



3000 E GRAND AVE, DES MOINES, IA 50317

OWNER:

ARCHITECT

STRUCTURAL ENGINEERING

MECHANICAL and ELECTRICAL ENGINEERING

H. Finish Protection & Closeout

1. Protect all installed finishes from damage by other trades using kraft paper, hardboard, or manufacturer-approved materials. Provide temporary coverings over floors during construction; remove protection only at substantial completion.
2. Clean all finished surfaces before substantial completion per manufacturer's recommendations. Remove all adhesive residue, paint overspray, and construction debris.
3. Provide touch-up of all finish materials as project completion. Replace any damaged, stained, or defective materials in-kind before substantial completion.
4. Provide attic stock of each finish material unless specs require more: resilient flooring 3% of each type; paint one full sealed labeled gallon of each color and sheen.
5. Provide the Owner with maintenance instructions and manufacturer's warranty documentation for all finish materials at project closeout.

I. Plastic Paneling (FRP)

1. Glass-fiber-reinforced plastic (FRP) wall paneling shall comply with ASTM D5316, be USDA-accepted for residential food contact, and carry the schedule finish rating. FRP shall be used at cooking areas or within the limits of a 2' minimum clear space. Provide stainless steel wall panels at those locations (see part 8, article D). Provide gelcoat or textured finish and FRP laminated to substrate where indicated. FRP ceiling panels shall be Class A rated with tongue-and-groove edges where scheduled.
2. Surface-burning characteristics shall be tested per ASTM E84 with a flame-spread index of 25 or less and a smoke-developed index of 450 or less, provide products bearing the markings of a qualified testing agency.
3. Provide the manufacturer's standard one-piece vinyl trim—division bars, inside and outside corners, and caps—to re-train and conceal panel edges. Seal joints with mildew-resistant, single-component, neutral-curing silicone sealant recommended by the panel manufacturer.
4. Clean substrates of oil, grease, dirt, and dust before installation and condition panels in the installation space per the manufacturer. Lay out panels so panels at the ends of walls are min. half the width of a full panel.
5. Install panels in a full spread of adhesive; install trim accessories with adhesive and do not fasten through panels. Fill trim grooves and bed inside-corner trim in sealant, maintain a uniform sealed finish space at wall futures, and remove excess sealant and smears as work proceeds.

L. Aluminum-Framed Entrances & Storefronts

1. Provide aluminum-framed entrances and storefronts where scheduled, installed by a firm with min. two years' experience. Submit shop drawings, product data, certificate of compliance, and closeout O&M data.
2. Provide site-and-rail aluminum sections (ASTM B211 extrusions) of 2" nominal thickness, with galvanized-steel track, head, jamb, and sill weatherstripping, and tempered glassed lights where scheduled. Finish: clear anodized, AAMA 611 Class I, AA-M122224A1.
3. Provide an electric operator operated by the door manufacturer for the door size, weight, and cycle life, operating at approximately 12 inches per second, with a 24 VAC push-button station marked OPEN, CLOSE, and STOP. Coordinate power and controls with the electrical drawings.
4. Provide a lock with electric interface, an electro-mechanical bottom safety edge, and a non-contact photoelectric sensor that reverses the door on obstruction. Provide the manufacturer's warranty of min. two years or 10,000 cycles, and install per the manufacturer's instructions and shop drawings.

1. Provide the manufacturer's instructions and shop drawings within these tolerances: plumb and level not exceeding 1/8" in 3'-0" (1/4" in 10'-0"); member end-to-end misalignment not exceeding 1/32" and a 1/2" (± 1/8") sealant joint between the system and adjacent construction.

PART 6 — FINISHES

A. General

1. All new materials and finishes shall be free of flaws and defects, new and first-quality, and installed per manufacturer's instructions and the applicable specification section.
 2. Where a finish is not indicated for a surface, match the adjacent or predominant finish of that space unless otherwise directed by the Architect.
 3. Verify all dimensions, room locations, and finish boundaries in the field before ordering materials. Notify the Architect and Owner of any discrepancy before proceeding.
 4. Examine all surfaces and substrates before starting work. Do not proceed over defective, wet, or contaminated surfaces. Finishes applied over uncorrected defects are the contractor's responsibility and shall be redone at no additional cost.
 5. All finish materials of the same type and color shall be from the same manufacturer and dye lot. Verify quantities and order sufficient material before commencing work.
- B. Coordination & Environmental Conditions**
1. Coordinate finish installation sequence with all trades to avoid damage to completed work. Notify the general construction contract of scheduling conflicts before proceeding.
 2. Do not begin finish installation until the building is enclosed, HVAC is operational, and ambient conditions meet manufacturer requirements for temperature and humidity.
 3. Maintain interior temperatures between 55°F and 95°F and relative humidity between 20% and 65% during and after installation of all finish materials unless the manufacturer requires stricter conditions. See article D for paint-specific limits.

C. Surface Preparation

1. Prepare all surfaces as required for each finish, including patching, sanding, priming, sealing, skim coating, and floor leveling as applicable.
 2. Patch and repair the floor slab to produce a smooth, level surface free of cracks, holes, and depressions, using materials compatible with the slab and approved by the flooring manufacturer.
 3. Finish gypsum board to the level required for the scheduled finish per GA-214, grade 4 standard for maximum in CMU; T-tap or 2-clip anchors at steel or wood stud walls; existing construction anchors where frames are installed in existing openings.
 4. Apply field touch-up paint to match factory primer at all walls, scratches, field modifications, and damaged primer locations before finish painting.
- D. Paint & Coatings**
1. Apply all paint and coatings per manufacturer's instructions for surface type, temperature, humidity, and number of coats. Minimum: one primer coat and two finish coats U.N.O.
 2. Paint all gullies, extruder/gutter cabinets, exposed ductwork, and miscellaneous surfaces with a rust-inhibiting metal primer compatible with the finish coats, and touch-up damaged factory shop primer.
 3. Paint surface on which they occur unless factory-finished or otherwise noted.
 4. Surface sheen as scheduled, where not scheduled: ceilings flat; walls eggshell or satin (semi-gloss at wet areas); trim, doors, and frames semi-gloss; casework semi-gloss or satin per schedule.
 5. Provide clean, sharp paint lines at all color or sheen changes. Apply painter's tape and remove it before paint fully cures. Touch up all edges and holidays after tape removal.
 6. Maintain ambient temperature between 65°F and 95°F and relative humidity below 85% during application and drying. Do not apply paint wet or damp surfaces.

E. Painting of Hollow Metal Doors & Frames

1. Paint all interior hollow metal doors and frames as scheduled. Prepare, prime, and finish per the general paint and coatings requirements (see article D) and the paint manufacturer's instructions for ferrous metal substrates.
2. Clean all hollow metal surfaces of dirt, grease, oil, and lightly abraded glossy shop primer to promote adhesion. Remove rust and spot-prime all bare metal, welds, abrasions, and field modifications with a rust-inhibiting metal primer compatible with the finish coats, and touch-up damaged factory shop primer.
3. Apply one primer coat where not factory-primed or where the shop primer is incompatible, and min. two finish coats of semi-gloss alkali or acrylic enamel (as per schedule), to be uniform, fully covered, smooth free of runs, sags, brush marks, and holidays.
4. Paint door faces, top and bottom edges, and exposed mortise edges; do not paint over labels, gaskets, weatherstripping, or finish hardware. Remove or mask hardware as required and install after finishing.
5. Coordinate color and sheen with the finish schedule, where not scheduled, provide semi-gloss in the color selected by the Architect. Touch up or re/finish damaged or marred coatings before substantial completion.

F. Flooring

1. Verify that slab moisture content and pH are within the flooring manufacturer's acceptable range before installation. Provide written test results to the general construction contract. Do not proceed until substrate conditions are approved.
2. Floor finishes shall provide slip resistance per the use and occupancy, tested per ANSI A326.3 (BOT-3000E or approved tribometer); submit wet DCOF data for Architect approval before ordering. Minimum wet DCOF: 0.42 at driving corridors, and general interior level surfaces; 0.55 at commercial kitchens, foot prep, dishwashing, walk-ins, and grease, oil, or standing-water areas (NSF-accepted high-traction product). Verify field DCOF where required by the AHJ. Owner, or insurer, replace flooring that fails at no additional cost.
3. Provide transitions and thresholds at all changes in flooring material, appropriate to the height differential and adjacent materials as indicated in the finish schedule. All thresholds shall comply with ADA 1/2" high maximum, beveled at 1/2" where over 1/4" high.
4. At commercial kitchens, food-preparation, dishwashing, walk-in, and wet areas where scheduled, provide a resilient urethane-former (cementitious urethane) floor system. Basis of design: Du-R-Flex Poly-Crete MDB (or approved equal), a seamless, nonmetal 1/4", 100 percent solids, self-priming cementitious urethane system with quartz aggregate broadcast to nominal resistance, meeting the wet DCOF standard. Coefficient of thermal expansion similar to concrete for resistance to thermal shock; body color, moisture-inhibiting and suitable over damp or green concrete. System shall follow NSF, ADA, USDA, FDA, and OSHA guidelines.
5. Topcoat: Poly-Crete TP Plus, matte finish. Poly-Crete MD, MDB, SLB, and HF systems and the Poly-Crete TP Plus topcoat feature a matte finish. Poly-Crete Color Fast topcoat features a semi-gloss finish and UV stability for color retention, and may be used where scheduled or where the floor is exposed to natural or overhead light. Certain-Cole Fast-colors require a greater coat of Poly-Crete TP Plus for consistent color. Do not apply Color-Fast thinner than 10 mils or thicker than 30 mils, or at relative humidity above 85 percent. Submit color samples for Owner selection.
6. Integral cover base: provide at wall, column, curb, and equipment pedestal junctions in areas receiving resilient flooring. Form the cover monolithically with the floor system—no seam or joint at the floor-to-wall junction—be it in place with a 3/4" minimum radius, using Poly-Crete TP Plus or the manufacturer's standard cover material. Taper the cover material to the floor system at a 1:1 slope or termination bar set in place. Provide a rigid, non-gypsum substrate behind the full height of the cover. Coordinate the substrate with the general construction contract.
7. Install the resilient flooring by a manufacturer-certified applicator per the manufacturer's instructions, over a substrate mechanically attached to the required concrete surface profile. Comply with the manufacturer's moisture-tolerance, thickness, thermal-shock, and chemical-resistance requirements; provide termination, drain, and transition details; and seal all penetrations waterproofly. System shall be USDA /FDA-acceptable for food areas; provide antimicrobial additive where specified.

G. Wall Finishes

1. Install wall protection, corner guards, and chair rails at locations indicated on the finish schedule. Provide stainless steel corner guards at all exposed corners in high-traffic areas as shown on Drawings. Height of guards to be 45" ± 1/4".
2. Install wall covering per manufacturer's instructions with seams aligned to pattern and plumb. Provide mold-resistant adhesive at kitchens, break rooms, and areas subject to moisture.

H. Profiled Resilient Wall Base

1. Basis of design: **Roggs Corporation® Profiled Wall Base**, Vertical RES (PV4065), 4-5/8" x 3/8", 8' lengths. Provide profiled thermoplastic-rubber (TPR) base, ASTM F1811 Type TP, satin finish, color from manufacturer's range.
2. Provide matching molded resilient baseboards at corners (1/4" taller than 1/2" base), adhere with manufacturer's wall-base adhesive.
3. Install light foot and wall with futes vertical and plumb; scribe to fit condition materials and area to 65° min. for 48 hr.

P. Solid Surfacing Countertops

1. Basis of design: **Wilsonart® Solid Surface**. Provide homogeneous acrylic solid-surface countertops with integral/undermount sinks, cover or applied backsplashes, and built-up edges; 1/2" nominal.
2. Non-porous, renewable and repairable; ASTM E64 Class A (GREENGUARD), certified to NSF/ANSI 51 in food-service applications.
3. Fabricate by a manufacturer-certified fabricator with inconspicuous, chemically-resistant seams. Finishing and setting are by the Owner's own forces; provide continuous perimeter support and bracket reinforcement (see Countertop Support Brackets).
4. Clean with mild soap and water; not intended for direct high-heat contact—provide trivets / heat protection.

PART 7 — REFLECTED CEILING PLAN

A. General

1. Compare the RCP with electrical lighting, mechanical supply / return / exhaust, plumbing, and fire-protection plans. Report any omission or inconsistency to the Architect before installation.
2. RCP locations of all ceiling-mounted devices—lights, diffusers, grilles, sprinklers, smoke detectors, speakers, fire alarm devices, and exit signs—take precedence over MEP plans for aesthetic placement. Coordinate exact locations. See electrical drawings for device locations.

4. Brace and laterally support partitions to the structure above per the wall-type schedule and structural drawings. Extend fire-rated, smoke, sound-rated, and full-height partitions to the deck and seal the joint between assembly; partitions indicated to stop above the ceiling shall be braced at the required spacing.
5. Provide additional studs, jamb studs, and headers at door and borrowed-light openings, and provide in-situ blocking, backing, and reinforcing the openings to working hours, working days, crew sizes, and equipment by which compliance will be required and the date recovery will be achieved.
6. Comply with all applicable federal, state, and local codes, including OSHA 29 CFR 1926 subpart T, EPA regulations, ANSI A10.6, and NFPA 241.
7. Confirm construction to the indicated site boundary. The contractor is responsible for all damage to adjacent properties at no cost to the Owner.
8. Prior to demolition, submit photographic / video documentation of existing conditions within the project area and affected adjacent properties to the Architect and Owner.
9. Where work is adjacent to existing structures or occupied spaces, conduct a pre-condition survey and provide vibration monitoring during impact, percussion, or heavy-equipment operations. Perform demolition during working hours permitted by the Owner.

G. Gypsum Board

1. Provide gypsum board and installation per GA-216 and ASTM C840, of the type and thickness indicated on the wall-type schedule. Where not indicated, provide 5/8" Type X board at partitions and ceilings, and match the board type and thickness of fire-rated and existing assemblies.
2. Provide moisture- and mold-resistant gypsum board (ASTM C1396) at food-service wet walls and ceilings subject to humidity, food storage, or impact-resistant board (ASTM C1629) at high-traffic and back-house locations where indicated.
3. Provide 5/8" cement board in lieu of gypsum board where scheduled on the Drawings—Durac Brand Cement Board by USG or equal, ASTM C1325—including as described for wall tile in wet and splash areas and at the standing-water and wet-cleaned locations substrate in this article. Install per ASTM A105.11 and the manufacturer's instructions, with corrosion-resistant screws, and treat joints with alkali-resistant mesh tape set in the lute-setting mortar.
4. Construct fire-resistance-rated assemblies to match the listed UL or GA design indicated on the wall-type schedule, including board layers, fastener type and spacing, and joint treatment. Do not substitute board type, fastener pattern, or components that would void the rating.
5. Fasten gypsum board per GA-216 with screws of the type and spacing required for the assembly. Flatten ends and joints, offset joints on opposite faces and between layers, install ends and edges over framing unless back-blocked, and do not bridge control joints with board.
6. Tape, fill, and finish joints, corners, and fasteners to the scheduled finish level per GA-214 (see part 6). Provide corner bead, casing and trim beads at transitions, and control joints per GA-216 (see article C).
7. Provide acoustic sealed and full-perimeter sealed at sound-rated partitions, and seal penetrations and perimeters at draft, smoke, and exterior assemblies. Hold gypsum board min. 1/4" above floor slabs and out of standing-water and wet-cleaned areas; use cementitious or non-absorptive materials at those locations.

H. Protection & Safety

1. Provide barricades, fencing, covered walkways, warning signs, and protective measures to protect the public, occupants, and workers. Maintain unobstructed egress at all times.
2. Protect all work, equipment, finishes, and building elements to remain. Repair any damage to work at no cost to the Owner, to the Architect's satisfaction.
3. Provide shoring, bracing, and structural supports to prevent movement, settlement, or collapse of construction to remain and uncontrolled collapse of construction being demolished. Shoring design shall be stamped by a licensed structural engineer where required.
4. Provide dust control throughout demolition. Wet-cut masonry and concrete where practicable. Provide dust barriers between work areas and occupied or clean spaces. Remove debris from public spaces at the end of each workday.

I. Hazardous Materials

1. The Owner shall provide a hazardous materials survey before demolition. If provided, notify the Architect in writing and do not proceed until the survey is received and reviewed.
2. If suspected hazardous materials not identified in the survey are encountered (ACM, PCB, mercury devices, USTs, etc.), immediately stop work in the affected area and notify the Architect and Owner in writing.
3. Recover refrigerants from all refrigeration, air, walk-ins, and ice machines per 40 CFR part 62 by an EPA section 608 certified technician. Submit recovery records to the Owner before equipment disposal.

J. Utilities

1. Coordinate with the Owner and utility companies to identify, cap, disconnect, and de-energize all utilities serving the project areas before commencing work. Identify, mark, and protect existing utilities, piping, conduit, and structural elements to remain in service.
2. Coordinate detection or bypass if fire alarm, sprinkler, and security systems with the Owner, monitoring systems, and fire department. Provide a fire watch and notify the AHJ when fire detection or suppression systems are out of service.
3. Utility capping, disconnection, and reconnection shall be performed by licensed tradespeople and inspected per AHJ requirements. Maintain temporary power, lighting, water, and utilities required for safe work and continuity of service to operation areas.

K. Selective Demolition Work

1. Make clean, true cuts at the limits of partial demolition. Saw-cut concrete and masonry; do not break beyond indicated limits.
2. Provide neat, clean terminations where new work meets existing. Patch, repair, and finish exposed surfaces to match adjacent existing construction, to the Architect's satisfaction.
3. Remove MEP systems within the demolition area as shown. Permanently cap piping, conduit, and ductwork at the nearest clean break for readywork by the manufacturer per the hardware schedule and applicable ANSI / BMA standards. Provide reinforcements in doors and frames for all specified hardware, including hinges, closers, exit devices, electric strikes, electrified hinges, and card readers.
3. Deliver min. 40 spare keys per permanent cylinder to the Owner. Deliver master and grandmaster keys directly to the Owner, not through the contractor. Deliver all construction and permanent cores in sealed, labeled containers.
4. Warranty periods from substantial completion. U.N.O.: hollow metal doors and frames 1 year; door covers 3 years; mechanical closers and exit devices lifetime limited.

L. Hollow Metal Doors & Frames

1. All hollow metal frames shall be welded unit construction unless specifically noted as knocked down (KD). Provide the manufacturer's standard primer-coat finish.
 2. Minimum gauges shall be: interior doors (heavy-duty / high-trail) 16-gauge steel; interior frames 16-gauge steel; frames in masonry walls 12-gauge steel.
 3. Provide floor anchors at all frame jamb bases, appropriate to the wall type: wire anchors at 16" o.c.; maximum in CMU; T-tap or 2-clip anchors at steel or wood stud walls; existing construction anchors where frames are installed in existing openings.
 4. Apply field touch-up paint to match factory primer at all walls, scratches, field modifications, and damaged primer locations before finish painting.
- D. Keying & Locking**
1. All interior doors shall be master keyed under a building-wide keying system accommodating grandmaster, master, sub-master, and change-key levels as directed by the Owner. Coordinate the keying schedule with the Owner before ordering cylinders.
 2. Provide interchangeable core (IC) cylinders as adopted by the AHJ. Lockdown areas shall comply with the FEMA code and the local health department having jurisdiction.

M. Fire Prevention & Disposal

1. Provide one 2-A-10-B-C portable fire extinguisher within 35 feet of hot work and at maximum 75-foot travel intervals throughout the demolition area per NFPA 10.
2. Remove demolished materials from site regularly; do not allow accumulation. Comply with all federal, state, and local ordinances for hauling and disposal of C&D debris.

PART 4 — FLOOR PLAN & PARTITIONS

A. General

1. Verify all existing conditions, dimensions, and elevations in the field before commencing work and notify the Architect in writing of any discrepancy before proceeding. All work shall conform to the codes and standards in part 1, article C, as adopted by the AHJ. Foodservice areas shall also comply with the FDA food code and the local health department having jurisdiction.

B. Dimensions & Layout

1. Field-verify all dimensions and contact the Architect immediately with any discrepancy or missing dimension. Dimensions are taken U.N.O.: exterior walls, outside face of stud or masonry; interior partitions, centerline; concrete / masonry walls, face; door openings, centerline unless tagged with a hinge or jamb dimension; corners, centerline.
2. Establish, seal, and maintain a permanent benchmark and layout control point on-site. Reference all layout to established survey control points.
3. Gridlines shown are for reference only and correspond to the structural drawings. Locate all structural elements per the structural drawings; do not use architectural gridlines for structural layout without verification.
4. All room dimensions shown are nominal, actual dimensions vary with finish thickness. Verify adequate clearances for accessibility, equipment installation, and code compliance before rough framing. During draw-down review, verify all rough-in dimensions with subcontractors and vendors.

C. Partitions & Wall Construction

1. Provide concealed blocking, backing, or reinforcement at all wall-mounted items, including grab bars, handrails, casework, shelving, laboratory cabinets, fire extinguisher cabinets, signage, accessories, and equipment. Use minimum 3/4" plywood backing where loads exceed gypsum-board fastener capacity. Fire extinguishers and cabinets and television / display monitors are furnished and installed by the Owner; blocking and backing are by the general construction contract.
4. Provide control joints in gypsum-board partitions per GA-216—at 30'-0" on center maximum, at changes in framing or substrate, and where partitions abut dissimilar construction.

D. Protection & Cleanup

1. Protect all existing and new construction from damage. Provide temporary barricades, dust partitions, and equipment protection as required; see part 1, article H for dust-partition and AHJ controls at occupied buildings.
 2. Maintain a clean, safe job site at all times. Remove construction debris regularly and at the completion of each phase. Provide temporary closures at all openings to prevent unauthorized entry, weather infiltration, and damage.
- E. Concrete & Slab Work**
1. Saw-cut, remove, and patch the existing slab as required for new trenching, plumbing, floor drains, floor sinks, and equipment depressions. Replace patched areas flush and level with the adjacent slab using materials compatible with the scheduled floor finish (see part 6).
 2. Backfill and compact trenches and excavations in lifts to the density required to support the slab and finishes. Provide a vapor retarder beneath new interior slabs on-grade, and provide reinforcement, dowels, and slab thickness per the structural drawings.
 3. Provide concrete curbwork and housekeeping drains where indicated, sized and reinforced per the equipment and structural drawings and sloped to floor drains where required (see part 6 for kitchen equipment pads).
 4. Provide saw-cut control and contraction joints in new slabs as indicated or as required for control cracking. Match the thickness, finish, and elevation of adjacent existing concrete, and coordinate all setbacks, sleeves, and details with the MEP and foodservice drawings before placement. Finish, cure, and seal concrete per the specifications.

F. Metal Framing

1. Provide cold-formed (light-gauge) steel framing for interior non-load-bearing partitions and furring per ASTM C845, extend beyond the ASTM C754, of the gauge, depth, and spacing indicated on the wall-type schedule. Where not indicated, provide minimum 25-gauge depth at 16" on center for partitions up to 10'-0" high; provide heavier gauge or closer spacing for taller partitions and where required to meet the demolition limit.
2. Limit partition framing deflection to L/240 for gypsum-board finishes and L/360 where rigid finishes occur, under the applicable lateral load. Where structural, load-bearing, or exterior cold-formed framing is indicated, provide 1 per ASTM C555 and the structural drawings.
3. Anchor runner tracks to the floor and structure with fasteners appropriate to the substrate at 24" on center maximum and within 2" of each end. Provide a deflection (gap) track or other approved detail at the head of full-height and fire-rated partitions to allow vertical structural movement without loading the partition.

PART 3 — SELECTIVE DEMOLITION

A. General

1. Examine existing conditions before bid. No additional compensation will be allowed for conditions discoverable by site investigation. Notify the Architect immediately of conditions materially differing from the drawings.

less than one week before each progress meeting. Each other Contract shall furnish its schedule information in accordance with Article 14 of Section 01 12 00.

3. "Remove" means remove and legally dispose of off-site unless noted "Remove and salvage" or "Remove and relocate." Demolished materials become the contractor's property and shall be disposed of per applicable regulations in the U.N.O.
4. Comply with all applicable federal, state, and local codes, including OSHA 29 CFR 1926 subpart T, EPA regulations, ANSI A10.6, and NFPA 241.
5. Confirm construction to the indicated site boundary. The contractor is responsible for all damage to adjacent properties at no cost to the Owner.
6. Prior to demolition, submit photographic / video documentation of existing conditions within the project area and affected adjacent properties to the Architect and Owner.
7. Where work is adjacent to existing structures or occupied spaces, conduct a pre-condition survey and provide vibration monitoring during impact, percussion, or heavy-equipment operations. Perform demolition during working hours permitted by the Owner.

K. Quality Assurance & Testing

1. Each standard or set of test methods and standards are part of the contract documents. Use the latest edition of each standard as of the date of the project manual, including supplements and amendments.
2. The Owner will employ and pay an independent testing laboratory to perform specified inspections, sampling, and testing. Cooperate with the laboratory, provide access to the work, and schedule tests to coordinate with construction progress; employment of the laboratory does not relieve the contractor of the obligation to perform the work per the contract documents and requirements.
3. The laboratory will report results to the Owner, Architect, and contractor electronically in PDF within 7 days of each test and notify all parties of irregularities or deficiencies. The laboratory is not authorized to notify contract requirements, approve any portion of the work, or perform the duties of the contractor.

L. Product Requirements

1. Incorporate only products that comply with the specified requirements unless a substitution has been approved by the Architect. Do not use products for purposes other than those for which they were designed, and do not use materials containing asbestos or other known hazardous materials.
2. Deliver products in the manufacturer's original, undamaged, labeled containers; store and handle per the manufacturer's instructions; and coordinate delivery with the construction schedule. Do not reuse materials or equipment removed from existing construction unless specifically directed.
3. Product selection by specification method: reference standard—any product meeting the standard; two or more named products—any named product; named product with "or approved equal"—submit a substitution request for any unused product; named product with "substitutions not permitted"—no substitution allowed; performance or attribute described without a named product—any product meeting the requirements. Submit product data to substantiate compliance.

M. Work Restrictions & Temporary Controls

1. Do not interrupt utilities serving occupied facilities except under approved conditions. Notify the Owner min. two days in advance of any utility interruption or of operations producing high levels of noise, vibration, dust, or odor, obtain the Owner's written permission before proceeding, and provide temporary services during interruptions.
2. Smoking is prohibited within the building and within 25 feet of entrances, operable windows, and outdoor air intakes. Use of tobacco products and controlled substances on the project site is not permitted.
3. Provide identification tags for all contractor personnel and comply with the Owner's drug- and background-screening requirements; maintain a list of approved screened personnel with the Owner's representative.
4. Provide temporary lighting of min. five foot-candles throughout construction areas. Prevent the formation of mold and mildew on interior surfaces and materials, promptly removing and replacing affected materials. Deposit waste and demolition materials in the shared waste containers provided under the general construction contract, and remove debris from the work areas daily. Hazardous, dangerous, unsanitary, or other harmful waste materials shall be collected and legally disposed of by the Contractor, generating them, at all Contract's expense. Refer to Article 15 of Section 01 12 00. Project signs are prohibited.

N. Mechanical, Electrical, Plumbing & Fire Protection

1. Mechanical, electrical, plumbing, fire-protection, and fire-alarm systems are designed by a separate MEP engineer under separate drawings and specifications. See the MEP drawings and specifications for the full scope, schedule, piping, connections, devices, and commissioning of those systems. Architectural drawings and specifications are diagrammatic for MEP work and govern only the aesthetic placement of visible devices per part 7.
2. Coordinate all MEP rough-in, penetrations, sleeves, blocking and backing, equipment connections, and access and maintenance clearances with the MEP drawings and the foodservice equipment schedule before proceeding. Notify the Architect and MEP engineer of any conflict before proceeding.
3. The existing building is protected by an automatic fire sprinkler system. Modify and extend the existing system and relocate sprinkler heads to suit the new ceiling and partition layout per the MEP / fire-protection engineer's drawings and NFPA 13, by a licensed fire-protection contractor as a deferred submital. Maintain sprinkler coverage during construction, coordinate any required shutdown with the Owner, AHJ, and provide a fire watch while the system is impaired.
4. Commissioning, testing, balancing, and closeout of all MEP and fire-protection systems shall be performed per the MEP engineer's drawings and specifications. Submit the associated reports and documentation with the project closeout submittals (see part 10).

O. Work by Owner

1. The following work is by the Owner's own forces or the Owner's separate vendors and is not included in any contract: countertops, including support brackets and seating, furnished and installed by the manufacturer; installation of wall-mounted equipment, including handrails, grab bars, and equipment; washer and dryer appliances; portable fire extinguishers and fire extinguisher cabinets; removal of existing equipment not attached to the building structure or walls, before construction; sneeze guards and food shields; employee lockers; seating and landscaping; and signage, excluding illuminated exit signage. Exit signs and emergency egress lighting are furnished and installed by the contractor. Refer to the responsibility matrices in Section 01 12 00 of the Procurement Manual for the assignment of data, telecommunications, and electrical work.

2. Each contractor shall provide the blocking, backing, rough-in, and utility connections indicated on the drawings to receive work by the Owner's forces, and shall coordinate the scheduling of that work with the Owner's representative.

PART 2 — SITEWORK

A. General

1. Provide all sitework indicated, including concrete sidewalk removal and repair, earthwork, and site utility work. Verify existing conditions and the location of existing utilities before starting work.
2. Notify Iowa One Call and have all underground utilities located and marked before any excavation. Protect existing utilities to remain and repair damage at no cost to the Owner.
3. Coordinate all sitework with the Owner. Maintain access to adjacent occupied areas, existing walkways, and drive throughout the work, and maintain accessible routes at all times.
4. Obtain all permits required for excavation, utility connection, and work within the public right-of-way.

B. Concrete Sidewalk Removal & Repair

1. Removal of existing concrete walks is included in Contract CUI 2500-3, Mechanical and Plumbing. Replacement of concrete walks is included in Contract CUI 2500-2, General Construction. Coordinate the limits, sequence, and timing of removal and replacement between the two Contracts so that walks are out of service for the shortest practical period.
2. Sawcut existing walks full depth in straight lines at the nearest joint or as indicated before removal. Do not break out beyond the sawcut line.
3. Remove and legally dispose of the existing walk, base, and reinforcement within the limits indicated.
4. Replace removed walk with concrete of min. 4,000 psi at 28 days; air-entrained 5 to 7 percent, 4" minimum over 4" of compacted granular base, matching the existing walk with texture, finish, jointing, and finish.
5. Provide a light broom finish transverse to the direction of travel, toolled edges, control joints at intervals not exceeding the walk width, and expansion joints with preformed filler at buildings, curbs, and existing walks to remain.
6. Match existing grades. Maintain running slope max. 5 percent and cross slope max. 2 percent. Limit vertical change at joints with existing walks at 1/4"; bevel changes between 1/4" and 1/2".
7. Cure per ACI 308.1 and 1 protect from traffic until the concrete has attained design strength.

8. Maintain a safe, accessible route around each removal area for the full period between removal and replacement, including barricades and temporary signage.

C. Earthwork

1. Strip and stockpile topsoil where indicated. Remove and legally dispose of unsuitable material, debris, and vegetation from areas to receive fill or paving.
2. Excavate to the lines and grades indicated. Do not excavate below the bearing elevation of existing footings. Notify the Architect if existing foundations, unknown structures, or unsuitable bearing material are encountered, and do not proceed until directed.
3. Place fill in max. 8" loose lifts and compact to min. 95 percent of maximum dry density per ASTM D698 beneath walks and paving, and 98 percent beneath compacted structures. Compaction testing by an independent testing agency as directed.
4. Provide shoring, shoring, and bracing required for the protection of work at all, adjacent construction, and existing utilities. Comply with OSHA excavation requirements.
5. Dewater excavations and keep them free of water during the work. Do not place fill, pipe, or concrete in standing water.
6. Restore all disturbed areas to the original grade, place topsoil, and provide erosion control until the Owner's landscaping is complete. Seedings and landscaping are provided by the Owner's own forces.

D. Site Utilities — Sanitary Sewer

1. Provide new sanitary sewer as indicated, including trenching, bedding, pipe, fittings, cleanouts, backfill, and connection to the existing main. Verify the location and invert elevation of the existing main before ordering materials.
2. Pipe: PVC SDR 35 per ASTM D3034 with gasketed joints unless otherwise indicated. Slope min. 1/8" per foot for 4" pipe and 1/16" per foot for 6" pipe and larger unless otherwise indicated.
3. Trenching: excavate to a width sufficient to allow compaction at the sides of the pipe. Overexcavate 6" below the pipe, place granular material, and shape the bedding to receive the pipe barrel with no excess at bed joints.
4. Backfill: place and compact granular material in 8" lifts to 12" above the top of the pipe, then backfill the remainder of the trench 8" to 15" to the compaction required for the surface above. Do not use frozen material or material containing debris or rock over 3".

5. Provide cleanouts at each change in direction, at intervals not exceeding 100 feet, and at the building connection. Extend cleanouts to finished grade with traffic-rated grates in paved areas and above ground.
6. Test the completed sewer as required by the authority having jurisdiction before backfilling to final grade. Provide record drawings showing as-built location, invert elevations, and depth of the new service.
7. Coordinate trenching and backfill at the building and to the point of connection with the plumbing work.

PART 1 — GENERAL & ADMINISTRATIVE

GENERAL NOTES & OUTLINE SPECIFICATIONS

Project description: 2,214 SF removal of an existing concessions stand in an assembly building. Work includes new walls, doors, finishes, and equipment.

Applicability: These general notes and outline specifications apply to all work under this contract unless specifically overridden by the project specifications, sheet-specific notes, schedule keynotes, or written direction from the Architect. In case of conflict, the more restrictive requirement shall govern, except that the responsibility matrices in Section 01 12 00 of the Procurement Manual govern the assignment of furnishing and installing responsibility. These notes do not relieve the contractor of any obligation imposed by code, contract, or law.

- Ceiling heights as indicated; verify in field. Coordinate with structural and MEP for clearances above all ceiling types. Maintain minimum 6" clearance between finished ceiling and underside of structure for MEP routing U.N.O.
- Unless noted otherwise, center all ceiling elements in the ceiling tile area, and center ceiling grids between walls.
- Ceiling finishes shall meet Class A flame-spread / smoke-developed indices per IBC chapter 8. See the finish schedule for ceiling type, color, and finish at each space.

B. Acoustical Ceiling Tile (ACT)

- Provide 2'-0" x 2'-0" kitchen-grade washable acoustical ceiling tile U.N.O. — Kitchen Zone by Armstrong or equal — vinyl-faced, with a smooth, washable, scrubable, non-porous face, Class A flame-spread per ASTM E84, humidity-resistant, and suitable for food-preparation and health department-regulated areas. Match the existing panel size and grid module where applicable. Provide aluminum-capped or otherwise corrosion-resistant grid components at kitchen, dishwashing, and wash-down areas.
- ACT and grid shall be level to within 1/8" in 12'-0". Cut tiles at perimeters shall be min. half a tile width.
- Provide hold-down clips at all lay-in fixtures and tiles where required by code (seismic) or manufacturer. Provide the manufacturer's standard edge molding at all walls and partitions; color to match grid.
- Suspend grid independently of ductwork, piping, and conduit, and with at 4'-0" on center maximum per ASTM C636.

C. Lighting

- See electrical drawings and the lighting schedule for future types, locations, and circuiting. Recessed housings in insulated assemblies shall be IC-rated.
- Provide emergency and egress lighting per electrical drawings and applicable code, with battery backup as required. Coordinate switches, occupancy sensors, and dimmers with finish materials and interior elevations.
- Support heavy or decorative fixtures (chandeliers, large pendants, ceiling fans, projectors, monitors) from structure with independent backing or blocking sized for the fixture weight; see the lighting schedule and structural drawings.

D. Mechanical Devices

- See mechanical drawings for diffuser, grille, register, and exhaust device types and sizes. Diffusers and grilles in ACT shall be tile-sized where possible and centered, round diffusers centered in the tile.
- Coordinate linear diffusers with the ceiling grid pattern and run continuous where indicated. Provide flexible duct connections at all diffusers; 6'-0" maximum length U.N.O.

E. Sprinkler & Fire Protection

- Sprinkler heads at finished ceilings shall be concealed or recessed with white cover plates U.N.O. Center heads in ceiling tiles.
- Coordinate final sprinkler head locations with sprinkler shop drawings and submit to Architect review before installation. Locate smoke detectors, fire alarm devices, and exit signs per electrical / fire-alarm drawings and applicable code.

F. Access Panels

- Provide access panels at all concealed valves, dampers, cloutions, junction boxes, and items requiring service access in non-accessible ceilings. Panels shall match the fire-resistance rating of the wall or ceiling in which they occur. Submit locations, sizes, and types to the Architect for approval before installation.

G. Kitchen & Foodservice Ceilings

- Provide smooth, washable, non-absorbent ceiling material (FRP panels, washable vinyl-faced ACT per article B, or similar) in food prep, cooking, dishwashing, walk-in cooler / freezer, and health department-regulated areas.
- Seal all joints, edges, and penetrations in kitchen ceilings for a cleanable, water-tight surface. Coordinate hood ductwork, fire-suppression piping, and exhaust-fan penetrations with the RCP and provide sealed flashing at all penetrations. See part 8, article F for food-area light-fixture requirements.

H. Ceiling Protection & Closeout

- Protect installed ceilings from damage. Cover or remove tiles as needed during MEP rough-in and above-ceiling work; reinstall undamaged at completion.
- Replace damaged, stained, or defective ceiling tiles and grid components in kind before substantial completion, matching existing pattern and finish. Provide attic stock (ACT 3% minimum), grid components, and other ceiling materials as required by specifications.

I. Not Used

- Clean-room ceiling requirements are deleted. Acoustical ceilings are specified in article B; kitchen and foodservice ceiling requirements are in article G.

PART 8 — KITCHEN & FOODSERVICE

A. General

- Foodservice equipment plans are provided for reference only to assist all trades; they are not complete construction documents. All equipment locations shown, including remote equipment, are approximate and subject to field conditions; verify with the Architect and Engineer. The Owner is responsible for additional submittals required by the authorities having jurisdiction.
- Field-verify all locations, dimensions, and utility rough-in (electrical, gas, water, drain) against the foodservice equipment schedule and manufacturer specifications before rough-in or installation.
- Maintain adequate clearances around all equipment for operation, maintenance, and code compliance. Coordinate all kitchen work with the foodservice equipment consultant and see floor plan, RCP, plumbing, mechanical, and electrical drawings for additional requirements.

B. Codes & Permits

- All kitchen work shall comply with the applicable codes and standards listed in part 1, article C — including the FDA food code, local health department regulations, NFPA 96, NFPA 17A, NFPA 54, NFPA 10, IMC, IPC, and NEC — plus NSF/ANSI 2 and NSF/ANSI 3, as amended by the AHJ.
- Obtain all permits required for foodservice equipment installation per part 1, article F before commencing work. All work is subject to inspection and written AHJ approval.

C. Structural, Envelope & Penetrations

- Provide ceiling reinforcement above the finished ceiling for all hanging equipment, including kitchen exhaust hoods; verify hood weights with the manufacturer before framing. Provide structural support for rooftop equipment (condensers, RTUs, exhaust fans, make-up air units); verify roof loads with the structural engineer.
- Provide wall blocking, backing, and reinforcement at all wall-mounted equipment, shelving, hand sinks, accessories, and fixtures; coordinate with framing before drywall. Blocking lengths shown on the foodservice equipment plans are nominal; extend blocking to the next stud in each direction. Anchor and restrain all equipment per manufacturer and applicable seismic and life safety requirements.
- Provide concrete equipment pads, conduit sleeves, and seal all building-envelope penetrations per applicable codes and energy-code air-barrier requirements. Provide fire-rated seal enclosures for kitchen exhaust ducts where required by IBC, IMC, and NFPA 96, maintaining required clearances from combustibles.

D. Interior Finishes & Waterproofing

- All floors, walls, and ceilings in food prep, cooking, dishwashing, walk-in cooler / freezer, and health department-regulated areas shall be smooth, washable, non-absorbent, and non-porous. Provide stainless steel wall panels at cooking areas and where indicated on the Drawings. Do not use FRP within cooking areas or within the limits of a Type I hood; FRP is permitted at other food-service walls where scheduled.
- Stainless steel wall panels: Type 304, No. 4 finish, 16 gauge minimum at cooking areas and 18 gauge elsewhere unless otherwise indicated. Provide panels in the sizes and at the locations indicated on the Drawings, over a rigid, non-combustible substrate — cement board, masonry, or concrete; do not install stainless steel wall panels over gypsum board within the limits of a Type I hood. Set panels tight and plumb with concealed fasteners; turn down and hem exposed edges or provide stainless trim, and seal all joints, edges, and penetrations watertight with NSF-certified sealant. Maintain the clearances to combustibles required by NFPA 96 and the IMC.
- Provide integral cove base, continuous and sealed, at all wall-to-floor junctions in food prep, cooking, dishwashing, walk-in cooler / freezer, and health department-regulated areas. Refer to part 6, article F for the cove height, radius, materials, and substrate.
- Provide waterproofing membrane at all wet wall substrates and beneath floor sinks, floor drains, and warewashing areas per local codes. Seal all joints, edges, penetrations, and equipment-to-wall junctions with NSF-approved sealant for cleanability.

E. Plumbing & Drainage

- Provide floor drains and floor sinks per the foodservice equipment layout and local plumbing and health codes. Slope floors to drains at 1/4" per foot minimum; coordinate exact locations with the plumbing engineer.
- Provide hand-wash sinks in all food prep, cook line, dishwashing, and bar service areas per the FDA food code, with hot and cold water at 100°F minimum, soap dispenser, paper-towel dispenser, and waste receptacle; faucets hands-free or metering.
- Indirect waste connections from refrigeration, ice machines, dishwashers, prep sinks, and food-prep equipment shall comply with FDA food code air-gap requirements. Provide backflow prevention at all cross-connection hazards per IPC, local water authority, and ASSE standards.
- Coordinate grease interceptor or trap installation per local plumbing and health codes; confirm size and location with the plumbing engineer and AHJ. Provide truck-accessible pump-out at exterior interceptors.
- Provide three-compartment sinks, prep sinks, and a mop sink per foodservice equipment drawings and the food code. Pre-rinse units, dishwashers, and warewashing equipment shall comply with NSF/ANSI 3; provide a booster heater for high-temperature dishwashers.

F. Gas & Electrical

- Gas connections shall be made by a licensed plumber or gas fitter per NFPA 54 and local gas codes. Verify and document gas pressure in writing at each piece of equipment before final acceptance. Provide gas shutoff valves at each piece of equipment per code and coordinate service capacity, meter location, and regulator placement with the gas utility.
- Cap and pressure-test existing gas piping serving cooking equipment at the meter or main by a licensed plumber before new equipment installation (see also part 3, article F).
- Electrical connections shall be made by a licensed electrician per NEC and local requirements. Verify equipment voltages, amperages, and phases before rough-in. Provide dedicated circuits for all foodservice equipment as specified; verify cord-and-plug or hardwired connection for each item.
- Install GFCI protection in food prep, cook line, dishwashing, and within 6 feet of sinks per NEC. Light fixtures in food prep, cook line, dishwashing, walk-in cooler / freezer, and dry storage shall be sealed, gasketed, and shatter-resistant per FDA food code; NSF/ANSI listed where required.

G. Ventilation & Hood Systems

- All Type I (grasse) and Type II (vapor) exhaust hood systems shall be designed and installed per NFPA 96 and the IMC, and shall be UL listed. Hoods shall be sized for capture and containment of cooking effluent; verify hood length, depth, overhang, and capture velocity against foodservice equipment drawings before installation.
- Grease ducts shall be minimum 16-gauge welded steel (or as required by NFPA 96), continuously welded liquid-tight, sloped back to the hood for drainage, and supported per NFPA 96, maintaining required clearances to combustibles. Provide listed cleanout / access doors at intervals required by NFPA 96 and at all changes in direction.
- Provide an approved make-up air system sized to balance exhaust volume, with conditioned make-up air during heating and cooling seasons. Coordinate with the mechanical engineer to maintain slight negative pressure in the kitchen and positive pressure in dining areas to control odor and grease migration.

H. Fire Suppression

- Kitchen hood fire suppression systems shall be UL 300 wet-chemical pre-engineered, designed and installed by a licensed fire suppression contractor per NFPA 17A and NFPA 96. Fusible links and automatic gas / electric shutoffs shall activate upon discharge; coordinate with electrical and gas trades.
- The system shall be tested, inspected, and approved in writing by the AHJ before operation. The Owner will furnish and install Class K portable fire extinguishers within 30 feet of all cooking equipment per NFPA 10, with other extinguishers per NFPA 10 rated appropriately to each area's hazard. Perform and certify hood and grease-duct cleaning per NFPA 96 before occupancy.

I. Equipment Coordination & Walk-ins

- See foodservice equipment schedule for responsibilities.
- All foodservice equipment in contact with food shall be NSF/ANSI listed and installed per manufacturer's instructions and health department requirements. Receive, inspect, and store Owner-furnished equipment until installation; report damage or discrepancies to the Owner in writing within 48 hours of receipt.
- Verify wall finishes are compatible with equipment installation; seal equipment-to-wall junctions per article J.

J. Foodservice Equipment

- Provide foodservice equipment bearing the NSF certification mark (or UL classification mark certifying NSF compliance); provide electric and fuel-burning equipment that is UL certified and labeled for its intended use. Install equipment in compliance with NFPA 70 (NEC) and the requirements of authorities having jurisdiction.
- Submit product data for each type of equipment and color-selection samples for factory-finished units, and submit O&M data at closeout. See the foodservice equipment schedule for items, models, quantities, and utility connections.
- Stainless steel surfaces shall have tool and die marks and stretch lines removed or blended and be ground first polished to a uniform finish free of cross scratches. Apply powder-coat finishes per the resin manufacturer's instructions for application, baking, and minimum dry-film thickness.
- Install equipment level and plumb per the manufacturer's instructions and connect to utilities. Neatly form cutouts for service lines, complete field assembly where required; provide closed butt and contact joints without filler, and grind and polish welds on stainless steel to match adjacent finish. Maintain the manufacturer's access and maintenance clearances.
- Set closure-trim strips and fastened items in a bed of sealant. Seal joints between equipment and abutting surfaces with continuous joint backing using NSF-certified, FDA-compliant elastomeric silicone sealant per ASTM D320 to produce airtight, watertight, vermin-proof, sanitary joints.
- After installation, repair damaged finishes, clean and adjust equipment to a ready-for-use condition, and protect it for the remainder of construction. Engage a factory-authorized service representative to train the Owner's maintenance personnel to adjust, operate, and maintain the equipment.

K. Walk-in Coolers & Freezers

- Provide site-assembled, prefabricated, sectional, foamed-in-place modular-panel walk-in cooler (+35°F) and walk-in freezer (−10°F) with remote pre-assembled refrigeration systems, complete and operational; sizes and door swings per plan. Units shall conform to NSF/ANSI 7, UL 207, UL 471, ASHRAE 15, NFPA 70 (NEC), AHRI 420 / 520, and DOE / EISA energy requirements for walk-in; equipment shall bear the NSF certification mark and be UL certified and labeled for its intended use. Installation and startup by a qualified, experienced refrigeration contractor.
- Basis of design: Nor-Lake Frieline (Hudson, WI), or approved equal, with remote air-cooled refrigeration systems sized by the manufacturer per ASHRAE data for the project load and ambient conditions (R-449A, cooler — +35°F operation with off-cycle defrost timer; freezer — −10°F operation with low-temperature electric defrost). See drawings for walk-in sizes, door sizes, and door swings. Verify all dimensions before ordering. Submit product data, assembly instructions, and piping / wiring / control diagrams per part 1, article E.
- Panel: interchangeable, all-metal-cold, 48" maximum width, 4" minimum foamed-in-place polyurethane insulation (K-factor ≤ 0.15; in-place density ≥ 2.0 pcf; foam-core flame spread ≤ 25 per ASTM E84), foamed tongue-and-groove urethane edges with double-seal serrated neoprene gaskets at interior and exterior of every tongue, and foamed-in cam-action section latches for air- and vapor-tight joints. Finishes: 26-ga stucco-embossed coated steel interior and exterior; 26-ga smooth galvanized ceiling. Provide 90-degree radius-cored corner panels and foamed floor screeds (2-1/2" minimum insulation).
- Floors and ceiling support; cooler shall be footless, mounted on the concrete slab with female bottom rails and NSF screed; freezer floor shall be heavy-duty insulated floor panels with reinforced wear surface by the walk-in cooler manufacturer. — floorless freezers are not permitted. Where compartment dimensions exceed the clear space (ceiling to ceiling panels, provide exterior / beam supports or spline hangers with 1/2" dia. steel rods secured to structure above, beams or posts within compartments are not acceptable.
- Door: in-fitting, flush-mounted insulated door in a channel thermal-break steel-reinforced perimeter frame, with cam-lift hinges, hydraulic exterior closer, deadbolt key / padlock latch with interior safety release, releasable magnetic gasket at head and jamb, dual flexible-blade vapor gasket at sill, heated double-glass view window, LED vapor-proof door-section light, flush-mounted digital thermometer and switch with pilot light, concealed energy-use-selective anti-sweat heater circuit at jambs, threshold, and door edges, and stainless steel threshold and jamb trim. Provide heated air vent / pressure-relief port (15V) at the freezer.
- Condensing units: comply with AHRI 520; air-cooled, with integral compressor, motor starter, condenser, receiver (capacity ≥ 125% of system charge), common base, positive oil lubrication with level indicator, and safety / operational controls including auto-reset low-pressure and high-pressure cutoff switches. Units shall be high-efficiency, weatherproofed for outdoor installation with UL listed all-weather hood, low-ambient control kit (head-pressure control), crankcase and receiver heaters, and PSC condenser fan motors. Do not locate compressors atop the units; provide factory steel racks at stacked or code installations.
- Unit coolers: comply with AHRI 420; UL listed and NSF approved, forced-ventilation type, with integral defrost, refrigerant distributor, drip pan, and PSC fan motors with thermal-overload protection. Suspend min. 3-1/2" below the ceiling to allow cleaning, or ceiling-mount per the manufacturer with the top seal sealed. Defrost: cooler — off-cycle with continuous evaporator fans; freezer — time-initiated, temperature-terminated electric defrost with fail-safe, heated drain pan, and fan-delay control.
- Monitoring and alarms: provide an electronic monitoring and alarm system for each unit (Nor-Lake NL708 / XWA11V or equal) with detecting thermostat, master control panel with temperature display and warning lights, remote audible alarm, defrost compensator, door-open alarm, alarms set 10°F above and below the operating temperature, and 5V battery backup (install after pull-down). Provide a separate interior personal alarm for each unit operable by a person unable to exit. Connect monitoring to a continuous (24-hour) remote monitoring and notification service that alarms on power failure and high / low temperature and automatically notifies designated personnel by phone, text, or e-mail, with backup power so notification remains active during an outage; coordinate with the Owner's monitoring service. Locate panels and alarms as indicated on the construction documents.
- Accessories: 16-ga galvanized hot-shape rub-rail wall protectors (1-1/2" high x 3" wide, concealed fasteners) at the floor line of walls exposed to traffic; locations per plan; vinyl strip curtains at entry doors; ramps as required; and EPDM membrane with trim where the top of the unit is exposed. Interior light fixtures are provided under the electrical division except the door section LED fixture.
- Installation: store panels indoors, vertical, grooved edge down, on spacers. Locate indoor walk-ins in conditioned space (relative humidity 30–60%; dew point ≤ 50°F). Verify the slab is smooth and level within ±1/2" shim and support floor panels and screeds at 12" o.c. maximum over a 6-mil poly vapor barrier; maintain 2" minimum clearance to building walls. Assemble per the manufacturer's printed instructions with light panel joints; seal all penetrations to prevent condensation or frosting; seal panel-to-slab junctures inside and out with NSF sealant and provide NSF cove base (1/4" minimum radius) at wall / floor junctures. Route piping, conduit, and instrumentation to the exterior through neatly drilled, sealed penetrations; do not penetrate panels within 6" of panel-look access holes.
- Refrigerant piping and drains: Type L (or K) ACR copper, brazed with dry-nitrogen purge, sized per the manufacturer's line-size tables; slope horizontal suction lines to the compressor 1/2" per 10'-0" with traps at risers; insulate suction lines with 3/4" elastomeric insulation, ends sealed; leak-test at 150 psig minimum and triple-evacuate to 200 microns. Refrigerant charging and recovery shall be performed by an EPA Section 608 certified technician. Condensate drains: copper or freezer (PVC permitted if cooler where code allows), no smaller than the unit-cooler connection, pitched per the manufacturer, with P-trap outside the refrigerated space and indirect discharge to an open drain; provide continuously energized heat tape (20 W/ft) and 1/2" minimum insulation on the freezer drain full length through the trap.
- Electrical: field verify NEC and local codes on dedicated circuits (see article F); two-point connection (condensing unit and unit cooler) plus door-section junction box. UL listed PVC or watertight flexible conduit at cold-side penetrations with conduit ends and penetrations sealed with silicone.
- Startup, testing and closeout: perform initial startup and an operational test of min. three (3) days under all modes of operation, recording the manufacturer's recommended readings hourly. Submit operational and final field test reports including compressor and fan ampere readings, power-supply characteristics and phase imbalance, field-tested TVX superheat, subcooling, pressure-switch and defrost setpoints, minimum condenser and evaporator temperatures, monitoring-alarm verification, and all field adjustments affecting performance. Complete and return the manufacturer's final installation checklist and deliver O&M manuals, wiring diagrams, and warranty documents at closeout; do not load product until operational checklist is complete. Warranty: one (1) year parts and labor; five (5) year compressor warranty — including failure to maintain set temperature — from final acceptance by the Owner.

- Unit coolers: comply with AHRI 420; UL listed and NSF approved, forced-ventilation type, with integral defrost, refrigerant distributor, drip pan, and PSC fan motors with thermal-overload protection. Suspend min. 3-1/2" below the ceiling to allow cleaning, or ceiling-mount per the manufacturer with the top seal sealed. Defrost: cooler — off-cycle with continuous evaporator fans; freezer — time-initiated, temperature-terminated electric defrost with fail-safe, heated drain pan, and fan-delay control.
- Monitoring and alarms: provide an electronic monitoring and alarm system for each unit (Nor-Lake NL708 / XWA11V or equal) with detecting thermostat, master control panel with temperature display and warning lights, remote audible alarm, defrost compensator, door-open alarm, alarms set 10°F above and below the operating temperature, and 5V battery backup (install after pull-down). Provide a separate interior personal alarm for each unit operable by a person unable to exit. Connect monitoring to a continuous (24-hour) remote monitoring and notification service that alarms on power failure and high / low temperature and automatically notifies designated personnel by phone, text, or e-mail, with backup power so notification remains active during an outage; coordinate with the Owner's monitoring service. Locate panels and alarms as indicated on the construction documents.
- Accessories: 16-ga galvanized hot-shape rub-rail wall protectors (1-1/2" high x 3" wide, concealed fasteners) at the floor line of walls exposed to traffic; locations per plan; vinyl strip curtains at entry doors; ramps as required; and EPDM membrane with trim where the top of the unit is exposed. Interior light fixtures are provided under the electrical division except the door section LED fixture.
- Installation: store panels indoors, vertical, grooved edge down, on spacers. Locate indoor walk-ins in conditioned space (relative humidity 30–60%; dew point ≤ 50°F). Verify the slab is smooth and level within ±1/2" shim and support floor panels and screeds at 12" o.c. maximum over a 6-mil poly vapor barrier; maintain 2" minimum clearance to building walls. Assemble per the manufacturer's printed instructions with light panel joints; seal all penetrations to prevent condensation or frosting; seal panel-to-slab junctures inside and out with NSF sealant and provide NSF cove base (1/4" minimum radius) at wall / floor junctures. Route piping, conduit, and instrumentation to the exterior through neatly drilled, sealed penetrations; do not penetrate panels within 6" of panel-look access holes.
- Refrigerant piping and drains: Type L (or K) ACR copper, brazed with dry-nitrogen purge, sized per the manufacturer's line-size tables; slope horizontal suction lines to the compressor 1/2" per 10'-0" with traps at risers; insulate suction lines with 3/4" elastomeric insulation, ends sealed; leak-test at 150 psig minimum and triple-evacuate to 200 microns. Refrigerant charging and recovery shall be performed by an EPA Section 608 certified technician. Condensate drains: copper or freezer (PVC permitted if cooler where code allows), no smaller than the unit-cooler connection, pitched per the manufacturer, with P-trap outside the refrigerated space and indirect discharge to an open drain; provide continuously energized heat tape (20 W/ft) and 1/2" minimum insulation on the freezer drain full length through the trap.
- Electrical: field verify NEC and local codes on dedicated circuits (see article F); two-point connection (condensing unit and unit cooler) plus door-section junction box. UL listed PVC or watertight flexible conduit at cold-side penetrations with conduit ends and penetrations sealed with silicone.
- Startup, testing and closeout: perform initial startup and an operational test of min. three (3) days under all modes of operation, recording the manufacturer's recommended readings hourly. Submit operational and final field test reports including compressor and fan ampere readings, power-supply characteristics and phase imbalance, field-tested TVX superheat, subcooling, pressure-switch and defrost setpoints, minimum condenser and evaporator temperatures, monitoring-alarm verification, and all field adjustments affecting performance. Complete and return the manufacturer's final installation checklist and deliver O&M manuals, wiring diagrams, and warranty documents at closeout; do not load product until operational checklist is complete. Warranty: one (1) year parts and labor; five (5) year compressor warranty — including failure to maintain set temperature — from final acceptance by the Owner.

- Unit coolers: comply with AHRI 420; UL listed and NSF approved, forced-ventilation type, with integral defrost, refrigerant distributor, drip pan, and PSC fan motors with thermal-overload protection. Suspend min. 3-1/2" below the ceiling to allow cleaning, or ceiling-mount per the manufacturer with the top seal sealed. Defrost: cooler — off-cycle with continuous evaporator fans; freezer — time-initiated, temperature-terminated electric defrost with fail-safe, heated drain pan, and fan-delay control.
- Monitoring and alarms: provide an electronic monitoring and alarm system for each unit (Nor-Lake NL708 / XWA11V or equal) with detecting thermostat, master control panel with temperature display and warning lights, remote audible alarm, defrost compensator, door-open alarm, alarms set 10°F above and below the operating temperature, and 5V battery backup (install after pull-down). Provide a separate interior personal alarm for each unit operable by a person unable to exit. Connect monitoring to a continuous (24-hour) remote monitoring and notification service that alarms on power failure and high / low temperature and automatically notifies designated personnel by phone, text, or e-mail, with backup power so notification remains active during an outage; coordinate with the Owner's monitoring service. Locate panels and alarms as indicated on the construction documents.
- Accessories: 16-ga galvanized hot-shape rub-rail wall protectors (1-1/2" high x 3" wide, concealed fasteners) at the floor line of walls exposed to traffic; locations per plan; vinyl strip curtains at entry doors; ramps as required; and EPDM membrane with trim where the top of the unit is exposed. Interior light fixtures are provided under the electrical division except the door section LED fixture.
- Installation: store panels indoors, vertical, grooved edge down, on spacers. Locate indoor walk-ins in conditioned space (relative humidity 30–60%; dew point ≤ 50°F). Verify the slab is smooth and level within ±1/2" shim and support floor panels and screeds at 12" o.c. maximum over a 6-mil poly vapor barrier; maintain 2" minimum clearance to building walls. Assemble per the manufacturer's printed instructions with light panel joints; seal all penetrations to prevent condensation or frosting; seal panel-to-slab junctures inside and out with NSF sealant and provide NSF cove base (1/4" minimum radius) at wall / floor junctures. Route piping, conduit, and instrumentation to the exterior through neatly drilled, sealed penetrations; do not penetrate panels within 6" of panel-look access holes.
- Refrigerant piping and drains: Type L (or K) ACR copper, brazed with dry-nitrogen purge, sized per the manufacturer's line-size tables; slope horizontal suction lines to the compressor 1/2" per 10'-0" with traps at risers; insulate suction lines with 3/4" elastomeric insulation, ends sealed; leak-test at 150 psig minimum and triple-evacuate to 200 microns. Refrigerant charging and recovery shall be performed by an EPA Section 608 certified technician. Condensate drains: copper or freezer (PVC permitted if cooler where code allows), no smaller than the unit-cooler connection, pitched per the manufacturer, with P-trap outside the refrigerated space and indirect discharge to an open drain; provide continuously energized heat tape (20 W/ft) and 1/2" minimum insulation on the freezer drain full length through the trap.
- Electrical: field verify NEC and local codes on dedicated circuits (see article F); two-point connection (condensing unit and unit cooler) plus door-section junction box. UL listed PVC or watertight flexible conduit at cold-side penetrations with conduit ends and penetrations sealed with silicone.
- Startup, testing and closeout: perform initial startup and an operational test of min. three (3) days under all modes of operation, recording the manufacturer's recommended readings hourly. Submit operational and final field test reports including compressor and fan ampere readings, power-supply characteristics and phase imbalance, field-tested TVX superheat, subcooling, pressure-switch and defrost setpoints, minimum condenser and evaporator temperatures, monitoring-alarm verification, and all field adjustments affecting performance. Complete and return the manufacturer's final installation checklist and deliver O&M manuals, wiring diagrams, and warranty documents at closeout; do not load product until operational checklist is complete. Warranty: one (1) year parts and labor; five (5) year compressor warranty — including failure to maintain set temperature — from final acceptance by the Owner.

- Unit coolers: comply with AHRI 420; UL listed and NSF approved, forced-ventilation type, with integral defrost, refrigerant distributor, drip pan, and PSC fan motors with thermal-overload protection. Suspend min. 3-1/2" below the ceiling to allow cleaning, or ceiling-mount per the manufacturer with the top seal sealed. Defrost: cooler — off-cycle with continuous evaporator fans; freezer — time-initiated, temperature-terminated electric defrost with fail-safe, heated drain pan, and fan-delay control.
- Monitoring and alarms: provide an electronic monitoring and alarm system for each unit (Nor-Lake NL708 / XWA11V or equal) with detecting thermostat, master control panel with temperature display and warning lights, remote audible alarm, defrost compensator, door-open alarm, alarms set 10°F above and below the operating temperature, and 5V battery backup (install after pull-down). Provide a separate interior personal alarm for each unit operable by a person unable to exit. Connect monitoring to a continuous (24-hour) remote monitoring and notification service that alarms on power failure and high / low temperature and automatically notifies designated personnel by phone, text, or e-mail, with backup power so notification remains active during an outage; coordinate with the Owner's monitoring service. Locate panels and alarms as indicated on the construction documents.
- Accessories: 16-ga galvanized hot-shape rub-rail wall protectors (1-1/2" high x 3" wide, concealed fasteners) at the floor line of walls exposed to traffic; locations per plan; vinyl strip curtains at entry doors; ramps as required; and EPDM membrane with trim where the top of the unit is exposed. Interior light fixtures are provided under the electrical division except the door section LED fixture.
- Installation: store panels indoors, vertical, grooved edge down, on spacers. Locate indoor walk-ins in conditioned space (relative humidity 30–60%; dew point ≤ 50°F). Verify the slab is smooth and level within ±1/2" shim and support floor panels and screeds at 12" o.c. maximum over a 6-mil poly vapor barrier; maintain 2" minimum clearance to building walls. Assemble per the manufacturer's printed instructions with light panel joints; seal all penetrations to prevent condensation or frosting; seal panel-to-slab junctures inside and out with NSF sealant and provide NSF cove base (1/4" minimum radius) at wall / floor junctures. Route piping, conduit, and instrumentation to the exterior through neatly drilled, sealed penetrations; do not penetrate panels within 6" of panel-look access holes.
- Refrigerant piping and drains: Type L (or K) ACR copper, brazed with dry-nitrogen purge, sized per the manufacturer's line-size tables; slope horizontal suction lines to the compressor 1/2" per 10'-0" with traps at risers; insulate suction lines with 3/4" elastomeric insulation, ends sealed; leak-test at 150 psig minimum and triple-evacuate to 200 microns. Refrigerant charging and recovery shall be performed by an EPA Section 608 certified technician. Condensate drains: copper or freezer (PVC permitted if cooler where code allows), no smaller than the unit-cooler connection, pitched per the manufacturer, with P-trap outside the refrigerated space and indirect discharge to an open drain; provide continuously energized heat tape (20 W/ft) and 1/2" minimum insulation on the freezer drain full length through the trap.
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L. Stainless Steel Casework & Fabrications

- Provide stainless steel casework, work tables, wall and undershelves, sinks, and fabrications where scheduled and in warewashing, wet, and food-preparation areas. Units shall be NSF/ANSI 2 certified and bear the NSF mark.
- Material: Type 304 stainless steel, No. 4 finish at exposed surfaces. Minimum gauges U.N.O.: work surfaces and countertops 14 gauge; sink bowls and compartments 14 gauge; shelves and cabinet bodies 16 gauge; enclosure panels, aprons, and backslashes 16 gauge.
- Fabricate with continuously welded joints at exposed and food-contact locations; ground and polished to match adjacent finish; no exposed fasteners at food-contact surfaces. Turn down and hem exposed edges. Reinforce work surfaces with channel or hat sections to prevent deflection.
- Set units on adjustable stainless steel bullet feet with 6" minimum clear beneath, or seal to the floor with NSF-approved sealant. Seal all joints between units and adjacent walls, countertops, and equipment watertight.

- Coordinate with the foodservice equipment schedule and approved shop drawings. Refer to part 6, article K for architectural casework and millwork.

PART 9 — ROOFING

A. General

- Provide elastomeric (EPDM) membrane roof replacement where scheduled; remove the existing membrane and install a new 1/4" glass-mat gypsum cover board and new membrane over the existing insulation to remain. The installer shall have min. two years' experience and be approved by the roofing-system manufacturer. Submit shop drawings, product data, samples, and a certificate of compliance.
- Conduct a pre-installation conference attended by the Architect, contractor, Owner, installer, and the roofing manufacturer's representative to review the contract documents, manufacturer's requirements, project conditions, and scheduling.
- Provide the roofing manufacturer's 20-year warranty against water leakage through the roofing system, beginning at substantial completion.
- Payment for unbreasted substrate replacement: Replacement of wet, damp, damaged, or deteriorated existing insulation (Unit Price No. 1), cover board (Unit Price No. 2), or roof deck (Unit Price No. 3) required by this Part is paid from Allowance No. 4 of Contract CVI 2500-2 at the unit prices stated on the Bid Form, upon written authorization of the Owner. Notify the Architect and the Project Coordinator upon discovery, before removal or covering of the affected materials, and afford the Architect the opportunity to verify quantities measured in place. The new cover board installed across the full area of the new roofing under paragraph C.4 is part of the Base Bid and is not payable under the unit prices or the allowance. Deck repair beyond in-kind replacement, and structural corrections arising under paragraph D.7, will be authorized by Change Order. Refer to Article 1.7 of Document 00 73 00 and Article 1.5 of Document 00 41 13 in the Procurement Manual.

B. Roofing System & Performance

- Provide a roofing system with a Class A fire-hazard classification tested to ASTM E108, designed for the minimum wind loads required by the building code. Install per the manufacturer's instructions, the NRCA Roofing Manual, and the approved shop drawings.
- Where required by the energy code, provide an Energy Star-qualified, labeled membrane with a solar reflectance index (SRI) of min. 78, tested per ASTM C1549 and calculated per ASTM E1980.

C. Materials

- Membrane: unreinforced, fire-retardant EPDM (ethylene propylene diene terpolymer) per ASTM D4637, 60 mils thick, color black or to match the surrounding existing membrane, with the manufacturer's matching flashing sheet.
- Existing substrate: install the new cover board over the existing insulation to remain, and the new membrane over the new cover board. Verify the existing substrate is sound, dry, clean, and compatible with the new cover board and adhesive; replace wet, damaged, or deteriorated cover board or insulation in kind to match the existing thickness and maintain positive drainage. Refer to paragraph A.4 for payment.
- Nailers and curbs: preservative-treated wood (3-1/2" minimum flap) per the rough-carpentry section; provide metal flashings per the sheet-metal flashing section.
- Cover board: glass-mat gypsum roof board per ASTM C1177, 1/4" thick; DensDeck by Georgia-Pacific or equal. Install over the existing insulation to remain across the full area of the new roofing, to provide a smooth, uniform substrate for the new membrane, and where required to replace damaged board. Where extruded-polystyrene board is present or installed, separate it from the membrane with a manufacturer-approved separator sheet.
- Fasteners: factory-coated steel, no. 12, with metal or plastic plates, FM approved and acceptable to the membrane manufacturer.
- Infill materials shall match the existing roof assembly unless otherwise noted. Provide all auxiliary tear-off and preparation materials as recommended by the membrane manufacturer.

D. Tear-Off & Substrate Preparation

- Tear off only as much roofing as can be made watertight the same day. Do not tear off during wet weather or when wet weather is forecast. Seal the edges of each day's work watertight and remove temporary seals before installing the new membrane.
- The Owner occupies spaces directly below the work area. Do not disrupt Owner operations; give the Owner min. 24 hours' notice of work affecting operations. Maintain access to existing walkways, corridors, and adjacent occupied areas.
- Protect existing roofing to remain. Coordinate shutdown of adjacent air intakes with the Owner. Keep roof drains functioning throughout the work; use drain plugs designed for the purpose, and remove all plugs at the end of each workday.
- Remove the existing membrane and base flashings and visually check the substrate for moisture as the work proceeds. Remove all wet, damp, or deteriorated materials and replace in kind to match the existing thickness. Refer to paragraph A.4 for payment.
- Remove existing fasteners and plates or drive them flush with the deck. Leave no protrusions that could puncture the new membrane.
- EPDM is not compatible with asphalt, coal tar, or petroleum products. Install a separator sheet where residual bitumen remains on substrates to receive the new membrane.
- Notify the Architect immediately if fasteners are broken or loose, the deck is inadequately attached, the deck surface is unsuitable to receive new roofing, or structural integrity is suspect. Do not proceed until directed by the Architect. In-kind replacement of deteriorated deck is paid under paragraph A.4.
- Immediately after tear-off and any repair deck, fill tear-off areas to match the existing assembly. Install a roofing patch over infill areas; a patch is not required where the new membrane is installed the same day.
- Remove blisters, ridges, buckles, and other irregularities that prevent cover board from conforming to the substrate. Verify the substrate is dry before installing cover board and spot-check with a capacitance moisture meter; remove wet or damp materials.
- Install cover board with long joints in continuous straight lines, and joints staggered; loosely butted and fastened to the deck. Tape board joints where required by the membrane manufacturer.
- Fasten cover board to resist wind uplift at the field, perimeter, and corners, and provide additional uplift securement where required by the manufacturer.
- Clean substrates of asphalt, sheet materials, dirt, and debris after flashing removal. Leave substrates to receive new base flashings clean, dry, smooth, and free of sharp edges and projections.
- Do not damage counterflashings that are to remain. Replace counterflashings damaged during removal with matching metal, thickness, and finish.
- Replace parapet sheathing where indicated, per the gypsum board and sheathing requirements of these notes. Notify the Architect if parapet framing, wood blocking, curbs, or nailers are deteriorated.

E. Installation, Flashing & Penetrations



ALL ROOF DETAILS SHALL FOLLOW MFR'S STANDARD INSTALLATIONS FOR A WARRANTED SYSTEM

1. Install all roofing work in strict accordance with the roofing system manufacturer's current published specifications and standard details. Where a condition is not covered by a standard detail, obtain the manufacturer's written detail before proceeding. Manufacturer's details govern over details shown here where they are more stringent.
2. Refer to the general notes and outline specifications for the roofing system, materials thicknesses, and warranty requirements.
3. The roofing installer shall be certified or approved by the roofing system manufacturer for the specified system. Submit shop drawings, product data, samples, and a certificate of compliance before starting work.
4. ~~Hold the roof-outside conditions for the following: Architect, roofing installer, and the manufacturer's technical representative before start-of-begin.~~
5. Field verify all existing conditions, dimensions, slopes, and drain locations before bidding and again before tear-off. Notify the Architect of deteriorated deck, wet insulation, or conditions differing from those indicated, and do not proceed in those areas until directed.
6. If the existing roof is under warranty, notify the existing manufacturer before any work and coordinate to preserve warranty rights where applicable.
7. Tear off only the area that can be made watertight the same working day. Provide temporary water cutoffs and night seals at all incomplete edges and remove them before resuming work. The Contractor is responsible for all water damage resulting from incomplete or unprotected work.
8. Notify the Architect immediately if the roof is not clean, and properly secured before installing new materials. Perform fastener pullout testing where required by the manufacturer and submit results before proceeding.
9. Do not install roofing over wet or frozen substrates, or during rain, snow, or weather that prevents proper adhesion, curing, or seaming. Install materials only within the manufacturer's published temperature and moisture limits.
10. Provide positive drainage to all drains, scuppers, and overflows. Ponds beyond the manufacturer's allowable ponding depth, notify the Architect where existing slope will not drain before installing new work.

11. Provide base flashing not less than 8" above the finished roof surface. Provide the manufacturer's standard terminations, counterflashing, curbs, and sealant at all walls, curbs, edges, and penetrations.
12. Coordinate all curbs, sleepers, supports, penetrations, drains, and equipment with the mechanical, electrical, and structural work before tear-off. Do not cut or penetrate new structure without an approved manufacturer's detail. Set all curbs and supports to the required height above the finished roof.
13. Protect the building, its contents, adjacent surfaces, and occupants at all times. Provide temporary protection at all openings and keep the interior dry and free of debris.
14. Provide walkway pads at roof access points, service paths, and around serviceable equipment as recommended by the manufacturer.
15. Do not overload the deck or structure with stored materials or equipment. Distribute loads and coordinate staging and hoisting locations with the Architect and structural engineer.
16. Remove all debris daily, keep the site clean, and perform a magnetic sweep of paved and lawn areas at completion.
17. Provide the manufacturer's final inspection and punch list at completion. Furnish the manufacturer's written warranty and the installer's workmanship warranty, closeout, together with record drawings noting deck type, fastening pattern, and any conditions concealed by the new work.

1. Refer to the general notes and outline specifications, part 2, for sitework materials and installation requirements, and to Section 01 12 00 for the scope of each Contract.
2. Removal of existing concrete walks is by the Mechanical and Plumbing Contract; removal of concrete sidewalks is by the General Construction Contract. Coordinate limits, sequence, and timing between the two Contracts so that walks are out of service for the shortest practical period.
3. Sawcut existing concrete full depth in straight lines at the nearest joint or as indicated before paving; do not break out beyond the sawcut line. Remove and legally dispose of existing walk base, and reinforcement within the limits indicated.
4. Dewater excavations and keep free of water. Do not place bedding, structures, pipe, or concrete in standing water.
5. Replace removed walk with concrete min. 4,000 psi at 28 days, air-entrained 5 to 7 percent, 4" minimum thickness over 4" of compacted granular base, matching the existing walk in width, thickness, jointing, and finish.
6. Provide a light broom texture to the surface of the new concrete. Place, grade, and control joints at intervals not exceeding the walk width, and expansion joints with preformed filler at buildings, curbs, and existing walks to remain.
7. Match existing grades. Maintain running slope max. 5 percent and cross slope max. 2 percent. Limit vertical change at joints with existing walks to 1/4"; bevel changes between 12" and 12'.
8. Cure per ACI 308.1 and protect from traffic until the concrete has attained design strength.
9. Maintain a safe, accessible route around the work for the full period between removal and replacement, including barricades and temporary signage. Comply with Owner site rules over the work area.
10. Restore all disturbed areas to original grade, place topsoil, and provide erosion control until the Owner's landscaping is complete. Seeding and landscaping are by the Owner.



MECHANICAL CONTRACT TO SAWCUT AND REMOVE
EXISTING SIDEWALK.
REPLACEMENT OF 120
SQUARE FEET OF CONCRETE
SIDEWALK SHALL BE IN THE
GENERAL CONSTRUCTION CONTRACT.
MATCH EXISTING LAYOUT

1. Refer to sheets G101 and G102 for the complete general notes and outline specifications. Those notes apply to all sheets in this set and to all contracts.
2. Refer to the cover sheet for the project description and the multi-price coordination notes. The contract is composed of separate price contracts. Refer to Section 01 12 00 "Multiple Contract Summary" in the Procurement Manual for the scope of each contract and for work by the Owner.
4. Field verify all existing conditions and dimensions before fabrication and installation. Do not scale drawings.
5. Note any discrepancies, gaps, or omissions to the Architect before proceeding. Where documents conflict, the more stringent requirement governs.
6. All work shall comply with the codes listed on G101 and with the requirements of the authorities having jurisdiction.
7. Provide blocking, backing, rough-in, and utility connections indicated on the drawings to receive the work of other contractors and work by the Owner.
8. Details and sections are typical at all dimensions unless noted otherwise.



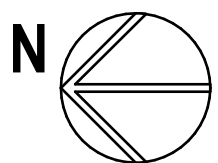
*** REFER TO DEMOLITION INFORMATION
ON OTHER STRUCTURAL AND MEP DRAWINGS
FOR ADDITIONAL ITEMS NOT SHOWN HERE



1/4" = 1'-0"

GENERAL NOTES

1. Refer to sheets G101 and G102 for the complete general notes and outline specifications. These notes apply to all items on the drawings and all contract documents.
2. Refer to the cover sheet for the project description, the multi-phase coordination note and the project location.
3. The Work is arranged under separate prime contracts. Refer to Section 01 12 00 "Multiple Contract Summary" in the Procurement Manual for the scope of each contract and for work by the Owner.
4. Field verify all existing conditions and dimensions before fabrication and installation. Do not scale drawings.
5. Report discrepancies, gaps, or omissions to the Architect before proceeding. Where documents conflict, the more stringent requirement governs.
6. All work shall comply with the codes listed on G101 and with the requirements of the authorities having jurisdiction.
7. Provide blocking, bracing, routing, and, utility connections indicated on the drawings to receive the work of other contracts and work by the Owner.
8. Details and sections are typical at similar conditions unless noted otherwise.



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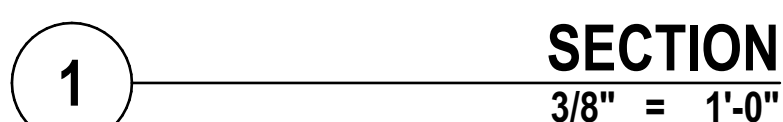
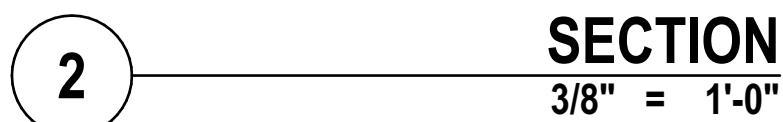


INT ELEV
1/4" = 1'-0"

Iowa State Fair

3000 E GRAND AVE, DES MOINES, IA 50317

1. Refer to sections G101 and G102 for the complete general notes and outline specifications. Those notes apply to all sheets in this set and to all contracts.
2. Refer to the cover sheet for project description and the multi-price coordination notes.
3. The Work is awarded under separate price contracts as set forth in Section 01 10 00 "Multiple Contract Summary" in the Procurement Manual for the scope of each contract and for work by the Owner.
4. Verify all existing conditions and dimensions before fabrication and installation. Do not scale drawings.
5. Report discrepancies, gaps, or omissions to the Architect before proceeding. Where documents conflict, the more stringent requirement governs.
6. All work shall comply with the codes listed on G101 and with the requirements of the authorities having jurisdiction.
7. Provide blocking, backing, rough-in, and utility connections indicated on the drawings to receive the work of other contractors and work by the Owner.
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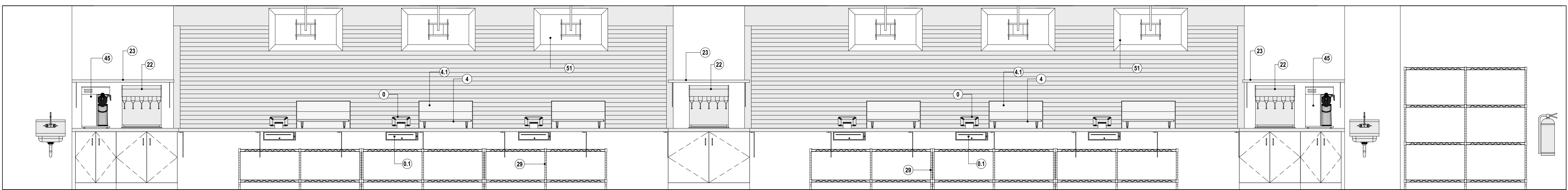
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Item No	Qty	Equipment Category	Manufacturer	Model Number	Provided by
0	6	Point of Sale	TBD	TBD	OWNER
0.1	6	Cash Drawer	TBD	TBD	OWNER
1	1	Exhaust Hood	Captive Aire	CUSTOM	MECH
2.1	1	Oven, Rotating Rack, Electric (EXISTING)	Baxter Manufacturing	OV500E2	OWNER
2.2	1	Oven, Rotating Rack, Electric	Baxter Manufacturing	OV500E2	OWNER
3	1	Griddle (EXISTING)	VERIFY	VERIFY	OWNER
4	6	Heated Shelves (EXISTING)	VERIFY	VERIFY	OWNER
4.1	1	Sneeze Guards	TBD	TBD	OWNER
5	1	Refrigerator, Shorty	True Mfg. - General Foodservice	TRCB-48	KES
6	1	Fryer, Dump Station	Vulcan	VX15	KES
7	3	Fryer, Deep Fat, Gas	Vulcan	LG400	KES
8	1	Table, Work, 16 gauge, Back Splash w/ Undershelf	Advantage Tabco	KMS-240	KES
9	3	Table, Work, 16 gauge, Back Splash w/ Undershelf	Advantage Tabco	KMS-246	KES
10	2	Shelf, Wall Mount	Advantage Tabco	WS-12-72	KES
11	1	Ice Maker w/ Bin	Mantowoc Ice	ID11500A-261 /D-970	KES
12	1	Refrigerator/Freezer Drawer	Rundell	FA-1CS-290	KES
13	1	Table, Work, 16 gauge, Back Splash w/ Undershelf	Advantage Tabco	KMS-248	KES
14	4	Back Bar Equipment	Beverage-Air	BB48HC1-G-S	KES
16	15	Rack, Oven	Baxter Manufacturing	BDRSB-12A	KES
17.1	1	Mixer, Floor	Hobart US Foodservice	HL1400-1	KES
17.2	1	Mixer, Floor (EXISTING)	Hobart US Foodservice	HL1400-1	OWNER
17.3	1	Pre-Rinse Faucet, Hose & Spray Only	T & S Brass	B-0100	KES
18	2	Dispenser, Self-Leveling Tray	Piper Products	ASCA-ST	KES
18.1	2	Shelf, Wall Mount	Advantage Tabco	WS-12-60	KES
19.1	1	Cookie Depositor	KookEKing	Super Automatic	KES
19.2	1	Cookie Depositor (EXISTING)	KookEKing	Super Automatic	OWNER
20	2	Shelf, Wall Mount	Advantage Tabco	WS-12-60	KES
21	4	Sink, Wall Mount	Advantage Tabco	7-P-50	KES
22	3	Soda Dispenser and Ice Well (BY VENDOR)	VERIFY	TBD	VENDOR
23	1	Shelf, Wall Mount	Advantage Tabco	WS-12-48	KES
24	1	Warewasher, Door Type, High Temp	Hobart US Foodservice	AM16T-BAS ELECTRIC	KES
25	1	Dishtable, Straight, 14 gauge	Advantage Tabco	DT5-330-84R	KES
26	1	Dishtable, Straight	John Boos & Co.	DT3818244-2D18L	KES
26.1	1	Pre-Rinse Faucet, Deck Mount	T & S Brass	B-0123	KES
26.2	1	Drying Rack	Advantage Tabco	DT-6R-48	KES
27	1	Exhaust Hood, Dishmachine	Captive Aire	CUSTOM	MECH
28	1	Transport Cart	Advantage Tabco	UC-3-1827	KES
29	1	Lot Shelving	Metro	Metro Max Q	OWNER
30	1	Walk In Freezer	Norlake	CUSTOM	KES
31	1	Walk In Cooler	Norlake	CUSTOM	KES
32	2	Table, Work, 16 gauge, Back Splash w/ Undershelf	Advantage Tabco	KMS-305	KES
33	1	Overshelf, 12" x 16"-6"	Advantage Tabco	CUSTOM	KES
34	1	Hot Dog Roller (EXISTING)	VERIFY		OWNER
35	1	Rice Cooker (EXISTING)	VERIFY		OWNER
36	1	Popcorn Machine (EXISTING)	VERIFY		OWNER
37	1	Warmer, Merch, 36x24x40 (EXISTING)	VERIFY		OWNER
38	3	Heat Lamps (EXISTING)	VERIFY		OWNER
38.1	3	Heat Lamps	Hatco	GRFS-16	KES
39	1	Warmer; 24x13x9 (EXISTING)	VERIFY		OWNER
40	2	Oven, Microwave	Panasonic	NE-1025F	KES
41	1	Warmer; 24x15x9 (EXISTING)	Panasonic		OWNER
42	1	Nacho Machine (EXISTING)	VERIFY		OWNER
44	1	Coffee Maker, Airport, Automatic	Bunn-O-Matic	23001.0051	KES
45	1	Airpot	Bunn-O-Matic	32125.0000 INM	KES
46	1	Pretzel Oven (EXISTING)	VERIFY		OWNER
47	1	Pretzel Display (EXISTING)	VERIFY		OWNER
48	1	Ice Cream Display (EXISTING)	VERIFY		OWNER
49	2	Cabinet, Mobile, Warming & Holding	Vulcan	VHFA18	KES
50	1	I-Pad Display	VERIFY	TBD	OWNER
51	6	Menu TV Boards	VERIFY	TBD	OWNER
53	1	Sauce Warmer (EXISTING)	VERIFY	TBD	OWNER
54	1	Stainless Steel Wall Panels (21" X 5" X 10")	Custom	16 gauge, type 304, #4 finish	KES

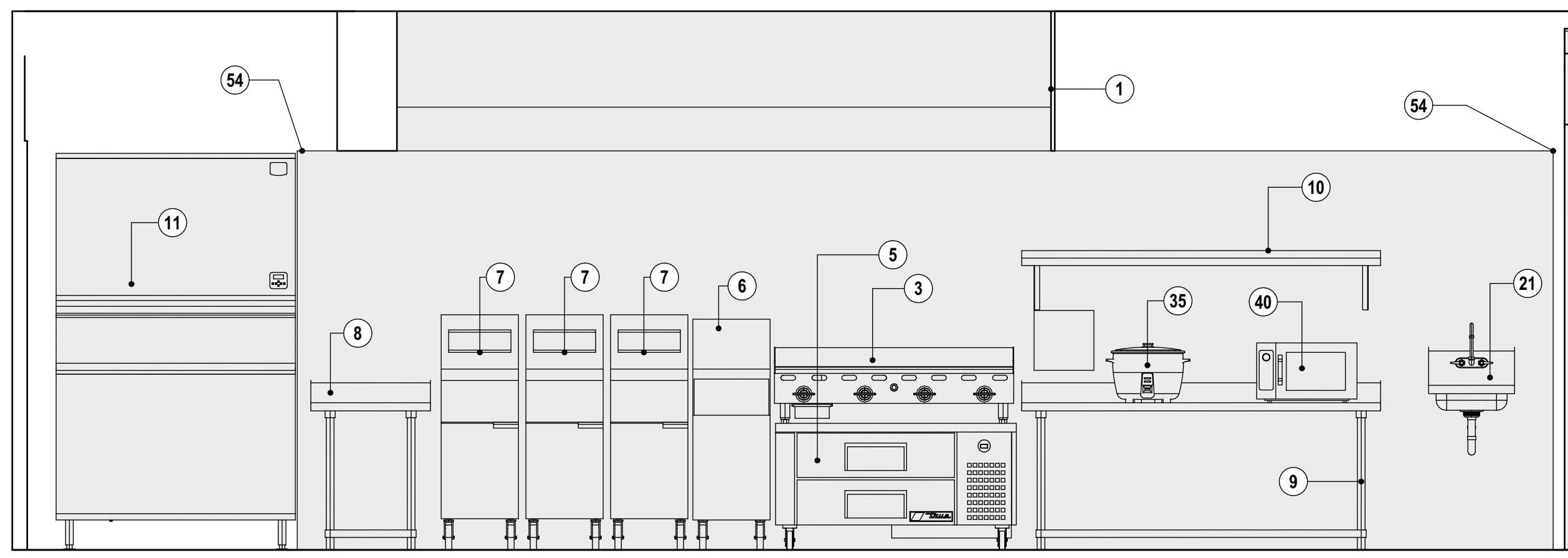
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2. Refer to the cover sheet for the project description and the multi-prime coordination notes for the project. Obtain separate prime contracts. Refer to Section 01 12 00 "Multiple Contract Summary" in the Procurement Manual for the scope of each contract and for work by the Owner.
4. Field verify all existing conditions and dimensions before fabrication and installation. Do not scale drawings.
5. Submit discrepancies, gaps, or omissions to the Architect before proceeding. Where documents conflict, the more stringent requirement governs.
6. All work shall comply with the codes listed on G101 and with the requirements of the authorities having jurisdiction.
7. Provide blocking, backing, rough-in, and utility connections indicated on the drawings to receive the work of other contractors and work by the Owner.
8. Details and sections are typical at similar conditions unless noted otherwise.

MARK	DATE	DESCRIPTION
01	8/5/2026	ISSUED FOR BID



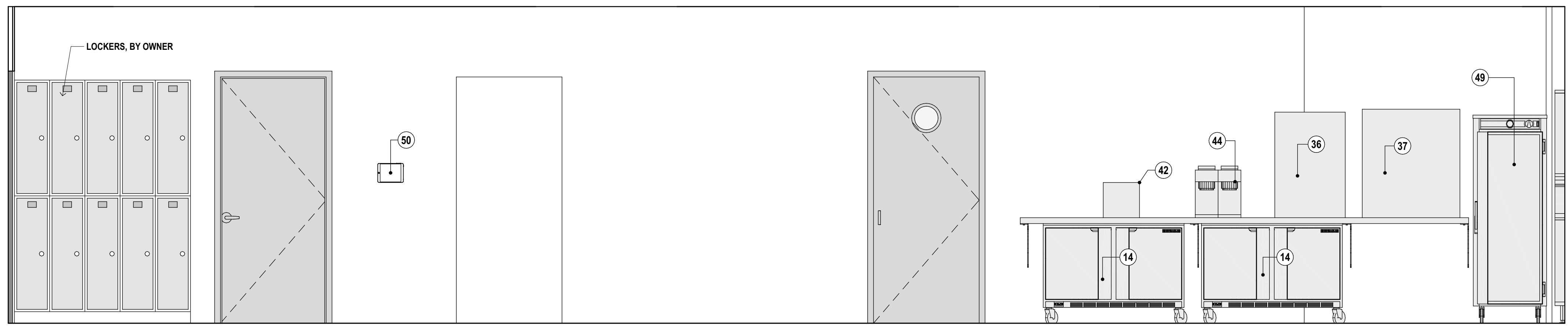
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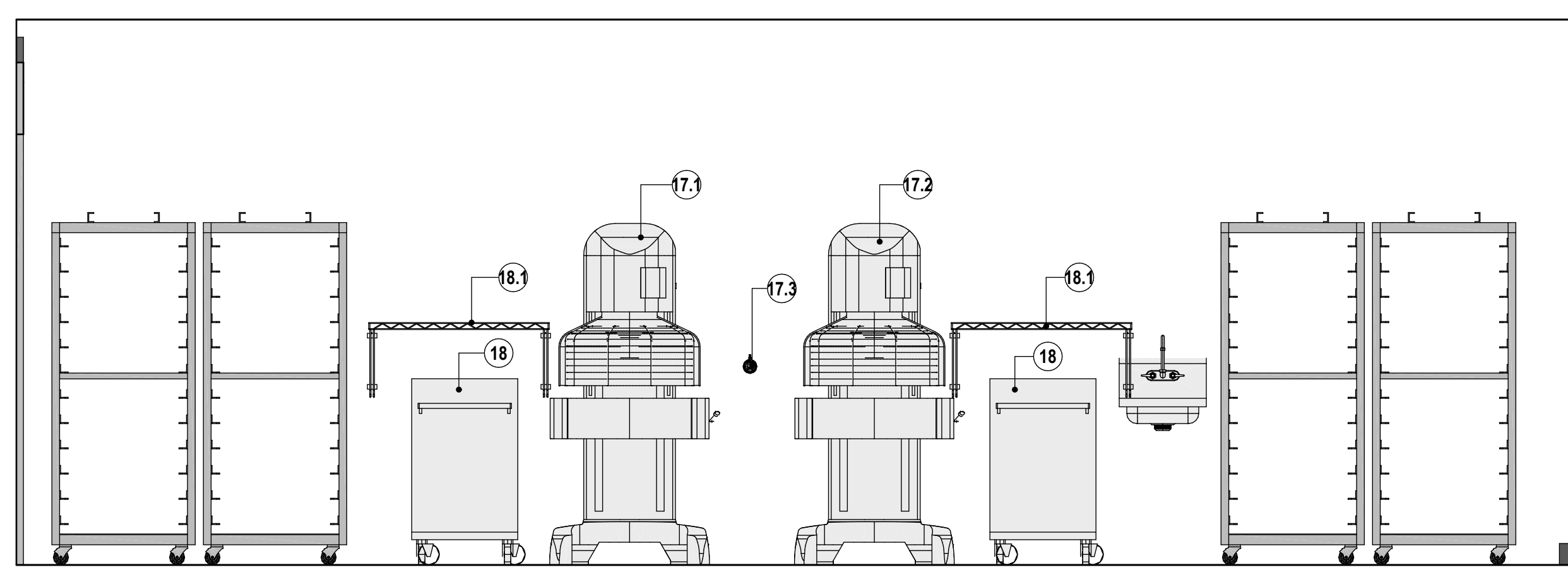
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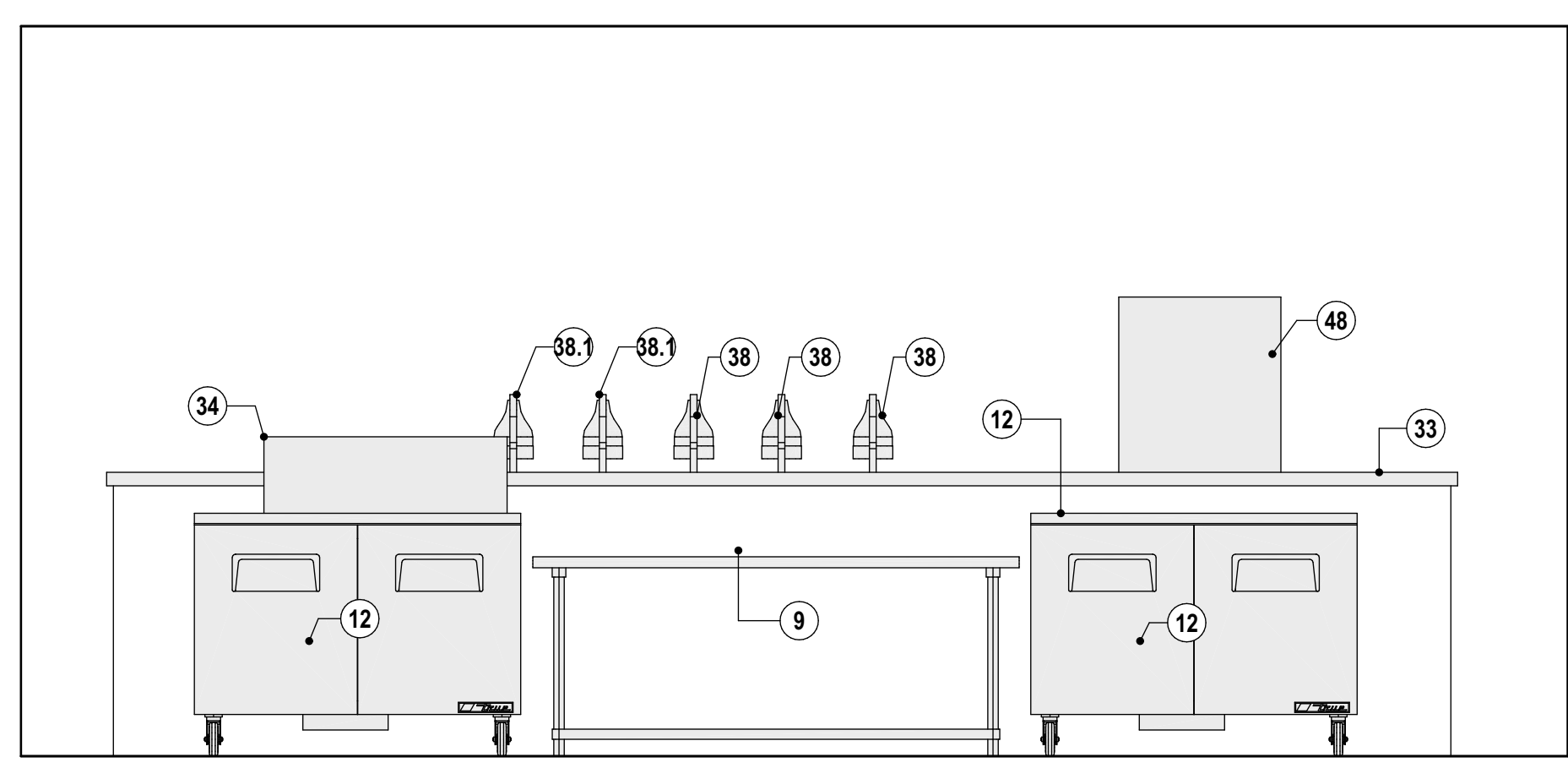
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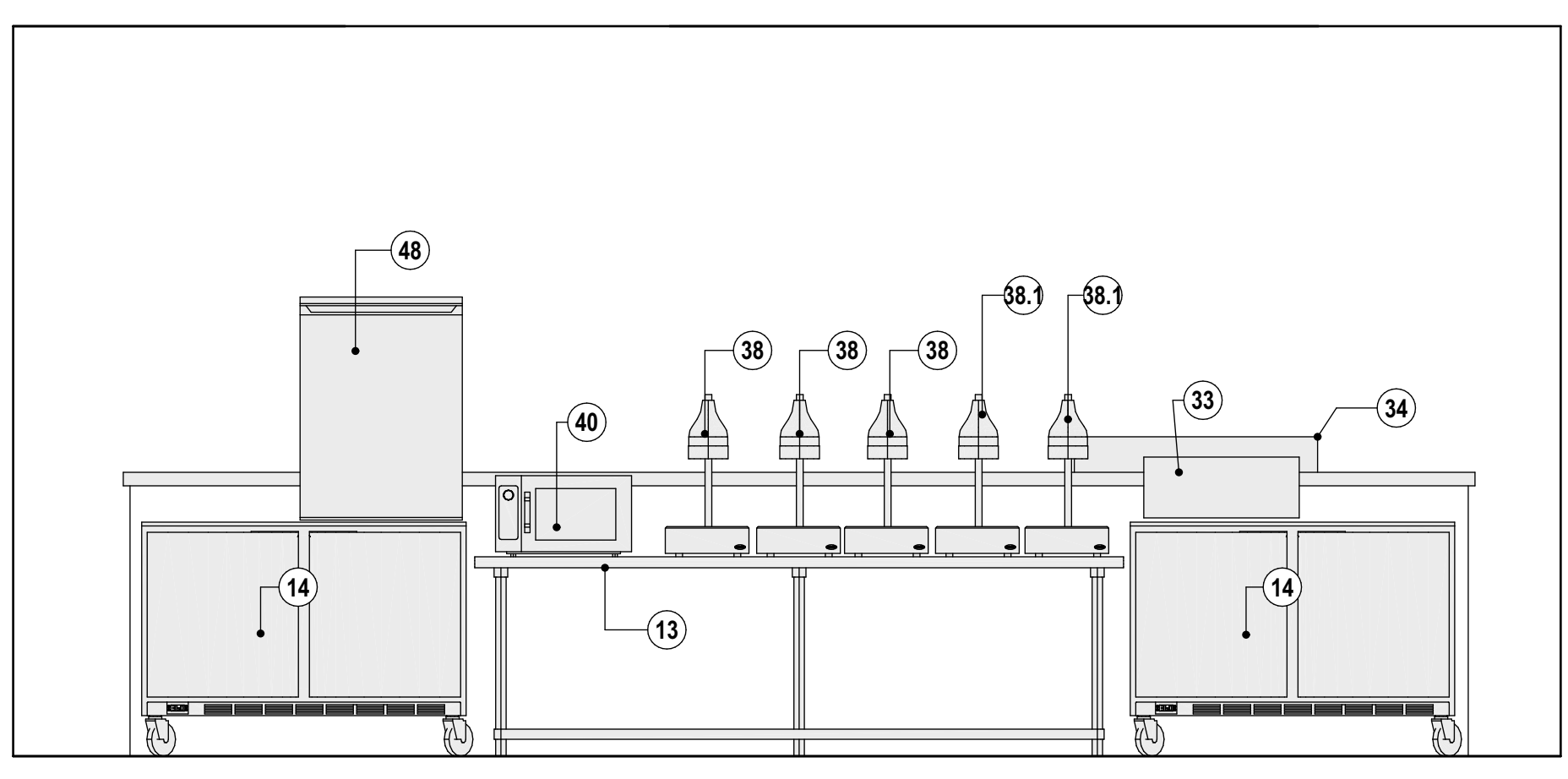
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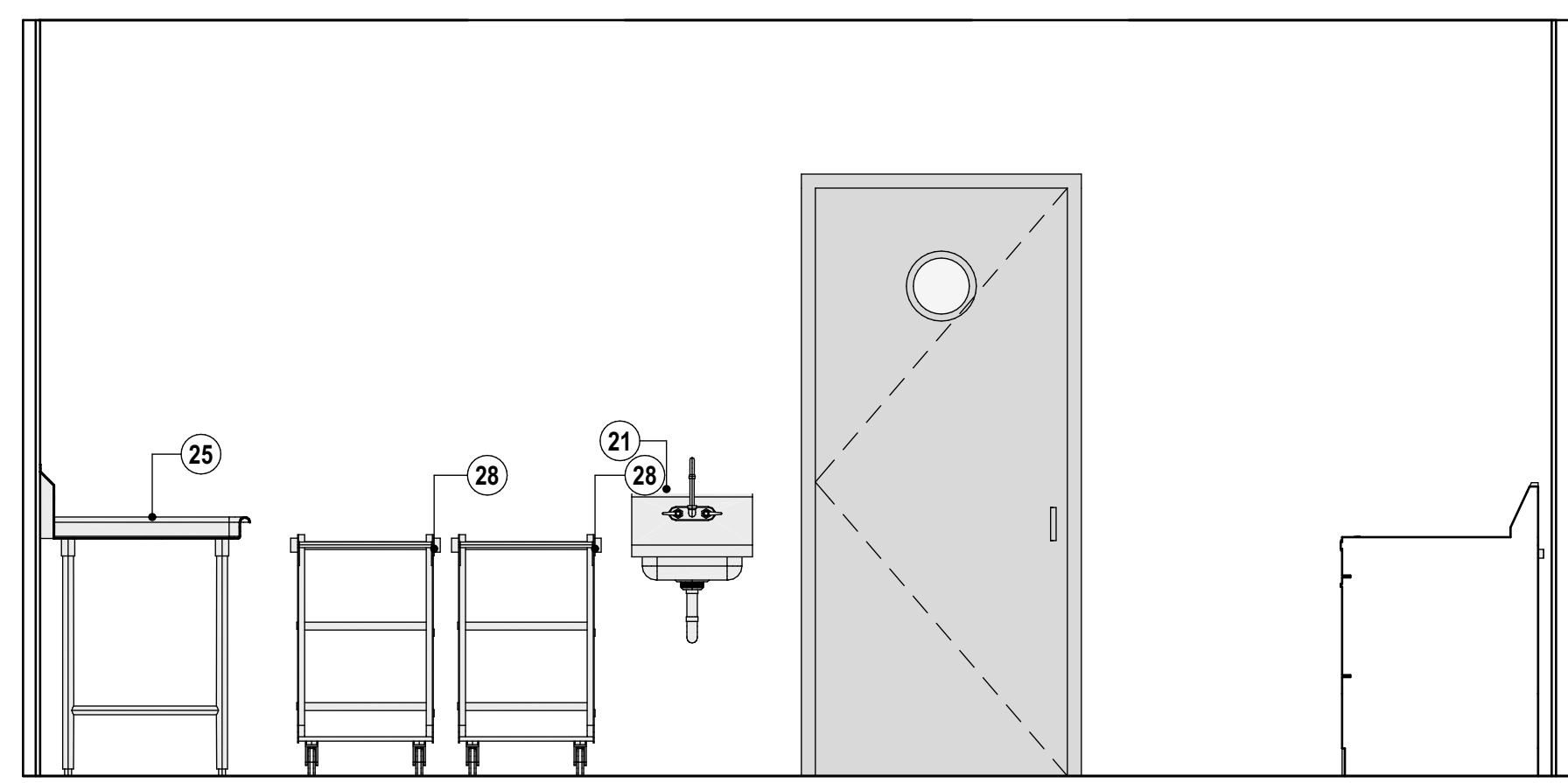
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1/2" = 1'-0"

5



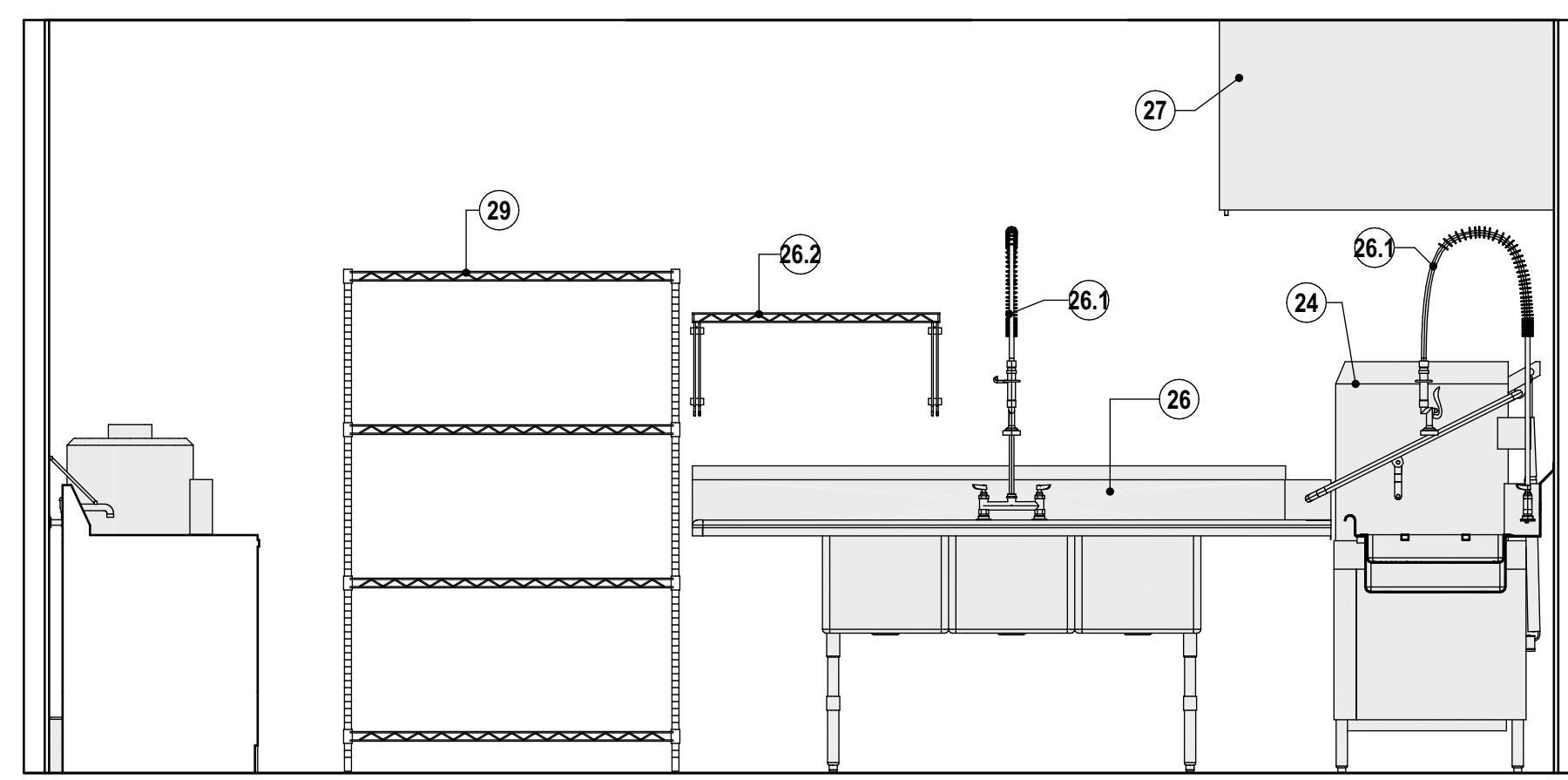
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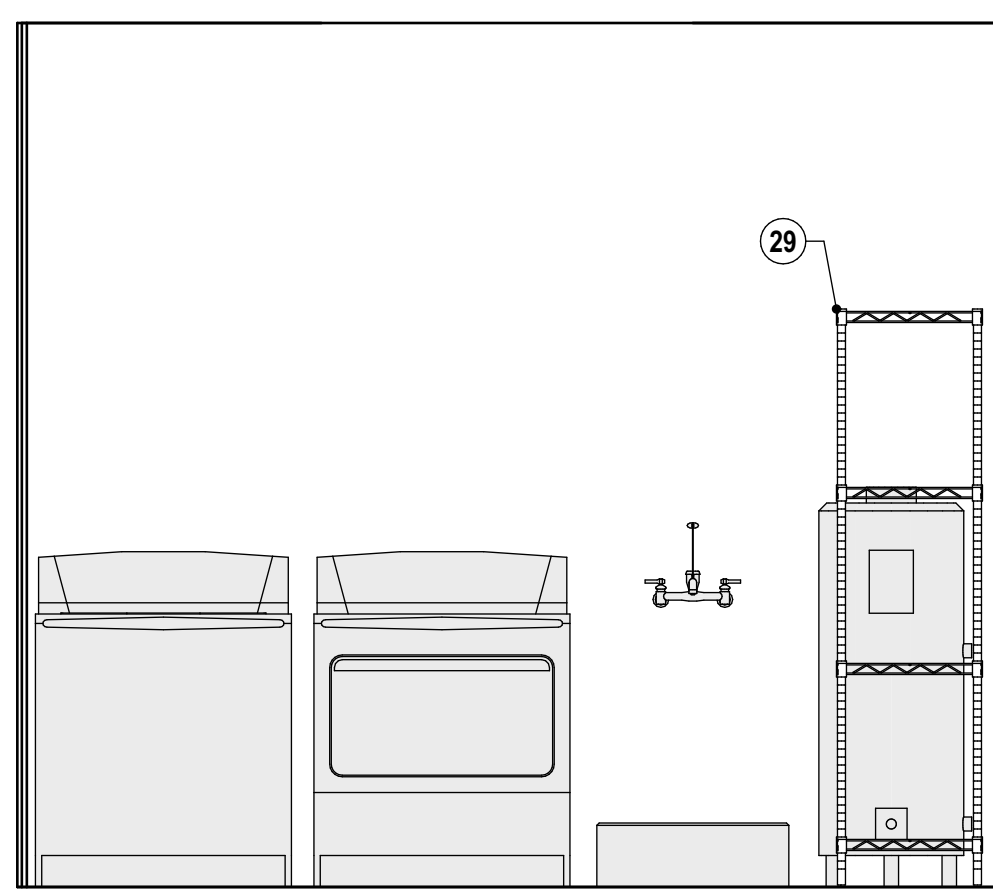
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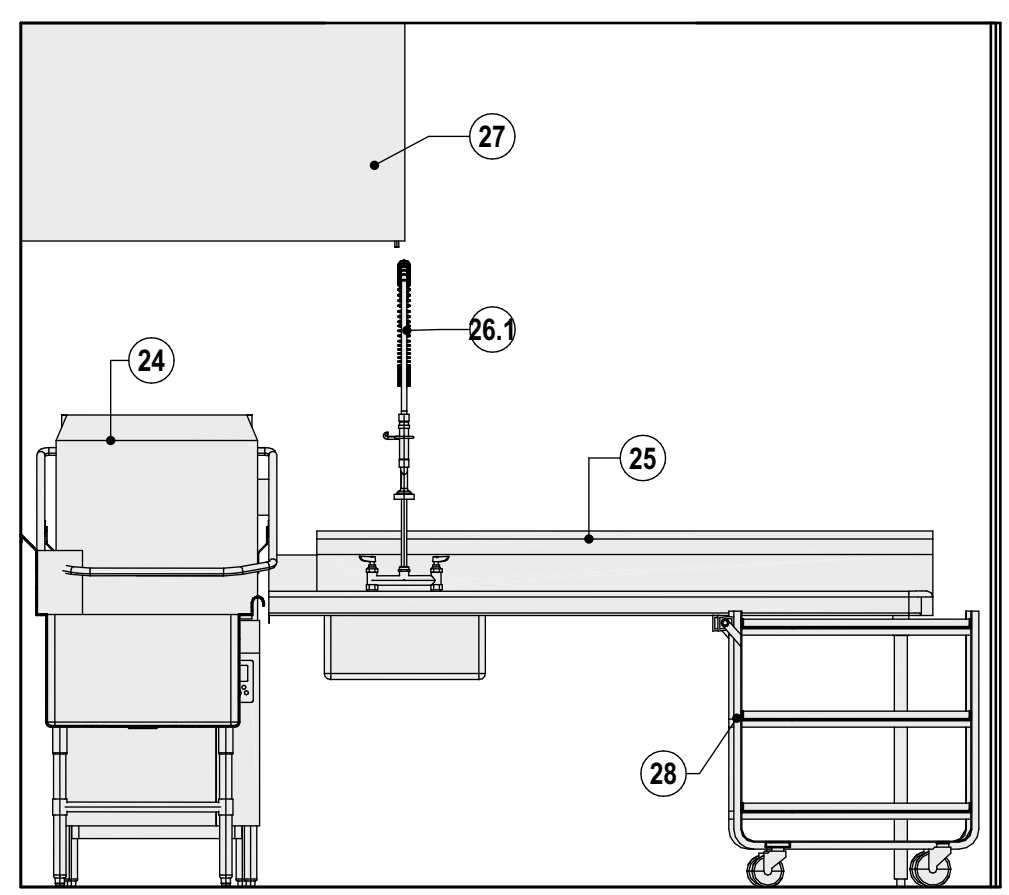
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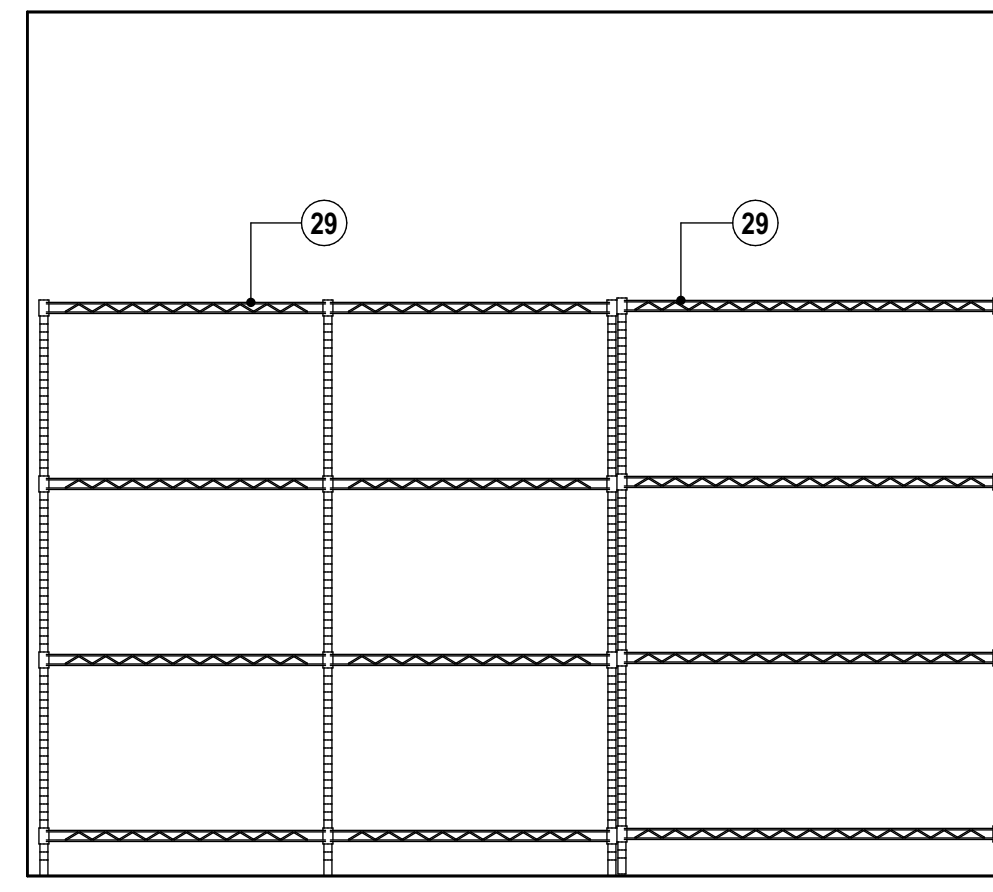
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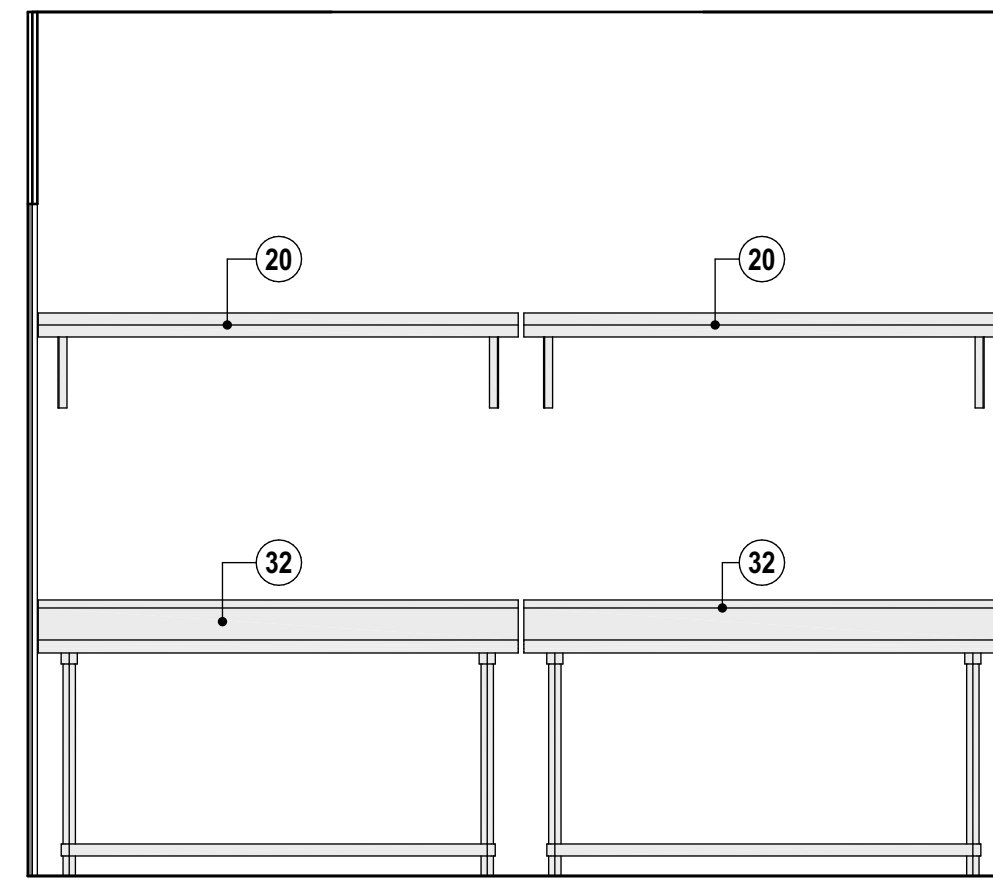
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INT ELEV
1/2" = 1'-0"

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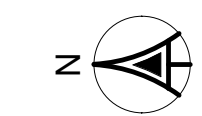
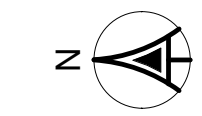
INT ELEV
1/2" = 1'-0"

11

- GENERAL NOTES**
- Refer to sheets G101 and G102 for the complete general notes and outline specifications. Those notes apply to all sheets in this set and to all contracts.
 - Refer to the cover sheet for the project description and the multi-prime coordination notes.
 - The Work is arranged under separate prime contracts. Refer to Section 01 12 00 "Multiple Contract Summary" in the Procurement Manual for the scope of each contract and for work by the Owner.
 - Field verify all existing conditions and dimensions before fabrication and installation. Do not scale drawings.
 - Report discrepancies, gaps, or omissions to the Architect before proceeding. Where documents conflict, the more stringent requirement governs.
 - All work shall comply with the codes listed on G101 and with the requirements of the authorities having jurisdiction.
 - Provide blocking, backing, rough-in, and utility connections indicated on the drawings to receive the work of other contracts and work by the Owner.
 - Details and sections are typical at similar conditions unless noted otherwise.



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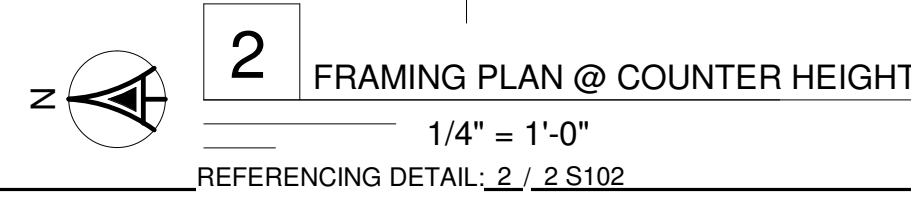
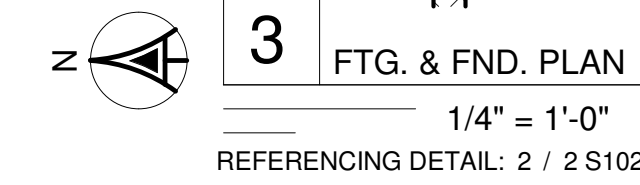
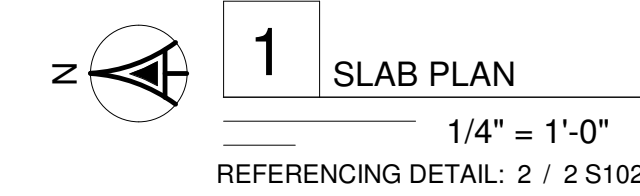
SD101

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

8/5/2026 11:06:02 AM



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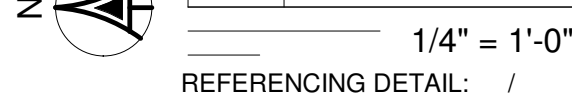
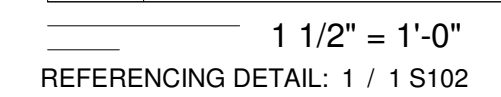
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Date: 08/05/26

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RD = ROOF DRAIN - SEE ARCH & MEP FOR NUMBER AND LOCATION

NEW 1.5N20 STEEL ROOF DECK (HATCHED)

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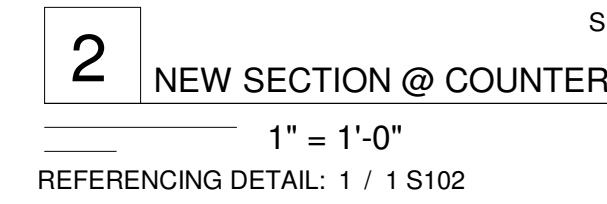
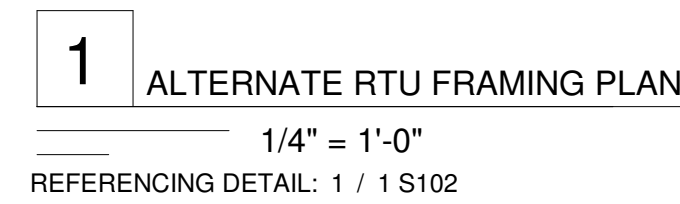
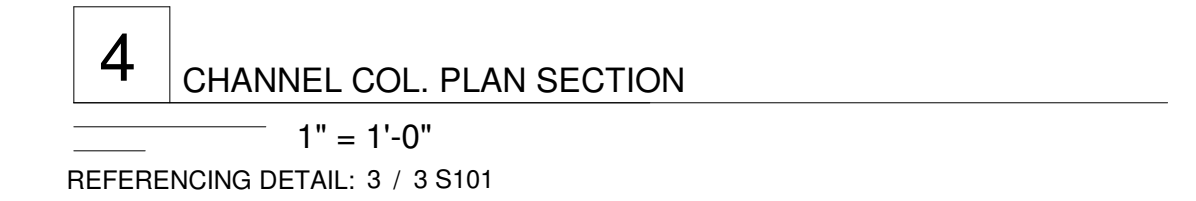
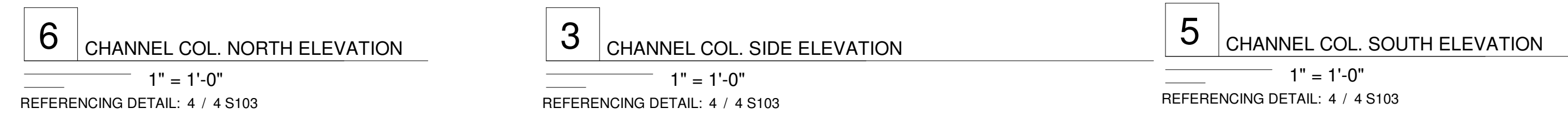
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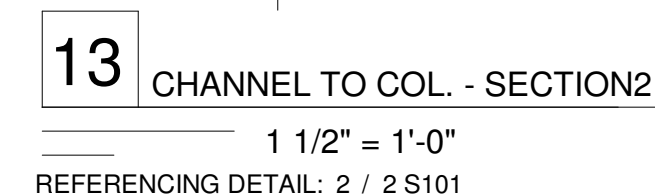
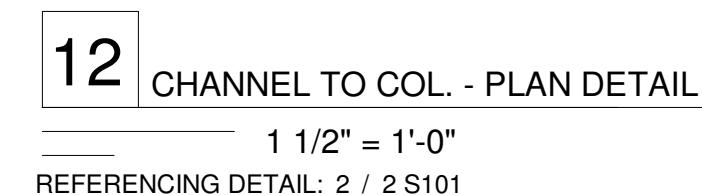
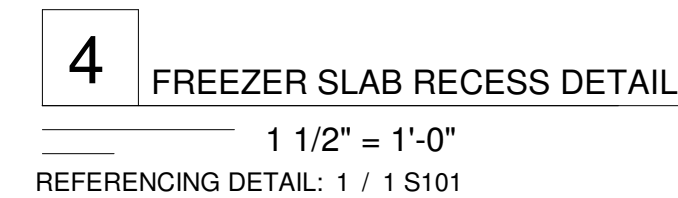
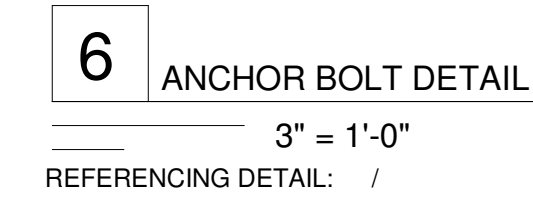
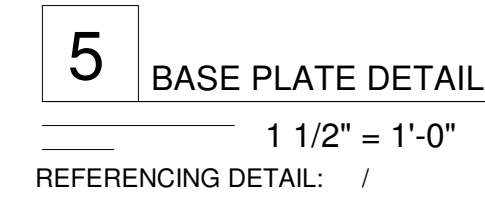
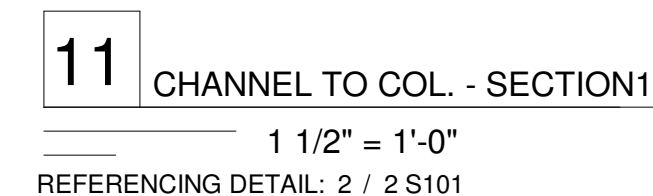
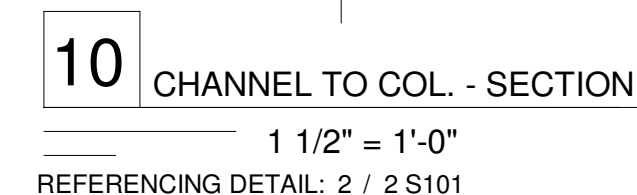
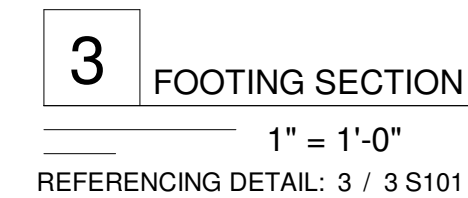
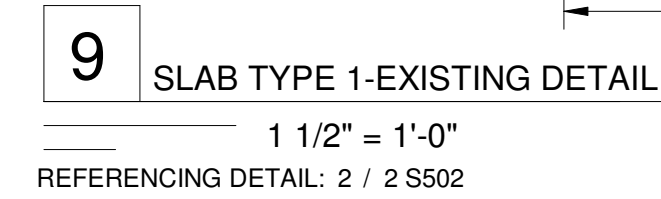
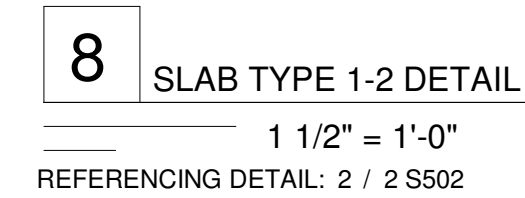
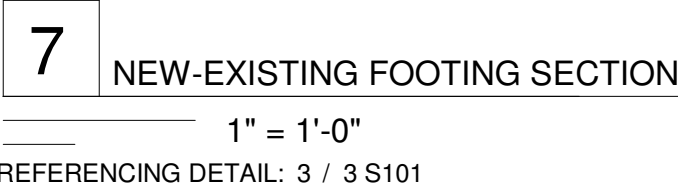
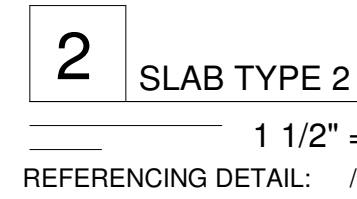
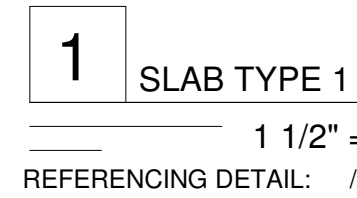
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FRAMING PLAN

Project Number: ISF PN CVI 2500
Date: 08/05/26

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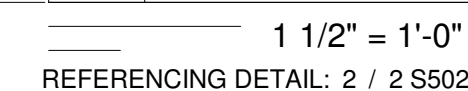
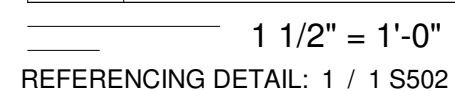
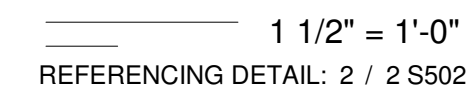
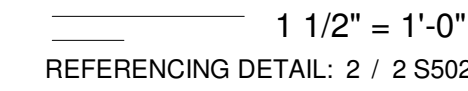
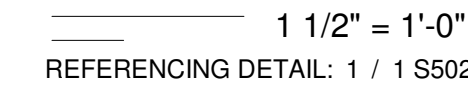
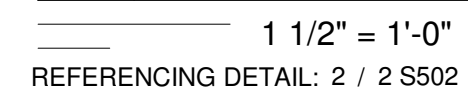
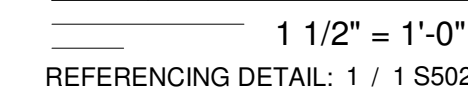
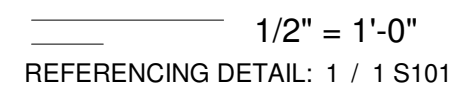
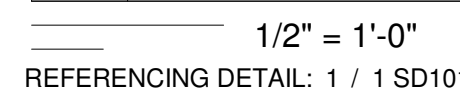
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SCALE: As indicated





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S502

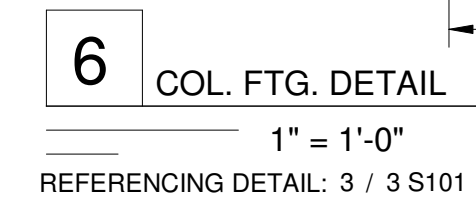
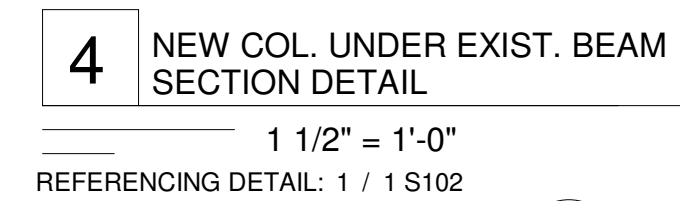
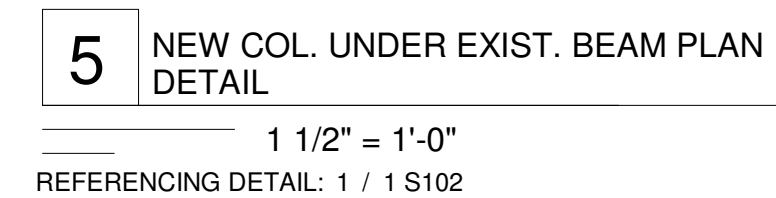
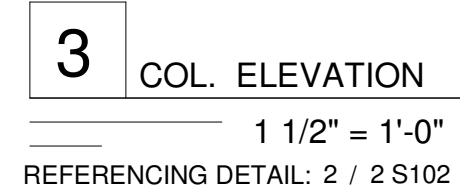
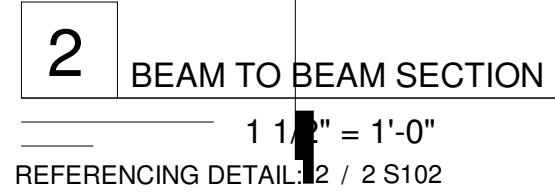
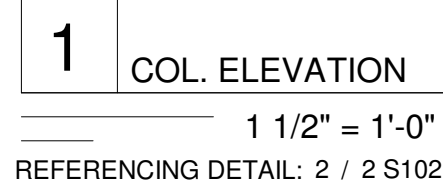
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DOALL:	As Indicated
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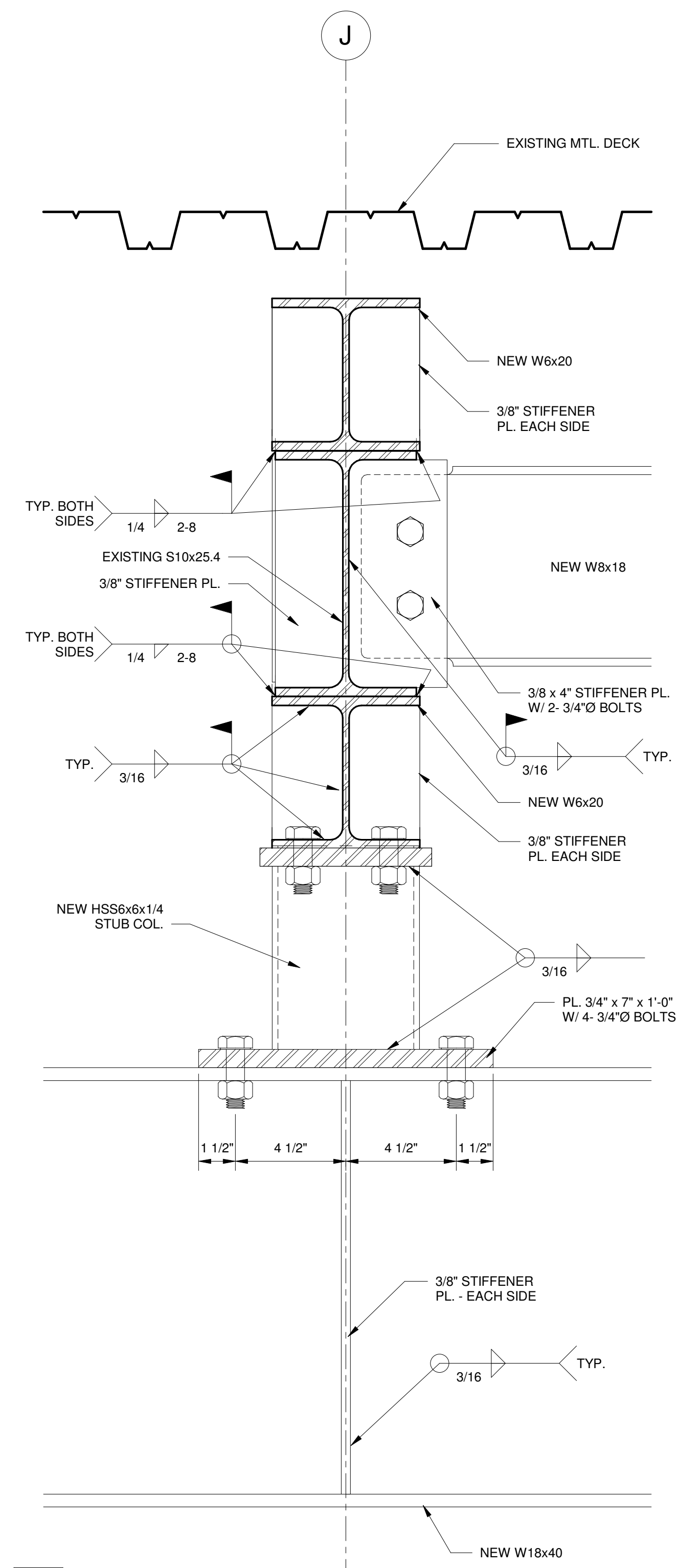
VARIED INDUSTRIES
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- KITCHEN REMODEL -

Project Number: ISF PN CVI 2500
Date: 08/05/26

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PROJECT
CONTACTS:

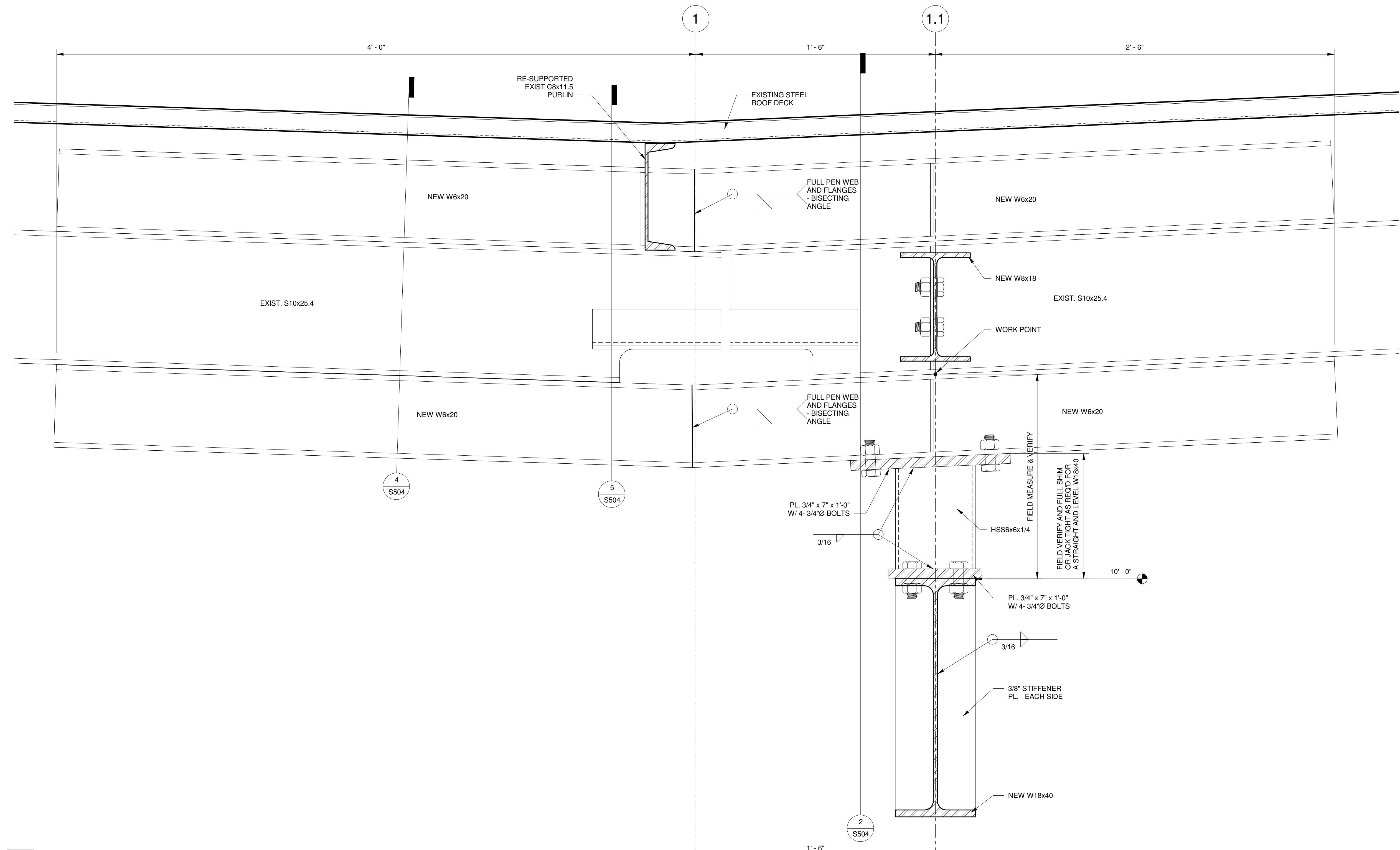
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2 CONNECTION SECTION

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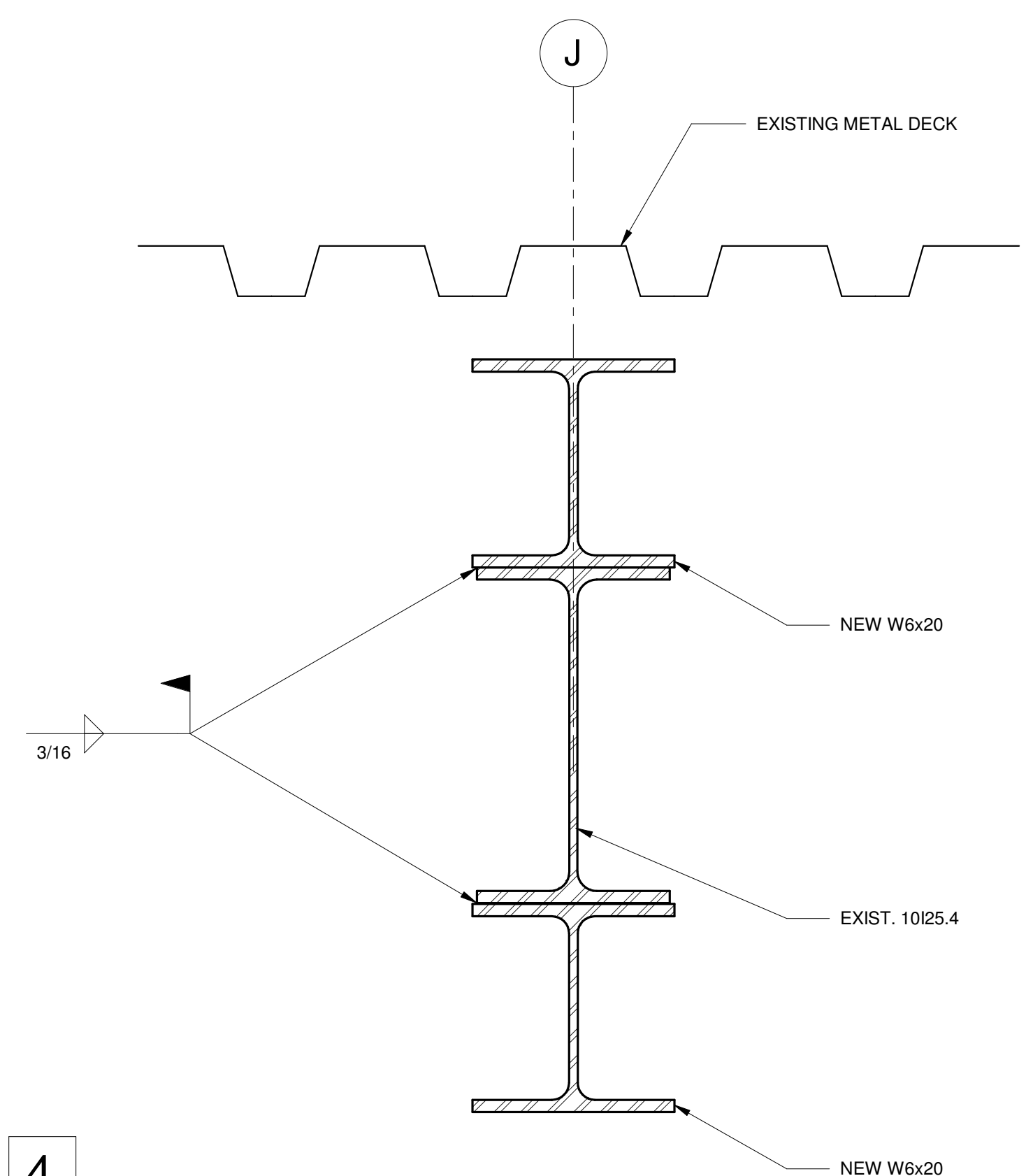
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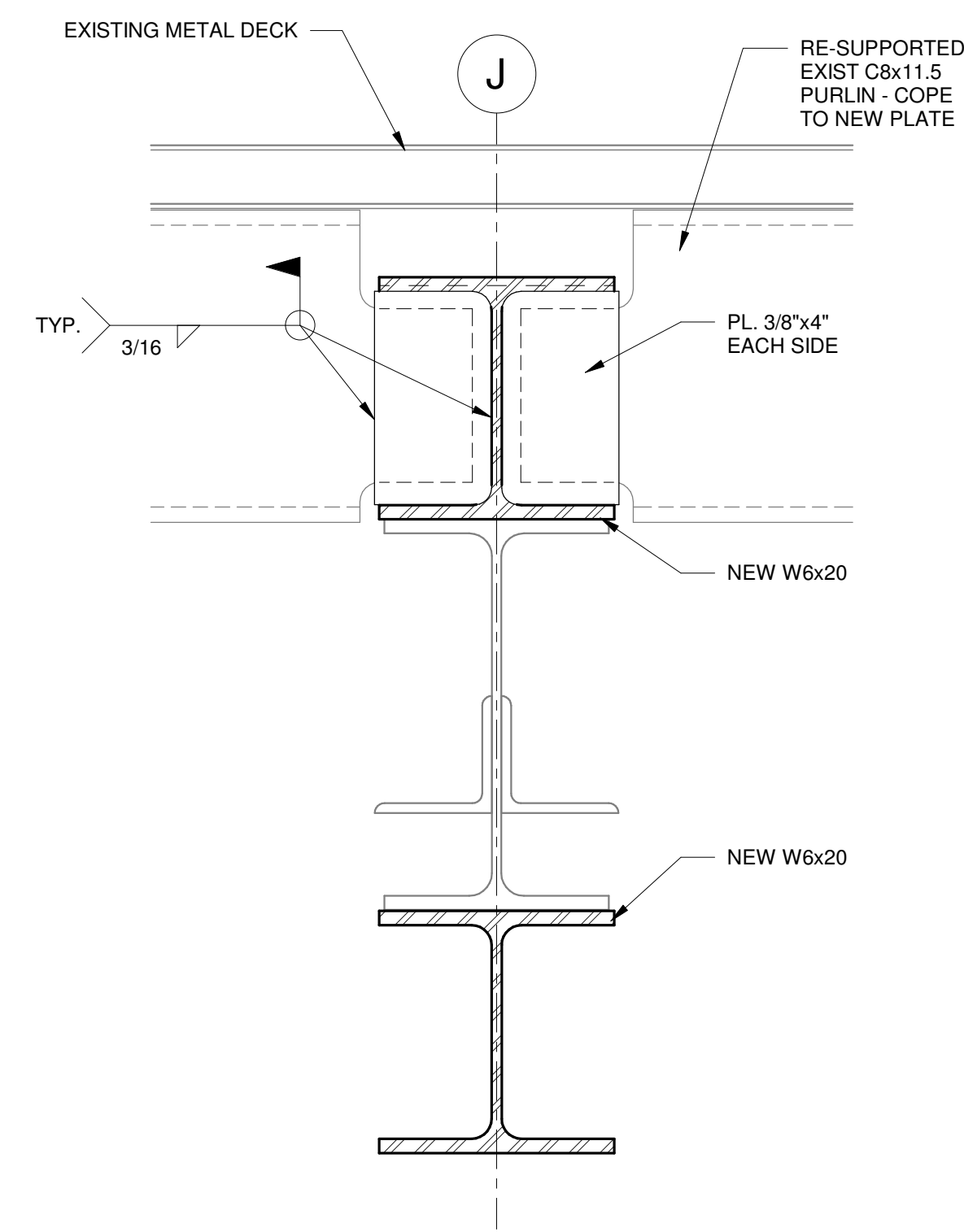
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4 Detail 1

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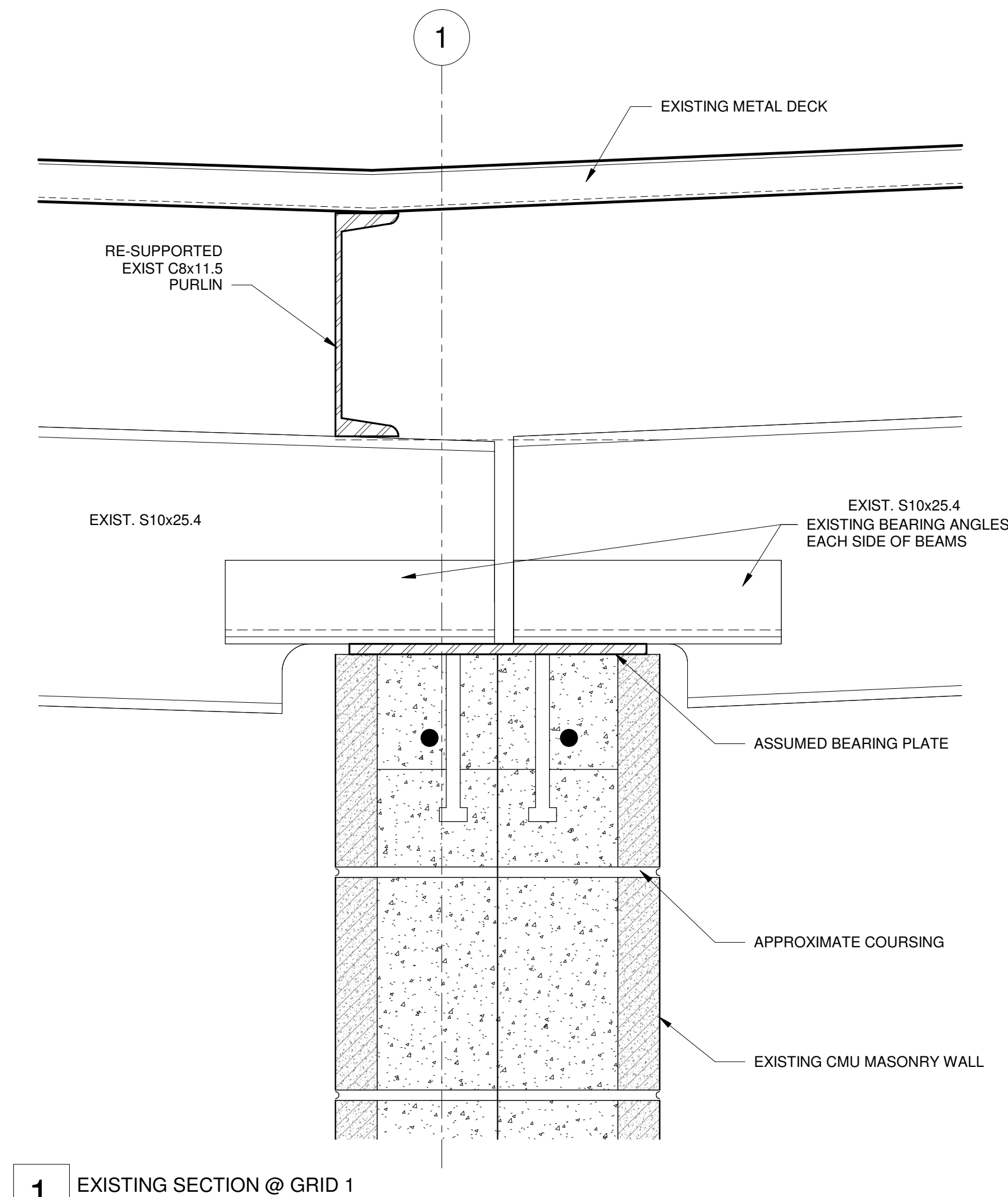
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5 Detail 2

3" = 1'-0"

REFERENCING DETAIL: 3 / 3 S504



1 EXISTING SECTION @ GRID 1
@ GRIDS H & J Copy 2

$$3'' = 1'-0''$$

REFERENCING DETAIL: /

[illegible]

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STRUCTURAL DETAILS

Project Number: ISF PN CVI 2500

Date: 08/05/26

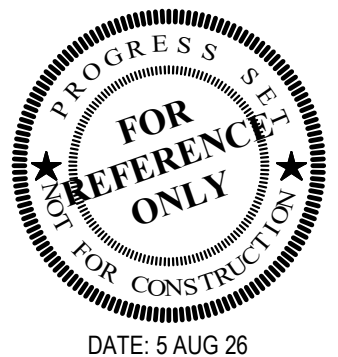
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SCALE: 3" = 1'-0"

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FIRE PROTECTION SHEET INDEX

F000 FIRE PROTECTION COVER SHEET
F101 FIRE PROTECTION PLAN



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(515) 727-0700
www.KEDbluestone.com

VARIED INDUSTRIES BUILDING CONCESSION
KITCHEN REMODEL
IOWA STATE FAIR
3000 E GRAND AVE, DES MOINES, IA 50317

REVISIONS:

NO. DESCRIPTION DATE

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DESIGNED BY: Designer CHECKED BY: Checker

PROJECT NO: 125-017

ISSUE DATE: 5 AUG 26

ISSUANCE:

SHEET NAME:

FIRE PROTECTION
COVER SHEET

SHEET (30X42):

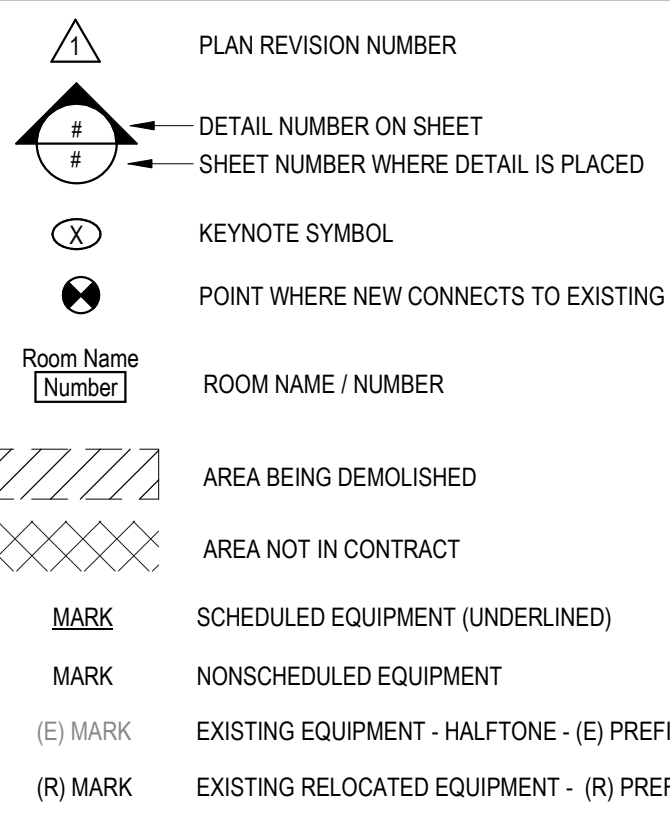
F000

ABBREVIATIONS			
▲ T	TEMPREATURE DIFFERENCE	LB	POUND
Ø	ROUND	LBHR	POUNDS PER HOUR
ABV	ABOVE	LD	LINEAR DIFFUSER
AC	AIR CONDITIONING	LP	LOW PRESSURE
AD	AREA DRAIN	LP	LIQUEFIED PETROLEUM GAS
ADD	ADDENDUM	LVR	LOUVER
A/E	ARCHITECT / ENGINEER	LWT	LEAVING WATER TEMPERATURE
AF	ABOVE FINISHED FLOOR	MA	MIXED AIR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MBH	ONE THOUSAND BTU PER HOUR
ALT	ALTERNATE	M.C.	MECHANICAL CONTRACTOR
AP	ACCESS PANEL	MFR	MOTORISED DAMPER
PACH	ARCHITECT/ARCHITECTURAL	MN	MINIMUM
BAS	BUILDING AUTOMATION SYSTEM	MECH	MECHANICAL
BFF	BELOW FINISHED FLOOR	MFR	MANUFACTURER
BHP	BRAKE HORSEPOWER	MN	MINIMUM
BLW	BELOW	MISC	MISCELLANEOUS
BTU	BRITISH THERMAL UNITS	MP	MEDIUM PRESSURE
BTUH	BRITISH THERMAL UNITS PER HOUR	MTR	MOTOR
CAP	CAPACITY	MUA	MAKE-UP/AIR
CB	CATCH BASIN	NC	NOISE CRITERIA
CD	CEILING DIFFUSER	NC	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	NC	NOT IN CONTRACT
CFH	CUBIC FEET PER HOUR	NG	NATURAL GAS
CLG	CEILING	NO	NUMBER
C.M.	CONSTRUCTION MANAGER	NO	NORMALLY OPEN
CO	CLEAN OUT	NTS	NOT TO SCALE
CV	CONTROL VALVE	O	OXYGEN
QW	COLD WATER	OA	OUTSIDE AIR
D	DEGREE	ORD	OVERFLOW ROOF DRAIN
DB	DRY BULB	PD	PRESSURE DROP
DDC	DIRECT DIGITAL CONTROLS	PV	POST INDICATOR VALVE
DIA	DIAMETER	PLBG	PLUMBING
DN	DOWN	PRESS	PRESSURE
DW	ENTERING WATER	PRV	PRESSURE REDUCING VALVE
EAT	ENTERING AIR TEMPERATURE	PSI	POUNDS PER SQUARE INCH
E.C.	ELECTRICAL CONTRACTOR	PSIG	POUNDS PER SQUARE INCH GAUGE
ELEC	ELECTRICAL EQUIPMENT	R	DUCT RISER
EWC	ELECTRIC WATER COOLER	RA	RETURN AIR
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
EA	EXHAUST AIR	RCP	RADIANT CEILING PANEL
EG	EXHAUST GRILLE	RD	ROOF DRAIN
EXIST	EXISTING	REC	RECESSED
F	DEGREES FAHRENHEIT	RED	REDUCER
FO	FLOOR CLEAN OUT	RG	RETURN GRILLE
FD	FLOOR DRAIN	RH	RELATIVE HUMIDITY
FDC	FIRE DEPARTMENT CONNECTION	REL	RELIEF AIR
FL	FLOOR	RM	ROOM
FO	FUEL OIL	RPM	REVOLUTIONS PER MINUTE
FOV	FUEL OIL VENT	SA	SUPPLY AIR
FOR	FUEL OIL RETURN	SAN	SANITARY
FOR	FUEL OIL RETURN	SD	SMOKE DAMPER
FOS	FUEL OIL SUPPLY	SF	SQUARE FOOT
FFC	FIRE PROTECTION CONTRACTOR	SG	SUPPLY GRILLE
FFM	FEET PER MINUTE	SM	SURFACE MOUNT
FS	FLOOR SINK	SP	STATIC PRESSURE
FT	FOOT/FEET	SR	SUPPLY REGISTER
FTR	FIN TUBE RADIATION	STM	STEAM
GAL	GALLON	T	THERMOSTAT
GF	GAS-FIRED	T.C.	TEMP CONTROLS CONTRACTOR
G.C.	GENERAL CONTRACTOR	TD	TEMPERATURE DROP
GPM	GALLONS PER MINUTE	TD	TRENCH DRAIN
GW	GREASE WASTE	TEMP	TEMPERATURE
HB	HOSE BIBB	TYP	TYPICAL
HP	HORSE POWER	UG	UNDERGROUND
HP	HIGH PRESSURE	VAC	VACUUM
HTG	HEATING	V	VENT
HTR	HEATER	VAV	VARIABLE AIR VOLUME
HW	HOT WATER	VENT	VENTILATION
HYD	HYDRANT	VTR	VENT THROUGH ROOF
ID	INDIRECT DRAIN	W	WASTE
IN	INCH	WB	WET BULB
I.E.	INVERT ELEVATION	WCO	WALL CLEAN OUT
K.E.C.	KITCHEN EQUIPMENT CONTRACTOR	WH	WALL HYDRANT
LAT	LEAVING AIR TEMPERATURE	YCO	YARD CLEANOUT

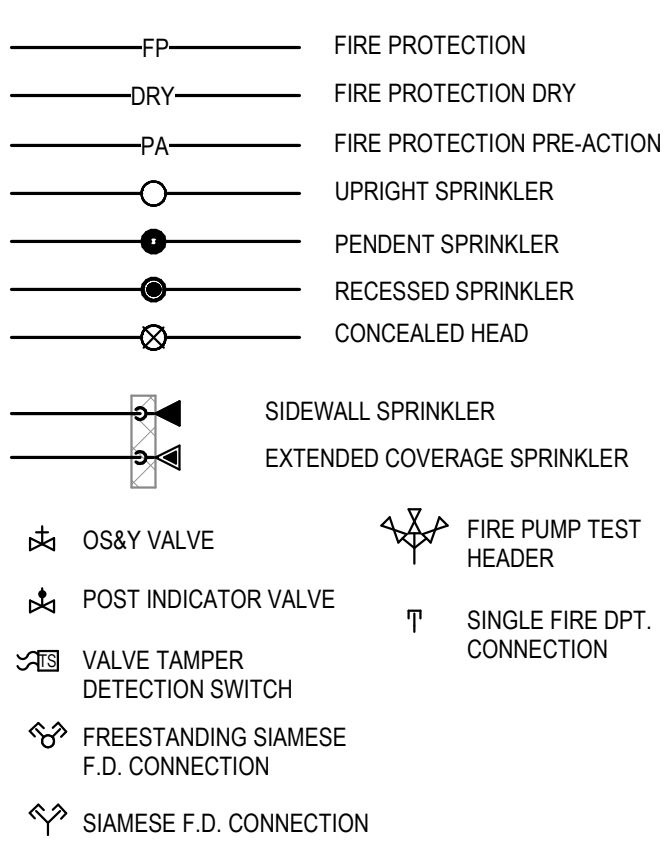
EQUIPMENT ABBREVIATIONS	
AC	AIR CONDITIONING UNIT
ACCU	AIR COOLING CONDENSING UNIT
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
B	BOILER
BCU	BLOWER COIL UNIT
CH	CHILLER
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CHWP	CHILLED WATER PUMP
CP	CONDENSER PUMP
DBP	DOMESTIC WATER BOOSTER PUMP
DC	DUCT MOUNTED COIL
CP	DOMESTIC WATER CIRCULATING PUMP
EF	EXHAUST FAN
EDC	ELECTRIC DUCT COIL
ET	EXPANSION TANK
ERV	ENERGY RECOVERY VENTILATOR
EVH	ELECTRIC WATER HEATER
FCU	FAN COIL UNIT
FP	FIRE PUMP
GI	GREASE INTERCEPTOR
GRV	GRAVITY ROOF VENTILATOR
HP	HEAT PUMP
HWP	HEATING WATER PUMP
HRU	HEAT RECOVERY UNIT
P	PUMP
PRV	POWER ROOF VENTILATOR
RF	RETURN FAN
RHC	REHEAT COIL
RTU	ROOFTOP UNIT
SP	SUMP PUMP
UH	UNIT HEATER
WH	WATER HEATER

* NOTE *
ALL GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL SUBSEQUENT SHEETS IN SHEET LIST. THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

GENERAL PLAN SYMBOLS



FIRE PROTECTION SYMBOLS



GENERAL NOTES - FIRE PROTECTION DEMOLITION

- REFER TO PROJECT DESCRIPTION NARRATIVE ON ARCHITECTURE CVR SHEET FOR PROJECT CLARIFICATIONS.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BID. NO ALLOWANCE WILL BE MADE FOR ADDITIONAL COSTS DUE TO CONTRACTORS FAILURE TO VERIFY EXISTING CONDITIONS AND DIMENSIONS.
- WHEN CONNECTING TO EXISTING SYSTEMS THE FIRE PROTECTION CONTRACTOR SHALL BE REQUIRED TO MOVE PIPING UP TO 6" IN ANY DIRECTION AND ADJUST CONNECTION SIZES UP OR DOWN TO THE NEXT NOMINAL PIPE SIZE WITHOUT ANY ADDITIONAL COST.
- ALL ITEMS INCLUDING HANGERS WITHIN THE DEMOLITION AREA ARE TO BE REMOVED UNLESS OTHERWISE NOTED. SEAL PENETRATIONS FROM DEMOLISHED PIPING.
- ALL SPRINKLERS AND EQUIPMENT SHOWN TO BE REMOVED SHALL INCLUDE ALL ASSOCIATED PIPING, CONTROLS, WIRING, HANGERS AND CONCRETE PADS UNLESS OTHERWISE NOTED. SEAL PENETRATIONS FROM DEMOLISHED PIPING.
- REMOVAL OF EXISTING SPRINKLER HEADS, PIPE, AND FITTINGS WILL REQUIRE DRAINING THE PIPING RISERS OR MAINS ALL PIPING RISERS AND MAINS SHALL BE REFILLED WITH PROPER FLUID AND PROPERLY VENTED BEFORE RETURNING TO SERVICE.
- REMOVAL OF EXISTING SPRINKLER HEADS, PIPE, AND FITTINGS WILL REQUIRE CAPPING EXISTING RISERS, MAINS OR BRANCHES REQUIRED TO ALLOW THE SYSTEMS TO REMAIN FULLY FUNCTIONAL.
- EXISTING SPRINKLER HEADS AND PIPING TO REMAIN SHALL BE PROTECTED DURING DEMOLITION AND NEW CONSTRUCTION ACTIVITIES.
- FIRE PROTECTION CONTRACTOR SHALL REMOVE FROM SITE MATERIALS NOT INDICATED TO BE SALVAGED INCLUDING ALL DEBRIS. ALL REMOVED MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR WHO SHALL LEGALLY DISPOSE OF SAME. OWNER SHALL HAVE RIGHT OF REFUSAL ON SALVAGEABLE ITEMS REMOVED AS A RESULT OF RENOVATION ACTIVITIES.
- COORDINATE WITH OWNER'S PERSONNEL TO MINIMIZE SHUT-DOWNS TO OCCUPIED AREAS.
- SOME WORK INDICATED IS TO BE ACCOMPLISHED IN AN EXISTING FINISHED AREA. (FIELD VISIT REQUIRED). FIRE PROTECTION CONTRACTOR SHOULD COORDINATE WITH OWNER'S PERSONNEL TO SCHEDULE NIGHT AND/OR WEEKEND WORK TO MINIMIZE DISRUPTIONS TO EXISTING TENANTS.
- SOME WORK INDICATED IS TO BE ACCOMPLISHED IN AN EXISTING FINISHED AREA. (FIELD VISIT REQUIRED). FPC SHOULD COORDINATE PARTIAL CEILING REMOVAL AND REPLACEMENT WITH GENERAL CONTRACTOR/ CONSTRUCTION MANAGER AND MAINTENANCE PERSONNEL. FPC TO REMOVE, STORE, AND REPLACE CEILING TILES AS REQUIRED.
- SOME WORK INDICATED IS TO BE ACCOMPLISHED IN AN EXISTING FINISHED AREA. (FIELD VISIT REQUIRED). FIRE PROTECTION CONTRACTOR SHOULD COORDINATE CORING WITH OWNER'S MAINTENANCE PERSONNEL. FPC SHOULD TAKE PRECAUTIONS NECESSARY TO MINIMIZE CONSTRUCTION DEBRIS TRANSFER TO ADJACENT NON-WORK AREAS.
- FIRE PROTECTION CONTRACTOR SHALL REMOVE ALL PENDENT SPRINKLER HEADS INSTALLED IN THE EXISTING CEILING. SPRINKLER DROPS SHALL BE TURNED TO THE UPRIGHT POSITION AND NEW UPRIGHT SPRINKLER HEADS INSTALLED WITHIN 12" OF THE DECK. ONCE THE NEW CEILINGS HAVE BEEN INSTALLED FIRE PROTECTION CONTRACTOR SHALL REMOVE THE UPRIGHT SPRINKLER HEADS AND INSTALL SPRINKLER HEADS AND ASSOCIATED PIPING AS SHOWN ON NEW WORK PLANS.
- THE OWNER SHALL PROVIDE A FULL TIME FIRE WATCH UNTIL THE NEW SPRINKLER SYSTEMS IS INSTALLED AND FULLY FUNCTIONAL. FIRE WATCH ACTIVITIES SHALL BE PROVIDED PER ALL REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

GENERAL NOTES - FIRE PROTECTION

- ALL FIRE PROTECTION WORK SHOULD BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION:
 - NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
 - NFPA 70 - NATIONAL ELECTRICAL CODE
 - INTERNATIONAL FIRE CODE
 - LOCAL CODES, INCLUDING ALL AMENDMENTS AND ORDINANCES
- REFER TO SHEET M001 FOR PLUMBING SPECIFICATIONS.
- COORDINATE INSTALLATION OF FIRE PROTECTION WORK WITH GENERAL CONTRACTOR/ CONSTRUCTION MANAGER AND ALL OTHER TRADES TO AVOID UNNECESSARY DELAY OR INTERFERENCES. CONTRACTOR SHALL REVIEW ARCHITECTURAL AND EQUIPMENT SHEETS. FIRE PROTECTION CONTRACTOR SHOULD PROVIDE RECORD DRAWING COMMENTARY REFLECTING ACTUAL INSTALLATION. PROVIDE ONE HARD COPY SET TO A/E.
- FIRE PROTECTION CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL FEES AND PERMITS REQUIRED TO ACCOMPLISH THIS WORK.
- REFERENCE ARCHITECTURAL DRAWINGS FOR CODE-RATED WALLS, FLOORS, AND CEILINGS. PROVIDE UL RATED, FM APPROVED FIRE STOP AT ALL NEW FIRE PROTECTION PIPE PENETRATIONS THROUGH FIRE RATED WALLS AND CEILINGS.
- REFERENCE ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING TYPES, HEIGHTS AND OTHER CEILING MOUNTED ITEMS.
- PROVIDE AND INSTALL AUXILIARY DRAINS AT ALL PIPING LOW POINTS. AUXILIARY DRAINS SHALL TERMINATE WITH A HOSE THREAD CONNECTION AND HAVE A PERMANENT LABEL ATTACHED.
- DO NOT ROUTE PIPING DIRECTLY ABOVE OR BELOW ELECTRICAL PANELS, INCLUDING PANEL SERVICE CLEARANCES.
- DO NOT SUSPEND PIPING FROM OTHER PIPING, DUCTWORK OR CONDUIT. ALL PIPING SHALL BE SUPPORTED FROM BUILDING STRUCTURE USING THE APPROPRIATE ATTACHMENTS.
- PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, INSTALLING, TESTING AND CERTIFICATION OF REDUCED PRESSURE BACKFLOW DEVICE. POST CERTIFICATION ON BACKFLOW DEVICE ONCE TESTING HAS BEEN COMPLETED.
- FIRE PROTECTION CONTRACTOR SHOULD REVIEW ANTICIPATED MAN/MATERIAL LIFT EQUIPMENT WITH OWNER'S REPRESENTATIVE PRIOR TO UTILIZING FOR INSTALLATION. DAMAGED FLOORING RESULTING FROM UNAPPROVED EQUIPMENT WILL BE REPLACED AT THE FIRE PROTECTION CONTRACTORS EXPENSE.
- REFER TO WRITTEN SPECIFICATIONS FOR EQUIPMENT AND MATERIAL RELATED TO THIS WORK.
- FIRE PROTECTION CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH CORING REQUIRED FOR INSTALLATION OF NEW FIRE PROTECTION SYSTEMS. CORING ACTIVITIES SHOULD BE CLOSELY COORDINATED WITH OWNER'S REPRESENTATIVE. FPC SHALL DEMARCATATE INTENDED CORING LOCATIONS AND REVIEW WITH OWNER PRIOR TO PROCEEDING WITH WORK.
- FIRE PROTECTION CONTRACTOR SHOULD TAKE PRECAUTIONS NECESSARY TO MINIMIZE CONSTRUCTION DEBRIS TRANSFER TO ADJACENT NON-WORK AREAS.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SUPPLYING AND INSTALLING ALL LOW VOLTAGE CABLING AND POWER WIRING/CONDUIT INDICATED ON THIS PLAN. COORDINATE WORK WITH ELECTRICAL CONTRACTOR PRIOR TO BID.
- FIRE PROTECTION CONTRACTOR SHALL RUN ALL FIRE PROTECTION PIPING AS HIGH AS POSSIBLE WITHIN THE TRUSS SPACE. COORDINATE THE LOCATION OF ALL PIPING WITH THE STRUCTURAL PLANS, ARCHITECTURAL CEILING HEIGHTS AND OTHER TRADES TO AVOID CONFLICTS. NOTIFY CONSTRUCTION MANAGER AS SOON AS ANY CONFLICTS ARE DETECTED. FAILURE TO PROPERLY COORDINATE PIPE ROUTING WITH OTHER TRADES WILL BE REQUIRED TO BE MOVED AT THE FIRE PROTECTION CONTRACTORS EXPENSE.
- REFER TO WRITTEN SPECIFICATIONS FOR EQUIPMENT AND MATERIAL RELATED TO THIS WORK.
- FIRE PROTECTION SYSTEM PIPING MUST BE HYDRAULICALLY CALCULATED, SIZED, AND BID USING SCHEDULE 40 ROLL-GROOVED AND SCHEDULE 40 CUT-GROOVED, THREADED OR WELDED PIPE. PIPE SCHEDULE DESIGN METHODS ARE NOT PERMITTED. HYDRAULIC CALCULATIONS MUST BE PERFORMED TO ALL APPLICABLE NFPA SPECIFICATIONS, AND SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL AS PART OF THE SHOP DRAWING PROCEDURE. ROLL AND CUT GROOVED PIPE SHALL BE PROVIDED WITH MECHANICAL JOINT FITTINGS AND COUPLINGS.
- PROVIDE DRAWINGS AND CALCULATIONS WITH PROFESSIONAL ENGINEER OR NICET III SEAL FOR SUBMITTAL TO AUTHORITY HAVING JURISDICTION FOR REVIEW PRIOR TO INSTALLATION.
- THE FOLLOWING INFORMATION TO BE USED FOR HYDRAULIC CALCULATIONS:
 - A. OCCUPANCY CLASSIFICATION = LIGHT HAZARD / ORDINARY HAZARD GROUP 1 / ORDINARY HAZARD GROUP 2
 - B. AREA OF SPRINKLER APPLICATION = 1500 S.F.
 - C. AREA OF SPRINKLER COVERAGE = 200 S.F. / 130 S.F. / 130 S.F.
 - D. DENSITY = 0.10 GPM PER S.F. / 0.15 GPM PER S.F. / 0.20 GPM PER S.F.
 - E. RESIDUAL PRESSURE AT MOST REMOTE HEAD AS REQUIRED BY AREA OF APPLICATION.
 - F. HOSE STREAM ALLOWANCE = 100 GPM / 250 GPM / 250 GPM.

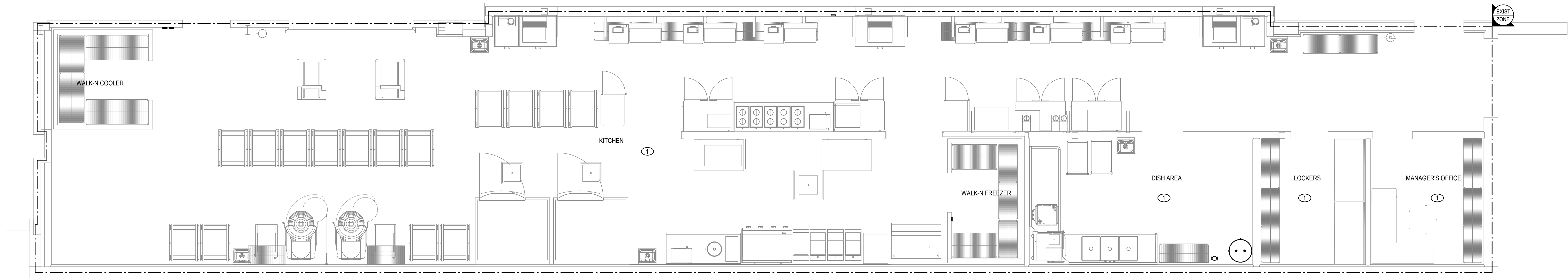


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KEYED NOTES:

1. MODIFY EXISTING FIRE PROTECTION PIPING AND SPRINKLER HEADS IN THIS AREA TO ACCOMMODATE FLOOR PLAN MODIFICATIONS.



1 FIRE PROTECTION PLAN
1/4" = 1'-0"

FIRE SPRINKLER USAGE MATRIX

SPRINKLER CALLOUT	AREA TYPE SERVED	HAZARD CLASSIFICATION					SPRINKLER TYPE					TYPE OF SYSTEM SERVED					CEILING TYPE			SPRINKLER FINISH					RESPONSE TYPE			NOTES			
		LIGHT	ORD GROUP 1	ORD GROUP 2	EXTRA GROUP 1	EXTRA GROUP 2	PENDANT	UPRIGHT	RECESSED	GASKETED	SIDEWALL	CONCEALED	WET PIPE	DRY PIPE	DOUBLE INSULATED	CHEMICAL SYSTEM	WET PIPE W/ DRY PENDANT	GLYCOL	LAV. IN	GYP BOARD	CLOUDS	EXPOSED STRUCTURE	CHROME	WHITE	CUSTOM COLOR	POLISHED BRASS	ROUGH BRASS		QUICK	STANDARD	ESFR
SPR-1	MANAGER'S OFFICE	X									X	X						X					X					X			
SPR-2	LOCKER AREA		X								X	X						X					X				X				
SPR-3	FREEZERS AND COOLERS	X									X					X					X	X						X			1
SPR-4	KITCHEN		X								X	X						X					X				X				

GENERAL NOTES: (APPLIES TO ALL AREAS AND SPRINKLER TYPES)

1. SPRINKLER CALLOUT TO BE USED IN THE SHOP DRAWING PROCESS FOR NOTING THE VARIOUS SPRINKLER CONFIGURATIONS.
2. ALL SPRINKLERS TO BE UL LISTED.
3. CONTRACTOR TO VERIFY SPRINKLER TEMPERATURE RATING IS ADEQUATE FOR THE AREA TO BE SERVED. THIS INCLUDES AREAS WITH ELEVATED TEMPERATURES DUE TO EQUIPMENT IN THE SPACE.
4. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR THE CEILING MATERIAL AND LAYOUT.

NOTES:

1. PROVIDE A DRY PIPE SPRINKLER SYSTEM IN ALL UNHEATED SPACES.

FIRE PROTECTION MATERIAL LIST

EQUIPMENT (NOTE 1)	MANUFACTURER	DESCRIPTION	UL RATED
DP-1	VICTAULIC MODEL VS1 OR APPROVED EQUAL	ITEM: DRY PENDANT SPRINKLER HEAD WITH A FLEXIBLE CONNECTION SERVED OFF THE WET PIPE SPRINKLER SYSTEM. AVAILABLE IN PENDENT, CONCEALED AND HORIZONTAL SIDEWALL WITH LENGTHS UP TO 58". HOSE CONSTRUCTED OF STAINLESS STEEL. UL MODELS TO ALLOW FOR (4) 90 DEGREE BENDS. CONFIRM NUMBER OF 90 DEG BENDS ALLOWED FOR FM RATED MODELS. RATED FOR USE IN LIGHT AND ORDINARY HAZARD SYSTEMS.	X

PIPING APPLICATION SCHEDULE (FIRE PROTECTION)

SYSTEM (NOTE 1)	USAGE	LOCATION	DESIGN WORKING PRESSURE (PSI) (NOTE 2)	MATERIAL	SCHEDULE	JOINTS	USAGE SIZE RANGE	NOTES
WET PIPE SPRINKLER	FIRE PROTECTION MAIN AND BRANCH PIPING	ABOVE GRADE	STANDARD	BLACK STEEL	40	THREADED, WELDED, OR GROOVED (CUT OR ROLLED)	2" AND SMALLER	3
				CPVC	10	WELDED, OR ROLL-GROOVED	2-1/2" AND LARGER	3
					-	SOCKET WELDED JOINTS	2" AND SMALLER	3, 4

NOTES:

1. REFER TO EACH PIPING SPECIFICATION FOR SPECIFIC PIPING REQUIREMENTS.
2. STANDARD PRESSURE IS < 175 PSI / HIGH PRESSURE IS 175 - 350 PSI
3. PAINT EXPOSED PIPING. COORDINATE WITH ARCHITECT.
4. CPVC FOR LIGHT HAZARD AREAS ONLY.

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ISSUANCE:

SHEET NAME:

FIRE PROTECTION PLAN

SHEET (30X42):

F101

[illegible]

- ALL PLUMBING WORK SHOULD BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION:
- 1. 2001 IOWA STATE PLUMBING CODE
 - 2. - UNIFORM PLUMBING CODE
 - 3. - IOWA ASH STANDARDS FOR ACCESSIBLE DESIGN
 - 4. LOCAL CODES, INCLUDING ORDINANCES
 - 5. THESE DRAWINGS ARE DIAGRAMMATIC - NOT ALL PIPING, FITTINGS, OFFSETS, VALVES OR OTHER ACCESSORIES ARE SHOWN. THE PLUMBING CONTRACTOR SHALL PROVIDE AND INSTALL ANY/ALL MISSING ACCESSORIES, FITTINGS, OFFSETS, VALVES, ETC. TO COMPLETE THE PLUMBING SYSTEM. EQUIPMENT, FIXTURES, ETC. REQUIRED FOR A COMPLETE FUNCTIONAL SYSTEM AS SHOWN ON PLUMBING PLANS AND AS OUTLINED IN SPECIFICATION INFORMATION UNLESS OTHERWISE NOTED.
 - 6. KITCHEN EQUIPMENT WILL BE PROVIDED BY THE OWNER. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.
 - 7. THE PLUMBING CONTRACTOR SHOULD UTILIZE THESE PLANS AND PROVIDE RECORD DRAWING COMMENTARY REFLECTING ACTUAL INSTALLATION. OBTAIN ONE HARD-COPY SET OF THE ARCHITECT/ENGINEER.
 - 8. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL FEES AND PERMITS REQUIRED TO ACCOMPLISH THIS WORK.
 - 9. INCLUDE \$10.00 ALLOWANCE FOR UNKNOWN CONDITIONS TO GET FROM GREEN INTERCEPTOR TO PLUMBING CONTRACTOR.
 - 10. THE PLUMBING CONTRACTOR SHOULD REVIEW ANTICIPATED MANNEFRIAL LIFT EQUIPMENT WITH OWNERS REPRESENTATIVE PRIOR TO UTILIZING FOR INSTALLATION. DAMAGED FLOORING FROM REMOVAL OF UNIMPROVED EQUIPMENT WILL BE REPLACED AT THE PLUMBING CONTRACTOR'S EXPENSE.
 - 11. REFER TO WRITTEN SPECIFICATIONS FOR EQUIPMENT AND MATERIAL RELATED TO THIS WORK.
 - 12. THE PLUMBING CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT/ENGINEER, CONTRACTOR/CONSTRUCTION MANAGER AND OTHER TRADES TO AVOID CONFLICTS.
 - 13. ADA COMPLIANCE SHALL BE MAINTAINED WHERE ADJUSTMENTS ARE MADE TO FIXTURES LOCATED IN PUBLIC AREAS.
 - 14. THE PLUMBING CONTRACTOR SHALL TAKE PRECAUTIONS NECESSARY TO MINIMIZE CONSTRUCTION DEBRIS TRANSFER TO ADJACENT NON-WORK AREAS.
 - 15. THE PLUMBING CONTRACTOR SHALL, AT THE PROJECT, VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL EXISTING UTILITIES IN FIELD. SHOULD CONDITIONS EXIST OTHER THAN THOSE INDICATED WHICH WOULD CAUSE THE DESIGN TO BE ALTERED, CONTRACTOR SHALL NOTIFY OWNER AND ARCHITECT IMMEDIATELY.
 - 16. PLUMBING UTILITY CONNECTIONS SHALL EXTEND TO 5'-0" OUTSIDE OF THE BUILDING FOR CONNECTION BY THE SITE UTILITIES CONTRACTOR.
 - 17. COORDINATE PLUMBING, MECHANICAL, ELECTRICAL AND EQUIPMENT WITH STRUCTURAL PLANS.
 - 18. COORDINATE INSTALLATION OF PLUMBING WORK WITH ALL OTHER TRADES SO AS TO AVOID UNNECESSARY DELAY OR INTERFERENCES. PLUMBING CONTRACTOR SHALL REVIEW ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR CONFLICTS.
 - 19. PLUMBING CONTRACTOR SHALL RUN ALL DOMESTIC WATER, WASTE AND VENT PIPING AS HIGH AS POSSIBLE WITHIN THE CEILING / TRUSS SPACE. COORDINATE THE LOCATION OF ALL PIPING WITH ARCHITECTURAL PLANS, STRUCTURAL CEILING, TRUSS AND OTHER TRADES TO AVOID CONFLICTS. NOTIFY GENERAL CONTRACTOR PRIOR TO STRUCTURE RISES. AS SOON AS ANY CONFLICTS ARE DETECTED, FALLOUT TO PROPERLY COORDINATE PIPE ROUTINGS WITH OTHER TRADES WILL BE REQUIRED TO BE MOVED AT THE PLUMBING CONTRACTORS EXPENSE.
 - 20. PLUMBING CONTRACTOR SHALL COORDINATE PIPE ROUTING TO FLOOR ROOF HATCHES, SKYLIGHTS, EQUIPMENT SERVICE ACCESS AND ACCESS PANELS.
 - 21. PLUMBING CONTRACTOR SHALL FIELD VERIFY MEANS AND METHODS REQUIRED TO BRING MATERIALS, EQUIPMENT, FIXTURES, AND MATERIAL INTO THE BUILDING. COORDINATE STORAGE AND LAY DOWN AREAS WITH THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER PRIOR TO BRINGING MATERIALS TO THE PROJECT SITE.
 - 22. COORDINATE PLUMBING WITH ALL OTHER CODE-RATED WALLS, FLOORS, AND CEILINGS PROVIDE UL RATED, FM APPROVED FIRE STOP OR AT ALL NEW PLUMBING PIPE PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILINGS.
 - 23. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING PLUMBING FIXTURES THAT ARE IN THE WALL UNLESS OTHERWISE NOTED.
 - 24. FLUSH NEW WATER PIPING AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION PRIOR TO CONCEALING ANY FIXTURES IN WALLS.
 - 25. PROVIDE WATER HAMMER ARRESTORS SERVING CLOSING VALVES IN EACH BRANCH OR AT APPLIANCE OR FIXTURE.
 - 26. PROVIDE WATER HAMMER ARRESTORS OR OTHER EQUIPMENT SHOWN IN WALLS OR ABOVE NON ACCESSIBLE CEILING SHALL BE INSTALLED BEHIND AN ACCESS PANEL. REFERENCE ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING TYPES, HEIGHTS, AND OTHER CEILING MOUNTED ITEMS. PROVIDE WATER HAMMER ARRESTORS SERVING CLOSING VALVES TO FIXTURE OR APPLIANCE. ALL EXPOSED WATER AND WASTE LINES TO BE CHROME PLATED.
 - 27. ALL VALVES, UNIONS, ETC. SHALL BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON PLANS.
 - 28. IN PLUMBING PIPING SHALL BE SUPPORTED. SEE SPECIFICATIONS.
 - 29. FURNISH AND INSTALL ALL BACKFLOW PROTECTION DEVICES REQUIRED BY AUTHORITY HAVING JURISDICTION. BACKFLOW PREVENTION TESTING SHALL BE INSTALLED NO HIGHER THAN 5'-0" ABOVE FINISHED FLOOR.
 - 30. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR TESTS AND CERTIFICATION OF REDUCED BACKFLOW PREVENTION DEVICES. AUTHORITY HAVING JURISDICTION FOR BACKFLOW PREVENTION SHALL BE POSTED ON BACKFLOW DEVICE ONCE TESTING HAS COMPLETED.
 - 31. ALL WATER LINES SHALL BE RUN OVERHEAD UNLESS OTHERWISE NOTED.
 - 32. PROVIDE UTILITY COORDINATION WITH ALL OTHER TRADES AT ALL UTILITY PENETRATIONS INTO WALLS, CEILINGS, AND FLOORS. DO NOT USE CAULKS OR EXPANDING FOAMS FOR SEALANT.
 - 33. COORDINATE FLOOR DRAIN AND CLEAUNOUT ROUGH-IN WITH SELECTED FLOOR COVERING SYSTEM. PROVIDE COORDINATION WASTE AND VENT SYSTEM FOR SINKS AND LAVATORIES. ROUGH IN FLOOR DRAIN.
 - 34. NOTIFY LOCAL INSPECTOR PRIOR TO BACKFILL OF ALL UNDER SLAB PLUMBING. ANY WORK TO BE DONE MUST BE REVIEWED BY THE LOCAL INSPECTOR.
 - 35. FLUSH ALL DRAIN TRAPS WITH MINERAL OIL.
 - 36. VERIFY THE LOCATION AND INVERT ELEVATION OF THE SANITARY SEWER ON THE SITE PLAN AND PROVIDE RECORD DRAWING.
 - 37. ALL CLEAUNOTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. THE CONTRACTOR SHALL COORDINATE ALL CLEAUNOUT LOCATIONS WITH EQUIPMENT, CABINETS, GRAB BARS, ETC. AND THE PLUMBING CONTRACTOR SHALL PROVIDE ACCESS TO ALL CLEAUNOUTS.
 - 38. ALL PLUMBING FIXTURE VENTS SHALL TERMINATE A MINIMUM OF 12 INCHES AND A MAXIMUM OF 24 INCHES FROM ANY VERTICAL SURFACE AND A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE OR EXHAUST. ALL VENTS SHALL BE INSTALLED TO THE OUTSIDE.
 - 39. ALL FLOOR SINKS AND FLOOR DRAINS IN TRAFFIC AREAS SHALL BE INSTALLED FLUSH TO FLOOR SURFACE.
 - 40. PROVIDE AIR GAPS FOR INDIRECT DRAINS AS REQUIRED BY CODE. AIR GAP SHALL BE NOT LESS THAN 1".
 - 41. DO NOT ROUTE PIPING DIRECTLY ABOVE OR BELOW ELECTRICAL PANELS, INCLUDING PANEL.
 - 42. PROVIDE CLEARANCES.
 - 43. DO NOT SUSPEND PIPING FROM OTHER PIPING, DUCTWORK OR CONDUIT. ALL PIPING SHALL BE SUPPORTED FROM BUILDING STRUCTURE USING THE APPROPRIATE ATTACHMENTS.
 - 44. PROVIDE SCHED 40S FOR CLARITY ONLY. PIPING SHALL BE ALLOWED TO BE ALLOWED TO CONSERVE SPACE WHERE POSSIBLE.
 - 45. REFER TO MECHANICAL SHEETS FOR PLUMBING CONNECTIONS TO MECHANICAL EQUIPMENT.
 - 46. PROVIDE PLUMBING COORDINATION WITH ALL OTHER TRADES. PROVIDE LOW VOLTAGE CABLING AND POWER WIRING/CORNDUT INDICATED THIS PLAN UNLESS SPECIFICALLY NOTED OTHERWISE. COORDINATE ALL WORK WITH ELECTRICAL CONTRACTOR PRIOR TO BID.
 - 47. SCHEDULE INDICATES THE SIZES OF THE PIPING, EQUIPMENT, AND INDIVIDUAL FIXTURES. BRANCH PIPE SIZES SHALL MATCH SCHEDULE UNLESS OTHERWISE NOTED.



DATE: 5 AUG 26



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SHEET NAME:

**PLUMBING COVER
SHEET**

SHEET (30X42):

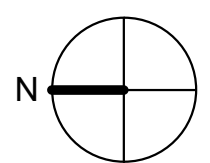
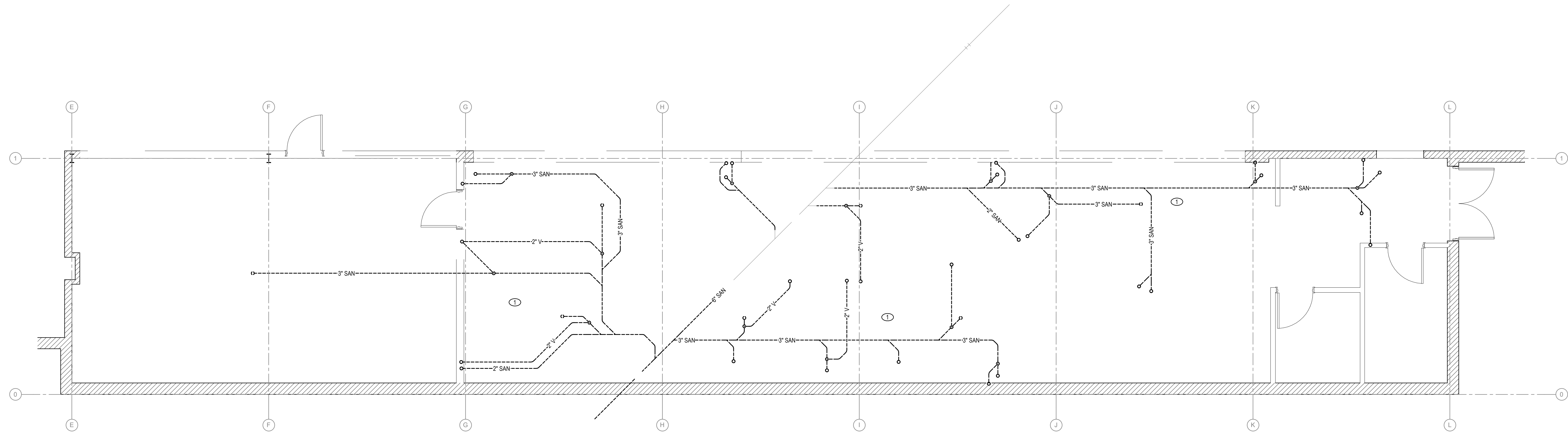
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KEYED NOTES:
1. DEMOLISH ALL EXISTING SANITARY BRANCH AND VENT
PIPING BACK TO MAIN AND CAP. FIELD VERIFY EXACT
LOCATIONS.



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1

PLUMBING UNDERFLOOR DEMO PLAN
1/4" = 1'-0"

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PLUMBING UNDERFLOOR
DEMO PLAN

SHEET (30X42):
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GENERAL NOTES:

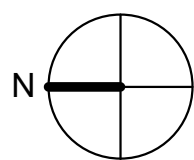
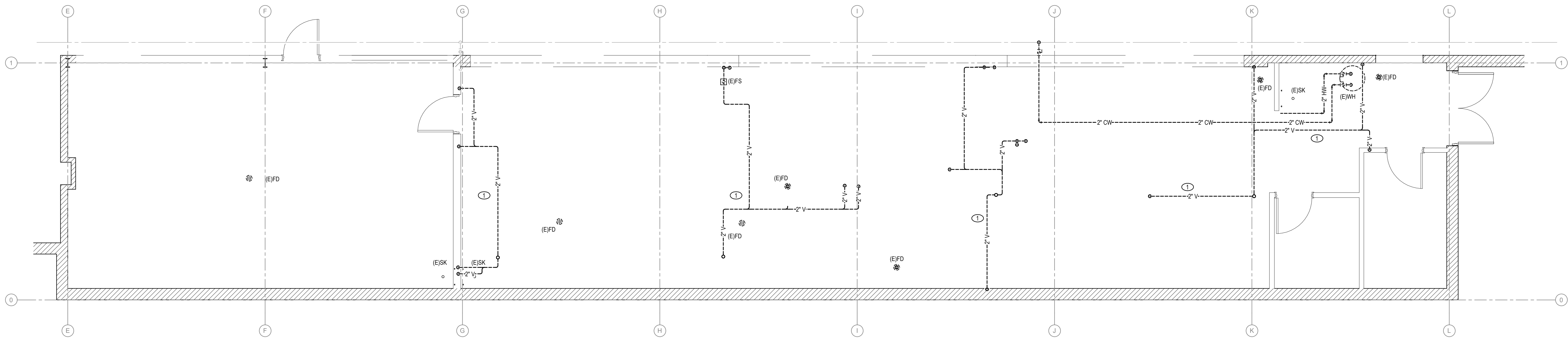
1. DEMOLISH ALL EXISTING DOMESTIC PIPING, PLUMBING EQUIPMENT, PIPE ACCESSORIES, AND PLUMBING FIXTURES IN AREA. NOT ALL PIPING IS SHOWN ON PLANS. FIELD VERIFY EXACT LOCATION AND QUANTITY.

KEYED NOTES:

1. DEMOLISH ALL EXISTING VENT PIPING IN AREA. FIELD VERIFY EXACT LOCATION.



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PLUMBING DEMO PLAN

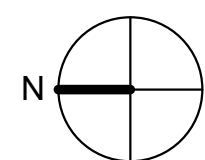
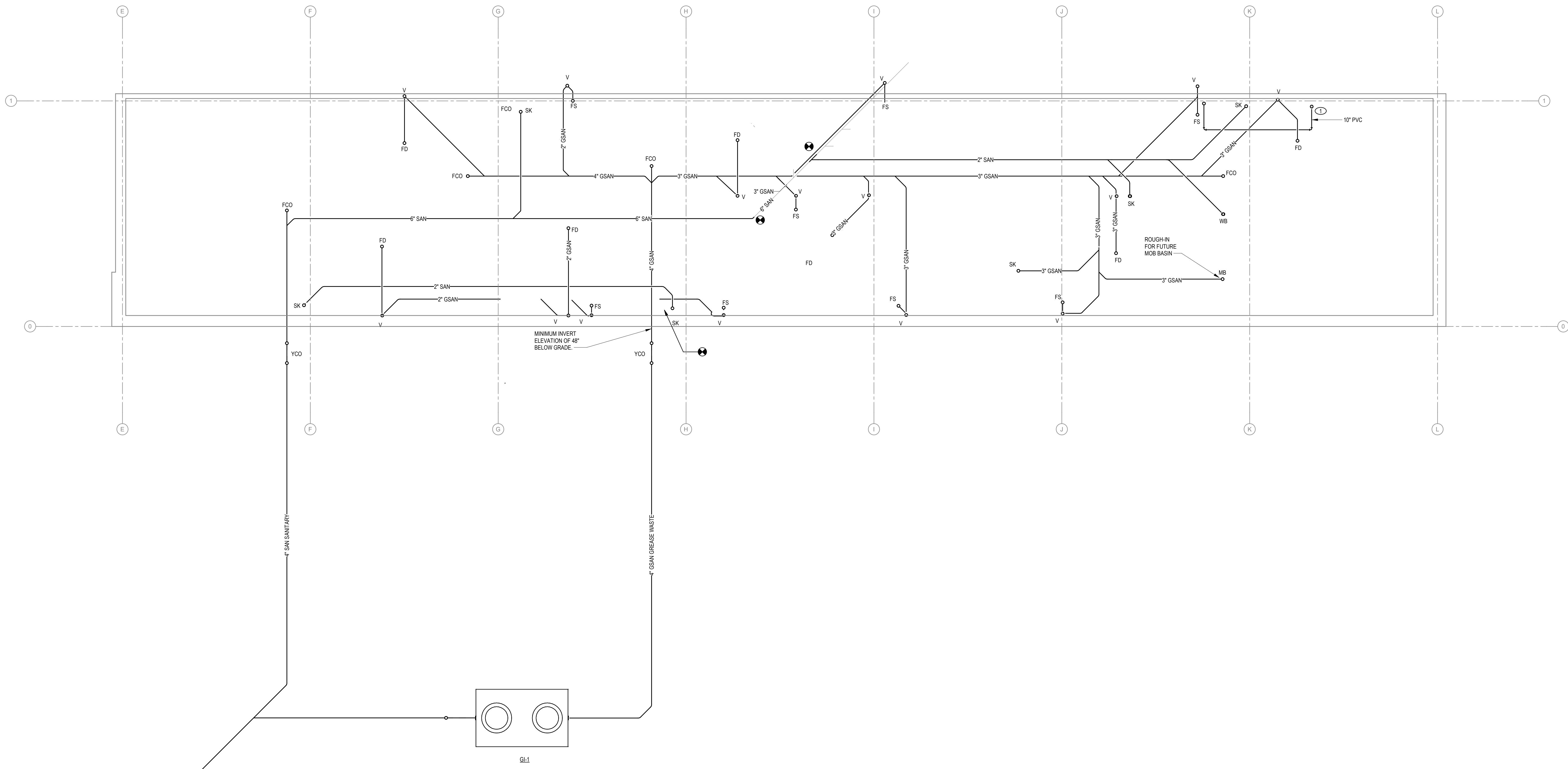
SHEET (30X42):
PD101



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VARIED INDUSTRIES BUILDING CONCESSION
KITCHEN REMODEL
IOWA STATE FAIR
3000 E GRAND AVE, DES MOINES, IA 50317

- KEYED NOTES:
- 10" PVC TO SERVE DRINK DISPENSER. COORDINATE EXACT LOCATIONS WITH OWNER AND ARCHITECT PRIOR TO INSTALLATION.



1

PLUMBING UNDERFLOOR PLAN

1/4" = 1'-0"

REVISIONS:
NO. DESCRIPTION DATE

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DESIGNED BY: Designer CHECKED BY: Checker
PROJECT NO: 125-017
ISSUE DATE: 5 AUG 26
ISSUANCE:

SHEET NAME:
PLUMBING UNDERFLOOR
PLAN

SHEET (30X42):
P001

GENERAL NOTES:

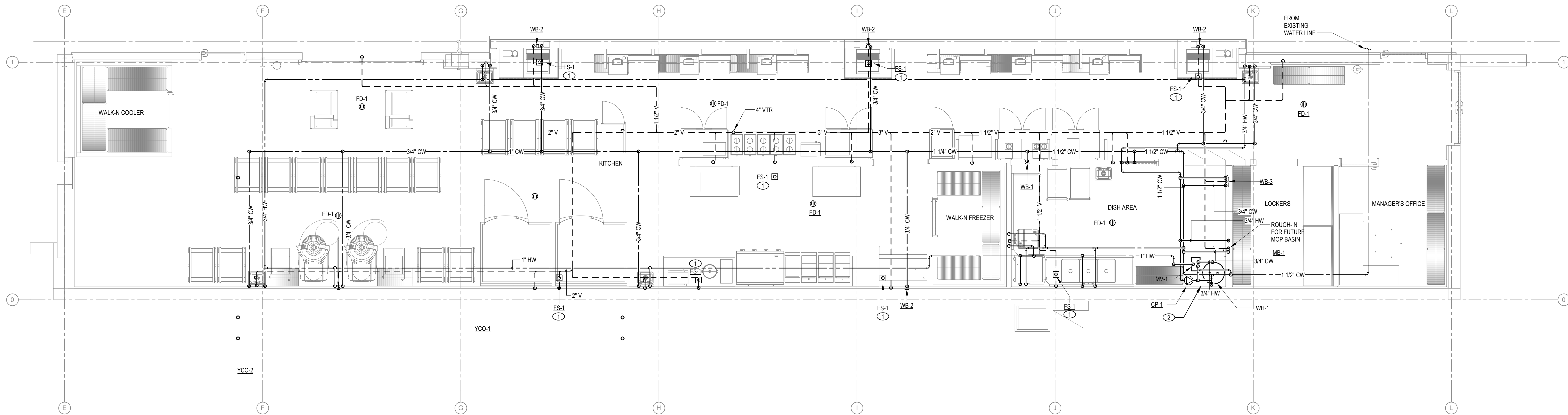
1. COORDINATE WITH KITCHEN EQUIPMENT PLAN. REFER TO PLAN FOR ANY ADDITIONAL REQUIREMENTS

KEYED NOTES:

1. TOP OF FLOOR SINKS TO BE INSTALLED AT 1" AFF.
2. REFER TO DOMESTIC HOT WATER FLOW DIAGRAM DETAIL FOR MORE INFORMATION.
3. COORDINATE WITH KITCHEN EQUIPMENT PLAN. REFER TO PLAN FOR ANY ADDITIONAL REQUIREMENTS



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1 PLUMBING PLAN
1/4" = 1'-0"

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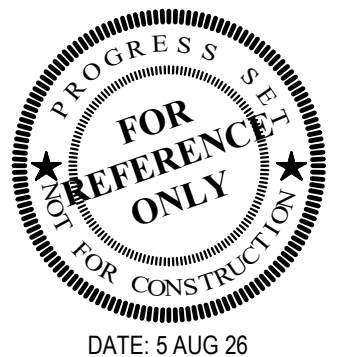
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DESIGNED BY: Designr CHECKED BY: Checker
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SHEET NAME:
PLUMBING PLAN

SHEET (30X42):
P101



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REVISIONS:
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DESIGNED BY: DesignChecked BY: Checker
PROJECT NO: 125-017
ISSUE DATE: 5 AUG 26
ISSUANCE:

SHEET NAME:
PLUMBING SCHEDULES

SHEET (30X42):

P601

PLUMBING MATERIAL LIST				
FIXTURE	MANUFACTURER (NOTE 1)	DESCRIPTION	ELECTRICAL CONNECTION (VOLT/PHASE/AMPS)	NOTES
ET-1	AMTROL ST-12	FIXTURE: EXPANSION TANK - WELDED STEEL CONSTRUCTION, STAINLESS STEEL SYSTEM CONNECTION, HEAVY DUTY BUTYL DIAPHRAGM AND RIGID POLYPROPYLENE LINER MECHANICALLY BONDED TO TANK TO PROVIDE A 100% NON-CORROSIVE WATER RESERVOIR, DIAPHRAGM AND LINER SHALL BE APPROVED FOR USE IN POTABLE WATER SYSTEMS, ALL WETTED COMPONENTS OF FDA APPROVED MATERIALS. TANK SHALL HAVE A WORKING TEMPERATURE OF 140°F AND A WORKING PRESSURE OF 150 PSIG, MINIMUM TANK VOLUME TO BE 4 GALLONS, MINIMUM ACCEPTING VOLUME TO BE 3.5 GALLONS, FACTORY PRE-CHARGED TO 45 PSIG, PROVIDE STANDARD SCHRADER AIR VALVE FOR FIELD CHARGING. COORDINATE FIELD CHARGE PRESSURE WITH THE ACTUAL STATIC SYSTEM PRESSURE ADJACENT TO THE EXPANSION TANK CONNECTION.	-	-
ECO-1	ZURN Z-1400	FIXTURE: FLOOR CLEANOUT - CAST IRON THREADED ADJUSTABLE HOUSING, FLANGED FERRULE WITH PLUG AND SECURED NICKEL BRONZE TOP. TOP STYLE SHALL MATCH FLOOR FINISH AS FOLLOWS: UNFINISHED FLOOR - ROUND SOLID SCORATED TOP, TILE- ROUND RECESSED TOP.	-	-
ED-1	ZURN Z415 SERIES	FIXTURE: FLOOR DRAIN - 5" DIAMETER NICKEL BRONZE ADJUSTABLE TOP WITH SURFACE MEMBRANE CLAMP, 2" BOTTOM OUTLET, CAST IRON BODY WITH 1/2" TRAP PRIMER CONNECTION, FLASHING COLLAR, DEEP SEAL TRAP.	-	-
ES-1	ZURN Z-1900 SERIES	FIXTURE: FLOOR SINK - 12" x 12" NICKEL BRONZE RIM AND 1/2 GRATE, 3" BOTTOM OUTLET, 6" DEEP RECEPTOR WITH DOME STRAINER, CAST IRON BODY WITH ACID RESISTANT COATED INTERIOR, SEEPAGE FLANGE, SEEPAGE HOLES, & CLAMPING COLLAR, DEEP SEAL TRAP.	-	-
GI-1	LISTER INDUSTRIES	FIXTURE: PRECAST CONCRETE GREASE INTERCEPTOR AS MANUFACTURED BY LISTER INDUSTRIES. GREASE INTERCEPTOR WILL HAVE A MINIMUM OF 1000 GALLON WORKING CAPACITY AND 4,000 PSI CONCRETE. DIMENSIONS OF 104" X 62" W X 80" H, WITH 2 MANWAY EXTENSIONS WITH LIDS SET AT GRADE. INLET, 2.5 OUTLET & VENT PIPE SIZES & ROUTING AS SHOWN ON DRAWINGS. UNIT TO BE CONSTRUCTED & INSTALLED TO MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. ACCESSORIES: PROVIDE A VENT FILTER ON EACH GREASE INTERCEPTOR VENT TERMINATION.	-	-
MB-1	FIAT MSB	FIXTURE: MOP BASIN - MOLDED STONE, 24"x24"x10", STAINLESS STEEL DRAIN WITH COMBINATION DOME STRAINER AND LINT BASKET, 3" OUTLET. DEEP SEAL TRAP. TRIM: TWO HANDLE EXPOSED MIXING FAUCET, 6" WRISTBLADE HANDLES, POLISHED CHROME PLATED, 3/4" HOSE THREAD SPOUT WITH INTEGRAL VACUUM BREAKER, WALL BRACE, PAL HOOK, INTEGRAL STOPS. EQUAL TO DELTA 26C2356R6. ACCESSORIES: FRICTION HINGE MOP HANGER, HOSE, AND HOSE BRACKET.	-	-
MC-1	LAWLER 800 SERIES	FIXTURE: LEAD FREE THERMOSTATIC MIXING VALVE - MASTER HIGH FLOW MIXING VALVE FOR TEMPERED WATER CONTROL, BRONZE BODY CONSTRUCTION WITH STAINLESS STEEL PISTON AND LINER, ROUGH BRONZE FINISH, UNION INLETS WITH STRAINERS AND CHECK STOPS, DIAL THERMOMETER ON OUTLET, RATED FOR 25 GPM OUTPUT MAXIMUM AT 10 PSI DIFFERENTIAL AND 1 GPM OUTPUT MINIMUM, UNIT TO MIX 140 DEGREE F. HOT WATER SUPPLY AND 40 DEGREE F. COLD WATER SUPPLY FOR 120 DEGREE F. OUTLET, SHALL CONFORM TO THE REQUIREMENTS OF ASSE 1017. ACCESSORIES: PROVIDE MIXING VALVE WITH (1) ADDITIONAL COMPLETE REBUILD KIT INCLUDING THERMOSTATIC ELEMENT, STOP CHECKS, PISTON & LINER, BONNET, PUSHER, & ALL ASSOCIATED O-RINGS & GASKETS. PROVIDE STEEL MOUNTING FRAME TO MOUNT VALVE, INLET STOPS, OUTLET THERMOMETER, AND OUTLET VALVES. CONFIGURATION OF VALVE AND BOX SHALL BE AS INDICATED ON THE PLANS.	-	-
WB-1	GLY GRAY MB SERIES	FIXTURE: WALL BOX - WHITE POWDER COATED 20 GA STEEL ENCLOSURE, ONE QUARTER-TURN ANGLE VALVE, COORDINATE OUTLET TYPE AND SIZE WITH EQUIPMENT SERVED. ACCESSORIES: INSTALL WALL BOX BELOW COUNTER BEHIND CABINETRY. ROUTE CW LINE UP THROUGH COUNTERTOP AND PROVIDE RUBBER GROMMET.	-	-
WB-2	GLY GRAY RMDW SERIES	FIXTURE: WALL BOX - WHITE POWDER COATED 20 GA STEEL ENCLOSURE, ONE QUARTER-TURN ANGLE VALVE, INTEGRAL WATER HAMMER ARRESTOR AND DRAIN PORT. COORDINATE OUTLET TYPE AND SIZE WITH EQUIPMENT SERVED.	-	-
WB-3	IPS CORP. MBS1200HA	FIXTURE: WALL BOX, WHITE RESIN ENCLOSURE, 2" DRAIN CONNECTION, TWO QUARTER-TURN INTEGRAL WATER HAMMER ARRESTOR VALVES, COORDINATE OUTLET TYPE WITH EQUIPMENT SERVED.	-	-
YCO-1	ZURN Z-1474	FIXTURE: 2-WAY YARD CLEANOUT - TWO ROUND DURA-COATED CAST IRON CLEANOUT AND DOUBLE FLANGED HOUSINGS, HEAVY DUTY SECURED SCORATED DURA-COATED CAST IRON COVERS WITH LIFTING DEVICE, BRONZE CLEANOUT PLUGS AND GAS/WATERTIGHT SEALS, PROVIDE WITH A DOUBLE, 2-WAY CLEANOUT FITTING, REFER TO YARD CLEANOUT DETAIL FOR ADDITIONAL INFORMATION, SIZE AS LISTED ON PLANS.	-	-
YCO-2	ZURN Z-1474	FIXTURE: YARD CLEANOUT - ROUND DURA-COATED CAST IRON CLEANOUT AND DOUBLE FLANGED HOUSING, HEAVY DUTY SECURED SCORATED DURA-COATED CAST IRON COVER WITH LIFTING DEVICE, BRONZE CLEANOUT PLUG AND GAS/WATERTIGHT SEAL, SIZE AS LISTED ON PLANS.	-	-

NOTES:

1. SEE SPECIFICATIONS FOR LIST OF ACCEPTABLE MANUFACTURERS AND INSTALLATION REQUIREMENTS.

WATER HEATER SCHEDULE (DOMESTIC)

MARK	MANUFACTURER	MODEL	FUEL	INPUT (KW)	EFFICIENCY	HW SETPOINT	RECOVERY RATE (GPH) (NOTE 1)	WORKING PRESSURE	STORAGE TANK SIZE (GAL)	ASME RATED	ELECTRICAL				NOTES
			GAS OR ELECTRIC								HP	VOLT	PH	DISCONNECT BY	
WH-1	A.O. SMITH	DVE-80-54	ELECTRIC	54	98%	140	223	150 PSI	80	NO	FHP	480	3	EC	

NOTES:

1. RECOVERY RATE BASED ON 100 DEGREE TEMPERATURE RISE.

CIRCULATION PUMP SCHEDULE

PUMP													
MARK	MANUFACTURER	MODEL	TYPE	PUMP SPEED	PUMP CONSTRUCTION		FLOWRATE PER PUMP (GPM)	HEAD (FT.)	ELECTRICAL				NOTES
					HOUSING	IMPELLER			HP	VOLT	PHASE	DISCONNECT BY	
CP-1	GRUNDFOS	UP	INLINE	SINGLE SPEED	BRONZE	COMPOSITE	4	12	1/25	115	1	E.C.	1, 2, 3

NOTES:

1. PROVIDE PUMP WITH IMMERSION TYPE AQUASTAT TEMPERATURE SENSOR FOR PUMP OPERATION.
2. PROVIDE PUMP WITH FLANGED CONNECTIONS.
3. REFER TO PUMP DETAIL FOR ADDITIONAL REQUIREMENTS.

NOTES:

1. ALL BELOW GRADE SANITARY AND VENT PIPING SHALL BE A MINIMUM OF 2".
2. ALL SUPPLY PIPING SERVING MORE THAN A SINGLE FIXTURE SHALL HAVE A MINIMUM PIPE SIZE OF 3/4".

PLUMBING CONNECTION SCHEDULE

FIXTURE	MINIMUM BRANCH SIZING				FIXTURE CONNECTION SIZE				NOTES
	CW	HW	SAN	VENT	CW	HW	SAN		
FLOOR DRAIN/FLOOR SINK	-	-	2-3"	1 1/2"	-	-	2-3"		1
KITCHEN SINK	1/2"	1/2"	1 1/2"	1 1/4"	3/8"	3/8"	1 1/2"		1, 2
MOP BASIN	3/4"	3/4"	3"	1 1/2"	1/2"	1/2"	3"		1
WASHING MACHINE WALL BOX	3/4"	3/4"	2"	1 1/4"	1/2"	1/2"	2"		
ICE MAKER WALL BOX	1/2"	-	-	-	1/2"	-	-		

NOTES:

1. REFER TO EACH PIPING SPECIFICATION FOR SPECIFIC PIPING REQUIREMENTS.
2. SEE SPECIFICATION SECTION 2307.19 FOR COMPLETE INSULATION AND JACKETING REQUIREMENTS.
3. INSTALL RIGID CALCIUM SILICATE INSERTS AT ALL PIPING HANGERS.
4. INSULATE ALL PLUMBING VENT PIPE WITHIN 10' OF ROOF PENETRATION.
5. PIPE SHALL BE CEMENT MORTAR LINED PER ANSI/AWWA STANDARDS. FITTINGS SHALL BE LONG RADIUS, 200 PSI RATED, CEMENT MORTAR LINED.
6. INSULATION ONLY REQUIRED FOR COLD SERVICE PIPING. EQUIPMENT DRAIN PIPING LESS THAN 5' IN LENGTH NEED NOT BE INSULATED.
7. PIPING SERVING FOOD SERVICE EQUIPMENT AND EXPOSED TO PUBLIC OR USERS.

PIPING APPLICATION SCHEDULE (PLUMBING)

SYSTEM (NOTE 1)	LOCATION	DESIGN WORKING PRESSURE (PSI)	MATERIAL	JOINTS	USAGE SIZE RANGE	INSULATION APPLICATION		NOTES
						THICKNESS (IN.)	TYPE (NOTES 2, 3)	
DOMESTIC COLD WATER	ABOVE GRADE	125	TYPE L COPPER	SOLDER OR MECHANICAL PRESS CONNECTION	1-1/4" OR LESS	1/2"	ELASTOMERIC FOAM OR FIBERGLASS	
					1-1/2" & GREATER	1"		
DOMESTIC HOT WATER SUPPLY AND RECIRCULATING	ABOVE GRADE	125	TYPE L COPPER	SOLDER OR MECHANICAL PRESS CONNECTION	1-1/4" OR LESS	1"	ELASTOMERIC FOAM OR FIBERGLASS	
					1-1/2" & GREATER	1-1/2"		
SANITARY VENT	BELOW GRADE	N/A	CAST IRON AND/OR SCH 40 PVC	BELL & SPIGOT, NO HUB, OR SOLVENT	ALL	-	-	-
	ABOVE GRADE (NON-PLENUM)	N/A	CAST IRON, DWV COPPER, AND/OR SCH 40 PVC	BELL & SPIGOT, NO HUB, SOLDER, OR SOLVENT	ALL	1/2"	FIBERGLASS	4
	ABOVE GRADE (RETURN AIR PLENUM)	N/A	CAST IRON, DWV COPPER	BELL & SPIGOT, NO HUB, SOLDER	ALL	1/2"	FIBERGLASS	4
PLUMBING EQUIPMENT DRAINS	ABOVE GRADE (RETURN AIR PLENUM)	N/A	DWV COPPER	SOLDER	ALL	1"	FIBERGLASS	6
	ABOVE GRADE	N/A	DWV COPPER, AND/OR SCH 40 PVC	SOLDER, AND/OR SOLVENT	ALL	1"	FIBERGLASS	6
	ABOVE GRADE EXPOSED IN FINISHED AREAS	N/A	CHROME PLATED BRASS PIPE	THREADED	ALL	-	-	7
GREASE SANITARY	BELOW GRADE	N/A	CAST IRON OR SCH 40 PVC	BELL & SPIGOT, NO HUB, OR SOLVENT	ALL	-	-	-

MECHANICAL GENERAL SPECIFICATION
PART 1 GENERAL

1.1 SCOPE

- A. In these documents, "Contractor" refers to the mechanical contractor and all the subcontractor, unless listed otherwise. The division of work within the mechanical scope is the responsibility of the lead mechanical contractor.
- B. Contractor is responsible for providing fully functional systems.

1.2 REFERENCES

- All work shall conform to the most current version of all applicable codes and standards or the version adopted by the jurisdiction.
- A. CODES
- 2024 International Building Code
 - 2024 International Mechanical Code
 - 2024 International Plumbing Code
 - 2024 International Fire Protection Code
 - 2012 International Energy Conservation Code
 - 2023 NFPA - National Fire Protection Association
- B. STANDARDS
- ASHRAE 15
 - ASHRAE 62
 - ASHRAE 90.1

1.3 SUBMITTALS

- A. Submit equipment and material information for all equipment scheduled on the drawings. Information shall include catalog sheets, performance, specifications, rough-in dimensions, and installation instructions for each item.
- B. Submit duct layout drawings for all project ductwork. Submit detailed elevations and sections where required to convey complete scope of work. Shop drawings shall be based on other trades contract drawings and field dimensions. Submit drawings on full size paper at 1/4" = 1'-0" scale.
- C. Submit approved sprinkler piping drawings for review and approval according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- D. Submission of shop drawings in electronic format is preferred using PDF format.
- E. If hard copies of shop drawings are utilized on this project, coordinate the quantity with the architect and general contractor.
- F. If a resubmittal is needed, the engineer is only responsible to review one (1) resubmittal for each product. If a resubmittal is incomplete or does not comply with the drawings and/or specifications, the contractor shall be responsible to bear the cost for the engineer to recheck and handle the additional shop drawing submittals. Documents will not be reviewed until payment is agreed upon.
- G. All submittals for equipment and materials shall be reviewed and approved by the engineer prior to the fabrication or release by the contractor. This includes fabrication drawings for ductwork and fire protection and the coordination of equipment between trades. The release, purchase, installation or fabrication of any items prior to the contractor receiving approval drawings will be at their own risk. Any rework that results, will be done by the contractor as needed, at no cost to the owner or design team.

1.4 QUALITY ASSURANCE

- A. WARRANTY
- Equipment warranty shall be a minimum of one (1) year from date of factory supervised startup or from the date of substantial completion, whichever is later.
 - Contractor shall warranty all of their work for one (1) year from the date of substantial completion.
- B. MATERIAL QUALITY AND SUBSTITUTION
- The equipment scheduled is the basis of design. The basis of design is preferred and will take precedence. Any products from an alternate approved manufacturer need to meet the requirements, size and performance specified and shall be equal to the basis of design.
 - Any requests for alternate manufacturers must be submitted to the architect/engineer at least ten (10) days prior to bid.
 - These documents are diagrammatical in nature and intended to convey scope and general arrangement of the mechanical systems. Not all fittings, risers, size changes, offsets, accessories, etc., are shown on plan. It is the contractor's responsibility to determine all utility routing prior to purchase and installation.
 - For remodel or addition projects, the contractor shall visit and survey the site prior to submitting a bid. The contractor shall visit the site to understand the complexity of utility routing, phasing, staging, and all general installation. Submitting a bid means the contractor acknowledges the complexities of the project and has made provisions for overcoming these complexities in their bid.
 - The contractor shall report any discrepancies between these documents and site conditions immediately to the engineer prior to submitting a bid or starting work.
 - Install all equipment per the manufacturer's requirements/recommendations.
 - All equipment shall be FM and ul listed where possible.

1.5 REGULATORY AND UTILITY REQUIREMENTS

- A. Contractor is responsible for coordinating all required site inspections by authorities having jurisdiction. Contractor shall notify general contractor of all scheduled inspections five (5) working days prior to site visit.
- B. Contractor is responsible for paying for all fees, permits, and inspections required to complete their work.
- C. Use only materials and methods allowed by applicable codes and authority having jurisdiction (AHJ). E.G. It is the contractor's responsibility to confirm if plastic piping is acceptable with the AHJ prior to installation.

1.6 DIVISION OF WORK AND COORDINATION

- A. All wiring required for the correct operation of the mechanical systems is the responsibility of the contractor. Refer to the electrical drawings for wiring requirements.
- B. The electrical contractor is responsible for wiring power to the equipment.
- C. All other wiring is the responsibility of the contractor, unless noted otherwise.
- D. Utilities routed within the building shall be installed in an orderly manner. All work will be coordinated with other disciplines prior to installation. The following list ranks the priority of the utilities to be installed:
- Light fixtures
 - Gravily piping
 - Ductwork
 - All other piping
 - Electrical conduits
- E. Any installed work that is not coordinated and that interferes with other contractor's work shall be removed or relocated at the installing contractor's expense.

1.7 SPECIAL REQUIREMENTS

- A. Contractor shall allow color selection by architect of any piece of exposed equipment from all available colors. BASE bid color selection shall include those considered "premium" by the manufacturer.

1.8 DEMOLITION

- A. Refer to division 01 section "Cutting and patching" and division 02 section "Selective structure demolition" for general demolition requirements and procedures.
- B. Coordinate work with the owner to minimize disruption to the existing building occupants.
- C. Contractor shall notify owner of any utility service shutdowns 72 hours in advance. This includes gas, water, sanitary, storm, fire protection, cooling and heating systems.
- D. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed. Perform demolition that may not be shown but required to accomplish new work. Where ductwork or piping is removed and not reconnected with new pipe, cap ends of existing services as if they were new work.
- E. Remove portion of ductwork or piping indicated to be removed and cap or plug remaining utility with same or compatible materials.
- F. All pipe, wiring, and associated condult, insulation, ductwork, and similar items demolished, abandoned, or deconstructed are to be removed from the site by the contractor. All piping and ductwork specialties are to be removed from the site by the contractor unless they are dismantled and removed or stored by the owner. All designated equipment is to be turned over to the owner for their use at a place and time so designated. Maintain the condition of material and/or equipment that is indicated to be reused equal to that existing before work began.
- G. Unless noted otherwise, all duct and piping branches prior to be removed shall be removed back to the main and capped. Pressure piping shall have shutoff valves and caps installed.
- H. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unusable portions and replace with new products of equal capacity and quality.

1.9 OWNER TRAINING

- A. Contractor shall include at least two (2) hours in their bid to provide complete owner training for all the mechanical systems. Training shall include explanation of system operation, start-up/shutdown, routine maintenance, seasonal changes, and controls adjustments. Coordinate acceptable training schedule with owner.

1.10 RECORD DOCUMENTS

- A. Contractor shall maintain a set of drawings at the jobsite for recording as-built systems. Drawings shall be available for review by engineer.

1.11 PROJECT CLOSEOUT REQUIREMENTS

- A. FINAL PROJECT CLOSEOUT TASKS
- Deliver all spare parts to owner chosen location. All equipment labeled per specifications.
 - All equipment cleaned and ready for use. Install new filters in all equipment with filters; do not use owner's spare filter sets.

B. CONTRACTOR REQUIREMENTS

- Marked up drawings and specifications provided to engineer for incorporation of as-built drawings or to serve as the as-built drawings depending on the project requirements. The as-built drawings shall be clean and legible. Operation and maintenance (O&M) manuals shall include the following:
- Contractor contact for warranty work
 - Approved shop drawings, incorporating all review comments
 - Warranty copies
 - Equipment start-up reports
 - Testing and balancing reports

C. OPERATION AND MAINTENANCE INSTRUCTIONS

- Three (3) final approved O&M manuals shall be delivered to owner. Each manual shall be an appropriately sized three-ring binder with a vinyl cover and printed spine and cover labels. Each section shall have a printed divider tab. Each section shall be listed in a table of contents at the beginning of the manual.

PART 2 FIRE PROTECTION

2.1 PERFORMANCE REQUIREMENTS

- A. Design sprinkler system per NFPA 13 using performance requirements and design criteria indicated.
- B. Sprinkler system design shall be approved by authority having jurisdiction (AHJ).
- C. Sprinkler system shall be hydraulically designed and have a density of at least that required by the hazard rating of the area protected.
- D. Piping shall be schedule 40 black carbon or galvanized steel as allowed by local jurisdiction to satisfy NFPA 13.

2.2 QUALITY ASSURANCE

- A. Installer qualifications: installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional design services needed to assume engineering responsibility. Base calculations of sizes of fire-hydrant flow tests.
- B. 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.
- C. NFPA standards: sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
- NFPA 13, "Installation of sprinkler systems."

2.3 COORDINATION

- A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

2.4 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Sprinkler cabinets: finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench.

2.5 INSTALLATION

- A. Extend/replace existing fire protection to provide fire protection covering for the project areas.
- B. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for project design calculations required in "Quality assurance" article.
- C. Connect sprinkler piping to building's interior water-distribution piping.
- D. Install sprinkler piping with drains for complete system drainage.
- E. Install hangers and supports for sprinkler system piping according to NFPA 13.
- F. Install sprinklers in suspended ceilings in center of acoustical ceiling panels.
- G. Install electric heating cables and pipe insulation on sprinkler piping in areas subject to freezing.

- I. Install dry-type sprinklers with water supply from heated space. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing.
- J. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.
- K. TESTING AND INSPECTIONS
- Flush, test and inspect sprinkler systems according to NFPA 13, "Systems acceptance" chapter.
 - energize circuits to electrical equipment and equipment and piping according to requirements in NFPA 13.
 - Coordinate with fire-alarm tests. Operate as required.
 - Verify that equipment hose Threads are same as local fire-department equipment.
 - Sprinkler piping system will be considered defective if it does not pass tests and inspections.
 - Prepare test and inspection reports. O clean dirt and debris from sprinklers.
 - Remove and replace sprinklers with paint other than factory finish.

PART 3 PLUMBING

3.1 REGULATORY AND UTILITY REQUIREMENTS

- A. Contractor shall include all work required to install new relocate utilities and meters as shown on drawings.
- B. Utility work 5'-0" from outside of building is by contractor.

3.2 VALVES

- A. Include all valves required for proper installation and a fully operational system. This includes but is not limited to the following:
- All valves shown on the drawings.
 - Valves to isolate all plumbing fixture groups. Valves to isolate each piece of equipment. Valves to isolate owner provided equipment.
 - Install shutoff valves above ceiling for each fixture if future is not provided with.
 - Integral stops.
 - Valve standardization: valves from one or more manufacturers may be used, however valves supplied for each specific valve type shall be the product of one manufacturer.
 - Valves shall be first quality, free from all imperfections and defects, with body markings indicating performed by a technically qualified tap firm.
 - Valve parts of same manufacturer, size and type shall be interchangeable.
 - Size valves the same size as the piping in which they are installed, unless specified otherwise.
 - Provide extended shutoffs for all valves installed on insulated piping.

3.3 PIPING INSTALLATION

- A. Install piping clear of obstructions, indicated, and at maximum height.
- B. Install piping clear of door swings, above and ahead shaft heads.
- C. Make allowances for expansion and contraction.
- D. Install horizontal piping with a constant pitch, and without sags or humps.
- E. Water piping pitch 1/4 inch per 10 feet upward in direction of flow unless otherwise noted. If it is not otherwise specified in this section shall be installed in a report. Three copies shall be provided, individually bound and also provided electronically to the contractor to be presented to the owner. Neatly type and arrange data, include with the data, the dates tested, personnel present, and weather conditions.
- F. Do not label equipment in exposed public spaces. E.G. Cabinet unit heaters, diffusers, louvers, etc.
- G. Label hidden equipment such as sump pumps or the control panel or disconnected if it does not make sense to label the equipment itself.
- H. Valve standardization: valves from one or more manufacturers may be used, however valves supplied for each specific valve type shall be the product of one manufacturer.
- I. Valves shall be first quality, free from all imperfections and defects, with body markings indicating performed by a technically qualified tap firm.
- J. Valve parts of same manufacturer, size and type shall be interchangeable.
- K. Size valves the same size as the piping in which they are installed, unless specified otherwise.
- L. Provide extended shutoffs for all valves installed on insulated piping.

3.4 DRAINAGE SYSTEMS

- A. FITTINGS
- Use long turn drainage pattern fittings, unless space conditions prohibit their use; in such cases, short turn pattern fittings may be used.
 - Vertical offsets: make vertical offsets with 45 degree elbows, or 1/8 bends.
- B. CLEANOUTS
- Install cleanouts with sufficient side and end clearance to allow for the removal of the cleanout plug, and the use of cleaning tools.
 - Cleanout lubricate plugs with anti-seize lubricant.
 - Do not hang or support one pipe from another or from ductwork.
 - Do not bend threaded rod.
 - Space hangers or supports for horizontal piping on center distances as allowed by the manufacturer. Max spacing shall not exceed 10 feet.
 - Cast iron soil pipe.

- One piping is supported on centers in excess of eighteen (18) inches by means of non-rigid hangers, provide swing bracing to prevent horizontal pipe movement.
- Additionally, brace piping five (5) inches and larger to prevent horizontal movement and/or joint separation. Provide braces, blocks, noddies or other suitable method at each branch opening, or change of direction.
- For bare steel cast iron soil pipe: space hangers or support pipe at each joint or on maximum centers of five (5) feet. Place hangers or supports as close as possible to joints when hangers or supports do not come within one (1) foot of a branch LINE fitting, install an additional hanger or support at the fitting.
- For hubless cast iron soil pipe: space hangers or support pipe at each joint or on maximum centers of five (5) feet. Place hangers or supports as close as possible to joints when hangers or supports do not come within one (1) foot of a branch LINE fitting, install an additional hanger or support at the fitting.

3.5 PIPE INSULATION SHELDIS

- A. Unless otherwise specified, install a pipe insulation shield, at all points of support. Center shields on all hangers and supports outside of high density insulation insert, and install in such a manner so as not to cut, or puncture jacket.

3.6 PRESSURE TESTING OF PIPING

- A. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering systems. Prevent if possible and remove stoppages or obstructions from piping and systems.
- B. Thoroughly clean compressed air, control air, refrigerant pipe and similar systems prior to pressure or vacuum testing.
- C. Pressure test piping systems inside buildings, at the rough-in stage of installation, before piping is enclosed by construction and, at other times as directed. Perform test operations in sections as required and directed, to progress the work in a satisfactory manner and not delay the general construction of the building. Valve or cap off sections of piping to be tested, utilizing valves required to be installed in the permanent piping systems or temporary valves or caps as required to perform the work.
- D. Piping shall be tight under test and shall not show loss in pressure or visible leaks, during test periods after the minimum duration of time as specified. Remove piping which is not tight under test, remake joints and retest until all leaks occur.

DOMESTIC WATER (POTABLE COLD, DOMESTIC HOT AND RECREATION) INSIDE BUILDINGS:

1. Before fixtures, faucets, trim and accessories are connected, perform hydrostatic test at 125 PSIG minimum for 4 hours.
2. After fixtures, faucets, trim and accessories are connected, perform hydrostatic retest at 75 PSIG for four (4) hours.
- F. SANITARY AND STORM WATER SYSTEMS:
- Before final connections are made perform hydrostatic test with 15' of head in the piping, for twenty-four (24) hours.
 - Circulating water systems, including propylene glycol solution systems and cold water make-up piping connections to heating, ventilating, air conditioning and refrigeration systems, and unless otherwise specified, test at 15' of head in the piping, for twenty-four (24) hours.
 - After final connections are made perform hydrostatic test at a pressure equal to maximum operating system pressure, but not less than 30 PSIG, for four (4) hours.

DISINFECT POTABLE WATER PIPE AND EQUIPMENT INSTALLED IN THE WORK OF THIS CONTRACT

1. Completely fill piping, including water storage tanks, equipment if installed, with a water solution containing 50 mg available chlorine, and allow to stand for 24 hours.
2. Operate all valves during this period to assure their proper disinfection.
3. After the retention period, discharge the solution to an approved waste and flush the system thoroughly with water until substantially all traces of chlorine are removed.
4. Drain and flush water storage equipment if installed.

1. Connect plumbing fixtures and equipment and place the system into service. Prevent recontamination of the piping.

PART 4 PLUMBING FIXTURES, EQUIPMENT AND ACCESSORIES A REGULATORY REQUIREMENTS

- A. COMPLY WITH THE FOLLOWING STANDARDS:
- Applicable sections of ANSI/ASME A112 - standards for plumbing equipment.
 - Materials and installations designated as handicapped accessible shall conform with the following:

1. ANSI A117.1 - Buildings and facilities - providing accessibility and usability for physically handicapped people

2. The Americans with Disabilities Act accessibility guidelines for buildings and facilities (ADAAG), (APPENDIX A To 28 CFR Part 36)

3. Each future carrier support shall be labeled by model number in the future support manufacturer's future support selection guide as being recommended for support of the appropriate fixture.

- D. Acceptable manufacturers: the following manufacturers are considered equal to the basis of design listed in the material list and schedules. The basis of design is preferred and will take precedence. Any products from an alternate approved manufacturer need to meet the requirements and performance specified and shall be equal to the basis of design.

EQUIPMENT / ACCEPTABLE MANUFACTURERS:

1. BACKFLOW / APOLOW, FEBCO, WATTS, WILKINS, ZURN
2. DRAINAGE FIXTURES / JOSAM, MIFAB, SMITH, WADE, WATTS, WILKINS, ZURN
3. HOSE BIBBS & MISC VALVES / APOLO, SMITH, WATTS, WILCOUGHY, WOODFORD, ZURN
4. HOT WATER CIRC PUMPS & EXPANSION TANKS / AMTROL, B & G, GRUNDOS, TACO, WATTS
5. ELECTRIC WATER COOLERS / ACCORN, ELKAY, HALSEY TAYLOR, HAWS, MURDOCK, OASIS
6. LAVATORIES & URINALS & WATER CLOSERS & SINK TRIM / AMERICAN STANDARD, CHICAGO FAUCET, DELTA COMMERCIALS, KOHLER, T&S BRASS, SLOAN, TOTO, ZURN
7. STAINLESS STEEL SINKS / ELKAY, JUST, KOHLER
8. MOP AND SERVICE SINKS / FIAT, WILLIAMS, ZURN

- E. All items shall be commercial grade unless specified otherwise.

- F. All items within a particular group listed above shall be supplied by the same manufacturer.

- G. DRAIN VALVES
- Provide on all equipment with drain connections and as shown on details
 - Cast brass body with renewable units, hose bibb vacuum breaker (asse 1011) with drainage feature, and removable cast iron handwheel.
 - Valve must be completely assembled to make hose connection.
 - Connections: 1/2" or 3/4 inch threaded or solder end inlet, and 3/4 inch hose bibb outlet.

- H. FIXTURE INSTALLATION:
- Install all equipment in accordance with the manufacturer's prescribed installation instructions.
 - See architectural floor plans and interior elevation drawings for final installation locations and heights of all plumbing fixtures. Architectural plans supersede these specifications.
 - Install fixtures level and at proper height, tighten connections, and install hold-down bolts, cap nuts and cover plates, where shown on details.
 - Caulk joint between all fixtures and wall or floor with sealant; strike a neat joint.
 - Clean fixture and trim. Remove grease and dirt; Polish surfaces but leave stickers and warning labels intact.
 - Flush supply piping and traps, clean strainers.
 - Adjust stops for proper delivery.

PART 4 HVAC

4.1 INSTALLATION

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are indicated for storage and identified with labels describing contents.
- B. Total allowable leakage shall not exceed 1 percent of the total system design Airflow rate.
- C. When partial pressures of the duct system are tested, the summation of the leakage for all sections shall not exceed the total allowable leakage.
- D. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- E. Install equipment to allow right of way for piping installed at required slope.

4.2 EQUIPMENT STARTUP

- A. Contractor shall perform startup per manufacturer's requirements. Startup shall be performed by personnel qualified for this work.
- B. Contractor shall test equipment to be fully functional. Test all equipment safeties and emergency stops. Test all control setpoints and equipment modes.
- C. Contractor shall return to site as needed to adjust equipment for seasonal equipment performance changes.

4.3 PIPING IDENTIFICATION

- A. PIPING IDENTIFICATION
- PIPE TYPE / FIELD COLOR / LETTERING COLOR

1. DOMESTIC WATER / GREEN / WHITE
2. SANITARY & VENT / YELLOW / BLACK
3. NATURAL GAS / YELLOW / BLACK
4. FIRE PROTECTION / RED / WHITE
5. REFRIGERANT / GREEN / WHITE
6. LOCATE PIPING IDENTIFICATION AS FOLLOWS:

1. Where piping identification at valve locations, at points where piping enters and leaves a partition, wall, floor or ceiling, and at intervals of 20 feet on straight runs.
2. Locations (2) or more pipes run in parallel, place printed legend and other markers in same relative location.
3. Install minimum of two (2) markers at each specified location, 90 degrees apart on visible side of pipe.
4. Underground pipe markers: Install 8'-12" above buried piping. Install along entire length of pipe.

4.4 EQUIPMENT IDENTIFICATION

- A. Install engraved tags on equipment using metal rivets or stainless steel sheet metal screws with a pan head. For indoor equipment, install strength double-sided tape is acceptable of rivets or screws cannot be used. Install label on most visible side of equipment. Place identification along center line of equipment, if possible.
- B. Label all mechanical equipment using the same callout as used on the drawings, by means of engraved tags.
- C. Label all fire, fire/smoke, and smoke dampers with adhesive labels or permanent nameplates. Labels shall read "Fire damper", "Fire/smoke damper", or "Smoke damper" to match damper type.
- D. Do not label equipment in exposed public spaces. E.G. Cabinet unit heaters, diffusers, louvers, etc.
- E. Label hidden equipment such as sump pumps or the control panel or disconnected if it does not make sense to label the equipment itself.

4.5 TESTING, ADJUSTING AND BALANCING

- A. Testing, adjusting, and balancing (bal) of the air conditioning systems and related ancillary equipment will be performed by a technically qualified tap firm.
- B. Tab firm shall check, adjust, and balance components of the air conditioning system which will result in optimal noise, temperature, and airflow conditions in the conditioned spaces of the building while the system equipment is operating economically and efficiently. This is intended to be accomplished after the system components are installed and operating as specified in the contract documents. It is the responsibility of the contractor to place the equipment into service. Variable air volume systems shall be balanced in accordance with the ASAC standard, latest edition or NEBB standards for testing, adjusting, balancing of environmental systems (latest edition).
- C. Tab firm shall check, adjust, and balance all air systems including air handling units, relief supply/return/exhaust fans, view terminal boxes and unitary terminal heating and cooling units.
- D. Tab firm shall check, adjust, and balance all hydronic systems including pumps, water distribution systems, chillers, cooling towers, boilers, heat exchangers, coils, and related equipment.
- E. All activities as described in this section shall be completed in a report. Three copies shall be provided, individually bound and also provided electronically to the contractor to be presented to the owner. Neatly type and arrange data, include with the data, the dates tested, personnel present, and weather conditions.
- F. Do not label equipment in exposed public spaces. E.G. Cabinet unit heaters, diffusers, louvers, etc.
- G. Label hidden equipment such as sump pumps or the control panel or disconnected if it does not make sense to label the equipment itself.
- H. Valve standardization: valves from one or more manufacturers may be used, however valves supplied for each specific valve type shall be the product of one manufacturer.
- I. Valves shall be first quality, free from all imperfections and defects, with body markings indicating performed by a technically qualified tap firm.
- J. Valve parts of same manufacturer, size and type shall be interchangeable.
- K. Size valves the same size as the piping in which they are installed, unless specified otherwise.
- L. Provide extended shutoffs for all valves installed on insulated piping.

4.6 DUCTWORK

- A. SMACNA: pages of materials, fabrication, reinforcement, sealing requirements, installation, and method of supporting ductwork shall be in accordance with the following SMACNA manuals, unless otherwise shown or specified:
- SHEET METAL
 - ALUMINUM ASTM-B209 ALLOY 3003 TEMPER H-14
 - CARBON STEEL: 16 GAUGE BLACK IRON
 - GALVANIZED STEEL: ASTM A653, CLASS LF55 (LOCK FORMING QUALITY), COATING DESIGNATION G-90
 - TAI NLESS STEEL: ASTI TYPES 302, 304 AND 316, AS SPECIFIED.

- C. Refer to the ductwork construction schedule on the drawings for the types and material usage for the various ductwork types required.

- D. Install ductwork to allow maximum headroom. Properly seal, brace, stiffen and support and render ducts mechanically airtight. Adjust ducts to suit job conditions. Dimensions may be changed as approved, if cross sectional area is maintained.

- E. Piping horizontal ducts connected to exhaust hoods downward toward hood not less than one (1) inch in ten (10) feet.

- F. Hangers and supports: all ductwork supports shall be in accordance with table 4-1 (rectangular duct) and table 4-2 (round duct) of the SMACNA standards, with all supports directly anchored to the building structure.

4.7 CLEANLINESS

1. Before installing ductwork, wipe ductwork free visibly clean condition.

2. During construction, provide temporary closures of metal or taped polyethylene on open ductwork and duct taps to prevent construction dust or contaminants from entering ductwork system. Seal ends of ductwork prior to installation to keep ductwork interior clean. Remove closures only for installation of the next duct section or for puncture jacket.

3. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

4. Slope duct toward drains for moisture removal. Provide drain and trap at elbow of main moisture exhaust duct system.

5. During the duration of construction, maintain the integrity of all temporary closures until air systems are activated.

- H. EXPOSED DUCTWORK:
- Remove all markings, stickers and labels.
 - Completely clean the exterior of all ducts prior to painting duct to be painted or prior to project completion.
 - All exposed ductwork shall have a paint/light finish to allow for normal painting application without additional field labor by the painter. See architectural drawings for areas with exposed ceiling to be painted.
 - Any ductwork deemed unsightly by the architect/engineer/owner will be replaced at the contractor's expense.

I. FLEXIBLE DUCT:

1. The terminal end of the duct core shall be secured by compression coupling or stainless steel worm gear type clamp.
2. Outer insulation connections shall be sealed by embedding fiberglass tape in the sealant and coating with neop sealant to provide a vapor barrier.
3. Support flexible ducts as per SMACNA standards to prevent sags, kinks and to have 90 degree turns.
4. Make ductwork connections to air handling equipment with flexible fabric connectors. Install connectors with sufficient slack to prevent vibration transmission.

4.8 HVAC EQUIPMENT (EXCLUDING ROOFTOP UNIT AND MAKEUP AIR UNIT)

- A. Acceptable manufacturers: the following manufacturers are considered equal to the basis of design listed in the material list and schedules. The basis of design is preferred and will take precedence. Any products from an alternate approved manufacturer need to meet the requirements and performance specified and shall be equal to the basis of design.

EQUIPMENT / ACCEPTABLE MANUFACTURERS:

1. FANS & ROOF HOODS / AGME, COOK, GREENHECK, PENN, TWIN CITY
2. GRILLES & REGISTER & DIFFUSERS / KRUEGER, NALOR, PROCE, TITUS, TRANE
3. DAMPERS & OUTLETS / AMCOIL, GREENHECK, RUSKIN, TAMCO
4. TERMINAL HEATING EQUIPMENT / INDOCO, MARMOIL, MOORE, REZKOR, STERLING, TRANE
5. PUMPS / ARMSTRONG, BELL & GOSSETT, GRUNDOS, TACO
6. All items within a particular group listed above shall be supplied by the same manufacturer.

- F. For rooftop unit and make-up air unit, please see separate rooftop unit and makeup air unit specification sections.

4.9 GRILLES, REGISTERS & DIFFUSERS

- A. REGISTERS AND GRILLES INSTALLED IN EXPOSED DUCTWORK:
- Frames are not required for registers and grilles installed directly in un-insulated exposed ductwork.
 - Out openings in ducts, forming a double thickness of metal, to attached registers or grilles with sheet metal screws. Bend back edges of openings into duct, on all four (4) sides, a minimum of one (1) inch to provide the thickness of metal listed above. Provide felt or sponge rubber gasketing, all four (4) sides of duct openings, for supply grilles and supply registers.

B. DIFFUSERS INSTALLED IN EXPOSED DUCTWORK:

1. Frames are not required for diffusers installed directly in un-insulated exposed ductwork.
2. Cut and form openings in ducts to accommodate the specified volume control damper and adjustable equalizing grid assembly. Reinforce openings as required and approved. Provide felt or sponge rubber gasketing, around duct opening, for supply diffuser assemblies.

3. Check grid of air outlets and inlets and make necessary adjustments in position to conform to architectural features, reflected ceiling plans, symmetry, and lighting arrangement.

4. Install air outlets and inlets to ductwork with airtight connection.

5. Provide balancing dampers or duct take-off to diffusers, grilles and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

- F. Paint ductwork visible behind air outlets and inlets matte black.

- G. Provide all specialties and frames for air distribution devices as required for proper installation in ceiling type as indicated on architectural drawings. Provide all cutting and patching of T-bars, gypsum board, and other ceiling systems as required for installation of air devices.

4.10 EXHAUST FANS

- A. Fans shall be either belt or direct drive as scheduled on drawings.
- B. Select fans such that they do not increase motor size, increase noise level, or increase tip speed by more than 10 percent, or increase inlet air velocity by more than 20 percent, from specified criteria. Provide fans capable of accommodating static pressure variations of plus or minus 10 percent.

- C. Statistically and dynamically balance fans to eliminate vibration or noise transmission to occupied areas.

- D. Backward inclined fan wheel with spun aluminum housing; resilient mounted motor and drive assembly; 16 gauge aluminum body; square base to suit roof curb with continuous curb gaskets, secured to roof curb with cadmium plated or stainless steel bolts and screws.

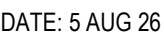
- E. Roof curb: roof curb shall be coordinated with owner and contractor.

- F. Exhaust ductwork: gravity activated or motorized as indicated. Where type is not indicated on drawings or specifications, provide gravity-activated ductwork. Aluminum construction, felt gasket with nylon bearings.

4.11 ACCESS DOORS

- A. INSTALL GASKETED ACCESS DOORS IN DUCTWORK AT EACH OF THE FOLLOWING:
- Major changes of direction in horizontal ducts connected to cooking equipment hoods.
 - Motor operated dampers.

3. Install fixtures level and at proper height, tighten connections, and install hold-down bolts, cap nuts and cover



JUST TRIES BUILDING CONCESSION
KITCHEN REMODEL
IOWA STATE FAIR
3000 E GRAND AVE., DES MOINES, IA 50317

33000 E GRAND AVE, DES MOINES, IA 50317

VARIED INDUSTRIES BUILDING CONCESSION
KITCHEN REMODEL

[illegible]

DESIGNED BY: Designer	CHECKED BY: Checker
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PROJECT NO: 125-017

ISSUANCE:

QUESTIONS

ONE HOUR

S

10

SHEET (30X)



VARIED INDUSTRIES BUILDING CONCESSION
KITCHEN REMODEL
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38000 E GRAND AVE. DES MOINES, IA 50317

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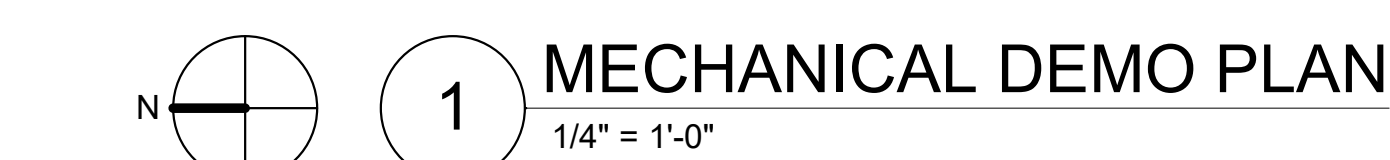
ISSUANCE: _____

SHEET (30X42):

MD101

1. DEMO ALL DASHED LINES AND REMOVE FROM SITE. NO SALVAGE OF ANY ITEMS INCLUDING DUCT AND PIPE HANGERS.

1. EXISTING GAS PIPING DROP TO FRYERS TO BE DEMOLISHED BACK TO MAIN, AND RE-ROUTED TO NEW FRYERS. REFER TO NEW WORK PLAN FOR NEW GAS PIPE ROUTING
2. EXISTING GAS PIPING DROP TO GRIDDLE TO BE DEMOLISHED BACK TO MAIN, AND RE-ROUTED TO NEW GRIDDLE. REFER TO NEW WORK PLAN FOR NEW GAS PIPE ROUTING
3. DEMO GAS PIPING TO MARKED LOCATION OR BEST SUITED AS DETERMINED IN THE FIELD.



- KEYED NOTES:**
1. INSTALL TEMPERATURE SENSOR IN WALK-IN COOLER AND WALK-IN FREEZER. REFER TO COOLER & FREEZER TEMPERATURE CONDITIONS CONTROL DIAGRAM ON SHEET M701 FOR MORE INFORMATION.
 2. EMERGENCY GAS SHUT OFF VALVE.
 3. GAS PIPING TO FRYERS.
 4. GAS PIPING TO GRIDDLE.



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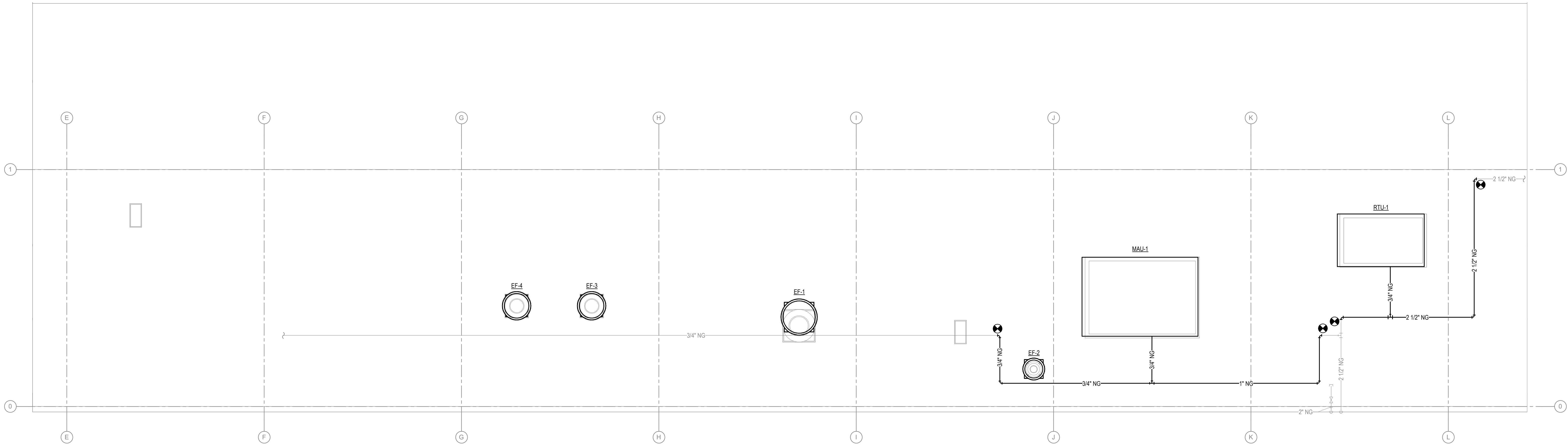
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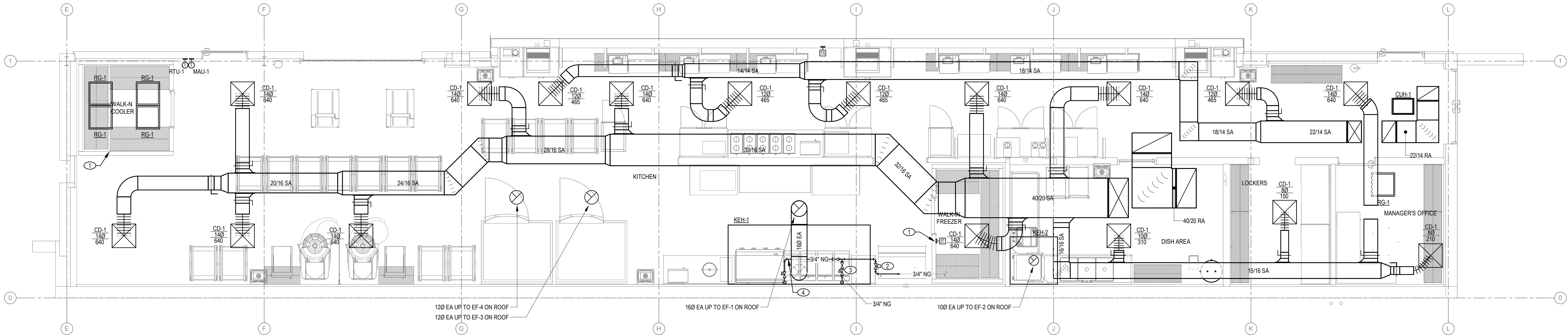
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SHEET NAME:
MECHANICAL PLAN

SHEET (30X42):
M101



2 MECHANICAL ROOF PLAN
1/4" = 1'-0"



1 MECHANICAL PLAN
1/4" = 1'-0"

- KEYED NOTES:**
1. INSTALL TEMPERATURE SENSOR IN WALK-IN COOLER AND WALK-IN FREEZER. REFER TO COOLER & FREEZER TEMPERATURE CONDITIONS CONTROL DIAGRAM ON SHEET M701 FOR MORE INFORMATION.
 2. INSTALL BLANK OFF PANEL AS SHOWN IN THE DIFFUSER FOR THE PORTION OF DIFFUSER FACING THE KITCHEN HOOD.



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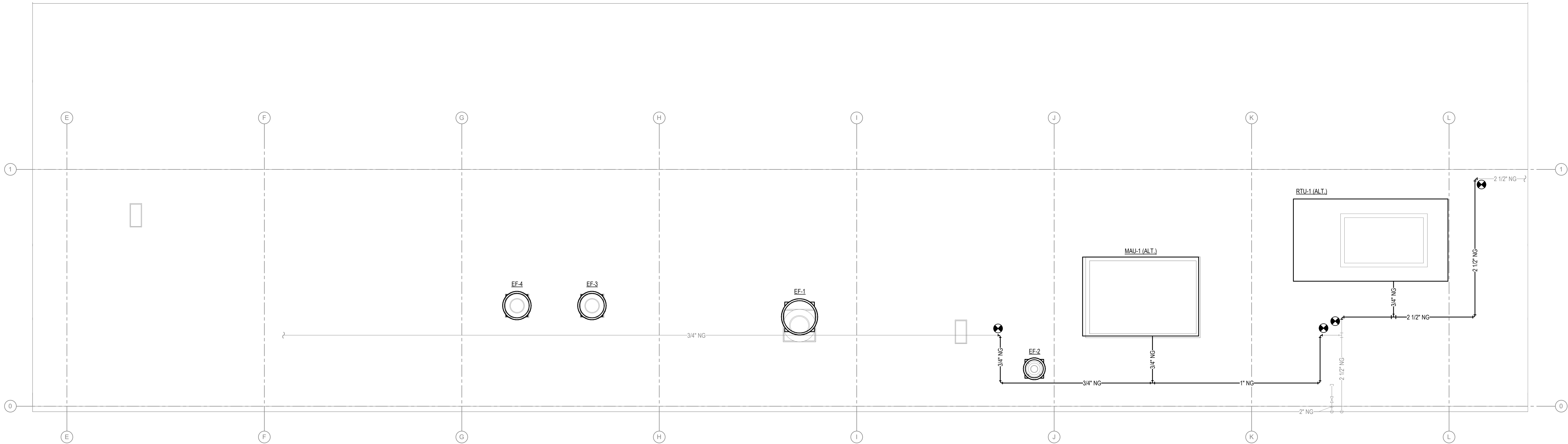
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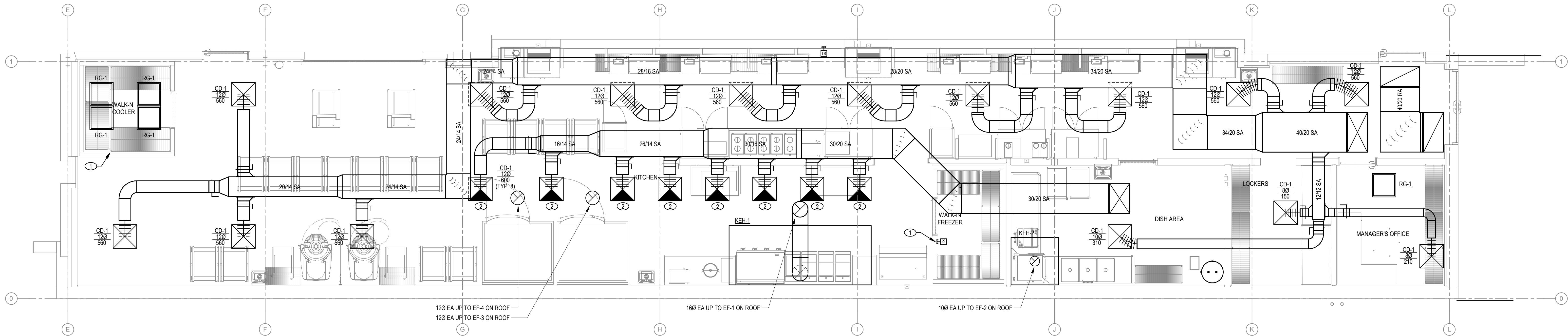
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SHEET NAME:
**MECHANICAL
ALTERNATE PLAN**

SHEET (30X42):
M102



2 MECHANICAL ROOF PLAN - ALTERNATE
1/4" = 1'-0"



1 MECHANICAL ALTERNATE PLAN
1/4" = 1'-0"



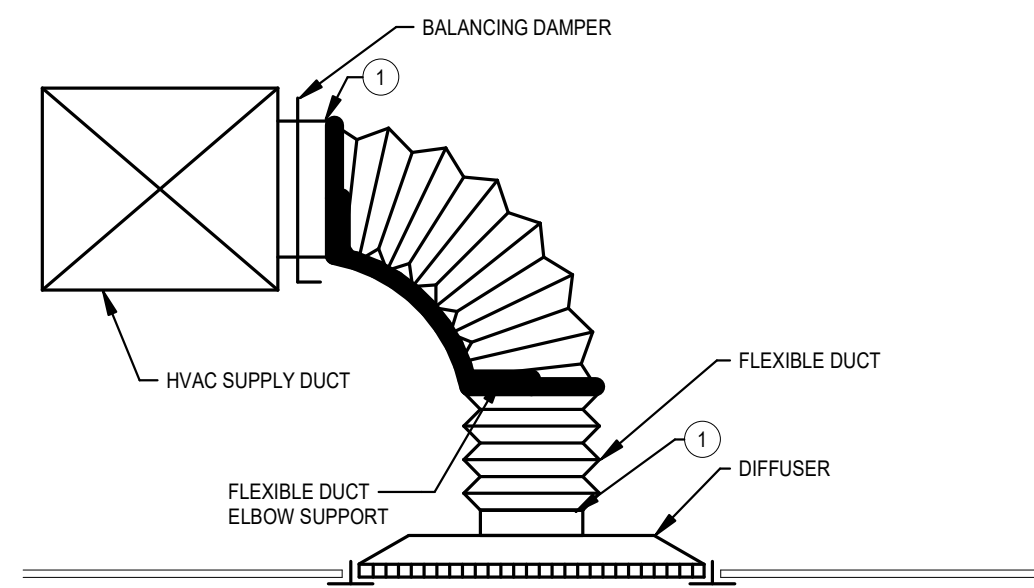
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SHEET NAME:
MECHANICAL DETAILS

SHEET (30X42):
M501



3 FLEX DUCT INSTALL

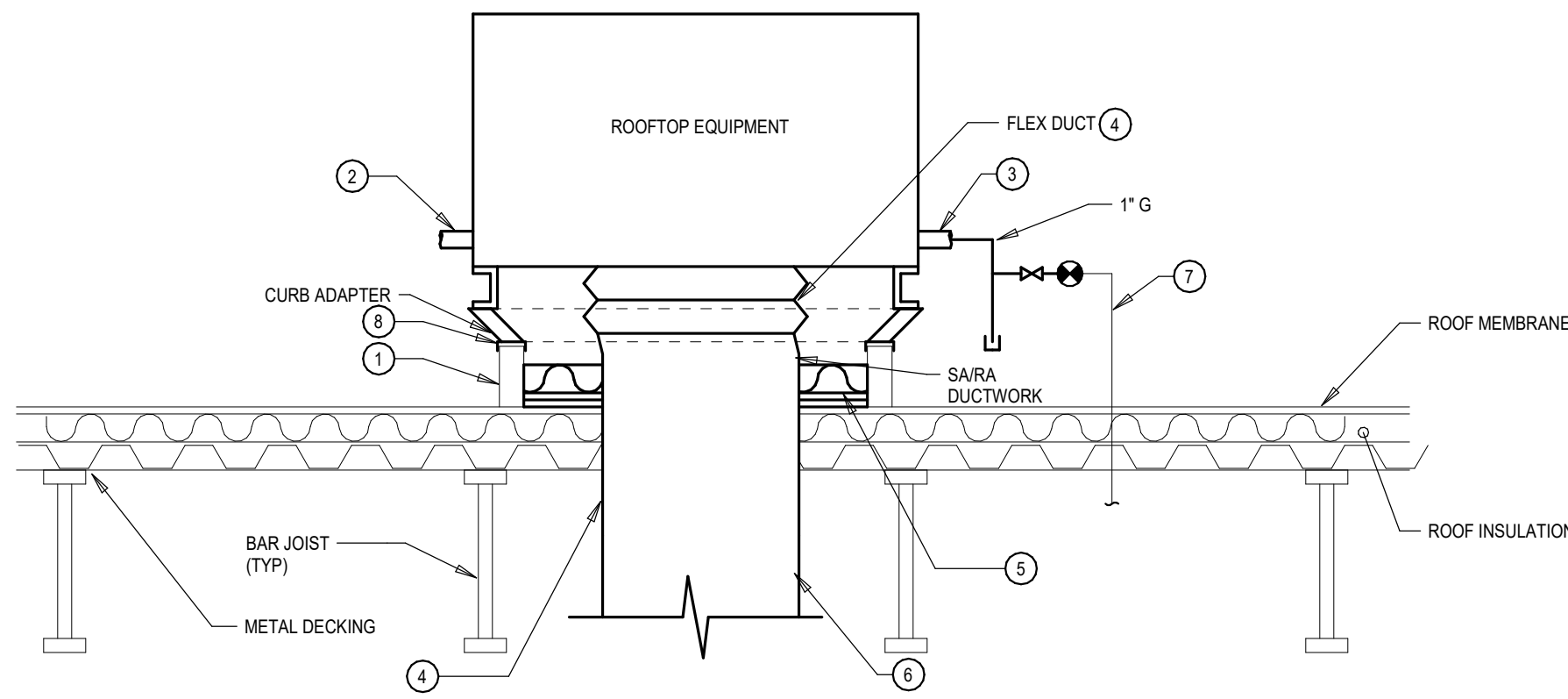
N.T.S.

GENERAL NOTES:

1. INSTALL FLEXIBLE DUCT ELBOW SUPPORTS AT ALL FLEXIBLE DUCT 90 DEGREE BENDS.
2. 5'-0" MAX FLEXIBLE DUCT LENGTH ALLOWED

KEYED NOTES:

1. M.C. TO USE 20P TIES TO ATTACH FLEX DUCT TO DUCT TAP AND DIFFUSER

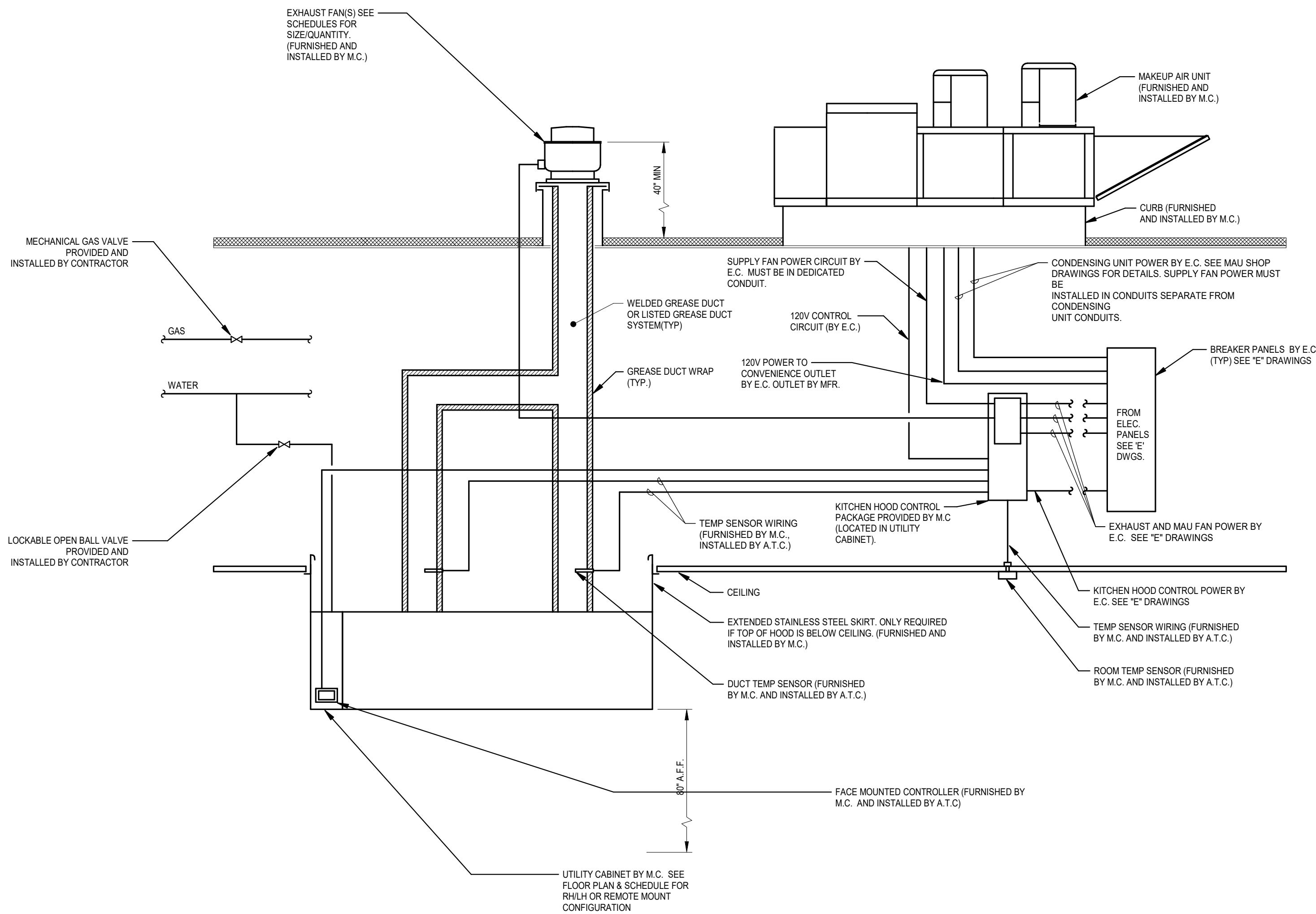


2 ROOFTOP CURB EQUIPMENT DETAIL

N.T.S.

KEYED NOTES:

1. REFER TO CONDENSATE DRAIN DETAIL FOR INSTALLATION AND DEPTH REQUIREMENTS.
2. GAS CONNECTION: PROVIDE DIRT LEG, SHUT-OFF VALVE AND RECONNECT TO EXISTING GAS PIPING PENETRATION THROUGH THE ROOF.
3. TRANSITION SUPPLY AND RETURN DUCT CONNECTION AS NEEDED TO CONNECT TO THE DUCT BELOW. MODIFY EXISTING DECK OPENINGS AS NEEDED AND PATCH/ SEAL AROUND DUCTWORK.
4. PROVIDE TWO LAYERS OF 5/8" GYP BOARD AND A LAYER OF 6" 3 LB / CU FT BATT ON TOP OF THE GYP BOARD. CAULK ALL JOINTS BETWEEN THE GYP AND THE CURB AND THE DUCTWORK.
5. REFER TO DUCTWORK APPLICATION SCHEDULE FOR DUCT AND INSTALLATION REQUIREMENTS.
6. ALL EXPOSED GAS PIPING SERVING RTU-2 ON THE ROOF TO BE PAINTED BY CONTRACTOR. COORDINATE COLOR WITH ARCHITECT.
7. CURB ADAPTER TO PROVIDE A DRIP EDGE AND ALL NECESSARY SEALANTS TO PROVIDE A WATERTIGHT ENCLOSURE BETWEEN THE EXISTING CURB, ADAPTER AND NEW ROOFTOP UNIT.



1 HOOD - TYPICAL KITCHEN VENTILATION SYSTEM

N.T.S.

GENERAL NOTES:

1. THIS DETAIL IS SCHEMATIC IN NATURE AND INTENDED TO DEFINE SCOPE. CONSULT HOOD AND MAU MANUFACTURER FOR ADDITIONAL REQUIREMENTS.
2. SEE MECHANICAL SCHEDULES AND DRAWINGS FOR ADDITIONAL EQUIPMENT AND ACCESSORY INFORMATION.
3. CHECK HOOD SCHEDULE TO CONFIRM LOCATION OF HOOD CONTROL PANEL.
4. INSTALL DUCT ACCESS DOORS AS REQUIRED IN NFPA 96 AND AS REQUIRED FOR CLEANING.
5. DO NOT INSTALL ROOM TEMPERATURE SENSORS NEAR HEAT SOURCES, COOLER DOORS, OR DIFFUSERS. SENSORS SHALL BE IN THE SAME ROOM AS THE EQUIPMENT SERVED.

CONTROLS/NOTES:	OPTIONS:
1. PROVIDE WITH UNIT MOUNTED CONTROLLER AND WALL MOUNTED TEMPERATURE SENSOR / T-STAT TO BE INSTALLED IN THE SPACE SERVED. REFER TO THE CONTROL DIAGRAMS FOR ADDITIONAL REQUIREMENTS	1. 120 V FIELD POWERED CONVENIENCE OUTLET
	2. CONDENSER COIL HAIL GUARDS
	3. DRAIN/LOW DISCHARGE UNIT
	4. 100% DUAL ENTHALPY ECONOMIZER
	5. GALVANIZED DRAIN PAN
	6. STAINLESS STEEL DRAIN PAN
	7. MOTORIZED EXHAUST AIR DAMPER
	8. BAROMETRIC RELIEF DAMPERS (25% MIN UNIT CAPACITY)
	9. STAINLESS STEEL HEAT EXCHANGER
	10. MODULATING GAS HEAT VALVE
	11. SINGLE ZONE VAV
	12. DUCT MOUNTED CO2 SENSOR TO BE USED FOR VENTILATION AIR CONTROL
	13. MODULATING HOT GAS REHEAT
	14. BACNET INTERFACE

NOTES:
1. SUPPLY AIR EXTERNAL PRESSURE INCLUDES A 0.5" W.C. ALLOWANCE FOR DIRTY FILTERS.
2. CONTRACTOR TO PROVIDE THE NECESSARY DUCTWORK TRANSFORMATION PIECES & FLEXIBLE DUCTWORK CONNECTIONS FOR ALL ROOFTOP UNITS. FIELD COORDINATE REQUIREMENTS WITH APPROVED EQUIPMENT SHOP DRAWINGS PRIOR TO DUCT FABRICATION.
3. HEIGHT LISTED IS THE MINIMUM REQUIRED HEIGHT ABOVE THE FINISHED ROOF LEVEL. COORDINATE REQUIRED CURB HEIGHT WITH ARCHITECTURAL DRAWINGS AND ROOF CONSTRUCTION.

NOTES:

1. DEFLECTION SIZE LISTED IS FOR LATERAL MOVEMENT.

REQUIRED HOSE LENGTH FOR FLEXIBLE PIPING CONNECTIONS	
NOMINAL PIPE DIAMETER (IN.)	HOSE LENGTH (IN.)
0.75	12

NOTES:

1. VERIFY LOCATION OF ALL THERMOSTATS WITH THE OWNER, ARCHITECT AND ENGINEER PRIOR TO ROUGH-IN.
2. ALL TEMPERATURE SENSORS & THERMOSTATS THAT HAVE USER ADJUSTMENT SHALL BE INSTALLED AT 42" A.F.F. TO THE CENTERLINE OF THE DEVICE. IF THE SENSOR IS INSTALLED ADJACENT TO ANOTHER DEVICE, COORDINATE CENTERLINE MOUNTING HEIGHTS FOR CONSISTENCY.
3. ZONE SENSORS MAY INCLUDE CO2 MONITORING IN ADDITION TO TEMPERATURE CONTROL. REFER TO TERMINAL AIR BOX SPREADSHEET FOR ZONES REQUIRING DEMAND CONTROLLED VENTILATION.

NOTES:

1. CONTRACTOR SHALL DETERMINE PROPER MARGIN STYLE TO MATCH CEILING TYPE.
2. BRANCH DUCT TO DIFFUSERS SHALL BE AT THE SAME SIZE AS THE DIFFUSER NECK, UNLESS SHOWN OTHERWISE.
3. DIFFUSER BACK PAN TO BE INSULATED.

1. REFER TO EACH PIPING SPECIFICATION FOR SPECIFIC PIPING REQUIREMENTS.
2. SEE SPECIFICATIONS FOR COMPLETE INSULATION AND JACKING REQUIREMENTS. ALL INSULATION SHALL BE PENUM RATED MEETING ASTM E84 WHERE INSTALLED IN A RETURN AIR PLenum.
3. INSTALL RIGID CALCIUM SILICATE INSERTS AT ALL PIPING HANDS.
4. GAS PIPING IS PROHIBITED FROM BEING INSTALLED IN SOLID PARTITIONS OR WALLS UNLESS IN A CHASE OR CASING (PIPE SLEEVE).
5. REFER TO KITCHEN EQUIPMENT SCHEDULE ON PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
6. DRAIN PIPING TO BE HEAT TRACED BY OTHERS PRIOR TO INSULATION.

NOTES:

1. DUCT DIMENSIONS SHOWN ON PLAN ARE MINIMUM ALLOWABLE DIMENSIONS AND DO NOT INCLUDE INSULATION.
2. R/VALUE LISTED IN SCHEDULE IS THE CELLULOSE FIBER INSULATION INSTALLED R/VALUE.
3. INSULATION THICKNESS SHOWN ON PLAN IS THE MINIMUM ALLOWABLE INSULATION THICKNESS. CONTRACTOR TO VERIFY REQUIRED INSULATION THICKNESS BASED ON INSULATION DENSITY USED.
4. DUCT SEAL CLASS TO BE BASED ON PRESSURE CLASS AS NOTED BELOW:
CLASS A -10"W.C. THRU -4"W.C.
CLASS B -3"W.C.
CLASS C -3"W.C. THRU +2"W.C.
CLASS A -4"W.C. THRU +10"W.C.
5. ACTUAL DUCT CORRECTION SHALL EXCEED THE ACTUAL PRESSURE RATING LISTED AND FALL INTO ONE OF THE STANDARD DUCT PRESSURE CLASS RATINGS AS FOLLOWS:
0.5", 1", 2", 3", 4", 6" (POSITIVE OR NEGATIVE)
6. CONTRACTOR TO PROVIDE DAMPERS AND DUCTWORK TO BE SMOKE DAMPER. SMOKE DAMPER REQUIRES A PRESSURE RATED DOOR TO PROTECT THE DUCTWORK DURING A CLOSURE OF THE DAMPER WHILE THE FAN IS STILL OPERATING. REFER TO THE PRESSURE RATED DOOR SCHEDULE AND SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

NOTES:	CONTROL TYPE:
1. REFER TO VIBRATIONS ISOLATION SCHEDULE FOR REQUIREMENTS (BASES, ISOLATORS, FLEX CONNECTIONS).	TYPE 1: WALL MOUNTED SWITCH
2. VENTED HINGED ROOF CURB CURB CUTWORK SHALL ATTACH TO FAN AT A MINIMUM OF 18" ABOVE ROOF LEVEL.	TYPE 2: REFER TO CONTROLS DETAILS
3. GREASE COLLECTION SYSTEM.	
4. HEIGHT LISTED IS THE MINIMUM REQUIRED HEIGHT ABOVE THE FINISHED ROOF LEVEL. COORDINATE REQUIRED CURB HEIGHT WITH ARCHITECTURAL DRAWINGS AND ROOF CONSTRUCTION.	

NOTES:

1. UTILITY CABINET BY HOOD MANUFACTURER. CABINET WIDTH IS 12" AND IS INCLUDED IN HOOD SIZE LISTED.
2. PROVIDE WITH STAINLESS STEEL INSULATED BACKSLASH. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
3. PROVIDE WITH DUCT TEMPERATURE KIT AND ROOM TEMPERATURE SENSOR.
4. PROVIDE WITH DEMAND CONTROL VENTILATION PACKAGE AND BACNET CONNECTIVITY PACKAGE TO MODULATE FANS BASED ON EXHAUST AIR TEMPERATURE.
5. HOOD TO HAVE A REMOVABLE CONDENSATE BAFFLE AND A PERIMETER CONDENSATE GUTTER.
6. PROVIDE 1" LEFT STANDOFF WITH 1" OF INSULATION TO MEET IF TO COMBUSTIBLES REQUIREMENTS.
7. PROVIDE WITH STAINLESS STEEL FIELD WRAPPER ON ALL EXPOSED SIDES. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING HEIGHTS.
8. PROVIDE COMPLETE CAPTIVEAIRE THERMOSTATIC ELECTRICAL PACKAGE TO CONTROL FAN WITH DUCT TEMP SENSOR, RECESSED HMI, AND ENCLOSURE. SEE PLAN FOR LOCATION OF HMI.

NOTES:	CONFIGURATION NOTES:	CONTROL TYPES:
1. VERIFY FINAL COLOR SELECTION WITH ARCHITECT.	CABINET: HORIZONTAL OR VERTICAL MOUNTING: CONCEALED / RECESSED / SEMI-RECESSED / SURFACE DISCHARGE: BOTTOM / TOP / DUCTED / FRONT	1. UNIT MOUNTED THERMOSTAT



3000 E GRAND AVE, DES MOINES, IA 50317

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DESIGNED BY: Design	CHECKED BY: Check
PROJECT NO: 125-017	
ISSUE DATE: 5 AUG 26	
ISSUANCE:	

SHEET NAME:

MECHANICAL SCHEDULES

SHEET (30X42)

M601



KITCHEN REMODEL
IOWA STATE FAIR
3000 E GRAND AVE., DES MOINES, IA 50317

(30X42):

ELECTRICAL ABBREVIATIONS			
1P	1 POLE (2P, 3P, 4P, ETC.)	LTNG	LIGHTNING
5'	5' ABOVE COUNTER OR BACKSPASH	LV	LOW VOLTAGE
A	AMP	M	MAXIMUM
AC	ABOVE COUNTER	MAG S	MAGNETIC STARTER
ACLG	ABOVE CEILING	MC	MECHANICAL CONTRACTOR
AF	AMP FRAME	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MCC	MAIN DISTRIBUTION CENTER
AGF	ABOVE FINISHED GRADE	MDP	MAIN DISTRIBUTION PANEL
AFCI	ARC FAULT CIRCUIT INTERRUPTER	MFR	MANUFACTURER
AHU	AIR HANDLING UNIT	MFS	MAIN FUSED DISCONNECT SWITCH
AL	ALUMINUM	MH	MANHOLE
ALT	ALTERNATE	MIC	MICROPHONE
AMP	AMPERE	MIN	MINIMUM
AMPL	AMPLIFIER	MISC	MISCELLANEOUS
ANUN	ANNUNCIATOR	MISC	MISCELLANEOUS
APPROX	APPROXIMATELY	MLO	MAIN LUGS ONLY
AQ-STAT	AQUASTAT	MMS	MANUAL MOTOR STARTER
ARCH	ARCHITECT, ARCHITECTURAL	MOA	MULTI-OUTLET ASSEMBLY
AS	AMP SWITCH	MSP	MOTOR STARTER PANELBOARD
AT	AMP TRIP	MSBD	MAIN SWITCHBOARD
A.T.C.	AUTOMATIC TEMPERATURE CONTROLS	MSS	MOTOR STARTER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH	MT	MOUNT
AUTO	AUTOMATIC	MTR	MOTOR, MOTORIZED
AUX	AUXILIARY	N.C.	NORMALLY CLOSED
AV	AUDIO VISUAL	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
B	BLACK DEVICE COLOR WITH BLACK UNBREAKABLE THERMOPLASTIC COVER	NFDS	NON-FUSED SAFETY DISCONNECT SWITCH
BAT	BATTERY	NIC	NOT IN CONTRACT
BD	BOARD	NIGHT	NIGHT LIGHT
BDD	BUILDING	N.O.	NORMALLY OPEN
BMS	BUILDING MANAGEMENT SYSTEM	NPF	NORMAL POWER FACTOR
C	CONDUIT	NTS	NOT TO SCALE
CAB	CABINET	OC	ON CENTER
CAT	CATALOG	OH	OVERHEAD
CE	CABLE TELEVISION	ON	ON CENTER
CB	CIRCUIT BREAKER	PA	PUBLIC ADDRESS
CCTV	CLOSED CIRCUIT TELEVISION	PB	PULL BOX OR PUSHBUTTON
CIR	CIRCUIT	PC	PLUMBING CONTRACTOR
CLG	CEILING	PE	PNEUMATIC ELECTRIC
CM	CONSTRUCTION MANAGER	PED	PEDESTAL
COMB	COMBINATION	PF	POWER FACTOR
CMR	COMPRESSOR	PH	PHASE
CONN	CONNECTION	PV	POST INDICATING VALVE
CONST	CONSTRUCTION	PNL	PANEL
CONT	CONTINUATION OR CONTINUOUS	PP	POWER POLE
CONTR	CONTRACTOR	PR	PAIR
CONV	CONVEYOR	PROJ	PROJECTION
CP	CIRCULATING PUMP	PRV	POWER ROOF VENTILATOR
CRT	CATHODE-RAY TUBE	PT	POTENTIAL TRANSFORMER
CT	CURRENT TRANSFORMER	PVC	POLYVINYL CHLORIDE (CONDUIT)
CTR	CENTER	PWR	POWER
CU	COPPER	QUAN	QUANTITY
DEPT	DEPARTMENT	RAC	RIGID ALUMINUM CONDUIT
DET	DETAIL	RCT	RECEPTACLE
DIA	DIAMETER	REQD	REQUIRED
DISC	DISCONNECT	RM	ROOM
DIST	DISTRIBUTION	RMC	RIGID METALLIC CONDUIT
DN	DOWN	RTU	ROOF TOP UNIT
DO	AUTOMATIC DOOR OPENER	SC	SECONDARY
DPR	DAMPER	SHT	SHEET
DS	SAFETY DISCONNECT SWITCH	SH	SHIM
DT	DOUBLE THROW	SIM	SIMILAR
DWG	DRAWING	SLD	SINGLE-LINE DIAGRAM
EC	ELECTRICAL CONTRACTOR	SN	SOLID NEUTRAL
ELEC	ELECTRIC, ELECTRICAL	SPEC	SPECIFICATION
ELEV	ELEVATOR	SPKR	SPEAKER
ELU	EMERGENCY LIGHTING UNIT	SPR	SPRINKLER
EM	EMERGENCY	SS	SHARED
EMS	ENERGY MANAGEMENT SYSTEM	SPP	SINGLE-POINT POWER
EMT	ELECTRICAL METALLIC TUBING	SR	SURFACE RACEWAY
EP	ELECTRIC PNEUMATIC	SS	STAINLESS STEEL
EPO	EMERGENCY POWER OFF	SSW	SELECTOR SWITCH
EQUIP	EQUIPMENT	S/S	STOP/START PUSHBUTTONS
EW	ELECTRIC WATER COOLER	STA	STATION
EXIST	EXISTING	STD	STANDARD
EXH	EXHAUST	SURF	SURFACE MOUNTED
EXP	EXPLOSION PROOF	SW	SWITCH
FA	FIRE ALARM	SWBD	SWITCHBOARD
FABP	FIRE ALARM BOOSTER POWER	SYM	SYMMETRICAL
FACP	FIRE ALARM CONTROL PANEL	SYS	SYSTEM
FCU	FAN COIL UNIT	TEL	TELEPHONE
FIXT	FIXTURE	TERM	TERMINAL
FLR	FLOOR	T	TAMPER RESISTANT
FLUOR	FLUORESCENT	TL	TWIST LOCK
F.P.C.	FIRE PROTECTION CONTRACTOR	T-STAT	THERMOSTAT
FUSE	FUSE	TTT	TELEPHONE TERMINAL CABINET
FUDS	FUSED SAFETY DISCONNECT SWITCH	TV	TELEVISION
GAL	GALLON	TVTC	TELEVISION TERMINAL CABINET
GALV	GALVANIZED	TYP	TYPICAL
GC	GENERAL CONTRACTOR	UC	UNDER COUNTER
GEN	GENERATOR	UE	UNDERGROUND ELECTRICAL
GFI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND
GFP	GROUND FAULT PROTECTOR	UH	UNIT HEATER
GND	GROUND	UL	UNDERGROUND TELEPHONE
GYP BD	GYP SUM BOARD	ULV	ULTRAVIOLET
HWC-B	DOMESTIC WATER CIRCULATING PUMP	V	VOLT
HOA	HANDS-OFF-AUTOMATIC SWITCH	V	VOLT
H	INSTALL DEVICE HORIZONTALLY	VDT	VIDEO DISPLAY TERMINAL
HP	HORSEPOWER	VERT	VERTICAL
HPF	HIGH POWER FACTOR	VFD	VARIABLE FREQUENCY DRIVE
HT	HEIGHT	VOL	VOLUME
HTG	HEATING	W	WATT
HTR	HEATER	W	WATT
HV	HIGH VOLTAGE	WG	WIRE GUARD
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	WH	WATER HEATER
IC	INTERRUPTING CAPACITY	W/O	WITHOUT
IG	ISOLATED GROUND	WP	WEATHERPROOF
MC	INTERMEDIATE METAL CONDUIT	XFR	TRANSFER
INCAND	INCANDESCENT	XX	LOCATION-SPECIFIC MOUNTING
INFR	INFRARED		HEIGHT ABOVE FINISHED FLOOR TO CENTERLINE OF DEVICE
IW	INTERLOCK WITH		
J-BOX	JUNCTION BOX	2	ANGLE
K.E.C.	KITCHEN EQUIPMENT CONTRACTOR	@	AT
KV	KILOVOLT	▲	DELTA
KVA	KILOVOLT-AMPERE	'	FEET
KVAR	KILOVOLT-AMPERE REACTIVE	"	INCHES
KW	KILOWATT	#	NUMBER
KWH	KILOWATT HOUR	Ø	PHASE
LOC	LOCATE OR LOCATION	C	CENTER LINE
LT	LIGHT	P	PLATE
LTG	LIGHTING		

BREAKER FUNCTION SCHEDULE		
SYMBOL	DESCRIPTION	
A	ARC FAULT INTERRUPTER (AFCI)	
AR	ARC ENERGY REDUCTION MAINTENANCE SWITCH	
E	EXISTING BREAKER TO REMAIN	
EM	EXTENDER PANEL	
LSA	PROVIDE IDENTIFICATION PER NEC 700.120(2)(4)	
GE	MAGNETIC STARTER	
GF	EXISTING BREAKER SERVING NEW CIRCUIT	
HL	JURISDICTION (N/A) IN CONDUIT OR RACEWAY UNLESS NOTED OTHERWISE. DO NOT LIE ON, OR SUPPORT CABLE FROM, CEILING DEVICES, PIPING OR DUCTWORK. PROVIDE NEW WIRING FOR ALL BRANCH CIRCUITS AND FEEDERS.	
K#	ADJUSTABLE GROUND FAULT PROTECTION FOR EQUIPMENT	
N	ADJUSTABLE GROUND FAULT PROTECTION FOR EQUIPMENT	
NE	HANDLE LOCK TO LOCK BREAKER IN CLOSED POSITION	
SD	KEY INTERLOCK (# REPRESENTS GROUPED KEYING)	
ST	LONG-TIME, SHORT-TIME, INSTANTANEOUS ADJUSTMENT	
	LONG-TIME, SHORT-TIME, INSTANTANEOUS ADJUSTMENT	
	LONG-TIME, SHORT-TIME, INSTANTANEOUS ADJUSTMENT, AND GROUND FAULT ADJUSTMENT	
	NEW BREAKER IN EXISTING PANEL	
	NEW BREAKER SERVING EXISTING CIRCUIT	
	SHUNT TRIP (120V OPERATED UNLESS NOTED OTHERWISE)	
EQUIPMENT/DEVICE HOME RUN KEY		
1.	BRANCH CIRCUIT WIRING SHALL BE #12AWG UNLESS NOTED OTHERWISE ON THE PLAN OR IN THE SCHEDULES.	
2.	AS A MINIMUM USE 10 AWG CONDUCTOR FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 100 FEET AND 277 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 200 FEET.	
3.	REFER TO SPECIFICATION SECTION 260519 FOR ADDITIONAL REQUIREMENTS.	
EQUIPMENT GROUNDING CONDUIT		
PHASE CONDUCTOR (SHORT LINE)		
NEUTRAL CONDUCTOR (LONG LINE)		
GENERAL PLAN SYMBOLS		
MARK	SCHEDULED EQUIPMENT (UNDERLINED)	
MARK	NONSCHEDULED EQUIPMENT	
(E) MARK	EXISTING EQUIPMENT - (H)AFTONE - (E) PREFIX	
(R) MARK	EXISTING RELOCATED EQUIPMENT - (R) PREFIX	
SECTION VIEW, TOP REPRESENTS DETAIL NUMBER, BOTTOM REPRESENTS SHEET NUMBER		
ENLARGED VIEW, TOP REPRESENTS VIEW NUMBER, BOTTOM REPRESENTS SHEET NUMBER		
NEW WORK BY THE E.C. (DARK SOLID LINE)		
NEW UNDERGROUND WORK BY THE E.C. (DARK DASHED LINE)		
WORK BY OTHERS AND/OR EXISTING (LIGHT SOLID LINE)		
DEMO WORK BY THE E.C. (DARK DASHED LINE)		
MATCHLINE		
KEYED NOTE		
LIGHTING CONTROL SYMBOL (DIAMOND)		
KITCHEN EQUIPMENT SYMBOL (OCTAGON)		
GENERAL ELECTRICAL SYMBOLS		
⊕ ⊗ ⊕	ELECTRICAL CONNECTION TO EQUIPMENT	
EP	EMERGENCY STOP PUSH BUTTON. REFER TO SCHEDULE FOR ADDITIONAL INFORMATION.	
DP	DIGITAL POWER METER, LCD DISPLAY, MONITORING OF VOLTAGE, CURRENT, POWER, PF, FREQUENCY, MIN/MAX AND AVERAGE VALUES, AND ENERGY	
PP	AUTOMATIC DOOR PUSH PAD	
PANELBOARD - SEE SCHEDULES FOR MORE INFORMATION		
UTILITY TRANSFORMER - PROVIDED BY UTILITY		
SWITCHBOARD - SEE SCHEDULES FOR MORE INFORMATION		
TRANSFORMER - SEE SCHEDULES FOR MORE INFORMATION		
DISCONNECT SWITCH, SEE SCHEDULES FOR MORE INFORMATION		
POWER METER		
COMBINATION STARTER, SEE SCHEDULES FOR MORE INFORMATION		
ELECTRICAL EQUIPMENT, DASHED LINES INDICATE CODE REQUIRED CLEARANCES. SEE SCHEDULES FOR MORE INFORMATION		
GROUND BAR		
GENERAL POWER SYMBOLS		
⊕ ⊗	DUPLEX / DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R, EMERGENCY POWER, REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION	
⊕ ⊗	DUPLEX / DOUBLE DUPLEX RECEPTACLE, REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION	
⊕ ⊗ ⊕ ⊗	CORD REEL / CORD DROP, REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION	
⊕	SIMPLEX RECEPTACLE, NEMA 5-20R	
⊕	SPECIAL RECEPTACLE	
⊕	RECESSED FLOOR BOX OR POKE-THRU	
⊕ ⊕	CEILING MOUNTED RECEPTACLE, REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION	
⊕ ⊕	SURFACE MOUNT MULTI-OUTLET ASSEMBLY, SEE GENERAL ELECTRICAL SCHEDULE FOR ADDITIONAL INFORMATION	

GENERAL FIRE ALARM SYMBOLS	
SYMBOL	DESCRIPTION
FAP	CONTROL PANEL
NEP	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
FAA	REMOTE ANNUNCIATOR PANEL
PIV	POST INDICATOR VALVE AND TAMPER SWITCH
PS	AIR PRESSURE SWITCH
TS	VALVE TAMPER SWITCH
FS	WATER FLOW SWITCH
BS	BEAM SMOKE REFLECTOR
BS	LINEAR BEAM SMOKE DETECTOR
BS	LINEAR BEAM SMOKE DETECTOR
BS	DUCT SMOKE DETECTOR
RI	DUCT SMOKE DETECTOR REMOTE INDICATOR STATION
H	HEAT DETECTOR ADDRESSABLE
J	LINEAR HEAT DETECTION CABLE
F	ADDRESSABLE FIRE ALARM MANUAL PULL STATION
DS	SMOKE DETECTOR
DS	AUDIO/VISUAL NOTIFICATION APPLIANCE, CEILING MOUNTED
DS	VISUAL NOTIFICATION APPLIANCE, CEILING MOUNTED
DS	SPEAKER NOTIFICATION APPLIANCE, CEILING MOUNTED
DS	SPEAKER/VISUAL NOTIFICATION APPLIANCE, CEILING MOUNTED
H	HORN NOTIFICATION APPLIANCE, WALL MOUNTED
A	AUDIO/VISUAL NOTIFICATION APPLIANCE, WALL MOUNTED
S	SPEAKER NOTIFICATION APPLIANCE, WALL MOUNTED
S	SPEAKER/VISUAL NOTIFICATION APPLIANCE, WALL SWITCH
V	VISUAL NOTIFICATION APPLIANCE, WALL MOUNTED
AM	ADDRESSABLE MONITOR MODULE
AR	ADDRESSABLE RELAY MODULE
M	MAGNETIC DOOR HOLDER
HD	HVAC ELEVATOR HOISTWAY DAMPER
SD	HVAC SMOKE DAMPER
ZAM	ZONE ADAPTER MODULES
CS	CO DETECTOR
CC	VOICE COMMAND CENTER
DC	DUPLICATE CO DETECTOR
F	BELL
CS	HIGH FIDELITY SPEAKER - CEILING MOUNT
H	HIGH FIDELITY SPEAKER - WALL MOUNT
ASD	AIR SAMPLING SMOKE DETECTOR
FS	FIRE SMOKE DAMPER
GENERAL SWITCH SYMBOLS	
SYMBOL	DESCRIPTION
\$	SWITCH, REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION
DS	REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION
DS	REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION
DS	REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION
NURSE CALL SYMBOLS	
SYMBOL	DESCRIPTION
N	REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION
DS	REFER TO SUBSCRIPT SCHEDULE FOR MORE INFORMATION

GENERAL LIGHTING SYMBOLS	
SYMBOL	DESCRIPTION
	CRITICAL FIXTURE (FULL SHADED)
	LIFE SAFETY (HALF SHADED)
	RECESSED MOUNTED (DIAGONAL SLASH)
	SURFACE MOUNTED
	SURFACE OR PENDANT FIXTURE (DOTS)
	POLE MOUNTED SITE FIXTURE
	RECESSED DOWNLIGHT
	EMERGENCY FIXTURE
	SINGLE / DOUBLE FACED EXIT SIGN
	EMERGENCY REMOTE HEAD (SINGLE/DOUBLE)
	COMBINATION EXT-EMERGENCY FIXTURE
	WALL MOUNTED FIXTURE (STEM OR STEMS)
	CYLINDRICAL FIXTURE (ARROW INDICATES WALL WASH)

GENERAL NOTES	
1.	REFER TO PROJECT DESCRIPTION NARRATIVE ON ARCHITECTURE C/R SHEET FOR PROJECT CLARIFICATIONS.
2.	ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES INCLUDING BUT NOT LIMITED TO THE NATIONAL ELECTRICAL CODE, THE INTERNATIONAL BUILDING CODE, AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES, AND INTERNATIONAL ENERGY CONSERVATION CODE. THE AUTHORITY HAVING JURISDICTION SHALL HAVE THE FINAL DECISION ON ALL INSTALLATIONS AND PRACTICES.
3.	ALL MATERIAL FURNISHED SHALL BE NEW, FREE OF DEFECTS, AND LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY UNLESS NOTED OTHERWISE.
4.	INSTALLATION OF EQUIPMENT SHALL BE IN ACCORDANCE WITH CURRENT STANDARDS AND SPECIFICATIONS APPROVED BY THE AUTHORITY HAVING JURISDICTION (N/A). ALL CABLEWIRING IN CONDUIT OR RACEWAY UNLESS NOTED OTHERWISE. DO NOT LIE ON, OR SUPPORT CABLE FROM, CEILING DEVICES, PIPING OR DUCTWORK. PROVIDE NEW WIRING FOR ALL BRANCH CIRCUITS AND FEEDERS.
5.	FEEDERS ON DRAWINGS ARE SCHEMATIC ONLY. CONDUIT RUNS SHALL COMPLY WITH CONDUIT SPECIFICATIONS AND CONTAIN BENDS THAT ARE NOT GREATER THAN 90 DEGREES. CONDUITS ABOVE GRADE SHALL BE RUN PARALLEL TO OR PERPENDICULAR WITH BUILDING LINES AND STRUCTURE.
6.	CIRCUIT WIRING FOR THE EMERGENCY SYSTEM SHALL BE INSTALLED IN SEPARATE CONDUIT/RACEWAY AND BE KEPT ENTIRELY INDEPENDENT OF ALL OTHER WIRING AND EQUIPMENT PER THE N.E.C.
7.	ALL FEEDER AND BRANCH CIRCUITS TO PANELS, MOTORS, LIGHTS, RECEPTACLES, GENERAL DISTRIBUTION, ETC. SHALL CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR SIZED ACCORDING TO THE N.E.C. THE CONDUIT SYSTEM SHALL NOT BE CONSIDERED AN ACCEPTABLE GROUND.
8.	REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR DETAILED INFORMATION ON EQUIPMENT, DISCONNECTS, AND CONTROLS. E.C. SHALL PROVIDE AND INSTALL ITEMS AS NOTED BY THE E.C. ON THE MECHANICAL SCHEDULES.
9.	ELECTRICAL INSTALLATION SHALL BE INSTALLED IN PHASES AS DIRECTED BY THE OWNER. PROVIDE TEMPORARY AND PERMANENT CONNECTIONS AS REQUIRED TO MEET THE PHASING REQUIREMENTS. COORDINATE ALL REQUIRED OUTAGES WITH THE OWNER.
10.	RELOCATE EXISTING CONDUITS, WIRING, AND BOXES AS REQUIRED FOR INSTALLATION OF MECHANICAL EQUIPMENT AND PIPING, TEMPORARY AND PERMANENT WALLS, AND STRUCTURES.
11.	ALL WIRING AND FEEDER SIZES ON DRAWINGS ARE SIZED FOR COPPER WIRING.
12.	IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE INSTALLATION OF ELECTRICAL SYSTEM AND THOSE REQUIRING ELECTRICAL CONNECTIONS TO MAINTAIN REQUIRED CLEARANCES, INCLUDING BUT NOT LIMITED TO AREAS ABOVE ACCESSIBLE CEILINGS.
13.	PROVIDE CABLE OR CONDUIT AND WIRE AS REQUIRED TO ACHIEVE CIRCUITING AS SHOWN. SIZE CONDUCTOR PER NEC AMPACITIES AND WIRE FILL CRITERIA. PROVIDE DEDICATED NEUTRALS AND GROUND CONDUCTOR FOR CIRCUITING, UNLESS NOTED OTHERWISE.
14.	CONDUIT FOR POWER WIRING SHALL BE PERMITTED TO BE LOCATED BENEATH FLOOR SLAB UNLESS NOTED OTHERWISE. RACEWAYS FOR LOW VOLTAGE CABLING FOR CONTROL, TELECOMMUNICATIONS, AND OTHER LOW VOLTAGE SYSTEMS SHALL NOT BE ALLOWED BENEATH, NOR WITHIN THE FLOOR SLAB UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. WHERE CABLING IS ROUTED BENEATH OR WITHIN THE FLOOR SLAB, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE CABLING IS LISTED FOR SUCH USE.
15.	ALL ELECTRICAL CONDUCTORS SHALL BE STRANDED COPPER WITH TYPE THIN-THIN INSULATION. THE MINIMUM WIRE SIZE SHALL BE #12 AWG.
16.	ALL NEW CIRCUITS REQUIRING NEUTRAL CONDUCTORS SHALL HAVE DEDICATED NEUTRALS. SHARED NEUTRALS ARE NOT ALLOWED.
17.	A GREEN GROUNDING CONDUCTOR SHALL BE CONNECTED TO ALL LOADS SERVED. THE CONDUCTOR SHALL BE SIZED PER THE NATIONAL ELECTRICAL CODE TO ACCOMMODATE THE LOAD SERVED. ALL GROUNDING CONDUCTORS SHALL BE INSTALLED IN CONDUIT.
18.	ALL BUILDING WIRING SHALL BE INSTALLED IN CONDUIT. MINIMUM SIZE SHALL BE #14.
19.	HOME RUN CONDUIT WITH A MINIMUM OF 1" CONDUIT WITHIN 4" HTR DEEP JUNCTION BOXES. ALL JUNCTION BOX COVERS SHALL BE CLEARLY MARKED TO IDENTIFY CIRCUIT NUMBERS IN THE ENCLOSURES. EACH HOME RUN RACEWAY SYSTEM SHALL HAVE SPARE CAPACITY FOR A MINIMUM OF 1 ADDITIONAL CIRCUIT AND ASSOCIATED DEDICATED NEUTRAL CONDUCTORS.
20.	MC CABLE IS NOT PERMITTED TO BE CONCEALED IN WALLS, ABOVE CEILINGS. EXPOSED SURFACE RACEWAY SHALL NOT BE PERMITTED WITHOUT PRIOR APPROVAL FROM ARCHITECT/ENGINEER. ALL EXPOSED SURFACE RACEWAY SHALL BE ROUTED PARALLEL AND PERPENDICULAR TO WALLS AND CEILINGS. SURFACE WIREWAY SHALL BE FACTORY RATED TO MATCH MOUNTING SURFACE.
22.	COORDINATE THE EXACT LOCATION OF ALL DEVICES LOCATED ABOVE OR BELOW COUNTERS, ETC. WITH OTHER TRADES, ARCHITECTURAL ELEVATIONS, AND REVIEWED SUBMITTALS PRIOR TO ROUGH-IN. ARCHITECTURAL ELEVATIONS AND DETAILS TAKE PRECEDENCE OVER LOCATIONS SHOWN ON ELECTRICAL DRAWINGS.
23.	ALL CUTTING AND PATCHING REQUIRED FOR CONDUITS, DEVICES OR OTHER ELECTRICAL EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
24.	ALL PENETRATIONS THROUGH FIRE-RATED WALLS, FLOORS, AND CEILINGS SHALL BE SEALED WITH A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) APPROVED FIRE-RATED SYSTEM EQUAL TO OR EXCEEDING THE RATING OF THE MATERIAL PENETRATED.
25.	COORDINATE LOCATIONS OF ALL ELECTRICAL ITEMS INCLUDING LIGHTING FIXTURES, CEILING MOUNTED DEVICES (OCCUPANCY SENSORS, FIRE ALARM DETECTORS, SPEAKERS, ETC.) WITH EACH OTHER AND WITH ALL SPRINKLER HEADS, AIR SUPPLY DIFFUSER AND RETURN GRILLES. ALL CEILING DEVICES SHALL BE CENTERED IN CEILING TILE, WHERE POSSIBLE.
26.	COORDINATE ALL MOUNTING OF ELECTRICAL MATERIALS, EQUIPMENT AND DEVICES REQUIRED FOR EQUIPMENT/DEVICES SUPPLIED BY OTHERS.
27.	ELECTRICAL ITEMS SHALL BE MOUNTED TO AVOID ANY INTERFERENCE WITH OTHER EQUIPMENT OPERATION OR ACCESS. ALL INSTALLATIONS OF ELECTRICAL ITEMS FOR EQUIPMENT/DEVICES SUPPLIED BY OTHERS SHALL BE COORDINATED AND APPROVED BY SUPPLYING CONTRACTOR PRIOR TO ROUGH-IN.
28.	BOXES LOCATED ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE OFFSET A MINIMUM OF 24" OR A FIRE RATED MATERIAL EQUAL TO OR GREATER THAN THE FIRE WALL MATERIAL RATING SHALL BE INSTALLED AROUND THE BOX. BOXES LOCATED ON OPPOSITE SIDES OF NON-FIRE RATED WALLS SHALL BE OFFSET A MINIMUM 6".
29.	REMOVE AND INSTALL ALL CEILING TILES NECESSARY TO PERFORM REQUIRED ELECTRICAL WORK. ALL CEILING TILES WHICH ARE DAMAGED DURING REMOVAL/REINSTALLATION, SHALL BE REPLACED WITH NEW TILES OF THE SAME MANUFACTURER AND MODEL OF EXISTING TILE.
30.	ALL REQUEST FOR CHANGE PROPOSALS IN THIS PROJECT SHALL INCLUDE A BREAKDOWNS OF MATERIALS, LABOR, AND SUBCONTRACTORS, WITH SUFFICIENT DETAIL FOR ENGINEER EVALUATION. EACH SEPARATE PROPOSAL REQUEST ITEM SHALL INCLUDE SEPARATE MATERIALS AND LABOR BREAKDOWNS. SUPPLIER BACK-UP PRICING SHALL BE INCLUDED ON THE SUPPLIER LETTERHEAD. ALL LABOR UNITS ASSOCIATED WITH THE NEW MATERIAL INSTALLATIONS SHALL NOT EXCEED 75% OF THE NECA 1 "NORMAL CONDITION" LABOR RATES, WITHOUT SPECIFIC APPROVAL.
31.	EXISTING CIRCUITS SHOWN ARE BASED ON EXISTING DRAWINGS AND NEW CIRCUITS ARE SHOWN FOR DESIGN INTENT USING EXISTING CIRCUITS. CONTRACTOR MAY USE DISCRETION WITH EXISTING CONDITIONS TO MAKE CIRCUIT CHANGES. ALL CHANGES SHALL BE RECORDED ON AS-BUILT DRAWINGS.
32.	TEMPORARY POWER AND LIGHTING TO BE BY ELECTRICAL CONTRACTOR
33.	EVERY CONTRACTOR IS RESPONSIBLE FOR DAILY CLEANING OF PROJECT SITE
34.	IF FEEDER LENGTH IS OVER 100' UPSIZE CONDUCTOR TO NEXT STANDARD SIZE. IF FEEDER LENGTH IS OVER 200' UPSIZE CONDUCTOR BY TWO STANDARD SIZES. REVIEW MINIMUM BRANCH CIRCUIT FEEDER SIZE ON SHEET E601 FOR CONDUCTOR SIZING.
DEMOLITION NOTES	
1.	DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED FOR THIS PROJECT. THEY ARE NOT INTENDED TO INDICATE THE LOCATION OF ALL DEVICES, JUNCTION BOXES, CONDUITS, ETC. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO VERIFY ALL RELEVANT EXISTING CONDITIONS.
2.	INSPECT AND TEST EXISTING ELECTRICAL DEVICES AND EQUIPMENT, INTENDED FOR REMOVAL AND REINSTALLATION, FOR GOOD CONDITION AND PROPER OPERATION PRIOR TO DEMOLITION. RECORD DEFICIENCIES PRIOR TO DISCONNECTION OR REMOVAL. PHOTOGRAPH, RECORD AND REPORT ALL SUCH EXISTING ITEMS DETERMINED TO BE DAMAGED, INOPERATIVE, OR OTHERWISE COMPROMISED. DAMAGED ITEMS FOUND TO BE DAMAGED OR INOPERATIVE AFTER REMOVAL SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
3.	WHERE LIGHT FIXTURES, SWITCHES, RECEPTACLES, OR OTHER ELECTRICAL ITEMS ARE BEING REMOVED, ALL ASSOCIATED CONDUIT AND WIRE BACK TO THE PANELBOARD OR FEEDER JUNCTION BOX SERVING THE DEVICE SHALL ALSO BE REMOVED, UNLESS THE CONDUIT CAN BE USED FOR NEW CONDUCTORS.
4.	NO PROJECT DEMOLITION SHALL OCCUR UNTIL COORDINATION WITH ANY/all TRADES AFFECTED DEVICES, EQUIPMENT, WIRING, PIPING, DUCTWORK, OR OTHER COMPONENTS HAS BEEN COMPLETED. DEMOLITION OR NEW WORK THAT CAUSES DAMAGE TO COMPONENTS INTENDED TO REMAIN OR BE REMOVED AND REINSTALLED SHALL BE REPAIRED/REPLACED AT CONTRACTOR'S EXPENSE.
5.	EXISTING CONDUIT IN GOOD CONDITION MAY BE REUSED IN PLACE. RELOCATED EXISTING CONDUIT SHALL NOT BE ALLOWED. EQUIPMENT GROUNDING (E.G.) CONDUITORS SHALL BE INSTALLED IN A REUSED CONDUIT TO ASSURE PROPER GROUND PATH.
6.	INVESTIGATION OF EXISTING POWER AND LIGHTING SYSTEMS WILL BE REQUIRED BY THE E.C. AS PART OF THE BIDDING PROCESS TO DETERMINE THE FULL EXTENT OF DEMOLITION WORK REQUIRED. THE E.C. SHALL BE RESPONSIBLE FOR REMOVAL OF SOME PORTIONS OF POWER AND LIGHTING SYSTEMS NOT EXPLICITLY SHOWN ON THESE DRAWINGS AND ARE REQUIRED FOR THIS PHASE OF THE PROJECT. COORDINATE WITH THE E.C., OWNER, AND ENGINEER TO DETERMINE WHICH PORTIONS OF EXISTING SYSTEMS MUST REMAIN ACTIVE AND WHICH PORTIONS MUST BE REMOVED.
7.	COORDINATE WORK IN PHASES WITH OWNER TO FACILITATE DEMOLITION AND NEW CONSTRUCTION.
8.	E.C. SHALL FIELD VERIFY ACTUAL LOCATION AND SIZES OF EXISTING CONDUIT, WIRING, AND EQUIPMENT.
9.	REMOVE POWER, LIGHTING, CONTROL, AND COMMUNICATIONS DEVICES SHOWN, UNLESS NOTED OTHERWISE. REMOVE ALL UNUSED CONDUIT, RACEWAYS, WIRING, JUNCTION BOXES, DISCONNECTS, HANGERS AND ACCESSORIES COMPLETELY BACK TO THE SOURCE.
10.	MAKE PROVISIONS AND BACK-FEED OR RE-CIRCUIT ANY ITEMS THAT ARE EXISTING TO REMAIN WHICH ARE AFFECTED BY DEMOLITION. COORDINATE OUTAGES WITH OWNER A MINIMUM OF 4 WORKING DAYS PRIOR TO THE OUTAGE OR AS NOTED IN THE SPECIFICATIONS.
11.	ALL SALVAGE SHALL REMAIN THE PROPERTY OF THE OWNER. DELIVER TO A LOCATION ON SITE AS DESIGNATED BY THE OWNER. IN THE EVENT THE OWNER DOES NOT WANT TO RETAIN THE SALVAGE MATERIAL, THE MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OR RECYCLED BY THE CONTRACTOR.
12.	RELOCATE CONDUITS ABOVE CEILING AS REQUIRED TO ACCOMMODATE PLUMBING PIPING AND HVAC MODIFICATIONS ASSOCIATED WITH THE REMODELING.
13.	PROVIDE CUTTING, PATCHING, AND RESTORATION OF FINISHES AS NECESSARY FOR COMPLETION OF WORK. PATCH AND REPAIR ALL FLOOR, WALL, AND CEILING OPENINGS DUE TO DEMOLITION WHICH WILL NOT BE REUSED. RESTORE SURFACE TO MATCH EXISTING SURFACE CONDITIONS. COORDINATE WORK WITH THE FINISH CONTRACTORS.
14.	EXISTING OPENINGS IN WALLS TO REMAIN SHALL BE PATCHED WITH MATERIAL MATCHING EXISTING WALL, INCLUDING TAPING AND PAINTING AS REQUIRED, TO MATCH EXISTING CONDITIONS. BLANK COVERPLATES OVER UNUSED OPENINGS ARE NOT ALLOWED. ALL ABANDONED CONDUITS EXTENDING FROM WALLS ABOVE CEILINGS SHALL BE CUT OFF FLUSH WITH THE STUD AND PLUGGED.
15.	PROVIDE BLANK PLATES ON ALL EXISTING UNUSED OPENINGS. PAINT TO MATCH EXISTING SURFACE. BLANK PLATES TO MATCH NEW DEVICE PLATES.
16.	PROTECT ALL WALLS, CEILINGS, FLOORS, LIGHTS, AND OTHER FINISHED SURFACES THAT ARE NOT SCHEDULED FOR DEMOLITION. IF DAMAGED, THE RESPONSIBLE CONTRACTOR SHALL REPAIR TO MATCH EXISTING CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
17.	PROVIDE FIELD TYPED PANELBOARD DIRECTORIES TO REFLECT AS-CONSTRUCTED CONDITIONS. FIELD VERIFY DURING CONSTRUCTION AND REFLECT EXISTING CONDITIONS.
18.	DO NOT INTERRUPT EXISTING UTILITIES SERVING OCCUPIED OR OPERATING FACILITIES EXCEPT WHEN AUTHORIZED IN WRITING BY OWNER AND AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES AS ACCEPTABLE BY OWNER AND AUTHORITIES HAVING JURISDICTION.
19.	SEAL ALL UNUSED OPENINGS DUE TO REMOVAL OF ELECTRICAL EQUIPMENT TO MATCH EXISTING CONSTRUCTION. ALL UNUSED OPENINGS IN FIRE RATED WALLS SHALL BE SEALED WITH A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) LISTED FIRE SEALING SYSTEM TO MATCH EXISTING FIRE RATING. CONTRACTOR SHALL REMOVE AND INSTALL ALL CEILING TILES REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR. CONTRACTOR SHALL RECORD EXISTING DAMAGE PRIOR TO BEGINNING REMOVAL.
20.	BALLASTS MANUFACTURED PRIOR TO 1980 MAY CONTAIN PCB'S AND SHALL BE DISPOSED OF BY A FEDERAL OR STATE E.P.A. APPROVED METHOD AND/OR IN ACCORDANCE WITH SPECIFICATIONS.
21.	FLUORESCENT LAMPS CONTAIN MERCURY AND SHALL BE DISPOSED OF BY A FEDERAL OR STATE E.P.A. APPROVED METHOD AND/OR IN ACCORDANCE WITH SPECIFICATIONS.

ELECTRICAL GENERAL SPECIFICATIONS

PART 1 - GENERAL

1.1 SCOPE

1.2 REQUIREMENTS

- A. Products and execution shall be provided for a complete and fully operational electrical system throughout the extent of the project, in conformance with applicable codes, laws, ordinances and agency standards or governing bodies having jurisdiction, and in strict accordance with the contract documents, and building standards.
- B. Products including equipment, devices, fixtures, and materials shall be new unless noted otherwise, UL listed, and bear appropriate label.
- C. Execution, including preparation, installation, starting, and testing shall be performed by skilled trades personnel, in compliance with the associated manufacturers recommendations, and coordinated with the other construction trades.

1.3 REFERENCES

- A. Codes
- 1.National Electrical Code (2023) - NEC
 - 2.International Energy Conservation Code (2012) - IECC
 - 3.International Building Code (2024) - IBC
 - 4.International Fire Code (2024) - IFC
- B. Standards
- 1.American National Standards Institute - ANSI
 - 2.American Society of Testing and Materials - ASTM
 - 3.Americans with Disabilities Act - ADA
 - 4.Association of Edison Illumination Companies - AEIC
 - 5.Electrical Testing Laboratories - ETL
 - 6.Electronic/Telecommunications Industries Association - EIA/TIA
 - 7.Energy Policy Act of 1992 - EPACT
 - 9.Illuminating Engineering Society of North America - IESNA
 - 10.Institute of Electrical and Electronics Engineers - IEEE
 11. Insulated Cable Engineers Association - ICEA
 - 12.National Electrical Manufacturers Association - NEMA
 - 13.National Fire Protection Association - NFPA
 14. Underwriters' Laboratories - UL

1.4 APPROVALS

- A. Fire Alarm and Life Safety Documents shall be prepared and submitted to the Local Fire Department for their approval of system expansion, layout, circuiting, equipment and device type. The base building fire alarm and life safety system manufacturer/installer shall be retained to produce or update the building fire alarm and life safety documents, and to make final connections and alterations to the existing system. Approved drawings shall be submitted for review prior to construction.
- B. Other systems requiring specific approval.

1.5 SUBMITTALS

- A. Product Data shall be prepared and submitted for review prior to construction for the following products: cabinets, access panels, supports, raceway components, floor boxes, fire proof fittings, wire fuses, circuit breakers, receptacles, toggle switches, slide dimmers, disconnect switches, motor starters, contactors, lighting fixtures, ballasts, lamps, controls, fire alarm devices, fire safety devices, and electric heating equipment.
- B. Shop Drawings shall be prepared and submitted for review prior to construction for the following products: metering equipment, distribution panelboards, branch panelboards, transformers, cable tray, dimming equipment, fire alarm equipment, and life safety equipment.
- C. Test Results shall be prepared and submitted prior to project completion for cable installation, grounding system, emergency system, fire alarm system, and life safety systems in accordance with authorities having jurisdiction, and applicable codes and agency standards.
- D. Manufacturer's Instructions shall be prepared and submitted prior to construction including installation manuals with application conditions and limitations for electrical apparatus use, storage, handling, protection, examination, preparation, installation, and starting.
- E. Project Record Documents shall be for electrical systems. Record actual location of equipment, devices, fixtures, etc. Record actual routing of overhead feeders. Record actual routing of feeders below slab and branch circuits within or below slab.
- F. Maintenance Data shall be prepared and submitted prior to project completion for electrical apparatus including operation manuals and maintenance manuals.

1.6 COORDINATION

- A. Electrical Engineer: Notify the Engineer of any conflicting design information or any design intentions which are not readily interpreted from the contract documents prior to any product selection or execution of work. Notify the Engineer of any products which are damaged, unsuitable, incompatible, or non-compliant with any applicable codes or ordinances of any governing bodies having lawful jurisdiction.
- B. Architect: Coordinate construction of the electrical system with the Architect. Final locations and mounting heights of electrical equipment, fire alarm equipment, receptacles, switches, communications devices, fire alarm devices, lighting fixtures, etc. shall be as directed by the Architect.
- C. Construction Trades: Coordinate work with other construction trades.
- D. Building Management: Meet on site with the building engineer to become familiar with building standards. Enclose construction area from other areas to prevent transmission of dust, dirt and noise into other existing tenant areas. Product and waste transfer shall be coordinated with building management for scheduling of the elevators, deliveries, and waste removal.
- E. Existing Building Systems: Review building standards with the building engineer. Perform a site visit to verify the existing site conditions. Costs associated with unforeseen conditions as a result of not performing a site visit shall not be an entitlement for an increase to the contract. Construction shall be performed without interruption to the building power, communications, security, fire alarm and life safety systems, or interference to common areas, corridors, or existing tenants. Where any construction would interfere with the daily operations of the building or other tenants, after-hours work or temporary services shall be provided at no increase to the contract.
- F. Contractor is responsible for electrical connections to all equipment shown on the Architectural, Plumbing, Fire Protection, Mechanical, and Kitchen as issued for the project design. Coordinate and confirm final connection requirements for each piece of equipment with submittals. Confirm connection requirements of existing equipment being reused.

1.7 WARRANTY AND GUARANTEE

- A. Provide warranty and manufacturer's certificate for each product, minimum of one (1) year or longer as specified, from the date of occupancy. Repair and/or replace any equipment, devices, fixtures, materials, etc. with defect as required at no increase to the contract.
- B. Provide guarantee of installation for a period of one (1) year from the date of occupancy. Repair and/or re-install any work with defect as required at no increase to the contract. Provide guarantee of rework for a period of one (1) year from the completion of repair or reinstallation.
- C. Damage caused to finishes, surfaces, ceiling tiles, equipment, etc. shall be repaired and/or replaced to match the pre-existing condition at no increase to the contract.

1.8 ADDITIONAL REQUIREMENTS

- A. Pay fees and other charges incidental to the electrical work and obtain and pay for required liability and casualty insurance, permits, licenses, inspections, taxes, etc.
- B. Construction shall be done during regular working hours and days, unless otherwise specified. Work required to be performed during overtime hours or days shall be as indicated.
- C. Allow for four (4) man-hours of training to the Owner's staff for the operation of the electrical systems.
- D. Substitutions are not acceptable.

PART 2 - PRODUCTS

2.1 GENERAL INFORMATION

- A. Cabinets, enclosures and access panels shall be code gauge steel with baked enamel finish and fangeless hinges and fasteners. Equipment bases shall be 3 inch high concrete, steel braced and reinforced with 1/4 inch channel, and shall extend a minimum of 2 inches around base of equipment. Vibration isolation shall be spring elements in suspended rods and isolation pads below equipment, electrical connections shall be flexible conduit.
- B. Conduits shall be hot-dipped galvanized or electro-galvanized steel, minimum size shall be 3/4 inch unless noted otherwise. Flexible connectors to recessed lighting fixtures which may be 3/8 inch. Flexible steel conduit shall be galvanized steel, with UL listed liquid tight jacket as required, for final connections to motors, recessed lighting fixtures, and life safety devices. Supports, including hangers, angles, rods, and fasteners shall be hot-dipped galvanized steel. Manufacturer shall be Allied, LV/Republic, Steelco, or Westinghouse.
- C. Conduit fittings shall be steel, die cast fittings of pot metal are not acceptable. Electrical metallic tubing (EMT) fittings shall be compression type with insulated threads; set screw fittings are not acceptable. Intermediate metal conduit (IMC) and rigid galvanized steel heavy wall conduit (RSC) fittings shall be of threaded joints, set screw and compression fittings are not acceptable. Manufacturer shall be Appleton, Crouse-Hinds/Midwest, OZ/Gedney, Raco, Steel City, or T&B.
- D. Outlet boxes for all toggle switches, receptacles, communications devices, fire alarm devices, and life safety devices shall include plaster rings, device plates, and cover plates where required. Provide boxes suitable for plenum, wet, or hazardous locations as required. Device cover plates shall be stainless steel painted to match finish. Multi-gang outlet boxes shall include suitable one-piece device cover plate. Outlets located on opposite sides of a partition shall be staggered by 12 inches, minimum. Manufacturer shall be Raco, or .
- E. Surface metal raceway may only be used from prior approval from owner/engineer. If allowed to be used, surface metal raceway including power devices, fittings, connectors, tees, elbows, connectors, tees, elbows, couplings, blanks, tees, wire clips, device brackets, device covers, and other associated apparatus shall be sized to facilitate pulling the quantity and size of wires and cables, and installing the devices contained. Raceway shall be of code gauge galvanized steel, shall include mounting knock-outs, and shall be finished as directed by the Architect. Manufacturer shall be Wiremold.
- F. Wire shall be 600 volt insulated copper, minimum size shall be No. 12 AWG, wire sizes No. 8 AWG and larger shall be stranded. Manufacturer shall be American Insulated Wire Corp., Cerni, Collier, Capitol Wire and Cable, Okonite, Senelec, South Wire, or Triangle. Aluminum wire shall not be used.
- G. Cable supports shall be appropriate for the size of conduit and type of wire and cables. Cable lubricant shall be less than 0% solid residue after drying and shall not contain any waxes, greases, silicones, or glycol oils.
- H. Metering panels shall include four (4) meter socket positions per vertical section with integral fuses, disconnect devices. Interchangeable coverplates shall be provided for all future or un-used meter-switch positions. Manufacturer shall be General Electric, Cutler-Hammer, Erickson, Siemens/ITE, or Square D.
- I. Branch panelboards shall be fully rated with copper phase, neutral, and ground bus, short circuit bracing as indicated on the panel schedule. Neutral bus shall be rated at 200% within panels serving non-linear loads. Isolated ground bus shall be as required. Manufacturer shall be General Electric, Cutler-Hammer, Siemens/ITE, or Square D. Overcurrent protection manufacturer shall be General Electric, Cutler-Hammer, Siemens/ITE, or Square D.
- J. Individual motor starters shall include two (2) sets of normally open contacts, one (1) set of normally closed contacts, three (3) overrated relays, individually fused control transformer, hand-off-auto selector switch for automatic start, and a red "on" pilot light. Combination starter disconnects shall include fusible switches. Contactors shall be NEMA type, with releasable coil and contact tips. Manufacturer shall be General Electric, Cutler-Hammer, Siemens/ITE, or Square D.
- K. Local disconnect switches for electrically operated equipment shall be heavy duty within enclosure suitable for the location. Fusible disconnect switches 800 Amps and larger shall be bolted pressure, load-break type. Fusible and non-fusible disconnect switches 800 Amps and smaller shall be quick-make and quick-break type. Provide RK-5 fuses for fused disconnects up to 200A, RK-1 fuses for fused disconnects 200A to 800A, and class J fuses for disconnects larger than 800A. Manufacturer shall be General Electric, Cutler-Hammer, Siemens/ITE, or Square D.
- L. Dry type transformers shall be two-winding type, air cooled with ratings as shown on the drawings. Transformers shall meet the energy efficiency standards of NEMA-T-1 and DOE Energy Star Label. Insulation system shall be rated at 220°C. Winding temperature rise shall be rated at 150°C above a 40°C ambient. Provide four (4) 2 1/2 % winding taps, two (2) above and two (2) below rated voltage. Provide full capacity taps on the primary winding. Isolate core from enclosure using vibration absorbing mounts. Windings shall be copper or aluminum. K-factor rating (if required) shall be indicated on drawings. Manufacturer shall be General Electric, Cutler-Hammer, Siemens/ITE, or Square D.
- M. Grounding system, including service and equipment grounding and bonding, shall be in accordance with code and shall connect all electrically operated equipment. Provide a separate green ground wire for each branch circuit and feeder.
- N. Receptacles shall be duplex NEMA 5-20R, back and side wired, specification grade, unless noted otherwise. Special receptacle configurations, duplex isolated ground receptacles, and duplex ground fault interrupter receptacles shall be as required or as indicated in the contract documents. General receptacle color shall be gray with stainless steel plates. Manufacturer shall be Hubbell, Pass & Seymour, or Leviton.
- O. Toggle switches shall be single pole 20 Amp, 120/277 Volt, back and side wired, specification grade, unless noted otherwise. Special switches, including three (3) way, pilot light and momentary contact, shall be as required or as indicated on the contract documents. Color shall be gray unless specified otherwise with stainless plates. Manufacturer shall be Hubbell, Pass & Seymour, or Leviton.

- P. Lighting fixtures shall include all appropriate accessories, mounting frame and trim for ceiling type. LED fixtures shall include integral drivers and total harmonic distortion of 10% or less. Lighting fixtures shall include coordinated air handling capability, plenum rating, damp label, wet label, and shall be explosion proof where required. Lighting fixtures recessed within grid type ceilings shall include securing clips as required by the local authority. Fixture manufacturer shall carry a minimum five (5) year warranty.
- Q. Occupancy sensor based lighting control shall accommodate all conditions of space utilization and all irregular work hours and habits. Contractor, in accordance with manufacturer's recommendation, shall determine final sensor location. Where applicable, adjust sensitivity so that controlled area is lighted when area is occupied. Adjust time delay so that controlled area remains lighted for five (5) minutes after occupant leaves area. Coordinate with the Owner for different time delay settings to meet specific room requirements. Acceptable products shall be Hubbell Building Automation or Wattslopper.
- R. New fire alarm devices provided within existing systems shall match existing device manufacturer and type. Strobes shall meet guidelines for the application and shall be rated 75cd, except in sleeping areas which shall be rated 110cd. Strobes rated 1575cd with 75cd or less are not acceptable except in small conference rooms. Existing fire alarm devices shall be extended as required. Existing fire alarm equipment shall be expanded as required with any additional components for proper operation of new devices on existing equipment.
- S. Surge protection devices (SPD) shall be parallel type and shall be rated with the maximum continuous operating voltage, clamping voltage, and the number of impulses per IA 1449 (3rd Edition), ANSI/IEEE C82-41, and NEMA LS-1 guidelines for the surge current ratings (per mode of protection) indicated. Surge protection device manufacturer shall be Mersen, Enco/Critec, Liebert, Eaton Cutler-Hammer, Square D, Siemens, General Electric, or Current Technology.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Penetrations and channels in floors and walls shall be via cutting and coring as required for the size of product, in accordance with the Architect and Engineer recommendations, and as scheduled with the building management. Patch and fill sleeves, inserts, penetrations, and channels with appropriate code approved fire rating or filling to match or better the original fire rating of the construction.
- B. Install 3 inch concrete pad below floor mounted equipment including distribution panelboards, transformers, etc.
- C. Make final connections to vibrating equipment, fixtures, and devices with flexible metal conduit or liquid tight flexible metal conduit as required. Extend ground wire through flexible connections.
- D. Install conduit, fittings, supports, etc. in accordance with codes, standards, and manufacturers' recommendations. The volumes identified in the following schedules are line-to-line or line-to-neutral. Interior concealed locations are those locations which are above ceilings, within walls, within floor slabs, and within dedicated electrical rooms. Conduit installation shall be as follows unless noted otherwise:

Location	Conduit type
Interior Concealed	EMT
Interior Exposed	EMT with raintight fittings
Exterior Locations (within 5'-0" of foundation wall)	RGS
Exterior Locations (greater than 5'-0" from foundation wall)	PVC

- E. Installations within air handling spaces, including plenum ceilings and built up air handling systems shall be approved for plenum installation and shall be in strict accordance with all applicable codes.
- F. Install pull boxes, junction boxes, and outlet boxes in accordance with codes, standards, and manufacturers' recommendations. Boxes shall include accessible covers, shall be fabricated of heavy gauge galvanized steel, and shall be sized with code to adequately facilitate pulling and connecting the quantity of wires, cables, and feeders contained. Conduit terminations shall be made with bushings and locknuts. Supports for conduits and boxes shall be suspended directly to the building structural components and in no case shall they be attached to suspended ceiling grid, ductwork, or piping components.
- G. Install feeders and branch circuit wiring in accordance with codes, standards, and manufacturers' recommendations. Provide neutral sized at 200% or two (2) neutral conductors where serving panels with 200% rated neutral bus, coordinate installation with panel manufacturers lug provisions. Install normal power, fire alarm, and life safety systems wiring. Install concealed security and communications wiring within continuous metal raceways. Separate each system into independent raceways. Provide cable supports as required. Terminate cables per code and manufacturer's recommendations. Provide two (2) hole lugs for cables 250 kcmil and larger. Power wiring installation shall be as follows unless noted otherwise:

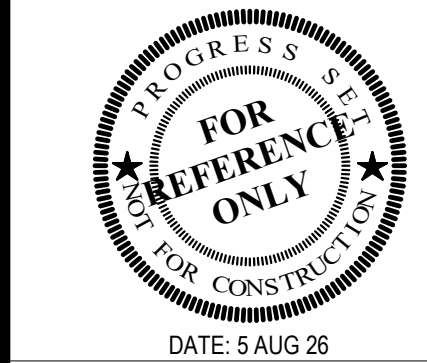
Wire Location	300 kcmil and Smaller	350 kcmil and Larger	Environmental Conditions
Interior Locations	THHN/THWN	XHHW	Dry
Exterior Locations	THHN/THWN THHN/THWN	XHHW XHHW-2	Damp, Wet

- H. Install electrical distribution equipment and devices, including metering, distribution panelboards, branch panelboards, motor starters, local disconnect switches, overcurrent protection, transformers, main contactors, receptacles, etc. in accordance with codes, standards, and manufacturer's recommendations.
- I. Install grounding systems in accordance with codes, standards, and manufacturer's recommendations.
- J. Install lighting and associated controls, including fixtures, toggle switches, dimmers, lighting contactors, etc. in accordance with codes, standards, and manufacturer's recommendations.
- K. Install single and multiple device cover plates as required. Extend existing devices to finished surface as required.
- L. Install fire alarm and other life safety systems in accordance with codes, standards, and manufacturer's recommendations.
- M. Install plastic laminate nameplates on enclosures for distribution panelboards, branch panelboards, motor starters, disconnect switches, transformers, and contactors. Nameplates shall be white with black core, 1-1/4 inches by 3 inches minimum, with 3/16 inch lettering, secured to equipment with two (2) machine screws. Prepare and install type-written panel directory within each branch panel. Device plates shall be engraved for toggle switches and other devices whose function is not readily apparent. Markers shall be self-sticking for each wire and cable terminations and at each accessible point in equipment and raceway.
- N. Wall switches, line voltage dimmers, motor switches, receptacles, photocontrols, and timeclocks shall be identified with circuit numbers and source. Labeling shall be permanent and machine generated (1/4" back text on a clear label). Label shall be installed at a consistent location in the face of the device plate.
- O. Clean electrical apparatus prior to completion of construction. Keep work areas clean at all times.

3.2 ALTERATIONS AND DEMOLITION

- A. Alterations and Demolition of existing systems shall be as follows:
1. Provide all alterations and demolition of the existing electrical installation as required, including any incidental materials to execute all removal, reworking, relocation, and any other modifications for proper accommodation of all new construction as indicated on the contract documents. All alterations and demolition shall be as indicated on the contract documents or as required, including any modifications not specifically identified on any contract documents but required to complete all new construction.
 2. Provide all modifications to existing equipment as required or as indicated on the contract documents in strict accordance with the existing product manufacturer's recommendations.
 3. Existing raceway, wire and cable extending through the construction area but serving areas outside the contract shall be rerouted and reconnected as required. All modifications shall be without any interruption to the building power, communications, security, fire alarm and life safety systems or interference to other areas or tenants. Where any modifications would interfere with the daily operations of the building or other tenants, after-hours work or temporary services shall be provided with prior written approval from the building.
 4. Existing conduit, wire, cable, supports, hangers, and other electrical installation which is removed, shall be completely removed, back to the first device or that equipment which is unaffected by the modifications. Conduit which is buried in concrete or otherwise inaccessible may be abandoned and capped at each end. All wire and cable shall be removed from any abandoned conduit.
 5. Reuse existing electrical products as indicated on the contract documents only as is found practical. Examine the condition of all such products, determine suitability for re-use, and periodically notify the Owner/Engineer of findings for final acceptance or re-use. Wire and Cable for new construction or extension of an existing installation shall be new, in no case shall existing wire and cable be reused.
 6. Refer to architectural demolition drawings for full extent and scope of partition and ceiling modifications.
 7. Existing floor mounted devices shall be demolished.
 8. Refer to mechanical and plumbing demolition drawings for full extent and scope of electrically operated equipment modifications.
 - a. Demolition of existing mechanical equipment shall include associated disconnects, raceway, wire and controls.

9. NFPA 70E Compliance:
- a. The Electrical Contractor will be responsible for providing ARC Flash labeling for all electrical distribution equipment installed or modified as part of this contract. This includes but is not limited to: Identification of ARC Flash Boundaries, Application of Proper Labels, and Identification of Proper Personal Protective Equipment.
 - b. The Contractor must ensure that personnel working on the equipment while energized are qualified to do so and are wearing the appropriate ARC Flash personal protective equipment. Documentation of this training is required.
 - c. The Electrical Contractor will include in his bid the cost to hire a qualified engineer to perform the necessary ARC Flash study.



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PROJECT NO: 125-017
ISSUE DATE: 5 AUG 26
ISSUANCE:

SHEET NAME:

ELECTRICAL
SPECIFICATIONS

SHEET (00X42):

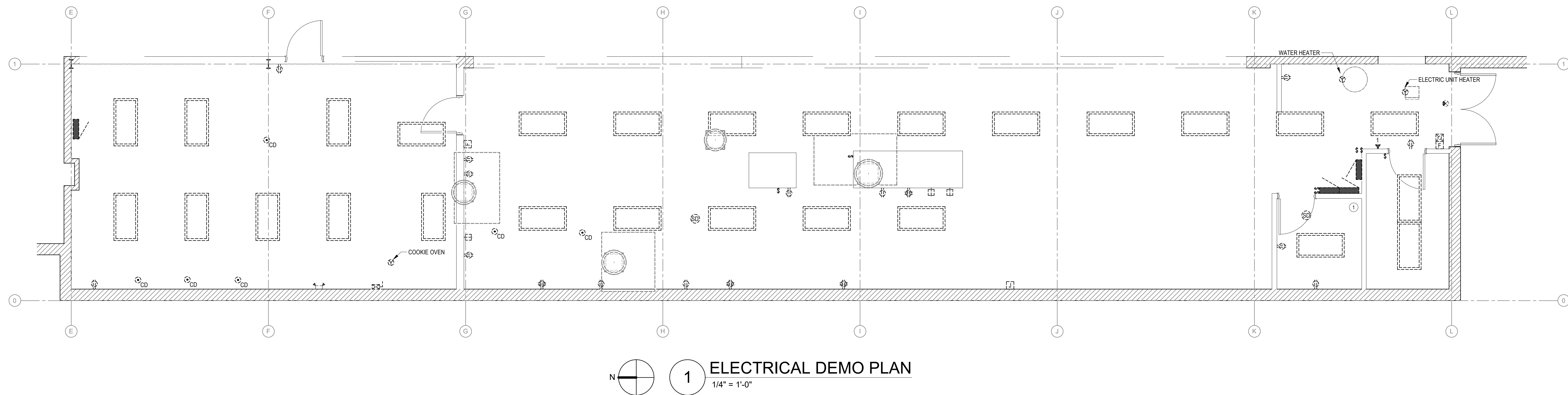
E001



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- GENERAL NOTES:
1. REMOVE ALL ELECTRICAL EQUIPMENT IN AREA OF WORK AS REQUIRED FOR REMODEL.
 2. ALL DA COMPONENTS SHOWN IN DASHED LINES TO BE REMOVED/DEM'D. ALONG WITH ASSOCIATED RACEWAY, EQUIPMENT, AND CONDUCTORS.
 3. DISCONNECT ALL HARD WIRED KITCHEN EQUIPMENT, KITCHEN EQUIPMENT REMOVED BY OTHERS.
 4. REFER TO DEMO RISER PLAN ON E501.
 5. ALL DEVICES WITHIN EXISTING KITCHEN, OFFICE, AND STORAGE ROOM ARE TO BE REMOVED/DEM'D.
 6. SEE ARCHITECTURAL AND STRUCTURAL FOR ADDITIONAL INFORMATION.
 7. REFER TO MECHANICAL AND PLUMBING PLANS FOR ADDITIONAL ELECTRICAL CONNECTIONS REMOVAL FOR DEMO'D EQUIPMENT.
- KEYED NOTES:
1. ELECTRICAL CONTRACTOR TO REMOVE AND RELOCATE WALL MOUNTED IT CABINET TO OFFICE.



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ISSUE DATE: 5 AUG 26
ISSUANCE:

SHEET NAME:
ELECTRICAL DEMO
SHEET

SHEET (30X42):
ED101

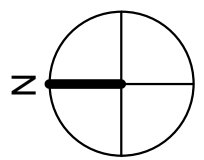
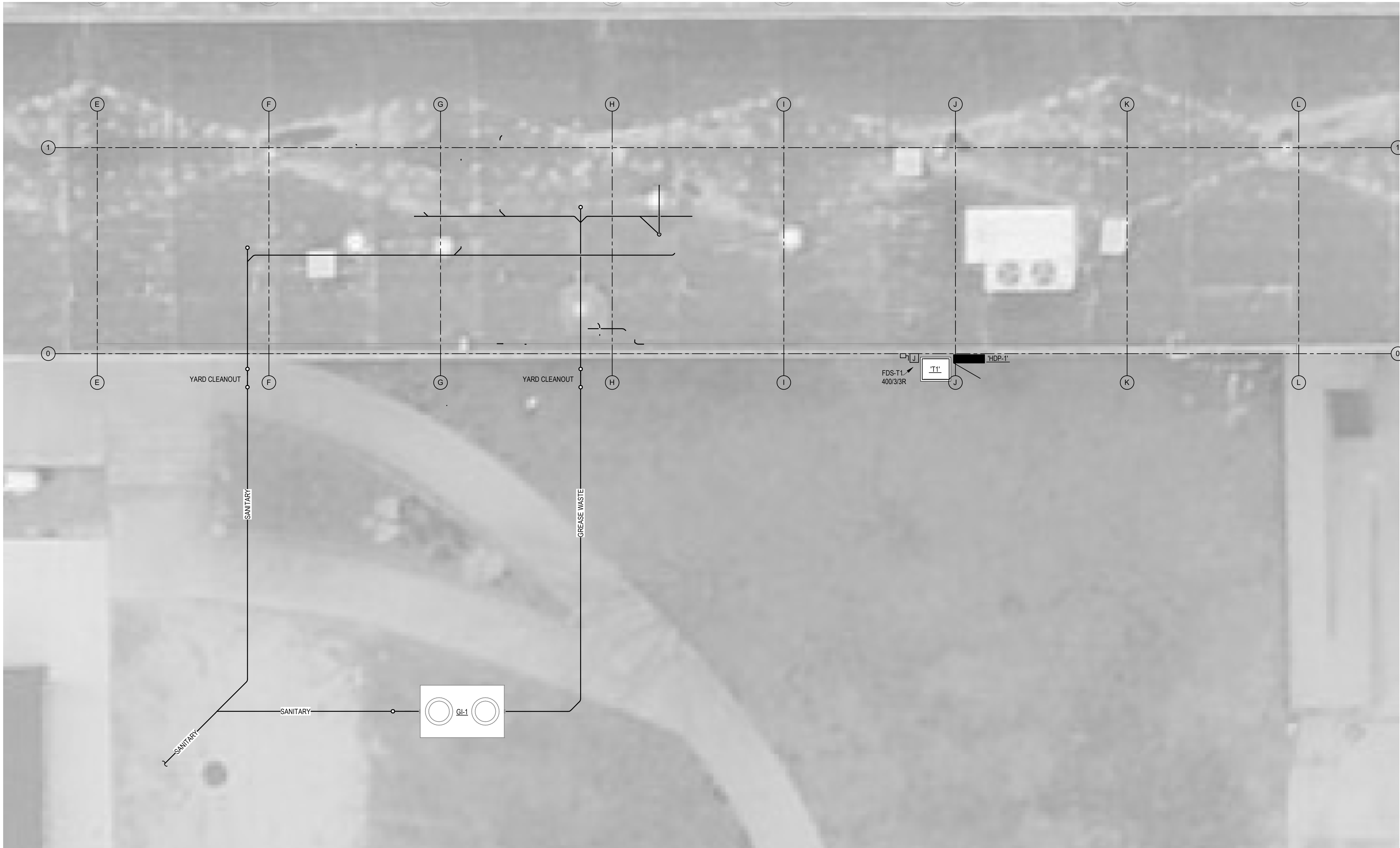
- GENERAL NOTES:
1. CONTRACTOR TO CONFIRM LOCATION OF ALL UTILITY.
 2. REFER TO THE ELECTRICAL RISER DIAGRAM FOR FEEDER SIZE.
 3. THIS SHEET IS NOT TO SCALE.
 4. CONFIRM ACTUAL LOCATION OF EXISTING SANITARY PIPING.
 5. EACH CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, BACKFILL, FINAL GRADING, SEEDING, AND CONCRETE PUTBACK OF INSTALLATION OF MATERIALS IN THEIR SCOPE.



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3 **COMBINED SITE PLAN**
N.T.S.

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ISSUANCE:

SHEET NAME:
COMBINED SITE PLAN

SHEET (30X42):
E100

GENERAL NOTES:
1. FIRE ALARM DEVICES WILL BE EXTENDED OFF OF EXISTING SIMPLEX 400S PANEL.



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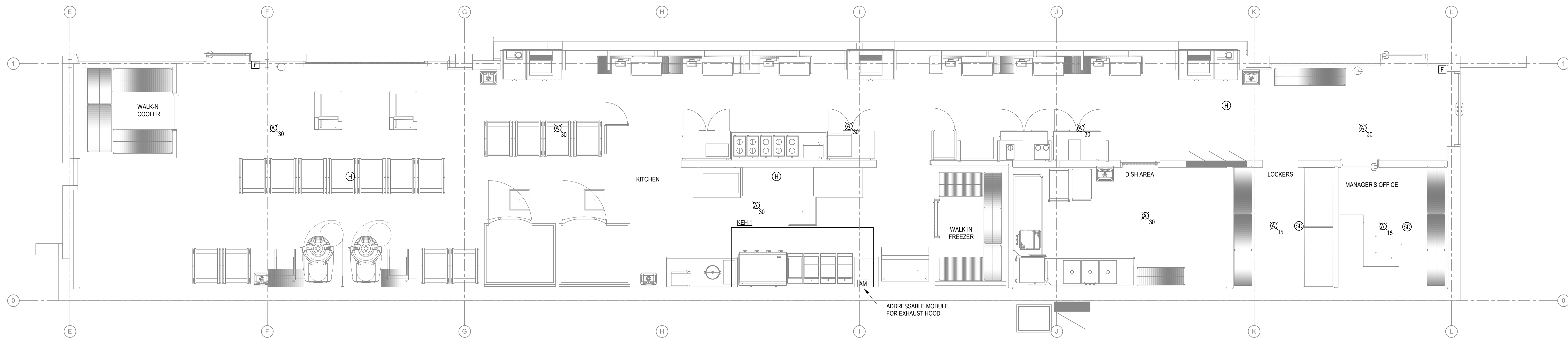
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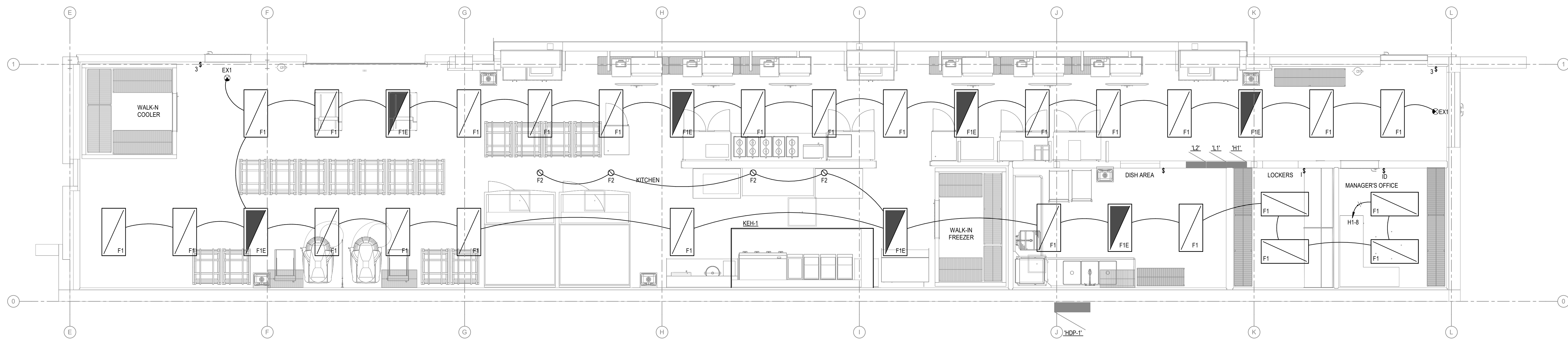
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PROJECT NO: 125-017
ISSUE DATE: 5 AUG 26
ISSUANCE:

SHEET NAME:
ELECTRICAL PLANS

SHEET (30X42):
E101



3 ELECTRICAL FIRE ALARM PLAN
1/4" = 1'-0"



1 ELECTRICAL LIGHTING PLAN
1/4" = 1'-0"



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ISSUANCE:

SHEET NAME:
ELECTRICAL KITCHEN
EQUIPMENT PLAN

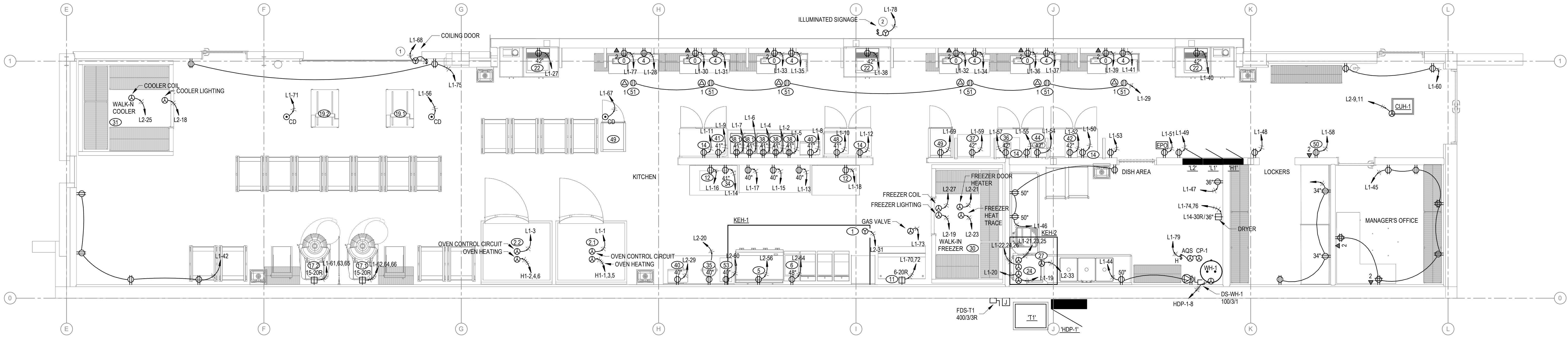
SHEET (30X42):
E102

KEYED NOTES:

1. INSTALL POWER FOR COILING DOOR AND ASSOCIATED CONTROL AND SAFETY DEVICES.
2. CONFIRM SIGN POWER REQUIREMENTS DURING CONSTRUCTION.
3. DEVICES MOUNTED BENEATH COUNTER, COORDINATE EXACT MOUNTING HEIGHT DURING CONSTRUCTION

GENERAL NOTES:

1. CONFIRM ALL MOUNTING HEIGHTS PRIOR TO ROUGH IN.
2. CONTRACTOR TO CARRY A \$15,000 ALLOWANCE FOR PROVIDING AND INSTALLING CAT6 TELECOMMUNICATIONS CABLING, TERMINATIONS, FACE PLATES, AND TESTING OF CABLE. COORDINATE OWNER'S STANDARDS AND PREFERENCES DURING CONSTRUCTION.
3. REFER TO SCHEDULES FOR DEVICE DEFAULT MOUNTING HEIGHT



1 ELECTRICAL KITCHEN EQUIPMENT PLAN
1/4" = 1'-0"

KITCHEN EQUIPMENT SCHEDULE				
NO.	EQUIPMENT TYPE	ELECTRICAL REQUIREMENTS	CONNECTION TYPE	DISCONNECT SWITCH
0	POINT OF SALE	1Ø 120V 3.3A 3Ø 208V 6.8A	CORD PLUG HARDWIRED - FAN (ROOF)	N/A EXTERNAL BY M.C. INSTALLED BY E.C.
1	EXHAUST HOOD	1Ø 120V 20A	HARDWIRED - CONTROLS	EXTERNAL BY E.C. - 2P, 30A, NEMA 1
2.1	OVEN	3Ø 480V 64A 1Ø 120V 15A	HARDWIRED - HEATING HARDWIRED - CONTROL	EXTERNAL BY E.C. - 3P, 100A, NEMA 1 EXTERNAL BY E.C. - 2P, 30A, NEMA 1
2.2	OVEN	3Ø 480V 64A 1Ø 120V 15A	HARDWIRED - HEATING HARDWIRED - CONTROL	EXTERNAL BY E.C. - 3P, 100A, NEMA 1 EXTERNAL BY E.C. - 2P, 30A, NEMA 1
4	HEATED SHELF	1Ø 120V 4.4A	CORD PLUG	N/A
5	REFRIGERATOR, SHORTY	1Ø 120V 2.4A	CORD PLUG	N/A
6	FRYER DUMP STATION	1Ø 120V	CORD PLUG	N/A
11	ICE MAKER	1Ø 208V 15.9A	CORD PLUG	N/A
12	REFRIGERATOR/FREEZER DRAWER	1Ø 120V 1.7A	CORD PLUG	N/A
14	BACK BAR EQUIPMENT	1Ø 120V	CORD PLUG	N/A
17.1	MIXER	3Ø 208V 20A	L15-20P	N/A
17.2	MIXER	3Ø 208V 20A	L15-20P	N/A
19.1	DOUGH DROPPER	1Ø 120V	CORD PLUG	N/A
19.2	DOUGH DROPPER	1Ø 120V	CORD PLUG	N/A
22	SODA DISPENSER WITH ICE WELL	1Ø 120V	CORD PLUG	N/A
24	DISHMACHINE	3Ø 208V 26.9A 3Ø 208V 25.6A 1Ø 120V 1.5A	HARDWIRED - PUMP & HEATER HARDWIRED - BOOSTER HARDWIRED - DETERGENT FEEDER	EXTERNAL BY E.C. - 3P, 30A, NEMA 1 EXTERNAL BY E.C. - 3P, 30A, NEMA 1 EXTERNAL BY E.C. - 2P, 30A, NEMA 1
27	EXHAUST HOOD, DISH MACHINE	1Ø 120V 1.5A 1Ø 208V 4.1A 1Ø 120V 20A	HARDWIRED - VENT FAN HARDWIRED - FAN (ROOF) HARDWIRED - CONTROLS	EXTERNAL BY E.C. - 2P, 30A, NEMA 1 EXTERNAL BY M.C. INSTALLED BY E.C. EXTERNAL BY E.C. - 2P, 30A, NEMA 1
30	WALK IN FREEZER	3Ø 208V 25A 1Ø 120V 20A 1Ø 120V 15A 1Ø 120V 15A	HARDWIRED - CONDENSING UNIT (ROOF) HARDWIRED - EVAPORATOR HARDWIRED - LIGHTING HARDWIRED - DOOR HEATER	EXTERNAL BY E.C. - 3P, 30A, NEMA 3R EXTERNAL BY E.C. - 2P, 30A, NEMA 3R N/A N/A
31	WALK IN COOLER	1Ø 120V 15A 3Ø 208V 25A 1Ø 120V 15A	HARDWIRED - CONDENSING UNIT (ROOF) HARDWIRED - EVAPORATOR HARDWIRED - LIGHTING	EXTERNAL BY E.C. - 3P, 30A, NEMA 3R EXTERNAL BY E.C. - 3P, 30A, NEMA 3R N/A
34	HOT DOG ROLLER	1Ø 120V 10.8	CORD PLUG	N/A
35	RICE COOKER	1Ø 120V	CORD PLUG	N/A
36	POPCORN MACHINE	1Ø 120V	CORD PLUG	N/A
37	WARMER, MERCH	1Ø 120V	CORD PLUG	N/A
38	HEAT LAMPS	1Ø 120V	CORD PLUG	N/A
38.1	HEAT LAMPS	1Ø 120V	CORD PLUG	N/A
40	MICROWAVE	1Ø 120V 13.4A	CORD PLUG	N/A
41	WARMER	1Ø 120V	CORD PLUG	N/A
42	NACHO MACHINE	1Ø 120V	CORD PLUG	N/A
44	COFFEE BREWING MACHINE	1Ø 120V 11.4A	CORD PLUG	N/A
48	ICE CREAM DISPLAY	1Ø 120V 1.8A	CORD PLUG	N/A
49	HOLDING CABINETS	1Ø 120V 16.7A	CORD PLUG	N/A
50	IPAD DISPLAY	1Ø 120V	CORD PLUG	N/A
51	MENU TV BOARDS	1Ø 120V	CORD PLUG	N/A
53	SAUCE WARMER	1Ø 120V 10A	CORD PLUG	N/A

ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL REQUIREMENTS AND CONNECTION TYPE OF EQUIPMENT WITH APPROVED SHOP DRAWINGS PRIOR TO ROUGH IN.

- KEYED NOTES:
1. VERIFY THAT THE MECHANICAL UNIT HAS BUILT IN CONVENIENCE OUTLET. OTHERWISE INSTALL WEATHERPROOF DUPLEX RECEPTACLE AS SHOWN ON PLANS.
 2. DISCONNECT SWITCH PROVIDED BY MECHANICAL CONTRACTOR. INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
 3. CONTRACTOR TO CONFIRM MECHANICAL ALTERNATE OR BASE BID DECISION PRIOR TO ROUGHING IN POWER FOR ROOF TOP EQUIPMENT.
 4. DEVICES TO BE MOUNTED ON DUCTWORK BELOW UNIT.



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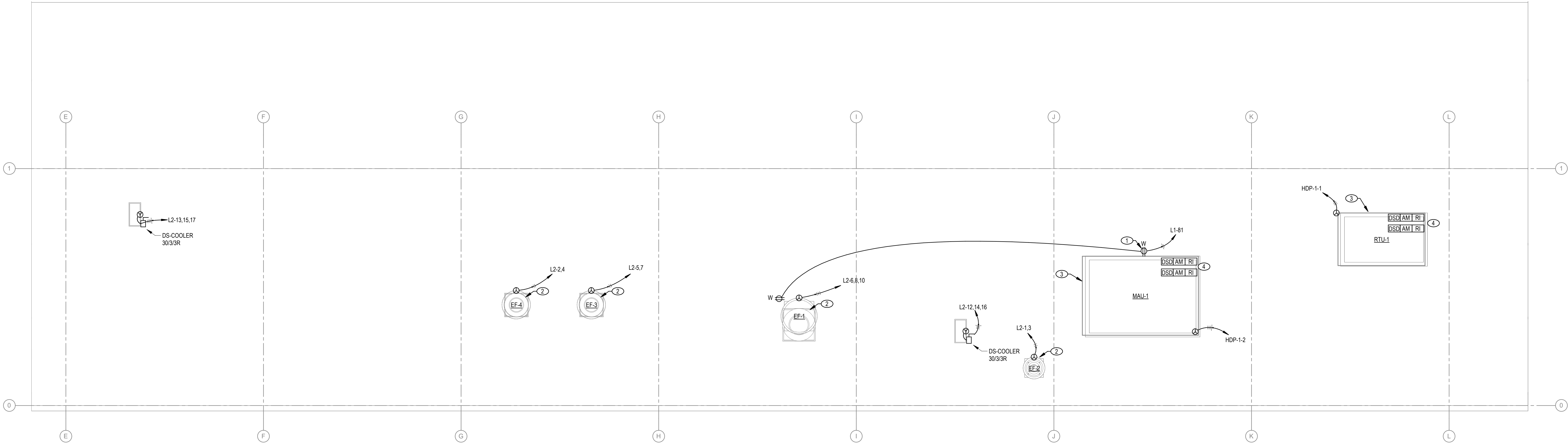
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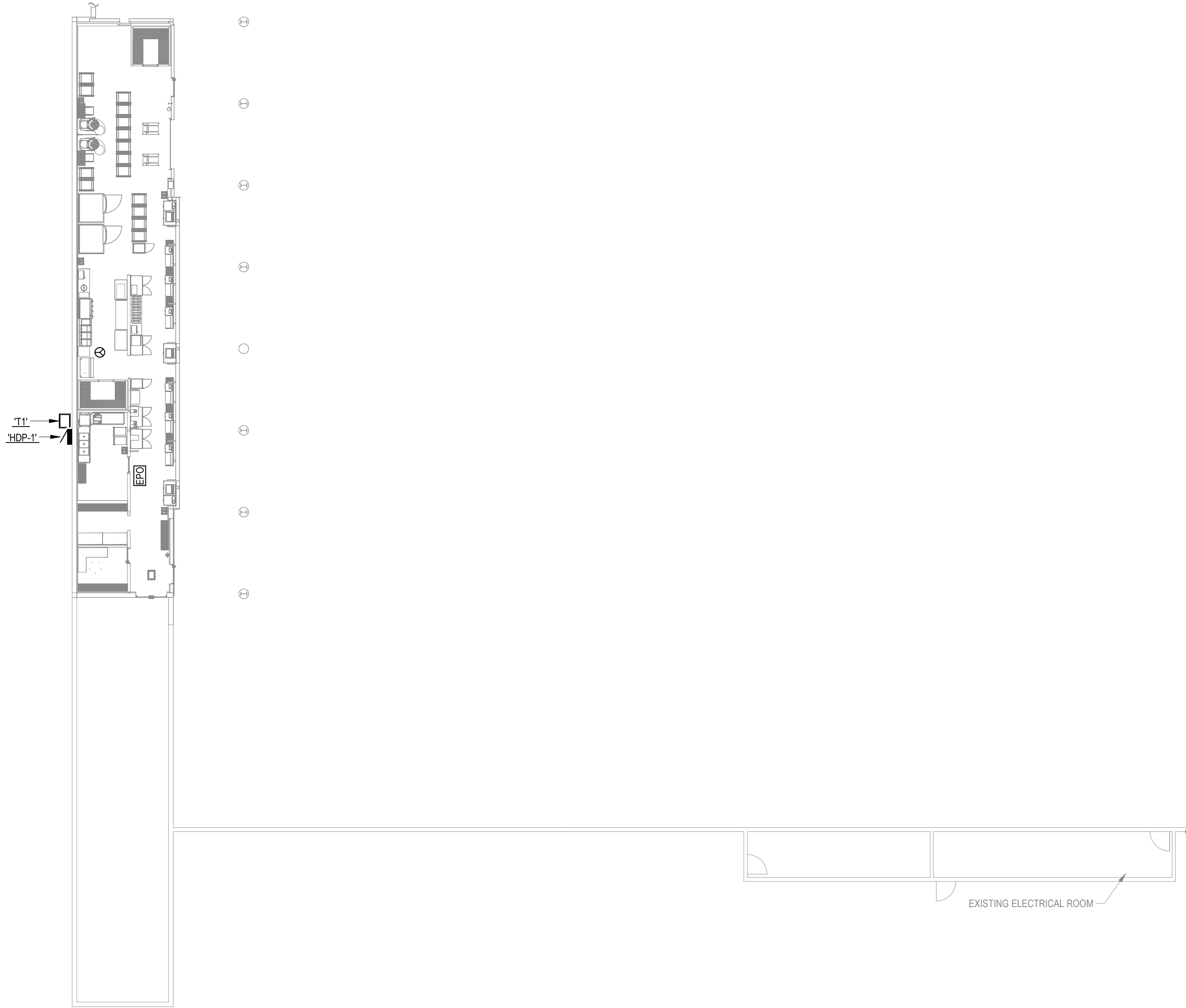
SHEET NAME:
ELECTRICAL ROOF PLAN

SHEET (30X42):

E103



1 ELECTRICAL ROOF PLAN
1/4" = 1'-0"



2 ELECTRICAL OVERALL PLAN
N.T.S.

REVISIONS:		
NO.	DESCRIPTION	DATE

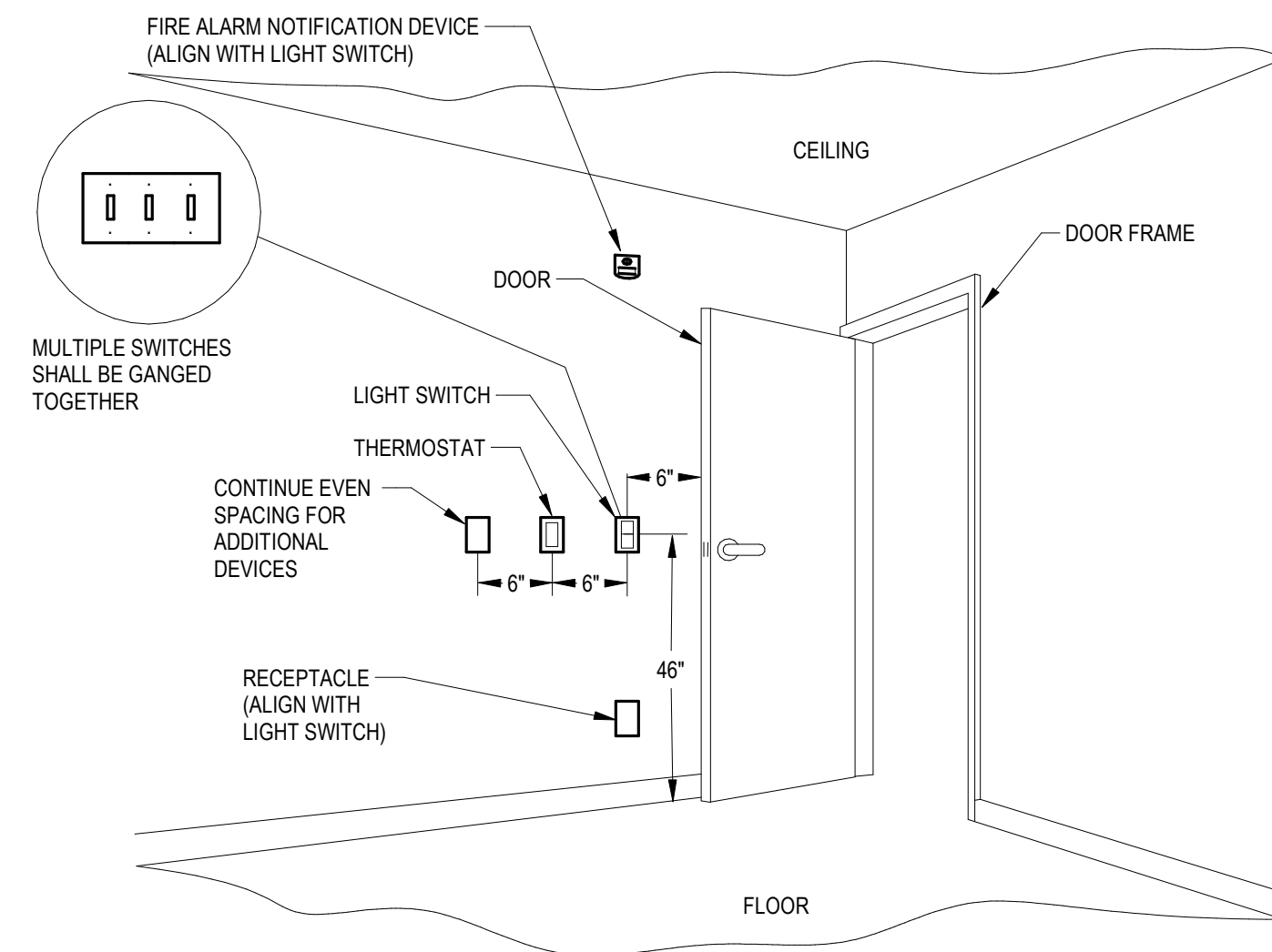
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SHEET NAME:
ELECTRICAL DETAILS

SHEET (30X42):

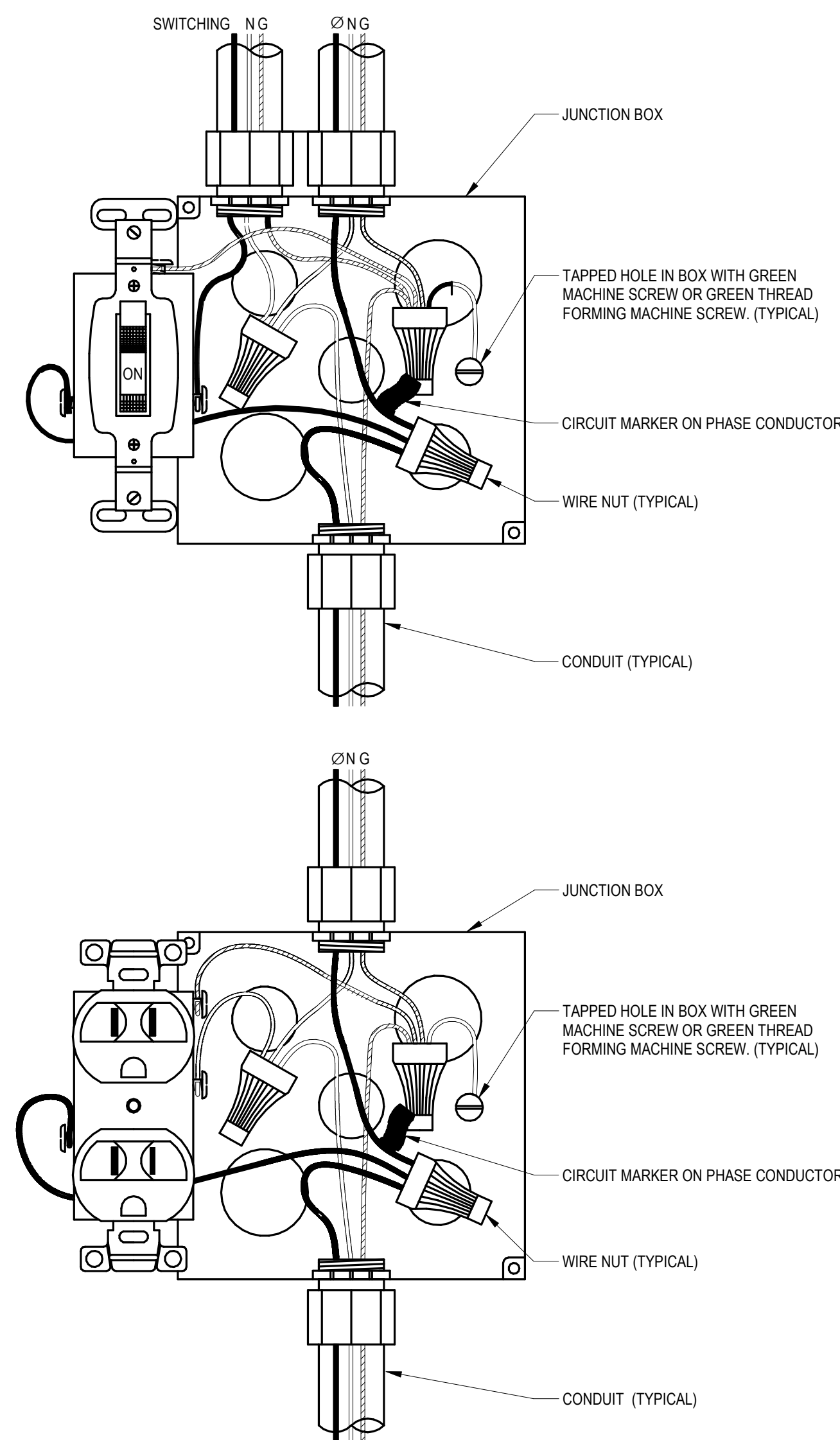
E501



2 ROOM DEVICE MOUNTING ORTHOGRAPHIC DETAIL N.T.S.

NOTES:

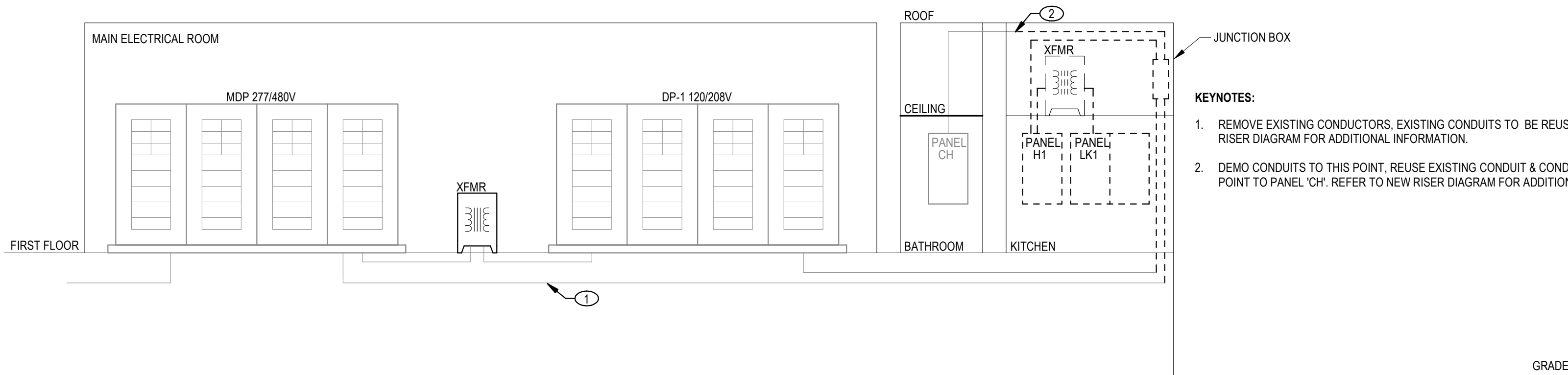
1. LIGHT SWITCH, THERMOSTAT, AND ADDITIONAL DEVICES TO BE MOUNTED ON WALL ADJACENT TO THE HINGE SIDE OF THE DOOR UNLESS NOTED OTHERWISE ON PLANS.
2. CENTER OF LIGHT SWITCH TO BE 6" FROM THE EDGE OF THE DOOR WHEN IN FULL OPEN POSITION.
3. IF LIGHT SWITCHES ARE LOCATED BACK TO BACK ON BOTH SIDES OF THE WALL, MOVE ONE TO THE NEXT AVAILABLE STUD CAVITY AWAY FROM THE DOOR AS NEEDED.
4. IF WALL PROTECTION IS PRESENT, DEVICES TO BE MOUNTED 42" A.F.F. RATHER THAN 48".
5. ALL DEVICES TO BE INSTALLED IN ACCORDANCE WITH ADA STANDARDS FOR ACCESSIBLE DESIGN. REFER TO AHA ADOPTED NEC - INFORMATIVE ANNEX J OR AHA ADOPTED PUBLISHING OF ADA STANDARDS FOR ACCESSIBLE DESIGN FOR ADDITIONAL INFORMATION.



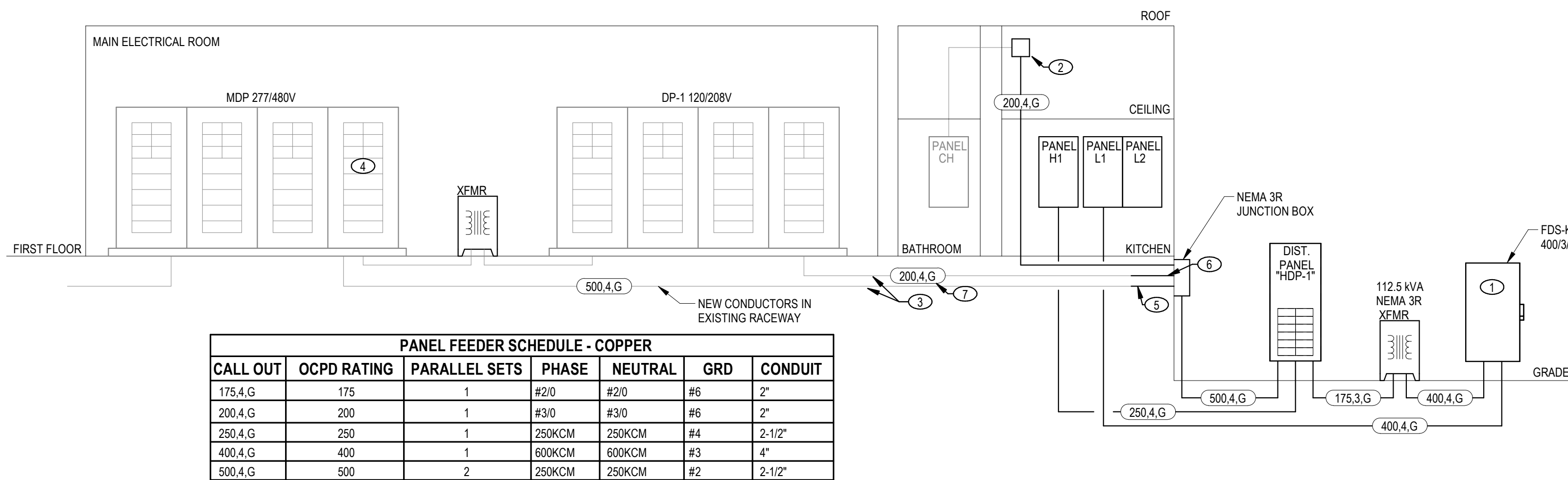
1 RECEPTACLE-SWITCH WIRING DETAIL N.T.S.

NOTES:

1. GREEN GROUND CONDUCTOR SHALL BE CONTINUOUS SO THAT REMOVAL OF DEVICE WILL NOT INTERFERE WITH GROUND CONTINUITY PER 250.148 (B).
2. INSTALL AN EQUIPMENT BONDING JUMPER TO THE METALLIC BOX USING A LISTED GROUNDING SCREW PER 250.146. THE BONDING JUMPER MAY BE OMITTED ON SURFACE MOUNTED BOXES.
3. PROVIDE SEPARATE NEUTRAL FOR EACH CIRCUIT.



4 ELECTRICAL RISER DIAGRAM - EXISTING N.T.S.

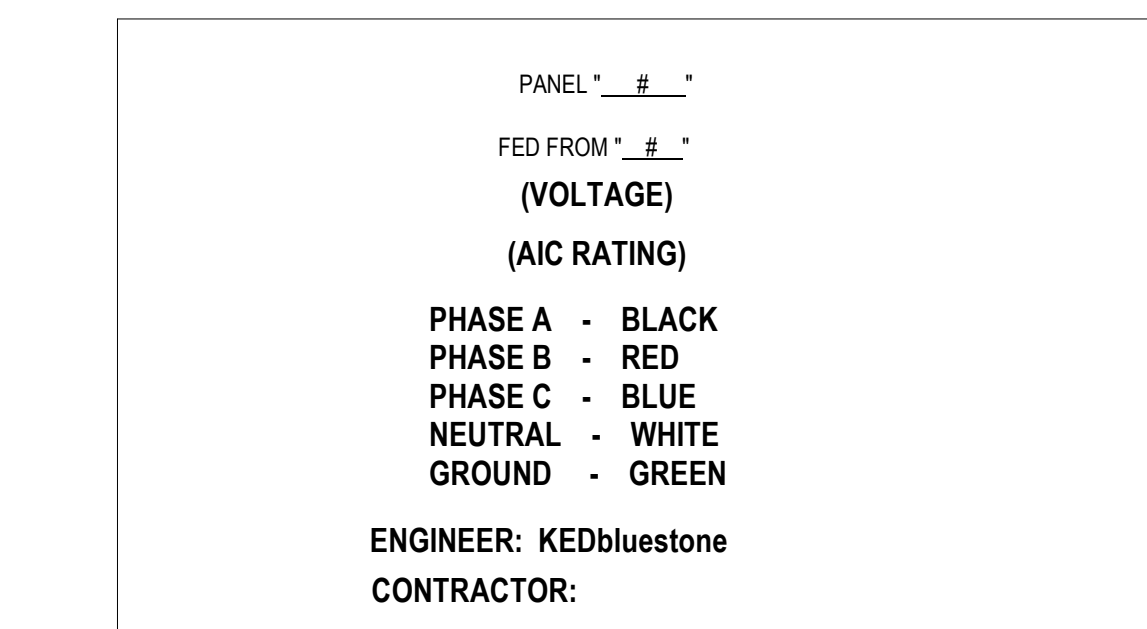


PANEL FEEDER SCHEDULE - COPPER						
CALL OUT	OCPD RATING	PARALLEL SETS	PHASE	NEUTRAL	GRD	CONDUIT
175 A.G.	175	1	#20	#20	#6	2"
200 A.G.	200	1	#30	#30	#6	2"
250 A.G.	250	1	250KCM	250KCM	#4	2-1/2"
400 A.G.	400	1	600KCM	600KCM	#3	4"
500 A.G.	500	2	250KCM	250KCM	#2	2-1/2"

5 ELECTRICAL RISER DIAGRAM - NEW 1/4" = 1'-0"

KEYNOTES:

1. INSTALLATION OF DISCONNECT SWITCH CAN BE OMITTED IF FEEDER LENGTH BETWEEN TRANSFORMER 'T1' AND 'L1' PANELBOARD IS LESS THAN 25'.
2. INSTALL JUNCTION BOX ABOVE CEILING. ROUTE CONDUIT UP TO CEILING AND TIE INTO EXISTING CONDUIT FOR PANEL 'CH'. EXISTING CONDUCTORS AND CONDUITS MAY BE REUSED. FEED COORDINATOR JUNCTION BOX LOCATION.
3. EXTEND EXISTING CONDUIT TO NEW EXTERIOR JUNCTION BOX. INSTALL NEW CONDUCTORS FROM MDP.
4. INSTALL NEW 500A 3 POLE BREAKER IN EXISTING SWITCHBOARD TO FEED HDP-1
5. EXTEND EXISTING CONDUITS FROM MPD TO NEW EXTERIOR JUNCTION BOX. PULL NEW CONDUCTORS FROM MDP TO HDP-1 THROW JUNCTION BOX.
6. EXTEND CONDUIT AND EXISTING CONDUCTORS ONTO EXISTING CONDUCTORS FROM DP-1 TO JUNCTION BOX LOCATED ABOVE KITCHEN CEILING TO REFEED PANEL 'CH'.
7. EXISTING CONDUCTORS AND CONDUIT TO REMAIN.



3 PANEL BOARD NAMEPLATE N.T.S.

NOTES:

1. FOR 208V SYSTEMS, FOLLOW COLORS AS SHOWN.
2. FOR 480/277 SYSTEMS, COLOR SHALL BE AS FOLLOWS:

PHASE A - BROWN
PHASE B - ORANGE
PHASE C - YELLOW
NEUTRAL - GRAY
GROUND - GREEN

3. NAME PLATE SHALL BE PERMANENTLY ATTACHED TO PANELBOARD. REFER TO SPECIFICATION SECTION 260553 FOR NAMEPLATE CONSTRUCTION REQUIREMENTS.

BRANCH PANELBOARD: H1											
LOCATION: MOUNTING: RECESSED ENCLOSURE: NEMA 1 FED FROM: HDP-1				VOLTAGE: 480/277 Wye PHASE: 3 WIRE: 4 LUGS:				MAIN DEVICE: 250 MCB BUS RATING: 250 NEUTRAL RATING: 100.00% A.I.C. RATING: 35000			
CKT #	CKT BKR A/P	NOTES	CIRCUIT DESCRIPTION	KVA LOAD 'PHASE A'	KVA LOAD 'PHASE B'	KVA LOAD 'PHASE C'	CIRCUIT DESCRIPTION	NOTES	CKT BKR P/A	CKT #	
1				17.7	17.7					2	
3	80 A	3	OVEN HEATING		17.7	17.7	OVEN HEATING	3	80 A	4	
5						17.7				6	
7				1.7			LIGHTING	1	20 A	8	
9										10	
11										12	
13										14	
15										16	
17										18	
19										20	
21										22	
23										24	
25										26	
27										28	
29										30	
31										32	
33										34	
35										36	
37										38	
39										40	
41										42	
TOTAL CONNECTED KVA BY PHASE				37.2 KVA	35.5 KVA	35.5 KVA					
TOTAL CONNECTED AMPS BY PHASE				134.3 A	128.1 A	128.1 A					
LOAD CLASSIFICATION		CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD		PANELBOARD TOTALS			
HVAC		106417 VA		100.00%		106417 VA		TOTAL CONNECTED KVA 108.1 KVA			
Lighting		1718 VA		100.00%		1718 VA		TOTAL CALCULATED KVA 108.1 KVA			
								TOTAL CONNECTED AMPS 130.1 A			
								TOTAL CALCULATED AMPS 130.1 A			
NOTES:											

DISTRIBUTION PANELBOARD: HDP-1									
LOCATION:			VOLTAGE: 480/277 Wye			MAIN DEVICE: 500 MCB			
MOUNTING: SURFACE			PHASE: 3			BUS RATING: 600			
ENCLOSURE: NEMA 1			WIRE: 4			NEUTRAL RATING: 100.00%			
FED FROM:			LUGS:			A.I.C. RATING: 42000			
CKT #	CIRCUIT DESCRIPTION	A	B	C	FRAME	TRIP	POLES	FEEDER RACEWAY & CONDUCTORS	NOTES
1	RTU-1	2.5	2.5	2.5	25 A	25 A	3	(3)#10, #10G, 3/4"	1
2	MAU-1	27.7	27.7	27.7	125 A	125 A	3	(3)#1, #6G, 1-1/2"	2
3	1T1	31.4	26.4	26.9	175 A	175 A	3	REFER TO THE RISER DIAGRAM	
4	H1	37.2	35.5	35.5	250 A	250 A	3	REFER TO THE RISER DIAGRAM	
5	PREPARED SPACE	0	0	0	200 A	20 A	3		
6	PREPARED SPACE	0	0	0	200 A	20 A	3		
7	PREPARED SPACE	0	0	0	100 A	20 A	3		
8	WATER HEATER	20	20	20	400 A	100 A	3		
9									
10									
11									
12									
TOTAL CONNECTED KVA BY PHASE		118.8 KVA	111.1 KVA	111.6 KVA					
TOTAL CONNECTED AMPS BY PHASE		429 A	401 A	403.1 A					
LOAD CLASSIFICATION		CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD		PANELBOARD TOTALS	
HVAC		238721 VA		100.00%		238721 VA		TOTAL CONNECTED KVA 341.5 KVA	
Lighting		1718 VA		100.00%		1718 VA		TOTAL CALCULATED KVA 345.7 KVA	
Receptacle		34720 VA		64.40%		22360 VA		TOTAL CONNECTED AMPS 410.8 A	
Electric Heat		66360 VA		125.00%		82950 VA		TOTAL CALCULATED AMPS 415.9 A	
NOTES:									
1. PART OF BASE BID. PROVIDE 3P 80A BREAKER IF ALTERNATE BID IS SELECTED									
2. PART OF BASE BID. PROVIDE 3P 80A BREAKER IF ALTERNATE BID IS SELECTED									
PROVIDE CONDUCTORS PER MINIMUM BRANCH CIRCUIT FEEDER SIZE									

LUMINAIRE SCHEDULE											
TYPE	DESCRIPTION	MANUFACTURER/MODEL	FINISHES	LIGHT SOURCE	MOUNTING	DELIVERED LUMENS	CRI	CCT	DIMMING	DISTRIBUTION	WATTS
EX1	EXIT SIGN, SINGLE SIGNED, THERMOPLASTIC HOUSING, SELF-TESTING/SELF-DIAGNOSTICS, ARROWS/MOUNTING PER PLANS	COMPASS CE	HOUSING WHITE, LETTERING RED	LED	CEILING	N/A	N/A	0 K	N/A	N/A	5 W
F1	BACKLIT 2x4 FLAT PANEL, WET LOCATION RATED, LISTED FOR USE IN FOOD PROCESSING APPLICATIONS, PROVIDE 0-10V DIMMING FOR LIGHT FIXTURES INSTALLED IN THE OFFICE	COOPER ARCADE FLR	WHITE	LED	RECESSED	6000	80	4000 K	0-10V	GENERAL	53 W
F1E	SAME AS F1, EMERGENCY BATTERY BACKUP	SAME AS F1	WHITE	LED	RECESSED	6000	80	4000 K	N/A	GENERAL	53 W
F2	6" SURFACE MOUNTED LED DOWNLIGHT, WHITE, ALUMINUM HOUSING TRIM RING, CAPABLE OF MOUNTING IN A STANDARD 4" SQUARE JUNCTION BOX, WET LOCATION RATED	PRESSCOUTE LBSO-RD HALO SMOGR	WHITE	LED	RECESSED	1200	80	4000 K	N/A	GENERAL	14 W

BRANCH PANELBOARD: L2											
LOCATION: MOUNTING: RECESSED ENCLOSURE: NEMA 1 FED FROM: T1				VOLTAGE: 208/120 Wye PHASE: 3 WIRE: 4 LUGS: STANDARD				MAIN DEVICE: MLO BUS RATING: 400 NEUTRAL RATING: 100.00% A.I.C. RATING: 22000			
CKT #	CKT BKR A/P	NOTES	CIRCUIT DESCRIPTION	KVA LOAD 'PHASE A'	KVA LOAD 'PHASE B'	KVA LOAD 'PHASE C'	CIRCUIT DESCRIPTION	NOTES	CKT BKR P/A	CKT #	
1	20 A	2	EF-2	0.4	0.6		EF-4		2	20 A	
3					0.4	0.6				4	
5	20 A	2	EF-3			0.6	0.8			6	
7				0.6	0.8		EF-1		3	20 A	
9	20 A	2	CUH-1		1.5	0.8				8	
11						1.5	0.1			10	
13				0.1	0.1		COOLER CONDENSING UNIT		3	20 A	
15	20 A	3	FREEZER CONDENSING UNIT		0.1	0.1				12	
17						0.1	0.1	COOLER LIGHTING	1	20 A	
19	20 A	1	FREEZER LIGHTING	0.1	1		RICE COOKER RCPT		1	20 A	
21	20 A	1	FREEZER DOOR HEATER		0.4	0	SPARE		1	20 A	
23	20 A	1	FREEZER HEAT TRACE			0.4	0	SPARE	1	20 A	
25	20 A	1	COOLER COIL	0.6	0		SPARE		1	20 A	
27	20 A	1	FREEZER COIL		0.4	0	SPARE		1	20 A	
29	20 A	1	MICROWAVE RCPT			0.8	0	SPARE	1	20 A	
31	20 A	1	KEH-1	3.2	0		SPARE		1	20 A	
33	20 A	1	KEH-2		3.2	0	SPARE		1	20 A	
35	20 A	1	SPARE			0	0	SPARE	1	20 A	
37	20 A	1	SPARE	0	0		SPARE		1	20 A	
39	20 A	1	SPARE		0	0	SPARE		1	20 A	
41	20 A	1	SPARE			0	0	SPARE	1	20 A	
43	20 A	1	SPARE	0	0		SPARE		1	20 A	
45	20 A	1	SPARE		0	0	SPARE		1	20 A	
47	20 A	1	SPARE			0	0	SPARE	1	20 A	
49	20 A	1	SPARE	0	0		SPARE		1	20 A	
51	20 A	1	SPARE		0	0	SPARE		1	20 A	
53	20 A	1	SPARE			0	0	SHUNT TRIP MODULE	1	20 A	
55	20 A	1	SPARE	0	0.2		REF EQUIPMENT STAND RCPT	ST	1	20 A	
57						0	SHUNT TRIP MODULE		1	20 A	
59						1.1	SAUCE WARMER RCPT	ST	1	20 A	
61				0			SHUNT TRIP MODULE		1	20 A	
63					0.2		FRYER DUMP STATION RCPT	ST	1	20 A	
65						0	SPARE		1	20 A	
67				0			SPARE		1	20 A	
69					0		SPARE		1	20 A	
71						0	SPARE		1	20 A	
73				0			SPARE		1	20 A	
75					0		SPARE		1	20 A	
77										76	
79										78	
81										80	
83										82	
TOTAL CONNECTED KVA BY PHASE				7.7 kVA	7.6 kVA	5.4 kVA					
TOTAL CONNECTED AMPS BY PHASE				66.8 A	66.1 A	45.1 A					
LOAD CLASSIFICATION		CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD		PANELBOARD TOTALS			
HVAC		14428 VA		100.00%		14428 VA		TOTAL CONNECTED KVA 20.7 kVA			
Receptacle		3260 VA		100.00%		3260 VA		TOTAL CALCULATED KVA 21.4 kVA			
Electric Heat		3000 VA		125.00%		3750 VA		TOTAL CONNECTED AMPS 57.4 A			
								TOTAL CALCULATED AMPS 59.5 A			
NOTES:											

SPECIALTY RECEPTACLE SUBSCRIPT SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
6-20R	NEMA 6-20R RECEPTACLE, FLUSH MOUNTED	HUBBELL HBL5451 LEVITON PASS & SEYMOUR COOPER
15-20R	NEMA 15-20R RECEPTACLE, FLUSH MOUNTED	HUBBELL HBL8420A LEVITON PASS & SEYMOUR COOPER
L14-30R	NEMA 14-30R RECEPTACLE, FLUSH MOUNTED	HUBBELL HBL2710 LEVITON PASS & SEYMOUR COOPER

CORD DROP / CORD REEL SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
CD	CORD DROP, GFI PROTECTED NEMA 5-20 CONNECTOR WITH BUILT-IN LIGHT, 25' 10/3 CORD, MOUNT TO ROOF FRAMING, PROVIDE KELLUM GRIPS AT THE ROOF FRAMING AND THE CONNECTOR, RECEPTACLE TO HANG AT 6'-6" AND ENOUGH CORD PROVIDED TO ALLOW RECEPTACLE TO BE LOWERED TO 5'-0"	CENTURY WIRE & CABLE PRO GRIP

FIRE ALARM DEVICE SCHEDULE		
SYMBOL	DESCRIPTION	MODEL
	ADDRESSABLE FIRE ALARM MANUAL PULL STATION, DOUBLE ACTION, RED POLYCARBONATE BODY, KEY RESET, STATUS LED	SIMPLEX
	ADDRESSABLE MONITOR MODULE, LED INDICATOR, SUPERVISION OF NORMALLY OPEN OR NORMALLY CLOSED CONTACT DEVICE	SIMPLEX
	ADDRESSABLE SMOKE DETECTOR, PHOTOELECTRIC TYPE, STATUS LED	SIMPLEX
	DUCT SMOKE DETECTOR REMOTE INDICATOR STATION WITH TEST CAPABILITY, LED INDICATOR, KEY OPERATED	SIMPLEX
	DUCT SMOKE DETECTOR, ADDRESSABLE, PHOTOELECTRIC, 300-4,000 FPM AIR VELOCITY, MINIMUM DUCT SIZE OF 8" SQUARE OR 18" ROUND, RELAY OUTPUT, TRANSPARENT COVERS, ADD AN REMOTE INDICATOR IF THE DSD IS NOT VISIBLE FROM AN OCCUPIED SPACE	SIMPLEX
 #	FIRE ALARM AUDIOVISUAL NOTIFICATION APPLIANCE, CEILING MOUNTED, WHITE HOUSING WITH "FIRE" MARKING, 4-WIRE, "F" IDENTIFIES CANDELA RATING: 15, 30, 75, 110	SIMPLEX
 #	FIRE ALARM AUDIOVISUAL NOTIFICATION APPLIANCE, CEILING MOUNTED, WHITE HOUSING WITH "FIRE" MARKING, 4-WIRE, "F" IDENTIFIES CANDELA RATING: 15, 30, 75, 110	SIMPLEX 4906-9128, 9130 SIEMENS NOTIFIER
	HEAT DETECTOR, ADDRESSABLE, RATE-OF-RISE OR FIXED TEMPERATURE SENSOR WITH A 135 OR 155 DEGREE TEMPERATURE ALARM, STATUS LED	SIMPLEX 4906-9129/4038-9129 SIEMENS NOTIFIER