

# HAWTHORNE PARK SHELTER

# 400 GUNNISON AVE CITY OF GRAND JUNCTION, CO

### OWNER:

CITY OF GRAND JUNCTION ATTN: Mike Vendegna 1340 Gunnison Ave Grand Junction, CO 80501 (970)254-3843

### ARCHITECT:

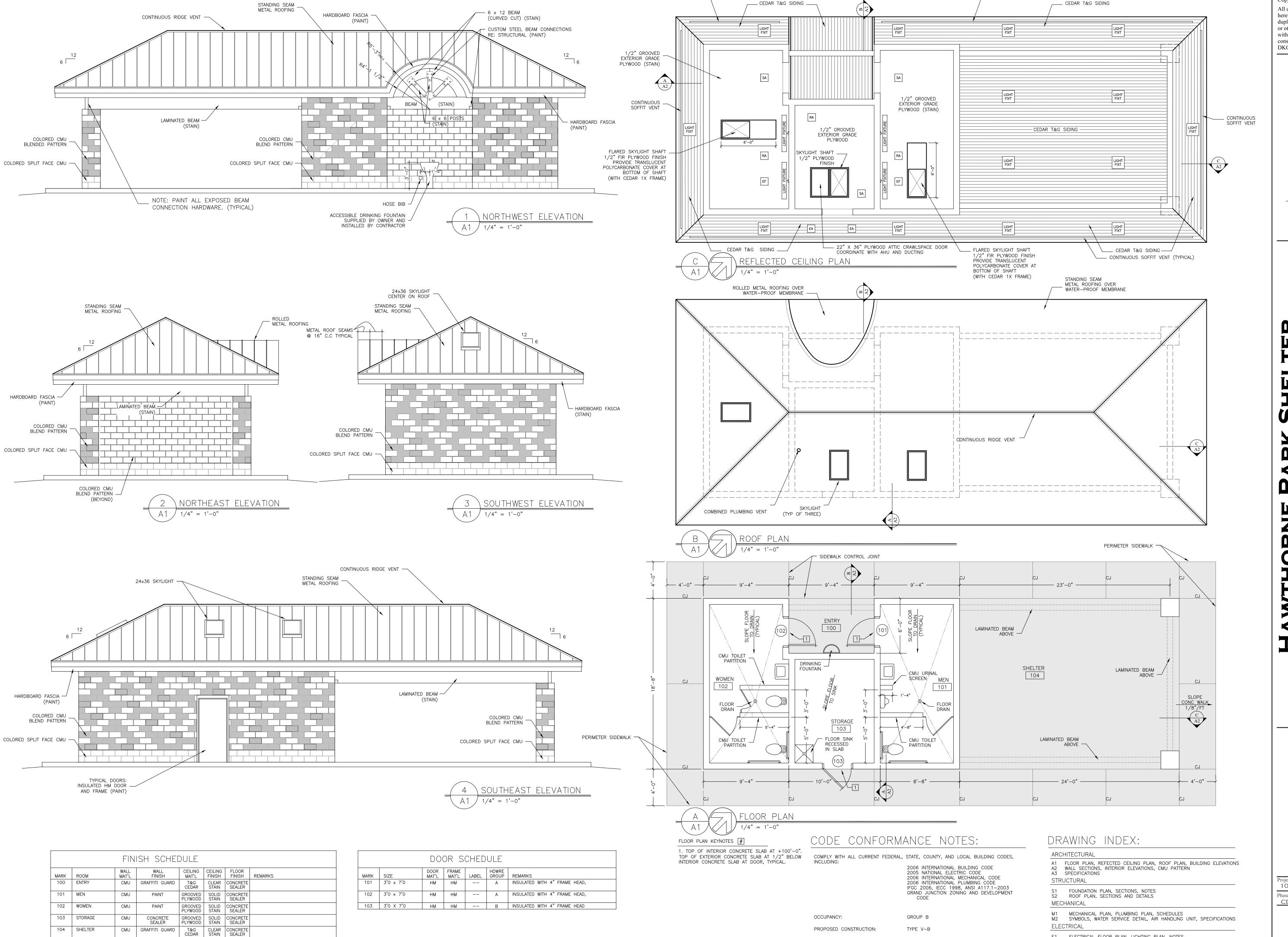
DKO ARCHITECTURE, PC ATTN: Kreg Obergfell 1109 Glengary Pl Colorado Springs, CO 80921 (719)648-3011

## STRUCTURAL:

LINDAUER DUNN, INC ATTN: JEFF DUNN 802 Rood Grand Junction, CO 81501 (970)241-0900 MECHANICAL/ELECTRICAL:
BIGHORN CONSULTING ENGINEERS

ATTN: Blaine Buck
569 S. Westgate Dr.
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THORNE (1)

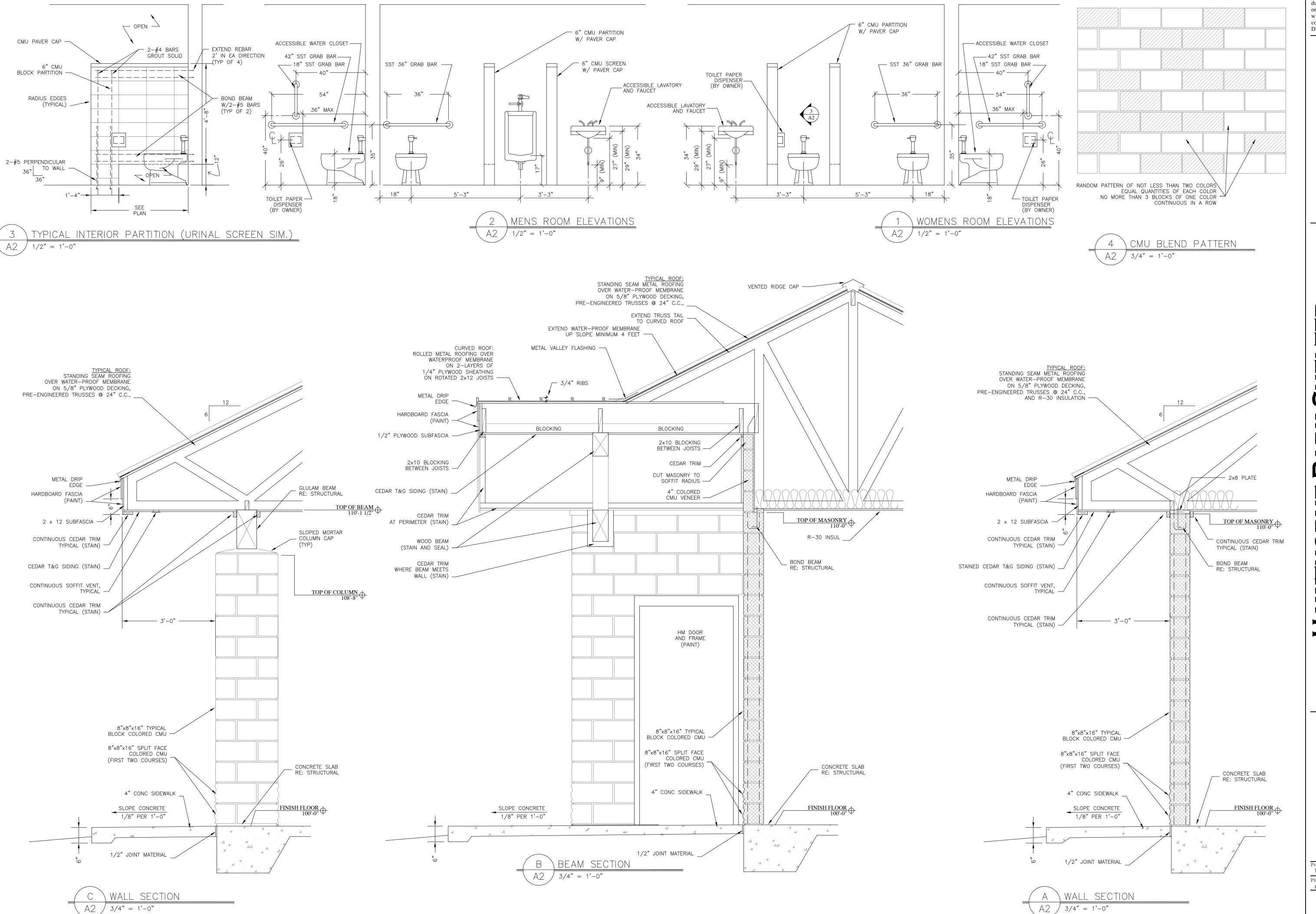
> Drawn by: Issue Date CD 8/17/10

E1 ELECTRICAL FLOOR PLAN, LIGHTING PLAN, NOTES

E2 SCHEDULES E3 SPECIFICATIONS

TOTAL FLOOR AREA:

453 GSF

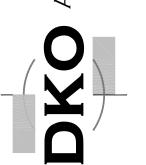


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NE PARK SHELTER
GUNNISON AVE

Project Nd. Drawn by:
1001

Phase Issue Date
CD 8/17/10

**A2** 

### PROJECT COORDINATION

- A. The Contractor shall be responsible for coordination of the Project. It is recognized the the Construction Drawings are diagrammatic in showing certain physical relationships of the various elements and systems and their interfacing with other elements and systems. Establishment and coordination of these relationships is the exclusive responsibility of the Contractor. Each entity involved in the performance of the Work shall
- cooperate in the overall coordination of the work. B. The Owner shall designate a Project Coordinator who shall represent and be authorized to act on behalf of the Owner with respect to the Project.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of
- temporary utilities and construction facilities. F. Coordinate field engineering and layout work under instructions of
- the Project Coordinator. G. Make the following types of submittals to Architect through the Project Coordinator: Shop drawings, product data, and samples. Test and inspection reports. Closeout submittals.

### RECORD DOCUMENTS

A. Maintain at job site, one copy of the Construction Drawings. Make note of revisions and note the actual location of concealed controls, underground utilities and conduits for future use.

A. Verify locations of all existing utilities prior to starting any work. Coordinate service and utility extensions to the Project site.

WASTE DISPOSAL A. Establish and enforce a daily system for collecting and disposing of waste materials. Provide dumpster on site.

### COMPLETE SYSTEMS

A. It is the intenet of the Construction Drawings that all systems, including mechanical and electrical, be complete and functional to provide the intended or specified performance. The Contractor shall provide all incidental items and parts necessary to achieve this requirement. Provide power, utilities, piping, drains, services and their connections to equipment and systems requiring them.

### CLEANING AND PROTECTION OF THE WORK

A. At the time each unit of the work or element of the construction is completed (substantially) in each area of the project, clean the unit or element to a condition suitable for use and repair damage. Replace elements which in the opinion of the Architect are damaged beyond successful restoration. Protect, clean and restore the Project elements throughout the Construction period until the Owner officially takes possession.

A. The basic warranty of the project and all of its elements shall extend for not less than one year after the Owner takes official

### SECTION 01400 - QUALITY REQUIREMENTS

### CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality. B. Comply with manufacturers' instructions, including each step in
- sequence. All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer. C. Should manufacturers' instructions conflict with Contract
- Documents, request clarification from Architect before proceeding. D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified
- requirements indicate higher standards or more precise workmanship. E. Have Work performed by persons qualified to produce required and specified auality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

### DEFECT ASSESSMENT

SUBMITTALS

adjust payment.

A. Replace Work or portions of the Work not conforming to

### specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and

### <u>SECTION 01600 - PRODUCT REQUIREMENTS</u>

A. Submit five (5) copies of shop drawings, product data and samples for all manufactured materials. Such submittals shall be completely reviewed by the Contractor prior to delivery to the Project Manager. The Contractor shall verify conformance with the requirements of Construction Documents and shall verify dimensions and compatibility with other elements of the Project. The Contractor shall submit with such promptness as to cause no delay in his own work allowing not less than two (2) weeks for

replace the Work, Architect will direct an appropriate remedy or

- Architect's review. B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers'
- standard data to provide information specific to this Project. C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for
- functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

### TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

### SECTION 01600 - PRODUCT REQUIREMENTS (continued)

- B. Transport and handle products in accordance with manufacturer's
- instructions C. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

- STORAGE AND PROTECTION A. Store and protect products in accordance with manufacturers'
- . Store with seals and labels intact and legible. C. Prevent contact with material that may cause corrosion,
- discoloration, or staining. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are

### maintained in acceptable condition. SECTION 01700 - EXECUTION REQUIREMENTS

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Requirements to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later. B. Notify affected utility companies and comply with their
- requirements. C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service,
- such equipment. D. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements. F. Coordinate completion and clean—up of work of separate

other installations, for maintenance, and for repairs.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

as a standard.

A. New Materials: As specified in product sections; match existing products and work for patching and extending work. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work

### EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached. C. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over—ordering or

misfabrication. D. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

- A. Clean substrate surfaces prior to applying next material or substance. B. Seal cracks or openings of substrate prior to applying next
- material or substance. C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### LAYING OUT THE WORK A. Promptly notify Architect of any discrepancies discovered.

- GENERAL INSTALLATION REQUIREMENTS A. Install products as specified in individual sections, in accordance
- with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement. B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise
- D. Make consistent texture on surfaces, with seamless transitions,

### unless otherwise indicated Make neat transitions between different surfaces, maintaining texture and appearance.

### CUTTING AND PATCHING

- A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non—conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
- Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces. Cut rigid materials using masonry saw or core drill. Pneumatic
- ools not allowed without prior approval. Restore work with new products in accordance with requirements of Contract Documents.
- Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material to full thickness of the penetrated
- Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

### PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to
- enclosing the space. Remove debris, junk, and trash from site.
- Leave site in clean condition, ready for subsequent work. Clean up spillage and wind-blown debris from public and private

### PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

Adjust operating products and equipment to ensure smooth and

### <u>SECTION 01700 - EXECUTION REQUIREMENTS (continued)</u>

- FINAL CLEANING
  - A. Use cleaning materials that are nonhazardous. B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces. C. Clean equipment and fixtures to a sanitary condition with
  - cleaning materials appropriate to the surface and material being D. Clean filters of operating equipment.

### CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other
- B. Notify Architect when work is considered ready for Substantial C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's
- D. Correct items of work listed in executed Certificates of
- Substantial Completion and comply with requirements for access to Owner-occupied areas. E. Notify Architect when work is considered finally complete.

F. Complete items of work determined by Architect's final inspection.

### SECTION 02200 - EARTHWORK

- TEST REPORTS-EXCAVATING, FILLING AND GRADING A. The Owner, at his own discretion and cost, may engage soil testing and inspection service (Soils Engineer) for quality control testing during earthwork operations.
- B. The Soils Engineer shall be consulted as an Owner's representative and shall approve fill materials, method of placement, moisture contents and percent compaction. Soil materials, whether from sources on or off site must be approved by the Soils Engineer as suitable for intended use and specifically for foundation bearing, fill and backfill.
- C. Location of the new structure and proposed Finish Floor Elevation shall be staked on site and approved by the Owner's Project D. Finished Excavation shall be observed by the Soils Engineer and
- Structural Engineer prior to placement of any Concrete. E. Backfill material shall be free of deleterious material and rocks having a diameter of more than 4". Fill material in areas to receive new concrete walks shall be placed in even layers not exceeding 8" of loose depth and uniformly compacted as directed by the Soils Engineer (not less than 95 percent of maximum dry density as defined by ASTM D698). Provide organic topsoil in other disturbed areas, compact and grade to match adjacent areas. Grade areas surrounding the structure to cause rapid runoff of surface water. Provide the slope required by the Soils Engineer or not less than 6" in 12 feet. Finish grade surfaces shall be free from irregular changes and within 0.10 foot of required sub or finish grade elevations. Spread stockpiled topsoil and compact to minimum six (6) inch depth

### SECTION 03300 - CONCRETE

A. <u>STANDARDS</u>. Conform to applicable ACI and ASTM Standards including but not limited to: ACI 301 Specifications for Structural Concrete for Buildings ASTM C-94 Specifications for Ready-Mixed Concrete

at all areas not designated for walks, paving or structures.

- ACI 318 Building Code Requirements for Reinforced Concrete B. <u>SUBMITTALS</u>. Furnish proposed design mix for each class of concrete specified, a minimum of two (2) weeks prior to placement. Provide product data for curing and sealing
- C. <u>CONCRETE MATERIALS</u>. Refer to the Structural drawings for concrete strength and reinforcing requirements.
- CURING AND SEALING COMPOUNDS. Dayton Superior Cure & Seal WB, or approved equal.

Construct forms complying with ACI 347, to the exact sizes,

- shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades, level and plumb work in finished structures. Plumbing and utilities which pass through floor slabs shall be isolated from the slab. 2. Comply with the specified codes and standards, and Concrete Reinforcing Steel Institute recommended practice for "Placing
- Reinforcing Bars," for details and methods of reinforcement placement and supports, and coordinate locations of dowels with the Masonry Contractor.
- 3. Furnish ready—mixed concrete mixed and delivered per ASTM
- 4. Place concrete in compliance with the practices and recommendations of ACI 304R-89, and as herein specified. Protect freshly placed concrete from premature drying and excessive cold and hot temperatures, and maintain without drying at a relatively constant temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete. Cure in accordance with ACI 301
- 5. After placing slabs, plane the surface to a tolerance not exceeding 1/8 inch in two feet. Slope surfaces uniformly to
- drain where required. After leveling, finish per the Architect. 6. Apply float finish to monolithic slab surfaces that are to receive trowel finish and other finishes as hereinafter specified. At Interior floors, apply trowel finish, unless otherwise shown. At Exterior walks, apply a non—slip broom finish. Broom finish shall be applied perpendicular to length of walk.

# <u>SECTION 04220 - MASONRY</u>

A. ASTM C90-03. All applicable NCMA TEK publications.

A. Product Data on Conctrete Masonry Units, reinforcing and all accessories. CMU and mortar color samples. CONCRETE MASONRY UNITS

A. Provide light weight colored CMU with a compressive strength not less than 1900 psi. Obtain CMU units with an integral Water Repellent from Robinson Block or approved equal. Manufacturer must provide a minimum of 16 available colors for Architect's selection. Architect shall select colors for the "BLEND" pattern and an additional color will be selected for the

### GENERAL PROCEDURES AND PROJECT CONDITIONS

- Comply with applicable codes and National Concrete Masonry Association TEK publications. 2. Install units in a running bond pattern with concave mortar joints. Rake out mortar in preparation for application of sealants. Prevent grout, mortar or other materials from staining
- the face of masonry to be left exposed. 3. Provide high quality colored mortar, Type M or S in accordance with Table No. 2103.7 of the International Building Code. Submit True Tone Mortar colors for selection by the Architect.

### <u>SECTION 06100 - ROUGH CARPENTRY</u>

4. Insulate exterior walls with Perlite.

REFERENCES A. All lumber shall be gradestamped by an agency certified by the Board of Review of the American Lumber Standards Committee, Inc. and manufactured in accordance with Product Standard PS 20, as published by the U.S. Department of Commerce.

### A. Provide product data. Provide Cedar Siding samples.

### <u>SECTION 06100 - ROUGH CARPENTRY</u> (continued)

- A. Framing Lumber, provide Hem-Fir dress lumber, S4S, unless
- otherwise noted, kiln dried to maximum 19% moisture content, Stud Grade with Fb = 675 psi and E = 1,200,000 psi. A. Plywood concealed, APA rated sheathing grade, Exposure 1, Group 1
- or 2 species for wall and roof sheathing. B. Plywood soffits, 1/2" fir siding with grooves @ 4", T-1-11 or
- approved equal. C. Cedar siding (for soffits), 1x4 tongue and groove, Select Tight Knot
- STK aradina. D. Continuous soffit vents, aluminum, painted brown, provide model

### SV202 by Airvent or approved equal.

A. Refer to International Building Code for maximum span tables and B. Set carpentry work accurately to required levels and lines, with

plywood. Provide Simpson Strong—Tie Panel Sheathing Clips to

### brace unsupported sheathing edges. SECTION 06194 - FABRICATED WOOD TRUSSES

A. Trusses shall be designed by a professional engineer employed by the Manufacturer and registered in the State of Colorado.

members plumb and true and accurately cut and fitted.

C. Comply with recommendations of the APA for installation of

### elevations, assembly methods, details, fastening methods, accessory listings, hardware location and design loads.

B. Shop Drawings: Indicate materials, component profiles and

### A. Follow Manufacturer's installation instructions and recommendations. B. Lift trusses into position, taking care to prevent out-of-plane bending. Set and secure level, plumb and at correct locations.

Install permanent bracing and bridging prior to application of loads.

### SECTION 07210 - BUILDING INSULATION

### A. MINERAL/GLASS FIBER BATT INSULATION. Glass or other inorganic (non-asbestos) fibers formed with binders into

resilient, flexible blankets or semi-rigid batts; ASTM C665, types as indicated, density not less than 0.5 pounds per cubic foot for glass and 2.5 pounds per cubic foot for mineral wool; thermal conductivity (k-value at 75oF) of 0.27; manufacturer's standard sizes, thicknesses to provide R-30 at

A. Comply with manufacturer's instructions for the particular conditions of installation in each case. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific recommendations before proceeding with the work. Extend insulation full thickness as shown over entire surface to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation and mastic. Apply a single layer of insulation of the required thickness, unless otherwise shown or

### required to make up the total thickness. <u>SECTION 07610 - METAL ROOFING</u>

### A. Product data. Color samples.

- A. Continuous length-roll formed panels with 1.3/4" tall ribs on 16 inch centers. Fastening system shall be concealed. Panel materials shall be minimum 24 gauge. Roof system shall include all flashings and fascia trims in materials and colors to match the roofing panel. Provide Snap—Clad metal panel system by PAC-CLAD Petersen Aluminum or approved equal. Panel finish selected from manufacturer's full line of colors
- ncludina metallic finishes. B. Provide all necessary items, trims, clips, nuts, and bolts necessary for a sound and secure weather—tight installation.

### approved equal.

A. Comply with manufacturer's instructions for the particular conditions of installation. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific

C. W.R. Grace Ice and Water Guard roof underlayment, or

recommendations before proceeding with the work. B. Roll form radius roof panels as required to meet profile of arched roof. C. Install metal roofing over a self adhesive, composite 40 mil

### rubberized membrane. <u>SECTION 07720 - ROOF ACCESSORIES</u>

### A. Product data.

### A. SKYLIGHTS: Provide Model #2448G by AIA industries or approved equal. Skylight shall be manufacturer's standard curb mount skylight. Provide curb extension as required for proper installation of skylight, membrane flashings, metal roofing, roofing flashings and roof insulation. Outside unit dimensions shall be approximately 24x48 (inches). Provide

with heat—mirror treated, clear Glazing. Fabricate units to

### withstand 40 pound live loading.

- EXECUTION A. Separate metal surfaces of roof accessories from dissimilar metals, and from wood and cementitious substrates, by a thick coating of fibrated bituminous compound or other
- separation as recommended by the metal manufacturer, and as required to prevent corrosive action. B. Anchor roof accessories permanently to the substrate by methods which are adequate for the sizes and locations of units. Comply with manufacturer's instructions for the particular conditions of installation. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for

### <u>08100 - HOLLOW METAL DOORS AND FRAMES</u>

STANDARDS

specific recommendations before proceeding with the work.

1. ANSI/SDI-100-98 - Recommended Specifications for Standard Steel Doors an Frames SDI-105-91 - Recommended Erection Instructions for Steel Frames SDI-107-78 - Hardware on Steel Doors (reinforcement application) ANSI-A250.4-1994 - Steel Doors and Frames Physical Endurance

5. Conform to HMMA 861 standards except where more stringent

requirements are specified IBC 2006 — International Building Code 7. ANSI-A117.1 - Accessible and Usable Building and Facilities

Submit shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door and frame types, conditions at openings, details of construction, location and installation requirements of door and frame hardware reinforcements, and details of joints and connections. Show anchorage and accessory items.

### 08100 - HOLLOW METAL DOORS AND FRAMES (continued)

- A. All doors and frames shall be manufactured of commercial quality cold rolled steel per ASTM-A366 and A568 general requirements or galvanized to A60 or G60 minimum coating weight standard per ASTM—A924. Internal reinforcing may be manufactured of hot rolled
- pickled and oiled steel per ASTM-A569. B. Supports and anchors shall be fabricated of not less that 18—gauge
- sheet steel, galvanized where galvanized frames are used. C. Where items are to be built into exterior walls, inserts, bolts and fasteners shall be hot dipped galvanized in compliance with
- D. Rust inhibitive enamel or paint primer shall be used, baked on, and suitable as a base for specified finish paints complying with ANSI A224.1, "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces on Steel Doors and Frames."

ASTM-A153, Class C or D as applicable.

- A. Provide 1 3/4" thick doors of materials and ANSI/SDI-100 grades B. Exterior Doors: Level 3, Model 2 — Seamless. Exterior doors shall be minimum 16-gauge steel with both lock and hinge rail edge of door intermittently welded, filled and ground smooth the full height of door. Exterior doors shall be insulated with a solid slab of expanded polystyrene or polyurethane foam permanently bonded to the inside of each face skin. The top of all doors shall be closed flush by the
- A. Provide hollow metal frames for doors of types and styles as shown on the drawings and schedules. Conceal fastenings unless otherwise

addition of a 16-gauge screwed—in top cap to prevent water

indicated. Exterior Frames: Level 2, 16-gauge B. Fabricate frames with mitered and faces only welded corners. re-prime at the welded areas. All welds to be flush with neatly

### mitered or butted material cuts. C. All frames shall have minimum 7 gauge hinge reinforcements, 14—gauge lock strike reinforcing, and 12—gauge closer reinforcing.

- A. Comply with provisions of SDI-105, "Recommended Erection Instructions for Steel Door Frames," unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and
- B. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T—shaped anchors. Coordinate frame anchor placement with wall construction.

### Coordinate installation of hardware. D. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

### 08700 - DOOR HARDWARE

infiltration.

A. Submit copies of finish hardware schedule in vertical format, listing each door opening, and organized into "hardware sets" indicating complete designations of every item required for each door opening to function as intended. Note any special mounting instructions or

### requirements with the hardware schedule. B. Submit catalog cuts and/or product data sheets for all scheduled finish hardware.

### A. All items, except as noted below, shall be warranted in writing by the manufacturer against failure due to defective materials and workmanship for a minimum period of one (1) year commencing on the date of final completion and acceptance. In the event of product

failure, promptly repair or replace item with no additional cost to the

### owner. Cylindrical locksets — Heavy Duty: Five (5) years. Door closers: Ten (10) years

INSTALLATION

- HARDWARE GROUPS A. MEN and WOMEN (doors 101 and 102) — Provide pushplate, pull,
- deadbolt, flushbolt, closer with adjustble stop and hold open, sign, weathering, and hinges. B. STORAGE (door 103) - Provide storeroom type lever-lockset, latch—guard, deadbolt, overhead stop, weathering and hinges.

Cylinders Best (verify with Owner)

Push / Pulls Trimco (4" x 16")

- A. Provide the following or approved equal: Hinges Hager BB1279 Norton Security Series parallel arm Closers Locksets Best 9K Series
- Deadbolts Best 9K Series Flushbolts Adams Rite Cylinder Operated Flushbolt -1870 HM Series A. (Restroom Doors to lock in the full open position)
- Latch-guard Trimco Weathering Pemko Wall Stops Rockwood Trimco (Men, Women, International symbol of accessibility).

### any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

1. "Recommended Locations for Builders Hardware for Standard

A. All hardware to be furnished in US32D 630 Stainless Steel Satin

- A. Mount hardware units at heights indicated in the following applicable publications, except as specifically indicated or required to comply with the governing regulations.
- Steel Doors and Frames" by the Door and Hardware Institute (DHI.) 2. All hardware shall be applied and installed in accordance with best trade practice by an experienced hardware installer. Care shall be exercised not to mar or damage adjacent work. B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is

required to install hardware onto or into surfaces that are later to be

painted or finished in another way, coordinate removal, storage, and

reinstallation or application of surface protection with finishing work

specified in the Division 9 Sections. Do not install surface—mounted

items; and caulking of all joints as required by these specifications

### items until finishes have been completed on the substrates involved.

SECTION 09900 — PAINTS AND COATINGS

- A. The work of this Section includes prep, priming, sanding and cleaning; painting/staining and finishing of all wood walls, ceilings, soffits, beams and wood trim; painting of all hollow metal door and door frames; painting of unfinished mechanical, plumbing and electrical
- and as directed by the Architect. B. Paint and stain colors will be selected by the Architect after all samples are submitted and approved. The Architect will issue a color schedule with an itemized list of colors to be applied. No paint shall be applied until the color schedule is issued. Rquirements of this section are that all items, and surfaces which
- are normally painted and finished in a project of this type and quality be included. All toilet room walls shall have block—fill and an D. elastomeric paint system. Typical plywood and cedar siding finished soffits and ceilings shall be stained. Provide a clear graffiti—guard system over CMU surfaces that are intended to be left without a paint system (submit a sample of each with the graffiti guard applied, prior to approval). Dayton Superior — Crystal Seal OTC (or approved equal) to cured concrete slab.

### SECTION 09900 - PAINTS AND COATINGS (continued)

content. Paint color fan deck.

- A. Product Data: Provide data on all finishing products, including VOC
  - B. Samples: Submit two paper chip samples, 8 x 8 inch in size
  - illustrating range of colors and textures available for each surface finishing product scheduled.
  - C. Manufacturer's Instructions: Indicate special surface preparation D. Maintenance Data: Submit data on cleaning, touch—up, and repair of

### painted and coated surfaces.

### A. Verify that surfaces are ready to receive Work as instructed by the

### product manufacturer. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

- A. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface
- Impervious Surfaces: Remove mildew by scrubbing with solution of tetra—sodium phosphate and bleach. Rinse with clean water and allow surface to drv. Shop—Primed Steel Surfaces to be Finish Painted: Sand and scrape
- to remove loose primer and rust. Feather edges to make touch—up patches inconspicuous. Clean surfaces with solvent. Prime bare steel Interior Wood Items to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has
- installation. F. Interior Wood Items to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with D. Provide temporary shipping bars to be removed before setting frames. gloss varnish reduced 25 percent with thinner.

dried; sand between coats. Back prime concealed surfaces before

Two separate coats of paint or stain shall be applied. Allow applied

- Apply products in accordance with manufacturer's instructions. Caulk joints between similar materials, fill nail holes, prime and clean
- coats to dry before next coat is applied. Apply each coat to uniform

surfaces to be painted prior to painting.

### D. Caulk joints at perimeter of plumbing fixture and wall or floor. SECTION 10155 - TOILET PARTITIONS

### SUBMITTALS. A. Submit manufacturer's detailed technical data for materials, fabrication and installation. Include catalog cuts of hardware, anchors, fastenings and accessories. Transmit copy of each to the

toilet partition assemblies which are not fully described in

Provide one set actual samples of available finishes for Architect's Comply with Handicap Accessibility requirements of "The Americans With Disabilities Act." Submit setting drawings, templates and

instructions for the installation of anchorage devices built into other

density polyethylene doors and hardware by Santana or approved

manufacturer's data. Show all anchorage and accessory items.

Installer. Submit shop drawings for the fabrication and erection of

### A. The work of this section includes stall doors at each of the toilets. Partitions shall be constructed of CMU. Provide heavy—duty high

- Material: Solid Plastic High Density Polyethylene Type: Pilaster type, Finish: Colors as selected from manufacturer's standards Hardware and Accessories: solid plastic pilaster shoes and full continuous plastic wall brackets, color to coordinate with system. Hardware: Manufacturer's standard design, heavy—duty operating
- Fasteners: Manufacturer's standard exposed fasteners of finished to match hardware, with security screw—type heads and nuts. For each stall, pull, heavy slide bar latch, rubber—tipped bumpers, gravity hinges with concealed ball—bearing rollers. Coordinate,

hardware and accessories, cast aluminum. Anchorages and

### prepare as required for other accessories as specified in this

INSTALLATION When possible, take field measurement prior to preparation of shop drawings and fabrications to ensure proper fitting of the work. Otherwise, indicate field measurements on final shop drawings. Furnish inserts and anchoring devices which must be built into other

inch between panels and walls. Install door bumpers on partitions or

work for the installation of toilet partitions and related work. Coordinate delivery with other work to avoid delay. Install partitions rigid, straight, plumb and level, with the panels laid out as shown on Drawings. Provide clearances of not more than 1/2 inch between pilasters and panels, and not more than one

copies of installation instructions to the Installer.

### Provide quality of finish, including thickness of plating or coating (if SECTION 10800 - TOILET ACCESSORIES

### SUBMITTALS. A. Submit product literature of each proposed accessory to the Architect for review and approval. Submit manufacturer's technical

x 30", (or approved equal)

recommended by manufacturer.

A. The work of this section includes the following items: Hand Dryer, World Hand Dryer model XA5 surface mount. Diaper Changing Stations, Bobrick B—2210 (or approved equal)

data and installation instructions for each accessory. Transmit

With Disabilities Act." Submit setting drawings, templates and

instructions for the installation of anchorage devices built into other

Stainless Steel Mirrors (provide at each lav), Bradley Model 748, 24"

B. Comply with Handicap Accessibility requirements of "The Americans

Napkin/Tampon Disposal (provide at each women's toilet), Bradley 4722-15 (or approved equal) Toilet Paper Holders, Supplied by Owner, Installed by General Contractor

Grab Bars, Bradley Model 812 (or approved equal)

### Contractor

handicapped.

A. Use concealed fastenings. Provide anchors, bolts and other necessary anchorages, and attach accessories securely to walls and partitions in locations as shown or directed. Install concealed mounting devices and fasteners fabricated of the

same material as the accessories, or of galvanized steel, as

Paper Towel Dispenser, Supplied by Owner, Installed by General

the accessories Provide theft—resistant fasteners for all accessory mountings. Secure accessories in accordance with the manufacturer's instructions for each item and each type of substrate construction. Unless otherwise indicated, align units with fixtures, other elements

and as directed by Architect. Conform to The Americans With Disabilities Act for positions and mounting heights for access to the

Install exposed mounting devices and fasteners finished to match

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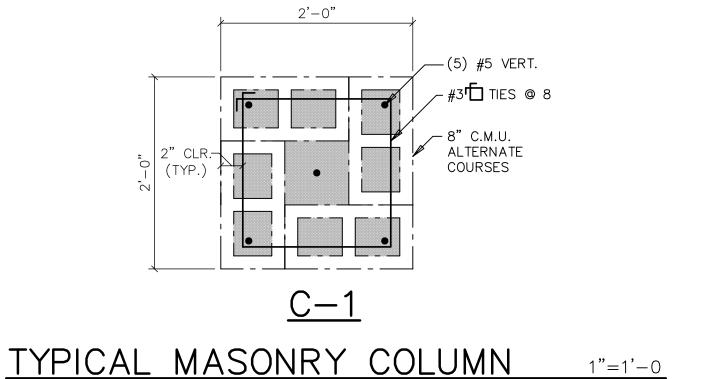
CD 8/17/10

1. REINFORCE CONCRETE SLAB WITH #4 @ 16 EACH WAY. PLACE IN MIDDLE OF SLAB.

1/4"=1'-0 NORTH

	LOOSE LINTE	L SCHEDULE	
OPENING	LINTEL	BEARING EA. END	REMARKS
3'-6 OR LESS	L 3 1/2x3x1/4	4"	S.L.V.

 WHERE ANGLE LINTELS ARE REQUIRED, PROVIDE ONE ANGLE FOR EACH 4" OR LESS THICKNESS OF MASONRY.



### GENERAL NOTES

1. LIVE LOADS USED IN DESIGN: A. ROOF (SNOW)B. WIND	30 PSF
EXPOSURE	C
BUILDING CATEGORY	Ĭ
IMPORTANCE FACTOR (Iw)	1.0
V <sub>3s</sub>	90 mph
V <sub>fm</sub>	75 mph
C. SEISMIC	·
SEISMIC USE GROUP	
IMPORTANCE FACTOR (Ie)	1.0
SPECTRAL RESPONSE COEFFICIENTS	
S <sub>DS</sub>	0.302
S <sub>D1</sub>	
SITE CLASS	C

BASIC SEISMIC
FORCE RESISTING SYSTEM -----ORDINARY REINFORCED MASONRY SHEAR WALLS
DESIGN BASE SHEAR -----35k
ANALYSIS PROCEDURE -----EQUIVALENT LATERAL FORCE PROCEDURE

### 2. CONCRETE:

- A. ALL CONCRETE SHALL DEVELOP 3,000 PSI COMPRESSIVE STRENGTH IN 28 DAYS.
  B. ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60.
  C. NO SPLICES OF REINFORCEMENT SHALL BE MADE EXCEPT AS DETAILED OR AUTHORIZED BY THE STRUCTURAL ENGINEER. LAP SPLICES, WHERE PERMITTED, SHALL BE A MINIMUM
- OF 36 BAR DIAMETERS. MAKE ALL BARS CONTINUOUS AROUND CORNERS.

  D. STAGGER SPLICES A MINIMUM OF 4'-0 FOR TOP AND BOTTOM CONTINUOUS BARS IN FOUNDATIONS, UNLESS OTHERWISE SHOWN OR NOTED.
- 3. WOOD:
  A. ALL BEAMS AND HEADERS 2 TO 4 INCHES THICK SHALL BE HEM-FIR NO. 2 AND BETTER WITH Fb = 850 PSI AND E = 1,300,000 PSI.
- B. STUDS AND PLATES SHALL BE HEM-FIR IN STUD GRADE WITH Fb = 675 PSI AND E = 1,200,000 PSI.
- E = 1,200,000 PSI.

  C. GLUE LAMINATED (G.L.) BEAMS:

  (1) ALL LAMINATED MEMBERS SHALL BE FARRICATED WITH ONE OF THE FOLLOW.
- (1) ALL LAMINATED MEMBERS SHALL BE FABRICATED WITH ONE OF THE FOLLOWING SPECIES:
   DOUGLAS FIR, HEMLOCK, LARCH, OR SOUTHERN PINE.
   (2) LAMINATED MEMBERS SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH THE
- STANDARD SPECIFICATIONS FOR THE DESIGN AND FABRICATION OF STRUCTURAL GLUED LAMINATED LUMBER, PUBLISHED BY THE A.I.T.C. AND THE APPROPRIATE LUMBER PRODUCER'S ASSOCIATION.
- (3) LAMINATED MEMBERS SHALL BE FABRICATED AS FOLLOWS: a. BEAMS:
- SIMPLE SPAN ----- 24F-V4
  CONTINUOUS AND CANTILEVERS -----24F-V8

  (4) LAMINATED MEMBERS SHALL BE BUILT UP USING 2" NOMINAL MATERIAL. LAMINATED
- MEMBER SIZES NOTED ARE NET.

  (5) MEMBERS EXPOSED TO VIEW SHALL BE FURNISHED IN "ARCHITECTURAL" APPEARANCE GRADE. MEMBERS TO BE CONCEALED BY FINISH MATERIALS OR CEILINGS MAY BE
- "INDUSTRIAL" GRADE.

  (6) ADHESIVES USED SHALL COMPLY WITH THE SPECIFICATIONS AS CONTAINED IN

  VOLUNTARY PRODUCT STANDARD PS56—73, STRUCTURAL GLUED LAMINATED TIMBER.

  WET—USE ADHESIVES ARE TO BE USED FOR ALL MEMBERS EXPOSED TO THE WEATHER.
- 4. MASONRY:
  A. ALL REINFORCING IN MASONRY WALLS SHALL BE FULLY ENCLOSED WITH GROUT. USE PEA
- GRAVEL MIX WITH f'c = 3,000 PSI.

  B. CONCRETE MASONRY SHALL CONSIST OF LIGHTWEIGHT CONCRETE BLOCK WITH A COMPRESSIVE STRENGTH OF 1,900 PSI.
- C. FILL ALL VOIDS AND BLOCK CELLS SOLID WITH MORTAR FOR A DISTANCE OF 24" BENEATH AND 12" EACH SIDE OF ALL BEAM REACTIONS OR OTHER CONCENTRATED LOADS, UNLESS
- OTHERWISE SHOWN OR NOTED.

  D. MASONRY IS TO BE LAID IN TYPE "M" OR "S" MORTAR IN ACCORDANCE WITH TABLE NO. 2103.7 IN THE INTERNATIONAL BUILDING CODE. TYPE "N" MASONRY CEMENT MORTAR IS NOT
- ACCEPTABLE.

  E. MASONRY WALLS MUST BE ADEQUATELY BRACED DURING CONSTRUCTION TO WITHSTAND WIND AND SEISMIC LOADS. BRACING MUST REMAIN IN PLACE UNTIL ROOF (AND FLOOR)
- WIND AND SEISMIC LOADS. BRACING MUST REMAIN IN PLACE UNTIL ROOF (AND FLOOD DIAPHRAGMS ARE FULLY CAPABLE OF PROVIDING LATERAL SUPPORT.

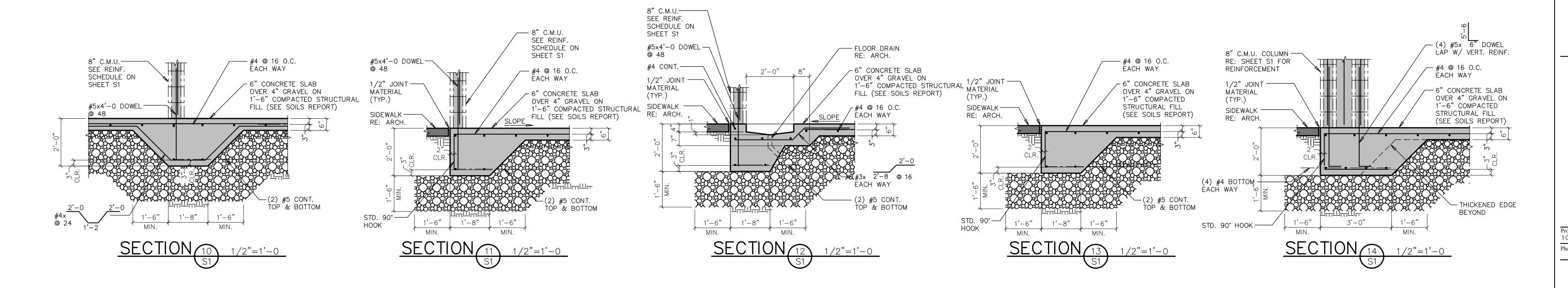
### 5. FOUNDATIONS

- C. SOILS ENGINEER OF RECORD SHALL EXAMINE EXCAVATION TO VERIFY CONDITIONS PRIOR TO CONSTRUCTION.
- 6. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

### C.M.U. REINFORCING SCHEDULE

- PROVIDE #5 @ 48 VERTICAL REINFORCING AT 8" C.M.U. GROUT ALL VERTICAL REINFORCING SOLID. VERTICAL REINFORCEMENT SHALL EXTEND THROUGH BOND BEAMS TO 2" CLR. BELOW OF C.M.U. USE STANDARD "DUR-O-WAL" "LADUR TYPE" @ 16" O.C. HORIZONTAL
- REINFORCING.

  2. PROVIDE #5 CONT. VERTICAL EACH SIDE OF ALL OPENINGS AND CONTROL JOINTS. EXTEND 2'-0 MINIMUM EACH SIDE OF OPENING. GROUT SOLID.
- 3. LAP ALL VERTICAL REINFORCING MINIMUM OF 40 BAR DIAMETERS.
- 4. PROVIDE  $\#5 \times 4'-0 \otimes 48$  DOWELS FROM STEMWALL TO C.M.U. LAP 2'-0 WITH VERTICAL REINFORCING AND GROUT SOLID.



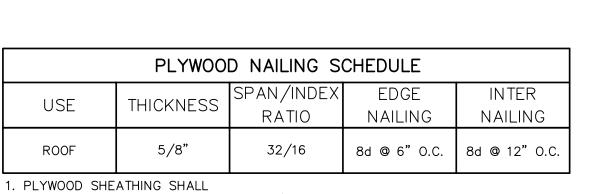
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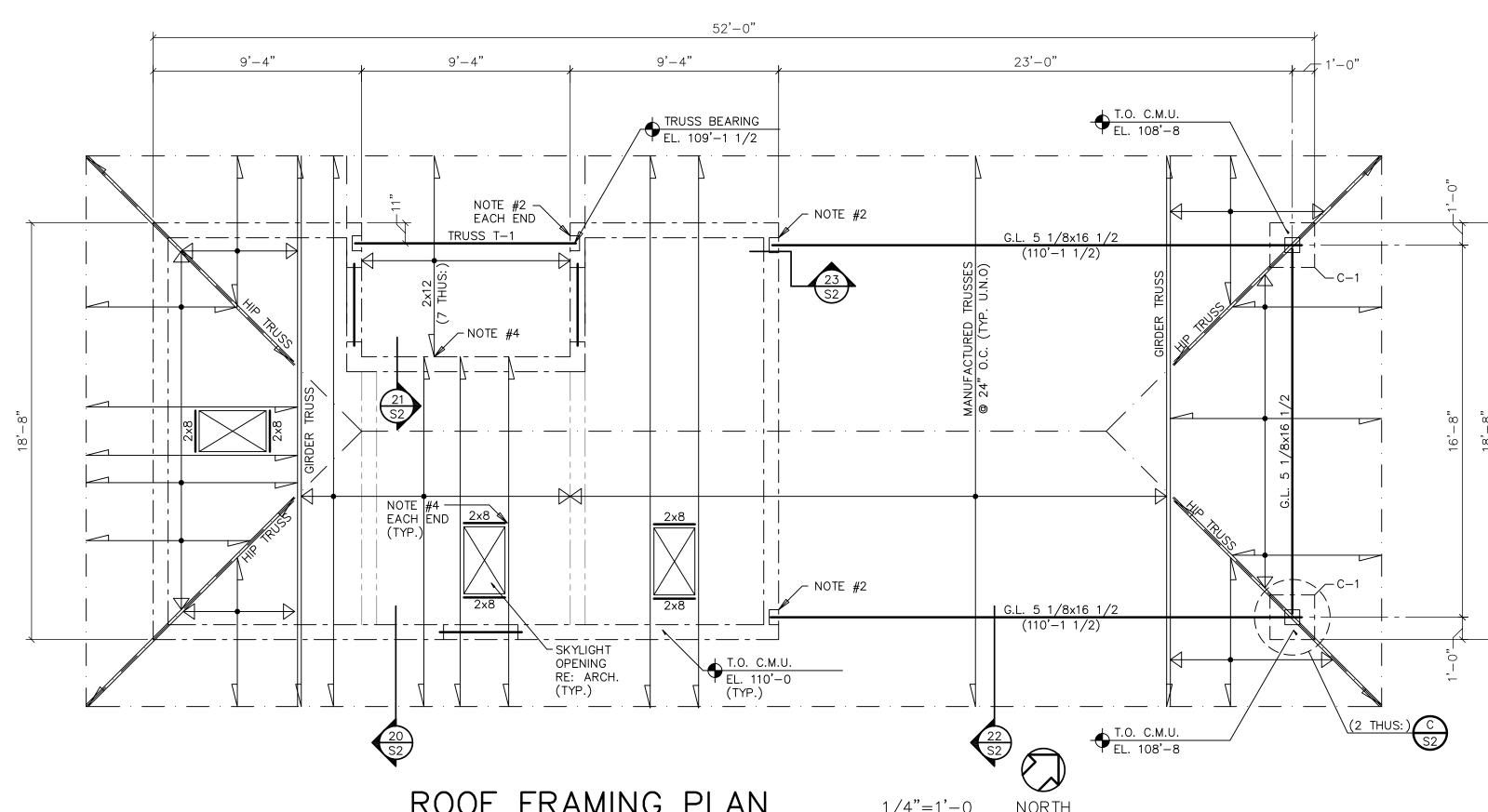


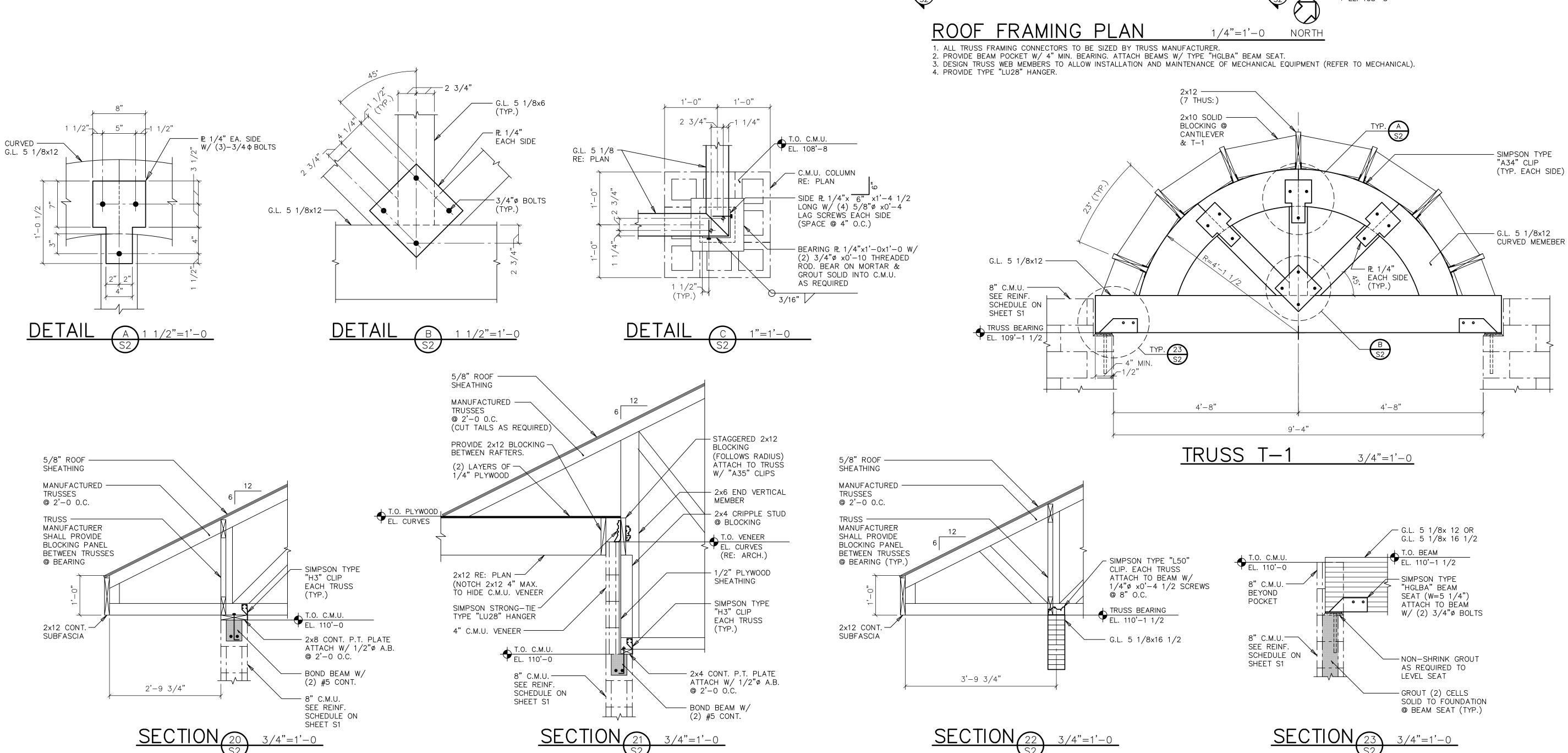
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BE APA GRADE TRADEMARKED CDX W/ EXTERIOR GLUE. LAY UP PLYWOOD W/ FACE GRAIN PERPENDICULAR TO SUPPORTS AND STAGGER JOINTS. ALL NAILING COMMON NAILS; RING SHANKED FOR ROOF AND FLOOR SHEATHING. REFER TO TABLE ABOVE FOR USE REQUIREMENTS. 2. O.S.B. SHEATHING MAY BE USED AS AN ALTERNATE TO PLYWOOD W/

PRIOR APPROVAL OF OWNER AND ARCHITECT. O.S.B. SHEATHING SHALL HAVE A SPAN RATING EQUIVALENT TO OR BETTER THAN THE PLYWOOD IT REPLACES. ATTACHMENT AND THICKNESS (WITHIN 1/32") SHALL BE THE SAME AS THE PLYWOOD IT REPLACES.





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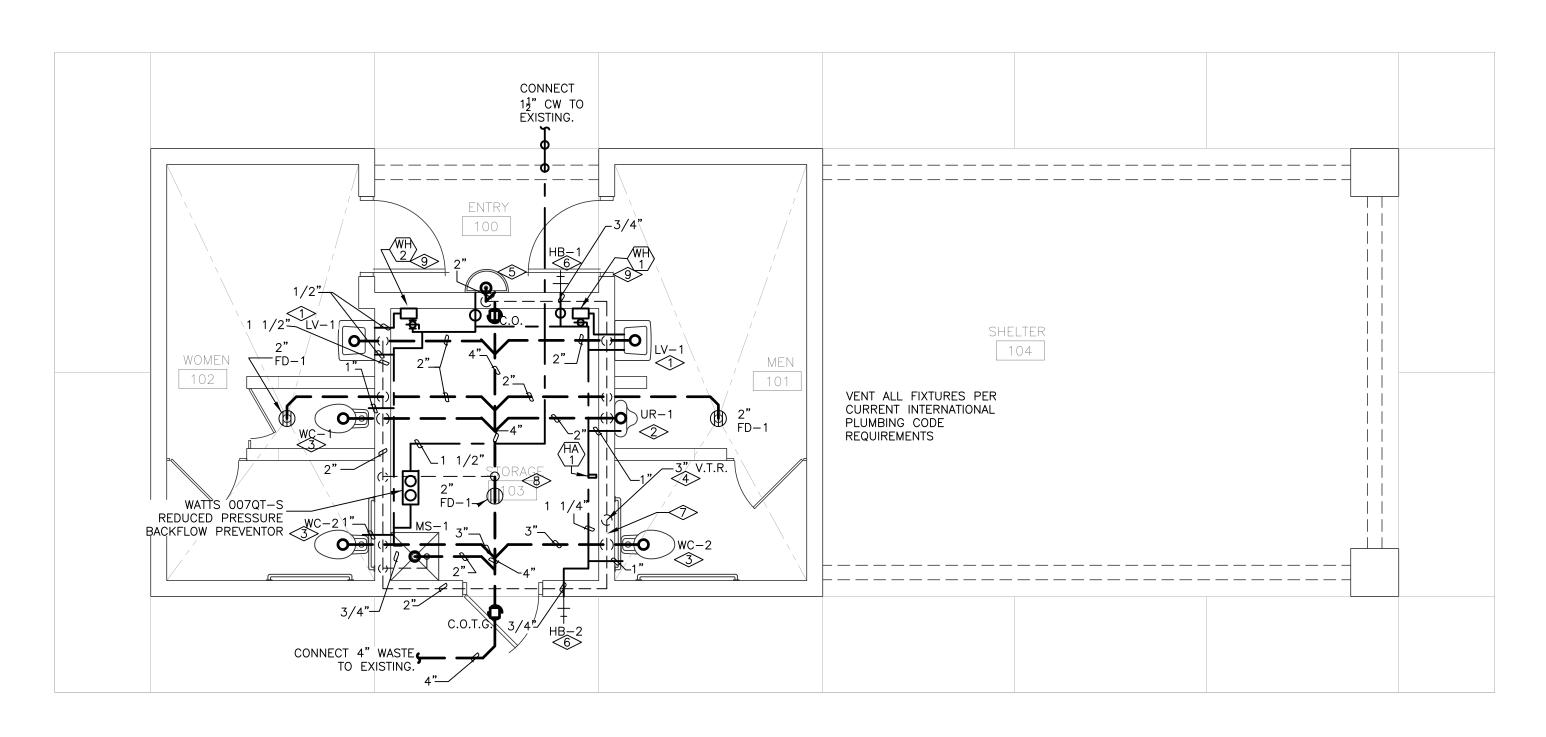
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400 G GRAND

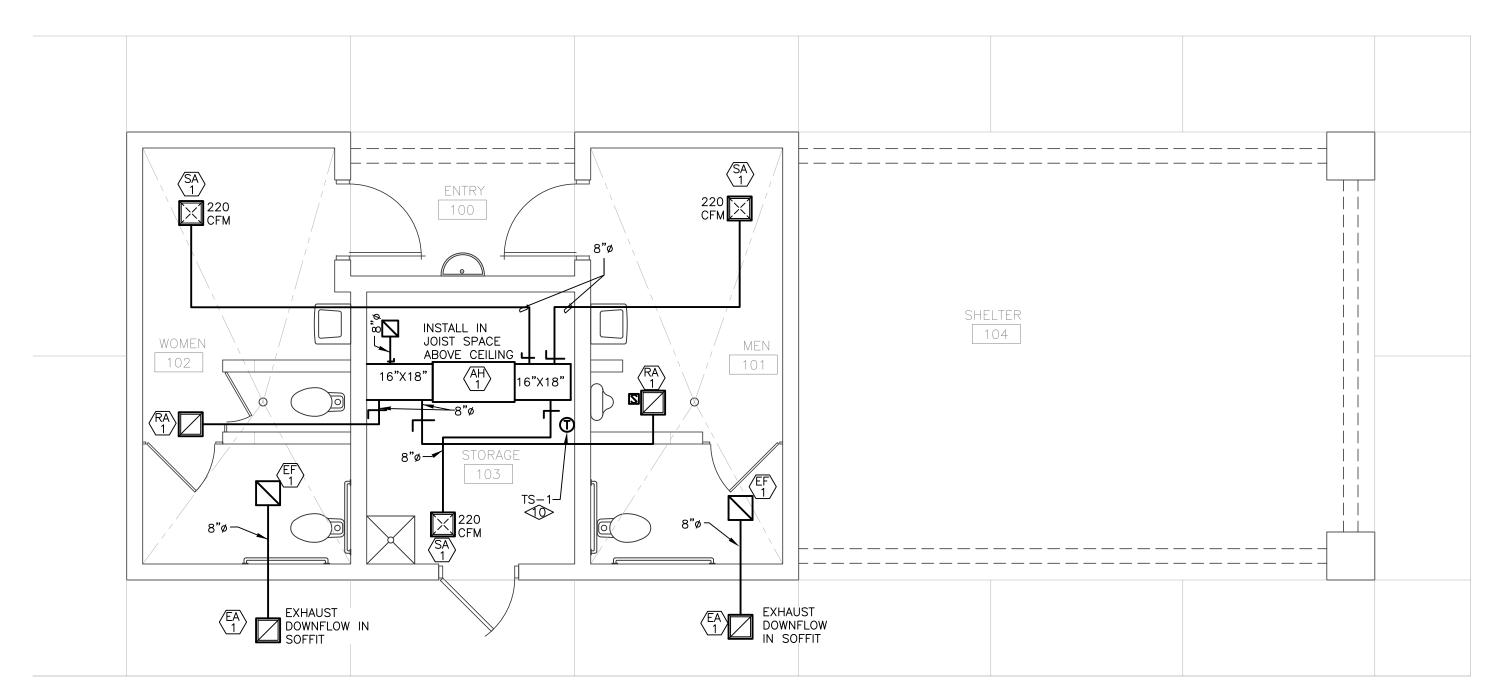
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Drawn by: JDG 10.073 Issue Date 08/17/10 CD

**S2** 



# PLUMBING FLOOR PLAN SCALE: 1/4"=1'-0"



MECHANICAL FLOOR PLAN SCALE: 1/4"=1'-0"

DRAWING FLAG NOTES: <

GENERAL NOTE:

ALLOWED.

1" CW DOWN ON WALL AND THROUGH WALL TO LAVATORY.  $1\frac{1}{2}$ " WASTE DOWN TO 2" WASTE BELOW FLOOR AND  $1\frac{1}{2}$ " VENT UP ON WALL TO ABOVE CEILING.

1" CW DOWN ON WALL AND THROUGH WALL TO URINAL. 2" WASTE DOWN TO 2" WASTE BELOW FLOOR AND  $1\frac{1}{2}$ " VENT UP ON WALL TO ABOVE CEILING.

3> 1" CW DOWN ON WALL AND THROUGH WALL TO WATER CLOSET. 4" WASTE UNDER FLOOR AND 2" VENT UP ON WALL TO ABOVE CEILING.

COMBINE ALL VENTS TO 3" VENT THRU ROOF. LOCATE VTR ON SE SIDE OF ROOF RIDGE LINE.

 $\frac{1}{2}$ " CW DOWN ON WALL AND THROUGH TO DRINKING FOUNTAIN.  $1\frac{1}{2}$ " WASTE DOWN ON WALL TO 2" WASTE BELOW FLOOR. 12" VENT UP ON WALL TO ABOVE

6 3" CW DOWN ON WALL AND THROUGH WALL TO HOSE BIBB.

2" VENT UP ON WALL TO ABOVE CEILING. TYPICAL ALL

1. CONTRACTOR TO VERIFY ALL SITE UTILITIES AND MODIFY/EXTEND AS REQUIRED - PROVIDE IN BID FOR

2. HORIZONTAL WATER PIPING SHALL BE LOCATED AS CLOSE TO CEILING AS POSSIBLE. ROUTE ALL VERTICAL DROPS DOWN TO FIXTURES IMMEDIATELY ADJACENT TO THE PLUMBING VENT FOR THAT FIXTURE. COORDINATE

LAYOUT OUT WITH OWNER TO MAXIMIZE USABLE WALL

ADJUSTMENTS - NO ADJUSTMENT TO BID SUM

SLOPE ALL HOT AND COLD WATER LINES TO DRAIN AT LOW POINT. INSTALL VALVES TO PROVIDE FOR COMPLETE DRAIN DOWN, TO PREVENT FREEZE DAMAGE.

(3) INSTANT HOT WATER HEATERS. SEE SCHEDULE THIS SHEET FOR FURTHER

TS-1 THERMOSTAT, ROBERTSHAW MODEL 300-201 1.25 AMPS, 10 24 VOLTS. SLIMLINE PROGRAMMABLE HEATING THERMOSTAT WITH LCD READOUT AND MODEL 10-528 REMOTE SENSOR.

WATER CLOSET (FLUSH VALVE)	WASTE	VENT	HW	CW
WATER CLOSET (FLUSH VALVE)	3"	2"	_	1"
URINAL (FLUSH VALVE)	2"	1-1/2"	_	1"
LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"
DRINKING FOUNTAIN/E.W.C.	1-1/2"	1-1/2"	_	1/2"
FLOOR DRAIN	2"	1-1/2"	_	_
MOP SINK	2"	1-1/2"	1/2"	1/2"

\*WASTE PIPES BELOW SLABS ON GRADE ARE A MINIMUM OF 2" DIA

		A	AIR DEVICE	SCHEDULI		
DESIG.	TYPE OF INSTALLATION	MANUFACTURER & MODEL NUMBER	CONNECTION SIZE	ACCESSORIES	PANEL OR FACE SIZE	NOTES
SA-1	CEILING SUPPLY	KRUEGER SHR	8"	O.B.D.	12X12	1
RA-1	CEILING RETURN	KRUEGER SHR	8"	OPEN THROAT	12X12	2
EA-1	SIDEWALL	METALAIRE RH-1	8"	OPEN THROAT	12X6	3

1. SURFACE MOUNT, FRAME 22, STEEL GRILLE CONSTRUCTION.

2. STEEL GRILLE CONSTRUCTION, O DEFLECTION.
3. PROVIDE WITH FIELD INSTALLED INSECT SCREEN.

WATER HEATER SCHEDULE												
DESIG.	ESIG. MANUFACTURE & GPM KW Ø VOLT LOCATION NOTES MODEL NUMBER RISE OUTPUT											
WH-1	STIEBEL ELTON MINI 3	.5 GPM @ 40 RISE	3 KW	1	120	ABOVE CEILING	1					
WH-2	STIEBEL ELTRON MINI 3	.5 GPM @ 40 RISE	3 KW	1	120	ABOVE CEILING	1					
	1. INSTANT HOW WATER HEATER, MOUNT ON WALL, 18" ABOVE FLOOR, PROVIDE BDT THERMOSTATIC MIXING VALVE, IN PIPING CHASE, §" CONNECTIONS.											

### PLUMBING FIXTURE SCHEDULE

DESIG.	UNIT DESCRIPTION	MANUFACTURER & CAT. ND.	DESCRIPTION	VOLTAGE AND PHASES	SIMILAR UNITS
DF-1	DRINKING FOUNTAIN	PROVIDED BY OWNER NONE	STERNS-WILLIAMS SINGLE BRUTE, SURFACE MOUNT DRINKING FOUNTAIN WITH FREEZE-RESISTANT VALVE SYSTEM MOUNTED ON BACK WALL	N/A	NONE
FD-1	FLOOR DRAIN	ZURN MODEL Z-415	DURA— COATED CAST IRON BODY FLOOR DRAIN WITH BOTTOM OUTLET, CLAMP, AND ADJUSTABLE TYPE B NICKEL BRONZE STRAINER. PIPE SIZE AS SHOWN ON DRAWING.	NO POWER REQUIRED	NONE
HA-1	WATER HAMMER ARRESTOR	ZURN MODEL Z-1700	SHOKTROL STAINLESS STEEL WATER HAMMER ARRESTOR WITH NESTING BELLOWS AND 1" IPS INLET	NO POWER REQUIRED	NONE
HB-1	HOSE BIBB	WOODFORD MODEL 24	WALL HYDRANT WITH ¾" CONNECTION, VACUUM BREAKER AND WHEEL HANDLE	NO POWER REQUIRED	NDNE
HB-2	HOSE BIBB	WOODFORD MODEL 65	AUTOMATIC DRAINING FREEZELESS WALL HYDRANT WITH 3" CONNECTION, VACUUM BREAKER AND LOOSE KEY OPERATOR.	NO POWER REQUIRED	NONE
LV-1	LAVATORY	K□HLER K-2007	KINGSTON VITREOUS CHINA WALL HUNG LAVATORY WITH HEAVY DUTY CARRIER, GRID STRAINER, OFFSET DRAIN, TRAP, KEYED STOPS, TRUEBRO LAV GUARD AND SLOAN ELF-10-A FAUCET.	24VAC	NDNE
UR-1	URINAL	KOHLER MODEL K-4989-R	FRESHMAN VITREOUS CHINA WASH 1.0 GALLON URINAL WITH \$\frac{1}{4}" REAR STUD, 2" THREADED OUTLET, WALL HUNGER AND \$LOAN 195-1 ES-S FLUSH VALVE	24VAC	NONE
WC-1	WATER CLOSET	KOHLER MODEL K-4349	WELLCOMME VITREOUS CHINA ELONGATED 1.6 GALLON FLOOR MOUNT SIPHON JET FLUSHING ACTION TOILET WITH 1½" REAR SPUD. PROVIDE WITH OPEN FRONT SEAT, BOLT CAS. AND SLOAN MODEL 140-1.6 ES-S	24VAC	NONE
WC-2	WATER CLOSET	KOHLER MODEL K-4367	HIGH CLIFF VITREOUS CHINA 17½" HIGH ELONGATED 1.6 GALLON FLOOR MOUNT SIPHON JET FLUSHING ACTION TOILET WITH 1½" REAR STUB. PROVIDE WITH OPEN FRONT SEAT, BOLT CAPS, AND SLOAN 140-1.6 ES-S FLUSH VALVE.	24VAC	NONE
MS-1	CAST IN PLACE MOP SINK	SEE DESCRIPTION	CAST IN PLACE 2'X2' MOP SINK. PROVIDE FD-1 FOR FLOOR DRAIN AND FAUCET 36"A.F.F. WILLIAMS T-10-VB	24VAC	NONE

	EXHAUST FAN SCHEDULE											
DESIG.	CFM	S.F.	DIA.	RPM	WATTS	Ø	VOLT	MANUFACTURER & MODEL NUMBER	MOUNTING	POWERED BY	NOTES	
EF-1	143	.25			80.7	1	115	COOK GC 162	CEILING	SWITCH	1	
EF-1 143 .25 80.7 1 115 COOK GC 162 CEILING SWITCH							SWITCH	1				
1. PROVI	DE WITH S	TEEL INTER	RIOR GRILL	ES.		•			,			

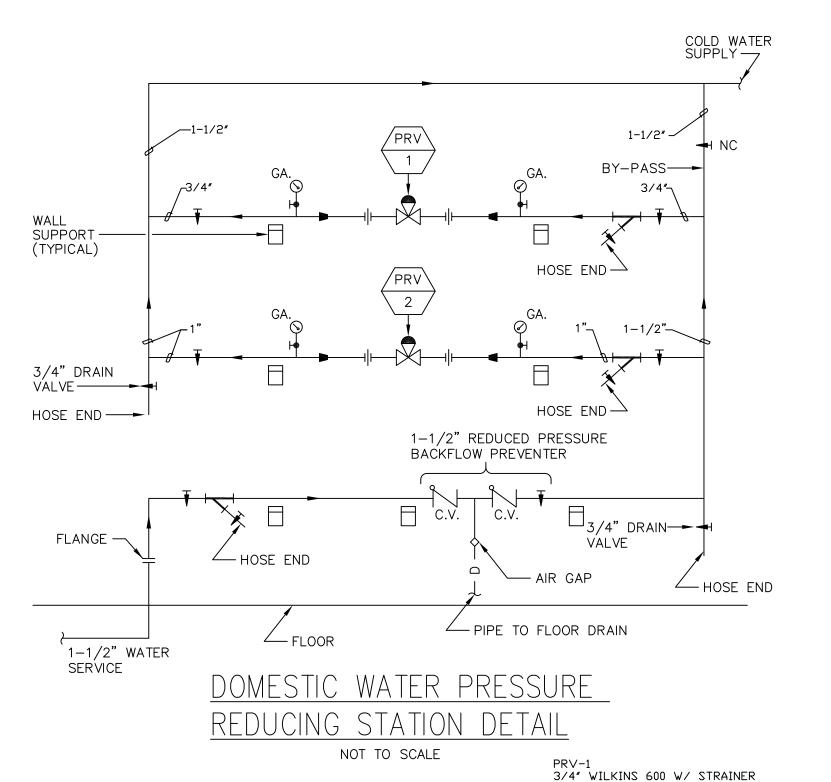
AIR HANDLING UNIT SCHEDULE
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								,	\	1 17	, , , ,		1 1	O 1 11								Pro
DESIG.	AREA	CFM @	EXT	MIN.	H	IEATIN	1G (	COIL	C	DNDE	NSI	ER	EV	AP. FA	N	Į	UNIT	MANUFACTURE	HTG. INPUT	COIL	NOTES	$\frac{10}{\text{Ph}}$
	SERVED	6350'	S.P. S.L.	CKT. AMPS	NO.	KW	Ø	VOLT	NO.	RLA	Ø	VOLT	RLA Ø	VOLT	HP	Ø	VOLT	& MODEL NO.	KW	COOLING CAP. MBH.	. INOTES	-
HU-1	ENTIRE BUILDING	660	.3"	27.1	1	6	1	23								1	230	FIRST CO. 18XMBX	6		1	
OTES: . HORIZONTA	L FAN COIL, WITH	1/8 HP DIRECT	DRIVE THERMA	LLY PROTECTE	D MOTO	R. 6 KW	HEATE	ER, FILTERS,	CONTRA	CTOR, AN	ND RE	ELAY TO C	YCLE FAN A	ND HEATIN	G ELEM	ENTS.						

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Drawn by:
BB/RC
Issue Date
08/17/10 Project No. 10-124



1" WILKINS 600 W/ STRAINER

MECHANICAL SPECIFICATIONS.

SPECIFIED OR IMPLIED.

### 1. SCOPE OF WORK

- A. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER
- B. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK
- OF THIS NATURE THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF
- THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS. D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

A. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

### 3. SHOP DRAWINGS

A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ACHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

### 3. FLEXIBLE DUCT WORK

- A. FLEXIBLE TYPE DUCT SHALL BE OF TWO ELEMENT SPIRAL CONSTRUCTION COMPOSED OF A CORROSION RESISTANT METAL SUPPORTING SPIRAL AND COATED FABRIC WITH A MINERIAL BASE. FLEXIBLE DUCT CONNECTORS SHALL BE LISTED BY U.L., CLASS 1 DUCTS, AND SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50
- B. USE OF FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN
- 6 LINEAR FEET PER RUN. CONTRACTOR SHALL BE CAREFUL SO AS NOT TO KINK OR COLLAPSE FLEXIBLE DUCT.

### 4. DUCTWORK

- A. THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "SMACNA" APPLICABLE MANUALS.
- ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
- CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON DRAWINGS.
- ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS, SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 150 CFM.
- ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA" STANDARDS AND ACCEPTED GOOD PRACTICE. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES.DIMENSIONS MAY BE
- CHANGED SO LONG AS THE NET FREE FACE AREA IS MAINTAINED. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1-1/2"
- FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.

### 5. HVAC CONTROLS

CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

### ELECTRICAL

A. CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR A. FOR LOCATION OF WIRING FOR EACH HVAC UNIT.

### 6. MISCELLANEOUS

- A. ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE. COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION.
- DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY
- ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE

### 7. TESTING AND BALANCING

A. THE HVAC SYSTEM SHALL BE TESTED AND AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPER-VISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

### 8. GUARANTEE

- A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE(1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S
- FOR THE SAME PERIOD, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

### PLUMBING SPECIFICATION.

### 1. SCOPE OF WORK:

- THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
- ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION), ALL LOCAL CODES AND ALL OTHER REGULATION
- GOVERNING WORK OF THIS NATURE. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
- ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

### PERMITS

THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL

### 3. SHOP DRAWINGS

- SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE
- ACHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

### 4. DOMESTIC WATER SUPPLY PIPING

- UNDERGROUND: PROVIDE TYPE "K" SOFT DRAWN COPPER TUBING WITH BRAZED CONNECTIONS.
- ABOVE GROUND: PROVIDE TYPE "L" HARD DRAWN COPPER TUBING WITH 125 PSI SOLDER JOINTS, COPPER OR BRASS FITTINGS.
- ALL SOLDER TO BE "NO LEAD" TYPE. ALL HOT WATER PIPING TO BE INSULATED WITH 1" FIBERGLASS INSULATION. ALL COLD WATER PIPING TO BE INSULATED WITH ½" FOAM INSULATION.

### 5. SANTARY/STORM DRAINAGE AND VENT PIPING.

- ABOVE GRADE -2" BELOW: SCH.40 GALV. STL. PIPE WITH SCREWED ENDS OR SCH. 40PVC WITH SOLVENT JOINTS OR DWV COPPER WITH SOLDER JOINTS. ALL SOLDER TO BE "NO LEAD" TYPE. -3" AND ABOVE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SCH 40 PVC WITH SOLVENT JOINTS.
- BELOW GRADE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR
- SCH 40 PVC WITH SOLVENT JOINTS. PVC PIPING SHALL NOT BE USED IN AIR PLENUM CEILINGS AND SHALL NOT CROSS FIRE RATED WALLS, CEILINGS, OR FLOORS. DRAINAGE PIPING SHALL BE RUN AS STRAIGHT AS POSSIBLE AND SHALL HAVE LONG TURN
- DRAINAGE PIPING 3" SIZE AND SMALLER SHALL RUN AT A UNIFORM GRADE OF AT LEAST
- 1/4" PER FOOT. AND PIPING LARGER THAN 3" SHALL BE RUN AT A GRADE OF NO LESS THAN 1/8"PER FOOT.
- ALL VENT PIPING SHALL BE SLOPED TO DRAIN BACK TO FIXTURES. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FLASHING OF THE VENT PIPING RUN THROUGH THE ROOF.
- ALL STUB-INS AND/OR SLAB OR WALL PENETRATION TO BE PER INTERNATIONAL PLUMBING CODE (LATEST EDITION).ALL PIPING PENETRATIONS OF BUILDING FOUNDATIONS OR FOOTINGS SHALL BE SLEEVED.

- ABOVE GRADE ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE AND PERFORMED METAL TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL BE AS SPECIFIED IN INTERNATIONAL PLUMBING CODE (LATEST EDITION).
- BELOW GRADE EARTH SHALL BE EXCAVATED TO A MINIMUM DEPTH WITH AN EVEN SURFACE TO INSURE SOLID BEARING OF PIPE FOR ITS ENTIRE LENGTH.
- INTERIOR: THE PIPE SHALL BE INSTALLED (UNLESS OTHERWISE SPECIFIED)A MINIMUM OF 4 INCHES BELOW THE BOTTOM OF THE SLAB AND SHALL NOT BE IN ANY DIRECT CONTACT WITH THE CONCRETE AT ANY POINT.
- EXTERIOR: THE WATER PIPE SHALL HAVE A MINIMUM OF 42" OF COVER AND THE SANITARY WASTE PIPE SHALL HAVE A MINIMUM OF 24" OF COVER.

### 7. MISCELLANEOUS

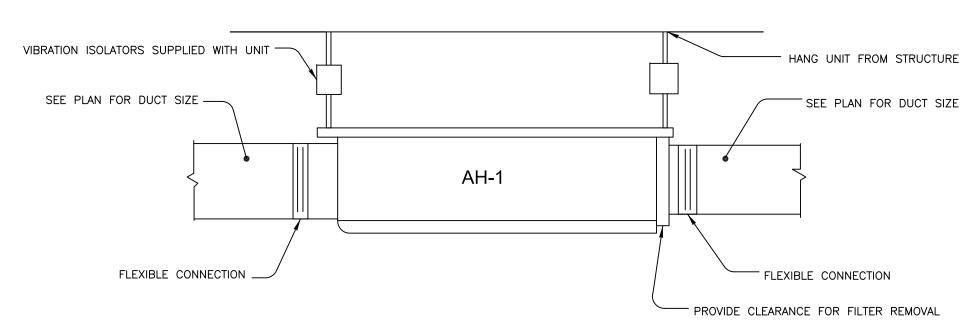
- COORDINATE INSTALLATION OF ALL ROOFS FLASHING AT ROOF PENETRATION. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS
- AND DIMENSIONS AT THE JOB SITE. THE PLUMBING PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION. THE EXACT DIMENSIONS OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT THE AVAILABLE SPACE.

### TESTING

PLUMBING SYSTEM SHALL BE FLOW AND PRESSURE TESTED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION).

### 9. GUARANTEE

- MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE AND BE GUARANTEED FOR THE SAME PERIOD.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.



AIR HANDLING UNIT MOUNTING DETAIL

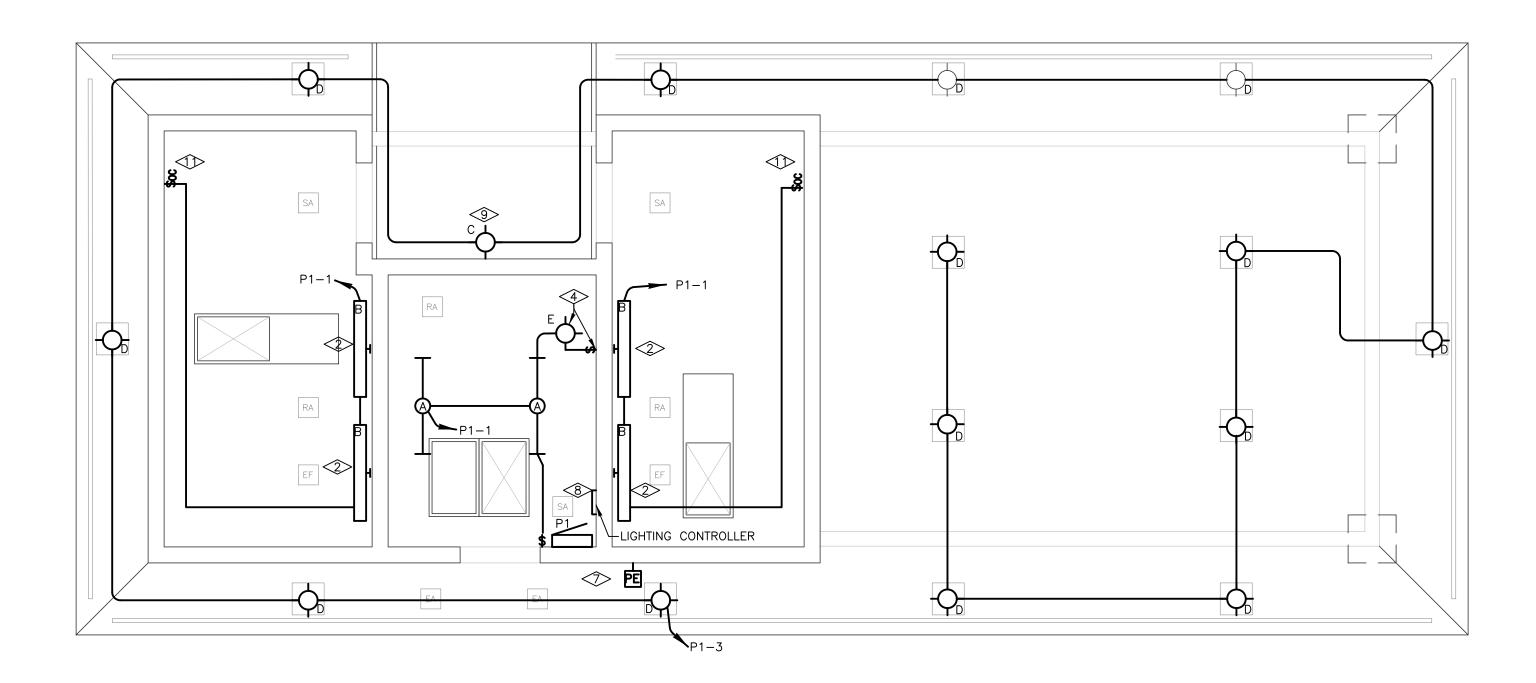
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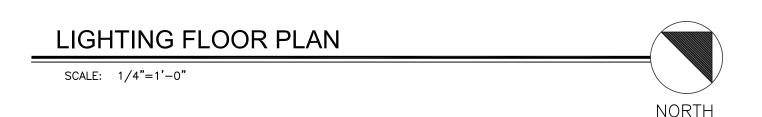
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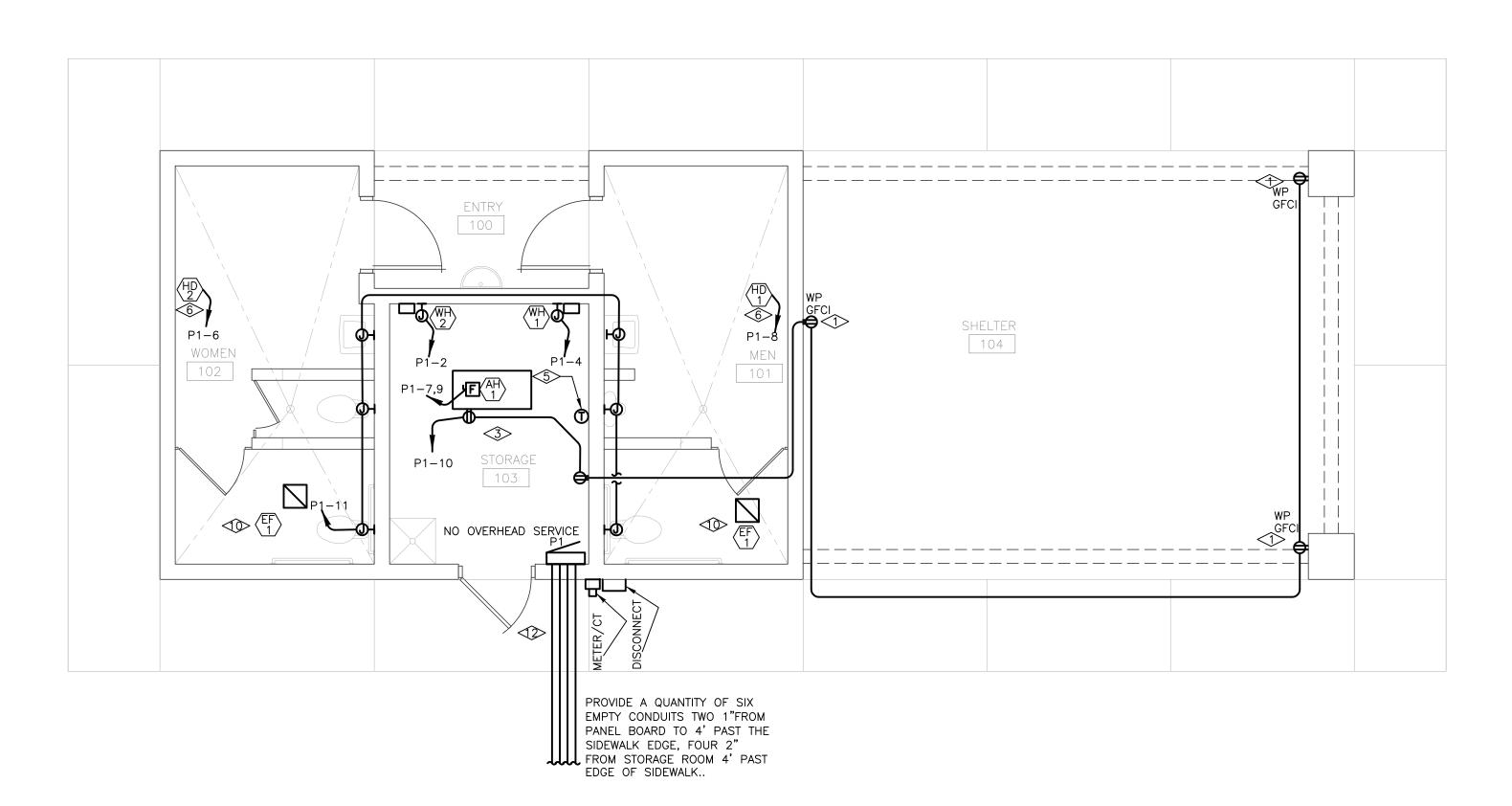


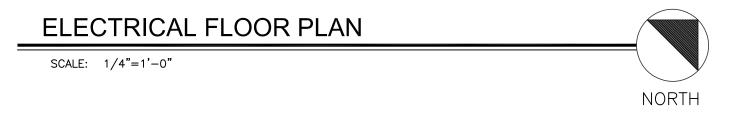
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### DRAWING FLAG NOTES:

- EXTERIOR RECEPTACLE AND LUG COVERS SHALL BE WEATHERPROOF TO COMPLY WITH NEC 406.8(A) AND 406.8(B)(2). THEY SHALL BE MORTORED-IN TYPE, FLUSH MOUNTED AND LOCKABLE. ALL EXTERIOR RECEPTACLE AND PLUG COVERS SHALL BE OPENED BY A SINGLE KEY. EXTERIOR RECEPTACLE AND PLUG COVERS SHALL BE MADE OF HEAVY CAST ALUMINUM OR IRON. COORDINATE COLOR WITH THE OWNER. INSTALL CONDUITS FEEDING THE SHELTER AREA RECEPTACLES UNDER SLAB.
- TYPE "B" WALL MOUNTED LIGHT FIXTURES ARE TO BE INSTALLED SO THAT THE TOP OF THE FIXTURE RESTS FLUSH AGAINST THE CEILING.
- 3> RECEPTACLE IS TO BE SURFACE MOUNTED IN THE ATTIC IN AN EASILY ACCESSIBLE LOCATION.
- 4> LIGHT FIXTURE "E" AND SWITCH ARE MOUNTED IN ATTIC SPACE. PLACE SWITCH IN LOCATION EASILY REACHED FROM THE ATTIC ACCESS DOOR.
- SEE MECHANICAL PLAN FOR DETAILS OF THERMOSTAT. CIRCUIT THERMOSTAT WITH AH-1 TO P1-7,9.
- 6 COORDINATE EXACT LOCATION WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.
- ⟨¬> PHOTOCELL TO BE PRECISION CATALOG #T-168 OR EQUAL.
- MOUNT LIGHT FIXTURE IN THIS AREA AT 10'−4"
- CIRCUIT EXHAUST FAN IN THIS AREA TO P1-5 VIA LIGHTING CONTROLLER. PROGRAM LIGHTING CONTROL TO ENERGIZE FANS WHEN INTERIOR LIGHTS COME
- MOUNT OCCUPANCY SENSOR IN THIS LOCATION AS HIGH AS POSSIBLE TO AVOID VANDALISM. PROVIDE OCCUPANCY SENSOR WITH A ADD-A-RELAY.
- STUB (4) 1" PVC FROM P1 TO CLEAR OF CONCRETE FOR FUTURE USE.

### ELECTRICAL LEGEND

NOTE: SYMBOLS SHOWN ARE STANDARD. VARIATION AND/OR COMBINATION MAY BE USED ON THE PLANS SUCH AS \$b (b: SWITCHING DESIGNATION), ⊕⁴ (4: CIRCUIT NO.),  $\square$  30A-2P (30A-2P: 30 AMPERE-TWO POLE), ETC. THIS LIST SHOWS STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL ON THE PROJECT DRAWINGS OCCUR; THE ITEM SHALL BE PROVIDED AND INSTALLED.

■ BRANCH CIRCUIT PANELBOARD

TELEPHONE TERMINAL BOARD 

F FUSED SAFETY SWITCH / DISCONNECT

4☑ COMBINATION MOTOR STARTER □ CONTACTOR

<u>LA-7</u> CIRCUITRY HOMERUN: PANEL LA — CIR. #7 ----- CONDUIT OR WIRE CONCEALED IN WALL/CLG.

----- CONDUIT OR WIRE UNDERFLOOR/UNDERGND. 

→ WALL JUNCTION BOX - SURFACE/FLUSH

DUPLEX RECEPTACLE

SPLIT WIRED DUPLEX RECEPTACLE

THERMOSTAT ▼ TELEPHONE OUTLET

◆ COMPUTER-DATA

COMBINATION DATA/TELEPHONE TELEVISION OUTLET

SINGLE POLE SWITCH \$2 TWO POLE SWITCH

\$3 THREE-WAY SWITCH

\$4 FOUR-WAY SWITCH

\$D DIMMER SWITCH \$TO MANUAL MOTOR STARTER

A FLUORESCENT FIXTURE TYPE A

WALL BRACKET FLUORESCENT FIXTURE

⊢O→ OPEN STRIP FLUORESCENT FIXTURE

SURFACE CEILING INCANDESCENT OR H.I.D. FIXTURE WALL MOUNTED INCANDESCENT OR H.I.D. FIXTURE

RECESSED CEILING DOWN LIGHT DOUBLE FACE EXIT SIGN, WALL AND CEILING MOUNTED

SINGLE FACE EXIT SIGN, WALL AND CEILING MOUNTED QEMIO WALL MOUNTED EMERGENCY LIGHT

REMOTE MOUNTED EMERGENCY HEAD

MECHANICAL CONTRACTOR FURNISHED EQUIPMENT (A) OWNER FURNISHED EQUIPMENT

<1>→ DRAWING FLAG NOTE ROOM DESIGNATION

NL EXISTING NIGHT/SECURITY LIGHT - DO NOT SWITCH

WP WEATHERPROOF

A.F.F. ABOVE FINISHED FLOOR

A.F.G. ABOVE FINISHED GRADE GFCI GROUND FAULT CIRCUIT INTERRUPTER

RECEPTACLE IS GFCI PROTECTED FROM AN UP STREAM GFCI RECEPTACLE

EM EMERGENCY FUNCTION

42" MOUNTING HEIGHT — A.F.F. OR A.F.G. TO C.L. HIGH

HID CB INTENSITY DISCHARGE LIGHTING TYPE CIRCUIT BREAKER

SWD CB U.L. LISTED AS SWITCHING DUTY CIRCUIT BREAKER

### GENERAL NOTES:

1. ALL CONDUITS AND CONVEYANCES SHALL BE CONCEALED. IN THE EVENT THAT A NEW DEVICE IS BEING INSTALLED IN AN EXISTING DRYWALL PARTITION, PROVIDE A CUT IN TYPE BOX AND FISH FLEXIBLE CONDUIT DOWN INSIDE THE WALL FROM ABOVE THE CEILING AND REPAIR THE DRYWALL AROUND THE CONDUIT. TRANSITION TO EMT ONCE ABOVE THE CEILING.

2. SIZES OF WIRE AND CABLES ARE BASED UPON COPPER CONDUCTORS, UNLESS OTHERWISE INDICATED. ALL CIRCUITS SHALL CONTAIN (2)#12 AWG WITH (1)#12 GND IN 1/2" CONDUIT UNLESS NOTED OTHÉRWISE.

3. ALL PENETRATIONS IN OR THROUGH FIRE RATED PARTITIONS SHALL BE FIRE STOPPED IN SUCH A WAY THAT THE PENETRATION MATCHES THE FIRE RATING OF THE WALL.

4. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION BETWEEN THE APPROPRIATE DISCIPLINES AND CONTRACTORS.

5. COORDINATE ALL DEVICE, FIXTURE AND HARDWARE COLOR

SELECTIONS WITH THE ARCHITECT PRIOR TO MAKING SHOP DRAWING 6. BRANCH CIRCUIT AND SPECIAL SYSTEMS WIRING FOR DEVICES ON

WALLS IN FINISHED AREAS WHICH CANNOT BE CONCEALED SHALL BE INSTALLED IN SURFACE MOUNTED RACEWAY. 7. ALL EXPOSED CONDUITS, BOXES, ETC. IN ROOMS TO BE PAINTED SHALL BE PAINTED TO MATCH THE SURROUNDING SURFACE. EXPOSED CONDUITS, BOXES, ETC. IN ROOMS WHICH ARE NOT PAINTED MAY BE

LEFT UN-PAINTED. EXPOSED CONDUIT, BOXES, ETC. ON THE EXTERIOR OF BUILDINGS SHALL BE PAINTED TO MATCH THE SURROUNDING

8. THE CONTRACTOR IS RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALLS, CEILING OR OTHER BUILDING ELEMENTS WHICH ARE DISTURBED AS PART OF THE DEMOLITION AND/OR INSTALLATION OF ELECTRICAL WORK.

SURFACE AS CLOSELY AS POSSIBLE.

9. PROVIDE ELECTRICAL CONNECTION TO ALL FIRE SMOKE DAMPERS INCLUDING POWER AND FIRE ALARM. VERIFY EXACT SIZE AND FINAL LOCATION OF ALL DAMPERS WITH THE MECHANICAL CONTRACTOR. ALL ROOFTOP UNITS RATED AT MORE THAN 2000 CFM WILL BE OUTFITTED WITH A DUCT DETECTOR IN THE RETURN DUCT. ALL ROOFTOP UNITS RATED AT MORE THAN 15000 CFM WILL BE OUTFITTED WITH A DUCT DETECTOR IN BOTH THE SUPPLY AND RETURN DUCT AT ROOFTOP LEVEL AND IN THE RETURN DUCT AT EVERY LEVEL THAT IS SERVED. ELECTRICAL CONTRACTOR WILL PROVIDE A REMOTE TEST STATION AND ALL WIRING NECESSARY TO COMPLETE INSTALLATION.

10. REFER TO THE ELECTRICAL CONNECTIONS SCHEDULE FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH PLUMBING AND HVAC EQUIPMENT AND OWNER/GENERAL CONTRACTOR FURNISHED EQUIPMENT.

11. NOTES FROM ARCHITECT: ALL LIGHT FIXTURES SHALL BE SPACED ACCORDING TO THE ARCHITECTURAL PLANS, AT REGULAR AND REPETITIVE DIMENSIONS, CENTERED IF INDICATED. PROVIDE ALL REQUIRED WIRING TO POWER AND SWITCH LIGHT FIXTURES. CONCEAL WIRING FROM VIEW IN THE ENTRY, MEN, WOMEN AND SHELTER SPACES. WIRING IN ATTIC MAY BE WITHOUT CONDUIT IF ALLOWED BY CODE. WIRING IN STORAGE SHALL BE IN CONDUIT IF EXPOSED. COORDINATE EXACT LOCATION OF ELECTRICAL DEVICES SUCH AS RECEPTACLE SWITCHES AND CONVENIENCE OUTLETS WITH MASONRY DIMENSIONS, REQUEST CLARIFICATION IF NECESSARY. ALL RECEPTACLES TO HAVE GFI PROTECTION. PRIOR TO BID DATE, COORDINATE WITH THE OWNER'S REPRESENTATIVE THE ELECTRICAL REQUIREMENTS FOR IRRIGATION CONTROLS, TELEPHONE, SECURITY AND DATA SYSTEMS.

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		LU	JMINAIRE	SCHEDULE	
TYPE	MANUFACTURER CATALOG NO.	MANUFACTURER CATALOG NO.	VOLTAGE MOUNTING # OF LAMPS	BALLAST LAMP TYPE LAMP CAT. #	DESCRIPTION
А	LITHONIA C 2 32 120 GEB10IS	ENGINEER APPROVED EQUIVALENT	120 CEILING SURFACE 2	ELECTRICAL F032/835/ECO 32W T8	4-3/16"Wx2-15/16"Dx48"L GENERAL PURPOSE STEEL CHANNEL WITH HIGH-GLOSS ENAMEL FINISH. INSTANT START BALLAST.
В	FAIL—SAFE FCC—D 332 120 80/85 EB81 SF3	ENGINEER APPROVED EQUIVALENT	120 WALL SURFACE 3	ELECTRICAL F032/835/ECO 32W T8	8-1/2"W X 48"L X 8-1/2" H VANDAL PROOF FIXTURE WITH .187" POLYCARBONATE LENS & .125" PRISMATIC OVERLAY. ELECT. BALLAST.
С	RUUD LIGHTING SE5503-1-J	ENGINEER APPROVED EQUIVALENT	120   WALL SURFACE   1	ELECTRICAL C335S76/D/M 35W HPS	8" SQ X 7-1/2" DEEP UP/DOWN CUTOFF, ALUMINUM HOUSING, POLYCARBONATE LENS, WET LOCATION LISTED. TAMPER PROOF LENS.
D	FAIL-SAFE HDR-70MH-120-81	ENGINEER APPROVED EQUIVALENT	120 CEILING RECESSED 1	70W HPS	15-3/8" SQUARE RECESSED FIXTURE W/.156" PRISMATIC POLYCARBONATE LENS AND ELECTRONIC BALLAST, DAMP LOCATION LISTED.
E	STONCO LIGHTING VK1GC	ENGINEER APPROVED EQUIVALENT	120 SURFACE 1	N/A 100A19 100W INCANDESCENT	4" X 4" X 8" CEILING SURFACE VAPORTIGHT JAR WITH CAST GUARD.
0_0	LITHONIA 6ELM2NH	APPROVED EQUIVALENT	120/277 SURFACE WALL 2	NONE REQUIRED HALOGEN WITH UNIT	16.25"Wx5-3/8"Dx5"H IMPACT RESISTANT POLYCARBONATE HOUSING 8W HALOGEN LAMPS NICKEL CADMIUM BATTERY
H	LITHONIA LQMSW1G120/277ELN REFER TO NOTE 4	APPROVED EQUIVALENT	120/277 WALL/CEILING N/A	NONE REQUIRED LED WITH UNIT	12-1/4"Wx7-1/2"Hx2"D, WHITE POLYCARBONATE. HOUSING WITH GREEN LETTERING. NICAD BATTERY
H⊗ <sub>X</sub>	LITHONIA LHQMSW1G120/277 RO/ELN, *	APPROVED EQUIVALENT	120/277 WALL/CEILING N/A	NONE REQUIRED LED WITH UNIT	12-1/4"Wx7-1/2"Hx2"D, WHITE POLYCARBONATE, HOUSING WITH GREEN LETTERING, NICAD BATTERY WITH IND REMOTE HEAD.
<u> </u>	LITHONIA ELA—W—H0806	APPROVED EQUIVALENT	120/277 WALL/CEILING 1	NONE REQUIRED INCANDESCENT WITH UNIT	4.75"Wx7.75"Hx4.5"D WHITE SEALED REMOTE MOUNTED FIXTURE, 6 VOLT, 8 WATT LAMP, VERIFY COMPATIBILITY WITH EMERGENCY FIXTURE

### NOTES:

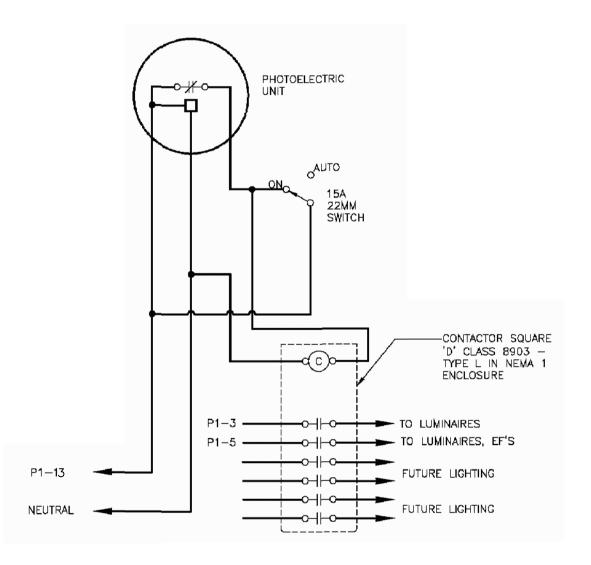
- 1. THE ELECTRONIC FLUORESCENT BALLAST SHALL HAVE A TOTAL HARMONIC DISTORTION OF PLUS/MINUS 20% AND A BALLAST FACTOR
- EQUAL TO OR GREATER THAN 80%

  2. ALL LIGHTING FIXTURES DENOTED WITH "EM" OR HALF SHADED SHALL BE PROVIDED WITH AN ENGINEER APPROVED EMERGENCY BALLAST FOR OPERATION OF TWO LAMPS IN A 4 LAMP FIXTURE AND 1 LAMP IN A 2 OR 3 LAMP FIXTURE. BALLAST SHALL BE CONNECT TO THE UNSWITCHED SIDE OF THE LIGHTING CIRCUIT.
- GRID TROFFER TYPE LIGHTING FIXTURES SHALL NOT BE SUPPORTED FROM THE T-BAR CEILING GRID.
   THE SYMBOL USED IN THIS SCHEDULE IS A GENERIC SYMBOL TO INDICATE AN EXIT LIGHT FIXTURE. REFER TO THE PLANS FOR THE NUMBER OF FACES REQUIRED AT EACH EXIT. FIELD ADJUST THE LOCATION
- OF THE EXIT SIGNS FOR THE BEST VISIBILITY POSSIBLE.

  5. THIS EXIT SIGN REQUIRES THE EXTRA BATTERY CAPACITY TO OPERATE THE REMOTELY LOCATED EMERGENCY HEAD FOR EGRESS AWAY FROM THE BUILDING.
- 6. FLUORESCENT LUMINAIRE DISCONNECTING MEANS; INDOOR LOCATIONS, OTHER THAN DWELLINGS AND ASSOCIATED ACCESSORY STRUCTURES, FLUORESCENT LUMINARIES (FIXTURES) THAT UTILIZE DOUBLE—ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE OR BALLASTED LUMINAIRES THAT ARE SUPPLIED FROM MULTI—WIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS EITHER INTERNAL OR EXTERNAL TO EACH LUMINAIRE (FIXTURE), TO DISCONNECT SIMULTANEOUSLY FROM THE SOURCE OF SUPPLY ALL CONDUCTORS OF THE BALLAST, INCLUDING THE GROUNDED CONDUCTOR IF ANY. THE LINE SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE GUARDED. THE DISCONNECTING MEANS SHALL BE LOCATED SO AS TO BE ACCESSIBLE TO QUALIFIED PERSONS BEFORE SERVICING OR MAINTAINING THE BALLAST. THIS REQUIREMENT SHALL BECOME EFFECTIVE JANUARY 1, 2008.

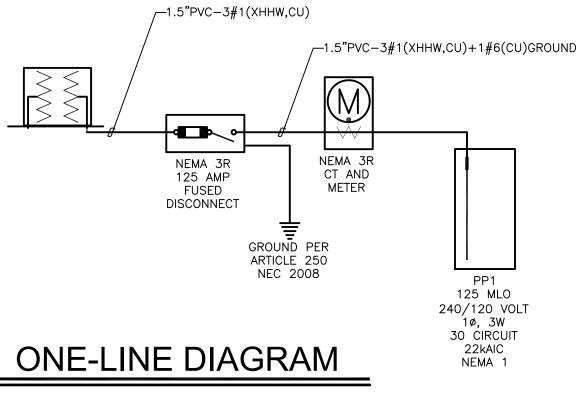
PANEL SCHEDUL	E – PP1	TYPE: VOLTAGE: ENCLOSUR	PANELB 120/24 E: NEMA1		MAIN	SIZE: N BRKR INTING:	125 R: NON SURI		PHASES: 1 WIRES: 3 SC RATING: 22000	NEUTRAL BUS: YES GROUND BUS: YES
LOAD TYPE	LOAD DESCRIPTION			AMPS POLES	CKT# LOAD	Ø	CKT# LOAD	AMPS POLES	LOAD TYPE	LOAD DESCRIPTION
LIGHTING	AREA LIGHTING			20A 1P	1 900	A	2 3000	30A 1P	MECH HEATING	WATER HEATER #1
LIGHTING	VIA LIGHTING CONT	TROLLER		20A 1P	3 800	В	4 3000	30A 1P	MECH HEATING	WATER HEATER #2
MOTOR	EXHAUST FANS			15A 1P	5 200	Α	6 2300	25A 1P	MECH HEATING	HAND DRYER #1
MECH YEAR ROUND	AIR HANDLER			35A 2P	7 3252	В	8 2300	25A 1P	MECH HEATING	HAND DRYER #2
MECH YEAR ROUND					9 3252	A	10 800	20A 1P	RECEPTACLE	AREA SERVICE
PROCESS	FLUSH VALVE			20A 1P	11 400	В	12	20A 1P	SPARE	UNALLOCATED FUTURE
LIGHTING	LIGHTING CONTROL	LER		20A 1P	13 120	Α	14 0	20A 1P	SPARE	UNALLOCATED FUTURE
SPARE	UNALLOCATED FUTU	URE		20A 1P	15 0	В	16 0		SPACE	
SPACE					17 0	Α	18 0		SPACE	
SPACE					19 0	В	20		SPACE	
SPACE					21	A	22 0		SPACE	
SPACE					23	В	24		SPACE	
SPACE					25 0	Α	26 0		SPACE	
SPACE					27 0	В	28		SPACE	
SPACE					29	A	30		SPACE	
LOADS BY TYPE:	1				LOADS	_↓ BY PHA	ASE:			
LOAD TYPE	CONNECTED LOAD (VA)	DEMAND FACTOR	DEMAND LOAD (VA)		PHAS	E		CONNECTED LOAD (VA)	CONNECTED LOAD (AMPS)	BALANCE (PERCENT)
LIGHTING KITCHEN PROCESS	1820.00 0.00 400.00	1.25 0.00 1.00	2275.00 0.00 400.00		A B C	_		10572.00 9752.00 	88.10	A-B: 92.2 B-A: 92.2
RECEPTACLES MECH HEATING MECH COOLING	800.00 10600.00 0.00	1.00 1.00 1.00	800.00 10600.00 0.00			_/AVER/	AGE	20324.00	84.68	92.2
MECH YEAR ROUND APPLIANCE MISCELLANEOUS MOTOR SPARE LARGEST MOTOR <sup>1</sup>	6504.00 0.00 0.00 200.00 0.00 ABOVE	1.00 1.00 1.00 1.00 1.00 0.25	6504.00 0.00 0.00 300.00 0.00 1626.00		NOTES		GEST CON	NECTED MO	TOR LOAD IS INCLUDED	IN MECHANICAL, PROCESS, OR MOTOR LOADS
TOTAL	20324.00	0.25	22405.00							

	MECHANICAL EQUIPMENT SCHEDULE											
COMB: MAG:												
UNIT NO	FUNCTION (NOTES)	LOAD	VOLTS	ø	FULL LOAD AMPS	CONDUIT	CH CIR NO.	CUIT WIRE SIZE	GRND WIRE SIZE	BRKR SIZE	START	DISC FUSE
(EF)	EXHAUST FAN #1 (TYPICAL OF 2)	99.6W	120	1	.83	1/2	2	#12		15		
WH)	WATER HEATER #1	3KW	120	1	25.0	1/2	2	#10		30	W/U	30 30
WH 2	WATER HEATER #2	3KW	120	1	25.0	1/2	2	#10		30	W/U	30 30
(AH)	AIR HANDLER #1		240	1	27.1	1/2	3	#8		35	W/U	60 35
(HD)	HAND DRYER #1	2300K	120	1	20.0	1/2	2	#10		25		
$\langle HD \rangle$	HAND DRYER #2	2300K	120	1	20.0	1/2	2	#10		25		



# LIGHTING CONTROL

NOT TO SCALE



P1

NOT TO SCALE

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ARCHITECTURE, PC
109 GLENGARY PLACE
9) GAB3011
9) GAB3011
90 MARSER I GOMMAST NET



# HAWTHORNE PARK SHELTI 400 GUNNISON AVE

 Project No.
 Drawn by:

 10-124
 BB/RC

 Phase
 Issue Date

 08/17/10

**E2** 

SECTION 16010

GENERAL PROVISIONS A.THE ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE A PART OF THE ELECTRICAL SPECIFICATIONS. THE ELECTRICAL CONTRACTOR SHALL EXAMINE THE GENERAL AND SPECIAL CONDITIONS BEFORE SUBMITTING HIS OR HER PROPOSAL

B. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK INCLUDED IN THIS SECTION AND THE DELEGATION OF WORK TO THE ELECTRICAL CONTRACTOR, SHALL NOT RELIEVE HIM OF THIS RESPONSIBILITY. THE ELECTRICAL CONTRACTOR AND HIS SUBCONTRACTORS WHO PERFORM WORK UNDER THIS SECTION SHALL BE RESPONSIBLE TO THE GENERAL CONTRACTOR C. WHERE ITEMS OF THE GENERAL CONDITIONS OR OF THE SPECIAL CONDITIONS ARE REPEATED IN THIS SECTION OF THE SPECIFICATIONS, IT IS INTENDED TO CALL PARTICULAR ATTENTION TO OR QUALIFY

THEM; IT IS NOT INTENDED THAT ANY OTHER PARTS OF THE GENERAL CONDITIONS OR SPECIAL CONDITIONS SHALL BE ASSUMED TO BE OMITTED IF NOT REPEATED HEREIN. D.THE NAMING OF A CERTAIN BRAND OR MAKE OR MANUFACTURER IN THE SPECIFICATIONS IS TO

ESTABLISH A QUALITY STANDARD FOR THE ARTICLE DESIRED. THE CONTRACTOR IS NOT RESTRICTED TO THE USE OF THE SPECIFIC BRAND OF THE MANUFACTURER NAMED UNLESS SO INDICATED IN THE SPECIFICATIONS. E. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND PRESENT FIVE (5) COPIES OF SHOP DRAWINGS OR

BROCHURES FOR ALL FIXTURES, EQUIPMENT, AND ACCESSORIES TO THE ENGINEER FOR THE ENGINEER'S APPROVAL. ENGINEER CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR: DIMENSIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES AND THE SATISFACTORY PERFORMANCE

F. THE ELECTRICAL CONTRACTOR SHALL EXAMINE DRAWINGS RELATING TO WORK OF ALL TRADES AND BECOME FULLY INFORMED AS TO EXTENT AND CHARACTER OF WORK REQUIRED AND ITS RELATION TO ALL OTHER WORK IN THE PROJECT G.BEFORE SUBMITTING BID, CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL ADJOINING EXISTING BUILDINGS, EQUIPMENT AND SPACE CONDITIONS ON WHICH HIS WORK IS IN ANY WAY DEPENDENT FOR

THE BEST WORKMANSHIP AND OPERATION ACCORDING TO THE INTENT OF SPECIFICATIONS AND DRAWINGS. HE SHALL REPORT TO THE ARCHITECT ANY CONDITION WHICH MIGHT PREVENT HIM FROM INSTALLING HIS EQUIPMENT IN THE MANNER INTENDED. H.NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT SITE, OR FOR ANY ALLEGED MISUNDERSTANDING OF MATERIALS TO BE FURNISHED OR WORK TO BE DONE. I. EXISTING CONDUITS, PIPES, EQUIPMENT, ETC.: REFER TO DIVISION I FOR ADDITIONAL REQUIREMENTS EXISTING CONDUITS, PIPES, UTILITY LINES, TANKS, EQUIPMENT, OR OTHER OBSTRUCTIONS WHETHER

UNDERGROUND, CONCEALED, OR EXPOSED ARE NOT IN GENERAL INDICATED ON DRAWINGS. PRIOR TO START OF WORK, HAVE EXISTING UTILITY OBSTRUCTIONS CLEARLY MARKED BY UTILITIES LOCATOR SERVICE. PLAN WORK SO AS TO ROUTE AND LOCATE ALL NEW WORK TO AVOID THESE OBSTRUCTIONS. REPAIR OR REPLACE, AT NO COST TO OWNER, EXISTING INSTALLATIONS WHERE DAMAGED, OCCURRING DURING THE COURSE OF CONSTRUCTION. END OF SECTION 16010

ELECTRICAL DRAWINGS AND REFERENCE SYMBOLS

SHALL BE PROVIDED AND INSTALLED.

END OF SECTION 16015

A.THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERALLY THE LOCATIONS OF MATERIAL AND EQUIPMENT. THESE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE WORK UNDER THIS SECTION WITH THE ARCHITECTURAL. STRUCTURAL. PLUMBING, HEATING AND AIR CONDITIONING, AND THE DRAWINGS OF OTHER TRADES FOR EXACT DIMENSIONS. CLEARANCES AND ROUGHING-IN LOCATIONS: THIS CONTRACTOR SHALL COOPERATE WITH ALL OTHER TRADES IN ORDER TO MAKE MINOR FIELD ADJUSTMENTS TO ACCOMMODATE THE WORK OF OTHERS. DO NOT RELY ON THE SCALE OF THE DRAWINGS FOR ROUGH-IN MEASUREMENTS, NOR USE

B. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, EACH TO THE OTHER, AND THE WORK REQUIRED BY EITHER SHALL BE INCLUDED IN THE CONTRACT AS IF CALLED FOR BY BOTH. C. IF DIRECTED BY THE ARCHITECT. THE CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE REASONABLE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK. D.ELECTRICAL SYMBOLS USED ON THIS PROJECT ARE SHOWN IN A SYMBOL LIST ON THE ACCOMPANYING WORKING DRAWINGS. THIS LIST SHOWS STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL ON PROJECT DRAWINGS OCCURS, THE ITEM

SECTION 16020

WORK INCLUDED A.THE SCOPE OF THE WORK CONSISTS OF ELECTRICAL INSTALLATION AND MODIFICATION FOR THE CONSTRUCTION OF HAWTHORNE PARK SHELTER. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO; INSTALLATION OF MAIN DISTRIBUTION PANEL AND OTHER ITEMS AS CALLED OUT ON THE DRAWINGS FOR THE AREAS OF CONSTRUCTION.THIS WORK WILL ALSO INCLUDE: ELECTRICAL DISTRIBUTION INSTALLATION; POWERING OF MECHANICAL EQUIPMENT; AND OTHER ITEMS AS CALLED OUT ON THE DRAWINGS FOR THE CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SUPERVISION. LABOR MATERIALS FOLIPMENT MACHINERY AND ANY AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE SYSTEMS. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT ALL ITEMS OF EQUIPMENT ARE SPECIFIED IN THE SINGULAR; HOWEVER, THE CONTRACTOR SHALL PROVIDE AND INSTALL THE NUMBER OF ITEMS OF EQUIPMENT AS INDICATED ON THE DRAWINGS AND AS REQUIRED FOR COMPLETE

B.IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED, AND C. ANY APPARATUS. APPLIANCE, MATERIAL OR WORK NOT SHOWN ON DRAWINGS BUT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION. EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE FURNISHED, DELIVERED AND INSTALLED BY THE CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER. WITH SUBMISSION OF BID, THE ELECTRICAL CONTRACTOR SHALL GIVE WRITTEN NOTICE TO THE ARCHITECT OF ANY MATERIALS OR APPARATUS BELIEVED INADEOUATE OR UNSUITABLE, IN VIOLATION OF LAWS, ORDINANCES, RULES; ANY NECESSARY ITEMS OR WORK OMITTED. IN THE ABSENCE OF SUCH WRITTEN NOTICE, IT IS MUTUALLY AGREED THE CONTRACTOR HAS INCLUDED THE COST OF ALL REQUIRED ITEMS IN HIS PROPOSAL. AND THAT HE WILL BE RESPONSIBLE FOR THE APPROVED SATISFACTORY FUNCTIONING OF THE ENTIRE SYSTEM WITHOUT EXTRA COMPENSATION.

### END OF SECTION 16020

SECTION 16030 CODES AND FEES

A.ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL APPLICABLE CODES, SPECIFICATIONS, LOCAL ORDINANCES INDUSTRY STANDARDS UTILITY COMPANY AND FIRE INSURANCE CARRIER'S REQUIREMENTS, CONTACT PROPER AUTHORITIES, OBTAIN AND PAY FOR REQUIRED PERMITS, NSPECTIONS AND UTILITY SERVICE CONNECTIONS. DO NOT INCLUDE ANY UTILITY COMPANY CHARGES THAT CAN BE BILLED DIRECTLY TO THE OWNER. B. IN CASE OF DIFFERENCE BETWEEN THE BUILDING CODES, SPECIFICATIONS, STATE LAWS, LOCAL

ORDINANCES, INDUSTRY STANDARDS, UTILITY COMPANY REGULATIONS, FIRE INSURANCE CARRIER'S REQUIREMENTS. AND THE CONTRACT DOCUMENTS. THE MOST STRINGENT SHALL GOVERN. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT IN WRITING OF ANY SUCH DIFFERENCE. C. NONCOMPLIANCE: SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODES STATE LAWS LOCAL ORDINANCES INDUSTRY STANDARDS, FIRE INSURANCE CARRIER'S REQUIREMENTS, AND UTILITY COMPANY REGULATIONS, HE SHALL BEAR THE COST ARISING IN CORRECTING ANY SUCH DEFICIENCY. END OF SECTION 16030

### **SECTION 16100** BASIC METHODS AND MATERIALS

**SECTION 16101** 

A.PROTECTION: ALL WORK, MATERIALS AND EQUIPMENT SHALL BE COMPLETELY AND ADEQUATELY PROTECTED AT ALL TIMES. PAY FOR ALL DAMAGE, INJURY OR LOSS, EXCEPT SUCH AS MAY BE DIRECTLY DUE TO ERRORS IN THE CONTRACT DOCUMENTS OR BE CAUSED BY AGENTS OR EMPLOYEES OF THE OWNER. POST EFFECTIVE DANGER SIGNS WARNING AGAINST HAZARDS CREATED BY THE WORK. B. TRENCHING AND BACKFILLING: PERFORM ALL TRENCHING AND BACKFILL REQUIRED BY WORK UNDER THIS DIVISION OF THE SPECIFICATIONS. TRENCHING AND BACKFILLING SHALL BE DONE IN ACCORDANCE WITH THE OWNER'S SOILS REPORT AND NOTES FROM STRUCTURAL DRAWINGS. REQUEST CLARIFICATION IF NECESSARY. THIS PORTION OF THE WORK SHALL BE EXECUTED UNDER THE DIRECT SUPERVISION OF THE GENERAL CONTRACTOR. TRENCHES SHALL BE EXCAVATED TO THE DEPTH REOUIRED FOR THE UTILITIES INVOLVED. THE TRENCH BOTTOM SHALL BE GRADED TRUE AND FREE FROM DEBRIS, STONES AND SOFT SPOTS. WHERE DIRECT BURIAL CABLES ARE USED FOUR INCHES OF FINE SAND SHALL BE PLACED IN THE BOTTOM OF THE TRENCH PRIOR TO CABLE PLACEMENT.

C. EOUIPMENT, MATERIALS, INSTALLATION: 1. ALL EQUIPMENT, ACCESSORIES AND SPECIALTIES CONNECTED TO EQUIPMENT AND ALL ITEMS OF MATERIAL SHALL BE INSTALLED AS RECOMMENDED BY THEIR MANUFACTURERS UNLESS SPECIFICALLY 2. STATED OTHERWISE. PROVIDE PROPER SUPPORTS, MOUNTS, ETC., AS REQUIRED. 3. COORDINATE WITH THE GENERAL CONTRACTOR.

4. OBTAIN INSTRUCTIONS FROM THE ARCHITECT FOR INSTALLATION OF ITEMS NOT COMPLETELY COVERED BY CONTRACT DOCUMENTS OR PUBLISHED MANUFACTURER'S RECOMMENDATIONS. D.EQUIPMENT FINISH: ALL ELECTRICAL EQUIPMENT SHALL BE FURNISHED FACTORY PAINTED OR FINISHED WITH TWO COATS OF HIGH GRADE ENAMEL AND IN THE MANUFACTURER'S STANDARD COLORS UNLESS

OTHERWISE SPECIFIED. 1. UNPAINTED EQUIPMENT AND MATERIALS, EXCEPT CONDUIT IN CONCEALED SPACES, SHALL BE CLEANED AND PRIMED TO BE PAINTED BY THE PAINTING CONTRACTOR IN ACCORDANCE WITH THE PAINTING

SECTION OF THESE SPECIFICATIONS. 2. THE COLORS OF ALL EXPOSED ELECTRICAL MATERIAL AND APPARATUS SHALL BE AS SELECTED BY THE

E. CHASES, SLEEVES, CUTTING, PATCHING 1. PROVIDE FOR NECESSARY CHASES, HOLES, SLEEVES, BOXES, INSERTS AND HANGERS BY ARRANGEMENT WITH CONTRACTORS OF THE OTHER APPROPRIATE TRADES. PROVIDE "FLAMESEAL" OR OF THE APPROVED FIRESTOPPING MATERIAL AT ALL PENETRATIONS THROUGH RATED WALLS, FLOORS AND

2. PROVIDE FOR ALL CUTTING AND PATCHING OF HOLES, OPENINGS, AND NOTCHES. OBTAIN WRITTEN APPROVAL OF THE ARCHITECT BEFORE NOTCHING, BORING, CHIPPING, BURNING, DRILLING, WELDING TO

ALL WORK AND MATERIALS COVERED BY DRAWINGS AND SPECIFICATIONS SHALL BE SUBJECT TO NSPECTION AT ANY AND ALL TIMES BY REPRESENTATIVES OF THE ARCHITECT AND OWNER. IF ANY MATERIAL OR INSTALLATION DOES NOT CONFORM TO THE DRAWINGS AND SPECIFICATIONS, WITHIN THREE

WORK SHALL NOT BE CLOSED IN NOR COVERED BEFORE INSPECTION AND APPROVAL BY THE ARCHITECT. PROVIDE FOR UNCOVERING AND MAKING REPAIRS, AT NO EXTRA COST, WHEN UNINSPECTED WORK HAS BEEN CLOSED IN. NOTIFY THE ARCHITECT WHEN WORK IS READY FOR INSPECTION. 3. NOTIFY PROPER AUTHORITIES WHEN WORK IS READY FOR ANY INSPECTIONS REQUIRED BY APPLICABLE CODES, RULES AND REGULATIONS, ALLOWING SUFFICIENT TIME FOR INSPECTIONS TO BE MADE WITHOUT HINDERING PROGRESS OF THE WORK, AND FURNISH THE OWNER, WITHOUT ADDITIONAL COSTS, PROPER CERTIFICATES OF ACCEPTANCE FROM SUCH AUTHORITIES. 4. UPON COMPLETION OF ALL WORK AND ADJUSTMENT OF ALL EQUIPMENT, FINAL INSPECTION SHALL BE MADE UNDER DIRECTION OF THE ARCHITECT. TEST AND OPERATE ALL DEVICES, EQUIPMENT AND SYSTEMS TO DEMONSTRATE THAT THE ELECTRICAL SYSTEM IS COMPLETE AND FUNCTIONAL IN THE MANNER REOUIRED. G. CLEAN UP

DURING THE COURSE OF THE WORK REMOVE ANY MATERIALS NOT INSTALLED IN THE WORK WHICH CONFLICT WITH THE WORK OF OTHERS IF SO DIRECTED BY THE ARCHITECT. AT COMPLETION OF WORK CLEAN UP AND REMOVE FROM THE PREMISES ALL DEBRIS AND MATERIALS NOT INSTALLED IN THE WORK SO THE PREMISES WILL BE LEFT CLEAN. WASH AND WIPE CLEAN ALL LIGHTING FIXTURES AND LAMPS WHICH MAY HAVE BECOME SOILED DURING INSTALLATION. H. RECORD DRAWINGS: AT COMPLETION OF THE WORK FURNISH TO THE ARCHITECT TWO COMPLETE SETS OF ELECTRICAL PRINTS MARKED TO SHOWTHE WORK "AS-BUILT".

MAINTENANCE AND OPERATING PROCEDURES: UPON COMPLETION OF ALLWORK AND ADJUSTMENT OF ALL FOUIPMENT INSTRUCT THE OWNER ON THE CORRECT OPERATION AND MAINTENANCE PROCEDURE FOR THE ELECTRICAL SYSTEM IN TOTAL. FURNISH 3 SETS OF TYPED MAINTENANCE MANUALS CONTAINING CUT SHEETS ON ALL EQUIPMENT, TABLES OF FUSES AND FOR WHAT EQUIPMENT, TABLE OF LAMPS AND BALLASTS AND FOR WHAT FIXTURES. INCLUDE A LIST OF CONTACTS WITH PHONE NUMBERS FOR ALL SYSTEMS FOR OWNERS' USE, IN THE EVENT THE ELECTRICAL SYSTEM REQUIRES SERVICE WORK WITHIN THE J. GUARANTEE: GUARANTEE THAT ALL WORK GOVERNED BY THIS DIVISION SHALL BE NEW AND FREE

OWNER. (INCANDESCENT LAMPS, FUSES AND ANY EXISTING EQUIPMENT ARE EXEMPT) **END OF SECTION 16101** 

ACCEPTANCE REPAIR REVISE AND REPLACE DEFECTS AS DIRECTED WITH NO ADDITIONAL COST TO THE

OF DEFECTIVE WORK, MATERIALS, AND COMPONENTS FOR A PERIOD OF ONE YEAR AFTER WRITTEN

SECTION 16111

CONDUITS A. PVC CONDUIT SHALL BE USED FOR ALL UNDERGROUND FEEDERS AND BRANCH CIRCUITS UNLESS OTHERWISE DIRECTED ON PLANS OR AS APPROVED BY NEC. ALL CONDUIT SHALL BE UL APPROVED. B. CONDUIT SIZES SHALL BE AS INDICATED ON THE DRAWINGS, OR MINIMUM IN ACCORDANCE WITH THE NEC, INCLUDING PROVISION FOR GREEN EQUIPMENT GROUNDING CONDUCTOR USING 3/4 INCH MINIMUM CONDUIT. THE USE OF 1/2 INCH CONDUIT ELSEWHERE MAY BE APPROVED IF CONDITIONS WARRANT. C. SPECIAL CONDUIT FITTINGS SHALL BE APPROPRIATE FOR EACH APPLICATION AND SHALL BE MANUFACTURED BY T & B OR APPROVED EQUAL. D. CONDUIT SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND

SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER. E. THE ENTIRE CONDUIT SYSTEM SHALL BE INSTALLED TO PROVIDE A CONTINUOUS BOND THROUGHOUT F. ELECTRICAL METALLIC TUBING (EMT) MAY BE USED FOR BRANCH CIRCUITS AND RACEWAYS OTHER THAN FOR SERVICE ENTRANCE AND MAIN FEEDERS UNLESS PROHIBITED BY THE NEC OR LOCAL ORDINANCES. EMT SHALL BE UL APPROVED, GALVANIZED INSIDE AND OUTSIDE, COMPLYING WITH ASA C-80.3 FOR ZINC COATED EMT WITH FITTINGS OF THE SAME TYPE MATERIAL AND FINISH, OF THE PRESSURE CONNECTED TYPE FOR EXTERIOR INSTALLATION AND OF THE SET SCREW TYPE FOR INTERIOR INSTALLATION.

G. ALL CONDUIT JOINTS SHALL BE CUT SQUARE, REAMED SMOOTH, AND DRAWN UP TIGHT. BENDS OR OFFSETS SHALL BE MADE WITH AN APPROVED BENDER OR HICKEY, OR HUB-TYPE CONDUIT FITTINGS. NUMBER OF BENDS PER RUN SHALL CONFORM TO THE NEC LIMITATIONS. H. CONCEALED CONDUITS SHALL BE RUN IN A DIRECT LINE WITH LONG SWEEP BENDS AND OFFSETS. EXPOSED CONDUITS SHALL BE PARALLEL TO AND AT RIGHT ANGLES TO BUILDING LINES, USING CONDUIT

I. TRANSITIONS BETWEEN NONMETALLIC CONDUITS AND CONDUITS OF OTHER MATERIALS SHALL BE MADE WITH THE MANUFACTURER'S STANDARD ADAPTERS DESIGNED FOR SUCH PURPOSE. I. EXPOSED CONDUITS SHALL BE SECURELY FASTENED IN PLACE ON MAXIMUM 10 FOOT INTERVALS; AND HANGERS, SUPPORTS OR FASTENERS SHALL BE PROVIDED AT EACH ELBOW AND AT THE END OF EACH STRAIGHT RUN TERMINATING AT A BOX OR CABINET. K. USE EMT IN BLOCK WALLS AND EXPOSED AREAS OF STORAGE. ATTIC WIRING MAY BE WITHOUT CONDUIT IF CODE ALLOWS.

**SECTION 16120** WIRES AND CABLES

FITTINGS FOR ALL TURNS AND OFFSETS.

END OF SECTION 16111

**END OF SECTION 16120** 

WIRE AND CABLE SHALL MEET ALL STANDARDS AND SPECIFICATIONS APPLICABLE, AND SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE NEC. INSULATED WIRE AND CABLE SHALL HAVE SIZE. TYPE OF INSULATION, VOLTAGE AND MANUFACTURER'S NAME PERMANENTLY MARKED ON OUTER COVERING AT REGULAR INTERVALS NOT EXCEEDING FOUR FEET. WIRE AND CABLE SHALL BE DELIVERED IN COMPLETE COILS OR REELS WITH IDENTIFYING TAGS STATING SIZE TYPE OF INSULATION ETC. B WIRE AND CARLE SHALL BE SUITABLY PROTECTED FROM WEATHER AND OTHER DAMAGE DURING STORAGE AND HANDLING. AND SHALL BE IN FIRST CLASS CONDITION AFTER INSTALLATION. C. WIRE AND CABLE SHALL BE FACTORY COLOR CODED WITH A SEPARATE COLOR FOR EACH PHASE AND NEUTRAL USED CONSISTENTLY THROUGHOUT THE SYSTEM. COLOR CODING SHALL BE AS REQUIRED BY THE

D. ALL CONDUCTORS SHALL BE RATED 600 VOLTS, UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS, OR FOR ELECTRONIC OR COMMUNICATION USE. WIRE AND CABLE FOR VARIOUS APPLICATIONS SHALL BE AS FOLLOWS UNLESS OTHERWISE DESIGNATED:

WIRE #10 AND SMALLER SHALL BE SOLID; WIRE #8 AND LARGER SHALL BE STRANDED. #12 THRU #6 DRY LOCATIONS: TYPE THHN, 90 DEGREES C. #12 THRU #6 IN SLABS, UNDERGROUND, OR WET LOCATIONS: TYPE THWN OR TYPE XHHW, 75 DEGREES

#4 AND LARGER: TYPE XHHW OR TYPE THWN 75 DEGREES C WIRE AND CABLE SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC, ANACONDA WIRE & CABLE, ROME CABLE TRIANGLE CONDUIT & CABLE, OR APPROVED FOUAL, SUBSTITUTION OF WIRE AND CABLE. MANUFACTURER SHALL BE ONLY WITH THE APPROVAL OF THE ARCHITECT/ENGINEER. FOR ANY SPECIFIC USE NOT COVERED HERE ABOVE, COMPLY WITH THE NEC IN CONDUCTOR USE. ALL CIRCUITS SHALL BE 2#12+G UNLESS OTHERWISE NOTED ON DRAWINGS OR IN SCHEDULES. ALL 15 AND 20 AMP CIRCUITS WITH LENGTHS OVER 150 FT. SHALL HAVE THEIR CONDUCTOR SIZE INCREASED TO #10 FOR VOLTAGE DROP.

SECTION 16121

WIRE CONNECTIONS A. JOINTS ON BRANCH CIRCUITS SHALL OCCUR ONLY WHERE SUCH CIRCUIT DIVIDE AS INDICATED ON PLANS AND SHALL CONSIST OF ONE THROUGH CIRCUIT TO WHICH SHALL BE SPLICED THE BRANCH FROM THE CIRCUIT. IN NO CASE SHALL JOINTS IN BRANCH CIRCUITS BE LEFT FOR THE FIXTURE HANGER TO MAKE. NO SPLICES SHALL BE MADE IN CONDUCTOR EXCEPT AT OUTLET BOXES, JUNCTION BOXES, OR SPLICE

B. ALL JOINTS OR SPLICES FOR #10 AWG OR SMALLER SHALL BE MADE WITH UL APPROVED WIRE NUTS OR

COMPRESSION TYPE CONNECTORS. C. ALL JOINTS OR SPLICES FOR #8 AWG OR LARGER SHALL BE MADE WITH A MECHANICAL COMPRESSION CONNECTOR. AFTER THE CONDUCTORS HAVE BEEN MADE MECHANICALLY AND ELECTRICALLY SECURE, THE ENTIRE JOINT OR SPLICE SHALL BE COVERED WITH SCOTCH #33 TAPE OR APPROVED EQUAL TO MAKE THE INSULATION OF THE JOINT OR SPLICE EQUAL TO THE INSULATION OF THE CONDUCTORS. THE CONNECTOR SHALL BE UL APPROVED. END OF SECTION 16121

SECTION 16125

PULLING CABLES A. INSTALL CONDUCTORS IN ALL RACEWAYS AS REQUIRED, UNLESS OTHERWISE NOTED, IN A NEAT AND WORKMANLIKE MANNER. ALL EMPTY CONDUITS SHALL HAVE A #14 GALVANIZED PULL WIRE OR NYLON PULLCORD LEFT IN PLACE FOR FUTURE USE.

B. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH THE NEC. MAINS, FEEDERS, SUBFEEDERS SHALL BE TAGGED IN ALL PULL, JUNCTION, AND OUTLET BOXES AND IN THE GUTTER OF PANELS WITH APPROVED CODE TYPE WIRE MARKERS. C. NO LUBRICANT OTHER THAN POWDERED SOAPSTONE OR APPROVED PULLING COMPOUND MAY BE

USED TO PULL CONDUCTORS D. AT LEAST EIGHT (8) INCHES OF SLACK WIRE SHALL BE LEFT IN EVERY OUTLET BOX WHETHER IT BE IN USE OR LEFT FOR FUTURE USE. E. ALL CONDUCTORS AND CONNECTIONS SHALL TEST FREE OF GROUNDS SHORTS AND OPENS BEFORE TURNING THE JOB OVER TO THE OWNER.

F. PULL BOXES SHALL BE REQUIRED IN RUNS OVER 100 FEET OR WHEN THREE 90-DEGREE BENDS ARE USED, OR AS INDICATED ON THE DRAWINGS. G. FEEDERS ARE TO BE RUN ABOVE GROUND TO ALL POWER PANELS AND LIGHTING PANELS, UNLESS INDICATED OTHERWISE ON DRAWINGS H. WHERE MOTORS HAVE CONDUIT TERMINAL BOXES, FEEDERS SHALL BE CONNECTED TO SAME BY FLEXIBLE MEANS.

ALL MOTORS WITH SLIDING BASE MOUNTINGS SHALL HAVE NOT LESS THAN 18 INCHES NOR MORE THAN 6 FEET OF CONDUIT CONNECTING RIGID CONDUIT FEED TO MOTOR TERMINAL BOX. J. CONDUCTOR SPLICES SHALL BE MADE ONLY IN JUNCTION BOXES, TERMINAL BOXES, OR PULL BOXES. **END OF SECTION 16125** 

SECTION 16133 OUTLET BOXES

ALL OUTLET BOXES FOR CONCEALED WIRING SHALL BE SHEET METAL, A. GALVANIZED OR CADMIUM PLATED, AT LEAST 1 « INCHES DEEP, SINGLE OR GANGED, OF SIZE TO ACCOMMODATE DEVICES AND NUMBER OF CONDUCTORS NOTED. BOXES SHALL BE EQUIPPED WITH PLASTER RING OR COVER AS NECESSARY. ALL OUTLET BOXES SHALL BE MANUFACTURED BY STEEL CITY OR APPROVED EOUAL. B. BOXES FOR EXPOSED WIRING SHALL BE MALLEABLE IRON, CADMIUM FINISH, OR CAST ALUMINUM ALLOY, AS MANUFACTURED BY STEEL CITY, AND SHALL NOT BE LESS THAN 4 INCHES SQUARE BY 1 « INCHES DEEP UNLESS OTHERWISE NOTED. FIXTURE OUTLET BOXES SHALL BE MINIMUM 4 IN OCTAGONAL AND, WHERE REQUIRED AS OUTLET AND JUNCTION BOXES, THEY SHALL BE 4 11/16 INCHES BY 2 1/8 INCHES DEEP. END OF SECTION 16133

SECTION 16190

SUPPORTING DEVICES A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL METALLIC SUPPORTS AS REQUIRED FOR THE PROPER INSTALLATION OF RACEWAY SYSTEMS AND ALL OTHER EQUIPMENT INSTALLED UNDER THIS

DIVISION OF THE CONTRACT CONFORMING TO THE LATEST EDITION OF THE NEC. B.CONDUIT SHALL BE SUPPORTED ON APPROVED TYPES OF WALL BRACKETS, CEILING TRAPEZES, STRAP HANGERS OR PIPE SUPPORTS, SECURED BY MEANS OF TOGGLE BOLTS IN HOLLOW MASONRY WALLS OR UNITS. EXPANSION BOLTS WILL BE USED IN CONCRETE OR BLOCK MACHINE SCREWS ON METAL SURFACES AND WOOD SCREWS ON WOOD CONSTRUCTION.

C.CONDUIT SHALL BE SECURELY FASTENED TO ALL SHEET METAL OUTLETS, JUNCTION AND PULL BOXES WITH TWO GALVANIZED LOCKNUTS AND BUSHING, CARE BEING TAKEN TO SEE THAT THE FULL NUMBER OF THREADS PROJECT THROUGH TO PERMIT THE BUSHING TO BE DRAWN TIGHT AGAINST THE END OF THI CONDUIT, AFTER WHICH THE LOCKNUTS SHALL BE MADE TIGHT SUFFICIENTLY TO DRAW THEM INTO FIRM ELECTRICAL CONTACT WITH THE OUTLET BOX. INSTALL A PLASTIC BUSHING ON END OF PIPE THREADS PROTRUDING INTO JUNCTION BOXES AND OTHER ENCLOSURES TO PROTECT CABLING. D.THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUPPORTS REQUIRED FOR THE ELECTRICAL FOUIPMENT AND CONDUIT

SECTION 16195

END OF SECTION 16190

A.THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ALL DEVIATIONS IN WORK AS ACTUALLY INSTALLED FROM WORK INDICATED ON THE DRAWINGS. ON COMPLETION OF THE PROJECT, TWO (2) COMPLETE SETS OF MARKED-UP PRINTS SHALL BE DELIVERED TO THE ARCHITECT. B. IDENTIFICATION OF EQUIPMENT

1. PROVIDE AND INSTALL LAMINATED BLACK AND WHITE LAMACOID NAMEPLATES FOR ALL SERVICE SWITCHES, DISTRIBUTION SWITCHBOARDS, BRANCH CIRCUIT PANELBOARDS, SAFETY SWITCHES, CABINETS, STARTERS, AND OTHER EQUIPMENT WITH THEIR CORRECT DESIGNATION. LABEL EQUIPMENT IN AREAS ACCESSIBLE TO THE PUBLIC ON INSIDE OF ENCLOSURE ONLY. NAMEPLATES SHALL BE FIRMLY SECURED TO FRONT COVER OR DOOR WITH TWO PROPERLY SIZED

2. MOUNT A TYPEWRITTEN DIRECTORY BEHIND PLASTIC ON THE INSIDE OF EACH BRANCH CIRCUIT PANEL DOOR, GIVING THE NUMBER, DESCRIPTION AND LOCATION OF THE CIRCUIT CONTROLLED BY EACH CIRCUIT BREAKER. REVISE EXISTING DIRECTORIES TO REFLECT CIRCUIT MODIFICATIONS UNDER THIS

3. ALL FUSED SAFETY SWITCHES AND FUSED SWITCH UNITS IN SWITCHBOARDS SHALL INDIVIDUALLY BEAR A FUSE LABEL SHOWING PROPER SIZE AND TYPE OF FUSE TO BE USED. 4. INSTALL WIRING DIAGRAMS ON THE INSIDE COVER OF ALL STARTERS, SWITCHES AND OTHER SUCH EQUIPMENT. SUCH DIAGRAMS SHALL NOT BE HANDWRITTEN.

5. ALL JUNCTION BOXES WITH BLANK COVERS SHALL HAVE CIRCUITS CONTAINED THEREIN IDENTIFIED BY MEANS OF PERMANENT BLACK "MAGIC MARKER" ON THE COVER. END OF SECTION 16195

A.THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND CONNECTION OF A PROPER POWER SUPPLY TO ALL ELECTRONIC EQUIPMENT FURNISHED BY OTHERS. HE SHALL VERIFY ALL VOLTAGE FREQUENCY ETC. REQUIREMENTS PRIOR TO ENERGIZING THE CIRCUIT. THOSE INSTALLING THE EOUIPMENT WILL BE RESPONSIBLE FOR THE PROPER OPERATION OF THE EQUIPMENT PROVIDED THE PROPER POWER SUPPLY CIRCUIT IS INSTALLED BY THE ELECTRICAL CONTRACTOR. B. PROVIDE TELEPHONE LINES TO EQUIPMENT CONTROL PANELS WITH MODEM ACCESS. COORDINATE WITH MECHANICAL CONTRACTOR.

SECTION 16400 SERVICE AND DISTRIBUTION

SECTION 16401

A.THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL RELATED DISTRIBUTION EQUIPMENT AS INDICATED ON THE FLOOR PLAN, DIAGRAMS, SCHEDULES, AND NOTES. ALL EQUIPMENT SHALL BE NEW B. RELATED DOCUMENTS: DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL

AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATIONS SECTION, APPLY TO WORK OF THIS

SECTION. END OF SECTION 16401

SECTION 16440

A.THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL SAFETY SWITCHES AS INDICATED ON THE DRAWINGS OR AS REOUIRED. ALL SAFETY SWITCHES SHALL BE UL LISTED.

1. THE SWITCHES SHALL BE FUSED SAFETY SWITCHES (FSS) OR NON-FUSED SAFETY SWITCHES (NFSS) AS SHOWN ON THE DRAWINGS OR REQUIRED AND SHALL BE MANUFACTURED BY SIEMENS, SQUARE D, OR APPROVED EOUAL. 2. SWITCHES SHALL HAVE A QUICK-MAKE AND QUICKBREAK OPERATING HANDLE AND MECHANISM WHICH SHALL BE AN INTEGRAL PART OF THE BOX. PADLOCKING PROVISIONS SHALL BE PROVIDED FOR

PADLOCKING IN THE OFF POSITION WITH AT LEAST THREE PADLOCKS. SWITCHES SHALL BE HORSEPOWER RATED FOR 250 VOLTS AC OR DC OR 600 VOLTS AC AS REOUIRED. LUGS SHALL BE UL LISTED FOR COPPER AND ALUMINUM CABLE. 3. SWITCHES SHALL BE FURNISHED IN NEMA I GENERAL PURPOSE ENCLOSURES WITH KNOCKOUTS UNLESS OTHERWISE NOTED OR REQUIRED. SWITCHES LOCATED ON THE EXTERIOR OF THE BUILDING OR IN

"WET" LOCATIONS SHALL HAVE NEMA 3R ENCLOSURES (WP). 4. THE SAFETY SWITCHES SHALL BE SECURELY MOUNTED IN ACCORDANCE WITH THE NEC. THE CONTRACTOR SHALL PROVIDE ALL MOUNTING MATERIALS AND INSTALL FUSES IN THE FSS. THE FUSES SHALL BE DUAL ELEMENT ON MOTOR CIRCUITS.

SECTION 16450 GROUNDING

A.THE CONDUIT SYSTEMS AND NEUTRAL CONDUCTOR FOR THE WIRING SYSTEM, AND THE TELEPHONE SYSTEM SHALL BE SECURELY GROUNDED. THE GROUNDS SHALL BE NEC GROUNDS IN EACH CASE. B. A GROUND SHALL BE ESTABLISHED AND TESTS CARRIED OUT TO INDICATE THAT SATISFACTORY GROUND HAS BEEN ESTABLISHED IN ACCORDANCE WITH THE NEC.

C. WRITTEN RESULTS OF THIS TEST SHALL BE FORWARDED TO THE ENGINEER BEFORE CONNECTION TO THE

END OF SECTION 16450

END OF SECTION 16440

SECTION 16470

A.FURNISH AND INSTALL DISTRIBUTION AND POWER PANELBOARDS AS INDICATED IN THE PANELBOARD SCHEDULE AND WHERE SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE DEAD-FRONT SAFETY TYPE EOUIPPED WITH OUICK-MAKE, OUICK-BREAK FUSIBLE BRANCH SWITCHES AND APPROVED FOR SERVICE ENTRANCE. THE ACCEPTABLE MANUFACTURERS OF THE PANELBOARD ARE SIEMENS, SOUARE D. AND GE PROVIDED THEY ARE FULLY EQUAL TO THE TYPE LISTED ON THE DRAWINGS. THE PANELBOARD SHALL BE UL LISTED AND BEAR THE UL LABEL.

B. ALL FUSIBLE BRANCH SWITCHES SHALL BE QUICK-MAKE, QUICK BREAK, WITH VISIBLE BLADES AND DUAL HORSEPOWER RATINGS SWITCH HANDLES SHALL PHYSICALLY INDICATE ON AND OFF POSITIONS. SUCH HANDLES SHALL ALSO BE ABLE TO ACCEPT THREE PADLOCKS HAVING HEAVY-DUTY INDUSTRIAL TYPE SHACKLES. COVERS SHALL BE INTERLOCKED WITH THE SWITCH HANDLES TO PREVENT OPENING IN THE ON POSITION. A MEANS SHALL BE PROVIDED TO ALLOW AUTHORIZED PERSONNEL TO RELEASE THE INTERLOCK FOR INSPECTION PURPOSES WHEN A SWITCH IS ON. A CARDHOLDER, PROVIDING CIRCUIT IDENTIFICATION, SHALL BE MOUNTED ON EACH BRANCH SWITCH. SWITCHES SHALL BE PROVIDED WITH FUSES OR AS NOTED ON THE DRAWINGS.

C. PANELBOARD BUS STRUCTURE AND MAIN LUGS OR MAIN SWITCH SHALL HAVE CURRENT RATINGS AS SHOWN ON THE PANELBOARD SCHEDULE. THE BUS STRUCTURE SHALL ACCOMMODATE PLUG-ON OR BOLTED BRANCH SWITCHES AND MOTOR STARTERS AS INDICATED IN THE PANELBOARD SCHEDULE WITHOUT MODIFICATION TO THE BUS ASSEMBLY. PROVIDE SOLID NEUTRAL ASSEMBLY (S/N). D.SWITCHES AND PANELBOARD BUS STRUCTURE SHALL SAFELY AND WITHOUT FAILURE WITHSTAND SHORT CIRCUITS ON THE SYSTEMS CAPABLE OF DELIVERING UP TO 100,000 AMPERES RMS SYMMETRICAL, UNLESS

OTHERWISE NOTED E. PANELBOARD ASSEMBLY SHALL BE ENCLOSED IN A STEEL CABINET. THE RIGIDITY AND GAUGE OF STEEL TO BE AS SPECIFIED IN UL STANDARD FOR CABINETS. THE SIZE OF WIRING GUTTERS SHALL BE IN ACCORDANCE WITH UL STANDARD. CABINETS SHALL BE EQUIPPED WITH A FRONT DOOR AND HAVE FULLY CONCEALED, SELF-ALIGNING TRIM CLAMPS. FRONTS SHALL BE FULL-FINISHED STEEL WITH RUST INHIBITING PRIMER AND BAKED ENAMEL FINISH.

F. TERMINALS FOR FEEDER CONDUCTORS TO THE PANELBOARD MAINS AND NEUTRAL SHALL BE SUITABLE FOR THE TYPE OF CONDUCTOR SPECIFIED. TERMINALS FOR BRANCH CIRCUIT WIRING, BOTH BREAKER AND NEUTRAL. SHALL BE SUITABLE FOR THE TYPE OF CONDUCTOR SPECIFIED G. BEFORE INSTALLING PANELBOARDS CHECK ALL OF THE ARCHITECTURAL DRAWINGS FOR POSSIBLE CONFLICT OF SPACE AND ADJUST THE LOCATION OF THE PANELBOARD TO PREVENT SUCH CONFLICT WITH

H.THE PANELBOARDS SHALL BE MOUNTED IN ACCORDANCE WITH THE NEC. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL MATERIAL FOR MOUNTING THE PANELBOARDS. END OF SECTION 16470

SECTION 16471

BRANCH CIRCUIT PANELBOARD A.POWER AND LIGHTING PANELS SHALL BE OF THE DEAD-FRONT, SAFETY TYPE, WITH THERMAL MAGNETIC, QUICKMAKE, QUICK-BREAK, TRIP FREE, BOLTED-TYPE MOLDED CASE CIRCUIT BREAKERS. VOLTAGE RATINGS NUMBER OF POLES, FRAME SIZE, TRIP RATINGS, MAIN BREAKER OR LUGS, NEUTRAL BUS, AND GROUND BUS ARE ALL AS SHOWN ON THE DRAWINGS. BUS BARS SHALL BE RECTANGULAR, SOLID COPPER, SECURELY MOUNTED AND BRACED. ALL CONNECTIONS TO BUS BARS SHALL BE SECURELY BOLTED. CABINET BOXES SHALL BE CONSTRUCTED OF CODE GRADE GALVANIZED STEEL, SIZED TO PROVIDE MINIMUM 4-INCH WIDE WIRING GUTTERS ON SIDES. TOP AND BOTTOM. FRONTS SHALL BE CONSTRUCTED OF CODE GRADE STEEL, ADJUSTABLE INDICATING TRIM CLAMPS AND WITH DOOR PROVIDED WITH CONCEALED HINGES AND CYLINDER TYPE LOCK AND CATCH. TWO KEYS PER PANEL SHALL BE FURNISHED, AND ALL LOCKS KEYED ALIKE. FRONT SHALL BE FINISH PAINTED BLUE-GRAY.

B. POWER PANELS SHALL BE SIEMENS, TYPE S1, S2, S3, SE, OR ENGINEER APPROVED EQUAL, WITH BRANCH BREAKERS, MAIN BREAKERS OR LUGS, NEUTRAL AND GROUND BUSES, ETC., ALL AS SHOWN ON THE DRAWINGS. C. POWER AND LIGHTING PANEL CONSTRUCTION DETAILS SHALL BE IN ACCORDANCE WITH UL STANDARDS

AND SHALL CONFORM TO NEMA STANDARDS. THEY SHALL BEAR THE UL LABEL. PANELS SHALL MEET USASI SPECIFICATIONS W-P-115A, TYPE 1, CLASS I. D. ALL PANEL DIRECTORIES SHALL BE TYPED AND TERMINOLOGY APPROVED BY THE OWNER. **END OF SECTION 16471** 

OVERCURRENT PROTECTIVE DEVICES A THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL WHERE INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE NEC MOLDED CASE CIRCUIT BREAKERS IN A NEMA TYPE 1 ENCLOSURE. BREAKERS SHALL BE MANUALLY OPERATED, TRIP-FREE AND DESIGNED SO THAT ALL POLES OPEN SIMULTANEOUSLY. TRIPPING MECHANISM SHALL BE (THERMALLY, MAGNETICALLY) OPERATED, SHALL OPEN INSTANTANEOUSLY ON SHORT CIRCUITS AND HAVE TIME DELAY ON OVERLOADS, AND HAVE EFFECTIVE SCALING AGAINST TAMPERING. BREAKERS SHALL BE AS CALLED FOR ON THE DRAWINGS OR IN THE

PANELBOARD SCHEDULE AND AS MANUFACTURED BY SIEMENS, SOUARE D. OR APPROVED EQUAL B. FUSES, UNLESS INDICATED OTHERWISE, SHALL BE DUAL ELEMENT, TIME LAG, CARTRIDGE TYPE AS MANUFACTURED BY BUSSMAN. FUSES FOR MOTOR CIRCUITS SHALL BE SIZED IN ACCORDANCE WITH THE NEC. LABELS INDICATING THE SIZE AND TYPE OF REPLACEMENT FUSES SHALL BE GLUED TO INSIDE OF DOOR ON ALL FUSIBLE SWITCHES AND PANELBOARDS.

C. ALL FUSES SHALL BE OF THE CURRENT AND VOLTAGE RATING AS REQUIRED OR INDICATED. D.SPARES: SPARE FUSES AMOUNTING TO 10% (MINIMUM THREE) OF EACH TYPE AND RATING SHALL BE SUPPLIED BY THE ELECTRICAL CONTRACTOR. THESE SHALL BE TURNED OVER TO THE OWNER UPON PROJECT COMPLETION **END OF SECTION 16475** 

SECTION 16900 CONTROLS AND INSTRUMENTATION

A. ALL EOUIPMENT AND MATERIALS USED IN RELATION TO CONTROL WORK FOR THE PROJECT SHALL BE NEW AND SHALL BEAR THE MANUFACTURER'S NAME AND TRADE NAME. THE EQUIPMENT AND MATERIAL SHALL BE ESSENTIALLY THE STANDARD PRODUCT OF A MANUFACTURER REGULARLY ENGAGED IN THE PRODUCTION OF THE REQUIRED TYPE OF EQUIPMENT AND SHALL BE THE MANUFACTURER'S LATEST

B. THE ELECTRICAL CONTRACTOR SHALL RECEIVE AND PROPERLY STORE THE EQUIPMENT AND MATERIAL PERTAINING TO THE ELECTRICAL WORK. THE EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER, CHEMICAL OR MECHANICAL INJURY AND THEFT. THE MANUFACTURER'S DIRECTIONS SHALL BE FOLLOWED COMPLETELY IN THE DELIVERY, STORAGE, PROTECTION AND INSTALLATION OF ALL EQUIPMENT AND MATERIALS.

C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL ITEM NECESSARY FOR THE COMPLETE INSTALLATION OF THE EQUIPMENT AS RECOMMENDED OR AS REQUIRED BY THE MANUFACTURER OF THE EQUIPMENT OR REQUIRED BY CODE WITHOUT ADDITIONAL COST TO THE OWNER. REGARDLESS OF WHETHER THE ITEMS ARE SHOWN ON THE PLANS OR COVERED IN THE SPECIFICATIONS. D.IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO CLEAN THE ELECTRICAL EQUIPMENT, MAKE NECESSARY ADJUSTMENTS AND PLACE THE EQUIPMENT INTO OPERATION BEFORE TURNING EOUIPMENT OVER TO OWNER. ANY PAINT THAT WAS SCRATCHED DURING CONSTRUCTION SHALL BE "TOUCHED-UP" WITH FACTORY COLOR PAINT TO THE SATISFACTION OF THE ARCHITECT. ANY ITEMS THAT WERE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED.

1. UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED AS FOLLOWS:

RESPONSIBLE DIVISION FURNISHED SET POWER- CONTROL-EQUIPMENT 15 15 16 --COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS AND FUSED AND UNFUSED DISCONNECT SWITCHES, THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS MANUAL-OPERATING AND MULTI-SPEED SWITCHES CONTROLS, RELAYS, TRANSFORMERS 1.5 THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES THERMOSTATS(LINE VOLTAGE) TEMPERATURE CONTROL PANELS MOTOR AND SOLENOID VALVES, DAMPER MOTORS, 15(2) PUSH-BUTTON STATIONS AND PILOT LIGHTS 15(2) HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROLS

SUBSCRIPT FOOTNOTES: (1) UNDER DIVISION 15 IF FURNISHED FACTORY-WIRED AS PART

OF EQUIPMENT OR IF FURNISHED WITH COMBINATION

(2) IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 16. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 15, CONNECT UNDER DIVISION 16.

2. VERIFY LOCATION AND NAMEPLATE DATA OF ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR PRIOR TO INSTALLING ELECTRICAL FACILITIES. BE RESPONSIBLE FO COORDINATION OF REVISIONS AND MODIFICATIONS NECESSARY TO PROPERLY SUPPLY ELECTRICAL FACILITIES TO HEATING, VENTILATING, AIR CONDITIONING, PUMPS, MOTORS, CONTROLS, AND OTHER MECHANICAL EQUIPMENT INSTALLED IN PLACE OF EQUIPMENT SPECIFIED. REQUIRED ELECTRICAL FACILITIES

CHANGES SHALL BE CONSIDERED TO BE A PART OF THE MECHANICAL CONTRACT. 3. PROVIDE EACH MOTOR WITH A HORSEPOWER RATED DISCONNECT SWITCH AND MOTOR RUNNING OVERCURRENT PROTECTION PER N.E.C. 430-37. TO FACILITATE EASE AND SAFETY OF OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT, LOCATE THE DISCONNECT SWITCH IMMEDIATELY ADJACENT TO THE MOTOR, UNLESS OTHERWISE INDICATED. SIZE THERMAL OVERLOAD HEATER UNITS FOR APPROXIMATELY 115% OF FULL LOAD MOTOR CURRENT. SIZE FUSES IN ACCORDANCE WITH THE ACTUAL MOTOR NAMEPLATE RATING AND AS RECOMMENDED BY THE BUSSMAN MFG. CO. CHECK AND COORDINATE ALL STARTERS, FUSES, AND OTHER MOTOR-RUNNING PROTECTIVE DEVICES WITH THE EOUIPMENT THEY CONTROL. AND PROVIDE AND INSTALL THE CORRECT SIZE PROTECTIVE ELEMENTS AS

4. DO NOT CONNECT MOTORS WHICH ARE OF A VOLTAGE RATING DIFFERENT THAN SUPPLY VOLTAGE. REPORT SAME TO THE ARCHITECT IN WRITING AND OBTAIN WRITTEN INSTRUCTIONS FOR RESOLUTION 5. USE FLEXIBLE CONDUIT FOR ALL CONNECTIONS TO DEVICES DIRECTLY ATTACHED TO DUCTS, PIPING AND MECHANICAL EQUIPMENT END OF SECTION 16901

SECTION 16950

EXHAUST FAN SWITCHES

15 16

A AS SOON AS ELECTRIC POWER IS AVAILABLE AND CONNECTED TO SERVE THE EQUIPMENT IN THE BUILDING, AND EVERYTHING IS READY FOR FINAL TESTING AND PLACING IN SERVICE, A COMPLETE OPERATIONAL TEST SHALL BE MADE. THE CONTRACTOR SHALL FURNISH ALL NECESSARY INSTRUMENTS AND EQUIPMENT AND MAKE ALL TESTS, ADJUSTMENTS, AND TRIAL OPERATIONS AS REQUIRED TO PLACE THE SYSTEM IN A BALANCED AND SATISFACTORY OPERATING CONDITION; FURNISH ALL NECESSARY ASSISTANCE AND INSTRUCTIONS TO PROPERLY INSTRUCT THE OWNER'S AUTHORIZED PERSONNEL IN THE OPERATION AND CARE OF THE SYSTEM. B. PRIOR TO TESTING THE SYSTEM, THE FEEDERS AND BRANCH CIRCUITS SHALL BE CONTINUOUS FROM MAIN FEEDERS TO MAIN PANELS. TO SUBPANELS. TO OUTLETS, WITH ALL BREAKERS AND FUSES IN PLACE.

PRESENCE OF THE ENGINEER'S REPRESENTATIVE. C. NO CIRCUITS SHALL BE ENERGIZED WITHOUT THE OWNER'S APPROVAL. D.THE RIGHT IS RESERVED TO INSPECT AND TEST ANY PORTION OF THE EQUIPMENT AND/OR MATERIALS DURING THE PROGRESS OF ITS ERECTION. THE CONTRACTOR SHALL FURTHER TEST ALL WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OREQUIPMENT. E. THE CONTRACTOR SHALL TEST THE ENTIRE SYSTEM IN THE PRESENCE OF THE ARCHITECT OR HIS ENGINEER WHEN THE SYSTEM IS FINALLY COMPLETED TO INSURE THAT ALL PORTIONS ARE FREE FROM SHORT CIRCUITS OR GROUND FAULTS.

THE SYSTEM SHALL BE TESTED FREE FROM SHORTS AND GROUNDS. SUCH TESTS SHALL BE MADE IN THE

END OF SECTION 16950 DEMONSTRATION OF ELECTRICAL EQUIPMENT

A.THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE LOCAL AUTHORITY HAVING JURISDICTION IN ORDER THAT LOCAL INSPECTION MAY BE CARRIED OUT AT THE PROPER STAGE. B. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ALL PERMITS, INSPECTION FEES, AND INSTALLATION FEES AS REQUIRED TO COMPLETE THE WORK UNDER THIS SECTION OF THE CONTRACT. C. THIS CONTRACTOR SHALL GUARANTEE THE MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWELVE (12) MONTHS FROM THE TIME THE INSTALLATION IS ACCEPTED BY THE OWNER. IF, DURING THIS TIME, ANY DEFECTS SHOULD SHOW UP DUE TO ANY DEFECTIVE MATERIALS, WORKMANSHIP, NEGLIGENCE OR WANT OF PROPER CARE ON THE PART OF THIS CONTRACTOR. HE SHALL FURNISH ANY NEW MATERIALS AS NECESSARY, REPAIR SAID DEFECTS, AND PUT THE SYSTEM IN ORDER AT HIS OWN EXPENSE ON RECEIPT OF

NOTICE OF SUCH DEFECTS FROM THE ARCHITECT. THIS SPECIFICATION IS NOT INTENDED TO IMPLY THAT

THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR NEGLIGENCE OF THE OWNER. END OF SECTION 16980 END OF DIVISION

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