University of Missouri - Columbia

For: The Curators of the University of Missouri

AGRICULTURE SCIENCE

Electrical Service Panel Replacements
Project No.: CP241481

Bid Set Dated: JANUARY 06, 2025

I hereby certif that these Drawings and/or Specifications have been prepared by me, or under by supervision. I futher certify that to the best of my knowledge these Drawings and/or Specifications are as required by and in compliance with the Building Codes of the University of Missouri.

Signature: _____
Monica Santos, MO License #E-200174546

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Kansas City, MO 64102
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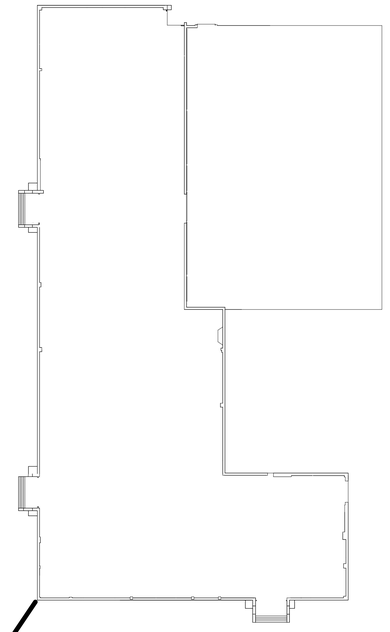
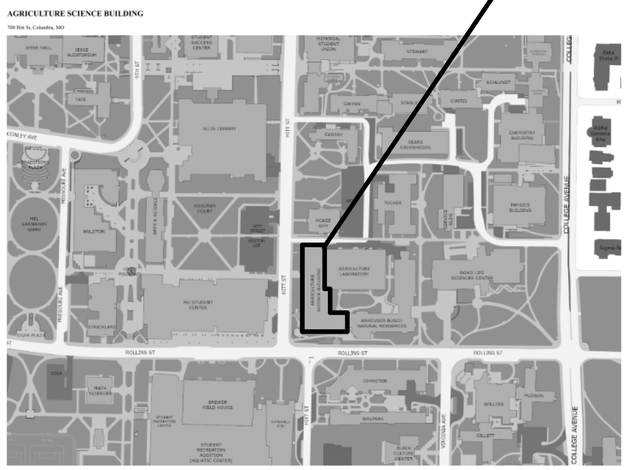
SHEET INDEX



KEY PLAN



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STATE OF MISSOURI
MONICA SANTOYO SANTOS
NUMBER E-2000174546
REGISTERED PROFESSIONAL ENGINEER
01/06/2025

Monica S Santos - Electrical
MO# E-2000174546

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Agriculture Science Electrical Service Panel Replacements
700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

BID DOCUMENTS

Issued: 01/06/2025

Rev. #	Description	Date Issued

TITLE SHEET AND DRAWING INDEX

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GENERAL NOTES:

CONTRACTOR WILL BE RESPONSIBLE FOR PLACEMENT AND MAINTENANCE OF TRAFFIC CONTROL DEVICES NECESSARY TO COMPLETE THEIR PORTION OF WORK. THE DEVICES AND METHODS EMPLOYED WILL COMPLY WITH THE CURRENT VERSION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).

EXISTING UTILITIES SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE LOCATES PRIOR TO ANY EXCAVATION.

ALL EXCAVATION TO BE IN ACCORDANCE WITH SECTIONS 319.010–319.050, REVISED STATUTES OF THE STATE OF MISSOURI. SUCH COMPLIANCE SHALL NOT, HOWEVER, EXCUSE ANY PERSON MAKING ANY EXCAVATION FROM DOING SO IN A CAREFUL AND PRUDENT MANNER, NOR SHALL IT EXCUSE SUCH PERSON FROM LIABILITY FOR ANY DAMAGE OR INJURY TO UNDERGROUND UTILITIES RESULTING FROM THE EXCAVATION.

IT IS THE INTENT OF THESE PLANS TO COMPLY WITH THE REQUIREMENTS OF THE MoDNR CLEAN WATER COMMISSION.

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES AND REMOVING THEM ONCE THE SITE IS STABILIZED.

STORM WATER OR OTHER SOURCES OF WATER SHALL NOT BE ALLOWED TO ENTER ACTIVE STEAM SYSTEMS.

CONTRACTOR TO PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND PAVEMENT THAT IS TO REMAIN. ALL DAMAGED ITEMS OUTSIDE THE SCOPE OF WORK TO BE REPLACED OR REPAIRED TO ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.

ALL PAVEMENTS, SIDEWALKS, ABANDONED SEWERS, PIPELINES, EXCESS EARTHWORK, OR OTHER OBSTRUCTIONS TO CONSTRUCTION THAT ARE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS SPECIFICALLY NOTED AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH STATE REGULATION 10 CSR 80-2.010 (9)(A)1.

ALL SLOPES ARE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.

ALL DISTURBED AREAS WITHIN THE "LIMITS OF DISTURBANCE" SHALL BE FINE GRADED AND LEFT (6" FOR TURF AREAS OR 18" FOR PLANTER BED AREAS) BELOW FINAL GRADE BY CONTRACTOR. FINAL TOPSOIL AND VEGETATION WILL BE REESTABLISHED BY OWNER.

TOTAL DISTURBED AREA ON SITE ≈ 0.02 AC.

MISSOURI DNR LAND DISTURBANCE PERMIT NOT NEEDED FOR THIS PROJECT.

THE PROJECT REQUIRES OUTAGES TO SITE UTILITY SYSTEMS. CONTRACTOR SHALL COMPLETE ALL RELATED WORK TO THE MAXIMUM EXTENT POSSIBLE PRIOR TO THE START OF OUTAGES. CONTRACTOR SHALL HAVE ALL REQUIRED MATERIALS ON SITE PRIOR TO START OF OUTAGES.

TIE-INS TO UNIVERSITY UTILITY SYSTEMS SHALL BE MADE ON WEEKENDS OR NIGHTS AND WORK SHALL BE DONE AROUND-THE-CLOCK UNTIL THE TIE-IN IS COMPLETED.

PROJECT BENCHMARK:

TBM #1 – CHISELED SQUARE IN THE SOUTHEAST CORNER OF THE BUILDING SIGN BASE, LOCATED WEST OF PROPOSED TRANSFORMER LOCATION, EAST OF THE SIDEWALK. SEE PLAN FOR LOCATION.

ELEVATION = 746.94'

UTILITY COMPANIES:

LOCATES:
MISSOURI ONE CALL INC.
1022 B NORTHEAST DRIVE
JEFFERSON CITY, MO 65109
1-800-344-7483

WATER:
ENERGY MANAGEMENT
417 S. 5TH ST.
COLUMBIA, MO 65211
573-882-3094

TELECOM:
UNIVERSITY OF MISSOURI, DIVISION OF I.T.
615 LOCUST ST.
COLUMBIA, MO 65211
573-882-5000

STORM/SANITARY SEWER & SECONDARY ELECTRIC:
UNIVERSITY CAMPUS FACILITY OPERATIONS
180 GENERAL SERVICES BUILDING
COLUMBIA, MO 65211
573-882-8211

STEAM & MEDIUM VOLTAGE ELECTRIC:
ENERGY MANAGEMENT
417 S. 5TH ST.
COLUMBIA, MO 65211
573-882-3094

SPECIAL INSPECTIONS:

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE:

1. PLACING OF CONCRETE AND REINFORCING STEEL (CONTINUOUS OF CONCRETE SAMPLING / PERIODIC OF REINFORCING)
2. IN-SITU SOILS, EXCAVATIONS, FILLING & COMPACTION (PERIODIC)

THE CONTRACTOR SHALL REQUEST SPECIAL INSPECTION OF THE ITEMS LISTED ABOVE PRIOR TO THOSE ITEMS BECOMING INACCESSIBLE AND UNOBSERVABLE DUE TO PROGRESSION OF THE WORK.

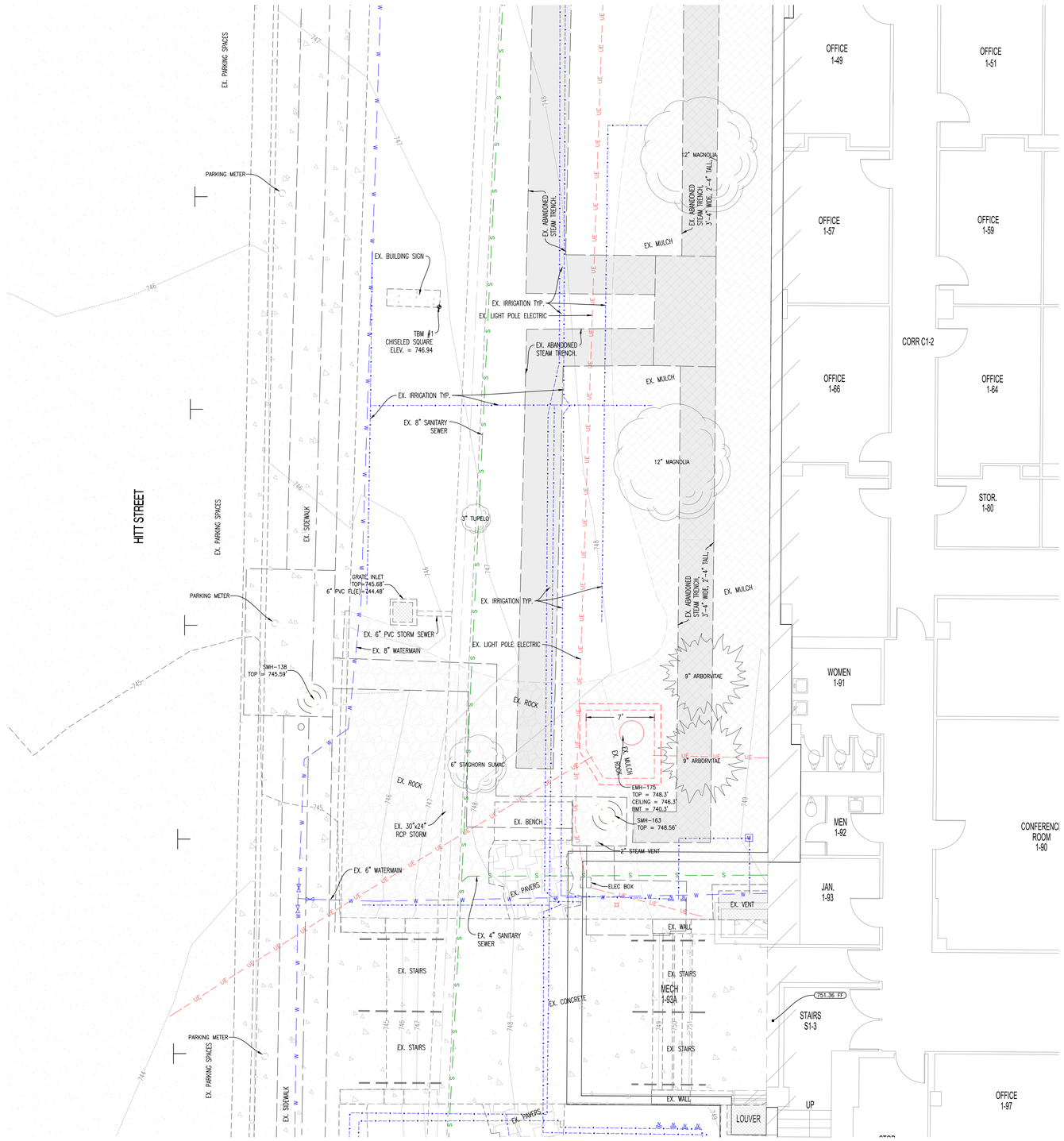
DEFERRED SUBMITTALS :

NONE.

CIVIL LEGEND OF SYMBOLS:

	EXISTING CURB
	PROPOSED CURB
	RIP RAP
	EXISTING STRUCTURE
	EXISTING TREELINE
	PROPOSED TREELINE
	EDGE OF WATERWAY
W	EXISTING WATERLINE
W	PROPOSED WATERLINE
G	EXISTING GAS LINE
G	PROPOSED GAS LINE
UT	EXISTING UNDERGROUND TELEPHONE
UTV	EXISTING UNDERGROUND CABLE TELEVISION
HVE	EXISTING HIGH VOLTAGE ELECTRIC
OE	EXISTING OVERHEAD ELECTRIC
UE	EXISTING UNDERGROUND ELECTRIC
OETV	EXISTING OVERHEAD ELEC. & TV
OETVT	EXISTING OVERHEAD ELEC., TV & TELE.
S	EXISTING SANITARY SEWER
S	PROPOSED SANITARY SEWER
XXX	EXISTING MINOR CONTOUR
XXX	EXISTING MAJOR CONTOUR
XXX	PROPOSED MINOR CONTOUR
XXX	PROPOSED MAJOR CONTOUR
	100 YEAR FLOOD PLAIN
	FLOODWAY
	ORDINARY HIGH WATER MARK
	STREAM SIDE BUFFER
	OUTER STREAM BUFFER
	DEMOLITION LIMITS
	SILT FENCE

FF=XXXX	FINISH FLOOR OF STRUCTURE
XXX.XX TC	PROPOSED TOP OF CURB ELEVATION
XXX.XX TP	PROPOSED TOP OF PAVEMENT ELEVATION
XXX.XX FG	PROPOSED FINISH GRADE ELEVATION
XXX.XX TW	PROPOSED TOP OF WALL
XX	LOT NUMBER
X	STORM SEWER STRUCTURE LABEL
X	SANITARY SEWER STRUCTURE LABEL
H.P.	HIGH POINT
L.P.	LOW POINT
	EXISTING SIGNS
	EXISTING POWER POLE
	EXISTING GAS VALVE
	EXISTING WATER VALVE
	EXISTING GAS METER
	EXISTING WATER METER
	EXISTING FIRE HYDRANT
	MANHOLE
	EXISTING SANITARY SEWER LATERAL
	PROPOSED SANITARY SEWER LATERAL
	PROPOSED TRACER WIRE TEST STATION BOX
AC	EXISTING AIR CONDITIONER
	EXISTING TELEPHONE PEDESTAL
	EXISTING ELECTRICAL TRANSFORMER
	EXISTING ELECTRIC METER
	EXISTING LIGHT POLE
	EXISTING GUY WIRE
	CONSTRUCTION BARRIER FENCING
	TREE PROTECTION FENCING



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ANDREW T. GREEN
NUMBER PE-2022000043
PROFESSIONAL ENGINEER
01/06/2025

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EXISTING CONDITIONS

C101

LEGEND OF LABELS

(A) INSTALL 6' TALL CHAIN LINK FENCE WITH GATES AS NEEDED FOR LIMITS OF WORK AREA. FENCE SHALL REMAIN IN PLACE THROUGHOUT PROJECT DURATION. REFER TO SPECS FOR FURTHER FENCING REQUIREMENTS.

(B) OBTAIN METER CLOSURE BAGS FROM OWNER AS REQUIRED. REFER TO PROJECT MANUAL FOR PARKING STALL CLOSURE SPECIAL CONDITIONS.

(C) EXISTING TREE TO BE PROTECTED. INSTALL TREE PROTECTION FENCING PER DETAIL ON THIS SHEET.

(D) REMOVE EXISTING TREE TO INSTALL PROJECT. REMOVE ENTIRE ROOT BALL OF TREES WHERE POSSIBLE WITHOUT DAMAGE TO ANY EXISTING BURIED UTILITIES THAT WILL REMAIN. IF EXISTING UNDERGROUND UTILITIES PREVENT THE REMOVAL OF THE ROOT BALL OF A TREE, THEN THE STUMP SHALL BE GROUND DOWN TO 6 INCHES BELOW GRADE.

(E) EXISTING ABANDONED STEAM TRENCH AND MANHOLE TO BE REMOVED AS NEEDED TO INSTALL PROJECT. CONDITION OF ABANDONED UTILITY IS UNKNOWN, ASSUME TRENCH IS FILLED WITH FLOWABLE FILL AND MANHOLE IS REMOVED TO 3' BELOW GRADE AND FILLED WITH SAND. ABANDONED PIPING WITHIN TRENCH AND MANHOLE TO BE REMOVED MAY NEED ASBESTOS ABATEMENT AS ENCOUNTERED. REFER TO PROJECT MANUAL FOR ABATEMENT INFORMATION. FOR TRENCHES TO BE ABANDONED THAT ARE NOT FILLED WITH FLOWABLE FILL, INSTALL CONCRETE BULKHEAD TO BLOCK OFF OPENINGS.

(F) REMOVE EXISTING GROUND COVER TO INSTALL PROJECT. KEEP DISTURBANCE TO A MINIMUM WITHIN AREA. DISPOSE OFF-SITE.

(G) LOCATED EXISTING UTILITY TO BE PROTECTED, ADDITIONAL UTILITIES MAY EXIST IN THE AREA AND SHOULD BE LOCATED PRIOR TO WORK.

(H) IRRIGATION LINES AND VALVES EXIST WITHIN THE PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE OF THE SYSTEM AS CAUSED BY CONSTRUCTION. WITHIN REASON AND WHEN POSSIBLE, THE NEW WORK SHALL BE INSTALLED TO AVOID LANDSCAPING COMPONENTS. IF AVOIDANCE IS NOT POSSIBLE, CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, REPAIR AND/OR RE-INSTALLATION OF THE IRRIGATION AS REQUIRED TO COMPLETE THE WORK AS SHOWN AND TO LEAVE THE OWNER WITH AN IRRIGATION SYSTEM IN THE SAME CONDITION AS WHEN WORK BEGAN.

(I) CONTRACTOR TO USE EXISTING PAVING AS STAGING AREA WITHIN THE FENCE LIMITS. ANY DAMAGED PAVEMENT DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR. CONTRACTOR SHALL CLEAN/POWER WASH CONSTRUCTION AREA PAVEMENT ONCE WORK IS COMPLETE.

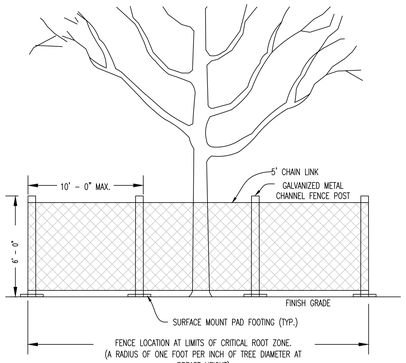
GENERAL EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL PROVIDE FOR CONTROL OF SURFACE EROSION AND SEDIMENT DEPOSITION DURING ALL PHASES OF CONSTRUCTION AND UNTIL THE OWNER ACCEPTS THE WORK AS SUBSTANTIALLY COMPLETE.
2. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ROADWAYS AND SIDEWALKS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.
3. CONTRACTOR SHALL KEEP THE ENTIRE PROJECT SITE FREE OF DEBRIS AND TRASH AT ALL TIMES. CONTRACTOR SHALL EXECUTE WORK USING METHODS THAT MINIMIZE EXCESSIVE NOISE OR DUST EMISSIONS. CONTRACTOR SHALL PROVIDE METHODS, MEANS AND FACILITIES TO PREVENT CONTAMINATION OF SOIL OR WATER FROM DISCHARGE OF REGULATED MATERIALS (I.E., DIESEL FUEL) USED DURING CONSTRUCTION.
4. CONTRACTOR MUST INSTALL AND MAINTAIN THE EROSION CONTROL MEASURES SHOWN ON THIS PLAN. IF THE ENGINEER, OWNER'S REPRESENTATIVE, DETERMINES THAT THE INSTALLATION OF THE MAINTENANCE IS INADEQUATE, THE CONTRACTOR MUST IMMEDIATELY CORRECT AT THEIR EXPENSE. IF IT IS DETERMINED THAT ADDITIONAL EROSION CONTROL MEASURES ARE NEEDED THE CONTRACTOR WILL BE DIRECTED TO INSTALL AND MAINTAIN THOSE MEASURES.
5. THE CONTRACTOR SHALL INSPECT THE LAND DISTURBANCE SITE AT LEAST ONCE EVERY SEVEN (7) DAYS AND WITHIN TWENTY-FOUR (24) HOURS FOLLOWING EACH RAINFALL EVENT OF 1/2" OR MORE WITHIN ANY TWENTY-FOUR (24) HOUR PERIOD. THE CONTRACTOR SHALL ALSO INSPECT AND ASSURE THAT ALL SEDIMENT CONTROL DEVICES ARE IN WORKING CONDITION PRIOR TO ANY FORECASTED RAINFALL.
6. THE CONTRACTOR SHALL REMOVE SEDIMENT FROM THE FLOW AREAS AND MAKE ALL NECESSARY REPAIRS TO MAINTAIN THE INTEGRITY OF THE SEDIMENT CONTROL MEASURES, SEDIMENT SHALL BE REMOVED ONCE IT REACHED ½ THE INSTALLED HEIGHT OF MEASURE.
7. SOME OF THE EROSION AND SEDIMENT CONTROL MEASURES, WILL REQUIRE THE CONTRACTOR TO INSTALL, REMOVE, AND REINSTALL THE MEASURES AS CONSTRUCTION PROCEEDS. THE PHASING OF THIS WORK IS DEPENDENT ENTIRELY ON THE CONTRACTOR'S SCHEDULE, AND IS NOT SPECIFIED HEREIN. HOWEVER, THE CONTRACTOR SHALL COORDINATE THESE ACTIONS WITH THE ENGINEER AT THE TIMES ADJUSTMENTS ARE NEEDED.
8. CONTRACTOR SHALL DIRECT CONCRETE TRUCKS TO WASHOUT AT PLANT.

SIGNAGE PLAN
NOT TO SCALE

GENERAL LANDSCAPE NOTES:

1. VEHICLES ARE TO USE DESIGNATED CONSTRUCTION ENTRANCES AS INDICATED ON DRAWINGS OR CONSTRUCTION DOCUMENTS. IF NO CONSTRUCTION ROUTE IS INDICATED VEHICLES ARE RESTRICTED TO SIDEWALKS OR PAVED AREAS. ALL CONSTRUCTION EQUIPMENT AND OR VEHICLES SHALL VERIFY THE WEIGHT LIMIT AND RESTRICTION ON PAVEMENT PRIOR TO CONSTRUCTION AND NOTIFY OWNERS REPRESENTATIVE OF THE PLANNED ROUTE.
2. THERE SHALL BE NO VEHICLE MOVEMENT IN ANY LANDSCAPED, SHRUB OR PERENNIAL AREAS, MULCH BED AND/OR TREE CANOPY DRIP AND ROOT ZONES, WITHOUT PRIOR MODIFICATIONS AND APPROVAL FROM LANDSCAPE SERVICES. LANDSCAPE SERVICES REQUIRES ONE WEEK NOTICE PRIOR TO ANY VEHICLE MOVEMENT IN THESE AREAS.
3. VEHICLE ACCESS SHALL NOT BREAK OR RUB TREE BRANCHES. OWNER WILL PRUNE TREE BRANCHES TO PROVIDE CLEARANCE AROUND BUILDING ENTRANCE. OWNER REQUIRES ONE WEEKS NOTICE FOR THIS WORK TO BE DONE.
4. DO NOT COMPACT GRADE WITHIN THE DRIP LINE OF TREES TO REMAIN. PROVIDE APPROVED FENCING TO PREVENT DRIVING OR EQUIPMENT PARKING WITHIN DRIP LINE OF TREES. PRIOR TO CONSTRUCTION OR WORK IN THE PROJECT AREA. MU'S CAMPUS STANDARD 6' CHAIN LINK FENCE AND POST SHALL BE USED UNLESS OTHERWISE NOTED AND/OR APPROVED BY OWNERS REPRESENTATIVE.
5. CONTRACTOR SHALL RIP THE SUB-SOIL TO A DEPTH OF 6" TO BREAK UP COMPACTION. CONTRACTOR SHALL THEN COMPACT THE SUB-SOIL TO 85% OF THE MATERIAL'S STANDARD PROCTOR DRY DENSITY, FOR NON-PAVED TURF AREAS; AND 95% COMPACTION IN PAVED AREAS.
6. CONTRACTOR SHALL LEAVE THE AREA 6" BELOW THE FINISHED GRADE IN TURF AREAS AND 24" BELOW THE FINISHED GRADE IN PLANTER BED AREAS.
7. FINAL TOP SOIL PLACEMENT, PLANTINGS AND TURF ESTABLISHMENT BY MU.
8. THE CONTRACTOR SHALL ADJUST EXISTING AND NEW YARD BOXES VALVE BOXES, PULL BOXES, CLEANOUTS, AND MANHOLE LID RINGS ETC. (INCLUDES IRRIGATION, SEWERS, WATER AND ELECTRIC), TO THE INDICATED FINAL FINISH GRADE WHERE NEW FINISHED GRADE ELEVATIONS ARE PROVIDED, INDICATED, OR OTHERWISE IMPLIED.
9. THE OWNER WILL WATER AND MAINTAIN ALL SEED AND LANDSCAPING.
10. IRRIGATION LINES AND VALVES EXIST WITHIN THE PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE OF THE SYSTEM AS CAUSED BY CONSTRUCTION. WITHIN REASON AND WHEN POSSIBLE, THE NEW WORK SHALL BE INSTALLED TO AVOID LANDSCAPING COMPONENTS. IF AVOIDANCE IS NOT POSSIBLE, CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, REPAIR AND/OR RE-INSTALLATION OF THE IRRIGATION AS REQUIRED TO COMPLETE THE WORK AS SHOWN AND TO LEAVE THE OWNER WITH AN IRRIGATION SYSTEM IN THE SAME CONDITION AS WHEN WORK BEGAN.

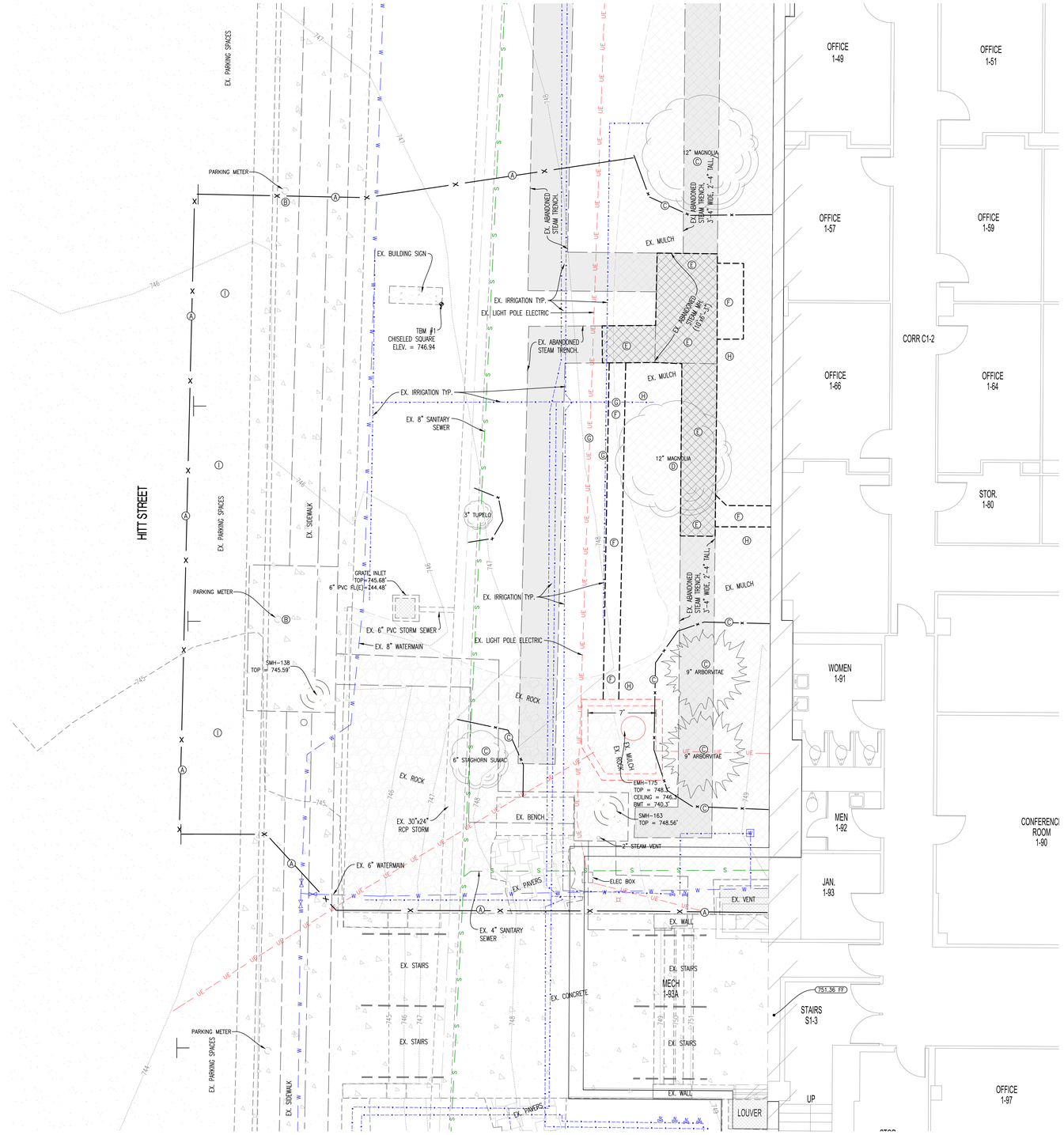


NOTES:
1. MAKE CLEAN SAWCUTS ON ROOTS EXPOSED BY GRADING AND BACKFILL IMMEDIATELY W/ TOPSOIL THOROUGHLY.
2. MAINTAIN FENCE TO KEEP IT ANCHORED FIRMLY TO POST WITHOUT SAGGING.
3. ANCHOR FENCE TO POSTS WITH WIRES OR PLASTIC TIES.
4. REMOVE FENCING AND TIES FROM SITE WHEN DIRECTED BY OWNER/ENGINEER OR AT SUBSTANTIAL COMPLETION OF PROJECT.

TREE PROTECTION FENCE

GENERAL DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE CAUTION TO PROTECT EXISTING UTILITIES THAT ARE TO REMAIN.
2. CERTAIN AREAS MAY BE REQUIRED TO BE REMOVED IN PHASES. CONTRACTOR TO COORDINATE TIMING WITH OWNER.
3. ITEMS OUTSIDE CONSTRUCTION LIMITS OR CALLED OUT TO REMAIN SHALL BE PROTECTED AS REQUIRED. CONTRACTOR SHALL REPAIR/REPLACE DAMAGED ITEMS OUTSIDE PROJECT SCOPE OF WORK AT NO EXPENSE TO THE OWNER.
4. CONCRETE TO BE REMOVED TO THE NEAREST SAW JOINT, BUT NOT LESS THAN THE DEMOLITION LIMITS SHOWN ON THE PLAN.
5. CONTRACTOR TO COORDINATE WITH OWNER PRIOR TO DISCONNECTING ANY UTILITIES.
6. ANY PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR. CONTRACTOR SHALL CLEAN/POWER WASH CONSTRUCTION AREA PAVEMENT ONCE WORK IS COMPLETE.



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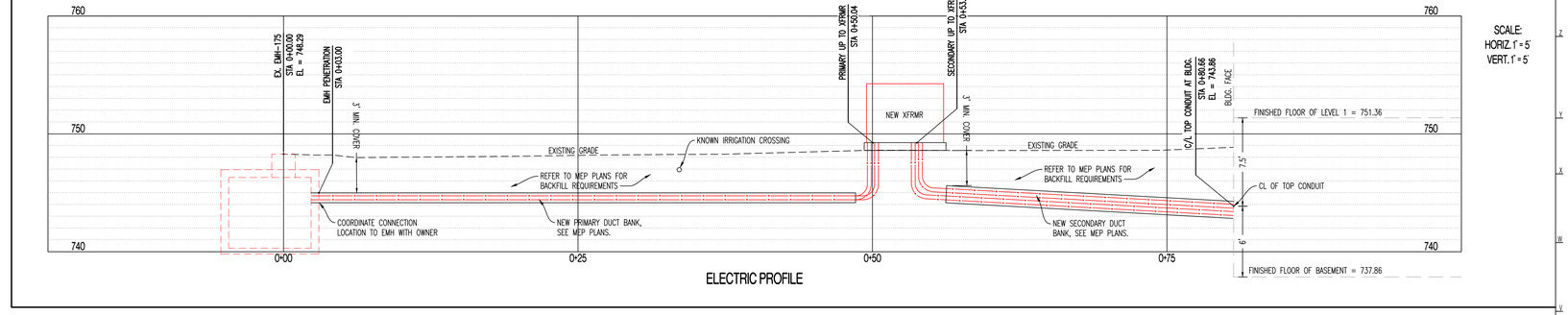
DEMOLITION PLAN

C102

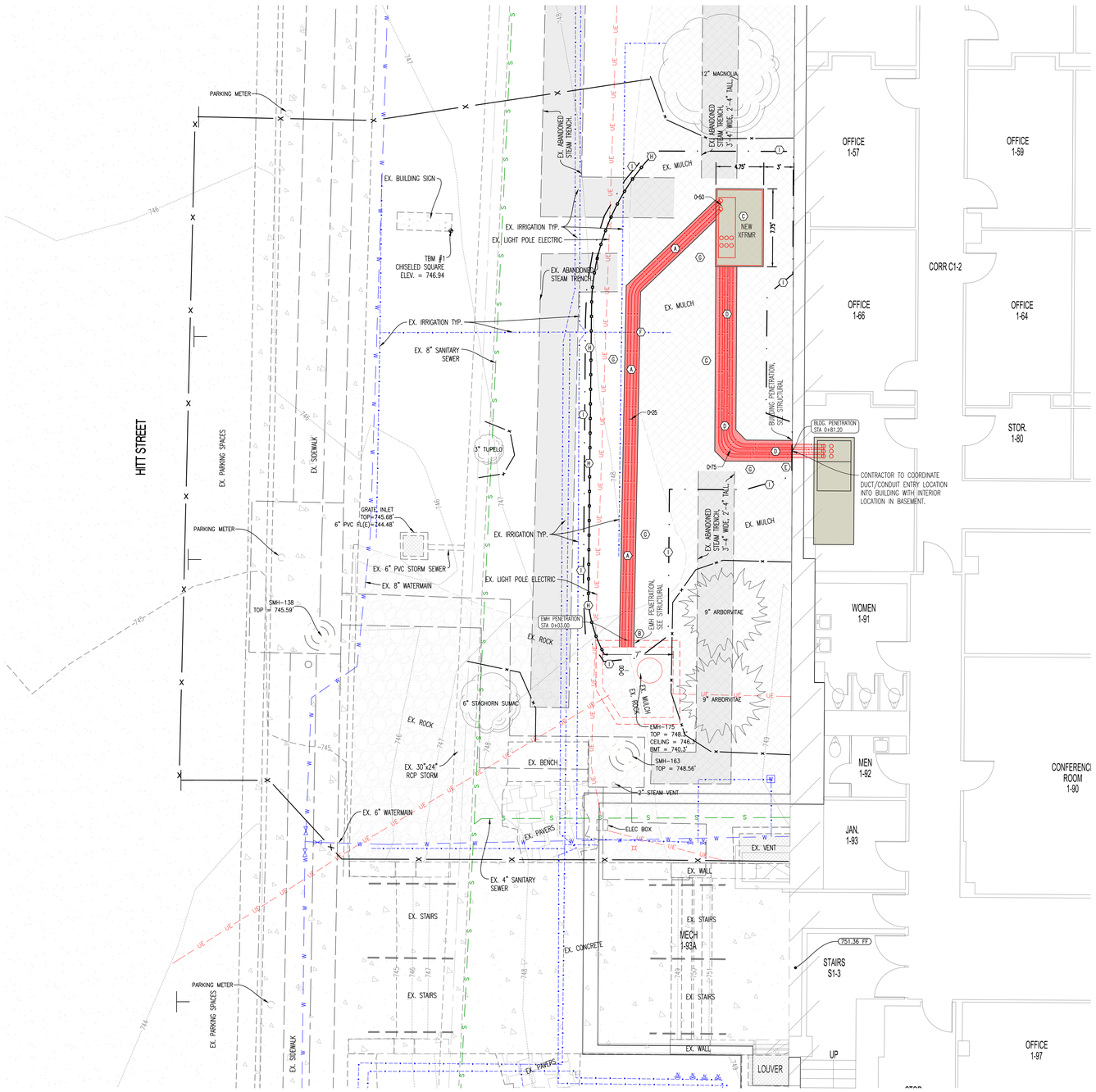


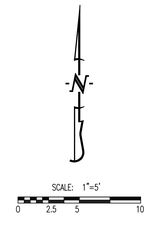
ELECTRIC PROFILE

SCALE:
HORIZ. 1" = 5'
VERT. 1" = 5'

LEGEND OF LABELS

(A)	INSTALL NEW PRIMARY ELECTRIC DUCT BANK WITH (2) 4" CONDUITS AS SHOWN. REFER TO MEP PLANS FOR DETAILS.
(B)	CONNECT NEW PRIMARY DUCT BANK TO EXISTING ELECTRIC MANHOLE AS SHOWN. REFER TO MEP PLANS FOR SERVICE CONNECTION TO EXISTING. REFER TO STRUCTURAL PLANS FOR STRUCTURE CONNECTION WORK.
(C)	NEW 8" THICK CONCRETE TRANSFORMER PAD. REFER TO MEP PLANS FOR PAD DETAILS. REFER TO MEP PLANS FOR TRANSFORMER INFORMATION.
(D)	INSTALL NEW SECONDARY ELECTRIC DUCT BANK WITH (6) 4" CONDUITS AS SHOWN. REFER TO MEP PLANS FOR DETAILS.
(E)	BUILDING PENETRATION FOR NEW SECONDARY ELECTRIC CONDUITS CONNECTION INTO BUILDING. REFER TO MEP PLANS FOR SERVICE CONTINUATION WITHIN BUILDING. REFER TO STRUCTURAL PLANS FOR BUILDING PENETRATION WORK.
(F)	KNOWN IRRIGATION LINE CROSSING. CONTRACTOR SHALL LOCATE UTILITY PRIOR TO WORK. UTILITY SHALL REMAIN PROTECTED OR RELOCATED/REPAIRED BY CONTRACTOR.
(G)	ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS, THAT ARE NOT TO BE PAVED, SHALL BE FINE GRADED BY CONTRACTOR TO AN ELEVATION OF, 6" FOR TURF AREAS OR 18" FOR PLANTER BED AREAS, BELOW FINISHED GRADE. FINAL TOP SOIL PLACEMENT AND VEGETATION/LANDSCAPING WILL BE REESTABLISHED BY OWNER.
(H)	INSTALL SILT FENCE OR STRAW WADDLE AT LOW POINTS IN DISTURBED TURF AREA AS SHOWN. THESE SHALL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN REESTABLISHED.
(I)	GENERAL LIMITS OF DISTURBANCE TO INSTALL PROJECT.





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CONSULTANT TEAM

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STATE OF MISSOURI
ANDREW T. GIBBINS
NUMBER PE-2010000043
PROFESSIONAL ENGINEER
01/06/2025

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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

Bid Documents

Issued: 01/06/2025

Rev. #	Description	Date Issued

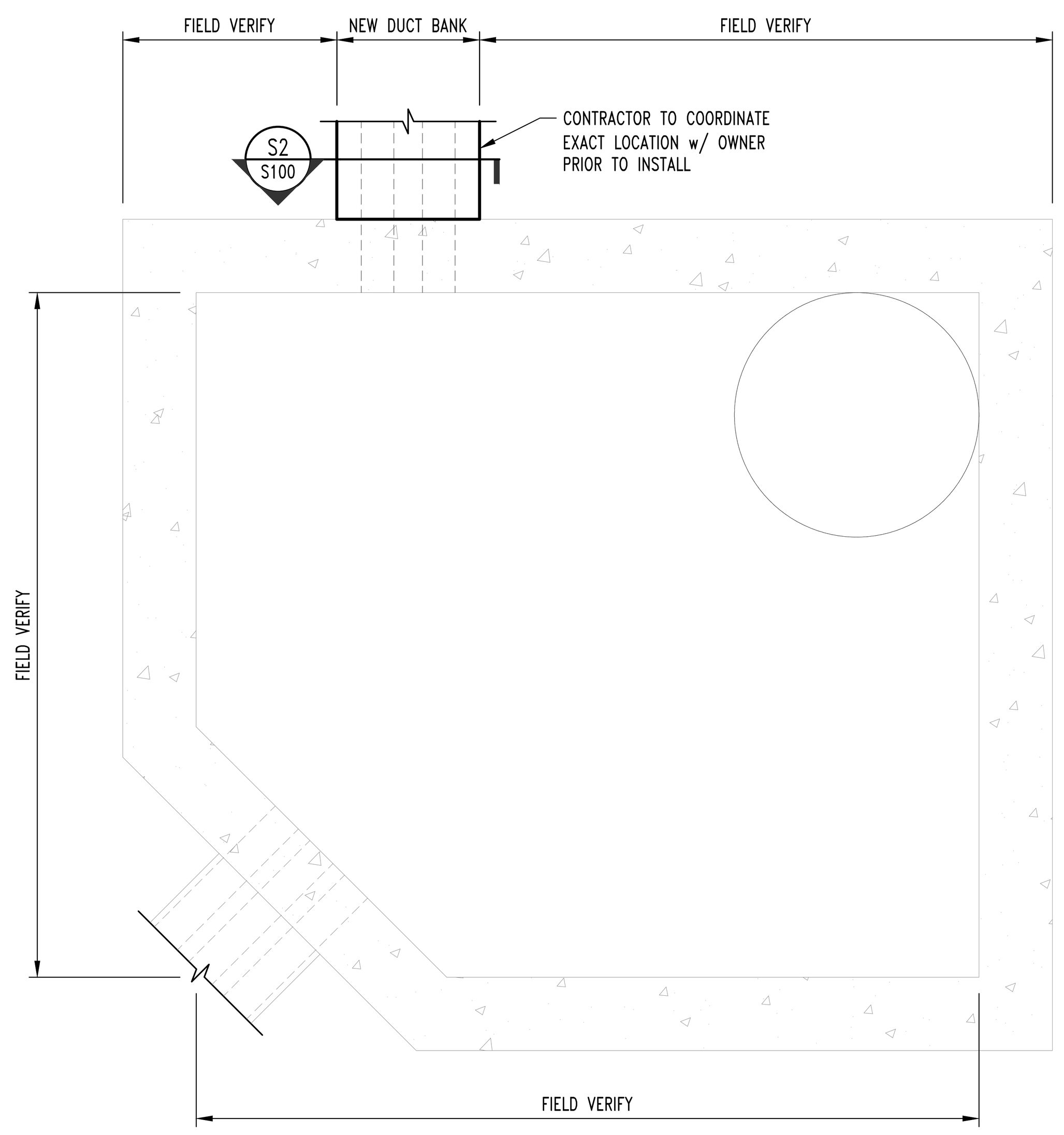
SITE PLAN

C103

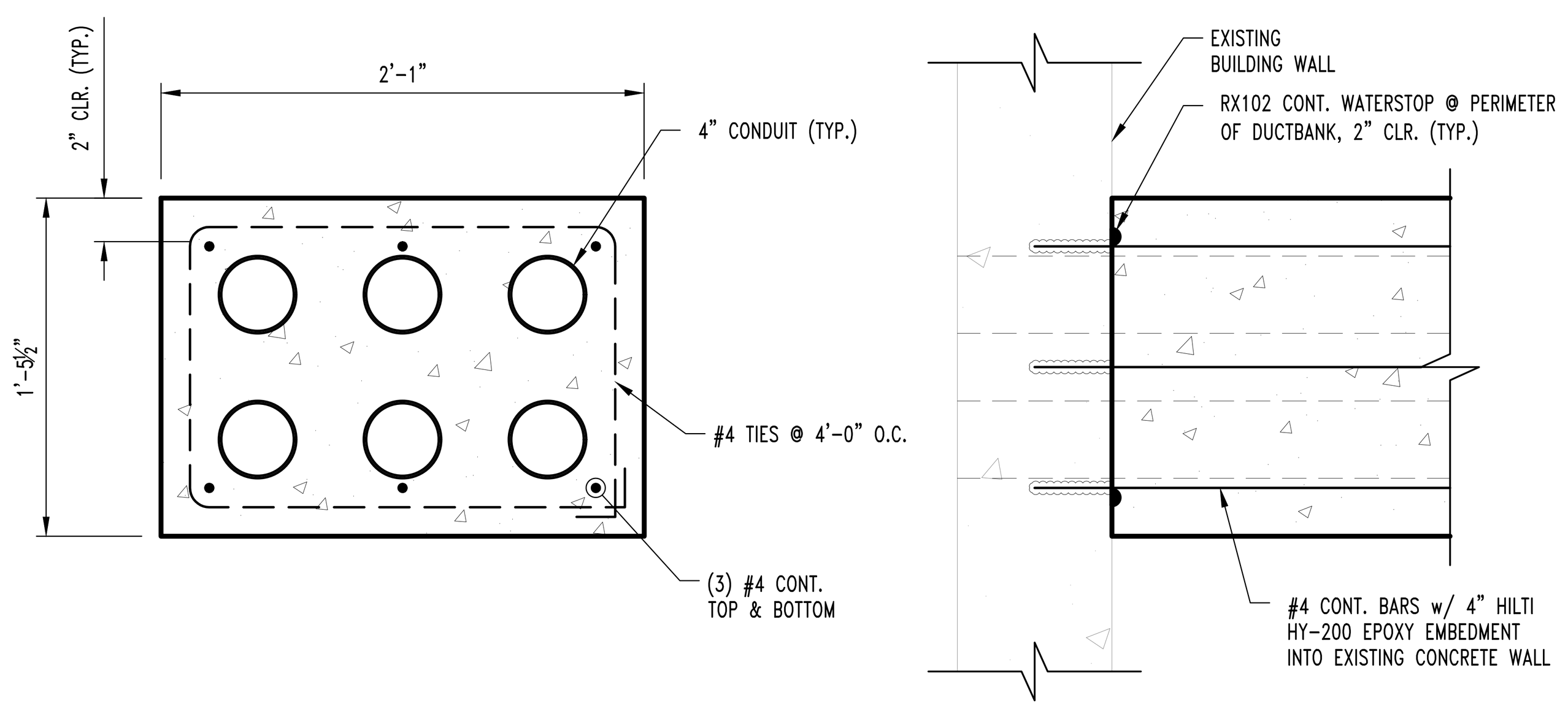
CONCRETE

CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF THE CURRENT ACI 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS, ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 305 SPECIFICATIONS FOR HOT WATER CONCRETE, AND ACI 306 SPECIFICATIONS FOR COLD WEATHER CONCRETE, WITH THE FOLLOWING ADDITIONAL REQUIREMENTS:

1. CONCRETE SHALL DEVELOP THE FOLLOWING 28-DAY MINIMUM COMPRESSIVE STRENGTH:
   FOUNDATIONS – 3,000 PSI
   CAST-IN-PLACE WALLS – 3,500 PSI
   FLOOR SLAB – 4,000 PSI
   EXTERIOR SLABS, WALLS AND CURBS – 4,000 PSI
2. ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR ENGINEERED FILL.
3. CHLORIDE- BASED ADMIXTURES ARE PROHIBITED IN ALL REINFORCED CONCRETE.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A615, A616, OR A617, GRADE 60.
5. ALL CONTINUOUS REINFORCING STEEL THAT MEETS AT A CORNER SHALL BE TIED TOGETHER WITH A CORNER BAR THAT HAS SUFFICIENT LAP DISTANCE IN EACH DIRECTION
6. CONTINUOUS REINFORCING BARS LAP LENGTH SHALL BE A MINIMUM OF 48 BAR DIAMETERS UNLESS NOTED OTHERWISE
7. CONCRETE SLUMP SHALL BE A MAXIMUM OF 4" +/- 1" (ASTM C- 143) AS DELIVERED IN THE FIELD. CONTRACTOR MAY USE CHEMICAL ADMIXTURES TO ATTAIN A MAXIMUM SLUMP OF 8" FOR WORKABILITY. NO WATER MAY BE ADDED TO THE CONCRETE MIX ON SITE UNLESS WATER IS WITHHELD AT THE BATCHING FACILITY. IF WATER IS WITHHELD AT THE BATCHING FACILITY IT SHOULD BE REFLECTED ON THE LOAD TICKET. THE TOTAL AMOUNT OF WATER IN THE MIX SHALL NOT EXCEED WHAT IS NOTED ON THE APPROVED MIXED. THIS SHALL BE NOTED IN THE SPECIAL INSPECTOR'S RECORDS.
8. CONCRETE EXPOSED TO WEATHER, VEHICLES, AND/OR DEICING CHEMICALS SHALL BE AIR-ENTRAINED WITH 6% (+/-) 1.5% ENTRAINED AIR BY VOLUME AT POINT OF DISCHARGE. DO NOT ALLOW AIR CONTENT OF TROWELED FINISHED FLOORS TO EXCEED 3%.
9. SUBMIT CONCRETE MIX PROPORTIONS PRIOR TO START OF WORK. DO NOT BEGIN CONCRETE PRODUCTION UNTIL MIXES HAVE BEEN REVIEWED AND ARE ACCEPTABLE TO THE ENGINEER.
10. READY MIX CONCRETE SHALL COMPLY WITH REQUIREMENTS OF ASTM C94.
11. CONCRETE WORK EXECUTION
    A. CONSTRUCT FORMS TO CORRECT SIZE, SHAPE, ALIGNMENT, ELEVATION AND POSITION; AND TO SUPPORT VERTICAL AND LATERAL LOADS.
    B. POSITION, SUPPORT, AND SECURE REINFORCEMENT AGAINST DISPLACEMENT. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE, UNLESS NOTED OTHERWISE ON THE DRAWINGS:
       CAST AGAINST AND EXPOSED TO EARTH........3 INCHES
       EXPOSED TO EARTH OR WEATHER..................2 INCHES
       NOT EXPOSED TO WEATHER OR
       IN CONTACT WITH EARTH.................................1 ½ INCHES
    C. PROVIDE CONTROL JOINTS IN SLABS-ON-GRADE AT NOT GREATER THAN 15 FEET ON CENTER IN EACH DIRECTION. SAW CUT CONTROL JOINTS MINIMUM ¼ OF SLAB DEPTH, AS SOON AFTER SLAB FINISHING WITHOUT DISLODGING AGGREGATE.
    D. STEEL TROWEL FINISH ALL INTERIOR CONCRETE SLABS, BROOM FINISH ALL EXTERIOR CONCRETE SLABS.
    E. CURE ALL CONCRETE IN COMPLIANCE WITH ACI 301, USING A LIQUID TYPE MEMBRANE, NON-RESIDUAL, CURING COMPOUND COMPLYING WITH ASTM C309. ASSURE COMPATIBILITY WITH FINISH FLOOR COVERING.



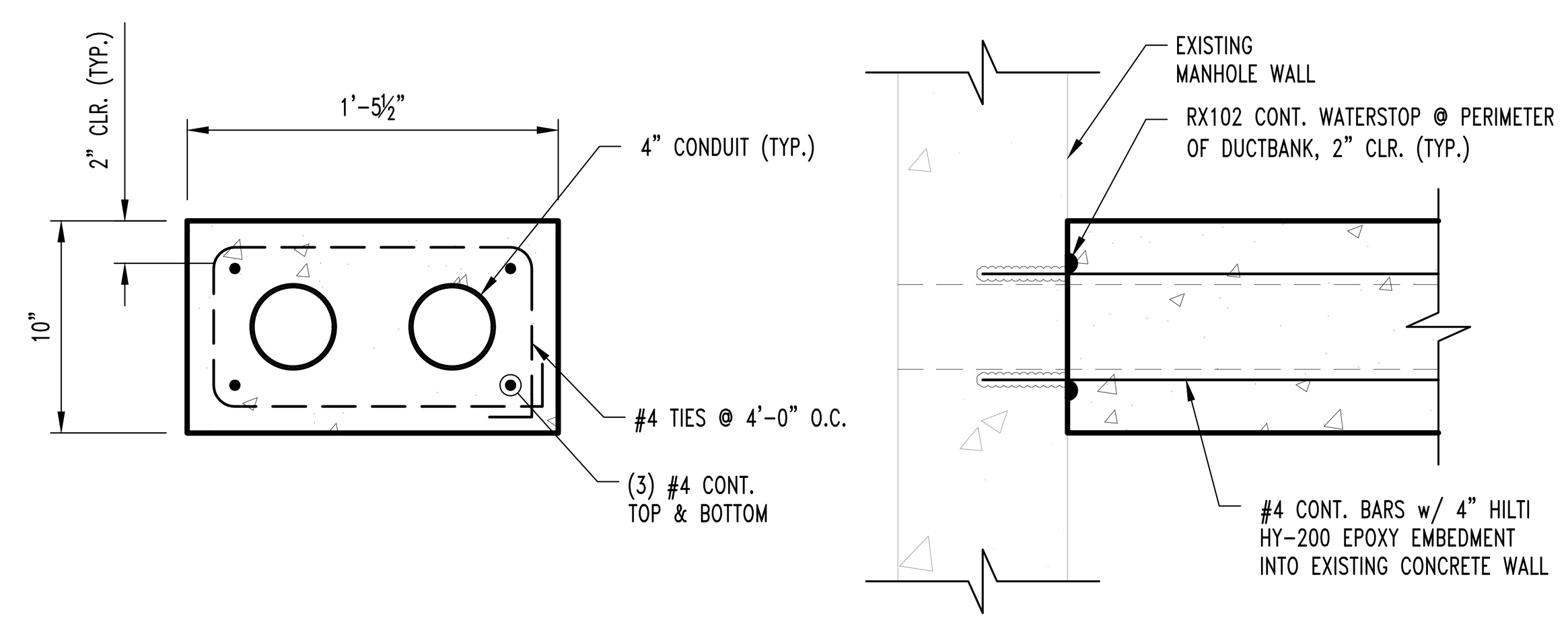
1 / S100 **EXISTING EMH-175 MANHOLE PLAN**
SCALE: ¾" = 1'-0"



S1 / S100 **DUCT BANK CONNECTION DETAIL**
SCALE: ¾" = 1'-0"

NOTE:
REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

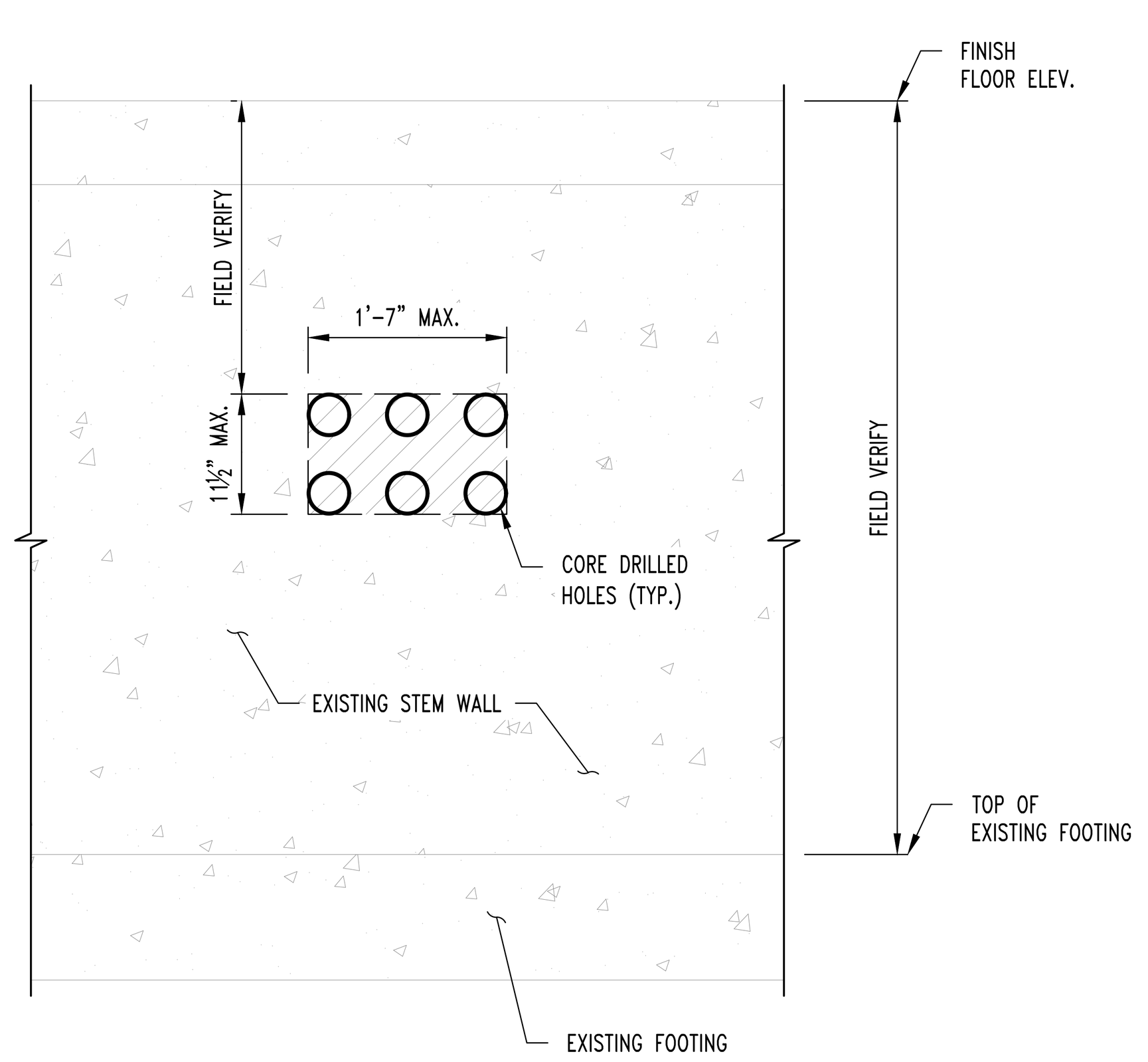
SIDE VIEW



S2 / S100 **DUCT BANK CONNECTION DETAIL**
SCALE: ¾" = 1'-0"

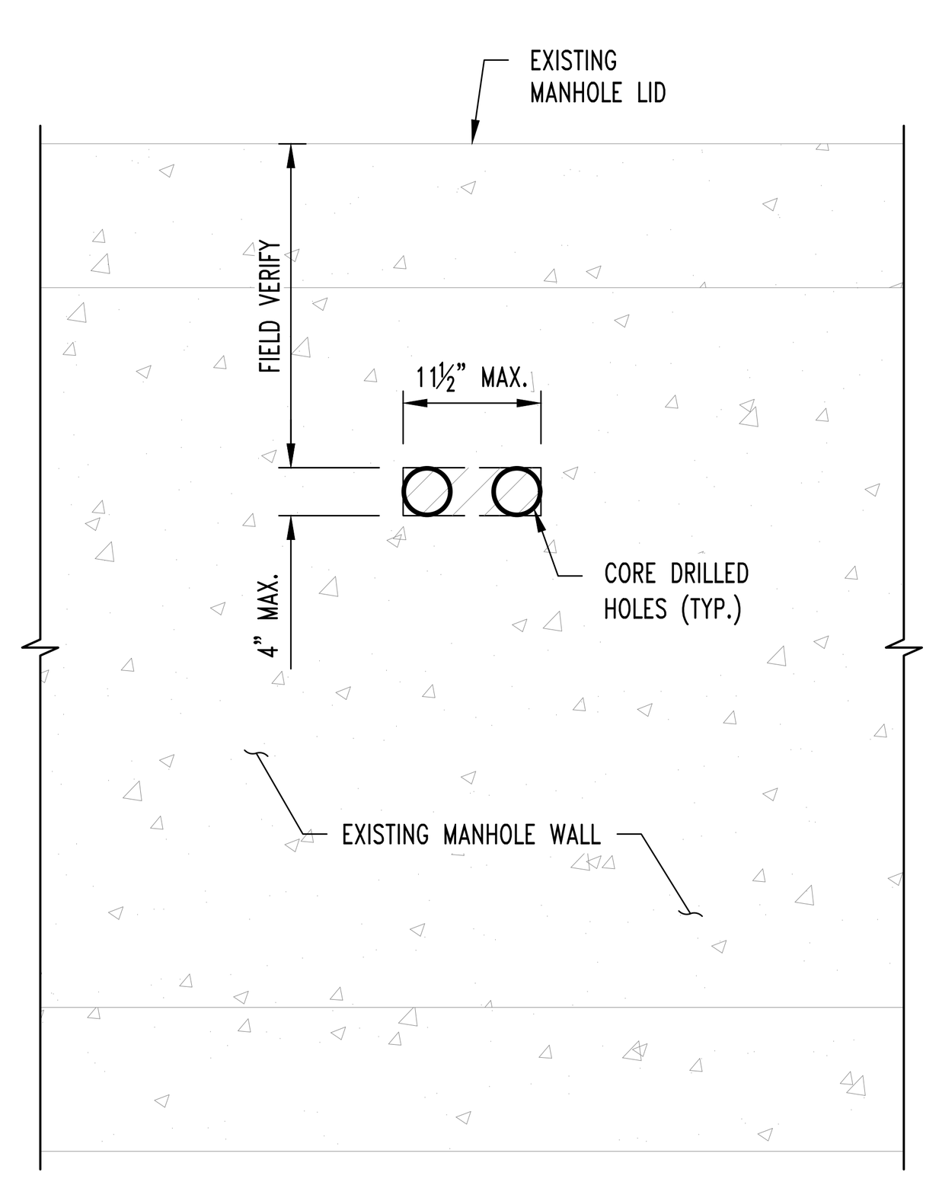
NOTE:
REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

SIDE VIEW



CONDUIT CORES THRU EXISTING STEM WALL @ EXISTING BUILDING

NOTE:
REFER TO DETAIL S1 ON THIS SHEET FOR WATERPROOFING INFO.



CONDUIT CORES THRU EXISTING MANHOLE WALL

NOTE:
REFER TO DETAIL S2 ON THIS SHEET FOR WATERPROOFING INFO.

Electrical Engineer

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OWNER

The Curators of the University of Missouri

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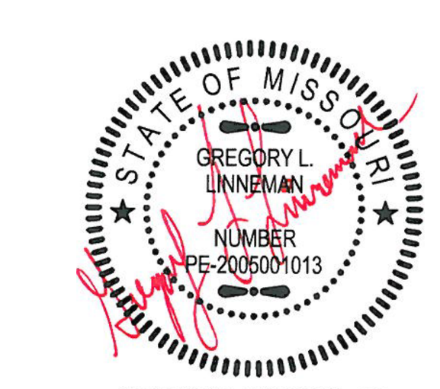

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013
01/03/2024

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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Crockett Project No: 240470

Bid Documents

Issued: 01/06/2025

Rev. #	Description	Date Issued

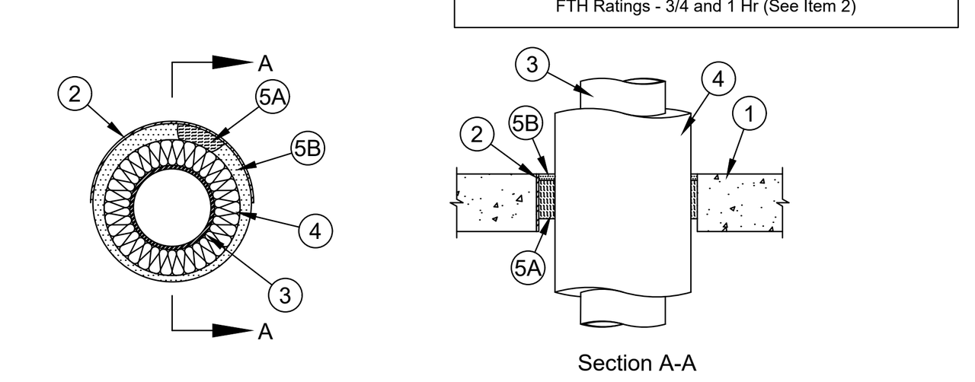
EXISTING EMH-175 MANHOLE PLAN & DETAILS

S100

TYPICAL FIRESTOPPING DETAILS

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. C-AJ-5138**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 2 Hr	F Rating - 2 Hr
T Ratings - 3/4 and 1 Hr (See Item 2)	FT Ratings - 3/4 and 1 Hr (See Item 2)
	FH Rating - 2 Hr
	FTH Ratings - 3/4 and 1 Hr (See Item 2)



Section A-A

1. **Floor or Wall Assembly -** Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 12 in. Max diam of opening in floors constructed of hollow-core precast concrete units is 7 in.
   See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve -** (Optional) - Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces. **When steel sleeve is used, the T Rating is 3/4 hr. When steel sleeve is omitted in min 4-1/2 in. thick concrete , the T Rating is 1 hr.**
3. **Through Penetrant -** One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes and tubes may be used:
   A. **Steel Pipe -** Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. **Iron Pipe -** Nom 6 in. diam (or smaller) cast or ductile iron pipe.
   C. **Copper Pipe -** Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
   D. **Copper Tube -** Nom 4 in. diam (or smaller) Regular L (or heavier) copper tube.
4. **Pipe Coverings -** One of the following types of pipe coverings shall be used:
   A. **Pipe and Equipment Covering Materials* -** Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product.
   See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   B. **Pipe Covering Materials* -** Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. OC.
   IIG MINWOOL L L C - High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc
   C. **Sheathing Material* -** Used in conjunction with Item 4B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 4B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.
   See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. **Firestop System -** The firestop system shall consist of the following:
   A. **Packing Material -** Min 4 pcf mineral wool batt insulation compressed and tightly packed into opening as a permanent form . Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 5B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material (Item 5B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface. Packing material depth is dependent upon several variables, as shown in the table under Item 5B.
   B. **Fill, Void or Cavity Material* - Sealant -** Fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surfaces of floor. Fill material depth is dependent upon several variables, as shown in the following table:

Min Floor or Wall thickness, in.	Annular Space, in.	Min Packing Material Depth, in.	Min Fill Material Depth, in.
2-1/2	1/4 to 5/8	1-1/2	1
4-1/2	1/4 to 1-5/8	3	1/2

SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant

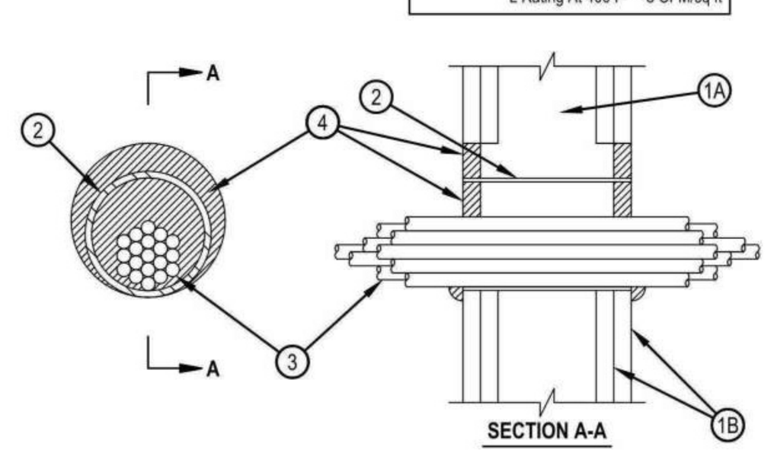
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. W-L-3065

WL 3065

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 0 and 3/4 Hr (See item 3)	FT Rating — 0 and 3/4 Hr (See item 3)
L Rating At Ambient — 15 CFM/sq ft	FH Rating — 1 and 2 Hr (See Item 1)
L Rating At 400 F — 8 CFM/sq ft	FTH Rating — 0 and 3/4 Hr (See item 3)
	L Rating At Ambient — 15 CFM/sq ft
	L Rating At 400 F — 8 CFM/sq ft



SECTION A-A

1. Wall Assembly — The 1 or 2 fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max diam of opening is 5-1/2 in. (138 mm) when sleeve (Item 2) is employed. Max diam of opening is 4 in. (102 mm) when sleeve (Item 2) is not employed.
   The F, FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
2. Metallic Sleeve — (Optional) - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 (or heavier) steel pipe or min 0.016 in. thick (0.41 mm, No. 28 ga) galv steel sleeve installed flush with wall surfaces. The annular space between steel sleeve and periphery of opening shall be min 0 in. (0 mm, point contact) to max 1 in. (25mm). When Schedule 5 steel pipe or EMT is used, sleeve may extend up to 18 in. (457 mm) beyond the wall surfaces. As an option when Schedule 5 steel pipe or EMT is used, sleeve may extend continuously beyond one wall surface. When cable bundle penetrates wall assembly at an angle of 45 degrees, no metallic sleeve is used.

System No. W-L-3065

WL 3065

3. Cables — Aggregate cross-sectional area of cable in opening to be max 45 percent of the cross-sectional area of the opening. The annular space between the cable bundle and the periphery of the opening to be min 0 in. (point contact) to max 1 in. (25 mm). When sleeve is continuous on one side of wall (see Item 2), the cable fill may be 0 to 45% and the max annular space is not limited. Cables to be rigidly supported on both sides of the wall assembly. Any combination of the following types and sizes of copper conductor cables may be used:
   A. Max 7/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
   B. Max 25 pair No. 24 AWG telephone cable with PVC insulation and jacket.
   B1. Max 4 pr No. 22 AWG Cat 5 or Cat 6 computer cables.
   C. Type RG/U coaxial cable with polyethylene (PE) insulation and PVC jacket having a max outside diameter of ½ in. (13 mm).
   C1. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   D. Multiple fiber optical communication cable jacketed with PVC and having a max OD of 5/8 in. (16 mm).
   E. Through Penetrating Products*— Max three copper conductor No. 8 AWG .Metal-Clad Cable+.
   AFC CABLE SYSTEMS INC
   F. Max 3/C (with ground)(or smaller) No. 8 AWG copper conductor cable with PVC insulation and jacketing.
   G. Max 3/4 in. (19 mm) diam copper ground cable with or without a PVC jacket.
   H. Fire Resistive Cables* - Max 1-1/4 in. (32 mm) diam single conductor or multi conductor Type MI cable. A min 1/8 in. (3 mm) separation shall be maintained between MI cables and any other types of cable.
   I. Max 4/C with ground 300 kcmil (or smaller) aluminum SER cable with PVC insulation and jacket.
   J. Through Penetrating Product* - Any cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the Through Penetrating Products category.
   K. Maximum 3/C No. 8 AWG metal-clad cable.
   L. Maximum 5/8 diam fiber-optic cable with PVC jacket.
   For cable bundle penetrating the wall assembly at an angle of 45 degrees, the T, FT, FTH Ratings are 0 hr and 3/4 hr for 1 and 2 hr wall assemblies, respectively.
   See Through Penetrating Product (XHLY) category in the Fire Resistance Directory for names of manufacturers.
4. Fill, Void or Cavity Material*— Sealant or Putty — Fill material applied within the annulus, flush with each end of the steel sleeve or wall surface. Fill material installed symmetrically on both sides of the wall. A min 5/8 in. (16 mm) thickness of sealant is required for the 1 or 2 hr F Rating . An additional 1/2 in. (13 mm) diam bead of fill material shall be applied at the interface of sleeve with gypsum board.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP606, FS-One Sealants or FS-ONE MAX Intumescent Sealantor or CP618 Putty
5. Packing Material — (Optional, Not Shown) — Mineral wool forming material may be used as a backer for the fill material (Item 4). When used, it shall be firmly packed into annular space within the sleeve as a permanent form and recessed from end of sleeve to accommodate the required thickness of fill material.

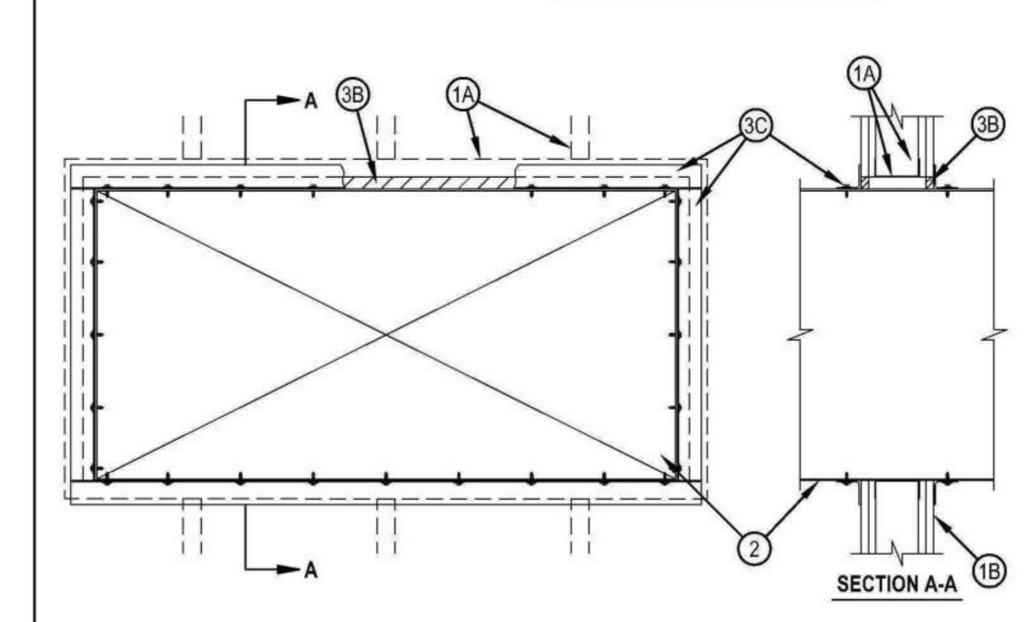
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. W-L-7155

WL 7155

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

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



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. Additional steel studs shall be used to completely frame the opening.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max area of opening is 73.7 sq ft (6.85 m2) with a max dimension of 104 in. (2.64 m).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Steel Duct — Max 100 in. by 100 in. (2.5 by 2.5 m) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The duct shall be constructed and reinforced in accordance with SMACNA construction standards. The space between the steel duct and periphery of opening shall be min 0 in. (point contact) to max 2 in. (51 mm). Steel duct to be rigidly supported on both sides of the wall assembly.

System No. W-L-7155

WL 7155

2A1. Through-Pentrating Product* — As an alterate to Item 2. Fiber cement with galvanized steel facing, 3/8 in.(10 mm) thick composite metallic duct, with a max cross-sectional area of 43.0 sq ft, (4 m2) and a max individual dimension of 78 3/4 in. (2 m). Duct to be installed either concentrically or eccentrically within the firestop system such that the annular space is min 0 in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides of wall assembly. Refer to Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory.
DURASYSTEMS BARRIERS INC — Type DuraDuct HP.
2A2. Through-Pentrating Product* — As an alternate to Item 2. Fiber cement with galvanized steel facing, 1/4 in. (6 mm) thick, with a max cross-sectional area of 1764 sq in. (1.14 m2), and a max individual dimension of 42 in. (1067 mm). Duct to be installed either concentrically or eccentrically within the firestop system such that the annular space is min 0 in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides of wall assembly and installed in accordance. Refer to Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory.
DURASYSTEMS BARRIERS INC — Type DuraDuct SD.
2A3. Through-Pentrating Product* — As an alternate to Item 2. Galvanized steel faced duct panel, with a max cross-sectional area of 2450 sq in. (1.58 m2), and a max individual dimension of 49-1/2 in. (1258 mm) Duct to be installed either concentrically or eccentrically within the firestop system such that the annular space is min 0 in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides wall assembly. Refer to Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory.
DURASYSTEMS BARRIERS INC — Type DuraDuct GNX.
3 Firestop System — The firestop system shall consist of the following:
   A. Packing Material — (Optional, Not Shown) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fitted into annular space. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material.
   A1. Packing Material — Required as specified in Table below. Min 3-3/4 in. (95 mm) or 5 in. (127 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form for 1 and 2 hr rated assemblies, respectively. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-S SIL GG Sealant, FS-ONE Sealant, FS-ONE MAX Intumescent Sealant or CP606 Flexible Firestop Sealant
   C. Steel Retaining Angles — Min No. 16 gauge galv steel angles sized to lap steel duct a min of 2 in. (51 mm) and to lap wall surfaces a min of 1 in. (25 mm). When max duct dimension does not exceed 48 in. (122 cm) and duct area does not exceed 1300 in2 (8387 cm2), angles may be min No. 18 gauge galv steel. Angles attached to steel duct on both sides of wall with min No. 10 by 1/2 in. (13 mm) long steel sheet metal screws located a max of 1 in. (25 mm) from each end of steel duct and spaced a max of 6 in. (152 mm) OC. Steel angles are optional for those sides of duct that do not exceed the dimension specified in Table below, dependent on packing material, sealant and annular space as specified.

Max Duct Dimension	Duct Thickness	Annular Space	Packing Material	Angle (Item 3C) Required
24 in. (610 mm)	24 ga or heavier	1/2 in. min to 1 in. max (13 to 25 mm)	Item 3A1	No

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

CODE & ZONING INFORMATION

Applicable Codes:
- 2021 International Building Code
- 2021 International Plumbing Code
- 2021 International Mechanical Code
- 2021 International Existing Building Code
- 2021 International Fire Code
- 2021 International Fuel Gas Code
- 2017 ICC A117.1 Accessible and Usable Buildings and Facilities
- 2020 National Electric Code
- 2019 NFPA 110 Standard for Emergency and Standby Power Systems
- 2018 NFPA 90A Installation of Air Conditioning and Ventilating Systems
- 2020 NFPA 75 Standard for the Fire Protection of Information Technology Equipment
- 2019 NFPA 72 National Fire Alarm Code
- 2019 NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
- 2019 NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals
- 2019 NFPA 20 Standard for the Installation of Stationary Fire Pumps for Fire Protection
- 2019 NFPA 14 Standard for the Installation of Standpipe, Private Hydrants and Hose Systems
- 2019 NFPA 13 Installation of Fire Sprinkler Systems
- 2019 ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality
- 2019 ASHRAE 90.1 Energy Standard for Buildings
- 2010 Americans with Disabilities Act - Standards for Accessible Design

Local Fire Department: City of Columbia Fire Department
Local Agencies Having Jurisdiction: UM Director of Facilities Planning and Development, University of Missouri
General Information:
Use Group - Business (B)
Construction Type – IB
Floor Areas:

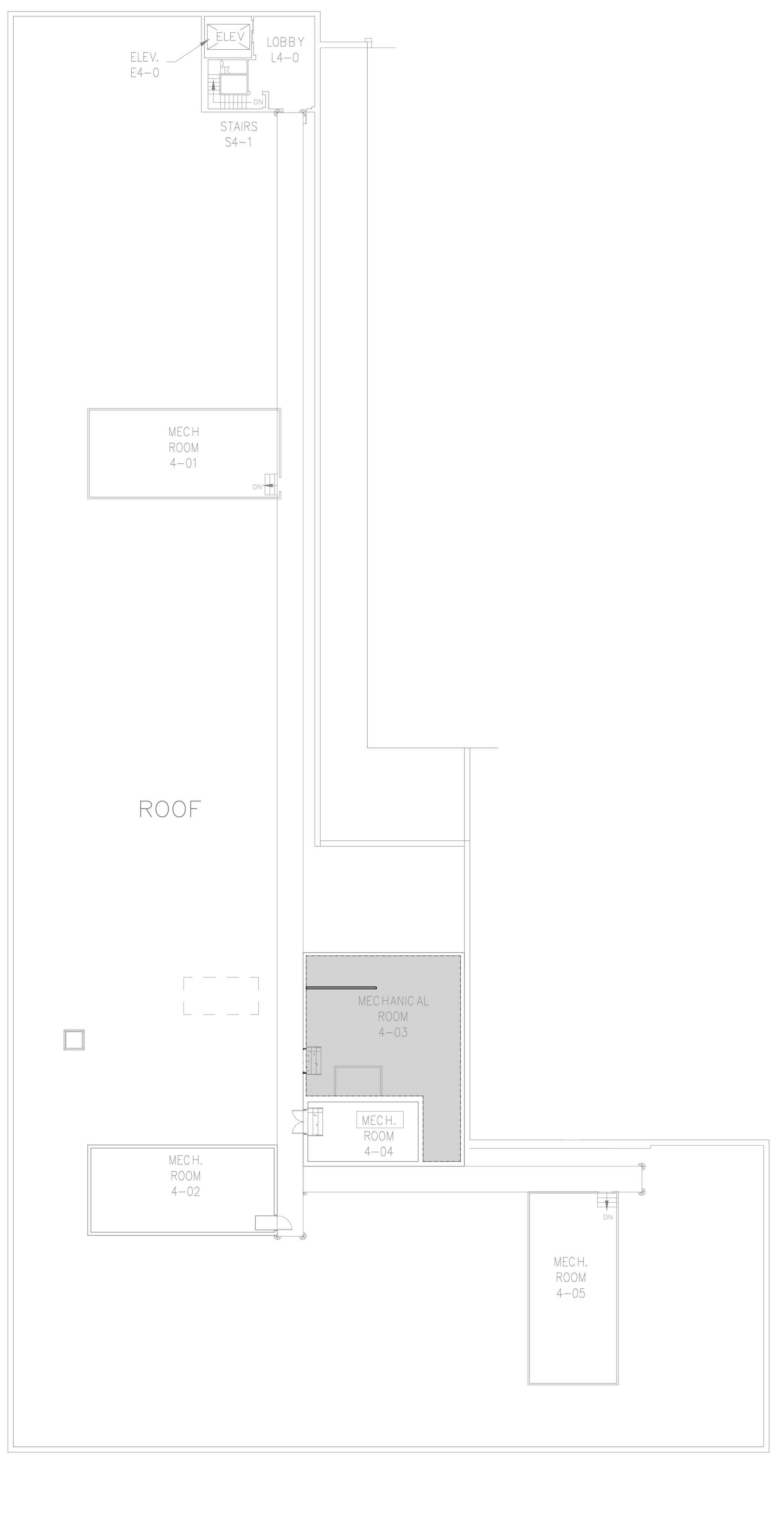
Basement:	28,297 SF
First Floor:	30,282 SF
Second Floor:	27,964 SF
	86,543 SF

Per IBC Table 506.2, Construction Type 1B is unlimited in allowable area (square feet)

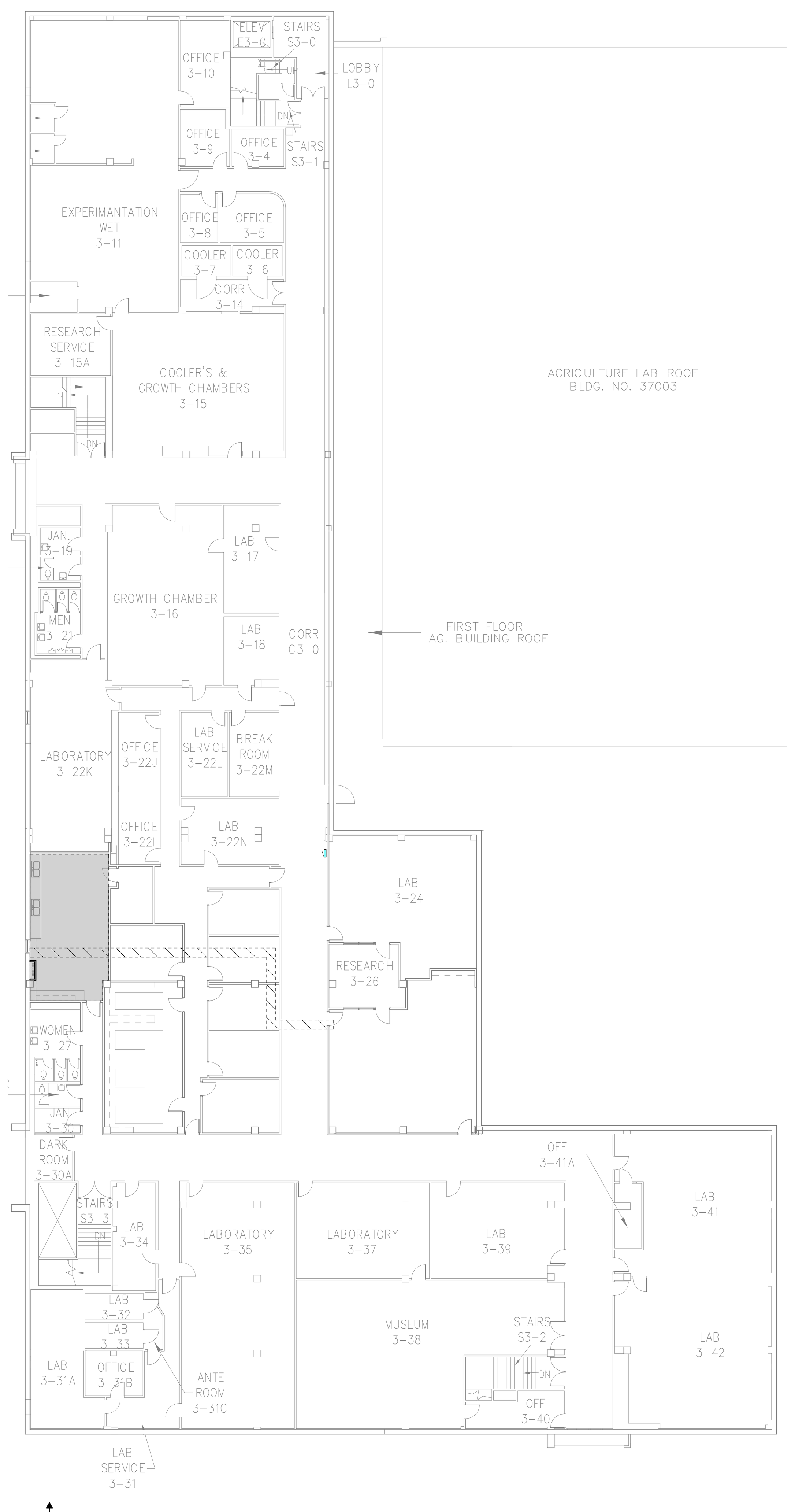
Fire Resistive Requirements – Type IB Construction

Structural Frame	2 Hours
Bearing Walls	2 Hours
Non-Bearing Walls	0 Hours
Floor Construction	2 Hours
Roof Construction	1 Hours
Exit Stair Enclosures	2 Hours
Shafts & Hoistways	2 Hours

Existing Wall Conditions: Refer to Table 721.1.(2.) 3-1.1-4 For minimum thickness 2.8" of existing concrete masonry walls
Special Inspections (2021 IBC 1705.17): Fire Resistant Penetrations and Joints
Deferred Submittals: IBC 107.3.4.1 - Not Applicable
Building Risk Category (2021 IBC 1604.5): Risk Category III
Soils Classification: Refer Structural
Seismic Design Category: Refer Structural



04 PENTHOUSE PLAN - KEYPLAN
A001 1" = 20'-0"



03 SECOND FLOOR PLAN - KEYPLAN
A001 1" = 20'-0"

02 FIRST FLOOR PLAN - KEYPLAN
A001 1" = 20'-0"

01 BASEMENT PLAN - KEYPLAN
A001 1" = 20'-0"

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STATE OF MISSOURI
Bradley John Stegemann
Number A-2008015243
ARCHITECT
01/06/2025

Bradley J Stegemann - Architect
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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

ISSUE FOR BID

Issued: 01/06/2025

Rev. #	Description	Date Issued

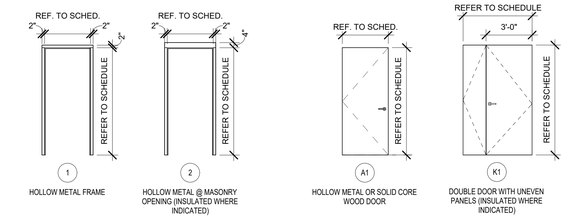
CODE INFORMATION & DETAILS

A001

1/3/2025 11:53:52 AM

DOOR AND FRAME SCHEDULE

DOOR NO	DOOR SIZE W	H	THK	MATL	ELEV	FRAME MATL	ELEV	DETAIL HEAD	DETAIL JAMB	FIRE RATING LABEL	HARDWARE SET NO	NOTES
1-81	5'-0"	8'-0"	1 3/4"	SCWD	K1	HM	1	03/A300	03/A300	45 MIN.	2	
C1-2	3'-6"	8'-0"	1 3/4"	SCWD	A1	HM	1	03/A300	03/A300	45 MIN.	1	
4-03	5'-0"	7'-0"	1 3/4"	HM	K1	HM	2	04/A300	04/A300		3	INSULATED

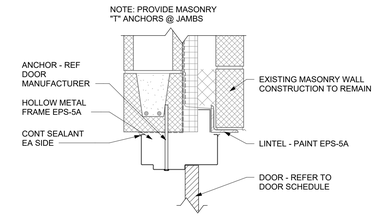


FRAME TYPES

1/4" = 1'-0"

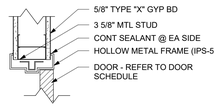
DOOR TYPES

1/4" = 1'-0"



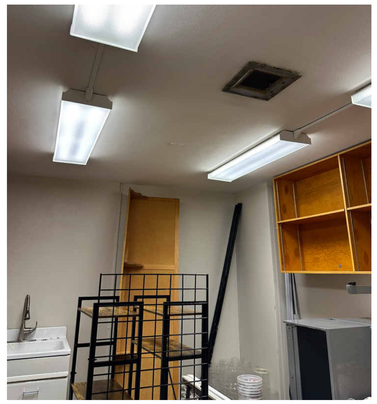
04 DTL - PENTHOUSE HEAD (JAMB SIM)

A300 1 1/2" = 1'-0"



03 DTL - TYP. HEAD/JAMB

A300 1 1/2" = 1'-0"



PHOTOS - LAB 1-81 (FOR REFERENCE)

02 BASEMENT PLAN - NEW WORK

A300 1/8" = 1'-0"

GENERAL NOTES - NEW WORK

1. FIELD VERIFY ALL DIMENSIONS. IF DIMENSIONS VARY SIGNIFICANTLY NOTIFY THE ARCHITECT
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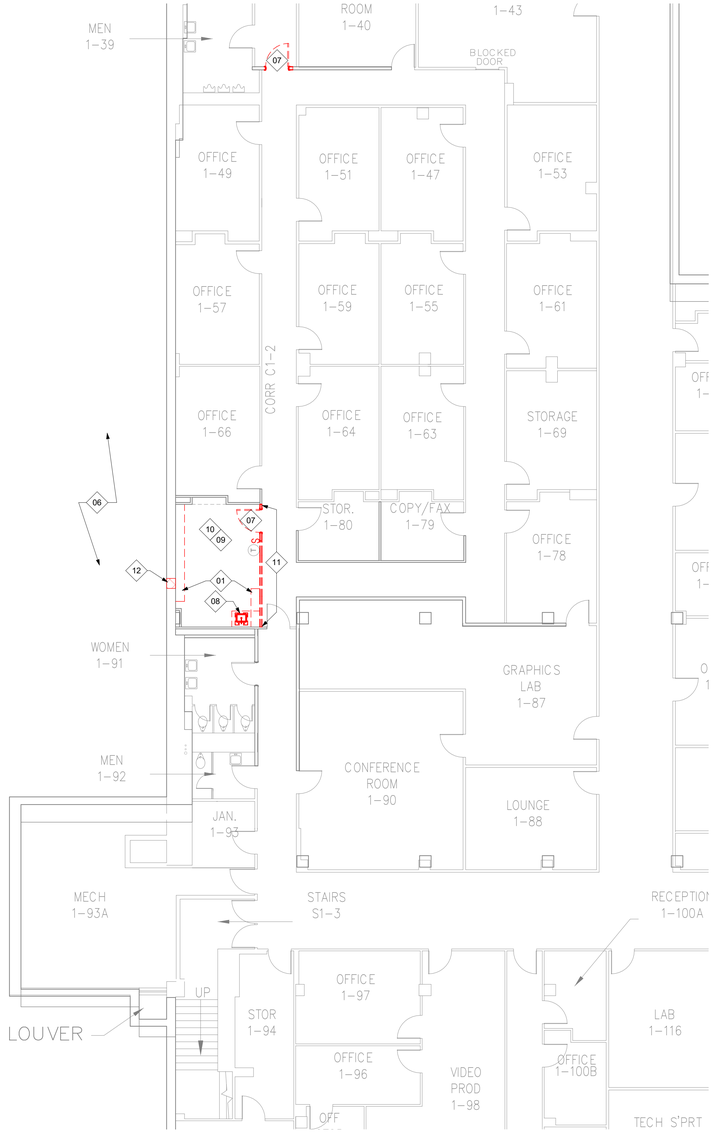
3. ALL NON STRUCTURAL METAL FRAMING (NSMF) 16" ON CENTER UNLESS NOTED OTHERWISE
4. GRAY WALLS & DOORS ARE EXISTING TO REMAIN - PROTECT DURING CONSTRUCTION

KEYNOTES - NEW WORK PLANS

01	INSTALL VERTICAL CHASE ENCLOSURE. PAINT TO MATCH ADJACENT WALLS
02	PATCH / INFILL ADJACENT CASEWORK
03	REINSTALL SALVAGED CEILING TILES
04	PATCH & SEAL AROUND WALL PENETRATIONS - REFER DETAILS A001
05	PATCH HARD CEILING - PAINT TO MATCH ADJACENT
06	BID ALTERNATE #1: NEW 2X2 CEILING TILE & GRID, AND LIGHTING - REFER MEP
07	TRANSFORMER ON CONRETE PAD - REFER MEP & CIVIL
08	RUBBER BASE TO MATCH ADJACENT WALLS
09	INSTALL FIRESTOPPING AT FLOOR PENETRATIONS - REFER DETAILS ON A001
10	ELECTRICAL EQUIPMENT ON 4" CONCRETE PAD - REFER MEP
11	NEW DOOR & FRAME - PAINT TO MATCH ADJACENT
12	PATCH VCT FLOORING AT WIDER DOOR OPENING
13	4'X4' METAL ACCESS PANEL
14	FAN COIL UNIT - REFER MEP
15	INSTALL GYPSUM BOARD OF PARTITION TYPE ON THE NORTH SIDE OF WALL
16	MODIFY WALL AS REQUIRED TO ACCESS EXISTING DRAIN PIPING - CONNECT PIPING AS INDICATED ON ELECTRICAL DRAWINGS



01 BASEMENT PLAN - DEMOLITION

A300 1/8" = 1'-0"

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06	LANDSCAPING - REMOVE AS INDICATED ON CIVIL DRAWINGS
07	DOOR, FRAME, & HARDWARE - REMOVE & DISPOSE OF
08	CABINET WITH SINK - REMOVE & DISPOSE OF. CAP OFF PLUMBING - REFER MEP
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10	HARD CEILING, LIGHTS, ACCESS PANELS - REMOVE & DISPOSE OF
11	PARTITION PANELS - REMOVE & DISPOSE OF - REFER TO HAZARDOUS MATERIAL REMOVAL SPECIFICATION
12	EXTERIOR WALL PENETRATION FOR CONDUITS TO NEW TRANSFORMER
13	BASE BID: REMOVE HARD CEILING ABOVE AS REQUIRED FOR NEW 4X4 ACCESS PANEL

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Antella Project No: A224-01D

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BASEMENT FLOOR PLANS

A300

1/3/2025 11:53:53 AM

FINISH SCHEDULE:

WALL BASE:
RESILIENT BASE
RB-1: TARKETT, 4"H DURACOVE, PLACEHOLDER COLOR: BURNT UMBER #63, COLOR TO BE FIELD VERIFIED TO MATCH EXISTING

WALLS:
PAINT
IPS-1A: EGGSHELL LATEX ON GYPSUM BOARD / PLASTER, SHERWIN WILLIAMS, NO VOC, PLACEHOLDER COLOR: SW7063 ACCESSIBLE BEIGE, COLOR TO BE FIELD VERIFIED TO MATCH EXISTING

CEILINGS:
ACOUSTICAL
AC-1 GRID: ARMSTRONG, #7300 SYSTEM, 15/16" PRELUDE, INTERMEDIATE DUTY

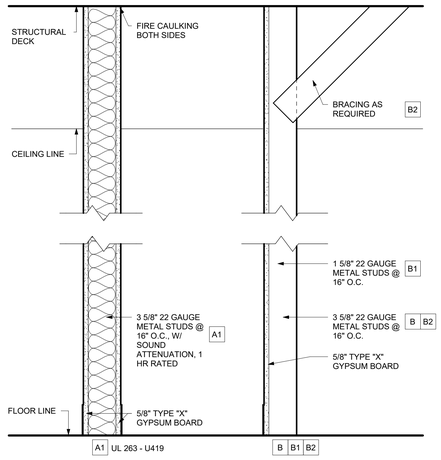
AC-1 TILE: ARMSTRONG, #1713, 2'X2', FINE FISSURED 15/16" SQUARE LAY-IN (FIELD VERIFY & MATCH EXISTING)

IPS-2A: FLAT LATEX ON GYP., SHERWIN WILLIAMS, CEILING WHITE (BULKHEAD / SOFFIT)

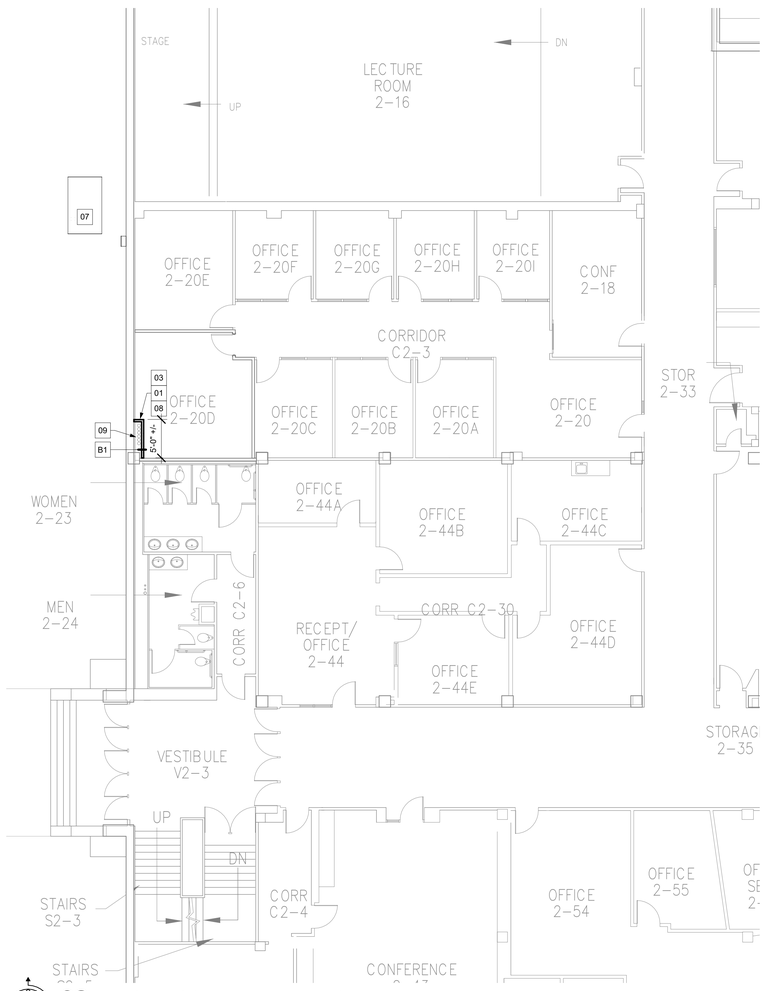
DOOR FRAMES:
IPS-5A: SEMI-GLOSS ALKYD PAINT ON METAL, LOW VOC, PLACEHOLDER COLOR: SW7063 ACCESSIBLE BEIGE, COLOR TO BE FIELD VERIFIED TO MATCH EXISTING

SUBMIT SAMPLES FOR OWNER & ARCHITECT APPROVAL

PHOTO - OFFICE 2-20D (FOR REFERENCE)



TYPICAL PARTITIONS
1 1/2" = 1'-0"



02 FIRST FLOOR PLAN - NEW WORK
A301 1/8" = 1'-0"

GENERAL NOTES - NEW WORK

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KEYNOTES - NEW WORK PLANS

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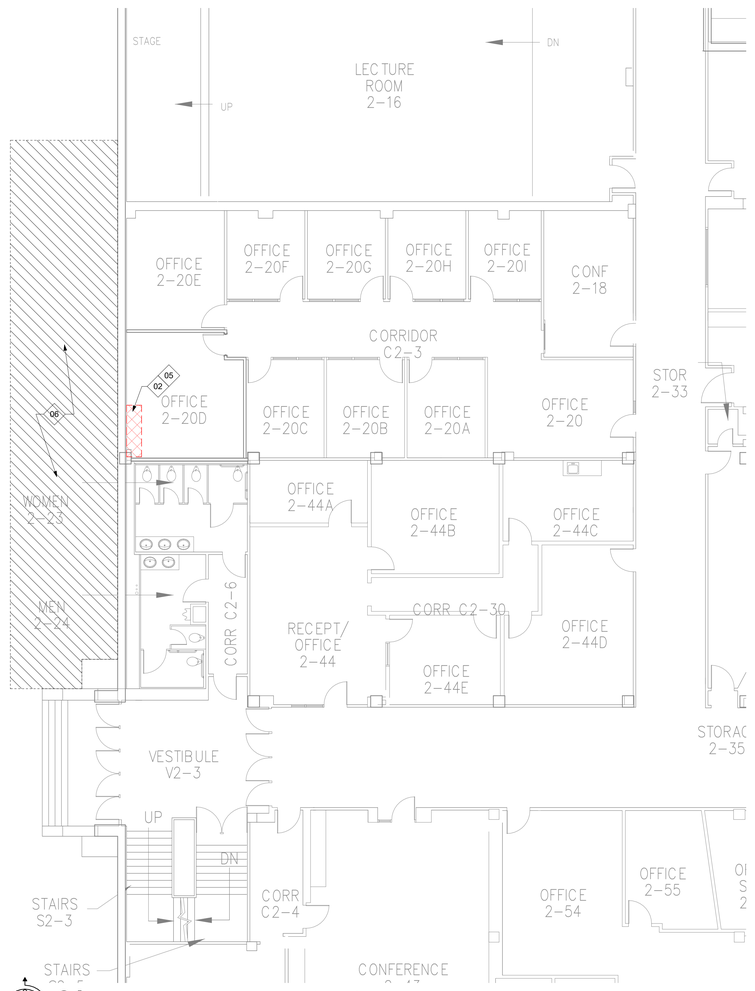
07	TRANSFORMER ON CONRETE PAD - REFER MEP & CIVIL
08	RUBBER BASE TO MATCH ADJACENT WALLS
09	INSTALL FIRESTOPPING AT FLOOR PENETRATIONS - REFER DETAILS ON A001
10	ELECTRICAL EQUIPMENT ON 4" CONCRETE PAD - REFER MEP
11	NEW DOOR & FRAME - PAINT TO MATCH ADJACENT
12	PATCH VCT FLOORING AT WIDER DOOR OPENING
13	4'X4' METAL ACCESS PANEL
14	FAN COIL UNIT - REFER MEP
15	INSTALL GYPSUM BOARD OF PARTITION TYPE ON THE NORTH SIDE OF WALL
16	MODIFY WALL AS REQUIRED TO ACCESS EXISTING DRAIN PIPING - CONNECT PIPING AS INDICATED ON ELECTRICAL DRAWINGS



01 FIRST FLOOR PLAN - DEMOLITION
A301 1/8" = 1'-0"

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Antella Project No: A224-01D

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FIRST FLOOR PLANS

A301

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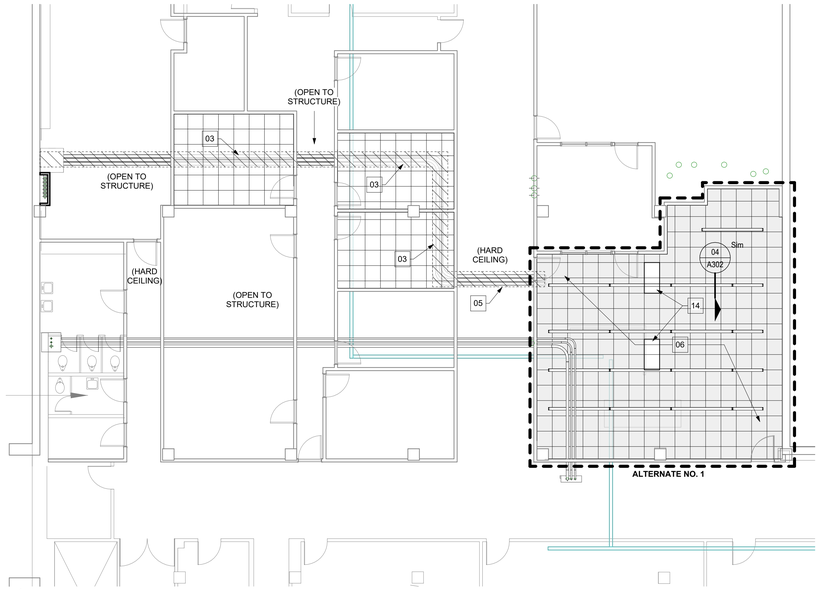
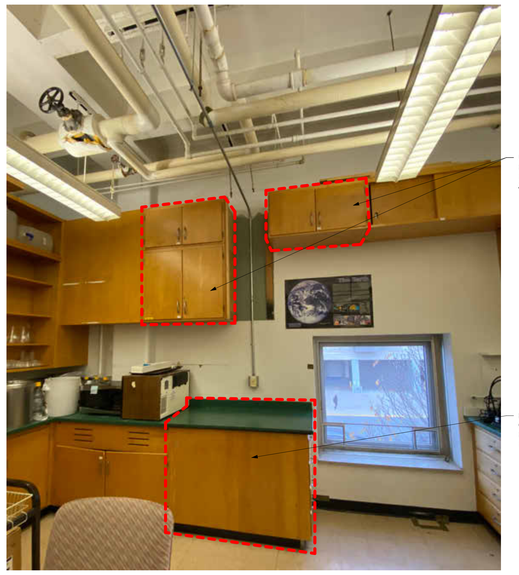


03 LEVEL 02 - REFLECTED CEILING PLAN

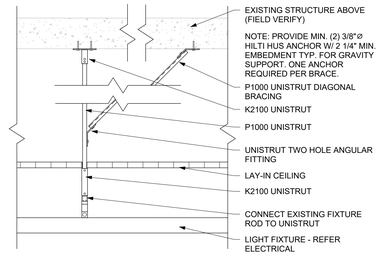
A302 1/8" = 1'-0"



UPPER CABINETS - REMOVE AS NEEDED FOR CONDUIT CHASE AND PULL BOX

BASE CABINETS & COUNTERTOP - REMOVE AS NEEDED FOR CHASE

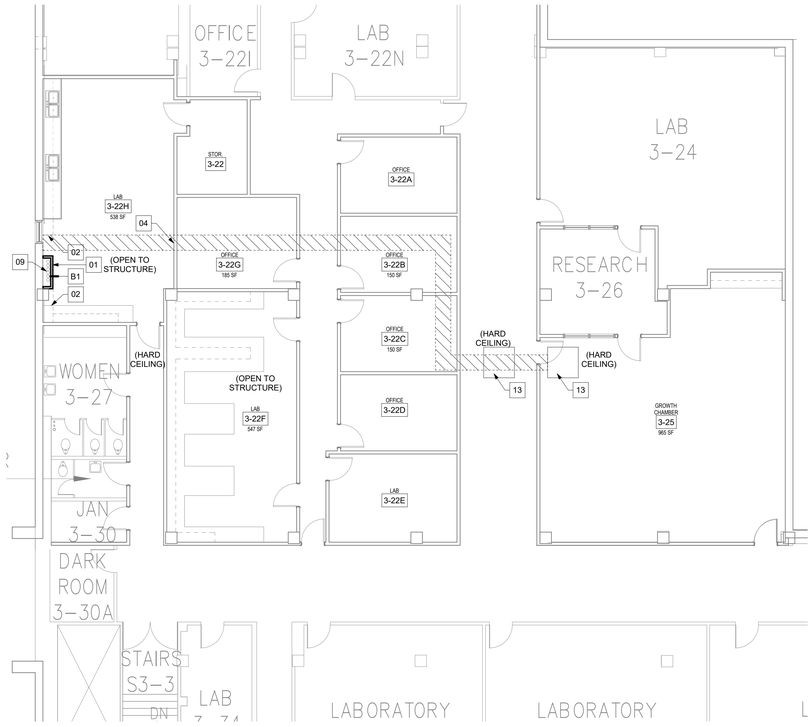
PHOTO - LAB 3-22H



04 TYP. DTL - ALT. NO. 1 LIGHT FIXTURE SUPPORT

A302 NOT TO SCALE

PHOTO - GROWTH CHAMBER CEILING - ALTERNATE TO REPLACE



02 SECOND FLOOR PLAN - NEW WORK

A302 1/8" = 1'-0"

GENERAL NOTES - NEW WORK

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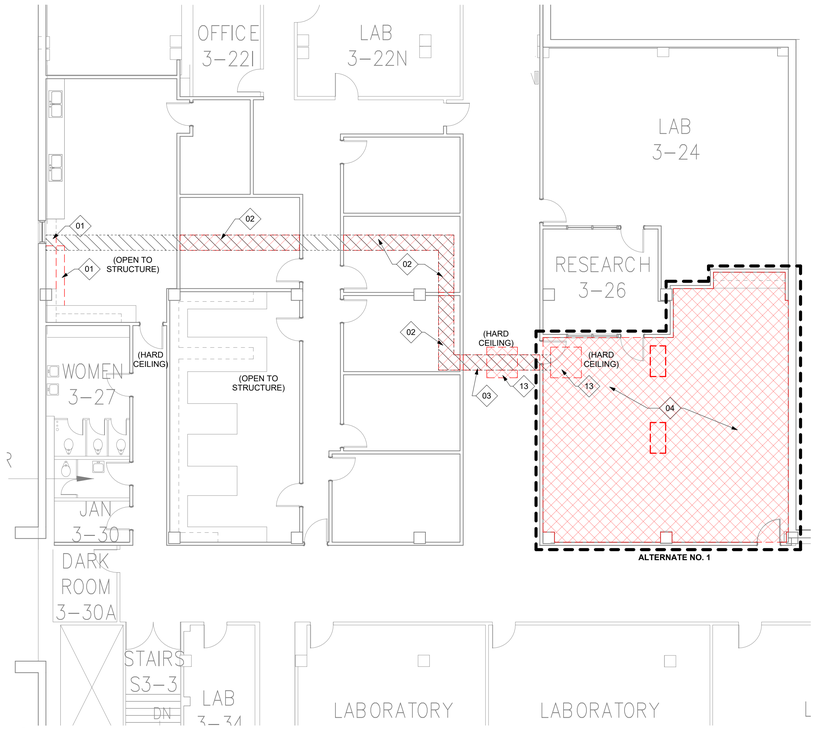

01 SECOND FLOOR PLAN - DEMOLITION

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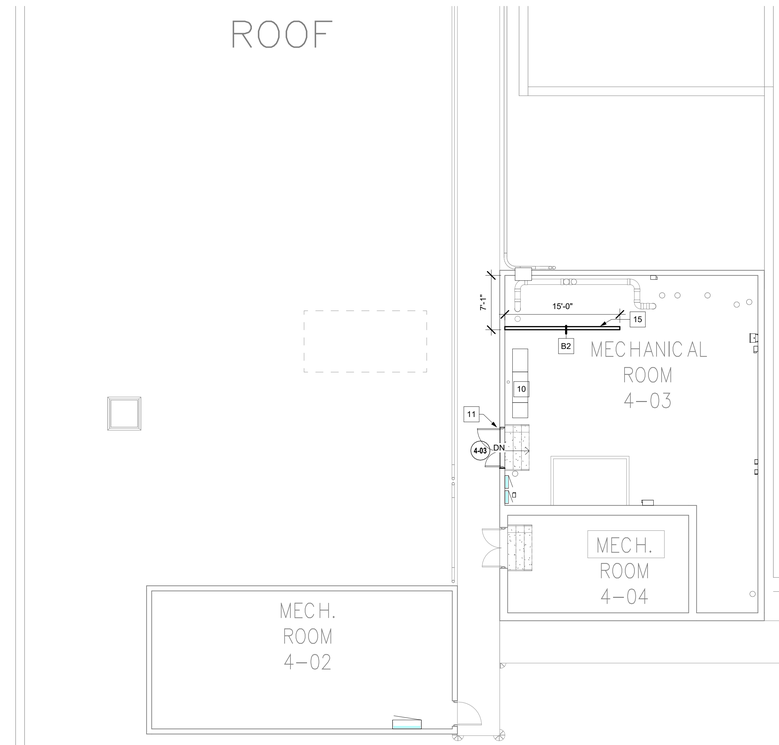
SECOND FLOOR PLANS

A302

1/3/2025 11:53:58 AM

PHOTO - INSIDE MECHANICAL - NORTH (FOR REFERENCE)



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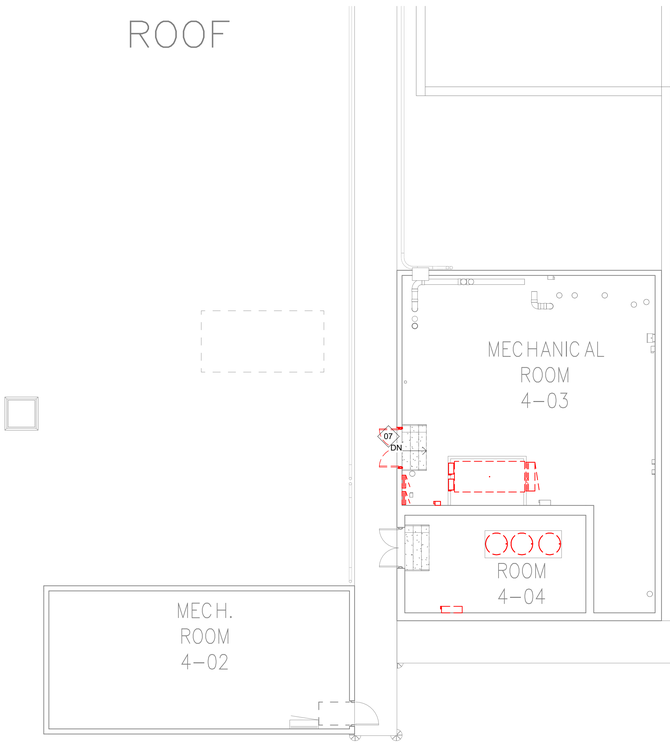
4. GRAY WALLS & DOORS ARE EXISTING TO REMAIN - PROTECT DURING CONSTRUCTION

KEYNOTES - NEW WORK PLANS

01	INSTALL VERTICAL CHASE ENCLOSURE. PAINT TO MATCH ADJACENT WALLS
02	PATCH / INFILL ADJACENT CASEWORK
03	REINSTALL SALVAGED CEILING TILES
04	PATCH & SEAL AROUND WALL PENETRATIONS - REFER DETAILS A001
05	PATCH HARD CEILING - PAINT TO MATCH ADJACENT
06	BID ALTERNATE #1: NEW 2X2 CEILING TILE & GRID, AND LIGHTING - REFER MEP
07	TRANSFORMER ON CONCRETE PAD - REFER MEP & CIVIL
08	RUBBER BASE TO MATCH ADJACENT WALLS
09	INSTALL FIRESTOPPING AT FLOOR PENETRATIONS - REFER DETAILS ON A001
10	ELECTRICAL EQUIPMENT ON 4" CONCRETE PAD - REFER MEP
11	NEW DOOR & FRAME - PAINT TO MATCH ADJACENT
12	PATCH VCT FLOORING AT WIDER DOOR OPENING
13	4'X4' METAL ACCESS PANEL
14	FAN COIL UNIT - REFER MEP
15	INSTALL GYPSUM BOARD OF PARTITION TYPE ON THE NORTH SIDE OF WALL
16	MODIFY WALL AS REQUIRED TO ACCESS EXISTING DRAIN PIPING - CONNECT PIPING AS INDICATED ON ELECTRICAL DRAWINGS

02 PENTHOUSE PLAN - NEW WORK

A303 1/8" = 1'-0"



GENERAL NOTES - DEMOLITION

1. BEFORE DEMOLITION PHASE, COORDINATE WITH OWNER REPRESENTATIVE
2. PROTECT EXISTING SURFACES & COMPONENTS SCHEDULED TO REMAIN
3. REFER TO CIVIL, STRUCTURAL, AND MEP DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION
4. REFER TO HAZARDOUS BUILDING MATERIALS SURVEY

KEYNOTES - DEMOLITION PLANS

01	CASEWORK - REMOVE AS NEEDED FOR WORK - REFER MEP
02	LAY-IN CEILING - REMOVE & SALVAGE AS NEEDED FOR WORK - REFER MEP
03	HARD CEILING - REMOVE AS NEEDED FOR WORK - REFER MEP
04	BID ALTERNATE #1: HARD CEILING, LIGHTS, ACCESS PANELS - REMOVE & DISPOSE OF
05	CARPET & RUBBER BASE - REMOVE & SALVAGE AS NEEDED FOR NEW CHASE
06	LANDSCAPING - REMOVE AS INDICATED ON CIVIL DRAWINGS
07	DOOR, FRAME, & HARDWARE - REMOVE & DISPOSE OF
08	CABINET WITH SINK - REMOVE & DISPOSE OF. CAP OFF PLUMBING - REFER MEP
09	VCT - REMOVE & DISPOSE OF
10	HARD CEILING, LIGHTS, ACCESS PANELS - REMOVE & DISPOSE OF
11	PARTITION PANELS - REMOVE & DISPOSE OF - REFER TO HAZARDOUS MATERIAL REMOVAL SPECIFICATION
12	EXTERIOR WALL PENETRATION FOR CONDUITS TO NEW TRANSFORMER
13	BASE BID: REMOVE HARD CEILING ABOVE AS REQUIRED FOR NEW 4X4 ACCESS PANEL

01 PENTHOUSE PLAN - DEMOLITION

A303 1/8" = 1'-0"

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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

ISSUE FOR BID

Issued: 01/06/2025

Rev. #	Description	Date Issued

PENTHOUSE PLANS

A303

1/3/2025 11:53:59 AM

GENERAL NOTES: (TYPICAL ALL SHEETS)

A) ALL WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE LATEST NATIONAL ELECTRICAL CODE, UNDERWRITER'S LABORATORIES, INC., OCCUPATIONAL SAFETY AND HEALTH ACT, AND ALL STATE, LOCAL, MUNICIPAL, AND STATUTORY REQUIREMENTS.

B) ALL JUNCTION BOXES FOR RECEPTACLES SHALL BE EVENLY SPACED ALONG WALL. NO BACK TO BACK JUNCTION BOXES SHALL BE PERMITTED FOR DEVICES ON OPPOSITE SIDES OF THE WALL.

C) ALL LIGHT FIXTURES SHALL BE SUPPORTED PER ASTM E580/E580M-06 WITH A MINIMUM OF (2) 12 GA. HANGER WIRES TO STRUCTURE ABOVE.

D) EXIT AND EMERGENCY LIGHTS SHALL BE CONNECTED TO AN UNSWITCHED HOT LEG.

E) ALL LINE VOLTAGE SWITCHES SHALL BE WIRED WITH A NEUTRAL CONDUCTOR.

F) ALL SINGLE PHASE, SINGLE POLE LOADS TO HAVE DEDICATED NEUTRALS. LABEL NEUTRAL CONDUCTORS WITH CORRESPONDING CIRCUIT NUMBER AT EACH PULL BOX, JUNCTION BOX, HANDHOLE AND OTHER SPLICE POINTS. USE OF BREAKER TIES IS NOT PERMITTED. SHARING OF NEUTRALS IS NOT PERMITTED.

G) CONTRACTOR TO ANTICIPATE PROVIDING CABLE TIES FOR ANY ENCOUNTERED NEUTRAL SHARING ON THE PANELS TO BE REPLACED. AT MINIMUM CARRY A 30% OF BREAKER QUANTITIES FOR CABLE TIES IN PANEL 'EL1' AND 'RL1'

H) MC CABLE SHALL BE ALLOWED WHERE CONCEALED ABOVE CEILINGS AND IN WALLS AS PERMITTED BY CODE. HOME RUNS TO PANELBOARDS SHALL BE IN EMT CONDUIT UNLESS NOTED OTHERWISE. MC CABLE SHALL NOT BE USED WHERE EXPOSED. SUPPORT PER NEC REQUIREMENTS.

I) CONTRACTOR SHALL PROVIDE A MINIMUM OF 3/4" CONDUIT PER SPECIFICATIONS. MC CABLE IS ONLY PERMITTED FOR DEDICATED LIGHT FIXTURE WHIPS UP TO 6'-0" LONG OR WHERE SPECIFICALLY NOTED ON DRAWINGS. MINIMUM OF 1" CONDUIT SHALL BE USED FOR DATA/ VOICE CABLING.

J) USE OF 3M SCOTCHLOK CONNECTORS OR PUSH-IN WIRE CONNECTORS (SIMILAR TO WAGO PUSH-IN CONNECTORS) ARE NOT PERMITTED. ALL WIRING CONNECTIONS TO BE DONE WITH WIRE NUT CONNECTORS.

K) IF CONTRACTOR CHOOSES TO GROUP CIRCUITS FOR HOME RUNS, CONTRACTOR SHALL APPLY ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A RACEWAY PER NEC TABLE 310.15(B)(3)(a). CONDUCTORS SHALL BE UPSIZED AS REQUIRED TO MAINTAIN FULL AMPACITY RATING.

L) ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A PULL WIRE.

M) ALL MATERIALS WITHIN A PLENUM SHALL BE NON-COMBUSTIBLE OR HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50.

N) CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL WORK ABOVE THE CEILING TO PROVIDE THE GREATEST POSSIBLE CLEARANCE FOR INSTALLATION OF PLUMBING AND MECHANICAL INSTALLATION.

O) ALL PANELBOARDS, SWITCHBOARDS AND LINE VOLTAGE CONTROL EQUIPMENT SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTING, SERVICING OR MAINTENANCE OF EQUIPMENT. MARKING SHALL BE SELF ADHESIVE, COMMERCIAL LABEL CONFORMING TO NEC AND ANSI REQUIREMENTS.

P) BATTERY DISPOSAL: BATTERIES SHALL BE PROPERLY DISPOSED OF PER UNIVERSITY CAMPUS STANDARDS.
- a) AFFIX ONE UNIVERSAL WASTE LABEL TO EACH COLLECTION CONTAINER BEFORE USE.
- b) MARK AN 'X' IN THE BOX TO THE LEFT OF THE "UNIVERSAL WASTE-BATTERY(IES)"
- c) ON LINE IMMEDIATELY FOLLOWING "ACCUMULATION START DATE", WRITE THE DATE/MONTH/DAY/YEAR OF THE DAY BATTERIES ARE BEGUN ACCUMULATED IN CONTAINER.

Q) PROPERLY DISPOSE OF FLUORESCENT LAMPS PER UNIVERSITY CAMPUS STANDARDS. OWNER SHALL PROVIDE EMPTY DRUMS/BOXES FOR LAMP DISPOSAL. DO NOT TAPE LAMPS TOGETHER. LAMPS MUST BE SORTED BY TYPE.
- a) GREEN TIPPED "ALTO" LAMPS ARE INCLUDED IN LAMPS TO BE RECYCLED.
- b) UP TO FOUR (4) FOOT STRAIGHT TUBE LAMPS IN FOUR (4) FOOT BOX OR DRUM.
- c) OVER FOUR (4) FEET UP TO EIGHT (8) FOOT STRAIGHT TUBE LAMPS IN EIGHT (8) FOOT BOX.
- d) SHATTERSHIELD LAMPS MUST BE ACCUMULATED/STORED/COUNTED SEPARATE FROM REGULAR STRAIGHT FLUORESCENT LAMPS.
- e) COMPACT CIRCULAR AND ROUND FLUORESCENT LAMPS BE COLLECTED TOGETHER.
- f) U-TUBE LAMPS TOGETHER.
- g) HID LAMPS TOGETHER.
- h) BROKEN LAMPS MUST BE PUT INTO THE BROKEN LAMP DRUM.
- i) PROPERLY LABEL DRUMS/BOXES PER OWNER INSTRUCTIONS.
- j) DELIVER CONTAINERS OF LAMPS TO LOCATION AS DIRECTED BY OWNER'S REPRESENTATIVE.

R) INSTALL BLANK COVER PLATE ON ALL OPEN OR ABANDONED DEVICE BOXES. VERIFY COLOR WITH ARCHITECT.

S) ANY MATERIAL REMOVED THAT OWNER DOES NOT WISH TO RETAIN SHALL BE REMOVED FROM PROJECT SITE AND DISPOSED OF BY THE CONTRACTOR.

T) NEW CIRCUITRY SHOWN FOR NEW/EXISTING POWER AND LIGHTING IS DIAGRAMMATIC AND IS INTENDED TO SHOW WHICH DEVICES ARE TO BE GROUPED ON INDIVIDUAL CIRCUITS. EXISTING WIRING THAT CONFORMS TO THE INTENT OF THE DRAWINGS MAY BE USED.

U) UPDATED, TYPEWRITTEN PANELBOARD DIRECTORY SHALL BE PROVIDED FOR EACH PANELBOARD THAT CIRCUITS HAVE BEEN ADDED TO OR MODIFIED.

V) CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND/OR REPLACE ANY DAMAGED CEILING TILE OR GRID DUE TO WORK ASSOCIATED WITH THE PROJECT. CONTRACTOR SHALL WALK BUILDING WITH ARCHITECT PRIOR TO COMMENCING WORK TO NOTE ANY EXISTING DAMAGED CEILING TILE OR GRID.

W) CONTRACTOR SHALL LOCATE ALL IN SLAB REBAR PRIOR TO CORE DRILLING AND SHALL ADJUST CORE LOCATIONS AS TO AVOID REBAR. ALL CORE DRILLING AND WORK DONE BELOW FLOOR SHALL BE DONE AFTER HOURS.

GENERAL DEMO NOTES:

A) REMOVE ALL WIRING (CONDUIT, CONDUCTORS, BOXES, ETC.) ABANDONED AS PART OF THIS PROJECT.

B) ANY EXISTING DEVICE AND/OR CIRCUIT SHOWN ARE INDICATED ONLY FOR INFORMATION PURPOSES. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL CONDITIONS AS THEY EXIST AND SHALL REMOVE, RELOCATE AND/OR REWORK ANY ELECTRICAL EQUIPMENT OR CIRCUITS NECESSARY FOR A COMPLETE REWIRING SYSTEM.

C) UNLESS NOTED OTHERWISE,THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL WORK TO BE DONE BY OBSERVATION OF THE SITE. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR PERFORMING ALL WORK NECESSARY TO PROVIDE A WORKMANLIKE INSTALLATION.

D) THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ANY MODIFICATIONS TO THE EXISTING SYSTEMS WHICH ARE TO REMAIN AND SHALL, UPON COMPLETION OF THIS PROJECT, DELIVER "RECORD" DRAWINGS TO THE ARCHITECT INDICATING ALL SUCH CHANGES. THE CONTRACTOR SHALL MAINTAIN IN THE PROJECT OFFICE, AS WORK PROGRESSES, AN UP-TO-DATE NEATLY MARKED COPY OF THESE DRAWINGS FOR REVIEW BY THE APPROPRIATE PARTIES.

E) WHERE FEEDERS OR OTHER CIRCUITS ARE ABANDONED AND ARE CONCEALED WITHIN WALLS OR FLOORS, SUCH CIRCUITS SHALL BE DISCONNECTED AT BOTH ENDS AND LABELED. ALL EXPOSED CONDUITS, CONDUITS ABOVE LAY-IN CEILINGS OR EQUIPMENT WHICH IS ABANDONED SHALL BE REMOVED, UNLESS NOTED OTHERWISE

F) THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES, THE CONDITION OF EXISTING BUILDING DEVICES AND MATERIALS, AND SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE SAME DURING THE COURSE OF THIS WORK. EXISTING UTILITIES, EXISTING BUILDING, AND/OR MATERIALS WHICH ARE DAMAGED BY NEGLIGENCE ON THIS CONTRACTOR'S PART OR ANY PARTIES ASSOCIATED WITH THIS CONTRACTOR, SHALL BE REPAIRED OR REPLACED AT THIS CONTRACTORS EXPENSE, IN A TIMELY MANNER, AND TO THE ARCHITECT'S AND OWNER'S WRITTEN ACCEPTANCE.

G) CIRCUIT ROUTINGS SHOWN IN REMODELED AREAS MAY BE MODIFIED TO SUIT FIELD CONDITIONS. HOWEVER, CARE SHOULD BE TAKEN TO KEEP DEVICES AND/OR FIXTURES AND CIRCUITS APPROXIMATELY AS INDICATED TO AVOID OVERLOADING OF THE CIRCUIT.

H) WHERE EXISTING ELECTRICAL LIGHTING AND DISTRIBUTION PANELBOARDS ARE TO BE REMOVED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN POWER TO BRANCH AND FEEDER CIRCUITS UNTIL A PERMANENT PANEL IS INSTALLED TO RECONNECT THE EXISTING REMAINING CIRCUITS.

I) WHERE EQUIPMENT IS REMOVED FROM, OR RELOCATED TO, A LOCATION WHICH PENETRATES A FIRE RATED STRUCTURE, THIS CONTRACTOR SHALL PROVIDE THE APPROPRIATE FIRE STOPPING MATERIALS SUCH THAT THE RATING OF THE STRUCTURE WILL BE MAINTAINED.

J) MAINTAIN CONTINUITY OF EXISTING CIRCUITS SERVING DEVICES, FIXTURES OR EQUIPMENT TO REMAIN.

K) PROVIDE BLANK COVER PLATES ON ALL ABANDONED BOXES LOCATED IN EXISTING WALLS.

L) EXISTING WIRING THAT MEETS INTENT OF NEW WORK AND IS IN GOOD CONDITION MAY REMAIN FOR REUSE.

PROPOSED SEQUENCE OF CONSTRUCTION:

A) CONTRACTOR TO INSTALL DUCTBANKS AND TRANSFORMER PAD.

B) CONTRACTOR TO SET UTILITY TRANSFORMER:
- a. EM TO SUPPLY UTILITY TRANSFORMER.
- b. CONTRACTOR TO PICK UP UTILITY TRANSFORMER FROM POWER PLAN COMPLEX AND SET TRANSFORMER. (TRANSFORMER ANTICIPATED TO BE AVAILABLE IN SPRING OF 2026)

C) CONTRACTOR TO SET NEW SERVICE ENTRANCE SWITCHBOARD AND DISTRIBUTION SWITCHBOARD ON ROOF.

D) CONTRACTOR TO TERMINATE ALL SECONDARIES ON NEW TRANSFORMER AND AT SWITCHBOARD.

E) OWNER TO PULL NEW PRIMARY CABLES AND TERMINATE AT UTILITY SWITCH AND AT NEW UTILITY TRANSFORMER. ARRESTORS BY OWNER.

F) NEW TRANSFORMER TO BE ENERGIZED. EXISTING SERVICE TO BE MAINTAINED.
- a. APPROXIMATELY 4 HOUR OUTAGE TO ENERGIZE TRANSFORMER

G) CONTRACTOR TO TRANSFER ALL LOADS ON TO THE NEW SERVICE.
- a. MULTIPLE OUTAGES:
  - CONTRACTOR TO WORK WITH OWNER TO MINIMIZE OUTAGE LENGTHS.
  - PROVISIONS TO BE MADE TO MAINTAIN POWER TO ALL CRITICAL FREEZER/REFRIGERATOR LOCADS SO NOT OFF FOR MORE THAN 4 HOURS.
  - PROVISIONS TO BE MADE TO MAINTAIN POWER TO FIRE ALARM SYSTEM AND SECURITY SYSTEM CONTROL PANELS. IF OUTAGE IS LONGER THAN STORAGE BATTERY CAPACITY, MAKE PROVISIONS FOR TEMPORARY POWER TO SYSTEMS TO ENSURE THEY REMAIN OPERATIONAL.

H) ONCE ALL LOADS HAVE BEEN TRANSFERED TO NEW SERVICE, OWNER TO DE-ENERGIZE EXISTING SERVICE.
- a. APPROXIMATELY 4 HOUR OUTAGE.

I) CONTRACTOR TO DISCONNECT AND DEMOLISH EXISTING SERVICE EQUIPMENT IN IT'S ENTIRETY.

J) CONTRACTOR TO REMOVE EQUIPMENT PADS MADE OBSOLETE FROM REMOVAL OF EQUIPMENT.

K) CONTRACTOR TO PULL OUT PRIMARY CABLING BACK TO MEDIUM VOLTAGE SWITCHGEAR.

L) CONTRACTOR TO PULL ABANDONED PRIMARY DUCTBANK MADE OBSOLETE FROM REMOVED OF EXISTING SERVICE. SEAL OPENING IN EMH-175 AND WATERPROOF.

ELECTRICAL SYMBOLS:

- BRANCH CIRCUIT CONCEALED IN CEILING OR WALL. ARROWS INDICATE HOME RUNS TO PANEL. ALL CONDUCTORS #12 AWG UNLESS NOTED OTHERWISE. EACH SINGLE PHASE CIRCUIT TO HAVE DEDICATED NEUTRAL. PHASE CONDUCTORS, NEUTRAL CONDUCTOR, GROUND CONDUCTOR, DENOTES PARTIAL CIRCUIT
- LP1-10 — PANEL - BREAKER NUMBER (IDENTIFICATION)
- 1,3; 1,3,5 — INDICATES X,X= 2-POLE C.B.; X,X,X = 3-POLE C.B.
- 3, 5, 1 — HOME RUN INDICATED LIKE THIS INDICATED THREE SEPARATE SINGLE PHASE CIRCUITS. EACH CIRCUIT TO HAVE DEDICATED NEUTRAL.
- CONDUIT CONCEALED IN CEILING OR WALL WITH THREE CONDUCTORS: 1-PHASE; 1-NEUTRAL; 1-GROUND WIRE, NO.12 AWG UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
- CONDUIT RUN UNDERGROUND OR CONCEALED IN FLOOR SLAB.
- GROUNDING CONDUCTOR NO.12 WIRE EXCEPT AS NOTED.
- A# OR A# — EXIT SIGN - SINGLE FACED - ARROWS AS SHOWN ON DRAWING. SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT. REFER TO LUMINAIRE SCHEDULE FOR TYPE.
- A# — EXIT SIGN - DOUBLE FACED - ARROWS AS SHOWN ON DRAWING. SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT. REFER TO LUMINAIRE SCHEDULE FOR TYPE.
- A# OR A# — CEILING OR WALL MOUNTED EMERGENCY LIGHTING UNIT WITH INTEGRAL BATTERY AND UNIT MOUNTED HEADS. REFER TO LUMINAIRE SCHEDULE FOR TYPE.
- A# OR A# — LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE FOR TYPE. REFERENCE LIGHT FIXTURE TAG LEGEND.
- A# — LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE FOR TYPE. REFERENCE LIGHT FIXTURE TAG LEGEND.
- XLC-# — A#, a #, [#] NL, EM

LIGHT FIXTURE TAG LEGEND:

'A#' = UPPERCASE LETTER AND/OR NUMBER COMBO DENOTES FIXTURE TYPE, REFER TO LUMINAIRE SCHEDULE.
'a' = LOWERCASE LETTER DENOTES LIGHTING CONTROL ZONE/SWITCH LEG
'#' = DENOTES #CIRCUIT NUMBER
'[#]' = NUMBER IN BRACKETS DENOTES CONTROL RELAY/ZONE
NL = DENOTES FIXTURE TO BE A NIGHT LIGHT AND REMAIN ON 24/7
EM = DENOTES FIXTURE TO BE ON EMERGENCY POWER OR PROVIDED WITH INTEGRAL EMERGENCY DRIVER AS SCHEDULED.
'XLC-#' = ENCLOSED IN BOX DENOTES LIGHTING CONTROL PANEL NAME AND RELAY NUMBER)

- MOTOR
- 208Y/120V OR 120/240V PANELBOARD TOP MOUNTED 72" AFF
- DISTRIBUTION PANEL (SURFACE OR FLOOR MOUNTED).
- SURFACE MOUNTED EQUIPMENT, TYPE AS INDICATED ON DRAWINGS
- FLUSH MOUNTED EQUIPMENT, TYPE AS INDICATED ON DRAWINGS
- CONDUIT UP
- CONDUIT DOWN
- CONDUIT STUBBED THRU WALL WITH BUSHINGS ON BOTH ENDS. SIZE AS NOTED ON PLANS.
- EMPTY CONDUIT STUB-UP INSIDE WALL TO ABOVE ACCESSIBLE CEILING WITH BUSHING ON THE END. SIZE AS NOTED ON DRAWINGS.
- GROUND
- POWER CONNECTION POINT
- DISCONNECT SWITCH, SIZE AND TYPE AS NOTED TOP MOUNTED 60" AFF
- S — SINGLE POLE SWITCH. +48" AFF TO TOP OF BOX OR AS NOTED.
- S TS — TIMER WALL SWITCH +48" AFF TO TOP OF BOX.
- a,b,c,d — SWITCH DESIGNATION
- SINGLE RECEPTACLE. +18" AFF TO CENTERLINE OF BOX OR AS NOTED
- DUPLEX RECEPTACLE. +18" AFF TO CENTERLINE OF BOX OR AS NOTED
- WP — GFCI DUPLEX RECEPTACLE WITH WEATHERPROOF WHILE-IN-USE COVER. HEIGHT AS NOTED.
- G — DUPLEX RECEPTACLE W/GROUND FAULT PROTECTION. +18" AFF OR AS NOTED
- J OR J — WALL MOUNTED OR CEILING MOUNTED JUNCTION BOX.
- INDICATES DEVICE ABOVE RE: DRAWING

- XX-X — ELECTRICAL EQUIPMENT PROVIDED BY AND INSTALLED BY E.C.
- +48" — TOP OF OUTLET BOX ABOVE FINISHED FLOOR
- AFF — ABOVE FINISH FLOOR
- ETR — EXISTING TO REMAIN
- FA — FIRE ALARM
- PA — PUBLIC ADDRESS
- ER — EXISTING RELOCATED
- FAAP — FIRE ALARM ANNUNCIATOR PANEL
- FACP — FIRE ALARM CONTROL PANEL
- G — GFCI (GROUND FAULT CIRCUIT INTERRUPTER) PROTECTION

XXX / X — MECHANICAL EQUIPMENT CALL OUT BUBBLE

DEFINITIONS

PROVIDE = FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

FURNISH = SUPPLY AND DELIVER TO PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION AND SIMILAR OPERATIONS

INSTALL = OPERATIONS AT PROJECT SITE INCLUDING UNLOADING, TEMPORARILY STORING, UNPACKING, ASSEMBLING, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS.

PLAN NOTE LEGEND

TAG VALUE	PLAN NOTE TEXT
ED000	ELECTRICAL DEMOLITION
ES000	ELECTRICAL SITE
EL000	LIGHTING
EP000	POWER

WIRING SCHEDULE-VOLTAGE DROP

DISTANCE	CONDUCTOR SIZE
120V-20A BRANCH CIRCUIT	
UP TO 100'	#12
100'-150'	#10
150'-250'	#8
250'-OVER	#6
277V-20A BRANCH CIRCUIT	
UP TO 200'	#12
200'-375'	#10
375'-OVER	#8

NOTE:
FOR ALL CIRCUITS WITH #6 CONDUCTORS, REDUCE TO #8 CONDUCTORS AT PANEL FOR FINAL CONNECTION TO CIRCUIT BREAKER.

FIRE WATCH:

A) THE BUILDING IS TO BE OCCUPIED DURING CONSTRUCTION. THE EXISTING FIRE ALARM SYSTEM IS TO REMAIN FUNCTIONAL AT ALL TIMES. DURING THE DAY, WHILE OCCUPIED, CONTRACTOR SHALL ENSURE THAT FIRE ALARM SYSTEM IS FUNCITONAL. ESTABLISH A FIRE WATCH WHEN THE FIRE ALARM SYSTEM IS SHUT DOWN FOR MORE THAN FOUR (4) HOURS IN A 24-HOUR PERIOD OR MAKE PROVISIONS FOR BACKUP POWER FOR ANY POWER OUTAGES THAT LAST MORE THAN FOUR (4) HOURS TO ENSURE FIRE ALARM SYSTEM IS OPERATIONAL.

B) CONTRACTOR SHALL ENSURE THAT FIRE ALARM PANEL HAS POWER AFTER CONTRACTOR WORK HOURS TO ENSURE THAT IT REMAINS FULLY OPERATIONAL.

C) IF THERE IS TO BE DISRUPTION OF POWER TO FIRE ALARM SYSTEM AFTER CONTRACTOR WORK HOURS, CONTRACTOR SHALL ESTABLISH A FIRE WATCH. SUBMIT PLAN FOR OWNER APPROVAL.

D) FIRE WATCH TO BE PERFORMED BY APPROPRIATELY TRAINED PERSONNEL WHO WILL FUNCTION AS THE FIRE ALARM SYSTEM TO REPORT FIRES OR SIMILAR EMERGENCIES TO THE FIRE DEPARTMENT.

E) FIRE WATCH REQUIREMENTS: FIRE WATCH PERSONNEL MUST BE TRAINED AND/OR HAVE THE FOLLOWING QUALIFICATIONS:

1. ACCESS TO ALL AREAS OF THE BUILDING UNDER FIRE WATCH.
2. RECOGNIZE SIGNS OF FIRE OR OTHER HAZARDS THAT COULD CAUSE INJURY.
3. KNOW EVACUATION ROUTES.
4. MANUALLY ALERT BUILDING OCCUPANTS BY SOUNDING A HORN, WHISTLE, ETC.
5. USE PORTABLE FIRE EXTINGUISHERS.
6. PATROL THEIR ASSIGNED BUIDLING AREA ONCE EVERY HOUR.
7. PROPERLY COMPLETE A FIRE WATCH LOG.
8. DURING NORMAL WORK HOURS, AFTER TRAINING, CONTRACTOR'S PERSONNEL MAY SERVE AS FIRE WATCH.

LUMINAIRE SCHEDULE

TYPE	MOUNTING	LAMPS	LUMENS	COLOR TEMP.	CRI	CONTROL TYPE	WATTS	VA	VOLTAGE	MANUFACTURER	DESCRIPTION	EQUALS	EQUALS 2	REVISION
A4	SUSPENDED	LED	5994 lm	3500 K	80	NON-DIM	42 W	47 VA	120 V	HE WILLIAMS 75R-4-L65-835-ACF/D96-DIM-UNV; CORD: S96-58D/W	4'-0" LONG LED STRIP WITH ROUND DIFFUSE LENS. AIRCRAFT CABLE SUSPENSION AND POWER CORD LENGTHS AS REQUIRED. MOUNT AT 9'-0" AFF UNLESS NOTED OTHERWISE. L85>50,000 HRS	PRE-APPROVED EQUAL BY LITHONIA ZL1D SERIES TO MATCH LUMEN OUTPUT AS STATED.		
X1	WALL/SURFACE	LED	250 lm			NON-DIM	2 W	3 VA	120 V	DUAL-LITE EV-2D-I	SURFACE EMERGENCY LIGHTING UNIT WITH INTEGRAL BATTERY BACKUP. WHITE FINISH. 1W LED LAMPS. SELF-DIAGNOSTIC, SELF-TESTING, INDIVIDUALLY ADJUSTABLE HEADS. MOUNT AT 7'-6" AFF, UNLESS NOTED OTHERWISE.	MULE LIGHTING SQ-LED-W-SD-HL		

LUMINAIRE SCHEDULE GENERAL NOTES:

1) PRE-APPROVAL FOR EQUALS MUST BE SUBMITTED PRIOR TO BIDS. SUBSTITUTIONS WILL NOT BE ENTERTAINED POST BIDS.

2) CONTRACTOR SHALL SUBMIT INDIVIDUAL PRICING. LOT PRICING WILL NOT BE ACCEPTED.

3) UNLESS NOTED OTHERWISE, ALL LUMINAIRES SHALL BE FIELD SERVICEABLE (I.E. LUMINAIRES SHALL HAVE FIELD REPLACEABLE LED DRIVERS AND LED BOARDS/ LIGHT ENGINES).

4) ALL LUMINAIRES SHALL BE POLYESTER POWDER COAT PAINTED AFTER FABRICATION, UNLESS NOTED OTHERWISE. FINAL SELECTION OF PAINT FINISH SHALL BE BY ARCHITECT DURING SHOP DRAWINGS.

5) ALL LIGHT FIXTURES AND EMERGENCY/EXIT LIGHTS SHALL HAVE A MINIMUM FIVE YEAR WARRANTY.

6) ALL LIGHT FIXTURES SHALL HAVE PLUG-IN TYPE ELECTRICAL DISCONNECTS AND MINIMUM EFFICACY OF 90 LUMENS/WATT, UNO.

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The Curators of the University of Missouri

CONSULTANT TEAM

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STATE OF MISSOURI — MONICA SANTOYO SANTOS — NUMBER E-2000174546 — REGISTERED PROFESSIONAL ENGINEER — 01/06/2025

Monica S Santos - Electrical
MO# E-2000174546

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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

BID DOCUMENTS

Issued: 01/06/2025

Rev. #	Description	Date Issued

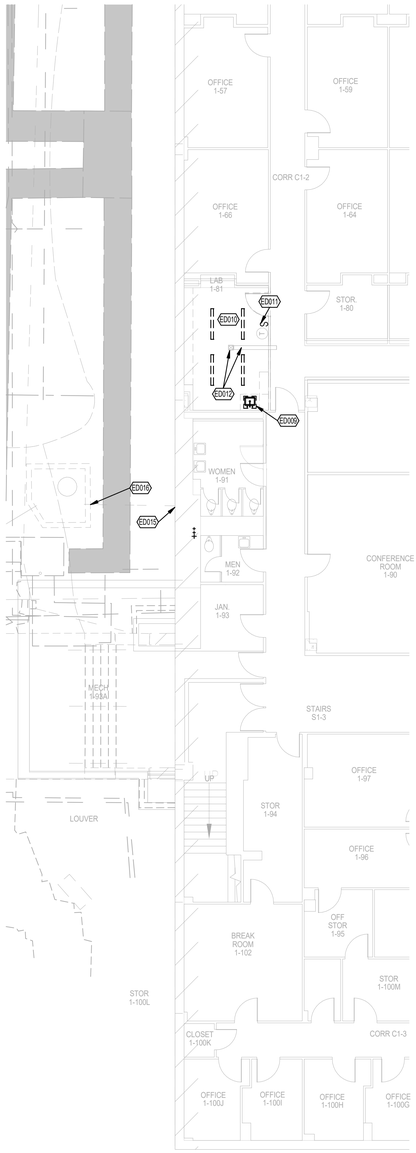
ELECTRICAL GENERAL NOTES & LEGEND

E001

1/5/2025 8:36:20 PM

DEMO PLAN NOTES

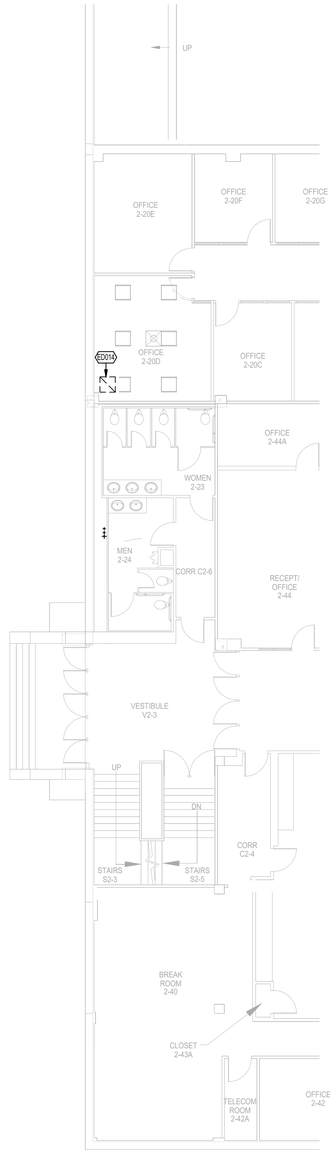
ED009	DISCONNECT AND DEMOLISH THE SINK. ASSOCIATED VALVES INCLUDING COLD AND HOT WATER PIPING BACK TO THE MAIN SUPPLY. CAP BRANCH TAP-OFFS WATERTIGHT. LEAVE NO DEAD ENDS FROM THE MAIN TAP-OFF. DEMOLISH THE WASTE AND VENT PIPING BACK TO THE MAIN AND CAP AIRTIGHT.
ED010	DISCONNECT AND REMOVE LIGHTING. REMOVE WIRING AND SURFACE RACEWAY BACK TO NEAREST JUNCTION BOX. CIRCUIT TO BE RE-USED FOR NEW LIGHTING IN SPACE.
ED011	DISCONNECT AND REMOVE MOTION SENSOR SWITCH AND REMOVE WIRING AND CONDUIT BACK TO NEAREST JUNCTION BOX.
ED012	PROTECT EXISTING 6"X6" CEILING SUPPLY AND 6"X 9" DUCTWORK DURING REMOVAL OF CEILING. RE-SUPPORT AS REQUIRED AFTER CEILING REMOVAL SO THAT IT REMAINS EXPOSED IN SPACE.
ED014	EXISTING DUCTED RETURN TO BE MOVED NORTH TO ALLOW FOR NEW CHASE INSTALLATION. REFER TO NEW WORK PLANS. REFER TO SHEET E301.
ED015	TRACE PRIMARY CONDUIT AND CUT BACK FROM BUILDING AFTER REMOVAL OF PRIMARY CABLES. SEAL BOTH ENDS OF CONDUIT WATER TIGHT.
ED016	CUT BACK CONDUIT FROM MANHOLE AND SEAL MANHOLE AFTER REMOVAL OF PRIMARY CABLES.



BASEMENT PLAN - DEMOLITION

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

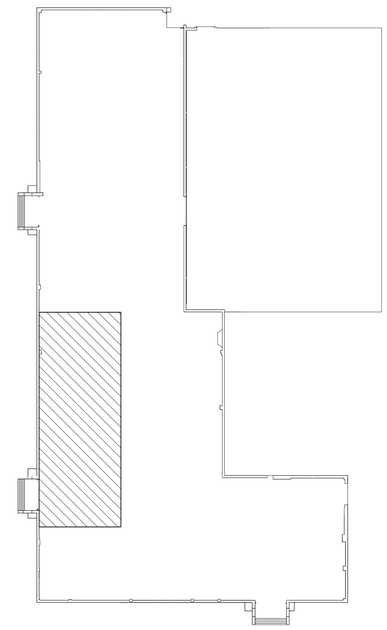
0 4' 8' 16'



FIRS FLOOR PLAN - DEMOLITION

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

0 4' 8' 16'



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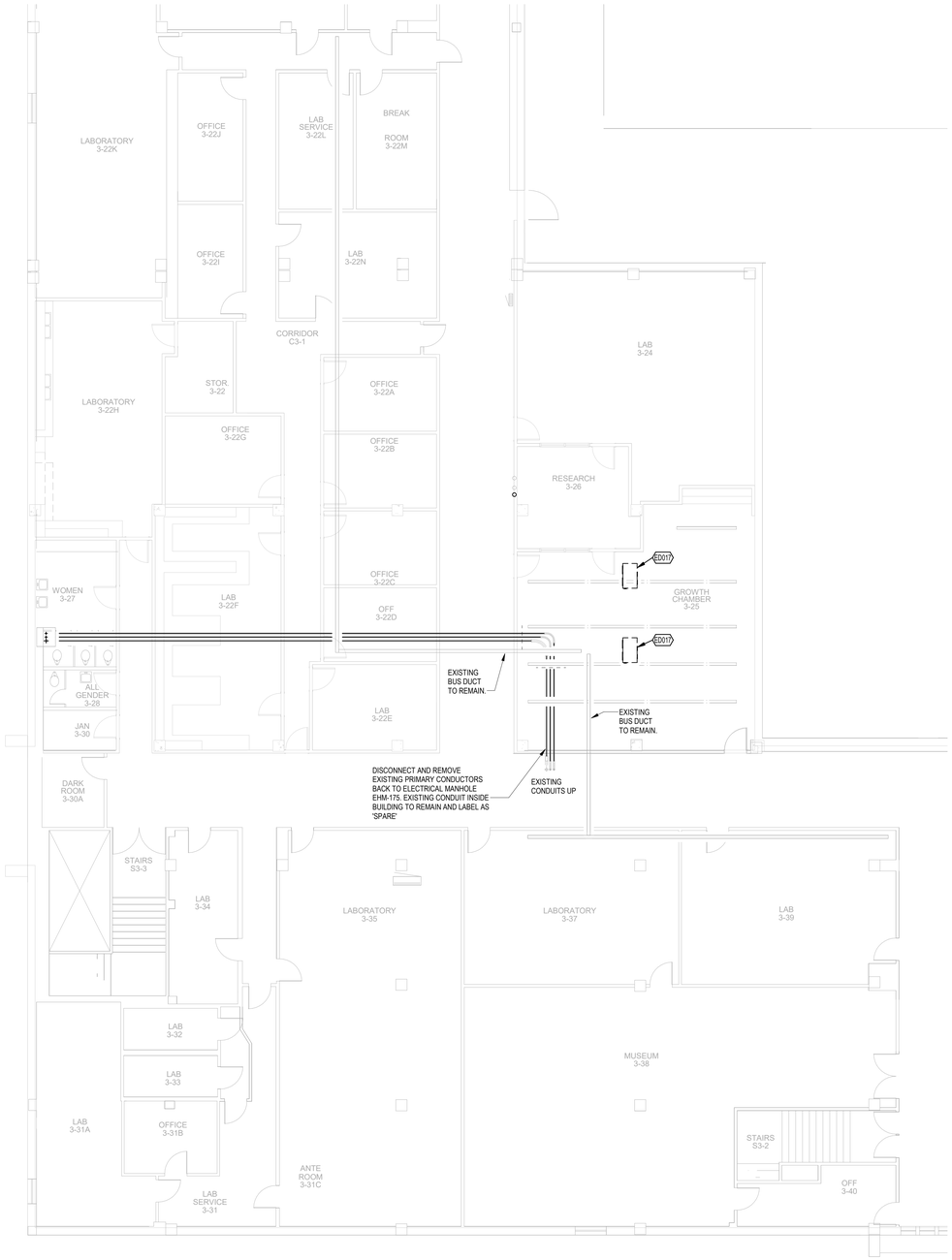
BASEMENT & FIRST FLOOR PLAN - DEMOLITION

E101

1/5/2025 8:36:26 PM

DEMO PLAN NOTES

ED017	BID ALTERNATE #1: ABANDONED FAN COIL UNITS TO BE REMOVED. DISCONNECT AND REMOVE ALL ASSOCIATED APPURTENANCES ASSOCIATED WITH ABANDONED FAN COIL UNITS.

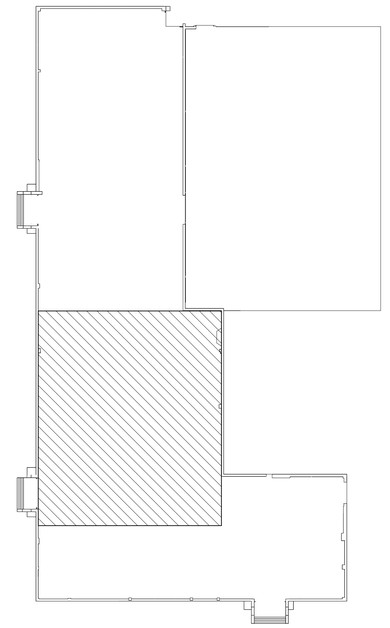


NORTH

SECOND FLOOR PLAN - DEMOLITION

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

0 4' 8' 16'



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SECOND FLOOR PLAN - DEMOLITION

E102

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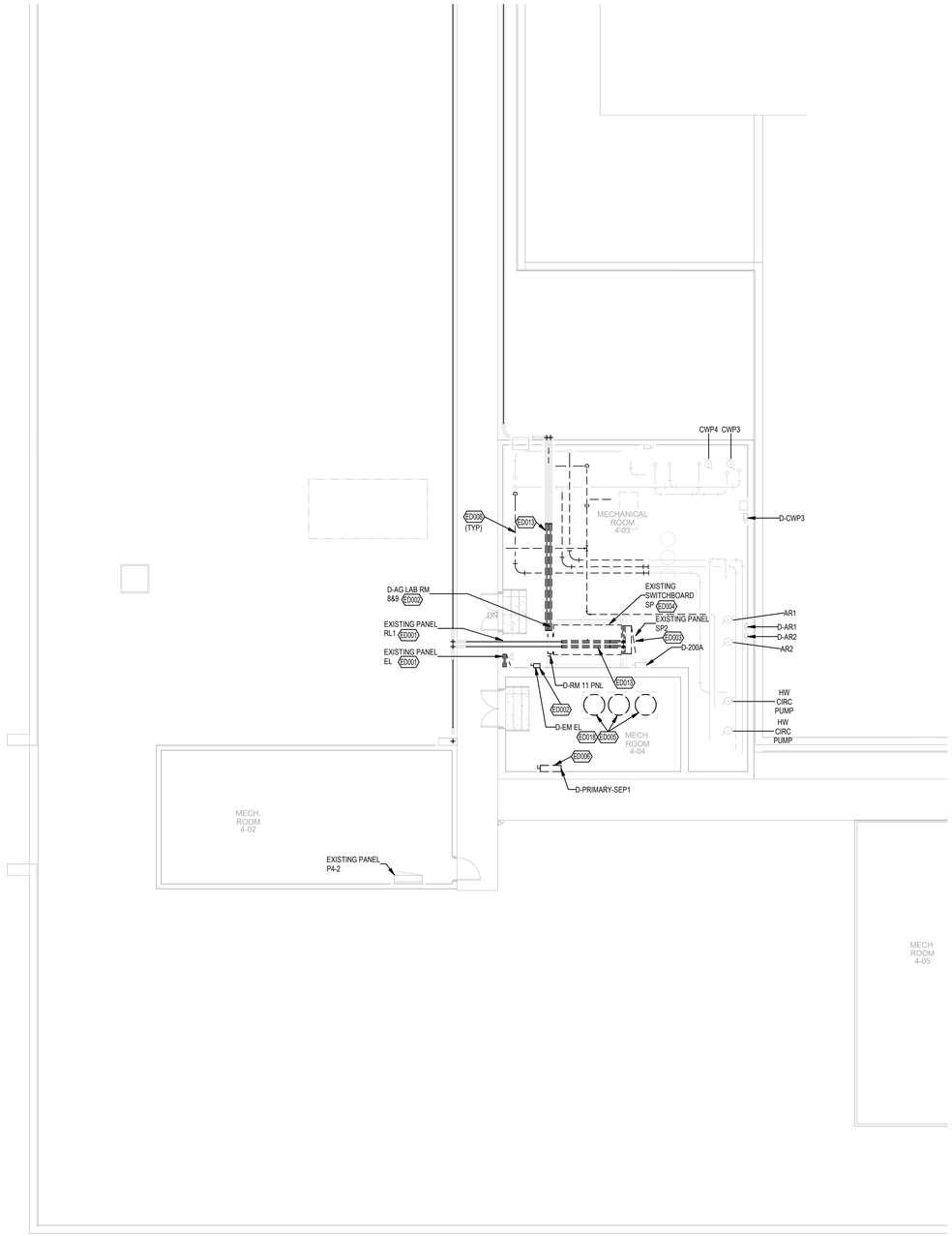


ROOF/PENTHOUSE PLAN - DEMOLITION

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

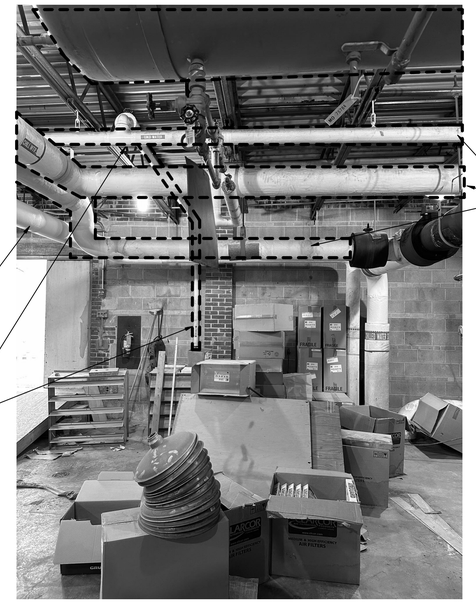
0 4' 8' 16'

GENERAL DEMOLITION...

1	
1	PRIOR TO DISCONNECTING ANY OF THE LOADS, TRACE FEEDER TO ENSURE LOAD AS LABELED IS CORRECT. PROVIDE RED-LINED AS-BUILT DOCUMENTS INDICATING EXISTING FEEDER CONDUCTOR SIZES IF DIFFERENT THAN NOTED. NOTIFY ENGINEER OF ANY DISCREPANCIES.
2	CONTRACTOR IS LIMITED TO A MAXIMUM OF 4 HOUR OUTAGE AT A TIME. ANY AND ALL POWER OUTAGES TO BE CLOSELY COORDINATED WITH THE OWNER TO ENSURE THAT ALL AFFECTED LOADS SAFELY RE-ENERGIZE UPON RETURN OF POWER.
4	CONTRACTOR TO PROVIDE OWNER DETAILED SEQUENCE OF DEMOLITION WORK TO ALLOW PROPER SCHEDULING OF POWER OUTAGES.
5	PROTECT ALL EXISTING ELECTRICAL EQUIPMENT TO REMAIN IN OPERATION FROM CONSTRUCTION DEBRIS DURING DEMOLITION AND NEW CONSTRUCTION.

DEMO PLAN NOTES

ED001	EXISTING PANEL TO BE REPLACED WITH NEW. ALL EXISTING CIRCUITS TO BE RE-CONNECTED TO NEW PANEL. BREAKERS TO MATCH. CONTRACTOR TO PROVIDE BREAKER TIES AS REQUIRED FOR ANY BREAKERS THAT SHARE NEUTRALS.
ED002	EXISTING DISCONNECT TO BE REMOVED. LOAD TO BE FED OUT OF NEW SWITCHBOARD. REFER TO RISER DIAGRAM.
ED003	EXISTING DISTRIBUTION PANEL TO BE REMOVED. LOADS ARE TO BE FED OUT OF NEW SWITCHBOARD. REFER TO RISER DIAGRAM.
ED004	DISCONNECT AND REMOVE EXISTING SWITCHBOARD ONCE LOADS HAVE BEEN RE-FED. SWITCHBOARD SECTIONS REQUIRED TO REMAIN TO SPLICE FEEDERS WILL BE USED AS A PULLBOX. CONTRACTOR TO REMOVE ALL BREAKERS AND REPLACE FRONT OF SWITCHBOARD WITH A BLANK COVER. LABEL AS A PULLBOX AND IDENTIFY WHICH CIRCUITS ARE ROUTED THROUGH.
ED005	ONCE NEW SERVICE IS ACTIVE. EXISTING SINGLE PHASE TRANSFORMERS TO BE REMOVED. COORDINATE WITH ENERGY MANAGEMENT FOR DEMOLITION OF TRANSFORMERS. IF ENERGY MANAGEMENT DOES NOT WANT TO SALVAGE THE TRANSFORMERS, CONTRACTOR TO PROPERLY DISPOSE OF THE TRANSFORMERS.
ED006	EXISTING PRIMARY FUSED DISCONNECT TO BE REMOVED. REMOVE ALL PRIMARY WIRING BACK TO MANHOLE. CONDUIT TO REMAIN AS "SPARE" PROVIDE LABEL TO INDICATE SPARE CONDUIT.
ED008	PIPING SHOWN FOR REFERENCE ONLY. IT IS TO BE REMOVED AND/OR REROUTED BY FACILITIES MANAGEMENT PRIOR TO COMMENCEMENT OF THIS PROJECT TO ALLOW FOR INSTALLATION OF NEW SWITCHBOARD.
ED013	CUT BACK CONDUIT TO RE-ROUTE TO NEW SWITCHBOARD LOCATION FOR AG LAB PANELS. REFER TO POWER PLANS FOR ADDITIONAL INFORMATION.
ED018	DISCONNECT EXISTING SERVICE GROUND. EXTEND REMAINING SYSTEMS GROUND (TELECOM) TO NEW GROUND BUS BAR.



LOW PRESSURE STEAM LINE TO BE REMOVED/REROUTED BY FACILITIES PRIOR TO CONSTRUCTION. SHOWN FOR REFERENCE ONLY

COLD WATER LINES TO BE REMOVED BY FACILITIES PRIOR TO CONSTRUCTION. SHOWN FOR REFERENCE ONLY

CHILLED WATER LINES TO BE REMOVED/REROUTED BY FACILITIES PRIOR TO CONSTRUCTION. SHOWN FOR REFERENCE ONLY

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Antella Project No: A224-01D

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PENTHOUSE FLOOR DEMOLITION PLAN - ELECTRICAL

E103

1/5/2025 8:36:43 PM

LIGHTING PLAN NOTES

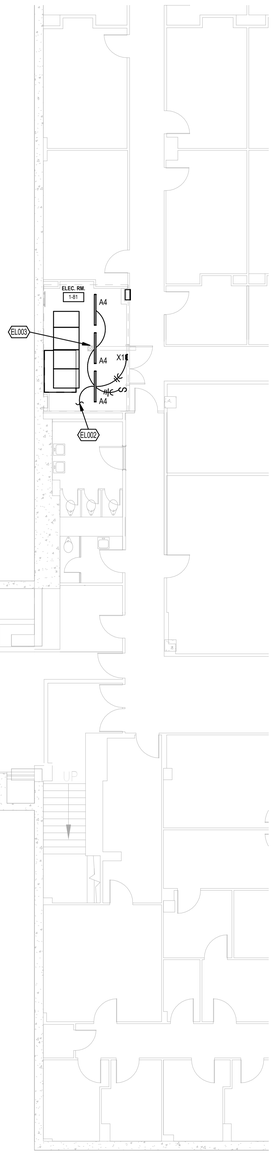
EL002	RE-CONNECT LIGHTING IN THIS ROOM TO EXISTING CIRCUIT.
EL003	DIFFUSER AND DUCTWORK TO REMAIN. SUPPORT OFF STRUCTURE AS REQUIRED DUE TO REMOVAL OF CEILING.

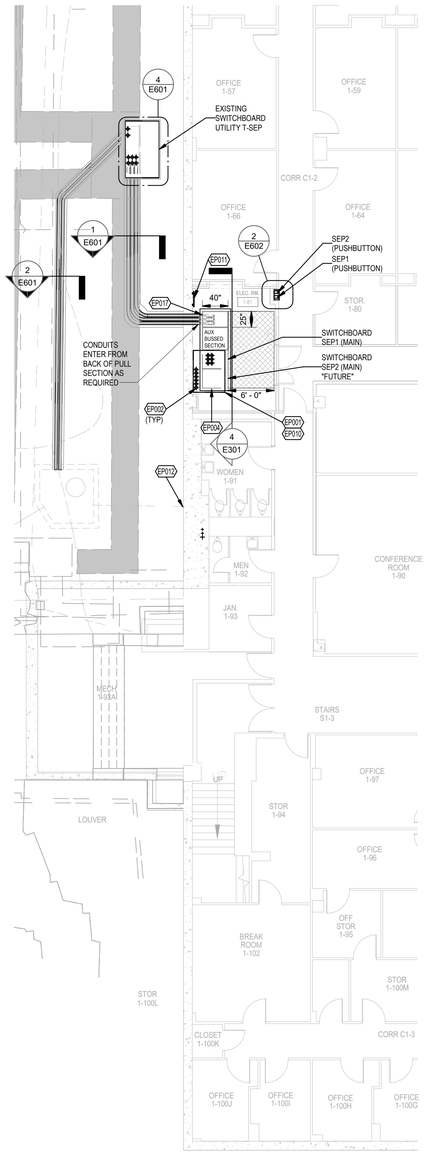
POWER PLAN NOTES

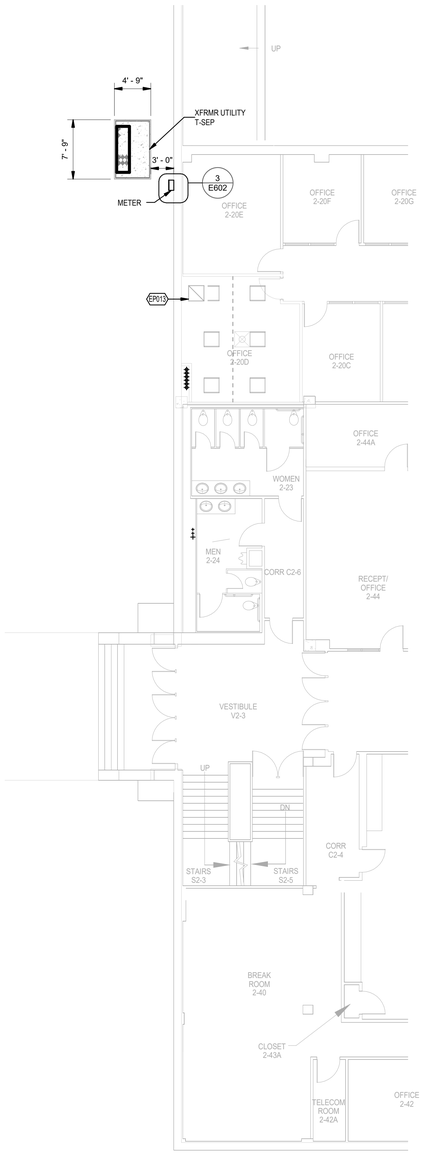
EP001	PROVIDE PULLBOX ON TOP OF SWITCHBOARD AS REQUIRED TO ALLOW FOR FEEDER TRANSITION FROM TOP OF SWITCHBOARD TO CHASE ABOVE.
EP002	CONTRACTOR TO X-RAY FLOOR SLAB ABOVE PRIOR TO MAKING ANY PENETRATIONS. ADJUST PLACEMENT AS REQUIRED.
EP004	PROVIDE EQUIPMENT PAD.
EP010	MOUNT PULL BOX AS HIGH AS POSSIBLE FOR CONDUIT TRANSITION AND TO ALLOW FUTURE INSTALLATION OF FEEDERS EXITING THE "FUTURE SEP2 MAIN".
EP011	PROVIDE MAIN GROUNDING BUS BAR. REFER TO SHEET 601 FOR DETAIL.
EP012	TRACE PRIMARY CONDUIT AND CUT BACK FROM BUILDING AFTER REMOVAL OF PRIMARY CABLES. SEAL BOTH ENDS OF CONDUIT WATER TIGHT.
EP013	RE-INSTALL DUCTED RETURN. CONTRACTOR TO CUT BACK DUCT AS REQUIRED FOR NEW LOCATION AND RE-SUPPORT.
EP014	PROVIDE PULLBOX SIZED AS REQUIRED TO ALLOW FOR CONDUIT TRANSITION FROM CHASE TO HORIZONTAL ROUTING AS SHOWN. CONDUIT TO BE ROUTED AS HIGH AS POSSIBLE. COORDINATE WITH EXISTING PIPING IN AREA.

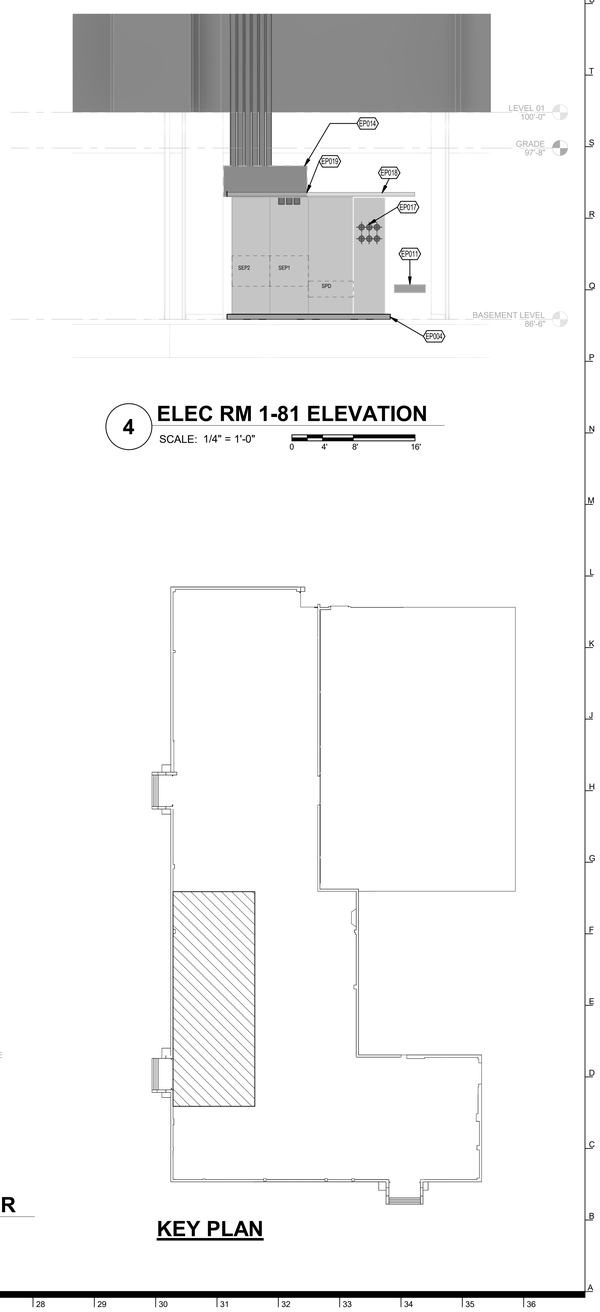
POWER PLAN NOTES

EP017	SERVICE CONDUCTORS TO BE ARRANGED TO ALLOW FOR A DRIP LOOP WITHIN PULL SECTION PRIOR TO CONNECTING TO SWITCHBOARD BUS.
EP018	PROVIDE A DRIP PAN UNDER PIPING WITHIN THE SWITCHBOARD DEDICATED SPACE AND EXTEND BEYOND THE FRONT OF THE SWITCHBOARD TO PROTECT EQUIPMENT FROM ANY CONDENSATION AND/OR LEAKS, BREAKS.
EP019	DRIP PAN TO BE ROUTED AROUND CONDUIT PENETRATIONS AS REQUIRED. FIELD VERIFY AND COORDINATE PLACEMENT WITH PULLBOX AND PIPING LOCATIONS.









4 ELEC RM 1-81 ELEVATION

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

KEY PLAN

PARTIAL BASEMENT PLAN - LIGHTING

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

PARTIAL BASEMENT FLOOR PLAN - POWER

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

PARTIAL FIRST FLOOR PLAN - POWER

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

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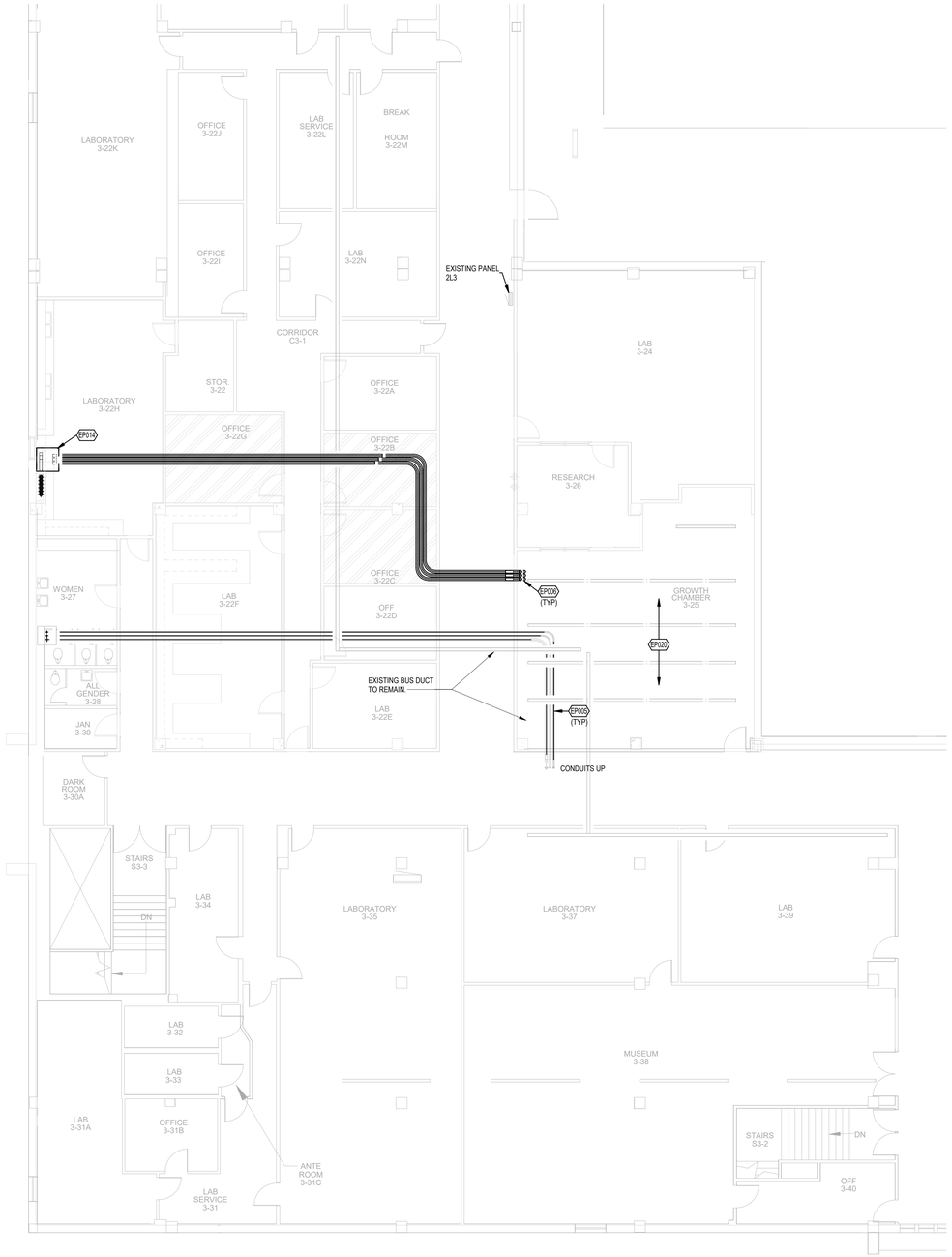
BASEMENT & FIRST FLOOR PLAN - POWER

E301

1/5/2025 8:36:57 PM

POWER PLAN NOTES

EP005	EXISTING PRIMARY CONDUIT TO REMAIN. CONTRACTOR TO PULL ALL PRIMARY CABLING BACK TO MANHOLE. CONDUITS TO BE LABELED AS "SPARE"
EP006	EXTEND CONDUIT UP TO PENTHOUSE. REFER TO PENTHOUSE PLAN FOR CONTINUATION.
EP014	PROVIDE PULLBOX SIZED AS REQUIRED TO ALLOW FOR CONDUIT TRANSITION FROM CHASE TO HORIZONTAL ROUTING AS SHOWN. CONDUIT TO BE ROUTED AS HIGH AS POSSIBLE. COORDINATE WITH EXISTING PIPING IN AREA.
EP020	BID ALTERNATE #1: CONTRACTOR TO TEMPORARILY SUPPORT ALL CEILING MOUNTED DEVICES AND RE-INSTALL IN NEW GRID CEILING. ALL LIGHTING TO BE REMOVED AND RE-INSTALLED AFTER NEW CEILING HAS BEEN INSTALLED. RE-CONNECT AND TEST TO ENSURE FULLY OPERATIONAL AND ALL LIGHTING CONTROLS ARE FULLY FUNCTIONAL.

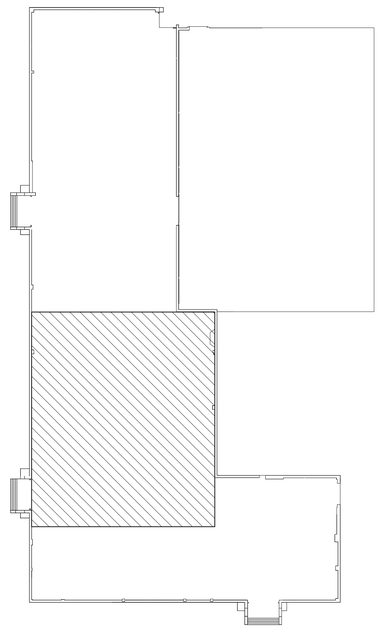


NORTH

PARTIAL SECOND FLOOR PLAN - POWER

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

0 4' 8' 16'



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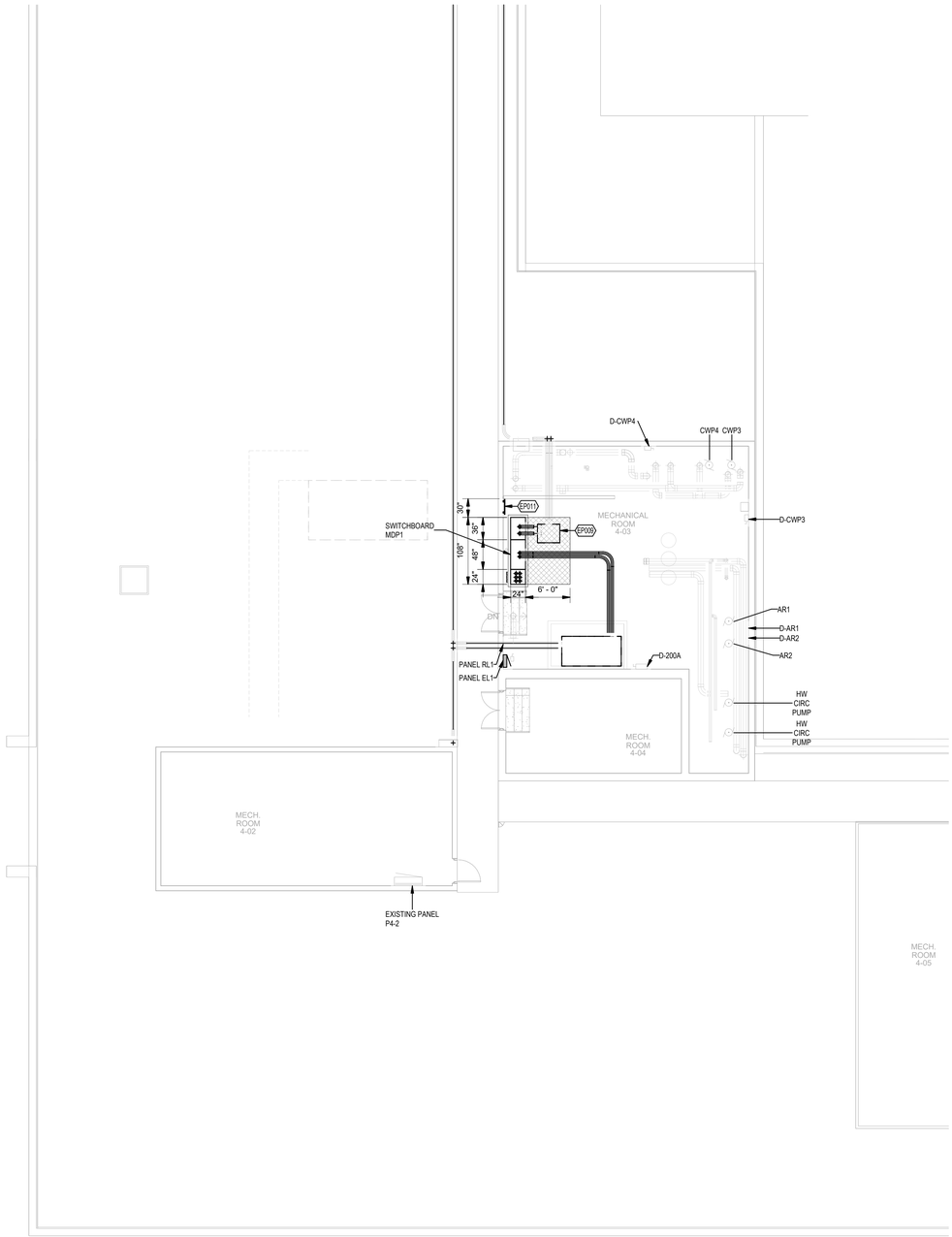
SECOND FLOOR PLAN - POWER

E302

1/5/2025 8:37:07 PM

POWER PLAN NOTES

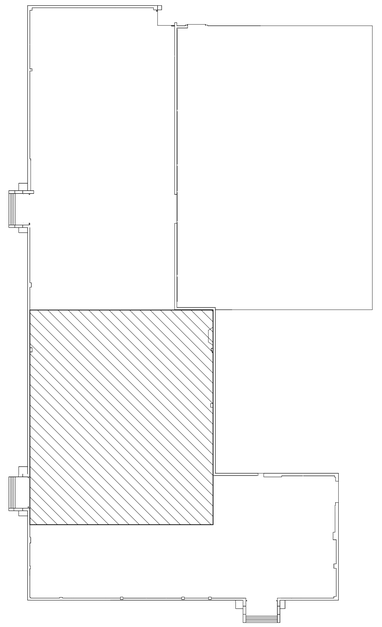
EP009	PROVIDE PULL BOX AS REQUIRED TO RE-ROUTE FEEDERS TO NEW SWITCHBOARD LOCATION.
EP011	PROVIDE MAIN GROUNDING BUS BAR. REFER TO SHEET 601 FOR DETAIL.



PARTIAL ROOF/PENTHOUSE PLAN - POWER

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

0 4' 8' 16'



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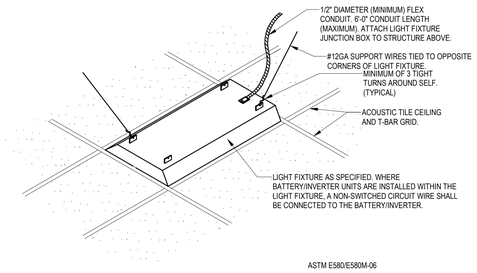
PENTHOUSE FLOOR PLAN - POWER

E303

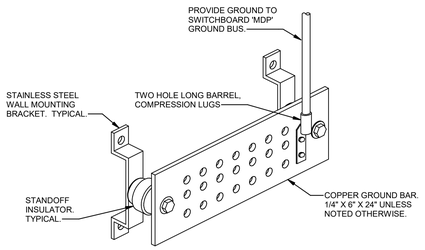
1/5/2025 8:37:15 PM

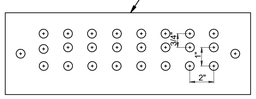


ASTM E580/E580M-06

7 LIGHT FIXTURE MOUNTING & BRACING

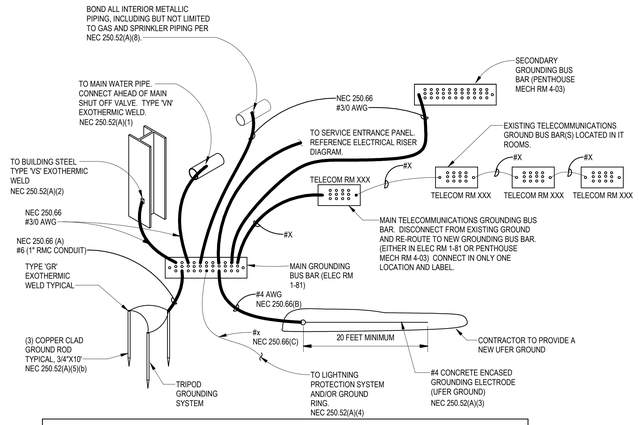
NO SCALE





6 MAIN GROUNDING BUS BAR

NO SCALE



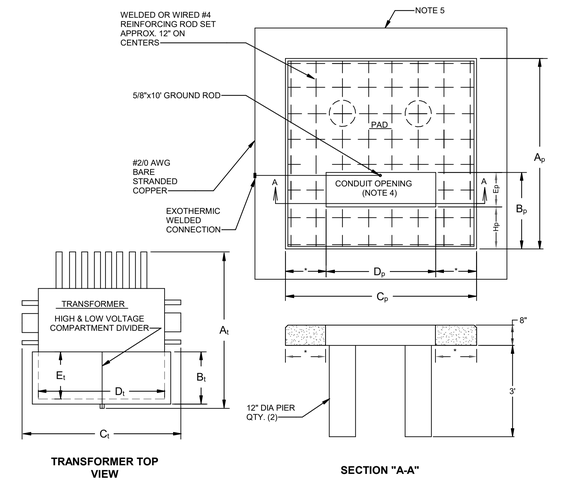
NOTES:

1. EXOTHERMIC WELD DESIGNATION INDICATED ABOVE ARE ERICO 'CADWELD'.
2. ALL GROUND BUS CONNECTIONS TO BE MADE WITH 2-HOLE COMPRESSION TYPE CONNECTORS. BUS SHALL BE INSULATED FROM ITS SUPPORT AND SHALL MAINTAIN A 2" SPACING FROM WALL.
3. ALL WIRING SHALL BE TYPE THHN/THWN-2
4. MAIN GROUND RODS ARE TO BE LOCATED AT SERVICE ENTRANCE WITH SIZE AND QUANTITY PER SPECIFICATIONS.
5. EACH CABLE TIED TO THE MAIN GROUNDING BUS BAR SHALL BE LABELED.
6. SIZING AND CODE REFERENCES BASED ON NEC 2020

CONTRACTOR SHALL DISCONNECT EXISTING SERVICE ENTRANCE GROUND AND RE-ESTABLISH NEW GROUND FOR NEW SERVICE ENTRANCE AS PER DETAIL. ANY SYSTEMS THAT ARE GROUNDED IN THE PENTHOUSE, EXTEND TO NEW GROUND BUS BAR BUT SHALL ONLY BE GROUNDED IN ONE LOCATION AS PER DETAIL.

5 MAIN SERVICE ENTRANCE GROUNDING

NO SCALE



TRANSFORMER TOP VIEW

SECTION "A-A"

PAD DIMENSIONS

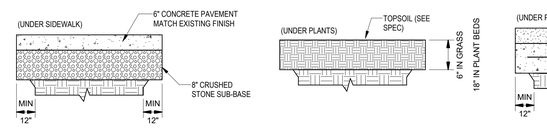
$A_p = A_t + 12"$ $B_p = B_t + 4.5"$ $C_p = C_t + 12"$ $D_p = D_t - 3"$ $E_p = E_t - 3"$ $H_p = 7.5"$

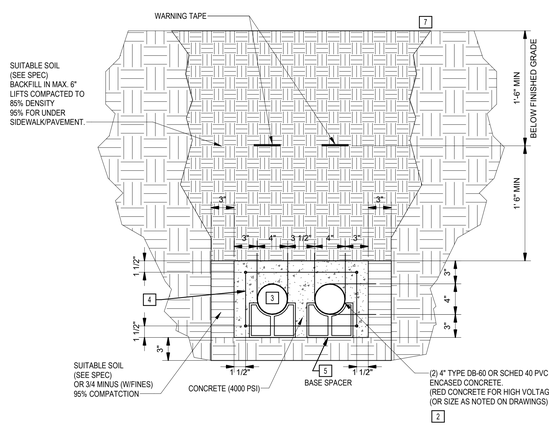
NOTES:

1. Ep SHOULD NEVER BEW LESS THAN 12 INCHES.
2. At AND Ct ARE OVERALL DIMENSIONS, WHICH INCLUDE HANDLES, COOLING FINS, LIFTING LUGS, ETC.
3. REINFORCED CONCRETE PAD SHALL BE CONSTRUCTED IN ACCORDANCE WITH SCI STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE, LATEST EDITION.
4. CONDUITS SHOULD BE CAREFULLY LOCATED IN CONDUIT OPENING SO THEY WILL NOT INTERFERE WITH TRANSFORMER HIGH & LOW VOLTAGE COMPARTEMTN DIVIDER OR OIL DRAINAGE VALVE.
5. GROUND LOOP TO BE INSTALLED 12" OUT AND 12" DEEP WITH EXOTHERMIC CONNECTIONS.
6. 8FT. MINIMUM CLEARANCE IN FRONT OF TRANFORMER.

4 TRANSFORMER PAD DETAIL

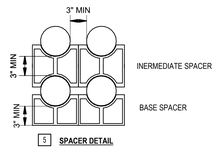
NO SCALE





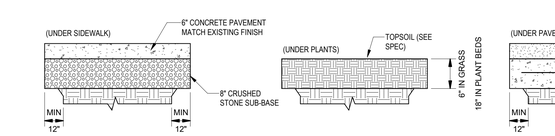
NOTES:

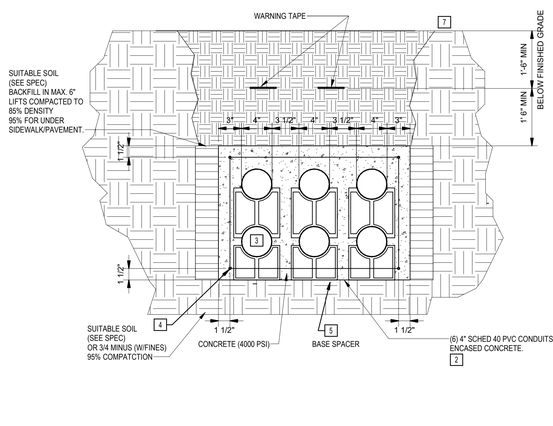
1. EARTH FORMING OF DUCT BANK IS ACCEPTABLE WHERE SIDES OF TRENCH CONSIST OF FIRM, UNDISTURBED SOIL. FORMING SHALL BE REQUIRED TO LIMIT DUCTBANK SIDEWALL THICKNESS TO 12" FROM SIDE OF DUCT.
2. PRIMARY (HIGH VOLTAGE) FEEDERS: CONDUIT ENCASED IN RED CONCRETE (4000 PSI); SECONDARY (208V) FEEDERS: CONDUIT INCASED IN GRAY CONCRETE (4000 PSI): IN PLACING CONCRETE, USE A DELIVERY CHUTE TO MINIMIZE FALL OF THE CONCRETE INTO THE TRENCH. USE A SPLASH BOARD TO DIVERT THE FLOW OF CONCRETE AWAY FROM THE TRENCH SIDES AND AVOID DISLODGING SOIL AND STONES. CONCRETE SLUMP SHALL HAVE CONSISTENCY TO INSURE FLOWING OF GROUT BETWEEN, UNDER, AND ALL AROUND DUCTS. PRECAUTIONS SHALL BE USED TO PREVENT VOIDS AND AIR POCKETS, AND TO PREVENT THE DUCT FROM FLOATING.
3. EACH UNDERGROUND CONDUIT MUST HAVE A MINIMUM 3" CONCRETE ENVELOPE IN EACH DIRECTION AND MAXIMUM OF 6" VERTICAL AND A MAXIMUM OF 12" HORIZONTAL. THE NUMBER AND CONFIGURATION OF CONDUIT IN DUCT BANKS WILL VARY.
4. #4 REBAR TIE LOOP EVERY 48" MAXIMUM O.C.. SPACE BETWEEN LONGITUDINAL REINFORCING REBAR IS 12" MAXIMUM.
5. PROVIDE PLASTIC CONDUIT BASE SPACERS AT A MAXIMUM OF EVERY 8 FEET ON CENTER.
6. SATISFACTORY SOIL BACKFILL MAX. 6" LIFTS COMPACTED TO 85% DENSITY. 95% FOR UNDER SIDEWAL/PAVEMENT.
7. SEE CIVIL DRAWINGS FOR TYPICAL GRADE FINISHES.



2 DUCT BANK (2 DUCTS)

NO SCALE





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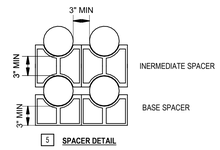
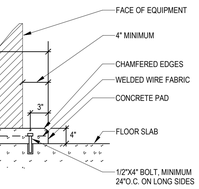


1 DUCT BANK (6 DUCTS)

NO SCALE



3 HOUSEKEEPING PAD

NO SCALE

Electrical Engineer

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STATE OF MISSOURI
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NOTARIAL SEAL
NUMBER E-2000174546
REGISTERED PROFESSIONAL ENGINEER
01/06/2025

Monica S Santos - Electrical
MO# E-2000174546

Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

BID DOCUMENTS

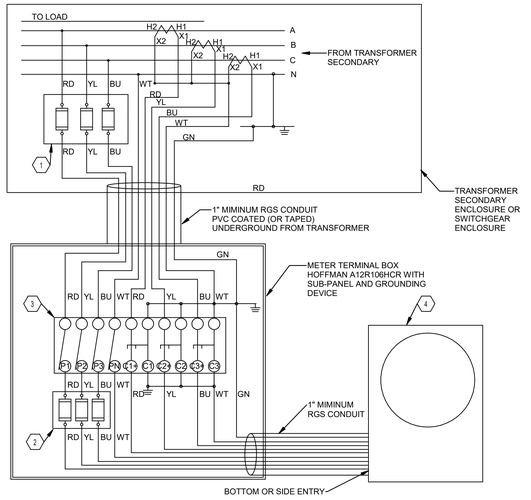
Issued: 01/06/2025

Rev. #	Description	Date Issued

DETAILS

E601

1/5/2025 8:37:22 PM



NOTES:

1. CONTRACTOR PROVIDE AND INSTALL CT'S, FUSE BLOCKS AND FUSES, TERMINAL BOX, METER BASE, AND WIRE.
2. OWNER TO TERMINATE ALL WIRING.
3. INSTALL METER TERMINAL BOX NEAR METER BASE. COORDINATE WITH OWNER. BOX SHALL BE NEMA 3R RATED WITH HINGED LOCKING COVER.
4. INSTALL METER BASE TO EXTERIOR OF BUILDING.

1. COOPER BUSSMAN FUSE BLOCK BM6033B, 30A 600V INSTALLED IN TRANSFORMER SECONDARY ENCLOSURE. FUSE: BUSSMAN KTK-15
2. COOPER BUSSMAN FUSE BLOCK BM6033B, 30A 600V INSTALLED IN METER TERMINAL BOX. FUSE: BUSSMAN KTK-2
3. MILBANK TEST SWITCH WITH COVER CATALOG #TS10-0109-WC 10 POLE
4. MILBANK METER BASE CATALOG #UC7237-XL, 13 TERMINAL

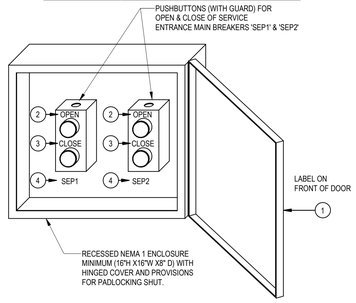
3 METERING DETAIL

NO SCALE

NOTES: (ENCLOSURE MOUNTED ON CORRIDOR SIDE)

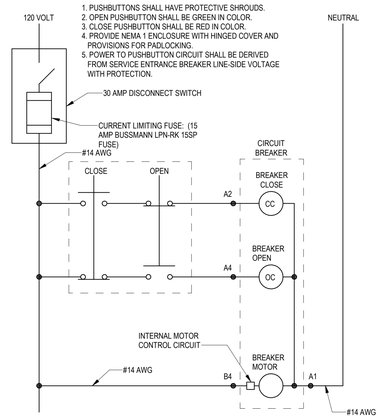
1. PUSHBUTTONS TO BE HEAVY DUTY 30.5 MM MOUNTED IN DIE-CAST ZINC BOX WITH 3/4" NPT CONDUIT ENTRANCE.
2. PUSHBUTTON MODULE (SEE NOTE 1) TO BE MOUNTED IN THE BACK OF A 16"X16"X9" DEEP RECESSED NEMA 1 FLUSH MOUNT ENCLOSURE WITH FULLY HINGED COVER AND PADLOCK INSERT. SIMILAR TO HOFFMAN CSD16168 WITH PLC OR APPROVED EQUAL.
3. INSTALL ENGRAVED NAMEPLATE AS SHOWN IN SCHEDULE FOR PUSHBUTTONS AND ON ENCLOSURE AT LOCATION INDICATED. NAMEPLATE TO BE 1/8" (MIN.) BLACK LETTERS ON WHITE BACKGROUND.
4. PUSHBUTTON TO BE INSTALLED OUTSIDE OF ARC FLASH BOUNDARY.

NAMEPLATE SCHEDULE	
LOCATION ON PANEL	NAMEPLATE MESSAGE
1	BUILDING MAIN CIRCUIT BREAKER REMOTE OPERATION PUSHBUTTON STATIONS
2	OPEN
3	CLOSE
4	LABEL EACH PUSHBUTTON WITH BREAKER DESIGNATION ASSOCIATED WITH.



NOTES:

1. PUSHBUTTONS SHALL HAVE PROTECTIVE SHROUDS.
2. OPEN PUSHBUTTON SHALL BE GREEN IN COLOR.
3. CLOSE PUSHBUTTON SHALL BE RED IN COLOR.
4. PROVIDE NEMA 1 ENCLOSURE WITH HINGED COVER AND PROVISIONS FOR PADLOCKING.
5. POWER TO PUSHBUTTON CIRCUIT SHALL BE DERIVED FROM SERVICE ENTRANCE BREAKER LINE-SIDE VOLTAGE WITH PROTECTION.



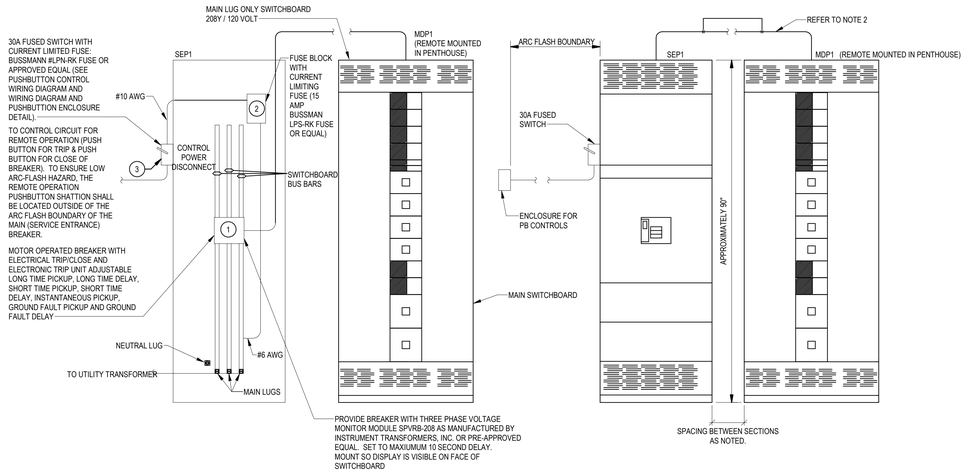
2 MAIN BREAKER ENCLOSED PUSHBUTTON CONTROL

NO SCALE

NAMEPLATE SCHEDULE	
LOCATION ON PANEL	NAMEPLATE MESSAGE
1	SERVICE ENTRANCE 1 OF 2 (MAIN)
2	SERVICE ENTRANCE 2 OF 2 (CONTROL POWER)
3	CONTROL POWER DISCONNECT

NOTES

1. INSTALL ENGRAVED NAMEPLATE AS SHOWN IN SCHEDULE ONTO SERVICE ENTRANCE PANEL AT LOCATION INDICATED. NAMEPLATE TO BE 1/4" BLACK LETTERS ON WHITE BACKGROUND.
2. PROVIDE 6 FEET MINIMUM CONDUIT LENGTH AND INSTALL O-Z/GEDNEY CONDUIT SEALING BUSHINGS (TYPE CSBG) IN ALL CONDUITS AT THE SERVICE ENTRANCE SWITCHBOARD.



1 SERVICE ENTRANCE DETAIL

NO SCALE

Electrical Engineer

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01/06/2025

Monica S Santos - Electrical
MO# E-2000174546

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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

BID DOCUMENTS

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Rev. #	Description	Date Issued

DETAILS

E602

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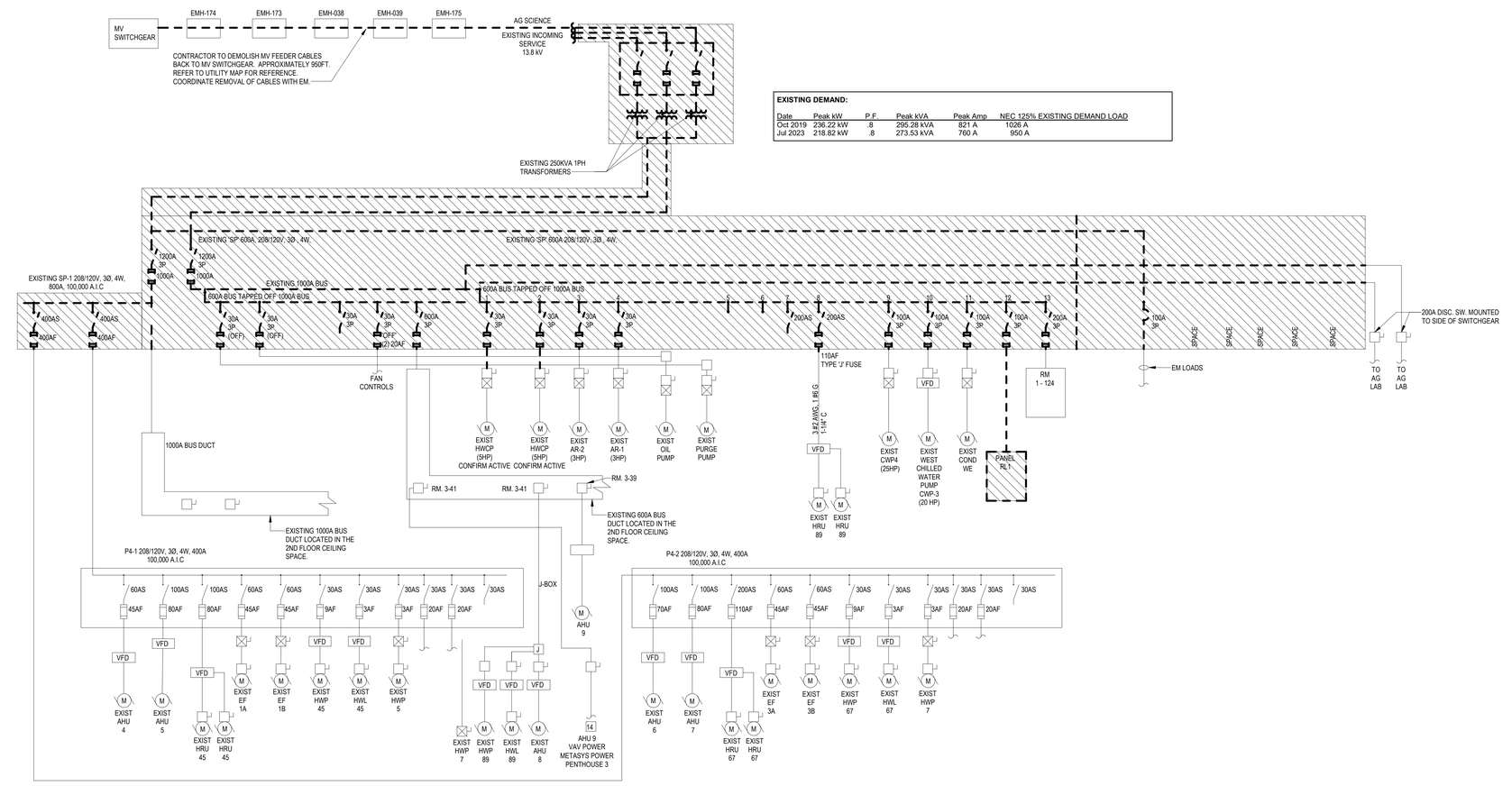
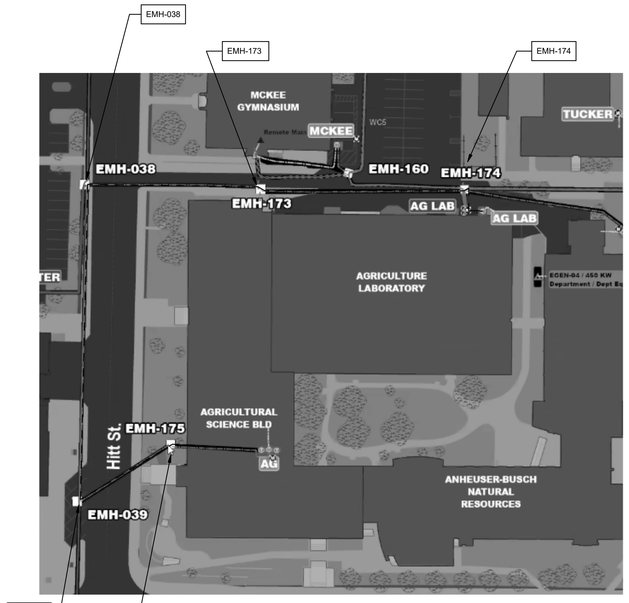


2 ONE-LINE DIAGRAM - DEMOLITION

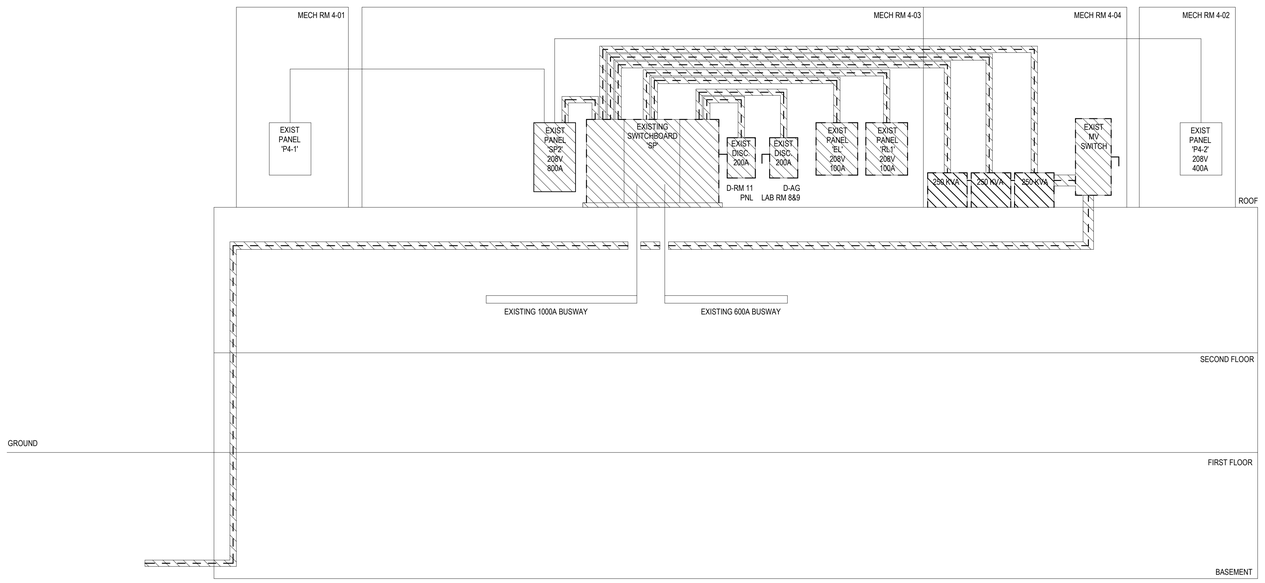
NO SCALE

EXISTING DEMAND:

Date	Peak kW	P.F.	Peak kVA	Peak Amp	NEC 125% EXISTING DEMAND LOAD
Oct 2019	236.22 kW	.8	295.28 kVA	821 A	1026 A
Jul 2023	218.82 kW	.8	273.53 kVA	760 A	950 A



UTILITY MAP FOR REFERENCE



1 ELECTRICAL RISER DIAGRAM - DEMO

NO SCALE

Electrical Engineer

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STATE OF MISSOURI — MONICA SANTOYO SANTOS — NUMBER E-2000174546 — REGISTERED PROFESSIONAL ENGINEER — 01/06/2025

Monica S Santos - Electrical
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Rev. #	Description	Date Issued

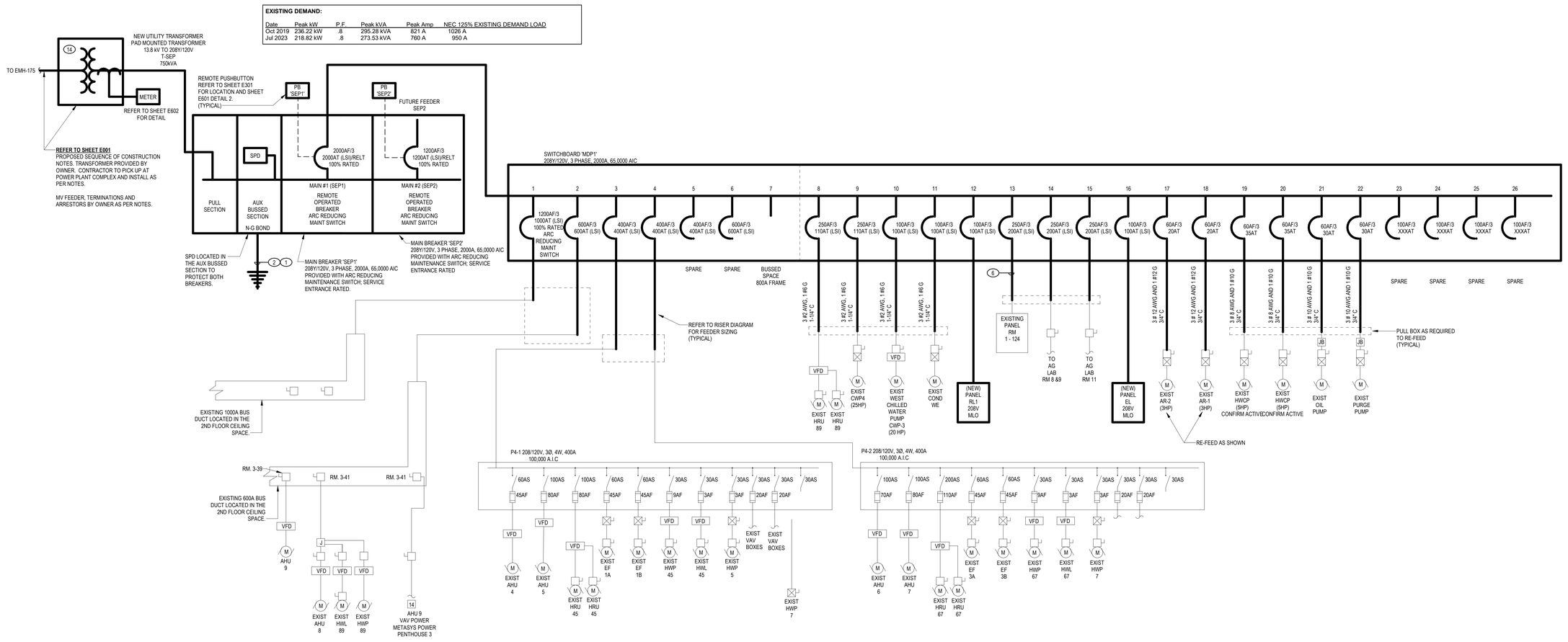
ONE-LINE & RISER DIAGRAMS - DEMOLITION

E701

1/5/2025 8:37:35 PM

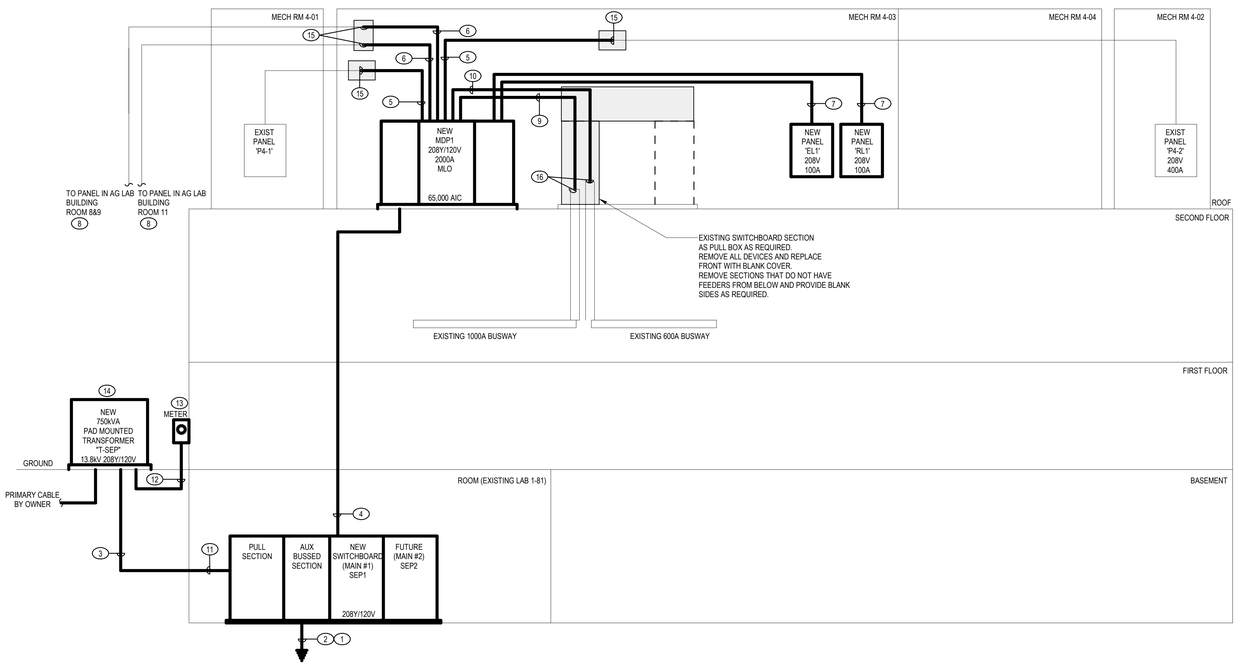
EXISTING DEMAND:

Date	Peak kW	P.F.	Peak kVA	Peak Amp	NEC 125% EXISTING DEMAND LOAD
Oct 2019	236.22 kW	.8	295.28 kVA	821 A	1026 A
Jul 2023	218.82 kW	.8	273.53 kVA	760 A	950 A



2 ONE-LINE DIAGRAM - NEW WORK

NO SCALE



1 ELECTRICAL RISER DIAGRAM - NEW WORK

NO SCALE

ELECTRICAL RISER FEEDER SCHEDULE

SYMBOL #	AMPACITY	NUMBER OF RUNS	COPPER FEEDER SIZE / NOTES	TEMP RATING	NOTES
1			GROUND PER NEC 250. BOND TO GROUND ROD. SERVICE GROUND BUS BAR LOCATED IN ROOM.		REFER TO SERVICE ENTRANCE GROUNDING DETAIL SHEET E601.
2			#3/0 GROUNDING ELECTROD CONDUCTOR		
3	2000	6	FOUR(4) #500 MCM IN 4" CONDUIT	90 DEG C	
4	2000	6	FOUR (4) #500 MCM AND 1 #250 GROUND IN 4" CONDUIT	90 DEG C	
5	400	1	FOUR (4) #500 MCM AND 1 #3 GROUND IN 3-1/2" CONDUIT.	90 DEG C	EXTEND FEEDER TO NEW PANEL AS NOTED.
6	200	1	FOUR (4) #4/0 AWG AND 1 #4 GROUND IN 2-1/2" CONDUIT.	90 DEG C	UPSIZED FEEDER TO FULL 225 AMP RATING. FIELD VERIFY SIZE OF EXISTING WIRING TO ENSURE NOT LARGER THAN NOTED.
7	100	1	FOUR (4) #1 AWG AND 1 #8 GROUND IN 1-1/2" CONDUIT.	90 DEG C	
8			PANEL LOCATED IN SEPARATE BUILDING. ADD NOTE AT BREAKER FEEDING THIS LOAD: "LOAD DISCONNECTS POWER IN SEPARATE BUILDING"		ADD SIGNAGE INDICATING WHICH BREAKER FEEDS EACH LOAD AND WHERE LOCATED.
9	1000	3	FOUR (4) #500 MCM AND 1 #2/0 GROUND IN 4" CONDUIT	90 DEG C	EXTEND FEEDER AS NOTED. USE EXISTING SWITCHBOARD SECTION AS PULLBOX IF REQUIRED.
10	600	2	FOUR (4) #350 MCM AND 1 #1 GROUND IN 3" CONDUIT	90 DEG C	EXTEND FEEDER AS NOTED. USE EXISTING SWITCHBOARD SECTION AS PULLBOX IF REQUIRED.
11					CONDUIT TO ENTER PULL SECTION FROM THE BACK. PROVIDE ENOUGH SLACK IN CONDUCTORS TO CREATE A DRIP LOOP PRIOR TO CONNECTING TO BUSSED SECTION TO AVOID CONDENSATION AND/OR WATER ENTERING THE AUX BUSSED SECTION.
12					1" RIGID STEEL CONDUIT.
13					METER. REFER TO SHEET E602 FOR DETAIL.
14					TRANSFORMER SUPPLIED BY EM AND INSTALLED BY CONTRACTOR.
15					PROVIDE PULLBOX AS REQUIRED TO SPLICE FEEDER. SPLICE WITH INLINE INSULATED SPLICE BLOCK.
16			PROVIDE ALL REQUIRED APPURTENANCES TO MAKE FINAL CONNECTION TO EXISTING BUSDUCT.		

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ONE-LINE & RISER DIAGRAMS - NEW WORK

E702

1/5/2025 8:37:42 PM

PANEL: EL1

SERVICE: 120/208 Wye , 3 -PHASE , 4 -WIRE
AMP: 100 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS:

BUS: COPPER, S/N, GND BUS ,
NEUTRAL...: 100%
MOUNTING: SURFACE
FEED: TOP
ENCLOSURE: TYPE 1

A.I.C. RATING: 22000
SUPPLIED FROM: MDP1
LOCATION:

NOTES:
TO REPLACE EXISTING PANEL EL1. MATCH ALL EXISTING BREAKER SIZES AND RE-CONNECT LOADS. PROVIDE UPDATED PANELBOARD SCHEDULE. (INFORMATION TAKEN FROM...

			BREAKER		LOAD KVA			LOAD KVA			BREAKER			
NOTE	CKT #	DESCRIPTION	P	AMP	A	B	C	A	B	C	AMP	P	DESCRIPTION	CKT #	NOTE
1	1	EXISTING LOAD (EM LTG BASEMENT)	1	20	0			0			20	1	EXISTING LOAD (EM LTG 1ST FLOOR NW HALL)	2	1
1	3	EXISTING LOAD (EM LTG BASEMENT)	1	20		0			0		20	1	EXISTING LOAD (EM LTG 1ST FLOOR S HALL)	4	1
1	5	EXISTING LOAD (EM LTG BASEMENT)	1	20			0			0	20	1	EXISTING LOAD (EM LTG 1ST FLOOR SE HALL)	6	1
1	7	EXISTING LOAD (EM LTG 2ND FLOOR)	1	20	0			0			20	1	EXISTING LOAD (LTG STAIR #1)	8	1
1	9	EXISTING LOAD (EM LTG 2ND FLOOR)	1	20		0			0		20	1	EXISTING LOAD (LTG ELEV PENTHOUSE)	10	1
1	11	EXISTING NOTED AS SPARE	1	20			0			0	20	1	EXISTING LOAD (EXIST LTG STAIR #1)	12	1
1	13	EXISTING LOAD (LTG - STAIR #3)	1	20	0			0			20	1	EXISTING NOTED AS SPARE	14	1
1	15	EXISTING LOAD (EXIT LTG - STAIR #3)	1	20		0			0		20	1	EXISTING LOAD (LTG - STAIR #4 SE	16	1
1	17	EXISTING LOAD (LTG - STAIR #2 NW)	1	20			0			0	20	1	EXISTING LOAD (EXIT LTG - STAIR #4 SE	18	1
1	19	EXISTING LOAD (EXIT LTG - STAIRS #2 NW)	1	20	0			0			20	1	EXISTING LOAD (PENHOUSE EM LTG)	20	1
	21	SPARE	1	20		0			0		20	1	SPARE	22	
	23	SPARE	1	20			0			0	20	1	SPARE	24	
	25	SPARE	1	20	0			0			20	1	SPARE	26	
	27	SPARE	1	20		0			0		20	1	SPARE	28	
	29	SPARE	1	20			0			0	20	1	SPARE	30	
		TOTAL LOAD:			0 kVA		0 kVA			0.00 kVA					
		TOTAL AMPS:			0 A		0 A			0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	0 VA	0.00%	0 VA		
Receptacle	0 VA	0.00%	0 VA	**TOTAL CONNECTED LOAD:**	0 kVA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	**TOTAL CONNECTED CURRENT:**	0 A
Heating Resistance Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	0 kVA
Heating Motor Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND CURRENT:**	0 A
Cooling	0 VA	0.00%	0 VA		
Motor	0 VA	0.00%	0 VA		
Misc. Continuous Load	0 VA	0.00%	0 VA		
Misc. Non-Continuous Load	0 VA	0.00%	0 VA		
Intermittent Loads	0 VA	0.00%	0 VA		
Elevator	0 VA	0.00%	0 VA		
Water Heater - Instantaneous	0 VA	0.00%	0 VA		
Water Heater Tank - Continuous	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA		

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)
PANEL IS LISTED AS EMERGENCY ON ORIGNAL DRAWINGS (NOT CONNECTED TO ANY EMERGENCY POWER)
IF SHARED NEUTRALS ARE ENCOUNTERED, PROVIDE BREAKER TIES TO TIE CIRCUITS TOGETHER THAT SHARE NEUTRALS.
1. RE-CONNECT EXISTING LOAD. INFORMATION TAKEN FROM EXISTING SCHEDULE.

GENERAL NOTE: (NEW PANELS)
IF CIRCUITS NEED TO BE RELOCATED DUE TO A SHARED NEUTRAL CONDITION, CONTRACTOR SHALL PROVIDE REVISED PANELBOARD SCHEDULE
REFLECTING RE-ARRANGED CIRCUITS.

PROVIDE A REDLINED AS-BUILT DRAWING INDICATING ANY CHANGES MADE IN THE FIELD.

PANEL: RL1

SERVICE: 120/208 Wye , 3 -PHASE , 4 -WIRE
AMP: 100 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS:

BUS: COPPER, S/N, GND BUS ,
NEUTRAL...: 100%
MOUNTING: SURFACE
FEED: TOP
ENCLOSURE: TYPE 1

A.I.C. RATING: 22,000
SUPPLIED FROM: MDP1
LOCATION:

NOTES:
TO REPLACE EXISTING PANEL RL1. MATCH ALL EXISTING BREAKER SIZES AND RE-CONNECT LOADS. PROVIDE UPDATED PANELBOARD SCHEDULE. (INFORMATION TAKEN FROM...

			BREAKER		LOAD KVA			LOAD KVA			BREAKER			
NOTE	CKT #	DESCRIPTION	P	AMP	A	B	C	A	B	C	AMP	P	DESCRIPTION	CKT #	NOTE
	1	EXISTING SPARE	1	20	0			0			20	1	EXISTING LOAD (EX FAN EQ RM)	2	1
1	3	EXISTING SPARE (TREATER PUMP)	1	20		0			0		20	1	EXISTING LOAD (WATER CONTROL TOWER)	4	1
1	5	EXISTING LOAD (LTG - EQ RM)	1	20			0			0	20	1	EXISTING LOAD (CHEMICAL FEED)	6	1
1	7	EXISTING LOAD (LTG - EQ RM)	1	20	0			0			20	1	EXISTING LOAD (DOMESTIC H WATER PUMP)	8	1
1	9	EXISTING LOAD (LTG - XFRMR RM)	1	20		0			0		20	1	EXISTING LOAD (REC - EQ RM, XFRMR RM)	10	1
	11	EXISTING LOAD (EX FAN XFRMR RM)	1	20			0			0	20	1	EXISTING LOAD (CONTROL POWER AR1 & AR2)	12	1
1	13	EXISTING LOAD (LTG, REC & FIL AC RM)	1	20	0			0			20	1	EXISTING LOAD (AHU 8&9)	14	1
	15	EXISTING SPARE	1	20		0			0		20	1	EXISTING LOAD (AHU 6 &7)	16	1
1	17	EXISTING LOAD (EMS)	1	20			0			0	20	1	EXISTING LOAD (AHU 4&5)	18	1
	19	EXISTING SPARE	1	20	0			0			20	1	EXISTING SPARE	20	
	21	SPARE	1	20		0			0		20	1	SPARE	22	
	23	SPARE	1	20			0			0	20	1	SPARE	24	
	25	SPARE	1	20	0			0			20	1	SPARE	26	
	27	SPARE	1	20		0			0		20	1	SPARE	28	
	29	SPARE	1	20			0			0	20	1	SPARE	30	
		TOTAL LOAD:			0 kVA		0 kVA			0.00 kVA					
		TOTAL AMPS:			0 A		0 A			0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	0 VA	0.00%	0 VA		
Receptacle	0 VA	0.00%	0 VA	**TOTAL CONNECTED LOAD:**	0 kVA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	**TOTAL CONNECTED CURRENT:**	0 A
Heating Resistance Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	0 kVA
Heating Motor Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND CURRENT:**	0 A
Cooling	0 VA	0.00%	0 VA		
Motor	0 VA	0.00%	0 VA		
Misc. Continuous Load	0 VA	0.00%	0 VA		
Misc. Non-Continuous Load	0 VA	0.00%	0 VA		
Intermittent Loads	0 VA	0.00%	0 VA		
Elevator	0 VA	0.00%	0 VA		
Water Heater - Instantaneous	0 VA	0.00%	0 VA		
Water Heater Tank - Continuous	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA		

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)
IF SHARED NEUTRALS ARE ENCOUNTERED, PROVIDE BREAKER TIES TO TIE CIRCUITS TOGETHER THAT SHARE NEUTRALS.
1. RE-CONNECT EXISTING LOAD. INFORMATION TAKEN FROM EXISTING SCHEDULE.

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MONICA SANTOYO SANTOS
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REGISTERED PROFESSIONAL ENGINEER
01/06/2025

Monica S Santos - Electrical
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Agriculture Science Electrical Service Panel Replacements

700 Hitt St.

Project Number: CP241481

Antella Project No: A224-01D

BID DOCUMENTS

Issued: 01/06/2025

Rev. #	Description	Date Issued

SCHEDULES

E801

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