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# HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

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## RENDERING

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VOLUME 2

SET NUMBER:

11/08/24

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| T-001 | TECHNOLOGY LEGEND AND NOTES |
| T-100 | OVERALL FIRST FLOOR - PATHWAY PLAN |
| T-200 | OVERALL SECOND FLOOR - PATHWAY PLAN |
| T-401 | TECHNOLOGY - ENLARGED PLANS |
| T-402 | TECHNOLOGY - ENLARGED PLANS |
| T-403 | TECHNOLOGY - ENLARGED PLANS |
| T-501 | TECHNOLOGY DETAILS |
| T-502 | TECHNOLOGY DETAILS |
| T-503 | TECHNOLOGY DETAILS |
| T-601 | TECHNOLOGY FIBER RISER DIAGRAM |
| T-602 | TECHNOLOGY PAGING RISER DIAGRAM |
| TI111 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 100 |
| TI112 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 200 |
| TI113.1 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 300 NORTH |


### VOLUME 2


| | |
|---|---|
| TI113.2 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 300 SOUTH |
| TI114 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 400 |
| TI115.1 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 500 RIGHT |
| TI115.2 | PARTIAL FIRST FLOOR PAGING PLAN - AREA 500 LEFT |
| TI116.1 | PARTIAL SECOND FLOOR PAGING PLAN - AREA 600 RIGHT |
| TI116.2 | PARTIAL SECOND FLOOR PAGING PLAN - AREA 600 LEFT |
| TN111 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 100 |
| TN112 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 200 |
| TN113.1 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 300 NORTH |
| TN113.2 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 300 SOUTH |
| TN114 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 400 |
| TN115.1 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 500 RIGHT |
| TN115.2 | PARTIAL FIRST FLOOR NETWORK PLAN - AREA 500 LEFT |
| TN116.1 | PARTIAL SECOND FLOOR NETWORK PLAN - AREA 600 RIGHT |
| TN116.2 | PARTIAL SECOND FLOOR NETWORK PLAN - AREA 600 LEFT |
| TY111 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 100 |
| TY112 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 200 |
| TY113.1 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 300 NORTH |
| TY113.2 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 300 SOUTH |
| TY114 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 400 |
| TY115.1 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 500 RIGHT |
| TY115.2 | PARTIAL FIRST FLOOR SECURITY PLAN - AREA 500 LEFT |
| TY116.1 | PARTIAL SECOND FLOOR SECURITY PLAN - AREA 600 RIGHT |
| TY116.2 | PARTIAL SECOND FLOOR SECURITY PLAN - AREA 600 LEFT |
| FIRE ALARM | |
| FA-001 | FIRE ALARM LEGEND AND NOTES |
| FA-010 | FIRE ALARM SITE PLAN |
| FA-111 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 100 |
| FA-112 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 200 |
| FA-113.1 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 NORTH |
| FA-113.2 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 SOUTH |
| FA-114 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 400 |
| FA-115.1 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 RIGHT |
| FA-115.2 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 LEFT |
| FA-116.1 | PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 RIGHT |
| FA-116.2 | PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 LEFT |
| FA-121 | MECH. MEZZANINE FIRE ALARM PLANS - AREAS 100, 400, & 600 |
| FA-122 | MECH. MEZZANINE FIRE ALARM PLANS - AREAS 200 & 300 |
| FA-601 | FIRE ALARM DETAILS |
| Grand total: 192 | |


NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.
Reviewed for Code Compliance
07/11/2025
Harnett COUNTY NORTH CAROLINA

### VOLUME 3 - FIELDHOUSE & DUGOUT


| | |
|---|---|
| GENERAL | |
| G-000FH | COVER SHEET |
| G-002.1FH | BUILDING CODE SUMMARY-FIELDHOUSE |
| G-002.2FH | BUILDING CODE SUMMARY-DUGOUT |
| STRUCTURAL | |
| S-100FH | FIELDHOUSE FRAMING PLANS AND NOTES |
| S-101FH | FIELDHOUSE FRAMING DETAILS |
| S-102FH | FIELDHOUSE FRAMING DETAILS |
| ARCHITECTURAL | |
| A-101FH | FLOOR PLAN & RCP-FIELDHOUSE |
| A-131FH | ROOF PLAN-FIELDHOUSE |
| A-201FH | EXTERIOR ELEVATIONS-FH |
| A-301FH | SECTIONS-FIELDHOUSE |
| A-401FH | INTERIOR ELEVATIONS & ENLARGED PLANS |
| A-501FH | DETAILS |
| A-601FH | DOOR & WINDOW SCHEDULE |
| A-701FH | FLOOR & ROOM FINISH SCHEDULE |
| A-801FH | DUGOUT |
| A-802FH | SHADE STRUCTURE |
| PLUMBING | |
| P-001FH | PLUMBING LEGEND, INDEX, AND NOTES |
| P-002FH | PLUMBING SCHEDULES |
| P-101FH | FIELD HOUSE PLUMBING PLANS |
| P-201FH | FIELD HOUSE PLUMBING RISER DIAGRAMS |
| P-501FH | FIELD HOUSE PLUMBING DETAILS |
| MECHANICAL | |
| M-001FH | MECHANICAL LEGEND AND NOTES |
| M-002FH | MECHANICAL SCHEDULES |
| M-101FH | FIELD HOUSE MECHANICAL PLAN |
| ELECTRICAL | |
| E-001FH | ELECTRICAL LEGEND AND NOTES |
| E-002FH | ELECTRICAL NOTES |
| E-010FH | ELECTRICAL SITE PLAN |
| E-101FH | BASEBALL FIELD ELECTRICAL PLAN AND BALLFIELD FIXTURE SCHEDULE |
| E-102FH | SOFTBALL FIELD ELECTRICAL PLAN |
| E-103FH | FOOTBALL FIELD ELECTRICAL PLAN |
| E-111FH | FIELD HOUSE ELECTRICAL PLANS |
| E-601FH | ELECTRICAL DETAILS |
| E-602FH | ELECTRICAL DETAILS |
| E-701FH | ELECTRICAL DIAGRAMS AND PANEL SCHEDULES |
| E-801FH | ELECTRICAL SCHEDULES |
| TECHNOLOGY | |
| T-001FH | TECHNOLOGY LEGEND AND NOTES |
| T-010FH | TECHNOLOGY SITE PLAN |
| T-101FH | FIELD HOUSE TECHNOLOGY PLANS |
| T-501FH | TECHNOLOGY DETAILS |
| Grand total: 39 | |


## PROJECT TEAM

Brooke Matthews _____
Superintendent

Steve Matthews _____
Maintenance Director

CIVIL ENGINEER:
Timmons Group
5410 Trinity Road, Suite 102
Raleigh, North Carolina 27607

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# FIRE PROTECTION DESIGN CRITERIA

| SYMBOL | OCCUPANCY | TYPE | DESIGN DENSITY ( GPM/SF ) | HYDRAULIC REMOTE AREA ( SF ) | MAX. COVERAGE PER SPRINKLER HEAD ( SF ) | HOSE STREAM | | AREAS OF COVERAGE |
|---|---|---|---|---|---|---|---|---|
| | | | | | | INSIDE GPM | OUTSIDE GPM | |
| LH | LIGHT HAZARD | WET | 0.10 | 1500 | 225 | 100 | - | ENTIRE FACILITY, EXCEPT AS NOTED OTHERWISE |
| OH-1 | ORDINARY HAZARD GROUP I | WET | 0.15 | 1500 | 130 | 100 | 150 | MECHANICAL ROOMS, STORAGE ROOMS, ELECTRICAL ROOMS, JANITORS CLOSETS, ETC. |
| OH-2 | ORDINARY HAZARD GROUP II | WET | 0.20 | 1500 | 130 | 100 | 150 | STORAGE ROOMS WITH SHELVES OVER 8'-0" TALL, RETAIL SPACE |

APPLICABLE PUBLICATIONS: THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE DESIGN OF THE FIRE PROTECTION SYSTEM ON THIS PROJECT:

1. NORTH CAROLINA STATE BUILDING CODE: FIRE PREVENTION CODE - 2018 EDITION
2. NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS - 2013 EDITION

NOTES:
1. DURING DESIGN CALCULATIONS, AN ALLOWANCE SHALL BE MADE FOR A 250 GPM HOSE STREAM.

# SPRINKLER SCHEDULE

1. PROVIDE ADJUSTABLE CONCEALED PENDENT SPRINKLERS ALL LAY-IN ACOUSTICAL TILE AND GYPBOARD CEILINGS. COORDINATE COLOR OF CONCEALED SPRINKLER HEAD COVER-PLATE WITH ARCHITECT.
2. LOCATE SPRINKLERS TO AVOID OBSTRUCTIONS BY CEILING MOUNTED DEVICES. WHERE CEILING DEVICES OBSTRUCT SPRINKLER DISCHARGE, ADD ADDITIONAL SPRINKLERS SPACED AROUND THE OBSTRUCTION.
3. PROVIDE BRASS UPRIGHT SPRINKLERS IN EXPOSED AREAS WITH NO FINISH CEILING.
4. PROVIDE BRASS PENDENT SPRINKLERS WITH SHIELDS IN MECHANICAL ROOMS, ELECTRIC ROOMS, GYMNASIUMS, STORAGE ROOMS AND OTHER AREAS WHERE EXPOSED SPRINKLERS ARE SUBJECT TO DAMAGE.
5. PROVIDE RECESSED DRY STEM PENDENT SPRINKLER WITH WHITE PLATE IN AREAS SUBJECT TO FREEZING.
6. PROVIDE RECESSED SIDEWALL SPRINKLERS AS REQUIRED OR AS INDICATED.
7. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLERS (175º F - 225ºF ACTIVATION TEMPERATURE) IN ELEC. ROOMS, DATA CLOSETS AND WHEN SPRINKLER IS LOCATED WITHIN 18" OF HVAC DIFFUSER.

* INSTALL SPRINKLERS IN ACCORDANCE WITH NFPA 13 AND THE MANUFACTURERS APPROVAL LISTING.
* PROVIDE QUICK RESPONSE SPRINKLERS.

GET CURRENT FLOW TEST INFO

# FLOW TEST DATA

| DATE / TIME | LOCATION | PRESSURE | | FLOW ( GPM ) | FLOW AT 20 PSI ( GPM ) |
|---|---|---|---|---|---|
| | | STATIC ( PSI ) | RESIDUAL ( PSI ) | | |
| 03-18-2024 1:35 PM | HYDRANT #XX 860 LF SOUTH OF THE INTERSECTION OF JOEL JOHNSON RD AND US 401. | 104 | 85 | 899 | 2,006 |

FLOW TEST PERFORMED BY: TIMMONS GROUP

FLOW TEST NOTES:

1. THE CONTRACTOR SHALL OBTAIN A NEW FIRE FLOW TEST LESS THAN 1 YEAR OLD. THE FLOW TEST SHALL BE PERFORMED PER NFPA 291 WITH THE FLOW HYDRANT LOCATED AS CLOSE TO THE POINT OF CONNECTION AS POSSIBLE.
2. A 10% SAFETY FACTOR SHALL BE INCLUDED IN THE HYDRAULIC CALCULATIONS BASED ON THE 48 HOUR LOW STATIC PRESSURE.
3. PROVIDE THE FLOW TEST DATA AND HYDRANT LOCATIONS WITH THE SUBMITTED SPRINKLER SHOP DRAWING PACKAGE, INCLUDING STATIC PRESSURE, RESIDUAL PRESSURE, FLOW IN GPM, HORIZONTAL AND VERTICAL DISTANCE OF TEST FROM BASE OF FIRE RISER, ORGANIZATION NAME PERFORMING FLOW AND PRESSURE TESTS, AND THE DATE AND TIME THE TEST WAS PERFORMED.

# MATERIALS AND INSTALLATION SPECIFICATIONS

GENERAL:
1. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
2. ABOVE GRADE PIPING:

   BLACK STEEL PIPING: SHALL BE ASTM A53, ASTM A135, OR ASTM A795, LISTED FOR FIRE SPRINKLER PIPING USE AND INCLUDE FM APPROVED MIC INHIBITING COATING.
   - PIPING 1 1/4" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL PIPE THREADED FOR THREADED FITTINGS FITTINGS.
   - PIPING 1 1/2" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PIPE ROLL GROOVED FOR MECHANICAL FITTINGS.
   - USE HOT-DIPPED GALVANIZED PIPE AND FITTINGS FOR COMPRESSED AIR PIPING, WATER MOTOR ALARM PIPING, BALL DRIP DISCHARGES, TEST AND DRAIN CONNECTIONS AND ANY OTHER SYSTEM PIPING SUBJECT TO ALTERNATE WETTING AND DRYING.
   - THREADED FITTINGS: UL-LISTED, STANDARD WEIGHT SUITABLE FOR PRESSURE UP TO 175 PSIG, CAST IRON MEETING ASTM A126 OR MALLEABLE IRON MEETING ASTM A197. THREADED CAST IRON FITTINGS SHALL MEET ANSI B16.4; FLANGED CAST IRON FITTINGS SHALL MEET ANSI B16.1. THREADED MALLEABLE IRON FITTINGS SHALL MEET ANSI B16.3.
   - GROOVED-END FITTINGS AND COUPLINGS: UL-LISTED, DUCTILE IRON MEETING ASTM A536, UTILIZING AN EDPM GASKET. PLAIN-END FITTINGS AND COUPLINGS, OR WELDED-SEGMENTED FITTINGS SHALL NOT BE USED. CHANGES IN PIPE DIAMETER SHALL BE MADE USING TAPERED REDUCING FITTINGS. BUSHINGS OR GROOVED-END REDUCING COUPLINGS SHALL NOT BE USED UNLESS STANDARD REDUCING FITTINGS ARE NOT REGULARLY AVAILABLE.
3. PIPE HANGERS: UL-LISTED SWIVEL LOOP TYPE WITH PRE-GALVANIZED CARBON STEEL BAND, HANGER RODS SIZED PER NFPA 13, UL-LISTED STEEL OR MALLEABLE IRON BEAM CLAMPS, UL-LISTED ANCHORS. POWER DRIVEN ANCHORS SHALL NOT BE USED.
4. VALVES: OUTSIDE SCREW AND YOKE (OSY): IRON BODY BRONZE MOUNTED, DOUBLE DISC WITH PARALLEL SEATS. BUTTERFLY: LUG TYPE, DUCTILE IRON BODY, STAINLESS STEEL STEM, ALUMINUM BRONZE DISC, PHENOLIC RING AND BUNA N SEAT. VALVES SHALL BE FM/UL LISTED AND APPROVED FOR FIRE PROTECTION SERVICE.
5. ESCUTCHEON PLATES: PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH FINISHED WALLS, FLOORS, OR CEILING. PROVIDE PRIME COAT PAINTED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH WALLS, CEILINGS, ETC. IN UNFINISHED EXPOSED AREAS.
6. SPRINKLERS: LISTED IN UL'S FIRE PROTECTION EQUIPMENT DIRECTORY OR FM GLOBAL'S APPROVAL GUIDE. 175-PSIG MINIMUM. AUTOMATIC SPRINKLERS WITH HEAT RESPONSIVE ELEMENT. NOMINAL 1/2-INCH ORIFICE WITH DISCHARGE COEFFICIENT (K) OF 5.6, AND FOR "ORDINARY" TEMPERATURE CLASSIFICATION RATING UNLESS OTHERWISE INDICATED OR REQUIRED BY APPLICATION.

SPRINKLER PIPING SPECIALTIES:

1. FLEXIBLE SPRINKLER PIPE/HOSE FITTINGS: UL1474FLEXIBLE HOSE FOR CONNECTION TO SPRINKLER AND WITH BRACKET FOR CONNECTION TO CEILING GRID. PRESSURE RATED TO 175 PSIG MINIMUM.

INSTALLATION REQUIREMENTS:

1. CONCEAL FIRE PROTECTION SYSTEM PIPING ABOVE CEILINGS UNLESS NOTED OTHERWISE.
2. PROVIDE ALL NECESSARY OFFSETS, RISES, OR DROPS IN THE PIPING WHETHER OR NOT SHOWN ON THE WORKING PLANS.
3. CONNECT ALL SPRINKLER ALARM, TAMPER AND DETECTION SYSTEMS TO THE BUILDINGS CENTRAL FIRE ALARM SYSTEM, COORDINATE LOCATIONS AND REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
4. PROVIDE CUTTING AND PATCHING OF EXISTING FLOORS, WALLS AND CEILINGS, AS REQUIRED FOR THE INSTALLATION OF THE FIRE PROTECTION SYSTEM. COORDINATE WITH THE GENERAL CONTRACTOR AND ALL OTHER TRADES.
5. PROVIDE HANGERS AND SUPPORTS FOR SPRINKLER SYSTEM PIPING ACCORDING TO NFPA 13. COMPLY WITH REQUIREMENTS FOR HANGER MATERIALS IN NFPA 13.
6. PROVIDE PRESSURE GAUGES ON RISER OR FEED MAIN, AT EACH SPRINKLER TEST CONNECTION, AND AT TOP OF EACH STANDPIPE. INCLUDE PRESSURE GAUGES WITH CONNECTION NOT LESS THAN 1/4" AND WITH SOFT-METAL SEATED GLOBE VALVE, ARRANGED FOR DRAINING PIPE BETWEEN GAUGE AND VALVE. INSTALL GAUGES TO PERMIT REMOVAL, AND LOCATE WHERE THEY ARE NOT SUBJECT TO FREEZING.
7. PROVIDE SPRINKLERS AT THE TOP OF THE ELEVATOR HOISTWAY, NFPA 13 SECTION 8.15.5.5, UNLESS THE CONDITIONS FOR EXCEPTION OUTLINED IN SECTION 8.15.5.6 ARE MET.
8. COORDINATE INSTALLATION OF SPRINKLERS WITH OTHER CONSTRUCTION THAT PENETRATES CEILINGS, INCLUDING LIGHT FIXTURES, HVAC EQUIPMENT, AND PARTITION ASSEMBLIES.
9. CENTER SPRINKLERS IN CEILING TILES IN AREAS WITH LAY-IN CEILINGS AND/OR VISUALLY ALIGNED IN AREAS WITH SMOOTH CEILINGS. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN DRAWINGS FOR CEILING TYPES, HEIGHTS, AND FEATURES.
10. WHERE CONCEALED SPRINKLERS ARE SPECIFIED, COORDINATE COVER PLATE COLOR WITH ARCHITECT.
11. PROVIDE "INSPECTOR'S TEST CONNECTIONS" IN SPRINKLER SYSTEM PIPING, COMPLETE WITH SHUTOFF VALVE, AND SIZED AND LOCATED ACCORDING TO NFPA 13.
12. PROVIDE SPRINKLER PIPING WITH DRAINS FOR COMPLETE SYSTEM DRAINAGE.
13. PROVIDE AUTOMATIC (BALL DRIP) DRAIN VALVE AT EACH CHECK VALVE FOR FIRE-DEPARTMENT CONNECTION, TO DRAIN PIPING BETWEEN FIRE-DEPARTMENT CONNECTION AND CHECK VALVE. INSTALL DRAIN PIPING TO AND SPILL OVER FLOOR DRAIN OR TO OUTSIDE BUILDING.
14. PAINT ALL EXPOSED FIRE PROTECTION SYSTEM PIPING (IN CLOSETS, STAIRWELLS, MECHANICAL ROOMS, ETC.). COLOR TO BE SELECTED BY THE ARCHITECT.
15. PROVIDE LABELING AND PIPE MARKERS ON EQUIPMENT AND PIPING ACCORDING TO REQUIREMENTS IN NFPA 13.
16. SPRINKLER LOCATIONS ARE TO BE IN THE CENTER OF THE CEILING TILE USING THE REFLECTIVE CEILING PLANS AND AS COORDINATED WITH THE CEILING CONTRACTOR.
17. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE AMOUNT OF TIME SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

TESTING AND FLUSHING:

1. OVERHEAD SPRINKLER PIPING: TESTED FOR A PERIOD OF TWO HOURS AT A HYDROSTATIC PRESSURE OF 200 LBS, OR 50 PSI IN EXCESS OF THE WORKING PRESSURE WHICHEVER IS GREATER AND ALL PIPING, VALVES, HEADS,ETC. SHALL BE WATERTIGHT.

# FIRE PROTECTION SHEET INDEX


| | |
|---|---|
| FP-001 | FIRE PROTECTION LEGEND, NOTES, AND DETAILS |
| FP-101 | FIRST FLOOR FIRE PROTECTION PLAN |
| FP-102 | SECOND FLOOR FIRE PROTECTION PLAN |
| FP-103 | MEZZANINE FIRE PROTECTION PLAN |
| FP-501 | FIRE PROTECTION DETAILS AND SCHEMATICS |


# FIRE PROTECTION LEGEND

| SYMBOL | ABBREVIATION | DESCRIPTION |
|---|---|---|
| F | F | FIRE PROTECTION SUPPLY PIPING |
| FDC | FDC | FIRE DEPARTMENT CONNECTION PIPING |
| WP | WP | WET PIPE SPRINKLER |
| DP | DP | DRY PIPE SPRINKLER |
| D | D | DRAIN PIPING |
| | - | PIPING ELBOW DOWN |
| | - | PIPING ELBOW UP |
| | - | PIPING CONTINUES |
| | OSY | OS&Y VALVE |
| | FDC | FIRE DEPARTMENT CONNECTION |

ADDITIONAL ABBREVIATIONS

| | | | |
|---|---|---|---|
| AFF | ABOVE FINISHED FLOOR | MFG | MANUFACTURER |
| AFG | ABOVE FINISHED GRADE | PSI | POUNDS PER SQUARE INCH |
| BAS | BUILDING AUTOMATION SYSTEM | TS | TAMPER SWITCH |
| BFF | BELOW FINISHED FLOOR | TYP | TYPICAL |
| CLG | CEILING | WMG | WATER MOTOR GONG |
| CONT | CONTINUATION | WC | WATER COLUMN |
| DN | DOWN | | |
| FS | FLOW SWITCH | EC | ELECTRICAL CONTRACTOR |
| FHV | FIRE HOSE VALVE | FSC | FOOD SERVICE CONTRACTOR |
| GPM | GALLONS PER MINUTE | GC | GENERAL CONTRACTOR |
| HP | HORSE POWER | MC | MECHANICAL CONTRACTOR |
| INV | INVERT ELEVATION | PC | PLUMBING CONTRACTOR |
| KW | KILOWATT | | |

# FIRE PROTECTION NOTES

GENERAL REQUIREMENTS:

1. THE ENTIRE BUILDING SHALL BE PROTECTED BY AN AUTOMATIC SPRINKLER SYSTEM.
2. PROVIDE DESIGN, FABRICATION, AND INSTALLATION OF A HYDRAULICALLY CALCULATED AUTOMATIC SPRINKLER SYSTEM (COMBINATION STANDPIPE SPRINKLER SYSTEM). INCLUDE ALL MATERIALS, LABOR, AND EQUIPMENT REQUIRED FOR A COMPLETE WORKING SYSTEM IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE STATE FIRE PREVENTION CODE, REFERENCED NFPA STANDARDS (NFPA 13R, NFPA 13, NFPA 14), THE OWNER'S INSURANCE UNDERWRITER, AND THE LOCAL AUTHORITY HAVING JURISDICTION.
3. OBTAIN A COMPLETE AND CURRENT SET OF THE PROJECT CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS. COORDINATE SYSTEM LAYOUT (PIPING AND SPRINKLERS) WITH THE WORK OF OTHER TRADES BEFORE THE START OF CONSTRUCTION.
4. DESIGN AND HYDRAULICALLY CALCULATE THE SPRINKLER SYSTEM UTILIZING THE INFORMATION PROVIDED IN THE SYSTEM DESIGN CRITERIA ON THIS SHEET.
5. SUBMIT WORKING PLANS AND HYDRAULIC CALCULATIONS TO THE AUTHORITIES HAVING JURISDICTION FOR REVIEW AND OBTAIN APPROVAL BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
6. SUBMIT WORKING PLANS, HYDRAULIC CALCULATIONS, AND MATERIALS DATA TO THE SPECIFYING ENGINEER FOR REVIEW AND OBTAIN APPROVAL BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
7. DEVIATIONS FROM APPROVED WORKING PLANS FOR PIPING REQUIRE WRITTEN APPROVAL FROM AUTHORITIES HAVING JURISDICTION. PROVIDE COPY OF WRITTEN APPROVAL TO THE ARCHITECT AND ENGINEER BEFORE DEVIATING FROM APPROVED WORKING PLANS.
8. AT THE COMPLETION OF THE PROJECT, PROVIDE A SET OF RECORD DRAWINGS (PDF FORMAT) TO THE OWNER.

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NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 043866 DANIEL A. REVIA 11/08/2024

CONSTRUCTION DOCUMENTS

optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: RLH
CHECKED BY: DAR

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FIRE PROTECTION LEGEND, NOTES, AND DETAILS

FP-001

Sheet No. 1 of 5

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1 FIRST FLOOR FIRE PROTECTION PLAN
1" = 20'-0"

## FP KEY NOTES

1. DATA ROOM: ROUTE ALL PIPING OUTSIDE DATA ROOM SPACES. PROVIDE SIDEWALL SPRINKLER COVERAGE FOR ALL DATA ROOMS. PIPING SHALL NOT BE INSTALLED WITHIN DATA ROOMS.
2. EXPANSION LOOP: PROVIDE PIPING EXPANSION LOOP EQUAL TO METRAFLEX FIRELOOP AT BUILDING EXPANSION LOOP.
3. MECHANICAL, ELECTRICAL, DATA ROOMS: PROVIDE INTERMEDIATE TEMPERATURE SPRINKERS (200°F ACTIVATION TEMPERATURE).
4. SPRINKLER DRAIN LOCATION: TERMINATE 2" DRAIN IN DOWNSPOUT BOOT OUTSIDE BUILDING. SEE DETAIL 6/FP501.
5. GYMNASIUM: PROVIDE SPRINKLERS WITH GUARDS IN GYMNASIUM.
6. FREEZER AND COOLER: PROVIDE DRY-STEM PENDANT SPRINKLER COVERAGE.
7. LOADING DOCK: PROVIDE DRY-STEM SIDEWALL SPRINKLER COVERAGE.
8. FIRE ALARM BELL: PROVIDE 24V ALARM BELL MOUNTED 8'-0" AFF.
9. COURTYARD: PROVIDE FREEZE PROTECTED 2-1/2" HOSE VALVE OFF OF ZONE #1 SUPPLY MAIN. SEE DETAIL 5/FP501.
10. PERFORMANCE STAGE: GREATER THAN 1,000 S.F. PROVIDE FIRE HOSE VALVES IN SEMI-RECESSED CABINETS PER NCBC 905.3.4 EXCEPTION, NFPA 13 SECTION 8.17.5.1.2 AND LOCAL AHJ REQUIREMENTS. PROVIDE ORDINARY HAZARD GROUP II COVERAGE FOR STAGE AREA.
11. ELEVATOR (NON-HYDRAULIC): ELEVATOR SHAFT IS NON-COMBUSTIBLE AND THE ELEVATOR SYSTEM DOES NOT CONTAIN OR UTILIZE HYDRAULIC FLUID. SPRINKLER PROTECTION IN ELEVATOR SHAFT IS NOT REQUIRED.
12. SLOPED REFLECTED CEILING PLAN: INDICATED AREAS HAVE A NON-TYPICAL CEILING SLOPING. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS IN THE INDICATED AREAS FOR MORE INFORMATION.
13. STAIRWELLS: PROVIDE SPRINKLER COVERAGE BELOW THE FIRST FLOOR STAIRWELL LANDING.

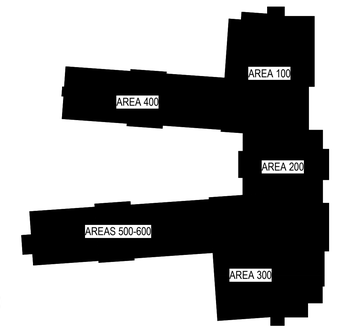
## FIRE PROTECTION GENERAL NOTES

1. FIRE PROTECTION CONTRACTOR SHALL SUBMIT PLANS TO ARCHITECT PRIOR TO INSTALLATION FOR COORDINATION / APPROVAL OF SPRINKLER MAIN ROUTING AND ITS INTERACTION WITH ARCHITECTURAL ELEMENTS.
2. SPRINKLER PIPING SHALL BE ROUTED TO MINIMIZE PIPING IN EXPOSED CEILINGS. COORDINATE SPRINKLER PIPING WITH GLULAM BEAM LOCATIONS. SPRINKLER PIPING SHALL BE CENTERED BETWEEN GLULAM BAYS. DO NOT ROUTE SPRINKLER PIPING UNDER GLULAM BEAMS. SPRINKLER DRAIN LINES SHALL BE CONCEALED. AVOID EXPOSED DRAIN LINES. REFER TO ARCHITECTUAL CEILING PLANS PRIOR TO CONSTRUCTION.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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ENERGY STAR PARTNER

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FIRST FLOOR FIRE PROTECTION PLAN

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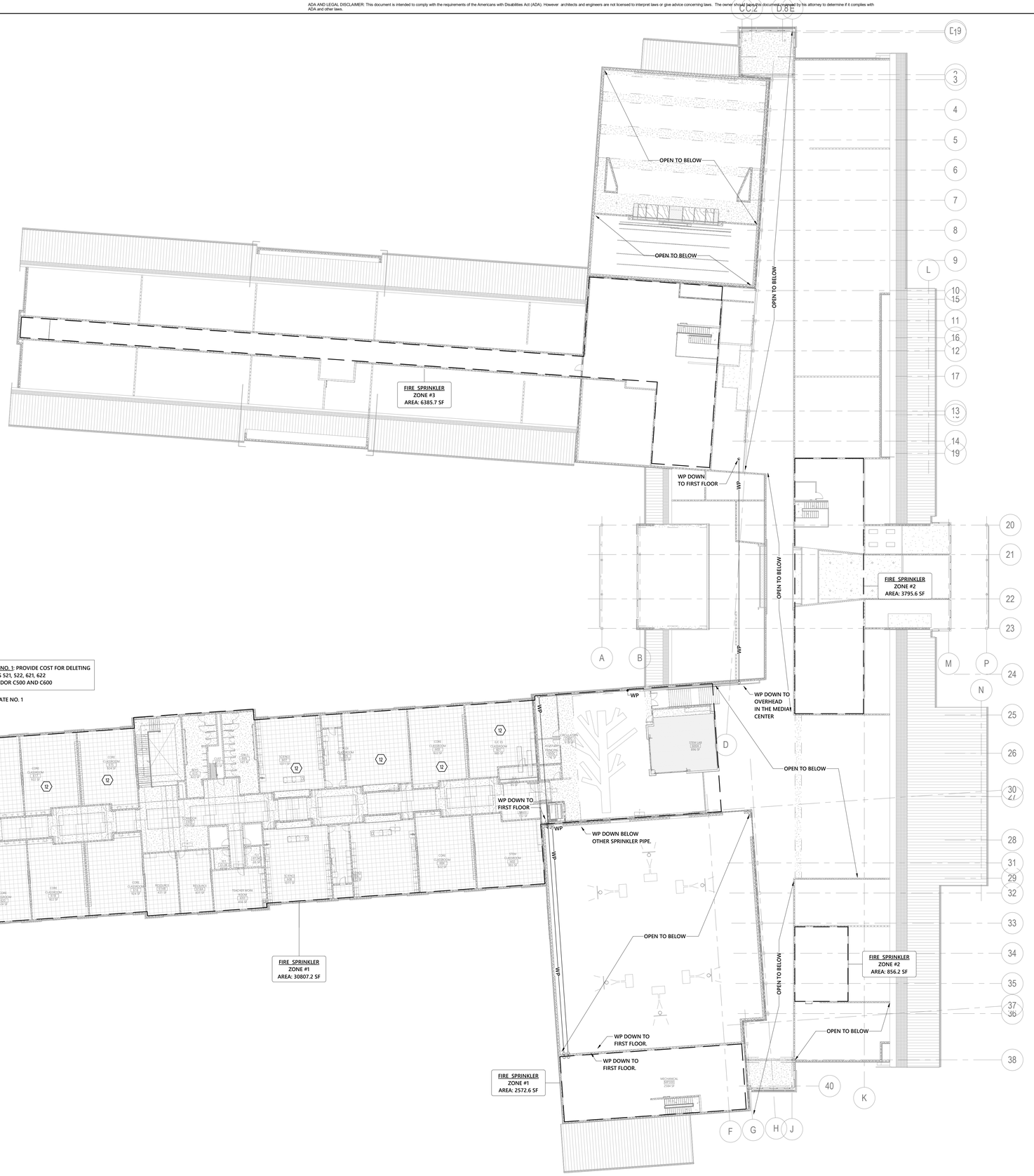


## FP KEY NOTES

1. DATA ROOM: ROUTE ALL PIPING OUTSIDE DATA ROOM SPACES. PROVIDE SIDEWALL SPRINKLER COVERAGE FOR ALL DATA ROOMS. PIPING SHALL NOT BE INSTALLED WITHIN DATA ROOMS.
2. EXPANSION LOOP: PROVIDE PIPING EXPANSION LOOP EQUAL TO METRAFLEX FIRELOOP AT BUILDING EXPANSION LOOP.
3. MECHANICAL, ELECTRICAL, DATA ROOMS: PROVIDE INTERMEDIATE TEMPERATURE SPRINKERS (200°F ACTIVATION TEMPERATURE).
4. SPRINKLER DRAIN LOCATION: TERMINATE 2" DRAIN IN DOWNSPOUT BOOT OUTSIDE BUILDING. SEE DETAIL 6/FP501.
5. GYMNASIUM: PROVIDE SPRINKLERS WITH GUARDS IN GYMNASIUM.
6. FREEZER AND COOLER: PROVIDE DRY-STEM PENDANT SPRINKLER COVERAGE.
7. LOADING DOCK: PROVIDE DRY-STEM SIDEWALL SPRINKLER COVERAGE.
8. FIRE ALARM BELL: PROVIDE 24V ALARM BELL MOUNTED 8'-0" AFF.
9. COURTYARD: PROVIDE FREEZE PROTECTED 2-1/2" HOSE VALVE OFF OF ZONE #1 SUPPLY MAIN. SEE DETAIL 5/FP501.
10. PERFORMANCE STAGE: GREATER THAN 1,000 S.F. PROVIDE FIRE HOSE VALVES IN SEMI-RECESSED CABINETS PER NCBC 905.3.4 EXCEPTION, NFPA 13 SECTION 8.17.5.1.2 AND LOCAL AHJ REQUIREMENTS. PROVIDE ORDINARY HAZARD GROUP II COVERAGE FOR STAGE AREA.
11. ELEVATOR (NON-HYDRAULIC): ELEVATOR SHAFT IS NON-COMBUSTIBLE AND THE ELEVATOR SYSTEM DOES NOT CONTAIN OR UTILIZE HYDRAULIC FLUID. SPRINKLER PROTECTION IN ELEVATOR SHAFT IS NOT REQUIRED.
12. SLOPED REFLECTED CEILING PLAN: INDICATED AREAS HAVE A NON-TYPICAL CEILING SLOPING. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS IN THE INDICATED AREAS FOR MORE INFORMATION.
13. STAIRWELLS: PROVIDE SPRINKLER COVERAGE BELOW THE FIRST FLOOR STAIRW

## FIRE PROTECTION GENERAL NOTES

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## WALL LEGEND

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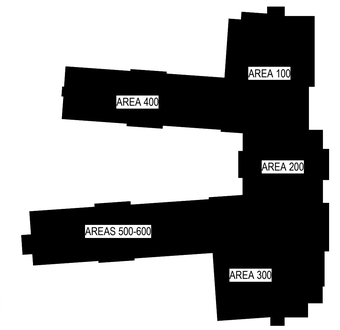
| | 2 HOUR RATED WALL |

KEY PLAN




1 SECOND FLOOR FIRE PROTECTION PLAN
1" = 20'-0"

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SECOND FLOOR FIRE PROTECTION PLAN

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1 MEZZANINE FIRE PROTECTION PLAN - AREA 600
1" = 20'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MEZZANINE FIRE PROTECTION PLAN

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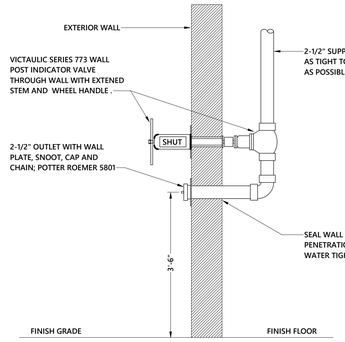
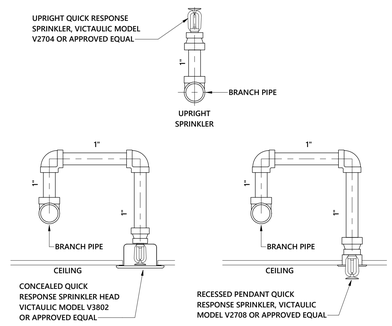
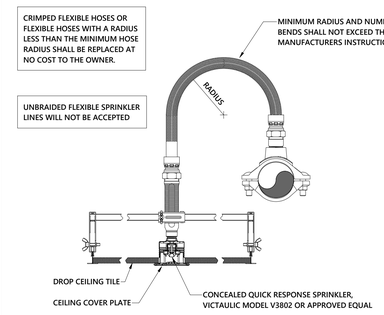


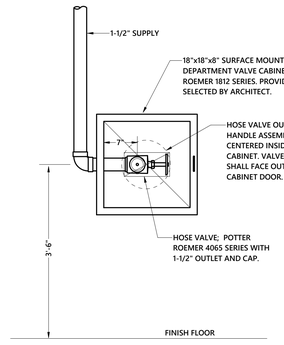

5 TYPICAL FREEZE PROOF FIRE HOSE VALVE CONNECTION
NOT TO SCALE



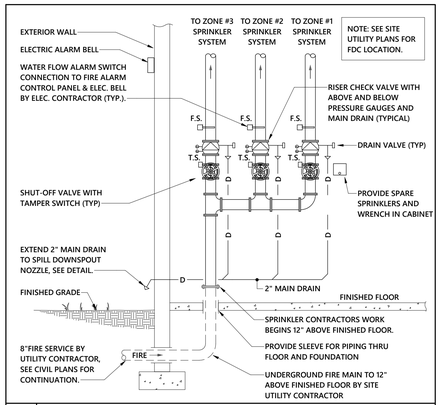

4 TYPICAL RETURN BEND SCHEMATIC
NOT TO SCALE




3 TYPICAL RETURN BEND SCHEMATIC - FLEXIBLE HOSE
NOT TO SCALE



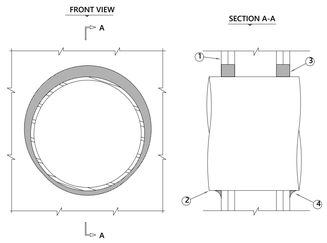

2 STAGE FIRE HOSE VALVE AND CABINET
NOT TO SCALE




1 FIRE SERVICE ENTRANCE SCHEMATIC
NOT TO SCALE

U.L. SYSTEM NO. WL1054
METAL PIPE THROUGH GYPSUM WALL ASSEMBLY

F RATING = 1-HR OR 2-HR
T RATING = 0-HR
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.




1. GYPSUM-WALL ASSEMBLY (1-HR. AND 2-HR. FIRE RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 20" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER STEEL EMT.
1. MINIMUM DEPTH
   A. MINIMUM 5/8" DEPTH HILTI FS-ONE FIRESTOP SEALANT = 1-HR. FIRE-RATING. B. MINIMUM 1-1/4" DEPTH HILTI FS-ONE FIRESTOP SEALANT = 2-HR. FIRE-RATING.
2. MINIMUM 1/2" BEAD HILTI FS-ONE FIRESTOP SEALANT FOR POINT OF CONTACT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 22-1/4".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".

INSTALLATION INSTRUCTIONS FOR UL NO.WL1054

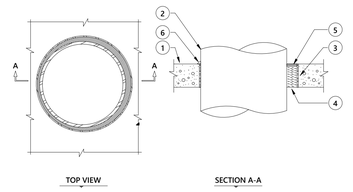
STEP 1 - PREPARATION: All surfaces must be clean, sound, dry and frost free prior to application of firestopping materials.

STEP 2 - FIRESTOP SEALANT: Apply a minimum 5/8" or 1-1/4" depth of FS-ONE in the annular space around the penetrating item. Tool excess sealant beyond perimeter of the opening 1/2" onto wall surface. Leave completed seal undisturbed for for 48 hours.

8 U.L. SYSTEM NO WL1054 DETAIL
NOT TO SCALE

U.L. SYSTEM NO. CAJ1155
METAL PIPE THROUGH A SLEEVE IN CONCRETE WALL OR FLOOR

F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.




1. FLOOR OR WALL ASSEMBLY: B. U.L. CLASSIFIED CONCRETE BLOCK WALL (MINIMUM 8" BLOCK). A. MINIMUM 4-1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR.
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 20" DIAMETER STEEL PIPE.
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER EMT.
3. OPTIONAL: MAXIMUM 22" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).
4. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) RECESSED 1/2" FROM TOP OF SLEEVE.
5. MINIMUM 1/2" DEPTH HILTI FS-ONE FIRESTOP SEALANT.
6. A GENEROUS BEAD OF HILTI FS-ONE FIRESTOP SEALANT AROUND OUTER PERIMETER OF STEEL SLEEVE.

NOTES:
1. MAXIMUM DIAMETER OF OPENING = 22".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

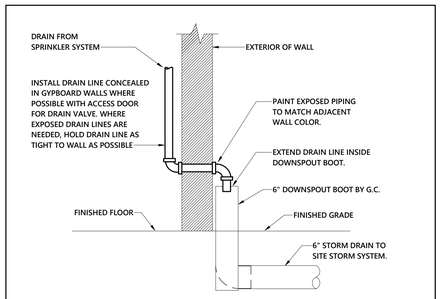
INSTALLATION INSTRUCTIONS FOR UL NO.CAJ1155

STEP 1 - PREPARATION: to application of firestopping materials. All surfaces must be clean, sound, dry and frost free prior

STEP 2 - BACKING MATERIAL: Firmly pack mineral wool around the penetrating item recessing it 1/2" below surface of the sleeve (or both ends of sleeve in wall)

STEP 3 - FIRESTOP SEALANT: Apply the Firestop Sealant over the backing material to a min. depth of 1/2" flush with the end(s) of the sleeve. Wall penetrations require Firestop Sealant installed on both sides. Leave completed seal undisturbed for 48 hours.

7 U.L. SYSTEM NO CAJ-1155 DETAIL
NOT TO SCALE




NOTE: DO NOT SPILL SPRINKLER DRAIN ONTO PAVING OR LANDSCAPING OF ANY TYPE. DISCHARGE SPRINKLER DRAINS INTO DOWNSPOUT BOOTS AT THE LOCATIONS DESIGNATED ON THE PLANS. IF ADDITIONAL AUXILIARY DRAINS ARE NEEDED, THE SPRINKLER CONTRACTOR SHALL PROVIDE A DOWNSPOUT BOOT AND EXTEND A 6" STORM DRAIN LINE UNDERGROUND TO THE NEAREST SITE STORM DRAIN INLET FOR EACH AUXILIARY DRAIN. OBTAIN DESIGN TEAM APPROVAL FOR ANY ADDITIONAL AUXILIARY DRAIN LOCATIONS PRIOR TO INSTALLATION. DOWNSPOUT BOOTS SHALL MATCH THE OTHER DOWNSPOUT BOOTS UTILIZED ON THE BUILDING. COORDINATE SPRINKLER DRAIN LOCATIONS WITH G.C. AND SITE GRADING PLANS.

6 TYPICAL DRAIN TO DOWNSPOUT BOOT
NOT TO SCALE

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FIRE PROTECTION DETAILS AND SCHEMATICS

FP-501

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## SANITARY WASTE & VENT PIPING

1. BELOW GRADE PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564) OR NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321. FOAM CORE PVC PIPING IS NOT APPROVED.
2. ABOVE GRADE PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED. DO NOT INSTALL PVC PIPING IN RETURN AIR PLENUMS.
3. SLOPE WASTE AND STORM DRAIN PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2-1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE. SLOPE ALL KITCHEN GREASE WASTE PIPING AT 1/4" PER FOOT MINIMUM.
4. PROVIDE CLEAN-OUTS AT THE BASE OF WASTE STACKS, STORM RISERS, AND AT EVERY TURN IN PIPING IN EXCESS OF 45° AND SPACED WITH-IN 100'-0" APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
5. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.
6. WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.
7. WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.
8. WHERE MECHANICAL ROOM FLOOR DRAINS ARE INSTALLED ABOVE GRADE, PROVIDE 1"THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET ON THE FLOOR DRAIN BODY, THE ASSOCIATED P-TRAP AND HORIZONTAL DRAIN PIPING ABOVE GRADE.
9. INSULATE HORIZONTAL DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET.
10. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.

## ACID WASTE & VENT PIPING

1. ABOVE GRADE PIPE AND FITTINGS (OUTSIDE OF RETURN AIR PLENUM): PROVIDE NON-FIRE RETARDANT SCHEDULE 40 POLYPROPYLENE PIPE (ASTM D4101, ASTM F1412), NSF LISTED, CSA CERTIFIED. FITTINGS: POLYPROPYLENE (ASTM D4101, ASTM F1412). JOINTS: ELECTROFUSION JOINTS CONFORMING TO ASTM F1290 OR MECHANICAL JOINTS (MOLDED UNION CONNECTION TYPE OR NO-HUB STYLE WITH STEEL OUTER COUPLING). MECHANICAL JOINTS SHALL BE DESIGNED TO LOCK ONTO A MACHINED GROOVE ON THE MATING PIPING.

## KITCHEN CONNECTION NOTES

1. PLUMBING CONTRACTOR TO BE RESPONSIBLE FOR PROTECTION OF DOMESTIC WATER SYSTEM AGAINST BACKFLOW AND BACK SIPHONING WHEN A 'HARD' CONNECTION IS MADE TO ANY KITCHEN EQUIPMENT OR APPLIANCE. PER NC PLUMBING CODE 608.3, ALL DEVICES, APPURTENANCES,APPLIANCES, AND APPARATUS INTENDED TO SERVE SPECIAL FUNCTIONS SUCH AS PROCESSING, COOKING, HEATING, OR STORAGE OF ICE THAT ARE CONNECTED TO THE WATER SUPPLY SHALL BE PROVIDED WITH PROTECTION AGAINST BACKFLOW CONTAMINATION OF WATER SUPPLY SYSTEM.
2. WATER FILTERS, SOFTENERS, AND HOLDING TANKS OF POTABLE WATER SHALL BE PROTECTED AGAINST CONTAMINATION. THE PC SHALL COOPERATE WITH KITCHEN EQUIPMENT CONTRACTOR AND SHALL VERIFY MOST ADEQUATE PROTECTION REQUIRED. ANY APPROVED DEVICE EITHER EXTERIOR TO OR BUILT-INTO THE APPLIANCE SHALL BE ACCEPTABLE.

## GREASE WASTE PIPING SPECIFICATIONS

GREASE WASTE AND VENT PIPING:

1. GREASE WASTE PIPING BELOW GRADE:
   A. SERVICE WEIGHT HIGH-PERFORMANCE COATED CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15). PIPE COATING SHALL CONSIST OF A CHEMICALLY DEPOSITED ZINC-PHOSPHATE PRETREATMENT LAYER FOLLOWED BY AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE CATHODIC EPOXY COATING AND FINISHED WITH AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE ANODIC EPOXY TOP COAT. (CHARLOTTE PIPE EDGE HP IRON OR APPROVED EQUAL).
2. GREASE WASTE PIPING ABOVE GRADE:
   A. HIGH-PERFORMANCE COATED CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15). PIPE COATING SHALL CONSIST OF A CHEMICALLY DEPOSITED ZINC-PHOSPHATE PRETREATMENT LAYER FOLLOWED BY AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE CATHODIC EPOXY COATING AND FINISHED WITH AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE ANODIC EPOXY TOP COAT. (CHARLOTTE PIPE EDGE HP IRON OR APPROVED EQUAL).
3. GREASE VENT PIPING:
   A. CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310)

INSTALLATION:

1. SLOPE ALL GREASE WASTE PIPING AT 1/4" PER FOOT MINIMUM.
2. PROVIDE CLEAN-OUTS AT THE BASE OF DRAINAGE STACKS, AT EVERY TURN IN PIPING IN EXCESS OF 45°, AND NO FURTHER THAN 100'-0" APART. INSTALL CLEANOUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
3. DRAINAGE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.

## DOMESTIC WATER PIPING

1. DOMESTIC WATER PIPING AND JOINTS BELOW GRADE:
   - PIPING 4" AND LARGER:
     A. DUCTILE IRON PIPE (AWWA C151, AWWA C110) AND FITTINGS WITH MECHANICAL JOINTS (AWWA C111). DUCTILE OR GRAY-IRON GLANDS, RUBBER GASKETS AND STEEL BOLTS.
   - PIPING 1-1/4" TO 3":
     A. TYPE 'K', DRAWN EMPER (HARD) COPPER TUBE (ASTM B88) WITH PRESSURE-SEAL JOINT FITTING (CAST BRASS, CAST-BRONZE OR WROUGHT-COPPER) WITH EDPM O-RING SEAL ON EACH END. 250-PSI WORKING PRESSURE AT 250°F.
   - PIPING 1" AND SMALLER:
     A. TYPE 'K' SOFT ANNEALED COPPER TUBE (ASTM B88) WITH NO JOINTS BELOW FLOOR (SLABS).
2. DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE:
   - PIPING 2-1/2" AND LARGER:
     A. TYPE 'L', DRAWN-TEMPER COPPER TUBE (ASTM B88) WITH PRESSURE-SEAL JOINT FITTIGNS (CAST-BRASS, CAST-BRONSE OR WROUGHT-COPPER) WITH EDPM O-RING SEAL ON EACH END 200 PSI WORKING PRESSURE AT 250°F.
     B. TYPE 'L' DRAWN-TEMPER COPPER TUBE (ASTM B88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18) WITH BCUP SILVER/PHOSPHORUS/COPPER BRAZED JOINTS (AWS A5.8).
   - PIPE 2" AND SMALLER:
     A. TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBE (ASTM B88) AND CAST COOPPER ALLOW FITTINGS (ASME B16.18_ WITH LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B32).
     B. TYPE 'L', DRAWN-TEMPER COPPER TUBE (ASTM B88) WITH PRESSURE-SEAL JOINT FITTINGS (CAST-BRASS, CAST-BRONZE OR WROUGHT-COPPER) WITH EDPM O-RING SEAL ON EACH END. 200 PSI WORKING PRESSURE AT 250°F.
3. INSULATE PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET FOT HOT WATER PIPING AND PROVIDE CLOSED CELL ELASTOMERIC INSULATION WITH JACKET FOR COLD WATER PIPING. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT °F, SEE LIST BELOW FOR INSULATION THICKNESS:

   - PROVIDE 1" THICK INSULATION FOR HW & HWR PIPING SIZES 1/2" THRU 3/4", R-VALUE R7.
   - PROVIDE 1-1/2" THICK INSULATION FOR HW & HWR PIPING SIZES 1" THRU 1-1/4", R-VALUE R12.5.
   - PROVIDE 1-1/2" THICK INSULATION FOR HW & HWR PIPING SIZES 1-1/2" THRU 4", R-VALUE R11.
   - PROVIDE 1" THICK INSULATION FOR CW PIPING SIZES 1/2" THRU 1-1/4", R-VALUE R6.5.
   - PROVIDE 1" THICK INSULATION FOR CW PIPING SIZES 1-1/2" THRU 4", R-VALUE R6.5.

4. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC INSULATION JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.
5. PROVIDE A CHROME FINISH ON EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
6. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.
7. PROTECT COPPER PIPING AGAINST CONTACT WITH MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
8. PERFORM A PRESSURE TEST ON ALL WATER PIPING. FILL PIPING WITH POTABLE WATER, CAP AND SUBJECT PIPING TO A STATIC WATER PRESSURE OF 50 PSIG ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS OR PRESSURIZE PIPING WITH AIR TO AT LEAST ONE-HUNDRED (100) PSI. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED
9. STERILIZE THE DOMESTIC WATER SYSTEM IN PER THE AMERICAN WATER WORKS ASSOCIATION'S INSTRUCTIONS SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
10. SLOPE WATER PIPING FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.
11. BALANCE THE DOMESTIC HOT WATER CIRCULATION SYSTEM TO THE PERFORMANCE SPECIFICATIONS INDICATED ON THE PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.

## THIRD PARTY COMMISSIONING NOTE

THIS PROJECT INCLUDES A THIRD PARTY COMMISSIONING AGENT CONTRACTED BY THE OWNER. THE PLUMBING CONTRACTOR SHALL COORDINATE WITH OWNER'S COMMISSIONING AGENT AND PROVIDE ALL NECESSARY TIME, MATERIALS, AND PROCEDURES REQUIRED FOR A FULLY COMMISSIONED PROJECT. SEE COMMISSIONING REQUIREMENTS IN THE PROJECT MANUAL FOR FURTHER INFORMATION.

## 2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - PLUMBING SUMMARY

C401 METHOD OF COMPLIANCE

- [■] 2018 NCECC CHAPTER 4
- [ ] ASHRAE 90.1-2013 PRESCRIPTIVE
- [ ] ASHRAE 90.1-2013 PERFORMANCE
- [ ] N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- [ ] COMCHECK PROVIDED (2018 NCECC)
- [ ] COMCHECK PROVIDED (90.1-2013)
- [ ] ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- [ ] C406.2 EFFICIENT MECH EQUIPMENT
- [■] C406.3 REDUCED LTG DENSITY
- [ ] C406.4 ENHANCED LTG CONTROLS
- [ ] C406.5 ON-SITE RENEWABLE ENERGY
- [ ] C406.6 DEDICATED OA SYSTEM
- [ ] C406.7 SERVICE WATER HEATING

TABLE C404.2 - MINIMUM PERFORMANCE OF WATER HEATING EQUIPMENT[c]

| EQUIPMENT TYPE | SIZE CATEGORY (INPUT) | SUB CATEGORY OR RATING CONDITION | PERFORMANCE REQUIRED a,b | REQ'D EFFICIENCY | SPECIFIED EQPM |
|---|---|---|---|---|---|
| WATER HEATER ELECTRIC (WH1) | > 12 kW | RESISTANCE | (0.3+27/Vm), %/h | 53% | 53% |
| WATER HEATER ELECTRIC (WH2) | > 12 kW | RESISTANCE | (0.3+27/Vm), %/h | 64% | 64% |
| WATER HEATER ELECTRIC (WH3) | > 12 kW | RESISTANCE | (0.3+27/Vm), %/h | 57% | 57% |
| WATER HEATER ELECTRIC (WH4) | > 12 kW | RESISTANCE | (0.3+27/Vm), %/h | 64% | 64% |
| WATER HEATER ELECTRIC (WH5) | > 12 kW | RESISTANCE | (0.3+27/Vm), %/h | 64% | 64% |

a. ENERGY FACTOR (EF) AND THERMAL EFFICIENCY ($E_t$) ARE MINIMUM REQUIREMENTS. IN THE EF EQUATION V IS THE VOLUME IN GALLONS.
b. STANDBY LOSS (SL) IS THE MAXIMUM BTU/H BASED ON A NOMINAL 70° TEMPERATURE DIFFERENCE BETWEEN STORED WATER AND AMBIENT REQUIREMENTS. IN THE SL EQUATION Q IS THE NAMEPLATE INPUT RATE IN BTU/H. IN THE EQUATIONS FOR ELECTRIC WATER HEATERS, V IS THE RATED VOLUME IN GALLONS AND $V_m$ IS THE MEASURED VOLUME IN GALLONS. IN THE SL EQUATION FOR GAS WATER HEATERS AND BOILERS, V IS THE RATED VOLUME IN GALLONS.
c. REFER TO WATER HEATER SCHEDULES FOR SPECIFIED WATER HEATING EQUIPMENT TYPES, CAPACITIES (STORAGE VOLUME) AND ENERGY INPUTS (ELECTRIC AND/OR GAS)

C408 - SYSTEM COMMISSIONING

- [ ] PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- [■] PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

## PLUMBING GENERAL NOTES

1. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 NORTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
3. PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.
4. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE TIME PERIOD SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.
5. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
6. FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS OBSERVED BEFORE CONTINUING WORK IN THE AFFECTED AREAS.
7. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONS OF ALL LOCATIONS OF PLUMBING FIXTURES, FLOOR DRAINS, COLUMNS, WALLS, DOORS, ETC.
8. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
9. ALL CAST IRON PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
10. ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
11. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC. AND INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
12. PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE.
13. PIPE PENETRATIONS THRU WALLS, PARTITIONS AND FLOORS SHALL BE SLEEVED. CORE DRILLING THRU WALLS AND PARTITIONS IS PERMITTED IF PERFORMED IN A NEAT CRAFTSMAN LIKE MANNER. OPENINGS THRU WALLS, PARTITIONS, AND FLOORS SHALL BE LARGE ENOUGH FOR PIPE INSULATION TO REMAIN CONTINUOUS. PIPES PENETRATING THRU EXTERIOR WALLS SHALL BE SEALED WATER TIGHT. INSTALL ESCUTCHEONS IN ALL EXPOSED AREAS.
14. PROVIDE ACCESS DOORS FOR ALL SPECIALTIES, VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC., CONCEALED BEHIND WALLS OR CEILINGS THAT REQUIRE MAINTENANCE ACCESS.
15. DO NOT INSTALL PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
16. PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.
17. PROVIDE A CHROME FINISH FOR ALL EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
18. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
19. REFER TO THE STRUCTURAL PLANS AND DETAILS FOR ACCEPTABLE LOCATIONS TO ATTACH HANGERS AND SUPPORTS TO THE BUILDING STRUCTURE. HANGERS SHALL NOT ATTACH TO THE ROOF DECK.
20. PROVIDE MANUFACTURERS RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE.
21. VALVES AND OTHER PIPING ACCESSORIES REQUIRING ACCESS SHALL BE INSTALLED IN ACCESSIBLE LOCATION NO MORE THAN 18" ABOVE THE CEILING, PROVIDE OFFSETS IN PIPING AS NEEDED.
22. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM.

FIRE STOPPING:

1. FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.

PIPE IDENTIFICATION:

1. PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
2. PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

SUBMITTALS:

1. PROVIDE SUBMITTALS BEARING THE CONTRACTORS REVIEW STAMP FOR ALL PLUMBING FIXTURES, PIPING, EQUIPMENT AND ACCESSORIES IN ELECTRONIC FORMAT (PDF).
2. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.
3. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

## PLUMBING LEGEND

| SYMBOL | ABBREVIATION | DESCRIPTION |
|---|---|---|
| | CW | COLD WATER PIPING |
| | HW | HOT WATER PIPING |
| | HWR | HOT WATER RETURN PIPING |
| —TW— | TW | TEMPERED HOT WATER PIPING |
| —140— | 140 | 140°F HOT WATER PIPING |
| —140— | 140 | 140°F HOT WATER RETURN PIPING |
| | W | SANITARY WASTE PIPING |
| | V | SANITARY VENT PIPING |
| —GW— | GW | GREASE WASTE PIPING |
| —AW— | AW | ACID RESISTANT WASTE PIPING |
| —PD— | PD | PUMP DISCHARGE (SUMP PUMP) |
| —CD— | CD | CONDENSATE DRAINAGE |
| | - | PIPING ELBOW DOWN |
| | - | PIPING ELBOW UP |
| | - | PIPING CONTINUES |
| | - | SHUT-OFF VALVE |
| | - | CHECK VALVE |
| | - | BALANCING VALVE |
| | PRV | PRESSURE REDUCING VALVE |
| | - | SOLENOID VALVE |
| | RPZ | REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY |
| | - | IN-LINE PUMP |
| | - | PIPING REDUCER |
| | YCO | YARD CLEANOUT |
| | WCO | WALL CLEANOUT |
| | CO | PLUG CLEANOUT |
| | FD | FLOOR DRAIN |
| | HB | HOSE BIBB / WALL HYDRANT |
| | SA-# | SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE |

ADDITIONAL ABBREVIATIONS

| | | | |
|---|---|---|---|
| AFF | ABOVE FINISHED FLOOR | MFG | MANUFACTURER |
| AFG | ABOVE FINISHED GRADE | PSI | POUNDS PER SQUARE INCH |
| AVTR | ACID VENT THRU ROOF | T&P | TEMPERATURE AND PRESSURE |
| BAS | BUILDING AUTOMATION SYSTEM | TYP | TYPICAL |
| BFF | BELOW FINISHED FLOOR | UG | UNDERGROUND |
| CFH | CUBIC FEET PER HOUR | VTR | VENT THRU ROOF |
| CLG | CEILING | WSV | WASTE STACK VENT |
| CONT | CONTINUATION | WC | WATER COLUMN |
| DN | DOWN | EC | ELECTRICAL CONTRACTOR |
| GPF | GALLONS PER FLUSH | FSC | FOOD SERVICE CONTRACTOR |
| GPM | GALLONS PER MINUTE | GC | GENERAL CONTRACTOR |
| HP | HORSE POWER | MC | MECHANICAL CONTRACTOR |
| INV | INVERT ELEVATION | PC | PLUMBING CONTRACTOR |
| KW | KILOWATT | | |
| MBH | 1,000 BRITISH THERMAL UNIT / HOUR | | |

## PLUMBING SHEET INDEX



| | |
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## GREASE INTERCEPTOR - GRS1

SCHIER (2) GB-1500 OR APPROVED EQUAL BY ZURN OR XERXES. 3,000 GALLON WATER CAPACITY (TWO 1,500 GALLON TANKS), FIBERGLASS CONSTRUCTION, 4" INLETS AND OUTLETS AND 3" VNTS. PROVIDE MANWAYS TO MEET INVERT DEPTH AND H-20 TRAFFIC RATED MANHOLE COVERS AND FRAMES INSTALLED FLUSH WITH FINISHED GRADE. PROVIDE REINFORCED CONCRETE RELIEVING SLAB AND INSTALL PER THE MANUFACTURERS INSTRUCTIONS. COORDINATE EXACT LOCATIONS WITH SITE UTILITY CONTRACTOR. SEE SCHEMATIC ON SHEET P502.

## LAB SINK ACID NEUTRALIZATION TRAP - ANT1

AT EACH LAB SINK, PROVIDE AN ACID NEUTRALIZATION TRAP EQUAL TO STRIEM LB-2. INCLUDING A GLASS FILLED POLYETHYLENE BODY WITH LOWER SEDIMENT CHAMBER, REMOVABLE NEUTRALIZATION CHAMBER, AND NEUTRALIZATION MEDIA. SEE DETAILS ON SHEET P502.

## PLUMBING SPECIALTIES SCHEDULE

| SYMBOL | DESCRIPTION | CONNECTION SIZE W | V | CW | HW | SPECIFICATION | REMARKS |
|---|---|---|---|---|---|---|---|
| WB1 | WASHING MACHINE CONNECTION BOX; 14"x 9"x 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL | 3" | 2" | 1/2" | 1/2" | FIXTURE: GUY GRAY T200TPPVCHA WITH WATER HAMMER ARRESTOR STOPS: INTEGRAL 1/4 TURN SUPPLIES: (2) 5/8" BRAIDED S.S. FLEXIBLE HOSES | |
| WB2 | INDIRECT DRAIN CONNECTION BOX; 14"x 9"x 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL | 2" | 1-1/2" | - | - | FIXTURE: GUY GRAY T200LV WITH KNOCK-OUTS IN TOP OF BOX 2" DRAIN OUTLET WITH 2" DEEP SEAL P-TRAP | |
| WB3 | WATER CONNECTION BOX; 7"X 7"X 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL | - | - | 1/2" | - | FIXTURE: GUY GRAY MB1BAB STOP: QUARTER TURN WITH SHOCK ARRESTOR SUPPLY: 1/4" FLEXIBLE HOSE | PROVIDE INLINE DOUBLE CHECK VALVE WILKINS SERIES 700 |
| CS-x | BALANCING VALVE, THERMOSTATIC, AUTOMATIC, SUFFIX INDICATES PIPE SIZE, SEE FLOOR PLANS | - | - | - | ** | EQUIPMENT: CIRCUIT SOLVER CS SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED. | PROVIDE 105°F MODEL |
| SA-x | SHOCK ARRESTOR, SUFFIX INDICATES PDI SIZE | - | - | x | - | EQUIPMENT: SIOUX CHIEF 650 SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED. | SEE SHOCK ARRESTOR TABLE THIS SHEET |
| HB1 | HOSE BIBB, INTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, ANTI-SIPHON | - | - | 3/4" | - | EQUIPMENT: ZURN Z1333-C-34EL, PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB | MOUNT 18" AFF |
| HB2 | HOSE BIBB, EXTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, FREEZELESS, ANTI-SIPHON | - | - | 3/4" | - | EQUIPMENT: ZURN Z1310-34EL, PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB | MOUNT 18" AFF |
| HB3 | HOSE BIBB, INTERIOR, EXPOSED, EXTERNAL VACUUM BREAKER, ANTI-SIPHON | - | - | 3/4" | - | EQUIPMENT: ZURN Z1341XL WHEEL HANDLE | MOUNT 18" AFF |
| HB4 | HOSE BIBB FOR CAN WASH, EXTERIOR, EXPOSED, EXTERNAL VACUUM BREAKER, ANTI-SIPHON | - | - | 3/4" | 3/4" | EQUIPMENT: WOODFORD HCB67 PROVIDE METAL LOOSE KEY FOR EACH HOSE BIBB | |
| WCO | WALL CLEANOUT, CAST IRON BODY, STAINLESS STEEL WALL PLATE | ** | - | - | - | CLEANOUT: ZURN Z-1446-BP, BRONZE PLUG, CLEANOUT SIZE SHALL MATCH PIPE SIZE | GAS / WATER TIGHT |
| YCO | YARD CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE, INSTALLED IN 18"x18"x6" CONCRETE PAD | ** | - | - | - | CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG INSTALL IN 18"x 18"x 6" DEEP CONCRETE PAD | GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED GRADE |
| FD1 | FLOOR DRAIN, CAST IRON BODY, ROUND NICKEL BRONZE GRATE, ADJUSTABLE | 3" | 2" | - | - | DRAIN: ZURN ZN-415-B, 6" DIAMETER GRATE P-TRAP: 3" DEEP SEAL. | INSTALL TOP FLUSH WITH FINISHED FLOOR. SEE NOTE 1 BELOW. |
| FD2 | FLOOR DRAIN, CAST IRON BODY, ROUND NICKEL BRONZE GRATE, ADJUSTABLE | 3" | 2" | - | - | DRAIN: ZURN ZN-415-I, 9" DIAMETER GRATE | INSTALL TOP FLUSH WITH FINISHED FLOOR. |
| FS1 | FLOOR SINK, 12"x 12"x 6" DEEP, STAINLESS STEEL BODY AND GRATE | ** | 2" | - | - | DRAIN: ZURN Z1750 P-TRAP: 3" CAST IRON, DEEP SEAL | SEE KITCHEN EQUIP. PLANS FOR GRATE (FULL / QUARTER / HALF) |
| FS2 | FLOOR TROUGH BY FOOD SERVICE EQUIPMENT CONTRACTOR STAINLESS STEEL BODY AND GRATE | 4" | 2" | - | - | DRAIN: PROVIDED BY F.S.E.C. INSTALLED BY P.C. P-TRAP: 4" CAST IRON, DEEP SEAL | - |
| TD1 | TRENCH DRAIN, STAINLESS STEEL BODY AND HEEL-PROOF GRATE | 4" | 2" | - | - | DRAIN: ZURN ZS890 P-TRAP: 4" CAST IRON, DEEP SEAL | INSTALL TOP FLUSH WITH FINSIHED FLOOR. SEE NOTE 1 BELOW. |
| AAV | AIR ADMITTANCE VALVE | - | 2" | - | - | EQUIPMENT: STUDOR "REDI-VENT" AIR ADMITTANCE VALVE | PROVIDE THE CODE REQUIRED CLEARENCE DURING INSTALLATION. |

NOTES:
1. PROVIDE WATERLESS INLINE TRAP GUARD FOR EACH FLOOR DRAIN CONFORMING TO ASSE 1072 AND EQUAL TO RECOTORSEAL"SURE-SEAL" MODEL SS3009V. INSTALL TRAP GUARDS IN THE OUTLET OF THE FLOOR DRAIN BODY (NOT IN THE STRAINER).
2. REFER TO FOODSERVICE EQUIPMENT DRAWINGS FOR LOCATIONS OF HALF, THREE-QUARTERS, FULL, ETC. STRAINER CONFIGURATIONS.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

| PRODUCT TYPE: | ACCEPTED MANUFACTURERS: |
|---|---|
| SHOCK ARRESTOR<br>HOSE BIBBS<br>DRAINS<br>BACKFLOW PREVENTER | SIOUX CHIEF, PPP INC., ZURN, WATTS<br>ZURN, WOODFORD, ZURN, J.R. SMITH<br>ZURN, J.R. SMITH, WADE<br>WILKINS, WATTS, APOLLO |

## KITCHEN WATER HEATER SCHEDULE - ELECTRIC

| SYM. | DESCRIPTION | STORAGE (GALLONS) | GPH RECOVERY @ 90°F RISE | ELECTRICAL DATA KW | VOLTS | PHASE | HERTZ | BASIS OF DESIGN MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| WH1 | ELECTRIC WATER HEATER | 120 | 410 | 90 | 480 | 3 | 60 | A.O. SMITH | DSE-120 | 1,2,3,4 |

REMARKS:
1. EQUIVALENT MANUFACTURERS: STATE, LOCHINVAR, BRADFORD WHITE, A.O. SMITH.
2. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE 90.1.
3. WATER HEATER (WH1) LOCATED IN MECHANICAL MEZZANINE IN AREA 300.
4. SET OUTLET TEMPERATURE TO 140°F.

## WATER HEATER SCHEDULE - ELECTRIC

| SYM. | DESCRIPTION | STORAGE (GALLONS) | GPH RECOVERY @ 70°F RISE | ELECTRICAL DATA KW | VOLTS | PHASE | HERTZ | BASIS OF DESIGN MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| WH2 | ELECTRIC WATER HEATER | 80 | 88 | 15 | 480 | 3 | 60 | A.O. SMITH | DSE-80 | 1,2,3,7 |
| WH3 | ELECTRIC WATER HEATER | 100 | 140 | 24 | 480 | 3 | 60 | A.O. SMITH | DSE-100 | 1,2,4,7 |
| WH4 | ELECTRIC WATER HEATER | 80 | 88 | 15 | 480 | 3 | 60 | A.O. SMITH | DSE-80 | 1,2,5,7 |
| WH5 | ELECTRIC WATER HEATER | 80 | 88 | 15 | 480 | 3 | 60 | A.O. SMITH | DSE-80 | 1,2,6,7 |

REMARKS:
1. EQUIVALENT MANUFACTURERS: STATE, LOCHINVAR, BRADFORD WHITE, A.O. SMITH.
2. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE 90.1.
3. WATER HEATER (WH2) LOCTAED IN THE MECHANICAL MEZZANINE OF AREA 500-600.
4. WATER HEATER (WH3) LOCATED IN ROOM 400, IN AREA 100.
5. WATER HEATER (WH4) LOCATED IN THE MECHANICAL MEZZANINE OF AREA 200.
6. WATER HEATER (WH5) LOCATED IN THE MECHANICAL MEZZANINE OF AREA 300.
7. SET OUTLET TEMPERATURE TO 120°F.

## HW CIRCULATION PUMP SCHEDULE

| SYM | DESCRIPTION | TYPE | CAPACITY GPM | HEAD (FT) | ELECTRICAL DATA HP | VOLTS | PH | HZ | SELECTION BASED ON MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RCP1 | HW RECIRC PUMP - 140° | IN-LINE | 1.5 | 4 | 1/20 | 115 | 1 | 60 | GRUNDFOS | 92603113 | 1,2,3 |
| RCP2 | HW RECIRC PUMP | IN-LINE | 9.5 | 3 | 1/20 | 115 | 1 | 60 | GRUNDFOS | 92603112 | 1,2,3 |
| RCP3 | HW RECIRC PUMP | IN-LINE | 1.5 | 2 | 1/20 | 115 | 1 | 60 | GRUNDFOS | 92603112 | 1,2,3 |
| RCP4 | HW RECIRC PUMP | IN-LINE | 2.5 | 2 | 1/20 | 115 | 1 | 60 | GRUNDFOS | 92603112 | 1,2,3 |
| RCP5 | HW RECIRC PUMP | IN-LINE | 2.5 | 2 | 1/20 | 115 | 1 | 60 | GRUNDFOS | 92603112 | 1,2,3 |

REMARKS:
1. EQUIVALENT MANUFACTURERS: GRUNDFOS, TACO.
2. PUMP SHALL BE ALL STAINLESS-STEEL CONSTRUCTION.
3. INTERLOCK WITH FULLY ADJUSTABLE AQUASTAT AND 7-DAY, 24 HOUR TIMER.

## EXPANSION TANK SCHEDULE

| SYM. | DESCRIPTION | VOLUME (GALLONS) | DIAMETER (INCHES) | HEIGHT (INCHES) | BASIS OF DESIGN MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|
| ET1 | BLADDER TYPE EXPANSION TANK | 16.5 | 15 | 25 | AMTROL | ST-30V | 1 |
| ET2 | BLADDER TYPE EXPANSION TANK | 16.5 | 15 | 25 | AMTROL | ST-30V | 1 |
| ET3 | BLADDER TYPE EXPANSION TANK | 8.6 | 12 | 22 | AMTROL | ST-20V | 1 |
| ET4 | BLADDER TYPE EXPANSION TANK | 6.4 | 12 | 18 | AMTROL | ST-12 | 1 |
| ET5 | BLADDER TYPE EXPANSION TANK | 6.4 | 12 | 18 | AMTROL | ST-12 | 1 |

REMARKS:
1. EQUIVALENT MANUFACTURERS: BELL & GOSSETT, WESSELS COMPANY.

## ELEVATOR PIT PUMP SCHEDULE

| SYM | DESCRIPTION | DISCHARGE PIPE (INCHES) | CAPACITY GPM | HEAD (FT) | ELECTRICAL DATA HP | VOLTS | PH | HZ | BASIS OF DESIGN MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SP1 | SUBMERSIBLE PUMP | 1-1/2 | 50 | 18 | 3/4 | 115 | 1 | 60 | LIBERTY PUMPS | 291 SERIES | 1,2,3,4 |

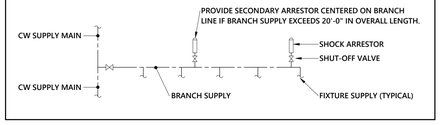
REMARKS:
1. EQUIVALENT MANUFACTURERS: STANCOR.
2. PROVIDE PUMP WITH PLUG AND CORD.
3. PROVIDE BACKWATER CHECK VALVE AND SHUT-OFF VALVE ON DISCHARGE LINE.

## SHOCK ARRESTOR TABLE

| DRAWING SYMBOL | FIXTURE UNITS | P.D.I. WH201 DESIGNATION | ARRESTOR SIZE |
|---|---|---|---|
| SA-A | 1 - 11 | A | 1/2" |
| SA-B | 12 - 32 | B | 3/4" |
| SA-C | 33 - 60 | C | 1" |
| SA-D | 61 - 113 | D | 1-1/4" |
| SA-E | 114 - 154 | E | 1-1/2" |

REMARKS: INSTALL SHOCK ARRESTORS PER THE PLUMBING DRAINAGE INSTITUTE (P.D.I.) GUIDELINES.

ACCEPTED MANUFACTURERS: SIOUX CHIEF, WATTS, PPP INC., ZURN




## STORAGE TANK WATER HEATER CALC. - KITCHEN

| WASH SINK EQUIPMENT ( CALCULATED AT 75% CAPACITY ) | # OF COMPARTMENTS | ( INCHES ) LENGTH | WIDTH | DEPTH | GALLONS PER HOUR ( GPH ) |
|---|---|---|---|---|---|
| TRIPLE COMPARTMENT POT SINK #1 | 3 | 24 | 24 | 14 | 79 |

| PREP SINK EQUIPMENT ( CALCULATED AT 5 GPH PER COMPARTMENT ) | # OF COMPARTMENTS | GALLONS PER HOUR ( GPH ) |
|---|---|---|
| PREP SINK - VEGETABLE | 2 | 10 |
| PREP SINK - MEAT | 1 | 5 |

| OTHER KITCHEN EQUIPMENT | GPH EACH | QUANTITY | GALLONS PER HOUR ( GPH ) |
|---|---|---|---|
| HAND SINK | 5 | 7 | 35 |
| CAN WASH | 10 | 1 | 10 |
| MOP SINK | 5 | 1 | 5 |
| HOSE REEL | 45 | 1 | 45 |
| CLOTHES WASHER | 15 | 1 | 15 |
| KITCHEN HOOD EQUIPMENT | 5 | 1 | 5 |
| PRE-RINSE SINK | 35 | 2 | 90 |
| FILL FAUCET | 10 | 1 | 10 |

| DISH MACHINE ( CALCULATED AT 70% OF MFG. FINAL RINSE ) | FINAL RINSE | QUANTITY | GALLONS PER HOUR ( GPH ) |
|---|---|---|---|
| HOBART MODEL CL44EN-BAS2 | 126 | 1 | 88.2 |
| - | 126 | 1 | - |
| | | RECOVERY RATE NEEDED ( GPH ) | 397.2 |

GAS WATER HEATER BTU REQUIRED AT 90°F RISE: 392,000

ELECTRIC WATER HEATER KW REQUIRED AT 90°F RISE: 87

NOTES:
1. WATER HEATER CALCULATIONS BASED ON THE NC DIVISION OF HEALTH STORAGE WATER HEATER CRITERIA.
2. WATER HEATERS PROVIDED: A.O. SMITH DSE-120A RATED FOR 410 GPH AT 90°F RISE (WH1).

## OUTDOOR GREASE INTERCEPTOR CALC. - GRS1

| KITCHEN EQUIPMENT | INDIRECT DRAIN SIZE ( SEE NOTE 1 ) | QUANTITY | FLOW RATE ( GPM ) | RATING FACTOR | SUB-TOTAL ( GPM ) |
|---|---|---|---|---|---|
| UTENSIL / POT WASH SINK | 1-1/2" I.D. TO 3"FS | 1 | 30 | 1 | 30 |
| MEAT PREP. SINK | 1-1/2" I.D. TO 3"FS | 1 | 20 | 0.75 | 15 |
| PRE-RINSE SINK | 1-1/2" I.D. TO 3"FS | 1 | 35 | 0.5 | 17.5 |
| VEGETABLE PREP. SINK | 1-1/2" I.D. TO 3"FS | 1 | 20 | 0.25 | 5 |
| CAN WASH | 3" P-TRAP | 1 | 10 | 1 | 10 |
| HOOD COOKING EQUIPMENT DRAINS | 1" I.D. TO 3"FS | 1 | 5 | 0.25 | 1.25 |
| DISHMACHINE (PEAK DRAIN RATE) | 2" PUMP I.D. TO 4"FS | 1 | 38 | 1.0 | 38 |
| | | | | TOTAL GPM | 117 |
| | | | | RETENTION TIME | 24 MIN. |
| | | | | MIN. STORAGE GALLONS REQUIRED TOTAL GPM x RETENTION TIME | 2,808 |

NOTE: FLOW RATE AND RATING VALUES ARE BASED ON THE 2024 HARNET COUNTY GREASE TRAP POLICY FOR OUTDOOR GREASE INTERCEPTORS AND THE MANNING FORMULA.

## PLUMBING FIXTURE SCHEDULE

| SYMBOL | DESCRIPTION | CONNECTION SIZE W | V | CW | HW | SPECIFICATION | REMARKS |
|---|---|---|---|---|---|---|---|
| P1 | TOILET ELONGATED, WHITE VITREOUS CHINA, WALL HUNG (1.28 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE | 4" | 2" | 1-1/4" | - | FIXTURE: SLOAN ST-2459 FLUSH VALVE: SLOAN G2 8111 BT-1.28-CP BATTERY POWERED SENSOR, WITH ELECTRICAL OVERRIDE AND CHLORAMINE RESISTANT DIAPHRAGM. SEAT: CHURCH 2955SCT ANTI-MICROBIAL (WHITE) | 15" RIM HEIGHT. SEE NOTE 6 BELOW. |
| P1A | TOILET, A.D.A. COMPLIANT ELONGATED, WHITE VITREOUS CHINA, WALL HUNG (1.28 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE | 4" | 2" | 1-1/4" | - | FIXTURE: SLOAN ST-2459 FLUSH VALVE: SLOAN G2 8111 BT-1.28-CP BATTERY POWERED SENSOR, WITH ELECTRICAL OVERRIDE AND CHLORAMINE RESISTANT DIAPHRAGM. SEAT: CHURCH 2955SCT ANTI-MICROBIAL (WHITE) | 16.5" RIM HEIGHT. SEE NOTES 5 AND 6 BELOW. |
| P2 | URINAL WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.5 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE | 2" | 2" | 3/4" | - | FIXTURE: SLOAN SU-1009 FLUSH VALVE: SLOAN G2 8186-0.5 BATTERY POWERED SENSOR, WITH ELECTRICAL OVERRIDE AND CHLORAMINE RESISTANT DIAPHRAGM. | SEE NOTE 1 BELOW. |
| P2A | URINAL, A.D.A. COMPLIANT WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.5 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE | 2" | 2" | 3/4" | - | FIXTURE: SLOAN SU-1009 FLUSH VALVE: SLOAN G2 8186-0.5 BATTERY POWERED SENSOR, WITH ELECTRICAL OVERRIDE AND CHLORAMINE RESISTANT DIAPHRAGM | SEE NOTE 1 BELOW. |
| P3A | LAVATORY, A.D.A. COMPLIANT, 20"x18" RECTANGULAR BOWL, WHITE ENAMELED CAST IRON, CARRIER MOUNTED, 4" CENTER SET FAUCET HOLES, SENSOR OPERATED FAUCET (0.5 GPM) VANDAL RESISTANT AERATOR | 2" | 1-1/2" | 1/2" | 1/2" | FIXTURE: SLOAN SS-3017 FAUCET: SLOAN EBF-650-8-BAT-8DM-CP-0.5GPM-MLM-FCT GRID DRAIN: ZURN 8743; P-TRAP: ZURN Z-8701 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK | SEE NOTES 2 & 4 BELOW. |
| P3H | HANDWASH SINK, 10"x14" DEEP DRAWN RECTANGULAR BOWL, 304 SERIES STAINLESS STEEL, WALL MOUNTED, INTEGRAL LEVER DRAIN, VADAL RESISTANT ASSE 1070 MIXING VALVE FOR SCALD PROTECTION, 4" GOOSENECK FAUCET WITH (1 GPM) AERATOR | 2" | 1-1/2" | 1/2" | 1/2" | FIXTURE TO BE SUPPLIED BY FOOD SERVICE SUPPLIED & INSTALLED BY THE P.C. FIXTURE: ADVANCE TABCO 7-PS-40 MIXING VALVE: LEONARD 170-LF | SEE NOTES 2 & 4 BELOW. |
| P4 | WATER COOLER, A.D.A. COMPLIANT, STAINLESS STEEL FINISH, SINGLE BOWL, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER | 2" | 1-1/2" | 1/2" | - | FIXTURE: ELKAY LVRCGRN8 ELEC: 260 WATT, 120 VOLT, SINGLE PHASE P-TRAP: ZURN Z-870 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK | SEE NOTE 3 BELOW. |
| P4A | WATER COOLER & BOTTLE FILLER, A.D.A. COMPLIANT, STAINLESS STEEL FINISH, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER, SENSOR OPERATED BOTTLE FILLER WITH AUTO SHUT-OFF. | 2" | 1-1/2" | 1/2" | - | FIXTURE: ELKAY LVRCGRN8WSK ELEC: 260 WATT, 120 VOLT, SINGLE PHASE P-TRAP: ZURN Z-870 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK | SEE NOTE 3 BELOW. |
| P5A | CLASSROOM SINK, A.D.A. COMPLIANT, 17" x16" x5-1/2" RECTANGULAR SINGLE BOWL, 18 GUAGE STAINLESS STEEL, DROP IN BOWL, 8" GOOSENECK FAUCET WITH WRIST BLADE HANDLES (1.5 GPM) VANDAL RESISTANT AERATOR. | 2" | 1-1/2" | 1/2" | 1/2" | FIXTURE: ELKAY LRAD171655 FAUCET: ZURN Z871B4-XL GRID DRAIN: ZURN 8743; P-TRAP: ZURN Z-8701 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK | SEE NOTE 4 BELOW. |
| P5B | ART ROOM SINK, A.D.A. COMPLIANT, 17" x16" x5-1/2" RECTANGULAR SINGLE BOWL, 18 GUAGE STAINLESS STEEL, DROP IN BOWL, 8" GOOSENECK FAUCET WITH WRIST BLADE HANDLES (1.5 GPM) VANDAL RESISTANT AERATOR, POINT OF USE SOLIDS INTERCEPTOR. | 2" | 1-1/2" | 1/2" | 1/2" | FIXTURE: ELKAY LRAD171655 FAUCET: ZURN Z871B4-XL GRID DRAIN: ZURN 8743; P-TRAP: ZURN Z-8701 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK SOLIDS INTERCEPTOR: STRIEM SIDEKICK | SEE NOTES 4 & 7 BELOW. |
| P5C | FAMILY AND CONSUMER SCIENCE CLASSROOM SINK, A.D.A. COMPLIANT, 29" x18" x5-1/2" RECTANGULAR DUAL BOWLS, 18 GUAGE STAINLESS STEEL, DROP IN BOWL, COUNTER MOUNTED FAUCET WITH (1.5 GPM) AERATOR. | 2" | 1-1/2" | 1/2" | 1/2" | FIXTURE: ELKAY LRAD291885 FAUCET: ZURN Z870C-XL GRID DRAIN: ZURN 8743; P-TRAP: ZURN Z-8701 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK | SEE NOTE 4 BELOW |
| P6 | MOP SINK, 28"x 28"x 12" TERRAZZO BASIN, 6" DROP FRONT WITH STAINLESS STEEL THRESHOLD CAP, 36" HIGH STAINLESS STEEL WALL GUARDS, SERVICE FAUCET, HOSE, MOP HANGER BRACKET. | 3" | 2" | 1/2" | 1/2" | FIXTURE: FIAT TSBCR1100, 8330AA, 832AA, (2) MSG2828 FAUCET: ZURN Z842M4 WITH INTEGRAL VACUUM BREAKER, DRAIN: 3" STAINLESS STEEL SLOTTED P-TRAP: 3" DEEP SEAL, CAST IRON | PROVIDE CHECK VALVES ON HW AND CW SUPPLIES. |
| P7 | SHOWER, PRESSURE BALANCED SHOWER VALVE WITH 1.5 GPM WALL MOUNTED SHOWER HEAD. | 2" | 2" | 1/2" | 1/2" | FIXTURE: TILED WALLS AND FLOOR BY G.C. SHOWER VALVE & HEAD : SYMMONS "ORIGINS" S-9601-PLR PROVIDE FLOOR DRAIN 2" FD1 IN TILED FLOOR BASE | COORDINATE RIGHT OR LEFT HAND CONTROLS WITH ARCHITECTURAL PLANS AND ELEVATIONS |
| P7A | SHOWER, ADA COMPLIANT, PRESSURE BALANCED SHOWER VALVE WITH 1.5 GPM WALL MOUNTED SHOWER HEAD WITH HAND HELD SHOWER AND SLIDE BAR. | 2" | 2" | 1/2" | 1/2" | FIXTURE: TILED WALLS AND FLOOR BY G.C. SHOWER VALVE & HEAD : SYMMONS "ORIGINS" S-9602-PLR PROVIDE FLOOR DRAIN 2" FD1 IN TILED FLOOR BASE | COORDINATE RIGHT OR LEFT HAND CONTROLS WITH ARCHITECTURAL PLANS AND ELEVATIONS |

NOTES:
1. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1222-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
2. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED, ADJUSTABLE CONCEALED ARM CARRIER EQUAL TO ZURN Z1231-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND BLOCK WALL, PROVIDE EXTENDED CONCEALED ARM SLEEVES TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
3. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1225-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
4. PROVIDE PRE-MANUFACTURED A.D.A. COMPLIANT INSULATION KIT FOR EXPOSED P'TRAP AND SUPPLY TRIM UNDER SINK.
5. PROVIDE LEVER ON WIDE SIDE OF STALL.
6. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED CARRIER EQUAL TO ZURN Z1203 (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
7. PROVIDE A SOLIDS TRAP EQUAL TO STRIEM "SIDEKICK" ON ALL ART ROOM SINKS IN LIEU OF A P-TRAP.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

| PRODUCT TYPE: | ACCEPTED MANUFACTURERS: |
|---|---|
| VITREOUS CHINA<br>FLUSH VALVES<br>ENAMELED CAST IRON CARRIERS<br>FAUCETS<br>WATER COOLERS<br>SUPPLIES, STOPS<br>HOSE BIBBS<br>UTILITY SINKS | ZURN, SLOAN, TOTO<br>ZURN, SLOAN, TOTO<br>ZURN, SLOAN, TOTO<br>ZURN, J.R. SMITH, WADE<br>ZURN, SLOAN, TOTO<br>ELKAY, MURDOCK, HALSEY TAYLOR<br>ZURN, MCGUIRE, BRASSCRAFT<br>ZURN, J.R. SMITH, WOODFORD<br>FIAT, FLORESTONE, STERN WILLIAMS |

## PLUMBING FIXTURE SCHEDULE (LAB SPACES)

| SYMBOL | DESCRIPTION | CONNECTION SIZE W | V | CW | HW | SPECIFICATION | REMARKS |
|---|---|---|---|---|---|---|---|
| L1 | LAB SINK AND FAUCET BY CASEWORK SUPPLIER. | 2" | 2" | 1/2" | 1/2" | FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - STRIEM LB-2 (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK | SEE NOTE 1 BELOW. SEE DETAILS 1/P501 & 2/P502. |
| L2 | LAB SINK AND FAUCET BY CASEWORK SUPPLIER. PROVIDE AIR ADMITTANCE VALVE FOR VENTING. | 2" | 2" | 1/2" | 1/2" | FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - STRIEM LB-2 (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK AIR ADMITTANCE VALVE: STUDOR "REDI-VENT" MATCH PIPE SIZE. | SEE NOTE 1 BELOW. SEE DETAIL 1/P501. |
| L3 | LAB SINK AND FAUCET BY CASEWORK SUPPLIER. PROVIDE EMERGENCY HANDHELD EYEWASH / DRENCH HOSE AT SINK. PROVIDE MIXING VALVE FOR CONNECTION TO EMERGENCY EYEWASH / DRENCH HOSE. | 2" | 2" | 1/2" | 1/2" | FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - STRIEM LB-2 (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK EYEWASH / DRENCH HOSE: HAWS 8904 | SEE NOTE 1 BELOW. SEE DETAIL 8/P501. |
| ES1 | EMERGENCY SHOWER AND EYE/FACE WASH, STAINLESS STEEL, BARRIER-FREE ACCESS, STAY-OPEN BALL VALVES | - | - | 1-1/4" | 1-1/4" | FIXTURE: HAWS 8309WC MIXING VALVE: LEONARD TM-800-LF | PROVIDE TEST KIT WITH BUCKET. ANSI Z358.1 COMPLIANT. SEE DETAIL 10/P501. |

NOTES:
1. GRID DRAIN / TAIL PIECE AND PIPING FROM THE LAB SINK TO THE NEUTRALIZATION TRAP SHALL BE ACID RESISTANT SCHEDULE 40 POLYPROPYLENE PIPE (ASTM D4101, ASTM F1412), NSF LISTED, CSA CERTIFIED WITH POLYPROPYLENE FITTINGS (ASTM D4101, ASTM F1412) WITH MECHANICAL JOINTS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

| PRODUCT TYPE: | ACCEPTED MANUFACTURERS: |
|---|---|
| EMERGENCY FIXTURES<br>ACID WASTE SPECIALITY | BRADLEY, GUARDIAN, SPEAKMAN<br>STRIEM, ZURN, IPEX |

## WATER HEATER SCHEDULE - ELECTRIC (TANK-LESS)

| SYM. | DESCRIPTION | DESIGN FLOW (GPM) | TEMPERATURE RISE AT DESIGN FLOW | ELECTRICAL DATA KW | VOLTS | PHASE | HERTZ | BASIS OF DESIGN MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| WH6 | ELECTRIC WATER HEATER | 0.50 | 57°F | 4.2 | 208 | 1 | 60 | CHRONOMITE | CM-20L/208 | 1,2,3,4 |

REMARKS:
1. EQUIVALENT MANUFACTURERS: STIEBEL-ELT

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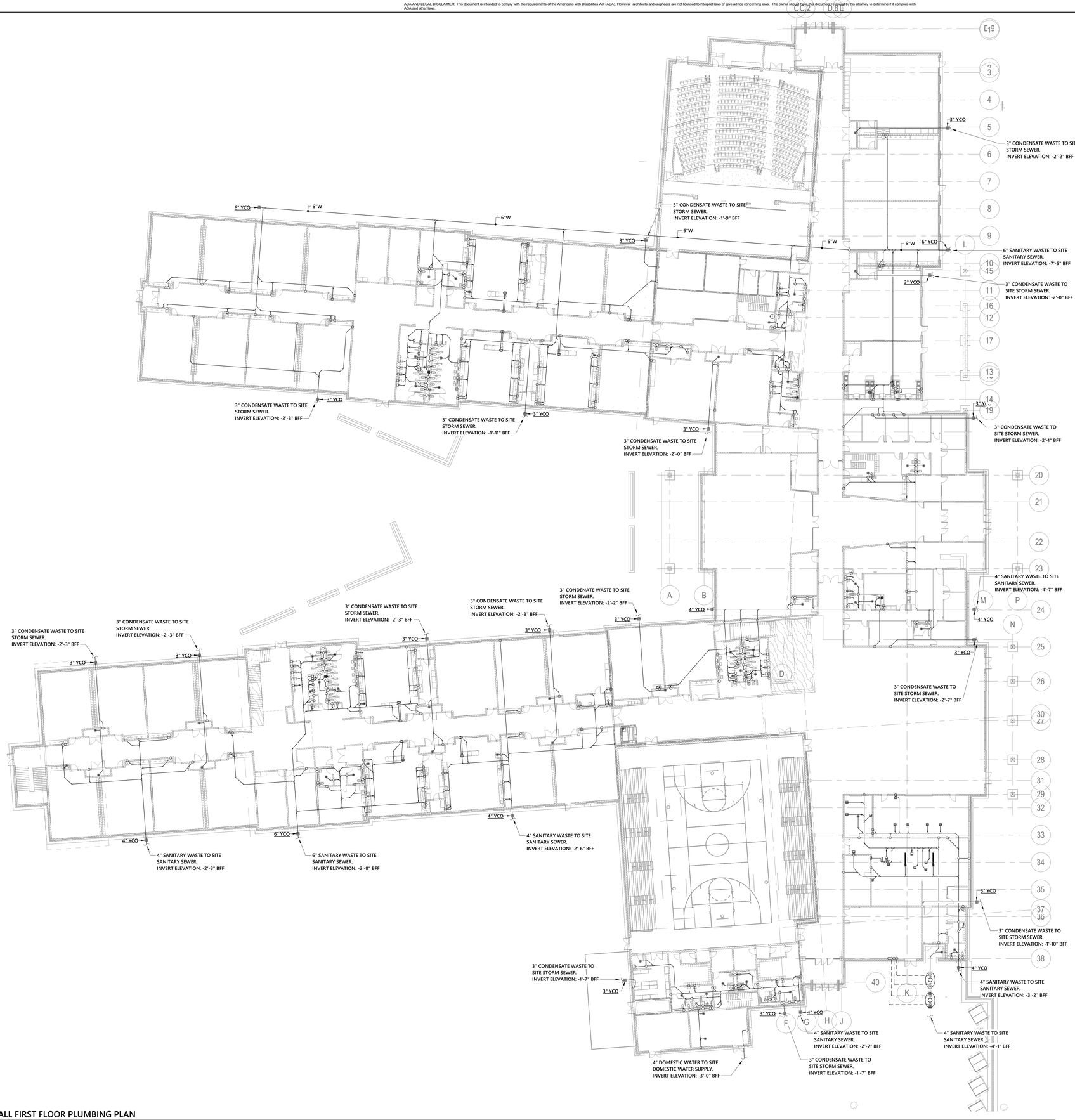
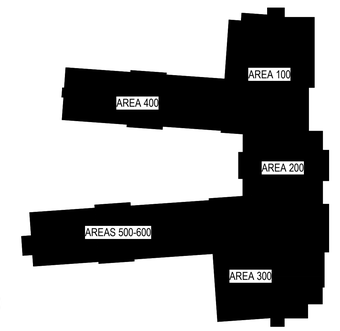



1 OVERALL FIRST FLOOR PLUMBING PLAN
1" = 20'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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|---|---|---|
| | | |

ISSUE DATE: 11/08/24
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OVERALL PLUMBING UTILITY CONNECTION PLAN

P-101

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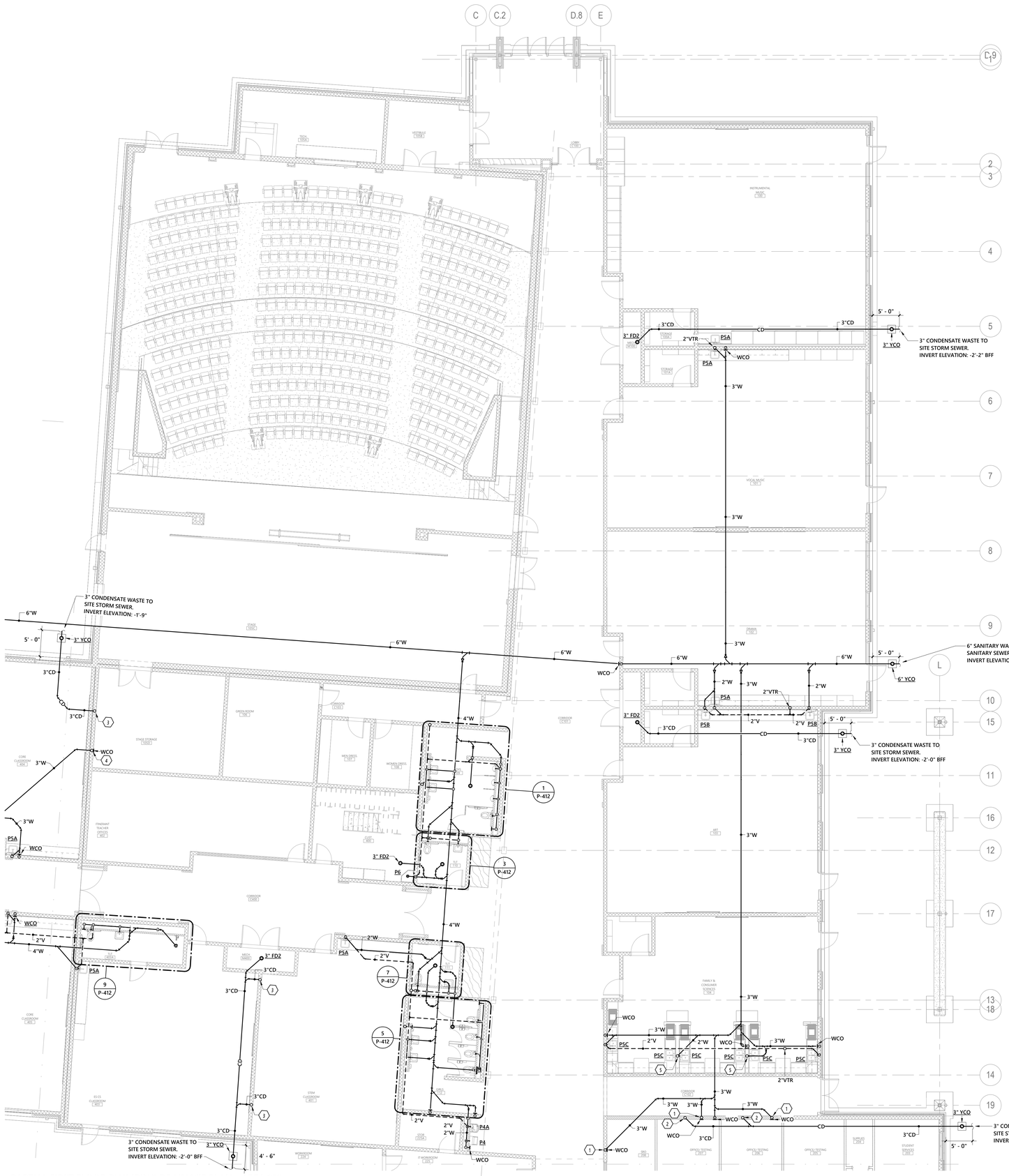



1 **PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100**
1/8" = 1'-0"

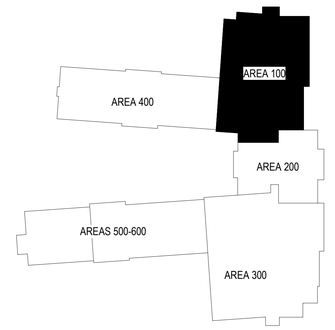
## KEYNOTES

1. 3"W UP TO AREA 200 MECHANICAL MEZZANINE. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2. 3"CD UP TO AREA 200 MECHANICAL MEZZANINE.
3. 3"CD UP TO AREA 400 MECHANICAL MEZZANINE.
4. 3"W UP TO AREA 400 MECHANICAL MEZZANINE. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
5. PROVIDE AAV WITH LOUVER FOR INSTALLATION IN HALF HEIGHT WALL.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100

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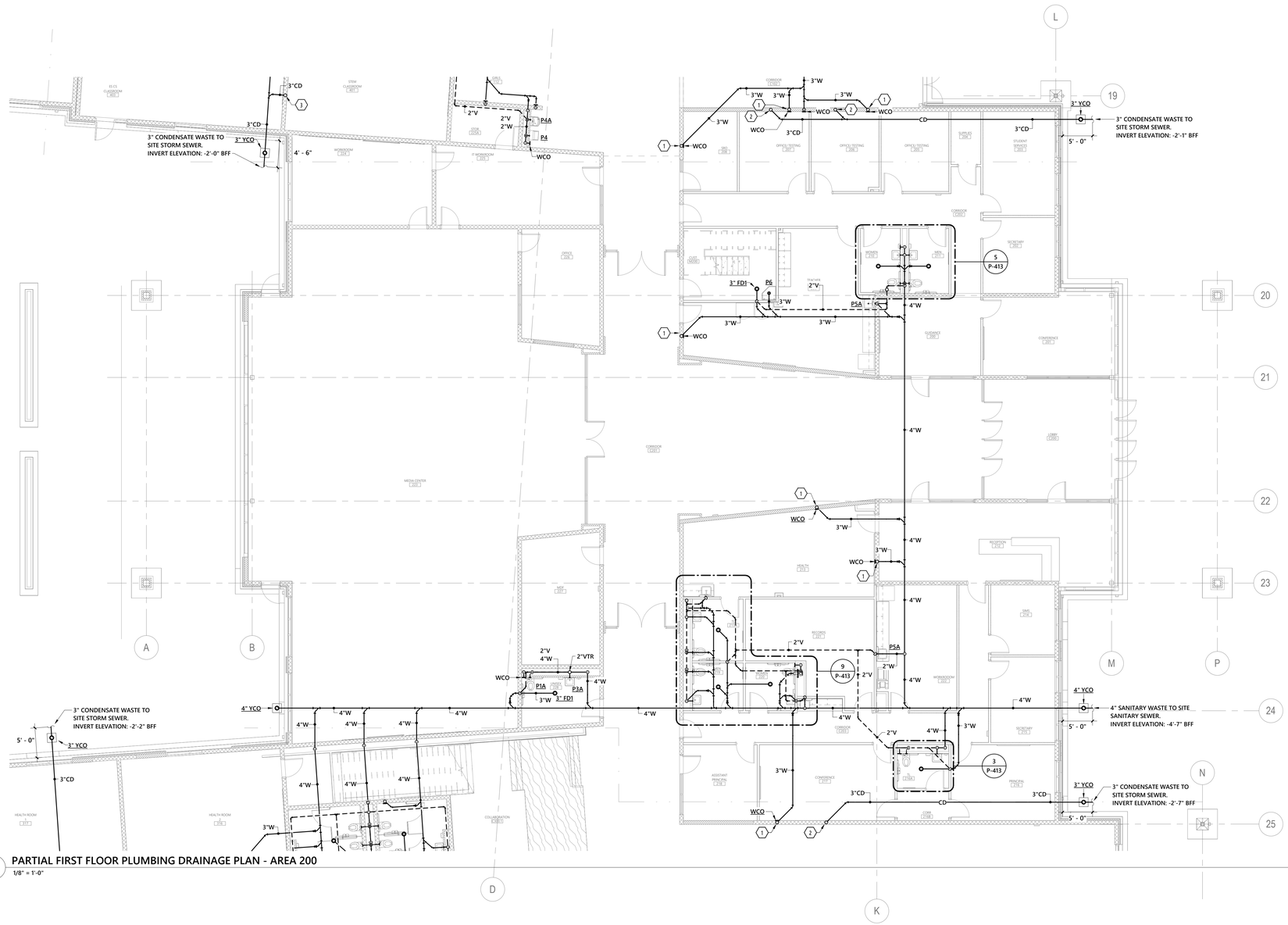
## KEYNOTES (#)

1 3"W UP TO AREA 200 MECHANICAL MEZZANINE. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2 3"CD UP TO AREA 200 MECHANICAL MEZZANINE.
3 3"CD UP TO AREA 400 MECHANICAL MEZZANINE.




1 PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200

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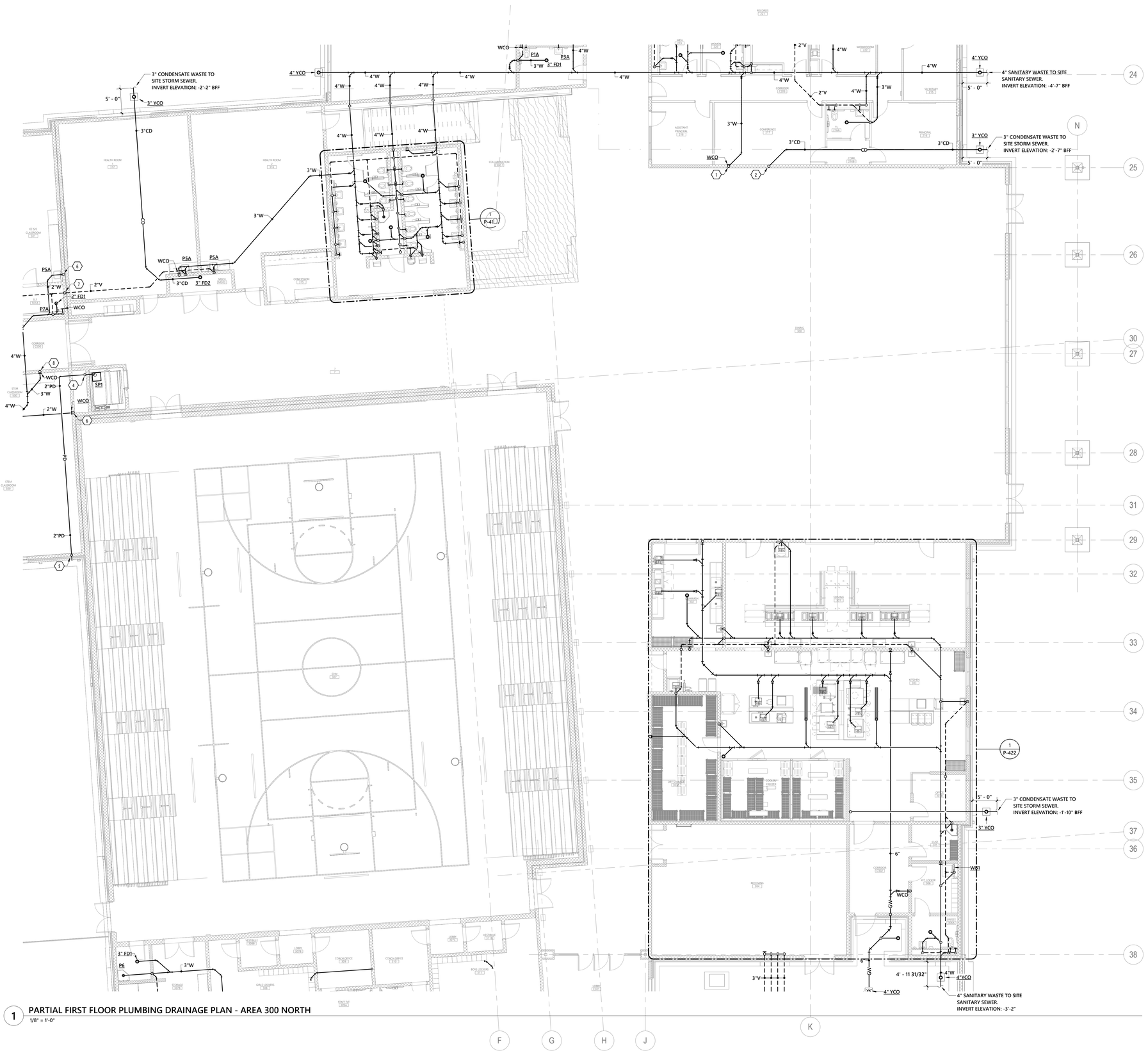



1 PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300 NORTH
1/8" = 1'-0"

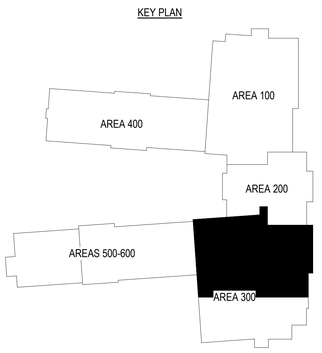
## KEYNOTES (#)

1. 3"W UP TO AREA 200 MECHANICAL MEZZANINE. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2. 3"CD UP TO AREA 200 MECHANICAL MEZZANINE.
3. 3"CD UP TO AREA 400 MECHANICAL MEZZANINE.
4. 2"PD UP IN CEILING AS HIGH AS POSSIBLE. SLOPE PD LINE AT A 1% SLOPE.
5. 2"PD DOWN TO DISCHARGE 8" AFG. PROVIDE DOWNSPOUT NOZZLE AND DISCHARGE BLOCK.
6. 2"W UP TO CLASSROOM SINK ON THE SECOND FLOOR. PROVIDE CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
7. 2"V UP TO SECOND FLOOR.
8. 3"W UP TO SECOND FLOOR. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300 NORTH

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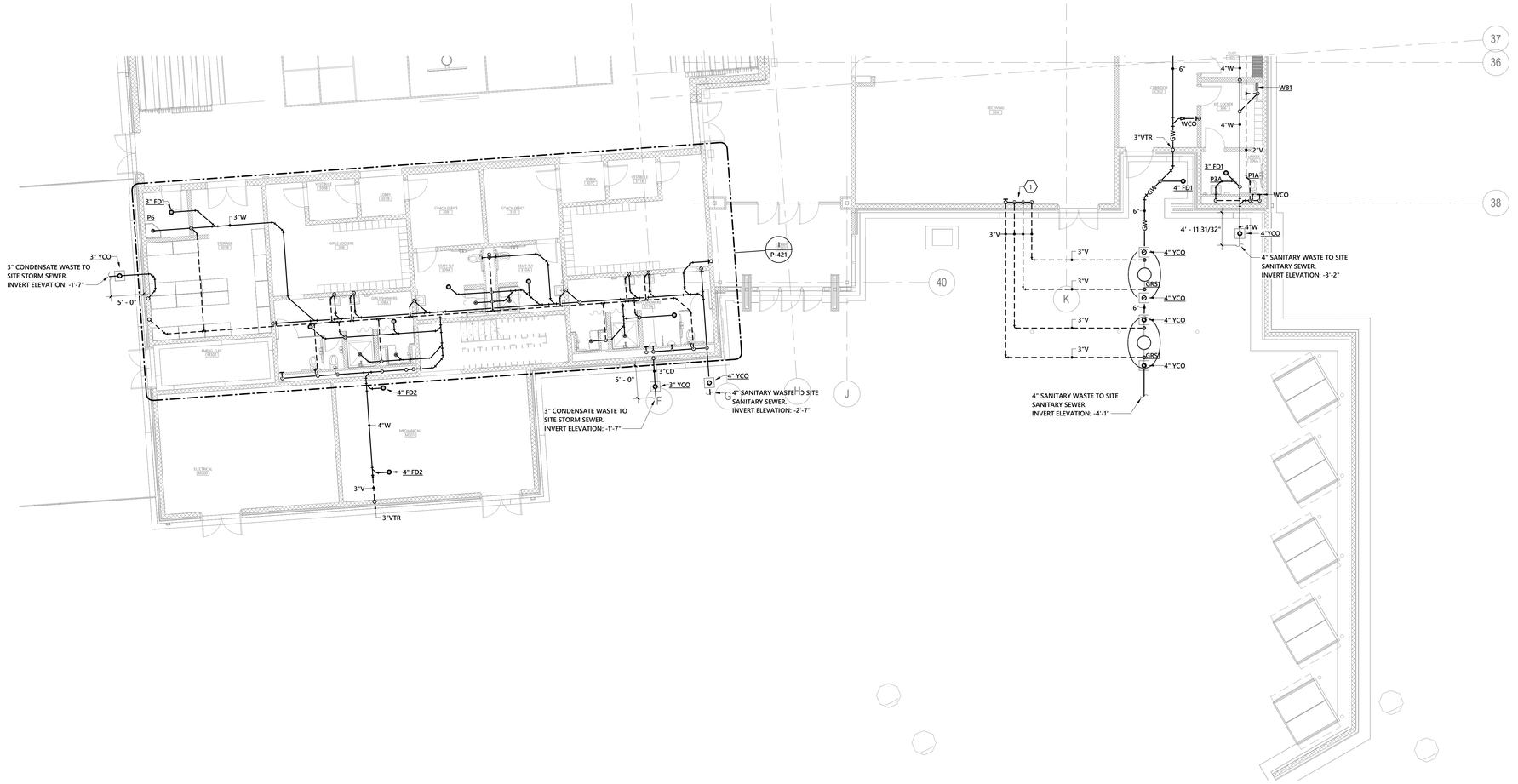
## KEYNOTES (#)

1 3"V HEADER FOR VENTING OF GREASE INTERCEPTORS. 3"V STACK UP TO VENT THROUGH THE ROOF. PROVIDE CLEANOUT AT THE BASE OF THE VENT STACK, BELOW HEADER CONNECTION.




1 PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300 SOUTH
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300 SOUTH

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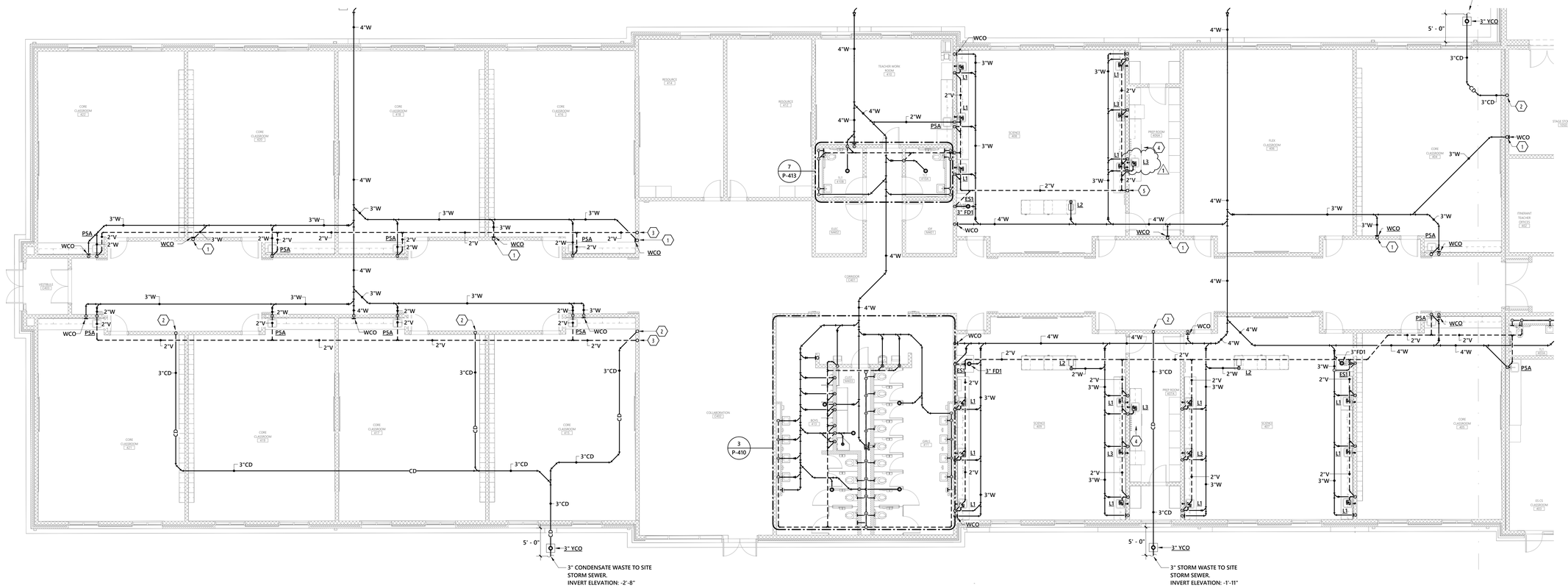
## KEYNOTES

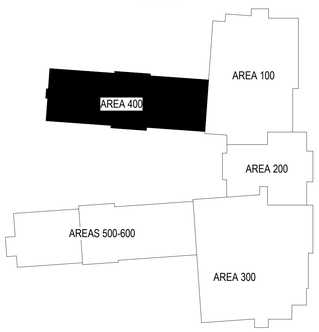
1. 3"W UP TO AREA 400 MECHANICAL MEZZANINE. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2. 3"CD UP TO AREA 400 MECHANICAL MEZZANINE.
3. 2"V UP TO AREA 400 MECHANICAL MEZZANINE.
4. PROVIDE SANITARY WASTE CONNECT FROM UNDERCOUNTER GLASSWASH TO ADJACENT LAB SINK'S TAIL PIECE. SEE DETAIL 9/501.
5. 2"V UP TO AREA 400 MEZZANINE.




## 1 PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400

1/8" = 1'-0"

KEY PLAN




**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400

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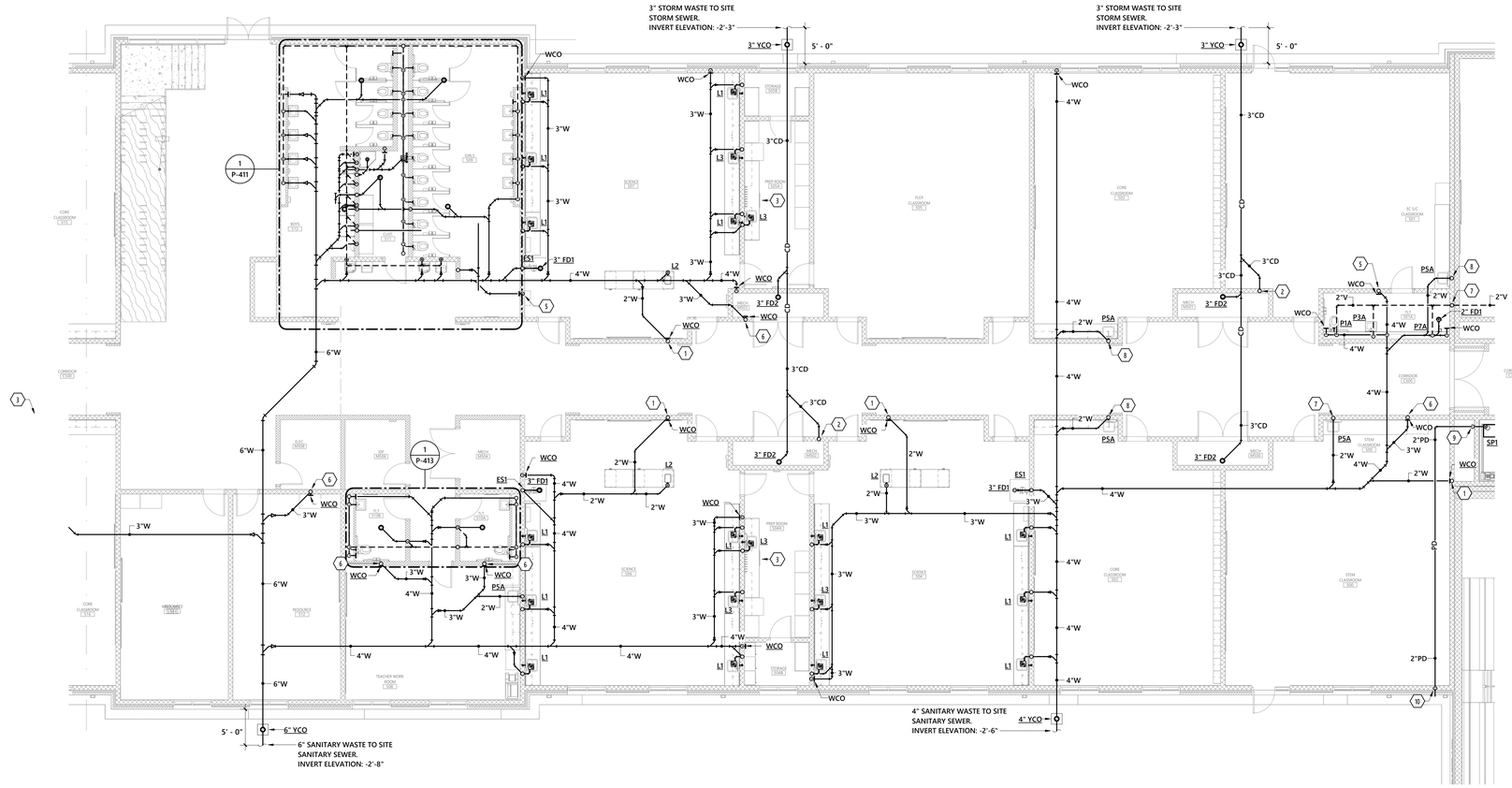
## KEYNOTES

1 2"W UP TO SECOND FLOOR. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2 3"CD UP TO SECOND FLOOR.
3 PROVIDE SANITARY WASTE CONNECT FROM UNDERCOUNTER GLASSWASH TO ADJACENT LAB SINK'S TAIL PIECE. SEE DETAIL 9/501.
5 4"W UP TO SECOND FLOOR. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
6 3"W UP TO SECOND FLOOR. PROVIDE CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
7 2"V UP TO SECOND FLOOR.
8 2"W UP TO CLASSROOM SINK ON SECOND FLOOR.
9 2"PD UP IN CEILING AS HIGH AS POSSIBLE. SLOPE PD LINE AT A 1% SLOPE.
10 2"PD DOWN TO DISCHARGE 8" AFG. PROVIDE DOWNSPOUT NOZZLE AND DISCHARGE BLOCK




1 PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500 RIGHT
1/8" = 1'-0"

KEY PLAN

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
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| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: RLH
CHECKED BY: DAR

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500 RIGHT

P-115.1

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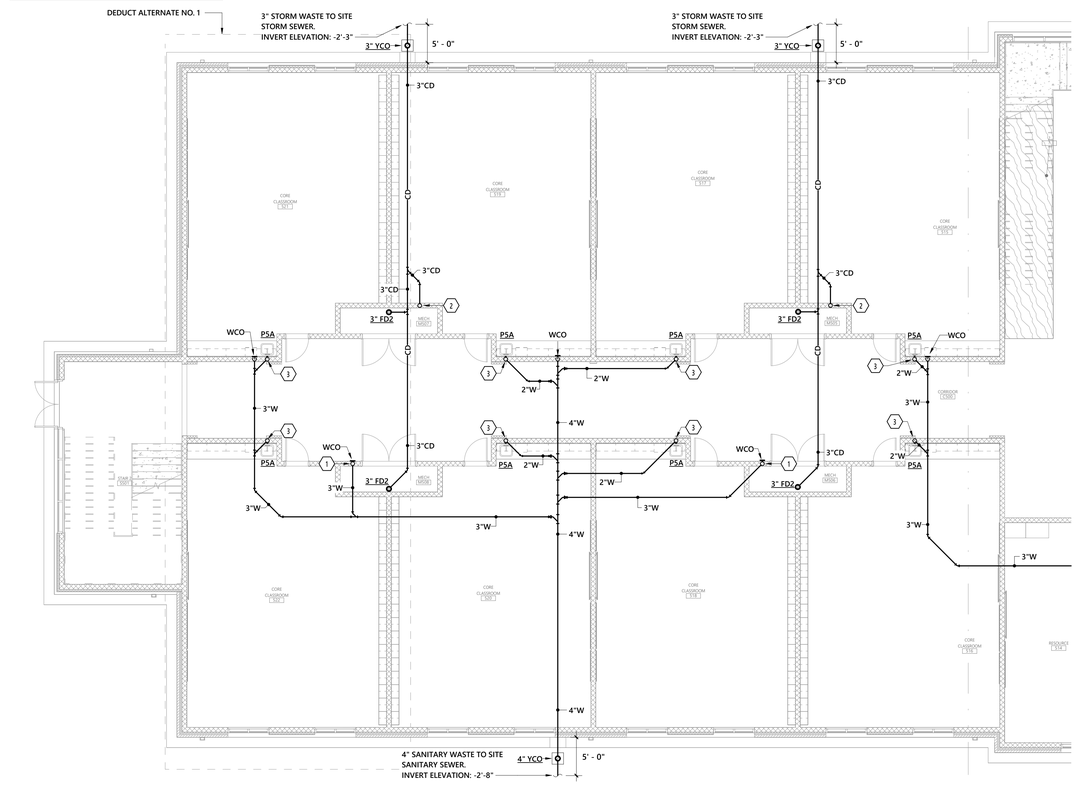
DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600

DEDUCT ALTERNATE NO. 1




1 PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500 LEFT
1/8" = 1'-0"

## KEYNOTES

1 3"W UP TO SECOND FLOOR. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2 3"CD UP TO SECOND FLOOR.
3 2"W UP TO CLASSROOM SINK ON THE SECOND FLOOR. PROVIDE CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500 LEFT

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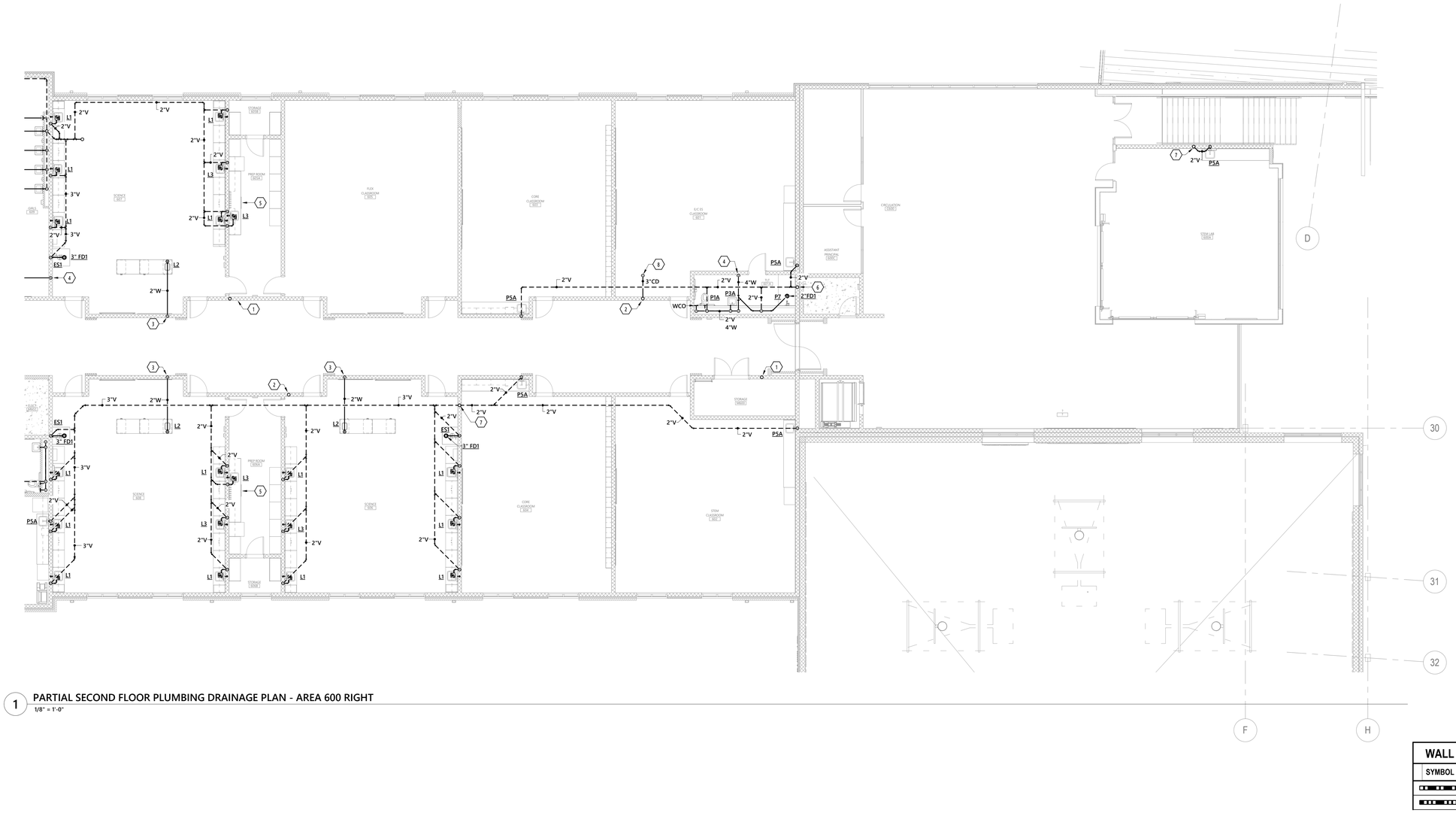
## KEYNOTES (#)

1 3"W UP TO AREA 600 MECHANICAL MEZZANINE.
2 3"CD UP TO AREA 600 MECHANICAL MEZZANINE.
3 2"W STACK DOWN TO FIRST FLOOR.
4 4"W DOWN TO FIRST FLOOR.
5 PROVIDE SANITARY WASTE CONNECT FROM UNDERCOUNTER GLASSWASH TO ADJACENT LAB SINK'S TAIL PIECE. SEE DETAIL 9/501.
6 2"V UP TO AREA 600 MECHANICAL MEZZANINE.
7 3"V UP TO AREA 600 MECHANICAL MEZZANINE.
8 3"CD DOWN TO FIRST FLOOR.




1 PARTIAL SECOND FLOOR PLUMBING DRAINAGE PLAN - AREA 600 RIGHT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR PLUMBING DRAINAGE PLAN - AREA 600 RIGHT

P-116.1

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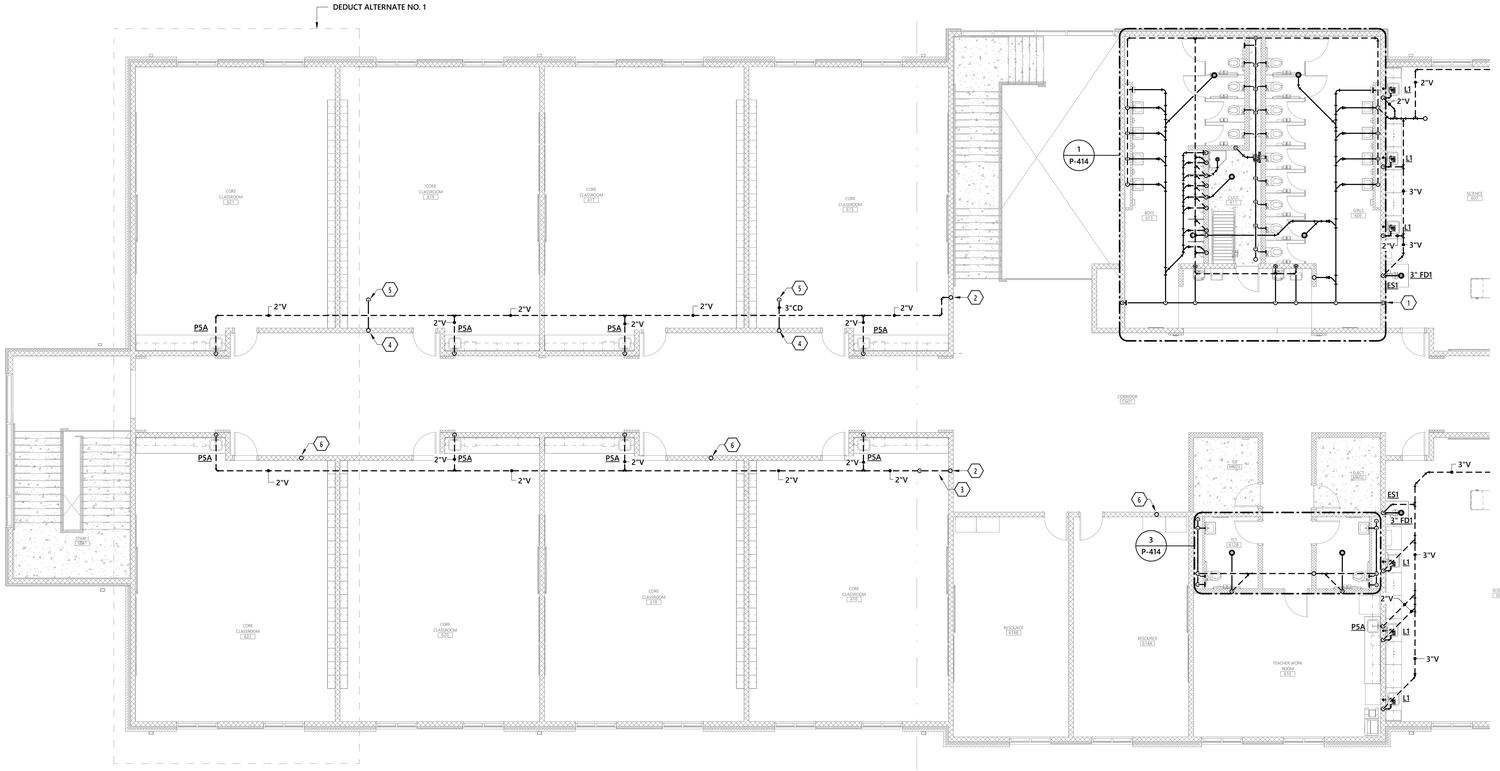
## KEYNOTES

1 4"W DOWN TO FIRST FLOOR.
2 2"V UP TO AREA 600 MECHANICAL MEZZANINE.
3 ROUTE 2"V PIPING UP AND OVER MECHANICAL DUCT.
4 3"CD UP TO AREA 600 MECHANICAL MEZZANINE.
5 3"CD DOWN TO FIRST FLOOR.
6 3"W UP TO AREA 600 MECHANICAL MEZZANINE.

**DEDUCT ALTERNATE NO. 1**: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600

DEDUCT ALTERNATE NO. 1




1 PARTIAL SECOND FLOOR PLUMBING DRAINAGE PLAN - AREA 600 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR PLUMBING DRAINAGE PLAN - AREA 600 LEFT

P-116.2

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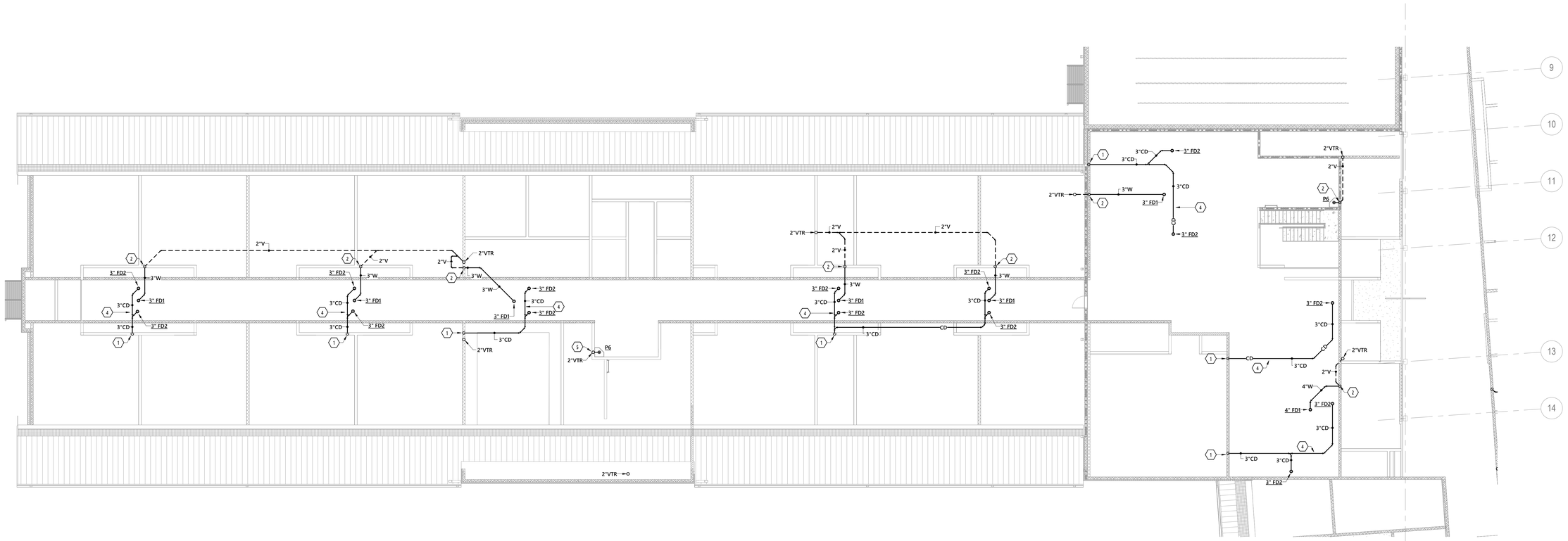
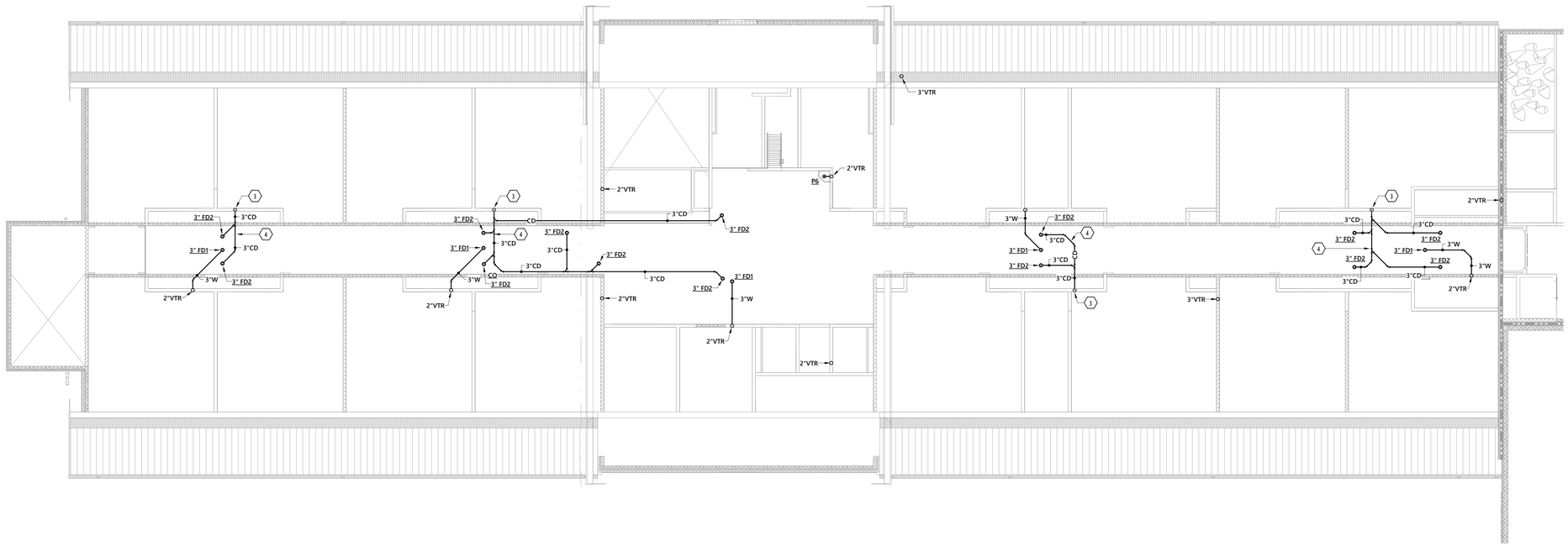
## KEYNOTES

1 3"CD DOWN TO FIRST FLOOR.
2 3"W DOWN TO FIRST FLOOR.
3 3"CD DOWN TO SECOND FLOOR.
4 INSULATE ALL CONDENSATE DRAINAGE PIPING IN THIS AREA.
5 3"W DOWN TO FIRST FLOOR. 2"VTR




1 MECH. MEZZANINE PLUMBING DRAINAGE PLAN - AREAS 100 & 400
3/32" = 1'-0"




2 MECH. MEZZANINE PLUMBING DRAINAGE PLAN - AREA 600
3/32" = 1'-0"

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE PLUMBING DRAINAGE PLANS - AREAS 100, 400, & 600

P-121

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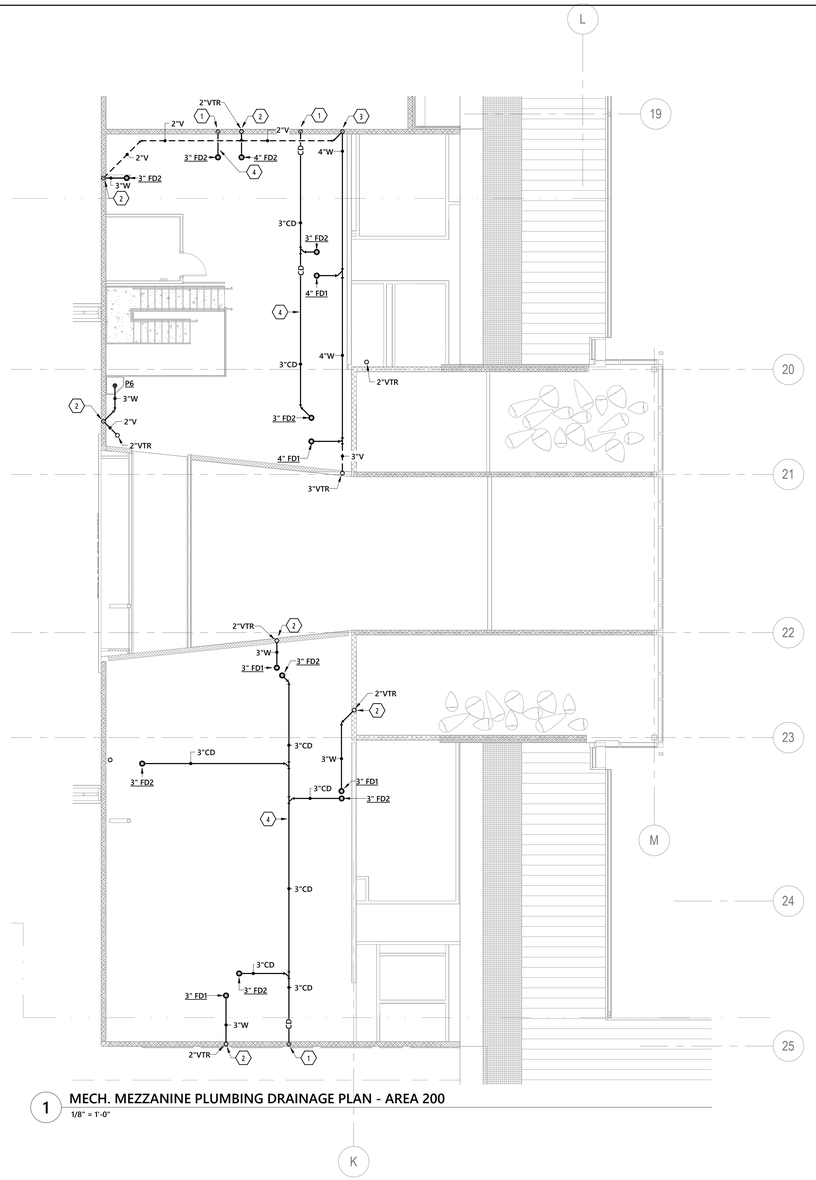
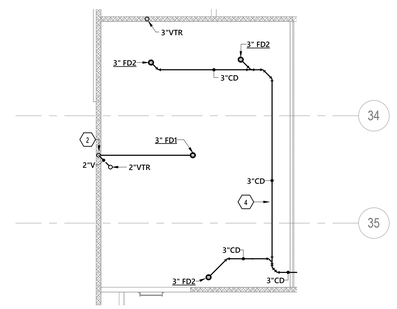
## KEYNOTES

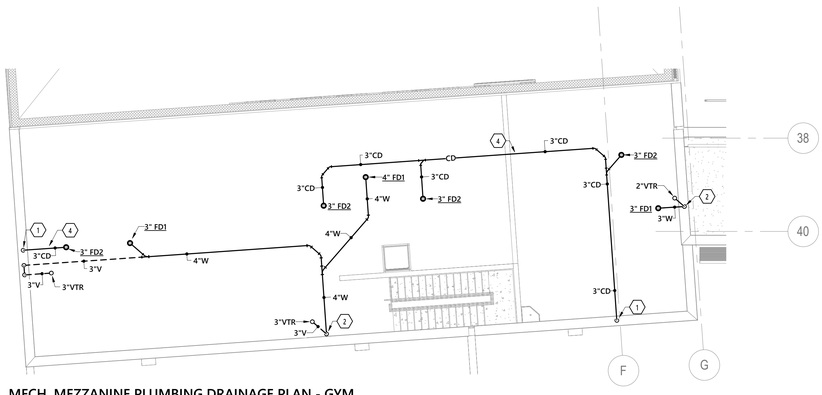
1 3"CD DOWN TO FIRST FLOOR.
2 3"W DOWN TO FIRST FLOOR.
3 4"W DOWN TO FIRST FLOOR.
4 INSULATE ALL CONDENSATE DRAINAGE PIPING IN THIS AREA.




1 MECH. MEZZANINE PLUMBING DRAINAGE PLAN - AREA 200
1/8" = 1'-0"




2 MECH. MEZZANINE PLUMBING DRAINAGE PLAN - AREA 300
1/8" = 1'-0"




3 MECH. MEZZANINE PLUMBING DRAINAGE PLAN - GYM
1/8" = 1'-0"

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE PLUMBING DRAINAGE PLANS - AREAS 200 & 300

P-122

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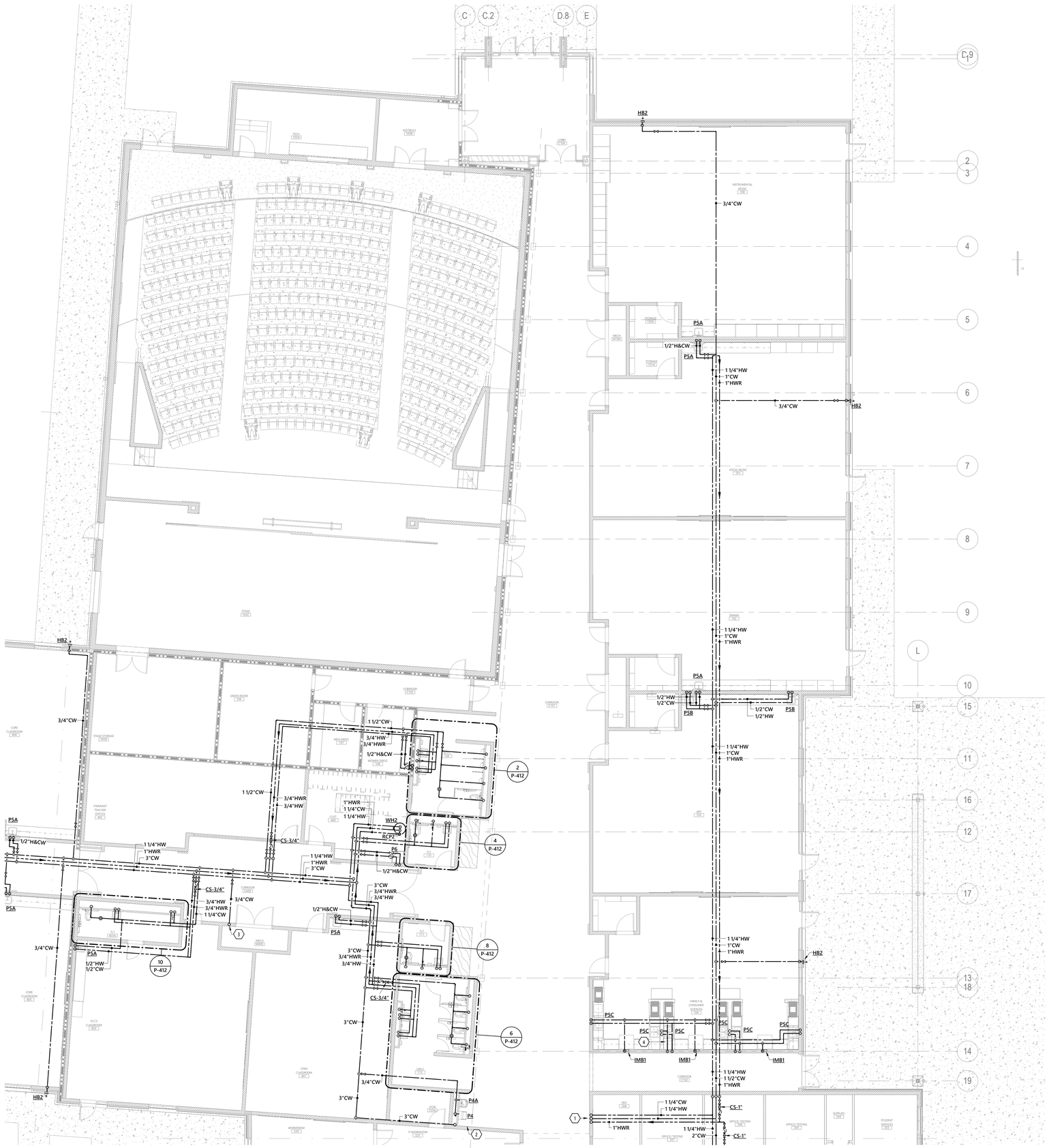


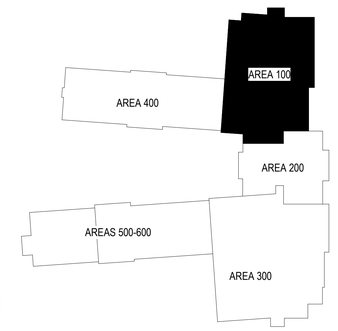

## KEYNOTES

1. 1-1/4"CW, 1-1/4"HW, 1"HWR UP TO AREA 200 MECHANICAL MEZZANINE.
2. 3"CW DOWN FROM CLEARSTORY LEVEL. PIPING TO DROP DOWN INTO CHASE BEHIND WATER COOLERS TO ENTER FIRST FLOOR CEILING.
3. 3/4"CW UP TO AREA 400 MECHANICAL MEZZANINE.
4. 1/2"CW & 1/2"HW DOWN BELOW FINISHED FLOOR AND OVER TO HALF WALL TO FEED FAMILY AND CONSUMER SCIENCE SINKS.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100

P-211

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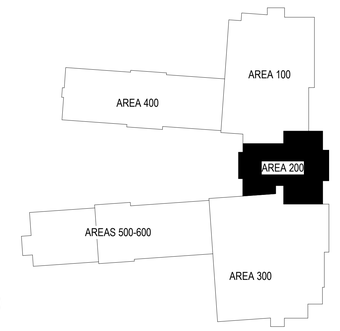
## KEYNOTES

1. 1-1/4"CW, 1-1/4"HW, 1"HWR UP TO AREA 200 MECHANICAL MEZZANINE.
2. 2"CW, 1-1/4"HW, 1"HWR UP TO AREA 200 MECHANICAL MEZZANINE.
3. 3"CW UP TO SECOND FLOOR. P.C. AND M.C. TO COORDINATE ROUTING OF HYDRONIC, DOMESTIC WATER, AND FIRE MAIN PIPING TOGETHER IN CHASE.
4. 1-1/4"CW DOWN FROM 3"CW MAIN TO SUPPLY RESTROOM.
5. WH6. SEE DETAIL 5/P502 FOR MORE INFORMATION.

1 PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200

P-212

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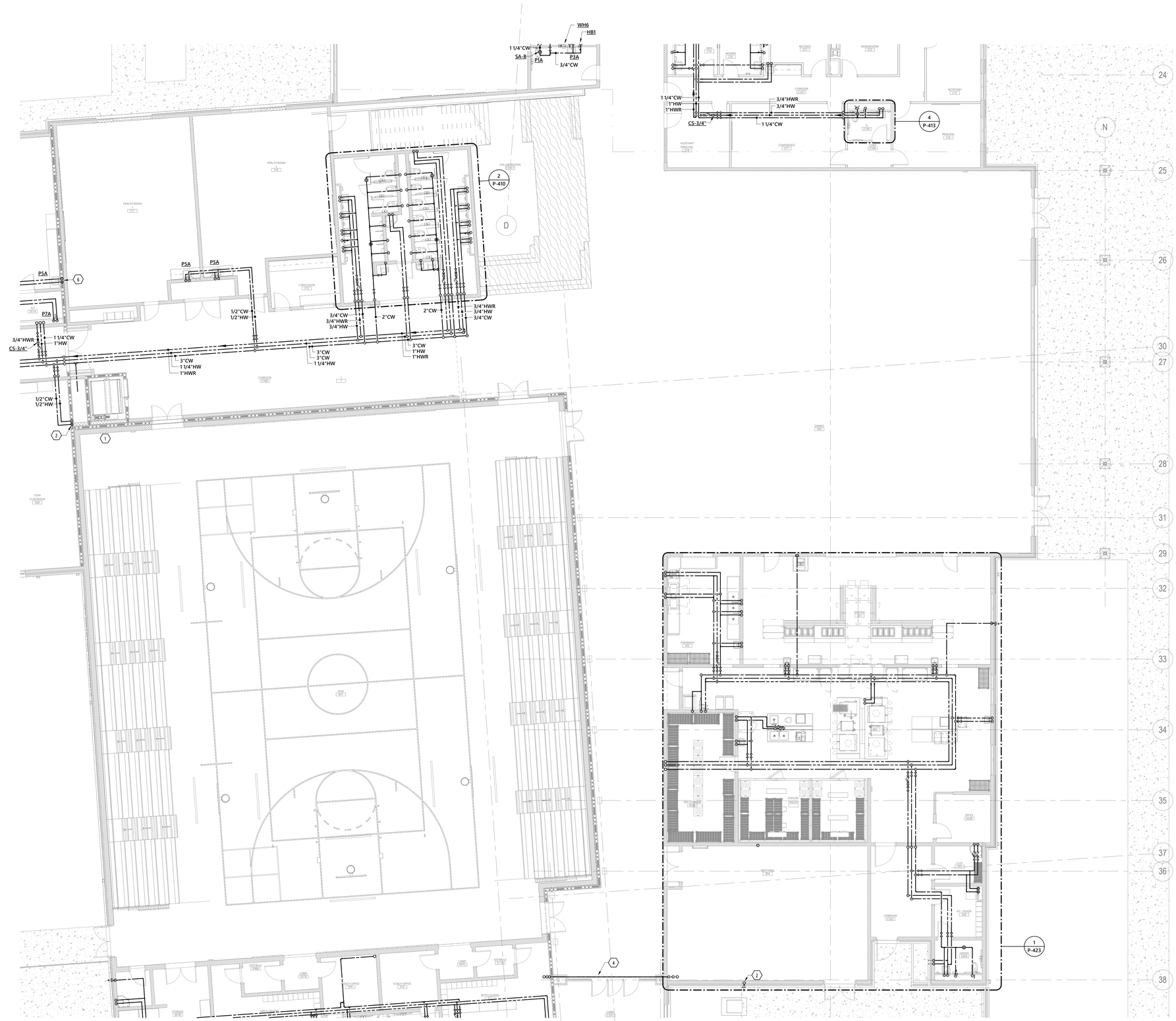


1 PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300 NORTH
1/8" = 1'-0"

## KEYNOTES (#)

1 3"CW UP HIGH IN THE GYMNASIUM. SEE SHEET
2 1/2"H&CW UP TO SECOND FLOOR.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

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ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: RLH
CHECKED BY: DAR

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300 NORTH

P-213.1

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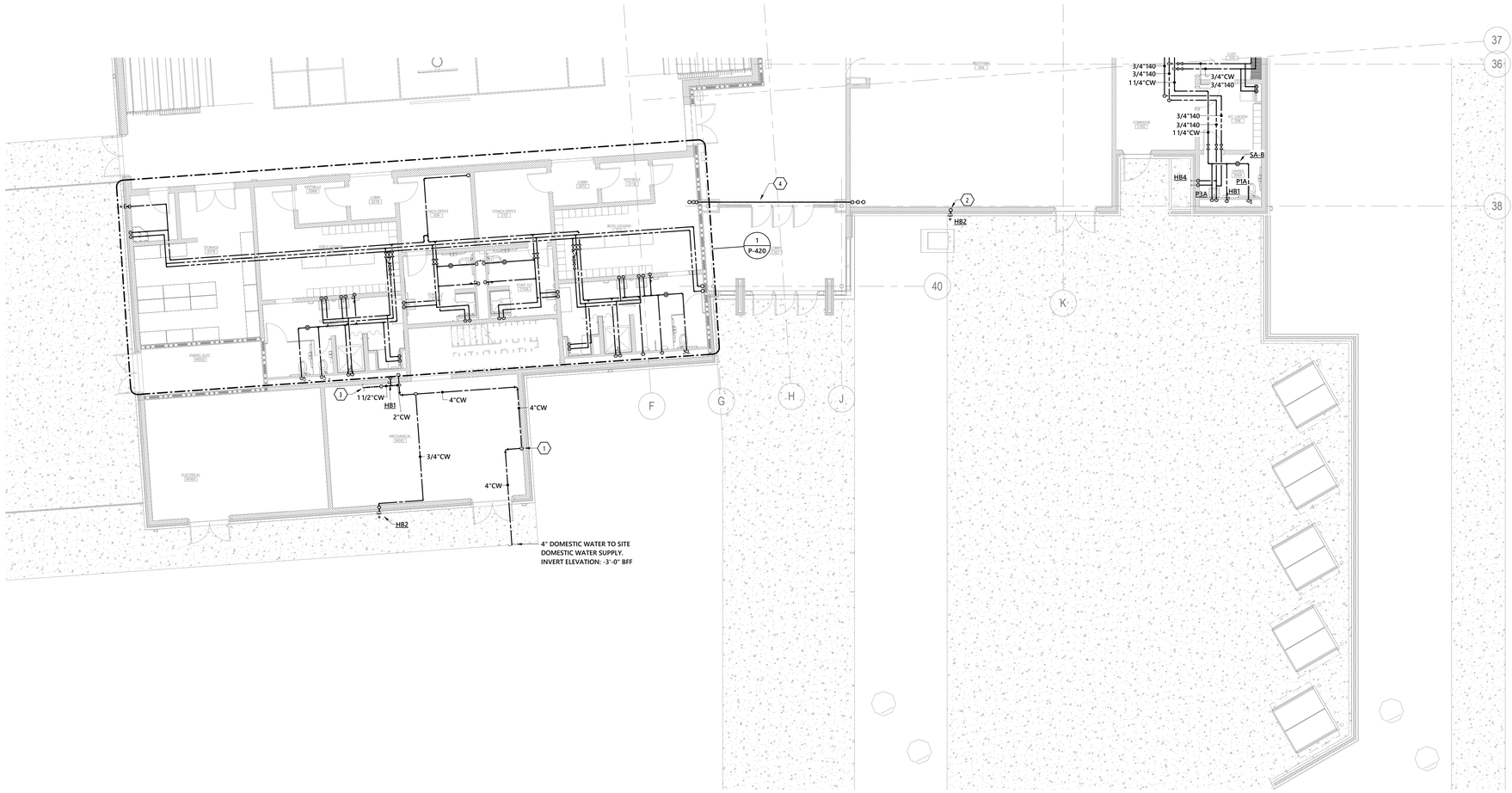
## KEYNOTES

1. 4"CW UP FROM BFF. PROVIDE SHUTOFF VALVE AT 24" AFF.
2. 3/4"CW UP HIGH IN RECIEVING AREA. SEE SHEET P222 FOR CONTINUATION.
3. 1-1/2"CW LINE FOR MECHANICAL HYDRONIC SYSTEM. PROVIDE WATTS LF009 OR EQUIVALENT MODEL BACKFLOW PREVENTER BEFORE CONNECTION TO MECHANICAL HYDRONIC SYSTEM. P.C. TO COORDINATE WITH M.C. ON ITS FINAL LOCATION AND CONNECTION TO THE MECHANICAL HYDRONIC SYSTEM. BACKFLOW PREVENTER TO MATCH THE PIPE SIZE.
4. PLUMBING CONTRACTOR, MECHANICAL CONTRACTOR, AND FIRE SPRINKLER CONTRACTOR TO COORDINATE THE ROUTING OF PIPING IN THIS AREA. PIPING TO BE HORIZONTALLY ALIGNED WITHIN BULKHEAD.




1 PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300 SOUTH
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300 SOUTH

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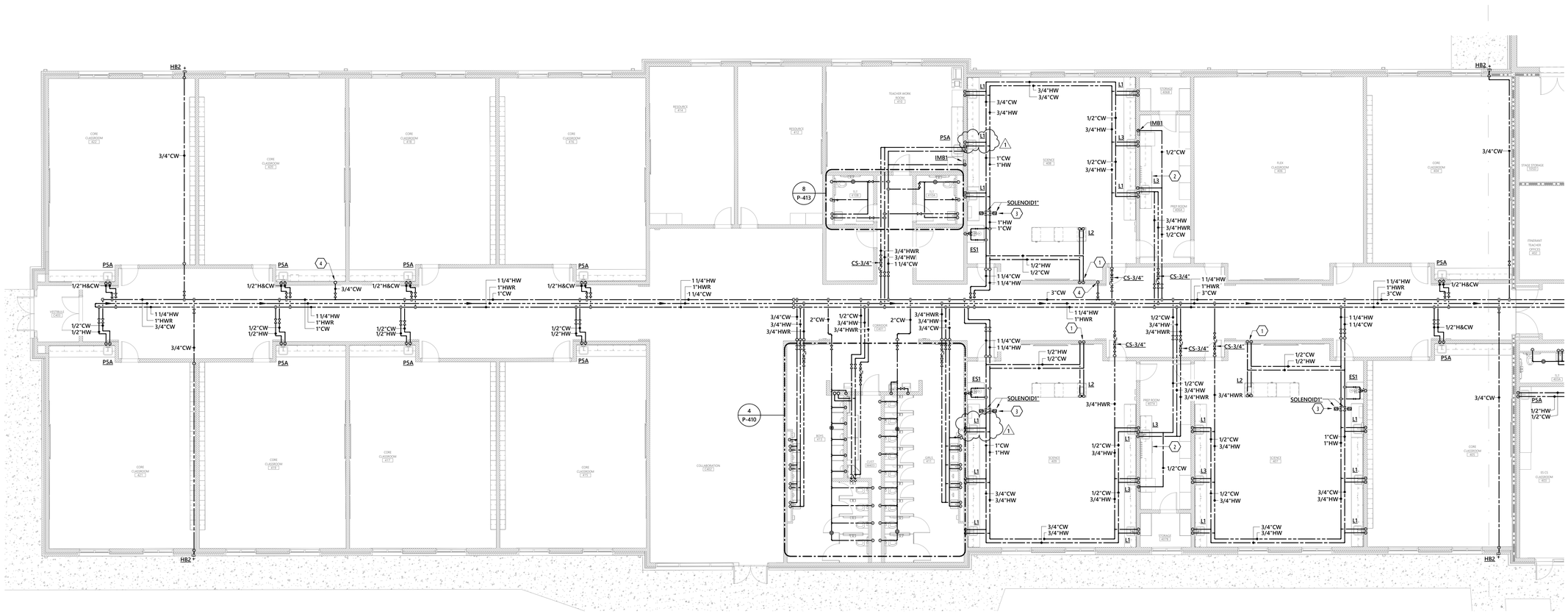
## KEYNOTES

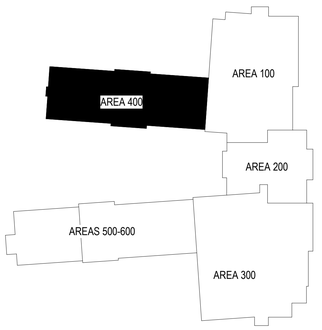
1. 1/2" CW & 1/2" HW SUPPLY LINES DOWN IN WALL. DOMESTIC WATER PIPING TO RUN UNDER FLOOR TO SERVE INSTRUCTOR'S LAB SINK.
2. PROVIDE DOMESTIC HW CONNECTION FROM PREP ROOM LAB SINK TO ADJACENT UNDERCOUNTER GLASS WASHER. SEE DETAIL 9/P501.
3. 1" EMERGENCY SOLENOID VALVES INSTALLED ON THE DOMESTIC CW & HW LINES ENTERING EACH SCIENCE CLASSROOM. SOLENOID VALVES ARE TO BE INSTALLED AFTER THE INSTRUCTOR'S LAB SINK AND EMERGENCY SHOWER CONNECTIONS. SOLENOID VALVES SHALL BE PROVIDED BY THE E.C. AND INSTALLED BY THE P.C.
4. 3/4"CW UP TO HOSE BIBB IN THE AREA 400 MECHANICAL MEZZANINE. PROVIDE SHUTOFF VALVE ON CW SUPPLY LINE AS CLOSE TO THE ACTIVE MAIN AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.




## 1 PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400

1/8" = 1'-0"

KEY PLAN




### WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400

P-214

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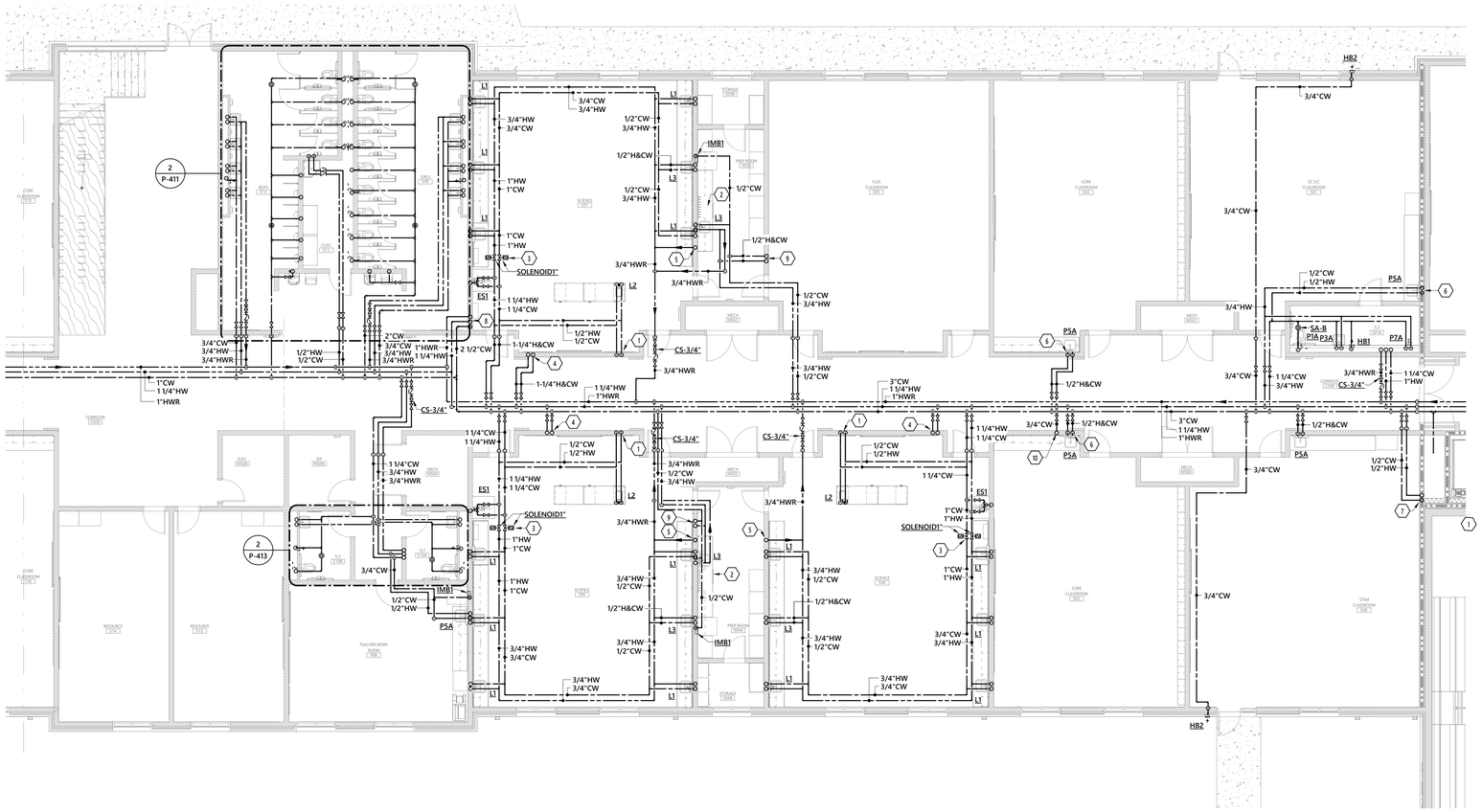
## KEYNOTES (#)

1 1/2" CW & 1/2" HW SUPPLY LINES DOWN IN WALL. DOMESTIC WATER PIPING TO RUN UNDER FLOOR TO SERVE INSTRUCTOR'S LAB SINK.
2 PROVIDE DOMESTIC HW CONNECTION FROM PREP ROOM LAB SINK TO ADJACENT UNDERCOUNTER GLASS WASHER. SEE DETAIL 9/P501.
3 1" EMERGENCY SOLENOID VALVES INSTALLED ON THE DOMESTIC CW & HW LINES ENTERING EACH SCIENCE CLASSROOM. SOLENOID VALVES ARE TO BE INSTALLED AFTER THE INSTRUCTOR'S LAB SINK AND EMERGENCY SHOWER CONNECTIONS. SOLENOID VALVES SHALL BE PROVIDED BY THE E.C. AND I
4 1-1/4"CW & 1-1/4"HW SUPPLY LINES UP TO SCIENCE CLASSROOMS ON THE SECOND FLOOR. PROVIDE SHUTOFF VALVES ON EACH SUPPLY LINE AS CLOSE TO THE ACTIVE SUPPLY MAINS AS POSSIBLE WHILE MAINTAING ACCESSIBILITY.
5 3/4"HWR UP TO SECOND FLOOR.
6 1/2"CW & 1/2"HW UP/DOWN TO CLASSROOM SINKS ON THE FIRST AND SECOND FLOORS. PROVIDE SHUTOFF VALVES AS CLOSE TO THE ACTIVE SUPPLY MAINS AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.
7 1/2"CW & 1/2"HW UP TO CLASSROOM SINK ON THE SECOND FLOOR. PROVIDE SHUTOFF VALVES ON EACH SUPPLY LINE AS CLOSE TO THE ACTIVE MAIN AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.
8 2-1/2"CW, 1-1/4"HW, 1"HWR UP TO SECOND FLOOR.
9 1/2" CW & 1/2"HW UP TO SECOND FLOOR.
10 3/4"CW UP TO SECOND FLOOR.




1 PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500 RIGHT
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500 RIGHT

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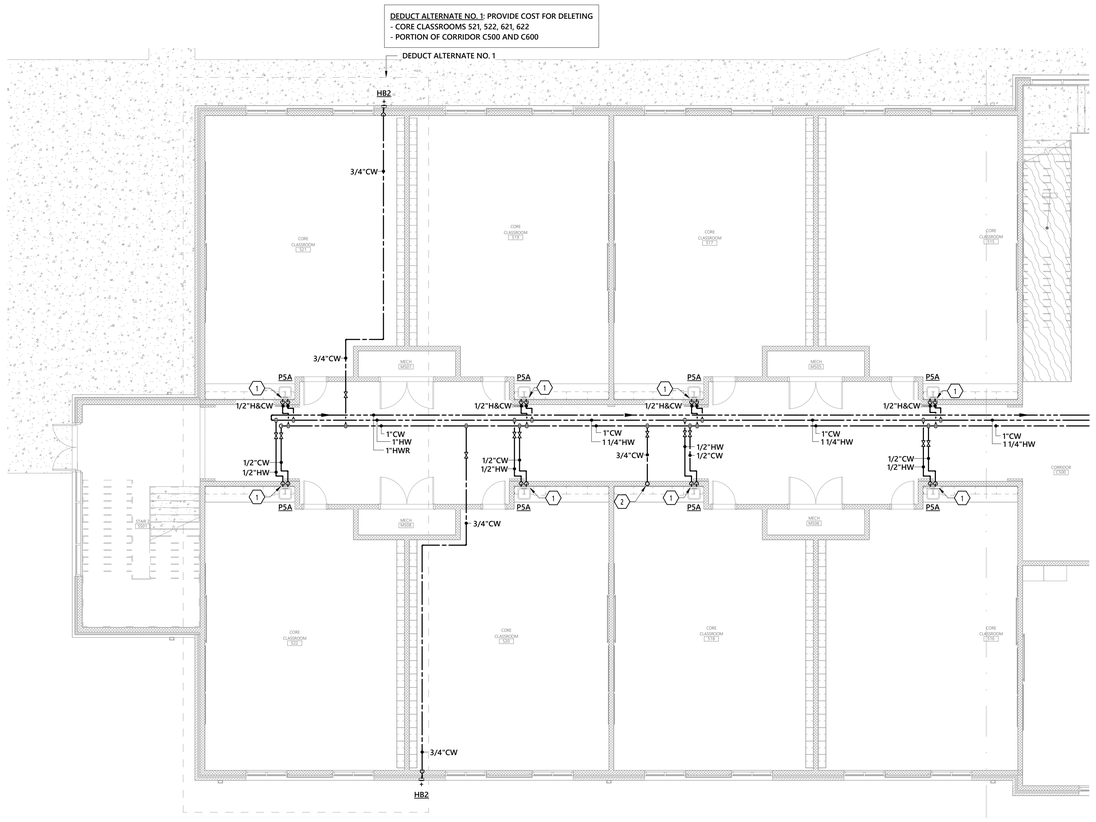
## KEYNOTES (#)

1 1/2"CW & 1/2"HW UP/DOWN TO SUPPLY SINKS ON THE FIRST AND SECOND FLOORS. PROVIDE SHUTOFF VALVES ON EACH SUPPLY LINE AS CLOSE TO THE ACTIVE MAIN AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.

2 3/4"CW UP TO SECOND FLOOR




1 PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500 LEFT

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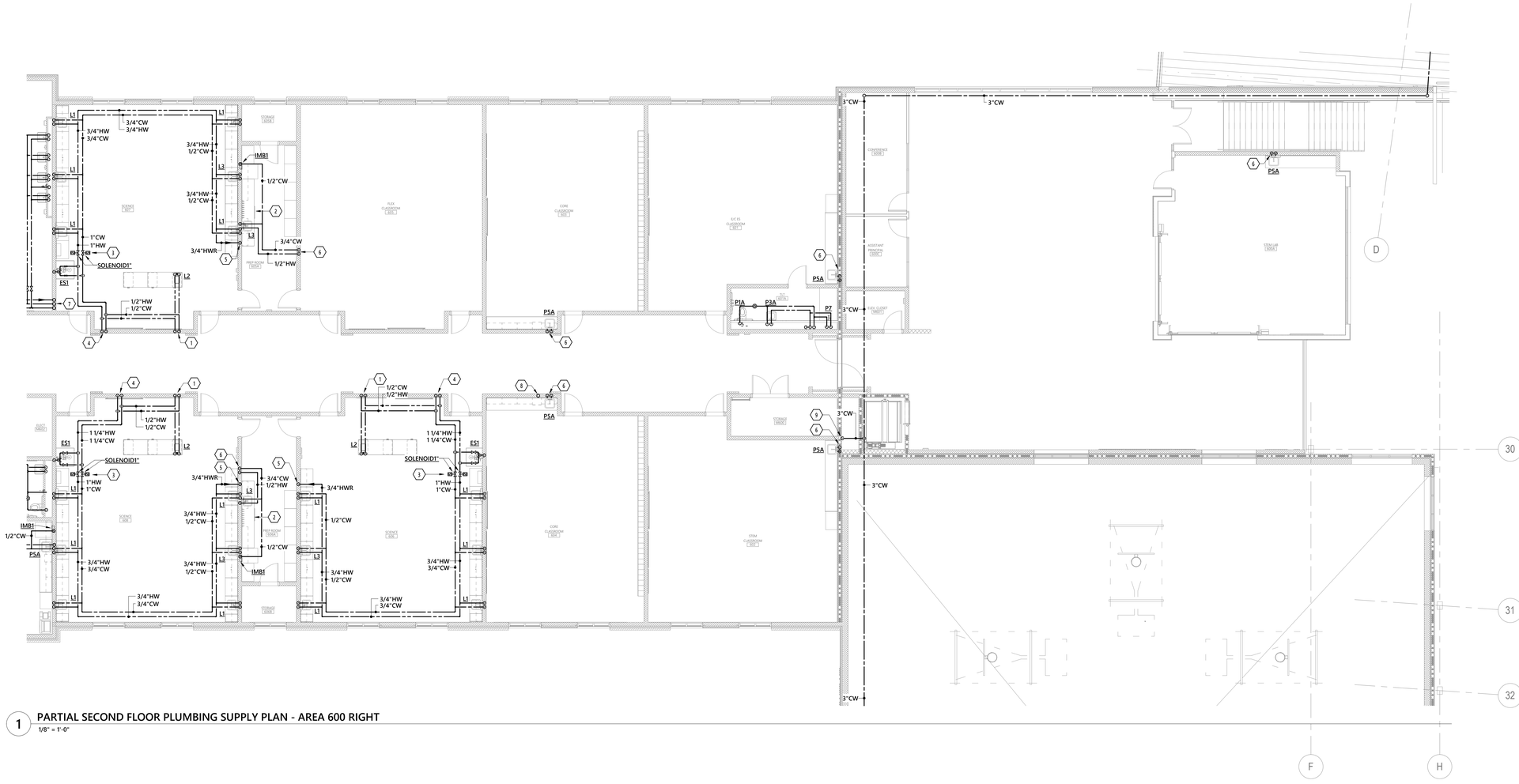
## KEYNOTES

1. 1/2" CW & 1/2" HW SUPPLY LINES DOWN IN WALL. DOMESTIC WATER PIPING TO RUN UNDER FLOOR TO SERVE INSTRUCTOR'S LAB SINK.
2. PROVIDE DOMESTIC HW CONNECTION FROM PREP ROOM LAB SINK TO ADJACENT UNDERCOUNTER GLASS WASHER. SEE DETAIL 9/P501.
3. 1" EMERGENCY SOLENOID VALVES INSTALLED ON THE DOMESTIC CW & HW LINES ENTERING EACH SCIENCE CLASSROOM. SOLENOID VALVES ARE TO BE INSTALLED AFTER THE INSTRUCTOR'S LAB SINK AND EMERGENCY SHOWER CONNECTIONS. SOLENOID VALVES SHALL BE PROVIDED BY THE E.C. AND INSTALLED BY THE P.C.
4. 1-1/4" CW & 1-1/4"CW SUPPLY LINES DOWN TO CONNECT TO ACTIVE SUPPLY MAINS ON FIRST FLOOR. PROVIDE SHUTOFF VALVES AS CLOSE TO THE ACTIVE SUPPLY MAINS AS POSSIBLY WHILE MAINTAINING ACCESSIBILITY.
5. 3/4"HWR DOWN TO FIRST FLOOR.
6. 1/2"CW & 1/2"HW DOWN TO FIRST FLOOR. PROVIDE SHUTOFF VALVES AS CLOSE TO THE ACTIVE SUPPLY MAINS AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.
7. 1-1/4"CW, 1-1/4"HW, AND 1"HWR UP TO AREA 600 MECHANICAL MEZZANINE.
8. 3/4"CW UP TO HB3 IN AREA 600 MECHANICAL MEZZANINE.
9. 3"CW DOWN TO FIRST FLOOR.




1 PARTIAL SECOND FLOOR PLUMBING SUPPLY PLAN - AREA 600 RIGHT
1/8" = 1'-0"

### WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR PLUMBING SUPPLY PLAN - AREA 600 RIGHT

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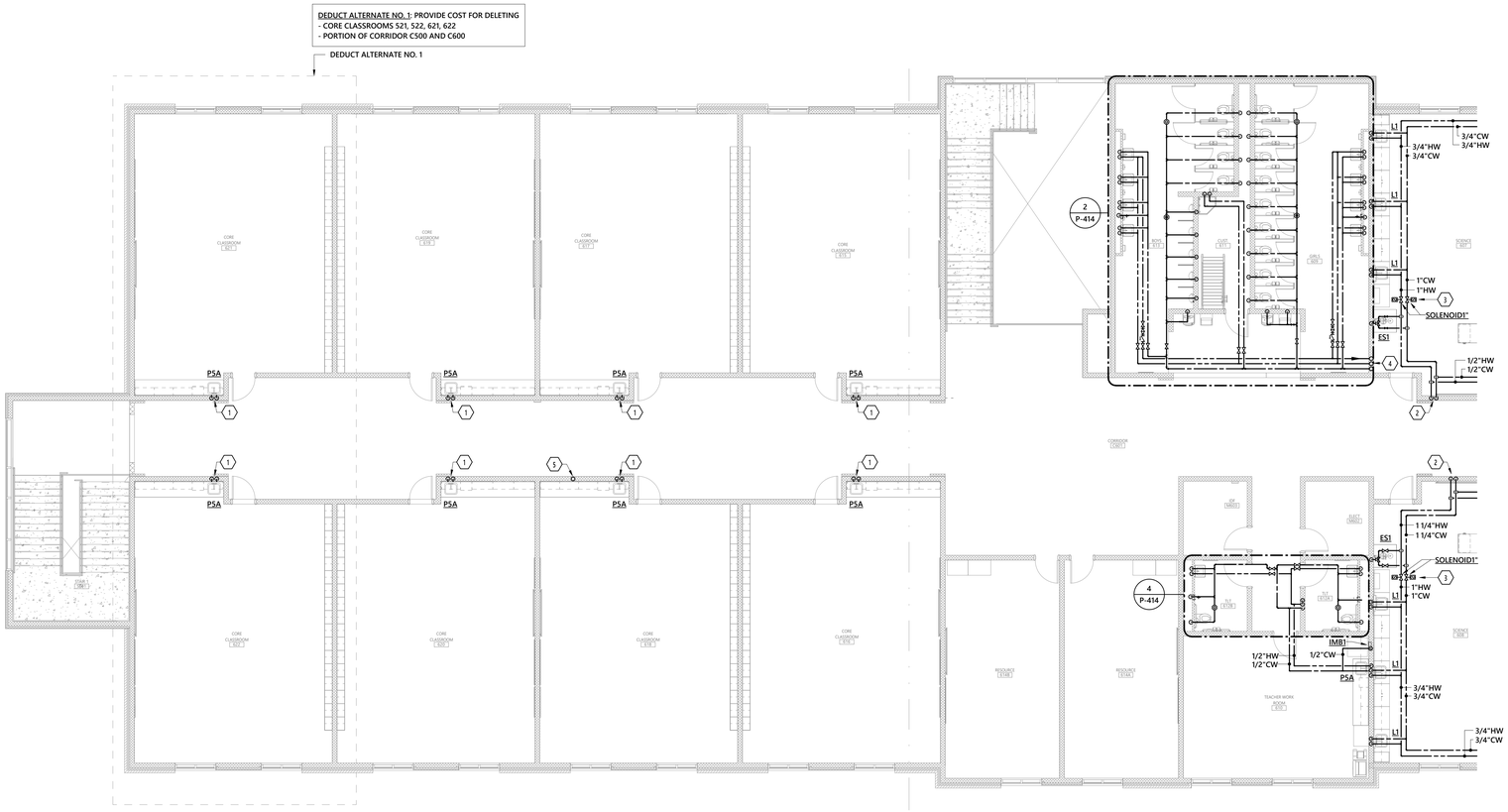
## KEYNOTES

1. 1/2"CW & 1/2"HW DOWN FIRST FLOOR. PROVIDE SHUTOFF VALVES ON EACH SUPPLY LINE AS CLOSE TO THE ACTIVE MAIN WHILE MAINTAINING ACCESSIBILITY.
2. 1-1/4"CW & 1-1/4"HW SUPPLY LINES DOWN TO CONNECT TO ACTIVE SUPPLY MAINS ON FIRST FLOOR. PROVIDE SHUTOFF VALVES ON EACH SUPPLY LINE AS CLOSE TO THE ACTIVE SUPPLY MAIN AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.
3. 1" EMERGENCY SOLENOID VALVES INSTALLED ON THE DOMESTIC CW & HW LINES ENTERING EACH SCIENCE CLASSROOM. SOLENOID VALVES ARE TO BE INSTALLED AFTER THE INSTRUCTOR'S LAB SINK AND EMERGENCY SHOWER CONNECTIONS. SOLENOID VALVES SHALL BE PROVIDED BY THE E.C. AND INSTALLED BY THE P.C.
4. 1-1/4"CW, 1-1/4"HW, 1"HWR UP TO AREA 600 MECHANICAL MEZZANINE.
5. 3/4"CW UP TO HB3 IN AREA 600 MECHANICAL MEZZANINE.




1 **PARTIAL SECOND FLOOR PLUMBING SUPPLY PLAN - AREA 600 LEFT**
1/8" = 1'-0"

### WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR PLUMBING SUPPLY PLAN - AREA 600 LEFT

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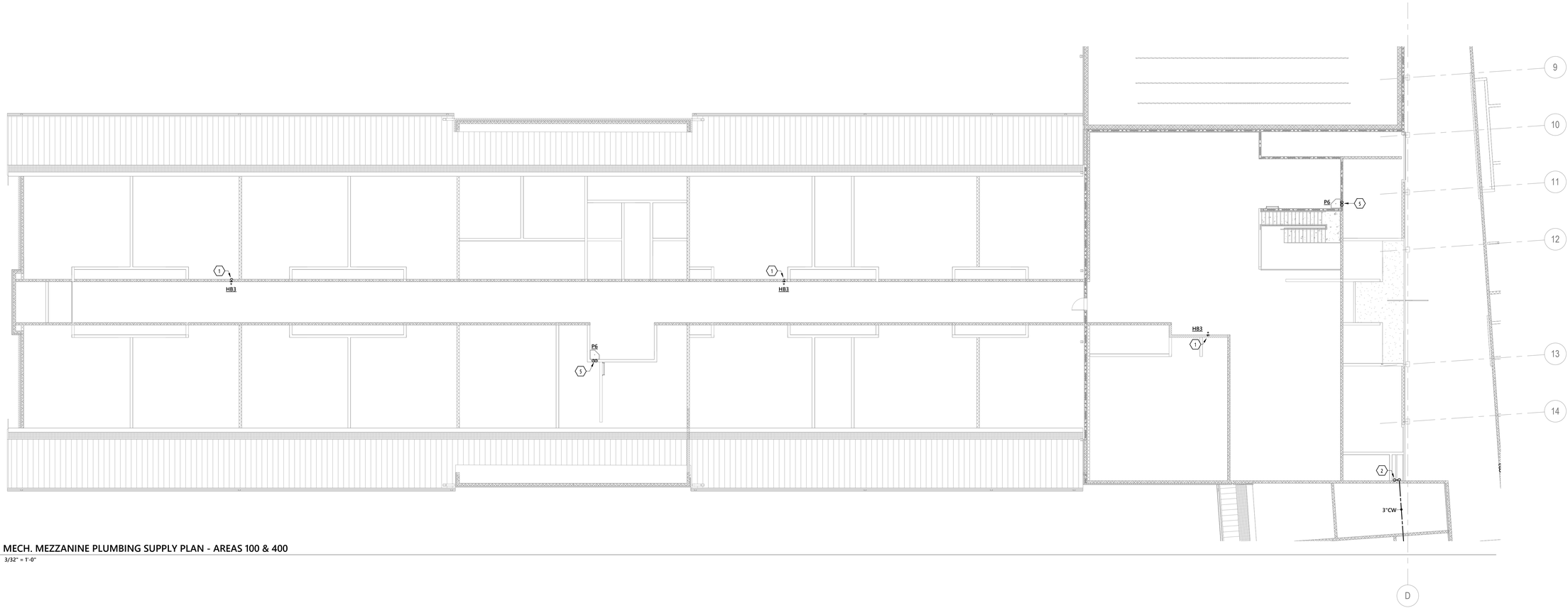
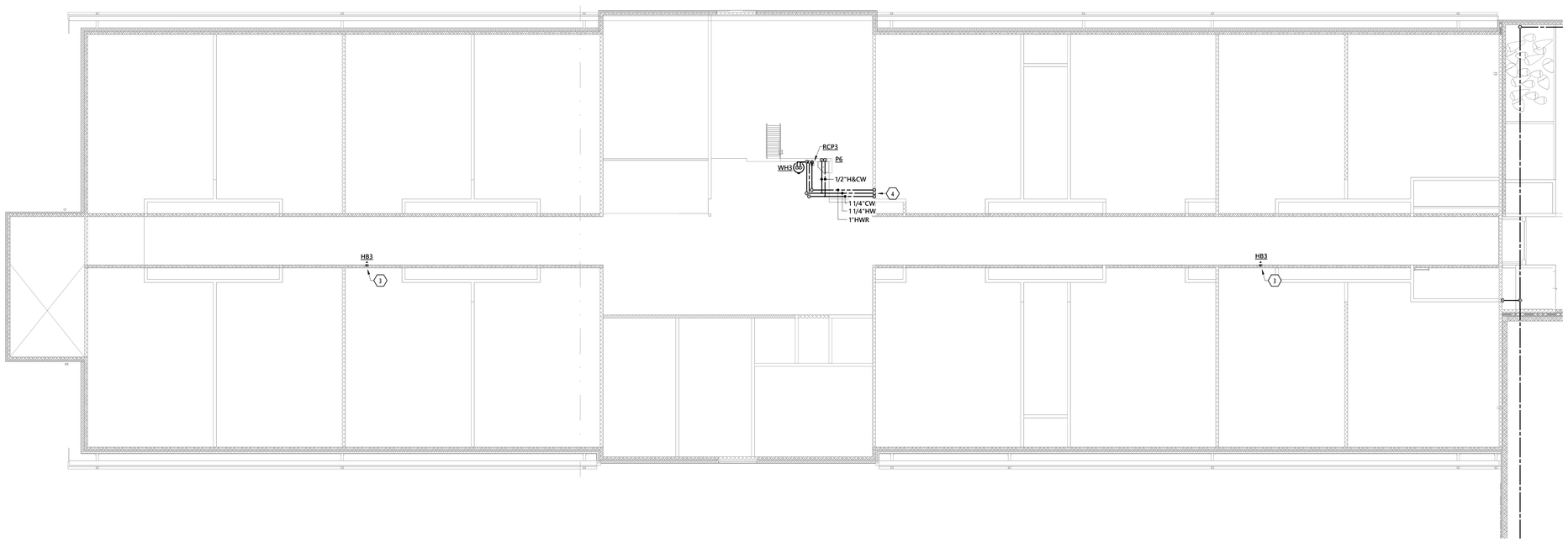
## KEYNOTES (#)

1 3/4"CW DOWN TO FIRST FLOOR. PROVIDE SHUTOFF VALVE ON CW SUPPLY LINE AS CLOSE TO ACTIVE MAIN AS POSSIBLE WHILE MAINTAINING ACCESSIBILITY.
2 3"CW DOWN TO FIRST FLOOR.
3 3/4"CW DOWN TO SECOND FLOOR.
4 1-1/4"CW, 1-1/4"HW, 1"HWR DOWN TO SECOND FLOOR.
5 1/2"HW AND 1/2"CW DOWN TO FIRST FLOOR.




1 MECH. MEZZANINE PLUMBING SUPPLY PLAN - AREAS 100 & 400
3/32" = 1'-0"




2 MECH. MEZZANINE PLUMBING SUPPLY PLAN - AREA 600
3/32" = 1'-0"

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE PLUMBING SUPPLY PLANS - AREAS 100, 400, & 600

P-221

Sheet No. 25 of 39

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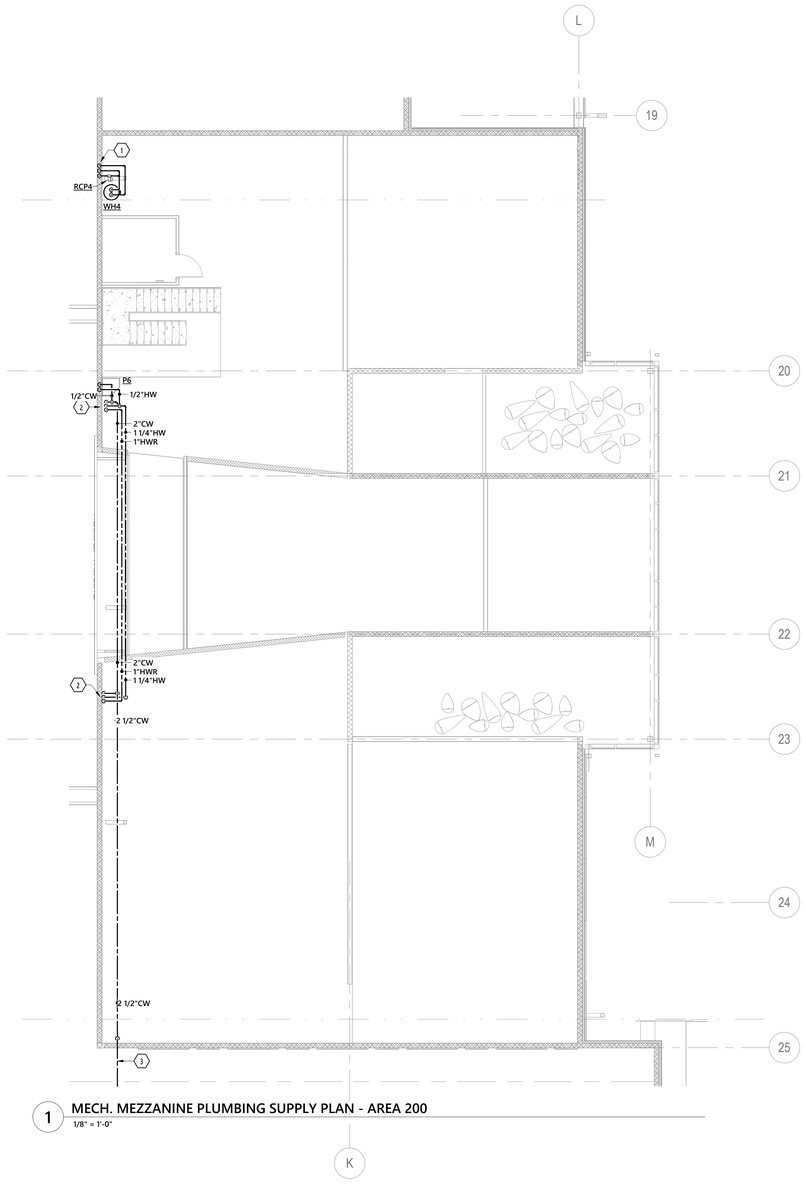
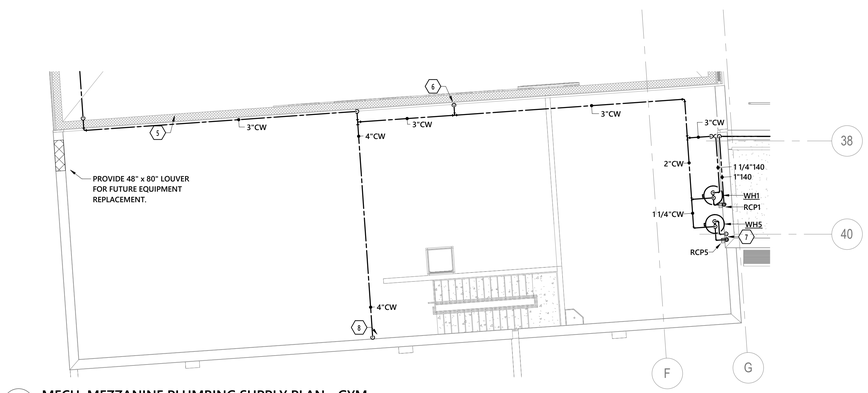
## KEYNOTES

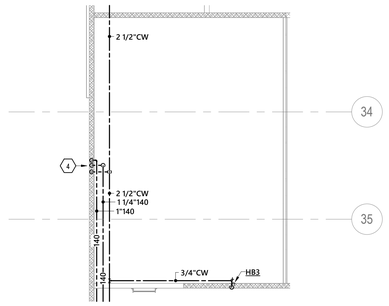
1. 1-1/4"CW, 1-1/4"HW, 1"HWR DOWN TO FIRST FLOOR.
2. 2"CW, 1-1/4"HW, 1"HWR DOWN TO FIRST FLOOR.
3. 2"CW TO BE ROUTED WITHIN BULKHEAD. P.C. TO COORDINATE WITH ARCHITECTURAL PLANS FOR FINAL BULKHEAD LOCATION AND DIMENSIONS.
4. 2"CW, 1-1/4" 140HW, 1" 140HWR DOWN TO FIRST FLOOR KITCHEN.
5. 3"CW UP TO RUN HIGH IN THE GYMNASIUM.
6. 2"CW DOWN TO LOCKER ROOMS.
7. 1"HW & 3/4"HWR DOWN TO LOCKER ROOMS.
8. 4"CW DOWN TO FIRST FLOOR RISER ROOM.




1 MECH. MEZZANINE PLUMBING SUPPLY PLAN - AREA 200
1/8" = 1'-0"




3 MECH. MEZZANINE PLUMBING SUPPLY PLAN - GYM
1/8" = 1'-0"




2 MECH. MEZZANINE PLUMBING SUPPLY PLAN - AREA 300
1/8" = 1'-0"

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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11/08/2024

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optima engineering
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North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS

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3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: RLH
CHECKED BY: DAR

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MECH. MEZZANINE PLUMBING SUPPLY PLANS - AREAS 200 & 300

P-222

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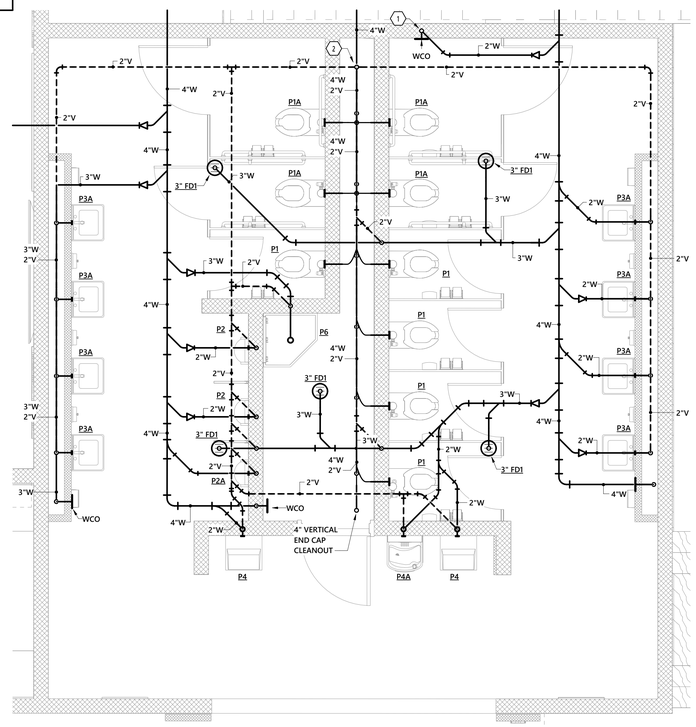
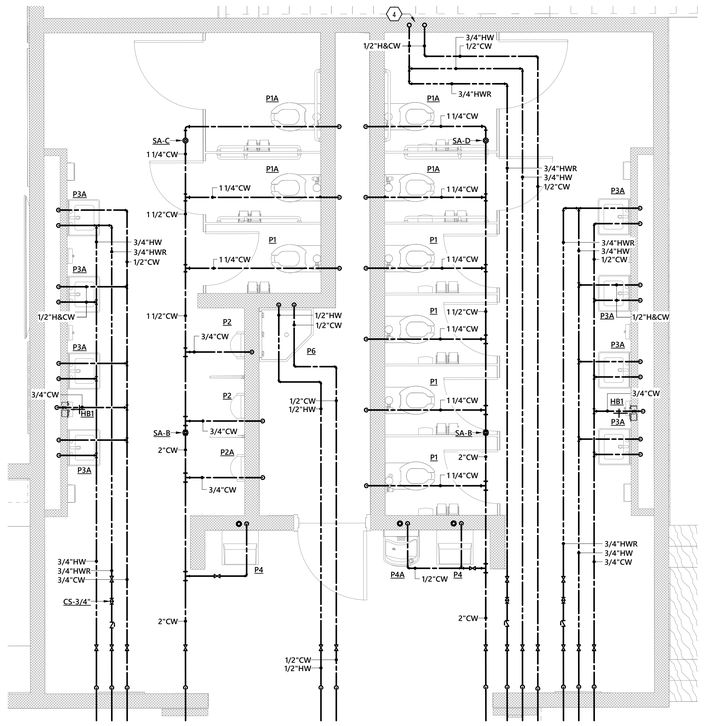


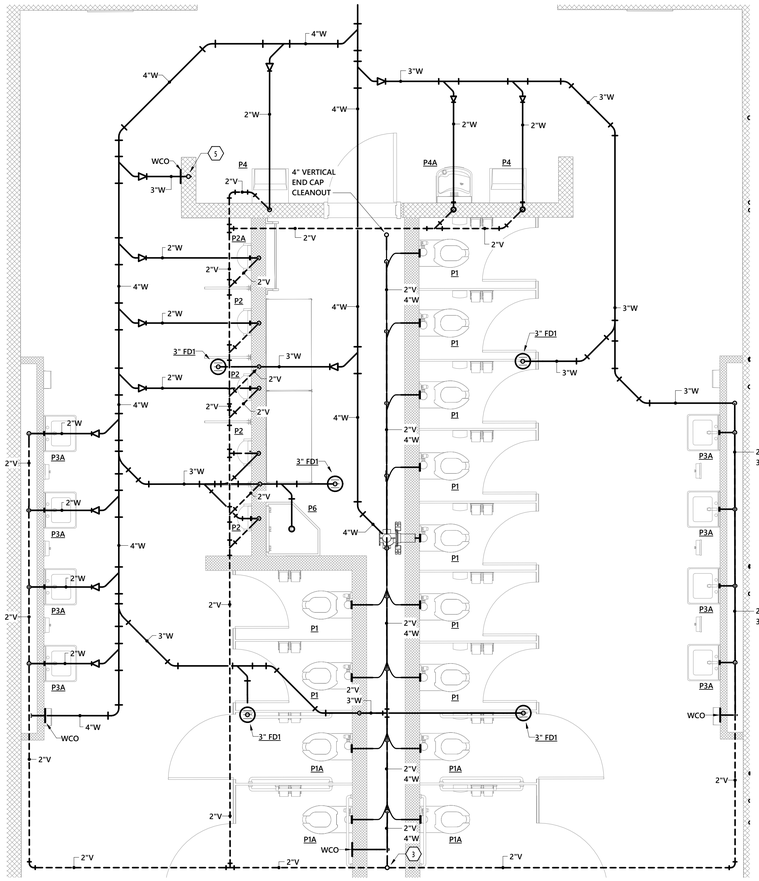

## 1 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300 - GROUP RESTROOM

3/8" = 1'-0"



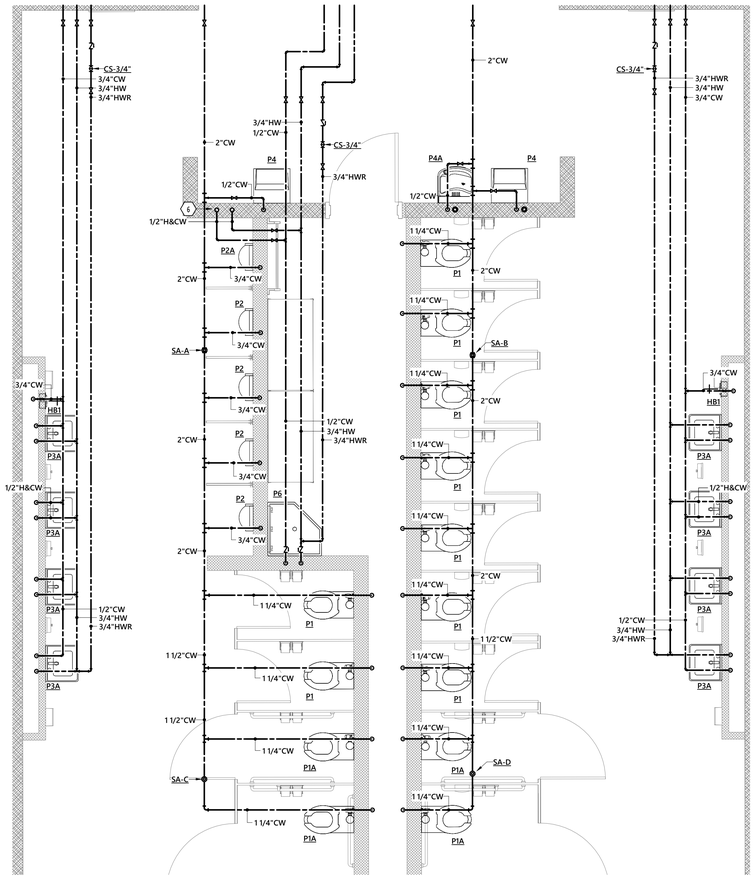

## 2 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300 - GROUP RESTROOM

3/8" = 1'-0"




## 3 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400 - GROUP RESTROOM

3/8" = 1'-0"




## 4 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300 - GROUP RESTROOM

3/8" = 1'-0"

## KEYNOTES

1. 2"W UP TO CLASSROOM SINK ON THE SECOND FLOOR. PROVIDE CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
2. 2"V UP TO SECOND FLOOR.
3. 3"V UP TO SECOND FLOOR.
4. 1/2"CW & 1/2"HW UP TO CLASSROOM SINK ON SECOND FLOOR.
5. 3"W UP TO AREA 400 MECHANICAL MEZZANINE. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
6. 1/2"HW AND 1/2"CW UP TO MOP SINK IN AREA 400 MECHANICAL MEZZANINE.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENLARGED FIRST FLOOR RESTROOM GROUP PLUMBING PLANS AREAS 300 & 400

P-410

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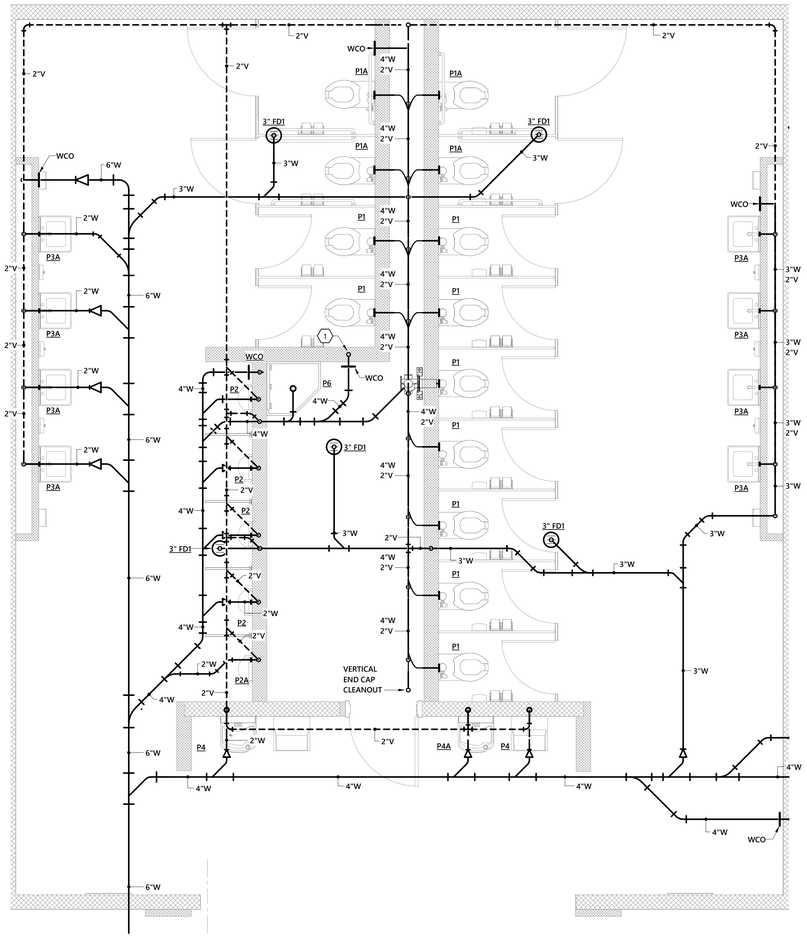
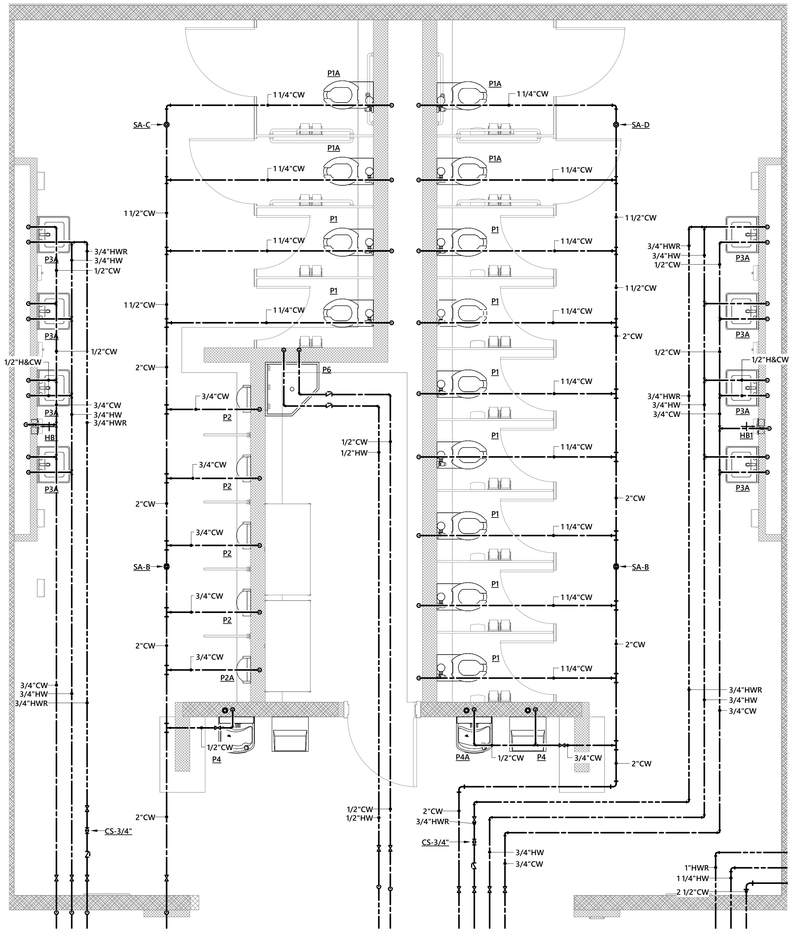



1 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500 RIGHT - GROUP RESTROOM
3/8" = 1'-0"




2 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500 RIGHT - GROUP RESTROOM
3/8" = 1'-0"

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ENLARGED FIRST FLOOR RESTROOM GROUP PLUMBING PLANS AREA 500

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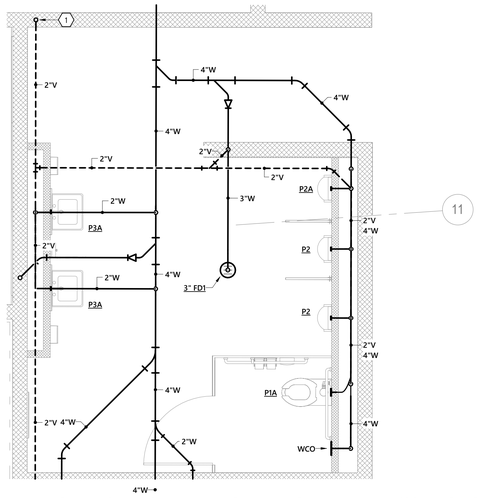
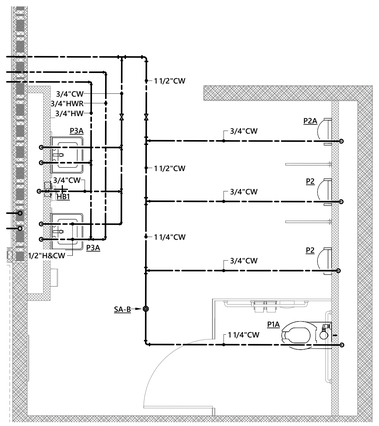
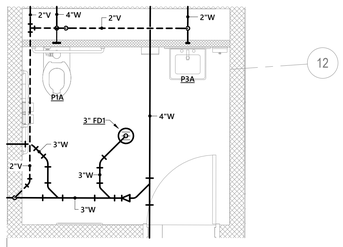


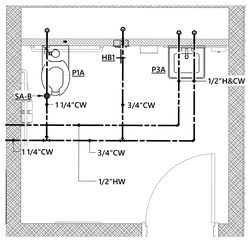

1 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100 - RESTROOM 109
3/8" = 1'-0"



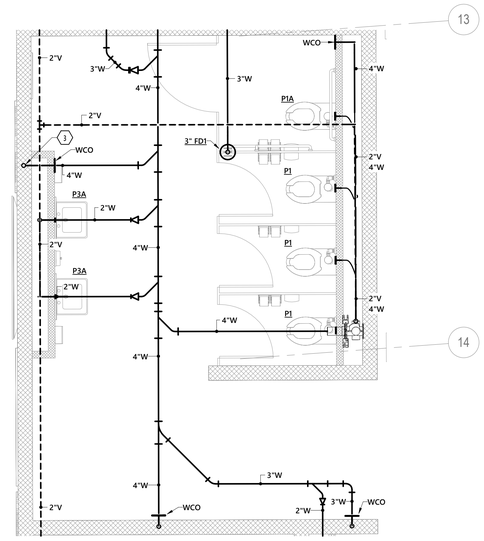

2 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100 - RESTROOM 109
3/8" = 1'-0"




3 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100 - RESTROOM 110
3/8" = 1'-0"



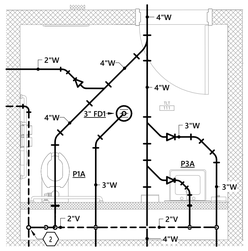

4 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100 - RESTROOM 110
3/8" = 1'-0"



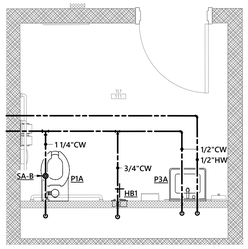

5 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100 - RESTROOM 112
3/8" = 1'-0"



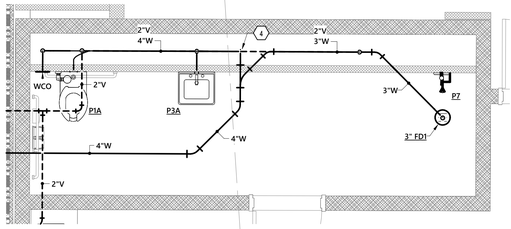

6 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100 - RESTROOM 112
3/8" = 1'-0"




7 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100 - RESTROOM 111
3/8" = 1'-0"

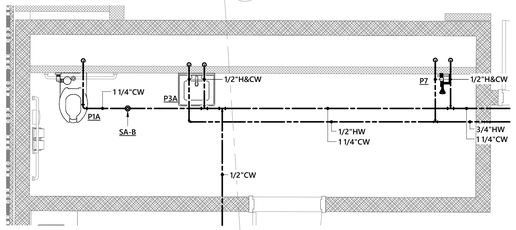



8 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100 - RESTROOM 111
3/8" = 1'-0"




9 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100 - RESTROOM 403A
3/8" = 1'-0"

A




10 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100 - RESTROOM 403A
3/8" = 1'-0"

A

## KEYNOTES

1 2"V UP TO AREA 100 MECHANICAL MEZZANINE.
2 2"V UP TO AREA 100 MECHANICAL MEZZANINE.
3 4"W UP TO AREA 100 MECHANICAL MEZZANINE. PROVIDE CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
4 4"W TO DROP DOWN BELOW FINISHED FLOOR.

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ENLARGED FIRST FLOOR RESTROOM GROUP PLUMBING PLANS AREA 100

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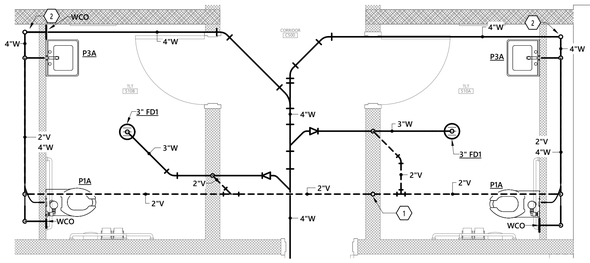
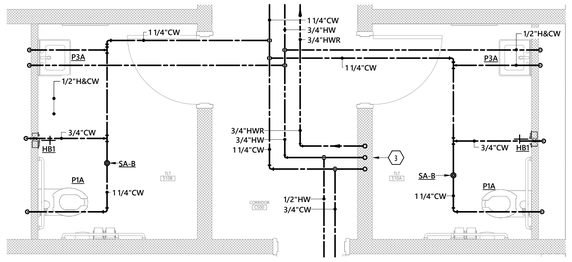
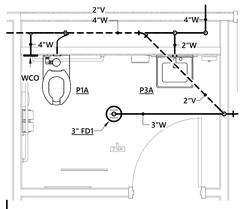


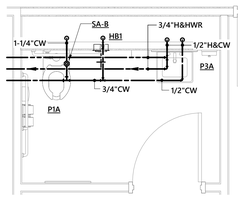

1 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500 RIGHT - RESTROOMS 510A & 510B
3/8" = 1'-0"



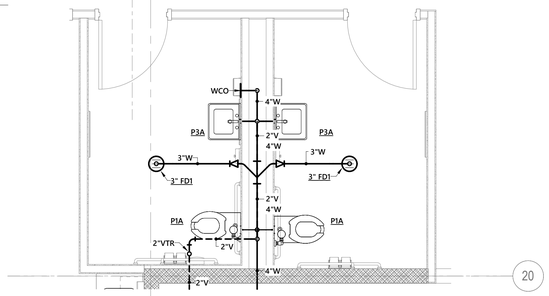

2 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500 RIGHT - RESTROOMS 510A & 510B
3/8" = 1'-0"



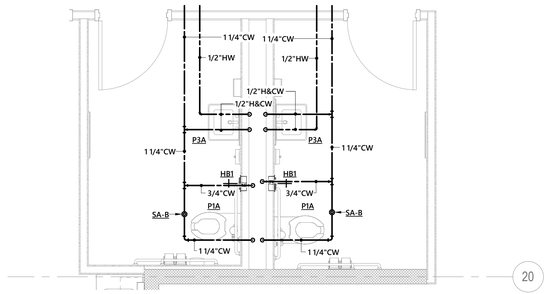

3 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200 - RESTROOM 216A
3/8" = 1'-0"



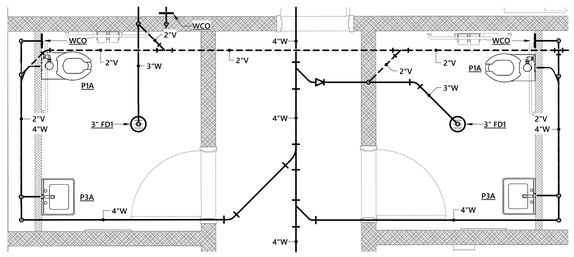

4 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200 - RESTROOM 216A
3/8" = 1'-0"



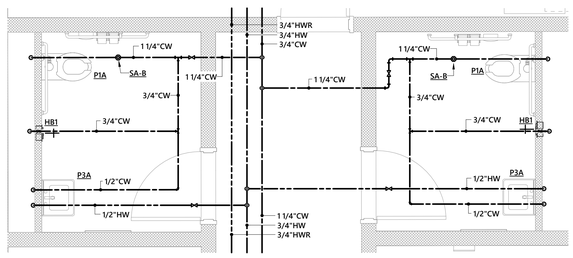

5 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200 - RESTROOMS 210 & 211
3/8" = 1'-0"




6 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200 - RESTROOMS 210 & 211
3/8" = 1'-0"



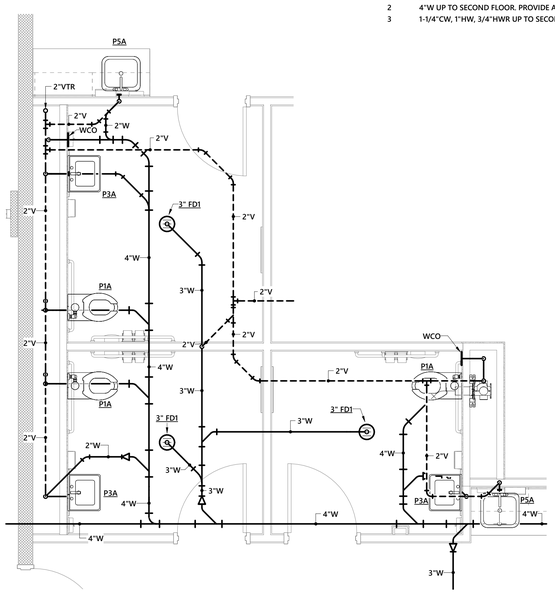

7 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400 - RESTROOMS 410A & 410B
3/8" = 1'-0"



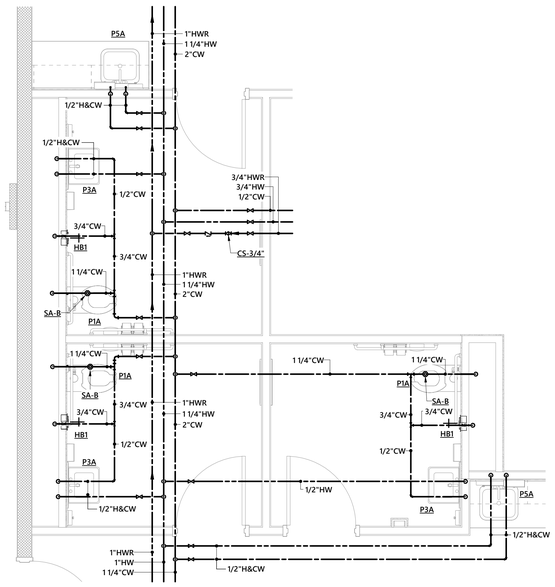

8 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400 - RESTROOMS 410A & 410B
3/8" = 1'-0"

## KEYNOTES

1 2"V UP TO SECOND FLOOR.
2 4"W UP TO SECOND FLOOR. PROVIDE A CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.
3 1-1/4"CW, 1"HW, 3/4"HWR UP TO SECOND FLOOR.




9 ENLARGED FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200 - RESTROOMS 213A, 219, 220
3/8" = 1'-0"




10 ENLARGED FIRST FLOOR PLUMBING SUPPLY PLANS - AREA 200 - RESTROOMS 213A, 219, 220
3/8" = 1'-0"

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ENLARGED FIRST FLOOR SINGULAR RESTROOM PLUMBING PLANS

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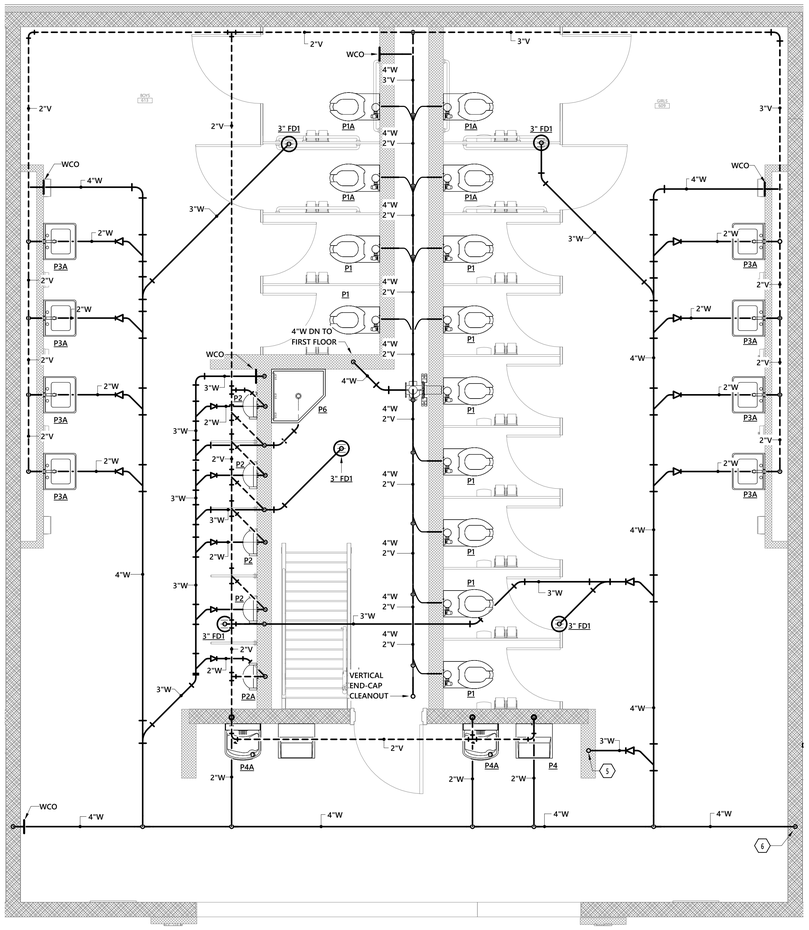
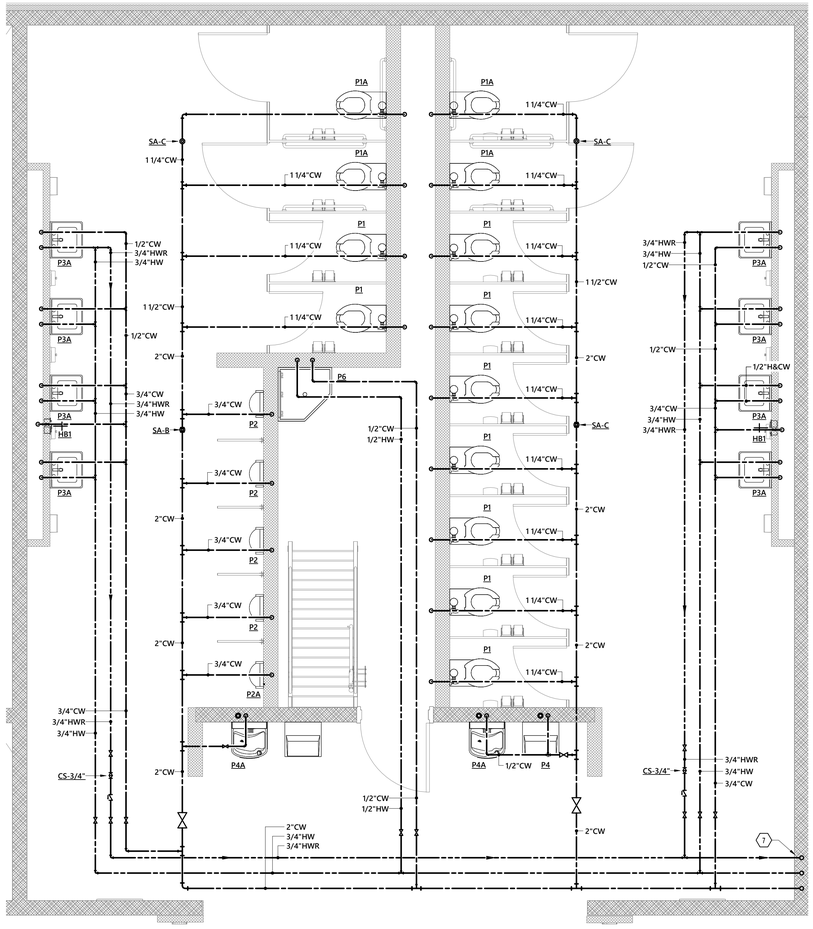
## KEYNOTES

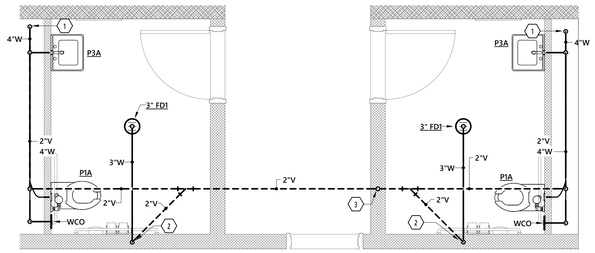
1 4"W DOWN TO FIRST FLOOR.
2 3"W DOWN TO FIRST FLOOR.
3 2"V UP TO AREA 600 MECHANICAL MEZZANINE.
4 1-1/4"CW, 3/4"HW, 3/4"HWR DOWN TO FIRST FLOOR.
5 3"W UP TO AREA 600 MECHANICAL MEZZANINE.
6 4"W DOWN TO FIRST FLOOR.
7 1-1/4"CW, 1-1/4"HW, 1"HWR UP TO AREA 600 MECHANICAL MEZZANINE.



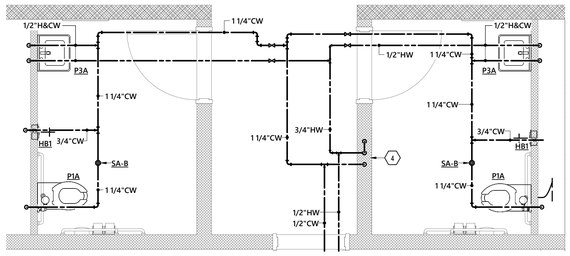

1 ENLARGED SECOND FLOOR PLUMBING DRAINAGE PLAN - AREA 600 LEFT - GROUP RESTROOMS 609 & 613
3/8" = 1'-0"




2 ENLARGED SECOND FLOOR PLUMBING SUPPLY PLAN - AREA 600 LEFT - GROUP RESTROOMS 609 & 613
3/8" = 1'-0"




3 ENLARGED SECOND FLOOR PLUMBING DRAINAGE PLAN - AREA 600 LEFT - RESTROOMS 612A & 612B
3/8" = 1'-0"




4 ENLARGED SECOND FLOOR PLUMBING SUPPLY PLAN - AREA 600 LEFT - RESTROOMS 612A & 612B
3/8" = 1'-0"

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ENLARGED SECOND FLOOR RESTROOMS PLUMBING PLANS AREA 600

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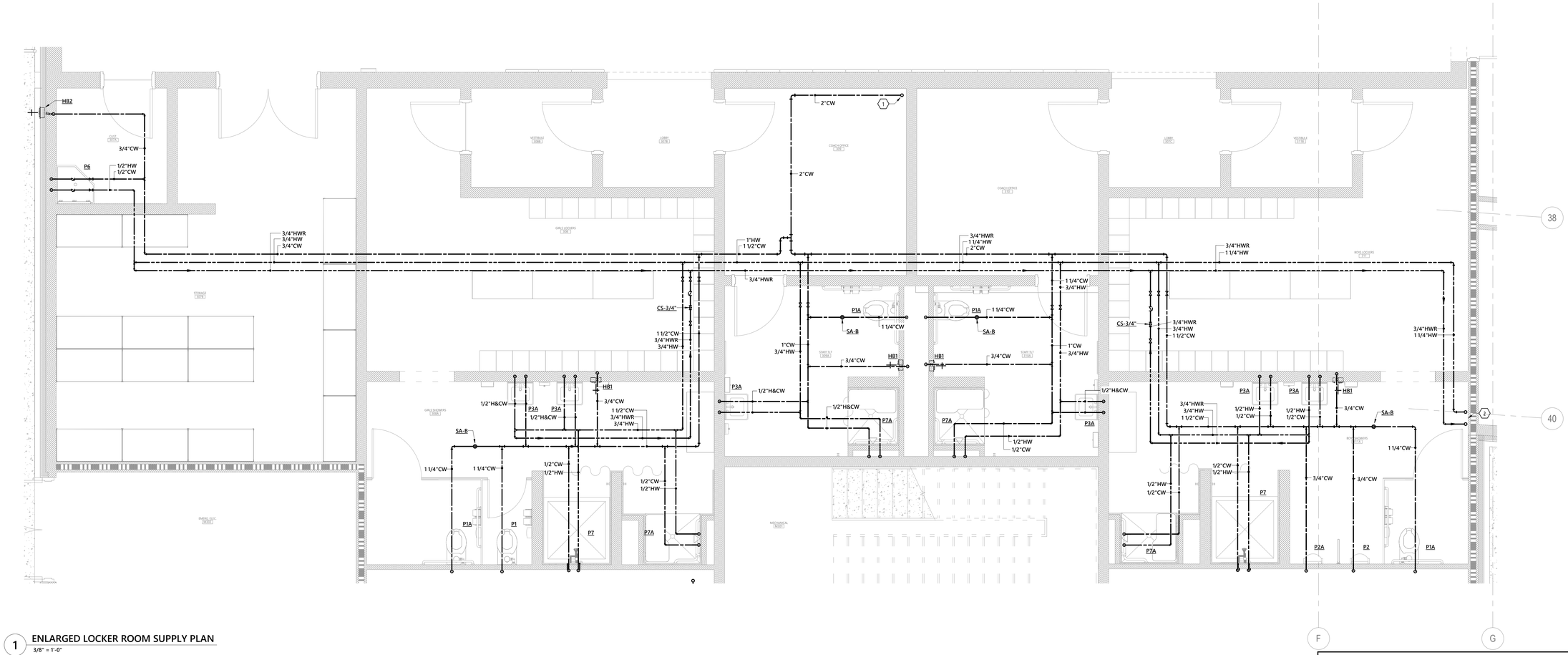
## KEYNOTES

1 2"CW UP TO MECHANICAL MEZZANINE LOCATED ABOVE THE GYMNASIUM LOCKER ROOMS.

2 1-1/4"HW & 3/4"HWR UP TO MECHANICAL MEZZANINE LOCATED ABOVE GYMNASIUM LOCKER ROOMS.




1 ENLARGED LOCKER ROOM SUPPLY PLAN
3/8" = 1'-0"

### WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENLARGED LOCKER ROOM SUPPLY PLAN

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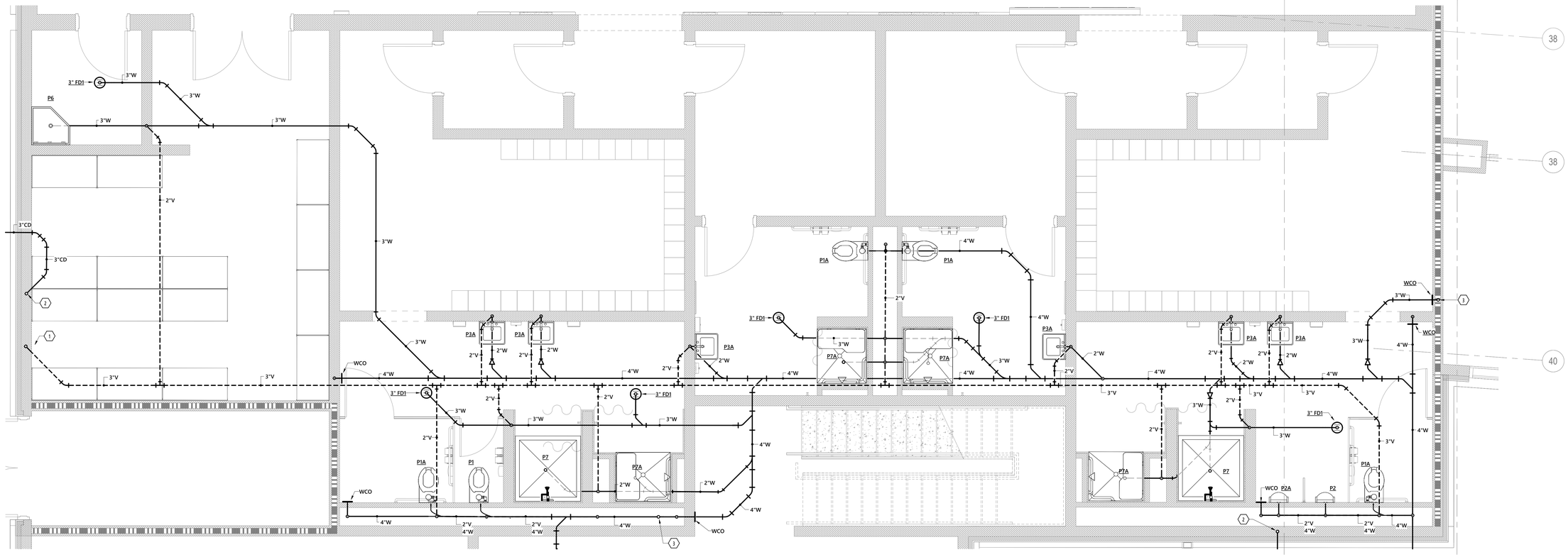
## KEYNOTES

1 3"V UP TO MECHANICAL MEZZANINE LOCATED ABOVE GYMNASIUM LOCKER ROOMS.
2 3"CD UP TO MECHANICAL MEZZANINE LOCATED ABOVE GYMNASIUM.
3 3"W UP TO MECHANICAL MEZZANINE LOCATED ABOVE GYMNASIUM LOCKER ROOMS. PROVIDE CLEANOUT AT THE BASE OF THE SANITARY WASTE STACK.




1 ENLARGED LOCKER ROOM DRAINAGE PLAN
3/8" = 1'-0"

### WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENLARGED LOCKER ROOM DRAINAGE PLAN

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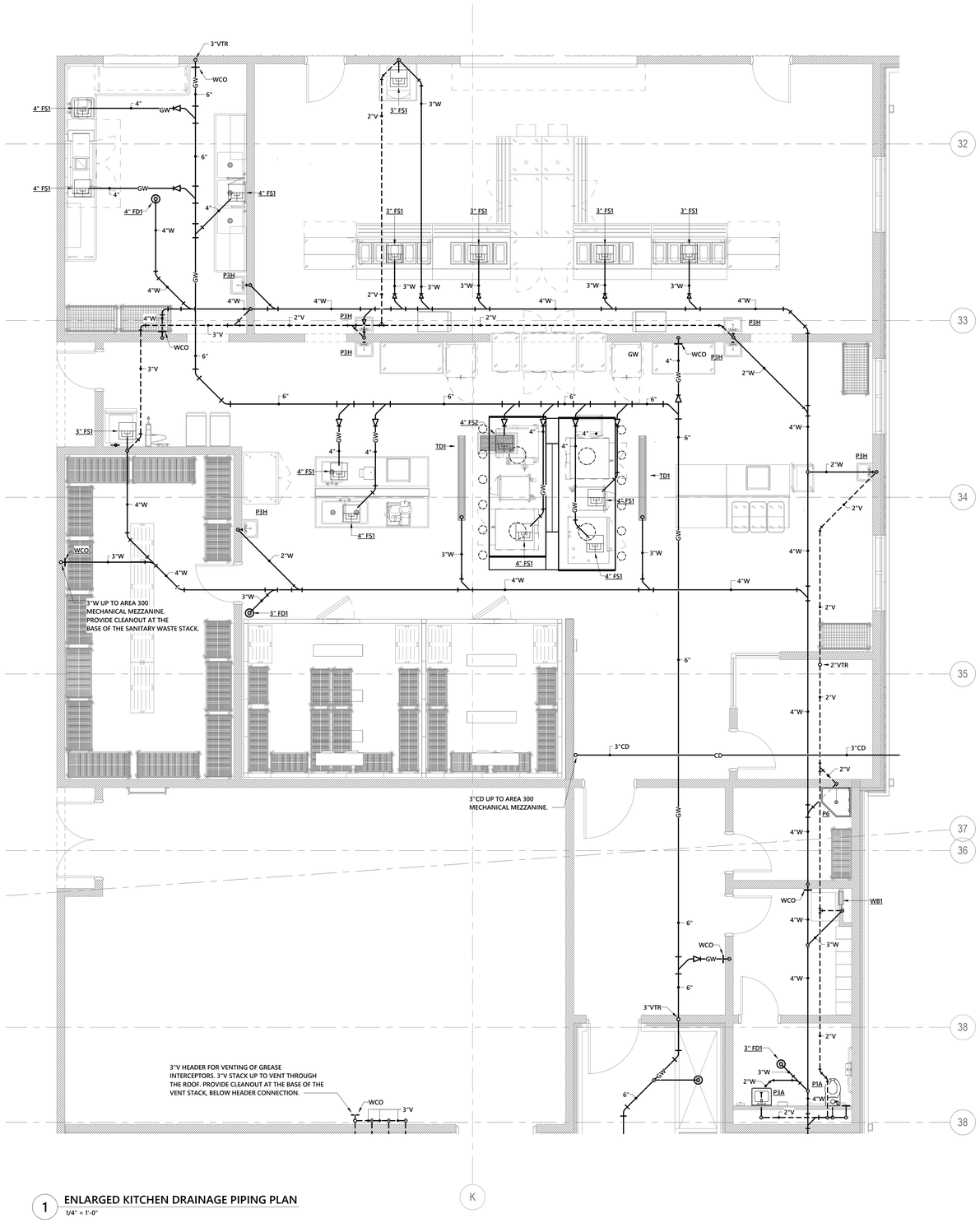


1 ENLARGED KITCHEN DRAINAGE PIPING PLAN
1/4" = 1'-0"

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ENLARGED KITCHEN DRAINAGE PLAN

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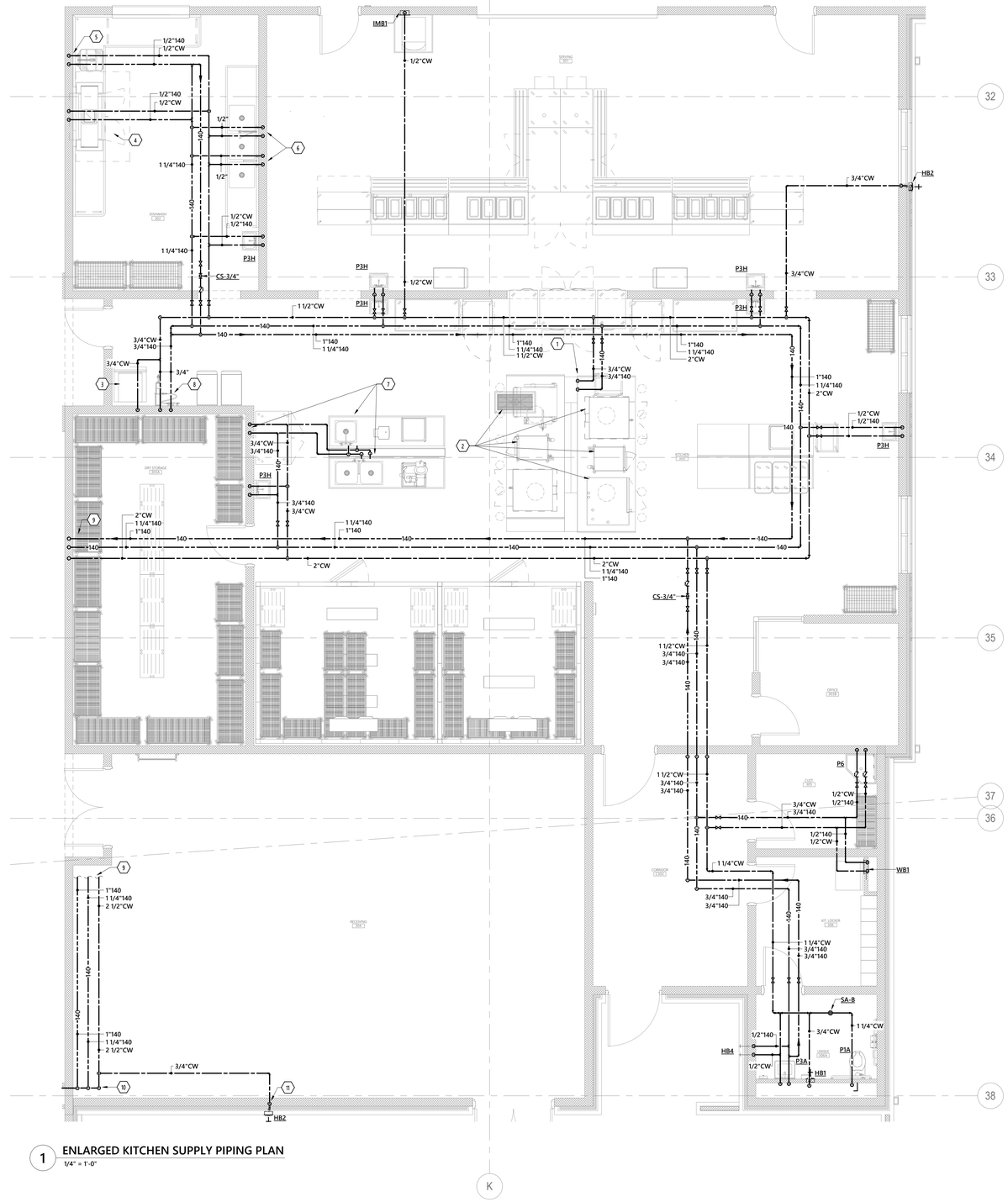


1 ENLARGED KITCHEN SUPPLY PIPING PLAN
1/4" = 1'-0"

## KITCHEN SUPPLY KEY NOTES

1. KITCHEN HOOD WATER SUPPLY: PROVIDE SHUT-OFF VALVES AND 3/4"CW, 3/4"HW, TO PREFABRICATED KITCHEN HOOD UTILITY DISTRIBUTION SYSTEM SERVING THE COOKING EQUIPMENT UNDER THE EXHAUST HOOD. SEE FOOD SERVICE EQUIPMENT PLANS FOR FINAL CONNECTION SIZES AND LOCATION.
2. KITCHEN EQUIPMENT (WATER): PROVIDE WATER SUPPLIES FROM THE HOOD UTILITY DISTRIBUTION SYSTEM CONNECTION POINT TO EACH PIECE OF KITCHEN EQUIPMENT REQUIRING HW / CW SUPPLY. PROVIDE DOMESTIC WATER SHUT-OFF VALVE(S), LEAD FREE (ASSE 1024 LISTED) INLINE DOUBLE CHECK VALVE EQUAL TO WILKINS 700XL AND NSF CERTIFIED FLEXIBLE WATER CONNECTION KIT(S) EQUAL TO DORMONT SERIES 71-000, 72-000, OR 73-000 INCLUDING, LEAD-FREE STAINLESS STEEL QUICK DISCONNECT(S), RETRACTABLE POLYURETHANCE SWIRL HOSE AND FINAL CONNECTION TO EQUIPMENT. PROVIDE VALVES AND WATER CONNECTION KIT PIPE SIZE TO MATCH THE EQUIPMENT CONNECTION SIZE. SEE FOOD SERVICE DRAWINGS FOR EQUIPMENT CONNECTION SIZES AND QUANTITIES.
3. ICE MAKER & WATER FILTER: PROVIDE 1/2"CW SHUT-OFF VALVE, LEAD FREE (ASSE 1024 LISTED) INLINE DOUBLE CHECK VALVE EQUAL TO WILKINS SERIES 700 AND NSF-CERTIFIED FLEXIBLE WATER CONNECTION KIT EQUAL TO DORMONT SERIES 71-000, 72-000, OR 73-000 INCLUDING, LEAD-FREE STAINLESS STEEL QUICK DISCONNECT(S), AND RETRACTABLE POLYURETHANE SWIRL HOSE. EXTEND DRAIN LINE FROM ICE MAKER TO SPILL OVER FLOOR SINK. SEE DETAIL 2/PS02.
4. DISHWASHER AND BOOSTER HEATER: PROVIDE 1"HW-140°F WITH SHUT-OFF VALVE, 20 PSI PRV, SHOCK ARRESTOR SA-A AND FINAL CONNECTIONS TO BOOSTER HEATER AND DISHWASHER. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL INTER-CONNECTING PIPING. PROVIDE T&P RELIEF VALVE FOR BOOSTER HEATER PER MANUFACTURERS INSTRUCTIONS. PROVIDE 3/4"CW WITH SHUT-OFF CALCE, SHOCK ARRESTOR SA-A, AND FINAL CONNECTION TO DISHWASHER DRAIN TEMPERING KIT.
5. PRE-RINSE SINK: PROVIDE 1/2"HW-140°F, 1/2"CW WITH SHUT-OFF VALVES AND CHECK VALVES TO PRE-RINSE SINK. PROVIDE QUARTER TURN STOPS AT FINAL CONNECTION TO PRE-RINSE SINK FAUCET.
6. KITCHEN SINK FAUCETS: PROVIDE 1/2"HW-140°F, 1/2"CW WITH SHUT-OFF VALVES AND CHECK VALVES. PROVIDE QUARTER TURN STOPS AT WALL AND FINAL CONNECTION TO SINK FAUCET.
7. PREP-SINKS: 1/2"HW-140°F, 1/2"CW DOWN IN ADJACENT WALL TO BELOW fINISHED FLOOR. ROUTE PIPING BELOW FINISHED FLOOR OVER TO PREP-SINKS. STUB UP FROM BELOW FINSHED FLOOR TO SUPPLY BOTH PREP SINKS. PROVIDE QUARTER TURN STOPS AT STUB UP LOCATION AND MAKE FINAL CONNECTION TO BOTH PREP-SINK FAUCETS.
8. HOSE REEL: PROVIDE 1/2"HW-140°F, 1/2"CW WITH SHUT-OFF VALVES AND CHECK VALVES TO HOSE REEL.
9. 2-1/2"CW, 1-1/4"HW, 1"HWR CONTINUING TO AREA 300 MECHANICAL MEZZANINE. SEE SHEET P-222 FOR CONTINUATION.
10. 2-1/2"CW, 1-1/4"HW, 1"HWR RUNNING HORIZONTALLY, ALIGNED VERTICALLY IN BULK HEAD FROM MECHANICAL MEZZANINE LOCATED ABOVE THE LOCKER ROOMS. SEE SHEET P-222 FOR MORE INFORMATION.
11. 3/4"CW DOWN TO HOSE BIBB (HB2), IN THE RECEIVING AREA.

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ENLARGED KITCHEN SUPPLY PLAN

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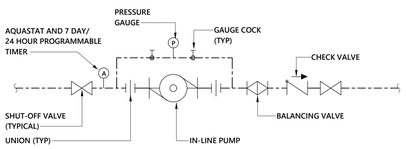
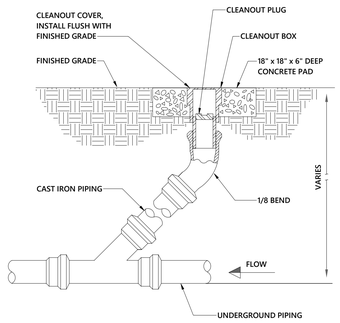
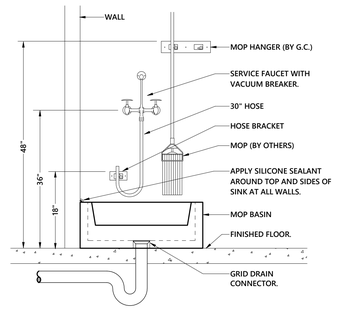


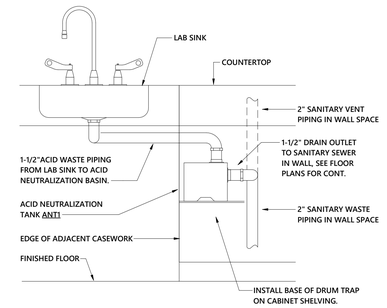

## 5 HOTWATER RECIRC PUMP DETAIL
NOT TO SCALE




## 4 YARD CLEANOUT DETAIL
NOT TO SCALE

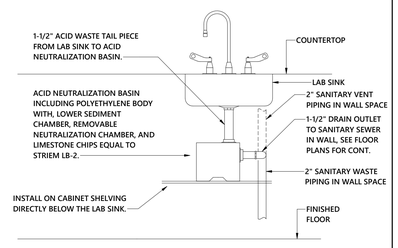



## 3 MOP BASIN AND ACCESSORIES
NOT TO SCALE



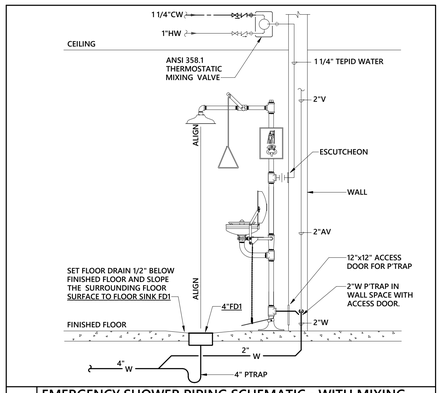

NOTE: SEE FLOOR PLANS FOR ACID NEUTRALIZATION TANK LOCATIONS.

## 2 TYPICAL ADA LAB SINK ACID NEUTRALIZATION TRAP DETAIL
NOT TO SCALE

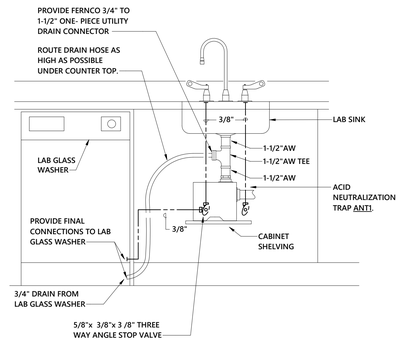



NOTE: WHERE ADA CLEARANCES ARE REQUIRED UNDER THE COUNTERTOP, INSTALL THE NEUTRALIZATION BASIN IN THE CABINET ADJACENT TO THE LAB SINK.

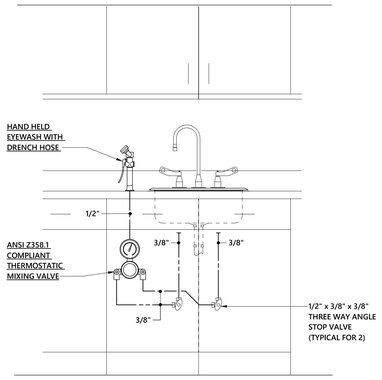
## 1 LAB SINK ACID NEUTRALIZATION TRAP DETAIL
NOT TO SCALE



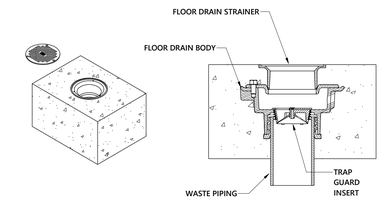

## 10 EMERGENCY SHOWER PIPING SCHEMATIC - WITH MIXING VALVE ABV CEILING
NOT TO SCALE




## 9 ACID NEUTRALIZATION TRAP DETAIL
NOT TO SCALE



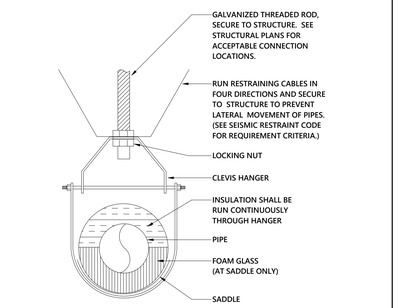

## 8 DECK MOUNTED EYEWASH DETAIL - HAND HELD
NOT TO SCALE



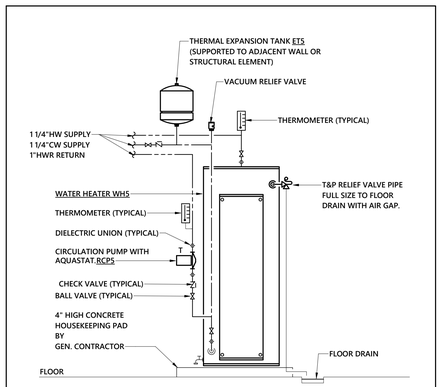

NOTES:

1. REMOVE SCREWS AND STRAINER FROM INSTALLED DRAIN. MAKE SURE DRAIN OUTLET IS CLEAR OF ANY DEBRIS OR OBSTRUCTIONS PRIOR TO INSTALLING THE TRAP GUARD.
2. ALIGN TRAP GUARD WITH THE CENTER OF THE DRAIN ASSEMBLY.
3. PUSH TRAP GUARD INTO BOTTOM OF DRAIN BODY OR OUTLET PIPE UNTIL THE UNDERSIDE OF THE BARRIER TRAP IS FLUSH WITH BOTTOM OF DRAIN OR TOP OF THE PIPE.

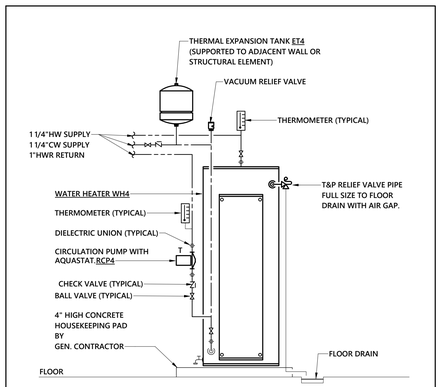
## 7 FLOOR DRAIN TRAP GUARD DETAIL
NO SCALE



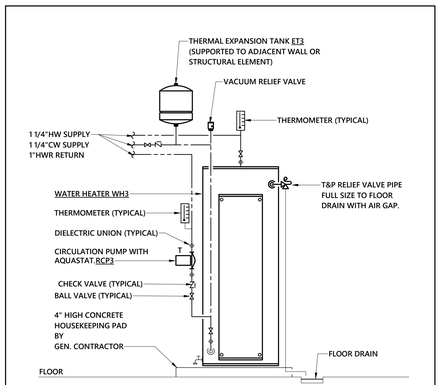

## 6 PIPE HANGER SCHEMATIC
NOT TO SCALE



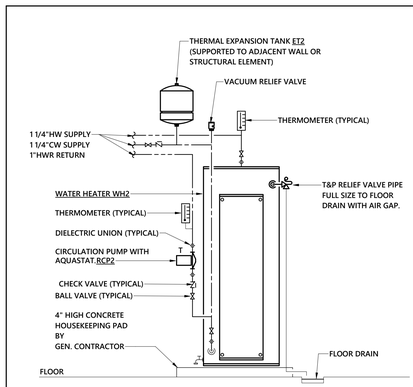

## 15 ELECTRIC WATER HEATER PIPING SCHEMATIC (WH5)
NOT TO SCALE



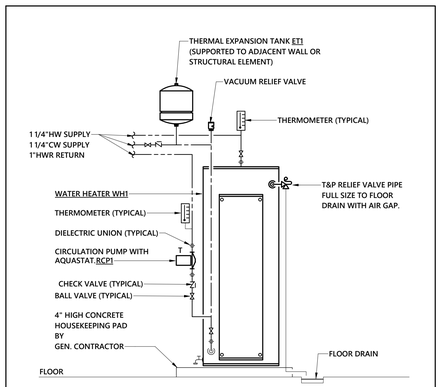

## 14 ELECTRIC WATER HEATER PIPING SCHEMATIC (WH4)
NOT TO SCALE




## 13 ELECTRIC WATER HEATER PIPING SCHEMATIC (WH3)
NOT TO SCALE




## 12 ELECTRIC WATER HEATER PIPING SCHEMATIC (WH2)
NOT TO SCALE




## 11 ELECTRIC WATER HEATER PIPING SCHEMATIC (WH1)
NOT TO SCALE

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

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CHECKED BY: DAR

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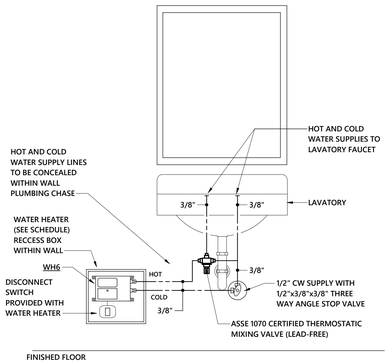
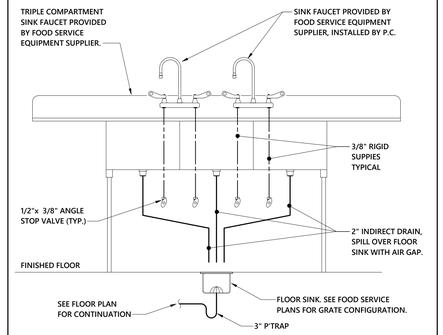
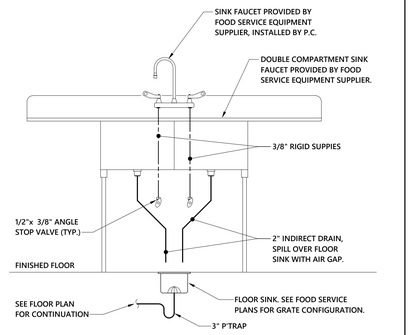


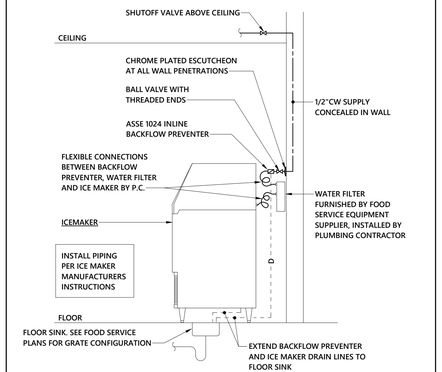

**5 ELECTRIC TANKLESS WATER HEATER DETAIL**
NOT TO SCALE



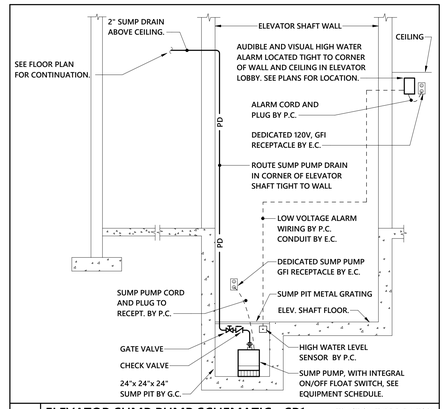

**4 TRIPLE COMPARTMENT SINK PIPING DETAIL**
NOT TO SCALE



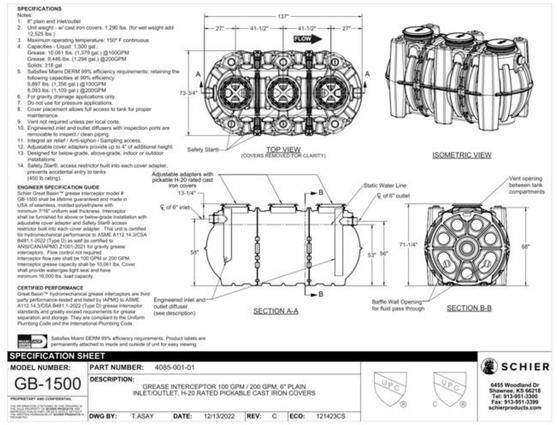

**3 DOUBLE COMPARTMENT SINK PIPING DETAIL**
NOT TO SCALE

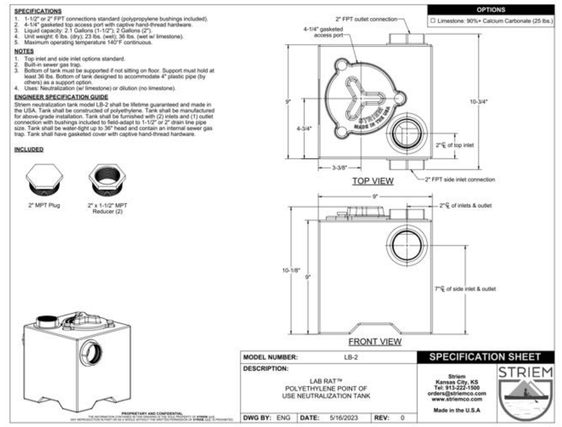



**2 ICE MAKER PIPING SCHEMATIC**
NOT TO SCALE




**1 ELEVATOR SUMP PUMP SCHEMATIC - SP1** (TRACTION TYPE ELEVATOR)
NOT TO SCALE

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ENERGY STAR PARTNER

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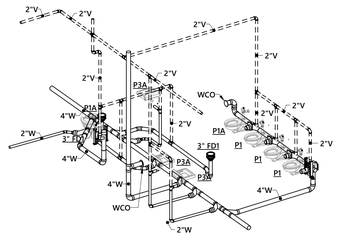
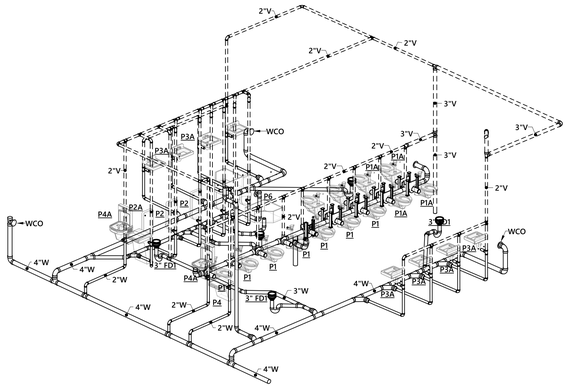
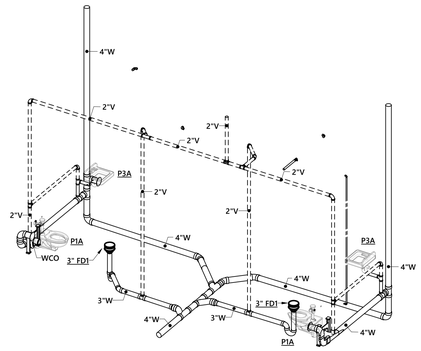



1 RESTROOMS 112 & 111 SANITARY RISER - PLUMBING
NOT TO SCALE




2 GROUP RESTROOMS 513 & 509 SANITARY RISER - PLUMBING
NOT TO SCALE




3 RESTROOMS 510A & 510B SANITARY RISER - PLUMBING
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WASTE & VENT RISER DIAGRAMS

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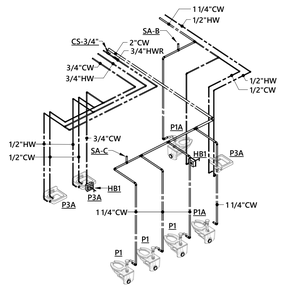
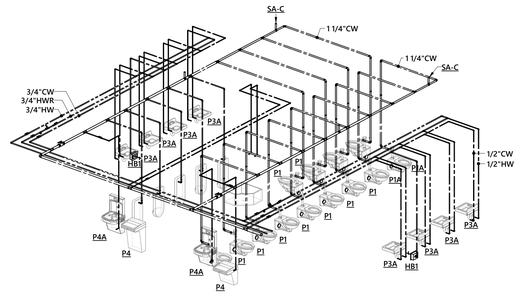
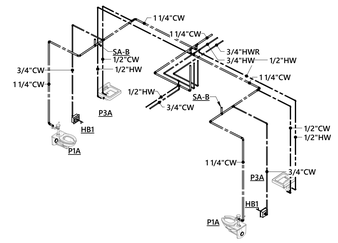



1 RESTROOMS 112 & 111 SUPPLY RISER - PLUMBING
NOT TO SCALE




2 RESTROOMS 513 & 509 SUPPLY RISER - PLUMBING
NOT TO SCALE




3 RESTROOMS 510A & 510B SUPPLY RISER - PLUMBING
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DOMESTIC RISER DIAGRAMS

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## ABBREVIATIONS

| | | | |
|---|---|---|---|
| Ø | ROUND | LVR | LOUVER |
| ABV | ABOVE | LWT | LEAVING WATER TEMPERATURE |
| AC | AIR CONDITIONING | M/A | MIXED AIR |
| ADD | ADDENDUM | MAX | MAXIMUM |
| AFF | ABOVE FINISHED FLOOR | MBH | ONE THOUSAND BTU PER HOUR |
| AFUE | ANNUAL FUEL UTILIZATION EFFICIENCY | MD | MOTORIZED DAMPER |
| ALT | ALTERNATE | MECH | MECHANICAL |
| AP | ACCESS PANEL | MFR | MANUFACTURER |
| ARCH | ARCHITECT/ARCHITECTURAL | MIN | MINIMUM |
| BFF | BELOW FINISHED FLOOR | MISC | MISCELLANEOUS |
| BLW | BELOW | MTR | MOTOR |
| BTU | BRITISH THERMAL UNITS | MU/A | MAKE-UP/AIR |
| BTUH | BRITISH THERMAL UNITS PER HOUR | NC | NOISE CRITERIA |
| CAP | CAPACITY | NC | NORMALLY CLOSED |
| CFM | CUBIC FEET PER MINUTE | NIC | NOT IN CONTRACT |
| CLG | CEILING | NO | NORMALLY OPEN |
| D | DEGREE | NTS | NOT TO SCALE |
| DB | DRY BULB | O/A | OUTSIDE AIR |
| DIA | DIAMETER | PD | PRESSURE DROP |
| DN | DOWN | PLBG | PLUMBING |
| EA | EACH | PRESS | PRESSURE |
| EAT | ENTERING AIR TEMPERATURE | PSI | POUNDS PER SQUARE INCH |
| ELEC | ELECTRICAL | PSIG | POUNDS PER SQUARE INCH GAUGE |
| EQUIP | EQUIPMENT | PWR | POWER |
| EWT | ENTERING WATER TEMPERATURE | R/A | RETURN AIR |
| E/A | EXHAUST AIR | RH | RELATIVE HUMIDITY |
| EXIST | EXISTING | RL/A | RELIEF AIR |
| F | DEGREES FAHRENHEIT | RM | REMAIN |
| FD | FIRE DAMPER | RPM | REVOLUTIONS PER MINUTE |
| FL | FLOOR | SF | SQUARE FOOT |
| FPM | FEET PER MINUTE | S/A | SUPPLY AIR |
| FT | FOOT/FEET | SF | SQUARE FOOT |
| GC | GENERAL CONTRACTOR | SD | SMOKE DAMPER |
| GPM | GALLONS PER MINUTE | SP | STATIC PRESSURE |
| HP | HORSE POWER | T | THERMOSTAT |
| HTG | HEATING | TD | TEMPERATURE DROP |
| HTR | HEATER | TEMP | TEMPERATURE |
| HW | HOT WATER | TYP | TYPICAL |
| IN | INCH | VAV | VARIABLE AIR VOLUME |
| LB | POUND | VENT | VENTILATION |
| LAT | LEAVING AIR TEMPERATURE | WB | WET BULB |
| LP | LOW PRESSURE | | |

## EQUIPMENT ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING UNIT | EWH | ELECTRIC WATER HEATER |
| ACC | AIR COOLED CONDENSER | FCU | FAN COIL UNIT |
| ACCU | AIR COOLING CONDENSING UNIT | FP | FIRE PUMP |
| AHU | AIR HANDLING UNIT | GI | GREASE INTERCEPTOR |
| AS | AIR SEPARATOR | GRV | GRAVITY ROOF VENTILATOR |
| B | BOILER | HWP | HEATING WATER PUMP |
| CH | CHILLER | HX | HEAT EXCHANGER |
| CT | COOLING TOWER | HRU | HEAT RECOVERY UNIT |
| CUH | CABINET UNIT HEATER | PRV | POWER ROOF VENTILATOR |
| CWP | CONDENSER WATER PUMP | RE | RETURN/EXHAUST FAN |
| CHWP | CHILLED WATER PUMP | RTU | ROOFTOP UNIT |
| DBP | DOMESTIC WATER BOOSTER PUMP | SEP | SEWAGE EJECTOR PUMP |
| DC | DUCT MOUNTED COIL | SF | SUPPLY FAN |
| DCP | DOMESTIC WATER CIRCULATING PUMP | SP | SUMP PUMP |
| EF | EXHAUST FAN | UH | UNIT HEATER |
| EDC | ELECTRIC DUCT COIL | WH | WATER HEATER |
| ET | EXPANSION TANK | | |

## TESTING, ADJUSTING, AND BALANCING

1. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
2. CONDUCT TESTING AND BALANCING IN ACCORDANCE WITH TECHNICAL PORTIONS OF THE AABC "NATIONAL STANDARDS FOR TESTING AND BALANCING HVAC SYSTEMS", LATEST EDITION.
3. INSTRUMENTS USED FOR BALANCING MUST HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX (6) MONTHS PRIOR TO BALANCING. SUBMIT SERIAL NUMBERS, AND DATES OF CALIBRATION OF ALL INSTRUMENTS TO BE USED PRIOR TO THE START OF WORK.
4. SET HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN THE FOLLOWING TOLERANCES:
   A. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: MINUS 5 TO PLUS 10 PERCENT.
   B. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.
   C. CONDENSER-WATER FLOW RATE: 0 TO MINUS 10 PERCENT.
5. REFER TO SPECIFICATION SECTION 230593 AND CONTRACT DRAWINGS IN THEIR ENTIRETY FOR ADDITIONAL REQUIREMENTS.

## COORDINATION DRAWINGS

THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA (INCLUDING CABLE TRAY) AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS FOR SHOP DRAWINGS AND COORDINATION DRAWINGS:

1. ALL SHOP AND COORDINAGION DRAWINGS WILL BE 1/4" = 1'-0" SCALE
2. DRAWINGS WILL BE ORIGINAL DRAWINGS AND NOT OVERLAYS OF THE CONTRACT/DESIGN
3. COORDINATION DRAWINGS WILL BE DRAWN ON REPRODUCIBLE MATERIAL 48"x36".
4. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
5. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

## MECHANICAL DUCT SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| 16x8 | SQUARE DUCT SIZE TAG (WIDTH x HEIGHT) |
| 16/8 | OVAL DUCT SIZE TAG (WIDTH / HEIGHT) |
| 16"Ø | ROUND DUCT SIZE TAG (DIAMETER) |
| (EX) | EXISTING DUCT TAG |
| | DUCT BEING DEMOLISHED |
| S/A | SUPPLY AIR |
| O/A | OUTDOOR AIR |
| R/A | RETURN AIR |
| E/A | EXHAUST AIR |
| L/A | RELIEF AIR |
| | SUPPLY AIR DIFFUSER (4-WAY) |
| | RETURN AIR GRILLE |
| | RETURN AIR GRILLE WITH SOUND BOOT |
| | EXHAUST AIR GRILLE |
| | POINT OF EXISTING TO NEW CONNECTION |
| | POINT OF DISCONNECT TO EXISTING CONNECTION |
| M.C. | MECHANICAL CONTRACTOR |
| E.C. | ELECTRICAL CONTRACTOR |
| P.C. | PLUMBING CONTRACTOR |
| N.I.C. | NOT IN CONTRACT |
| (EX) | EXISTING |
| AFF | ABOVE FINISHED FLOOR |
| DN | DOWN |
| UP | UP |
| X / X | SECTION CUT → REFERRING DETAIL NUMBER / → REFERRING SHEET NUMBER |

## MECHANICAL PIPING SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| | BUTTERFLY VALVE |
| | 3-PIECE BALL VALVE |
| | CHECK VALVE |
| | STRAINER WITH BLOWDOWN VALVE WITH HOSE CONN. |
| | BALANCING VALVE |
| | B&G CIRCUIT SETTER |
| | UNION |
| | THERMOMETER |
| P | PRESSURE GAGE & COCK |
| | GAGE COCK |
| | FLOW SWITCH |
| | ECCENTRIC REDUCER |
| | CONCENTRIC REDUCER |
| | STEAM TRAP, F&T |
| | STEAM TRAP, TB |
| | CONTROL VALVE |
| | GAS COCK |
| | PRESSURE REDUCING/REGULATING VALVE |
| | SOLENOID VALVE |

## MECHANICAL PIPING SYSTEMS LEGEND

| | |
|---|---|
| D | CONDENSATE DRAINAGE |
| CR | CONDENSER WATER RETURN |
| CS | CONDENSER WATER SUPPLY |
| GR | GEOTHERMAL WATER RETURN |
| GS | GEOTHERMAL WATER SUPPLY |
| R | REFRIGERANT |

## MECHANICAL ACCESSORIES SYMBOL LEGEND

| | |
|---|---|
| C | CARBON DIOXIDE SENSOR |
| T | THERMOSTAT / TEMP SENSOR (4'-0" AFF TO TOP) |
| DP | DIFFERENTIAL PRESSURE SENSOR FOR PUMP CONTROL |
| H | HUMIDISTAT (4'-0" AFF TO TOP) |
| S | SWITCH (4'-0" AFF TO TOP) |
| FD | RECTANGULAR DUCT FIRE DAMPER W/ ACCESS DOOR (SEE DETAIL) |
| FD | ROUND DUCT FIRE DAMPER W/ACCESS DOOR (SEE DETAIL) |
| DD | RECTANGULAR DUCT SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. |
| M | RECTANGULAR DUCT MOUNTED MOTOR OPERATED DAMPER, INTERLOCK WITH FAN AS INDICATED. (DAMPER BY M.C.) |
| M | ROUND DUCT MOTORIZED DAMPER |

## MECHANICAL GENERAL NOTES

SEE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS. THESE GENERAL NOTES ARE INTENDED TO SUPPLEMENT THE SPECIFICATIONS. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL EQUIPMENT LISTED IN PROJECT SCHEDULES IS TO BE CONSIDERED DESIGN BASIS EQUIPMENT. ALL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. TRANSFER DUCTS SHALL BE LINED WITH 1" THICK FIBERGLASS DUCT LINER FOR ACOUSTICAL PURPOSES. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE.
4. SUPPLY AND RETURN DUCTWORK LOCATED OUTSIDE THE BUILDING SHALL BE WRAPPED WITH 3" THICK DUCT WRAP WITH VAPOR BARRIER HAVING A MINIMUM INSTALLED R VALUE OF 8.0. COVER EXTERNAL INSULATION WITH AN ALUMINUM OUTER ENCLOSURE AND SEAL WATER TIGHT.
5. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE NORTH CAROLINA INTERNATIONAL MECHANICAL CODE. SEAL MEDIUM PRESSURE SUPPLY DUCTWORK FOR POSITIVE 3" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4.
6. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
7. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
8. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS. IN ADDITION, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO HIRE A REGISTERED DESIGN PROFESSIONAL TO COMMISSION THE INSTALLED SYSTEM AND PROVIDE THE OWNER AND CODE REVIEWER A SEALED STATEMENT OF SYSTEM COMMISSIONING (PER 2018 NCECC APPENDIX C1).
9. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
10. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
11. CONDENSATE DRAIN PIPING SHALL BE TYPE 'L' OR 'K' HARD DRAWN COPPER AND SHALL BE INSULATED WITH 1 1/2" THICK FIBERGLASS INSULATION WITH A DENSITY OF 1.5 LB. PER CUBIC FOOT. INSULATION SHALL HAVE A FACTORY APPLIED PRESSURIZED VAPOR BARRIER JACKET WITH PRESSURE SENSITIVE ADHESIVE SELF-SEALING LAP. INSULATION AND JACKET SHALL BE RATED FOR INSULATION IN A RETURN AIR PLENUM.
12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING INSULATION EXPOSED OUTDOORS SHALL BE COVERED WITH AN OUTER ALUMINUM JACKET.
13. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
14. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM-FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
15. CONTRACTOR SHALL VERIFY LOCATION OF ALL ROOF PENETRATIONS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION. NEW ROOF PENETRATIONS MADE THROUGH EXISTING ROOF SYSTEMS SHALL BE VERIFIED WITH THE OWNER'S EXISTING ROOF WARRANTY PRIOR TO INSTALLATION.
16. ROOF CURBS SHALL ALLOW A MINIMUM OF 8" ABOVE ROOF INSULATION FOR FLASHING, OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER. IN ADDITION, ALL ROOF CURBS OR EQUIPMENT SUPPORT RAILS THAT SUPPORT EQUIPMENT, PIPING, CONDUIT, ETC. EXPOSED ON THE ROOF SHALL HAVE SUFFICIENT HEIGHT TO MAINTAIN A MINIMUM OF 18" CLEARANCE BELOW SUPPORTED EQUIPMENT FOR ROOF MAINTENANCE.
17. CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 15'-0" FROM ANY OUTSIDE AIR INTAKE.
18. DRYER VENT WALL CAPS SHALL BE PROVIDED WITH A BACKDRAFT DAMPER. DRYER VENT SHALL NOT EXCEED A TOTAL EQUIVALENT LENGTH OF 35'-0" WITH A 2.5' DEDUCTION FOR EACH 45° BEND AND A 5' DEDUCTION FOR EACH 90° BEND.
19. KITCHEN HOOD EXHAUST DUCT SHALL BE 16 GAUGE CARBON STEEL. ALL JOINTS AND SEAMS SHALL BE CONSTRUCTED WITH A CONTINUOUS LIQUID - TIGHT EXTERNAL WELD. ALL DUCTWORK SHALL SLOPE A MINIMUM OF 1/4 INCH PER FOOT TOWARD HOOD. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE EXHAUST DUCT AND AT 20'-0" (MINIMUM) INTERVALS.
20. THE MECHANICAL CONTRACTOR SHALL PERFORM A LIGHT TEST (AS REQUIRED BY THE MECHANICAL CODE) FOR ALL JOINTS AND SEAMS IN THE PRESENCE OF THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO CONCEALING KITCHEN HOOD EXHAUST DUCTWORK.
21. DISHWASHER EXHAUST DUCT SHALL BE STAINLESS STEEL. ALL JOINTS AND SEAMS SHALL HAVE A LIQUID TIGHT CONTINUOUS EXTERNAL WELD. EXHAUST DUCT SHALL SLOPE DOWN IN DIRECTION OF HOOD A MINIMUM OF 1" PER FOOT.
22. ALL CONDENSER WATER PIPING 2" AND LESS SHALL BE SCHEDULE 40 BLACK STEEL OR HARD-DRAWN TYPE-L COPPER PIPE AND FITTINGS. ALL CHILLED WATER, HOT WATER PIPING AND CONDENSER WATER PIPING GREATER THAN 2" SHALL BE (WELDED) SCHEDULE 40 BLACK STEEL. PROVIDE BRONZE VALVES AND FITTINGS WITH COPPER PIPING AND CAST IRON VALVES AND FITTINGS WITH SCHEDULE 40 BLACK STEEL.

   *ALTERNATE #6: PROVIDE ALTERNATE PRICING TO UTILIZE SDR-11 HDPE PIPING. PROVIDE WITH MOLDED FITTINGS, HDPE RESIN SOCKET-OR BUTT-FUSION TYPE MADE TO MATCH HDPE PIPE DIMENSIONS AND CLASS.*
23. EXPOSED CONDENSER WATER PIPING IN OCCUPIED AREAS SHALL BE INSULATED WITH 1 1/2" THICK FIBERGLASS INSULATION. FIBERGLASS INSULATION SHALL HAVE A K-VALUE OF 0.27 (OR LESS) AT 75°F. INSULATION SHALL HAVE A FACTORY APPLIED PRESSURIZED VAPOR BARRIER JACKET WITH PRESSURE SENSITIVE ADHESIVE SELF-SEALING LAP. ALL FITTINGS SHALL HAVE PVC FITTING COVERS.
24. ALL CONDENSER WATER PIPING SHALL PITCH DOWN IN DIRECTION OF FLOW WITH MANUAL AIR VENTS AT ALL HIGH POINTS AND 1/2" DRAIN VALVES AT ALL LOW POINTS.
25. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
26. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
27. ALL ISOLATION VALVES, TERMINAL UNITS, CONTROLS, ETC. REQUIRING ACCESS AND SERVICE SHALL BE INSTALLED WITHIN 18" OF THE CEILING FOR SERVICE ACCESSIBILITY. LOCATIONS SHALL BE INDICATED ON THE CEILING GRID PER THE SPECIFICATIONS.
28. ALL EQUIPMENT CONCRETE PAD SIZES FOR MECHANICAL EQUIPMENT SHALL BE CONFIRMED WITH APPROVED SHOP DRAWING SUBMITTALS AND ASSOCIATED UNIT MANUFACTURER ANCHOR LOCATIONS PRIOR TO FABRICATION/INSTALLATION. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL COORDINATE THE EXACT LOCATION OF MECHANICAL EQUIPMENT HOUSEKEEPING PADS WITH THE FLOOR DRAIN LOCATIONS PRIOR TO INSTALLATION OF DRAINS AT EQUIPMENT/PAD LOCATIONS.
29. DUCTWORK AND PIPING PASSING THROUGH/ABOVE ELECTRICAL ROOMS SHALL BE CLOSELY COORDINATED WITH THE ELECTRICAL CONTRACTOR. DUCTWORK OR PIPING SHALL NOT BE LOCATED ABOVE ELECTRICAL PANELS.
30. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS, DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.
31. COMMERCIAL DRYER EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL NOT LESS THAN 0.0195 INCHES THICK. EXHAUST DUCT SHALL BE ASSEMBLED WITH SMOOTH INTERIOR SURFACE SO THAT THE JOINTS DO NOT PERMIT THE ACCUMULATION OF LINT, DO NOT USE SHEET METAL SCREWS AT JOINTS. ALL 90° TURN SHALL HAVE LONG RADIUS ELBOWS. ALL DUCTWORK SHALL BE INSTALLED PER THE DRYER MANUFACTURER'S RECOMMENDATIONS. COMMERCIAL DRYER EXHAUST DUCTWORK SHALL BE WRAPPED WITH TWO LAYERS OF 1 1/2" THICK THERMAL INSULATION BLANKET AS MANUFACTURED BY FIREMASTER (OR EQUAL). INSULATION SHALL BE INSTALLED PER NFPA-96 AND IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS TO OBTAIN A 2-HOUR RATED ASSEMBLY. ASSEMBLY SHALL BE U.L. APPROVED.
32. PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH AN IONIZATION TYPE DUCT MOUNTED SMOKE DETECTOR IN DUCTED APPLICATIONS, OR SPOT DETECTORS IN OPENING APPLICATIONS (WITHIN 5'-0" OF THE DAMPER WITH NO AIR OUTLETS OR INLETS BETWEEN DETECTOR AND DAMPER), INSTALLED IN THE DUCT WIRED, TO CLOSE THE DAMPER UPON ACTIVATION. DUCT MOUNTED SMOKE DETECTORS AND SPOT DETECTORS SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. DETECTORS SHALL BE INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR.
33. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING RESTRAINTS TO RESIST THE EARTHQUAKE EFFECTS ON THE MECHANICAL SYSTEMS. THE REQUIREMENTS FOR THOSE RESTRAINTS ARE FOUND IN THE LOCAL BUILDING CODE AND ASCE 7. THE ANCHORAGE OF THE MECHANICAL SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL BUILDING CODE AND ASCE 7.
34. MECHANICAL CONTRACTOR SHALL PROVIDE PRE-PRINTED COLOR-CODED PIPE LABELS WITH 1-1/2" HIGH LETTERING INDICATING SERVICE AND FLOW DIRECTION. PLASTIC PIPE LABELS UTILIZED IN A RETURN AIR PLENUM SHALL BE LISTED/APPROVED FOR USE IN A RETURN AIR PLENUM. ALL PIPING TO MATCH EXISTING FACILITIES STANDARD (IF APPLICABLE). OTHERWISE, PIPE LABELS SHALL MATCH THE FOLLOWING:
    CONDENSER WATER: GREEN BACKGROUND, WHITE LETTERING
    REFRIGERANT PIPING: YELLOW BACKGROUD, BLACK LETTERING
35. ALL MECHANICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED AS A COMPLETE PACKAGE, NOT THROUGH INDIVIDUAL COMPONENTS OR PARTS. PROVIDE REQUIRED 3RD PARTY FIELD UL LISTING SERVICES AS REQUIRED TO COMPLY.

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## 2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

C401 METHOD OF COMPLIANCE

- ■ 2018 NCECC CHAPTER 4
- ☐ ASHRAE 90.1-2013 PRESCRIPTIVE
- ☐ ASHRAE 90.1-2013 PERFORMANCE
- ☐ N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- ☐ COMCHECK PROVIDED (2018 NCECC)
- ☐ COMCHECK PROVIDED (90.1-2013)
- ☐ ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ■ C406.3 REDUCED LTG DENSITY
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- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.7 SERVICE WATER HEATING

C301 CLIMATE ZONE

4A - HARNETT COUNTY, NORTH CAROLINA

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1-2013 TABLE D-1)

| | |
|---|---|
| winter dry bulb | 22° F. |
| summer dry bulb | 94° F. |
| summer wet bulb | 76° F. |

INTERIOR (2018 NCECC SECTION C302.1)

| | |
|---|---|
| winter dry bulb | 72° F. |
| summer dry bulb | 75° F. |

C403.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

| | |
|---|---|
| BUILDING HEATING LOAD | 4,052,650 BTUH (peak) |
| BUILDING COOLING LOAD | 4,621,700 BTUH (peak) |
| INSTALLED HEATING CAPACITY | 6,820,430 BTUH |
| INSTALLED COOLING CAPACITY | 5,826,090 BTUH |

C403.2.3 & C406.2 - REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRI

ADA AND LEGAL DISCLAIMER: This document is intended to comply with the requirements of the Americans with Disabilities Act (ADA). However architects and engineers are not licensed to interpret laws or give advice concerning laws. The owner should have this document reviewed by his attorney to determine if it complies with ADA and other laws.

# DEDICATED OUTDOOR AIR SYSTEM SUMMARY SCHEDULE

| SYMBOL | EQUIPMENT LOCATION | SUPPLY FAN AIR FLOW (CFM) | SUPPLY FAN E.S.P. (IN H20) | RETURN FAN AIR FLOW (CFM) | RETURN FAN E.S.P. (IN H20) | SUMMER POST-WHEEL AIR CONDITIONS DRY BULB (°F) | SUMMER POST-WHEEL AIR CONDITIONS WET BULB (°F) | SUMMER POST-WHEEL AIR CONDITIONS TOTAL ENERGY RECOVERED (BTUH) | WINTER POST-WHEEL AIR CONDITIONS DRY BULB (°F) | WINTER POST-WHEEL AIR CONDITIONS WET BULB (°F) | WINTER POST-WHEEL AIR CONDITIONS TOTAL ENERGY RECOVERED (BTUH) | UNIT LEAVING AIR TEMPERATURE SUMMER DB (°F) | UNIT LEAVING AIR TEMPERATURE SUMMER WB (°F) | UNIT LEAVING AIR TEMPERATURE WINTER DB (°F) | EQUIVALENT NET TC (BTUH) | COMPRESSOR COOLING CAPACITY NET TC (BTUH) | COMPRESSOR COOLING CAPACITY NET SHC (BTUH) | COMPRESSOR COOLING CAPACITY EER | HEATING CAPACITY | CONDENSOR WATER GPM | CONDENSOR WATER MAX. P.D. | CONDENSOR WATER RUNOUT SIZE | ELECTRICAL DATA SUPPLY FAN HP | SUPPLY FAN QTY | SUPPLY FAN FLA | HEAT WHEEL MOTOR QTY | HEAT WHEEL MOTOR HP | HEAT WHEEL MOTOR FLA | EXHAUST FAN HP | EXHAUST FAN FLA | COMPRESSOR QTY | POWER SUPPLY RLA | POWER SUPPLY MCA | POWER SUPPLY MOCP | POWER SUPPLY VOLTS | POWER SUPPLY PHASE | UNIT WEIGHT | MODEL (AAON) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOAS-400 | AREA 400 | 5010 | 1.00 | 4035 | 1.00 | 94.0 | 76.0 | 164800 | 22.0 | 18.0 | 217000 | 75.0 | 60.0 | 75.0 | 379,800 | 215000 | 151600 | 21.5 | 294,100 | 48.0 | 17.5 | 2 1/2" | 7.50 | 1 | 11.0 | 1 | 0.17 | 0.6 | 5.0 | 7.6 A | 2 | 13.5 A | 49.0 A | 60.0 A | 460 | 3 | 3390 lb | RNA-018 |
| DOAS-500 | AREA 500 | 5460 | 1.00 | 4460 | 1.00 | 94.0 | 76.0 | 178200 | 22.0 | 18.0 | 235000 | 75.0 | 60.0 | 75.0 | 396,200 | 217900 | 157200 | 21.1 | 296,600 | 48.0 | 17.5 | 2 1/2" | 7.50 | 1 | 11.0 | 1 | 0.17 | 0.6 | 5.0 | 7.6 A | 2 | 13.5 A | 49.0 A | 60.0 A | 460 | 3 | 3420 lb | RNA-018 |
| DOAS-600 | AREA 600 | 5400 | 1.00 | 4375 | 1.00 | 94.0 | 76.0 | 175800 | 22.0 | 18.0 | 231700 | 75.0 | 60.0 | 75.0 | 393,500 | 217700 | 156400 | 21.1 | 296,400 | 48.0 | 17.5 | 2 1/2" | 7.50 | 1 | 11.0 | 1 | 0.17 | 0.6 | 5.0 | 7.6 A | 2 | 13.5 A | 49.0 A | 60.0 A | 460 | 3 | 3420 lb | RNA-018 |

NOTES:

1. 1. PROVIDE ALL UNITS WITH: DDC CONTROLS, MOTORIZED ECONOMIZER DAMPERS, MODULATING HOT GAS REHEAT TO MAINTAIN 70°F-75°F AND 50%-55% R.H. DISCHARGE CONDITIONS, 2" PLEATED O.A. AND EXHAUST FILTERS, SINGLE POINT ELECTRICAL CONNECTION.
2. ALL UNITS SHALL BE U.L. LABELED AND ASHRAE 90.1 COMPLIANT.
3. IONIZATION TYPE SMOKE DETECTORS SHALL BE PROVIDED WITH EACH UNIT. DUCT DETECTORS WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR, INSTALLED IN DUCT BY THE MECHANICAL CONTRACTOR, AND WIRED FOR UNIT SHUT-DOWN AND FIRE ALARM INTERFACE BY THE ELECTRICAL CONTRACTOR. DUCT DETECTORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
4. ALL TEMPERATURES ARE MEASURED IN DEGREES FAHRENHEIT, AND SPECIFIC HUMIDITY IS MEASURED IN GRAINS PER POUND DRY AIR.
5. OUTDOOR DESIGN CONDITIONS: SUMMER: 91° F. D.B., 74° F. W.B., WINTER: 18° F. D.B.
6. COOLING EFFICIENCY BASED ON 85° F. ENTERING CONDENSER WATER TEMPERATURE. HEATING EFFICIENCY BASED ON 50° F. ENTERING CONDENSER WATER TEMPERATURE.
7. PROVIDE UNITS WITH REFRIGERANT DETECTION SYSTEMS (RDS), AND STOP VALVES TO BE IN COMPLIANCE WITH ASHRAE STANDARD 15-2022 FOR A2L REFRIGERANTS.

# WATER SOURCE HEAT PUMP SCHEDULE

| SYMBOL | EQUIP. SERVES | TYPE | EVAPORATOR COOLING COIL NOMINAL (TONS) | SUPPLY AIR FLOW (CFM) | OUTSIDE AIR OCC. MIN. | OUTSIDE AIR DESIGN | ESP | COOLING CAPACITY EWT | LWT | EAT(db) | EAT(wb) | TC (BTUH) | SHC (BTUH) | EER | HEATING CAPACITY EWT | LWT | EAT(db) | BTUH | COP | REFRIG. | HOT GAS REHEAT (BTUH) | CONDENSER WATER GPM | PD | RUNOUT | FAN MOTOR HP | COMPRESSOR MOTOR QTY | ELECTRICAL DATA VOLTAGE | PHASE | MCA | MOCP | MODEL | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSHP-1.1 | 100 INSTRUMENTAL MUSIC | VERTICAL | 5.0 | 2000 | 200 | 770 | 0.50 | 65 °F | 79 °F | 80.0 °F | 67.0 °F | 58110 | 46460 | 19.6 | 65 °F | 55 °F | 68.0 °F | 62380 | 5.43 | R-454B | 21790 | 10.0 | 6.7 | 1" | 1.00 | 1 | 460 V | 3 | 12.0 | 15.0 | DXVK0604 | HGR, DCV |
| WSHP-1.2 | 101 VOCAL MUSIC | VERTICAL | 5.0 | 2000 | 200 | 620 | 0.50 | 65 °F | 79 °F | 80.0 °F | 67.0 °F | 58110 | 46460 | 19.6 | 65 °F | 55 °F | 68.0 °F | 62380 | 5.43 | R-454B | 21790 | 10.0 | 6.7 | 1" | 1.00 | 1 | 460 V | 3 | 12.0 | 15.0 | DXVK0604 | HGR, DCV |
| WSHP-1.3 | 102 DRAMA | VERTICAL | 5.0 | 2000 | 200 | 605 | 0.50 | 65 °F | 79 °F | 80.0 °F | 67.0 °F | 58110 | 46460 | 19.6 | 65 °F | 55 °F | 68.0 °F | 62380 | 5.43 | R-454B | 21790 | 10.0 | 6.7 | 1" | 1.00 | 1 | 460 V | 3 | 12.0 | 15.0 | DXVK0604 | HGR, DCV |
| WSHP-1.4 | 103 ART | VERTICAL | 4.0 | 1600 | 200 | 535 | 0.50 | 65 °F | 77 °F | 80.0 °F | 67.0 °F | 48210 | 37920 | 19.8 | 65 °F | 57 °F | 68.0 °F | 51610 | 5.35 | R-454B | 18080 | 10.0 | 5.4 | 1" | 1.00 | 1 | 460 V | 3 | 11.0 | 15.0 | DXVK0484 | HGR, DCV |
| WSHP-1.5 | 104 FAMILY & CONS. SCIENCE | HORIZONTAL | 3.0 | 1200 | 200 | 515 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | HGR, DCV |
| WSHP-1.6 | C101 CORRIDOR | HORIZONTAL | 6.0 | 2400 | 250 | 250 | 1.00 | 86 °F | 97 °F | 80.0 °F | 67.0 °F | 76200 | 57900 | 13.62 | 68 °F | 61 °F | 68.0 °F | 82400 | 4.31 | R-454B | 29963 | 18.0 | 11.2 | 1" | 1.50 | 1 | 460 V | 3 | 15.5 | 20.0 | GEHK0724 | HGR |
| WSHP-1.7 | 105 AUDITORIUM | VERTICAL | 12.5 | 5000 | 500 | 1500 | 1.00 | 86 °F | 97 °F | 80.6 °F | 67.0 °F | 158800 | 121500 | 15.9 | 68 °F | 60 °F | 68.0 °F | 196300 | 4.90 | R-454B | 62325 | 37.5 | 17.0 | 1 1/2" | 3.00 | 2 | 460 V | 3 | 24.8 | 30.0 | GEHV1504 | HGR, DCV |
| WSHP-1.8 | 105 AUDITORIUM | VERTICAL | 12.5 | 5000 | 500 | 1500 | 1.00 | 86 °F | 97 °F | 80.6 °F | 67.0 °F | 158800 | 121500 | 15.9 | 68 °F | 60 °F | 68.0 °F | 196300 | 4.90 | R-454B | 62325 | 37.5 | 17.0 | 1 1/2" | 3.00 | 2 | 460 V | 3 | 24.8 | 30.0 | GEHV1504 | HGR, DCV |
| WSHP-1.9 | 105C STAGE | HORIZONTAL | 10.0 | 4000 | 150 | 700 | 1.00 | 86 °F | 96 °F | 80.0 °F | 67.0 °F | 124200 | 95000 | 16.8 | 68 °F | 60 °F | 68.0 °F | 146400 | 4.90 | R-454B | 49125 | 30.0 | 13.8 | 1 1/2" | 3.00 | 2 | 460 V | 3 | 20.1 | 25.0 | GEVK1204 | HGR |
| WSHP-1.10 | BACKSTAGE | HORIZONTAL | 3.0 | 1200 | 65 | 65 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | HGR |
| WSHP-1.11 | C400 CORRIDOR | HORIZONTAL | 3.0 | 1200 | 120 | 120 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | HGR |
| WSHP-1.12 | AREA 100 MEZZANINE | VERTICAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | HGR |
| WSHP-2.1 | ADMIN | HORIZONTAL | 2.0 | 800 | 80 | 80 | 0.50 | 65 °F | 76 °F | 80.0 °F | 67.0 °F | 26610 | 20060 | 21.3 | 65 °F | 57 °F | 68.0 °F | 30280 | 5.28 | R-454B | 9980 | 6.0 | 4.2 | 3/4" | 0.50 | 1 | 265 V | 1 | 12.0 | 15.0 | DXHK0247 | HGR |
| WSHP-2.2 | ADMIN | HORIZONTAL | 2.5 | 1000 | 125 | 110 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 31880 | 24370 | 23.8 | 65 °F | 57 °F | 68.0 °F | 35770 | 5.20 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.33 | 0 | 460 V | 3 | 16.0 | 25.0 | EXHK0307 | HGR |
| WSHP-2.3 | ADMIN | HORIZONTAL | 3.0 | 1200 | 230 | 230 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | HGR |
| WSHP-2.4 | ADMIN | HORIZONTAL | 3.0 | 1200 | 210 | 210 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | HGR |
| WSHP-2.5 | RECEPTION | HORIZONTAL | 5.0 | 2000 | 140 | 140 | 0.50 | 65 °F | 79 °F | 80.0 °F | 67.0 °F | 58110 | 46460 | 19.6 | 65 °F | 55 °F | 68.0 °F | 62380 | 5.43 | R-454B | 21790 | 10.0 | 6.7 | 1" | 1.00 | 1 | 460 V | 3 | 12.0 | 15.0 | DXHK0604 | HGR |
| WSHP-2.6 | ADMIN | HORIZONTAL | 2.0 | 800 | 50 | 50 | 0.50 | 65 °F | 76 °F | 80.0 °F | 67.0 °F | 26610 | 20060 | 21.3 | 65 °F | 57 °F | 68.0 °F | 30280 | 5.28 | R-454B | 9980 | 6.0 | 4.2 | 3/4" | 0.50 | 1 | 265 V | 1 | 12.0 | 15.0 | DXHK0247 | HGR |
| WSHP-2.7 | ADMIN | HORIZONTAL | 2.5 | 1000 | 110 | 110 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 31880 | 24370 | 23.8 | 65 °F | 57 °F | 68.0 °F | 35770 | 5.20 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.33 | 0 | 460 V | 3 | 16.0 | 25.0 | EXHK0307 | HGR |
| WSHP-2.8 | C201 CORRIDOR | VERTICAL | 5.0 | 2000 | 120 | 120 | 0.50 | 65 °F | 79 °F | 80.0 °F | 67.0 °F | 58110 | 46460 | 19.6 | 65 °F | 55 °F | 68.0 °F | 62380 | 5.43 | R-454B | 21790 | 10.0 | 6.7 | 1" | 1.00 | 1 | 460 V | 3 | 12.0 | 15.0 | DXVK0604 | HGR |
| WSHP-2.9 | 223 MEDIA CENTER | HORIZONTAL | 10.0 | 4000 | 300 | 700 | 1.00 | 86 °F | 96 °F | 80.0 °F | 67.0 °F | 123700 | 94700 | 13.3 | 68 °F | 60 °F | 68.0 °F | 146900 | 4.59 | R-454B | 49125 | 30.0 | 13.9 | 1 1/2" | 3.00 | 2 | 460 V | 3 | 20.1 | 25.0 | GEHK1204 | HGR, DCV |
| WSHP-2.10 | 223 MEDIA CENTER | HORIZONTAL | 10.0 | 4000 | 300 | 950 | 1.00 | 86 °F | 96 °F | 80.0 °F | 67.0 °F | 123700 | 94700 | 13.3 | 68 °F | 60 °F | 68.0 °F | 146900 | 4.59 | R-454B | 49125 | 30.0 | 13.9 | 1 1/2" | 3.00 | 2 | 460 V | 3 | 20.1 | 25.0 | GEHK1204 | HGR, DCV |
| WSHP-2.11 | 227 MDF | HORIZONTAL | 1.5 | 600 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 19440 | 14730 | 22.6 | 65 °F | 57 °F | 68.0 °F | 21890 | 4.98 | R-454B | 0 | 4.5 | 2.6 | 3/4" | 0.50 | 1 | 265 V | 1 | 11.0 | 15.0 | EXHK0187 | |
| WSHP-3.1 | C300 CORRIDOR | HORIZONTAL | 5.0 | 2000 | 85 | 85 | 0.50 | 65 °F | 79 °F | 80.0 °F | 67.0 °F | 58110 | 46460 | 19.6 | 65 °F | 55 °F | 68.0 °F | 62380 | 5.43 | R-454B | 21790 | 10.0 | 6.7 | 1" | 1.00 | 1 | 460 V | 3 | 12.0 | 15.0 | DXHK0604 | HGR |
| WSHP-3.2 | 317 HEALTH ROOM 1 | VERTICAL | 3.0 | 1200 | 250 | 250 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | HGR |
| WSHP-3.3 | 316 HEALTH ROOM 2 | VERTICAL | 3.0 | 1200 | 250 | 250 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | HGR |
| WSHP-4.1 | 404 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.2 | 405 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.3 | 406 FLEX CLASSROOM | HORIZONTAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.33 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | |
| WSHP-4.4 | 407 SCIENCE | HORIZONTAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.33 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | |
| WSHP-4.5 | 408 SCIENCE | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.6 | 409 SCIENCE | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.7 | 400 WING RESOURCE ROOMS | HORIZONTAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.33 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | |
| WSHP-4.8 | 400 WING CORRIDOR | HORIZONTAL | 2.0 | 800 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 24730 | 19200 | 21.2 | 65 °F | 57 °F | 68.0 °F | 30280 | 5.28 | R-454B | 0 | 6.0 | 4.2 | 3/4" | 0.50 | 1 | 265 V | 1 | 12.0 | 15.0 | DXHK0247 | |
| WSHP-4.9 | C402 COLLABORATION | HORIZONTAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.33 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | |
| WSHP-4.10 | 416 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.11 | 415 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.12 | 418 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.13 | 417 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.14 | 400 WING CORRIDOR | HORIZONTAL | 2.0 | 800 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 24730 | 19200 | 21.2 | 65 °F | 57 °F | 68.0 °F | 30280 | 5.28 | R-454B | 0 | 6.0 | 4.2 | 3/4" | 0.50 | 1 | 265 V | 1 | 12.0 | 15.0 | DXHK0247 | |
| WSHP-4.15 | 420 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.16 | 419 CORE CLASSROOM | HORIZONTAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXHK0307 | |
| WSHP-4.17 | 422 CORE CLASSROOM | HORIZONTAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.33 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | |
| WSHP-4.18 | 421 CORE CLASSROOM | HORIZONTAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.33 | 1 | 265 V | 1 | 15.0 | 25.0 | DXHK0367 | |
| WSHP-4.19 | 401 STEM LAB | VERTICAL | 2.5 | 1000 | 275 | 275 | 0.50 | 65 °F | 76 °F | 80.0 °F | 67.0 °F | 34740 | 25630 | 23.6 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 13030 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | HGR |
| WSHP-4.20 | 403 ES CS CLASSROOM | VERTICAL | 3.0 | 1200 | 300 | 300 | 0.50 | 65 °F | 74 °F | 80.0 °F | 67.0 °F | 36490 | 28740 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 13680 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | HGR |
| WSHP-4.21 | M401 MDF | HORIZONTAL | 1.5 | 600 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 19440 | 14730 | 22.6 | 65 °F | 57 °F | 68.0 °F | 21890 | 4.98 | R-454B | 0 | 4.5 | 2.6 | 3/4" | 0.50 | 1 | 265 V | 1 | 11.0 | 15.0 | EXHK0187 | |
| WSHP-5.1 | 501 EC S/C CLASSROOMS | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.2 | 500 STEM LABS | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.3 | 503 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.4 | 502 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.5 | 505 FLEX CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.6 | 504 SCIENCE | VERTICAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | |
| WSHP-5.7 | 507 SCIENCE | VERTICAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | |
| WSHP-5.8 | 506 SCIENCE | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.9 | 500 WING CORRIDOR | VERTICAL | 4.0 | 1600 | 0 | 0 | 0.50 | 65 °F | 76 °F | 75.0 °F | 62.5 °F | 45280 | 36330 | 19.9 | 65 °F | 57 °F | 68.0 °F | 51610 | 5.35 | R-454B | 0 | 10.0 | 5.4 | 1" | 1.00 | 1 | 460 V | 3 | 11.0 | 15.0 | DXVK0484 | |
| WSHP-5.10 | 500 WING RESOURCE ROOMS | VERTICAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | |
| WSHP-5.11 | 515 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.12 | 516 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.13 | 517 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.14 | 518 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.15 | 519 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.16 | 520 CORE CLASSROOM | VERTICAL | 2.5 | 1000 | 0 | 0 | 0.50 | 65 °F | 75 °F | 75.0 °F | 62.5 °F | 32320 | 24540 | 23.5 | 65 °F | 57 °F | 68.0 °F | 35980 | 5.28 | R-454B | 0 | 7.5 | 6.8 | 1" | 0.75 | 1 | 265 V | 1 | 16.0 | 25.0 | EXVK0307 | |
| WSHP-5.17 | 521 CORE CLASSROOM | VERTICAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | DEDUCT ALT#1 |
| WSHP-5.18 | 522 CORE CLASSROOM | VERTICAL | 3.0 | 1200 | 0 | 0 | 0.50 | 65 °F | 73 °F | 75.0 °F | 62.5 °F | 34250 | 27480 | 21.9 | 65 °F | 58 °F | 68.0 °F | 40340 | 5.41 | R-454B | 0 | 10.0 | 11.1 | 1" | 0.75 | 1 | 265 V | 1 | 15.0 | 25.0 | DXVK0367 | DEDUCT ALT#1 |
| WSHP-5.19 | C300 CORRIDOR | HORIZONTAL | 3.0 |

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## LOUVER SCHEDULE - MECHANICAL EQUIPMENT

| SYMBOL | MANUFACTURER | MODEL NO. | DESIGN AIRFLOW | FREE AREA | FREE AREA VELOCITY | PD | DAMPER TYPE | DIMENSIONS | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | WIDTH | HEIGHT | |
| LE-1 | RUSKIN | ELF375DX | 1000 CFM | 1.0 SF | 1000 FPM | 0.05 in-wg | NONE | 24" | 12" | EXHAUST |
| LE-2 | RUSKIN | ELF375DX | 300 CFM | 5.3 SF | 56 FPM | 0.05 in-wg | NONE | 24" | 64" | EXHAUST |
| LE-3 | RUSKIN | ELF375DX | 1545 CFM | 5.6 SF | 275 FPM | 0.05 in-wg | NONE | 36" | 45" | EXHAUST |
| LE-4 | RUSKIN | ELF375DX | 2300 CFM | 5.3 SF | 431 FPM | 0.05 in-wg | NONE | 24" | 64" | EXHAUST |
| LE-5 | RUSKIN | ELF375DX | 11000 CFM | 21.7 SF | 508 FPM | 0.05 in-wg | NONE | 96" | 58" | EXHAUST |
| LE-6 | RUSKIN | ELF375DX | 1700 CFM | 5.3 SF | 324 FPM | 0.05 in-wg | NONE | 36" | 42" | EXHAUST |
| LE-7 | RUSKIN | ELF375DX | 975 CFM | 2.5 SF | 385 FPM | 0.05 in-wg | NONE | 24" | 16" | EXHAUST |
| LE-8 | RUSKIN | ELF375DX | 450 CFM | 2.0 SF | 225 FPM | 0.05 in-wg | NONE | 24" | 24" | EXHAUST |
| LO-1 | RUSKIN | ELF375DX | 100 CFM | 0.3 SF | 294 FPM | 0.02 in-wg | NONE | 12" | 12" | INTAKE |
| LO-2 | RUSKIN | ELF375DX | 350 CFM | 2.0 SF | 175 FPM | 0.02 in-wg | MOTORIZED | 24" | 24" | INTAKE |
| LO-3 | RUSKIN | ELF375DX | 11000 CFM | 21.7 SF | 508 FPM | 0.05 in-wg | NONE | 96" | 58" | INTAKE |
| LO-4 | RUSKIN | ELF375DX | 4540 CFM | 6.7 SF | 681 FPM | 0.02 in-wg | NONE | 60" | 32" | INTAKE |
| LO-5 | RUSKIN | ELF375DX | 1350 CFM | 4.0 SF | 338 FPM | 0.02 in-wg | MOTORIZED | 48" | 24" | INTAKE |
| LO-6 | RUSKIN | ELF375DX | 300 CFM | 1.4 SF | 208 FPM | 0.02 in-wg | NONE | 20" | 20" | INTAKE |
| LO-7 | RUSKIN | ELF375DX | 720 CFM | 1.4 SF | 498 FPM | 0.02 in-wg | NONE | 20" | 20" | INTAKE |
| LO-8 | RUSKIN | ELF375DX | 500 CFM | 3.0 SF | 167 FPM | 0.02 in-wg | NONE | 36" | 24" | INTAKE |
| LO-9 | RUSKIN | ELF375DX | 5650 CFM | 10.8 SF | 522 FPM | 0.05 in-wg | NONE | 60" | 52" | INTAKE |
| LO-10 | RUSKIN | ELF375DX | 535 CFM | 1.0 SF | 535 FPM | 0.02 in-wg | NONE | 12" | 24" | INTAKE |
| LO-11 | RUSKIN | ELF375DX | 605 CFM | 1.0 SF | 605 FPM | 0.02 in-wg | NONE | 24" | 12" | INTAKE |
| LO-12 | RUSKIN | ELF375DX | 620 CFM | 1.0 SF | 620 FPM | 0.02 in-wg | NONE | 24" | 12" | INTAKE |
| LO-13 | RUSKIN | ELF375DX | 3490 CFM | 5.2 SF | 677 FPM | 0.02 in-wg | NONE | 33" | 45" | INTAKE |
| LO-14 | RUSKIN | ELF375DX | 770 CFM | 1.0 SF | 770 FPM | 0.02 in-wg | NONE | 24" | 12" | INTAKE |

LOUVER SCHEDULE NOTES:

1. PROVIDE BAKED ENAMEL FINISH, COLOR BY ARCHITECT.
2. PROVIDE WITH BIRDSCREEN.
3. PROVIDE WITH DAMPER AS NOTED IN SCHEDULE
4. INSTALL WITH 18" DEEP INSULATED PLENUM.
5. PROVIDE FRAME TYPE REQUIRED FOR MOUNTING LOCATION.

## ELECTRIC WALL HEATER SCHEDULE

| SYMBOL | LOCATION | CFM | BTUH | KW | MOTOR | | | MANUFACTURER (MARKEL) | ACCESSORIES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | RPM | VOLT | PH | | |
| EWH-3.1 | ELECTRICAL M300 | 175 | 13649 | 4.00 | 600 | 277 V | 1 | G3326TD-RP | A,B,G,H |
| EWH-3.2 | MECH M301 | 175 | 13649 | 4.00 | 600 | 277 V | 1 | G3326TD-RP | A,B,G,H |
| EWH-3.3 | LOBBY C301 | 175 | 7677 | 3.00 | 600 | 277 V | 1 | G3325TD-RP | A,B,G,H |
| EWH-3.4 | EMERGENCY ELEC M302 | 175 | 3413 | 1.00 | 600 | 120 V | 1 | E3322TD-RP | A,B,G,H |
| EWH-4.1 | VESTIBULE C403 | 175 | 3413 | 1.00 | 600 | 120 V | 1 | E3322TD-RP | A,B,G,H |
| EWH-5.1 | STAIR S501 | 175 | 13649 | 4.00 | 600 | 277 V | 1 | G3326TD-RP | A,B,G,H |

NOTES:

1. HEATING CAPACITY BASED ON 65° F E.A.T.
2. SEE PLANS FOR TYPE OF THERMOSTAT REQUIRED (WALL MOUNTED OR UNIT MOUNTED). UNIT HEATERS SHOWN WITHOUT THERMOSTAT INDICATED SHALL BE PROVIDED WITH A UNIT MOUNTED THERMOSTAT.
3. SET TO MAINTAIN 45°F.
4. MOUNT 80 INCHES ABOVE FINISHED FLOOR

ELECTRIC UNIT HEATER ACCESSORIES:

A. DISCONNECT SWITCH
B. BUILT IN THERMOSTAT
C. WALL MOUNTED THERMOSTAT
D. WALL MOUNTING BRACKETS
E. CEILING MOUNTED BRACKETS
F. ADJUSTABLE DISCHARGE LOUVERS
G. PENCIL PROOF LOUVERS
H. CABINET FOR SURFACE MOUNTING

## ROOF MOUNTED GRAVITY VENTILATOR SCHEDULE

| SYMBOL | LOCATION | SERVICE | CFM | MAX. THROAT VELOCITY (FPM) | MAX. SP DROP (IN.) | MANUFACTURER | MODEL | ACCESSORIES |
|---|---|---|---|---|---|---|---|---|
| GIH-1 | AREA 100 ROOF | AREA 100 | 11025 | 600 | 0.02 | GREENHECK | FGI-54x76 | A,B,C |
| GRH-1 | AREA 100 ROOF | AREA 100 | 4905 | 800 | 0.02 | GREENHECK | FGR-42x58 | A,B,C |

NOTES:

1. PROVIDE ALL VENTILATORS WITH FACTORY ROOF CURBS. CURBS AND VENTILATORS SHALL BE INSTALLED LEVEL.

ACCESSORIES:

A. ROOF CURB
B. BIRD SCREEN
C. GRAVITY BACK DRAFT DAMPER
D. MOTORIZED DAMPER
E. WASHABLE ALUMINUM FILTERS

## EXHAUST FAN SCHEDULE

| SYMBOL | LOCATION | MANUFACTURER | MODEL NO. | TYPE | CFM | APPROX. ESP | DRIVE TYPE | FAN RPM | SONES | ELECTRICAL DATA | | | | ACCESSORIES | CONTROL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | WATTS | H.P. | VOLTAGE | PHASE | | |
| DEF-1 | AREA 300 SIDEWALL | GREENHECK | CUE-101HP | UPBLAST | 600 | 1.000 | DIRECT | 1583 | 17.3 | | 0.33 | 115 V | 1 | A,B,E,J | 8 |
| EF-1.1 | ART 103 | GREENHECK | SQ-100 | INLINE | 960 | 0.500 | DIRECT | 1482 | 8.4 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-1.2 | MEN DRESS 107 | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 9 |
| EF-1.3 | WOMEN DRESS 107 | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 9 |
| EF-1.4 | AREA 100 MEZZANINE | GREENHECK | SQ-90 | INLINE | 750 | 0.500 | DIRECT | 1750 | 8.1 | | 0.25 | 115 V | 1 | A,B,F,G | 5 |
| EF-1.5 | FAMILY & CONS. SCIENCE 104 | GREENHECK | SQ-100 | INLINE | 960 | 0.500 | DIRECT | 1482 | 8.4 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-2.1 | TL 213A | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-2.2 | MEN 219 | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-2.3 | TLT 228 | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-2.4 | WOMEN 220 | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-2.5 | TL 213A | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-2.6 | WOMEN 210 | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-2.7 | MEN 211 | GREENHECK | SP-A200 | CLG CABINET | 75 | 0.500 | DIRECT | 772 | 2.5 | 29.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-3.1 | CUST. 305 | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G,O | 5 |
| EF-3.2 | KIT LOCKER 306 | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-3.3 | TLT 306A | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G,O | 2 |
| EF-3.4 | ELECTRICAL M300 | GREENHECK | SQ-120 | INLINE | 1400 | 0.500 | DIRECT | 1503 | 10.2 | | 0.50 | 115 V | 1 | A,B,F,G | 1 |
| EF-3.5 | 316 HEALTH ROOM 2 | GREENHECK | SQ-100 | INLINE | 975 | 0.500 | DIRECT | 1495 | 8.5 | | 0.25 | 115 V | 1 | A,B,F,G,H | 5 |
| EF-3.6 | EMERGENCY ELEC M302 | GREENHECK | SQ-95 | INLINE | 370 | 0.500 | DIRECT | 1479 | 7.5 | | 0.13 | 115 V | 1 | A,B,F,G | 1 |
| EF-3.7 | CUST. 307A | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G | 5 |
| EF-3.8 | STAFF TLT 309A | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G | 2 |
| EF-3.9 | STAFF TLT 310A | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G | 2 |
| EF-3.10 | GYM LOCKERS AND SHOWERS | GREENHECK | SQ-100 | INLINE | 950 | 0.500 | DIRECT | 1473 | 8.2 | | 0.25 | 115 V | 1 | A,B,F,G | 5 |
| EF-3.11 | TLT 403A | GREENHECK | CSP-A250 | CLG CABINET | 75 | 0.500 | DIRECT | 775 | 0.8 | 25.0 | | 115 V | 1 | A,B,F,G | 2 |
| EF-4.1 | FLEX CLASSROOM 406 | GREENHECK | SQ-120 | INLINE | 1210 | 0.500 | DIRECT | 1365 | 8.5 | | 0.50 | 115 V | 1 | A,B,F,G | 9 |
| EF-4.2 | SCIENCE 408 | GREENHECK | SQ-120 | INLINE | 1210 | 0.500 | DIRECT | 1365 | 8.5 | | 0.50 | 115 V | 1 | A,B,F,G | 9 |
| EF-4.3 | PREP RM & STG 406A | GREENHECK | SQ-90 | INLINE | 300 | 0.500 | DIRECT | 1526 | 7.2 | | 0.10 | 115 V | 1 | A,B,F,G | 6 |
| EF-4.4 | SCIENCE 407 | GREENHECK | SQ-100 | INLINE | 1070 | 0.500 | DIRECT | 1580 | 9.4 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-4.5 | SCIENCE 409 | GREENHECK | SQ-100 | INLINE | 1070 | 0.500 | DIRECT | 1580 | 9.4 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-4.6 | PREP RM & STG 407A | GREENHECK | SQ-90 | INLINE | 300 | 0.500 | DIRECT | 1526 | 7.2 | | 0.10 | 115 V | 1 | A,B,F,G | 6 |
| EF-4.7 | ELEC M402 | GREENHECK | CSP-A250 | CABINET | 140 | 0.500 | DIRECT | 879 | 2.2 | 39.0 | | 115 V | 1 | A,B,F,G,H | 1 |
| EF-5.1 | FLEX CLASSROOM 505 | GREENHECK | SQ-120 | INLINE | 1230 | 0.500 | DIRECT | 1379 | 8.7 | | 0.50 | 115 V | 1 | A,B,F,G | 9 |
| EF-5.2 | SCIENCE 507 | GREENHECK | SQ-120 | INLINE | 1230 | 0.500 | DIRECT | 1379 | 8.7 | | 0.50 | 115 V | 1 | A,B,F,G | 9 |
| EF-5.3 | PREP RM & STG 505A | GREENHECK | SQ-90 | INLINE | 275 | 0.500 | DIRECT | 1502 | 7 | | 0.10 | 115 V | 1 | A,B,F,G | 6 |
| EF-5.4 | SCIENCE 504 | GREENHECK | SQ-100 | INLINE | 1085 | 0.500 | DIRECT | 1593 | 9.5 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-5.5 | PREP RM 504A | GREENHECK | SQ-90 | INLINE | 275 | 0.500 | DIRECT | 1502 | 7 | | 0.10 | 115 V | 1 | A,B,F,G | 6 |
| EF-5.6 | SCIENCE 506 | GREENHECK | SQ-100 | INLINE | 1085 | 0.500 | DIRECT | 1593 | 9.5 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-5.7 | ELEC M508 | GREENHECK | CSP-A250 | CABINET | 140 | 0.500 | DIRECT | 879 | 2.2 | 39.0 | | 115 V | 1 | A,B,F,G,H | 1 |
| EF-6.1 | SCIENCE 605 | GREENHECK | SQ-120 | INLINE | 1240 | 0.500 | DIRECT | 1386 | 8.7 | | 0.50 | 115 V | 1 | A,B,F,G | 9 |
| EF-6.2 | FLEX CLASSROOM 607 | GREENHECK | SQ-120 | INLINE | 1240 | 0.500 | DIRECT | 1386 | 8.7 | | 0.50 | 115 V | 1 | A,B,F,G | 9 |
| EF-6.3 | PREP RM & STG 605A | GREENHECK | SQ-90 | INLINE | 310 | 0.500 | DIRECT | 1535 | 7.3 | | 0.10 | 115 V | 1 | A,B,F,G | 6 |
| EF-6.4 | SCIENCE 606 | GREENHECK | SQ-100 | INLINE | 1100 | 0.500 | DIRECT | 1607 | 9.7 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-6.5 | SCIENCE 608 | GREENHECK | SQ-100 | INLINE | 1100 | 0.500 | DIRECT | 1607 | 9.7 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-6.6 | PREP RM 606A | GREENHECK | SQ-90 | INLINE | 310 | 0.500 | DIRECT | 1535 | 7.3 | | 0.10 | 115 V | 1 | A,B,F,G | 6 |
| EF-6.7 | STEM LAB 602 | GREENHECK | SQ-100 | INLINE | 1020 | 0.500 | DIRECT | 1535 | 8.9 | | 0.25 | 115 V | 1 | A,B,F,G | 9 |
| EF-6.8 | ELECT M602 | GREENHECK | CSP-A250 | CABINET | 140 | 0.500 | DIRECT | 879 | 2.2 | 39.0 | | 115 V | 1 | A,B,F,G,H | 1 |

EXHAUST FAN SCHEDULE ACCESSORIES:

A. DISCONNECT SWITCH
B. GRAVITY BACKDRAFT DAMPER
C. MOTORIZED BACKDRAFT DAMPER
D. PREFAB, ROOF CURB
E. BIRDSCREEN
F. ACOUSTICAL LINING
G. HANGING BRACKETS WITH VIBRATION ISOLATION
H. WL, WALL LOUVER DISCHARGE
I. RCC OR GRS ROOF CAP (FLAT ROOF) OR RJ ROOF CAP (PITCHED ROOF)
J. WALL MOUNTING COLLAR
K. INLET GAURD
M. 2" WASHABLE ALUMINUM FILTERS
N. MOTORSIDE FAN GUARD
O. EXHAUST GRILLE
P. U.L. 762
Q. VENTED ROOF CURB EXTENSION
R. COMBINATION KITCHEN HOOD FAN CURB
S. INTERLOCK WITH FUME HOOD
T. PROVIDE DRAIN PLUG ACCESSORY
U. ROOF SUPPORT RAILS
V. VFD

EXHAUST FAN SCHEDULE CONTROLS:

1. WALL MOUNTED THERMOSTAT (REVERSE ACTING, SET FOR 80°)
2. INTERLOCK WITH ROOM LIGHT SWITCH (FAN SHALL OPERATE WHEN LIGHT IS ON IF ANY ROOM IS SERVED BY FAN)
3. WALL MOUNTED ON/OFF SWITCH WITH IDENTIFICATION LABEL
4. WALL MOUNTED MUSHROOM PUSH BUTTON SWITCH/STARTER WITH IDENTIFICATION LABEL
5. CONTROLLED BY BUILDING AUTOMATION SYSTEM
6. CONTINUOUS 24/7 OPERATION
7. CONTROLLED BY THE FACP AND FIREMAN'S MANUAL OVER-RIDE CONTROL PANEL IN FIRE COMMAND ROOM. NO MECHANICAL CONTROL POINTS REQUIRED BY M.C. FOR SMOKE CONTROL FANS
8. INTERLOCK WITH DISHWASHER
9. WALL MOUNTED TWIST TIMER (0-30 MIN RANGE) WITH IDENTIFICATION LABEL

EXHAUST FAN SCHEDULE NOTES:

1. ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW. ALL FANS INSTALLED INSIDE, ABOVE, OR ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. MECHANICAL CONTRACTOR SHALL PROVIDE MAGNETIC STARTER WITH AUXILIARY CONTACTS AS REQUIRED.
4. PROVIDE ALL DIRECT DRIVE FANS WITH SPEED CONTROLLERS.
5. BACKDRAFT DAMPER ON ROOF SUPPLY FANS SHALL BE MOTORIZED.

## GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

| SYMBOL | DESCRIPTION | MANUF. | MODEL | MATERIAL | FACE SIZE | NECK | | | INSTALLATION | OPTIONS | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SIZE | WIDTH | HEIGHT | BORDER TYPE | DAMPER DESCRIPTION | |
| A | PLAQUE FACE DIFFUSER | TITUS | OMNI | STEEL | 12x12 | 6 | | | <varies> | --- | |
| B | PLAQUE FACE DIFFUSER | TITUS | OMNI | <varies> | 24x24 | 6 | | | TYPE 3 (LAY-IN) | --- | |
| C | PLAQUE FACE DIFFUSER | TITUS | OMNI | <varies> | 24x24 | 8 | | | TYPE 3 (LAY-IN) | --- | |
| D | PLAQUE FACE DIFFUSER | TITUS | OMNI | STEEL | 24x24 | 10 | | | TYPE 3 (LAY-IN) | --- | |
| F | PLAQUE FACE DIFFUSER | TITUS | OMNI | STEEL | 24x24 | 12 | | | TYPE 3 (LAY-IN) | --- | |
| G | PERFORATED DIFFUSER | TITUS | PAR | ALUMINUM | 12x12 | 6 | | | <varies> | --- | |
| H | PERFORATED DIFFUSER | TITUS | PAR | <varies> | 24x24 | 6 | | | <varies> | --- | |
| J | PERFORATED DIFFUSER | TITUS | PAR | <varies> | 24x24 | 8 | | | <varies> | --- | |
| K | PERFORATED DIFFUSER | TITUS | PAR | <varies> | 24x24 | 10 | | | <varies> | --- | |
| L | PERFORATED DIFFUSER | TITUS | PAR | STEEL | 24x24 | 12 | | | <varies> | --- | |
| M | PERFORATED DIFFUSER | TITUS | PAR | <varies> | 24x24 | 14 | | | <varies> | --- | |
| N | PERFORATED DIFFUSER | TITUS | PAR | STEEL | 24x24 | 16 | | | TYPE 3 (LAY-IN) | --- | |
| P | LOUVERED DOUBLE DEFLECTION GRILLE | TITUS | 300RL | STEEL | | SEE PLANS | | | TYPE 1 (SURFACE) | --- | |
| Q | LOUVERED DOUBLE DEFLECTION GRILLE | TITUS | 300FL | ALUMINUM | | SEE PLANS | | | TYPE 1 (SURFACE) | --- | |
| R | DUCT MTD DBL-DEFLECTION | TITUS | US300FL | ALUMINUM | | SEE PLANS | | | | | |
| S | HEAVY DUTY LOUVERED GRILLE | TITUS | 33RL | STEEL | | SEE PLANS | | | TYPE 1 (SURFACE) | --- | |
| T | LOUVERED GRILLE | TITUS | 350RL | STEEL | | SEE PLANS | | | TYPE 1 (SURFACE) | --- | |
| U | LINEAR BAR GRILLE | TITUS | CT-580 | ALUMINUM | | | 72 | 3 | TYPE 1 (SURFACE) | --- | |
| V | PERFORATED DIFFUSER | TITUS | PAS-AA | ALUMINUM | 24x24 | 6 | | | TYPE 3 (LAY-IN) | --- | |
| W | PERFORATED DIFFUSER | TITUS | PAS-AA | ALUMINUM | 24x24 | 8 | | | TYPE 3 (LAY-IN) | --- | |
| Y | PERFORATED DIFFUSER | TITUS | PAS-AA | ALUMINUM | 24x24 | 10 | | | TYPE 3 (LAY-IN) | --- | |

## LINEAR SLOT DIFFUSER SCHEDULE

| SYMBOL | DESCRIPTION | MANUF. | MODEL | MATERIAL | LINEAR DIFFUSER | | | | NECK | INSTALLATION | OPTIONS | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SLOT | | PLENUM | | | | | |
| | | | | | WIDTH | QTY | NOM. LENGTH | INSULATED | SIZE | BORDER TYPE | DAMPER DESCRIPTION | |
| LS1 | LINEAR SLOT DIFFUSER | TITUS | FL-10 | ALUMINUM | 1 | 1 | 4' - 0" | Yes | 6 | DEFAULT | --- | |
| LS2 | LINEAR SLOT DIFFUSER | TITUS | FL-10 | ALUMINUM | 1 | 1 | 4' - 0" | Yes | 8 | DEFAULT | --- | |
| LS3 | LINEAR SLOT DIFFUSER | TITUS | FL-10 | ALUMINUM | 1 | 2 | 4' - 0" | Yes | 10 | DEFAULT | --- | |
| LS4 | LINEAR SLOT DIFFUSER | TITUS | FL-10 | ALUMINUM | 1 | 2 | 4' - 0" | Yes | 10 | <varies> | --- | |
| LS5 | LINEAR SLOT DIFFUSER | TITUS | FL-10 | ALUMINUM | 1 | 4 | 5' - 0" | Yes | 12 | DEFAULT | --- | |

AIR DISTRIBUTION SCHEDULE NOTES:

1. ALL CEILING AND WALL MOUNTED DEVICES SHALL BE FURNISHED WITH AN ENAMEL BRIGHT WHITE FINISH UNLESS NOTED OTHERWISE.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR THE TYPE OF INSTALLATION REQUIRED.
3. ALL LINEAR DIFFUSERS IN LAY-IN CEILINGS SHALL BE FURNISHED WITH END CAPS. ALL LINEAR DIFFUSERS IN HARD CEILINGS SHALL BE FURNISHED WITH END BORDERS. ALL LINEAR SUPPLY DIFFUSERS SHALL BE PROVIDED WITH INTEGRAL AIRFLOW PATTERN ADJUSTMENT BARS FOR HORIZONTAL/VERTICAL PATTERN ADJUSTMENT AT EACH SLOT.
4. ALL DOUBLE DEFLECTION SUPPLY GRILLES SHALL HAVE DAMPER BLADES ADJUSTED TO PROVIDE AIRFLOW PATTERN INDICATED BY FLOW ARROWS ON PLANS. DAMPERS SHALL BE ADJUSTED TO A 30 DEGREE POSITION UNLESS NOTED OTHERWISE ON PLANS.
5. DIFFUSERS/GRILLES INSTALLED IN KITCHENS, RESTROOMS AND LOCKER ROOMS TO BE ALUMINUM MATERIAL CONSTRUCTION

## PUMP SCHEDULE

| SYMBOL | MANUFACTURER | MODEL NO. | PUMP TYPE | PUMP Flow | HEAD (FT H20) | PUMP EFF. | MOTOR POWER | MOTOR RPM | VOLT | PH | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P-1 | BELL & GOSSETT | e-1510 - 3 BD | BASE MOUNTED END SUCTION | 450 | 70 | 84% | 15.0 hp | 1750 | 460 V | 3 | VFD, GROUND LOOP PUMP |
| P-2 | BELL & GOSSETT | e-1510 - 3 BD | BASE MOUNTED END SUCTION | 450 | 70 | 84% | 15.0 hp | 1750 | 460 V | 3 | VFD, GROUND LOOP PUMP |
| P-3 | BELL & GOSSETT | e-1510 - 3 BD | BASE MOUNTED END SUCTION | 450 | 60 | 84% | 15.0 hp | 1750 | 460 V | 3 | VFD, BUILDING LOOP PUMP |
| P-4 | BELL & GOSSETT | e-1510 - 3 BD | BASE MOUNTED END SUCTION | 450 | 60 | 84% | 15.0 hp | 1750 | 460 V | 3 | VFD, BUILDING LOOP PUMP |

HYDRONIC PUMP SCHEDULE NOTES:

1. PROVIDE "END OF CURVE" PROTECTION WHERE REQUIRED. PUMPS SHALL BE NON-OVERLOADING
2. PROVIDE VARIABLE FREQUENCY DRIVE FOR PARALLEL OPERATION (REFER TO SEQUENCE OF OPERATION). PROVIDE ALL VFD'S WITH INTEGRAL DISCONNECT & MANUAL BYPASS
3. ALL PUMPS SHALL BE FURNISHED WITH NEMA PREMIUM EFFICIENCY MOTORS.
4. PROVIDE ALL PUMPS WITH TRIPLE DUTY VALVE AND SUCTION DIFFUSER, SEE INSTALLATION DETAIL ON M-503.

## KITCHEN HOOD SCHEDULE

(FURNISHED AND INSTALLED BY THE M.C.)

KEF-1 CAPTIVE-AIRE MODEL DU240HFA EXHAUST FAN; 4,600 CFM, 1.0" E.S.P., 3-HP 208V-3PH FAN MOTOR w/ INTEGRAL DISCONNECTS, 285 LBS OPERATING WEIGHT.

MAU-1 CAPTIVE-AIRE MODEL A2-E734-20D MAKE-UP AIR UNIT; 3680 CFM, 0.5" E.S.P., 2-HP 208V-3PH FAN MOTOR, 10.4A MCA, 15A MOCP w/ INTEGRAL DISCONNECTS. ELECTRIC HEAT SECTION, 57KW, 480V-3PH AT 50 DEG F TEMP RISE, 783 LBS OPERATING WEIGHT.

KH-1 CAPTIVE-AIRE MODEL 5424 ND-2-PSP-F; 11'-0"x6'-8"x2'-0" DEEP HOOD WITH 6" DEEP SUPPLY PLENUMS AT FRONT; 2200 CFM EXHAUST @ 1.02" S.P. (MAX.); 1760 CFM SUPPLY @ 0.17" S.P. (MAX.)

KH-2 CAPTIVE-AIRE MODEL 5424 ND-2-PSP-F; 12'-0"x6'-8"x2'-0" DEEP HOOD WITH 6" DEEP SUPPLY PLENUMS AT FRONT; 2400 CFM EXHAUST @ 0.438" S.P. (MAX.); 1920 CFM SUPPLY @ 0.15" S.P. (MAX.)

ALL 430 STAINLESS STEEL CONSTRUCTION. ALL COMPONENTS SHALL BE U.L. LISTED AND LABELED. PROVIDE A REMOTE CONTROL PANEL MOUNTED ON FACE OF HOOD WITH MASTER DISCONNECT SWITCH, STARTER FOR FAN, CONTROL VOLTAGE TRANSFORMER, FIRE CONTROL SYSTEM RELAY AND TERMINAL STRIP. MOUNT HOOD 6'-8" ABOVE FINISH FLOOR, PROVIDE STAINLESS STEEL ENCLOSURE AROUND TOP OF HOOD AS REQUIRED TO CLOSE TO CEILING. PROVIDE VERTICAL END PANELS FOR ENDS OF HOOD. HOOD SHALL BE PROVIDED WITH: AUTOMATICALLY OPERATED FIXED PIPE FIRE SUPPRESSION SYSTEM IN ACCORDANCE WITH NFPA 96, CONTROL SWITCHES AND PILOT LIGHT FOR EXHAUST FAN, TWO 4' VAPORPROOF LED LAMP LIGHT FIXTURES (MIN. 2 PER HOOD), AND STAINLESS STEEL GREASE FILTERS. FIRE SUPPRESSION SYSTEM SHALL BE ANSUL R-102 WITH ANSULEX LIQUID FIRE SUPPRESSANT. REMOTE PULL STATION FOR ACTIVATION OF FIRE SUPPRESSION SYSTEM SHALL BE PROVIDED AND INSTALLED WHERE INDICATED ON THE PLANS. FIRE SUPPRESSION SYSTEM SHALL BE UL 300 LISTED. CONTRACTOR SHALL PROVIDE MANUAL VOLUME DAMPER IN EACH SUPPLY DUCT COLLAR FOR MAKE-UP AIR BALANCING. HOOD MANUFACTURER SHALL PROVIDE 12" STAINLESS TEEL ISLAND UTILITY CHASE BETWEEN SECTIONS OF HOOD, INCLUDING WATER, GAS, AND ELECTRICAL, TO SERVE ITEMS UNDER HOOD. PROVIDE QUICK DISCONNECTS FOR ALL UTILITIES. COORDINATE REQUIREMENTS WITH KITCHEN EQUIPMENT SUPPLIER.

### ADDITIONAL FIRE SUPPRESSION NOTES (2018 NC FIRE CODE)

904.12.1 A MANUAL ACTUATION DEVICE SHALL BE LOCATED AT OR NEAR A MEANS OF EGRESS FROM THE COOKING AREA, A MINIMUM OF 10 FEET AND A MAXIMUM OF 20 FEET FROM THE KITCHEN EXHAUST SYSTEM. THE MANUAL ACTUATION DEVICE SHALL BE LOCATED A MINIMUM OF 3.5 FEET AND A MAXIMUM OF 4 FEET ABOVE THE FLOOR AND CLEARLY INDICATE THE HAZARD PROTECTED. THE MANUAL ACTUATION SHALL REQUIRE A MAXIMUM FORCE OF 40 POUNDS AND A MAXIMUM MOVEMENTOF 14 INCHES TO ACTUATE THE FIRE SUPPRESSION SYSTEM.

904.12.2 THE ACTUATION OF THE FIRE SUPPRESSION SYSTEM SHALL AUTOMATICALLY SHUT DOWN THE FUEL AND ELECTRICAL POWER SUPPLY TO THE COOKING EQUIPMENT. THE FUEL AND ELECTRICAL SUPPLY RESET SHALL BE MANUAL.

NOTES:

1. KITCHEN HOOD SHALL BE CONSTRUCTED AND INSTALLED PER NFPA 96.
2. UPON ACTIVATION OF FIRE CONTROL SYSTEM, KITCHEN HOOD EXHAUST FAN SHALL CONTINUE TO OPERATE. PROVIDE INTERLOCK FOR AUTOMATIC OPERATION OF FIRE SUPPRESSION SYSTEM WITH:
   A. CONTACTORS (BY ELEC. CONTR.)
   B. HOOD SUPPLY AND EXHAUST FANS
   C. REMOTE MANUAL PULL STATION
   D. ALL ASSOCIATED AIR HANDLING UNITS
   E. FIRE ALARM SYSTEM NOTIFICATION (BY ELEC. CONTR.)
3. SEE SHEET M-502 FOR HOOD DETAILS.
4. KITCHEN HOOD EXHAUST DUCT SHALL BE STAINLESS STEEL. ALL JOINTS AND SEAMS SHALL BE CONSTRUCTED WITH A CONTINUOUS LIQUID-TIGHT EXTERNAL WELD. ALL DUCTWORK SHALL SLOPE A MINIMUM OF 1/4 INCH PER FOOT TOWARD HOOD. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE EXHAUST DUCT AND AT 20'-0" (MINIMUM) INTERVALS. THE MECHANICAL CONTRACTOR SHALL PERFORM A LIGHT TEST (AS REQUIRED BY MECHANICAL CODE) FOR ALL JOINTS AND SEAMS IN THE PRESENCE OF THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO CONCEALING KITCHEN HOOD EXHAUST DUCTWORK.
5. ALL EXPOSED PIPING WITH FIRE SUPPRESSION SYSTEM SHALL BE COVERED WITH A CHROME SLEEVE.
6. MECHANICAL CONTRACTOR SHALL INSTALL 1/2" CONDUIT IN WALL FOR MANUAL PULL STATION. SEE PLANS FOR LOCATION OF MANUAL PULL STATION (MPS).
7. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR HOOD CERTIFICATION IN COMPLIANCE WITH LOCAL CODE REQUIREMENTS. CERTIFICATION SHALL BE WITNESSED AND PERFORMED BY A PERSON CERTIFIED THROUGH AABC, TABB, NEBB OR NBC AND SHALL PROVIDE DOCUMENTATION OF PERFORMANCE TO THE CODE OFFICIAL. THIS SHALL INCLUD

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## CONDENSING UNIT SCHEDULE

| SYMBOL | MANUFACTURER | MODEL NO. | NOMINAL CAPACITY | TYPE | REFRIGERANT TYPE | REFRIGERANT CHARGE | LOW AMBIENT KIT | SUMMER AMBIENT DBT | WINTER AMBIENT DBT | EER | SOUND PRESSURE LEVEL | WEIGHT | MCA | MOCP | VOLT | PH | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ODU-6.2 | MITSUBISHI | PUY-A12NHA6 | 2 ton | DC INVERTER TWIN ROTARY | R410A | 3 lb | Yes | 95.0 °F | 0.0 °F | 12 | 48 | 82 lb | 11.0 A | 28.0 A | 208 V | 1 | |

DUCTLESS A/C CONDENSING UNIT SCHEDULE NOTES:

1. MOUNT ON EQUIPMENT ON 4" CONCRETE PAD.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. PROVIDE WITH MANUFACTURERS WIND BAFFLES AND LOW AMBIENT CONTROLS
4. PROVIDE WITH 6-YEAR EXTENDED COMPRESSOR WARRANTY

## DUCTLESS A/C INDOOR UNIT SCHEDULE

| SYMBOL | MANUFACTURER | MODEL NO. | DESIGN AIRFLOW | TOTAL CAPACITY | EAT(db) | EAT(wb) | UNIT WEIGHT | MCA | VOLT | PH | INTERLOCK ID | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDU-6.2 | MITSUBISHI ELECTRIC | PKA-A12HA6 | 425 CFM | 12000 Btu/h | 80.0 °F | 67.0 °F | 29 lb | 1.0 A | 208 V | 1 | ODU-6.2 | |

DUCTLESS A/C UNIT SCHEDULE NOTES:

1. PROVIDE WITH FACTORY THERMOSTAT AND CONDENSATE PUMP.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. SIZE AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
4. INDOOR UNITS ARE POWERED BY THE CONDENSING UNITS.
5. IN EVERY ROOM SERVED BY A MINI-SPLIT INDOOR UNIT PROVIDE A TEMPERATURE SENSOR INTEGRATED INTO THE BAS WITH HIGH TEMPERATURE ALARM SET AT 80F (ADJ)

## DUCTED HEAT PUMP INDOOR UNIT SCHEDULE

| SYMBOL | CFM | NOMINAL TONNAGE | O.A. CFM | COOLING CAPACITY TC (BTUH) | COOLING CAPACITY SHC (BTUH) | HEATING CAPACITY (BTUH) | ELECTRIC HEAT KW | ELECTRIC HEAT STAGES | ELECTRIC HEAT AMPS | ELECTRICAL DATA MCA | ELECTRICAL DATA MOCP | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PH | MANUFACTURER | MODEL | WEIGHT | REFRIGERANT TPE | MATCHING OUTDOOR UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDU-1 | 800 | 2 | 50 | 24500 | 18100 | 15500 | 7 | 1 | 34.6 | 46.0 | 50.0 A | 208 V | 1 | TRANE | TEM6A0B24H21S | 117 lb | R-454B | HP-1 |
| IDU-2 | 1200 | 3 | 50 | 37000 | 27700 | 21800 | 7 | 1 | 34.6 | 49.0 | 50.0 A | 208 V | 1 | TRANE | TEM6A0C36H31S | 144 lb | R-454B | HP-2 |

INDOOR UNIT SCHEDULE NOTES:

1. COOLING CAPACITY BASED ON 80°/67° ENTERING AIR.
2. PROVIDE UNITS WITH: THERMOSTAT/CONTROLS TO BE INTEGRATED WITH BUILDING AUTOMATION SYSTEM (BAS), 1" THICK DISPOSABLE FILTER (MERV 8 MINIMUM), FIELD INSTALLED HEATER, U.L. LABEL, SINGLE POINT ELECTRICAL CONNECTION, 1-INCH INSULATION.
3. SEQUENCE OF OPERATION: UNIT SHALL BE CONTROLLED BY ITS PROGRAMMABLE THERMOSTAT AND MONITORED BY BAS. UNIT SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE, CYCLE WITH HEATING AND COOLING WHILE UNOCCUPIED. UPON A RISE IN SPACE TEMPERATURE, UNIT COMPRESSOR AND CONDENSER FAN SHALL ACTIVATE TO SATISFY SPACE. UPON A DROP IN SPACE TEMPERATURE, UNIT COMPRESSOR SHALL ACTIVATE IN REVERSE CYCLE FOR HEATING. UPON A FURTHER DROP IN SPACE TEMPERATURE, ELECTRIC HEAT SHALL BE ENERGIZED TO SATISFY SPACE TEMPERATURE. THERMOSTATS SHALL PROVIDE A DEADBAND OF 5°, WITHIN WHICH THE SUPPLY OF HEATING OR COOLING ENERGY TO THE ZONE CAN BE REDUCED TO THE MINIMUM. OCCUPANCY SCHEDULES SHALL BE SET TO OCCUPIED MONDAY THRU FRIDAY, 7 AM TO 7 PM, UNOCCUPIED NIGHTS AND WEEKENDS. THERMOSTATS SHALL BE SET FOR OCCUPIED COOLING 75°, OCCUPIED HEATING 70°, UNOCCUPIED COOLING 85°, UNOCCUPIED HEATING 55°. ALL TIME AND TEMPERATURE SETPOINTS SHALL BE VERIFIED BY THE OWNER PRIOR TO PROGRAMMING. THERMOSTATS SHALL BE PROGRAMMED BY MECHANICAL CONTRACTOR IN THE PRESENCE OF OWNER'S REPRESENTATIVE PRIOR TO PROJECT COMPLETION.

## HEAT PUMP SCHEDULE (AIR COOLED)

| SYMBOL | NOMINAL TONNAGE | COOLING COIL TC (BTUH) | COOLING COIL SHC (BTUH) | EFFICIENCY EER | EFFICIENCY SEER | HEATNG CAPACITY (BTUH) | EFFICIENCY COP | COMPRESSOR LRA | COMPRESSOR RLA | FAN FLA | ELECTRICAL DATA MCA | ELECTRICAL DATA FUSE | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PH | REFRIG. TYPE | MANUFACTURER (TRANE) MODEL | WEIGHT | MATCHING INDOOR UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP-1 | 2.0 | 24500 | 18100 | 12 | 15.8 | 15500 | 2.4 | 58.3 | 11.7 | 0.7 | 15.0 | 25.0 | 208 V | 1 | R-454B | 4TWR6024 | 236 lb | IDU-1 |
| HP-2 | 3.0 | 37000 | 27700 | 12.3 | 16 | 21800 | 2.6 | 83.0 | 15.3 | 0.8 | 20.0 | 35.0 | 208 V | 1 | R-454B | 4TWR6036 | 257 lb | IDU-2 |

NOTES:

1. COOLING CAPACITY @ 95 AMBIENT.
2. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER OF 13.
3. HEAT PUMP SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL BE PROVIDED WITH CONTROLS TO PREVENT OPERATION WHEN THE REVERSE CYCLE HEAT CAN MEET HEATING LOAD. SUPPLEMENTAL ELECTRIC HEAT SHALL BE ALLOWED TO OPERATE DURING HEAT PUMP DEFROST CYCLE. SUPPLEMENTAL ELECTRIC HEAT SHALL BE LOCKED OUT WHEN THE OUTDOOR TEMPERATURE IS BETWEEN 35°F AND 40°F AND THE INDOOR TEMPERATURE SETPOINT IS INCREASED.
4. MOUNT UNITS ON A 4" THICK CONCRETE PAD AND PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND UNITS.
5. PROVIDE UNITS WITH CONDENSER COIL HAIL GUARDS AND LOW AMBIENT CONTROLS.
6. FOR REFRIGERANT LINE APPLICATIONS WITH A TOTAL EQUIVALENT LENGTH BETWEEN 50'-0" AND 175'-0".
   THE FOLLOWING ACCESSORIES SHALL BE PROVIDED;
   -COMPRESSOR CRANKCASE HEATER

   -FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE SOLENOID WITHIN 2'-0" OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
   -MECHANICAL CONTRACTOR & UNIT MANUFACTURER ARE TO REVIEW INSTALLATION, AND FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR LONG REFRIGERANT LINE APPLICATIONS (AS DEFINED BY UNIT MFGR).

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL SCHEDULES

M-004

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## 2018 NCMC - TABLE 409.3 MECHANICAL VENTILATION SCHEDULE

| LOCATION NO. | NAME | Occupancy Category | Area | Number of People_OPT | Outdoor Airflow Rate Per Person, Rp | Outdoor Airflow Rate Per Unit Area, Ra | Breathing Zone Outdoor Airflow, Voz | Zone Air Distribution Effectiveness, Ez | Required Outdoor Air Intake Flow, Vot |
|---|---|---|---|---|---|---|---|---|---|
| 100 | INSTRUMENTAL MUSIC | Music/theater/dance | 1819.5 SF | 64 | 10.0 CFM | 0.06 CFM/SF | 749 CFM | 1 | 749 CFM |
| 100A | STORAGE | Storage rooms | 59.6 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 7 CFM | 1 | 7 CFM |
| WSHP-1.1 | | | | | | | | | 756 CFM |
| 101 | VOCAL MUSIC | Music/theater/dance | 1474.7 SF | 52 | 10.0 CFM | 0.06 CFM/SF | 608 CFM | 1 | 608 CFM |
| 101A | STORAGE | Storage rooms | 59.6 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 7 CFM | 1 | 7 CFM |
| WSHP-1.2 | | | | | | | | | 616 CFM |
| 102 | DRAMA | Music/theater/dance | 1442.4 SF | 51 | 10.0 CFM | 0.06 CFM/SF | 597 CFM | 1 | 597 CFM |
| 102A | STORAGE | Storage rooms | 59.6 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 7 CFM | 1 | 7 CFM |
| WSHP-1.3 | | | | | | | | | 604 CFM |
| 103 | ART | Art classroom | 1358.2 SF | 28 | 10.0 CFM | 0.18 CFM/SF | 524 CFM | 1 | 524 CFM |
| 103A | STORAGE | Storage rooms | 59.6 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 7 CFM | 1 | 7 CFM |
| WSHP-1.4 | | | | | | | | | 532 CFM |
| 104 | FAMILY & CONSUMER SCIENCES | Classroom (age 9 plus) NC | 1044.5 SF | 37 | 7.5 CFM | 0.00 CFM/SF | 278 CFM | 1 | 278 CFM |
| 104A | PANTRY | Storage rooms | 56.0 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 7 CFM | 1 | 7 CFM |
| WSHP-1.5 | | | | | | | | | 284 CFM |
| C101 | CORRIDOR | Corridors | 3839.8 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 230 CFM | 1 | 230 CFM |
| WSHP-1.6 | | | | 247 | | | | | 230 CFM |
| 105-2 | AUDITORIUM-2 | Auditorium seating area | 2488.5 SF | 374 | 5.0 CFM | 0.06 CFM/SF | 2019 CFM | 1 | 1384 CFM |
| WSHP-1.7 | | | | 247 | | | | | 1384 CFM |
| 105-1 | AUDITORIUM-1 | Auditorium seating area | 2484.5 SF | 373 | 5.0 CFM | 0.06 CFM/SF | 2014 CFM | 1 | 1384 CFM |
| WSHP-1.8 | | | | | | | | | 1384 CFM |
| 105C | STAGE | Stages, studios | 793.3 SF | 56 | 10.0 CFM | 0.06 CFM/SF | 608 CFM | 1 | 608 CFM |
| 105E | STAGE | Corridors | 1198.5 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 72 CFM | 1 | 72 CFM |
| WSHP-1.9 | | | | | | | | | 680 CFM |
| 105D | STAGE STORAGE | Storage rooms | 444.4 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 53 CFM | 1 | 53 CFM |
| 106 | GREEN ROOM | Lockers/ Dressing Rooms | 319.0 SF | | | | | 1 | 0 CFM |
| 107 | MEN DRESS. | Lockers/ Dressing Rooms | 113.0 SF | | | | | 1 | 0 CFM |
| 108 | WOMEN DRESS. | Lockers/ Dressing Rooms | 113.0 SF | | | | | 1 | 0 CFM |
| C103 | CORRIDOR | Corridors | 179.1 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 11 CFM | 1 | 11 CFM |
| WSHP-1.10 | | | | | | | | | 64 CFM |
| 402 | ITINERANT TEACHER OFFICES | Office space | 625.2 SF | 4 | 5.0 CFM | 0.06 CFM/SF | 58 CFM | 1 | 58 CFM |
| C400 | CORRIDOR | Corridors | 755.6 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 45 CFM | 1 | 45 CFM |
| WSHP-1.11 | | | | | | | | | 103 CFM |
| 204 | SUPPLIES | Storage rooms | 43.4 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 5 CFM | 1 | 5 CFM |
| 205 | OFFICE/ TESTING | Office space | 149.9 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 14 CFM | 1 | 14 CFM |
| 206 | OFFICE/ TESTING | Office space | 148.7 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 14 CFM | 1 | 14 CFM |
| 207 | OFFICE/ TESTING | Office space | 154.3 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 14 CFM | 1 | 14 CFM |
| 208 | SRO | Office space | 119.5 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 12 CFM | 1 | 12 CFM |
| C102 | CORRIDOR | Corridors | 288.7 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 17 CFM | 1 | 17 CFM |
| WSHP-2.1 | | | | | | | | | 77 CFM |
| 201 | CONFERENCE | Conference rooms | 296.2 SF | 15 | 5.0 CFM | 0.06 CFM/SF | 93 CFM | 1 | 93 CFM |
| 202 | SECRETARY | Office space | 151.5 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 14 CFM | 1 | 14 CFM |
| 203 | STUDENT SERVICES | Office space | 207.4 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 22 CFM | 1 | 22 CFM |
| WSHP-2.2 | | | | | | | | | 129 CFM |
| 200 | GUIDANCE | Reception areas | 221.8 SF | 7 | 5.0 CFM | 0.06 CFM/SF | 48 CFM | 1 | 48 CFM |
| 209 | TEACHER LOUNGE | Break rooms | 499.6 SF | 25 | 5.0 CFM | 0.06 CFM/SF | 155 CFM | 1 | 155 CFM |
| C202 | CORRIDOR | Corridors | 348.6 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 21 CFM | 1 | 21 CFM |
| WSHP-2.3 | | | | | | | | | 224 CFM |
| 213 | HEALTH | Classroom (age 9 plus) NC | 440.1 SF | 16 | 7.5 CFM | 0.00 CFM/SF | 120 CFM | 1 | 120 CFM |
| 221 | RECORDS | Storage rooms | 298.9 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 36 CFM | 1 | 36 CFM |
| 222 | WORKROOOM | Office space | 274.4 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 26 CFM | 1 | 26 CFM |
| C203 | CORRIDOR | Corridors | 372.3 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 22 CFM | 1 | 22 CFM |
| WSHP-2.4 | | | | | | | | | 205 CFM |
| 212 | RECEPTION | Reception areas | 523.3 SF | 16 | 5.0 CFM | 0.06 CFM/SF | 111 CFM | 1 | 111 CFM |
| C200 | LOBBY | Corridors | 447.2 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 27 CFM | 1 | 27 CFM |
| WSHP-2.5 | | | | | | | | | 138 CFM |
| 214 | SIMS | Office space | 124.3 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 12 CFM | 1 | 12 CFM |
| 215 | SECRETARY | Office space | 151.9 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 14 CFM | 1 | 14 CFM |
| 216 | PRINCIPAL | Office space | 218.9 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 23 CFM | 1 | 23 CFM |
| WSHP-2.6 | | | | | | | | | 50 CFM |
| 216B | CORR | Corridors | 43.0 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 3 CFM | 1 | 3 CFM |
| 217 | CONFERENCE | Conference rooms | 285.7 SF | 15 | 5.0 CFM | 0.06 CFM/SF | 92 CFM | 1 | 92 CFM |
| 218 | ASSISTANT PRINCIPAL | Office space | 155.7 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 14 CFM | 1 | 14 CFM |
| WSHP-2.7 | | | | | | | | | 109 CFM |
| C201 | CORRIDOR | Corridors | 1996.4 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 120 CFM | 1 | 120 CFM |
| WSHP-2.8 | | | | | | | | | 120 CFM |
| 223-2 | MEDIA CENTER-2 | Media center | 1527.3 SF | 39 | 10.0 CFM | 0.12 CFM/SF | 573 CFM | 1 | 573 CFM |
| 225 | IT WORKROOM | Office space | 341.7 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 30 CFM | 1 | 30 CFM |
| 225A | STOR | Storage rooms | 72.3 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 9 CFM | 1 | 9 CFM |
| 226 | OFFICE | Office space | 246.6 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 25 CFM | 1 | 25 CFM |
| WSHP-2.9 | | | | | | | | | 637 CFM |
| 223-1 | MEDIA CENTER-1 | Media center | 2368.6 SF | 60 | 10.0 CFM | 0.12 CFM/SF | 884 CFM | 1 | 884 CFM |
| 224 | WORKROOM | Office space | 334.2 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 30 CFM | 1 | 30 CFM |
| WSHP-2.10 | | | | | | | | | 914 CFM |
| C300-2 | CORRIDOR-2 | Corridors | 1376.3 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 83 CFM | 1 | 83 CFM |
| WSHP-3.1 | | | | | | | | | 83 CFM |
| 317 | HEALTH ROOM 1 | Classroom (age 9 plus) NC | 923.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| WSHP-3.2 | | | | | | | | | 248 CFM |
| 316 | HEALTH ROOM 2 | Classroom (age 9 plus) NC | 832.0 SF | 30 | 7.5 CFM | 0.00 CFM/SF | 225 CFM | 1 | 225 CFM |
| WSHP-3.3 | | | | | | | | | 225 CFM |
| 401 | STEM LAB | Classroom (age 9 plus) NC | 957.4 SF | 34 | 7.5 CFM | 0.00 CFM/SF | 255 CFM | 1 | 255 CFM |
| WSHP-4.19 | | | | | | | | | 255 CFM |
| 403 | ES CS CLASSROOM | Classroom (age 9 plus) NC | 1057.5 SF | 38 | 7.5 CFM | 0.00 CFM/SF | 285 CFM | 1 | 285 CFM |
| WSHP-4.20 | | | | | | | | | 285 CFM |
| 315 | CONCESSION | Office space | 128.3 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 13 CFM | 1 | 13 CFM |
| C300-1 | CORRIDOR-1 | Corridors | 1650.1 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 99 CFM | 1 | 99 CFM |
| WSHP-5.19 | | | | | | | | | 112 CFM |
| 600 | COLLABORATION | Classroom (age 9 plus) NC | 2083.2 SF | 73 | 7.5 CFM | 0.00 CFM/SF | 548 CFM | 1 | 548 CFM |
| 600B | CONFERENCE | Conference rooms | 200.0 SF | 11 | 5.0 CFM | 0.06 CFM/SF | 67 CFM | 1 | 67 CFM |
| 600C | ASSISTANT PRINCIPAL | Office space | 116.7 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 12 CFM | 1 | 12 CFM |
| C600 | CIRCULATION | Corridors | 917.3 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 55 CFM | 1 | 55 CFM |
| WSHP-6.21 | | | | | | | | | 682 CFM |
| 600A | STEM LAB | Classroom (age 9 plus) NC | 896.0 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| WSHP-6.22 | | | | | | | | | 240 CFM |
| C300-3 | CORRIDOR-3 | Corridors | 2124.7 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 127 CFM | 1 | 127 CFM |
| C300.1 | COLLABORATION | Corridors | 244.1 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 15 CFM | 1 | 15 CFM |
| WSHP-6.23 | | | | | | | | | 142 CFM |

## 2018 NCMC - TABLE 403.3 MECHANICAL VENTILATION SCHEDULE

| LOCATION NO. | NAME | Occupancy Category | Area | Number of People_OPT | Outdoor Airflow Rate Per Person, Rp | Outdoor Airflow Rate Per Unit Area, Ra | Breathing Zone Outdoor Airflow, Voz | Zone Air Distribution Effectiveness, Ez | Required Outdoor Air Intake Flow, Vot |
|---|---|---|---|---|---|---|---|---|---|
| 404 | CORE CLASSROOM | Classroom (age 9 plus) NC | 890.7 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 405 | CORE CLASSROOM | Classroom (age 9 plus) NC | 890.7 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 406 | FLEX CLASSROOM | Classroom (age 9 plus) NC | 1046.7 SF | 37 | 7.5 CFM | 0.00 CFM/SF | 278 CFM | 1 | 278 CFM |
| 407 | SCIENCE | Science laboratories | 1047.0 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 458 CFM | 1 | 458 CFM |
| 408 | SCIENCE | Science laboratories | 1046.1 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 458 CFM | 1 | 458 CFM |
| 409 | SCIENCE | Science laboratories | 1046.1 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 458 CFM | 1 | 458 CFM |
| 410 | TEACHER WORK ROOM | Office space | 456.9 SF | 3 | 5.0 CFM | 0.06 CFM/SF | 42 CFM | 1 | 42 CFM |
| 412 | RESOURCE | Classroom (age 9 plus) NC | 421.8 SF | 15 | 7.5 CFM | 0.00 CFM/SF | 113 CFM | 1 | 113 CFM |
| 414 | RESOURCE | Classroom (age 9 plus) NC | 421.8 SF | 15 | 7.5 CFM | 0.00 CFM/SF | 113 CFM | 1 | 113 CFM |
| 415 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.8 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 416 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.7 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 417 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.8 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 418 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.8 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 419 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.8 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 420 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.7 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 421 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.8 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 422 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.8 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| C401 | CORRIDOR | Corridors | 3684.9 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 221 CFM | 1 | 221 CFM |
| C402 | COLLABORATION | Classroom (age 9 plus) NC | 932.1 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| DOAS 400 | | | | | | | | | 4789 CFM |
| 500 | STEM LABS | Classroom (age 9 plus) NC | 1092.9 SF | 39 | 7.5 CFM | 0.00 CFM/SF | 293 CFM | 1 | 293 CFM |
| 501 | EC S/C CLASSROOM | Classroom (age 9 plus) NC | 966.8 SF | 34 | 7.5 CFM | 0.00 CFM/SF | 255 CFM | 1 | 255 CFM |
| 502 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.2 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 503 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.2 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 504 | SCIENCE | Storage rooms | 1064.1 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 128 CFM | 1 | 128 CFM |
| 505 | FLEX CLASSROOM | Classroom (age 9 plus) NC | 1064.1 SF | 38 | 7.5 CFM | 0.00 CFM/SF | 285 CFM | 1 | 285 CFM |
| 506 | SCIENCE | Science laboratories | 1064.4 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 462 CFM | 1 | 462 CFM |
| 507 | SCIENCE | Science laboratories | 1064.3 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 462 CFM | 1 | 462 CFM |
| 508 | TEACHER WORK ROOM | Office space | 456.2 SF | 3 | 5.0 CFM | 0.06 CFM/SF | 42 CFM | 1 | 42 CFM |
| 512 | RESOURCE | Classroom (age 9 plus) NC | 431.4 SF | 16 | 7.5 CFM | 0.00 CFM/SF | 120 CFM | 1 | 120 CFM |
| 514 | RESOURCE | Classroom (age 9 plus) NC | 431.4 SF | 16 | 7.5 CFM | 0.00 CFM/SF | 120 CFM | 1 | 120 CFM |
| 515 | CORE CLASSROOM | Classroom (age 9 plus) NC | 898.3 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 516 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.1 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 517 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.2 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 518 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.2 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 519 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.1 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 520 | CORE CLASSROOM | Classroom (age 9 plus) NC | 897.1 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 521 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.2 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| 522 | CORE CLASSROOM | Classroom (age 9 plus) NC | 895.2 SF | 32 | 7.5 CFM | 0.00 CFM/SF | 240 CFM | 1 | 240 CFM |
| C501 | COLLABORATION | Corridors | 224.6 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 13 CFM | 1 | 13 CFM |
| S500 | STAIR 1 | Corridors | 166.5 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 10 CFM | 1 | 10 CFM |
| DOAS 500 | | | | | | | | | 4589 CFM |
| 601 | E/C ES CLASSROOM | Classroom (age 9 plus) NC | 984.9 SF | 35 | 7.5 CFM | 0.00 CFM/SF | 263 CFM | 1 | 263 CFM |
| 602 | STEM LAB | Classroom (age 9 plus) NC | 993.5 SF | 35 | 7.5 CFM | 0.00 CFM/SF | 263 CFM | 1 | 263 CFM |
| 603 | CORE CLASSROOM | Classroom (age 9 plus) NC | 921.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 604 | CORE CLASSROOM | Classroom (age 9 plus) NC | 921.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 605 | FLEX CLASSROOM | Classroom (age 9 plus) NC | 1072.1 SF | 38 | 7.5 CFM | 0.00 CFM/SF | 285 CFM | 1 | 285 CFM |
| 606 | SCIENCE | Science laboratories | 1072.1 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 463 CFM | 1 | 463 CFM |
| 607 | SCIENCE | Science laboratories | 1071.0 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 463 CFM | 1 | 463 CFM |
| 608 | SCIENCE | Science laboratories | 1071.1 SF | 27 | 10.0 CFM | 0.18 CFM/SF | 463 CFM | 1 | 463 CFM |
| 610 | TEACHER WORK ROOM | Office space | 456.2 SF | 3 | 5.0 CFM | 0.06 CFM/SF | 42 CFM | 1 | 42 CFM |
| 614A | RESOURCE | Classroom (age 9 plus) NC | 431.4 SF | 16 | 7.5 CFM | 0.00 CFM/SF | 120 CFM | 1 | 120 CFM |
| 614B | RESOURCE | Classroom (age 9 plus) NC | 431.4 SF | 16 | 7.5 CFM | 0.00 CFM/SF | 120 CFM | 1 | 120 CFM |
| 615 | CORE CLASSROOM | Classroom (age 9 plus) NC | 923.8 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 616 | CORE CLASSROOM | Classroom (age 9 plus) NC | 923.8 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 617 | CORE CLASSROOM | Classroom (age 9 plus) NC | 921.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 618 | CORE CLASSROOM | Classroom (age 9 plus) NC | 921.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 619 | CORE CLASSROOM | Classroom (age 9 plus) NC | 923.8 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 620 | CORE CLASSROOM | Classroom (age 9 plus) NC | 923.8 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 621 | CORE CLASSROOM | Classroom (age 9 plus) NC | 921.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| 622 | CORE CLASSROOM | Classroom (age 9 plus) NC | 921.9 SF | 33 | 7.5 CFM | 0.00 CFM/SF | 248 CFM | 1 | 248 CFM |
| C601 | CORRIDOR | Corridors | 4061.1 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 244 CFM | 1 | 244 CFM |
| M600 | STORAGE | Storage rooms | 112.3 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 13 CFM | 1 | 13 CFM |
| DOAS 600 | | | | | | | | | 5213 CFM |

## 2018 NCMC - TABLE 403.3 MECHANICAL VENTILATION SCHEDULE

| LOCATION NO. | NAME | Occupancy Category | Area | Number of People_OPT | Outdoor Airflow Rate Per Person, Rp | Outdoor Airflow Rate Per Unit Area, Ra | Breathing Zone Outdoor Airflow, Voz | Zone Air Distribution Effectiveness, Ez | Required Outdoor Air Intake Flow, Vot |
|---|---|---|---|---|---|---|---|---|---|
| 105A | TECH. | Office space | 317.3 SF | 2 | 5.0 CFM | 0.06 CFM/SF | 29 CFM | 1 | 29 CFM |
| IDU-1 | | | | | | | | | 29 CFM |
| 105B | VESTIBULE | Corridors | 186.6 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 11 CFM | 1 | 11 CFM |
| C100 | LOBBY | Corridors | 487.9 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 29 CFM | 1 | 29 CFM |
| IDU-2 | | | | | | | | | 40 CFM |
| 300-1 | DINING-1 | Dining rooms NC | 3093.5 SF | 217 | 7.5 CFM | 0.18 CFM/SF | 2184 CFM | 1 | 2184 CFM |
| WSHP-D2 | | | | | | | | | 2184 CFM |
| 300-2 | DINING-2 | Dining rooms NC | 2409.1 SF | 169 | 7.5 CFM | 0.18 CFM/SF | 1701 CFM | 1 | 1701 CFM |
| WSHP-D.1 | | | | | | | | | 1701 CFM |
| 307-1 | GYM-1 | Gym, stadium (play area) | 2038.1 SF | 15 | 20.0 CFM | 0.18 CFM/SF | 667 CFM | 1 | 667 CFM |
| 307-4 | GYM-4 | Spectator areas | 1129.4 SF | 170 | 7.5 CFM | 0.06 CFM/SF | 1343 CFM | 1 | 1343 CFM |
| 307-5 | GYM-5 | Corridors | 1658.1 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 99 CFM | 1 | 99 CFM |
| WSHP-G1 | | | | | | | | | 2109 CFM |
| 307-2 | GYM-2 | Gym, stadium (play area) | 2206.7 SF | 16 | 20.0 CFM | 0.18 CFM/SF | 717 CFM | 1 | 717 CFM |
| 307-3 | GYM-3 | Spectator areas | 1101.4 SF | 166 | 7.5 CFM | 0.06 CFM/SF | 1311 CFM | 1 | 1311 CFM |
| 307-6 | GYM-6 | Corridors | 1823.2 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 109 CFM | 1 | 109 CFM |
| WSHP-G2 | | | | | | | | | 2138 CFM |
| 307A | CUST. | Toilets (public) | | | | | | | 0 CFM |
| 307B | STORAGE | Storage rooms | 355.8 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 43 CFM | 1 | 43 CFM |
| 308 | GIRLS LOCKERS | Lockers/ Dressing Rooms | 260.3 SF | | | | | 1 | 0 CFM |
| 308B | VESTIBULE | Corridors | 44.4 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 3 CFM | 1 | 3 CFM |
| 406A | GIRLS SHOWERS | Toilets (public) | | | | | | | 0 CFM |
| WSHP-G3 | | | | | | | | | 45 CFM |
| 309 | COACH OFFICE | Office space | 125.5 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 13 CFM | 1 | 13 CFM |
| 309A | STAFF TLT | Toilets (public) | | | | | | | 0 CFM |
| 310 | COACH OFFICE | Office space | 125.5 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 13 CFM | 1 | 13 CFM |
| 310A | STAFF TLT | Toilets (public) | | | | | | | 0 CFM |
| 311 | BOYS LOCKERS | Lockers/ Dressing Rooms | 272.7 SF | | | | | 1 | 0 CFM |
| 311A | BOYS SHOWERS | Lockers/ Dressing Rooms | 225.4 SF | | | | | 1 | 0 CFM |
| 311B | VESTIBULE | Corridors | 44.4 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 3 CFM | 1 | 3 CFM |
| WSHP-G4 | | | | | | | | | 28 CFM |
| 301 | SERVING | Dining rooms NC | 1048.4 SF | 74 | 7.5 CFM | 0.18 CFM/SF | 744 CFM | 1 | 744 CFM |
| 302 | DISHWASH | | 308.0 SF | | | | | 1 | 0 CFM |
| WSHP-K1 | | | | | | | | | 744 CFM |
| 303 | KITCHEN | | 1371.0 SF | | | | | 1 | 0 CFM |
| 303A | DRY STORAGE | Storage rooms | 344.7 SF | 0 | 0.0 CFM | 0.12 CFM/SF | 41 CFM | 1 | 41 CFM |
| WSHP-K2 | | | | | | | | | 41 CFM |
| 303B | OFFICE | Office space | 104.3 SF | 1 | 5.0 CFM | 0.06 CFM/SF | 11 CFM | 1 | 11 CFM |
| 304 | RECEIVING | Shipping/receiving SC | 1034.0 SF | 3 | 10.0 CFM | 0.12 CFM/SF | 154 CFM | 1 | 154 CFM |
| 305 | CUST. | Toilets (public) | | | | | | | 0 CFM |
| 306 | KIT. LOCKER | Lockers/ Dressing Rooms | 91.3 SF | | | | | 1 | 0 CFM |
| 306A | UNISEX | Toilets (public) | | | | | | | 0 CFM |
| C302 | CORRIDOR | Corridors | 216.4 SF | 0 | 0.0 CFM | 0.06 CFM/SF | 13 CFM | 1 | 13 CFM |
| WSHP-K3 | | | | | | | | | 178 CFM |

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ISSUE DATE: 11/08/24

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M-005

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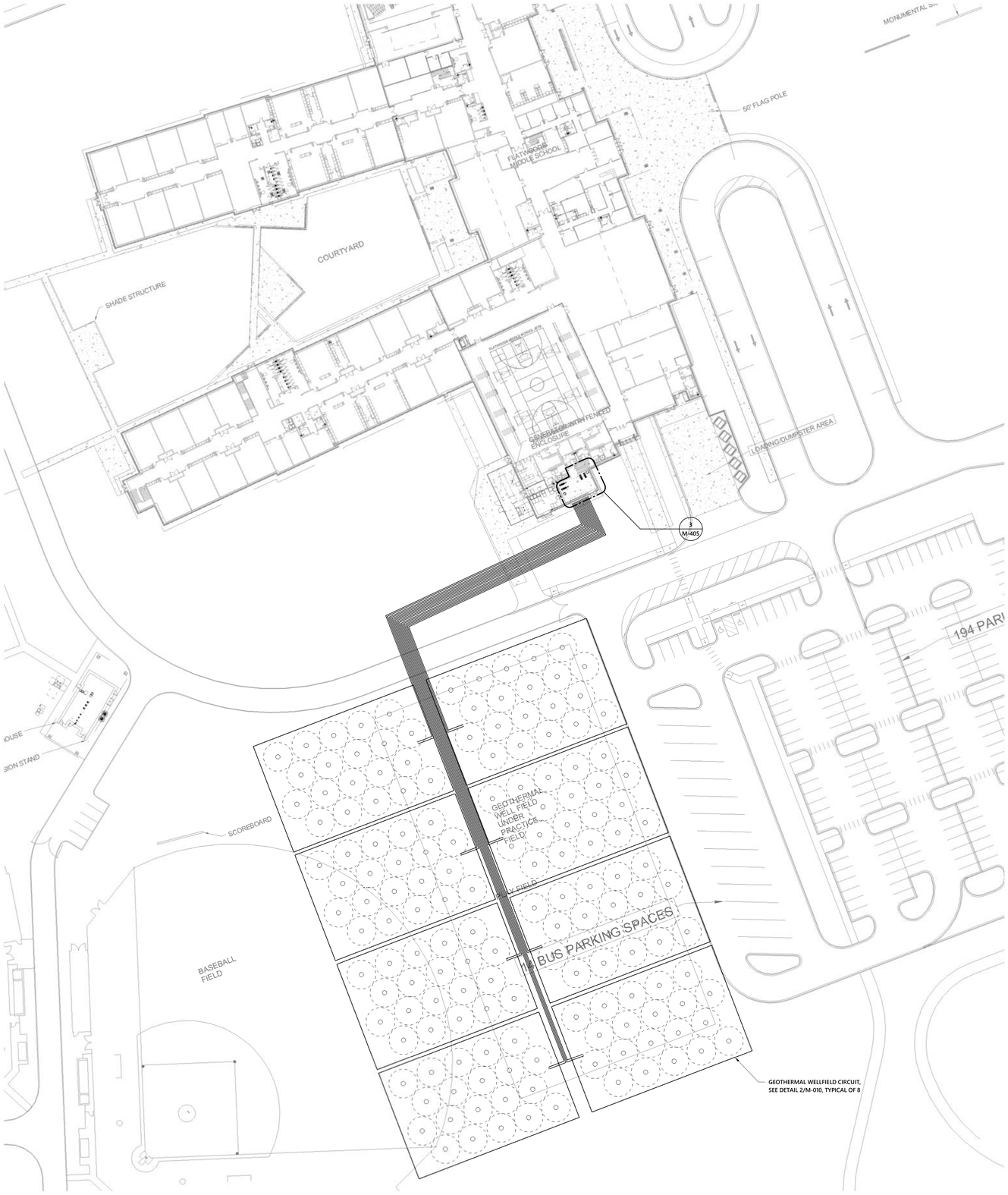



1 MECHANICAL SITE PLAN
1" = 40'-0"

## GEOTHERMAL WELLFIELD SPECIFICATION

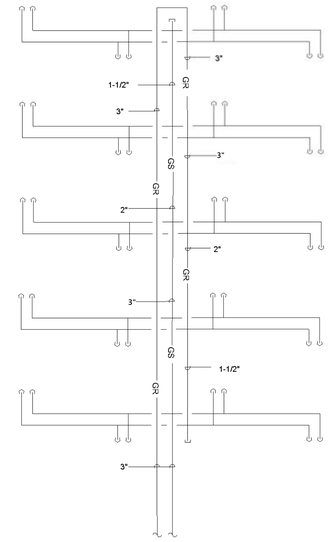
1. DRILLING MUST BE PERFORMED BY A CERTIFIED NORTH CAROLINA WELL DRILLER.
2. LOCATE WELLS A MINIMUM OF 20' APART. COORDINATE EXACT WELLFIELD LAYOUT BASED ON ACTUAL SITE CONDITIONS.
3. COORDINATE EXACT GEOTHERMAL PIPING LOCATIONS AND DEPTHS WITH ALL OTHER UNDERGROUND UTILITY LOCATIONS, SEE CIVIL PLANS.
4. GEOTHERMAL WELLFIELD IS DESIGNED BASED ON THE FOLLOWING:

SITE SPECIFIC PARAMETERS:
SOIL CONDUCTIVITY - 1.68 BTU/HR*FT*F
UNDISTRIBUTED SOIL TEMPERATURE - 68.2 DEG F

UTILIZING THE FOLLOWING VARIABLES:

PEAK ZONE COOLING LOAD - 4,621 MBH
PEAK ZONE HEATING LOAD - 4,052 MBH
BASIC WELLFIELD GRID - 8 CIRCUITS, 20 WELLS PER CIRCUIT
WELL SEPARATION DISTANCE - 20' MINIMUM
BORE DIAMETER - 5"∅
BORE DEPTH - 400'
U-TUBE DIAMETER - 1" HDPE, SDR-11
GROUT CONDUCTIVITY - 1.2 BTU/HR*FT**F

AS A VALUE ENGINEERING OPTION, ALTERNATE WELLFIELD LAYOUTS MAY BE SUMBITTED DURING THE BIDDING PROCESS UTILIZING DIFFERENT COMBINATIONS OF THE VARIABLES, PROVIDED ALL NORTH CAROLINA STATE REGULATIONS ARE MET. CONTRACTOR SHALL SUBMIT FULL CALCULATIONS USING ALTERNATIVE METHODS FOR REVIEW AND APPROVAL BY THE MECHANICAL ENGINEER. ALTERNATE WELLFIELD DESIGNS MUST HAVE SIMILAR STAGING CAPACITY (DESIGN HAS 8 STAGES WITH 12.5% TOTAL LOAD CAPACITY EACH). WELLFIELD SUBSTITUTIONS, LIKE EQUIPMENT SUBSTITUTIONS, REQUIRE A 2-WEEK PRIOR APPROVAL BEFORE BID DAY. SHOULD PUMPING SYSTEM HEAD REQUIREMENTS AND/OR HORSEPOWERS CHANGE, OR ANY OTHER BUILDING SIDE CHANGE RESULT FROM REDESIGN OF THE WELLFIELD, ANY ADDITIONAL COSTS (INCLUDING ELECTRICAL CHANGES AND SITE CHANGES) SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.




2 TYPICAL REVERSE RETURN CIRCUIT PIPING DETAIL
1/16" = 1'-0"

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3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
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| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
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MECHANICAL GEOTHERMAL SITE PLAN

M-010

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**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

1 **OVERALL FIRST FLOOR MECHANICAL PLAN**
1" = 20'-0"

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OVERALL FIRST FLOOR MECHANICAL PLAN

M-101

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**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
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| | 2 HOUR RATED WALL |

1 OVERALL SECOND FLOOR MECHANICAL PLAN
1" = 20'-0"

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OVERALL SECOND FLOOR MECHANICAL PLAN

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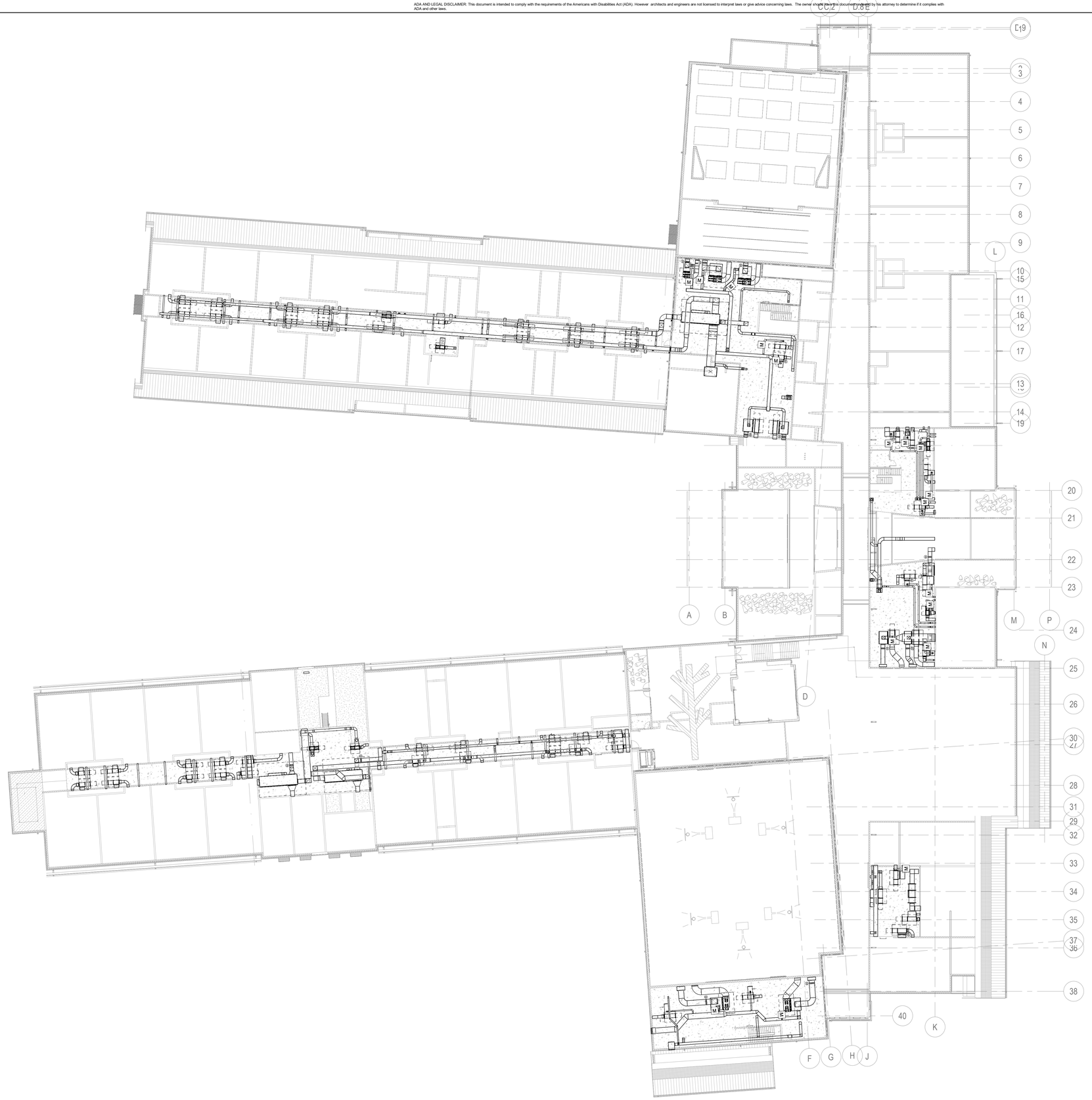


**GENERAL NOTE:**
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**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

1 OVERALL MECH. MEZZANINE MECHANICAL PLAN
1" = 20'-0"

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OVERALL MECH. MEZZANINE MECHANICAL PLAN

M-103

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| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

1 OVERALL ROOF MECHANICAL PLAN
1" = 20'-0"

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OVERALL ROOF MECHANICAL PLAN

M-104

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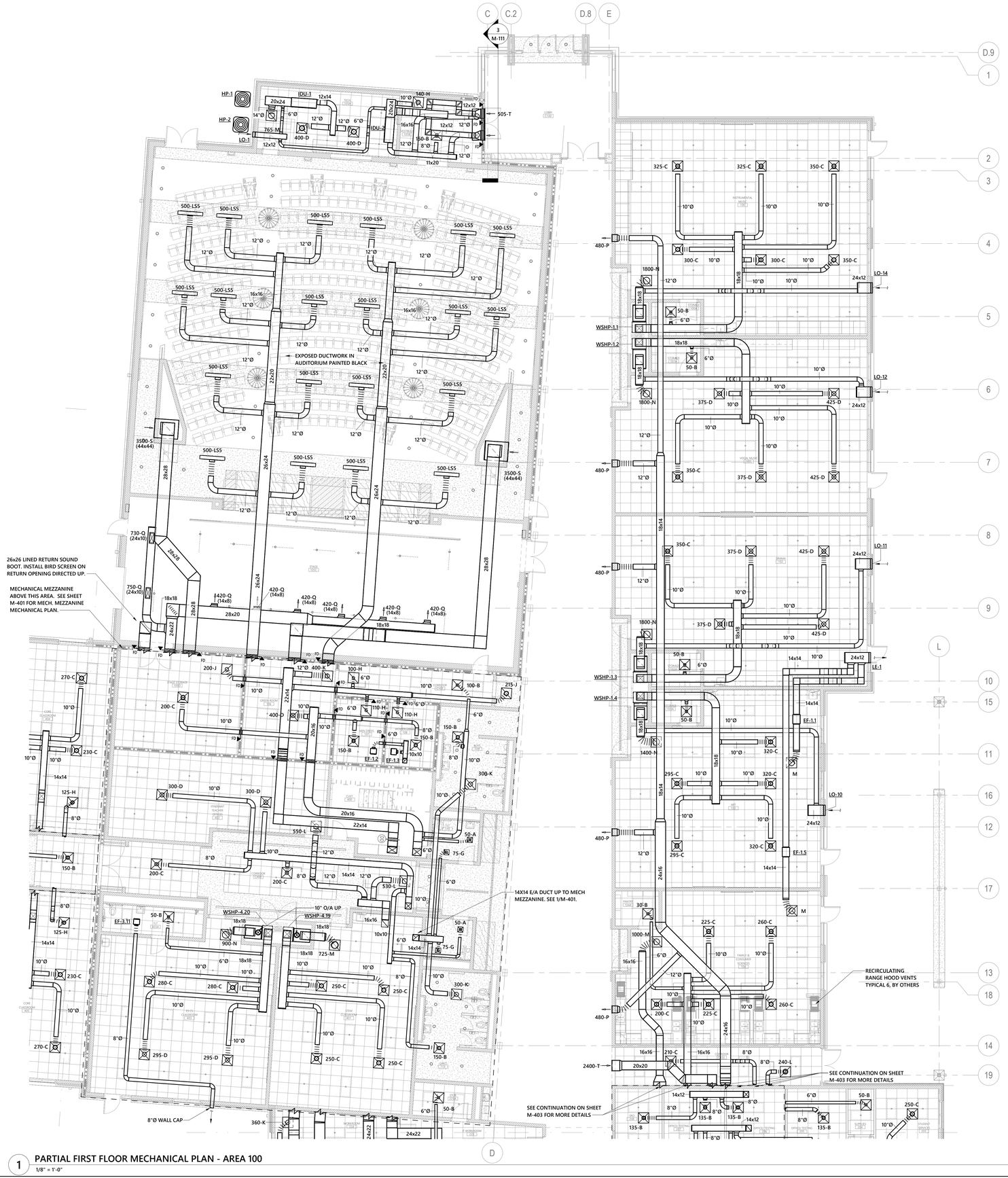
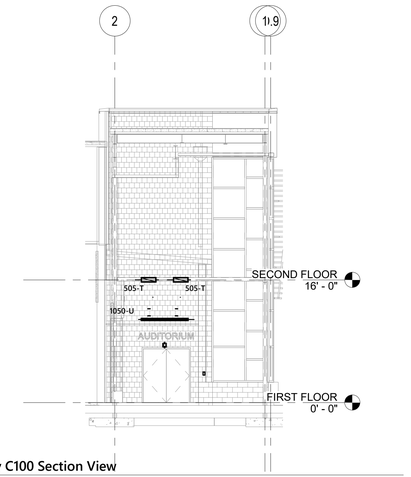



1 **PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 100**
1/8" = 1'-0"




3 **Lobby C100 Section View**
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 100

M-111

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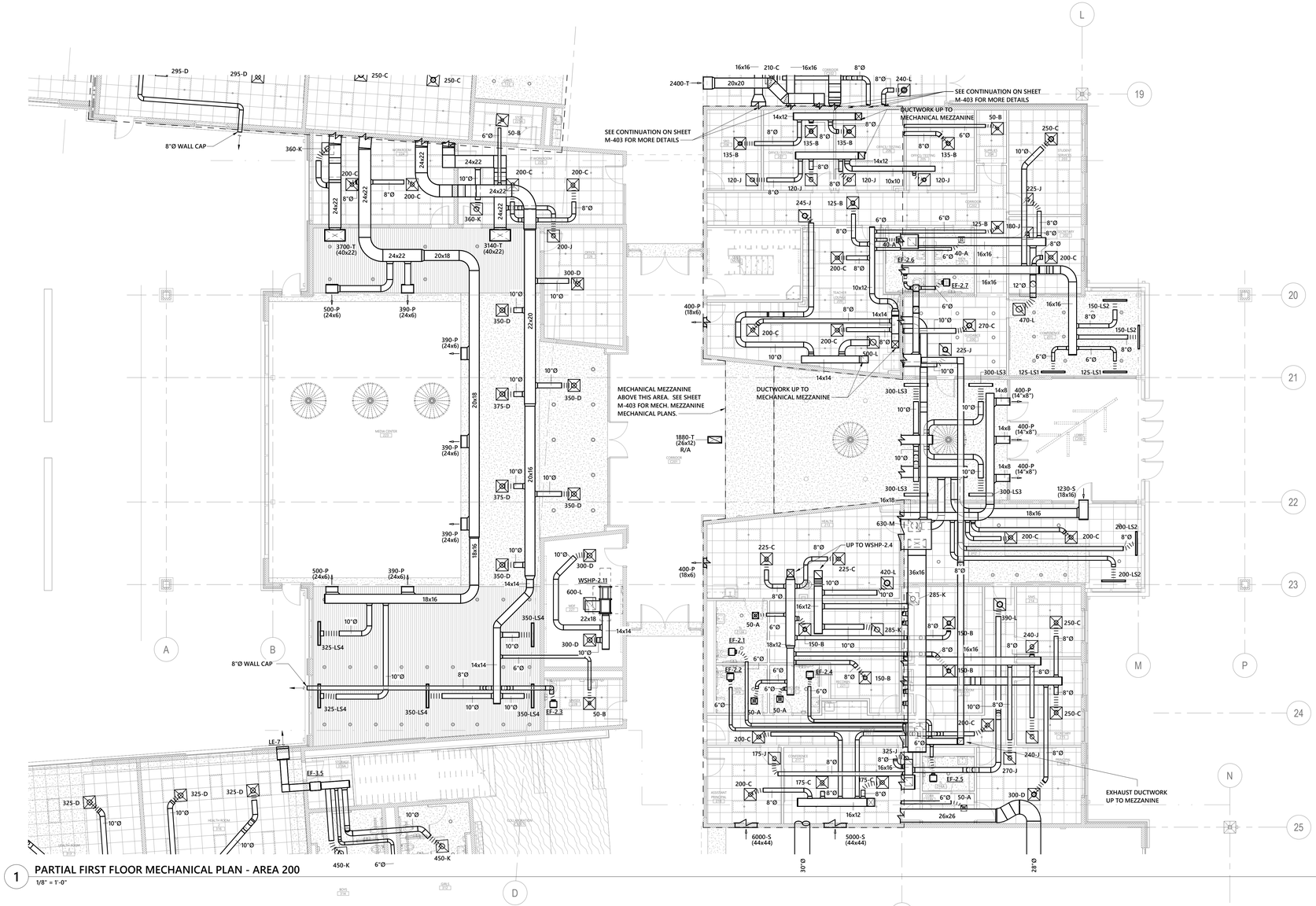
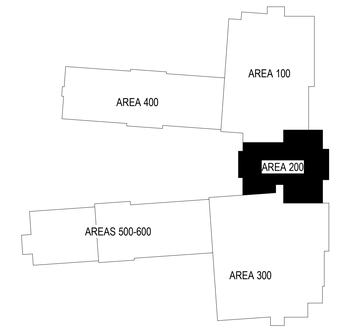



## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 200

M-112

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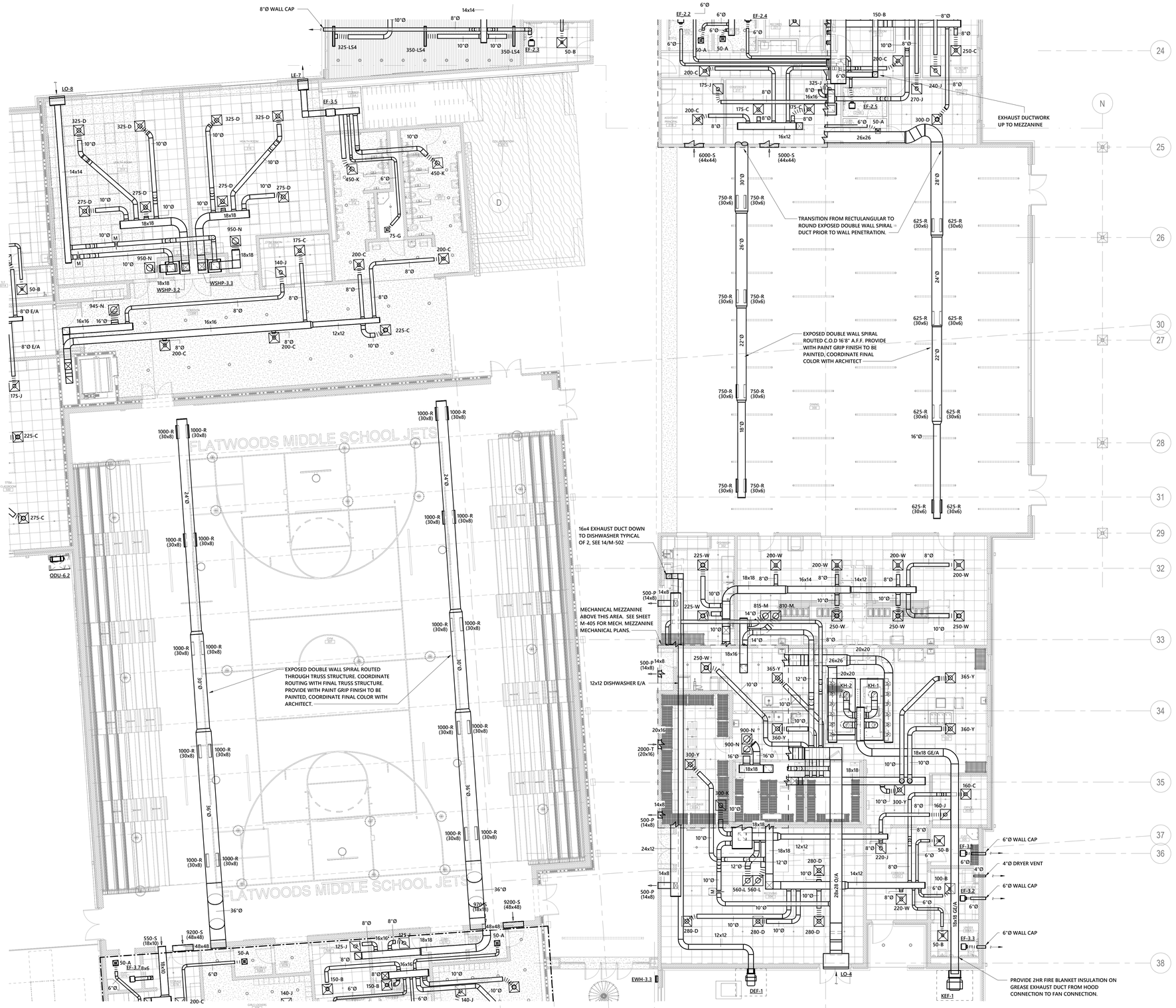


1 **PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 300 NORTH**
1/8" = 1'-0"

**GENERAL NOTES:**

1. ALL EXPOSED SPIRAL DUCTWORK SHALL BE A DOUBLE WALL LINDAB SPIROSAFE-SEALING DUCT SYSTEM (OR APPROVED EQUAL) WITH 1" LINER AND PERFORATED INNER SHELL. REGISTERS ON SPIRAL DUCT SHALL BE MOUNTED WITHOUT THE USE OF RECTANGULAR REGISTERS TAPS, TOP AND BOTTOM FLANGES SHALL MEET FLUSH WITH THE SPIRAL DUCT WALL REGARDLESS OF DUCT DIAMETER. DUCT DIMENSIONS ON PLANS ARE INSIDE CLEAR SIZES.
2. PROVIDE 3" SHEET METAL COLLAR TO COVER OPEN VOID AROUND HOLES IN BLOCK WALLS AT SPIRAL DUCT PENETRATIONS.

**KITCHEN AIR BALANCE**

| EQUIPMENT | OUTSIDE AIR | MAKE-UP AIR | EXHAUST AIR |
|---|---|---|---|
| WSHP K-1 | 744 | | |
| WSHP K-2 | 41 | | |
| MAU-1 | | 3680 | |
| KEF-1 | | | -4600 |
| DEF-1 | | | -600 |
| TOTALS: | 785 | 3680 | -5400 |
| | -935 CFM | | |

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 300 NORTH

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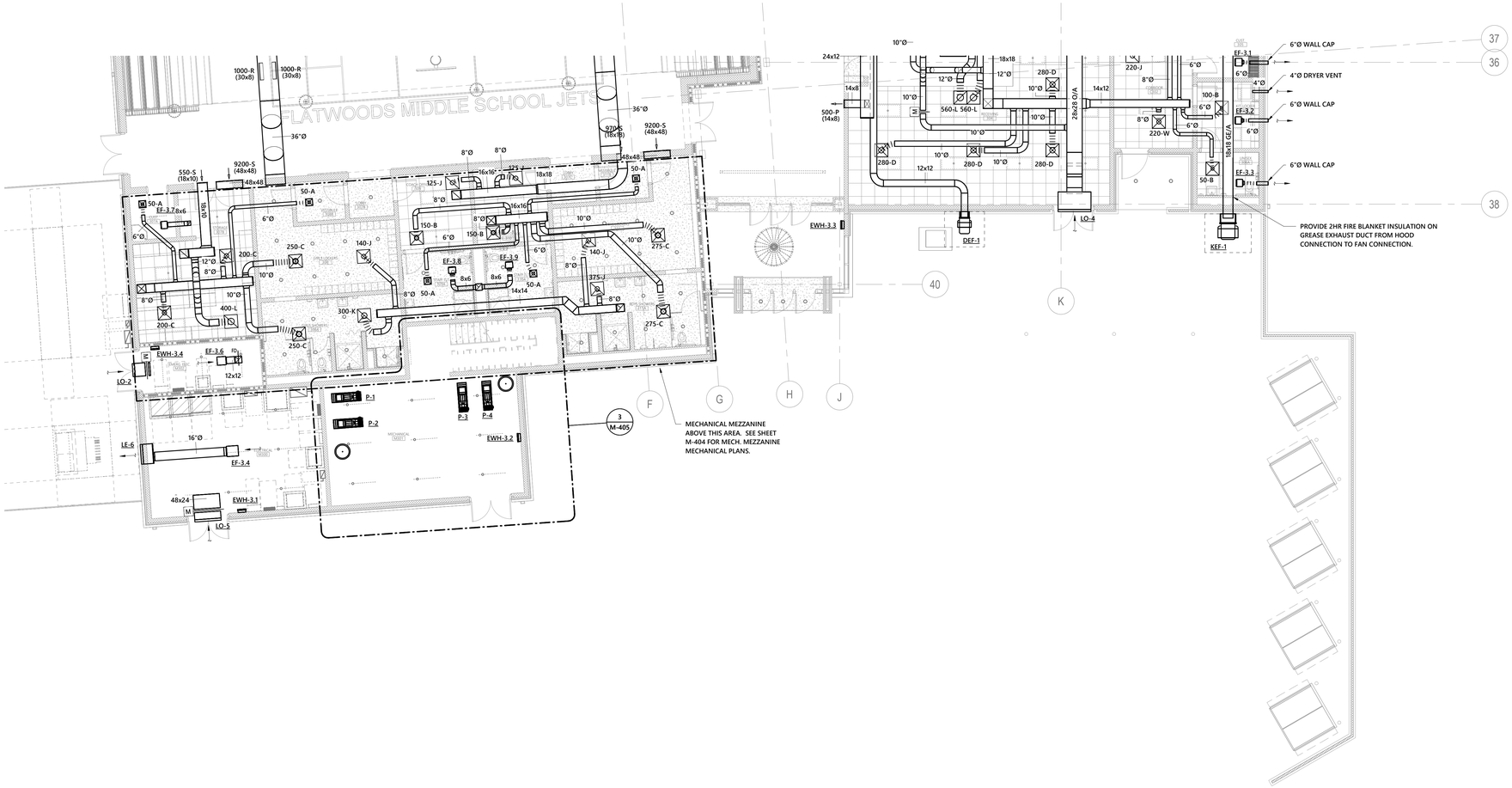


## 1 PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 300 SOUTH

1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 300 SOUTH

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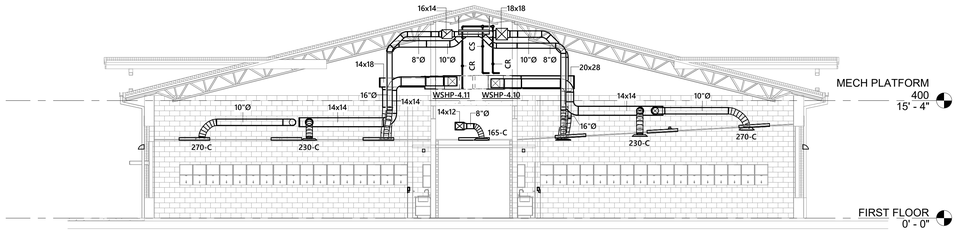
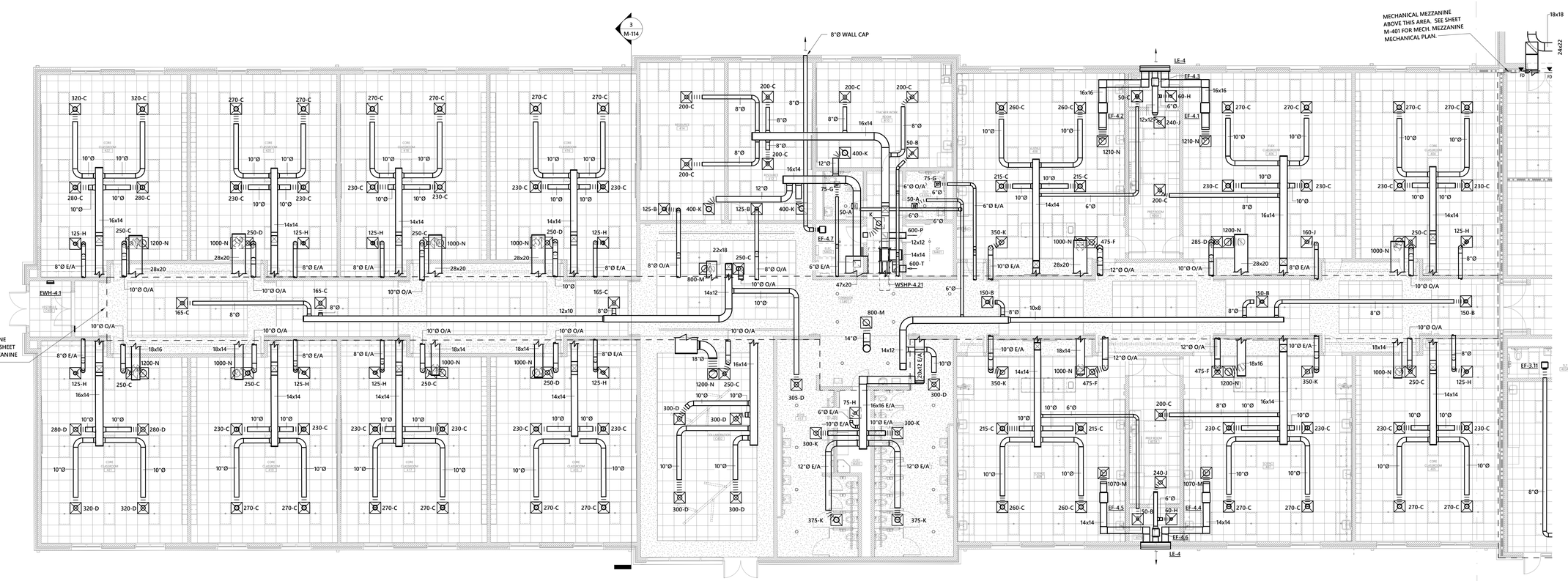



3 **400 AREA DUCTWORK SECTION**
1/8" = 1'-0"

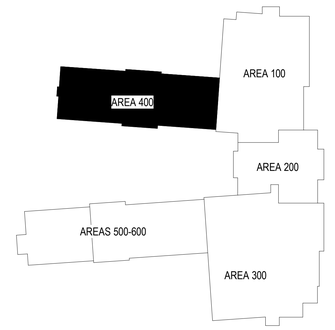



1 **PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 400**
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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ENERGY STAR PARTNER

| No. | Date | Description |
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ISSUE DATE: 11/08/24
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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 400

M-114

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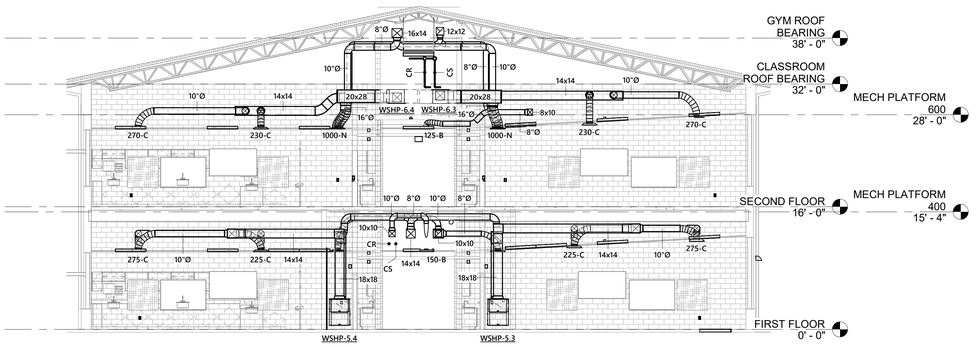
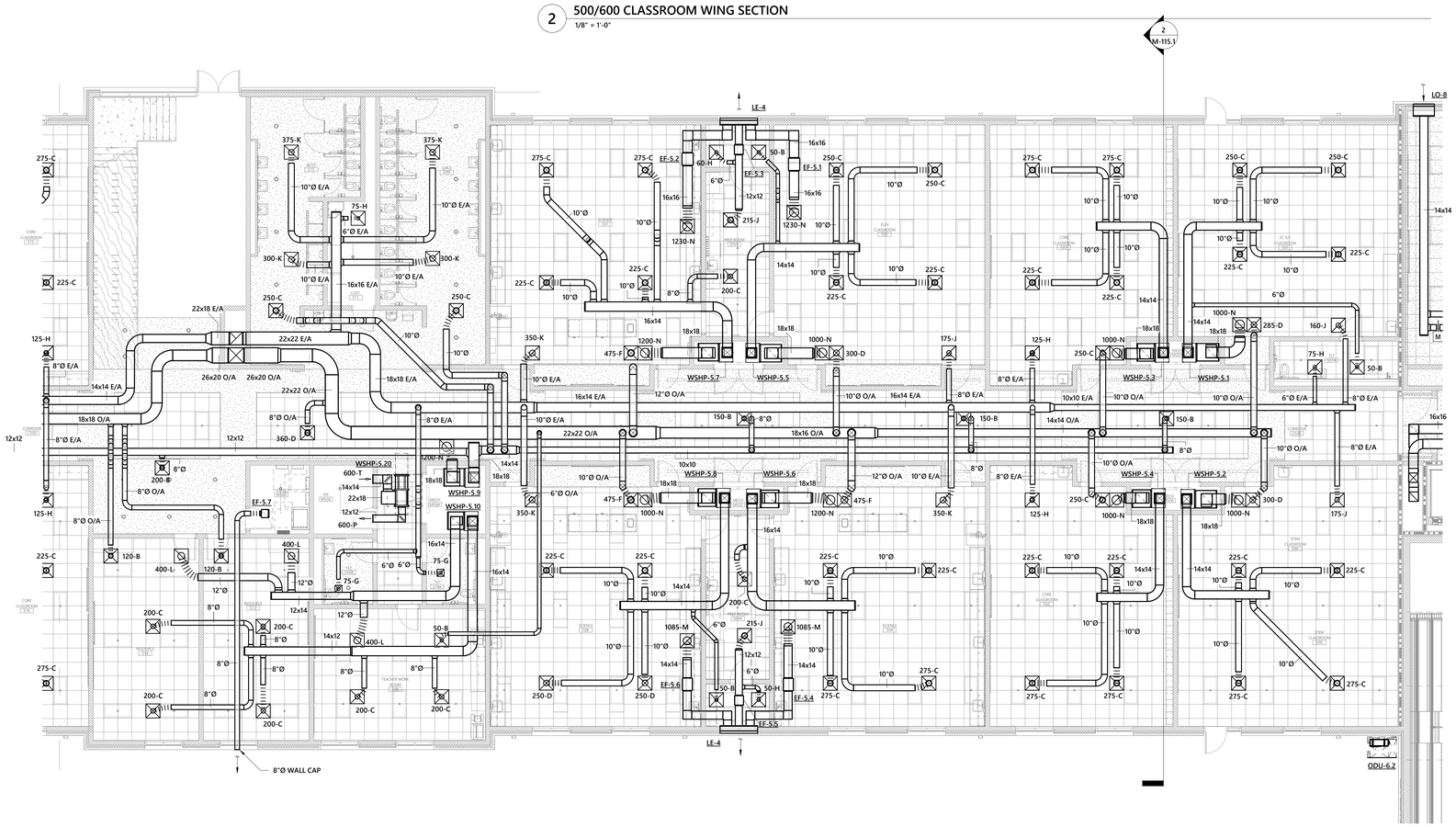



## 2 500/600 CLASSROOM WING SECTION

1/8" = 1'-0"




## 1 PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 500 RIGHT

1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 500 RIGHT

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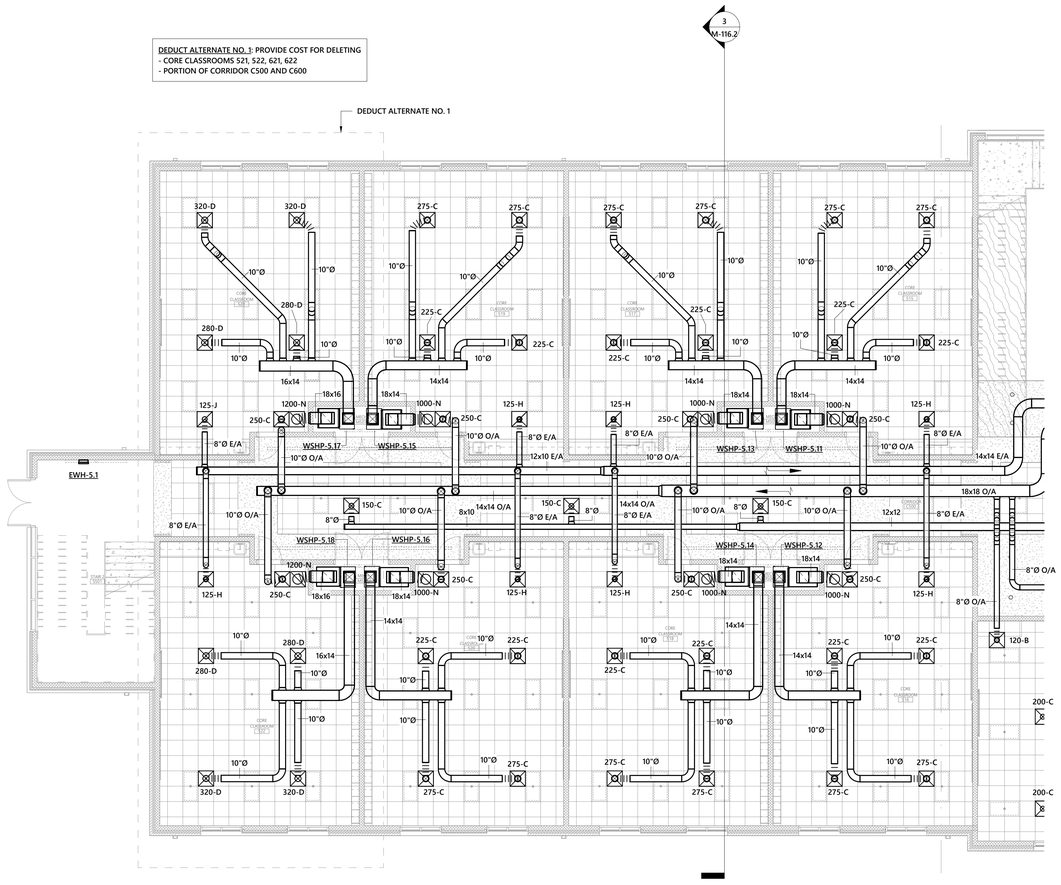
DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600




1 PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 500 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PLAN - AREA 500 LEFT

M-115.2

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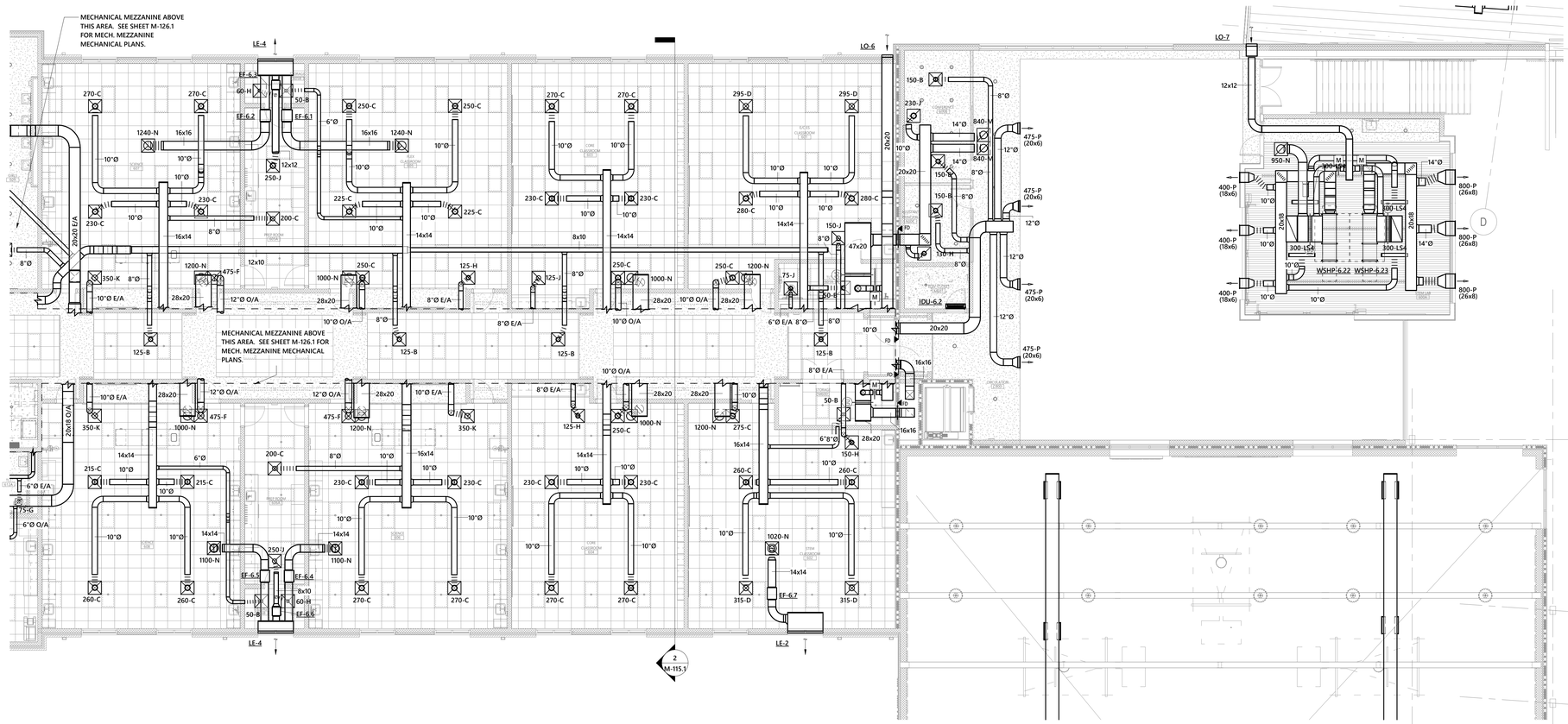


1 **PARTIAL SECOND FLOOR MECHANICAL PLAN - AREA 600 RIGHT**
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR MECHANICAL PLAN - AREA 600 RIGHT

M-116.1

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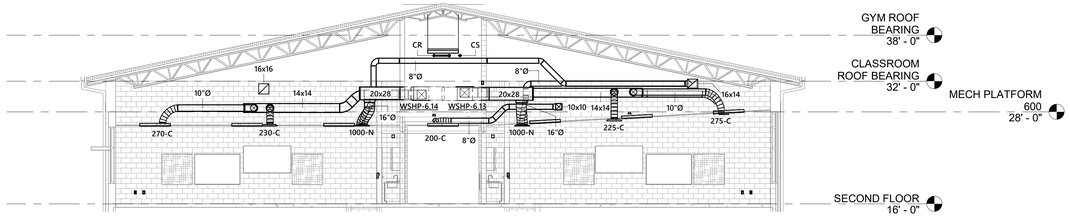
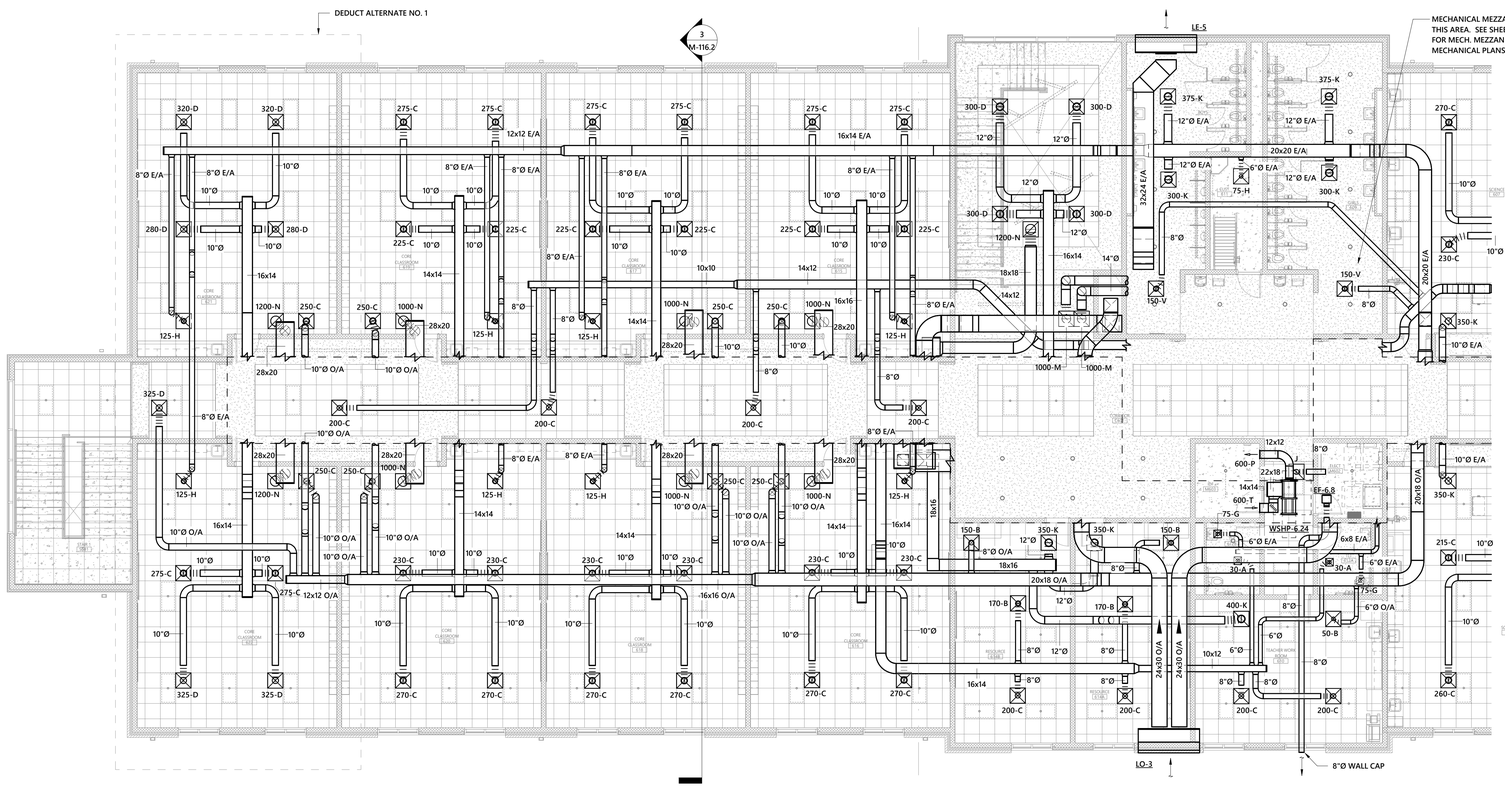



3 **Section 257**
1/8" = 1'-0"

DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600




1 **PARTIAL SECOND FLOOR MECHANICAL PLAN - AREA 600 LEFT**
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR MECHANICAL PLAN - AREA 600 LEFT

**M-116.2**

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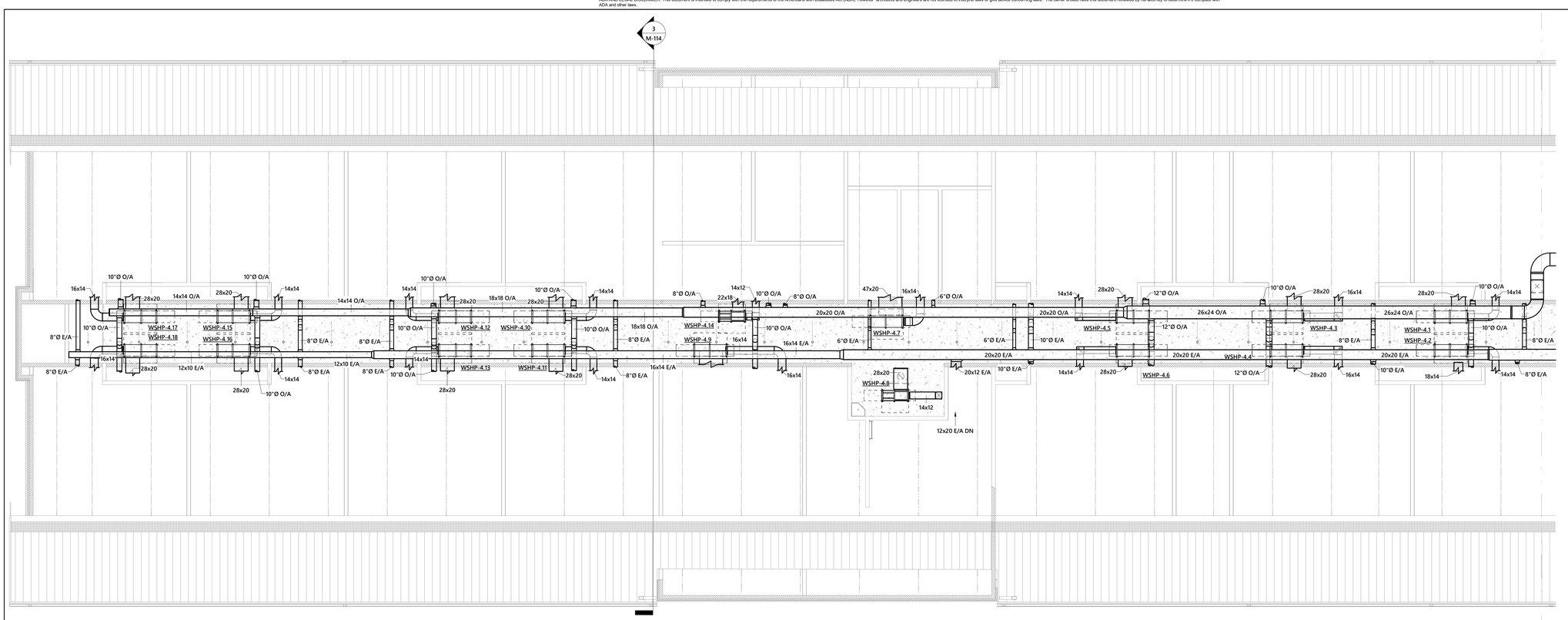
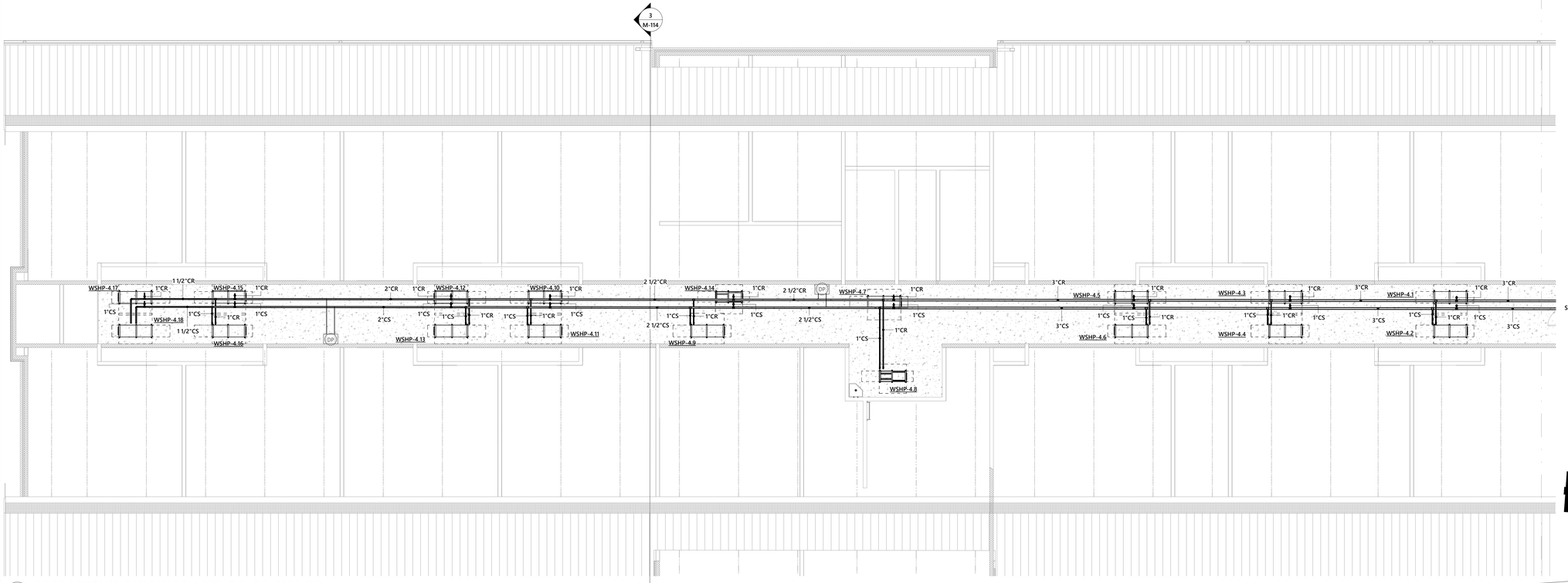



1 MECH. MEZZANINE MECHANICAL PLAN - AREA 400
1/8" = 1'-0"




GENERAL NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

2 MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 400
1/8" = 1'-0"

KEY PLAN

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE MECHANICAL PLANS - AREA 400

M-124

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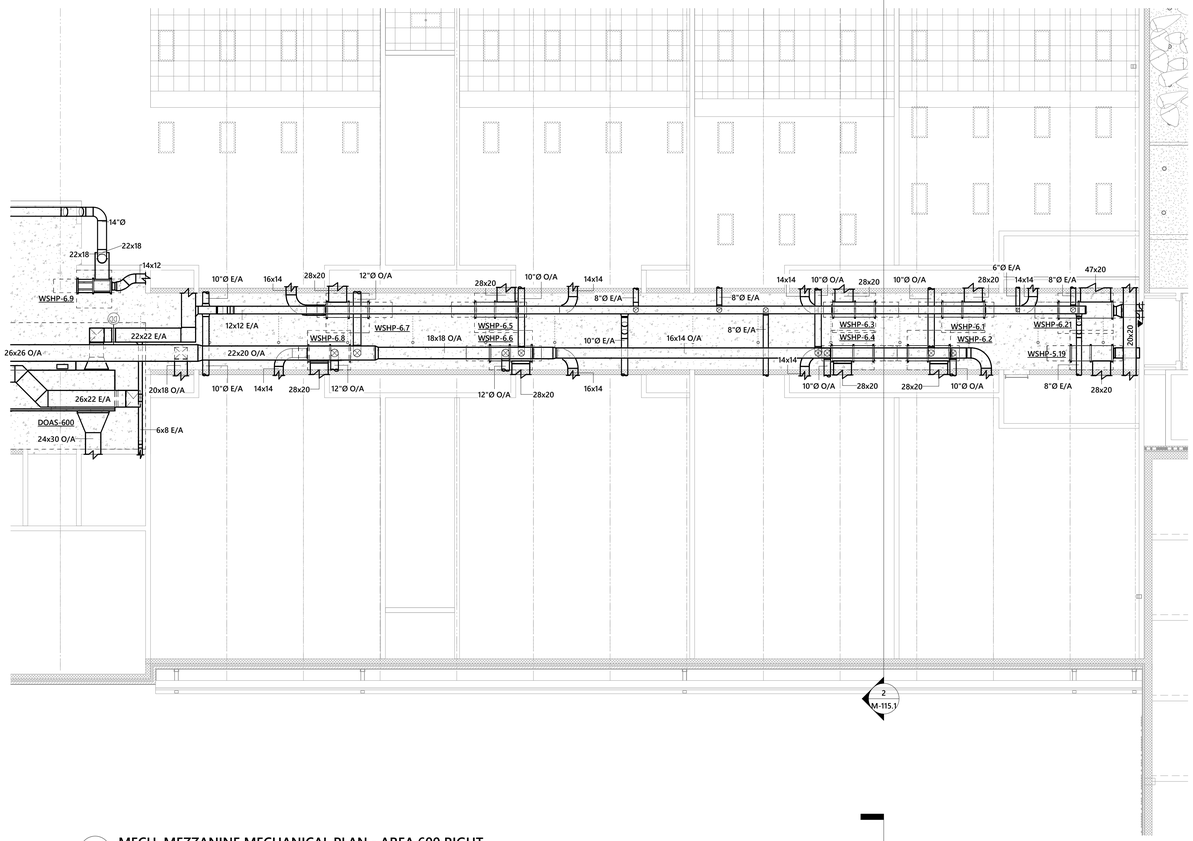
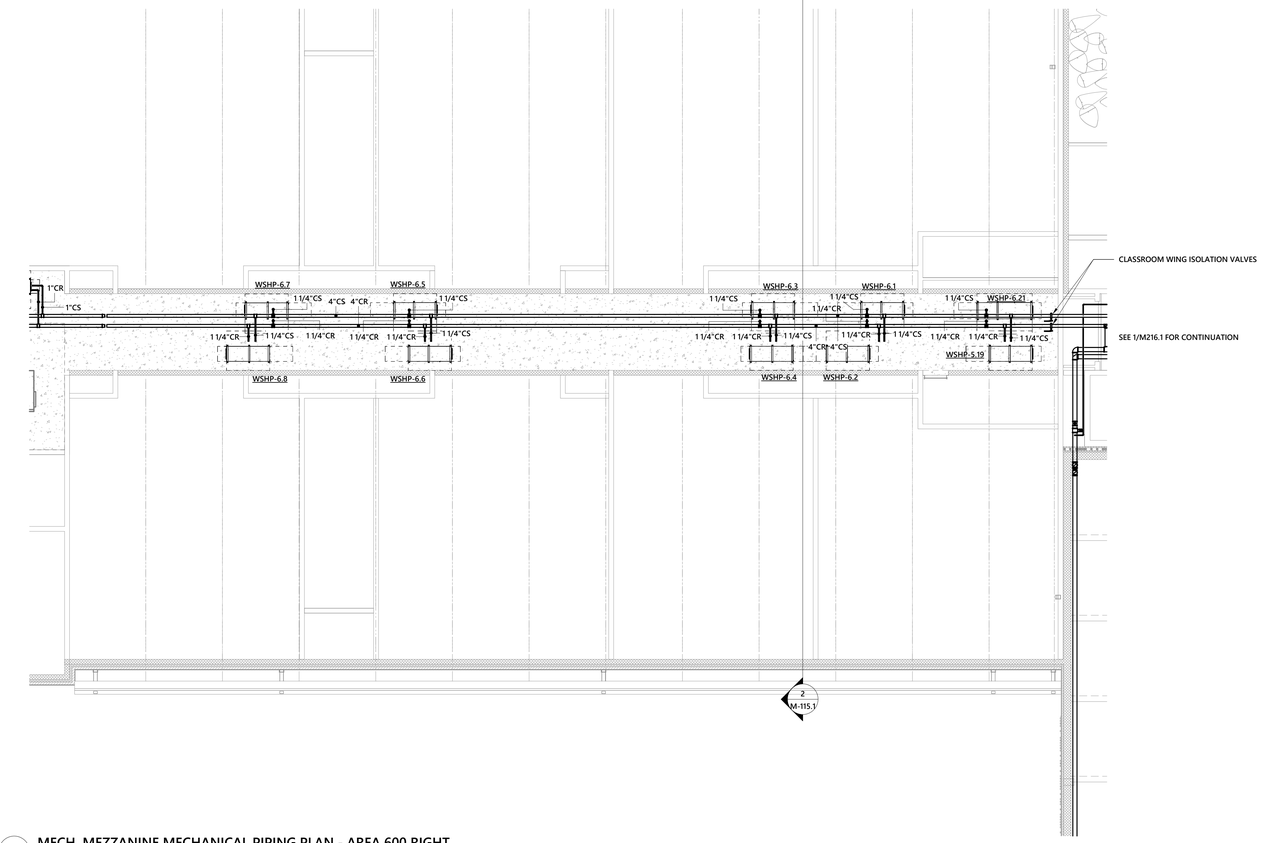



## 1 MECH. MEZZANINE MECHANICAL PLAN - AREA 600 RIGHT

1/8" = 1'-0"




## 2 MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 600 RIGHT

1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE MECHANICAL PLANS - AREA 600 RIGHT

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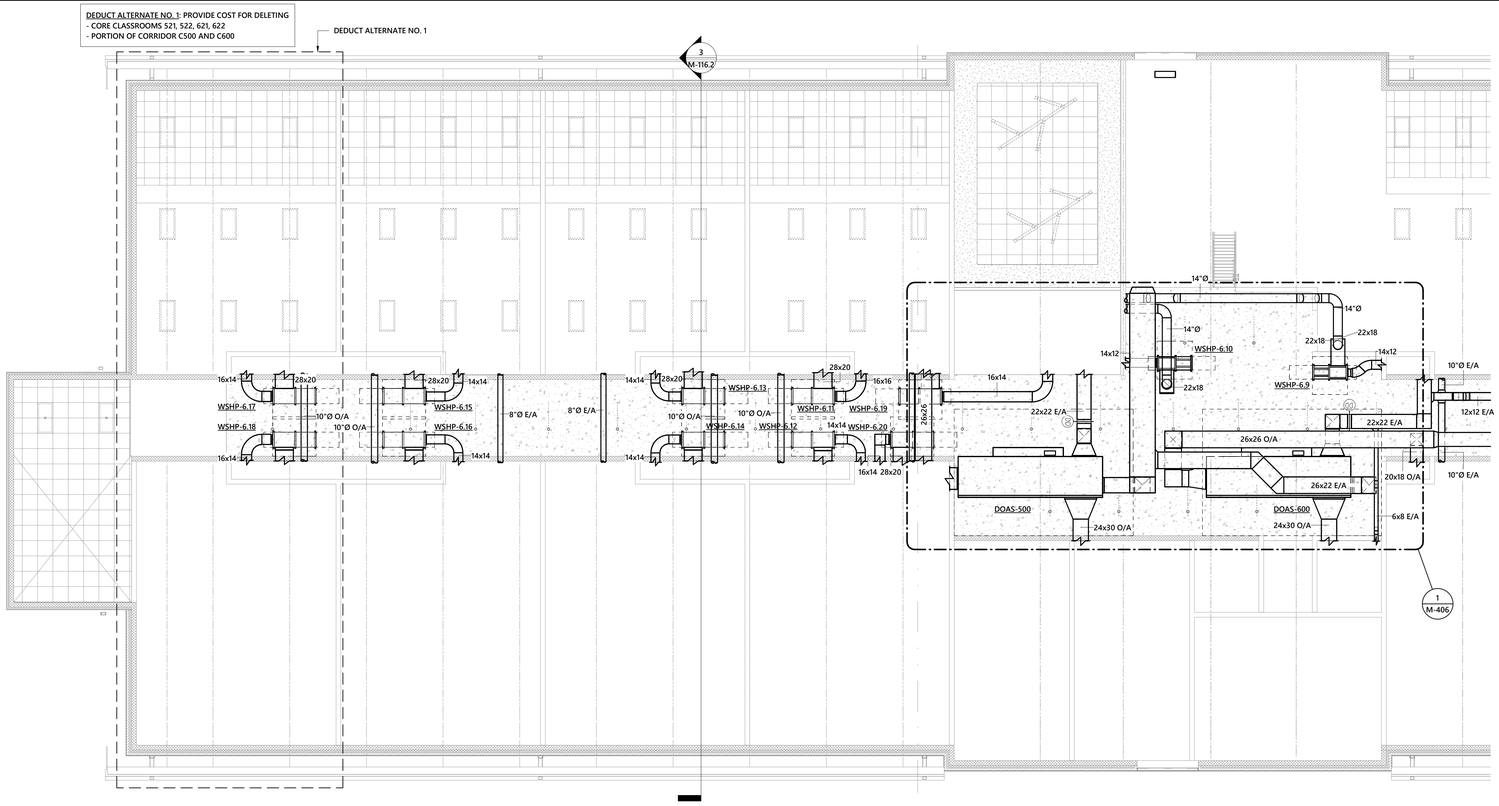
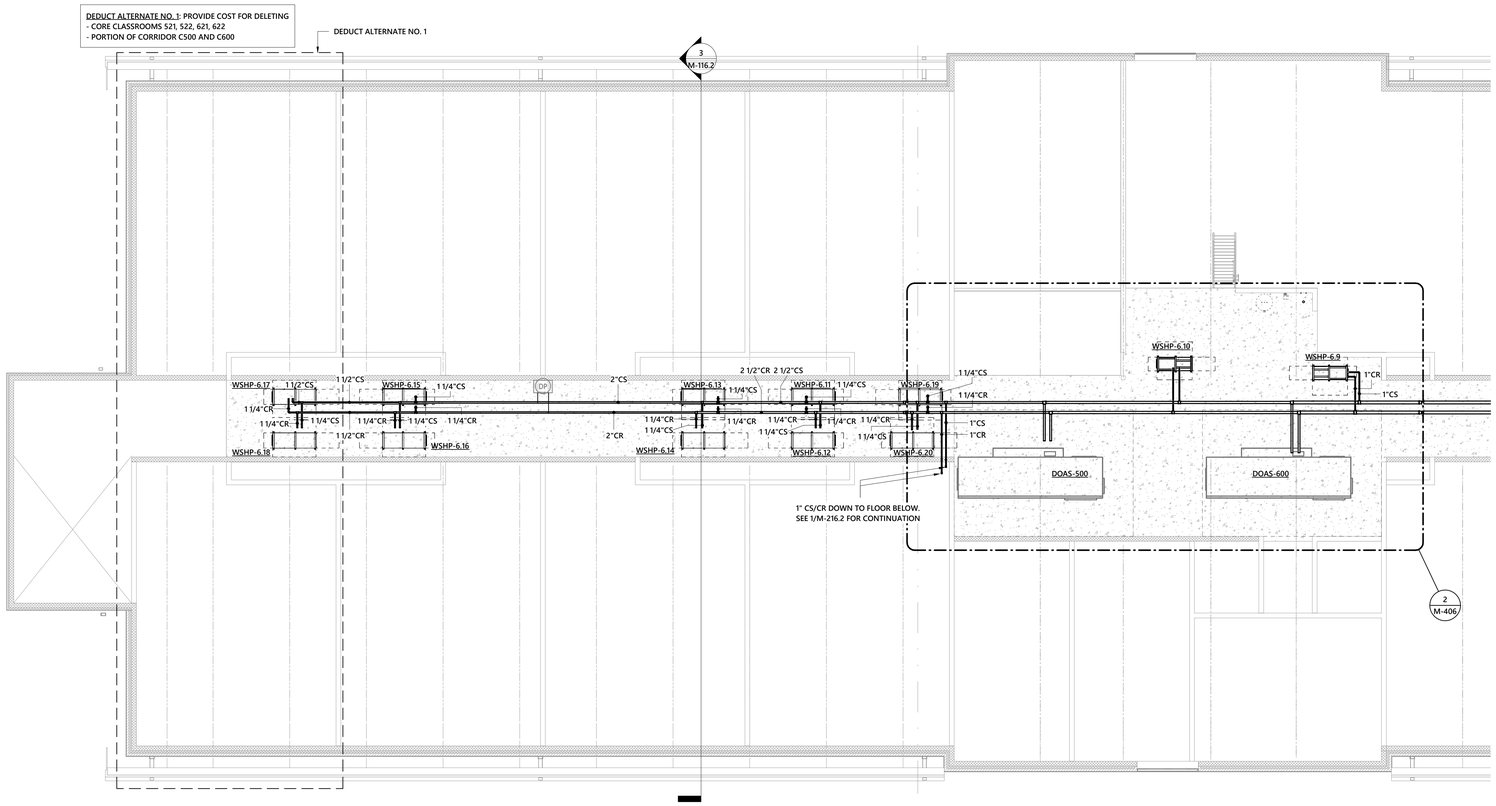



1 MECH. MEZZANINE MECHANICAL PLAN - AREA 600 LEFT
1/8" = 1'-0"




2 MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 600 LEFT
1/8" = 1'-0"

NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE MECHANICAL PLANS - AREA 600 LEFT

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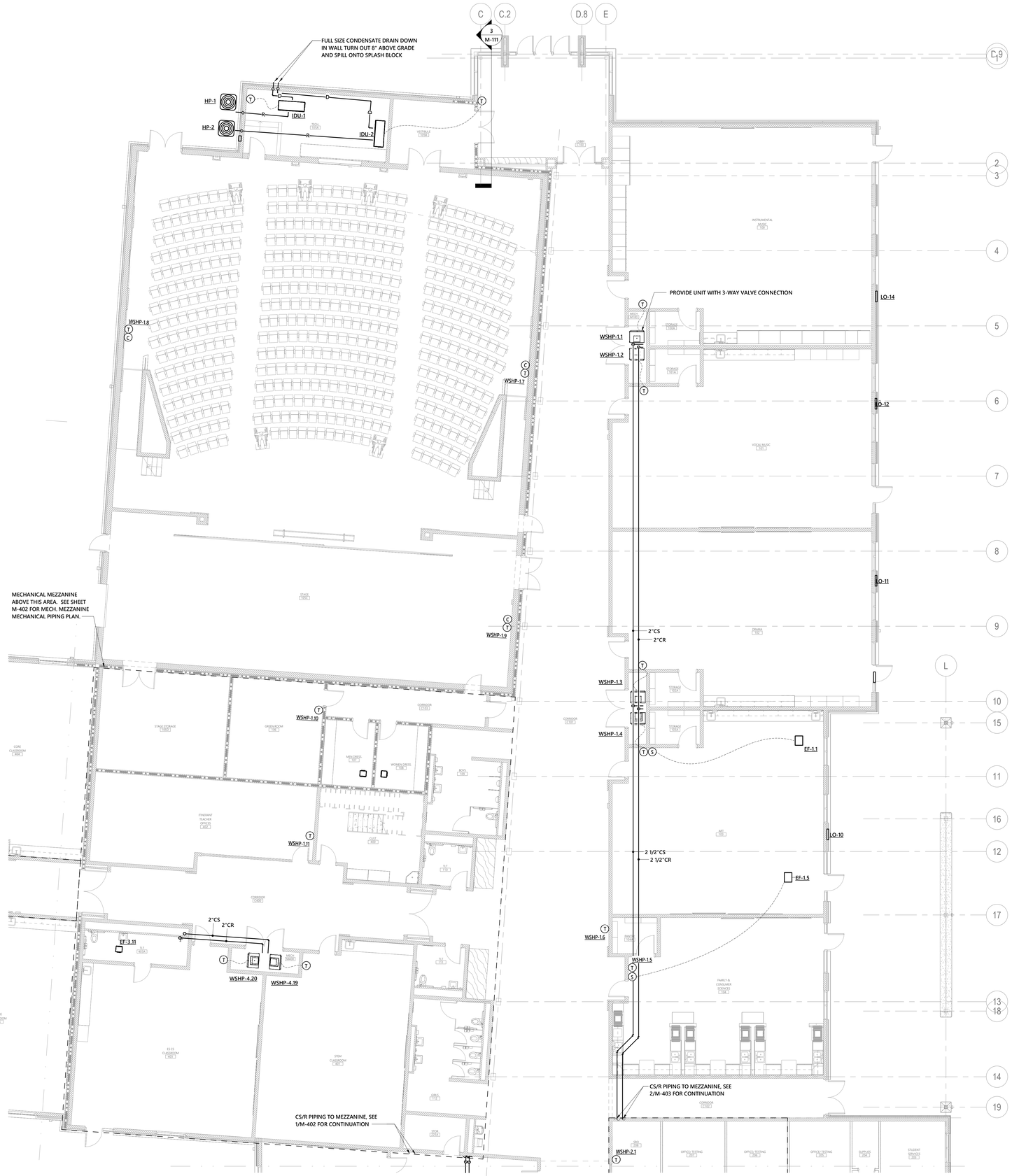
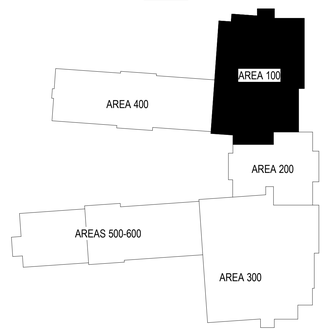



1 PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 100
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 100

M-211

Sheet No. 23 of 42

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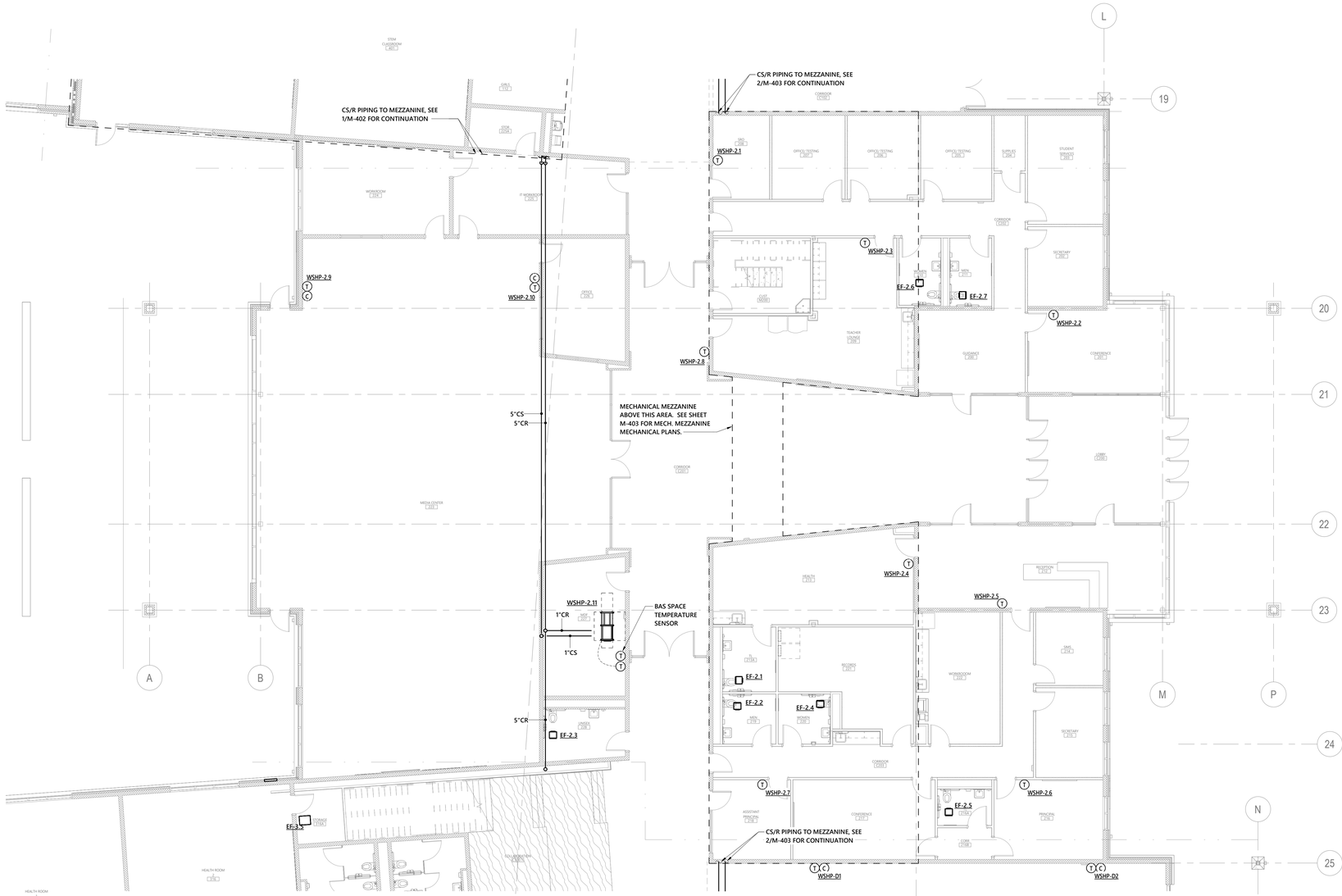
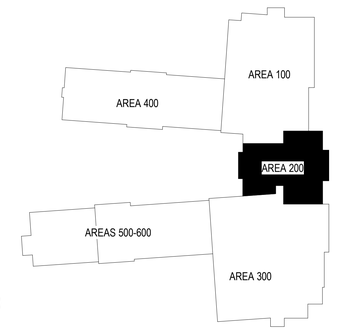



1 **PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 200**
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 200

# M-212

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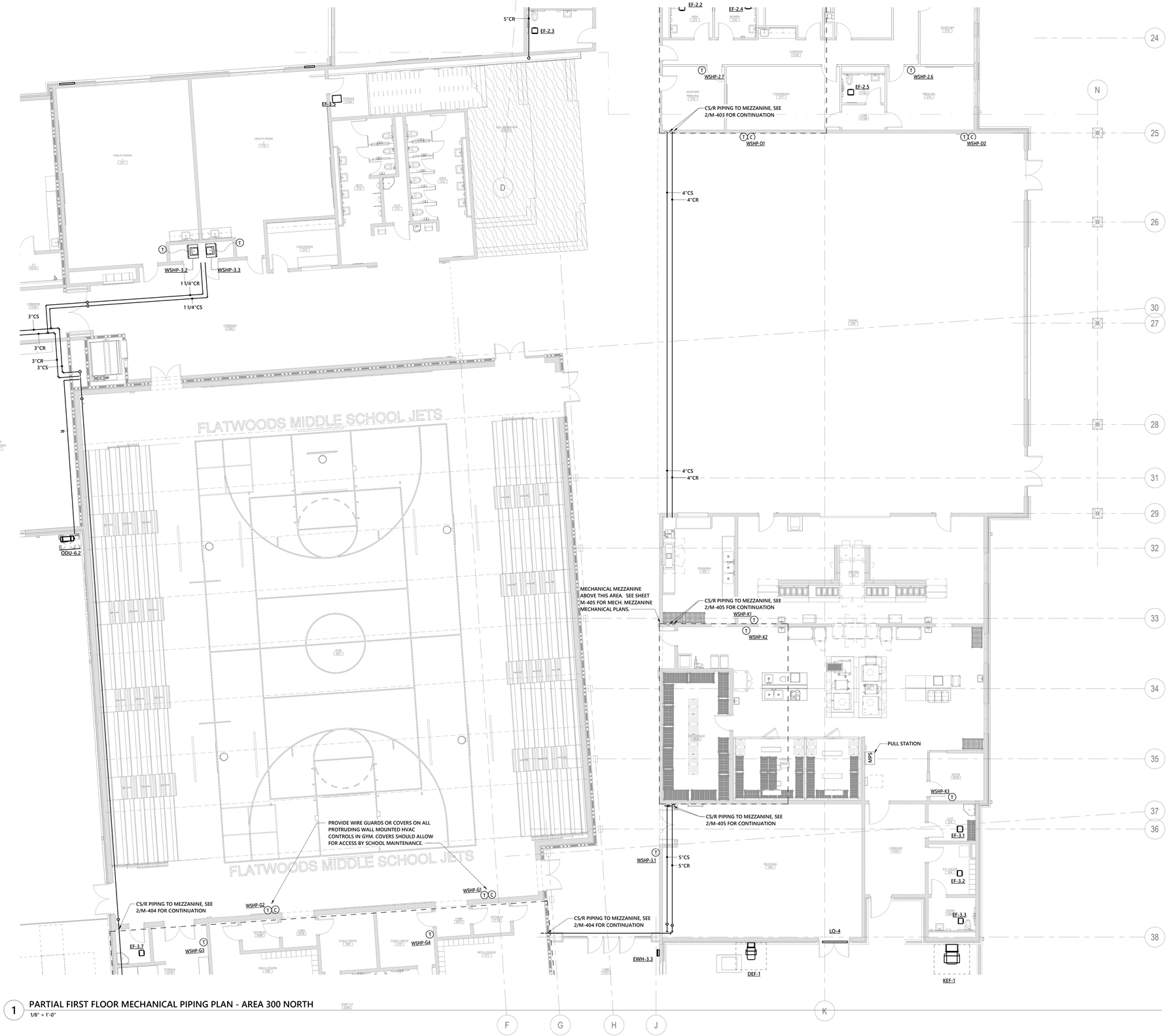


### 1 PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300 NORTH

1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300 NORTH

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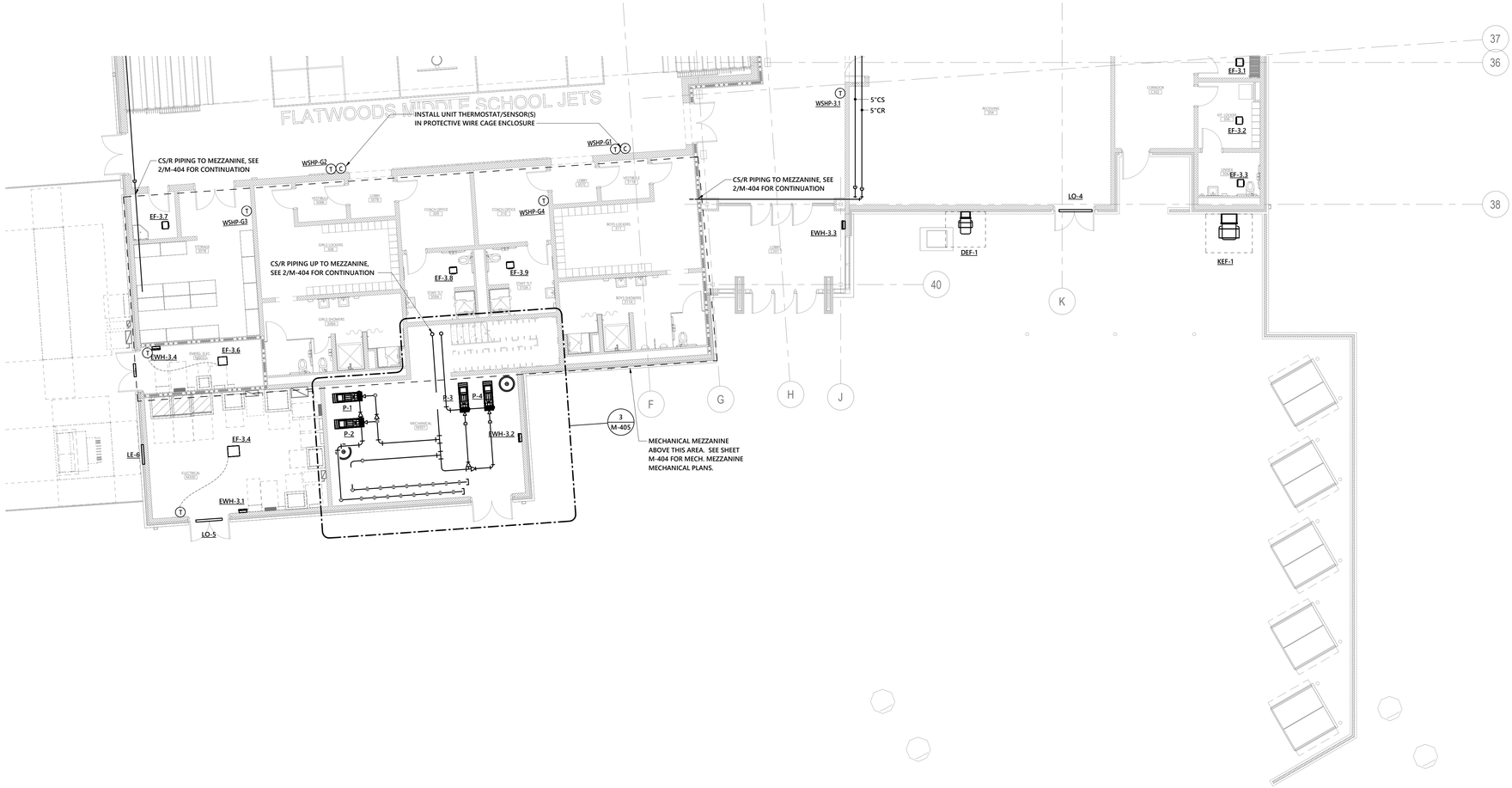


## 1 PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300 SOUTH

1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300 SOUTH

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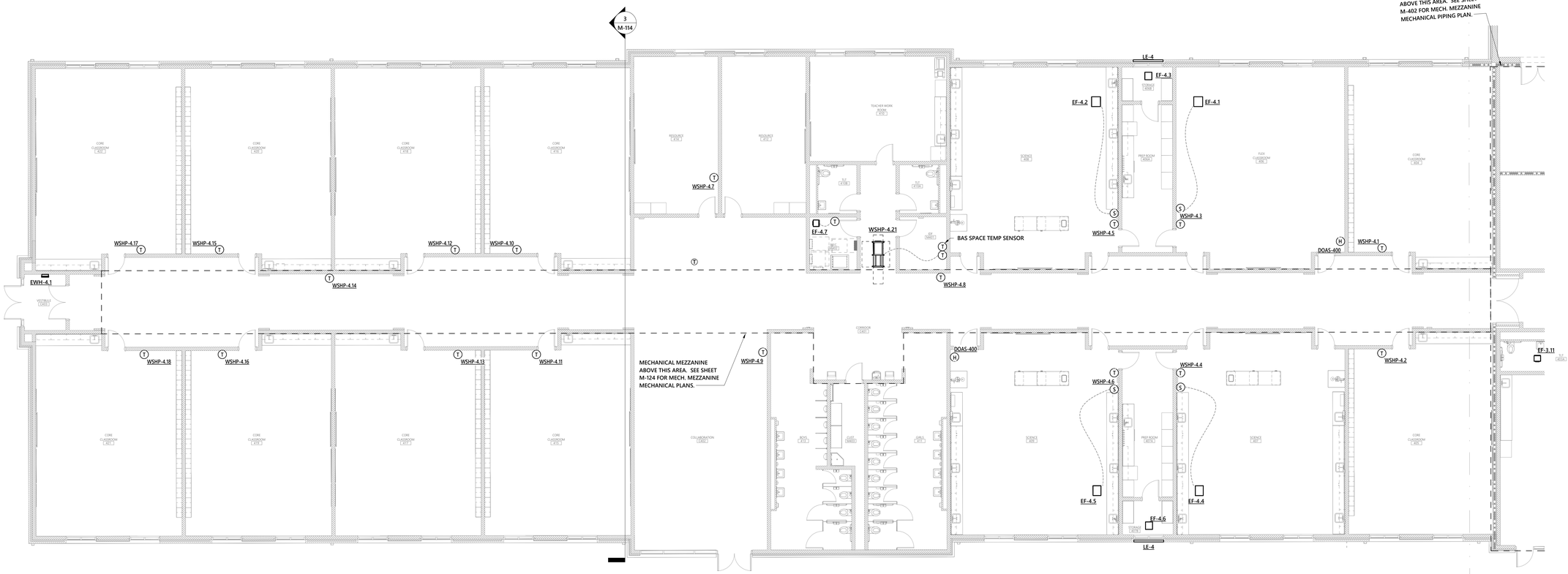
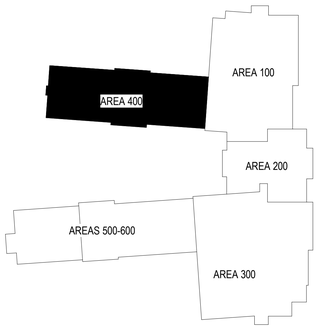



1 **PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 400**
1/8" = 1'-0"

KEY PLAN




**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 400

M-214

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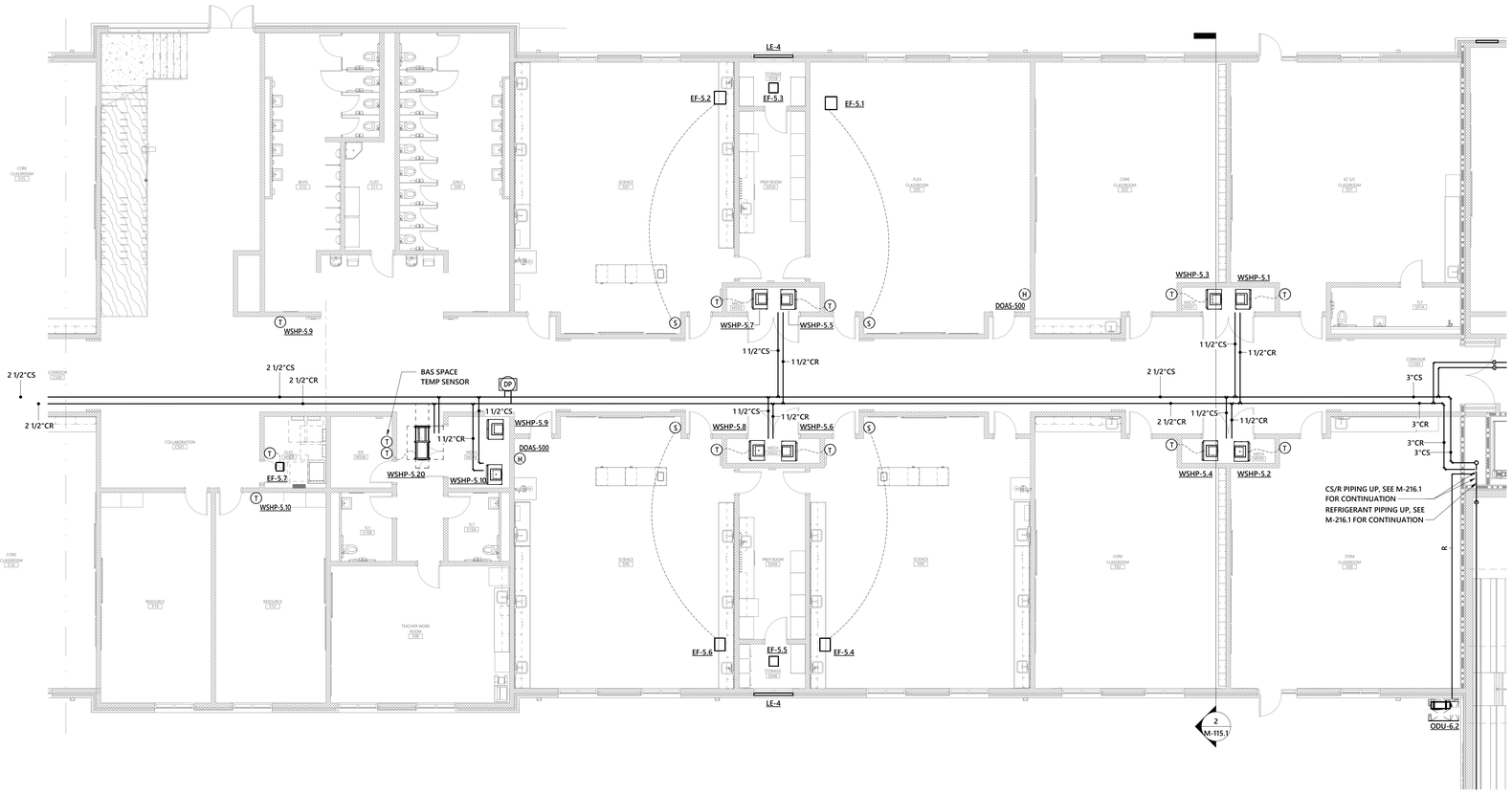


1 PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500 RIGHT
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500 RIGHT

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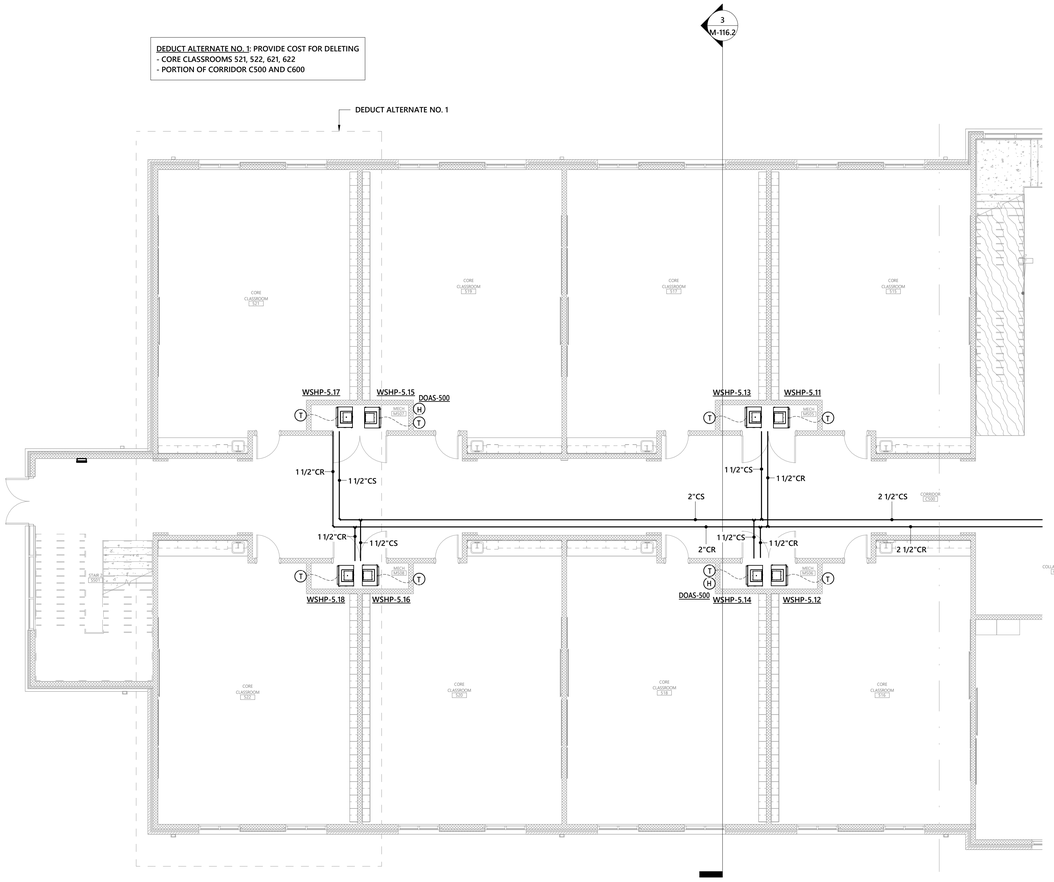


1 PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500 LEFT

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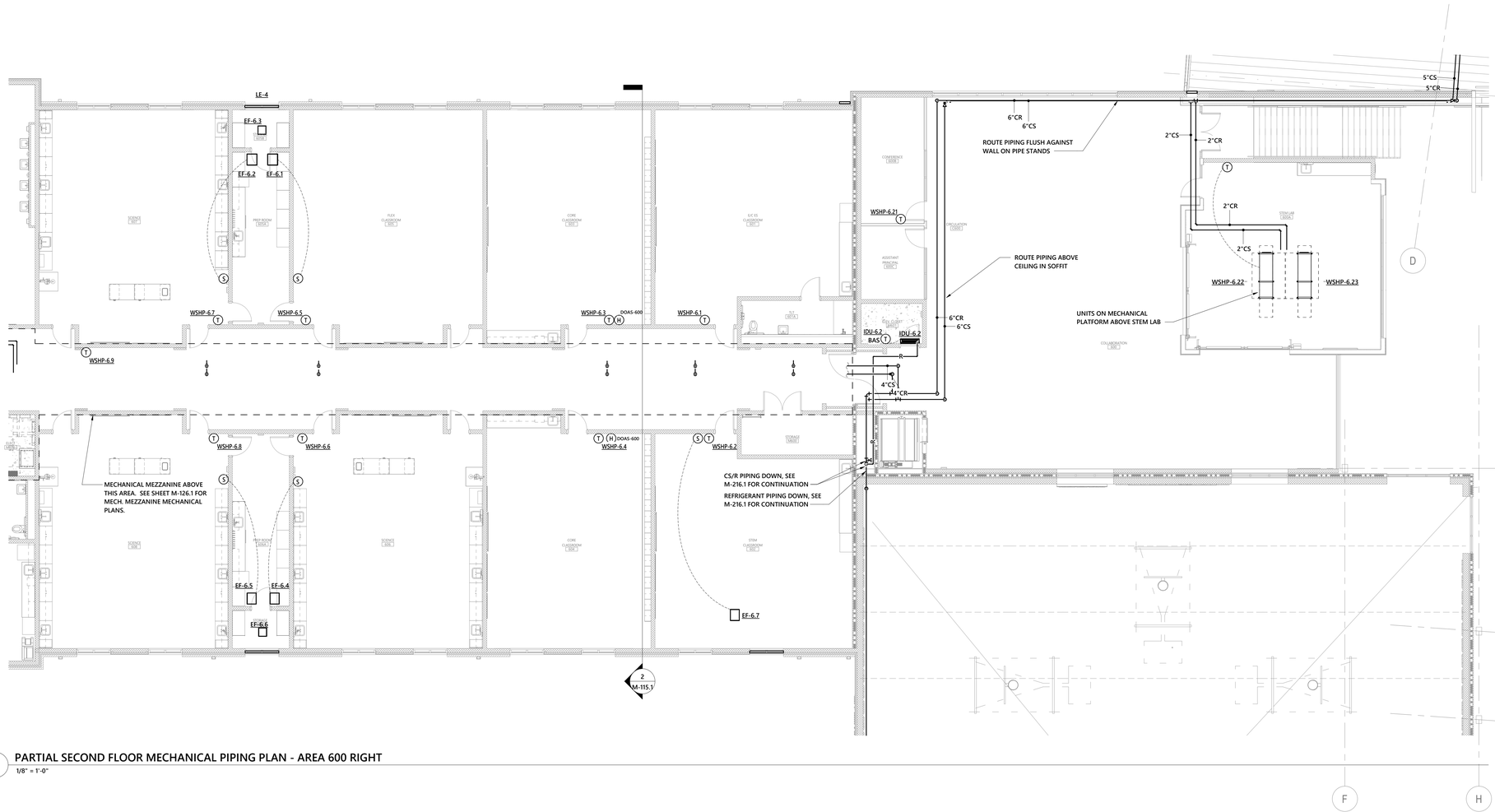


1 PARTIAL SECOND FLOOR MECHANICAL PIPING PLAN - AREA 600 RIGHT
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL SECOND FLOOR MECHANICAL PIPING PLAN - AREA 600 RIGHT

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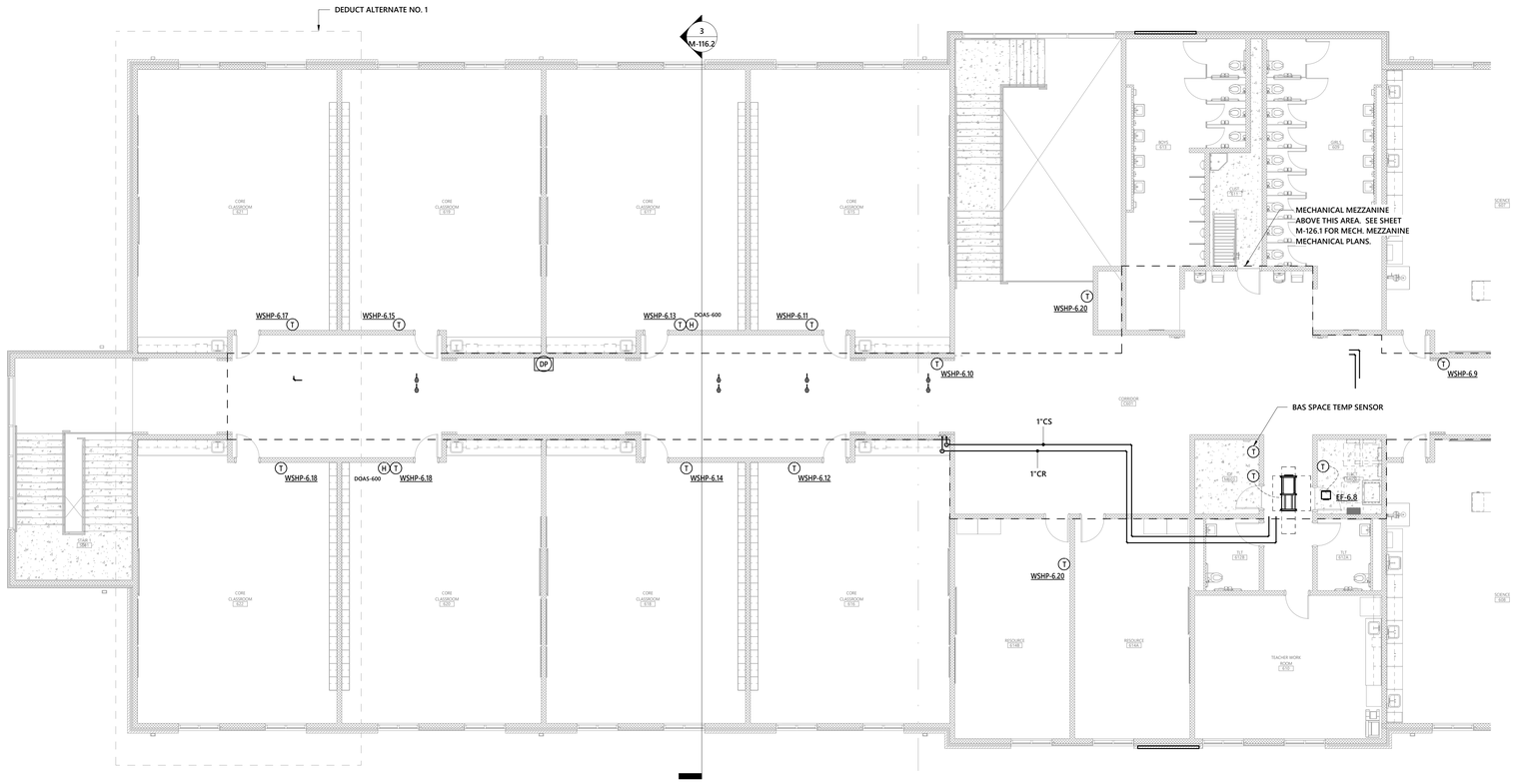
## KEYNOTE LEGEND (#)

DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600




1 PARTIAL SECOND FLOOR MECHANICAL PIPING PLAN - AREA 600 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR MECHANICAL PIPING PLAN - AREA 600 LEFT

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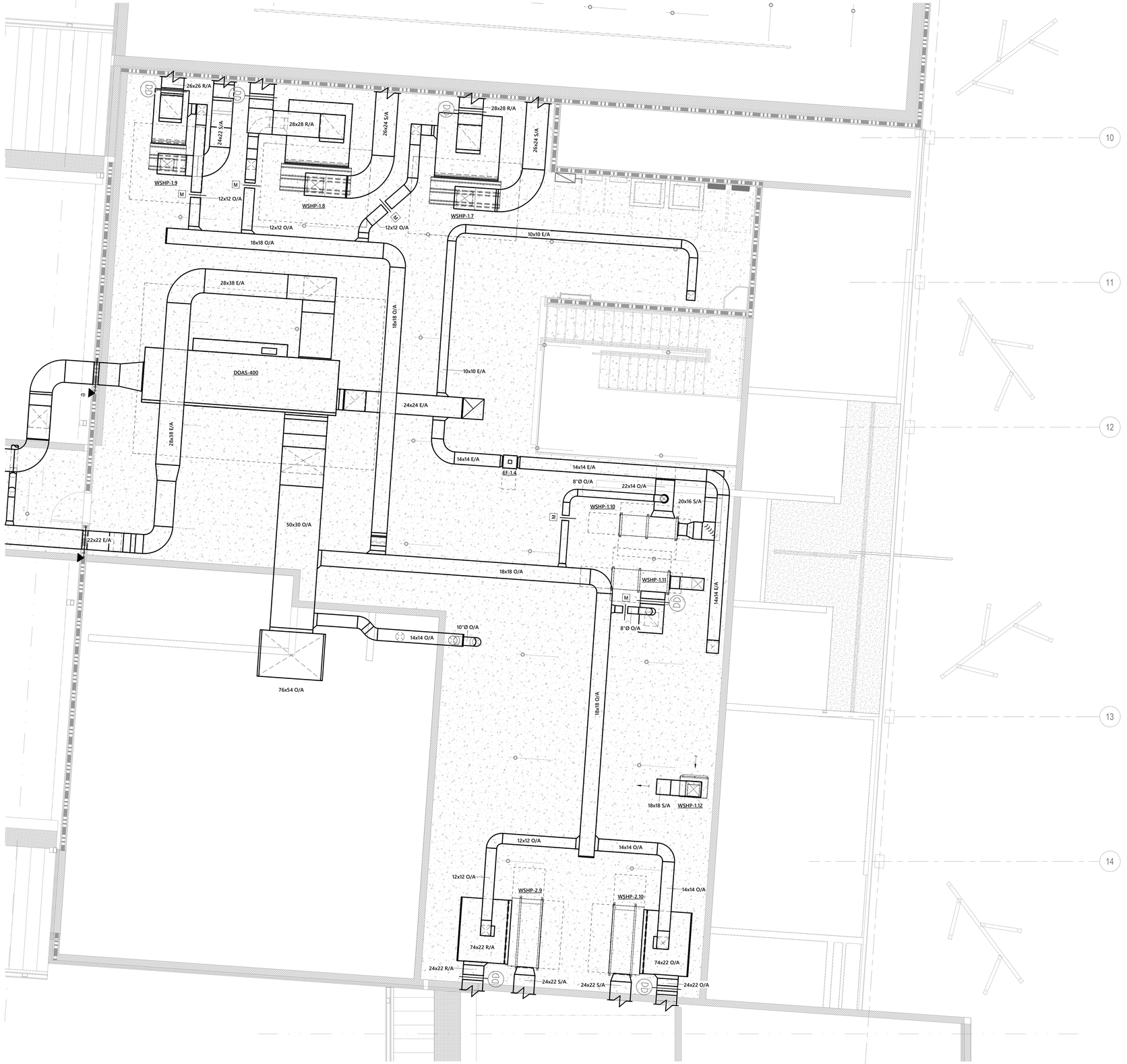


SEE 1/M-124 FOR CONTINUATION

## KEYNOTE LEGEND (1)

NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

1 MECH. MEZZANINE MECHANICAL PLAN - AREA 100
1/4" = 1'-0"

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PROJECT #: 02208.000
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ENLARGED MECH. MEZZANINE MECHANICAL PLAN - AREA 100

M-401

Sheet No. 32 of 42

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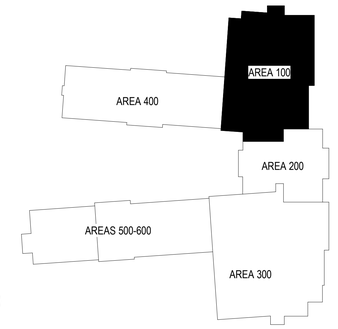
## KEYNOTE LEGEND (0)

NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN




1 MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 100
1/4" = 1'-0"

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North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

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ENLARGED MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 100

M-402

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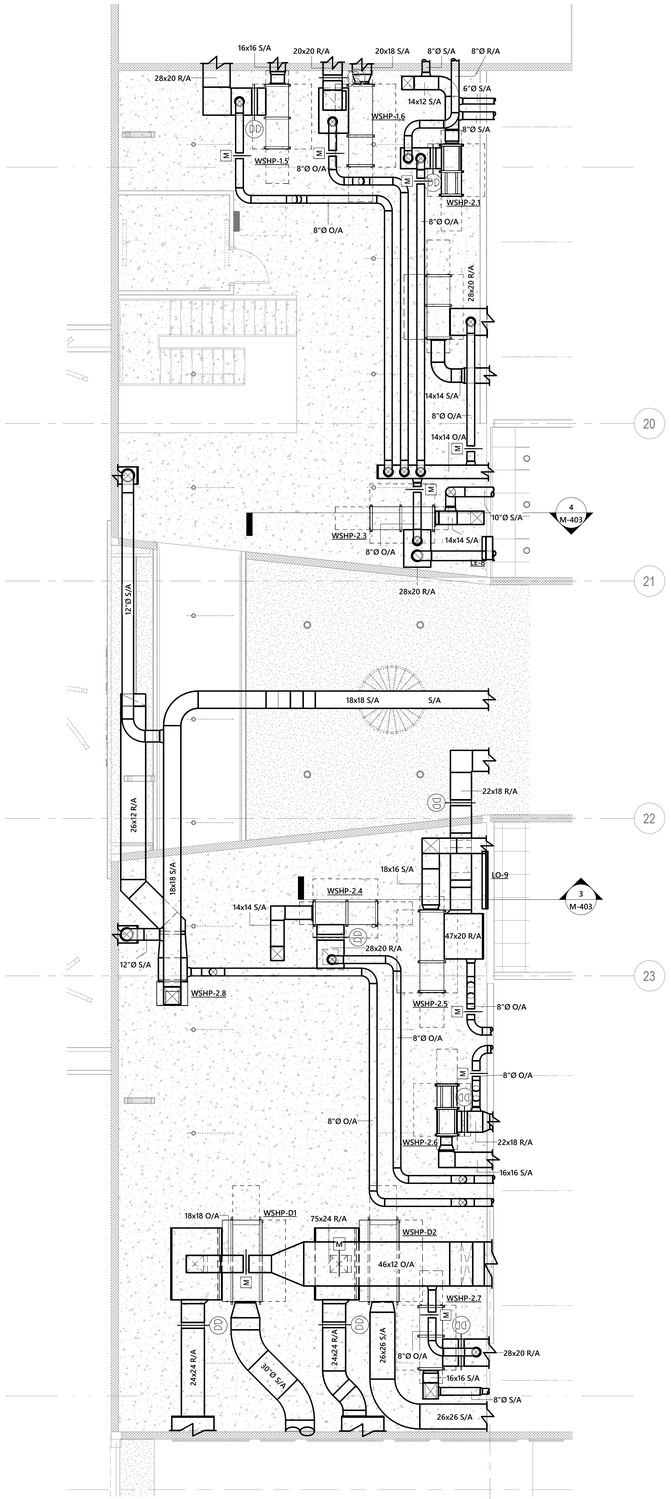
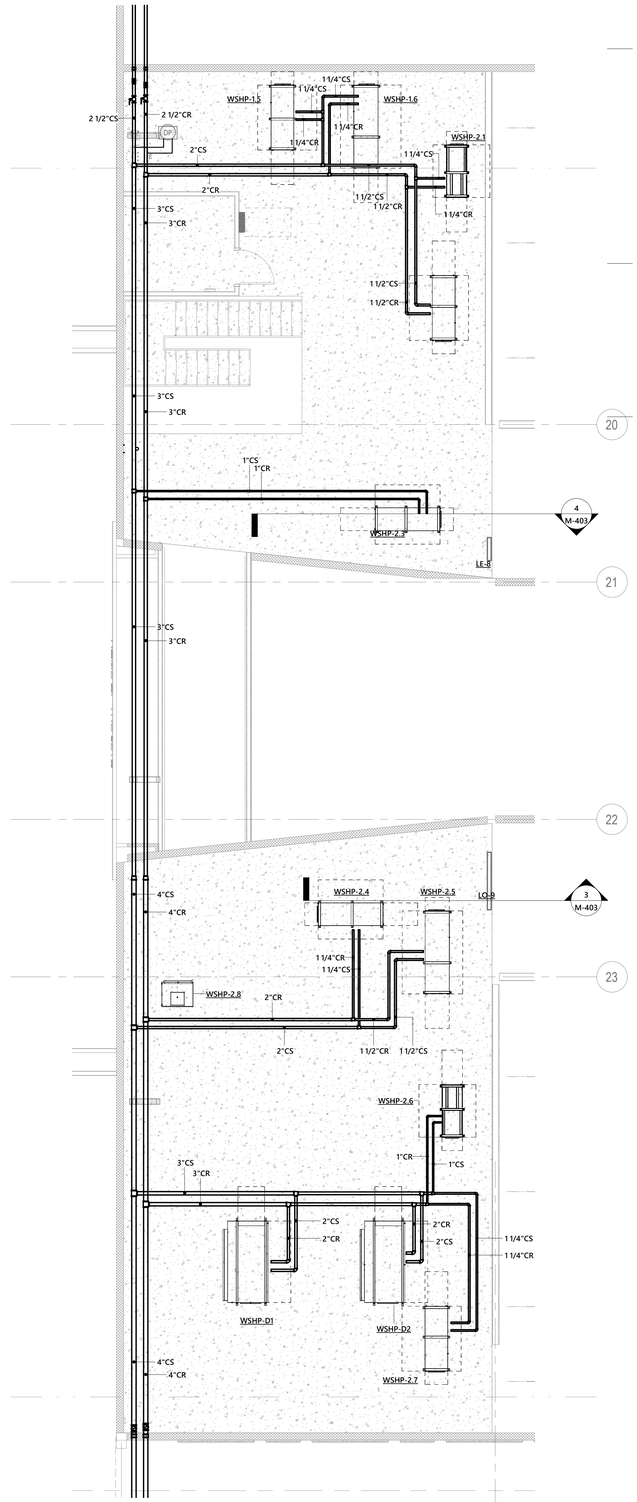
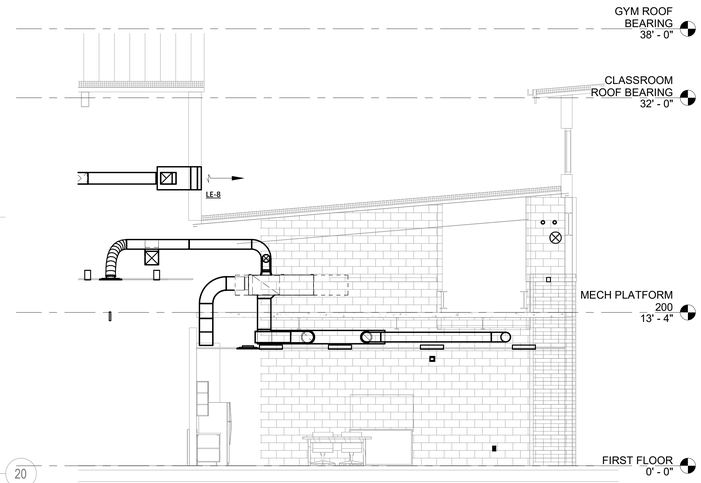


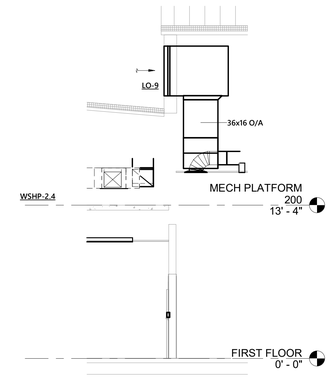

1 MECH. MEZZANINE MECHANICAL PLAN - AREA 200
3/16" = 1'-0"




2 MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 200
3/16" = 1'-0"




4 AREA 200 EXHAUST AIR LOUVER SECTION
3/16" = 1'-0"




3 AREA 200 OUTSIDE AIR LOUVER SECTION
3/16" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

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ENLARGED MECH. MEZZANINE MECHANICAL PLANS - AREA 200

M-403

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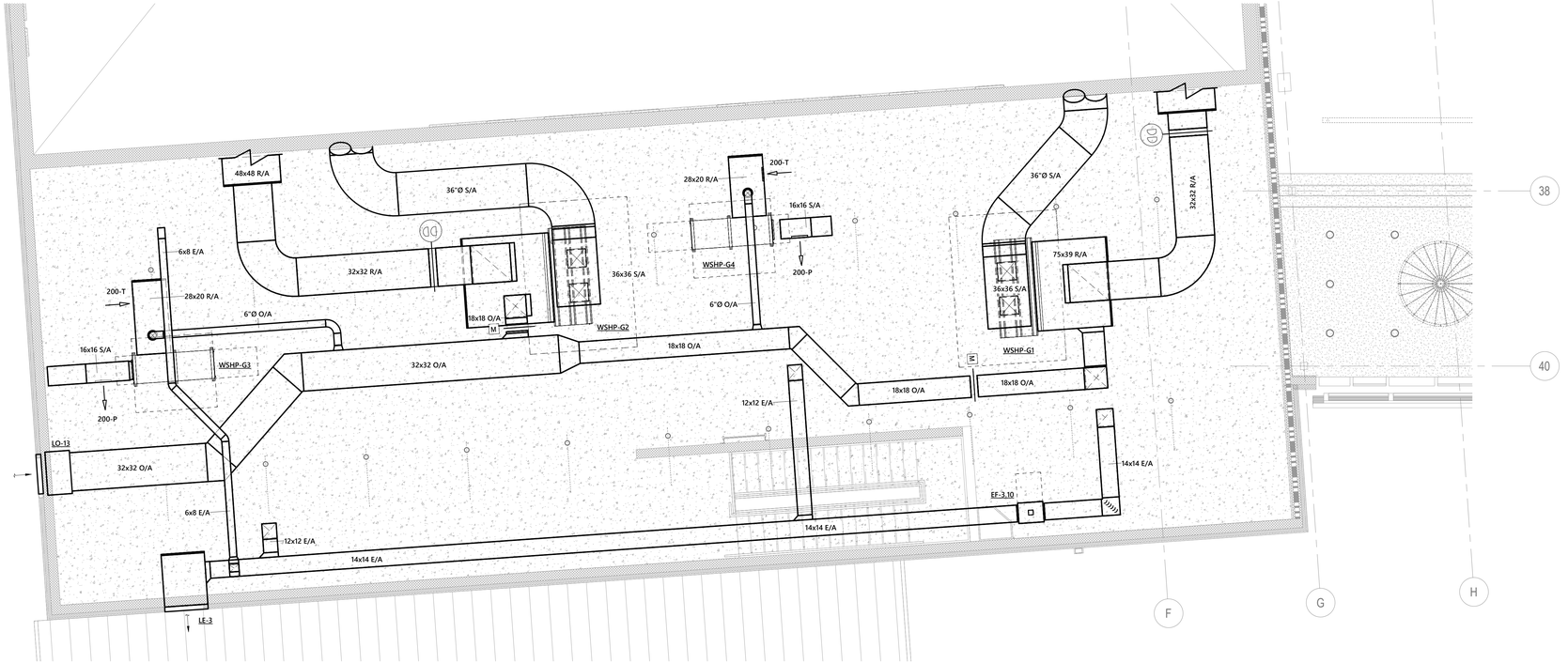
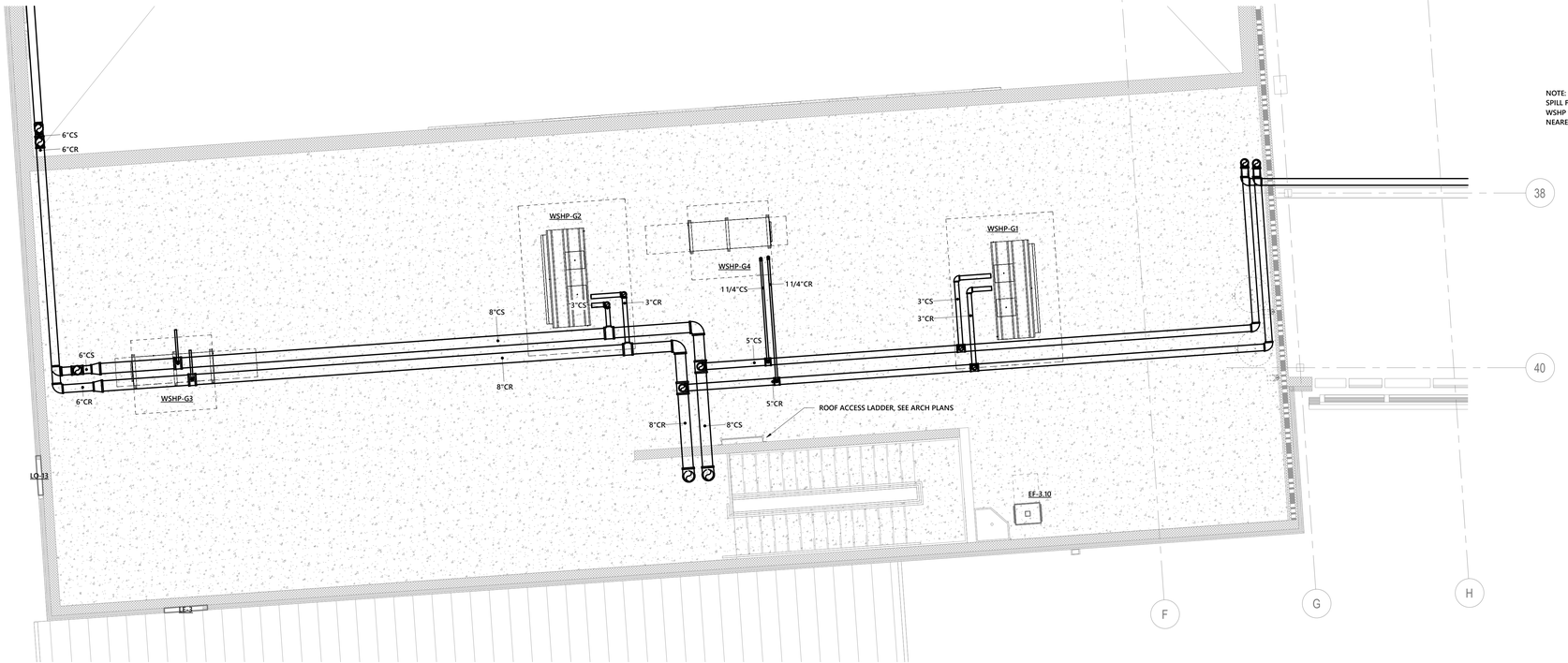



1 MECH. MEZZANINE MECHANICAL PLAN - GYM
1/4" = 1'-0"




2 MECH. MEZZANINE MECHANICAL PIPING PLAN - GYM
1/4" = 1'-0"

NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP AND DOAS IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENLARGED MECH. MEZZANINE MECHANICAL PLANS - GYM

M-404

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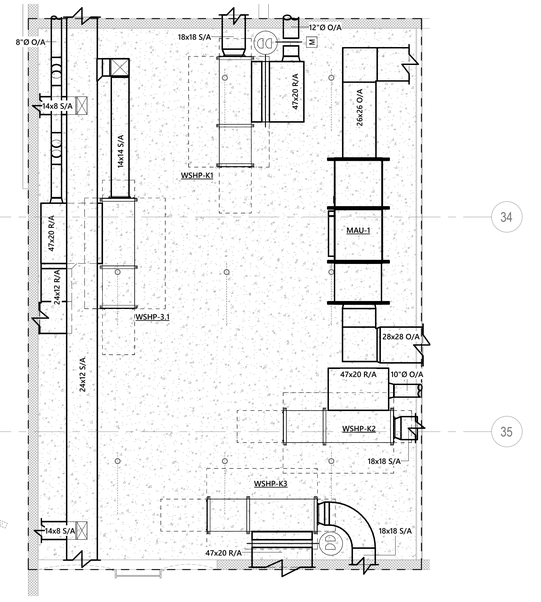
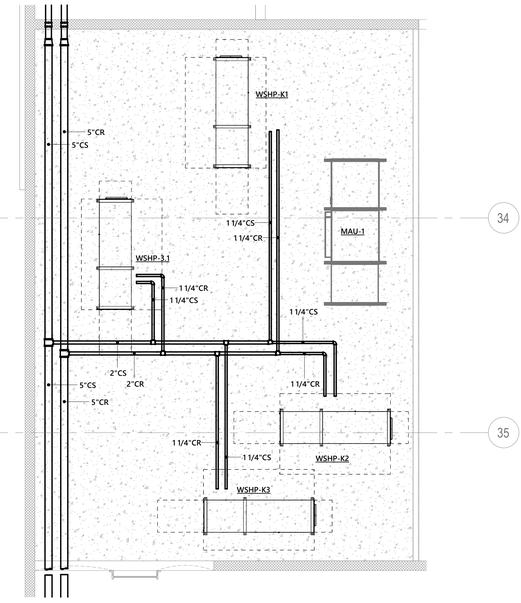
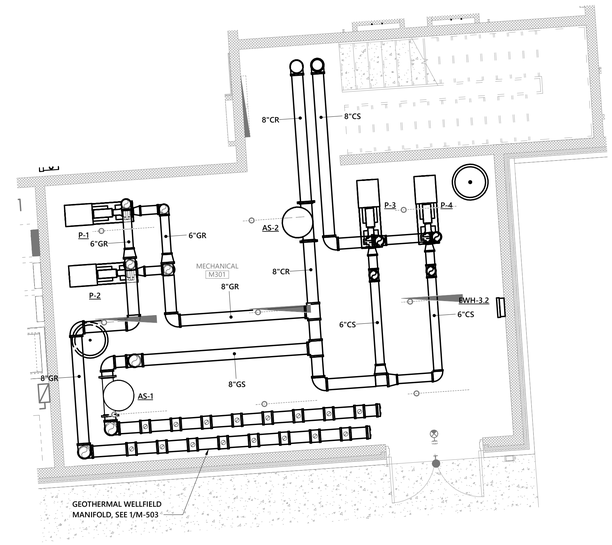



1 MECH. MEZZANINE MECHANICAL PLAN - AREA 300
1/4" = 1'-0"




2 MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 300
1/4" = 1'-0"




3 ENLARGED MECHANICAL PIPING PLANS - MECHANICAL M301
1/4" = 1'-0"

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENLARGED MECH. MEZZANINE MECHANICAL PLANS - AREA 300

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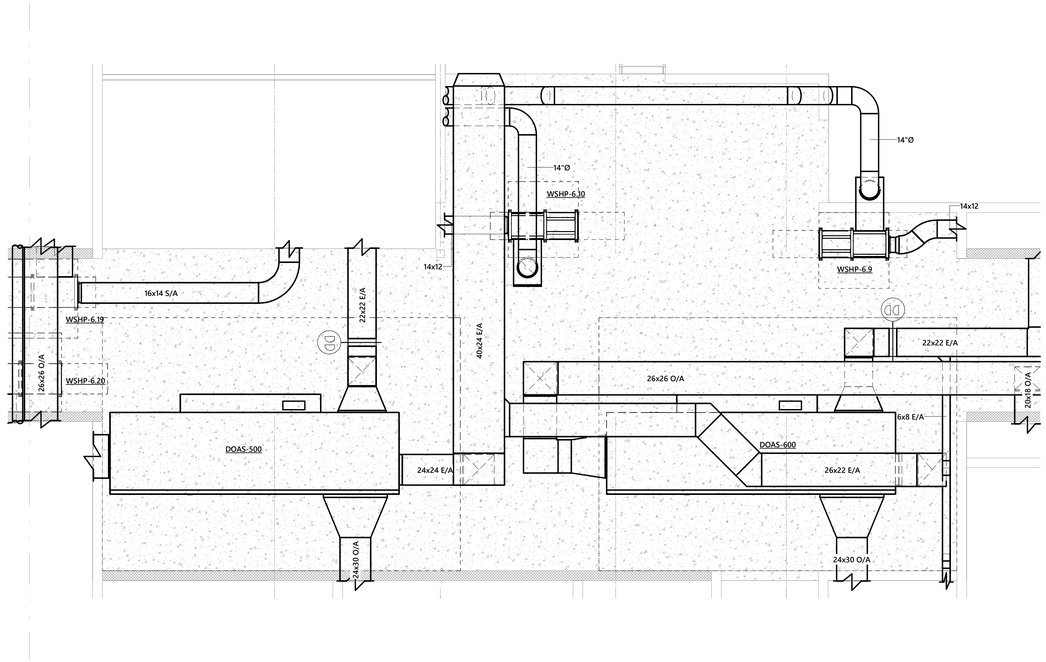
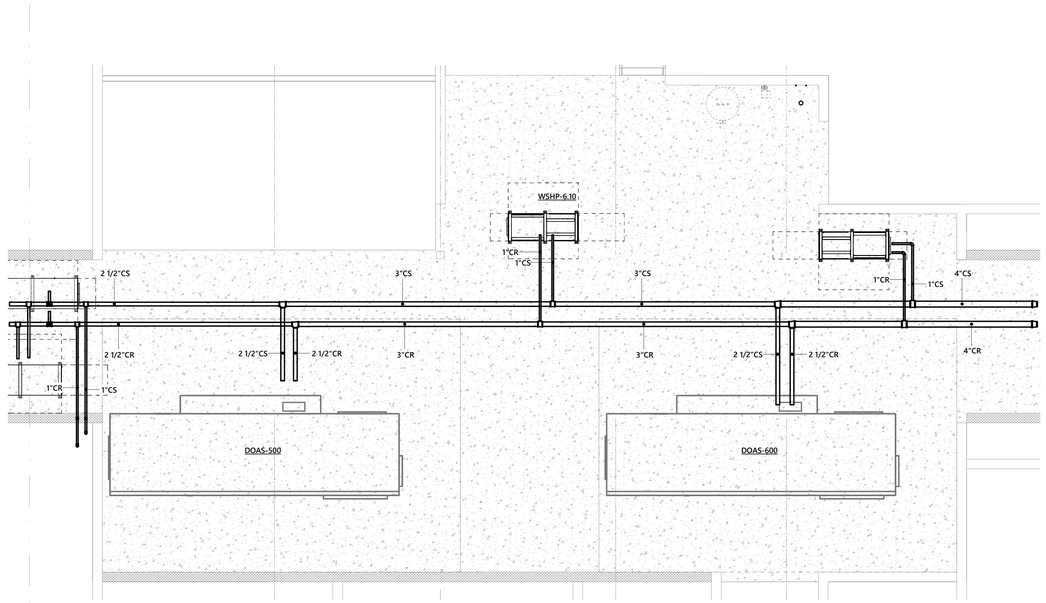



1 ENLARGED MECH. MEZZANINE MECHANICAL PLAN - AREA 600 LEFT

1/4" = 1'-0"




2 ENLARGED MECH. MEZZANINE MECHANICAL PIPING PLAN - AREA 600 LEFT

1/4" = 1'-0"

NOTE:
SPILL FULL SIZE CONDENSATE DRAIN FROM EACH WSHP AND DOAS IN MECHANICAL ROOM OVER NEAREST FLOOR DRAIN (FLOOR DRAINS BY P.C.)

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENLARGED MECH. MEZZANINE MECHANICAL PLANS - AREA 600 LEFT

M-406

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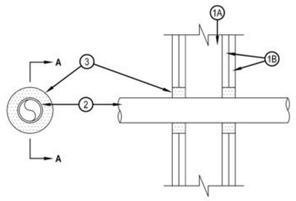
## System No. W-L-2098

**F Ratings — 1 and 2 Hr (See Item 1)**
**T Ratings — 1 and 2 Hr (See Item 1)**
**L Rating At Ambient — Less Than 1 CFM/Sq Ft**
**L Rating At 400 F — 4 CFM/Sq Ft**

WL 2098




1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Gypsum Board* — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 4-3/8 in.
   The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One nonmetallic pipe installed within the firestop system. Pipe to be rigidly supported on both sides of floor or wall assembly. The space between pipe and periphery of opening shall be min 3/4 in. to max 1-1/4 in. Pipe to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping system.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.
3. Fill, Void or Cavity Materials* — Sealant — Installed to completely fill the annular space between the pipes and gypsum wallboard on both sides of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

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Hilti Firestop Systems

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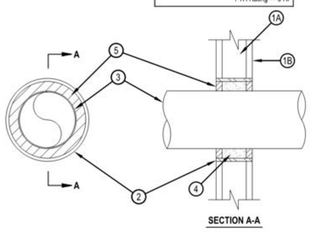
SYSTEM NO. WS-L-2098

## System No. W-L-7017

WL 7017

| ANSI/UL1479 (ASTM E814) | CAN/ULC S115 |
|---|---|
| F Rating — 1 Hr | F Rating — 1 Hr |
| T Rating — 0 Hr | FT Rating — 0 Hr |
| | FH Rating — 1 Hr |
| | FTH Rating — 0 Hr |




1. Wall Assembly — The 1-hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 9-5/8 in. (219 mm).
2. Metallic Sleeve — Nom 8 in. (203 mm) diam (or smaller) Schedule 40 (or heavier) steel sleeve cast into wall assembly with joint compound and installed flush with wall surfaces.
3. Air Duct — Nom 6 in. (152 mm) diam (or smaller) prefabricated No. 28 MSG galv sheet metal duct. A min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm) annular space is required within the firestop system. Duct to be rigidly supported on both sides of wall assembly.
4. Forming Material* — Foamed plastic forming material foamed into opening as a permanent form. Forming material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CF812 or CF-AS CJP Foam Sealant
5. Fill, Void or Cavity Material* — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant

*Bearing the UL Classification Mark

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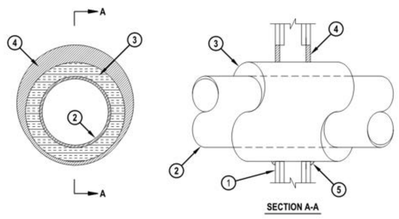
SYSTEM NO. W-L-7017

## System No. W-L-5029

WL 5029

| ANSI/UL1479 (ASTM E814) | CAN/ULC S115 |
|---|---|
| F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4) | F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4) |
| T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3) | FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3) |
| L Rating At Ambient — 4 CFM/Sq Ft | FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4) |
| L Rating At 400 F — Less Than 1 CFM/Sq Ft | FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3) |
| | L Rating At Ambient — 4 CFM/Sq Ft |
| | L Rating At 400 F — Less Than 1 CFM/Sq Ft |

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1. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 in. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in. (473 mm).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 in. (102 mm).
3. Pipe Covering* — Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above.
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

Hilti Firestop Systems

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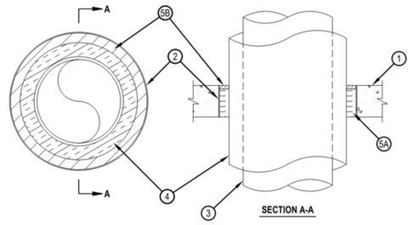
SYSTEM NO. W-L-5029

## System No. C-AJ-5091

CAJ 5091




1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 29 in. (737 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall. If the steel sleeve extends beyond the top surface of the floor or both surfaces of the wall, the T Rating of the firestop system is 0 hr.
2A. Sheet Metal Sleeve — (Optional) - Max 6 in. (152 mm) diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.
2B. Sheet Metal Sleeve — (Optional) - Max 12 in. (305 mm) diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.
3. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

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## System No. C-AJ-5091

CAJ 5091

4. Pipe Covering — Min 1/2 in. (13 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). When thickness of pipe covering is less than 2 in. (51 mm), the T Rating for the firestop system is 0 hr.
   See Pipe Equipment Covering — Materials — (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4A. Pipe Covering — (Not Shown) — As an alternate to Item 4, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf or 224 kg/m3) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm).
5. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

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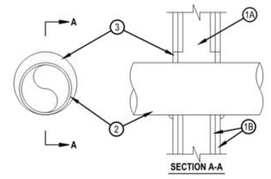
SYSTEM NO. C-AJ-5091

## System No. W-L-1054

WL 1054

| ANSI/UL1479 (ASTM E814) | CAN/ULC S115 |
|---|---|
| F Ratings —1 and 2 Hr (See Items 1 and 3) | F Ratings — 1 and 2 Hr (See Items 1 and 3) |
| T Rating — 0 Hr | FT Rating — 0 Hr |
| L Rating (Without Movement) at Ambient — Less Than 1 CFM/sq ft | FH Ratings —1 and 2 Hr (See Items 1 and 3) |
| L Rating (Without Movement) at 400°F — Less Than 1 CFM/sq ft | FTH Rating — 0 Hr |
| M Rating (Movement) — See Table 1 | FTH Rating — 0 Hr |
| | L Rating at Ambient — Less Than 5.1 L/s/m2 |
| | L Rating at 204°C — Less Than 5.1 L/s/m2 |




1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. For M Rating, steel studs to be min 3-5/8 in. (92 mm) wide. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
   The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly. The M Rating is applicable only to 1 hr rated walls.

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## System No. W-L-1054

WL 1054

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) , diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

| Movement Direction | Penetrant Item | Nominal Penetrant Diameter | Annular Space | Movement | Sealant Depth | F-Rating | L Rating with Movement |
|---|---|---|---|---|---|---|---|
| Y | 2A, 2C* | 2 in. | Max 2-1/4 in. | 5% | 5/8 in. | 1 hr | N/A |
| Z | 2A, 2C* | 2 in. | 2-1/4 in. | 0.25 in. | 5/8 in. | 1 hr | N/A |

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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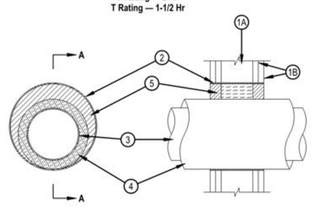
SYSTEM NO. W-L-1054

## System No. W-L-7018

WL 7018

**F Rating — 2 Hr**
**T Rating — 1-1/2 Hr**




1. Wall Assembly — The 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Gypsum Board* — Two layers of nom 5/8 in. thick gypsum wallboard as specified in the individual Wall and Partition Design No. Max diam of opening is 9 in.
2. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.016 in. thick (No. 28 gauge) galv steel sheet steel and having a min 2 in. lap along the longitudinal seam. Length of sleeve to be 1/8 in. less than thickness of wall. Sleeve to be installed by coiling the sheet metal to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.
3. Steel Duct — Nom 6 in. diam (or smaller) No. 28 gauge (or heavier) galv steel duct to be installed concentrically within the firestop system. Duct to be rigidly supported on both sides of the wall assembly.
4. Pipe Covering* — Nom 1 in. thick hollow cylindrical heavy density (3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Tranverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the steel sleeve shall be min 0 in. (point contact) to max 1 in.
   See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. depth of sealant applied within the annulus, flush with each surface of the wall assembly. At the point contact location between insulated pipe and wall, a min 1/2 in. diam bead of sealant shall be applied on both surfaces of wall, lapping 1/4 in. beyond the periphery of the opening.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-ONE Sealant

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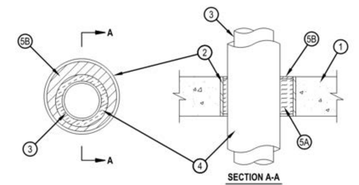
SYSTEM NO. W-L-7018

## System No. C-AJ-5090

CAJ 5090

| ANSI/UL1479 (ASTM E814) | CAN/ULC S115 |
|---|---|
| F Ratings — 2 and 3 Hr (See Item 4) | F Ratings — 2 and 3 Hr (See Item 4) |
| T Rating — 0 Hr | FT Rating — 0 Hr |
| L Rating At Ambient — 4 CFM/sq ft | FH Ratings — 2 and 3 Hr (See Item 4) |
| L Rating At 400 F — Less Than 1 CFM/sq ft | FTH Rating — 0 Hr |
| | L Rating At Ambient — 4 CFM/sq ft |
| | L Rating At 400 F — Less Than 1 CFM/sq ft |

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Hilti Firestop Systems

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SYSTEM NO. C-AJ-5090

CAJ 5090

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 18 in. (457 mm).
   See Concrete Blocks (CAZT) Category in the Fire Resistance Directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 18 in. (457 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall.
3. Through Penetrants — One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper tubing.
   C. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
4. Tube Insulation — Plastics+ — Min 1/2 in. (13 mm) to max 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Nom 1 in. (25 mm) thick AB/PVC flexible foam insulation may be used for max 2 hr F and FH Ratings when max 3 in. (76 mm) diam pipe or tubing is used. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). When max annular space exceeds 1-1/2 in. (38 mm) the F and FH Ratings are 2 hr.
   See Plastics+ (QMFZ2) Category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
5. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. When max annular space exceeds 1-1/2 in. (38 mm) the min thickness of fill material is 1/2 in. (13 mm).
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-One Sealant

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SYSTEM NO. C-AJ-5090

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040316 ENGINEERING FIRM P-1439 11/08/2024

CONSTRUCTION DOCUMENTS

optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS

FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24

PROJECT #: 02208.000
DRAWN BY: HFK
CHECKED BY: TAL

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U.L. PENETRATION DETAILS

M-501

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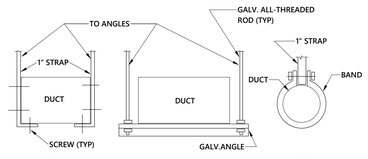
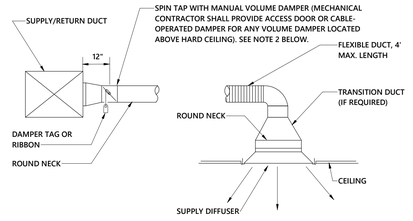



## LOW PRESSURE DUCTWORK

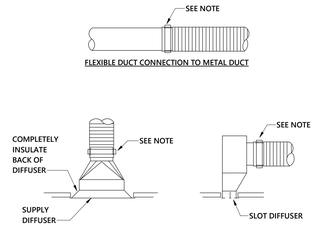
NOTE:
ALL DUCTWORK AND EQUIPMENT HANGERS AND SUPPORTS MUST BE PURCHASED THRU THE METAL DECKING MANUFACTURER. HANGERS SCREWED INTO THE DECK WILL NOT BE ACCEPTABLE. COORDINATE WITH GENERAL CONTRACTOR.

**4 DUCTWORK HANGER DETAILS**
NO SCALE




NOTE:
1. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST RUNOUTS.
2. ALL MANUAL VOLUME DAMPERS (FOR INSULATED DUCTWORKS) SHALL BE PROVIDED WITH AN ELEVATED REGULATOR (STAND-OFF) EQUAL TO DURO DYNE SEST SERIES AND FULL-LENGTH SHAFT. STAND SHALL EXTEND A MINIMUM OF 2" BEYOND DUCTWORK WITH EXTENDED TAB/SHAFT.
3. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR DESIRED DAMPER ACCESS STYLE CABLE-OPERATED DAMPER ADJUSTMENT SHALL BE THROUGH AIR TERMINAL. FACE OPERATION (CONCEALED MOUNTING) OR THROUGH CEILING-MOUNTED RECESSED PORTS EQUAL TO MAT RT-CCM.

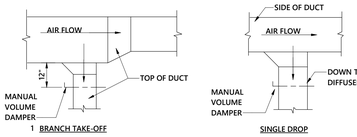
**3 SPIN TAP TO ROUND NECK DIFFUSER**
NOT TO SCALE




FLEXIBLE CONNECTION TO SUPPLY DIFFUSER

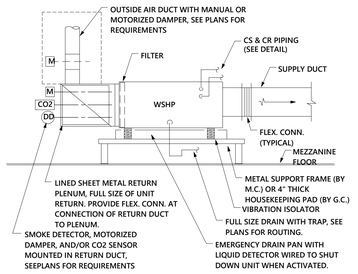
NOTE:
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH APPROVED STRAP AND SEALANT.

**2 FLEX CONNECTION DETAIL**
NOT TO SCALE



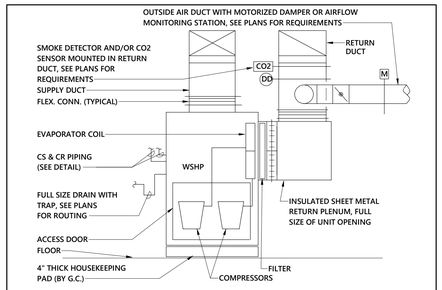

NOTE:
1. USE BRANCH TAKE-OFF (1) WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF (2) WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST SINGLE DROP DUCT RUNS.

**1 DUCTWORK DETAILS**
NOT TO SCALE



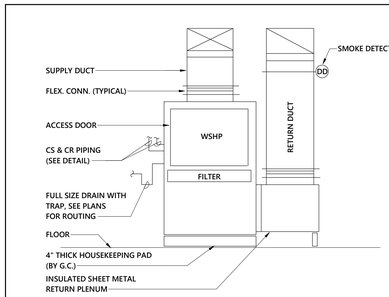

NOTES:
1. SEE PLANS FOR SIZE AND ROUTING OF DUCTWORK AND PIPING.
2. SEE 1/M-503 FOR PIPING DETAILS.
3. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
4. HORIZONTAL UNIT INSTALLATION IS SHOWN, VERTICAL UNIT INSTALLATION IS SIMILAR.

**8 HORIZONTAL WSHP DETAIL**
NO SCALE



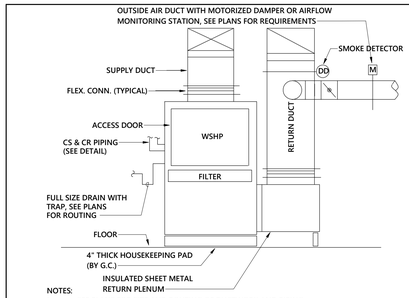

NOTES:
1. SEE PLANS FOR SIZE AND ROUTING OF DUCTWORK AND PIPING.
2. SEE 4/M-403 FOR PIPING DETAILS.
3. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, I INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

**7 UPFLOW WSHP DETAIL (VARIABLE VOLUME)**
NO SCALE



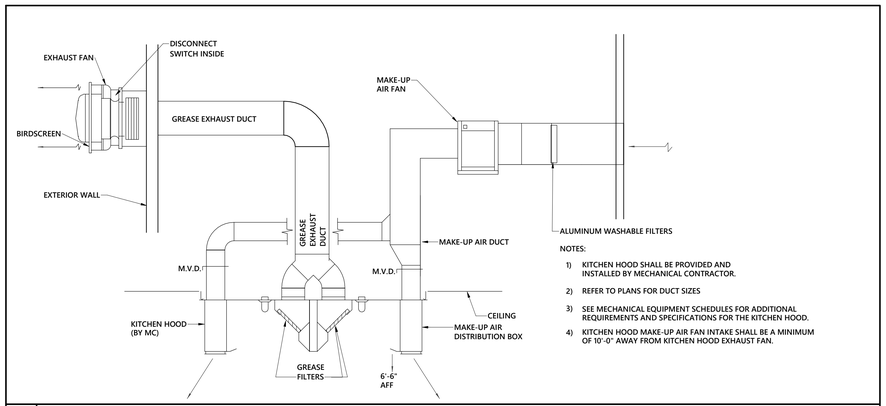

NOTES:
1. SEE PLANS FOR SIZE AND ROUTING OF DUCTWORK AND PIPING.
2. SEE 1/M-503 FOR PIPING DETAILS.
3. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

**6 UPFLOW WSHP DETAIL (CONSTANT VOLUME)**
NO SCALE



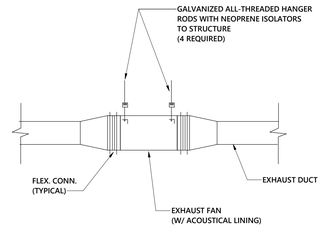

NOTES:
1. SEE PLANS FOR SIZE AND ROUTING OF DUCTWORK AND PIPING.
2. SEE 1/M-503 FOR PIPING DETAILS.
3. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

**5 UPFLOW WSHP DETAIL (CONSTANT VOLUME ADMIN)**
NO SCALE



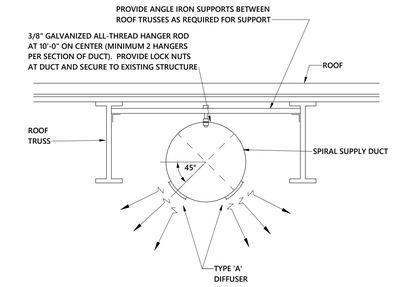

NOTES:
1) KITCHEN HOOD SHALL BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR.
2) REFER TO PLANS FOR DUCT SIZES
3) SEE MECHANICAL EQUIPMENT SCHEDULES FOR ADDITIONAL REQUIREMENTS AND SPECIFICATIONS FOR THE KITCHEN HOOD.
4) KITCHEN HOOD MAKE-UP AIR FAN INTAKE SHALL BE A MINIMUM OF 10'-0" AWAY FROM KITCHEN HOOD EXHAUST FAN.

**11 KITCHEN HOOD SYSTEM DETAIL**
NO SCALE



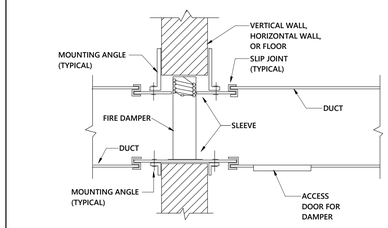

NOTES:
1. COORDINATE LOCATION OF FAN WITH OTHER TRADES TO INSURE SERVICE CLEARANCES.
2. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING IF REQUIRED.

**10 INLINE EXHAUST FAN DETAIL**
NO SCALE




NOTES:
1. DUCTWORK SHALL BE INSTALLED LEVEL, AS HIGH AS POSSIBLE (UNLESS OTHERWISE NOTED).
2. ALL EXPOSED SPIRAL DUCTWORK SHALL BE A SINGLE OR DOUBLE WALL LINDAB SPIROSAFE SELF-SEALING DUCT SYSTEM (OR APPROVED EQUAL). REGISTERS ON SPIRAL DUCT SHALL BE MOUNTED WITHOUT THE USE OF RECTANGULAR REGISTER TAPS, TOP AND BOTTOM FLANGES SHALL MEET FLUSH WITH THE SPIRAL DUCT WALL REGARDLESS OF DUCT DIAMETER.

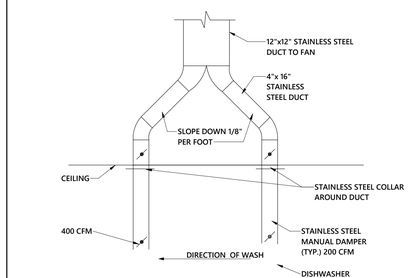
**9 DBL. DEFL. DIFFUSER MOUNTING ON SPIRAL DUCT**
NOT TO SCALE




NOTE: DAMPERS SHALL BE INSTALLED AS PER MFG. INSTRUCTIONS.

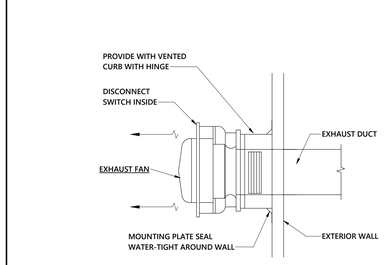
FIRE DAMPER SHALL BE RUSKIN TYPE DIBD2 STYLE B 1 1/2 HOUR UL, INSTALLED IN ACCORDANCE WITH NFPA. ACCESS DOOR SHALL BE RUSKIN MODEL ADC2 LOCATED ON ACCESSIBLE CEILING SIDE OF WALL. IF ACCESSIBLE CEILING NOT AVAILABLE, MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING (OR WALL) TO MATCH FINISH COLOR. DAMPER SHALL BE EQUIPPED FOR HORIZONTAL OR VERTICAL MOUNTING AS REQUIRED. WHERE ROUND DUCTS REQUIRE A DAMPER, AN ENCLOSURE WITH ROUND DUCT CONNECTION WILL BE REQUIRED WITH TYPE B DAMPER INSIDE. ALL MODELS ARE RUSKIN (APPROVED EQUAL ACCEPTABLE).

**15 DAMPER - LOW PRESSURE FIRE**
NOT TO SCALE

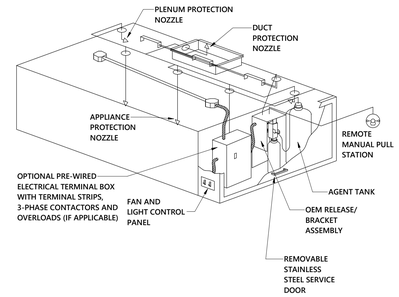



NOTE:
ALL DUCT SEAMS AND JOINTS SHALL BE CONSTRUCTED WATERTIGHT. ALL DUCTWORK SHALL SLOPE TOWARD DISHWASHER.

**14 DISHWASHER EXHAUST DETAIL**
NO SCALE




**13 FAN - SIDEWALL KITCHEN & DISHWASHER HOOD EXHAUST**
NOT TO SCALE




**12 KITCHEN HOOD FIRE SUPRESSION**
NO SCALE

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CONSTRUCTION DOCUMENTS

optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
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HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL DETAILS

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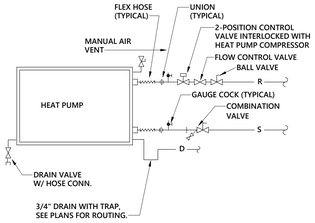
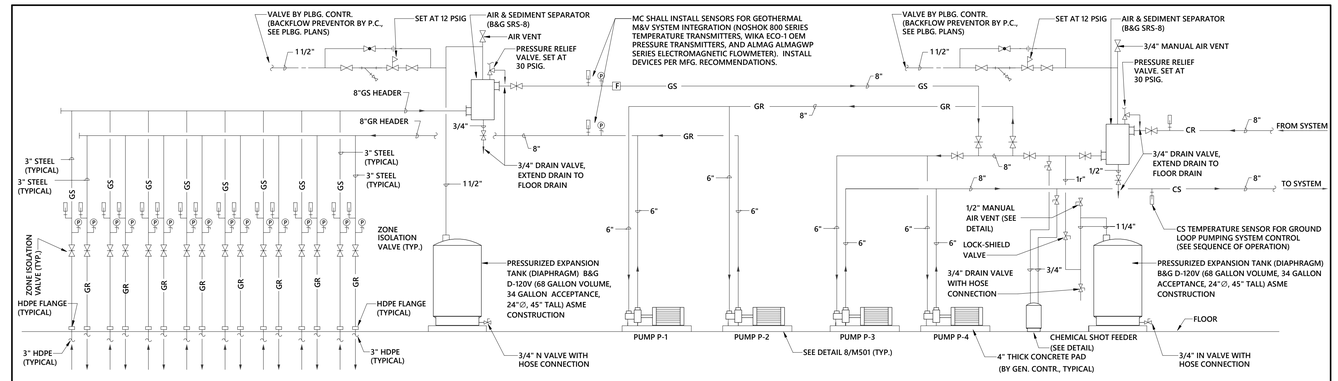
NOTE:
PROVIDE TWO-WAY TWO-POSITION CONTROL VALVE INTERLOCKED WITH THE HEAT PUMP COMPRESSOR, VALVE SHALL OPEN WHEN COMPRESSOR IS ACTIVATED FOR HEATING OR COOLING FOR ALL UNITS WITH THE EXCEPTION OF UNITS INDICATED ON THE PLANS, WHERE VALVE SHALL BE OMITTED. CONDENSER WATER SHALL CIRCULATE THRU THESE UNITS CONSTANTLY TO MAINTAIN MINIMUM SYSTEM WATER FLOW.

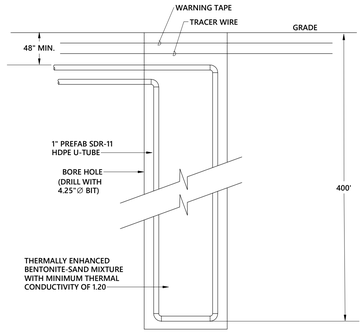



COMBINATION VALVE SHALL INCLUDE BALL VALVE, STRAINER, BLOWDOWN VALVE AND UNIONS.

## 2 WATER SOURCE HEAT PUMP PIPING
NO SCALE

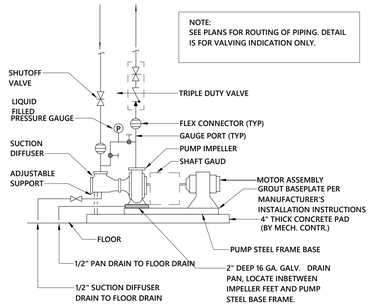



## 1 CONDENSER AND GEOTHERMAL WATER PIPING SCHEMATIC
NO SCALE

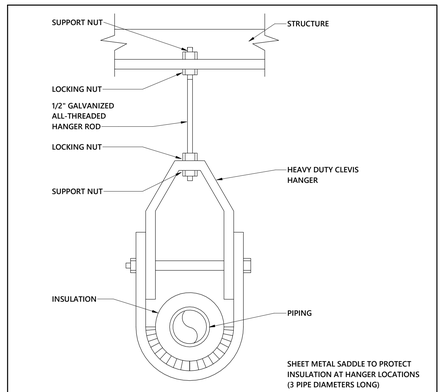



NOTE:
INSTALL WARNING TAPE AND TRACER WIRE ABOVE ALL UNDERGROUND PIPING

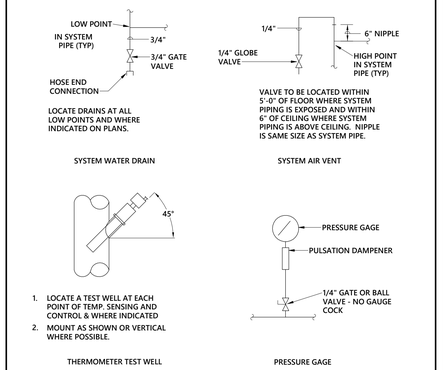
## 6 GEOTHERMAL WELL DETAIL
NO SCALE




## 5 PUMP PIPING DETAIL
NO SCALE




## 4 PIPE HANGER DETAIL
NOT TO SCALE




## 3 PIPING SPECIALTIES
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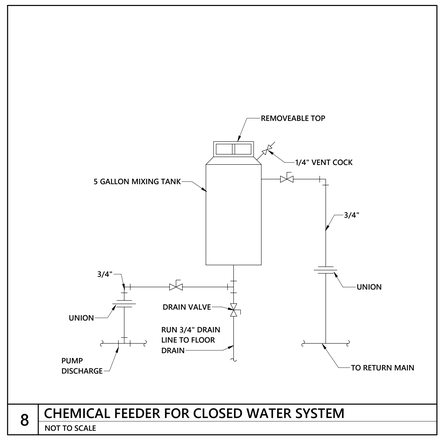
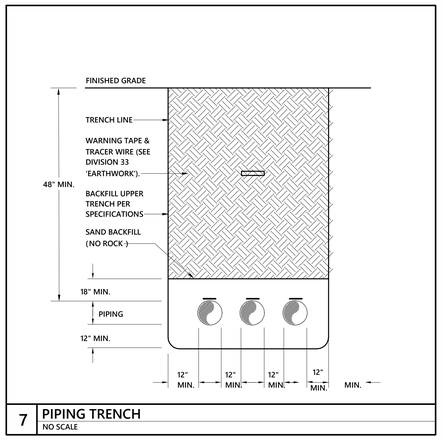



## 8 CHEMICAL FEEDER FOR CLOSED WATER SYSTEM
NOT TO SCALE




## 7 PIPING TRENCH
NO SCALE

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ENERGY STAR PARTNER

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ISSUE DATE: 11/08/24
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DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL DETAILS

M-503

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# SEQUENCE OF OPERATION - MECHANICAL SYSTEMS

A COMPLETE AND OPERATIONAL DDC CONTROL SYSTEM (BAS) SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 230900) AND AS INTENDED ON THESE PLANS. ALL CONTROLS SHALL BE DDC/ELECTRONIC WITH ELECTRIC ACTUATION OF ALL VALVES AND DAMPERS. CONTROL SYSTEM SHALL BE BACNET OR LONMARK COMPATIBLE.

GENERAL:
BUILDING AUTOMATION SYSTEM (BAS) SHALL PROVIDE PROGRAMMED/TIMED OPERATION OF HVAC SYSTEM AND SYSTEM COMPONENTS BY PLACING THE SYSTEM IN "OCCUPIED" OR "UNOCCUPIED" MODES BASED ON THE OWNERS OPERATING SCHEDULE. BAS SHALL BE WEB I/P BASED TO ALLOW INTERNET ACCESS FOR REMOTE OPERATION OF SYSTEM. BAS SHALL ALLOW GLOBAL OPERATION OF COOLING, HEATING, CO2, AND HUMIDITY SETPOINTS. BAS SHALL ALSO ALLOW EITHER ZONE BY ZONE OR GLOBAL OVERRIDE OF SYSTEM OPERATION WHILE IN THE UNOCCUPIED MODE. OVERRIDE SHALL ACTIVATE ALL LIGHTS, RECEPTACLES, AND HVAC SYSTEM EQUIPMENT, INCLUDING CENTRAL PLANT, REQUIRED TO MAINTAIN "OCCUPIED" SPACE CONDITIONS IN THE OVERRIDE ZONE FOR A TIME PERIOD OF 2 HOURS, TIME PERIOD SHALL BE ADJUSTABLE THROUGH THE BUILDING AUTOMATION SYSTEM.

CENTRAL PLANT:
THE SYSTEM SHALL BE STARTED BY THE BAS. WHEN PLACED IN THE OCCUPIED MODE, VARIABLE SPEED PARALLEL PUMPING SYSTEM SHALL BE ACTIVATED. BUILDING LOOP PUMPS P-3 AND P-4 SHALL BE INDEXED ON AND PUMP P-4 SHALL BE STARTED AS THE LEAD PUMP, WITH PUMP P-3 SERVING AS THE LAG PUMP. BAS SHALL ALTERNATE LEAD PUMP TO MAINTAIN EQUAL RUN TIME FOR PUMPS P-3 AND P-4. LEAD PUMP SHALL START AT LOW SPEED (30%) AND THEN INCREASE IN SPEED VIA PUMP VFD AS REQUIRED TO MAINTAIN SYSTEM PRESSURE AS MEASURED BY DIFFERENTIAL PRESSURE IN LOOP PIPING (SEE PIPING PLANS FOR SENSOR LOCATIONS). WHEN LEAD PUMP SPEED REACHES 95% CONTINUOUSLY FOR A PERIOD OF 10 MINUTES, LAG PUMP SHALL BE STARTED AND BOTH PUMPS SHALL OPERATE AT EQUAL SPEED TO MAINTAIN SYSTEM OPERATING PRESSURE. AS PUMP SPEEDS FALL BELOW 40%, THE LAG PUMP SHALL BE STOPPED AND THE LEAD PUMP SHALL CONTINUE TO OPERATE TO MAINTAIN SYSTEM PRESSURE.

BUILDING LOOP TEMPERATURE SHALL BE MAINTAINED BETWEEN 55°F. AND 85°F. AN ALARM SHALL BE ACTIVATED IF THE LOOP TEMPERATURE FALLS BELOW 45°F. OR RISES ABOVE 100°F.

GEOTHERMAL PLANT:
BASED ON BUILDING LOOP TEMPERATURE, GROUND LOOP PUMPS P-1 AND P-2 SHALL BE INDEXED ON AND PUMP P-1 SHALL BE STARTED AS THE LEAD PUMP, WITH PUMP P-2 SERVING AS THE LAG PUMP. BAS SHALL ALTERNATE LEAD PUMP TO MAINTAIN EQUAL RUN TIME FOR PUMPS P-1 AND P-2. LEAD PUMP SHALL START AT LOW SPEED (30%) AND THEN INCREASE IN SPEED VIA PUMP VFD AS REQUIRED TO MAINTAIN LOOP TEMPERATURE MEASURED AT THE 8" CS MAIN AT THE INLET HEADER TO PUMPS P-3 & P-4 (LOCATED IN PUMP ROOM). WHEN LEAD PUMP SPEED REACHES 95% CONTINUOUSLY FOR A PERIOD OF 10 MINUTES, LAG PUMP SHALL BE STARTED AND BOTH PUMPS SHALL OPERATE AT EQUAL SPEED TO MAINTAIN LOOP TEMPERATURE. AS PUMP SPEEDS FALL BELOW 40%, THE LAG PUMP SHALL BE STOPPED AND THE LEAD PUMP SHALL CONTINUE TO OPERATE UNTIL TEMPERATURE SENSOR IS SATISFIED.

WHEN THE BUILDING LOOP TEMPERATURE RISES ABOVE 80°F. WHILE IN THE OCCUPIED MODE, LEAD GROUND LOOP PUMP SHALL BE STARTED AT LOW SPEED (30%) AND BEGIN CIRCULATING WATER THROUGH THE WELLFIELD. AS THE LOOP TEMPERATURE RISES, VFD SHALL INCREASE LEAD PUMP SPEED AS INDICATED ABOVE, AND BRING ON LAG PUMP IF NECESSARY. AS THE LOOP TEMPERATURE DROPS, PUMPS SHALL RAMP DOWN IN SPEED IN REVERSE ORDER, AS INDICATED ABOVE. PUMPS SHALL BE STOPPED WHEN THE LOOP TEMPERATURE FALLS BELOW 77°F.

WHEN THE LOOP TEMPERATURE FALLS BELOW 60° F. WHILE IN THE OCCUPIED MODE, LEAD GROUND LOOP PUMP SHALL BE STARTED AT LOW SPEED (30%) AND BEGIN CIRCULATING WATER THROUGH THE WELLFIELD. AS THE LOOP TEMPERATURE DROPS, VFD SHALL INCREASE LEAD PUMP SPEED AS INDICATED ABOVE, AND BRING ON LAG PUMP IF NECESSARY. AS THE LOOP TEMPERATURE RISES, PUMPS SHALL RAMP DOWN IN SPEED IN REVERSE ORDER, AS INDICATED ABOVE. PUMPS SHALL BE STOPPED WHEN THE LOOP TEMPERATURE REACHES 63° F.

UNOCCUPIED MODE:
WSHP LOOP PUMPS SHALL REMAIN OFF WHILE IN THE UNOCCUPIED MODE UNLESS REQUIRED TO OPERATE FOR A LOW LIMIT OR HIGH LIMIT SETBACK SIGNAL FROM ANY WSHP OR A TIMED OVERRIDE OF THE SYSTEM. WSHP LOOP PUMPS SHALL BE SEQUENCED AS OUTLINED ABOVE WHEN STARTED DURING UNOCCUPIED PERIODS. GROUND LOOP SYSTEM SHALL ALSO OPERATE AS OUTLINED ABOVE TO MAINTAIN LOOP WATER TEMPERATURE ANYTIME THE LOOP SYSTEM PUMPS ARE STARTED DURING UNOCCUPIED PERIODS. WHEN THE SYSTEM IS ACTIVATED BASED ON A SETBACK CONDITION, THE START OF THE WSHP SHALL BE DELAYED FIVE MINUTES AFTER THE START OF THE BUILDING LOOP PUMPS, AND LOOP FLOW HAS BEEN VERIFIED. LEAD BUILDING SYSTEM PUMP AND LOOP PUMP SHALL OPERATE CONTINUOUSLY AT LOW SPEED ANYTIME THE OUTDOOR AIR TEMPERATURE IS BELOW 28° F. REGARDLESS OF OPERATING MODE (OCCUPIED OR UNOCCUPIED).

THERMOSTATS
THERMOSTATS FOR WSHP UNITS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS, AND PER THE SPECIFICATIONS. THERMOSTATS SHALL HAVE ROTARY SWITCH ADJUSTMENT WITH NUMERICAL INDICATION, INITIALLY SET IN THE OCCUPIED MODE FOR COOLING TO 75° AND HEATING TO 70°. THERMOSTATS SHALL HAVE A 3° RANGE IN WHICH THEY ARE SATISFIED (IF SET TO 70°, SATISFIED ANYWHERE BETWEEN 68.5° AND 71.5°). ROTARY SWITCH SHALL HAVE THE CAPABILITY TO ADJUST THE HEATING AND COOLING SETPOINTS BY 3° IN EITHER DIRECTION, BUT MAINTAIN A MINIMUM 4° SPREAD BETWEEN THE HEATING AND COOLING SETPOINT. UNOCCUPIED SETTINGS SHALL BE 85° COOLING AND 60° HEATING. THERMOSTAT SHALL HAVE PUSHBUTTON OVERRIDE TO PLACE ONLY THAT ZONE INTO THE OCCUPIED MODE FOR TWO HOURS. LOFT WSHP SETPOINTS SHALL BE 80° COOLING AND 60° HEATING, ONLY TEMPORARILY CHANGING TO OCCUPIED SETPOINTS FOR A TWO HOUR DURATION IF THE PUSHBUTTON OVERRIDE IS ACTIVATED.

OCCUPIED SETBACK MODE SHALL BE ENABLED DURING THE OCCUPIED MODE IF THE OCCUPANCY SENSOR DE-ENERGIZES THE LIGHTS IN THE ROOM. OCCUPIED SETBACK MODE SHALL DRIFT THE COOLING AND HEATING SETPOINTS BY 3° EACH WAY (COOLING TO 78° AND HEATING TO 67°). OCCUPIED MODE IS RESTORED WHEN OCCUPANCY SENSOR RE-ENERGIZES THE LIGHTS.

CO2 SENSORS
CO2 SENSORS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS, SEQUENCES OF OPERATION, AND PER THE SPECIFICATIONS. CO2 SENSORS INSTALLED IN ROOMS VENTILATED BY DOAS UNITS SHALL MONITOR CO2 LEVELS IN THESE ROOMS AND REPORT BACK TO THE BAS. SHOULD THE CO2 LEVEL IN A SPACE EXCEED 1500 PPM DURING UNOCCUPIED TIMES FOR A CONTINUOUS 15 MINUTE INTERVAL, ASSOCIATED DOAS UNIT SHALL BE ENERGIZED UNTIL PPM HOLDS BELOW 1500 PPM FOR A CONTINUOUS 15 MINUTE INTERVAL. SENSOR SHALL ALARM BAS SHOULD CO2 LEVELS EXCEED 2500 PPM AT ANY TIME. CO2 SENSORS IN AUXILARY SPACE, MEDIA CENTER, CAFETERIA, AND GYMNASIUM SHALL CONTROL DEMAND CONTROL VENTILATION SEQUENCE AS OUTLINED.

DEDICATED OUTSIDE AIR UNITS (DOAS-400, DOAS-500 AND DOAS-600):
WHEN PLACED IN THE OCCUPIED MODE, DEDICATED OUTSIDE AIR UNIT (DOAS) SHALL BE INDEXED "ON". UNITS SHALL BE ALLOWED TO START FOLLOWING A FIVE MINUTE DELAY RELATIVE TO THE START OF THE WSHP LOOP PUMP(S). UNITS SHALL START TO SUPPLY CONDITIONED/NEUTRAL AIR TO THE CLASSROOM WINGS. SUPPLY FAN, EXHAUST FAN, AND ENERGY RECOVERY WHEEL ARE ACTIVATED. CONDENSER WATER CONTROL VALVE SHALL MODULATE OPEN, AND UNIT COMPRESSORS SHALL OPERATE IN HEATING OR COOLING MODE TO SUPPLY AIR AT NEUTRAL CONDITIONS (67-73° AND 45-55% RH). IF ALL SENSORS ON THE ZONE ARE CALLING FOR COOLING, DOAS COMPRESSOR SHALL OPERATE IN COOLING MODE WITHOUT ANY HOT GAS REHEAT, TO DISCHARGE AIR AT 55° AND SHALL FUNCTION AS THE FIRST STAGE OF COOLING FOR THE CLASSROOMS. WHEN ALL CLASSROOMS ARE CALLING FOR HEAT, CONDENSER WATER CONTROL VALVE SHALL MODULATE OPEN, COMPRESSOR SHALL OPERATE IN THE HEATING MODE, AND UTILIZE REVERSE HEAT PUMP CYCLE TO HEAT OUTSIDE AIR AND SERVE AS FIRST STAGE OF HEATING FOR THE CLASSROOMS. IF ALL SENSORS ARE CALLING FOR EITHER IS A MIX OF CALLS FOR HEATING AND COOLING, DOAS UNIT SHALL OPERATE TO MAINTAIN NEUTRAL DISCHARGE CONDITIONS (67-73° AND 45-55% RH), UTILIZING COOLING, HEATING, REHEAT, AND CONDENSER WATER VALVE MODULATION AS REQUIRED. HEAT WHEEL SHALL BE MODULATED BY INTERNAL UNIT CONTROLS.

UNIT SHALL PROVIDE HUMIDITY CONTROL WHILE IN THE OCCUPIED OR UNOCCUPIED MODE. ZONE HUMIDISTATS SHALL PLACE UNIT IN THE DEHUMIDIFICATION MODE WHEN THE SPACE RH RISES ABOVE 60% IN EITHER THE OCCUPIED OR UNOCCUPIED MODE (SEE PLANS FOR HUMIDISTAT LOCATIONS). HUMIDITY CONTROL SEQUENCE SHALL BE ENERGIZED THROUGH THE BAS. CONDENSER WATER CONTROL VALVE SHALL OPEN, UNIT COMPRESSORS SHALL BE ACTIVATED IN COOLING MODE, AND HOT GAS REHEAT SHALL BE STAGED TO MAINTAIN NEUTRAL DISCHARGE TEMPERATURE, UNLESS ALL SENSORS ON THE ZONE ARE CALLING FOR COOLING, IN WHICH CASE HOT GAS REHEAT SHALL REMAIN CLOSED. WHEN SPACE HUMIDITY DROPS BELOW 55% R.H., BAS SHALL DEACTIVATE HUMIDITY CONTROL SEQUENCE. CONTROL OF DEDICATED OUTSIDE AIR UNIT SHALL REVERT BACK TO NORMAL OPERATION. IF SPACE HUMIDITY REACHES 65%, ALARM SHALL BE SENT TO CENTRAL BAS.

IN THE UNOCCUPIED MODE, UNIT SHALL REMAIN OFF UNLESS COMMANDED ON BY A ROOM MOUNTED CO2 SENSOR, THE ZONE IS SCHEDULED ON VIA THE DDC SYSTEM OVERRIDE PANEL, OR ACTIVATED BY THE DEHUMIDIFICATION SEQUENCE.

DUCT SMOKE DETECTOR INSTALLED IN THE EXHAUST DUCT SHALL SHUT DOWN UNIT AND ACTIVATE FIRE ALARM SYSTEM UPON DETECTION OF SMOKE

NOTE:
COORDINATE EXACT SEQUENCE OF OPERATION FOR ENERGY RECOVERY UNITS WITH MANUFACTURER, MANUFACTURER AND ENGINEER TO APPROVE FINAL SEQUENCE PRIOR TO PROGRAMMING. BAS VENDOR SHALL VERIFY ALL OPERATION/MONITORING POINTS COMPATIBILITY AT SUBMITTAL PHASE.

SINGLE ZONE GEOTHERMAL WATER SOURCE HEAT PUMPS (CLASSROOM WINGS):
UNITS SHALL BE PROVIDED WITH A TWO-WAY CONDENSER WATER CONTROL VALVE INTERLOCKED WITH THE HEAT PUMP COMPRESSOR (UNLESS NOTED OTHERWISE). ON A CALL FOR HEATING OR COOLING, VALVE SHALL OPEN TO THE UNIT AND HEAT PUMP HEATING/COOLING SYSTEM SHALL START ON A TWO MINUTE DELAY. SELECTED UNITS AT THE END OF EACH PIPING RUN ARE NOT PROVIDED WITH TWO WAY CONTROL VALVES TO MAINTAIN MINIMUM FLOW IN THE SYSTEM, SEE PLANS FOR UNITS NOT REQUIRING CONTROL VALVE. WHILE IN THE UNOCCUPIED MODE, THE UNIT SHALL CYCLE AS NOTED ABOVE TO MAINTAIN SETBACK TEMPERATURES. IF ACTIVATED DURING THE UNOCCUPIED MODE, THE UNIT SHALL RUN FOR A MINIMUM OF 20 MINUTES AND SHALL NOT BE ALLOWED TO RESTART FOR A MINIMUM OF FIVE MINUTES FOLLOWING SHUT-DOWN.

A CENTRAL TIMED OVERRIDE PANEL SHALL BE LOCATED IN THE ADMIN AREA, TO TEMPORARILY PLACE ANY ZONE INTO THE OCCUPIED MODE. WHEN PLACED IN OVERRIDE, UNIT AND CENTRAL PLANT SHALL OPERATE AS IF IN THE OCCUPIED MODE.

UNITS EQUIPPED WITH VARIABLE SPEED COMPRESSORS AND FANS SHALL UTILIZE THEIR INTERNAL CONTROLS TO MODULATE COMPRESSOR AND FAN STAGES TO MAINTAIN SPACE TEMPERATURE.

UNITS SHALL BE PROVIDED WITH A WALL MOUNTED DDC SENSOR FOR SPACE TEMPERATURE CONTROL. WHILE IN THE OCCUPIED MODE THE SUPPLY FAN, CONDENSER WATER CONTROL VALVE, AND HEAT PUMP HEATING/COOLING SYSTEM SHALL CYCLE ON UPON A CALL FOR HEATING OR COOLING AS REQUIRED TO MAINTAIN SPACE TEMPERATURE. SENSOR SHALL ALSO SEND A SIGNAL TO ITS ZONE DEDICATED OUTSIDE AIR SYSTEM TO INDICATE STATUS AS HEAT, COOL, OR SATISFIED.

NON-CLASSROOM UNIT: (UNITS WITH O.A./RETURN AIR MIXING BOXES):
WHEN PLACED IN THE OCCUPIED MODE BY THE BAS, THE UNITS SHALL BE INDEXED ON. UNITS SHALL START ON A FIVE MINUTE DELAY RELATIVE TO THE START OF THE WSHP LOOP PUMP. WHILE IN OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE CONDENSER WATER CONTROL VALVE AND HEAT PUMP COOLING/HEATING SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE.

WHILE IN THE UNOCCUPIED MODE, THE UNIT FAN SHALL BE OFF AND SHALL ENERGIZE ONLY WITH A CALL FOR HEATING OR COOLING AS REQUIRED TO MAINTAIN SETBACK TEMPERATURE. IF ACTIVATED DURING THE UNOCCUPIED MODE, THE UNIT SHALL RUN FOR A MINIMUM OF FIVE MINUTES FOLLOWING SHUT-DOWN.

FOR UNITS EQUIPPED WITH VARIABLE FREQUENCY DRIVE FOR THE SUPPLY FAN, FAN SHALL START AT LOW SPEED (30%). ON A RISE IN TEMPERATURE ABOVE SETPOINT, THE CONDENSER WATER CONTROL VALVE SHALL OPEN, THE FIRST STAGE OF HEAT PUMP COOLING SHALL ACTIVATE, AND DX COIL LOWER SECTION RETURN AIR MOTORIZED DAMPER (INTERLOCKED WITH UNIT COMPRESSOR STAGE 1) SHALL OPEN. ON A CONTINUOUS RISE IN SPACE TEMPERATURE, VARIABLE FREQUENCY DRIVE SHALL INCREASE FAN SPEED, HEAT PUMP SHALL ACTIVATE SECOND STAGE OF COOLING, AND DX COIL UPPER SECTION RETURN AIR MOTORIZED DAMPER (INTERLOCKED WITH UNIT COMPRESSOR STAGE 2) SHALL OPEN AS NECESSARY TO MAINTAIN DISCHARGE TEMPERATURE, UNTIL SPACE TEMPERATURE IS SATISFIED. AS THE SPACE TEMPERATURE DROPS BELOW SETPOINT, THE SUPPLY FAN SPEED SHALL RESET FROM MAXIMUM TO MINIMUM. AS THE SPACE TEMPERATURE CONTINUES TO DROP, THE CONDENSER WATER CONTROL VALVE SHALL OPEN, THE FIRST STAGE OF HEAT PUMP HEATING SHALL ACTIVATE, AND DX COIL LOWER SECTION RETURN AIR MOTORIZED DAMPER SHALL OPEN, ON A CONTINUED DROP IN SPACE TEMPERATURE, VARIABLE FREQUENCY DRIVE SHALL INCREASE FAN SPEED, HEAT PUMP SHALL ACTIVATE SECOND STAGE OF HEATING, AND DX COIL UPPER SECTION RETURN AIR MOTORIZED DAMPER SHALL OPEN AS NECESSARY TO MAINTAIN DISCHARGE TEMPERATURE, UNTIL SPACE TEMPERATURE IS SATISFIED.

FOR UNITS PROVIDED WITH MOTORIZED OUTSIDE AIR DAMPERS (INDICATED BY 'DCV' IN EQUIPMENT SCHEDULE), DAMPER SHALL BE CLOSED WHEN IN THE UNOCCUPIED MODE. WHEN PLACED INTO THE OCCUPIED MODE BY THE BAS, OUTSIDE AIR DAMPER SHALL REMAIN CLOSED FOR MORNING WARM-UP IF SPACE TEMPERATURE IS BELOW SETPOINT. ONCE THE SPACE TEMPERATURE SETPOINT IS REACHED, THE OUTSIDE AIR DAMPER SHALL OPEN TO THE MINIMUM POSITION (OCC MIN OA CFM AS INDICATED IN WSHP SCHEDULE), AND SHALL REMAIN OPEN WHILE IN THE OCCUPIED MODE. MOTORIZED DAMPER SHALL VARY THE VOLUME OF OUTSIDE AIR BASED ON CO2 LEVEL AS MEASURED BY A SPACE OR DUCT MOUNTED CO2 SENSOR. OUTSIDE AIR DAMPER SHALL MODULATE OPEN IF CO2 READING RISES ABOVE 500 PPM ABOVE OUTSIDE AIR CO2 LEVEL. DAMPER SHALL MODULATE CLOSED UNTIL MINIMUM POSITION IS REACHED. BAS SHALL CONTINUALLY MONITOR THE AMOUNT OF OUTSIDE AIR PROVIDED TO EACH ZONE, AND ALARM CENTRAL BAS IF CO2 SENSOR READING IS ABOVE 1000 PPM.

FOR UNITS WITH HUMIDITY CONTROLS (SHOWN WITH HOT GAS REHEAT 'HGR' IN WSHP SCHEDULE, AND HUMIDISTATS INSTALLED IN THEIR ZONES), WITH SYSTEM IN OCCUPIED OR UNOCCUPIED MODE, HUMIDITY CONTROL SYSTEM SHALL BE CAPABLE OF BEING ACTIVATED. UNDER NORMAL OPERATION, UNIT SHALL BE CONTROLLED AS OUTLINED ABOVE. IF SPACE HUMIDITY REACHES 60% RH IN THE OCCUPIED MODE OR 65% IN THE UNOCCUPIED MODE (ADJUSTABLE), HUMIDITY CONTROL SEQUENCE SHALL BE ENERGIZED THROUGH THE DDC SYSTEM. UNIT OUTSIDE AIR DAMPER SHALL CLOSE TO MINIMUM POSITION. CONDENSER WATER CONTROL VALVE SHALL OPEN AND UNIT COMPRESSORS SHALL BE MODULATED TO REHEAT AIR TO MAINTAIN SPACE CONDITIONS AS REQUIRED. WHEN SPACE HUMIDITY DROPS BELOW 55% RH IN THE OCCUPIED MODE OR 60% IN THE UNOCCUPIED MODE, BAS SHALL DEACTIVATE HUMIDITY CONTROL SEQUENCE, AND CONTROL OF THE UNITS SHALL REVERT BACK TO NORMAL OPERATION. IF SPACE HUMIDITY REACHES 65% IN THE OCCUPIED MODE OR 70% IN UNOCCUPIED MODE, AND ALARM SHALL BE SENT TO CENTRAL BAS.

GYMNASIUM WSHP STAGING
GYMNASIUM SHALL BE STAGED SUCH THAT WSHP-G.1 SHALL ACT AS THE FIRST STAGE OF HEATING AND COOLING, AND LOW OCCUPANCY CONSTANT VENTILATION DURING OCCUPIED TIMES. WSHP-G.1 SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE AND COMPRESSORS SHALL CYCLE AS NEEDED FOR HEATING AND COOLING. WSHP-G.2 SHALL ACT AS THE SECOND STAGE OF HEATING, COOLING, DEHUMIDIFICATION, AND VENTILATION, OPERATING AS OUTLINED FOR NON-CLASSROOM UNITS (WITH O.A./RETURN AIR MIXING BOXES). THERMOSTAT SETPOINTS FOR WSHP-G.2 SHALL BE SET 2° HOTTER/COLDER THAN SETPOINTS FOR PRIMARY UNIT WSHP-G.1, AND UNIT SHALL ONLY BE ACTIVATED UPON A CALL FOR HEATING AND COOLING FROM THE THERMOSTAT, BY THE CO2 SENSOR INSTALLED IN THE SPACE UTILIZING DEMAND CONTROL VENTILATION AS DESCRIBED IN THE SEQUENCE, OR BY THE SPACE MOUNTED HUMIDISTAT ACTIVIATING THE DEHUMIDIFICATION SEQUENCE.

DINING WSHP STAGING
THE DINING ROOM SHALL BE STAGED SUCH THAT WSHP-D.2 SHALL ACT AS THE FIRST STAGE OF HEATING AND COOLING, AND LOW OCCUPANCY CONSTANT VENTILATION DURING OCCUPIED TIMES. WSHP-D.2 SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE AND COMPRESSORS SHALL CYCLE AS NEEDED FOR HEATING AND COOLING. WSHP-D.1 SHALL ACT AS THE SECOND STAGE OF HEATING, COOLING, DEHUMIDIFICATION, AND VENTILATION, OPERATING AS OUTLINED FOR NON-CLASSROOM UNITS (WITH O.A./RETURN AIR MIXING BOXES). THERMOSTAT SETPOINTS FOR WSHP-D.1 SHALL BE SET 2° HOTTER/COLDER THAN SETPOINTS FOR PRIMARY UNIT WSHP-D.2, AND UNIT SHALL ONLY BE ACTIVATED UPON A CALL FOR HEATING AND COOLING FROM THE THERMOSTAT, BY THE CO2 SENSOR INSTALLED IN THE SPACE UTILIZING DEMAND CONTROL VENTILATION AS DESCRIBED IN THE SEQUENCE, OR BY THE SPACE MOUNTED HUMIDISTAT ACTIVIATING THE DEHUMIDIFICATION SEQUENCE.

AUDITORIUM WSHP STAGING
THE AUXILIARY SPACE SHALL BE STAGED SUCH THAT WSHP-1.7 SHALL ACT AS THE FIRST STAGE OF HEATING AND COOLING, AND LOW OCCUPANCY CONSTANT VENTILATION DURING OCCUPIED TIMES. WSHP-1.7 SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE AND COMPRESSORS SHALL CYCLE AS NEEDED FOR HEATING AND COOLING. WSHP-1.8 SHALL ACT AS THE SECOND STAGE OF HEATING, COOLING, DEHUMIDIFICATION, AND VENTILATION, OPERATING AS OUTLINED FOR NON-CLASSROOM UNITS (WITH O.A./RETURN AIR MIXING BOXES). THERMOSTAT SETPOINTS FOR WSHP-1.8 SHALL BE SET 2° HOTTER/COLDER THAN SETPOINTS FOR PRIMARY UNIT WSHP-1.7, AND UNIT SHALL ONLY BE ACTIVATED UPON A CALL FOR HEATING AND COOLING FROM THE THERMOSTAT, BY THE CO2 SENSOR INSTALLED IN THE SPACE UTILIZING DEMAND CONTROL VENTILATION AS DESCRIBED IN THE SEQUENCE, OR BY THE SPACE MOUNTED HUMIDISTAT ACTIVIATING THE DEHUMIDIFICATION SEQUENCE.

HVAC SCHEDULING
INITIAL SCHEDULES OF OPERATION SHALL BE COORDINATED AND CONFIRMED BY THE OWNER, AND PROGRAMMED BY THE CONTROLS CONTRACTOR. MODIFICATION OF SCHEDULES SHALL BE A PART OF REQUIRED OWNER TRAINING. DISCREET SCHEDULES SHALL BE PROVIDED FOR EACH DEDICATED OUTSIDE AIR UNIT, EACH INDIVIDUAL CLASSROOM WING, AUDITORIUM, STAGE, ADMINISTRATION AREA, MEDIA CENTER, CAFETERIA, KITCHEN AREA, AND GYMNASIUM.

SCHOOL CALENDAR SHALL BE PROGRAMMED INTO THE BAS SUCH THAT THE SYSTEMS REMAIN UNOCCPUIED ON DAYS THE SCHOOL IS CLOSED AND ON TEACHER WORKDAYS.

DEDICATED OUTSIDE AIR UNITS SHALL OPERATE IN THE OCCUPIED MODE FROM OPENING BELL TO CLOSING BELL. SHOULD BOTH WINGS SERVED BY THE DOAS GO UNOCCUPIED REGULARLY DURING THE DAY, DOAS SHALL GO INTO THE UNOCCUPIED MODE DURING THOSE HOURS.

ADMINISTRATION AREA SHALL REMAIN IN THE OCCPUIED MODE DURING THE SUMMER, EXACT HOURS TO BE COORDINATED WITH THE OWNER. REMAINING WSHP'S SHALL BE INITIALLY SET TO BE IN THE OCCUPIED MODE FROM 30 MINUTES BEFORE THE OPENING BELL TO 30 MINUTES PRIOR TO THE CLOSING BELL, UNTIL MODIFIED BY START/STOP OPTIMIZATION. AFTER HOURS OPERATION FOR ALL ZONES SHALL BE COORDINATED WITH THE OWNER WITH INPUT FROM THE KITCHEN, ATHLETIC, LIBRARY, AND FINE ARTS STAFF.

OVERRIDE PANEL
A CENTRAL OVERRIDE PANEL SHALL BE LOCATED IN THE ADMIN ZONE MEZZANINE. PANEL SHALL BE PROVIDED WITH TIMERS, LABELS, AND LED INDICATOR LIGHT FOR EACH AREA SERVED. SOFTWARE SHALL BE PROGRAMMED FOR FULLY FUNCTIONAL OVERRIDE, TO SET HVAC EQUIPMENT, RECEPTACLES, AND LIGHTING INTO THE OCCUPIED MODE FOR A SET PERIOD OF TIME. ALL OVERRIDES SHALL ALSO HAVE REMOTE CAPABILITIES THRU IP BASED ACCESS.

PANEL SHALL INCLUDE THE DISCREET ZONES FOR EACH INDIVIDUAL CLASSROOM WING, ADMINISTRATION AREA, MEDIA CENTER, CAFETERIA, KITCHEN AREA, AND GYMNASIUM. CLASSROOM WING ACTIVATION SHALL ALSO PLACE DOAS SYSTEM SERVING THAT WING INTO THE OCCUPIED MODE.

START/STOP OPTIMIZATION
BAS SHALL PROVIDE START/STOP OPTIMIZATION (SSO) FOR ALL EQUIPMENT AND SYSTEMS. SSO SHALL BE CAPABLE OF LEARNING BUILDING THERMAL CHARACTERISTICS AND RESPOND TO VARIABLE CONDITIONS. SSO SHALL START/STOP CONTROLLED EQUIPMENT AS LATE AS POSSIBLE PRIOR TO OCCUPIED TIME PERIOD AND AS EARLY AS POSSIBLE PRIOR TO UNOCCUPIED TIME PERIOD. SSO SHALL BE CALCULATED BASED ON OUTDOOR AIR TEMPERATURE, ZONE TEMPERATURES, AND CONTROL SETPOINT/SETBACK TEMPERATURES.

SMOKE DETECTORS
SMOKE DETECTOR SHALL BE PROVIDED IN THE RETURN DUCT PRIOR TO THE OUTSIDE AIR DUCT CONNECTION. DETECTOR SHALL INTERFACE WITH FIRE ALARM SYSTEM AND SHUT-DOWN UNIT FANS UPON ACTIVATION. WHERE APPLICABLE, DETECTORS SHALL BE INSTALLED IN THE LOWER SECTION OF
THE RETURN AIR PLENUM BUILT BEHIND THE UNIT (SEE MECHANICAL DRAWINGS FOR DETAILS).

IDF/MDF ROOM SPLIT SYSTEMS:
UNITS SHALL PROVIDE COOLING IN DATA/SERVER ROOMS ON A CONTINUOUS BASIS. SUPPLY FAN AND COOLING CYCLE SHALL CYCLE WITH A CALL FOR COOLING TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 75° F. BAS SHALL MONITOR SYSTEM STATUS AND SHALL ALSO MONITOR ROOM TEMPERATURE. AN ALARM SHALL BE ACTIVATED IF THE ROOM TEMPERATURE RISES ABOVE 85° F.

UNIT HEATERS
UNIT HEATERS SHALL BE PROVIDED WITH A LOW VOLTAGE THERMOSTAT. UNIT HEAT AND FAN SHALL BE ENERGIZED WHEN SPACE TEMPERATURE FALLS BELOW SETPOINT. INITIAL SYSTEM SETPOINTS SHALL BE 50° F.

EXHAUST FANS
CONTROL DEVICES (SWITCHES, THERMOSTATS, INTERLOCKS, ETC.) SHALL BE PROVIDED AS REQUIRED TO COMPLY WITH INTENT OF OPERATION AS INDICATED ON THE FAN SCHEDULE. ELECTRICAL AND MECHANICAL ROOM EXHAUST FANS SHALL BE SET TO MAINTAIN 85° F.

DOMESTIC HOT WATER SYSTEM
BAS SHALL HAVE GLOBAL CONTROL OVER DOMESTIC WATER HEATING SYSTEM. WATER HEATERS SHALL CYCLE ON AND OFF BASED ON THIER TANK TEMPERATURES, TO MAINTAIN 140° FOR WH-1 AND WH-2. AN ALARM SHALL BE GENERATED SHOULD EITHER TANK DEVIATE FROM SETPOINT BY 10° EITHER HIGH OR LOW. AN ALARM SHALL ALSO BE GENERATED SHOULD THE DOMESTIC HWS TEMPERATURE DEVIATE FROM SETPOINT BY 10° EITHER HIGH OR LOW. CIRCULATION PUMPS SHALL OPERATE ON A SCHEDULED BASIS BASED ON BUILDING OCCUPANCY. THE PUMPS SHALL BE CAPABLE OF OPERATING ON SEPARATE SCHEDULES, SHOULD THE KITCHEN SCHEDULE DIFFER FROM THE ENTIRE BUILDING. A TEMPERATURE SENSOR SHALL BE MOUNTED IN THE END OF THE LINE CAPABLE OF OVERRIDING THE PUMP SHOULD THE LOOP TEMPERATURE FALL BELOW 105° FOR CP-1 OR 130° FOR CP-2. BAS SHALL ALSO MONITOR BOTH DOMESTIC HWR TEMPERATURES AND DOMESTIC WATER SUPPLY TEMPERATURE FOR TRACKING PURPOSES. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH PLUMBING CONTRACTOR.

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE BY THE USER SCHOOL STAFF, AND MAINTENANCE DEPARTMENT. INDICATED SCHEDULES AND SETPOINTS SHOULD BE USED FOR ORIGINAL SYSTEM SET-UP. ANY CHANGES IN SETPOINT SETTINGS REQUIRED FOR INTENDED SYSTEM OPERATION SHALL BE APPROVED BY THE ENGINEER AND SHALL BE DISCREETLY INDICATED ON THE AS-BUILT DRAWINGS.
3. DIFFERENTIAL PRESSURE SWITCHES SHALL BE PROVIDED IN THE PIPING OF EACH PUMP TO VERIFY PUMP STATUS.
4. IONIZATION TYPE DUCT SMOKE DETECTORS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR, INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR AND WIRED TO SHUT DOWN THE UNIT AND FOR FIRE ALARM INTERFACE BY THE ELECTRICAL CONTRACTOR.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE A DEDICATED 120V CIRCUIT IN A J-BOX FOR CONTROL POWER. CONTROLS CONTRACTOR SHALL EXTEND 120V POWER FROM J-BOX TO CONTROL PANELS, DAMPER ACTUATORS, TRANSFORMERS, ETC. AS REQUIRED FOR OPERATION OF CONTROL SYSTEM. BAS CONTRACTOR SHALL PROVIDE ALL 120V
6. BAS SHALL ALLOW GLOBAL OPERATION OF HEAT PUMP SETPOINTS.
7. ALL FACTORY INSTALLED EQUIPMENT SAFETIES (HIGH LIMIT, LOW LIMIT, LOW TEMP., HIGH TEMP., LOW FLOW, HEAD PRESSURE, ETC.) SHALL BE ACTIVE

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# POINTS LIST - INPUT/OUTPUT SUMMARY

| SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION | INPUTS: ANALOG: MEASURED: TEMPERATURE | PRESSURE | RH | AIR FLOW | WATER FLOW | CO2 | VELOCITY | KW | VOLTS | AMPS | HERTZ | KWH | ENTHALPY | RUN TIME | EFFICIENCY | INPUTS: ANALOG: CALC. | INPUTS: BINARY: STATUS | FILTER | FREEZE | AIR FLOW | METER | OUTPUTS: DIGITAL: OFF-ON | OFF-HI-LO | OPEN-CLOSE | OUTPUTS: ANALOG: DMPR. POS. | VALVE POS. | VFD SPEED (%) | STEP CONTROL | SYSTEM FEATURES: ALARMS: HI ANALOG | LO ANALOG | HI BINARY | LO BINARY | PROOF | SYSTEM FEATURES: PROGRAMS: TIME SCHEDULING | DEMAND LIMITING | DUTY CYCLE | SUPPLY FAN OPT. | ENTHALPY OPT. | SMOKE CNT. | CO2 | ALARM INSTRUCT | MAIN. WK. ORD. | OCC. OVERRIDE | BYPASS COVER | GENERAL: COLOR GRAPHIC | SUPPLMENT. NOTES |
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| Geothermal Plant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pump P-1 | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | | X | | | | | | | | | | | | | | | Typical of 2 |
| Pump P-2 | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | | X | | | | | | | | | | | | | | |
| Pump P-3 | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | | X | | | | | | | | | | | | | | | Typical of 3 |
| Pump P-4 | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | | X | | | | | | | | | | | | | | |
| Geothermal Supply Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Geothermal Return Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Building Loop Supply Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Building Loop Return Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Building Loop Differential Pressure | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | TYPICAL OF 3 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WSHP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | | X | | | |
| Supply Fan | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | | | | | | | | | |
| Supply VFD on/off | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | WHERE APPLICABLE |
| Supply VFD Speed | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | WHERE APPLICABLE |
| Supply VFD Status | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | WHERE APPLICABLE |
| CW Valve | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Compressor #1 | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | | | | | | | | | |
| Compressor #2 & RA Damper #2 | | | | | | | | | | | | | | | | | X | | | | | | | | | X | | | | | X | | | | | | | | | | | WHERE APPLICABLE |
| Space Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Space CO2 | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | WHERE INDICATED |
| Space RH | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | WHERE INDICATED |
| Supply Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Over-ride | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Setpoint Adjust | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Return Air Smoke (by elec. contr.) | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | WHERE INDICATED |
| OA Damper (damper by controls contr.) | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | WHERE INDICATED |
| Hot Gas Reheat Valve | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | WHERE INDICATED |
| Reversing Valve | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | WHERE INDICATED |
| Safety | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Condensate Overflow | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Local Occupancy | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Refrigerant Monitoring | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DOAS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | | X | | | |
| Supply Fan | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | | | | | | | | | |
| Exhaust Fan | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| Heat Wheel Exh Fan | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| Exhaust Damper | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Return Damper | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| CW Valve | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Hot Gas Reheat Valve | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Compressor #1 | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | | | | | | | | | |
| Compressor #2 | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | | | | | | | | | |
| Entering Supply Air Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leaving Supply Air Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leaving Supply Air RH | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Entering Exhaust Air Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Entering Exhaust Air RH | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Override | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Setpoint Adjust | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Exhaust Air Smoke | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Filter Status | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Filter Status | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fans | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Core Toilet Fans | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Misc. Fans | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | SEE FAN SCHEDULE |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Split Systems (Server/Data Rooms) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Supply Fan | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | | | | | X | | | | | | | | | | |
| DX Compressor | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Space Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| Supply Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Override | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Setpoint Adjust | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Misc. Points | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Freezer Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| Cooler Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| OA Temp | X | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OA CO2 | | | | | X | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dew Point | X | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic Water Meter | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | |
| LP Gas Meter | | | | | | X | | | | | | | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | |
| Fire Alarm Status | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |

GENERAL NOTE:
INPUT/OUTPUT SUMMARY IS A GENERAL LIST OF CONTROL POINTS REQUIRED FOR THE OPERATION OF THE MECHANICAL SYSTEM. IN ADDITION TO CONTROL POINTS INDICATED, THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL POINTS AS REQUIRED FOR OPERATION OF THE MECHANICAL SYSTEM AS SPECIFIED AND OUTLINED IN THE SEQUENCE OF OPERATION, AND TO COMPLY WITH THE SPECIFICATIONS.

| SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION | INPUTS: ANALOG: MEASURED: TEMPERATURE | PRESSURE | RH | AIR FLOW | WATER FLOW | CO2 | VELOCITY | KW | VOLTS | AMPS | HERTZ | KWH | ENTHALPY | RUN TIME | EFFICIENCY | INPUTS: ANALOG: CALC. | INPUTS: BINARY: STATUS | FILTER | FREEZE | AIR FLOW | METER | OUTPUTS: DIGITAL: OFF-ON | OFF-HI-LO | OPEN-CLOSE | OUTPUTS: ANALOG: DMPR. POS. | VALVE POS. | VFD SPEED (%) | STEP CONTROL | SYSTEM FEATURES: ALARMS: HI ANALOG | LO ANALOG | HI BINARY | LO BINARY | PROOF | SYSTEM FEATURES: PROGRAMS: TIME SCHEDULING | DEMAND LIMITING | DUTY CYCLE | SUPPLY FAN OPT. | ENTHALPY OPT. | SMOKE CNT. | CO2 | ALARM INSTRUCT | MAIN. WK. ORD. | OCC. OVERRIDE | BYPASS COVER | GENERAL: COLOR GRAPHIC | SUPPLMENT. NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Domestic H.W. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Circulation Pump | | | | | | | | | | | | | | | | | | | X | | | | X | | | | | | | | | | | | | | | | | | | | | Typical of 2 |
| Domestic Cold Water Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WH Storage Tank | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Typical of 3 |
| Building Domestic HWS Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Building End of Line Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kitchen System HWS Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kitchen System End of Line Temp | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical Systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Main Service - Total Elec Demand | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Main Service - Total Elec Consumption | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current - Phase A | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current - Phase B | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current - Phase C | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average Current | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - AB Line-to-Line | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - BC Line-to-Line | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - CA Line-to-Line | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - Avg Line-to-Line | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - AN Line-to-Neutral | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - BN Line-to-Neutral | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - CN Line-to-Neutral | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage - Avg Line-to-Neutral | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KW Total (Real Power) | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KW Maximum Demand | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KVA Total (Apparent Power) | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KVAR Total (Reactive Power) | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KWH Total (Energy) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Power Factor | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Building Consumption | | | X | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Standby Power Consumption | | | X | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Life Safety Consumption | | | X | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EV Chargers | | | X | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PV Array | | | X | | | | | X | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION | INPUTS: ANALOG: MEASURED: KW | KWH | KVA | KVAR | POWER FACTOR |
|---|---|---|---|---|---|
| Emergency Generator | | | | | |
| Current - Phase A | | | | | |
| Current - Phase B | | | | | |
| Current - Phase C | | | | | |
| Average Current | | | | | |
| Voltage - AB Line-to-Line | | | | | |
| Voltage - BC Line-to-Line | | | | | |
| Voltage - CA Line-to-Line | | | | | |
| Voltage - Avg Line-to-Line | | | | | |
| Voltage - AN Line-to-Neutral | | | | | |
| Voltage - BN Line-to-Neutral | | | | | |
| Voltage - CN Line-to-Neutral | | | | | |
| Voltage - Avg Line-to-Neutral | | | | | |
| KW Total (Real Power) | X | | | | |
| KW Demand | X | | | | |
| KW Maximum Demand | X | | | | |
| KVA Total (Apparent Power) | | | X | | |
| KVAR Total (Reactive Power) | | | | X | |
| KWH Total (Energy) | | X | | | |
| Power Factor | | | | | X |
| Frequency | | | X | | |
| Solar PV System | | | | | |
| Current - Phase A | | | | | |
| Current - Phase B | | | | | |
| Current - Phase C | | | | | |
| Average Current | | | | | |
| Voltage - AB Line-to-Line | | | | | |
| Voltage - BC Line-to-Line | | | | | |
| Voltage - CA Line-to-Line | | | | | |
| Voltage - Avg Line-to-Line | | | | | |
| Voltage - AN Line-to-Neutral | | | | | |
| Voltage - BN Line-to-Neutral | | | | | |
| Voltage - CN Line-to-Neutral | | | | | |
| Voltage - Avg Line-to-Neutral | | | | | |
| KW Total (Real Power) | X | | | | |
| Frequency | | | X | | |
| Solar PV System | | | | | |
| Current - Phase A | | | | | |
| Current - Phase B | | | | | |
| Current - Phase C | | | | | |
| Average Current | | | | | |
| Voltage - AB Line-to-Line | | | | | |
| Voltage - BC Line-to-Line | | | | | |
| Voltage - CA Line-to-Line | | | | | |
| Voltage - Avg Line-to-Line | | | | | |
| Voltage - AN Line-to-Neutral | | | | | |
| Voltage - BN Line-to-Neutral | | | | | |
| Voltage - CN Line-to-Neutral | | | | | |
| Voltage - Avg Line-to-Neutral | | | | | |
| KW Total (Real Power) | X | | | | |
| Frequency | | | X | | |
| Total KWh Stored in Battery | | X | | | |
| Available KWH Above Minimum Charge Avail | | X | | | |
| Total KWH Needed to Charge to 90% Cap | | X | | | |

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333 Fayetteville St, Ste 225
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P: 919.573.6350
F: 919.573.6355
www.sfla.biz

sfl+a ARCHITECTS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043516 THOMAS A. LEMON 11/08/2024

CONSTRUCTION DOCUMENTS

optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS

FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
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ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL CONTROLS POINT TO POINT LIST

M-602

Sheet No. 42 of 42

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# 2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - ELECTRICAL SUMMARY

C401 METHOD OF COMPLIANCE

- [x] 2018 NCECC CHAPTER 4
- [ ] NC SPECIFIC COMCHECK PROVIDED
- [ ] N/A BASED ON PROJECT SCOPE
- [ ] ASHRAE 90.1-2013

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- [ ] C406.2 EFFICIENT MECH EQUIPMENT
- [ ] C406.5 ON-SITE RENEWABLE ENERGY
- [x] C406.3 REDUCED LTG DENSITY
- [ ] C406.6 DEDICATED OA SYSTEM
- [ ] C406.4 ENHANCED DIGITAL LTG CNTLS
- [ ] C406.7 HI-EFF SERVICE WTR HTG
- [ ] NOT APPLICABLE BASED ON PROJECT SCOPE
- [ ] C406.7.1 WTR HTG LOAD FRACTION

C405.2 - LIGHTING CONTROLS (MANDATORY REQUIREMENTS):

- [x] LIGHTING SYSTEMS ARE PROVIDED WITH CONTROLS AS REQUIRED PER SECTION C405.2, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C405.3 - EXIT SIGNS (MANDATORY REQUIREMENTS):

- [x] INTERNALLY ILLUMINATED EXIT SIGNS DO NOT EXCEED 5 WATTS PER SIDE.
- [ ] NOT APPLICABLE

C405.4 - INTERIOR LIGHTING POWER REQUIREMENTS (PRESCRIPTIVE) (NON-EXEMPT):

- [ ] NOT APPLICABLE PER 2018 NCECC C503.1, EXCEPTION 2.G.

C405.4.1 - TOTAL CONNECTED INTERIOR LIGHTING POWER:
87,481 WATTS SPECIFIED
35 % REDUCTION OF SPECIFIED VS. ALLOWED (APPLICABLE IF C406.1.2 IS SELECTED)

C405.4.2 - TOTAL ALLOWABLE INTERIOR LIGHTING POWER:
METHOD OF COMPLIANCE:

- [x] BUILDING AREA METHOD
- [ ] SPACE-BY-SPACE METHOD

134,006 WATTS ALLOWED

C405.5.1 - EXTERIOR BUILDING LIGHTING POWER (NON-EXEMPT):

- [ ] NOT APPLICABLE

TOTAL CONNECTED EXTERIOR LIGHTING POWER:
3,140 WATTS SPECIFIED
TOTAL ALLOWABLE EXTERIOR LIGHTING POWER:
5,690 WATTS ALLOWED

C405.6 - ELECTRICAL ENERGY CONSUMPTION (DWELLING UNITS):

- [ ] SEPARATE ELECTRICAL METERING HAS BEEN PROVIDED FOR EACH DWELLING UNIT IN GROUP R-2 BUILDINGS.
- [x] NOT APPLICABLE

C405.7 - ELECTRICAL TRANSFORMERS (MANDATORY REQUIREMENTS):

- [x] ELECTRICAL TRANSFORMERS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.7, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS):

- [x] ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.8, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C408 - SYSTEM COMMISSIONING:

- [ ] PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- [x] PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

## SYMBOL SCHEDULE POWER

| SYMBOL | DESCRIPTION |
|---|---|
| | WIRING SYSTEM CONCEALED IN WALL OR CEILING. |
| | WIRING SYSTEM CONCEALED IN OR UNDER SLAB OR UNDERGROUND WHEN SHOWN ON POWER PLANS. UNSWITCHED LEG OF LIGHTING CIRCUIT WHEN SHOWN ON LIGHTING PLANS. |
| | WIRING SYSTEM LOW VOLTAGE. |
| | CONDUIT TURNED DOWN TO FLOOR BELOW. |
| | CONDUIT TURNED UP TO FLOOR ABOVE. |
| | BRANCH CIRCUIT HOMERUN TO PANEL. |

## ELECTRICAL ABBREVIATIONS LIST

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1P | 1 POLE (2P, 3P, 4P, ETC.) | DCP | DOMESTIC WATER CIRCULATING PUMP | HT | HEIGHT | NEMA | NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION | SWBD | SWITCHBOARD | | |
| A | AMPERE | DEPT | DEPARTMENT | HTG | HEATING | | | SYM | SYMMETRICAL | | |
| AC | ABOVE COUNTER OR AIR CONDITIONER | DET | DETAIL | HTR | HEATER | NFDS | NON-FUSED SAFETY DISCONNECT SWITCH | SYS | SYSTEM | | |
| ACLG | ABOVE CEILING | DIA | DIAMETER | HV | HIGH VOLTAGE | | | TEL | TELEPHONE | | |
| ADO | AUTOMATIC DOOR OPENER | DISC | DISCONNECT | HVAC | HEATING, VENTILATING AND AIR CONDITIONING | NIC | NOT IN CONTRACT | TEL/DATA | TELEPHONE/DATA | | |
| AF | AMP FRAME | DIST | DISTRIBUTION | HWP | HYDRONIC WATER PUMP | NL | NIGHT LIGHT | TERM | TERMINAL | | |
| AFF | ABOVE FINISHED FLOOR | DN | DOWN | | | N.O. | NORMALLY OPEN | TL | TWIST LOCK | | |
| AFG | ABOVE FINISHED GRADE | DPR | DAMPER | IC | INTERRUPTING CAPACITY | NPF | NORMAL POWER FACTOR | TR | TAMPER RESISTANT | | |
| AFI | ARC FAULT CIRCUIT INTERRUPTER | DS | SAFETY DISCONNECT SWITCH | IG | ISOLATED GROUND | NTS | NOT TO SCALE | T-STAT | THERMOSTAT | | |
| AHU | AIR HANDLING UNIT | DT | DOUBLE THROW | IMC | INTERMEDIATE METAL CONDUIT | | | TTC | TELEPHONE TERMINAL CABINET | | |
| AL | ALUMINUM | DWG | DRAWING | INCAND | INCANDESCENT | OH | OVERHEAD | TV | TELEVISION | | |
| ALT | ALTERNATE | EC | ELECTRICAL CONTRACTOR | IR | INFRARED | OL | OVERLOADS | TVTC | TELEVISION TERMINAL CABINET | | |
| AMP | AMPERE | ELEC | ELECTRIC, ELECTRICAL | I/W | INTERLOCK WITH | PA | PUBLIC ADDRESS | TYP | TYPICAL | | |
| AMPL | AMPLIFIER | ELEV | ELEVATOR | J-BOX | JUNCTION BOX | PB | PULL BOX OR PUSHBUTTON | | | | |
| ANNUN | ANNUNCIATOR | EM | EMERGENCY | | | PE | PNEUMATIC ELECTRIC | UC | UNDER COUNTER | | |
| APPROX | APPROXIMATELY | EMS | ENERGY MANAGEMENT SYSTEM | KV | KILOVOLT | PED | PEDESTAL | UE | UNDERGROUND ELECTRICAL | | |
| AQ-STAT | AQUASTAT | EMT | ELECTRICAL METALLIC TUBING | KVA | KILOVOLT-AMPERE | PF | POWER FACTOR | UG | UNDERGROUND | | |
| ARCH | ARCHITECT, ARCHITECTURAL | EP | ELECTRIC PNEUMATIC | KVAR | KILOVOLT-AMPERE REACTIVE | PH | PHASE | UH | UNIT HEATER | | |
| AS | AMP SWITCH | EQUIP | EQUIPMENT | KW | KILOWATT | PIV | POST INDICATING VALVE | UT | UNDERGROUND TELEPHONE | | |
| AT | AMP TRIP | EWC | ELECTRIC WATER COOLER | KWH | KILOWATT HOUR | PNL | PANEL | UTIL | UTILITY | | |
| ATS | AUTOMATIC TRANSFER SWITCH | EX | EXISTING | | | PP | POWER POLE | UV | UNIT VENTILATOR OR ULTRAVIOLET | | |
| AUTO | AUTOMATIC | EXH | EXHAUST | LOC | LOCATE OR LOCATION | PR | PAIR | | | | |
| AUX | AUXILIARY | EXP | EXPLOSION PROOF | LT | LIGHT | PRI | PRIMARY | | | | |
| AV | AUDIO VISUAL | FA | FIRE ALARM | LTG | LIGHTING | PROJ | PROJECTION | V | VOLT | | |
| AWG | AMERICAN WIRE GAUGE | FABP | FIRE ALARM BOOSTER POWER SUPPLY PANEL | LTNG | LIGHTNING | PRV | POWER ROOF VENTILATOR | VA | VOLT-AMPERES | | |
| | | | | LV | LOW VOLTAGE | PT | POTENTIAL TRANSFORMER | VDT | VIDEO DISPLAY TERMINAL | | |
| BATT | BATTERY | FACP | FIRE ALARM CONTROL PANEL | MAX | MAXIMUM | PVC | POLYVINYL CHLORIDE (CONDUIT) | VERT | VERTICAL | | |
| BD | BOARD | FCU | FAN COIL UNIT | MAG.S | MAGNETIC STARTER | PWR | POWER | VFD | VARIABLE FREQUENCY DRIVE | | |
| BLDG | BUILDING | FIXT | FIXTURE | M/C | MOMENTARY CONTACT | | | VOL | VOLUME | | |
| BMS | BUILDING MANAGEMENT SYSTEM | FLR | FLOOR | MC | MECHANICAL CONTRACTOR | QUAN | QUANTITY | W | WATT | | |
| | | FLUOR | FLUORESCENT | MCB | MAIN CIRCUIT BREAKER | | | W/ | WITH | | |
| | | FU | FUSE | MCC | MOTOR CONTROL CENTER | RCPT | RECEPTACLE | WG | WIRE GUARD | | |
| C | CONDUIT | FUDS | FUSED SAFETY DISCONNECT SWITCH | MDC | MAIN DISTRIBUTION CENTER | REQD | REQUIRED | WH | WATER HEATER | | |
| CAB | CABINET | | | MDP | MAIN DISTRIBUTION PANEL | RM | ROOM | W/O | WITHOUT | | |
| CAT | CATALOG | | | MFR | MANUFACTURER | RSC | RIGID STEEL CONDUIT | WP | WEATHERPROOF | | |
| CATV | CABLE TELEVISION | GA | GAUGE | MFS | MAIN FUSED DISCONNECT SWITCH | RTU | ROOF TOP UNIT | XFMR | TRANSFORMER | | |
| CB | CIRCUIT BREAKER | GAL | GALLON | | | | | XFR | TRANSFER | | |
| CCTV | CLOSED CIRCUIT TELEVISION | GALV | GALVANIZED | MH | MANHOLE | SC | SURFACE CONDUIT | | | | |
| CKT | CIRCUIT | GC | GENERAL CONTRACTOR | MIC | MICROPHONE | SEC | SECONDARY | | | | |
| CLG | CEILING | GEN | GENERATOR | MIN | MINIMUM | SHT | SHEET | | | | |
| COMB | COMBINATION | GFI | GROUND FAULT CIRCUIT INTERRUPTER | MISC | MISCELLANEOUS | SIM | SIMILAR | | | | |
| CMPR | COMPRESSOR | | | MLO | MAIN LUGS ONLY | S/N | SOLID NEUTRAL | | | | |
| CONN | CONNECTION | GFP | GROUND FAULT PROTECTOR | MMS | MANUAL MOTOR STARTER | SPEC | SPECIFICATION | | | | |
| CONST | CONSTRUCTION | GND | GROUND | MOA | MULTIOUTLET ASSEMBLY | SPKR | SPEAKER | | | | |
| CONT | CONTINUATION OR CONTINUOUS | GRS | GALVANIZED RIGID STEEL (CONDUIT) | MSP | MOTOR STARTER PANELBOARD | SP | SPARE | ∠ | ANGLE | | |
| | | | | MSBD | MAIN SWITCHBOARD | SR | SURFACE RACEWAY | @ | AT | | |
| CONTR | CONTRACTOR | GYP BD | GYPSUM BOARD | MT | MOUNT | SS | STAINLESS STEEL | Δ | DELTA | | |
| CONV | CONVECTOR | | | MT.C | EMPTY CONDUIT | SSW | SELECTOR SWITCH | ' | FEET | | |
| CP | CIRCULATING PUMP | HOA | HANDS-OFF-AUTOMATIC SWITCH | MTS | MANUAL TRANSFER SWITCH | S/S | STOP/START PUSHBUTTONS | " | INCHES | | |
| CRT | CATHODE-RAY TUBE | | | MTR | MOTOR, MOTORIZED | STA | STATION | # | NUMBER | | |
| CT | CURRENT TRANSFORMER | HORIZ | HORIZONTAL | | | STD | STANDARD | Ø | PHASE | | |
| CTR | CENTER | HP | HORSEPOWER | N.C. | NORMALLY CLOSED | SURF | SURFACE MOUNTED | C | CENTER LINE | | |
| CU | COPPER | HPF | HIGH POWER FACTOR | NEC | NATIONAL ELECTRICAL CODE | SW | SWITCH | P | PLATE | | |

## SYMBOL SCHEDULE POWER LEGEND

| | |
|---|---|
| | JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. |
| | CEILING MOUNT JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED |
| | FLOOR MOUNT JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED |
| | 208Y/120V THREE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF. |
| | 480Y/277V THREE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF. |
| | 480-208Y/120V TRANSFORMER. SEE RISER FOR SIZE. PROVIDE 4" THICK HOUSEKEEPING PAD TO EXTEND 3" ON SIDES, FRONT WITH CHAMFER EDGE AND OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE. |
| | AUTOMATIC TRANSFER SWITCH WALL MOUNT |
| SPD | SURGE PROTECTION DEVICE (SPD); SEE DETAIL. |
| | JUNCTION BOX FOR HAND DRYER CONNECTION; SEE MOUNTING HEIGHTS DETAIL FOR EXACT HEIGHT; SEE ARCH. SHEETS FOR COORDINATION 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. |
| | SPECIAL OUTLET. SEE PLANS. |
| | FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. UNSHADED INDICATES NON-FUSED. |
| | FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. UNSHADED INDICATES NON-FUSED. |
| $_{FHP}$ | FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER, WITH OVERLOAD PROTECTION |
| $_{T}$ | ALL THINGS "X" CAN BE: T = TIMER, (0 - 4) HOUR MANUAL TIMER SWITCH, F = FAN SWITCH, VARIABLE SPEED FAN SWITCH |
| | HANDHOLE |
| | SWITCH - START/STOP PUSH BUTTON - WALL |
| | EMERGENCY POWER OFF BUTTON |

## ELECTRICAL FIXTURES LEGEND - COMMERCIAL

| | |
|---|---|
| | TAMPER RESISTANT COMBINATION GROUND FAULT RECEPTACLE AND USB. NEMA 5-20R DUPLEX. ALL OUTLETS INSTALLED WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI. |
| | TAMPER RESISTANT DUPLEX RECEPTACLE, 20 AMP, 120 VOLT. |
| | TAMPER RESISTANT GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI. |
| | GROUND FAULT RECEPTACLE - BREAKER AT PANEL. NEMA 5-20R DUPLEX. MOUNTED ABOVE COUNTER, OR AT HEIGHT NOTED. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI. |
| | TAMPER RESISTANT GROUND FAULT RECEPTACLE - BREAKER AT PANEL. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI. |
| | TAMPER RESISTANT GROUND FAULT DUPLEX RECEPTACLE, NEMA 5-20R MOUNTED ABOVE COUNTER BACKSPLASH OR AT HEIGHT NOTED. |
| | TAMPER RESISTANT GROUND FAULT DUPLEX RECEPTACLE - BREAKER AT PANEL, NEMA 5-20R MOUNTED ABOVE COUNTER BACKSPLASH OR AT HEIGHT NOTED. |
| WP | WEATHERPROOF TAMPER RESISTANT GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX, CORROSION RESISTANT, WITH IN-USE COVER. |
| | QUAD RECEPTACLE. TWO NEMA 5-20R TAMPER RESISTANT DUPLEX RECEPTACLES, OTHERWISE SAME AS DUPLEX RECEPTACLE ABOVE. |
| EWC | QUAD RECEPTACLE, TWO TAMPER RESISTANT NEMA 5-20R FOR ELECTRIC WATER COOLER TO BE SUPPLIED BY GROUND FAULT BREAKER. COORDINATE LOCATION WITH PLUMBING CONTRACTOR. |
| | GROUND FAULT QUAD RECEPTACLE. TWO TAMPER RESISTANT NEMA 5-20R DUPLEX RECEPTACLES ABOVE COUNTER. |
| GFI | GROUND FAULT QUAD RECEPTACLE. TWO TAMPER RESISTANT NEMA 5-20R DUPLEX RECEPTACLES. |

## EM./LS LIGHTING FIXTURE SYMBOLS AND DEVICES

| SYMBOL | DESCRIPTION |
|---|---|
| | LED FIXTURE WITH EMERGENCY DRIVER ON LIFE SAFETY BRANCH. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE. |

## LIGHTING FIXTURES SYMBOLS AND DEVICES LEGEND

| | |
|---|---|
| | WALL MOUNTED LED LIGHTING FIXTURE. |
| | LED LIGHTING FIXTURE. SEE FIXTURE SCHEDULE. SUSPEND FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE. |
| | LED STRIP LIGHT FIXTURE |
| | RECESSED LED LIGHTING FIXTURE. |
| | SUSPENDED OR PENDANT LIGHT (TYPE DENOTED IN LIGHTING SCHEDULE) |
| | SURFACE LINEAR LIGHT (TYPE DENOTED IN LIGHTING SCHEDULE) |
| | RECESSED LINEAR LIGHT (TYPE DENOTED IN LIGHTING SCHEDULE) |
| | SUSPENDED OR PENDANT LIGHT (TYPE DENOTED) |
| | EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. SEE LIGHTING FIXTURE SCHEDULE. |
| | EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. SEE LIGHTING FIXTURE SCHEDULE. |
| $_{S}$ | SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER AH 1221, OR EQUAL BY HUBBELL, LEVITON AND PASS & SEYMOUR. |
| $_{S^3}$ | THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, OR EQUAL BY HUBBELL, LEVITON AND PASS & SEYMOUR. |
| $_{S^4}$ | FOUR WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1224 OR EQUAL BY HUBBELL, LEVITON AND PASS & SEYMOUR. |
| $_{S^K}$ | ADDRESSABLE KEY OPERATED SWITCH FOR SINGLE ZONE |
| $_{S^D}$ | DIMMER SWITCH. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD AND DEVICE QUANTITY. PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG TRIM PLATE. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED) WATTAGE, AND QUANTITY. |
| $_{S^{3D}}$ | 3-WAY DIMMER SWITCH. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD AND DEVICE QUANTITY. PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG TRIM PLATE. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED) WATTAGE, AND QUANTITY. |
| $_{S^{OC}}$ | CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. 360 DEGREE COVERAGE, 2,000 SQ FT COVERAGE LARGE MOTION, 400 SQ FT SMALL MOTION. NON CATEGORY CABLE CONNECTORS. LOW VOLTAGE DETECTOR, PROVIDE WITH POWER PACK FOR EACH SWITCH LEG. SENSOR SWITCH, WATT STOPPER, LEVITION, EATON, SENSORWORX OR EQUAL. |
| $_{S^{OC}}$ | CEILING CORNER MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. CONICAL PATTERN WIDE VIEW 120 DEGREES, MOUNT AS CLOSE TO CORNER OF ROOM AS POSSIBLE. 40' SMALL MOTION, 70' LARGE MOTION PATTERN. NON CATEGORY CABLE CONNECTORS. LOW VOLTAGE DETECTOR. PROVIDE WITH POWER PACK FOR EACH SWITCH LEG. SENSOR SWITCH, WATT STOPPER, LEVITON, EATON OR EQUAL. |
| $_{S^{OC}}$ | WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY WITH NEUTRAL, 120/277V RATED. WATT STOPPER #WS-250, OR EQUAL BY SENSOR SWITCH, AND LEVITON. |
| $_{S^{OCD}}$ | WALL MOUNTED OCCUPANCY SENSOR AND SWITCH WITH 0-10V DIMMING. INFRARED TECHNOLOGY, WATT STOPPER #PW-311, SENSOR SWITCH, COOPER CONTROLS OR EQUAL. SWITCH SHALL BE INSTALLED IN SINGLE GANG BOX. 120V RATED. |
| | GENERATOR EMERGENCY SHUNT RELAY DEVICE FOR NORMAL LIGHTING CONTROL, SEE EMERG. LTG RELAY DETAIL. CONNECT TO LOCAL LIFE SAFETY BRANCH LIGHTING CIRCUIT. BASED ON BODINE BLCD-20B WITH 0-10V, EQUALS BY: LEGRAND, ETC, OR APPROVED EQUAL. |
| $_{S^{L1}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF FOR 1 ZONE OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON. |
| $_{S^{L3}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF FOR 3 ZONES OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON. |
| $_{S^{L4}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF FOR 4 ZONES OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON. |
| $_{S^{AGS}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL GRAPHIC WALL STATION. 3.5" HIGH RESOLUTION TOUCH SCREEN. 16 ZONES FOR ON/OFF AND DIMMING. PASSWORD PROTECTION. HUBBELL NSXW-TH3 OR EQUAL BY ACUITYNLIGHT OR WATTSTOPPER DLM. |
| $_{S^{P1}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF WITH DIMMING CONTROL FOR 1 ZONE OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON. |
| $_{S^{P2}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF WITH DIMMING CONTROL FOR 2 ZONES OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON. |
| $_{S^{P4}}$ | WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF WITH DIMMING CONTROL FOR 4 ZONES OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON. |
| OS | CEILING MOUNTED OCCUPANCY SENSOR POWER PACK. SENSOR SWITCH PP-20, WATT STOPPER #BZ-100, COOPER SP-20, OR EQUAL. |
| $_{PD\ NX}$ | ADDRESSABLE ROOM CONTROLLER HUBBELL NXRC OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE |
| $_{PD\ NXD}$ | ADDRESSABLE ROOM CONTROLLER W/ 0-10V DIMMING, HUBBEL NXRC OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE |
| $_{PD\ EM}$ | ADDRESSABLE EMERGENCY ROOM CONTROLLER UL924 LISTED. HUBBELL NXRC-UL924 OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE |
| $_{PD\ EMD}$ | ADDRESSABLE EMERGENCY ROOM CONTROLLER W/0-10V DIMMING, UL924 LISTED. HUBBELL NXRC-UL924 OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE |

## FLOOR BOXES:

| SYMBOL | DESCRIPTION |
|---|---|
| FB4 | 4-GANG MULTI-SERVICE FLOOR BOX. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, CONDUITS, ELECTRICAL DEVICES AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. LEGRAND: EVOLUTION EFB45S-OG OR APPROVED EQUAL. |
| PT8 | 8" MULTI-SERVICE POKE-THRU FLOOR BOX. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, CONDUITS, ELECTRICAL DEVICES AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. . LEGRAND: EVOLUTION 8AT OR APPROVED EQUAL. |
| FWB | DUPLEX/DATA IN STAGE. 120VAC, 20A, AND DATA OUTLET, RECESSED FLOOR MOUNTED (HUBBELL DEEP RECTANGULAR CAST IRON BOX, OR APPROVED EQUAL BY THOMAS & BETTS OR LEGRAND). TWO GANG, BRASS FLANGE, BRASS COVER PLATE. MINIMUM (2) 1" CONDUITS, ONE FOR POWER AND ONE FOR DATA. |

## TECHNOLOGY SYMBOLS:

| SYMBOL | DESCRIPTION |
|---|---|
| | NETWORK OUTLET. STANDARD HEIGHT (+18" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. |
| | NETWORK OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. |
| | NETWORK OUTLET. FOR OWNER PROVIDED VAPE SENSOR. CEILING MOUNTED. ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. |
| | NETWORK WALL PHONE OUTLET. ELEVATED HEIGHT (+42" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. |
| WAP | WIRELESS ACCESS POINT CONNECTION (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (HARD/OPEN CEILING). COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT. |
| WAP | WIRELESS ACCESS POINT CONNECTION (WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (WALL). COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT. |
| WAP EXT | WIRELESS ACCESS POINT CONNECTION (EXTERIOR). ELECTRICAL CONTRACTOR SHALL PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO EXTERIOR NETWORK DEVICE DETAIL. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT. |
| | CONDUIT/SLEEVE. 4" UNLESS OTHERWISE NOTED. |
| | RUNWAY LADDER CABLE TRAY IN TELECOMMUNICATIONS ROOMS, BY TELECOMMUNICATIONS CONTRACTOR. |
| | WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS. |
| | TWO-POST EQUIPMENT RACK, FLOOR MOUNTED, WITH VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR. |
| | FOUR-POST EQUIPMENT RACK, FLOOR MOUNTED, WITH VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR. |
| | EQUIPMENT CABINET WITH INTEGRAL VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR. |
| | TTB (TELEPHONE TERMINAL BOARD). 3/4" A/C GRADE FIRE-RATED PLYWOOD. MOUNT VERTICALLY TO WALLS WITH BOTTOM EDGE 8" AFF AND GRADE "A" SURFACE EXPOSED. FIRE RATING STAMP MUST REMAIN VISIBLE. |
| PBB | PRIMARY BONDING BUSBAR. GROUNDING SHALL BE PROVIDED AND INSTALL PER TIA-607-D. SEE T-SERIES DRAWINGS FOR ADDITIONAL INFORMATION. |
| SBB | SECONDARY BONDING BUSBAR. GROUNDING SHALL BE PROVIDED AND INSTALL PER TIA-607-D. SEE T-SERIES DRAWINGS FOR ADDITIONAL INFORMATION. |
| # | NETWORK CAMERA (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. |
| # | NETWORK CAMERA (WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. |
| # EXT | NETWORK CAMERA (EXTERIOR CEILING). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. |
| # EXT | NETWORK CAMERA (EXTERIOR WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. SEE DETAILS FOR ADDITIONAL INFORMATION. |
| VI | VIDEO INTERCOM WITH INTEGRAL CARD READER. ELEVATED HEIGHT (+42" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. |
| MS | MASTER STATION FOR VIDEO INTERCOM AND PAGING (DESKTOP DEVICE). |
| KP | KEYPAD FOR ALARM/IDS. ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO INTRUSION DETECTION CONTROL PANEL. |
| MD | MOTION DETECTOR. WHEN IN HARD CEILING OR WALL MOUNT; ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING. |
| GB | GLASS BREAK DETECTOR. WHEN IN HARD CEILING OR WALL MOUNT; ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDU

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1. GENERAL:
   - A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS AND SUPPLIES AS NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON THE PLANS.
   - B. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
   - C. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTION FEES.
   - D. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIALS AND USE EXISTS. ALL ITEMS OF THE SAME TYPE AND RATING SHALL BE IDENTICAL AND OF THE SAME MANUFACTURER.
   - E. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CATALOG DATA IN ELECTRONIC FORMAT (PDF) FOR ALL ELECTRICAL ITEMS IN THE SCOPE OF WORK, INCLUDING, BUT NOT LIMITED TO, RACEWAYS, BOXES, FITTINGS, CONDUCTORS, LUMINARIES, LAMPS, BALLASTS, WIRING DEVICES, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, SWITCHBOARDS, SWITCHGEARS, MOTOR CONTROL CENTERS (MCC), BUSWAYS, FIRE ALARM, TELECOMMUNICATIONS, ETC. FOR APPROVAL AS APPLICABLE FOR THE PROJECT. ONE COMPLETE SET OF APPROVED SUBMITTALS SHALL BE MAINTAINED AT THE JOB SITE.
   - F. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH THE BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, CONDUIT, WIRING, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, METHODS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COSTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED AFTER BIDS HAVE BEEN ACCEPTED AND ALL COSTS WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.
   - G. ONE COMPLETE SET OF THE LATEST CONSTRUCTION PLANS OF ALL TRADES SHALL BE MAINTAINED AT THE JOB SITE. IN ADDITION, ALL ADDENDUMS, BULLETINS, AND/OR SKETCHES SHALL BE INCORPORATED INTO THE ON-SITE CONSTRUCTION PLANS AS THE JOB PROGRESSES.
   - H. COMPLETELY ADEQUATE HOUSING SHALL BE PROVIDED FOR ALL MATERIALS STORED ON JOB SITE. ONLY CONDUIT MAY BE STORED OUTSIDE, BUT NOT IN CONTACT WITH THE GROUND.
   - I. THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT. GROUNDING ELECTRODE SYSTEM SHALL BE PER NEC 250.
   - J. PROVIDE AN INTERSYSTEM BONDING TERMINATION DEVICE AT THE MAIN ELECTRICAL SERVICE PER NEC 250.94.
   - K. WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER.
   - L. PROVIDE ALL CUTTING AND PATCHING FOR INSTALLATION OF WORK AND REPAIR ANY DAMAGE DONE.
   - M. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED), EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING FOR SUCH EQUIPMENT SHALL BE PROVIDED BY THE RESPECTIVE DISCIPLINE.
   - N. ALL ELECTRICAL JUNCTION BOXES, SWITCHGEAR, CABLING, VOICE/DATA OUTLETS, LOW VOLTAGE CABINETS, EMERGENCY RECEPTACLES, ETC. SHALL BE LABELED ACCORDING TO PANEL/RACK AND CIRCUIT NUMBER.
   - O. UPON COMPLETION OF WORK, CONTRACTOR SHALL PRESENT ENGINEER WITH CERTIFICATE OF APPROVAL FROM LOCAL INSPECTOR AND/OR AUTHORITY HAVING JURISDICTION BEFORE WORK WILL BE APPROVED FOR FINAL PAYMENT.
   - P. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR EFFECTIVE THE DATE THE PROJECT IS ACCEPTED BY THE OWNER. ANY IMPERFECT MATERIALS OR WORKMANSHIP SHALL BE REPLACED WITHOUT ADDED COST TO THE PROJECT.
   - Q. IT SHALL NOT BE THE INTENT OF ISSUED PLANS AND SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL NECESSARY ITEMS FOR A COMPLETE AND OPERATING SYSTEM.
   - R. THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FURNISH, FABRICATE, ERECT, CONNECT, AND COMPLETELY INSTALL SYSTEMS IN PROPER OPERATING CONDITION. ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED SHALL BE CARRIED AS PART OF THIS WORK TO COMPLETE THE INSTALLATION.
   - S. THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.
   - T. CONTRACTOR SHALL COORDINATE THE ROUGH-IN OF ALL OUTLET LOCATIONS WITH ARCHITECTURAL FLOOR PLANS, ELEVATIONS, AND MILLWORK SHOP DRAWINGS PRIOR TO ROUGH-IN.
   - U. ELECTRICAL CONTRACTOR SHALL NOT SCALE PLANS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS OTHERWISE NOTED.
   - V. CONTRACTOR SHALL TEST ALL "LIFE SAFETY" EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS, CONFIRMATION SHALL BE SENT TO THE ENGINEER OF RECORD IN THE FORM OF A STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETE. "LIFE SAFETY" EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN THE STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE (NEC), NFPA 101, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
   - W. IF DURING THE COURSE OF WORK, THE CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS, THE NEC, OR OTHER CODES OR REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK.
   - X. WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BRING THE ISSUE TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK OR ORDERING ANY MATERIALS. NO ADDITIONAL COSTS SHALL BE WARRANTED WITHOUT A CHANGE TO THE PROJECT SCOPE.
   - Y. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PROVIDING TEMPORARY POWER AND LIGHTING FOR ALL TRADES. AT NO TIME SHALL EXISTING BUILDING POWER SYSTEMS BE UTILIZED WITHOUT WRITTEN PERMISSION FROM THE OWNER.
   - Z. COORDINATE LOCATION AND REQUIREMENTS FOR ELECTRICAL SERVICE WITH THE POWER COMPANY. WHERE MORE THAN ONE SERVICE IS SUPPLIED TO A BUILDING, PROVIDE IDENTIFICATION AT EACH SERVICE PER NEC 230-2(E).
   - AA. COORDINATE LOCATION AND REQUIREMENTS FOR TELEPHONE SERVICE WITH THE TELEPHONE COMPANY.
   - AB. THE CONTRACTOR SHALL PROVIDE A MINIMUM TWO WEEK NOTICE FOR ANY PLANNED UTILITY OUTAGES. WRITTEN AUTHORIZATION FROM THE OWNER SHALL BE PROVIDED PRIOR TO ANY OUTAGE. ALL PLANNED UTILITY OUTAGES SHALL BE COORDINATED WITH THE OWNER TO OCCUR DURING NON-OPERATING TIMES, INCLUDING NIGHTS, WEEKENDS AND HOLIDAYS. ALL PLANNED UTILITY OUTAGES SHALL INCLUDE PROVISIONS FOR PROPER BACK-UP OF ALL LIFE-SAFETY SYSTEMS AND INCLUDE AN APPROVED FIRE-WATCH PROGRAM AS REQUIRED BY THE LOCAL FIRE MARSHALL.
   - AC. EACH BIDDER SHALL VISIT THE JOB SITE PRIOR TO BIDDING TO FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND TO ASCERTAIN THE EXTENT OF WORK REQUIRED. FAILURE TO VISIT SITE SHALL NOT EXCUSE CONTRACTOR FROM PERFORMING REQUIRED WORK NOR SHALL IT BE AN ACCEPTABLE REASON FOR REQUESTING ADDITIONS TO THE CONTRACT.

2. RACEWAY:
   - A. CONDUIT SHALL BE MANUFACTURED BY ALLIED, WHEATLAND, REPUBLIC CONDUIT, WESTERN TUBE, OR APPROVED EQUIVALENT.
   - B. FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW CONCRETE SLAB, IN DUCTBANKS, AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE. USE IMC WHERE SUBJECT TO PHYSICAL DAMAGE.
   - C. EMT FITTINGS SHALL BE COMPRESSION GLAND TYPE, OF MALLEABLE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS. CAST, SET SCREW, OR INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS FOR EMT SHALL BE MADE OF STEEL.
   - D. ALL RACEWAYS SHALL BE RUN CONCEALED, UNLESS OTHERWISE NOTED. FISH ALL NEW OUTLETS IN EXISTING WALLS, WHERE POSSIBLE. ALL RUNS SHALL BE NEAT AND SQUARE.
   - E. LOW VOLTAGE CABLING NOT SPECIFIED TO BE INSTALLED IN CONDUIT, SHALL BE INSTALLED IN A CABLE TRAY SYSTEM OR J-HOOK SYSTEM CONSISTING OF MINIMUM 2" DIAMETER HOOKS LOCATED ON 3'-0" CENTERS IN ALL ACCESSIBLE CEILINGS. WHERE THERE ARE INACCESSIBLE CEILINGS, PROVIDE CONDUIT FOR ENTIRE LENGTH OF INACCESSIBILITY.
   - F. RACEWAYS USED FOR LOW VOLTAGE SYSTEMS SUCH AS TELECOMMUNICATIONS, FIRE ALARM, SECURITY, CCTV, CONTROLS, AND SIMILAR CONDUITS ABOVE THE CEILING AND BACKBOARD(S) SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS AT EACH CONDUIT TERMINATION. THESE BUSHINGS SHALL BE BE INSTALLED PRIOR TO PULLING LOW-VOLTAGE CABLES.
   - G. RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT ROOF CURB.
   - H. SUPPORT ALL CONDUIT WITH STRAPS AND CLAMPS.
   - I. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES, WHETHER EXPOSED OR NOT AND SUPPORTED FROM STRUCTURE AND PROPERLY SECURED.
   - J. WHERE CONDUITS PASS THROUGH A BUILDING EXPANSION JOINT, PROVIDE GALVANIZED EXPANSION FITTINGS WITH BONDING JUMPERS.
   - K. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR INTERIOR WORK, 1" FOR EXTERIOR WORK.
   - L. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
   - M. LIQUID-TIGHT METAL CONDUIT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO EQUIPMENT AND ALL OTHER ROTATING AND VIBRATING EQUIPMENT, MAXIMUM LENGTH OF 3'-0".
   - N. FLEXIBLE METAL CONDUIT, MINIMUM SIZE 3/8", SHALL ONLY BE USED FOR FINAL CONNECTION TO LIGHTING FIXTURES, MAXIMUM LENGTH OF 6'-0".
   - O. PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360°. PULL BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDER PAVED AREAS, THEY SHALL BE RGS.
   - P. ALL CONDUIT BENDS/ELBOWS EMERGING FROM UNDERGROUND SHALL BE IMC AND SHALL EXTEND A MINIMUM OF 18" BELOW GRADE.
   - Q. ALL UNDERGROUND METALLIC RACEWAYS SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTUM BITUMASTIC.
   - R. ALL METALLIC CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATERTIGHT BY USE OF POLYETRA-FLUOROETHYLENE TAPE.
   - S. THE USE OF AC OR NM CABLE IS NOT PERMITTED.
   - T. THE USE OF MC CABLE IS NOT ALLOWED, EXCEPT FOR FINAL CONNECTION TO LIGHT FIXTURES. PER NOTE 2.N.

3. OUTLET BOXES:
   - A. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO, CROUSE-HINDS, APPLETON (EMERSON), OR APPROVED EQUIVALENT.
   - B. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS.
   - C. ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.
   - D. ATTACH BOXES TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL.
   - E. ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
   - F. ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

4. CONDUCTORS:
   - A. CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SIMPULL), ENCORE (SUPERSLICK), UNITED COPPER (SLK), CERRO (SLP), OR APPROVED EQUAL, "PRE-LUBRICATED" BY THE MANUFACTURER.
   - B. ALL CONDUCTORS SHALL BE COPPER, RATED 75° C WET/DRY EXCEPT WHERE OTHERWISE NOTED OR REQUIRED BY U.L. OR OTHER CODES.
   - C. ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THWN-2. SIZES #10 AWG AND SMALLER SHALL BE SOLID, SIZES #8 AWG AND LARGER SHALL BE STRANDED.
   - D. BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG.
   - E. CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS AND BROWN/ORANGE/YELLOW FOR 277/480 VOLT SYSTEMS FOR A, B, AND C PHASES, RESPECTIVELY. NEUTRAL SHALL BE WHITE FOR 120/208 VOLT SYSTEMS AND NATURAL GRAY FOR 277/480 VOLT SYSTEMS. GROUND CONDUCTOR SHALL BE GREEN ON ALL SYSTEMS. ALL CONDUCTOR SIZES SHALL HAVE COLOR-CODED INSULATION. THE USE OF COLORED TAPE ON LARGER WIRE SIZES SHALL NOT BE ALLOWED.
   - F. INSULATION SHALL BE DUAL RATED TYPE THHN/THWN-2 FOR FEEDERS AND BRANCH CIRCUITS. FIXTURE TAPS SHALL BE #12 THHN/THWN-2 IN FLEX WITH GREEN #12 AWG GROUNDING CONDUCTOR.
   - G. ALL CONDUCTORS SHALL BE IN CONDUIT.
   - H. WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY U.L. LABEL.
   - I. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ALLOWED.
   - J. JOINTS IN #10 AWG AND SMALLER SHALL BE MADE UP WITH CRIMPED CONNECTORS WITH INSULATING CAPS (NO TAPE) OR WIRENUTS (MAXIMUM OF 3 CONDUCTORS UNDER ANY CONNECTOR OR WIRENUT). LARGER WIRE SHALL USE SPLIT BOLTS OR BOLTED CLAMPS.
   - K. ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING, BUT NOT LIMITED TO, BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, MOTOR STARTER LUGS, TRANSFORMERS LUGS, WIRING DEVICE TERMINALS, AND ALL EQUIPMENT LUGS/TERMINALS SHALL BE RATED FOR USE WITH 75 DEGREE INSULATED CONDUCTORS AT THE 75 DEGREE AMPACITY AND SHALL BE SIZED AND SELECTED TO MATCH THE CONDUCTOR SIZE AND MATERIAL.
   - L. CIRCUIT JOINTS SHALL NOT BE MADE ON DEVICE TERMINALS.
   - M. WIRE WITHIN PANELBOARDS SHALL BE NEATLY TRAINED, SQUARED, BUNCHED, AND TAGGED.
   - N. ALL SYSTEM FURNITURE CONNECTIONS SHALL COMPLY WITH NEC 605.
   - O. GROUND ALL EQUIPMENT PER NEC ARTICLE 250. BOND WHERE CONDUITS ENTER ENCLOSURES THROUGH CONCENTRIC KNOCKOUTS. ALL FLEX, INCLUDING FIXTURE TAPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT, SIZED PER NEC 250-122.
   - P. ALL CONDUCTORS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC 300-19.
   - Q. THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW, REGARDLESS WHAT THE PANEL SCHEDULE INDICATES, FOR SIZING ALL 120V & 277V, 20 AMP BRANCH CIRCUITS (COPPER CONDUCTORS) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT:

| VOLTAGE | CONDUCTOR LENGTH * | BRANCH CIRCUIT |
|---|---|---|
| 120 | 0' - 50' | #12 |
| 120 | 51' - 90' | #10 |
| 120 | 91' - 140' | #8 |
| 120 | 141' - 225' | #6 |
| 277 | 0' - 125' | #12 |
| 277 | 126' - 200' | #10 |
| 277 | 201' - 330' | #8 |
| 277 | 331' - 525' | #6 |

* - THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

WIRING DEVICES:
   - A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM, EQUAL TO COOPER QUALITY INDICATED BELOW OR AS MANUFACTURED BY HUBBELL, LEGRAND-PASS & SEYMOUR, LEVITON, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED:

SWITCHES (120/277V) SHALL BE AS FOLLOWS:

| | |
|---|---|
| SINGLE-POLE 20 AMP | COOPER AH1221 |
| DOUBLE-POLE 20 AMP | COOPER AH1222 |
| THREE-WAY 20 AMP | COOPER AH1223 |
| 5. FOUR-WAY 20 AMP | COOPER AH1224 |
| SINGLE-POLE-PILOT 20 AMP | COOPER AH1221PL |
| DOUBLE-POLE-PILOT 20 AMP | COOPER AH1222PL |
| THREE-WAY-PILOT 20 AMP | COOPER AH1223PL |
| SINGLE-POLE-KEY 20 AMP | COOPER AH1221L |
| DOUBLE-POLE-KEY 20 AMP | COOPER AH1222L |
| THREE-WAY-KEY 20 AMP | COOPER AH1223L |
| FOUR-WAY-KEY 20 AMP | COOPER AH1224L |

DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:

| | |
|---|---|
| 15 AMP DUPLEX | COOPER 5252 |
| 20 AMP DUPLEX | COOPER 5352 |
| 15 AMP DUPLEX GFCI | COOPER SGF15F |
| 20 AMP DUPLEX GFCI | COOPER SGF20F |
| 15 AMP DUPLEX TAMPER | COOPER TR5262 |
| 20 AMP DUPLEX TAMPER | COOPER TR5362 |
| 15 AMP DUPLEX GFCI-TAMPER | COOPER TRSGF15F |
| 20 AMP DUPLEX GFCI-TAMPER | COOPER TRSGF20F |

THE PART NUMBERS ABOVE ARE FOR WIRING DEVICE TYPE ONLY. SEE BELOW FOR WIRING DEVICE COLOR AND PLATE MATERIAL/COLOR.
   - B. SEE MOUNTING HEIGHT ELEVATION DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, UNLESS OTHERWISE NOTED.
   - C. THE COLOR OF ALL WIRING DEVICES (SWITCHES AND RECEPTACLES) SHALL BE AS DIRECTED BY THE ARCHITECT, UNLESS OTHERWISE NOTED. ALL COVER PLATES SHALL BE 302 STAINLESS STEEL. COVER PLATES IN MASONRY WALLS SHALL BE JUMBO SIZE.
   - D. EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL BE 20 AMP TYPE.
   - E. ADJACENT DEVICES SHALL HAVE A COMMON WALL PLATE.
   - F. WEATHERPROOF COVERS SHALL BE "WHILE-IN-USE" SO PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION. COOPER #WIU-2 DOUBLE-GANG WITH CLEAR COVER OR APPROVED EQUAL
   - G. A MAXIMUM OF 10 GENERAL PURPOSE RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT.
   - H. DIMMERS SHALL BE LINEAR SLIDE, PRESENT ON/OFF, SQUARE LAW DIMMING, W/RFI FILTERING AND VOLTAGE COMPENSATION CIRCUITING.
   - I. ALL WALL MOUNTED OCCUMPANCY/VACANCY SENSORS/SWITCHES SHALL BE INSTALLED WITH AN EQUIPMENT GROUNDING CONDUCTOR.
   - J. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED IN ALL LOCATIONS PER NEC 210.8. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
   - K. ALL GFCI RECEPTACLES SHALL HAVE AUTO-MONITORING / SELF-TEST FUNCTION AND REVERSE LINE-LOAD MISFIRE FUNCTION AND MEET ALL REQUIREMENTS OF UL 943 (LATEST EDITION).
   - L. TAMPER-RESISTANT RECEPTACLES SHALL BE PROVIDED FOR ALL AREAS PER NEC 406.12, INCLUDING DWELLING UNITS, GUEST ROOMS AND GUEST SUITES OF HOTELS AND MOTELS, CHILD-CARE FACILITIES, PRESCHOOL AND ELEMENTARY EDUCATION FACILITIES, BUSINESS OFFICES/CORRIDORS/WAITING ROOMS AND THE LIKE IN CLINICS/MEDICAL/DENTAL OFFICES AND OUTPATIENT FACILITIES, ASSEMBLY OCCUPANCIES INCLUDING PLACES OF AWAITING TRANSPORTATION/GYMNASIUMS/SKATING RINKS/AUDITORIUMS, AND DORMITORIES/STUDENT HOUSING.

6. SUPPORTS:
   - A. ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE.
   - B. INSERTS IN MASONRY SHALL BE LEAD OR FIBER IN DRILLED HOLES, OR CAST IN PLACE.
   - C. NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
   - D. EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MAXIMUM OF 3'-0" FROM BOXES.
   - E. LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING GRID OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

7. PAINTING:
   - A. SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT. PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO BLEND WITH ADJACENT SURFACES, OR SHALL BE MANUFACTURER'S STANDARD COLOR BAKED ENAMEL FINISH, OR AS DIRECTED BY THE ARCHITECT.

8. TELECOMMUNICATIONS:
   - A. PRIOR TO STARTING WORK, CONTRACTOR MUST VERIFIY IF A SEPARATE TELECOMMUNICATIONS PACKAGE HAS BEEN PROVIDED. IF A SEPARATE TELECOMMUNICTIONS PACKAGE HAS BEEN PROVIDED, THAT PACKAGE SHALL TAKE PRECEDENCE SHOULD ANY DISCREPANCIES EXIST BETWEEN THE DOCUMENTS.
   - B. FURNISH A COMPLETE TELECOMMUNICATIONS PATHWAY SYSTEM AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
   - C. EACH TELECOMMUNICATIONS OUTLET SHALL CONSIST OF A 4-11/6" SQUARE BY 2-1/8" DEEP JUNCTION BOX WITH A SINGLE-GANG PLASTER RING. PROVIDE A BLANK COVER PLATE FOR EACH OUTLET.
   - D. PROVIDE MINIMUM 1-1/4" CONDUIT RACEWAY (UNLESS OTHERWISE NOTED ON TELECOMMUNICATIONS DRAWINGS AND SPECIFICATIONS) FROM EACH OUTLET JUNCTION BOX TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE MINIMUM 210LB TEST NYLON PULL STRING AND NYLON BUSHINGS FOR EACH CONDUIT RACEWAY.
   - E. PROVIDE GROUNDING FOR ALL TELECOMMUNICATIONS SYSTEMS AND EQUIPMENT IN ACCORDAWNCE WITHDRAWINGS AND SPECIFICATIONS.
   - F. PROVIDE DEDICATED TELECOMMUNICATIONS GROUNGING BUSBARS IN EACH TELECOMMUNICATIONS ROOM. PROVIDE GREEN-JACKETED COPPER BONDING CONDUCTOR BETWEEN THE MAIN ELECTRICAL GROUND AND THE TELECOMMUNICATIONS PRIMARY BONDING BUSBAR, SIZED PER TIA REQUIREMENTS. PROVIDE GREEN-JACKETED COPPER BONDING CONDUCTOR BETWEEN THE TELECOMMUNICATIONS PRIMARY BONDING BUSBAR AND EACH ADDITIONAL SECONDARY BONDING BUSBAR, SIZED PER TIA REQUIREMENTS.
   - G. PROVIDE TELECOMMUNICATIONS TERMINAL BACKBOUND IN EACH TELECOMMUNICATIONS ROOM AS INDICATED ON DRAWINGS AND SPECIFICATIONS. BACKBOARDS SHALL CONSIST OF 4' BY 8' SHEETS OF FIRE-RATED A/C GRADE PLYWOOD MOUNTED VERTICALLY WITH THE BOTTOM EDGE 2" AFF AND GRADE-A SURFACE EXPOSED. FIRE RATING STAMP MUST NOT BE COVERED AND MUST REMAIN VISIBLE.
   - H. VERIFY LOCATION OF INCOMING TELECOMMUNICATIONS SERVICES WITH LOCAL SERVICE PROVIDERS PRIOR TO SUBMITTING BID. TELECOMMUNICATIONS SERVICE CONDUITS SHALL BE PROVIDED TO THE PROPERTY LINE OR OTHER POINT AS DIRECTED BY THE LOCAL SERVICE PROVIDER.
   - I. THE SCOPE OF THE TELECOMMUNICATIONS DESIGN SHOWN ON THESE DRAWINGS INCLUDES PATHWAYS ONLY. TELECOMMUNICATIONS CABLING, CONNECTIONS, AND EQUIPMENT ARE NOT WITHIN THE SCOPE OF THESE DOCUMENTS.

9. LIGHTING FIXTURES:
   - A. TYPES AND MANUFACTURERS ARE SCHEDULED ON THE PLANS. EQUIVALENT FIXTURES BY OTHERS MAY BE SUBMITTED ONLY AS INDICATED ON THE PLANS AND ARE SUBJECT TO THE APPROVAL OF THE OWNER AND ENGINEER.
   - B. ALL FIXTURES SHALL BE U.L. LISTED AND LABELED.
   - C. LAMPS SHALL BE GENERAL ELECTRIC, PHILIPS, OR OSRAM/SYLVANIA EXCEPT WHERE OTHERWISE NOTED IN THE LIGHTING FIXTURE SCHEDULE OR OTHERWISE NOTED. ALL FIXTURES SHALL BE EQUIPPED WITH LAMPS.
   - D. BALLASTS SHALL BE AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE OR AS OTHERWISE NOTED.
   - E. ALL FIXTURES SHALL BE PROVIDED FOR PROPER VOLTAGE BASED ON THE CIRCUIT ASSIGNMENT INDICATED ON THE PLANS.
   - F. CATALOG NUMBERS ARE FOR GENERAL IDENTIFICATION OF FIXTURES ONLY. ALL RELATED PARTS, SUCH AS PLASTER RINGS, JUNCTION BOXES, LOUVERS, SHIELDS, MOUNTING STEMS, CANOPIES, CONNECTORS, STRAPS, NIPPLES, HARDWARE, ACCESSORIES, ETC., TO FIT THEM PROPERLY TO THE CONSTRUCTION, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. CONTRACTOR SHALL PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL AS SPECIFIED IN ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF CATALOG NUMBER GIVEN.
   - G. ALL FIXTURES SHALL BE GROUNDED PER THE NEC.
   - H. FIXTURES CONNECTED WITH FLEX TO THE RIGID RACEWAY PORTION OF THE WIRING SYSTEM SHALL CARRY A GREEN BONDING JUMPER WITHIN THE FLEX. THE JUMPER SHALL BE FASTENED TO BOTH THE FIXTURE AND THE RACEWAY SYSTEM WITH A STEEL CITY "G" CLIP OR APPROVED EQUIVALENT. PHASE AND GROUND CONDUCTORS RUN IN FLEX SHALL BE #12 AWG MINIMUM. MAXIMUM FLEX LENGTH SHALL BE 6'-0".
   - I. SURFACE-MOUNTED FLUORESCENT FIXTURES INSTALLED ON COMBUSTIBLE MATERIAL SHALL BE MOUNTED AT LEAST 1/4" FROM THE SURFACE OF THE MATERIAL, EXCEPT FOR FIXTURES WHICH ARE PLAINLY MARKED AS U.L. APPROVED FOR MOUNTING DIRECTLY TO SUCH SURFACES.
   - J. MOUNT ALL FIXTURES PLUMB AND SQUARE WITH ROWS ALIGNED.
   - K. FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS WITHER INTEGRAL OR EXTERNAL TO EACH LUMINAIRE PER NEC 410.130(G).
   - L. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF FIXTURES.
   - M. CONTRACTOR SHALL COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION AND ADJUST ACCORDINGLY WITHOUT ADDITIONAL EXPENSE.
   - N. ALL LIGHTING FIXTURES SHALL BE THERMALLY PROTECTED PER THE NEC.
   

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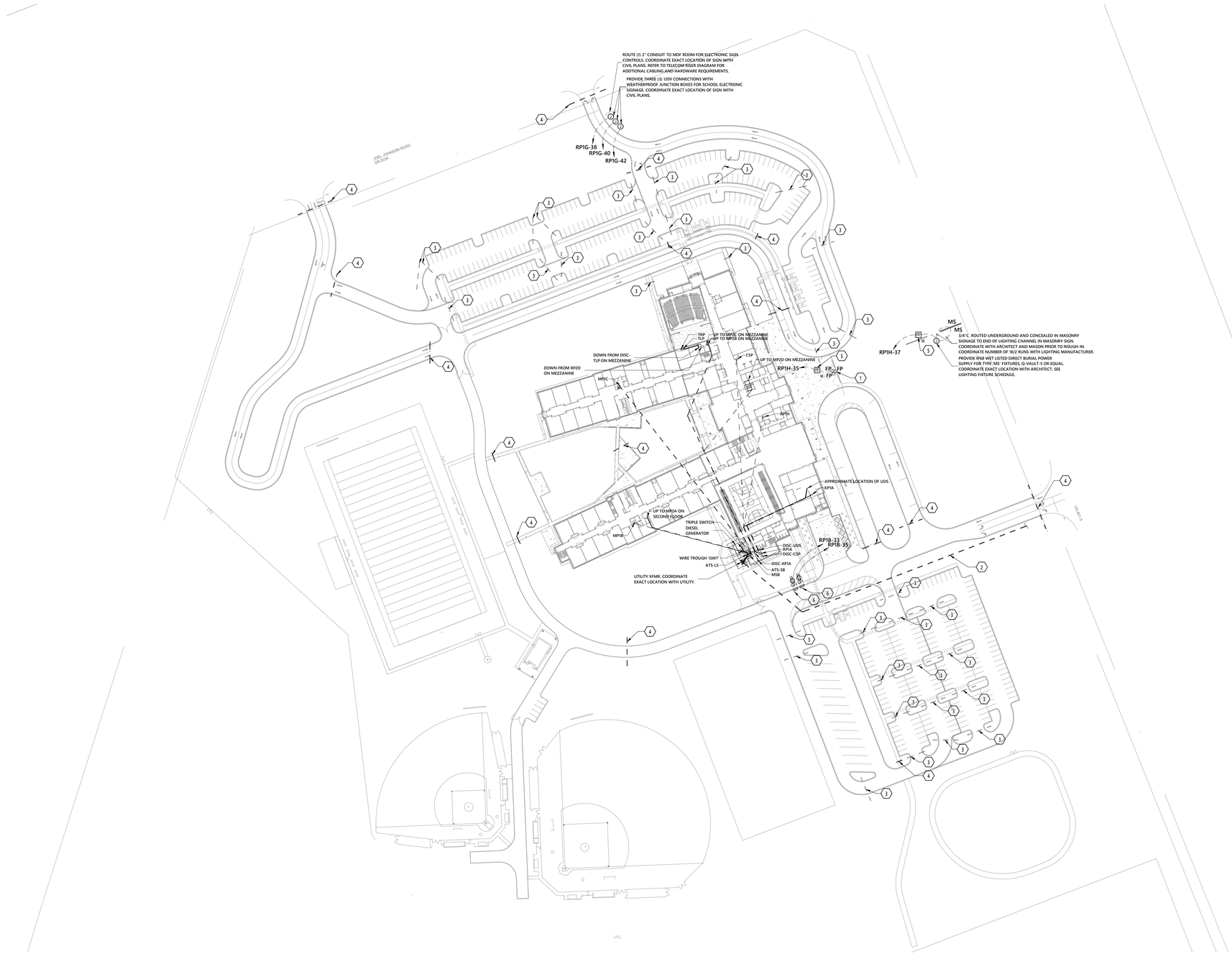
ROUTE (1) 2" CONDUIT TO MDF ROOM FOR ELECTRONIC SIGN CONTROLS. COORDINATE EXACT LOCATION OF SIGN WITH CIVIL PLANS. REFER TO TELECOM RISER DIAGRAM FOR ADDITIONAL CABLING AND HARDWARE REQUIREMENTS.
PROVIDE THREE (3) 120V CONNECTIONS WITH WEATHERPROOF JUNCTION BOXES FOR SCHOOL ELECTRONIC SIGNAGE. COORDINATE EXACT LOCATION OF SIGN WITH CIVIL PLANS.
JOEL JOHNSON ROAD SR1534
RP1G-38
RP1G-40
RP1G-42
TRP
TLP
UP TO MP2C ON MEZZANINE
UP TO MP2B ON MEZZANINE
DOWN FROM DISC-TLP ON MEZZANINE
DOWN FROM RP2D ON MEZZANINE
MP1C
CSP
UP TO MP2D ON MEZZANINE
RP1H-35
FP
RP1H-37
MS
MS
3/4"C. ROUTED UNDERGROUND AND CONCEALED IN MASONRY SIGNAGE TO END OF LIGHTING CHANNEL IN MASONRY SIGN. COORDINATE WITH ARCHITECT AND MASON PRIOR TO ROUGH-IN. COORDINATE NUMBER OF 18/2 RUNS WITH LIGHTING MANUFACTURER. PROVIDE IP68 WET LISTED DIRECT BURIAL POWER SUPPLY FOR TYPE 'MS' FIXTURES. Q-VAULT-5 OR EQUAL. COORDINATE EXACT LOCATION WITH ARCHITECT. SEE LIGHTING FIXTURE SCHEDULE.
RP1H
APPROXIMATE LOCATION OF UDS KP1A
UP TO MP2A ON SECOND FLOOR
TRIPLE SWITCH DIESEL GENERATOR
MP1B
WIRE TROUGH 'GWT'
ATS-LS
UTILITY XFMR. COORDINATE EXACT LOCATION WITH UTILITY.
DISC-UDS KP1A
DISC-CSP
DISC-KP1A
ATS-SB
MSB
RP1B-32
RP1B-35
LAWN
LAWN
LAWN

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1 PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 100
1/8" = 1'-0"

## GENERAL NOTES:

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-1T', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

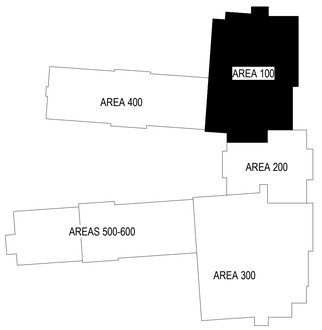
## KEYNOTES (4)

1 LOCATE POWER PACK IN EMERGENCY ELECTRICAL ROOM ADJACENT TO PANEL 'LSH'. CONNECT VOLTAGE SENSING INPUT OF POWER PACK TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
2 DRESSING ROOM LIGHTING PILOT LIGHT. TYPICAL OF TWO (2) THIS CORRIDOR. MOUNT ADJACENT TO DRESSING ROOM RECEPTACLE PILOT LIGHT. PILOT LIGHT SHALL ILLUMINATE WHEN DRESSING ROOM LIGHTS ARE TURNED ON.
3 EMERGENCY LIGHTING TRANSFER DEVICE TO BE LOCATED AT THEATRICAL LIGHTING PANEL. SEE THEATRICAL LIGHTING RISER / SHEET E-604 FOR DETAILS.
4 MOUNT TYPE 'STL1' FIXTURES IN BACKSTAGE AREA ABOVE THEATRICAL LIGHTING AND CURTAINS. COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
5 MOUNT TYPE 'WL1' FIXTURE DIRECTLY ABOVE MECHANICAL ROOM DOOR.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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ENERGY STAR PARTNER

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|---|---|---|

ISSUE DATE: 11/08/24
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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 100

E-111



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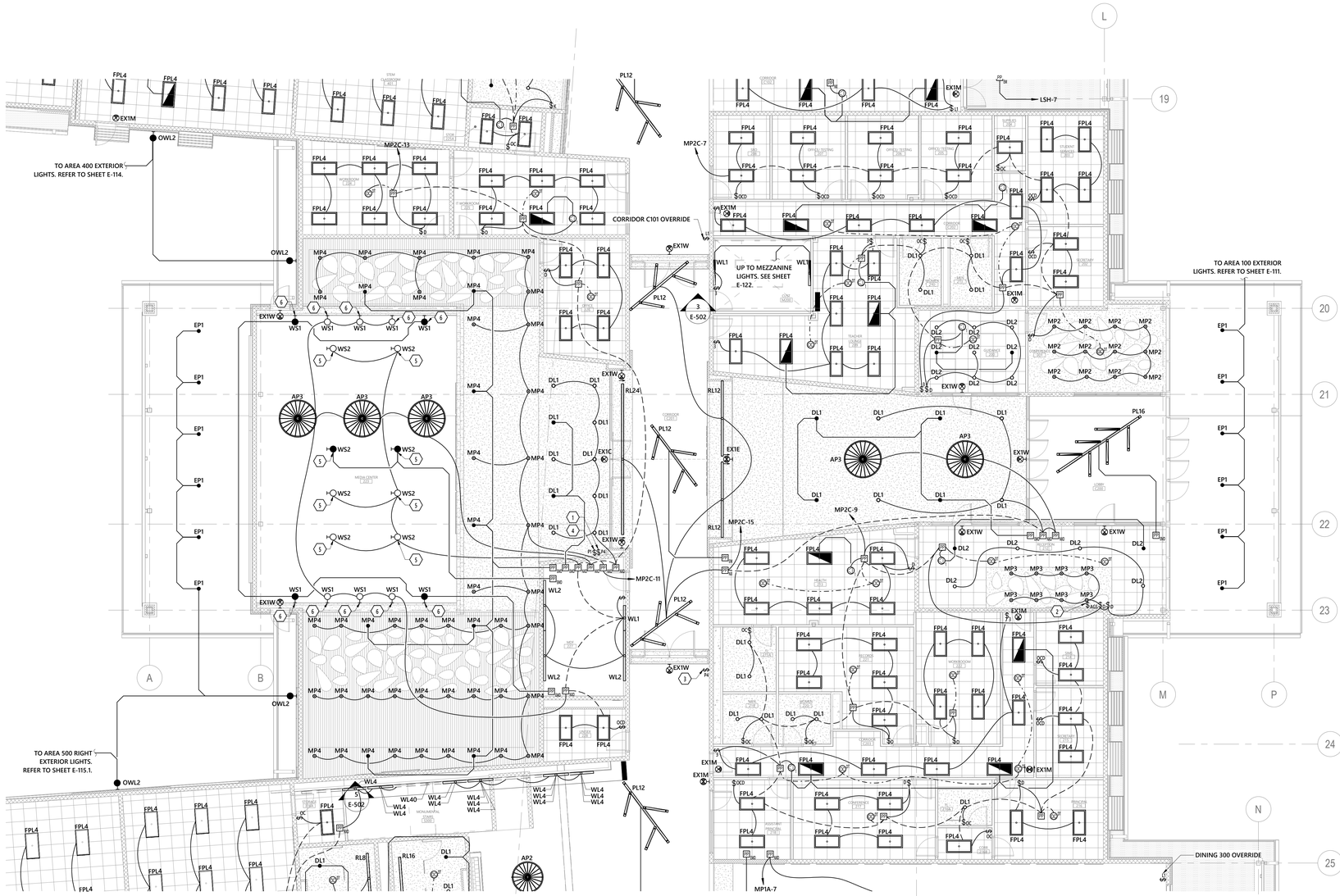


1 **PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 200**
1/8" = 1'-0"

## GENERAL NOTES:

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C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-13'; UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

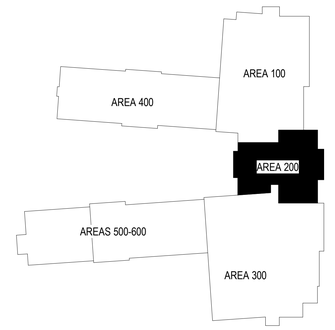
## KEYNOTES (#)

1 MEDIA CENTER 223 OVERRIDE.
4 ZONES:
ZONE 1: TYPE 'DL1' DOWNLIGHTS
ZONE 2: TYPE 'MP1' PENDANTS
ZONE 3: TYPE 'WS1' SCONCES
ZONE 4: TYPE ' AP3' PENDANTS
2 LOW VOLTAGE SCENE CONTROLLER WITH FULL COLOR TOUCH SCREEN. ON/OFF/DIM CONTROLS. PASSWORD PROTECTED. CONTROLLED AREAS INCLUDING BUT NOT LIMITED TO: ALL CORRIDORS, LOBBY, AND VESTIBULES.
3 CORRIDOR C300 OVERRIDE.
4 ZONES:
ZONE 1: TYPE 'PL12' AND 'L16' PENDANTS
ZONE 2: TYPE 'DL1' DOWNLIGHTS
ZONE 3: TYPE 'AP2' PENDANTS
ZONE 4: TYPE 'WL40' AND 'WL44' WALL MOUNTED LINEARS
4 MEDIA CENTER 223 OVERRIDE.
1 ZONE:
ZONE 1: TYPE 'WS2' SCONCES
5 LIGHTING FIXTURE TO BE MOUNTED TO SIDE OF GLULAM STRUCTURE.
6 LIGHTING FIXTURE TO BE MOUNTED TO WALL AT 23'-0" AFF.

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 200

**E-112**

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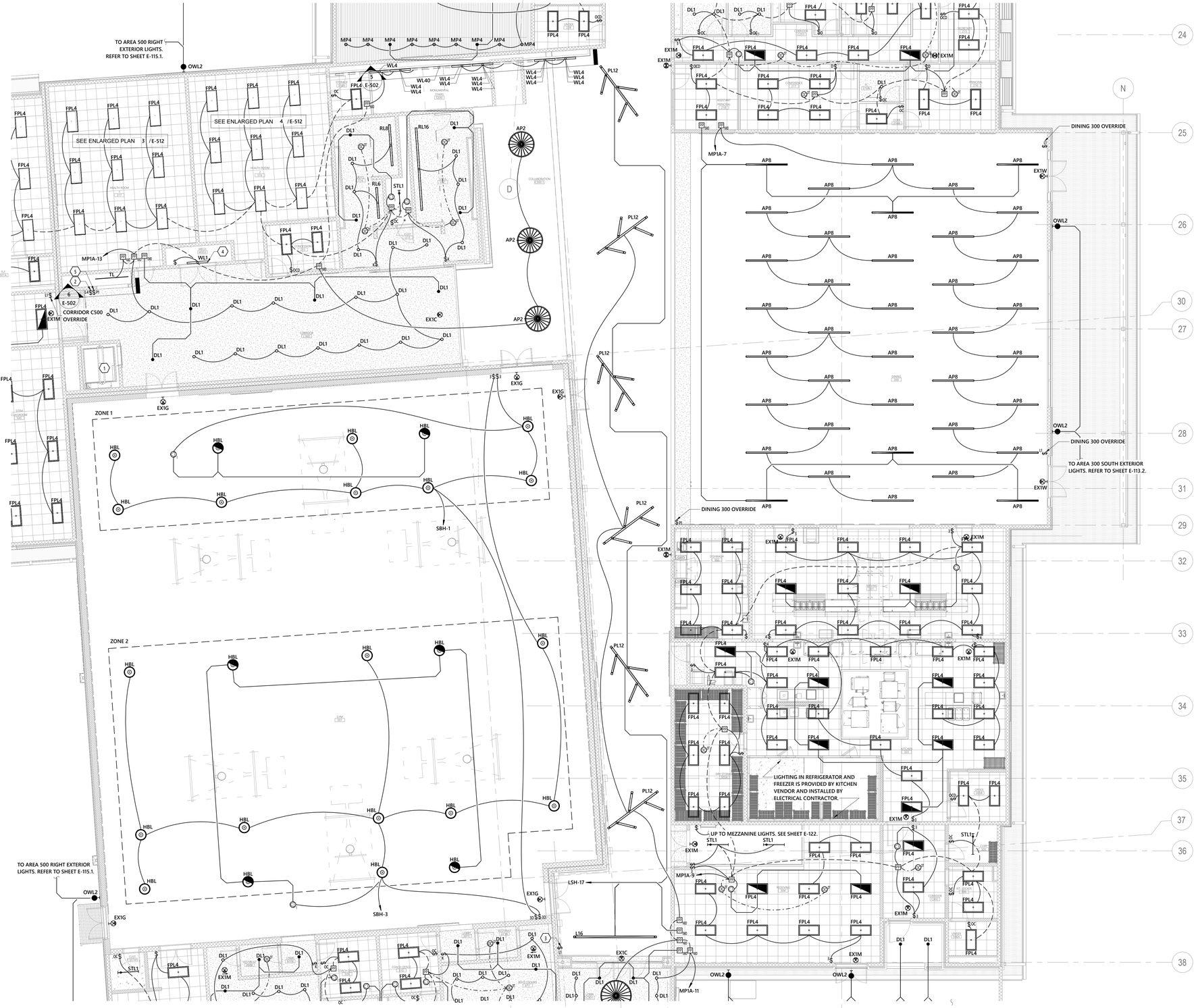


1 PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 300 NORTH
1/8" = 1'-0"

## GENERAL NOTES:

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
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D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-15', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
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G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
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K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

## KEYNOTES

1 REFER TO ELEVATOR DETAILS/ SHEET E-605 FOR ELEVATOR LIGHTING REQUIREMENTS.
2 CORRIDOR C300 OVERRIDE.
4 ZONES:
ZONE 1: TYPE 'PL12' AND 'L16' PENDANTS
ZONE 2: TYPE 'DL1' DOWNLIGHTS
ZONE 3: TYPE 'AP2' PENDANTS
ZONE 4: TYPE 'WL40' AND 'WL44' WALL MOUNTED LINEARS
3 CORRIDOR C300 OVERRIDE.
1 ZONE:
ZONE 1: TYPE 'PL12' AND 'L16' PENDANTS
4 MOUNT TYPE 'WL1' FIXTURE DIRECTLY ABOVE MECHANICAL ROOM DOOR.
5 CORRIDOR C300 OVERRIDE.
1 ZONES:
ZONE 1: TYPE 'TL' CASEWORK TAPE LIGHT

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 300 NORTH

E-113.1

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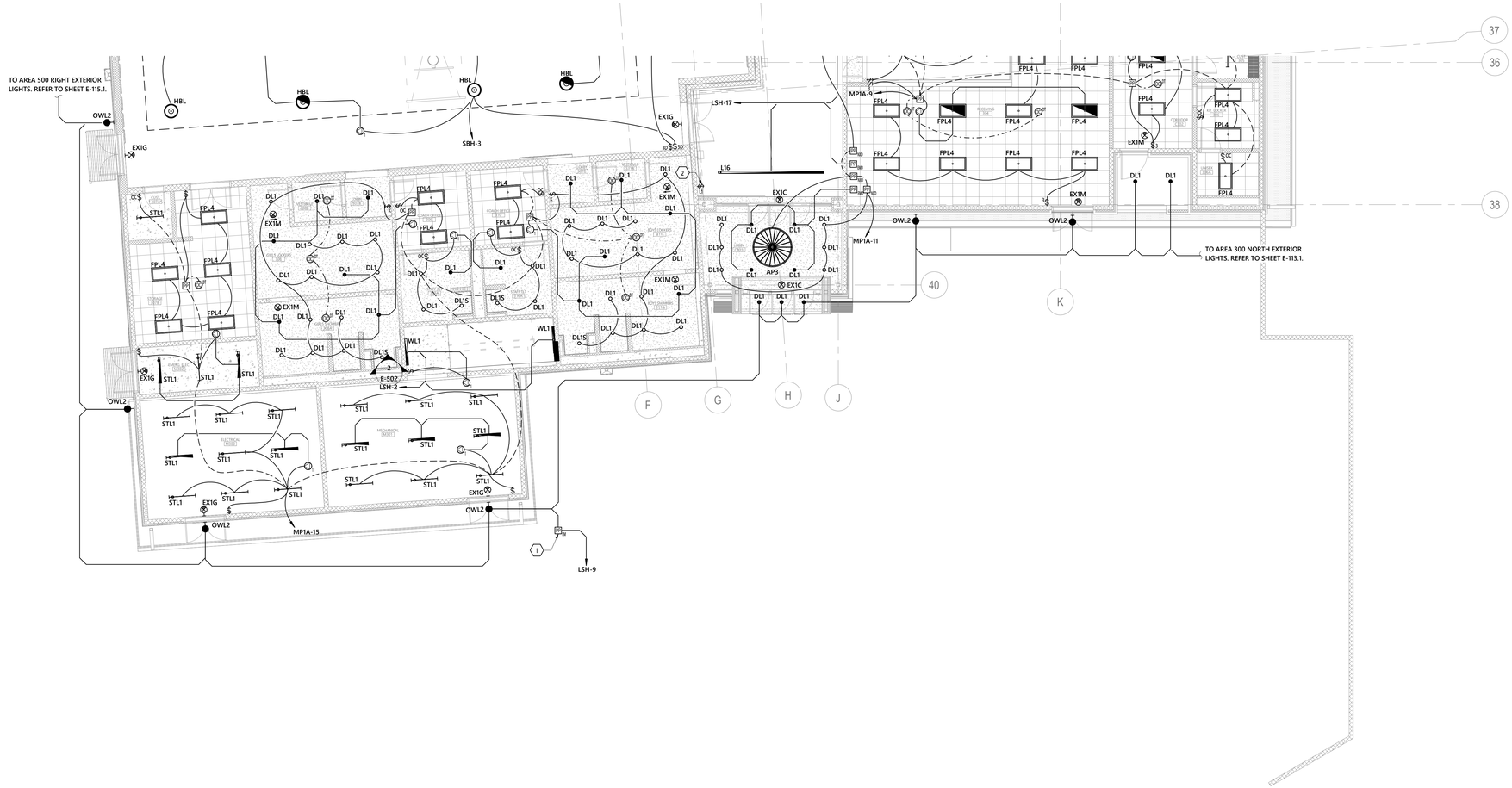
## KEYNOTES (#)

1 LOCATE POWER PACK IN EMERGENCY ELECTRICAL ROOM ADJACENT TO PANEL 'LSH'. CONNECT VOLTAGE SENSING INPUT OF POWER PACK TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
2 CORRIDOR C300 OVERRIDE.
1 ZONE:
ZONE 1: TYPE 'PL12' AND 'L16' PENDANTS




1 PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 300 SOUTH
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 300 SOUTH

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D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT LSN-1P, UNLESS OTHERWISE NOTED.
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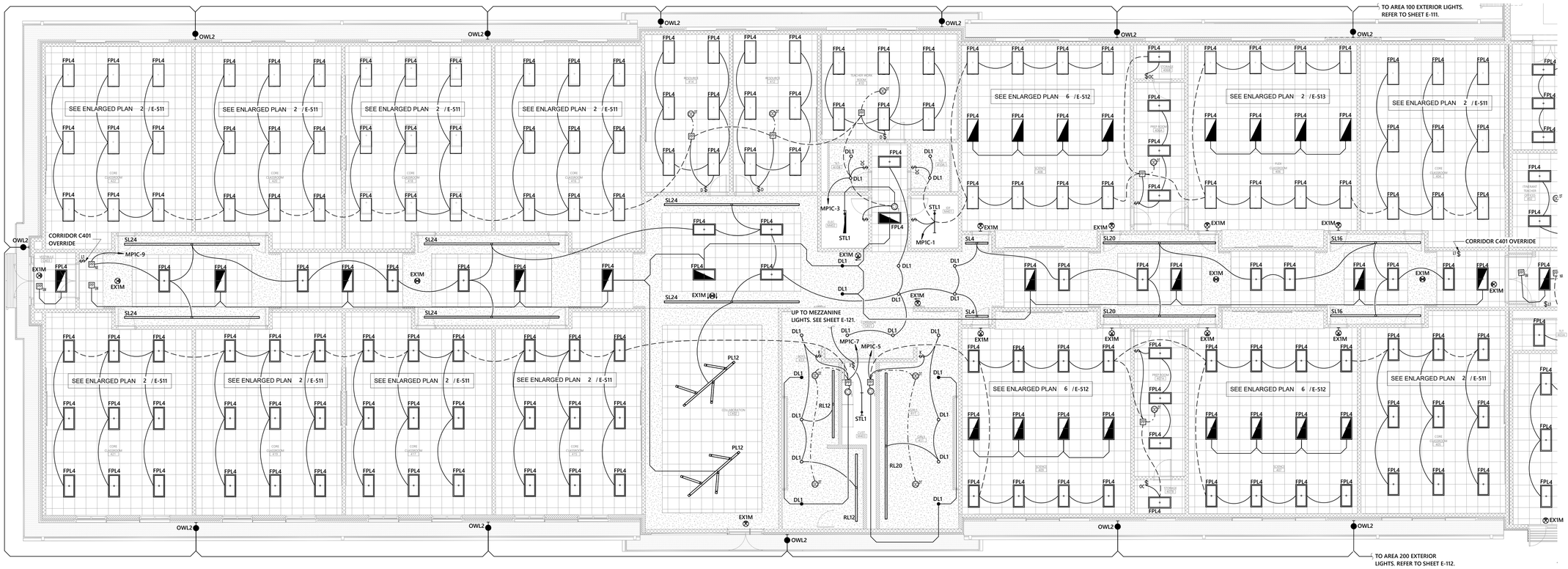
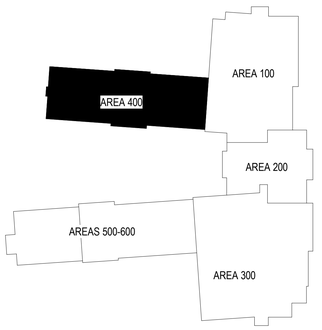
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.




1 PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 400
1/8" = 1'-0"

KEY PLAN




**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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ENERGY STAR PARTNER

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CHECKED BY: MKG

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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 400

E-114

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B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSN-21', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
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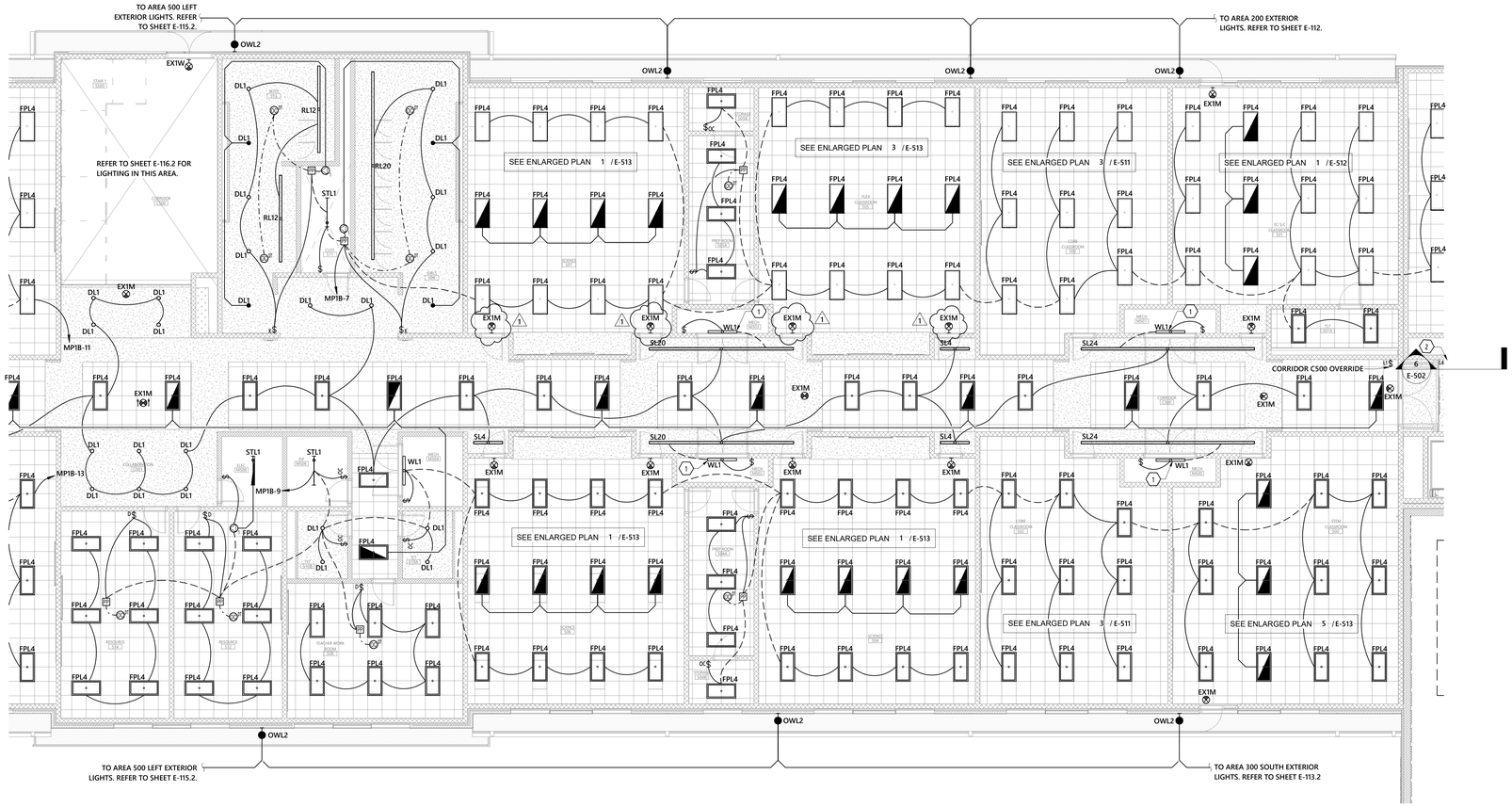
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

## KEYNOTES

1 MOUNT TYPE 'WL1' FIXTURE DIRECTLY ABOVE MECHANICAL ROOM DOOR.




1 PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 500 RIGHT
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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HARNETT COUNTY SCHOOLS
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ENERGY STAR PARTNER

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| 1 | 12/05/2024 | NCDOI CD |

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CHECKED BY: MKG

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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 500 RIGHT

E-115.1

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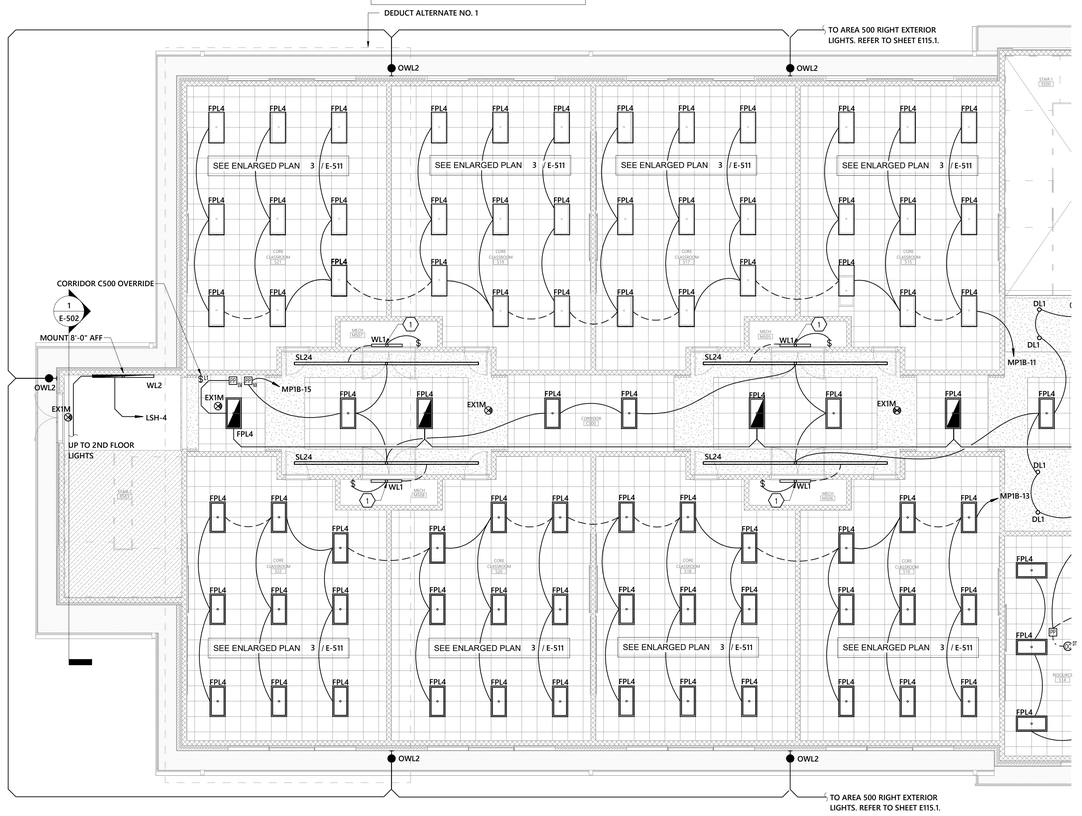
DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600




1 PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 500 LEFT
1/8" = 1'-0"

## GENERAL NOTES:

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D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-21'; UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
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## KEYNOTES

1 MOUNT TYPE 'WL1' FIXTURE DIRECTLY ABOVE MECHANICAL ROOM DOOR.

### WALL LEGEND

| SYMBOL | DESCRIPTION |
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| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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North Carolina License Number C-0914

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ENERGY STAR PARTNER

| No. | Date | Description |
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PROJECT #: 02208.000
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CHECKED BY: MKG

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PARTIAL FIRST FLOOR LIGHTING PLAN - AREA 500 LEFT

E-115.2

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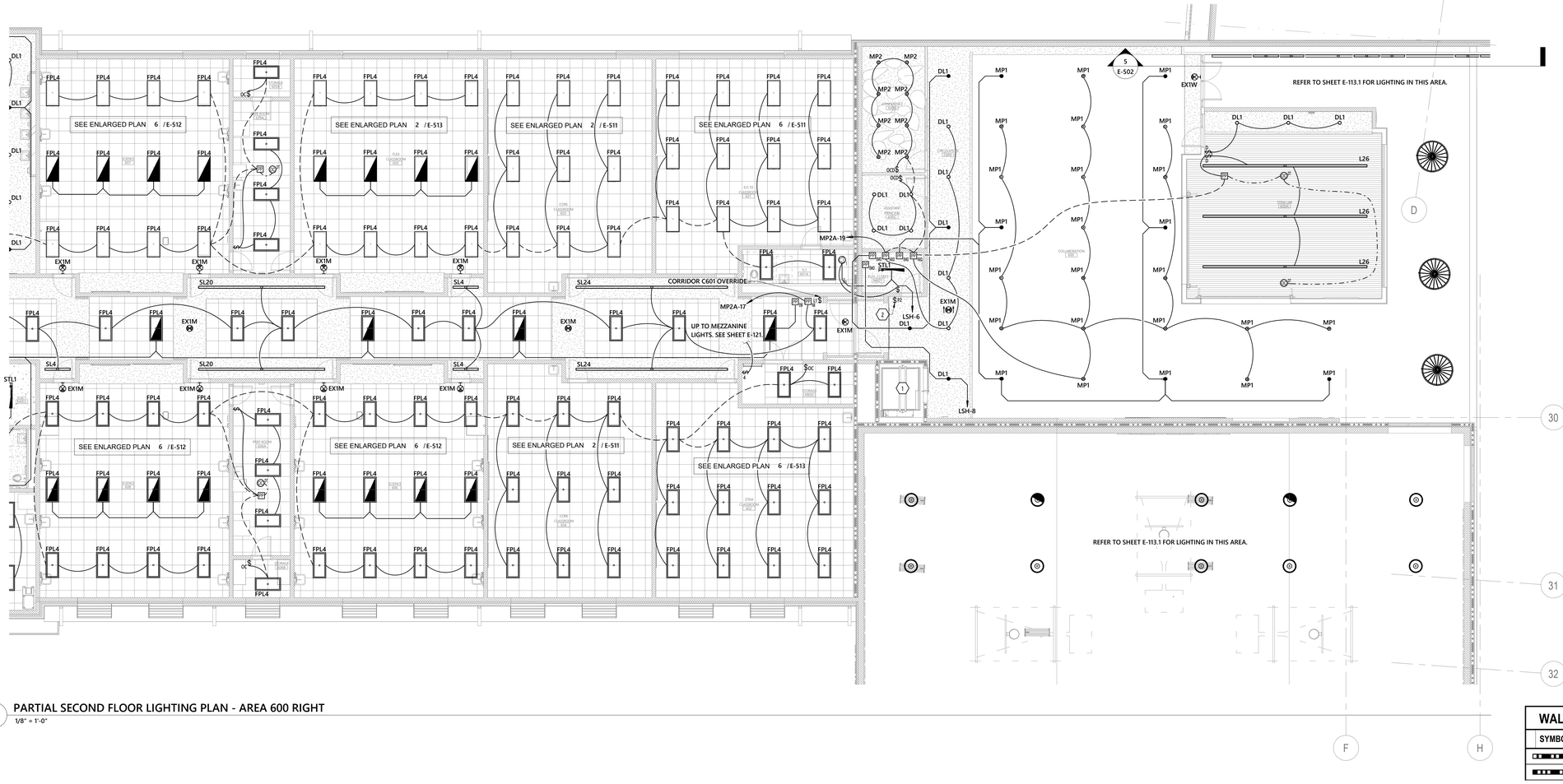
## KEYNOTES

1 REFER TO ELEVATOR DETAILS/ SHEET E-605 FOR ELEVATOR LIGHTING REQUIREMENTS.
2 2 ZONE OVERRIDE SWITCH. DIMMING CONTROL FOR 2 ZONES IN COLLABORATION 600 / CIRCULATION C600:
ZONE 1: TYPE 'MP2' FIXTURES IN COLLABORATION 600.
ZONE 2: TYPE 'DL1 FIXTURES IN CIRCULATION C600.




1 PARTIAL SECOND FLOOR LIGHTING PLAN - AREA 600 RIGHT
1/8" = 1'-0"

### WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR LIGHTING PLAN - AREA 600 RIGHT

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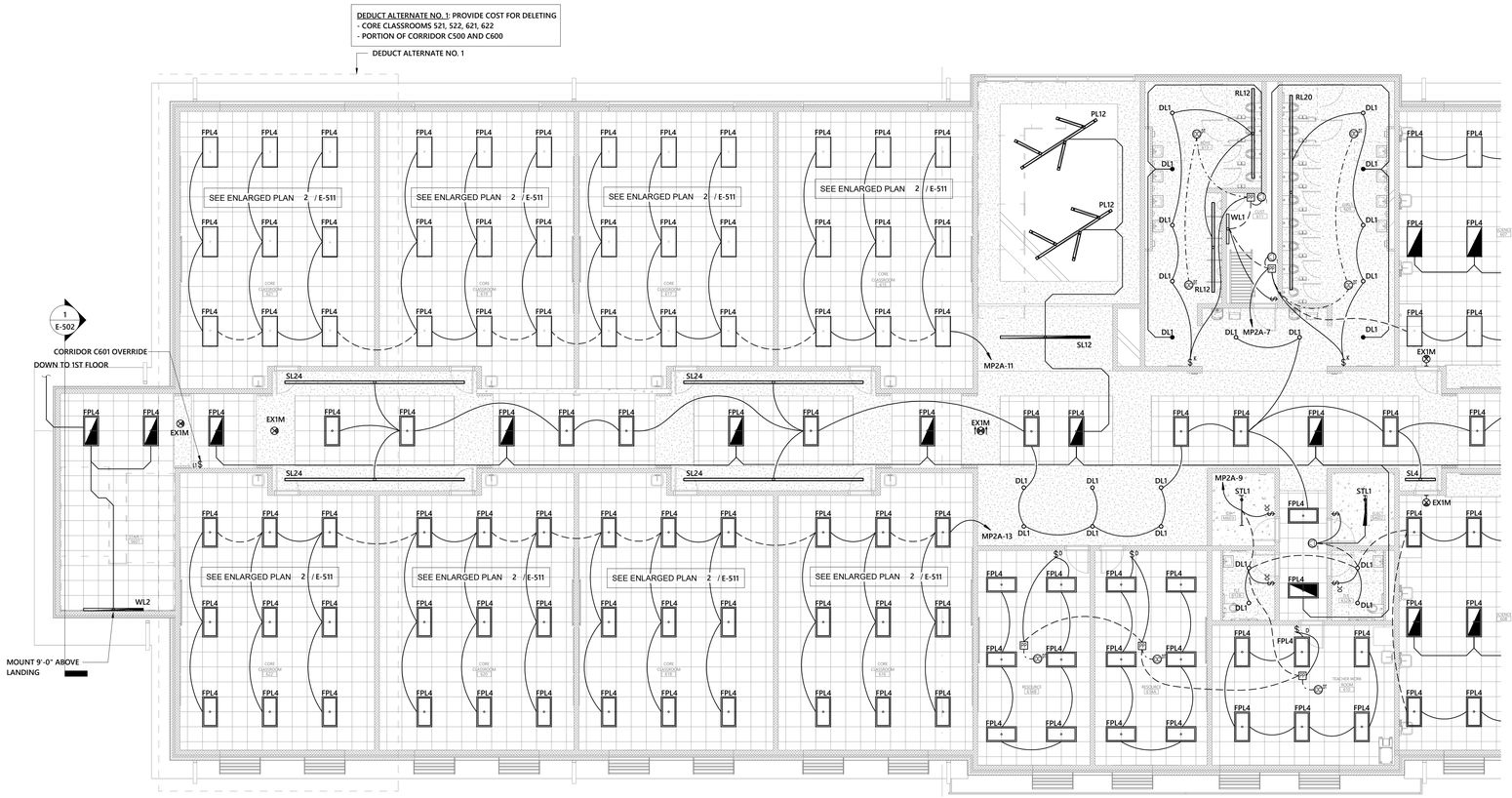


1 PARTIAL SECOND FLOOR LIGHTING PLAN - AREA 600 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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11/8/2024

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PARTIAL SECOND FLOOR LIGHTING PLAN - AREA 600 LEFT

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E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
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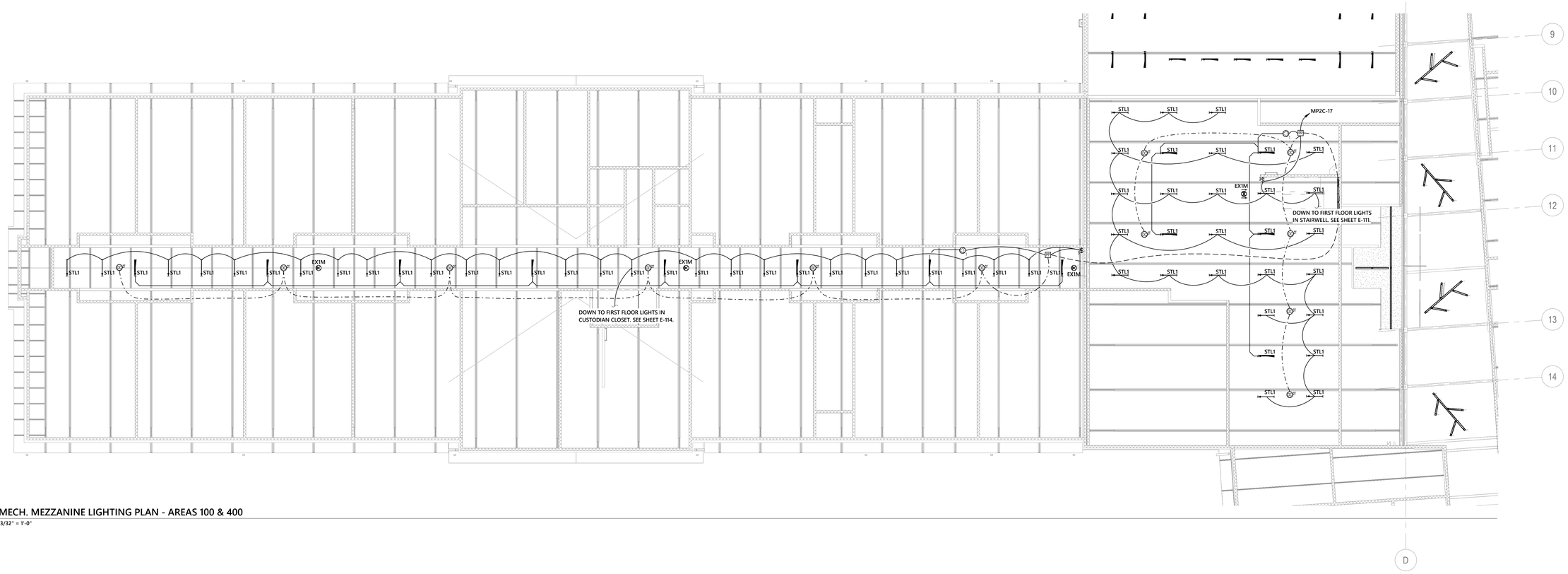
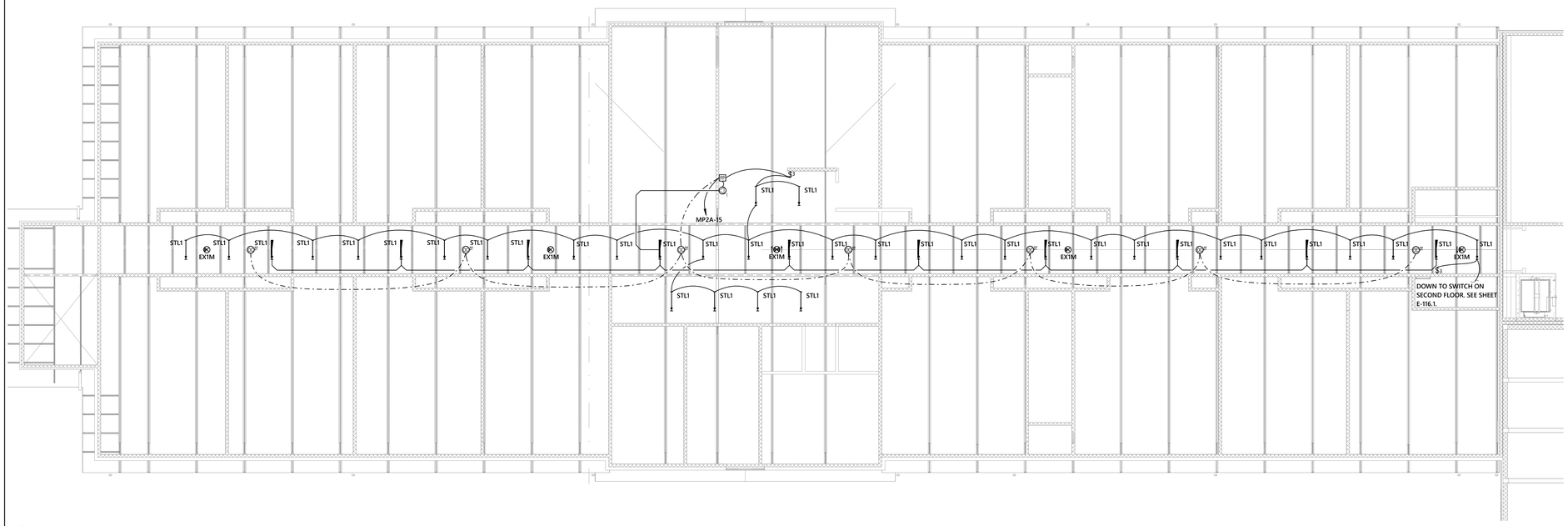



1 MECH. MEZZANINE LIGHTING PLAN - AREAS 100 & 400
3/32" = 1'-0"




2 MECH. MEZZANINE LIGHTING PLAN - AREA 600
3/32" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

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MECH. MEZZANINE LIGHTING PLANS - AREAS 100, 400, & 600

E-121

Sheet No. 13 of 54

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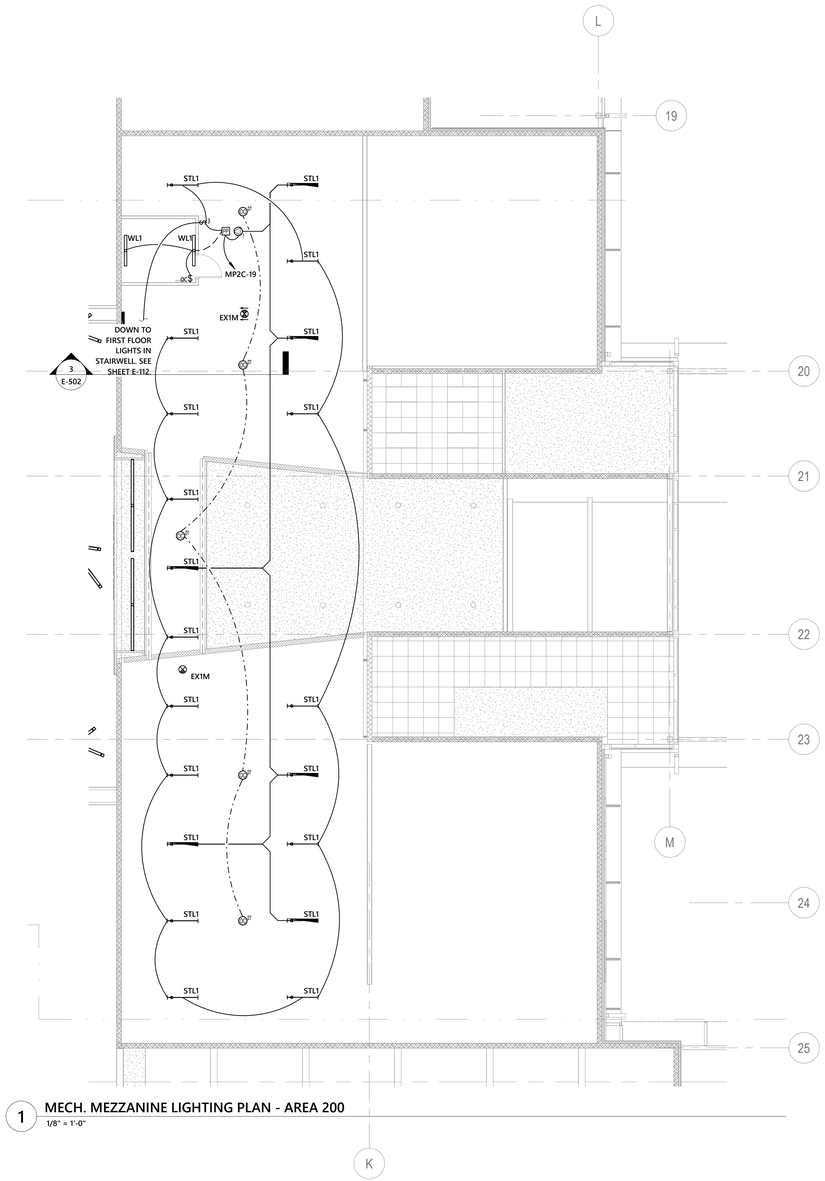
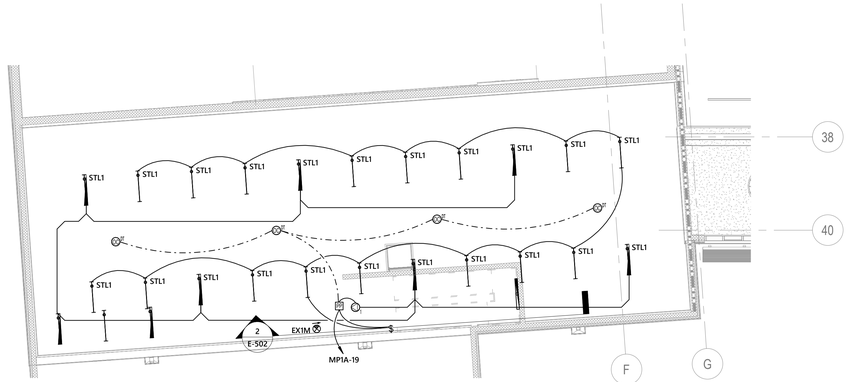
## GENERAL NOTES:

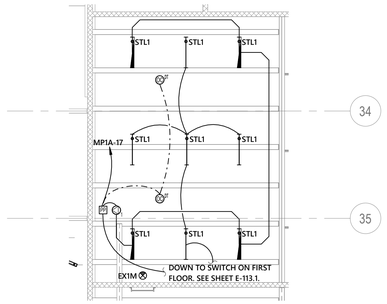
A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON DETAIL #1 THIS SHEET TO EMERGENCY CIRCUIT 'LSH-27', UNLESS OTHERWISE NOTED. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON DETAIL #2 THIS SHEET TO EMERGENCY CIRCUIT 'LSH-29', UNLESS OTHERWISE NOTED. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON DETAIL #3 THIS SHEET TO EMERGENCY CIRCUIT 'LSH-33', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.




1 MECH. MEZZANINE LIGHTING PLAN - AREA 200
1/8" = 1'-0"




3 MECH. MEZZANINE LIGHTING PLAN - GYM
1/8" = 1'-0"




2 MECH. MEZZANINE LIGHTING PLAN - AREA 300
1/8" = 1'-0"

## WALL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE LIGHTING PLANS - AREAS 200 & 300

E-122

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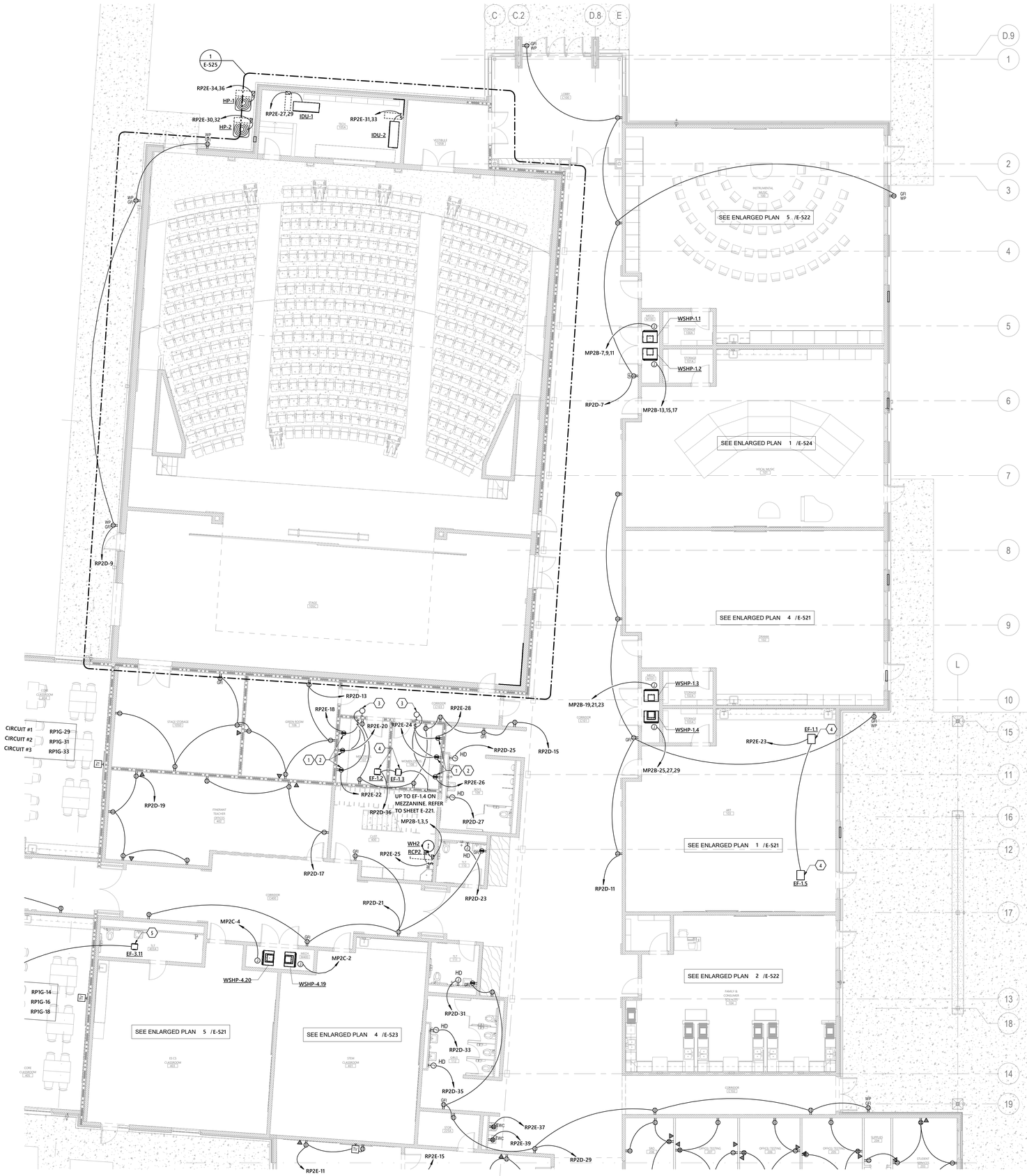



1 PARTIAL FIRST FLOOR POWER PLAN - AREA 100
1/8" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

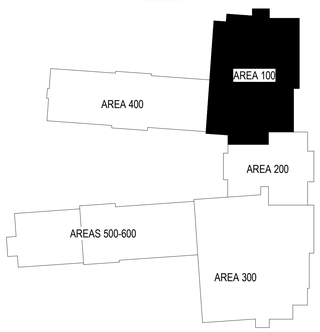
1 ABOVE COUNTER RECEPTACLES TO BE MOUNTED HORIZONTALLY.
2 CIRCUIT SWITCHED RECEPTACLES THROUGH PILOT LIGHT SHOWN ADJACENT TO DRESSING ROOM DOOR. PILOT LIGHT SHALL INDICATE WHEN THE RECEPTACLES ARE ENERGIZED PER NEC 520.74.
3 DRESSING ROOM RECEPTACLE PILOT LIGHT. TYPICAL OF TWO (2) THIS CORRIDOR. MOUNT ADJACENT TO DRESSING ROOM LIGHTING PILOT LIGHT.
4 WALL TWIST TIMER CONTROL PROVIDED BY M.C. COORDINATE PRIOR TO ROUGH-IN.
5 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR POWER PLAN - AREA 100

E-211

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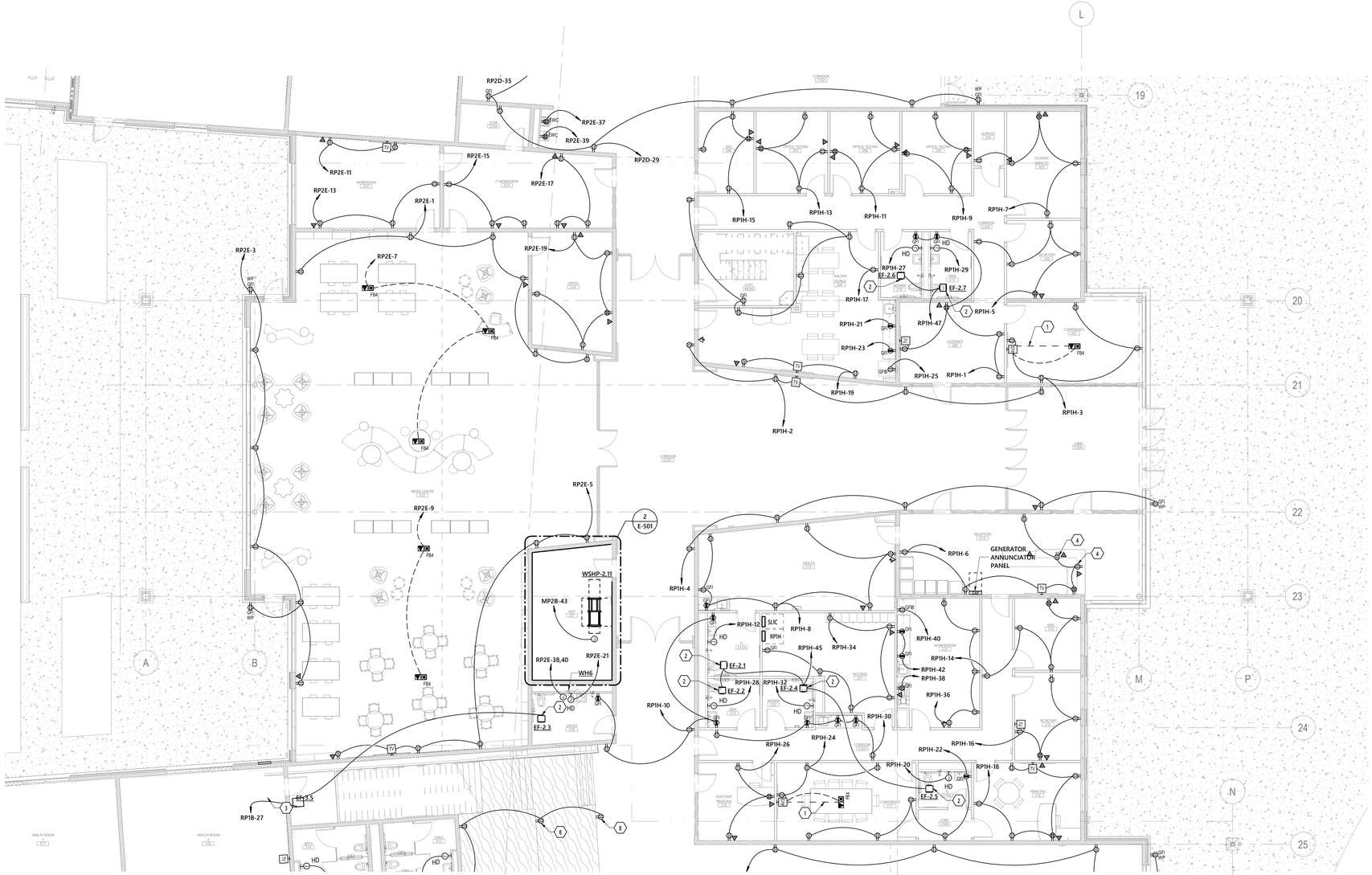


## 1 PARTIAL FIRST FLOOR POWER PLAN - AREA 200

1/8" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

1 PROVIDE 2"C. FROM FLOOR BOX TO TV BOX IN WALL. PROVIDE WITH PULL STRING.
2 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
3 INTERLOCK FAN WITH LIGHTING CONTROLS IN ADJACENT RESTROOMS. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
4 RECEPTACLE TO BE MOUNTED IN DESK.

**REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS**

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR POWER PLAN - AREA 200

E-212

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1 PARTIAL FIRST FLOOR POWER PLAN - AREA 300 NORTH
1/8" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

1 REFER TO ELEVATOR DETAILS/ SHEET E-605 FOR ELEVATOR POWER REQUIREMENTS.
2 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
3 2-GANG JUNCTION BOX WITH 1.25" CONDUIT TO AUDIO CABINET. AV CONTRACTOR WILL PROVIDE EYE HOOKS FOR CABLES TO EXTEND WITH BLEACHERS FROM WALL EXTENDED POSITION AND FACEPLATE.
4 INTERLOCK FAN WITH DISHWASHER LOCATED IN KITCHEN. PROVIDE WITH RELAY, CONNECT COMPLETE.
5 INTERLOCK FAN WITH LIGHTING CONTROLS IN ADJACENT RESTROOMS. PROVIDE RELAYS TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN. FAN SHALL COME ON WHEN LIGHTS IN EITHER GIRLS 312 OR BOYS 314 ARE TURNED ON.
6 PROVIDE 2"C. FROM FLOOR BOX TO TV BOX IN WALL. PROVIDE WITH PULL STRING.
7 PROVIDE 208V, 1-PHASE, 30A NEMA 14-30R RECEPTACLE FOR DRYER.
8 RECEPTACLE TO BE MOUNTED CENTERED IN STEP RISER.
9 RECEPTACLE TO BE MOUNTED INSIDE BOTTOM OF WALL MOUNTED DATA CABINET. REFER TO TECHNOLOGY DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS.

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR POWER PLAN - AREA 300 NORTH

E-213.1

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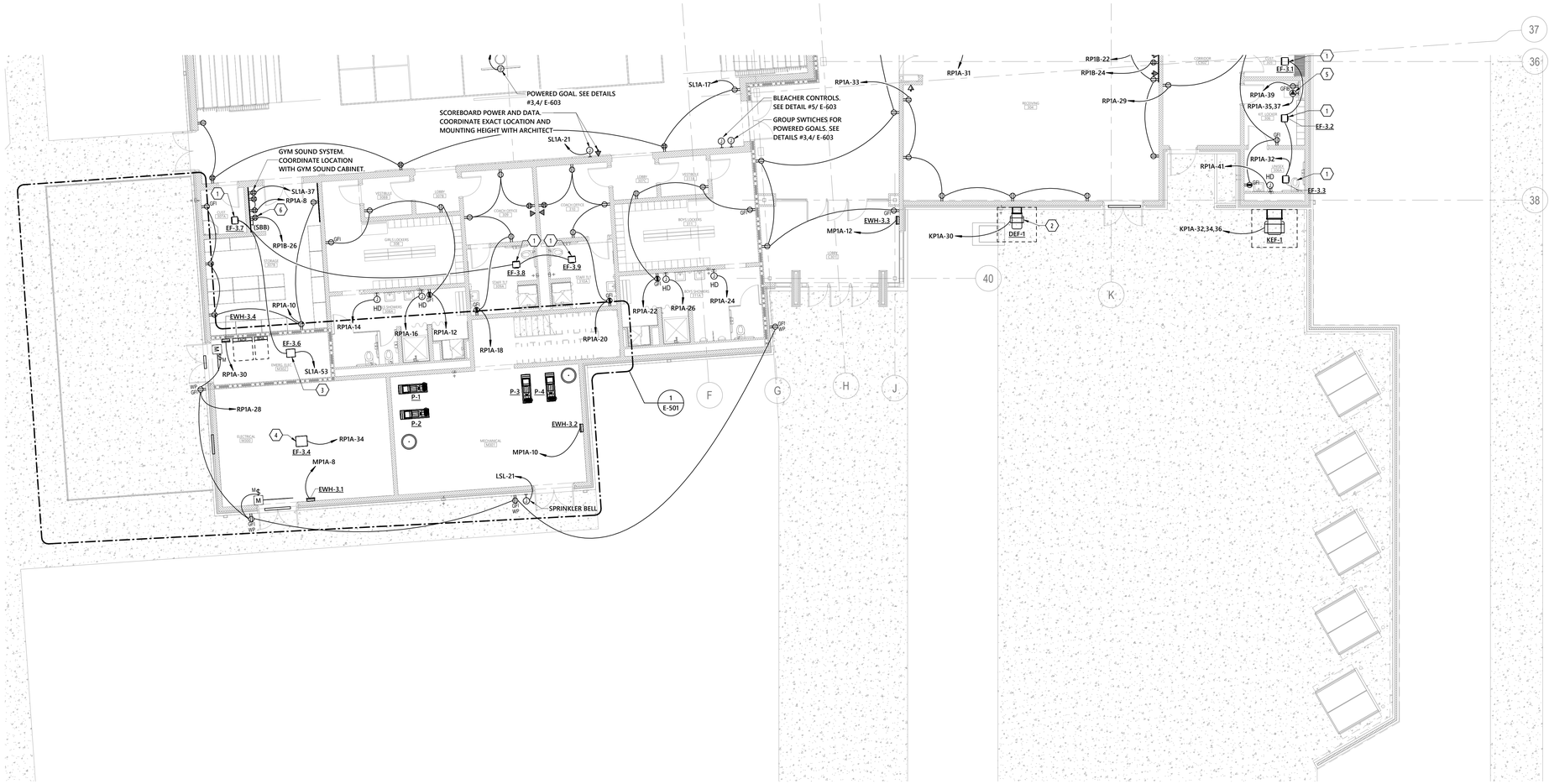


1 PARTIAL FIRST FLOOR POWER PLAN - AREA 300 SOUTH
1/8" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

1 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
2 INTERLOCK FAN WITH DISHWASHER LOCATED IN KITCHEN. PROVIDE WITH RELAY, CONNECT COMPLETE.
3 EXHAUST FAN TO BE CONTROLLED BY THERMOSTAT LOCATED IN EMERGENCY ELECTRICAL ROOM.
4 EXHAUST FAN TO BE CONTROLLED BY THERMOSTAT LOCATED IN THIS ROOM.
5 PROVIDE 208V, 1-PHASE, 30A NEMA 14-30R RECEPTACLE FOR DRYER.
6 RECEPTACLE TO BE MOUNTED INSIDE BOTTOM OF WALL MOUNTED DATA CABINET. REFER TO TECHNOLOGY DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS.

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
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| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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PARTIAL FIRST FLOOR POWER PLAN - AREA 300 SOUTH

E-213.2

Sheet No. 18 of 54

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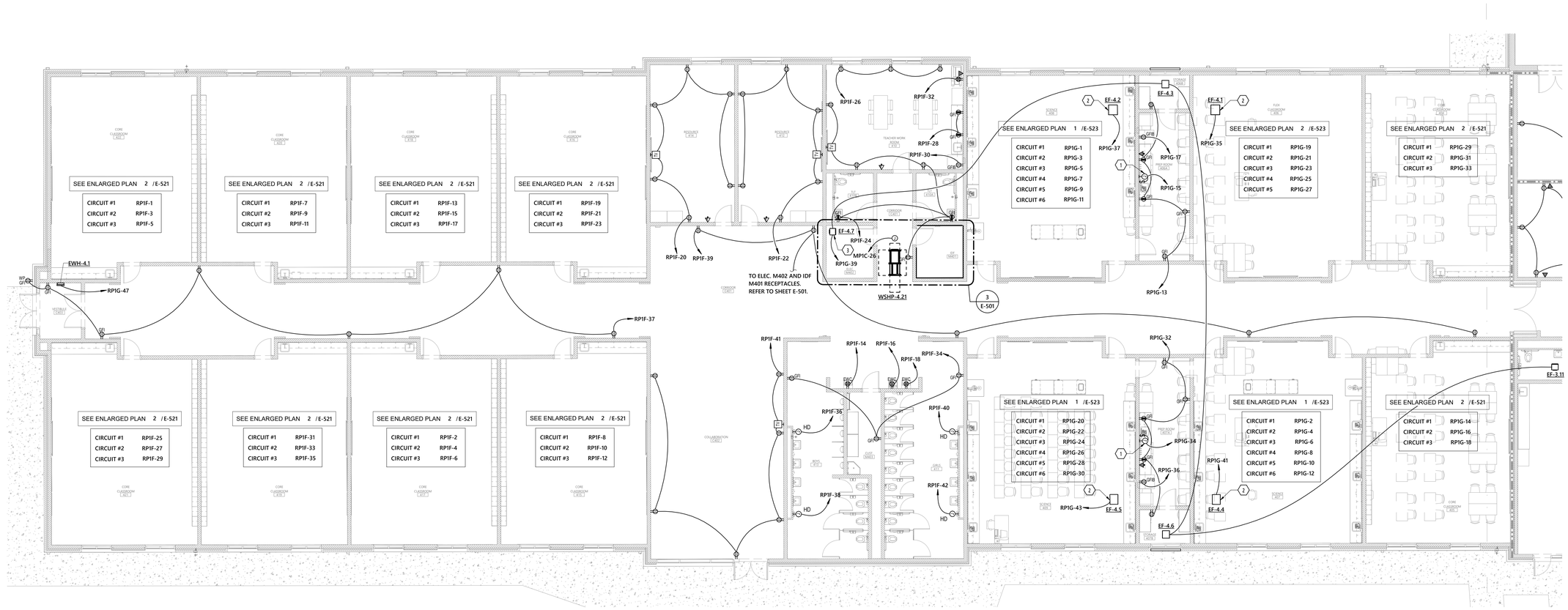
## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES (#)

1 PROVIDE 120V CONNECTION AND SWITCH UNDER COUNTER FOR DISHWASHER. COORDINATE EXACT REQUIREMENTS WITH GC.
2 WALL TWIST TIMER CONTROL PROVIDED BY M.C. COORDINATE PRIOR TO ROUGH-IN.
3 EXHAUST FAN TO BE CONTROLLED BY THERMOSTAT LOCATED IN THIS ROOM.



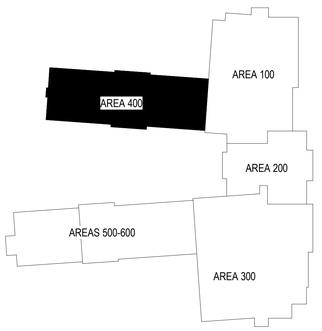

1 PARTIAL FIRST FLOOR POWER PLAN - AREA 400
1/8" = 1'-0"

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR POWER PLAN - AREA 400

E-214

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B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
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F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

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1 PARTIAL FIRST FLOOR POWER PLAN - AREA 500 RIGHT
1/8" = 1'-0"

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR POWER PLAN - AREA 500 RIGHT

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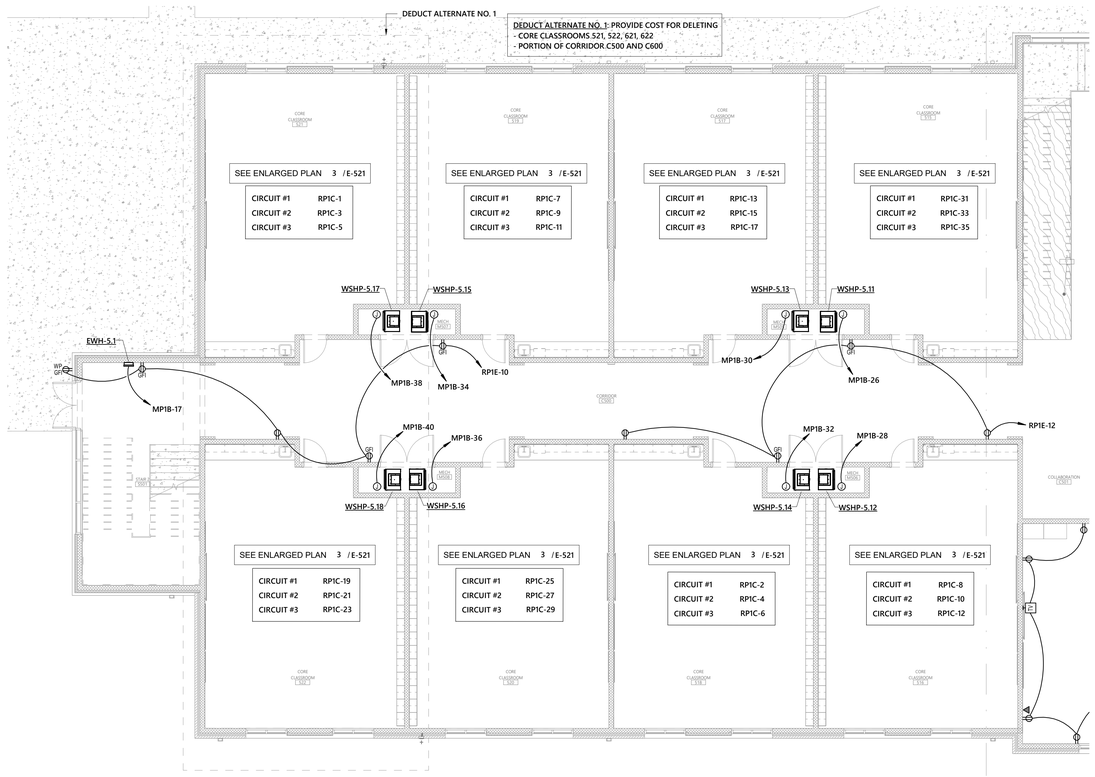


1 PARTIAL FIRST FLOOR POWER PLAN - AREA 500 LEFT
1/8" = 1'-0"

## GENERAL NOTES:

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PARTIAL FIRST FLOOR POWER PLAN - AREA 500 LEFT

E-215.2

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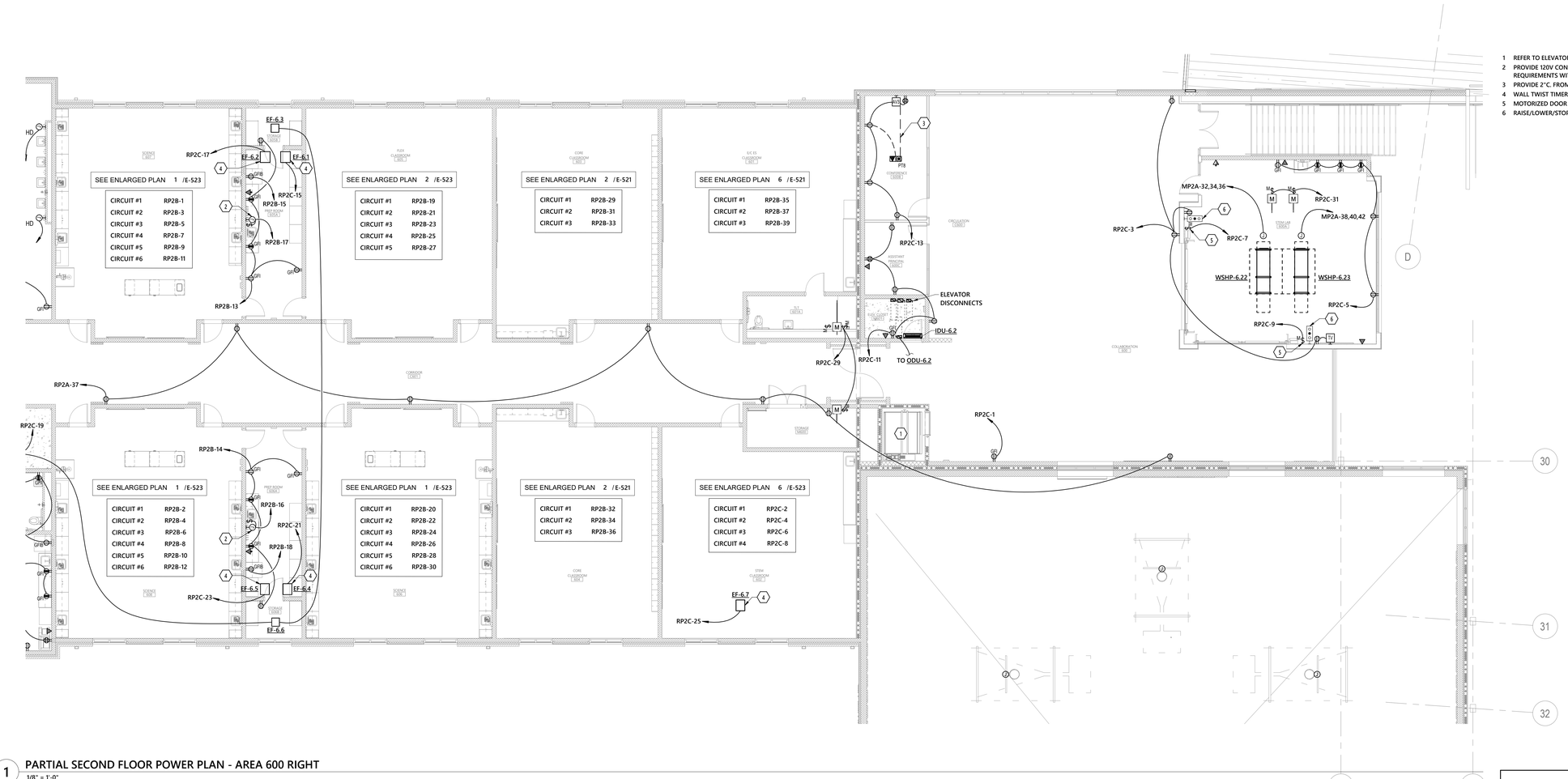
## KEYNOTES

1 REFER TO ELEVATOR DETAILS/ SHEET E-605 FOR ELEVATOR POWER REQUIREMENTS.
2 PROVIDE 120V CONNECTION AND SWITCH UNDER COUNTER FOR DISHWASHER. COORDINATE EXACT REQUIREMENTS WITH GC.
3 PROVIDE 2"C. FROM POKE THRU TO TV BOX IN WALL. PROVIDE WITH PULL STRING.
4 WALL TWIST TIMER CONTROL PROVIDED BY M.C. COORDINATE PRIOR TO ROUGH-IN.
5 MOTORIZED DOOR CONNECTION. COORDINATE EXACT REQUIREMENTS WITH VENDOR PRIOR TO ROUGH-IN.
6 RAISE/LOWER/STOP SWITCH FOR MOTORIZED DOOR. MOUNT AT 48" AFF. PROVIDE DOUBLE GANG SQUARE BOX.




1 PARTIAL SECOND FLOOR POWER PLAN - AREA 600 RIGHT
1/8" = 1'-0"

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

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|---|---|
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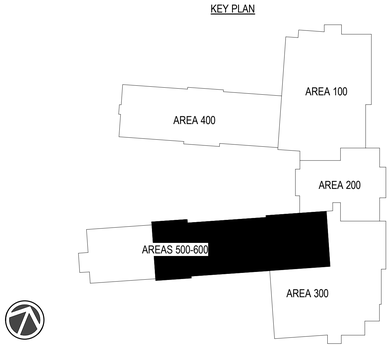
KEY PLAN

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PARTIAL SECOND FLOOR POWER PLAN - AREA 600 RIGHT

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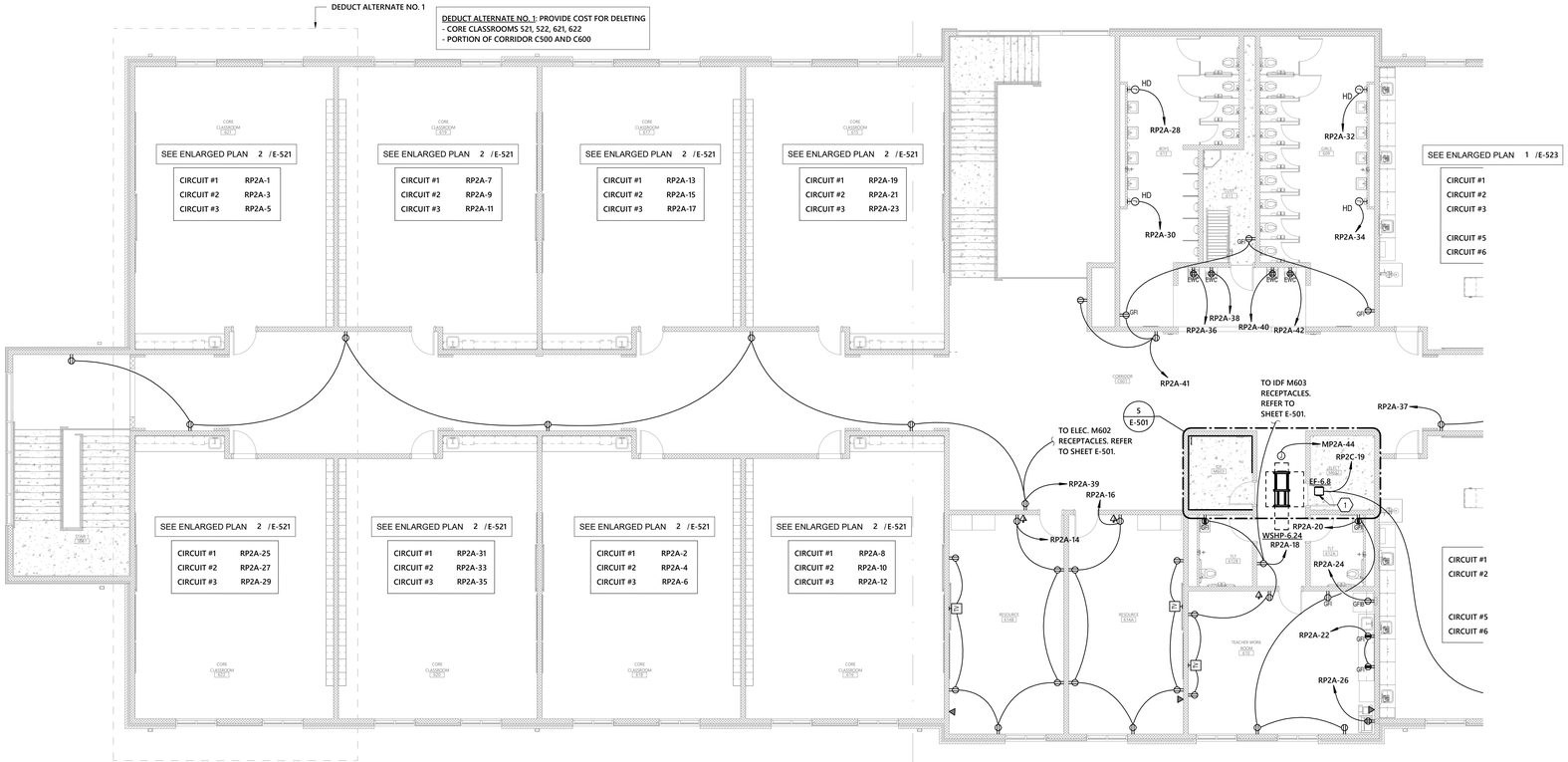
## KEYNOTES

1 EXHAUST FAN TO BE CONTROLLED BY THERMOSTAT LOCATED IN THIS ROOM.




1 PARTIAL SECOND FLOOR POWER PLAN - AREA 600 LEFT
1/8" = 1'-0"

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

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PARTIAL SECOND FLOOR POWER PLAN - AREA 600 LEFT

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## KEYNOTES (7)

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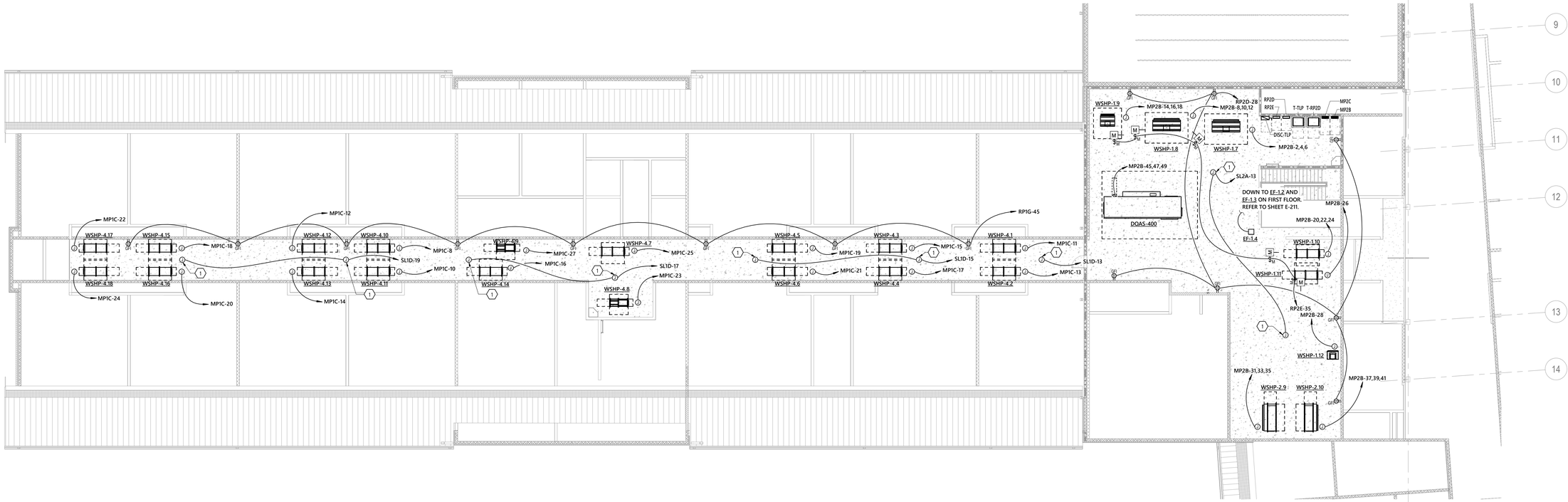
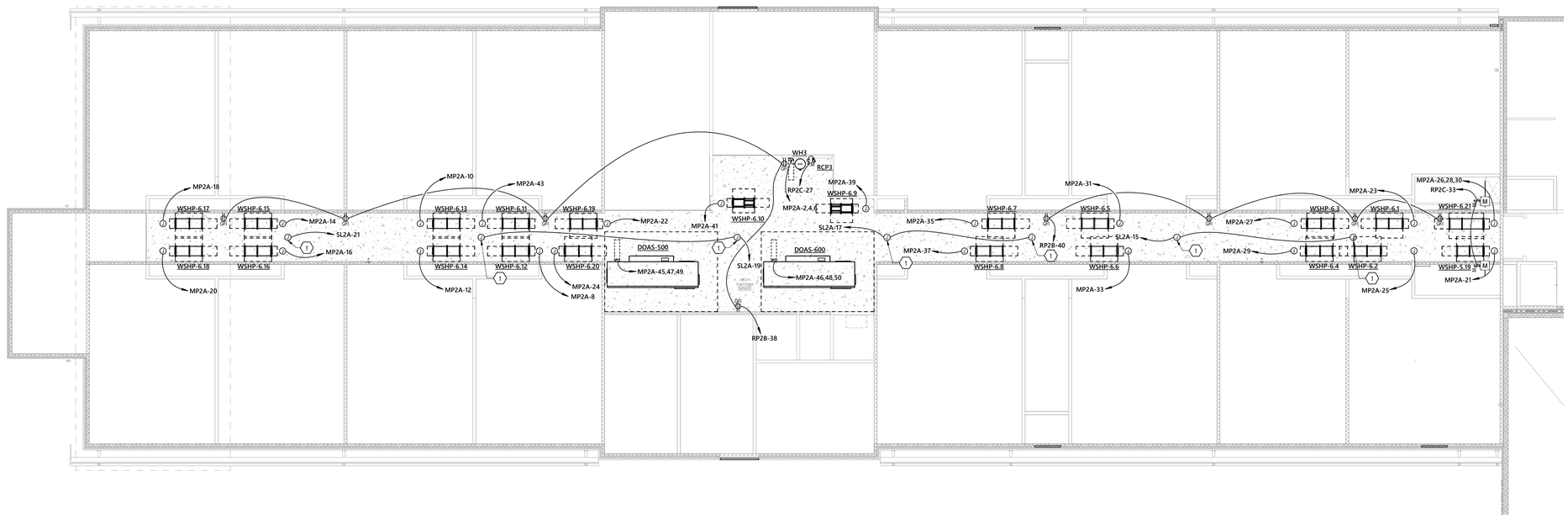



1 MECH. MEZZANINE POWER PLAN - AREAS 100 & 400
3/32" = 1'-0"




2 MECH. MEZZANINE POWER PLAN - AREA 600
3/32" = 1'-0"

**REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS**

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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| No. | Date | Description |
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ISSUE DATE: 11/08/24
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CHECKED BY: MKG

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MECH. MEZZANINE POWER PLANS - AREAS 100, 400, & 600

E-221

Sheet No. 24 of 54

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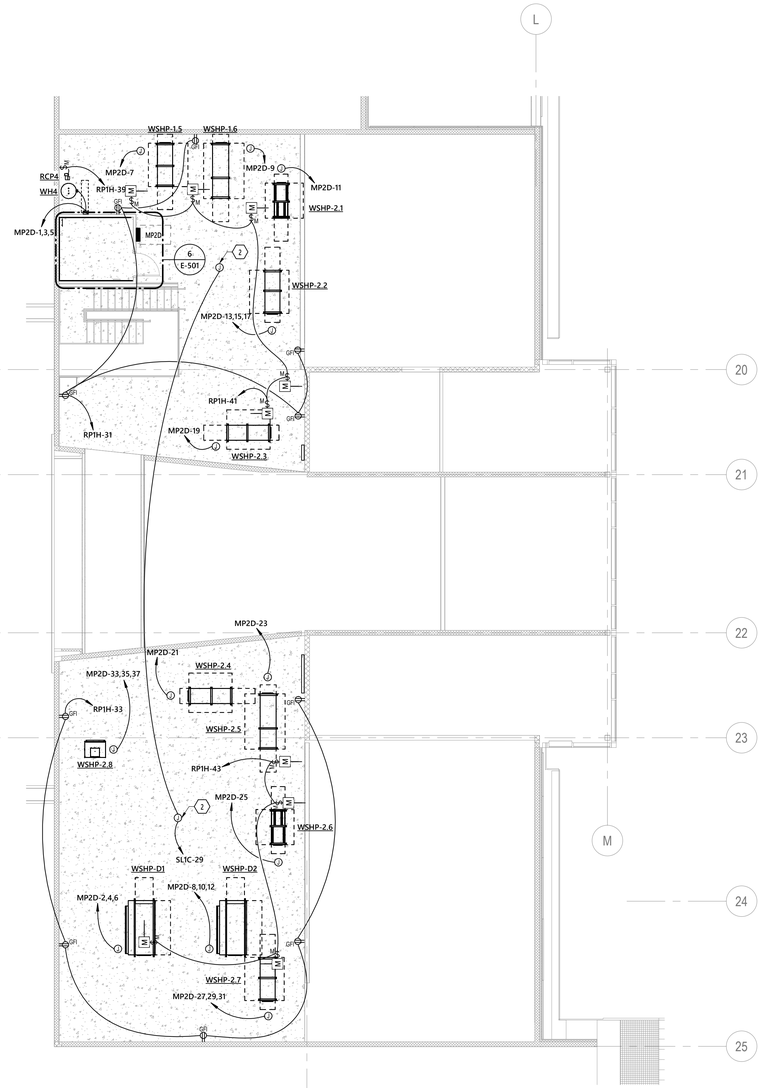
## GENERAL NOTES:

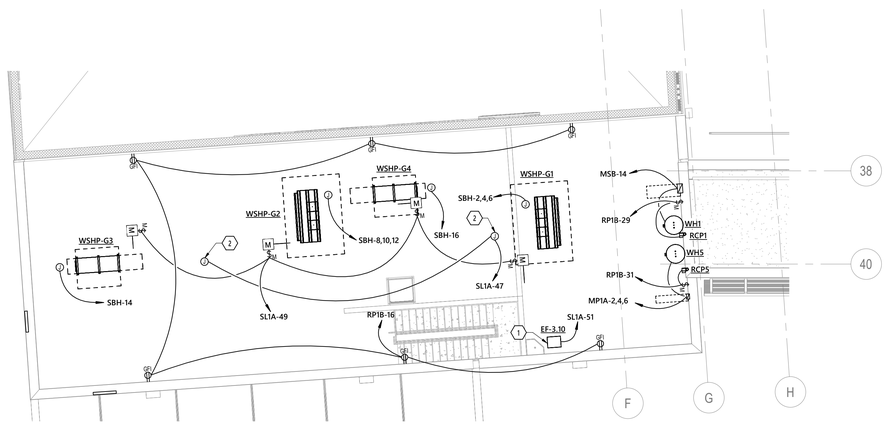
A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

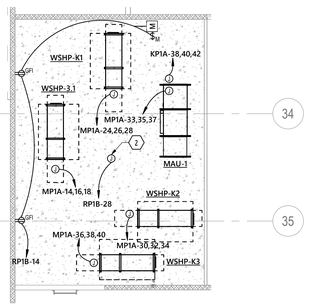
1 INTERLOCK FAN WITH LIGHTING CONTROLS IN GYM LOCKERS AND SHOWERS. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
2 PROVIDE 120V CONNECTION FOR MECHANICAL CONTROLS. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.




1 MECH. MEZZANINE POWER PLAN - AREA 200
1/8" = 1'-0"




3 MECH. MEZZANINE POWER PLAN - GYM
1/8" = 1'-0"




2 MECH. MEZZANINE POWER PLAN - AREA 300
1/8" = 1'-0"

REFER TO T-SERIES TECHNOLOGY PLANS FOR ADDITIONAL CONDUIT REQUIREMENTS

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
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MECH. MEZZANINE POWER PLANS - AREAS 200 & 300

E-222

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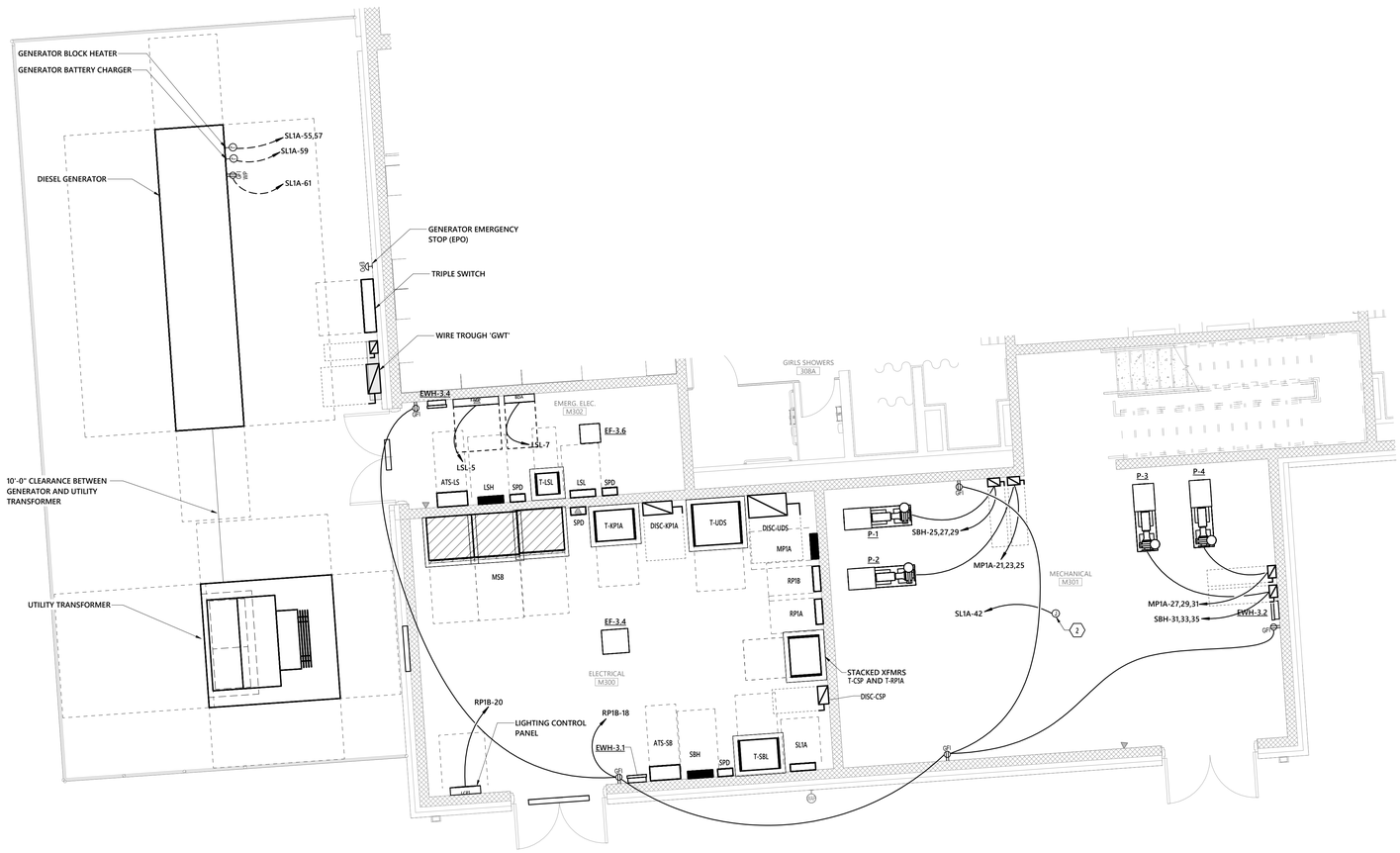
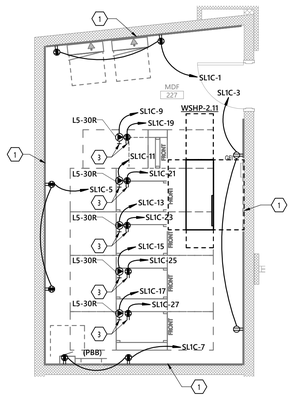
## KEYNOTES (#)

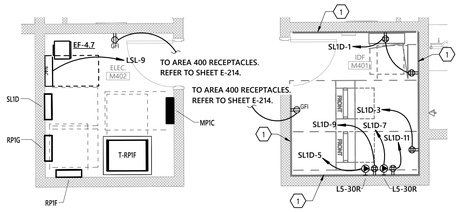
1 TTB (TELEPHONE TERMINAL BOARD). 3/4" A/C GRADE FIRE-RATED PLYWOOD. MOUNT VERTICALLY TO WALLS WITH BOTTOM EDGE 8" AFF AND GRADE "A" SURFACE EXPOSED. FIRE RATING STAMP MUST REMAIN VISIBLE.
2 PROVIDE 120V CONNECTION FOR MECHANICAL CONTROLS. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
3 RECEPTACLE SHALL BE MOUNTED SUCH THAT THE TOP OF THE OUTLET BOX IS FLUSH WITH THE BOTTOM OF THE LADDER RACK. BOXES SHALL NOT BE SUPPORTED BY THE LADDER RACK.



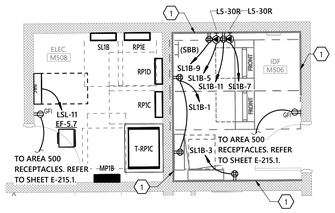

1 ENLARGED ELECTRICAL ROOM AND EQUIPMENT YARD PLAN - POWER
1/4" = 1'-0"



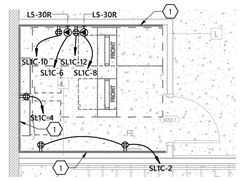

2 ENLARGED MDF ROOM 227 - POWER
1/4" = 1'-0"



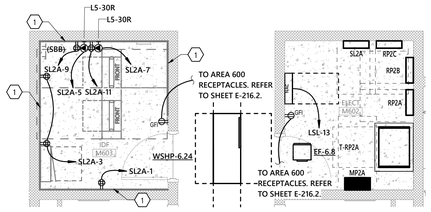

3 ENLARGED IDF ROOM M401 AND ELEC. ROOM M402 - POWER
1/4" = 1'-0"




4 ENLARGED IDF ROOM M506 AND ELEC. ROOM M508 - POWER
1/4" = 1'-0"




6 ENLARGED IDF ROOM MEZZANINE AREA 200 - POWER
1/4" = 1'-0"




5 ENLARGED ELEC. ROOM M602 AND IDF ROOM M603 - POWER
1/4" = 1'-0"

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ENLARGED ELECTRICAL PLANS

E-501

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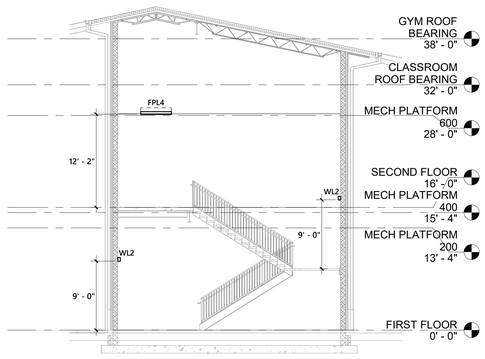
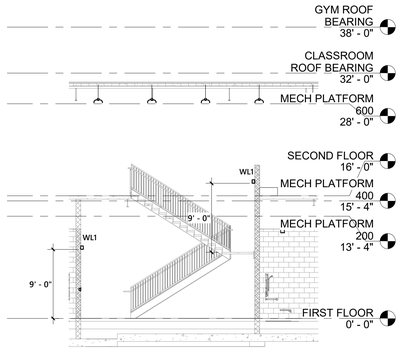
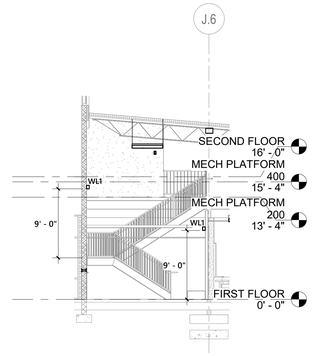


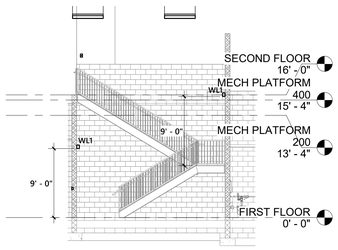

1 STAIR S501 ELEVATION - LIGHTING
1/8" = 1'-0"



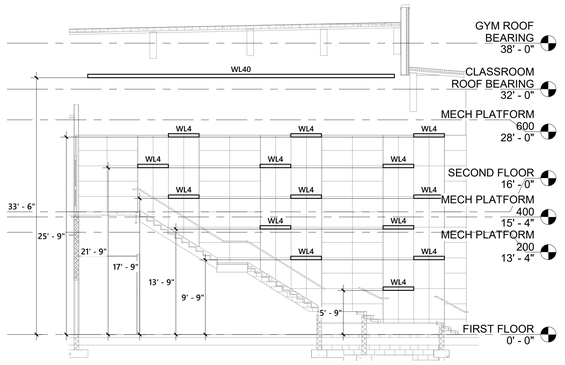

2 MECHANICAL M301 STAIR ELEVATION - LIGHTING
1/8" = 1'-0"



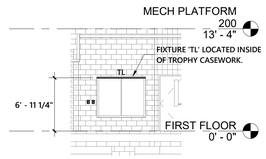

3 CUST. M200 STAIR ELEVATION - LIGHTING
1/8" = 1'-0"




4 CUST. 400 STAIR ELEVATION - LIGHTING
1/8" = 1'-0"




5 MONUMENTAL STAIRS S600 ELEVATION - LIGHTING
1/8" = 1'-0"




6 CORRIDOR C300 TROPHY CASE - LIGHTING
1/8" = 1'-0"

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ELECTRICAL ELEVATIONS

E-502

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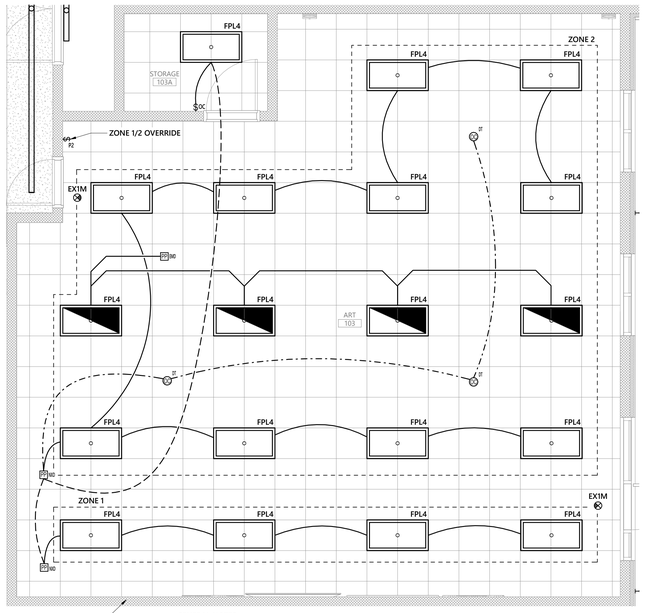
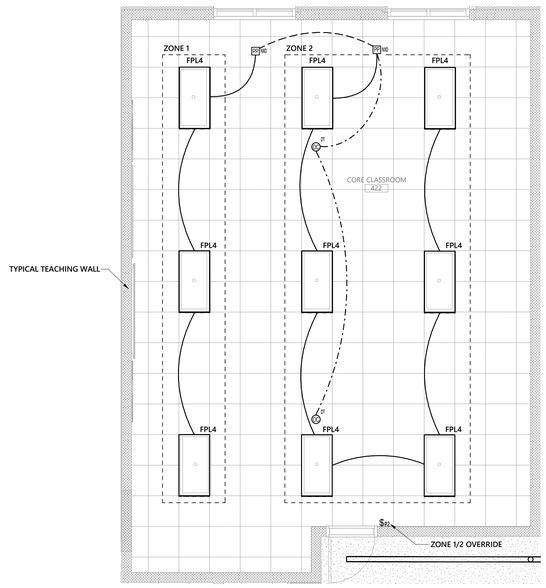



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONES 2: CLASSROOM ZONES

## 1 ENLARGED LIGHTING PLAN - ART CLASSROOM
1/4" = 1'-0"

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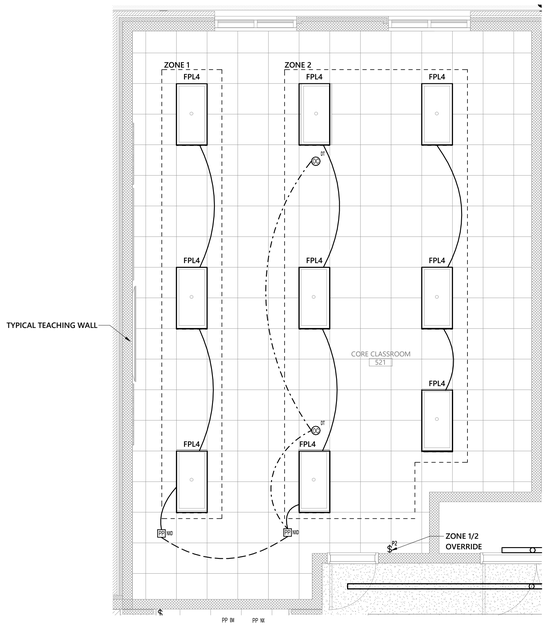
## 2 ENLARGED LIGHTING PLAN - CORE CLASSROOM
1/4" = 1'-0"

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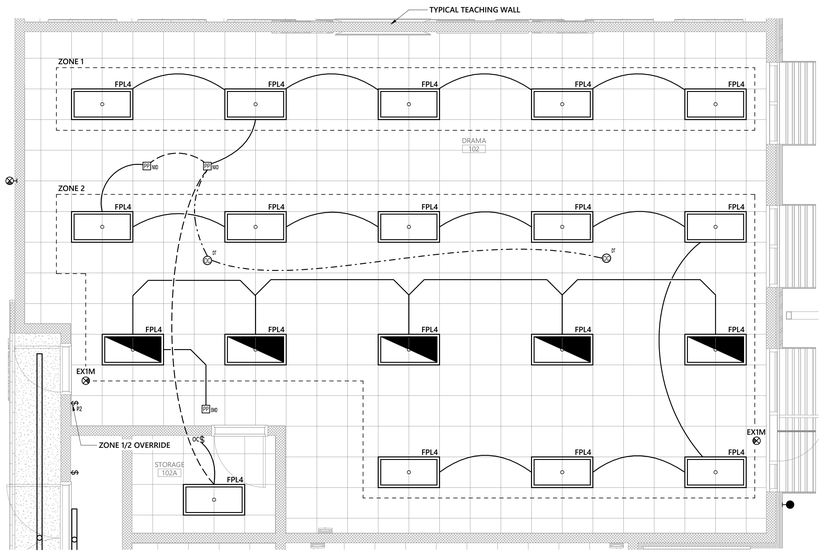
## 3 ENLARGED LIGHTING PLAN - CORE CLASSROOM 2
1/4" = 1'-0"

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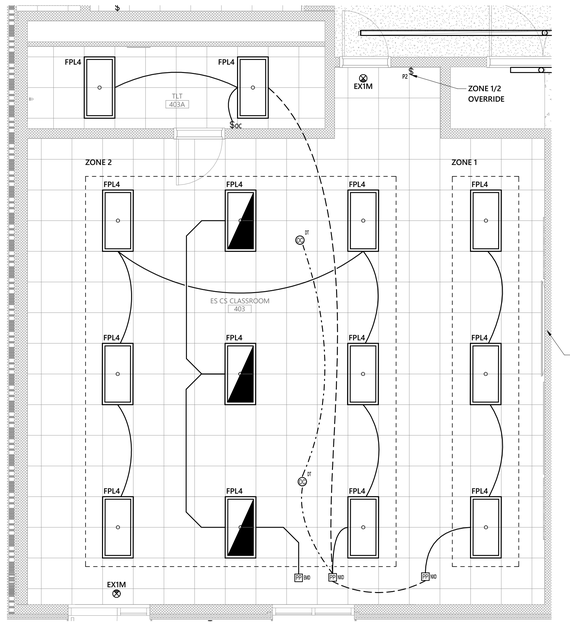
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONES 2: CLASSROOM ZONES

## 4 ENLARGED LIGHTING PLAN - DRAMA CLASSROOM
1/4" = 1'-0"

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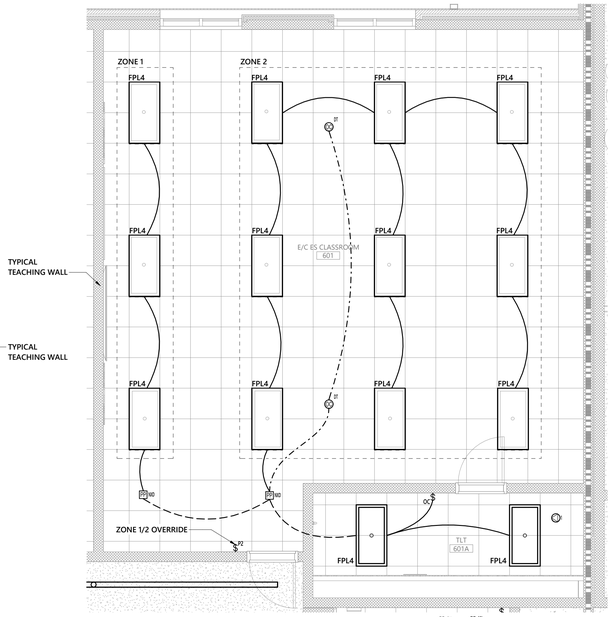
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONES 2: CLASSROOM ZONES

## 5 ENLARGED LIGHTING PLAN - ES CS CLASSROOM
1/4" = 1'-0"

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2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONES 2: CLASSROOM ZONES

## 6 ENLARGED LIGHTING PLAN - EC CS CLASSROOM 2
1/4" = 1'-0"

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HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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ENLARGED CLASSROOM LIGHTING PLANS

E-511

Sheet No. 28 of 54

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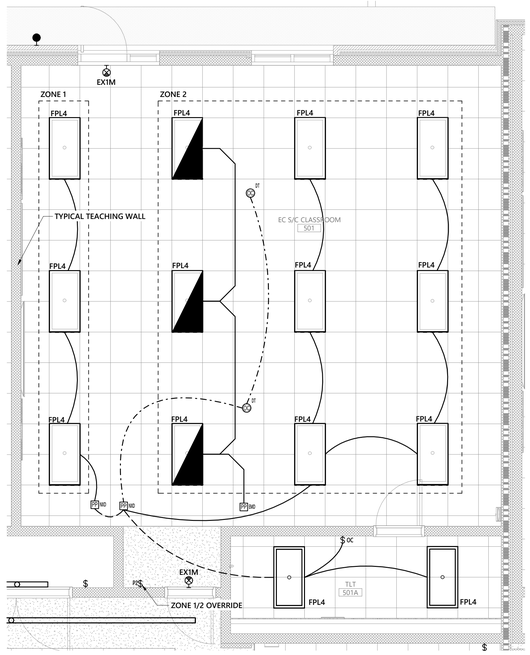
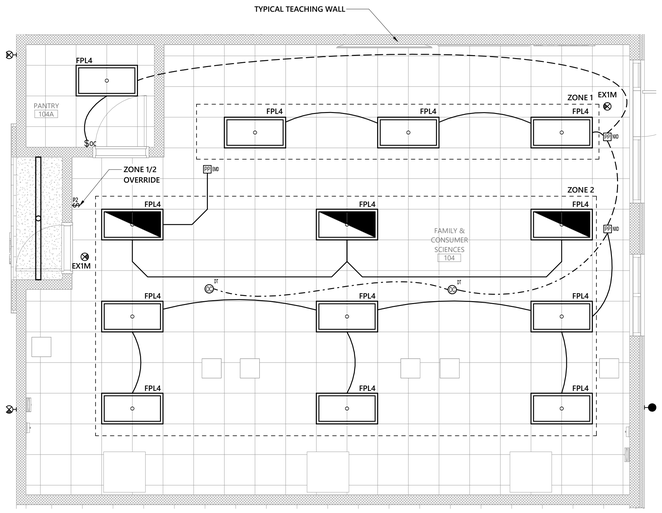



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONES 2: CLASSROOM ZONES

## 1 ENLARGED LIGHTING PLAN - ES CS CLASSROOM 3
1/4" = 1'-0"

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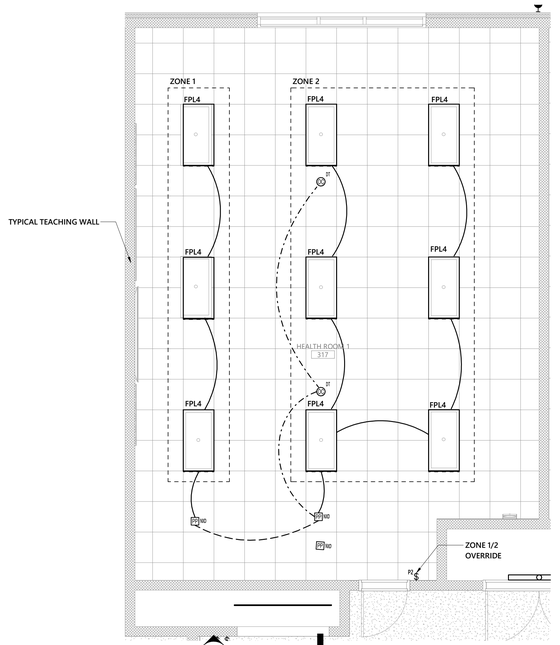
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONES 2: CLASSROOM ZONES

## 2 ENLARGED LIGHTING PLAN - FAMILY & CONSUMER SCIENCES CLASSROOM
1/4" = 1'-0"

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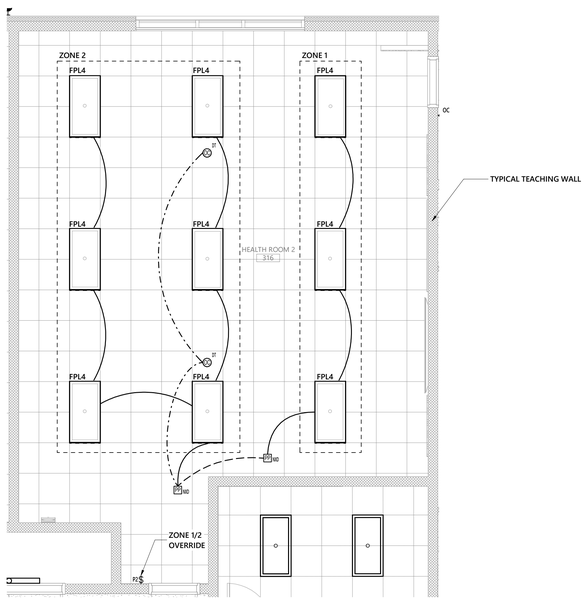
   B. ZONES 2: CLASSROOM ZONES

## 3 ENLARGED LIGHTING PLAN - HEALTH ROOM 1
1/4" = 1'-0"

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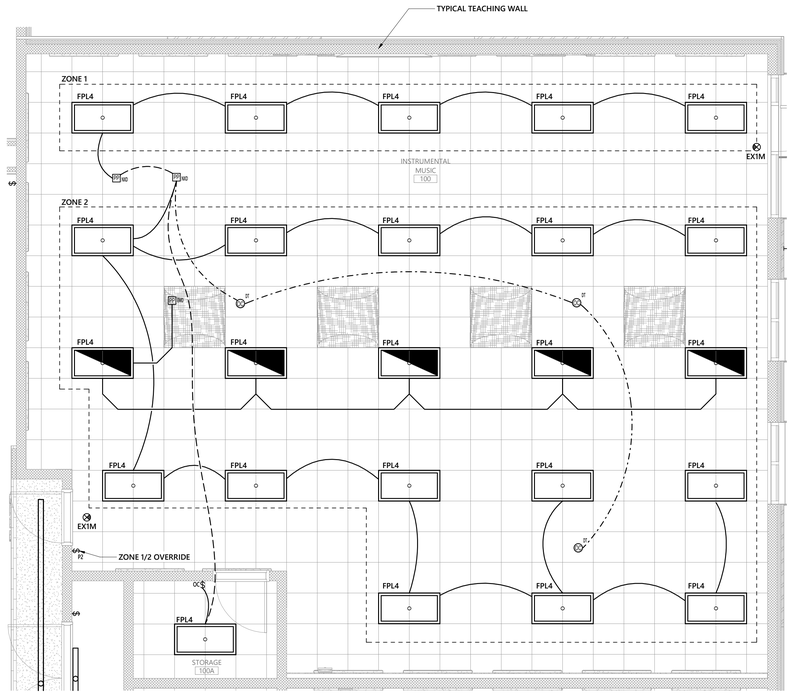
## 4 ENLARGED LIGHTING PLAN - HEALTH ROOM 2
1/4" = 1'-0"

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3. CLASSROOM ZONES
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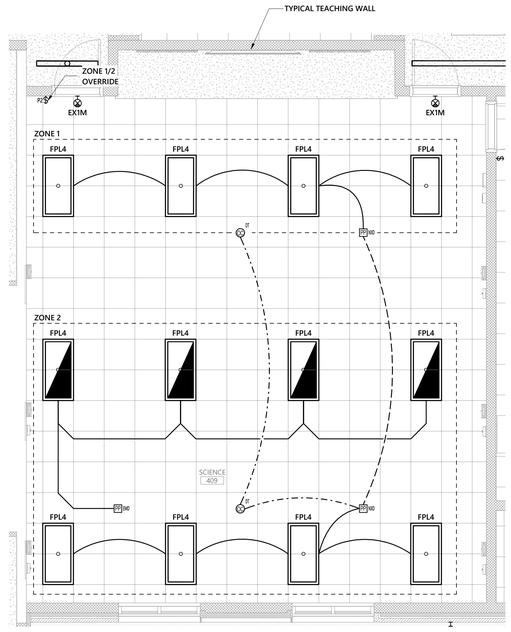
## 5 ENLARGED LIGHTING PLAN - INSTRUMENTAL MUSIC CLASSROOM
1/4" = 1'-0"

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## 6 ENLARGED LIGHTING PLAN - SCIENCE CLASSROOM
1/4" = 1'-0"

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NORTH CAROLINA REGISTERED ARCHITECT 32410 JAMES M. GUNTER 11/8/2024

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ENLARGED CLASSROOM LIGHTING PLANS

E-512



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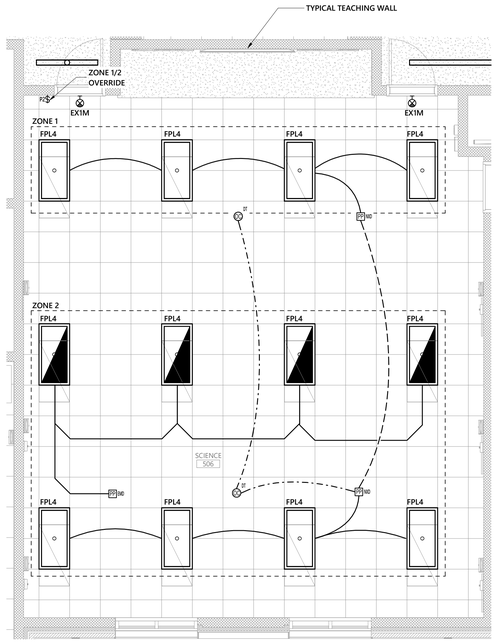


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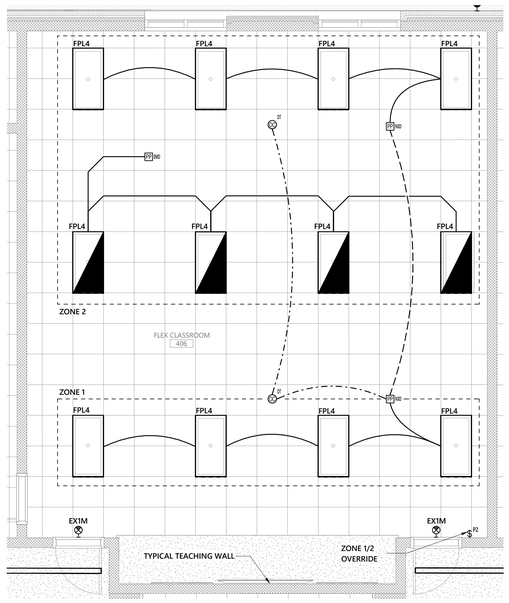
## 1 ENLARGED LIGHTING PLAN - SCIENCE CLASSROOM 2
1/4" = 1'-0"

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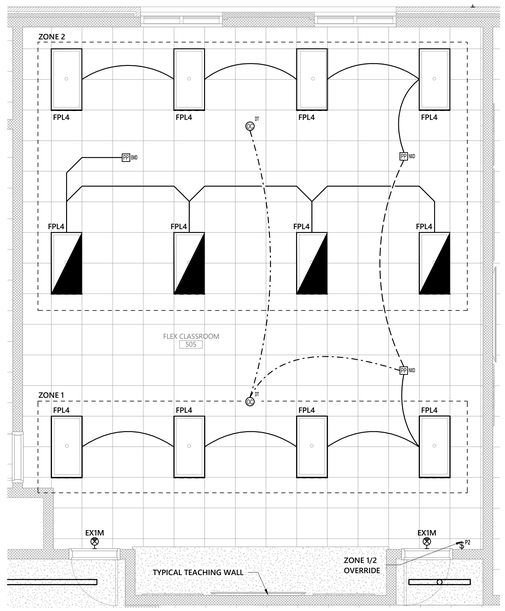
## 2 ENLARGED LIGHTING PLAN - FLEX CLASSROOM
1/4" = 1'-0"

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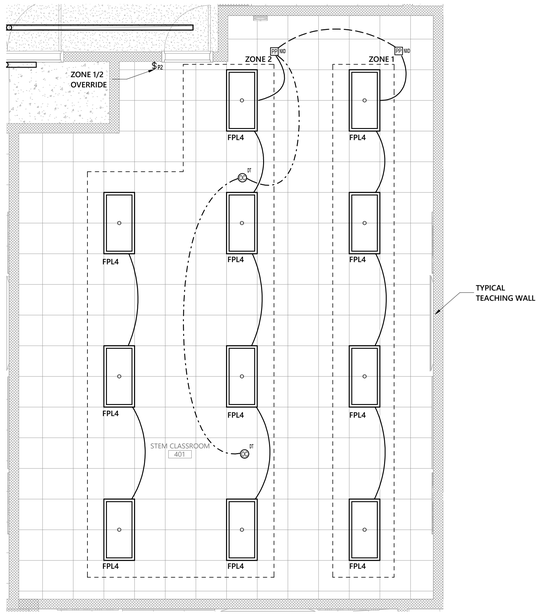
## 3 ENLARGED LIGHTING PLAN - FLEX CLASSROOM 2
1/4" = 1'-0"

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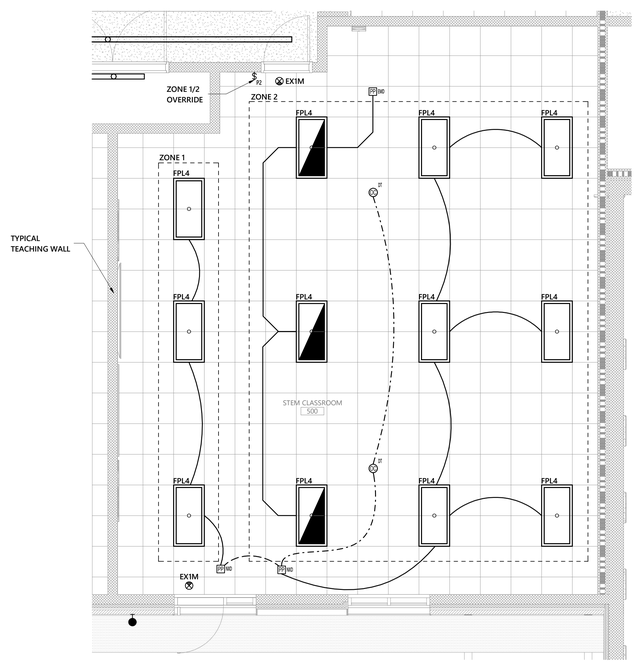
   B. ZONES 2: CLASSROOM ZONES

## 4 ENLARGED LIGHTING PLAN - STEM CLASSROOM
1/4" = 1'-0"

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3. CLASSROOM ZONES
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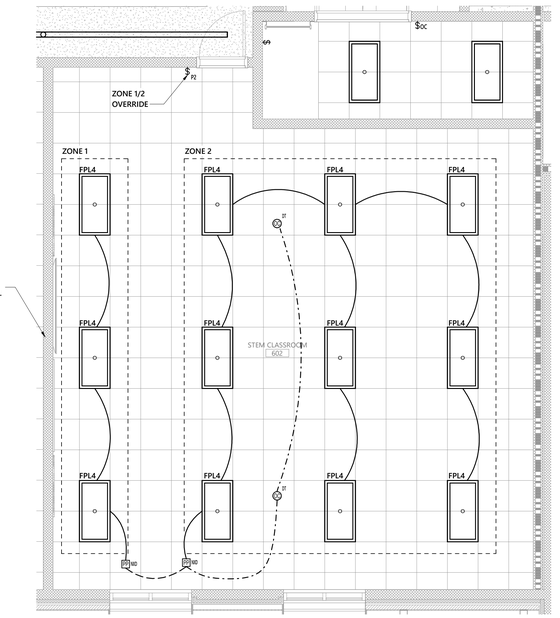
## 5 ENLARGED LIGHTING PLAN - STEM CLASSROOM 2
1/4" = 1'-0"

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## 6 ENLARGED LIGHTING PLAN - STEM CLASSROOM 3
1/4" = 1'-0"

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11/8/2024

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CHECKED BY: MKG

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ENLARGED CLASSROOM LIGHTING PLANS

E-513

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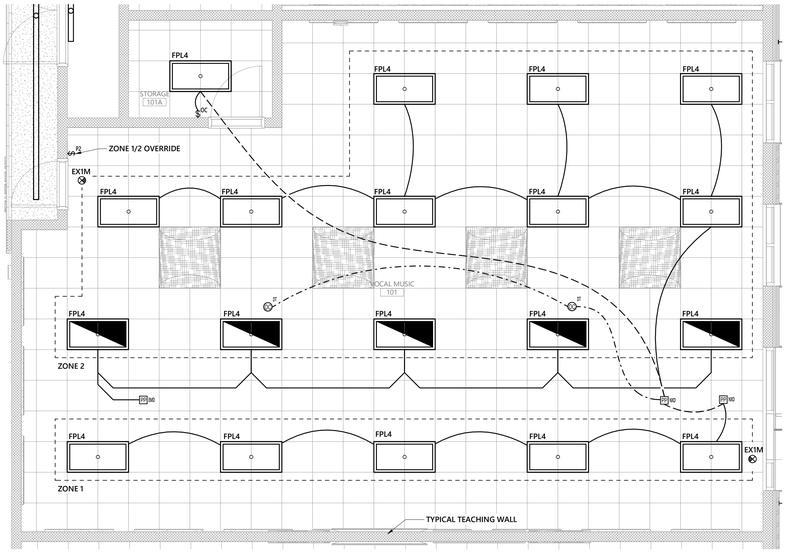


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3. CLASSROOM ZONES
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## 1 ENLARGED LIGHTING PLAN - VOCAL MUSIC CLASSROOM

1/4" = 1'-0"

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ENLARGED CLASSROOM LIGHTING PLANS

E-514



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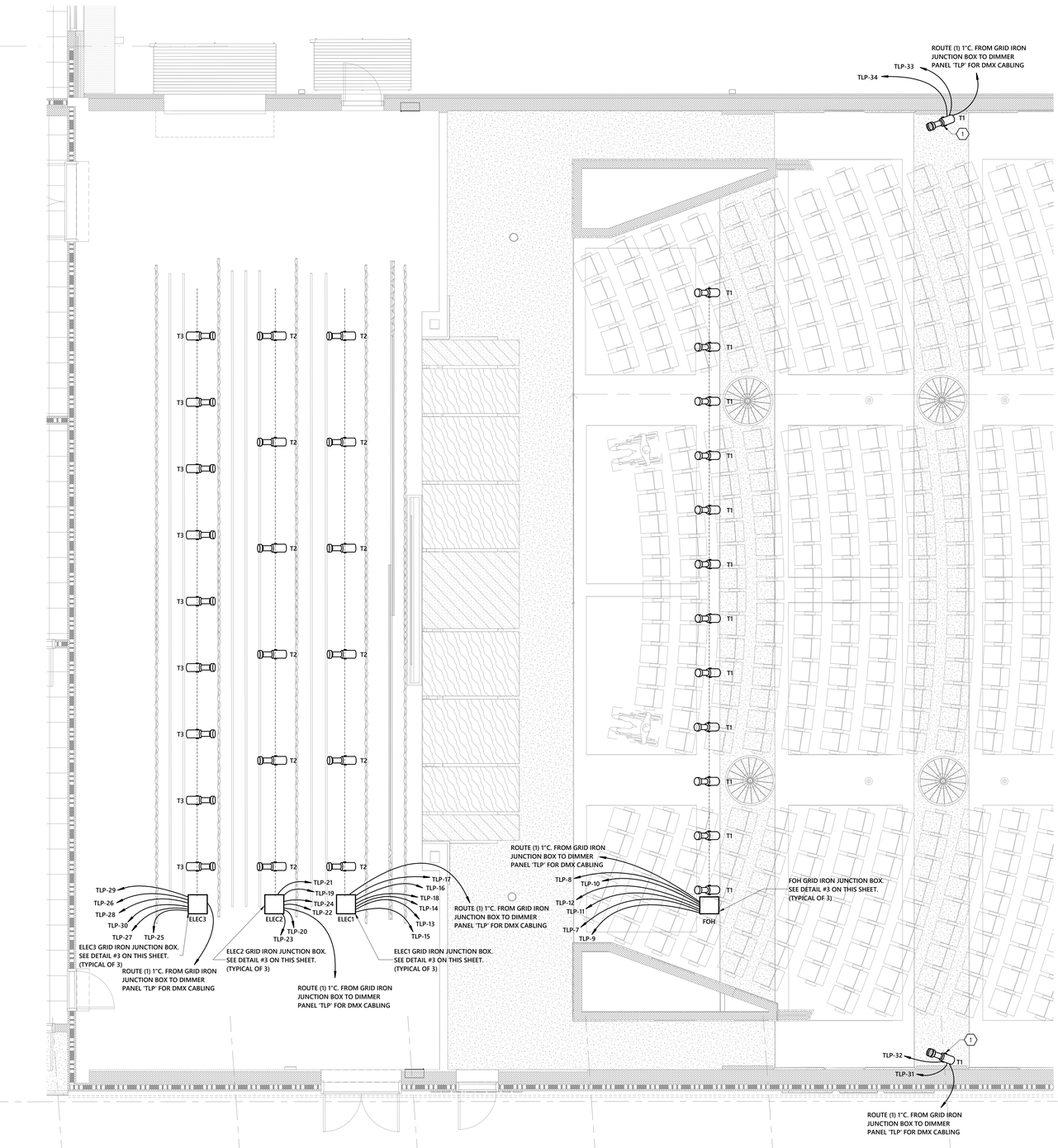
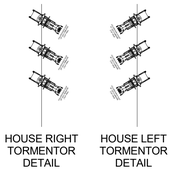


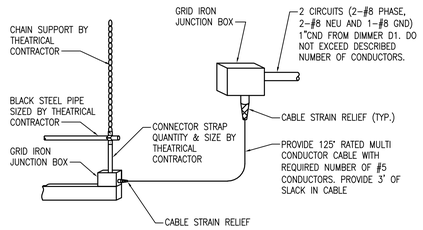

## 1 ENLARGED LIGHTING PLAN - AUDITORIUM PLATFORM

1/4" = 1'-0"




## 2 HOUSE TORMENTOR ELEVATION - AUDITORIUM

1/4" = 1'-0"




## 3 GRID IRON JUNCTION BOX - AUDITORIUM

1" = 1'-0"

## GENERAL NOTES:

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT LSH-xx, UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.
L. ALL PERFORMANCE FIXTURES TO REMAIN BAGGED UNTIL SPACE IS DUST FREE.
M. THE THEATRICAL SYSTEMS INTEGRATOR SHALL HANG, CIRCUIT, DATA, AND FOCUS ALL PERFORMANCE FIXTURES FOR A "REP" PLOT HANG.
N. THE THEATRICAL SYSTEMS INTEGRATOR SHALL PATCH AND PROGRAM ALL FIXTURES IN THE PERFORMANCE LIGHTING CONSOLE INCLUDING CREATING A DIGITAL MAGIC SHEET THAT SHOWS ROUGH FIXTURE PLACEMENT.
O. THE BASIS OF DESIGN IS ETC. ALL FIXTURES SHALL BE BY ELECTRONIC THEATRE CONTROLS, INC. INFORMATION IS AVAILABLE AT WWW.ETCCONNECT.COM. THIS SYSTEM IS DESIGNED IN ACCORDANCE WITH INFORMATION FROM THE CONSULTANT, ENGINEER AND OWNER.
P. LIGHTING POSITIONS ARE NOT DRAWN TO SCALE, FOR FIXTURE REPRESENTATION ONLY.

## KEYNOTES (#)

1 LIGHTING TORMENTOR CONSISTING OF THREE (3) TYPE "T1" FIXTURES AT THIS LOCATION. REFER TO DETAIL #2 ON THIS SHEET FOR ELEVATION DETAILS OF LIGHTING TORMENTOR. EXACT LOCATION AND HEIGHT TO BE COORDINATED WITH THEATRICAL LIGHTING VENDOR PRIOR TO ROUGH-IN. PROVIDE WITH PLUG-IN STATION AS SHOWN ON THEATRICAL LIGHTING RISER DIAGRAM/ SHEET E-604.

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT DUNCAN K. CUMMINGS 2010
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ENLARGED AUDITORIUM LIGHTING PLAN

E-515

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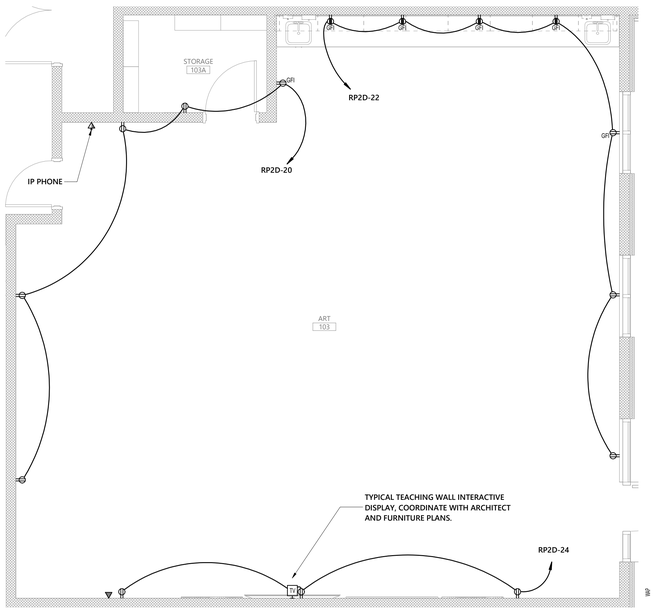
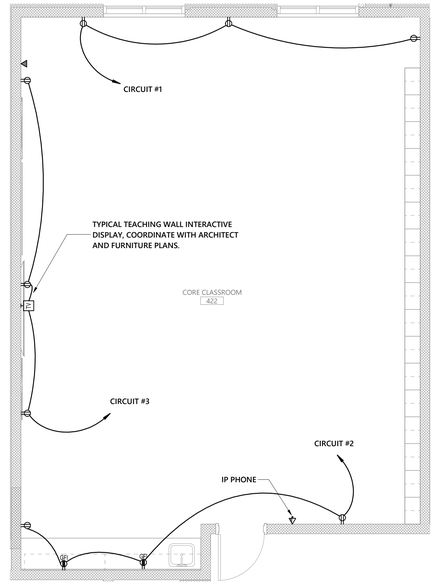



GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 1 ENLARGED POWER PLAN - ART CLASSROOM
1/4" = 1'-0"




GENERAL NOTES:
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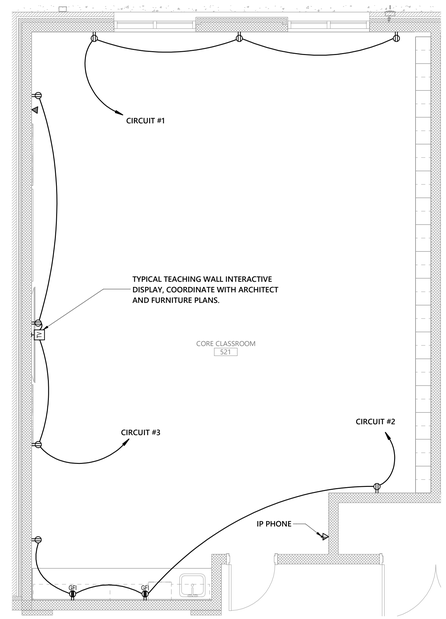
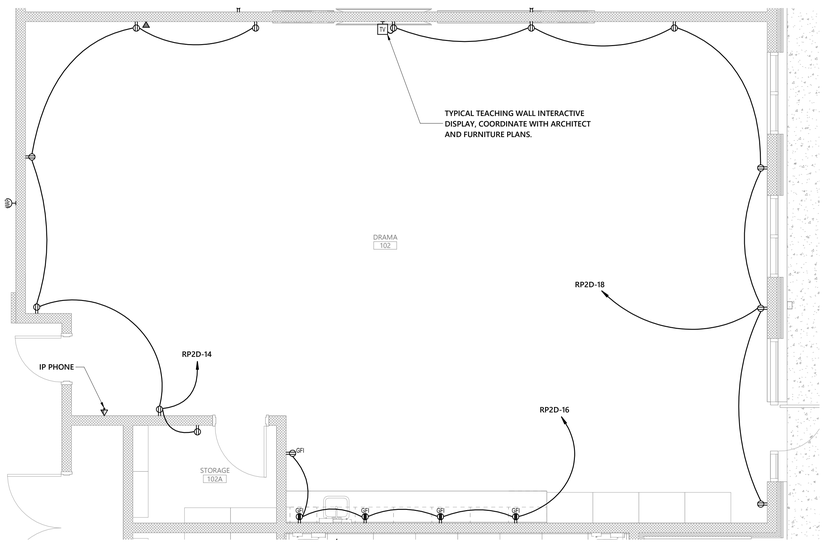
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 2 ENLARGED POWER PLAN - CORE CLASSROOM
1/4" = 1'-0"



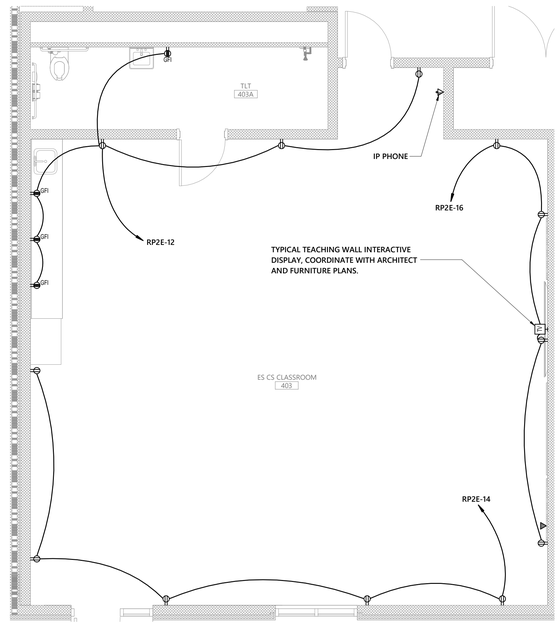

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 3 ENLARGED POWER PLAN - CORE CLASSROOM 2
1/4" = 1'-0"



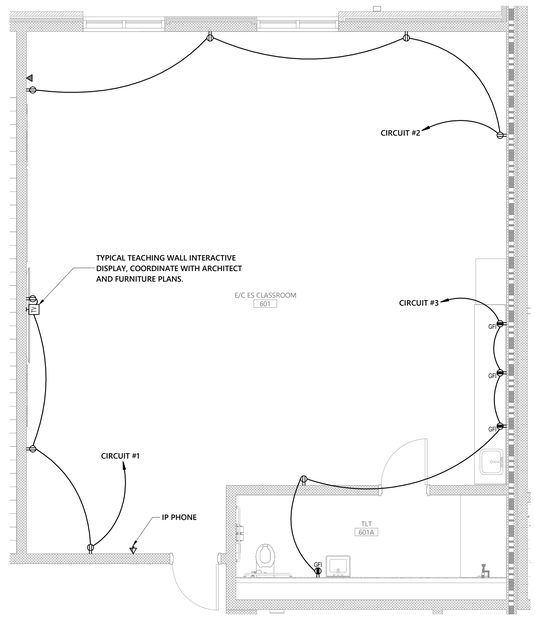

GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 4 ENLARGED POWER PLAN - DRAMA CLASSROOM
1/4" = 1'-0"




GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 5 ENLARGED POWER PLAN - ES CS CLASSROOM
1/4" = 1'-0"




GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 6 ENLARGED POWER PLAN - EC CS CLASSROOM 2
1/4" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

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ENERGY STAR PARTNER

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ISSUE DATE: 11/08/24
PROJECT #: 02208.000
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ENLARGED CLASSROOM POWER PLANS

E-521



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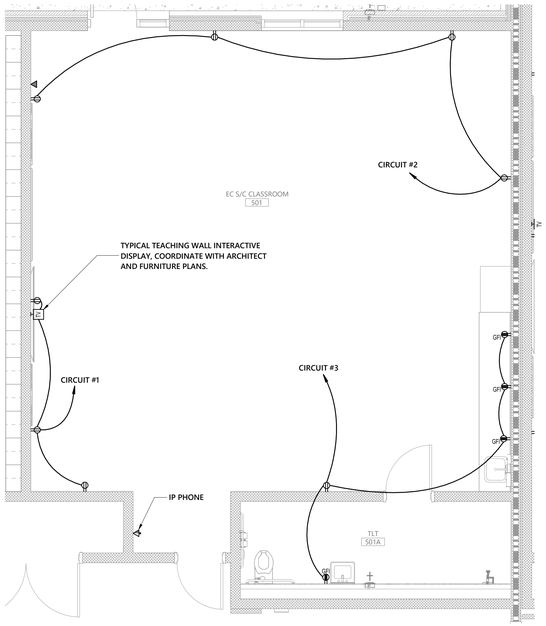
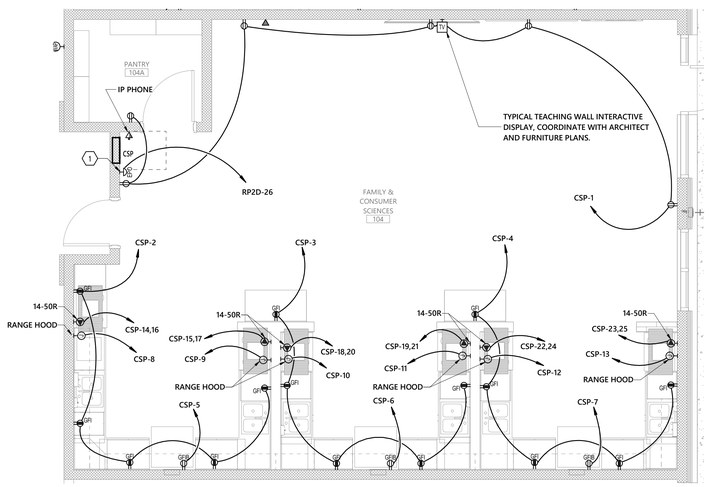


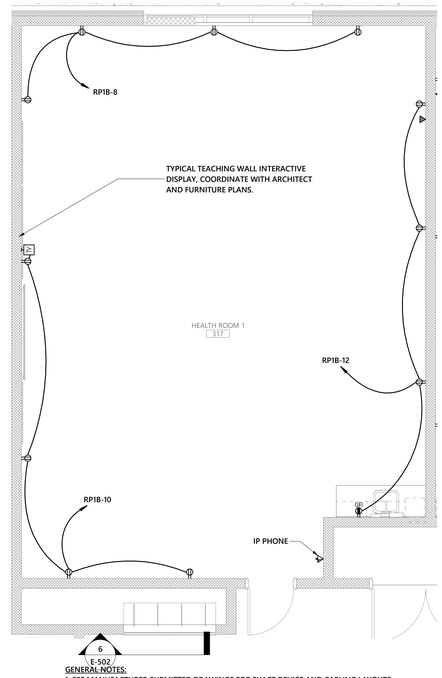

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 1 ENLARGED POWER PLAN - ES CS CLASSROOM 3
1/4" = 1'-0"



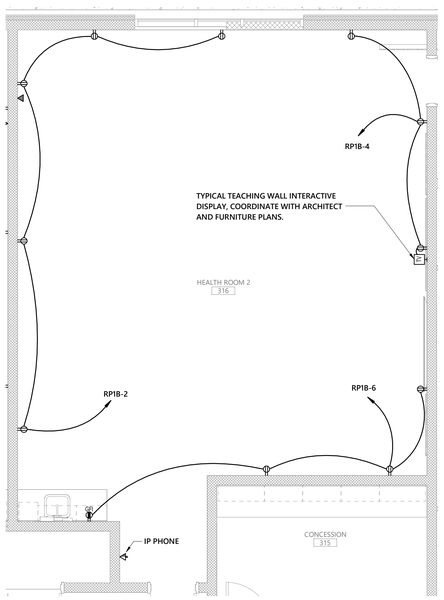

GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 2 ENLARGED POWER PLAN - FAMILY & CONSUMER SCIENCES CLASSROOM
1/4" = 1'-0"



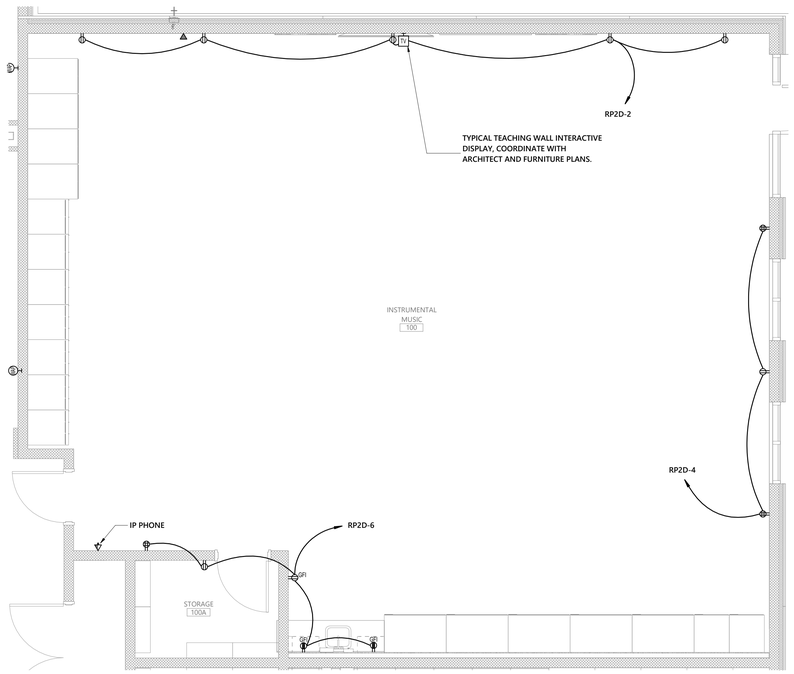

GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 3 ENLARGED POWER PLAN - HEALTH ROOM 1
1/4" = 1'-0"



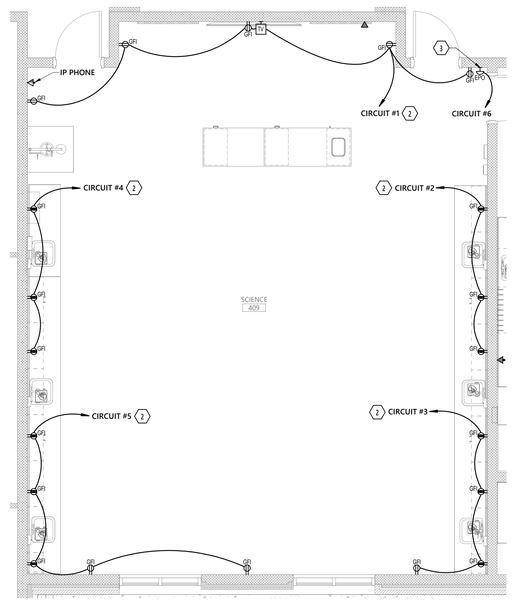

GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 4 ENLARGED POWER PLAN - HEALTH ROOM 2
1/4" = 1'-0"




GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 5 ENLARGED POWER PLAN - INSTRUMENTAL MUSIC CLASSROOM
1/4" = 1'-0"




GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 6 ENLARGED POWER PLAN - SCIENCE CLASSROOM
1/4" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES

1 EMERGENCY ELECTRIC AND WATER SHUTOFF. REFER TO DETAIL 15/ SHEET E-601. EMERGENCY SHUTOFF SHALL SHUT OFF PANEL 'CSP' VIA SHUNT TRIP. SOLENOIDS FOR WATER SHUTOFF SHALL BE PROVIDED BY EC AND INSTALLED BY PC. COORDINATE SOLENOID SIZE WITH PLUMBING PLANS.
2 PROVIDE CONTACTOR TO SHUTOFF POWER TO RECEPTACLE CIRCUIT WHEN EMERGENCY STOP BUTTON HAS BEEN PRESSED.
3 EMERGENCY ELECTRIC AND WATER SHUTOFF. REFER TO DETAIL 15/ SHEET E-601. SOLENOIDS FOR WATER SHUTOFF SHALL BE PROVIDED BY EC AND INSTALLED BY PC. COORDINATE SOLENOID SIZE WITH PLUMBING PLANS.

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ENLARGED CLASSROOM POWER PLANS

E-522

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## KEYNOTES (#)

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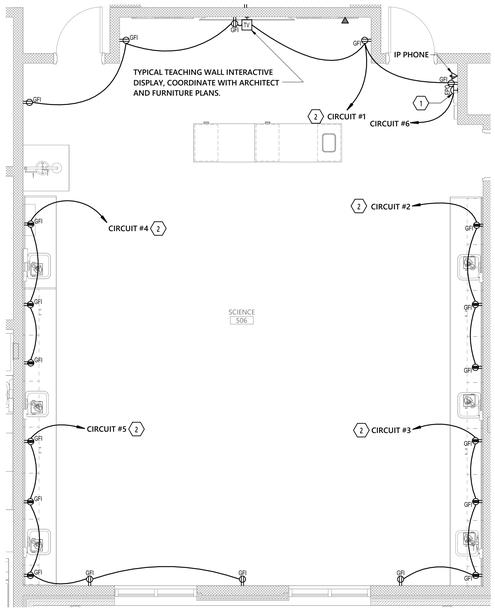
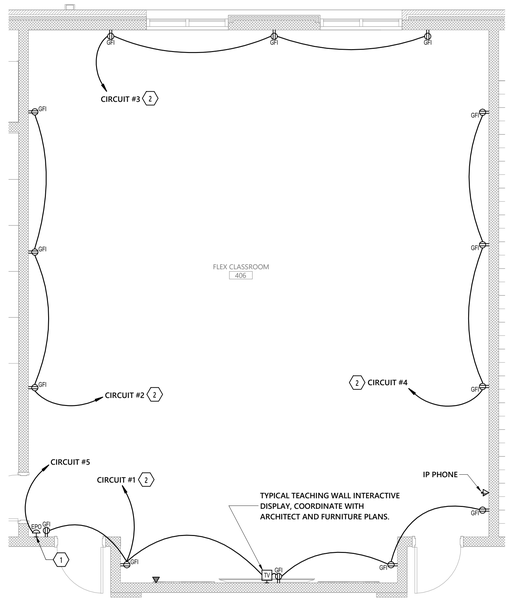


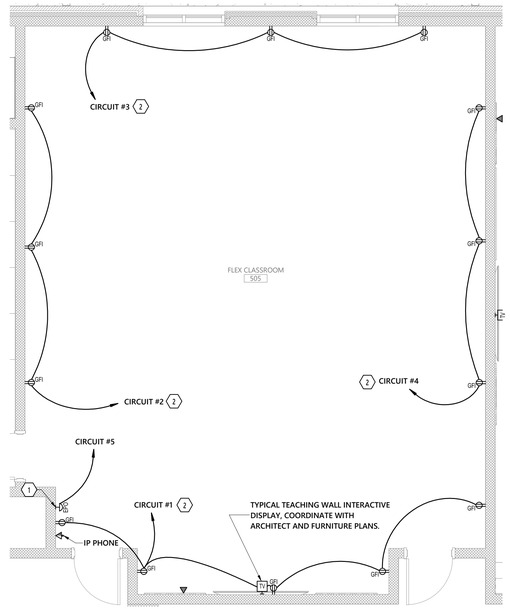

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

### 1 ENLARGED POWER PLAN - SCIENCE CLASSROOM 2
1/4" = 1'-0"



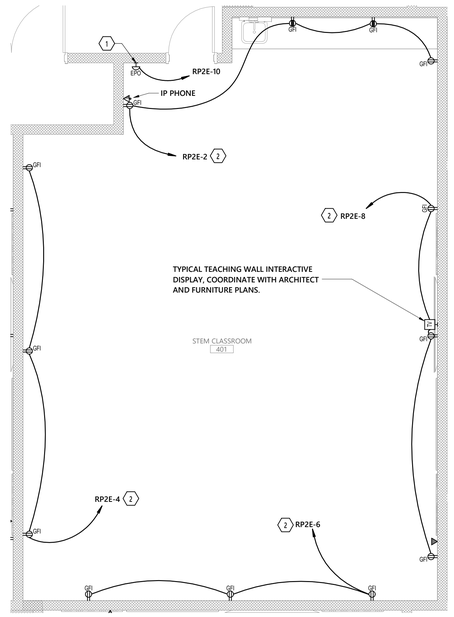

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

### 2 ENLARGED POWER PLAN - FLEX CLASSROOM
1/4" = 1'-0"



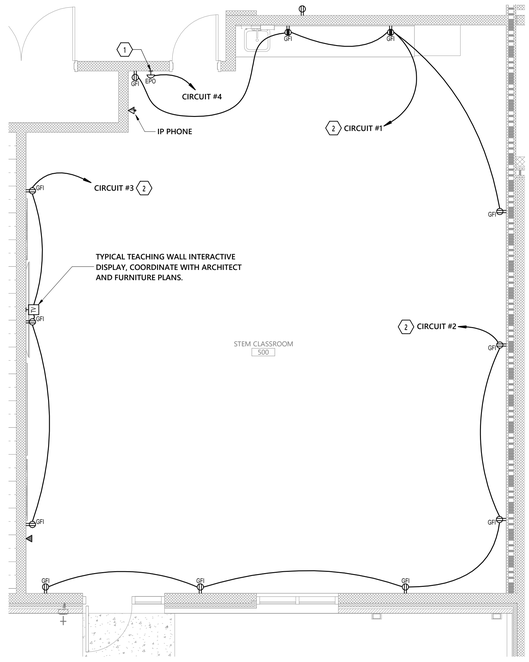

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

### 3 ENLARGED POWER PLAN - FLEX CLASSROOM 2
1/4" = 1'-0"



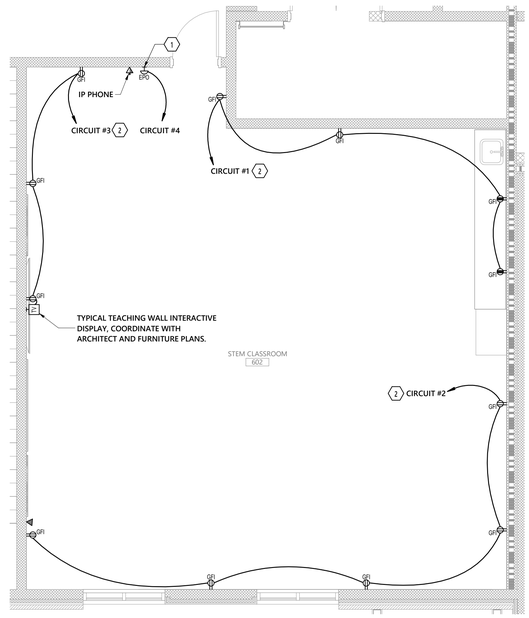

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

### 4 ENLARGED POWER PLAN - STEM CLASSROOM
1/4" = 1'-0"




GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

### 5 ENLARGED POWER PLAN - STEM CLASSROOM 2
1/4" = 1'-0"




GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS.
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### 6 ENLARGED POWER PLAN - STEM CLASSROOM 3
1/4" = 1'-0"

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ENLARGED CLASSROOM POWER PLANS

E-523

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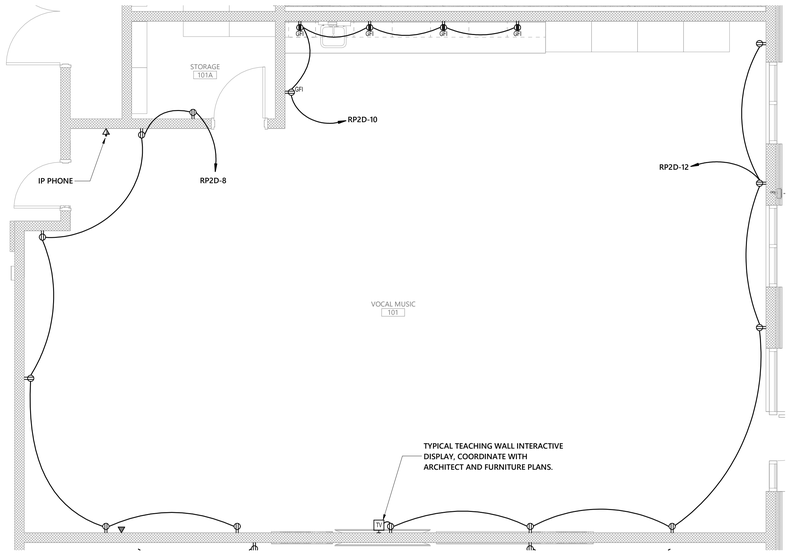


GENERAL NOTES:
1. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

## 1 ENLARGED POWER PLAN - VOCAL MUSIC CLASSROOM

1/4" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
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ENLARGED CLASSROOM POWER PLANS

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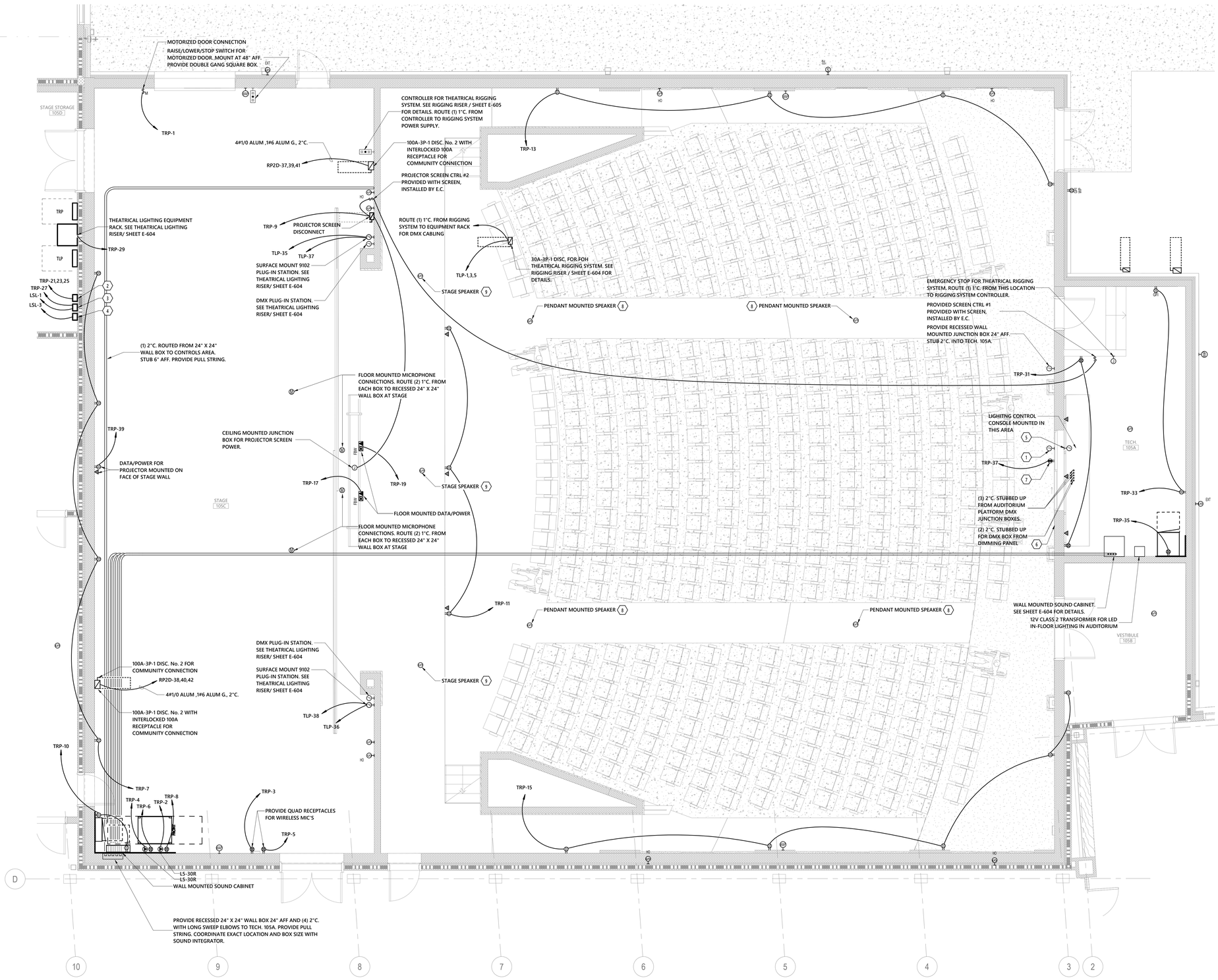


1 ENLARGED POWER PLAN - AUDITORIUM
1/4" = 1'-0"

## GENERAL NOTES:

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BE THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES (#)

1 JUNCTION BOX FOR PROJECTOR HDMI OUTLET. MOUNT ABOVE SOUND BOOTH. COORDINATE EXACT LOCATION WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN. PROVIDE 2-GANG JUNCTION BOX WITH SINGLE GANG MUD RING. ROUTE (1) 1"C. FROM JUNCTION BOX TO ACCESSIBLE CEILING IN SOUND BOOTH. PROVIDE PULL STRING.
2 EMERGENCY BYPASS DETECTION KIT FOR THEATRICAL LIGHTING. REFER TO THEATRICAL LIGHTING RISER DIAGRAM/ SHEET E-604.
3 DMX EMERGENCY BYPASS FOR THEATRICAL LIGHTING. REFER TO THEATRICAL LIGHTING RISER DIAGRAM/ SHEET E-604.
4 SC100B BCELTS EMERGENCY LIGHTING TRANSFER SWITCH FOR THEATRICAL LIGHTING. REFER TO THEATRICAL LIGHTING RISER DIAGRAM/ SHEET E-604.
5 CONTROL BOOTH PLUG-IN STATION. REFER TO THEATRICAL LIGHTING RISER DIAGRAM/ SHEET E-604 FOR DETAILS.
6 HOUSE MIX POSITION PLUG-IN STATIONS. REFER TO THEATRICAL LIGHTING RISER DIAGRAM/ SHEET E-604 FOR DETAILS.
7 POWER AND DATA OUTLET FOR PROJECTOR. MOUNT ABOVE SOUND BOOTH. COORDINATE EXACT LOCATION WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN. ROUTE (1) 1-1/2"C. BACK TO LIGHTING EQUIPMENT RACK.
8 ROUTE (1) 1"C. FROM EACH SPEAKER LOCATION TO RECESSED 24"X 24" JUNCTION BOX FOR SOUND CABINET ON STAGE WALL. CONTRACTOR SHALL PAINT PENDANT SPEAKERS TO MATCH COLOR OF CAVITY SPACE. COORDINATE PENDANT SPEAKER COLOR, LOCATION AND EXACT MOUNTING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
9 ROUTE (1) 1"C. FROM EACH SPEAKER LOCATION TO RECESSED 24"X 24" JUNCTION BOX FOR SOUND CABINET ON STAGE WALL.

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optima engineering
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ENERGY STAR PARTNER

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ENLARGED AUDITORIUM POWER PLAN

E-525



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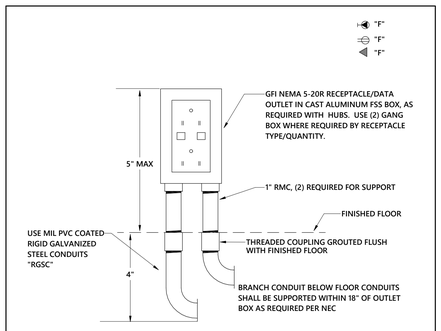
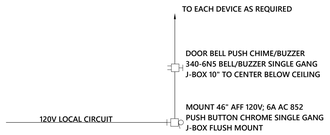


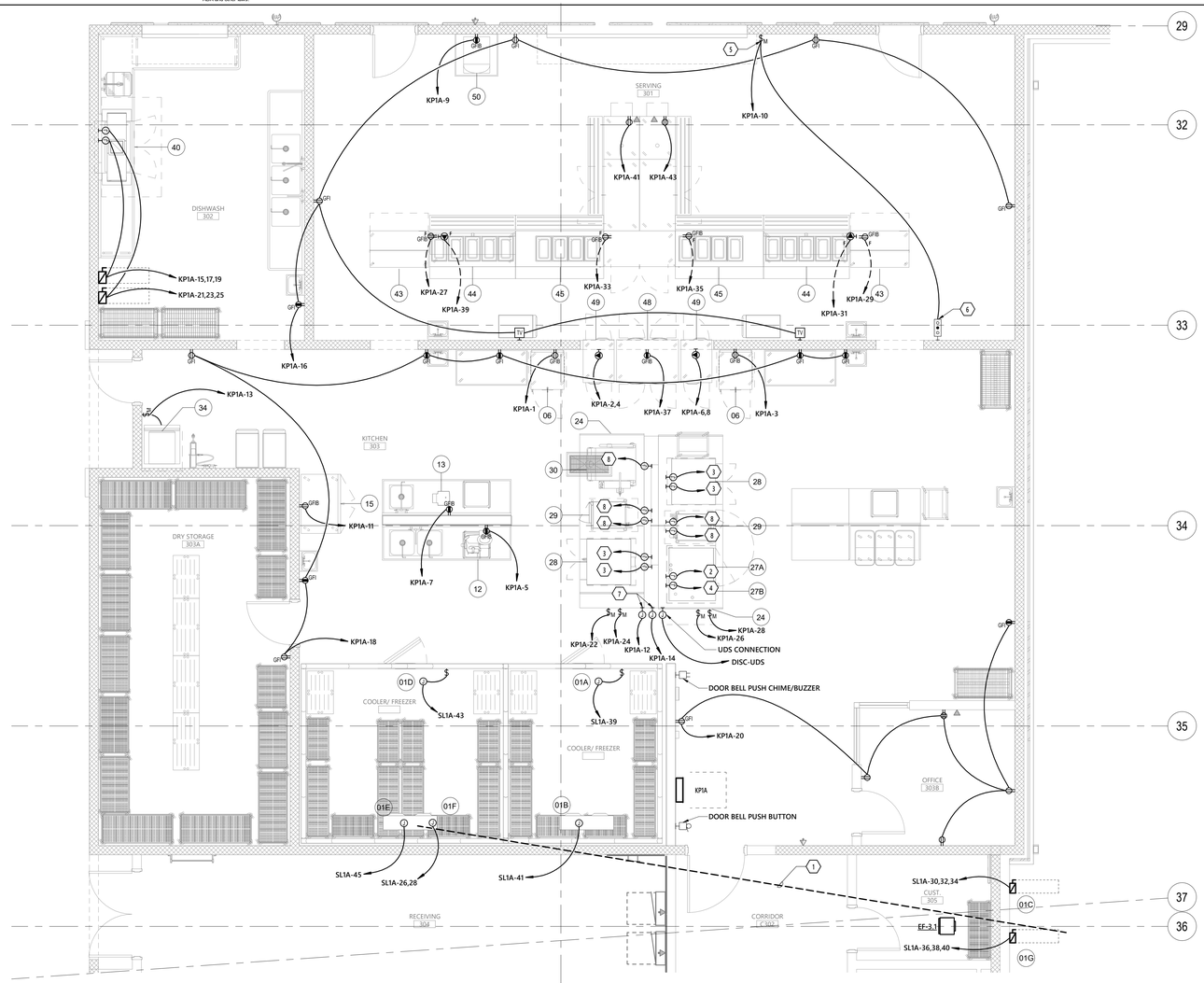

NOTES:
1. COORDINATE HEIGHT OF RECEPTACLE/DATA BOX WITH FOOD SERVICE PLANS PRIOR TO INSTALLATION. FOOD SERVICE HEIGHT SHALL SUPERCEDE HEIGHT SHOWN.

## 2 KITCHEN FLOOR BOX DETAIL
NOT TO SCALE




NOTES:
1. DEVICES ARE BASED ON EDWARDS SIGNALING SYSTEMS, OR APPROVED EQUAL.

## 3 DOOR BELL SYSTEM
NOT TO SCALE




## 1 ENLARGED KITCHEN ELECTRICAL PLAN
1/4" = 1'-0"

## GENERAL NOTES:

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E. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G. PROVIDE PAINT/TAPE TO INDICATE MINIMUM REQUIRED WORKING CLEARANCES FOR PANELBOARDS LOCATED OUTSIDE OF DEDICATED ELECTRICAL ROOMS ACCORDING TO NEC ARTICLE/TABLE 110.26(A)(1).

## KEYNOTES (7)

1 PROVIDE (1) 1-1/2"C. FROM FREEZER CONDENSING UNIT TO FREEZER EVAPORATOR COIL.
2 CONNECT TO 60A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
3 CONNECT TO 40A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
4 CONNECT TO 100A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
5 120V CONNECTION TO OVERHEAD DOOR. COORDINATE EXACT REQUIREMENTS WITH DOOR INSTALLER PRIOR ROUGH-IN.
6 RAISE/LOWER/STOP SWITCH FOR OVERHEAD DOOR. COORDINATE EXACT REQUIREMENTS WITH DOOR INSTALLER PRIOR TO ROUGH-IN.
7 120V CONNECTION FOR UDS PANEL CONTROLS. COORDINATE EXACT REQUIREMENTS WITH UDS PANEL MANUFACTURER DRAWINGS PRIOR TO ROUGH-IN.
8 CONNECT TO 50A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.

## REFRIGERATION CONNECTION SCHEDULE

| CONN. | EQUIPMENT | LOAD | V/PH | REMARKS | DISCONNECT SIZE | CONDUCTOR AND CONDUIT SIZE |
|---|---|---|---|---|---|---|
| 01A | LIGHTS, COOLER | 500 W | 120/1 | 4 EXTRA LIGHTS | SINGLE POLE SWITCH | 2#12,1#12G., 3/4"C. |
| 01B | EVAP. COIL, COOLER | 2.0 AMPS | 120/1 | --- | LOCKABLE CB | 2#12,1#12G., 3/4"C. |
| 01C | COND. UNIT, COOLER | 11.1 MCA | 208/3 | --- | 30A/FPN-3P-3R | 4#12,1#12G., 3/4"C. |
| 01D | LIGHTS & DOOR HEAT | 700 W | 120/1 | 3 EXTRA LIGHTS | SINGLE POLE SWITCH | 2#12,1#12G., 3/4"C. |
| 01E | HEAT TAPE, FREEZER | 15.0 AMPS | 120/1 | DRAINLINE HEAT TAPE | LOCKABLE CB | 2#12,1#12G., 3/4"C. |
| 01F | EVAP. COIL, FREEZER | 1.2 MCA | 208/1 | FEED DEFROST THRU TIMER @ COND. UNIT | LOCKABLE CB | 3#12,1#10G., 3/4"C. |
| 01G | COND. UNIT, FREEZER | 13.1 AMPS | 208/3 | | 30A/FPN-3P-3R | 4#12,1#12G., 3/4"C. |

## FOODSERVICE EQUIPMENT SCHEDULE

| QTY | ITEM | DESCRIPTION | MANUFACTURER | MODEL | ITEM | ELECTRICAL A.F.F. | KW | HP | AMPS | VOLTS | PHASE | NEMA | REMARKS | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 06 | PROOFER CABINET | WINSTON | HOV3-14UV | | 24" | | | 19.1 A | 120 V | 1 | 5-20P | CASTERS, SOLID DUTCH DOORS | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 1 | 12 | SLICER, ELECTRIC | HOBART | EDGE13A-11 | | 48" | | 1/2 | 4.0 A | 120 V | 1 | 5-15P | | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 1 | 13 | FOOD PROCESSOR | ROBOT COUPE | CL50EULTRA | | 48" | | | | 120 V | 1 | 5-15P | | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 1 | 15 | REACH-IN REFRIGERATOR | EVEREST | EBSR2 | | 24" | | 1/3 | 3.5 A | 115 V | 1 | 5-15P | CASTERS | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 2 | 24 | EXHAUST HOOD | CAPTIVE-AIRE | ND2-PSP | | (2) ABV. | | | 20.0 A | 120 V | 1 | (2) DIRECT | SEE VENTILATION CONNECTION SCHEDULE | (2) MOTOR RATED SWITCH | (2) 2#12,1#12G., 3/4"C. |
| 1 | 27A | COMBI OVEN, ELECTRIC | CONVOTHERM | C4 ET 6.20EB-N | | U.C. | | | 44.1 A | 208 V | 3 | DIRECT | WATER FILTER | CB IN UDS | 4#4,1#10G., 1-1/4"C. |
| 1 | 27B | COMBI OVEN, ELECTRIC | CONVOTHERM | C4 ET 10.20EB-N | | U.C. | | | 27.1 A | 208 V | 3 | DIRECT | WATER FILTER, STACKING KIT ON CASTERS | CB IN UDS | 4#1,1#8G., 2"C. |
| 2 | 28 | ELECTRIC CONVECTION OVEN | BLODGETT | ZEPH-100-E-DBL | | (2) U.C. | | | 31.0 A | 208 V | 3 | (2) DIRECT | DOUBLE DECK, CASTERS | (2) CB IN UDS | (2) 4#8,1#10G., 1"C. |
| 2 | 29 | CONVECTION STEAMER | CLEVELAND | (2) 22CET66.1 | | (2) U.C. | | | 29.8 A | 208 V | 3 | (2) DIRECT | DRAIN COOLING KIT, WATER FILTRATION SYSTEM, BACKFLOW PREVENTER | (2) CB IN UDS | (2) 4#6,1#10G., 1-1/4"C. |
| 1 | 30 | TILT SKILLET | CLEVELAND RANGE | SEL30T1 | | U.C. | | | 44.5 A | 208 V | 3 | DIRECT | SINGLE PANTRY FAUCET | CB IN UDS | 4#6,1#10G., 1-1/4"C. |
| 1 | 34 | ICE MAKER | HOSHIZAKI AMERICA, INC. | KM-350MAJ | | 64" | | | 9.1 A | 115 V | 1 | DIRECT | WATER FILTER, BACKFLOW PREVENTION DEVICE | MOTOR RATED SWITCH | 2#12,1#12G., 3/4"C. |
| 1 | 40 | DISHWASHER CONVEYOR TYPE | HOBART | CL44EN-BAS2 | | (2) 64" | B: 30 | | 55.0 A | 208 V | 3 | (2) DIRECT | 30KW ELECTRIC BOOSTER, DRAIN WATER TEMPERING KIT, DUAL POINT CONNECTION | (1) 100A-F70A-3P-4X STAINLESS STEEL<br>(1) 100A-F90A-3P-4X STAINLESS STEEL | (1) 4#4,1#8G., 1-1/4"C.<br>(1) 4#2,1#8G., 1-1/4"C. |
| 2 | 43 | MILK COOLER | BEVERAGE-AIR | SM49HC-S | | STUB | | 1/3 | 2.2 A | 115 V | 1 | 5-15P | CASTERS | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 2 | 44 | HEATED SERVING COUNTERS | DELFIELD | SH-5-NU | | STUB | | | 28.0 A | 120 V | 1 | 14-50P | LED LIGHT, TOE PLATES, TRAY SLIDES, WORK SHELF,GLASS FRONT COUNTER PROTECTOR, CASTERS | RECEPTACLE | 3#6,1#10G., 1"C. |
| 2 | 45 | SERVING COUNTER, COLD FOOD | DELFIELD | SCSC-60-EFP | | STUB | | 1/4 | 3.2 A | 115 V | 1 | 5-15P | 14" TOP EXTENTION, TOE PLATES, TRAY SLIDES, WORK SHELF, SNEEZE GUARD, CASTERS | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 1 | 48 | REFRIGERATOR, PASS-THRU | CONTINENTAL REFRIGERATOR | D2RNSAPTHD | | 90" | | 1/3 | 6.9 A | 120 V | 1 | 5-15P | | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |
| 2 | 49 | HEATED CABINET, PASS-THRU | CONTINENTAL REFRIGERATOR | DL1W-SA-PT-HD | | 90" | | | 7.2 A | 120 V | 1 | C&P | | RECEPTACLE | 3#12,1#12G., 3/4"C. |
| 1 | 50 | COUNTERTOP ICE WATER DISPENSER | HOSHIZAKI | DM-4420N | | 50" | | | 3.0 A | 120 V | 1 | 5-15P | WATER FILTER, BACKFLOW PREVENTION DEVICE | DUPLEX RECEPTACLE | 2#12,1#12G., 3/4"C. |

KITCHEN SCHEDULE NOTES:
1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL AS REQUIRED ALL DISCONNECT SWITCHES, RECEPTACLES, ETC. TO MECHANICAL, PLUMBING, AND KITCHEN EQUIPMENT COMPLETELY. THE ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE ALL CORDS, PLUGS, CABLES, ETC., ON REQUIRING SUCH ITEMS.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL CONNECTIONS TO ALL MECHANICAL, PLUMBING AND KITCHEN EQUIPMENT AS REQUIRED.
3. ALL DISCONNECT SWITCHES, FUSE SIZES, PLUG CONFIGURATIONS, BREAKER SIZES, WIRE SIZES, ETC., SHALL BE COORDINATED WITH SHAP DRAWINGS PRIOR TO INSTALLING. ANY EQUIPMENT INSTALLED INCORRECTLY BECAUSE OF LACK OF COORDINATION WILL BE REMOVED.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE A GROUND WIRE AND A NEUTRAL WITH ALL CIRCUITS, WHETHER SO DESIGNATED OR NOT.
5. ALL 15 AND 20 AMP RECEPTACLES IN FOOD PREP AREA SHALL BE GFI, UNLESS NOTES TO BE PROVIDED WITH A GFI BREAKER.

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FLATWOODS MIDDLE SCHOOL
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ENERGY STAR PARTNER

| No. | Date | Description |
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ISSUE DATE: 11/08/24
PROJECT #: 02208.000
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CHECKED BY: MKG

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ENLARGED KITCHEN ELECTRICAL PLAN

E-530

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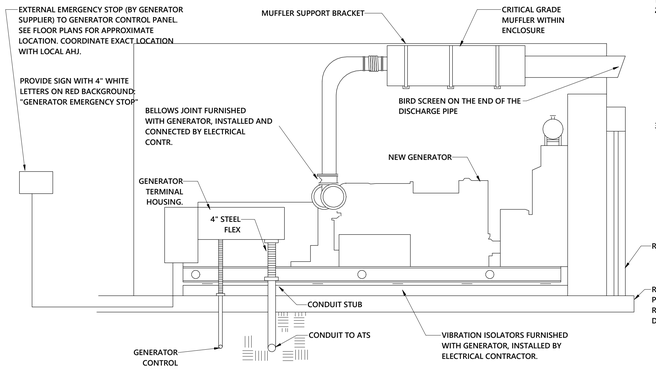
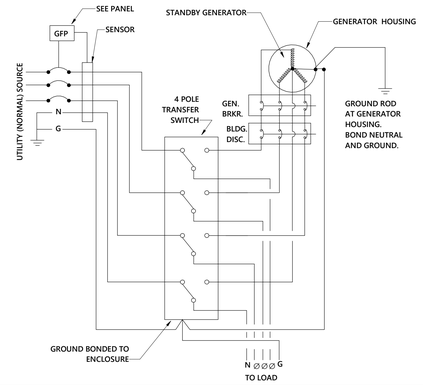
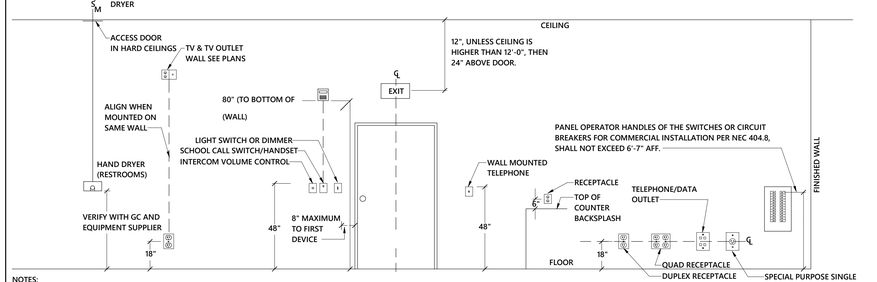



NOTES:
1. GENERATOR MUST MEET UL 2200.
2. ENCLOSURE TO SHALL BE LIMITED TO THE FOLLOWING:
   A. 16 GAUGE FORMED STEEL CONSTRUCTION.
   B. AIR INTAKE LOUVERS BASED ON 95° F OUTSIDE AIR.
   C. ALL DOORS TO HAVE "PIANO HINGES" AND KEY LOCK LATCHES.
   D. AN ANGLE IRON FRAME ATTACHED TO THE BOTTOM OF ENCLOSURE ENABLING ENCLOSURE TO BE BOLTED TO THE CONCRETE MOUNTING BASE.
3. SOUND ATTENUATION TO MEET SPECIFICATIONS.

**3 SECTION AT WEATHERPROOF GENERATOR HOUSEING**
NOT TO SCALE

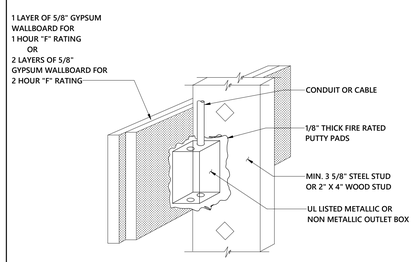



**2 GENERATOR GROUNDING DETAIL - 4P ATS**
NOT TO SCALE



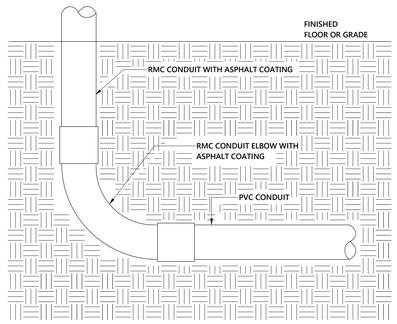

NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE. DEVICES REQUIRED TO BE ADA ACCESSIBLE SHALL BE INSTALLED PER ANSI A117.1.
3. DEVICES NEXT TO DOOR EXIT SHALL BE WITHIN 8" (MAXIMUM) TYPICAL OF DOOR UNLESS OBSTACLES SUCH AS SIDELITES, ETC.
4. ALL METALLIC & NON-METALLIC SWITCH AND RECEPTACLE BOXES INSTALLED IN FIRE RATED FRAME WALLS SHALL INCLUDE APPROVED FIRESTOP PUTTY PADS APPLIED ON THE BACK AND ALL SIDES OF BOX NOT TOUCHING THE WOOD STUD.
5. IN THE CIRCULATION PATH, IF THERE ARE PENDANT LIGHT FIXTURES, ENSURE THEY ARE LOCATED 80" A.F.F. OR HIGHER UNLESS LOCATED ABOVE A FIXED ELEMENT. WALL MOUNTED FIXTURES LOCATED BETWEEN 27" AND 80" A.F.F. SHALL NOT EXTEND GREATER THAN 4" FROM WALL OR BASE OR HAVE FIXED PROTECTION AT 27" A.F.F. OR LOWER WHEN THESE ELEMENTS ARE LOCATED IN THE CIRCULATION PATH.

**1 MOUNTING HEIGHTS OF DEVICES - ELEVATION**
NOT TO SCALE

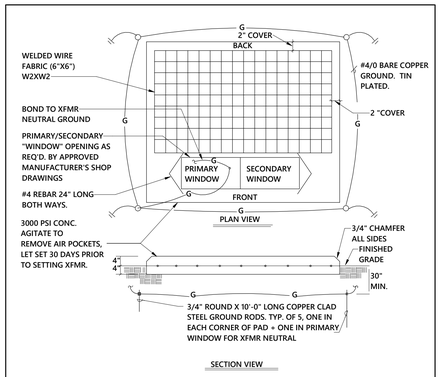



NOTES:
1. REQUIRED FOR METALLIC AND NON-METALLIC ELECTRICAL BOXES EXCEEDING 16 SQ. INCHES IN AREA OR MULTIPLE BOXES SERVING SAME SPACE.
2. REQUIRED FOR BACK TO BACK BOXES IN THE SAME STUD CAVITY.
3. REQUIRED FOR BOXES EXCEEDING 100 SQ INCHES TOTAL IN 100 SQ FEET OF WALL AREA.
4. THE USE OF PUTTY PADS ADHERENCE IS AT THE DISCRETION OF THE LOCAL AUTHORITY HAVING JURISDICTION.
5. REFER TO UL LISTING OF WALL FOR ADDITIONAL RESTRICTIONS OR INFORMATION.

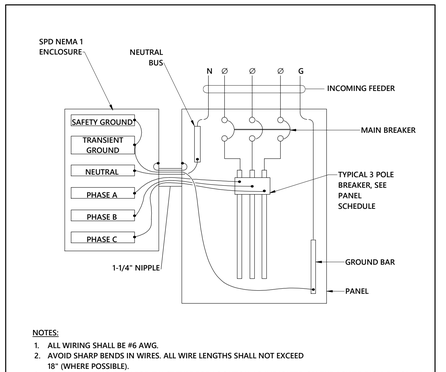
**8 WALL OUTLET DETAIL**
NOT TO SCALE




**7 CONDUIT TRANSITION DETAIL**
NO SCALE



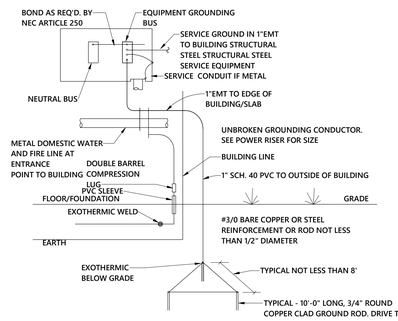

**6 TRANSFORMER PAD DETAIL**
NOT TO SCALE



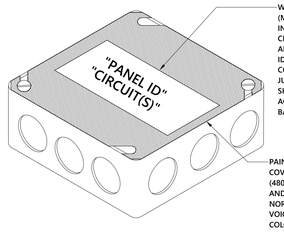

NOTES:
1. ALL WIRING SHALL BE #6 AWG.
2. AVOID SHARP BENDS IN WIRES. ALL WIRE LENGTHS SHALL NOT EXCEED 18" (WHERE POSSIBLE).
3. SEE SPD SPECIFICATION FOR EXACT TYPE FOR LOCATION AS INDICATED ON THE POWER RISER DIAGRAM.

**5 SPD CONNECTION DETAIL**
NOT TO SCALE

NOTE: REFER TO TECHNOLOGY PLANS FOR TELECOM GROUNDING REQUIREMENTS.

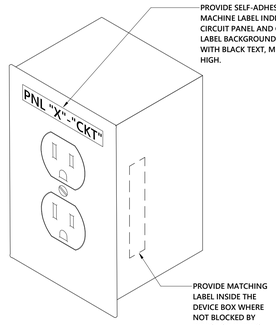



**4 SERVICE GROUND DIAGRAM**
NOT TO SCALE

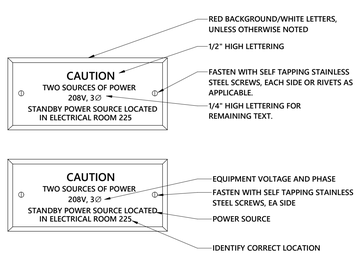



NOTES:
1. ALL JUNCTION BOXES SHALL BE ACCESSIBLE.
2. THE LABELING/IDENTIFICATION INDICATED ABOVE IS INTENDED FOR ALL JUNCTION BOXES EXCEPT AS INDICATED IN NOTE 3.
3. LABELING/IDENTIFICATION FOR JUNCTION BOXES WHICH ARE VISIBLE IN FINISHED SPACES SHALL BE SIMILAR TO ABOVE EXCEPT THE LABELING/IDENTIFICATION SHALL BE LOCATED ON THE INSIDE COVER OF THE JUNCTION BOX.

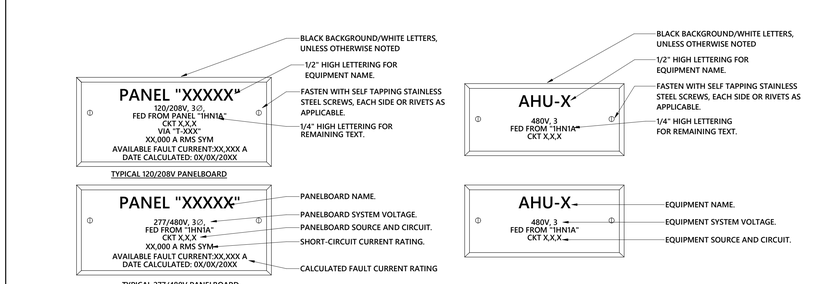
**12 JUNCTION BOX LABELING/IDENTIFICATION**
NO SCALE




**11 RECEPTACLE PLATE AND BOX LABELING**
NO SCALE




**10 EMERGENCY POWER NAMEPLATE**
NOT TO SCALE

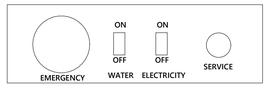



PANELBOARD NAMEPLATES

EQUIPMENT NAMEPLATES

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, COLORS, ETC.
2. PROVIDE SHORT-CIRCUIT CURRENT RATING AND AVAILABLE FAULT CURRENT ON EACH NON-DWELLING SERVICE EQUIPMENT NAMEPLATE.

**9 TYPICAL NAMEPLATE DIAGRAM**
NOT TO SCALE

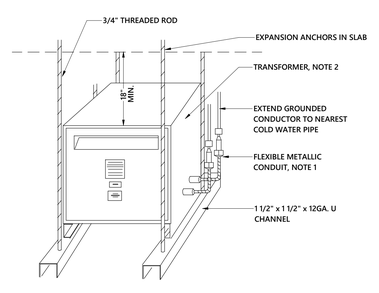



FLUSH PANEL - SEE PLANS FOR LOCATION
TYPICAL DIMENSIONS: 6"HX11.875"WX4"D

NOTES:
1. PROVIDE PHENOLIC LABEL ABOVE PUSH BUTTON: EMERGENCY SHUT-OFF
2. PROVIDE WITH PANIC BUTTON COVER.
3. MANUAL PUSH BUTTON RESET AT PANEL.
4. E.C. SHALL PROVIDE CONTACT ENCLOSURE, AND PANEL. (ALL COMPONENTS OF ISIMET SYSTEM)
5. WALL BOX IS PROVIDED WITH SYSTEM. SEE MANUFACTURER DRAWINGS FOR SIZE AND MOUNTING INSTRUCTIONS.
6. CONTACT ENCLOSURE SHALL BE MOUNTED ABOVE CEILING NEAREST CONTROLLER.
7. PROVIDE 120V SOURCE CIRCUIT FOR CONTROLLER FROM LOCAL CIRCUIT. SEE PLANS
8. TYPICAL OPERATION: OUTPUT SIGNAL FROM CONTROLLER ENGAGES OR DIS-ENGAGES CONTACTORS FOR ELECTRIC.

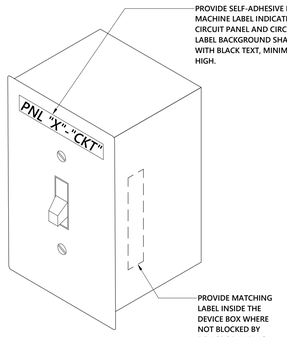
MODEL INFORMATION:
CONTROLLER: LAV2-HV-K-F-E-W-C
E-SERIES COMPANION: E-31-__-S. SEE PLANS FOR CONTROLLED CIRCUIT QUANTIES IN EACH ROOM AND PROVIDE ACCORDINGLY.
EQUALS: JOHNSON CONTROLS, EATON CUTLER HAMMER, AGS

**15 SCIENCE CLASSROOM SHUT OFF - WATER & ELEC. ONLY**
NOT TO SCALE




NOTES:
1. TRANSFORMER CONNECTIONS SHALL BE MADE TO SIDES ONLY.
2. MAINTAIN 6" MINIMUM CLEARANCE ALL AROUND.

**14 TRANSFORMER SUSPENDED FROM STRUCTURE**
NOT TO SCALE




**13 SWITCH PLATE AND BOX LABELING**
NO SCALE

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CONSTRUCTION DOCUMENTS

optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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ELECTRICAL DETAILS

E-601

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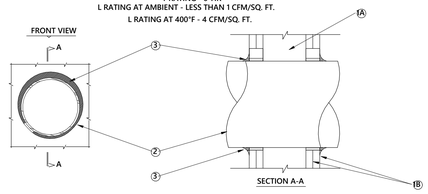
U.L. SYSTEM NO. W-L-1085
F RATING - 1-HR OR 2-HR (SEE ITEM 1B)
T RATING - 0-HR
L RATING AT AMBIENT - LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F - 4 CFM/SQ. FT.




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

A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.

B. GYPSUM BOARD* - 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIA OF OPENING IS 13-1/4 IN.

DIA OF CIRCULAR OPENING CUT THROUGH GYPSUM WALLBOARD OF EACH SIDE OF WALL ASSEMBLY TO BE MIN 1/4 IN. TO MAX 1/2 IN. LARGER THAN OUTSIDE DIA OF THROUGH PENETRANT (ITEM 2), THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

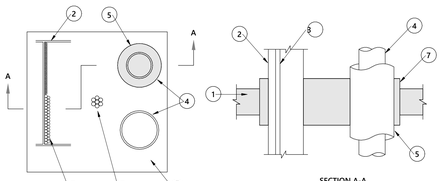
2. THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE ANNUIAR SPACE BETWEEN THE THROUGH-PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE MIN 0 IN. TO MAX 1/4 IN. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

A. STEEL PIPE - NOM 12 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE - NOM 12 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. CONDUIT - NOM 6 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT.
D. COPPER TUBING - NOM 5 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
E. COPPER TUBING - NOM 6 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. FILL, VOID, OR CAVITY MATERIAL* - SEALANT - FILL MATERIAL TO BE FORCED INTO THE ANNULUS TO MAXIMUM EXTENT POSSIBLE. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/2 IN. CROWN IS FORMED AROUND THE PENETRATING ITEM AND LAPPING 1/4 IN. BEYOND THE PERIPHERY OF THE OPENING.

HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

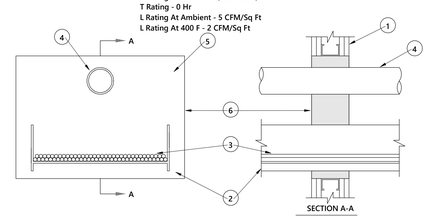
System No. C-AJ-8056
F Rating -- 3 Hr
T Rating -- 0 Hr
L Rating At Ambient -- 5 CFM/sq ft
L Rating At 400 F -- 2 CFM/sq ft




1. FLOOR OR WALL ASSEMBLY -- 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX AREA OF OPENING IS 1296 IN. SQ WITH MAX DIMENSION OF 36 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. CABLE TRAY* -- MAX 18 IN. WIDE BY MAX 6 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.060 IN. THICK ALUMINUM OR STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAYS IS 9 IN. AND BETWEEN THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. TO MAX 4-1/2 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY
3. CABLES -- AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY BASED ON A MAX 3 IN. CABLE LOADING DEPTH WITHIN THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 300 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 1/C, 350 KCMIL WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND JACKET.
D. 1/C, 500 KCMIL WITH THERMO PLASTIC INSULATION AND POLYVINYL CHLORIDE (PVC) JACKET.
E. TWENTY FOUR FIBER OPTIC CABLE WITH PVC SUB UNIT AND JACKET.
4. THROUGH-PENETRANTS -- ONE OR MORE PIPE, CONDUIT OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND BETWEEN THE PERIPHERY OF THE OPENING AND THE PIPES OR CONDUITS SHALL BE MIN 1 IN. TO MAX 4-1/2 IN. PIPE, CONDUIT OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
A. NOM 6 IN. DIA (OR SMALLER) RIGID GALV STEEL CONDUIT.
B. NOM 4 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
C. NOM 4 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
D. NOM 4 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
E. NOM 6 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
F. NOM 6 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.
5. PIPE COVERING -- NOM 6 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT.
SEE PIPE AND EQUIPMENT COVERING AND MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 MAY BE USED.
6. CABLES -- MAX 2 IN. DIA TIGHT BUNDLE OF CABLES CENTERED IN OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF FLOOR AND WALL, ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 25 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 2/C NO. 10 AWG WITH PVC INSULATION AND JACKET.
D. 3/C NO. 8 AWG SHIELDED CABLE WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND PVC JACKET.
E. TYPE RC - 62 A/U COAXIAL CABLE WITH AIR CORE AND PVC JACKET.
F. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.
7. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* -- FIRE BLOCKS INSTALLED WITH LONG DIMENSION PASSED THROUGH THE OPENING EXTENDING MIN 1-1/2 IN. FROM EACH SURFACE. BLOCKS TO COMPLETELY FILL THE ENTIRE OPENING.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* -- FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES AND BETWEEN CABLES AND CABLE TRAYS TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT
C. WIRE MESH (NOT SHOWN) -- WHEN THE ANNULAR SPACE EXCEEDS 4-1/2 IN. TO THE PERIPHERY, A NOM 2 IN. SQ WIRE FENCING SHALL BE USED TO KEEP THE FIRE BLOCKS IN PLACE. THE WIRE FENCING IS FABRICATED FROM MIN NO. 16 SWG (0.060 IN.) GALV STEEL WIRE. THE WIRE IS CUT TO FIT THE CONTOUR OF THE PENETRATING ITEM WITH A MIN 3 IN. LAP BEYOND THE PERIPHERY OF THE OPENING. WIRE FENCING SECURED TO TOP SURFACE OF FLOOR AND BOTH SURFACES OF WALL ASSEMBLY BY MEANS OF 1/4 IN. DIA BY 1 IN. LONG CONCRETE ANCHORS AND 1/4 IN. BY 1-1/2 IN. DIA FENDER WASHERS SPACED MAX 8 IN. OC.
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

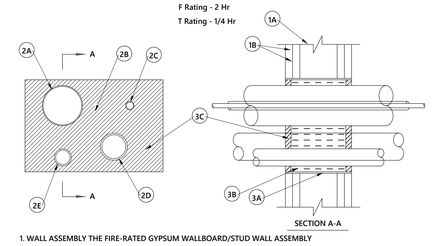
System No. W-L-8013
F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating At Ambient - 5 CFM/Sq Ft
L Rating At 400 F - 2 CFM/Sq Ft




1. WALL ASSEMBLY — THE 1 OR 2 HR FIRE-RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 IN. (51 MM) BY 4 IN. (102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. ADDITIONAL STUDS INSTALLED TO COMPLETELY FRAME THE OPENING.
B. GYPSUM BOARD* — 5/8 IN. (16 MM) THICK, 4 FT (1219 MM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF OPENING IS 352 SQ IN. (2271 SQ CM) WITH MAX DIMENSION OF 22 IN. (559 MM) WIDE.
THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. CABLE TRAY* — MAX 18 IN. (457 MM) WIDE BY MAX 6 IN. (152 MM) DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.065 IN. (1.65 MM) THICK ALUMINUM OR 0.060 IN. (1.52 MM) THICK STEEL AND WITH 1-1/2 IN. (38 MM) WIDE BY 1 IN. (25 MM) CHANNEL SHAPE RUNGS SPACED 9 IN. (229 MM) OC OR A 0.029 IN. (0.74 MM) THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. (25 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES — AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 100 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 1/C, 750 KCMIL (OR SMALLER) WITH PVC INSULATION AND JACKET.
4. THROUGH-PENETRANTS — ONE OR MORE PIPE OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN THE PIPE OR TUBE AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. (38 MM) TO MAX 9-1/4 IN. (235 MM). PIPE OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NON-METALLIC OR METALLIC PIPES, OR TUBES MAY BE USED:
A. POLYVINYL CHLORIDE (PVC) PIPE — MAX 3 IN. (76 MM) DIA SCHEDULE 40 SOLID CORE PVC PIPE (OR SMALLER) FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEM.
B. STEEL PIPE — NOM 6 IN. (152 MM) DIA (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE.
C. CONDUIT — NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. (152 MM) DIA STEEL CONDUIT.
D. COPPER PIPE — NOM 4 IN. (102 MM) DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
E. COPPER TUBE — NOM 4 IN. (102 MM) DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
4A. PIPE COVERING — (NOT SHOWN) NOM 1-1/2 IN. (38 MM) THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) (56KG/M3) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT.
SEE PIPE AND EQUIPMENT COVERING AND MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 MAY BE USED.
5. CABLES — MAX 1-1/2 IN. (38 MM) DIA TIGHT BUNDLE OF CABLES INSTALLED WITHIN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF WALL. THE SPACE BETWEEN THE CABLES AND PERIPHERY OF THE OPENING SHALL RANGE FROM 1-3/16 IN. (30.2 MM) MIN TO A MAX OF 1-1/2 IN. (38 MM). ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
B. 25 PAIR — NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. TYPE RG/59 COAXIAL CABLE WITH PVC OUTER JACKET.
D. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.
6. FIRESTOP SYSTEM — THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* — FIRE BLOCKS FOR WALLS INCORPORATING MAX 3-5/8 IN. (92 MM) STEEL STUDS OR MAX 2 (51 MM) BY 4 IN. (102 MM) WOOD STUDS, FIRE BLOCK INSTALLED WITH 5 IN. (127 MM) DIMENSION PROJECTING THROUGH AND CENTERED IN OPENING. FOR WALLS CONSTRUCTED OF LARGER STEEL OR WOOD STUDS, FIRE BLOCK INSTALLED WITH LONG DIMENSION PASSING THROUGH AND CENTERED IN OPENING. BLOCKS MAY OR MAY NOT BE CUT FLUSH WITH BOTH SURFACES OF WALL. WHEN MULTIPLE LAYERS OF GYPSUM BOARD ARE USED, BLOCKS MAY BE RECESSED 1/2 IN. (13 MM) FROM SURFACE OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS 657 FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* — SEALANT OR PUTTY - FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES, BETWEEN CABLES AND CABLE TRAYS, AROUND EACH PENETRANT AND WHERE OBVIOUS VOIDS ARE OBSERVED TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE SEALANT, CP 618 PUTTY STICK OR CP620 FIRE FOAM
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

System No. W-L-8004
F Rating - 2 Hr
T Rating - 1/4 Hr



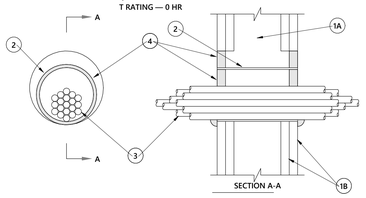

1. WALL ASSEMBLY THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE
CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL
U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL
STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN.
OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.
ADDITIONAL FRAMING (NOT SHOWN) MAY BE INSTALLED AROUND THE PERIMETER OF
THE OPENING IN LIEU OF THE STEEL WIRE MESH (ITEM NO. 3A).
B. GYPSUM BOARD* TWO LAYERS OF NOM 5/8 IN. THICK GYPSUM WALLBOARD, AS
SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF OPENING
IS 96 SQ IN. WITH MAX DIMENSION OF 12 IN. MAX WIDTH OF OPENING IN WOOD
STUD WALLS IS LIMITED TO 12 IN.
2. THROUGH PENETRANTS THE FOLLOWING TYPES AND SIZES OF PIPES, CONDUITS, TUBING
OR CABLES MAY BE USED:
A. NOM 3 IN. DIA (OR SMALLER) ELECTRICAL METALLIC TUBING (EMT).
B. MAX 25 PAIR -- NO. 24 AWG (OR SMALLER) TELEPHONE CABLE WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
C. MAX 3/C WITH GROUND -- NO. 10 AWG (OR SMALLER) TYPE NM CABLE WITH PVC INSULATION AND JACKET.
D. NOM 2 IN. DIA (OR SMALLER) SCHEDULE 40 PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS ONLY.
E. MAX 300 KCMIL (OR SMALLER) POWER CABLE WITH PVC INSULATION AND NYLON JACKET. THE THROUGH PENETRATING ITEMS TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY AND LOCATED AS SHOWN IN THE TABLE BELOW:

| ITEM NO. | MIN PEN. ITEM IN. | MAX PEN. ITEM IN. | MIN DISTANCE BETWEEN OPENING IN. | MAX DISTANCE BETWEEN OPENING IN. | MIN DISTANCE FROM OPENING IN. | MAX DISTANCE FROM OPENING IN. |
|---|---|---|---|---|---|---|
| 2A | 7-7/16 | 1-11/16 | 7-7/16 | | 1/2 | |
| 2B | 7-7/16 | 1-11/16 | 7-7/16 | | 1/2 | |
| 2C | 7-7/16 | 1-11/16 | 7-7/16 | | 1/2 | |
| 2D | 7-7/16 | 1-11/16 | 7-7/16 | | 1/2 | |
| 2E | 7-7/16 | 1-11/16 | 7-7/16 | | 1/2 | |

3. FIRESTOP SYSTEM THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. STEEL WIRE MESH NO. 8 STEEL WIRE MESH HAVING A MIN 1 IN. LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL WIRE MESH TO BE 4-3/4 IN., CENTERED AND FORMED TO FIT PERIPHERY OF THROUGH OPENING. STEEL WIRE MESH IS NOT REQUIRED WHEN ADDITIONAL FRAMING MEMBERS (ITEM NO. 1A) ARE USED.
B. PACKING MATERIAL MIN 4.0 IN. THICKNESS OF MIN 3.5 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL
TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE
REQUIRED THICKNESS OF FILL MATERIAL.
C. FILL, VOID OR CAVITY MATERIAL* - SEALANT MIN 1/2 IN. THICKNESS OF FILL MATERIAL
APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARKING

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

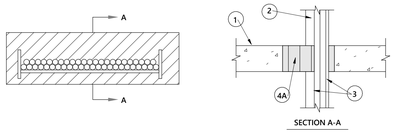
SYSTEM NO. W-L-3065
F RATINGS — 1 AND 2 HR (SEE ITEM 1)
T RATING — 0 HR




1. WALL ASSEMBLY — THE 1 OR 2 FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS, WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC.
B. GYPSUM BOARD* — NOM 5/8 IN. (16 MM) THICK GYPSUM BOARD, WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIA OF OPENING IS 5-1/2 IN. (138 MM) WHEN SLEEVE (ITEM 2) IS EMPLOYED. MAX DIA OF OPENING IS 4 IN. (102 MM) WHEN SLEEVE (ITEM 2) IS NOT EMPLOYED.
THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.
2. METALLIC SLEEVE — (OPTIONAL) - NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR SCHEDULE 5 (OR HEAVIER) STEEL PIPE OR MIN 0.016 IN. THICK (0.41 MM, NO. 28 GA) GALV STEEL SLEEVE INSTALLED FLUSH WITH WALL SURFACES. THE ANNULAR SPACE BETWEEN STEEL SLEEVE AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25MM). WHEN SCHEDULE 5 STEEL PIPE OR EMT IS USED, SLEEVE MAY EXTEND UP TO 18 IN. (457 MM) BEYOND THE WALL SURFACES.
3. CABLES — AGGREGATE CROSS-SECTIONAL AREA OF CABLE IN OPENING TO BE MAX 45 PERCENT OF THE CROSS-SECTIONAL AREA OF THE OPENING. THE ANNULAR SPACE BETWEEN THE CABLE BUNDLE AND THE PERIPHERY OF THE OPENING TO BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25 MM) CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
A. MAX 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
B. MAX 25 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC INSULATION AND JACKET.
B1. MAX 4 PR NO. 22 AWG CAT 5 OR CAT 6 COMPUTER CABLES.
C. TYPE RG/U COAXIAL CABLE WITH POLYETHYLENE (PE) INSULATION AND PVC JACKET HAVING A MAX OUTSIDE DIAMETER OF ½ IN. (13 MM).
C1. MAX RG 6/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
D. MULTIPLE FIBER OPTICAL COMMUNICATION CABLE JACKETED WITH PVC AND HAVING A MAX OD OF 5/8 IN. (16 MM).
E. THROUGH PENETRATING PRODUCTS*— MAX THREE COPPER CONDUCTOR NO. 8 AWG . METAL-CLAD CABLE+, AFC CABLE SYSTEMS INC
F. MAX 3/C (WITH GROUND)(OR SMALLER) NO. 8 AWG COPPER CONDUCTOR CABLE WITH PVC INSULATION AND JACKETING.
G. MAX 3/4 IN. (19 MM) DIA COPPER GROUND CABLE WITH OR WITHOUT A PVC JACKET.
H. FIRE RESISTIVE CABLES* - MAX 1-1/4 IN. (32 MM) DIA SINGLE CONDUCTOR OR MULTI CONDUCTOR TYPE MI CABLE. A MIN 1/8 IN. (3 MM) SEPARATION SHALL BE MAINTAINED BETWEEN MI CABLES AND ANY OTHER TYPES OF CABLE.
I. MAX 4/C WITH GROUND 300KCMIL (OR SMALLER) ALUMINUM SER CABLE WITH PVC INSULATION AND JACKET.
J. THROUGH PENETRATING PRODUCT* - ANY CABLES, METAL-CLAD CABLE+ OR ARMORED CABLE+ CURRENTLY CLASSIFIED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
SEE THROUGH PENETRATING PRODUCT (XHJV) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
4. FILL, VOID OR CAVITY MATERIAL*— SEALANT OR PUTTY — FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH EACH END OF THE STEEL SLEEVE OR WALL SURFACE. FILL MATERIAL INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. A MIN 5/8 IN. (16 MM) THICKNESS OF SEALANT IS REQUIRED FOR THE 1 OR 2 HR F RATING . AN ADDITIONAL 1/2 IN. (13 MM) DIA BEAD OF FILL MATERIAL SHALL BE APPLIED AROUND THE PERIMETER OF SLEEVE ON BOTH SIDES OF THE WALL WHEN SLEEVE EXTENDS BEYOND SURFACE OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP606, FS-ONE SEALANTS OR CP618 PUTTY
*BEARING THE UL CLASSIFICATION MARK
+BEARING THE UL LISTING MARK

HILTI FIRESTOP SYSTEMS
DRAWING ORIGINATION DATE: 03-21, 2011
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

SYSTEM NO. C-AJ-4035
F RATING - 3 HR.
T RATING = 0 HR.




1. FLOOR OR WALL ASSEMBLY MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX AREA OF OPENING IS 270 SQ IN WITH MAX DIMENSION OF 30 IN.
SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. CABLE TRAY* MAX 24 IN. WIDE BY MAX 4 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.10 IN. THICK ALUMINUM OR 0.060 IN. THICK GALV STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. THE ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. TO MAX 4 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 40 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE USED:
A. 1/C, 500 KCMIL WITH THERMOPLASTIC INSULATION AND PVC JAC

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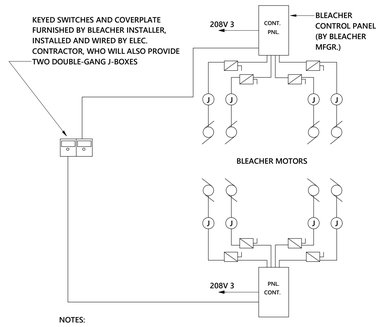
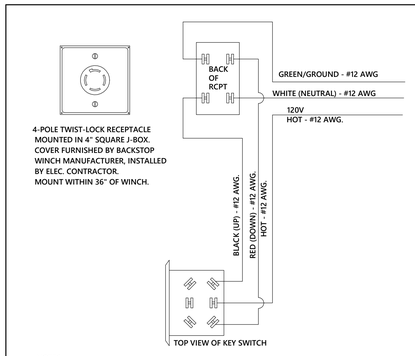


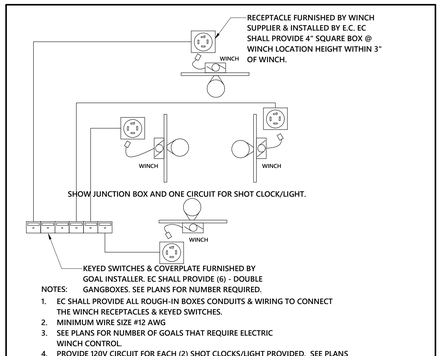

NOTES:
1. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-IN J-BOXES, CONDUIT AND WIRING TO CONNECT THE BLEACHER CONTROL PANELS AND KEYED SWITCHES. PROVIDE A 16"X16"X4" MINIMUM J-BOX AT MAIN ROUGH-IN.
2. MINIMUM WIRE SIZE SHALL BE #12 AWG.
3. PROVIDE 3 PHASE DISCONNECT AT EACH PANEL CONTROLLER, 30A/3P.

## 5 BLEACHER CONNECTION RISER
NO SCALE



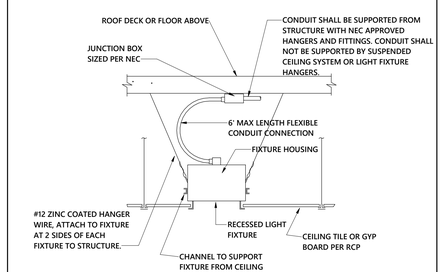

NOTES:
1. KEY SWITCHES AND COVERPLATE SHALL BE FURNISHED BY GOAL INSTALLER. ELEC. CONTRACTOR SHALL PROVIDE AND INSTALL ALL J-BOXES, CONDUIT, AND WIRING.
2. MINIMUM WIRE SIZE SHALL BE #12 AWG.

## 4 ELECT. BASKETBALL WINCH WIRING DETAIL
NO SCALE



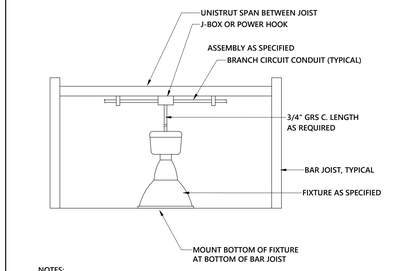

NOTES:
1. EC SHALL PROVIDE ALL ROUGH-IN BOXES CONDUITS & WIRING TO CONNECT THE WINCH RECEPTACLES & KEYED SWITCHES.
2. MINIMUM WIRE SIZE #12 AWG
3. SEE PLANS FOR NUMBER OF GOALS THAT REQUIRE ELECTRIC WINCH CONTROL.
4. PROVIDE 120V CIRCUIT FOR EACH (2) SHOT CLOCKS/LIGHT PROVIDED. SEE PLANS FOR GOAL LOCATIONS. SHOT CLOCKS ARE AT EACH MAIN BASKETBALL GOAL.
5. PROVIDE INTERLOCKING SWITCH SO THAT GOALS LOCATED NEAR BLEACHERS ARE NOT EXTENDED WHEN BLEACHERS ARE EXTENDED. COORDINATE WITH BLEACHER AND BASKETBALL GOAL MANUFACTURER.

## 3 BASKETBALL GOAL SWITCH RISER
NO SCALE



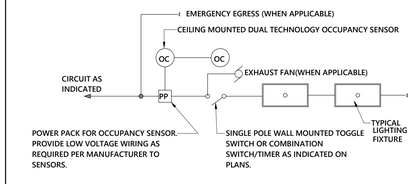

NOTES:
1. WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

## 2 TYPICAL RECESSED DOWN LIGHT FIXTURE INSTALLATION DIAGRAM
NOT TO SCALE




NOTES:
1. ORIENTATION SHOWN IS FOR PERPENDICULAR TO FLOOR APPLICATIONS. FOR SLOPED JOIST INSTALLATION, MATCH SLOPE OF JOIST AND MOUNT FLUSH WITH JOIST. ADJUST UNISTRUT AS REQUIRED.
2. EXPOSED CONDUIT SHALL BE PAINTED TO MATCH LOCAL AREA.

## 1 HI-BAY FIXTURE PENDANT
NOT TO SCALE




NOTES:
1. OCCUPANCY SENSORS SHALL BE SET TO TIME OUT AFTER 15 MINUTES AND THE TRIM POTENTIOMETER IS SET TO 90% FOR SENSITIVITY.
2. OCCUPANCY SENSORS SHALL BE PLACED AS TO NOT FUNCTION UPON SOMEONE JUST PASSING BY THE ROOM DOOR BUT BY ACTUALLY ENTERING THE ROOM IN AS MUCH AS POSSIBLE.

## 6 TYPICAL CEILING MOUNTED OCCUPANCY SENSOR WIRING DIAGRAMS
NOT TO SCALE

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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ELECTRICAL DETAILS

E-603

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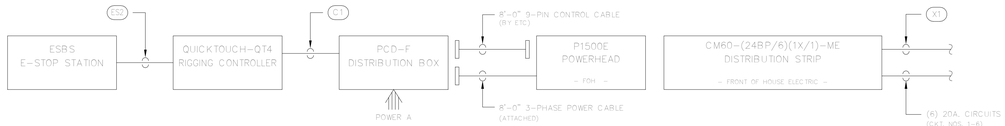



| HOIST POWER LEGEND | | |
|---|---|---|
| SYMBOL | BOX TYPE | POWER |
| POWER A | PCD-F | 3 PHASE, 3 WIRE + GROUND MOTOR RATED BREAKER - 208VAC 20A. MAX. - 60 Hz. |
| ALL POWER PROVIDED BY OTHERS | | |

| CONTROL WIRING LEGEND | | |
|---|---|---|
| SYMBOL | WIRE TYPE(S) | SIGNAL |
| C* | (1) BELDEN #1583A | HOIST CONTROL (24AWG Cat5e) |
| X* | (1) BELDEN #9729 | DMX OUT |
| ES* | (1) BELDEN #1583A | E-STOP (24AWG Cat5e) |
| N* | (1) BELDEN #1583A | ETCNet (Cat5e) |
| RC* | (1) BELDEN #1583A | REMOTE CONTROL (24AWG Cat5e) |
| SL* | (1) BELDEN #1583A | SAFETYLINK (24AWG Cat5e) |
| * = WIRE IDENTIFICATION NUMBER (NOT QUANTITY) | | |

## NOTES:

1.) ALL CONTROL WIRING IS PROVIDED BY OTHERS UNLESS NOTED OTHERWISE.

2.) TOTAL COMBINED LENGTH OF C (HOIST CONTROL) AND ES (EMERGENCY STOP) WIRING RUNS CANNOT EXCEED 500 FEET (150 METERS).

3.) A MAXIMUM OF 3 EMERGENCY STOP STATIONS PER SYSTEM.

4.) ALL C AND ES RUNS SHALL BE CONTINUOUS UNSPLICED RUNS.

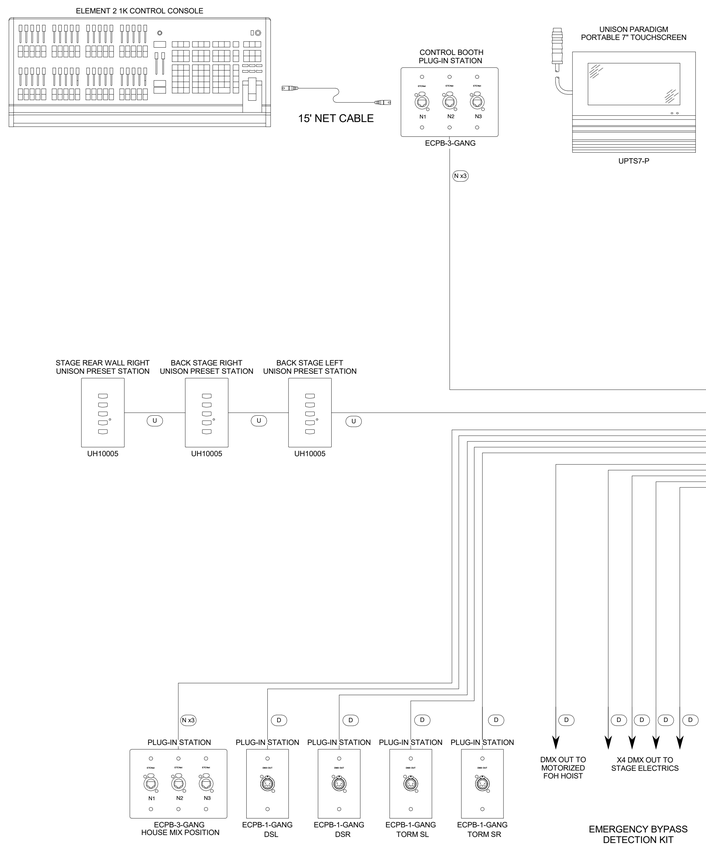
5.) PHASE SEQUENCING FOR 3-PHASE POWER MUST BE OBSERVED AND BE CONSISTENT.

6.) HOIST CONTROL AND EMERGENCY STOP WIRING MUST BE IN GROUNDED METAL CONDUIT UNLESS SHIELDED CABLE (Cat5E STP) IS USED.

7.) ALL ETCNet RUNS SHALL BE CONTINUOUS UNSPLICED RUNS LESS THAN 300 FEET (90 METERS). ALL ETCNet CONNECTIONS TO BE TIA/EIA 568B.

## 1 RIGGING RISER - AUDITORIUM

NOT TO SCALE




| WIRING LEGEND AND CONTROL WIRE NOTES | |
|---|---|
| D (1) TMB PC24ST (DMX) (MAX. LENGTH 300M.) | WIRE TYPE "D" IS DMX PROTOCOL |
| U (1) TMB PCLP1PT (UNISON LINK POWER) (MAX. LENGTH 500M.) | WIRE TYPE "U" IS TMB PCLP1PT ARCHITECTURAL NODE LOW VOLTAGE CABLE. THE STATIONS AND SENSORS ARE TOPOLOGY FREE. YOU CAN DAISY CHAIN, STAR CONFIGURE THE WIRING. |
| B (3) #14 AWG. WIRE (BLUESYSTEM) (MAX. LENGTH 75M.) | WIRE TYPE "B" IS FOR LOW VOLTAGE BLUESYSTEM FIXTURES. NONE OF THESE CONDUCTORS ARE AN AC GROUND; NO CONDUCTORS TO BE GROUNDED TO CONDUIT. |
| N (1) CAT 5e (NET) (MAX. LENGTH 100M. TO SWITCH) | WIRE TYPE "N" IS NETWORK FOLLOW TCP/IP PROTOCOL ALL CAT5E OR CAT6 ARE HOME RUNS TO ARCHITECTURAL CONTROL PANEL. |
| P (2) #16 AWG. WIRE (PANIC) | ALL CONTROL CABLE MUST BE MARKED AND LABELED FOR IDENTIFICATION IN THE FIELD. |

**NOTES:**

1. ALL ELECTRICAL TERMINATIONS, WIRE AND CONDUIT TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL CONTRACTOR TO PROVIDE IN-WALL CABLE LENGTHS FOR ALL NETWORK PORTS AND LABLED ON FACEPLATE.
3. ALL CONTROL, DIMMING, DISTRIBUTION, FIXTURES AND DEVICES IN DRAWINGS AND SCHEDULE SHALL BE PROVIDED BY A "THREATICAL SYSTEM INTERGRATOR" AND SHOULD BE RECEIVED BY THE ELECTRICAL CONTRACTOR AND STORED IN A SECURE, DRY LOCATION.
4. ALL DEVICES ON THIS RISER TO BE PLACED, MOUNTED AND INSTALLED BY ELECTRICAL CONTRACTOR.
5. ALL NON NETWORK LOW VOLTAGE TERMINATIONS AS SHOWN BY THEATRICAL SYSTEM INTEGRATOR.
6. ALL PROGRAMMING TO BE DONE BY THEATRICAL SYSTEM INTEGRATOR.
7. ALL ETHERNET CABLE IS A HOME RUN TO EQUIPMENT RACK, DO NOT EXCEED 100 METERS INCLUDING PORTABLE PLUG-IN EXTENSION WHEN APPLICABLE. FIBER CABLE MM9023 MUST BE USED OVER 100 METERS. ALL NETWORK TERMINATIONS TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR, BY CERTIFIED NETWORK CABLE INSTALLER.
8. THE THEATRICAL SYSTEM INTEGRATOR SHALL HAVE ACCESS TO ALL FIXTURE TYPES AND TEST WHERE REQUIRED FOR DIMMING PERFORMANCE.
9. THE THEATRICAL SYSTEM INTEGRATOR SHALL PROVIDE ALL EQUIPMENT RACKS, THEATRICAL FIXTURES, THEATRICAL FIXTURE/DEVICE SAFETY CABLES AND TERMINATED PLUGS.
10. THE THEATRICAL SYSTEM INTEGRATOR MUST BE A ETC FACTORY CERTIFIED TECHNICIAN.
11. COORDINATE WITH THEATRICAL SYSTEM INTEGRATOR FOR LOW VOLTAGE TERMINATIONS AND PURCHASE OF LIGHTING CONTROL, DEVICES AND SPECIALIZED CONTROL. SYSTEM INTEGRATOR SHALL

PROGRAM A BASIS OF OPERATION AND ASSIST THE DESIGN TEAM IN PROGRAMMING. THE SYSTEM INTEGRATOR SHALL HAVE ON SITE PRESENCE DURING CONSTRUCTION TO COORDINATE CONTROL, DIMMING AND SYSTEMS. THE THEATRICAL SYSTEM INTEGRATOR SHALL BE RESPONSIBLE FOR A COMPLETE WORKING SYSTEM.

12. THE BASIS OF DESIGN IS ETC. ALL SYSTEMS SHALL BE BY ELECTRONIC THEATRE CONTROLS, INC. INFORMATION IS AVAILABLE AT WWW.ETCCONNECT.COM. THIS SYSTEM IS DESIGNED IN ACCORDANCE WITH INFORMATION FROM THE CONSULTANT, ENGINEER AND OWNER.

## 2 PERFORMANCE DIMMING RISER - AUDITORIUM

1 1/2" = 1'-0"

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ELECTRICAL DETAILS

E-604

Sheet No. 42 of 54

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## ELEVATOR EQUIPMENT CIRCUIT INFORMATION

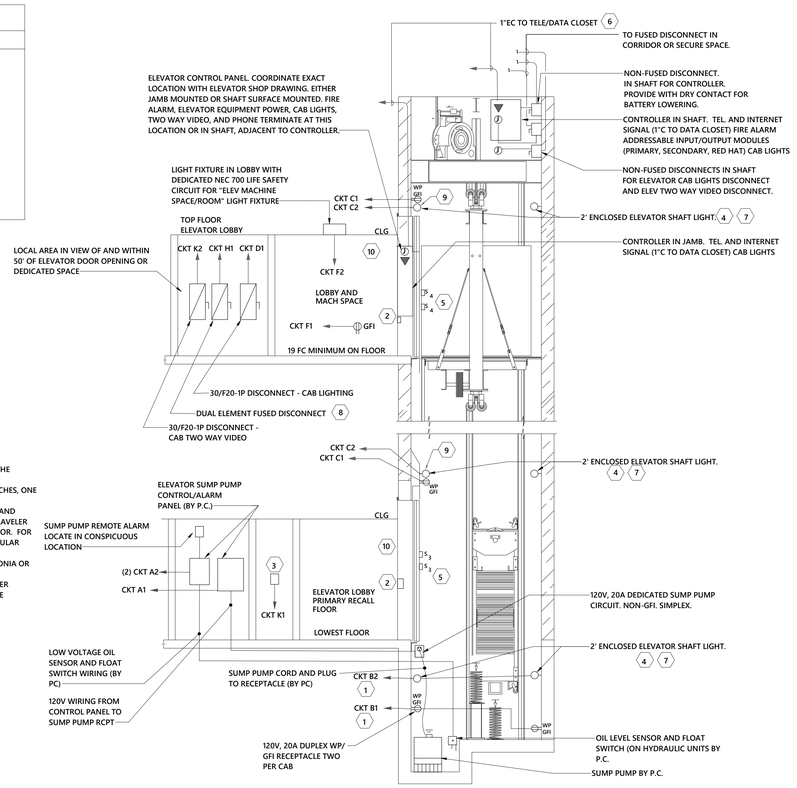
| CKT | ITEM | CONNECTION | PANEL/CKT | NOTES |
|---|---|---|---|---|
| A1 | SUMP PUMP | WP NON-GFI SIMPLEX | RP1A-1 | |
| A2 | SUMP PUMP CONTROL & ALARM | WP NON-GFI SIMPLEX | RP1A-3 | |
| B1 | ELEVATOR PIT RCPT | WP/GFI DUPLEX | RP1A-5 | |
| B2 | ELEVATOR PIT LIGHT | LIGHT FIXTURE | RP1A-7 | |
| C1 | ELEVATOR SHAFT LIGHT | LIGHT FIXTURE | RP1A-9 | |
| C2 | ELEVATOR SHAFT RCPT | WP/GFI DUPLEX | RP1A-11 | |
| D1 | ELEV CAB LIGHTING | 30-1P DISC | RP1A-13 | |
| F1 | ELEV LOBBY RCPT | GFI DUPLEX RCPT | SEE PLANS | |
| F2 | ELEV LOBBY LIGHTS | LIGHT FIXTURE | SEE PLANS | |
| G1 | DESTINATION DISPATCH | 30-1P DISC | RP1A-15 | |
| H1 | ELEVATOR MOTOR | 60/FPN-3P DISC | MP1A-1,3,5 | SEE (8) BELOW |
| K1 | ELEV LOBBY COMM SYSTEM | J-BOX | RP1A-17 | |
| K2 | ELEV LOBBY TWO WAY VIDEO | 30/F20-1P DISC | RP1A-19 | |

## GENERAL NOTES:

A. COORDINATE EXACT LOCATION OF ALL DEVICES WITH ELEVATOR SHOP DRAWINGS PRIOR TO INSTALLATION.
B. LOCATE PIT AND SHAFT LIGHT SWITCH ADJACENT TO CAB DOOR ON EACH FLOOR. LOCATE ONE WP/GFI RECEPTACLE PER CAB PER FLOOR IN SHAFT.

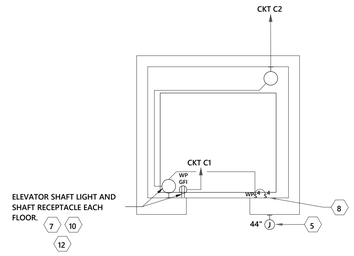
## (#) KEYED NOTES:

1. CONNECT TO DEDICATED 120V CIRCUIT. SEE CHART ABOVE FOR CIRCUIT DESIGNATION.
2. PROVIDE FLUSH JUNCTION BOX FOR TWO-WAY COMMUNICATION BETWEEN EACH ELEVATOR LOBBY LANDING PER IBC 1009.8. PROVIDE 3/4" EMPTY CONDUIT BETWEEN EACH J-BOX.
3. ELEVATOR LOBBY TWO-WAY COMMUNICATION MASTER STATION. COORDINATE LOCATION WITH AHJ.
4. LIGHTS SHALL BE PROVIDED WITH DEDICATED CIRCUIT. LIGHTS SHALL NOT BE CONNECTED TO THE LOAD SIDE TERMINALS OF THE CONVENIENCE RECEPTACLE. PROVIDE SEPARATE CIRCUITS FOR PIT AND SHAFT, AS INDICATED.
5. PROVIDE BOTH A PIT AND SHAFT LIGHT SWITCH AT EACH LEVEL, THREE OR FOUR WAY AS REQUIRED. PROVIDE SEPARATE SWITCHES, ONE FOR PIT LIGHTING AND ONE FOR SHAFT LIGHTING.
6. PROVIDE THREE (3) CATEGORY 6A CABLES TO EACH ELEVATOR CONTROLLER FROM THE LOCAL TELECOM ROOM FOR NETWORK AND EMERGENCY PHONE INTERFACE. EXTEND INCOMING ALALOG DEMARC TO LOCAL TELECOM ROOM AS REQUIRED. ELEVATOR TRAVELER CABLE SHALL BE PROVIDED BY ELEVATOR INSTALLER. COORDINATE LOCATION AND REQUIREMENT WITH ELEVATOR CONTRACTOR. FOR LOCATIONS WHERE POTS LINE IS NOT AVAILABLE, PROVIDE CELLULAR DIALER WITH 4 HOUR BATTERY BACKUP. RATH 2100 CELLULAR GATEWAY OR SIMILAR DEPARTMENT OF LABOR APPROVED UNIT.
7. 2' ENCLOSED ELEVATOR PIT AND SHAFT LIGHT. TYPICAL OF METALUX 2VT2-LDS-5000-DR-UNV-L850-EL-TEH OR EQUAL BY LITHONIA OR WILLIAMS. MAX OF 6" DEEP FIXTURE WITH CONDUIT HUBBED ENDS.
8. DISCONNECT FOR ELEVATOR POWER. PROVIDE SPD AT SOURCE PANEL. FOR SHAFTS, PITS OR MACHINE ROOMS WITH SPRINKLER HEADS, PROVIDE WITH BUSSMAN QUICK-SPEC POWER MODULE WITH SHUNT TRIP FIRE SAFETY INTERFACE RELAY AND VOLTAGE MONITORING RELAY. COORDINATE DISCONNECT AND FUSE SIZE WITH ELEVATOR NAMEPLATE DATA.
9. MOUNT BOTTOM OF LIGHT AND BOTTOM OF RECEPTACLE 12" ABOVE CAB DOOR OPENING ON EACH FLOOR.
10. LIGHTING MINIMUM REQUIREMENTS OF 10 FC ON EACH FLOOR UNLESS OTHERWISE NOTED.

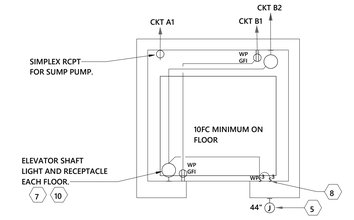



ELEVATOR SHAFT DETAIL

## 2 MACHINE ROOMLESS ELEVATOR NOTES
NO SCALE




TOP LEVEL AND INTERMEDIATE LEVELS DETAIL - 1 CAB




ELEVATOR PIT DETAIL AND FIRST LEVEL DETAIL - 1 CAB

## 1 MACHINE ROOMLESS ELEVATOR DETAIL - 1 CAB
NO SCALE

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ELECTRICAL DETAILS

E-605



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## FEEDER SCHEDULE FOR ALUMINUM CONDUCTORS TO SPECIFIC BREAKER SIZE

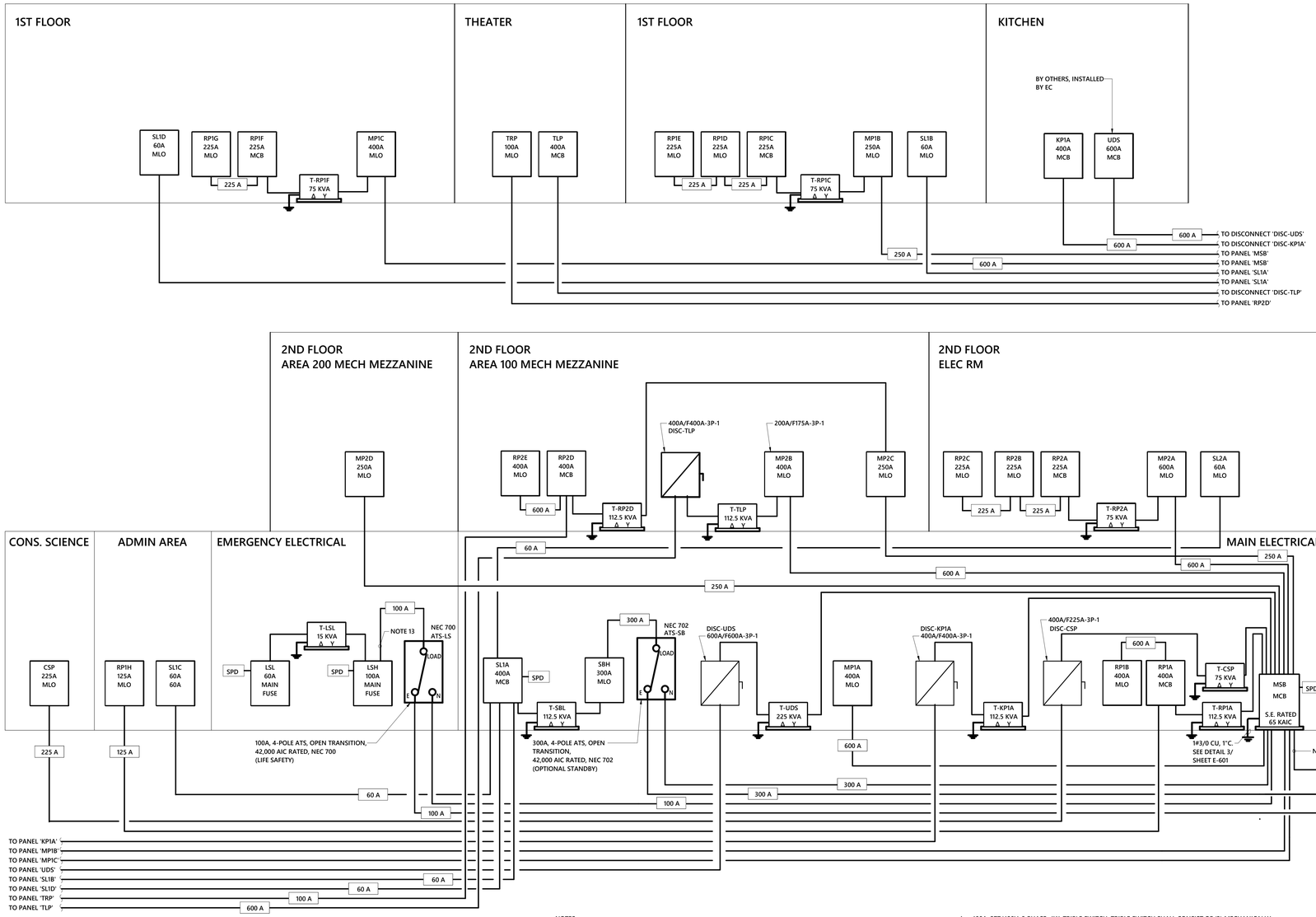
| | |
|---|---|
| 60 A | 4#6 CU, 1#8 CU G, 1-1/4"C |
| 100 A | 4#1/0, 1#6G, 2"C |
| 125 A | 4#2/0, 1#4G, 2"C |
| 225 A | 4-300 KCMIL, 1#2G, 3"C |
| 250 A | 4-350 KCMIL, 1#2G, 3"C |
| 300 A | 4-500 KCMIL, 1#2G, 3-1/2"C |
| 400 AS | (2) 4-250 KCMIL, 3"C |
| | <varies> |
| 2500 AS | (9) 4-500 KCMIL, 4"C |

NOTES:
1.) THE CONTRACTOR SHALL MAKE EVERY PROVISION TO INSTALL ALUMINUM CONDUCTORS CORRECTLY, INCLUDING TERMINATIONS IN PANELBOARDS, DISCONNECTS, ETC. ALL TERMINALS SHALL BE LISTED SUITABLE FOR ALUMINUM. APPLY OXIDE INHIBITING PASTE TO ALUMINUM CONDUCTORS AT TERMINATIONS.

## DRY-TYPE TRANSFORMER SCHEDULE

| TRANSFORMER | VOLTAGE | | KVA | PRIMARY | | SECONDARY | | |
|---|---|---|---|---|---|---|---|---|
| TYPE | PRIMARY | SECONDARY | RATING | BREAKER | WIRE & CONDUIT | BREAKER | WIRE & CONDUIT | SERVICE GROUND |
| T-4 | 480 V | 208Y/120 | 15 | 25 | 3#10 CU, 1#10 CU G., 3/4"C. | 60 | 4#6 CU, 1#8 CU G., 1-1/4"C. | #8 CU, 1"C. |
| T-7 | 480 V | 208Y/120 | 75 | 125 | 3#2/0, 1#4G., 2"C. | 225 | 4-300 KCMIL, 1#1/0G., 3"C. | #2 CU, 1"C. |
| T-8 | 480 V | 208Y/120 | 112.5 | 175 | 3#4/0, 1#4G., 2-1/2"C. | 400 | (2) 4-250 KCMIL, 1#1/0G., 2-1/2"C. | #1/0 CU, 1"C. |
| T-10 | 480 V | 208Y/120 | 225 | 350 | 3-600 KCMIL, 1#1G., 4"C. | 700 | (3) 4-350 KCMIL, 1#4/0G., 3"C. | #2/0 CU, 1"C. |

NOTE: 1. HOUSEKEEPING PADS SHALL HAVE OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE. 2. ALL CONDUCTORS ARE SHOWN FOR ALUMINUM MATERIALS, UNLESS OTHERWISE NOTED.




NOTES:
1. ALL FEES ASSOCIATED WITH UTILITY COMPANY COORDINATION, INCLUDING PURCHASE/LEASE OF UTILITY TRANSFORMER, TRANSFORMER PRIMARY FEES, PAD, AND ALL ADMINISTRATIVE FEES SHALL BE INCLUDED AS PART OF THE E.C. CONTRACT. ALLOWANCE OF $25,000.00 SHALL BE ESTIMATED FOR THE UNDERGROUND TRANSFORMER SERVICE FEE.
2. PROVIDE PERMANENT PLACARD LOCATED ABOVE MAIN SERVICE DISCONNECT. PLACARD SHALL READ: EMERGENCY POWER IS LOCATED OUTSIDE OF MAIN ELECTRICAL ROOM, 200KW DIESEL GENERATOR 480V 3 PHASE.
3. PROVIDE 4" HIGH FORMED CONCRETE HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED ELECTRICAL GEAR.
4. 400A, 277/480V, 3 PHASE, 4W. TRIPLE SWITCH. TRIPLE SWITCH SHALL CONSIST OF (2) MECHANICALLY-INTERLOCKED MOLDED CASE CIRCUIT BREAKERS, AND (1) INDEPENDENT LOAD BANK BREAKER WITH A SHUNT TRIP, MALE CAM-STYLE INLET CONNECTORS, FEMALE CAM-TYLE OUTLET CONNECTORS, DISTRIBUTION BLOCKS AND GROUNDING TERMINALS, ALL HOUSED WITHIN A PADLOCKABLE NEMA 3R ENCLOSURE.
5. 400A QUICK CONNECT CAMLOCK CONNECTIONS FOR THE OWNER TO PROVIDE A ROLL UP STAND-BY GENERATOR.
6. 400A QUICK CONNECT CAMLOCK CONNECTIONS FOR THE OWNER TO PROVIDE A ROLL UP LOAD BANK.
7. PROVIDE DIRECTORY PER NEC 705.10 AT ALL SERVICE LOCATIONS.

1 POWER RISER DIAGRAM
NOT TO SCALE

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ELECTRICAL RISER DIAGRAM

E-701

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# SWITCHBOARD: MSB

**VOLTAGE:** 480Y/277 3Ø | **MAIN TYPE:** MCB | **MFR:**
**MOUNTING:** FLOOR | **PHASE:** 3 | **TYPE:**
**MAIN:** 2500 A | **WIRE:** 4 | **AIC:** 65 KAIC

**MAIN CB NOTES: 3, 4, 6, 7**

| CKT/ID | LOAD SERVED | FRAME | TRIP | POLE | FEEDER | NOTES | Load |
|---|---|---|---|---|---|---|---|
| 1 | PANEL RP1A' VIA T-RP1A | 175 A | 175 A | 3 | | | 86.9 kVA |
| 2 | PANEL 'UDS' VIA T-UDS | 350 A | 350 A | 3 | | | 186.0 kVA |
| 3 | PANEL 'KP1A' VIA T-KP1A | 175 A | 175 A | 3 | | | 90.5 kVA |
| 4 | ATS-LS | 100 A | 100 A | 3 | | NOTE 7 | 27.8 kVA |
| 5 | ATS-SB | 300 A | 300 A | 3 | | NOTE 7 | 192.3 kVA |
| 6 | PANEL 'MP1A' | 400 A | 400 A | 3 | | | 202.7 kVA |
| 7 | PANEL 'MP1B' | 250 A | 250 A | 3 | | | 154.8 kVA |
| 8 | PANEL 'MP1C' | 400 A | 400 A | 3 | | | 139.7 kVA |
| 9 | PANEL 'MP2A' | 600 A | 600 A | 3 | | | 289.8 kVA |
| 10 | PANEL 'MP2B' | 400 A | 400 A | 3 | | | 209.5 kVA |
| 11 | PANEL 'MP2C' | 250 A | 250 A | 3 | | | 152.7 kVA |
| 12 | PANEL 'MP2D' | 250 A | 250 A | 3 | | | 105.5 kVA |
| 13 | PANEL 'CSP' VIA T-CSP | 125 A | 125 A | 3 | | | 52.3 kVA |
| 14 | WH1 | 150 A | 140 A | 3 | | | 90.0 kVA |
| 15 | SPACE FOR FUTURE 400A BREAKER | -- | -- | 3 | | | -- |
| 16 | SPD | 60 A | 60 A | 3 | | NOTE 2, SEE DETAIL #5 / SHEET E-601 | 0.0 kVA |

| Load Classification | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|
| LIGHTS | 136.86 kVA | 125.00% | 171.07 kVA |
| LIGHTING - EXTERIOR | 3.14 kVA | 125.00% | 3.92 kVA |
| HEATING | 95.80 kVA | 100.00% | 95.80 kVA |
| COOLING | 18.30 kVA | 100.00% | 18.30 kVA |
| VENTILATION | 22.61 kVA | 100.00% | 22.61 kVA |
| MOTORS | 783.88 kVA | 100.00% | 783.88 kVA |
| KITCHEN | 252.73 kVA | 65.00% | 164.27 kVA |
| RECEPTACLES | 257.04 kVA | 51.95% | 133.52 kVA |
| WATER HEATER | 121.50 kVA | 100.00% | 121.50 kVA |
| MISC. | 287.80 kVA | 100.00% | 287.80 kVA |
| ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |
| Spare | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 1980.7 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 1803.7 KVA | 2481.3 A | 2446.2 A | 2269.9 A |
| TOTAL AMP. (CONNECTED): | 2382.4 A | | | |
| TOTAL AMP. (DEMAND): | 2169.5 A | | | |

**NOTES:**
1. THIS SWITCHBOARD SHALL BE U.L. LISTED FOR USE AS S.E. EQUIPMENT.
2. PROVIDE WITH TYPE 2 SPD (120kA/MODE, 240kA/PHASE MIN.).
3. PROVIDE BREAKER WITH ADJUSTABLE GFP TRIP FUNCTIONS.
4. BREAKER SHALL BE 100% RATED.
5. PROVIDE BREAKER WITH SHUNT TRIP.
6. PROVIDE BREAKER WITH RELT (MAINTENANCE MODE) SWITCH.
7. PROVIDE BREAKER WITH ADJUSTABLE LSI TRIP FUNCTIONS.
8. SEE RISER DIAGRAM/SHEET E-701 FOR WIRE SIZE.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.

# PANEL: CSP

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** DISC-CSP
**MOUNTING:** RECESSED | **MAIN TYPE:** MCB (NOTE 7)
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | FAMILY/CONS SCIENCES 500: REC | 12 | 20 A | 1 | 1 | 1.26 | 0.90 | | 1 | 2 | 20 A | 12 | FAMILY/CONS SCIENCES 500: REC | R |
| R | FAMILY/CONS SCIENCES 500: REC | 12 | 20 A | 3 | 1 | | 0.90 | 0.90 | 1 | 4 | 20 A | 12 | FAMILY/CONS SCIENCES 500: REC | R |
| MS | REF FAMILY/CONS 500 (NOTE 8) | 12 | 20 A | 5 | 1 | | | 0.50 | 0.50 | 1 | 6 | 20 A | 12 | REF FAMILY/CONS 500 (NOTE 8) | MS |
| MS | REF FAMILY/CONS 500 (NOTE 8) | 12 | 20 A | 7 | 1 | 0.50 | 0.50 | | 1 | 8 | 20 A | 12 | RANGE HOOD | MS |
| MS | RANGE HOOD | 12 | 20 A | 9 | 1 | | 0.50 | 0.50 | 1 | 10 | 20 A | 12 | RANGE HOOD | MS |
| MS | RANGE HOOD | 12 | 20 A | 11 | 1 | | | 0.50 | 0.50 | 1 | 12 | 20 A | 12 | RANGE HOOD | MS |
| MS | RANGE HOOD | 12 | 20 A | 13 | 1 | 0.50 | 3.65 | | | 14 | | | | | |
| MS | RANGE (NOTE 8) | 6 | 50 A | 15 | 2 | | 3.65 | 3.65 | 2 | 16 | 50 A | 6 | RANGE (NOTE 8) | MS |
| | | | | 17 | | | | 3.65 | 3.65 | | 18 | | | | |
| MS | RANGE (NOTE 8) | 6 | 50 A | 19 | 2 | 3.65 | 3.65 | | | 20 | | | | | |
| | | | | 21 | | | 3.65 | 3.65 | 2 | 22 | 50 A | 6 | RANGE (NOTE 8) | MS |
| MS | RANGE (NOTE 8) | 6 | 50 A | 23 | 2 | | | 3.65 | 3.65 | 24 | | | | | |
| | | | | 25 | | 3.65 | -- | | 1 | 26 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 27 | 1 | | 0.00 | -- | 1 | 28 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | 0.00 | -- | 1 | 30 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 | -- | | | 1 | 32 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 33 | 1 | | 0.00 | -- | | 1 | 34 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | 0.00 | -- | 1 | 36 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | -- | | | 1 | 38 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 39 | 1 | | 0.00 | -- | | 1 | 40 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | 0.00 | -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 3.78 kVA | 100.00% | 3.78 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 48.48 kVA | 100.00% | 48.48 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 52.26 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 52.26 kVA | 153.2 A | 146.0 A | 138.3 A |
| TOTAL AMP. (CONNECTED): | 145 A | | | |
| TOTAL AMP. (DEMAND): | 145 A | **TOTAL AMP. (DEMAND) x 125%** | | 181.3 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE MAIN BREAKER WITH SHUNT TRIP
8. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

# PANEL: KP1A

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** DISC-KP1A
**MOUNTING:** RECESSED | **MAIN TYPE:** MCB
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 400 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K | PROOFER CABINET (NOTES 7 & 8) | - | 20 A | 1 | 1 | 2.29 | 0.75 | | 2 | 2 | 50 A | - | PASS-THRU HEATED CABINET (NOTES 7 & 8) | K |
| K | PROOFER CABINET (NOTES 7 & 8) | - | 20 A | 3 | 1 | | 2.29 | 0.75 | | 4 | | | | |
| K | SLICER (NOTES 7 & 8) | - | 20 A | 5 | 1 | | | 0.48 | 0.75 | 2 | 6 | 50 A | - | PASS-THRU HEATED CABINET (NOTES 7 & 8) | K |
| K | FOOD PROCESSOR (NOTES 7 & 8) | - | 20 A | 7 | 1 | 0.91 | 0.75 | | | 8 | | | | | |
| K | ICE DISPENSER (NOTES 7 & 8) | - | 15 A | 9 | 1 | | 0.36 | 1.00 | | | | | | | |
| MS | REACH-IN REF. (NOTES 7 & 8) | - | 20 A | 11 | 1 | | | 0.36 | 0.50 | 1 | 10 | 20 A | 12 | OVERHEAD DOOR | M |
| MS | ICE MAKER (NOTE 7) | 12 | 20 A | 13 | 1 | 1.09 | 0.50 | | 1 | 12 | 20 A | 12 | UDS CONTROLS | MS |
| | | | | 15 | | | | | 1 | 14 | 20 A | 12 | UDS CONTROLS | MS |
| K | DISHWASHER (NOTE 7) | - | 70 A | 17 | 3 | | 6.60 | 1.26 | 1 | 16 | 20 A | 12 | CONVENIENCE REC. | R |
| | | | | 19 | | | | 6.60 | 1.26 | 1 | 18 | 20 A | 12 | CONVENIENCE REC. | R |
| | | | | 21 | | 6.60 | 0.18 | | 1 | 20 | 20 A | 12 | CONVENIENCE REC. | R |
| K | DISHWASHER BOOSTER HEATER (NOTE 7) | - | 90 A | 23 | 3 | | 10.00 | 1.92 | 1 | 22 | 20 A | - | EXHAUST HOOD (NOTE 7) | MS |
| | | | | 25 | | 10.00 | 1.92 | | 1 | 24 | 20 A | - | EXHAUST HOOD (NOTE 7) | MS |
| MS | MILK COOLER (NOTES 7 & 8) | - | 20 A | 27 | 1 | | | 10.00 | 1.92 | 1 | 26 | 20 A | - | EXHAUST HOOD (NOTE 7) | MS |
| MS | MILK COOLER (NOTES 7 & 8) | - | 20 A | 29 | 1 | | 0.26 | 1.92 | | | | | | | |
| K | HEATED SERVING (NOTES 7 & 8) | - | 40 A | 31 | 1 | 3.36 | 1.27 | | | | | | | | |
| K | COLD FOOD SERVING (NOTES 7 & 8) | - | 20 A | 33 | 1 | | 0.44 | 1.27 | | | | | | | |
| K | COLD FOOD SERVING (NOTES 7 & 8) | - | 20 A | 35 | 1 | | | | 0.26 | 0.86 | 1 | 30 | 15 A | - | DEF-1 (NOTE 10) | V |
| MS | PASS-THRU REF. (NOTES 7 & 8) | - | 20 A | 37 | 1 | 0.77 | 1.00 | | 0.44 | 1.27 | 3 | 32 | | | | |
| K | HEATED SERVING (NOTES 7 & 8) | - | 40 A | 39 | 1 | | 3.36 | 1.00 | | | | | | | |
| MS | POS STATION | 12 | 20 A | 41 | 1 | | | 0.50 | 1.00 | 3 | 34 | 15 A | - | KEF-1 (NOTE 10) | V |
| MS | POS STATION | 12 | 20 A | 43 | 1 | 0.50 | -- | | | 36 | | | | | |
| Sp... | SPARE | - | 20 A | 45 | 1 | | 0.00 | -- | | 38 | | | | | |
| Sp... | SPARE | - | 20 A | 47 | 1 | | | 0.00 | -- | 1 | 40 | 15 A | - | MAU-1 (NOTE 10) | M |
| Sp... | SPARE | - | 20 A | 49 | 1 | 0.00 | -- | | | 42 | | | | | |
| Sp... | SPARE | - | 20 A | 51 | 1 | | 0.00 | -- | 1 | 44 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 53 | 1 | | | 0.00 | -- | 1 | 46 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 55 | 1 | 0.00 | -- | | | 1 | 48 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 57 | 1 | | 0.00 | -- | | 1 | 50 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 59 | 1 | | | 0.00 | -- | 1 | 52 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 61 | 1 | 0.00 | -- | | | 1 | 54 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 63 | 1 | | 0.00 | -- | | 1 | 56 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 65 | 1 | | | 0.00 | -- | 1 | 58 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 67 | 1 | 0.00 | -- | | | 1 | 60 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 69 | 1 | | 0.00 | -- | | 1 | 62 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 71 | 1 | | | 0.00 | -- | 1 | 64 | -- | - | SPACE ONLY | |
| | | | | | | | | | | 1 | 66 | -- | - | SPACE ONLY | |
| | | | | | | | | | | 1 | 68 | -- | - | SPACE ONLY | |
| | | | | | | | | | | 1 | 70 | -- | - | SPACE ONLY | |
| | | | | | | | | | | 1 | 72 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 4.68 kVA | 100.00% | 4.68 kVA |
| M | MOTORS | 4.00 kVA | 100.00% | 4.00 kVA |
| K | KITCHEN | 66.73 kVA | 65.00% | 43.37 kVA |
| R | RECEPTACLES | 2.34 kVA | 100.00% | 2.34 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 12.78 kVA | 100.00% | 12.78 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 90.53 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 67.17 kVA | 273.1 A | 277.6 A | 218.4 A |
| TOTAL AMP. (CONNECTED): | 251 A | | | |
| TOTAL AMP. (DEMAND): | 186 A | **TOTAL AMP. (DEMAND) x 125%** | | 233.1 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE / SHEET E-501 FOR WIRE SIZE.
8. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
9. PROVIDE PANEL WITH NEMA 4X STAINESS STEEL COVER.
10. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

# PANEL: MP1A

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 400 A | **WIRE:** 4 | **AIC:** 65 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | | | | 1 | 2 | | | | |
| E | ELEVATOR | 4 | 60 A | 3 | 3 | 7.67 | 7.67 | | 3 | 4 | 20 A | - | WH5 (NOTE 8) | WH |
| | | | | 5 | | | | 7.67 | 4.10 | 6 | | | | |
| L | 1ST FLR AREA 300 DINING LTS | 12 | 20 A | 7 | 1 | 2.66 | 4.00 | | 1 | 8 | 20 A | - | EWH-3.1 (NOTE 8) | H |
| L | 1ST FLR AREA 300 KITCHEN LTS | 12 | 20 A | 9 | 1 | | 2.59 | 4.00 | 1 | 10 | 20 A | - | EWH-3.2 (NOTE 8) | H |
| L | 1ST FLR AREA 300 CORR. LTS | 12 | 20 A | 11 | 1 | | | 2.94 | 3.00 | 1 | 12 | 15 A | - | EWH-3.3 (NOTE 8) | H |
| L | 1ST FLR AREA 300 CORR. LTS | 12 | 20 A | 13 | 1 | 1.42 | 2.66 | | | 14 | | | | | |
| L | 1ST FLR AREA 300 LTS | 12 | 20 A | 15 | 1 | | 2.14 | 2.66 | 3 | 16 | 15 A | - | WSHP-3.1 (NOTE 8) | M |
| L | MECH. MEZZANINE AREA 300 LTS | 12 | 20 A | 17 | 1 | | | 0.31 | 2.66 | 18 | | | | | |
| L | MECH. MEZZANINE GYM LTS | 12 | 20 A | 19 | 1 | 0.76 | 3.32 | | 1 | 20 | 25 A | - | WSHP-3.2 (NOTE 8) | M |
| | | | | 21 | | | 5.33 | 3.32 | 1 | 22 | 25 A | - | WSHP-3.3 (NOTE 8) | M |
| M | P-2 | NOTE 8 | 35 A | 23 | 3 | | | 5.33 | 2.66 | 24 | | | | | |
| | | | | 25 | | 5.33 | 2.66 | | 3 | 26 | 15 A | - | WSHP-K1 (NOTE 8) | M |
| | | | | 27 | | | 5.33 | 2.66 | | 28 | | | | | |
| M | P-4 | NOTE 8 | 35 A | 29 | 3 | | | 5.33 | 2.66 | 30 | | | | | |
| | | | | 31 | | 5.33 | 2.66 | | 3 | 32 | 15 A | - | WSHP-K2 (NOTE 8) | M |
| | | | | 33 | | | | | | 34 | | | | | |
| H | MAU-1 HEAT STRIP | NOTE 10 | 110 A | 35 | 3 | | | 24.33 | 2.66 | 36 | | | | | |
| | | | | 37 | | 24.33 | 2.66 | | 3 | 38 | 15 A | - | WSHP-K3 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 39 | 1 | | 0.00 | 2.66 | | 40 | | | | | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 43 | 1 | 0.00 | 0.00 | | | 1 | 44 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 45 | 1 | | 0.00 | 0.00 | | 1 | 46 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 47 | 1 | | | 0.00 | 0.00 | 1 | 48 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 49 | 1 | 0.00 | 0.00 | | | 1 | 50 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 51 | 1 | | 0.00 | 0.00 | | 1 | 52 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 53 | 1 | | | 0.00 | 0.00 | 1 | 54 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 12.83 kVA | 125.00% | 16.03 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 84.00 kVA | 100.00% | 84.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 93.56 kVA | 100.00% | 93.56 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA |
| WH | WATER HEATER | 12.30 kVA | 100.00% | 12.30 kVA |
| MS | MISC. | 0.00 kVA | 0.00% | 0.00 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 202.69 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 205.89 kVA | 254.4 A | 254.0 A | 229.8 A |
| TOTAL AMP. (CONNECTED): | 244 A | | | |
| TOTAL AMP. (DEMAND): | 248 A | **TOTAL AMP. (DEMAND) x 125%** | | 309.6 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

# PANEL: MP1B

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 250 A | **WIRE:** 4 | **AIC:** 42 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | 24.69 | 3.55 | | 1 | 2 | 25 A | - | WSHP-5.1 (NOTE 8) | M |
| F | PANEL 'RP1C' VIA T-RP1C | NOTE 9 | 125 A | 3 | 3 | | 24.81 | 3.55 | 1 | 4 | 25 A | - | WSHP-5.2 (NOTE 8) | M |
| | | | | 5 | | | | 20.44 | 3.55 | 1 | 6 | 25 A | - | WSHP-5.3 (NOTE 8) | M |
| L | 1ST FLR AREA 500 CLASSROOM LTS | 12 | 20 A | 7 | 1 | 3.62 | 3.55 | | 1 | 8 | 25 A | - | WSHP-5.4 (NOTE 8) | M |
| L | 1ST FLR AREA 500 CLASSROOM LTS | 12 | 20 A | 9 | 1 | | 2.86 | 3.55 | 1 | 10 | 25 A | - | WSHP-5.5 (NOTE 8) | M |
| L | 1ST FLR AREA 500 CLASSROOM LTS | 12 | 20 A | 11 | 1 | | | 1.46 | 3.32 | 1 | 12 | 25 A | - | WSHP-5.6 (NOTE 8) | M |
| L | 1ST FLR AREA 500 CLASSROOM LTS | 12 | 20 A | 13 | 1 | 1.42 | 3.32 | | | 1 | 14 | 25 A | - | WSHP-5.7 (NOTE 8) | M |
| L | 1ST FLR AREA 500 CORRIDOR LTS | 12 | 20 A | 15 | 1 | | 2.57 | 3.55 | | 1 | 16 | 25 A | - | WSHP-5.8 (NOTE 8) | M |
| H | EWH-5.1 (NOTE 8) | - | 20 A | 17 | 1 | | | 4.00 | 2.44 | 18 | | | | | |
| Sp... | SPARE | - | 20 A | 19 | 1 | 0.00 | 2.44 | | 3 | 20 | 15 A | - | WSHP-5.9 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 21 | 1 | | 0.00 | 2.44 | | 22 | | | | | |
| Sp... | SPARE | - | 20 A | 23 | 1 | | | 0.00 | 3.32 | 1 | 24 | 25 A | - | WSHP-5.10 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 25 | 1 | 0.00 | 3.55 | | | 1 | 26 | 25 A | - | WSHP-5.11 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 27 | 1 | | 0.00 | 3.55 | | 1 | 28 | 25 A | - | WSHP-5.12 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | 0.00 | 3.55 | 1 | 30 | 25 A | - | WSHP-5.13 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 | 3.55 | | | 1 | 32 | 25 A | - | WSHP-5.14 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 33 | 1 | | 0.00 | 3.55 | | 1 | 34 | 25 A | - | WSHP-5.15 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | 0.00 | 3.55 | 1 | 36 | 25 A | - | WSHP-5.16 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | 3.32 | | | 1 | 38 | 25 A | - | WSHP-5.17 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 39 | 1 | | 0.00 | 3.32 | | 1 | 40 | 25 A | - | WSHP-5.18 (NOTE 8) | M |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | 0.00 | 2.44 | 1 | 42 | 15 A | - | WSHP-5.20 (NOTE 8) | M |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 11.92 kVA | 125.00% | 14.90 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 4.00 kVA | 100.00% | 4.00 kVA |
| C | COOLING | 2.50 kVA | 100.00% | 2.50 kVA |
| V | VENTILATION | 4.00 kVA | 100.00% | 4.00 kVA |
| M | MOTORS | 68.96 kVA | 100.00% | 68.96 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 49.32 kVA | 60.14% | 29.66 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 14.12 kVA | 100.00% | 14.12 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 154.82 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 138.14 kVA | 194.1 A | 196.8 A | 173.5 A |
| TOTAL AMP. (CONNECTED): | 186 A | | | |
| TOTAL AMP. (DEMAND): | 166 A | **TOTAL AMP. (DEMAND) x 125%** | | 207.7 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.

MSB | CSP | KP1A | | MP1A | MP1B

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ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJ

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## PANEL: MP1C

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
**MAIN:** 400 A | **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 1ST FLR AREA 400 CLASSROOM LTS | 12 | 20 A | 1 | 1 | 1.54 | 22.30 | | | | | | 2 | | | | |
| L | 1ST FLR AREA 400 CLASSROOM LTS | 12 | 20 A | 3 | 1 | | | 2.21 | 22.29 | | | | 4 | 125 A | NOTE 9 | PANEL 'RP1E' VIA T-RP1E | F |
| L | 1ST FLR AREA 400 CLASSROOM LTS | 12 | 20 A | 5 | 1 | | | | | 1.64 | 22.22 | | 6 | | | | |
| L | 1ST FLR AREA 400 CORRIDOR LTS | 12 | 20 A | 7 | 1 | 1.62 | 3.55 | | | | | 1 | 8 | 25 A | - | WSHP-4.10 (NOTE 8) | M |
| L | 1ST FLR AREA 400 CORRIDOR LTS | 12 | 20 A | 9 | 1 | | | 2.75 | 3.55 | | | 1 | 10 | 25 A | - | WSHP-4.11 (NOTE 8) | M |
| M | WSHP-4.1 (NOTE 8) | - | 25 A | 11 | 1 | | | | | 3.55 | 3.55 | 1 | 12 | 25 A | - | WSHP-4.12 (NOTE 8) | M |
| M | WSHP-4.2 (NOTE 8) | - | 25 A | 13 | 1 | 3.55 | 3.55 | | | | | 1 | 14 | 25 A | - | WSHP-4.13 (NOTE 8) | M |
| M | WSHP-4.3 (NOTE 8) | - | 25 A | 15 | 1 | | | 3.32 | 2.66 | | | 1 | 16 | 15 A | - | WSHP-4.14 (NOTE 8) | M |
| M | WSHP-4.4 (NOTE 8) | - | 25 A | 17 | 1 | | | | | 3.32 | 3.55 | 1 | 18 | 25 A | - | WSHP-4.15 (NOTE 8) | M |
| M | WSHP-4.5 (NOTE 8) | - | 25 A | 19 | 1 | 3.55 | 3.55 | | | | | 1 | 20 | 25 A | - | WSHP-4.16 (NOTE 8) | M |
| M | WSHP-4.6 (NOTE 8) | - | 25 A | 21 | 1 | | | 3.55 | 3.32 | | | 1 | 22 | 25 A | - | WSHP-4.17 (NOTE 8) | M |
| M | WSHP-4.8 (NOTE 8) | - | 15 A | 23 | 1 | | | | | 2.66 | 3.32 | 1 | 24 | 25 A | - | WSHP-4.18 (NOTE 8) | M |
| M | WSHP-4.7 (NOTE 8) | - | 25 A | 25 | 1 | 3.32 | 2.44 | | | | | 1 | 26 | 15 A | - | WSHP-4.21 (NOTE 8) | M |
| M | WSHP-4.9 (NOTE 8) | - | 25 A | 27 | 1 | | | 3.32 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | | | 0.00 | 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 33 | 1 | | | 0.00 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | | | 0.00 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 39 | 1 | | | 0.00 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 9.75 kVA | 125.00% | 12.19 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 1.00 kVA | 100.00% | 1.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 4.03 kVA | 100.00% | 4.03 kVA |
| M | MOTORS | 63.18 kVA | 100.00% | 63.18 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 45.36 kVA | 61.02% | 27.68 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 16.42 kVA | 100.00% | 16.42 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 139.74 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 124.50 kVA | 178.5 A | 171.3 A | 158.2 A |
| TOTAL AMP. (CONNECTED): | 168 A | | | |
| TOTAL AMP. (DEMAND): | 150 A | **TOTAL AMP. (DEMAND) x 125%** | | 187.2 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: MP2A

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO | **TYPE:**
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
**MAIN:** 600 A | **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | PANEL 'RP2A' VIA T-RP2A | NOTE 9 | 125 A | 3 | 3 | | | 26.56 | 8.00 | | | 3 | 4 | 40 A | - | WH3 (NOTE 8) | WH |
| L | 2ND FLR AREA 600 CLASSROOM LTS | 12 | 20 A | 7 | 1 | 2.45 | 3.55 | | | | | 1 | 8 | 25 A | - | WSHP-6.12 (NOTE 8) | M |
| L | 2ND FLR AREA 600 CLASSROOM LTS | 12 | 20 A | 9 | 1 | | | 2.88 | 3.55 | | | 1 | 10 | 25 A | - | WSHP-6.13 (NOTE 8) | M |
| L | 2ND FLR AREA 600 CLASSROOM LTS | 12 | 20 A | 11 | 1 | | | | | 1.42 | 3.55 | 1 | 12 | 25 A | - | WSHP-6.14 (NOTE 8) | M |
| L | 2ND FLR AREA 600 CLASSROOM LTS | 12 | 20 A | 13 | 1 | 1.42 | 3.55 | | | | | 1 | 14 | 25 A | - | WSHP-6.15 (NOTE 8) | M |
| L | MECH. MEZZANINE AREA 600 LTS | 12 | 20 A | 15 | 1 | | | 1.28 | 3.55 | | | 1 | 16 | 25 A | - | WSHP-6.16 (NOTE 8) | M |
| L | 2ND FLR AREA 600 CORRIDOR LTS | 12 | 20 A | 17 | 1 | | | | | 2.85 | 3.32 | 1 | 18 | 25 A | - | WSHP-6.17 (NOTE 8) | M |
| L | 2ND FLR AREA 600 COLLAB LTS | 12 | 20 A | 19 | 1 | 3.31 | 3.32 | | | | | 1 | 20 | 25 A | - | WSHP-6.18 (NOTE 8) | M |
| M | WSHP-5.19 (NOTE 8) | - | 25 A | 21 | 1 | | | 3.32 | 3.32 | | | 1 | 22 | 25 A | - | WSHP-6.19 (NOTE 8) | M |
| M | WSHP-6.1 (NOTE 8) | - | 25 A | 23 | 1 | | | | | 3.32 | 3.32 | 1 | 24 | 25 A | - | WSHP-6.20 (NOTE 8) | M |
| M | WSHP-6.2 (NOTE 8) | - | 25 A | 25 | 1 | 3.32 | 3.44 | | | | | | 26 | | | | |
| M | WSHP-6.3 (NOTE 8) | - | 25 A | 27 | 1 | | | 3.55 | 3.44 | | | 3 | 28 | 20 A | - | WSHP-6.21 (NOTE 8) | M |
| M | WSHP-6.4 (NOTE 8) | - | 25 A | 29 | 1 | | | | | 3.55 | 3.44 | | 30 | | | | |
| M | WSHP-6.5 (NOTE 8) | - | 25 A | 31 | 1 | 3.55 | 3.41 | | | | | | 32 | | | | |
| M | WSHP-6.6 (NOTE 8) | - | 25 A | 33 | 1 | | | 3.32 | 3.41 | | | 3 | 34 | 20 A | - | WSHP-6.22 (NOTE 8) | M |
| M | WSHP-6.7 (NOTE 8) | - | 25 A | 35 | 1 | | | | | 3.32 | 3.41 | | 36 | | | | |
| M | WSHP-6.8 (NOTE 8) | - | 25 A | 37 | 1 | 3.55 | 3.41 | | | | | | 38 | | | | |
| M | WSHP-6.9 (NOTE 8) | - | 15 A | 39 | 1 | | | 2.66 | 3.41 | | | 3 | 40 | 20 A | - | WSHP-6.23 (NOTE 8) | M |
| M | WSHP-6.10 (NOTE 8) | - | 15 A | 41 | 1 | | | | | 2.66 | 3.41 | | 42 | | | | |
| M | WSHP-6.11 (NOTE 8) | - | 25 A | 43 | 1 | 3.55 | 2.44 | | | | | 1 | 44 | 15 A | - | WSHP-6.24 (NOTE 8) | M |
| | | | | 45 | | | | 11.74 | 11.74 | | | | 46 | | | | |
| M | DOAS-500 (NOTE 8) | - | 60 A | 47 | 3 | | | | | 11.74 | 11.74 | 3 | 48 | 60 A | - | DOAS-600 (NOTE 8) | M |
| | | | | 49 | | 11.74 | 11.74 | | | | | | 50 | | | | |
| Sp... | SPARE | - | 20 A | 51 | 1 | | | 0.00 | -- | | | 1 | 52 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 53 | 1 | | | | | 0.00 | -- | 1 | 54 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 55 | 1 | 0.00 | -- | | | | | 1 | 56 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 57 | 1 | | | 0.00 | -- | | | 1 | 58 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 59 | 1 | | | | | 0.00 | -- | 1 | 60 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 61 | 1 | 0.00 | -- | | | | | 1 | 62 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 63 | 1 | | | 0.00 | -- | | | 1 | 64 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 15.60 kVA | 125.00% | 19.51 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 4.70 kVA | 100.00% | 4.70 kVA |
| M | MOTORS | 176.99 kVA | 100.00% | 176.99 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 54.18 kVA | 59.23% | 32.09 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 38.34 kVA | 100.00% | 38.34 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 289.81 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 271.63 kVA | 368.8 A | 347.5 A | 333.6 A |
| TOTAL AMP. (CONNECTED): | 349 A | | | |
| TOTAL AMP. (DEMAND): | 327 A | **TOTAL AMP. (DEMAND) x 125%** | | 408.4 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: MP2B

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
**MAIN:** 400 A | **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | 5.00 | 5.50 | | | | | | 2 | | | | |
| WH | WH2 (NOTE 8) | - | 25 A | 3 | 3 | | | 5.00 | 5.50 | | | | 4 | | | | |
| | | | | 5 | | | | | | 5.00 | 5.50 | | 6 | | | | |
| | | | | 7 | | 2.66 | 5.50 | | | | | | 8 | | | | |
| M | WSHP-1.1 (NOTE 8) | - | 15 A | 9 | 3 | | | 2.66 | 5.50 | | | 3 | 10 | 30 A | - | WSHP-1.8 (NOTE 8) | M |
| | | | | 11 | | | | | | 2.66 | 5.50 | | 12 | | | | |
| | | | | 13 | | 2.66 | 4.46 | | | | | | 14 | | | | |
| M | WSHP-1.2 (NOTE 8) | - | 15 A | 15 | 3 | | | 2.66 | 4.46 | | | 3 | 16 | 25 A | - | WSHP-1.9 (NOTE 8) | M |
| | | | | 17 | | | | | | 2.66 | 4.46 | | 18 | | | | |
| | | | | 19 | | 2.66 | 2.66 | | | | | | 20 | | | | |
| M | WSHP-1.3 (NOTE 8) | - | 15 A | 21 | 3 | | | 2.66 | 2.66 | | | 3 | 22 | 15 A | - | WSHP-1.10 (NOTE 8) | M |
| | | | | 23 | | | | | | 2.66 | 2.66 | | 24 | | | | |
| | | | | 25 | | 2.66 | 3.32 | | | | | 1 | 26 | 25 A | - | WSHP-1.11 (NOTE 8) | M |
| M | WSHP-1.4 (NOTE 8) | - | 15 A | 27 | 3 | | | 2.66 | 3.32 | | | 1 | 28 | 25 A | - | WSHP-1.12 (NOTE 8) | M |
| | | | | 29 | | | | | | 2.66 | 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| | | | | 31 | | 4.46 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.9 (NOTE 8) | - | 25 A | 33 | 3 | | | 4.46 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| | | | | 35 | | | | | | 4.46 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| | | | | 37 | | 4.46 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.10 (NOTE 8) | - | 25 A | 39 | 3 | | | 4.46 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | Sp... |
| | | | | 41 | | | | | | 4.46 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.11 (NOTE 8) | - | 15 A | 43 | 1 | 2.44 | 0.00 | | | | | 1 | 44 | 20 A | - | SPARE | Sp... |
| | | | | 45 | | | | 11.74 | 0.00 | | | 1 | 46 | 20 A | - | SPARE | Sp... |
| M | DOAS-400 (NOTE 8) | - | 60 A | 47 | 3 | | | | | 11.74 | 0.00 | 1 | 48 | 20 A | - | SPARE | Sp... |
| | | | | 49 | | 11.74 | 12.85 | | | | | | 50 | | | | |
| Sp... | SPARE | - | 20 A | 51 | 1 | | | 0.00 | 11.66 | | | 3 | 52 | 175 A | NOTE 9 | PANEL 'TLP' VIA 'T-TLP' (NOTE 10) | F |
| Sp... | SPARE | - | 20 A | 53 | 1 | | | | | 0.00 | 12.71 | | 54 | | | | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 30.72 kVA | 125.00% | 38.39 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 157.30 kVA | 100.00% | 157.30 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 21.50 kVA | 100.00% | 21.50 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.
10. PROVIDE BREAKER AS SUB-FEED TYPE.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 209.52 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 217.19 kVA | 264.8 A | 251.7 A | 242.3 A |
| TOTAL AMP. (CONNECTED): | 252 A | | | |
| TOTAL AMP. (DEMAND): | 261 A | **TOTAL AMP. (DEMAND) x 125%** | | 326.6 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: MP2C

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
**MAIN:** 250 A | **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 1ST FLR AREA 100 LTS | 12 | 20 A | 1 | 1 | 3.04 | 3.55 | | | | | 1 | 2 | 25 A | - | WSHP-4.19 (NOTE 8) | M |
| L | 1ST FLR AREA 100 CORR. LTS | 12 | 20 A | 3 | 1 | | | 3.82 | 3.32 | | | 1 | 4 | 25 A | - | WSHP-4.20 (NOTE 8) | M |
| L | 1ST FLR AREA 100 CLASSROOM LTS | 12 | 20 A | 5 | 1 | | | | | 3.98 | -- | 1 | 6 | -- | - | SPACE ONLY | |
| L | 1ST FLR AREA 200 LTS | 12 | 20 A | 7 | 1 | 1.92 | -- | | | | | 1 | 8 | -- | - | SPACE ONLY | |
| L | 1ST FLR AREA 200 LTS | 12 | 20 A | 9 | 1 | | | 2.02 | -- | | | 1 | 10 | -- | - | SPACE ONLY | |
| L | 1ST FLR AREA 200 LTS | 12 | 20 A | 11 | 1 | | | | | 3.01 | -- | 1 | 12 | -- | - | SPACE ONLY | |
| L | 1ST FLR AREA 200 LTS | 12 | 20 A | 13 | 1 | 2.68 | -- | | | | | 1 | 14 | -- | - | SPACE ONLY | |
| L | 1ST FLR AREA 200 CORR. LTS | 12 | 20 A | 15 | 1 | | | 2.47 | -- | | | 1 | 16 | -- | - | SPACE ONLY | |
| L | MECH. MEZZ. AREAS 100 & 400 LTS | 12 | 20 A | 17 | 1 | | | | | 2.36 | -- | 1 | 18 | -- | - | SPACE ONLY | |
| L | MECH. MEZZANINE AREA 200 LTS | 12 | 20 A | 19 | 1 | 0.94 | -- | | | | | 1 | 20 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 21 | 1 | | | 0.00 | -- | | | 1 | 22 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 23 | 1 | | | | | 0.00 | -- | 1 | 24 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 25 | 1 | 0.00 | -- | | | | | 1 | 26 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 27 | 1 | | | 0.00 | -- | | | 1 | 28 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | | | 0.00 | -- | 1 | 30 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 | -- | | | | | 1 | 32 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 33 | 1 | | | 0.00 | -- | | | 1 | 34 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | | | 0.00 | -- | 1 | 36 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | 39.87 | | | | | | 38 | | | | |
| Sp... | SPARE | - | 20 A | 39 | 1 | | | 0.00 | 44.07 | | | 3 | 40 | 125 A | NOTE 9 | PANEL 'RP2D' VIA 'T-RP2D' | F |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | 35.68 | | 42 | | | | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 26.24 kVA | 125.00% | 32.80 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 5.80 kVA | 100.00% | 5.80 kVA |
| C | COOLING | 15.80 kVA | 100.00% | 15.80 kVA |
| V | VENTILATION | 2.13 kVA | 100.00% | 2.13 kVA |
| M | MOTORS | 7.37 kVA | 100.00% | 7.37 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 42.30 kVA | 61.82% | 26.15 kVA |
| WH | WATER HEATER | 4.20 kVA | 100.00% | 4.20 kVA |
| MS | MISC. | 47.88 kVA | 100.00% | 47.88 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 152.72 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 143.13 kVA | 191.6 A | 204.9 A | 162.6 A |
| TOTAL AMP. (CONNECTED): | 184 A | | | |
| TOTAL AMP. (DEMAND): | 172 A | **TOTAL AMP. (DEMAND) x 125%** | | 215.2 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: MP2D

**VOLTAGE:** 480Y/277 3Ø | **FED FROM:** MSB
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
**MAIN:** 250 A | **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | 5.00 | 7.18 | | | | | | 2 | | | | |
| WH | WH4 (NOTE 8) | - | 25 A | 3 | 3 | | | 5.00 | 7.18 | | | 3 | 4 | 40 A | - | WSHP-D1 (NOTE 8) | M |
| | | | | 5 | | | | | | 5.00 | 7.18 | | 6 | | | | |
| M | WSHP-1.5 (NOTE 8) | - | 25 A | 7 | 1 | 3.32 | 5.50 | | | | | | 8 | | | | |
| M | WSHP-1.6 (NOTE 8) | - | 25 A | 9 | 1 | | | 3.32 | 5.50 | | | 3 | 10 | 30 A | - | WSHP-D2 (NOTE 8) | M |
| M | WSHP-2.1 (NOTE 8) | - | 25 A | 11 | 1 | | | | | 3.32 | 5.50 | | 12 | | | | |
| | | | | 13 | | 3.55 | 0.00 | | | | | 1 | 14 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.2 (NOTE 8) | - | 25 A | 15 | 3 | | | 3.55 | 0.00 | | | 1 | 16 | 20 A | - | SPARE | Sp... |
| | | | | 17 | | | | | | 3.55 | 0.00 | 1 | 18 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.3 (NOTE 8) | - | 25 A | 19 | 1 | 3.32 | 0.00 | | | | | 1 | 20 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.4 (NOTE 8) | - | 25 A | 21 | 1 | | | 3.32 | 0.00 | | | 1 | 22 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.5 (NOTE 8) | - | 25 A | 23 | 1 | | | | | 3.32 | 0.00 | 1 | 24 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.6 (NOTE 8) | - | 25 A | 25 | 1 | 3.32 | 0.00 | | | | | 1 | 26 | 20 A | - | SPARE | Sp... |
| | | | | 27 | | | | 3.55 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.7 (NOTE 8) | - | 25 A | 29 | 3 | | | | | 3.55 | 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| | | | | 31 | | 3.55 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | Sp... |
| | | | | 33 | | | | 2.66 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| M | WSHP-2.8 (NOTE 8) | - | 15 A | 35 | 3 | | | | | 2.66 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| | | | | 37 | | 2.66 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 39 | 1 | | | 0.00 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 90.54 kVA | 100.00% | 90.54 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA |
| WH | WATER HEATER | 15.00 kVA | 100.00% | 15.00 kVA |
| MS | MISC. | 0.00 kVA | 0.00% | 0.00 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 105.54 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 105.54 kVA | 135.0 A | 123.0 A | 123.0 A |
| TOTAL AMP. (CONNECTED): | 127 A | | | |
| TOTAL AMP. (DEMAND): | 127 A | **TOTAL AMP. (DEMAND) x 125%** | | 158.7 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP1A

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** T-RP1A
**MOUNTING:** SURFACE | **MAIN TYPE:** MCB | **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **AIC:** 10 KAIC
**MAIN:** 400 A | **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

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## PANEL: RP1B

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** RP1A
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 400 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | GIRLS 312 HAND DRYER (NOTE 9) | 12 | 20 A | 1 | 1 | 1.00 | 0.90 | | | | | 1 | 2 | 20 A | 12 | HEALTH ROOM 2 316: REC | R |
| MS | GIRLS 312 HAND DRYER (NOTE 9) | 12 | 20 A | 3 | 1 | | | 1.00 | 0.72 | | | 1 | 4 | 20 A | 12 | HEALTH ROOM 2 316: REC | R |
| MS | BOYS 314 HAND DRYER (NOTE 9) | 12 | 20 A | 5 | 1 | | | | | 1.00 | 0.72 | 1 | 6 | 20 A | 12 | HEALTH ROOM 2 316: REC | R |
| MS | BOYS 314 HAND DRYER (NOTE 9) | 12 | 20 A | 7 | 1 | 1.00 | 0.72 | | | | | 1 | 8 | 20 A | 12 | HEALTH ROOM 1 317: REC | R |
| R | GIRLS 312 / BOYS 314 REC. | 12 | 20 A | 9 | 1 | | | 0.54 | 0.90 | | | 1 | 10 | 20 A | 12 | HEALTH ROOM 1 317: REC | R |
| R | CONCESSION 315 REC. | 12 | 20 A | 11 | 1 | | | | | 0.54 | 0.72 | 1 | 12 | 20 A | 12 | HEALTH ROOM 1 317: REC | R |
| R | CONCESSION 315 REC. | 12 | 20 A | 13 | 1 | 0.18 | 0.46 | | | | | 1 | 14 | 20 A | 12 | MECH. MEZZANINE AREA 300 REC. | R |
| R | CONCESSION 315 REC. | 12 | 20 A | 15 | 1 | | | 0.18 | 1.08 | | | 1 | 16 | 20 A | 12 | MECH. MEZZANINE GYM REC. | R |
| R | CONCESSION 315 REC. | 12 | 20 A | 17 | 1 | | | | | 0.18 | 0.72 | 1 | 18 | 20 A | 12 | MAIN ELECTRICAL / MECH. REC. | R |
| MS | CORRIDOR C300 EWC (NOTE 7) | 12 | 20 A | 19 | 1 | 0.50 | 0.50 | | | | | 1 | 20 | 20 A | 12 | MAIN ELEC RM LTG CONTROL PNL | MS |
| MS | CORRIDOR C300 EWC (NOTE 7) | 12 | 20 A | 21 | 1 | | | 0.50 | 0.18 | | | 1 | 22 | 20 A | 12 | RECEIVING 304 DED. QUAD | R |
| MS | CORRIDOR C300 EWC (NOTE 7) | 12 | 20 A | 23 | 1 | | | | | 0.50 | 0.18 | 1 | 24 | 20 A | 12 | RECEIVING 304 DED. QUAD | R |
| R | COLLABORATION C300 REC. | 12 | 20 A | 25 | 1 | 1.26 | 0.36 | | | | | 1 | 26 | 20 A | 12 | STORAGE 307B DED. QUAD | R |
| V | EF-2.3, EF-3.5 (NOTE 10) | - | 15 A | 27 | 1 | | | 0.70 | 0.50 | | | 1 | 28 | 20 A | 12 | MECHANICAL CONTROLS | MS |
| MS | RCP1 (NOTE 10) | - | 15 A | 29 | 1 | | | | | 0.04 | 0.20 | 1 | 30 | 15 A | 12 | MOTORIZED DAMPERS | M |
| MS | RCP5 (NOTE 10) | - | 15 A | 31 | 1 | 0.04 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | Sp... |
| MS | HOTBOX | 10 | 20 A | 33 | 1 | | | 1.20 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| MS | HOTBOX | 10 | 20 A | 35 | 1 | | | | | 1.20 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | Sp... |
| | SPACE ONLY | - | -- | 39 | 1 | | | -- | -- | | | 1 | 40 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 41 | 1 | | | | | -- | -- | 1 | 42 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 43 | 1 | -- | -- | | | | | 1 | 44 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 45 | 1 | | | -- | -- | | | 1 | 46 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 47 | 1 | | | | | -- | -- | 1 | 48 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 49 | 1 | -- | -- | | | | | 1 | 50 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 51 | 1 | | | -- | -- | | | 1 | 52 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 53 | 1 | | | | | -- | -- | 1 | 54 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 55 | 1 | -- | -- | | | | | 1 | 56 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 57 | 1 | | | -- | -- | | | 1 | 58 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 59 | 1 | | | | | -- | -- | 1 | 60 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 61 | 1 | -- | -- | | | | | 1 | 62 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 63 | 1 | | | -- | -- | | | 1 | 64 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 65 | 1 | | | | | -- | -- | 1 | 66 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 67 | 1 | -- | -- | | | | | 1 | 68 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 69 | 1 | | | -- | -- | | | 1 | 70 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 71 | 1 | | | | | -- | -- | 1 | 72 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.70 kVA | 100.00% | 0.70 kVA |
| M | MOTORS | 0.30 kVA | 100.00% | 0.30 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 9.90 kVA | 100.00% | 9.90 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 9.52 kVA | 100.00% | 9.52 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. REFER TO KITCHEN EQUIPMENT SCHEDULE SHEET E-501 FOR WIRE SIZE.
9. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
10. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
11. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 20.42 kVA | | | |
| TOTAL KVA (DEMAND): | 20.42 kVA | 58.8 A | 63.7 A | 50.0 A |
| TOTAL AMP. (CONNECTED): | 57 A | | | |
| TOTAL AMP. (DEMAND): | 57 A | **TOTAL AMP. (DEMAND) x 125%** | | 70.9 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP1C

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** T-RP1C
**MOUNTING:** SURFACE | **MAIN TYPE:** MCB
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | CORE CLASSROOM 521: REC | 12 | 20 A | 1 | 1 | 0.54 | 0.54 | | | | | 1 | 2 | 20 A | 12 | CORE CLASSROOM 518: REC | R |
| R | CORE CLASSROOM 521: REC | 12 | 20 A | 3 | 1 | | | 0.72 | 0.72 | | | 1 | 4 | 20 A | 12 | CORE CLASSROOM 518: REC | R |
| R | CORE CLASSROOM 521: REC | 12 | 20 A | 5 | 1 | | | | | 0.72 | 0.72 | 1 | 6 | 20 A | 12 | CORE CLASSROOM 518: REC | R |
| R | CORE CLASSROOM 519: REC | 12 | 20 A | 7 | 1 | 0.54 | 0.54 | | | | | 1 | 8 | 20 A | 12 | CORE CLASSROOM 516: REC | R |
| R | CORE CLASSROOM 519: REC | 12 | 20 A | 9 | 1 | | | 0.72 | 0.72 | | | 1 | 10 | 20 A | 12 | CORE CLASSROOM 516: REC | R |
| R | CORE CLASSROOM 519: REC | 12 | 20 A | 11 | 1 | | | | | 0.72 | 0.72 | 1 | 12 | 20 A | 12 | CORE CLASSROOM 516: REC | R |
| R | CORE CLASSROOM 517: REC | 12 | 20 A | 13 | 1 | 0.54 | 1.18 | | | | | 1 | 14 | 15 A | - | EF-5.1 (NOTE 9) | V |
| R | CORE CLASSROOM 517: REC | 12 | 20 A | 15 | 1 | | | 0.72 | 1.18 | | | 1 | 16 | 15 A | - | EF-5.2 (NOTE 9) | V |
| R | CORE CLASSROOM 517: REC | 12 | 20 A | 17 | 1 | | | | | 0.72 | 0.24 | 1 | 18 | 15 A | - | EF-5.3, EF-5.5, EF-5.7 (NOTE 9) | V |
| R | CORE CLASSROOM 522: REC | 12 | 20 A | 19 | 1 | 0.54 | 0.70 | | | | | 1 | 20 | 15 A | - | EF-5.4 (NOTE 9) | V |
| R | CORE CLASSROOM 522: REC | 12 | 20 A | 21 | 1 | | | 0.72 | 0.70 | | | 1 | 22 | 15 A | - | EF-5.6 (NOTE 9) | V |
| R | CORE CLASSROOM 522: REC | 12 | 20 A | 23 | 1 | | | | | 0.72 | 0.00 | 1 | 24 | 20 A | - | SPARE | Sp... |
| R | CORE CLASSROOM 520: REC | 12 | 20 A | 25 | 1 | 0.54 | 0.00 | | | | | 1 | 26 | 20 A | - | SPARE | Sp... |
| R | CORE CLASSROOM 520: REC | 12 | 20 A | 27 | 1 | | | 0.72 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | Sp... |
| R | CORE CLASSROOM 520: REC | 12 | 20 A | 29 | 1 | | | | | 0.72 | 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| R | CORE CLASSROOM 515: REC | 12 | 20 A | 31 | 1 | 0.54 | -- | | | | | 1 | 32 | -- | - | SPACE ONLY | |
| R | CORE CLASSROOM 515: REC | 12 | 20 A | 33 | 1 | | | 0.72 | -- | | | 1 | 34 | -- | - | SPACE ONLY | |
| R | CORE CLASSROOM 515: REC | 12 | 20 A | 35 | 1 | | | | | 0.72 | -- | 1 | 36 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | -- | | | | | 1 | 38 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 39 | 1 | | | 0.00 | -- | | | 1 | 40 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 2.50 kVA | 100.00% | 2.50 kVA |
| V | VENTILATION | 4.00 kVA | 100.00% | 4.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 49.32 kVA | 60.14% | 29.66 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 14.12 kVA | 100.00% | 14.12 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE
11. PROVIDE PANEL WITH FEED-THRU LUGS.
12. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 69.94 kVA | | | |
| TOTAL KVA (DEMAND): | 50.28 kVA | 211.2 A | 212.2 A | 170.3 A |
| TOTAL AMP. (CONNECTED): | 194 A | | | |
| TOTAL AMP. (DEMAND): | 140 A | **TOTAL AMP. (DEMAND) x 125%** | | 174.5 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP1D

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** RP1C
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | SCIENCE 507: REC | 12 | 20 A | 1 | 1 | 1.08 | 1.08 | | | | | 1 | 2 | 20 A | 12 | SCIENCE 504: REC | R |
| R | SCIENCE 507: REC | 12 | 20 A | 3 | 1 | | | 0.54 | 0.54 | | | 1 | 4 | 20 A | 12 | SCIENCE 504: REC | R |
| R | SCIENCE 507: REC | 12 | 20 A | 5 | 1 | | | | | 0.72 | 0.72 | 1 | 6 | 20 A | 12 | SCIENCE 504: REC | R |
| R | SCIENCE 507: REC | 12 | 20 A | 7 | 1 | 0.54 | 0.54 | | | | | 1 | 8 | 20 A | 12 | SCIENCE 504: REC | R |
| R | SCIENCE 507: REC | 12 | 20 A | 9 | 1 | | | 0.90 | 0.90 | | | 1 | 10 | 20 A | 12 | SCIENCE 504: REC | R |
| MS | SCIENCE 507: EPO | 12 | 20 A | 11 | 1 | | | | | 0.20 | 0.20 | 1 | 12 | 20 A | 12 | SCIENCE 504: EPO | MS |
| R | MATH / SCIENCE FLEX 505: REC | 12 | 20 A | 13 | 1 | 1.08 | 0.54 | | | | | 1 | 14 | 20 A | 12 | CORE CLASSROOM 502: REC | R |
| R | MATH / SCIENCE FLEX 505: REC | 12 | 20 A | 15 | 1 | | | 0.54 | 0.72 | | | 1 | 16 | 20 A | 12 | CORE CLASSROOM 502: REC | R |
| R | MATH / SCIENCE FLEX 505: REC | 12 | 20 A | 17 | 1 | | | | | 0.54 | 0.72 | 1 | 18 | 20 A | 12 | CORE CLASSROOM 502: REC | R |
| R | MATH / SCIENCE FLEX 505: REC | 12 | 20 A | 19 | 1 | 0.54 | 0.72 | | | | | 1 | 20 | 20 A | 12 | STEM LABS 500: REC | R |
| MS | MATH / SCIENCE FLEX 505: EPO | 12 | 20 A | 21 | 1 | | | 0.20 | 0.90 | | | 1 | 22 | 20 A | 12 | STEM LABS 500: REC | R |
| R | CORE CLASSROOM 503: REC | 12 | 20 A | 23 | 1 | | | | | 0.54 | 0.72 | 1 | 24 | 20 A | 12 | STEM LABS 500: REC | R |
| R | CORE CLASSROOM 503: REC | 12 | 20 A | 25 | 1 | 0.72 | 0.20 | | | | | 1 | 26 | 20 A | 12 | STEM LABS 500: EPO | MS |
| R | CORE CLASSROOM 503: REC | 12 | 20 A | 27 | 1 | | | 0.72 | 0.72 | | | 1 | 28 | 20 A | 12 | EC S/C CLASSROOM 501: REC | R |
| R | SCIENCE 506: REC | 12 | 20 A | 29 | 1 | | | | | 1.08 | 0.72 | 1 | 30 | 20 A | 12 | EC S/C CLASSROOM 501: REC | R |
| R | SCIENCE 506: REC | 12 | 20 A | 31 | 1 | 0.54 | 0.90 | | | | | 1 | 32 | 20 A | 12 | EC S/C CLASSROOM 501: REC | R |
| R | SCIENCE 506: REC | 12 | 20 A | 33 | 1 | | | 0.72 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| R | SCIENCE 506: REC | 12 | 20 A | 35 | 1 | | | | | 0.54 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| R | SCIENCE 506: REC | 12 | 20 A | 37 | 1 | 0.90 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | Sp... |
| MS | SCIENCE 506: EPO | 12 | 20 A | 39 | 1 | | | 0.20 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 2.50 kVA | 100.00% | 2.50 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 33.48 kVA | 64.93% | 21.74 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 14.12 kVA | 100.00% | 14.12 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE
11. PROVIDE PANEL WITH FEED-THRU LUGS.
12. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 50.10 kVA | | | |
| TOTAL KVA (DEMAND): | 38.36 kVA | 157.6 A | 146.6 A | 120.3 A |
| TOTAL AMP. (CONNECTED): | 139 A | | | |
| TOTAL AMP. (DEMAND): | 106 A | **TOTAL AMP. (DEMAND) x 125%** | | 133.1 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP1E

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** RP1D
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | RESOURCE 514 REC. | 12 | 20 A | 1 | 1 | 1.26 | 0.50 | | | | | 1 | 2 | 20 A | 12 | CORRIDOR C500 EWC (NOTE 7) | MS |
| R | RESOURCE 512 REC. | 12 | 20 A | 3 | 1 | | | 1.26 | 0.50 | | | 1 | 4 | 20 A | 12 | CORRIDOR C500 EWC (NOTE 7) | MS |
| R | TEACHER WORK ROOM 508 REC. | 12 | 20 A | 5 | 1 | | | | | 1.44 | 0.50 | 1 | 6 | 20 A | 12 | CORRIDOR C500 EWC (NOTE 7) | MS |
| R | TEACHER WORK ROOM 508 REC. | 12 | 20 A | 7 | 1 | 0.54 | 0.50 | | | | | 1 | 8 | 20 A | 12 | CORRIDOR C500 EWC (NOTE 7) | MS |
| MS | TEACH WORK RM 508 REF. (NOTE 7) | 12 | 20 A | 9 | 1 | | | 1.00 | 0.90 | | | 1 | 10 | 20 A | 12 | CORRIDOR C500 REC. | R |
| R | TEACHER WORK ROOM 508 REC. | 12 | 20 A | 11 | 1 | | | | | 0.36 | 0.72 | 1 | 12 | 20 A | 12 | CORRIDOR C500 REC. | R |
| MS | TEACHER WORK ROOM 508 COPIER | 12 | 20 A | 13 | 1 | 1.00 | 1.26 | | | | | 1 | 14 | 20 A | 12 | CORRIDOR C500 REC. | R |
| R | GIRLS 509 / BOYS 513 REC. | 12 | 20 A | 15 | 1 | | | 0.54 | 0.72 | | | 1 | 16 | 20 A | 12 | CORRIDOR C500 REC. | R |
| MS | BOYS 513 HAND DRYER (NOTE 8) | 12 | 20 A | 17 | 1 | | | | | 1.00 | 0.72 | 1 | 18 | 20 A | 12 | CORRIDOR C500 REC. | R |
| MS | BOYS 513 HAND DRYER (NOTE 8) | 12 | 20 A | 19 | 1 | 1.00 | 0.90 | | | | | 1 | 20 | 20 A | 12 | PREP ROOM 505A REC. | R |
| MS | GIRLS 509 HAND DRYER (NOTE 8) | 12 | 20 A | 21 | 1 | | | 1.00 | 1.20 | | | 1 | 22 | 20 A | 12 | PREP ROOM 505A DISH. (NOTE 7) | MS |
| MS | GIRLS 509 HAND DRYER (NOTE 8) | 12 | 20 A | 23 | 1 | | | | | 1.00 | 1.00 | 1 | 24 | 20 A | 12 | PREP ROOM 505A REF. (NOTE 7) | MS |
| C | ODU-6.2 & IDU-6.2 | NOTE 9 | 30 A | 25 27 | 2 | 1.25 | 0.90 | | | | | 1 | 26 | 20 A | 12 | PREP ROOM 504A REC. | R |
| | | | | | | | | 1.25 | 1.20 | | | 1 | 28 | 20 A | 12 | PREP ROOM 504A DISH. (NOTE 7) | MS |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | | | 0.00 | 1.00 | 1 | 30 | 20 A | 12 | PREP ROOM 504A REF. (NOTE 7) | MS |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 33 | 1 | | | 0.00 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | | | 0.00 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 39 | 1 | | | 0.00 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 2.50 kVA | 100.00% | 2.50 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 10.80 kVA | 96.30% | 10.40 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 13.12 kVA | 100.00% | 13.12 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 26.42 kVA | | | |
| TOTAL KVA (DEMAND): | 26.02 kVA | 77.7 A | 81.5 A | 64.5 A |
| TOTAL AMP. (CONNECTED): | 73 A | | | |
| TOTAL AMP. (DEMAND): | 72 A | **TOTAL AMP. (DEMAND) x 125%** | | 90.3 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP1F

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** T-RP1F
**MOUNTING:** SURFACE | **MAIN TYPE:** MCB
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | CORE CLASSROOM 422: REC | 12 | 20 A | 1 | 1 | 0.54 | 0.54 | | | | | 1 | 2 | 20 A | 12 | CORE CLASSROOM 417: REC | R |
| R | CORE CLASSROOM 422: REC | 12 | 20 A | 3 | 1 | | | 0.72 | 0.72 | | | 1 | 4 | 20 A | 12 | CORE CLASSROOM 417: REC | R |
| R | CORE CLASSROOM 422: REC | 12 | 20 A | 5 | 1 | | | | | 0.72 | 0.72 | 1 | 6 | 20 A | 12 | CORE CLASSROOM 417: REC | R |
| R | CORE CLASSROOM 420: REC | 12 | 20 A | 7 | 1 | 0.54 | 0.54 | | | | | 1 | 8 | 20 A | 12 | CORE CLASSROOM 415: REC | R |
| R | CORE CLASSROOM 420: REC | 12 | 20 A | 9 | 1 | | | 0.72 | 0.72 | | | 1 | 10 | 20 A | 12 | CORE CLASSROOM 415: REC | R |
| R | CORE CLASSROOM 420: REC | 12 | 20 A | 11 | 1 | | | | | 0.72 | 0.72 | 1 | 12 | 20 A | 12 | CORE CLASSROOM 415: REC | R |
| R | CORE CLASSROOM 418: REC | 12 | 20 A | 13 | 1 | 0.54 | 0.50 | | | | | 1 | 14 | 20 A | 12 | CORRIDOR C401 EWC (NOTE 7) | MS |
| R | CORE CLASSROOM 418: REC | 12 | 20 A | 15 | 1 | | | 0.72 | 0.50 | | | 1 | 16 | 20 A | 12 | CORRIDOR C401 EWC (NOTE 7) | MS |
| R | CORE CLASSROOM 418: REC | 12 | 20 A | 17 | 1 | | | | | 0.72 | 0.50 | 1 | 18 | 20 A | 12 | CORRIDOR C401 EWC (NOTE 7) | MS |
| R | CORE CLASSROOM 416: REC | 12 | 20 A | 19 | 1 | 0.54 | 1.26 | | | | | 1 | 20 | 20 A | 12 | RESOURCE 414 REC. | R |
| R | CORE CLASSROOM 416: REC | 12 | 20 A | 21 | 1 | | | 0.72 | 1.26 | | | 1 | 22 | 20 A | 12 | RESOURCE 412 REC. | R |
| R | CORE CLASSROOM 416: REC | 12 | 20 A | 23 | 1 | | | | | 0.72 | 1.26 | 1 | 24 | 20 A | 12 | TEACHER WORK ROOM 410 REC. | R |
| R | CORE CLASSROOM 421: REC | 12 | 20 A | 25 | 1 | 0.54 | 0.54 | | | | | 1 | 26 | 20 A | 12 | TEACHER WORK ROOM 410 REC. | R |
| R | CORE CLASSROOM 421: REC | 12 | 20 A | 27 | 1 | | | 0.72 | 0.36 | | | 1 | 28 | 20 A | 12 | TEACHER WORK ROOM 410 REC. | R |
| R | CORE CLASSROOM 421: REC | 12 | 20 A | 29 | 1 | | | | | 0.72 | 1.00 | 1 | 30 | 20 A | 12 | TEACH WORK RM 410 REF. (NOTE 7) | MS |
| R | CORE CLASSROOM 419: REC | 12 | 20 A

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## PANEL: RP1H

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** RP1A
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 125 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | GUIDANCE 200 REC. | 12 | 20 A | 1 | 1 | 1.44 | 0.90 | | | | | 1 | 2 | 20 A | 12 | CORRIDOR C201 REC. | R |
| R | CONFERENCE 201 REC. | 12 | 20 A | 3 | 1 | | | 1.26 | 0.90 | | | 1 | 4 | 20 A | 12 | CORRIDOR C201 REC. | R |
| R | SECRETARY 202 REC. | 12 | 20 A | 5 | 1 | | | | | 1.08 | 1.44 | 1 | 6 | 20 A | 12 | RECEPTION 212 REC. | R |
| R | STUDENT SERVICES 203 REC. | 12 | 20 A | 7 | 1 | 1.08 | 1.26 | | | | | 1 | 8 | 20 A | 12 | HEALTH 213 REC. | R |
| R | OFFICE / TESTING 205 REC. | 12 | 20 A | 9 | 1 | | | 0.90 | 0.90 | | | 1 | 10 | 20 A | 12 | TL 213A / MEN 219 / TLT 228 REC. | R |
| R | OFFICE / TESTING 206 REC. | 12 | 20 A | 11 | 1 | | | | | 0.90 | 1.00 | 1 | 12 | 20 A | 12 | TL 213A HAND DRYER (NOTE 8) | MS |
| R | OFFICE / TESTING 207 REC. | 12 | 20 A | 13 | 1 | 0.90 | 1.08 | | | | | 1 | 14 | 20 A | 12 | SIMS 214 REC. | R |
| R | SRO 208 REC. | 12 | 20 A | 15 | 1 | | | 0.90 | 1.08 | | | 1 | 16 | 20 A | 12 | SECRETARY 215 REC. | R |
| R | TEACHER LOUNGE 209 REC. | 12 | 20 A | 17 | 1 | | | | | 1.26 | 1.26 | 1 | 18 | 20 A | 12 | PRINCIPAL 216 REC. | R |
| R | TEACHER LOUNGE 209 REC. | 12 | 20 A | 19 | 1 | 0.54 | 1.00 | | | | | 1 | 20 | 20 A | 12 | TL 216A HAND DRYER (NOTE 8) | MS |
| R | TEACHER LOUNGE 209 REC. | 12 | 20 A | 21 | 1 | | | 0.18 | 0.90 | | | 1 | 22 | 20 A | 12 | TL 216A / CONFERENCE 217 REC. | R |
| R | TEACHER LOUNGE 209 REC. | 12 | 20 A | 23 | 1 | | | | | 0.18 | 1.08 | 1 | 24 | 20 A | 12 | CONFERENCE 217 REC. | R |
| MS | TEACH LOUNGE 209 REF. (NOTE 7) | 12 | 20 A | 25 | 1 | 1.00 | 0.72 | | | | | 1 | 26 | 20 A | 12 | ASSISTANT PRINCIPAL 216 REC. | R |
| MS | WOMEN 210 HAND DRYER (NOTE 8) | 12 | 20 A | 27 | 1 | | | 1.00 | 1.00 | | | 1 | 28 | 20 A | 12 | MEN 219 HAND DRYER (NOTE 8) | MS |
| MS | MEN 211 HAND DRYER (NOTE 8) | 12 | 20 A | 29 | 1 | | | | | 1.00 | 0.90 | 1 | 30 | 20 A | 12 | WOMEN 220 / CORRIDOR C203 REC. | R |
| R | AREA 200 MECH. MEZZANINE REC. | 12 | 20 A | 31 | 1 | 0.90 | 1.00 | | | | | 1 | 32 | 20 A | 12 | WOMEN 220 HAND DRYER (NOTE 8) | MS |
| R | AREA 200 MECH. MEZZANINE REC. | 12 | 20 A | 33 | 1 | | | 0.90 | 1.08 | | | 1 | 34 | 20 A | 12 | RECORDS 221 REC. | R |
| LE | EXTERIOR FLAGPOLE LIGHTS | 12 | 20 A | 35 | 1 | | | | | 0.18 | 0.90 | 1 | 36 | 20 A | 12 | WORKROOM 222 REC. | R |
| LE | EXTERIOR MONUMENT SIGN LIGHTS | 12 | 20 A | 37 | 1 | 0.25 | 1.00 | | | | | 1 | 38 | 20 A | 12 | WORKROOM 222 COPIER | MS |
| MS | RCP4 (NOTE 9) | - | 15 A | 39 | 1 | | | 0.04 | 1.00 | | | 1 | 40 | 20 A | 12 | WORKROOM 222 REF. (NOTE 7) | MS |
| M | MOTORIZED DAMPERS | 12 | 15 A | 41 | 1 | | | | | 0.50 | 0.36 | 1 | 42 | 20 A | 12 | WORKROOM 222 REC. | R |
| M | MOTORIZED DAMPERS | 12 | 15 A | 43 | 1 | 0.40 | 0.00 | | | | | 1 | 44 | 20 A | - | SPARE | Sp... |
| V | EF-2.1-2.2, EF-2.4-2.5 (NOTE 9) | - | 15 A | 45 | 1 | | | 0.12 | 0.00 | | | 1 | 46 | 20 A | - | SPARE | Sp... |
| V | EF-2.6-2.7 (NOTE 9) | - | 15 A | 47 | 1 | | | | | 0.06 | 0.00 | 1 | 48 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 49 | 1 | 0.00 | 0.00 | | | | | 1 | 50 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 51 | 1 | | | 0.00 | 0.00 | | | 1 | 52 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 53 | 1 | | | | | 0.00 | 0.00 | 1 | 54 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 55 | 1 | 0.00 | 0.00 | | | | | 1 | 56 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 57 | 1 | | | 0.00 | 0.00 | | | 1 | 58 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 59 | 1 | | | | | 0.00 | 0.00 | 1 | 60 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 61 | 1 | 0.00 | 0.00 | | | | | 1 | 62 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 63 | 1 | | | 0.00 | 0.00 | | | 1 | 64 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 65 | 1 | | | | | 0.00 | 0.00 | 1 | 66 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 67 | 1 | 0.00 | 0.00 | | | | | 1 | 68 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 69 | 1 | | | 0.00 | 0.00 | | | 1 | 70 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 71 | 1 | | | | | 0.00 | 0.00 | 1 | 72 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.42 kVA | 125.00% | 0.53 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.18 kVA | 100.00% | 0.18 kVA |
| M | MOTORS | 0.90 kVA | 100.00% | 0.90 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 25.38 kVA | 69.70% | 17.69 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 10.84 kVA | 100.00% | 10.84 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 37.72 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 30.14 kVA | 112.3 A | 101.4 A | 100.8 A |
| TOTAL AMP. (CONNECTED): | 105 A | | | |
| TOTAL AMP. (DEMAND): | 84 A | **TOTAL AMP. (DEMAND) x 125%** | | 104.6 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP2A

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** T-RP2A
**MOUNTING:** SURFACE | **MAIN TYPE:** MCB
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | CORE CLASSROOM 621: REC | 12 | 20 A | 1 | 1 | 0.54 | 0.54 | | | | | 1 | 2 | 20 A | 12 | CORE CLASSROOM 618: REC | R |
| R | CORE CLASSROOM 621: REC | 12 | 20 A | 3 | 1 | | | 0.72 | 0.72 | | | 1 | 4 | 20 A | 12 | CORE CLASSROOM 618: REC | R |
| R | CORE CLASSROOM 621: REC | 12 | 20 A | 5 | 1 | | | | | 0.72 | 0.72 | 1 | 6 | 20 A | 12 | CORE CLASSROOM 618: REC | R |
| R | CORE CLASSROOM 619: REC | 12 | 20 A | 7 | 1 | 0.54 | 0.54 | | | | | 1 | 8 | 20 A | 12 | CORE CLASSROOM 616: REC | R |
| R | CORE CLASSROOM 619: REC | 12 | 20 A | 9 | 1 | | | 0.72 | 0.72 | | | 1 | 10 | 20 A | 12 | CORE CLASSROOM 616: REC | R |
| R | CORE CLASSROOM 619: REC | 12 | 20 A | 11 | 1 | | | | | 0.72 | 0.72 | 1 | 12 | 20 A | 12 | CORE CLASSROOM 616: REC | R |
| R | CORE CLASSROOM 617: REC | 12 | 20 A | 13 | 1 | 0.54 | 1.26 | | | | | 1 | 14 | 20 A | 12 | RESOURCE 614B REC. | R |
| R | CORE CLASSROOM 617: REC | 12 | 20 A | 15 | 1 | | | 0.72 | 1.26 | | | 1 | 16 | 20 A | 12 | RESOURCE 614A REC. | R |
| R | CORE CLASSROOM 617: REC | 12 | 20 A | 17 | 1 | | | | | 0.72 | 1.26 | 1 | 18 | 20 A | 12 | TEACHER WORK ROOM 610 REC. | R |
| R | CORE CLASSROOM 615: REC | 12 | 20 A | 19 | 1 | 0.54 | 0.72 | | | | | 1 | 20 | 20 A | 12 | TEACHER WORK ROOM 610 REC. | R |
| R | CORE CLASSROOM 615: REC | 12 | 20 A | 21 | 1 | | | 0.72 | 0.36 | | | 1 | 22 | 20 A | 12 | TEACHER WORK ROOM 610 REC. | R |
| R | CORE CLASSROOM 615: REC | 12 | 20 A | 23 | 1 | | | | | 0.72 | 1.00 | 1 | 24 | 20 A | 12 | TEACH WORK RM 610 REF. (NOTE 7) | MS |
| R | CORE CLASSROOM 622: REC | 12 | 20 A | 25 | 1 | 0.54 | 1.00 | | | | | 1 | 26 | 20 A | 12 | TEACHER WORK ROOM 610 COPIER | MS |
| R | CORE CLASSROOM 622: REC | 12 | 20 A | 27 | 1 | | | 0.72 | 1.00 | | | 1 | 28 | 20 A | 12 | BOYS 613 HAND DRYER (NOTE 8) | MS |
| R | CORE CLASSROOM 622: REC | 12 | 20 A | 29 | 1 | | | | | 0.72 | 1.00 | 1 | 30 | 20 A | 12 | BOYS 613 HAND DRYER (NOTE 8) | MS |
| R | CORE CLASSROOM 620: REC | 12 | 20 A | 31 | 1 | 0.54 | 1.00 | | | | | 1 | 32 | 20 A | 12 | GIRLS 609 HAND DRYER (NOTE 8) | MS |
| R | CORE CLASSROOM 620: REC | 12 | 20 A | 33 | 1 | | | 0.72 | 1.00 | | | 1 | 34 | 20 A | 12 | GIRLS 609 HAND DRYER (NOTE 8) | MS |
| R | CORE CLASSROOM 620: REC | 12 | 20 A | 35 | 1 | | | | | 0.72 | 0.50 | 1 | 36 | 20 A | 12 | CORRIDOR C601 EWC (NOTE 7) | MS |
| R | CORRIDOR C601 REC. | 12 | 20 A | 37 | 1 | 1.26 | 0.50 | | | | | 1 | 38 | 20 A | 12 | CORRIDOR C601 EWC (NOTE 7) | MS |
| R | CORRIDOR C601 REC. | 12 | 20 A | 39 | 1 | | | 1.44 | 0.50 | | | 1 | 40 | 20 A | 12 | CORRIDOR C601 EWC (NOTE 7) | MS |
| R | GIRLS 609 / BOYS 613 REC. | 12 | 20 A | 41 | 1 | | | | | 0.90 | 0.50 | 1 | 42 | 20 A | 12 | CORRIDOR C601 EWC (NOTE 7) | MS |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 4.70 kVA | 100.00% | 4.70 kVA |
| M | MOTORS | 2.60 kVA | 100.00% | 2.60 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 54.18 kVA | 59.23% | 32.09 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 14.34 kVA | 100.00% | 14.34 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 75.82 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 53.73 kVA | 219.1 A | 224.6 A | 194.7 A |
| TOTAL AMP. (CONNECTED): | 210 A | | | |
| TOTAL AMP. (DEMAND): | 149 A | **TOTAL AMP. (DEMAND) x 125%** | | 186.4 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.
11. PROVIDE PANEL WITH FEED-THRU LUGS.
12. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP2B

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** RP2A
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | SCIENCE/ MATH FLEX 607: REC | 12 | 20 A | 1 | 1 | 1.08 | 1.08 | | | | | 1 | 2 | 20 A | 12 | SCIENCE 608: REC | R |
| R | SCIENCE/ MATH FLEX 607: REC | 12 | 20 A | 3 | 1 | | | 0.54 | 0.54 | | | 1 | 4 | 20 A | 12 | SCIENCE 608: REC | R |
| R | SCIENCE/ MATH FLEX 607: REC | 12 | 20 A | 5 | 1 | | | | | 0.72 | 0.72 | 1 | 6 | 20 A | 12 | SCIENCE 608: REC | R |
| R | SCIENCE/ MATH FLEX 607: REC | 12 | 20 A | 7 | 1 | 0.54 | 0.54 | | | | | 1 | 8 | 20 A | 12 | SCIENCE 608: REC | R |
| R | SCIENCE/ MATH FLEX 607: REC | 12 | 20 A | 9 | 1 | | | 0.90 | 0.90 | | | 1 | 10 | 20 A | 12 | SCIENCE 608: REC | R |
| MS | SCIENCE/ MATH FLEX 607: EPO | 12 | 20 A | 11 | 1 | | | | | 0.20 | 0.20 | 1 | 12 | 20 A | 12 | SCIENCE 608: EPO | MS |
| R | PREP ROOM 605A REC. | 12 | 20 A | 13 | 1 | 0.90 | 0.90 | | | | | 1 | 14 | 20 A | 12 | PREP ROOM 606A REC. | R... |
| MS | PREP ROOM 605A REF. (NOTE 7) | 12 | 20 A | 15 | 1 | | | 1.00 | 1.20 | | | 1 | 16 | 20 A | 12 | PREP ROOM 606A DISH. (NOTE 7) | MI... |
| MS | PREP ROOM 605A DISH. (NOTE 7) | 12 | 20 A | 17 | 1 | | | | | 1.20 | 1.00 | 1 | 18 | 20 A | 12 | PREP ROOM 606A REF. (NOTE 7) | MI... |
| R | SCIENCE 605: REC | 12 | 20 A | 19 | 1 | 1.08 | 1.08 | | | | | 1 | 20 | 20 A | 12 | SCIENCE 606: REC | R |
| R | SCIENCE 605: REC | 12 | 20 A | 21 | 1 | | | 0.54 | 0.54 | | | 1 | 22 | 20 A | 12 | SCIENCE 606: REC | R |
| R | SCIENCE 605: REC | 12 | 20 A | 23 | 1 | | | | | 0.54 | 0.72 | 1 | 24 | 20 A | 12 | SCIENCE 606: REC | R |
| R | SCIENCE 605: REC | 12 | 20 A | 25 | 1 | 0.54 | 0.54 | | | | | 1 | 26 | 20 A | 12 | SCIENCE 606: REC | R |
| MS | SCIENCE 605: EPO | 12 | 20 A | 27 | 1 | | | 0.20 | 0.90 | | | 1 | 28 | 20 A | 12 | SCIENCE 606: EPO | MS |
| R | CORE CLASSROOM 603: REC | 12 | 20 A | 29 | 1 | | | | | 0.54 | 0.20 | 1 | 30 | 20 A | 12 | CORE CLASSROOM 604: REC | R |
| R | CORE CLASSROOM 603: REC | 12 | 20 A | 31 | 1 | 0.72 | 0.54 | | | | | 1 | 32 | 20 A | 12 | CORE CLASSROOM 604: REC | R |
| R | CORE CLASSROOM 603: REC | 12 | 20 A | 33 | 1 | | | 0.72 | 0.72 | | | 1 | 34 | 20 A | 12 | CORE CLASSROOM 604: REC | R |
| R | E/C ES CLASSROOM 601: REC | 12 | 20 A | 35 | 1 | | | | | 0.72 | 0.72 | 1 | 36 | 20 A | 12 | CORE CLASSROOM 604: REC | R |
| R | E/C ES CLASSROOM 601: REC | 12 | 20 A | 37 | 1 | 0.72 | 0.90 | | | | | 1 | 38 | 20 A | 12 | AREA 600 MECH. MEZZANINE REC. | R |
| R | E/C ES CLASSROOM 601: REC | 12 | 20 A | 39 | 1 | | | 0.90 | 0.72 | | | 1 | 40 | 20 A | 12 | AREA 600 MECH. MEZZANINE REC. | R |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 4.70 kVA | 100.00% | 4.70 kVA |
| M | MOTORS | 2.60 kVA | 100.00% | 2.60 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 30.42 kVA | 66.44% | 20.21 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 5.80 kVA | 100.00% | 5.80 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 43.52 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 33.31 kVA | 135.6 A | 130.6 A | 103.7 A |
| TOTAL AMP. (CONNECTED): | 121 A | | | |
| TOTAL AMP. (DEMAND): | 92 A | **TOTAL AMP. (DEMAND) x 125%** | | 115.6 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. PROVIDE PANEL WITH FEED-THRU LUGS.
11. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP2C

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** RP2B
**MOUNTING:** SURFACE | **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | ELEVATOR LOBBY REC. | 12 | 20 A | 1 | 1 | 0.18 | 0.72 | | | | | 1 | 2 | 20 A | 12 | STEM LAB 602: REC | R |
| R | STEM LAB 600A REC. | 12 | 20 A | 3 | 1 | | | 0.90 | 0.90 | | | 1 | 4 | 20 A | 12 | STEM LAB 602: REC | R |
| R | STEM LAB 600A REC. | 12 | 20 A | 5 | 1 | | | | | 1.08 | 0.72 | 1 | 6 | 20 A | 12 | STEM LAB 602: REC | R |
| M | STEM LAB 600A MOTORIZED DOOR | 12 | 20 A | 7 | 1 | 1.00 | 0.20 | | | | | 1 | 8 | 20 A | 12 | STEM LAB 602: EPO | MS |
| M | STEM LAB 600A MOTORIZED DOOR | 12 | 20 A | 9 | 1 | | | 1.00 | 0.00 | | | 1 | 10 | 20 A | - | SPARE | Sp... |
| R | ASSISTANT PRINCIPAL 600C REC. | 12 | 20 A | 11 | 1 | | | | | 1.08 | 0.00 | 1 | 12 | 20 A | - | SPARE | Sp... |
| R | CONFERENCE 600B REC. | 12 | 20 A | 13 | 1 | 1.44 | 0.00 | | | | | 1 | 14 | 20 A | - | SPARE | Sp... |
| V | EF-6.1 (NOTE 9) | - | 15 A | 15 | 1 | | | 1.18 | 0.00 | | | 1 | 16 | 20 A | - | SPARE | Sp... |
| V | EF-6.2 (NOTE 9) | - | 15 A | 17 | 1 | | | | | 1.18 | 0.00 | 1 | 18 | 20 A | - | SPARE | Sp... |
| V | EF-6.3, EF-6.6, EF-6.8 (NOTE 9) | - | 15 A | 19 | 1 | 0.24 | 0.00 | | | | | 1 | 20 | 20 A | - | SPARE | Sp... |
| V | EF-6.4 (NOTE 9) | - | 15 A | 21 | 1 | | | 0.70 | 0.00 | | | 1 | 22 | 20 A | - | SPARE | Sp... |
| V | EF-6.5 (NOTE 9) | - | 15 A | 23 | 1 | | | | | 0.70 | 0.00 | 1 | 24 | 20 A | - | SPARE | Sp... |
| V | EF-6.7 (NOTE 9) | - | 15 A | 25 | 1 | 0.70 | 0.00 | | | | | 1 | 26 | 20 A | - | SPARE | Sp... |
| MS | RCP3 (NOTE 9) | - | 15 A | 27 | 1 | | | 0.04 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | Sp... |
| M | MOTORIZED DAMPERS | 12 | 15 A | 29 | 1 | | | | | 0.20 | 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| M | MOTORIZED DAMPERS | 12 | 15 A | 31 | 1 | 0.20 | -- | | | | | 1 | 32 | -- | - | SPACE ONLY | |
| M | MOTORIZED DAMPERS | 12 | 15 A | 33 | 1 | | | 0.20 | -- | | | 1 | 34 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 35 | 1 | | | | | -- | -- | 1 | 36 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 37 | 1 | -- | -- | | | | | 1 | 38 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 39 | 1 | | | -- | -- | | | 1 | 40 | -- | - | SPACE ONLY | |
| | SPACE ONLY | - | -- | 41 | 1 | | | | | -- | -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 4.70 kVA | 100.00% | 4.70 kVA |
| M | MOTORS | 2.60 kVA | 100.00% | 2.60 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 6.66 kVA | 100.00% | 6.66 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 0.60 kVA | 100.00% | 0.60 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 14.56 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 14.56 kVA | 39.0 A | 41.3 A | 41.6 A |
| TOTAL AMP. (CONNECTED): | 40 A | | | |
| TOTAL AMP. (DEMAND): | 40 A | **TOTAL AMP. (DEMAND) x 125%** | | 50.5 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE.
10. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: RP2D

**VOLTAGE:** 208Y/120 3Ø | **FED FROM:** T-RP2D
**MOUNTING:** SURFACE | **MAIN TYPE:** MCB
**ENCLOSURE:** NEMA1 | **PHASE:** 3 | **TYPE:** 20-IN. WIDE
**MAIN:** 400 A | **WIRE:** 4 | **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | PANEL 'TRP' | NOTE 12 | 100 A | 1 | 6.20 | 1.08 | | | | | | 1 | 2 | 20 A | 12 | INSTRUMENTAL MUSIC 100: REC | R |
| | | | | 3 | | | 6.48 | 0.90 | | | | 1 | 4 | 20 A | 12 | INSTRUMENTAL MUSIC 100: REC | R |
| | | | | 5 | | | | | 2.80 | 1.08 | | 1 | 6 | 20 A | 12 | INSTRUMENTAL MUSIC 100: REC | R |
| R | CORRIDOR C101 REC. | 12 | 20 A | 7 | 1 | 0.90 | 1.08 | | | | | 1 | 8 | 20 A | 12 | VOCAL MUSIC 101: REC | R |
| R | AREA 100 EXTERIOR REC. | 12 | 20 A | 9 | 1 | | | 0.54 | 0.90 | | | 1 | 10 | 20 A | 12 | VOCAL MUSIC 101: REC | R |
| R | CORRIDOR C101 REC. | 12 | 20 A | 11 | 1 | | | | | 0.90 | 1.26 | 1 | 12 | 20 A | 12 | VOCAL MUSIC 101: REC | R |
| R | STOR 105D / GREEN RM 106 REC. | 12 | 20 A | 13 | 1 | 1.44 | 1.08 | | | | | 1 | 14 | 20 A | 12 | DRAMA 102: REC | R |
| R | DRESS 107 / DRESS 108 REC. | 12 | 20 A | 15 | 1 | | | 1.26 | 0.90 | | | 1 | 16 | 20 A | 12 | DRAMA 102: REC | R |
| R | ITINERANT TEACH OFFICES 402 REC. | 12 | 20 A | 17 | 1 | | | | | 0.54 | 1.26 | 1 | 18 | 20 A | 12 | DRAMA 102: REC | R |
| R | ITINERANT TEACH OFFICES 402 REC. | 12 | 20 A | 19 | 1 | 0.72 | 0.90 | | | | | 1 | 20 | 20 A | 12 | ART 103: REC | R |
| R | CORRIDOR C400 REC. | 12 | 20 A | 21 | 1 | | | 0.90 | 1.26 | | | 1 | 22 | 20 A | 12 | ART 103: REC | R |
| MS | TLT 110 HAND DRYER (NOTE 10) | 12 | 20 A | 23 | 1 | | | | | 1.00 | 0.72 | 1 | 24 | 20 A | 12 | ART 103: REC | R |
| MS | BOYS 109 HAND DRYER (NO

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## PANEL: TLP

**VOLTAGE:** 208Y/120 3Ø
**FED FROM:** DISC-TLP
**MOUNTING:** SURFACE
**MAIN TYPE:** MCB
**MFR:** SEE PERF. DIMMING RISER
**ENCLOSURE:** NEMA1
**PHASE:** 3
**TYPE:** SEE PERF. DIMMING RISER
**MAIN:** 400 A
**WIRE:** 4
**AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | 0.83 -- | | | 1 | 2 | -- | - | SPACE ONLY | |
| M | THEATRICAL RIGGING | 12 | 20 A | 3 | 3 | | 0.83 -- | | 1 | 4 | -- | - | SPACE ONLY | |
| | | | | 5 | | | | 0.83 -- | 1 | 6 | -- | - | SPACE ONLY | |
| L | FOH THEATRICAL LTS | 12 | 20 A | 7 | 1 | 1.00 1.00 | | | 1 | 8 | 20 A | 12 | FOH THEATRICAL LTS | L |
| L | FOH THEATRICAL LTS | 12 | 20 A | 9 | 1 | | 1.00 1.00 | | 1 | 10 | 20 A | 12 | FOH THEATRICAL LTS | L |
| L | FOH THEATRICAL LTS | 12 | 20 A | 11 | 1 | | | 1.00 1.00 | 1 | 12 | 20 A | 12 | FOH THEATRICAL LTS | L |
| L | ELEC1 THEATRICAL LTS | 12 | 20 A | 13 | 1 | 1.00 1.00 | | | 1 | 14 | 20 A | 12 | ELEC1 THEATRICAL LTS | L |
| L | ELEC1 THEATRICAL LTS | 12 | 20 A | 15 | 1 | | 1.00 1.00 | | 1 | 16 | 20 A | 12 | ELEC1 THEATRICAL LTS | L |
| L | ELEC1 THEATRICAL LTS | 12 | 20 A | 17 | 1 | | | 1.00 1.00 | 1 | 18 | 20 A | 12 | ELEC1 THEATRICAL LTS | L |
| L | ELEC2 THEATRICAL LTS | 12 | 20 A | 19 | 1 | 1.00 1.00 | | | 1 | 20 | 20 A | 12 | ELEC2 THEATRICAL LTS | L |
| L | ELEC2 THEATRICAL LTS | 12 | 20 A | 21 | 1 | | 1.00 1.00 | | 1 | 22 | 20 A | 12 | ELEC2 THEATRICAL LTS | L |
| L | ELEC2 THEATRICAL LTS | 12 | 20 A | 23 | 1 | | | 1.00 1.00 | 1 | 24 | 20 A | 12 | ELEC2 THEATRICAL LTS | L |
| L | ELEC3 THEATRICAL LTS | 12 | 20 A | 25 | 1 | 1.00 1.00 | | | 1 | 26 | 20 A | 12 | ELEC3 THEATRICAL LTS | L |
| L | ELEC3 THEATRICAL LTS | 12 | 20 A | 27 | 1 | | 1.00 1.00 | | 1 | 28 | 20 A | 12 | ELEC3 THEATRICAL LTS | L |
| L | ELEC3 THEATRICAL LTS | 12 | 20 A | 29 | 1 | | | 1.00 1.00 | 1 | 30 | 20 A | 12 | ELEC3 THEATRICAL LTS | L |
| L | TORMENTOR LIGHT | 12 | 20 A | 31 | 1 | 0.20 0.20 | | | 1 | 32 | 20 A | 12 | TORMENTOR LIGHT | L |
| L | TORMENTOR LIGHT | 12 | 20 A | 33 | 1 | | 0.20 0.20 | | 1 | 34 | 20 A | 12 | TORMENTOR LIGHT | L |
| MS | LTG PLUG-IN STATION | 12 | 20 A | 35 | 1 | | | 1.00 1.00 | 1 | 36 | 20 A | 12 | LTG PLUG-IN STATION | MS |
| MS | LTG PLUG-IN STATION | 12 | 20 A | 37 | 1 | 1.00 1.00 | | | 1 | 38 | 20 A | 12 | LTG PLUG-IN STATION | MS |
| L | STAGE HOUSE LTS (NOTE 6) | 12 | 20 A | 39 | 1 | | 0.62 0.00 | | 1 | 40 | 20 A | - | SPARE | Sp... |
| L | AUD. PENDANT LIGHTS (NOTE 6) | 12 | 20 A | 41 | 1 | | | 0.36 1.52 | 1 | 42 | 20 A | 12 | AUD. EMR. DOWNLIGHTS (NOTE 6) | L |
| L | AUD. WALL SCONCES (NOTE 6) | 12 | 20 A | 43 | 1 | 0.09 1.52 | | | 1 | 44 | 20 A | 12 | AUD. EMR. DOWNLIGHTS (NOTE 6) | L |
| Sp... | SPARE | - | 20 A | 45 | 1 | | 0.00 1.80 | | 1 | 46 | 20 A | 12 | AUD. AISLE LIGHTING (NOTE 6) | L |
| Sp... | SPARE | - | 20 A | 47 | 1 | | | 0.00 0.00 | 1 | 48 | 20 A | - | SPARE | Sp... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 30.72 kVA | 125.00% | 38.39 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 6.50 kVA | 100.00% | 6.50 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 37.22 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 44.89 kVA | 108.4 A | 97.1 A | 107.3 A |
| TOTAL AMP. (CONNECTED): | 103 A | | | |
| TOTAL AMP. (DEMAND): | 125 A | **TOTAL AMP. (DEMAND) x 125%** | | 155.8 A |

**NOTES:**
1. DMX CAPABILITY REQUIRED FOR PANEL.
2. ALL LIGHTING SHALL BE CAPABLE OF BEING CONTROLLED FROM MASTER THEATRICAL CONTROL PANEL.
3. ALL DIMMER BRANCH CIRCUITS REQUIRE INDIVIDUAL NEUTRALS.
4. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
5. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
6. COORDINATE DIMMING CABLING REQUIREMENTS WITH PERFORMANCE DIMMING RISER DIAGRAM ON SHEET E-604. THEATRICAL LIGHTING SPECIFICATION 116161, AND FIXTURE DIMMING TYPE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## PANEL: TRP

**VOLTAGE:** 208Y/120 3Ø
**FED FROM:** RP2D
**MOUNTING:** SURFACE
**MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1
**PHASE:** 3
**TYPE:** 20-IN. WIDE
**MAIN:** 100 A
**WIRE:** 4
**AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | MOTORIZED DOOR | 12 | 20 A | 1 | 1 | 1.00 1.50 | | | 1 | 2 | 30 A | 10 | STAGE 105C L5-30R | MS |
| R | WIRELESS MIC REC. | 12 | 20 A | 3 | 1 | | 0.36 1.50 | | 1 | 4 | 30 A | 10 | STAGE 105C L5-30R | MS |
| R | WIRELESS MIC REC. | 12 | 20 A | 5 | 1 | | | 0.36 0.36 | 1 | 6 | 20 A | 12 | STAGE 105C REC. | R |
| R | RECEPTACLES STAGE 105C | 12 | 20 A | 7 | 1 | 0.72 0.36 | | | 1 | 8 | 20 A | 12 | STAGE 105C REC. | R |
| MS | PROJ. SCREEN DISCONNECT | 12 | 20 A | 9 | 1 | | 1.00 0.36 | | 1 | 10 | 20 A | 12 | STAGE 105C REC. | R |
| R | RECEPTACLES AUDITORIUM 105 | 12 | 20 A | 11 | 1 | | | 0.54 0.00 | 1 | 12 | 20 A | - | SPARE | Sp... |
| R | RECEPTACLES AUDITORIUM-2 105-2 | 12 | 20 A | 13 | 1 | 0.72 0.00 | | | 1 | 14 | 20 A | - | SPARE | Sp... |
| R | RECEPTACLES AUDITORIUM-2 105-2 | 12 | 20 A | 15 | 1 | | 0.90 0.00 | | 1 | 16 | 20 A | - | SPARE | Sp... |
| R | FLOOR BOX AUDITORIUM | 12 | 20 A | 17 | 1 | | | 0.18 0.00 | 1 | 18 | 20 A | - | SPARE | Sp... |
| R | FLOOR BOX AUDITORIUM | 12 | 20 A | 19 | 1 | 0.18 0.00 | | | 1 | 20 | 20 A | - | SPARE | Sp... |
| | | | | 21 | | | 0.00 0.00 | | 1 | 22 | 20 A | - | SPARE | Sp... |
| MS | EMERGENCY BYPASS SENSE FEED | 12 | 20 A | 23 | 3 | | | 0.00 0.00 | 1 | 24 | 20 A | - | SPARE | Sp... |
| | | | | 25 | | 0.00 0.00 | | | 1 | 26 | 20 A | - | SPARE | Sp... |
| MS | DMX BYPASS NORMAL FEED | 12 | 20 A | 27 | 1 | | 1.00 0.00 | | 1 | 28 | 20 A | - | SPARE | Sp... |
| L | THEATRICAL LTG EQUIP. RACK | 12 | 20 A | 29 | 1 | | | 1.00 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| R | RECEPTACLES TECH. 105A | 12 | 20 A | 31 | 1 | 0.72 -- | | | 1 | 32 | -- | - | SPACE ONLY | |
| R | RECEPTACLES TECH. 105A | 12 | 20 A | 33 | 1 | | 0.36 -- | | 1 | 34 | -- | - | SPACE ONLY | |
| R | DED. QUAD TECH. 105A | 12 | 20 A | 35 | 1 | | | 0.36 -- | 1 | 36 | -- | - | SPACE ONLY | |
| MS | AUDITORIUM PROJECTOR | 12 | 20 A | 37 | 1 | 1.00 -- | | | 1 | 38 | -- | - | SPACE ONLY | |
| MS | AUDITORIUM PROJECTOR | 12 | 20 A | 39 | 1 | | 1.00 -- | | 1 | 40 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | 0.00 -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 6.48 kVA | 100.00% | 6.48 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 8.00 kVA | 100.00% | 8.00 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 15.48 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 15.48 kVA | 56.0 A | 58.4 A | 23.3 A |
| TOTAL AMP. (CONNECTED): | 43 A | | | |
| TOTAL AMP. (DEMAND): | 43 A | **TOTAL AMP. (DEMAND) x 125%** | | 53.7 A |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.

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3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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PANEL SCHEDULES

E-706

Sheet No. 49 of 54

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## NEC 700 PANEL: LSH

**VOLTAGE:** 480Y/277 3Ø **FED FROM:** ATS-LS
**MOUNTING:** SURFACE **MAIN TYPE:** MAIN FUSE **MFR:** COOPER BUSSMAN
**ENCLOSURE:** NEMA1 **PHASE:** 3 **TYPE:** FUSED
**MAIN:** 100 A **WIRE:** 4 **AIC:** 42 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | 1.98 | 0.12 | | | | | 1 | 2 | 20 A | 12 | MECHANICAL STAIR M301 LIGHTS | L |
| MS | PANEL 'LSL' VIA T-LSL | NOTE 9 | 25 A | 3 | 3 | | | 3.22 | 0.28 | | | 1 | 4 | 20 A | 12 | STAIR 2 SS01 LIGHTS | L |
| | | | | 5 | | | | | | 2.52 | 0.03 | 1 | 6 | 20 A | 12 | ELEV CLOSET LIGHTS | L |
| LE | EXTERIOR LTS | 12 | 20 A | 7 | 1 | 1.50 | 0.02 | | | | | 1 | 8 | 20 A | 12 | ELEV LOBBY LIGHTS | L |
| LE | EXTERIOR LTS | 12 | 20 A | 9 | 1 | | | 1.39 | 0.00 | | | 1 | 10 | 20 A | - | SPARE | S... |
| L | AREA 100 EM. LTS | 12 | 20 A | 11 | 1 | | | | | 2.86 | 0.00 | 1 | 12 | 20 A | - | SPARE | S... |
| L | AREA 200 EM. LTS | 12 | 20 A | 13 | 1 | 2.79 | 0.00 | | | | | 1 | 14 | 20 A | - | SPARE | S... |
| L | AREA 300 EM. LTS | 12 | 20 A | 15 | 1 | | | 3.02 | 0.00 | | | 1 | 16 | 20 A | - | SPARE | S... |
| L | AREA 300 EM. LTS | 12 | 20 A | 17 | 1 | | | | | 1.45 | 0.00 | 1 | 18 | 20 A | - | SPARE | S... |
| L | AREA 400 EM. LTS | 12 | 20 A | 19 | 1 | 1.51 | 0.00 | | | | | 1 | 20 | 20 A | - | SPARE | S... |
| L | AREA 500 EM. LTS | 12 | 20 A | 21 | 1 | | | 1.32 | 0.00 | | | 1 | 22 | 20 A | - | SPARE | S... |
| L | AREA 600 EM. LTS | 12 | 20 A | 23 | 1 | | | | | 2.46 | 0.00 | 1 | 24 | 20 A | - | SPARE | S... |
| L | MEZZ AREA 100/400 EM. LTS | 12 | 20 A | 25 | 1 | 0.44 | 0.00 | | | | | 1 | 26 | 20 A | - | SPARE | S... |
| L | MEZZ AREA 200 EM. LTS | 12 | 20 A | 27 | 1 | | | 0.20 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | S... |
| L | MEZZ AREA 300 EM. LTS | 12 | 20 A | 29 | 1 | | | | | 0.14 | 0.00 | 1 | 30 | 20 A | - | SPARE | S... |
| L | MEZZ AREA 600 EM. LTS | 12 | 20 A | 31 | 1 | 0.34 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | S... |
| L | MEZZ GYM EM. LTS | 12 | 20 A | 33 | 1 | | | 0.20 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 35 | 1 | | | | | 0.00 | 0.00 | 1 | 36 | 20 A | - | SPARE | S... |
| | | | | 37 | | 0.00 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | S... |
| MS | SPD (NOTE 8) | 6 | 30 A | 39 | 3 | | | 0.00 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | S... |
| | | | | 41 | | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | S... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand | NOTES: |
|---|---|---|---|---|---|
| L | LIGHTS | 21.03 kVA | 125.00% | 26.28 kVA | 1. FRAME SHALL BE AS REQ'D PER PANEL AIC RATING. |
| LE | LIGHTING - EXTERIOR | 2.72 kVA | 125.00% | 3.39 kVA | 2. BASED ON COOPER BUSSMANN FUSE PANEL WITH BRANCH FUSES FOR |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA | SELECTIVE COORDINATION. |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA | 3. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS. |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA | 4. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK. |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA | 5. PROVIDE METAL DIRECTORY FRAME. |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA | 6. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER. |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA | 7. THIS PANEL SHALL BE U.L. LISTED FOR USE AS S.E. EQUIP. |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA | 8. PROVIDE WITH TYPE 1 SPD (120kA / MODE, 240kA / PHASE MIN.). |
| MS | MISC. | 4.06 kVA | 100.00% | 4.06 kVA | |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA | |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA | |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA | |

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 27.80 kVA | | | |
| TOTAL KVA (DEMAND): | 33.74 kVA | 31.4 A | 35.2 A | 34.6 A |
| TOTAL AMP. (CONNECTED): | 33 A | | | |
| TOTAL AMP. (DEMAND): | 41 A | **TOTAL AMP. (DEMAND) x 125%** | | 50.7 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## NEC 700 PANEL: LSL

**VOLTAGE:** 208Y/120 3Ø **FED FROM:** T-LSL
**MOUNTING:** SURFACE **MAIN TYPE:** MAIN FUSE **MFR:** COOPER BUSSMAN
**ENCLOSURE:** NEMA1 **PHASE:** 3 **TYPE:** FUSED
**MAIN:** 60 A **WIRE:** 4 **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | LS DMX EMERGENCY BYPASS INPUT | 12 | 20 A | 1 | 1 | 0.36 | 0.00 | | | | | 1 | 2 | 20 A | - | SPARE | S... |
| MS | AUD. EMERGENCY BYPASS | 12 | 20 A | 3 | 1 | | | 1.00 | 0.00 | | | 1 | 4 | 20 A | - | SPARE | S... |
| MS | FACP (NOTE 10) | 12 | 20 A | 5 | 1 | | | | | 0.50 | 0.00 | 1 | 6 | 20 A | - | SPARE | S... |
| MS | BDA (NOTE 10) | 12 | 20 A | 7 | 1 | 0.50 | 0.00 | | | | | 1 | 8 | 20 A | - | SPARE | S... |
| MS | ELEC. M402 NAC (NOTE 10) | 12 | 20 A | 9 | 1 | | | 0.50 | 0.00 | | | 1 | 10 | 20 A | - | SPARE | S... |
| MS | ELEC. M508 NAC (NOTE 10) | 12 | 20 A | 11 | 1 | | | | | 0.50 | 0.00 | 1 | 12 | 20 A | - | SPARE | S... |
| MS | ELEC. M602 NAC (NOTE 10) | 12 | 20 A | 13 | 1 | 0.50 | 0.00 | | | | | 1 | 14 | 20 A | - | SPARE | S... |
| L | AUDITORIUM EMER. HOUSE LTS | 12 | 20 A | 15 | 1 | | | 1.52 | 0.00 | | | 1 | 16 | 20 A | - | SPARE | S... |
| L | AUDITORIUM EMER. HOUSE LTS | 12 | 20 A | 17 | 1 | | | | | 1.52 | 0.00 | 1 | 18 | 20 A | - | SPARE | S... |
| L | AUD. EMER. BACKSTAGE LTS | 12 | 20 A | 19 | 1 | 0.62 | 0.00 | | | | | 1 | 20 | 20 A | - | SPARE | S... |
| MS | SPRINKER BELL | 12 | 20 A | 21 | 1 | | | 0.20 | 0.00 | | | 1 | 22 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 23 | 1 | | | | | 0.00 | 0.00 | 1 | 24 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 25 | 1 | 0.00 | 0.00 | | | | | 1 | 26 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 27 | 1 | | | 0.00 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 29 | 1 | | | | | 0.00 | 0.00 | 1 | 30 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 31 | 1 | 0.00 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 33 | 1 | | | 0.00 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | S... |
| S... | SPARE | - | 20 A | 35 | 1 | | | | | 0.00 | 0.00 | 1 | 36 | 20 A | - | SPARE | S... |
| | | | | 37 | | 0.00 | 0.00 | | | | | 1 | 38 | 20 A | - | SPARE | S... |
| MS | SPD (NOTE 8) | 6 | 30 A | 39 | 3 | | | 0.00 | 0.00 | | | 1 | 40 | 20 A | - | SPARE | S... |
| | | | | 41 | | | | | | 0.00 | 0.00 | 1 | 42 | 20 A | - | SPARE | S... |

| | LOAD | Connected Load | Demand Factor | Estimated Demand | NOTES: |
|---|---|---|---|---|---|
| L | LIGHTS | 3.66 kVA | 125.00% | 4.58 kVA | 1. FRAME SHALL BE AS REQ'D PER PANEL AIC RATING. |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA | 2. BASED ON COOPER BUSSMANN FUSE PANEL WITH BRANCH FUSES FOR |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA | SELECTIVE COORDINATION. |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA | 3. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS. |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA | 4. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK. |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA | 5. PROVIDE METAL DIRECTORY FRAME. |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA | 6. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER. |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA | 7. THIS PANEL SHALL BE U.L. LISTED FOR USE AS S.E. EQUIP. |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA | 8. PROVIDE WITH TYPE 1 SPD (120kA / MODE, 240kA / PHASE MIN.). |
| MS | MISC. | 4.06 kVA | 100.00% | 4.06 kVA | |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA | |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA | |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA | |

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 7.72 kVA | | | |
| TOTAL KVA (DEMAND): | 8.64 kVA | 16.5 A | 27.5 A | 21.7 A |
| TOTAL AMP. (CONNECTED): | 21 A | | | |
| TOTAL AMP. (DEMAND): | 24 A | **TOTAL AMP. (DEMAND) x 125%** | | 30.0 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## NEC 702 PANEL: SBH

**VOLTAGE:** 480Y/277 3Ø **FED FROM:** ATS-SB
**MOUNTING:** SURFACE **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 **PHASE:** 3 **TYPE:** 20-IN. WIDE
**MAIN:** 300 A **WIRE:** 4 **AIC:** 42 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 1ST FLR GYM LTS | 12 | 20 A | 1 | 1 | 3.03 | 11.84 | | | | | | 2 | | | | |
| L | 1ST FLR GYM LTS | 12 | 20 A | 3 | 1 | | | 4.24 | 11.84 | | | 3 | 4 | 70 A | NOTE 11 | WSHP-G1 | M |
| Sp... | SPARE | - | 20 A | 5 | 1 | | | | | 0.00 | 11.84 | | 6 | | | | |
| Sp... | SPARE | - | 20 A | 7 | 1 | 0.00 | 11.84 | | | | | | 8 | | | | |
| Sp... | SPARE | - | 20 A | 9 | 1 | | | 0.00 | 11.84 | | | 3 | 10 | 70 A | NOTE 11 | WSHP-G2 | M |
| Sp... | SPARE | - | 20 A | 11 | 1 | | | | | 0.00 | 11.84 | | 12 | | | | |
| Sp... | SPARE | - | 20 A | 13 | 1 | 0.00 | 3.32 | | | | | 1 | 14 | 25 A | - | WSHP-G3 (NOTE 11) | M |
| Sp... | SPARE | - | 20 A | 15 | 1 | | | 0.00 | 3.32 | | | 1 | 16 | 25 A | - | WSHP-G4 (NOTE 11) | M |
| Sp... | SPARE | - | 20 A | 17 | 1 | | | | | 0.00 | 0.00 | 1 | 18 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 19 | 1 | 0.00 | 0.00 | | | | | 1 | 20 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 21 | 1 | | | 0.00 | 0.00 | | | 1 | 22 | 20 A | - | SPARE | Sp... |
| Sp... | SPARE | - | 20 A | 23 | 1 | | | | | 0.00 | 0.00 | 1 | 24 | 20 A | - | SPARE | Sp... |
| M | P-1 | NOTE 11 | 35 A | 25 | | 5.33 | 0.00 | | | | | 1 | 26 | 20 A | - | SPARE | Sp... |
| | | | | 27 | 3 | | | 5.33 | 0.00 | | | 1 | 28 | 20 A | - | SPARE | Sp... |
| | | | | 29 | | | | | | 5.33 | 0.00 | 1 | 30 | 20 A | - | SPARE | Sp... |
| M | P-3 | NOTE 11 | 35 A | 31 | | 5.33 | 0.00 | | | | | 1 | 32 | 20 A | - | SPARE | Sp... |
| | | | | 33 | 3 | | | 5.33 | 0.00 | | | 1 | 34 | 20 A | - | SPARE | Sp... |
| | | | | 35 | | | | | | 5.33 | 0.00 | 1 | 36 | 20 A | - | SPARE | Sp... |
| F | PANEL 'SL1A' VIA T-SBL | NOTE 7 | 125 A | 37 | | 26.89 | 0.00 | | | | | | 38 | | | | |
| | | | | 39 | 3 | | | 22.39 | 0.00 | | | 3 | 40 | 30 A | 6 | SPD (NOTE 9) | MS |
| | | | | 41 | | | | | | 26.11 | 0.00 | | 42 | | | | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand | NOTES: |
|---|---|---|---|---|---|
| L | LIGHTS | 7.27 kVA | 125.00% | 9.09 kVA | 1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING. |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA | 2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED. |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA | 3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER. |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA | 4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS. |
| V | VENTILATION | 0.92 kVA | 100.00% | 0.92 kVA | 5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK. |
| M | MOTORS | 119.08 kVA | 100.00% | 119.08 kVA | 6. PROVIDE METAL DIRECTORY FRAME. |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA | 7. SEE RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE. |
| R | RECEPTACLES | 11.70 kVA | 92.74% | 10.85 kVA | 8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA | PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE |
| MS | MISC. | 53.36 kVA | 100.00% | 53.36 kVA | LOCK INSTALLED. |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA | 9. PROVIDE WITH TYPE 1 SPD (120kA / MODE, 240kA / PHASE MIN.). |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA | 10. REFER TO REFRIGERATION CONNECTION SCHEDULE SHEET |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA | 11. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE. |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA | 12. PROVIDE CLASS B GFI (30mA-EQUIPMENT) BREAKER. |

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 192.33 kVA | | | |
| TOTAL KVA (DEMAND): | 193.30 kVA | 246.1 A | 234.3 A | 218.2 A |
| TOTAL AMP. (CONNECTED): | 231 A | | | |
| TOTAL AMP. (DEMAND): | 233 A | **TOTAL AMP. (DEMAND) x 125%** | | 290.6 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## NEC 702 PANEL: SL1A

**VOLTAGE:** 208Y/120 3Ø **FED FROM:** T-SBL
**MOUNTING:** SURFACE **MAIN TYPE:** MCB
**ENCLOSURE:** NEMA1 **PHASE:** 3 **TYPE:** 20-IN. WIDE
**MAIN:** 400 A **WIRE:** 4 **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | 3.72 | 5.52 | | | | | | 2 | | | | |
| F | PANEL 'SL1D' | NOTE 7 | 60 A | 3 | 3 | | | 1.72 | 4.80 | | | 3 | 4 | 60 A | NOTE 7 | PANEL 'SL1C' | F |
| | | | | 5 | | | | | | 2.86 | 6.94 | | 6 | | | | |
| | | | | 7 | | 2.22 | 3.86 | | | | | | 8 | | | | |
| F | PANEL 'SL1B' | NOTE 7 | 60 A | 9 | 3 | | | 0.72 | 2.22 | | | 3 | 10 | 60 A | NOTE 7 | PANEL 'SB2A' | F |
| | | | | 11 | | | | | | 1.86 | 2.86 | | 12 | | | | |
| R | GYM 307 REC. | 12 | 20 A | 13 | 1 | 0.90 | 1.50 | | | | | | 14 | | | | |
| R | GYM 307 REC. | 12 | 20 A | 15 | 1 | | | 0.90 | 1.50 | | | 3 | 16 | 30 A | 10 | GYM 307 BLEACHERS | M |
| R | GYM 307 REC. | 12 | 20 A | 17 | 1 | | | | | 1.44 | 1.50 | | 18 | | | | |
| MS | GYM 307 SCOREBOARD | 12 | 20 A | 19 | 1 | 1.00 | 1.50 | | | | | | 20 | | | | |
| MS | GYM 307 SCOREBOARD | 12 | 20 A | 21 | 1 | | | 1.00 | 1.50 | | | 3 | 22 | 30 A | 10 | GYM 307 BLEACHERS | M |
| MS | GYM 307 POWERED GOAL | 12 | 20 A | 23 | 1 | | | | | 1.00 | 1.50 | | 24 | | | | |
| MS | GYM 307 POWERED GOAL | 12 | 20 A | 25 | 1 | 1.00 | 0.10 | | | | | 2 | 26 | 20 A | - | FREEZER EVAP. COIL (NOTES 8 & 9) | MS |
| MS | GYM 307 POWERED GOAL | 12 | 20 A | 27 | 1 | | | 1.00 | 0.10 | | | | 28 | | | | |
| MS | GYM 307 POWERED GOAL | 12 | 20 A | 29 | 1 | | | | | 1.00 | 1.07 | | 30 | | | | |
| MS | GYM 307 POWERED GOAL | 12 | 20 A | 31 | 1 | 1.00 | 1.07 | | | | | 3 | 32 | 20 A | - | COOLER COND. UNIT (NOTE 9) | MS |
| MS | GYM 307 POWERED GOAL | 12 | 20 A | 33 | 1 | | | 1.00 | 1.07 | | | | 34 | | | | |
| R | GYM 307 SCORERS TABLE | 12 | 20 A | 35 | 1 | | | | | 0.36 | 1.26 | | 36 | | | | |
| R | GYM SOUND SYSTEM | 12 | 20 A | 37 | 1 | 0.36 | 1.26 | | | | | 3 | 38 | 20 A | - | FREEZER COND. UNIT (NOTE 9) | MS |
| MS | COOLER LTS (NOTE 9) | - | 20 A | 39 | 1 | | | 0.50 | 1.26 | | | | 40 | | | | |
| MS | COOLER EVAP. COIL (NOTES 8 & 9) | - | 20 A | 41 | 1 | | | | | 0.24 | 0.50 | 1 | 42 | 20 A | 12 | MECHANICAL CONTROLS | MS |
| MS | FRZR LTS (NOTE 9) | - | 20 A | 43 | 1 | 0.70 | -- | | | | | 1 | 44 | -- | - | SPACE ONLY | |
| MS | FRZR HEAT TAPE GFP (NOTES 8 & 9) | - | 20 A | 45 | 1 | | | 1.80 | -- | | | 1 | 46 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 47 | 1 | | | | | 1.00 | -- | 1 | 48 | -- | - | SPACE ONLY | |
| M | MOTORIZED DAMPERS | 12 | 15 A | 49 | 1 | 0.40 | -- | | | | | 1 | 50 | -- | - | SPACE ONLY | |
| V | EF-3.10 (NOTE 10) | - | 15 A | 51 | 1 | | | 0.70 | -- | | | 1 | 52 | -- | - | SPACE ONLY | |
| V | EF-3.6-3.9 (NOTE 10) | - | 15 A | 53 | 1 | | | | | 0.22 | -- | 1 | 54 | -- | - | SPACE ONLY | |
| MS | GEN.: BLOCK HEATER GFP | 12 | 20 A | 55 | 2 | 0.60 | -- | | | | | 1 | 56 | -- | - | SPACE ONLY | |
| | | | | 57 | | | | 0.60 | -- | | | 1 | 58 | -- | - | SPACE ONLY | |
| MS | GEN.: BATTERY CHARGER | 12 | 20 A | 59 | 1 | | | | | 0.50 | -- | 1 | 60 | -- | - | SPACE ONLY | |
| R | GEN.: REC | 12 | 20 A | 61 | 1 | 0.18 | -- | | | | | 1 | 62 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 63 | 1 | | | 0.00 | -- | | | 1 | 64 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 65 | 1 | | | | | 0.00 | -- | 1 | 66 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 67 | 1 | 0.00 | -- | | | | | 1 | 68 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 69 | 1 | | | 0.00 | -- | | | 1 | 70 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 71 | 1 | | | | | 0.00 | -- | 1 | 72 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand | NOTES: |
|---|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA | 1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING. |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA | 2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED. |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA | 3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER. |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA | 4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS. |
| V | VENTILATION | 0.92 kVA | 100.00% | 0.92 kVA | 5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK. |
| M | MOTORS | 9.40 kVA | 100.00% | 9.40 kVA | 6. PROVIDE METAL DIRECTORY FRAME. |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA | 7. SEE RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE. |
| R | RECEPTACLES | 11.70 kVA | 92.74% | 10.85 kVA | 8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA | PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE |
| MS | MISC. | 53.36 kVA | 100.00% | 53.36 kVA | LOCK INSTALLED. |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA | 9. REFER TO REFRIGERATION CONNECTION SCHEDULE / SHEET E-530 FOR |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA | WIRE SIZE. |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA | 10. REFER TO MECHANICAL SCHEDULES / SHEET E-801 FOR WIRE SIZE. |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA | 11. PROVIDE CLASS B GFI (30mA-EQUIPMENT) BREAKER. |

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 75.38 kVA | | | |
| TOTAL KVA (DEMAND): | 74.53 kVA | 228.8 A | 186.6 A | 222.3 A |
| TOTAL AMP. (CONNECTED): | 209 A | | | |
| TOTAL AMP. (DEMAND): | 207 A | **TOTAL AMP. (DEMAND) x 125%** | | 258.6 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## NEC 702 PANEL: SL1B

**VOLTAGE:** 208Y/120 3Ø **FED FROM:** SL1A
**MOUNTING:** SURFACE **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 **PHASE:** 3 **TYPE:** 20-IN. WIDE
**MAIN:** 60 A **WIRE:** 4 **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | IDF M506 REC. | 12 | 20 A | 1 | 1 | 0.72 | -- | | | | | 1 | 2 | -- | - | SPACE ONLY | |
| R | IDF M506 REC. | 12 | 20 A | 3 | 1 | | | 0.36 | -- | | | 1 | 4 | -- | - | SPACE ONLY | |
| MS | IDF M506 L5-30R | 10 | 30 A | 5 | 1 | | | | | 1.50 | -- | 1 | 6 | -- | - | SPACE ONLY | |
| MS | IDF M506 L5-30R | 10 | 30 A | 7 | 1 | 1.50 | -- | | | | | 1 | 8 | -- | - | SPACE ONLY | |
| R | IDF M506 REC. | 12 | 20 A | 9 | 1 | | | 0.36 | -- | | | 1 | 10 | -- | - | SPACE ONLY | |
| R | IDF M506 REC. | 12 | 20 A | 11 | 1 | | | | | 0.36 | -- | 1 | 12 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 13 | 1 | 0.00 | -- | | | | | 1 | 14 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 15 | 1 | | | 0.00 | -- | | | 1 | 16 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 17 | 1 | | | | | 0.00 | -- | 1 | 18 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 19 | 1 | 0.00 | -- | | | | | 1 | 20 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 21 | 1 | | | 0.00 | -- | | | 1 | 22 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 23 | 1 | | | | | 0.00 | -- | 1 | 24 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 25 | 1 | 0.00 | -- | | | | | 1 | 26 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 27 | 1 | | | 0.00 | -- | | | 1 | 28 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | | | 0.00 | -- | 1 | 30 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 | -- | | | | | 1 | 32 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 33 | 1 | | | 0.00 | -- | | | 1 | 34 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | | | 0.00 | -- | 1 | 36 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 | -- | | | | | 1 | 38 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 39 | 1 | | | 0.00 | -- | | | 1 | 40 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | | | 0.00 | -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand | NOTES: |
|---|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA | 1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING. |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA | 2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED. |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA | 3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER. |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA | 4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS. |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA | 5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK. |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA | 6. PROVIDE METAL DIRECTORY FRAME. |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA | |
| R | RECEPTACLES | 1.80 kVA | 100.00% | 1.80 kVA | |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA | |
| MS | MISC. | 3.00 kVA | 100.00% | 3.00 kVA | |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA | |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA | |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA | |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA | |

| | | TOTAL PER PHASE: (CONNECTED) | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 4.80 kVA | | | |
| TOTAL KVA (DEMAND): | 4.80 kVA | 20.0 A | 6.0 A | 17.0 A |
| TOTAL AMP. (CONNECTED): | 13 A | | | |
| TOTAL AMP. (DEMAND): | 13 A | **TOTAL AMP. (DEMAND) x 125%** | | 16.7 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## NEC 702 PANEL: SL1C

**VOLTAGE:** 208Y/120 3Ø **FED FROM:** SL1A
**MOUNTING:** SURFACE **MAIN TYPE:** MLO
**ENCLOSURE:** NEMA1 **PHASE:** 3 **TYPE:** 20-IN. WIDE
**MAIN:** 60 A **WIRE:** 4 **AIC:** 10 KAIC

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | | B | | C | | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | MDF 227 REC. | 12 | 20 A | 1 | 1 | 0.72 | 0.36 | | | | | 1 | 2 | 20 A | 12 | IDF MP200 REC. | R |
| R | MDF 227 REC. | 12 | 20 A | 3 | 1 | | | 

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## VOLTAGE: 208Y/120 3Ø — NEC 702 PANEL: SL1D — FED FROM: SL1A

**MOUNTING:** SURFACE **MAIN TYPE:** MLO **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 **PHASE:** 3 **AIC:** 10 KAIC
**MAIN:** 60 A **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | IDF M401 REC. | 12 | 20 A | 1 | 1 | 0.72 -- | | | 1 | 2 | -- | - | SPACE ONLY | |
| MS | IDF M401 REC. | 12 | 20 A | 3 | 1 | | 0.36 -- | | 1 | 4 | -- | - | SPACE ONLY | |
| MS | IDF M401 L5-30R | 10 | 30 A | 5 | 1 | | | 1.50 -- | 1 | 6 | -- | - | SPACE ONLY | |
| MS | IDF M401 L5-30R | 10 | 30 A | 7 | 1 | 1.50 -- | | | 1 | 8 | -- | - | SPACE ONLY | |
| MS | IDF M401 REC. | 12 | 20 A | 9 | 1 | | 0.36 -- | | 1 | 10 | -- | - | SPACE ONLY | |
| MS | IDF M401 REC. | 12 | 20 A | 11 | 1 | | | 0.36 -- | 1 | 12 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 13 | 1 | 0.50 -- | | | 1 | 14 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 15 | 1 | | 1.00 -- | | 1 | 16 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 17 | 1 | | | 1.00 -- | 1 | 18 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 19 | 1 | 1.00 -- | | | 1 | 20 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 21 | 1 | | 0.00 -- | | 1 | 22 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 23 | 1 | | | 0.00 -- | 1 | 24 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 25 | 1 | 0.00 -- | | | 1 | 26 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 27 | 1 | | 0.00 -- | | 1 | 28 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | 0.00 -- | 1 | 30 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 -- | | | 1 | 32 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 33 | 1 | | 0.00 -- | | 1 | 34 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | 0.00 -- | 1 | 36 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 -- | | | 1 | 38 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 39 | 1 | | 0.00 -- | | 1 | 40 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | 0.00 -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 8.30 kVA | 100.00% | 8.30 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 8.30 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 8.30 kVA | 32.5 A | 14.3 A | 25.3 A |
| TOTAL AMP. (CONNECTED): | 23 A | | | |
| TOTAL AMP. (DEMAND): | 23 A | **TOTAL AMP. (DEMAND) x 125%** | | 28.8 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

## VOLTAGE: 208Y/120 3Ø — NEC 702 PANEL: SL2A — FED FROM: SL1A

**MOUNTING:** SURFACE **MAIN TYPE:** MLO **TYPE:** 20-IN. WIDE
**ENCLOSURE:** NEMA1 **PHASE:** 3 **AIC:** 10 KAIC
**MAIN:** 60 A **WIRE:** 4

| LC Abbr | Load Served | Wire | Trip | Ckt No | Pole | A | B | C | Pole | Ckt No | Trip | Wire | Load Served | LC Abbr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | IDF M603 REC. | 12 | 20 A | 1 | 1 | 0.36 -- | | | 1 | 2 | -- | - | SPACE ONLY | |
| MS | IDF M603 REC. | 12 | 20 A | 3 | 1 | | 0.36 -- | | 1 | 4 | -- | - | SPACE ONLY | |
| MS | IDF M603 L5-30R | 10 | 30 A | 5 | 1 | | | 1.50 -- | 1 | 6 | -- | - | SPACE ONLY | |
| MS | IDF M603 L5-30R | 10 | 30 A | 7 | 1 | 1.50 -- | | | 1 | 8 | -- | - | SPACE ONLY | |
| MS | IDF M603 REC. | 12 | 20 A | 9 | 1 | | 0.36 -- | | 1 | 10 | -- | - | SPACE ONLY | |
| MS | IDF M603 REC. | 12 | 20 A | 11 | 1 | | | 0.36 -- | 1 | 12 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 13 | 1 | 1.00 -- | | | 1 | 14 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 15 | 1 | | 1.00 -- | | 1 | 16 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 17 | 1 | | | 1.00 -- | 1 | 18 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 19 | 1 | 1.00 -- | | | 1 | 20 | -- | - | SPACE ONLY | |
| MS | MECHANICAL CONTROLS | 12 | 20 A | 21 | 1 | | 0.50 -- | | 1 | 22 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 23 | 1 | | | 0.00 -- | 1 | 24 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 25 | 1 | 0.00 -- | | | 1 | 26 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 27 | 1 | | 0.00 -- | | 1 | 28 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 29 | 1 | | | 0.00 -- | 1 | 30 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 31 | 1 | 0.00 -- | | | 1 | 32 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 33 | 1 | | 0.00 -- | | 1 | 34 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 35 | 1 | | | 0.00 -- | 1 | 36 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 37 | 1 | 0.00 -- | | | 1 | 38 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 39 | 1 | | 0.00 -- | | 1 | 40 | -- | - | SPACE ONLY | |
| Sp... | SPARE | - | 20 A | 41 | 1 | | | 0.00 -- | 1 | 42 | -- | - | SPACE ONLY | |

| | LOAD | Connected Load | Demand Factor | Estimated Demand |
|---|---|---|---|---|
| L | LIGHTS | 0.00 kVA | 0.00% | 0.00 kVA |
| LE | LIGHTING - EXTERIOR | 0.00 kVA | 0.00% | 0.00 kVA |
| H | HEATING | 0.00 kVA | 0.00% | 0.00 kVA |
| C | COOLING | 0.00 kVA | 0.00% | 0.00 kVA |
| V | VENTILATION | 0.00 kVA | 0.00% | 0.00 kVA |
| M | MOTORS | 0.00 kVA | 0.00% | 0.00 kVA |
| K | KITCHEN | 0.00 kVA | 0.00% | 0.00 kVA |
| R | RECEPTACLES | 0.00 kVA | 0.00% | 0.00 kVA |
| WH | WATER HEATER | 0.00 kVA | 0.00% | 0.00 kVA |
| MS | MISC. | 8.94 kVA | 100.00% | 8.94 kVA |
| S | Spare | 0.00 kVA | 0.00% | 0.00 kVA |
| E | ELEVATOR | 0.00 kVA | 0.00% | 0.00 kVA |
| LD | LAUNDRY | 0.00 kVA | 0.00% | 0.00 kVA |
| EV | EV CHARGING | 0.00 kVA | 0.00% | 0.00 kVA |

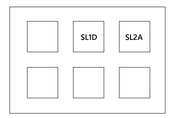
**NOTES:**
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.

| | | | | |
|---|---|---|---|---|
| TOTAL KVA (CONNECTED): | 8.94 kVA | TOTAL PER PHASE: (CONNECTED) | | |
| TOTAL KVA (DEMAND): | 8.94 kVA | 33.0 A | 18.5 A | 24.7 A |
| TOTAL AMP. (CONNECTED): | 25 A | | | |
| TOTAL AMP. (DEMAND): | 25 A | **TOTAL AMP. (DEMAND) x 125%** | | 31.0 A |

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

ALL PANELBOARDS SHOWN ON THIS SHEET ARE BACKED UP BY THE EMERGENCY GENERATOR.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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EMERGENCY PANEL SCHEDULES

E-708

Autodesk Docs://HCS Flatwoods MS/24-0049R_HCS Flatwoods MS_MEPFpT_R23.rvt
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## EXHAUST FAN SCHEDULE

| SYMBOL | LOCATION | WATTS | ELECTRICAL DATA H.P. | VOLTAGE-PHASEØ | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|
| DEF-1 | AREA 300 SIDEWALL | | 0.33 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-1.1 | ART 103 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-1.2 | MEN DRESS 107 | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-1.3 | WOMEN DRESS 107 | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-1.4 | AREA 100 MEZZANINE | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-1.5 | ART 103 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.1 | TL 213A | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.2 | MEN 219 | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.3 | TLT 228 | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.4 | WOMEN 220 | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.5 | TL 213A | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.6 | WOMEN 210 | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-2.7 | MEN 211 | 29 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.1 | CUST. 305 | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.2 | KIT LOCKER 306 | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.3 | TLT 306A | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.4 | ELECTRICAL M300 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.5 | 316 HEALTH ROOM 2 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.6 | EMERGENCY ELEC M302 | | 0.13 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.7 | CUST. 307A | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.8 | STAFF TLT 309A | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.9 | STAFF TLT 310A | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.10 | GYM LOCKERS AND SHOWERS | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-3.11 | TLT 403A | 25 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.1 | FLEX CLASSROOM 406 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.2 | SCIENCE 408 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.3 | PREP RM & STG 406A | | 0.10 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.4 | SCIENCE 407 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.5 | SCIENCE 409 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.6 | PREP RM & STG 407A | | 0.10 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-4.7 | ELEC M402 | 39 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.1 | FLEX CLASSROOM 505 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.2 | SCIENCE 507 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.3 | PREP RM & STG 505A | | 0.10 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.4 | SCIENCE 504 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.5 | PREP RM 504A | | 0.10 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.6 | SCIENCE 506 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-5.7 | ELEC M508 | 39 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.1 | SCIENCE 605 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.2 | FLEX CLASSROOM 607 | | 0.50 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.3 | PREP RM & STG 605A | | 0.10 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.4 | SCIENCE 606 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.5 | SCIENCE 608 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.6 | PREP RM 606A | | 0.10 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.7 | STEM LAB 602 | | 0.25 | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| EF-6.8 | ELECT M602 | 39 | | 115 V-1Ø | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |

## INDOOR UNIT SCHEDULE

| SYMBOL | FAN MOTOR FLA | MCA | MOCP | ELECTRICAL DATA FLA | FUSE | VOLTAGE | PH | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|---|---|
| IDU-1 | 2.5 A | 46.0 | 50.0 A | 0.0 | 0.0 | 208 V | 1 | 60A/F50A-2P-1 | 3#6, 1#10G., 1"C. |
| IDU-2 | 1.9 A | 49.0 | 50.0 A | 0.0 | 0.0 | 208 V | 1 | 60A/F50A-2P-1 | 3#6, 1#10G., 1"C. |

## HEAT PUMP SCHEDULE (AIR COOLED)

| SYMBOL | COMPRESSOR LRA | RLA | FAN FLA | ELECTRICAL DATA MCA | FUSE | VOLTAGE | PH | MATCHING INDOOR UNIT | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|---|---|---|
| HP-1 | 58.3 | 11.7 | 0.7 | 15.0 | 25.0 | 208 V | 1 | IDU-1 | 30A/25A-2P-3R | 3#10, 1#10G., 3/4"C. |
| HP-2 | 83.0 | 15.3 | 0.8 | 20.0 | 35.0 | 208 V | 1 | IDU-2 | 60A/35A-2P-3R | 3#8, 1#10G., 3/4"C. |

## CONDENSING UNIT SCHEDULE

| SYMBOL | MCA | MOCP | VOLT | PH | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|
| ODU-6.2 | 11.0 A | 28.0 A | 208 V | 1 | 30A/F30A-2P-1 | 3#12, 1#12G., 3/4"C. |

## DUCTLESS A/C INDOOR UNIT SCHEDULE

| SYMBOL | MCA | VOLT | PH | INTERLOCK ID | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|
| IDU-6.2 | 1.0 A | 208 V | 1 | ODU-6.2 | 30A/F15A-2P-1 | 3#12, 1#12G., 3/4"C. |

## KITCHEN HOOD SCHEDULE

(FURNISHED AND INSTALLED BY THE M.C.)

KEF-1 3-HP 208V-3PH FAN MOTOR
DISCONNECT SIZE: PROVIDED BY M.C.
CONDUIT AND CONDUCTOR SIZE: 4#12, 1#12G. 3/4"C.

MUA-1
FAN SECTION:
2-HP 208V-3PH FAN MOTOR, 10.4A MCA, 15A MOCP
DISCONNECT SIZE: PROVIDED BY M.C.
CONDUIT AND CONDUCTOR SIZE: 4#12, 1#12G., 3/4"C.

ELECTRIC HEAT SECTION:
73KW MAX, 480V-3PH
DISCONNECT SIZE: PROCIDED BY M.C.
CONDUIT AND CONDUCTOR SIZE: 4#1, 1#6G., 1-1/2"C.

## DEDICATED OUTDOOR AIR SYSTEM SUMMARY SCHEDULE

| SYMBOL | EQUIPMENT LOCATION | ELECTRICAL DATA SUPPLY FAN HP | QTY | FLA | HEAT WHEEL MOTOR QTY | HP | FLA | EXHAUST FAN HP | FLA | COMPRESSOR QTY | RLA | POWER SUPPLY MCA | MOCP | VOLTS | PHASE | Hz | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOAS-400 | AREA 400 | 7.50 | 1 | | 1 | | | | 7.6 A | 2 | 13.5 A | 49.0 A | 60.0 A | 460 | 3 | 60 | 100A/F60A-3P-1 | 4#4, 1#10G., 1 1/4"C. |
| DOAS-600 | AREA 600 | 7.50 | 1 | | 1 | | | | 7.6 A | 2 | 13.5 A | 49.0 A | 60.0 A | 460 | 3 | 60 | 100A/F60A-3P-1 | 4#4, 1#10G., 1 1/4"C. |
| DOAS-500 | AREA 500 | 7.50 | 1 | | 1 | | | | 7.6 A | 2 | 13.5 A | 49.0 A | 60.0 A | 460 | 3 | 60 | 100A/F60A-3P-1 | 4#4, 1#10G., 1 1/4"C. |

## ELECTRIC WALL HEATER SCHEDULE

| SYMBOL | LOCATION | KW | MOTOR VOLT | PH | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|
| EWH-3.1 | ELECTRICAL M300 | 4.00 | 277 V | 1 | PROVIDED BY M.C. | 2#12, 1#12G., 3/4"C. |
| EWH-3.2 | MECH M301 | 4.00 | 277 V | 1 | PROVIDED BY M.C. | 2#12, 1#12G., 3/4"C. |
| EWH-3.3 | LOBBY C301 | 3.00 | 277 V | 1 | PROVIDED BY M.C. | 2#12, 1#12G., 3/4"C. |
| EWH-3.4 | EMERGENCY ELEC M302 | 1.00 | 120 V | 1 | PROVIDED BY M.C. | 2#12, 1#12G., 3/4"C. |
| EWH-4.1 | VESTIBULE C403 | 1.00 | 120 V | 1 | PROVIDED BY M.C. | 2#12, 1#12G., 3/4"C. |
| EWH-5.1 | STAIR S501 | 4.00 | 277 V | 1 | PROVIDED BY M.C. | 2#12, 1#12G., 3/4"C. |

## WATER SOURCE HEAT PUMP SCHEDULE

| SYMBOL | EVAPORATOR COOLING COIL NOMINAL (TONS) | FAN MOTOR HP | ELECTRICAL DATA VOLTAGE | PHASE | MCA | MOCP | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|---|
| WSHP-1.1 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-1.2 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-1.3 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-1.4 | 4.0 | 1.00 | 460 V | 3 | 11.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-1.5 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-1.6 | 6.0 | 1.50 | 460 V | 3 | 15.5 | 20.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-1.7 | 12.5 | 3.00 | 460 V | 3 | 24.8 | 30.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-1.8 | 12.5 | 3.00 | 460 V | 3 | 24.8 | 30.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-1.9 | 10.0 | 3.00 | 460 V | 3 | 20.1 | 25.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-1.10 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-1.11 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-1.12 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-2.1 | 2.0 | 0.50 | 265 V | 1 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-2.2 | 2.5 | 0.33 | 460 V | 3 | 16.0 | 25.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-2.3 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-2.4 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-2.5 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-2.6 | 2.0 | 0.50 | 265 V | 1 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-2.7 | 2.5 | 0.33 | 460 V | 3 | 16.0 | 25.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-2.8 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-2.9 | 10.0 | 3.00 | 460 V | 3 | 20.1 | 25.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-2.10 | 10.0 | 3.00 | 460 V | 3 | 20.1 | 25.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-2.11 | 1.5 | 0.50 | 265 V | 1 | 11.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-3.1 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-3.2 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-3.3 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.1 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.2 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.3 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.4 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.5 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.6 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.7 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.8 | 2.0 | 0.50 | 265 V | 1 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-4.9 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.10 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.11 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.12 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.13 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.14 | 2.0 | 0.50 | 265 V | 1 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-4.15 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.16 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.17 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.18 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.19 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.20 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-4.21 | 1.5 | 0.50 | 265 V | 1 | 11.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-5.1 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.2 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.3 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.4 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.5 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.6 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.7 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.8 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.9 | 4.0 | 1.00 | 460 V | 3 | 11.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-5.10 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.11 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.12 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.13 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.14 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.15 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.16 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.17 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.18 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.19 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-5.20 | 1.5 | 0.50 | 265 V | 1 | 11.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-6.1 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.2 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.3 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.4 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.5 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.6 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.7 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.8 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.9 | 2.0 | 0.50 | 265 V | 1 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-6.10 | 2.0 | 0.50 | 265 V | 1 | 12.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-6.11 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.12 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.13 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.14 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.15 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.16 | 2.5 | 0.75 | 265 V | 1 | 16.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.17 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.18 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.19 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.20 | 3.0 | 0.33 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-6.21 | 6.0 | 1.50 | 460 V | 3 | 15.5 | 20.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-6.22 | 6.0 | 1.50 | 460 V | 3 | 15.5 | 20.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-6.23 | 6.0 | 1.50 | 460 V | 3 | 15.5 | 20.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-6.24 | 1.5 | 0.50 | 265 V | 1 | 11.0 | 15.0 | PROVIDED BY M.C. | 2#12, 1#12G, 3/4"C. |
| WSHP-D1 | 15.0 | 5.00 | 460 V | 3 | 32.4 | 40.0 | PROVIDED BY M.C. | 4#8, 1#10G, 1"C. |
| WSHP-D2 | 12.5 | 3.00 | 460 V | 3 | 24.8 | 30.0 | PROVIDED BY M.C. | 4#10, 1#10G, 3/4"C. |
| WSHP-G1 | 25.0 | 7.50 | 460 V | 3 | 53.4 | 70.0 | PROVIDED BY M.C. | 4#4, 1#8G, 1 1/4"C. |
| WSHP-G2 | 25.0 | 7.50 | 460 V | 3 | 53.4 | 70.0 | PROVIDED BY M.C. | 4#4, 1#8G, 1 1/4"C. |
| WSHP-G3 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-G4 | 3.0 | 0.75 | 265 V | 1 | 15.0 | 25.0 | PROVIDED BY M.C. | 2#10, 1#10G, 3/4"C. |
| WSHP-K1 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-K2 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |
| WSHP-K3 | 5.0 | 1.00 | 460 V | 3 | 12.0 | 15.0 | PROVIDED BY M.C. | 4#12, 1#12G, 3/4"C. |

## PUMP SCHEDULE

| SYMBOL | PUMP TYPE | MOTOR POWER | VOLT | PH | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|
| P-1 | BASE MOUNTED END SUCTION | 15.0 hp | 460 V | 3 | 60A/F35A-3P-1 | 4#8, 1#10G., 1"C. |
| P-2 | BASE MOUNTED END SUCTION | 15.0 hp | 460 V | 3 | 60A/F35A-3P-1 | 4#8, 1#10G., 1"C. |
| P-3 | BASE MOUNTED END SUCTION | 15.0 hp | 460 V | 3 | 60A/F35A-3P-1 | 4#8, 1#10G., 1"C. |
| P-4 | BASE MOUNTED END SUCTION | 15.0 hp | 460 V | 3 | 60A/F35A-3P-1 | 4#8, 1#10G., 1"C. |

## WATER HEATER SCHEDULE - ELECTRIC

| SYM. | DESCRIPTION | ELECTRICAL DATA KW | VOLTS | PHASE | HERTZ | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|
| WH2 | ELECTRIC WATER HEATER | 15 | 480 | 3 | 60 | 30A/F25A-3P-1 | 4#10,1#10G., 3/4"C. |
| WH3 | ELECTRIC WATER HEATER | 24 | 480 | 3 | 60 | 60A/F40A-3P-1 | 4#8,1#10G., 3/4"C. |
| WH4 | ELECTRIC WATER HEATER | 15 | 480 | 3 | 60 | 30A/F25A-3P-1 | 4#10,1#10G., 3/4"C. |
| WH5 | ELECTRIC WATER HEATER | 12.3 | 480 | 3 | 60 | 30A/F20A-3P-1 | 4#12,1#12G., 3/4"C. |

## WATER HEATER SCHEDULE - ELECTRIC (TANK-LESS)

| SYM. | DESCRIPTION | ELECTRICAL DATA KW | VOLTS | PHASE | HERTZ | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|
| WH6 | ELECTRIC WATER HEATER | 4.2 | 208 | 1 | 60 | INTEGRAL PROVIDED BY PC | 3#10,1#10G., 3/4"C. |

## KITCHEN WATER HEATER SCHEDULE - ELECTRIC

| SYM. | DESCRIPTION | ELECTRICAL DATA KW | VOLTS | PHASE | HERTZ | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|
| WH1 | ELECTRIC WATER HEATER | 90 | 480 | 3 | 60 | 200A/F140A-3P-1 | 4#1/0,1#6G., 2"C. |

## HW CIRCULATION PUMP SCHEDULE

| SYM | DESCRIPTION | ELECTRICAL DATA HP | VOLTS | PH | HZ | DISCONNECT SIZE | CONDUIT AND CONDUCTOR SIZE |
|---|---|---|---|---|---|---|---|
| RCP1 | HW RECIRC PUMP - 140° | 1/20 | 115 | 1 | 60 | MOTOR RATED SWITCH | 2#12, 1#12G., 3/4"C. |
| RCP2 | HW RECIRC PUMP | 1/20 | 115 | 1 | 60 | MOTOR RATED SWITCH | 2#12, 1#12G., 3/4"C. |
| RCP3 | HW RECIRC PUMP | 1/20 | 115 | 1 | 60 | MOTOR RATED SWITCH | 2#12, 1#12G., 3/4"C. |
| RCP4 | HW RECIRC PUMP | 1/20 | 115 | 1 | 60 | MOTOR RATED SWITCH | 2#12, 1#12G., 3/4"C. |
| RCP5 | HW RECIRC PUMP | 1/20 | 115 | 1 | 60 | MOTOR RATED SWITCH | 2#12, 1#12G., 3/4"C. |

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optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

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FLATWOODS MIDDLE SCHOOL
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ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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MECHANICAL EQUIPMENT CONNECTION SCHEDULE

E-801

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# LIGHTING SEQUENCE OF OPERATION

A COMPLETE AND OPERATIONAL LIGHTING CONTROL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 260923 AND 260943) AND AS INTENDED ON THESE PLANS. ALL CONTROL POINTS AND EQUIPMENT SEQUENCES OF OPERATION LISTED IN SPECIFICATION SECTION 260923 SHALL BE CONSIDERED IN ADDITION TO THOSE LISTED HERE. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY.

SYSTEM DESCRIPTION:
LIGHTING CONTROLS ARE BASED ON ETHERNET CONNECTED DEVICES THAT HAVE INDIVIDUAL ADDRESS LOCATIONS FOR PROGRAMMING AND CONTROL. INDEPENDENT OF THE ETHERNET BASED CONTROLS ARE STAND ALONE OCCUPANCY SENSORS. THESE SHALL BE INDEPENDENT AND NOT TIED INTO THE BAS/SYSTEM SOFTWARE.

SENSORS
1. CEILING MOUNTED OCCUPANCY AND VACANCY SENSORS SHALL OPERATE AS PART OF THE ETHERNET BASED SYSTEM AND AS STAND ALONE CONTROLS AS SHOWN ON THE PLANS.
2. WALL MOUNTED NON SWITCH TYPE OCCUPANCY/VACANCY SENSORS SHALL OPERATE AS PART OF THE ETHERNET BASED SYSTEM.
3. ALL OCCUPANCY SENSORS SHALL BE PROGRAMMED FOR AUTOMATIC ON (FULL LEVELS) AND AUTOMATIC OFF.
4. ALL VACANCY SENSORS SHALL BE PROGRAMMED FOR MANUAL ON AND AUTOMATIC OFF.
5. LARGE PUBLIC SPACES SHALL BE OCCUPANCY BASED WHERE PROVIDED WITH A SENSOR.

TIMER SETTINGS:
A. WALL SWITCH PASSIVE INFRARED: 2 MINUTES FOR INDIVIDUAL RESTROOMS AND STORAGE ROOMS.
B. CLASSROOMS VACANCY: 15 MINUTES.
C. WALL SWITCH VACANCY SENSORS OFFICES: 5 MINUTES.
D. WALL SWITCH VACANCY SENSORS CONFERENCE: 10 MINUTES.
E. OTHER SPACES NOT LISTED: 30 MINS.

BAS INTEGRATION:
A. EXTERIOR LIGHTING ZONES, TIME SCHEDULE CONTROL.
B. INTERIOR LIGHTING:
- CORRIDORS
- LOBBY/RECEPTION
- CAFE/DINING
- PREP/SERVING
- CLASSROOMS
- OFFICES
- COLLABORATION AREAS
- GYMNASIUM

COMMISSIONING AND COORDINATION OF BAS
1. BAS CONTROL SHALL BE THE PRIORITY SYSTEM WITH LOCAL OVERRIDES.
2. LIGHTING SYSTEM SHALL ALSO BE INDEPENDENTLY CONTROLLED BY A SOFTWARE BASED SYSTEM.
3. LIGHTING SYSTEM IS CONNECTED TO THE BAS VIA BACNET PROTOCOL OR EQUAL. COORDINATE LANGUAGE REQUIREMENTS WITH MECHANICAL CONTROLS CONTRACTOR SUPPLYING BUILDING AUTOMATION SYSTEM.

LIGHTING COORDINATION AND QUALITY CONTROL:
1. ELECTRICAL CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH CONTROLS SUPPLIER PRIOR TO CONDUIT ROUGH-IN TO VERIFY BOXES, CONDUIT PATHS, AND GENERAL LIGHTING CONTROL STRATEGY FOR INSTALLATION.
2. ELECTRICAL CONTRACTOR SHALL HAVE A POST-SUBMITTAL MEETING WITH CONTROLS SUPPLIER TO IDENTIFY LINE AND LOW VOLTAGE ROUTING, INTENT OF LIGHTING CONTROL DESIGN, AND GENERAL CONSTRUCTION STRATEGIES.

EXTERIOR LIGHTING CONTROL:
A. EXTERIOR LIGHTING CONTROL IS VIA SCHEDULED TIME CONTROL AND PHOTOCELL.
B. EXTERIOR LIGHTING IS BROKEN UP INTO (4) SCHEDULED ZONES:
1. CANOPY LIGHTING.
2. WALL PACKS.
3. PARKING LIGHTING.
4. GYMNASIUM/CAFETERIA FACADE LIGHTING.

EMERGENCY LIGHTING CONTROL:
A. EXTERIOR EMERGENCY LIGHTING IS VIA EMERGENCY POWER PACK (ENTIRE CIRCUIT.) UPON LOSS OF NORMAL POWER, UL924 POWER PACK SHALL BYPASS ALL SWITCHING AND TURN FIXTURES ON.
B. MULTIPLE FIXTURES OR LISTED FIXTURES ARE USED TO MEET REQUIRED EGRESS PATH ILLUMINATION.
C. INTERIOR EMERGENCY LIGHTING IS SWITCHED VIA AN EMERGENCY RELAY OR EMERGENCY POWER PACK THAT IS BACKED UP BY A GENERATOR LIFE SAFETY CIRCUIT. EMERGENCY RELAY OR POWER PACK CONTAINS BOTH AN EMERGENCY CIRCUIT AND A NORMAL CIRCUIT. DURING NORMAL CONDITIONS THE FIXTURE IS ABLE TO BE COMPLETELY TURN OFF. IN EMERGENCY CONDITIONS THE RELAY BYPASSES ALL SWITCHING AND PROVIDES A CONSTANTLY HOT SOURCE VIA GENERATOR BACK LIFE SAFETY CIRCUIT.

OTHER SYSTEM INTEGRATION:
1. UPON LOSS OF POWER OR FIRE ALARM EVENT, EMERGENCY RATED RELAYS SHALL DEFAULT TO ON (HIGHEST PRIORITY).
2. UPON A FIRE ALARM EVENT, ALL CORRIDOR ZONES SHALL SWEEP ON.

TIME SCHEDULES:
A. TIME SCHEDULES ARE TO BE DETERMINED BY THE OWNER. THIS SHALL BE COORDINATED AND DIRECTED BY OWNER AND INPUT BY THE LIGHTING PROGRAMMER AND THE BAS PROGRAMMER. SEE THE BELOW INITIAL SETTING UNTIL OWNER HAS GIVEN INPUT.
B. INITIAL TIME SCHEDULES SHALL BE:
MONDAY - FRIDAY: 6AM ON, 7 PM OFF
SATURDAY 8AM ON, 4 PM OFF
SUNDAY: OFF

INDIVIDUAL AREAS INTENT OF CONTROL:
- MAIN CORRIDORS/HALLWAYS: TIME SCHEDULE ZONED. EMERGENCY LIGHTING SHALL SUPPLEMENT THIS AREA VIA RELAY CONTROL. MANUAL LOW VOLTAGE OVERRIDE IN LOCAL CORRIDOR. CORRIDOR SWITCHES SHALL BE LOCKED OUT (PUBLIC AREAS) DURING "NORMAL OPERATING HOURS."
- ADMIN AREA CORRIDORS: ON/OFF WALL SWITCH OCCUPANCY SENSORS (PASSIVE INFRARED.);OCCUPANCY SENSORS SHALL OPERATE NORMAL AND EMERGENCY FIXTURES IN THIS AREA.
- LOBBY/RECEPTION: TIME SCHEDULE ZONED. EMERGENCY LIGHTING SHALL SUPPLEMENT THIS AREA VIA RELAY CONTROL. MANUAL LOW VOLTAGE OVERRIDE IN RECEPTION. ZONE CONTROLLER PROVIDED FOR OVERRIDE OF MULTIPLE AREAS. SEE PLANS FOR LOCATIONS CONTROLLED AND TYPE OF CONTROLLER. OCCUPANCY SENSORS SHALL OPERATE NORMAL AND EMERGENCY FIXTURES IN THIS AREA.
- GROUP RESTROOMS: ON/OFF WALL SWITCH OCCUPANCY SENSORS (PASSIVE INFRARED.);OCCUPANCY SENSORS SHALL OPERATE NORMAL AND EMERGENCY FIXTURES IN THIS AREA.
- INDIVIDUAL RESTROOMS: ON/OFF WALL SWITCH OCCUPANCY SENSORS (PASSIVE INFRARED.)
- ELECTRICAL ROOMS, BOILER ROOMS, ETC.: ON/OFF WALL SWITCH WITH MANUAL OVERRIDE FOR PERSONNEL SAFETY. SEE PLANS
- STORAGE ROOMS: ON/OFF WALL SWITCH OCCUPANCY SENSORS (PASSIVE INFRARED.)
- OFFICES/SMALL WORKROOMS: ON/OFF SWITCHES WITH OCCUPANCY SENSORS.
- SMALL STORAGE/UTILITY ROOMS: ON/OFF WALL SWITCH VACANCY SENSORS (PASSIVE INFRARED.)
-CONFERENCE ROOMS: ON/OFF OCCUPANCY SENSOR. ON/OFF/DIM BY ZONE.
- CAFE/DINING: ON/OFF/DIM BY ZONE. TIME SCHEDULE CONTROLLED.
- CLASSROOMS: (2-4) ZONES. ZONE ONE IS ON/OFF WITH FULL DIMMING, ZONE TWO IS ON/OFF WITH FULL DIMMING, ZONE THREE (WHEN SHOWN) IS ON/OFF WITH FULL DIMMING. ZONE FOUR (WHEN SHOWN) ON/OFF WITH FULL DIMMING. ZONES WORK INDEPENDENTLY OF EACH OTHER.
SOME LARGE/MULTI EXIT CLASSROOMS ARE SUPPLEMENTED WITH EMERGENCY RATED RELAYS FOR SWITCHED EMERGENCY APPLICATION OF ON/OFF DIMMING. EMERGENCY IS ZONED WITH LOCAL NORMAL ZONE. SENSORS ARE OCCUPANCY CONTROLLED.
- GYM: ON/OFF WITH FULL DIMMING. EMERGENCY RATED RELAYS FOR SWITCHED EMERGENCY APPLICATION OF ON/OFF DIMMING. EMERGENCY IS ZONED WITH LOCAL NORMAL ZONE.
- AUDITORIUM: SEE PERFORMANCE DIMMING RISER ON SHEET E-604. EMERGENCY RATED RELAYS FOR SWITCHED EMERGENCY APPLICATION OF ON/OFF DIMMING. EMERGENCY IS ZONED WITH LOCAL NORMAL ZONE.

LIGHTING SYSTEM NOTES:
1. SYSTEM ARCHITECTURE SHALL BE DESIGNED BY RESPECTIVE CONTROLS PROVIDER. SYSTEM SHALL BE PROVIDED WITH 25% ADDITIONAL CAPACITY FOR ENTIRE SYSTEM.
2. SYSTEM IS BASED ON INX DISTRIBUTED INTELLIGENCE, BY HUBBELL. ALL ALTERNATE MANUFACTURERS SHALL PROVIDE EQUIPMENT TO MEET THE DESIGN INTENT. (GRAPHIC WALL PODS FOR EXAMPLE.) APPROVED EQUALS: WATTSTOPPER DLM, COOPER GREENGATE, OR ACUITY NLIGHT.
3. SEE VENDOR DRAWINGS/DETAILS FOR ALL 0-10V DIMMING WIRING.
4. PROVIDE DEVICE LAYOUT AS PART OF LIGHTING CONTROL SUBMITTAL. INCLUDE ALL DEVICE LOCATIONS, CABLING, EQUIPMENT, ETC.

FIXTURE NOTES:
A. ARCHITECT TO APPROVE ALL EXTERIOR FIXTURE LOCATIONS. E.C. TO MARK OFF LOCATIONS WITH TEMPORARY "CHALK" OUTLINE AND PLAN FOR ARCHITECT ON-SITE APPROVAL OF LOCATIONS BEFORE INSTALLATION. E.C. TO CONTACT ARCHITECT WITH (1) WEEK PRIOR NOTICE.

# LIGHTING FIXTURE NOTES

1. ALL FIXTURES SHALL BE LED UNLESS OTHERWISE SPECIFIED. COLOR TEMPERATURE SHALL BE 4000K UNLESS OTHERWISE NOTED.
2. LED DRIVERS SHALL BE PROVIDED FROM PER MANUFACTURER RECOMMENDATION. AS PART OF THIS RECOMMENDATION COORDINATE THE REQUIRED WAVE OUTPUT SO THEY ARE COMPATIBLE. THIS INCLUDES EMERGENCY DRIVERS.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS.
4. FIXTURES IN FIRE RATED CEILING SHALL BE PROVIDED WITH FIRE RATED TENTS AS REQUIRED.
5. SUSPEND ALL FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
6. FIXTURES WITH EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH 1100 LUMEN INVERTERS.
7. PROVIDE INTEGRAL SURGE PROTECTION ON ALL EXTERIOR LED DRIVER FIXTURE TYPES.
8. DIMMING OF FIXTURES SHALL BE WITH A SWITCH AS RECOMMENDED BY THE DRIVER MANUFACTURER.
9. THE CONTRACTOR SHALL VERIFY THE LEAD TIME OF ALL PRODUCTS SPECIFIED IN THIS SCHEDULE AT THE TIME OF PACKAGE QUOTE.
10. DURING THE BID PROCESS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DELIVERY/SCHEDULING ISSUES.
11. NO SUBSTITUTIONS WILL BE ALLOWED DUE TO LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER BID.
12. ALL EXPEDITED EXPENSES SHALL BE THE RESPONSIBILTY OF THE CONTRACTOR.
13. FIXTURES TO BE INSTALLED IN CEILINGS, INDICATED ON ARCHITECTURAL PLANS AS HAVING INSULATION IN CONTACT WITH CEILING SURFACE, SHALL BE IC RATED BY MANUFACTURER.
14. LED DRIVERS LOCATED IN UNCONDITIONED SPACES SHALL BE RATED FOR 90 DEGREES F.
15. PROVIDE EMERGENCY RELAY BASED ON MINIMUM BODINE GLCD-208 OR EQUAL. SEE PLANS FOR INTENT. PROVIDE EMERGENCY GENERATOR/INVERTER CIRCUIT AND SWITCH LEG NORMAL CIRCUIT. SEE DETAIL.
16. POLES PROVIDED FOR LED FIXTURES SHALL BE METAL, REGARDLESS OF SPECIFICATION FOR GROUNDING PURPOSES.

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HARNETT COUNTY SCHOOLS
FLATWOODS MIDDLE SCHOOL
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ENERGY STAR PARTNER

| No. | Date | Description |
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DRAWN BY: ZAT
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LIGHTING SEQUENCE OF OPERATIONS

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# LIGHTING FIXTURE SCHEDULE

| TYPE | DESCRIPTION | MINIMUM LUMENS | TOTAL FIXURE WATTAGE | DRIVER | VOLTAGE | MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|
| AP1 | 48" DECORATIVE CIRCULAR LED PENDANT | 3,300 | 60.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | OCL<br>ALW<br>LIGHTART | PE1-P1DB-48-MW-LED2-40K-UNV-DM1<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINISH AND MOUNTING/SUSPENSION HEIGHT<br>VERIFY MOUNTING OPTIONS WITH ARCHITECT PRIOR TO ROUGH-IN<br>DECORATIVE ACRYLIC PETAL FIXTURE<br>SILICONE DIFFUSER |
| AP2 | 60" DECORATIVE CIRCULAR LED PENDANT | 5,130 | 80.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | OCL<br>ALW<br>LIGHTART | PE1-P1DB-60-MW-LED2-40K-UNV-DM1<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINISH AND MOUNTING/SUSPENSION HEIGHT<br>VERIFY MOUNTING OPTIONS WITH ARCHITECT PRIOR TO ROUGH-IN<br>DECORATIVE ACRYLIC PETAL FIXTURE<br>SILICONE DIFFUSER |
| AP3 | 72" DECORATIVE CIRCULAR LED PENDANT | 6,560 | 95.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | OCL<br>ALW<br>LIGHTART | PE1-P1DB-72-MW-LED2-40K-UNV-DM1<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH AND MOUNTING/SUSPENSION HEIGHT<br>VERIFY MOUNTING OPTIONS WITH ARCHITECT PRIOR TO ROUGH-IN<br>DECORATIVE ACRYLIC PETAL FIXTURE<br>SILICONE DIFFUSER<br>FIXTURES LOCATED IN MEDIA CENTER SHALL BE SOLID BLACK POWDER COAT WITH SILVER GRAY FINISH |
| AP8 | 8' LINEAR ACOUSTIC LED PENDANT | 6,240 | 73.6 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>FOCAL POINT<br>LITE CONTROL<br>ALW<br>MARK LIGHTING | HP-2-P-D-8'-V-840-F-277-FC-10%<br>FSM2LS-FL-875LF-40K-1C-UNV-LD1-8FT<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 780 LUMENS/FT<br>ARCHITECT TO CHOOSE FINAL FINISH AND MOUNTING/SUSPENSION HEIGHT/OPTIONS<br>PEW FINISH |
| DL1 | 6" RECESSED LED DOWNLIGHT | 1,500 | 20.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>CURRENT LIGHTING<br>COOPER | LDN6<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 10% DIMMING<br>DLC/ENERGY STAR LISTED<br>MATTE DIFFUSER |
| DL1S | 4" RECESSED SHOWER RATED DOWNLIGHT | 1,500 | 20.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | GOTHAM<br>PRESCOLITE<br>LIGHTOLIER | EVO4SH _/15 DFFAMF SMO MVOLT<br>APPROVED EQUAL<br>APPORVED EQUAL | MINIMUM 10% DIMMING<br>DLC/ENERGY STAR LISTED<br>MAXIMUM DEPTH OF DOWNLIGHT SHALL BE 0'-6".<br>MATTE DIFFUSER |
| DL2 | 6" RECESSED LED DOWNLIGHT | 3,000 | 35.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>CURRENT LIGHTING<br>COOPER | LDN6<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 10% DIMMING<br>DLC/ENERGY STAR LISTED<br>MATTE DIFFUSER |
| EP1 | 6" EXTERIOR PENDANT LED CYLINDER | [redacted] | 27.4 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | ALW<br>DMF<br>ALPHABET | CRT6-20904080-15904080-DV00<br>APPROVED EQUAL<br>APPROVED EQUAL | PENDANT MOUNTED<br>UL LISTED WET LOCATIONS<br>ARCHITECT TO CHOOSE FINISH AND MOUNTING/SUSPENSION HEIGHT<br>MINIMUM 2000 LUMENS DIRECT, MINIMUM 1500 LUMENS INDIRECT |
| EX1C | CEILING MOUNT EDGE-LIT EXIT SIGN | [redacted] | 1.0 W | INTEGRAL LED DRIVER | UNIV | LITHONA<br>HUBBELL<br>JUNO<br>COOPER<br>PHILIPS | LES C<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL | NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR<br>FACE STYLE AND ARROW REQUIREMENTS<br>UL LISTED FOR DAMP LOCATIONS<br>RED |
| EX1E | END MOUNT EDGE-LIT EXIT SIGN | [redacted] | 1.0 W | INTEGRAL LED DRIVER | UNIV | DUAL LITE<br>LITHONIA<br>JUNO<br>COOPER<br>PHILIPS | LES E<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL | NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR<br>FACE STYLE AND ARROW REQUIREMENTS<br>UL LISTED FOR DAMP LOCATIONS<br>RED |
| EX1G | THERMOPLASTIC EXIT SIGN WITH WIREGUARD | [redacted] | 1.0 W | INTEGRAL LED DRIVER | UNIV | LITHONIA<br>CHLORIDE<br>DUAL-LITE<br>MULE<br>SURE-LITES | QUANTUM LQM S W R 120/277<br>DUAL LITE LX U R W<br>NAVILITE NXPA R WH<br>SURE-LITES LPX 6<br>CHLORIDE | NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR FACE STYLE AND QTY<br>UL LISTED FOR DAMP LOCATIONS<br>RED; PROVIDE WIREGUARD |
| EX1M | THERMOPLASTIC EXIT SIGN | [redacted] | 1.0 W | INTEGRAL LED DRIVER | UNIV | LITHONIA<br>CHLORIDE<br>DUAL-LITE<br>MULE<br>SURE-LITES | QUANTUM LQM S W R 120/277<br>DUAL LITE LX U R W<br>NAVILITE NXPA R WH<br>SURE-LITES LPX 6<br>CHLORIDE | UNIVERSAL MOUNT NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR<br>FACE STYLE AND ARROW REQUIREMENTS.<br>UL LISTED FOR DAMP LOCATIONS<br>RED |
| EX1W | WALL MOUNT EDGE-LIT EXIT SIGN | [redacted] | 1.0 W | INTEGRAL LED DRIVER | UNIV | DUAL LITE<br>LITHONIA<br>JUNO<br>COOPER<br>PHILIPS | LES W<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL | NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR<br>FACE STYLE AND ARROW REQUIREMENTS<br>UL LISTED FOR DAMP LOCATIONS<br>RED |
| FP | EXTERIOR IN-GROUND FLAGPOLE LIGHT | 5,400 | 53.0 W | INTEGRAL LED DRIVER | UNIV | HYDREL<br>KIM<br>APPROVED EQUAL | M9710C P4 MVOLT NFL<br>APPROVED EQUAL<br>APPROVED EQUAL | UL WET LOCATION LISTED<br>PROVIDE GLARE SHIELD<br>IN-GROUND INSTALLATION<br>COORDINATE EXACT LOCATION WITH GC PRIOR TO ROUGH-IN |
| HBL | LED HIGH-BAY FIXTURE | 40,500 | 300.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | TGS LIGHTING<br>LITHONIA<br>CURRENT LIGHTING | CHB-P-300W-40K-WD-U-D-B<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE MOUNTING/SUSPENSION HEIGHT<br>BLACK FINISH<br>DIFFUSING ACRYLIC<br>PROVIDE WITH WIREGUARD<br>WIDE OUTPUT<br>MINIMUM 10% DIMMING |
| L16 | 16' INDIRECT/DIRECT LINEAR LED PENDANT | [redacted] | 305.5 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-P-ID-V-V-840-TG-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH AND MOUNTING/SUSPENSION HEIGHT<br>UP/DOWN 55/45<br>SEE PLANS FOR EXACT FIXTURE LENGTH<br>MINIMUM 785 LM/FT DIRECT, MINIMUM 960 LM/FT INDIRECT<br>19 W/FT<br>PROVIDE WITH EXTENDED MOUNTING CABLING<br>BLACK FINISH |
| L26 | 26' INDIRECT/DIRECT LINEAR LED PENDANT | 6,000 | 208.0 W | INTEGRAL LED DRIVER | UNIV | LITECONTROL<br>LITHONIA<br>FOCAL POINT | 4L-P-IAD-STD-_-_-_-SOF-_-40K9-_-I080-D080-D1-1C-UNV | SUSPEND 2'-0" BELOW CEILING; 4" WIDE<br>700 LUMENS/FT UPLIGHT; 300 LUMENS/FT DOWNLIGHT;<br>SOFT DIFFUSE LENS; FLUSH LENS |
| M | 4" RECESSED LED DOWNLIGHT | 1,100 | 13.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | PRESCOLITE<br>LIGHTOLIER<br>GOTHAM | LF4SL 4LFSL 11L 35K 8 | MINIMUM 10% DIMMING<br>ENERGY STAR LISTED |
| MP1 | 4" PENDANT LED CYLINDER | 7,650 | 78.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | SPI LIGHTING<br>ALW<br>LIGHTART | SIP12068-L78W-XX-120-277-28W-90 | PENDANT MOUNTED<br>UL LISTED DAMP LOCATIONS<br>CONFIRM MOUNTING HEIGHT WITH ARCHITECT<br>6' FIXTURE LENGTH |
| MP2 | 6" PENDANT LED CYLINDER | 2,000 | 22.5 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>CURRENT LIGHTING<br>COOPER | LDN6CYL 35/20 L06 AR LD MVOLT<br>APPROVED EQUAL<br>APPROVED EQUAL | PENDANT MOUNTED<br>UL LISTED DAMP LOCATIONS<br>CONFIRM FINAL FINISH AND MOUNTING HEIGHT/OPTIONS WITH ARCHITECT PRIOR TO ROUGH-IN<br>MATTE DIFFUSER<br>FIXTURES LOCATED IN MEDIA CENTER SHALL BE BLACK FINISH |
| MP3 | 6" PENDANT LED CYLINDER | 2,500 | 28.3 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>CURRENT LIGHTING<br>COOPER | LDN6CYL 35/25 L06 AR LD MVOLT<br>APPROVED EQUAL<br>APPROVED EQUAL | PENDANT MOUNTED<br>UL LISTED DAMP LOCATIONS<br>CONFIRM FINAL FINISH AND MOUNTING HEIGHT/OPTIONS WITH ARCHITECT PRIOR TO ROUGH-IN<br>MATTE DIFFUSER<br>FIXTURES LOCATED IN MEDIA CENTER SHALL BE BLACK FINISH |

# LIGHTING FIXTURE NOTES

1. ALL FIXTURES SHALL BE LED UNLESS OTHERWISE SPECIFIED. COLOR TEMPERATURE SHALL BE 4000K UNLESS OTHERWISE NOTED.
2. LED DRIVERS SHALL BE PROVIDED FROM PER MANUFACTURER RECOMMENDATION. AS PART OF THIS RECOMMENDATION COORDINATE THE REQUIRED WAVE OUTPUT SO THEY ARE COMPATIBLE. THIS INCLUDES EMERGENCY DRIVERS.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS.
4. FIXTURES IN FIRE RATED CEILING SHALL BE PROVIDED WITH FIRE RATED TENTS AS REQUIRED.
5. SUSPEND ALL FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
6. FIXTURES WITH EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH 1100 LUMEN INVERTERS.
7. PROVIDE INTEGRAL SURGE PROTECTION ON ALL EXTERIOR LED DRIVER FIXTURE TYPES.
8. DIMMING OF FIXTURES SHALL BE WITH A SWITCH AS RECOMMENDED BY THE DRIVER MANUFACTURER.
9. THE CONTRACTOR SHALL VERIFY THE LEAD TIME OF ALL PRODUCTS SPECIFIED IN THIS SCHEDULE AT THE TIME OF PACKAGE QUOTE.
10. DURING THE BID PROCESS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DELIVERY/SCHEDULING ISSUES.
11. NO SUBSTITUTIONS WILL BE ALLOWED DUE TO LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER BID.
12. ALL EXPEDITED EXPENSES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
13. FIXTURES TO BE INSTALLED IN CEILINGS, INDICATED ON ARCHITECTURAL PLANS AS HAVING INSULATION IN CONTACT WITH CEILING SURFACE, SHALL BE IC RATED BY MANUFACTURER.
14. LED DRIVERS LOCATED IN UNCONDITIONED SPACES SHALL BE RATED FOR 90 DEGREES F.
15. PROVIDE 90 MINUTE EMERGENCY BATTERY BACK UP. EMERGENCY BACK UP SHALL BE BASED ON TYPE OF FIXTURE, LED DRIVER, BALLAST, ETC. EMERGENCY BACKUP SHALL BE DUAL INPUT FOR BOTH SWITCHING AND CHARGING. PROVIDE UNSWITCHED "HOT" FROM LOCAL CIRCUIT UNLESS OTHERWISE INDICATED ON PLANS. PROVIDE WITH INDICATOR LIGHT. INSTALL LED INDICATOR ON LIGHT FIXTURE UNLESS DECORATIVE. DECORATIVE FIXTURES SHALL HAVE INDICATOR PLACED AT LOCAL CEILING. BODINE, PHILLIPS, POWER SENTRY OR EQUAL.
16. PROVIDE EMERGENCY RELAY BASED ON MINIMUM BODINE GLCD-208 OR EQUAL. SEE PLANS FOR INTENT. PROVIDE EMERGENCY GENERATOR/INVERTER CIRCUIT AND SWITCH LEG NORMAL CIRCUIT. SEE DETAIL.
17. POLES PROVIDED FOR LED FIXTURES SHALL BE METAL, REGARDLESS OF SPECIFICATION FOR GROUNDING PURPOSES.

# LIGHTING FIXTURE SCHEDULE

| TYPE | DESCRIPTION | MINIMUM LUMENS | TOTAL FIXURE WATTAGE | DRIVER | VOLTAGE | MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|
| MP4 | 6" PENDANT LED CYLINDER | 5,000 | 57.7 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>CURRENT LIGHTING<br>COOPER | LDN6CYL 35/50 L06 AR LD MVOLT<br>APPROVED EQUAL<br>APPROVED EQUAL | PENDANT MOUNTED<br>UL LISTED DAMP LOCATIONS<br>CONFIRM FINAL FINISH AND MOUNTING HEIGHT/OPTIONS WITH ARCHITECT PRIOR TO ROUGH-IN<br>MATTE DIFFUSER<br>FIXTURES LOCATED IN MEDIA CENTER SHALL BE BLACK FINISH |
| MS | MONUMENT SIGNAGE RECESSED LED LINEAR | 11,500 | 123.0 W | REMOTE LED DRIVER | 24V | Q-TRAN LED<br>APPROVED EQUAL<br>APPROVED EQUAL | VERS-04-SW-3.0-WET-25D-N/A-XX-BW-BW-BK-XX-CC-BK<br>APPROVED EQUAL<br>APPROVED EQUAL | 41' FIXTURE RUN LENGTH - CONFIRM LENGTH WITH ARCHITECTURAL DETAILS<br>WET LOCATION LISTED<br>CONCEALED CLIP MOUNTING<br>MINIMUM 3.0W/FT - 3000K<br>PROVIDE WITH WET LOCATION LISTED IN-GROUND REMOTE POWER SUPPLY, Q-TRAN Q-VAULT-5 OR EQUAL, MVOLT, 600W MINIMUM |
| OWL2 | WALL PACK LED | 5,700 | 45.0 W | INTEGRAL LED DRIVER | UNIV | CURRENT LIGHTING<br>LITHONIA<br>COOPER | QSP2-36L-39-4K_-4F-UNV<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINISH<br>MINIMUM 5700 LUMENS<br>FORWARD THROW |
| PL12 | INDIRECT/DIRECT CONTINUOUS LED PENDANT | [redacted] | 381.8 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-P-ID-V-V-840-TG-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH AND MOUNTING/SUSPENSION HEIGHT<br>UP/DOWN 55/45<br>SEE PLANS FOR EXACT FIXTURE LENGTHS AND ANGLES NEEDED TO COMPLETE CONTINUOUS FIXTURE<br>MINIMUM 785 LUMENS/FT DIRECT, MINIMUM 960 LUMENS/FT INDIRECT<br>19 W/FT<br>PROVIDE WITH EXTENDED MOUNTING CABLING<br>BLACK FINISH |
| PL16 | INDIRECT/DIRECT CONTINUOUS LED PENDANT | [redacted] | 760.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-P-ID-V-V-840-TG-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH AND MOUNTING/SUSPENSION HEIGHT<br>UP/DOWN 55/45<br>SEE PLANS FOR EXACT FIXTURE LENGTHS AND ANGLES NEEDED TO COMPLETE CONTINUOUS FIXTURE<br>MINIMUM 785 LUMENS/FT DIRECT, MINIMUM 960 LUMENS/FT INDIRECT<br>19 W/FT<br>PROVIDE WITH EXTENDED MOUNTING CABLING<br>BLACK FINISH |
| RL6 | 6' RECESSED LINEAR | 1,950 | 21.6 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-6'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| RL8 | 8' RECESSED LINEAR | 2,600 | 28.8 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-8'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| RL12 | 12' RECESSED LINEAR | 3,900 | 43.2 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-12'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| RL16 | 16' RECESSED LINEAR | 5,200 | 57.6 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-16'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| RL20 | 20' RECESSED LINEAR | 6,500 | 72.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-20'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| RL24 | 24' RECESSED LINEAR | 7,800 | 86.4 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-24'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| RL30 | 30' RECESSED LINEAR | 9,750 | 108.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-R-D-30'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 325 LUMENS/FT<br>FLUSH LENS |
| SL4 | 4' SURFACE MOUNTED LINEAR | 1,300 | 14.4 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-SM-D-4'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 325 LUMENS/FT<br>BLACK FINISH |
| SL12 | 12' SURFACE MOUNTED LINEAR | 3,900 | 43.2 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-SM-D-12'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 325 LUMENS/FT<br>BLACK FINISH |
| SL16 | 16' SURFACE MOUNTED LINEAR | 5,200 | 57.6 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-SM-D-16'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 325 LUMENS/FT<br>BLACK FINISH |
| SL20 | 20' SURFACE MOUNTED LINEAR | 6,500 | 72.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-SM-D-20'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 325 LUMENS/FT<br>BLACK FINISH |
| SL24 | 24' SURFACE MOUNTED LINEAR | 7,800 | 86.4 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-SM-D-24'-S-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 325 LUMENS/FT<br>BLACK FINISH |
| STL1 | 4 FT. LED STRIP | 5,000 | 34.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>COLUMBIA<br>CREE<br>COOPER<br>DAY-BRITE | CLX LED L48 5000LM SEF FDL MVOLT GZ10 35K 80CRI<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL | PROVIDE CHAIN FOR PENDANT MOUNTING<br>PROVIDE WIRE GUARD<br>LENSED<br>DLC LISTED |
| T1 | THEATRICAL LIGHTING SPOT LED. ALL FIXTURES SHALL BE PROVIDED WITH CLAMP, SAFETY CABLE, GEL FRAME AND CONNECTOR. ALL FIXTURES SHALL BE PROVIDED WITH 19°, 26°, OR 36° LENS TUBE. | 9,456 | 197.0 W | DMX DIMMING DRIVER | 120V | PROVIDED BY SYSTEMS INTEGRATOR:<br>ETC LIGHTING<br>CHAUVET<br>BRIGHTLINE | | REFER TO SPECIFICATION SECTION 11 26 55.10 |
| T2 | THEATRICAL LIGHTING WASH LED. ALL FIXTURES SHALL BE PROVIDED WITH CLAMP, SAFETY CABLE, GEL FRAME AND CONNECTOR. | 5,343 | 148.4 W | DMX DIMMING DRIVER | 120V | PROVIDED BY SYSTEMS INTEGRATOR:<br>ETC LIGHTING<br>CHAUVET<br>BRIGHTLINE | | REFER TO SPECIFICATION SECTION 11 26 55.10 |
| T3 | THEATRICAL LIGHTING CYC LED. ALL FIXTURES SHALL BE PROVIDED WITH CLAMP, SAFETY CABLE, GEL FRAME AND CONNECTOR. | 4,123 | 133.0 W | DMX DIMMING DRIVER | 120V | PROVIDED BY SYSTEMS INTEGRATOR:<br>ETC LIGHTING<br>CHAUVET<br>BRIGHTLINE | | REFER TO SPECIFICATION SECTION 11 26 55.10 |
| TL | CASEWORK LED TAPE LIGHT | [redacted] | 19.0 W | REMOTE LED DRIVER | UNIV | NOVA FLEX LIGHTING<br>WAC LIGHTING<br>LED LINEAR | PRO SERIES W/ REMOTE DIMMABLE POWER SUPPLY W/ SURFACE MOUNTED CHANNEL W/ DOT FREE LENSE<br>APPROVED EQUAL<br>APPROVED EQUAL | CONTRACTOR TO FIELD VERIFY LENGTH<br>PROVIDE REMOTE DRIVER AND SURFACE MOUNTED CHANNEL WITH DOT FREE LENSE.<br>COORDINATE INSTALLATION WITH CASEWORK VENDOR PRIOR TO ROUGH-IN<br>MINIMUM 200 LUMENS PER FOOT<br>PROVIDE SEAMLESS ILLUMINATION ALONG THE LENGTH OF THE CASEWORK<br>3.0 W/FT MAXIMUM |
| U | 8" CYLINDER PENDANT FIXTURE | 8,000 | 93.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | 120V | LITHONIA<br>PATHWAY<br>JUNO<br>COOPER<br>SPECTRUM | LDN8CYL35/80 L08 BR MVOLT RM DBL<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL<br>APPROVED EQUAL | 8,000 LUMENS. PENDANT MOUNT LEVEL WITH FACE OF ADJACENT CEILING-CLOUD; MINIMUM 1% DIMMING; BLACK APERTURE AND FINISH. |
| WC | AUDITORIUM WALL SCONCE | 1,000 | 21.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | BROWNLEE<br>FC<br>BETA-CALCO | S176-24- - H16-35K<br>APPROVED EQUAL<br>APPROVED EQUAL | VERTICAL MOUNT; MINIMUM 1600 LUMENS; ARCHITECT TO SELECT FINISH; COORDINATE MOUNTING HEIGHT WITH ARCHITECT |
| WL1 | 4 FT. LED WALL MOUNT STRIP | 6,000 | 60.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>H.E. WILLIAMS<br>COOPER | BLWP4 60L ADSM GZ10 LP840<br>APPROVED EQUAL<br>APPROVED EQUAL | DLC LISTED. MINIMUM 6000 LUMENS. |
| WL2 | 8 FT. LED WALL MOUNT STRIP | 10,000 | 100.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | LITHONIA<br>H.E. WILLIAMS<br>COOPER | BLWP8 100L ADSM GZ10 LP840<br>APPROVED EQUAL<br>APPROVED EQUAL | DLC LISTED. MINIMUM 10000 LUMENS. |
| WL4 | 4' WALL MOUNT LINEAR | 2,400 | 28.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-WM-D-4'-H-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 600 LUMENS/FT DIRECT<br>7 W/FT<br>ARCHITECT TO CHOOSE FINAL FINISH<br>BLACK FINISH |
| WL40 | 40' WALL MOUNT LINEAR | 24,000 | 284.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | FINELITE<br>PINNACLE<br>MARK LIGHTING | HP-2-WM-D-40'-H-840-F-277-FC-10%<br>APPROVED EQUAL<br>APPROVED EQUAL | MINIMUM 600 LUMENS/FT DIRECT<br>7 W/FT<br>ARCHITECT TO CHOOSE FINAL FINISH<br>BLACK FINISH |
| WS1 | INDIRECT/DIRECT LED WALL SCONCE | [redacted] | 71.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | ALW<br>DMF<br>GOTHAM | CRU6-40904080-40904080-DV00<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 4000 LUMENS DIRECT, MINIMUM 4000 LUMENS INDIRECT<br>BLACK FINISH |
| WS2 | DIRECT LED WALL SCONCE | [redacted] | 35.5 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | ALW<br>DMF<br>GOTHAM | CRS6-40904080-NV00<br>APPROVED EQUAL<br>APPROVED EQUAL | ARCHITECT TO CHOOSE FINAL FINISH<br>MINIMUM 4000 LUMENS DIRECT<br>BLACK FINISH |

# LIGHTING FIXTURE SCHEDULE - PREFERRED BRAND ALT.

| TYPE | DESCRIPTION | MINIMUM LUMENS | TOTAL FIXURE WATTAGE | DRIVER | VOLTAGE | MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|
| FPL4 | 2X4 LED FLAT PANEL | 4,000 | 39.0 W | INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING) | UNIV | PREFERRED BRAND<br>ALTERNATE: LITHONIA<br>DAYBRITE<br>H.E. WILLIAMS<br>COOPER | CPX 2X4 4000LM 35K M2 | DAMP LOCATIONS<br>DLC LISTED |

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11/8/2024

CONSTRUCTION DOCUMENTS

optima engineering
434 Fayetteville St., Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

HARNETT COUNTY SCHOOLS
FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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LIGHTING FIXTURE SCHEDULE

E-803

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## GENERAL NOTES:

A. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT NETWORK OUTLET LOCATIONS.

B. COORDINATE LOCATIONS OF CEILING MOUNTED DEVICES (WIRELESS ACCESS POINTS, SPEAKERS, CABLE TRAY, ETC) WITH ALL OTHER TRADES (ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, TECHNOLOGY, ETC).

C. ANY DIRECTION GIVEN IN THE FIELD THAT DEVIATES FROM THE CONSTRUCTION DOCUMENTS MUST BE DOCUMENTED AND VERIFIED WITH THE ENGINEER.

D. PROVIDE ALL REQUIRED HARDWARE FOR A COMPLETE INSTALLATION.

E. IF A CONTRADICTION OF DIRECTION IS IDENTIFIED WITHIN THE RESPONSIBILITY MATRIX, DRAWINGS AND/OR SPECIFICATIONS, CONTRACTOR SHALL REQUEST CLARIFICATION PRIOR TO FINALIZING BID OR INCLUDE THE HIGHER COST OPTION IN THEIR BID.

F. EACH 4" LOW VOLTAGE SITE CONDUIT SHALL BE PROVIDED WITH (1) 3-CELL FABRIC MESH INNERDUCT, MAXCELL OR EQUIVALENT; UNLESS OTHERSIDE NOTED.

G. ALL CONDUITS SHALL BE CONCEALED UNLESS OTHERWISE NOTED. WHERE CONDUITS ARE TO BE INSTALLED IN EXPOSED CEILINGS, CONDUITS SHALL BE INSTALLED TIGHT TO STRUCTURE AND PAINTED TO MATCH ADJACENT SURFACE.

H. NO SECTION OF LOW VOLTAGE CONDUIT SHALL CONTAIN MORE THAN (2) 90° BENDS, OR EQUIVALENT BETWEEN PULL POINTS. PROVIDE BOX SIZED PER NEC OR AS INDICATED.

I. NO SECTION OF LOW VOLTAGE CONDUIT SHALL BE LONGER THAN 100'-0" BETWEEN PULL POINTS. PROVIDE BOX SIZED PER NEC OR AS INDICATED.

J. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT CONDUIT ROUTING FOR TELECOMMUNICATIONS HORIZONTAL CABLING WITH STRUCTURED CABLING CONTRACTOR PRIOR TO INSTALLATION.

K. ALL 2" AND LARGER CONDUITS SHALL BE LABELED ON BOTH ENDS INDICATING DESTINATION LOCATION.

L. ALL JUNCTION BOXES MOUNTED IN EXTERIOR WALLS SHALL BE WEATHERPROOF AND GASKETED.

M. ELECTRICAL CONTRACTOR SHALL PROVIDE PULLSTRINGS (INTERIOR) OR MULE TAPE (EXTERIOR) FOR ALL CONDUITS TO BE UTILIZED FOR LOW VOLTAGE SYSTEMS.

N. ELECTRICAL CONTRACTOR SHALL MAINTAIN FIRE RATINGS OF WALLS, PARTITIONS, FLOORS OR CEILINGS PER NEC & IBC WHEN INSTALLING RECESSED BOXES. BOXES IN RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE NOT LESS THAN 24". THE HORIZONTAL DISTANCE MAY BE REDUCED, BUT SHALL NOT BE LESS THAN THE DEPTH OF THE WALL CAVITY, WHERE FILLED WITH CELLULOSE LOOSE FILL, ROCKWOOL OR SLAG MINERAL WOOL INSULATION OR WHERE PROTECTED BY LISTED PUTTY PADS OR OTHER LISTED MATERIALS/METHODS. ELECTRICAL CONTRACTOR SHALL PROVIDE LISTED PUTTY PADS AS REQUIRED. IN NO CASE SHALL THE AGGREGATE AREA OF OPENINGS EXCEED 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL SPACE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH LOW VOLTAGE CONTRACTOR TO VERIFY FINAL INSTALLATION WILL SATISFY CODE REQUIREMENTS.

O. INSTALLATION OF AC VOLTAGE CABLING IN LOW VOLTAGE PATHWAYS IS NOT ACCEPTABLE.

P. CABLING SHALL PASS STRAIGHT THROUGH ANY PULL BOX. CHANGE OF DIRECTION IN A PULL BOX IS NOT ACCEPTABLE.

Q. CONDUIT FILL RATIO SHALL NOT EXCEED 40% FILL.

R. FACEPLATES SHALL MATCH ADJACENT ELECTRICAL DEVICES. FINAL COLOR AND FINISH TO BE APPROVED BY ARCHITECT AND OWNER.

S. ALL FACEPLATES AND PATCH PANELS SHALL UTILIZE MODULAR JACKS.

T. ALL CABLING SHALL BE PLENUM RATED UNLESS OTHERWISE NOTED.

U. ALL CABLING, TERMINATIONS AND HOUSINGS ARE TO BE RATED FOR THE ENVIRONMENTS IN WHICH THEY ARE INSTALLED.

V. CABLING SHALL NOT BE PAINTED. MANUFACTURERS WARRANTY MAY BE VOIDED IF PAINTED.

W. DO NOT INSTALL BRUISED, KINKED, SCORED, DEFORMED, OR ABRADED CABLE. REMOVE AND DISCARD CABLE IF DAMAGED DURING INSTALLATION AND REPLACE IT WITH NEW CABLE.

X. TERMINATE ALL CABLING ON DEDICATED SYSTEM PATCH PANEL. (WIRELESS, DATA, SECURITY, ETC.)

Y. PROVIDE OUTSIDE PLANT CATEGORY CABLING FOR IN/UNDERSLAB OR OUTDOOR APPLICATIONS. CONDUIT CONTAINING OUTSIDE PLANT CABLING SHALL BE EXTENDED TO LOCAL TELECOMMUNICATIONS ROOM. INDOOR/OUTDOOR CATEGORY CABLING IS AN ACCEPTABLE ALTERNATIVE. GENERAL CABLE: GENSPEED 10 UTP INDOOR/OUTDOOR 7141007 OR APPROVED EQUAL.

Z. ALL CABLING SHALL BE TERMINATED, TESTED AND LABELED PER SPECIFICATIONS. ALL LABELING SHALL BE MACHINE PRINTED. HAND WRITTEN LABELS ARE NOT ACCEPTABLE.

AA. PROVIDE PATCH CORD FOR EACH TERMINATED PORT IN TELECOMMUNICATIONS ROOM. COORDINATE EXACT LENGTH WITH OWNER.

BB. PROVIDE EQUIPMENT CORD FOR EACH WIRELESS ACCESS POINT, NETWORK SPEAKER, AND NETWORK CAMERA. COORDINATE EXACT LENGTH WITH OWNER.

CC. PROVIDE ENCLOSURE FOR WIRELESS ACCESS POINTS LOCATED IN GYMNASIUMS AND SPORTS ENVIRONMENTS. BERON OR APPROVED EQUAL.

DD. PROVIDE SURGE SUPPRESSION MODULE AT DEVICES UTILIZING IN/UNDERSLAB CONDUIT AND EXTERIOR WIRELESS ACCESS POINT, CAMERA, AND NETWORK SPEAKER LOCATIONS. DITEK: DTK-MRJPOES OR APPROVED EQUAL. REFER TO EXTERIOR NETWORK DEVICE DETAIL. PROVIDE 24 CHANNEL, RACK MOUNTED SURGE SUPPRESSION AT RACK LOCATION FOR NETWORK PROTECTION. DITEK: DTK-RM24NETS OR APPROVED EQUAL. PROVIDE PATCH CORDS AS REQUIRED. INSTALL SURGE SUPPRESSION DEVICES WITHIN 24" OF BUILDING ENTRY OR EQUIPMENT ENCLOSURE.

EE. ALL PENETRATIONS THROUGH RATED WALLS MUST BE FIRESTOPPED. UTILIZE MECHANICAL FIRE RATED PATHWAYS. STI EZ-PATH OR APPROVED EQUAL.

FF. PROVIDE METALLIC J-HOOKS FOR CABLING IN ACCESSIBLE CEILING SPACES WITHOUT CABLE TRAY, BETWEEN CONDUITS, AND BETWEEN CONDUITS AND CABLE TRAY AT 3'-5' IRREGULAR INTERVALS. PANDUIT, COOPER B-LINE, NVENT CADDY, OR APPROVED EQUAL. PER NFPA 1221 SECTION 5.5, J-HOOKS ARE NOT ACCEPTABLE WITHIN AN EMERGENCY SERVICES COMMUNICATIONS CENTER. CABLE TRAY OR CONDUIT SHALL BE PROVIDED.

GG. THE USE OF J-HOOKS IN EXPOSED CEILING AREAS IS NOT ACCEPTABLE. PROVIDE CONDUIT OR SOLID BOTTOM CABLE TRAY. CONDUITS AND/OR SOLID BOTTOM CABLE TRAY SHALL BE PAINTED TO MATCH ADJACENT SURFACE.

HH. PROVIDE PLASTIC INSERT WITH SIDES FOR WIRE MESH CABLE TRAY SHOWN IN EXPOSED CEILINGS.

II. THE USE OF J-HOOKS ABOVE INACCESSIBLE CEILING AREAS IS NOT ACCEPTABLE. PROVIDE CONDUIT.

JJ. NYLON CABLE TIE WRAPS ARE NOT ACCEPTABLE FOR BINDING OR SECURING CABLE BUNDLES. UTILIZE HOOK AND LOOP STRAPS TO SECURE CABLING IN TELECOMMUNICATIONS ROOM. STRAPS SHALL BE EVENLY SPACED THROUGHOUT THE DRESSED LENGTH AND PLENUM RATED WHERE APPLICABLE.

KK. PROVIDE (2) CATEGORY 6 CABLES TO EACH ELEVATOR CONTROLLER FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK AND EMERGENCY PHONE INTERFACE. ELEVATOR TRAVELER CABLE SHALL BE PROVIDED WITH ELEVATOR. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH ELEVATOR CONTRACTOR.

LL. PROVIDE (2) CATEGORY 6 CABLES TO EACH FIRE ALARM CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH FIRE ALARM CONTRACTOR.

MM. PROVIDE (1) CATEGORY 6 CABLE TO EACH EMERGENCY RESPONDER RADIO SYSTEM CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

NN. PROVIDE (2) CATEGORY 6 CABLES TO EACH SECURITY ALARM PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH SECURITY CONTRACTOR.

OO. PROVIDE (1) CATEGORY 6 CABLE TO EACH HVAC CONTROLLER (JACE) FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH HVAC CONTRACTOR

PP. PROVIDE (1) CATEGORY 6 CABLE TO EACH LIGHTING CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

QQ. PROVIDE (1) CATEGORY 6 CABLE TO MAIN SWITCHBOARD FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

RR. PROVIDE (1) CATEGORY 6 CABLE TO EACH AUTOMATIC TRANSFER SWITCH FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

SS. PROVIDE (1) CATEGORY 6 CABLE TO EACH ELECTRIC VEHICLE (EV) CHARGER FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. NETWORK DROP SHALL BE MOUNTED INSIDE ENCLOSURE AND TERMINATED ON A BISCUIT BOX. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

## SYMBOLS:

| SYMBOL | DESCRIPTION |
|---|---|
| #D | NETWORK OUTLET. STANDARD HEIGHT (+18" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE 2 CATEGORY 6 CABLES UNLESS OTHERWISE INDICATED BY SUBSCRIPT. |
| #D | NETWORK OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE 2 CATEGORY 6 CABLES UNLESS OTHERWISE INDICATED BY SUBSCRIPT. |
| | NETWORK OUTLET. FOR OWNER PROVIDED VAPE SENSOR. CEILING MOUNTED. ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1)CATEGORY 6 CABLE WITH MPTL CONNECTOR. SEE DETAIL ON SHEET T-503 FOR ADDITIONAL INFORMATION. |
| | NETWORK WALL PHONE OUTLET. ELEVATED HEIGHT (+42" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6 CABLE AND PHONE WALL MOUNT FACEPLATE. |
| WAP | WIRELESS ACCESS POINT CONNECTION (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (HARD/OPEN CEILING). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. WHEN INSTALLED IN ACCESSIBLE CEILING, STRUCTURED CABLING CONTRACTOR SHALL PROVIDE ABOVE CEILING BRACKET AND SURFACE BOX. REFER TO WIRELESS ACCESS POINT DETAIL (ACCESSIBLE CEILING). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE 3'-0" EQUIPMENT CORD. WIRELESS ACCESS POINT EQUIPMENT SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT. |
| WAP | WIRELESS ACCESS POINT CONNECTION (WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (WALL). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. WIRELESS ACCESS POINT EQUIPMENT SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT. |
| WAP EXT | WIRELESS ACCESS POINT CONNECTION (EXTERIOR). ELECTRICAL CONTRACTOR SHALL PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE SURGE PROTECTION AND 3'-0" EQUIPMENT CORD. WIRELESS ACCESS POINT EQUIPMENT SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED. REFER TO EXTERIOR NETWORK DEVICE DETAIL. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT. |
| | CONDUIT/SLEEVE. 2" UNLESS OTHERWISE NOTED. |
| | RUNWAY LADDER CABLE TRAY IN TELECOMMUNICATIONS ROOMS. |
| | WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS. |
| | TWO-POST EQUIPMENT RACK, FLOOR MOUNTED, WITH VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR. |
| | FOUR-POST EQUIPMENT RACK, FLOOR MOUNTED, WITH VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR. |
| | EQUIPMENT CABINET WITH INTEGRAL VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR. |
| | TTB (TELEPHONE TERMINAL BOARD). 3/4" A/C GRADE FIRE-RATED PLYWOOD. MOUNT VERTICALLY TO WALLS WITH BOTTOM EDGE 8" AFF AND GRADE "A" SURFACE EXPOSED. FIRE RATING STAMP MUST REMAIN VISIBLE. |
| PBB | PRIMARY BONDING BUSBAR |
| SBB | SECONDARY BONDING BUSBAR |
| X | KEYED NOTE |

## FLOOR BOXES:

| SYMBOL | DESCRIPTION |
|---|---|
| FB4 | 4-GANG MULTI-SERVICE FLOOR BOX. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, CONDUITS, ELECTRICAL DEVICES AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6 CABLES AS INDICATED BY SUBSCRIPT. LEGRAND: EVOLUTION EFB45S-OG OR APPROVED EQUAL. |
| PT8 | 8" MULTI-SERVICE POKE-THRU FLOOR BOX. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, CONDUITS, ELECTRICAL DEVICES AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6 CABLES AS INDICATED BY SUBSCRIPT. LEGRAND: EVOLUTION BAT OR APPROVED EQUAL. |
| FBW | DUPLEX/DATA IN STAGE. 120VAC, 20A, AND DATA OUTLET, RECESSED FLOOR MOUNTED (HUBBELL DEEP RECTANGULAR CAST IRON BOX, OR APPROVED EQUAL BY THOMAS & BETTS OR LEGRAND). TWO GANG, BRASS FLANGE, BRASS COVER PLATE. MINIMUM (2) 1" CONDUITS, ONE FOR POWER AND ONE FOR DATA. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6 CABLES AS INDICATED BY SUBSCRIPT. |

## SYMBOLS:

| SYMBOL | DESCRIPTION |
|---|---|
| # I # OF SENSORS | NETWORK CAMERA (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6 CABLE FOR EACH CAMERA CONNECTION. WHEN INSTALLED IN ACCESSIBLE CEILING, STRUCTURED CABLING CONTRACTOR SHALL PROVIDE ABOVE CEILING BRACKET AND BISCUIT BOX. SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL CAMERA; QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. |
| # I # OF SENSORS | NETWORK CAMERA (WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6 CABLE FOR EACH CAMERA CONNECTION. SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL CAMERA; QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. |
| # EXT I # OF SENSORS | NETWORK CAMERA (EXTERIOR CEILING). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6 CABLE FOR EACH CAMERA CONNECTION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE SURGE PROTECTION AND 1'-0" EQUIPMENT CORD. SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL CAMERA; QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. |
| # EXT I # OF SENSORS | NETWORK CAMERA (EXTERIOR WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6 CABLE FOR EACH CAMERA CONNECTION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE SURGE PROTECTION AND 1'-0" EQUIPMENT CORD. REFER TO EXTERIOR NETWORK DEVICE DETAIL. QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL CAMERA; QUANTITY OF SENSORS REQUIRED INDICATED INSIDE CAMERA BY A NUMBER. SEE DETAILS FOR ADDITIONAL INFORMATION. |
| VI | VIDEO INTERCOM WITH INTEGRAL CARD READER. ELEVATED HEIGHT (+42" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. |
| MS | MASTER STATION FOR VIDEO INTERCOM AND PAGING (DESKTOP DEVICE). SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. |
| KP | KEYPAD FOR ALARM/IDS. ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO INTRUSION DETECTION CONTROL PANEL. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. |
| MD | MOTION DETECTOR. WHEN IN HARD CEILING OR WALL MOUNT; ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. |
| GB | GLASS BREAK DETECTOR. WHEN IN HARD CEILING OR WALL MOUNT; ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. . |
| PB | PANIC BUTTON. ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESS CONTROL PANEL. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. |
| DR | DOOR RELEASE. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. SEE DETAILS FOR ADDITIONAL INFORMATION. |
| WL | WIRELESS LOCK. PROVIDED AND INSTALLED BY OTHERS. SECURITY CONTRACTOR SHALL PROGRAM. |
| HUB | WIRELESS LOCK HUB. PROVIDE SINGLE GANGE JUNCTION BOX WITH 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. |
| S | 70-VOLT PAGING SPEAKER (CEILING MOUNTED). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE MIN. 16/2C CABLING TO EACH SPEAKER. DAISY CHAINING OF SPEAKERS WITHIN ZONES SHALL BE ALLOWED. PROVIDE 10'-0" CABLE SLACK AND COIL AT SPEAKER LOCATION ABOVE ACCESSIBLE CEILING. |
| S HO | 70-VOLT PAGING SPEAKER (WALL-MOUNTED). MOUNT AT 9.5' AFF, UON. ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG J-BOX WITH 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE MIN. 16/2 C CABLING TO EACH SPEAKER. DAISY CHAINING OF SPEAKERS WITHIN ZONES SHALL BE ALLOWED.<br>SUBSCRIPT "HO" DENOTES HIGH-OUTPUT HORN SPEAKER.<br>SUBSCRIPT "EXT" DENOTES HIGH-OUTPUT EXTERIOR HORN SPEAKER. |
| S EXT | |
| VC | LOCAL VOLUME CONTROL FOR PAGING SPEAKER. ELECTRICAL CONTRACTOR SHALL PROVIDE SINGLE GANG JUNCTION BOX WITH 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE VOLUME CONTROL WITH FACE PLATE AND 16/2C CABLING TO LOCAL SPEAKER. |
| AV# | AV BACKBOX. ELECTRICAL CONTRACTOR SHALL PROVIDE BACKBOX/JUNCTION BOX AND CONDUIT. REFER TO DETAILS ON T-502 FOR ADDITIONAL INFORMATION. |
| TV | DISPLAY CONNECTION WITH NETWORK AND DUPLEX POWER. ELECTRICAL CONTRACTOR SHALL PROVIDE 3-GANG JUNCTION BOX WITH OFFSET 1-GANG TRIM RING FOR LOW VOLTAGE SECTION, LOW VOLTAGE DIVIDER, 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE FOR NETWORK CABLING, 0.75" CONDUIT FOR POWER AND DUPLEX RECEPTACLE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6 CABLE; UNLESS OTHERWISE NOTED. REFER TO DISPLAY DETAIL. |

## SECURITY GENERAL NOTES

1. MOST INTERIOR CAMERAS SHALL BE RECESSED CEILING MOUNTED WITH TRIM RINGS AND EXPOSED HOUSINGS COLOR MATCHED TO CEILING. PROVIDE ARCHITECT COLOR SAMPLES FOR VERIFICATION PRIOR TO ORDERING.
2. WALL MOUNTED CAMERAS LOCATIONS SHALL BE COORDINATED TO MAINTAIN THE DESIRED FIELD OF VIEW (FoV) WITH ALL EXPOSED HOUSINGS COMPONENTS COLOR MATCHED TO WALL. PROVIDE ARCHITECT COLOR SAMPLES FOR VERIFICATION PRIOR TO ORDERING.
3. ALL DOOR HARDWARE SHALL BE COORDINATED WITH THE ARCHITECTURAL DOOR HARDWARE CONSULTANT. HARDWARE SHOWN ON SECURITY DRAWINGS SHOW NEED AND DOES NOT SIGNIFY THE TYPE.
   A. (WL)-BATTERY OPERATED WIRELESS LOCK. SCHLAGE AD400/402 SERIES WITH MECHANICAL KEY OVERRIDE.
   B. SECURITY CONTRACTOR SHALL PROVIDE, INSTALL, AND CABLE DOOR HUBS/PIM DEVICES PER MANUFACTURER'S SPECIFICATIONS
4. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. PATHWAYS SHALL BE CONCEALED. NO CONDUIT SHALL BE EXPOSED. WHEN FREE-AIR CABLING IS APPROVED, CONDUIT SHALL BE INSTALLED ABOVE HARD-CEILINGS OR INACCESSIBLE AREAS TO THE CLOSEST APPROVED TECHNOLOGY CABLE SUPPORT SYSTEM (CABLE TRAY, J-HOOKS NOT MORE THAN 5-FEET APART). BRIDLE RINGS SHALL NOT BE INSTALLED. SECURITY SYSTEMS CABLES SHALL HAVE A DEFINED AREA IN THE CABLE SUPPORT SYSTEM AND NOT BE COMMINGLED WITH OTHER SYSTEMS CABLES. AC VOLTAGE SHALL NOT BE INSTALLED IN THE TECHNOLOGY CABLE SUPPORT SYSTEM.
6. ALL WALL MOUNTED SECURITY EQUIPMENT SHALL BE PLACED ON 4' X 8' X 3/4" A/C GRADE FIRE RATED PLYWOOD WITHIN THE TELECOM EQUIPMENT ROOM.
7. SECURITY CONTRACTOR SHALL COORDINATE THE EXACT PLACEMENT OF ALL SECURITY EQUIPMENT WITH IT PRIOR TO MOUNTING ANY EQUIPMENT

## TELECOMMUNICATIONS STANDARDS:

INSTALLATION SHALL CONFORM TO THE FOLLOWING STANDARDS:

A. TIA-568.0-E (GENERIC TELECOMMUNICATIONS CABLING FOR CUSTOMER PREMISES)
B. TIA-568.1-E (COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING)
C. TIA-568.2-D (BALANCED TWISTED-PAIR TELECOMMUNICATIONS CABLING AND COMPONENTS)
D. TIA-568.3-E (OPTICAL FIBER CABLING AND COMPONENTS)
E. TIA-569-E (TELECOMMUNICATIONS PATHWAYS AND SPACES)
F. TIA-606-D (ADMINISTRATION STANDARD FOR TELECOMMUNCATIONS INFRASTRUCTURE)
G. TIA-607-D (TELECOMMUNICATIONS BONDING AND GROUNDING FOR CUSTOMER PREMISES)

## CABLE SERVICE LOOP SCHEDULE

| | SOURCE | DESTINATION | NOTES |
|---|---|---|---|
| BACKBONE - FIBER | 20'-0" | 20'-0" | RACK MOUNTED ENCLOSURE |
| HORIZONTAL - COPPER - DATA | 10'-0" | 1'-6" | |
| HORIZONTAL - COPPER - WAP | 10'-0" | 20'-0" | |
| HORIZONTAL - COPPER - CAMERA | 10'-0" | 20'-0" | |
| HORIZONTAL - COPPER - INTERCOM | **10'-0"** | 10'-0" | |
| | | | |

NOTES:
A. UTILIZE FIGURE EIGHT CONFIGURATION FOR LARGE SERVICE LOOPS.
B. COIL CABLING FOR FIELD DEVICE LOCATIONS AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
C. PROVIDE 20'-0" SERVICE LOOP WERE A ROOM IS UTILIZED AS A PULL POINT AND NO TERMINATIONS ARE MADE.
D. PROVIDE A 50'-0" FIBER SERVICE LOOP IN EACH HAND HOLE

## NETWORK CABLE COLORS

| | |
|---|---|
| DATA/VOICE: | BLUE CABLE - BLUE JACK |
| WIRELESS ACCESS: | PURPLE CABLE - PURPLE JACK |
| SECURITY: | GREEN CABLE - GREEN JACK |
| INTERCOM: | WHITE CABLE - WHITE JACK |

## CATEGORY CABLE EMT CONDUIT CAPACITY SCHEDULE

| CONDUIT | 1" | 1.25" | 1.50" | 2.00" | 2.50" | 3.00" | 4.00" |
|---|---|---|---|---|---|---|---|
| CABLES | 7 | 12 | 16 | 27 | 47 | 72 | 120 |

NOTES:
A. UPSIZE CONDUIT TO NEXT SIZE SHOWN IN THIS SCHEDULE WHEN CABLE CAPACITY HAS BEEN EXCEEDED
B. CONDUIT CAPACITY CALCULATED WITH 0.25" O.D. CATEGORY CABLE AT 40% FILL RATIO.

## CONDUIT/SLEEVE SCHEDULE

| | |
|---|---|
| CLASSROOMS | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| COMPUTER LABS | (2) 4" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| SMALL OFFICES | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| LARGE OFFICES | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| WORKSPACES | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| CONFERENCE RMS. | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| VESTIBUL

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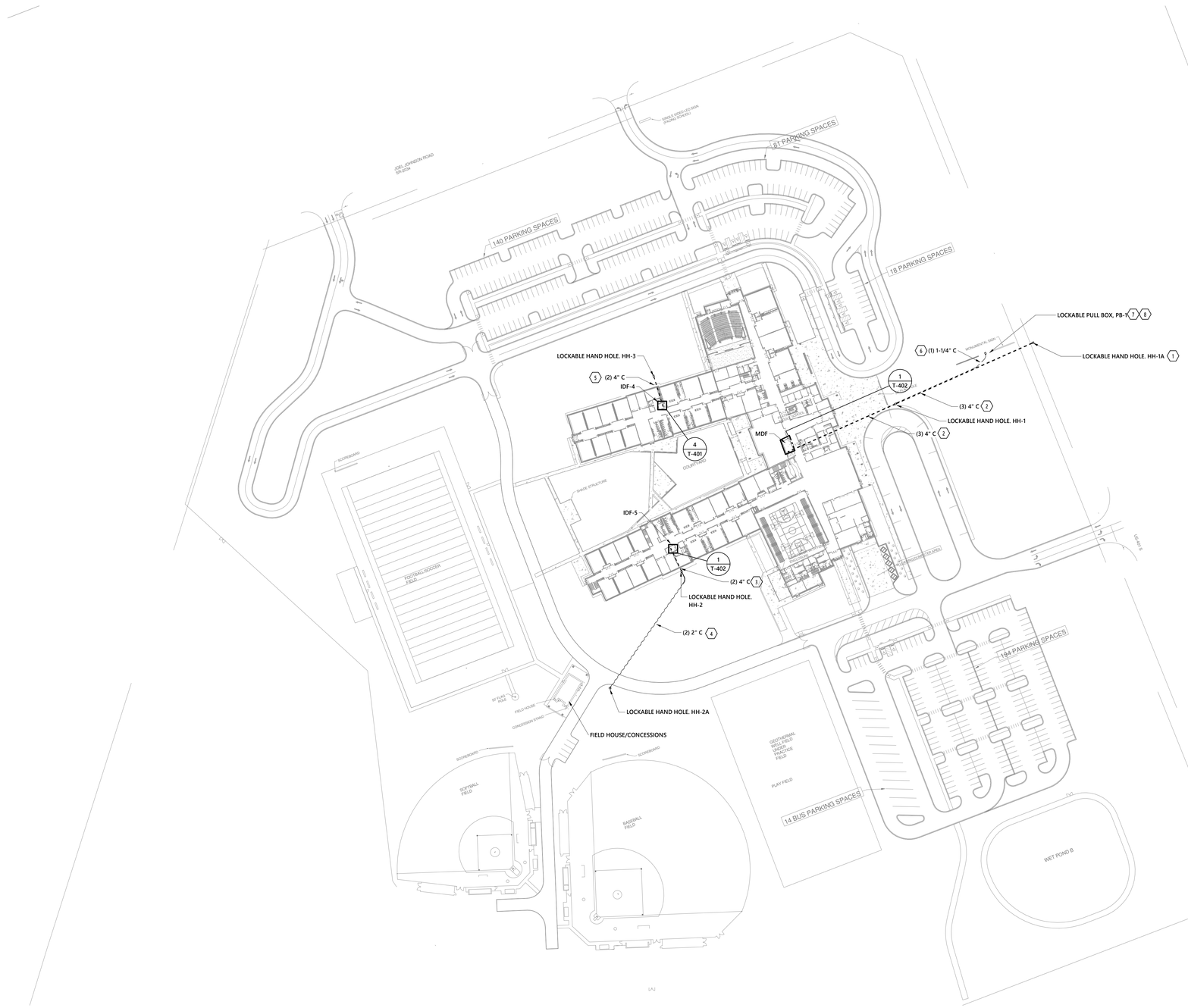


1 **TECHNOLOGY SITE PLAN**
1" = 80'-0"

## GENERAL NOTES:

A. UNDERGROUND PATHWAYS SHALL BE COORDINATED WITH ALL DISCIPLINES PRIOR TO ROUGH-IN.

B. CONDUITS SHALL BE A MINIMUM 36" BELOW FINISHED GRADE.

C. ALL HAND HOLES SHALL BE A MINIMUM 36"X28" WITH LOCKING SECURITY COVER AND FACTOR LABELED COVER; COVER SHALL READ "TELECOM" . UNLESS OTHERWISE NOTED.

## KEYED NOTES: (#)

1. COORDINATE HAND HOLE LOCATION WITH LOCAL SERVICE PROVIDER PRIOR TO ROUGH-IN.
2. PROVIDE AND INSTALL (1) 3-CELL 3" FABRIC MESH INNERDUCTT IN (2) OF THE 4" CONDUITS, THE THIRD CONDUIT SHALL BE MARKED AS SPARE AND CAPPED.
3. PROVIDE AND INSTALL (1) 3-CELL 3" FABRIC MESH INNERDUCT IN (1) OF THE 4" CONDUITS, THE SECOND CONDUIT SHALL BE MARKED AS SPARE AND CAPPED.
4. PROVIDE AND INSTALL (1) 3-CELL 2" FABRIC MESH INNERDUCT IN (1) OF THE 2" CONDUITS, THE SECOND CONDUIT SHALL BE MARKED AS SPARE AND CAPPED.
5. CAP CONDUITS AT BOTH ENDS FOR FUTURE USE.
6. PROVIDE AND INSTALL (1) 1-1/2" CONDUIT FROM HH-1 TO PB-1 FOR 2-STRAND FIBER TO MONUMENT SIGN.
7. CONTRACTOR SHALL PROVIDE AND INSTALL CONDUIT FROM PB-1 TO MONUMENT SIGN. COORDINATE EXACT LOCATION WITH SIGN VENDOR.
8. LOCKING PULL BOX FOR MONUMENT SIGN FIBER. COORDINATE EXACT LOCATION WITH SIGN VENDOR PRIOR TO ROUGH-IN.

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: PAL
CHECKED BY: TMC

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TECHNOLOGY SITE PLAN

T-010

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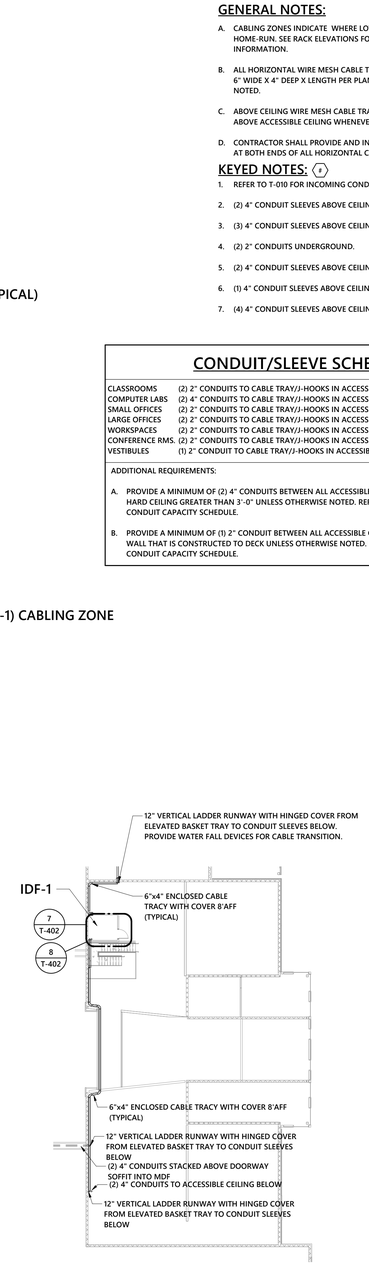
1 OVERALL FIRST FLOOR TECHNOLOGY PLAN
1" = 20'-0"




2 MECH. MEZZANINE TECHNOLOGY PATHWAY PLAN - AREA 200
1" = 20'-0"

## GENERAL NOTES:

A. CABLING ZONES INDICATE WHERE LOW-VOLTAGE CABLING SHALL HOME-RUN. SEE RACK ELEVATIONS FOR ADDITIONAL INFORMATION.

B. ALL HORIZONTAL WIRE MESH CABLE TRAY ON THIS SHEET SHALL BE 6" WIDE X 4" DEEP X LENGTH PER PLANS, UNLESS OTHERWISE NOTED.

C. ABOVE CEILING WIRE MESH CABLE TRAY SHALL BE MOUNTED 12" ABOVE ACCESSIBLE CEILING WHENEVER POSSIBLE.

D. CONTRACTOR SHALL PROVIDE AND INSTALL WATERFALL DEVICES AT BOTH ENDS OF ALL HORIZONTAL CONDUITS.

## KEYED NOTES: (#)

1. REFER TO T-010 FOR INCOMING CONDUIT INFORMATION.
2. (2) 4" CONDUIT SLEEVES ABOVE CEILING.
3. (3) 4" CONDUIT SLEEVES ABOVE CEILING.
4. (2) 2" CONDUITS UNDERGROUND.
5. (2) 4" CONDUIT SLEEVES ABOVE CEILING INTO MEZZ.
6. (1) 4" CONDUIT SLEEVES ABOVE CEILING.
7. (4) 4" CONDUIT SLEEVES ABOVE CEILING.

## CONDUIT/SLEEVE SCHEDULE

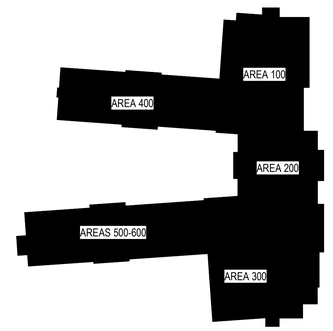
| | |
|---|---|
| CLASSROOMS | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| COMPUTER LABS | (2) 4" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| SMALL OFFICES | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| LARGE OFFICES | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| WORKSPACES | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| CONFERENCE RMS. | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
| VESTIBULES | (1) 2" CONDUIT TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |

ADDITIONAL REQUIREMENTS:

A. PROVIDE A MINIMUM OF (2) 4" CONDUITS BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A HARD CEILING GREATER THAN 3'-0" UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

B. PROVIDE A MINIMUM OF (1) 2" CONDUIT BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A WALL THAT IS CONSTRUCTED TO DECK UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

KEY PLAN

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3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: PAL
CHECKED BY: TMC

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OVERALL FIRST FLOOR - PATHWAY PLAN

T-100

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## GENERAL NOTES:

A. CABLING ZONES INDICATE WHERE LOW-VOLTAGE CABLING SHALL HOME-RUN. SEE RACK ELEVATIONS FOR ADDITIONAL INFORMATION.

B. ALL HORIZONTAL WIRE MESH CABLE TRAY ON THIS SHEET SHALL BE 6" WIDE X 4" DEEP X LENGTH PER PLANS, UNLESS OTHERWISE NOTED.

C. ABOVE CEILING WIRE MESH CABLE TRAY SHALL BE MOUNTED 12" ABOVE ACCESSIBLE CEILING WHENEVER POSSIBLE..

D. CONTRACTOR SHALL PROVIDE AND INSTALL WATERFALL DEVICES AT BOTH ENDS OF ALL HORIZONTAL CONDUITS.

## KEYED NOTES: (x)

1. (2) 4" CONDUIT SLEEVES ABOVE CEILING.
2. (3) 4" CONDUIT SLEEVES ABOVE CEILING.

## CONDUIT/SLEEVE SCHEDULE

| | |
|---|---|
| CLASSROOMS | (2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |
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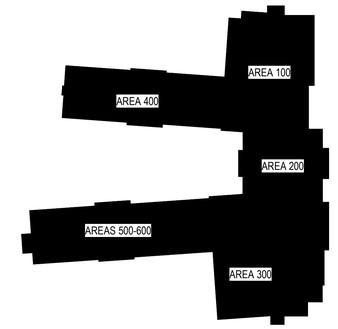
| VESTIBULES | (1) 2" CONDUIT TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR. |

ADDITIONAL REQUIREMENTS:

A. PROVIDE A MINIMUM OF (2) 4" CONDUITS BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A HARD CEILING GREATER THAN 3'-0" UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

B. PROVIDE A MINIMUM OF (1) 2" CONDUIT BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A WALL THAT IS CONSTRUCTED TO DECK UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

KEY PLAN




1 OVERALL SECOND FLOOR TECHNOLOGY PLAN
1" = 20'-0"

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OVERALL SECOND FLOOR - PATHWAY PLAN

T-200

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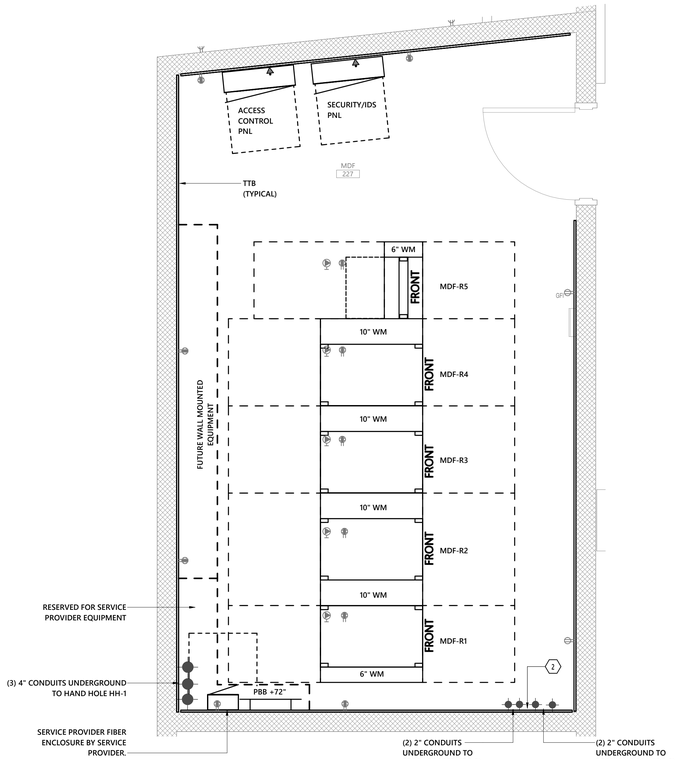
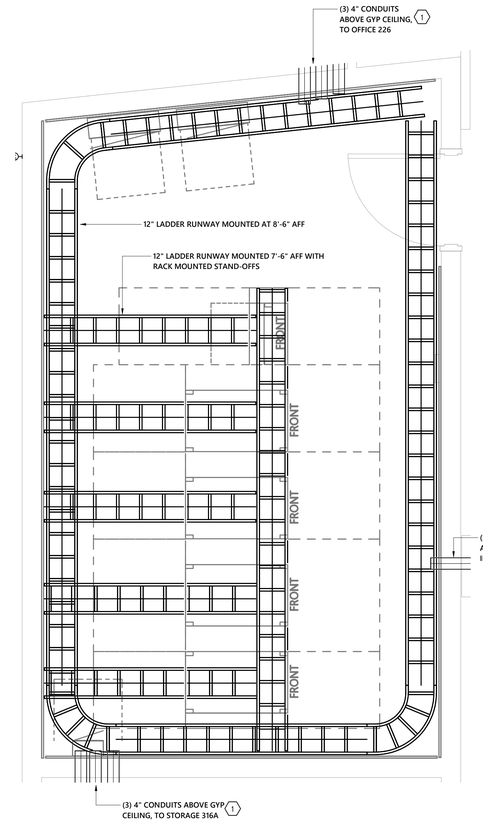



1 TECHNOLOGY ENLARGED - 1ST FL - MDF 227 (MDF) - LOWER
1/2" = 1'-0"




2 TECHNOLOGY ENLARGED - 1ST FL - MDF 227 (MDF) - UPPER
1/2" = 1'-0"

## KEYED NOTES: MDF

1. PROVIDE AND INSTALL 18" VERTICAL LADDER RUNWAY 6" ABOVE HORIZONTAL LADDER RUNWAY TO 6" BELOW WALL SLEEVES. VERTICAL CABLING SHALL BE LASHED TO LADDER RUNWAY.
2. PROVIDE AND INSTALL 18" VERTICAL LADDER RUNWAY 8" ABOVE FINISHED FLOOR TO 6" BELOW HORIZONTAL LADDER RUNWAY. VERTICAL CABLING SHALL BE LASHED TO LADDER RUNWAY.

## GENERAL NOTES: MDF

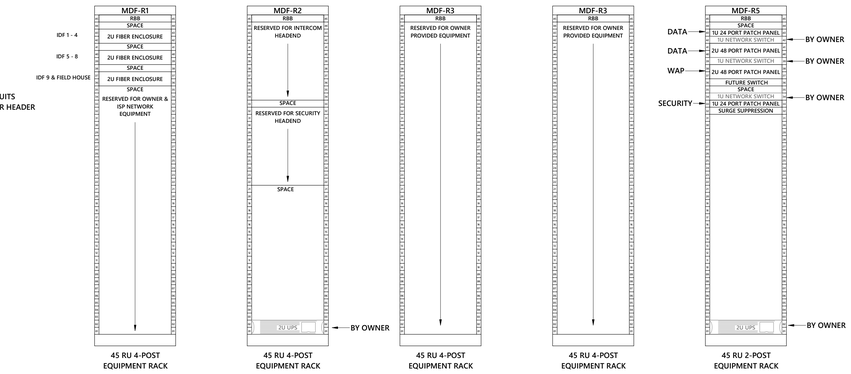
A. PROVIDE D-RINGS AS NEEDED TO DRESS CABLING RUN ALONG TTB.

B. HORIZONTAL RACK BONDING BUSBAR (RBB) IN EACH EQUIPMENT RACK SHALL BE INSTALLED IN TOP RU ON REAR SIDE OF EACH RACK.

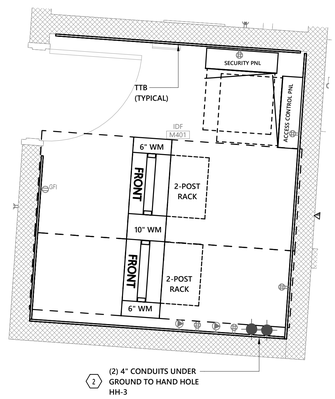
C. PROVIDE 2RU RACK MOUNTED FIBER ENCLOSURES AS INDICATED ON ELEVATION DRAWINGSFOR CONNECTION TO IDFS. PROVIDE 24-STRAND (12-PORT DUPLEX) COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.

D. SERVICE PROVIDER FIBER SHALL TERMINATE IN A WALL MOUNTED FIBER ENCLOSURE. CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH SERVICE PROVIDER PRIOR TO PURCHASE.

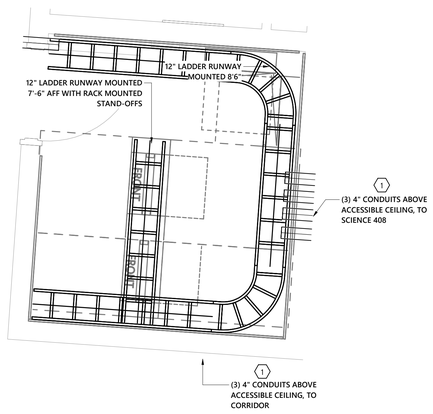
E. NETWORK OUTLETS SERVING WALL MOUNTED EQUIPMENT SHALL BE TERMINATED ON A 2-PORT BISCUIT BOX INSIDE ENCLOSURE.



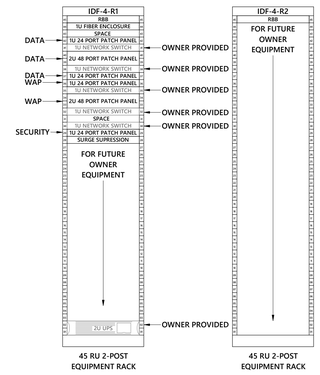

3 RACK ELEVATIONS - MDF 227 (MDF)
NO SCALE




4 TECHNOLOGY ENLARGED - 1ST FL - IDF M401 (IDF-4) - LOWER
1/2" = 1'-0"




5 TECHNOLOGY ENLARGED - 1ST FL - IDF M401 (IDF-4) - UPPER
1/2" = 1'-0"




6 RACK ELEVATIONS - 1ST FL - IDF M401 (IDF-4)
NO SCALE

## KEYED NOTES: IDF-4

1. PROVIDE AND INSTALL 18" VERTICAL LADDER RUNWAY 6" ABOVE HORIZONTAL LADDER RUNWAY TO 6" BELOW WALL SLEEVES. VERTICAL CABLING SHALL BE LASHED TO LADDER RUNWAY.
2. PROVIDE AND INSTALL 12" VERTICAL LADDER RUNWAY 8" ABOVE FINISHED FLOOR TO 6" BELOW HORIZONTAL LADDER RUNWAY. VERTICAL CABLING SHALL BE LASHED TO LADDER RUNWAY.

## GENERAL NOTES: IDF-4

A. PROVIDE D-RINGS AS NEEDED TO DRESS CABLING RUN ALONG TTB.

B. HORIZONTAL RACK BONDING BUSBAR (RBB) IN EACH EQUIPMENT RACK SHALL BE INSTALLED IN TOP RU ON REAR SIDE OF EACH RACK.

C. PROVIDE 1RU RACK MOUNTED FIBER ENCLOSURE AS INDICATED ON ELEVATION DRAWINGS FOR CONNECTION FROM MDF. PROVIDE 24-STRAND (12-PORT DUPLEX) COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.

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HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24
PROJECT #: 02208.000
DRAWN BY: PAL
CHECKED BY: TMC

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TECHNOLOGY - ENLARGED PLANS

T-401

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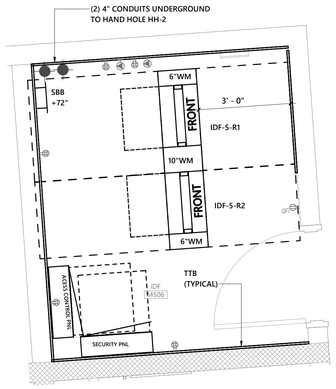
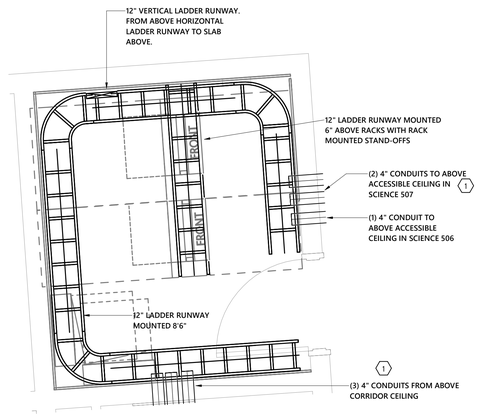
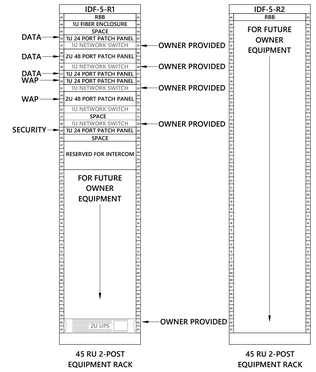



1 TECHNOLOGY ENLARGED - 1ST FL - IDF M506 (IDF-5) - LOWER
1/2" = 1'-0"




2 TECHNOLOGY ENLARGED - 1ST FL - IDF M506 (IDF-5) - UPPER
1/2" = 1'-0"




4 RACK ELEVATIONS - IDF M506 (IDF-5)
NO SCALE

## KEYED NOTES: ALL IDF'S ON THIS SHEET

1. PROVIDE AND INSTALL 18" VERTICAL LADDER RUNWAY 6" ABOVE HORIZONTAL LADDER RUNWAY TO 6" BELOW WALL SLEEVES. VERTICAL CABLING SHALL BE LASHED TO LADDER RUNWAY.
2. PROVIDE AND INSTALL 12" VERTICAL LADDER RUNWAY 8" ABOVE FINISHED FLOOR TO 6" BELOW HORIZONTAL LADDER RUNWAY. VERTICAL CABLING SHALL BE LASHED TO LADDER RUNWAY.

## GENERAL NOTES: ALL IDF'S ON THIS SHEET

A. PROVIDE D-RINGS AS NEEDED TO DRESS CABLING RUN ALONG TTB.

B. HORIZONTAL RACK BONDING BUSBAR (RBB) IN EACH EQUIPMENT RACK SHALL BE INSTALLED IN TOP RU ON REAR SIDE OF EACH RACK.

C. PROVIDE 1RU RACK MOUNTED FIBER ENCLOSURE AS INDICATED ON ELEVATION DRAWINGS FOR CONNECTION FROM MDF. PROVIDE 24-STRAND (12-PORT DUPLEX) COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.

D. NETWORK OUTLETS SERVING WALL MOUNTED EQUIPMENT SHALL BE TERMINATED ON A 2-PORT BISCUIT BOX INSIDE ENCLOSURE.



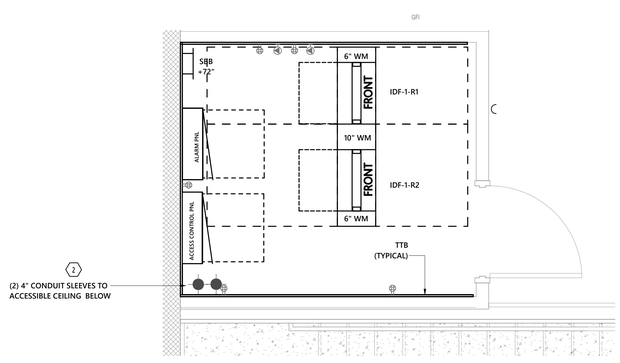

3 TECHNOLOGY ENLARGED - 2ND FL - IDF M603 (IDF-6) - LOWER
1/2" = 1'-0"



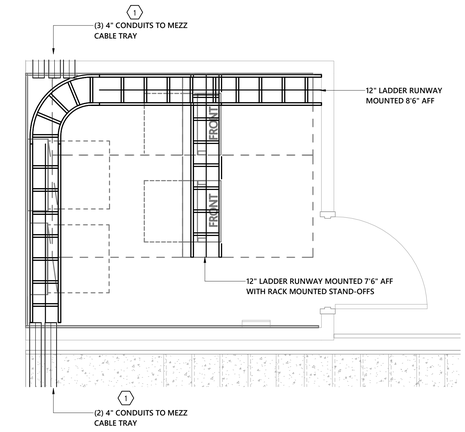

5 TECHNOLOGY ENLARGED - 2ND FL - IDF M603 (IDF-6) - UPPER
1/2" = 1'-0"



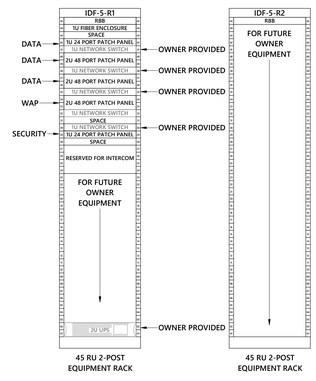

6 RACK ELEVATIONS - IDF M603 (IDF-6)
NO SCALE




7 TECHNOLOGY ENLARGED - MEZZ 200 - (IDF-1) - LOWER
1/2" = 1'-0"




8 TECHNOLOGY ENLARGED - MEZZ 200 - (IDF -1) - UPPER
1/2" = 1'-0"




9 RACK ELEVATIONS - MEZZ 200 (IDF -1)
NO SCALE

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CHECKED BY: TMC

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TECHNOLOGY - ENLARGED PLANS

T-402

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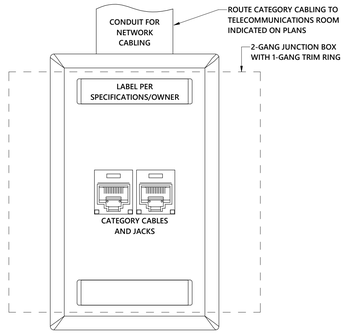
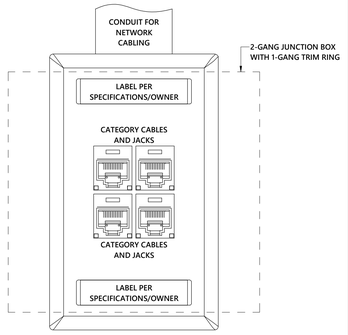
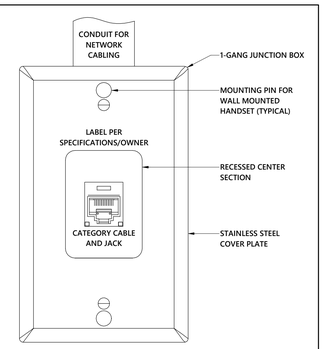


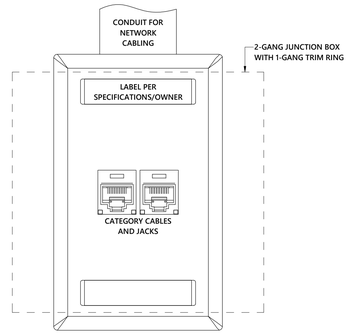

1 **NETWORK OUTLET DETAIL - 2 PORT**
NOT TO SCALE



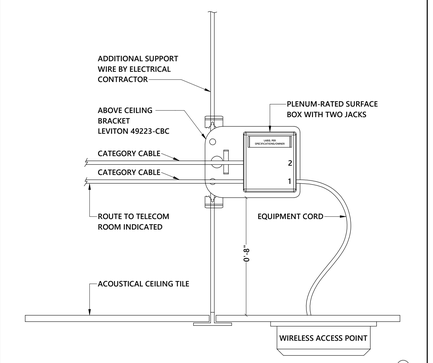

2 **NETWORK OUTLET DETAIL - 4 PORT**
NOT TO SCALE



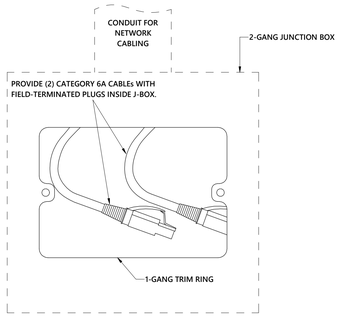

3 **NETWORK WALL PHONE OUTLET DETAIL**
NOT TO SCALE



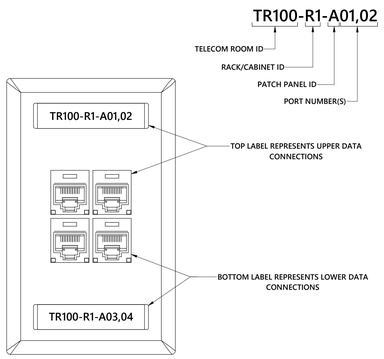

4 **WIRELESS ACCESS POINT DETAIL** (OPEN CEILING)
NOT TO SCALE



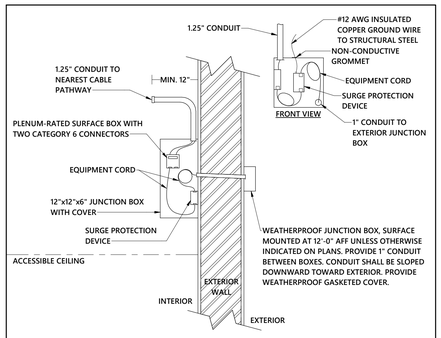

5 **WIRELESS ACCESS POINT DETAIL** (ACCESSIBLE CEILING)
NOT TO SCALE




6 **WIRELESS ACCESS POINT DETAIL** (HARD CEILING MOUNTED AND WALL MOUNTED)
NOT TO SCALE

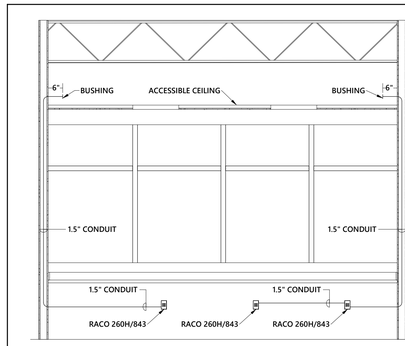



7 **NETWORK OUTLET LABELING DETAIL**
NOT TO SCALE



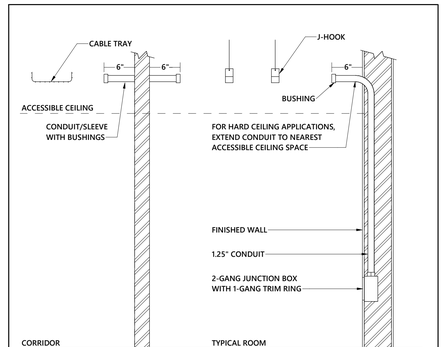

GENERAL NOTES:
A. ALL DEVICES MUST BE SECURED INSIDE JUNCTION BOX.
B. EQUIPMENT CORD BETWEEN CAMERA AND SURGE PROTECTION DEVICE MUST BE MINIMUM 3' IN LENGTH.
C. SURGE PROTECTION DEVICE MUST BE GROUNDED WITHIN 10' OF ENTERING BUILDING.

8 **EXTERIOR NETWORK DEVICE DETAIL**
NOT TO SCALE

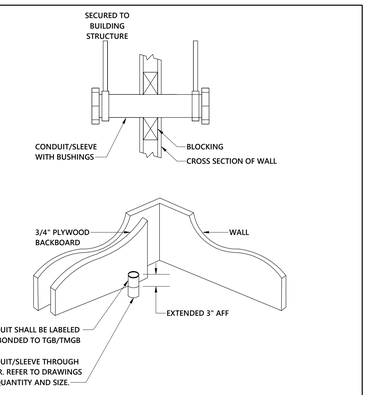



GENERAL NOTES:
A. FOR HARD CEILING APPLICATIONS, EXTEND CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
B. NO MORE THAN (2) CONSECUTIVE JUNCTION BOXES MAY BE SERVED HORIZONTALLY.

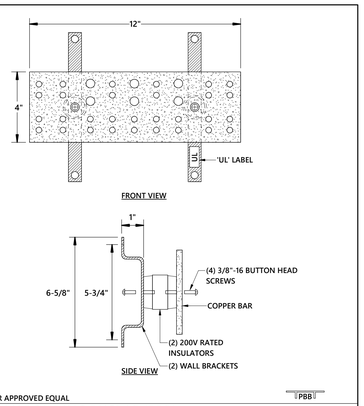
9 **NETWORK OUTLETS UNDER WINDOW REQUIREMENTS**
NOT TO SCALE




10 **NETWORK OUTLET STUB UP DETAIL**
NO SCALE

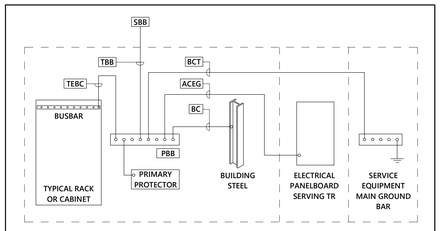



11 **TELECOMMUNICATIONS CONDUIT/SLEEVE DETAIL**
NOT TO SCALE




CPI: 40153-012 OR APPROVED EQUAL

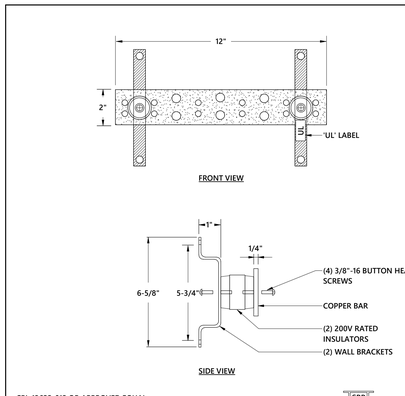
12 **PRIMARY BONDING BUSBAR 'PBB'**
NOT TO SCALE




TELECOMMUNICATIONS GROUNDING LEGEND

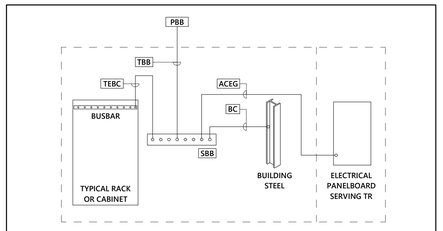
| | |
|---|---|
| PBB | PRIMARY BONDING BUSBAR |
| SBB | SECONDARY BONDING BUSBAR |
| TBB | TELECOMMUNICATIONS BONDING BACKBONE. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C. |
| TEBC | TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND. |
| BC | BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND. |
| ACEG | ALTERNATING CURRENT EQUIPMENT GROUND. PROVIDE A MINIMUM #6 AWG GROUND. |
| BCT | BONDING CONDUCTOR FOR TELECOMMUNICATIONS. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C. |

13 **TYPICAL PBB CONNECTIONS**
NOT TO SCALE




CPI: 13622-012 OR APPROVED EQUAL SBB

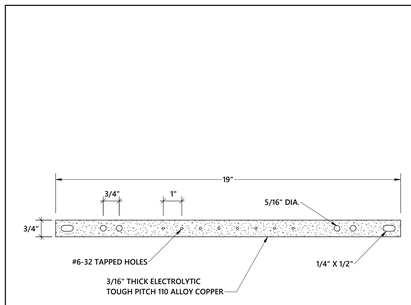
14 **SECONDARY BONDING BUSBAR 'SBB'**
NOT TO SCALE




TELECOMMUNICATIONS GROUNDING LEGEND

| | |
|---|---|
| PBB | TELECOMMUNICATIONS MAIN GROUND BAR |
| SBB | TELECOMMUNICATIONS GROUND BAR |
| TBB | TELECOMMUNICATIONS BONDING BACKBONE. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" CONDUIT. |
| TEBC | TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND. |
| BC | BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND. |
| ACEG | ALTERNATING CURRENT EQUIPMENT GROUND. PROVIDE A MINIMUM #6 AWG GROUND. |

15 **TYPICAL SBB CONNECTIONS**
NOT TO SCALE



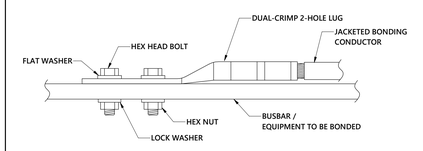

CPI: 10610-019 OR APPROVED EQUAL

16 **RACK BONDING BUSBAR 'RBB'**
NOT TO SCALE

| TELECOM BACKBONE BONDING (TBB) CONDUCTOR SIZE VS LENGTH TABLE | |
|---|---|
| TBB/GE LINEAR LENGTH (FT) | TBB/GE SIZE (AWG) |
| 13 | 6 |
| 14-20 | 4 |
| 21-26 | 3 |
| 27-33 | 2 |
| 34-41 | 1 |
| 42-52 | 1/0 |
| 53-66 | 2/0 |
| 67-84 | 3/0 |
| 85-105 | 4/0 |
| 106-125 | 250 kcmil |
| 126-150 | 300 kcmil |
| 151-175 | 350 kcmil |
| 176-250 | 500 kcmil |
| 251-300 | 600 kcmil |
| GREATER THAN 301 | 750 kcmil |

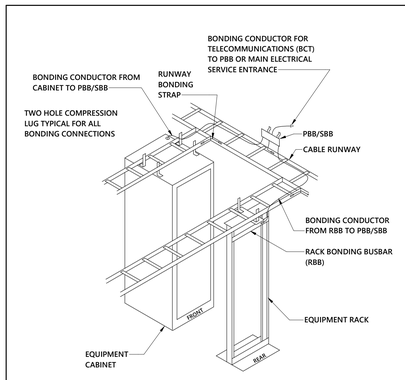
NOTES:
A. TBB SIZING TABLE PER LATEST EDITION OF TIA-607-D.
B. THE MINIMUM TBB CONDUCTOR SIZE SHALL BE A NO. 6 AMERICAN WIRE GAUGE (AWG).

17 **TELECOM BACKBONE BONDING (TBB) TABLE**
NOT TO SCALE

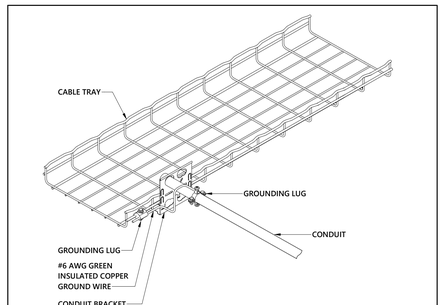



INSTALLATION NOTES:
1. PROVIDE APPROPRIATELY SIZED LUG FOR BONDING CONDUCTOR.
2. PROVIDE APPROPRIATELY SIZED BOLTS WITH A MINIMUM OF TWO EXPOSED THREADS.
3. REMOVE PAINT FROM MATING SURFACE IN AREA OF LUG CONTACT.
4. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE AND WIPE CLEAN EXCESS COMPOUND.

18 **2-HOLE GROUNDING LUG TERMINATION**
NOT TO SCALE




19 **CABLE TRAY BONDING AND GROUNDING**
NOT TO SCALE




GENERAL NOTES:
A. DETAIL SHALL APPLY TO ALL CABLE TRAY/CONDUIT TRANSITIONS.
B. BONDING CLAMP SHALL BE APPROVED FOR DISSIMILAR METAL CONNECTIONS.
C. GROUNDING LUGS SHALL BE TIN-PLATED COPPER WITH STAINLESS STEEL HARDWARE

20 **CONDUIT AND CABLE TRAY CONNECTION DETAIL**
NOT TO SCALE

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# HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| ISSUE DATE: | | 11/08/24 |
| PROJECT #: | | 02208.000 |
| DRAWN BY: | | PAL |
| CHECKED BY: | | TMC |

TECHNOLOGY DETAILS

T-501

Sheet No. 36

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GENERAL NOTES:

A. BASIS OF DESIGN: LEGRAND EVOLUTION POKE-THRU BAT OR APPROVED EQUAL. PROVIDE HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

B. PROVIDE (2) 5-20R RECEPTACLES. (PRE-WIRED)

C. PROVIDE ALL INSTALLATION HARDWARE AS REQUIRED.

D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

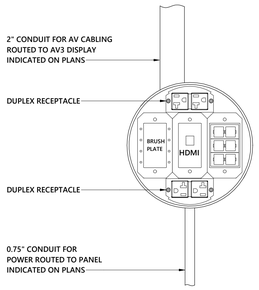
E. POKE-THRU & COVER, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUTURED CABLING CONTRACTOR.

G. A/V CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY AV CONTRACTOR.

H. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.

I. ALL CORE DRILLS AND CONDUIT PENETRATIONS SHALL BE COORDINATED, EVALUATED AND APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION.




PT8

## 1 8" MULTI-SERVICE FIRE RATED POKE-THRU FLOOR BOX
NOT TO SCALE

GENERAL NOTES:

A. BASIS OF DESIGN: LEGRAND EVOLUTION FLOOR BOX EFB45S-OG OR APPROVED EQUAL. PROVIDE HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

B. PROVIDE (2) 5-20R DUPLEX RECEPTACLES.

C. PROVIDE ALL INSTALLATION HARDWARE AS REQUIRED.

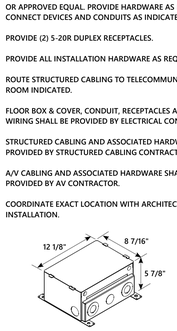
D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

E. FLOOR BOX & COVER, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

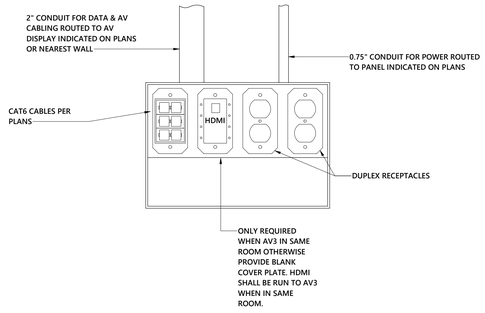
F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUCTURED CABLING CONTRACTOR.

G. A/V CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY AV CONTRACTOR.

H. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.

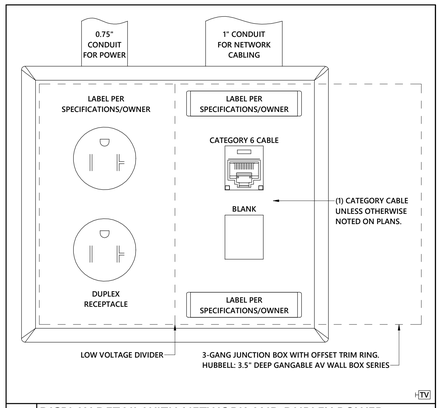



DIMENSIONAL VIEW




FB4

## 2 4-GANG MULTI-SERVICE FLOOR BOX
NOT TO SCALE




TV

## 3 DISPLAY DETAIL WITH NETWORK AND DUPLEX POWER
NOT TO SCALE

GENERAL NOTES:

A. BASIS OF DESIGN: HUBBELL HBL98S OR APPROVED EQUAL. BOX MUST BE GANGABLE. PROVIDE FACEPLATES, KEYSTONES, AND HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

B. PROVIDE (1) 5-20R DUPLEX RECEPTACLE AND (1) 5-20R QUAD RECEPTACLE.

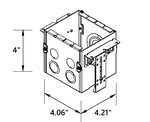
C. PROVIDE INSTALLATION HARDWARE AS REQUIRED. COORDINATE WITH ARCHITECTURAL DRAWINGS.

D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

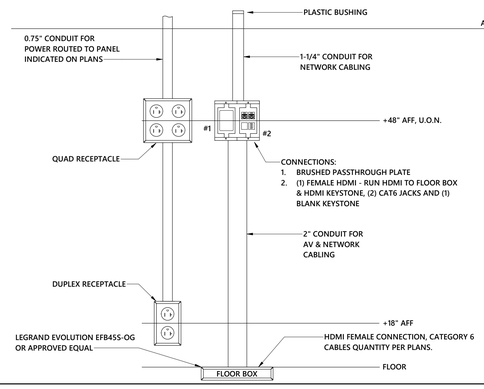
E. WALL BOX, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUTURED CABLING CONTRACTOR.

G. A/V CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY AV CONTRACTOR.

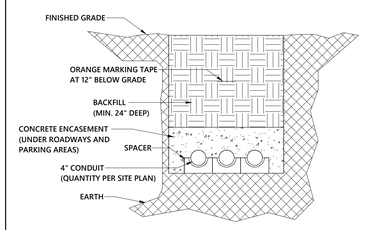



ISOMETRIC VIEW OF HUBBELL HBL98S




AV3

## 4 AV3 DISPLAY DETAIL
NOT TO SCALE




NOTES:
A. PROVIDE 3-CELL FABRIC MESH INNERDUCT AND/OR MULE TAPE IN ALL SITE CONDUITS AS INDICATED ON SITE PLAN.
B. PROVIDE MINIMUM 3" OF SEPARATION BETWEEN CONDUITS IN DUCTBANK.
C. PROVIDE ALL CONDUITS WITH DUCT PLUGS ON BOTH ENDS.
D. PROVIDE TRACER WIRE IN ONE CONDUIT IN THE DUCTBANK.
E. CONDUIT BEND RADIUS SHALL BE NO LESS THAN 10 TIMES THE CONDUIT OUTER DIAMETER.

## 5 TYPICAL TELECOM DUCTBANK DETAIL
NOT TO SCALE

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11/8/2024

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# HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
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CHECKED BY: TMC

TECHNOLOGY DETAILS

T-502

Sheet No. 37

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# HARNETT COUNTY SCHOOLS
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|---|---|---|
| ISSUE DATE: | | 11/08/24 |
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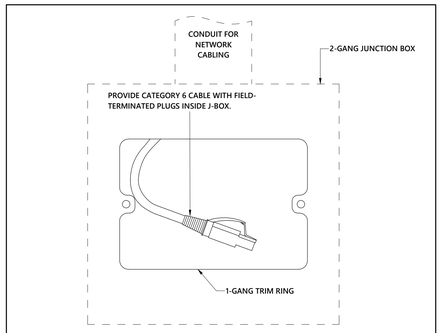
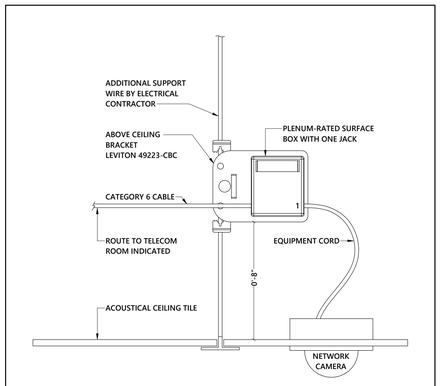
| DRAWN BY: | | PAL |
| CHECKED BY: | | TMC |

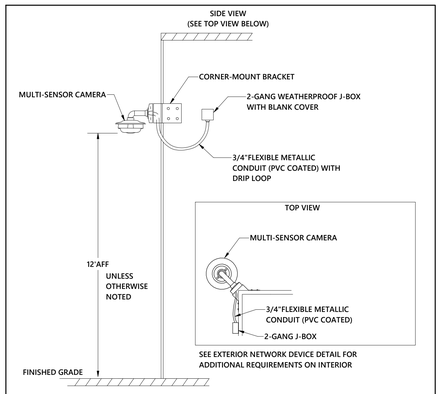
TECHNOLOGY DETAILS



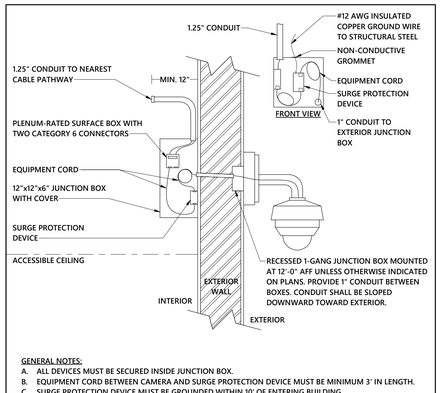

1 VAPE SENSOR OUTLET (CEILING MOUNTED)
NOT TO SCALE




2 INTERIOR CAMERA (ACCESSIBLE CEILING)
NOT TO SCALE

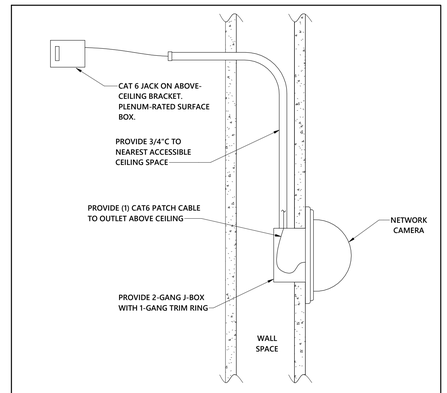



3 EXTERIOR CAMERA - CORNER MOUNT MULTI-SENSOR
NOT TO SCALE




GENERAL NOTES:
A. ALL DEVICES MUST BE SECURED INSIDE JUNCTION BOX.
B. EQUIPMENT CORD BETWEEN CAMERA AND SURGE PROTECTION DEVICE MUST BE MINIMUM 3' IN LENGTH.
C. SURGE PROTECTION DEVICE MUST BE GROUNDED WITHIN 10' OF ENTERING BUILDING.

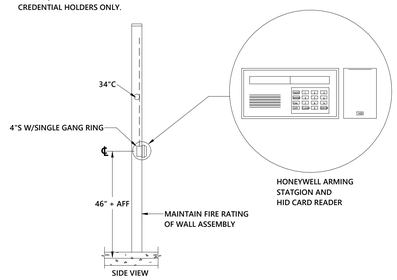
4 EXTERIOR CAMERA DETAIL (WALL MOUNTED)
NOT TO SCALE



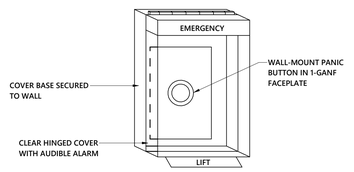

5 INTERIOR CAMERA (WALL MOUNTED)
NO SCALE

## SEQUENCE OF OPERATION:

1. PRESENTATION OF VALID ACCESS CREDENTIAL AT THE CARD READER WILL TRIGGER VIA A DRY CONTACT THE REMOTE ARM/DISARM FUNCTION OF THE INTRUSIVE ALARM PANEL.
2. USING CONTROLLED P:ROGRAMMING THE INTRUSION ALARM PANEL CAN BE ARMED BY THE BUILDING CUSTODIAN TO MONITOR THE PERIMETER OPENINGS ONLY DURING CUSTODIAN HOURS OF MAINTENANCE DUTIES.
3. ARMING/DISARMING OF THE INTRUSION ALARM WILL BE RESTRICTED TO DISTRICT APPROVED CREDENTIAL HOLDERS ONLY.

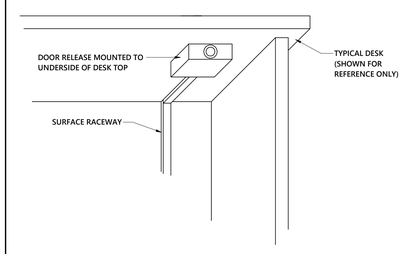



6 ARMING STATION (WALL MOUNTED)
NOT TO SCALE



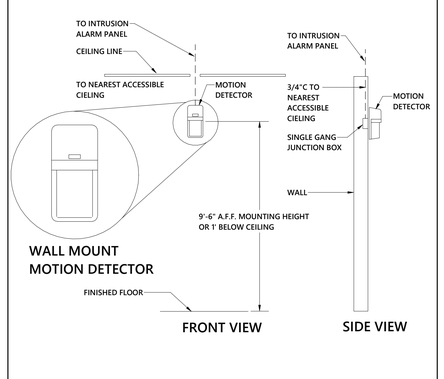

NOTES:
A. ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AT 44" AFF AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
B. SECURITY CONTRACTOR SHALL PROVIDE DEVICE, CABLING, AND CONNECTIONS.
C. PROVIDE (1) SHIELDED 18/4C CABLE TO EACH PANIC BUTTON AND TERMINATE PER MANUFACTURER'S INSTRUCTIONS.

7 PANIC BUTTON (WALL MOUNTED)
NO SCALE

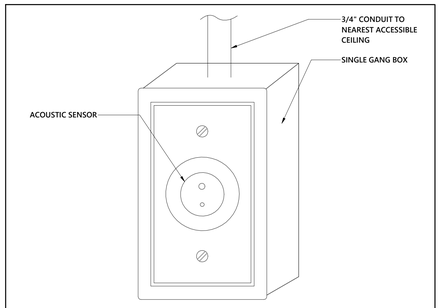



NOTES:
A. SECURE DOOR RELEASE BUTTON TO DESK PER MANUFACTURER'S INSTRUCTIONS.
B. CABLE MUST BE PROTECTED FROM JUNCTION BOX OR CONDUIT STUB-UP TO PANIC BUTTON.
C. UTILIZE SURFACE-MOUNT RACEWAY ALONG UNDERSIDE OF DESK.
D. UTILIZE SPLIT-LOOM WHERE REQUIRED TO BRIDGE GAP FROM JUNCTION BOX OR CONDUIT STUB-UP TO DESK-MOUNTED SURFACE RACEWAY.
E. PROVIDE (1) SHIELDED 18/2C CABLE TO EACH DOOR RELEASE BUTTON AND TERMINATE PER MANUFACTURER'S INSTRUCTIONS.

8 DOOR RELEASE BUTTON (UNDER DESK)
NO SCALE




9 MOTION DETECTOR ( WALL MOUNTED)
NOT TO SCALE




NOTE:
SENSOR MUST BE MOUNTED WITHIN 25 FEET OF GLASS TO PROVIDE PROPER DETECTION.

10 ACOUSTIC GLASS BREAK SENSOR
NOT TO SCALE

T-503

Sheet No. 38

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1 **PARTIAL FIRST FLOOR PAGING PLAN - AREA 100**
1/8" = 1'-0"

## GENERAL NOTES:

A. CONTRACTOR SHALL COORDINATE PAGING SYSTEM COMPONENT LOCATIONS WITH PAGING SYSTEM SHOW DRAWINGS PRIOR TO ROUGH-IN.

B. PAGING SYSTEM SHOP DRAWINGS SHALL BE PREPARED BY THE CERTIFIED PAGING SYSTEM INSTALLER.

C. INTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 9'6" UNLESS OTHERWISE NOTED.

D. ALL EXTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

E. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

## KEYED NOTES: (#)

1. CONTRACTOR SHALL COORDIANTE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN TO AVOID BACK STAGE WALL COVERINGS.

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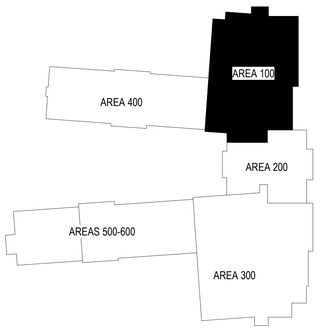
KEY PLAN




PARTIAL FIRST FLOOR PAGING PLAN - AREA 100

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## GENERAL NOTES:

A. CONTRACTOR SHALL COORDINATE PAGING SYSTEM COMPONENT LOCATIONS WITH PAGING SYSTEM SHOW DRAWINGS PRIOR TO ROUGH-IN.

B. PAGING SYSTEM SHOP DRAWINGS SHALL BE PREPARED BY THE CERTIFIED PAGING SYSTEM INSTALLER.

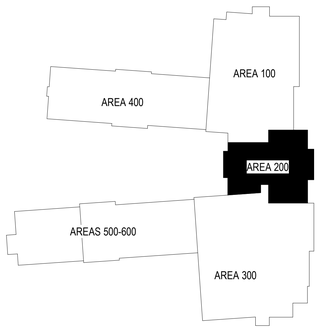
C. INTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 9'6" UNLESS OTHERWISE NOTED.

D. ALL EXTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

E. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

1 **PARTIAL FIRST FLOOR PAGING PLAN - AREA 200**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR PAGING PLAN - AREA 200

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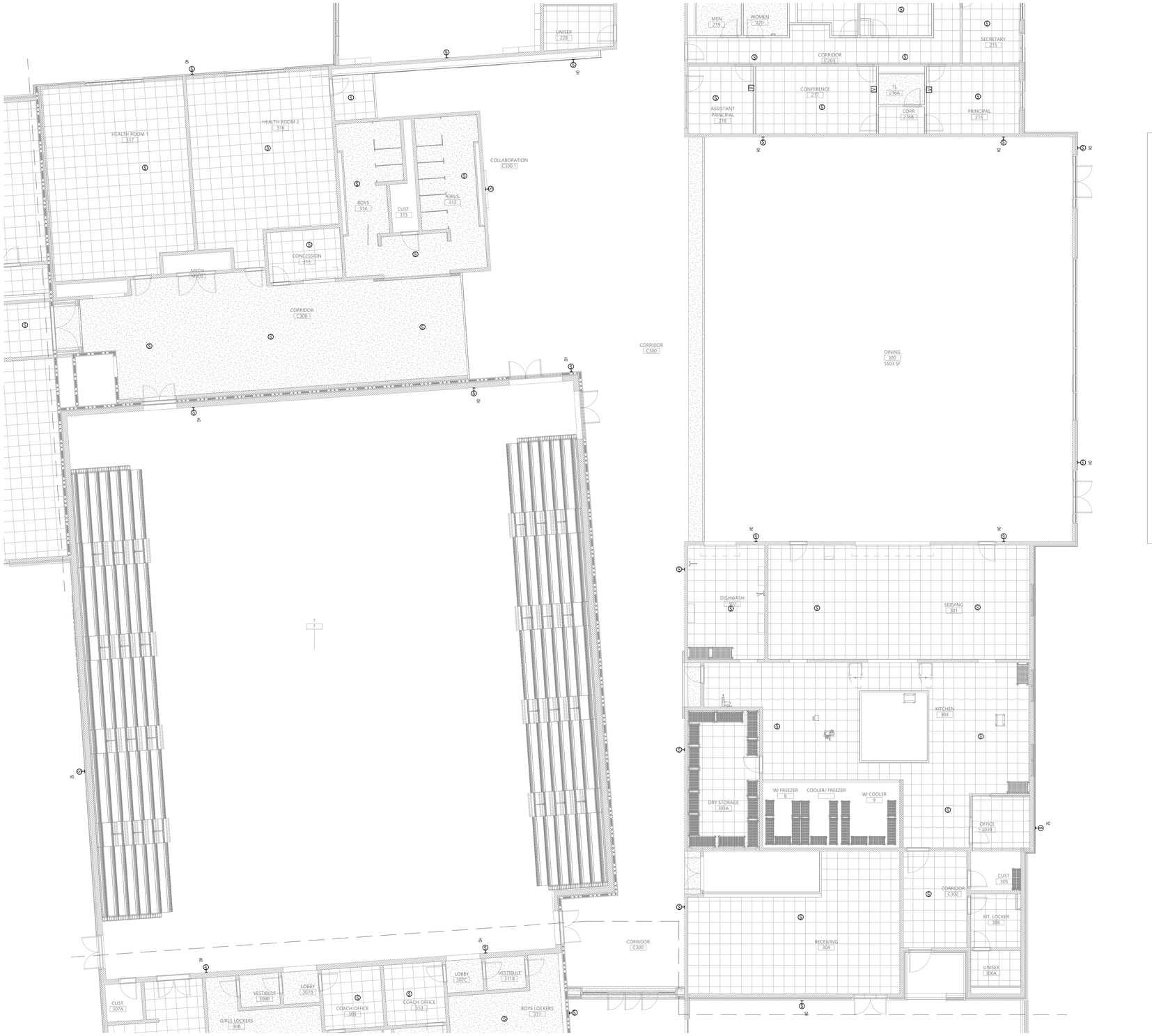


1 **PARTIAL FIRST FLOOR PAGING PLAN - AREA 300 NORTH**
1/8" = 1'-0"

## GENERAL NOTES:

A. CONTRACTOR SHALL COORDINATE PAGING SYSTEM COMPONENT LOCATIONS WITH PAGING SYSTEM SHOW DRAWINGS PRIOR TO ROUGH-IN.

B. PAGING SYSTEM SHOP DRAWINGS SHALL BE PREPARED BY THE CERTIFIED PAGING SYSTEM INSTALLER.

C. INTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 9'6" UNLESS OTHERWISE NOTED.

D. ALL EXTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

E. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

KEY PLAN

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CHECKED BY: TMC

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PARTIAL FIRST FLOOR PAGING PLAN - AREA 300 NORTH

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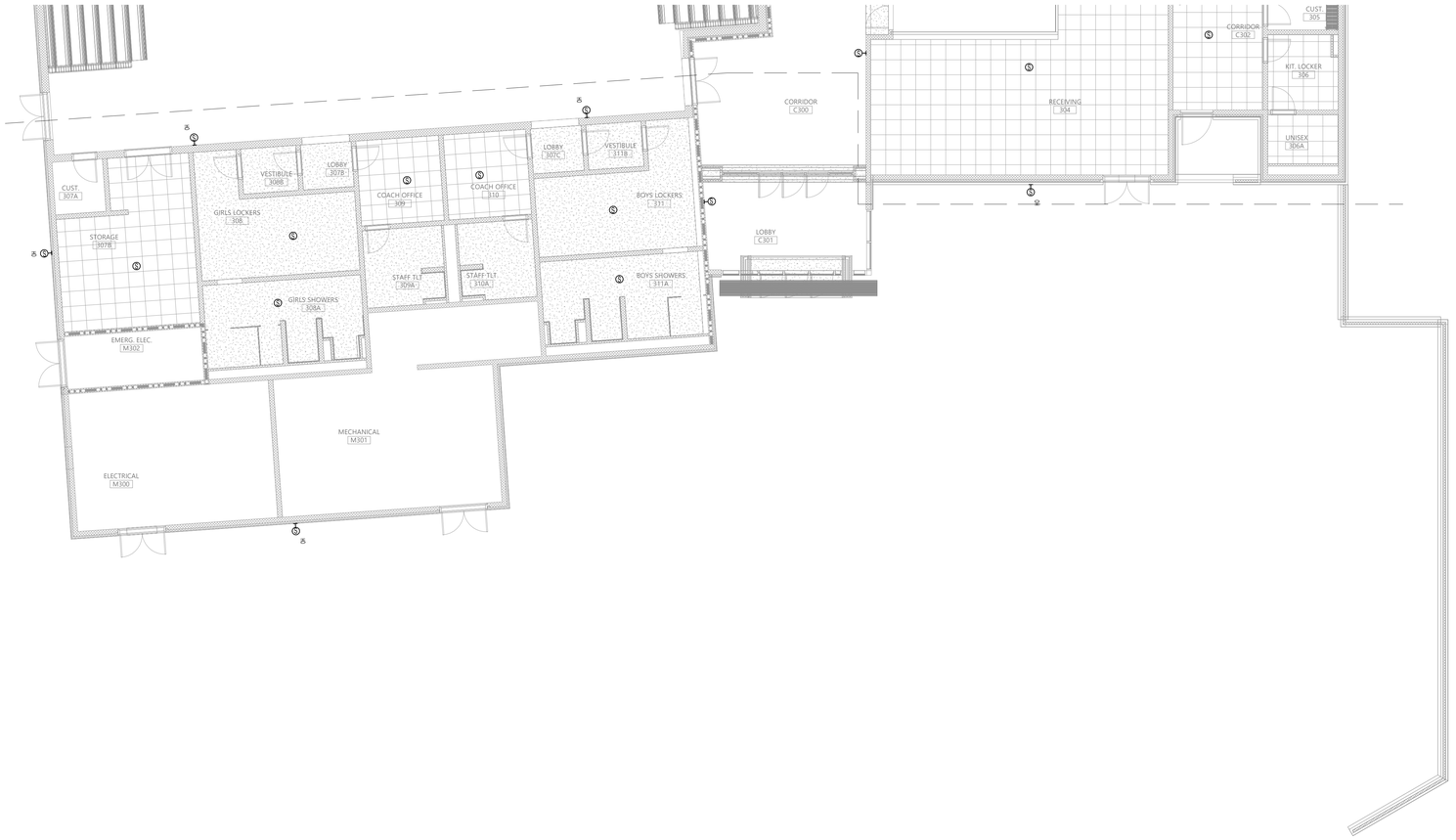
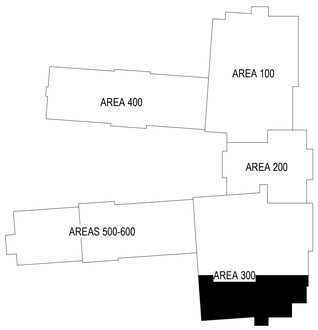
D. ALL EXTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

E. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.




1 PARTIAL FIRST FLOOR PAGING PLAN - AREA 300 SOUTH
1/8" = 1'-0"

KEY PLAN

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

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PARTIAL FIRST FLOOR PAGING PLAN - AREA 300 SOUTH

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A. CONTRACTOR SHALL COORDINATE PAGING SYSTEM COMPONENT LOCATIONS WITH PAGING SYSTEM SHOW DRAWINGS PRIOR TO ROUGH-IN.

B. PAGING SYSTEM SHOP DRAWINGS SHALL BE PREPARED BY THE CERTIFIED PAGING SYSTEM INSTALLER.

C. INTERIOR WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 9'6" UNLESS OTHERWISE NOTED.

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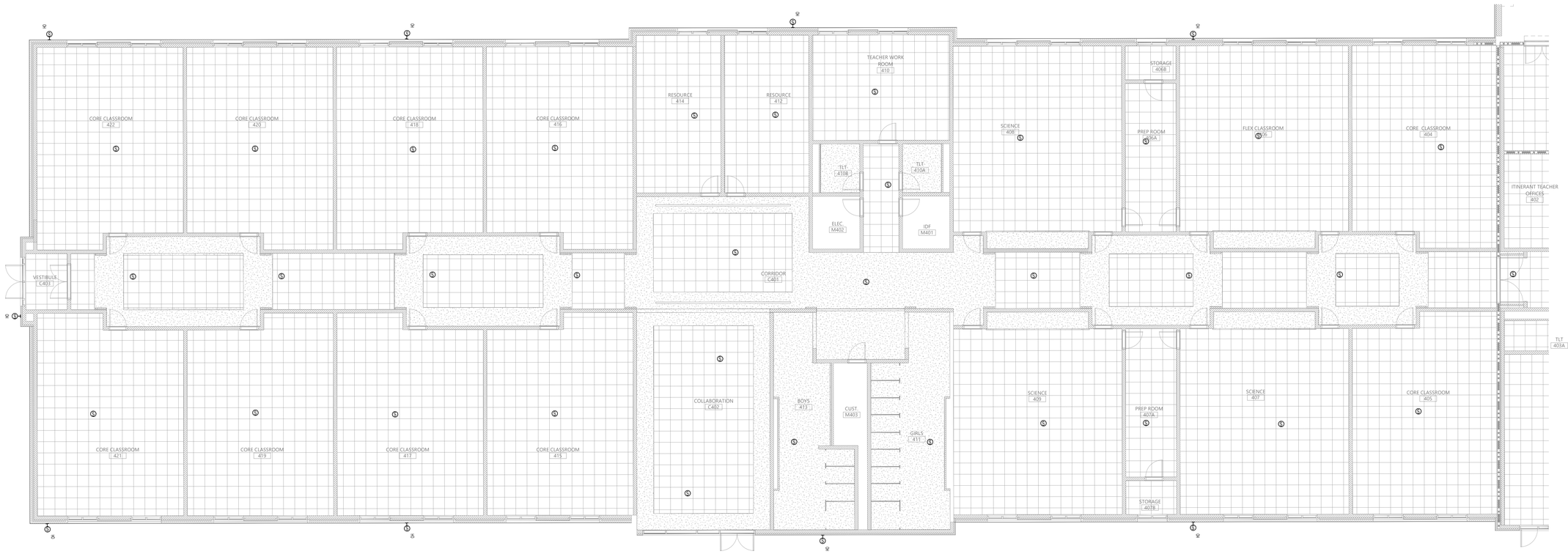
E. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.




1 **PARTIAL FIRST FLOOR PAGING PLAN - AREA 400**
1/8" = 1'-0"

KEY PLAN

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HARNETT COUNTY SCHOOLS

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PARTIAL FIRST FLOOR PAGING PLAN - AREA 400

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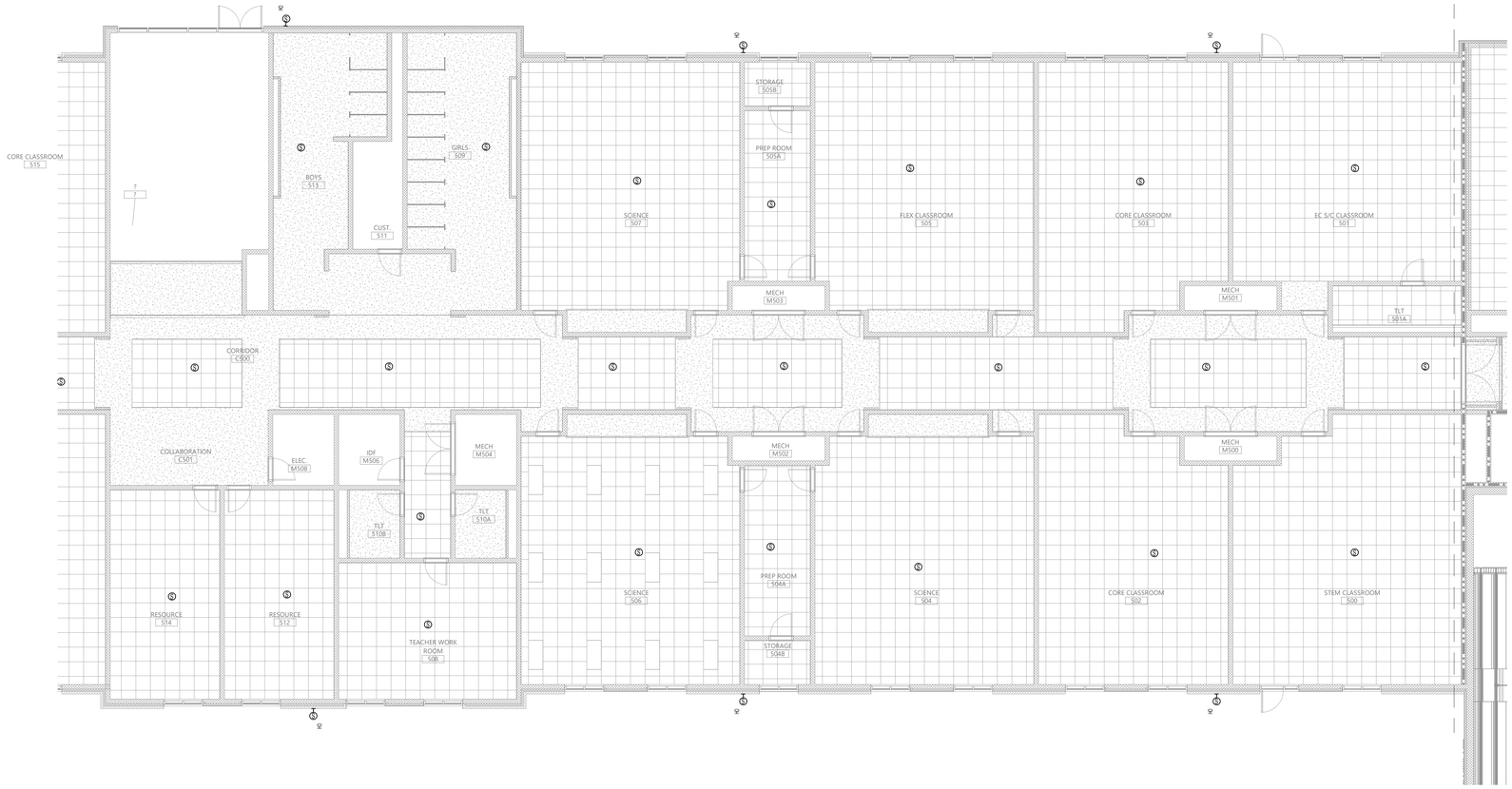
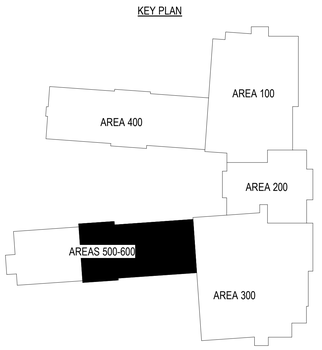



1 **PARTIAL FIRST FLOOR PAGING PLAN - AREA 500 RIGHT**
1/8" = 1'-0"

KEY PLAN

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11/8/2024

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# HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
## 3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

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PARTIAL FIRST FLOOR PAGING PLAN - AREA 500 RIGHT

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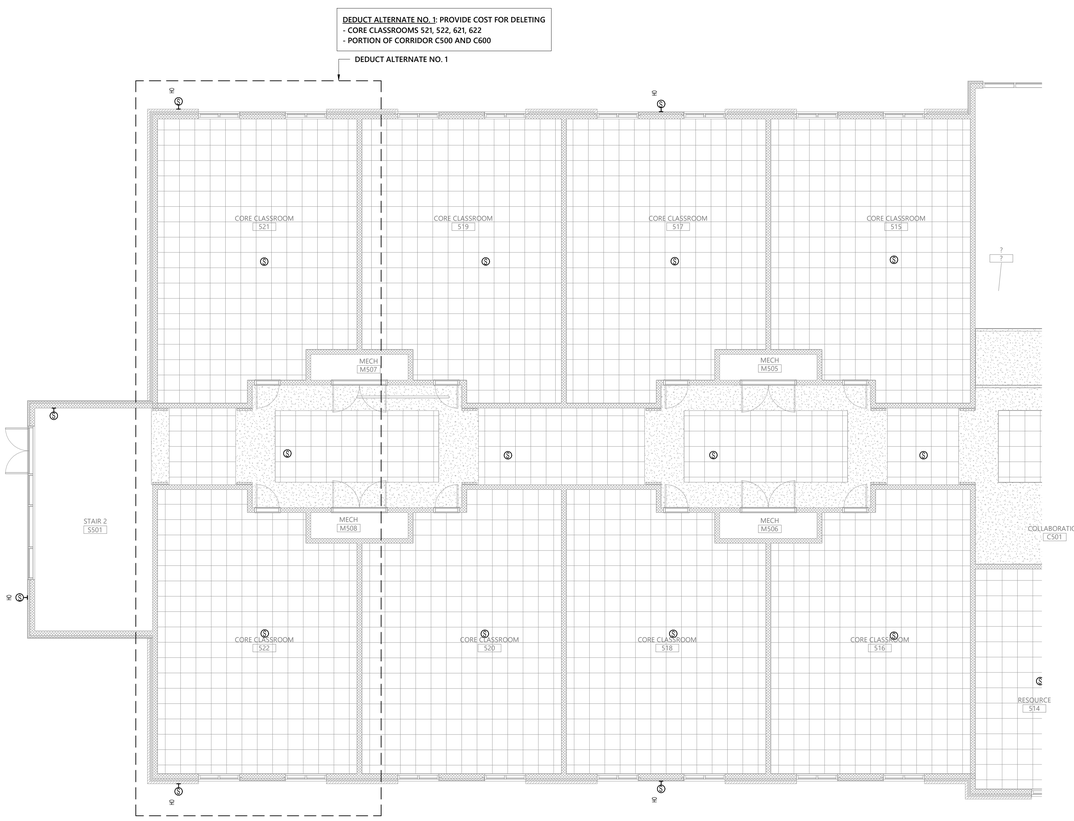
E. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600

DEDUCT ALTERNATE NO. 1




1 PARTIAL FIRST FLOOR PAGING PLAN - AREA 500 LEFT
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR PAGING PLAN - AREA 500 LEFT

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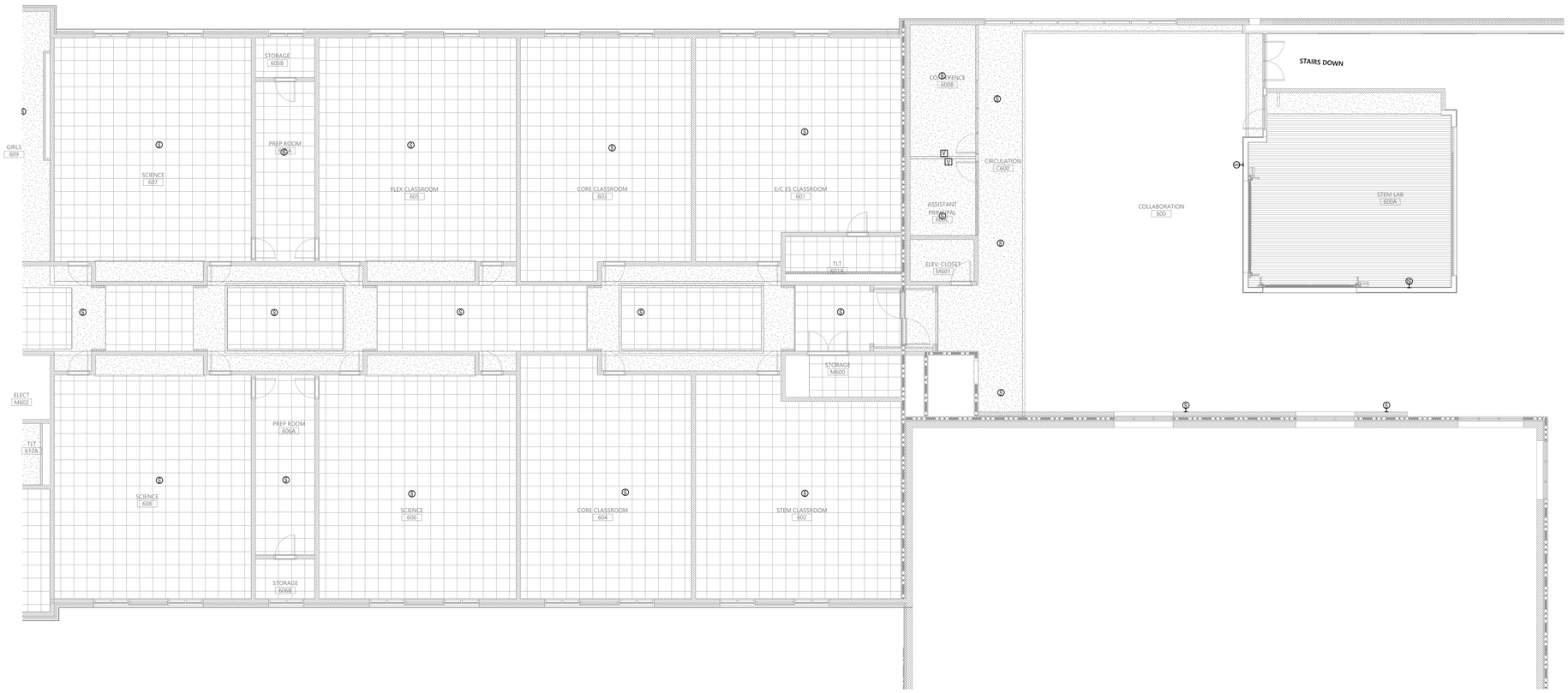


1 **PARTIAL SECOND FLOOR PAGING PLAN - AREA 600 RIGHT**
1/8" = 1'-0"

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PARTIAL SECOND FLOOR PAGING PLAN - AREA 600 RIGHT

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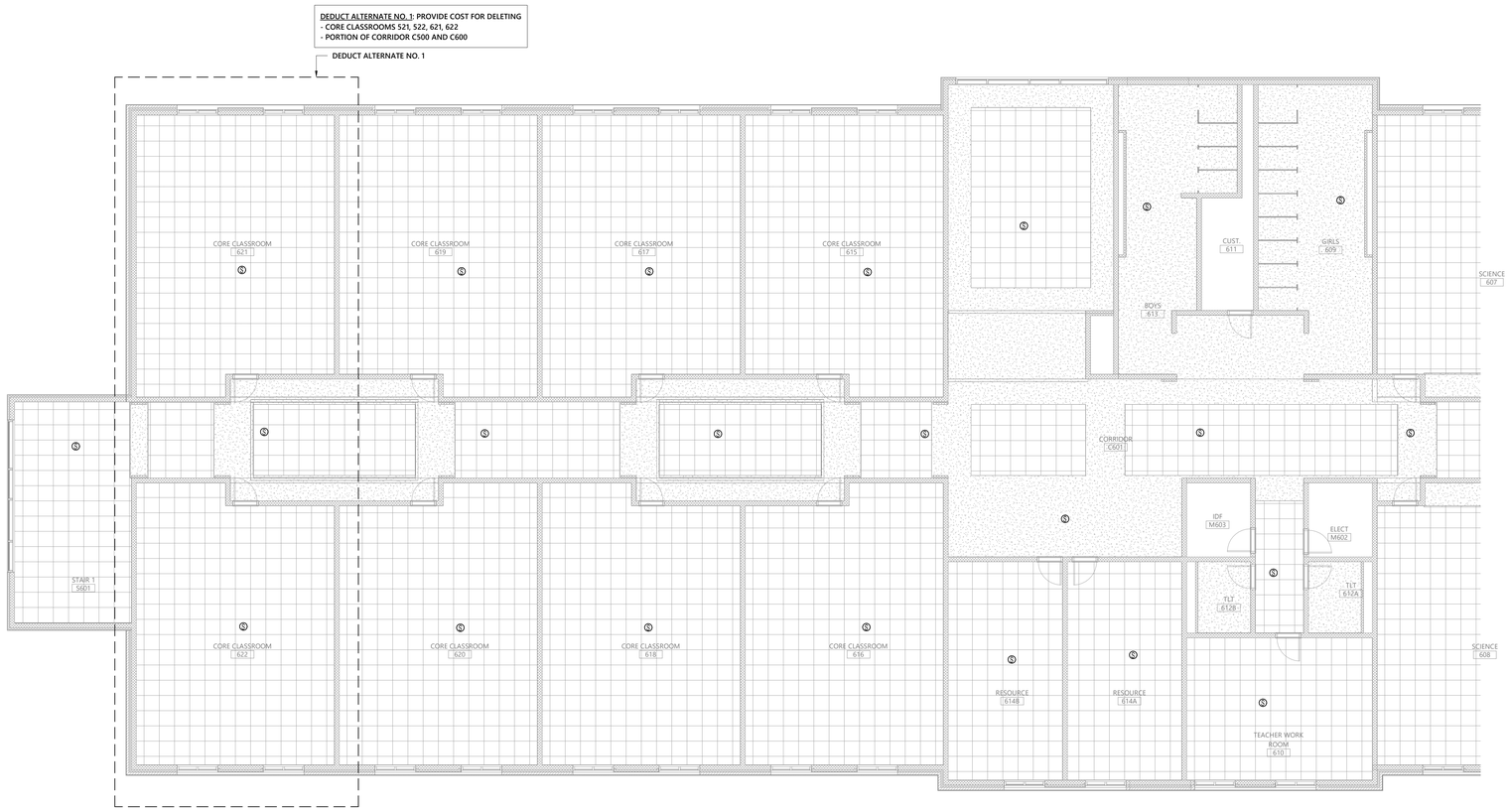


1 **PARTIAL SECOND FLOOR PAGING PLAN - AREA 600 LEFT**
1/8" = 1'-0"

KEY PLAN

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PARTIAL SECOND FLOOR PAGING PLAN - AREA 600 LEFT

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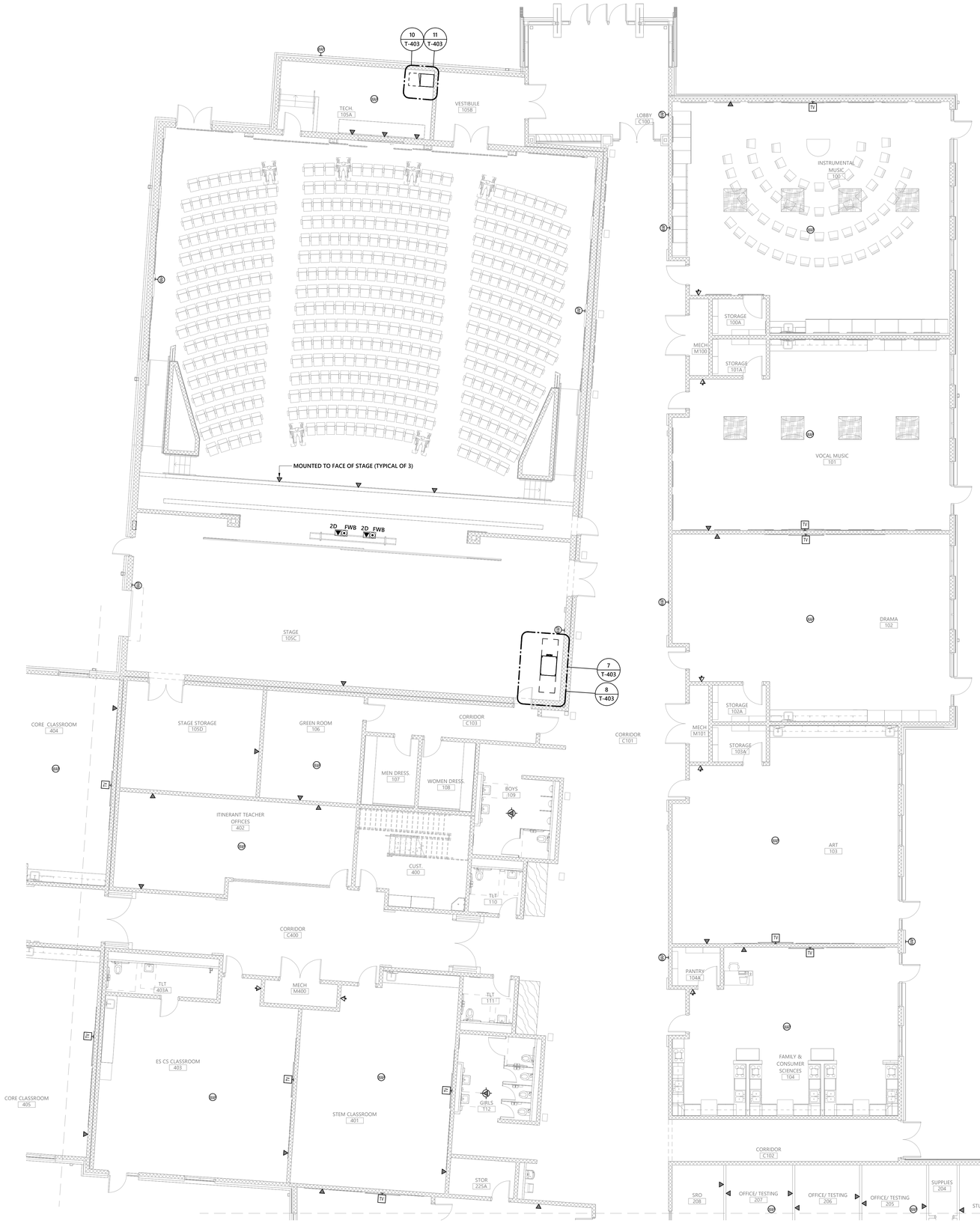



1 **PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 100**
1/8" = 1'-0"

## GENERAL NOTES:

A. REFER TO T-100 FOR CABLING ZONES.

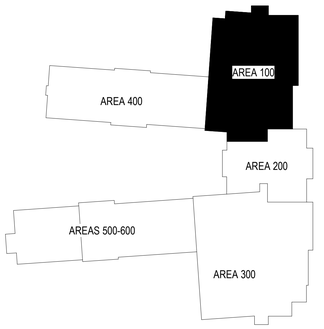
B. INTERIOR WALL MOUNTED DEVICES SHALL BE MOUNTED AT 9'-6" UNLESS OTHERWISE NOTED.

C. EXTERIOR WALL MOUNTED DEVICES SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

D. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

E. CEILING DATA DROPS IN BATHROOMS ARE FOR OWNER PROVIDED VAPE SENSORS. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.

KEY PLAN

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 100

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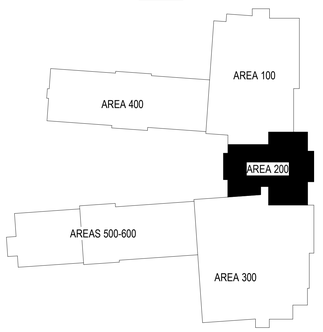
1 PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 200
1/8" = 1'-0"

KEY PLAN

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11/8/2024

CONSTRUCTION DOCUMENTS

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HARNETT COUNTY SCHOOLS

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 200

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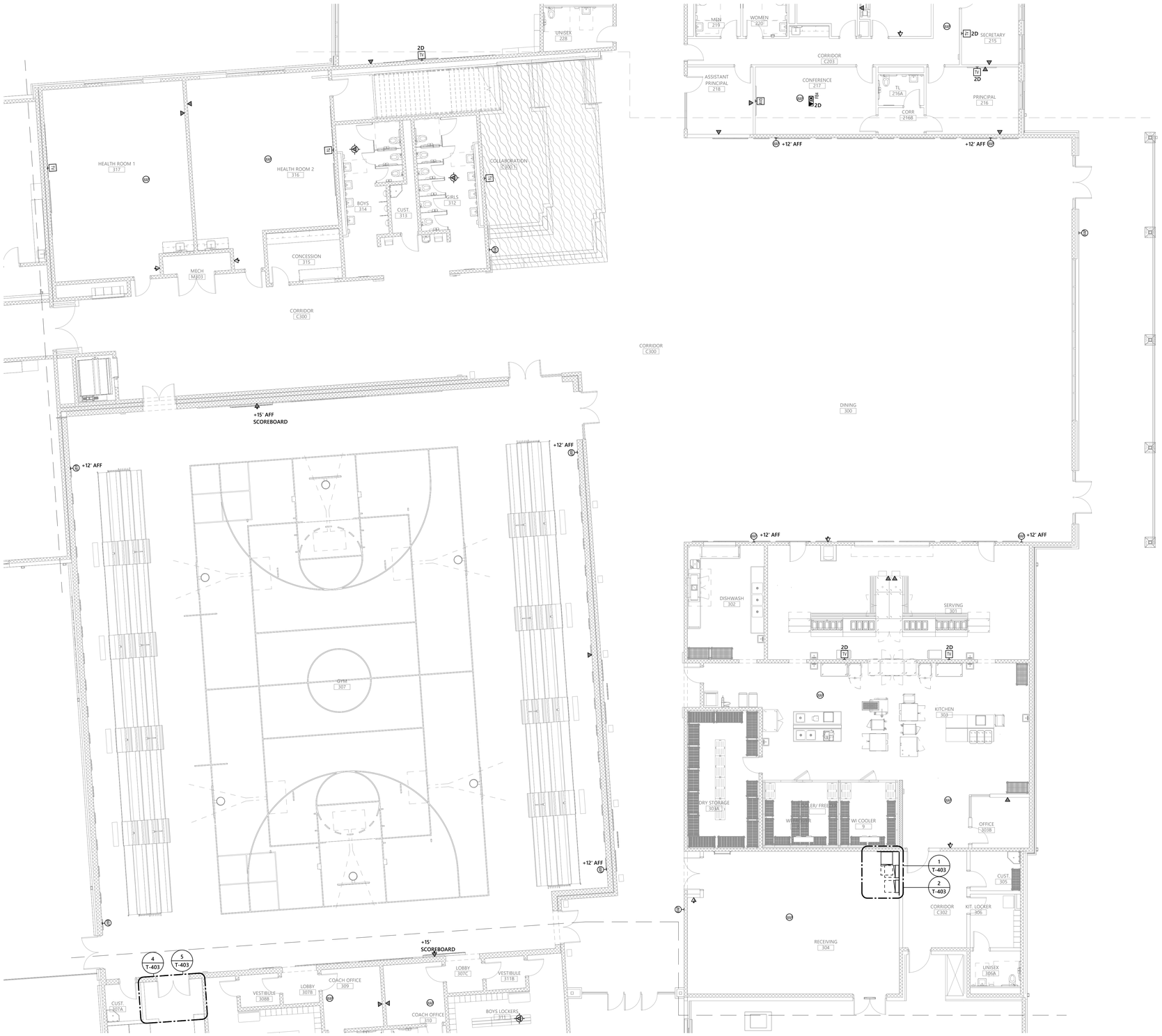


1 PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 300 NORTH
1/8" = 1'-0"

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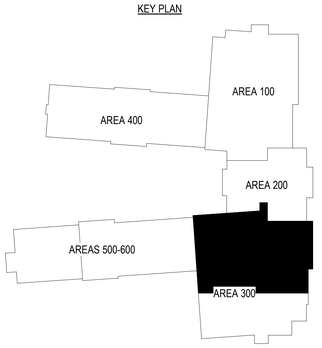
KEY PLAN

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11/8/2024

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 300 NORTH

TN113.1

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## GENERAL NOTES:

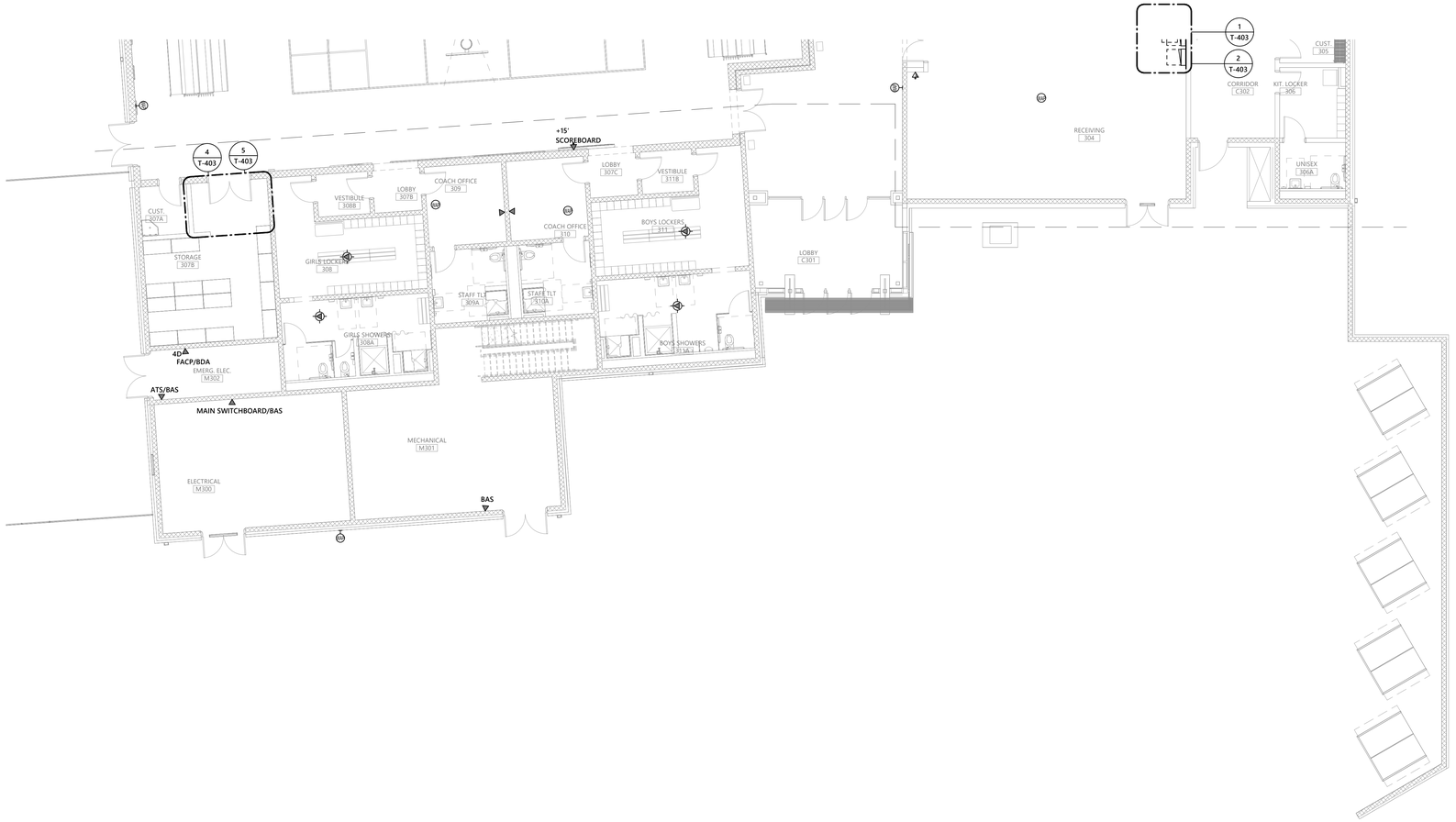
A. REFER TO T-100 FOR CABLING ZONES.

B. INTERIOR WALL MOUNTED DEVICES SHALL BE MOUNTED AT 9'-6" UNLESS OTHERWISE NOTED.

C. EXTERIOR WALL MOUNTED DEVICES SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

D. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

E. CEILING DATA DROPS IN BATHROOMS ARE FOR OWNER PROVIDED VAPE SENSORS. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.




1 PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 300 SOUTH
1/8" = 1'-0"

KEY PLAN

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11/8/2024

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 300 SOUTH

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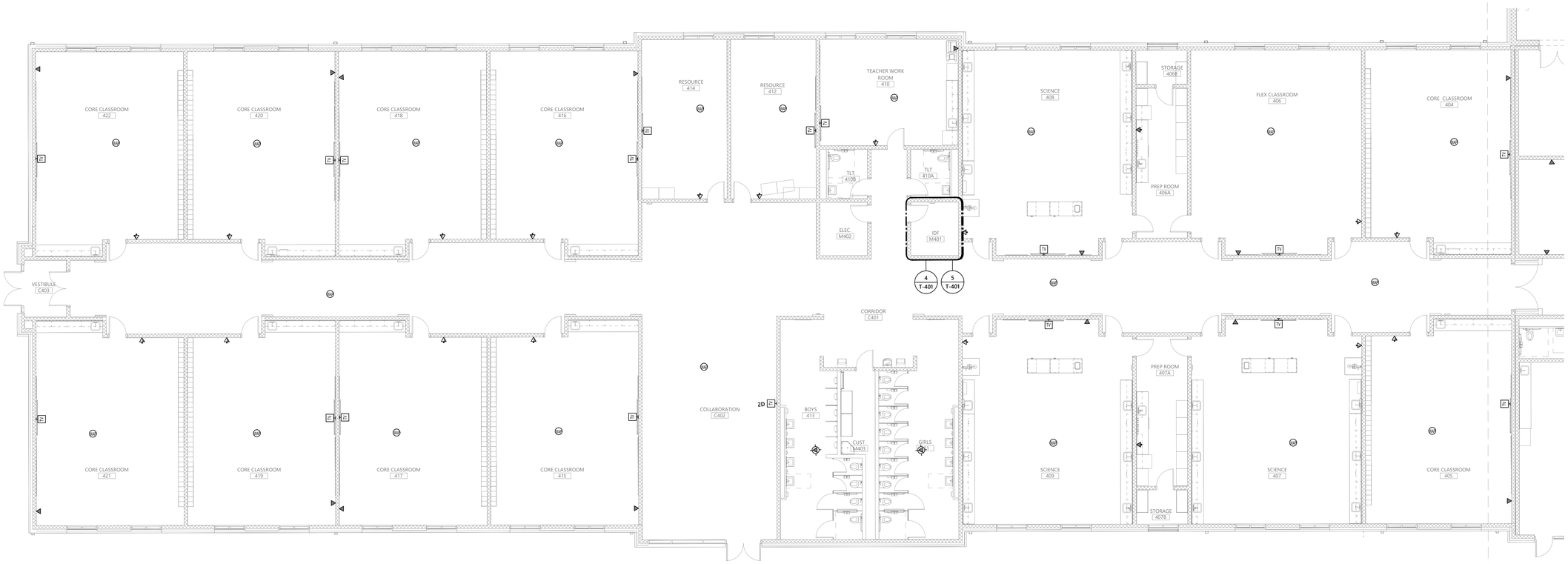
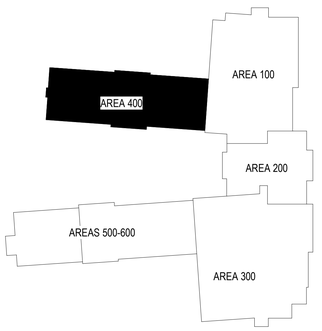



1 **PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 400**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 400

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1 **PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 500 RIGHT**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 500 RIGHT

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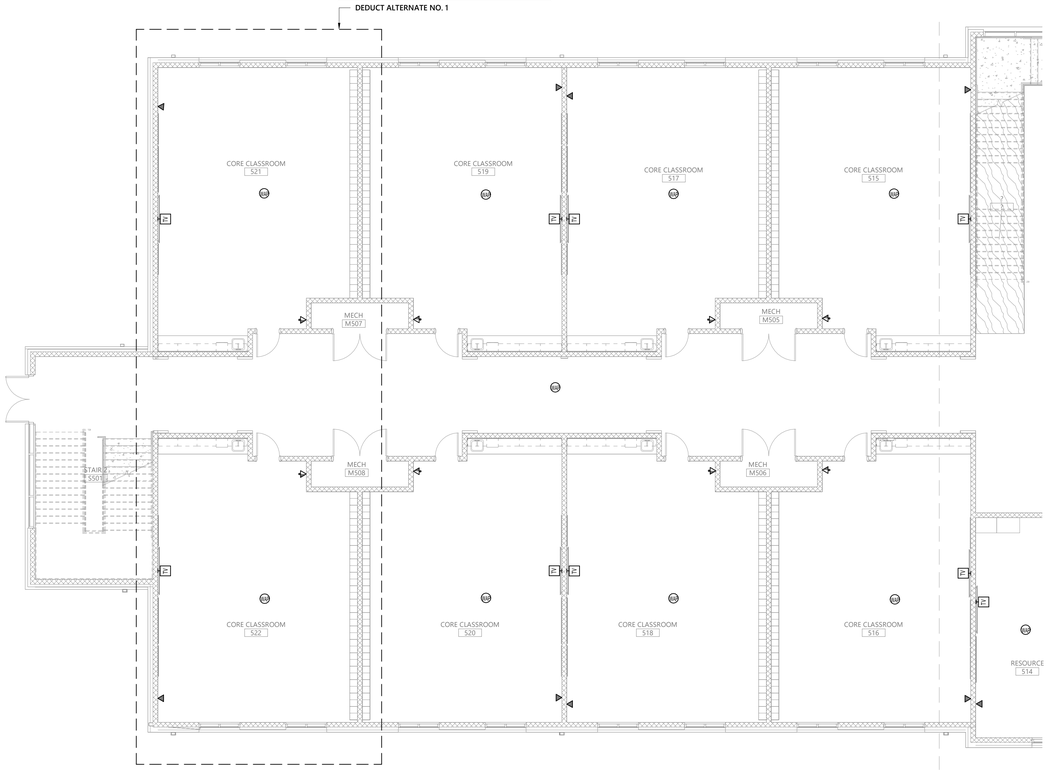
DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600

DEDUCT ALTERNATE NO. 1




1 PARTIAL FIRST FLOOR TECHNOLOGY PLAN - AREA 500 LEFT
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR NETWORK PLAN - AREA 500 LEFT

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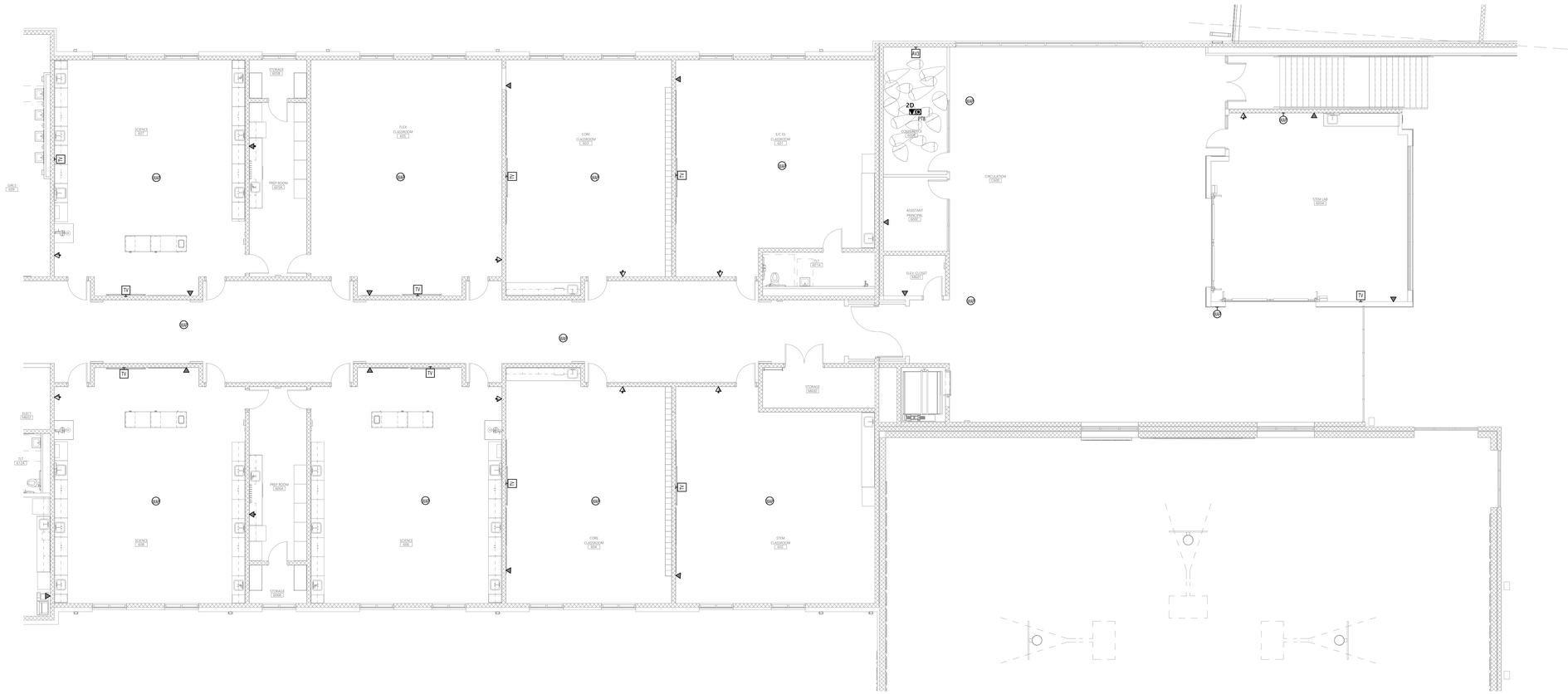


1 PARTIAL SECOND FLOOR TECHNOLOGY PLAN - AREA 600 RIGHT
1/8" = 1'-0"

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PARTIAL SECOND FLOOR NETWORK PLAN - AREA 600 RIGHT

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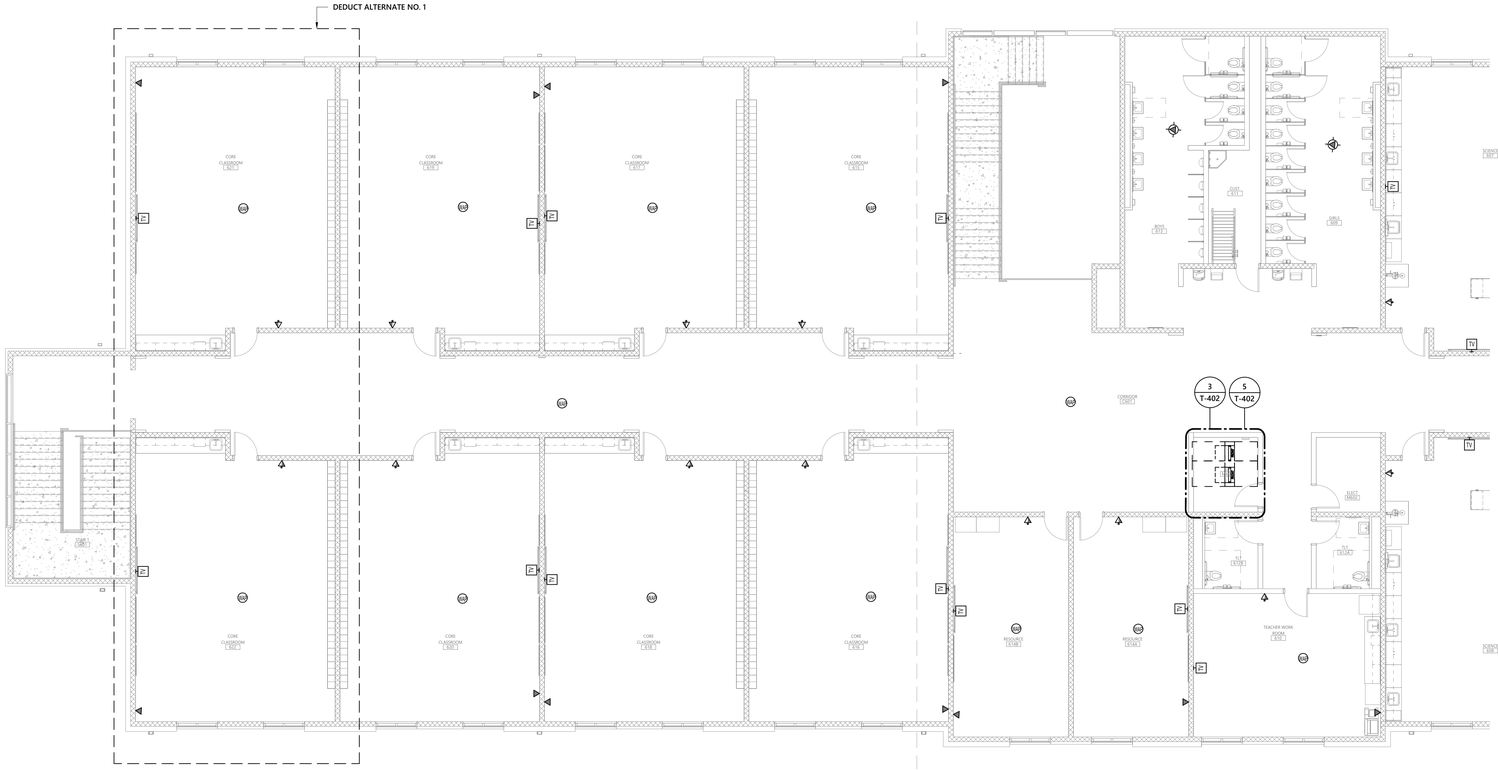
**DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING**
- **CORE CLASSROOMS 521, 522, 621, 622**
- **PORTION OF CORRIDOR C500 AND C600**

DEDUCT ALTERNATE NO. 1




1 **PARTIAL SECOND FLOOR TECHNOLOGY PLAN - AREA 600 LEFT**
1/8" = 1'-0"

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11/8/2024

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PARTIAL SECOND FLOOR NETWORK PLAN - AREA 600 LEFT

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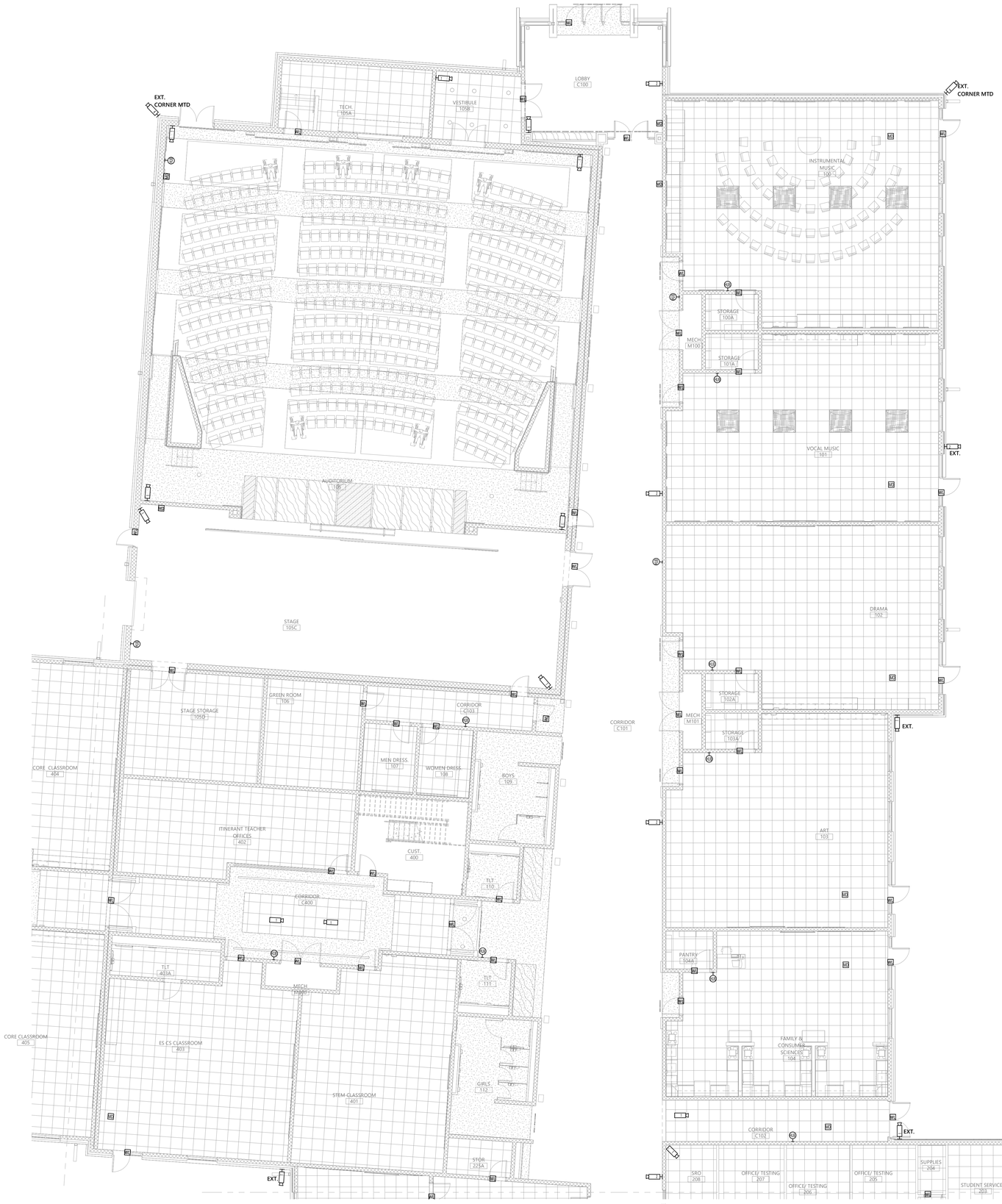


1 **PARTIAL FIRST FLOOR SECURITY PLAN - AREA 100**
1/8" = 1'-0"

## GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY WIRELESS HUB LOCATION WITH MANUFACTURE'S REP AND PROVIDE ADDITIONAL HUBS AND HUB INFARASTRUCTURE AS REQUIRED.

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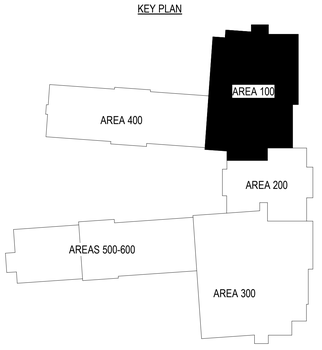


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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 100

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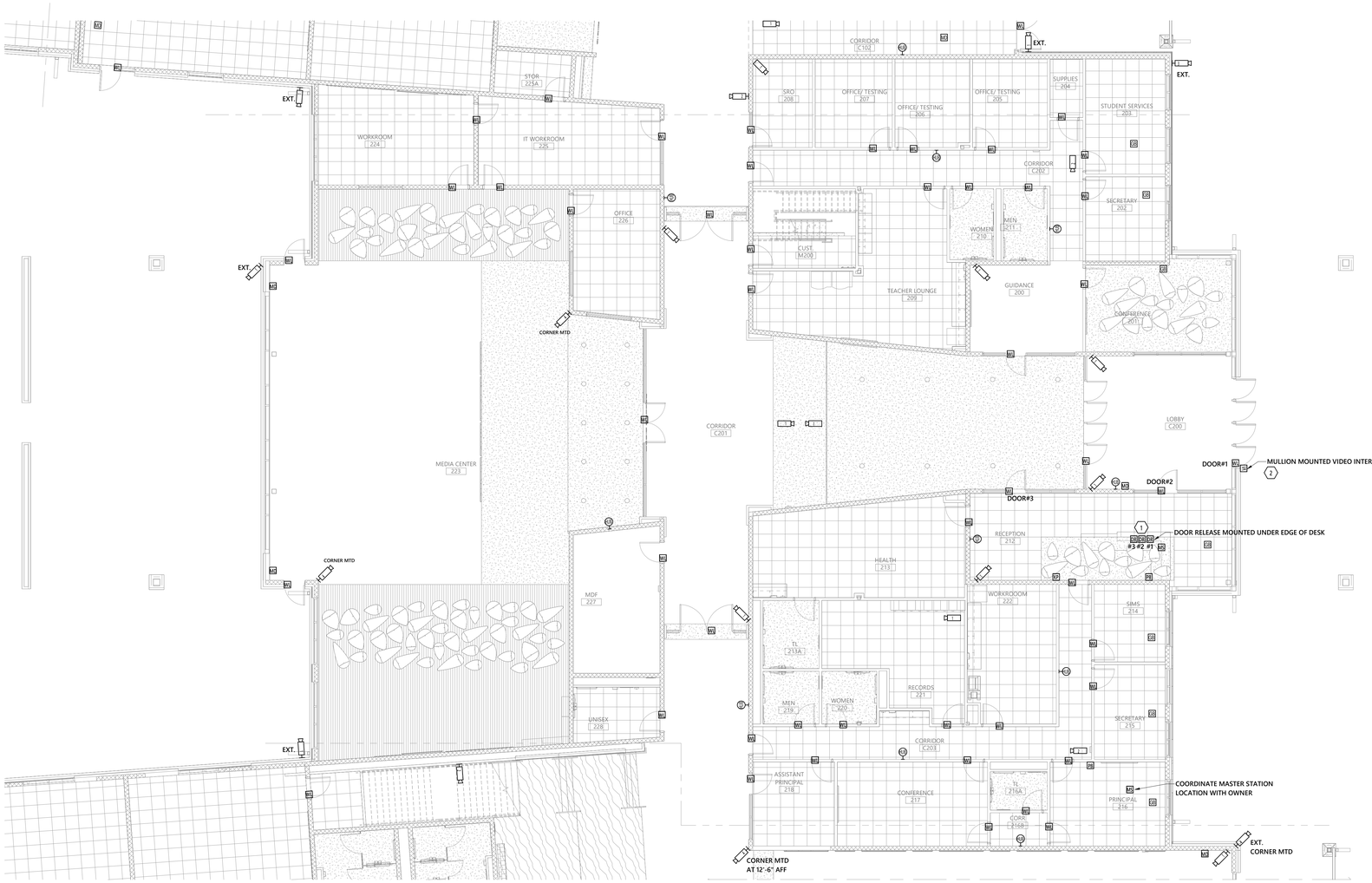
## KEYED NOTES: ⟨x⟩

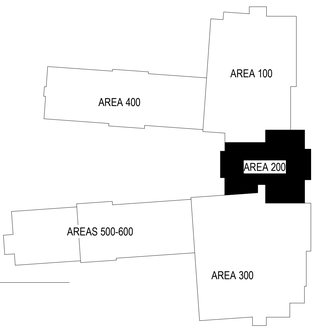
1. DOOR RELEASE SHALL REMOTELY RELEASE DOORS. DOOR NUMBER AND DOOR RELEASE NUMBER CORRESPOND TO DOOR THAT SHALL BE UNLOCKED.

2. VIDEO INTERCOM( MULLION MOUNTED). AXIS I8116-E. PROVIDED AND INSTALLED BY SECURITY CONTRACTOR. CONTRACTOR SHALL PROVIDE ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.




1 **PARTIAL FIRST FLOOR SECURITY PLAN - AREA 200**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 200

TY112

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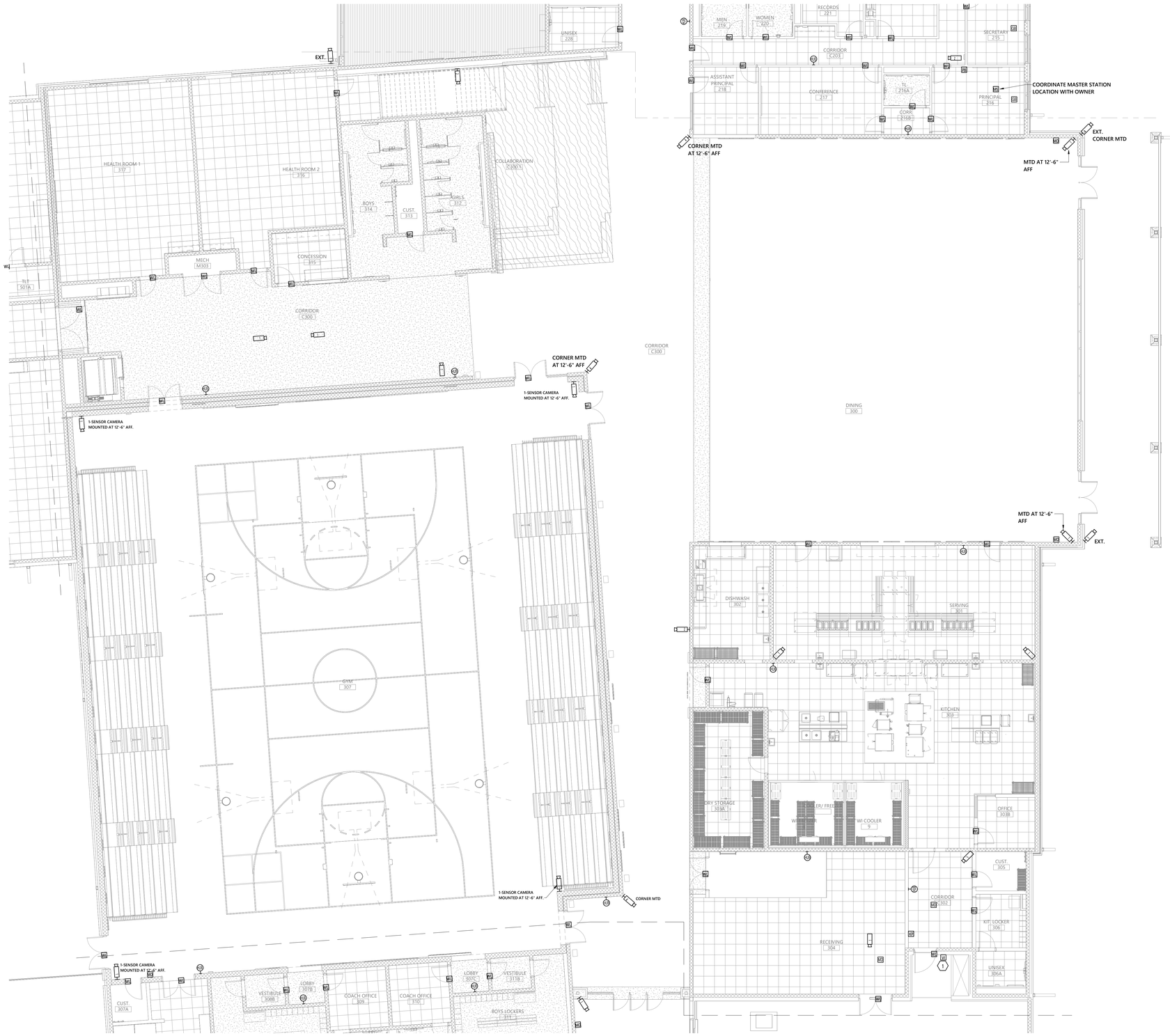


1 **PARTIAL FIRST FLOOR SECURITY PLAN - AREA 300 NORTH**
1/8" = 1'-0"

## GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY WIRELESS HUB LOCATION WITH MANUFACTURE'S REP AND PROVIDE ADDITIONAL HUBS AND HUB INFARASTRUCTURE AS REQUIRED.

B. INTERIOR WALL MOUNTED DEVICES SHALL BE MOUNTED AT 9'-6" UNLESS OTHERWISE NOTED.

C. EXTERIOR WALL MOUNTED DEVICES SHALL BE MOUNTED AT 12'-0" UNLESS OTHERWISE NOTED.

D. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2010 CARLINE DUNCAN K. GUNTER
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# HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
## 3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

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ISSUE DATE: 11/08/24
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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 300 NORTH

TY113.1

KEY PLAN

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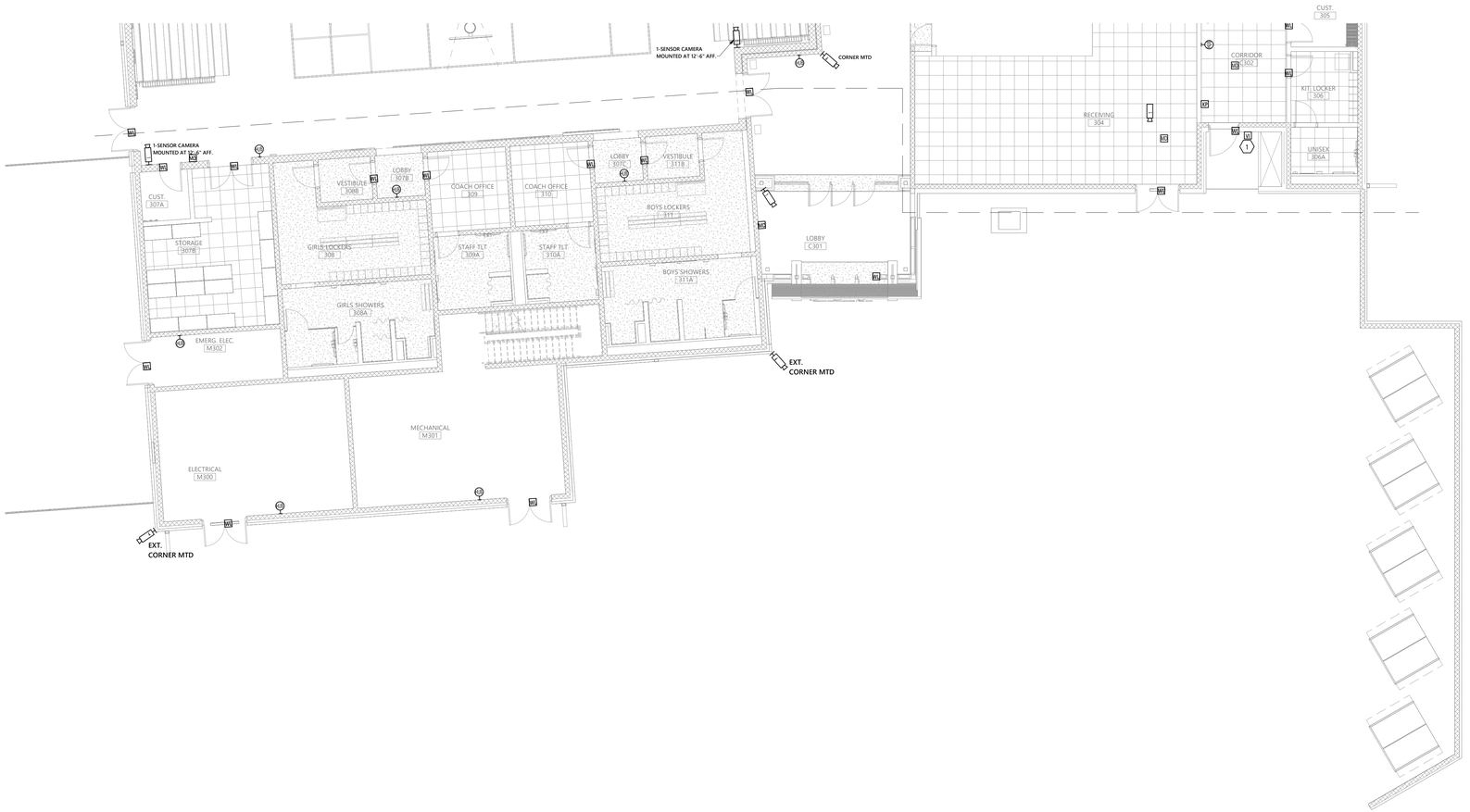
D. ALL WALL MOUNTED DEVICES MUST BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

## KEYED NOTES:

1. VIDEO INTERCOM. AXIS I8016-LVE. PROVIDED AND INSTALLED BY SECURITY CONTRACTOR. CONTRACTOR SHALL PROVIDE ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.




1 PARTIAL FIRST FLOOR SECURITY PLAN - AREA 300 SOUTH
1/8" = 1'-0"

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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 300 SOUTH

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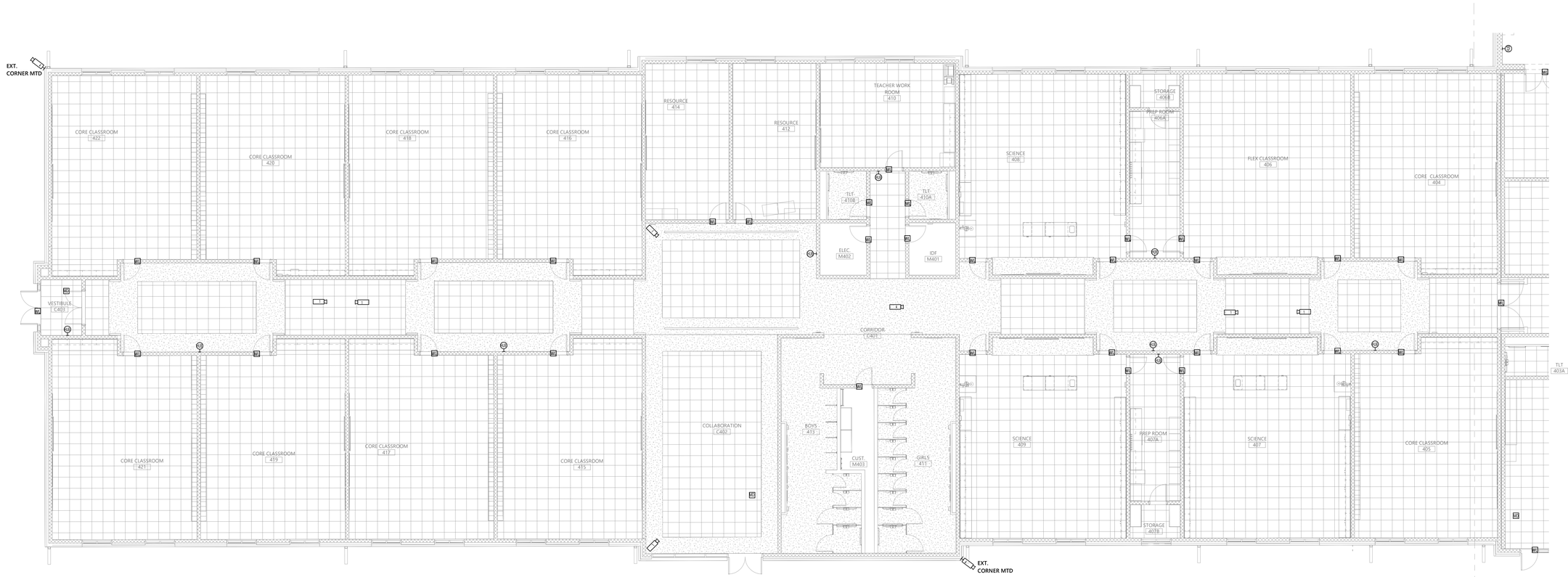
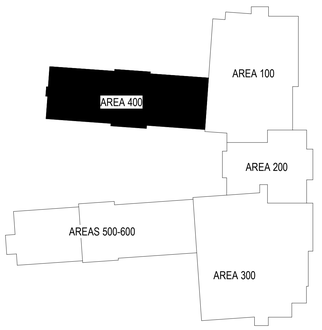



1 **PARTIAL FIRST FLOOR SECURITY PLAN - AREA 400**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 400

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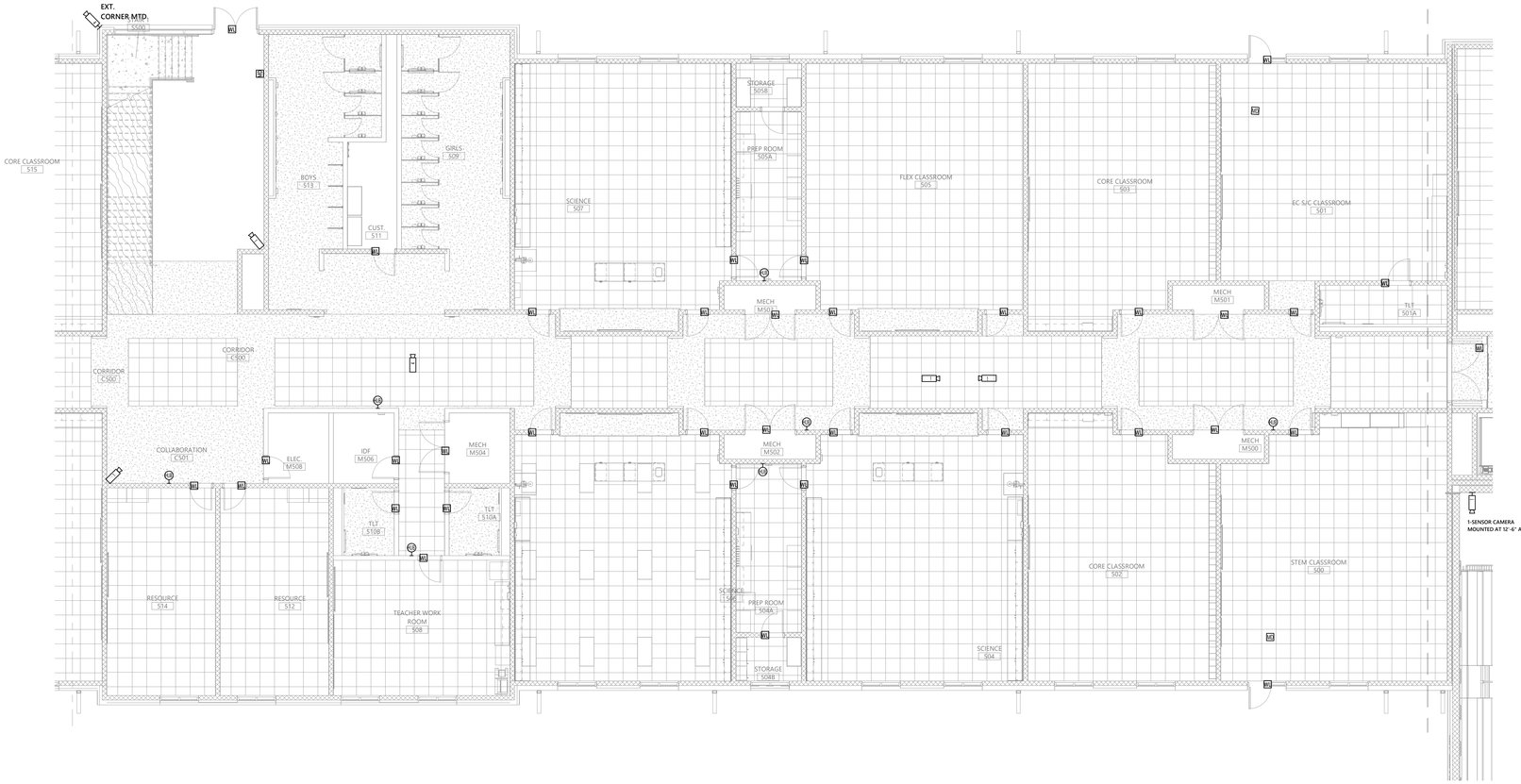


1 **PARTIAL FIRST FLOOR SECURITY PLAN - AREA 500 RIGHT**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 500 RIGHT

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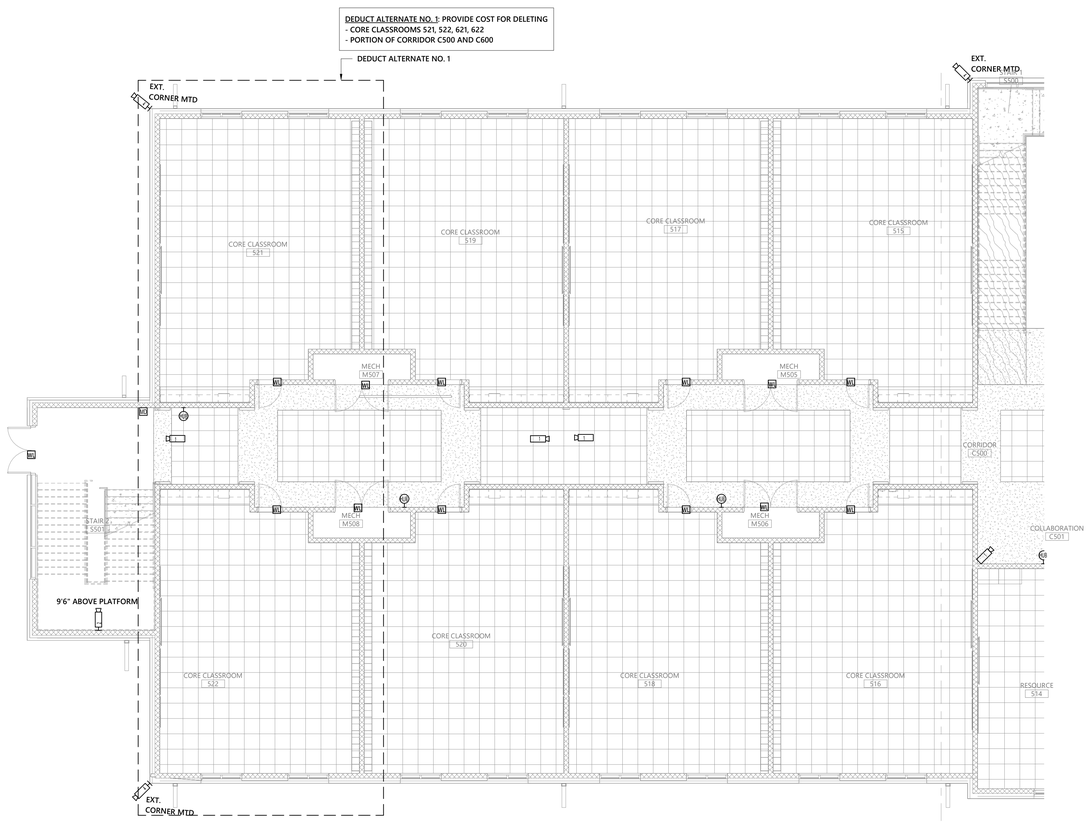


1 **PARTIAL FIRST FLOOR SECURITY PLAN - AREA 500 LEFT**
1/8" = 1'-0"

KEY PLAN

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PARTIAL FIRST FLOOR SECURITY PLAN - AREA 500 LEFT

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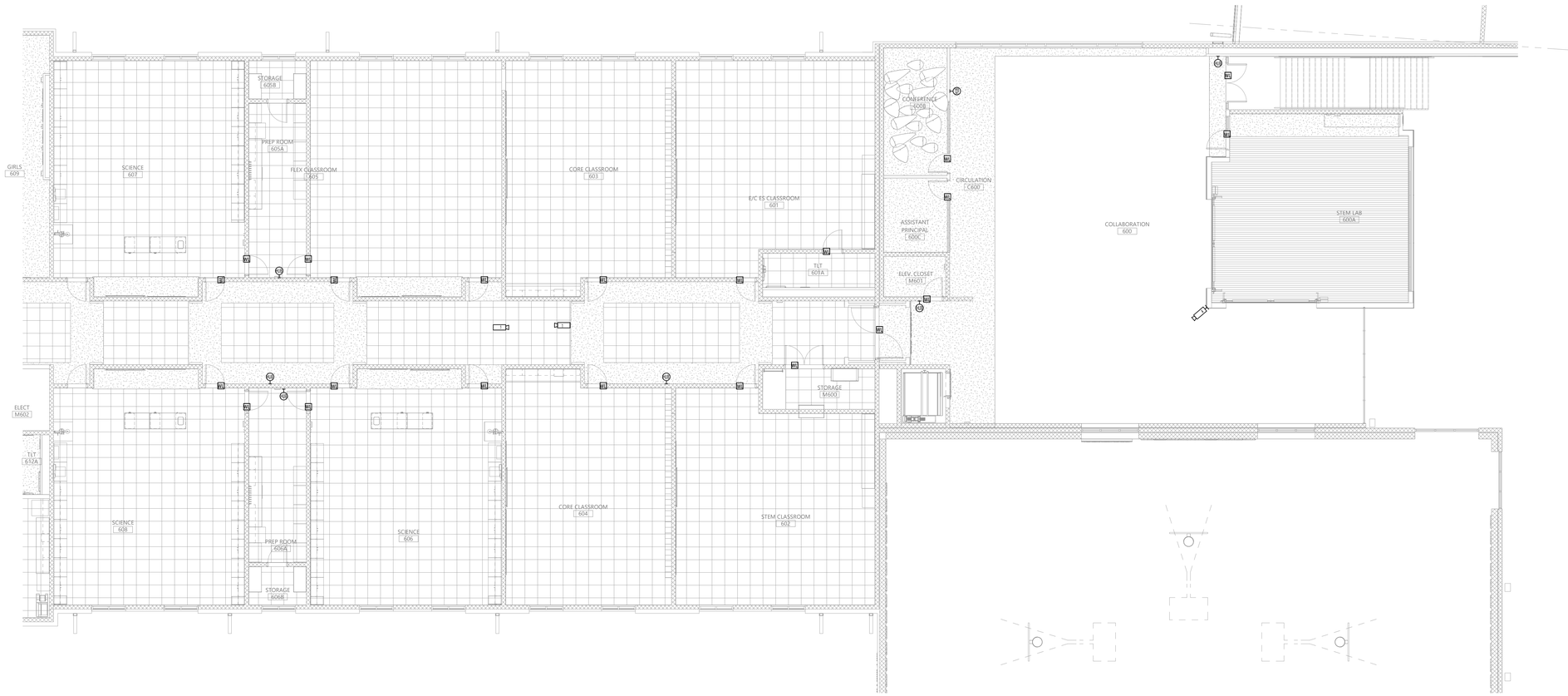


1 **PARTIAL SECOND FLOOR SECURITY PLAN - AREA 600 RIGHT**
1/8" = 1'-0"

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PARTIAL SECOND FLOOR SECURITY PLAN - AREA 600 RIGHT

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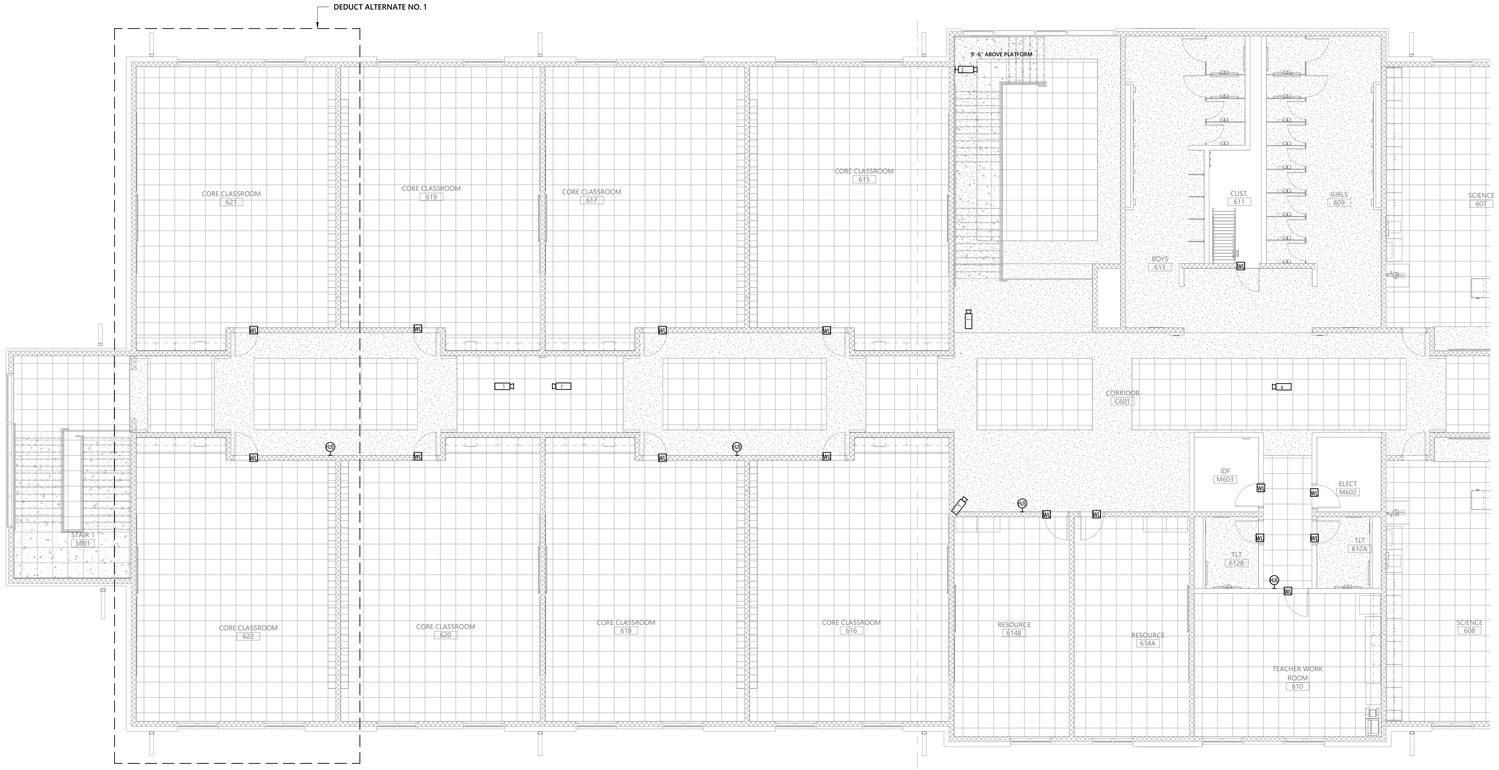
DEDUCT ALTERNATE NO. 1: PROVIDE COST FOR DELETING
- CORE CLASSROOMS 521, 522, 621, 622
- PORTION OF CORRIDOR C500 AND C600

DEDUCT ALTERNATE NO. 1




1 PARTIAL SECOND FLOOR SECUIRTY PLAN - AREA 600 LEFT
1/8" = 1'-0"

KEY PLAN

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NORTH CAROLINA REGISTERED ARCHITECT ... CHRISTOPHER K. GUNTER
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HARNETT COUNTY SCHOOLS

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PARTIAL SECOND FLOOR SECURITY PLAN - AREA 600 LEFT

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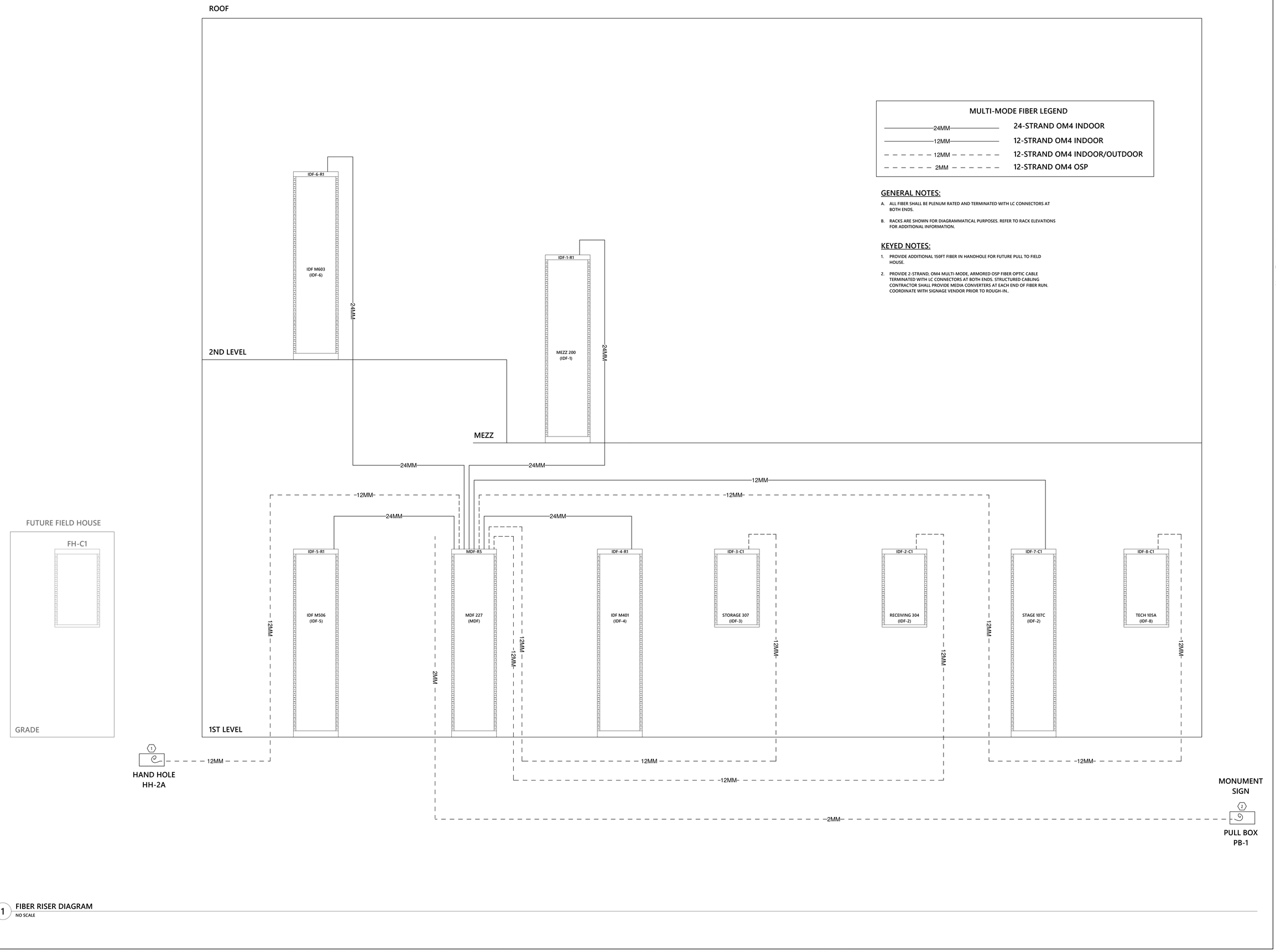


## MULTI-MODE FIBER LEGEND

| | |
|---|---|
| ——24MM—— | 24-STRAND OM4 INDOOR |
| ——12MM—— | 12-STRAND OM4 INDOOR |
| – – – – – 12MM – – – – – | 12-STRAND OM4 INDOOR/OUTDOOR |
| – – – – – 2MM – – – – – | 12-STRAND OM4 OSP |

## GENERAL NOTES:

A. ALL FIBER SHALL BE PLENUM RATED AND TERMINATED WITH LC CONNECTORS AT BOTH ENDS.

B. RACKS ARE SHOWN FOR DIAGRAMMATICAL PURPOSES. REFER TO RACK ELEVATIONS FOR ADDITIONAL INFORMATION.

## KEYED NOTES:

1. PROVIDE ADDITIONAL 150FT FIBER IN HANDHOLE FOR FUTURE PULL TO FIELD HOUSE.

2. PROVIDE 2-STRAND, OM4 MULTI-MODE, ARMORED OSP FIBER OPTIC CABLE TERMINATED WITH LC CONNECTORS AT BOTH ENDS. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE MEDIA CONVERTERS AT EACH END OF FIBER RUN. COORDINATE WITH SIGNAGE VENDOR PRIOR TO ROUGH-IN..

1 **FIBER RISER DIAGRAM**
NO SCALE

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049481 ENGINEER FRANK K. GUM
11/8/2024

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# HARNETT COUNTY SCHOOLS
# FLATWOODS MIDDLE SCHOOL
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| CHECKED BY: | | TMC |

TECHNOLOGY FIBER RISER DIAGRAM

T-601

Sheet No. 38

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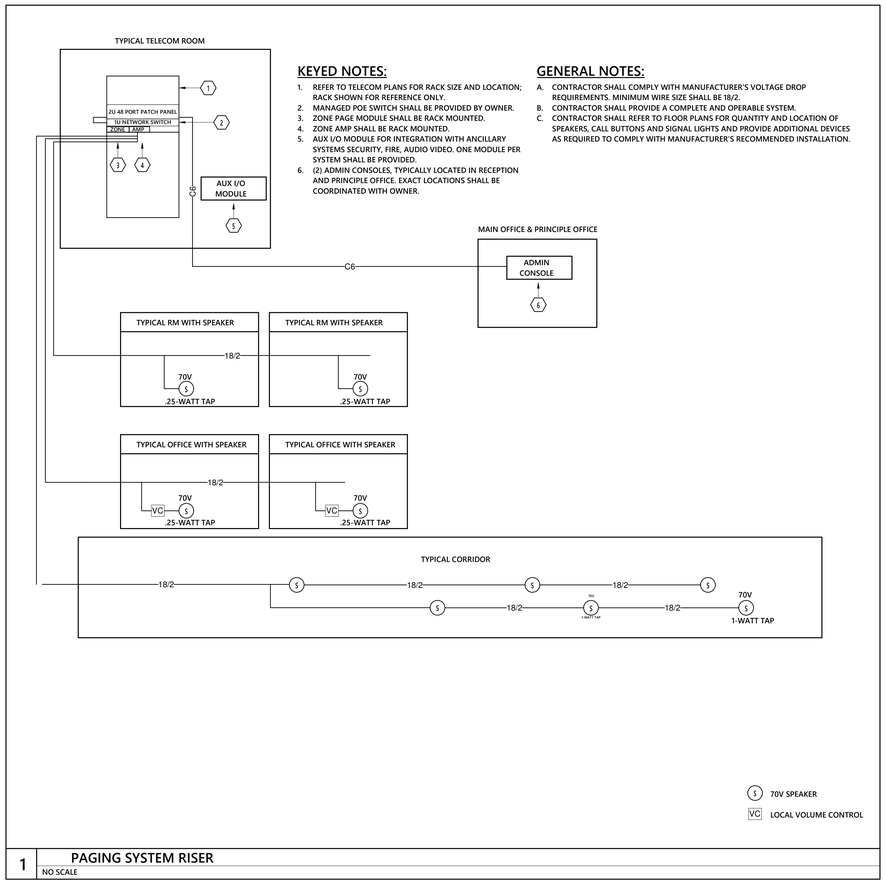


## KEYED NOTES:

1. REFER TO TELECOM PLANS FOR RACK SIZE AND LOCATION; RACK SHOWN FOR REFERENCE ONLY.
2. MANAGED POE SWITCH SHALL BE PROVIDED BY OWNER.
3. ZONE PAGE MODULE SHALL BE RACK MOUNTED.
4. ZONE AMP SHALL BE RACK MOUNTED.
5. AUX I/O MODULE FOR INTEGRATION WITH ANCILLARY SYSTEMS SECURITY, FIRE, AUDIO VIDEO. ONE MODULE PER SYSTEM SHALL BE PROVIDED.
6. (2) ADMIN CONSOLES. TYPICALLY LOCATED IN RECEPTION AND PRINCIPLE OFFICE. EXACT LOCATIONS SHALL BE COORDINATED WITH OWNER.

## GENERAL NOTES:

A. CONTRACTOR SHALL COMPLY WITH MANUFACTURER'S VOLTAGE DROP REQUIREMENTS. MINIMUM WIRE SIZE SHALL BE 18/2.
B. CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERABLE SYSTEM.
C. CONTRACTOR SHALL REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF SPEAKERS, CALL BUTTONS AND SIGNAL LIGHTS AND PROVIDE ADDITIONAL DEVICES AS REQUIRED TO COMPLY WITH MANUFACTURER'S RECOMMENDED INSTALLATION.

1 PAGING SYSTEM RISER
NO SCALE

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TECHNOLOGY PAGING RISER DIAGRAM

T-602

Sheet No. 38

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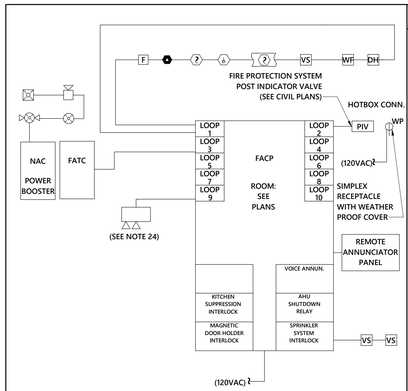



1 **FIRE ALARM RISER DIAGRAM**
NOT TO SCALE

## FIRE ALARM NOTES

1. FACP SHALL HAVE A MINIMUM 24HR. BATTERY BACKUP.
2. FACP SHALL BE FULLY ANALOG ADDRESSABLE.
3. FACP SHALL BE CONNECTED TO A UL APPROVED CENTRAL STATION.
4. ZONE PER NFPA 72, 2013 AND MANUFACTURER'S RECOMMENDATIONS WITH NO ONE ZONE EXCEEDING 15,000 S.F. PER FLOOR.
5. COORDINATE QUANTITY AND LOCATIONS OF DEVICES WITH CONTRACT DRAWINGS.
6. LOCATE SMOKE DETECTOR WITHIN 5' OF THE MAGNETIC HOLD OPEN DOORS. (TYPICAL)
7. LOCATE FIRE ALARM PULL STATION WITHIN 5' OF THE EXIT DOOR.
8. LOCATE SMOKE/HEAT DETECTOR WITHIN 5' OF THE FA EQUIPMENT (FACP, FATC, NAC).
9. LOCATION OF CEILING MOUNTED SMOKE/HEAT DETECTOR SHALL BE FIELD COORDINATED PRIOR TO ROUGH IN. THE DETECTOR SHALL BE A MINIMUM OF 2' AWAY FROM LIGHT FIXTURE AND A MINIMUM OF 3' AWAY FROM AIR DISTRIBUTION DEVICES.
10. AUTOMATIC DOOR CLOSING SHALL BE ACCOMPLISHED BY THE ACTIVATION OF THE BUILDING FIRE ALARM SYSTEM. SMOKE DETECTOR ACTIVATION SHALL ALERT THE BUILDING FIRE ALARM SYSTEM. THE FIRE ALARM SYSTEM SHALL CAUSE ALL HOLD OPEN DOORS TO CLOSE UPON ALARM ACTIVATION IN THE BUILDING.
11. ACTIVATION OF AN ALARM ZONE SHALL CAUSE ALL AIR HANDLING EQUIPMENT TO SHUT DOWN (ALL DAMPERS, AIR HANDLERS AND EXHAUST FANS MUST STOP).
12. ACTIVATION OF KITCHEN HOOD SUPPRESSION SYSTEM PROVIDES SIGNAL TO FACP WHICH IN TURN ACTIVATES ALL ANNUNCIATING ZONES & SHUTS DOWN HOOD SUPPLY AIR. HOOD EXHAUST SHALL CONTINUE TO OPERATE.
13. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOW, PRESSURE, & TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION.
14. ALL VISUAL DEVICES WITHIN THE SAME AREA SHALL BE SYNCHRONIZED.
15. ALL FIRE ALARM WIRING SHALL BE IN RED COLORED CONDUIT. FIRE ALARM CABLING SHALL BE PLENUM RATED.
16. PROVIDE MULTI-TEMPORAL SOUNDING CAPABILITY AT ALL AUDIO DEVICES FOR EMERGENCY NOTIFICATION FOR NON VOICE SYSTEMS COMPONENTS.
17. THE FIRE ALARM SYSTEM MANUFACTURER SHALL PROVIDE NOTIFICATION APPLIANCE CIRCUIT (NAC) POWER EXTENDERS AS REQUIRED.
18. THE DUCT SMOKE DETECTORS SHALL COMPLY WITH IFC 907.2.12.1.2 AND 907.3.1.
19. PROVIDE DITEK #DTK-DF1205I SERIES OR EQUAL TVSS FOR 120V SUPPLY TO FIRE ALARM CONTROL PANELS, WITH TVSS DRY CONTACT TO BE MONITORED BY FACP. PROVIDE DITEK DTK-2MHLP24F-WB OR EQUAL FOR ALL FIRE ALARM CABLES THAT EXIT THE PHYSICAL BUILDING. TAMPER SWITCHES DTK-2MHLP24B-WB, AND EACH UB/EXTENDER FIRE ALARM PANEL. NAC, PIV, IDC SURGE: DTK-2MHLP24B-WB OR EQUAL. DIALER SURGE: DTK -2MHTPWB FIBER MEDIA CONVERTER PROTECTOR DTK-PVPIP OR EQUAL.
20. THE CIRCUIT FEEDING THE FIRE ALARM PANEL IS DEDICATED FOR THE FIRE ALARM ONLY. BREAKER SHALL BE PROVIDED WITH A LABEL "FIRE ALARM CIRCUIT" AND SHALL BE RED. PROVIDE BREAKER LOCK ON DEVICE.
21. PROVIDE REMOTE LIGHT WITH TEST SWITCH FOR DUCT SMOKE DETECTOR ON CEILING WHERE UNIT IS ABOVE CEILING.
22. CONTRACTOR RESPONSIBLE FOR SHOP DRAWINGS AS REQUIRED BY LOCAL AHJ.
23. DUCT DETECTORS SHALL BE VERIFIED WITH THE MECHANICAL DRAWINGS FOR QUANTITY AND LOCATION. TOTAL QUANTITY MINIMUM SHALL BE BASED ON BOTH MECHANICAL SCHEDULES AND MECHANICAL PLAN LOCATIONS AND ELECTRICAL PLANS. WHEN DEVICE QUANTITIES (ELECTRICAL VS. MECHANICAL) ARE IN CONFLICT, PROVIDE THE GREATER QUANTITY OF DETECTORS.
24. DIGITAL ALARM COMMUNICATOR TRANSMITTER SHALL BE ACCEPTABLE TO THE REMOTE CENTRAL STATION AND SHALL COMPLY WITH UL 632. CELLULAR LINE – SINGLE MAIN SOURCE. PROVIDE NAPCO STARLINK (SLD-CMDA-FIRE) FIRE ALARM COMMUNICATOR AND SLE-ANTEXT50 EXTERNAL ANTENNA TO OR EQUAL AND COORDINATED WITH THE CELLULAR DIAL OUT SERVICE. CELLULAR DIAL OUT SHALL BE BACKED UP AS PART OF BATTERY BACKUP AS WELL AS GENERATOR BACKED UP WHERE AVAILABLE. FUNCTIONAL PERFORMANCE: UNIT SHALL RECEIVE AN ALARM, SUPERVISORY, OR TROUBLE SIGNAL FROM FIRE-ALARM CONTROL UNIT AND AUTOMATICALLY CAPTURE A PRESET NUMBER FOR A REMOTE CENTRAL STATION. WHEN CONTACT IS MADE WITH CENTRAL STATION(S), SIGNALS SHALL BE TRANSMITTED. IF SERVICE ON THE CELLULAR LINE IS INTERRUPTED FOR LONGER THAN 45 SECONDS, TRANSMITTER SHALL INITIATE A LOCAL TROUBLE SIGNAL. TRANSMITTER SHALL AUTOMATICALLY REPORT CELLULAR SERVICE RESTORATION TO THE CENTRAL STATION. IF SERVICE IS LOST, TRANSMITTER SHALL INITIATE THE LOCAL TROUBLE SIGNAL.

## FIRE ALARM SPECIFICATIONS

A. SYSTEM SHALL BE A CENTRALIZED, ANALOG, ADDRESSABLE, FULLY ELECTRONICALLY SUPERVISED (INCLUDING AUXILIARY SYSTEMS INTERCONNECT WIRING) SYSTEM LISTED BY UL IN COMPLIANCE WITH ALL APPLICABLE NFPA 72 AND OTHER STANDARDS AS WELL AS THE AMERICAN'S WITH DISABILITIES ACT (ADA). ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. SYSTEM SHALL BE SIMPLEX, NOTIFIER, SIEMENS, OR APPROVED EQUAL AS ACCEPTED BY THE ENGINEER. SYSTEM SHALL HAVE A 24HR MINIMUM BATTERY BACKUP.

B. INITIATING DEVICE ACTIVATION SHALL CAUSE OPERATION OF THE PROPER ALARM CIRCUIT IN THE CONTROL PANEL, AND OPERATE ALL AUDIBLE AND VISUAL INDICATING ALARMS. ALL AIR HANDLING UNITS SHALL BE STOPPED UPON ANY ALARM INPUT. EACH AIR HANDLER UNIT SHALL BE PROVIDED WITH A SYSTEM CONTROLLED RELAY TO EFFECT SHUTDOWN. ALL ALARM DEVICES AND LAMPS SHALL CONTINUE TO OPERATE UNTIL THE INITIATING DEVICE IS RESET. SUBSEQUENT ALARMS SHALL RESOUND THE SYSTEM. AN AUDIBLE AND VISUAL SIGNAL SHALL INDICATE SYSTEM TROUBLE. THE CONTROL PANEL SHALL PROVIDE FOR ACTIVATING A UL LISTED CENTRAL STATION SIGNAL FOR NOTIFYING THE FIRE DEPARTMENT.

C. MANUAL STATIONS SHALL BE NON-CODED, WITH DUAL-ACTION PULL AND KEY TYPE RESET, SEMI-FLUSH MOUNTED. COMBINATION LIGHT AND HORN SIGNALS SHALL BE FLUSH MOUNTED. WIRING SHALL BE IN CONDUIT AS PREVIOUSLY SPECIFIED, #14 AWG MINIMUM, THHN. ALL J-BOXES USED FOR THE FIRE ALARM SYSTEM SHALL BE PAINTED RED.

D. SPRINKLER SYSTEM TAMPER SWITCHES SHALL BE CONNECTED INTO A COMMON ZONE WHICH SHALL DISTINGUISH BETWEEN A CONDUIT FAULT AND A CLOSED VALVE. A CLOSED VALVE SHALL BE INDICATED AS AN ALARM CONDITION, BUT WILL NOT ACTIVATE THE AUDIO-VISUAL DEVICES AND SHALL CAUSE A SUPERVISORY SIGNAL TO BE TRANSMITTED TO THE FIRE DEPARTMENT.

E. CONDUCTORS SHALL BE PLENUM-RATED AND INSTALLED IN CONDUIT AND INSTALLED IN COMPLIANCE WITH NFPA 70, ARTICLE 760; IN ADDITION TO WIRING METHODS 300.4.

F. ALL FIRE ALARM WIRING SHALL BE CLASS B.

G. PROVIDE ALL REQUIRED MODULES, POWER EXTENDERS, PROGRAMMING, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.

H. SUBMIT FIRE ALARM SHOP DRAWINGS CONSISTING OF PRODUCT DATA, TO THE ENGINEER AND FOR APPROVAL.

I. FILL OUT NFPA 72 CERTIFICATION REPORT AND SUBMIT TO ENGINEER AND AUTHORITY HAVING JURISDICTION.

J. WARRANTY - ALL WORK PERFORMED AND ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY THE PROFESSIONAL ENGINEER AND/OR OWNER. THE FULL COST OF MAINTENANCE, LABOR, AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS TWO YEAR PERIOD SHALL BE IMMEDIATELY CORRECTED AT NO ADDITIONAL COST TO THE OWNER. ANY DEFECTS THAT RENDER THE SYSTEM INOPERATIVE SHALL BE REPAIRED WITHIN 24 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR. OTHER DEFECTS SHALL BE REPAIRED WITHIN 48 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR.

## NFPA FIRE ALARM LEGEND

| | |
|---|---|
| FACP | FIRE ALARM CONTROL PANEL |
| GAP N | GRAPHIC ANNUNCIATOR PANEL |
| FAA | FIRE ALARM ANNUNCIATOR |
| NAC | NOTIFICATION APPLIANCE CIRCUIT POWER EXTENDER |
| BDA | BI-DIRECTIONAL AMPLIFIER SYSTEM |
| WF | SPRINKLER FLOW SWITCH |
| TT | SPRINKLER TEMPERATURE SWITCH |
| VS | VALVE SUPERVISORY SWITCH |
| M | ADDRESSABLE INPUT MONITOR |
| CM | ADDRESSABLE CONTROL MONITOR |
| H | HEAT DETECTOR/SENSOR. |
| P | PULLSTATION/FIRE ALARM |
| S | SMOKE DETECTOR/SENSOR (DEFAULT PHOTOELECTRIC TYPE) |
| DH | FIRE ALARM DOOR HOLDER |
| R | FIRE ALARM REMOTE INDICATOR |
| R | FIRE ALARM CEILING MOUNT INDICATOR |
| DD | RECTANGULAR DUCT SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. |
| | FIRE ALARM BELL NOTIFICATION |
| D | DUCT SMOKE DETECTOR (NFPA 72, SECTION 17.7.5.5) |
| | FIRE ALARM SPEAKER ONLY, WHITE FINISH |
| 15cd | ADA COMPLIANT WALL MOUNTED FIRE ALARM SPEAKER WITH STROBE LIGHT, 15CD UNLESS OTHERWISE NOTED. WHITE FINISH.** |
| | FIRE ALARM SPEAKER ONLY, WHITE FINISH |
| 15cd | FIRE ALARM SPEAKER W/STROBE (CANDELAS), WHITE FINISH |

## FIRE ALARM SHEET INDEX



| SHEET NUMBER | SHEET NAME |
|---|---|
| FA-001 | FIRE ALARM LEGEND AND NOTES |
| FA-010 | FIRE ALARM SITE PLAN |
| FA-111 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 100 |
| FA-112 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 200 |
| FA-113.1 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 NORTH |
| FA-113.2 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 SOUTH |
| FA-114 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 400 |
| FA-115.1 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 RIGHT |
| FA-115.2 | PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 LEFT |
| FA-116.1 | PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 RIGHT |
| FA-116.2 | PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 LEFT |
| FA-121 | MECH. MEZZANINE FIRE ALARM PLANS - AREAS 100, 400, & 600 |
| FA-122 | MECH. MEZZANINE FIRE ALARM PLANS - AREAS 200 & 300 |
| FA-601 | FIRE ALARM DETAILS |

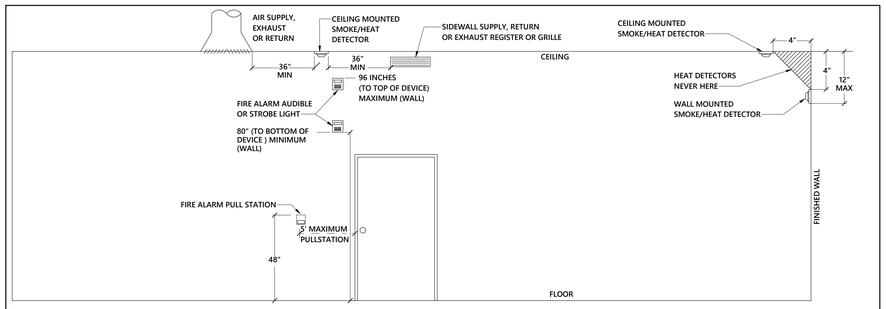


## FIRE ALARM SYSTEM MATRIX

BUILDING SYSTEM OUTPUTS

| | ACTIVATE COMMON ALARM SIGNAL INDICATOR | ACTIVATE AUDIBLE ALARM SIGNAL | ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR | ACTIVATE AUDIBLE SUPERVISORY SIGNAL | ACTIVATE COMMON TROUBLE SIGNAL INDICATOR | ACTIVATE AUDIBLE TROUBLE SIGNAL | ACTIVATE ZONE OR DEVICE ALARM ADDRESS INDICATOR | DISPLAY CHANGE OF STATUS | ACTIVATE ADA ROOM STROBE | ACTIVATE UNDUE SIGNAL IN CO DETECTOR | ACTIVATE UNDUE SIGNAL IN SUITE SOUNDER BASES | ACTIVATE ALL EQUIPMENT SOUNDER BASES IN BUILDING | TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION | TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION | TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION | DELAYED REMOVAL OF POWER FROM ELEVATOR | FIREMAN'S HAT ARM IN CAR | RETURN ELEVATOR TO ALTERNATE FLOOR | RETURN ELEVATOR TO FIRST FLOOR | RETURN ELEVATOR TO ATTENDED FLOOR | SHUNT TRIP AFTER ELEV. REACHES DESIGNATED FLOOR | SHUT DOWN RESPECTIVE HVAC | CLOSE ALL FIRE/SMOKE DAMPERS | UNLOCK EGRESS DOOR CONTROL DOORS | RELEASE IMMEDIATELY HELD DOORS | ACTUATE STAIRWAY PRESSURIZATION | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MANUAL FIRE ALARM PULL BOXES | X | X | | | | | X | X | X | X | | X | X | | | | | | | X | X | X | X | | | | | |
| DUCT SMOKE DETECTOR | | | X | X | | | X | | X | X | | X | | X | | | | | | | | X | X | | | | | |
| AREA HEAT DETECTOR | X | X | | | | | X | X | X | X | | X | X | | | | | | | | X | X | X | X | | | | | |
| SPRINKLER WATER FLOW | X | X | | | | | X | X | X | X | | X | X | | | | | | | | X | X | X | X | X | | | | |
| SPRINKLER TAMPER | | | X | X | | | X | | X | | | | | X | | | | | | | | | | | | | | |
| ELEV. EQ. ROOM SMOKE DETECTOR | X | X | | | | | X | X | X | X | | X | X | | | X | | X | | | X | X | X | X | X | X | | |
| ELEV. EQ. ROOM HEAT DETECTOR | X | X | | | | | X | X | X | X | | X | X | | | X | X | | X | X | X | X | X | X | X | X | | |
| ELEV. SHAFT HEAT DETECTOR | X | X | | | | | X | X | X | X | | X | X | | | X | X | | X | X | X | X | X | X | X | X | | |
| ELEV. SHAFT SMOKE DETECTOR | X | X | | | | | X | X | X | X | | X | X | | | | X | | X | | X | X | X | X | X | X | X | | |
| 1ST FLOOR ELEV. LOBBY SMOKE DET. | X | X | | | | | X | X | X | X | | X | X | | | | | X | | | X | X | X | X | X | X | X | | |
| UPPER FLR. ELEV. LOBBY SMOKE DET. | X | X | | | | | X | X | X | X | | X | X | | | X | | X | | | X | X | X | X | X | X | X | | |
| ELEVATOR CONTROLLER SHUNT TRIP STATUS | | | X | X | | | | | X | | | | | X | | | | | | | | | | | | | | |
| NOTIFICATION DEVICE SHORT CIRCUIT | | | | | X | X | | | X | | | | | | X | | | | | | | | | | | | | |
| OPEN CIRCUIT | | | | | X | X | | | X | | | | | | X | | | | | | X | | | | | | | |
| GROUND FAULT | | | | | X | X | | | X | | | | | | X | | | | | | | | | | | | | |
| FIRE ALARM A.C. POWER FAILURE | | | | | X | X | | | X | | | | | | X | | | | | | | | | | | | | |
| FIRE ALARM SYSTEM LOW BATTERY | | | | | X | | | | | | | | | | X | | | | | | | | | | | | | |
| GENERATOR RUNNING | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| GENERATOR SYSTEM NOT IN AUTOMATIC | | | X | X | | | X | | | | | | | X | | | | | | | | | | | | | | |
| GENERATOR FAULT | | | X | X | | | X | | | | | | | X | | | | | | | | | | | | | | |
| AREA OF REFUGE TWO-WAY COMMUNICATION STATUS | | | X | X | | | X | | | | | | | X | | | | | | | | | | | | | | |
| SPRINKLER DRY SYSTEM PRESSURE | | | X | X | | | X | | | | | | | X | | | | | | | | | | | | | | |
| SPRINKLER CONTROL LOW/ HIGH PRESSURE | | | X | X | | | X | | | | | | | X | | | | | | | | | | | | | | |
| BDA SYSTEM | | | | | X | X | X | | | | | | | | X | | | | | | | | | | | | | |
| SECURITY INPUT | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |

2 **FIRE ALARM MATRIX**
NOT TO SCALE




NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE.
3. DEVICES NEXT TO DOOR EXIT SHALL BE WITHIN 8" (MAXIMUM) TYPICAL OF DOOR UNLESS OBSTACLES SUCH AS SIDELITES, ETC.
4. ALL DEVICES ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.

3 **MOUNTING HEIGHTS OF DEVICES - ELEVATION**
NOT TO SCALE

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FIRE ALARM
LEGEND AND NOTES

FA-001

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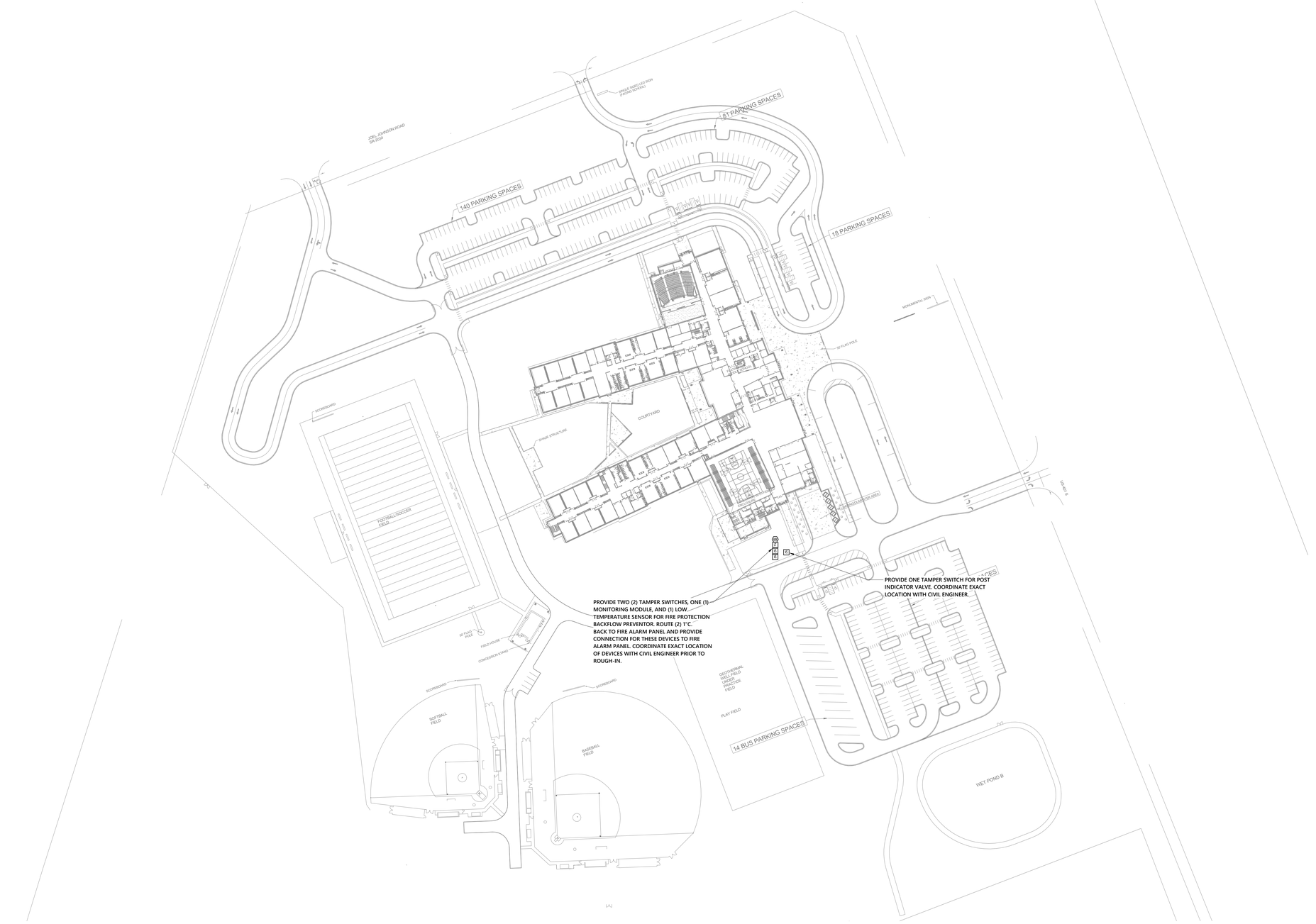


1 **FIRE ALARM SITE PLAN**
1" = 80'-0"

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FIRE ALARM SITE PLAN

FA-010

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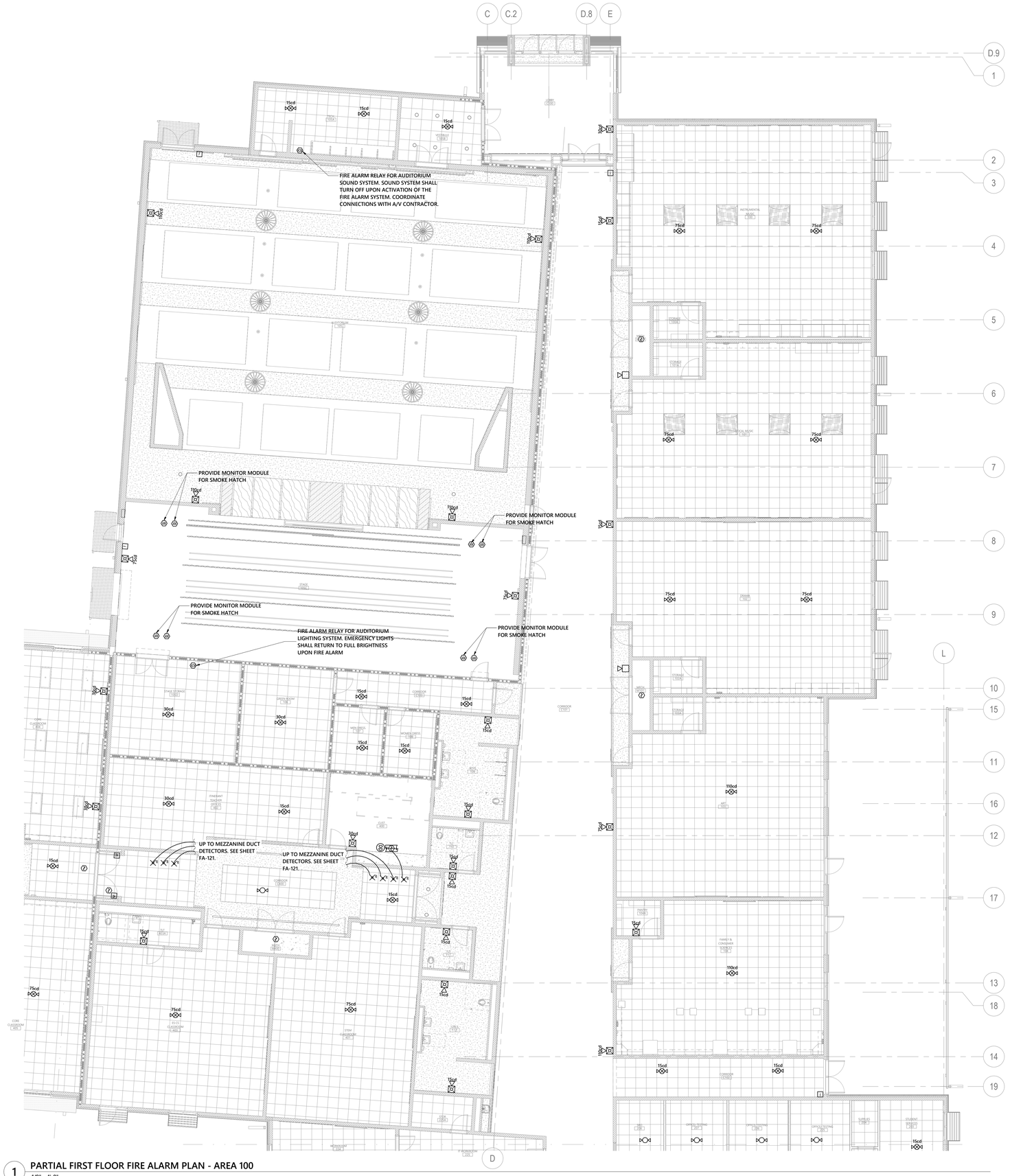
## GENERAL NOTES:

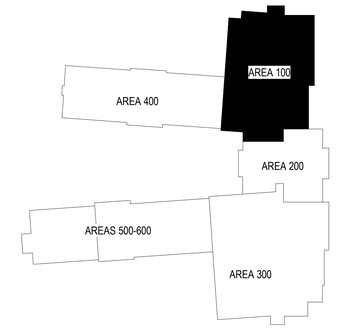
A. REFER TO DRAWING FA-001 FOR SYMBOL DESCRIPTIONS AND NOTES.




1 PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 100
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 100

FA-111

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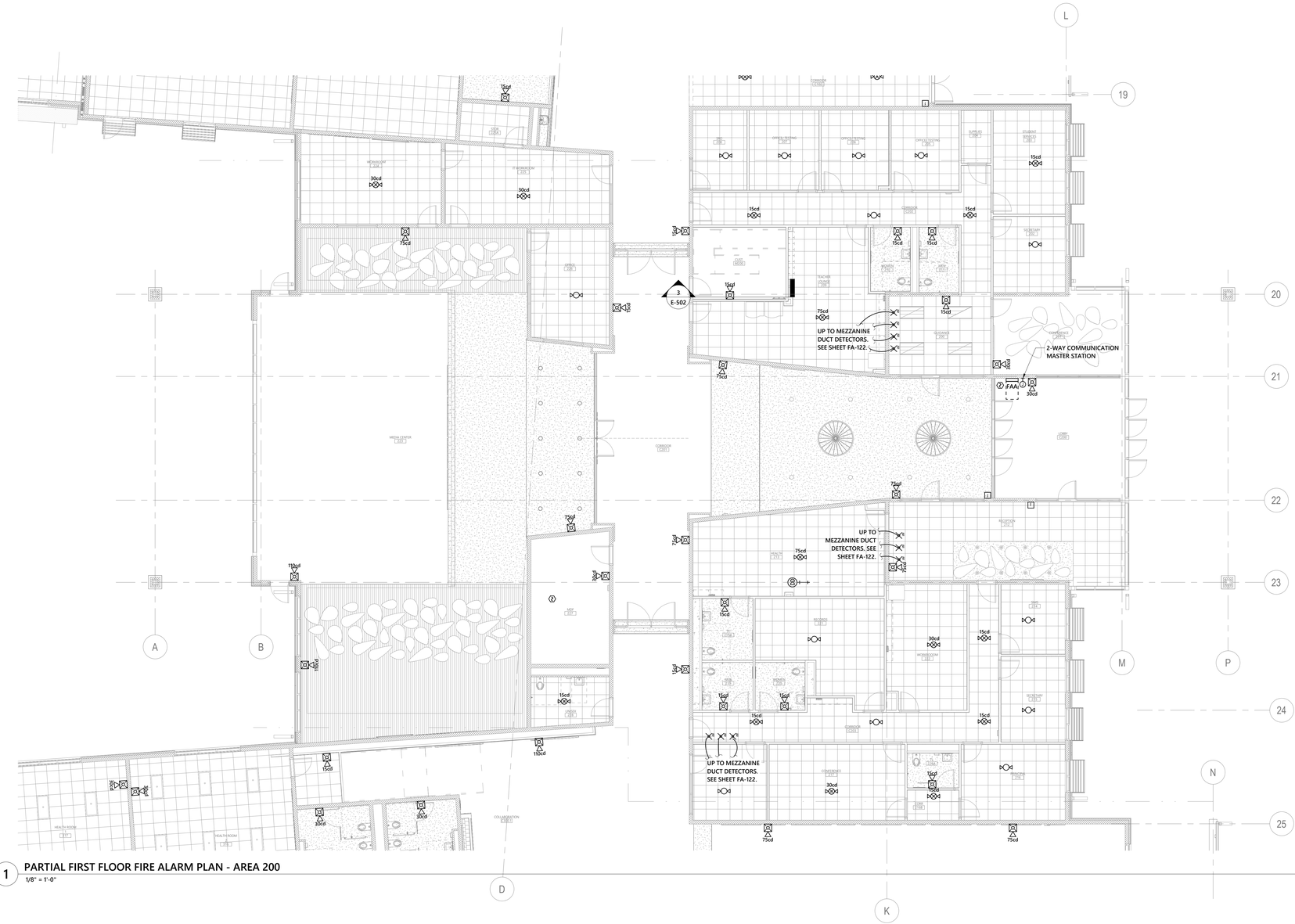
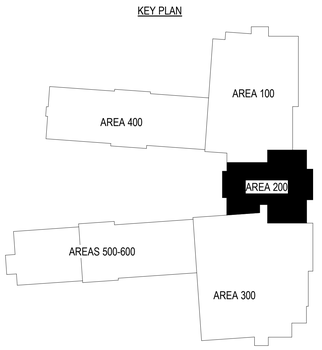



1 PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 200
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

KEY PLAN

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 200

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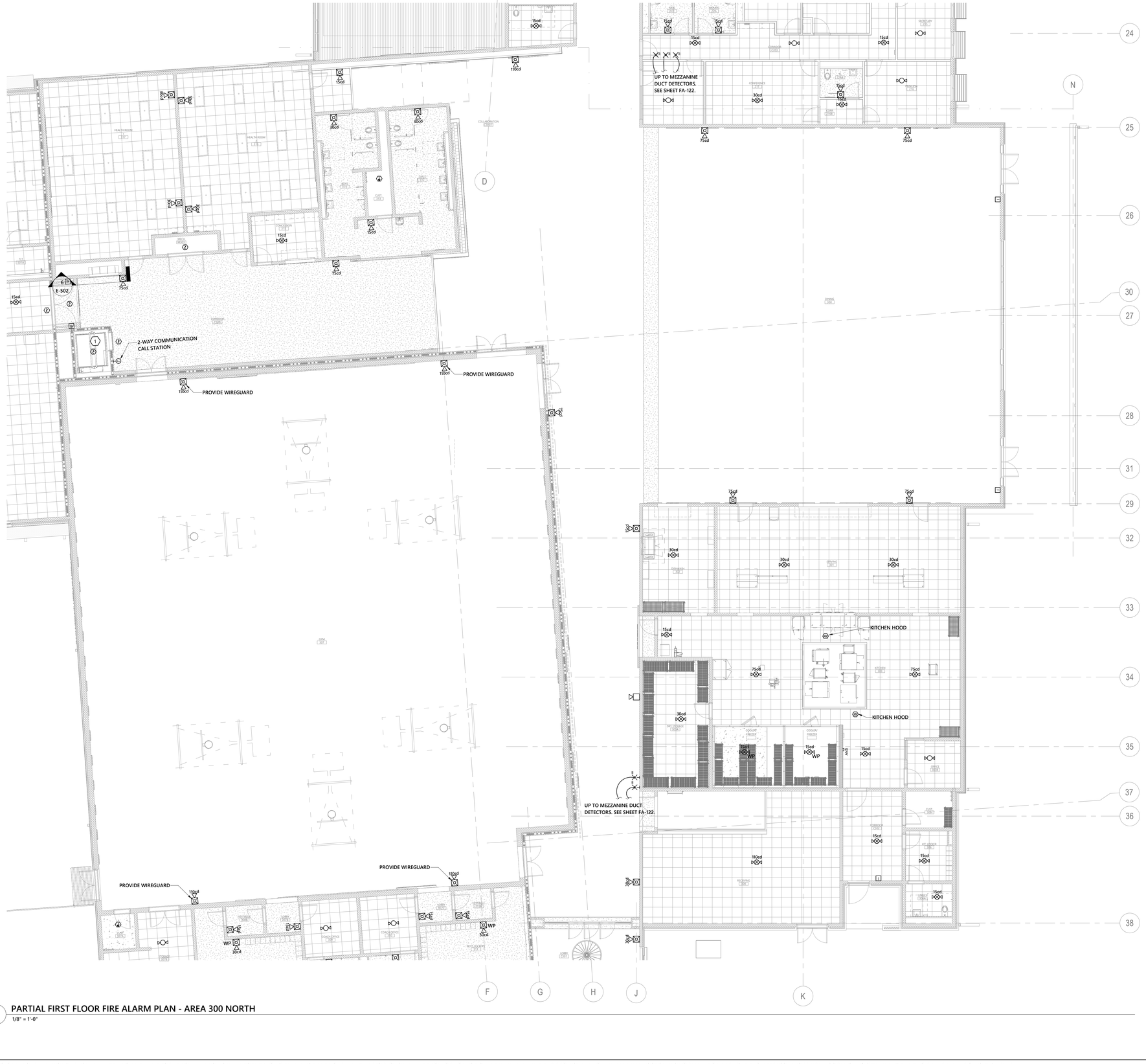


1 **PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 NORTH**
1/8" = 1'-0"

## GENERAL NOTES:

A. REFER TO DRAWING FA-001 FOR SYMBOL DESCRIPTIONS AND NOTES.

## KEYNOTES

1 REFER TO ELEVATOR DETAILS/ SHEET FA-601 FOR ELEVATOR FIRE ALARM REQUIREMENTS.
2 PROVIDE COMBINATION SMOKE/HEAT DETECTOR.

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 NORTH

# FA-113.1

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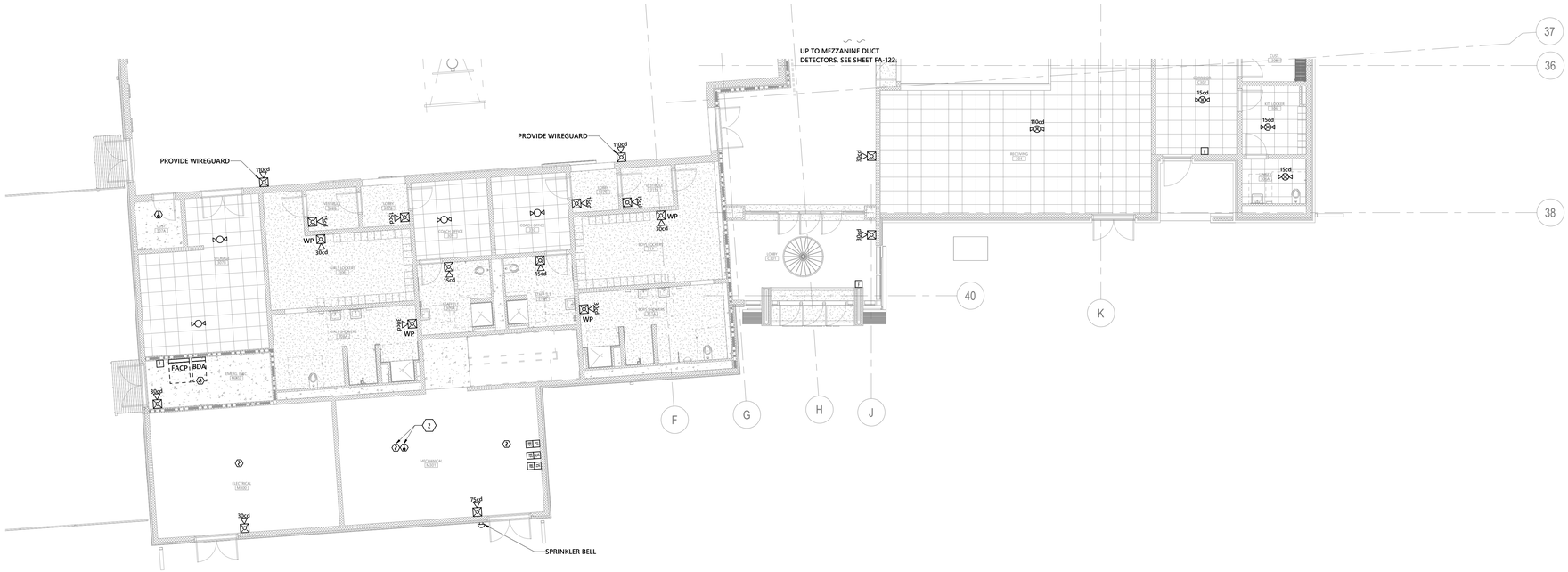


1 PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 SOUTH
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 300 SOUTH

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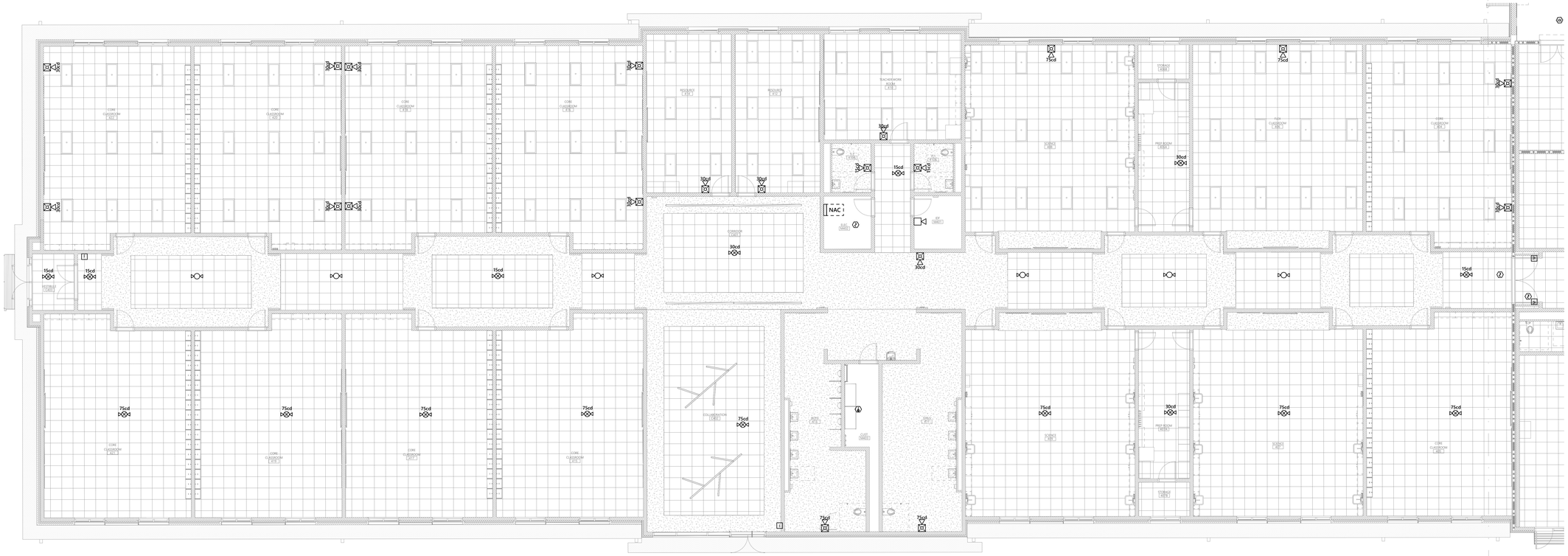
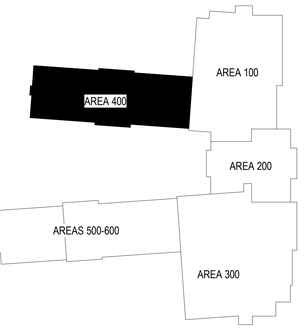



1 PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 400
1/8" = 1'-0"

KEY PLAN




**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 400

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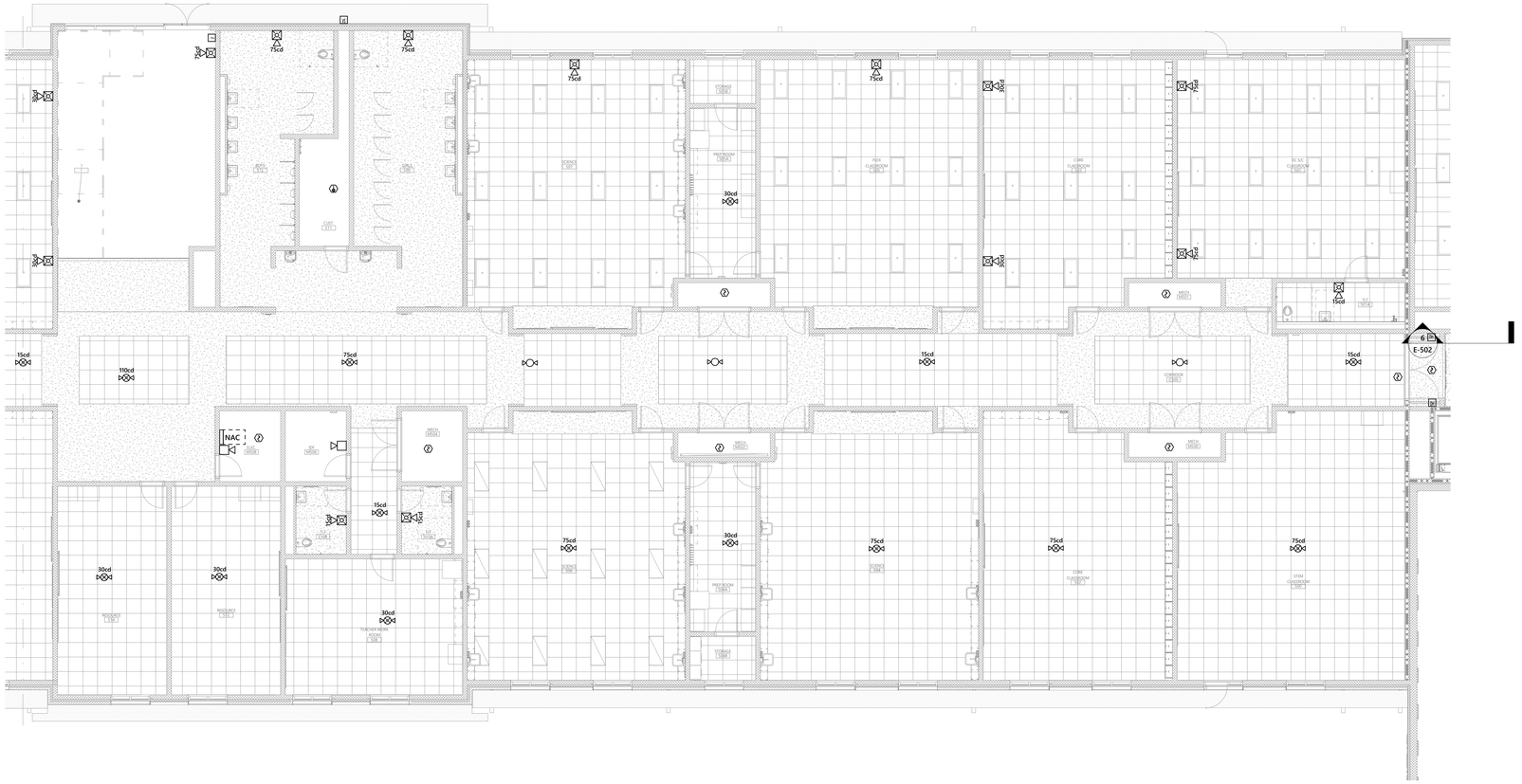


1 PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 RIGHT
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 RIGHT

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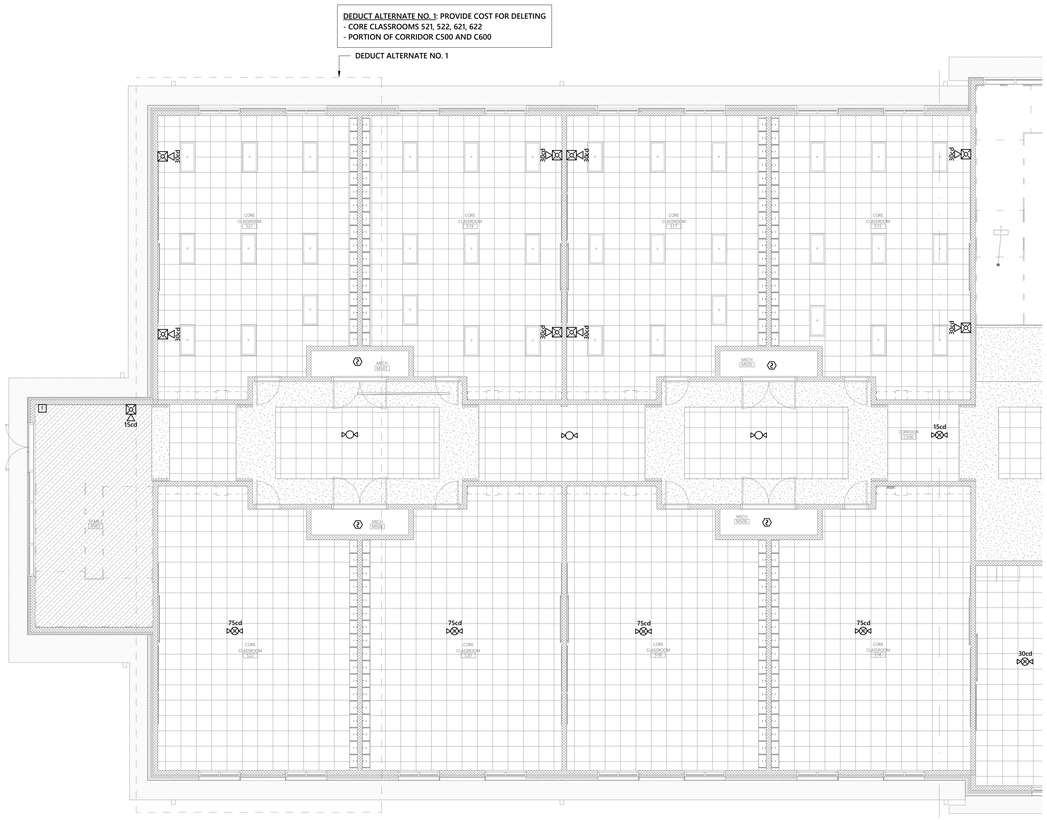


1 PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 LEFT
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL FIRST FLOOR FIRE ALARM PLAN - AREA 500 LEFT

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1 PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 RIGHT
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 RIGHT

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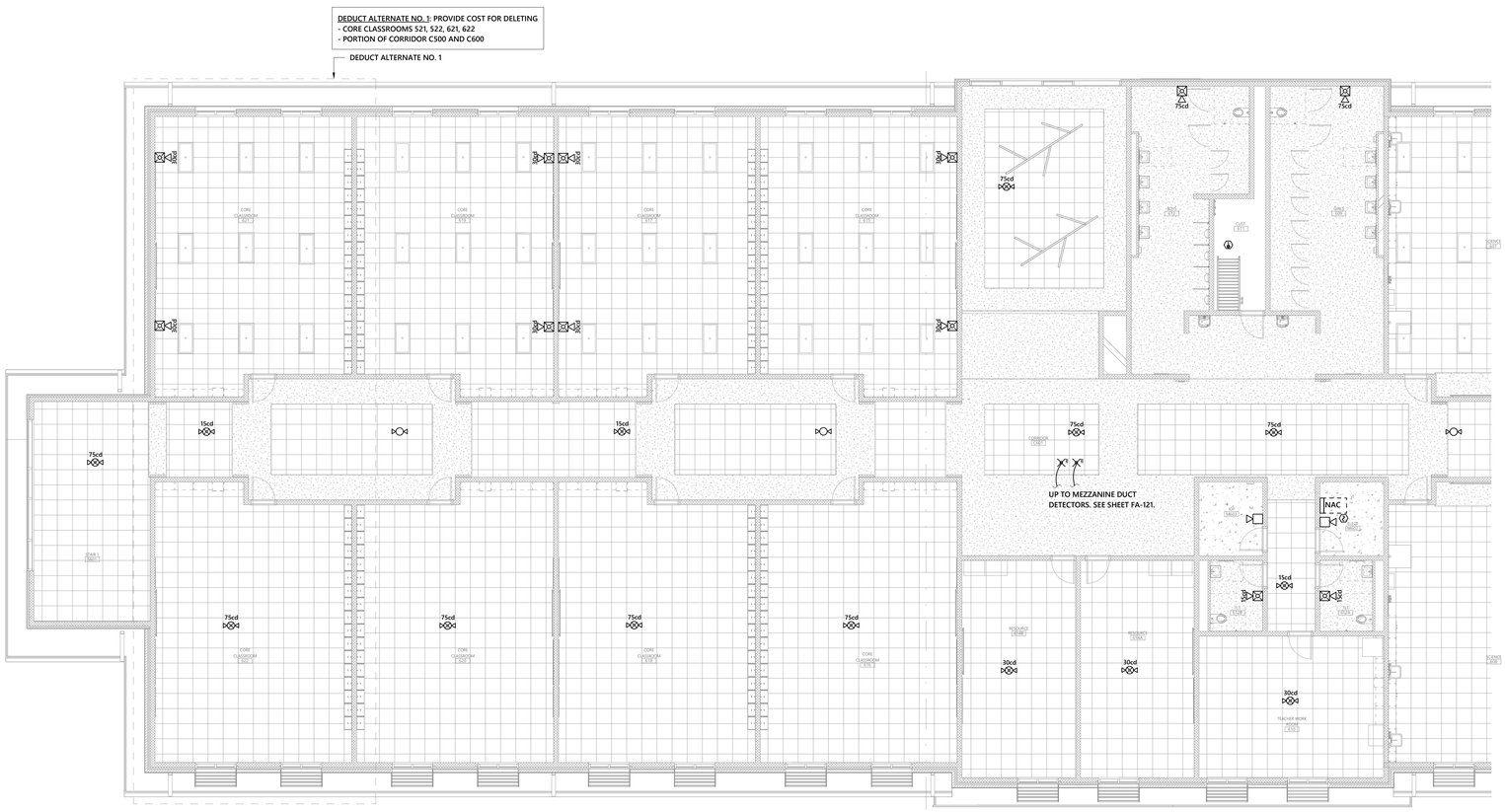


1 **PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 LEFT**
1/8" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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PARTIAL SECOND FLOOR FIRE ALARM PLAN - AREA 600 LEFT

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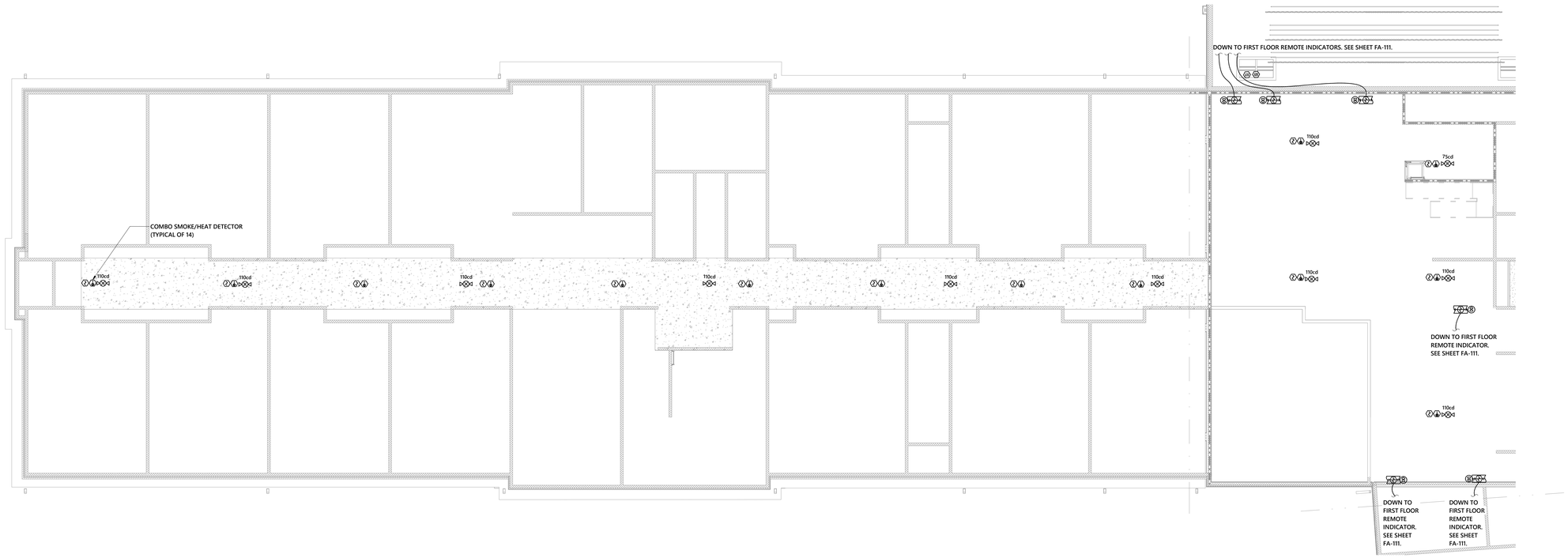
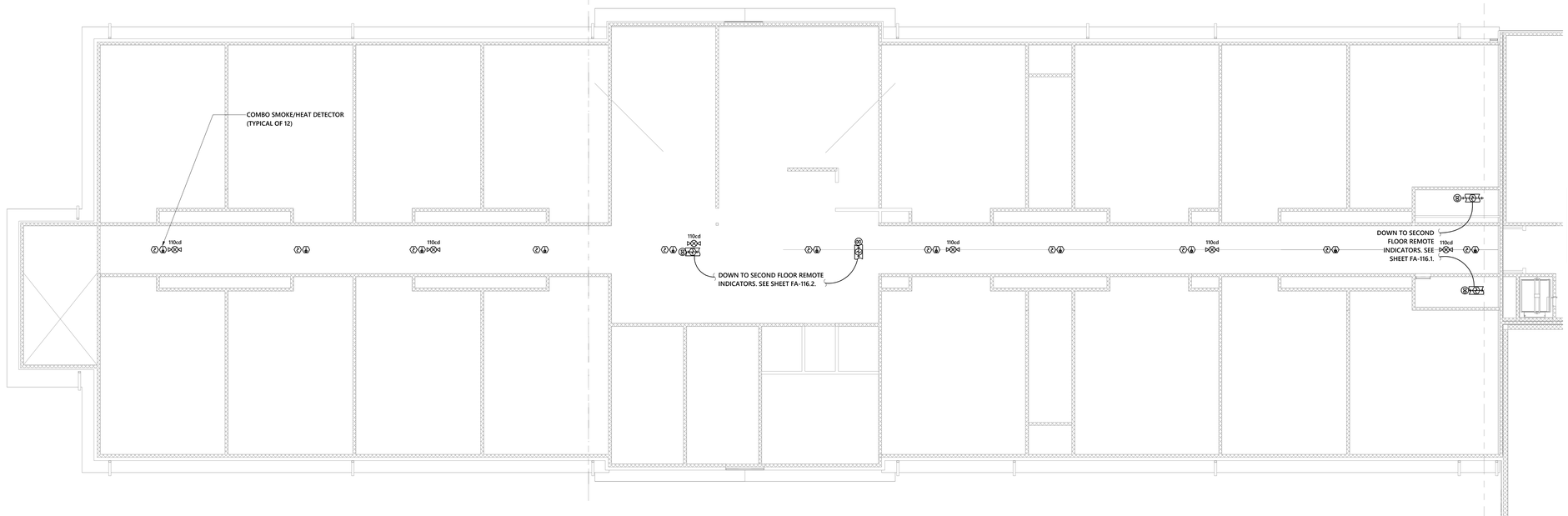



1 MECH. MEZZANINE FIRE ALARM PLAN - AREAS 100 & 400
3/32" = 1'-0"




2 MECH. MEZZANINE FIRE ALARM PLAN - AREA 600
3/32" = 1'-0"

**WALL LEGEND**

| SYMBOL | DESCRIPTION |
|---|---|
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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MECH. MEZZANINE FIRE ALARM PLANS - AREAS 100, 400, & 600

FA-121

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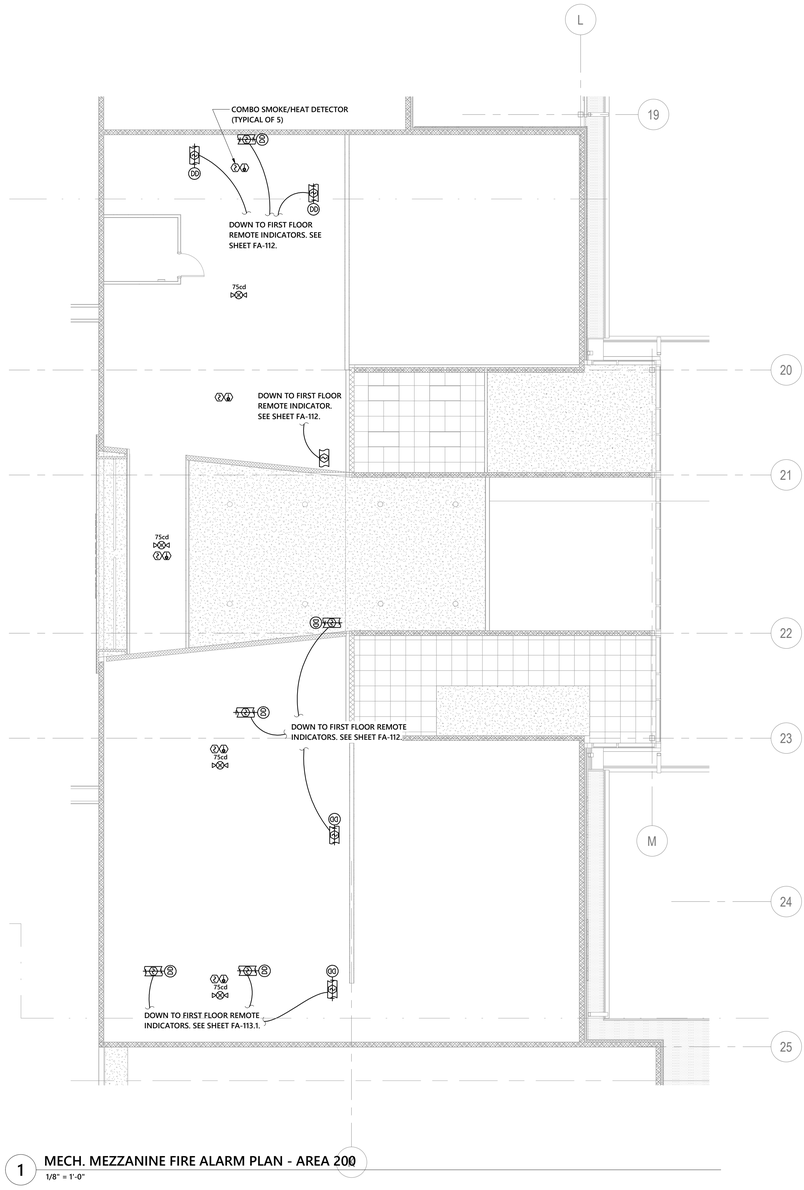
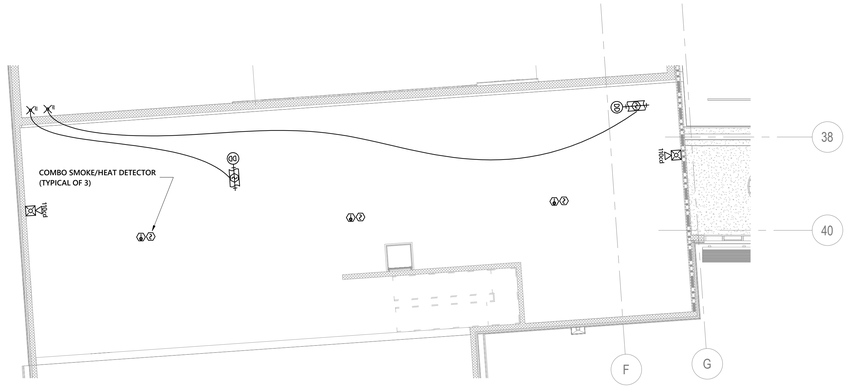
## GENERAL NOTES:

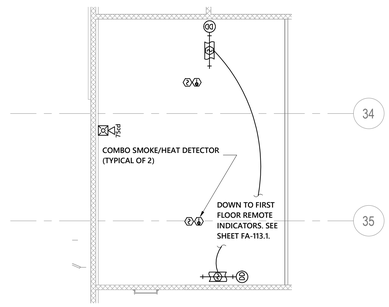
A. REFER TO DRAWING FA-001 FOR SYMBOL DESCRIPTIONS AND NOTES.




1 MECH. MEZZANINE FIRE ALARM PLAN - AREA 200
1/8" = 1'-0"




3 MECH. MEZZANINE FIRE ALARM PLAN - GYM
1/8" = 1'-0"




2 MECH. MEZZANINE FIRE ALARM PLAN - AREA 300
1/8" = 1'-0"

| WALL LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
| | 1 HR RATED EXIT ENCLOSURE (FIRE BARRIER) |
| | 2 HOUR RATED WALL |

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HARNETT COUNTY SCHOOLS

# FLATWOODS MIDDLE SCHOOL

3544 US 401 S, LILLINGTON NC 27546

ENERGY STAR PARTNER

| No. | Date | Description |
|---|---|---|
| | | |

ISSUE DATE: 11/08/24

PROJECT #: 02208.000
DRAWN BY: ZAT
CHECKED BY: MKG

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MECH. MEZZANINE FIRE ALARM PLANS - AREAS 200 & 300

FA-122

Sheet No. 13 of 14

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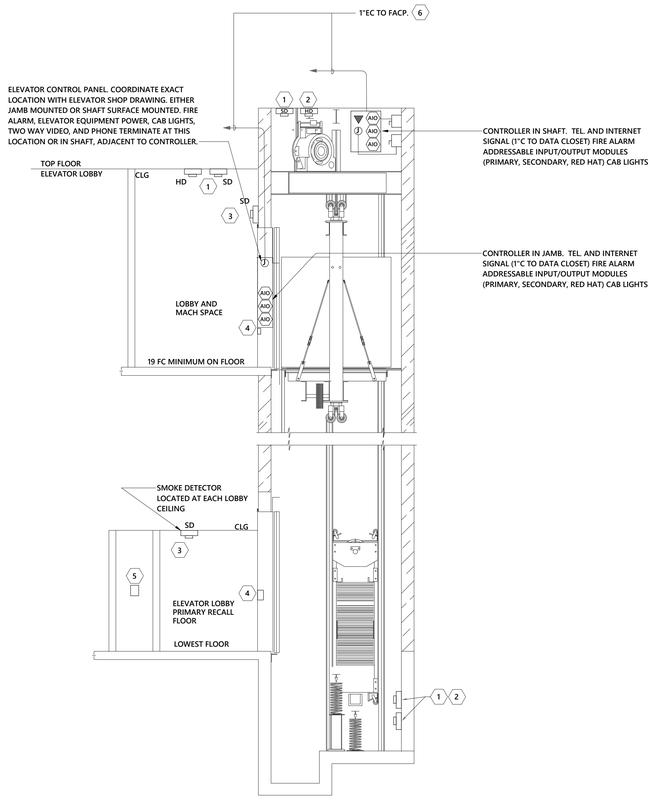
## GENERAL NOTES:

A. COORDINATE EXACT LOCATION OF ALL DEVICES WITH ELEVATOR SHOP DRAWINGS PRIOR TO INSTALLATION.
B. THE SMOKE DETECTOR(S) LOCATED IN THE DESIGNATED PRIMARY ELEVATOR RECALL LOBBY(S) SHALL ACTUATE THE PRIMARY ELEVATOR RECALL CIRCUIT. THE SMOKE DETECTORS IN THE REMAINING ELEVATOR LOBBIES SHALL ACTUATE THE SECONDARY ELEVATOR RECALL CIRCUIT. THE SMOKE DETECTORS IN THE PIT, SHAFT, AND MACHINE ROOM SHALL ACTUATE THE PRIMARY ELEVATOR RECALL CIRCUIT. COORDINATE SEQUENCE WITH AHJ.

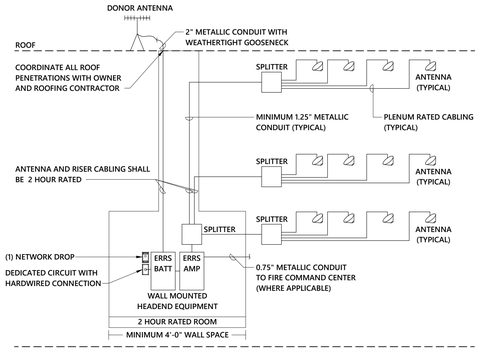
## (#) KEYED NOTES:

1. MOUNT HEAT DETECTORS WITHIN 24" OF SPRINKLER HEADS. SMOKE DETECTORS SHALL, UPON ALARM, RE-CALL ELEVATOR TO THE APPROPRIATE LEVEL AND LOCK OUT ELEVATOR VIA ELEVATOR EQUIPMENT. HEAT DETECTORS SHALL CONTROL THE OPERATION OF THE SPRINKLER PIPING SOLENOID VALVE(S) AND THE SHUNTING OF THE MAIN ELEVATOR POWER. SEE ELEVATOR ALARM SHUTDOWN MATRIX. HEAT DETECTORS SHALL HAVE A LOWER RESPONSE TIME INDEX (135 DEG) AS COMPARED TO THE SPRINKLER HEADS IN THE MACHINE ROOM, SHAFT OR PIT (155 DEG).
2. WHERE PIT SHAFT OR MACHINE ROOM ARE NOT SPRINKLERED, DO NOT PROVIDE HEAT DETECTORS IN THE PIT, SHAFT OR MACHINE ROOM. DO NOT PROVIDE SHUNT TRIP. SEE NOTE 11.
3. MOUNT SMOKE DETECTOR AT EACH LANDING WITHIN 10'-0" OF THE DOOR(S).
4. PROVIDE FLUSH JUNCTION BOX FOR TWO-WAY COMMUNICATION BETWEEN EACH ELEVATOR LANDING PER IBC 1009.8. PROVIDE 3/4" EMPTY CONDUIT BETWEEN EACH J-BOX.
5. ELEVATOR LOBBY TWO-WAY COMMUNICATION MASTER STATION. COORDINATE LOCATION WITH AHJ.
6. 1°C WITH INITIATING CIRCUIT FOR HEAT DETECTOR, SMOKE DETECTOR AND RECALL RELAY(S). PROVIDE PRIMARY FLOOR RECALL RELAY, SECONDARY FLOOR RECALL RELAY AND FIREMAN'S RED HAT RELAY FOR USE BY ELEVATOR INSTALLER. PROVIDE PROGRAMMING FOR ALL FIRE ALARM DEVICE FUNCTIONS.




ELEVATOR SHAFT DETAIL

## 2 MACHINE ROOMLESS ELEVATOR NOTES
NO SCALE




GENERAL NOTES:

A. EMERGENCY RESPONDER RADIO SYSTEM (ERRS) MAY ALSO BE REFERRED TO AS BI-DIRECTIONAL ANTENNA SYSTEM (BDA) OR FIRST RESPONDER DISTRIBUTED ANTENNA SYSTEM.

B. ERRS SYSTEM SURVEY SHALL CONSIST OF TWO PARTS. PART ONE SHALL BE ADMINISTERED AT THE START OF CONSTRUCTION TO DOCUMENT THE AVAILABLE SIGNAL AT THE SITE. PART TWO SHALL BE ADMINISTERED WHEN ALL STEEL, GYPBOARD, AND WINDOWS HAVE BEEN INSTALLED.

C. DETAIL IS DIAGRAMATIC AND ONLY INDICATES MAIN COMPONENTS AND APPROXIMATE LOCATIONS. QUANTITY AND LOCATIONS OF EQUIPMENT ARE DETERMINED BY THE 3RD PARTY DELIGATED DESIGN. SYSTEM DESIGN SHALL BE BASED ON THE ACTUAL CONSTRUCTION OF THE BUILDING. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH VENDOR.

SPECIFICATIONS:

A. ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL, AND TEST A COMPLETE AND OPERATING EMERGENCY RESPONDER RADIO SYSTEM ("SYSTEM"). THE SYSTEM SHALL BE PROVIDED FOR THE PURPOSE OF ASSURING RELIABLE EMERGENCY COMMUNICATIONS.

B. THE REQUIREMENTS ESTABLISHED BY THE AHJ IN EFFECT AT THE TIME OF SYSTEM INSTALLATION SUPERSEDE THE SPECIFICATIONS IN THIS SECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THE INSTALLED SYSTEM COMPLIES WITH ALL CURRENTLY APPLICABLE LOCAL, NATIONAL AND INDUSTRY CODES AS ADOPTED BY THE AHJ.

C. TWO SETS OF FREQUENCIES ARE TO BE UTILIZED ON THE SYSTEM. THE FOLLOWING FCC-LICENSED FACILITIES ARE TO BE CARRIED ON THE SYSTEM: FCC CALL SIGN, DOWNSTREAM/BASE TO MOBILE FREQUENCY, UPSTREAM/MOBILE TO BASE FREQUENCY AND CHANNEL BANDWIDTH. TRANSMISSIONS ON EACH SET OF FREQUENCIES MUST INDIVIDUALLY MEET THE COVERAGE, MINIMUM SIGNAL AND MINIMUM VOICE QUALITY REQUIREMENTS OF THE AHJ. EQUIPMENT SELECTED FOR THIS SYSTEM MUST BE CAPABLE OF BEING CONFIGURED TO DIFFERENT FREQUENCY PAIRS IN THE 700-800 Mhz PUBLIC SAFETY FREQUENCY BANDS. THESE CHANGES MAY LATER BE NECESSARY DUE TO FUTURE ADDITIONS OR OPTIMIZATION OF RADIO SYSTEMS MAINTAINED BY THE AHJ. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE FREQUENCIES IN USE WITH THE AHJ BEFORE PROCEEDING WITH THE SYSTEM INSTALLATION. ALL CABLE AND PASSIVE ELECTRONIC COMPONENTS SHALL HAVE A MINIMUM PASS BAND OF 400-2700 Mhz.

SPECIFICATIONS (CONTINUED):

D. SIGNALS AT OR ABOVE THE MINIMUM LEVELS ARE TO BE RECEIVABLE TO AND FROM 95% OF ALL AREAS WITHIN THE BUILDING. SPACES OR ROOMS DEFINED AS CRITICAL AREAS REQUIRE 99% COVERAGE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SYSTEM DESIGN AND INSTALLATION THAT PROVIDES ENHANCEMENT ONLY TO THOSE AREAS OF THE BUILDING WHERE EXISTING OFF-AIR SERVICE DOES NOT MEET THE MINIMUM LEVELS AS DESCRIBED IN THE LATEST VERSIONS OF NFPA 72 AND IFC. CARE MUST BE TAKEN IN ENGINEERING A SYSTEM THAT WILL NOT CAUSE INTERFERENCE TO THE AUTHORITY'S RADIO SYSTEM OUTSIDE THE BUILDING AND SHALL NOT CAUSE HARMFUL INTERFERENCE TO OTHER RF SYSTEMS INSIDE THE BUILDING.

E. THE SYSTEM SHALL BE DESIGNED FOR CONTINUOUS, ALWAYS-ON SERVICE. SIX (6) MALFUNCTION ALARMS FOR THE SYSTEM SHALL BE PROVIDED AND CONNECTED TO THE BUILDING FIRE ALARM SYSTEM. CONTRACTOR SHALL PROVIDE 24 HOUR BATTERY BACKUP. BATTERIES SHALL BE CONTAINED IN A NEMA 4 TYPE WATERPROOF CABINET.

F. ALL CABLING, WITH THE EXCEPTION OF RADIATING CABLE AND ANTENNA JUMPER CABLES MEASURING LESS THAN 2 FEET IN LENGTH, SHALL BE INSTALLED IN CONDUIT. ALL EXPOSED CABLE, INCLUDING FLEXIBLE JUMPER CABLES, SHALL BE PLENUM RATED, UTILIZING A JACKET OF NON-HALOGENATED, FIRE RETARDANT POLYOLEFIN.

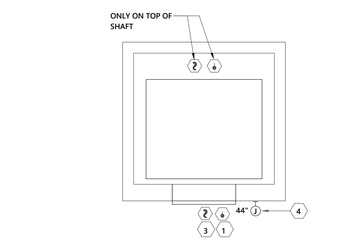
G. GROUND AND BOND CABLE SHIELDS AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS AND LATEST NFPA 70 NEC REQUIREMENTS. THE DONOR ANTENNA MAST SHALL BE GROUNDED PER LATEST NFPA 70 NEC REQUIREMENTS. GROUNDING BLOCKS AND SURGE PROTECTION SHALL BE PROVIDED FOR OUTSIDE CABLING.

H. SHOP DRAWINGS SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER AND AHJ PRIOR TO INSTALLATION. PROVIDE A SYSTEM BLOCK DIAGRAM INDICATING THE DONOR ANTENNA(S), HEADEND EQUIPMENT, PASSIVE COMPONENTS AND IN-BUILDING ANTENNAS. INCLUDE THE RF LINK BUDGET. PROVIDE A OVERLAY OF THE SYSTEM DESIGN ON BUILDING FLOOR PLAN DRAWINGS AND OVERLAY ON FLOOR PLAN DRAWINGS OF THE PREDICTED SIGNAL STRENGTH WITHIN THE COVERAGE AREA INDICATING, AT A MINIMUM, THE –95 DBM DOWNLINK (BASE TO MOBILE) SIGNAL STRENGTH FOR ALL COVERAGE AREAS.

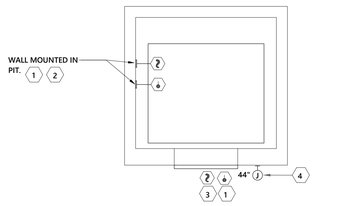
I. CONTRACTOR SHALL PROVIDE THE FOLLOWING DOCUMENTS AT PROJECT CLOSEOUT: AS-BUILT DRAWINGS IN PDF AND AUTOCAD FORMATS, COVERAGE/ACCEPTANCE TEST RESULTS, DONOR ANTENNA ISOLATION, SPECTRUM ANALYSIS DEMONSTRATING ONLY THE INTENDED FREQUENCIES ARE BEING CARRIED ON THE SYSTEM, SPECTRUM ANALYSIS DEMONSTRATING NO SPURIOUS OSCILLATIONS, PIM OR OTHER INTERMODULATION DISTURBANCES ARE BEING CARRIED ON THE SYSTEM, SIGNAL LEVELS RECEIVED AT THE DONOR ANTENNA, SIGNAL LEVELS AT THE INPUT AND OUTPUT OF THE HEADEND EQUIPMENT, GAIN SETTINGS, OPERATION AND MAINTENANCE MANUAL IN HARDCOPY AND PDF FORMAT AND WARRANTY DOCUMENTS.

J. CONTRACTOR SHALL PROVIDE A ONE YEAR WARRANTY ON PARTS AND LABOR AND PROVIDE A ONE YEAR MAINTENANCE AGREEMENT. MAINTENANCE AGREEMENT SHALL INCLUDE 24/7 EMERGENCY RESPONSE WITHIN TWO HOURS OF NOTIFICATION AND ANNUAL TESTING.

## 1 EMERGENCY RESPONDER RADIO SYSTEM (ERRS) - DIAGRAMATIC ONLY
NOT TO SCALE

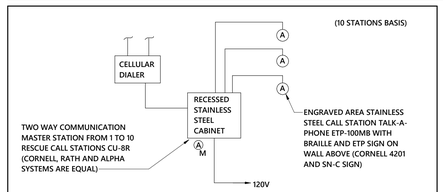



TOP LEVEL AND INTERMEDIATE LEVELS DETAIL - 1 CAB




ELEVATOR PIT DETAIL AND FIRST LEVEL DETAIL - 1 CAB

## 3 MACHINE ROOMLESS ELEVATOR DETAIL - 1 CAB
NO SCALE




NOTES:
1. ALL EQUIPMENT SHALL BE OF THE SAME MANUFACTURER AND MEET THE REQUIREMENTS OF ADA AND ALL OTHER CODES AND REQUIREMENTS.
2. SYSTEM SHALL BE WIRED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED RECOMMENDATIONS IN MINIMUM OF 1" CONDUIT.
3. OPERATION OF SYSTEM SHALL BE HANDS FREE.
4. AREA STATIONS TO HAVE PANIC BUTTONS LABELED "PUSH FOR HELP" MOUNTED AT 44"A.F.F TO CENTER.
5. SEE PLANS FOR EXACT LOCATIONS AND QUANTITY. MASTER STATION LOCATION SHALL BE COORDINATED BEFORE INSTALLATION.
6. PROVIDE (1) RJ11 MODULAR PHONE PORTS FOR MASTER STATION. UNIT SHALL BE PROGRAMMED TO CALL OUT TO 911 IN THE EVENT THE MASTER STATION IS NOT PICKED UP (TIMED).
7. PROVIDE WITH DUAL PATH CELLULAR AND/OR IP FOR OUTSIDE COMMUNICATION. PROVIDE BATTERY BACK UP FOR A MINIMUM OF (4) HOURS. (STARLINK FIRE, SIMILAR BY ROTH, CORNELL OR ALPHA.)
8. COMMAND UNIT SHALL HAVE BATTERY BACK UP FOR A MINIMUM OF (4) HOURS. ALL BATTERY BACK UP SHALL BE CONCEALED ABOVE LOCAL UNIT OR WITHIN MASTER STATION (FLUSH).

## 4 TWO WAY COMMUNICATION SYSTEM DETAIL
NOT TO SCALE

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# FLATWOODS MIDDLE SCHOOL
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ENERGY STAR PARTNER

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| | | |

ISSUE DATE: 11/08/24
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FIRE ALARM DETAILS

FA-601

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