# FIRE ALARM NOTES:

## FIRE ALARM & MASS NOTIFICATION LEGEND

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| CD W | 4" CEILING MOUNTED SPEAKER/ STROBE WITH CLEAR LENS, WHITE TRIM, AND "ALERT" TEXT. CANDELA AND INITIAL WATTAGE INDICATED. |
| CD | CEILING MOUNTED CLEAR STROBE, WHITE TRIM, "ALERT" TEXT. CANDELA INDICATED |
| W S | CEILING MOUNT 4" SPEAKER WITH INITIAL WATTAGE TAP INDICATED |
| CD W | WALL MOUNT SPEAKER/STROBE CLEAR LENS, WHITE TRIM, "ALERT" TEXT. AT ~96" TO TOP. CANDELA AND CIRCUITS INDICATED |
| W S | WALL MOUNT MASS NOTIFICATION / FIRE ALARM SPEAKER AT ~96" TO TOP TO MATCH SPEAKER/STROBES. WP=WEATHER PROOF BACKBOX AND SPEAKER. |
| 15 | WALL MOUNT CLEAR STROBE, WHITE TRIM, "ALERT" TEXT, AT ~96" TO TOP. |
| S SB | SMOKE DETECTOR (PHOTOELECTRIC). SB=SOUNDER BASE; DH=DOOR HOLD; EL=ELEVATOR |
| CO | CARBON MONOXIDE DETECTOR - STAND ALONE |
| S S | DUCT SMOKE DETECTOR; S=SUPPLY, R=RETURN INCLUDE RELAYS, TUBES, ETC. |
| TXT | BASIC "ANNUNCIATE" AND "EVACUATE" LED TEXT SIGN FOR MNS. MINIMAL SECONDARY POWER FOR POWER BLIPS (7AH). NO VISIBLE TEXT WHEN NOT ILLUMINATED. |
| F | MANUAL PULL STATION 48" AFF TO TOP OF BOX |
| WF | FLOW SWITCH MODULE |
| TS | TAMPER SWITCH MODULE |
| DH | DOOR HOLD-OPEN MODULE AND ASSEMBLY. PROVIDE 24 VOLT DC HOLD OPEN ASSEMBLY. |
| RM | RELAY / CONTROL MODULES AS NEEDED |
| MM | MONITOR / CONTROL MODULES AS NEEDED |
| SS | EXTERNAL SURGE PROTECTION WITH TROUBLE MONITOR |
| ISO | ISOLATION MODULE FOR SIGNALING LINE CIRCUIT |
| F | ELECTRIC WATER FLOW BELL, 24V, LOCATED ABOVE FDC AT 96" ABOVE GRADE. ON DEDICATED NAC CIRCUIT TO ALARM DURING WATER FLOW. |
| 1 M | DIRECTIONAL LOUD SPEAKER WITH VARIABLE OUTPUT WATTAGES. LISTED FOR WET LOCATIONS. PROVIDE LIQUID TIGHT FLEX WITH DRIP LEG. WATTAGE INDICATED |
| J | PROVIDE JUNCTION BOX WITH COVER PLATE WHICH INCLUDES 6" LOOPED CIRCUITS AND LABELS ON CIRCUITS. SIZE ACCORDING TO CIRCUITS PER NEC. |

NOTE: THE PANEL SYMBOLS BELOW ARE NOT IN COMPLIANCE WITH NFPA 170 AS WE FEEL IT IS MORE IMPORTANT THAT THEY BE SIZED TO SCALE OF TYPICAL PANELS OF THEIR TYPE TO ENSURE ADEQUATE WALL SPACE IS PROVIDED FOR EQUIPMENT. NFPA SYMBOLS WOULD NOT PROVIDE THIS NECESSARY SCALE.

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| FACU | EST-4 AUTOMATIC INTELLIGENT, ADDRESSABLE FIRE ALARM CONTROL UNIT. USER MAINTAINABLE. |
| TRC | CELL BASED DACT OFF-SITE REPORTING TO CENTRAL STATION MONITORING. |
| RAP | FIRE ALARM REMOTE ANNUNCIATOR, RECESSED IN WALL. |
| NAC TXT | NOTIFICATION APPLIANCE CIRCUIT STROBE/ TEXT PANEL CAPABLE OF 4 CLASS "B" CIRCUITS |
| LOC | LOCAL OPERATOR CONTROL PANEL |
| ACU | HEAD-END VOICE PANEL WITH AMPLIFIERS IF NOT INCORPORATED IN FACU. |
| MNSA | BOOSTER AMPLIFIER 100W CABINET WITH MINIMUM 4-CLASS "B" CIRCUITS. |
| | LOCKED AS-BUILT CABINET SIZED TO HOLD SHOP DRAWINGS, DATA SHEETS, MANUALS FOR PANELS. |

DEVICE INFORMATION

**PANEL PROGRAMMING:**
FIRE ALARM PANEL MUST BE PROGRAMMED USING ACTUAL ROOM NUMBERS. COORDINATE WITH FACILITY ROOM SIGNAGE.

**ACCESS CONTROL:**
ACCESS CONTROL MUST NOT PREVENT UNRESTRICTED EGRESS FROM ANY AREA. ALL SYSTEMS MUST COMPLY WITH NFPA 101, IBC, AND NFPA 72.

**FIRE ALARM CONDUIT FILL - RECOMMENDED MAXIMUM CONDUCTORS PER CONDUIT**

| CONDUIT SIZE | FPL 2-14 AWG | FPL 2-16 AWG | FPL 2-18 AWG | THHN 14 AWG | TFFN 16 AWG | TFFN 18 AWG |
|---|---|---|---|---|---|---|
| 3/4" | 5 | 6 | 7 | STRANDED IS NOT PERMITTED THIS PROJECT | | |
| 1" | 7 | 10 | 12 | | | |

NO GUARANTEE IS PROVIDED WITH USING THIS TABLE. CONTRACTOR IS RESPONSIBLE TO ESTABLISH CONDUIT SIZE BASED ON WHAT THEY CAN SAFELY AND EFFECTIVELY PULL WITHOUT EXCEEDING NEC LIMITS FOR FILL, DISTANCES, AND/OR DAMAGING CIRCUITS.

TWISTED FPL / FPLR / FPLP CABLES ARE CONSIDERABLY MORE DIFFICULT TO PULL THROUGH CONDUIT THAN COMPARABLE SMOOTH THHN / TFFN SINGLE CONDUCTOR WIRE. AS A RESULT THE VALUES PRESENTED IN THIS TABLE ARE RECOMMENDED MAXIMUMS. THESE VALUES ARE CONSERVATIVE FROM CALCULATING 40% FILL BASED ON GENERALLY PUBLISHED OUTSIDE CABLE DIMENSIONS. WIRE PULLING LUBRICANT IS RECOMMENDED WHEN NEARING FILL QUANTITIES AND ON LONGER PULLS TO MINIMIZE DAMAGE SUCH AS SHORTS & GROUND FAULTS ON CIRCUITS.

FPL / FPLR / FPLP CAN BE USED INTERCHANGEABLY PER THIS TABLE. VALUES INDICATE 2-CONDUCTOR CABLES (i.e. 2-14 AWG). SOME CABLES SUCH AS FPLP MAY PULL EASIER THAN FPL BASED ON OUTER SHEATH.

CONTRACTOR TO ESTABLISH CONDUIT SIZE VS. RUNNING ADDITIONAL CONDUITS. ADDITIONAL CONDUITS CAN REDUCE VOLTAGE DROP AND REDUCE CIRCUIT LENGTHS / NUMBER OF CIRCUITS.

**JUNCTION BOX / PULL BOX CONDUCTOR FILL**

CONTRACTOR TO ACCOUNT FOR THE NUMBER OF CIRCUITS PERMITTED WITHIN A JUNCTION BOX. EXTENSION RINGS ARE NOT ALLOWED IN LIEU OF PROPERLY SIZING BOXES OR NUMBER OF CONDUCTORS ENTERING THE BOX. THE FOLLOWING SUMMARIZES ALLOWABLE CIRCUITS PER BOX.

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| 4" SQUARE 1-1/2" DEEP BOX | 10- #14AWG | 12- #16AWG | 14- #18AWG | THESE VALUES DO NOT ACCOUNT FOR BOXES WITH MOUNTED DEVICES OR MIXED CIRCUIT SIZES. |
| 4" SQUARE 2-1/8" DEEP BOX | 15- #14AWG | 17- #16AWG | 20- #18AWG | |
| CIRCUITS TO BE PULLED SPLICE FREE AND WITHOUT "T" TAPS. THIS WILL REQUIRE SOME CONDUITS TO HAVE TWO CIRCUITS (TO & BACK) FROM A DEVICE TO CONTINUE TO NEXT DEVICE. | | | | |

1 FA-001 CONDUIT FILL CONCEPT
SCALE: NTS

**SCOPE OF PROJECT:**
1. PROVIDE EST-4 ADDRESSABLE VOICE FIRE ALARM AND MASS NOTIFICATION SYSTEM AS OUTLINED FOR NEW LAB BUILDING.
2. SYSTEM MUST BE EST-4 FACU TO INTEGRATE WITH EXISTING EST EQUIPMENT IN ADJACENT BUILDINGS.
3. A QUALIFIED QUALITY CONTROL FIRE PROTECTION ENGINEER (QFPE) MUST PROVIDE OVERSIGHT OF FINAL PRODUCT SPECIFIC SHOP DRAWINGS AND FIELD INSTALLATION WITH COMMISSIONING. CONTRACTORS FPE IS NOT REQUIRED TO SEAL THE DRAWINGS BUT MUST PROVIDE QUALITY CONTROL REVIEWS AS OUTLINED.

**FA UPGRADE NOTES:**
1. ADJACENT HEADHOUSE HAS EXISTING EST-3 PANEL THAT IS REACHING END OF LIFE.
2. UNDER THIS SCOPE, REPLACE THE MOTHERBOARD / CARDS OF EXISTING EST-3 WITH A NEW EST-4 PLATFORM. MAINTAIN EXISTING CAN.
3. REPROGRAM NEW SYSTEM FOR EXISTING DEVICES IN HEADHOUSE, GREENHOUSE, ETC.
4. PROVIDE FIBER CONNECTION BETWEEN EST-4 IN HEADHOUSE AND EST-4 IN LAB BUILDING TO NETWORK THE TWO PANELS WITH A SINGLE OFF-SITE REPORTING POINT.
5. EXISTING HEADHOUSE AND GREENHOUSE SYSTEMS WILL REMAIN HORN/STROBE. NEW LAB BUILDING WILL BE PROVIDED WITH MNS VOICE SYSTEM PER PRESIDENTIAL DIRECTIVE FOR FEDERAL BUILDINGS.
6. MAINTAIN EXISTING ANNUNCIATOR(S) IN HEADHOUSE.

**FIRE ALARM AND MNS GENERAL NOTES:**
1. SYSTEM MUST COMPLY WITH THE FOLLOWING AT MINIMUM:
   - 1.1. NFPA 70 & 72, LATEST EDITION AT TIME OF SOLICITATION
   - 1.2. UPDATES FOR VISUAL NOTIFICATION FROM ECB 2018-17
   - 1.3. FOLLOW ALL APPLICABLE SPECIFICATIONS INCLUDING FIRE ALARM 28 31 76, AND GENERAL ELECTRICAL 26 20 00 WHEN ISSUED.
2. CLEAR STROBES WITH "ALERT" WILL BE USED FOR VISUAL NOTIFICATION.
3. DIRECTIONAL LOUDSPEAKERS SIMILAR TO WHEELOCK STH-15 MUST BE USED WHERE INDICATED AND AIMED IN THE GENERAL DIRECTION INDICATED.
4. ADDRESSABLE NOTIFICATION APPLIANCES ARE NOT PERMITTED.
5. COMBINATION NOTIFICATION / SIGNALING CIRCUITS FOR SPEAKERS AND/OR STROBES ARE NOT PERMITTED.
6. ALL STROBES MUST BE LISTED AND INTENDED FOR OPERATION AT 24 VOLTS WITH NOMINAL 24 VOLT POWER SUPPLIES.
7. USER MUST BE PROVIDED WITH ALL TOOLS, HARDWARE, CABLES, MANUALS, SOFTWARE, PASSWORDS, PASSWORD KEYS, ETC. TO FULLY SUPPORT AND MAINTAIN THE SYSTEM.
8. CEILING GRID-MOUNT NOTIFICATION APPLIANCES MUST BE MOUNTED CENTER OF TILE.
9. CEILING GRID-MOUNTED DEVICES MUST BE SUPPORTED BY BRIDGE SUPPORTS AND NOT BY THE CEILING TILE.
10. ALL PANELS AND EQUIPMENT CABINETS, LOC, ETC. MUST BE KEYED THE SAME. AS-BUILT MAY BE KEYED SEPARATE.

**TEXT SIGN NOTES:**
1. TEXT SIGNS ARE NOT PROVIDED FOR THIS BUILDING AS NOT REQUIRED BY FEDERAL DIRECTIVE FOR VOICE SYSTEMS AND THIS PROJECT IS NOT REQUIRED TO COMPLY WITH CORPS OF ENGINEERS ECD OR UFC CRITERIA.

**INTELLIGIBILITY CONSIDERATIONS:**
1. INTELLIGIBILITY MUST BE MEASURED AND SPEAKER TAPS FIELD ADJUSTED AS NECESSARY TO ACHIEVE THE BEST SCORE.
2. INITIAL SPEAKER WATTAGE LEVELS ARE INDICATED ON DRAWINGS. CONTRACTOR MUST ALLOW FOR FIELD ADJUSTMENTS TO ESTABLISH THE BEST INTELLIGIBILITY WATTAGE / TAP SETTINGS FOR EACH RESPECTIVE SPACE BASED ON TESTING.
3. ALERT TONES MUST BE 15 DBA ABOVE AMBIENT AND MUST BE MEASURED TO SATISFY AUDIBILITY LEVELS PER NFPA 72.
4. VOICE MESSAGES MUST BE RECORDED AND AMPLIFIED TO DELIVER THE BEST INTELLIGIBILITY LEVELS PER NFPA 72.
5. PRE-RECORDED VOICE MESSAGES MUST BE OF A LOWER FREQUENCY/ PITCH RATHER THAN A HIGHER FREQUENCY/ PITCH TO REDUCE THE NUMBER OF REFLECTIONS IN REFLECTIVE SPACES.
6. THE NUMBER OF SPEAKERS HAS BEEN INTENTIONALLY LIMITED IN SOME AREAS DUE TO REFLECTIVE PROPERTIES OF THE WORK SPACES. UNLIKE CARPETED OFFICE SPACES, MORE SPEAKERS PRODUCE MORE REFLECTIONS IN REFLECTIVE SPACES. AS SUCH, THE DESIGNER HAS TRIED TO OPTIMIZE INTELLIGIBILITY WHILE LIMITING REFLECTIONS.
7. TARGET CIS SCORES IN WORK AREAS IS 0.80, AND 0.75 IN MECHANICAL AND CRAWL SPACE AREAS.
8. DURING STIPA TESTING, THE INPUT SIGNAL MUST BE INJECTED INTO THE AMPLIFIER VIA AUX AUDIO INPUT SO THAT THE RESULTING OUTPUT SIGNAL IS APPROXIMATELY THE SAME VOLUME LEVEL AS PRE-RECORDED MESSAGES. THUS, THE VOICE MESSAGE DBA LEVEL MUST BE MEASURED AT A PARTICULAR LOCATION AND THEN THE STIPA INPUT ADJUSTED TO RESULT IN THE SAME SPEAKER OUTPUT LEVEL. THIS CORRELATES THE STIPA INTELLIGIBILITY READINGS AS CLOSE AS FEASIBLE TO ACTUAL PRE-RECORDED LEVELS.
9. INTELLIGIBILITY READINGS MUST BE TAKEN THROUGHOUT REPRESENTATIVE AREAS AND DOCUMENTED ON DRAWINGS WITH BOTH THE AUDIBLE LEVELS AND CIS SCORES.
10. THREE READINGS ARE TO BE TAKEN AND AVERAGED FOR EACH LOCATION.

**AC POWER FOR FIRE ALARM / MNS EQUIPMENT:**
11. AC CIRCUITS MUST BE PROVIDED WITH RED LOCKING DEVICES AND CLEARLY INDICATED AT FACU.
12. NO MORE THAN 3 FA/MNS PANELS ON ONE 20A CIRCUIT.
13. SURGE PROTECTION WITH ILLUMINATED STATUS LAMP IS TO BE PROVIDED FOR EACH 120VAC CIRCUIT.
   - 13.1. SURGE PROTECTION MUST BE MOUNTED ADJACENT TO AND OUTSIDE OF ANY FIRE ALARM CONTROL PANEL.
   - 13.2. PROVIDE MINIMUM 3' LENGTH OF CIRCUIT BETWEEN SURGE PROTECTION AND PROTECTED EQUIPMENT.
14. 120VAC CONDUIT MUST NOT BE RED.

CIRCUIT NOTES:
1. FIRE ALARM AND MNS NAC/SLC CIRCUITS MUST BE CLASS "B" WITH NO "T" TAPS ALLOWED. SLC MUST BE CONTINUOUS PATH AND CAN BE DIVIDED BY ISOLATION MODULES AS DETAILED.
2. SEE DETAIL FOR HYBRID CLASS A & B CIRCUIT AT MODULES IF UTILIZED, SUCH AS ONE MODULE PER FLOOR / BUILDING.
3. PATHWAY SURVIVABILITY MUST BE LEVEL 1.
4. WHERE MORE THAN TWO (2) SLC, NAC, OR IDC CONDUITS WILL ENTER A SINGLE PANEL OR WHERE THERE IS MORE THAN TWO (2) ADJACENT PANELS, A WIRE GUTTER IS TO BE PROVIDED ABOVE THE PANEL FOR ADDITIONAL CONDUITS.
   - 4.1. CONDUITS BETWEEN THE WIRE GUTTER AND PANELS TO BE INCREASED IN SIZE TO MINIMIZE NUMBER OF CONDUITS.
   - 4.2. TROUGHS SHOULD BE ABOVE CEILINGS IN FINISHED AREAS WITH MINIMUM CONDUITS BETWEEN PANELS AND TROUGHS.
   - 4.3. PANELS MUST NOT BE USED AS TERMINAL CABINETS OR PULL BOXES FOR CIRCUITS PASSING THROUGH TO OTHER PANELS.
5. POWER LIMITED AND NON-POWER LIMITED CIRCUITS MUST NOT BE RUN IN SAME RACEWAY OR WITHIN PANELS IN SPACES NOT APPROVED BY THE MANUFACTURER.
   - 5.1. 120VAC CIRCUITS MUST NOT PASS THROUGH WIRE GUTTERS AND MUST ENTER PANELS IN LOCATIONS DESIGNATED BY THE PANEL MANUFACTURER.
6. NO CONDUIT MAY ENTER THE BOTTOM SECTION OF A FIRE ALARM PANEL WHERE BATTERIES ARE TO BE PLACED.
7. FIRE ALARM AND MNS CIRCUITS TO BE SOLID COPPER FPL/FPLR/FPLP UNLESS OTHERWISE RECOMMENDED BY THE MFG.
8. PROVIDE FIBER BETWEEN MAIN PANELS IN ADJACENT BUILDINGS. PROVIDE REDUNDANT / SPARE FIBERS IN EACH PULL.
9. ALL CIRCUITS RUNNING UNDERGROUND MUST BE LISTED FOR WET LOCATIONS.
10. EACH NOTIFICATION CIRCUITS IS TO BE LIMITED TO A SINGLE FLOOR AND NOT SERVE MULTIPLE FLOORS.
11. EACH AMPLIFIER PANEL IS TO HAVE ONE SPARE SPEAKER CIRCUIT AVAILABLE FOR TEMPORARY SWITCHING IF A CIRCUIT FAILS.
12. ALL FIELD-WIRING COLORS MUST BE THE SAME THROUGHOUT THE CIRCUIT TO WHICH IT IS CONNECTED. DEVELOP A COLOR SCHEME AND SHOW ON SHOP DRAWINGS, SUCH AS DIFFERENT COLORS FOR EACH CIRCUIT OR TYPE OF CIRCUIT.
13. WIRE PULLS ARE TO BE DEVICE TO DEVICE WITHOUT SPLICING. WIRING MUST EITHER TERMINATE AT THE FIRE ALARM CONTROL PANEL, REMOTE POWER SUPPLY, OTHER CABINETS OR A DEVICE.
   - 13.1. ALL DEVICES MUST UTILIZE SCREW TERMINALS.
   - 13.2. PULL ALL CONDUCTORS SPLICE FREE.
   - 13.3. THE USE OF WIRE NUTS, CRIMPED CONNECTORS, OR TWISTING OF CONDUCTORS IS PROHIBITED.
   - 13.4. DO NOT USE TERMINAL STRIPS IN THE FIELD WIRING, SUCH AS IN-BETWEEN DEVICES.
   - 13.5. TERMINATION AT A DEVICE MUST BE A COMPLETE BREAK IN THE WIRE, DO NOT LOOP THE WIRE AROUND THE SCREW.
14. UNLESS INDICATED OTHERWISE, THE FOLLOWING WIRE SIZE MUST BE USED:
   - 14.1. SLC AND IDC: MINIMUM 18 AWG
   - 14.2. NAC STROBE AND/OR TEXT SIGNS: MINIMUM 14 AWG
   - 14.3. SPEAKER: MINIMUM 16 AWG
   - 14.4. REMOTE ANNUNCIATOR, LOC DATA, TEXT SIGN CONTROL (RS485) PER MFG RECOMMENDATIONS FOR DISTANCES OF PROJECT.
15. STROBE CIRCUITS AND SPEAKER CIRCUITS TO BE CALCULATED AS INDICATED.
   - 15.1. AN ADDITIONAL 30'+ TO BE ADDED TO EACH DEVICE DISTANCE WHEN FLEX DROPS ARE UTILIZED TO ACCOUNT FOR DROPS AND LOOPS IN JUNCTION BOXES (DOWN/BACK). THIS DISTANCE MAY BE 15' WHEN CALCULATIONS DOUBLE EITHER THE RESISTANCE OR THE DISTANCE. (EACH 6 FOOT FLEX ADDS 28' PER DROP, DOWN & BACK WITH LOOPS).
   - 15.2. VOLTAGE FOR STROBE CALCULATIONS MUST START AT 20.4 VOLTS AND MUST NOT DROP BELOW 17 VOLTS (POINT-TO-POINT) ACCOUNTING FOR TOTAL CIRCUIT PATH (OUT / BACK, AND DROPS / ELEVATION CHANGES).
   - 15.3. VOLTAGE CALCS TO PROVIDE A SAFETY FACTOR OF AT LEAST 1 VOLT WHEN POINT-TO-POINT CALCS ARE USED. NOT REQUIRED FOR LUMP-SUM CALCULATIONS.
   - 15.4. CONTRACTOR MUST PROVIDE VOLTAGE DROP CALCS FOR THEIR PARTICULAR PRODUCTS.
   - 15.5. BATTERY CALCULATIONS MUST ACCOUNT FOR 1.25% AGING FACTOR PER NFPA 72 10.6.7.2.14 (REVISED IN 2022 EDITION).
16. 70 VOLT SPEAKER CIRCUITS MUST BE USED TO MINIMIZE VOLTAGE DROP.
   - 16.1. SPEAKER dB CALCULATIONS TO BE PERFORMED ACCOUNTING FOR DOUBLE THE WATTAGE INDICATED ON FLOOR PLAN. THIS IS TO ACCOUNT FOR FIELD ADJUSTMENTS AND SPARE CAPACITY.
   - 16.2. IN NO CASE ARE SPEAKER CIRCUITS TO BE LOADED TO EXCEED A 5% DROP IN VOLTAGE PER CALCULATIONS WITH DOUBLE ANTICIPATED WATTAGE USED IN CALCS.
17. OTHER THAN SHORT DISTANCES SUCH AS AT PANEL AND TO WIRE GUTTERS, SIGNALING LINE CIRCUITS ARE TO BE RUN IN SEPARATE RACEWAYS FROM NOTIFICATION WIRING.
18. LOC CIRCUITS AND/OR CIRCUITS BETWEEN CONTROL PANELS (SUCH AS RS485, VOICE, ETC.) MUST BE IN RACEWAYS SEPARATE FROM SLC AND NAC.
19. CONDUIT FILL CALCULATIONS MUST BE PROVIDED TO ENSURE THAT WIRE FILL DOES NOT EXCEED 40% FILL OF THE CONDUIT. FP CABLES UP TO 14 AWG TO BE SIZED AS #6 AWG FOR CONDUIT FILL UNLESS OTHERWISE INDICATED.
20. MINIMUM 3/4" EMT RED CONDUIT IS REQUIRED FOR ALL LOW-VOLTAGE CIRCUITS. 1" RED CONDUIT MAY BE REQUIRED BASED ON CIRCUIT DESIGN. 120VAC CONDUIT WILL NOT BE RED.
21. 3/4" FLEXIBLE METALLIC CONDUIT (FMC) MAY BE USED FOR DROPS TO DEVICES (SUCH AS IN CEILINGS) TO A MAXIMUM OF 6' EACH.
   - 21.1. A SINGLE DROP MUST BE PROVIDED DOWN/BACK TO DEVICE. DO NOT LOOP DROPS TO DEVICES.
22. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT (LTMC) AND FITTINGS MUST BE USED ON THE EXTERIOR OR WET LOCATIONS (SUCH AS FOR SPEAKERS).
23. FLEXIBLE DROPS ARE NOT REQUIRED TO BE RED.
24. ALL CONDUIT MUST BE DEBURRED USING INTENDED CONDUIT REAMING TOOLS.
25. SCHEDULE 40 (MINIMUM) PVC IS TO BE USED WHEN RUNNING EXTERIOR CIRCUITS, SUCH AS TO A PIV OR PUMP HOUSE.
26. SURGE PROTECTION IS REQUIRED FOR ALL FIRE ALARM CIRCUITS ENTERING / LEAVING A BUILDING.
   - 26.1. SURGE PROTECTION IS TO BE LOCATED JUST INSIDE THE BUILDING WHERE THE CIRCUIT ENTERS THE BUILDING.
   - 26.2. SURGE PROTECTION MUST HAVE PROPER GROUND CONDUCTOR PER THE MFG.
27. CONDUIT FITTINGS MUST BE OF THE COMPRESSION TYPE. SET SCREW NOT PERMITTED.
28. UNLESS INDICATED, LOW-VOLTAGE FIRE ALARM AND MNS CONDUITS AND BACK BOXES MUST BE RED DIPPED / PAINTED BY MFG.
   - 28.1. WIRE TROUGHS AND LARGER JUNCTION BOXES MAY BE FIELD PAINTED RED.
   - 28.2. COVERS MAY BE FIELD PAINTED RED.
   - 28.3. EXPOSED CONDUITS IN A FINISHED ROOM MUST BE PAINTED TO MATCH WALL / CEILING FINISH AND LABELED WITH A RED 3/4" BAND ON EACH SIDE OF A WALL. THE INSIDE COVER OF PULL BOXES MUST BE LABELED AS "FIRE ALARM" WITH THE INTERIOR OF THE BOX PAINTED RED.
29. ALL CONDUIT MUST BE CONCEALED, UNLESS REQUIRED TO BE RUN IN OPEN EXPOSED AREAS.
30. MINIMUM 25 PERCENT SPARE AMPERAGE MUST BE PROVIDED ON EACH CIRCUIT OF POWER SUPPLIES.
31. RACEWAY FILL MUST BE IN ACCORDANCE WITH NFPA 70. FORTY (40) PERCENT FILL MUST NOT BE EXCEEDED.
32. PROVIDE SPARE CIRCUITS AS INDICATED.

FIRE ALARM DESIGN:
1. THESE DRAWINGS PROVIDE GENERAL SPACING AND LOCATION OF DEVICES. FINAL LOCATIONS TO BE COORDINATED WITH OTHER SYSTEMS AND FIELD CONDITIONS TO ENSURE COMPLIANCE WITH NFPA 72 AND PROJECT REQUIREMENTS.
2. CONTRACTOR TO PROVIDE FULLY DETAILED SHOP DRAWINGS IN ACCORDANCE WITH NFPA 72 AND SPECIFICATIONS.
3. IN ADDITION TO SPECIFICATIONS, SHOP DRAWINGS WILL AT MINIMUM INCLUDE THE FOLLOWING:
   - 3.1. DEVICE LOCATIONS WITH CONDUIT ROUTING.
   - 3.2. IDENTIFICATION OF CIRCUITS IN RESPECTIVE CONDUIT PATH TO ACCOUNT FOR CONDUIT FILL.
   - 3.3. RISER DIAGRAM THAT REFLECTS ALL PANELS, CONTROLLERS, MODULES, BATTERY CABINETS, ETC. THAT WILL BE INSTALLED AND HOW THEY INTERACT WITH EACH OTHER.
   - 3.4. ELEVATION DIAGRAM TO SCALE SHOWING ALL PANELS AND LOCATIONS.
   - 3.5. MOUNTING HEIGHTS IN ACCORDANCE WITH CONTRACT DRAWINGS, SPECIFICATIONS, AND NFPA 72.
   - 3.6. DETAILS OF CONNECTIONS TO CIRCUIT BOARDS FOR INSTALLATION AND FUTURE SERVICE. INCLUDING SLC, NAC, SPEAKER CIRCUITS, LOC, ANNUNCIATOR, ETC. BETWEEN PANELS AND EQUIPMENT.
   - 3.7. MOUNTING AND BACK BOX DETAILS / REQUIREMENTS.
   - 3.8. VOLTAGE CALCULATIONS BY CIRCUIT.
   - 3.9. BATTERY CALCULATIONS.
   - 3.10. PRODUCT CUT SHEETS FOR ALL COMPONENTS WITH OPTIONS IDENTIFIED.

BASIS OF DESIGN FOR CIRCUITS AND PHASING:
1. CONTRACT DRAWINGS MAY SHOW CONCEPTUAL DEVICES PER CIRCUITS TO ESTABLISH CIRCUITS AND PANELS ANTICIPATED.
2. UNLESS INDICATED OTHERWISE, CONTRACTOR MAY MODIFY THE CIRCUIT PATHS, DEVICES PER CIRCUIT, ETC. TO BETTER FACILITATE FIELD CONDITIONS OR PHASING.
3. PANEL LOCATIONS INDICATED ARE APPROXIMATE AND MUST BE MAINTAINED UNLESS OTHERWISE APPROVED PRIOR TO SUBMITTING SHOP DRAWINGS.

SMOKE DETECTOR VERIFICATION:
1. SPOT SMOKE DETECTORS ARE TO BE PROVIDED WITH ALARM VERIFICATION FEATURE.
2. INITIALLY SET VERIFICATION AT 20 SECONDS.

LABELING BATTERIES:
1. EVERY CABINET THAT HAS BACKUP BATTERIES MUST HAVE A LABEL THAT IS PROMINENTLY DISPLAYED JUST ABOVE BATTERIES INDICATING THE VOLTAGE AND AMP-HOUR OF BATTERIES REQUIRED IN THAT CABINET BASED ON CALCULATIONS.
2. EXAMPLE: "TWO-12-VOLT 35-AMP HOUR BATTERIES".
3. BATTERIES MUST HAVE MFG DATE PER NFPA 72, NOT DATE OF INSTALLATION.
4. BATTERIES MUST HAVE BEEN MANUFACTURED WITHIN 6 MONTHS OF OCCUPANCY.

ADDITIONAL SITE / PROJECT SPECIFIC REQUIREMENTS:
1. EXISTING EQUIPMENT IS EST-3. PROVIDE NEW EST-4 FOR BACKWARD COMPATIBILITY WITH EXISTING EQUIPMENT.

QUALITY CONTROL FIRE PROTECTION ENGINEER:
1. A QUALITY CONTROL FIRE PROTECTION ENGINEER (QFPE) IS REQUIRED FOR THIS PROJECT.
2. THE QFPE MUST NOT BE AN EMPLOYEE OF THE INSTALLING CONTRACTOR.
3. THE QFPE IS TO BE A PART OF THE GENERAL CONTRACTORS QUALITY CONTROL TEAM.
   - 3.1. IT IS RECOMMENDED THAT THE QFPE BE HIRED BY THE GENERAL CONTRACTOR.
   - 3.2. IF THE FIRE ALARM AND/OR MASS NOTIFICATION SYSTEM ALSO REQUIRES THE SERVICES OF A QFPE, THERE SHOULD BE A SINGLE QFPE PROVIDING OVERSIGHT OF ALL FIRE PROTECTION SYSTEMS UNDER THE CONTROL AND DIRECTION OF THE GENERAL CONTRACTOR.
4. THE QFPE MUST HAVE SPECIFIC DESIGN, INSPECTION, AND COMMISSIONING EXPERIENCE IN FIRE PROTECTION SYSTEMS IDENTIFIED FOR THIS PROJECT.
5. UNLESS SPELLED OUT OTHERWISE, THE QFPE IS TO PROVIDE THE FOLLOWING MINIMUM SERVICES:
   - 5.1. PROVIDE OVERSIGHT IN THE DESIGN AND PREPARATION OF THE SYSTEM INSTALLATION DRAWINGS.
   - 5.2. PROVIDE A LETTER AND/OR STAMP ON DOCUMENTS INDICATING THAT DESIGN OVERSIGHT HAS BEEN PROVIDED AND THAT THE DESIGN IS IN COMPLIANCE WITH ALL CONTRACT REQUIREMENTS.
   - 5.3. QFPE IS NOT REQUIRED TO SEAL THE DESIGN DOCUMENTS AS A DESIGNER OF RECORD (DOR), BUT MUST SEAL A LETTER TO VALIDATE THEIR PE QUALIFICATIONS.
   - 5.4. PROVIDE CONSTRUCTION SITE VISITS TO VERIFY THE INSTALLATION IS IN ACCORDANCE WITH CONTRACT AND SHOP DRAWING REQUIREMENTS. AT MINIMUM THIS INCLUDES INSPECTION PRIOR TO CEILINGS BEING INSTALLED.
   - 5.5. PROVIDE DOCUMENTATION OF PRE-TESTING AND COMMISSIONING PLAN AND STEPS TO BE TAKEN TO VERIFY SYSTEM COMPLIANCE AT LEAST 30 DAYS PRIOR TO PERFORMING PRE-TESTING.
   - 5.6. PROVIDE PRE-TESTING INSPECTION AND EVALUATION TO ENSURE SYSTEM COMPLIANCE PRIOR TO SCHEDULING A FINAL COMMISSIONING TEST WITH CONTRACTING OFFICER.
   - 5.7. BE PRESENT FOR FINAL COMMISSION TESTING WITH THE CONTRACTING OFFICER AND DESIGNATED REPRESENTATIVES.
   - 5.8. PROVIDE DOCUMENTATION OF ALL FINDINGS, CORRECTIVE ACTIONS, AND RESULTS OF PRE-TESTING AND FINAL COMMISSIONING.

BID OPTION NOTES:
1. BID OPTIONS MAY INCLUDE A COVERED CANOPY.
2. THIS BID OPTION CAN ONLY BE EXERCISED IF A UTILITY WATER SUPPLY DEFICIENCY IS RESOLVED TO SUPPORT A DRY-PIPE SYSTEM WATER DEMAND.
3. IF EXERCISED, THE SYSTEM MUST INCORPORATE A NITROGEN GENERATOR MONITORED BY THE FIRE ALARM SYSTEM.
4. THE DRY-PIPE VALVE AND NITROGEN GENERATOR WILL BE LOCATED ON THE MEZZANINE OF THE NEW LAB BUILDING WHERE SPRINKLER EQUIPMENT IS IDENTIFIED.
5. PROVIDE FIRE ALARM MONITORING OF VALVES, HIGH PRESSURE, LOW PRESSURE, TRIP, AND NITROGEN TROUBLE/OFF-LINE.

THIS DETAIL UTILIZES A HYBRID CLASS A / B APPROACH WITH LIMITED "T-TAPS" PERMITTED ON THE CLASS-A CIRCUIT ADJACENT TO FACU. THIS APPROACH PROVIDES FOR AN ENHANCED SYSTEM RELIABILITY WITH VERY LITTLE ADDED COST VS. FULL-BUILDING CLASS-A DESIGN.

THIS APPROACH ALLOWS CLASS-B SIGNALING LINE CIRCUITS TO GO IN DIFFERENT DIRECTIONS ISOLATING SMALLER ZONES RATHER THAN RUNNING ONE LONG SLC THROUGHOUT ENTIRE BUILDING. ENHANCING RELIABILITY AT LOWER CONDUIT AND CIRCUIT COSTS OF OTHERWISE ZIG-ZAGING ACROSS BUILDING.

PROVIDE CLASS-A SIGNALING LINE CIRCUIT ADJACENT TO FACU TO SERVE INDIVIDUAL ZONE ISOLATION MODULES. THESE MODULES WILL PROVIDE CLASS-B SIGNALING LINE CIRCUITS TO RESPECTIVE ZONES / FLOOR AREAS AS IDENTIFIED ELSEWHERE.

2 FA-001 HYBRID CLASS A / B ZONE ISOLATION MODULES
SCALE: NTS

KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

REVISIONS


THE Johnson McAdams FIRM P.A.
ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT
P.O. BOX 513, GREENWOOD, MISSISSIPPI - (662) 455-4943


Registered Professional Engineer (Fire Protection) CERTIFICATE NO. 37345 SCOTT WADE LACEY DATE SIGNED 5/20/26 ARIZONA USA

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SWL | PPM XXX |
| CHECKED BY BT/DW | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRE ALARM NOTES AND LEGEND LAB/OFFICE

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET FA-001
90 OF 176

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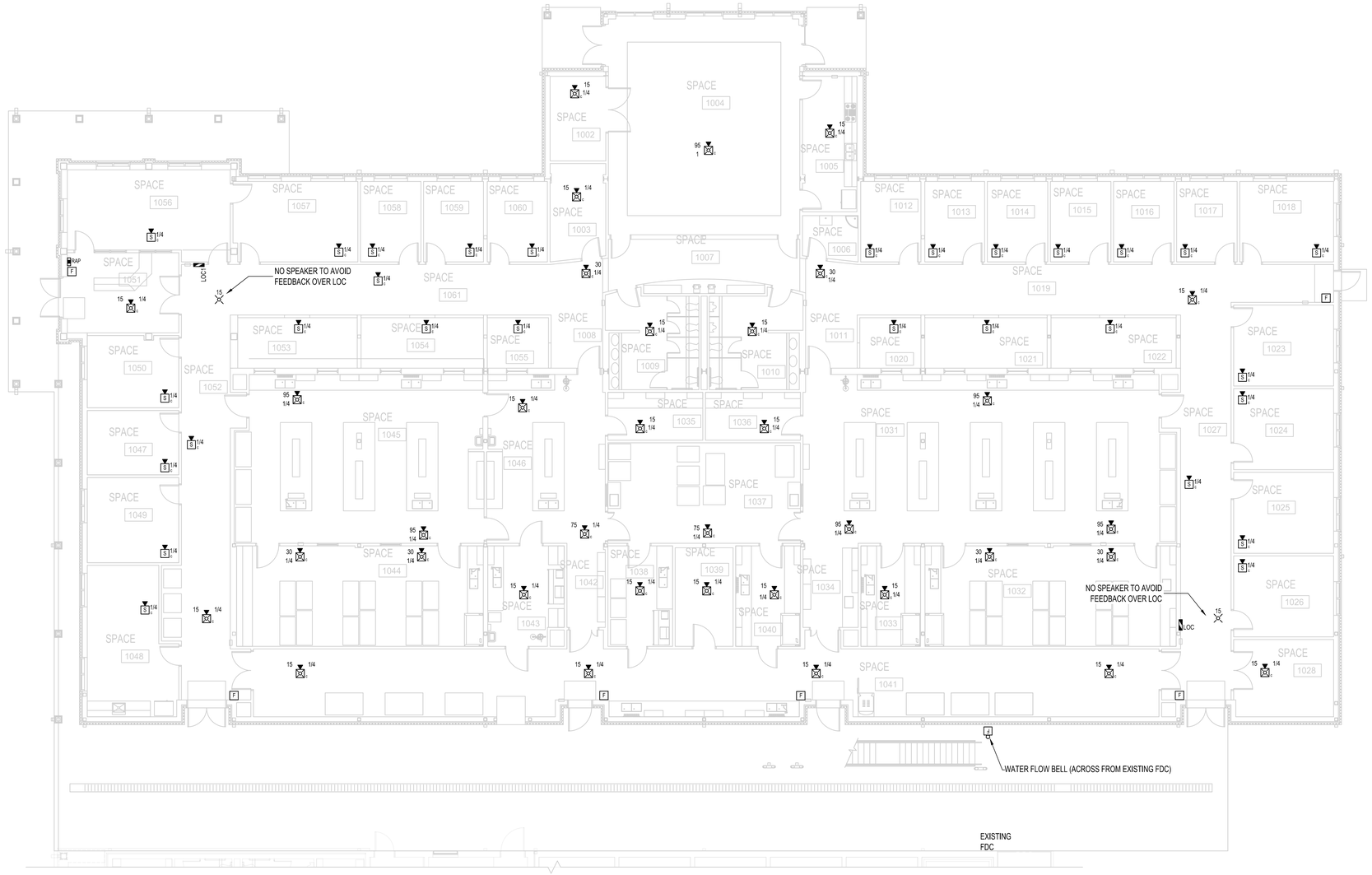
May 19, 2026 – 4:42pm




1 FA-101 FIRST FLOOR FIRE ALARM PLAN

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

PLAN NORTH

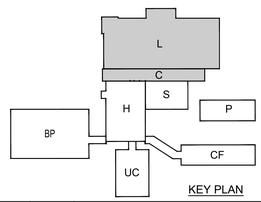
TRUE NORTH

## ROOM LEGEND

| ROOM NO | ROOM NAME |
|---|---|
| 1002 | STORAGE |
| 1003 | STORAGE |
| 1004 | MEETING ROOM |
| 1005 | PREP |
| 1006 | JANITORIAL |
| 1007 | CORRIDOR |
| 1008 | CORRIDOR |
| 1009 | WOMEN |
| 1010 | MEN |
| 1011 | CORRIDOR |
| 1012 | OFFICE |
| 1013 | OFFICE |
| 1014 | OFFICE |
| 1015 | OFFICE |
| 1016 | OFFICE |
| 1017 | OFFICE |
| 1018 | SMALL CONFERENCE |
| 1019 | CORRIDOR |
| 1020 | TECH OFFICE |
| 1021 | TECH OFFICE |
| 1022 | TECH OFFICE |
| 1023 | CAT 3 OFFICE |
| 1024 | CAT 3 OFFICE |
| 1025 | TECHNICIAN OFFICE |
| 1026 | TECHNICIAN OFFICE |
| 1027 | CORRIDOR |
| 1028 | STORAGE |
| 1031 | PLANT PHYSIOLOGY / SOILS |
| 1032 | SUPPORT |
| 1033 | SUPPORT |
| 1034 | HALL |
| 1035 | SCOPE |
| 1036 | SCOPE |
| 1037 | SHARED EQUIPMENT ROOM |
| 1038 | SUPPORT |
| 1039 | STORAGE |
| 1040 | SUPPORT |
| 1041 | SERVICE / UTILITY CORRIDOR |
| 1042 | HALL |
| 1043 | BSL-2 LABORATORY |
| 1044 | SUPPORT |
| 1045 | PATHOLOGY / MOLECULAR GENETICS (CLEAN) |
| 1046 | PATHOLOGY / MOLECULAR GENETICS (DIRTY) |
| 1047 | FILES |
| 1048 | BREAK ROOM |
| 1049 | POST-DOC / TECHICAL OFFICE |
| 1050 | MAIL / WORK ROOM |
| 1051 | ENTRY LOBBY |
| 1052 | CORRIDOR |
| 1053 | TECH OFFICE |
| 1054 | TECH OFFICE |
| 1055 | TECH OFFICE |
| 1056 | PROGRAM ASSISTANT |
| 1057 | RESEARCH LEADER |
| 1058 | OFFICE |
| 1059 | OFFICE |
| 1060 | OFFICE |
| 1061 | CORRIDOR |

8' 0 4' 8'

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




KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
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| | | | |

REVISIONS

Johnson McAdams PSM

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER | EPM |
| REH | WN |
| DESIGNER | PPM |
| SWL | XXX |
| CHECKED BY | SAFETY & HEALTH |
| BT/DW | CM |
| JOB # | REAL PROPERTY |
| 5825 | JS |

Registered Professional Engineer - Civil Engineer
CERTIFICATE NO. 37345
SCOTT WADE LACEY
05/20/26
ARIZONA USA

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR FIRE ALARM PLAN
LAB/OFFICE

| PROJECT NO. | AGRICULTURAL RESEARCH SERVICE<br>FACILITIES ENGINEERING BRANCH<br>5106 SUNNYSIDE AVENUE<br>BELTSVILLE, MD 20705-5100 | SHEET |
|---|---|---|
| XXX | | FA-101 |
| DATE | | 91 OF 176 |
| 05/20/2026 | | |

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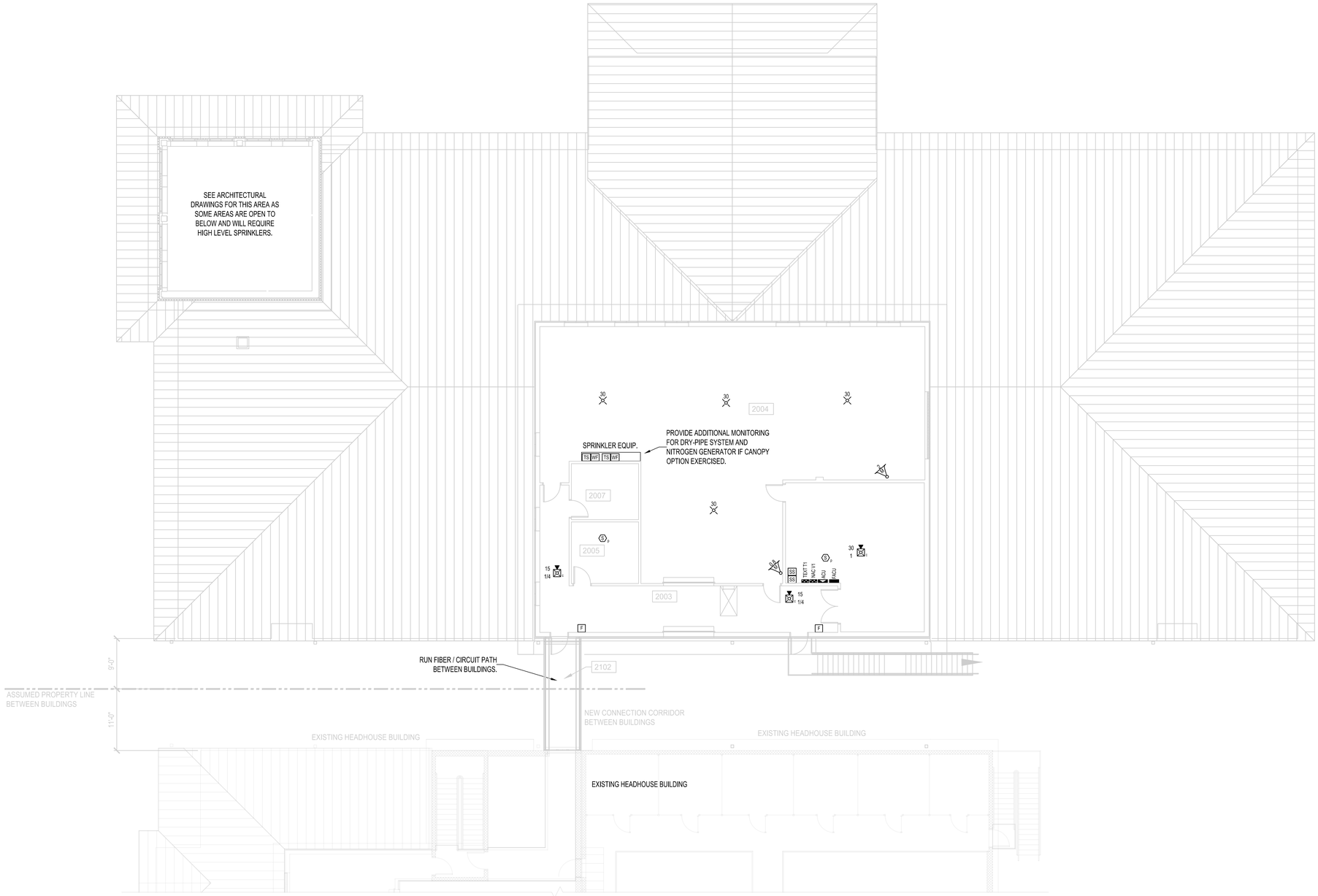
May 19, 2026 - 4:42pm



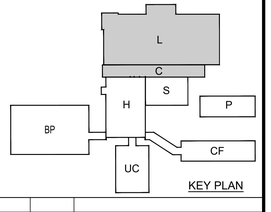

1 FA-102 SECOND FLOOR FIRE ALARM PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH TRUE NORTH

## ROOM LEGEND

| ROOM NO | ROOM NAME |
|---|---|
| 2003 | SERVICE / UTILITY CORRIDOR |
| 2004 | MECHANICAL PENTHOUSE |
| 2005 | COMMUNICATIONS |
| 2006 | ELECTRICAL ROOM |
| 2007 | STORAGE |
| 2102 | CORRIDOR |

8' 0 4' 8'
SCALE: 1/8" = 1'-0"




KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson McAdams PRINCIPAL
ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT
P.O. BOX 515, GREENWOOD, MISSISSIPPI (662) 455-4643

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SWL | PPM XXX |
| CHECKED BY BT/DW | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

SECOND FLOOR FIRE ALARM PLAN
LAB/OFFICE

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET FA-102
92 OF 176

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 37345
SCOTT WADE LACEY
5/20/26
ARIZONA, U.S.A.

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May 19, 2026 - 4:42pm

**GENERAL SPRINKLER NOTES:**
1. SYSTEM MUST COMPLY WITH NFPA 13, LATEST EDITION AT TIME OF SOLICITATION.
2. UNLESS INDICATED OTHERWISE, LIMITED SPRINKLER PIPING AND SPRINKLERS ARE SHOWN TO ESTABLISH REMOTE AREA FIRE FLOW DEMAND CALCS AND / COST ESTIMATING.
3. CONTRACTOR IS TO PERFORM HYDRAULIC CALCULATIONS AND ESTABLISH PIPE SIZING FOR SYSTEM.
4. REPLACE EXISTING FIRE PUMP CONTROLLER AND TRANSFER SWITCH.
5. LOCAL BUILDING AND FIRE PERMITS ARE NOT REQUIRED. FIRE DEPARTMENT WOULD LIKE TO BE NOTIFIED AND ALLOWED TO INSPECT THE PROJECT FOR PRE-PLANNING FUNCTIONS.

**QUALITY CONTROL FIRE PROTECTION ENGINEER:**
1. A QUALITY CONTROL FIRE PROTECTION ENGINEER (QFPE) IS REQUIRED FOR THIS PROJECT.
2. THE QFPE MUST NOT BE AN EMPLOYEE OF THE INSTALLING CONTRACTOR.
3. THE QFPE IS TO BE A PART OF THE GENERAL CONTRACTORS QUALITY CONTROL TEAM.
   - 3.1. IT IS RECOMMENDED THAT THE QFPE BE HIRED BY THE GENERAL CONTRACTOR.
   - 3.2. IF THE FIRE ALARM AND/OR MASS NOTIFICATION SYSTEM ALSO REQUIRES THE SERVICES OF A QFPE, THERE SHOULD BE A SINGLE QFPE PROVIDING OVERSIGHT OF ALL FIRE PROTECTION SYSTEMS UNDER THE CONTROL AND DIRECTION OF THE GENERAL CONTRACTOR.
4. THE QFPE MUST HAVE SPECIFIC DESIGN, INSPECTION, AND COMMISSIONING EXPERIENCE IN FIRE PROTECTION SYSTEMS IDENTIFIED FOR THIS PROJECT.
5. UNLESS SPELLED OUT OTHERWISE, THE QFPE IS TO PROVIDE THE FOLLOWING MINIMUM SERVICES:
   - 5.1. PROVIDE OVERSIGHT IN THE DESIGN AND PREPARATION OF THE SYSTEM INSTALLATION DRAWINGS.
   - 5.2. PROVIDE A LETTER AND/OR STAMP ON DOCUMENTS INDICATING THAT DESIGN OVERSIGHT HAS BEEN PROVIDED AND THAT THE DESIGN IS IN COMPLIANCE WITH ALL CONTRACT REQUIREMENTS.
   - 5.3. QFPE IS NOT REQUIRED TO SEAL THE DESIGN DOCUMENTS AS A DESIGNER OF RECORD (DOR), BUT MUST SEAL A LETTER TO VALIDATE THEIR PE QUALIFICATIONS.
   - 5.4. PROVIDE CONSTRUCTION SITE VISITS TO VERIFY THE INSTALLATION IS IN ACCORDANCE WITH CONTRACT AND SHOP DRAWING REQUIREMENTS. AT MINIMUM THIS INCLUDES INSPECTION PRIOR TO CEILINGS BEING INSTALLED.
   - 5.5. PROVIDE DOCUMENTATION OF PRE-TESTING AND COMMISSIONING PLAN AND STEPS TO BE TAKEN TO VERIFY SYSTEM COMPLIANCE AT LEAST 30 DAYS PRIOR TO PERFORMING PRE-TESTING.
   - 5.6. PROVIDE PRE-TESTING INSPECTION AND EVALUATION TO ENSURE SYSTEM COMPLIANCE PRIOR TO SCHEDULING A FINAL COMMISSIONING TEST WITH CONTRACTING OFFICER.
   - 5.7. BE PRESENT FOR FINAL COMMISSION TESTING WITH THE CONTRACTING OFFICER AND DESIGNATED REPRESENTATIVES.
   - 5.8. PROVIDE DOCUMENTATION OF ALL FINDINGS, CORRECTIVE ACTIONS, AND RESULTS OF PRE-TESTING AND FINAL COMMISSIONING.

**RISER NOTES:**
1. HEADHOUSE HAS AN EXISTING FIRE PUMP THAT IS TO ALSO SERVE THE NEW LAB AND OFFICE BUILDING.
2. PIPING BETWEEN THE BUILDING MUST BE INSTALLED TO PREVENT FREEZING AND INCLUDE SOURCES OF HEAT.
3. PROVIDE ISOLATION VALVE IN PUMP ROOM FOR NEW LAB BUILDING, IN ADDITION TO ZONE VALVES IN LAB BUILDING ON MEZZANINE.
4. RISER AND ALL ASSOCIATED VALVES / EQUIPMENT ARE TO BE LOCATED TO PROVIDE A MINIMUM OF 36 INCHES CLEAR WORKING SPACE.
5. IN ACCORDANCE WITH NFPA 13, A HYDRAULIC PLACARD AND INFORMATION PLACARD IS TO BE PROVIDED. INFORMATION MUST BE PRESENTED IN A MANNER THAT WILL NOT FADE. NON PIGMENT MARKERS ARE NOT ALLOWED.
6. PROVIDE ELECTRONIC 24-VOLT DC BELL FOR WATER FLOW DEDICATED TO LAB BUILDING ZONES.
   - 6.1. BELL IS TO BE CONFIGURED TO CONTINUOUSLY RING WHILE SPRINKLER WATER IS FLOWING.
   - 6.2. UNLESS INDICATED OTHERWISE, THE BELL IS TO BE LOCATED ABOVE OR NEAR THE FIRE DEPARTMENT CONNECTION TO HELP IDENTIFY FDC TO FIRE DEPARTMENT.
7. FIRE DEPARTMENT CONNECTION IS EXISTING. PROVIDE NEW SIGNAGE UNDER EXTERIOR STAIRS TO IDENTIFY LOCATION OF FDC.
8. ALL DRAINS ARE TO BE PIPED TO THE EXTERIOR.
   - 8.1. PROVIDE A SPLASH BLOCK TO PREVENT EROSION.
   - 8.2. PROVIDE PROVISIONS SO THAT MAIN-DRAIN TESTING WILL NOT ERODE LANDSCAPING.
   - 8.3. DRAIN MUST NOT BE IN A LOCATION THAT STAINING WILL BE OBTRUSIVE, SUCH AS NEAR A MAIN BUILDING ENTRANCE.
9. EVERY VALVE MUST HAVE A SIGN INDICATING FUNCTION AND NORMALLY OPEN OR NORMALLY CLOSED POSITION.
   - 9.1. THIS INCLUDES MAIN VALVES, MAIN DRAINS, ALARM TRIM VALVE, AIR MAINTENANCE VALVES, AUXILIARY DRAIN VALVES, INSPECTOR TEST VALVES, PRIMING VALVES, ETC.
   - 9.2. SIGNAGE MUST BE PRINTED IN A MANNER THAT WILL NOT FADE.
   - 9.3. THE USE OF PERMANENT INK MARKER THAT DOES NOT CONTAIN A FADE-RESISTANT PIGMENT IS NOT ALLOWED.

**FIRE PUMP NOTES:**
1. THE FIRE PUMP WITHIN HEADHOUSE IS EXISTING.
2. PUMP IS RATED AT 75 PSI @ 500 GPM.
3. CURRENT WATER SUPPLY AT TIME OF ISSUING DOCUMENTS CANNOT SUPPORT FLOW OVER 520 GPM AT 20 PSI. AS SUCH, STREET PRESSURE MUST BE MONITORED DURING PUMP TESTING. UTILITY COMPANY INDICATES THEY HAVE A VALVE CLOSED AND PUMPS OFF-LINE. FIRE DEPARTMENT IS AWARE OF CONDITIONS.
4. CONTRACTOR IS TO FIELD VERIFY ALL CONDITIONS.
5. SEE KEY PLAN ON THIS DRAWING FOR APPROXIMATE SPRINKLER MAIN ROUTING, FIRE PUMP LOCATION, AND FDC LOCATION.
6. REPLACE FIRE PUMP CONTROLLER AND TRANSFER SWITCH PER NOTES.
7. SEE PUMP CONTROLLER DATA ON SHEET FP-101.

**SPRINKLER HEAD GENERAL NOTES:**
1. UNLESS INDICATED OTHERWISE THE FOLLOWING SUB-SECTIONS APPLY:
   - 1.1. ALL SPRINKLERS ARE TO BE QUICK RESPONSE
   - 1.2. SPRINKLER TEMPERATURES ARE TO BE IN ACCORDANCE WITH NFPA 13 FOR THE SPACE AND HEAT SOURCES IN THE AREA OF THE SPRINKLERS.
   - 1.3. SPRINKLER HEADS FOR ORDINARY HAZARD SPACES ARE TO BE K=8 WITH 3/4" THREADS.
   - 1.4. PENDENT SPRINKLERS ARE TO BE SEMI-RECESSED WITH CHROME FINISH.
   - 1.5. SPRINKLERS IN COMMUNICATION CLOSETS, JANITOR CLOSETS, ELECTRICAL ROOMS, OR SERVER ROOMS ARE TO HAVE CONCEALED HEADS WITHIN A FINISHED CEILING, OR UPRIGHT HEADS WITH APPROVED GUARDS IN OPEN EXPOSED ROOMS.
   - 1.6. ANY LOCATION IN WHICH A DRY-BARREL SPRINKLER IS INSTALLED MUST BE INSTALLED TO EASILY FACILITATE REMOVAL / REPLACEMENT EVERY 20 YEARS PER NFPA 25. AS SUCH, PROVISIONS ARE TO BE PROVIDED AS NEEDED TO APPLY WRENCHES ON THE BACK-SIDE OF THE FITTING / PIPPING THAT THE SPRINKLER IS INSTALLED.
   - 1.7. DRY-BARREL STYLE FLEXIBLE SPRINKLERS ARE PROHIBITED.
   - 1.8. FLEXIBLE SPRINKLER DROPS FOR WET-PIPE SYSTEMS ARE PERMITTED AS FOLLOWS:
     - 1.8.1. ONLY BRAIDED HOSES ARE ALLOWED.
     - 1.8.2. FLEXIBLE SEGMENT IS LIMITED TO 48 INCHES.
     - 1.8.3. CEILING GRID BRACKETS MUST BE SUBSTANTIAL TO PREVENT THE SPRINKLER HEAD FROM ROTATING IN THE CEILING GRID PREVENTING A COMPLETELY FLUSH ESCUTCHEON.
     - 1.8.4. HYDRAULIC CALCS MUST VALIDATE THE FRICTION LOSS.
     - 1.8.5. SHOP DRAWINGS MUST SPECIFICALLY IDENTIFY THE BRAND, SIZE, NUMBER OF BENDS ALLOWED, AND LENGTH OF HEAD USED IN CALCULATIONS TO BE VERIFIED IN THE INSTALLATION.
2. ALL SPRINKLER HEADS IN SUSPENDED CEILINGS ARE TO BE CENTER OF TILE.
3. SPRINKLER HEADS IN HARD-LID CEILINGS ARE TO BE COORDINATED WITH OTHER SYSTEMS (LIGHTS, VENTS, FIRE ALARM, ETC.) AS MUCH AS POSSIBLE WHILE ACHIEVING CODE CRITERIA.

**SPRINKLER DENSITY / AREA / CALCS:**
1. SEE SCHEDULES FOR DENSITY BY ROOM / AREA.
2. PROVIDE OUTSIDE HOSE DEMAND PER NFPA 13.
3. SEE FIRE FLOW DATA ON THIS SHEET FOR BIDDING.
4. CONTRACTOR TO PERFORM AN ADDITIONAL FLOW TEST WITHIN 6 MONTHS OF SUBMITTING CALCULATIONS. CALCULATIONS TO BE BASED ON WORST CASE OF THE TWO FLOW TESTS.
5. CONTRACTOR IS TO PROVIDE PIPE SIZES WHERE SPECIFICALLY INDICATED. IF NOT INDICATED, THE CONTRACTOR IS TO SIZE PIPING BASED ON CALCULATIONS.
6. ABOVE GROUND VELOCITY NOT TO EXCEED 25 FPS WITH UNDERGROUND VELOCITY NOT TO EXCEED 10 FPS.
7. PROVIDE 10 PSI SAFETY MARGIN. THIS AREA WILL HAVE CONTINUED GROWTH AND DEMAND ON THE EXISTING WATER SYSTEM.
8. AREA REDUCTIONS FOR QUICK RESPONSE HEADS ARE NOT ALLOWED.
9. SMALL ROOM SPACING IS PERMITTED IN ACCORDANCE WITH NFPA 13.
10. SYSTEM MAINS ARE TO BE NOT LESS THAN 2.5", SUCH AS EXTENDING TO THE END OF A CORRIDOR.

**SPRINKLER MATERIALS NOTES:**
1. PROVIDE INSPECTOR TEST AND DRAIN WHICH INCORPORATES PRESSURE RELIEF WITHIN RISER ROOM OR READILY ACCESSIBLE AREAS.
   - 1.1. ADDITIONAL PRESSURE RELIEF APPLIES TO SUB-ZONES.
2. PROVIDE AIR VENT PER NFPA 13 ON HIGH POINT OF SYSTEM WITH DRAIN PIPED TO AN EXTERIOR LOCATION.
   - 2.1. ADDITIONAL AIR VENT APPLIES TO SUB-ZONES.
3. ALL DRAINS, INCLUDING AUX. DRAINS FOR TRAPPED WATER MUST BE PIPED TO EXTERIOR OF BUILDING WITH SPLASH BLOCKS.
4. FDC IS EXISTING TO PUMP MANIFOLD.
5. ABOVE GROUND PIPE 2.5" AND LARGER TO BE BLACK STEEL SCHEDULE 10 OR SCHEDULE 40.
6. PIPE 2" OR SMALLER TO BE BLACK STEEL SCHEDULE 40.
7. THIN-WALL ALTERNATE PIPES ARE NOT PERMITTED.
8. ALL GROOVED FITTINGS TO BE OF SAME BRAND.
9. ALL REDUCER FITTINGS TO BE CONCENTRIC.
10. NO WET PIPE IS TO BE INSTALLED WITHIN AN EXTERIOR WALL THAT COULD BE SUBJECT TO FREEZING TEMPERATURES.
    - 10.1. WHERE A SECTION OF PIPE MUST BE RUN DOWN AN EXTERIOR WALL TO DRAIN, THE POINT OF ISOLATION (VALVE) MUST BE LOCATED ABOVE A CEILING OR OTHER SPACE NOT SUBJECT TO FREEZING WITH ONLY DRY PIPE BEING WITHIN THE WALL ENCLOSURE.

**SHOP DRAWINGS AND SUBMITTALS:**
1. DETAILED SHOP DRAWINGS ARE TO BE PROVIDED IN ACCORDANCE WITH NFPA 13 AND SPECIFICATIONS.
2. IN ADDITION TO CRITERIA IN SPECIFICATIONS, ENSURE SUBMITTALS INCLUDE AT MINIMUM THE CRITERIA IN THIS SECTION.
   - 2.1. FLOOR PLANS INCLUDING SIZES, REMOTE AREA DEMANDS, HANGER CRITERIA, ELEVATION CHANGES, PIPE ELEVATIONS, AND BRACING.
   - 2.2. ELEVATION VIEW CROSS SECTION OF TYPICAL MAIN AND BRANCH LINE ELEVATIONS.
   - 2.3. RISER DETAIL
   - 2.4. LOCATION OF RELIEF VALVES AND AIR VENTS.
   - 2.5. LOCATION OF AUXILIARY DRAINS TO APPROVED LOCATIONS ENSURING THAT NO WET PIPE IS WITHIN AN EXTERIOR WALL.
   - 2.6. REVIEW AND LETTER FROM QFPE WHEN INDICATED.

**TESTING AND INSPECTIONS:**
1. ALL TESTING TO BE IN ACCORDANCE WITH NFPA 13 AND NFPA 24.
2. PRESSURE TEST PIPING AT 200 LBS FOR MINIMUM 2-HR. PROVIDE THIRD-PARTY WITNESS AND CONTACT INFORMATION.

**SPECIFIC SITE CONDITIONS:**
1. CONTRACTOR TO COMPLY WITH LOCAL JURISDICTION REQUIREMENTS.
2. CONTRACTOR TO INCLUDE FEES AND SUBMIT FOR ALL LOCAL PERMITS AND INSPECTIONS AS MAY BE APPLICABLE.

**BID OPTION NOTES:**
1. BID OPTION #1 MAY INCLUDE A COVERED CANOPY.
2. THIS BID OPTION CAN ONLY BE EXECUTED IF A UTILITY WATER SUPPLY DEFICIENCY IS RESOLVED TO SUPPORT A DRY-PIPE SYSTEM OF OH1 / 1,950 FT2. THE CURRENT WATER SUPPLY CANNOT SUPPORT THE INCREASED AREA OF DRY SYSTEM.
3. IF EXERCISED, THE SYSTEM MUST INCORPORATE A NITROGEN GENERATOR ON THE MEZZANINE WITH LAB BUILDING SPRINKLER ZONE VALVES AND MONITORED BY THE FIRE ALARM SYSTEM.
4. C-FACTOR OF DRY-PIPE MAY BE 120 IN ACCORDANCE WITH NFPA 13 UTILIZING NITROGEN.
5. WATER SUPPLY IS A CONCERN. SYSTEM MUST BE CAREFULLY BALANCED BETWEEN PRESSURES AND FLOWS FOR THE AVAILABLE SUPPLY.
6. THE DRY-PIPE VALVE AND NITROGEN GENERATOR WILL BE LOCATED ON THE MEZZANINE OF THE NEW LAB BUILDING WHERE SPRINKLER EQUIPMENT IS IDENTIFIED.
7. COORDINATE WITH ELECTRICAL FOR LARGER CIRCUITS IF NITROGEN GENERATOR REQUIRES > 20AMP 120VAC CIRCUIT.
8. GALVANIZED PIPE CANNOT BE USED.
9. ALL PIPING MUST BE CLEANED, PRIMED, AND PAINTED RED ENAMEL WITH UV PROTECTED PIGMENTS FOR EXTERIOR USE.
10. PIPE MUST BE SLOPED PER NFPA 13 WITH DRUM DRIP DRAINS PROVIDED.
11. PROVIDE SPRINKLER PROTECTION OVER AND UNDER THE CONNECTING WALKWAY IF BID OPTION #1 IS EXECUTED.
12. PROVIDE FIRE ALARM MONITORING OF VALVES, HIGH PRESSURE, LOW PRESSURE, TRIP, AND NITROGEN TROUBLE/OFF-LINE.

CURRENT FDC IS NOT IDENTIFIED PER CODE. PROVIDE SIGNAGE WITH MINIMUM 5" HIGH LETTERS, REFLECTIVE RED ON REFLECTIVE WHITE BACKGROUND, ALUMINUM GRADE TRAFFIC GRADE ALUMINUM.

PROVIDE BRACING AND ATTACH TO METAL STAIR STRUCTURE, JUST OUT FROM WALL WHERE INDICATED. SIGN TO IDENTIFY LOCATION OF EXISTING FDC.

SEE KEY PLAN THIS SHEET FOR GENERAL SIGN LOCATION.

2 FP-001 FIRE DEPARTMENT CONNECTION SIGN
SCALE: NOT TO SCALE

3 FP-001 SPRINKLER MANIFOLD IN LAB BUILDING
SCALE: NOT TO SCALE

| City Water Supply: | | Pump Data: | | Demand: | |
|---|---|---|---|---|---|
| C1 - Static Pressure | : 58 | P1 - Pump Churn Pressure | : 82.5 | D1 - Elevation | : 3.465 |
| C2 - Residual Pressure: | 16 | P2 - Pump Rated Pressure | : 75 | D2 - System Flow | : 431.75 |
| C2 - Residual Flow | : 557 | P2 - Pump Rated Flow | : 500 | D2 - System Pressure | : 32.936 |
| | | P3 - Pump Pressure @ Max Flow | : 48.75 | Hose ( Demand ) | : |
| City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow | | P3 - Pump Max Flow | : 615.27 | D3 - System Demand | : 431.75 |
| | | City Residual Flow @ 0 | = 663.17 | Hose ( Adj City ) | : 100 |
| A1 - Adjusted Static: | 54.366 | City Residual Flow @ 20 | = 527.67 | Safety Margin | : 57.653 |
| A2 - Adj Resid | : 15.947 @ 500 | City Water @ 150% of Pump | = 7.51 | | |
| A3 - Adj Resid | : 0 @ 615.27 | Pump flow terminated at adjusted curve 0 psi | | | |

4 FP-001 PRELIMINARY WATER SUPPLY AND DEMAND
SCALE: NOT TO SCALE

FIRE FLOW TEST WAS PERFORMED ON 4/16/2026. NOTE THAT THE AVAILABLE WATER ONLY ALLOWS FOR A FLOW OF 520 GPM AT 20 PSI. AS SUCH, THE FIRE PUMP CANNOT BE TESTED AT RATED FLOW. SUCTION PRESSURES MUST BE MONITORED AT THE STREET TO MAINTAIN 20 PSI IN SYSTEM. WHEN PERFORMING A FIRE FLOW TEST THE TEST PRESSURE MUST BE MONITORED TO MAINTAIN ABOVE 20 PSI. THIS MAY CAUSE A CHALLENGE WITH FULL OPERATION OF THE FLOW HYDRANT TO PROPERLY SEAT DRAIN VALVE. UTILITY PROVIDER WAS PRESENT AND AWARE OF WATER SUPPLY ISSUE AS THEY HAD VALVES AND PUMPS OFF-LINE AT TIME OF TESTING. ESTIMATED TIME OF SYSTEM RETURNING TO SERVICE COULD NOT BE PROVIDED.

HYDRAULIC SYSTEM

THIS BUILDING IS PROTECTED BY A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM

LOCATION ____

NO. OF SPRINKLERS ____

BASIS FOR DESIGN
1. DENSITY ____
2. DESIGNED AREA OF DISCHARGE ____

SYSTEM DEMAND
1. WATER FLOW RATE ____
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER ____
3. STATIC PRESSURE ____

SECURE HYDRAULIC CALC DATA TO RISER PIPE AT FIRE PUMP MANIFOLD AND ALSO AT SECOND FLOOR ZONE VALVES IN NEW LAB BUILDING. ALSO PROVIDE INFORMATION SHEET AS REQUIRED BY NFPA 13 AT PUMP ROOM RISER.

5 FP-001 SYSTEM IDENTIFICATION
SCALE: NOT TO SCALE

## FIRE PROTECTION LEGEND FOR THIS SHEET

- SECTIONAL VALVE WITH DRAIN
- ANGLE VALVE WITH DRAIN
- POST INDICATOR VALVE
- OS & Y
- OS & Y WITH TAMPER SWITCH
- ZONE RISER
- INSPECTOR TEST / DRAIN / PRESSURE RELIEF (TDR)
- SWING GATE CHECK VALVE
- DRIP CHECK VALVE
- OS&Y VALVE WITH TAMPER SWITCH
- FS — FLOW SWITCH
- PRESSURE GAGE WITH SHUT OFF COCK
- DRAIN CUP
- — FP — FIRE PROTECTION PIPING

1 FP-001 EXISTING SERVICE ENTRANCE AND ZONE RISERS
SCALE: NOT TO SCALE

KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

REVIEW: REVISIONS

The Johnson McAdams Firm P.A. — ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT — P.O. BOX 513, GREENWOOD, MISSISSIPPI - (662) 455-4943

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SWL | PPM XXX |
| CHECKED BY BT/DW | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA — USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

**FIRE PROTECTION SPRINKLER NOTES LAB/OFFICE**

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET FP-001
93 OF 176

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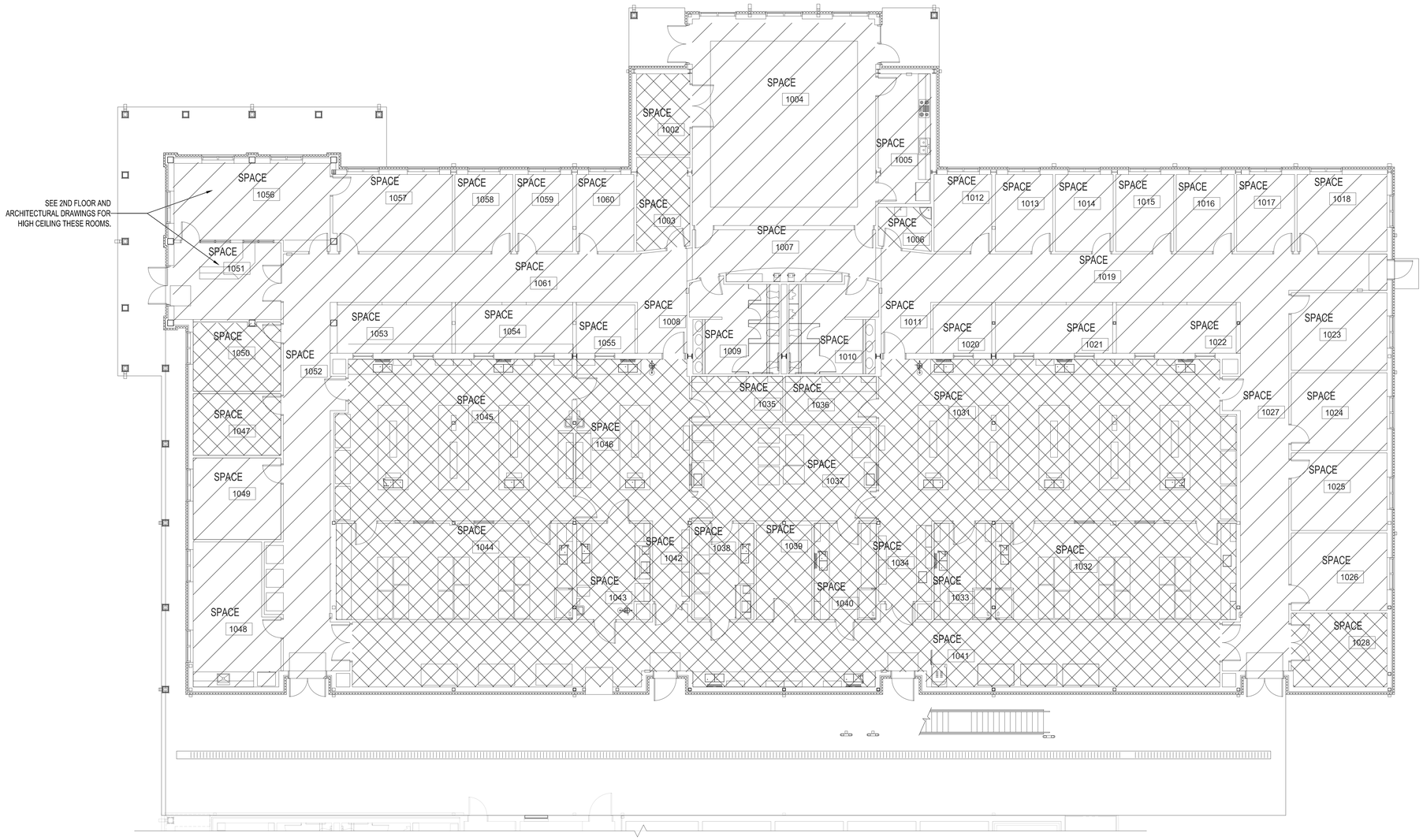
May 19, 2026 – 4:42pm




1 FP-101 FIRST FLOOR SPRINKLER PLAN

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

PLAN NORTH

TRUE NORTH

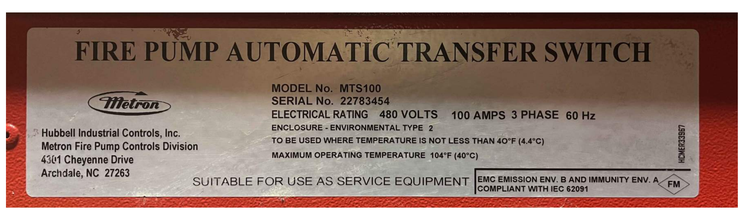
## ROOM LEGEND

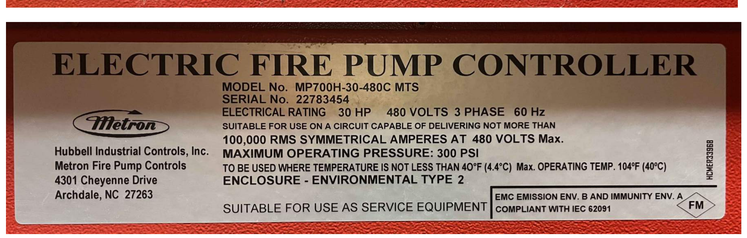
| ROOM NO | ROOM NAME |
|---|---|
| 1002 | STORAGE |
| 1003 | STORAGE |
| 1004 | MEETING ROOM |
| 1005 | PREP |
| 1006 | JANITORIAL |
| 1007 | CORRIDOR |
| 1008 | CORRIDOR |
| 1009 | WOMEN |
| 1010 | MEN |
| 1011 | CORRIDOR |
| 1012 | OFFICE |
| 1013 | OFFICE |
| 1014 | OFFICE |
| 1015 | OFFICE |
| 1016 | OFFICE |
| 1017 | OFFICE |
| 1018 | SMALL CONFERENCE |
| 1019 | CORRIDOR |
| 1020 | TECH OFFICE |
| 1021 | TECH OFFICE |
| 1022 | TECH OFFICE |
| 1023 | CAT 3 OFFICE |
| 1024 | CAT 3 OFFICE |
| 1025 | TECHNICIAN OFFICE |
| 1026 | TECHNICIAN OFFICE |
| 1027 | CORRIDOR |
| 1028 | STORAGE |
| 1031 | PLANT PHYSIOLOGY / SOILS |
| 1032 | SUPPORT |
| 1033 | SUPPORT |
| 1034 | HALL |
| 1035 | SCOPE |
| 1036 | SCOPE |
| 1037 | SHARED EQUIPMENT ROOM |
| 1038 | SUPPORT |
| 1039 | STORAGE |
| 1040 | SUPPORT |
| 1041 | SERVICE / UTILITY CORRIDOR |
| 1042 | HALL |
| 1043 | BSL-2 LABORATORY |
| 1044 | SUPPORT |
| 1045 | PATHOLOGY / MOLECULAR GENETICS (CLEAN) |
| 1046 | PATHOLOGY / MOLECULAR GENETICS (DIRTY) |
| 1047 | FILES |
| 1048 | BREAK ROOM |
| 1049 | POST-DOC / TECHICAL OFFICE |
| 1050 | MAIL / WORK ROOM |
| 1051 | ENTRY LOBBY |
| 1052 | CORRIDOR |
| 1053 | TECH OFFICE |
| 1054 | TECH OFFICE |
| 1055 | TECH OFFICE |
| 1056 | PROGRAM ASSISTANT |
| 1057 | RESEARCH LEADER |
| 1058 | OFFICE |
| 1059 | OFFICE |
| 1060 | OFFICE |
| 1061 | CORRIDOR |

## LEGEND

LIGHT HAZARD

ORDINARY HAZARD GROUP 1




2 FP-101 FIRE PUMP CONTROLLER AND TRANSFER SWITCH DATA

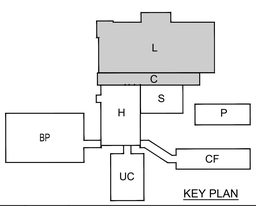
SCALE: NTS

**FIRE PUMP CONTROLLER NOTES:**

1. THE EXISTING FIRE PUMP CONTROLLER HAS EXPERIENCED A LOW VOLTAGE DETECTION FAULT. CONTROLLER SETTINGS HAVE BEEN ADJUSTED TO NOT ALARM. THE CONTROLLER IS NO LONGER SUPPORTED BY MFG.
2. CONTRACTOR IS TO VERIFY THAT THE PUMP CONTROLLER HAS NOT BEEN PREVIOUSLY REPLACED PRIOR TO ORDERING. A CREDIT IS TO BE ISSUED IF PREVIOUSLY REPLACED DUE TO CONTRACTING DELAYS.
3. CONTROLLER SHOULD BE COORDINATED TO BE REPLACED AS SOON AS POSSIBLE FOLLOWING AWARD OF CONTRACT AND NOT TO EXCEED 90 DAYS.
4. REPLACE THE CONTROLLER AND TRANSFER SWITCH WITH MANUFACTURER COMPATIBLE EQUIVALENT SUCH AS:
   - 4.1. FIRETROL FTA1930-AM30B-TSA-JKP
   - 4.2. REPLACEMENT INFORMATION PROVIDED BY FIRETROL / METRON REPRESENTATIVE CRAIG FINK OF AMPAIR, INC. OF HOUSTON, TX.
   - 4.3. CONTRACTOR TO VERIFY EQUAL REPLACEMENT.
5. CONTROLLER TO BE IN ACCORDANCE WITH NFPA 20 & 70, LATEST EDITION AT TIME OF SOLICITATION.
6. PROVIDE R QUALIFIED ELECTRICAL PERSONNEL TO ISOLATE AND REPLACE EQUIPMENT ENSURING LOCK-OUT-TAG-OUT PROCEDURES ARE FOLLOWED, INCLUDING POWER FROM GENERATOR.
4. PROVIDE FACTORY AUTHORIZED CONTROLLER MANUFACTURER REPRESENTATIVE TO INSPECT AND PERFORM FIRE PUMP TESTING TO VERIFY PERFORMANCE.
5. PROVIDE ALL EQUIPMENT AND TESTING NECESSARY TO PERFORM REPLACEMENT IN ACCORDANCE WTIH NFPA 70 AND NFPA 20.
6. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS FOR THE EQUAL REPLACEMENT AND CODE COMPLIANCE.
7. WATER SUPPLY PRESSURE MUST BE MONITORED AT STREET HYDRANT DURING ALL PUMP FLOW TESTING TO ENSURE WATER MAIN DOES NOT DROP BELOW 20 PSI.
8. ENSURE ALL EQUIPMENT IS ON-SITE PRIOR TO STARTING REPLACEMENT.
9. COORDINATE ALL TRADES AND REPLACEMENT SO THAT FIRE PUMP IS NOT OUT OF SERVICE FOR MORE THAN A 72-HOUR PERIOD.
10. IMPAIRMENT PROCEDURES PER NFPA 25 ARE TO BE FOLLOWED.

8' 0 4' 8'

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




KEY PLAN

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REVISIONS

Johnson McAdams PLLC

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER: REH | EPM: WN |
| DESIGNER: SWL | PPM: XXX |
| CHECKED BY: BT/DW | SAFETY & HEALTH: CM |
| JOB #: 5825 | REAL PROPERTY: JS |

Registered Professional Engineer - Fire Protection
CERTIFICATE NO. 37345
SCOTT WADE LACEY
5/20/26
ARIZONA USA

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR SPRINKLER PLAN LAB/OFFICE

| PROJECT NO. | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET |
|---|---|---|
| XXX | | FP-101 |
| DATE: 05/20/2026 | | 94 OF 176 |

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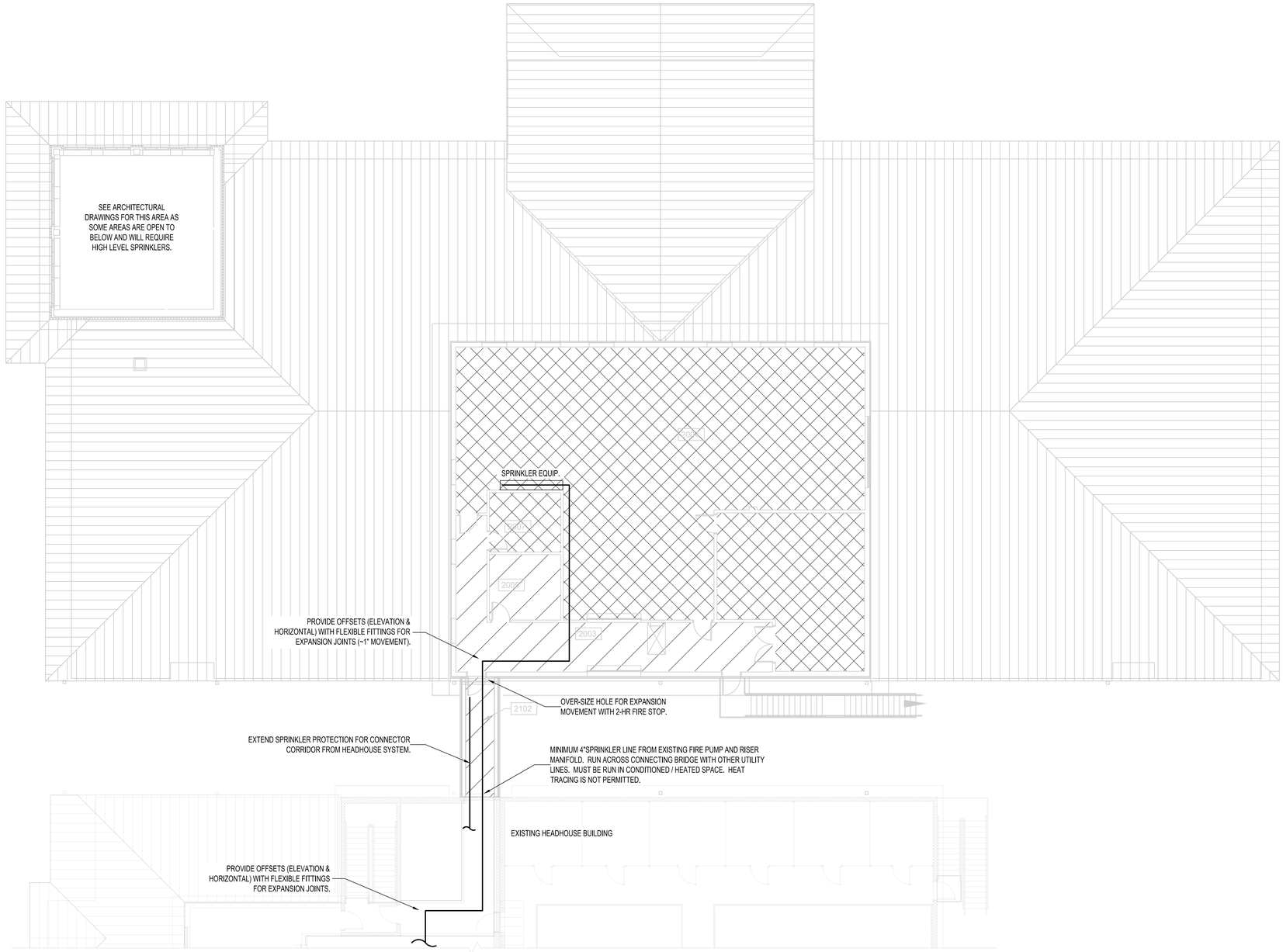
May 19, 2026 - 4:40pm




1 FP-102 SECOND FLOOR SPRINKLER PLAN

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

PLAN NORTH TRUE NORTH

## ROOM LEGEND

| ROOM NO | ROOM NAME |
|---|---|
| 2003 | SERVICE / UTILITY CORRIDOR |
| 2004 | MECHANICAL PENTHOUSE |
| 2005 | COMMUNICATIONS |
| 2006 | ELECTRICAL ROOM |
| 2007 | STORAGE |
| 2102 | CORRIDOR |

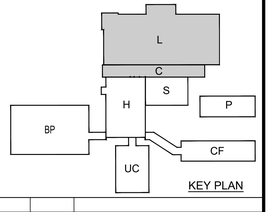
LEGEND

LIGHT HAZARD

ORDINARY HAZARD GROUP 1

8' 0 4' 8'

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




KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson McAdams PRINCIPAL
ARCHITECTS/ENGINEERS PLANNERS SURVEYING MANAGEMENT
P.O. BOX 515, GREENWOOD, MISSISSIPPI 38602 (662) 455-8643

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SWL | PPM XXX |
| CHECKED BY BT/DW | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

SECOND FLOOR SPRINKLER PLAN
LAB/OFFICE

PROJECT NO. XXX

DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET FP-102

95 OF 176

Registered Professional Engineer (Fire Protection)
CERTIFICATE NO. 37345
SCOTT WADE LACEY
5/20/26
ARIZONA, U.S.A.

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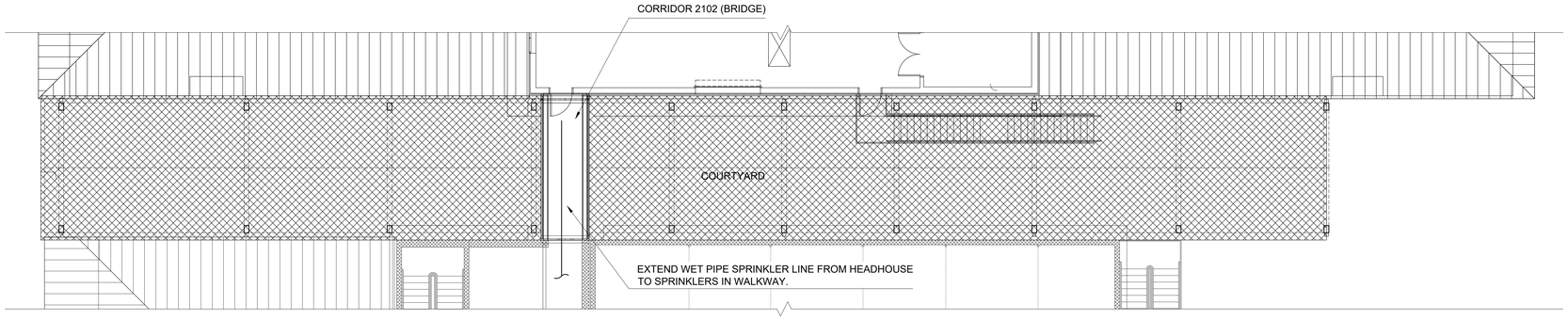
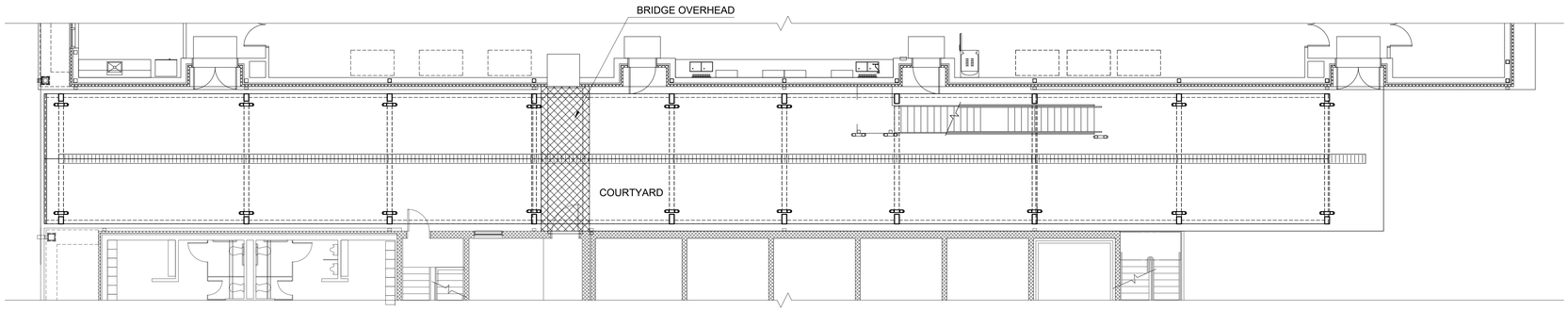



NOTE:
DRY PIPE SYSTEM VALVES AND AIR NITROGEN GENERATOR TO BE LOCATED ON MEZZANINE OF LAB BUILDING.

1 CSFP101 WALKWAY - CANOPY PLAN - BID OPTION #1
SCALE: 1/8"=1'-0"
PLAN NORTH TRUE NORTH




2 CSFP101 WALKWAY - GROUND LEVEL - PLAN BID OPTION #1
SCALE: 1/8"=1'-0"
PLAN NORTH TRUE NORTH

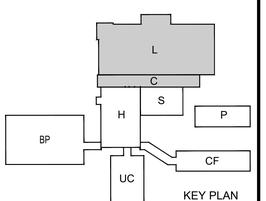
**BID OPTION 1 CANOPY NOTES:**

1. AT TIME OF DESIGN THE WATER SUPPLY CANNOT SUPPORT DRY-PIPE PROTECTION OF THE PROPOSED EXTERIOR CANOPY WITH THE 30% INCREASED SPRINKLER DESIGN AREA. BEFORE THIS OPTION CAN BE EXERCISED THE UTILITY WATER SUPPLY WILL NEED TO BE CORRECTED. (AS OF DESIGN THERE ARE UTILITY COMPANY PUMPS OFF-LINE AND A VALVE CLOSED SERVING THE STREET MAIN.)
2. IF THE WATER SUPPLY ISSUE IS RESOLVED AND THE CANOPY OPTION IS EXERCISED, THE FOLLOWING NOTES APPLY.
3. A NEW FIRE FLOW TEST WOULD NEED TO BE PERFORMED TO VERIFY. THE UTILITY COMPANY WOULD NEED TO VERIFY IN WRITING THAT THE HIGHER FLOW CONDITIONS WILL BE MAINTAINED AS THE NORMAL CONDITION.
4. SEE BID OPTION NOTES ON FP001.
5. COORDINATE ADDITIONAL FIRE ALARM MONITORING BETWEEN TRADES.
6. COORDINATE NITROGEN GENERATOR WIRE / CIRCUIT SIZE WITH ELECTRICAL. LOCATE THE NITROGEN GENERATOR ON MEZZANINE OF LAB BUILDING WHERE SPRINKLER EQUIPMENT IS INDICATED.
7. DRY-PIPE SPRINKLERS MUST BE PROVIDED OVER AND UNDER THE CONNECTING WALKWAY BETWEEN BUILDINGS.
8. SLOPE PIPE AND PROVIDE LOW POINT DRAINS PER NFPA 13.
9. SEE ARCHITECTURAL ELEVATION VIEWS FOR CHANGES IN CANOPY ELEVATION.

## LEGEND

BID OPTION COVERED CANOPY / WALKWAY. OHG1 0.1 / 1,950 FT2 (1,500 FT2 + 30%) DRY-PIPE SYSTEM SERVED FROM NEW LAB BUILDING. PROVIDE DRY-PIPE PROTECTION OVER AND UNDER THE CONNECTING WALKWAY. INSIDE THE WALKWAY IS TO BE PROTECTED FROM WET-PIPE SYSTEM IN HEADHOUSE.

8' 0 4' 8'
SCALE: 1/8" = 1'-0"




KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
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| | | | |

REVISIONS

Johnson McAdams
PROJECT DESIGNERS PLANNERS SURVEYING ENGINEERING
P.O. BOX 515, GREENWOOD, MISSISSIPPI 38930 (662) 455-6642

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SWL | PPM XXX |
| CHECKED BY BT/DW | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

BID OPTION #1 SPRINKLER DRY-PIPE LAB/OFFICE

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET CSFP101
96 OF 176

Registered Professional Engineer Fire Protection
CERTIFICATE NO. 37345
SCOTT WADE LACEY
5/20/26
ARIZONA USA

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May 19, 2026 - 4:42pm

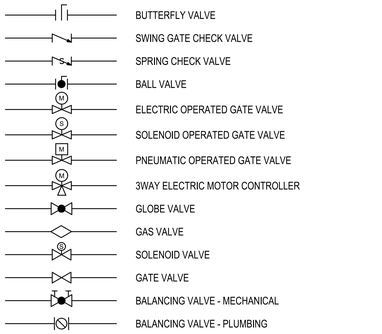
## PLUMBING ABBREVIATIONS:

| | |
|---|---|
| ° | DEGREES |
| Ø | DIAMETER |
| AC | AIR COMPRESSOR |
| AD | AIR DRYER |
| AFF | ABOVE FINISHED FLOOR |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| BFP | BACKFLOW PREVENTER |
| BTU | BRITISH THERMAL UNIT |
| CA | COMPRESSED AIR |
| CO | CLEANOUT |
| CW | COLD WATER (DOMESTIC) |
| DN | DOWN |
| DWV | DRAIN WASTE AND VENT |
| EMCS | ENERGY MANAGEMENT CONTROL SYSTEM |
| ET | EXPANSION TANK |
| EW | EYE WASH |
| EWC | ELECTRIC WATER COOLER |
| F | FARENHEIGHT |
| FCO | FLOOR CLEANOUT |
| FD | FLOOR DRAIN |
| FT | FOOT |
| GAS | NATURAL GAS |
| GCO | GROUND CLEANOUT |
| GPM | GALLONS PER MINUTE |
| GWH | GAS WATER HEATER |
| HP | HORSEPOWER |
| HW | HOT WATER (DOMESTIC) |
| HWCP | HOT WATER CIRCULATION PUMP |
| HWR | HOT WATER RETURN (DOMESTIC) |
| IMB | ICE MAKER BOX |
| IPC | INTERNATIONAL PLUMBING CODE |
| kW | KILLOWATT |
| KS | KITCHEN SINK |
| LV | LAVATORY |
| MAX | MAXIMUM |
| MIN | MINIMUM |
| MS | MOP SINK |
| NPT | NATIONAL PIPE TAPER |
| P | PLUMBING |
| PDI | PLUMBING AND DRAINAGE INSTITUTE |
| PSI | POUNDS PER SQUARE INCH |
| PVC | POLYVINYL CHLORIDE |
| RPZ | REDUCED PRESSURE ZONE |
| S | SANITARY SEWER |
| SH | SHOWER |
| SS | SAFETY SHOWER |
| SSEW | SAFETY SHOWER EYE WASH |
| TYP | TYPICAL |
| U/G | UNDERGROUND |
| UR | URINAL |
| V | VENT PIPING |
| VTR | VENT THROUGH ROOF |
| W/ | WITH |
| W/O | WITHOUT |
| WC | WATER CLOSET |
| WCO | WALL CLEANOUT |
| WH | WALL HYDRANT |
| WHA | WATER HAMMER ARRESTOR |

## GENERAL PLUMBING NOTES:

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS (DO NOT SCALE FOR LOCATIONS). THE CONTRACTOR MUST PROVIDE A COMPLETE AND FUNCTIONAL PLUMBING SYSTEM AS INDICATED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES AND CONTROLS AS INDICATED.
2. THE PLUMBING CONTRACTOR MUST REVIEW THE DRAWINGS OF OTHER TRADES AS PART OF THIS CONTRACT FOR ADDITIONAL WORK REQUIRED AND FOR COORDINATION OF PLUMBING WORK FOR OPERATIONS OF OR CONNECTIONS TO OTHER TRADES.
3. REMOVE AND CAP CONNECTING UTILITIES (WATER, DRAINAGE, POWER, GAS, ETCETERA) AS INDICATED OR NECESSARY FOR FUTURE RECONNECTION.
4. CONTRACTOR MUST EMPLOY WORKMEN WHO ARE TRAINED AND EXPERIENCED IN NECESSARY SKILLS TO PERFORM PLUMBING AND PLUMBING DEMOLITION WORK.
5. CONTRACTOR MUST USE APPROPRIATE TOOLS AND MUST NOT IMPART EXCESSIVE VIBRATIONS TO THE EXISTING STRUCTURE OR OTHER BUILDING COMPONENTS.
6. MAKE OFFSETS AND TRANSITIONS TO COORDINATE WITH OTHER TRADES WITHOUT ANY ADDITIONAL EXPENSE TO THE OWNER. CONTRACTOR MUST PROVIDE COORDINATION DRAWINGS OF TRADES.
7. ALL NEW & DEMOLISHED PIPING PENETRATIONS TO THE BUILDING ENVELOPE MUST BE FULLY SEALED WATER TIGHT.
8. CONTRACTOR MUST FIELD VERIFY EXACT LOCATIONS AND POINTS OF CONNECTIONS TO THE EXISTING UTILITIES (DOMESTIC WATER & SANITARY SEWER, NATURAL GAS, ETCETERA).
9. REFER TO SPECIFICATIONS, SHEET NOTES, DETAILS AND SCHEDULES FOR ADDITIONAL REQUIREMENTS PERTAINING TO THE PLUMBING WORK.
10. ALL WORK (MATERIALS, EQUIPMENT, DEVICES, COMPONENTS, SYSTEMS, SUPPORTS, ETCETERA) MUST COMPLY WITH THE REQUIREMENTS OF ALL CODES, CODE AMENDMENTS, AND ORDINANCES AS USED, ADOPTED AND/OR ENFORCED BY THE LOCAL JURISDICTION, COUNTY AND STATE IN WHICH THE PROJECT IS LOCATED. WHERE INSPECTIONS ARE REQUIRED BY C.O., WORK MUST NOT BE CONCEALED UNTIL INSPECTIONS AND TESTS ARE COMPLETED AND ACCEPTED. REFER TO SPECIFICATIONS FOR APPLICABLE CODES.
11. SCHEDULES, NOTES OR SPECIFICATIONS MAY REFERENCE "BASIS OF DESIGN" INFORMATION REGARDING A SPECIFIC MANUFACTURER OR MODEL NUMBER. SUCH INFORMATION IS PROVIDED SO AS TO ESTABLISH A STANDARD OF PERFORMANCE, QUALITY, FEATURES AND OPTIONS (SEE SCHEDULES AND SPECIFICATIONS). THE INTENT IS NOT TO LIMIT COMPETITION, EQUIVALENT EQUIPMENT OF OTHER MANUFACTURERS MUST BE ACCEPTABLE PROVIDED SUCH EQUIPMENT EQUALS OR EXCEEDS THE BASIS OF DESIGN EQUIPMENT IN PERFORMANCE, QUALITY, FEATURES AND OPTIONS WHETHER SPECIFIED, SCHEDULED OR NOTED.
12. ALL EQUIPMENT FURNISHED FOR THIS PROJECT MUST COMPLY WITH THE "BUY AMERICAN ACT".
13. ALL WORK IMUST BE FABRICATED AND/OR ERECTED USING CONTRACTOR'S FIELD MEASUREMENTS FOR PROPER COORDINATION WITH WORK OF OTHER TRADES.
14. ALL CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENTS OR GEOMETRICAL RELATIONSHIPS OF THE WORK. THEY ARE NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, SEQUENCE, DEVICE, OPTION, FITTING, OR COMPONENT. DO NOT SCALE DRAWINGS.
15. INFORMATION AND COMPONENTS SHOWN ON DIAGRAMS OR DETAILS, BUT NOT SHOWN ON PLANS, AND VICE VERSA, MUST BE PROVIDED AS IF EXPRESSLY REQUIRED BY BOTH.
16. EXCEPT WHERE INDICATED OTHERWISE, THE NOTATION OR DESCRIPTION OF ANY ITEM IN THE CONTRACT DOCUMENTS CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM, WHETHER OR NOT THIS INSTRUCTION IS EXPLICITLY STATED.
17. ALL WORK MUST BE INSTALLED SO AS MAINTAIN ANY "UL" ASSEMBLY RATINGS, FIRE RATINGS OR SMOKE BARRIER CAPABILITIES OF WALLS, PARTITIONS, FLOORS AND ROOF. SEAL AROUND AND PLACE UL RATED FIRE-STOP MATERIAL AT ANY PENETRATION OR DISTURBANCE OF SUCH ASSEMBLIES. COORDINATE WITH ARCHITECTURAL PLANS AND CONTRACTOR.
18. COORDINATE PLACEMENT OF ALL WORK WITH OTHER TRADES. DO NOT LOCATE, POSITION OR INSTALL ANY WORK IN SUCH A WAY THAT SYSTEM COMPONENTS OR ACCESS DOORS WILL BE INACCESSIBLE, UNUSABLE OR UN-MAINTAINABLE AFTER CONSTRUCTION IS COMPLETED. COMPLY WITH MANUFACTURER'S MINIMUM RECOMMENDED SERVICE CLEARANCES.
19. UNLESS OTHERWISE INDICATED, ALL WORK IS TO BE SUPPORTED FROM STRUCTURE ABOVE, FROM WALLS, FROM COLUMNS, OR FROM THE FLOOR. DO NOT USE THE INSTALLED WORK OF OTHER TRADES, OR WORK RELATED TO ANY SUPPORT SYSTEMS FOR SUPPORT FOR OTHER TRADES.
20. PROVIDE PIPE TRANSITIONS AS REQUIRED AT FIXTURE CONNECTIONS WHERE PIPE SIZES INDICATED DIFFER FROM THE FIXTURE CONNECTION SIZE.
21. PROVIDE EQUIPMENT ACCESS PANELS FOR ALL EQUIPMENT AND VALVES THAT ARE LOCATED ABOVE HARD CEILINGS, IN WALLS, OR BEHIND SURFACES THAT ARE NOT REMOVABLE. ACCESS PANELS MUST BE 18"X18" MINIMUM UNLESS OTHERWISE NOTED. LOCATE ACCESS PANELS AS CLOSE AS POSSIBLE TO DEVICE NEEDING ACCESS, BUT NO FARTHER THAN 24" AWAY.
22. DOMESTIC WATER PIPING MUST BE TYPE L RIGID COPPER.
23. NATURAL GAS PIPING MUST BE SCHEDULE 40 BLACK STEEL PIPING AND SCHEDULE 40 THREADED FITTINGS.
24. ALL ACCESS PANELS PROVIDED UNDER THIS CONTRACT MUST BE PERMANENTLY LABELED TO IDENTIFY THE EQUIPMENT, DEVICE, OR SYSTEM SERVED. LABELS MUST BE CLEAR, LEGIBLE, AND DURABLE, AND MUST BE INSTALLED ON THE EXTERIOR FACE OF THE PANEL USING A MECHANICALLY FASTENED NAMEPLATE OR APPROVED PRINTED LABELING SYSTEM. LABEL CONTENT MUST CORRESPOND TO THE ASSOCIATED EQUIPMENT TAG OR DESCRIPTION AS INDICATED ON THE CONTRACT DOCUMENTS. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
25. ALL SANITARY PIPING MUST BE OF THE TYPE CHEMICAL RESISTANT. WHEN CONNECTING TO EXISTING UTILITIES, THE DESIGN INTENT IS TO MATCH EXISTING PIPE AND FITTING TYPE UNLESS SPECIFIED OTHERWISE.

VALVES





Johnson M'Adams PSM P.A.
ARCHITECTS/ENGINEERS PLANNING SURVEYING
P.O. BOX 513, GREENWOOD, MISSISSIPPI (662) 455-6943


| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

# PLUMBING GENERAL NOTES, ABBREVIATIONS, AND LEGEND

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | REH |
| EPM | WN |
| DESIGNER | SME |
| PPM | XXX |
| CHECKED BY | DRL |
| SAFETY & HEALTH | CM |
| JOB # | 5825 |
| REAL PROPERTY | JS |

STATE OF LOUISIANA
JAMES M. SMITH
05/20/26
PROFESSIONAL ENGINEER

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET P-001
97 OF 176

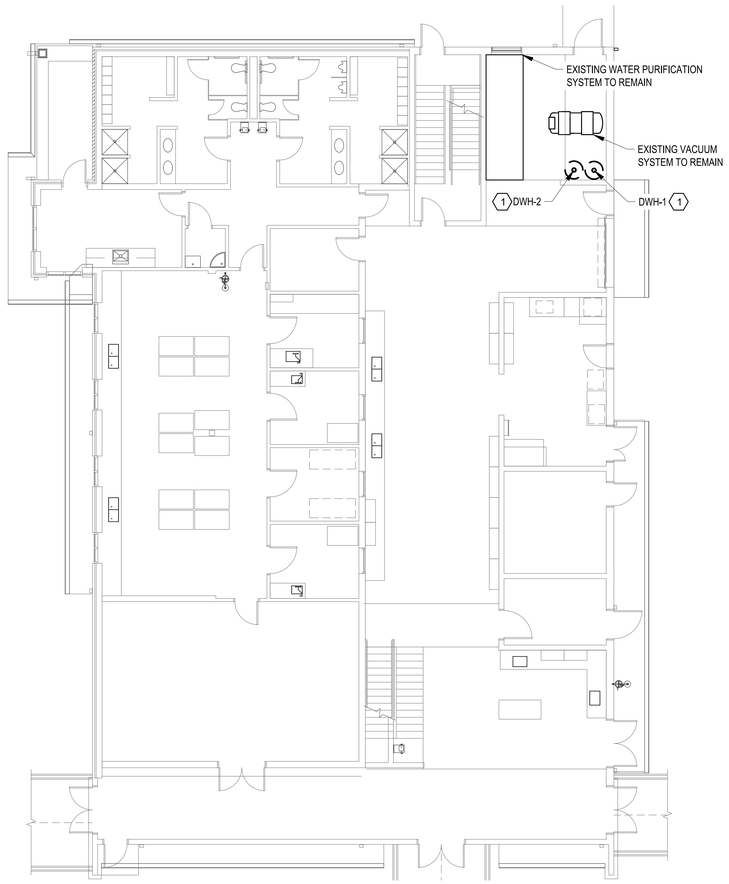
J:\greenwood\2025_Job\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-001.dwg
May 19, 2026 - 7:29pm

KEYED NOTES

1. DEMOLISH EXISTING DOMESTIC WATER HEATER. DEMOLISH AND TEMPORARILY CAP EXISTING UTILITIES, VENT, FLUE, AND DRAIN AS NEEDED FOR THE REMOVAL AND REPLACEMENT OF EXISTING WATER HEATER.

LEGEND

POINT OF CONNECTION

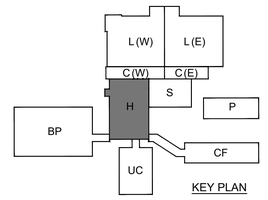



1 PD101 FIRST FLOOR PLUMBING DEMOLITION PLAN

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

PLAN NORTH

TRUE NORTH




KEY PLAN

0 4' 8' 16' 24'

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

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson McAdams

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR PLUMBING DEMOLITION PLAN

PROJECT NO. XXX

DATE 05/20/2026

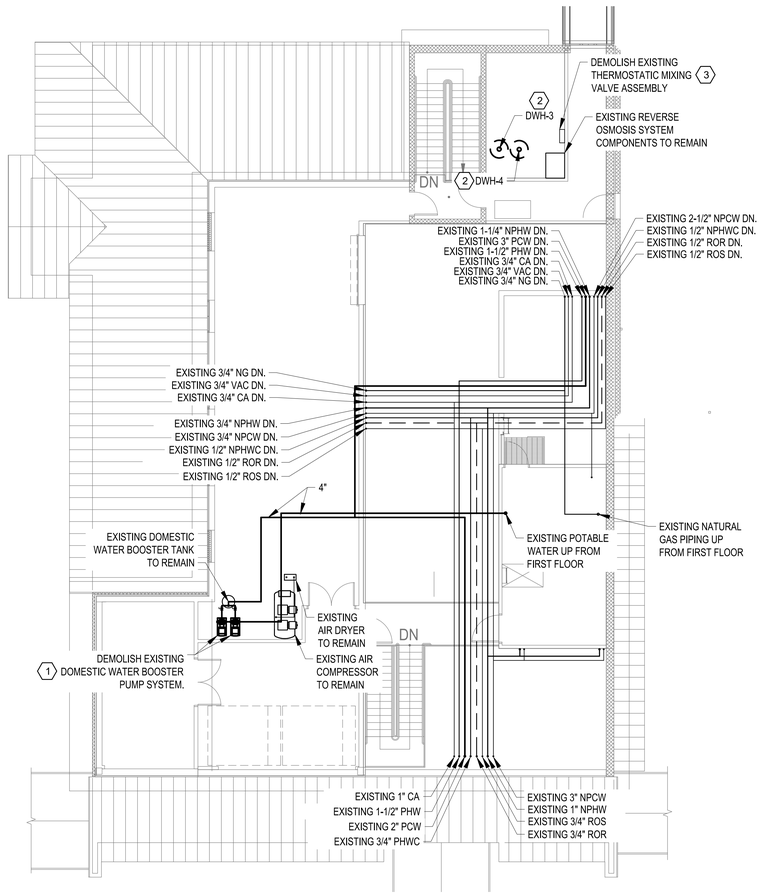
AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET PD101

98 OF 176

STATE OF LOUISIANA
LARRY W. ENGLE
LICENSED PROFESSIONAL ENGINEER
05/20/26

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\PD101.dwg
May 19, 2026 - 7:31pm




1 PD102 SECOND FLOOR PLUMBING DEMOLLITION PLAN

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

PLAN NORTH

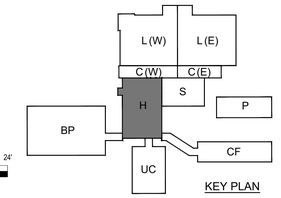
TRUE NORTH

## KEYED NOTES

1. DEMOLISH EXISTING DOMESTIC WATER BOOSTER PUMP SYSTEM UP TO EXISTING BALL VALVES. SEE DETAIL 2/P-501.
2. DEMOLISH EXISTING DOMESTIC WATER HEATER. DEMOLISH AND TEMPORARILY CAP EXISTING UTILITIES, VENT, FLUE, AND DRAIN AS NEEDED FOR THE REMOVAL AND REPLACEMENT OF EXISTING WATER HEATER.
3. TEMPORARILY CAP EXISTING PIPING FOR RECONNECTION. EXISTING

LEGEND

POINT OF CONNECTION




KEY PLAN

0 4' 8' 16' 24'

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

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson Mirmiran & Adams, PLLC — ARCHITECTS | ENGINEERS | PLANNERS — P.O. BOX 913, GREENWOOD, MISSISSIPPI — (662) 455-6643

STATE OF LOUISIANA — Lynne M. Vaughn — 05/20/26 — PROFESSIONAL ENGINEER

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

SECOND FLOOR PLUMBING DEMOLITION PLAN

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | REH |
| EPM | WN |
| DESIGNER | SME |
| PPM | XXX |
| CHECKED BY | DRL |
| SAFETY & HEALTH | CM |
| JOB # | 5825 |
| REAL PROPERTY | JS |

| | |
|---|---|
| PROJECT NO. | XXX |
| DATE | 05/20/2026 |

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET PD102



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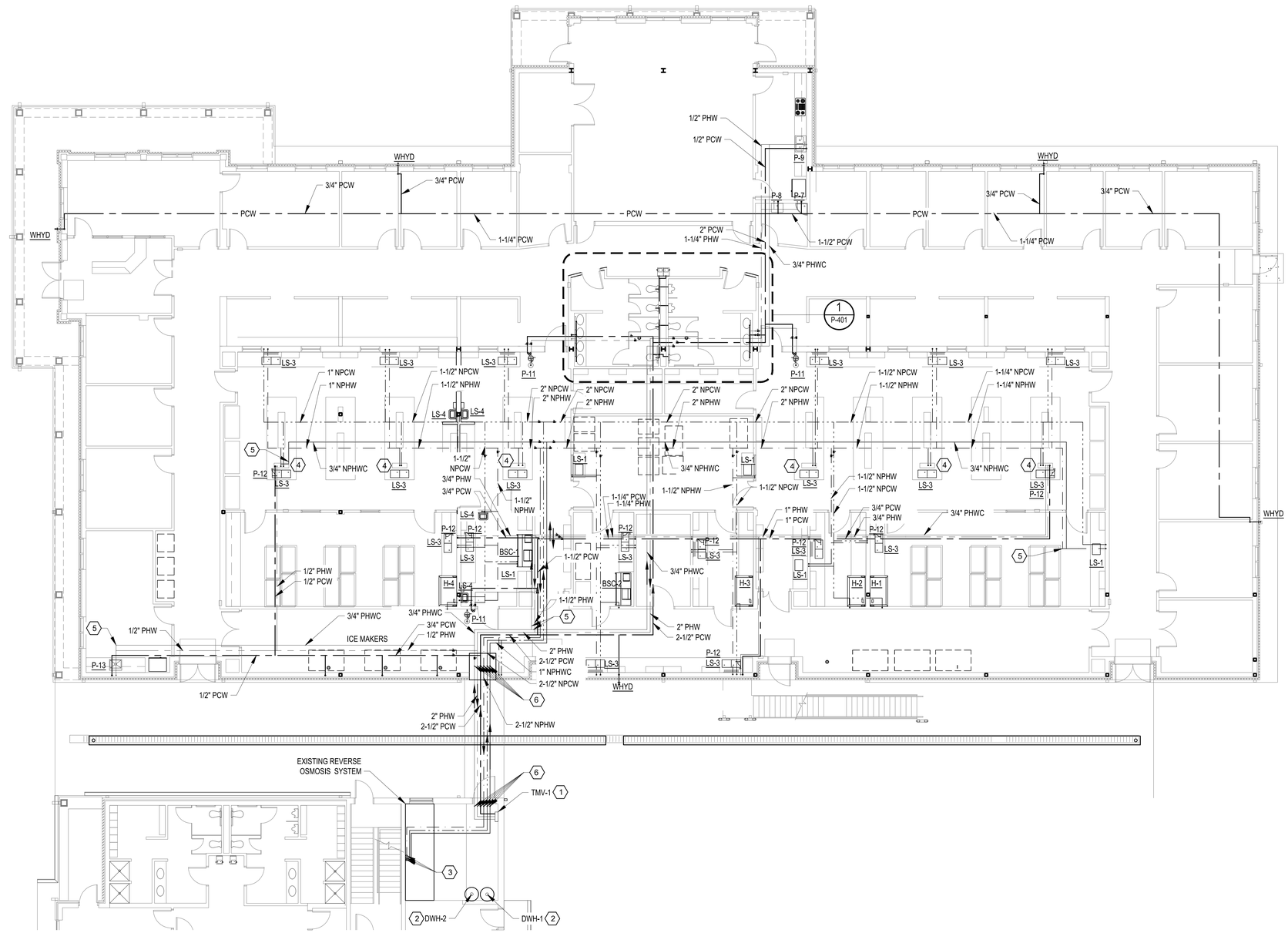
May 19, 2026 - 7:59pm

PIPING LEGEND:

- POTABLE HOT WATER CIRCULATING (PHWC)
- POTABLE HOT WATER (PHW)
- POTABLE COLD WATER (PCW)
- NON-POTABLE HOT WATER (NPCW)
- NON-POTABLE COLD WATER (NPHW)
- NON-POTABLE HOT WATER CIRCULATING (NPHWC)




1 P-101 FIRST FLOOR PLUMBING PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH / TRUE NORTH

## KEYED NOTES

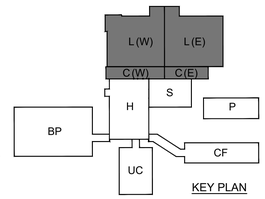
1. PROVIDE TMV-1 ON WALL AND CONNECT PIPING TO EXISTING POINT OF CONNECTION LOCATED IN EXISTING HEADHOUSE. EXISTING POINT OF CONNECTION MUST BE FIELD VERIFIED. PROVIDE PUMP AND ROUTE TO EXISTING HTWR PIPING. EXISTING CIRCULATION PUMP MUST REMAIN.
2. PROVIDE DOMESTIC WATER HEATER IN PLACE OF EXISTING. RECONNECT TO ALL EXISTING UTILITIES AND REUSE EXISTING EQUIPMENT PAD, VENT, FLUE, DRAIN, AND ALL APPURTENANCES.
3. ROUTE PIPING UP TO TMV-2 ON SECOND FLOOR. PROVIDE PUMP AND ROUTE TO EXISTING HTWR PIPING. EXISTING CIRCULATION PUMP MUST REMAIN.
4. ROUTE LAB UTILITY PIPING FROM CEILING DOWN THROUGH COLUMN CHASE TO SERVE LAB SINKS.
5. PROVIDE BALANCING VALVE SET TO 2.5 GPM.
6. ROUTE PIPING DOWN TO PIPING CHASE BELOW BRIDGE. SEE PLUMBING DETAIL SECTION 4/P-503.

## GENERAL NOTES

1. FOR ALL LAB SINK CONNECTIONS REFER TO DETAILS 7/P-501 AND P/P-501.

LEGEND
POINT OF CONNECTION

0 4' 8' 16' 24'
SCALE: 1/8"= 1'-0"




KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | EPM |
| REH | WN |
| DESIGNER | PPM |
| SME | XXX |
| CHECKED BY | SAFETY & HEALTH |
| DRL | CM |
| JOB # | REAL PROPERTY |
| 5825 | JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR PLUMBING PLAN

| | | |
|---|---|---|
| PROJECT NO. XXX | AGRICULTURAL RESEARCH SERVICE<br>FACILITIES ENGINEERING BRANCH<br>5106 SUNNYSIDE AVENUE<br>BELTSVILLE, MD 20705-5100 | SHEET P-101 |
| DATE 05/20/2026 | | 100 OF 176 |

STATE OF LOUISIANA — 05/20/26 — PROFESSIONAL ENGINEER

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May 19, 2026 - 7:59pm

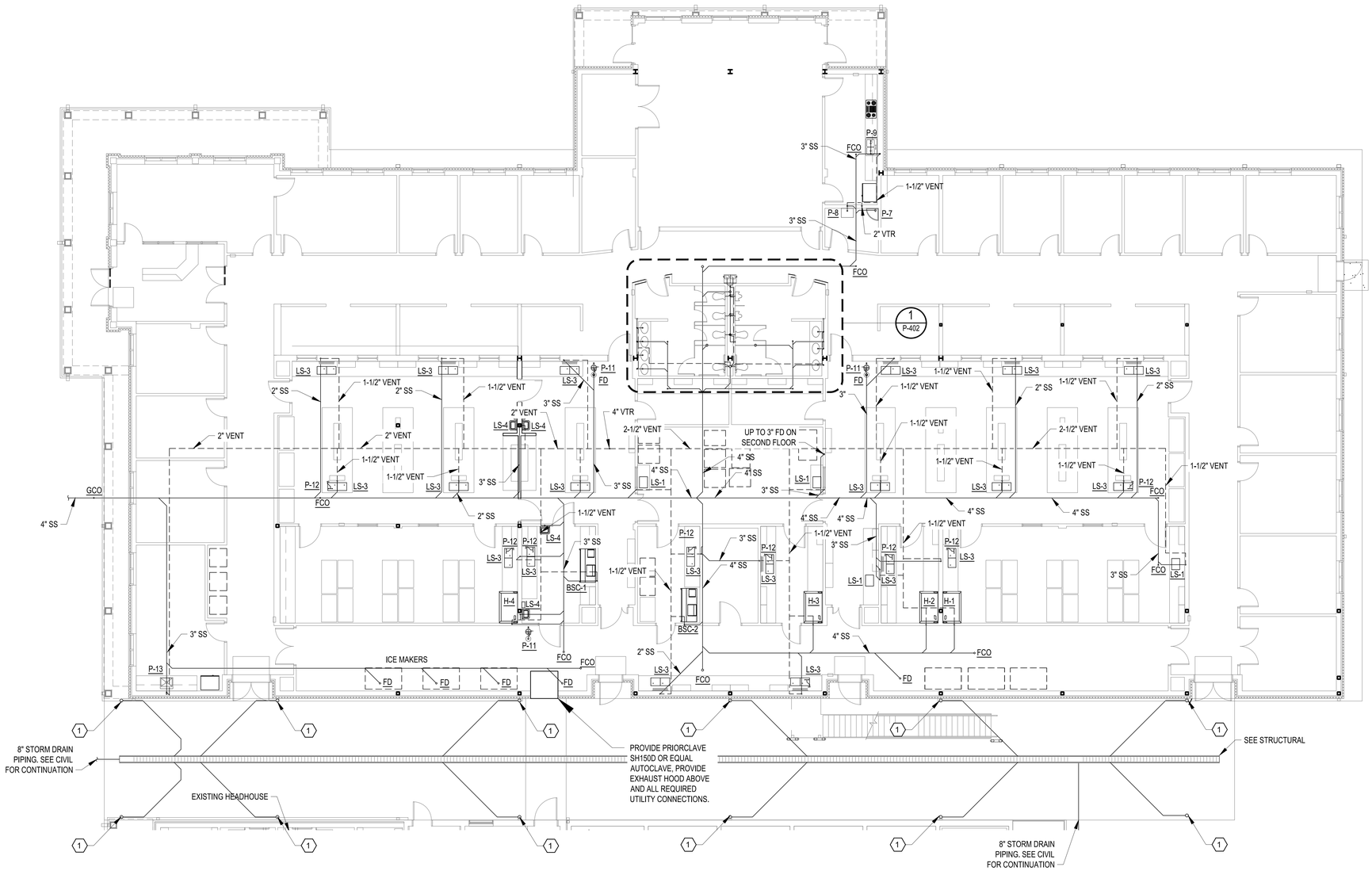
PIPING LEGEND:

SANITARY WASTE (SS)

SANITARY VENT (VENT)

KEYED NOTES

1. DOWN SPOUT ROUTED BELOW GRADE TO TRENCH DRAIN. SEE ARCH. FOR ABOVE GRADE GUTTER SYSTEM.

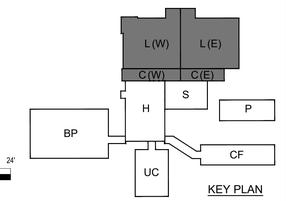



1 P-102 FIRST FLOOR DRAIN AND VENT PLAN

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

PLAN NORTH

TRUE NORTH




KEY PLAN

0 4' 8' 16' 24'

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

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson McAdams

A-E FIRM USDA

| | |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR DRAIN AND VENT PLAN

PROJECT NO. XXX

DATE 05/20/2026

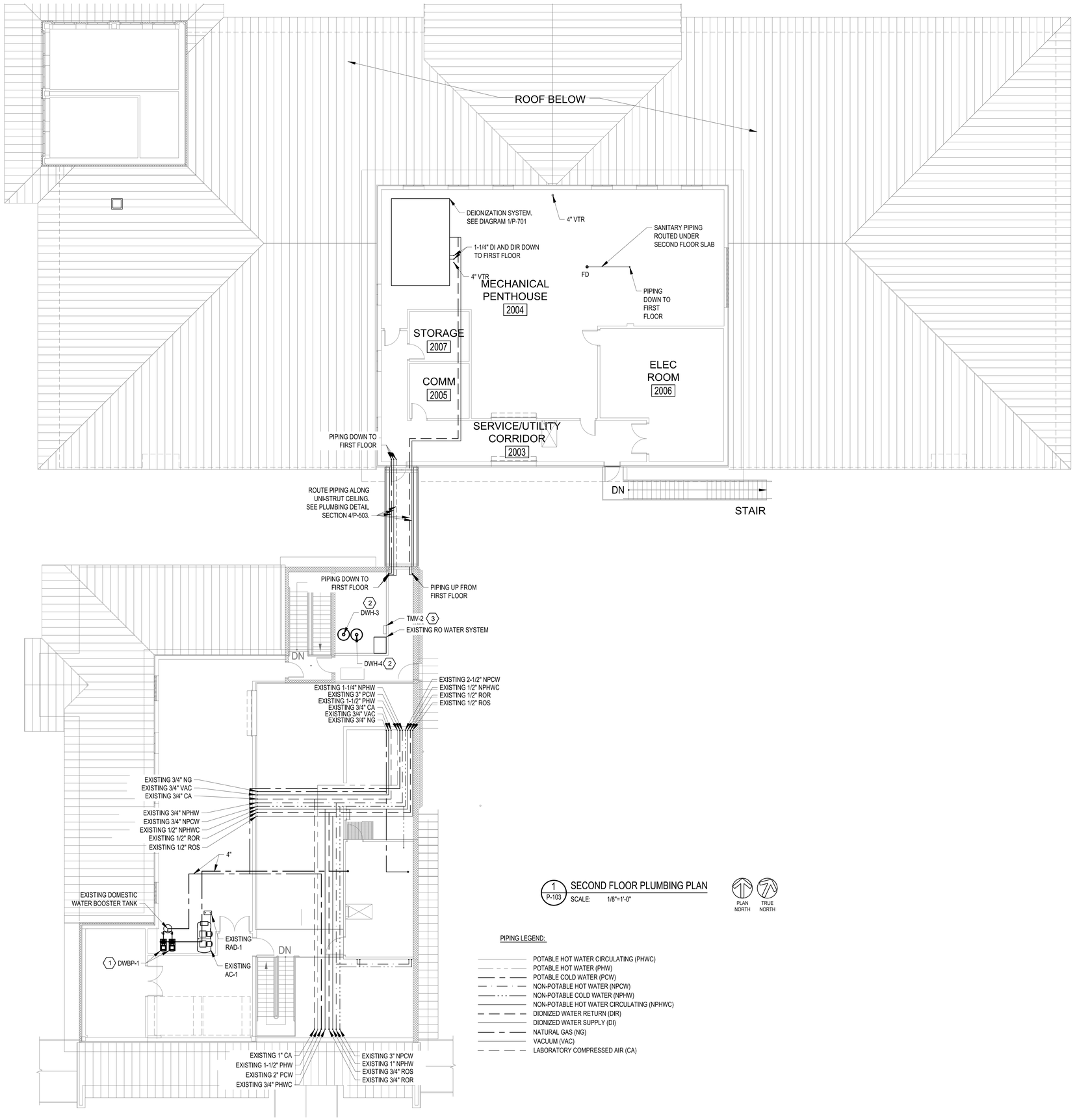
AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

SHEET P-102

101 OF 176

STATE OF LOUISIANA
DANIEL M. ENGLE
LICENSED PROFESSIONAL ENGINEER
05/20/26

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-102.dwg
May 19, 2026 - 7:31pm




1 P-103 SECOND FLOOR PLUMBING PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH TRUE NORTH

PIPING LEGEND:

- POTABLE HOT WATER CIRCULATING (PHWC)
- POTABLE HOT WATER (PHW)
- POTABLE COLD WATER (PCW)
- NON-POTABLE HOT WATER (NPCW)
- NON-POTABLE COLD WATER (NPHW)
- NON-POTABLE HOT WATER CIRCULATING (NPHWC)
- DIONIZED WATER RETURN (DIR)
- DIONIZED WATER SUPPLY (DI)
- NATURAL GAS (NG)
- VACUUM (VAC)
- LABORATORY COMPRESSED AIR (CA)

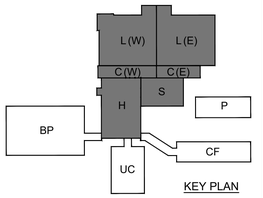
KEYED NOTES

1. LOCATE DOMESTIC WATER BOOSTER PUMP SYSTEM IN PLACE OF EXISTING. RECONNECT TO EXISTING BALL VALVES. SEE DETAIL 2/P-501.
2. PROVIDE DOMESTIC WATER HEATER IN PLACE OF EXISTING. RECONNECT TO ALL EXISTING UTILITIES AND REUSE EXISTING EQUIPMENT PAD, VENT, FLUE, DRAIN, AND ALL APPURTENANCES.
3. PROVIDE THERMOSTATIC MIXING VALVE AND ALL APPURTENANCES IN PLACE OF EXISTING. PROVIDE CONNECTION FOR PIPING ROUTED UP FROM FIRST FLOOR AND EXISTING CAPPED PIPING. PROVIDE RETURN PUMP AND ROUTE TO EXISTING HTWR PIPING. EXISTING CIRCULATION PUMP MUST REMAIN.
4. ROUTE EXPOSED PIPING ALONG WALL. COORDINATE PENETRATION WITH STRUCTURAL COMPONENTS AND WALL LOCATION.

LEGEND

POINT OF CONNECTION

0 4' 8' 16' 24'
SCALE: 1/8"= 1'-0"




KEY PLAN

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

The Johnson McAdams Firm P.A.
ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT
P.O. BOX 515, GREENWOOD, MISSISSIPPI - (662) 455-6943

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

SECOND FLOOR PLUMBING PLAN

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

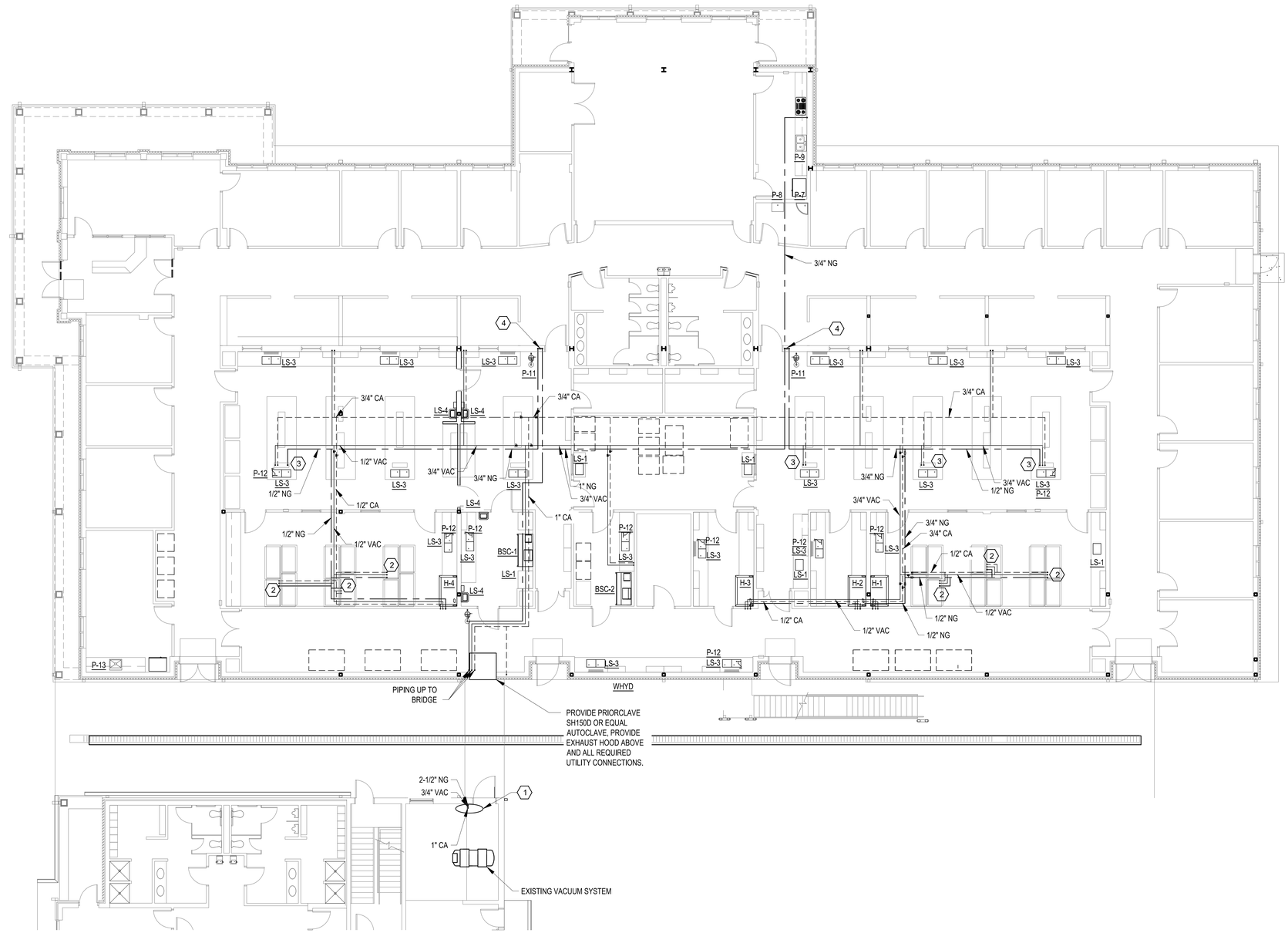
SHEET P-103
102 OF 176

STATE OF LOUISIANA
DANIEL W. ENGLE
LICENSED PROFESSIONAL ENGINEER
05/20/26

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-103.dwg
May 19, 2026 - 7:31pm

PIPING LEGEND:

- NATURAL GAS (NG)
- VACUUM (VAC)
- LABORATORY COMPRESSED AIR (CA)




1 P-104 FIRST FLOOR LAB UTILITIES PLAN
SCALE: 1/8"=1'-0"

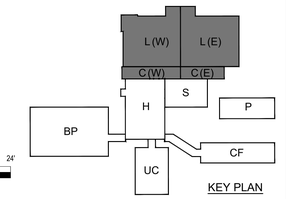
PLAN NORTH TRUE NORTH

KEYED NOTES

1. CONNECT PIPING TO EXISTING IN HEADHOUSE. EXISTING POINT OF CONNECTION MUST BE FIELD VERIFIED.
2. ROUTE 1/2" NG, CA, AND VAC DOWN TO SERVE WORK STATION. PIPING MUST BE ROUTED DOWN TO APPROXIMATELY 6'-6" ABOVE FINISHED FLOOR AND PROVIDED WITH INDIVIDUAL ISOLATION VALVE AND QUICK CONNECT FITTING TO ALLOW EASE OF USE.
3. ROUTE LAB UTILITY PIPING FROM CEILING DOWN THROUGH COLUMN CHASE.
4. SEE DETAIL 3/P-501 FOR LABORATORY GAS SHUT OFF VALVE CONNECTIONS.

LEGEND

POINT OF CONNECTION




KEY PLAN

0 4' 8' 16' 24'
SCALE: 1/8"= 1'-0"

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

THE Johnson, McAdams FIRM P.A.
ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT
P.O. BOX 515, GREENWOOD, MISSISSIPPI (662) 455-6663

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR LAB UTILITIES PLAN

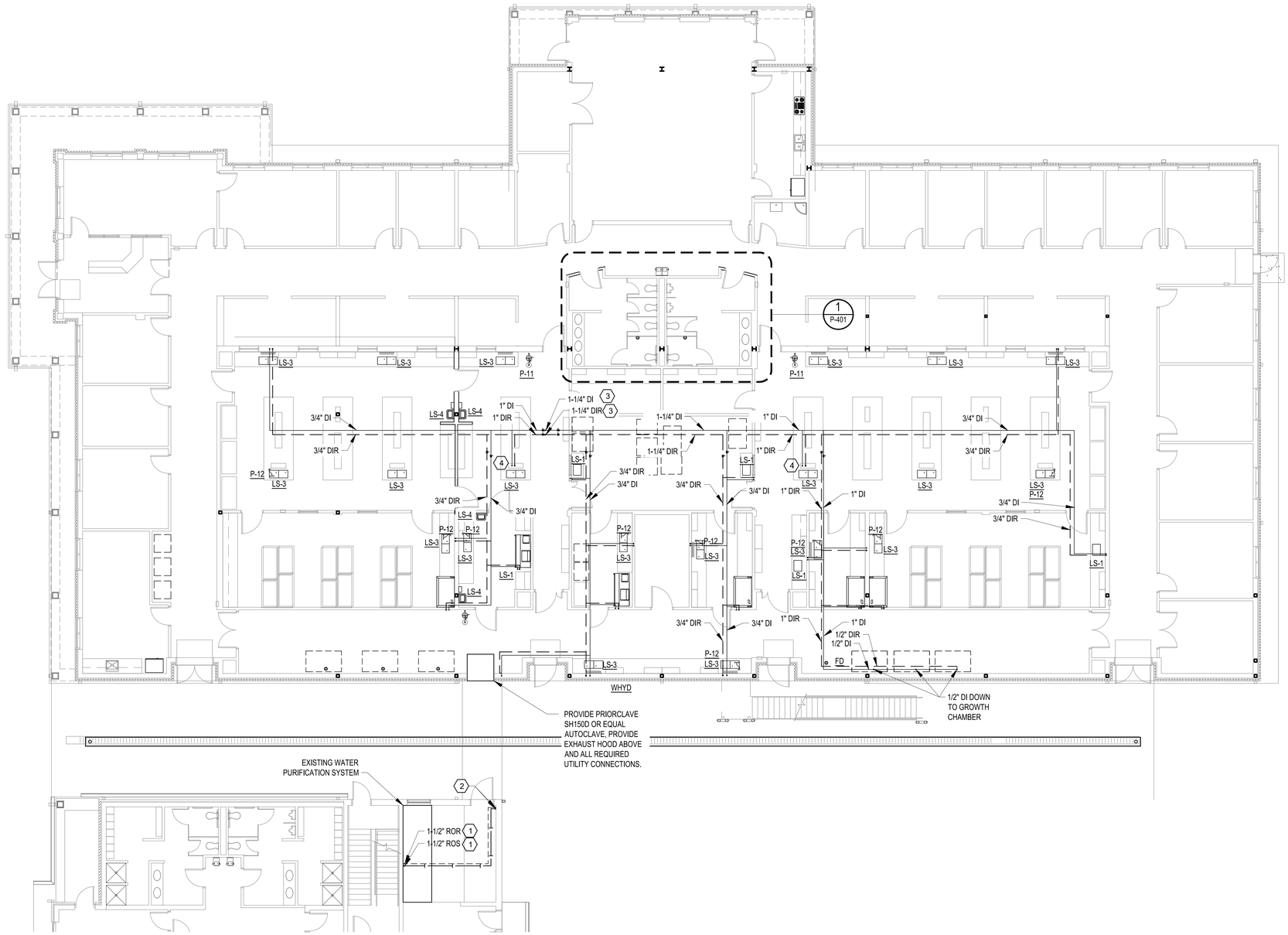
| PROJECT NO. | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET |
|---|---|---|
| XXX | | P-104 |
| DATE 05/20/2026 | | 103 OF 176 |

STATE OF LOUISIANA
DANIEL M. ENGLE
LICENSED PROFESSIONAL ENGINEER
05/20/26
PROFESSIONAL ENGINEER

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-104.dwg
May 19, 2026 - 7:31pm

PIPING LEGEND:

- DIONIZED WATER RETURN (DIR)
- DIONIZED WATER SUPPLY (DI)
- RO WATER RETURN (ROR)
- RO WATER SUPPLY (ROS)




1 P-101 FIRST FLOOR PLUMBING PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH TRUE NORTH

## KEYED NOTES

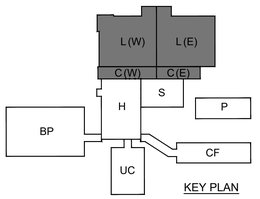
1. ROUTE AND CONNECT PIPING TO EXISTING ROS AND ROR PIPING IN VERTICAL RISE OF PIPING.
2. ROUTE PIPING UP TO SECOND FLOOR.
3. DI WATER PIPING TO BE ROUTED DOWN FROM WATER PURIFICATION SYSTEM.
4. ROUTE LAB UTILITY PIPING FROM CEILING DOWN THROUGH COLUMN CHASE TO SERVE LAB SINKS.

## GENERAL NOTES

1. FOR ALL LAB SINK CONNECTIONS REFER TO DETAILS P-501-7 AND P-501-9.

LEGEND

POINT OF CONNECTION




KEY PLAN

0 4' 8' 16' 24'
SCALE: 1/8"= 1'-0"

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson McAdams
PROFESSIONAL ENGINEERS PLANNING SURVEYING ENVIRONMENT
P.O. BOX 515, GREENWOOD, MISSISSIPPI 38935 (662) 455-6943

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

FIRST FLOOR PLUMBING PLAN

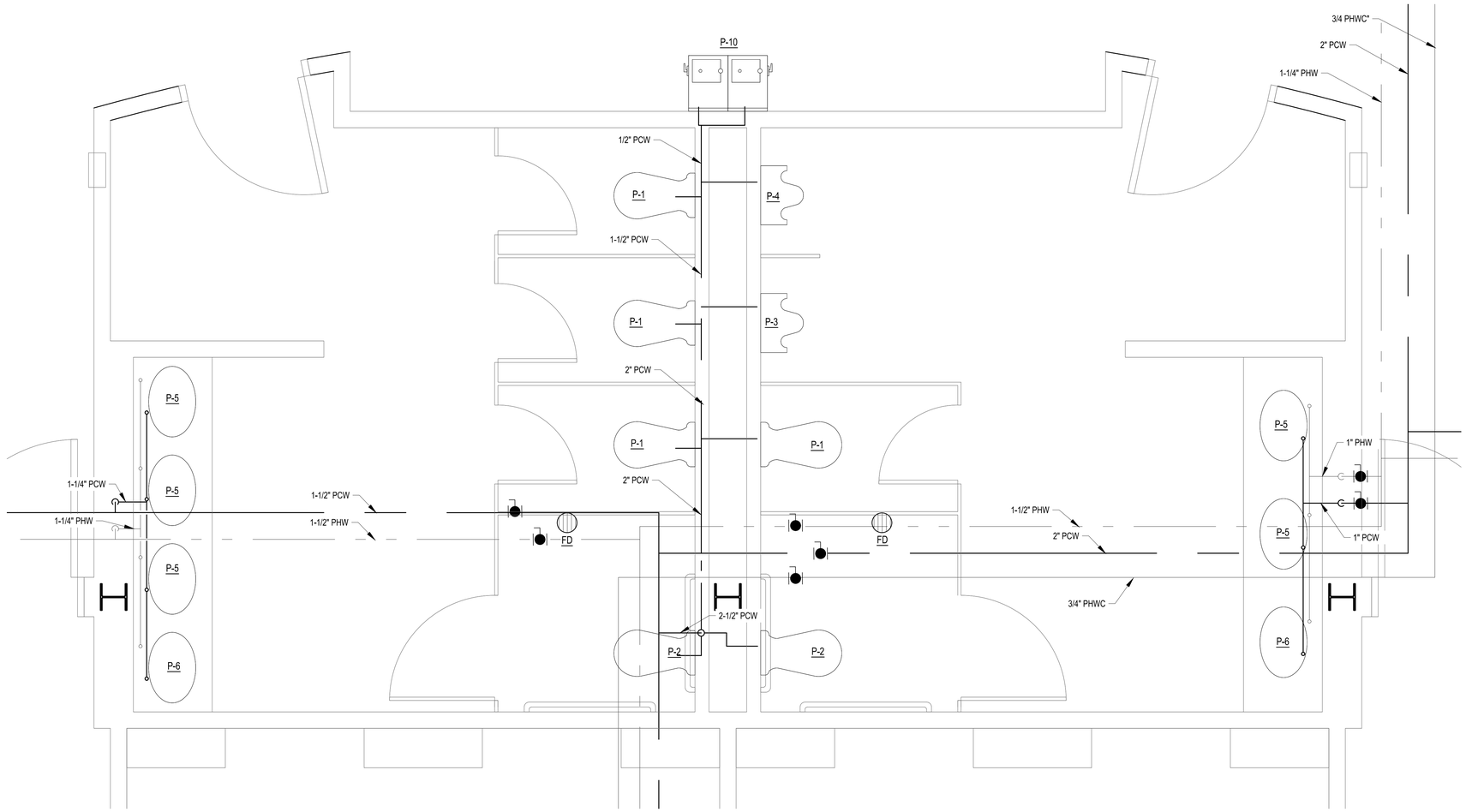
| PROJECT NO. | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET |
|---|---|---|
| XXX | | P-105 |
| DATE 05/20/2026 | | 104 OF 176 |

STATE OF LOUISIANA
DANIEL M. ENGLE
LICENSED PROFESSIONAL ENGINEER
05/20/26

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-105.dwg
May 19, 2026 - 7:31pm

PIPING LEGEND:

- POTABLE HOT WATER CIRCULATING (PHWC)
- POTABLE HOT WATER (PHW)
- POTABLE COLD WATER (PCW)




1 P-401 ENLARGED PLUMBING PLAN
SCALE: 3/4"=1'-0"

PLAN NORTH TRUE NORTH

0 1' 2' 4'
SCALE: 3/4"=1'-0"

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

Johnson, McAdams
ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT
P.O. BOX 515 GREENWOOD, MISSISSIPPI (662) 455-6943

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

ENLARGED PLUMBING PLAN

PROJECT NO. XXX
DATE 05/20/2026

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

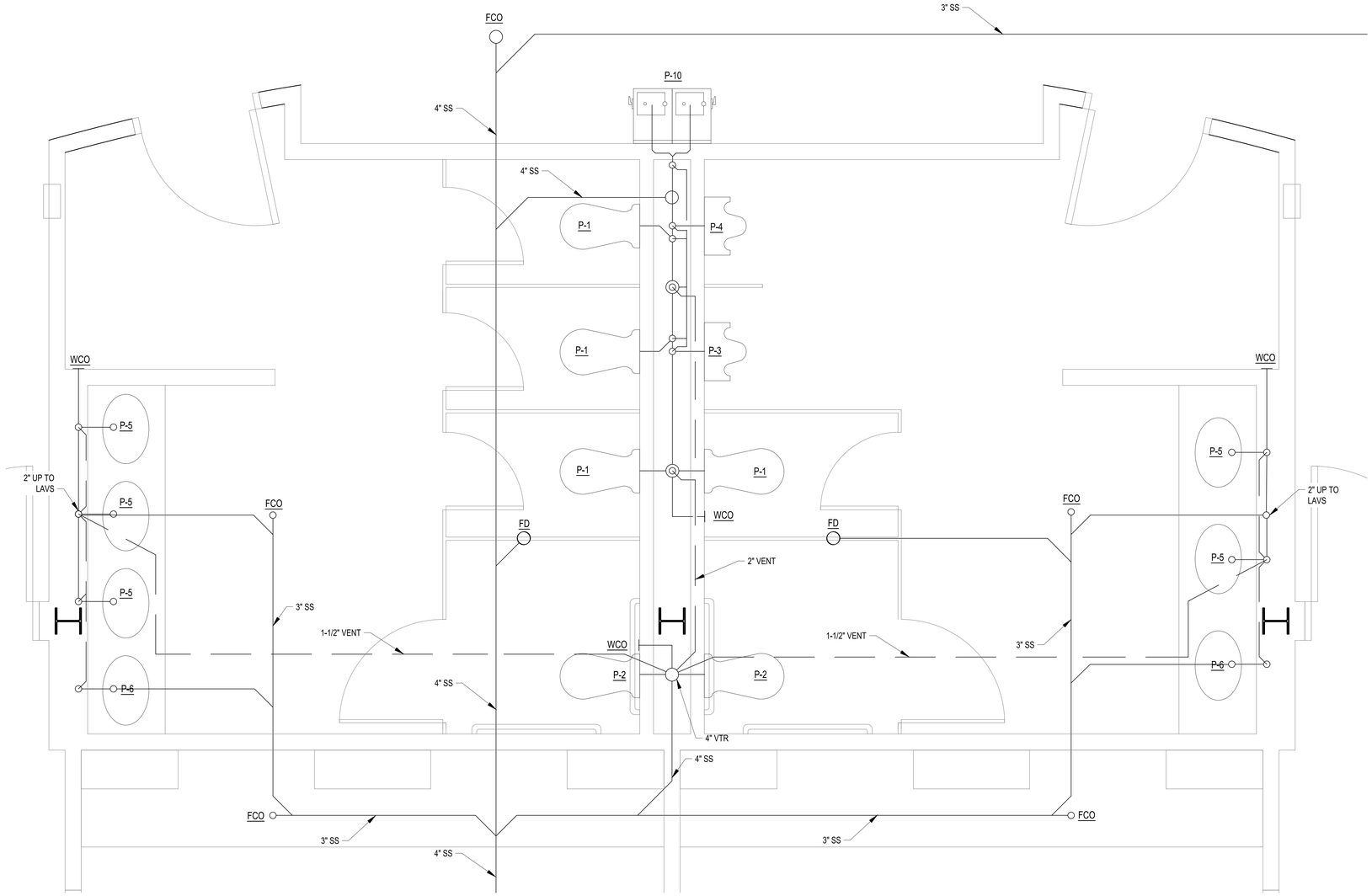
SHEET P-401
105 OF 176

STATE OF LOUISIANA
DANIEL M. ENGLE
LICENSED PROFESSIONAL ENGINEER
05/20/26

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-401.dwg
May 19, 2026 - 7:31pm

PIPING LEGEND:

———— SANITARY WASTE (SS)
– – – – – – – SANITARY VENT (VENT)




1 / P-402 ENLARGED DRAIN AND VENT PLAN

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

PLAN NORTH / TRUE NORTH

0 1' 2' 4'

SCALE: 3/4"=1'-0"


Johnson, Mirmiran & Thompson, Inc.
ARCHITECTS/ENGINEERS PLANNING SURVEYING MANAGEMENT
P.O. BOX 313, GREENWOOD, MISSISSIPPI - (662) 455-6422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| | | | |

REVISIONS

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

ENLARGED DRAIN AND VENT PLAN

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | REH |
| EPM | WN |
| DESIGNER | SME |
| PPM | XXX |
| CHECKED BY | DRL |
| SAFETY & HEALTH | CM |
| JOB # | 5825 |
| REAL PROPERTY | JS |

STATE OF LOUISIANA — DANIEL M. KNOLL — LICENSE NO. 41477 — 05/20/26 — PROFESSIONAL ENGINEER

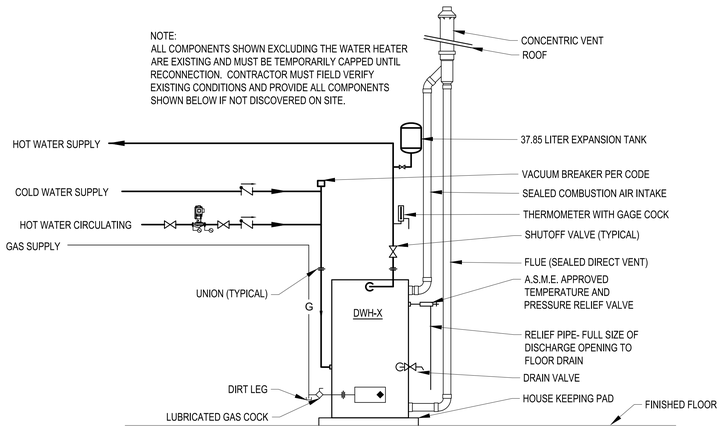
| | |
|---|---|
| PROJECT NO. | XXX |
| DATE | 05/20/2026 |

AGRICULTURAL RESEARCH SERVICE
FACILITIES ENGINEERING BRANCH
5106 SUNNYSIDE AVENUE
BELTSVILLE, MD 20705-5100

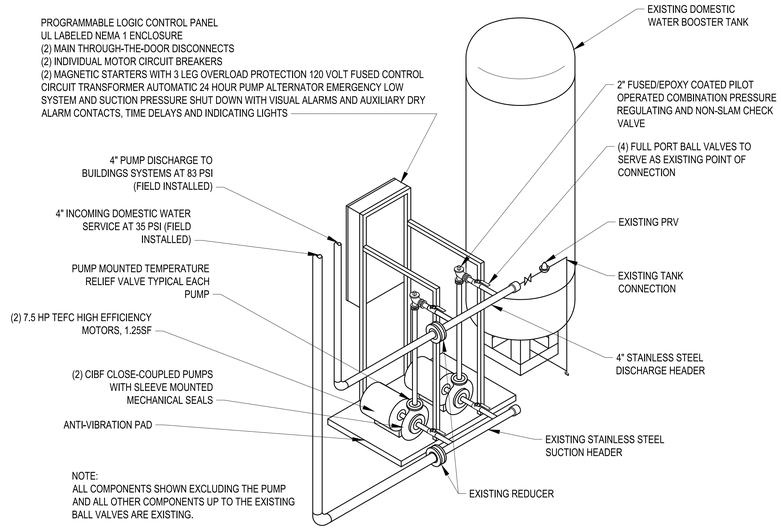
SHEET P-402



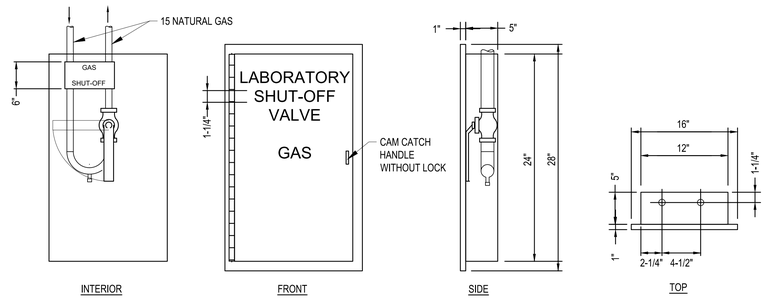

J:\Jgreenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-402.dwg
May 19, 2026 - 3:25pm




1 P-501 GAS FIRED WATER HEATER DETAIL
SCALE: N.T.S




2 P-501 WATER PRESSURE BOOSTER SYSTEM DETAIL
SCALE: N.T.S




NOTE:
CABINET SHALL BE STEEL HOLLOW METAL RIGID TUBULAR CONSTRUCTION, WELDED AND GROUND SMOOTH. 20 GAUGE TUBULAR STEEL DOOR WITH 18 GAUGE STEEL FRAME. CONTINUOUS STEEL HINGE WITH BRASS PIN. FINISH WITH BAKED ON WHITE PRIME POLYESTER COATING.

3 P-501 TYPICAL LABORATORY VALVE BOX DETAIL
SCALE: N.T.S




4 P-501 COUNTER MOUNTED LAVATORY DETAIL (P-5)
SCALE: N.T.S




5 P-501 FLOOR CLEANOUT DETAIL (FCO)
SCALE: N.T.S

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

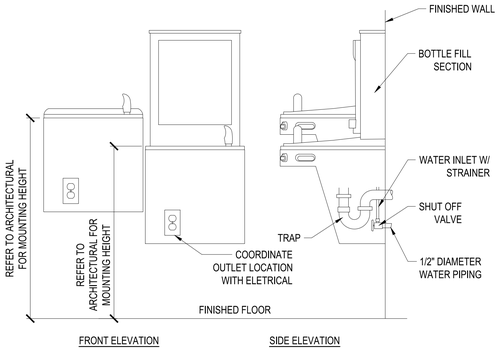



NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE DIAPHRAGM TYPE WATER HAMMER ARRESTOR AT ALL QUICK-CLOSING VALVES.

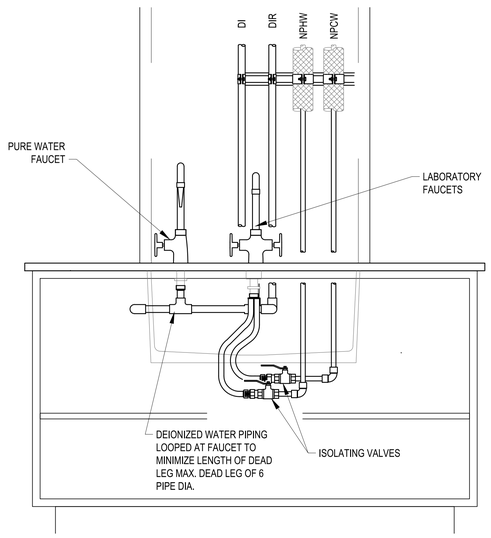
6 P-501 WATER HAMMER ARRESTOR (WHA) SCHEMATIC
SCALE: N.T.S




7 P-501 LABORATORY FAUCET CONNECTION DETAIL (LS-3)
SCALE: N.T.S




8 P-501 BI-LEVEL DRINKING FOUNTAIN WITH BOTTLE FILLING STATION (P-10)
SCALE: N.T.S




9 P-501 LABORATORY FAUCET CONNECTION DETAIL (LS-1)
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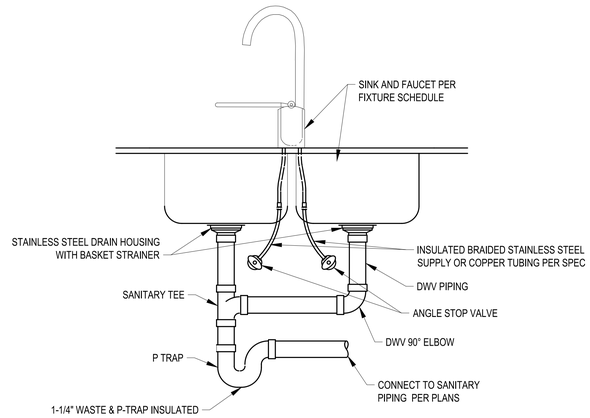


10 P-501 TWO COMPARTMENT SINK DETAIL (P-9)
SCALE: N.T.S

J:\greenwood\2025 Jobs\5825 USDA Sugarcane Research Lab Rooms LA\07 Working Folder\Mech\P-501.dwg
May 19, 2026 - 7:39pm

| NO. | DATE | BY | DESCRIPTION |
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P.O. BOX 313, GREENWOOD, MISSISSIPPI - (662) 455-6343

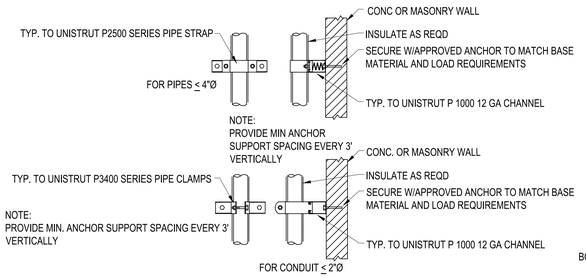
| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER | EPM |
| REH | WN |
| DESIGNER | PPM |
| SME | XXX |
| CHECKED BY | SAFETY & HEALTH |
| DRL | CM |
| JOB # | REAL PROPERTY |
| 5825 | JS |

STATE OF LOUISIANA — DARRIN L. REED — 05/20/26 — PROFESSIONAL ENGINEER

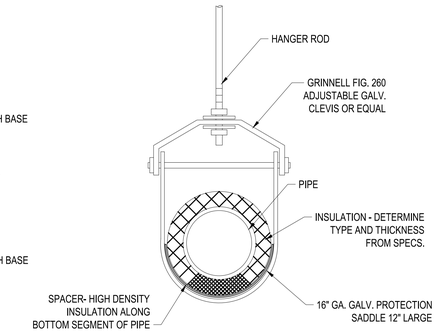
USDA Agricultural Research Service
USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

PLUMBING DETAILS

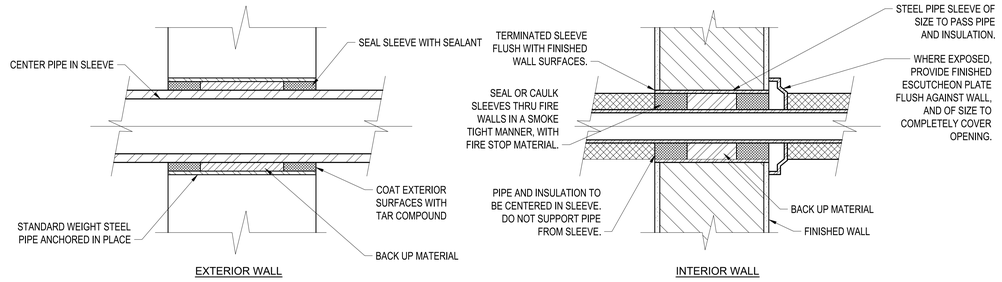
| PROJECT NO. | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET |
|---|---|---|
| XXX | | P-501 |
| DATE | | 107 OF 176 |
| 05/20/2026 | | |



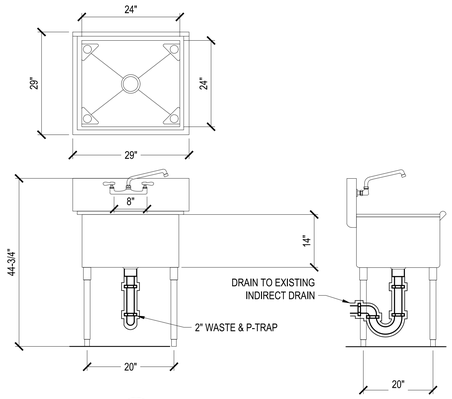

1 P-502 PIPING WALL SUPPORT DETAIL
SCALE: N.T.S



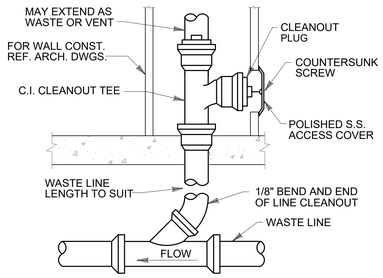

2 P-502 HANGER FOR INSULATED PIPE
SCALE: N.T.S



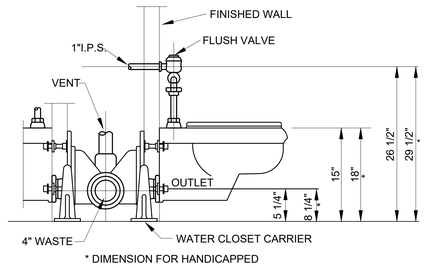

3 P-502 TYPICAL PIPE SLEEVES THROUGH WALLS
SCALE: N.T.S



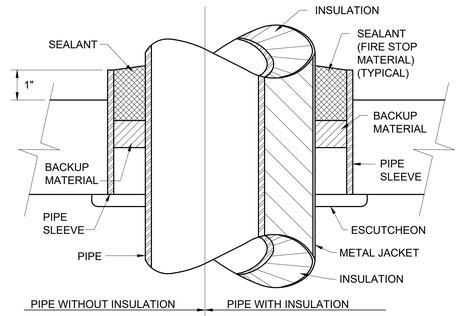

4 P-502 WORK SINK DETAIL (P-8)
SCALE: N.T.S



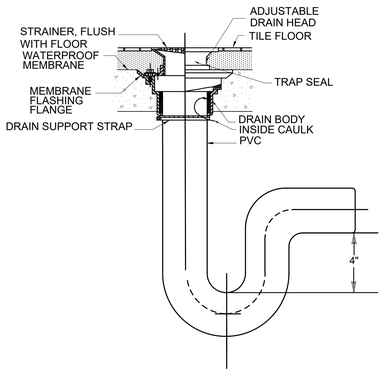

5 P-502 WALL CLEAN OUT DETAIL
SCALE: N.T.S



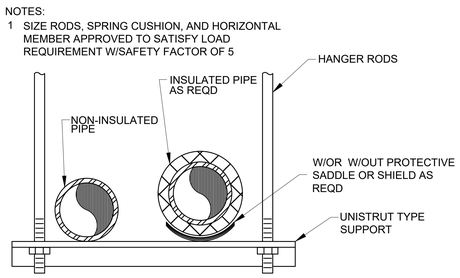

6 P-502 DOUBLE WALL MOUNTED WATER CLOSET DETAIL (P-1 & P-2)
SCALE: N.T.S



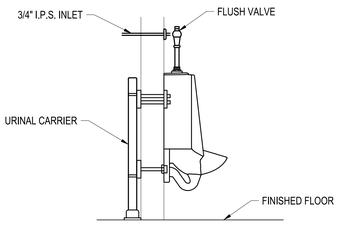

7 P-502 TYPICAL PIPE SLEEVE THRU FLOOR
SCALE: N.T.S



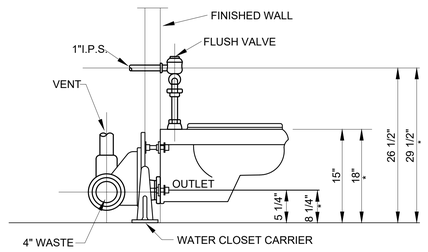

8 P-502 FLOOR DRAIN WITH TRAP SEAL DETAIL
SCALE: N.T.S




9 P-502 TRAPEZE HANGER DETAIL
SCALE: N.T.S




10 P-502 WALL HUNG URINAL DETAIL (P-3)
SCALE: N.T.S




6 P-502 SINGLE WALL MOUNTED WATER CLOSET DETAIL (P-1 & P-2)
SCALE: N.T.S

| NO. | DATE | BY | DESCRIPTION |
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ARCHITECTS/ENGINEERS PLANNERS SURVEYING ENVIRONMENT
P.O. BOX 51-5 LAKE CHARLES, LOUISIANA 70605 (337) 433-5443

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | EPM |
| REH | WN |
| DESIGNER | PPM |
| SME | XXX |
| CHECKED BY | SAFETY & HEALTH |
| DRL | CM |
| JOB # | REAL PROPERTY |
| 5825 | JS |

STATE OF LOUISIANA
DAVID R. LANDRY
NUMBER 36,746
05/20/26
PROFESSIONAL ENGINEER

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

PLUMBING DETAILS

| | | |
|---|---|---|
| PROJECT NO. XXX | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET P-502 |
| DATE 05/20/2026 | | 108 OF 176 |

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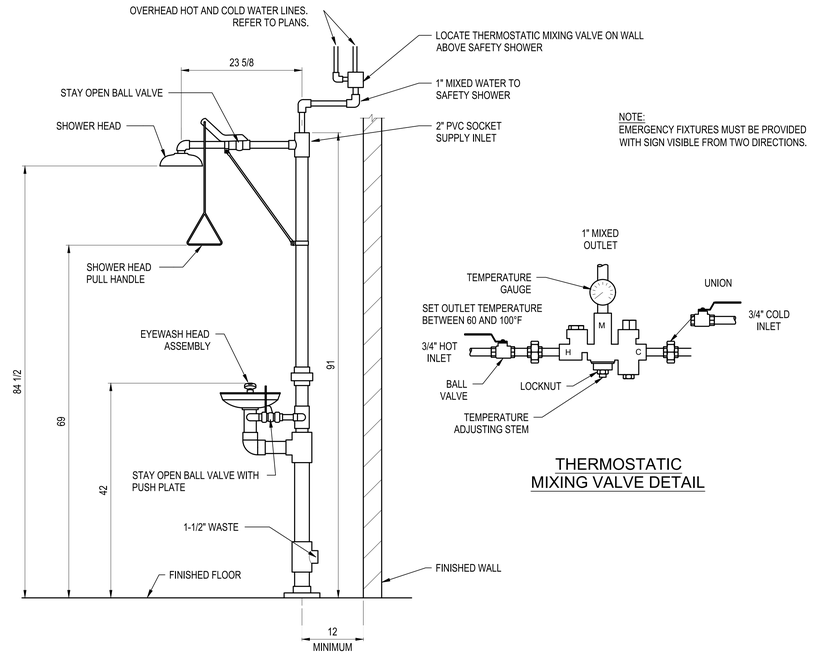
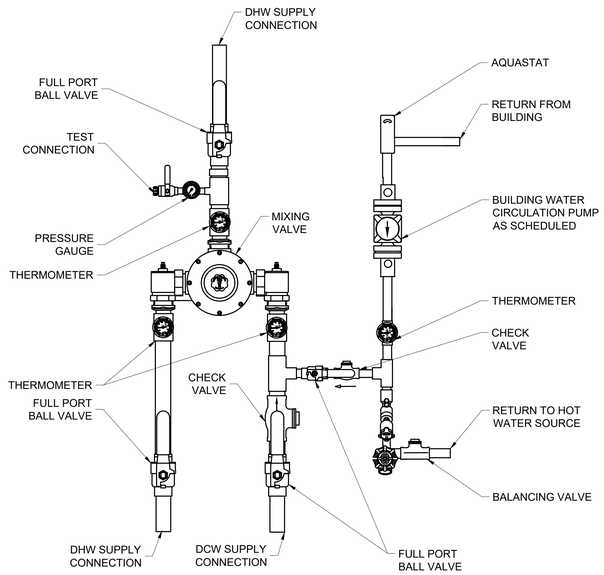
May 19, 2026 - 2:29pm




1 P-503 COMBINATION SAFETY SHOWER/EYEWASH DETAIL (P-11)
SCALE: N.T.S




2 P-503 THERMOSTATIC MIXING VALVE CONNECTION DETAIL
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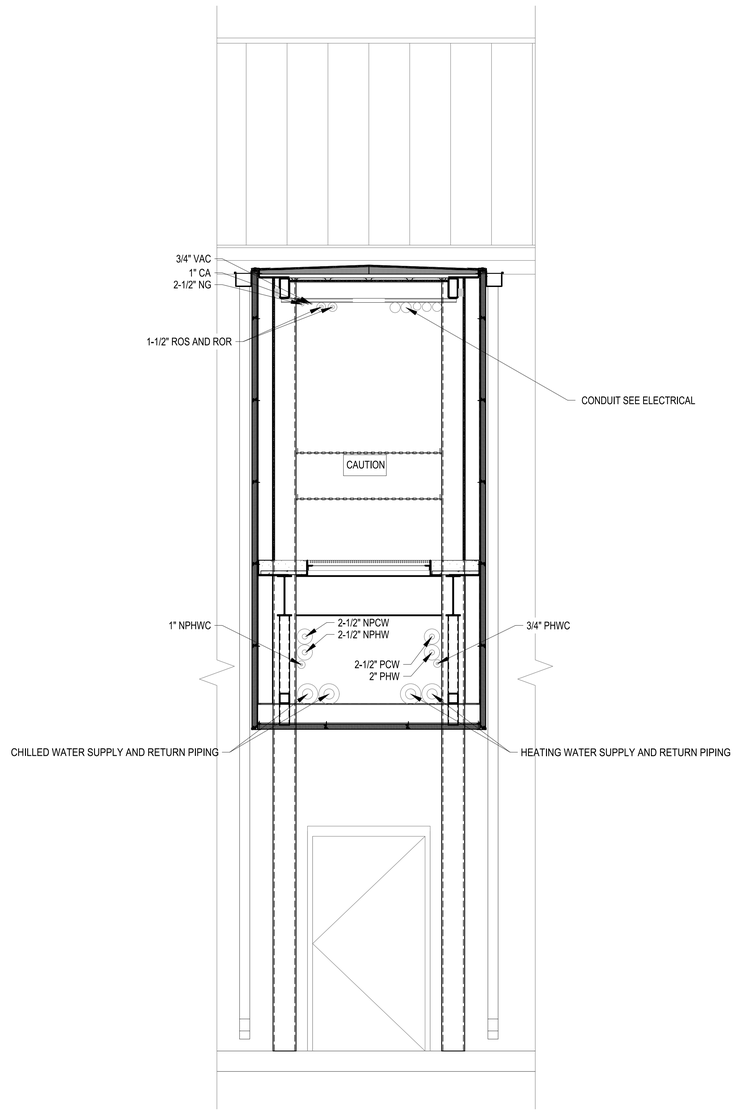
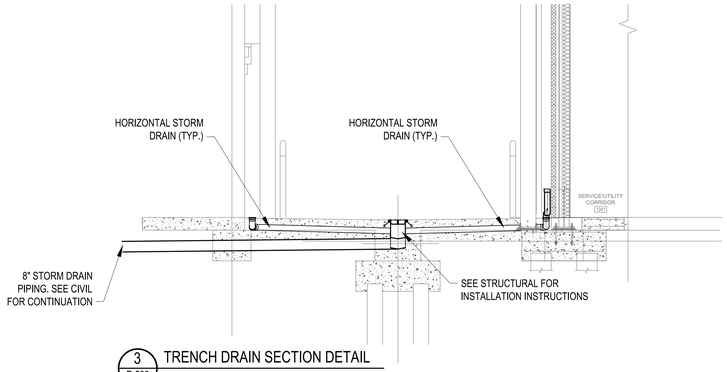
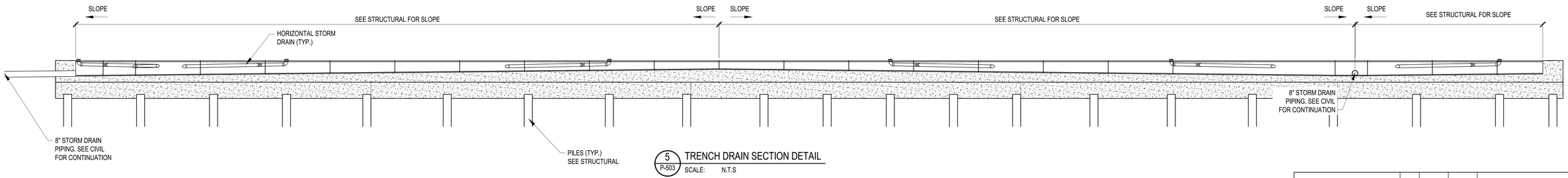



4 P-503 PIPING SECTION DETAIL
SCALE: N.T.S




3 P-503 TRENCH DRAIN SECTION DETAIL
SCALE: N.T.S




5 P-503 TRENCH DRAIN SECTION DETAIL
SCALE: N.T.S

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

REVISIONS

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USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

PLUMBING DETAILS

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | REH |
| EPM | WN |
| DESIGNER | SME |
| PPM | XXX |
| CHECKED BY | DRL |
| SAFETY & HEALTH | CM |
| JOB # | 5825 |
| REAL PROPERTY | JS |

STATE OF LOUISIANA — DAVID R. LEBLANC — LICENSED NO. 34282 — 05/20/26 — PROFESSIONAL ENGINEER

| PROJECT NO. | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET |
|---|---|---|
| XXX | | P-503 |
| DATE 05/20/2026 | | 109 OF 176 |

J:\greenwood\2025_Jobs\5825 USDA Sugarcane Research Lab Houma LA\07 Working Folder\Mech\P-503.dwg
May 19, 2026 - 7:39pm

## PLUMBING FIXTURE SCHEDULE

| MARK | DESCRIPTION | CW | HW | MIN. WASTE | MIN. TRAP | VENT | REMARKS |
|---|---|---|---|---|---|---|---|
| P-1 | WALL-MOUNTED WATER CLOSET | 1" | - | 4" | - | 2" | KOHLER KINGSTON ULTRA K-84325-SS-0 OR EQUAL WALL-MOUNTED, ABA COMPLIANT, FLUSH VALVE, 1.28 GPF (KOHLER MACH MANUAL K-80TM00N10) OR EQUAL. PROVIDE W/WHITE SEAT. PROVIDE WITH WALL CARRIER. |
| P-2 | ADA COMPLIANT WATER CLOSET | 1" | - | 4" | - | 2" | KOHLER KINGSTON ULTRA K-84325-SS-0 OR EQUAL WALL-MOUNTED, ABA COMPLIANT, FLUSH VALVE, 1.28 GPF (KOHLER MACH MANUAL K-80TM00N10) OR EQUAL. PROVIDE W/WHITE SEAT. INSTALL PER ADA REQUIREMENTS. SEE ARCH. FOR MOUNTING HEIGHT AND ACCESSORIES. PROVIDE WITH WALL CARRIER. |
| P-3 | WALL-MOUNTED URINAL | 3/4" | - | 2" | 2" | 2 | KOHLER K-4991-ET OR EQUAL VITREOUS CHINA WALL MOUNTED URINAL AND KOHLER K-76319 OR EQUAL MANUAL 1 GPF FLUSHAMETER. PROVIDE WITH WALL CARRIER. |
| P-4 | ADA COMPLIANT URINAL | 3/4" | - | 2" | 2" | 2 | KOHLER K-4991-ET VITREOUS CHINA WALL MOUNTED URINAL AND KOHLER K-76319 MANUAL 1 GPF FLUSHAMETER. INSTALL PER ADA REQUIREMENTS. SEE ARCH. FOR MOUNTING HEIGHT, AND ACCESSORIES. PROVIDE WITH WALL CARRIER. |
| P-5 | LAVATORY- COUNTER MOUNTED | 1/2" | 1/2" | 2" | 1-1/4" | 1-1/4" | KOHLER PENNINGTON K-2196-8 OR EQUAL DROP-IN VITREOUS CHINA LAVATORY WITH OVERFLOW. PROVIDE WITH KOHLER CORALAIS K-15199-4NDRA OR EQUAL 4" CENTERSET FAUCET, 0.5 FPM AERATOR, POLISHED CHROME FINISH, INTEGRAL POINT OF USE THERMOSTATIC MIXING VALVE. |
| P-6 | ADA COMPLIANT LAVATORY | 1/2" | 1/2" | 2" | 1-1/4" | 1-1/4" | KOHLER PENNINGTON K-2196-8 OR EQUAL DROP-IN VITREOUS CHINA LAVATORY WITH OVERFLOW. PROVIDE WITH KOHLER CORALAIS K-15199-4NDRA OR EQUAL 4" CENTERSET FAUCET, 0.5 FPM AERATOR, POLISHED CHROME FINISH, INTEGRAL POINT OF USE THERMOSTATIC MIXING VALVE. INSTALL PER ADA REQUIREMENTS. SEE ARCH. FOR MOUNTING HEIGHT. |
| P-7 | SERVICE SINK | 1/2" | 1/2" | 2" | 2" | 1-1/2" | PROVIDE TERAZZO SERVICE SINK EQUAL TO ACORN TCR-28. PROVIDE WITH AMERICAN STANDARD 8350.243 OR EQUAL 5 GPM FAUCET, CAST BRASS SPOUT WITH VACUUM BREAKER. PROVIDE WITH STRAINER AND DRAIN. |
| P-8 | UTILITY SINK | 1/2" | 1/2" | 1-1/2" | 2" | 1-1/2" | ELKAY 14-1C24X24-0X OR EQUAL 16 GUAGE STAINLESS STEEL SINGLE COMPARTMENT UTILITY SINK WITH STAINLESS STEEL LEGS AND ADJUSTABLE FEET. PROVIDE WITH KOHLER PURIST K-7549-4 OR EQUAL WALL-MOUNT FAUCET, POLISHED CHROME FINISH. ANCHOR SINK TO WALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. |
| P-9 | KITCHEN SINK | 1/2" | 1/2" | 1-1/2" | 2" | 1-1/2" | KOHLER VERSE K-5267-3 OR EQUAL 33" TOP MOUNT DOUBLE BOWL 18 GAUGE STAINLESS STEEL SINK. PROVIDE WITH SIGNATURE HARDWARE BEASLEY BRIDGE OR EQUAL FAUCET WITH PULL DOWN SPRING SPOUT, 1.75 GPM. |
| P-10 | BI-LEVEL DRINKING FOUNTAIN | 1/2" | - | 2" | 2" | 2" | 115 VOLT, 6 FULL LOAD AMP, 370 RATED WATT WALL MOUNTED FILTERED REFRIGERATED ELKAY LZSTL8WSLK BI-LEVEL ADA DRINKING FOUNTAIN WITH BOTTLE FILLER. |
| P-11 | EMERGENCY SHOWER/EYEWASH | 1-1/4" | - | - | - | - | FLOOR MOUNTED COMBINATION EMERGENCY SHOWER AND EYE/FACE WASH , GUARDIAN G1950 OR EQUAL, WITH 10" ABS SHOWER HEAD, STAINLESS STEEL EYEWASH BOWL, AND GALVANIZED STEEL PIPING. PROVIDE WITH THERMOSTATIC MIXING VALVE COMPLIANT WITH ANSI Z358.1. SEE DETAIL P-503-1 |
| P-12 | EMERGENCY EYEWASH | 3/4" | - | - | - | - | DECK MOUNTED BARRIER-FREE EMERGENCY EYEWASH, GUARDIAN GBF1849 OR EQUAL, WITH AUTOFLOW 90 DEGREE SWING-DOWN ACTIVATION, CHROME PLATED BRASS CONSTRUCTION, AND DUAL SPRAY HEADS. PROVIDE WITH THERMOSTATIC MIXING VALVE COMPLIANT WITH ANSI Z358.1. SEE DETAIL P-501-7 |
| P-13 | BREAK ROOM SINK | 1/2" | 1/2" | 1-1/2" | 2" | 1-1/2" | KOHLER K-RH23377-1PC OR EQUAL STAINLESS STEEL COUNTER MOUNTED SINK WITH KOHLER K-22972 OR EQUAL FAUCET. |
| WHYD | FREEZE PROOF WALL HYDRANT | 3/4" | - | - | - | - | PRIER C-144 NON-FREEZE, ANTI-SIPHON DESIGN WALL-HYDRANT. |
| FD | FLOOR DRAIN | - | - | - | 2" | 1-1/2" | ZURN ZN415 FLOOR DRAIN OR EQUAL. PROVIDE WITH DEEP SEAL TRAPS AND TRAP SEALS. SEE PLANS FOR SIZING |
| FC0 | FLOOR CLEANOUT | - | - | - | - | - | ZURN CO-PV3 OR EQUAL, ADJUSTABLE FLOOR CLEAN OUT, PVC 3" X 4" SOLVENT WELD BODY WITH BOTTOM OUTLET, CLEAN OUT PLUG, AND LIGHT DUTY NICKEL BRONZE OR STAINLESS STEEL STRAINER. SEE PLANS FOR SIZING. |
| WCO | WALL CLEANOUT | - | - | - | - | - | ZURN Z1446 DURA-COAT CAST IRON BODY, GAS AND WATERTIGHT ABS TAPERED THREAD PLUG FLOOR CLEANOUT OR EQUAL. PROVIDE WITH ROUND SMOOTH STAINLESS STEEL WALL ACCESS COVER WITH SECURING SCREW. SEE PLANS FOR SIZING. |

## THERMOSTATIC MIXING VALVE SCHEDULE

| MARK | SERVICE | BASIS OF DESIGN | CONNECTION SIZE | SETPOINT | MAX. PD PSI | MIN. GPM | MAX. GPM | REMARKS |
|---|---|---|---|---|---|---|---|---|
| TMV-1 | WH-1,WH-2 | LEONARD | SEE DETAIL | 131°F | 200 | 5 | 208 | SEE NOTES |
| TMV-2 | WH-3,WH-4 | LEONARD | SEE DETAIL | 131°F | 200 | 5 | 208 | SEE NOTES |

NOTES:

1. PROVIDE VALVE IN COMPLIANCE WITH ASSE 1017.
2. PROVIDE WITH PROTON CONTROL MONITORED BY BUILDING CONTROL SYSTEM.

## DOMESTIC HOT WATER CIRCULATION PUMP SCHEDULE

| MARK | SERVICE | BASIS OF DESIGN | FLOW RATE (GPM) | HEAD (FT) | VOLTS/ PHASE | MOTOR POWER | REMARKS |
|---|---|---|---|---|---|---|---|
| HWCP-1 | TMV-1 | TACO | 7.5 | 10 | 115/1 | 1/8 HP | SEE NOTES |
| HWCP-2 | TMV-2 | TACO | 5.0 | 10 | 115/1 | 1/8 HP | SEE NOTES |

NOTES:

1. PUMP SUPPORTED BY HOT WATER PIPING.
2. BUILT IN CHECK VALVE.
3. DIRECT DRIVE.
4. STAINLESS STEEL CONSTRUCTION.
5. ALL MOVING PARTS CONTAINED IN REPLACEABLE MAINTENANCE CARTRIDGE.

## LABORATORY FIXTURE SCHEDULE

| MARK | DESCRIPTION | NPCW | NPHW | DIONIZED WATER | MIN. WASTE | MIN. TRAP | VENT | REMARKS |
|---|---|---|---|---|---|---|---|---|
| LS-1 | LAB SINK | 1/2" | 1/2" | 1/2" | 1-1/2" | - | 1-1/2" | DURCON D45 OR EQUAL EPOXY RESIN DROP-IN LABORATORY SINK OF CHEMICAL RESISTANT CONSTRUCTION. PROVIDE WITH ONE ZURN Z8264B4-XL OR EQUAL LABORATORY FAUCET AND ONE ZURN Z825B4-XL OR EQUAL LABORATORY FAUCET WITH SERRATED NOZZLE ATTACHMENT |
| LS-3 | LAB SINK | 1/2" | 1/2" | 1/2" | 1-1/2" | - | 1-1/2" | DURCON D30D OR EQUAL EPOXY RESIN DOUBLE BOWL DROP-IN LABORATORY SINK OF CHEMICAL RESISTANT CONSTRUCTION. PROVIDE WITH TWO ZURN Z8264B4-XL OR EQUAL LABORATORY FAUCETS AND ONE ZURN Z825B4-XL OR EQUAL LABORATORY FAUCET WITH SERRATED NOZZLE ATTACHMENT |
| LS-4 | STAINLESS STEEL AUTOMATIC LAB SINK | 1/2" | 1/2" | - | 2" | - | 2" | PROVIDE REGENCY 600HS172EFW4 OR EQUAL STAINLESS STEEL WALL MOUNTED SINK. PROVIDE WITH MANUFACTURER PROVIDED MOTION ACTIVATED GOOSENECK SWIVEL SPOUT FAUCET. |

## WATER PRESSURE BOOSTER SCHEDULE

| MARK | TYPE | BASIS OF DESIGN | MAXIMUM FLOW (GPM) | MAXIMUM FT HEAD | NUMBER OF PUMPS | RATED CURRENT (AMP) | POWER (KW) | WEIGHT (LBS) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| DWBP-1 | VARIABLE FLOW BOOSTER PUMP | GRUNDFUS | 138 | 45 | 2 | 9.2 | 0.75 | 296 | SEE NOTES |

NOTES:
1. PROVIDE VARIABLE SPEED DUAL PUMP SYSTEM CAPABLE OF INTEGRATING WITH THE EXISTING COMPONENTS REMAINING FROM THE EXISTING SYSTEM.
2. PROVIDE ELECTRONICALLY STARTED, MONITORED, AND CONTROLLED PUMP SYSTEM. PROVIDE SINGLE POINT POWER CONNECTION.

## WATER HEATER SCHEDULE

| MARK | TYPE | BASIS OF DESIGN | TANK SIZE (GAL.) | EFFICIENCY | INPUT (BTU/H) | MIN/MAX PRESSURE (IN WC) | GPH AT TEMPERATURE RISE | EWT (°F) | LWT (°F) | FUEL TYPE | ELECTRICAL | | | DIMENSIONS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | V | PH | FREQ. | DIAM (IN) | HEIGHT (IN) | WEIGHT (LBS) | |
| DWH-1 | TANK DOMESTIC WATER HEATER | AOSMITH BTH-250 | 100 | 96% | 250,000 | 4.0 / 14 | 365 | 61 | 145 | NATURAL GAS | 120 | 1 | 60 | 27.75 | 76.5 | 553 | SEE NOTES |
| DWH-2 | TANK DOMESTIC WATER HEATER | AOSMITH BTH-250 | 100 | 96% | 250,000 | 4.0 / 14 | 365 | 61 | 145 | NATURAL GAS | 120 | 1 | 60 | 27.75 | 76.5 | 553 | SEE NOTES |
| DWH-3 | TANK DOMESTIC WATER HEATER | AOSMITH BTH-250 | 100 | 96% | 250,000 | 4.0 / 14 | 365 | 61 | 145 | NATURAL GAS | 120 | 1 | 60 | 27.75 | 76.5 | 553 | SEE NOTES |
| DWH-4 | TANK DOMESTIC WATER HEATER | AOSMITH BTH-250 | 100 | 96% | 250,000 | 4.0 / 14 | 365 | 61 | 145 | NATURAL GAS | 120 | 1 | 60 | 27.75 | 76.5 | 553 | SEE NOTES |

NOTES:
1. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. CONTRACTOR MUST FIELD VERIFY ALL EXISTING DIMENSIONS AND CONNECTION CONDITIONS.
3. WATER HEATER MUST BE CAPABLE OF SEAMLESS INTEGRATION INTO THE EXISTING DOMESTIC WATER HEATING SYSTEM.

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May 19, 2026 - 2:29pm

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STATE OF LOUISIANA — WILLIAM M. NGO — 05/20/26 — PROFESSIONAL ENGINEER

| | |
|---|---|
| A-E FIRM | USDA |
| PROJECT MANAGER | EPM |
| REH | WN |
| DESIGNER | PPM |
| SME | XXX |
| CHECKED BY | SAFETY & HEALTH |
| DRL | CM |
| JOB # | REAL PROPERTY |
| 5825 | JS |

USDA Agricultural Research Service

USDA AGRICULTURAL RESEARCH SERVICE
SUGARCANE RESEARCH LABORATORY
HOUMA, LOUISIANA

PLUMBING SCHEDULES

| | | |
|---|---|---|
| PROJECT NO. XXX | AGRICULTURAL RESEARCH SERVICE FACILITIES ENGINEERING BRANCH 5106 SUNNYSIDE AVENUE BELTSVILLE, MD 20705-5100 | SHEET P-601 |
| DATE 05/20/2026 | | 110 OF 176 |

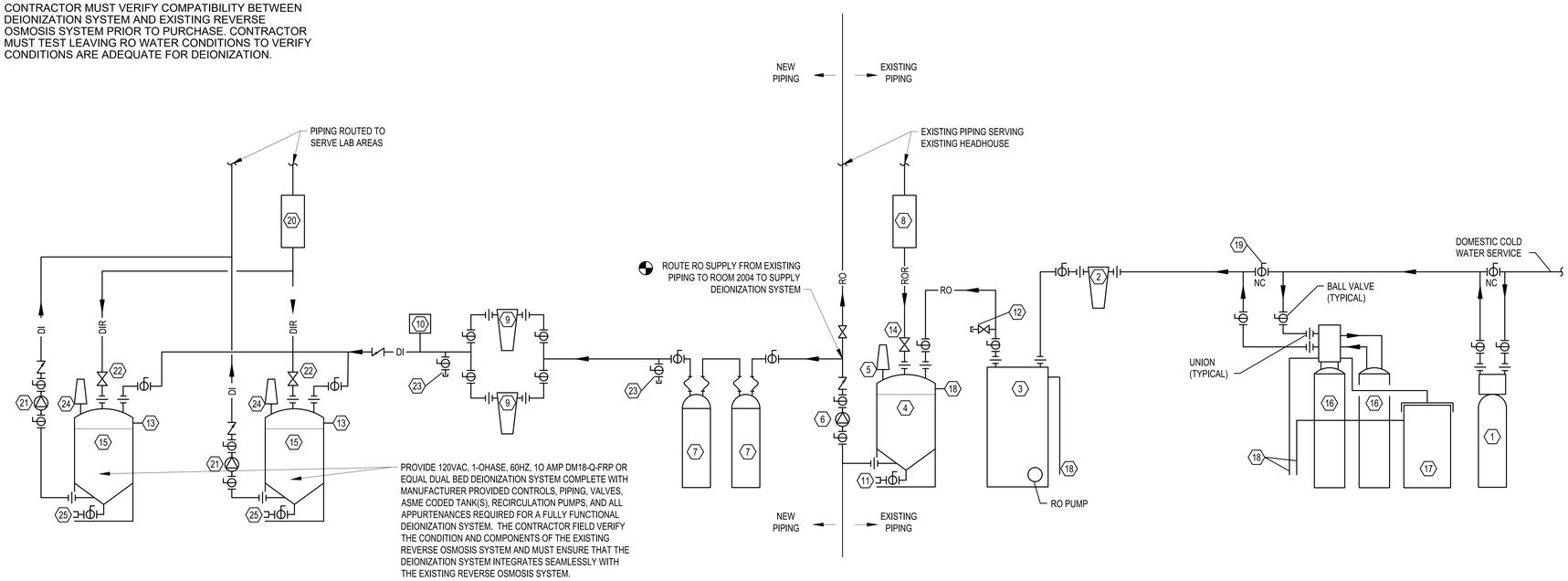
NOTE:
DESIGN INTENT IS TO MATCH EXISTING RO PIPING TYPE (SCHEDULE 80 WHITELINE PP TYPE 1 ASTM D401) FOR ALL RO PIPING PROVIDED DURING THIS PROJECT. CONTRACTOR MUST PROVIDE EQUAL OR BETTER PIPING AND FITTINGS THAT ALLOW FOR SEAMLESS INTEGRATION WITH THE EXISTING RO PIPING SYSTEM.

ALL DI AND DIR PIPING MUST BE PROVIDED TO BE SEAMLESSLY WELDED STAINLESS STEEL.

CONTRACTOR MUST VERIFY COMPATIBILITY BETWEEN DEIONIZATION SYSTEM AND EXISTING REVERSE OSMOSIS SYSTEM PRIOR TO PURCHASE. CONTRACTOR MUST TEST LEAVING RO WATER CONDITIONS TO VERIFY CONDITIONS ARE ADEQUATE FOR DEIONIZATION.

LEGEND:

| | |
|---|---|
| NC | NORMALLY CLOSED |
| NO | NORMALLY OPEN |
| DI | DEIONIZED SUPPLY |
| DIR | DEIONIZED RETURN |
| RO | REVERSE OSMOSIS SUPPLY |
| ROR | REVERSE OSMOSIS RETURN |




WATER PURIFICATION DIAGRAM KEYED NOTES:

1. EXISTING ACTIVATED CARBON PREFILTER
2. EXISTING REVERSE OSMOSIS PRE-FILTER
3. EXISTING REVERSE OSMOSIS SYSTEM
4. EXISTING RO WATER STORAGE TANK
5. EXISTING VENT FILTER HOUSING WITH CARTRIDGE
6. EXISTING REPRESSURE PUMP
7. PROVIDE MIXED BED DEIONIZER
8. EXISTING UV STERILIZER
9. PROVIDE POST FILTER HOUSING WITH CARTRIDGE
10. PROVIDE DIGITAL RESISTIVITY METER AND PROBE
11. PROVIDE VALVE WITH HOSE CONNECTION
12. EXISTING SAMPLE PORT
13. PROVIDE HARD WIRED HIGH LEVEL CUT OFF SWITCH
14. PROVIDE BACK PRESSURE VALVE, SET AT 40 PSI
15. PROVIDE DI WATER STORAGE TANK
16. EXISTING DUPLEX ALTERNATING WATER SOFTENER
17. EXISTING BRINE TANK
18. EXISTING HARD WIRED HIGH LEVEL CUT OFF SWITCH
19. EXISTING BYPASS FOR WATER SOFTENER
20. PROVIDE UV STERILIZER
21. PROVIDE RECIRCULATION PUMP
22. PROVIDE BACK PRESSURE VALVE, SET AT 40 PSI
23. PROVIDE SAMPLE PORT
24. PROVIDE VENT FILTER HOUSING WITH CARTRIDGE
25. PROVIDE VALVE WITH HOSE CONNECTION

1 / P-701 WATER PURIFICATION SYSTEM DIAGRAM
SCALE: NOT TO SCALE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| EPM | WN |
| DESIGNER | SME |
| PPM | XXX |
| CHECKED BY | DRL |
| SAFETY & HEALTH | CM |
| JOB # | 5825 |
| REAL PROPERTY | JS |

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PLUMBING DIAGRAMS

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| DATE 05/20/2026 | | 111 OF 176 |


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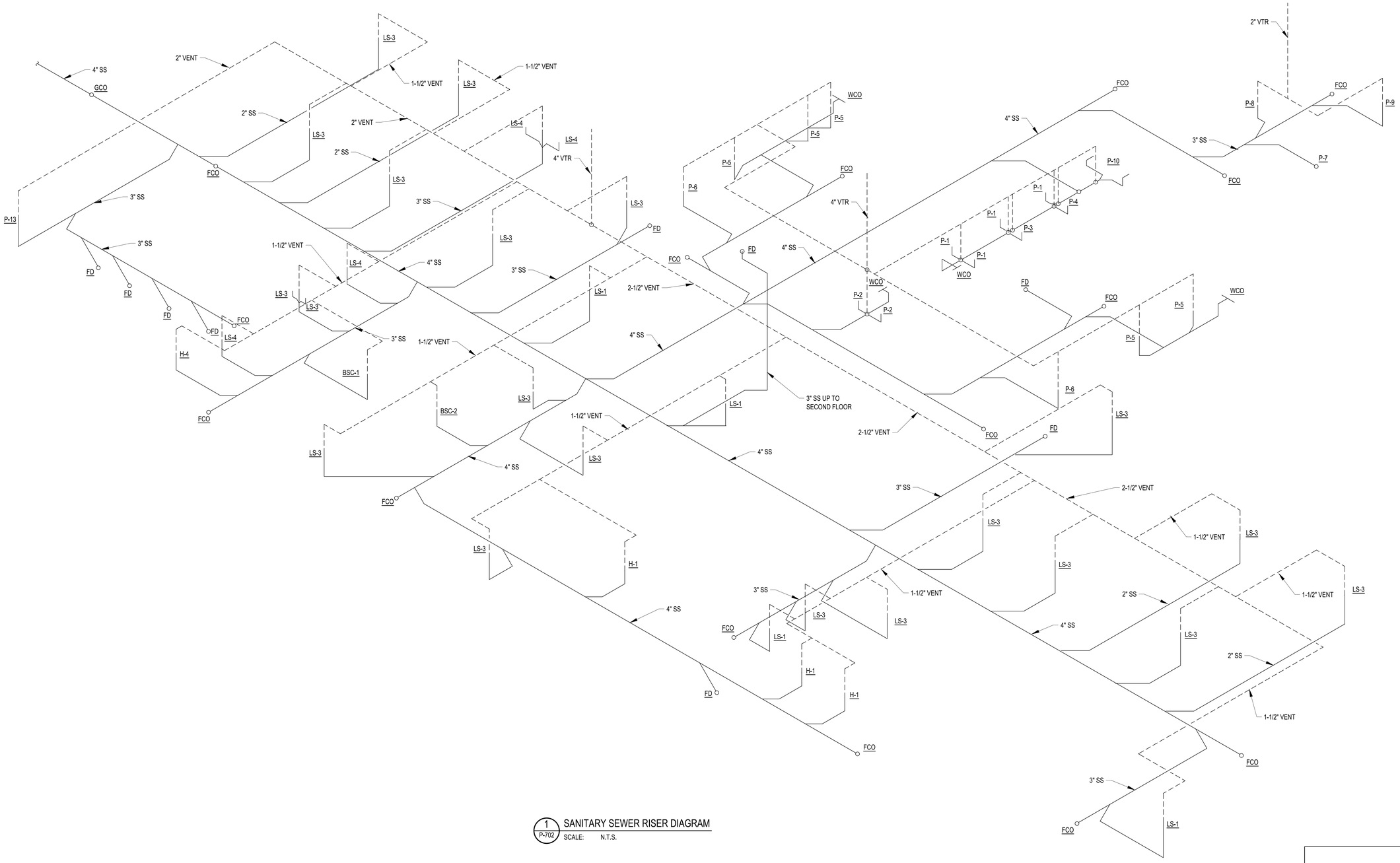


1 P-702 SANITARY SEWER RISER DIAGRAM
SCALE: N.T.S.

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|---|---|
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| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
| JOB # 5825 | REAL PROPERTY JS |

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SANITARY SEWER RISER DIAGRAM

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SHEET P-702
112 OF 176

STATE OF LOUISIANA
DANIEL M. ENGLE
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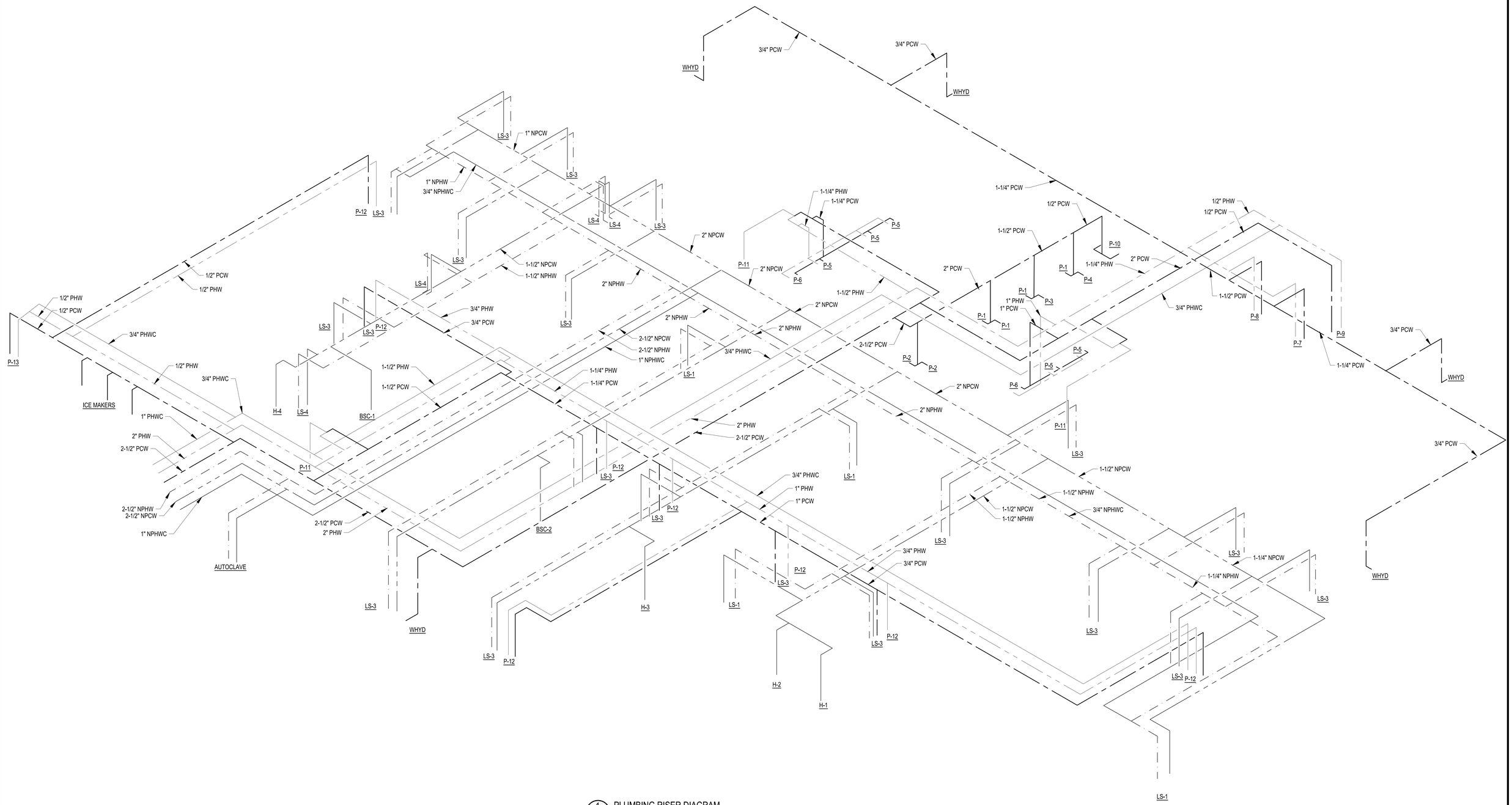


1 PLUMBING RISER DIAGRAM
P-703 SCALE: N.T.S.

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PLUMBING RISER DIAGRAM

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|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
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| JOB # 5825 | REAL PROPERTY JS |

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113 OF 176

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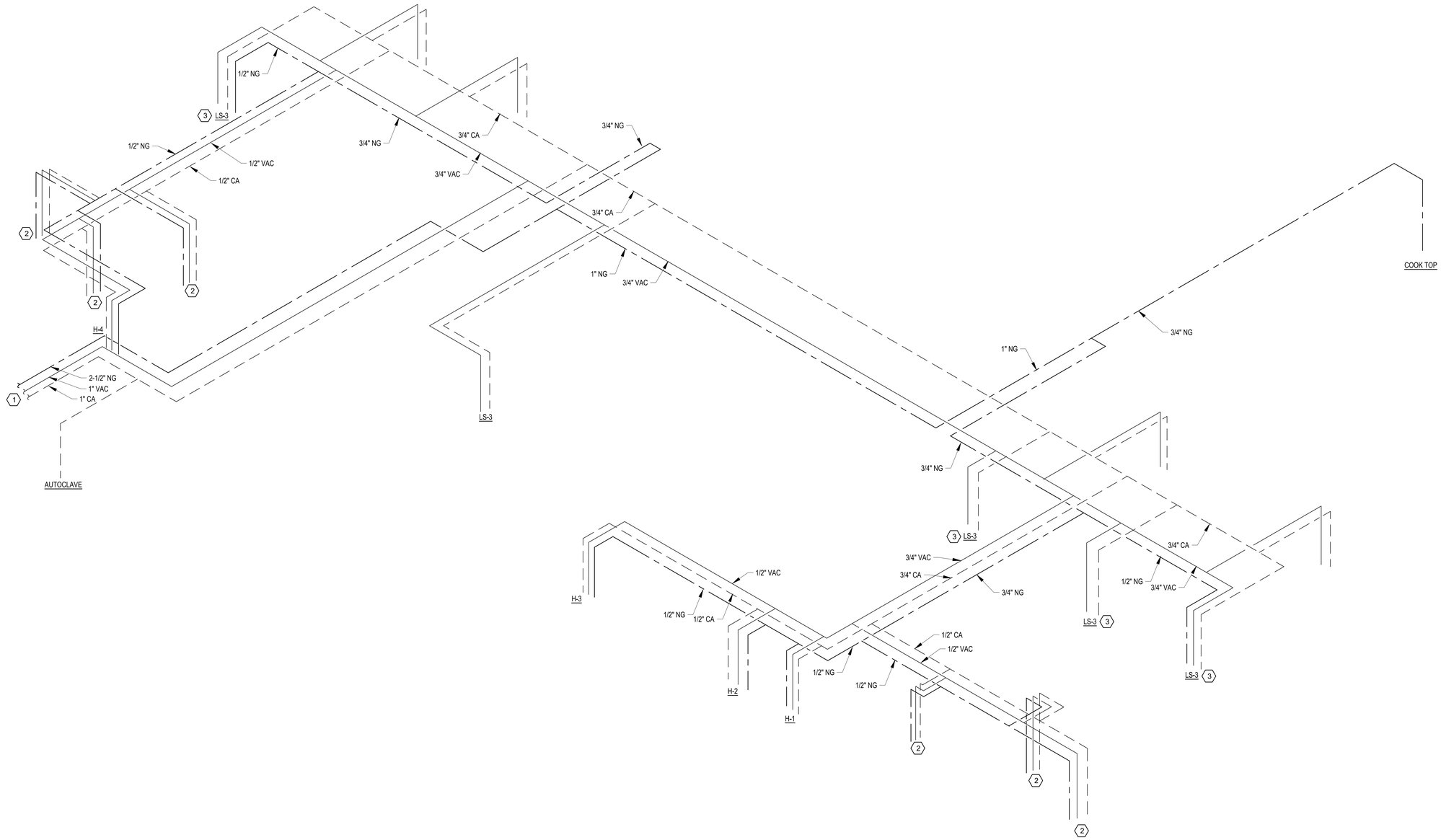
KEYED NOTES

1. CONNECT PIPING TO EXISTING POINT OF CONNECTION LOCATED IN EXISTING HEADHOUSE. EXISTING POINT OF CONNECTION MUST BE FIELD VERIFIED.
2. ROUTE 1/2" NG, CA, AND VAC DOWN TO SERVE WORK STATION. PIPING MUST BE ROUTED DOWN TO APPROXIMATELY 6'-6" ABOVE FINISHED FLOOR AND PROVIDED WITH INDIVIDUAL ISOLATION VALVE AND QUICK CONNECT FITTING TO ALLOW EASE OF USE.
3. ROUTE LAB UTILITY PIPING FROM CEILING DOWN THROUGH COLUMN CHASE.

LEGEND

POINT OF CONNECTION




1 P-704 LAB UTILITIES RISER DIAGRAM

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LAB UTILITIES RISER DIAGRAM

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER REH | EPM WN |
| DESIGNER SME | PPM XXX |
| CHECKED BY DRL | SAFETY & HEALTH CM |
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SHEET P-704

114 OF 176

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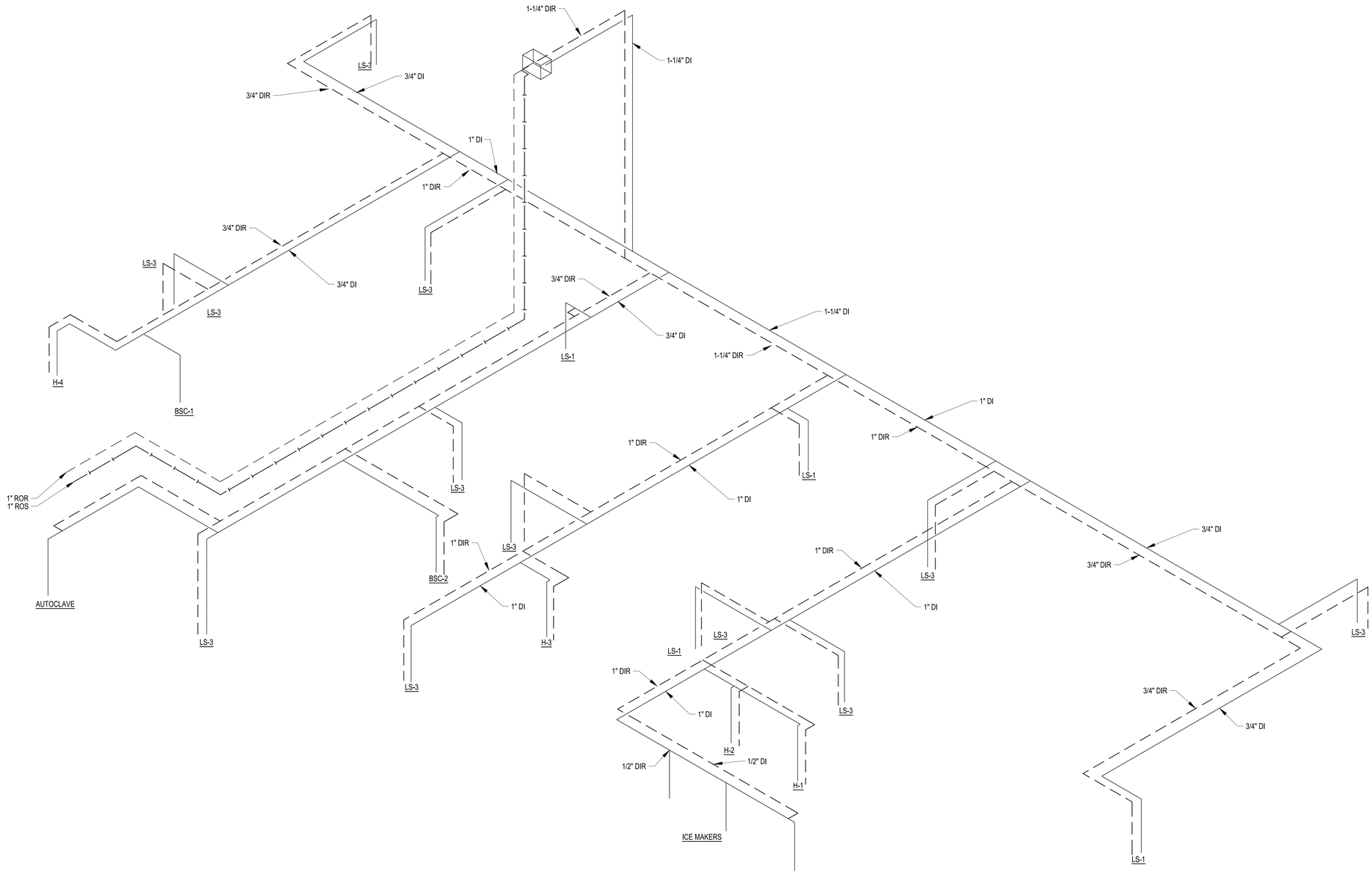


1 P-705 LAB PURIFIED WATER RISER DIAGRAM

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HOUMA, LOUISIANA

LAB PURIFIED WATER RISER DIAGRAM

| A-E FIRM | USDA |
|---|---|
| PROJECT MANAGER | EPM |
| REH | WN |
| DESIGNER | PPM |
| SME | XXX |
| CHECKED BY | SAFETY & HEALTH |
| DRL | CM |
| JOB # | REAL PROPERTY |
| 5825 | JS |

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| XXX | | P-705 |
| DATE | | 115 OF 176 |
| 05/20/2026 | | |

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NO. 37966
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