

14X10ø

PIPING SYMBOLS:

OVAL DUCT (WIDTH X DEPTH)

VARIABLE REFRIGERANT FLOW, COPPER

PIPE ELBOW UP/TOP CONNECTION

CONDENSATE DRAIN

PIPE ELBOW DOWN

DIRECTION OF AIR FLOW

INLET/OUTLET

DIFFUSER TYPE, CFM

ERR EXISTING RETURN REGISTER

EXISTING SUPPLY REGISTER

DENOTES CFM REQUIRED AT

#### **GENERAL NOTES:**

- 1. SCOPE OF WORK SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, HOISTING & RIGGING, ETC. TO PERFORM THE WORK AS INDICATED ON THE DRAWINGS & HEREIN SPECIFIED FOR A COMPLETE & TOTAL INSTALLATION.
- 2. ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL, STATE & LOCAL CODES & ORDINANCES & BASE BUILDING STANDARDS, AS INTERPRETED BY THE ENGINEER.
- 3. PROVIDE ALL HANGERS & SUPPORTS AS REQUIRED TO SUPPORT ALL DUCT & EQUIPMENT.
- 4. THE MECHANICAL CONTRACTOR SHALL UNCONDITIONALLY WARRANT ALL WORK TO BE FREE OF DEFECTS IN MATERIAL & WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE BY OWNER & WILL REPAIR OR REPLACE ANY DEFECTIVE WORK PROMPTLY & WITHOUT CHARGE & RESTORE ANY OTHER EXISTING WORK DAMAGED IN THE COURSE OF REPAIRING DEFECTIVE MATERIALS & WORKMANSHIP.
- 5. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO STUDY ALL DRAWINGS & DETAILS SO THAT THE INSTALLATION OF ALL WORK CAN BE FULLY COORDINATED.
- 6. CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION, START-UP, & PROPER OPERATION OF ALL
- 7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROLS & CONTROL WIRING.
- 8. CONNECT WORK IN A NEAT & APPROVED MANNER.
- 9. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING HEIGHTS & CONSTRUCTION. WHERE WORK BETWEEN THIS DRAWING & ARCHITECTURAL PLANS ARE IN CONFLICT, ADVISE PRIOR TO FABRICATION OF SHEET METAL.
- 10. COORDINATE WORK WITH ALL OTHER TRADES.
- 11. THE SHEET METAL SHOP DRAWINGS SHALL INDICATE ALL HUNG CEILING STARTING POINTS. ELEVATIONS &
- 12. FOR EXACT LOCATION OF CEILING DIFFUSERS, SEE ARCHITECTURAL REFLECTED CEILING PLAN.
- 13. CONTRACTOR SHALL PROVIDE SUBMITTALS, SHOP DRAWINGS & COORDINATION DRAWINGS WITH ALL OTHER
- 14. CONTRACTOR SHALL PROVIDE FINAL "AS-BUILT" DRAWINGS TO BUILDING OWNER OR DESIGNATED REPRESENTATIVE WITHIN 90 DAYS OF THE DATE OF SYSTEM ACCEPTANCE AS PART OF THIS PROJECT AS-BUILT DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES AND
- 15. MANUFACTURER'S NAMES & MODEL NUMBERS SHOWN ON THE DRAWINGS ARE FOR DESCRIPTIVE PURPOSES & ARE INTENDED TO SHOW A LEVEL OF PERFORMANCE AS WELL AS QUALITY OF MATERIALS. SUBSTITUTIONS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- 16. DIFFUSERS & REGISTERS SHALL NOT EXCEED A VALUE OF 22 NOISE CRITERIA (NC), WITH SOUND PRESSURE LEVELS BASED ON A 10 FT x 8 FT ROOM ABSORPTION. STATIC PRESSURE SHALL NOT EXCEED 0.08 INCHES OF WATER. SIZES SHOWN ON REGISTER & DIFFUSER SCHEDULE ARE NECK SIZES.
- 17. THE MECHANICAL CONTRACTOR SHALL PROCURE & PAY FOR ALL PERMITS, FEES & INSPECTIONS NECESSARY TO COMPLETE THE MECHANICAL WORK
- 18. ALL ROUND VOLUME/BALANCING DAMPERS ABOVE ACCESSIBLE CEILINGS SHALL BE KRUEGER PRD10 DUCT MOUNTED RADIAL OPPOSED BLADE TYPE OR EQUAL.
- 19. ALL RECTANGULAR VOLUME/BALANCING DAMPERS ABOVE ACCESSIBLE CEILINGS SHALL BE KRUEGER OBD
- 20. WHEREVER THERE IS A CONTRADICTION BETWEEN THE PLANS, SPECIFICATIONS, OR LOCAL, STATE OR NATIONAL CODES, THE MOST STRINGENT PERFORMANCE CRITERIA SHALL APPLY. CONTRACTOR SHALL INCLUDE SUCH COSTS IN BID & EXECUTION OF WORK

- 1. ALL SUPPLY, RETURN & EXHAUST AIR DUCTWORK SHALL BE WRAPPED WITH 2" FIBERGLASS & ASJ OR FOIL FACED KRAFT PAPER COVERING OF SUFFICIENT THERMAL RESISTANCE TO MEET ALL LOCAL ENERGY CODE REQUIREMENTS. THERMA RESISTANCE SHALL BE A MINIMUM OF R-5 FOR SPACES WITHIN THE BUILDING ENVELOPE & R-8 FOR OUTSIDE OF ENVELOPE.
- 2. THERMAL INSULATION TO COMPLY WITH AN NFPA FLAME SPREAD OF 25 OR LESS, & SMOKE DEVELOPED NO GREATER
- 3. PROVIDE THE APPROPRIATE THERMAL HIGH TEMPERATURE INSULATION ON EXHAUST DUCTS WHEN EXHAUST TEMPERATURES EXCEED 20°F OF ROOM TEMPERATURE OR THERE IS A REQUIREMENT FOR FIRE RATING THE EXHAUST DUCTWORK SUCH AS FIREPLACE FLUE, UNIT HEATER FLUE, KITCHEN HOOD EXHAUST, ETC ... TO MEET THE CLEARANCE TO COMBUSTIBLE REQUIREMENTS IN THE STATES BUILDING AND MECHANICAL CODES.
- 4. PROVIDE THERMAL INSULATION OF ALL DUCTWORK TO MEET ENERGY CODE AND TO PREVENT CONDENSATION THAT WOULD OTHERWISE OCCUR ON EXHAUST OR MAKE-UP AIR DUCTWORK.

## **GREASE EXHAUST SYSTEM:**

FACTORY BUILT GREASE DUCT:

1. CONTRACTOR SHALL INSTALL SELKIRK METALBESTOS FACTORY BUILT GREASE DUCT ZERO CLEAR PLUS IPS-Z3 (ALSO KNOWN AS ZC+ OR Z3) SYSTEM FOR THIS PROJECT, OR EQUIVALENT IN PERFORMANCE, ONLY EXCEPTIONS ALLOWED ARE THE CONNECTIONS TO HOOD AND EXHAUST FAN ALONG WITH THEIR IMMEDIATE TRANSITIONS TO THE FACTORY BUILT GREASE DUCT SYSTEM, THESE DUCTS SHALL BE CONSTRUCTED TO NFPA AND BUILDING CODE STANDARDS WITH ZERO CLEARANCE INSULATION WRAPPING.

2. ZERO CLEAR PLUS IPS-Z3 (ALSO KNOWN AS ZC+ OR Z3) SHALL HAVE 316 INNER AND OUTER SHEATHS.

3. CONTRACTOR SHALL SUBMIT A COMPLETE GREASE DUCT LAYOUT, ELEVATION, AND BILL OF MATERIAL FOR THE INSTALLATION FOR ENGINEER AND MECHANICAL

4. CONTRACTOR SHALL NOT USE PLANS FOR DETAILING GREASE DUCT SYSTEM. CONTRACTOR SHALL FIELD MEASURE EXACT BUILDING DIMENSIONS AND PROVIDE ANY REVISIONS TO ENGINEER'S DIAGRAMMATIC PLANS TO ACCOMMODATE EXISTING BUILDING ELEMENTS, COORDINATE GREASE DUCT SYSTEM INSTALLATION WITH ALL OTHER TRADES.

5. CONTRACTOR SHALL PROVIDE A COMPLETE, FULLY FUNCTIONAL AND CODE COMPLIANT SELKIRK MODEL ZERO CLEAR PLUS IPS-Z3 GREASE DUCT SYSTEM. SELKIRK MODEL ZERO CLEAR (ZC) GREASE DUCTS ARE LISTED (SAFETY CERTIFIED) BY UNDERWRITERS LABORATORIES, INC. (UL) IN ACCORDANCE WITH UL1978, THE "STANDARD FOR GREASE DUCTS". THEY ARE INTENDED TO BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING INSTALLATION INSTRUCTIONS AND NFPA 96, THE (NATIONAL FIRE PROTECTION ASSOCIATION) "STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS". SELKIRK MODEL ZERO CLEAR ZERO CLEAR PLUS IPS-Z3 (ALSO KNOWN AS ZC+ OR Z3) GREASE DUCT SYSTEMS ARE LISTED WITH A MINIMUM ZERO INCH CLEARANCE TO COMBUSTIBLES.

SELKIRK MODEL ZERO CLEAR PLUS (IPS-Z3/ZC+) GREASE DUCTS ARE ALSO CLASSIFIED BY UL IN ACCORDANCE WITH UL2221, THE "STANDARD FOR FIRE TESTS FOR FIRE RESISTANT GREASE DUCT ENCLOSURE ASSEMBLIES" AND ASTME2336, THE "TEST METHODS FOR FIRE RESISTIVE GREASE DUCT ENCLOSURES". ZERO CLEAR PLUS (Z3/ZC+) IS CLASSIFIED FOR A MAXIMUM 2 HOUR FIRE RESISTANCE RATING PER UL2221 AND A MAXIMUM 2 HOUR FIRE RESISTANCE RATING PER E2336. THESE RATINGS QUALIFY THE INSULATION AND THE OUTER WALL OF THE ZEROCLEAR (ZC) PRODUCTS AS AN ALTERNATE TO THE SPECIFIED HOURLY RATED FIRE RESISTIVE SHAFT ENCLOSURES (THEREFORE ELIMINATING THE NEED FOR A SEPARATE FIRE RESISTIVE ENCLOSURE) AND FOR INSTALLATION AT ZERO CLEARANCE TO COMBUSTIBLES. MODEL ZC+ (IPS-Z3) INCORPORATES 3" OF SPECIAL FIBER INSULATION BETWEEN WALLS.

#### **DUCTWORK:**

- 1. ALL BRANCH TAKEOFFS FROM MAIN SUPPLY DUCT SHALL BE VIA A 45° SHOE OR BELL MOUTH TYPE FITTING WITH VOLUME DAMPER.
- 2. ALL SUPPLY DUCTWORK SHALL BE INSTALLED PER THE MOST CURRENT EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL & FLEXIBLE". MEDIUM PRESSURE CLASS SHALL BE 3" w.g.. & LOW PRESSURE SHALL BE 1"w.g.. ALL FLEXIBLE DUCTWORK SHALL NOT EXCEED 5' & SHALL BE PULLED TIGHT TO ELIMINATE SAGGING. ALL DUCT SIZES SHOWN ARE NET INSIDE DIMENSIONS.
- 3. ALL DUCTWORK SHALL BE SEALED TO SEAL CLASS A.
- 4. DUCT DIMENSIONS INDICATED ON DUCTWORK PLAN ARE CLEAR INSIDE DIMENSIONS & MUST BE INCREASED FOR DUCT LINING WHERE APPLICABLE. PROVIDE DUCT LINING 1" THICK 10FT DOWNSTREAM OF HVAC EQUIPMENT CONNECTIONS.
- 5. PROVIDE ALL RADIUS DUCT ELBOWS WITH CENTERLINE RADIUS EQUAL TO 1½ TIMES THE RADIUS DEPTH. PROVIDE ALL SQUARE DUCT ELBOWS WITH TURNING VANES. (VOLUME DAMPERS REQUIRED AT ALL BRANCH CONNECTIONS & RETURN AIR GRILLES.)
- 6. ALL BRANCH RUNOUTS FROM ROUND DUCT MAINS SHALL HAVE CONICAL TAKE-OFFS & VOLUME DAMPERS.
- 7. COVER ALL OPEN-ENDED RETURN DUCT WITH 1/4"x1/4" FRAMED WIRE MESH SCREEN.
- 8. ALL DUCTWORK TO BE RIGID SHEETMETAL CONSTRUCTED FROM GALVANIZED SHEET STEEL IN ACCORDANCE WITH SMACNA LOW VELOCITY DUCT CONSTRUCTION STANDARDS. ALL EXPOSED DUCTWORK TO BE ROUND, SPIRAL, OR RECTANGULAR LOCK-SEAM TYPE.
- 9. FURNISH ALL REQUIRED DAMPERS, TRANSITIONS, CONNECTIONS TO AIR TERMINALS, & OTHER ACCESSORIES NECESSARY FOR A COMPLETE OPERATING SYSTEM. NO VARIATION OF DUCT CONFIGURATION OR SIZES WILL BE PERMITTED EXCEPT BY PERMISSION FROM
- 10. PROVIDE HOT-DIPPED GALVANIZED STEEL, FASTENERS, ANCHORS. RODS, STRAPS, TRIM, & ANGLES FOR SUPPORT OF DUCTWORK.
- 11. PROVIDE UL LISTED FIRE DAMPERS WHERE REQUIRED & IN ACCORDANCE WITH NFPA & LOCAL CODES. PROVIDE CONVENIENTLY LOCATED ACCESS DOORS OF AMPLE SIZE & QUANTITY FOR SERVICING THE DAMPERS.
- 12. DIFFUSERS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS & SCHEDULES. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS ITEMS NECESSARY FOR A COMPLETE & PROPER INSTALLATION IN THE TYPE OF CEILING & WALLS USED IN THIS
- 13. ALL NEW DUCTWORK SHALL BE LINED WITH 1" THICK ACOUSTICAL INSULATION UP TO 10' FROM THE EQUIPMENT. THE THICKNESS OF THE INSULATION SHALL NOT REDUCE THE SIZE OF THE DUCT NOR SHALL IT SUBSTITUTE FOR THERMAL INSULATION.
- 14. ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED (HANGERS, SUPPORTS, METAL GAUGE, ETC ....) PER THE LATEST STANDARD OF SHEET METAL AND AIR CONTRACTORS' NATIONAL ASSOCIATION (SMACNA), INC.. "HVAC DUCT CONSTRUCTION STANDARDS METAL AND
- 15. ALL TURNING VANES SHALL HAVE TRAILING EDGES. WHERE THE TURNING VANES ARE INSTALLED LESS THAN FOUR TIMES THE PERIMETER OF THE DUCTWORK, THEY SHALL HAVE EQUAL NUMBER OF ALIGNED UPSTREAM AIR STRAIGHTNERS. THE AIR STRAIGHTNERS SHALL BE AS LONG AS THE SHORTEST DUCT DIMENSION DIMENSION INSTALLED UPSTREAM AND JUST PRIOR TO THE TURNING VANES.

#### TESTING + BALANCING:

- 1. CONTRACTOR TO RETAIN THE SERVICES OF AN INDEPENDENT CERTIFIED BALANCING CONTRACTOR, WHO SHALL BALANCE SYSTEMS & DIFFUSERS IN ACCORDANCE WITH NEBB & SMACNA WRITTEN PRACTICES & PROVIDE A REPORT TO THE ENGINEER, (2) COPIES. FOR REVIEW & APPROVAL. THE BALANCING CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ALL ADJUSTMENTS REQUIRED TO BASE
- 2. THE TESTS SHALL BE DONE IN THE PRESENCE OF OR WITH THE PRIOR KNOWLEDGE OF THE OWNER'S REPRESENTATIVE.
- 3. OPERATIONAL DEFICIENCIES SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE & MECHANICAL ENGINEER.
- 4. ALL DATA RECORDED SHALL BE ENTERED INTO THE BALANCING REPORT.
- 5. THE AIR BALANCE CONTRACTOR SHALL SUBMIT AN AS-BUILT PLAN ON WHICH ALL SUPPLY DIFFUSERS & ZONE VALVES SHALL BE NUMBERED & IDENTIFIED TO CORRESPOND WITH THE FINAL AIR BALANCE REPORTS. ALL DIFFUSERS SHALL BE GROUPED, & WHENEVER
- 6. UPON REQUEST OF THE OWNER, ENGINEER OR ARCHITECT, CONTRACTOR SHALL PROVIDE AT LEAST THREE COMFORT BALANCING OF THE BUILDINGS ENTIRE HVAC SYSTEMS FOR UP TO A PERIOD OF ONE YEAR AFTER INITIAL BALANCING & ACCEPTANCE OF THE HVAC
- 7. WHILE BALANCING SYSTEM, BALANCING CONTRACTOR SHALL USE MANUAL VOLUME DAMPERS WHILE MOTORIZED DAMPERS ARE AT FULL OPEN POSITION.
- 8. ALL TAB WORK SHALL BE PERFORMED PER THE LATEST EDITION OF SMACNA "HVAC SYSTEMS TESTING, ADJUSTING, AND BALANCING". THE TAB REPORT SHALL INCLUDE NUMBERED DIFFUSERS, DUCTS, AND EQUIPMENT, FROM THE HVAC CONTRACTORS "AS-BUILT" HVAC PLANS SHOWING FLUID FLOW QUANTITIES AND THE CORRESPONDING FLUID TEMPERATURES (FLUID MAY BE AIR, WATER, OR WATER/GLYCOL SOLUTION).

#### **INSTRUMENT NOTES:**

- 1. INSTRUMENTS SUPPLIED & INSTALLED BY MECHANICAL CONTRACTOR, LOW VOLTAGE (24V OR LESS) WIRING BY CONTROLS CONTRACTOR, HIGH VOLTAGE (48V OR HIGHER) & FIRE ALARM WIRING SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL VERIFY INSTRUMENT FUNCTIONS PRIOR TO TESTING, ADJUSTING & BALANCING CONTRACTOR PERFORMING SYSTEM
- 2. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING IN CONCEALED 1" DIAMETER WEATHERPROOF LIQUIDTIGHT ELECTRICAL METALLIC TUBING CONDUIT NECESSARY FOR THE COMPLETE & PROPER OPERATING TEMPERATURE CONTROL SYSTEM.

#### SCHEDULE OF MECHANICAL DRAWINGS

| DWG. # | DESCRIPTION                                   | REV # |
|--------|---|-------|
| M-000  | MECHANICAL - SYMBOLS, NOTES AND ABBREVIATIONS | -     |
| M-100  | MECHANICAL - NEW LOWER LEVEL FLOOR PLAN       | _     |
| M-101  | MECHANICAL - NEW MAIN LEVEL FLOOR PLAN        | _     |
| M-102  | MECHANICAL - NEW ROOF PLAN                    | -     |
| M-200  | MECHANICAL - DETAILS                          | -     |
| M-300  | MECHANICAL - SPECIFICATIONS                   | _     |
| M-400  | MECHANICAL - GREASE HOOD DETAILS              | _     |

# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



111 PERKINS STREET SUITE 215 BOSTON MA 02130 (617) 522-0718

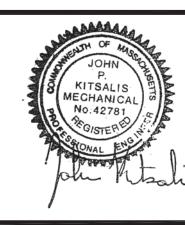
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MECHANICAL -SYMBOLS, NOTES AND ABBREVIATIONS

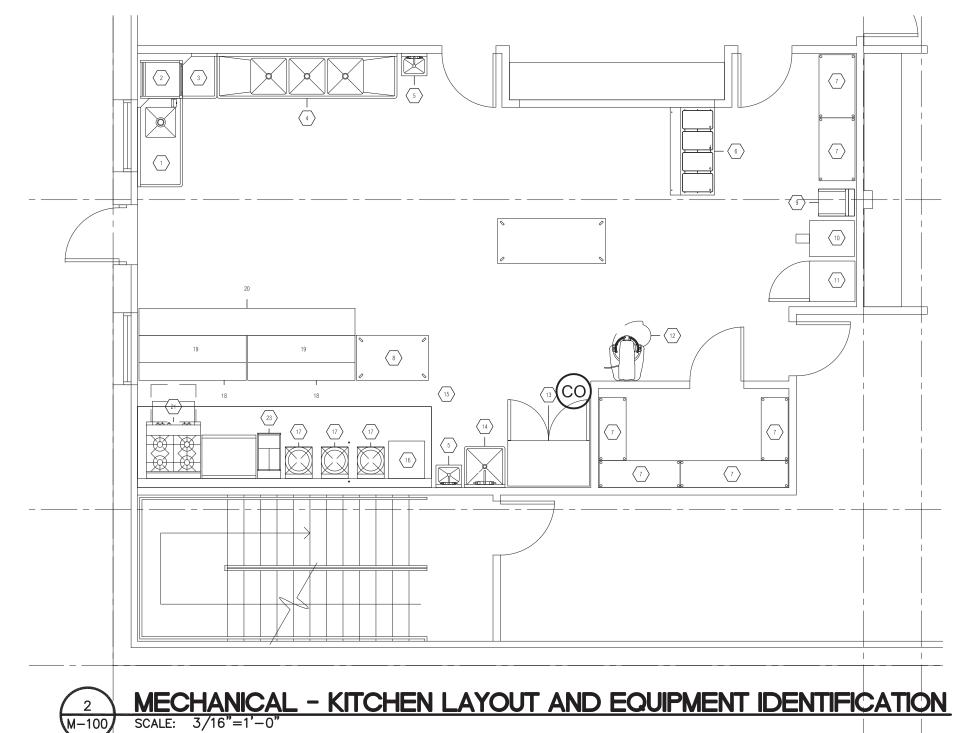
**AS NOTED** 

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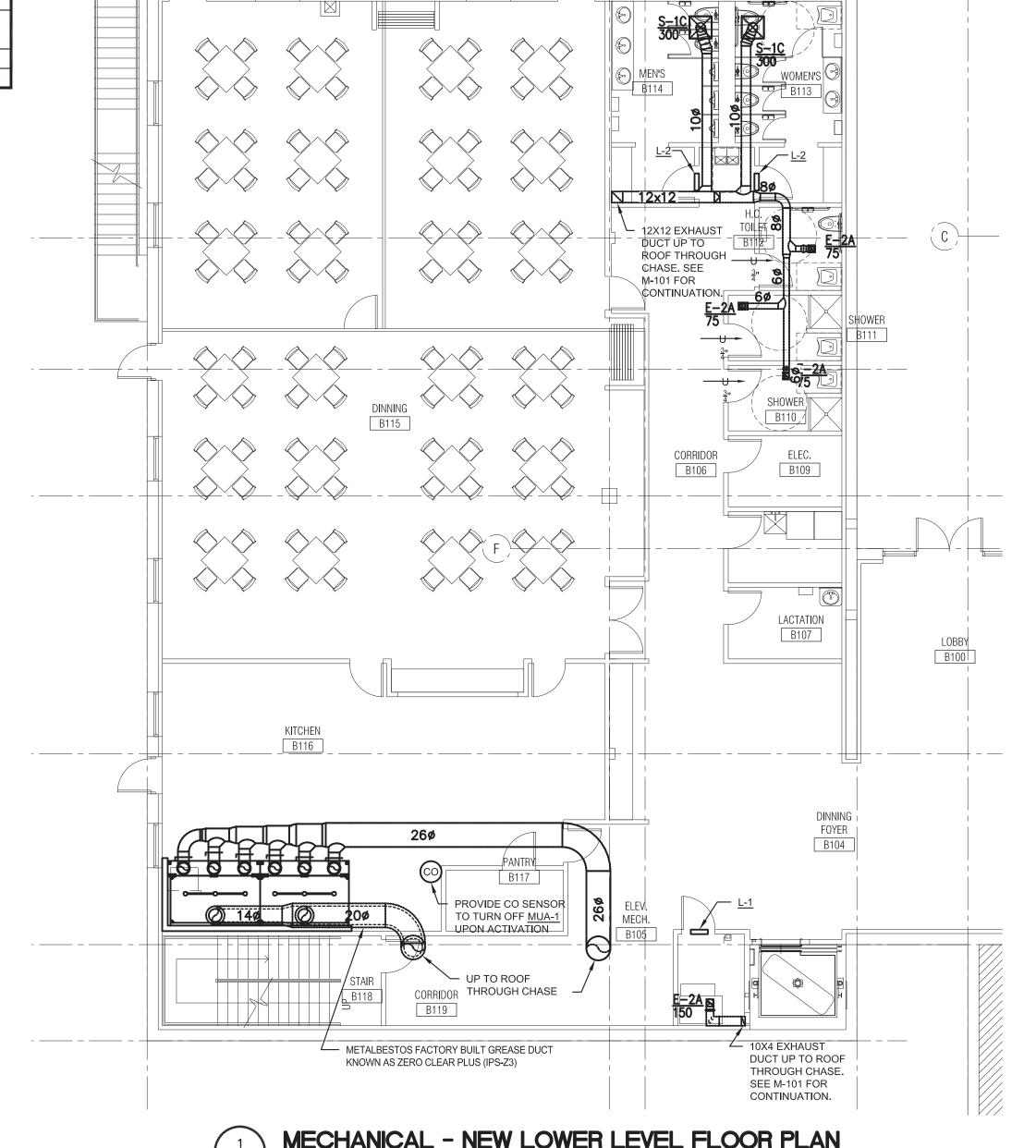
MECHANICAL - SYMBOLS, NOTES AND ABBREVIATIONS

- .) DUCTWORK SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL DUCT PLACEMENT AND ADJUST AS NEEDED TO ACCOMMODATE STRUCTURAL ELEMENTS WHILE MAINTAINING DUCT CROSS SECTIONAL AREAS SHOWN ON PLANS.
- 2.) CONTRACTOR SHALL NOT USE PLANS TO FABRICATE DUCTWORK. CONTRACTOR SHALL USE MEASURED BUILDING DIMENSIONS OF ALL STRUCTURAL ELEMENTS FOR PREPARING DUCTWORK.
- EQUIPMENT LAYOUT SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. CONTRACTOR SHALL INSTALL EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS.
- .) CONTRACTOR SHALL UTILIZE TURNING VANES AT ALL POSSIBLE LOCATIONS TO MINIMIZE TOTAL STATIC PRESSURE LOSSES.
- .) HVAC CONTRACTOR SHALL COORDINATE ALL ROOF PENETRATIONS AND ROOF DUCT INSTALLATION WITH GENERAL AND ROOF CONTRACTORS.
- S.) CONTRACTOR SHALL INSTALL FIRE DAMPERS (FD) AT ALL PENETRATIONS THROUGH FIRE RATED PARTITIONS. FIRE DAMPER HOURLY RATING TO MATCH PARTITION.
- ALL NEW DUCTWORK SHALL BE INSTALLED TIGHT TO STRUCTURE WHEREVER POSSIBLE TO MAXIMIZE SPACE FOR ALL OTHER TRADES.
- ) NEW MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH MANUFACTURER RECOMMENDED VIBRATION ISOLATION SUPPORTS. CONTRACTOR SHALL INSURE ANY MECHANICAL VIBRATION OR NOISE ISSUES CAUSED BY THE NEW WORK BE ELIMINATED PRIOR TO THE OCCUPATION OF THE SPACE BY THE TENANT.
- ) MINIMUM SHEET STEEL THICKNESS SHALL BE 26 GAUGE
- 10.) CONTRACTOR SHALL PROVIDE ACCESS PANELS THAT ARE OF SUFFICIENT SIZE FOR MAINTENANCE OF ANY DAMPERS OR EQUIPMENT ABOVE SHEET ROCK OR OTHERWISE UNACCESSIBLE CEILINGS/WALLS. ALL ACCESS PANELS SHALL BE COORDINATED WITH PROJECT ARCHITECT FOR STYLE. ACCESS PANEL COLOR TO MATCH CORRESPONDING CEILING/WALL, COORDINATE ALL COLORS AND TRIMS WITH ARCHITECT. CONTRACTOR SHALL MAKE ALL REASONABLE EFFORTS TO LOCATED ALL EQUIPMENT AND DAMPERS THAT REQUIRE MAINTENANCE ABOVE ACCESSIBLE CEILINGS.
- .) ALL NEW INDOOR EQUIPMENT, PIPING, AND DUCTWORK SHALL BE A CONCEALED INSTALLATION. EXCEPTION ONLY TO WALL/FLOOR MOUNTED HVAC UNITS.

| TAG LOCATION FUNCTION BLADE STYLE WIDTH/ FRAME DEPTH CFM (SQ. FT) MATERIAL FINISH REMARKS  L-1 ELEVATOR MECHANICAL ROOM TRANSFER AIR - 18/12 2" 150 0.675 STEEL FRAME COORDINATE WITH ARCHITECT NAILOR 61DGD-FR, COLOR BY ARCHITECT, FIRE F |                | LOUVER SCHEDULE   |                           |             |       |     |    |       |   |              |                          |     |  |  |  |  |
|---|----------------|---|---------------------------|-------------|-------|-----|----|-------|---|--------------|--------------------------|-----|--|--|--|--|
| L-1 ELEVATOR MECHANICAL ROOM TRANSFER AIR - 18/12 2" 150 0.675 STEEL FRAME COORDINATE WITH ARCHITECT NAILOR 61DGD-FR. COLOR BY ARCHITECT, FIRE F  |                | AG LOCATION FUNCTION BLADE HEIGHT DEPTH CFM FREE AREA MATERIAL FINISH REMARKS |                           |             |       |     |    |       |   |              |                          |     |  |  |  |  |
|   | TING TO MATCH. | NAILOR 61DGD-FR. COLOR BY ARCHITECT, FIRE RATING TO M                         | COORDINATE WITH ARCHITECT | STEEL FRAME | 0.675 | 150 | 2" | 18/12 | _ | TRANSFER AIR | ELEVATOR MECHANICAL ROOM | L-1 |  |  |  |  |
| L-2 PUBLIC RESTROOM TRANSFER AIR - 24/12 2" 300 0.9 STEEL FRAME COORDINATE WITH ARCHITECT NAILOR 61DGD. COLOR BY ARCHITECT.   |                | NAILOR 61DGD. COLOR BY ARCHITECT.   | COORDINATE WITH ARCHITECT | STEEL FRAME | 0.9   | 300 | 2" | 24/12 | _ | TRANSFER AIR | PUBLIC RESTROOM          | L-2 |  |  |  |  |



| DIFF    | DIFFUSER, GRILLE, AND REGISTER SCHEDULE |                           |                   |                    |                                   |  |  |  |  |  |  |  |  |  |
|---------|---|---------------------------|-------------------|--------------------|-----------------------------------|--|--|--|--|--|--|--|--|--|
| CALLOUT | DESCRIPTION                             | AIRFLOW<br>RANGE<br>(CFM) | FACE SIZE<br>(IN) | INLET SIZE<br>(IN) | NOISE<br>CRITERIA<br>@ MAX<br>CFM | NOTES  |  |  |  |  |  |  |  |  |
| E-2A    | TITUS 50FF EGGCRATE RETURN              | 0 - 150                   | 7 3/4×7<br>3/4    | 6x6                | 22                                | COORDINATE CEILING TYPE, FRAME AND COLOR WITH ARCHITECT. |  |  |  |  |  |  |  |  |
| S-1C    | TITUS PAS                               | 0 - 330                   | 24×24             | 10ø                | 27                                | COORDINATE CEILING TYPE, FRAME AND COLOR WITH ARCHITECT. |  |  |  |  |  |  |  |  |



# MECHANICAL - NEW LOWER LEVEL FLOOR PLAN SCALE: 1/8"=1'-0"

CADMILLEAIDE CDEACE HOOD INTEODIAMION

| <i>CAPTIVEAIR</i> | <u> P.E. GRE'ASE' HOO.</u> | <u>D INF'O.</u> | <u>RMATI</u> | <u>'ON</u> |         |               |               |         |                      |      |               |      |                         |        |             |          |        |           |             |                   |           |                   |
|-------------------|----------------------------|-----------------|--------------|------------|---------|---------------|---------------|---------|----------------------|------|---------------|------|-------------------------|--------|-------------|----------|--------|-----------|-------------|-------------------|-----------|-------------------|
|                   | MAX.                       |                 |              |            | PLENUM  |               | HOOD (        | CONFIG. | FILTER(S             | 3)   |               |      | LIGHT(S)                |        | FIRE HOC    | n        |        | MAKE-UP A | ID SLIDDI V | / DI ENILIM       |           |                   |
| HOOD MODEL        |                            | TOTAL           | RISE         | R(S)       |         | HOOD          | END TO        |         |                      |      |               |      |                         | \//IDE | SYSTEM HANG | <b>I</b> |        | WARL-OF A | 301 1 L I   | I LLINOW          |           |                   |
| NO.               |                            | EXH. CFM        | DIA.         | CFM        | S.P.    | CONSTRUCTION  | END TO<br>END | ROW     | TYPE                 | QTY. | HEIGHT LENGTH | QTY. | IVPE                    |        | PIPING WG   | I        | LENGTH | WIDTH     | HEIGHT      | RISER<br>DIAMETER | RISER CFM | RISER<br>QUANTITY |
| 5424              | 8' 0.00" 450 Deg.          | 1800            | 14"          | 1800       | -0.698" | 430 SS        |               |         |                      | 1    | 20" 16"       |      |                         |        |             |          | 06"    | 4.011     | 011         | 4.411             | 400       |                   |
| ND-2-PSF          |                            | 1000            |              |            |         | Where Exposed | LEFT          | ALONE   | Captrate Solo Filter | 4    | 20" 20"       | 3    | Incandescent Light Fixt | NO     | YES 448 L   | BS FRONT | 96"    | 16"       | 6"          | 14"               | 480       | 3                 |
| 5424              | 8' 1.00" 450 Deg.          | 1819            | 14"          | 1819       | -0.711" | 430 SS        | RIGHT         | ALONE   | - · · · - · - · ·    | 1    | 20" 16"       |      |                         |        |             |          | 4001   | 4.011     | 011         | 4.411             | 40.4      |                   |
| ND-2-PSF          | P-F   430 Deg.             | 1019            |              |            |         | Where Exposed | KIGHT         | ALONE   | Captrate Solo Filter | 4    | 20" 20"       | 3    | Incandescent Light Fixt | NO     | YES 435 L   | BS FRONT | 100"   | 16"       | 6"          | 14"               | 484       | 3                 |

|      |      |                                   |      |      |     | SCHE     | DULE OF EQ  | UIPMENT       | •     |           |        |     |          |       |           |                 |                  |                 |               |      |                  |                |                 |
|------|------|-----------------------------------|------|------|-----|----------|-------------|---------------|-------|-----------|--------|-----|----------|-------|-----------|-----------------|------------------|-----------------|---------------|------|------------------|----------------|-----------------|
| Item | Qty. | Description                       |      |      |     | Ele      | ectrical    |               |       |           | Wate   | r   |          | Waste |           | Natural Ga      | s                |                 |               | Flue | Manufacturer     | Model No.      | Notes/ Remarks: |
|      |      |                                   | Amps | кw   | НР  | Volts    | Conn        | Type Min. Amp | Hertz | Phase Col | d Hot  | AFF | Direct   | AFF   | Indirect  | AFF Gas Pressur | e Gas Flow (CFH) | Connection Size | Gas Regulator | Size |                  |                |                 |
| 1    | 1    | Dishtable, Soiled                 |      |      |     |          |             |               |       | 1/2       | " 1/2" | 18" |          |       | 1-1/2 IPS | 9"              |                  |                 |               |      | Advance Tabco    | DTS-S60-60L    |                 |
| 2    | 1    | Dishwasher, Door Type             | 36.6 | 15.8 | 1   | 208-230v |             | 50            | 60    | 3 3/4     | " 3/4" | 18" | 3/4 FPT  | :     | 1-1/2 MPT | 9"              |                  |                 |               |      | Hoshizaki        | JWE-620UA-6B   |                 |
| 3    | 1    | Dishtable, Cleaned                |      |      |     |          |             |               |       |           |        |     |          |       |           |                 |                  |                 |               |      | Advance Tabco    | DTC-S30-24R    |                 |
| 4    | 1    | Sink, (3) Compartment*(2 Faucets) |      |      |     |          |             |               |       | 1/2       | " 1/2" | 18" |          |       | 2"        | 9"              |                  |                 |               |      | Turbo Air        | TSB-3-D2       |                 |
| 5    | 2    | Hand Sink(2)                      |      |      |     |          |             |               |       | 1/2       | " 1/2" | 18" |          |       | 2"        | 9"              |                  |                 |               |      | Turbo Air        | TSS-1-H        |                 |
| 6    | 1    | Serving Counter                   | 14.4 |      |     | 208-240v | NEMA 6-20   | 25            | 60    | 3         |        |     |          |       |           |                 |                  |                 |               |      | Duke Mfg.        | E304SW         |                 |
| 7    | 6    | Shelving Unit                     |      |      |     |          |             |               |       |           |        |     |          |       |           |                 |                  |                 |               |      | AMCO Corp        | 1428CP         |                 |
| 8    | 2    | Stainless Steel Table             |      |      |     |          |             |               |       |           |        |     |          |       |           |                 |                  |                 |               |      | Seidman Brothers | Prep Table     |                 |
| 9    | 1    | Rice Mixer                        |      |      | 3/4 | 200-240  |             | 50            | 60    | 3         |        |     |          |       |           |                 |                  |                 |               |      |                  |                |                 |
| 10   | 1    | Mixer Grinder                     | 37.0 |      | 10  | 208      | NEMA L2130P | 50            | 60    | 3         |        |     |          |       |           |                 |                  |                 |               |      | Hobart           | 4246+ Build-Up |                 |
| 11   | 1    | Freezer, Reach-In                 | 7.8  |      | 1/2 | 115v     | NEMA 5-15P  |               | 60    | 1         |        |     |          |       |           |                 |                  |                 |               |      | Turbo Air        | TSF-23SD       |                 |
| 12   | 1    | Food Mixer                        | 5.7  |      | 3/4 | 200-240v |             | 50            | 60    | 3         |        |     |          |       |           |                 |                  |                 |               |      | Hobart           | HL300-1        |                 |
| 13   | 1    | Refrigerator                      | 9.2  |      | 1/2 | 115v     | NEMA 5-15P  |               | 60    | 1         |        |     |          |       |           |                 |                  |                 |               |      | Turbo Air        | TSF-23SD       |                 |
| 14   | 1    | Hand Sink                         |      |      |     |          |             |               |       | 1/2       | " 1/2" | 18" |          |       | 2"        | 9"              |                  |                 |               |      | Turbo Air        | TSB-1-N        |                 |
| 15   | 1    | Exhaust Hood                      |      |      |     |          |             |               |       |           |        |     |          |       |           |                 |                  |                 |               |      |                  |                |                 |
| 16   | 1    | Steamer                           | 46.1 | 15   |     | 208v     |             | 50            | 60    | 3 1/2     | " 1/2" | 18" | 1/2" NPT |       | 2"        | 9"              |                  |                 |               |      | Solaris          | EPX-5-S        |                 |
| 17   | 1    | Stock Pot                         |      |      |     |          |             |               |       |           |        |     |          |       |           |                 | 79               | 3/4"            | SPECIFIED     | 3/4" | Turbo Air        | TASP-18        | 79,000 BTU      |
| 18   | 1    | Work Top Cooler                   | 7.0  |      | 1/3 |          |             |               | 60    | 1         |        |     |          |       |           |                 |                  |                 |               |      |                  |                |                 |
| 19   | 2    | Double Overshelf                  |      |      |     |          |             |               |       |           |        |     |          |       |           |                 |                  |                 |               |      |                  |                |                 |
| 20   | 1    | Dish Cabinet                      |      |      |     |          |             |               |       |           |        |     |          |       |           |                 |                  |                 |               |      | Advance Turbo    | DC-812         |                 |
| 21   | 1    | Range, Gas (heavy-duty)           |      |      |     | 208-240v |             |               | 60    | 1         |        |     |          |       |           | 7"              | 225              | 1-1/4"          | SPECIFIED     | 5"   | Southbend        | P36D-XX        | 225,000 BTU     |
| 22   | 1    | Griddle, Gas                      |      |      |     |          |             |               |       |           |        |     |          |       |           |                 | 60               | 3/4" NPT        | SPECIFIED     |      | Star Mfg.        | 636TD          | 60,000 BTU      |
| 23   | 1    | Fryer                             |      |      |     | 120      |             |               | 60    | 1         |        |     |          |       |           |                 | 122              | 3/4" NPT        | SPECIFIED     |      | Pitco Frialator  | 45C+           | 122,000 BTU     |

MECHANICAL - KITCHEN EQUIPMENT REQUIREMENT SPREADSHEET

# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



Architecture • Interior Design

111 PERKINS STREET SUITE 215 BOSTON MA 02130 (617) 522-0718

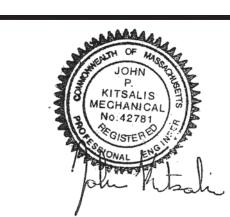


# ABERIONA ENGINEERING INC

1 MOUNT VERNON STREET WINCHESTER,MA 01890 781-729-6188



Building Systems & Commissioning Engineers Massachusetts 30 Turnpike Road, Suite #1, Southborough, MA 01772 Tel: (508) 485-4633 Fax: (508) 485-1830



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| Issue                      | Date       |
|----------------------------|------------|
| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
|                            |            |
|                            |            |
|                            |            |
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|                            |            |

MECHANICAL - NEW LOWER LEVEL FLOOR PLAN

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Shoot #  | •        |             |

- 1.) DUCTWORK SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL DUCT PLACEMENT AND ADJUST AS NEEDED TO ACCOMMODATE STRUCTURAL ELEMENTS WHILE MAINTAINING DUCT CROSS SECTIONAL AREAS SHOWN ON PLANS.
- 2.) CONTRACTOR SHALL NOT USE PLANS TO FABRICATE DUCTWORK. CONTRACTOR SHALL USE MEASURED BUILDING DIMENSIONS OF ALL STRUCTURAL ELEMENTS FOR PREPARING DUCTWORK.
- 3.) EQUIPMENT LAYOUT SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. CONTRACTOR SHALL INSTALL EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS.
- 4.) CONTRACTOR SHALL UTILIZE TURNING VANES AT ALL POSSIBLE LOCATIONS TO MINIMIZE TOTAL STATIC PRESSURE
- 5.) HVAC CONTRACTOR SHALL COORDINATE ALL ROOF PENETRATIONS AND ROOF DUCT INSTALLATION WITH GENERAL AND ROOF CONTRACTORS.
- 6.) CONTRACTOR SHALL INSTALL FIRE DAMPERS (FD) AT ALL PENETRATIONS THROUGH FIRÉ RATED PARTITIONS. FIRE DAMPER HOURLY RATING TO MATCH
- 7.) ALL NEW DUCTWORK SHALL BE INSTALLED TIGHT TO STRUCTURE WHEREVER POSSIBLE TO MAXIMIZE SPACE FOR ALL OTHER TRADES.
- 3.) NEW MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH MANUFACTURER RECOMMENDED VIBRATION ISOLATION SUPPORTS. CONTRACTOR SHALL INSURE ANY MECHANICAL VIBRATION OR NOISE ISSUES CAUSED BY THE NEW WORK BE ELIMINATED PRIOR TO THE OCCUPATION OF THE SPACE BY THE TENANT.
- 9.) MINIMUM SHEET STEEL THICKNESS SHALL BE 26 GAUGE
- D.) CONTRACTOR SHALL PROVIDE ACCESS PANELS THAT ARE OF SUFFICIENT SIZE FOR MAINTENANCE OF ANY DAMPERS OR EQUIPMENT ABOVE SHEET ROCK OR OTHERWISE UNACCESSIBLE CEILINGS/WALLS. ALL ACCESS PANELS SHALL BE COORDINATED WITH PROJECT ARCHITECT FOR STYLE. ACCESS PANEL COLOR TO MATCH CORRESPONDING CEILING/WALL, COORDINATE ALL COLORS AND TRIMS WITH ARCHITECT. CONTRACTOR SHALL MAKE ALL REASONABLE EFFORTS TO LOCATED ALL EQUIPMENT AND DAMPERS THAT REQUIRE MAINTENANCE ABOVE
- 1.) ALL NEW INDOOR EQUIPMENT, PIPING, AND DUCTWORK SHALL BE A CONCEALED INSTALLATION. EXCEPTION ONLY TO WALL/FLOOR MOUNTED HVAC UNITS.

TITUS PAS

DESCRIPTION

TITUS 50FF EGGCRATE RETURN

**RANGE** 

(CFM)

0 - 150 | 7 3/4x7

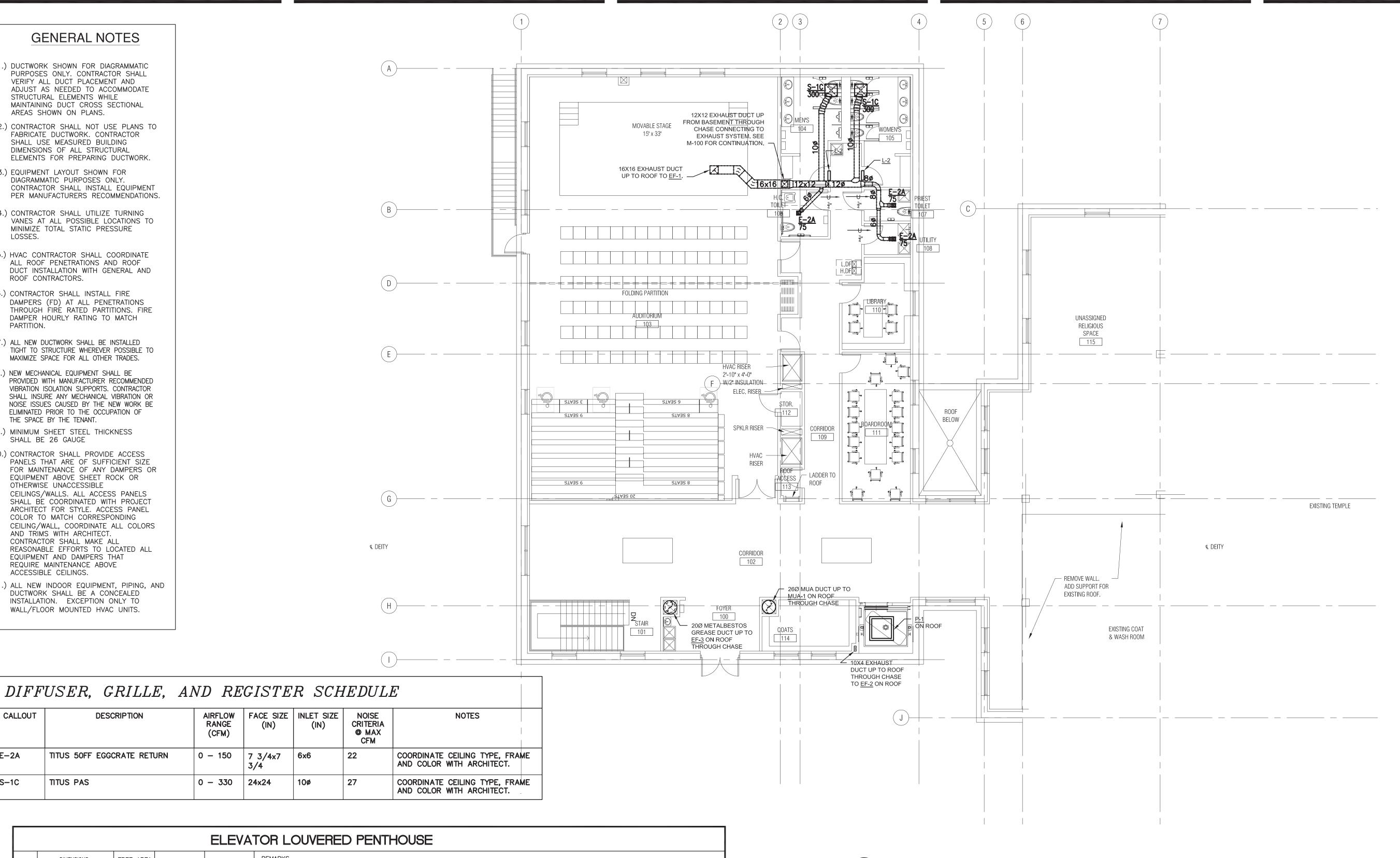
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0 - 330 | 24x24

ACCESSIBLE CEILINGS.

CALLOUT

S-1C



|            |  |                      |              | ELEVA           | TOR LOUVERED PENTHOUSE  |
|------------|--|----------------------|--------------|-----------------|---|
| TAG        | DIMENSIONS<br>(WIDTH X DEPTH X HEIGHT) | FREE AREA<br>(SQ FT) | MANUFACTURER | MODEL<br>NUMBER | REMARKS  PROVIDE WITH 3' HIGH ROOF CURB, BIRD SCREEN, AND FINISH BY ARCHITECT. ROOF CURB SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS WITH FLASHING     |
| <u>P-1</u> | 30"x30"x18"                            | 4.44                 | GREENHECK    |                 | AND COUNTER FLASHING BY CONTRACTOR. PROVIDE WITH MANUFACTURER INCLUDED SMOKE DAMPER THAT SHALL BE CONTROLLED BY THE FIRE ALARM CONTROL PANEL WITH 120V DRY CONTACT RELAY. |

| MMENDATIONS WITH FLASHING<br>CONTROL PANEL WITH 120V | 1<br>M-101 | MECHANICAL - NEW MAIN LEVEL FLOOR PLAN  SCALE: 1/8"=1'-0" |
|--|------------|---|

|                    | PACKAGED ROOFTOP AIR CONDITIONING UNIT SCHEDULE |                        |        |               |             |                   |       |          |              |        |                |                 |             |                             |        |                   |      |               |                        |                           |          |                |                |                |        |                        |   |
|--------------------|---|------------------------|--------|---------------|-------------|-------------------|-------|----------|--------------|--------|----------------|-----------------|-------------|-----------------------------|--------|-------------------|------|---------------|------------------------|---------------------------|----------|----------------|----------------|----------------|--------|------------------------|---|
| LINIT              | FILTER D  | ATA                    | SUPPLY | Y FAN PERFORM | MANCE DA    | ATA               |       |          |              |        | COOLI          | NG DATA         |             |                             | GA     | S HEATING DATA    |      |               | COMPRESSO              | R DATA                    |          | CONDENSER      | CONDITIONS     | UNIT ELECTRICA | L DATA | MANUFACTURER / MODEL # | REMARKS   |
| SYMBOL ARRANGEMENT | SIZE  | QTY. MAX EXT. CFM S.P. |        | INLET QTY.    | FAN<br>TYPE | FAN<br>OP.<br>BHP |       | V/ø/HZ   | COIL<br>TYPE | EER (S | EA<br>F.) TOTA | MBH<br>AL SENS. | ENT.<br>DB° | ENT. ROW(S)<br>WB* FINS/IN. | STAGES | MBH INPUT OUTPUT  | QTY. | . COMP.<br>HP | REF. R.L.A<br>TYPE PER | L.R.A.<br>COMP. PER COMP. | V/ø/HZ   | OUTDOOR<br>DB* | OUTDOOR<br>WB* | V/ø/HZ M.C.A.  | MOCP   |                        |   |
| RTU-1 DOWNFLOW     | 16x20x2   | 16 11,000 2.0          | 1650   | - 1           | FC          | 6.95              | 670 2 | 208/3/60 | MICROCHANNEL | - 31   | .7 318         | 234             | 80          | 67 3/15                     | 2      | 600/425 486/344.5 | 2    | -             | R410A 44.0             | /50.5 304/315             | 208/3/60 | 95             | 67             | 208/3/60 150.7 | 250    | TRANE<br>YCD-330-B-E-H | PROVIDE WITH HONEYWELL RAPIDZONE CONTROL PANEL. |
| RTU-2 DOWNFLOW     | 16x20x2   | 16 11,000 2.0          | 1650   | - 1           | FC          | 6.95              | 670 2 | 208/3/60 | MICROCHANNEL | - 31   | .7 318         | 234             | 80          | 67 3/15                     | 2      | 600/425 486/344.5 | 2    | _             | R410A 44.0             | /50.5 304/315             | 208/3/60 | 95             | 67             | 208/3/60 150.7 | 250    | TRANE<br>YCD-330-B-E-H | PROVIDE WITH HONEYWELL RAPIDZONE CONTROL PANEL. |

1) PROVIDE ROOF TOP UNITS WITH PHASE MONITOR & CIRCUIT BREAKER, HOT GAS BYPASS REHEAT. FULLY MODULATING COMPARATIVE ENTHALPY ECONOMIZER, CONDENSER COIL GUARD, CLOGGED FILTER & FAN FAILURE SWITCHES W/ S.A. SENSING TUBE, STAINLESS STEEL GAS HEAT EXCHANGER, VIBRATION ISOLATION, BURGLAR BARS, LOW AMBIENT KIT, THROUGH THE BASE GAS & ELECTRICAL, 120 VOLT 15A POWERED CONVENIENCE OUTLET & WEATHER PROOF LIGHT (INCLUDING ANY TRANSFORMERS AS NEEDED), HINGED ACCESS DOOR PANELS, MERV-13 2" PLEATED FILTERS, RETURN AND SUPPLY DUCT MOUNTED SMOKE DETECTOR & DISCHARGE AIR TEMPERATURE SENSOR KIT. COORDINATE INSTALLATION WITH ALL OTHER TRADES. COORDINATE EXACT POSITION ON ROOF AND PENETRATIONS WITH ARCHITECTURAL AND STRUCTURAL.

|      |          |         |         |      |            |      | F     | AN    | I SCH   | HEDI  | JLE     |            |                          |   |
|------|----------|---------|---------|------|------------|------|-------|-------|---------|-------|---------|------------|--------------------------|---|
| TAG  | LOCATION | SERVICE | TYPE    | CFM  | E.S.P.     | HP   | FA    | TOM V | OR DATA |       | MOTOR ( | CONTROLLER | MANUFACTURER & MODEL NO. | REMARKS                                 |
| TAG  | LOCATION | SERVICE | ITE     | CFIM | (IN. W.G.) | ПЕ   | RPM   | FLA   | VOLT    | PHASE | TYPE    | NEMA SIZE  | MANOFACTORER & MODEL NO. | REMARKS                                 |
| EF-1 | ROOF     | EXHAUST | UPBLAST | 1650 | .20        | 1/3  | 1,487 | 3.5   | 208     | 3     | SWITCH  | NEMA 3R    | GREENHECK CUBE-121       | PROVIDE WITH: BIRDSCREEN AND ROOF CURB. |
| EF-2 | ROOF     | EXHAUST | UPBLAST | 150  | .20        | 1/60 | 1,550 | 2.4   | 208     | 3     | SWITCH  | NEMA 3R    | GREENHECK CUE-060-D      | PROVIDE WITH: BIRDSCREEN AND ROOF CURB. |

|     | LOUVER SCHEDULE          |              |                |                           |                         |     |                       |             |                           |  |  |  |
|-----|--------------------------|--------------|----------------|---------------------------|-------------------------|-----|-----------------------|-------------|---------------------------|--|--|--|
| TAG | LOCATION                 | FUNCTION     | BLADE<br>STYLE | WIDTH/<br>HEIGHT<br>(IN.) | FRAME<br>DEPTH<br>(IN.) | CFM | FREE AREA<br>(SQ. FT) | MATERIAL    | FINISH                    | REMARKS  |  |  |
| L-1 | ELEVATOR MECHANICAL ROOM | TRANSFER AIR | _              | 18/12                     | 2"                      | 150 | 0.675                 | STEEL FRAME | COORDINATE WITH ARCHITECT | NAILOR 61DGD-FR. COLOR BY ARCHITECT, FIRE RATING TO MATCH. |  |  |
| L-2 | PUBLIC RESTROOM          | TRANSFER AIR | _              | 24/12                     | 2"                      | 300 | 0.9                   | STEEL FRAME | COORDINATE WITH ARCHITECT | NAILOR 61DGD. COLOR BY ARCHITECT.                          |  |  |

# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



Architecture • Interior Design

111 PERKINS STREET SUITE 215 BOSTON MA 02130 (617) 522-0718



1 MOUNT VERNON STREET WINCHESTER, MA 01890 781-729-6188



Building Systems & Commissioning Engineers Massachusetts 30 Turnpike Road, Suite #1, Southborough, MA 01772 Tel: (508) 485-4633 Fax: (508) 485-1830



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| Issue                      | Date       |
|----------------------------|------------|
| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
|                            |            |
|                            |            |
|                            |            |
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MECHANICAL - NEW MAIN LEVEL FLOOR PLAN

AS NOTED

- 1.) DUCTWORK SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL DUCT PLACEMENT AND ADJUST AS NEEDED TO ACCOMMODATE STRUCTURAL ELEMENTS WHILE MAINTAINING DUCT CROSS SECTIONAL AREAS SHOWN ON PLANS.
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|       |      |       |     |       |   |      |            |               | 2 3  |          | 5                              | 6              | 7 |  |
|-------|------|-------|-----|-------|---|------|------------|---------------|--|----------|--------------------------------|----------------|---|--|
|       |      | A )   |     |       |   |      |            |               |  |          |                                |                |   |  |
|       |      | В     |     |       |   |      |            |               | Supply A Sup |          |                                |                |   |  |
|       |      | D     |     |       |   |      |            |               | SNINSHO NINITAL STATE OF THE PROPERTY OF THE P |          |                                |                |   |  |
|       |      | E )—— |     |       |   |      |            |               | Shinago Nini and District of the Control of the Con | F        |                                |                |   |  |
|       |      | G ——— |     |       |   |      | · <i> </i> |               |  |          |                                |                |   |  |
|       |      | H)——  |     |       |   |      |            |               |  | N-AND    | <u>-1</u><br>OR ELEVATOR SHAFT | /<br>          |   |  |
| TAG   | CFM  | ESP.  | RPM | H.P.  | Ø | VOLT | FLA        | WEIGHT (LBS.) | REQUIRED INPUT GAS PRESSURE  | GAS TYPE | INPUT BTUs                     | OUTPUT<br>BTUs |   |  |
| MUA-1 | 2895 | 1.000 | 970 | 3.000 | 3 | 208  | 9.5        | 820.40        | 7 in. w.c 14 in. w.c.  | Natural  | 232607                         | 213998         |   |  |

|            |                          |           |                                | ELEVA. | TOR LOUVERED PENTHOUSE  |
|------------|--------------------------|-----------|--------------------------------|--------|---|
| TAG        | DIMENSIONS               | FREE AREA | MANUFACTURER                   | MODEL  | REMARKS   |
| IAG        | (WIDTH X DEPTH X HEIGHT) | (SQ FT)   | MANUFACTURER                   | NUMBER | PROVIDE WITH 3' HIGH ROOF CURB, BIRD SCREEN, AND FINISH BY ARCHITECT. ROOF CURB SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS WITH FLASHING              |
| <u>P-1</u> | 30"x30"x18"              | 4.44      | McDERMOTT METAL<br>WORKS CORP. |        | AND COUNTER FLASHING BY CONTRACTOR. PROVIDE WITH MANUFACTURER INCLUDED SMOKE DAMPER THAT SHALL BE CONTROLLED BY THE FIRE ALARM CONTROL PANEL WITH 120V DRY CONTACT RELAY. |

ALTERNATIVE: McDERMOTT METAL WORKS CORP. PENTHOUSE MODEL # M-445PH

MAKE-UP AIR FAN INFORMATION

TAG | FAN UNIT MODEL # | BLOWER | HOUSING

G15-PB

A2-D.250

A2-D.250-G15

|       | MECHANICAL - NEW ROOF PLAN |
|-------|----------------------------|
| M-102 | SCALE: 1/8"=1'-0"          |

|        |             |    |          |         |                   |       |                  |          |        |        |                   |            |          |              |       |              |                           |             | PACKAG                      | ED R   | OOFTC       | OP AIF    | R CO | NDITION     | ONING        | G UNIT             | SCH               | EDULE      | <u> </u>       |                |                |        |                        |   |
|--------|-------------|----|----------|---------|-------------------|-------|------------------|----------|--------|--------|-------------------|------------|----------|--------------|-------|--------------|---------------------------|-------------|-----------------------------|--------|-------------|-----------|------|-------------|--------------|--------------------|-------------------|------------|----------------|----------------|----------------|--------|------------------------|---|
|        | UNIT        | F  | ILTER DA | TA      |                   | SUP   | PLY FA           | N PERFOR | RMANCE | E DATA |                   |            |          |              |       |              | COOLING DATA              |             |                             | GA:    | S HEATING D | DATA      |      |             | СОМР         | RESSOR DA          | TA                |            | CONDENSER      | CONDITIONS     | UNIT ELECTRICA | L DATA | MANUFACTURER / MODEL # | REMARKS   |
| SYMBOL | ARRANGEMENT | 5  | SIZE     | QTY. MA | AX EXT<br>FM S.P. | MIN C | ).A. INLE<br>VAN | ET QTY.  | ′. FA  |        | FAN<br>OP.<br>BHP | FAN<br>RPM | V/ø/HZ   | COIL<br>TYPE | EE    | ER (S.I      | EA MBH<br>F.) TOTAL SENS. | ENT.<br>DB° | ENT. ROW(S)<br>WB* FINS/IN. | STAGES |             | BH        | QTY. | COMP.<br>HP | REF.<br>TYPE | R.L.A.<br>PER COMI | L.R.A.<br>PER COM | IP. V/ø/HZ | OUTDOOR<br>DB* | OUTDOOR<br>WB* | V/ø/HZ M.C.A.  | МОСР   |                        |   |
| RTU-1  | DOWNFLOW    | 16 | x20x2    | 16 11,  | 000 2.0           | 1650  | 0 –              | - 1      | F      | FC     | 6.95              | 670        | 208/3/60 | MICROCHAN    | NEL - | <b>–</b> 31. | .7 318 234                | 80          | 67 3/15                     | 2      | 600/425     | 486/344.5 | 2    | _           | R410A        | 44.0/50.           | 304/31            | 5 208/3/60 | 95             | 67             | 208/3/60 150.7 | 200    | TRANE<br>YCD-330-B-E-H | PROVIDE WITH HONEYWELL RAPIDZONE CONTROL PANEL. |
| RTU-2  | DOWNFLOW    | 16 | x20x2    | 16 11,  | 000 2.0           | 1650  | 0 –              | - 1      | F      | FC     | 6.95              | 670        | 208/3/60 | MICROCHAN    | NEL - | <b>–</b> 31. | .7 318 234                | 80          | 67 3/15                     | 2      | 600/425     | 486/344.5 | 2    | _           | R410A        | 44.0/50.           | 304/31            | 5 208/3/60 | 95             | 67             | 208/3/60 150.7 | 200    | TRANE<br>YCD-330-B-E-H | PROVIDE WITH HONEYWELL RAPIDZONE CONTROL PANEL. |

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|      | FAN SCHEDULE |         |         |   |            |      |       |     |         |       |        |            |                          |   |
|------|--------------|---------|---------|---|------------|------|-------|-----|---------|-------|--------|------------|--------------------------|---|
| TAG  | LOCATION     | SERVICE | TYPE    | CFM                                     | E.S.P.     | HP   |       |     | OR DATA |       |        | CONTROLLER | MANUFACTURER & MODEL NO. | REMARKS                                 |
|      |              |         |         | • | (IN. W.G.) |      | RPM   | FLA | VOLT    | PHASE | TYPE   | NEMA SIZE  |                          | · · <del>-</del> · · · · · · · ·        |
| EF-1 | ROOF         | EXHAUST | UPBLAST | 1650                                    | .20        | 1/3  | 1,487 | 3.5 | 208     | 3     | SWITCH | NEMA 3R    | GREENHECK CUBE-121       | PROVIDE WITH: BIRDSCREEN AND ROOF CURB. |
| EF-2 | ROOF         | EXHAUST | UPBLAST | 150                                     | .20        | 1/60 | 1,550 | 2.4 | 208     | 3     | SWITCH | NEMA 3R    | GREENHECK CUE-060-D      | PROVIDE WITH: BIRDSCREEN AND ROOF CURB. |
| EF-3 | ROOF         | EXHAUST | UPBLAST | 3619                                    | 2.0        | 3    | 1,061 | 9.5 | 208     | 3     | SWITCH | NEMA 3R    | CAPTIVEAIRE NCA24HPFA    | PROVIDE WITH: ROOF CURB.                |

# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



Architecture • Interior Design

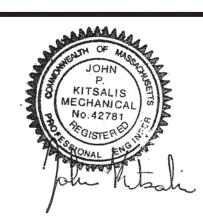
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1 MOUNT VERNON STREET WINCHESTER,MA 01890 781-729-6188



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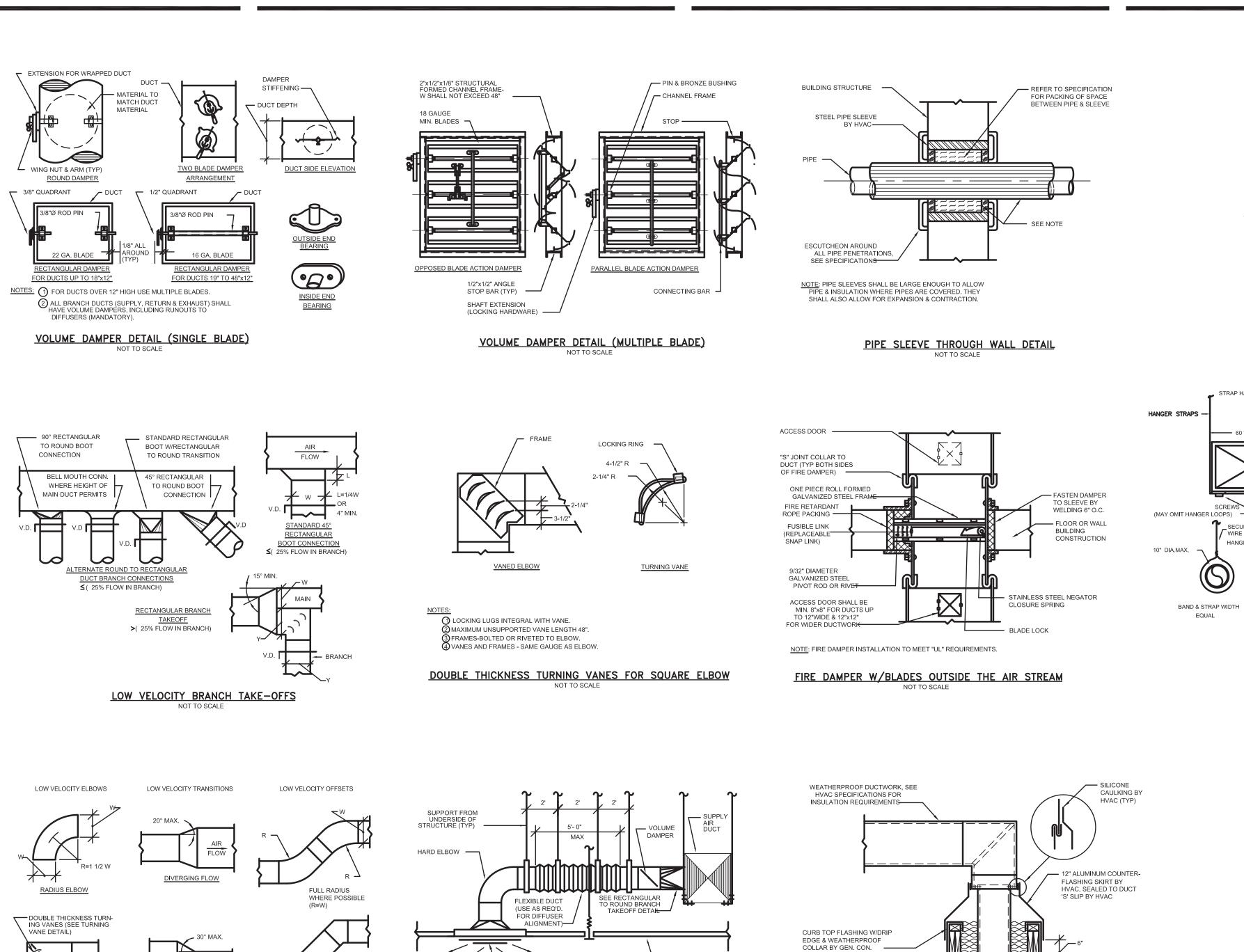
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| Issue                      | Date       |
|----------------------------|------------|
| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
|                            |            |
|                            |            |
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MECHANICAL -**NEW ROOF PLAN** 



NOTES:

EXTERIOR FACE OF BUILDING

WATER STOP AND WELDED

ANCHOR COLLAR (NON-METALLIC WHEN USED WITH

PIPE INSULATION WHERE

APPLICABLE —— WATERTIGHT ASPHALT

OR MASTIC

INDUCTION HEATING SYSTEM)

BUILDING STRUCTURE

RECTANGULAR ELBOW

INTERIOR FACE OF BUILDING -

CONTINUOUS WELD

CONSTRUCTION. —

PIPE CENTERED

LEAD CAULKING ·

OAKUM STUFFING -

STANDARD WALL PIPE SLEEVE,

ONE PIPE SIZE LARGER THAN

THE PIPE OR CONDUIT. TO BE

INSTALLED DURING WALL

BOTH SIDES -

**LOW VELOCITY TRANSITIONS** 

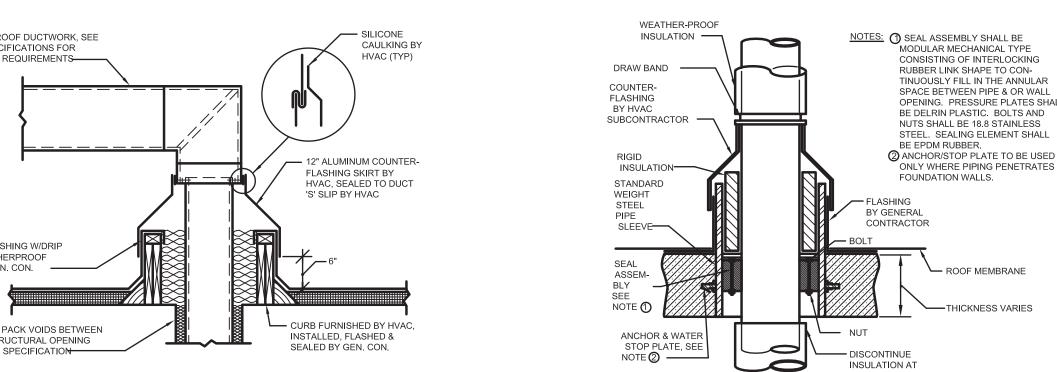
OFFSETS AND ELBOWS

WHERE PIPING PENETRATES FLOORS, EXTEND SLEEVE ABOVE FINISHED FLOOR PER SPECS.

PIPE PENETRATION THROUGH WALL DETAIL (BELOW GROUND)

②IN EXISTING CONSTRUCTION, A CORE DRILL ONE PIPE SIZE LARGER THAN THE

PIPE OR CONDUIT MAY BE USED IN LIEU OF A SLEEVE, ONLY IF APPROVED BY THE ARCHITECT IN THE FIELD.



TO STRUCTURAL STEEL

TRAPEZE HANGER

TRAPEZE HANGER

- STRAP OR ANGLE

- ALT.LOC.(VERIFY UPPER

TRAPEZE LOAD CAPACITY)

MODULAR MECHANICAL TYPE

CONSISTING OF INTERLOCKING

TINUOUSLY FILL IN THE ANNULAR SPACE BETWEEN PIPE & OR WALL

BE DELRIN PLASTIC. BOLTS AND

STEEL. SEALING ELEMENT SHALL

ONLY WHERE PIPING PENETRATES

— ROOF MEMBRANE

NUTS SHALL BE 18.8 STAINLESS

BE EPDM RUBBER.

FOUNDATION WALLS.

ROOF SLAB

**DUCTWORK ROOF PENETRATION DETAIL** 

NOT TO SCALE

STRUCTURAL STEEL OR

BUILDING STRUCTURE -

NOTES:

REFER TO OTHER DETAILS ON THIS DRAWING FOR HIGH VELOCITY

DUCT STANDARDS.

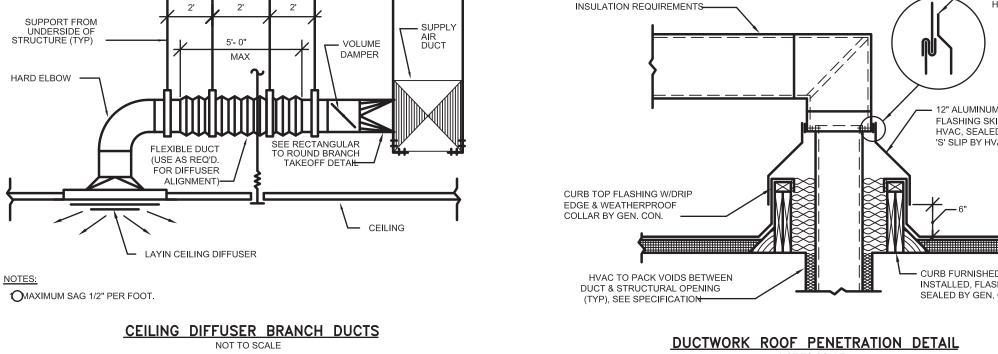
On POP RIVETS ALLOWED, USE SELF-TAPPING SHEETMETAL SCREWS ONLY.

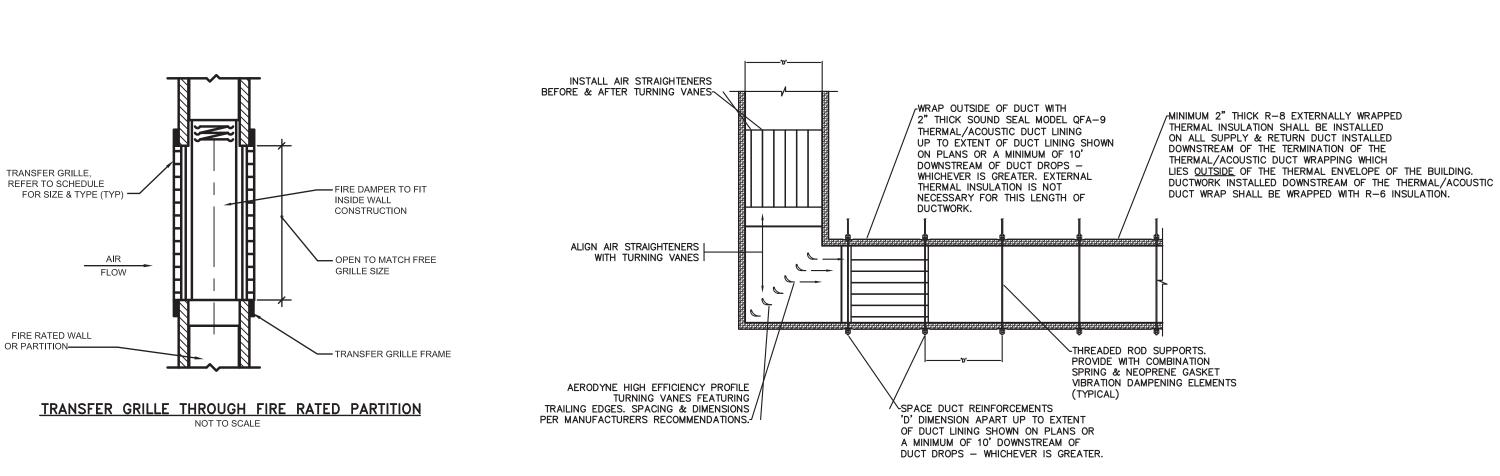
**DUCT HANGER DETAIL (LOW VELOCITY)** 

DUCT WORK DETAILS AS REQUIRED.

POR STRAP AND TRAPEZE HANGER SIZE, REFER TO SMACNA

UNLESS FOOT OF STRAP IS PLACED UNDER A BOTTOM REINFORCEMENT.





TYPICAL THERMAL & ACOUSTICAL SUPPLY/RETURN DUCT LINING DETAIL



# SRI LAKSHMI TEMPLE **NEW ADDITION**

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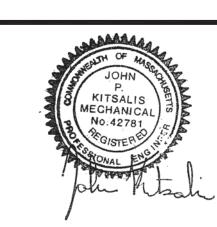
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MECHANICAL - DETAILS

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Sheet #  |          |             |

```
PART 1 - GENERAL
  A. SECTION REQUIREMENTS
PART 2 - PRODUCTS
 2.1 SUPPORTING DEVICES
PART 3 — EXECUTION
 3.1 INSTALLATION
      metals in gas piping.
 3.2 HANGERS AND SUPPORTS
END OF SECTION 15055
PART 1 — GENERAL
 1.1 SECTION REQUIREMENTS
PART 2 - PRODUCTS
 2.1 PIPE INSULATION
PART 3 - EXECUTION
 3.1 INSTALLATION
      below 60 deg F.
      the top of the roof flashing.
    3. Refrigerant piping.

    Flexible connectors

       valves, and flow regulators.
      materials and thicknesses:
      insulation.
END OF SECTION 15080
SECTION 15110 - VALVES
PART 1 - GENERAL (Not Applicable)
PART 2 - PRODUCTS
 2.1 GENERAL DUTY VALVES
      square head, and threaded ends.
   D. Swing Check Valves: Class 125, cast bronze body and cap; with horizontal
PART 3 - EXECUTION
```

SECTION 15055 - COMMON PIPING REQUIREMENTS 1. Comply with the requirements of the Building Code and the local authority having jurisdiction. A. Hanger and Pipe Attachments: Factory fabricated with galvanized coatings; nonmetallic coated for hangers in direct contact with copper tubing. B. Building Attachments: Powder actuated type, drive pin attachments with pullout and shear capacities appropriate for supported loads and building materials; UL listing and FM approval for fire protection systems. C. Mechanical Anchor Fasteners: Insert—type attachments with pullout and shear capacities appropriate for supported loads and building materials; UL listing and FM approval for fire protection systems. A. Install piping free of sags and bends. B. Install fittings for changes in direction and branch connections. C. Install sleeves for pipes passing through concrete and masonry walls, gypsum board partitions, and concrete floor and roof slabs. D. Exterior Wall, Pipe Penetrations: Mechanical sleeve seals installed in steel or cast iron pipes for wall sleeves. E. Fire Barrier Penetrations: Seal pipe penetrations with through—penetration F. Install unions adjacent to each valve and at final connection to each piece of G. Install dielectric unions and flanges to connect piping materials of dissimilar H. Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals in water piping. I. Provide full ring escutcheons at plumbing penetrations through walls or ceilings. Tightly seal escutcheons to the adjacent surface. A. Install building attachments within concrete or to structural steel. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. B. Install powder actuated drive pin fasteners in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches thick. C. Install mechanical anchor fasteners in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches thick. D. Support fire protection system piping independent of other piping. E. Load Distribution: Install hangers and supports so piping live and dead loading maximum smoke developed rating of 50 according to ASTM E 84. applied, all purpose, vapor retarder jacket. Comply with ASTM C 534, Type I, except for density. B. Insulate fittings, valves, and specialties. C. Seal vapor barrier penetrations for hangers, supports, anchors, and other terminate insulation flush with mechanical sleeve seal.

solenoid valve, and elsewhere as indicated. and stresses from movement will not be transmitted to connected equipment. I. Install valves in accessible locations, protected from damage. Tag valves with metal tag indicating piping supplied. Attach tag to valve with metal chain. J. Install gas valve upstream from each gas pressure regulator. Where two gas pressure regulators are installed in series, valve is not required at second SECTION 15080 - MECHANICAL INSULATION K. Connect gas piping to equipment and appliances with shutoff valves and unions. Install gas valve upstream from and within 72 inches of each appliance using A. Submittals: Product Data for each type of mechanical insulation. gas. Install union or flanged connection downstream from valve. L. Inspect, test, and purge piping according to NFPA 54, Part 4, "Gas Piping B. Quality Assurance: Labeled with maximum flame—spread rating of 25 and Inspection, Testing, and Purging", and requirements of authorities having END OF SECTION 15198 A. Preformed Glass Fiber Pipe Insulation: ASTM C 547, Class 1, with factory B. Polyolefin Pipe Insulation: Unicellular polyethylene, preformed pipe insulation. SECTION 15554 - FLUES AND VENTS PART 1 - GENERAL A. Install vapor barriers on insulated pipes with surface operating temperatures 1.1 SECTION REQUIREMENTS A. Submittals: Product Data. PART 2 - PRODUCTS 2.1 GAS VENTS A. Vent/air intake for high efficiency domestic water heater. Size per D. Coat glass fiber pipe insulation ends with vapor barrier coating. manufacturer's recommendation. E. Roof Penetrations: Apply insulation for interior applications to a point even with B. Accessories: Tees, elbows, increasers, draft hood connectors, metal cap with bird barrier, adjustable roof flashing, storm collar, support assembly, thimbles, F. Exterior Wall Penetrations: For penetrations of below grade exterior walls, firestopping spacers, and fasteners; fabricated of similar materials and designs as vent-pipe straight sections. G. Interior Walls and Partitions Penetrations: Apply insulation continuously through PART 3 - EXECUTION walls and partitions, except fire rated walls and partitions. 3.1 INSTALLATION H. Fire Rated Walls and Partitions Penetrations: Terminate insulation at A. Install vents according to stipulated minimum clearances from combustibles. penetrations through fire rated walls and partitions. Seal around penetration B. Seal between sections of positive pressure vents using only sealants with through penetration firestop systems. recommended by manufacturer. Floor Penetrations: Terminate insulation at the underside of the floor assembly Support vents at intervals to support the weight of the vent and all and at the floor support at top of floor. Seal around penetration with accessories, without exceeding loading of appliances. through penetration firestop systems. J. Glass Fiber Insulation Installation: Bond insulation to pipe with adhesive. Seal seams and joints with vapor barrier compound K. Interior Piping System Applications: Insulate the following piping systems: SECTION 15732 - PACKAGED ROOFTOP AIR-CONDITIONING UNITS 1. Domestic hot and cold water. PART 1 - GENERAL 2. Exposed sanitary drains of fixtures for the disabled. 1.1 SECTION REQUIREMENTS A. Submittals: Product Data and Shop Drawings. L. Do not apply insulation to the following systems, materials, and equipment: B. Comply with ASHRAE 15. C. EER: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient 2. Fire protection piping systems. Design of New Building, except Low Rise Residential Buildings. 3. Sanitary drainage and vent piping. D. Warranties: Submit a written warranty, signed by the manufacturer, agreeing to

4. Chrome plated pipes and fittings, except for plumbing fixtures for the 5. Piping specialties, including air chambers, unions, strainers, check valves, plug M. Pipe Insulation Thickness Application Schedule: Insulate piping with the following 1. Domestic Hot and Cold Water: 1/2-inch preformed glass fiber pipe 2. Sanitary Drains: 1/2—inch polyolefin pipe insulation.

A. End Connections: Threads shall comply with ANSI B1.20.1. Flanges shall comply with ANSI B16.1 for cast iron valves and ANSI B16.24 for bronze valves. Solder-joint connections shall comply with ANSI B16.18. B. Ball Valves: Rated for 150 psig saturated steam pressure, 400 psig WOG

pressure; 2 piece construction; with bronze body, standard (or regular) port, chrome plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, and vinyl covered steel handle. C. Plug Valves: Rated at 150 psig WOG; bronze body, with straightaway pattern,

swing, Y-pattern, and bronze disc. E. Valves for Copper Tube: Solder ends, except provide threaded ends for heating hot water and low pressure steam service. F. Valves for Steel Pipe: Threaded ends.

3.1 INSTALLATION

A. Use gate and ball valves for shutoff duty and ball for throttling duty. B. Locate valves for easy access and provide separate support where necessary. C. Install valves for each fixture and item of equipment.

D. Install valves in horizontal piping with stem at or above center of pipe. . Install valves in a position to allow full stem movement. F. Install check valves for proper direction of flow in horizontal position with hinae

END OF SECTION 15110

END OF SECTION 15732

Completion.

2.1 PACKAGED UNITS, 5 TO 20 TONS

9. Low ambient controls.

12. Roof curb.

PART 3 - EXECUTION

3.1 INSTALLATION

controls, filters, and dampers.

capacities, and manufacturers.

10. Smoke Detectors: Photoelectric.

8-1/2 tons and over.

4. Condenser Fans: Direct drive propeller.

hot gas bypass, and timed off controls.

cutout, and forced draft proving switch.

8. Economizer controls (Dry bulb, 100% capacity).

conductor, rated for plenum applications.

A. Install units level and plumb and firmly anchored.

PART 2 - PRODUCTS

SECTION 15198 - NATURAL GAS PIPING

2.1 PIPE, TUBE, AND SPECIALTIES

A. Quality Assurance: Comply with NFPA 54 and the Plumbing Code.

E. Gas Valves: 150-psig WOG, cast-iron or bronze body, bronze plug,

feet per hour of natural gas at specific gravity are as indicated.

B. Malleable Iron Threaded Fittings: ASME B16.3, Class 150.

straightaway pattern, square head, tapered-plug type.

and threaded ends complying with ASME B1.20.1.

G. Flexible Connectors: ANSI Z21.24, copper alloy.

125-psig- minimum, WOG working pressure.

turned off in affected piping section.

A. Steel Pipe: ASTM A 53, Type S (Seamless), Grade B, Schedule 40, plain ends.

C. Manual Valves: Comply with standards listed or, if appropriate, to ANSI Z21.15.

D. Gas Stops: AGA certified, bronze-body, plug type with bronze plug, for 2-psig

F. Gas Pressure Regulators: ANSI Z21.18, single stage, steel jacketed, corrosion

1. Line Gas Pressure Regulators: Inlet pressure rating not less than system

H. Strainers: Bronze body, Y-pattern, full size of connecting piping. Include

B. Install shutoff valve, downstream from gas meter, outside building at gas

D. Drips and Sediment Traps: Install drips at points where condensate may

E. Install gas piping at uniform slope of 0.1 percent upward toward risers.

G. Connect branch piping from top or side of horizontal piping.

or less natural gas. Include AGA stamp, flat or square head or lever handle,

resistant pressure regulators. Include atmospheric vent, elevation compensator.

stainless-steel screens with 3/64 inch perforations and a pressure rating of

A. Close equipment shutoff valves before turning off gas to premises or section of

C. Install gas stops for shutoff to appliances with NPS 2" or smaller low pressure

collect. Include outlets of gas meters. Locate where readily accessible to

permit cleaning and emptying. Do not install where condensate would be

F. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings

H. Install strainers on supply side of each control valve, gas pressure regulator,

piping. Perform leakage test as specified to determine that all equipment is

Regulator pressure ratings, inlet and outlet pressures, and flow volume in cubic

1.1 SECTION REQUIREMENTS

PART 1 — GENERAL

PART 2 - PRODUCTS

PART 3 – EXECUTION

service entrance.

subject to freezing.

with level side down.

gas supply.

3.1 INSTALLATION

provide union with sufficient clearance for burner removal and service. Connect to supply and return hydronic piping with shutoff valve and union or flange at each connection. D. Install ducts to termination in roof mounting frames. Terminate return air duct through roof structure.

the repair or replacement of components that fail within 5 years of Substantial

evaporator coils, condenser and evaporator fans, refrigeration and temperature

A. Factory assembled and tested, consisting of compressors, condensers,

2. Evaporator Fans: Belt driven, forward curved centrifugal.

5. Refrigerant Coils: Aluminum fins and copper coil.

1. Refer to Rooftop Heating/Cooling Unit Schedule on drawing M200 for

3. Exhaust/Relief Fans: Direct drive, forward curved centrifugal or propeller.

6. Compressors: Serviceable hermetic or fully hermetic, with safety controls,

11. Operating Controls: Two stage heating and two stage cooling on units

13. Control Wiring from T-stat to rooftop unit: Shall be 18ga / 7

14. Control Wiring from T-stat to remote sensor: Shall be a separate

18ga / 2 conductor shielded, rated for plenum applications.

B. Connect gas piping to burner with pipe same size as gas train inlet, and

7. Heat Exchangers: Gas fired, with gas controls, electronic ignition, high limit

E. Connect units to wiring systems and to ground.

SECTION 15810 - DUCTS AND ACCESSORIES

PART 1 - GENERAL 1.1 SECTION REQUIREMENTS

A. Submittals: Product Data for fire and smoke dampers. B. Comply with NFPA 90A for systems serving spaces more than 25,000 cu. ft. in volume or building Types II, IV, and V construction more than 3 stories in height. C. Comply with NFPA 90B for systems serving spaces in 1 or 2 family dwellings or serving spaces less than 25,000 cu. ft..

D. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," Chapter 3, "Duct System," for range hood ducts, except single family residential usage, unless otherwise indicated. . Comply with UL 181 and UL 181A for ducts and closures.

F. Testing, Adjusting, and Balancing Agency Qualifications: AABC certified. PART 2 - PRODUCTS

2.1 DUCTS A. Spiral Duct: Spiral Lock Seam, without insulation, G90 galvanized finish, ASTM A-653/924

1. Basis of Design Manufacturers: Lindab SPIROsafe, alternates to the basis of design must be submitted for review. 2. Fittings: Factory produced standing seam construction with internal sealing. Fittings with a major axis of 36" or smaller shall be 20 gauge. Fittings with a major axis of 37"-48" shall be 18 gauge

B. Galvanized Steel Sheet: Forming steel, ASTM A 653/653M, G90 coating designation. C. Duct Liner: ASTM C 1071, Type II, with an airstream surface coated with a temperature resistant coating. Thickness: 1 inch (25 mm). R-value: 3.7. Adhesive: ASTM C 916, Type I.

2. Mechanical Fasteners: Galvanized steel pin, length as required to penetrate liner plus a 1/8 inch projection maximum into the airstream. D. Joint and Seam Tape: Comply with UL 181A. Joint and Seam Sealant: Comply with UL 181A.

F. Rectangular Metal Duct Fabrication: Comply with SMACNA's "HVAC Duct Construction Standard" for metal thickness, reinforcing types and intervals, tie rod applications, and joint types and intervals.

2.2 ACCESSORIES A. Volume-Control Dampers: Factory fabricated volume control dampers, complete with required hardware and accessories. Single blade and multiple opposed blade, standard leakage rating, and suitable for horizontal or vertical applications.

B. Fire Dampers: Factory—fabricated fire dampers, complete with required hardware and accessories. UL labeled according to UL 555, "Fire Dampers". C. Flexible Connectors: Flame retardant or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1 D. Flexible Ducts: Factory fabricated, insulated, round duct, with an outer jacket enclosing 1-1/2 inch (38 mm) thick, glass fiber insulation, R-value: 4.3, around a continuous inner liner. PART 3 - EXECUTION

3.1 INSTALLATION A. Duct System Pressure Class: Construct and install each duct system with 2 inch positive and negative duct pressure classifications. B. Conceal ducts from view in finished and occupied spaces. Except where noted as C. Avoid passing through electrical equipment spaces and enclosures.

D. Support and connect metal ducts according to SMACNA's "HVAC Duct Construction E. Install duct accessories according to applicable portions of details of construction as

shown in SMACNA standards. F. Install liner on all supply and return duct. G. Install volume control dampers in lined duct with methods to avoid damage to liner

and to avoid erosion of duct liner. H. Install fire and smoke dampers according to manufacturer's UL approved written instructions.

I. Install fusible links in fire dampers. J. Provide saddle taps at tees for exposed ductwork.

3.2 TESTING, ADJUSTING, AND BALANCING A. The owner will supply an independent balance agent to to balance and adjust the HVAC installation. The balance agent will be responsible for any pulley or belt changes

B. The general contactor is to have trained staffed available during the balancing to correct issues noted by the balance agent. C. The balance agent is to balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities  $\pm /-10\%$ . The hood exhaust system shall be balanced to a tolerance of -0+10% and the make-up air system to

D. The balance agent is to supply a copy of the balance report to the owner, engineer and general contractor for review.

SECTION 15855 - DIFFUSERS, REGISTERS, AND GRILLES PART 1 - GENERAL 1.1 SECTION REQUIREMENTS

A. Submit Product Data, including color charts for factory finishes. PART 2 - PRODUCTS 2.1 OUTLETS AND INLETS A. Diffusers:

1. Refer to Grills, Registers, and Diffusers Schedule for equipment schedule 2. Manufacturer: As scheduled (NO SUBSTITUTIONS) . Material: As scheduled. . Finish: As scheduled.

B. Wall and Ceilina Registers: 1. Refer to Grills, Registers, and Diffusers Schedule for equipment schedule

5. Mounting: Countersunk screw.

5. Mounting: As scheduled.

2. Manufacturer: As scheduled (NO SUBSTITUTIONS) Material: As scheduled. l. Finish: As Scheduled.

C. Wall and Ceiling Grilles: 1. Refer to Grills. Registers, and Diffusers Schedule for equipment schedule . Manufacturer: As scheduled (NO SUBSTITUTIONS) Material: As scheduled.

. Finish: As Scheduled. 5. Mounting: Countersunk screw or lay in depending location.

PART 3 - EXECUTION 3.1 INSTALLATION A. Coordinate location and installation with duct installation and installation of other

ceiling and wall mounted items. B. Locate ceiling diffusers, registers, and grilles, as indicated on general

construction "reflected ceiling plans." Unless otherwise indicated, locate units in center of acoustical ceiling panels. END OF SECTION 15855

SECTION 15900 - HVAC INSTRUMENTATION AND CONTROLS PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: Electric/electronic control sequences for HVAC systems and

B. Submittals: Shop Drawings detailing operating control sequences of each item of HVAC equipment and system and Product Data for controllers, sensors. operators, control panels, thermostats, humidistats, actuators, control valves and dampers.

C. System Description: Control systems consists of sensors, indicators, actuators, final control elements, interface equipment, and other apparatus, accessories, required to operate mechanical systems according to sequences of operation indicated and specified.

D. Operation Sequence: 1. Unoccupied Cycle: During unoccupied hours as set by a programmable thermostat the outside air and return dampers for the HVAC unit close, and the thermostat set point resets to 65° F (user adjustable).

Upon a call for heating, the HVAC unit energizes. 2. Occupied Cycle: During occupied hours, as set by a programmable thermostat the outside air and return dampers open to a minimum set point. The furnace and exhaust fans run continuously. Upon a call for heating, the furnace heating energizes. Upon a call for cooling, the condensing unit

PART 2 - PRODUCTS (Not Applicable) PART 3 - EXECUTION

3.1 INSTALLATION A. Install control wiring concealed, except in mechanical rooms, and according to requirements specified in Division 16 Sections. END OF SECTION 15900



SRI LAKSHMI TEMPLE **NEW ADDITION** 

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Project #

MECHANICAL -**SPECIFICATIONS** 

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Charat # |          |             |

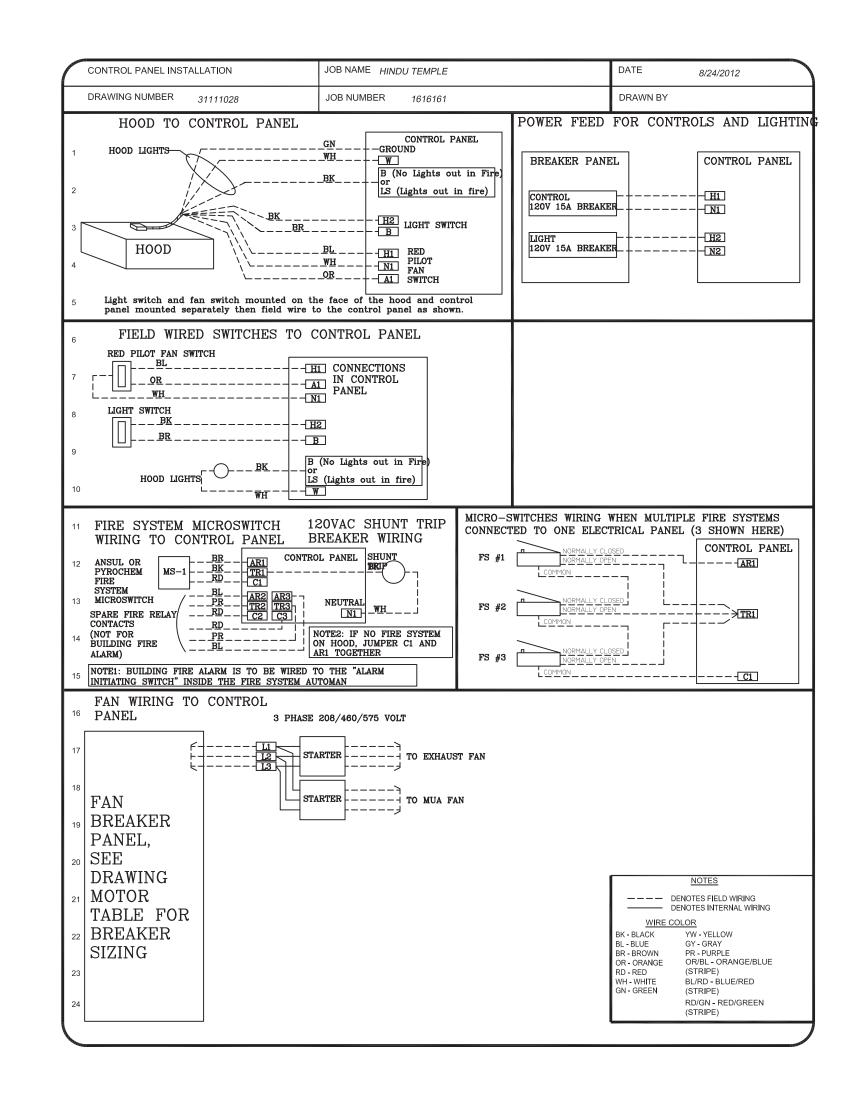
#### ELECTRICAL PACKAGES

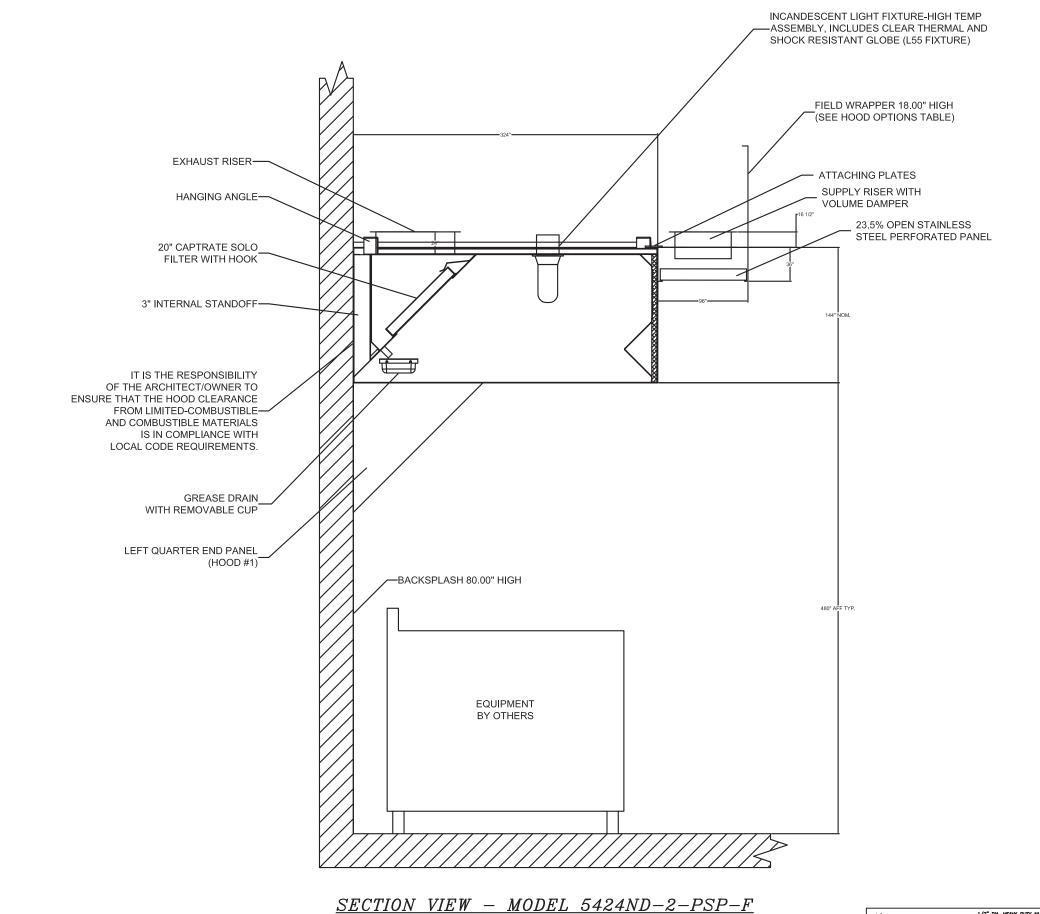
| NC | о. т | AG PACKAGE | # LOCATION           | SWITCHES          |                  | OPTION   | FANS CONTROLLED |   |       |      |     |
|----|------|------------|----------------------|-------------------|------------------|--|-----------------|---|-------|------|-----|
|    |      |            |                      | LOCATION          | QUANTITY         |  | TYPE            | Ø | H.P.  | VOLT | FLA |
|    | 1    | 31111028   | Wall Mount In SS Box | SS Wall Mount Box | 1 Light<br>1 Fan | Exhaust in Fire, Relay w/ 2-DPDT on/off w/ Sup Fan | Exhaust         | 3 | 3.000 | 208  | 9.5 |
|    |      |            |                      |                   |                  |  | Supply          | 3 | 3.000 | 208  | 9.5 |

SPECIFICATIONS: ELECTRICAL PACKAGE (SEE TABLE FOR DETAILS) A PRE-WIRED ELECTRICAL CONTROL PACKAGE SHALL BE PROVIDED TO OPERATE THE HOOD LIGHTS AND FANS. THE WIRING OPTION, LOCATED IN A HINGED COVERED ELECTRICAL BOX, SHALL INCLUDE A STAINLESS STEEL SWITCH PANEL CONSISTING OF LIGHT SWITCH(ES) AND RED-LIGHTED FAN SWITCH(ES), A STARTER/OVERLOAD ASSEMBLY FOR EACH 3 PHASE FAN, NUMBERED INPUT/OUTPUT TERMINAL STRIPS, AND A TERMINAL STRIP FOR DOUBLE-DUAL FIRE SYSTEM MICROSWITCH CONNECTION. ONE MICROSWITCH IS WIRED TO A RELAY FOR SUPPLY FAN SHUTDOWN AND A REALY FOR ADDITIONAL FIRE SYSTEM ACTIVATED DRY CONTACTS, AND THE OTHER MICROSWITCH REMAINS OPEN FOR CONNECTION OF BUILDING FIRE ALARM SYSTEM (DRY CONTACTS). A WIRING DIAGRAM SHOWING THE CONNECTIONS OF THESE PARTS IS LOCATED ON THE DOOR.

ELECTRICAL CONDUIT DROPS FROM THE FAN(S) SHALL BE CONNECTED TO THE NUMBERED TERMINAL STRIP. CONDUIT BETWEEN THE PRE-WIRE PACKAGE AND THE FAN(S) SHALL BE SUPPLIED BY THE ELECTRICAL CONTRACTOR.

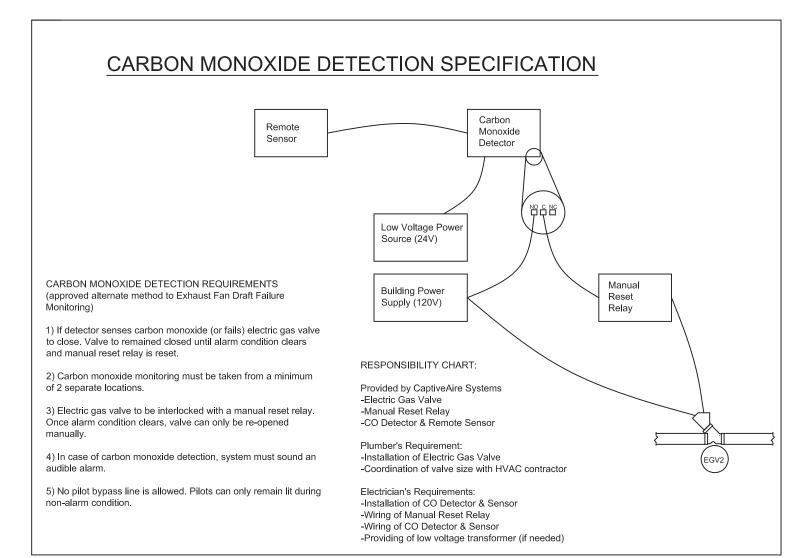
| ELECTRICAL PREWIRE PACKAGE   | JOB NAME HINDU TEMPLE                            | DATE 8/24/2012  |
|--|--|---|
| DRAWING NUMBER 31111028  | JOB NUMBER 1616161                               | DRAWN BY  |
| ONTROL INPUT 120VAC H1=LINE, N1=NEUTRAL  1 H1 FS-01 WH  2 (Fan Switch Shown Installed)  A1 ST-1 OL-1  A2 96 H95 WH | 7<br>1   | 3 Phase, W/ 1 Exhaust Fan, 1 Supply Fan, Relay w/ 2 -DPDT On/Off w/ Supply Fan, Exhaust on in fire condition  COMPONENT PARTS LIST LABEL DESCRIPTION  |
| 5  |  | C-x Contactor ST-x Starter OL-x Overload FS-xx Fan Switch (Lighted)  LS-xx Light Switch L Hood Light(s) MS-x MicroSwitch (Ansul/PyroChem) Rx Relay DPDT - 34.110.0184.0 + Socket  |
| 6 R1-1 BK NC C C T NO ST-2 OL-2 WH A1 A2 96 95 WH  |  |   |
| 9 10   |  | SPARE FIRE DRY CONTACTS  SPARE RELAY CONTACTS USED WHEN FIRE SYSTEM DISCHARGES TO SHUT DOWN SHUNT TRIP, EQUIPMENT OR PROVIDE SIGNALS. (NOT FOR BUILDING FIRE ALARM)  R2-1  R2-2   |
| 11 R3 WH   |  |   |
| 12 Jumper 2 C1 8 PAR19 BK WH   |  | R3-1  |
| 15 LIGHT INPUT 120VAC H2-H5=LINE, N2-N5=<br>LS-01<br><u>РН2 В В В В В В В В В В В В В В В В В В В</u>              | NEUTRAL 15A BKR (MAX 1400W PER CIRCUIT)<br>-ØN2S | Rx RELAY   SOCKET STUE   CLION*   MS-x   MicroSwitch   C-RD   NO-BL   NC-PR   COIL   8   7   COM   6   5     MS-x   MicroSwitch   C-RD   NO-BK   NC-BR   NC-BR   MOTOR   TAG   PH VLT   HP   FLA   BRK   MOTOR   TAG   PH VLT   PH P   FLA   BRK   MOTOR   TAG   PH VLT   PH P   FLA   BRK   MOTOR   TAG   PH VLT   PH P   PH P |
| 17<br>3 PHASE <b>208V</b>  |  | EXH-1 KEF-1 3 208 3 9.5 25A<br>SUP-2 MUA-1 3 208 3 9.5  |
| 18 INPUT — 2 L1 6 L1   T1  | 1) GR  |   |
| 3 PHASE <b>208V</b> ST-2 OL-2  L1   L1   T1   T2   T2   T3   T3   T3   T3   T3   T3                                | Z GR   | NOTES  DENOTES FIELD WIRING DENOTES INTERNAL WIRING   |
| 21   |  | WIRE COLOR  BK - BLACK YW - YELLOW  BL - BLUE GY - GRAY  BR - BROWN PR - PURPLE  OR - ORANGE OR/BL - ORANGE/BLUE (STRIPE)   |
| 22   |  | OR - URANGE OKYBL - ORANGE/BLDE (STRIPE) RD - RED BL/RD - BLUE/RED (STRIPE) WH - WHITE RD/GN - RED/GREEN (STRIPE) DRAWING SHOWN DE-ENERGIZED NOTE: IF WALL MOUNT PREWIRE, OR FIELD INSTALLED FIRE SYSTEM MICROSWITCH, THE   |
| 24   |  | TERMINALS SHOWING FACTORY WIRING MUST BE FIELD WIRED.  12 x 18 x 6 Box  |
|  |  | 12 X 10 X 0 D0X   |

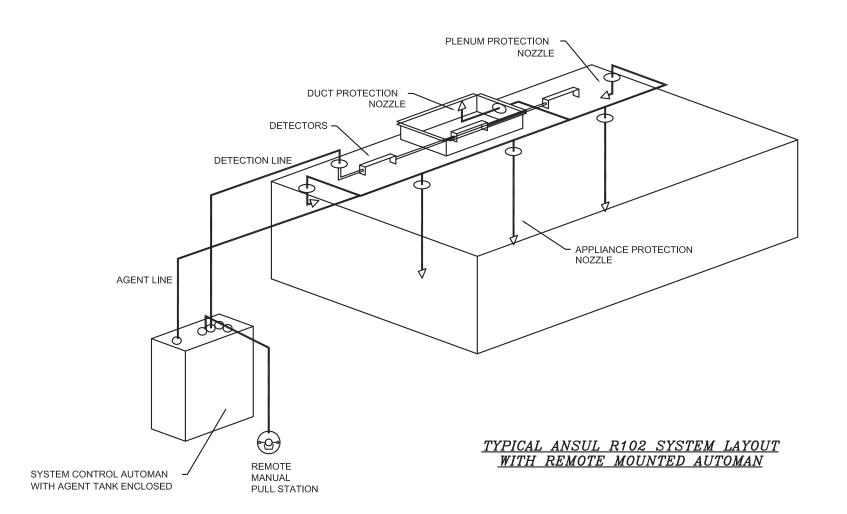




1/2" DIA. HEAVY DUTY NUT ONE ABOVE AND ONE BELOW HANGING ANGLE 1/2" DIA. ALL THREAD ROD CONNECTED TO ROOF JOIST THROUGH ANOTHER HANGING ANGLE

\*ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR
HANGING ANGLE IS PRE-PUNCHED AT FACTORY
HANGING ANGLE DETAIL







# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



Architecture • Interior Design

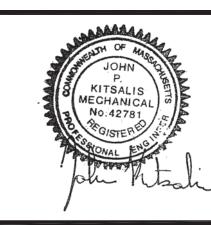
111 PERKINS STREET SUITE 215 BOSTON MA 02130 (617) 522-0718



1 MOUNT VERNON STREET WINCHESTER,MA 01890 781-729-6188



Building Systems & Commissioning Engineers Massachusetts 30 Turnpike Road, Suite #1, Southborough, MA 01772 Tel: (508) 485-4633 Fax: (508) 485-1830



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| Date       |
|------------|
| 10.15.2014 |
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|            |
|            |

# MECHANICAL - GREASE HOOD DETAILS

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Choot #  | -        | -           |

- 1. THE INTENT OF THE SPECIFICATION AND THE DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL PLUMBING SYSTEM. ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, HOISTING AND RIGGING, ETC.., NECESSARY TO COMPLETE THE PLUMBING WORK SHALL BE INCLUDED IN PLUMBING CONTRACTORS BID.
- 2. ALL WORK SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT

#### **GENERAL PROJECT NOTES**

- 1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION MAY BE USED ON THIS PROJECT.
- 2. COORDINATE INSTALLATION OF ALL PIPING WITH OTHER CONTRACTORS. NOTIFY CONSTRUCTION MANAGER OF ANY DEVIATIONS FROM THESE DRAWINGS PRIOR TO FABRICATION AND OR INSTALLATION.
- 3. CONTRACTOR TO INSTALL ALL EQUIPMENT AND MATERIALS AS SHOWN ON DWGS. IN ACCORDANCE WITH THE SPECIFICATIONS, IN THE EVENT OF A CONFLICT BETWEEN DWGS. AND SPECIFICATIONS THE DRAWINGS WILL
- 4. CONTRACTOR TO VERIFY ALL PIPE ROUTINGS AND DIMENSIONS BEFORE ORDERING MATERIAL OR DOING WORK.
- 5. ALL NEW PIPING IS TO BE FLUSHED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- 6. CONTRACTOR TO INSTALL PIPE SUPPORTS AND MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS AND STATE CODES.
- 7. CONTRACTOR SHALL COORDINATE ALL BUILDING SERVICES WITH CIVIL SITE PLAN AND OWNER. CONTRACTOR SHALL INCORPORATE ALL EARTHWORK. OUTDOOR SEWER PUMPING SYSTEM (IF REQUIRED), AND UTILITIES TO THEIR POINT OF USE (METERED LOCATIONS FOR GAS AND WATER) IN BID DERIVED FROM THE CIVIL/OWNER SITE PLAN COORDINATION OF BUILDING'S UTILITIES.
- 8. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID.
- 9. ALL CUTTING AND PATCHING SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
- 10. ANY DAMAGE DONE TO THE BUILDING AS A RESULT OF THE PLUMBING CONTRACTORS OPERATIONS SHALL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER.
- 11. CONTRACTOR SHALL OBTAIN ALL WRITTEN PROJECT SPECIFICATIONS PRIOR TO BID, AND INSTALLATION.
- 12. CONTRACTOR SHALL PROVIDE SUBMITTALS, SHOP DRAWINGS AND COORDINATION DRAWINGS WITH ALL OTHER TRADES FOR REVIEW AND
- 13. FINAL "AS-BUILT" SHALL BE FURNISHED AT THE END OF THIS PROJECT TO OWNER, ARCHITECT AND ENGINEER.
- 14. ALL VENTS SHALL BE PITCHED BACK TO DRAIN WITH NO SAGS OR POCKETS FOR CONDENSATION TO ACCUMULATE

#### SITE EXAMINATION

THE PLUMBING CONTRACTOR SHALL THOROUGHLY EXAMINE ALL AREAS WHERE FIXTURES, EQUIPMENT, AND PIPING WILL BE INSTALLED. EXAMININATION IS TO VERIFY THAT ALL PROVISIONS HAVE BEEN MADE FOR ALL ASPECTS OF THIS PROJECT. IF DISCREPANCIES EXIST BETWEEN DRAWINGS AND/OR SITE CONDITIONS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD PRIOR TO SIGNING OF CONTRACT.

#### PERMITS AND FEES

THE PLUMBING CONTRACTOR SHALL PROCURE AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS NECESSARY TO COMPLETE THE

#### <u>WARRANTY</u>

THE PLUMBING CONTRACTOR SHALL UNCONDITIONALLY WARRANT ALL WORK TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE BY LICENSEE AND WILL REPAIR OR REPLACE ANY DEFECTIVE WORK PROMPTLY AND WITHOUT CHARGE AND RESTORE ANY OTHER EXISTING WORK DAMAGED IN THE COURSE OF REPAIRING DEFECTIVE MATERIALS AND WORKMANSHIP.

### **UTILITIES CONNECTIONS**

- 1. ALL TIE-IN CONNECTIONS TO NEW SERVICE SITE UTILITIES CONNECTIONS SHALL BE COORDINATED. SEE CIVIL ENGINEER'S DRAWINGS.
- 2. PLUMBING CONTRACTOR SHALL VERIFY U.G. LOCATIONS AND INVERTS PRIOR TO STARTING WORK, IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING SUBCONTRACTOR TO STUDY ALL DRAWINGS AND DETAILS SO THAT THE INSTALLATION OF ALL NEW WORK CAN BE FULLY

### **CONNECTIONS**

COORDINATED.

INSTALL UNIONS ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT. INSTALL DIELECTRIC COUPLINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS. SCREW JOINT STEEL PIPING UP TO AND INCLUDING 1-1/2". WELD PIPING USE LEAD FREE SOLDER FOR SOLDERING DOMESTIC WATER COPPER PIPE.

#### **TESTING**

ALL PIPES SHALL BE TESTED BY AN APPROVED METHOD BEFORE THEY ARE BACKFILLED OR CONCEALED. AFTER TESTING IS COMPLETE, THE PLUMBING CONTRACTOR SHALL DISINFECT THE POTABLE WATER SYSTEM AS REQUIRED BY LOCAL AUTHORITY. TEST WATER PURITY ACCORDING TO LOCAL REQUIREMENTS AND SUBMIT CERTIFIED TEST RESULTS TO ENGINEER FOR REVIEW AND APPROVAL.

#### ADA COMPLIANCE

INSTALL SPECIFIED NO-SCALD SAFETY COVERS WITH INSULATED FOAM LINER AND TAMPER PROOF STRAP AS FURNISHED BY LICENSEE AT ALL EXPOSED PIPING. COVERS SHALL COMPLY WITH ALL ADA SPECIFICATIONS.

#### **INSTALLATION**

INSTALL PIPING FREE OF SAGS AND BENDS. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS. INSTALL SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, CONCRETE FLOOR, AND ROOF SLABS. SEAL PIPE PENETRATIONS THROUGH RATED CONSTRUCTION WITH FIRESTOPPING SEALANT MATERIAL. UNDERGROUND WATER AND SEWER LINES SHALL BE LAID IN SEPARATE TRENCHES WITH A MINIMUM HORIZONTAL SPACING AS REQUIRED BY CODE, EXCAVATED TO THE PROPER DEPTH AND GRADED TO PRODUCE THE REQUIRED FALL.

#### **VALVES**

#### **GENERAL**

PLUMBING CONTRACTOR TO PROVIDE VALVES WHERE INDICATED ON PLANS AND AS NECESSARY FOR PROPER SYSTEM OPERATION AND COMPONENT ISOLATION. INSTALL VALVES FOR EACH FIXTURE AND ITEM OF EQUIPMENT. PROVIDE BRAIDED STAINLESS STEEL HOSE (UNLESS OTHERWISE NOTED) BETWEEN VALVE AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. LOCATE SHUT-OFF VALVES ADJACENT TO EQUIPMENT FOR EASY ACCESS SUCH THAT VALVES CAN BE REACHED WITHOUT MOVING EQUIPMENT.

#### <u>VALVES</u>

PROVIDE VALVES FOR WORKING PRESSURE IN WATER PIPING OF 125 PSI OR GREATER. UNLESS NOTED OTHERWISE VALVES SHALL BE AS

| VALVE TYPE               | MANUFACTURER & MODEL    |
|--------------------------|-------------------------|
| CHECK VALVE UP TO 3"     | CRANE OR EQUIVALENT     |
| GLOBE VALVE UP TO 3"     | CRANE OR EQUIVALENT     |
| GATE VALVE UP TO 3"      | APOLLO OR EQUIVALENT    |
| TEMP. & PRESSURE REFLIEF | WATTS OR EQUIVALENT     |
| SHOCKSTOP                | WADE OR EQUIVALENT      |
| BACKFLOW PREVENTOR       | WATTS OR EQUIVALENT     |
| VACUUM RELIEF VALVE      | WATTS OR EQUIVALENT     |
| PRESSURE REDUCING VALVE  | WATTS OR EQUIVALENT     |
| TRAP SEAL PRIMER         | J.R. SMITH OR EQUIVALEN |

#### PLUMBING FIXTURES/EQUIPMENT

- 1. THE PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO EQUIPMENT INCLUDING REQUIRED MATERIAL SUCH AS PIPING, VALVES, FILTERS, TRAPS, CHECK VALVES, THERMOSTATIC MIXING VALVES, VACUUM BREAKERS, AND FLEXIBLE AND RIGID TUBING.
- 2. PLUMBING FIXTURES AND EQUIPMENT ARE FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR. REFER TO SCHEDULES ON DRAWINGS FOR MORE COMPLETE DESCRIPTION OF LISTED ITEMS.

#### NATURAL GAS

- 1. FOLLOW THE LATEST REQUIREMENTS OF NFPA 54 NATURAL GAS CODE, THE STATE FUEL GAS AND PLUMBING CODES, AND THOSE OF ANY CITY STATE, OR FEDERAL AGENCY HAVING JURISDICTION OVER THIS PROJECT.
- 2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND ANY REFERENCES TO EXISTING CONDITIONS ON THE DRAWINGS.
- 3. CONTRACTOR SHALL PAY FOR AND OBTAIN ALL PERMITS FOR HIS WORK.
- 4. DEVIATIONS TO CONTRACT DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL
- 5. PROPER COVER SHALL BE PROVIDED FOR UNDERGROUND PIPING UNLESS MECHANICAL MEANS OF PROTECTION IS PROVIDED MEETING NFPA 54 AND STATE PLUMBING GAS CODE REQUIREMENTS.
- 6. PLUMBING CONTRACTOR SHALL COORDINATE WORK WITH MECHANICAL CONTRACTOR FOR PROVISION OF CONNECTIONS FOR APPLIANCES, MECHANICAL, AND HVAC EQUIPMENT PRIOR TO INSTALLATION OF

#### **DOMESTIC WATER PIPING**

- 1. IF WATER PRESSURE SUPPLIED TO PLUMBING FIXTURES IS NOT BETWEEN 60 PSI MIN. AND 65 PSI MAX. THEN PROVIDE A PRESSURE REGULATOR TO MAIN SUPPLY TO MAINTAIN WATER PRESSURE. PROVIDE BACKFLOW PREVENTION ON WATER SERVICE IF REQUIRED BY LOCAL CODES.
- 2. DOMESTIC WATER PIPING 2" AND SMALLER SHALL BE COPPER TUBE WITH WROUGHT COPPER SWEAT FITTINGS JOINED WITH LEAD FREE SOLDER. PROVIDE TYPE "L" COPPER TUBE ABOVE GRADE AND TYPE "K" BELOW

### DOMESTIC WATER PIPING INSULATION

PROVIDE THERMAL INSULATION ON ALL HOT AND COLD WATER PIPING AND HORIZONTAL WASTE PIPING IN CEILING SPACE WITH SELF-SEALING CLOSED CELL FOAM OR JACKETED FIBERGLASS INSULATION. FIRE HAZARD RATING FOR INSULATION, ADHESIVES, SEALERS, AND COATINGS SHALL NOT EXCEED 25 FOR FLAME SPREAD, 50 FOR FUEL CONTRIBUTED, AND 50 FOR SMOKE DEVELOPED. UNLESS OTHERWISE REQUIRED BY THE LOCAL AUTHORITY OR ENERGY CODES THE MINIMUM INSULATION LEVELS SHALL BE AS FOLLOWS:

INSTALL SPECIFIED NO-SCALD SAFETY COVERS WITH INSULATED FOAM LINER AND TAMPER PROOF STRAP AS FURNISHED BY LICENSEE AT ALL

| PIPING.            |                      |
|--------------------|----------------------|
| PIPE SIZE          | INSULATION THICKNESS |
| 1" DIA. OR LESS    | 1"                   |
| 1" - 2" DIA.       | 1"                   |
| 2" DIA. OR GREATER | 1-1/2"               |

### **CLEANOUTS**

PROVIDE J.R. SMITH OR EQUIVALENT FLOOR AND WALL CLEANOUTS AS INDICATED ON THE DRAWINGS OR WHERE REQUIRED IN ALL SOIL, WASTE, AND DRAIN LINES. IN AREAS WITH CERAMIC TILE OR CARPETED FLOORING, PROVIDE CLEANOUTS WITH SQUARE, ADJUSTABLE, NICKEL BRONZE TOP. IN AREAS WITH RESILIENT FLOORING, PROVIDE CLEANOUTS WITH SQUARE, ADJUSTABLE, NICKEL BRONZE TOP WITH TILE RECESS. CLEANOUTS SHALL BE SAME SIZE AS PIPE EXCEPT THAT CLEANOUTS LARGER THAN 4" WILL NOT BE REQUIRED. WHERE CLEANOUTS OCCUR IN WALLS OF FINISHED AREAS, THEY SHALL BE CONCEALED BEHIND CHROME PLATED ACCESS COVERS.

#### SOIL. WASTE AND VENT PIPING

SOIL, WASTE AND VENT PIPING 10" AND SMALLER SHALL BE SERVICE WEIGHT, HUBLESS, CAST IRON PIPE AND FITTINGS WITH NEOPRENE GASKET AND STAINLESS STEEL SHIELD AND CLAMP. PROVIDE HUB-TYPE PIPE AND FITTINGS BELOW GRADE WHERE REQUIRED BY LOCAL CODES. HORIZONTAL RUNS SHALL DRAIN AT A GRADE OF 1/4 INCH PER FOOT WHERE POSSIBLE BUT IN NO CASE LESS THAN 1/8" PER FOOT FOR PIPE 4" AND LARGER. INSULATE STORM DRAINAGE PIPING WITH 1" INSULATION SHALL NOT EXCEED 25 FOR FLAME SPREAD, 50 FOR FUEL CONTRIBUTED, AND 50 FOR SMOKE DEVELOPED.

#### CHARGED WASTE AND VENT PIPING

CHARGED SANITARY PIPING.

FOR VENTS USE DWV COPPER TUBING, WITH CAST BRASS OR WROUGHT COPPER DRAINAGE PATTERN FITTINGS. VENTS FROM EJECTORS SHALL ONLY BE CONNECTED TO OTHER VENTS FROM EJECTORS OR EJECTOR VENT SHALL BE CONNECTED TO PLUMBING FIXTURE VENT SYSTEM NO FURTHER THAN THREE FEET BEFORE IT PENETRATES BUILDING ROOF AT VENT THRU ROOF EXPANSION.

FOR CHARGED SOIL AND WASTE USE GRADES H. OR SL COPPER COATED STAINLESS STEEL TUBING CONFORMING TO ASTM STANDARD, MANUFACTURED OF TYPE 430 OR TYPE 439 STAINLESS STEEL, PLAINLY MARKED PER PLUMBING CODE. FITTINGS TO BE CAST BRASS OR WROUGHT COPPER DRAINAGE PATTERN. SCHEDULE 40 GALVANIZED WROUGHT IRON OR GALVANIZED STEEL PIPE WITH PLAIN OR GALVANIZED DRAINAGE PATTERN FITTINGS ON SIZES ABOVE TWO INCHES. THIS MATERIAL MAY ALSO BE USED WHEN PIPE AND FITTINGS ARE END GROOVED TO BE JOINED WITH AN APPROVED SPLIT AND BOLTED GALVANIZED STEEL COUPLING WITH GASKET. EJECTOR CHARGED SANITARY SHALL GO TO BUILDING SEWER AND NO OTHER GRAVITY SYSTEM SHALL BE CONNECTED TO

## **HANGERS & SUPPORTS**

THE PLUMBING CONTRACTOR SHALL FURNISH ALL PIPE SUPPORTS REQUIRED FOR HIS EQUIPMENT AND MATERIAL. ALL HORIZONTAL RUNS OF PIPING SHALL BE SUPPORTED BY PIPE HANGERS SPACED NOT MORE THAN 10 FEET O.C. FOR PIPES 1-1/4" AND LARGER, AND 8 FEET O.C. FOR PIPES SMALLER THAN 1-1/4" AND AT EACH JOINT FOR SOIL OR WASTE PIPE. ADDITIONAL SUPPORTS SHALL BE PROVIDED WHERE REQUIRED TO PREVENT SAGGING. HANGERS AND PIPE ATTACHMENTS TO BE FACTORY FABRICATED WITH GALVANIZED COATINGS: NONMETALLIC COATED FOR HANGERS IN DIRECT CONTACT WITH COPPER TUBING.

ALL GAS PIPING SHALL BE SEISMICALLY BRACED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND MANUFACTURES SPECIFICATIONS. FOR SEISMIC BRACING US ONLY TOLCO PRODUCTS. WIRE RESTRAINTS SHALL NOT BE

SITE EXAMINATION & CONFLICT RESOLUTION THE PLUMBING CONTRACTOR SHALL THOROUGHLY EXAMINE ALL AREAS WHERE FIXTURES, EQUIPMENT, AND PIPING WILL BE INSTALLED. EXAMINATION IS TO VERIFY THAT ALL PROVISIONS HAVE BEEN MADE FOR ALL ASPECTS OF THIS PROJECT. IF DISCREPANCIES EXIST BETWEEN DRAWINGS AND/OR SITE CONDITIONS. THE PLUMBING CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD PRIOR TO SIGNING OF CONTRACT.

IN THE EVENT OF A CONFLICT OR CONTRADICTION BETWEEN PLANS, SPECIFICATIONS, LOCAL, STATE OR FEDERAL CODES, CONTRACTOR SHALL APPLY THE MOST STRINGENT PERFORMANCE CRITERIA AND INCLUDE ALL COSTS IN BID. THE PERFORMANCE CRITERIA OF CODES AND REGULATIONS SHALL BE UP TO THE ENGINEER'S INTERPRETATION.

#### SOIL, WASTE, STORM AND VENT INSULATION

PROVIDE THERMAL INSULATION ON ALL SANITARY AND WASTE PIPING WHERE EXPOSED, AND FOR STORM AND VENT PIPING UP TO 10' FROM ROOF PENETRATION IN CEILING SPACE WITH SELF-SEALING CLOSED CELL FOAM OR JACKETED FIBERGLASS INSULATION AS APPLICABLE. FIRE HAZARD RATING FOR INSULATION. ADHESIVES. SEALERS, AND COATINGS SHALL NOT EXCEED 25 FOR FLAME SPREAD, 50 FOR FUEL CONTRIBUTED, AND 50 FOR SMOKE

#### PLUMBING GENERAL NOTES

- GENERAL NOTES APPLY TO PLUMBING SHEETS. PLUMBING WORK SHALL BE DONE IN ACCORDANCE WITH THE PLUMBING CODE, LOCAL HEALTH DEPARTMENT STANDARDS, AND THE AUTHORITY HAVING JURISDICTION. SEE SHEET A000 FOR THE PREVAILING CODES.
- C. PIPING LAYOUTS ON DRAWINGS ARE SCHEMATIC. EXACT LOCATIONS ARE TO BE COORDINATED WITH THE EXISTING CONDITIONS AND THE WORK OF OTHER TRADES. CONCEAL PIPING UNLESS NOTED OTHERWISE. WATER SUPPLY
- PIPES SHALL BE INSTALLED LEVEL PROVIDE STOP VALVES AT FIXTURES. PROVIDE SHUT-OFF VALVES FOR ISOLATION OF FIXTURE GROUPS AS SHOWN ON DRAWINGS IN ADDITION TO STOP
- VALVES AT EACH FIXTURE. PROVIDE TRAP PRIMERS FOR FLOOR DRAINS AND SINKS. PIPING IN EXTERIOR WALLS SHALL BE INSTALLED BETWEEN THE INSULATION AND THE INTERIOR WALL FINISHING
- PROVIDE GAS SHUT-OFF VALVES AT EACH PIECE OF EQUIPMENT. PROVIDE ACCESSIBLE DIRT LEG AT THE BOTTOM OF VERTICAL SECTIONS OF GAS PIPE AND AT THE
- CONNECTION TO EACH PIECE OF EQUIPMENT. INSULATE THE HOT AND COLD WATER, CONDENSATE DRAINAGE, AND STORM PIPING PER THE SPECIFICATIONS. CONTRACTOR AND SUBCONTRACTOR SHALL FIELD VERIFY LOCATION, SIZE, AND LAYOUT OF EXISTING PLUMBING FIXTURES, DOMESTIC WATER LINE, SANITARY AND GREASE
- UPON ANY CONFLICT BETWEEN DRAWINGS, NOTES, SPECIFICATIONS AND AUTHORITY HAVING JURSDICTION REQUIREMENTS, THE MOST STRIGENT REQUIREMENTS SHALL APPLY FOR THE PROJECT.

WASTE LINE AND INFORM ENGINEER IF DIFFERENT THAN

|       | PLUMBING                                     |
|-------|--|
| P-000 | PLUMBING - SYMBOLS, NOTES, AND ABBREVIATIONS |
| P-010 | PLUMBING — FOUNDATION PLAN                   |
| P-100 | PLUMBING - NEW LOWER LEVEL SUPPLY PLAN       |
| P-101 | PLUMBING - NEW MAIN LEVEL SUPPLY PLAN        |
| P-102 | PLUMBING - NEW ROOF SUPPLY PLAN              |
| P-200 | PLUMBING - NEW LOWER LEVEL SANITARY PLAN     |
| P-201 | PLUMBING — NEW MAIN LEVEL SANITARY PLAN      |
| P-202 | PLUMBING - ROOF STORM DRAINAGE PLAN          |
| P-300 | PLUMBING - SCHEDULES AND DETAILS             |
| P-301 | PLUMBING - SCHEDULES AND DETAILS             |
| P-400 | PLUMBING - SPECIFICATIONS                    |

#### SYMBOLS: AFF - ABOVE FINISHED FLOOR ABOVE GROUND SANITARY PIPING AFC - ABOVE FINISHED CEILING UNDER SLAB SANITARY LINE AFG - ABOVE FINISHED GRADE UNDER SLAB STORM PIPING BELOW FLOOR STORM PIPING BASEMENT NATURAL GAS BCT - BELOW COUNTER TOP EXISTING UNDER SLAB CAI - CPVC COMBUSTION AIR INTAKE CFV - CPVC FLUE VENT FOR HIGH DOMESTIC COLD WATER EFFICIENCY WATER HEATER FLUE **EXHAUST** DOMESTIC HOT WATER SUPPLY LINE (110°F) CAST IRON DOMESTIC RECIRCULATING HOT WATER (110°F) SUPPLY LINE CLG - CEILING VENT PIPING CO - CLEAN OUT PIPE TURNING UP CODP - CLEANOUT DECK PLATE PIPE TURNING DOWN COWP - CLEANOUT WALL PLATE CT - COUNTER TOP TEE TURNING UP CTE - CONNECT TO EXISTING TEE TURNING DOWN CW - COLD WATER >-⊗> ACCESSIBLE FIXTURE DHW - DOMESTIC HOT WATER DECK PLATE CLEANOUT DHWR - DOMESTIC HOT WATER RETURN FLOOR DRAIN DPCO - DECK PLATE CLEANOUT TRAP DRAINAGE, WASTE & VENT DRAINAGE EC - ELECTRIC CONTRACTOR DOMESTIC WATER DROP TO FIXTURE ELECTRIC WATER COOLER PIPE CAP FTR - FXISTING TO REMAIN BALL VALVE EX — EXISTING TO BE REMOVED ER - EXISTING TO BE RELOCATED BALL VALVE FAHRENHEIT CHECK VALVE FAI - FRESH AIR INLET GATE VALVE FCO - FLOOR CLEANOUT GLOBE VALVE FD - FLOOR DRAIN GAS COCK FINISHED FLOOR ELEVATION FS - FLOOR SINK STOP VALVE FT - FEET GCO - GRADE CLEANOUT REDUCING VALVE GM - GAS METER REDUCER GPM - GALLONS PER MINUTE G V - GREASE VENT ISOLATING JOINT G W - GREASE WASTE PLUG VALVE HWR - DOMESTIC HOT WATER RETURN SAFETY VALVE WALL GRILLE INCHES FRESH AIR INLET INV. EL. - INVERT ELEVATION HOSE BIBB INDIRECT WASTE PIPE ELBOW DOWN LAV - LAVATORY DOMESTIC PIPE ELBOW DOWN LT - LINT; GALVANIZED STEEL CLOTHES SANITARY DRYER VENT DUCT, 26 MINIMUM GAGE WATER HAMMER ARRESTOR MAXIMUM MECHANICAL CONTRACTOR

LIMIT OF REMOVAL VACUUM BREAKER CLEAN OUT PLUMBING SYMBOLS  $\vdash ---- \text{GW} ---- \rightarrow \text{GREASE WASTE}$ **├───** DOMESTIC FILTERED COLD WATER  $\leftarrow --- co --- \rightarrow CONDENSATE DRAIN$ **←** GAS }-----GAS (ON ROOF)

STRAINER

CONNECT TO EXISTING

PLAN NOTE: SEE PLAN NOTES LISTED ON THE SAME SHEET FOR NOTE MEANING REDUCED PRESSURE ZONE BACKFLOW PREVENTER WATER METER EQUIPMENT TAG: SEE EQUIPMENT SCHEDULE ON SHEET P5 FOR EQUIPMENT INFORMATION SOLENOID-OPERATED VALVE WALL HYDRANT/ROOF HYDRANT

FLOOR DRAIN FLOOR SINK CLEANOUT

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SRI LAKSHMI TEMPLE

117 WAVERLY STREET

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PLUMBING - SYMBOLS, NOTES AND ABBREVIATIONS

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PLUMBING - SYMBOLS, NOTES AND ABBREVIATIONS

MANUFACTURER

MIXING VALVE

NTS - NOT TO SCALE

REMOVE

SAN - SANITARY

VENT

NOT IN CONTRACT

MOP SERVICE SINK

PLUMBING CONTRACTOR

POUNDS PER SQUARE INCH

PREVENTION DEVICE

VENT THROUGH THE ROOF

WASTE AND VENT

WALL HYDRANT

WALL PLATE CLEANOUT

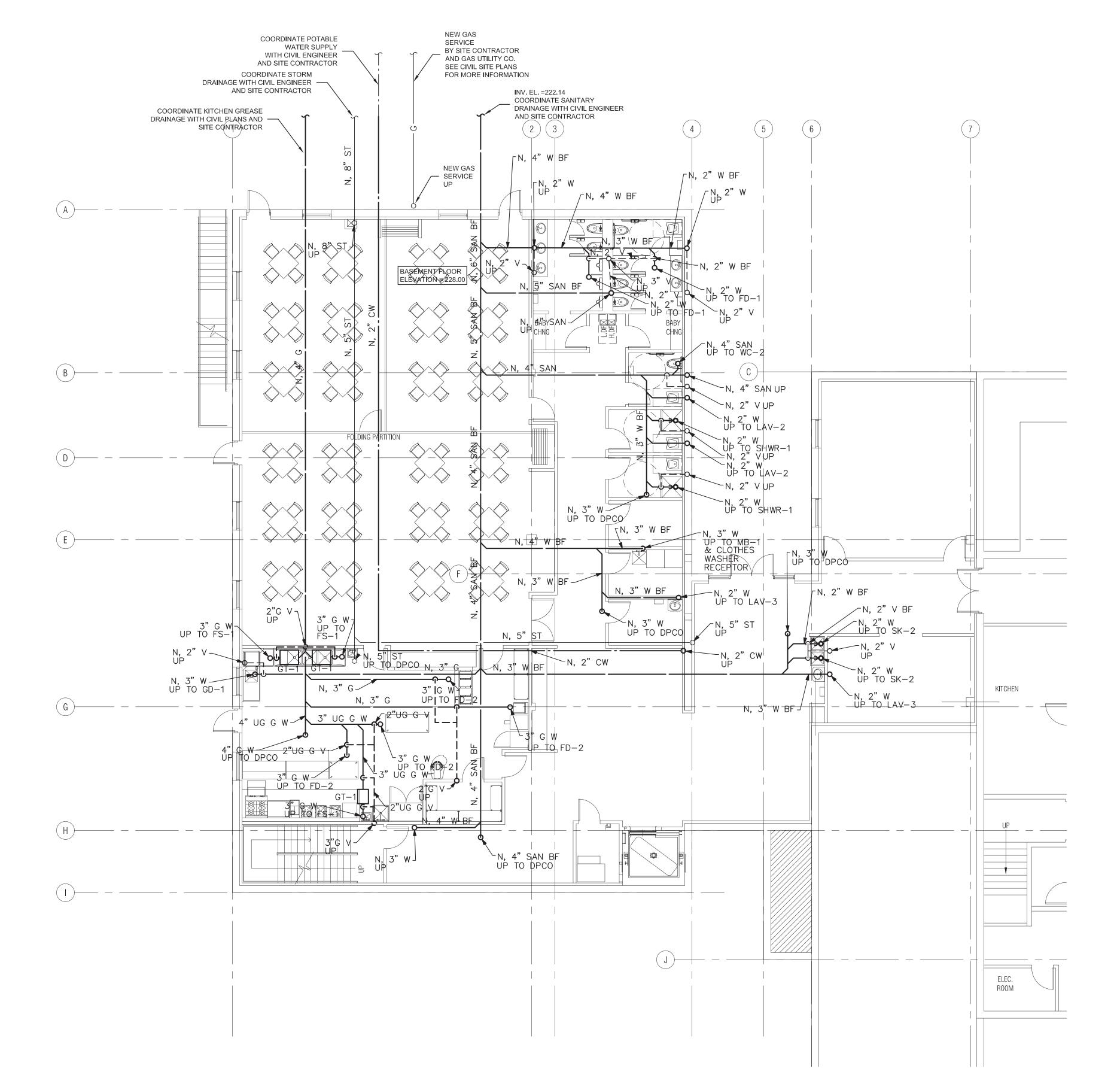
WATER HAMMER ARRESTOR

UNDER GROUND

WATER METER

PRESSURE REDUCING VALVE

REDUCED PRESSURE ZONE BACKFLOW



CONTRACTOR SHALL COORDINATE WORK

ABOVE THE CEILING.

WITH ALL TRADES.

REASONS OF CLARITY

CONTRACTOR SHALL INSULATE ALL PIPING

. CONTRACTOR SHALL USE CAST IRON PIPING FOR ALL DRAINAGE ABOVE CEILING AREAS.

PROVIDE TRAP PRIMER FOR ALL PLUMBING FIXTURES. ONE TRAP PREMIER PER TRAP. COLD WATER CONNECTIONS TO TRAP

CLEANOUT COVER PLATES WITH ARCHITECT.

CONTRACTOR SHALL TAG ALL PIPING WITH

PRIMERS NOT SHOWN ON PLANS FOR

CONTRACATOR SHALL COORDINATE

STICKERS DESIGNATING FLUID TYPE



# SRI LAKSHMI TEMPLE **NEW ADDITION**

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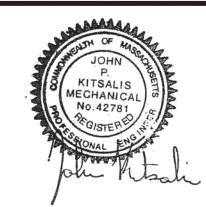
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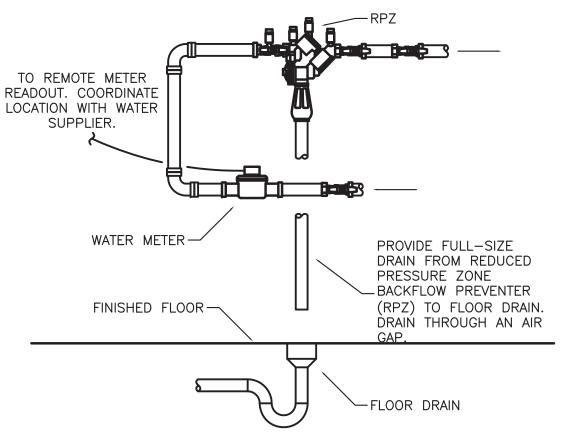
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PLUMBING -FOUNDATION PLAN

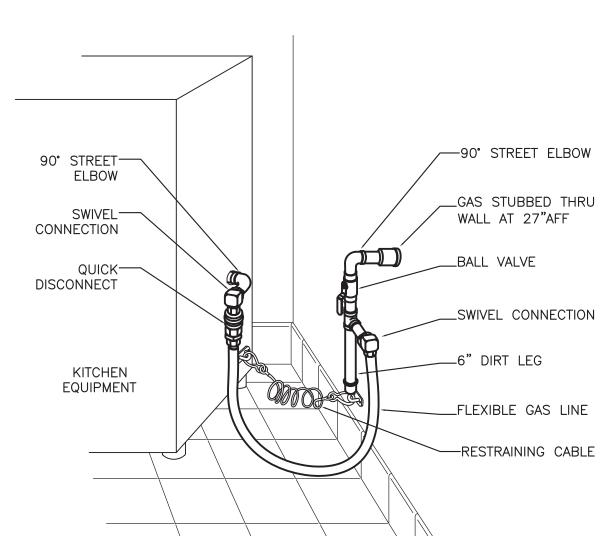
AS NOTED



#### NOTES:

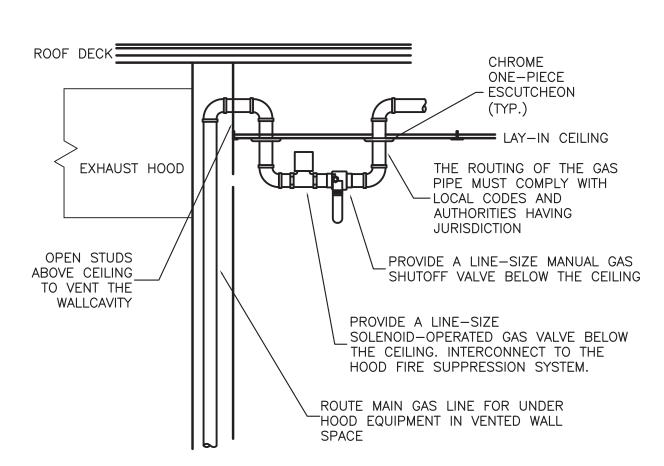
MAKE NECESSARY ARRANGEMENTS WITH WATER COMPANY TO INSTALL NEW WATER SERVICE PER LOCAL CODES & WATER COMPANY REGULATIONS AND PAY ALL CHARGES. SERVICE SHALL BE SIZED PER THE PLUMBING PLAN & INSTALLED IN STRICT ACCORDANCE OF WATER COMPANY REGULATIONS. ANCHOR METER, BACKFLOW PREVENTER, AND PIPING TO THE WALL OR THE FLOOR. CERTIFY THE BACKFLOW PREVENTER PER THE WATER COMPANY'S REQUIREMENTS.

WATER SERVICE ENTRY DETAIL NOT TO SCALE



ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT ACTUAL CONDITIONS. MAKE FINAL CONNECTION TO EQUIPMENT AS RECOMMENDED BY MANUFACTURER. PROVIDE WELDED FITTINGS/JOINTS IN ANY CONCEALED, UNSLEEVED LOCATION.

KITCHEN GAS EQUIPMENT DETAIL

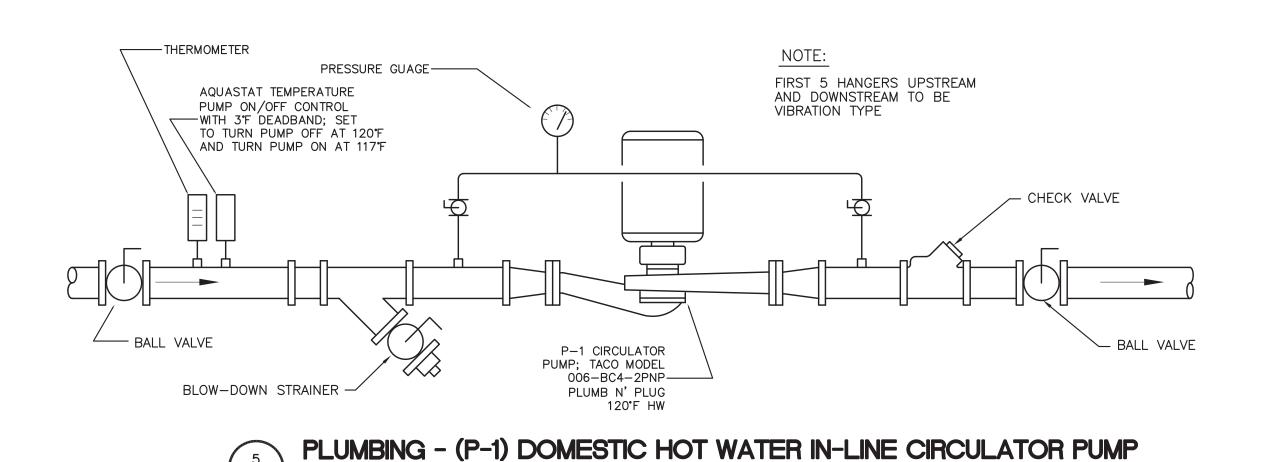


### **SEQUENCE OF OPERATIONS:**

NORMAL MODE:

• WHEN HOOD FAN IS ENERGIZED SOLENOID VALVE IS TO OPEN. • ON A LOSS OF POWER OR IF THE FAN IS DE-ENERGIZED THE VALVE IS TO CLOSE.

• UPON ACTUATION OF THE FIRE SUPPRESSION SYSTEM OR A SIGNAL FROM THE FIRE ALARM, THE SOLENOID VALVE IS TO CLOSE



# **KEYED NOTES**

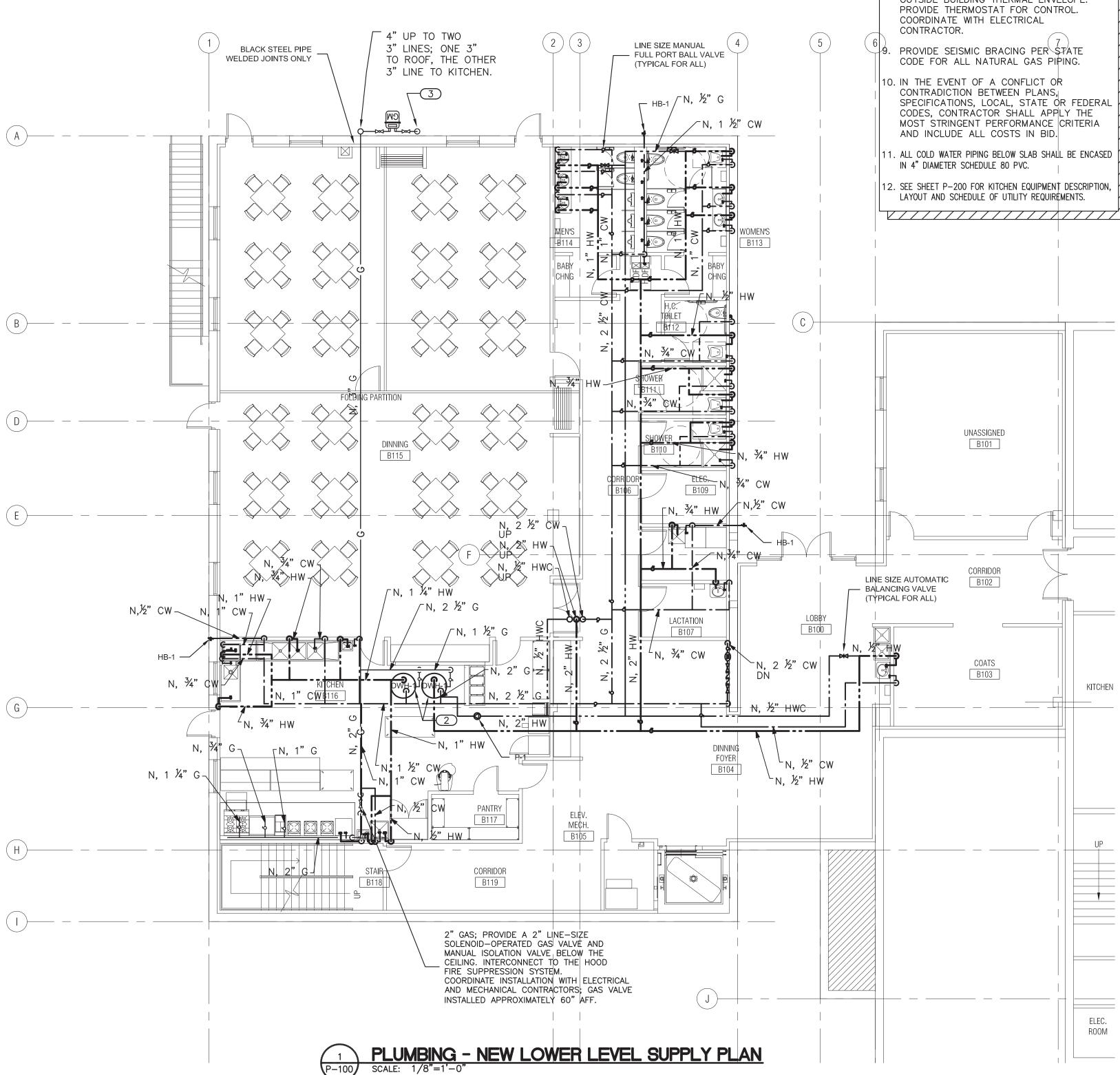
1) PROVIDE 2" POTABLE WATER METER, REDUCED PRESSURE BACKFLOW PREVENTER, AND ISOLATION BALL VALVES FOR NEW 2" POTABLE WATER SERVICE; NOT ALL COMPONENTS SHOWN FOR REASONS OF CLARITY. CONTRACTOR MAY VERTICALLY OFFSET THE PIPING COMPONENTS AS NEEDED FOR THE INSTALLATION. ALL WATER SERVICE ENTRANCE PIPING COMPONENTS SUCH AS THE BACKFLOW PREVENTER SHALL BE LISTED FOR EITHER VERTICAL OR HORIZONTAL INSTALLATION.

2 <u>DWH-1</u> PVI PLATINUM 399 L A-PN 399CFH, 70GAL, 310 GPH RECOVERY MA PLUMBING BOARD APPROVAL CODE: P3-0312-413.

> $\frac{3}{4}$ " NPT NATURAL GAS INLET CONNECTION. 2"CW&DHW DROPS, 18GAL POTABLE WATER EXPANSION TANK, VACUUM BREAKER, AND WAGS VALVE IN SAFE PAN; PROVIDE STRUCTURAL SUPPORT,

P&T RELIEF AND DRIP PAN DRAIN TO FD-1 WITH AIR GAP . LOCATION OF BOTH DWHs SHOWN FOR DIAGRAMMATIC PURPOSES ONLY, CONTRACTOR SHALL DETERMINE EXACT DWHs INSTALLATION LOCATION WITH OWNER. INCLUDE IN BID EXTRA MATERIALS AND LABOR FOR FIELD LOCATING DWH INSTALLATION LOCATION WITH ONER.

3 COORDINATE INSTALLATION OF NEW 3,000 CFH GAS SERVICE AT 7" W.C. PRESSURE WITH SITE CONTRACTOR AND NATURAL GAS UTILITY COMPANY.



# GENERAL NOTES

- CONTRACTOR SHALL INSULATE ALL PIPING ABOVE THE CEILING.
- CONTRACTOR SHALL COORDINATE WORK WITH ALL TRADES.
- CONTRACTOR SHALL USE CAST IRON PIPING FOR ALL DRAINAGE ABOVE OFFICE AREAS.
- PIPE ROUTING IS SHOWN DIAGRAMMATICALLY ON PLUMBING DRAWINGS AND SHALL BE ADJUSTED FOR ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL CLEARANCES AND LIMITATIONS AND FOR EQUIPMENT SELECTION. FURNISH AND INSTALL ALL ELEMENTS REQUIRED TO COMPLETE INTENDED PIPING SYSTEMS WHETHER OR NOT THESE ELEMENTS ARE SPECIFICALLY SHOWN ON DRAWINGS OR CALLED FOR IN SPECIFICATIONS.
- CONTRACATOR SHALL COORDINATE CLEANOUT COVER PLATES WITH ARCHITECT.
- CONTRACTOR SHALL TAG ALL PIPING WITH

STICKERS DESIGNATING FLUID TYPE.

- COORDINATE GAS METER, METER PIPING. AND GAS LOADS WITH UTILITY.
- CONTRACTOR SHALL PROVIDE SELF REGULATING HEAT TRACE FOR ALL PIPING OUTSIDE BUILDING THERMAL ENVELOPE.

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SRI LAKSHMI TEMPLE

**NEW ADDITION** 

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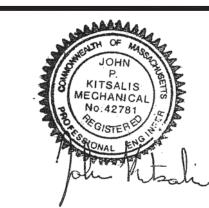
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PLUMBING - NEW LOWER LEVEL SUPPLY PLAN

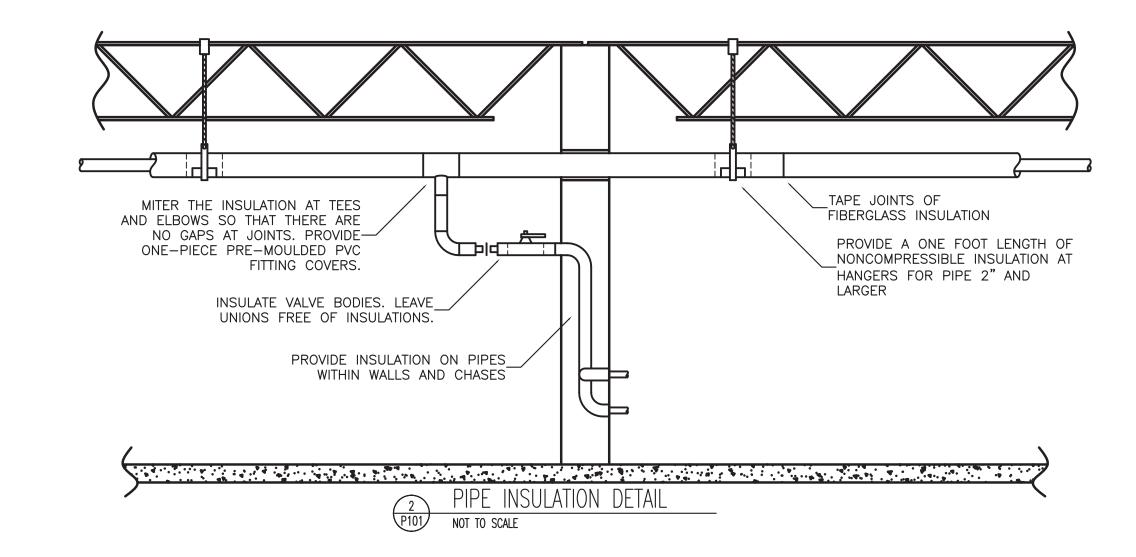
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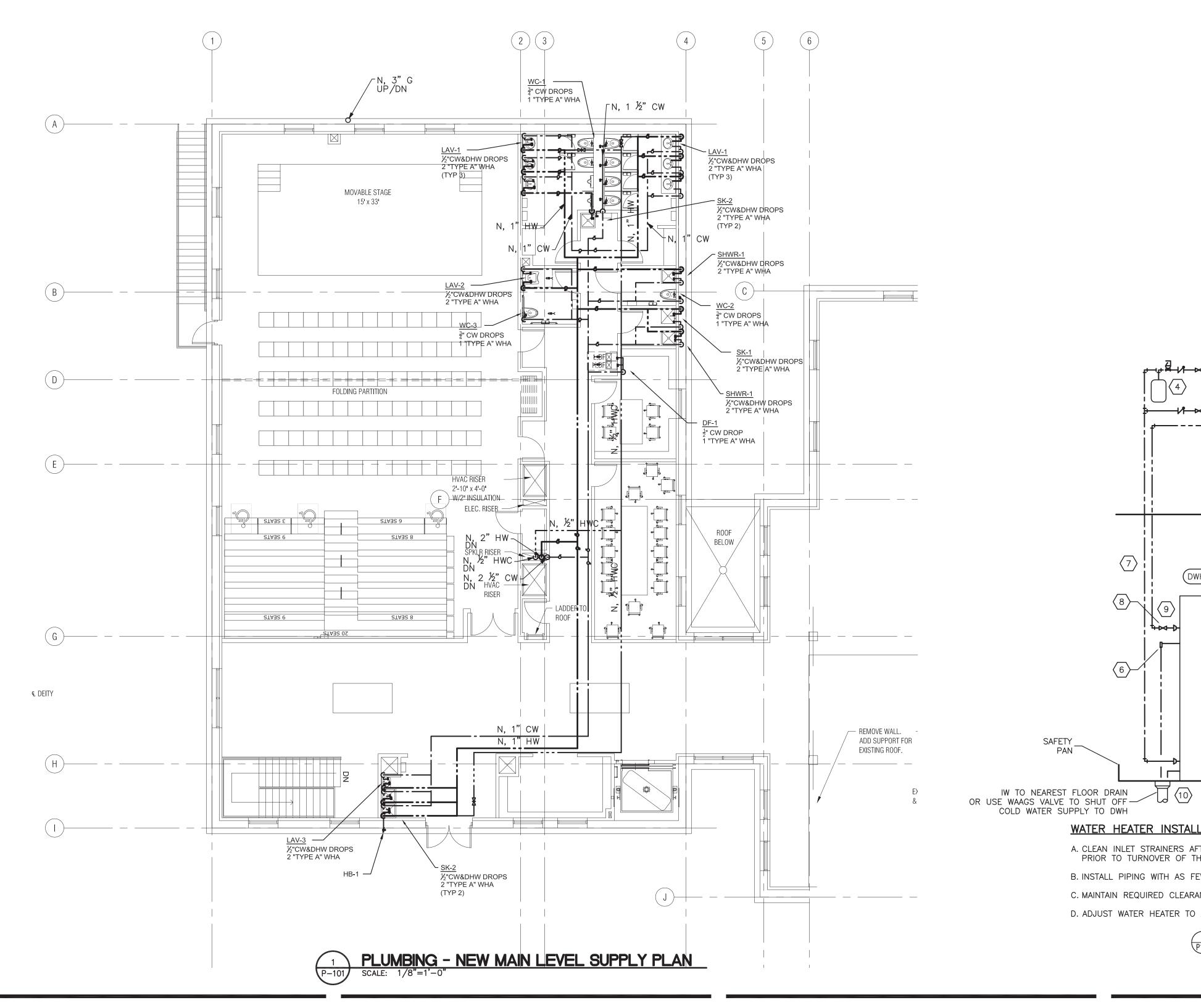
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- CONTRACTOR SHALL INSULATE ALL PIPING ABOVE THE CEILING.
- CONTRACTOR SHALL COORDINATE WORK WITH ALL TRADES.
- CONTRACTOR SHALL USE CAST IRON PIPING FOR ALL DRAINAGE ABOVE CEILING AREAS.
- . PROVIDE TRAP PRIMER FOR ALL PLUMBING FIXTURES. ONE TRAP PREMIER PER TRAP. COLD WATER CONNECTIONS TO TRAP PRIMERS NOT SHOWN ON PLANS FOR REASONS OF CLARITY
- . CONTRACATOR SHALL COORDINATE CLEANOUT COVER PLATES WITH ARCHITECT.
- . CONTRACTOR SHALL TAG ALL PIPING WITH STICKERS DESIGNATING FLUID TYPE



PIPE INSULATION DETAIL NOTE(S): PROVIDE INSULATION ON INTERIOR COLD AND HOT WATER PIPING, CONDENSATE DRAIN PIPE, AND STORM PIPE. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION REGARDING INSULATION. INSTALL ITEMS PER SPECIFICATIONS AND MANUFACTURER'S INSTRUCTIONS. MAINTAIN VAPOR BARRIER ON COLD WATER AND CONDENSATE PIPING BY MEANS OF SEALANT AND TAPE. FLAME SPREAD AND SMOKE-DEVELOPED INDEXES SHALL NOT EXCEED 25/50. SEAL EXPOSED ENDS OF FIBERGLASS INSULATION WITH ADHESIVE MASTIC.



# WATER HEATER DETAIL NOTES 1. PROVIDE RAIN CAP AT FLUE TERMINATION THROUGH

- 2. PROVIDE RECIRCULATION PUMP P-1 AS SHOWN. SUPPORT PUMP FROM WALL OR STRUCTURE ABOVE. THE PUMP SHALL BE CONTROLLED BY A TIME CLOCK SET FOR THE OCCUPIED HOURS OF THE STORE AND AN AQUASTAT INSTALLED ON THE RECIRC. PIPE UPSTREAM FROM THE PUMP.
- 3. PROVIDE LINE-SIZE CHECK VALVES IN COLD AND RECIRCULATION WATER PIPES AS SHOWN.
- 4. PROVIDE EXPANSION TANK ET-1 AS SHOWN. SUPPORT
- TANK FROM WALL OR STRUCTURE ABOVE. 5. PROVIDE A SCREENED AIR INTAKE ABOVE THE ROOF PER

THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

- FINISHED CEILING 6. PROVIDE PRESSURE RELIEF VALVE. PIPE PRESSURE
  - RELIEF VALVE TO FLOOR DRAIN.
  - 7. INSULATE EXPOSED AND CONCEALED HOT AND COLD WATER PIPING TO WITHIN 3" OF THE WATER HEATER.
  - 8. PROVIDE LINE-SIZE BALL VALVES IN COLD AND HOT WATER PIPES AS SHOWN.
  - 9. IF THE COLD, HOT, OR GAS PIPE LINE SIZE AS SHOWN ON THE PLUMBING PLANS IS LARGER THAN THE WATER HEATER CONNECTION SIZES, PROVIDE REDUCERS WITHIN 6" OF THE WATER HEATER.
  - 10. PIPE PRESSURE RELIEF VALVE DISCHARGE AND WATER HEATER CONDENSATE DRAIN TO THE FLOOR DRAIN. DRAIN THROUGH AN AIR GAP.
  - 11. PROVIDE AN EXPOSED DRIP LEG AND LINE-SIZE GAS VALVE ON THE GAS SERVICE TO THE WATER HEATER.
  - 12. PROVIDE A 4"Ø PVC FLUE FROM WATER HEATER TO THE POINT OF DISCHARGE.
  - 13. PROVIDE A 4"Ø PVC INTAKE PIPE FROM THE WATER HEATER TO THE POINT OF INTAKE.

# SRI LAKSHMI TEMPLE **NEW ADDITION**

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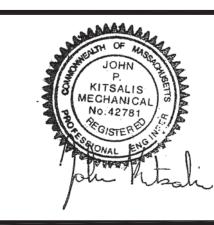
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PLUMBING - NEW MAIN LEVEL SUPPLY PLAN

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| AS NOTED | TJL      | JPK         |

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WATER HEATER INSTALLATION NOTES

SAFETY

PAN

COLD WATER SUPPLY TO DWH

- A. CLEAN INLET STRAINERS AFTER CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO TURNOVER OF THE BUILDING TO THE OWNER.
- B. INSTALL PIPING WITH AS FEW ELBOWS AS POSSIBLE.
- C. MAINTAIN REQUIRED CLEARANCES TO COMBUSTIBLE MATERIALS.

( DWH-1

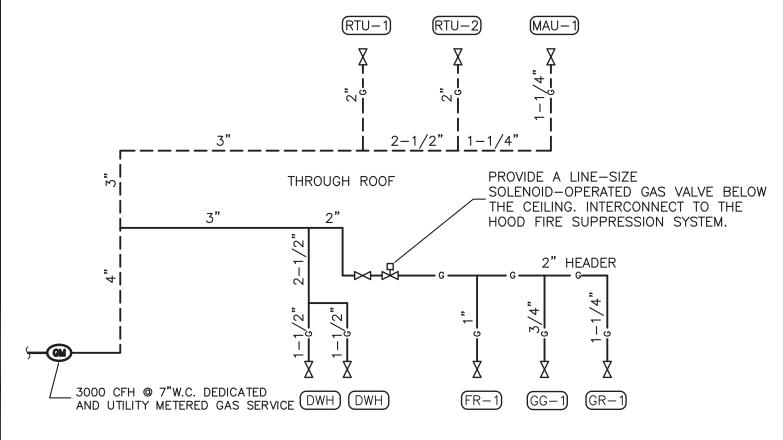
- D. ADJUST WATER HEATER TO A SETPOINT OF 110° F.
  - WATER HEATER DETAIL NOT TO SCALE

FINISHED FLOOR

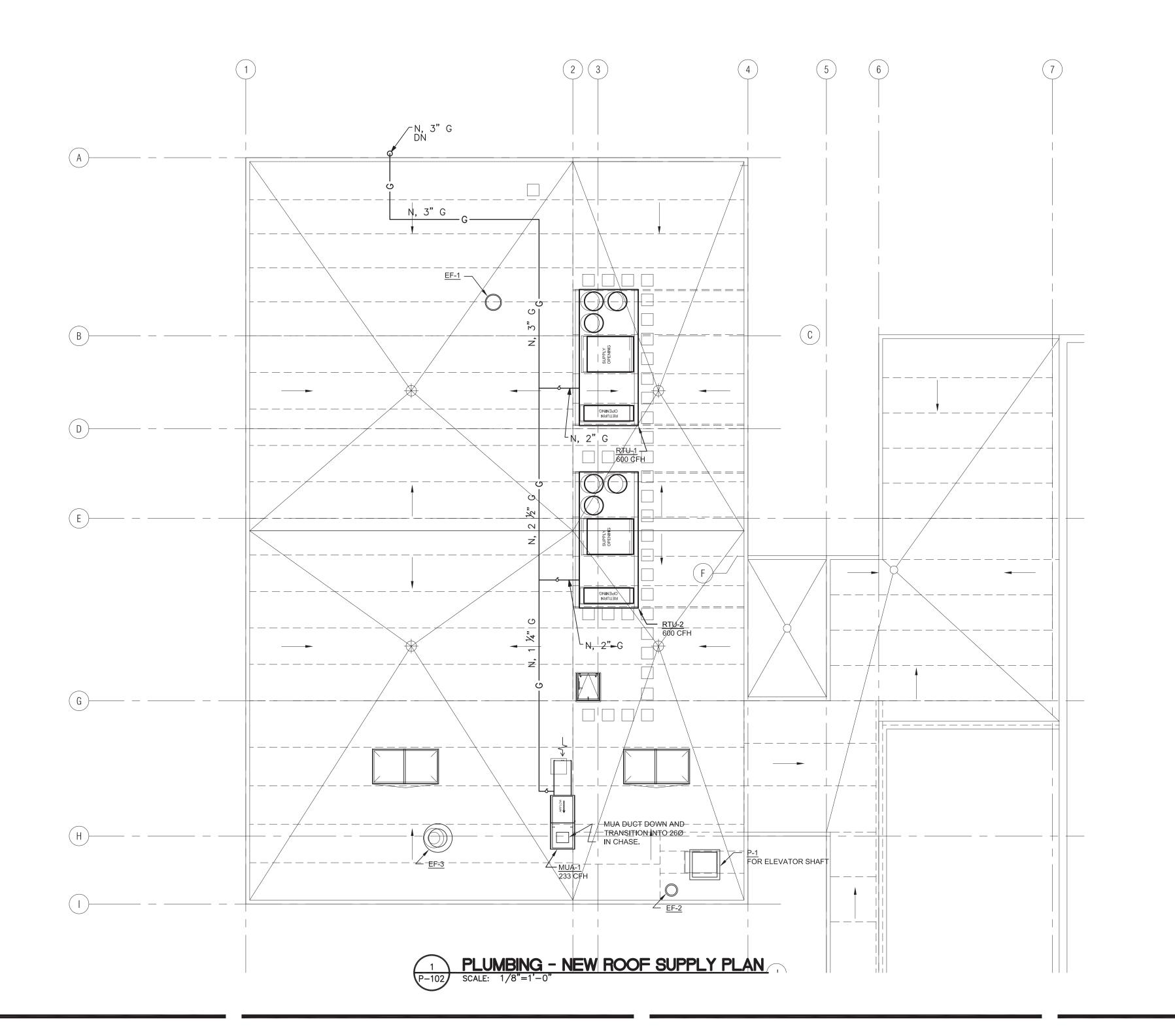
- CONTRACTOR SHALL INSULATE ALL PIPING ABOVE THE CEILING.
- CONTRACTOR SHALL COORDINATE WORK WITH ALL TRADES.
- . CONTRACTOR SHALL USE CAST IRON PIPING FOR ALL DRAINAGE ABOVE CEILING AREAS.
- -. PROVIDE TRAP PRIMER FOR ALL PLUMBING FIXTURES. ONE TRAP PREMIER PER TRAP. COLD WATER CONNECTIONS TO TRAP PRIMERS NOT SHOWN ON PLANS FOR REASONS OF CLARITY
- 5. CONTRACATOR SHALL COORDINATE CLEANOUT COVER PLATES WITH ARCHITECT.
- CONTRACTOR SHALL TAG ALL PIPING WITH STICKERS DESIGNATING FLUID TYPE

| CONNECTED GAS LOAD |       |               |                                      |  |  |  |  |  |  |  |  |  |  |
|--------------------|-------|---------------|--------------------------------------|--|--|--|--|--|--|--|--|--|--|
| FIXTURE            | TAG   | LOAD<br>[MBH] | EQUIVALENT LENGTH<br>FROM METER [FT] |  |  |  |  |  |  |  |  |  |  |
| DOMESTIC WATER HTR | DWH   | 399           | 120                                  |  |  |  |  |  |  |  |  |  |  |
| DOMESTIC WATER HTR | DWH   | 399           | 120                                  |  |  |  |  |  |  |  |  |  |  |
| FLATOP GAS GRILLE  | GG-1  | 60            | 140                                  |  |  |  |  |  |  |  |  |  |  |
| GAS RANGE          | GR-1  | 225           | 150                                  |  |  |  |  |  |  |  |  |  |  |
| ROOFTOP UNIT       | RTU-1 | 600           | 55                                   |  |  |  |  |  |  |  |  |  |  |
| ROOFTOP UNIT       | RTU-2 | 600           | 45                                   |  |  |  |  |  |  |  |  |  |  |
| MAKEUP AIR UNIT    | MAU-1 | 233           | 200                                  |  |  |  |  |  |  |  |  |  |  |
| FRYER              | FR-1  | 122           | 130                                  |  |  |  |  |  |  |  |  |  |  |
| FOOD WARMER        | FW-1  | _             | _                                    |  |  |  |  |  |  |  |  |  |  |
| TOTAL              |       | 2,638         | MAX: 200                             |  |  |  |  |  |  |  |  |  |  |

1. PRESSURE REQUIRED AFTER METER: 7" W.C. 2. DISTANCES ARE APPROXIMATE



GAS DISTRIBUTION DIAGRAM



SECTION 15198 - NATURAL GAS PIPING

PART 1 - GENERAL 1.1 SECTION REQUIREMENTS

A. Quality Assurance: Comply with NFPA 54 and the Plumbing Code. PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND SPECIALTIES

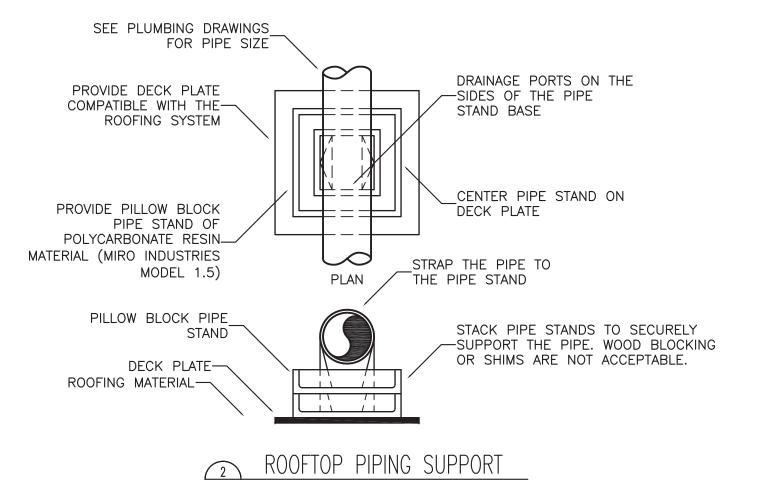
A. Steel Pipe: ASTM A 53, Type S (Seamless), Grade B, Schedule 40, plain ends. B. Malleable Iron Threaded Fittings: ASME B16.3, Class 150.

- C. Manual Valves: Comply with standards listed or, if appropriate, to ANSI Z21.15. D. Gas Stops: AGA certified, bronze—body, plug type with bronze plug, for 2—psig or less natural gas. Include AGA stamp, flat or square head or lever handle, and threaded ends complying with ASME B1.20.1.
- E. Gas Valves: 150-psig WOG, cast-iron or bronze body, bronze plug, straightaway pattern, square head, tapered-plug type.
- F. Gas Pressure Regulators: ANSI Z21.18, single stage, steel jacketed, corrosion resistant pressure regulators. Include atmospheric vent, elevation compensator. Regulator pressure ratings, inlet and outlet pressures, and flow volume in cubic feet per hour of natural gas at specific gravity are as indicated. 1. Line Gas Pressure Regulators: Inlet pressure rating not less than system
- pressure.
- G. Flexible Connectors: ANSI Z21.24, copper alloy. H. Strainers: Bronze body, Y-pattern, full size of connecting piping. Include stainless—steel screens with 3/64 inch perforations and a pressure rating of

125-psig- minimum, WOG working pressure.
PART 3 - EXECUTION

- 3.1 INSTALLATION A. Close equipment shutoff valves before turning off gas to premises or section of piping. Perform leakage test as specified to determine that all equipment is
- turned off in affected piping section. B. Install shutoff valve, downstream from gas meter, outside building at gas
- service entrance. C. Install gas stops for shutoff to appliances with NPS 2" or smaller low pressure
- gas supply. D. Drips and Sediment Traps: Install drips at points where condensate may collect. Include outlets of gas meters. Locate where readily accessible to permit cleaning and emptying. Do not install where condensate would be subject to freezing.
- E. Install gas piping at uniform slope of 0.1 percent upward toward risers. F. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.
- G. Connect branch piping from top or side of horizontal piping.
- H. Install strainers on supply side of each control valve, gas pressure regulator, solenoid valve, and elsewhere as indicated.
- I. Install valves in accessible locations, protected from damage. Tag valves with metal tag indicating piping supplied. Attach tag to valve with metal chain. J. Install gas valve upstream from each gas pressure regulator. Where two gas—
- pressure regulators are installed in series, valve is not required at second K. Connect gas piping to equipment and appliances with shutoff valves and unions.
- Install gas valve upstream from and within 72 inches of each appliance using gas. Install union or flanged connection downstream from valve. L. Inspect, test, and purge piping according to NFPA 54, Part 4, "Gas Piping Inspection, Testing, and Purging", and requirements of authorities having

END OF SECTION 15198



# SRI LAKSHMI TEMPLE **NEW ADDITION**

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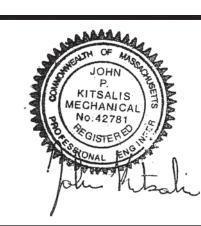


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PLUMBING - NEW ROOF SUPPLY PLAN

| Scale    | Drawn by | Verified by |
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| AS NOTED | TJL      | JPK         |
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P-102

- CONTRACTOR SHALL INSULATE ALL PIPING ABOVE THE CEILING.
- 2. CONTRACTOR SHALL COORDINATE WORK WITH ALL TRADES.
- 3. CONTRACTOR SHALL USE CAST IRON PIPING

FOR ALL DRAINAGE ABOVE CEILING AREAS.

- 4. PROVIDE TRAP PRIMER FOR ALL PLUMBING FIXTURES. ONE TRAP PREMIER PER TRAP. COLD WATER CONNECTIONS TO TRAP PRIMERS NOT SHOWN ON PLANS FOR REASONS OF CLARITY
- 5. CONTRACATOR SHALL COORDINATE CLEANOUT COVER PLATES WITH ARCHITECT.
- 6. CONTRACTOR SHALL TAG ALL PIPING WITH STICKERS DESIGNATING FLUID TYPE
- 7. CONTRACTOR SHALL NOT CROSS OVER ELECTRICAL ROOM, OR ANY ELECTRICAL EQUIPMENT WITH ANY TYPE OF PLUMBING PIPE. COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES.

#### MASSACHUSETTS STATE PLUMBUNG CODE FOR DETAIL 2/P200:

248 CMR SECTION 10.12: INDIRECT WASTE PIPING (1) INDIRECT WASTES REQUIRED.

(A) FOOD HANDLING ESTABLISHMENTS.

1. FOOD HANDLING ESTABLISHMENTS ENGAGED IN THE STORAGE,
PREPARATION, SELLING, SERVING, PROCESSING, OR IN ANY MANNER THE
HANDLING OF FOOD SHALL PROVIDE: INDIRECT WASTE PIPING FOR
REFRIGERATORS, REFRIGERATOR COILS, WALK—IN FREEZERS OR COOLERS,
ICE COMPARTMENTS, ICE MAKING MACHINES, STEAM KETTLES, STEAM
TABLES, POTATO PEELERS, EGG BOILERS, COFFEE URNS, COFFEE, SODA
AND BEVERAGE TRAYS AND ALL SIMILAR TYPES OF ENCLOSED
EQUIPMENT.

2. DISHWASHING PRE-RINSE SINKS INSTALLED IN COMBINATION WITH A COMMERCIAL DISHWASHER, POT SINKS, SCULLERY SINKS AND OTHER SINKS ARE EXCLUDED FROM THE INDIRECT WASTE REQUIREMENT AND SHALL BE DIRECTLY CONNECTED TO THE SANITARY DRAINAGE SYSTEM.

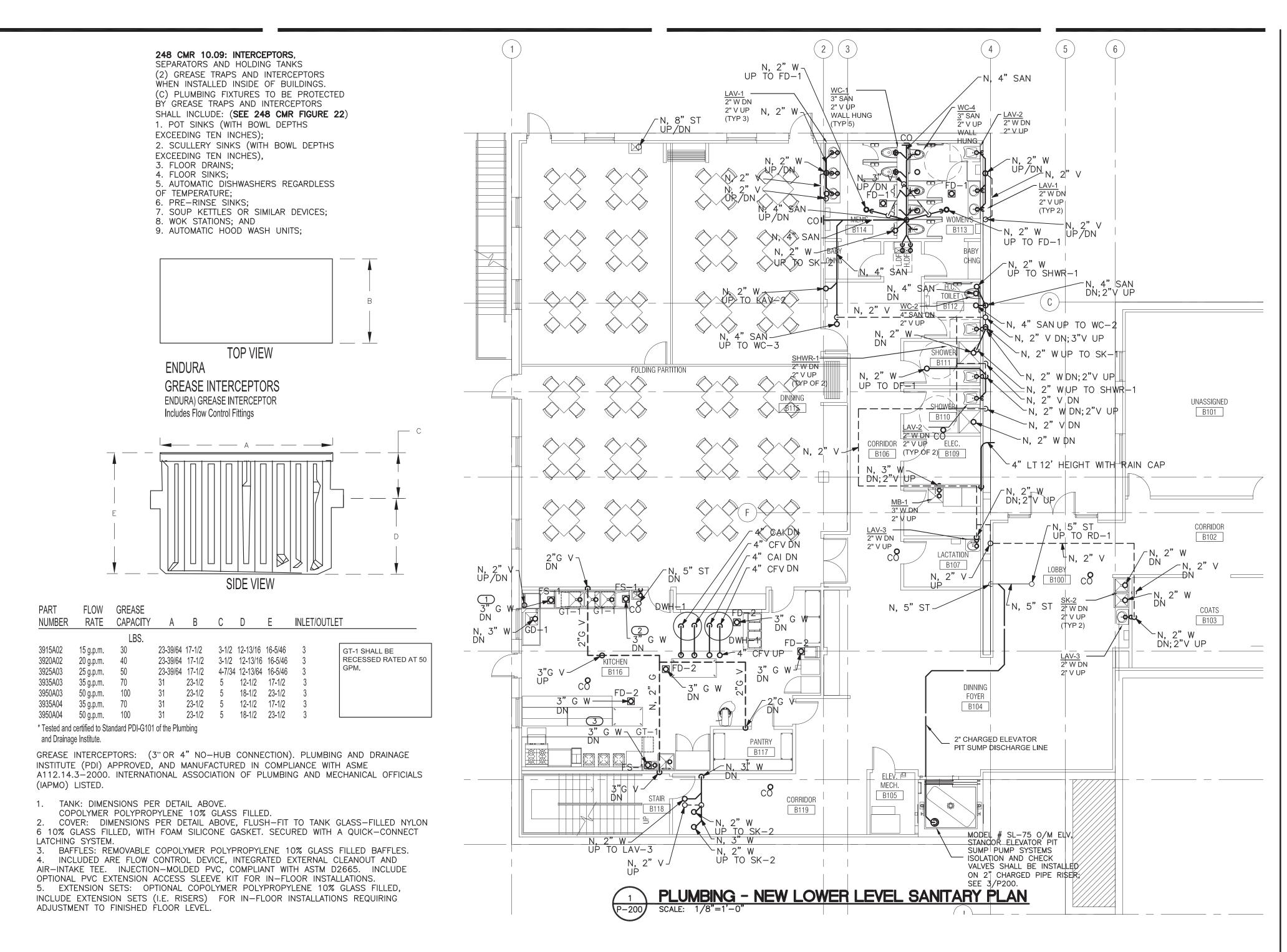
3. SINGLE COMPARTMENT CULINARY/PRODUCE SINKS OR INDIVIDUAL CULINARY/PRODUCE SINK COMPARTMENTS SPECIFICALLY DESIGNATED AND \*LABELED FOR PRODUCE PREPARATION SHALL CONVEY THE WASTE FROM THESE FIXTURES OR COMPARTMENTS INDIRECTLY TO A PROPERLY TRAPPED AND VENTED FLOOR SINK. THE PRODUCE PREPARATION COMPARTMENT SHALL BE AUTHORIZED AND APPROVED BY THE LOCAL BOARD OF HEALTH OR OTHER DESIGNATED MUNICIPAL HEALTH OFFICIAL.

4. THE PRODUCE PREPARATION LABEL MUST BE A LAMINATED SIGN WITH LETTERS TWO—INCHES IN HEIGHT THAT READS: "THIS COMPARTMENT ONLY IS DESIGNATED FOR PRODUCE PREPARATION."

5. ALL INDIRECT WASTE SHALL DISCHARGE THROUGH AN AIR GAP OR AIR BREAK INTO A PROPERLY TRAPPED AND VENTED RECEPTOR EXCEPT THAT AN AIR GAP IS REQUIRED WHERE THE INDIRECT WASTE PIPE MAY BE UNDER VACUUM (LESS THAN ATMOSPHERIC PRESSURE).

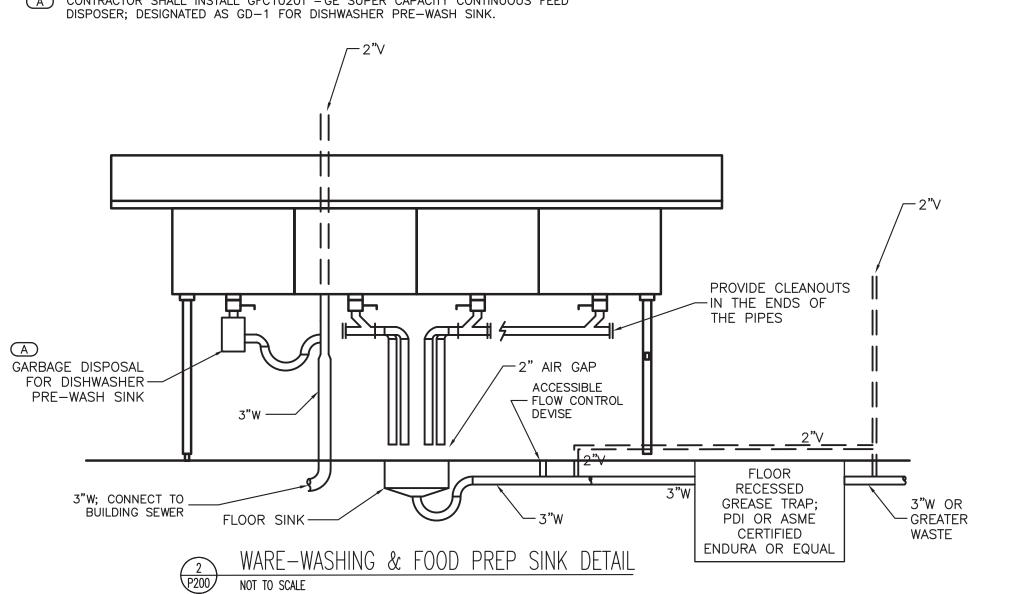
### KEYED NOTES

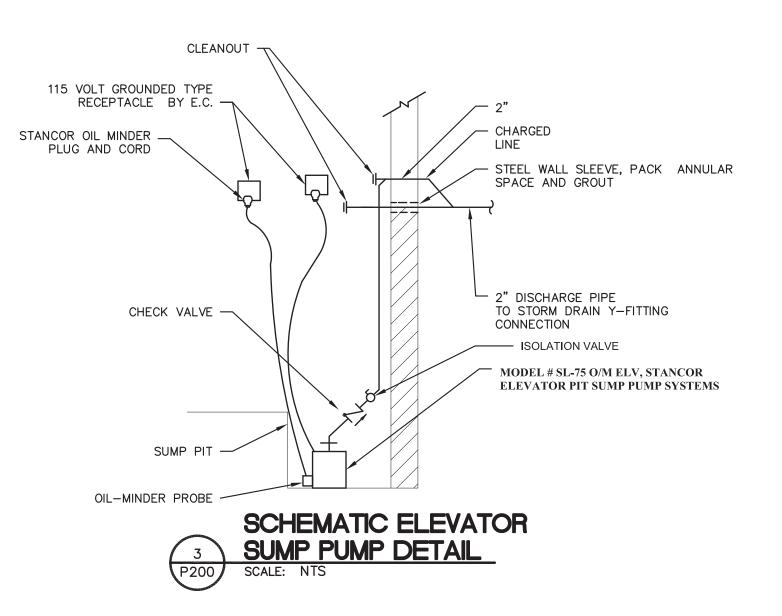
- 1 CONTRACTOR SHALL INSTALL RECESSED 50 GPM
  RATED GREASE TRAP TO HANDLE THE INDIRECT
  WASTE OF THE DISHWASHER. INDIRECT WASTE PIPING
  SHALL BE IN ACCORDANCE TO THE EQUIPMENT
  SCHEDULE SHOWN ON 3/P300.
- CONTRACTOR SHALL INSTALL RECESSED 50 GPM RATED GREASE TRAP TO HANDLE THE INDIRECT WASTE OF THE THREE COMPARTMENT SINK AND HAND SINK. INDIRECT WASTE PIPING SHALL BE IN ACCORDANCE TO THE EQUIPMENT SCHEDULE SHOWN ON 3/P300.
- CONTRACTOR SHALL INSTALL RECESSED 50 GPM RATED GREASE TRAP TO HANDLE THE INDIRECT WASTE OF THE STEAMER AND HAND SINK. INDIRECT WASTE PIPING SHALL BE IN ACCORDANCE TO THE EQUIPMENT SCHEDULE SHOWN ON 3/P300.
- 4 CONTRACTOR SHALL INSTALL CLOTHES WASHER STANDPIPE RECEPTOR WITH TRAP AND TRAP PRIMER FROM ADJACENT MOP BASIN 3" WASTE DRAINAGE



#### KEYED NOTES

A CONTRACTOR SHALL INSTALL GFC1020T - GE SUPER CAPACITY CONTINUOUS FEED





# SRI LAKSHMI TEMPLE NEW ADDITION

117 WAVERLY STREET ASHLAND, MA 01721



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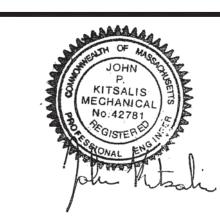


1 MOUNT VERNON STREET WINCHESTER,MA 01890 781-729-6188



Building Systems & Commissioning Engineers

Massachusetts
30 Tumpike Road, Suite #1, Southborough, MA 01772
Tel: (508) 485-4633 Fax: (508) 485-1830



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| Issue                      | Date       |
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| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
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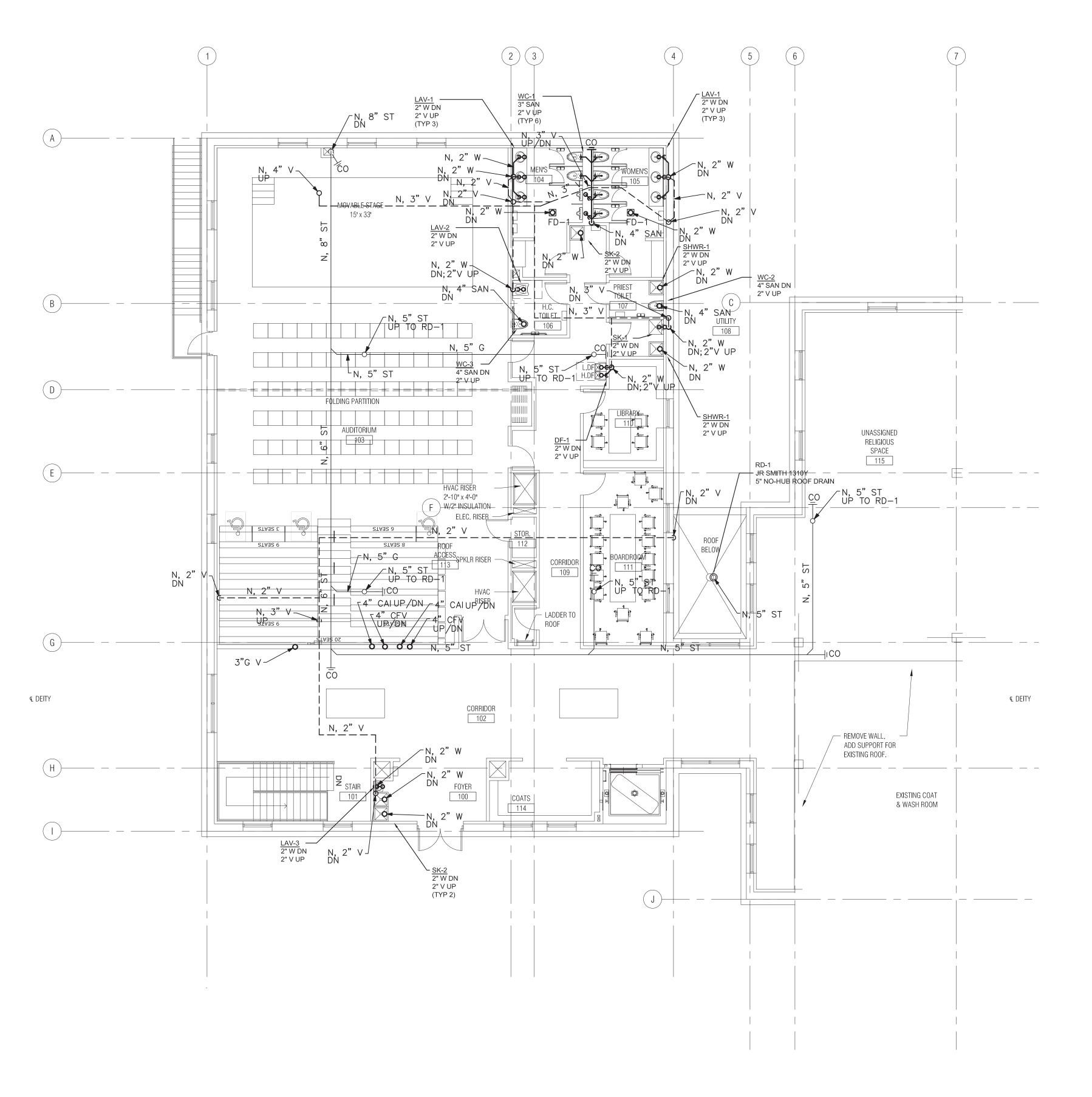
Sheet Title

PLUMBING - NEW LOWER LEVEL SANITARY PLAN

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Sheet #  |          |             |

P-200

- I. CONTRACTOR SHALL INSULATE ALL PIPING ABOVE THE CEILING.
- 2. CONTRACTOR SHALL COORDINATE WORK WITH ALL TRADES.
- 3. CONTRACTOR SHALL USE CAST IRON PIPING FOR ALL DRAINAGE ABOVE CEILING AREAS.
- 4. PROVIDE TRAP PRIMER FOR ALL PLUMBING FIXTURES. ONE TRAP PREMIER PER TRAP. COLD WATER CONNECTIONS TO TRAP PRIMERS NOT SHOWN ON PLANS FOR REASONS OF CLARITY
- 5. CONTRACATOR SHALL COORDINATE CLEANOUT COVER PLATES WITH ARCHITECT.
- 6. CONTRACTOR SHALL TAG ALL PIPING WITH STICKERS DESIGNATING FLUID TYPE



PLUMBING - NEW MAIN LEVEL SANITARY PLAN

SCALE: 1/8"=1'-0"

# SRI LAKSHMI TEMPLE NEW ADDITION

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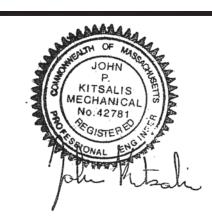
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| Issue                      | Date       |
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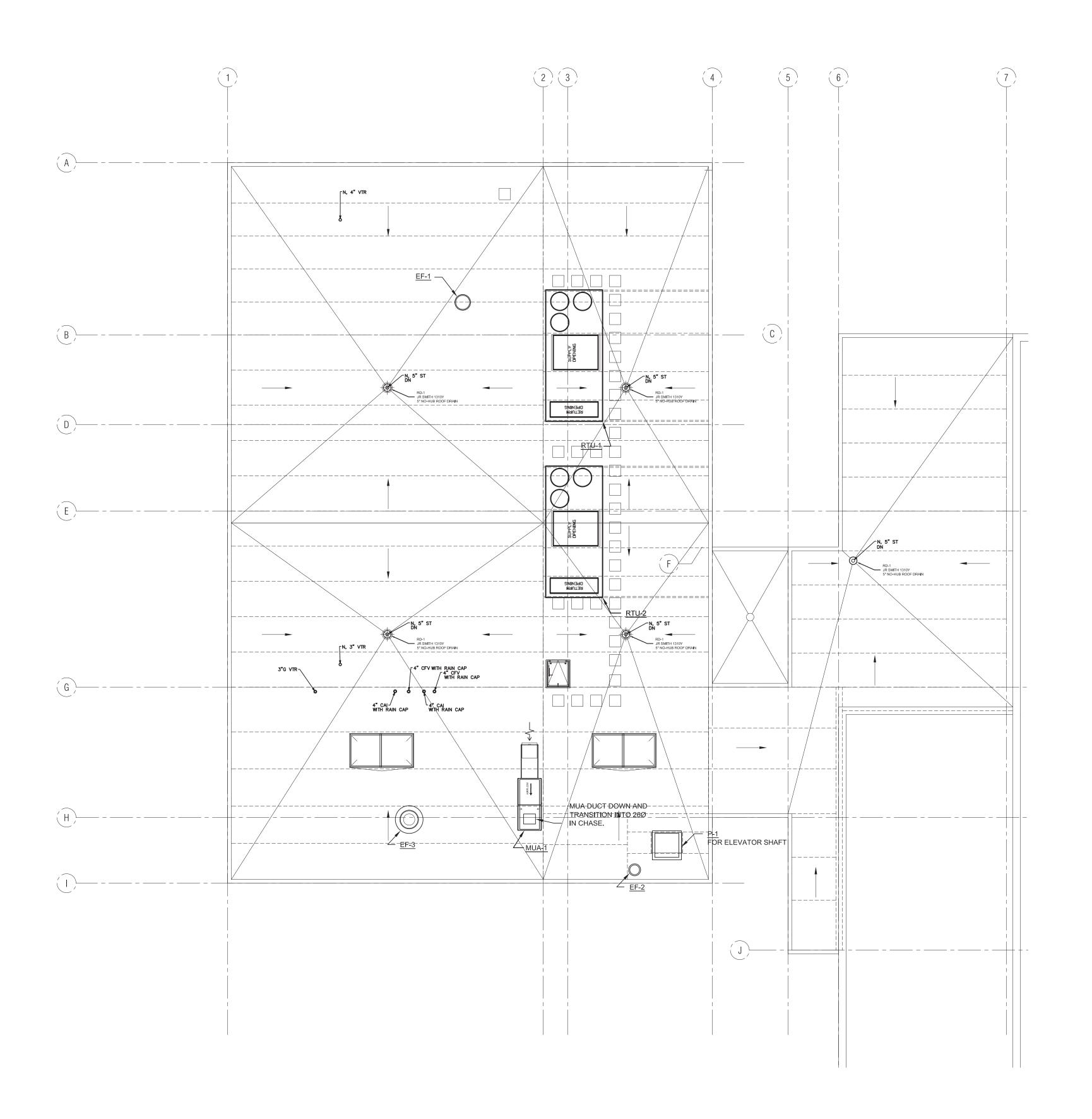
PLUMBING - NEW MAIN LEVEL SANITARY PLAN

AS NOTED Drawn by Verified by JPK

P-201

ect #

- . CONTRACTOR SHALL INSULATE ALL PIPING ABOVE THE CEILING.
- 2. CONTRACTOR SHALL COORDINATE WORK WITH ALL TRADES.
- 3. CONTRACTOR SHALL USE CAST IRON PIPING FOR ALL DRAINAGE ABOVE CEILING AREAS.
- FIXTURES. ONE TRAP PRIMER FOR ALL PLUMBING FIXTURES. ONE TRAP PREMIER PER TRAP. COLD WATER CONNECTIONS TO TRAP PRIMERS NOT SHOWN ON PLANS FOR REASONS OF CLARITY
- 5. CONTRACATOR SHALL COORDINATE CLEANOUT COVER PLATES WITH ARCHITECT.
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# SRI LAKSHMI TEMPLE NEW ADDITION

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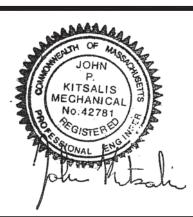
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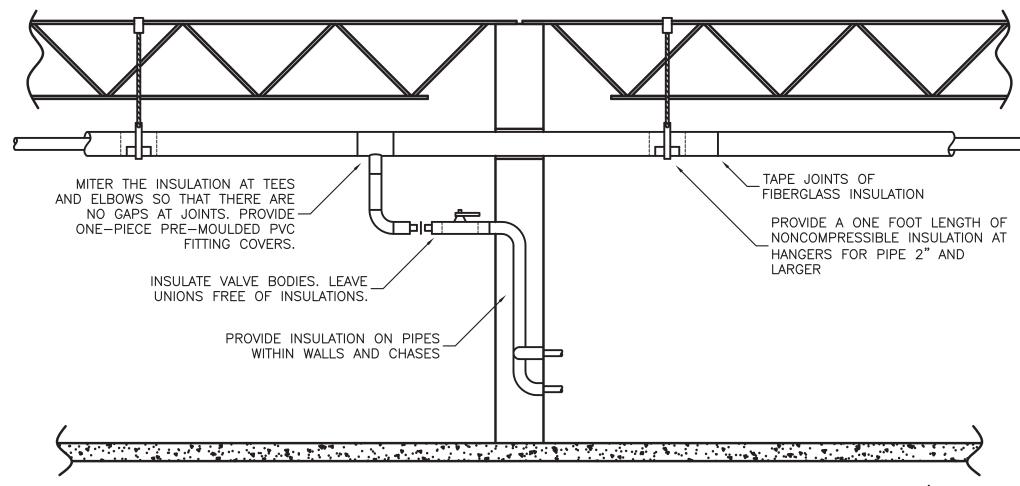
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# PLUMBING - ROOF STORM DRAINAGE PLAN

Scale Drawn by Verified by JPK

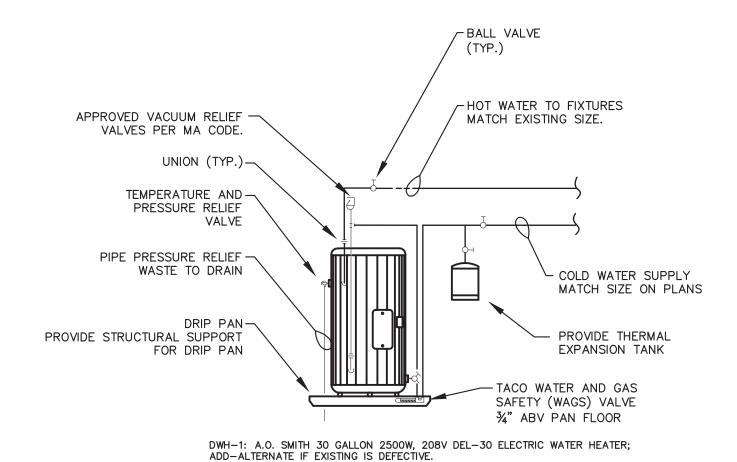
P-202

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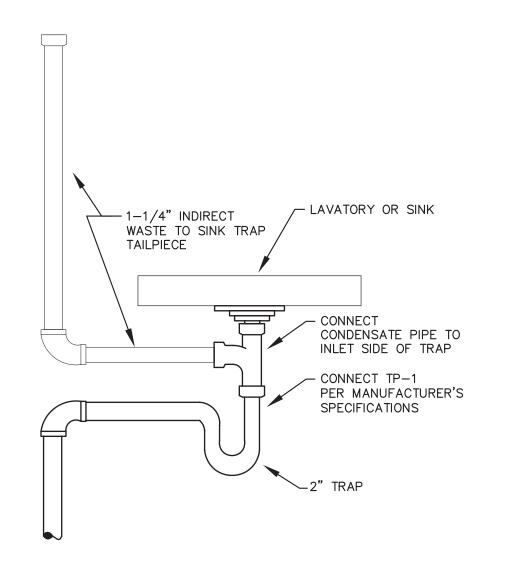


PROVIDE INSULATION ON INTERIOR COLD AND HOT WATER PIPING, CONDENSATE DRAIN PIPE, STORM PIPE AND UP TO 5' FROM THE ROOFLINE PENETRATION FOR VENT THRU ROOF PIPE. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION REGARDING INSULATION. INSTALL ITEMS PER SPECIFICATIONS AND MANUFACTURER'S INSTRUCTIONS. MAINTAIN VAPOR BARRIER ON COLD WATER AND CONDENSATE PIPING BY MEANS OF SEALANT AND TAPE. FLAME SPREAD AND SMOKE-DEVELOPED INDEXES SHALL NOT EXCEED 25/50. SEAL EXPOSED ENDS OF FIBERGLASS INSULATION WITH ADHESIVE MASTIC.

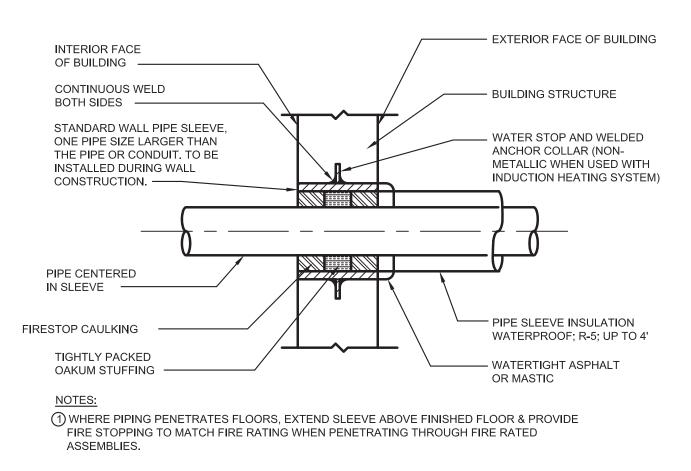




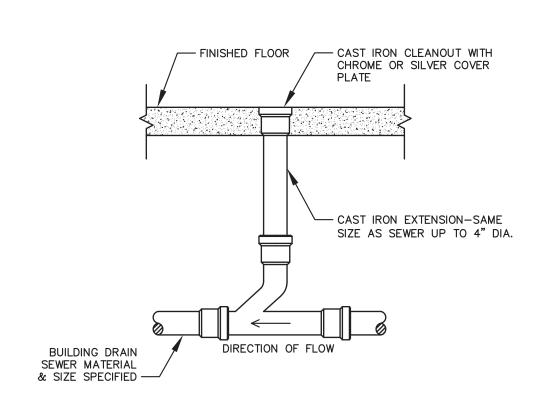
PLUMBING - DOMESTIC HOT WATER HEATER DETAIL SCALE: NTS











CONSISTING OF INTERLOCKING

RUBBER LINK SHAPE TO CON-TINUOUSLY FILL IN THE ANNULAR

SPACE BETWEEN PIPE & OR WALL

BE DELRIN PLASTIC. BOLTS AND

NUTS SHALL BE 18.8 STAINLESS STEEL. SEALING ELEMENT SHALL

② ANCHOR/STOP PLATE TO BE USED

ONLY WHERE PIPING PENETRATES

- ROOF MEMBRANE

-THICKNESS VARIES

BE EPDM RUBBER.

FLASHING

- DISCONTINUE

PLUMBING - PIPE THROUGH ROOF DETAIL

INSULATION AT

SCALE: NTS; CONFIRM FLASHING AND COUNTER FLASHING WITH GC, ROOFER AND ARCHITECT.

5' BELOW ROOF SLAB

BY GENERAL

CONTRACTOR

FOUNDATION WALLS.

OPENING. PRESSURE PLATES SHALL

WEATHER-PROOF INSULATION —

DRAW BAND

COUNTER-

FLASHING

RIGID

BY PLUMBING

SUBCONTRACTOR -

INSULATION-

STANDARD

WEIGHT

SLEEVE

STEEL

PIPE

SEAL

BLY

SEE

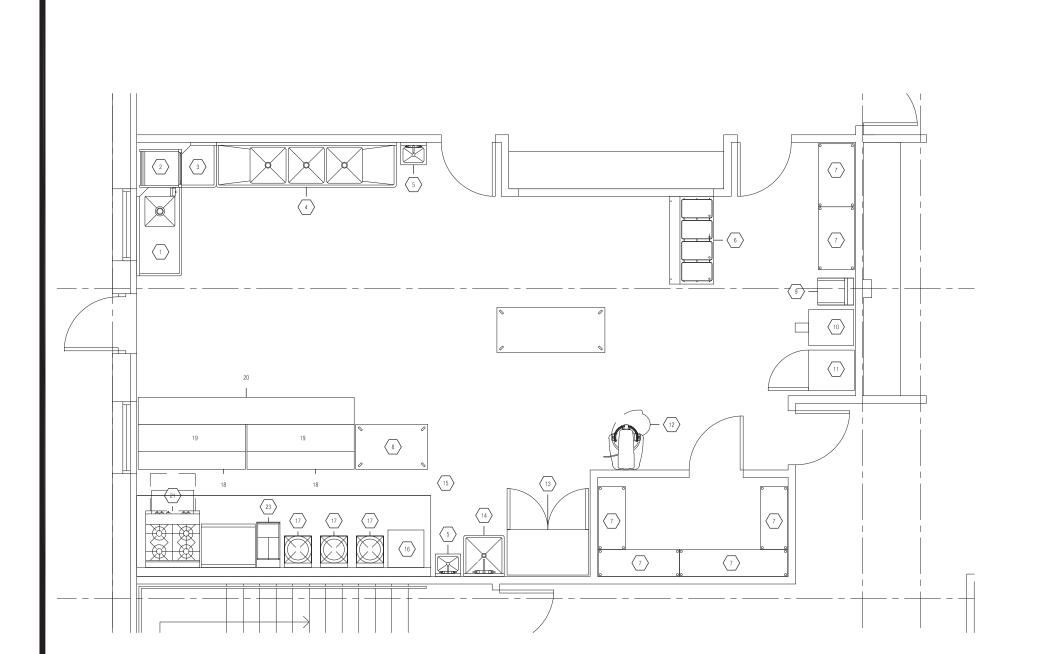
ASSEM-

NOTE (1)

ANCHOR & WATER STOP PLATE, SEE

NOTE 2 -

PLUMBING - INTERIOR FLOOR CLEANOUT DETAIL SCALE: NTS



|      |      |                                   |      |      |     | SCHE     | OULE OF E   | QUII | PME      | VT      |        |        |      |     |         |      |           |                  |               |                |                 |      |                  |                |                |
|------|------|-----------------------------------|------|------|-----|----------|-------------|------|----------|---------|--------|--------|------|-----|---------|------|-----------|------------------|---------------|----------------|-----------------|------|------------------|----------------|----------------|
| Item | Qty. | Description                       |      |      |     | Ele      | ectrical    |      |          |         |        |        | Wate | r   |         | Wast | :e        | Natural Gas      |               |                |                 | Flue | Manufacturer     | Model No.      | Notes/Remarks: |
|      |      |                                   | Amps | KW   | НР  | Volts    | Conn        | Туре | e Min. A | mp Hert | z Phas | e Colo | Hot  | AFF | Direct  | AFF  | Indirect  | AFF Gas Pressure | Gas Flow (CFH | Onnection Size | e Gas Regulator | Size |                  |                |                |
| 1    | 1    | Dishtable, Soiled                 |      |      |     |          |             |      |          |         |        | 1/2'   | 1/2" | 18" |         |      | 1-1/2 IPS | 9"               |               |                |                 |      | Advance Tabco    | DTS-S60-60L    |                |
| 2    | 1    | Dishwasher, Door Type             | 36.6 | 15.8 | 1   | 208-230v |             |      | 50       | 60      | 3      | 3/4'   | 3/4" | 18" | 3/4 FP  | Г    | 1-1/2 MPT | 9"               |               |                |                 |      | Hoshizaki        | JWE-620UA-6B   |                |
| 3    | 1    | Dishtable, Cleaned                |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  |               |                |                 |      | Advance Tabco    | DTC-S30-24R    |                |
| 4    | 1    | Sink, (3) Compartment*(2 Faucets) |      |      |     |          |             |      |          |         |        | 1/2'   | 1/2" | 18" |         |      | 2"        | 9"               |               |                |                 |      | Turbo Air        | TSB-3-D2       |                |
| 5    | 2    | Hand Sink(2)                      |      |      |     |          |             |      |          |         |        | 1/2'   | 1/2" | 18" |         |      | 2"        | 9"               |               |                |                 |      | Turbo Air        | TSS-1-H        |                |
| 6    | 1    | Serving Counter                   | 14.4 |      |     | 208-240v | NEMA 6-20   |      | 25       | 60      | 3      |        |      |     |         |      |           |                  |               |                |                 |      | Duke Mfg.        | E304SW         |                |
| 7    | 6    | Shelving Unit                     |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  |               |                |                 |      | AMCO Corp        | 1428CP         |                |
| 8    | 2    | Stainless Steel Table             |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  |               |                |                 |      | Seidman Brothers | Prep Table     |                |
| 9    | 1    | Rice Mixer                        |      |      | 3/4 | 200-240  |             |      | 50       | 60      | 3      |        |      |     |         |      |           |                  |               |                |                 |      |                  |                |                |
| 10   | 1    | Mixer Grinder                     | 37.0 |      | 10  | 208      | NEMA L2130F |      | 50       | 60      | 3      |        |      |     |         |      |           |                  |               |                |                 |      | Hobart           | 4246+ Build-Up |                |
| 11   | 1    | Freezer, Reach-In                 | 7.8  |      | 1/2 | 115v     | NEMA 5-15P  |      |          | 60      | 1      |        |      |     |         |      |           |                  |               |                |                 |      | Turbo Air        | TSF-23SD       |                |
| 12   | 1    | Food Mixer                        | 5.7  |      | 3/4 | 200-240v |             |      | 50       | 60      | 3      |        |      |     |         |      |           |                  |               |                |                 |      | Hobart           | HL300-1        |                |
| 13   | 1    | Refrigerator                      | 9.2  |      | 1/2 | 115v     | NEMA 5-15P  |      |          | 60      | 1      |        |      |     |         |      |           |                  |               |                |                 |      | Turbo Air        | TSF-23SD       |                |
| 14   | 1    | Hand Sink                         |      |      |     |          |             |      |          |         |        | 1/2'   | 1/2" | 18" |         |      | 2"        | 9"               |               |                |                 |      | Turbo Air        | TSB-1-N        |                |
| 15   | 1    | Exhaust Hood                      |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  |               |                |                 |      |                  |                |                |
| 16   | 1    | Steamer                           | 46.1 | 15   |     | 208v     |             |      | 50       | 60      | 3      | 1/2'   | 1/2" | 18" | 1/2" NF | Т    | 2"        | 9"               |               |                |                 |      | Solaris          | EPX-5-S        |                |
| 17   | 1    | Stock Pot                         |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  | 79            | 3/4"           | SPECIFIED       | 3/4" | Turbo Air        | TASP-18        | 79,000 BTU     |
| 18   | 1    | Work Top Cooler                   | 7.0  |      | 1/3 |          |             |      |          | 60      | 1      |        |      |     |         |      |           |                  |               |                |                 |      |                  |                |                |
| 19   | 2    | Double Overshelf                  |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  |               |                |                 |      |                  |                |                |
| 20   | 1    | Dish Cabinet                      |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  |               |                |                 |      | Advance Turbo    | DC-812         |                |
| 21   | 1    | Range, Gas (heavy-duty)           |      |      |     | 208-240v |             |      |          | 60      | 1      |        |      |     |         |      |           | 7"               | 225           | 1-1/4"         | SPECIFIED       | 5"   | Southbend        | P36D-XX        | 225,000 BTU    |
| 22   | 1    | Griddle, Gas                      |      |      |     |          |             |      |          |         |        |        |      |     |         |      |           |                  | 60            | 3/4" NPT       | SPECIFIED       |      | Star Mfg.        | 636TD          | 60,000 BTU     |
| 23   | 1    | Fryer                             |      |      |     | 120      |             |      |          | 60      | 1      |        |      |     |         |      |           |                  | 122           | 3/4" NPT       | SPECIFIED       |      | Pitco Frialator  | 45C+           | 122,000 BTU    |

KITCHEN APPLIANCE SCHEDULE - EQUIPMENT BY OWNER, COMPLETE INSTALLATION BY CONTRACTOR



PLUMBING - KITCHEN EQUIPMENT REQUIREMENT SPREADSHEET

P-300 SCALE: NTS

# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



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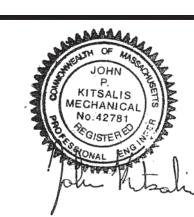
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|----------------------------|------------|
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PLUMBING - SCHEDULES **AND DETAILS** 

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Shoot #  |          |             |

NOTE: SEE 2/P-300 FOR LOCATION OF EQUIPMENT IN KITCHEN

PLUMBING - KITCHEN LAYOUT AND EQUIPMENT IDENTIFICATION

SCALE: 3/16"=1'-0"

|  | PLUM           | IBING FIXTURE / EQUIF                  | PMENT SCHEDULI               | Ε                            |                               |                                 |                         |                                       |                                  |                            |        |                |                   |           |      |            |             |     |    |             |            |     |
|--|----------------|--|------------------------------|------------------------------|-------------------------------|---------------------------------|-------------------------|---------------------------------------|----------------------------------|----------------------------|--------|----------------|-------------------|-----------|------|------------|-------------|-----|----|-------------|------------|-----|
| Mark   Column   Col   |                |  |                              |                              |                               |                                 |                         |                                       |                                  |                            |        | CONNECTION SIZ | ES                |           |      | FIXTURE UN | NITS (EACH) |     |    | FIXTURE UNI | rs (total) |     |
| Column   C   | TAG            | FIXTURE                                | MANUFACTURER                 | MODEL NUMBER                 |                               |                                 |                         | DESCRIPTION                           |                                  |                            | HW     | CW             | WASTE             | QUANTITY  | CW   | HW         | TOTAL       | SAN | CW | HW          | TOTAL      | SAN |
| ## PROCESS OF THE PRO | WC-1,<br>2,3,4 |  |                              |                              | ALL WCs SHAL<br>TO 19" A.F.F. | LL HAVE WHITE<br>MAX AT ADA H   | SEAT ELON<br>HEIGHT.    | NGATED, OPEN FRO                      | ONT. FOR ADA V                   | WCs MOUNT SEAT 17"         |        | 1-1/2"         | 4"                | SEE PLANS | 5    |            | 5           | 6   |    |             |            |     |
| ## 1 196   | LAV-1,<br>2,3  | RESTROOM HAND SINK                     | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | WALL HUNG. V<br>PROVIDE "TRUE | /ITREOUS CHINA<br>BRO" HANDI—LA | FURNISH<br>.V—GUARD     | COMPLETE WITH W<br>#102 KIT.          | WALL HANGER, (                   | GRID STRAINER.             | 1/2"   | 1/2"           | 1-1/2"            | SEE PLANS | 1.5  | 1.5        | 2           | 1   |    |             |            |     |
| 15   15   15   15   15   15   15   15  | HS−1,2         | KITCHEN HAND SINKS                     | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | SEE EQUIPMEN                  | NT SCHEDULE 3                   | 3/P300 ON               | SHEET P300                            |                                  |                            | 1/2"   | 1/2"           | INDIRECT<br>WASTE | SEE PLANS | 1.5  | 1.5        | 2           | 1   |    |             |            |     |
| STATE   STAT   | SK-1,2         | SINK                                   | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | PER OWNERS                    | SPECIFICATIONS                  |                         |                                       |                                  |                            | 1/2"   | 1/2"           | 2"                | SEE PLANS | 1.5  | 1.5        | 2           | 1   |    |             |            |     |
| 102   102   103    | SHWR-          | SHOWER                                 |                              | PER OWNERS<br>SPECIFICATIONS | PER OWNERS                    | SPECIFICATIONS                  |                         |                                       |                                  |                            | 3/4"   | 3/4"           | 2"                | SEE PLANS | 1.5  | 1.5        | 2           | 1   |    |             |            |     |
| Fig. 2019  | MB-1           | MOP BASIN                              |                              | PER OWNERS<br>SPECIFICATIONS | PER OWNERS                    | SPECIFICATIONS                  |                         |                                       |                                  |                            | 1/2"   | 1/2"           | 3"                | SEE PLANS | 2.25 | 2.25       | 3           | 5   |    |             |            |     |
| 10   10   10   10   10   10   10   10  | FD-2           | FLOOR DRAIN                            | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | INSTALL TRAP                  | PRIMER AND TE                   | DRAIN, STA<br>RAP PRIME | NINLESS STEEL MET.<br>R COLD WATER CO | TAL RING AND S                   | STRAINER<br>SHOWN ON PLANS |        |                | 3"                | SEE PLANS |      |            |             | 5   |    |             |            |     |
| ### COMPANIES SPECIAL  | FS-1           | FLOOR SINK                             | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | HEAVY DUTY C                  | CAST IRON FLOC                  | OR SINK W               | ITH STRAINER AND                      | ) GRATE                          |                            |        |                | 3"                | SEE PLANS |      |            |             | 5   |    |             |            |     |
| SPECIFICATIONS SPECIFICATIONS OF THE COMPANS PROPERTY OF THE PROPERTY OF THE COMPANS PROPERTY OF THE COMPANS PROPERTY OF THE PROPERTY OF THE COMPANS SPECIFICATIONS SPECIFI | SK             | THREE COMPARTMENT SINK                 | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | PER OWNERS                    | SPECIFICATIONS                  |                         |                                       |                                  |                            | 3/4"   | 3/4"           | TO FS-1           | SEE PLANS | 3    | 3          | 4           |     |    |             |            |     |
| ## PLOOK DRAIN ## STEDIFICATIONS ## STEDIFICATIO | SK             | PREP SINK                              |                              | PER OWNERS<br>SPECIFICATIONS | PER OWNERS                    | SPECIFICATIONS                  |                         |                                       |                                  |                            | 3/4"   | 3/4"           | TO FS-1           | SEE PLANS | 3    | 3          | 4           |     |    |             |            |     |
| ### BACKHOW PROVENTER SPECIFICATIONS SPECIFICATIONS VALUE  ###################################   | FD-1           | FLOOR DRAIN                            | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | INSTALL TRAP                  | PRIMER AND TH                   | DRAIN, STA<br>RAP PRIME | INLESS STEEL MET.<br>R COLD WATER CO  | TAL RING AND S<br>ONNECTION, NOT | STRAINER<br>SHOWN ON PLANS |        |                | 2"                | SEE PLANS |      |            |             | 4   |    |             |            |     |
| HB-1 FREZE PROOF HOSE PER OWNERS PER OWNERS PER OWNERS SPECIFICATIONS  | BFP-1          | REDUCED PRESSURE<br>BACKFLOW PREVENTER | PER OWNERS<br>SPECIFICATIONS | PER OWNERS<br>SPECIFICATIONS | REDUCED PRES                  | SSURE PRINCIPI                  | LE BACKFL               | OW PREVENTER WIT                      | /ITH AUTOMATIC [                 | DIFFERENTIAL RELIEF        |        | 2-1/2"         |                   | SEE PLANS |      |            |             |     |    |             |            |     |
| BIBB   | RH-1           | FREEZE PROOF ROOF<br>HYDRANT           | HOEPTNER                     | 2131R                        |                               |                                 |                         |                                       | NTI-SIPHON VACI                  | UUM BREAKER                |        | 3/4"           |                   | SEE PLANS | 1    |            | 1           |     |    |             |            |     |
| P-1 RECIRCULATING PUMP TACO 006-BC4-2PNP DOMESTIC HOT WATER CARTRIDGE—TYPE CIRCULATOR WITH INTEGRAL TIMER AND AQUASTAT 1/2" SEE PLANS  | HB-1           |  |                              |                              | PER OWNERS                    | SPECIFICATIONS                  |                         |                                       |                                  |                            |        | 1/2"           |                   | SEE PLANS |      |            |             |     |    |             |            |     |
| HB-2 FROST FREE LAWN FAUCET ARROWHEAD 455BFP14 PROVIDE COMMERCIAL FROST FREE HYDRANT BOX  GT-1 GREASE TRAP  ENDURA  GT-1 PROVIDE COMMERCIAL FLOOR RECESSED GREASE REMOVAL SYSTEM TYPE GREASE TRAP  THAT IS PDI OR ASME CERTIFIED PER STATE PLUMBING CODE REQUIREMENTS.  TOTALS  TOTALS | ET-1           | EXPANSION TANK                         | AMTROL                       | ST-42VC                      | 18 GALLON TA<br>11 GALLON AC  | ANK VOLUME,<br>CCEPTANCE CAP    | ACITY                   |                                       |                                  |                            |        | 1/2"           |                   | SEE PLANS |      |            |             |     |    |             |            |     |
| GT-1 GREASE TRAP ENDURA GT-1 PROVIDE COMMERCIAL FLOOR RECESSED GREASE REMOVAL SYSTEM TYPE GREASE TRAP 3" SEE PLANS   | P-1            | RECIRCULATING PUMP                     | TACO                         | 006-BC4-2PNP                 | DOMESTIC HOT                  | T WATER CARTRI                  | IDGE-TYPE               | CIRCULATOR WITH                       | H INTEGRAL TIME                  | R AND AQUASTAT             | 1/2"   |                |                   | SEE PLANS |      |            |             |     |    |             |            |     |
| WATER HEATER SCHEDULE  TOTALS  THAT IS PDI OR ASME CERTIFIED PER STATE PLUMBING CODE REQUIREMENTS.  TOTALS  TO | HB-2           | FROST FREE<br>LAWN FAUCET              | ARROWHEAD                    | 455BFP14                     | PROVIDE COM                   | MERCIAL FROS                    | T FREE H                | YDRANT BOX                            |                                  |                            |        | 3/4"           |                   | SEE PLANS |      |            |             |     |    |             |            |     |
| MARK DESCRIPTION MANUEACTURER AND MODEL NO SURPLUER STORAGE INPUT RECOVERY WATER CONN. WEIGHT TANK DIAMETER NOTES  | GT-1           | GREASE TRAP                            | ENDURA                       | GT-1                         | PROVIDE COM                   | MERCIAL FLOO<br>OR ASME CERT    | IR RECESS<br>TIFIED PER | ED GREASE REMON<br>STATE PLUMBING (   | JVAL SYSTEM T<br>CODE REQUIREM   | TYPE GREASE TRAP<br>MENTS. |        |                | 3"                | SEE PLANS |      |            |             |     |    |             |            |     |
|  | WATE           | R HEATER SCHEDULE                      |                              |                              |                               |                                 |                         |                                       |                                  |                            |        |                |                   |           |      |            | TOTALS      |     |    |             |            |     |
|  | MARK           | DESCRIPTION                            | MANUFACTURE                  | R AND MODEL NO.              | SUPPLIER                      | STORAGE                         | INPUT<br>MBH            | RECOV                                 | OVERY                            | WATER CONN.                | WEIGHT | TANK DIAMETER  | ·                 | NOTES     |      |            |             |     |    |             |            |     |

2" HOT & COLD 1040 LBS.

399 CFH OF NATURAL GAS

36" DIAMETER



310 GPH @ 70° RISE

DWH-1

TWO GAS FIRED WATER
HEATERS, INTERCONNECTED
SO THAT EITHER CAN BACK
UP THE OTHER BY MANUAL
CONTROL.

PVI PLATINUM 399 L A-PN
399CFH, 70GAL, 310 GPH RECOVERY
MA PLUMBING BOARD APPROVAL CODE:
P3-0312-413

PVI

70 GALLON

399

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# PLUMBING - SCHEDULES AND DETAILS

AS NOTED
Sheet #

P-301

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SECTION 15055 - COMMON PIPING REQUIREMENTS
                                                                                              PART 2 - PRODUCTS
PART 1 - GENERAL
                                                                                              2.1 PIPES AND TUBES
   A. SECTION REQUIREMENTS
                                                                                                A. Hard Copper Tube: ASTM B 88, Types L and M, water tube, drawn temper.
   1. Comply with the requirements of the Building Code
                                                                                                B. PVC Plastic, Water Pipe: ASTM D 1785, Schedule 80, plain ends.
      and the local authority having jurisdiction.
PART 2 - PRODUCTS
                                                                                                A. Wrought Copper, Solder Joint Pressure Fittings: ASME B 16.22.
 2.1 SUPPORTING DEVICES
                                                                                                B. Cast Copper Alloy, Solder Joint Pressure Fittings: ASME B 16.18.
                                                                                                 C. Bronze Flanges: ASME B 16.24, Classes 150 and 300.
   A. Hanger and Pipe Attachments: Factory fabricated with galvanized coatings;
                                                                                                D. Copper Unions: ASME B 16.18, cast copper alloy body, hexagonal stock, with
      nonmetallic coated for hangers in direct contact with copper tubing.
   B. Building Attachments: Powder actuated type, drive pin attachments with pullout
                                                                                                   ball and socket joint, metal to metal seating surfaces, and solder joint,
      and shear capacities appropriate for supported loads and building materials; UL
                                                                                                   threaded, or solder joint and threaded ends. Threads complying with
       listing and FM approval for fire protection systems.
                                                                                                   ASME B 1.20.1.
   C. Mechanical Anchor Fasteners: Insert-type attachments with pullout and shear
                                                                                                E. PVC Plastic, Schedule 80, Socket Type Pipe Fittings: ASTM D 2467.
                                                                                              2.3 JOINING MATERIALS
      capacities appropriate for supported loads and building materials; UL listing and
                                                                                                A. Solder Filler Metal: ASTM B 32, lead free.
      FM approval for fire protection systems.
PART 3 - EXECUTION
                                                                                                B. Brazing Filler Metals: AWS A5.8, alloys to suit system requirements.
 3.1 INSTALLATION
                                                                                                   Solvent Cements: As recommended by manufacturer.
                                                                                                D. Plastic Pipe Seals: ASTM F 477, elastomeric aasket.
   A. Install piping free of sags and bends.
   B. Install fittings for changes in direction and branch connections.
                                                                                             PART 3 — EXECUTION
                                                                                              3.1 VALVE APPLICATIONS
   C. Install sleeves for pipes passing through concrete and masonry walls, gypsum—
      board partitions, and concrete floor and roof slabs.
                                                                                               A. Install gate valves close to main on each branch and riser serving two or more
   D. Exterior Wall, Pipe Penetrations: Mechanical sleeve seals installed in steel or
                                                                                                   plumbing fixtures or equipment connections and where indicated.
      cast iron pipes for wall sleeves.
                                                                                                B. Install gate or ball valves on inlet to each plumbing equipment item, on each
  E. Fire Barrier Penetrations: Seal pipe penetrations with through—penetration
                                                                                                   supply to each plumbing fixture not having stops on supplies, and elsewhere as
       firestop systems.
                                                                                                   indicated.
   F. Install unions adjacent to each valve and at final connection to each piece of
                                                                                                C. Install drain valve at base of each riser, at low points of horizontal runs, and
                                                                                                   where required to drain water distribution piping system.
                                                                                                D. Install swing check valve on discharge side of each pump and elsewhere as
   G. Install dielectric unions and flanges to connect piping materials of dissimilar
      metals in gas piping.
                                                                                                   indicated.
  H. Install dielectric coupling and nipple fittings to connect piping materials of
                                                                                               E. Install ball valves in each hot water circulating loop and discharge side of each
       dissimilar metals in water piping.
                                                                                              3.2 PIPING INSTALLATIONS
   I. Provide full ring escutcheons at plumbing penetrations through walls or ceilings.
      Tightly seal escutcheons to the adjacent surface.
                                                                                                A. Install hangers and supports at intervals indicated in the applicable plumbing
                                                                                                   code and as recommended by pipe manufacturer.
  3.2 HANGERS AND SUPPORTS
   A. Install building attachments within concrete or to structural steel. Install
                                                                                                B. Support vertical piping at each floor.
      additional attachments at concentrated loads, including valves, flanges, guides,
                                                                                              3.3 INSPECTING AND CLEANING
                                                                                               A. Inspect and test piping systems following procedures of authorities having
      strainers, expansion joints, and at changes in direction of piping.
   B. Install powder actuated drive pin fasteners in concrete after concrete is cured.
                                                                                                B. Ćlean and disinfect water distribution piping following procedures of authorities
      Do not use in lightweight concrete or in slabs less than 4 inches thick.
                                                                                             having jurisdiction
END OF SECTION 15140
   C. Install mechanical anchor fasteners in concrete after concrete is cured. Do
      not use in lightweight concrete or in slabs less than 4 inches thick.
   D. Support fire protection system piping independent of other piping.
   E. Load Distribution: Install hangers and supports so piping live and dead loading
      and stresses from movement will not be transmitted to connected equipment.
END OF SECTION 15055
SECTION 15080 - MECHANICAL INSULATION
PART 1 - GENERAL
                                                                                              SECTION 15150 - SANITARY WASTE AND VENT PIPING
 1.1 SECTION REQUIREMENTS
  A. Submittals: Product Data for each type of mechanical insulation.
                                                                                              PART 1 - GENERAL
                                                                                              1.1 SECTION REQUIREMENTS
   B. Quality Assurance: Labeled with maximum flame-spread rating of 25 and
                                                                                                A. Minimum Pressure Requirement for Soil, Waste and Vent: 10 feet head.
      maximum smoke developed rating of 50 according to ASTM E 84.
PART 2 - PRODUCTS
                                                                                                B. Comply with CISPI's "Case Iron Soil Pipe and Fittings Handbook".
 2.1 PIPE INSULATION
                                                                                              PART 2 - PRODUCTS
   A. Preformed Glass Fiber Pipe Insulation: ASTM C 547, Class 1, with factory
                                                                                              2.1 PIPES AND TUBES
                                                                                                A. Cast iron, DWV Pipe: ASTM A 74 Hub and Spigot Pipe Extra Heavy Class.
      applied, all purpose, vapor retarder jacket.
   B. Polyolefin Pipe Insulation: Unicellular polyethylene, preformed pipe insulation.
                                                                                              2.2 FITTINGS
      Comply with ASTM C 534, Type I, except for density.
                                                                                                A. Cast iron, DWV Pipe Fittings: ASTM C 564 Gaskets.
PART 3 - EXECUTION
                                                                                              PART 3 - EXECUTION
 3.1 INSTALLATION
                                                                                              3.1 PIPE APPLICATIONS
  A. Install vapor barriers on insulated pipes with surface operating temperatures
                                                                                                A. For waste and vent piping applications use Hub and Spigot Cast Iron pipe and
      below 60 deg F.
                                                                                              fittings with non-toxic rubber gaskets.
  B. Insulate fittings, valves, and specialties.
                                                                                               3.2 PIPING INSTALLATION
   C. Seal vapor barrier penetrations for hangers, supports, anchors, and other
                                                                                                A. Install cleanout and extension to grade at connection of building sanitary drain
                                                                                                   and building sanitary sewer.
   D. Coat glass fiber pipe insulation ends with vapor barrier coating.
                                                                                                B. Locate drainage piping runouts as close as possible to bottom of floor slab
   E. Roof Penetrations: Apply insulation for interior applications to a point even with
                                                                                                    supporting fixtures or drains.
      the top of the roof flashing.
   F. Exterior Wall Penetrations: For penetrations of below grade exterior walls,
                                                                                               A. Inspect and test piping systems following procedures of authorities having
      terminate insulation flush with mechanical sleeve seal.
                                                                                                    jurisdiction.
                                                                                             END OF SECTION 15150
   G. Interior Walls and Partitions Penetrations: Apply insulation continuously through
      walls and partitions, except fire rated walls and partitions.
   H. Fire Rated Walls and Partitions Penetrations: Terminate insulation at
      penetrations through fire rated walls and partitions. Seal around penetration
      with through penetration firestop systems.
   I. Floor Penetrations: Terminate insulation at the underside of the floor assembly
      and at the floor support at top of floor. Seal around penetration with
      through penetration firestop systems.
                                                                                              SECTION 15198 - NATURAL GAS PIPING
   J. Glass Fiber Insulation Installation: Bond insulation to pipe with adhesive. Seal
                                                                                             PART 1 - GENERAL
      seams and joints with vapor barrier compound.
                                                                                              1.1 SECTION REQUIREMENTS
   K. Interior Piping System Applications: Insulate the following piping systems:
                                                                                               A. Quality Assurance: Comply with NFPA 54 and the Plumbing Code.
     1. Domestic hot and cold water.
                                                                                             PART 2 - PRODUCTS
     2. Exposed sanitary drains of fixtures for the disabled
                                                                                              2.1 PIPE, TUBE, AND SPECIALTIES
     3. Refrigerant piping.
                                                                                                A. Steel Pipe: ASTM A 53, Type S (Seamless), Grade B. Schedule 40, plain ends.
   L. Do not apply insulation to the following systems, materials, and equipment:
                                                                                                B. Malleable Iron Threaded Fittings: ASME B16.3, Class 150.
      . Flexible connectors.
                                                                                                  . Manual Valves: Comply with standards listed or, if appropriate, to ANSI Z21.15.
     2. Fire protection piping systems.
                                                                                                D. Gas Stops: AGA certified, bronze-body, plug type with bronze plug, for 2-psig
      3. Sanitary drainage and vent piping.
                                                                                                   or less natural gas. Include AGA stamp, flat or square head or lever handle,
    4. Chrome plated pipes and fittings, except for plumbing fixtures for the
                                                                                                   and threaded ends complying with ASME B1.20.1
                                                                                                E. Gas Valves: 150-psig WOG, cast-iron or bronze body, bronze plug,
   5. Piping specialties, including air chambers, unions, strainers, check valves, plug
                                                                                                   straightaway pattern, square head, tapered-plug type.
        valves, and flow regulators.
                                                                                               F. Gas Pressure Regulators: ANSI Z21.18, single stage, steel jacketed, corrosion
   M. Pipe Insulation Thickness Application Schedule: Insulate piping with the following
                                                                                                   resistant pressure regulators. Include atmospheric vent, elevation compensator.
      materials and thicknesses:
                                                                                                   Regulator pressure ratings, inlet and outlet pressures, and flow volume in cubic
   1. Domestic Hot and Cold Water: 1/2—inch preformed glass fiber pipe
                                                                                                   feet per hour of natural gas at specific gravity are as indicated.
                                                                                                 1. Line Gas Pressure Regulators: Inlet pressure rating not less than system
   2. Sanitary Drains: 1/2-inch polyolefin pipe insulation.
END OF SECTION 15080
                                                                                                G. Flexible Connectors: ANSI Z21.24, copper alloy.
                                                                                                H. Strainers: Bronze body, Y-pattern, full size of connecting piping. Include
SECTION 15110 - VALVES
                                                                                                   stainless-steel screens with 3/64 inch perforations and a pressure rating of
PART 1 - GENERAL (Not Applicable)
                                                                                                    125-psig- minimum, WOG working pressure.
PART 2 - PRODUCTS
                                                                                             PART 3 - EXECUTION
 2.1 GENERAL DUTY VALVES
                                                                                              3.1 INSTALLATION
  A. End Connections: Threads shall comply with ANSI B1.20.1. Flanges shall
                                                                                               A. Close equipment shutoff valves before turning off gas to premises or section of
      comply with ANSI B16.1 for cast iron valves and ANSI B16.24 for bronze
                                                                                                   piping. Perform leakage test as specified to determine that all equipment is
      valves. Solder—joint connections shall comply with ANSI B16.18.
                                                                                                    turned off in affected piping section.
   B. Ball Valves: Rated for 150 psig saturated steam pressure, 400 psig WOG
                                                                                                B. Install shutoff valve, downstream from gas meter, outside building at gas
      pressure; 2 piece construction; with bronze body, standard (or regular) port,
                                                                                                   service entrance.
      chrome plated brass ball, replaceable "Teflon" or "TFE" seats and seals,
                                                                                                C. Install gas stops for shutoff to appliances with NPS 2" or smaller low pressure
      blowout proof stem, and vinyl covered steel handle.
                                                                                                   aas supply.
  C. Plug Valves: Rated at 150 psig WOG; bronze body, with straightaway pattern,
                                                                                                D. Drips and Sediment Traps: Install drips at points where condensate may
      square head, and threaded ends.
                                                                                                   collect. Include outlets of gas meters. Locate where readily accessible to
   D. Swing Check Valves: Class 125, cast bronze body and cap; with horizontal
                                                                                                   permit cleaning and emptying. Do not install where condensate would be
      swing, Y-pattern, and bronze disc.
                                                                                                    subject to freezing.
  E. Valves for Copper Tube: Solder ends, except provide threaded ends for heating
                                                                                                 E. Install gas piping at uniform slope of 0.1 percent upward toward risers.
      hot water and low pressure steam service.
                                                                                                F. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings
   F. Valves for Steel Pipe: Threaded ends.
                                                                                                   with level side down.
PART 3 - EXECUTION
                                                                                                G. Connect branch piping from top or side of horizontal piping.
 3.1 INSTALLATION
                                                                                                H. Install strainers on supply side of each control valve, gas pressure regulator,
   A. Use gate and ball valves for shutoff duty and ball for throttling duty.
                                                                                                  solenoid valve, and elsewhere as indicated.
   B. Locate valves for easy access and provide separate support where necessary.
                                                                                               I. Install valves in accessible locations, protected from damage. Tag valves with
   C. Install valves for each fixture and item of equipment.
                                                                                                   metal tag indicating piping supplied. Attach tag to valve with metal chain.
   D. Install valves in horizontal piping with stem at or above center of pipe.
                                                                                                J. Install gas valve upstream from each gas pressure regulator. Where two gas—
    . Install valves in a position to allow full stem movement.
                                                                                                   pressure regulators are installed in series, valve is not required at second
   F. Install check valves for proper direction of flow in horizontal position with hinge
                                                                                                K. Connect gas piping to equipment and appliances with shutoff valves and unions.
END OF SECTION 15110
                                                                                                   Install gas valve upstream from and within 72 inches of each appliance using
                                                                                                   gas. Install union or flanged connection downstream from valve.
SECTION 15140 - DOMESTIC WATER PIPING
                                                                                                L. Inspect, test, and purge piping according to NFPA 54, Part 4, "Gas Piping
PART 1 - GENERAL
```

1.1 SECTION REQUIREMENTS

A. Performance Requirements: Unless otherwise indicated minimum pressure

C. Comply with NSF 61 "Drinking Water System Components — Health Effects."

B. Comply with NSF 14 "Plastic Piping Components and Materials."

requirements for water piping are as follows:

1. Service Entrance Piping: 100 psig. 2. Domestic Water Piping: 80 psig.

PART 1 - GENERAL 1.1 SECTION REQUIREMENTS A. Submittals: Product Data for each type of plumbing fixture. B. Comply with requirements of Public Law 102-486, "Energy Policy Act". regarding water flow rate and water consumption of plumbing fixtures. C. Comply with applicable standards below: 1. Enameled, Cast Iron Fixtures: ASME A112.19.1M. 2. National Sanitation Foundation Construction: NFS2. 3. Porcelain Enameled Fixtures: ASME A112.19.4M. 4. Slip Resistant Bathing Surfaces: ASTM F 462. 5. Stainless Steel Fixtures: ASME A112.19.3M. 6. Vitreous China Fixtures: ASME A112.19.2M. 2.1 Refer to the fixture schedule on drawing P400 PART 3 - EXECUTION 3.1 INSTALLATION A. Install fitting insulation kits on fixtures for the disabled. B. Install fixtures with flanges and gasket seals. C. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for the disabled to reach D. Fasten wall hanging plumbing fixtures securely to supports attached to building substrate when supports are specified, and to building wall construction where no support is indicated. E. Fasten floor mounted fixtures to substrate. With fixtures having holes for securing fixture to wall construction, fasten to reinforcement built into walls. F. Fasten wall mounted fittings to reinforcement built into walls. G. Fasten counter mounted plumbing fixtures to casework. H. Secure supplies to supports or substrate within pipe space behind fixture. I. Set shower receptors and mop basins in leveling bed of cement grout. J. Install individual supply inlets, supply stops, supply risers, and tubular brass traps with cleanouts at fixture. K. Install water supply stop valves in accessible locations. L. Install traps on fixture outlets. Omit traps on fixtures having integral traps. Omit traps on indirect wastes, unless otherwise indicated. M. Install escutcheons at wall, floor, and ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep pattern escutcheons where required to conceal protruding pipe fittings. N. Seal joints between fixtures and walls, floors, and counters using sanitary type, one part, mildew resistant, silicone sealant. Match sealant color to fixture O. Install piping connections between plumbing fixtures and piping systems and plumbing equipment. Install insulation on supplies and drains of fixtures for the disabled P. Ground equipment. Tighten electrical connectors and terminals according to UL 486A and UL 486B. END OF SECTION 15410 SECTION 15425 - PLUMBING SPECIALTIES PART 1 - GENERAL 1.1 SECTION REQUIREMENTS A. Minimum Working Pressure Rating for Products: 1. Water Distribution Piping: 80 psig. B. Submittals: Product Data. PART 2 - PRODUCTS 2.1 Refer to fixture schedule on drawing P400. PART 3 - EXECUTION 3.1 INSTALLATION A. Install backflow preventers at each water—supply connection to mechanical equipment and where required by authorities having jurisdiction. B. Install hose bibbs with integral or field-installed vacuum breaker. C. Install floor drains at low points of surface areas and where indicated. Set tops of drains flush with finished floor. 1. Trap drains connected to sanitary building drain. 2. Install drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes. END OF SECTION 15425 SECTION 15554 - FLUES AND VENTS PART 1 - GENERAL 1.1 SECTION REQUIREMENTS A. Submittals: Product Data. PART 2 - PRODUCTS 2.1 GAS VENTS A. Vent/air intake for high efficiency domestic water heater. Size per manufacturer's recommendation B. Accessories: Tees, elbows, increasers, draft hood connectors, metal cap with bird barrier, adjustable roof flashing, storm collar, support assembly, thimbles, firestopping spacers, and fasteners; fabricated of similar materials and designs as vent-pipe straight sections. PART 3 - EXECUTION 3.1 INSTALLATION A. Install vents according to stipulated minimum clearances from combustibles. B. Seal between sections of positive pressure vents using only sealants recommended by manufacturer. C. Support vents at intervals to support the weight of the vent and all accessories, without exceeding loading of appliances. END OF SECTION 15554

SECTION 15410 - PLUMBING FIXTURES

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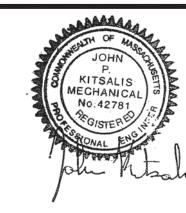
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PLUMBING -SPECIFICATIONS

Scale Drawn by Verified by
AS NOTED TJL JPK

1203020

P-400

Project #

PLUMBING - SPECIFICATIONS

SCALE: NTS

Inspection, Testing, and Purging", and requirements of authorities having

jurisdiction.

END OF SECTION 15198

#### **FIRE PROTECTION NOTES:**

- 1) AREAS SHALL BE DESIGNED LIGHT HAZARD WITH SPRINKLER HEADS NOT EXCEEDING 225 SQUARE FEET. EXCEPT FOR THE KITCHEN WHICH IS ORDINARY HAZARD GROUP 1 NOT TO EXCEED 130 SQUARE FEET.
- 2) CONTRACTOR SHALL ABIDE BY THE LOCAL FIRE PROTECTION CODE, NFPA AND STATE CODE.
- 3) ALL NEW VALVES ON THE FIRE PROTECTION SYSTEM TO BE ELECTRICALLY SUPERVISED. TYPE AND EXACT LOCATION OF FLOW, PRESSURE AND SUPERVISORY SWITCHES SHALL BE ACCOMPLISHED BETWEEN THE DIFFERENT RESPONSIBLE
- 4) ALL NEW SPRINKLERS SHALL BE MATCH BASE BUILDING STANDARD.
- 5) ALL NEW SPRINKLERS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE: K-FACTOR: ORIFICE DIAMETER:
- TEMPERATURE RATING: ORDINARY MATCH BASE BUILDING STANDARD RESPONSE:
- 6) LOCATION OF SPRINKLERS IN CEILING TILES:
- A) REFER TO ARCHITECTURAL REFLECTED CEILING PLANS AND ROOM FINISH SCHEDULES FOR CEILING TILE TYPES.
- B) IN STANDARD 2 BY 4 CEILING TILES, LOCATE SPRINKLERS IN THE CENTER OF TILES.
- C) IN STANDARD 2 BY 4 CEILING TILES WHICH SIMULATE 2 BY 2 CEILING TILES, LOCATE SPRINKLERS IN THE CENTER OF THE 2 BY 2 AREA.

#### 7) MATERIALS:

STORAGE/FILE STORAGE.

- A) ALL PIPING 1"- 2" SHALL BE SCHEDULE 40 BLACK STEEL PIPING WITH THREADED CAST IRON FITTINGS. (SCHEDULE 10 PIPE WILL NOT BE ALLOWED).
- B) ALL PIPING 2-1/2" OR LARGER SHALL BE SCHEDULE 10 BLACK STEEL PIPING WITH GROOVED TYPE FITTINGS AND MECHANICAL COUPLINGS.
- 8) ALL SPRINKLER WORK SHALL BE IN STRICT CONFORMANCE WITH NFPA-13 "STANDARD FOR INSTALLATION OF SPRINKLER SYSTEMS", STATE BUILDING CODE, AND THE OWNER'S INSURANCE COMPANY.
- 9) CONTRACTOR SHALL COORDINATE DRAINING OF SPRINKLER SYSTEM WITH BUILDING PLUMBING DRAINAGE.
- 10) THE BASE BUILDING "CONTRACT DRAWINGS" AND "SPECIFICATIONS" INCLUDING ALL RESPECTIVE ADDENDA AND BULLETINS SHALL FORM A PART OF THIS WORK. ALL WORK SHALL BE SUBJECT TO RESPECTIVE PROVISIONS THEREOF.
- 11) REFER TO ARCHITECTURAL DRAWINGS FOR HUNG CEILING HEIGHTS AND CONSTRUCTION. WHERE WORK BETWEEN THIS DRAWING AND ARCHITECTURAL PLANS ARE IN CONFLICT, ADVISE PRIOR TO INSTALLATION OF PIPING.
- 12) WORK SHALL BE COORDINATED WITH ALL OTHER TRADES, NOTIFY ENGINEER TO AVOID CONFLICTS.
- 13) SPRINKLER CONTRACTOR SHALL ADJUST AND/OR ADD SPRINKLERS AS REQUIRED UTILIZING ARCHITECT'S REFLECTED CEILING PLAN FOR LOCATION OF LIGHTS, DIFFUSERS, CABLE TRAYS, ETC...
- 14) ALL EQUIPMENT SHALL BE APPROVED BY OWNER'S INSURANCE COMPANY.
- 15) LAYOUT OF SPRINKLERS ARE FOR BUILDING DEPARTMENT USE ONLY, SPRINKLER CONTRACTOR SHALL PREPARE FINAL SPRINKLER LAYOUT AND SHOP DRAWINGS INCLUDING HYDRAULIC CALCULATIONS AND OBTAIN ALL APPROVALS AS REQUIRED. CONTRACTOR SHALL PERFORM A HYDRANT FLOW TEST AND/OR FIRE PUMP TEST WHICH WILL BE USED FOR CONTRACTOR'S HYDRAULIC CALCULATIONS.
- 16) CONTRACTOR SHALL NOT INSTALL ANY SPRINKLER PIPING THAT WILL INTERFERE WITH THE MAINTENANCE/REMOVAL/INSTALLATION OF HVAC EQUIPMENT.
- 17) SPRINKLER CONTRACTOR MUST FILE APPLICATION FOR AND SUBMIT EVIDENCE OF A VALID SPRINKLER SYSTEM IMPAIRMENT PERMIT TO BUILDING MANAGEMENT WHEN SCHEDULING ALL SPRINKLER SYSTEM MODIFICATIONS. ALL SHUTDOWNS WILL BE PERFORMED BY BUILDING ENGINEERING PERSONNEL EXCLUSIVELY, UNLESS OTHERWISE PERMITTED BY BUILDING MANAGEMENT.
- 18) CONTRACTOR SHALL DETERMINE BEST LOCATION FOR ROUTING/RE-ROUTING ALL ASSOCIATED SPRINKLER LINES. PIPE ROUTING SHOWN SHALL BE USED AND ANY ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES SHALL BE PROVIDED. VERIFY EXISTING STRUCTURAL, MECHANICAL, ELECTRICAL INSTALLATIONS AND AVOID ANY/ALL OBSTRUCTIONS OR INTERFERENCES WITH FIRE PROTECTION PIPE ROUTING.
- 19) ALL SPRINKLERS MOUNTED IN CEILING SHALL BE LOCATED A MINIMUM OF 4" AWAY FROM ANY WALLS, CEILING HEIGHT CHANGES OR ANY OTHER VERTICAL INTERSECTING SURFACE.
- 20) PROVIDE SPRINKLERS ABOVE AND BELOW EXPOSED HORIZONTAL OBSTRUCTIONS/DUCT WORK 4 FEET OR WIDER.
- 21) PROVIDE HEAD GUARDS ON SPRINKLERS IN ELECTRIC, TELEPHONE AND ELEVATOR EQUIPMENT ROOMS.
- 22) CUTTING OF STRUCTURAL AND/OR ARCHITECTURAL MEMBERS TO BE DONE ONLY WITH THE WRITTEN APPROVAL OF THE ARCHITECT.
- 23) FIRE STOP ALL PENETRATIONS OF SMOKE/FIRE WALLS, CEILINGS, FLOORS, ROOFS, ETC. FLASH AND COUNTERFLASH ROOF PENETRATIONS.
- 24) PROVIDE ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILINGS AND CHASES.
- 25) METHODS OF HANGING PIPES, HEADERS AND BRANCHES SHALL BE IN ACCORDANCE WITH NFPA-13.
- 26) ALL VALVES FOR FIRE SERVICE SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. AND THE FACTORY MUTUAL LABORATORIES. VALVES SHALL BE FACTORY MARKED "UL" AND "FM", 175 PSI WORKING PRESSURE.
- 27) ALL POWER WIRING SHALL BE ACCOMPLISHED UNDER THE ELECTRICAL DIVISION. ALL CONTROL AND INTERLOCK WIRING SHALL BE ACCOMPLISHED UNDER THIS SECTION OF THE SPECIFICATIONS IN ACCORDANCE WITH THE REQUIREMENTS IN THE ELECTRICAL DIVISION. COORDINATE ALL ELECTRICAL ITEMS WITH ELECTRICAL CONTRACTOR.
- 28) SPRINKLERS SHALL COVER THE ENTIRE AREA OF THE ROOM INCLUDING ALCOVES. SPRAY SHALL NOT BE BLOCKED BY WALLS OR PARTITIONS.
- 29) MAINTAIN A MINIMUM OF 18 INCHES FROM THE BOTTOM OF THE SPRINKLER DEFLECTOR TO THE TOP OF
- 30) CONTRACTOR SHALL CONDUCT A THOROUGH EXAMINATION OF THE PREMISES PRIOR TO PREPARING A PROPOSAL. ANY CHANGES TO THE DESIGN MADE NECESSARY BY FIELD CONDITIONS SHALL BE CONVEYED TO THE ENGINEER PRIOR TO PREPARATION OF A PROPOSAL. NO ADDITIONAL COSTS BEYOND THE PROPOSAL PRICE WILL BE ACCEPTED FOR FIELD
- 31) ALL FIRE PROTECTION SYSTEMS ARE SHOWN SCHEMATICALLY. IT IS NOT THE INTENT OF THESE PLANS TO SHOW ALL LISTED COMPONENTS, SUCH AS PIPING, FITTINGS, VALVES, ETC. CONTRACTOR IS RESPONSIBLE FOR PROVIDING WORKING PLANS AND FOR INSTALLING SYSTEM PER APPLICABLE CODES.
- 32) PROVIDE A PERMANENTLY ATTACHED HYDRAULIC DESIGN INFORMATION SIGN STATING THE REQUIRED DESIGN CRITERIA FOR EACH HYDRAULICALLY DESIGNED SYSTEM.
- 33) INSPECTOR'S TEST VALVE SHALL NOT EXCEED 7 FEET ABOVE THE FINISHED FLOOR.

CONDITIONS THAT COULD HAVE BEEN DETERMINED BY AN INSPECTION OF THE PREMISES.

33) THE SPRINKLER PIPING LAYOUT AND PIPE SIZES SHOWN ON THE CONTRACT DOCUMENTS ARE TO DEFINE THE DESIGN INTENT FOR COMPETITIVE BIDDING AND FOR PRELIMINARY SUBMISSION TO THE AUTHORITIES HAVING JURISDICTION. THE WORK OF THE CONTRACT INCLUDES HYDRAULIC CALCULATIONS AND FABRICATION SHOP DRAWINGS AND WORKING PLANS FOR THE ACTUAL INSTALLATION CONDITIONS.

- 34) FIRE PROTECTION PIPING SHALL BE SEISMICALLY BRACED ACCORDING TO NFPA 13 REQUIREMENTS.
- 35) FIRE PROTECTION CONTRACTOR SHALL OBTAIN ALL PERMITS ARE REQUIRED FOR THE COMPLETE INSTALLATION OF THE FIRE PROTECTION SYSTEM.
- 36) FIRE PROTECTION SYSTEM SHALL BE DRAINABLE TO OUTSIDE GRADE OR SUMP PUMP LOCATED IN BASEMENT. COORDINATE WITH PLUMBING CONTRACTOR TO VERIFY CAPACITY.
- 37) CONTRACTOR SHALL PROTECT ALL CONCEALED COMBUSTIBLE SPACES PER NFPA 13 REQUIREMENTS.

MAIN CEILING

SUSPENDED CEILING

IF NEEDED UPRIGHT

BRANCH LINE-

38) ALL FIRE PROTECTION PIPING SHALL BE SEISMICALLY BRACED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND MANUFACTURES SPECIFICATIONS. FOR SEISMIC BRACING USE ONLY SOLID STRUCTURAL MEMBERS. WIRE RESTRAINTS SHALL NOT BE ACCEPTED.

(SEE PLAN)

(SEE PLAN)

**PENDANT** 

#### **FIRE PROTECTION ABBREVIATIONS:**

- CTE CONNECT NEW TO EXISTING
- D DRY
- E EXISTING TO REMAIN EC — EXTENDED COVERAGE
- EX REMOVE EXISTING F – FAHRENHEIT
- FCA FLOOR CONTROL ASSEMBLY
- GPM GALLONS PER MINUTE
- N NEW
- SF SQUARE FEET
- TS TAMPER SWITCH
- WFS WATER FLOW SWITCH
- WFS WATER FLOW SWITCH
- ER or R RELOCATE EXISTING

# STEEL FLANGE WELDED TO SLEEVE ALL AROUND FOUNDATION WALL LEAD (TYP.) ELBOW YBIBIBIBIBIA, JBA. ANCHOR ROD -- 6" FIRE SERVICE PIPE

FIRE PROTECTION -RETURN BEND ASSEMBLY W/ UPRIGHT FOR SPRINKLER SPACE PROTECTION SCALE: NTS

FIRE PROTECTION - SYMBOLS, NOTES, AND DETAILS

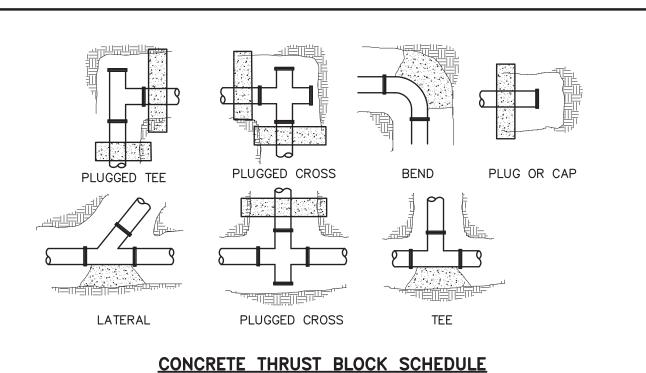
# LONG RADIUS STEEL SLEEVE (TYP.) - OAKUM (TYP.)

PROVIDE SLEEVE AT FOUNDATION WALL

FIRE SERVICE SLEEVE DETAIL

#### **FIRE PROTECTION SYMBOLS:**

- NEW CONCEALED PENDANT QUICK RESPONSE SPRINKLER FOR COMMERCIAL
- NEW UPRIGHT QUICK RESPONSE SPRINKLER FOR COMMERCIAL AREAS.
- EXISTING CONCEALED PENDANT QUICK
- RESPONSE SPRINKLER - EXISTING UPRIGHT QUICK RESPONSE SPRINKLER
- REMOVE EXISTING PENDANT SPRINKLER
- REMOVE EXISTING UPRIGHT SPRINKLER
- ------ REMOVE EXISTING PIPING
- EXISTING PIPING
- NEW PIPING
- DISCONNECT FROM EXISTING
- CONNECT TO EXISTING



## (BEARING AREA OF THRUST BLOCKS IN SQUARE FEET)

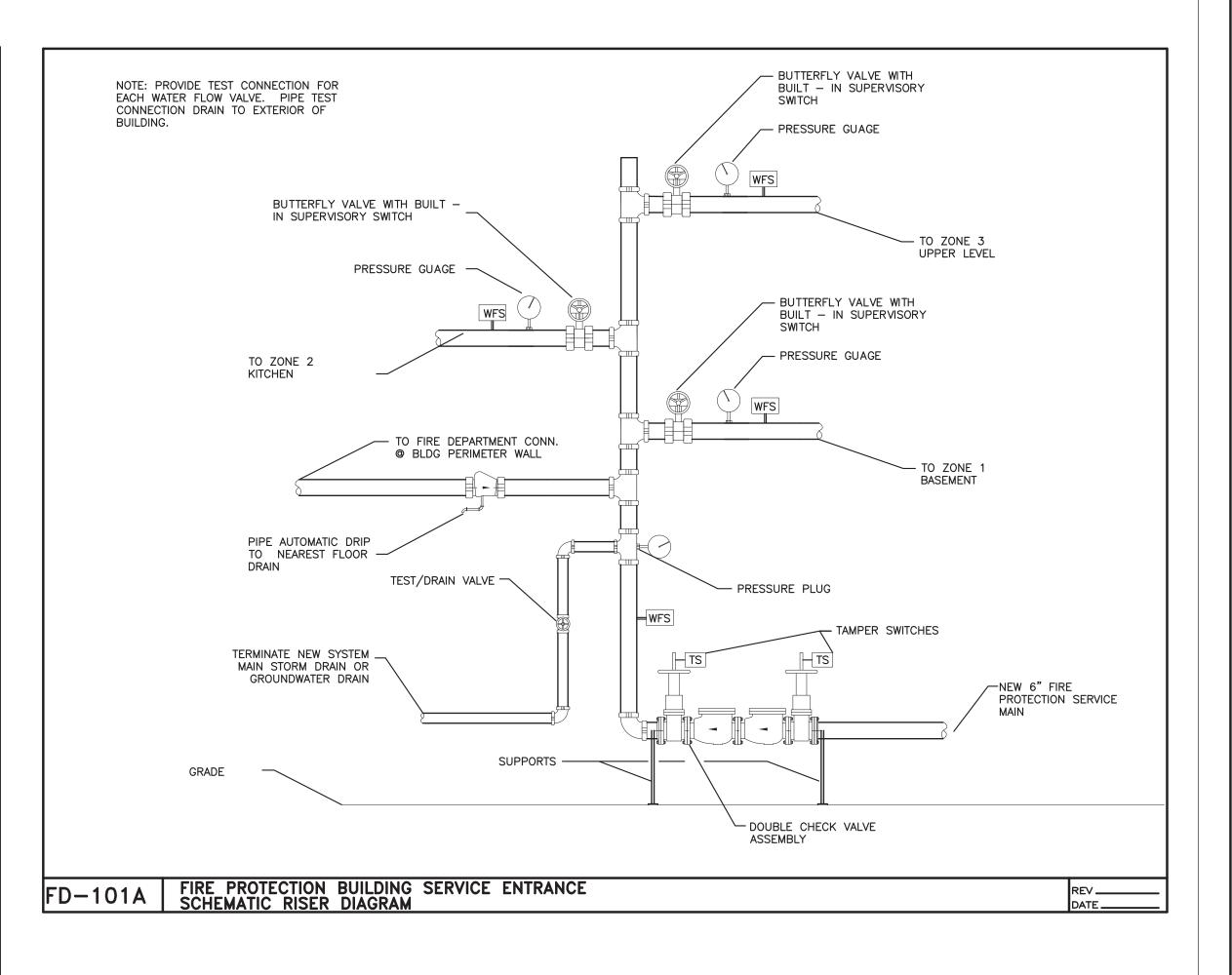
| FITTING SIZE<br>(INCHES) | 90° BEND, TEE, OR<br>PLUGGED CROSS | 45°<br>BEND | 22½°<br>BEND | 11¼°<br>BEND |
|--------------------------|------------------------------------|-------------|--------------|--------------|
| 4                        | 01.9                               | 01.3        |              |              |
| 6                        | 04.0                               | 02.1        | 01.3         |              |
| 8                        | 07.1                               | 03.9        | 02.0         | 01.3         |
| 12                       | 16.0                               | 08.8        | 04.5         | 02.3         |
| 16                       | 28.4                               | 15.5        | 0.80         | 04.0         |
| 24                       | 64.0                               | 34.9        | 18.1         | 09.1         |

ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 P.S.I. & AN ALLOWABLE SOIL BEARING STRENGTH OF 1500 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES & SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION.

BEARING AREAS = (TEST PRESSURE/150) X (1500/SOIL BEARING STRESS) X (TABLE VALUE)

- 1. STRADDLE BLOCKS REQUIRED WHERE LINES MAY BE EXTENDED IN FUTURE.
- 2. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
- 3. KEEP CONCRETE CLEAR OF JOINT & ACCESSORIES.
- 4. THE REQUIRED THRUST BEARING AREAS FOR SPECIAL CONNECTIONS ARE SHOWN ENCIRCLED ON THE PLANS: e.g. 15 INDICATES 15 SQUARE FEET BEARING AREA
- 5. IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUST IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) & ALLOWABLE SOIL BEARING STRESS(ES) STATED IN THE SPECIAL
- BEARING AREAS & SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS & BLOCKING DETAILS SHOWN ON THIS STANDARD DETAIL. BEARING AREA OF THRUST BLOCKS ARE IN SQUARE FEET.

THRUST BLOCKTYPICAL INSTALLATION



| DWG. # | DESCRIPTION                                  | REV # |
|--------|--|-------|
| FP-000 | FIRE PROTECTION — SYMBOLS, NOTES AND DETAILS | _     |
| FP-100 | FIRE PROTECTION — NEW LOWER LEVEL FLOOR PLAN | _     |
| FP-101 | FIRE PROTECTION - NEW MAIN LEVEL FLOOR PLAN  | _     |

#### SCHEDULE OF FIRE PROTECTION DRAWINGS

| DWG. # | DESCRIPTION                                  | REV # |
|--------|--|-------|
| FP-000 | FIRE PROTECTION — SYMBOLS, NOTES AND DETAILS | -     |
| FP-100 | FIRE PROTECTION — NEW LOWER LEVEL FLOOR PLAN | _     |
| FP-101 | FIRE PROTECTION - NEW MAIN LEVEL FLOOR PLAN  | _     |

# SRI LAKSHMI TEMPLE NEW ADDITION

117 WAVERLY STREET ASHLAND, MA 01721



Architecture • Interior Design

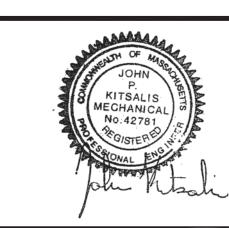
111 PERKINS STREET SUITE 215 BOSTON MA 02130 (617) 522-0718



1 MOUNT VERNON STREET WINCHESTER MA 01890 781-729-6188



Building Systems & Commissioning Engineers Massachusetts 30 Turnpike Road, Suite #1, Southborough, MA 01772 Tel: (508) 485-4633 Fax: (508) 485-1830



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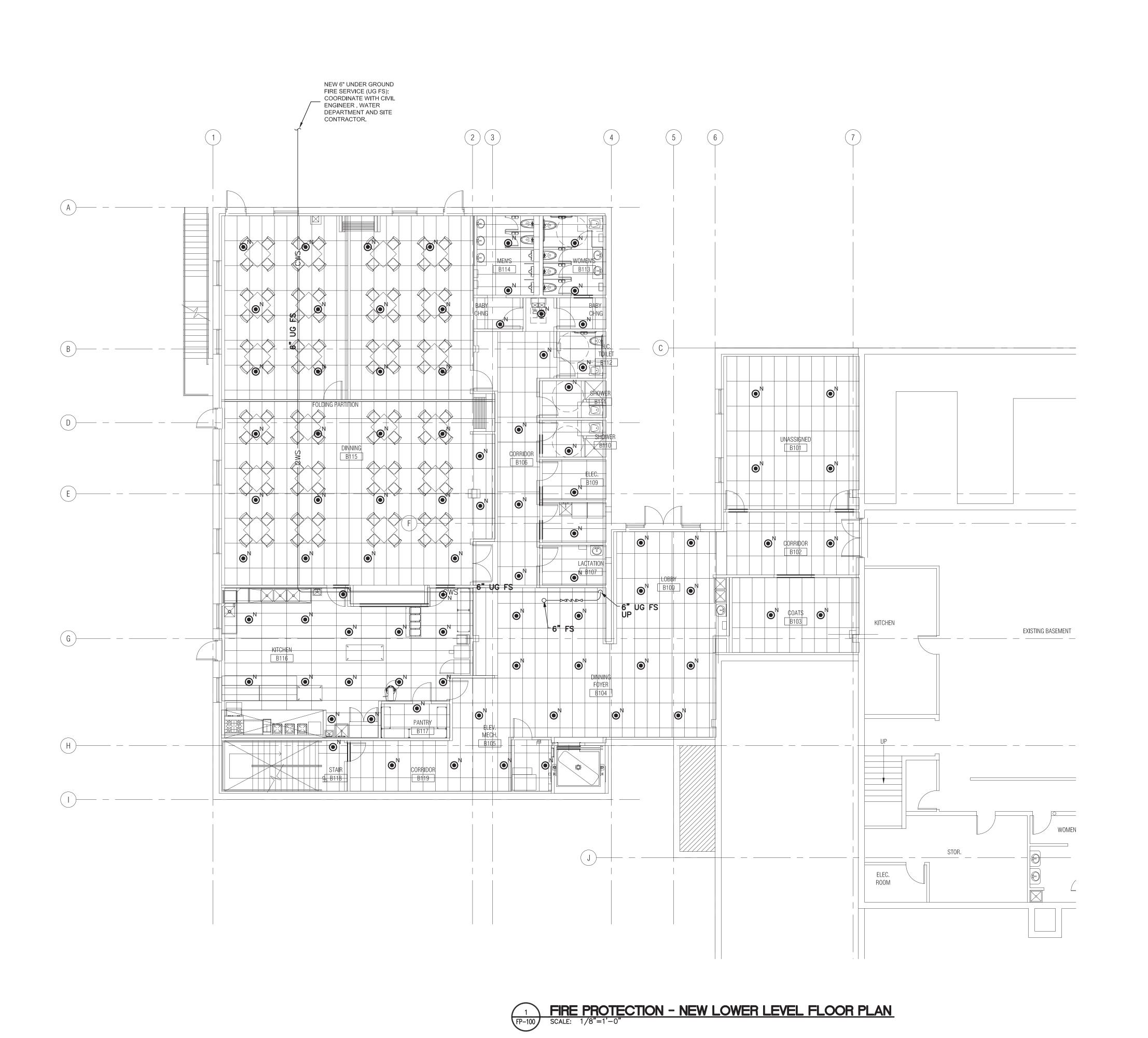
DO NOT SCALE THE DRAWINGS. USE ALL DIMENSIONS SHOWN. VERIFY ALL DIMENSIONS ON SITE AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.

#### © JDP/JOYCE DESIGN PARTNERSHIP

| Issue                      | Date       |
|----------------------------|------------|
| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
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| Stamp                      | <u>'</u>   |

FIRE PROTECTION -SYMBOLS, NOTES **AND DETAILS** 

AS NOTED



# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



Architecture · Interior Design

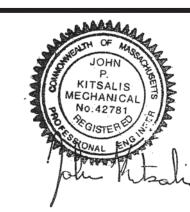
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| Issue                      | Date       |
|----------------------------|------------|
| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
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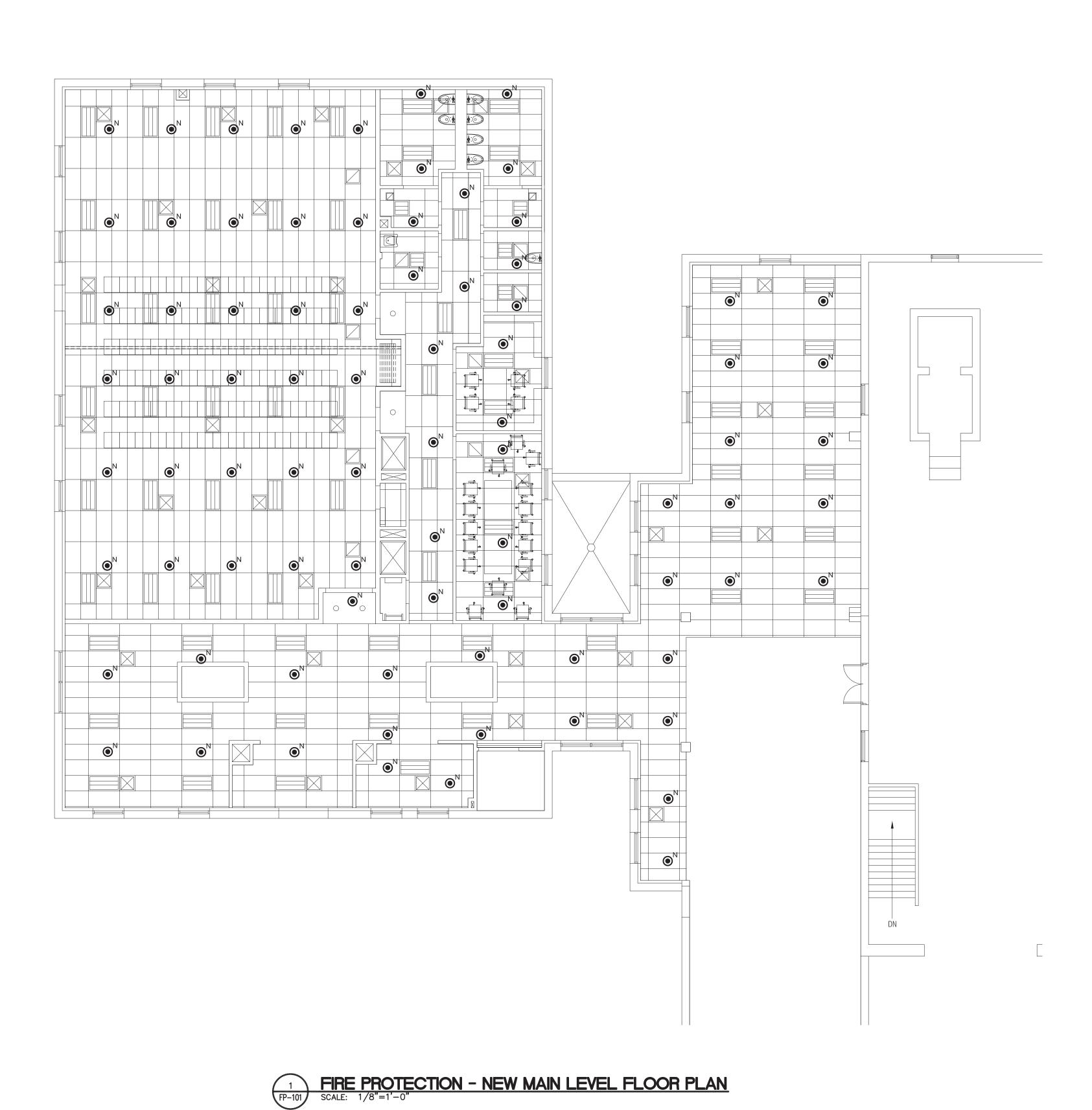
# FIRE PROTECTION - NEW LOWER LEVEL FLOOR PLAN

AS NOTED

FP-100

1203020

Project #



# SRI LAKSHMI TEMPLE NEW ADDITION

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| Issue                      | Date       |
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| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
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Sheet

FIRE PROTECTION - NEW MAIN LEVEL FLOOR PLAN

AS NOTED Drawn by Verified by JPK

FP-101

1 1 10

Proiect #



- 1) ALL ELECTRICAL WORK, EQUIPMENT, RACEWAYS, CABLES, WIRING AND DEVICES ARE NEW, U.N.O.
- 2) ALL RECEPTACLES MTD 18" A.F.F U.N.O.
- 3) ALL SWITCHES MTD 48" A.F.F.

VALUES.

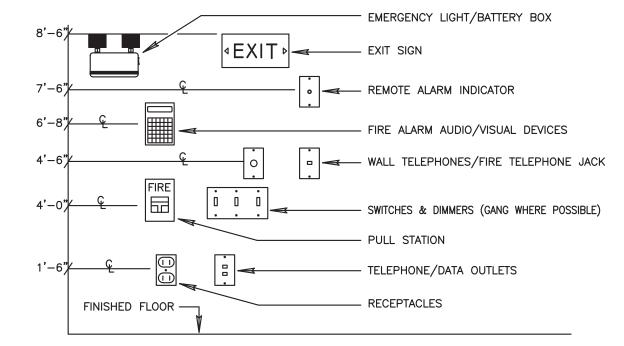
- 4) ALL DEVICES TO MATCH BUILDING STYLES U.N.O.
- 5) CONTRACTOR SHALL COORDINATE MAIN ELECTRIC SERVICE REQUIREMENTS WITH ELECTRIC UTILITY.
- 6) ALL CONCEALED CIRCUITS SHALL BE RATED 20A, FED WITH 600V, 4#12-CU METAL-CLAD CABLE (MC-CABLE) THAT IS U.L. LISTED FOR IT'S INTENDED SERVICE, U.N.O. ALL EXPOSED CIRCUITS SHALL BE RATED 20A WITH 600V, 4#12-CU IN ½" ELECTRICAL METALLIC TUBING WITH WEATHER/WATER PROOF RATED CONNECTIONS. ALL NORMALLY OCCUPIED AREAS SHALL HAVE CONCEALED CIRCUITS.
- 7) ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE STATE'S ELECTRICAL CODE.
- 8) THE ELECTRICAL CONTRACTOR SHALL REFER TO THE STRUCTURAL, PLUMBING, HVAC, FIRE PROTECTION, FIRE ALARM, AND ARCHITECTURAL DRAWINGS BEFORE INSTALLING ANY ELECTRICAL EQUIPMENT.
- 9) ALL WIRE, TERMINATION'S, & DEVICES SHALL BE RATED 75°C.
- 10) ALL EXPOSED WIRING SHALL BE IN E.M.T.
- 11) THE ELECTRICAL CONTRACTOR SHALL CONFIRM THE CURRENT DRAW ON ANY REWIRED CIRCUITS DOES NOT EXCEED 79% OF THE CIRCUITS OVERCURRENT PROTECTIVE DEVICE.
- 12) ALL COMPONENTS FURNISHED BY THE EC SHALL BE UL LISTED FOR THEIR INTENDED USE.
- 13) CONTRACTOR SHALL PROVIDE FULLY RATED ELECTRICAL EQUIPMENT OF THEIR NAMEPLATE
- 14) THE EC SHALL PROVIDE BOX, CONDUIT AND PULL STRING FOR COMMUNICATION CABLES. THE WIRING OF THESE SYSTEMS IS BY OTHERS.
- 15) ALL WIRING SHALL BE ROUTED PERPENDICULAR TO COLUMN LINES.
- 16) CONTRACTOR SHALL COORDINATE ELECTRICAL SYSTEM SHORT—CIRCUIT WITHSTAND AND INTERRUPT WITH THE ELECTRIC UTILITY.
- 17) ALL RECEPTACLES, SWITCHES, FACEPLATES, AND FASTENERS SHALL BE NEW, LISTED AND COMMERCIAL GRADE WITHIN PROJECT SCOPE AREA. COORDINATE ALL WALL PLATE TRIMS AND COLORS WITH ARCHITECT
- 18) ALL CEILING MOUNTED DEVICES SHALL BE MOUNTED IN THE CENTER OF TILES.
- 19) EC SHALL REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL DEVICES.
- 20) OUTLET BOXES SHALL NOT BE INSTALLED BACK-TO-BACK.
- 21) CONTRACTOR SHALL MATCH ALL ELECTRICAL DEVICES, COVER PLATES, RECEPTACLES AND THE PLATES AND THE LIKE. TRIMS, FINISHES AND COLORS SHALL BE COORDINATED THROUGH
- 22) CONTRACTOR SHALL PROVIDE FULLY RATED SHORT—CIRCUIT WITHSTAND AND CURRENT INTERRUPT ELECTRICAL EQUIPMENT FOR THIS PROJECT. CONTRACTOR SHALL PROVIDE A COMPLETE SHORT—CIRCUIT STUDY COORDINATED WITH THE AVAILABLE SHORT—CIRCUIT CURRENT FROM THE ELECTRICAL UTILITY SUPPLY. THE SHORT—CIRCUIT STUDY SHALL BE USED TO COORDINATE THE SHORT—CIRCUIT RATING OF THE ELECTRICAL EQUIPMENT. CONTRACTOR SHALL SUBMIT AS AN ADD—ALTERNATE A LISTED SERIES—COMBINATION RATED ELECTRICAL DISTRIBUTION SYSTEM THAT HAS BEEN COORDINATED WITH THE SHORT—CIRCUIT STUDY. CONTRACTOR SHALL BEAR COMPLETE AND TOTAL RESPONSIBILITY FOR ALL UL LISTED SERIES—COMBINATION RATED
- 23) ELECTRICAL CONTRACTOR SHALL PROVIDE SEPARATE CONDUIT FROM THAT OF THE POWER CIRCUIT FOR ALL MECHANICAL EQUIPMENT CONTROLS WIRING. THE CONTROLS CONDUIT AND CABLE IS FROM THE SPACE THERMOSTAT TO THE HVAC EQUIPMENT.
- 24) EC SHALL GUARANTEE ALL WORK PERFORMED AS PART OF THIS CONTRACT IS FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. EC SHALL REPLACE OR REPAIR ANY DAMAGED OR DEFECTIVE DEVICES OR WORK FREE OF CHARGE DURING THIS PERIOD.
- 25) A MANUFACTURER'S SPEC SHEET (INCLUDING CATALOG NUMBER AND SHOP DRAWINGS) SHALL BE SUBMITTED FOR APPROVAL ON ALL FIXTURES, DEVICES AND EQUIPMENT PRIOR TO PURCHASING.
- 26) ALL CONDUCTORS SUPPLYING POWER TO HEATING EQUIPMENT SHALL BE COPPER CONDUCTOR WITH RATED 90°C MIN INSULATION.
- 27) ALL WIRING SHALL BE IDENTIFIED WITH PANELBOARD AND CIRCUIT NUMBERS IN ALL JUNCTION BOXES, TROUGHS, POINTS OF TERMINATION, ETC..
- 28) EC SHALL CLEAN, VACUUM & TIGHTEN ALL CONNECTIONS IN ANY ELECTRICAL DISTRIBUTION EQUIPMENT THAT IS TO BE RE-USED.
- 29) ALL KNOCKOUTS IN ALL ENCLOSURES SHALL BE SEALED.

DETERMINED BY AN INSPECTION OF THE PREMISES.

- 30) PANELBOARDS SHALL BE DOOR-IN-DOOR TRIM STYLE. ENTIRE TRIM & INTERIOR DOOR SHALL BE HINGED. ALL PANELBOARDS SHALL BE FURNISHED WITH COPPER BUSES.
- 31) EC SHALL BE RESPONSIBLE FOR PROVIDING AN UPDATED TYPED CIRCUIT DIRECTORY FOR ALL PANELBOARDS (NEW & EXISTING) THAT ARE EFFECTED BY THE CONSTRUCTION.
- 32) EC SHALL PROVIDE ENGRAVED NAMEPLATES FOR ALL PANELBOARDS, JUNCTION BOXES, DISCONNECT SWITCHES AND MOTOR STARTERS.
- 33) ALL POWER WIRING IN ELECTRICAL AND MECHANICAL ROOMS AND TO ELECTRICAL/MECHANICAL
- EQUIPMENT SHALL BE ARMOR—CLAD CABLE OR IN RMC OR EMT.

  34) CONTRACTOR SHALL UTILIZE THE MOST STRINGENT SPECIFICATIONS IN THESE DOCUMENTS. IF
- THERE ARE ANY CONFLICTS OR CONTRADICTIONS, THE MOST STRINGENT SPECIFICATIONS SHALL APPLY.

  34) TELEPHONE AND DATA CABLES RAN IN RETURN AIR PLENUMS SHALL BE TEFLON COATED AND PLENUM
- 4) TELEPHONE AND DATA CABLES RAN IN RETURN AIR PLENUMS SHALL BE TEFLON COATED AND PLENUM RATED. THE WIRING OF THESE SYSTEMS SHALL BE PRICED AS AN ADD—ALTERNATE.
- 35) CONTRACTORS SHALL MAINTAIN ALL FIRE RATINGS WITH CONDUCTOR FIRE RATED FLOOR/CEILING/WALL PENETRATIONS WITH LISTED MATERIALS AND INSTALLATION METHODS.
- 36) CONTRACTOR SHALL CONDUCT A THOROUGH EXAMINATION OF THE PREMISES PRIOR TO PREPARING A PROPOSAL. ANY CHANGES TO THE DESIGN MADE NECESSARY BY FIELD CONDITIONS SHALL BE CONVEYED TO THE ENGINEER PRIOR TO PREPARATION OF A PROPOSAL. NO ADDITIONAL COSTS BEYOND THE PROPOSAL PRICE WILL BE ACCEPTED FOR FIELD CONDITIONS THAT COULD HAVE BEEN



IOTES

1. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.

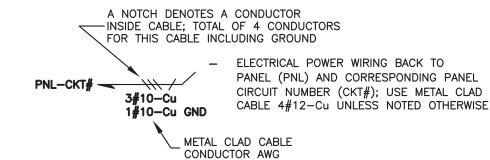
2. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL, UNO.

WIRING DEVICE, STANDARD MOUNTING
HEIGHTS FOR TYPICAL DEVICES
SCALE:

**GENERAL PROJECT NOTES** 

- 1) CONTRACTOR SHALL PROVIDE SUBMITTALS, SHOP DRAWINGS AND COORDINATION DRAWINGS WITH ALL OTHER TRADES.
- 2) FINAL "AS-BUILT" SHALL BE FURNISHED AT THE END OF THIS PROJECT TO OWNER, ARCHITECT AND ENGINEER.
- 3) WHERE THE CONTRACTOR PROPOSES TO USE AN ITEM OF EQUIPMENT OTHER THAN THAT SPECIFIED OR DETAILED ON THE DRAWINGS, WHICH REQUIRES ANY REDESIGN OF THE STRUCTURE, PARTITIONS, WIRING, OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL, OR ARCHITECTURAL LAYOUT, ALL SUCH REDESIGN, AND ALL NEW DRAWINGS AND DETAILING REQUIRED THEREFORE SHALL, WITH THE APPROVAL OF THE ARCHITECT, BE PREPARED BY THIS CONTRACTOR AT HIS EXPENSE.
- 4) THE CONTRACTOR SHALL REVIEW THE CIVIL SITE PLAN FOR WATER, SEWER, GAS AND ELECTRIC SERVICE UTILITIES TO THE BUILDING. THE CONTRACTOR SHALL INCORPORATE IN BID TO BRINGING UTILITIES TO "POINT OF USE" OR UTILITY METER DESIGNATED AREAS AS SHOWN ON THESE PLANS, AND INCORPORATE ALL ASSOCIATED EARTHWORK COSTS IN BID.





## SCHEDULE OF ELECTRICAL DRAWINGS

| DWG. # | DESCRIPTION                                   | REV # |
|--------|---|-------|
|        | ELECTRIC POWER & LIGHTING                     |       |
| E-000  | ELECTRICAL - SYMBOLS, NOTES, AND DETAILS      | _     |
| ED-100 | ELECTRICAL - EXISTING AND REMOVALS            | _     |
| E-100  | ELECTRICAL - NEW POWER PLAN                   | _     |
| E-200  | ELECTRICAL - NEW LIGHTING PLAN                | _     |
| E-300  | FIRE ALARM — ABBREVIATIONS, NOTES AND DETAILS | _     |
| E-301  | FIRE ALARM — SELECTIVE REMOVALS               | _     |
| E-302  | FIRE ALARM — NEW FLOOR PLAN                   | _     |
| E-400  | ELECTRICAL - SPECIFICATIONS                   |       |

# CONTRACTOR COORDINATION SCHEDULE THE FOLLOWING TABLE SHOULD BE USED TO CLARIFY THE SCOPE OF WORK FOR THE COMPONENTS ASSOCIATED

WITH MULTIPLE TRADES LISTED BELOW.

MC — MECHANICAL CONTRACTOR GC — GENERAL CONTRACTOR EVC— ELEVATOR CONTRACTOR

EC — ELECTRICAL CONTRACTOR PC — PLUMBING CONTRACTOR
CC — CONTROLS CONTRACTOR SC — SPRINKLER CONTRACTOR

| NO. | COMPONENT                  | FURNISHED BY | INSTALLED BY | WIRED BY | TERMINATED BY | PLUMB/PIPE CONNECTION |    | FIRE ALARM<br>OVERRIDE | *REMARKS |
|-----|----------------------------|--------------|--------------|----------|---------------|-----------------------|----|------------------------|----------|
| 1   | HVAC EQUIPMENT             | MC           | MC           | EC       | EC            | _                     | CC | CONTROL                |          |
| 2   | DOMESTIC HOT WATER HEATERS | PC           | PC           | EC       | EC            | PC                    | _  | _                      |          |
| 3   | UNIT HEATERS               | MC           | MC           | EC       | EC            | -                     | _  | _                      |          |
| 4   | LINE VOLTAGE THERMOSTATS   | MC           | MC           | EC       | EC            | -                     | _  | _                      |          |



# SRI LAKSHMI TEMPLE NEW ADDITION

117 WAVERLY STREET ASHLAND, MA 01721



(617) 522-0718

111 PERKINS STREET SUITE 215 BOSTON MA 02130

Architecture • Interior Design

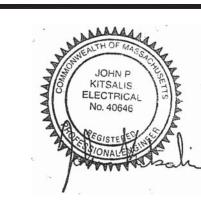


1 MOUNT VERNON STREET WINCHESTER,MA 01890 781-729-6188



Building Systems & Commissioning Engineers

Massachusetts
30 Turnpike Road, Suite #1, Southborough, MA 01772
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DO NOT SCALE THE DRAWINGS. USE ALL DIMENSIONS SHOWN. VERIFY ALL DIMENSIONS ON SITE AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.

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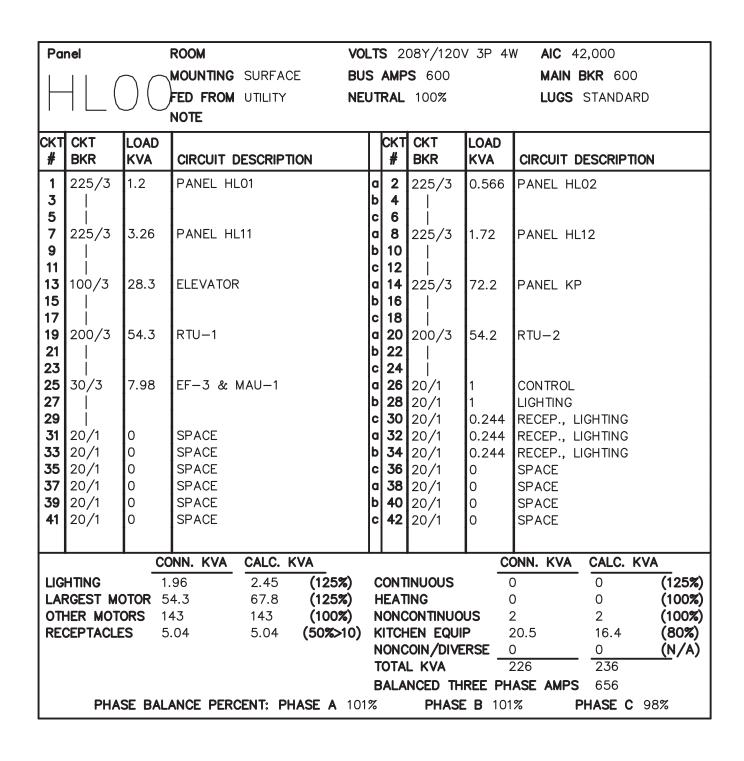
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Sheet Title

ELECTRICAL -SYMBOLS, NOTES AND DETAILS

Scale Drawn by Verified by
AS NOTED TJL JPK

E-000



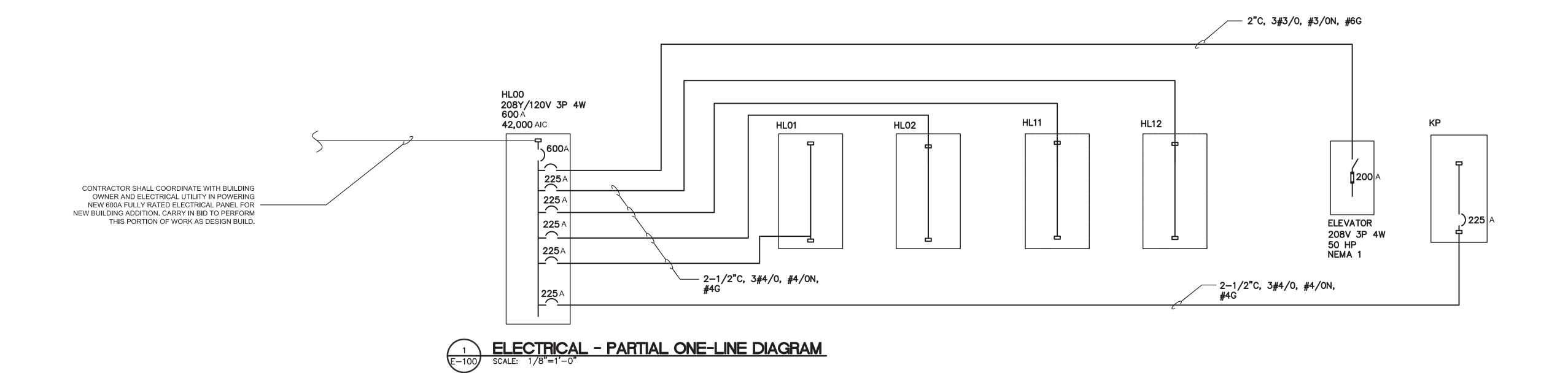
| Pai | nel      |        | ROOM      |                   |         |      | •            | )V 3P 4\ |          | 42,000        |        |
|-----|----------|--------|-----------|-------------------|---------|------|--------------|----------|----------|---------------|--------|
|     | ]   (    | 1      | MOUNTING  |                   |         |      | <b>S</b> 225 |          |          | BKR MLO       |        |
|     |          |        | FED FROM  | HL00              | IEU'    | RAL  | 100%         |          | LUGS     | FEEDTHRU      |        |
|     |          |        | NOTE      |                   |         |      |              |          |          |               |        |
| СКТ | CKT      | LOAD   |           |                   |         | CKI  |              | LOAD     |          |               |        |
| #   | BKR      | KVA    | CIRCUIT   | ESCRIPTION        | $\perp$ | #    | BKR          | KVA      | CIRCUIT  | DESCRIPTIO    | N      |
| 1 1 | 20/1     | 0.502  | LIGHTING  |                   | o       | 2    | 20/1         | 0.699    | LIGHTING | ;             |        |
| 3   | 20/1     | 0      | SPACE     |                   | þ       | 4    | 20/1         | 0        | SPACE    |               |        |
| 5   | 20/1     | 0      | SPACE     |                   | c       |      | 20/1         | 0        | SPACE    |               |        |
| 7   | 20/1     | 0      | SPACE     |                   | o       |      | 20/1         | 0        | SPACE    |               |        |
| 9   | 20/1     | 0      | SPACE     |                   | þ       | 10   | 20/1         | 0        | SPACE    |               |        |
| 11  | 20/1     | 0      | SPACE     |                   | c       | 12   | 20/1         | 0        | SPACE    |               |        |
| 13  | 20/1     | 0      | SPACE     |                   | o       | 14   | 20/1         | 0        | SPACE    |               |        |
| 15  | 20/1     | 0      | SPACE     |                   | þ       | 16   | 20/1         | 0        | SPACE    |               |        |
| 17  | 20/1     | 0      | SPACE     |                   | c       | 18   | 20/1         | 0        | SPACE    |               |        |
| 19  | 20/1     | 0      | SPACE     |                   | lo      | 20   | 20/1         | 0        | SPACE    |               |        |
| 21  | 20/1     | 0      | SPACE     |                   | þ       | 22   | 20/1         | 0        | SPACE    |               |        |
| 23  | 20/1     | 0      | SPACE     |                   | c       | 24   | 20/1         | 0        | SPACE    |               |        |
| 25  | 20/1     | 0      | SPACE     |                   | lo      |      | 20/1         | О        | SPACE    |               |        |
| 27  | 20/1     | 0      | SPACE     |                   | b       |      | 20/1         | o        | SPACE    |               |        |
| 29  | 20/1     | o      | SPACE     |                   | c       |      | 20/1         | o        | SPACE    |               |        |
| 31  | 20/1     | o      | SPACE     |                   |         |      | 20/1         | o        | SPACE    |               |        |
| 33  | 20/1     | o      | SPACE     |                   | b       |      | 20/1         | o        | SPACE    |               |        |
| 35  | 20/1     | o      | SPACE     |                   | c       |      | 20/1         | ő        | SPACE    |               |        |
| 37  | 20/1     | ő      | SPACE     |                   |         |      | 20/1         | 0        | SPACE    |               |        |
| 39  | 20/1     | ő      | SPACE     |                   | b       |      | 20/1         | 0        | SPACE    |               |        |
| 41  | 20/1     | o      | SPACE     |                   | c       |      | 20/1         | 0        | SPACE    |               |        |
| "'  | 20/1     | ľ      | 3F ACE    |                   | ١       | 72   | 20/1         | ľ        | SPACE    |               |        |
|     |          |        |           |                   | $\perp$ |      |              |          |          |               |        |
|     |          | C      | ONN. KVA  | CALC. KVA         |         |      |              | C        | ONN. KVA | CALC. KV      | /A     |
| LIG | HTING    | 1      | .2        | 1.5 <b>(125%)</b> | (       | CONT | INUOUS       | (        | 0        | 0             | (125%) |
| LAF | RGEST M  | OTOR C | )         | 0 <b>(125%)</b>   | - 1     | HEAT | ING          | (        | 0        | 0             | (100%) |
| ТО  | HER MOT  | ORS C  | )         | 0 (100%)          | 1       | NON  | CONTINUO     | ous (    | 0        | 0             | (100%) |
| REC | CEPTACLE | ES C   | )         | 0 (50%>10         | )       | KITC | HEN EQU      | IP (     | 0        | 0             | (N/A)  |
| 1   |          |        |           | •                 |         |      | COIN/DIV     |          | 0        | 0             | (N/A)  |
|     |          |        |           |                   | •       | ГОТА | L KVA        | _        | 1.2      | 1.5           |        |
|     |          |        |           |                   | E       | BALA | NCED TI      | HREE PH  | ASE AMP  | <b>S</b> 4.17 |        |
| 1   | PHA      | SF BAL | ANCE PERC | ENT: PHASE A 3    |         |      |              | E B 0%   |          | PHASE C       | )%     |
|     |          |        |           |                   |         |      |              |          |          |               |        |
|     |          |        |           |                   |         |      |              |          |          |               |        |
|     |          |        |           |                   |         |      |              |          |          |               |        |
|     |          |        |           |                   |         |      |              |          |          |               |        |

| Pai            | nel                                       |                      | ROOM                                      | VOL              | TS :                              | 208Y/120   | V 3P 4\               | W <b>AIC</b> 42,000   |
|----------------|---|----------------------|---|------------------|-----------------------------------|--|-----------------------|---|
| 1 /            | /   |                      | MOUNTING SURFACE                          | BUS              | AM                                | <b>PS</b> 225  |                       | MAIN BKR 225  |
| K              | $\square$                                 |                      | FED FROM HL00<br>NOTE                     | NEU              | TRA                               | _ 100%   |                       | LUGS FEEDTHRU   |
| CKT<br>#       | CKT<br>BKR                                | LOAD<br>KVA          | CIRCUIT DESCRIPTION                       |                  | CK<br>#                           | T CKT<br>BKR   | LOAD<br>KVA           | CIRCUIT DESCRIPTION   |
| 1<br>3<br>5    | 60/3<br>                                  | 15.8                 | DISHWASHER                                |                  | 2 4 6                             | 20/1   | 0.18<br>0.18<br>18.1  | RECEP.<br>RECEP.<br>RICE MIXER  |
| 7 9            | 20/3                                      | 5.18                 | SERVING COUNTER                           |                  | 8<br>0 10                         |  |                       |   |
| 15             | <br>20/1<br>20/1                          | 0.18<br>1.1          | RECEP.<br>REFRIGERATOR                    |                  | 0 12<br>0 14<br>0 16              | ·  | 13.3                  | MIXER GRINDER   |
| 17<br>19<br>21 | 60/3<br> <br>                             | 15                   | STEAMER                                   | ŀ                | a  20                             | 20/1<br>20/1<br>20/1<br>20/1                             | 0.897<br>0.18<br>0.18 | FREEZER<br>RECEPTACLE<br>RECEPTACLE   |
|                | 20/1<br>20/1<br>20/1                      | 0.18<br>0.18<br>0.18 | RECEP. RECEP. RECEPTACLE                  | -                | c 24<br>a 26                      | 20/1<br>20/1<br>20/1                                     | 0.18<br>0.18<br>1     | RECEPTACLE<br>RECEP.<br>DWH-1/2 AND P-1   |
| 29<br>31       | 20/1<br>20/1<br>20/1                      | 0 0                  | SPACE<br>SPACE<br>SPACE                   |                  | c 30<br>a 32                      | 20/1<br>20/1<br>20/1<br>20/1                             | 0                     | SPACE<br>SPACE<br>SPACE   |
| 35<br>37       | 20/1<br>20/1                              | 0<br>0               | SPACE<br>SPACE                            |                  | c   36<br>a   38                  | 20/1<br>20/1   | 0<br>0                | SPACE<br>SPACE  |
|                | 20/1<br>20/1                              | 0                    | SPACE<br>SPACE                            | 1                |                                   | 20/1 20/1  | 0                     | SPACE<br>SPACE  |
| _              |   | CC                   | I<br>DNN. KVA CALC. KVA                   |                  |                                   |  | C                     | I<br>ONN. KVA CALC. KVA   |
| LAF<br>OTI     | HTING<br>RGEST MO<br>HER MOTO<br>CEPTACLE | 0<br>OTOR 1<br>ORS 3 | 0 (125<br>8.1 22.6 (125<br>60.8 30.8 (100 | %)<br>%)<br>>10) | HEA<br>NON<br>KITC<br>NON<br>TOTA | TINUOUS TING CONTINUO HEN EQUI COIN/DIVE AL KVA ANCED TH | DUS (                 | 0 (125%) 0 0 (100%) 1 1 (100%) 20.5 16.4 (80%) 0 0 (N/A) 72.2 72.6 ASE AMPS 202 |
|                | PHA                                       | SE BAL               | ANCE PERCENT: PHASE A                     | 97.1             | %                                 | PHASE  | E <b>B</b> 104        | 4% <b>PHASE C</b> 98.6%   |
|                |   |                      |   |                  |                                   |  |                       |   |

| Pai     | nel          |             | ROOM             |           | VO            | LTS  | 20      | 08Y/120      | V 3P 4      | 4W AIC         | 42,000   |       |
|---------|--------------|-------------|------------------|-----------|---------------|------|---------|--------------|-------------|----------------|----------|-------|
| 1       |              |             | MOUNTING         | SURFAC    | E <b>BU</b> : | S AI | MP      | <b>S</b> 225 |             | MAIN           | BKR ML   | .0    |
|         | 1 L          |             | FED FROM<br>NOTE | HL00      | NE            | JTR  | AL      | 100%         |             | LUGS           | FEEDTH   | RU    |
| KT<br># | CKT<br>BKR   | LOAD<br>KVA | 1                | SECODIDE  | ION           |      | KT<br># | CKT<br>BKR   | LOAD<br>KVA | CIRCUIT        | DESCRIP  | TION  |
|         |              |             | CIRCUIT          | DESCRIP I | ION           | H    | -       |              | +           | +              | DESCRIP' | IION  |
| 1       | 20/1         | 0.566       | LIGHTING         |           |               |      | 2       | 20/1         | 0           | SPACE          |          |       |
| 3<br>5  | 20/1         | 0<br>0      | SPACE<br>SPACE   |           |               |      | 4 6     | 20/1<br>20/1 | 0           | SPACE          |          |       |
| 3<br>7  | 20/1<br>20/1 | 0           | SPACE            |           |               |      | 8       | ,            | 0           | SPACE<br>SPACE |          |       |
| 9       | 20/1         | 0           | SPACE            |           |               |      | 10      | 20/1<br>20/1 | 0<br>0      | SPACE          |          |       |
| 3<br>11 | 20/1         | 0           | SPACE            |           |               |      | 12      | 20/1         | 0           | SPACE          |          |       |
| 13      | 20/1         | ő           | SPACE            |           |               |      | 14      | 20/1         | 0           | SPACE          |          |       |
| 15      | 20/1         | o           | SPACE            |           |               |      | 16      | 20/1         | 0           | SPACE          |          |       |
| 17      | 20/1         | o           | SPACE            |           |               |      | 18      | 20/1         | o           | SPACE          |          |       |
| 19      | 20/1         | 0           | SPACE            |           |               |      | 20      | 20/1         | 0           | SPACE          |          |       |
| 21      | 20/1         | o           | SPACE            |           |               |      | 22      | 20/1         | 0           | SPACE          |          |       |
| 23      | 20/1         | 0           | SPACE            |           |               |      | 24      | 20/1         | 0           | SPACE          |          |       |
| 25      | 20/1         | 0           | SPACE            |           |               |      | 26      | 20/1         | 0           | SPACE          |          |       |
| 27      | 20/1         | 0           | SPACE            |           |               |      | 28      | 20/1         | 0           | SPACE          |          |       |
| 29      | 20/1         | 0           | SPACE            |           |               | c  3 | 30      | 20/1         | 0           | SPACE          |          |       |
| 31      | 20/1         | 0           | SPACE            |           |               | a  3 | 32      | 20/1         | 0           | SPACE          |          |       |
| 33      | 20/1         | 0           | SPACE            |           |               | Ы  З | 34      | 20/1         | 0           | SPACE          |          |       |
| 35      | 20/1         | 0           | SPACE            |           |               | c  3 | 36      | 20/1         | 0           | SPACE          |          |       |
| 37      | 20/1         | 0           | SPACE            |           |               | a  3 | 38      | 20/1         | 0           | SPACE          |          |       |
| 39      | 20/1         | 0           | SPACE            |           |               | b  4 | 40      | 20/1         | 0           | SPACE          |          |       |
| 41      | 20/1         | 0           | SPACE            |           |               | C  4 | 42      | 20/1         | 0           | SPACE          |          |       |
|         |              | CC          | NN. KVA          | CALC. H   | (VA           | Ш    | _       |              | <del></del> | <br>CONN. KVA  | CALC.    | KVA   |
| LIG     | HTING        |             | .566             | 0.708     | (125%)        | CO   | NT      | INUOUS       | -           | 0              | 0        | (125% |
|         | RGEST N      |             |                  | 0.700     | (125%)        |      |         | ING          |             | 0              | 0        | (100% |
|         | HER MO       |             |                  | 0         | (100%)        |      |         | ONTINUC      | US          | 0              | 0        | (100% |
|         | CEPTACI      |             |                  | 0         | (50%>10)      |      |         |              |             | 0              | 0        | (N/A  |
| `       |              |             |                  | =         | (             |      |         | OIN/DIVE     |             | 0              | 0        | (N/A  |
|         |              |             |                  |           |               |      |         | L KVA        | _           | 0.566          | 0.708    |       |
|         |              |             |                  |           |               |      |         |              | IREE P      | HASE AMP       |          |       |
|         | 머            | ASE RAI     | ANCE PER         | TENT. DL  | 1ACE A 300    |      |         |              | E B 0       |                | PHASE (  | 007   |

|          |            |              | MOUNTING<br>FED FROM<br>NOTE |          |          |        |         | <b>S</b> 225<br>100% |              |                  | BKR MLO<br>FEEDTHRU | J                       |
|----------|------------|--------------|------------------------------|----------|----------|--------|---------|----------------------|--------------|------------------|---------------------|-------------------------|
| KT<br>#  | CKT<br>BKR | LOAD<br>KVA  | CIRCUIT [                    | ESCRIPTI | ON       |        | KT<br># | CKT<br>BKR           | LOAD<br>KVA  | CIRCUIT [        | DESCRIPTION         |                         |
| 1        | 20/3       | 0.862        | EF-1                         |          |          | a      | 2       | 20/3                 | 0.419        | EF-2             |                     |                         |
| 3        |            |              |                              |          |          | b      | 4       |                      | l            |                  |                     |                         |
| 5  <br>7 | 20/1       | 0.36         | RECEP.                       |          |          | a      | 6<br>8  | <br> 20/1            | 0.18         | RECEP.           |                     |                         |
|          | 20/1       | 0.38         | RECEP.                       |          |          |        | 10      | 20/1                 | 0.18<br>0.18 | RECEP.           |                     |                         |
|          | 20/1       | 0.18         | RECEP.                       |          |          |        |         | 20/1                 | 0.18         | RECEP.           |                     |                         |
|          | 20/1       | 0.18         | RECEP.                       |          |          |        |         | 20/1                 | 0.18         | RECEP.           |                     |                         |
|          | 20/1       | 0.18         | RECEP.                       |          |          |        |         | 20/1                 | 0.18         | RECEP.           |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        | 20      | 20/1                 | 0            | SPACE            |                     |                         |
| 21       | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
| 23       | 20/1       | 0            | SPACE                        |          |          | c  :   | 24      | 20/1                 | 0            | SPACE            |                     |                         |
|          | ,          | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
|          | 20/1       | 0            | SPACE                        |          |          |        |         | 20/1                 | 0            | SPACE            |                     |                         |
| 41  <br> | 20/1       | 0            | SPACE                        |          |          | C <br> | 42      | 20/1                 | 0            | SPACE            |                     |                         |
| _        |            | CC           | NN. KVA                      | CALC. K  | :VA      | ш      | _       |                      | C            | ONN. KVA         | CALC. K             | VA                      |
| LIGH     | HTING      | 0            |                              | 0        | (125%)   | CC     | TNC     | INUOUS               | (            | )                | 0                   | <u>(1</u> 25 <b>%</b> ) |
|          | RGEST M    |              |                              | 1.08     | (125%)   |        | EAT     |                      |              | )                | 0                   | (100%)                  |
|          | IER MOT    |              | .419                         | 0.419    | (100%)   |        |         | OUNITHO              |              | )                | 0                   | (100%)                  |
| REC      | EPTACL     | <b>ES</b> 1. | .98                          | 1.98     | (50%>10) |        |         | IEN EQUI             |              | )                | 0                   | (N/A)                   |
|          |            |              |                              |          |          |        |         | OIN/DIVE             |              | 0                | 0                   | <u>(</u> N/A)           |
|          |            |              |                              |          |          |        |         | L KVA                |              | 3.26<br>ASE AMPS | 3.48<br>9.65        |                         |

| KT<br># | CKT<br>BKR | LOAD<br>KVA | CIRCUIT DESCRIPTION           | T   | CKT<br># | CKT<br>BKR | LOAD<br>KVA | CIRCUIT D   | DESCRIPTION | ON     |
|---------|------------|-------------|-------------------------------|-----|----------|------------|-------------|-------------|-------------|--------|
| 1       | 20/1       | 0.18        | RECEP.                        | da  | -        | 20/1       | 0.18        | RECEP.      |             |        |
| 3       | 20/1       | 0.18        | RECEP.                        | b   |          | 20/1       | 0.18        | RECEP.      |             |        |
| 5       | 20/1       | 1           | LOCKED C/B; FACP              | c   |          | 20/1       | 0           | SPACE       |             |        |
| 7       | 20/1       | 0           | SPACE                         | a   |          | 20/1       | 0           | SPACE       |             |        |
| 9       | 20/1       | 0           | SPACE                         | Ь   | 10       | 20/1       | О           | SPACE       |             |        |
| 1       | 20/1       | 0           | SPACE                         | c   |          | 20/1       | 0           | SPACE       |             |        |
| 3       | 20/1       | 0           | SPACE                         | a   | 14       | 20/1       | 0           | SPACE       |             |        |
| 5       | 20/1       | 0           | SPACE                         | b   | 16       | 20/1       | 0           | SPACE       |             |        |
| 17      | 20/1       | 0           | SPACE                         | c   | 18       | 20/1       | 0           | SPACE       |             |        |
| 19      | 20/1       | 0           | SPACE                         | a   | 20       | 20/1       | 0           | SPACE       |             |        |
| 21      | 20/1       | 0           | SPACE                         | þ   | 22       | 20/1       | 0           | SPACE       |             |        |
| 23      | 20/1       |             | SPACE                         | c   |          | 20/1       | 0           | SPACE       |             |        |
| 25      | 20/1       |             | SPACE                         | a   |          | 20/1       | 0           | SPACE       |             |        |
| 27      | 20/1       | 0           | SPACE                         | þ   |          | ,          | 0           | SPACE       |             |        |
| 29      | 20/1       | 0           | SPACE                         | c   |          | · '        | 0           | SPACE       |             |        |
| 31      | 20/1       | 0           | SPACE                         | a   |          |            | 0           | SPACE       |             |        |
| 33      | 20/1       | 0           | SPACE                         | þ   |          | ,          | 0           | SPACE       |             |        |
| 35      | 20/1       | 0           | SPACE                         | c   |          | ,          | 0           | SPACE       |             |        |
| 37      | 20/1       | 0           | SPACE                         | a   |          | 20/1       | 0           | SPACE       |             |        |
| 39      | 20/1       | 0           | SPACE                         | þ   |          | / -        | 0           | SPACE       |             |        |
| 41      | 20/1       | 0           | SPACE                         | C   | 42       | 20/1       | 0           | SPACE       |             |        |
| _       |            | CC          | DNN. KVA CALC. KVA            |     |          |            | C           | DNN. KVA    | CALC. K     | VA     |
| LIG     | HTING      | 0           | 0 (125%)                      | (   | CONT     | INUOUS     |             | <del></del> | 0           | (125%) |
| LAF     | RGEST M    | IOTOR 0     | •                             | ŀ   | HEAT     | ING        | (           | )           | 0           | (100%  |
| OTH     | HER MO     | TORS 0      | 0 (100%)                      | 1   | ONO      | OUNITHO    | US 1        |             | 1           | (100%) |
| REC     | CEPTACL    | ES 0        | 0.72 0.72 <b>(50%&gt;10</b> ) | ) k | (ITCH    | IEN EQUI   | <b>P</b> (  | )           | 0           | (N/A)  |
|         |            |             | •                             | N   | IONC     | OIN/DIVE   | RSF (       | )           | 0           | (N/A)  |



# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



Architecture · Interior Design

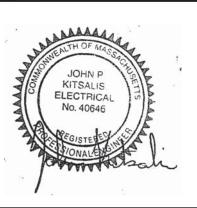
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1 MOUNT VERNON STREET WINCHESTER, MA 01890 781-729-6188



Building Systems & Commissioning Engineers Massachusetts 30 Turnpike Road, Suite #1, Southborough, MA 01772 Tel: (508) 485-4633 Fax: (508) 485-1830



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| Issue                      | Date       |
|----------------------------|------------|
| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
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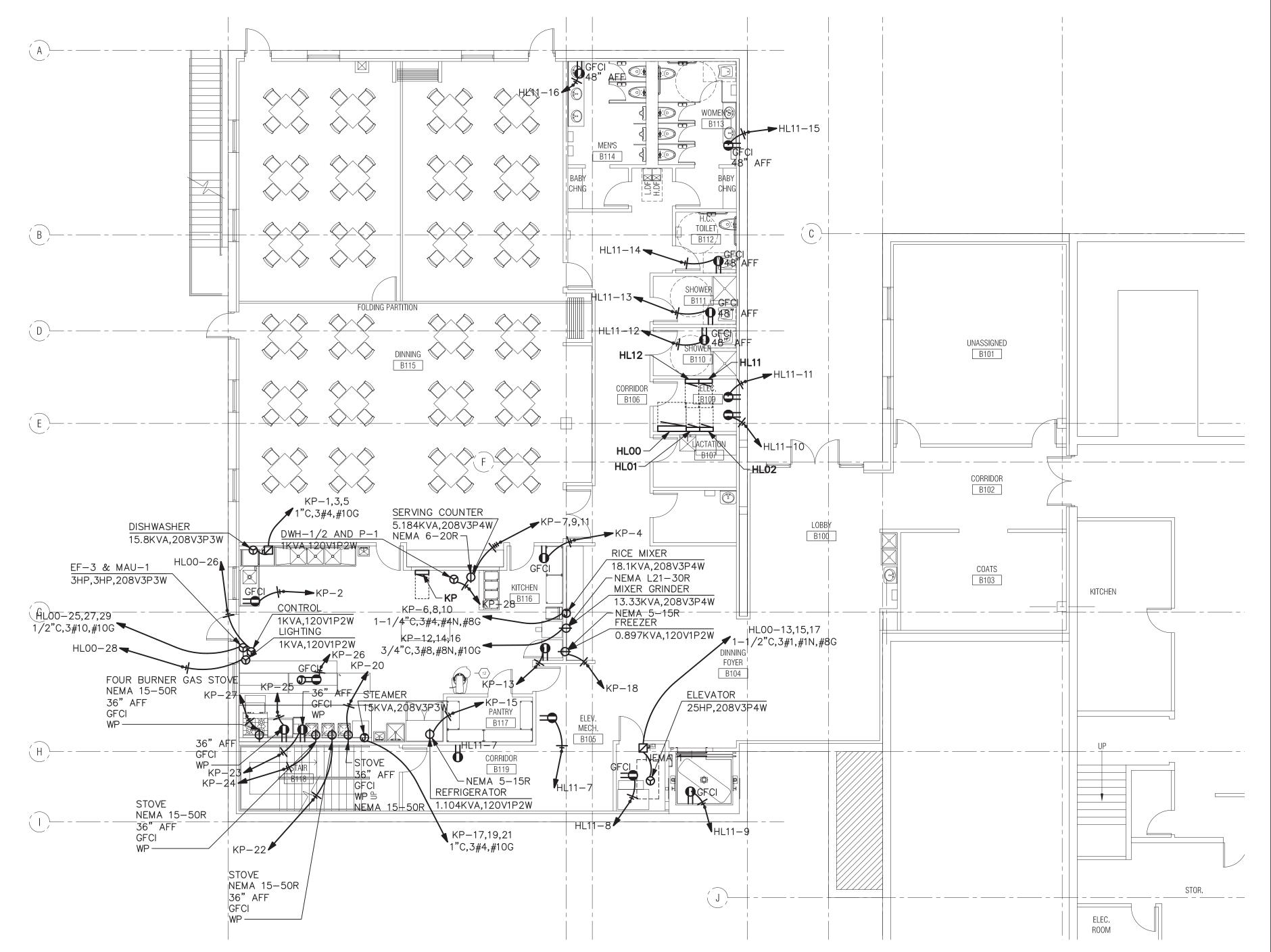
ELECTRICAL - PARTIAL ONE-LINE DIAGRAM

| Scale    | Drawn by | Verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |

E-100

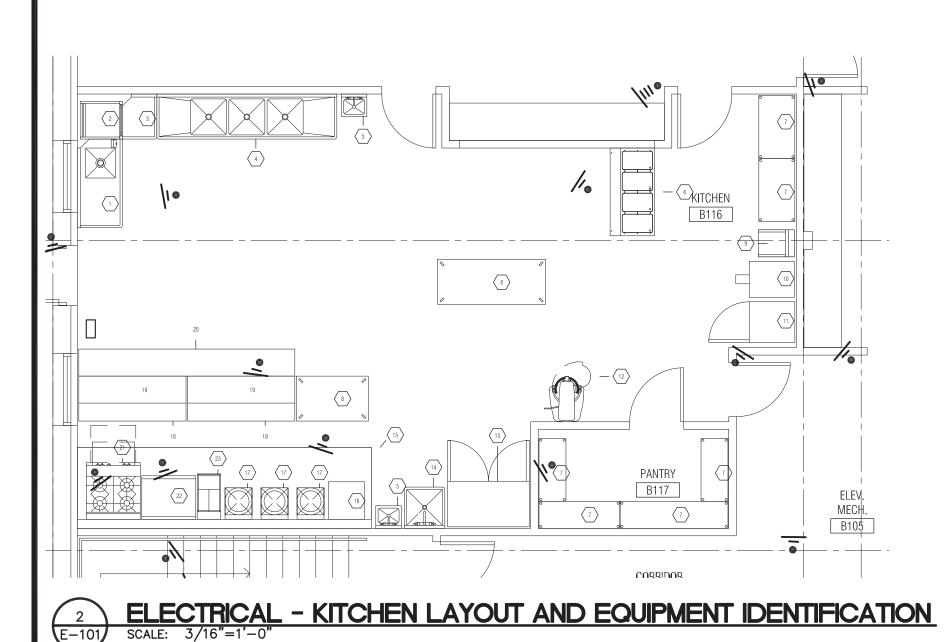
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- 2) EC AND GC SHALL COORDINATE ALL FLOOR CORES AND TRENCHING WITH OTHER TRADES AND BUILDING MANAGEMENT.
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- 7) ALL HVAC COMPONENTS EF, TSTATS, AND ROOF—TOP UNITS SHALL BE FURNISHED BY MC. EC SHALL BE RESPONSIBLE ONLY FOR ELECTRICAL WIRING AND ELECTRICAL
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- 9) EC SHALL VERIFY ALL MECHANICAL EQUIPMENT ELECTRICAL REQUIREMENTS WITH MC PRIOR TO ANY WIRING. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, AND COORDINATION DRAWINGS WITH ALL OTHER TRADES PRIOR TO INSTALLATION.
- 10) CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DEVICE (WIREMOLD, DUPLEX RECEPTACLES, TEL/DATA OUTLETS AND THE LIKE) LOCATIONS WITH ARCHITECTURAL AND FURNITURE PLANS FOR EXACT MOUNTING HEIGHTS.
- 11) CONTRACTOR SHALL COORDINATE ALL WIRING WITH PROJECT MANUFACTURER SHOP DRAWING SUBMITTALS, EQUIPMENT LOCATIONS, STRUCTURAL COMPONENTS, AND
- 12) CONTRACTOR SHALL OBTAIN FROM BANK OR ARCHITECT THE "ALARM & VIDEO LAYOUT" DRAWINGS AND ASSOCIATED SPECIFICATIONS OF THIS PROJECT, AND INCORPORATE ALL ASSOCIATED MATERIAL AND LABOR INVOLVED FOR THESE DOCUMENTS IN BASE—BID AS A SEPARATE ITEM.
- 13) CONTRACTOR SHALL INCLUDE IN BASE—BID AN ALLOWANCE FOR COORDINATING EACH ELECTRICAL DEVICE, RECEPTACLE, TEL/DATA OUTLETS, SECURITY SYSTEM COMPONENTS WITH EQUIPMENT SUBMITTALS, FIELD CONDITIONS, MILWORK FURNISHINGS AND EQUIPMENT LOCATIONS. CONTRACTOR SHALL PROVIDE ALL RECEPTACLES IN EASILLY ACCESSIBLE LOCATIONS, IF FIELD CONDITIONS REQUIRE RELOCATION OF ANY DEVICE CONTRACTOR SHALL PERFORM THE WORK FREE OF ANY ADDITIONAL CHARGES.
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- 17) ELECTRICAL CONTRACTOR SHALL REVIEW MECHANICAL HVAC AND PLUMBING PLANS AND INTEGRATE ALL SYMBOLS AND DEVICES IN ELECTRICAL PLANS FOR PROVIDING THE ELECTRICAL POWER WIRING AND GROUNDING REQUIREMENTS OF THE HVAC AND PLUMBING SYSTEM.





|      |      |                                   |      |      |     | SCHE     | DULE OF E   | QUIF | PMENT    | -     |       |          |       |             |     |           |     |              |                |                 |                 |      |                  |                |                 |
|------|------|-----------------------------------|------|------|-----|----------|-------------|------|----------|-------|-------|----------|-------|-------------|-----|-----------|-----|--------------|----------------|-----------------|-----------------|------|------------------|----------------|-----------------|
| Item | Qty. | Description                       |      |      |     | Ele      | ectrical    |      |          |       |       | Wa       | ter   |             | Was | te        |     | Natural Gas  |                |                 |                 | Flue | Manufacturer     | Model No.      | Notes/ Remarks: |
|      |      |                                   | Amps | KW   | НР  | Volts    | Conn        | Туре | Min. Amp | Hertz | Phase | Cold Ho  | t AF  | F Direct    | AFF | Indirect  | AFF | Gas Pressure | Gas Flow (CFH) | Connection Size | e Gas Regulator | Size |                  |                |                 |
| 1    | 1    | Dishtable, Soiled                 |      |      |     |          |             |      |          |       |       | 1/2" 1/2 | 2" 18 | "           |     | 1-1/2 IPS | 9"  |              |                |                 |                 |      | Advance Tabco    | DTS-S60-60L    |                 |
| 2    | 1    | Dishwasher, Door Type             | 36.6 | 15.8 | 1   | 208-230v |             |      | 50       | 60    | 3     | 3/4" 3/4 | 1" 18 | ' 3/4 FP    |     | 1-1/2 MPT | 9"  |              |                |                 |                 |      | Hoshizaki        | JWE-620UA-6B   |                 |
| 3    | 1    | Dishtable, Cleaned                |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              |                |                 |                 |      | Advance Tabco    | DTC-S30-24R    |                 |
| 4    | 1    | Sink, (3) Compartment*(2 Faucets) |      |      |     |          |             |      |          |       |       | 1/2" 1/2 |       |             |     | 2"        | 9"  |              |                |                 |                 |      | Turbo Air        | TSB-3-D2       |                 |
| 5    | 2    | Hand Sink(2)                      |      |      |     |          |             |      |          |       |       | 1/2" 1/2 | 2" 18 | "           |     | 2"        | 9"  |              |                |                 |                 |      | Turbo Air        | TSS-1-H        |                 |
| 6    | 1    | Serving Counter                   | 14.4 |      |     | 208-240v | NEMA 6-20   |      | 25       | 60    | 3     |          |       |             |     |           |     |              |                |                 |                 |      | Duke Mfg.        | E304SW         |                 |
| 7    | 6    | Shelving Unit                     |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              |                |                 |                 |      | AMCO Corp        | 1428CP         |                 |
| 8    | 2    | Stainless Steel Table             |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              |                |                 |                 |      | Seidman Brothers | Prep Table     |                 |
| 9    | 1    | Rice Mixer                        |      |      | 3/4 | 200-240  |             |      | 50       | 60    | 3     |          |       |             |     |           |     |              |                |                 |                 |      |                  |                |                 |
| 10   | 1    | Mixer Grinder                     | 37.0 |      | 10  | 208      | NEMA L2130F |      | 50       | 60    | 3     |          |       |             |     |           |     |              |                |                 |                 |      | Hobart           | 4246+ Build-Up |                 |
| 11   | 1    | Freezer, Reach-In                 | 7.8  |      | 1/2 | 115v     | NEMA 5-15P  |      |          | 60    | 1     |          |       |             |     |           |     |              |                |                 |                 |      | Turbo Air        | TSF-23SD       |                 |
| 12   | 1    | Food Mixer                        | 5.7  |      | 3/4 | 200-240v |             |      | 50       | 60    | 3     |          |       |             |     |           |     |              |                |                 |                 |      | Hobart           | HL300-1        |                 |
| 13   | 1    | Refrigerator                      | 9.2  |      | 1/2 | 115v     | NEMA 5-15P  |      |          | 60    | 1     |          |       |             |     |           |     |              |                |                 |                 |      | Turbo Air        | TSF-23SD       |                 |
| 14   | 1    | Hand Sink                         |      |      |     |          |             |      |          |       |       | 1/2" 1/2 | 2" 18 | "           |     | 2"        | 9"  |              |                |                 |                 |      | Turbo Air        | TSB-1-N        |                 |
| 15   | 1    | Exhaust Hood                      |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              |                |                 |                 |      |                  |                |                 |
| 16   | 1    | Steamer                           | 46.1 | 15   |     | 208v     |             |      | 50       | 60    | 3     | 1/2" 1/2 | 2" 18 | "   1/2" NP | Т   | 2"        | 9"  |              |                |                 |                 |      | Solaris          | EPX-5-S        |                 |
| 17   | 1    | Stock Pot                         |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              | 79             | 3/4"            | SPECIFIED       | 3/4" | Turbo Air        | TASP-18        | 79,000 BTU      |
| 18   | 1    | Work Top Cooler                   | 7.0  |      | 1/3 |          |             |      |          | 60    | 1     |          |       |             |     |           |     |              |                |                 |                 |      |                  |                |                 |
| 19   | 2    | Double Overshelf                  |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              |                |                 |                 |      |                  |                |                 |
| 20   | 1    | Dish Cabinet                      |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              |                |                 |                 |      | Advance Turbo    | DC-812         |                 |
| 21   | 1    | Range, Gas (heavy-duty)           |      |      |     | 208-240v |             |      |          | 60    | 1     |          |       |             |     |           |     | 7"           | 225            | 1-1/4"          | SPECIFIED       | 5"   | Southbend        | P36D-XX        | 225,000 BTU     |
| 22   | 1    | Griddle, Gas                      |      |      |     |          |             |      |          |       |       |          |       |             |     |           |     |              | 60             | 3/4" NPT        | SPECIFIED       |      | Star Mfg.        | 636TD          | 60,000 BTU      |
| 23   | 1    | Fryer                             |      |      |     | 120      |             |      |          | 60    | 1     |          |       |             |     |           |     |              | 122            | 3/4" NPT        | SPECIFIED       |      | Pitco Frialator  | 45C+           | 122,000 BTU     |



ELECTRICAL - KITCHEN EQUIPMENT REQUIREMENT SPREADSHEET

SCALE: NTS

# SRI LAKSHMI TEMPLE NEW ADDITION

117 WAVERLY STREET ASHLAND, MA 01721



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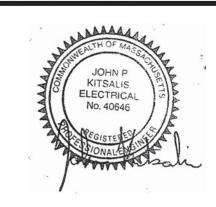


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| Issue                      | Date       |
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| PERMIT SET ( CORE & SHELL) | 10.15.2014 |
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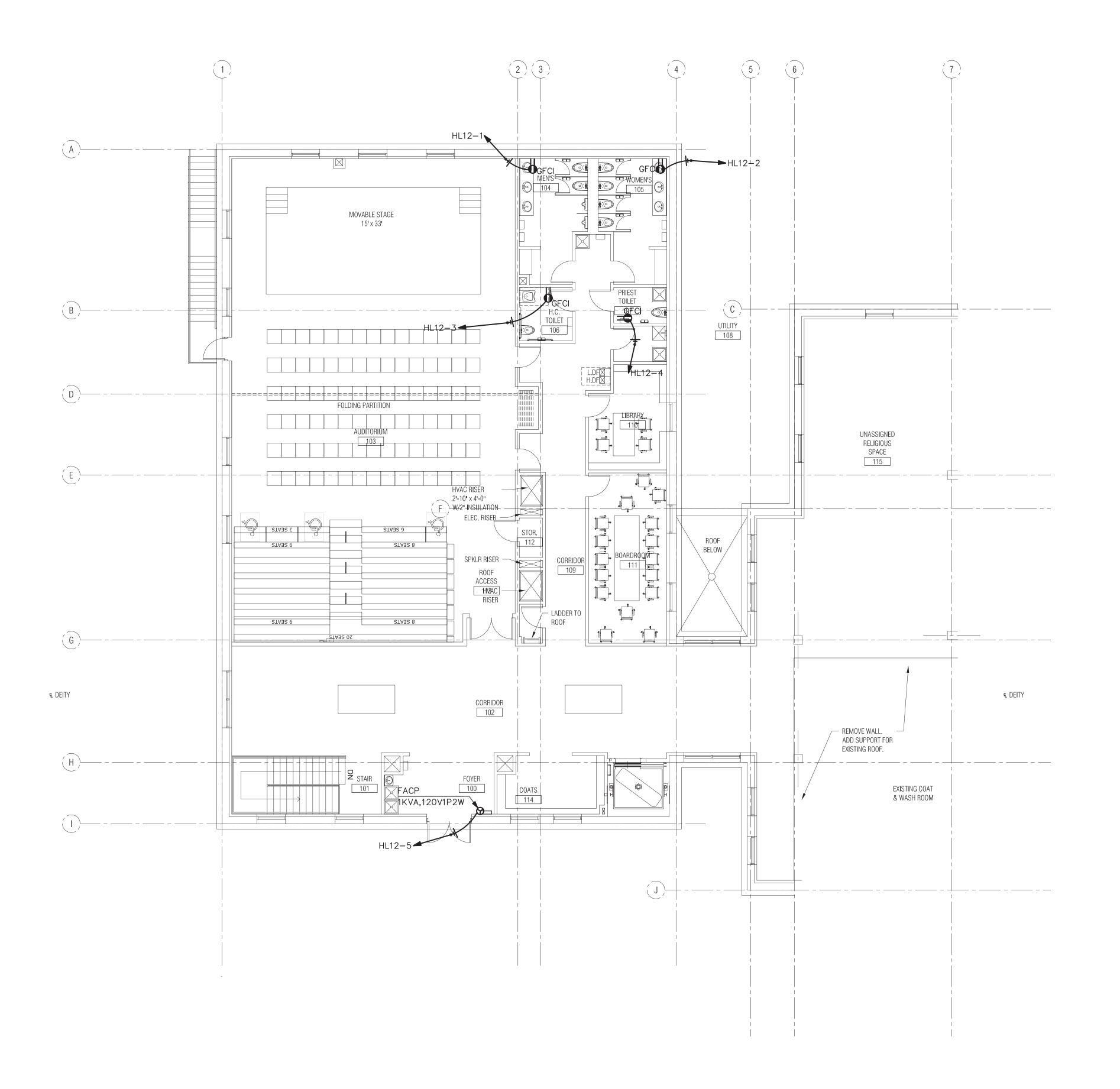
ELECTRICAL - NEW LOWER LEVEL POWER PLAN

Scale Drawn by Verified by
AS NOTED TJL JPK

E-101

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# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



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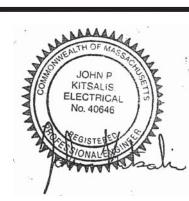
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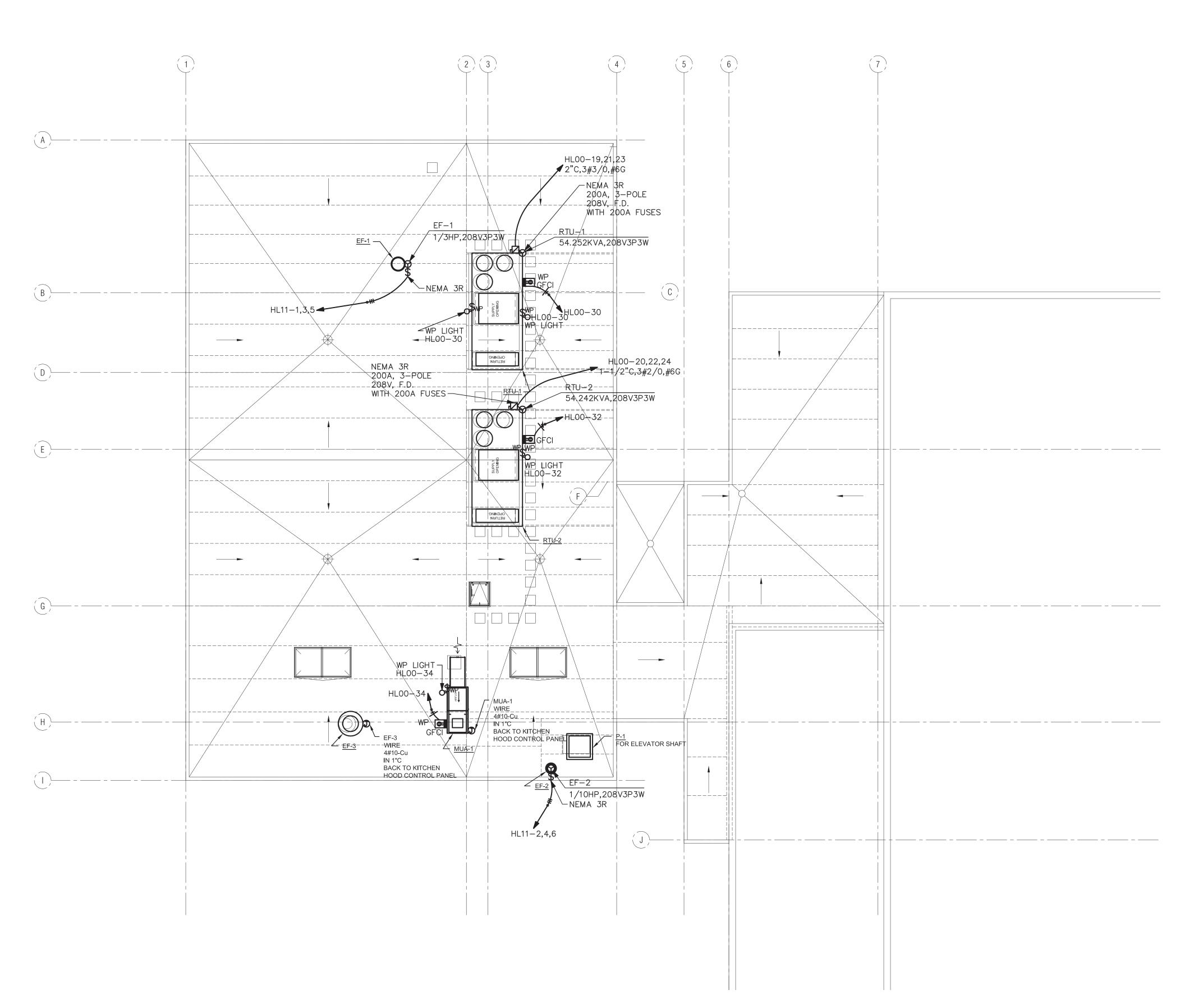
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ELECTRICAL - NEW MAIN LEVEL POWER PLAN

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# SRI LAKSHMI TEMPLE NEW ADDITION

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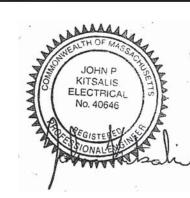
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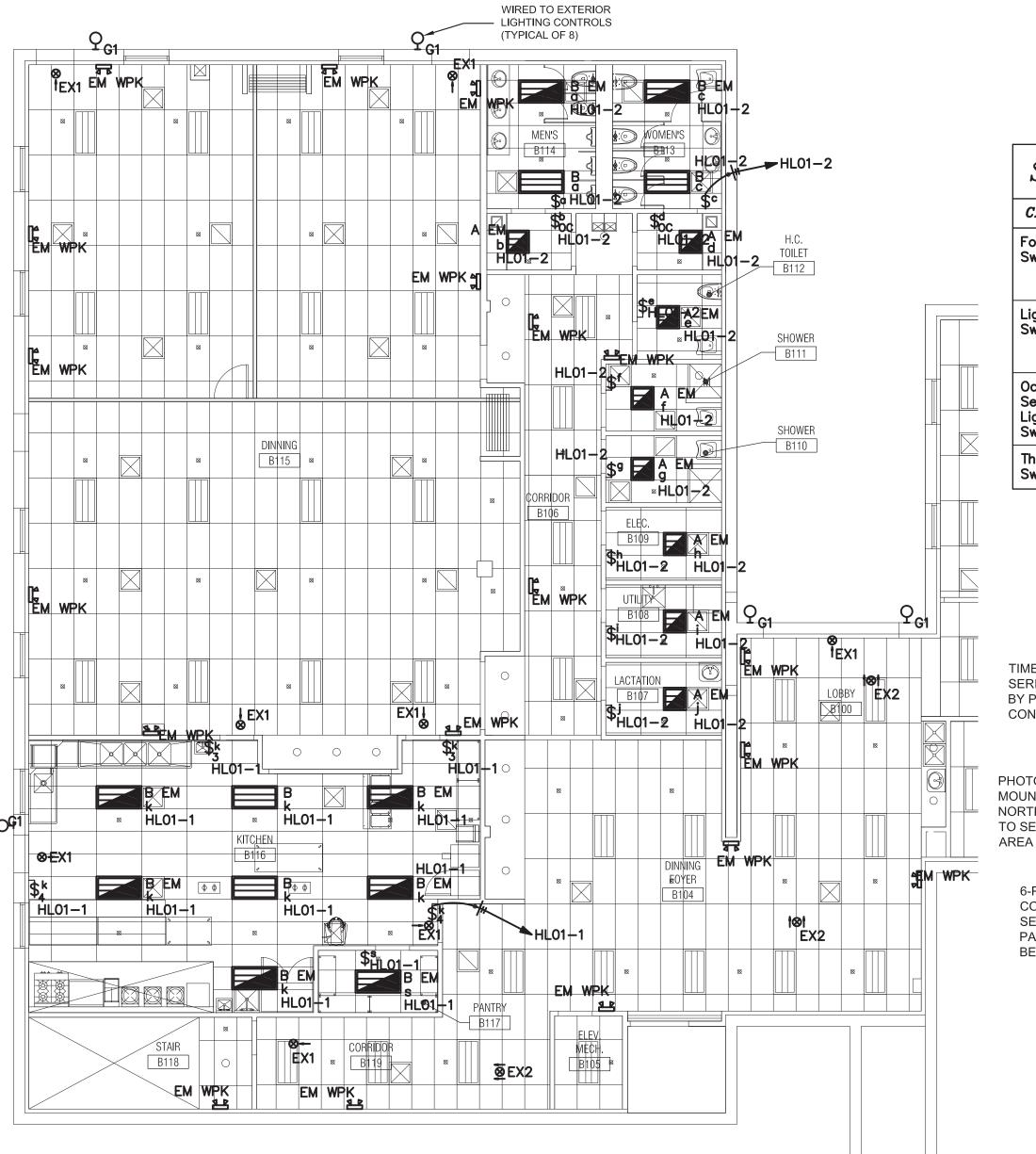
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ELECTRICAL - NEW ROOF POWER PLAN

AS NOTED Drawn by TJL

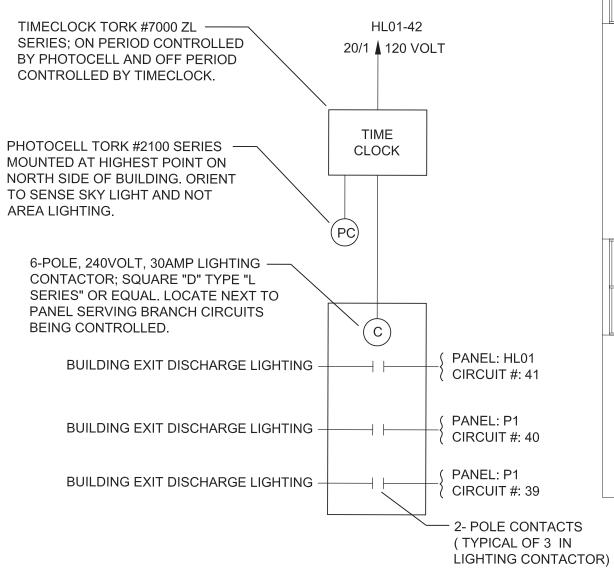
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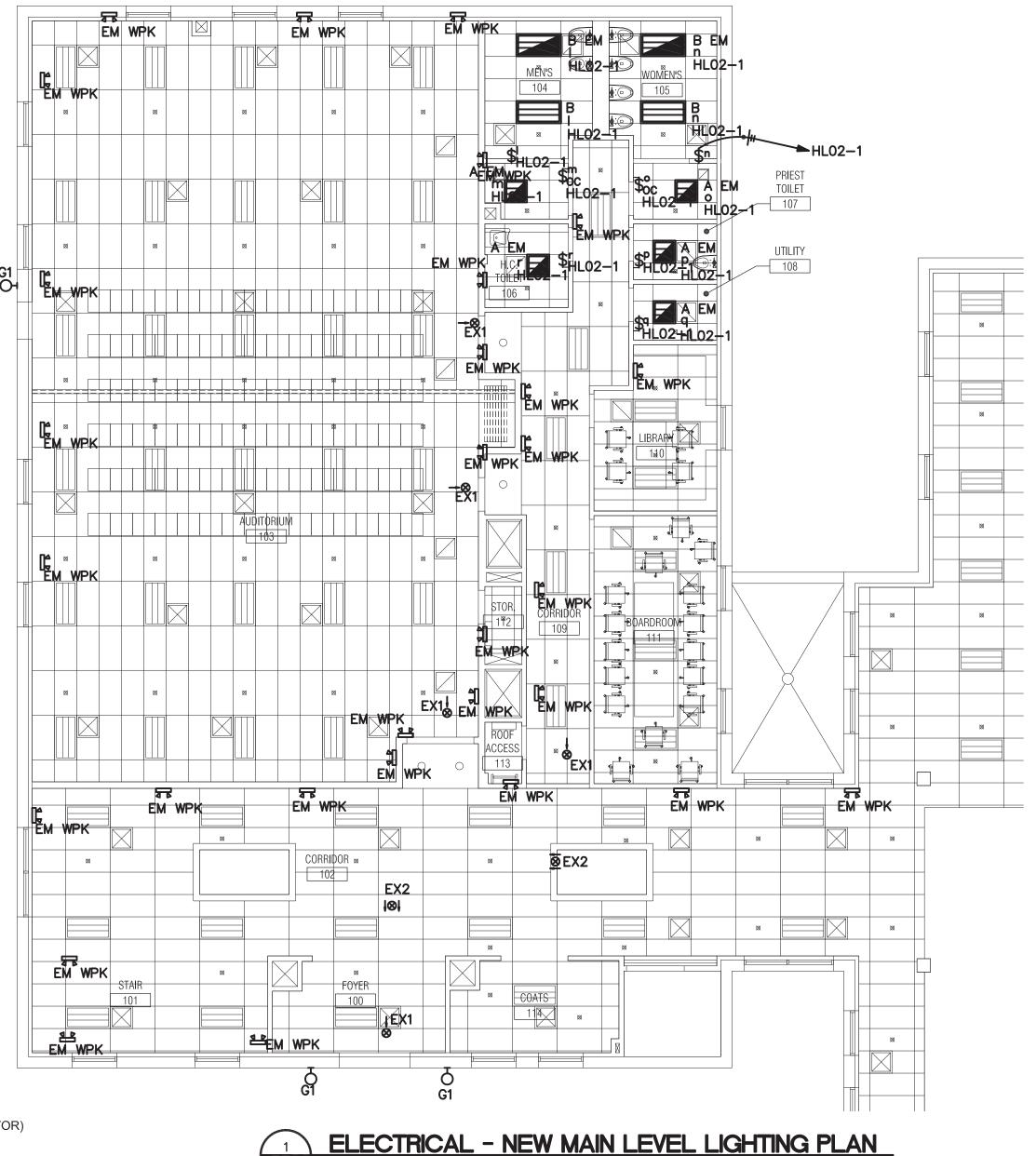
ELECTRICAL - NEW LOWER LEVEL LIGHTING PLAN
SCALE: 1/8"=1'-0"

| CALLOUT                                | SYMBOL           | NOTE 1   | QUANTITY |
|--|------------------|--|----------|
| Fourway<br>Switch                      | \$4              | COMMERCIAL GRADE;<br>120-277V, 20A<br>COLOR & TRIM BY<br>ARCHITECT | 2        |
| Light<br>Switch                        | \$               | COMMERCIAL GRADE;<br>120-277V, 20A<br>COLOR & TRIM BY<br>ARCHITECT | 18       |
| Occupancy<br>Sensor<br>Light<br>Switch | \$ <sub>oc</sub> | COMMERCIAL GRADE<br>OCCUPANCY SENSOR;<br>LEVITON ODS15-ID          | 4        |
| Threeway<br>Switch                     | \$3              | COMMERCIAL GRADE;<br>120-277V, 20A                                 | 2        |





| CALLOUT  | SYMBOL        | LAMP               | DESCRIPTION   | BALLAST    | MOUNTING | MODEL  | INPUT<br>WATTS | VOLTS      | QUANTITY |
|----------|---------------|--------------------|---|------------|----------|--|----------------|------------|----------|
| A EM     |               | (2) 2 LAMP, T8     | LIGHTOLIER COFAIRE HP SERIES 2X2 INCLUDE 90MIN EMERGENCY BATTERY BACKUP POWER | ELECTRONIC | CEILING  | LIGHTOLIER,<br>CFS2GPF217UNVHI   | 64             | 120V 1P 2W | 13       |
| В        |               | (2) 34W 2 LAMP, T8 | LIGHTOLIER COFAIRE HP SERIES 2X4  | ELECTRONIC | CEILING  | LIGHTOLIER,<br>CFS2GPF217UNVHI   | 59             | 120V 1P 2W | 6        |
| В ЕМ     |               | (2) 2 LAMP, T8     | LIGHTOLIER COFAIRE HP SERIES 2X4 INCLUDE 90MIN EMERGENCY BATTERY BACKUP POWER | ELECTRONIC | CEILING  | LIGHTOLIER,<br>CFS2GPF217UNVHI   | 64             | 120V 1P 2W | 10       |
| EM WPK   | الم           | (2) 0110258        | SLIM LITE - SL1 Series  | ELECTRONIC | CEILING  | DUAL-LITE, SL1 POWER FROM LOCAL NORMAL LIGHTING POWER CIRCUIT                                  | 11             | 120V 1P 2W | 49       |
| EX1      | <b>⊗</b><br>† | (1) LED            | CEILING MOUNTED EXIT SIGN   | ELECTRONIC | CEILING  | LIGHTALARMS PREMIUM DIE CAST EDGE-LIT EXIT SIGN POWER FROM LOCAL NORMAL LIGHTING POWER CIRCUIT | 4              | 120V 1P 2W | 13       |
| EX2      | t⊗t           | (1) LED            | EXIT SIGNAGE DOUBLE FACE & ARROWS   | ELECTRONIC | CEILING  | LIGHTALARMS: SPLED W RC D 2DC POWER FROM LOCAL NORMAL LIGHTING POWER CIRCUIT                   | 3              | 120V 1P 2W | 5        |
| G1       | Ю             | (4) 4W             | WEATHERPROOF LED WALL SCONCE  | ELECTRONIC | CEILING  | DUAL-LITE MODEL#<br>PGN-Z-HTR  | 16             | 120V 1P 2W | 8        |
| WP LIGHT | Ю             | (1) 60W 60W        | WEATHER PROOF WORK LIGHT  | ELECTRONIC | SURFACE  |  | 64             | 120V 1P 2W | 4        |



#### LIGHTING NOTES:

L1) ALL COMPONENTS ARE NEW, UNO.

- L2) LIGHT FIXTURE QUANTITIES AND TYPES ARE FOR REFERENCE ONLY. EC SHALL REFER TO REFLECTED CEILING PLAN IN DETERMINING EXACT LIGHT FIXTURE QUANTITIES AND TYPES. CONTRACTOR SHALL INCLUDE IN BID ALL WIRING, CIRCUITS, HOMERUNS, AND SWITCHING TO ACCOMMODATE THE REFLECTED CEILING PLAN LIGHT FIXTURE QUANTITIES AND LIGHT FIXTURE
- L3) COUNT FIXTURE QUANTITIES AND TYPES FROM ELECTRICAL AND ARCHITECTURAL PLANS.
- L4) CONTRACTOR SHALL MATCH FLUORESCENT LAMPS SHOWN ON SCHEDULE TO THEIR CORRESPONDING BALLAST. FOR ALL OUTDOOR FIXTURES, USE BALLAST WITH LOW AMBIENT TEMPERATURE START OPERATION.
- L5) EC SHALL REFER TO ARCHITECTURAL PLANS FOR SPECIFIC CEILING TYPES AND HEIGHTS.
- L6) CONTRACTOR SHALL PROVIDE THE DIMMING BALLAST MANUFACTURERS RECOMMENDED DIMMING SWITCH. INSTALL ALL SYSTEMS PER MANUFACTURERS RECOMMENDATIONS.
- L7) REFER TO MANUFACTURER FOR TYPE OF SWITCHES FOR EXTERIOR SIGNAGES. EXTERIOR SIGNAGE FIXTURES SUCH AS P & M.
- L8) ALL OUTSIDE SITE LIGHTING SHALL BE CONTROLLED VIA TIME CLOCKS AND PHOTOCELLS, USE TORK TIMECLOCK MODEL 930L WITH TORK PHOTOCELL MODEL 2101.
- L9) CONTRACTOR SHALL VERIFY CURRENT DRAW OF ALL LIGHTING CIRCUITS. LIGHTING CIRCUITS SHALL NOT BE USED FOR RECEPTACLES.
- L10) CONTRACTOR SHALL REFER TO ARCHITECTS DRAWINGS FOR EXACT MODEL AND MAKE FOR ALL LIGHTING FIXTURES. CONFIRM ALL COLORS, FINISHES, AND TRIMS WITH ARCHITECT FOR ALL LIGHTING FIXTURES.
- L11) GC SHALL PERFORM A COORDINATION STUDY TO RESOLVE ANY CEILING PLENUM CLEARANCE/SPACE-USE CONFLICTS THAT MAY OCCUR BETWEEN THE TRADES HVAC, PLUMBING AND ELECTRICAL.
- L12) GC SHALL COORDINATE CEILING PLENUM EQUIPMENT, PIPING, WIRING, ETC.. BETWEEN THE MC AND EC. THE GC SHALL IDENTIFY ALL POSSIBLE PROBLEM AREAS FROM THE HVAC, FIRE PROTECTION AND LIGHTING PLANS AND COORDINATE BETWEEN SUBCONTRACTORS TOWARDS RESOLUTION. THE ARCHITECT AND ENGINEER SHALL BE NOTIFIED BEFORE ANY FIELD CHANGES TAKE PLACE TO ACCOMMODATE PLENUM SPACE-USE / CLEARANCE CONFLICTS.
- L13) LIGHTING FIXTURES WHICH ARE DESIGNATED WITH THE "NIGHT-LIGHT" (NL) DESIGNATION; THESE FIXTURES SHALL NOT BE SWITCHED.
- L14) CONTRACTOR SHALL REPLACE ALL EXISTING EXIT SIGNS WITH NEW PER MAKE/MODEL SPECIFIED ON FIXTURE SCHEDULE FOR ALL AREAS AFFECTED BY THE RENOVATION WORK. CONTRACTOR SHALL VERIFY EXIT SIGN DIRECTIONAL SIGNALS AND MOUNTING AND INCORPORATE IN REPLACEMENT MODEL AND ITS EXACT LOCATION FOR INSTALLATION.
- L15) ALL EXISTING EXIT SIGNS SHALL BE REPLACED WITH NEW EXIT SIGNS. MINIMUM STANDARD SHALL BE LIGHTALARMS SPLED-W-R.
- L16) ALL EMERGENCY WALL PACK LIGHTING FIXTURES SHALL BE REPLACED WITH NEW; SEE SHEET ED-100.

# SRI LAKSHMI TEMPLE **NEW ADDITION**

117 WAVERLY STREET ASHLAND, MA 01721



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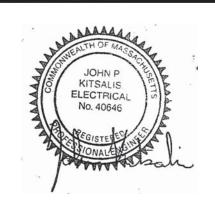
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## ELECTRICAL -**NEW LIGHTING PLAN**

| Scale    | Drawn by | verified by |
|----------|----------|-------------|
| AS NOTED | TJL      | JPK         |
| Sheet #  |          |             |

#### FIRE ALARM NOTES:

- (F1) FIRE ALARM INSTALLATION CONTRACTOR SHALL OBTAIN A COPY OF THE FIRE ALARM REGULATIONS FROM THE ASHLAND, MA FIRE PREVENTION DEPARTMENT, BUREAU OF FIRE PREVENTION. THESE REGULATIONS ARE PART OF THE PROJECT'S CONSTRUCTION DOCUMENTS AND THE CONTRACTOR SHALL REVIEW ALL LOCAL REGULATIONS PRIOR TO SUBMITTING BID. IF THERE IS ANY CONFLICT BETWEEN WHAT IS SHOWN ON THE DRAWINGS AND LOCAL REGULATIONS THEN LOCAL REGULATIONS SHALL TAKE PRIORITY. CONTRACTOR SHALL INFORM ENGINEER IF ANY CONFLICTS ARISE PRIOR TO SUBMITTING BID. CONTRACTOR SHALL PROVIDE FINAL "AS-BUILT" DRAWINGS AT THE END OF THIS PROJECT.
- (F2) NEW AUDIO/STROBES SHALL BE ADA AND NFPA 72 APPROVED. CANDELA RATING AS NOTED.
- (F3) NEW AUDIO/STROBES SHALL HAVE A 1 WATT AUDIO OUTPUT.
- (F4) AUDIO/STROBES SHALL BE MTD. 80" A.F.F. OR 6" BELOW CEILING HEIGHT WHICHEVER IS LESS.
- (F5) SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE.
- (F6) THE TESTING OF THE FIRE ALARM SYSTEM SHALL BE INCLUDED IN THE CONTRACT OF THE EC.
- (F7) EC SHALL CONFIRM THAT THE CURRENT DRAW ON THE AUDIO RISER IS NOT EXCEEDED DUE TO THE CURRENT DRAW OF EACH NEW AUDIO/STROBE.
- (F8) ALL WIRING SHALL TERMINATE ON TERMINAL BOARDS IN SPACE FATC.
- (F9) EC SHALL FURNISH, INSTALL, AND WIRE REMOTE ALARM INDICATORS (RAI) AND REMOTE ALARM INDICATORS WITH TEST SWITCHES (RAITS) AS INDICATED ON THE PLANS. EC SHALL FURNISH AND INSTALL ENGRAVED NAMEPLATES FOR EACH RAI AND RAITS. EACH ENGRAVED NAMEPLATE SHALL HAVE THE UNIQUE NAME FOR EACH ROOM OR DEVICE IT IS
- (F10) EC SHALL CONFIRM THAT THERE ARE NO OPEN OR SHORTED FIRE ALARM CIRCUITS PRIOR TO FACP TIE IN AND TEST.
- (F11) ALL WIRING FOR FIRE ALARM DEVICES SHALL BE TWISTED SHIELDED TYPE, #16 AWG SOLID COPPER IN 1/2" RMC OR
- (F12) ALL AUDIO/STROBES SHALL BE SYNCHRONIZED.

METAL CLAD CABLE PAINTED RED.

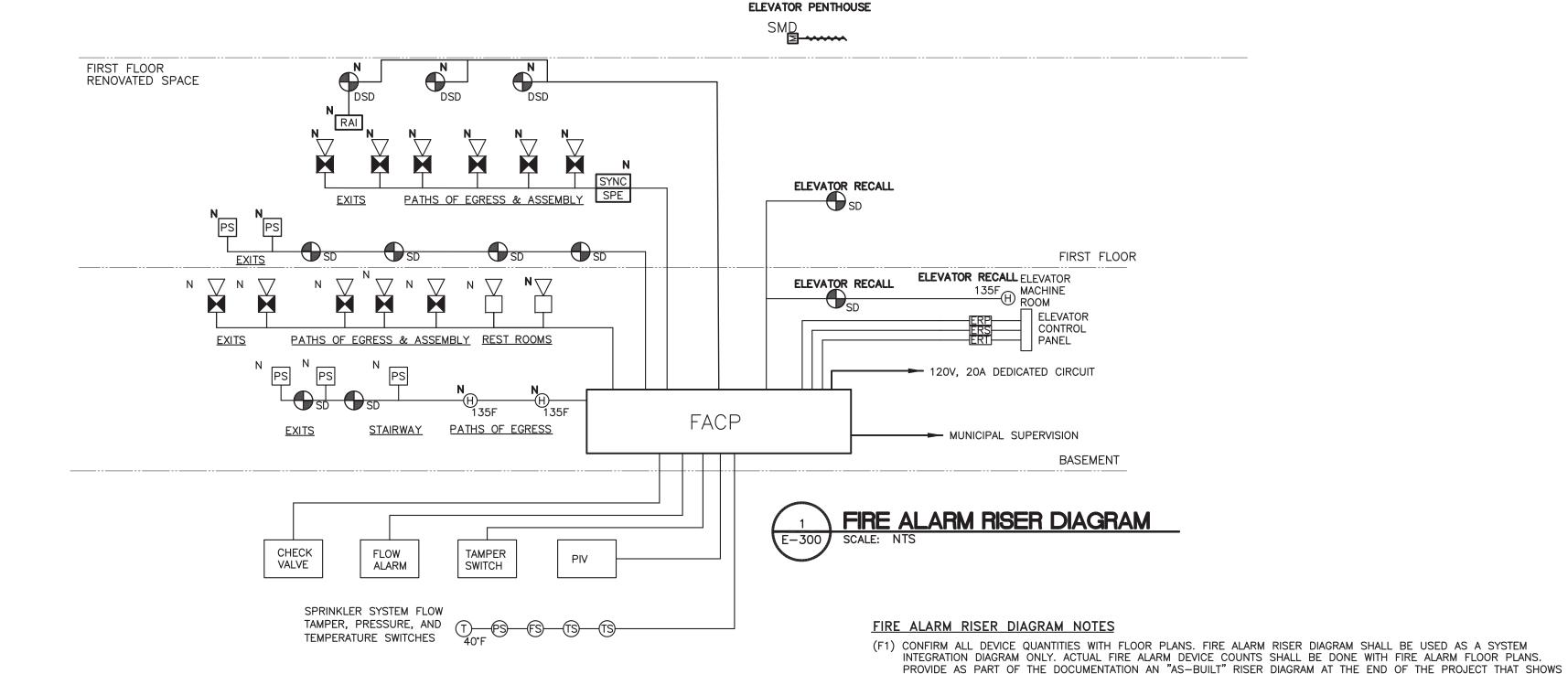
- (F13) CONTRACTOR SHALL PERFORM ALL BATTERY CALCULATIONS FOR THE FIRE ALARM SYSTEM TO MEET ALL NFPA 72 REQUIREMENTS. ANY BATTERY UPGRADES, ADDITIONS OR MODIFICATIONS TO MEET ALL STATE AND LOCAL REQUIREMENTS.
- (F14) CONTRACTOR SHALL PERFORM A SITE SURVEY BEFORE SUBMITTING BID.
- (F15) FINAL FIRE DEPARTMENT ACCEPTANCE TESTING OF THE FIRE ALARM SYSTEM SHALL BE INCLUDED IN THE CONTRACT OF THE CONTRACTOR. TESTING SHALL INCLUDE ALL AUXILIARY INITIATING, CONTROL, AND INDICATING FUNCTIONS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
- (F16) THE CONTRACTOR SHALL PREPARE A CERTIFICATION OF COMPLETION PRIOR TO FIRE DEPARTMENT ACCEPTANCE TEST.
- THE FIRE ALARM SYSTEM SHALL OVERRIDE ALL SECURITY SYSTEM ELECTRIC DOOR LOCKS WHICH EMERGENCY DOORS OR, ARE PRIMARY PATHS OF EGRESS. ALL MAGNETIC DOOR HOLDERS IN THE PREMISES SHALL BE RELEASED.
- (F18) OUTSIDE BEACON & MUNICIPAL FIRE DEPARTMENT CONNECTION: A. PROVIDE 200 Cd WP BEACON FOR EACH TENANT SPACE.
  - B. PROVIDE TIE AND PROGRAMMING INTO EXISTING WALGREENS FACP.

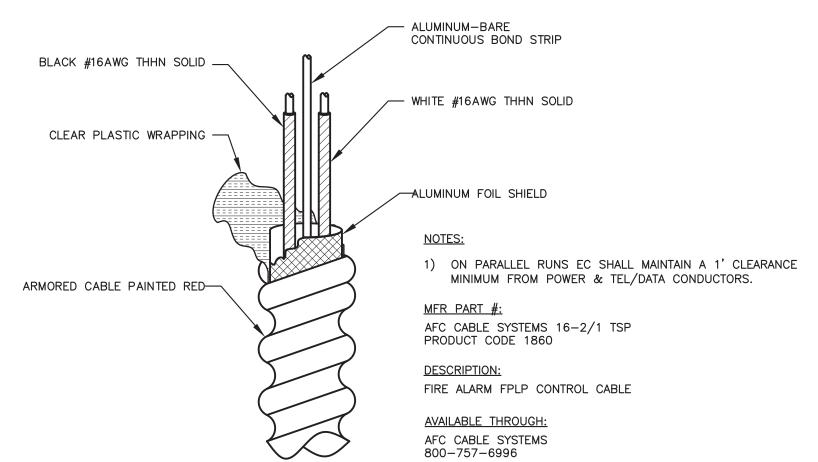
#### (F19) ZONE WIRING:

- A. SHALL BE ADDRESSABLE.
- B. SHALL BE CLASS A FOR INITIATING DEVICES AND NOTIFICATION APPLIANCES.
- (F20) FINAL "AS-BUILT" DRAWINGS AND DOCUMENTATION -
  - THE CONTRACTOR SHALL PROVIDE REPRODUCIBLE DRAWINGS DETAILING THE FOLLOWING: - SCHEMATICS OF ALL COMPONENT INTERCONNECTIONS
  - ASSEMBLY DRAWINGS OF ALL CONTROL PANELS
  - CONNECTION DIAGRAMS OF TERMINAL OR MODULE CABINETS LOCATION OF END OF THE LINE COMPONENTS
  - MANUALS FOR ALL CONTROL PANELS - CUT SHEETS FOR EACH DEVICE
  - BATTERY CALCULATIONS - SYSTEMWIDE RISER DIAGRAM WITH INITIATING, INDICATING AND CONTROL DEVICES

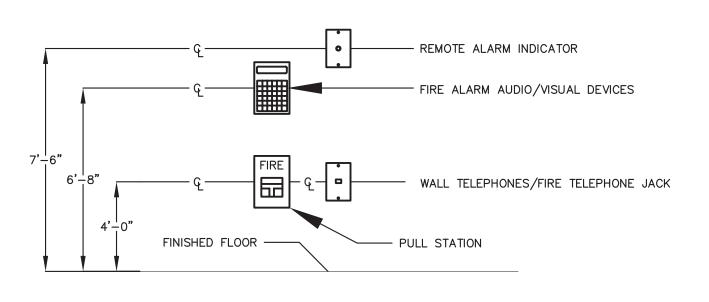
#### (F21) MINIMUM BATTERY AND WIRING REQUIREMENTS:

- A. BOX AND CONDUIT MARKINGS: BOXES, CABINETS OR ENCLOSURES CONTAINING FIRE ALARM COMPONENTS OR TERMINATIONS SHALL BE RED AND CLEARLY MARKED "FIRE ALARM". CONDUIT SHALL BE MARKED WITH A 2" WIDE RED STRIPE EVERY 10' AND WITHIN 3' OF EACH BOX.
- B. TERMINATION'S:
- CABLE TERMINATION'S SHALL BE MADE ON TERMINAL STRIPS WITH EACH WIRE LABELED IN THE FOLLOWING WAY:
- ZONE NUMBER LINE VOLTAGE
- POLARITY
- C. BATTERY CALCULATIONS THE CONTRACTOR SHALL SIZE THE AMPERE-HOUR OF THE BATTERIES BASED ON THE FOLLOWING:
- MANUFACTURERS DATA SHEETS FOR ALL INDICATING AND INITIATING COMPONENTS. - MANUFACTURERS DATA SHEETS ON ALL FIRE ALARM SYSTEM ELECTRIC POWER CONSUMING COMPONENTS.
- THE BATTERIES SHALL BE SIZED TO HANDLE THE GREATER OF A OR B, WHICHEVER IS GREATER: A. 60 HOURS IN THE STANDBY MODE FOLLOWED BY 5 MINUTES IN THE ALARM MODE
- B. 15 MINUTES IN THE ALARM MODE
- D. FIRE ALARM TERMINAL CABINETS CONTRACTOR SHALL PROVIDE. A NEMA 4, RED CABINET APPROXIMATELY 24"X 18" X 6" DEEP IN EACH OF THE FOLLOWING LOCATIONS: RECEIVING
- (F22) GUARANTEE: A. THE FIRE ALARM SYSTEM SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. ANY EQUIPMENT SHOWN TO BE DEFECTIVE IN WORKMANSHIP OR MATERIAL SHALL BE REPAIRED, REPLACED OR ADJUSTED FREE OF CHARGE. THE DATE OF ACCEPTANCE SHALL BE THE DATE OF FINAL APPROVAL OF THE FIRE DEPARTMENT.
- (F23) FIRE ALARM SYSTEM -
- A. RECOMMENDED FIRE ALARM MANUFACTURERS ARE NOTIFIER, EDWARDS, SIEMENS. FCI.
- B. SYSTEM TYPE -THE FIRE ALARM CONTRACTOR SHALL PROVIDE AN ADDRESSABLE FIRE ALARM SYSTEM.
- (F24) CONFIRM ALL DEVICE QUANTITIES WITH FLOOR PLANS. ACTUAL FIRE ALARM DEVICE COUNTS SHALL BE DONE WITH FIRE ALARM FLOOR PLANS. PROVIDE AS PART OF THE DOCUMENTATION AN "AS-BUILT" RISER DIAGRAM AT THE END OF THE









#### NOTES:

- 1. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE
- 2. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL, UNO.

#### WIRING DEVICE, STANDARD MOUNTING HEIGHTS FOR TYPICAL DEVICES SCALE: NTS

# SUBSCRIPTS & ABBREVIATIONS

FIRE ALARM SEQUENCE OF OPERATION:

DETECTOR, OR SPRINKLER MONITORING DEVICE, SUCH AS FLOW SWITCH:

SEQ2- ACTIVATE THE VOICE/STROBE AND STROBE EVACUATION SYSTEM.

- ABOVE FINISHED FLOOR
- ABOVE COUNTER TOP
- INDICATES THE CANDELA RATING OF THE STROBE
- CARBON MONOXIDE
- CONTROL PANEL DIGITAL ALARM RECIEVER/TRANSMITTER
- ELECTRICAL METALLIC TUBING
- EXISTING
- ELECTRICAL CONTRACTOR
- EXISTING, RELOCATED
- FUTURE FIRE ALARM
- FIRE ALARM CONTROL PANEL
- FIRE ALARM REMOTE ANNUNCIATOR
- FIRE ALARM TERMINAL CABINET
- FURNISHED BY OTHERS
- FLEXIBLE METAL CONDUIT FURNISHED UNDER ANOTHER CONTRACT
- MECHANICAL CONTRACTOR
- NEW DEVICE
- NORMAL POWER
- SIGNAL POWER EXPANDER
- TO BE DETERMINED
- UNLESS NOTED OTHERWISE
- WEATHER PROOF

#### **SYMBOLS**

ALL WIRING, DEVICE ADDRESSES (ZONING), BATTERY AMPERE—HOUR AND VOLTAGE DROP CALCULATIONS.

UPON ACTIVATION OF FIRE ALARM THE FACP SHALL NOTIFY THE MUNICIPAL FIRE DEPARTMENT THROUGH THE

(F2) GROUNDING CONDUCTOR NOT SHOWN IN FIRE ALARM RISER DIAGRAM FOR REASONS OF CLARITY.

UPON ACTIVATION OF ANY DOUBLE ACTION PULL STATION, SMOKE DETECTOR, HEAT DETECTOR, DUCT SMOKE

SEQ3- INDICATE THE ZONE OR DEVICE OF ACTIVATION ON THE FACP AND REMOTE ANNUNCIATOR(S).

SEQ5- RELEASE ALL PATH OF EGRESS ELECTRIC/MAGNETIC SECURITY LOCKS CONNECTED TO THE FIRE ALARM

SEQ4- RELEASE ALL FIRE DOORS (MAGNETIC HOLD) CONNECTED TO THE FIRE ALARM SYSTEM.

- PSH PULL STATION
- SMOKE DETECTOR, PHOTOELECTRIC TYPE
- HEAT DETECTOR, FIXED TEMPERATURE AS INDICATED
- VOICE-STROBE W/CANDELLA & AUDIO LEVEL
- MASTERBOX PLENUM SMOKE DETECTOR
- FIRE DEPARTMENT KEY VAULT
- REMOTE ALARM INDICATOR
- REMOTE ALARM INDICATOR WITH TEST INDICATOR SWITCH 200 CANDELA EXTERIOR STROBE
- SYNCHRONIZATION MODULE AUDIO/STROBE SIGNAL POWER EXPANDER
- DUCT SMOKE DETECTOR RADIO MASTERBOX
- SIGNAL POWER?

DACT - DIGITAL ALARM COMMUNICATOR TRANSMITTER SMOKE DAMPER

SCHEDULE OF FIRE ALARM DRAWINGS

| WG. # | DESCRIPTION                          | REV # |  |  |  |
|-------|--------------------------------------|-------|--|--|--|
|       | FIRE ALARM                           |       |  |  |  |
| E-300 | FIRE ALARM — SCHEDULES AND DETAILS   | -     |  |  |  |
| E-301 | FIRE ALARM - NEW BASEMENT FLOOR PLAN | _     |  |  |  |
| E-302 | FIRE ALARM - NEW FIRST FLOOR PLAN    | _     |  |  |  |

# SRI LAKSHMI TEMPLE NEW ADDITION

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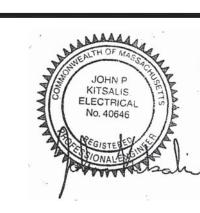
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FIRE ALARM - SCHEDULES AND DETAILS

AS NOTED

1203020

FIRE ALARM - SCHEDULES AND DETAILS

# FIRE ALARM METHODOLOGY, SEQUENCE OF OPERATION & TESTING — LOWER LEVEL FLOOR:

THE FIRE ALARM SYSTEM IS DESIGNED TO MEET THE <u>FIRE ALARM SIGNALING SYSTEM</u> REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE. AUXILIARY FUNCTIONS SUCH AS ELEVATOR RECALL, & HVAC ROOFTOP UNIT SHUTDOWN ARE ADDITIONS TO THE AUTOMATIC SMOKE DETECTORS, HEAT DETECTORS, AUXILIARY SWITCHES, MANUAL FIRE ALARM PULL STATIONS, & SUPERVISION REQUIREMENTS:

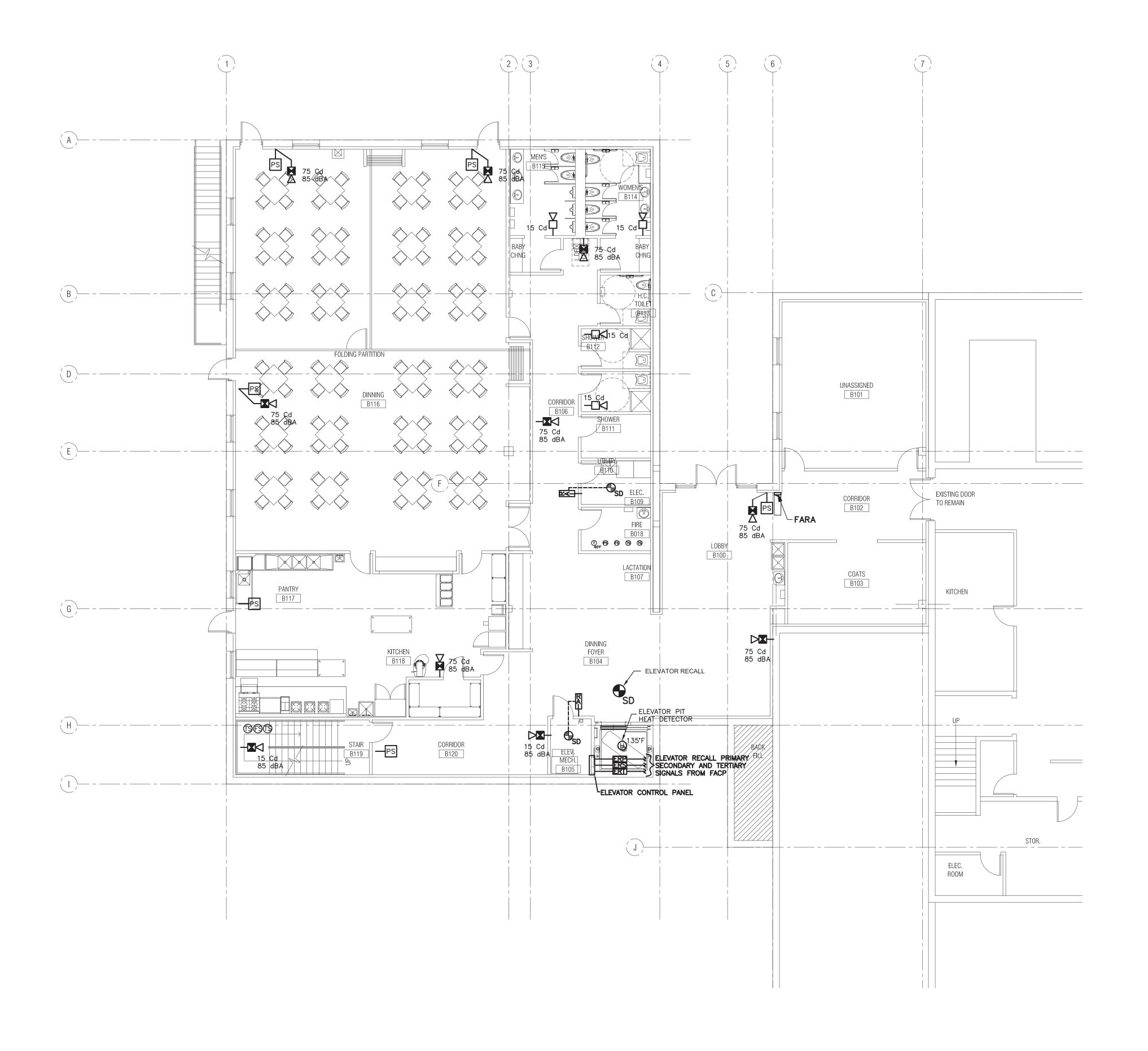
- FIRE PROTECTIVE SIGNALING SYSTEM INITIATING MANUAL PULL STATIONS ARE PROVIDED NOT MORE THAN FIVE FEET AWAY FROM AT ALL FLOOR EXITS & MOUNTED 48" ABOVE THE FINISHED FLOOR.
- 2. <u>FIRE PROTECTIVE SIGNALING SYSTEM</u> NOTIFYING VOICE STROBE COVERAGE IS PER 2002 NFPA 72 PUBLIC MODE. THE AMERICAN WITH DISABILITIES ACT (ADA), & 780 CMR REQUIREMENTS FOR SPACING, CANDELA, & VOICE ALARM AMPLITUDE.
- 3. <u>AUXILIARY FUNCTION</u> ELEVATOR RECALL IS TIED INTO THE MAIN FIRE ALARM SYSTEM THROUGH THE ELEVATOR LOBBY SMOKE DETECTORS. UPON A ELEVATOR LOBBY SMOKE DETECTOR INITIATION, ELEVATOR MACHINE ROOM SMOKE DETECTOR & ELEVATOR LOBBY SMOKE DETECTORS, THE FIRE ALARM SYSTEM SHALL RECALL THE ELEVATOR TO AN ALTERNATE SAFE
- 4. <u>AUXILIARY FUNCTION</u> HVAC ROOFTOP UNIT SHUTDOWN IS TIED INTO THE MAIN FIRE ALARM SYSTEM THROUGH THE FIRST FLOOR SPRINKLER CONTROL VALVE FLOW SWITCH OR INITIATION OF ITS SUPPLY AIR DUCT SMOKE DETECTOR.
- 5. <u>AUXILIARY FUNCTION</u> SPRINKLER SYSTEM ALARMS, FLOW SWITCHES, & TAMPER SWITCHES MONITORING SHALL BE TIED INTO THE MAIN FIRE ALARM SYSTEM.
- ANY AUXILIARY FUNCTION <u>INITIATING DEVICE</u> OR MANUAL PULL STATION <u>SHALL ACTIVATE</u> THE FIRE ALARM SYSTEM TO PERFORM ALL THE NECESSARY AUXILIARY CONTROL FUNCTIONS & ACTIVATE THE MASTERBOX TO COMMUNICATE THE FIRE ALARM TO THE CAMBRIDGE FIRE DEPARTMENT. THE FIRE ALARM SYSTEM SHALL ANNUNCIATE ALL INITIATING FIRE ALARM DEVICES & ANNUNCIATE ON THE FIRST FLOOR MAIN STREET ENTRANCE AND REMOTE ALARM ANNUNCIATOR.
- 7. WHEN THE FIRE ALARM SYSTEM IS ACTIVATED, ALL VOICE STROBES SHALL IN SYNCHRONIZED MANNER ALARM FOR BUILDING EVACUATION AS DESCRIBED PER 780 CMR & THE 2002 NFPA
- 8. TESTING OF ALL PROTECTIVE SIGNALING SYSTEM & AUXILIARY FUNCTIONS THAT CONSTITUTE THE FIRE ALARM SYSTEM SHALL BE COORDINATED WITH THE FIRE DEPARTMENT. ALL 2002 NFPA 72 TESTING REQUIREMENTS, ALONG WITH THOSE OF THE AUTHORITY HAVING JURISDICTION SHALL BE MET. CONTRACTOR SHALL COORDINATE FIRE ALARM TESTING WITH ALL OTHER PROJECT CONTRACTORS TO CONFIRM ALL AUXILIARY FUNCTIONS AS DEFINED IN THIS NARRATIVE REPORT FOR THE FIRST FLOOR.

# FIRE ALARM NOTES:

- F1) ALL VOICE/STROBES SHALL BE ADA APPROVED & SYNCHRONIZED. CANDELA RATING AS
- F2) VOICE/STROBES SHALL BE MOUNTED 80" A.F.F OR 6" BELOW CEILING.
- F3) ELEVATOR LOBBY SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE.
- F4) THE TESTING OF THE FIRE ALARM SYSTEM SHALL BE INCLUDED IN THE CONTRACT OF THE EC. THE EC SHALL BEAR THE COST OF ANY FEES FROM THE FIRE DEPARTMENT & FOR ANY OTHER AUTHORITY HAVING JURISDICTION MANDATORY FIRE ALARM TESTING & COMMISSIONING.
- F5) EC SHALL PROVIDE SIGNAL POWER EXPANDERS IF THE QUANTITY OF VOICE STROBES EXCEED THE FIRE ALARM SYSTEMS CAPABILITY. EC SHALL PLAN PRIMARY & BATTERY BACKUP POWER & ALL ASSOCIATED WIRING TO ACCOMPLISH THIS PORTION OF THE WORK.
- F6) ALL DEVICES SHALL BE LISTED FOR USE WITH THE BASE BUILDING FIRE ALARM SYSTEM.
- F7) EC SHALL PROVIDE NAME PLATES FOR REMOTE ALARM INDICATORS WITH TEST SWITCH FOR THE CONCEALED FIRE ALARM INDICATING DEVICE WHICH IT IS MONITORING. RAITS ARE NOT SHOWN ON FLOOR PLANS, BUT EC IS RESPONSIBLE FOR RAITS OF ALL CONCEALED FA INDICATING DEVICES.
- F8) ALL CONCEALED SMOKE/HEAT DETECTORS SHALL HAVE CORRESPONDING REMOTE ALARM ANNUNCIATORS.
- F9) EC SHALL PROVIDE A FIRE ALARM RELEASE ON ALL BUILDINGS EGRESS DOOR MAGNETIC LOCKS. EC IS RESPONSIBLE FOR TESTING.
- F10) ALL APPLICABLE NOTES & DETAILS ON ALL OTHER FA SHEETS SHALL ALSO APPLY TO THIS SHEFT
- F11) ASSEMBLY SPACE SMOKE DETECTORS HAS BEEN PROVIDED WITH A ZONE DISABLE SWITCH TO PREVENT NUISANCE ALARMS DURING RELIGIOUS ACTIVITIES; A TROUBLE SIGNAL WILL CONTINUOUSLY ANNUNCIATE UNTIL THE SMOKE DETECTORS HAVE BEEN ENABLED IN THIS ZONE.
- F13) FIRE ALARM & ELEVATOR CONTROL CIRCUITS ARE TO SUPPORT ELEVATOR RECALL PER 2002 NFPA 72. ELEVATOR RECALL SHALL BE INITIATED FROM ELEVATOR LOBBY SMOKE DETECTORS &/OR ELEVATOR MACHINE ROOM SMOKE DETECTOR.
- THERE WILL BE NO SPRINKLER IN MACHINE ROOM, ELEVATOR PIT, OR ELEVATOR HOISTWAY PER MA BUILDING BOARD MORATORIUM. THEREFORE, AS PER NFPA 72, NO SMOKE OR HEAT DETECTORS SHALL BE LOCATED IN THE ELEVATOR HOISTWAY OR ELEVATOR PIT BECAUSE THOSE AREAS ARE NOT SPRINKLERED.
- 2. THERE WILL BE NO ELECTRICAL SHUNT TRIP PER MA BUILDING BOARD MORATORIUM.
- 3. THERE IS AN AUXILIARY CONTACT ON THE 200A FUSED DISCONNECT FEEDING THE ELEVATOR CONTROL PANEL AS PART OF BATTERY LOWERING SAFETY FEATURE.
- 4. PER 2002 NFPA 72 YOU WILL BE GIVEN THREE SIGNALS FROM THE FIRE ALARM CONTROL PANEL (FACP), THESE THREE SIGNALS WILL BE GENERATED BY THE ELEVATOR MACHINE ROOM SMOKE DETECTOR AND ELEVATOR LOBBY SMOKE DETECTORS.
- A. IF ELEVATOR LOBBY SMOKE DETECTOR ACTIVATES <u>OTHER THAN</u> THE DESIGNATED SAFE FLOOR ELEVATOR LOBBY SMOKE DETECTOR THEN THE FACP WILL SEND OUT AN ELEVATOR RECALL SECONDARY (ERS) SIGNAL TAKING THE ELEVATOR TO A SAFE DESIGNATED FLOOR TO BE DETERMINED BY ELEVATOR PROVIDER, FOR EXAMPLE, THE FIRST FLOOR, AS THE DESIGNATED SAFE FLOOR.
- BY ELEVATOR PROVIDER, FOR EXAMPLE, THE FIRST FLOOR, AS THE DESIGNATED SAFE FLOOR.

  B. IF THE DESIGNATED SAFE FLOOR ELEVATOR LOBBY SMOKE DETECTOR ACTIVATES, THEN THE FACP WILL SEND OUT AN ELEVATOR RECALL PRIMARY (ERP) SIGNAL TAKING THE ELEVATOR TO A SAFE
- FLOOR OTHER THAN THE DESIGNATED SAFE FLOOR INITIATED BY THE ERS SIGNAL.

  IF THE ELEVATOR MACHINE ROOM SMOKE DETECTOR ACTIVATES, THEN AN ELEVATOR RECALL TERTIARY (ERT) SIGNAL IS SENT FROM THE FACP TO THE ELEVATOR CONTROL PANEL FOR THE ELEVATOR TO GO TO A SAFE FLOOR THAT MAY BE AN ALTERNATE FLOOR THAN THOSE DESIGNATED BY THE ERP & ERS SIGNALS.





# SRI LAKSHMI TEMPLE NEW ADDITION

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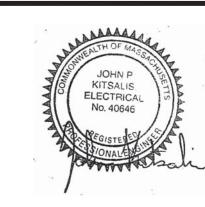


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FIRE ALARM - NEW LOWER LEVEL FLOOR PLAN

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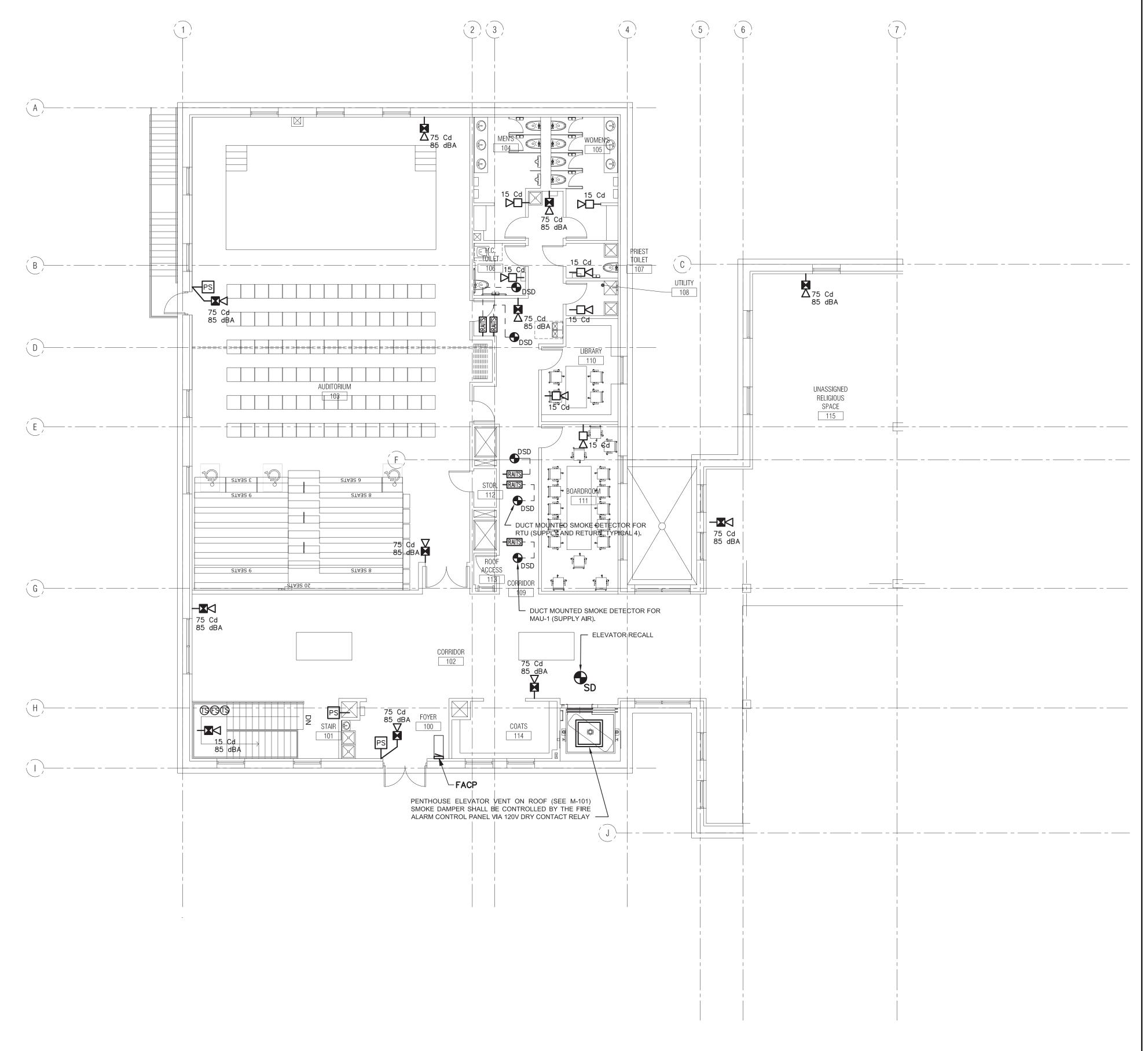
# FIRE ALARM METHODOLOGY, SEQUENCE OF OPERATION & TESTING — FIRST FLOOR:

THE FIRE ALARM SYSTEM IS DESIGNED TO MEET THE <u>FIRE ALARM SIGNALING SYSTEM</u> REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE. AUXILIARY FUNCTIONS SUCH AS ELEVATOR RECALL, & HVAC ROOFTOP UNIT SHUTDOWN ARE ADDITIONS TO THE AUTOMATIC SMOKE DETECTORS, HEAT DETECTORS, AUXILIARY SWITCHES, MANUAL FIRE ALARM PULL STATIONS, & SUPERVISION REQUIREMENTS:

- 1. <u>FIRE PROTECTIVE SIGNALING SYSTEM</u> INITIATING MANUAL PULL STATIONS ARE PROVIDED NOT MORE THAN FIVE FEET AWAY FROM AT ALL FLOOR EXITS & MOUNTED 48" ABOVE THE FINISHED FLOOR.
- FIRE PROTECTIVE SIGNALING SYSTEM NOTIFYING VOICE STROBE COVERAGE IS PER 2002 NFPA 72 PUBLIC MODE. THE AMERICAN WITH DISABILITIES ACT (ADA), & 780 CMR REQUIREMENTS FOR SPACING, CANDELA, & VOICE ALARM AMPLITUDE.
- 3. <u>AUXILIARY FUNCTION</u> ELEVATOR RECALL IS TIED INTO THE MAIN FIRE ALARM SYSTEM THROUGH THE ELEVATOR LOBBY SMOKE DETECTORS. UPON A ELEVATOR LOBBY SMOKE DETECTOR INITIATION, ELEVATOR MACHINE ROOM SMOKE DETECTOR & ELEVATOR LOBBY SMOKE DETECTORS, THE FIRE ALARM SYSTEM SHALL RECALL THE ELEVATOR TO AN ALTERNATE SAFE
- 4. <u>AUXILIARY FUNCTION</u> HVAC ROOFTOP UNIT SHUTDOWN IS TIED INTO THE MAIN FIRE ALARM SYSTEM THROUGH THE FIRST FLOOR SPRINKLER CONTROL VALVE FLOW SWITCH OR INITIATION OF ITS SUPPLY AIR DUCT SMOKE DETECTOR.
- 5. <u>AUXILIARY FUNCTION</u> SPRINKLER SYSTEM ALARMS, FLOW SWITCHES, & TAMPER SWITCHES MONITORING SHALL BE TIED INTO THE MAIN FIRE ALARM SYSTEM.
- 6. ANY AUXILIARY FUNCTION INITIATING DEVICE OR MANUAL PULL STATION SHALL ACTIVATE THE FIRE ALARM SYSTEM TO PERFORM ALL THE NECESSARY AUXILIARY CONTROL FUNCTIONS & ACTIVATE THE MASTERBOX TO COMMUNICATE THE FIRE ALARM TO THE CAMBRIDGE FIRE DEPARTMENT. THE FIRE ALARM SYSTEM SHALL ANNUNCIATE ALL INITIATING FIRE ALARM DEVICES & ANNUNCIATE ON THE FIRST FLOOR MAIN STREET ENTRANCE AND REMOTE ALARM ANNUNCIATOR
- 7. WHEN THE FIRE ALARM SYSTEM IS ACTIVATED, ALL VOICE STROBES SHALL IN SYNCHRONIZED MANNER ALARM FOR BUILDING EVACUATION AS DESCRIBED PER 780 CMR & THE 2002 NFPA
- 8. TESTING OF ALL PROTECTIVE SIGNALING SYSTEM & AUXILIARY FUNCTIONS THAT CONSTITUTE THE FIRE ALARM SYSTEM SHALL BE COORDINATED WITH THE FIRE DEPARTMENT. ALL 2002 NFPA 72 TESTING REQUIREMENTS, ALONG WITH THOSE OF THE AUTHORITY HAVING JURISDICTION SHALL BE MET. CONTRACTOR SHALL COORDINATE FIRE ALARM TESTING WITH ALL OTHER PROJECT CONTRACTORS TO CONFIRM ALL AUXILIARY FUNCTIONS AS DEFINED IN THIS NARRATIVE REPORT FOR THE FIRST FLOOR.

# FIRE ALARM NOTES:

- F1) ALL VOICE/STROBES SHALL BE ADA APPROVED & SYNCHRONIZED. CANDELA RATING AS
- F2) VOICE/STROBES SHALL BE MOUNTED 80" A.F.F OR 6" BELOW CEILING.
- F3) ELEVATOR LOBBY SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE.
- F4) THE TESTING OF THE FIRE ALARM SYSTEM SHALL BE INCLUDED IN THE CONTRACT OF THE EC. THE EC SHALL BEAR THE COST OF ANY FEES FROM THE FIRE DEPARTMENT & FOR ANY OTHER AUTHORITY HAVING JURISDICTION MANDATORY FIRE ALARM TESTING & COMMISSIONING.
- F5) EC SHALL PROVIDE SIGNAL POWER EXPANDERS IF THE QUANTITY OF VOICE STROBES EXCEED THE FIRE ALARM SYSTEMS CAPABILITY. EC SHALL PLAN PRIMARY & BATTERY BACKUP POWER & ALL ASSOCIATED WIRING TO ACCOMPLISH THIS PORTION OF THE WORK.
- F6) ALL DEVICES SHALL BE LISTED FOR USE WITH THE BASE BUILDING FIRE ALARM SYSTEM.
- F7) EC SHALL PROVIDE NAME PLATES FOR REMOTE ALARM INDICATORS WITH TEST SWITCH FOR THE CONCEALED FIRE ALARM INDICATING DEVICE WHICH IT IS MONITORING. RAITS ARE NOT SHOWN ON FLOOR PLANS, BUT EC IS RESPONSIBLE FOR RAITS OF ALL CONCEALED FA INDICATING DEVICES.
- F8) ALL CONCEALED SMOKE/HEAT DETECTORS SHALL HAVE CORRESPONDING REMOTE ALARM ANNUNCIATORS.
- F9) EC SHALL PROVIDE A FIRE ALARM RELEASE ON ALL BUILDINGS EGRESS DOOR MAGNETIC LOCKS. EC IS RESPONSIBLE FOR TESTING.
- F10) ALL APPLICABLE NOTES & DETAILS ON ALL OTHER FA SHEETS SHALL ALSO APPLY TO THIS
- F11) ASSEMBLY SPACE SMOKE DETECTORS HAS BEEN PROVIDED WITH A ZONE DISABLE SWITCH TO PREVENT NUISANCE ALARMS DURING RELIGIOUS ACTIVITIES; A TROUBLE SIGNAL WILL CONTINUOUSLY ANNUNCIATE UNTIL THE SMOKE DETECTORS HAVE BEEN ENABLED IN THIS ZONE.



FIRE ALARM - NEW UPPER LEVEL FLOOR PLAN

# SRI LAKSHMI TEMPLE NEW ADDITION

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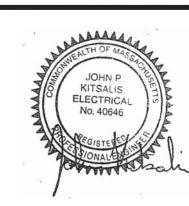


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FIRE ALARM - NEW MAIN LEVEL FLOOR PLAN

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SECTION 16011 TEMPORARY & PERMANENT ELECTRICAL SERVICE

PART 1 GENERAL

#### 1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this

#### 1.2 SUMMARY

A. This section includes temporary lighting and power with luminaires, panelboards, circuit breakers, and enclosures.

#### B. Related sections include the following:

- 1. Division 16 Section "Grounding". 2. Division 16 Section "Wiring Devices"
- 3. Division 16 Section "Circuit Breakers"
- 4. Division 16 Section "Panelboards"

#### 1.3 DEFINITIONS

A. GFCI: Ground fault current interrupter.

- B. RMS: Root Mean Square
- C. SPDT: Single Pole, Double Throw

#### 1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Owner, Architect, or Engineer and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:

- 1. Owner's construction forces.
- 2. Occupants of Project.
- 3. Architect. 4. Engineer.
- 5. Testing agencies. 6. Personnel of authorities having jurisdiction.

C. Permanent Service: Coordinate with building owner and utility company to establish permanent service upon completion of the project. Contractor shall pay for all permits, aid—to—construction charges, and related fees associated with the new service.

#### 1.5 NOTIFICATION

A. Coordinate with owner to provide 72 hour written notification to other tenants of any power interruptions. Notification shall state the estimated time and duration of the electrical outage.

#### 1.6 QUALITY ASSURANCE

A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical

Facilities," and NFPA 241. 1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and

2. Electric Service: Comply with NECA, NEMA and UL standards and regulations for temporary electric service. Install service to comply with

3. Comply with OSHA standards and regulations.

#### PART 2 PRODUCTS

#### 2.1 MATERIALS

A. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

B. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

#### C. Main panelboard with disconnect.

- D. Temporary lighting.
- E. 120 volt receptacles with overcurrent protection.
- F. Enclosures. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location. 1. Outdoor Locations: NEMA 250, Type 3R.

#### PART 3 EXECUTION

### 3.1 INSTALLATION

A. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, and overload-protected disconnecting means.

1. Install power distribution wiring overhead and rise vertically where least exposed to damage.

B. Electric Distribution: Provide receptacle outlets adequate for connection

of power tools and equipment. 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio. 2. Provide metal conduit, tubing, or metallic cable for wiring exposed to

possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.

3. Provide metal conduit enclosures or boxes for wiring devices. 4. Provide 4-gang outlets, spaced so 100-foot (30-m) extension cord can reach each area for power hand tools and task lighting. Provide a separate

125-V ac, 20-A circuit for each outlet. C. Lighting: Provide temporary lighting with local switching that provides

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

adequate illumination for construction operations and traffic conditions.

2. Provide one 100-W incandescent lamp every 50 feet (15 m) in traffic

3. Install exterior—yard site lighting that will provide adequate illumination for construction operations, parking and traffic conditions, and signage visibility

when the Work is being performed. 4. Install lighting for Project identification sign.

#### END OF SECTION 16011

#### SECTION 16060 - GROUNDING AND BONDING

#### PART 1 - GENERAL

#### 1.1 SUMMARY

A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

#### 1.2 QUALITY ASSURANCE

A. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the InterNational Electrical Testing Association and that is acceptable to authorities having jurisdiction. 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. 1. Comply with UL 467.

#### PART 2 - PRODUCTS

#### 2.1 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 16 Section "Wiring Methods.

B. Material: Copper. C. Equipment Grounding Conductors: Insulated with green-colored

D. Grounding Electrode Conductors: Stranded cable.

2. Assembly of Stranded Conductors: ASTM B 8.

E. Bare Copper Conductors: Comply with the following: Solid Conductors: ASTM B 3.

#### 2.2 CONNECTOR PRODUCTS

A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

# PART 3 - EXECUTION

#### 3.1 APPLICATION

A. Use only copper conductors. B. In raceways, use insulated equipment grounding conductors.

C. Equipment Grounding Conductor Terminations: Use bolted pressure

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

1. Use insulated spacer; space 1 inch from wall and support from wall 6 inches above finished floor, unless otherwise indicated. 2. At doors, route the bus up to the top of the door frame, across the top of the doorway, and down to the specified height above the floor.

#### 3.2 EQUIPMENT GROUNDING CONDUCTORS

A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

#### 3.3 INSTALLATION

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

#### 3.4 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically

B. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure—type connectors.

C. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque—tightening values. If manufacturer's torque values are not indicated, use those specified in UL

D. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

#### END OF SECTION 16060

#### SECTION 16100 - WIRING METHODS

PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

A. Summary: Building wire and cable and associated splices, connectors, and terminations for wiring systems rated 600 V and less, and twisted—pair cable; and raceways and boxes.

#### PART 2 - PRODUCTS

#### 2.1 WIRES AND CABLES

A. Connectors and Splices: Wiring connectors of size, ampacity rating, material, and type and class for application and for service indicated.

A. Wireways: Screwed cover type, with manufacturers standard finish.

B. Outlet and Device Boxes: Sheet metal boxes, except use cast-metal boxes at exterior, interior exposed, and interior damp locations.

C. Pull and Junction Boxes: Sheet metal boxes, except use nonmetallic boxes with gasketed covers at exterior and interior damp locations.

#### 2.3 ENCLOSURES

A. Hinged-Cover Enclosures: NEMA 250, steel enclosure with continuous hinge cover and flush latch. Finish inside and out with manufacturer's

B. Cabinets: NEMA 250, Type 1, unless otherwise indicated.

#### PART 3 - EXECUTION

#### 3.1 INSTALLATION

A. Install wires and cables according to the NECA's "Standard of

Installation." B. Wiring at Outlets: Install with at least 12 inches of slack conductor at

each outlet.

C. Conceal wiring, unless otherwise indicated, within finished walls, ceilings,

D. Boxes and Enclosures: In damp or wet locations use NEMA 250, Type 4. stainless steel.

E. Use raceway fittings compatible with raceway and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings, unless otherwise indicated.

F. Raceways Embedded in Slabs: Install in middle third of the slab thickness where practical, and leave at least 1—inch concrete cover.

G. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as practical.

H. Join raceways with fittings designed and approved for the purpose and make joints tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight. Use insulating bushings to protect conductors.

I. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line having not less than 200-lb tensile strength. Leave not less than 18 inches of slack at each end of the pull wire.

J. Install raceway sealing fittings where required by the NEC and at wiring entrances to refrigerated spaces. Locate at suitable, approved, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.

with intermediate metal conduit; flexible metal conduit may be used 6 inches above the floor. L. Install a separate green ground conductor in surface metal raceway

K. Stub-up Connections for Equipment: Extend conductors to equipment

from the junction box supplying the raceway to receptacle and fixture ground terminals.

### 3.2 IDENTIFICATION MATERIALS AND DEVICES

A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

C. Identify raceways and cables with color banding as follows: 1. Bands: Pretensioned, snap-around, colored plastic sleeves or colored adhesive marking tape. Make each color band 2 inches wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.

2. Band Locations: At changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

3. Colors: As follows:

D. Color-code 208/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as

a. Telecommunication System: Green and yellow.

1. Phase A: Black. 2. Phase B: Red.

3. Phase C: Blue.

4. Neutral: White.

5. Ground: Green. END OF SECTION 16100

# SECTION 16140 - WIRING DEVICES

#### PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data

B. Comply with NEMA WD 1 C. Comply with NFPA 70.

#### PART 2 - PRODUCTS

## 2.1 DEVICES

A. General: Listed and labeled as defined in NFPA 70. Article 100, by a

testing agency acceptable to authorities having jurisdiction.

B. Color: White/Gray (Gray only when device is mounted on metal surface) C. Receptacles: Heavy— Duty grade, NEMA WD6, Configuration 5—20R unless otherwise indicated.

D. Ground-Fault Circuit Interrupter Receptacles: Feed-through type, with integral duplex receptacle; for installation in a 2-3/4-inch- deep outlet box without an adapter.

E. Isolated—Ground Receptacles: Equipment grounding contacts connected only to the green grounding screw terminal of the device with inherent electrical isolation from mounting strap.

E. Snap Switches: Heavy-duty, quiet type.

F. Wall Plates, Finished Areas: Smooth plastic fastened with metal screws having heads matching plate color.

G. Wall Plates, Unfinished Areas, Metal Surfaces: Galv. steel with metal screws. H. Floor Service Fittings: Modular, above-floor, dual-service units suitable for wiring method used.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install devices and assemblies plumb and secure.

B. Mount devices flush, with long dimension vertical, and grounding terminal of receptacles on top unless otherwise indicated. Group adjacent devices under single, multigang wall plates.

C. Protect devices and assemblies during painting.

D. Install wall plates when painting is complete.

#### END OF SECTION 16140

SECTION 16410 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL (Not Applicable)

#### PART 2 - PRODUCTS 2.1 SWITCHES

A. Enclosed, Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle.

2.2 CIRCUIT BREAKERS

A. Enclosed, Molded-Case Circuit Breaker: NEMA AB 1, with thermal-magnetic trip unless otherwise indicated.

1. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated. 2. Interrupting Rating: PER DRAWINGS 3. Thermal-Magnetic Circuit Breakers, 225 A and Larger: Trip units fixed

4. Current—Limiting Trips: Let—through ratings less than NEMA FU 1, Class 5. Enclosure: NEMA AB 1, Type 1, unless otherwise specified or required to meet environmental conditions of installed location.

#### PART 3 - EXECUTION

#### 3.1 TESTING

A. Perform visual and mechanical inspections and electrical tests stated in

END OF SECTION 16410

SECTION 16442 - PANELBOARDS

PART 1 - GENERAL 1.1 SECTION REQUIREMENTS A. Submittals: Product Data.

B. Comply with NFPA 70.

#### PART 2 - PRODUCTS

C. Comply with NEMA PB 1.

2.1 PANELBOARDS AND LOAD CENTERS A. Manufacturers: Subject to compliance with requirement, provide products

by one of the following: 1. Panelboards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories:

c. General Electric Co.; Electrical Distribution & Control Div. d. Siemens Energy & Automation.

a. Square D Co.

B. Recessed, NEMA PB 1, Type 1.

b. Eaton Corp.; Cutler—Hammer Products.

1. Load Center Capacity: as shown on drawings. Front: Secured to box with concealed trim clamps. 3. Doors: With concealed hinges, flush catches, and tumbler locks, all keyed alike.

C. Molded-Case Circuit Breakers: NEMA AB 1, plug-intype. Single handle for multipole circuit breakers. Appropriate for application, including Type SWD for repetitive switching lighting loads and Type HACR for heating,

air—conditioning, and refrigerating equipment.

4. Bus: Hard drawn copper of 98 percent conductivity

#### D. Contactors: NEMA ICS 2, Class A combination contactors.

PART 3 - EXECUTION 3.1 INSTALLATION A. Install panelboards and accessory items according to NEMA PB 1.1. Indicate installed circuit loads in English and Spanish on a typed circuit

directory after balancing panelboard loads. B. Mounting Heights: Top of trim 74 inches above finished floor, unless

otherwise indicated. C. Future Circuit Provisions at Flush Panelboards: Stub four empty 3/4-inch conduits from panelboard into accessible or designated ceiling

D. Wiring in Panelboard Gutters: Arrange conductors into groups, bundle and wrap with wire ties according to NEC guidelines. E. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque—tightening values.

Where manufacturer's torque values are not indicated, use those specified F. Perform visual and mechanical inspections and electrical tests stated in

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END OF SECTION 16442 SECTION 16500 - LIGHTING

PART 1 - GENERAL 1.1 SECTION REQUIREMENTS

A. Submittals: Product Data for each luminaire, including lamps. B. Fixtures, Emergency Lighting Units, and Accessories: Listed and labeled as defined in NFPÁ 70, Article 100, by a testing agency acceptable to

authorities having jurisdiction. C. Coordinate ceiling-mounted luminaires with ceiling construction. mechanical work, and security and fire-prevention features mounted in

#### ceiling space and on ceiling.

PART 2 - PRODUCTS

2.1 FIXTURES AND FIXTURE COMPONENTS. GENERAL A. Metal Parts: Free from burrs, sharp corners, and edges. Steel, unless otherwise indicated. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access: Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in

operating position. C. Lenses, Diffusers, Covers, and Globes: 100 percent virgin acrylic plastic

# or annealed crystal glass, unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION A. Set units level, plumb, and square with ceiling and walls, and secure.

B. Support for Recessed and Semirecessed Grid-Type Fluorescent Fixtures: Install ceiling support system rods or wires at a minimum of 4 rods or wires for each fixture, located not more than 6 inches from fixture corners.

recommendations. D. Lamping: Where specific lamp designations are not indicated, lamp units according to manufacturer's written instructions.

C. Support for Suspended Fixtures: Support according to manufacturers'

END OF SECTION 16500

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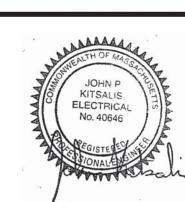
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ELECTRICAL -**SPECIFICATIONS** 

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