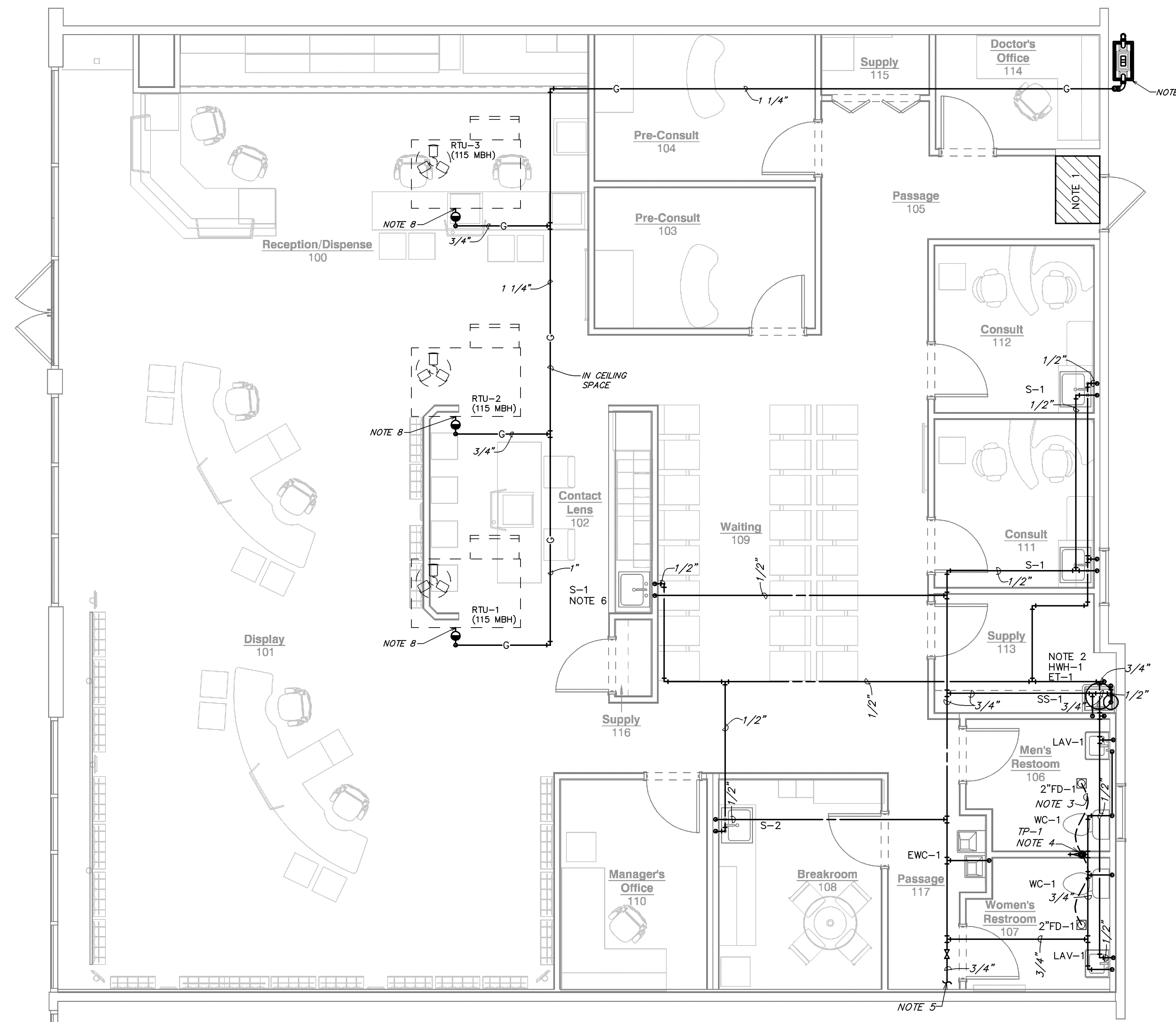
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No.	Description	Date

Sheet Title:
**PLUMBING PLAN
 WASTE AND
 VENT**

Project Number: 16903_050
 Drawn By: ATB
 Issue Date: 08/12/2016

Sheet Number:
P1



PLAN NORTH
1 PLUMBING PLAN - WATER
 SCALE: 1/4" = 1'-0"

PLUMBING GENERAL NOTES

- A. THE EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS AND/OR LIMITED FIELD VERIFICATIONS. THE CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE PROJECT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ANY EXTRAS DUE TO THE CONTRACTOR'S FAILURE TO VISIT THE PROJECT SITE AND/OR PREDETERMINATION OF EXISTING CONDITIONS PRIOR TO SUBMITTING THE BID. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION.
- B. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE GOVERNMENTAL AND LOCAL CODE REQUIREMENTS.
- C. ALL SANITARY LINES AND PLUMBING FIXTURES ON THE PROJECT SHALL HAVE AN APPROVED MEANS OF SEWAGE BACKFLOW PREVENTION. FIXTURE SPECIFIC BACKFLOW PREVENTION INCLUDING AIR GAPS AND VACUUM BREAKERS ARE AN ACCEPTABLE MEANS OF BACKFLOW PREVENTION.
- D. COORDINATE ALL SLAB PENETRATIONS WITH GENERAL CONTRACTOR PRIOR TO CONSTRUCTION. MAINTAIN A MINIMUM OF 2" CLEARANCE FROM THE EDGE OF THE SLAB OPENING TO ANY STRUCTURAL MEMBERS AND PIPES.
- E. PIPE SIZES INDICATED ON THE PLANS ARE MINIMUM. THE CONTRACTOR SHALL PROVIDE PIPE SIZES EQUAL TO OR GREATER THAN THE SPECIFIED SIZES. THE CONTRACTOR MAY INCREASE PIPE SIZES AS REQUIRED AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- F. REFER TO THE PLUMBING FIXTURE SCHEDULE OF PROJECT FOR INDIVIDUAL PLUMBING FIXTURE CONNECTION SIZE REQUIREMENTS.
- G. THE CONTRACTOR SHALL OBTAIN A COPY OF THE LANDLORD'S TENANT CRITERIA MANUAL PRIOR TO BIDDING. THE TENANT CRITERIA MANUAL REQUIREMENTS SHALL BE INCLUDED IN THE CONTRACTOR CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE LANDLORD REQUIREMENTS AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- H. ALL PUBLIC USE LAVATORY FAUCETS SHALL HAVE AN AUTOMATIC SAFETY WATER MIXING DEVICE IN ACCORDANCE WITH ANSI/ASSE 1016, 1017, OR 1070 AS APPLICABLE.
- I. ALL HANDICAPPED ACCESSIBLE WATER CLOSETS SHALL HAVE THE FLUSHING HANDLE ON THE WIDE SIDE OF THE HANDICAPPED ACCESSIBLE STALL AS REQUIRED BY ADA REQUIREMENTS.

- J. THE ENTIRE TENANT SPACE SHALL BE PROVIDED WITH A COMPLETE FIRE SPRINKLER SYSTEM IN ALL RESPECTS. COORDINATE THE FIRE SPRINKLER PIPING AND SPRINKLER HEAD LOCATIONS WITH ALL TRADES PRIOR TO FABRICATION OR INSTALLATION. IF CONFLICTS OCCUR BETWEEN THE FIRE SPRINKLER PIPING/HEADS AND LIGHTS, DIFFUSERS, DUCTWORK, ETC., THE FIRE SPRINKLER PIPING/HEADS SHALL BE RELOCATED OR REROUTED AT NO ADDITIONAL EXPENSE TO THE PROJECT. AN ADEQUATE SUPPLY OF EXTRA PIPING AND FITTINGS SHALL BE MAINTAINED ON SITE TO ALLOW FOR FIELD MODIFICATIONS. PERFORM HYDRAULIC CALCULATIONS AS REQUIRED BY NFPA, LOCAL, STATE CODES, AND THE OWNER'S INSURANCE AGENCY. APPROVED SHOP DRAWINGS DO NOT PRECLUDE REROUTING IF SO REQUIRED BY THE ARCHITECT/ENGINEER.

PLUMBING PLAN NOTES

1. THIS SPACE IS RESERVED FOR ELECTRICAL EQUIPMENT. NO PIPING SHALL PASS BELOW, ABOVE, OR AROUND ELECTRICAL EQUIPMENT. PROVIDE CODE REQUIRED MINIMUM CLEARANCE ABOVE ELECTRICAL EQUIPMENT ACCESS SPACE.
2. FURNISH AND INSTALL WATER HEATER AND EXPANSION TANK ON WATER HEATER SHELF AS INDICATED ON THE PLANS. REFER TO P4 FOR WATER HEATER SHELF REQUIREMENTS AND EXACT LOCATION. PIPE WATER HEATER RELIEF AND SECONDARY DRAIN PAN DISCHARGE TO THE NEAREST WOP SINK OR FLOOR DRAIN BELOW THE WATER HEATER. PROVIDE A CODE APPROVED AIR GAP ON THE DISCHARGE OF THE WATER HEATER RELIEF AND SECONDARY DRAIN. REFER TO DETAILS SHEET FOR ADDITIONAL INFORMATION.
3. 1/2" FLEXIBLE CONTINUOUS TYPE "K" COPPER TUBING BELOW GRADE FROM TRAP PRIMER TO FLOOR DRAIN. NO FITTINGS OR SPLICES ARE ALLOWED BELOW GRADE.
4. INSTALL TRAP PRIMER HIGH IN THE CEILING SPACE. FURNISH AND INSTALL AN ACCESS PANEL AS NECESSARY TO MAINTAIN EQUIPMENT.
5. CONNECT THE NEW DOMESTIC COLD WATER LINE TO AN EXISTING COLD WATER LINE OF EQUAL OR GREATER SIZE. FIELD VERIFY THE EXACT LOCATION AND SIZE OF THE EXISTING WATER LINE PRIOR TO CONSTRUCTION. ADJUST THE NEW WATER LAYOUT AS REQUIRED TO ALLOW FOR CONNECTION TO THE EXISTING WATER SYSTEM.
6. PROVIDE GUARDIAN G1100 EYESAFE FAUCET-MOUNTED EYEWASH ATTACHEMENT AT CONTACT LENS SINK FAUCET.
7. CONNECT NEW NATURAL GAS LINE TO EXISTING NATURAL GAS METER SERVING 345 MBH. THE SYSTEM DESIGN IS BASED ON LESS THAN 2 PSI DELIVERY PRESSURE WITH A PRESSURE DROP OF 0.5 INCHES OF WATER COLUMN. THE CONTRACTOR SHALL COORDINATE THE METER LOCATION OR REPLACEMENT, AVAILABLE PRESSURE, AND ANY NEW SERVICE REQUIREMENTS WITH THE LOCAL UTILITY PRIOR TO CONSTRUCTION. IF THE DELIVERY PRESSURE INDICATED IS NOT AVAILABLE FROM THE UTILITY COMPANY, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY.
8. CONNECT NATURAL GAS SERVICE TO ROOFTOP UNIT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. REFER TO DETAIL SHEET FOR ADDITIONAL INFORMATION. VERIFY EXACT LOCATION OF NATURAL GAS CONNECTION ON FURNACE WITH EQUIPMENT PRIOR TO PIPE INSTALLATION.

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No.	Description	Date

Sheet Title:
PLUMBING PLAN WATER

Project Number: 16903_050
 Sheet Number:
 Drawn By: ATB
 Issue Date: 08/12/2016
P2

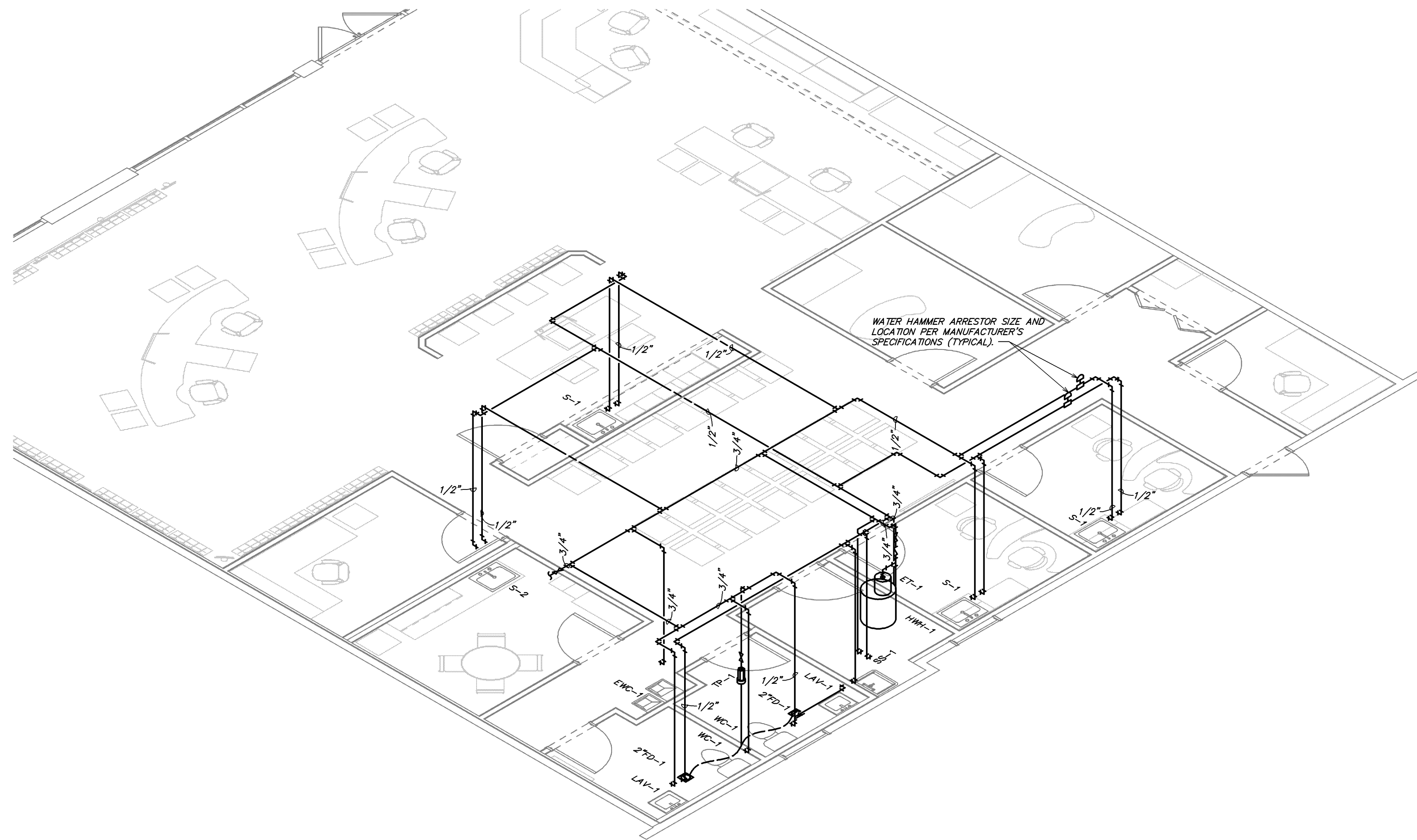
ELECTRICAL WATER HEATERS								
MARK	LOCATION	KW	GAL/HR @ 90 DEGREE RISE	ELECTRICAL		STORAGE CAP	MANUFACTURER	REMARKS
				VOLTS	PHASE			
HWH-1	SHELF	3.0	13.7	208	1	20 GAL.	A.O. SMITH	MODEL: DEL-20 (1)

1. SET WATER HEATER STORAGE TEMPERATURE TO 120°F.

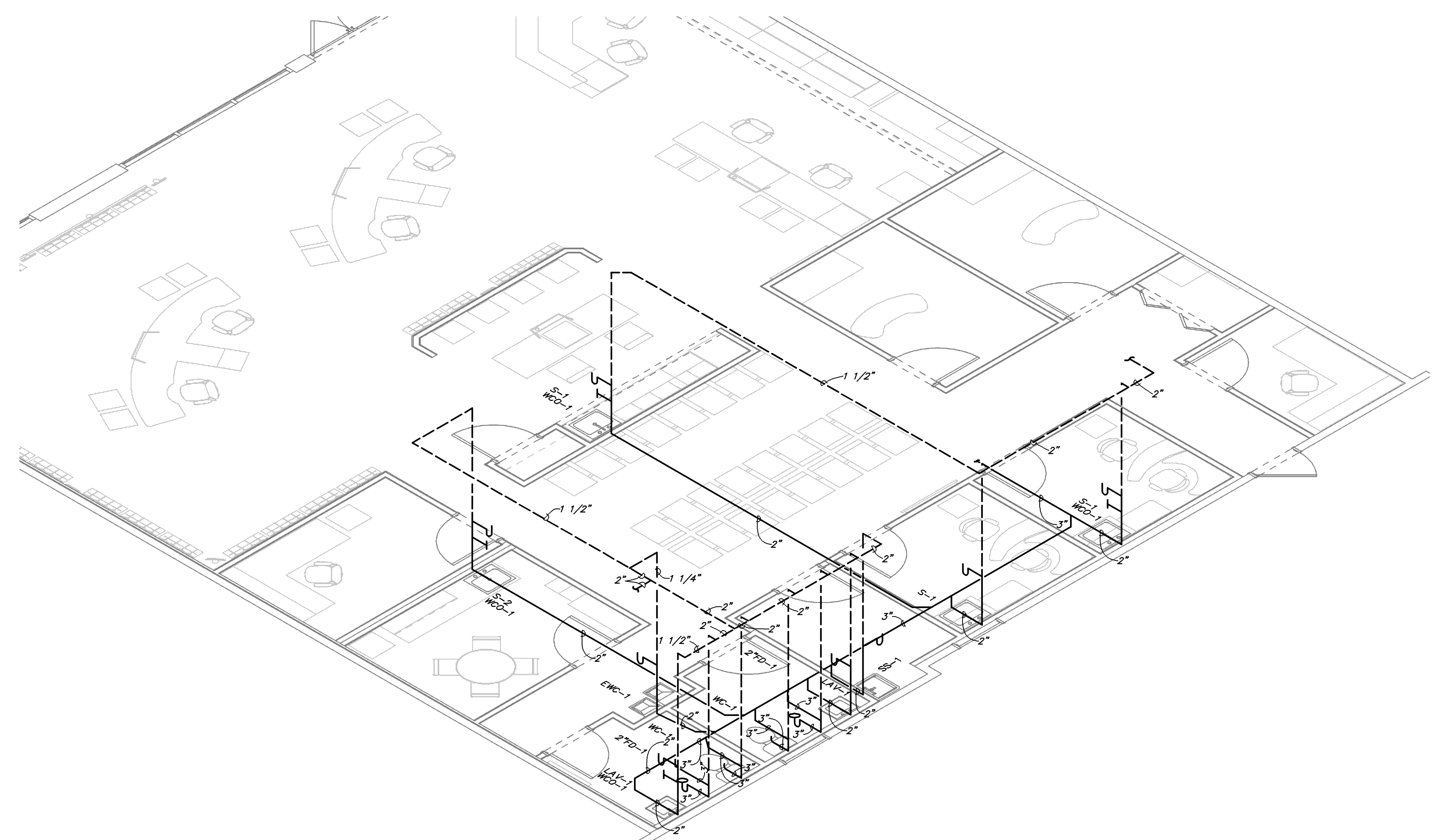
EXPANSION TANKS							
MARK	LOCATION	SERVES	MINIMUM ACCEPTANCE (GAL)	WORKING PRESS (PSI)	SIZE (APPROX)	MANUFACTURER	REMARKS
ET-1	HWH-1	DOM. HW	0.9	150	8" x 12 1/2"	AMTROL	MODEL ST-5 (1)

1. CONTRACTOR SHALL ADJUST PRE-CHARGE OF EXPANSION TANK TO EQUAL INCOMING WATER PRESSURE PRIOR TO INSTALLATION.

PLUMBING FIXTURE SCHEDULE							
MARK	DESCRIPTION	CONNECTIONS				MANUFACTURER/ MODEL NUMBER	
		HW	CW	TEMP	V		
WC-1	HANDICAPPED WATER CLOSET	---	1/2"	---	2"	4"	AMERICAN STANDARD / 2467.016
	SUPPLY		3/8" CHROME PLATED BRASS TUBING W/ CHROME PLATED ANGLE STOP W/ WHEEL HANDLE.				
	SEAT		HEAVY DUTY, ELONGATED BOWL, OPEN FRONT, LESS COVER, SELF-SUSTAINING CHECK HINGE STOPS SEAT 11" BEYOND VERTICAL.				BEMIS / 1955SSC
LAV-1	HANDICAPPED LAVATORY	1/2"	1/2"	---	1 1/4"	1 1/4"	AMERICAN STANDARD / 0124.024
	TRIM		4" CENTER SET WITH 4" WRIST BLADE HANDLES.				CHICAGO FAUCET / #802-317
	SUPPLIES		3/8" CHROME PLATED ANGLED STOP WITH WHEEL HANDLE, 3/8" CHROME PLATED FLEXIBLE BRASS RISER				
	WASTE		GRID DRAIN, 4 1/2" OFFSET FOR WHEELCHAIR, 1 1/4" TAILPIECE, 1 1/4" 17 GAUGE CHROME PLATED ADJUSTABLE BRASS P-TRAP WITH CLEAN-OUT PLUG, 1 1/4" CHROME PLATED BRASS WASTE TO WALL, RUN PARALLEL AND AS TIGHT TO WALL AS POSSIBLE				AMERICAN STANDARD / 7723.018
	INSULATION		ADA COMPLIANT, CHINA WHITE, ANTI-BACTERIA/FUNGAL, MOLDED VINYL, P-TRAP COVER, TWO ANGLE VALVE AND SUPPLY COVERS, 5" OFFSET TAILPIECE WHEELCHAIR STRAINER COVER				TRUEBRO / 103 E-2
S-1	SINK	1/2"	1/2"	---	1 1/2"	1 1/2"	FRANKE USA / FBF5602NKIT
	TRIM		DUAL 4" LEVER HANDLE SWING GOOSENECK FAUCET, DECK MOUNTED ESCUTCHEON, BRASS CONSTRUCTION, CHROME PLATED, GOOSENECK SWING SPOUT EQUIPPED WITH AERATOR, REQUIRES 2 FAUCET HOLES 4" CENTERS.				FAUCET INCLUDED WITH KIT
	SUPPLIES		1/2" CHROME PLATED ANGLE STOPS WITH LOOSE KEY HANDLE, 1/2" CHROME PLATED FLEXIBLE BRASS RISER.				
	WASTE		STANDARD DUO STRAINER, FITS 3-1/2" OPENING (4-1/2" TOP DIAMETER), ONE PIECE STAINLESS CONICAL STRAINER BASKET WITH NEOPRENE STOPPER, CHROME PLATED BRASS TAILPIECE, 1-1/2" 17 GAUGE CHROME PLATED ADJUSTABLE BRASS P-TRAP WITH CLEANOUT PLUG, 1-1/2" CHROME PLATED BRASS WASTE TO WALL.				ELKAY / LK-35
S-2	SINK	1/2"	1/2"	---	1 1/2"	1 1/2"	ELKAY / GE12521
	TRIM		DUAL LEVER HANDLE SWING GOOSENECK FAUCET, DECK MOUNTED ESCUTCHEON, BRASS CONSTRUCTION, CHROME PLATED, GOOSENECK SWING SPOUT EQUIPPED WITH AERATOR.				AMERICAN STANDARD / 2475F
	SUPPLIES		1/2" CHROME PLATED ANGLE STOPS WITH LOOSE KEY HANDLE, 1/2" CHROME PLATED FLEXIBLE BRASS RISER.				
	WASTE		STANDARD DUO STRAINER, FITS 3-1/2" OPENING (4-1/2" TOP DIAMETER), ONE PIECE STAINLESS CONICAL STRAINER BASKET WITH NEOPRENE STOPPER, CHROME PLATED BRASS TAILPIECE, 1-1/2" 17 GAUGE CHROME PLATED ADJUSTABLE BRASS P-TRAP WITH CLEANOUT PLUG, 1-1/2" CHROME PLATED BRASS WASTE TO WALL.				ELKAY / LK-35
EWC-1	ELECTRIC WATER COOLER	---	1/2"	---	1 1/2"	1 1/2"	HALSEY TAYLOR / HACBFSBL-Q
FD-1	FLOOR DRAIN	---	---	---	SEE PLANS	SEE PLANS	ZURN / Z415B
WCO-1	WALL CLEANOUT	---	---	---	---	---	ZURN / Z1446
	COVER						
TP-1	TRAP PRIMER	---	1/2"	---	---	---	ZURN / Z1022
SS-1	SERVICE SINK	1/2"	1/2"	---	2"	2"	BK-RESOURCES / BK8BS-1-18-14
	FAUCET						AMERICAN STANDARD / 7298.252



2 WATER RISER DIAGRAM
NTS



1 SANITARY RISER DIAGRAM
NTS

Professional Seal:

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APPROVAL SET
AUGUST 12, 2016

Project Title:

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No.	Description	Date
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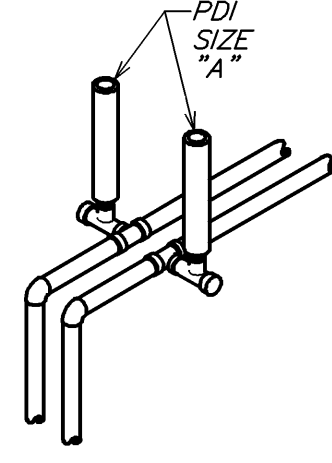
Sheet Title:

PLUMBING
SPECIFICATIONS
AND RISERS

Project Number: 16903.050
Drawn By: ATB
Issue Date: 08/12/2016

P3

INSTALL PER PDI STANDARDS AND MANUFACTURER'S INSTRUCTIONS

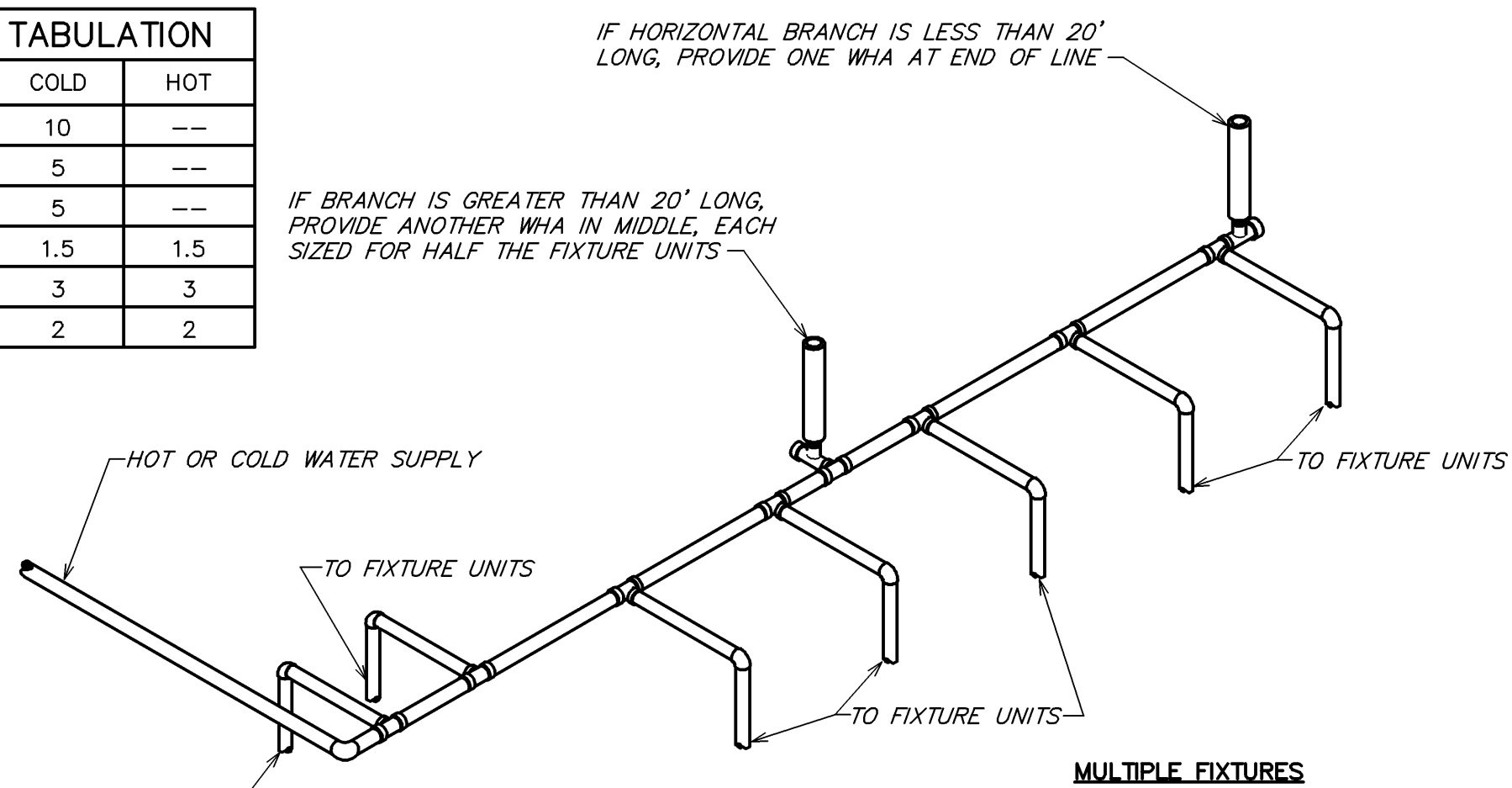


SINGLE FIXTURE

PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	155-330

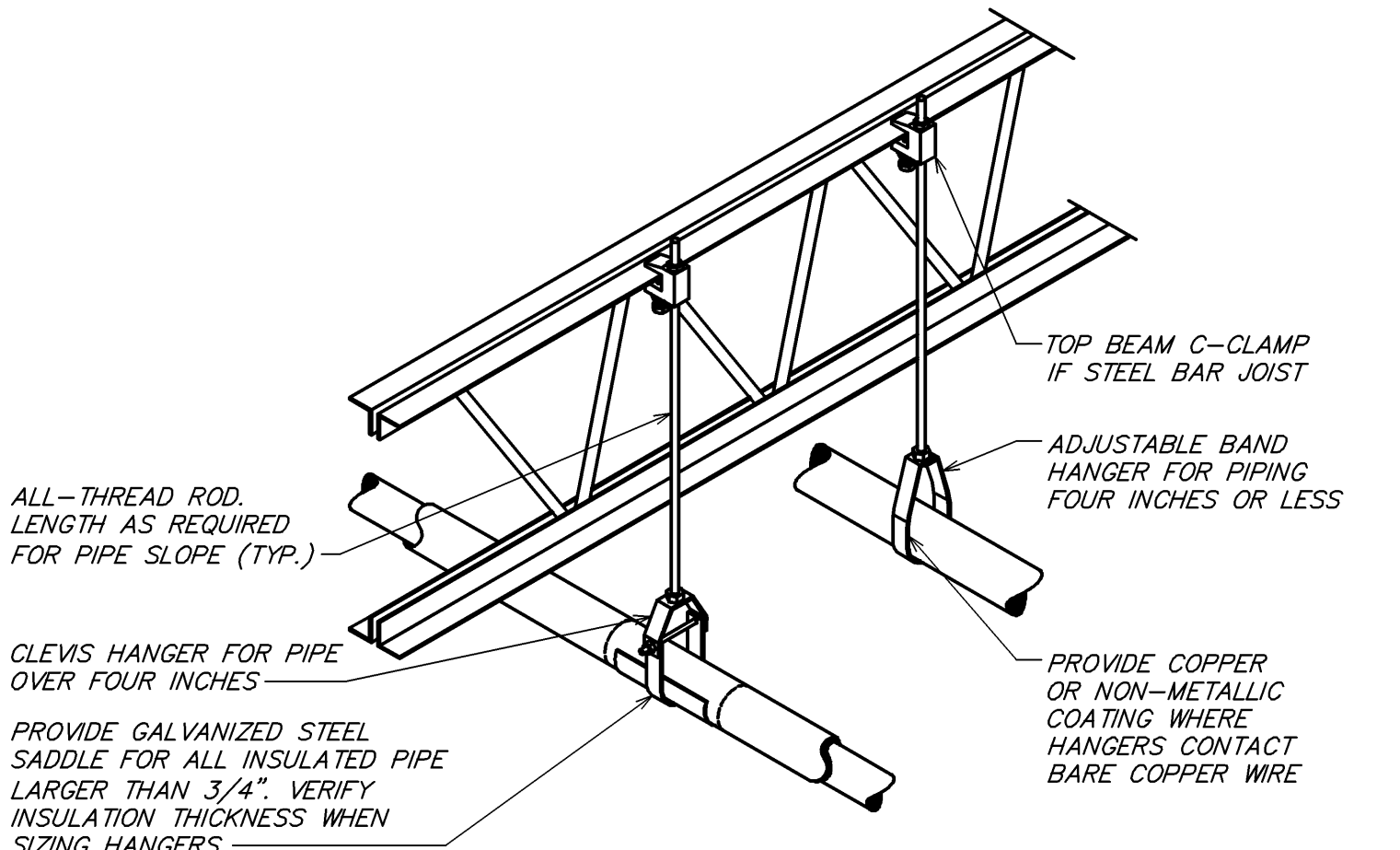
FIXTURE	COLD	HOT
VALVE WATER CLOSET	10	---
TANK WATER CLOSET	5	---
URINAL	5	---
LAVATORY/SINK	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATHTUB	2	2

IF BRANCH IS GREATER THAN 20' LONG, PROVIDE ANOTHER WHA IN MIDDLE, EACH SIZED FOR HALF THE FIXTURE UNITS



IF HORIZONTAL BRANCH IS LESS THAN 20' LONG, PROVIDE ONE WHA AT END OF LINE

PLUMBING CONTRACTOR SHALL PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE.



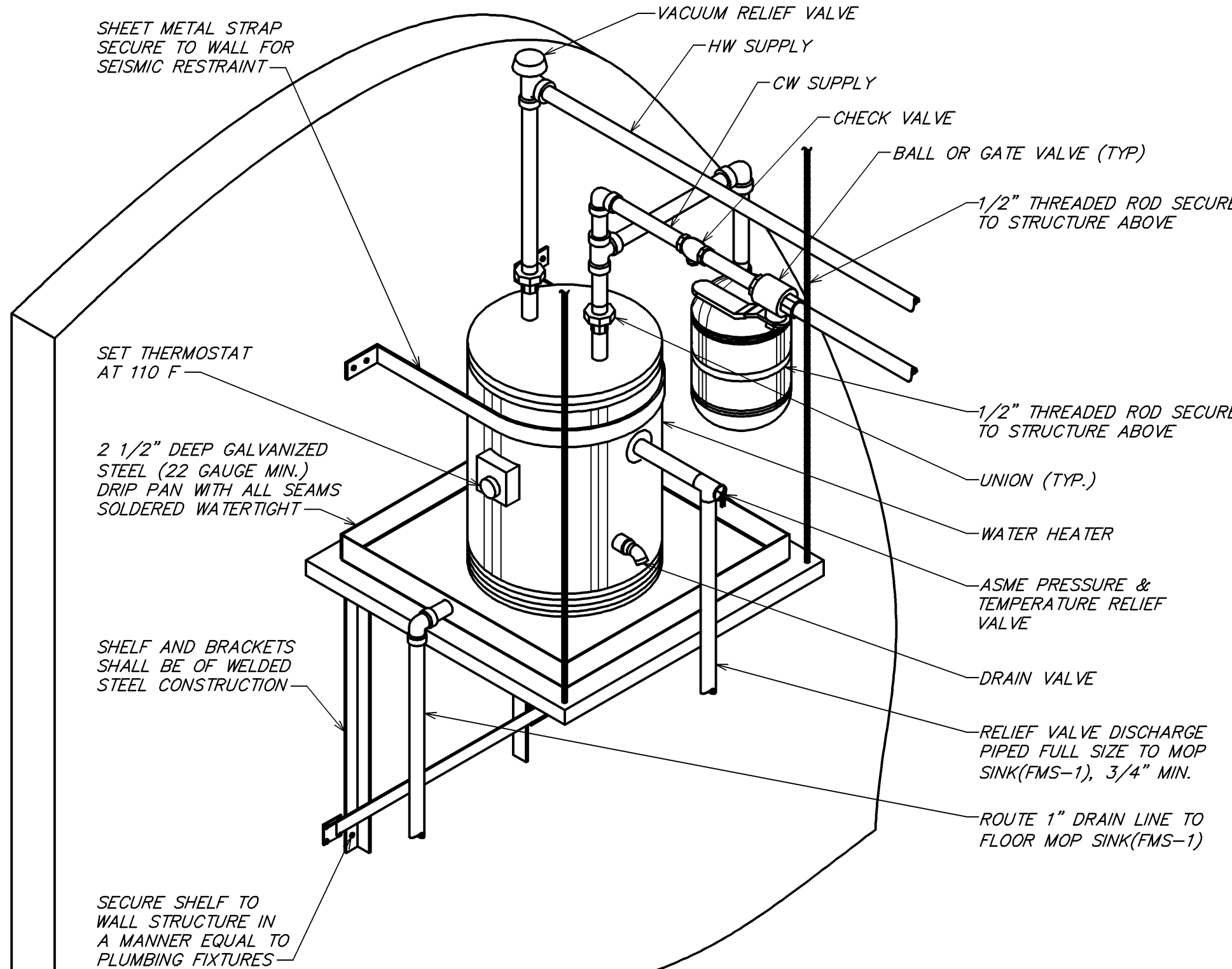
NOTE: PROVIDE UPPER ATTACHMENT AS REQUIRED FOR CASES NOT SHOWN HERE. DO NOT INSTALL HANGER INSIDE INSULATION OR OTHERWISE PENETRATE VAPOR BARRIER. DO NOT HANG ONE PIPE FROM ANOTHER EXCEPT IN CHASES. TRAPEZE HANGERS MAY BE USED FOR MULTIPLE PARALLEL PIPES. HANGER SPACING FOR PIPE SIZE: COPPER: 4"=12' 3"=11' 2-1/2"=10' 2"=9' 1-1/2"=8' 1-1/4"=7' 1"=6' 3/4"=6' 1/2"=5'. CAST IRON: 10' AND ONE NEAR ALL JOINTS. STEEL: 4"=14' 3"=12' 2-1/2"=11' 2"=10' 1-1/2"=9' 1"=8' 3/4"=6' 1/2"=5'. LOCATE HANGERS AS CLOSE AS POSSIBLE TO TURNS AND TEES OF PIPE. PROVIDE SUPPLEMENTARY STEEL STRUTS BETWEEN JOISTS IF REQUIRED. LOCATE HANGERS TO TAKE LOAD OFF OF EQUIPMENT CONNECTIONS. ANCHOR WATER PIPE AGAINST SWAYING DUE TO CHANGES IN WATER VELOCITY. PROVIDE SEISMIC BRACING IF/AS REQUIRED BY LOCAL AUTHORITIES. CHAINS OR PERFORATED STRAP IRON OR STEEL IS NOT ACCEPTABLE. REFER TO CODES FOR FURTHER INFORMATION.

1 WATER HAMMER ARRESTERS

NOT TO SCALE

2 PIPE INSULATION DETAIL

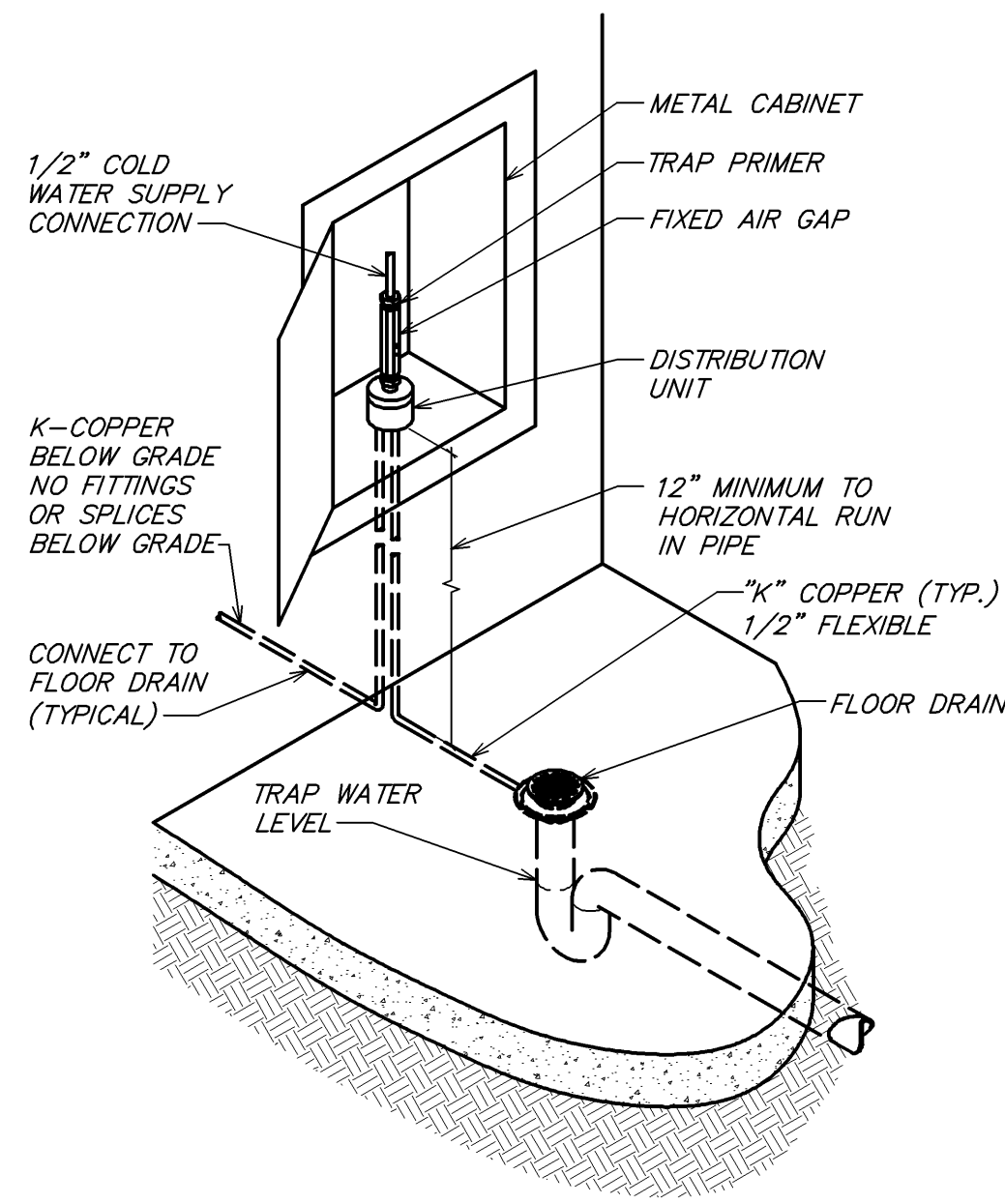
NOT TO SCALE



GENERAL NOTES APPLICABLE TO THIS DETAIL:
 A. SET MOUNTING HEIGHT AS HIGH AS POSSIBLE.
 B. SHELF SHALL BE CONSTRUCTED TO SUPPORT THE WATER HEATER CAPACITY INDICATED. SEE FLOOR PLANS FOR LOCATION.

3 WATER HEATER DETAIL

NOT TO SCALE



4 FLOOR DRAIN TRAP PRIMER DETAIL

NOT TO SCALE

- 1.01 GENERAL:
- ALL WORK SHALL BE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF CITY, AND/OR STATE.
 - ALL AUTHORITIES HAVING JURISDICTION SHALL BE NOTIFIED AT LEAST THREE WORKING DAYS PRIOR TO COMMENCEMENT OF WORK.
 - ALL PIPING SHALL BE ROUTED IN THE SUSPENDED CEILING SPACE UNLESS OTHERWISE INDICATED. ALL PIPING EXPOSED TO VIEW SHALL BE ROUTED AS HIGH AS POSSIBLE AND TIGHT TO THE UNDERSIDE OF THE STRUCTURAL STEEL.
 - EXPOSED PIPING IN FINISHED AREAS SHALL BE CHROME PLATED WITH CHROME-PLATED ESCUTCHEON AT PIPE ENTRY TO FINISHED AREA.
 - SLEEVE OR CORE-DRILL FLOOR SLABS, WALLS, ETC. AS REQUIRED FOR PIPING AND FIRE-STOP OPENING AROUND PIPE. VERIFY LOCATION OF STRUCTURAL BEAMS, JOISTS, ETC. BEFORE DRILLING.
 - ALL OPENINGS IN DRAINAGE AND/OR VENT SYSTEMS AS A RESULT OF INSTALLATION SHALL BE PROTECTED WITH A TEST PLUG THAT IS SECURELY LOCKED IN PLACE UNTIL FINAL FINISHED CONNECTIONS ARE INSTALLED.
 - ALL PIPING SHALL BE CONCEALED IN WALLS AND BEHIND FIXED FURNISHINGS UNLESS OTHERWISE INDICATED.
 - WHEREVER FOUNDATION WALLS, OUTSIDE WALLS, ROOF, ETC. ARE PENETRATED FOR INSTALLATION OF SYSTEMS, THEY SHALL BE PATCHED TO MATCH EXISTING CONSTRUCTION AND SEALED WEATHER TIGHT. WORK SHALL BE PERFORMED BY CRAFTSMEN SKILLED IN THEIR RESPECTIVE TRADES.
 - ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK INCLUDING DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIELECTRIC UNION.
 - PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.
 - ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS.
 - PROVIDE A COMPLETE SYSTEM OF COPPER OR STEEL VENT RISERS ABOVE FLOOR. ALL VENTS SHALL BE CARRIED THROUGH THE ROOF WITH FLASHING.
 - CONDENSATE AND INDIRECT DRAIN PIPING SHALL BE COPPER.
 - PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAINPIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE.
 - HOT AND COLD WATER PIPING SHALL BE TYPE "L" COPPER PIPE ABOVE GRADE AND TYPE "K" COPPER PIPE BELOW GRADE. FITTINGS AS REQUIRED BY LOCAL AUTHORITIES. PROVIDE WATER HAMMER ARRESTERS W/SHOCKSTOP MODEL NO. W-5 THROUGH W-100. SIZE AS INDICATED BY MANUFACTURER, WHERE SHOWN ON THE DRAWINGS. INSTALL STOP VALVE IN AN ACCESSIBLE LOCATION IN EACH WATER SUPPLY TO EACH FIXTURE.
 - INSULATE ALL HOT AND COLD WATER PIPING BOTH VERTICALLY AND HORIZONTALLY, IN CEILING, BELOW ALL HANDICAPPED FIXTURES AND CONCEALED IN WALLS COMPLETELY. PROVIDE 1" PREFORMED FIBERGLASS ASJ-VB, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547.
 - PIPING ROUTED IN EXTERIOR WALLS SHALL BE ROUTED ON WINTER WARM SIDE OF BUILDING WALL INSULATION.
 - ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS, WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED.
 - TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED.
 - PROVIDE A COMPLETE NATURAL GAS PIPING SYSTEM AS NOTED ON THE DRAWINGS. PIPE AND FITTINGS SHALL BE AS REQUIRED BY LOCAL AUTHORITIES. PROVIDE ALL UNIONS, SHUT-OFF VALVES, AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES. PROVIDE ALL TEST, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTION REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. PAINT PIPING ON A ROOF WITH TWO COATS OF RUST RESISTANT OUTDOOR PAINT.
 - THE DOMESTIC WATER SYSTEM, DRAINAGE SYSTEMS, AND GAS PIPING SYSTEM SHALL BE FLUSHED AND PRESSURE TESTED. THE DOMESTIC WATER SYSTEM SHALL BE PURIFIED.
 - DRAINAGE PIPING UNDERGROUND SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS.
 - DRAINAGE PIPING INSIDE THE BUILDING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS.
 - ALL FLOOR DRAINS SHALL BE CONNECTED TO THE SANITARY SEWER SYSTEM.

SYMBOLS					
PLUMBING					
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[Symbol]	SANITARY DRAIN ABOVEGROUND	[Symbol]	CLEAN OUT	[Symbol]	VC WATER CLOSET (TANK TYPE)
[Symbol]	SANITARY DRAIN BELOWGROUND	[Symbol]	GRADE CLEAN OUT	[Symbol]	VC WATER CLOSET (FLUSH VALVE)
[Symbol]	VENT LINE	[Symbol]	N.T.C. NOT IN THIS CONTRACT	[Symbol]	UR URINAL
[Symbol]	ACID WASTE	[Symbol]	VTR VENT THROUGH ROOF	[Symbol]	LAV LAVATORY
[Symbol]	ACID VENT	[Symbol]	VB VACUUM BREAKER	[Symbol]	KS KITCHEN SINK
[Symbol]	WASTE ANESTHESIA GAS DISPOSAL	[Symbol]	BV BALL VALVE	[Symbol]	SS SERVICE SINK
[Symbol]	STORM DRAIN ABOVEGROUND	[Symbol]	GLV GLOBE VALVE	[Symbol]	CS CLINIC SERVICE SINK
[Symbol]	STORM DRAIN BELOWGROUND	[Symbol]	CV CHECK VALVE	[Symbol]	CS CLASSROOM SINK
[Symbol]	COLD WATER (CW)	[Symbol]	PRV PRESSURE REGULATING VALVE (PRV)	[Symbol]	BF DRINKING FOUNTAIN
[Symbol]	DISTILLED WATER	[Symbol]	PRV PRESSURE RELIEF VALVE	[Symbol]	EW ELECTRIC WATER COOLER
[Symbol]	DRINKING WATER	[Symbol]	SW STOP AND WASTE VALVE	[Symbol]	SH SHOWER HEAD
[Symbol]	DRINKING WATER CIRCULATING	[Symbol]	SWW STOP AND WASTE VALVE (ON RISE)	[Symbol]	BT BATH TUB
[Symbol]	HOT WATER (HW)	[Symbol]	MX MIXING VALVE	[Symbol]	
[Symbol]	HOT WATER CIRCULATING (HWG)	[Symbol]	CD GAS COCK	[Symbol]	
[Symbol]	HOT WATER 180°	[Symbol]	FV FIRE ALARM VALVE (SPRINKLER)	[Symbol]	
[Symbol]	HOT WATER CIRCULATING 180°	[Symbol]	CV COLD WEATHER VALVE (SPRINKLER)	[Symbol]	
[Symbol]	TEMPERED WATER	[Symbol]	WALR WATER MOTOR ALARM (SPRINKLER)	[Symbol]	
[Symbol]	TEMPERED WATER CIRCULATING	[Symbol]	MB HOSE BIBB	[Symbol]	
[Symbol]	FIRE LINE	[Symbol]	WB VALV W/BRNNT	[Symbol]	
[Symbol]	SPRINKLER MAIN BRANCH	[Symbol]	FM FIRE HYDRANT	[Symbol]	
[Symbol]	SPRINKLER BRANCH HEADS	[Symbol]	MH MANHOLE	[Symbol]	
[Symbol]	GAS LINE	[Symbol]	SW STREET WASHER	[Symbol]	
[Symbol]	COMPRESSED AIR LINE	[Symbol]	JV VALVE IN RISE	[Symbol]	
[Symbol]	VACUUM LINE	[Symbol]	EJ EXPANSION JOINT	[Symbol]	
[Symbol]	OXYGEN LINE	[Symbol]	D-M DRAIN AND MARK	[Symbol]	
[Symbol]	PNEUMATIC TUBE	[Symbol]	RD ROOF DRAIN	[Symbol]	
[Symbol]	COLD SOFT WATER	[Symbol]	CS SOFT WATER	[Symbol]	
[Symbol]	HOT SOFT WATER	[Symbol]	VC VITRIFIED CLAY PIPE	[Symbol]	
[Symbol]	HOT SOFT WATER CIRCULATING	[Symbol]	CI CAST IRON	[Symbol]	
[Symbol]	UNDW UNDER DRAIN	[Symbol]	IE INVERT ELEVATION	[Symbol]	
[Symbol]	STRAINER			[Symbol]	
[Symbol]	AUTOMATIC BALANCING VALVE			[Symbol]	
[Symbol]	RUNNING TRAP			[Symbol]	

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 AUGUST 12, 2016

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No.	Description	Date

Sheet Title: **PLUMBING DETAILS**
 Project Number: _____ Sheet Number: _____
 16903_050
 Drawn By: _____
 ATB
 Issue Date: _____
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P4

PART 1 - GENERAL

1. SUMMARY
- A. Provide complete, approved sprinkler system as specified, including, but not limited to, the following:
- Sprinkler service connections to existing piping terminating above floor in sprinkler valve rooms with all required valves, devices, connections, etc.
 - Sprinkler valves, hangers, connections, test connections, drain connections, alarm check valves, flow switches, etc.
 - Complete interior sprinkler system of the wet type as indicated.
 - Include coverage for all canopies, awnings, vestibule overhangs, etc. as required by NFPA 13.
 - Identification, diagrams, and signs.
 - Cutting and patching.
 - All other requirements of a complete sprinkler installation.
 - Furnish all permits of a special nature required by local and state authority.
2. IN GENERAL
- A. The naming of manufacturers in the Specifications shall not be construed as eliminating the materials, products, or services of other manufacturers and suppliers having approved equivalent items.
- B. The substitutions of materials or products other than those named in the Specifications are subject to prior approval of the Engineer granted in writing.
- C. The Subcontractor shall furnish and install wet pipe automatic sprinkler systems of first quality in every and all respects, together with the necessary pipe, fittings, hangers and other apparatus as hereinafter enumerated and/or indicated.
- D. All sprinkler piping must be substantially supported from building structure and only approved type hangers shall be used. Sprinkler lines under ducts shall not be supported from ductwork or roof deck, but shall be supported from building structure with trapeze hangers where necessary. No fire sprinkler piping may be attached to Epic Deck or any metal roof decking. Suspend from structural steel only.
- E. Sprinkler equipment shall be completed and placed in service during non-attended hours in all areas. Every effort shall be made to provide sprinkler protection before combustible contents are moved into the building. Sprinkler Subcontractor shall plan his work with Owner's representative to determine which system will be required first.
- F. All work specified shall be done in a first class and workmanlike manner, complete in every respect and when completed shall conform to the present standards of the National Fire Protection Association Pamphlet #13 and to all requirements of the inspection agency of the owner's insurance company, to all local and state inspection agencies and to the requirements of the local utility. Pressure tests to be 200 psi or as required by inspection authorities, but not less than 200 psi.
- G. The Sprinkler Subcontractor shall obtain the approval of local officials on system design and completed installation.
3. DEFINITIONS
- (NFS)
- A. Pipe sizes used in this Specification are Nominal Pipe size
- B. Other definitions for fire protection systems are listed in NFPA Standards 13, 14, and 24.
- C. Working Plans as used in this section means those documents (including drawings and calculations) prepared pursuant to the requirements contained in NFPA 13 for obtaining approval of the authority having jurisdiction.
4. SYSTEM DESCRIPTION
- A. Fire protection system is a "Wet-Pipe" system employing automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by fire. Wet standpipes are to be provided as required by local building codes.
5. SUBMITTALS
- A. Product Data for each type sprinkler head, valve, piping specialty, fire protection specialty, fire department connection and standpipe cabinet specified.
- B. Shop Drawings prepared in accordance with NFPA 13 identified as "Working Plans," including hydraulic calculations that have been approved by the authority having jurisdiction.
- The Subcontractor shall before commencing installation of his work obtain all necessary insurance or inspection agency approvals and then send one set and one copy of approved drawings to the Architect for his review.
 - Shop drawings must be legible copies of clear, sharp tracings, prepared at scale of 1/8" = 1'-0" and must show along with piping, sprinklers, ductwork, etc., construction and occupancy of each area, including ceiling and roof heights.
 - Calculations shall be based on NFPA requirements for mercantile occupancy.
 - Shop drawings shall be prepared using for reference all of the architectural, structural, mechanical, plumbing, and electrical drawings.
 - The placement of sprinklers and the routing of all exposed piping are subject to the review and approval of both the Engineer and the Architect for proper coordination and aesthetics. Pipe routing in exposed areas may require rerouting for architectural reasons, at no additional cost to the Owner.
- C. Maintenance Data for each type sprinkler head, valve, piping specialty, fire protection specialty, fire department connection, hose and rack, and hose cabinet specified, for inclusion in

- operating and maintenance manual specified in Division 1 and Division-15 Section "Basic mechanical Requirements."
- D. Welders, qualification certificates.
- E. Test Reports and Certificates including "Contractor's Material & Test Certificate for Above-ground Piping" and "Contractor's Material & Test Certificate for Underground Piping" as described in NFPA 13.
6. QUALITY ASSURANCE
- A. Subcontractor's Qualifications: Installation and alterations of fire protection piping, equipment, specialties, and accessories, and repair and servicing of equipment shall be performed only by a qualified installer employed by the subcontractor. The term qualified means experienced in such work (experienced shall mean having a minimum of 5 previous projects similar in size and scope to this project), familiar with all precautions required, and has complied with all the requirements of the authority having jurisdiction. Upon request, submit evidence of such qualifications to the Architect. Refer to Division-1 Section: "Definitions and Standards", for definitions for "Installers."
- B. Qualifications for Welding Processes and Operators: Comply with the requirements of AWS D10.9, Specifications for Qualifications of Welding Procedures and Welders for Piping and Tubing, Level AR-3.
- C. Regulatory Requirements: Comply with the requirements of the following codes:
- NFPA 13 - Standard for the Installation of Sprinkler Systems.
 - UL Compliance: Fire protection system materials and components shall be Underwriter's Laboratories listed and labeled, and approved for the application anticipated.
 - Current Uniform Building Code and Uniform Fire Code as they apply to covered mall buildings.
7. SEQUENCING AND SCHEDULING
- A. Schedule rough-in installations with installations of other building components as directed by the Construction Manager.
8. EXTRA MATERIALS
- A. Valve Wrenches: Furnish to Owner, 3 valve wrenches for each type of sprinkler head installed.
- B. Sprinkler Heads and Cabinets: Furnish 12 extra sprinkler heads of each style included in the project. Furnish each style with its own sprinkler head cabinet and special wrenches as specified in this Section.
- PART 2 - PRODUCTS
1. MANUFACTURERS
- A. Manufacturer: Subject to compliance with requirements, provide fire protection system products from one of the following:
- Grooved Mechanical Couplings:
 - Stockham
 - Victaulic Company of America
 - Sprinkler Heads:
 - Automatic Sprinkler Corp of America.
 - Tyco
 - Reliable Automatic sprinkler Co., Inc.
 - Star Sprinkler Corp.
 - Viking Corp.
2. PIPE AND TUBING MATERIALS
- A. General: Refer to Part 3 Article "PIPE APPLICATIONS" for identification of systems where the below specified pipe and fitting materials are used.
- B. Steel Pipe (2 inches and smaller): ASTM A 120, Schedule 40, E.R.W., black steel pipe, plain ends.
- C. Steel Pipe (2-1/2 inches and larger): ASTM A53 or A85, Schedule 10, E.R.W., black steel pipe, plain or roll grooved ends.
- D. The use of threaded "thinwall" pipe will not be acceptable.
- E. The use of schedule 40 black steel pipe 2" and smaller with roll grooved connections on gridded systems is acceptable.
3. FITTINGS
- A. Cast-Iron Threaded Fittings: ANSI B16.4, Class 125, standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1.
- B. Malleable-Iron Threaded Fittings: ANSI B16.3, Class 300, standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1.
- C. Steel Fittings: ASTM A 234, seamless or welded, for welded joints.
- D. Grooved Mechanical Fittings: ASTM A 536, Grade 65-45-12 ductile iron; ASTM A 47 Grade 32510 malleable iron; or ASTM A53, Type F or Types E or S, Grade B fabricated steel fittings with grooves or shoulders designed to accept grooved end couplings.
- E. Grooved Mechanical Couplings: Consist of ductile or malleable iron housing, a synthetic rubber gasket of a central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure roll-grooved pipe and fittings.
- F. Cast-Iron Threaded Flanges: ANSI B16.1, Class 125; raised ground face, bolt holes spot faced.
4. JOINING MATERIALS
- A. Welding Materials: Comply, with section II, Part C, ASME Boiler and Pressure Vessel Code for welding material appropriate for the wall thickness and chemical analysis of the pipe being welded.

- Brazing Filler Metals: AWS A5.8, Classification BAg1 (silver).
 - Solder Filler Metals: ASTM B 32, 95-5 Tin-Antimony.
- B. Gasket Materials: Thickness, material, and type suitable for fluid to be handled, and design temperatures and pressures.
5. AUTOMATIC SPRINKLERS
- A. Sprinkler Heads: Fusible link type or glass bulb type, and style as required by the application. Unless otherwise indicated, provide heads with nominal 1/2-inch discharge orifice, for "Ordinary" temperature range.
- B. Sprinkler Head Finishes: Provide heads with the following finishes:
- Sprinklers for the proposed equipment shall be of the approved bronze and chrome upright and pendent; bronze and chrome flush and semi-recessed; and lead coated upright type, and shall be distributed throughout the building as required.
 - Sprinklers in suspended acoustical tile and gypsum drywall ceilings in service/exit corridors or office areas shall be approved semi-recessed pendent type, chrome plated with escutcheon of 1" maximum depth with supply piping concealed above ceiling.
 - Sprinklers within existing spaces with fire sprinkler coverage shall match existing sprinklers in color, K factor, temperature, and style.

PART 3 - EXECUTION

1. EXAMINATION
- A. Examine rough in for sprinkler system piping and equipment to verify actual locations of piping and equipment prior to installation.
- B. Examine walls for suitable conditions where cabinets are to be installed.
- C. Do not proceed until unsatisfactory conditions have been corrected.
2. PIPE APPLICATIONS
- A. Use most economical combination of the following materials meeting all requirements. Alternate piping materials may be submitted for approval, subject to prior written approval by the Local Fire Marshal.
- Install Schedule 40 steel pipe with threaded joints and fittings for 2 inch and smaller.
 - Install Schedule 10 steel pipe with roll-grooved ends and grooved mechanical couplings for 2 1/2 inch and larger.
3. PIPING INSTALLATIONS
- A. Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of piping systems. So far as practical, install piping as indicated.
- The Subcontractor shall make no changes in installation from layout as shown on approved working drawings which may be requested by any Inspection Bureau or Insurance Association unless such change is specifically approved by the Engineer. Any changes made other than as above stated are at the Subcontractor's own expense and responsibility.
- B. Install sprinkler piping to provide for complete system drainage in accordance with NFPA 13.
- C. Use approved fittings to make all changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- D. Install unions in pipes 2 inch and smaller, adjacent to each valve. Unions are not required on flanged devices or in piping installations using grooved mechanical couplings.
- E. Hangers and Supports: Comply with the requirements of NFPA 13 and NFPA 14. Hanger and support spacing and locations for piping joined with grooved mechanical couplings shall be in accordance with the grooved mechanical coupling manufacturer's written instructions, for rigid systems. Provide protection from damage where subject to earthquake in accordance with NFPA 13.
- F. Install pressure gage on the riser or feed main at or near each test connection. Provide gage with a connection not less than 1/4 inch and having a soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and where they will not be subject to freezing.
4. PIPE JOINT CONSTRUCTION
- A. Welded Joints: AWS D10.9, Level AR-3.
- B. Threaded Joints: conform to ANSI B1.20.1, tapered pipe threads for field cut threads. Join pipe, fittings, and valves as follows:
- Note the internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
 - Align threads at point of assembly.
 - Apply appropriate tape or thread compound to the external pipe threads.
 - Assemble joint to appropriate thread depth. When using a wrench on valves place the wrench on the valve end into which the pipe is being threaded.
 - Damaged Threads: Do not use pipe with threads that are corroded or damaged. If a weld opens during cutting or threading operations, that portion of pipe shall not be used.
- C. Mechanical Grooved Joints: Cut or roll grooves on pipe ends dimensionally compatible with the couplings.
- D. End Treatment: After cutting pipe lengths, remove burrs and fins from pipe ends.
5. SPRINKLER HEAD INSTALLATIONS

- A. Use proper tools to prevent damage during installations.
6. FIELD QUALITY CONTROL
- A. Flush, test, and inspect sprinkler piping systems in accordance with NFPA 13 requirements.
- B. Flush, test, and inspect standpipe systems in accordance with NFPA 14 requirements.
- C. Replace piping system components, which do not pass the test procedures, specified, and retest repaired portion of the system.
7. FLUSHING CONNECTIONS
- A. Provide flushing connections in cross-mains as specified in NFPA 13, latest edition.
8. PIPING THROUGH WALLS AND FLOORS
- A. Sleeves shall be set in place for all pipes passing through floors and walls.
- B. In the event Sprinkler Subcontractor fails to set sleeves for passage of piping through floors and walls, he shall pay the Construction Manager to cut and install them.
- C. All hangers and hanger components shall be approved type.
9. FREIGHT & HAULING
- A. Deliver materials to job site and unload and stack in location designated by the owner's representative.
10. LEAK DAMAGE
- A. This Subcontract shall be responsible during the installation and testing periods of the sprinkler system for any damage to the work of others, to the building, its contents, etc., caused by leaks in any equipment, by unplugged or disconnected pipes, fittings, etc. or by overflow, and shall pay for necessary replacements or repair to work of others, building, store fixtures, or merchandise damaged by such leakage.
11. GUARANTEE
- A. At the completion of the work under this sprinkler contractor, this Subcontractor shall furnish, in writing, to the owner, a guarantee stating that all equipment, materials and work performed are in full accordance with the Plans and Specifications.
- B. This Subcontractor shall also furnish to the owner a written guarantee (in triplicate) that all equipment, materials and work performed under this contract, and any subsequent change orders thereto, are fully guaranteed for one year from date of final acceptance, and that any equipment, materials or workmanship which may prove defective within that time will be replaced at no cost to the owner.
12. MORE OR LESS SPRINKLERS
- A. The Sprinkler Subcontractor shall state price in the bid for more or less sprinklers than the total number of sprinkler heads as shown on the working drawings. This price shall include all necessary heads, piping, fittings, and labor per head and shall state price for installation of each type of sprinkler used job.
13. ACCEPTANCE
- A. Before offering system for acceptance, the Subcontractor shall furnish written proof that it is entirely satisfactory to the Inspection Agency, governmental bodies having jurisdiction and the local water utility.
14. CUTTING & PATCHING
- A. Chases, openings, recesses, etc. in new construction shall be provided where so indicated by the Subcontractors in construction at the locations involved. Subcontractors shall furnish information as to size, location, etc. and shall provide and set in place all boxes, sleeves, inserts, forms, etc.
- B. If he fails to provide the required data in time for openings to be left, or if he fails to set boxes, sleeves, inserts, forms, etc., Construction manager shall do required cutting.
- C. Openings shall be accurately located, neatly cut and no larger than necessary.
- D. The Subcontractor shall do rebuilding, patching, refinishing and painting required to restore construction to original condition before cutting, as approved by the Architect, using skilled craftsmen.
15. INSPECTOR'S TESTING
- A. Inspector's test connections, consisting of 1" piping, 1" Globe valve, and 1/2" special discharge nozzle, shall be provided and connected to the systems at required points. The subcontractor to consult with Construction Manager's superintendent on the job to determine exact locations of Inspector's test connections and locations of discharge piping. Piping downstream of test valves shall be galvanized.
16. SUBSTITUTIONS
- A. If the Subcontractor makes any substitutions of equipment or materials from that specified he shall be responsible for any required changes in drawings and responsible for any changes and cost caused by changes to other contracts involved.

END OF SECTION

Professional Seal

Project Title

BID & LLD
APPROVAL SET
AUGUST 12, 2016

America's Best Contacts & Eyeglasses

San Juan Capistrano, CA

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