ADDENDUM NO. 2

Each bidder shall note these revisions to the Bidding Documents and incorporate these revisions in their bid. Each bidder shall acknowledge receipt of this addendum in the Bid Form of the Bidding Documents.

This addendum, dated November 5, 2012, consists of this page and the following revisions:

A. SPECIFICATIONS

- 1. Revise Section 00400 "Bid Form" as follows:
 - a. Page 1, under Bid Schedule Lump Sum, include the following language: "Bidder shall submit a copy of Section 00431 "Allowance Form" with their bid, and shall include this allowance in their Base Bid Lump Sum. Also refer to Section 01210 "Allowances" for additional information."
 - b. Top of Page 5, the lines for "State" and "County" apply to the Notary Public.
- 2. Insert new Section 10290 "Bird Control", and update 00003 Table of Contents to identify it accordingly.
- 3. Insert new Section 15082 "Equipment Insulation", and update 00003 Table of Contents to identify it accordingly.
- 4. Insert new Section 15088 "HVAC Piping Insulation", and update 00003 Table of Contents to identify it accordingly.
- 5. Insert new Section 15763 "Fan-Coil Units", and update 00003 Table of Contents to identify it accordingly.
- 6. Insert new Section 15838 "Power Ventilators", and update 00003 Table of Contents to identify it accordingly.
- 7. Revise Section 16231 "Packaged Engine Generator" as follows:
 - a. Revise Part 2.5 paragraph A to read as follows: "Generator Circuit Breaker: Molded case, thermal-magnetic type; 80 percent rated; complying with NEMA AB 1 and UL 489."
 - b. Revise Part 2.7 paragraph B to read as follows: "Description: Prefabricated or preengineered enclosure with the following features:"
 - c. Delete Part 2.7, paragraph B, subsection 3 in its entirety.
 - d. Delete Part 2.7, paragraph B, subsection 7 in its entirety.
 - e. Delete Part 2.7, paragraph C, subsection 2 in its entirety.
- 8. Revise Section 16415 "Transfer Switches" as follows:
 - a. Revise Part 1.4 paragraph B to read as follows: Testing Agency Qualifications: Generator manufacturers certified technician to test for proper operation.
 - b. Delete Part 1.4 paragraph B subsection 1 in its entirety.
 - c. Delete Part 2.2 paragraph I in its entirety.

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- d. Delete Part 2.3 paragraph K in its entirety.
- e. Delete Part 3.3 paragraph C subsection 3 in its entirety.
- f. Delete Part 3.3 paragraph D subsection 2 in its entirety.

B. DRAWINGS

- 1. Replace drawing sheet AS-101(Architectural Site Plan) with the attached revised version, to include the following changes:
 - a. Clarifies approved areas that are available for staging and dumpsters.
- 2. Replace drawing sheet AD-101 (First Floor Demolition Plan) with the attached revised version, to include the following changes:
 - a. Demo doorbell box and all associated wiremold at the south entry portico.
- 3. Revise drawing sheet AD-102 (Second Floor Demolition Plan), Keynote #35 to read: "DEMO SLAB FOR NEW ELEVATOR HOISTWAY (HATCHED). RE: STRUCTURAL FOR CLEARANCE AROUND NEW HOISTWAY, TEMPORARY SHORING, AND BRACING OF SLAB TO NEW HOISTWAY. CAREFULLY REMOVE AND SALVAGE EXISTING BATTLESHIP LINOLEUM IN GOOD CONDITION FOR REUSE."
- 4. Replace drawing sheet AD-103 (Attic Demolition Plan) with the attached revised version, to include the following changes:
 - a. Revise location of exterior wall louver for attic ERV unit.
- 5. Replace drawing sheet A-101.1 (First Floor Plan NE Quad) with the attached revised version, to include the following changes:
 - a. Paint all woodwork around entry porticos.
 - b. Locate a duplex electrical outlet at entry porticos.
 - c. Identify new kiosk millwork at Lobby 101.
- 6. Replace drawing sheet A-101.2 (First Floor Plan SE Quad) with the attached revised version, to include the following changes:
 - a. Locate a duplex electrical outlet at entry porticos.
 - b. Paint all woodwork around entry porticos.
- 7. Replace drawing sheet A-101.3 (First Floor Plan SW Quad) with the attached revised version, to include the following changes:
 - a. Locate a duplex electrical outlet at entry porticos.
 - b. Paint all woodwork around entry porticos.
 - c. Locate a new bollard at the south entry portico with recessed card reader and door actuator.
- 8. Replace drawing sheet A-101.4 (First Floor Plan NW Quad) with the attached revised version, to include the following changes:
 - d. Locate a duplex electrical outlet at entry porticos.
 - e. Paint all woodwork around entry porticos.
- 9. Replace drawing sheet A-102.1(Second Floor Plan NE Quad) with the attached revised version, to include the following changes:
 - a. Identifies one specific location to remove and replace a damaged area of battleship linoleum flooring in the Brady Courtroom.

- 10. Replace drawing sheet A-103 (Attic Floor Plan) with the attached revised version, to include the following changes:
 - b. Revise location of exterior wall louver for attic ERV unit.
- 11. Revise drawing sheet A-301 (Enlarged Cupola Plans), adding Keynote #12 to indicate the following for Cupola Plan #3: "ADJUST ROOF HATCH AND/OR WEATHER STRIPPING AS NEEDED TO ALLOW ROOF HATCH TO CLOSE EASILY AND SPRING LATCH TO FUNCTION PROPERLY."
- 12. Replace drawing sheet A-302 (Cupola Elevation and Section) with the attached revised version, to include the following changes:
 - a. Identified the scope of bird control netting at the bell tower cupola.
 - b. Identified fastening clips for installation of holiday lighting on outside of Bell Tower.
- 13. Replace drawing sheet A-404 (Stair Plan and Elevations) with the attached revised version, to include the following changes:
 - a. Add Detail #4 to show glass partition head condition.
- 14. Replace drawing sheet A-408 (Restroom Plans & Elevations) with the attached revised version, to include the following changes:
 - a. Locate purse shelf.
 - b. Identify lavshield at sinks.
 - c. Add keynote #20 and clarify scope of work at restroom window.
- 15. Replace drawing sheet A-409 (Restroom Plans & Elevations) with the attached revised version, to include the following changes:
 - a. Locate purse shelf.
 - b. Note the reinstallation of marble wall panels.
- 16. Replace drawing sheet A-410 (Restroom Plans & Elevations) with the attached revised version, to include the following changes:
 - a. Clarify keynotes regarding sink and toilet.
- 17. Replace drawing sheet A-411 (Restroom Plans & Elevations) with the attached revised version, to include the following changes:
 - a. Locate purse shelf.
 - b. Identify the removal of existing non-functioning heaters and associated outlet and wiremold.
- 18. Replace drawing sheet A-413 (Restroom Plans & Elevations) with the attached revised version, to include the following changes:
 - a. Locate purse shelf.
- 19. Replace drawing sheet A-416 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying microwave.
 - b. Identifying millwork section detail locations.

- 20. Replace drawing sheet A-419 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying fan coil unit detail reference.
 - b. Identifying surface mounted light fixtures.
- 21. Replace drawing sheet A-420 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying surface mounted, pendant, wall sconce light fixtures.
 - b. Identifying new supply grille.
 - c. Identifying fan coil unit detail reference.
- 22. Replace drawing sheet A-421 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying surface mounted and pendant light fixtures.
 - b. Identifying fan coil unit detail reference.
- 23. Replace drawing sheet A-422 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying surface mounted, pendant, wall sconce light fixtures.
 - b. Identifying new supply grille.
 - c. Identifying fan coil unit detail references.
- 24. Replace drawing sheet A-423 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying surface mounted and pendant light fixtures.
- 25. Replace drawing sheet A-426 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying pendant mounted light fixtures.
 - b. Identifying new supply grille.
- 26. Replace drawing sheet A-427 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying pendant mounted and wall sconce light fixtures.
 - b. Showing millwork in Work Room 225.
- 27. Replace drawing sheet A-431 (Interior Elevations) with the attached revised version, to include the following changes:
 - a. Identifying fan coil unit detail reference.
- 28. Revise drawing sheet A-432 (Interior Elevations), Keynote #10 to read: "TENANT PROVIDED AND INSTALLED HIGH DENSITY FILE SYSTEM."
- 29. Replace drawing sheet A-504 (Detail) with the attached revised version, to include the following changes:
 - a. Revise size and location of exterior wall louver for attic ERV unit.
- 30. Insert new drawing sheet A-506 "Details", and update the sheet index on drawing G-001:
 - a. Identify access doors in Storage 027 and Janitor's Closet 113.

- 31. Replace drawing sheet A-601 (Finish Schedules) with the attached revised version, to include the following changes:
 - a. Identify concrete sealer on Finish Schedule.
- 32. Revise drawing sheet VT-01 (General Elevator Information) as follows: Delete Note #19 under Legal Hoistway and Pit, eliminating reference to smoke venting of the elevator shaft as it is not required and therefore does not apply.
- 33. Replace drawing sheet S-2 (Structural Plans and Details) with the attached revised version, to include the following changes:
 - a. Eliminate new elevator shaft lid. Shaft walls extend to existing Attic level floor slab above.
- 34. Replace drawing sheet M-103 (Attic/Roof Plan Mechanical) with the attached revised version, to include the following changes:
 - a. Shift exhaust louver location North to building centerline. Route exhaust ductwork from ERV-1 and connect to relocated louver.
 - b. Revise note 4 to read as follows: INSTALL 34"X29" GREENHECK MODEL ESD 403 LOUVER CONNECTING TO OUTSIDE AIR LOUVER. SEAL PENETRATION WEATHER TIGHT. COLOR BY ARCHITECT. PROVIDE LOUVERS WITH OPTIONAL 1 1/2" FLANGES. VERIFY FINAL LOUVER DIMENSIONS AFTER ROUGH OPENING HAS BEEN CREATED.
 - c. Revise note 10 to read as follows: SAW CUT OPENING AND INSTALL 24"X24" GREENHECK MODEL ESD 403 LOUVER CONNECTING TO EXHAUST AIR DUCT. SEAL PENETRATION WEATHER TIGHT. COLOR BY ARCHITECT. PROVIDE LOUVERS WITH OPTIONAL 1 1/2" FLANGES. VERIFY FINAL LOUVER DIMENSIONS AFTER ROUGH OPENING HAS BEEN CREATED.
- 35. Drawing sheets ED-100 (Lower Level Demo Floor Plan Electrical), ED-101 (First Floor Demo Plan Electrical), ED-102 Second Floor Demo Plan Electrical), and ED-103 (Attic/Roof Demo Plan Electrical), add the following to the end of Floor Plan Note #1: "TYPICAL ENTIRE FLOOR."
- 36. Replace drawing sheet E-100 (Lower Level Floor Plan Power) with the attached revised version, to include the following changes:
 - a. Revised telecommunications conduit cable quantities.
 - b. Revised power requirements within Telecom 011 room.
 - c. Reference revised sheet for additional clarifications.
- 37. Replace drawing sheet E-101 (First Floor Plan Power) with the attached revised version, to include the following changes:
 - a. Add one (1) WP/GFI Receptacle at each exterior exit door.
 - b. Add generator annunciation panel on east wall of Open Office 115 (near room 115B). Route 1 ¹/₄" Conduit to generator from annunciation panel.
- 38. Replace drawing sheet E-502 (Electrical Schedules and Symbols) with the attached revised version, to include the following changes:
 - a. Updated Panelboard EP Schedule.

- 39. Replace drawing sheet T-101.1 (First Floor Plan Technology) with the attached revised version, to include the following changes:
 - b. Added phone cable to fire alarm panel.
 - c. Reference revised sheet for additional clarifications.

C. RESPONSE TO BIDDER'S QUESTIONS

1. **Question:** "Sheet AD 100 Note 23 and 25 Remove paint. It was our understanding that the paint contains lead and any abatement would be done by the owner."

Answer: As stated in the pre-bid conference, loose and flaking deteriorated lead-based paint was abated by the Owner. GC shall be responsible for additional LBP removal and/or treatment as required and/or indicated. As such, EPA certification by both the GC and appropriate subs will be required.

2. **Question:** "*Is it acceptable to field finish in lieu of shop finish millwork items (trim, doors, frames etc)*"

Answer: Field finishing is required for all millwork items (trim, doors, frames, etc.) to ensure an exact match to existing finishes. No shop finishing is allowed.

3. **Question:** "In the lower level and in the tunnel there are openings in the foundation and walls that expose wood floors. What, if anything needs to happen for fire protection for the exposed areas. Will these be treated as crawl spaces and require fire sprinklers?"

Answer: Refer to Lower Level Fire Suppression Plan FP-00, as areas on either side of the tunnel are identified as crawl space with sprinkler coverage.

4. **Question:** "In the lower level at the elevator where the soldier piers are called out to be 12" can an alternate of 18" soldier piers be accepted?"

Answer: No, because 18" piles would not fit between the elevator pit walls and the existing walls to remain at east and west sides (refer to section 1/S2).

5. Question: "There is plumbing Insulation spec and duct Insulation spec but I see no HVAC pipe Insulation or Equipment Insulation spec, and does all this exposed duct really require Insulation per Duct Insulation 15086-8 - 3.8?"

Answer: New specification Sections for HVAC Piping Insulation and Equipment Insulation are provided. Exposed ductwork in occupied areas does not require insulation. Revise Section 15086 "Duct Insulation", Paragraph 3.7, A.2 to read: "*Indoor, exposed supply (in non-occupied areas only) and outdoor air*"

6. **Question:** "Spec sections for window treatments (12491 – Horizontal Louver Blinds and 12494 – Roller Shades) refer to drawings for locations & quantities, but I do not see where that is indicated on the plans."

Answer: Lower Level Quadrant Plans identify roller shades per keynote #2. First Floor Quadrant Plans general note "E" indicates all exterior windows to receive roller shades. Second Floor

Quadrant Plans general note "E" indicates all exterior windows to receive roller shades except the (3) windows in the Circuit (Brady) Courtroom 217, and (5) windows in Lobby 201.

Elevations on sheets A-429 and A-430 identify locations for horizontal louver blind in Open Office 115, Cashier 115C, Office 115A, and Office 115B. Per this Addendum, horizontal louver blinds have also been added to the borrowed lights for Offices 002B and 002C. The door schedule (updated in Addendum No. 1) calls out which doors receive horizontal louver blinds, and this would only apply to Door Type B.

- 7. **Question:** "Appliances called for in spec section 11451 (Residential Appliances) include (1) microwave, (1) under-counter refrigerator and (2) under-counter ice makers. Is this a correct accounting of required appliances? Please clarify so we can have accurate quantities."
 - a. "2.2A Microwave Ovens: Specs refer to 5/A-416 (Room #022). That reference is correct, but is this the only microwave required? It seems like the Kitchenette (Room #244) would also need a microwave."

Answer: The only microwave is in Room 022.

b. "2.3A – Undercounter Refrigerators: Is this the only location for an undercounter refrigerator?"

Answer: Yes, there is only one undercounter refrigerator in Kitchenette 244.

c. "2.4A – Icemakers: As amended, specs refer to elevations 4/A-426 and 3/A-427 for rooms #244 and #225, respectively. Room #244 is correct, but there is no elevation 3/A-427 on the original plans (and there was not a new A-427 in Addendum #1), so #225 has no elevation drawing."

Answer: There are two icemakers, one in Kitchenette 244 and one in new cabinetry at Work Room 225. Elevation 3/A-427 is included with this Addendum.

a. "In the Breakroom (#022), it looks to have a bank of (5) refrigerators along the east wall. The elevation it refers to is 8/A-415, but that elevation shows a partial exterior elevation. Is there an elevation that shows these refrigerators and are they a part of this contract (since there is no full-size refrigerator noted in the specs)?"

Answer: The elevation reference should be 2/A-415. The full size refrigerators on the east wall of the Break Room are not part of this contract.

8. **Question:** "Spec section 12484 – Floor Mats and Frames refers to plans for location & quantity of floor mats required. I do not see this information on the plans."

Answer: In Addendum No. 1, Keynote #26 was added to north, south, and east vestibules of the First Floor Quadrant Plans identifying floor mats at these vestibules.

9. Question: "Since the elevation (4/A-426) for the casework in the Kitchenette (room #244) is the only one that has sections through it, are we to assume that is typical of new casework/countertop surface throughout the building (room #022, #140, etc.)?"

Answer: Correct, except that cabinets at Coffee 006, Open Office 144, Storage 117, Work Room 140, and Work Room 225 are base units only (no wall cabinets).

10. **Question:** "Is an ignition barrier required over closed cell spray-applied polyurethane foam insulation in the unoccupied attic space?

Answer: Yes. An ignition barrier is required to be installed in the attic. However, we understand that the ignition barrier requirement may, for certain types of closed cell spray-applied polyurethane foam insulation, be accomplished by the use of certain intumescent coatings tested for that purpose directly applied to spray foam insulation. Current test reports will be required and strict adherence to manufacturer's installation instructions will be required to assure complete coverage and therefore acceptance at the end of the installation. Spray foam insulation needs to be kept within the existing stud cavities. Contractor needs to clean up all extraneous foam trimmings out of attic area and cover / protect miscellaneous past construction salvage items currently present in attic areas during the installation process.

D. PROCUREMENT SUBSTITUTION REQUESTS

- 1. Section 15785 "Air-To-Air Energy Recovery Equipment", Paragraph 2.1 Packaged Energy Recovery Units: Add Item A.4 identifying "Loren Cook Company" as an acceptable manufacturer. The equipment supplier will be required to verify that they can disassemble their unit to get into the space and then and reassemble it during installation. The contractor must also coordinate with all trades as necessary if changes to other components (such as ductwork, piping, and electrical) are required due to configuration differences between the unit provided and the basis-of-design product specified.
- 2. Section 15815 "Metal Ducts", Paragraph 2.2 Round Ducts and Fittings: Add Item A.1.e identifying "*Lindab Corporation*" as an acceptable manufacturer.

END OF ADDENDUM NO. 1

SECTION 10290 – BIRD CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Bird Netting constructed of high density polyethylene (HDPE) that is abrasion, flame, rot and UV resistant. 3/4" (1.9cm) square mesh to keep out all but the smallest of pest birds.
 - 2. Bird Netting Hardware fastens the bird netting to all types of surface shapes and materials. A variety of netting installation tools and accessories are available to make the netting installation an efficient process.
 - 3. Surface Cleaning System: surface disinfectants and deodorizers to neutralize potentially hazardous bird and/or animal wastes and properly prepare the surface for installation.

1.2 SUBMITTALS

- A. Manufacturer's literature including specifications and installation guidelines for the Bird Netting, Hardware and specified Surface Cleaning System.
- B. Sample of the Bird Netting, in color specified not less than 24" square (15.2cm square).
- C. Provide Installation Shop Drawings of complete proposed installation detailing the scope of the netting enclosure, and the mounting hardware type, location and spacing.

1.3 QUALITY ASSURANCE

- A. Installer must obtain, review and understand all manufacturer's installation guidelines.
- B. Installer must be completely familiar with the proper installation procedures for the Bird Netting and Hardware.
- C. Installer should contact manufacturer for any updated or newly developed planning or procedural information that may be pertinent to the netting installation.
- D. Installer to ensure that bird netting meets or exceeds ISO 9001 2000 Quality Management Standards.

1.4 STORAGE AND HANDLING

A. Provide storage to keep all netting and netting hardware shipping boxes dry, clean and undamaged. Do not stack or place other packaging or objects on the bird netting shipping boxes.

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B. Keep bird netting, installation hardware and surface cleaning systems in original packaging until needed for installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. K-Net HT, as manufactured by Nixalite of America Inc., or ABC Advanced Bird Control – A division of Nixalite of America Inc., or approved equal.

2.2 BIRD-NET BIRD NETTING

- A. Material: High density polyethylene (HDPE) that is abrasion, UV, flame and rot resistant. Netting to be water proof.
- B. Color: Stone (tan).
- C. Construction: Knotted 3/4" mesh netting. Netting comprised of 12 ply (4x3) strands with 75lb. (33.9kg) knotted breaking strength (KBS). Seamless full size mesh runs.
- D. Standards: Must meet ISO 9001 2000 Quality Management Standards.
- E. Mesh size: 3/4" (1.9cm) square, steam set knots.
- F. Netting Sizes: Widths: 25' (7.6m), 50' (15.2m). Lengths: 25' (7.6m), 50' (15.2m) and 100' (30.4m).
- G. Warranties: Stone (tan) K-Net HT has a 3 year limited warranty.
- H. Thermal & Physical Properties: Softening point: 250 F° (122°C). Melting point: 293 F° (145°C). Flash point: 660 F° (349°C). Remains flexible at very low temperatures. Specific gravity: 0.96 (it floats) – will not absorb water. Chemically inert. Resistant to acids and alkalis at room temperature.

2.3 BIRD NETTING HARDWARE

- A. Installer to contact manufacturer for up-to-date information and recommendations for bird netting hardware applications, item combinations and new items and procedures.
- B. Tensioned Cable Hardware: Choose the Connection, Anchoring, Cable Guide and Finishing hardware that best suits the installation surface and conditions. Hardware combinations can be mixed to suit changing surface materials and conditions. Cable hardware is NOT FOR LOAD LIFTING!
 - 1. Connection hardware:

- a. Net Cable: Aircraft grade, 302/304 stainless steel, 7x7, 49 strand, 3/32" (2.2mm) diameter cable with 900 lb. (407kg) breaking strength. In 250' (76.2m) and 500' (152.4m) spool lengths. Hardware spacing determines max cable run lengths.
- b. Turnbuckles: Stainless steel, hook & eye turnbuckles three sizes. Small: Max cable run: 25 feet (7.6m). Safe working load 360 lbs. (163kg). Medium: Max cable run: 50 feet (15.2m). Safe working load 500 lbs. (226kg).
- c. Ferrules: Zinc plated copper ferrules for 3/32" (2.2mm) cable. Acceptable connection for cable runs up to 25' (7.6m) max. Always use 2 ferrules per connection. Always use in conjunction with Cable Thimble.
- d. Wire Rope Clamps: Galvanized or stainless steel for 3/32" (2.2mm) diameter cable. Recommended connection for all cable runs. Mandatory connection for cable runs over 25' (7.6m). Always use 2 clamps per connection. Always use in conjunction with Cable Thimble.
- e. Cable Thimble: Stainless steel cable thimble for 3/32" (2.2mm) diameter cable. Cable Thimble prevents cable fraying and creasing when tensioning cable system.
- 2. Cable Anchoring Hardware:
 - a. Eyebolts: for steel, iron, and heavy gauge sheet metal. Extreme duty stainless steel eyebolt, 2" (5.1cm) long, 9/16" I.D. (14.2mm) with 1/4-20 stainless steel hex nut. Maximum spacing between eyebolts: 50' (15.2m).
 - b. Screw Eyes: for wood beams, heavy to medium gauge sheet metal and wood core surfaces. Extreme duty stainless steel screw eyes 2" (5.1cm) long, 17/32" I.D. (13.5mm). Pilot holes recommended for all surfaces.
 - c. Maximum spacing between screw eyes: 50' (15.2m).
 - d. Eyebolts and Machine Screw Anchors: for concrete, stone, masonry block, brick and pre-cast surfaces. Eyebolt specs are same as above. Machine Screw Anchor: Zinc plated anchor 1/2" (12.7mm) diameter x 1" (25.4mm) deep with 1/4-20 threads inside. Setting tool included with anchors.
- 3. Cable Guide Hardware:
 - a. Small Screw Eyes: for wood, medium/light gauge sheet metal and wood core surfaces. Heavy duty, stainless steel, 1-3/16"long x 7/32"I.D. (31mm long x 5.3mm I.D.). Maximum spacing: 24" (61cm) O.C.
 - b. Small Eyebolts: for steel, iron, and heavy gauge sheet metal. Heavy duty, stainless steel, 1 3/8" long x 9/32" I.D. (35mm long x 7.1mm I.D.). Maximum spacing: 24" (61cm) O.C.
 - c. Sidewinders: for heavy gauge sheet metal, structural steel up to 1/2" thick and solid concrete surfaces. Sidewinders for steel are self-drill, self-tap items, no pilot required. Sidewinder for concrete requires pilot hole. Maximum spacing: 24" (61cm) O.C. Sidewinders require the Driver Socket.
- 4. Finishing Hardware:
 - a. Net Rings: attaches the netting mesh to the cables, closes seams, and fastens the Net Zippers to the K-Net HT mesh.

Net ring quantity requirements per attachment:

- b. Netting to cable: Use 16 net rings per foot (each netting mesh).
- c. Lapped seams: Use 32 net rings per foot (1 per mesh each side of seam).
- d. Zipper Installation: Use 32 net rings per foot (1 per mesh each side of zipper).
- e. Net Zipper: Allows for access to areas behind the bird netting installation. Available in 2 ft. (61cm), 4 ft. (122cm) and 8 ft. (244cm) lengths. Heavy duty, marine-grade, black zipper with 3/4" (1.9cm) fabric tape, open top and auto lock slider.

2.4 SURFACE DISINFECTANTS

- A. Steri-Fab: surface disinfectant and bactericide to neutralize bird waste. Do not use with Microcide-SQ on the same surface.
- B. Microcide-SQ: surface cleaner and deodorizer to sanitize surface and remove any residual odor from bird inhabitation. Do not use with Steri-Fab on the same surface.
- C. Microsan: anti-bacterial soap and lotion to prevent disease transmittal after working around surfaces contaminated with bird & animal wastes. Use to compliment personal protection equipment standards (PPE).

PART 3 - EXECUTION

3.1 INSPECTION

- A. Visually inspect the surfaces that will receive the netting hardware and all areas that will end up behind or inside the netting installation. Note damaged surfaces or incomplete construction that could compromise the bird netting installation.
- B. Note all areas, surfaces or objects that may require maintenance or periodic replacement after the bird netting is installed (i.e. lights, electrical equipment, etc.). Use the appropriate netting accessories to allow access behind the installed netting system.
- C. Note any objects or conditions that could damage the installed bird netting. Install the in such a manner as to avoid these conditions.

3.2 PREPARATION

A. Field Measurements: Verify dimensions of the areas to be enclosed. Make sure you have sufficient quantity of bird netting, netting hardware and surface cleaning products to properly install the Netting System.

3.3 SURFACE CLEANING

- A. All surfaces to be clean, dry and free of obstructions before bird control is installed.
- B. If bird waste is present treat, neutralize and safely remove all bird waste from installation surfaces. Installer must follow all cities, state and federal regulations regarding the proper removal and disposal of bird droppings.
- C. Use manufacturer's surface cleaning products to neutralize any bird droppings, nests and related waste materials that may be present. Allow all surfaces to air dry completely, and then reapply to sanitize and deodorize the surface before proceeding. Strictly follow treatment instructions provided with manufacturer's surface cleaning products.
- D. Use manufacturer's anti-bacterial personal protection products to help prevent disease transmittal when working around surfaces contaminated with bird droppings.

3.4 INSTALLATION

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- A. Install the bird netting hardware as recommended by manufacturer. General order of installation: install perimeter and support hardware; attach bird netting to installed hardware; install access or additional support hardware as specified.
- B. Install netting as recommended by the manufacturer. If necessary, cut the netting to fit the area. If multiple pieces are needed, join the pieces together with the recommended seam fastening hardware.
- C. Install netting to avoid contact with machinery, vehicles, extreme heat, tree branches, etc. Make necessary adjustments to keep netting a sufficient distance from these objects or conditions.
- D. Finished netting installation to be taught, free of wrinkles, gaps and openings.

3.5 ADJUSTMENTS / CLEANING

- A. Remove debris and waste materials from project site.
- B. Inspect finished installation. Make any adjustments needed to conform to manufacturer's installation guidelines.

END OF SECTION 10290

SECTION 15082 - EQUIPMENT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes blanket, board, and block insulation; insulating cements; field-applied jackets; accessories and attachments; and sealing compounds.
- B. Related Sections include the following:
 - 1. Division 15 Section "Duct Insulation" for insulation materials and application for ducts and plenums.
 - 2. Division 15 Section "Pipe Insulation" for insulation for piping systems.

1.3 SUBMITTALS

A. Product Data: Identify thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the U.S. Department of Labor, Bureau of Apprenticeship and Training.
- B. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this Section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer and cement material containers with appropriate markings of applicable testing and inspecting agency.
 - 1. Insulation Installed Indoors: Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread rating of 75 or less, and smoke-developed rating of 150 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Ship insulation materials in containers marked by manufacturer with appropriate ASTM specification designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate clearance requirements with equipment Installer for insulation application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Mineral-Fiber Insulation:
 - a. CertainTeed Manson.
 - b. Knauf FiberGlass GmbH.
 - c. Owens-Corning Fiberglas Corp.
 - d. Schuller International, Inc.
 - 2. Flexible Elastomeric Thermal Insulation:
 - a. Armacell LLC
 - b. Rubatex Corp.

2.2 INSULATION MATERIALS

- A. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Maximum "k" factor of 0.25 at 70°F for use to 400°F. Comply with ASTM C 612, Type IB, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
- B. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Maximum "k" factor of 0.25 at 70°F with a 1.5lb/ft³ density for use to 250°F. Comply with ASTM C 553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
- C. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type II for sheet materials.
 - 1. Adhesive: As recommended by insulation material manufacturer.
 - 2. Ultraviolet-Protective Coating: As recommended by insulation manufacturer.
 - 3. Maximum "k" factor of 0.25 at 70°F for use to 200°F.

2.3 STANDARD JACKET FOR EQUIPMENT INSULATION

A. ASTM C 921, Type I, vapor barrier type. Provide jacket of laminated aluminum foil and kraft paper with a glass reinforcing scrim.

2.4 ACCESSORIES AND ATTACHMENTS

- A. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq. yd. (270 g/sq. m).
 - 1. Tape Width: 4 inches (100 mm).
- B. Weld-Attached Anchor Pins and Washers: Copper-coated steel pin for capacitor-discharge welding and galvanized speed washer. Pin length sufficient for insulation thickness indicated.
 - 1. Welded Pin Holding Capacity: 100 lb (45 kg) for direct pull perpendicular to the attached surface.
- C. Adhesive-Attached Anchor Pins and Speed Washers: Galvanized steel plate, pin, and washer manufactured for attachment to duct and plenum with adhesive. Pin length sufficient for insulation thickness indicated.
 - 1. Adhesive: Recommended by the anchor pin manufacturer as appropriate for surface temperatures of ducts, plenums, and breechings; and to achieve a holding capacity of 100 lb (45 kg) for direct pull perpendicular to the adhered surface.
- D. Self-Adhesive Anchor Pins and Speed Washers: Galvanized steel plate, pin, and washer manufactured for attachment to duct and plenum with adhesive. Pin length sufficient for insulation thickness indicated.

2.5 VAPOR RETARDERS

- A. Moisture Barrier: 3-mil Dupont Surlyn.
- B. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.
 - 1. Exterior Equipment (metal jacket): Flexible elastomeric based, vapor barrier sealant designed to seal metal joints, with a water permeance of .02 max. and temperature range -50 to 250°F, aluminum color.
 - 2. Interior Equipment: Water based fire resistive composition with a water permeance of .08 max. and temperature range of -20 to 180°F.

PART 3 - EXECUTION

3.1 **EXAMINATION**

- Examine substrates and conditions for compliance with requirements for installation and other A. conditions affecting performance of insulation application.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will A. adversely affect insulation application.

3.3 GENERAL APPLICATION REQUIREMENTS

- Apply insulation materials, accessories, and finishes according to the manufacturer's written A. instructions; with smooth, straight, and even surfaces; and free of voids throughout the length of equipment.
- Refer to schedules at the end of this Section for materials, forms, jackets, and thicknesses B. required for each equipment system.
- Use accessories compatible with insulation materials and suitable for the service. C. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either the wet or dry state.
- D. Apply multiple layers of insulation with longitudinal and end seams staggered.
- E. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.
- F. Keep insulation materials dry during application and finishing.
- G. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.
- H. Apply insulation with the least number of joints practical.
- Apply insulation over fittings and specialties, with continuous thermal and vapor-retarder I. integrity, unless otherwise indicated.
- J. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor-retarder mastic. Apply insulation continuously through hangers and around anchor attachments.
- K. Insulation Terminations: For insulation application where vapor retarders are indicated, seal ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.
- Apply insulation with integral jackets as follows: L.

- 1. Pull jacket tight and smooth.
- 2. Joints and Seams: Cover with tape and vapor retarder as recommended by insulation material manufacturer to maintain vapor seal.
- 3. Vapor-Retarder Mastics: Where vapor retarders are indicated, apply mastic on seams and joints and at ends adjacent to flanges and fittings.
- M. Cut insulation according to manufacturer's written instructions to prevent compressing insulation to less than 75 percent of its nominal thickness.
- N. Install vapor-retarder mastic on equipment scheduled to receive vapor retarders. Overlap insulation facing at seams and seal with vapor-retarder mastic and pressure-sensitive tape having same facing as insulation. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-retarder seal.
- O. Insulate the following indoor equipment:
 - 1. Steam-to-water converters, not factory insulated.
 - 2. Chilled-water centrifugal pump housings.
- P. Provide removable insulation sections to cover parts of equipment which must be opened periodically for maintenance.
- Q. Omit insulation from the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Manholes.
 - 5. Handholes.
 - 6. Cleanouts.

3.4 FINISHES

A. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

3.5 FIELD QUALITY CONTROL

A. Insulation applications will be considered defective if on site observations reveal noncompliance with requirements. Remove defective Work and replace with new materials according to these Specifications.

3.6 EQUIPMENT APPLICATIONS

A. Insulation materials and thicknesses are specified in schedules at the end of this Section.

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3.7 EQUIPMENT INSULATION SCHEDULE

- A. Chilled-water pumps.
 - 1. Insulation Material: Flexible elastomeric.
 - 2. Insulation Thickness: 1".
- B. Heat exchangers.
 - 1. Insulation Material: Mineral Fiber.
 - 2. Insulation Thickness: 2".

END OF SECTION 15082

SECTION 15088 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulating the following HVAC piping systems:
 - 1. Chilled-water piping, indoors.
 - 2. Heating hot-water piping, indoors.
 - 3. Refrigerant suction and hot-gas piping, indoors and outdoors.

B. Related Sections:

- 1. Division 15 Section "Duct Insulation."
- 2. Division 15 Section "HVAC Equipment Insulation."

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

- C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- E. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pittsburgh Corning Corporation; Foamglas.
 - 2. Preformed Pipe Insulation with Factory-Applied ASJ: Comply with ASTM C 552, Type II, Class 2.
 - 3. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
- F. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Aeroflex USA, Inc.; Aerocel.
 - b. Armacell LLC; AP Armaflex.
 - c. K-Flex USA; Insul-Lock, Insul-Tube, and K-FLEX LS.

2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 deg F.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 81-84.
 - 2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Use adhesive that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.

- C. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Aeroflex USA, Inc.; Aeroseal.
 - b. Armacell LLC; Armaflex 520 Adhesive.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-75.
 - d. K-Flex USA; R-373 Contact Adhesive.
 - 2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Use adhesive that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
- D. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
 - b. Eagle Bridges Marathon Industries; 225.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-50.
 - d. Mon-Eco Industries, Inc.; 22-25.
 - 2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Use adhesive that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.

2.3 SEALANTS

- A. Joint Sealants:
 - 1. Joint Sealants for Cellular-Glass Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
 - b. Eagle Bridges Marathon Industries; 405.

- c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-45.
- d. Mon-Eco Industries, Inc.; 44-05.
- e. Pittsburgh Corning Corporation; Pittseal 444.
- 2. Materials shall be compatible with insulation materials, jackets, and substrates.
- 3. Permanently flexible, elastomeric sealant.
- 4. Service Temperature Range: Minus 100 to plus 300 deg F.
- 5. Color: White or gray.
- 6. For indoor applications, use sealants that have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- 7. Use sealants that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
- B. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
 - 2. Materials shall be compatible with insulation materials, jackets, and substrates.
 - 3. Fire- and water-resistant, flexible, elastomeric sealant.
 - 4. Service Temperature Range: Minus 40 to plus 250 deg F.
 - 5. Color: White.
 - 6. For indoor applications, use sealants that have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 7. Use sealants that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.

2.4 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
 - 1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
 - 2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.

2.5 TAPES

- ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, A. complying with ASTM C 1136.
 - Products: Subject to compliance with requirements, available products that may be 1. incorporated into the Work include, but are not limited to, the following:
 - ABI, Ideal Tape Division; 428 AWF ASJ. a.
 - Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836. b.
 - c. Compac Corporation; 104 and 105.
 - Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ. d.
 - 2. Width: 3 inches.
 - Thickness: 11.5 mils. 3.
 - 4. Adhesion: 90 ounces force/inch in width.
 - Elongation: 2 percent. 5.
 - Tensile Strength: 40 lbf/inch in width. 6.
 - ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape. 7.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- Mix insulating cements with clean potable water; if insulating cements are to be in contact with C. stainless-steel surfaces, use demineralized water.

3.2 GENERAL INSTALLATION REQUIREMENTS

- Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; A. free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- Install accessories compatible with insulation materials and suitable for the service. Install C. accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- Install insulation with longitudinal seams at top and bottom of horizontal runs. D.

- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
 - a. For below-ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- P. For above-ambient services, do not install insulation to the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Manholes.
 - 5. Handholes.
 - 6. Cleanouts.

3.3 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 - 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.
- C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 - 4. Seal jacket to wall flashing with flashing sealant.
- D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

- 1. Comply with requirements in Division 7 Section "Through-Penetration Firestop Systems" for firestopping and fire-resistive joint sealers.
- F. Insulation Installation at Floor Penetrations:
 - 1. Pipe: Install insulation continuously through floor penetrations.
 - 2. Seal penetrations through fire-rated assemblies. Comply with requirements in Division 7 Section "Through-Penetration Firestop Systems."

3.4 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
 - 1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 - 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
 - 3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 - 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
 - 5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 - 6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
 - 7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

- 8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
- 9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
 - 1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 - 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
 - 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 - 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 - 5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.5 INSTALLATION OF CELLULAR-GLASS INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:
 - 1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
 - 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
 - 3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward-clinched staples at 6 inches o.c.
 - 4. For insulation with factory-applied jackets on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.
- B. Insulation Installation on Pipe Flanges:

- 1. Install preformed pipe insulation to outer diameter of pipe flange.
- 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
- 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of same thickness as pipe insulation.
- 4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.
- C. Insulation Installation on Pipe Fittings and Elbows:
 - 1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
 - 2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.
- D. Insulation Installation on Valves and Pipe Specialties:
 - 1. Install preformed sections of cellular-glass insulation to valve body.
 - 2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
 - 3. Install insulation to flanges as specified for flange insulation application.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- B. Insulation Installation on Pipe Flanges:
 - 1. Install pipe insulation to outer diameter of pipe flange.
 - 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
 - 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
 - 4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Insulation Installation on Pipe Fittings and Elbows:
 - 1. Install mitered sections of pipe insulation.
 - 2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- D. Insulation Installation on Valves and Pipe Specialties:
 - 1. Install preformed valve covers manufactured of same material as pipe insulation when available.

- 2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
- 3. Install insulation to flanges as specified for flange insulation application.
- 4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.7 FINISHES

- A. Pipe Insulation with ASJ or Other Paintable Jacket Material.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Do not field paint aluminum or stainless-steel jackets.

3.8 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.9 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - 1. Drainage piping located in crawl spaces.
 - 2. Underground piping.
 - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.10 INDOOR PIPING INSULATION SCHEDULE

- A. Chilled Water above 40 Deg F: Insulation shall be the following:
 - 1. Cellular Glass: 1-1/2 inches thick.
- B. Heating-Hot-Water Supply and Return, 200 Deg F and Below: Insulation shall be the following:
 - 1. Cellular Glass: 1-1/2 inches thick.
- C. Refrigerant Suction and Hot-Gas Piping: Flexible elastomeric, 1 inch thick.
- D. Refrigerant Suction and Hot-Gas Flexible Tubing: Flexible elastomeric, 1 inch thick.

3.11 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

- A. Refrigerant Suction and Hot-Gas Piping: Insulation shall be the following:
 - 1. Flexible Elastomeric: 2 inches thick.
- B. Refrigerant Suction and Hot-Gas Flexible Tubing: Insulation shall be the following:
 - 1. Flexible Elastomeric: 2 inches thick.

END OF SECTION 15088

SECTION 15763 - FAN-COIL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes fan-coil units and accessories.

1.3 DEFINITIONS

A. BAS: Building automation system.

1.4 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Coordination Drawings: Floor plans, reflected ceiling plans, and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Ceiling suspension components.
 - 2. Structural members to which fan-coil units will be attached.
 - 3. Method of attaching hangers to building structure.
 - 4. Size and location of initial access modules for acoustical tile.
 - 5. Items penetrating finished ceiling, including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - 6. Perimeter moldings for exposed or partially exposed cabinets.

- D. Samples for Initial Selection: For units with factory-applied color finishes.
- E. Samples for Verification: For each type of fan-coil unit indicated.
- F. Manufacturer Seismic Qualification Certification: Submit certification that fan-coil units, accessories, and components will withstand seismic forces defined in Division 15 Section "Mechanical Vibration and Seismic Controls." Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
 - b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- G. Field quality-control test reports.
- H. Operation and Maintenance Data: For fan-coil units to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
 - 1. Maintenance schedules and repair part lists for motors, coils, integral controls, and filters.
- I. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 "Systems and Equipment" and Section 7 "Construction and Startup."
- C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 "Heating, Ventilating, and Air-Conditioning."

1.6 COORDINATION

- Coordinate layout and installation of fan-coil units and suspension system components with A. other construction that penetrates or is supported by ceilings, including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.
- Coordinate size and location of wall sleeves for outdoor-air intake. Β.

1.7 WARRANTY

- Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or A. replace components of condensing units that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Compressor failure.
 - Condenser coil leak. b.
 - 2. Warranty Period: Five years from date of Substantial Completion.
 - Warranty Period (Compressor Only): Five years from date of Substantial Completion. 3.
 - Warranty Period (Condenser Coil Only): Five years from date of Substantial 4. Completion.

1.8 EXTRA MATERIALS

- Furnish extra materials described below that match products installed and that are packaged A. with protective covering for storage and identified with labels describing contents.
 - 1. Fan-Coil-Unit Filters: Furnish 2 spare filters for each filter installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- In other Part 2 articles where titles below introduce lists, the following requirements apply to A. product selection:
- B. In the Fan-Coil-Unit Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
 - 1. Basis-of-Design Product: The design for each fan-coil unit is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified meeting the specified requirements of the system.

2.2 FAN-COIL UNITS - DUCTED AND NON-DUCTED

- A. Available Manufacturers:
 - 1. Carrier Corporation.
 - Environmental Technologies, Inc. 2.
 - 3. McOuav International.
 - Trane. 4.
 - YORK International Corporation. 5.
- B. Description: Factory-packaged and -tested units rated according to ARI 440, ASHRAE 33, and UL 1995.
- C. Coil Section Insulation: 1/2-inch thick, foil-covered, closed-cell foam complying with ASTM C 1071 and attached with adhesive complying with ASTM C 916.
 - Fire-Hazard Classification: Insulation and adhesive shall have a combined maximum 1. flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84.
 - 2. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
- Main and Auxiliary Drain Pans: Plastic or Stainless steel. Fabricate pans and drain connections D. to comply with ASHRAE 62.1-2004.
- Chassis: Galvanized steel where exposed to moisture. Floor-mounting units shall have leveling E. screws.
- F. Cabinet: Steel with baked-enamel finish in manufacturer's standard paint color or as selected by Architect.
 - 1. Vertical Unit Front Panels: Removable, steel, with integral stamped or steel discharge grille and channel-formed edges, cam fasteners, and insulation on back of panel.
 - 2. Horizontal Unit Bottom Panels: Fastened to unit with cam fasteners and hinge and attached with safety chain; with integral stamped discharge grilles.
 - 3. Steel recessing flanges for recessing fan-coil units into ceiling or wall.
- Filters: Minimum arrestance according to ASHRAE 52.1, and a minimum efficiency reporting G. value (MERV) according to ASHRAE 52.2.
 - 1. Pleated Cotton-Polyester Media: 90 percent arrestance and 7 MERV.
- Hydronic Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than H. 0.1 inch, rated for a minimum working pressure of 200 psig and a maximum entering-water temperature of 220 deg F. Include manual air vent and drain valve.
- Fan and Motor Board: Removable. I.

- 1. Fan: Forward curved, double width, centrifugal; directly connected to motor. Thermoplastic or painted-steel wheels, and aluminum, painted-steel, or galvanized-steel fan scrolls.
- 2. Motor: Permanently lubricated, multispeed; resiliently mounted on motor board. Comply with requirements in Division 15 Section "Motors."
- 3. Wiring Termination: Connect motor to chassis wiring with plug connection.
- J. Factory, Hydronic Piping Package: ASTM B 88, Type L copper tube with wrought-copper fittings and brazed joints. Label piping to indicate service, inlet, and outlet.
 - 1. Two and Three-way, modulating control valve for chilled-water coil per drawings and schedules.
 - 2. Two and Three-way, modulating control valve for heating coil per drawings and schedules.
 - 3. Hose Kits: Minimum 400-psig working pressure, and operating temperatures from 33 to 211 deg F. Tag hose kits to equipment designations.
 - a. Length: 24 inches.
 - b. Minimum Diameter: Equal to fan-coil-unit connection size.
 - 4. Two-Piece Ball Valves: Bronze body with full-port, chrome-plated bronze ball; PTFE or TFE seats; and 600-psig minimum CWP rating and blowout-proof stem.
 - 5. Calibrated-Orifice Balancing Valves: Bronze body, ball type; 125-psig working pressure, 250-deg F maximum operating temperature; with calibrated orifice or venturi, connections for portable differential pressure meter with integral seals, threaded ends, and equipped with a memory stop to retain set position.
 - 6. Automatic Flow-Control Valve: Brass or ferrous-metal body; 300-psig working pressure at 250 deg F, with removable, corrosion-resistant, tamperproof, self-cleaning piston spring; factory set to maintain constant indicated flow with plus or minus 10 percent over differential pressure range of 2 to 80 psig.
 - 7. Y-Pattern Hydronic Strainers: Cast-iron body (ASTM A 126, Class B); 125-psig working pressure; with threaded connections, bolted cover, perforated stainless-steel basket, and bottom drain connection. Include minimum NPS 1/2 hose-end, full-port, ball-type blowdown valve in drain connection.
 - 8. Wrought-Copper Unions: ASME B16.22.
 - 9. Risers: ASTM B 88, Type L copper pipe with hose and ball valve for system flushing.
- K. Control devices and operational sequences are specified in Division 15 Sections "HVAC Instrumentation and Controls" and "Sequence of Operation."
 - a.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive fan-coil units for compliance with requirements for installation tolerances and other conditions affecting performance.

- B. Examine roughing-in for piping and electrical connections to verify actual locations before fancoil-unit installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install fan-coil units level and plumb.
- B. Install fan-coil units to comply with NFPA 90A.
- C. Suspend fan-coil units from structure with elastomeric hangers. Vibration isolators are specified in Division 15 Section "Mechanical Vibration and Seismic Controls."
- D. Install new filters in each fan-coil unit within two weeks after Substantial Completion.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Specific connection requirements are as follows:
 - 1. Install piping adjacent to machine to allow service and maintenance.
 - 2. Connect piping to fan-coil-unit factory hydronic piping package. Install piping package if shipped loose.
 - 3. Connect condensate drain to indirect waste.
 - a. Install condensate trap of adequate depth to seal against the pressure of fan. Install cleanouts in piping at changes of direction.
- B. Connect supply and return ducts to fan-coil units with flexible duct connectors specified in Division 15 Section "Duct Accessories." Comply with safety requirements in UL 1995 for duct connections.
- C. Ground equipment according to Division 16 Section "Grounding and Bonding."
- D. Connect wiring according to Division 16 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
 - 3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

B. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 15763

SECTION 15838 - POWER VENTILATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Centrifugal roof ventilators.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. AMCA Compliance: Fans shall have AMCA-Certified performance ratings and shall bear the AMCA-Certified Ratings Seal.

PART 2 - PRODUCTS

2.1 CENTRIFUGAL ROOF VENTILATORS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Greenheck Fan Corporation.
 - 2. Loren Cook Company.
 - 3. PennBarry.

- B. Housing: Removable, spun-aluminum, dome top and outlet baffle; square, one-piece, aluminum base with venturi inlet cone.
 - 1. Upblast Units: Provide spun-aluminum discharge baffle to direct discharge air upward, with rain and snow drains.
 - 2. Hinged Subbase: Galvanized-steel hinged arrangement permitting service and maintenance.
- C. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.
- D. Belt Drives:
 - 1. Resiliently mounted to housing.
 - 2. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.
 - 3. Shaft Bearings: Permanently lubricated, permanently sealed, self-aligning ball bearings.
 - 4. Pulleys: Cast-iron, adjustable-pitch motor pulley.
 - 5. Fan and motor isolated from exhaust airstream.
- E. Accessories:
 - 1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
 - 2. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted outside fan housing, factory wired through an internal aluminum conduit.
 - 3. Bird Screens: Removable, 1/2-inch mesh, aluminum or brass wire.
 - 4. Dampers: Counterbalanced, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.
 - 5. Motorized Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops.
- F. Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch- thick, rigid, fiberglass insulation adhered to inside walls; and 1-1/2-inch wood nailer. Size as required to suit roof opening and fan base.
 - 1. Configuration: Built-in cant and mounting flange.
 - 2. Overall Height: 16 inches.
 - 3. Sound Curb: Curb with sound-absorbing insulation.
 - 4. Pitch Mounting: Manufacture curb for roof slope.
 - 5. Metal Liner: Galvanized steel.
 - 6. Mounting Pedestal: Galvanized steel with removable access panel.

2.2 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 15 Section "Common Motor Requirements for HVAC Equipment."
 - 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

- 2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 16 Sections.
- B. Enclosure Type: Totally enclosed, fan cooled.

2.3 SOURCE QUALITY CONTROL

- A. Certify sound-power level ratings according to AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.
- B. Certify fan performance ratings, including flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests according to AMCA 210, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating." Label fans with the AMCA-Certified Ratings Seal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Secure roof-mounted fans to roof curbs with cadmium-plated hardware. See Division 7 Section "Roof Accessories" for installation of roof curbs.
- B. Install units with clearances for service and maintenance.
- C. Label units according to requirements specified in Division 15 Section "Identification for HVAC Piping and Equipment."

3.2 CONNECTIONS

- A. Duct installation and connection requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Division 15 Section "Duct Accessories."
- B. Install ducts adjacent to power ventilators to allow service and maintenance.
- C. Ground equipment according to Division 16 Section "Grounding and Bonding."
- D. Connect wiring according to Division 16 Section "Conductors and Cables."

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

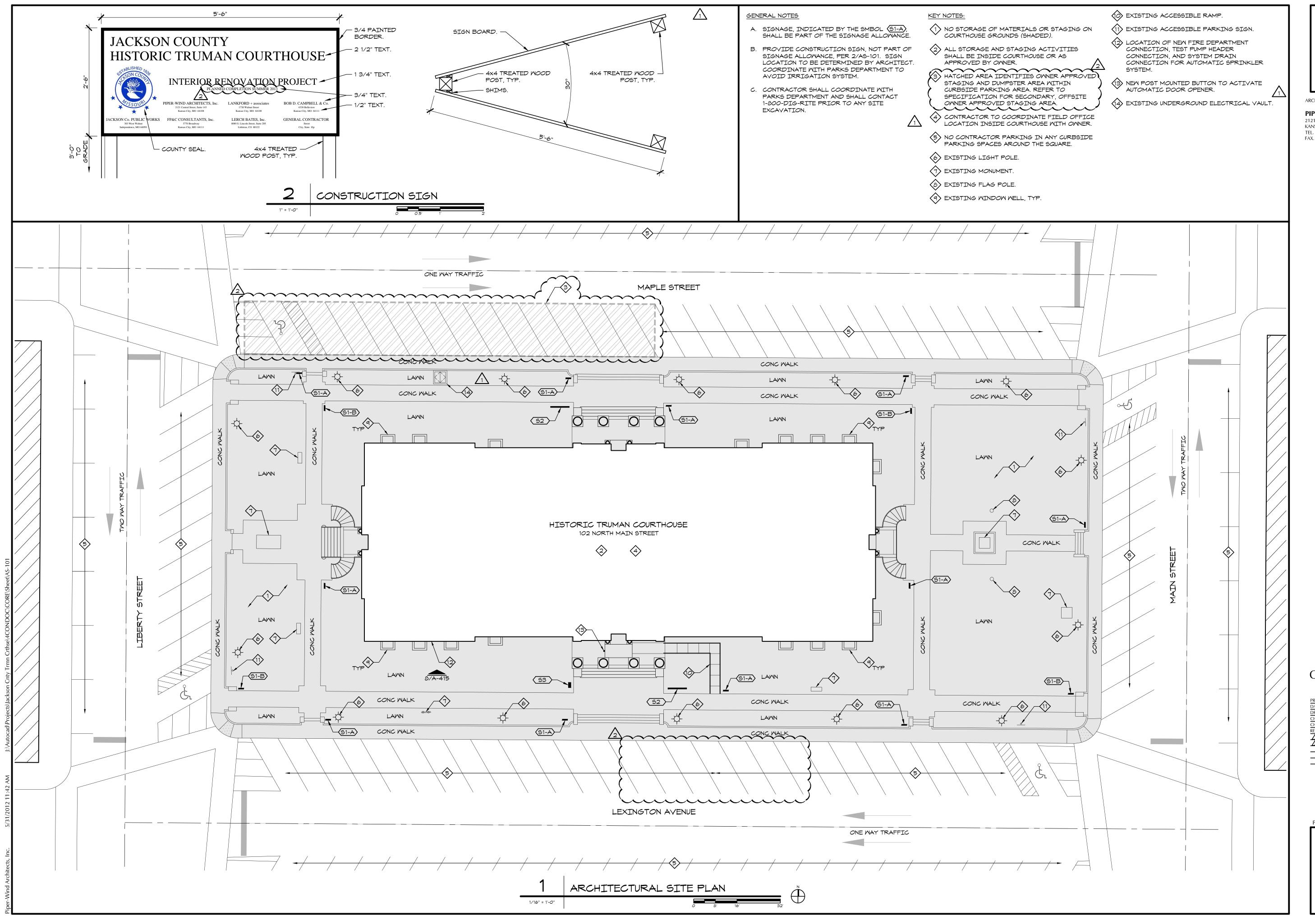
POWER VENTILATORS

- B. Tests and Inspections:
 - 1. Verify that shipping, blocking, and bracing are removed.
 - 2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
 - 3. Verify that cleaning and adjusting are complete.
 - 4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
 - 5. Adjust belt tension.
 - 6. Adjust damper linkages for proper damper operation.
 - 7. Verify lubrication for bearings and other moving parts.
 - 8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
 - 9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
 - 10. Shut unit down and reconnect automatic temperature-control operators.
 - 11. Remove and replace malfunctioning units and retest as specified above.
- C. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Prepare test and inspection reports.

3.4 ADJUSTING

- A. Adjust damper linkages for proper damper operation.
- B. Adjust belt tension.
- C. Comply with requirements in Division 15 Section "Testing, Adjusting, and Balancing" for testing, adjusting, and balancing procedures.
- D. Replace fan and motor pulleys as required to achieve design airflow.
- E. Lubricate bearings.

END OF SECTION 15838



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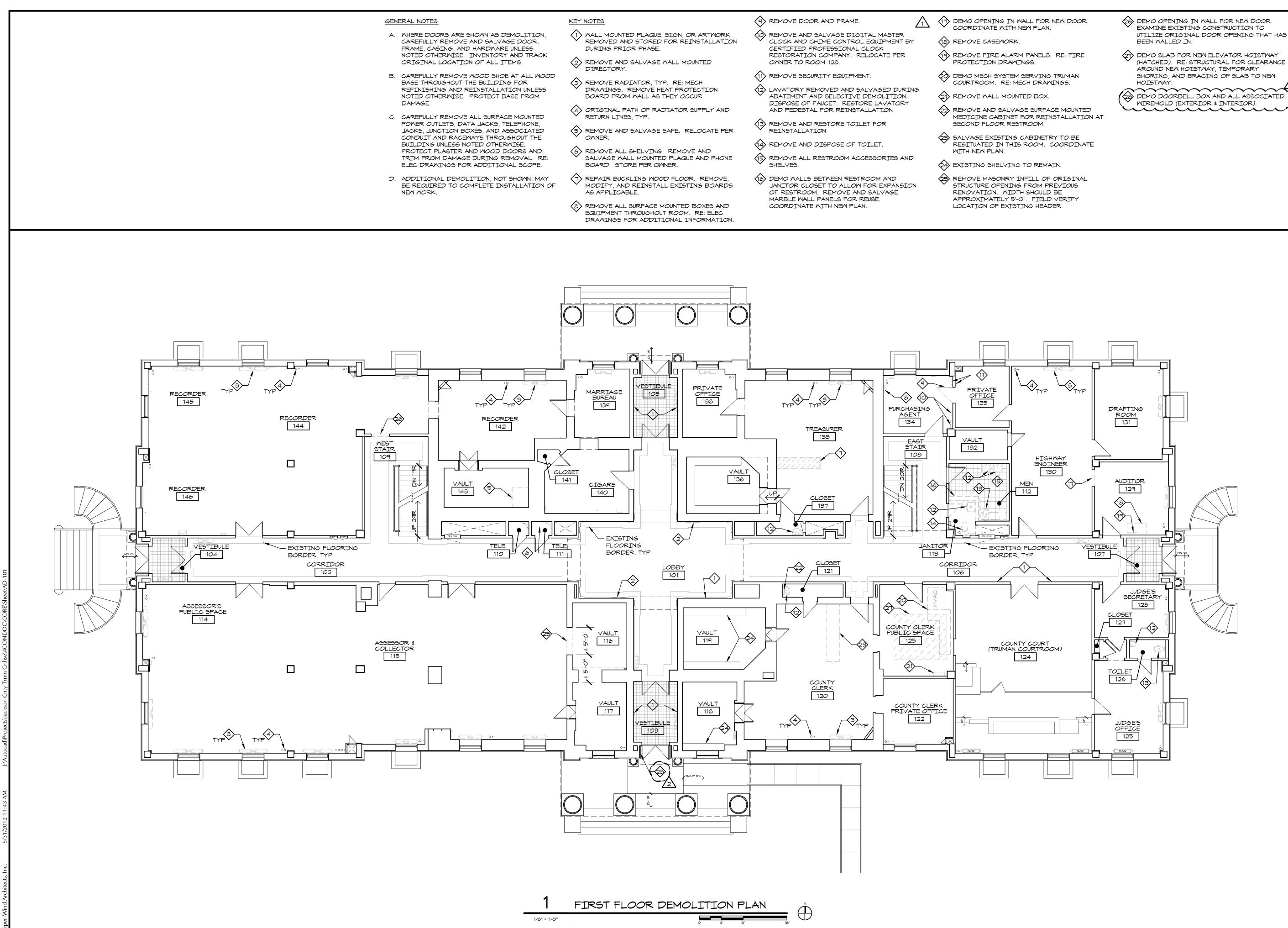
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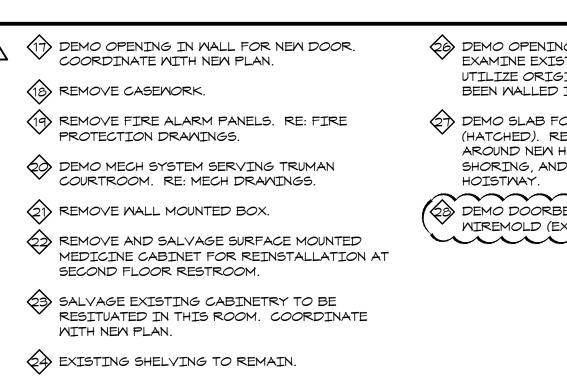
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DATE	10-19-2012
DRAWN BY	CAM/SAK/MDB
CHECKED BY	EJP
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REVISED DATE	DESCRIPTION
10-30-2012	ADDENDUM 1
11-05-2012	ADDENDUM 2

SHEET TITLE & NUMBER ARCHITECTURAL SITE PLAN

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DEMO OPENING IN WALL FOR NEW DOOR. EXAMINE EXISTING CONSTRUCTION TO UTILIZE ORIGINAL DOOR OPENING THAT HAS

(HATCHED). RE: STRUCTURAL FOR CLEARANCE AROUND NEW HOISTWAY, TEMPORARY SHORING, AND BRACING OF SLAB TO NEW

WIREMOLD (EXTERIOR & INTERIOR). ······

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ARCHITECT:

PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051

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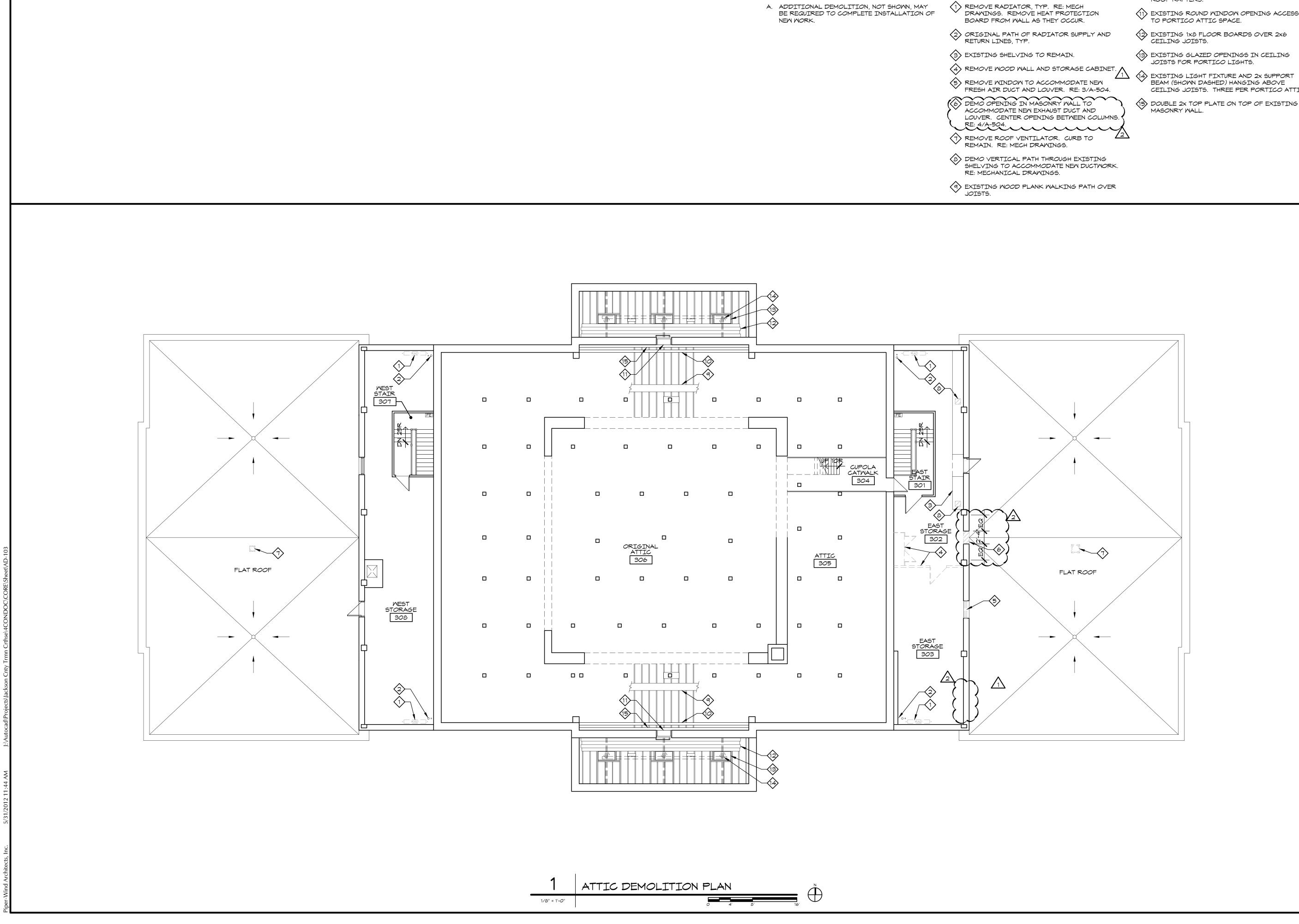
FIRST FLOOR DEMOLITION PLAN

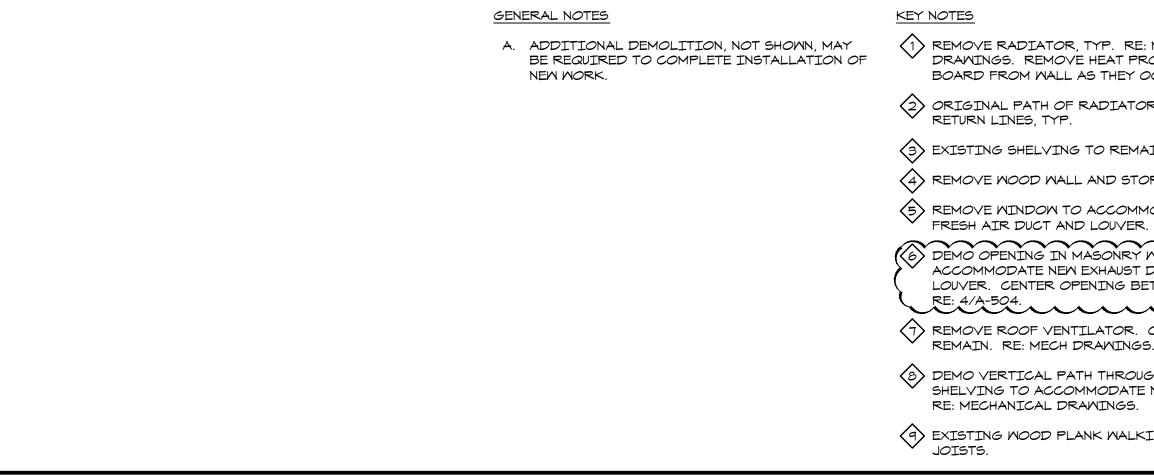
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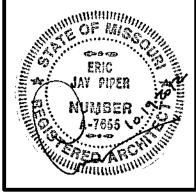
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> DESCRIPTION DDENDUM 1 DDENDUM 2





- EXISTING 2X CRIPPLE WALL SUPPORTING ROOF RAFTERS.
- EXISTING ROUND WINDOW OPENING ACCESS TO PORTICO ATTIC SPACE.
- EXISTING 1X8 FLOOR BOARDS OVER 2X6 CEILING JOISTS.
- EXISTING GLAZED OPENINGS IN CEILING JOISTS FOR PORTICO LIGHTS.
- CEILING JOISTS. THREE PER PORTICO ATTIC.
- DOUBLE 2X TOP PLATE ON TOP OF EXISTING MASONRY WALL.

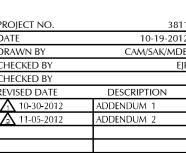


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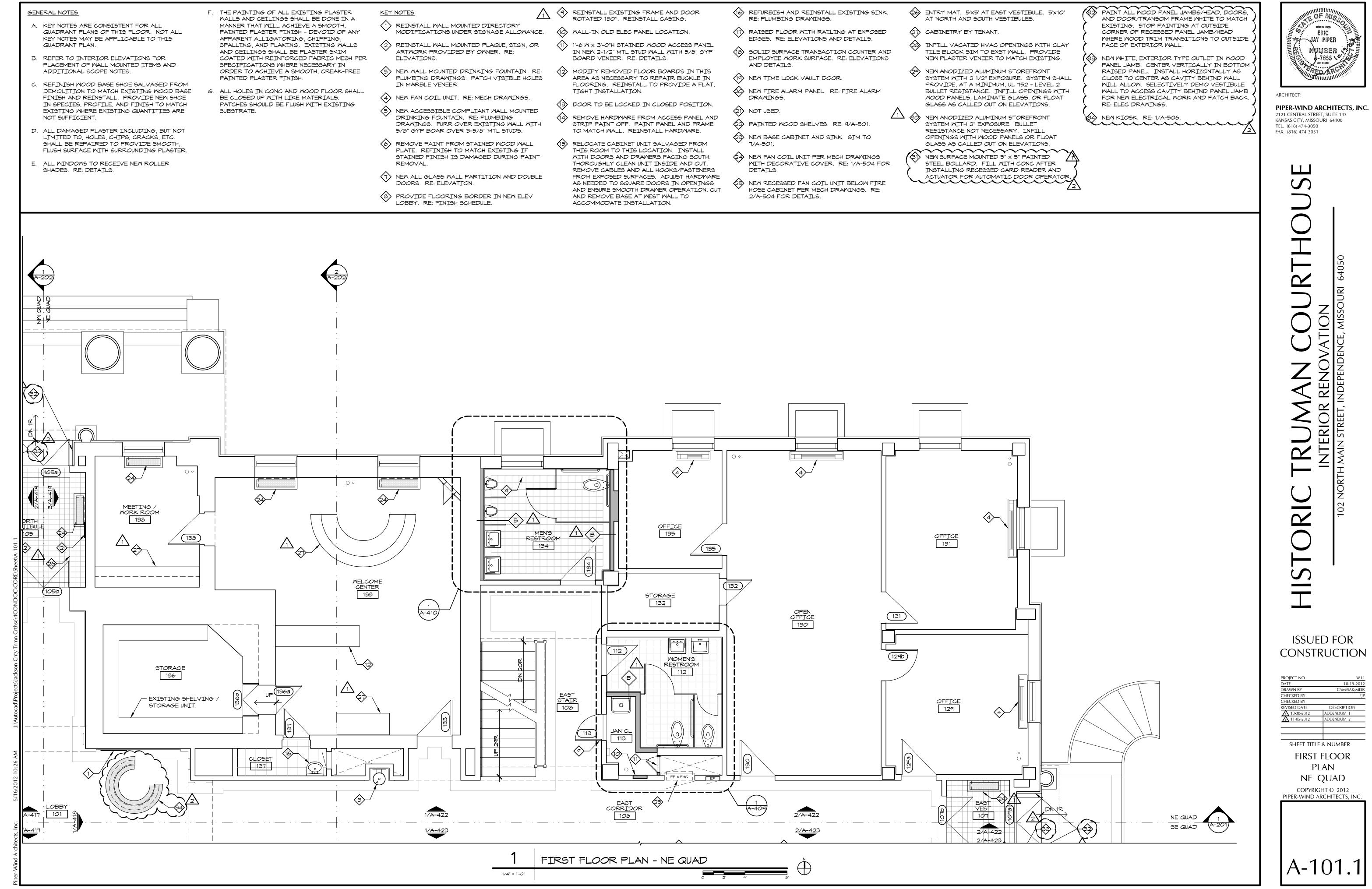


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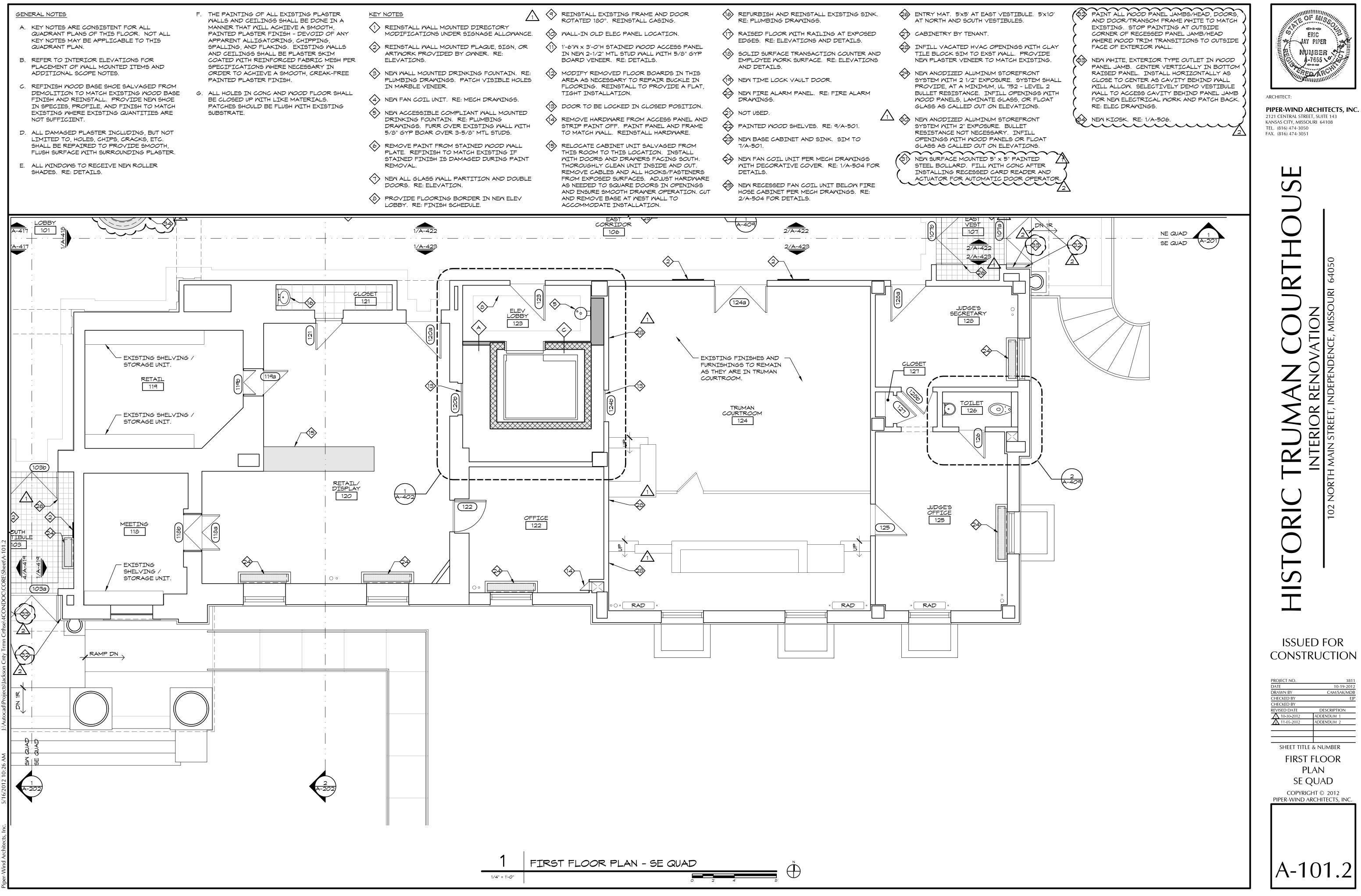
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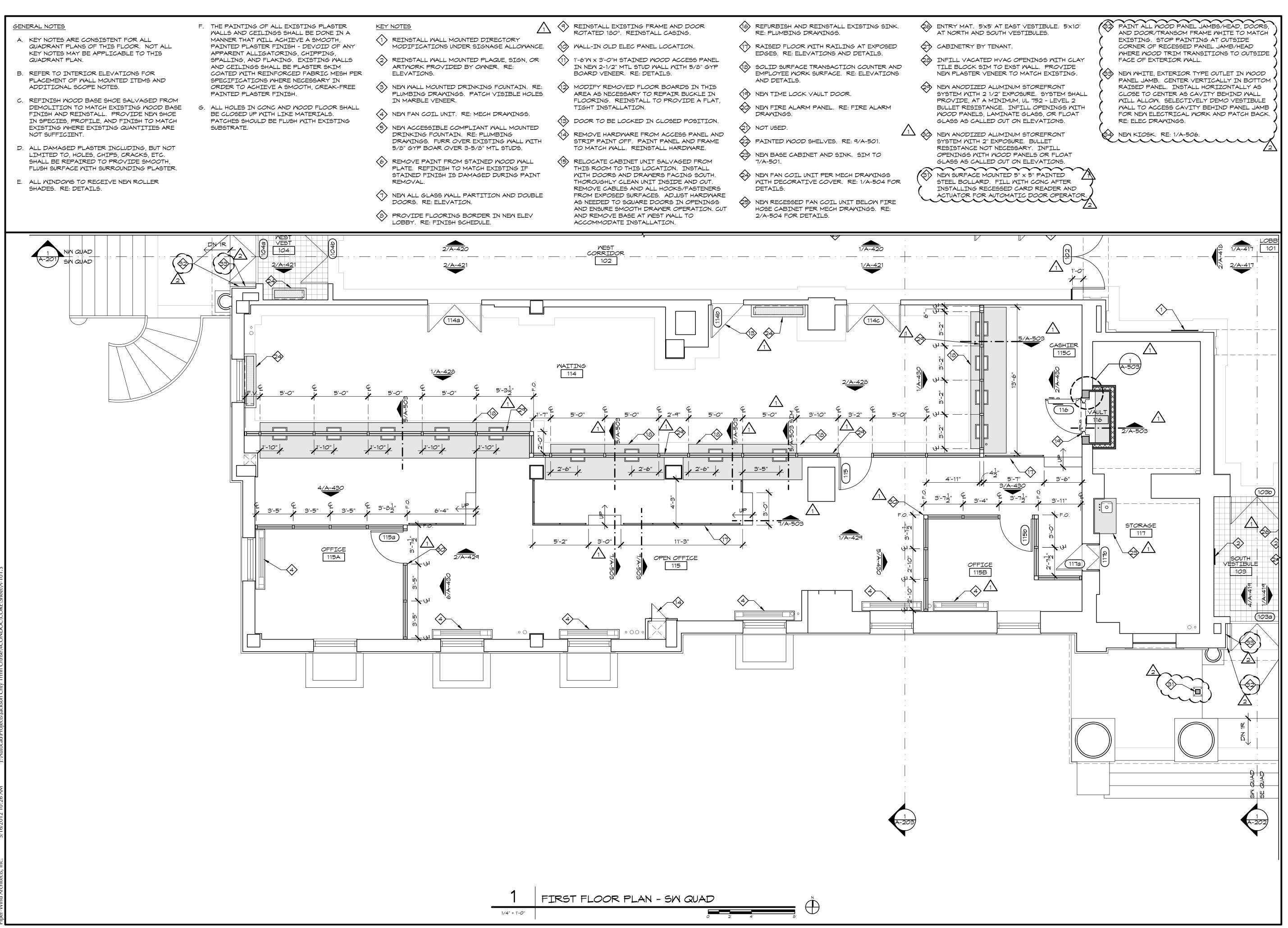
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Δ		REINSTALL EXISTING FRAME AND DOOR ROTATED 180°. REINSTALL CASING.	16	REFURBISH AND REINSTALL EXISTING SINK. RE: PLUMBING DRAWINGS.	Ę	Ì	ENTRY MAT. 5'X5' AT EAS AT NORTH AND SOUTH VE
DIRECTORY SNAGE ALLOWANCE.	\bigcirc	WALL-IN OLD ELEC PANEL LOCATION.		RAISED FLOOR WITH RAILING AT EXPOSED EDGES. RE: ELEVATIONS AND DETAILS.	Ę	\rightarrow	CABINETRY BY TENANT.
PLAQUE, SIGN, OR NNER. RE:		1'-6"W X 3'-0"H STAINED WOOD ACCESS PANEL IN NEW 2-1/2" MTL STUD WALL WITH 5/8" GYP BOARD VENEER. RE: DETAILS.	13	SOLID SURFACE TRANSACTION COUNTER AND EMPLOYEE WORK SURFACE. RE: ELEVATIONS AND DETAILS.	Ę	\checkmark	INFILL VACATED HVAC C TILE BLOCK SIM TO EXS NEW PLASTER VENEER TO
ING FOUNTAIN. RE: CH VISIBLE HOLES		MODIFY REMOVED FLOOR BOARDS IN THIS AREA AS NECESSARY TO REPAIR BUCKLE IN FLOORING. REINSTALL TO PROVIDE A FLAT, TIGHT INSTALLATION.		NEW TIME LOCK VAULT DOOR. NEW FIRE ALARM PANEL. RE: FIRE ALARM	Ę	\checkmark	NEW ANODIZED ALUMINUN SYSTEM WITH 2 1/2" EXPO PROVIDE, AT A MINIMUM BULLET RESISTANCE. INF
CH DRAWINGS.	(13)	DOOR TO BE LOCKED IN CLOSED POSITION.	∇	DRAWINGS.			WOOD PANELS, LAMINATE GLASS AS CALLED OUT O
NT WALL MOUNTED PLUMBING ISTING WALL WITH "MTL STUDS.		REMOVE HARDWARE FROM ACCESS PANEL AND STRIP PAINT OFF. PAINT PANEL AND FRAME TO MATCH WALL. REINSTALL HARDWARE.		PAINTED WOOD SHELVES. RE: 9/A-501.	7 \$	\checkmark	NEW ANODIZED ALUMINUN SYSTEM WITH 2" EXPOSUR RESISTANCE NOT NECESS
NED WOOD WALL H EXISTING IF		RELOCATE CABINET UNIT SALVAGED FROM THIS ROOM TO THIS LOCATION. INSTALL	\$ 3	NEW BASE CABINET AND SINK. SIM TO 7/A-501.	_		OPENINGS WITH WOOD P GLASS AS CALLED OUT O
ED DURING PAINT		WITH DOORS AND DRAWERS FACING SOUTH. THOROUGHLY CLEAN UNIT INSIDE AND OUT. REMOVE CABLES AND ALL HOOKS/FASTENERS	$ \diamondsuit $	NEW FAN COIL UNIT PER MECH DRAWINGS WITH DECORATIVE COVER. RE: 1/A-504 FOR DETAILS.		\checkmark	NEW SURFACE MOUNTED S STEEL BOLLARD. FILL W INSTALLING RECESSED (
ITION AND DOUBLE		FROM EXPOSED SURFACES. ADJUST HARDWARE AS NEEDED TO SQUARE DOORS IN OPENINGS AND ENSURE SMOOTH DRAWER OPERATION. CUT	♦	NEW RECESSED FAN COIL UNIT BELOW FIRE HOSE CABINET PER MECH DRAWINGS. RE:		~	ACTUATOR FOR AUTOMAT
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CONSTRUCTION

ISSUED FOR

DESCRIPTION DDENDUM 1 DDENDUM 2

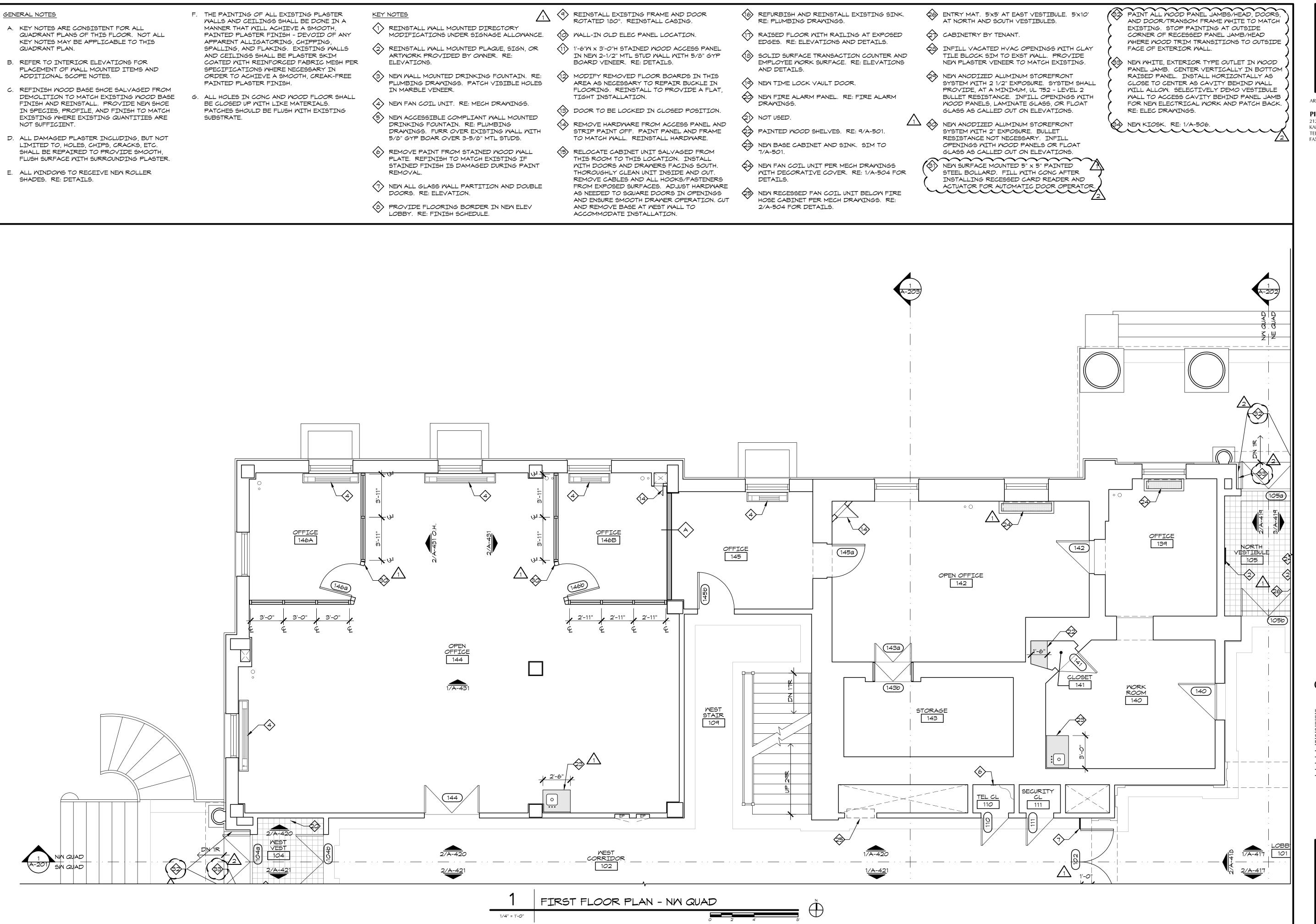
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GENERAL NOTES F. THE PAINTING OF ALL EXISTING PLASTER KEY NOTES WALLS AND CEILINGS SHALL BE DONE IN A A. KEY NOTES ARE CONSISTENT FOR ALL MANNER THAT WILL ACHIEVE A SMOOTH, QUADRANT PLANS OF THIS FLOOR. NOT ALL PAINTED PLASTER FINISH - DEVOID OF ANY KEY NOTES MAY BE APPLICABLE TO THIS APPARENT ALLIGATORING, CHIPPING, QUADRANT PLAN. SPALLING, AND FLAKING. EXISTING WALLS AND CEILINGS SHALL BE PLASTER SKIM B. REFER TO INTERIOR ELEVATIONS FOR COATED WITH REINFORCED FABRIC MESH PER ELEVATIONS. PLACEMENT OF WALL MOUNTED ITEMS AND SPECIFICATIONS WHERE NECESSARY IN ADDITIONAL SCOPE NOTES. ORDER TO ACHIEVE A SMOOTH, CREAK-FREE PAINTED PLASTER FINISH. C. REFINISH WOOD BASE SHOE SALVAGED FROM IN MARBLE VENEER. ALL HOLES IN CONC AND WOOD FLOOR SHALL DEMOLITION TO MATCH EXISTING WOOD BASE G. FINISH AND REINSTALL. PROVIDE NEW SHOE BE CLOSED UP WITH LIKE MATERIALS. IN SPECIES, PROFILE, AND FINISH TO MATCH PATCHES SHOULD BE FLUSH WITH EXISTING EXISTING WHERE EXISTING QUANTITIES ARE SUBSTRATE. NOT SUFFICIENT. D. ALL DAMAGED PLASTER INCLUDING, BUT NOT LIMITED TO, HOLES, CHIPS, CRACKS, ETC. SHALL BE REPAIRED TO PROVIDE SMOOTH, FLUSH SURFACE WITH SURROUNDING PLASTER. E. ALL WINDOWS TO RECEIVE NEW ROLLER REMOVAL. SHADES. RE: DETAILS.



Λ	$\langle q \rangle$	REINSTALL EXISTING FRAME AND DOOR ROTATED 180°. REINSTALL CASING.	16	REFURBISH AND REINSTALL EXISTING SINK. RE: PLUMBING DRAWINGS.	~	Ø	ENTRY MAT. 5'X5' AT EAST AT NORTH AND SOUTH VES
DIRECTORY GNAGE ALLOWANCE.		WALL-IN OLD ELEC PANEL LOCATION.		RAISED FLOOR WITH RAILING AT EXPOSED EDGES. RE: ELEVATIONS AND DETAILS.	~	Ð	CABINETRY BY TENANT.
PLAQUE, SIGN, OR NNER. RE:	11	1'-6"W X 3'-0"H STAINED WOOD ACCESS PANEL IN NEW 2-1/2" MTL STUD WALL WITH 5/8" GYP BOARD VENEER. RE: DETAILS.	18	SOLID SURFACE TRANSACTION COUNTER AND EMPLOYEE WORK SURFACE. RE: ELEVATIONS AND DETAILS.	~	\checkmark	INFILL VACATED HVAC OF TILE BLOCK SIM TO EXST NEW PLASTER VENEER TO
NG FOUNTAIN. RE: CH VISIBLE HOLES	12>	AREA AS NECESSARY TO REPAIR BUCKLE IN FLOORING. REINSTALL TO PROVIDE A FLAT,		NEW TIME LOCK VAULT DOOR.	~	\checkmark	NEW ANODIZED ALUMINUM SYSTEM WITH 2 1/2" EXPOS PROVIDE, AT A MINIMUM,
CH DRAWINGS. NT WALL MOUNTED	(13)	TIGHT INSTALLATION. DOOR TO BE LOCKED IN CLOSED POSITION.		NEW FIRE ALARM PANEL. RE: FIRE ALARM DRAWINGS. NOT USED.	^		BULLET RESISTANCE. INF MOOD PANELS, LAMINATE GLASS AS CALLED OUT ON
"LUMBING ISTING WALL WITH "MTL STUDS.	14	REMOVE HARDWARE FROM ACCESS PANEL AND STRIP PAINT OFF. PAINT PANEL AND FRAME TO MATCH WALL. REINSTALL HARDWARE.		PAINTED WOOD SHELVES. RE: 9/A-501.	1	\checkmark	RESISTANCE NOT NECESSA
NED WOOD WALL H EXISTING IF ED DURING PAINT	15	RELOCATE CABINET UNIT SALVAGED FROM THIS ROOM TO THIS LOCATION. INSTALL WITH DOORS AND DRAWERS FACING SOUTH. THOROUGHLY CLEAN UNIT INSIDE AND OUT. REMOVE CABLES AND ALL HOOKS/FASTENERS	<>> <₽	NEW BASE CABINET AND SINK. SIM TO 7/A-501. NEW FAN COIL UNIT PER MECH DRAWINGS WITH DECORATIVE COVER. RE: 1/A-504 FOR DETAILS.	(°	\sim	OPENINGS WITH WOOD PA GLASS AS CALLED OUT ON NEW SURFACE MOUNTED 5" STEEL BOLLARD. FILL WI INSTALLING RECESSED C,
ITION AND DOUBLE		FROM EXPOSED SURFACES. ADJUST HARDWARE AS NEEDED TO SQUARE DOORS IN OPENINGS AND ENSURE SMOOTH DRAWER OPERATION. CUT	¢		(4	ACTUATOR FOR AUTOMATI
ER IN NEW ELEV LE.		AND REMOVE BASE AT WEST WALL TO ACCOMMODATE INSTALLATION.		2/A-504 FOR DETAILS.			
				A-	1 203		

VE OF MIS (20 m) ERIC JAY PIPER nvmber A-7655 \O @~#~@ REDAR ARCHITECT:

PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051

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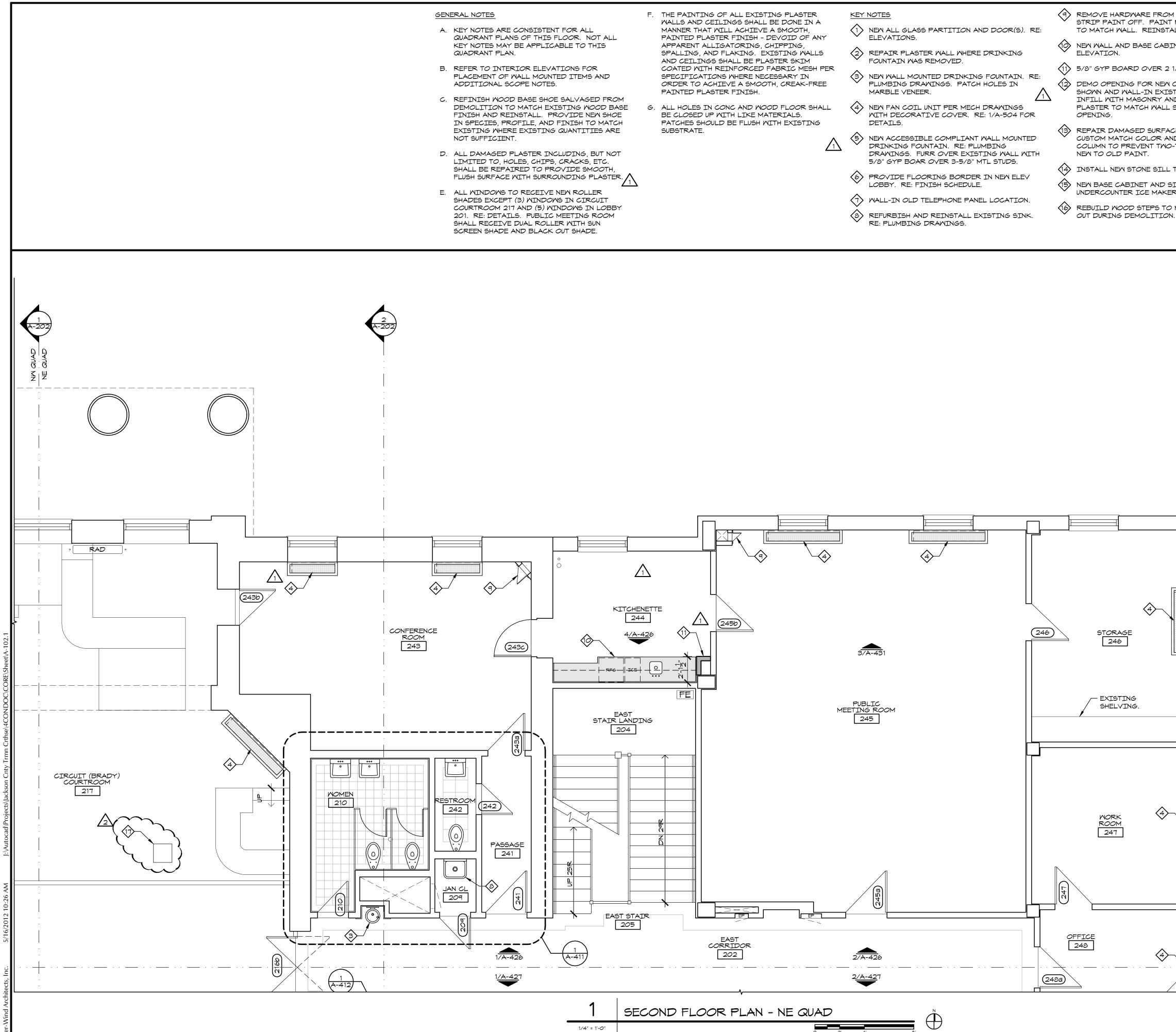
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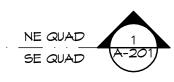
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A-101.4



A ACCESS PANEL AND PANEL AND FRAME ALL HARDWARE. NETS WITH SINK. RE: 1/2" MTL STUDS. CASED OPENING AS TING DOORWAY. D FINISH WITH SURROUNDING	NITH OORING TO
CE ON COLUMN. ID REPAINT ENTIRE -TONE AFFECT FROM TO MATCH EXISTING.	PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051
INK WITH U-LINE R. SIM TO 7/A-501. MATCH STEPS TAKEN I.	HOUSE
	IC TRUMAN COURT INTERIOR RENOVATION 02 NORTH MAIN STREET, INDEPENDENCE, MISSOURI 64050
	HISTORIC TR IN
	ISSUED FOR CONSTRUCTION
	PROJECT NO. 3811 DATE 10-19-2012 DRAWN BY CAM/SAK/MDB CHECKED BY EJP CHECKED BY REVISED DATE DESCRIPTION 10-30-2012 ADDENDUM 1 11-05-2012 ADDENDUM 2 SHEET TITLE & NUMBER SECOND FLOOR

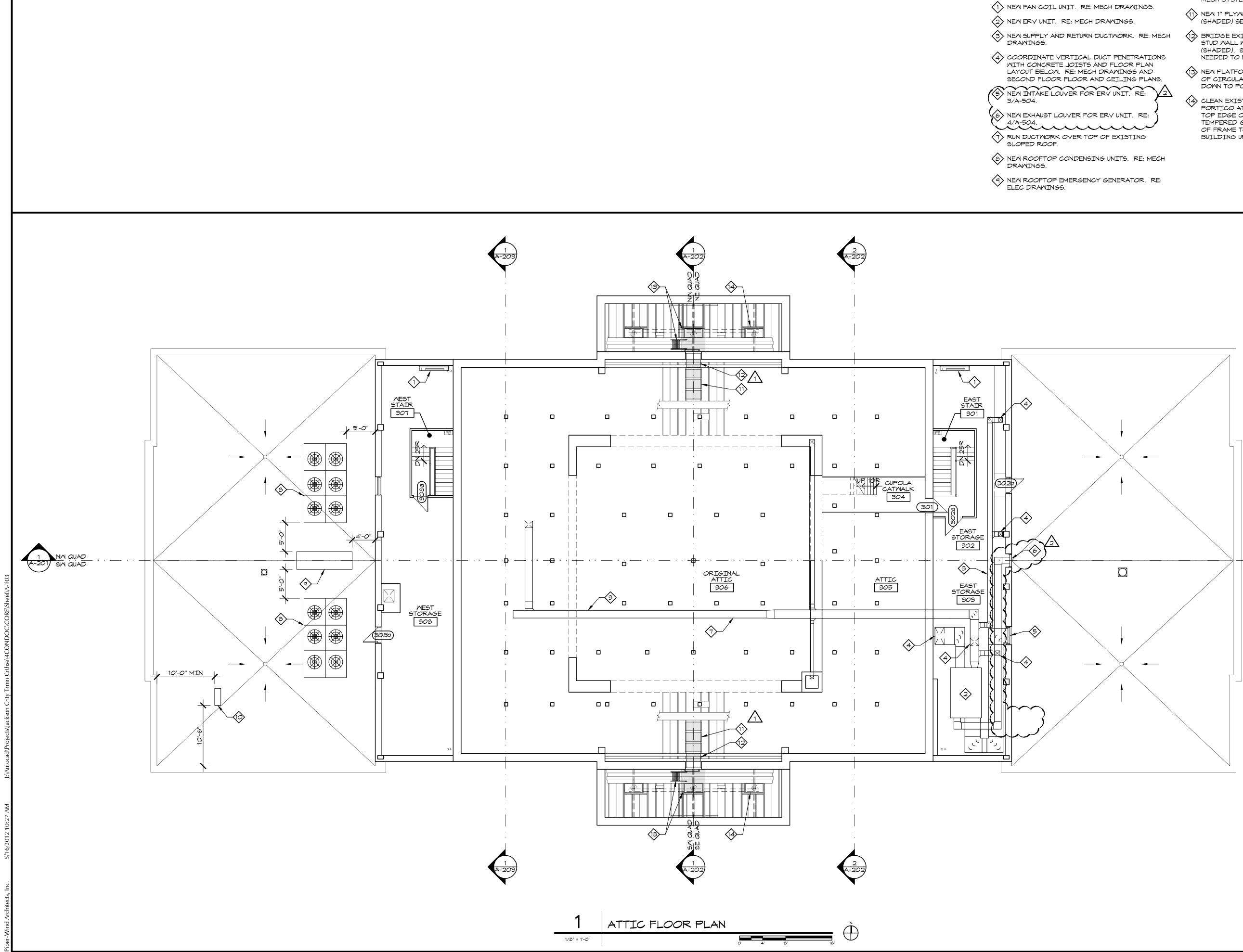


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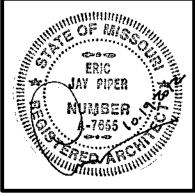
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A-102.1



- NEW CONDENSING UNIT FOR TELCOM ROOM MECH SYSTEM. RE: MECH DRAWINGS.
- NEW 1" PLYWOOD DECKING SERVICE PATH (SHADED) SECURED TO EXISTING JOISTS.
- BRIDGE EXISTING CRIPPLE WALL AND TOP OF STUD WALL WITH 1" PLYWOOD DECKING (SHADED). SHIM LOWER OF TWO ELEMENTS AS NEEDED TO PROVIDE LEVEL SURFACE.
- 13 NEW PLATFORM (SHADED) AT PORTICO SIDE OF CIRCULAR WINDOW OPENING WITH LADDER DOWN TO PORTICO CEILING JOISTS.
- (14) CLEAN EXISTING GLAZED OPENING (3) EACH PORTICO ATTIC. PROVIDE FOAM GASKET ON TOP EDGE OF 1X WOOD FRAME AND INSTALL TEMPERED GLASS, LOOSE LAID LID ON TOP OF FRAME TO KEEP DIRT AND INSECTS FROM BUILDING UP WITHIN FRAME.





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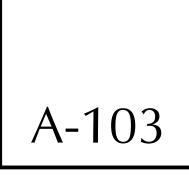
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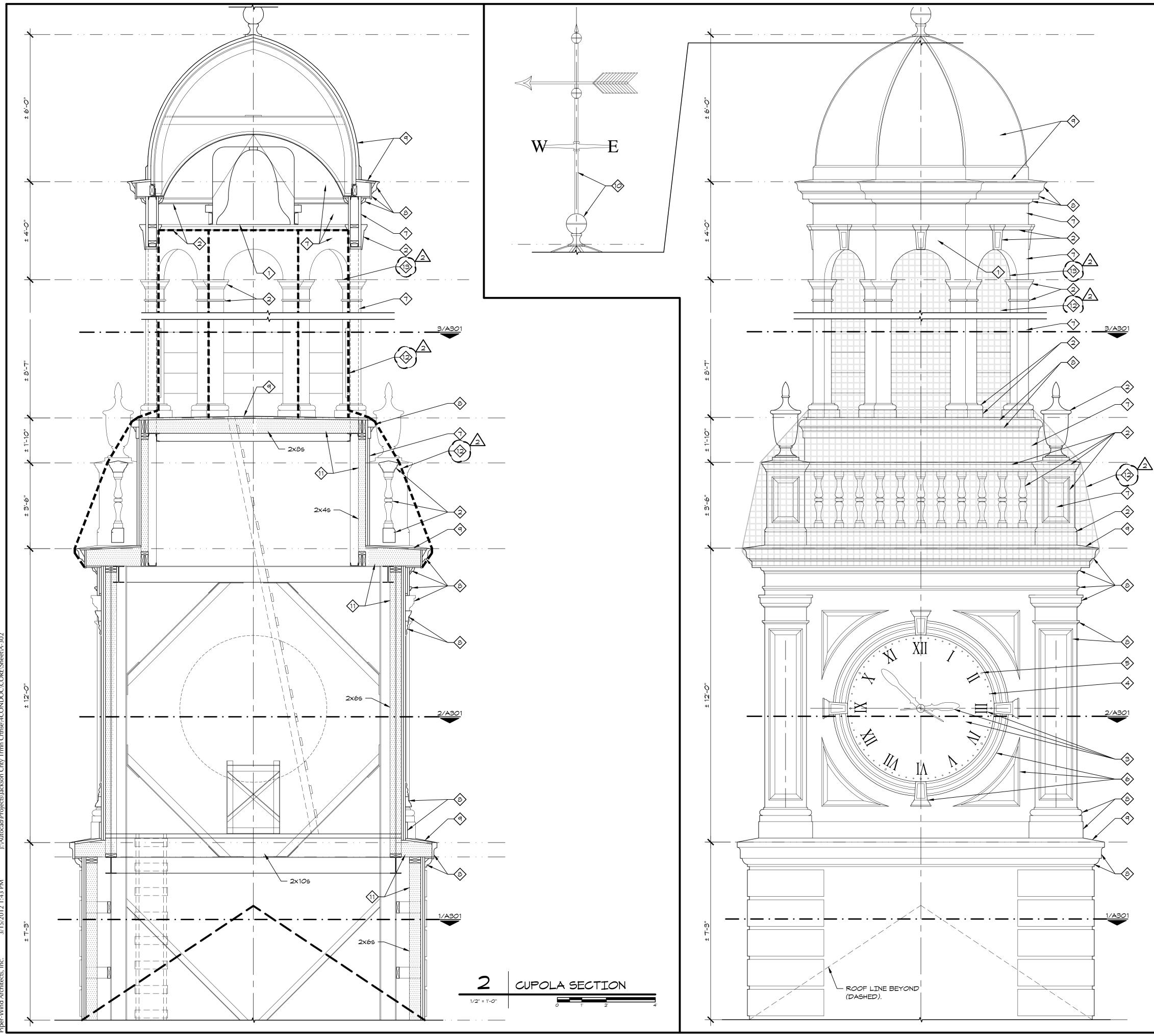
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11-05-2012	ADDENDUM 2
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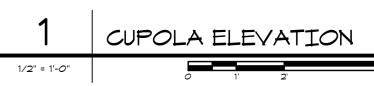


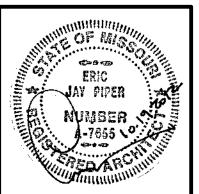


GEN	ERAL	NOT	ES

- A. PROVIDE A WEATHERPROOF BARRIER AT ALL TIMES AS REQUIRED TO MAINTAIN A DRY CONDITION IN CLOCKWORK ROOM.
- B. ALL NEW TRIM TO BE HIGH DENSITY POLYURETHANE TO EXACTLY MATCH EXISTING TRIM (HAVE NEW KNIVES CUT AS REQUIRED TO ACHIEVE THIS).
- C. PROVIDE SCAFFOLDING AS REQUIRED. PROVIDE PROPER PROTECTION OF EXISTING SLATE ROOF AND UNDERLAYMENT AND RETURN TO EXISTING, "LIKE NEW" CONDITION. REMOVE, STORE, PROTECT, AND REINSTALL ROOFING COMPONENTS AS REQUIED TO ENSURE SCAFFOLDING DOES NOT DAMAGE ANY EXISTING SLATE TILES.

KEY	NOTES
	REMOVE, CLEAN, REFINISH, AND REINSTALL BELL AND
\checkmark	STRIKING MECHANISM
	REMOVE AND REPLACE ALL EXISTING FINIALS, BALUSTRADE, RAIL, CAP, PANEL TRIM, AND OTHER MISC. TRIM WITH HIGH DENSITY POLYURETHANE SHAPED TO EXACTLY MATCH EXISTING PROFILES AND SIZES. PRIME AND PAINT AS SPECIFIED.
3	RESTORE (4) FOUR CLOCK FACES, INCLUDING TAPERED AND POISED HOUR AND MINUTE HANDS. ENGAGE CERTIFIED PROFESSIONAL CLOCK RESTORATION COMPANY TO REMOVE AND REINSTALL HANDS. SANDBLAST NUMERALS AND MINUTE MARKERS. SAND, PRIME, AND PAINT BACKGROUND. CUSTOM MAKE HANDS TO FIT PROPORTIONATELY TO MINUTE MARKERS AND PAINT MATTE BLACK. REMOVE NUMERALS AND MINUTE MARKERS FOR DIAL PREPARATION. GOLD LEAF (12) TWELVE ROMAN NUMERALS APPROXIMATELY 7" HIGH ON EACH OF FOUR FACES.
$\langle 4 \rangle$	REMOVE, SAND, PRIME, PAINT, AND REINSTALL (48) 1 FORTY EIGHT SMALL MINUTE MARKERS PER EACH OF FOUR FACES.
\$	REMOVE, SAND, PRIME, GOLD LEAF, AND REINSTALL (12) TWELVE LARGE MINUTE MARKERS (5-MINUTE MARKS) PER EACH OF FOUR FACES.
¢	REMOVE ALL WOODEN CLOCK FACE MOLDINGS (ALL MOLDINGS BETWEEN THE CORNER COLUMNS) AND REPLACE WITH REPLICA HIGH DENSITY POLYURETHANE TRIM. NEW TRIM AND TRIM PAINT SHAL CONFORM TO THE FOLLOWING SPECIFICATIONS: CUSTOM FABRICATED, HIGH DENSITY POLYURETHANE (18 LBS OR GREATER, SIGN-ARTS PRODUCTS - RPU-3000-18# OR EQUAL) SHAPED TO EXACTLY MATCH EXISTING WOOD TRIM. PAINT WITH (2) TWO COATS OF "BEST QUALITY" EXTERIOR ACRYLIC PAINT (SATIN FINISH) OVER MANUFACTURER'S RECOMMENDED PRIMER. PREP AND SAND AS REQUIRED TO ACHIEVE A SMOOTH FINISH.
\Diamond	SCRAPE, FILL, SAND, PRIME, AND PAINT ALL FLAT CASING TO FULLY RESTORED SMOOTH FINISH (INSIDE BELL TOWER INCLUDED).
\$	SCRAPE, SAND, FILL, SAND, PRIME, AND PAINT WOOD TRIM THESE AREAS TO FULLY RESTORED FINISH. IF NOT PRACTICAL TO REFINISH, REPLACE AS NEEDED WITH HIGH DENSITY POLYURETHANE PER NOTE 2.
(1)	CLEAN COPPER ROOFING AND FLASHINGS TO ORIGINAL PAINTED FINISH AND RE-COAT WITH RECOMMENDED SEALER.
\bigcirc	REMOVE, CLEAN, SAND, SCRAPE, AND REPAINT WEATHER VAIN.
	SPRAY FOAM INSULATION WITH IGNITION BARRIER IN ALL STUD CAVITIES (R-19) AND ALL RAFTER SPACES (R-30) TO PROVIDE COMPLETE ENCLOSURE. RE: SPECIFICATION.
	REMOVE EXISTING TEMPORARY BIRD NETTING AND FASTENERS INSTALLED DURING PHASE 1, AND INSTALL NEW BIRD NETTING. NIXALITE K-NET HT 3/4" SQUARE IN STONE (TAN). SECURE WITH STAINLESS STEEL TENSIONED PERIMETER CABLE HARDWARE AND SUPPORT CABLES TO PROVIDE TIGHT AND UNIFORM APPEARANCE. SECURE NETTING TO INSIDE FACE OF COLUMNS AT UPPER PORTION OF BELL TOWER. CASCADE NETTING DOWN OVER RAILING AS SHOWN AT MIDDLE PORTION OF BELL TOWER AND FASTEN TO VERTICAL FASCIA BOARD UNDER CROWN MOLDING. PROVIDE AND INSTALL HOLIDAY LIGHTING CLIPS FOR CONTINUOUS LIGHTING INSTALLATION AROUND OPEN AIR ARCHES OF BELL TOWER.





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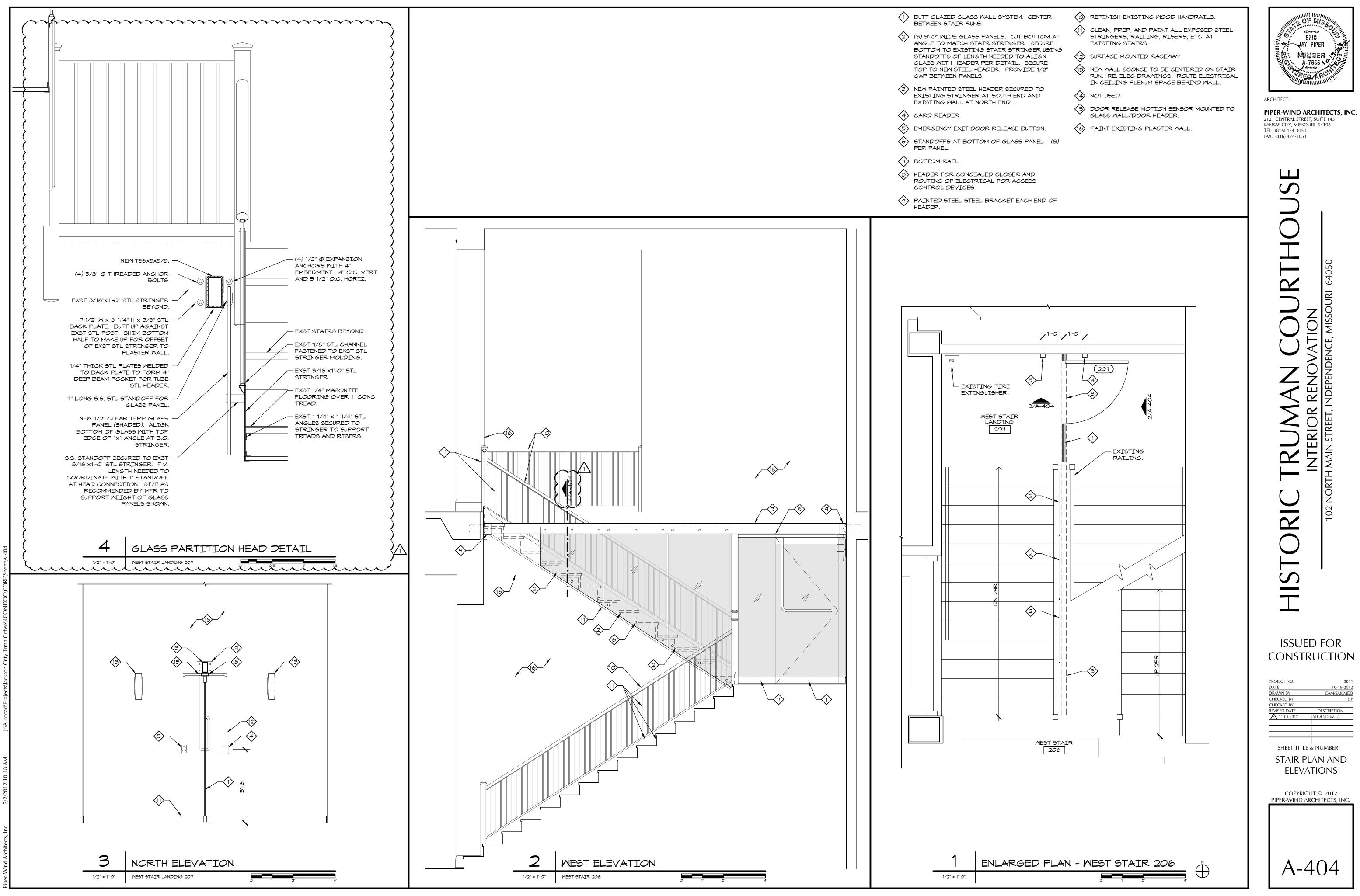
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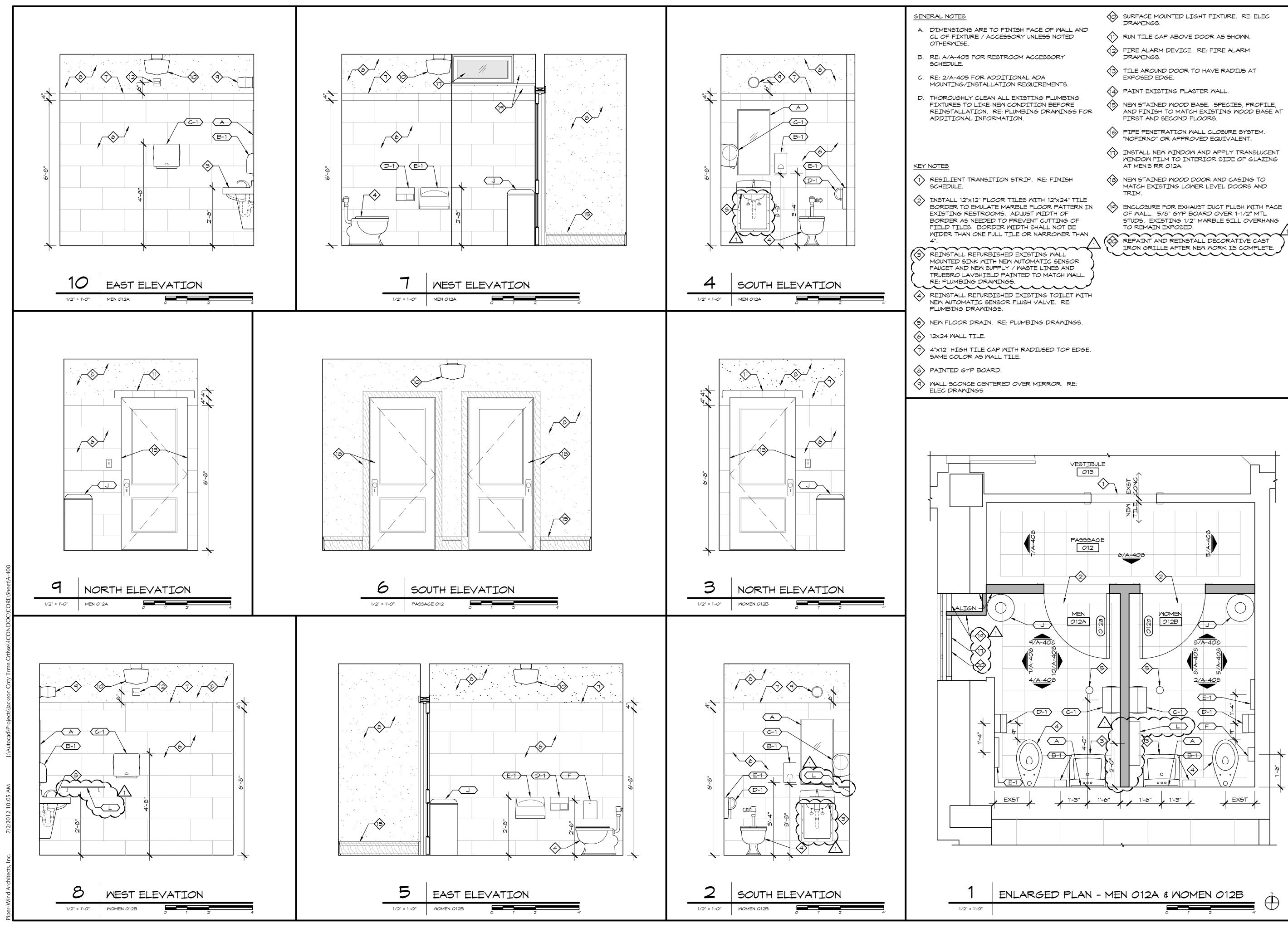
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		SURFACE MOUNTED LIGHT FIXTURE. RE: ELEC DRAWINGS.
LE OF WALL AND LESS NOTED		RUN TILE CAP ABOVE DOOR AS SHOWN.
CESSORY		FIRE ALARM DEVICE. RE: FIRE ALARM DRAWINGS.
	13	TILE AROUND DOOR TO HAVE RADIUS AT EXPOSED EDGE.
REMENTS.	14	PAINT EXISTING PLASTER WALL.
NG PLUMBING ON BEFORE 5 DRAWINGS FOR	(15)	NEW STAINED WOOD BASE. SPECIES, PROFILE, AND FINISH TO MATCH EXISTING WOOD BASE AT FIRST AND SECOND FLOORS.
	16	PIPE PENETRATION WALL CLOSURE SYSTEM. "NOFIRNO" OR APPROVED EQUIVALENT.
		INSTALL NEW WINDOW AND APPLY TRANSLUCENT WINDOW FILM TO INTERIOR SIDE OF GLAZING AT MEN'S RR 012A.
RE: FINISH	18	NEW STAINED WOOD DOOR AND CASING TO MATCH EXISTING LOWER LEVEL DOORS AND TRIM.
TH 12"X24" TILE OOR PATTERN IN WIDTH OF CUTTING OF HALL NOT BE	19	ENCLOSURE FOR EXHAUST DUCT FLUSH WITH FACE OF WALL. 5/8" GYP BOARD OVER 1-1/2" MTL STUDS. EXISTING 1/2" MARBLE SILL OVERHANG TO REMAIN EXPOSED.
IARROWER THAN	Ó	REPAINT AND REINSTALL DECORATIVE CAST IRON GRILLE AFTER NEW WORK IS COMPLETE.
ING WALL ATIC SENSOR E LINES AND O MATCH WALL.		
·····		
ING TOILET WITH ALVE. RE:		
NG DRAWINGS.		
IUSED TOP EDGE.		
IIRROR. RE:		



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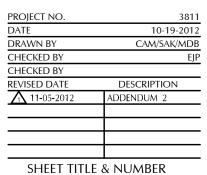
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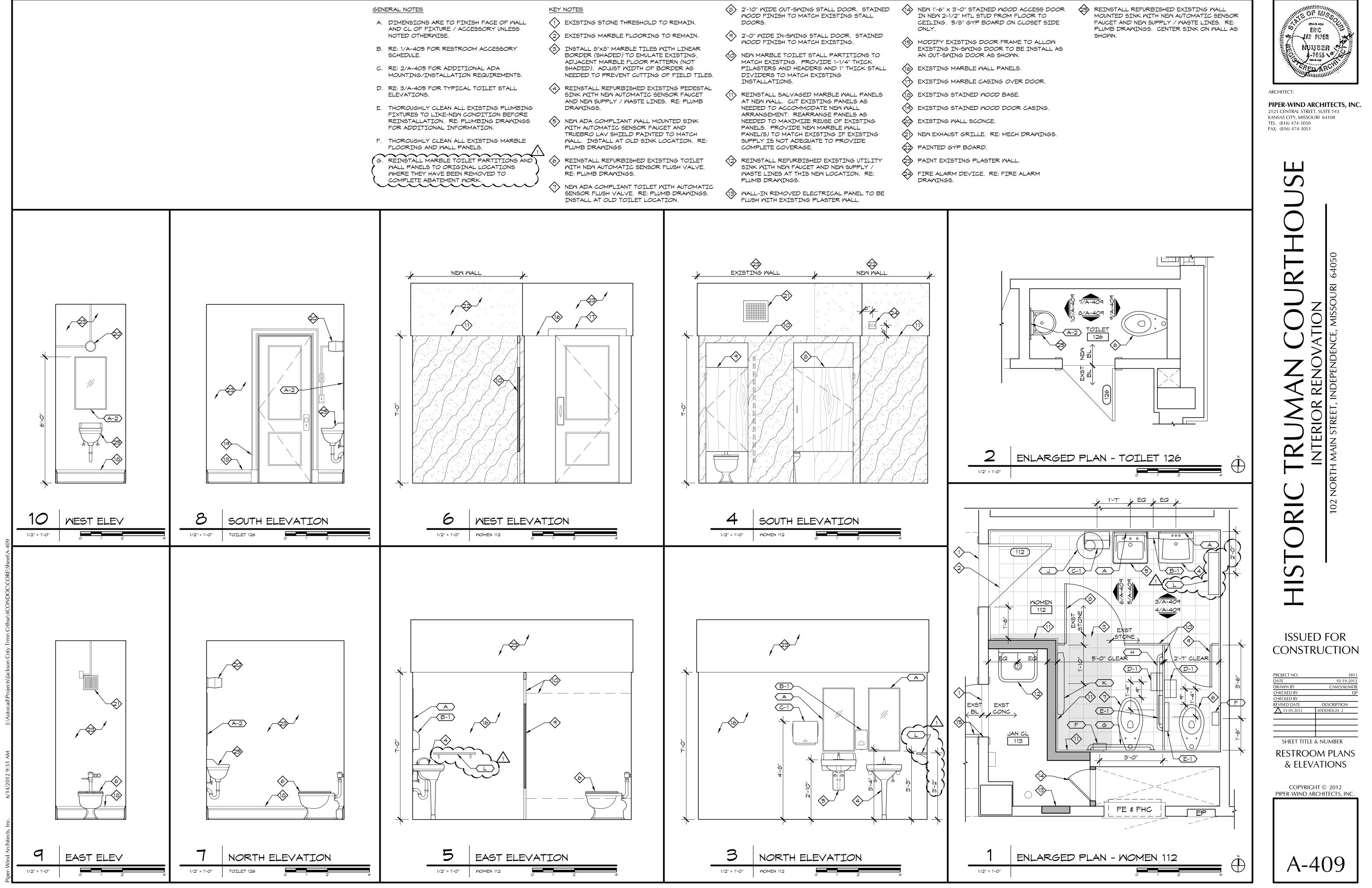
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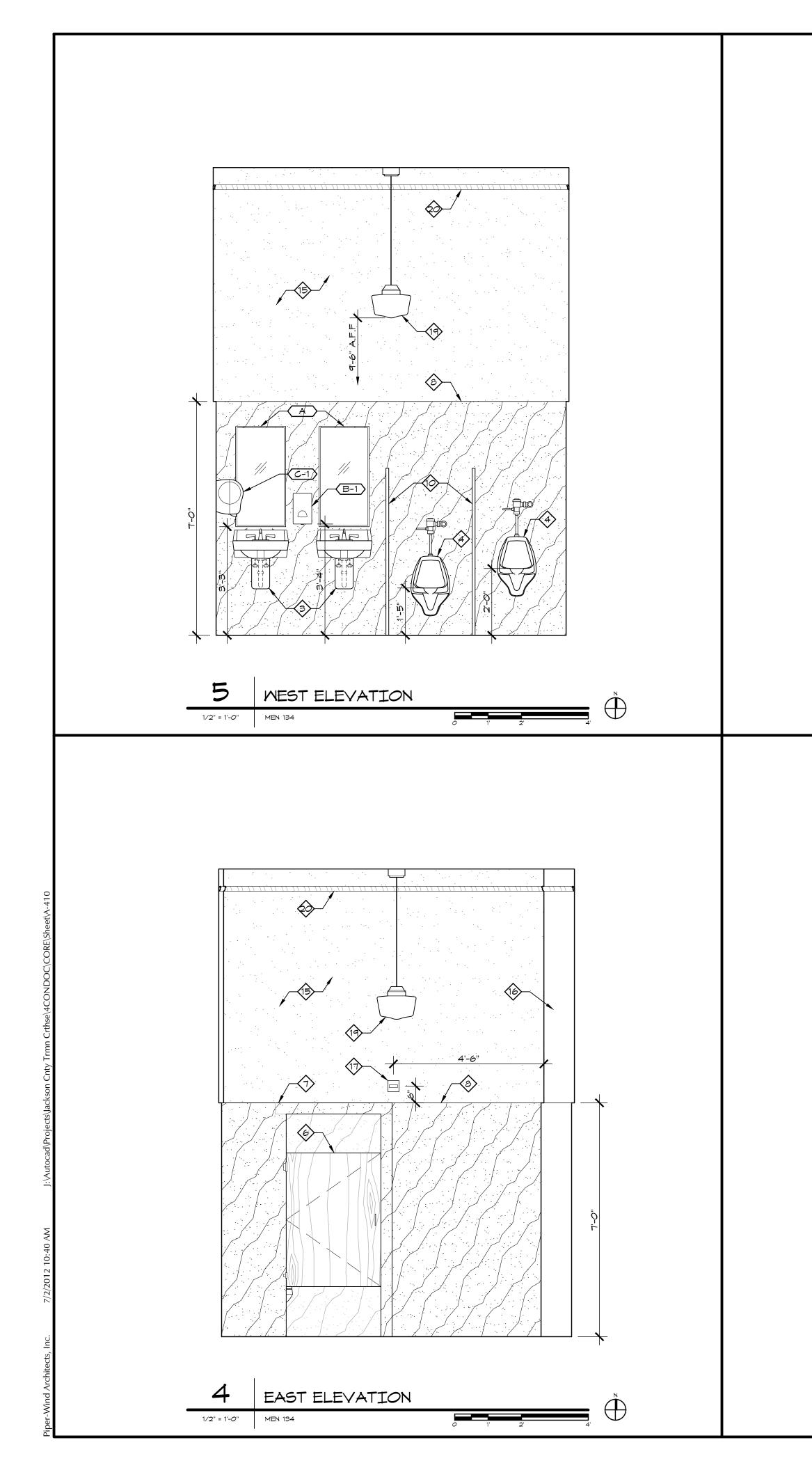
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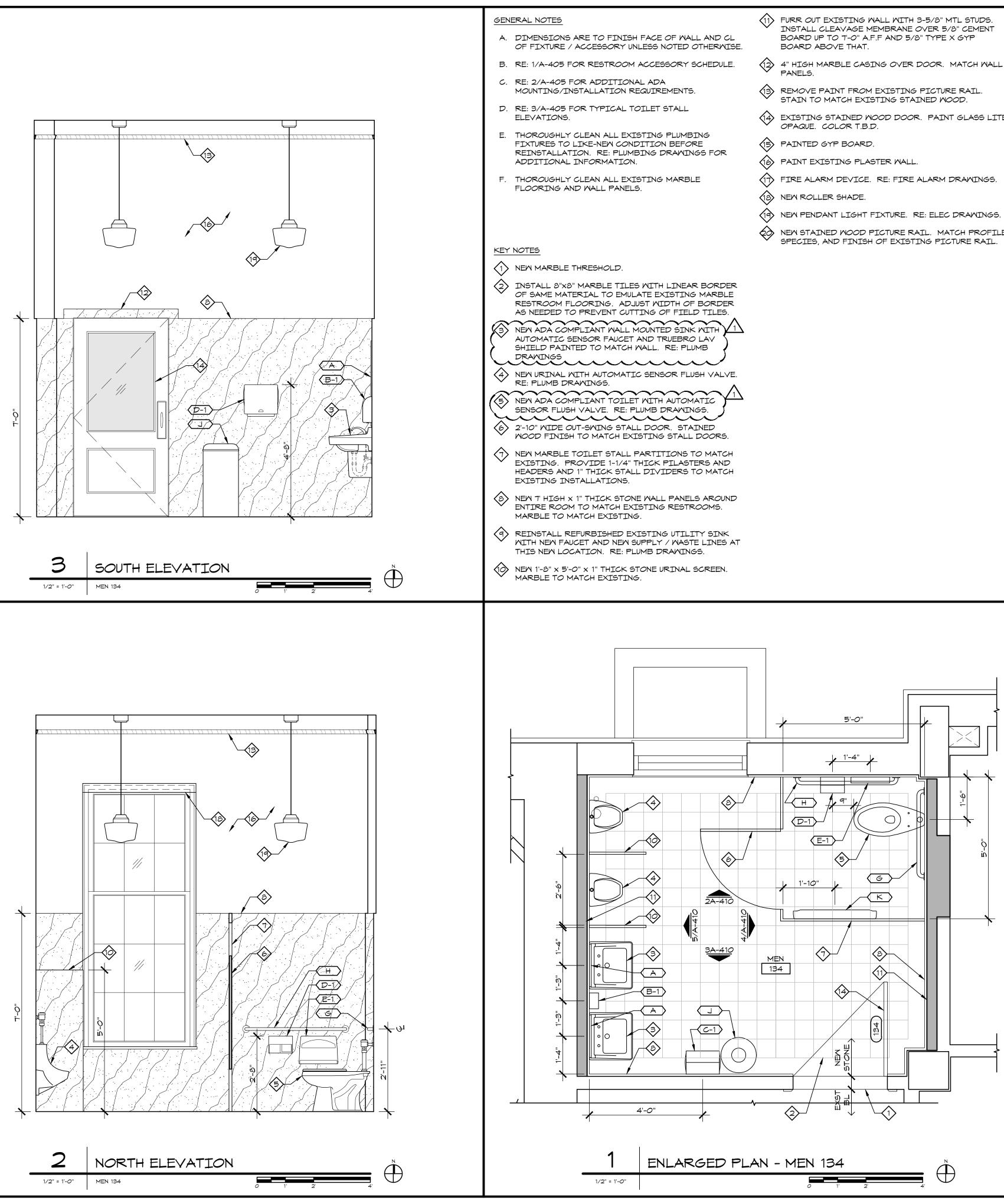


RESTROOM PLANS & ELEVATIONS

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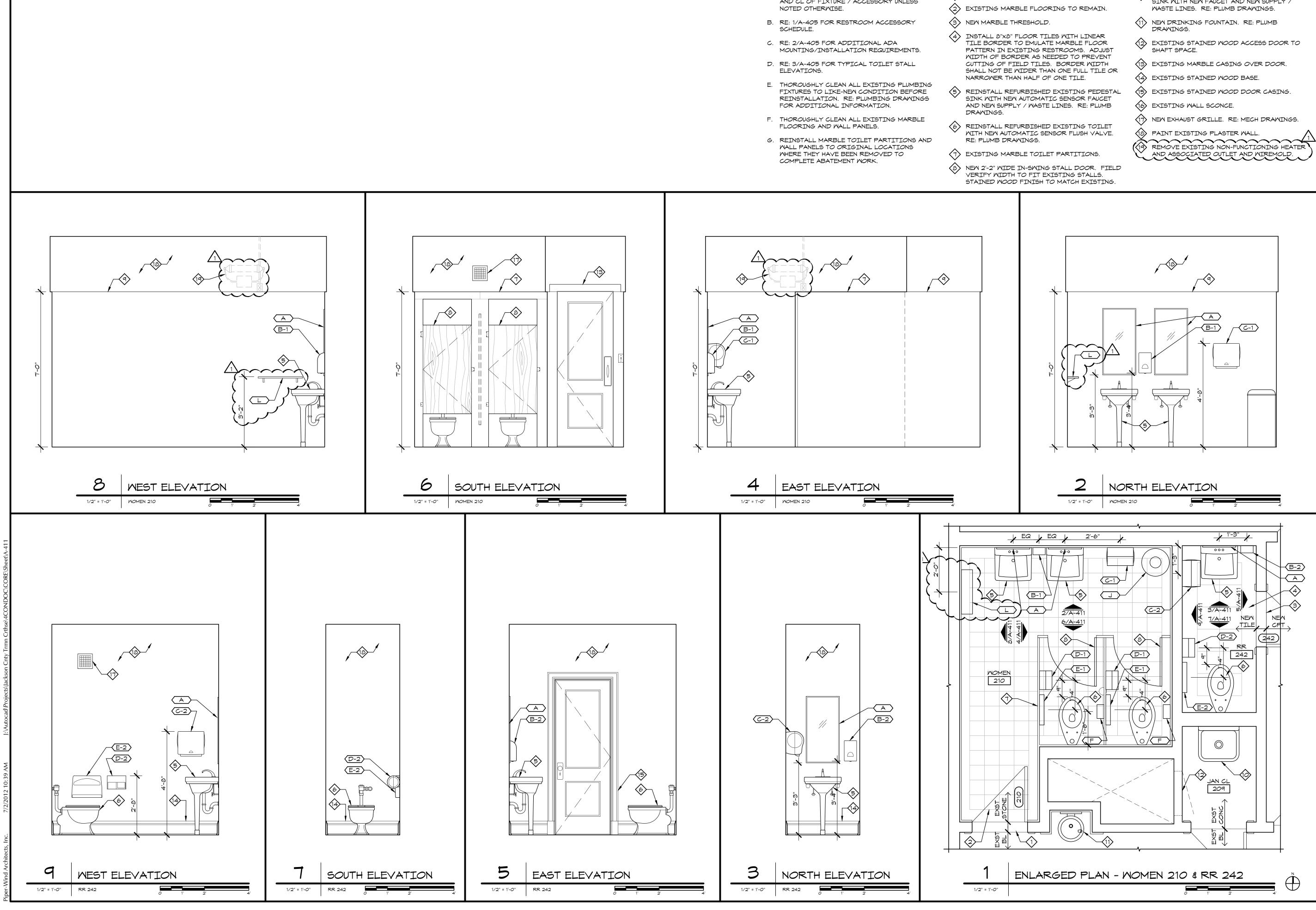




PF WALL AND CL DTED OTHERWISE.	FURR OUT EXISTING WALL WITH 3-5/8" MTL STUDS. INSTALL CLEAVAGE MEMBRANE OVER 5/8" CEMENT BOARD UP TO 7'-0" A.F.F AND 5/8" TYPE X GYP BOARD ABOVE THAT.	ERIC ERIC
ORY SCHEDULE.	4" HIGH MARBLE CASING OVER DOOR. MATCH WALL PANELS.	AV PIPER
IENTS.	REMOVE PAINT FROM EXISTING PICTURE RAIL. STAIN TO MATCH EXISTING STAINED WOOD.	A Press Continue
	EXISTING STAINED WOOD DOOR. PAINT GLASS LITE OPAQUE. COLOR T.B.D.	ARCHITECT:
CLUMBING BEFORE	TS PAINTED GYP BOARD.	PIPER-WIND ARCHITECTS, INC.
AWINGS FOR	16 PAINT EXISTING PLASTER WALL.	2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108
1ARBLE	17 FIRE ALARM DEVICE. RE: FIRE ALARM DRAWINGS.	TEL. (816) 474-3050 FAX. (816) 474-3051
	18 NEW ROLLER SHADE.	
	19 NEW PENDANT LIGHT FIXTURE. RE: ELEC DRAWINGS.	
	NEW STAINED WOOD PICTURE RAIL. MATCH PROFILE, SPECIES, AND FINISH OF EXISTING PICTURE RAIL.	

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GENERAL NOTES

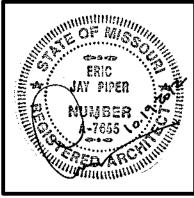
- A. DIMENSIONS ARE TO FINISH FACE OF WALL AND CL OF FIXTURE / ACCESSORY UNLESS

 $\langle 1 \rangle$ EXISTING MARBLE THRESHOLD TO REMAIN.

KEY NOTES

EXISTING MA	RBLE WALL PANELS.
\checkmark SINK WITH NE	EFURBISHED EXISTING UTILITY EW FAUCET AND NEW SUPPLY / RE: PLUMB DRAWINGS.
NEW DRINKIN DRAWINGS.	G FOUNTAIN. RE: PLUMB
(12) EXISTING STA SHAFT SPACE.	AINED WOOD ACCESS DOOR TO
(3) EXISTING MA	RBLE CASING OVER DOOR.
(4) EXISTING STA	AINED WOOD BASE.
(5) EXISTING STA	AINED WOOD DOOR CASING.
(6) EXISTING WAR	LL SCONCE.
17 NEW EXHAUST	GRILLE. RE: MECH DRAWINGS.
18 PAINT EXISTI	ING PLASTER WALL.





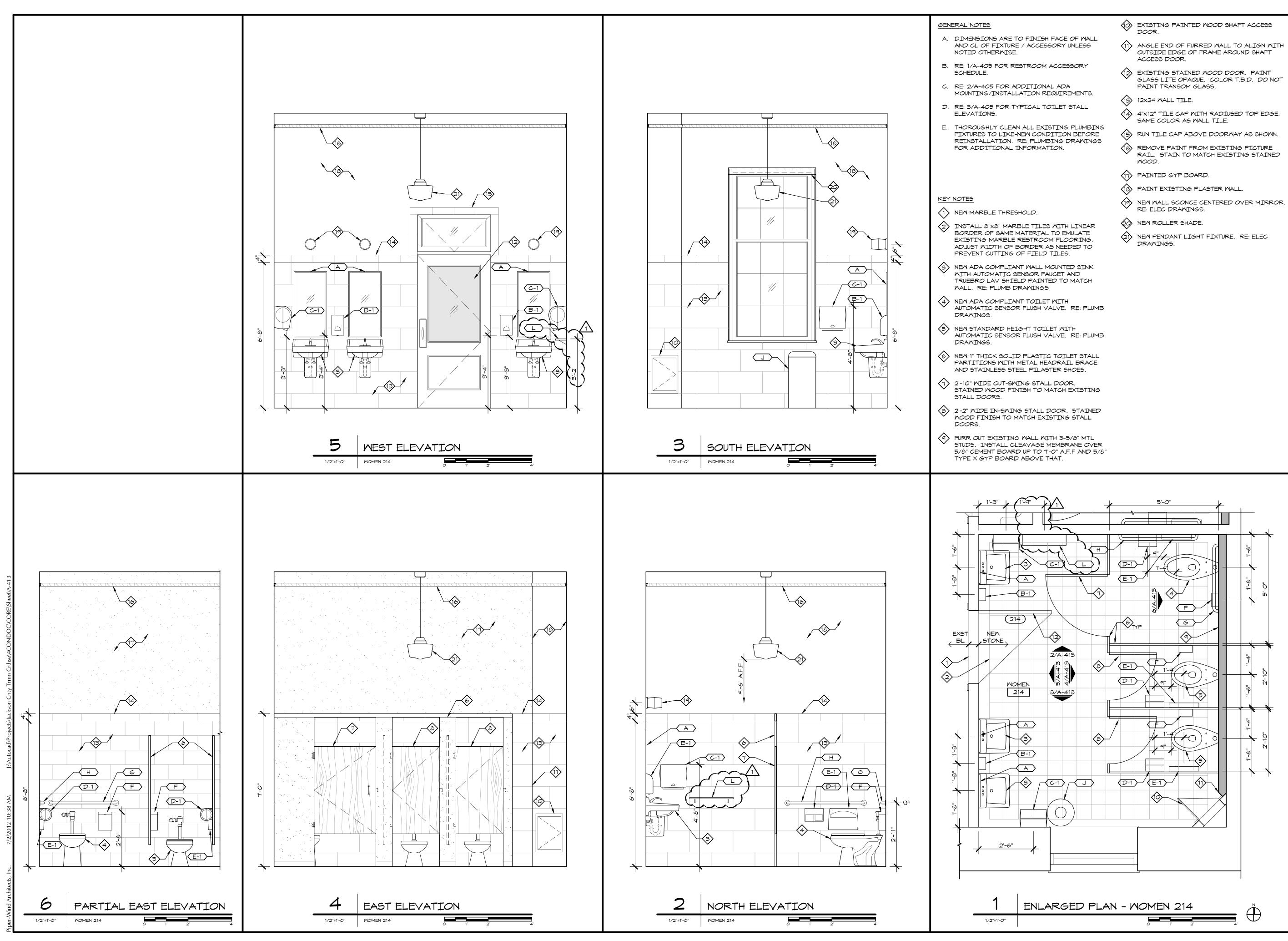
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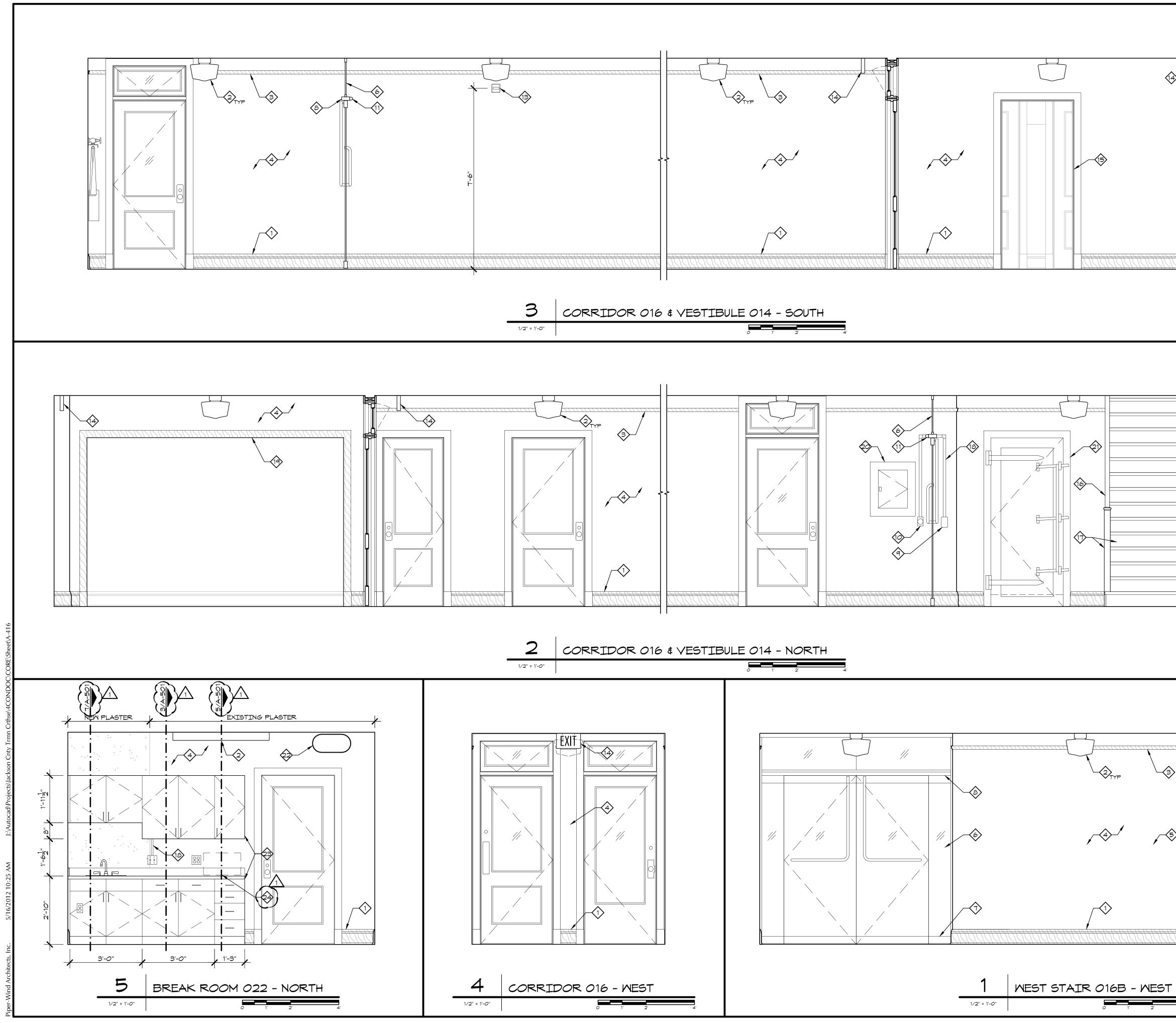
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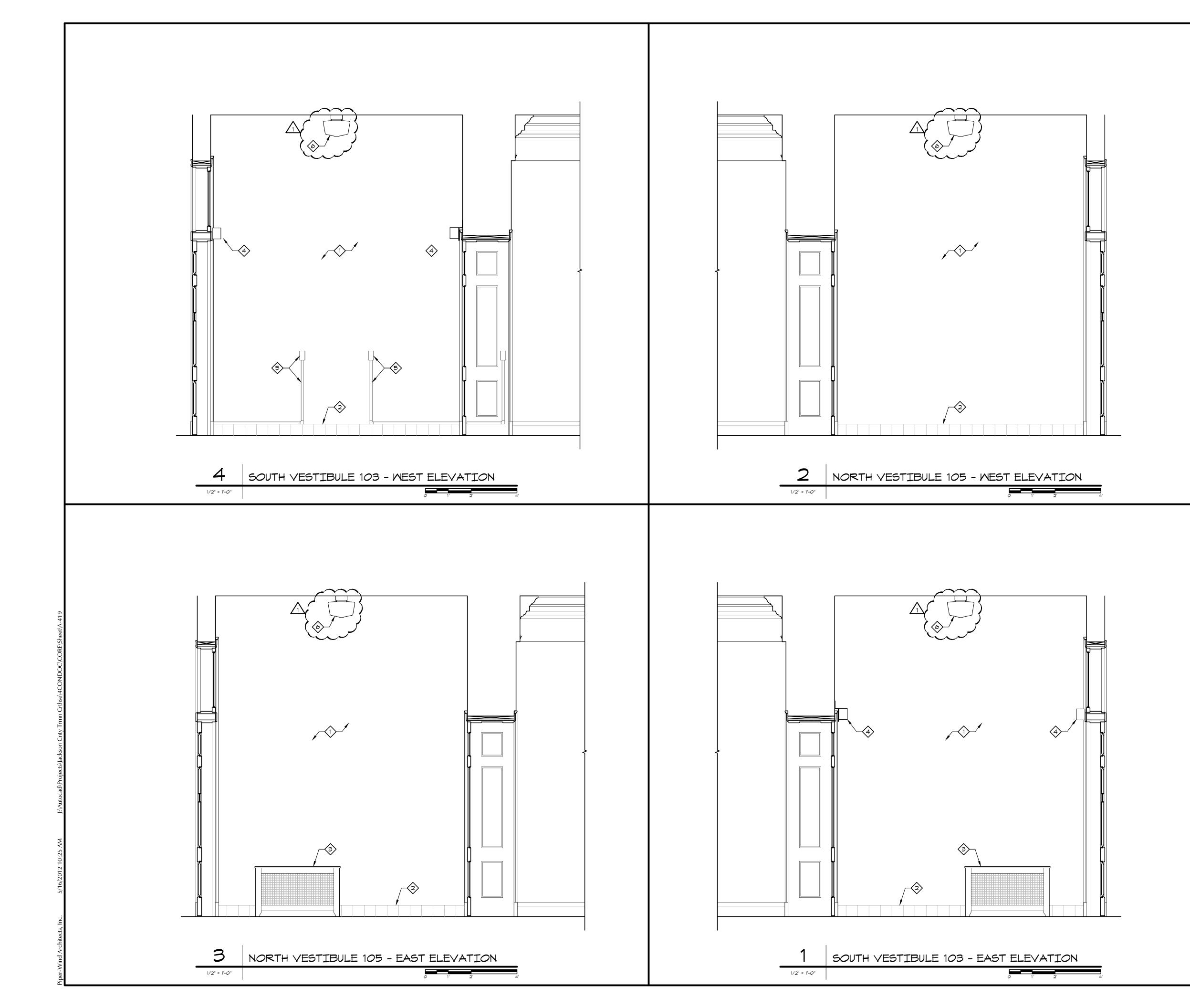


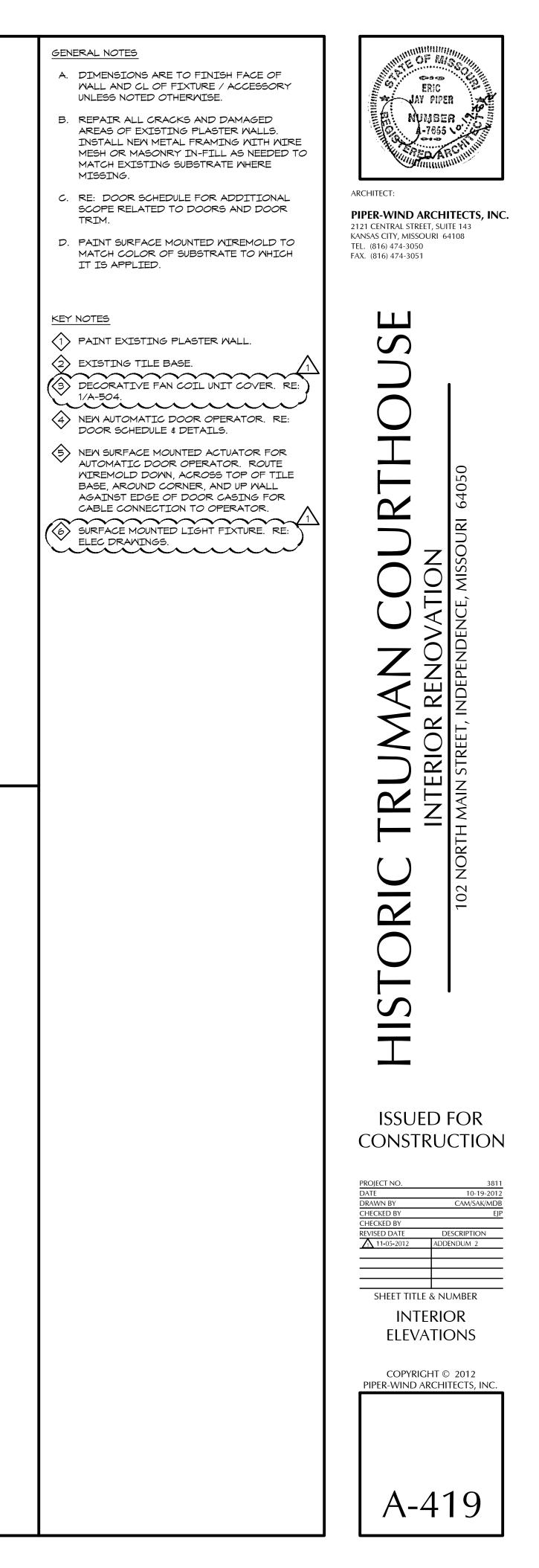
	GENERAL NOTES	OF MISSIN
	A. DIMENSIONS ARE TO FINISH FACE OF WALL AND CL OF FIXTURE / ACCESSORY UNLESS NOTED OTHERWISE.	ERIC LAV PIPER
14	B. REPAIR ALL CRACKS AND DAMAGED AREAS OF EXISTING PLASTER WALLS. INSTALL NEW METAL FRAMING WITH WIRE MESH OR MASONRY IN-FILL AS NEEDED TO MATCH EXISTING SUBSTRATE WHERE MISSING.	NUMBER A-7655 OF ARCHININ
	C. RE: DOOR SCHEDULE FOR ADDITIONAL SCOPE RELATED TO DOORS AND DOOR TRIM.	ARCHITECT: PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143
	KEY NOTES	KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050
	NEW STAINED WOOD BASE. MATCH PROFILE, SPECIES, AND FINISH OF EXISTING WOOD BASE AT FIRST AND SECOND FLOORS.	FAX. (816) 474-3051
	NEW SURFACE MOUNTED LIGHT FIXTURE. RE: ELEC DRAWINGS.	
	REMOVE PAINT FROM EXISTING PICTURE RAIL. STAIN TO MATCH EXISTING STAINED WOOD.	S .
	A PAINT EXISTING PLASTER WALL.	$\overline{\frown}$
	REPAIR PLASTER WALL WITH PLASTER TO MATCH EXISTING WHERE ELECTRICAL PANELS AND DUCT HAVE BEEN REMOVED.	$ \qquad \qquad$
	BUTT GLAZED GLASS WALL SYSTEM.	
	T BOTTOM RAIL.	
	HEADER FOR CONCEALED CLOSER AND ROUTING OF ELECTRICAL FOR ACCESS CONTROL DEVICES.	
	(9) CARD READER.	
	EMERGENCY EXIT DOOR RELEASE BUTTON.	
	DOOR RELEASE MOTION SENSOR MOUNTED TO GLASS WALL/DOOR HEADER.	
Q	12 BOTTOM RAIL.	
	NEW FIRE ALARM DEVICE. RE: FIRE ALARM DRAWINGS.	
	14 NEW EXIT SIGN. RE: ELEC DRAWINGS.	
	REMOVE DOOR LEAF. FRAME AND CASING TO REMAIN. REMOVE PAINT FROM PASSAGE SIDE OF DOOR AND STAIN TO MATCH EXISTING STAINED WOOD.	REET, IN
	(6) REFINISH EXISTING WOOD HANDRAILS.	
	CLEAN, PREP, AND PAINT ALL EXPOSED STEEL STRINGERS, RAILING, RISERS, ETC. AT EXISTING STAIRS.	
	SURFACE MOUNTED RACEWAY.	
	NEW STAINED WOOD CASED OPENING. MATCH CASING OF LOWER LEVEL DOORS. PROVIDE STEEL LINTEL TO SUPPORT WALL ABOVE PER STRUCTURAL.	IC TRUMAN COUI INTERIOR RENOVATION 02 NORTH MAIN STREET, INDEPENDENCE, MISSOURI
	PAINT ELECTRICAL PANEL TO MATCH WALL.	
	PAINT STEEL DOOR TO MATCH WALL.	
	NEW DUCTWORK. RE: MECH DRAWINGS.	
	A NEW UPPER AND LOWER CABINETS.	
	24 PROVIDE AND INSTALL MICROWAVE.	

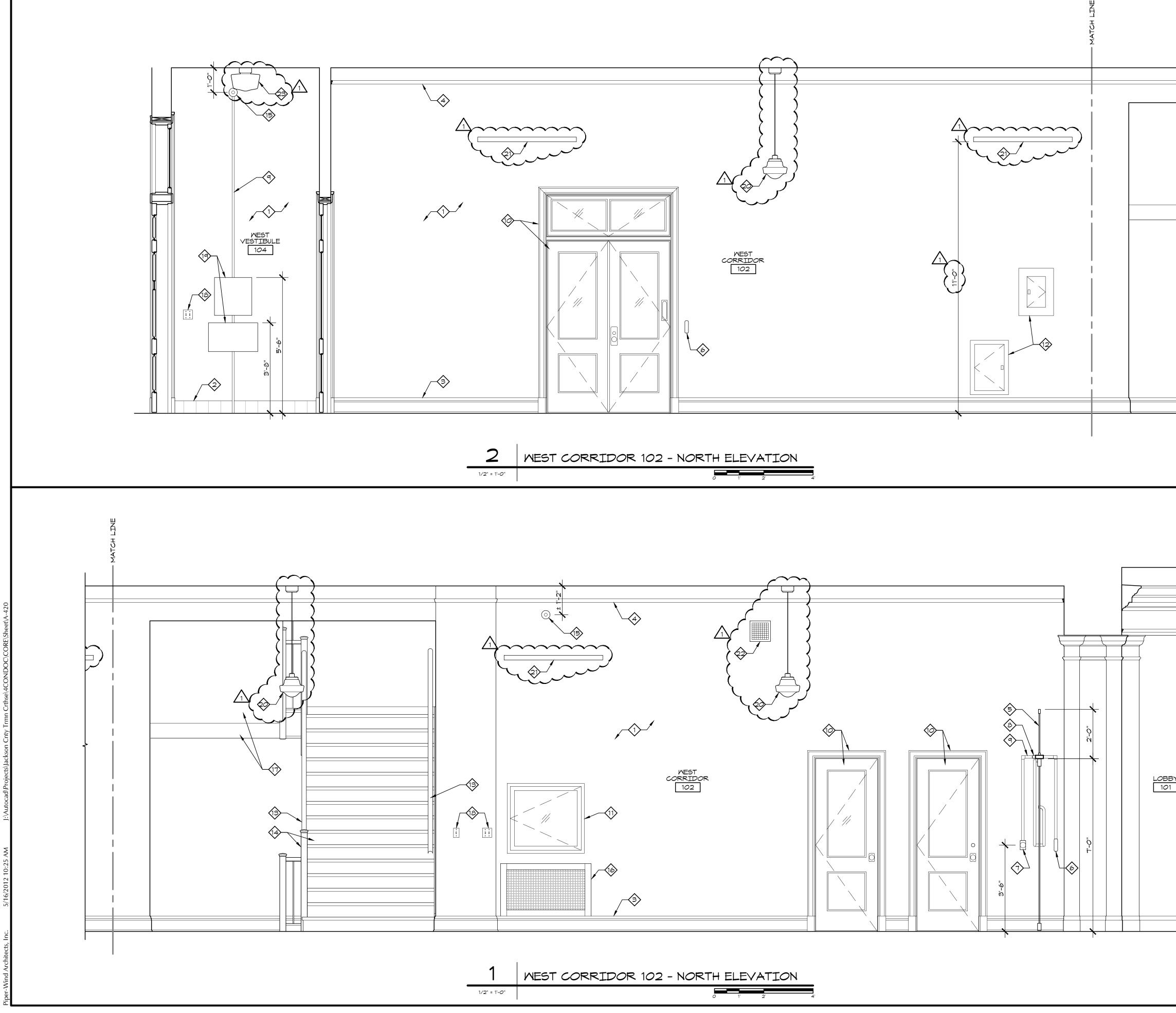
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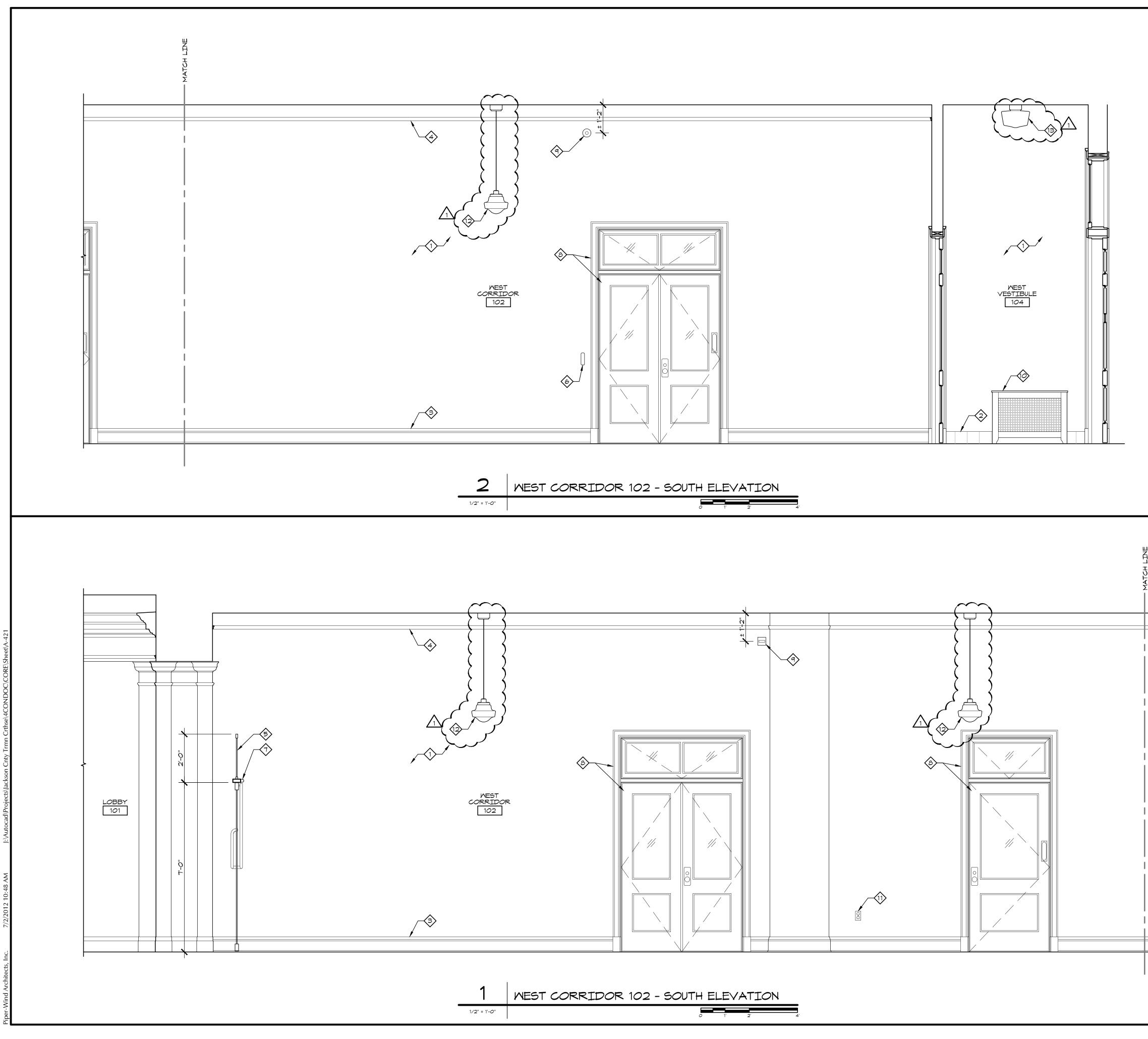
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REVISED DATE	DESCRIPTION
11-05-2012	ADDENDUM 2
SHEET TITLE	& NUMBER
INITE	RIOR
FI FV A	TIONS
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PIPER-WIND A	RCHITECTS, INC.
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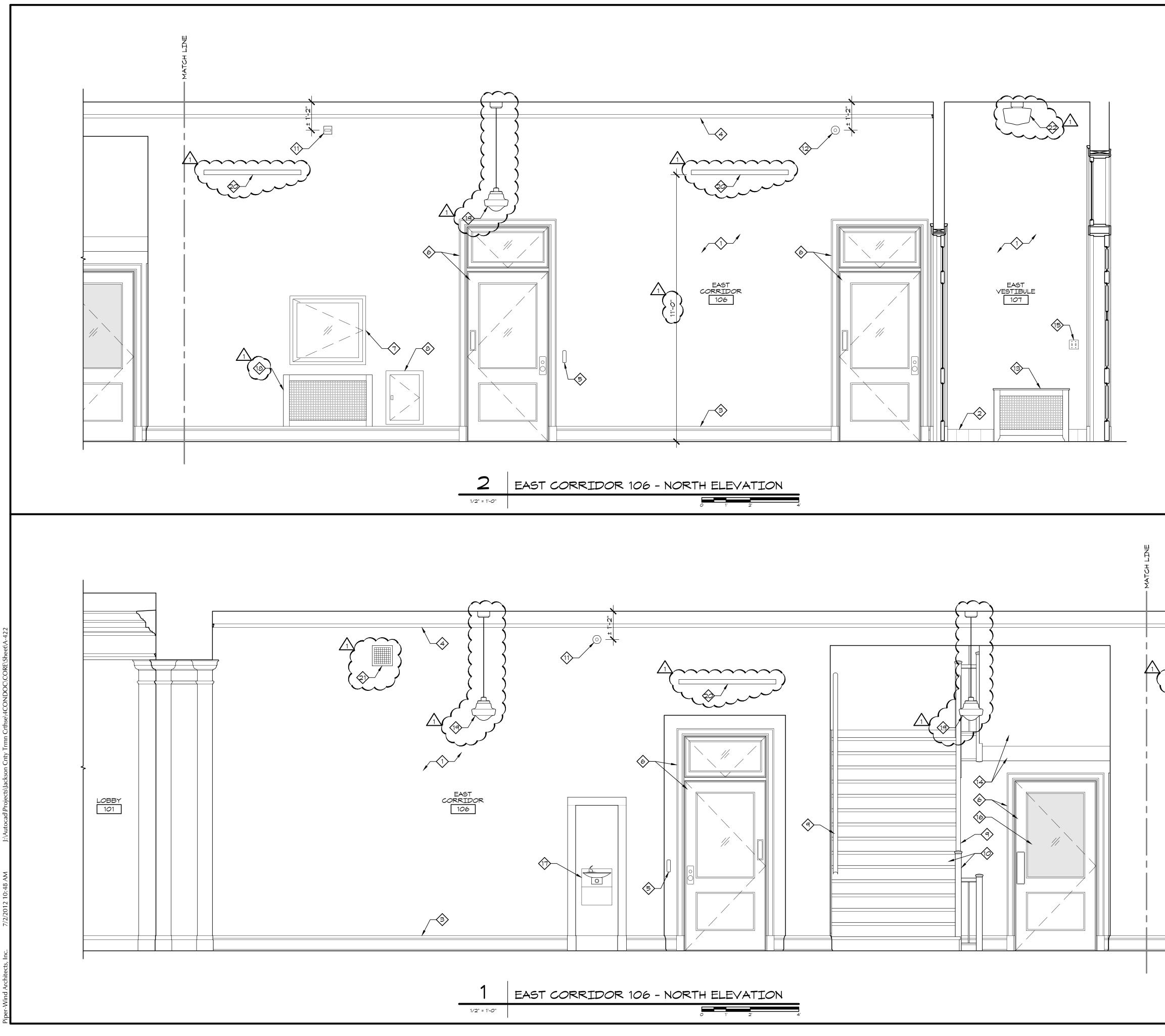




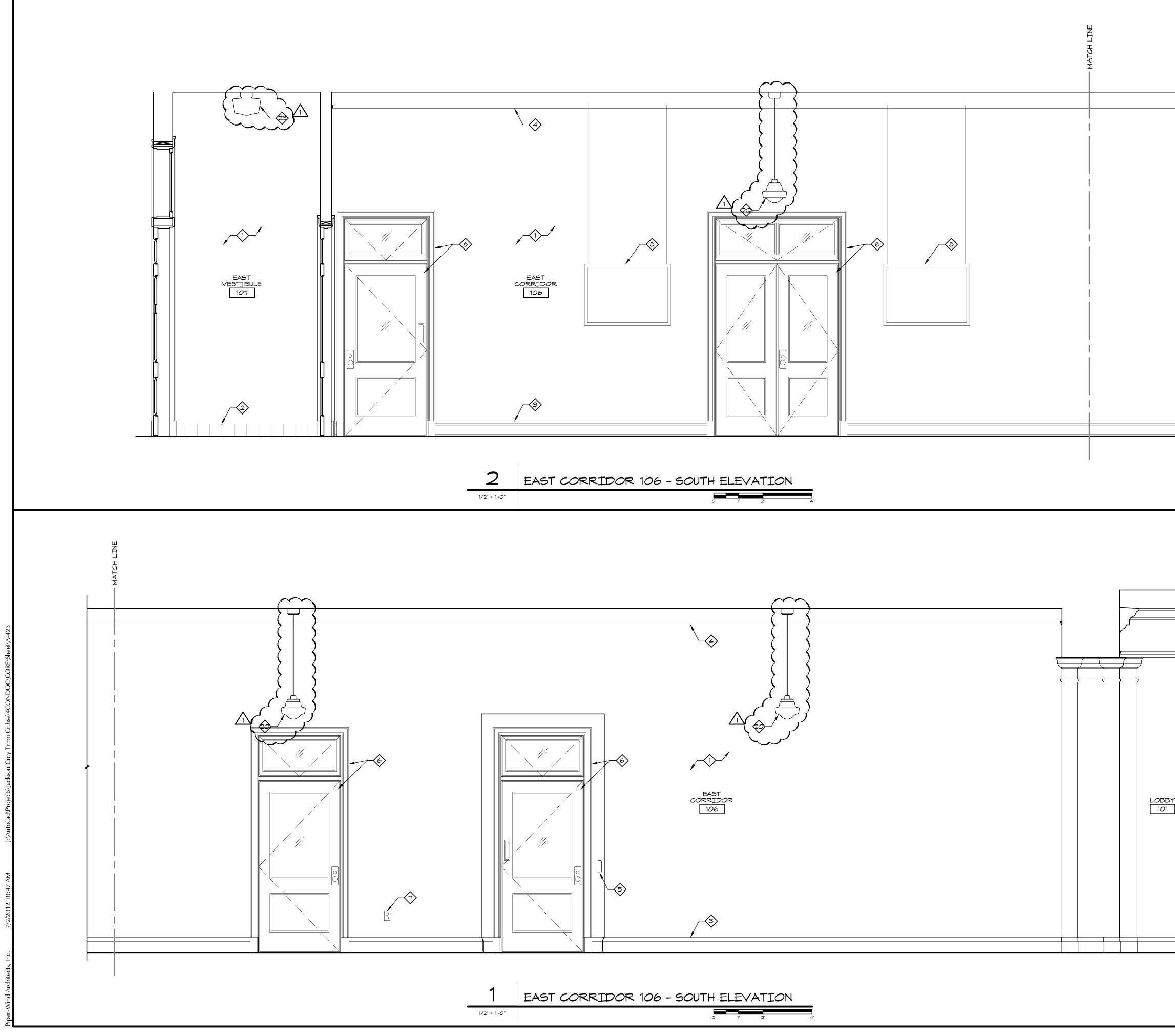
GENERAL NOTES	OF MO
A. DIMENSIONS ARE TO FINISH FACE OF WALL AND CL OF FIXTURE / ACCESSORY UNLESS NOTED OTHERWISE.	ERIC JAV PIPER
B. REPAIR ALL CRACKS AND DAMAGED AREAS OF EXISTING PLASTER WALLS. INSTALL NEW METAL FRAMING WITH WIRE MESH OR MASONRY IN-FILL AS NEEDED TO MATCH EXISTING SUBSTRATE WHERE MISSING.	NUMBER A-7655 LOT ARCHININ
C. RE: DOOR SCHEDULE FOR ADDITIONAL SCOPE RELATED TO DOORS AND DOOR TRIM.	ARCHITECT: PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143
D. PAINT SURFACE MOUNTED WIREMOLD TO MATCH COLOR OF SUBSTRATE TO WHICH IT IS APPLIED.	KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051
 KEY NOTES PAINT EXISTING PLASTER MALL. PAINT EXISTING FLASTER MALL. PAINT EXISTING TALE DASE. REFINISH TO MATCH EXISTING, AND REFLACE TO MATCH EXISTING MERRE SHOE IS JAMAGE MILL RAILED MODE DASE. REMOVE, REPORTAL LALL SHOE MOLDING. REPLACE TO MATCH EXISTING MERRE SHOE IS JAMAGE MILL RAIL NG AND RE-SECURE TO ALL WHERE LOOSE. PHIT-GLAZED GLASS PARTITION. PAINT BELARE MOTTON SENSOR MOUNTED TO COMPRESSION MOUNTED TO COMPRESSION MOUNTED TO COMPRESSION. PAINT BELEASE MOTTON SENSOR MOUNTED TO COMPRESSION. PAINT BELEASE STATION. PAINT MERRENSE STATION. PAINT MERRENSES. PAINT MERRENSES.<th><section-header></section-header></th>	<section-header></section-header>



GEN	ERAL NOTES		OF MISHING
A.	DIMENSIONS ARE TO FINISH FACE OF WALL AND CL OF FIXTURE / ACCESSORY UNLESS NOTED OTHERWISE.		ERIC AV PIPER
B.	REPAIR ALL CRACKS AND DAMAGED AREAS OF EXISTING PLASTER WALLS. INSTALL NEW METAL FRAMING WITH WIRE MESH OR MASONRY IN-FILL AS NEEDED TO MATCH EXISTING SUBSTRATE WHERE MISSING.		NUMBER A-7655 O. APCHININ
C.	RE: DOOR SCHEDULE FOR ADDITIONAL SCOPE RELATED TO DOORS AND DOOR TRIM.	Р	RCHITECT: IPER-WIND ARCHITECTS, INC. 21 CENTRAL STREET, SUITE 143
D.	PAINT SURFACE MOUNTED WIREMOLD TO MATCH COLOR OF SUBSTRATE TO WHICH IT IS APPLIED.	TE	ANSAS CITY, MISSOURI 64108 L. (816) 474-3050 X. (816) 474-3051
$\underbrace{\mathbb{H}} \bigcirc $	NOTES PAINT EXISTING PLASTER VALL. EXISTING STAINED PLAGE REPORT, REPORT REPORTAL ALL SHOE MOLDING, REPLACE JONAGE TAISTING VIERE SHOE IS JONAGED TAISTING VIERE SHOE IS JONAGED TAISTING VIERE SHOE HAS BEEN INT-GLAZED GLASS PARTITION. CARD REAL RAILING AND RE-SECURE TO CONTINUES THAN TO SENGOR MOUNTED TO CONTINUES THAN TO SENGOR MOUNTED CONTINUES THAN TO SENGOR MOUNTED TO CONTINUES THAN TO THE ALARM SETTING STAINED WOOD DOOR AND CONTINUES. THE ALARM DEVICE INSTALLED AT OLD DEVICE LOATION. RE: FIFE ALARM TAISTING STAINED WOOD DOOR AND CONTINUES. DECORATIVE FAN COIL UNIT COVER. RE: TAISTING STAINED WOOD TO THE REAL SETTING DUPLES OUTLET. PENDANT LIGHT FLYTURE, RE: ELED TRAVENOS. SUEFACE MONITED LIGHT FLYTURE, RE: ELED TAILEDS.		
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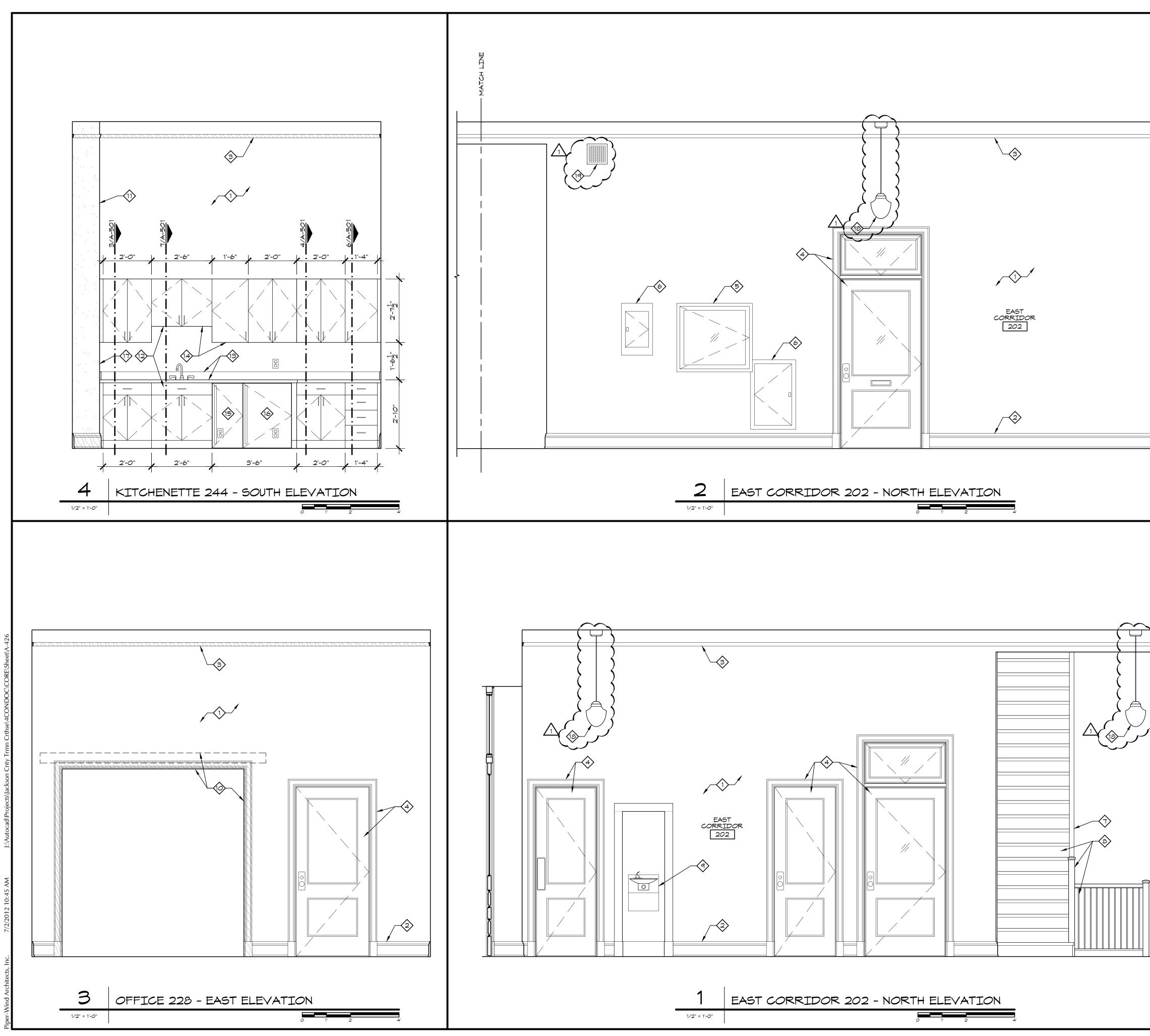


	GENERAL NOTES	INTE OF MISSING
	A. DIMENSIONS ARE TO FINISH FACE OF WALL AND CL OF FIXTURE / ACCESSORY UNLESS NOTED OTHERWISE.	ERIC JAY PIPER
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	C. RE: DOOR SCHEDULE FOR ADDITIONAL SCOPE RELATED TO DOORS AND DOOR TRIM.	ARCHITECT: PIPER-WIND ARCHITECTS, INC
	D. THOROUGHLY CLEAN ALL EXISTING MARBLE WALL PANELS AND TRIM.	2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051
	KEY NOTES	
	PAINT EXISTING PLASTER WALL.	
	EXISTING TILE BASE.	SI
	EXISTING STAINED WOOD BASE. REMOVE, REFINISH TO MATCH EXISTING, AND REINSTALL ALL SHOE MOLDING. REPLACE TO MATCH EXISTING WHERE SHOE IS DAMAGED, MISSING, OR WHERE NON-ORIGINAL SHOE HAS BEEN INSTALLED.	Ñ 0
	EXISTING STAINED WOOD PICTURE RAIL. EXAMINE ALL RAILING AND RE-SECURE TO WALL WHERE LOOSE.	
	5 CARD READER.	6 405
	EXISTING STAINED WOOD DOOR AND CASING.	
	T EXISTING FIRE HOSE STATION.	
	B PAINT ELECTRICAL PANEL TO MATCH WALL.	
	REFINISH EXISTING WOOD HANDRAILS.	
	CLEAN, PREP, AND PAINT ALL EXPOSED STEEL STRINGERS, RAILING, RISERS, ETC. AT EXISTING STAIRS.	
	NEW FIRE ALARM DEVICE. RE: FIRE ALARM DRAWINGS.	
	12 NEW FIRE ALARM DEVICE AT OLD DEVICE LOCATION. RE: FIRE ALARM DRAWINGS. (13) DECORATIVE FAN COIL UNIT COVER. RE:	C TRUMAN COUI Interior renovation North main street, independence, missouri
	1/A-504. A PAINT UNDERSIDE OF STAIRS TO MATCH CEILINGS.	
	EXISTING LIGHT SWITCH.	
	PAINT GLASS LITE OPAQUE. COLOR T.B.D.	
	NEW DRINKING FOUNTAIN IN EXISTING MARBLE ALCOVE. RE: PLUMBING DRAWINGS. ORDER WITH EXTENDED WALL PANEL TO COVER HOLES IN MARBLE VENEER. PATCH ANY REMAINING, VISIBLE HOLES IN MARBLE WITH STONE PATCH TO	ZIC -
_	MATCH MARBLE. (18) DECORATIVE FAN COIL UNIT COVER. RE: 2/A-504.	
	PENDANT LIGHT FIXTURE. RE: ELEC DRAWINGS. B.O. GLOBE TO BE AT SAME HEIGHT AS EXISTING FIXTURES.	
	NEW WALL SCONCE. RUN ELECTRICAL ON TENANT SIDE OF WALL. RE: ELEC DRAWINGS.	IIS
7	21 NEW GRILLE FOR SUPPLY AIR. ALIGN TOP WITH HEADER AT STAIRS. RE: MECH DRAWINGS.	
	SURFACE MOUNTED LIGHT FIXTURE. RE:	
	ELEC DRAWINGS.	ISSUED FOR CONSTRUCTION
		PROJECT NO. 3811
		DATE 10-19-2012 DRAWN BY CAM/SAK/MDB
		CHECKED BY EJP CHECKED BY REVISED DATE DESCRIPTION
		ADDENDUM 2
		SHEET TITLE & NUMBER
		INTERIOR ELEVATIONS
		COPYRIGHT © 2012 PIPER-WIND ARCHITECTS, INC.
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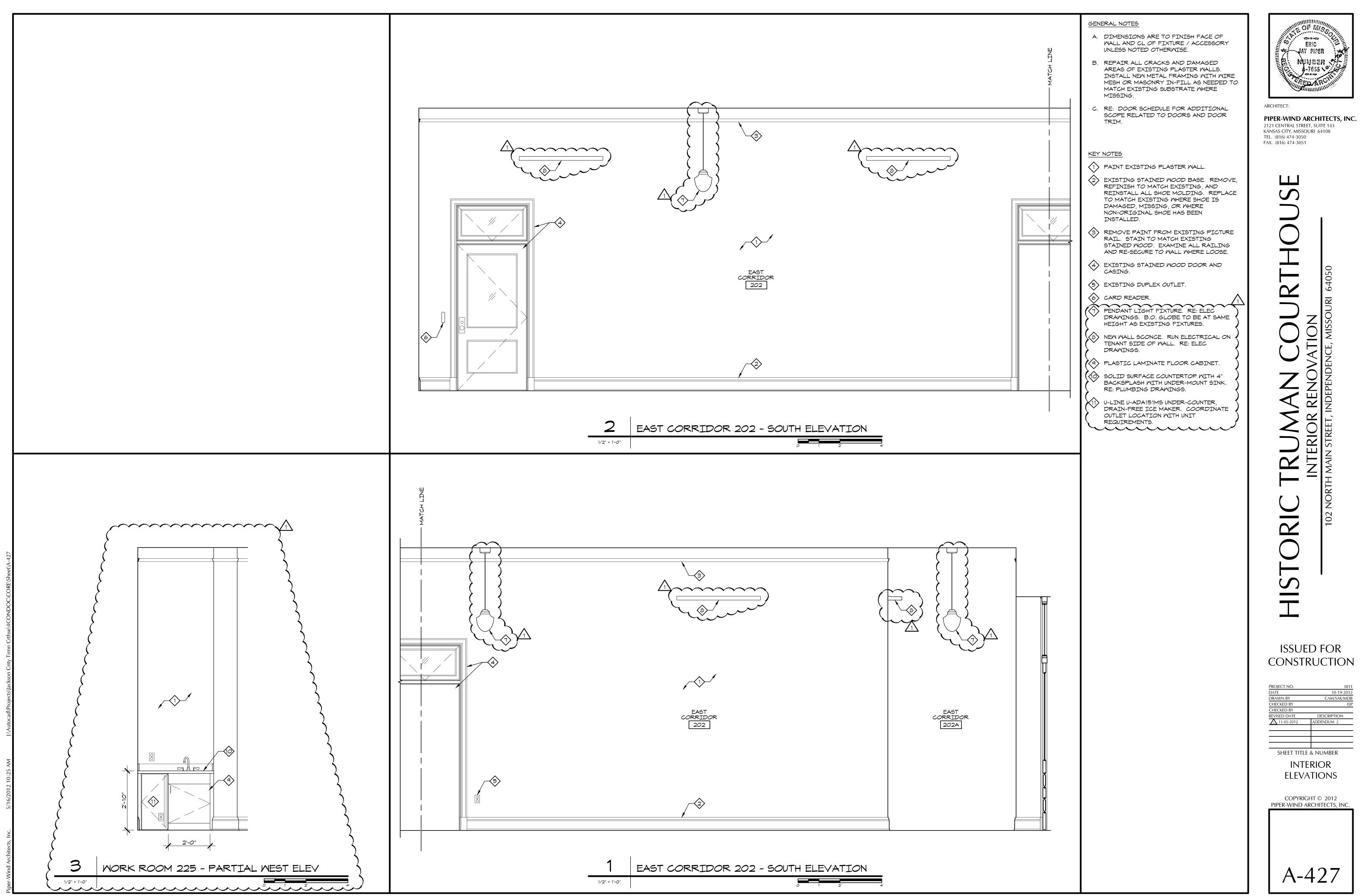
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 <u>GENERAL NOTES</u> A. DIMENSIONS ARE TO FINISH FACE OF WALL AND CL OF FIXTURE / ACCESSORY UNLESS NOTED OTHERWISE. B. REPAIR ALL CRACKS AND DAMAGED AREAS OF EXISTING PLASTER WALLS. INSTALL NEW METAL FRAMING WITH WIRE MESH OR MASONRY IN-FILL AS NEEDED TO MATCH EXISTING SUBSTRATE WHERE MISSING. C. RE: DOOR SCHEDULE FOR ADDITIONAL SCOPE RELATED TO DOORS AND DOOR TRIM. D. THOROUGHLY CLEAN ALL EXISTING MARBLE WALL PANELS AND TRIM. 	ARCHITECT: PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3051
 PAINT EXISTING PLASTER WALL. PAINT EXISTING TILE BAGE. EXISTING STAINED WOOD BAGE. REMOVE, REINSTALL ALL SHOE MOLDING. REPLACE TO MATCH EXISTING WHERE SHOE IS DAMAGED, MISSING, OR WHERE NON-ORIGINAL SHOE HAS BEEN INSTALLED. EXISTING STAINED WOOD PICTURE RAIL EXAMINE ALL RAILING AND RE-SECURE TO NALL WHERE LOOSE. CARD READER. EXISTING STAINED WOOD DOOR AND CASING. EXISTING DUPLEX OUTLET. REINSTALL FRAMED GRAPHIC PROVIDED BY OWNER, GC TO PROVIDE WIRE AND CLIPS TO UTILIZE PICTURE RAIL FOR HANGING OF GRAPHIC. PENDANT LIGHT FINTURE. RE: ELEC DRAVINGS. B.O. GLOBE TO BE AT SAME HEIGHT AS EXISTING FIXTURES. SURFACE MOUNTED LIGHT FIXTURE. RE: ELEC DRAVINGS. 	HISTORIC TRUMAN COURTHOUSE INTERIOR RENOVATION 102 NORTH MAIN STREET, INDEPENDENCE, MISSOURI 64050
	Support DATE DATE



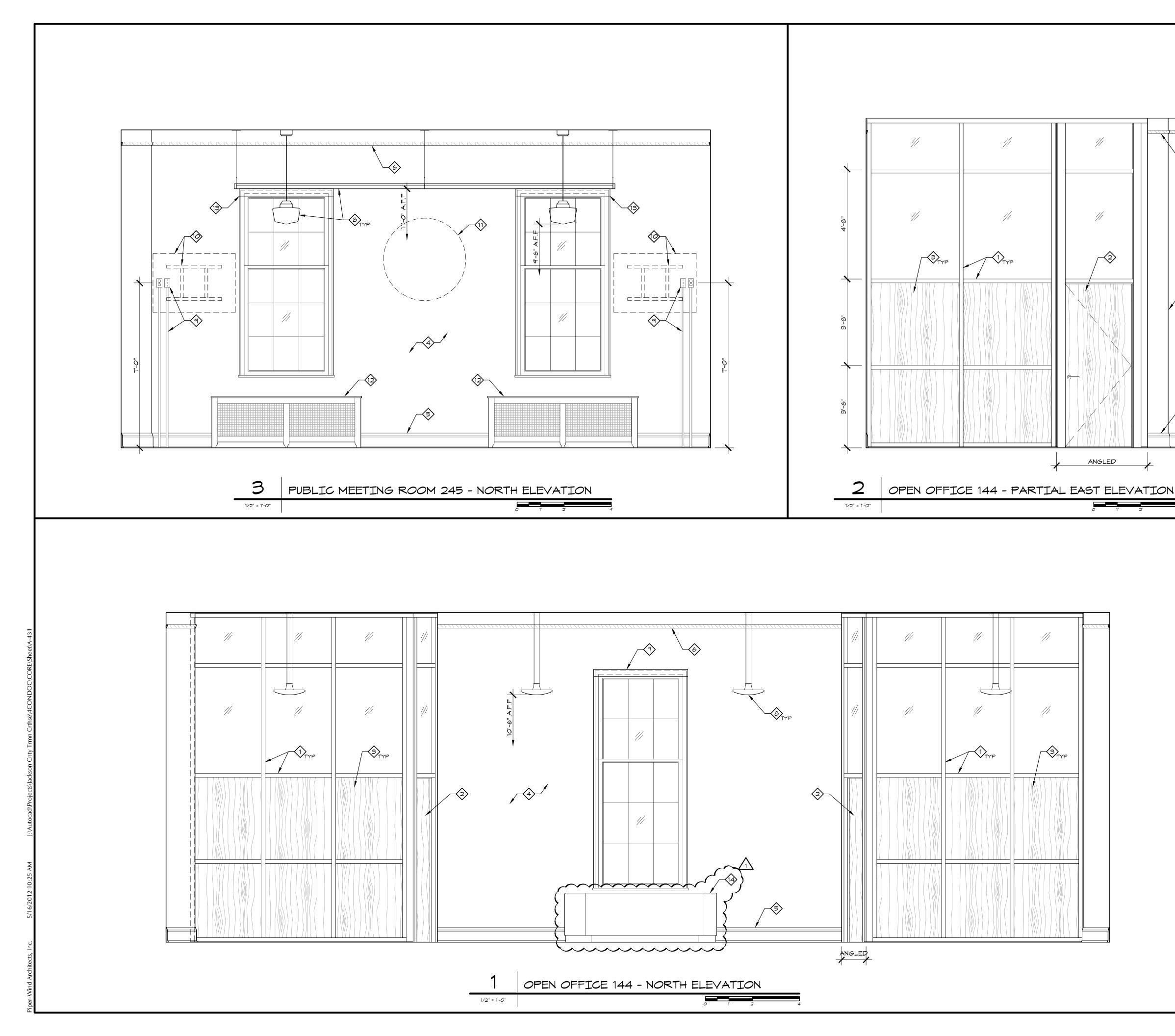
1/2" = 1'-0"			EAST CORRIDOR 202 - NORTH ELEVATION
	-	1/2" = 1'-0"	

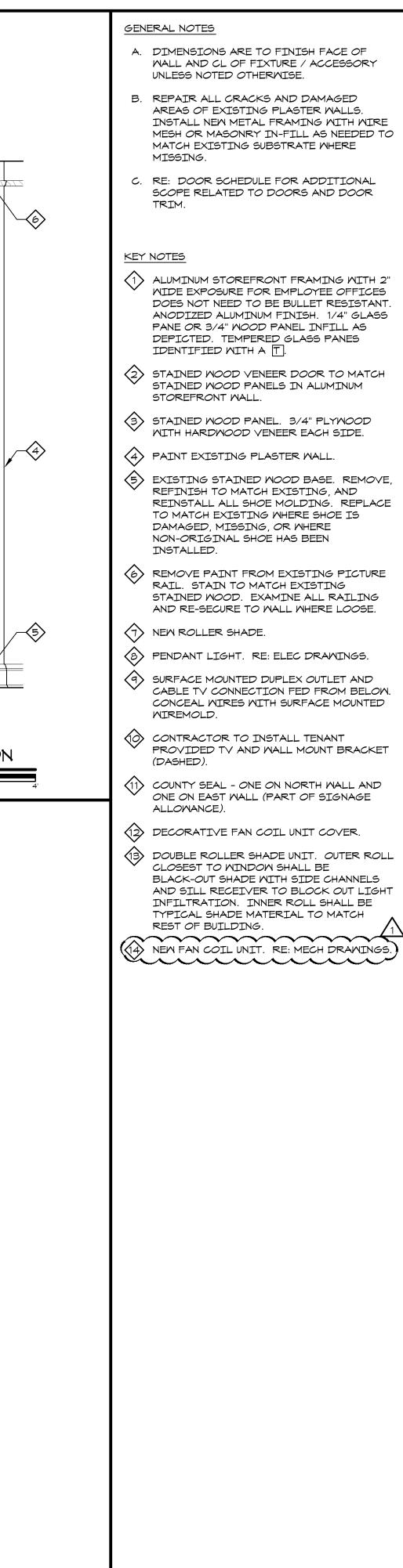
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	KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050



2	EAST CORRIDOR 202 - SOUTH ELEVATION
1/2" = 1'-0"	0 1' 2' 4'

	EAST CORRIDOR 202 - SOUTH ELEVATION
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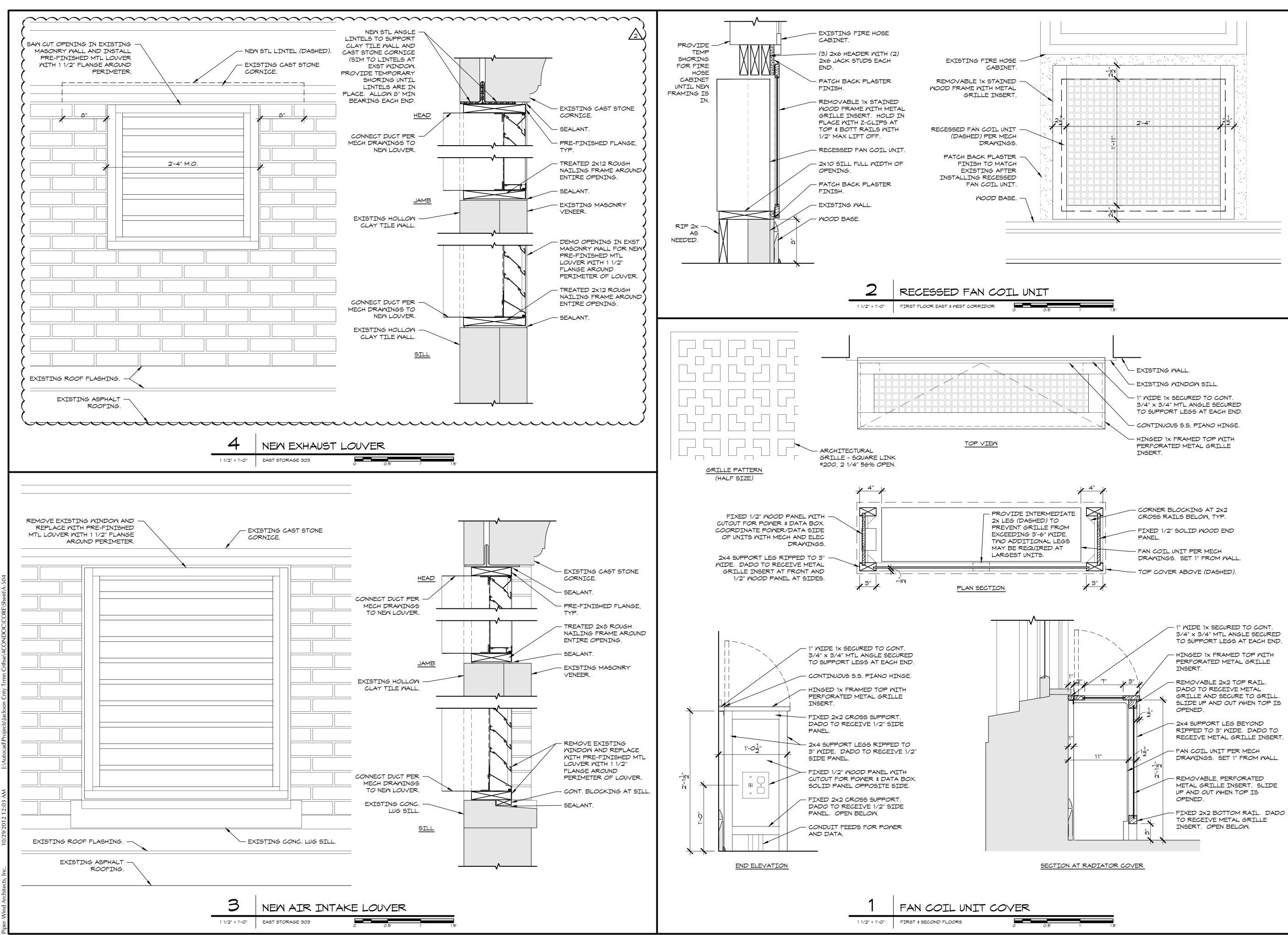
PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051

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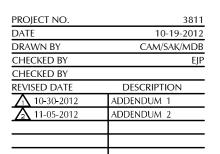
ISSUED FOR CONSTRUCTION

PROJECT NO.	3811
DATE	10-19-2012
DRAWN BY	CAM/SAK/MDB
CHECKED BY	EJP
CHECKED BY	
REVISED DATE	DESCRIPTION
<u>11-05-2012</u>	ADDENDUM 2
SHEET TITLE	& NUMBER
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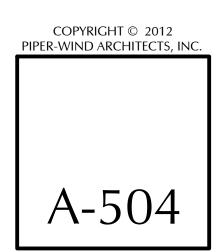


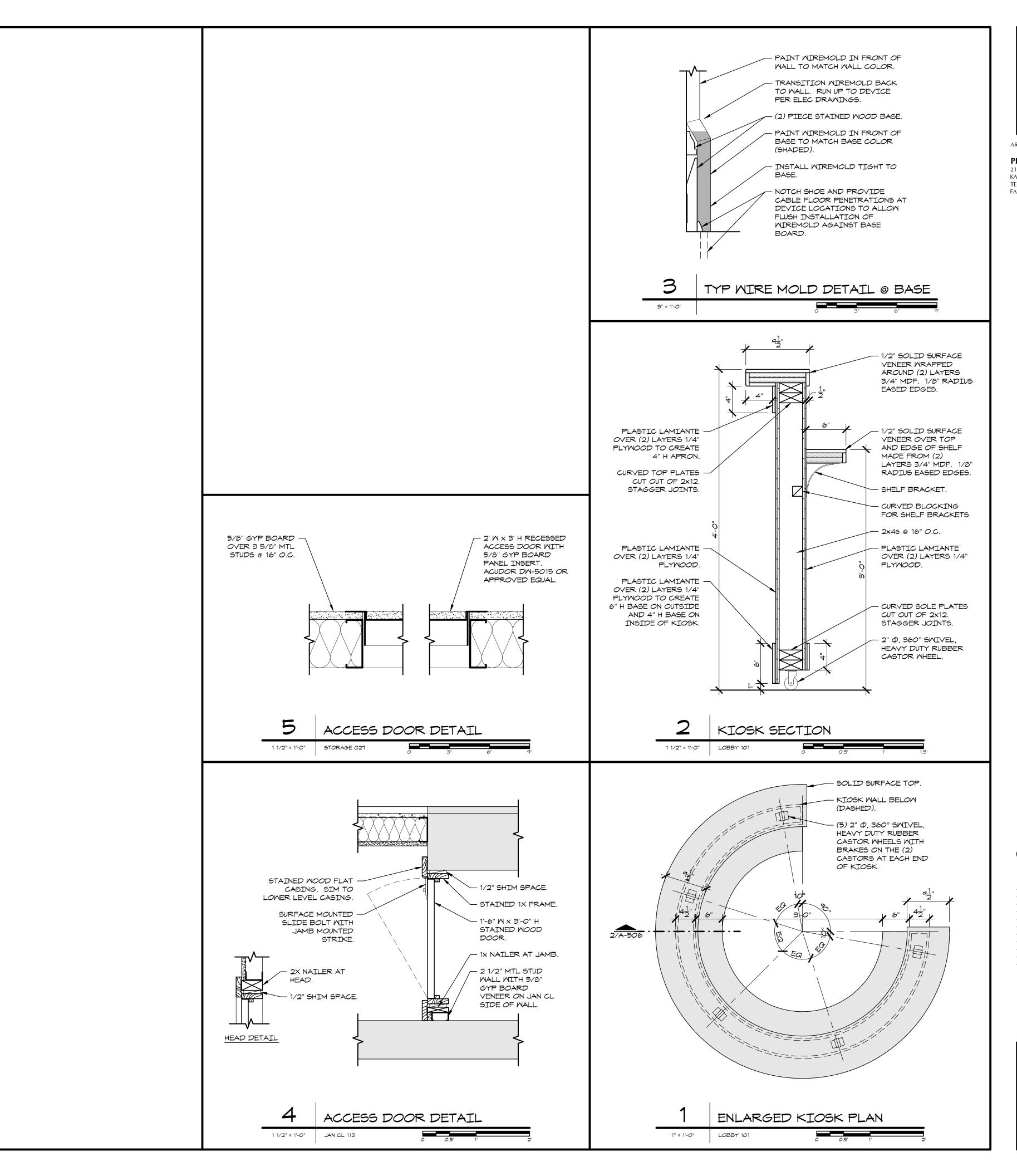
WE OF MIR (***) (** ERIC JAY PIPER NUMBER A-7655 \ C> 6 -C> ARCHITECT: **PIPER-WIND ARCHITECTS. INC.** 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051 5 ____ \sim \frown Ē Ζ ш $\mathbf{\nabla}$ \sim \frown N ш Ζ Ś \sim \mathcal{I} **ISSUED FOR** CONSTRUCTION



SHEET TITLE & NUMBER

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MULE OF MISS (***) (***) ERIC JAY PIPER 12 NUMBER . A-7655 \0 000 PED ARC' ARCHITECT: PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051 $\boldsymbol{\mathcal{S}}$ C 64050 \sim RENOVATION INDEPENDENCE, MISSOURI **١**

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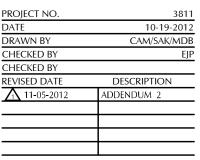
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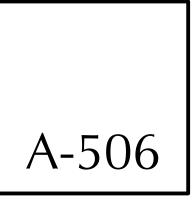
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ISSUED FOR CONSTRUCTION



SHEET TITLE & NUMBER

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						MA	LL		CEILING		
ROOM NO.	ROOM NAME	HISTORIC ROOM NAME	FLOORING	BASE	NORTH	EAST	SOUTH	WEST	TYPE	FIN	
101	LOBBY	LOBBY	EXST BL	EXST ST <i>O</i> NE	NONE	NONE	NONE	NONE	-	P	
102	WEST CORRIDOR	CORRIDOR	EXST BL	EXST MDB	PT-3	PT-3	PT-3	PT-3	_	P'	
103	SOUTH VESTIBULE	VESTIBULE	EXST TILE	EXST TILE	PT-3	PT-3	PT-3	PT-3	_	P'	
104	WEST VESTIBULE	VESTIBULE	EXST TILE	EXST	PT-3	PT-3	PT-3	PT-3		P	
105	NORTH VESTIBULE	VESTIBULE	EXST TILE	TILE EXST	PT-3	PT-3	PT-3	PT-3		P	
106	EAST CORRIDOR	CORRIDOR	EXST BL	TILE EXST MDB	PT-3	PT-3	PT-3	PT-3			
107	EAST VESTIBULE	VESTIBULE	EXST TILE	EXST	PT-3	PT-3	PT-3	PT-3		' P	
108	EAST STAIR	EAST STAIR	EXST BL	TILE EXST WDB	PT-3	PT-3	PT-3	PT-3		P	
109	WEST STAIR	WEST STAIR	EXST BL	EXST MDB	PT-3	PT-3	PT-3	PT-3	_	P	
110	TELEPHONE CLOSET	TELEPHONE	EXST BL	EXST MDB	PT-3	PT-3	PT-3	PT-3	_	P	
111	SECURITY CLOSET	TELEPHONE	EXST BL	EXST MDB	PT-3	PT-3	PT-3	PT-3	_	P	
			EXST STT /		EXST /	EXST /	EXST /	EXST /			
112	WOMEN	MEN'S TOILET	STT-1	NONE	PT-1	PT-1	STP-1 / PT-1	STP-1 / PT-1	-	P	
113	JANITOR'S CLOSET		EXST CONC	NDB-1	PT-3	PT-3	PT-3	PT-3	-	P	
114	WAITING	ASSESSOR'S PUBLIC SPACE	BL-1 / 2	EXST WDB / WDB-1 EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
115	OPEN OFFICE	ASSESSOR & COLLECTOR	CPT-1	/ WDB-1 EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
115A	OFFICE	N/A	CPT-1	/ WDB-1 EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
115B		N/A	CPT-1	/ MDB-1	PT-3	PT-3	PT-3	PT-3	-	P	
1150	CASHIER VAULT	N/A VAULT	CPT-1 RFT-3	NDB-1 RMB-1	PT-3 PT-3	PT-3	PT-3	PT-3 PT-3	-	P P	
117	STORAGE	VAULT	EXST CONC	RWB-1	PT-3	PT-3	PT-3	PT-3		P	
118	MEETING	VAULT	CPT-1	MDB-1	PT-3	PT-3	PT-3	PT-3	-	' P	
119	RETAIL/VAULT	VAULT	EXST CONC	MDB-1	PT-3	PT-3	PT-3	PT-3	-	P	
120	RETAIL/DISPLAY	COUNTY CLERK	WDF-1	EXST MDB	PT-3	PT-3	PT-3	PT-3	_	P	
121	CLOSET	CLOSET	TILE-1	EXST MDB	PT-3	PT-3	PT-3	PT-3	-	P	
122	OFFICE	COUNTY CLERK PRIVATE OFFICE	CPT-1	EXST MDB	PT-3	PT-3	PT-3	PT-3	-	P	
123	ELEVATOR LOBBY	COUNTY CLERK PUBLIC SPACE	BL-1 / 2	NDB-1	PT-3	PT-3	PT-3	PT-3	-	P	
124	TRUMAN COURTROOM	COUNTY COURT	EXST BL	EXST MDB	EXST PT	EXST PT	EXST PT	EXST PT	-	P	
125	JUDGE'S OFFICE	JUDGE'S OFFICE	EXST BL	EXST MDB	EXST PT	EXST PT	EXST PT	EXST PT	-	P	
126	TOILET	TOILET	BL-1	EXST MDB	EXST PT	EXST PT	EXST PT	EXST PT	-	P	
127	CLOSET	CLOSET	EXST BL	EXST NDB	EXST PT	EXST PT	EXST PT	EXST PT	-	P	
128	JUDGE'S SECRETARY	JUDGE'S SECRETARY	EXST BL	EXST MDB	EXST PT	EXST PT	EXST PT	EXST PT	-	P	
129	OFFICE	AUDITOR	CPT-1	EXST NDB	PT-3	PT-3	PT-3	PT-3	-	P	
130 131	OPEN OFFICE	HIGHWAY ENGINEER DRAFTING ROOM	CPT-1 CPT-1	EXST WDB	PT-3 PT-3	PT-3 PT-3	PT-3 PT-3	PT-3 PT-3	-	P P	
132	STORAGE	VAULT	EXST CONC	RMB-1	PT-3	PT-3	PT-3	PT-3	-	P	
133	WELCOME CENTER	TREASURER	MDF-1	MDB-1	PT-3	PT-3	PT-3	PT-3	-	P	
134	MEN	PURCHASING AGENT	STT-1	NONE	STP-1/ PT-1	STP-1/ PT-1	STP-1/ PT-1	STP-1/ PT-1	-	P	
135	OFFICE	HIGHWAY ENGINEER'S PRIVATE OFFICE	CPT-1	EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
136	STORAGE	VAULT	EXST CONC	RWB-1	PT-3	PT-3	PT-3	PT-3	-	P	
137	CLOSET	CLOSET	TILE-1	EXST MDB	PT-3	PT-3	PT-3	PT-3	-	P	
138	MEETING/WORK ROOM	TREASURE'S PRIVATE OFFICE	EXST BL	EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
139	OFFICE	MARRIAGE BUREAU	CPT-1	EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
140	WORK ROOM	CIGARS	CPT-1	EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
141			CPT-1	EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P'	
142 143	OPEN OFFICE STORAGE	VAULT	CPT-1 EXST CONC	EXST WDB RWB-1	PT-3 PT-3	PT-3	PT-3 PT-3	PT-3 PT-3	-	P P	
145	OPEN OFFICE	RECORDER	CPT-1	EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P	
144	OFFICE	RECORDER	CPT-1	/ WDB-1 EXST WDB	PT-3	PT-3	PT-3	PT-3	-	P P	
146A	OFFICE	N/A	CPT-1	EXST WDB / WDB-1	PT-3	PT-3	PT-3	PT-3	-	P'	
					1					1	

NOM ROOM NAME PESTOREC ROOM NAME FLOORDO PARE NORTH LAST BO.TH NEST TYPE TYPE C01 DAST STAJR - RTT-1/2 ADD1 FT-3							CEILI				
ONA GLOSET CLOSET RT1-2 NDE1 T1-3 PT-3		ROOM NAME	HISTORIC ROOM NAME	FLOORING	BASE	NORTH	EAST	SOUTH	MEST	TYPE	
ODE OPEN OFFICE ELECTOR OPEN OPEN PT-3	001	EAST STAIR	-	RFT-1 / 2	NDB-1	PT-3	PT-3	PT-3	PT-3	-	Ť
022 OPEN OFFICE CONTENTIONERS 0PT-1 NOB-1 PT-3	001A	CLOSET	CLOSET	RFT-2	MDB-1	PT-3	PT-3	PT-3	PT-3	-	
02024 9TORAGE CONSISTIONER AND	002	OPEN OFFICE	COMMISSIONER'S	CPT-1	WDB-1	PT-3	PT-3	PT-3	PT-3	-	
0020 OFFICE EGAND ROOM RFT-1/2 MDB-1 PT-3 PT-3 PT-3 PT-3 003 CORRIDOR BOARD ROOM RFT-1/2 NDB-1 PT-3 PT-3 <td< td=""><td>002A</td><td>STORAGE</td><td>COMMISSIONER'S WORK</td><td>EXST CONC</td><td>RWB-1</td><td>PT-3</td><td>PT-3</td><td>PT-3</td><td>PT-3</td><td>-</td><td></td></td<>	002A	STORAGE	COMMISSIONER'S WORK	EXST CONC	RWB-1	PT-3	PT-3	PT-3	PT-3	-	
003 CORRIDOR BOARD ROOM RFT-1/2 MDE-1 PT-3 PT-3 <td>002B</td> <td>OFFICE</td> <td></td> <td>CPT-1</td> <td>NDB-1</td> <td>PT-3</td> <td>PT-3</td> <td>PT-3</td> <td>PT-3</td> <td>-</td> <td></td>	002B	OFFICE		CPT-1	NDB-1	PT-3	PT-3	PT-3	PT-3	-	
OODA HOMEN TILE-1/2 NORE TILE-3/2 TILE-3	0020	OFFICE		CPT-1	MDB-1	PT-3	PT-3	PT-3	PT-3	-	
LOSA MORE MORE PT-1 PT-1 <t< td=""><td>003</td><td>CORRIDOR</td><td>BOARD ROOM</td><td>RFT-1 / 2</td><td>MDB-1</td><td>PT-3</td><td>PT-3</td><td>PT-3</td><td>PT-3</td><td>-</td><td></td></t<>	003	CORRIDOR	BOARD ROOM	RFT-1 / 2	MDB-1	PT-3	PT-3	PT-3	PT-3	-	
CODD MKN ITLE-1/2 NARE FT-1	<i>00</i> 3A	WOMEN		TILE-1 / 2	NONE					-	
005 STORAGE VALT RT-3 RAB-1 PT-3	003В	MEN		TILE-1 / 2	NONE					-	
006 COFFEE MENS TOTLET TILE-1/2 MODEL PT-9 PT-1 PT-9 PT-3 PT-3 <td>004</td> <td>STORAGE</td> <td>PRESS</td> <td>RFT-3</td> <td>RMB-1</td> <td>PT-3</td> <td>PT-3</td> <td>PT-3</td> <td>PT-3</td> <td>-</td> <td></td>	004	STORAGE	PRESS	RFT-3	RMB-1	PT-3	PT-3	PT-3	PT-3	-	
OOT RESTROOM ACMENS TOILET TILE-1/2 NONE TILE-3/ PT-1 TILE-3/ PT-3 PT-3 PT-3<	005	STORAGE	VAULT	RFT-3	RMB-1	PT-3	PT-3	PT-3	PT-3	-	
CO1 NEME IN COMM PREMENDIALEI ILLE-1/L NAME PT-1 PT-3 PT	006	COFFEE	MEN'S TOILET	TILE-1 / 2	MDB-1	PT-3	PT-3	PT-3	PT-3	-	
039A ELEVATOR LOBBY PM RFT-1/2 MDB-1 PT-3	700	RESTROOM	WOMEN'S TOILET	TILE-1 / 2	NONE					-	
004 STORAGE PA66AGE EX5 COC RNB-1 PT-3	008	STORAGE	STORAGE #2	RFT-3	RMB-1	PT-3	PT-3	PT-3	PT-3	-	
OIO BOILER ROOM BOILER ROOM ENST CONC NONE PT-3 PT-	008A	ELEVATOR LOBBY			MDB-1	PT-3	PT-3	PT-3	PT-3		
OIGA STORAGE ENSINEER EXST CONC RNB-1 PT-3 PT-3 <td>009</td> <td>STORAGE</td> <td>PASSAGE</td> <td>EXST CONC</td> <td>RMB-1</td> <td>PT-3</td> <td>PT-3</td> <td>PT-3</td> <td>PT-3</td> <td>-</td> <td></td>	009	STORAGE	PASSAGE	EXST CONC	RMB-1	PT-3	PT-3	PT-3	PT-3	-	
O11 TELCOM N/A RFT-4 NONE NONE PT-3 PT-3 PT-3 PT-3 012 PASSAGE TILE-1/2 NOB-1 PT-3	010	BOILER ROOM	BOILER ROOM		NONE	PT-3	PT-3	PT-3		-	
O12 PASSAGE TILE-1/2 WDB-1 PT-3	010A				RMB-1	PT-3				-	
012A MEN WOMENS PUBLIC TOILET TILE-1/2 NORE TILE-3/ PT-1 TILE-3/ PT-3 TILE			N/A							-	
OLA MEN MOMENS PUBLIC TOLLET FILE-1/2 NORE PT-1 PT-3 PT-	012	PASSAGE		TILE-1 / 2	NDB-1					-	
O12b MOMENS MOMENS PUBLIC 101LEI IIIE-172 NONE PT-1 PT-3 PT-3 <th< td=""><td>012A</td><td>MEN</td><td>WOMEN'S PUBLIC TOILET</td><td>TILE-1 / 2</td><td>NONE</td><td></td><td></td><td></td><td></td><td>-</td><td></td></th<>	012A	MEN	WOMEN'S PUBLIC TOILET	TILE-1 / 2	NONE					-	
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GENERAL NOTES A. ALL EXISTING PLASTER, WHERE PATCHING IS REQUIRED TO ACHIEVE A SMOOTH, ORIGINAL FINISH, SHALL BE PATCHED WITH METHODS AND MATERIALS IDENTICAL TO THE ORIGINAL METHODS AND MATERIALS TO THE EXTENT PRACTICAL.

- B. THE PAINTING OF ALL EXISTING PLASTER WALLS AND CEILINGS SHALL BE DONE IN A MANNER THAT WILL ACHIEVE A SMOOTH, PAINTED PLASTER FINISH - DEVOID OF ANY APPARENT ALLIGATORING, CHIPPING, SPALLING, AND FLAKING. EXISTING WALLS AND CEILINGS SHALL BE PLASTER SKIM COATED WITH REINFORCED FABRIC MESH PER SPECIFICATIONS WHERE NECESSARY IN ORDER TO ACHIEVE A SMOOTH, CRACK-FREE, PAINTED PLASTER FINISH.
- C. RESTORE ALL EXISTING BROWN AND/OR BLACK "BATTLESHIP LINOLEUM" FLOORING. RESTORE BY CLEANING AND/OR STRIPPING WITH NEUTRAL PH CLEANERS (LESS THAN 10PH LEVEL), RESTORING FLEXIBILITY WITH LINSEED OIL, PROVIDE, HIGH-QUALITY, STAIN-RESISTANT COMMERCIAL FLOOR SEALER, AND HIGH-QUALITY COMMERCIAL FLOOR POLISH PER MANUFACTURER'S RECOMMENDATIONS THROUGHOUT. PATCH LARGE AREAS OF EXITING FLOORS WITH MATCHING SALVAGED PIECES OF LINOLEUM AND SMALLER GOUGES WITH APPROPRIATE PATCHING PASTE S RECOMMENDED BY FLOORING RESTORER.
- D. RESTORE, CLEAN, PATCH, SEAL, AND POLISH ALL "BATTLESHIP LINOLEUM" STAIR TREADS IN SAME AS DESCRIBED IN GENERAL NOTE "C" ABOVE.
- E. PATCH AREAS OF DETERIORATED, DAMAGED, OR DISCOLORED BATTLESHIP LINOLEUM AS INDICATED WITH EXISTING SALVAGED AND, IF NECESSARY, NEW BATTLESHIP LINOLEUM TO MATCH EXISTING. ALL NEW PATCH SEAMS SHOULD BE STRAIGHT, RECTANGULAR, AND UNDETECTABLE.
- F. ALL NEW GYPSUM BOARD CEILINGS ON THE FIRST AND SECOND FLOORS - WHETHER AREAS OF NEW SUSPENDED CEILING OR LAMINATED OVER EXISTING PLASTER - SHALL RECEIVE A TYPE 5 FINISH (REFERENCE SPECIFICATIONS).
- G. ALL NEW GYPSUM BOARD CEILINGS ON THE LOWER LEVEL - WHETHER AREAS OF NEW SUSPENDED CEILING OR LAMINATED OVER EXISTING PLASTER - SHALL RECEIVE A TYPE 4 FINISH (REFERENCE SPECIFICATIONS).
- H. ALL NEW GYPSUM BOARD WALLS ON THE FIRST AND SECOND FLOORS - WHETHER NEW STUD WALLS OR LAMINATED OVER EXISTING PLASTER - SHALL RECEIVE A GYPSUM VENEER PLASTER FINISH (REFERENCE SPECIFICATIONS).
- I. ALL NEW GYPSUM BOARD WALLS ON THE LOWER LEVEL - WHETHER NEW STUD WALLS OR LAMINATED OVER EXISTING PLASTER - SHALL RECEIVE A TYPE 5 FINISH.
- J. EVERYTHING VISIBLE BELOW THE LOWER LEVEL CEILING, EXCEPT FOR LIGHT FIXTURES AND LIGHT SUPPORTS, IN THE AREAS INDICATED SHALL BE PAINTED. CONTRACTOR OPTION TO ROLL, BRUSH, OR SPRAY (REFERENCE SPECIFICATIONS FOR DRY-FALL PAINT FINISH).
- K. EXAMINE ALL PICTURE RAIL AND RE-SECURE TO WALL WHERE IT IS LOOSE. STRIP ALL PAINTED PICTURE RAIL AND REFINISH TO PROVIDE STAINED FINISH WITH CLEAR COAT TO MATCH EXISTING STAINED WOODWORK.
- L. EXAMINE ALL WOOD BASE AND RE-SECURE TO WALL WHERE IT IS LOOSE. STRIP ALL PAINTED BASE AND REFINISH TO PROVIDE STAINED FINISH WITH CLEAR COAT TO MATCH EXISTING STAINED WOODWORK.

FINISH SCHEDULE NOTES:

- 1. CONCRETE STEPS TO REMAIN AS THEY ARE.
- 2. SEAL CONCRETE SLAB WITH A NEGATIVE SIDE, PENETRATING, WATERPROOFING SEALER SUCH AS PENETRON, AQUAFIN-IC, OR APPROVED EQUAL. CLEAN AND PREP SLAB PER MFR'S
- RECOMMENDATIONS. 3. CLEAN AND WAX LINOLEUM FLOOR. 4. CLEAN AND WAX LINOLEUM STAIR TREADS. 5. CLEAN AND TREAT MARBLE FLOOR WITH IMPREGNATING SEALER.
- 6. BL-2 BORDER WITH BL-1 FIELD. BORDER WIDTH TO MATCH WIDTH OF BORDER AT CORRIDOR. 7. REMOVE REMAINING CARPET GLUE RESIDUE FROM EXISTING BATTLESHIP LINOLEUM. CLEAN, WAX, AND POLISH AS REQUIRED TO RESTORE TO ORIGINAL LUSTER FINISH. IF GLUE RESIDUE CANNOT BE REMOVED FROM EXISTING BATTLESHIP LINOLEUM IN A MANNER THAT WILL ALLOW FOR ITS RESTORATION BACK TO ORIGINAL LUSTER FINISH, THEN CONTRACTOR SHALL REPLACE WITH NEW BATTLESHIP LINOLEUM BL-1 AND BL-2 TO MATCH EXISTING PATTERN. CONTRACTOR NEEDS TO MAKE DETERMINATION AS TO WHETHER EXISTING BATTLESHIP LINOLEUM CAN BE RESTORED IN THE VARIOUS ROOMS WHERE 1CARPET GLUE RESIDUE REMAINS.



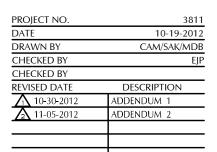
ARCHITECT:

PIPER-WIND ARCHITECTS, INC. 2121 CENTRAL STREET, SUITE 143 KANSAS CITY, MISSOURI 64108 TEL. (816) 474-3050 FAX. (816) 474-3051

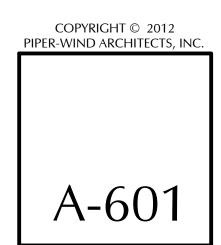
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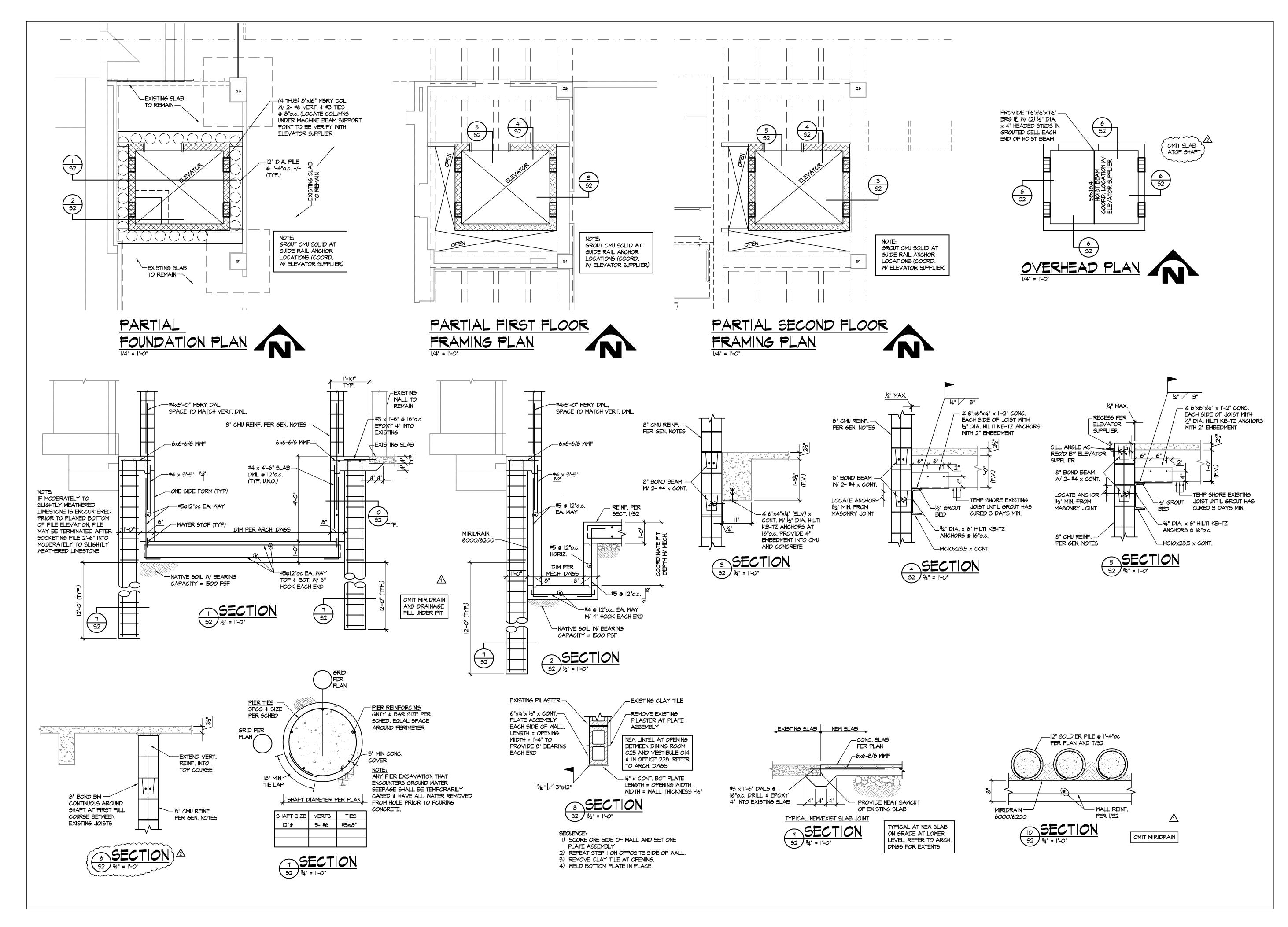
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RICHARD C. CRABTREE NUMBER E-27441

STRUCTURAL ENGINEER:

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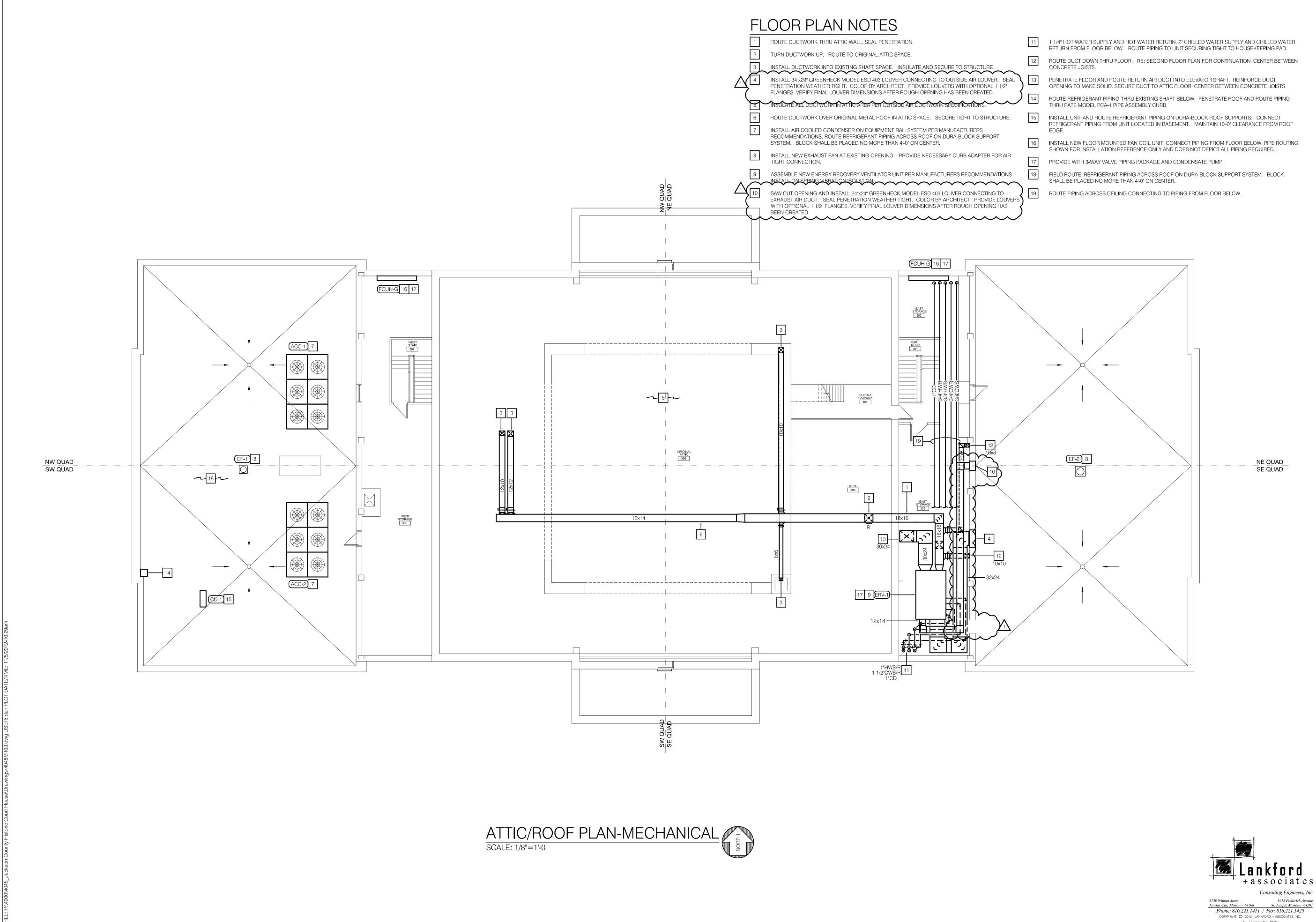
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BOB D. CAMPBELL & CO. 4338 BELLEVIEW KANSAS CITY, MISSOURI 64111 TEL. (816) 531-4144 FAX. (816) 531-8572

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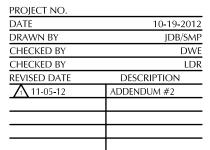
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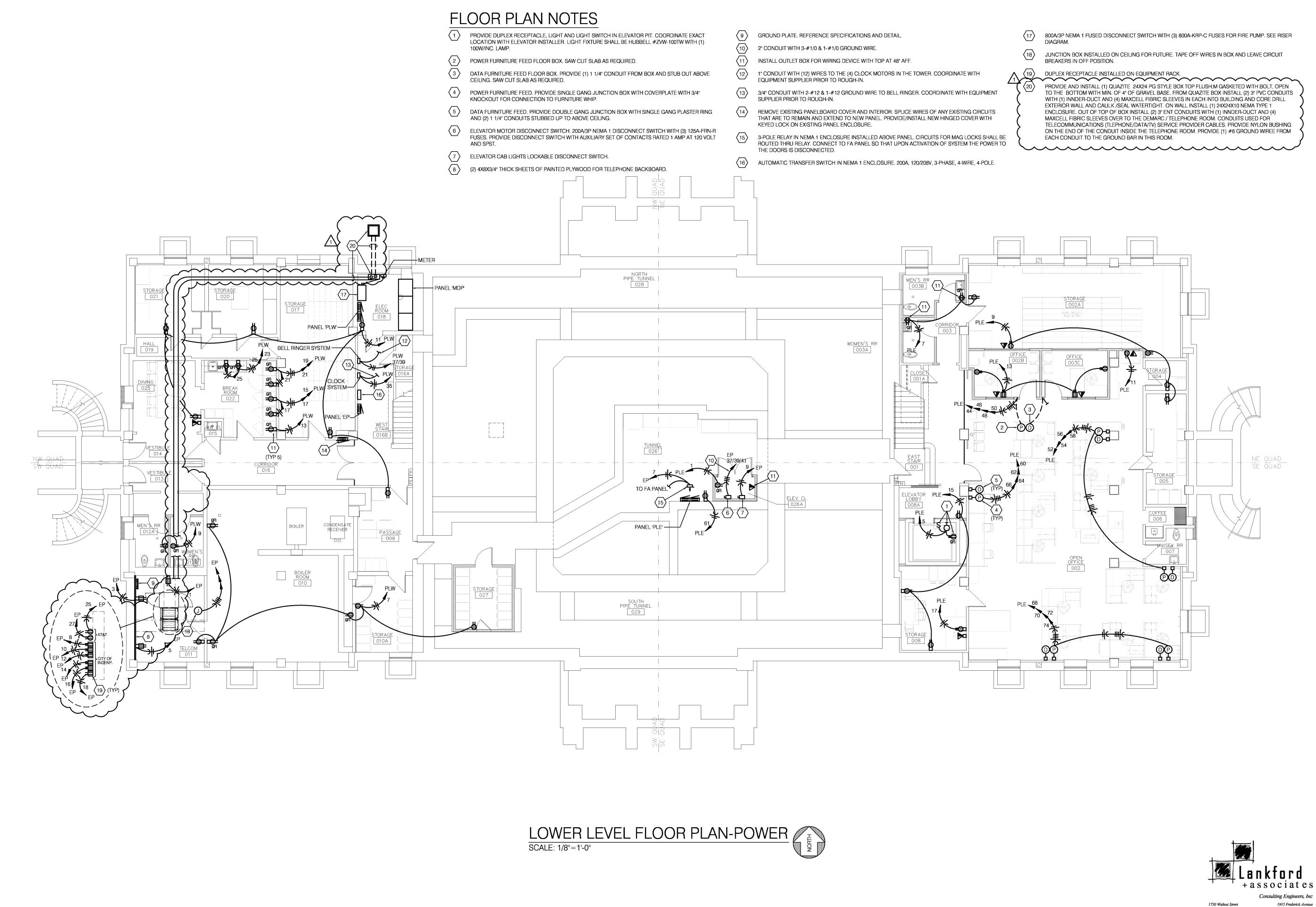
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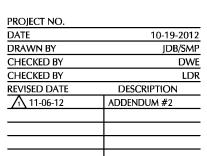
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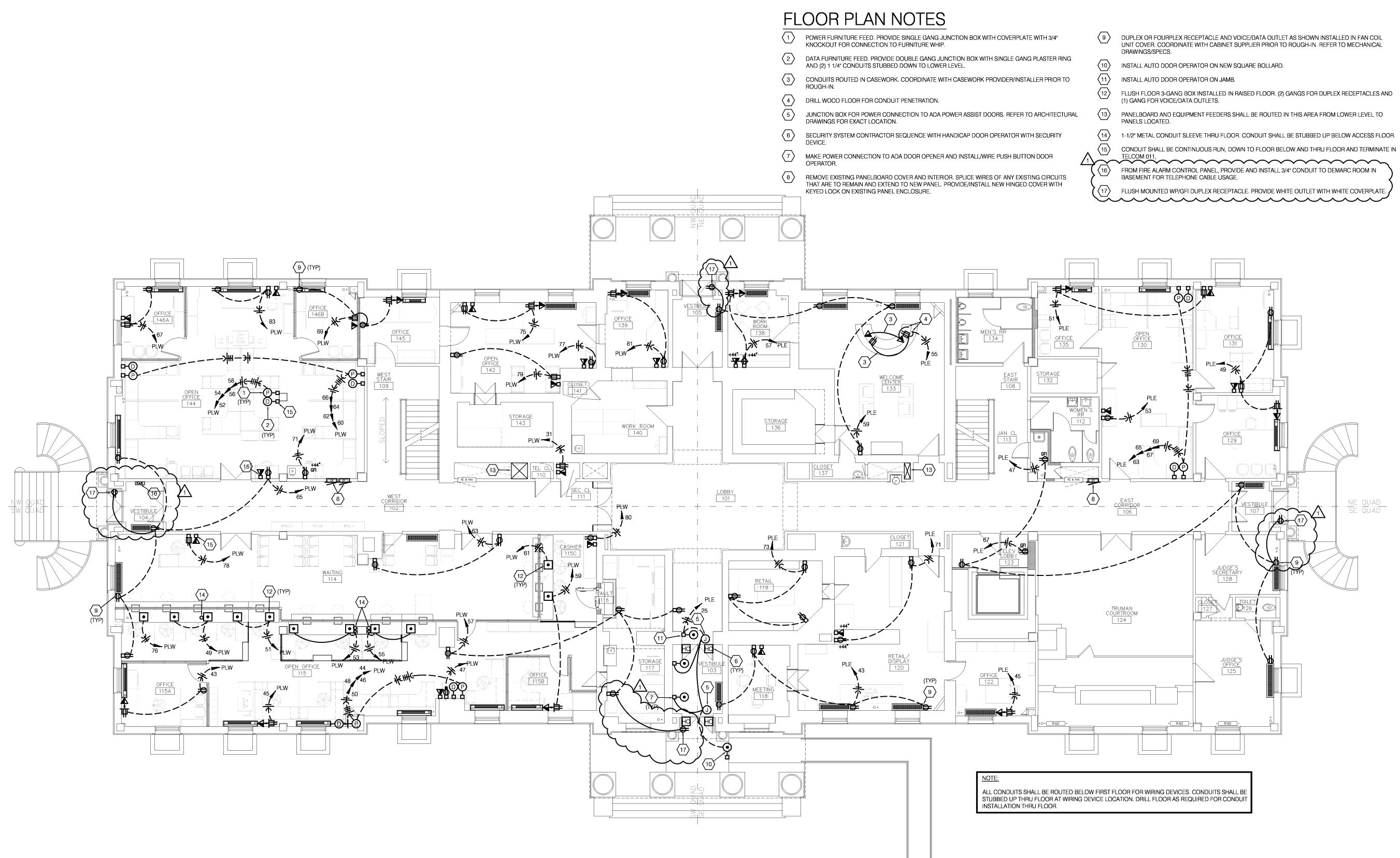
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FIRST FLOOR PLAN-POWER



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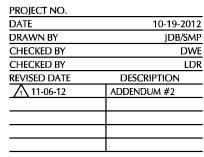
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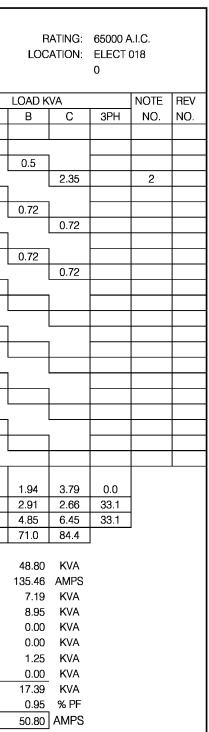
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	15.75	KVA			
	0.00	KVA			
	352.18	KVA			
	367.93	KVA			
	0.95	% PF			
	1075.1	AMPS			



GENERAL NOTES (TYPICAL ALL SHEETS)

- A. REFER TO ARCHITECTS REFLECTED CEILING PLANS FOR EXACT PLACEMENT OF LIGHT FIXTURES, SPEAKER AND F.A. DEVICES IN THE CEILING SYSTEM.
- B. PROVIDE UPDATED, TYPEWRITTEN PANELBOARD DIRECTORY FOR EACH PANELBOARD WHICH CIRCUITS HAVE BEEN ADDED TO OR MODIFIED.
- C. CONTRACTOR TO REFERENCE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING OF BRANCH CIRCUITS AND OR FEEDERS AT OR BELOW 100AMPS.
- D. SUPPORT ALL LIGHT FIXTURES WITH A MINIMUM OF (4) 12 GA. HANGER WIRES TO STRUCTURE ABOVE.
- E. CONNECT EXIT AND EMERGENCY LIGHTS TO HOT LEG, NOT SWITCH LEG.
- F. REPAIR AND/OR REPLACE ANY DAMAGED CEILING TILE OR GRID DUE TO INSTALLATION OF CONDUITS, ETC. ABOVE EXISTING CEILING. WALK BUILDING WITH ARCHITECT PRIOR TO COMMENCING WORK TO NOTE ANY EXISTING DAMAGED CEILING TILE OR GRID.
- G. LOCATE ALL IN SLAB REBAR PRIOR TO CORE DRILLING AND SHALL ADJUST CORE LOCATIONS AS TO AVOID REBAR. PROVIDE MINIMUM SPACING BETWEEN CORE DRILL LOCATIONS AS REQUIRED BY POKE THROUGH DEVICE UL LISTING. ALL CORE DRILLING AND WORK DONE BELOW FLOOR SHALL BE DONE AFTER HOURS.
- H. COORDINATE INSTALLATION REQUIREMENTS AND SCHEDULING OF ALL SYSTEM FURNITURE WITH FURNITURE INSTALLER.
- I. DISCONNECTS FOR MECHANICAL EQUIPMENT ARE PROVIDED WITH EQUIPMENT. UNLESS NOTED OTHERWISE.
- J. ALIGN ALL WIRING DEVICES IN VERTICAL ALIGNMENT. IF ANY DEVICE(S) ARE FOUND NOT TO BE INSTALLED PER DETAIL CONTRACTOR SHALL RELOCATE AND PAY ALL ASSOCIATED COSTS ASSOCIATED WITH THE RELOCATION(S).
- K. LIGHTING INDICATED ABOVE EXIT DISCHARGE DOOR IS FOR MEANS OF EGRESS ILLUMINATION PER IBC 1006.1.
- L. MEANS OF EGRESS TO BE ILLUMINATED AT NOT LESS THAN 1 FOOTCANDLE AT THE FLOOR. CONTRACTOR SHALL PROVIDE AND INSTALL IF NECESSARY ADDITIONAL EMERGENCY FIXTURES IF NECESSARY TO MEET THE REQUIRED READINGS.
- M. PROVIDE FIRE STOP ON ALL PIPING AT FLOOR PENETRATIONS PER LOCAL CODE REQUIREMENTS. METHOD OF FIRE STOP SHALL MEET WALL RATING. RE: ARCHITECTURAL DRAWINGS FOR LOCATION OF FIRE RATED WALLS. PROVIDE FIRE CAP HOUSING FOR ALL FIXTURES THAT PENETRATE FIRE RATED CEILINGS.
- N. CONDUIT SHALL BE USED FOR CONDUCTORS WHERE REQUIRED BY N.E.C.
- O. PROVIDE HOUSE KEEPING PAD FOR ALL FLOOR MOUNTED EQUIPMENT.
- P. WHERE MORE THAN ONE SWITCH IS INDICATED ON DRAWINGS SIDE BY SIDE, CONTRACTOR SHALL INSTALL SWITCHES UNDER ONE COMMON FACE PLATE.
- Q. UPON REQUEST FOR ELECTRONIC FILES, CONTRACTOR SHALL FILL OUT, SIGN AND RETURN ELECTRONIC MEDIA RELEASE FORM FROM ENGINEER AND PROVIDE PAYMENT FOR FEES STIPULATED ON ELECTRONIC MEDIA RELEASE FORM. UPON RECEIPT OF COMPLETED RELEASE FORM AND PAYMENT, ELECTRONIC FILES WILL BE RELEASED.
- R. ELECTRICAL CONTRACTOR SHALL SCAN FLOOR UTILIZING GROUND PENETRATING RADAR PRIOR TO ANY CORE DRILLING OR SAW CUTTING OF SLAB AND SHALL VERIFY PLACEMENT WITH BUILDING OWNER'S REPRESENTATIVE PRIOR TO DRILLING.
- S. CUTTING AND PATCHING OF FLOORS, WALLS, CEILING, ETC., REQUIRED IN STRICT ACCORDANCE WITH THE RULES AND REGULATIONS OF THE ARCHITECT'S SPECIFICATIONS.
- T. EACH ROOM UTILIZING A LEVITON LEVNET RF WIRELESS SWITCH OR OCCUPANCY SENSOR, PROVIDE AND INSTALL A LEVITON LEVNET RF RELAY RECEIVER ABOVE CEILING.
- U. <u>RESTRICTED ACCESS OVER CEILING AREAS:</u> APPLIED CONSTRUCTION LOADS OVER EXISTING PLASTER CEILINGS SHALL BE LIMITED TO NOT MORE THAN 175 POUNDS. THIS LOAD SHALL BE APPLIED DIRECTLY TO THE EXISTING CEILING JOISTS. NO LOAD SHALL BE PERMITTED TO BE IN DIRECT CONTACT WITH THE CEILING GRID BETWEEN JOISTS. IF LOADS IN EXCESS OF 175 POUNDS MUST BE APPLIED ABOVE THE CEILING, THE CONTRACTOR SHALL PROVIDE A TEMPORARY PLATFORM FRAMING BACK TO THE EXISTING VERTICAL STUDS THAT PRESENTLY SUPPORT THE EXISTING CEILING JOISTS. CONSTRUCTION DOCUMENTS FOR SUCH A PLATFORM SHALL BE DESIGNED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER AND SHALL BEAR HIS MISSOURI SEAL. THESE PLANS SHALL BE SUBMITTED TO THE PROJECT ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW.

BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART *

OVERCURRENT PROTECTION DEVICE RATING (AMPS)	REQUIRED CONDUCTOR SIZE	EQUIPMENT GROUNDING CONDUCTOR SIZE	SINGLE PHASE 2 WIRE + GND. CONDUIT SIZE	SINGLE PHASE 3 WIRE + GND. CONDUIT SIZE (where noted on circuit)	THREE PHASE 3 WIRE + GND. CONDUIT SIZE	THREE PHASE 4 WIRE + GND. CONDUIT SIZE (where noted on circuit)
15	12 AWG	12 AWG	3/4"	3/4"	3/4"	3/4"
20	12 AWG	12 AWG	3/4"	3/4"	3/4"	3/4"
25	10 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
30	10 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
35	8 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
40	8 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
45	6 AWG	10 AWG	3/4"	3/4"	3/4"	1"
50	6 AWG	10 AWG	3/4"	3/4"	3/4"	1"
60	4 AWG	10 AWG	1"	1"	1"	1-1/4"
70	4 AWG	8 AWG	1"	1"	1"	1-1/4"
80	3 AWG	8 AWG	1"	1-1/4"	1-1/4"	1-1/4"
90	2 AWG	8 AWG	1"	1-1/4"	1-1/4"	1-1/4"
100	1 AWG	8 AWG	1-1/4"	1-1/2"	1-1/2"	1-1/2"

* = UNLESS OTHERWISE NOTED ON THE DRAWINGS.

* = ALL CONDUCTORS SIZED ON THE POWER RISER DIAGRAM OR IN BRANCH CIRCUIT CONDUCTOR TABLE ARE BASED ON 3 CURRENT CARRYING CONDUCTORS IN A RACEWAY OR CABLE. CONDUCTORS SHALL BE DERATED IN ACCORDANCE WITH THE NEC IF 4 OR MORE CONDUCTORS ARE PLACED IN A RACEWAY OR CABLE.

ELECTRICAL SYMBOLS

,∭ ►►►	BRANCH CIRCUIT CONCEALED IN CEILING OR WALL. ARROWS INDICATE
///	HOMERUNS TO PANEL. ALL CONDUCTORS ARE MINIMUM NO.12 UNLESS NOTED OTHERWISE.
∭└────	PHASE CONDUCTORS NEUTRAL CONDUCTOR
	GROUND CONDUCTOR
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.
- 1 3	
	HOMERUN INDICATED LIKE THIS INDICATED THREE SEPARATE CIRCUITS
\$\$	CONDUIT CONCEALED IN CEILING OR WALL WITH THREE CONDUCTORS: 1-PHASE; 1-NEUTRAL; 1-GROUND WIRE, MINIMUM NO.12 WIRE UNLESS OTHERWISE SPECIFIED
	ON DRAWINGS.
	CONDUIT RUN UNDERGROUND OR CONCEALED IN FLOOR SLAB.
	GROUNDING CONDUCTOR NO.12 WIRE EXCEPT AS NOTED
🔕 or 🙀	EXIT SIGN - SINGLE FACED - ARROWS AS SHOWN ON DRAWING. SHADED SIDE(S)
	INDICATES FACE SIDE(S) OF EXIT.
	EXIT SIGN - DOUBLE FACED - ARROWS AS SHOWN ON DRAWING. SHADED SIDE(S)
	INDICATES FACE SIDE(S) OF EXIT.
	FLUORESCENT LIGHT FIXTURE, LETTER DENOTES FIXTURE TYPE
	FLUORESCENT LIGHT FIXTURE ON EMERGENCY POWER OR WITH INTEGRAL
	EMERGENCY BALLAST, REFER TO FIXTURE SCHEDULE FOR TYPE
⊢⊶	FLUORESCENT STRIP FIXTURE
O OR O	WALL WASH OR RECESSED CEILING LIGHT FIXTURE
Ŷ┯┯	WALL MOUNTED LIGHT FIXTURE, SIZE AND TYPE AS NOTED
×	PENDANT MOUNTED LIGHT FIXTURE, SIZE AND TYPE AS NOTED
	TRACK LIGHTING, SIZE AND TYPE AS NOTED
• •	INDIRECT/DIRECT LIGHT FIXTURE, SIZE AND TYPE AS NOTED
	208Y/120V OR 120/240V PANELBOARD (SURFACE) TOP MOUNTED 6'-0" AFF
ŀ	GROUND
•	POWER CONNECTION POINT
S	SINGLE POLE SWITCH. +4'-0" AFF TO CENTERLINE OF DEVICE BOX
S ^{W1}	
5	WIRELESS SINGLE ROCKER SWITCH. LEVITON LEVNET RF DECORA SELF- POWERED SWITCH. +4'-0" AFF TO CETNERLINE OF SWITCH
MS ₁	CEILING MOUNTED OCCUPANCY SENSOR. LEVITON DUAL TECHNOLOGY, 1500 SF
	COVERAGE.
MS_2	CEILING MOUNTED WIRELESS OCCUPANCY SENSOR. LEVITON WSCO4-IRW, 450 SF COVERAGE.
MS ₃	CEILING MOUNTED WIRELESS OCCUPANCY SENSOR. LEVITON WSCO4-IRW, 1500 SF
	COVERAGE.
ф	DUPLEX RECEPTACLE. +1'-6" AFF OR AS NOTED
⊕	DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP
₩P	GFI DUPLEX RECEPTACLE WITH WEATHERPROOF PLATE. HEIGHT AS NOTED.
∬GFI	DUPLEX RECEPTACLE W/GROUND FAULT PROTECTION.
Ψ	+1'-6" AFF OR AS NOTED
Щ	DOUBLE DUPLEX RECEPTACLE. +1'-6" AFF OR AS NOTED
•	SQUARE RECESSED FLUSH FLOOR BOX WITH TYPE INDICATED. SEE SPECS.
4	
	LOW VOLTAGE OUTLET, DOUBLE GANG BOX WITH SINGLE GANG PLASTER RING. INSTALL 1" CONDUIT STUBBED UP OUT OF TOP OF BOX TO ABOVE AN ACCESSIBLE
	CEILING. +1'-6" AFF OR AS NOTED.
4	LOW VOLTAGE OUTLET, DOUBLE GANG BOX WITH SINGLE GANG PLASTER RING. INSTALL 1" CONDUIT STUBBED UP OUT OF TOP OF BOX TO ABOVE AN ACCESSIBLE
	CEILING. +1'-6" AFF OR AS NOTED.
FSD	FIRE AND SMOKE DAMPER 120V, 1Ø, CONNECT TO FA SYSTEM
HCR	CARD READER. PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG PLASTER RING
	WITH 3/4"C STUBBED UP INSIDE WALL AND OUT TO ACCESSIBLE CEILING WITH BUSHING ON THE END. +3'-10" AFF OR AS NOTED.
HC	HANDICAP DOOR OPERATOR
_	
DC	INDOOR DOOR CONTACT (FLUSH MOUNTD)
RX	REQUEST TO EXIT MOTION SENSOR
ES	ELECTRIC STRIKE
\bigtriangleup	MAG-LOCK
	FIXED CAMERA
P	FIRE RATED THRU FLOOR POKE THRU DEVICE, FURNITURE POWER FEED. TYPE AS
\bigcirc	NOTED ON DRAWINGS.
D	FIRE RATED THRU FLOOR POKE THRU DEVICE, FURNITURE DATA FEED. TYPE AS
0	NOTED ON DRAWINGS.
нP	FURNITURE POWER FEED. WALL MOUNTED SINGLE GANG J-BOX WITH 1" CONDUIT UP TO ABOVE ACCESSIBLE CEILING. +1'-6" AFF OR AS NOTED.
FD	FURNITURE DATA FEED. WALL MOUNTED DOUBLE GANG J-BOX WITH DOUBLE
	GANG PLASTER RING. INSTALL (2) 1-1/4"C, STUBBED UP OUT OF BOX TO ABOVE
	ACCESSIBLE CEILING FOR COMMUNICATION CABLES. +1'-6" AFF OR AS NOTED.
	INDICATES WIRING DEVICE ABOVE RE: DRAWING
+4'-0"	HEIGHT TO CENTERLINE OF OUTLET BOX ABOVE FINISHED FLOOR
AFF	ABOVE FINISH FLOOR
ETR	EXISTING TO REMAIN
ACC-1	AIR COOLED CONDENSOR UNIT AND NUMBER
ERV-1	ENERGY RECOVERY VENTILATOR UNIT AND NUMBER
HWP-1	HOT WATER PUMP AND NUMBER
FCU-1	FAN COIL UNIT AND NUMBER
CWP-1	
CH-1	CHILLER UNIT AND NUMBER
EF-1	EXHAUST FAN AND NUMBER
AFF	ABOVE FINISH FLOOR
ETR	EXISTING TO REMAIN + a sociates
	Consulting Engineers, Inc 1730 Walnut Street 1915 Frederick Avenue
	Kansas City, Missouri 64108 St. Joseph, Missouri 64501 Phone: 816.221.1411 / Fax: 816.221.1429
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MECH / PLUMB / ELECTRICAL ENGINEER: LANKFORD + associates

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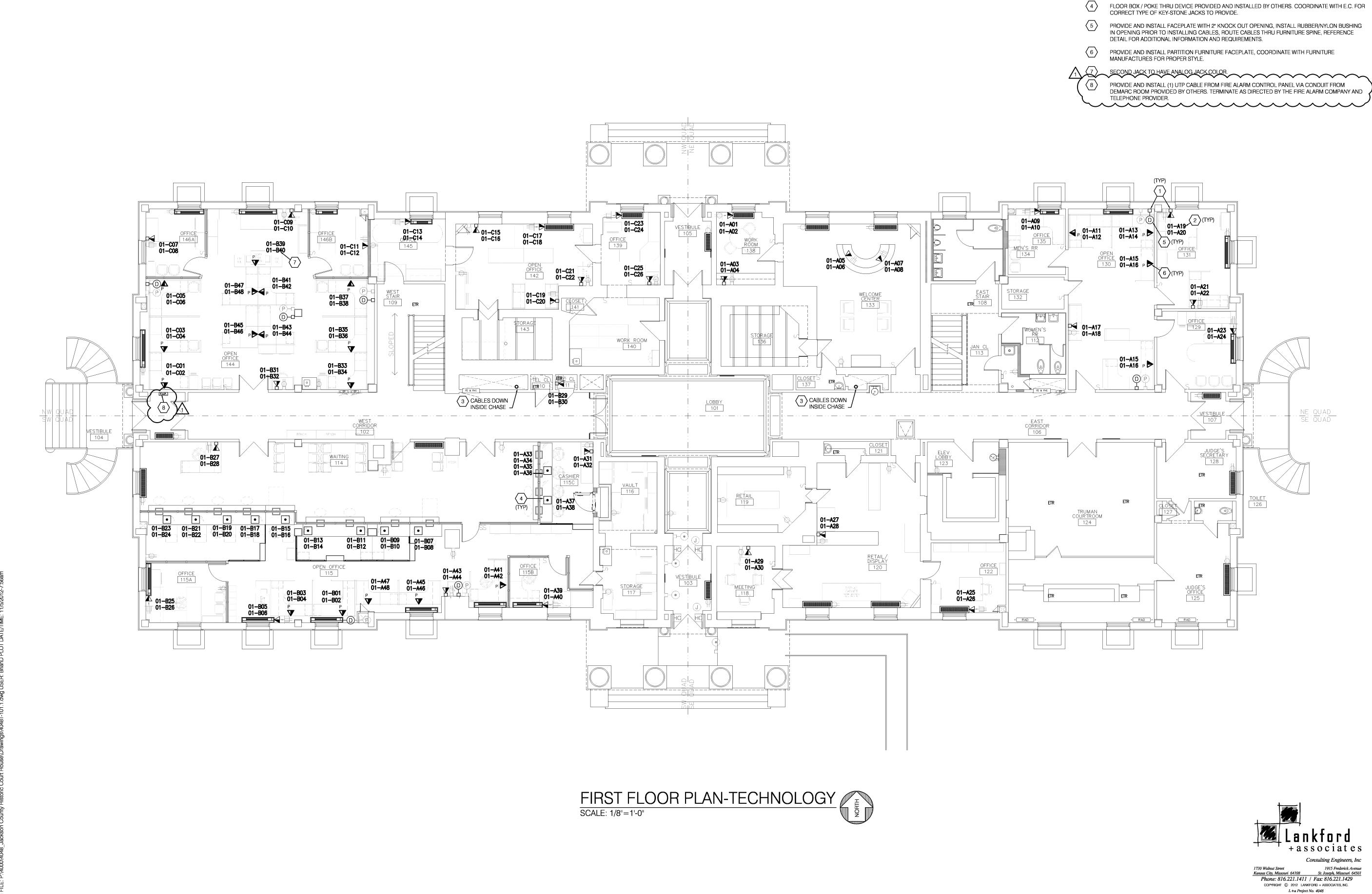
ISSUED FOR CONSTRUCTION

PROJECT NO.	
DATE	10-19-2012
DRAWN BY	JDB/SMP
CHECKED BY	DWE
CHECKED BY	LDR
REVISED DATE	DESCRIPTION
11-06-12	ADDENDUM #2
SHEET TITLE &	& NUMBER

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E-502

L+a Project No. 4048



FLOOR PLAN NOTES

 $\langle 1 \rangle$ ROUGH-IN AND WIREMOLD STUBBED UP FROM FLOOR BELOW INSTALLED BY E.C. PROVIDE FACEPLATE AND JACKS PER SPECIFICATIONS.

 $\langle 2 \rangle$ CABLE ID NUMBER TO EACH WORKSTATION.

3 ROUTE CABLES U AND DOWN WITH IN EXISTING CHASE AS REQUIRED. SUPPORT CABLES AND REQUIRED.

DEMARC ROOM PROVIDED BY OTHERS. TERMINATE AS DIRECTED BY THE FIRE ALARM COMPANY AND

L+a Project No. 4048

MECH / PLUMB / ELECTRICAL ENGINEER:

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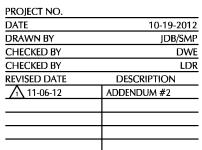
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HISTOR

ISSUED FOR CONSTRUCTION



SHEET TITLE & NUMBER

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