

October 14, 2016
Transmittal No: CREC - 001

Joseph Raymond
144 Harrisville Main Street
Harrisville, RI 02830

Subject: Clear River Energy Center (CREC) – Building Drawing Package

Dear Mr. Raymond,

As discussed, we are forwarding the building drawings for your review. This package includes a site plan, general arrangement, plan and section views of the Administration and Control Building, the specification the specifications that the buildings will be designed to, and the site grading, drainage and storm water management plans. A list of the drawings is enclosed.

CREC has not reached a stage where we have authorized the detailed design and construction contractor who would prepare the detailed drawings for the project, however we are forwarding representative drawings from one of our sister projects (Lackawanna Energy Center) which has the same power generation equipment and is a similar configuration (Lackawanna has three single shaft power trains as opposed to two and each train is cooled by an air cooled condenser) and has already commenced construction. The drawing set includes a complete plan set for the LEC Administration and Control Building and plan and elevation views of the turbine building. The turbine building and details are set by the major equipment manufacturer, General Electric, and is the identical equipment being proposed for Clear River Energy and as such the design for the Clear River facility will be very similar, the only significant differences being those features that are needed to meet local codes and permit requirements.

We trust the enclosed package of drawings represents the type of drawings and information you were expecting to receive. The finish product on CREC will be similar and you should expect a drawing package similar to the enclosed drawing set for review once the project has obtained the necessary approvals and has advance into detailed design and engineering needed to support construction. Please advise if there is additional drawings or data that you need and we will make every effort to provide that information.



Please feel free to reach out me via email should you have any questions or concerns at jniland@Invenergyllc.com.

Regards,

A handwritten signature in purple ink, appearing to read 'J. Niland'.

John Niland

CC: Amit Nadkarni

Alan Shoer (APS)

Information Provided for Building Inspector Review

CREC information

The following are the drawings specific to the Clear River Energy Center that have been prepared to support procurement of the engineering, procure, and construction (EPC) contract for the project. The drawings include the site plan, general arrangement, layout and preliminary architectural features of the control administration building, and drawings from the stormwater management plan. The specifications that would govern the design of the buildings have also been provided.

| Drawing Number | Drawing Title |
|-----------------------|---|
| 238926-OGA-C1000 | Single Shaft Site Arrangement |
| 238926-OGA-C1001B | Single Shaft GA Modifications to Support Permitting |
| 238926-OGA-A1000 | Administration Building Floor Plan |
| A-2.0 | Exterior Elevations - (Reference Drawing) |
| A-3.0 | Typical Wall Sections - (Reference Drawing) |
| A3.1 | Typical Wall Sections - (Reference Drawing) |
| Specifications | Consolidated Specification for Building Design from EPC Specification |
| 01C000 | Stormwater Management Cover |
| 01C001 | Legend |
| 01C100 | Existing Drainage Conditions |
| 01C200 | Proposed Site Layout Plan |
| 01C300 | Proposed Grading, Drainage and Water Quality Plan |
| 01C400 | Proposed Drainage Plan |
| 01C600 | Roadway Plan & Profile |
| 01C601 | Roadway Plan & Profile |
| 01C800 | Proposed Site Drainage Details |
| 01C801 | Proposed Site Drainage Details |
| 01C802 | Proposed Site Drainage Details |
| 01C803 | Proposed Site Drainage Details |
| 01C804 | Proposed Site Drainage Details |
| 01C805 | Proposed Site Drainage Details |

LEC information

The following information is from a sister project to the CREC that is representative of the design of the similar buildings and structures. These are provided as examples to support the review.

| Drawing Number | Drawing Title |
|---------------------|--|
| 2014-087-199-BA1.10 | Units 1,2 & 3 Turbine Bldg – Architectural Floor Plan |
| 2014-87-199-BA3.01 | Units 1,2 & 3 Turbine Bldg – Exterior Elevations |
| 2014-87-199-BA3.02 | Units 1,2 & 3 Turbine Bldg – Exterior Elevations |
| 2014-087-001-BA0.00 | 001-Administration Building - Cover Sheet |
| 2014-087-001-BA0.01 | 001-Administration Building – Standards |
| 2014-087-001-BA0.02 | 001-Administration Building – Code Analysis |
| 2014-087-001-BA1.10 | 001-Administration Building – Architectural Floor Plan |
| 2014-087-001-BA1.11 | 001-Administration Building – Reflected Ceiling Plan |
| 2014-087-001-BA1.12 | 001-Administration Building – Enlarged Restroom Plans & Elevations |
| 2014-087-001-BA2.01 | 001-Administration Building – Roof Plan & Details |
| 2014-087-001-BA3.01 | 001-Administration Building – Exterior Elevations |
| 2014-087-001-BA4.01 | 001-Administration Building – Building Sections |
| 2014-087-001-BA4.02 | 001-Administration Building – Wall Sections |
| 2014-087-001-BA4.03 | 001-Administration Building – Wall Sections |
| 2014-087-001-BA4.04 | 001-Administration Building – Wall Sections |
| 2014-087-001-BA5.04 | 001-Administration Building – Wall Sections |
| 2014-087-001-BA6.00 | 001-Administration Building – Door & Room Finish Schedules |
| 2014-087-001-BA6.01 | 001-Administration Building – Door & Window Details |
| 2014-087-001-BA6.02 | 001-Administration Building – Door & Window Details |
| 2014-087-001-BA6.03 | 001-Administration Building – Door & Window Details |
| 2014-087-001-BS0.00 | 001-Administration Building – General Notes |
| 2014-087-001-BS0.01 | 001-Administration Building – Special Inspections |
| 2014-087-001-BS1.10 | 001-Administration Building – Foundation Plan |
| 2014-087-001-BS2.10 | 001-Administration Building – Roof Framing Plan |
| 2014-087-001-BS3.10 | 001-Administration Building – Typical Foundation Details |
| 2014-087-001-BS3.11 | 001-Administration Building – Foundation Sections & Details |
| 2014-087-001-BS3.12 | 001-Administration Building – Glass Wall Header Elevation |
| 2014-087-001-BS3.20 | 001-Administration Building – Canopy Framing |
| 2014-087-001-BS4.10 | 001-Administration Building – Typical Roof Framing |

| | |
|---------------------|---|
| | Details |
| 2014-087-001-BS4.11 | 001-Administration Building – Roof Framing Sections & Details |
| 2014-087-001-BS4.12 | 001-Administration Building – Monorail Details |
| 2014-087-001-BP0.00 | 001-Administration Building – Plumbing Abbreviations & Symbols |
| 2014-087-001-BP1.11 | 001-Administration Building – Plumbing Floor Plan- Sanitary Vent System |
| 2014-087-001-BP1.12 | 001-Administration Building – Plumbing Floor Plan- Domestic Water System |
| 2014-087-001-BP1.13 | 001-Administration Building – Plumbing Plan-Gas and Condensate System |
| 2014-087-001-BP2.00 | 001-Administration Building – Sanitary Drain/Vent Isometric Riser |
| 2014-087-001-BP2.01 | 001-Administration Building – Domestic Hot & Cold Water Isometric Riser |
| 2014-087-001-BP2.02 | 001-Administration Building – Gas & Condensate Drain Isometric Riser |
| 2014-087-001-BP4.00 | 001-Administration Building – Plumbing Schedules and Details |
| 2014-087-001-BM0.00 | 001-Administration Building – Mechanical HVAC Abbreviations & Symbols |
| 2014-087-001-BM1.10 | 001-Administration Building – Mechanical HVAC First Floor Plan |
| 2014-087-001-BM1.11 | 001-Administration Building – Mechanical Piping First Floor Plan |
| 2014-087-001-BM1.20 | 001-Administration Building – Mechanical HVAC Roof Plan |
| 2014-087-001-BM3.00 | 001-Administration Building – Mechanical Details |
| 2014-087-001-BM3.01 | 001-Administration Building – Mechanical Details |
| 2014-087-001-BM4.00 | 001-Administration Building – Mechanical HVAC Schedules |
| 2014-087-01-BM4.01 | 001-Administration Building – Mechanical HVAC Schedules |
| 2014-087-001-BM5.00 | 001-Administration Building – Mechanical HVAC Facility Instruments & Controls Symbols & Abbreviations |
| 2014-087-001-BM5.01 | 001-Administration Building – Mechanical HVAC Facility Instruments & Controls |
| 2014-087-001-BM5.02 | 001-Administration Building – Mechanical HVAC Facility Instruments & Controls |
| 2014-087-001-BM6.00 | 001-Administration Building – Mechanical HVAC Flow Diagram |
| 2014-087-001-BM6.01 | 001-Administration Building – Mechanical VRF System |

| | |
|---------------------|---|
| | Diagram |
| 2014-087-001-BE0.00 | 001-Administration Building – Electrical Symbols & Abbreviations |
| 2014-087-001-BE0.01 | 001-Administration Building – Light Fixture and Device Schedules |
| 2014-087-001-BE0.02 | 001-Administration Building – Equipment Schedule and One-Line Diagram |
| 2014-087-001-BE0.03 | 001-Administration Building – Equipment Schedule |
| 2014-087-001-BE0.04 | 001-Administration Building – Electrical Panel Schedules |
| 2014-087-001-BE0.05 | 001-Administration Building – Electrical Panel Schedules |
| 2014-087-001-BE1.11 | 001-Administration Building – Lighting Floor Plan |
| 2014-087-001-BE2.11 | 001-Administration Building – Power Floor Plan – Level 1 |
| 2014-087-001-BE2.12 | 001-Administration Building – Power Floor Plan Above Ceiling |
| 2014-087-001-BE2.13 | 001-Administration Building – Electrical Roof Plan |
| 2014-087-001-BE4.11 | 001-Administration Building – Security Floor Plan – Level 1 |
| 2014-087-001-BE9.00 | 001-Administration Building – Electrical Details |
| 2014-087-001-BE9.01 | 001-Administration Building – Enlarged Power Plan |

1 INTRODUCTION

The Clear River Energy Center ("Facility") shall be configured as a nominal 850 – 1,000 MW, dual one-on-one single shaft (2, 1x1 single shaft), duct fired, combined cycle generation station. The two units will be installed in phases. The first unit (Unit 1) shall be installed in Phase 1 and the second unit (Unit 2) shall be installed in Phase 2. The common balance of plant (BOP) systems shall be designed for both units and installed in Phase 1.

The proposed location of buildings at the Facility is as shown on the project conceptual site arrangement drawing 238926-0GA-C1001B.

The following sections specify the general design requirements for the Facility buildings.

2 SUMMARY OF WORK

Contractor shall furnish and install enclosed structural steel buildings as identified below in accordance with the latest state building code and with all applicable interior equipment foundations, drainage, electrical, mechanical, HVAC, and life safety systems intended for proper function.

- Combined Administration/Control and Maintenance/Warehouse Building with storm shelter
- Turbine Building (one per Power Island)
- Feedwater Pump Building (one per Power Island)
- BOP Electrical Building (one per Power Island)
- Water Treatment Building
- Auxiliary Boiler Building
- Gas Compressor Building
- Fuel Oil Equipment Building
- Fire Pump Building
- Switchyard Control Building

Structural and architectural provisions shall be provided complete including all shallow and deep foundations, lifting equipment, steel structures, and protective coatings.

3 DESIGN BASIS

The power station Facility, including the buildings shall be designed and constructed over the entire ambient condition range.

The Facility shall be designed in compliance with all applicable laws and regulations. In particular, the Facility shall comply with all relevant federal and state environmental and occupational health and safety regulations.

3.1 CODES AND STANDARDS

The following codes, standards, and publications of the latest issue in effect at date of the Agreement shall be used in the design and installation of the Work.

**Invenergy Clear River Energy Center
Specification for Building Design**

| | |
|--------|---|
| ACI | American Concrete Institute |
| AHRI | Air-conditioning, Heating, and Refrigeration Institute |
| AISC | American Institute for Steel Construction |
| AISI | American Iron and Steel Institute |
| AMCA | Air Moving and Conditioning Association |
| ANSI | American National Standards Institute |
| ASCE | American Society of Civil Engineers |
| ASHRAE | American Society of Heating, Refrigeration and Air Conditioning Engineers |
| ASME | American Society of Mechanical Engineers |
| ASTM | ASTM International |
| AWS | American Welding Society |
| CRSI | Concrete Reinforcing Steel Institute |
| IBC | International Building Code |
| IES | Illuminating Engineers Society |
| ISA | International Society of Automation |
| ISO | International Standards Organization |
| MBMA | Metal Building Manufacturers Association |
| NACE | National Association of Corrosion Engineers |
| NAIMA | North American Insulation Manufacturers Association |
| NEC | National Electric Code |
| NEMA | National Electrical Manufacturers Association |
| NFPA | National Fire Protection Association |
| NIOSH | National Institute of Occupational Safety and Health |
| SDIS | Steel Deck Institute Standards |
| SJIS | Steel Joint Institute Standard |
| SMACNA | Sheet Metal and Air-conditioning Contractors National Association |
| SSPC | Society of Protective Coatings |
| UL | Underwriters Laboratories |

Adoption of alternative standards shall be subject to Owner's prior approval. When requested, Contractor shall provide one English language copy of the requested alternative for Owner's sole use.

Contractor shall be consistent in their application of codes and standards in execution of the Work.

3.2 FORBIDDEN MATERIALS

Equipment and materials or any other temporary or permanent items which contain PCBs, asbestos or asbestos bearing materials, nuclear sources, lead based paint ($>1.0 \text{ mg/cm}^2$, or

0.5% by weight), methyl ethyl ketones (MEK), or mercury are prohibited from use at the Facility.

3.3 SITE CONDITIONS

Elevation

Site elevation shall be established at 575 feet above mean sea level (MSL) for the main power block. Grading around foundations and exposed concrete slabs shall be sloped to assure proper drainage away from foundation structures.

Precipitation

Point precipitation frequency estimates Burrillville, RI:

- | | |
|-----------------------------|----------|
| • Annual average, inches | 47.18 ** |
| • 10 year, 24-hour, inches | 5.05* |
| • 25 year, 24-hour, inches | 6.24* |
| • 100 year, 24-hour, inches | 8.40* |
| • Average Snowfall Total | 33.80** |

**Data based on NOAA Atlas 14 point precipitation frequency estimates (Mansfield, NJ)*

***Based on NOAA Normals of the US 1981-2010 (Providence, RI)*

Dry Bulb Ambient Temperature

Temperatures are from 2013 ASHRAE fundamentals handbook for Providence, RI.

- | | |
|------------------------------------|------------------|
| • 50 Year Extreme High Temperature | 104.3 °F |
| • 1% Incident Temperature | 86.7 °F (52% RH) |
| • Annual Average Mean Temperature | 51.8 °F |
| • 50 Year Extreme Low Temperature | -8.9 °F |

3.4 BASIC STRUCTURAL DESIGN CRITERIA

Structural design criteria for the facilities buildings shall be in accordance with Section 4.

3.5 BASIC HVAC DESIGN CRITERIA

HVAC design criteria for the facilities buildings shall be in accordance with Section 5.

3.6 BASIC FIRE PROTECTION DESIGN CRITERIA

HVAC design criteria for the facilities buildings shall be in accordance with Section 6.

3.7 PAINTING AND COATING

This section outlines the general requirements and scope of painting and lining for the buildings.

Finish colors shall be selected by Owner from among the paint manufacturer's standard colors. The "Paint/Lining System Application Table" contained herein includes specific definition of primer and finish paints and lining materials, touch-up, and application of galvanizing and other similar materials.

Standards

The following specific codes and standards apply:

American Concrete Institute (ACI)

**Invenergy Clear River Energy Center
Specification for Building Design**

| | |
|--------|--|
| 222R | Protection of Metals in Concrete Against Corrosion |
| 515.1R | Guide to the Use of Waterproofing, Dampproofing, and Decorative Barrier Systems for Concrete |

ASTM International (ASTM)

| | |
|-------|--|
| A123 | Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products |
| D520 | Standard Specification for Zinc Dust Pigment |
| D3359 | Standard Test Method for Cross Hatch Adhesion Test of Coatings |
| D4417 | Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel |

International Concrete Repair Institute (ICRI)

| | |
|--------|--|
| 310.1R | Guideline for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion |
|--------|--|

Society of Protective Coatings (SSPC)

| | |
|----------|---|
| AB1 | Mineral and Slag Abrasives |
| AB2 | Cleanliness of Recycled Ferrous Metallic Abrasives |
| AB3 | Ferrous Metallic Abrasive |
| PA2 | Measurement of Dry Coating Thickness with Magnetic Gages |
| SP1 | Solvent Cleaning |
| SP3 | Power Tool Cleaning |
| SP6 | Commercial Blast Cleaning |
| SP10 | Near-White Blast Cleaning |
| SP11 | Power Tool Cleaning to Bare Metal |
| SP13 | Surface Preparation of Concrete |
| Paint 20 | Zinc-Rich Primers (Type I, Inorganic, and Type II, Organic) |
| Paint 30 | Weld-Through Inorganic Zinc Primer |

National Association for Corrosion Engineers (NACE)

| | |
|--------|---|
| SP0178 | Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service |
|--------|---|

Paint/Lining System Tables

Table 1- Paint/Lining Systems Application Table

| Item to be Coated | Exposure | Coating System (Note 1) | Color (Note 2) |
|--|--|-------------------------|----------------|
| Structural Steel | | | |
| Structural steel, Pre-engineered building structural steel | Interior, <220°F, SSPC Environmental Zone 1A | A | |
| Structural steel, Pre-engineered building structural steel | Interior, <220°F, corrosive environment | D | |

**Invenergy Clear River Energy Center
Specification for Building Design**

| Item to be Coated | Exposure | Coating System (Note 1) | Color (Note 2) |
|--|---|----------------------------|---|
| Structural steel, Pre-engineered building structural steel | Interior, < 220 °F, non-corrosive, fire proofed | | |
| Structural steel, Pre-engineered building structural steel | Exterior | Z | |
| Miscellaneous Steel | | | |
| Handrails, guardrails, ladders, safety cages | Interior and Exterior | Z | |
| Grating, stair stringers, toe and kick-plates, stair treads, checkered floor plate | Interior and Exterior, ≤220°F, noncorrosive | Z | First and last stair tread nose shall be safety yellow. |
| Metal siding, roofing and gutters | Exterior | 20 year warranty | |
| Ductwork | | | |
| Ductwork; HVAC and other, interior and exterior, <220°F | | E, I, | Silver / aluminum |
| Ductwork, Stacks, and Similar; Other than HVAC, interior and exterior, 220°F to 750°F + | | K, L | Match system |
| Ductwork; Exposed doors, frames, supports, and ports, interior and exterior, (insulated) | | H | Match balance |

Notes:

1. See Paint/Lining Systems Table below. Where modifier number (second digit) is not used, either parent coating type may be used (e.g., B1 or B2, where B is specified).
2. Physical color samples shall be submitted to Owner for approval for all exterior paint colors.

Table 2 - Paint/Lining Systems

| Step | Surface Prep/Paint or Coating | DFT (mils) |
|--|--|---------------|
| A - Inorganic Zinc | | |
| Initial Surface Prep: | SSPC-SP6 | |
| 1st Coat: | Inorganic zinc silicate primer, gray-green pigment | 3.0-4.0 |
| Repair Surface Prep: | SSPC-SP3/11 | |
| Touch-up: | Organic zinc epoxy primer | 3.0-4.0 |
| D – Inorganic Zinc Primer, Polyamide Epoxy Finish | | |
| Initial Surface Prep: | SSPC-SP6 | |
| 1 st Coat: | Inorganic zinc primer, gray-green pigment | 3.0-4.0 |
| 2 nd Coat: | Polyamide epoxy | 4.0-6.0 |
| Repair Surface Prep: | SSPC-SP3/11 | |

**Invenergy Clear River Energy Center
Specification for Building Design**

| Step | Surface Prep/Paint or Coating | DFT (mils) |
|---|---|-----------------------|
| Touch-up: | Organic zinc primer, same finish coat | |
| E – Inorganic Zinc Primer, Epoxy Mastic, Urethane Finish | | |
| Initial Surface Prep: | SSPC-SP6 | |
| 1 st Coat: | Inorganic zinc primer, gray green pigment | 2.0-3.0 |
| 2 nd Coat: | High build epoxy mastic | 4.0-6.0 |
| 3 rd Coat: | Aliphatic urethane | 2.0-3.0 |
| Repair Surface Prep: | SSPC-SP3/11 | |
| Touch-up: | Organic zinc primer, same intermediate and finish coats | |
| H – Epoxy Primer, Epoxy Finish | | |
| Initial Surface Prep: | SSPC-SP6 | |
| 1 st Coat: | High build epoxy primer | 4.0-6.0 |
| 2 nd Coat: | High build epoxy | 4.0-6.0 |
| I – Epoxy Primer, Epoxy, Urethane Finish | | |
| Initial Surface Prep: | SSPC-SP6 | |
| 1 st Coat: | Epoxy primer | 2.0-3.0 |
| 2 nd Coat: | High build epoxy | 4.0-6.0 |
| 3 rd Coat: | Aliphatic urethane | 2.0-3.0 |
| Z – Hot Dipped Galvanizing | | |
| Initial Surface Prep: | SSPC-SP6 | |
| Coating: | ASTM A123, A153, or A767 | per ASTM |
| Repair: | ASTM A780 | per ASTM |
| Painted Surface Prep: | ASTM D7396 | |

Table Notes:

1. When top coating over inorganic, zinc silicate primers, a mist coat is necessary to avoid bubbling. A mist coat may be a thinned coat or applied by a quick pass of the spray gun prior to applying the full coat, but allowing sufficient time for solvent evaporation. Please consult coating manufacturer's technical product data sheets for further details.
2. Two coats of Epoxy at 4.0 – 8.0 mils DFT per coat can be substituted for two of Acrylic if desired.
3. Acid containments shall be rated for full immersion; system shall be Carboline Semstone, Blome TL 400 HWM vinyl ester resin lining with fiberglass reinforcing, or Owner approved equal.
4. Chemistry of cargo must be specified along with product concentration, temperature, etc.
5. See Paint/Linings Application Table above.

3.8 SIGNAGE

Contractor shall provide complete signage for the Facility. Within the Site, Contractor shall provide signs for the following:

- Signs identifying each building and enclosure shall be placed over each entrance
- Room numbers on doors, room names for conference rooms, building-internal signs for restrooms, and emergency egress
- General directions to assembly points for inclement weather throughout the Facility
- Areas requiring hearing protection, other personal protection equipment (PPE), confined space access, heat stress, chemicals, or similar safety instructions
- Required NFPA 704 placards
- Locations where extra care is needed to enter (e.g., flammable material storage, forklift traffic areas, other)
- Locations where manual drain valves are included on secondary containment areas (e.g., describing when valves are to be opened/closed)
- General directions to safety shower/eyewash stations
- Required signage for arc flash areas on all equipment rated at above 300 V
- Floor plaques that provide an overview of building floor plan and state the floor number or letter, at the entrance/exit of stairwells and elevators
- Painted floor area marking space required for equipment maintenance (e.g. shaft, rotor, tube, motor control center drawers, fire extinguishers, pull spaces)
- Painted indoor floor areas for preferred walkways
- OSHA safety and emergency response signs
- Design floor loading for all above ground level/elevated platforms and grated areas serviced by hoists.
- Design capacity for all lifting points, monorails, gantries, and cranes
- Underground utility corridor signs
- Electrical equipment enclosures, and electrical safety signs therein
- Fire protection system access/direction signs
- Building column identification at ground level and elevated platforms
- Any signage required by federal, state, or local regulations
- Cautionary paint or tape where applicable (e.g. low hanging pipes or beams, trip hazards, high voltage, etc.)

4 STRUCTURAL/ARCHITECTURAL

4.1 SUMMARY

Contractor shall furnish the buildings listed in Section 2.0 – Summary of Work. This section outlines the minimum structural and architectural requirements for buildings.

4.2 BUILDINGS

Unless noted otherwise, all buildings shall be metal sided-metal frame pre-engineered type structures. The Administration/Control Building and the Warehouse/Maintenance building shall have structural precast wall system.

4.2.1 General Building Requirements

Structures shall be designed to support and provide personnel access to the mechanical equipment and piping/electrical/control systems directly or indirectly associated with power generation. All enclosed and non-enclosed structures shall have permanent grating, platforms, ladders, and stairways for personnel access that meet the requirements of the state OSHA. All penetrations and openings through grating shall have banding. Structures and equipment components shall be supported by suitable concrete foundations either bearing on existing soil or if required, for heavier equipment and structures, supported on deep foundations (piles).

For all buildings and enclosures, an applicable (future) collateral loading should be provided in wall and roof framing to allow future conduit, cable tray, and mechanical piping to be top-supported (especially for any pre-engineered buildings). If collateral loading is not needed in a specific structure, the unity stress for all members should be limited to 0.9. For buildings with significant piping and tray, a lower unity stress allowance shall be used coupled with increased load factors on primary framing that shall be affected. All wind girts shall be designed to support their own vertical dead weight rather than be supported by liner panel or temporary means so that they do not warp.

Contractor shall provide Owner with complete design calculations for each building, enclosure, or other structure signed and sealed by a professional engineer, registered in the State that account for all applicable loading and code requirements.

Liner panels on the insides of all buildings shall be used to absorb sound and protect insulation, while also providing a hard surface for maintenance. For general areas, the liner panel shall match the outer wall panel. Liner panels in areas of high traffic or where materials shall be stored on the inside shall consider thick sections or even 3-foot high row of concrete masonry. The minimum liner and wall and roof metal panel gauge thickness that shall be allowed for any building or enclosures is 24 gauge, without Owner approval. All roof and wall panels shall be protected with galvanizing base coat and finish painting coat with a minimum guaranteed service life of 30 years (warranty required). The finish coating film integrity shall be for 30 years service against cracking, flaking, chipping and peeling, with chalking and fading resistance covered for at least 25 years. Gutter systems shall be similarly coated, with debris guards provided.

See following articles for additional building requirements.

4.2.2 Turbine Building

The turbine building footprint shall be designed to accommodate the selected Power Island Supplier's recommended component laydown and maintenance requirements within the concrete section of the operating floor. The synchronous generator rotor removal pull space shall be completely within the building volume and shall not require removal of a wall panel or disassembly of the generator exciter enclosure to remove the rotor with the bridge crane. Generator isophase bus shall be routed outside of the rotor removal space.

4.2.3 Administration Building

The Administration/Control Building main conference room shall be designed as a storm shelter area. The storm shelter shall be designed in accordance with the ICC/NSSA 500 Standard for the Design and Construction of Storm Shelters.

4.2.4 Water Treatment Building

The water treatment building shall be provided with an office/laboratory room. The laboratory shall include a fume hood, lab sink, and counters with cabinets above and below, lab bench, a computer station with desk and chair, and testing equipment consisting of a pH meter, conductivity meter, turbidity meter, spectrophotometer, hardness titrator, lab demineralizer and other standard laboratory equipment.

4.3 STRUCTURAL REQUIREMENTS

4.3.1 General

Design shall be in accordance with the applicable codes and regulations and industry standards referred to in this section. The design criteria discussed in this section shall govern the technical requirements for designing civil/structural elements.

Work shall be produced in accordance with the rules applicable to Professional Engineers practicing in the State, using due standards of care, skill and diligence. Design drawings and specifications produced shall be sealed by a Professional Engineer licensed to practice in Rhode Island.

4.3.2 Codes and Standards

In addition to the codes and standards identified in Section 03 – Facility Design Basis, relevant aspects of the Rhode Island State Building Code, the 2012 International Building Code (IBC), and the editions of the American Concrete Institute (ACI) code and American Institute of Steel Construction (AISC) code incorporated by reference.

Structural design shall be in conformance with the latest standard accepted edition listed in the table below, to the extent they apply, unless the building code requires a more conservative design.

American Concrete Institute (ACI)

| | |
|------------|--|
| 117/117R | Standard Specifications for Tolerances for Concrete Construction and Materials and Commentary |
| 301 | Specifications for Structural Concrete |
| 315 | Details and Detailing of Concrete Reinforcement |
| 318/318R | Building Code Requirements for Structural Concrete and Commentary |
| 350R | Environmental Engineering Concrete Structures |
| 351.R1 | Grouting between Foundations and Bases for Support of Equipment and Machinery |
| 351.R2 | Static Foundations for Equipment and Machinery |
| 351.R3 | Dynamic Foundations for Equipment and Machinery |
| 360R | Guide to Design of Slabs-on-Ground |
| 530/530.1R | Building Code Requirements for Masonry Structures and Specifications for Masonry Structures and Commentaries |

American Institute of Steel Construction (AISC)

| | |
|-----|--|
| 303 | Code of Standard Practice for Structural Steel Buildings and Bridges |
| 341 | Seismic Provisions for Structural Steel buildings |
| 360 | Specification for Structural Steel buildings |

American Society of Civil Engineers (ASCE)

- 7 Minimum Design Loads for Buildings and Other Structures
 Structural Design of Air and Gas Ducts for Power Stations and Industrial
 Boiler Applications

American Welding Society (AWS)

- D1.1 Structural Welding Code-Steel

Association of Iron and Steel Institute (AISI)

- Specifications of the Design of Cold Formed Structural Steel Members

Metal Buildings Manufacturer Association (MBMA)

- Metal Building Systems Manual

Precast Prestressed Concrete Institute (PCI)

- Manual for Structural Design of Architectural Precast Concrete

Research Council On Structural Connections (RCSC)

- Specification for Structural Joints Using ASTM A325 or A490 Bolts

Steel Deck Institute (SDI)

- Design Manual for Composite Deck, Form Decks and Roof Decks –
 Publication No. 30

- Diaphragm Design Manual

Steel Joist Institute (SJI)

- Standard Specifications, Loads Tables and Weight Tables for Steel Joists
 and Joist Girders

4.3.3 Design Loads

Design loads and load combinations for all buildings, structures, structural elements and components, handrails, guardrails, and connections shall be determined according to the criteria specified below, unless the applicable building code requires more severe design conditions. Loads imposed on structural systems from the weight of all temporary and permanent construction, occupants and their possessions, environmental effects, differential settlement, and restrained dimensional changes shall be considered.

Wind, seismic, and snow loading shall be in accordance with IBC or local jurisdictional building code, whichever is more stringent.

4.3.3.1 Wind Loads

Wind design shall be in accordance with:

- 3 second gust = 139 mph
- Exposure category = C

4.3.3.2 Seismic Loads

Seismic design shall be in accordance with SBC-1 2013 Table 1608.1 and Chapters 11 thru 15 of ASCE 7-10 as applicable, utilizing the inputs below:

- Job site (soil) class = D (Code Default)
- Mapped MCE_R spectral response accelerations, $S_s = 0.175g$

- Mapped MCE_R spectral response accelerations, $S_1 = 0.063g$
- Spectral acceleration for short periods, $S_{DS} = 0.187g$
- Spectral acceleration for a 1-second period, $S_{D1} = 0.101g$
- Seismic Design Category, $SDC = B$
- Importance factor, $I_E = 1.25$
- Seismic design criteria may be adjusted by Owner based on future geotechnical investigation and report

4.3.3.3 Snow Loads

Snow loads applied to exposed equipment and buildings shall be in accordance with SBC-1 2013 Table 1608.1 and Chapter 7 of ASCE 7-10, utilizing the inputs below:

- Ground snow load, $p_g = 35 \text{ psf}$
- Importance factor, $I_S = 1.1$

4.3.3.4 Live Loads

The live loads used in the design of buildings and structures shall be the maximum loads likely to be imposed by the intended use or occupancy, but shall not be less than the minimum uniform design live loads. Components of the structural system may be designed for a reduced live load in accordance with the local building code. Roofs shall be designed to preclude instability resulting from ponding effects by ensuring adequate primary and secondary drainage systems, slope, and member stiffness.

Live loads used in the design of buildings and structures shall be the maximum loads likely to be imposed by the intended use or occupancy, but not less than the following minimum uniform live loads:

- Turbine operating deck floor = 150 psf
- Ground floor slabs = 250 psf
- Storage areas = Weight of stored material, but no less than 150 psf
- Other concrete floors = 100 psf
- Grating floors = 100 psf
- Checker Plate floors = 100 psf
- Stairs = 100 psf

4.3.3.5 Construction Loads

Construction or crane access considerations may dictate the use of temporary structural systems. Special considerations shall be made to ensure the stability and integrity of the structures during any periods involving use of temporary bracing systems.

4.3.3.6 Buildings and Other Structures

Except for the administration/control building and warehouse/maintenance building superstructure support systems shall consist of pre-engineered steel moment frame construction with bracing in the orthogonal axis direction as required or custom designed steel braced frame structures and/or steel moment frame structures. Position of bracing shall meet spatial requirements for access and maintenance. The superstructure shall provide an integrated gravity and lateral load resisting system to transfer loads to the reinforced concrete foundation.

4.3.3.7 Concrete

Except as otherwise specified, or where precast structural elements can reduce cost and meet or exceed cast-in-place reinforced concrete performance, all concrete shall be reinforced cast-in-place concrete designed in accordance with ACI 318, *Building Code Requirements for Structural Concrete*, and other applicable structure specific codes and standard.

Exposed concrete floors within the water treatment, chemical lab building and chemical feed area are to have a steel-trowel finish and be sealed to impart chemical resistance where such exposure is possible.

Duct banks which run under roads and maintenance areas shall be adequately reinforced to withstand anticipated loads, supported by deep foundations if necessary by design, and shall be marked with a permanent dye to identify it as electrical ductbank.

4.3.3.8 Concrete Masonry Block Work

Structural masonry design shall be in accordance with the latest edition of ACI 530, *Building Code Requirements for Masonry Structures*.

4.3.3.9 Steel Structures

Design and construction of steel structures shall utilize standard design practices as defined by local building codes and standards, but not less than those defined below.

| System | Criteria |
|---|--|
| Deflection, floors and roofs, live load only | Span/360, vertical, unless attached to more rigid, brittle members |
| Deflection, floors and roofs, dead and live load combined | Span/240, vertical |
| Deflection, roof beams and boiler girders | Span/360, vertical |
| Deflection, girts | Span/360, horizontal |
| Deflection, grating (100 psf uniform load) | 1/4 inch maximum |
| Deflection, crane and hoist support beams | Span/800, vertical (with impact), Span/1000 vertical (without impact) |
| Deflection, duct plates (between stiffeners) | Span/100, normal operations only |
| Deflection, duct plate stiffeners | Span/240, normal operations only |
| Unbraced length, pipe bracing in ducts | $KL/r \leq 120$, checked for vortex shedding in flow and thermal restraint forces |

4.3.3.10 Pre-Engineered Buildings

Design of the structural framing, by pre-engineered metal building (PEMB) manufacturer, shall be in accordance with the MBMA Metal Building Systems Manual.

Framing configurations shall conform to the architectural floor plans.

Prior to any pre-engineered building package being shipped to Site for erection, a letter of certification signed and stamped by a professional engineer registered in the State shall be provided to Owner and shall include the following information and state that the building meets all applicable Contract and code requirements:

- Column base loads (for each load combination)
- Column base loads (for envelope solution)

- Allowable loads for framing members
- Critical reactions and locations
- Critical shears and locations
- Critical moments and locations

4.4 STRUCTURAL MATERIALS

Materials, workmanship, and testing shall be in accordance with the appropriate specifications, standards and codes. Methods of quality control shall be clearly established and documented for all structural Work (e.g., concrete, steel, connections, anchors, other) by Contractor, including the Submittal of test records to Owner. Third party shall be used to complete any special inspections and for Site quality control functions (soils, asphalt, concrete, steel, connections, other).

Working methods shall ensure the construction of stable structures able to withstand all applied loadings during construction and for the design life of the Facility without collapse, failure or excessive deformation such as to cause any damage, loss of function or any durability problems.

4.4.1 Structural Steel

Structural steel shall be detailed and fabricated in accordance with the AISC *Code of Standard Practice* and the AISC *Specification for Structural Steel Buildings*. Construction of steel structures shall use materials as defined in the table below:

| Material | Criteria |
|---|---|
| General use steel shapes, plates, appurtenances | Multicertification ASTM A36/A572, Grade 50, or ASTM A992. |
| Steel tube, rectangular or square | ASTM A500, Grade B |
| Bolts | ASTM A325, A490, F1852, F2280 |
| Weld filler metal | 70 ksi tensile strength |
| Extreme corrosion-resistant stainless steel | ASTM A167, type as required |
| Guardrail and handrail pipe | 1-1/2 inch nominal diameter, ASTM A53, Type E or S, Grade B for new construction. |
| Steel grating | 3/16 inch by 1-1/4 inch bearing bars, galvanized. Furnish with serrated surface for exterior applications |
| Toeboard, banding, kickplate and grating panel ends | ASTM A36 or ASTM A1101, galvanized |
| Anchor bolts, sized for design loads | ASTM F1554, ASTM A193, Type 316 stainless steel |
| Miscellaneous channels, angles, plates, and embedded shapes | ASTM A36 |
| Stair stringers | ASTM A36, C10 minimum |
| Stair treads | Steel grating, galvanized, cast abrasive or bent checker plate nosings |

| Material | Criteria |
|-----------------------------|--|
| Metal deck, roof | 1-1/2 inch profile depth (or as required by design), 22 gauge minimum, galvanized |
| Metal deck, form | 1-1/2 inch profile depth (or as required by design), 18 gauge minimum, galvanized. |
| Checkered steel floor plate | ASTM A786 (0.25 inch thick) |

Where structural components are subject to severe corrosion due to chemical exposure but not elevated temperatures, Contractor may use FRP (fiber-reinforced polymer) material produced for structural application. All structural shapes shall be capable of carrying their intended load, contain ultraviolet (UV) light inhibitors and be flame retardant per ASTM E-84 Class 1 with flame spread of less than 25.

Provisions of Section H1.3 of the AISC Manual of Steel Construction shall not be used when any biaxial bending may occur under any loading case. Provisions of H1.1 shall be satisfied for all biaxial bending and compression load cases. All bolted connections in primary building, enclosure, and structure members shall be bolted using A325 or A490 bolts. Direct-tensioning indication devices ("squirters"), or tension controlled bolts, for both secondary and primary members shall be used. Secondary members may be bolted using A307 bolts.

4.4.2 Structural precast wall panels

Precast concrete wall panels shall be detailed and fabricated in accordance with the *Precast Prestressed Concrete Institute standards* at a PCI certified production facility and /or NPCA/ANCI certified production facility. Panels shall have a minimum thickness required by design to support panel self weight, gravity, roof snow loads, wind loads, and erection loads.

Reinforcing fabric shall be stainless steel deformed wire in accordance with ASTM A1022, or carbon fiber mesh C-Grid® by Carboncast

Wall panels shall be built and erected in accordance with production, erection, and interface tolerances established by PCI.

4.5 ARCHITECTURAL REQUIREMENTS

4.5.1 General

The buildings and building systems shall be designed based on the applicable codes and requirements as determined by the Rhode Island State Building Code.

Contractor shall perform a building code analysis and establish occupancy and type of construction for each building.

The design and material selections in the interior building/office areas shall be driven by functionality and established Owner architectural standards and sustainability goals. The overall Project seeks an Envision™ rating for sustainable infrastructure. Sustainable criteria based on the LEED New Construction v3, 2009 rating system is noted where applicable. Contractor shall provide related material data sheets showing applicable sustainable attributes of materials with Submittals. The Facility does not seek a LEED rating. The buildings shall be designed for accessibility complying with applicable law.

4.5.2 Architectural Codes and Standards

Normally occupied areas such as control rooms shall be designed in general accordance with the requirements of the latest applicable building codes and standards. Allowable variances and applicable local code interpretations should be established before project

commencement.

Fire rated assemblies shall be provided when required by building or fire codes. Penetrations through partitions shall be provided with fire stops per NFPA. Insulation shall be used for sound and thermal control in walls between and around finished rooms and air-conditioned areas.

4.5.3 Exterior Architecture Criteria

The exterior architectural systems provide a durable, weathertight enclosure to protect systems and personnel and allow for a controlled interior environment.

Exterior architectural systems shall conform to the following general design criteria:

| Item | Criteria |
|------------------------|--|
| Walls | Walls shall consist of insulated metal wall panel or Insulated precast concrete panels were required. Building enclosures may also be pre-engineered; exposed surfaces to be non-reflective. |
| Roofs | Metal standing seam roofing. Built-up roofing or single-ply membrane over metal deck may also be used. Flat roofing shall be used unless Owner approval is provided. Solar reflectance of materials shall be considered. Solar Reflectance Index (SRI) of materials: Low slope roofing with SRI > or = 78, steep slope roofing or curved roof area with SRI > or = 29 preferred. Roofs on the turbine building and other membrane roofs shall have parapet walls installed around the perimeter. |
| Thermal insulation | Incorporated into the walls and roofs for thermal design. |
| Louvers | Include stormproof louvers as required by the ventilation design. |
| Windows | Include windows, frames, and glazing. Selection shall be based on Facility and environmental requirements. |
| Personnel doors | Hollow, metal type personnel doors. Insulation and fire rating criteria shall be dictated by the interior and environmental requirements. |
| Equipment access doors | Double mandooors (for smaller equipment access) and/or large exterior metal curtain doors, motor operated with weather seals, windlocks, and backup manual chain operators. |
| Masonry block | Consist of concrete block, which may be utilized for enclosure and separation purposes. |
| Finish painting | Exterior steel materials not galvanized or factory finished shall be finish painted. Colors shall be selected by Owner. Exposed surfaces to be non-reflective. See previous section for painting systems of structural components. Paints and coatings used in the building interior and applied on-Site shall be low-VOC materials. |

4.5.3.1 Acoustical Insulation

Acoustical insulation shall be incorporated into the walls and roofs of the Turbine Building. The minimum acoustical performance requirements are summarized in the table below. The transmission loss (TL) values are octave band-specific and expressed in terms of dB. The

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values equate to an overall STC 35 which can be achieved using 24 gauge steel cladding coupled with high-density internal acoustic insulation and perforated liner.

| Absorptive Surface | Octave Band Center Frequency, Hz | | | | | | | | |
|---------------------------|---|-----------|------------|------------|------------|-------------|-------------|-------------|-------------|
| | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Barrier or Enclosure (dB) | 10 | 16 | 17 | 24 | 32 | 41 | 49 | 52 | 57 |

If a more stringent design than the minimum requirements specified above is required to satisfy the far field noise guarantees of the Agreement, Contractor shall be responsible for design and installation of a complete system of noise abatement that satisfies the guaranteed requirements.

4.5.3.2 Interior Architecture Criteria

The interior architectural items shall provide a functional, low maintenance, aesthetically pleasing environment. Interior architectural items shall conform to the following general design criteria:

| Item | Criteria |
|-----------------|---|
| Partitions | Partitions for general unfinished plant areas shall be constructed of masonry, metal wall panel. The complete administration/control building interior, including the storm shelter masonry and all structural steel, shall be furnished with a drywall finish. |
| Windows | Interior fixed windows as required by the occupancy. Rated and nonrated glazing shall be installed in accordance with fire retardant criteria where applicable. |
| Personnel doors | Hollow, metal type personnel doors. Insulation and fire rating criteria shall be dictated by the interior and environmental requirements. Wood doors are not allowed. |
| Concrete slabs | Warehouse, maintenance shop and mechanical/electrical areas – concrete slab sealed with concrete hardener. Sealants shall be low-VOC materials. |
| Ceilings | Ceilings in the administration/control building and finished areas of the Facility shall consist of suspended, exposed grid, lay-in acoustical type systems. Wet areas shall consist of moisture resistant materials. The use of sustainable, low-emitting materials containing recycled content and that are regionally located is desired where possible. |
| Floor coverings | Floor coverings in the administration/control building and finished areas of the Facility shall a tile suitable for high traffic areas, commercial modular carpet tiles for office and general areas. Floor coverings in control and electrical equipment rooms shall be static dissipative and shall incorporate epoxy coatings. High moisture areas shall incorporate unglazed ceramic tiles. The use of sustainable, low-emitting materials containing recycled content and that are regionally located is desired where possible. |
| Wall coverings | Glazed wall tiles shall be used in shower and toilet rooms for maintenance and sanitary requirements. All other finished area wall |

| Item | Criteria |
|---------------------|--|
| | coverings shall be identified in the painting section. Paints and coatings used in the building interior and applied on-Site shall be low-VOC materials. |
| Interior drywall | Smooth, clean, and dry surface preparation; a primer coat (0.5-3.0 mils) of sealer or thinned finish coat as recommended by the paint manufacturer; and a finish coat (1-2 mils) of low gloss acrylic latex paint. Paints and coatings used in the building interior and applied on-Site shall be low-VOC materials, per VOC limits of LEED New Construction v3, 2009. |
| Finish painting | Interior areas shall be coated where required for chemical resistance, light reflection, or aesthetics. Interior masonry walls shall be coated a gloss finish. Paints and coatings used in the building interior and applied on-Site shall be low-VOC materials, per VOC limits of LEED New Construction v3, 2009. |
| Sanitary facilities | Toilet and shower facilities, associated accessories, and janitor closet with mop station shall be provided where required to meet code and Facility requirements. Low-flow flush and flow plumbing fixtures shall be utilized where applicable. |
| Raised floor areas | The administration/control building control room, DCS equipment room, electrical room and communications area shall have raised floors furnished with anti-static carpet tiles. |

4.6 ARCHITECTURAL MATERIALS

4.6.1 Concrete Masonry Units

Concrete masonry Units shall be hollow, normal weight, nonload-bearing, Type 1 conforming to ASTM C 129, or load bearing Grade N, Type 1 conforming to ASTM C 90.4, as appropriate. Concrete masonry Units shall be reinforced as required. Masonry Units shall not be used for structures designed to resist fluid loads such as basins.

4.6.2 Preformed Metal Siding

Preformed metal siding panels shall be fabricated from galvanized sheet steel. Exterior and interior face panels shall be 22 gauge minimum. Exterior siding shall be either an insulated or an uninsulated field-assembled system as required by this specification. Uninsulated siding panels shall meet the same finish and strength characteristics as the insulated siding system.

The wall system shall be designed to withstand the specified wind loading with practical and economical support girt spacing.

Exterior panel surfaces exposed to weather shall be coil coated with a finish designed to withstand all Site-specific conditions. The siding finish color shall be selected by Owner, from among the siding manufacturer's standard colors if possible. The final finish shall be non-reflective. The interior surface of the exterior panels shall be finished with manufacturer's standard baked-on enamel finish. When required, the interior liner panels shall be galvanized sheet steel. Exposed panel surfaces shall have manufacturer's standard gloss white baked-on enamel finish.

4.6.3 Precast Concrete Wall Panels

Precast concrete wall panels exterior surface shall have a texture and color/coating as selected by Owner. A 12 inch x 12 inch sample coupons shall be submitted for approval by the Owner. Where applied coatings are selected, the coating shall be compatible and adhere to concrete and shall be acrylic, epoxy, or polyurethane based. Coating shall be selected to provide the least maintenance cost for the 30 life of the plant.

Where specified, the architectural wall finish schedule interior surfaces shall have a texture and color, finish as selected by Owner. 12 inch x 12 inch sample coupons shall be submitted for approval.

After a color, texture, and finish are selected a minimum 4ft x 4ft full scale panel mock-up shall be erected in the vertical position at the site for final approval. Owner has the right to reject the field erected mock-up.

Panel shall have an insulated core to meet or exceed the energy code requirements and not less than the thermal requirements of the building design.

Panels shall be sealed to resist water penetration and streaking

Panel joints shall be detailed showing industry standard joint thickness, backer rods, and sealant depth.

4.6.4 Roofing

Roofing for all major structures shall consist of the following roofing systems. The completed roofing system shall meet the requirements for a Factory Mutual Class I rating and fire code requirements for the type of building. Five-inch gutters shall be provided to direct rainwater to the storm sewer system.

- Acoustical standing seam metal roofing; or
- White synthetic single layer membrane over insulation and a metal deck; or
- Stone covered built-up roofing over insulation and metal deck.

Standing seam roof panels shall have a slope within the range of 1/2 to 1 inch of rise per 12 inches of run, but not less than required by local code. Standing seam roof decks shall have acoustical insulation built into the roofing panel or as a separate component of the roof system, placed directly below the roof panel. Minimum of R-19 fiberglass blanket insulation with UL 25 or less flame spread rating shall be used and attached to the ceiling with metal components such that there shall be no sagging. Standing seam roof panels shall have hidden (nonexposed) fasteners. Roof panel gage and shape of panels shall be sufficient to withstand all design loadings without excessive deflection or vibration.

Built-up and single membrane roof systems shall have a minimum slope of 1/4 inch per foot toward the roof drains. Roof drains with expansion joints shall be provided at the low edge of the roof and shall be located as determined by the detailed design. The roof drains shall be set in galvanized steel pans and flashed appropriately.

A membrane and roof expansion joint shall be used to separate areas where a major change in structural framing occurs.

Cant strips and vertical wood nailers shall be attached to the roof decks with expansion clearance from walls and parapets with insulation placed in the clearance space.

Snow guards shall be provided at all roof edges.

All gutters and downspouts shall be heat traced to minimize icing.

4.6.5 Metal Roll-Up Doors

Roll-up doors shall be constructed of interlocking roll-formed galvanized steel slats to withstand a minimum of 25 psf wind pressure. Roll-up doors shall be motor-operated with a manual chain operated backup feature. Provide uninsulated door curtains for the maintenance shop roll-up doors.

4.6.6 Hollow Metal Doors, Frames, and Hardware

Interior personnel doors shall be flush hollow metal on pressed steel door frames and shall include hinges, locksets, closers, weather-stripping, and accessory hardware. Fire doors and frames shall conform to NFPA 80 for the class of door furnished.

Doors shall meet the requirements of Steel Door Institute (SDI) - recommended specifications 100-91, Grade II, Model 2. Doors shall be heavy-duty seamless-composite construction using 18 gauge galvanized face sheets. Door frames shall be formed of 16 gauge steel to the sizes and shapes required.

Doors and frames in the outer limits of environmentally controlled areas shall be fully insulated. Where fire doors are required, the door, frame, and hardware shall bear a certification label from Underwriter's Laboratories for the class of opening and rating.

Exterior doors shall have roofs, awnings, or overhangs to protect personnel from snow.

All doors shall be finished with glass and glazing to help prevent the doors from being opened into oncoming traffic. Glass and glazing shall conform to the requirements for glazing materials for Category II products in accordance with the Safety Standards for Architectural Glazing Materials 16 CFR 1201, and installed in accordance with the publications of the Flat Glass Marketing Association.

4.6.7 Windows

Windows shall consist of aluminum frames with insulated and tinted glazing as used in commercial or industrial applications. The windows shall be weather tight including low-E insulated glass in thermally broken aluminum frames.

4.6.8 Louvers

Louvers shall be both the operable and inoperable types, fabricated of extruded-aluminum section alloy and provided with stainless steel fastenings and removable aluminum bird screen. Louvers shall have a paint finish meeting the specified finish requirements for the adjacent siding. Blades shall be storm proof. The louver-free area shall be a minimum of 50 percent of the louver face area. Louvers shall be designed for manual or gravity operation. Louvers shall be designed to meet wind loads.

4.6.9 Floor Finish

Floor finishes shall generally be concrete, steel troweled to a smooth surface and finished with a seal hardener.

Floors in personnel areas shall be unglazed ceramic tile in high traffic areas and commercial modular carpet tiles in offices and low traffic finished areas.

Exposed concrete finishes shall be repaired according to ACI 301-10, 5.3.7 - *Repair of Surface Defects*. Allowable hole size to be no greater than 1/4 inch.

The toilet facilities shall receive unglazed ceramic mosaic tiles.

4.6.10 Protective Coatings for Architectural Elements

Contractor shall prequalify all coatings and colors with Owner prior to purchase. See Section 03 - Facility Design Basis, Article 3.13.8 - Painting/Lining System Tables for coating requirements of structural elements (steel, concrete, and masonry block).

4.6.11 Doors, Roll-up Doors and Frames

All exterior doors (personnel) and frames shall receive Supplier's standard zinc-rich primer in the shop and finish coat in the field with a minimum ISO 12944 C5 coating classification, or equivalent door manufacturers recommended finish.

Roll-up doors shall be primed and finish coated in the Supplier's shop. Touch-up shall be performed as required with a compatible primer using SSPC-SP 3, Power Tool Cleaning standard.

Interior man doors (personnel) and frames that have both sides exposed to an interior environment shall receive Supplier's standard primer in the shop and finish coat in the field with an ISO 12944 C3 environment finish, or equivalent door manufactures recommended finish.

4.6.12 Masonry Walls and Concrete Floors

Surfaces exposed to chemical contaminants shall be coated with polyester- or vinylester-based coatings.

Concrete floors in electrical, DCS, and switchgear rooms shall have epoxy coatings and be static dissipative.

Exposed (visible) interior masonry wall surfaces in office areas shall have a surface preparation that is clean, dry and free of contaminants; a primer coat thickness rate per paint manufacturer of masonry filler; an intermediate coat (2-3 mils) of low gloss acrylic latex; and a finish coat (2-3 mils) of low gloss acrylic latex.

See Section 03 - Facility Design Basis, Article 3.13.8 - Painting/Lining System Tables for coating requirements of masonry block elements.

4.6.13 Gypsum Wallboard

Exposed surfaces shall receive one coat of sealer and two coats of compatible acrylic finish.

5 HVAC DESIGN CRITERIA

The following articles define the HVAC requirements for the Facility buildings.

5.1 DESIGN CONDITIONS

Climatic conditions for the design of HVAC systems shall be based on the criteria listed in Section 2 – Design Basis. The climatic data set from the 2013 ASHRAE Fundamentals Handbook shall be used for design calculations. For heating design the 99.6 percent parameters shall be used. For ventilation design, the 0.4 percent design parameters shall be used. For air conditioning design, the 1.0 percent parameters shall be used.

5.2 DESIGN REQUIREMENTS

In addition to the codes and standards listed in Section 2 – Design Basis, the HVAC systems shall be designed to the following specific codes and standards:

Acoustics Society of America (ASA)

S12.2 Criteria for Evaluating Room Noise

**Invenergy Clear River Energy Center
Specification for Building Design**

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

| | |
|------|--|
| 52.2 | Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size |
| 55 | Thermal Environmental Conditions for Human Occupancy |
| 62.1 | Ventilation for Acceptable Indoor Air Quality |
| 90.1 | Energy Standard for Buildings Except Low-Rise Residential Buildings |

Sheet Metal & Air-Conditioning Contractors' National Association (SMACNA)

| | |
|-----|---|
| 006 | HVAC Duct Construction Standards - Metal and Flexible |
|-----|---|

Buildings, enclosures, and interior spaces shall be heated, ventilated, and air-conditioned, to provide proper environmental control to meet equipment protection and safety requirements as well as to provide personnel comfort in areas normally occupied. For areas that are not continuously occupied, the HVAC systems shall be designed to provide a minimum level of personal comfort when maintenance activities are being performed.

The following areas shall be designed to maintain the minimum conditions as listed below:

| INDOOR DESIGN CONDITIONS | | | | | |
|---|-------------------------------|-------------------------------|--------------------|-------------------|-------------------|
| Building/Room Name | Cooling Design Temp, F | Heating Design Temp, F | System Type | Redundancy | Filtration |
| Offices & Administration Areas | 72 | 72 | HVAC | Multiplicity | Yes |
| Control Room | 72 | 72 | HVAC | Redundant | Yes |
| DCS Rooms, UPS Rooms, Electronics Rooms | 72 | 72 | HVAC | Redundant | Yes |
| Laboratory Rooms / Sample Panel Rooms | 72 | 72 | HVAC Exhaust | Multiplicity | Yes |
| Electrical Equipment Rooms | 85 | 55 | HVAC | Multiplicity | Yes |
| Battery Rooms | 77 ±2 | 77 ± 2 | HVAC Exhaust | Multiplicity | Yes |
| Turbine Building | Ambient + 20 | 45 | H&V | Multiplicity | None |
| Water Treatment Bldg, Feedwater Pump Bldg, Gas Compressor Bldg, Aux Boiler Bldg | Ambient + 15 | 55 | H&V | Multiplicity | None |
| Warehouse | Ambient + 15 | 55 | H&V | Multiplicity | None |
| Workshop | Ambient + 15 | 72 | H&V | Multiplicity | None |

Notes:

1. Systems with multiplicity shall be configured as (n+1) redundancy. Redundant systems shall be configured with full backup (100 percent) capability redundancy.
2. Filtration requirements shall be in accordance with the recommendations of ASHRAE 62.1. Filters shall be at least a MERV 6 rating.
3. Electrical equipment rooms shall not exceed 104 °F (40 °C) under any operating condition during the loss of one item of HVAC equipment.

5.2.1 Air Changes

Air changes per hour for the administration building, control room, remote offices, laboratory rooms, and other occupied areas shall comply with ASHRAE 62.1.

Battery rooms shall have sufficient fresh airflow to maintain less than 0.8 percent hydrogen concentration in the room based on manufacturer's data for hydrogen gas release.

5.2.2 Design Pressure

The pressure in individual portions of the Administration Building shall be maintained positive in relation to the exterior, storage areas, vehicle maintenance/garage areas, and the vestibules. Toilet rooms, janitor's closets, and any other similar areas shall be maintained negative and exhausted directly to the outdoors with respect to adjacent building spaces. Administration areas (excluding areas that are exhausted to the outdoors) may use plenum returns, however all items in the ceiling to be plenum rated.

5.2.3 Hours of Operation

The Facility is a 24-hour per day operation. Contractor is responsible for coordinating with Owner to determine the areas/buildings that may utilize some type of night set-back or ventilation reduction.

5.3 COMBUSTION TURBINE AND STEAM TURBINE BUILDING

The ventilation philosophy shall be designed to use displacement ventilation (thermal buoyancy) concepts.

The building roof shall use a continuous ridge vent (or equivalent for flat roofs) to release air to the outdoors. The ridge vent shall include motorized dampers, bird screen, and weather hood to prevent precipitation from entering the building. Low velocity makeup air to the building shall be provided from makeup air units. The makeup air units shall consist of intake damper, inlet filters, redundant fans, and indirect natural gas fired or electric heaters. The makeup air units shall be shop fabricated assemblies. Each makeup air unit shall be capable of increasing the makeup air to above freezing during cold ambient conditions to prevent localized freezing of equipment and piping systems inside the building. Ductwork and diffusers shall be used along the perimeter of the building to supply makeup air at grade, mezzanine, and operating deck levels as needed. Provide sufficient capacity in the makeup air unit sizing, such that the loss of one makeup air unit does not affect overall building temperatures (localized affects are acceptable near the unit that is out of service). The size of the makeup air units shall be sufficient to limit the number of wall penetrations. Makeup air units shall be fully accessible around the perimeter for inspection and maintenance activities.

Localized areas within the building that require spot cooling shall be ventilated using circulating fans.

5.4 WATER TREATMENT BUILDING

The water treatment building shall be ventilated using power wall ventilators with a continuous ridge vent on the roof for exhaust. The ventilators shall be located at grade to allow access for maintenance.

Natural gas fired or electrical unit heaters shall be located within the building to provide heating. The heaters shall be positioned as close to grade/floor as allowed by equipment or structures, and not causing personnel hazards.

The office and laboratory room located in the building shall be provided with a ground-mounted packaged HVAC system to provide complete temperature and humidity control for personnel comfort and equipment protection.

5.5 BATTERY ROOMS

Battery Rooms shall be under negative pressurization and vented directly to the outdoors by exhaust fans. Battery room temperature shall be based on manufacturers' recommendations for life and charging considerations. Battery rooms shall be provided with HVAC to maintain a temperature of 77 ± 2 °F. Rooms shall be exhausted by 2 x 50 percent exhaust fans.

Provide a hydrogen sensor in the battery room with an externally mounted alarm and control panel outside the room (Sensidyne SensAlarm plus or equal). High hydrogen levels or loss of ventilation shall alarm on the local panel.

5.6 ADMINISTRATION BUILDING AND CENTRAL CONTROL ROOM

The Administration Building HVAC systems shall be in accordance with the recommendations of ASHRAE standard 90.1. The Administration Building HVAC systems shall use a VAV type design that incorporates energy recovery of the exhausted air. HVAC units shall include outdoor air economizers for use in cold weather operation.

The HVAC system shall be provided with zone temperature control. Interior control zones must not exceed 600 sf per zone for open office areas or a maximum of four offices per zone for closed office areas. Exterior perimeter zones on north, south, east and west sides of the building shall be separate zones. Corner offices shall be a dedicated zone. Perimeter zones shall not exceed 300 sf. Independent zones should be provided for spaces such as conference rooms, entrance lobbies, kitchen areas, and physical fitness areas.

The Control Room and associated adjacent electronics rooms located inside the Administration Building shall be provided with a separate redundant HVAC system from the administration area's system to provide complete temperature and humidity control for personnel comfort and equipment protection. Failure of any major piece of HVAC equipment shall not cause a failure of the Control Room's or equipment room's HVAC operation.

All HVAC controls shall be designed as direct digital control (DDC). Provide a "front end" computer with all control software including a graphics package that provides visual, on-screen graphics to locate control points and features for the Administration Building and Central Control Room systems.

Prepare floor plans for seating numbers to determine individual space design occupancies. These occupancies shall be incorporated in the load calculations. Heat producing office equipment shall be coordinated with Owner as the design progresses. Calculations shall be in accordance with the ASHRAE Handbook of Fundamentals. Internal equipment gain shall not be used as part of the heating load calculations (loads are not modeled to allow lowering of the base heating load). For the cooling load calculations, the people load is assumed at peak occupancy levels for each space.

HVAC systems shall be designed to limit noise. The systems shall be designed for a NC40 level in accordance with ANSI/ASA S12.2.

5.7 MAINTENANCE/WAREHOUSE BUILDING

The maintenance office shall be provided with a packaged HVAC system. The warehouse workshop area shall be provided with heating and ventilation. Provide a welding booth in the workshop with dedicated ventilation system to remove welding fumes from the building. The welding booth shall be 6 feet wide, 9 feet tall, and 4 feet deep.

5.8 HEATING, VENTILATION AND AIR-CONDITIONING EQUIPMENT

HVAC rotating equipment (AHUs, ACUs, CDUs, and fans) shall be vibrationally isolated from their supporting structures and shall be purchased completely assembled, tested and balanced by the manufacturer. HVAC equipment and systems shall be designed such that components which require maintenance are easily accessible.

All HVAC systems that require ductwork shall be designed to utilize low-pressure ductwork. All ductwork shall be tightly sealed, and rigidly supported. Supply and return ductwork serving air-conditioned areas shall be internally lined in accordance with SMACNA installation details for the entire distribution system. Exhaust systems in air-conditioned areas does not require insulation. Ductwork in non air-conditioned areas does not require insulation. Ductwork in the Administration Building or any other room or area with finished spaces shall be installed in the walls and ceiling and not exposed to view.

Smoke and fire dampers as well as fire rated caulks and sealants for fire rated wall penetrations associated with the ductwork shall be included in the design as required by NFPA and Building Codes.

Ducted systems shall be flow tested and balanced.

6 FIRE PROTECTION

The Facility shall be equipped with a fire protection system that will provide fire protection for the buildings.

The fire protection system is comprised of the fire water supply, water-based fire suppression systems, alarm and detection system, clean agent systems, and portable fire extinguishers.

6.1 CODES AND STANDARDS

In addition to the codes and standards listed in Section 2 – Design Basis, the fire protection systems shall be designed to the Rhode Island Fire Safety Code and the following specific codes and standards:

National Fire Protection Association (NFPA)

| | |
|---------|--|
| NFPA 1 | Fire Prevention Code |
| NFPA 10 | Standard for Portable Fire Extinguishers |
| NFPA 11 | Standard for Low-, Medium-, and High-Expansion Foam |
| NFPA 13 | Standard for the Installation of Sprinkler Systems |
| NFPA 14 | Standard for the Installation of Standpipes and Hose Systems |
| NFPA 15 | Standard for Water Spray Fixed Systems for Fire Protection |
| NFPA 16 | Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems |
| NFPA 20 | Standard for the Installation of Stationary Pumps for Fire Protection |
| NFPA 22 | Standard for Water Tanks for Private Fire Protection |
| NFPA 24 | Standard for the Installation of Private Fire Service Mains and their Appurtenances |
| NFPA 25 | Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems |

| | |
|-----------|--|
| NFPA 30 | Flammable and Combustible Liquids Code |
| NFPA 54 | National Fuel Gas Code |
| NFPA 55 | Compressed Gases and Cryogenic Fluids Code |
| NFPA 56 | Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems |
| NFPA 70 | National Electrical Code |
| NFPA 72 | National Fire Alarm and Signaling Code |
| NFPA 73E | Standard for Safety in the Work Place |
| NFPA 75 | Standard for the Protection of Electronic Computer/Data Processing Equipment |
| NFPA 80 | Standard for Fire Doors and Fire Windows |
| NFPA 85 | Boiler and Combustion Systems Hazards |
| NFPA 90A | Standard for the Installation of Air-Conditioning and Ventilating Systems |
| NFPA 101 | Life Safety Code |
| NFPA 110 | Standard for Emergency and Standby Power Systems |
| NFPA 170 | Fire Safety and Emergency Symbols |
| NFPA 220 | Standard on Types of Building Construction |
| NFPA 241 | Standard for Safeguarding Construction, Alteration, and Demolition Operations |
| NFPA 400 | Hazardous Materials Code |
| NFPA 750 | Standard on Water Mist Fire Protection Systems |
| NFPA 780 | Standard for the Installation of Lightning Protection Systems |
| NFPA 850 | Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations |
| NFPA 2001 | Standard on Clean Agent Fire Extinguishing Systems |

6.2 GENERAL

All fire protection materials or services that require approval in accordance with NFPA shall be FM or UL approved. The "Authority Having Jurisdiction" shall be the State Fire Marshal. Contractor is responsible for contacting the AHJ and determining if any local codes or rules apply to the Facility. All recommendations of NFPA 850 shall be considered as required in the design of the Facility unless specified differently herein.

6.3 FIRE PROTECTION DESIGN BASIS DOCUMENT

Contractor shall prepare a fire protection design basis document (DBD) in accordance with NFPA 850, Chapter 4 and submit to Owner prior to sending to the AHJ. The approved DBD shall be periodically updated during the design phase of the Facility (including the buildings) and reissued.

6.4 FIRE ALARM AND DETECTION

The custom-designed fire alarm and detection system shall be in accordance with NFPA 72. The fire alarm system shall be an intelligent addressable type using FlashScan™ signaling

line or equivalent circuits. Contractor shall provide a master Fire Alarm Control Unit (FACU) located in the Central Control Room (CCR). All local FACUs shall be connected to the master FACU.

Local FACUs shall accept signals from initiating devices or other FACUs, alarm in the CCR, and process the signals to determine the required output functions, such as provide local alarms and annunciation and/or initiate release of the fire suppression systems.

The CT local FACU shall be connected to the master FACU.

Smoke detection systems shall be provided in the areas specified herein, and as recommended by NFPA 850. Aspirating type smoke detectors shall be provided for electronics and electrical rooms.

Contractor shall provide a shared public address/emergency notification capability into the master FACU. Loud speakers and other notification devices shall be placed throughout the Facility to allow both emergency communications, and regular employee paging. Contractor shall provide the following functionality:

- Speakers shall be located such that paging and emergency announcements can be heard throughout the Facility.
- Ability to make an announcement on the system using the Business Telephone System

6.5 FIRE WATER SUPPLY

The Facility's fire water supply shall come from the Service/Fire Water Storage tank. Contractor shall review and verify the suitability of the water supply to meet the Facility's requirements.

A motor-driven fire pump, diesel-driven fire pump, and a motor-driven jockey pump shall be provided in accordance with NFPA 20. The diesel-driven fire pump shall use ultra low sulfur diesel fuel. The fire pumps shall take suction from a dedicated water volume in the service/fire water storage tank and discharge to the service main (yard loop).

The pumps shall supply the design maximum water demand for any automatic suppression system plus flow for fire hydrants or hose stations per NFPA 850 requirements. The pumps shall have a 10 percent or 10 psi margin on head, whichever is greater.

The electric-motor and diesel-engine-driven fire pumps shall incorporate both manual and automatic start features. A manual start switch shall be on the associated local pump controller and on a mimic panel located in the CCR master FACU. Automatic start shall be initiated by pressure switch in accordance with standard NFPA practice. Once started, the pump(s) shall continue to run until manually stopped at the associated local pump controller. A jockey pump shall be provided to maintain water pressure in the fire water main. During fire conditions, the motor-driven fire pump shall start automatically when pressure in the fire water distribution header drops below a set point. If the pressure in the header continues to drop, the diesel engine fire pump shall automatically start.

6.6 FIRE SERVICE MAINS

The main fire header shall loop around the Facility with service main branch lines to buildings, auxiliary structures, enclosures, yard fire hydrants and water-based suppression systems. The fire service main shall be designed to NFPA 24.

Underground piping material shall be HDPE or ductile iron. Above ground piping material shall be carbon steel. The service main piping minimum size shall be 10 inches.

Buildings with fire suppression systems shall have dual feeds from the loop system to ensure both systems are not taken out of service due to a single line break.

Header valves for suppression system isolation should be provided with electronic feedback to the fire control panel. Header PIV are to be provided without tamper switches.

6.7 FIRE PROTECTION SYSTEMS

The table below outlines the minimum fire detection and suppression systems to be provided for the Facilities buildings and structures.

| Area or Equipment | Suppression System | Detection |
|---|---------------------------|------------------------------------|
| CT enclosures | Clean Agent or Water Mist | Cross Zoned Heat Detectors |
| ST Building: ground floor, mezzanine, and platforms subject to oil flow, oil spray, or oil accumulation | Wet Pipe Sprinkler | Frangible Bulb |
| ST Building - above the operating floor | Portable Extinguishers | Local Smoke and/or Heat Detectors |
| Electrical Rooms (switchgear, MCC, etc.) | Portable Extinguishers | Aspirating Smoke Detector |
| Administration building | Wet pipe Sprinkler | Smoke Detection and Frangible Bulb |
| Central control room | Portable Extinguishers | Smoke Detection |
| Maintenance Workshop | Wet Pipe Sprinkler | Frangible Bulb |
| Warehouse | Wet Pipe Sprinkler | Smoke Detection and Frangible Bulb |
| Water Treatment building | Wet Pipe Sprinkler | Frangible Bulb |
| Feedwater Pump Building | Wet Pipe Sprinkler | Frangible Bulb |
| Auxiliary Boiler Building | Portable Extinguishers | Smoke Detection |
| Gas Compressor Building | Wet Pipe Sprinkler | Frangible Bulb |
| Diesel Fire Pump Room | Wet Pipe Sprinkler | Frangible Bulb |

6.8 WATER BASED FIRE SUPPRESSION SYSTEMS

Sprinkler and fixed spray systems shall be designed and installed in accordance with NFPA 13 and NFPA 15, respectively. Water Mist Fire Protection may be proposed as an alternative.

6.8.1 Steam Turbine

Sprinkler systems for the steam turbine shall be designed to Factory Mutual Data Sheet 7-101.

The Power Island turbine building ground floor shall be provided with containment walls and drainage in accordance with NFPA 850 Article 5.5. Trench drains shall be used to contain and remove lube oil from the building and minimize the size of fire sprinkler areas within the turbine building. Containment walls shall be provided under and around the STG to prevent the spread of burning lube oil to other areas, in accordance with the insurance provider's requirements.

In addition to the NFPA codes, the sprinkler systems for the steam turbine shall be designed to Factory Mutual Data Sheet 7-101. The following deviations and corresponding alternates to FM Global Data Sheet 7-101 are to be provided:

**Invenergy Clear River Energy Center
Specification for Building Design**

| Section | FM Scope Description | Alternate Scope to be Provided |
|----------------|--|---|
| 2.2.4.2 | Locate oil conditioning systems in a cut-off room of 1 hour construction or outside the turbine building. | Oil conditioning systems to be located on grade floor of the Steam Turbine Building. No cut-off room is required. |
| 2.2.2.1 | Provide enhanced fire resistance for structural steel. | Not required if lube oil conditioning skid is located at grade (Concrete turbine pedestal, lube oil reservoir at grade, building steel exposure mitigated by curbing and drainage). |
| 2.2.3.1 | Provide an engineered spill containment and emergency drainage system that shall "contain and drain" mineral oil released from lubrication oil systems. Ensure containment is adequate for the quantity of oil in the reservoir. | The design includes drains to a permanent plant drain system that includes containment (oil/water separator) with electric driven pump discharge per NFPA 850 requirements. |
| 2.2.3 | Design emergency drainage capacities and floor pitch (to drains) in accordance with FM Global Property Loss Prevention Data Sheet 7-83, <i>Drainage Systems for Ignitable Liquids</i> , or equivalent design criteria, to provide a discharge flow rate equal to the combined water spray and sprinkler demand plus 750 gpm hose stream. | NFPA based 500 gpm hose stream criteria shall be utilized for supply and drainage flow rates. |
| 2.2.5 | Control, Seal, and Lube oil Piping | Steam turbine manufacturer's standard piping design shall be used. |
| 2.3.5.F | Provide automatic sprinkler protection for cable trays where quantity presents significant fire loading. | Automatic sprinkler protection of cable trays is not to be provided. |
| 2.4.1.1 | Provide a water supply capable of meeting the maximum design sprinkler discharge flow rate plus 750 gpm for hose streams. | NFPA 850 criteria of 500 gpm shall be used. This exception applies across Data Sheet 7-101. |
| 2.4.1.3 | Install automatic sprinklers in accordance with Data Sheet 2-0, <i>Installation Guidelines for Automatic Sprinklers</i> . Install automatic water-spray systems in accordance with Data Sheet 4-1N, <i>Water Spray Fixed Systems, for Fire Protection</i> . | NFPA design basis to be used. |
| 2.4.1.10 | If fire pump(s) are needed, use FM Approved fire pumps, controllers and drivers as applicable. Install them in accordance with recommendations in DS 3-7, <i>Fire Protection Pumps</i> . If electric motor driven pumps are used, supply power from a source that shall not be interrupted in the event of loss of power to the Station. | NFPA design basis to be used. |
| 2.4.2 | Provide one of the following protection methods over oil pumps and conditioning equipment where pressurized releases could result in spray fires that could expose the roof, operating floor, turbine, generator, or other critical targets | Subparagraph D shall be used - FM approved spray shields on flanges of piping shall be provided. |
| 2.4.4.1.b | Provide a fixed, automatically actuated water spray system with directional-spray nozzles or automatic sprinkler protection for the control oil system containing mineral oil. | An FM approved fire resistant fluid shall be utilized, therefore a spray water system is not to be provided. |

| Section | FM Scope Description | Alternate Scope to be Provided |
|----------------|--|---|
| 2.4.4.3 | Direct Connected Exciter Enclosure CO2 system. | A CO2 based protection system is not to be provided for the static excitation design. |

6.9 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS

Clean agent suppression systems shall be designed in accordance with NFPA 2001.

Clean agent systems shall use INERGEN or NOVEC. Halon is prohibited. Carbon dioxide suppression systems shall not be applied without Owner approval for their use.

6.10 FIRE EXTINGUISHERS

Portable multipurpose dry chemical extinguishers shall be located throughout the Facility.

These extinguishers shall be sized, rated, and spaced in accordance with NFPA 10.

Supplemental CO₂ extinguishers having a minimum rating of 20B:C shall be located to serve electrical equipment rooms and control rooms.

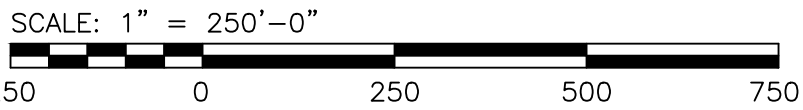


- NOTES:
1. WETLANDS DELINEATION PERFORMED BY ESS GROUP, INC., WALTHAM, MA. SURVEY CONDUCTED JULY 2015. ALL WETLANDS MUST BE CONFIRMED BY DEM.
 2. SURVEY PERFORMED BY WATERMAN ENGINEERING COMPANY, EAST PROVIDENCE, RI. SURVEY DRAWING: 15-015_SU1_EMAIL_2-12-2016.DWG
 3. SET-BACK FROM FUTURE CONSTRUCTION. ROW FOR SINGLE OR DOUBLE CIRCUIT.
 4. SEE DRAWING C1002 FOR CONSTRUCTION LAYDOWN EXTENTS AND REQUIREMENTS.
 5. THE TWO UNITS AT THIS FACILITY WILL BE INSTALLED IN PHASES. THE FIRST UNIT (UNIT 1) SHALL BE INSTALLED IN PHASE 1 AND THE SECOND UNIT SHALL BE INSTALLED IN PHASE 2. THE COMMON BOP SYSTEMS SHALL BE DESIGNED FOR BOTH UNITS AND INSTALLED IN PHASE 1.

- LEGEND
- INDICATES EXISTING PROPERTY LINES FROM SURVEYOR
 - INDICATES PROPOSED PROPERTY LINES BY HOR
 - INDICATES EXISTING DELINEATED WETLANDS
 - INDICATES CONSTRUCTION LAYDOWN EXTENTS



SITE ARRANGEMENT



| | | | | | | |
|-------|-----------|---|-----|------|-----|------|
| 4 | 06 JUL 16 | ADDED FENCE LINE | EDC | - | - | - |
| 3 | 30 JUN 16 | REVISED PROPERTY LINES & SITE ARRANGEMENT | EDC | - | - | - |
| 2 | 30 MAR 16 | ISSUED FOR PROPERTY SUBDIVISION APPROVAL | EDC | - | - | - |
| 1 | 07 MAR 16 | BID ISSUE (STAGGERED UNIT INSTALLATION) | EDC | - | - | - |
| 0 | 02 NOV 15 | M0102 BID ISSUE | EDC | - | - | - |
| ISSUE | DATE | DESCRIPTION | DWN | ENGR | CHK | APPV |

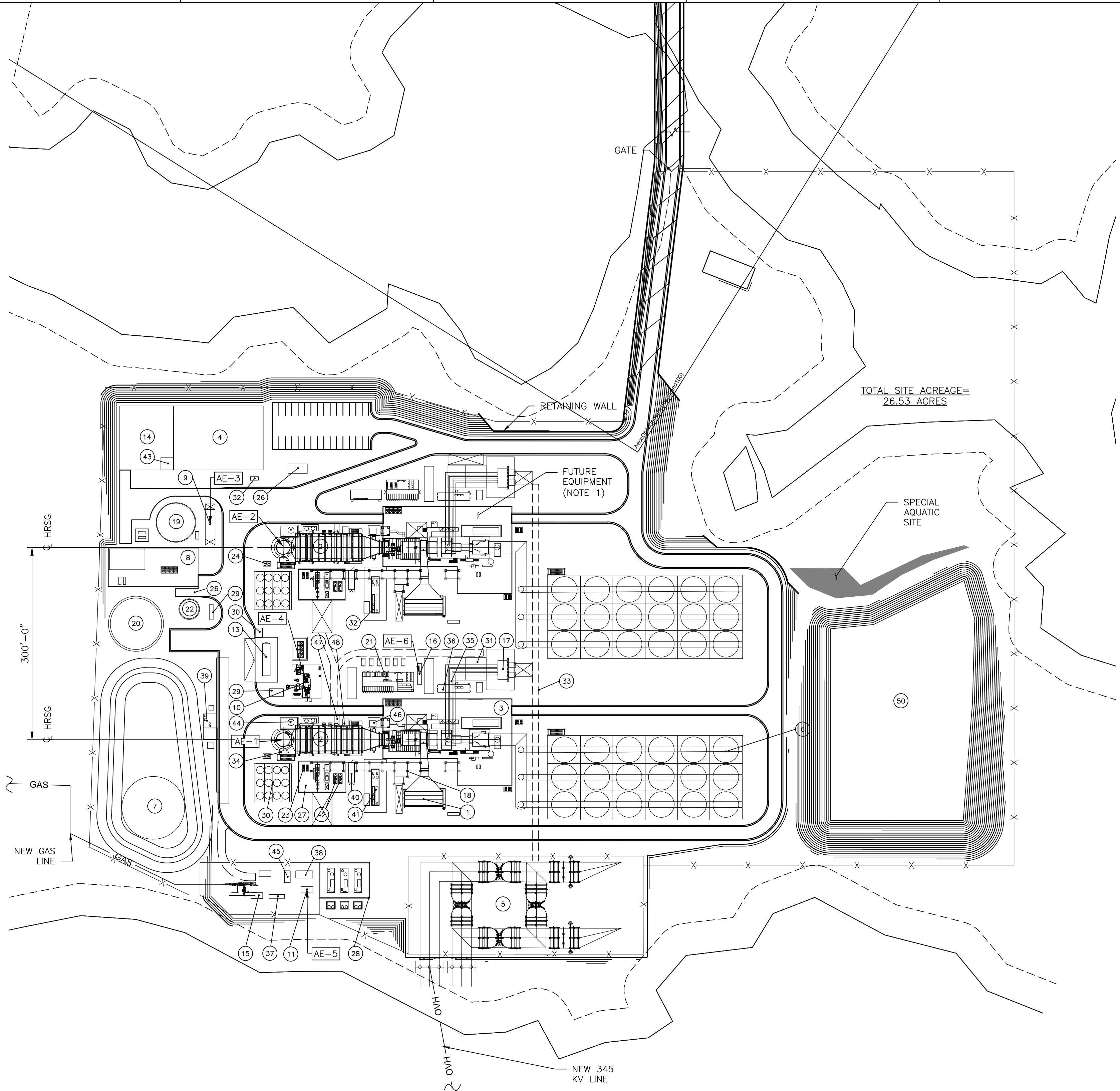
PRELIMINARY
NOT FOR
CONSTRUCTION
OR
RECORDING

INVENERGY, LLC
CLEAR RIVER ENERGY CENTER

SINGLE SHAFT
SITE ARRANGEMENT

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| FILENAME | C1000-0GA-238926.dwg |
| SCALE | AS NOTED |

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| SHEET | 238926-0GA-C1000 |
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NOTES:
1. THE TWO UNITS AT THIS FACILITY WILL BE INSTALLED IN PHASES. THE FIRST UNIT (UNIT 1) SHALL BE INSTALLED IN PHASE 1 AND THE SECOND UNIT SHALL BE INSTALLED IN PHASE 2. THE COMMON BOP SYSTEMS SHALL BE DESIGNED FOR BOTH UNITS AND INSTALLED IN PHASE 1.

| BUILDING AND EQUIPMENT LIST | | | | |
|-----------------------------|----------------------------------|---------------------------|-------|--------|
| NO | NAME | SIZE (DIMENSIONS IN FEET) | | |
| | | LENGTH | WIDTH | HEIGHT |
| 1 | COMBUSTION TURBINE INLET FILTER | 60 | 27 | 50 |
| 2 | HEAT RECOVERY STEAM GENERATOR | 103 | 44 | 135 |
| 3 | TURBINE BUILDING | 202 | 136 | 80 |
| 4 | ADMINISTRATION/CONTROL BUILDING | 140 | 100 | 25 |
| 5 | SWITCHYARD | 367 | 153 | 25 |
| 6 | AIR-COOLED CONDENSER | 305 | 130 | 110 |
| 7 | FUEL OIL STORAGE TANK | 90ø | — | 48 |
| 8 | WATER TREATMENT BUILDING | 140 | 60 | 30 |
| 9 | FIRE PUMP BUILDING | 50 | 16 | 15 |
| 10 | AUXILIARY BOILER BUILDING | 54 | 45 | 35 |
| 11 | CTG FUEL GAS DEW POINT HEATER | 18 | 9 | 15 |
| 12 | STORM WATER DETENTION POND #1 | — | — | — |
| 13 | AMMONIA STORAGE TANK | 50 | 12 | 15 |
| 14 | WAREHOUSE | 100 | 84 | 25 |
| 15 | FUEL GAS FILTER/SEPARATOR | 24 | 6 | 15 |
| 16 | EMERGENCY DIESEL GENERATOR | 33 | 8 | 15 |
| 17 | GSU TRANSFORMER | 48 | 27 | 15 |
| 18 | PIPE RACK | 313 | 15 | 55 |
| 19 | FIRE/SERVICE WATER TANK | 62ø | — | 30 |
| 20 | DEMINERALIZED WATER STORAGE TANK | 86ø | — | 55 |
| 21 | BOP ELECTRICAL | 80 | 30 | 25 |
| 22 | WASTE WATER TANK | 32.5ø | — | 30 |
| 23 | HRSG LTE RECIRCULATION PUMPS | 10 | 4 | 6 |
| 24 | HYDROGEN TUBE TRAILER | — | — | 15 |
| 25 | NOT USED | — | — | — |
| 26 | OIL STORAGE SHELTER | 30 | 15 | 12 |
| 27 | FEEDWATER PUMP BUILDING | 74 | 49 | 25 |
| 28 | GAS COMPRESSOR BUILDING | 78.5 | 56 | 30 |
| 29 | OIL WATER SEPARATOR | 24 | 5 | — |
| 30 | CCCW HEAT EXCHANGER | 60 | 58 | 32 |
| 31 | AUX. TRANSFORMERS | 20 | 16 | 15 |
| 32 | SUS TRANSFORMERS | 51 | 25 | 12 |
| 33 | 345 KV UNDERGROUND DUCT BANK | — | 5 | — |
| 34 | CEMS SHELTER | 9 | 8 | 12 |
| 35 | GENERATOR CIRCUIT BREAKER | 23.5 | 8 | 20 |
| 36 | LCI EXCITATION CONTAINER | 52 | 12 | 12 |
| 37 | FUEL GAS FLOW METER | 18 | 9 | 6 |
| 38 | FUEL GAS PRESSURE REGULATION | 27 | 11 | 6 |
| 39 | FUEL OIL EQUIPMENT BUILDING | 40 | 20 | 20 |
| 40 | SAMPLE PANEL ENCLOSURE | 31 | 9 | 12 |
| 41 | FUEL GAS PERFORMANCE HEATER | 57 | 13 | 10 |
| 42 | CCCW PUMPS | 16 | 16 | 6 |
| 43 | WORKSHOP | 20 | 20 | 25 |
| 44 | BLOWDOWN TANK | 10ø | — | 10 |
| 45 | LP FUEL GAS DEW POINT HEATER | 18 | 9 | 8 |
| 46 | WATER WASH DRAIN TANK | 11 | 11 | — |
| 47 | DUCT BURNER FUEL SKID | 16 | 8.5 | 8 |
| 48 | DUCT BURNER COOLING AIR BLOWER | 12 | 8.5 | 6 |
| 49 | STORM WATER DETENTION POND #2 | — | — | — |
| 50 | STORM WATER DETENTION POND #3 | — | — | — |

| AIR EMISSION SOURCES (COMBUSTION SOURCES) | | | | |
|---|-------------------------------------|-----------------|----------|-----------|
| NO | NAME | UTM COORDINATES | | ELEVATION |
| | | N | E | |
| AE-1 | HRSG EXHAUST STACK 1 | N4,649,602 | E271,730 | 770.00' |
| AE-2 | HRSG EXHAUST STACK 2 (FUTURE) | N4,649,648 | E271,808 | 770.00' |
| AE-3 | DIESEL FIRE WATER PUMP SKID VENT | N4,649,684 | E271,800 | 582.00' |
| AE-4 | AUXILIARY BOILER STACK | N4,649,606 | E271,759 | 620.00' |
| AE-5 | CTG FUEL GAS DEW POINT HEATER STACK | N4,649,557 | E271,674 | 596.00' |
| AE-6 | EMERGENCY DIESEL GENERATOR STACK | N4,649,562 | E271,789 | 586.00' |

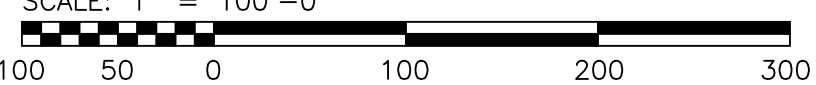
1. UTM COORDINATES ARE FOR UTM GRID ZONE 19T. COORDINATES REMAIN UNCHANGED FOR ZONE 19N NORTHERN HEMISPHERE, UTM ZONE 19N DESIGNATION.
2. BASE ELEVATION IS 570 FEET AMSL



NORTH

GENERAL ARRANGEMENT

SCALE: 1" = 100'-0"





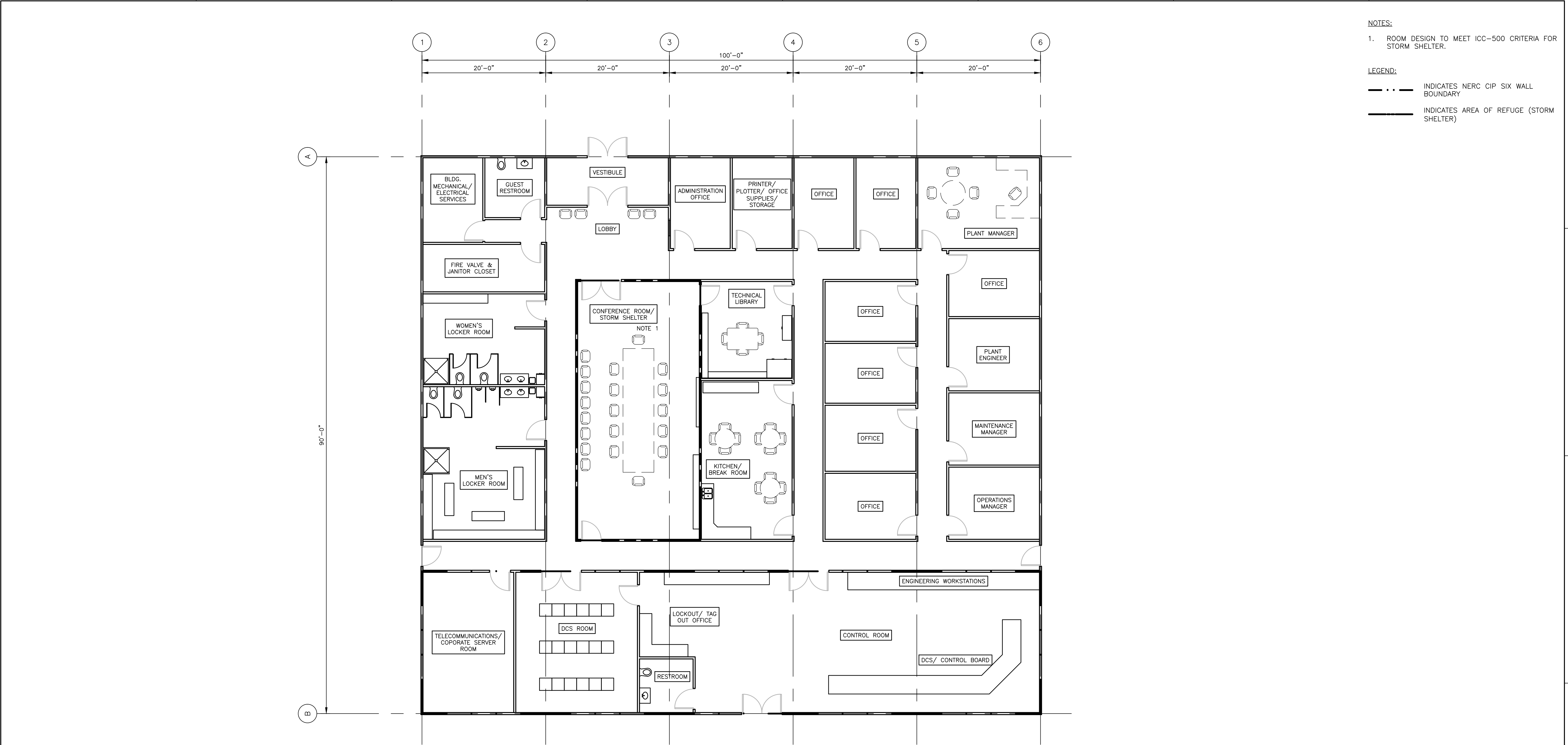
| | | | | | | |
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| 5 | 21 SEP 16 | MODIFICATIONS TO SUPPORT PERMITTING | PVJ | — | — | — |
| 4 | 06 JUL 16 | ADDED FENCE LINE | EDC | — | — | — |
| 3 | 28 JUN 16 | ISSUED FOR DISPERSION MODELING UPDATE | PVJ | — | — | — |
| 2 | 30 MAR 16 | ISSUED FOR PROPERTY SUBDIVISION APPROVAL | EDC | — | — | — |
| 1 | 07 MAR 16 | BID ISSUE (STAGGERED UNIT INSTALLATION) | EDC | — | — | — |
| 0 | 02 NOV 15 | M0102 BID ISSUE | EDC | — | — | — |
| ISSUE | DATE | DESCRIPTION | DWN | ENGR | CHK | APPV |

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INVENERGY, LLC
CLEAR RIVER ENERGY CENTER

SINGLE SHAFT
GENERAL ARRANGEMENT
MODIFICATIONS TO SUPPORT PERMITTING

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ADMINISTRATION BUILDING FLOOR PLAN

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

NORTH



HDR Engineering, Inc.

| | | | | | | | |
|-------|-----------|---|-----|------|-----|------|---|
| | | | | | | | |
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| 1 | 07 MAR 16 | BID ISSUE (STAGGERED UNIT INSTALLATION) | EDC | - | - | - | - |
| 0 | 02 NOV 15 | M0102 BID ISSUE | EDC | - | - | - | - |
| ISSUE | DATE | DESCRIPTION | DWN | ENGR | CHK | APPV | |

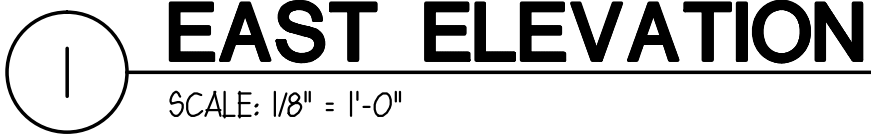
PRELIMINARY
NOT FOR
CONSTRUCTION
OR
RECORDING

INVENERGY, LLC
CLEAR RIVER ENERGY CENTER

ADMINISTRATION BUILDING
FLOOR PLAN

| | |
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| FILENAME | A1000-0GA-238926.dwg |
| SCALE | AS NOTED |

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| SHEET |
| 238926-0GA-A1000 |



FOR REFERENCE ONLY

Charles E. Smith
Architect - ALA, NCARB, APA
13543 W. 185th Street, Mokena, IL 60448
P: (708) 921-0282 E: cems52@aol.com

| | |
|-----------|-------------------------|
| 3-30-2016 | FINAL PRELIM DRAWINGS & |
| 3-6-2016 | ISSUE FOR REVIEW |
| 3-4-2016 | PLAN REVISIONS |
| 3-3-2016 | ISSUE FOR REVIEW |

These drawings on scope documents reflecting the general project design and construction of the project, including, but not limited to, the general description of structural and mechanical, electrical and plumbing projects. As scope documents, these drawings do not necessarily describe or indicate the precise nature and extent of the work to be completed and the contractor is responsible for the proper interpretation of the drawings and the completion of all items required for proper execution of the project. The Architect is not responsible for the interpretation of the drawings and the contractor shall be responsible for the proper completion of these documents. All drawings with regard to the scope of these documents shall be furnished with the Architect and Owner and communication is writing to the contractor.

PROPOSED ADMINISTRATION / CONTROL BUILDING
LACKAWANNA ENERGY CENTER
ADDRESS TBD
JESSUP PA 19334 (LACKAWANNA COUNTY)

FOR:
INVENERGY
1 SOUTH WALKER
SUITE 1900
CHICAGO, IL 60606

**EXTERIOR
ELEVATIONS**

JOB NO: 16011 DRAWN: JSD
ORIGIN: 3-3-2016 CHECKED: CES

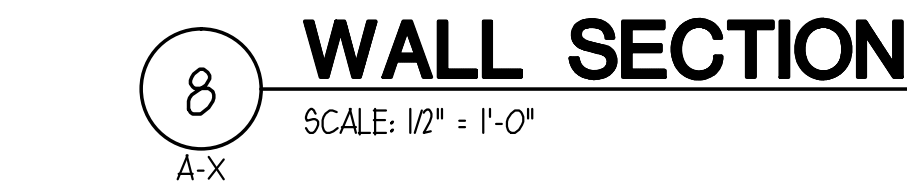
SHEET NUMBER:
A-2.0

PLOT: scales: AS NOTED date: 3-20-2016
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and communicated in writing to the contractor (a). The agreement between the Architect and any other party involved with this project, including but not limited to, the contractor, does not include on-site inspections and observation, and due to the fact that the Architect has completed only working drawings for this project, the Architect cannot assume responsibility for construction, and assumes no responsibility for proper completion of this project, and makes no warranty and no claim or implied on these construction documents. All changes with regard to the scope of these documents shall be finalized with the Architect and Owner.

FOR:
IN/ENERGY

PLOT: scale: AS NOTED date: 3-20-21
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FOR REFERENCE ONLY

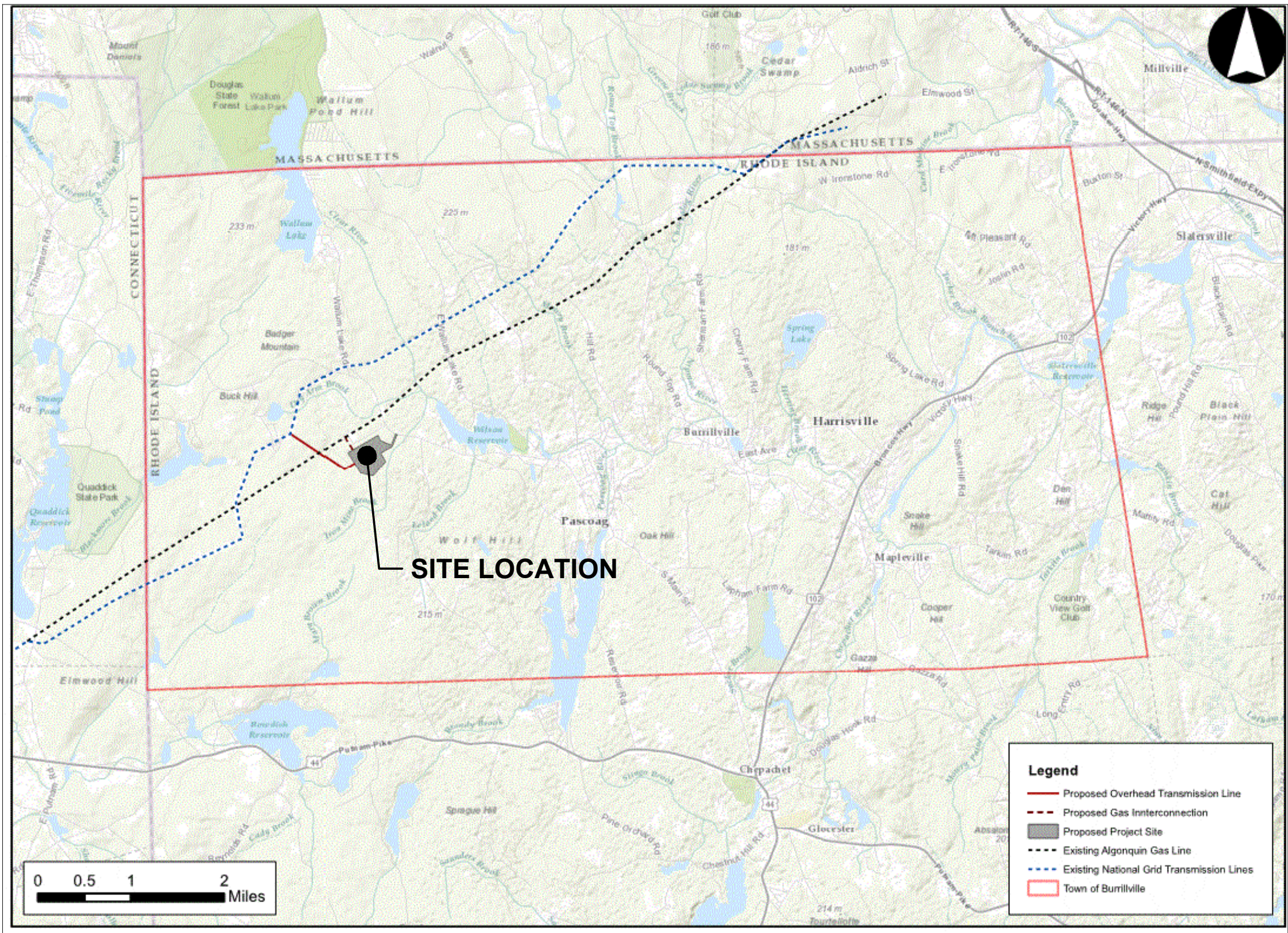


Drawing Package For

Stormwater Management

INDEX OF DRAWINGS

| SITE PLANS | |
|------------|------------------------------|
| 01C000 | COVER |
| 01C001 | LEGEND |
| 01C100 | EXISTING DRAINAGE CONDITIONS |
| 01C200 | SITE LAYOUT PLAN |
| 01C300 | GRADING PLAN |
| 01C400 | DRAINAGE PLAN |
| 01C600 | ROADWAY PLAN AND PROFILE |
| 01C601 | ROADWAY PLAN AND PROFILE |
| 01C800 | STORMWATER DETAILS |
| 01C801 | STORMWATER DETAILS |
| 01C802 | STORMWATER DETAILS |
| 01C803 | STORMWATER DETAILS |
| 01C804 | STORMWATER DETAILS |
| 01C805 | STORMWATER DETAILS |



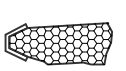
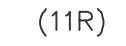



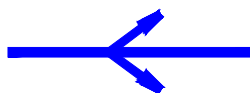










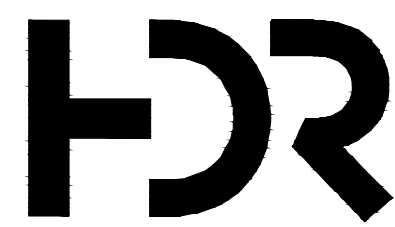
Clear River Energy LLC

Project No.
000000000238926

Burrillville, Rhode Island
September, 2016

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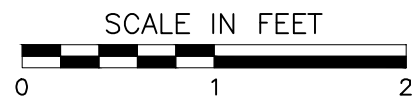
| CIVIL MAPPING SYMBOLOGY | | UTILITY/CIVIL LINE SYMBOLOGY | |
|---|--|------------------------------|--|
| <div><div><div>SILT FENCE INLET PROTECTION</div></div><div><div>DIRECTION OF OVERLAND FLOW DURING & AFTER MASS GRADING</div></div><div><div>DIRECTION OF OVERLAND FLOW W/ GRADE</div></div><div><div>SB SEDIMENT BASIN</div></div><div><div>TEMPORARY STONE CONSTRUCTION EXIT</div></div><div><div>TEMPORARY DIVERSION DITCH/BERM</div></div><div><div>OUTLET PROTECTION RIP-RAP PAD (FOR SIZE SEE DETAIL)</div></div><div><div>HYDROCAD REFERENCE NODE FOR CALCS</div></div><div><div>WETLAND</div></div><div><div>SPECIAL AQUATIC SITE</div></div><div><div>PROPOSED STORM STRUCTURE</div></div><div><div>EXISTING POINT OF DISCHARGE</div></div><div><div>PROPOSED POINT OF DISCHARGE</div></div><div><div>LIMITS OF DRAINAGE SUB-BASIN</div></div><div><div>EXISTING LIGHT POLE</div></div><div><div>EXISTING SIGN</div></div></div> <div><div><div>PROPERTY LINE SETBACK</div></div><div><div>PROPERTY LINE</div></div><div><div>EXISTING CONTOUR ELEVATIONS</div></div><div><div>PROPOSED CONTOUR ELEVATIONS</div></div><div><div>LIMITS OF DISTURBANCE (SILT FENCE INSTALLATION, SEE NOTE ABOVE)</div></div><div><div>PROPOSED SILT FENCE</div></div><div><div>PROPOSED STORM DRAIN</div></div><div><div>WETLAND</div></div><div><div>WETLAND BUFFER</div></div><div><div>EXISTING STREAM</div></div><div><div>EXISTING STREAM BANK</div></div><div><div>100' STREAM BUFFER</div></div><div><div>200' STREAM BUFFER</div></div><div><div>RIGHT OF WAY</div></div><div><div>DRAINAGE AREAS</div></div><div><div>DRAINAGE PATHS</div></div><div><div>TREE LINE</div></div><div><div>EXISTING GAS LINE</div></div></div> <div><p>GENERAL NOTES:</p><p>1. THIS IS A STANDARD CIVIL SYMBOLOGY SHEET. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.</p><p>2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.</p></div> | | | |



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| | | | PROJECT MANAGER C. JACOBS | |
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| ISSUE | DATE | DESCRIPTION | PROJECT NUMBER | 000000000238926 |

CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

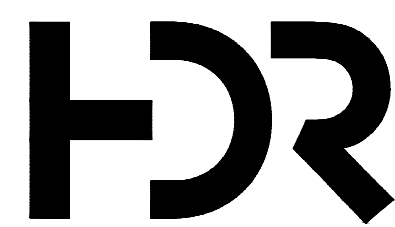
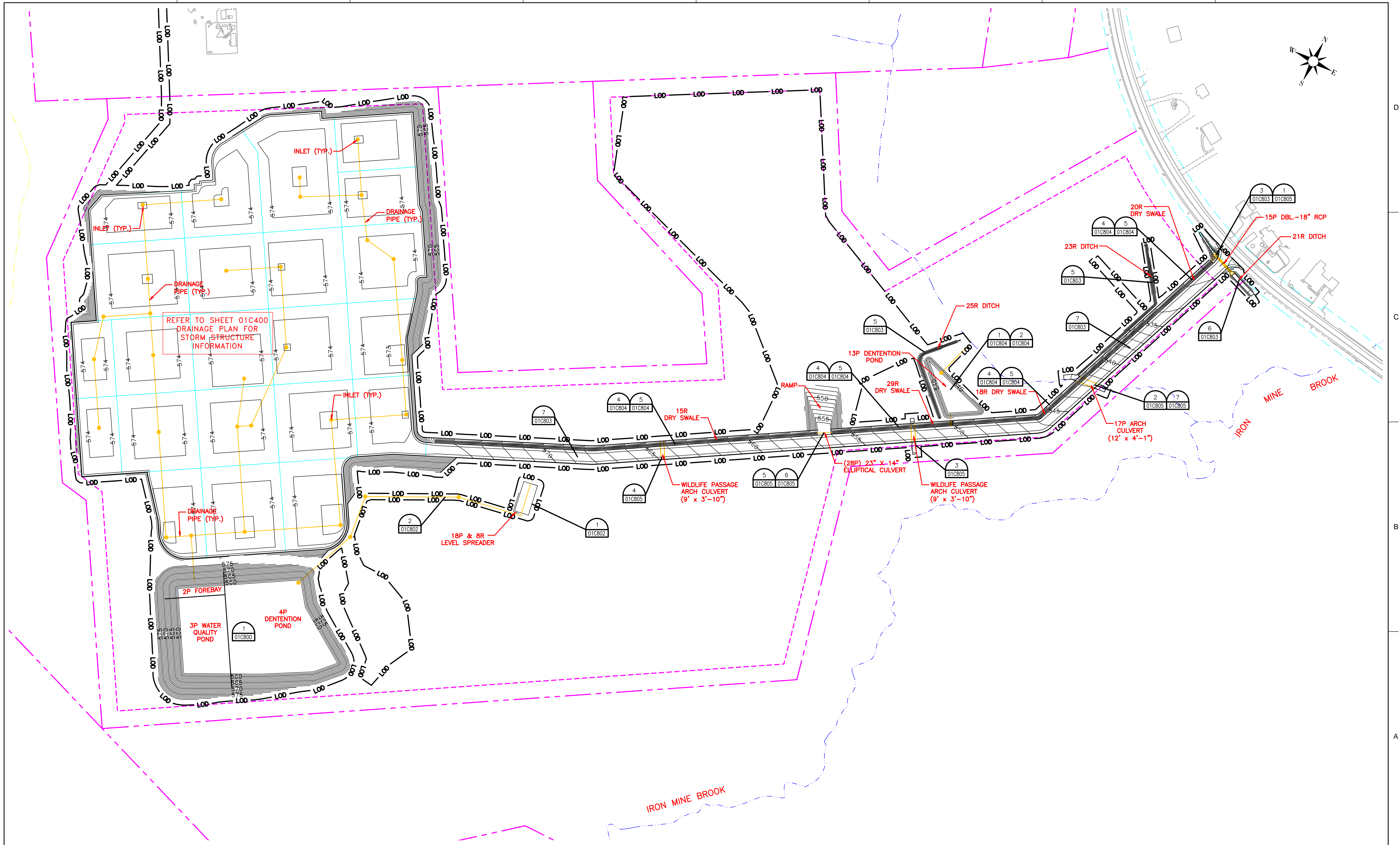
LEGEND



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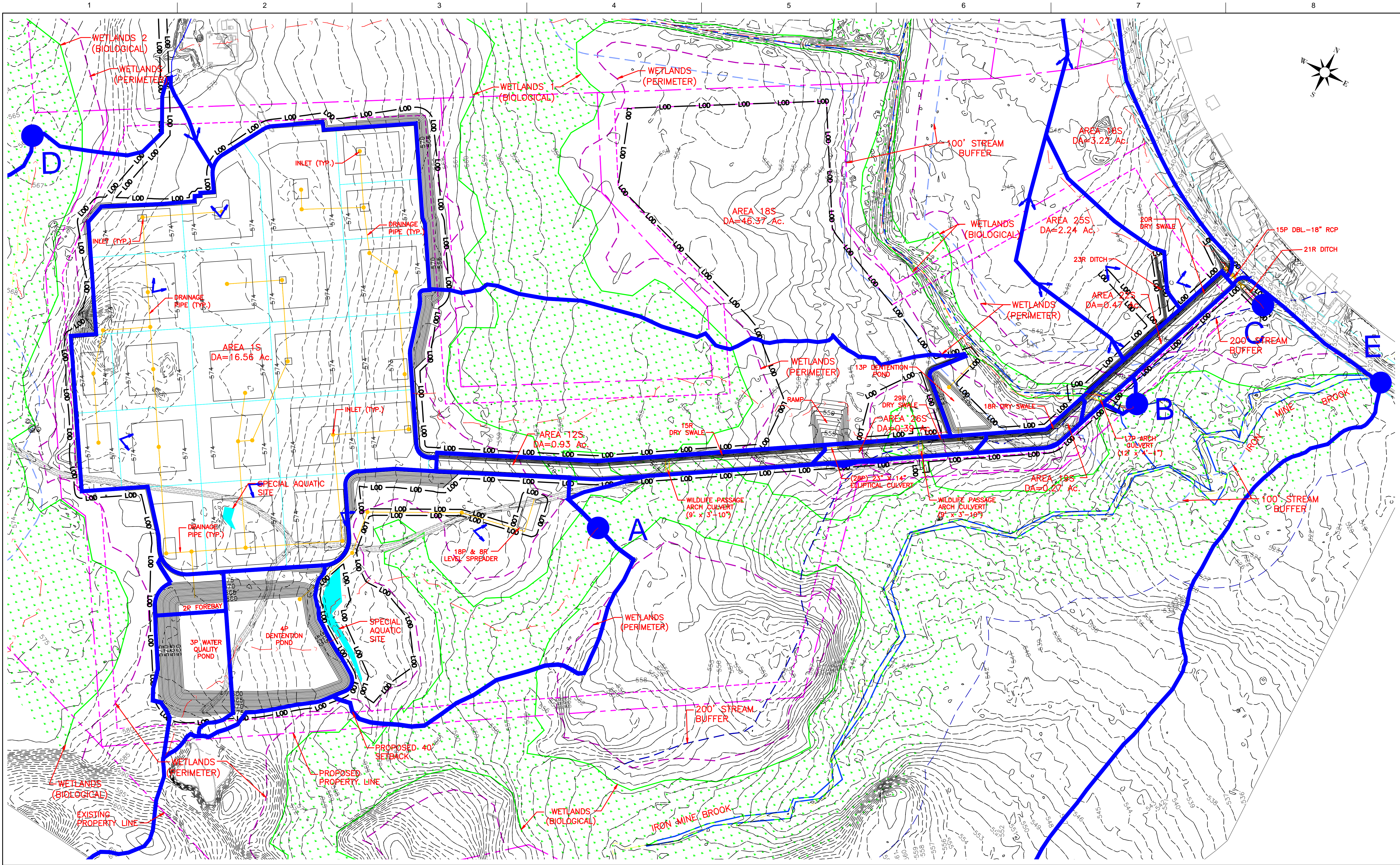
CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED SITE LAYOUT PLAN

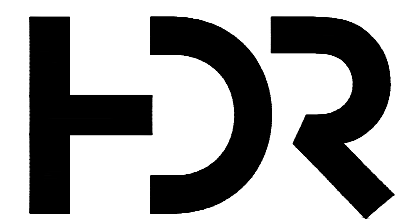


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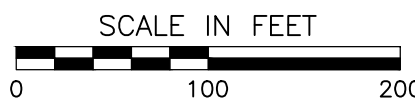
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PROJECT MANAGER C. JACOBS

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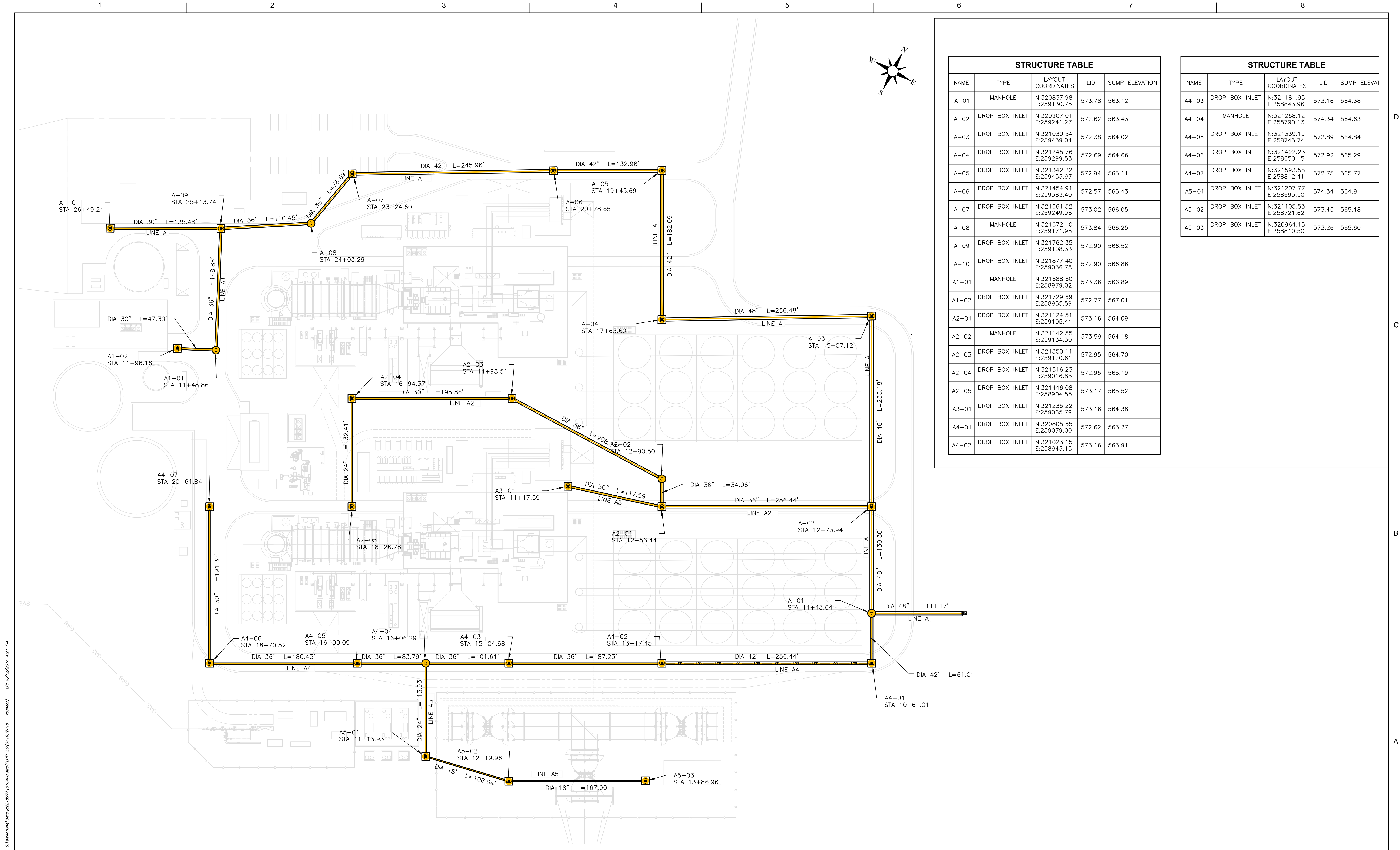
CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED GRADING, DRAINAGE
AND WATER QUALITY PLAN



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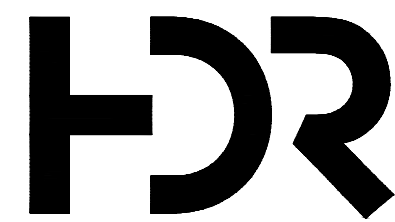
SHEET
01C300



| STRUCTURE TABLE | | | | |
|-----------------|----------------|----------------------------|--------|----------------|
| NAME | TYPE | LAYOUT COORDINATES | LID | SUMP ELEVATION |
| A-01 | MANHOLE | N:320837.98 E:259130.75 | 573.78 | 563.12 |
| A-02 | DROP BOX INLET | N:320907.01 E:259241.27 | 572.62 | 563.43 |
| A-03 | DROP BOX INLET | N:321030.54 E:259439.04 | 572.38 | 564.02 |
| A-04 | DROP BOX INLET | N:321245.76 E:259299.53 | 572.69 | 564.66 |
| A-05 | DROP BOX INLET | N:321342.22 E:259453.97 | 572.94 | 565.11 |
| A-06 | DROP BOX INLET | N:321454.91 E:259383.40 | 572.57 | 565.43 |
| A-07 | DROP BOX INLET | N:321661.52 E:259249.96 | 573.02 | 566.05 |
| A-08 | MANHOLE | N:321762.10 E:259171.98 | 573.84 | 566.25 |
| A-09 | DROP BOX INLET | N:321762.35 E:259108.33 | 572.90 | 566.52 |
| A-10 | DROP BOX INLET | N:321877.40 E:259036.78 | 572.90 | 566.86 |
| A1-01 | MANHOLE | N:321688.60 E:258979.02 | 573.36 | 566.89 |
| A1-02 | DROP BOX INLET | N:321729.69 E:258955.59 | 572.77 | 567.01 |
| A2-01 | DROP BOX INLET | N:321124.51 E:259105.41 | 573.16 | 564.09 |
| A2-02 | MANHOLE | N:321142.55 E:259134.30 | 573.59 | 564.18 |
| A2-03 | DROP BOX INLET | N:321350.11 E:259120.61 | 572.95 | 564.70 |
| A2-04 | DROP BOX INLET | N:321516.23 E:259016.85 | 572.95 | 565.19 |
| A2-05 | DROP BOX INLET | N:321446.08 E:258904.55 | 573.17 | 565.52 |
| A3-01 | DROP BOX INLET | N:321235.22 E:259065.79 | 573.16 | 564.38 |
| A4-01 | DROP BOX INLET | N:320805.65 E:259079.00 | 572.62 | 563.27 |
| A4-02 | DROP BOX INLET | N:321023.15 E:258943.15 | 573.16 | 563.91 |

| STRUCTURE TABLE | | | | |
|-----------------|----------------|----------------------------|--------|----------------|
| NAME | TYPE | LAYOUT COORDINATES | LID | SUMP ELEVATION |
| A4-03 | DROP BOX INLET | N:321181.95 E:258843.96 | 573.16 | 564.38 |
| A4-04 | MANHOLE | N:321268.12 E:258790.13 | 574.34 | 564.63 |
| A4-05 | DROP BOX INLET | N:321339.19 E:258745.74 | 572.89 | 564.84 |
| A4-06 | DROP BOX INLET | N:321492.23 E:258650.15 | 572.92 | 565.29 |
| A4-07 | DROP BOX INLET | N:321593.58 E:258812.41 | 572.75 | 565.77 |
| A5-01 | DROP BOX INLET | N:321207.77 E:258693.50 | 574.34 | 564.91 |
| A5-02 | DROP BOX INLET | N:321105.53 E:258721.62 | 573.45 | 565.18 |
| A5-03 | DROP BOX INLET | N:320964.15 E:258810.50 | 573.26 | 565.60 |

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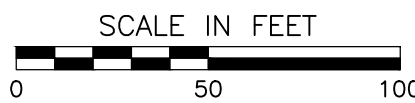
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PROJECT MANAGER C. JACOBS

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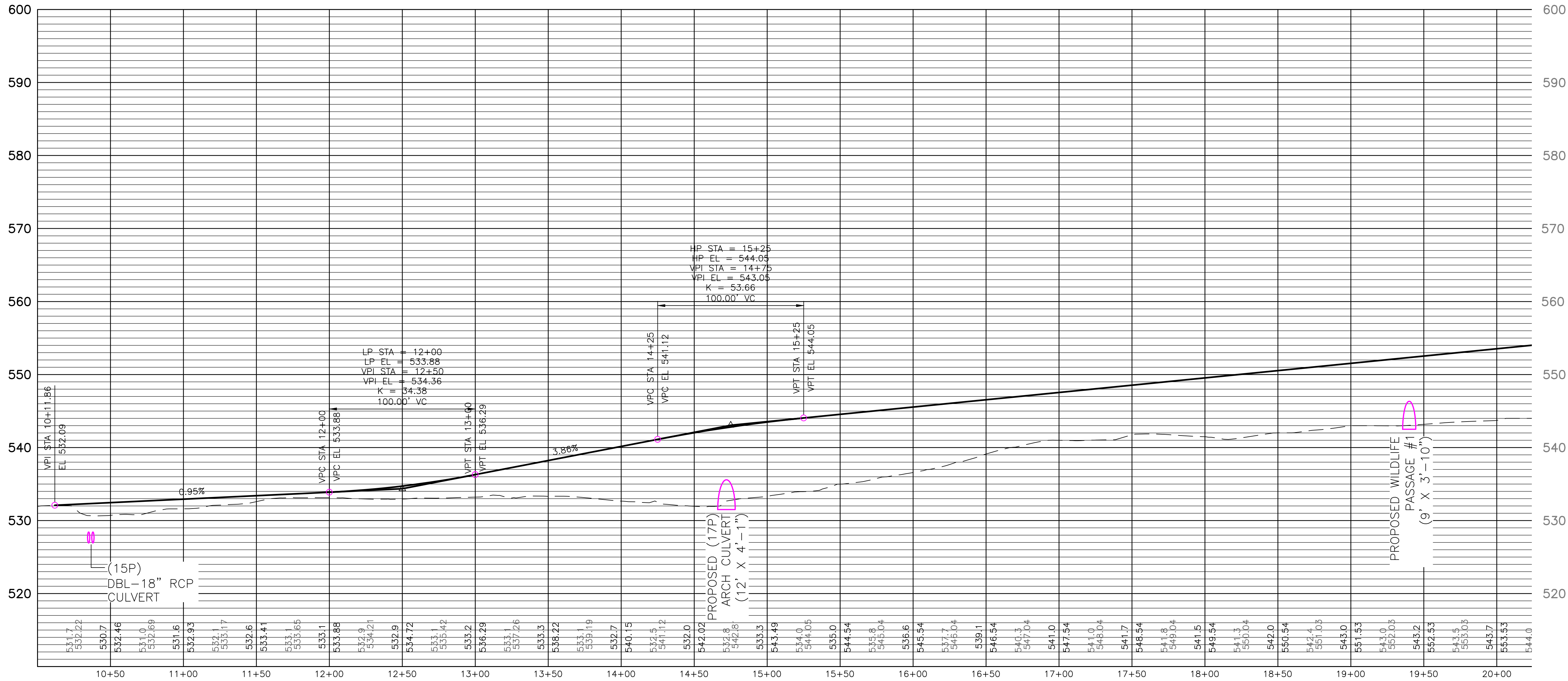
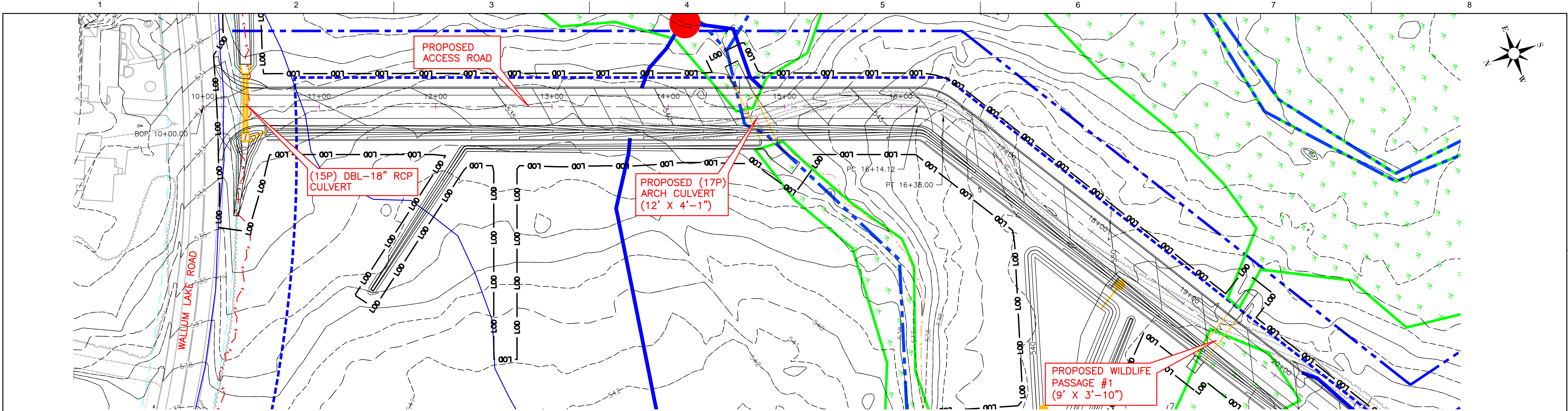
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TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED DRAINAGE PLAN

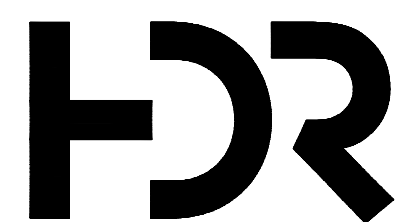


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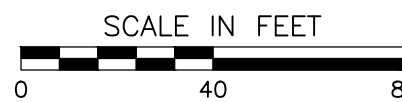
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TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

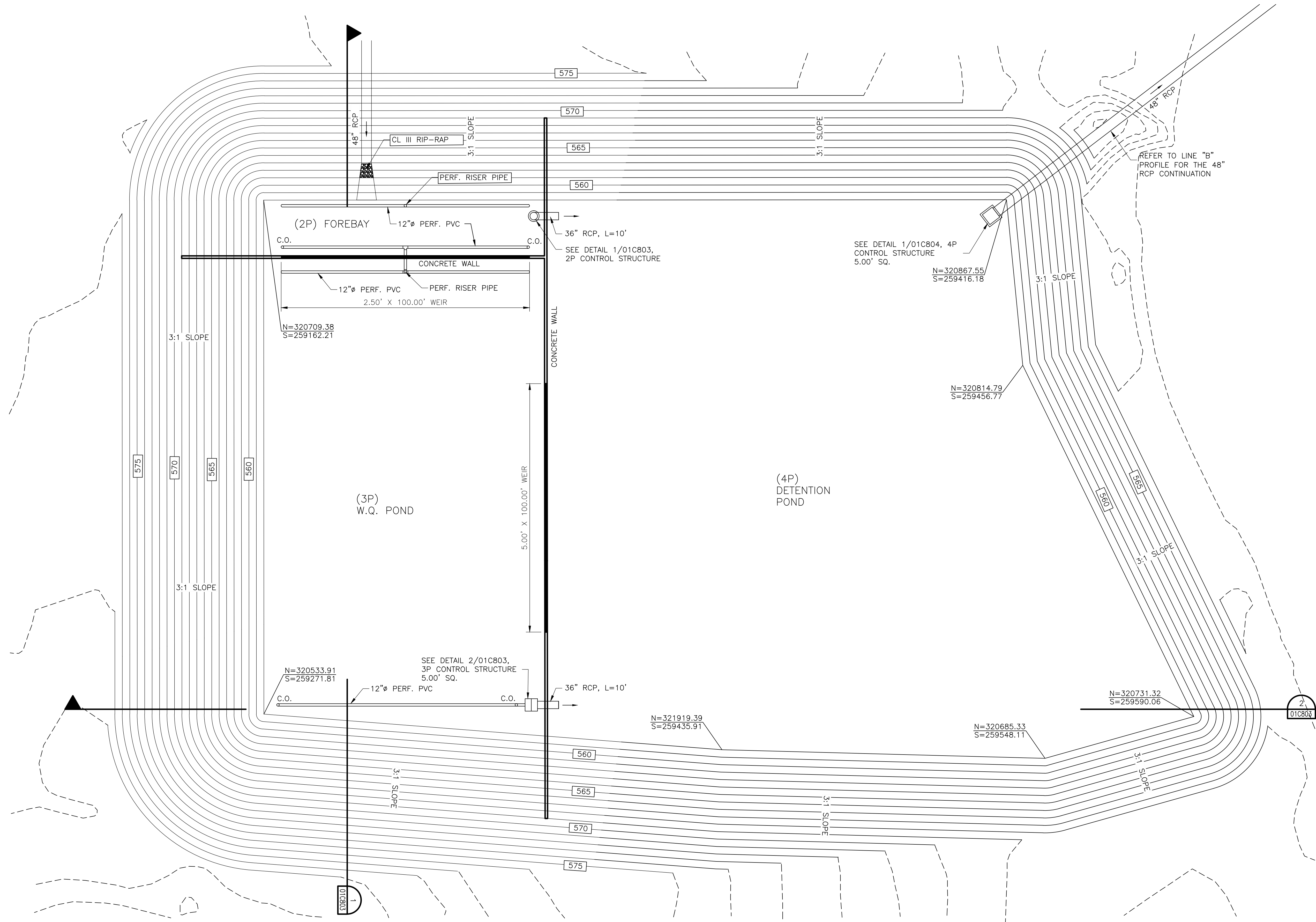
ROADWAY
PLAN & PROFILE



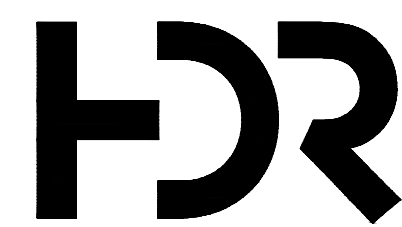
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BASIN A DETAIL (2P)(3P)(4P)
SCALE: 1"=20'



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| | | | PROJECT MANAGER C. JACOBS | |
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CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

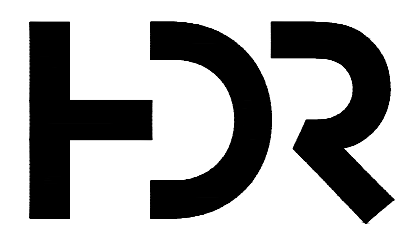
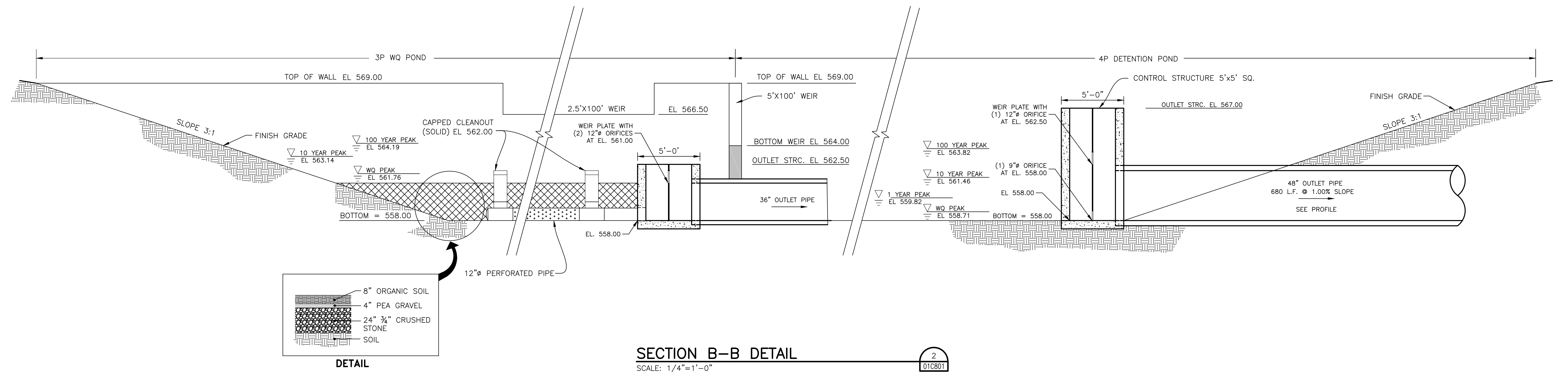
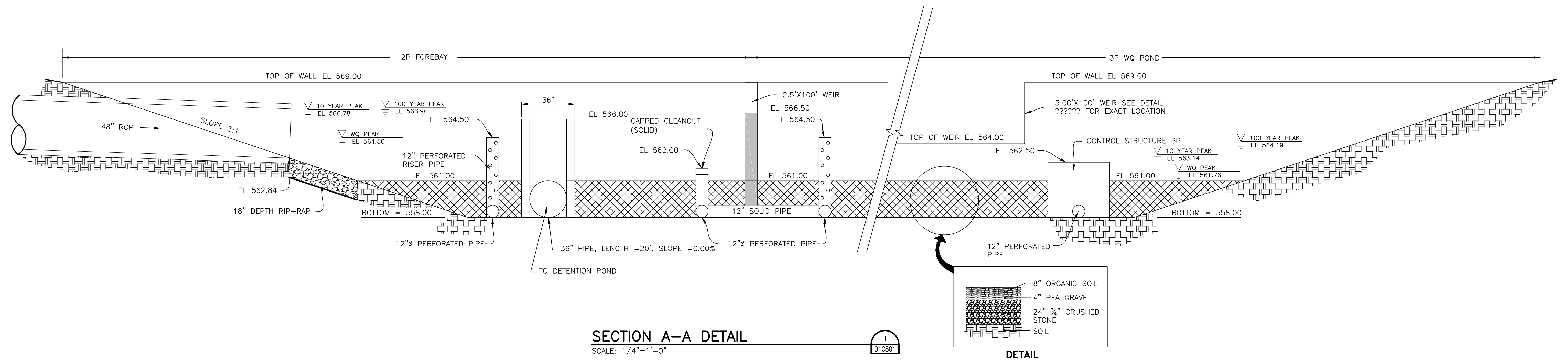
PROPOSED SITE
DRAINAGE DETAILS



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SHEET
01C800

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| | | | PROJECT MANAGER C. JACOBS | |
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CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

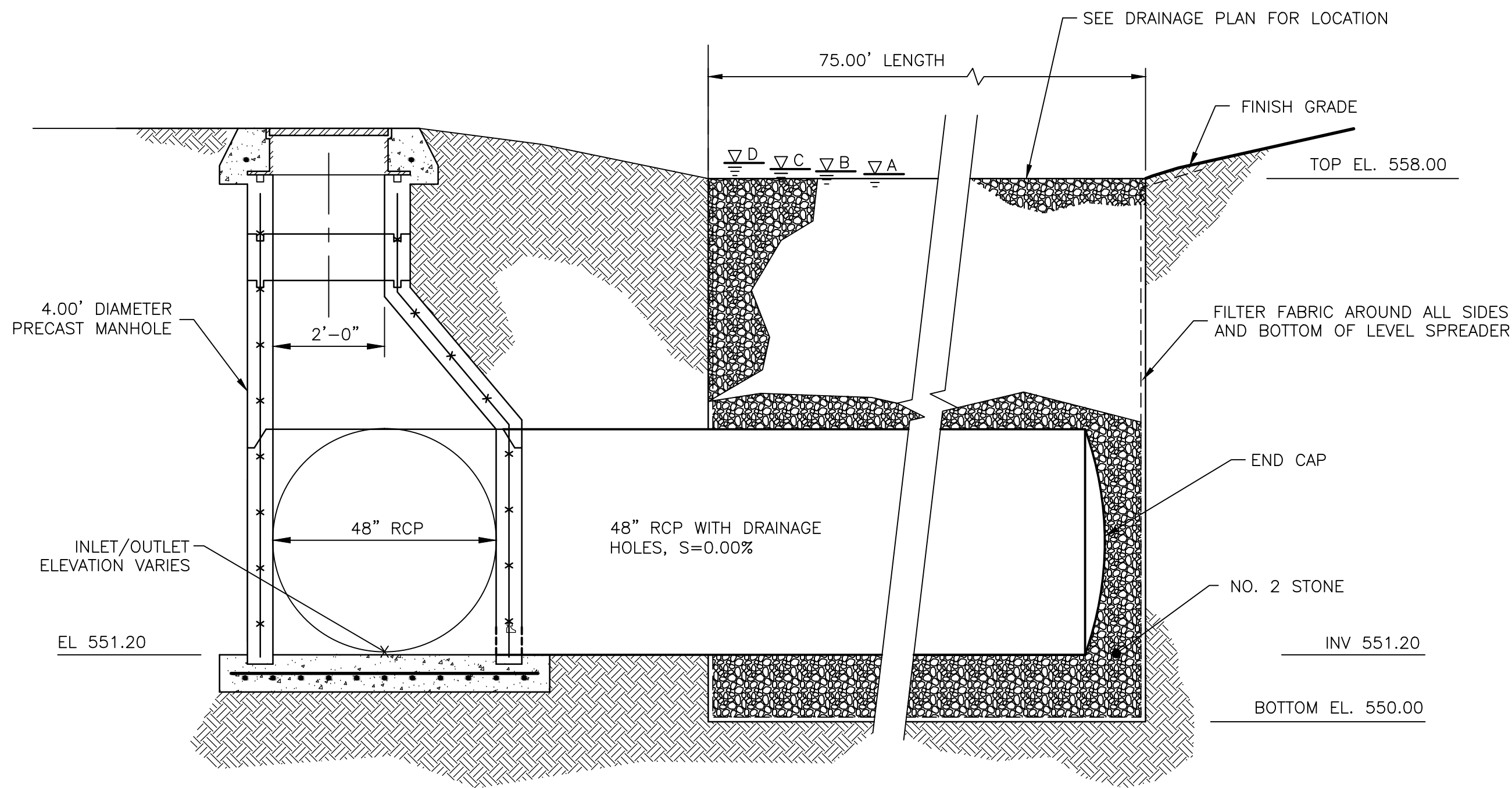
PROPOSED SITE
DRAINAGE DETAILS



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01C801

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| WATER DEPTH SCHEDULE | | |
|----------------------|-------------|-----------|
| | STORM EVENT | ELEVATION |
| A | WQ PEAK | 558.08 |
| B | 1 YR PEAK | 558.13 |
| C | 10 YR PEAK | 558.17 |
| D | 100 YR PEAK | 558.28 |

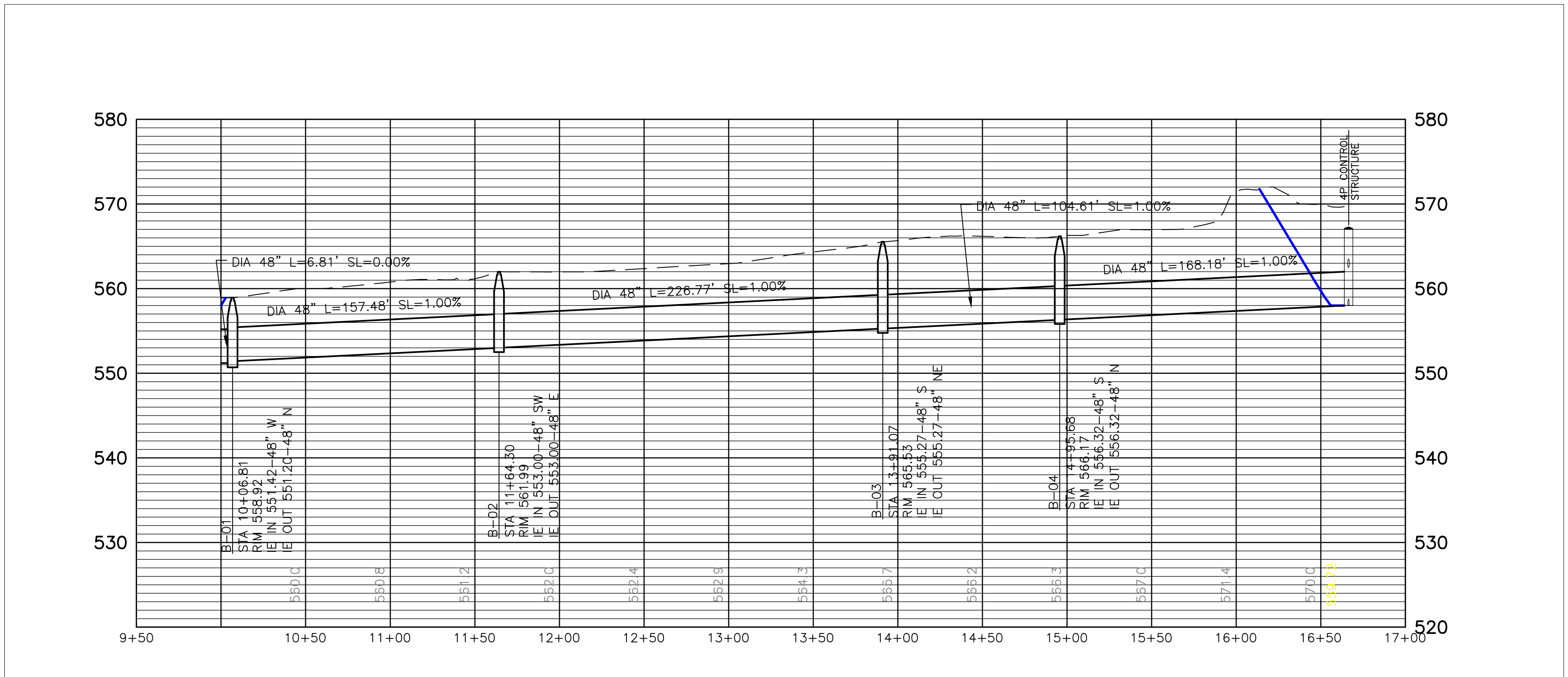
NOTE:

- 1) 48" I.D. PERFORATED UNDERDRAIN WITH FILTER SOCK. LAY PIPE WITH PERFORATIONS ON BOTTOM OF PIPE AND CAP END OF PIPE. LAY UNDERDRAIN AT 0.00% SLOPE FROM MANHOLE INVERT AND THRU BOTTOM OF LEVEL SPREADER.
- 2) WATER DEPTH MEASURED FROM TOP OF LEVEL SPREADER = EL 558.00.

LEVEL SPREADER DETAIL (18P)

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

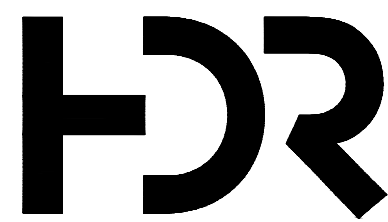
1
01C802



PROFILE OF LINE B

SCALE: HOR- 1"=50' VER- 1"= 5'

2
01C802



| PROJECT MANAGER | | | C. JACOBS | |
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| ISSUE | DATE | DESCRIPTION | PROJECT NUMBER | 000000000238926 |

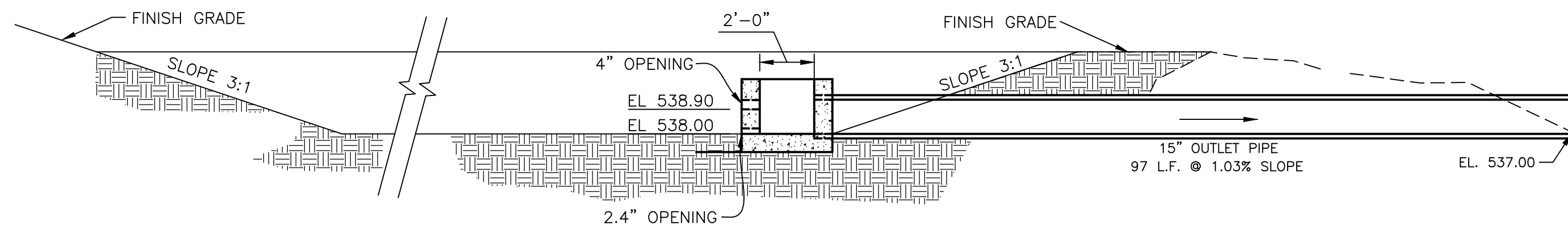
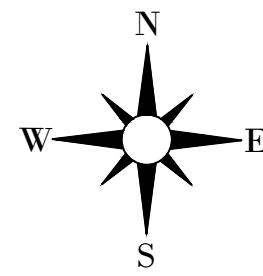
CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED SITE
DRAINAGE DETAILS

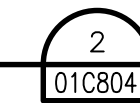


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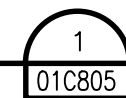
SHEET
01C801



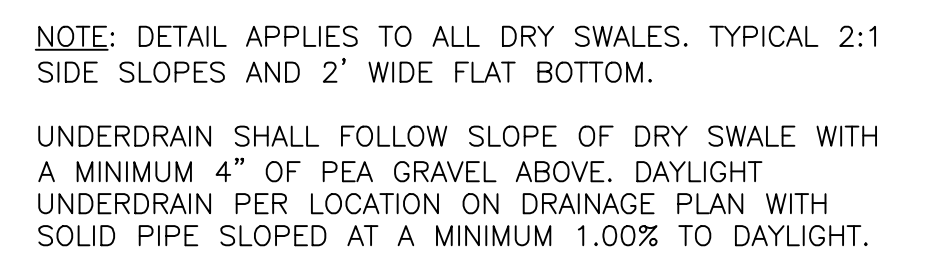
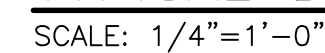
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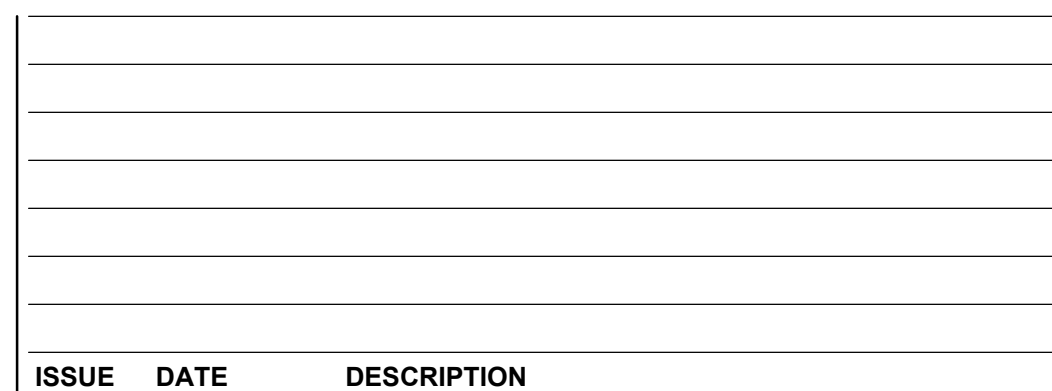
SCALE: 1"=20'



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

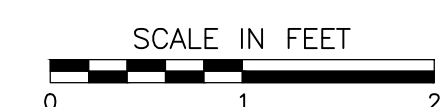


SCALE: 1/2"=1'-0'



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| PROJECT MANAGER | C. JACOBS |
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| PROJECT NUMBER | 000000000238926 |

PROPOSED SITE DRAINAGE DETAILS

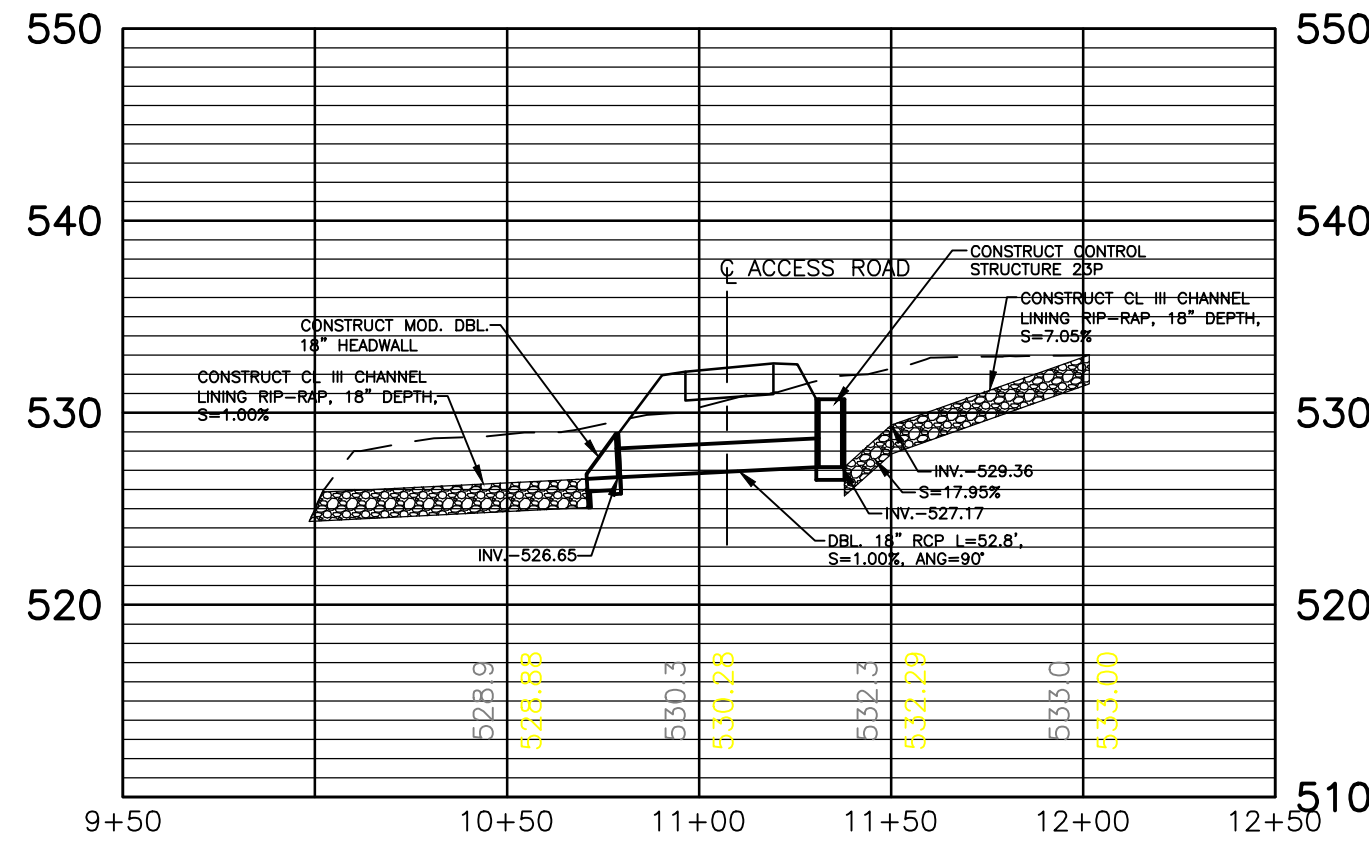


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| SCALE | AS SHOWN |

SHEET
01C804

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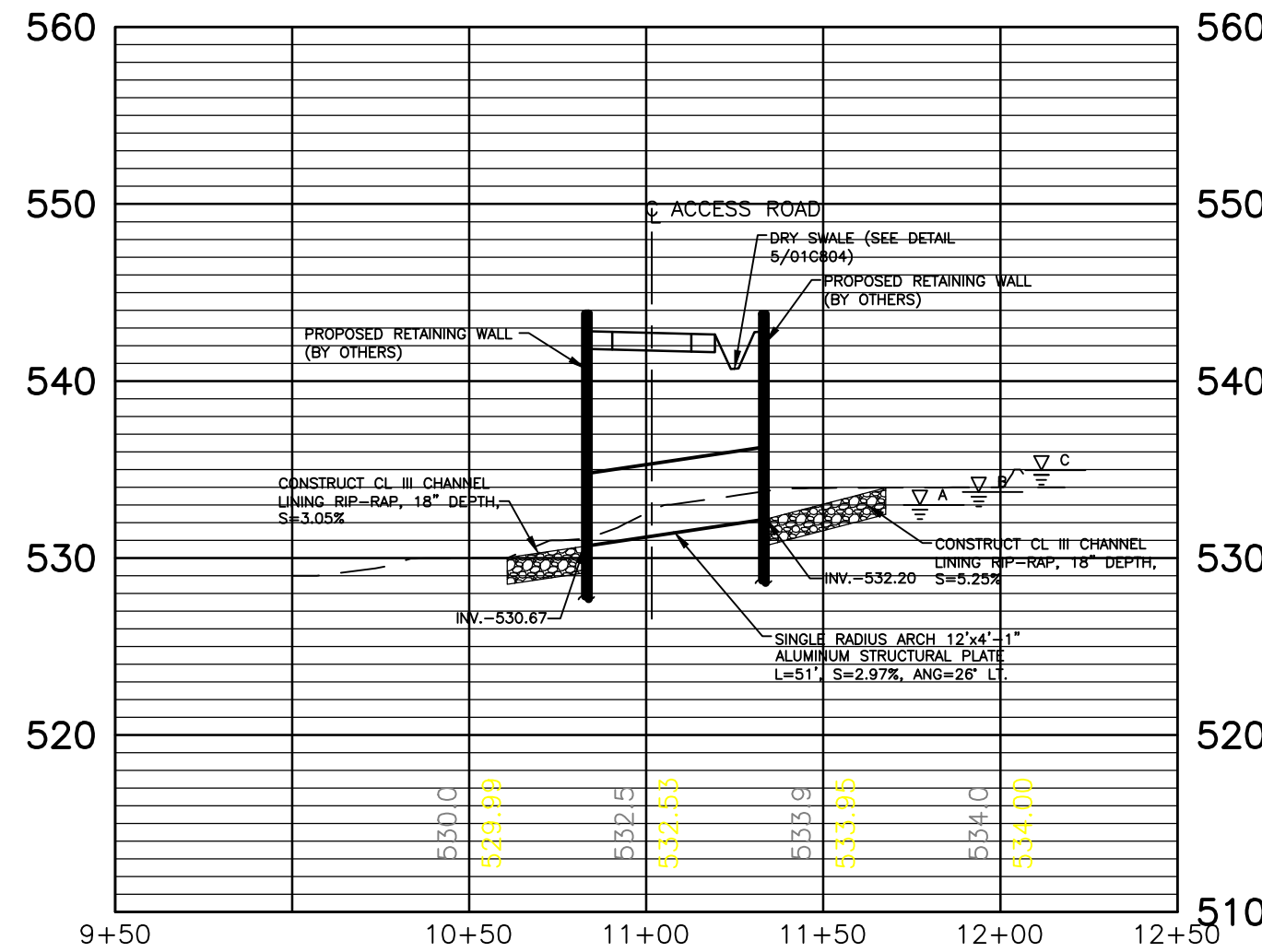
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CULVERT #1 SECTION (15P)

SCALE: HOR- 1"=50' VER- 1"=5'

1
01C805

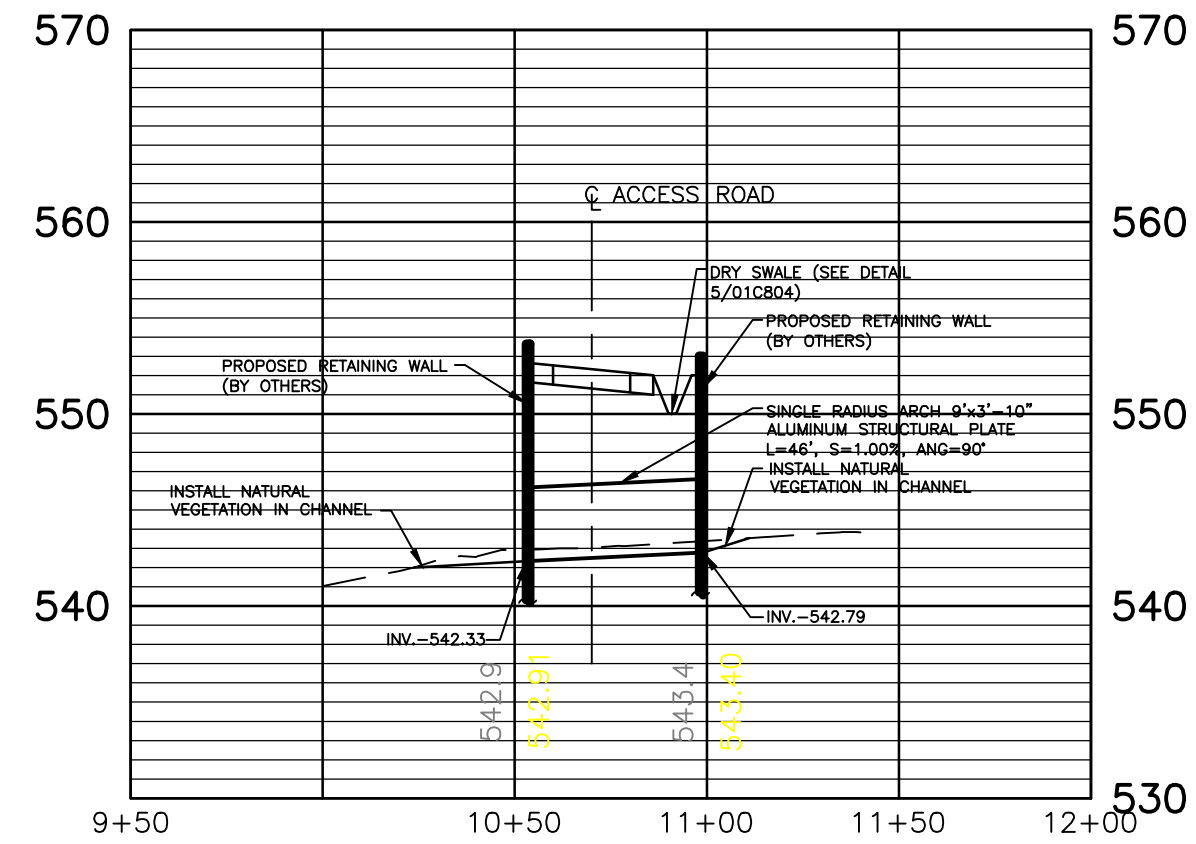


CULVERT #2 SECTION (17P)

SCALE: HOR- 1"=50' VER- 1"=5'

2
01C805

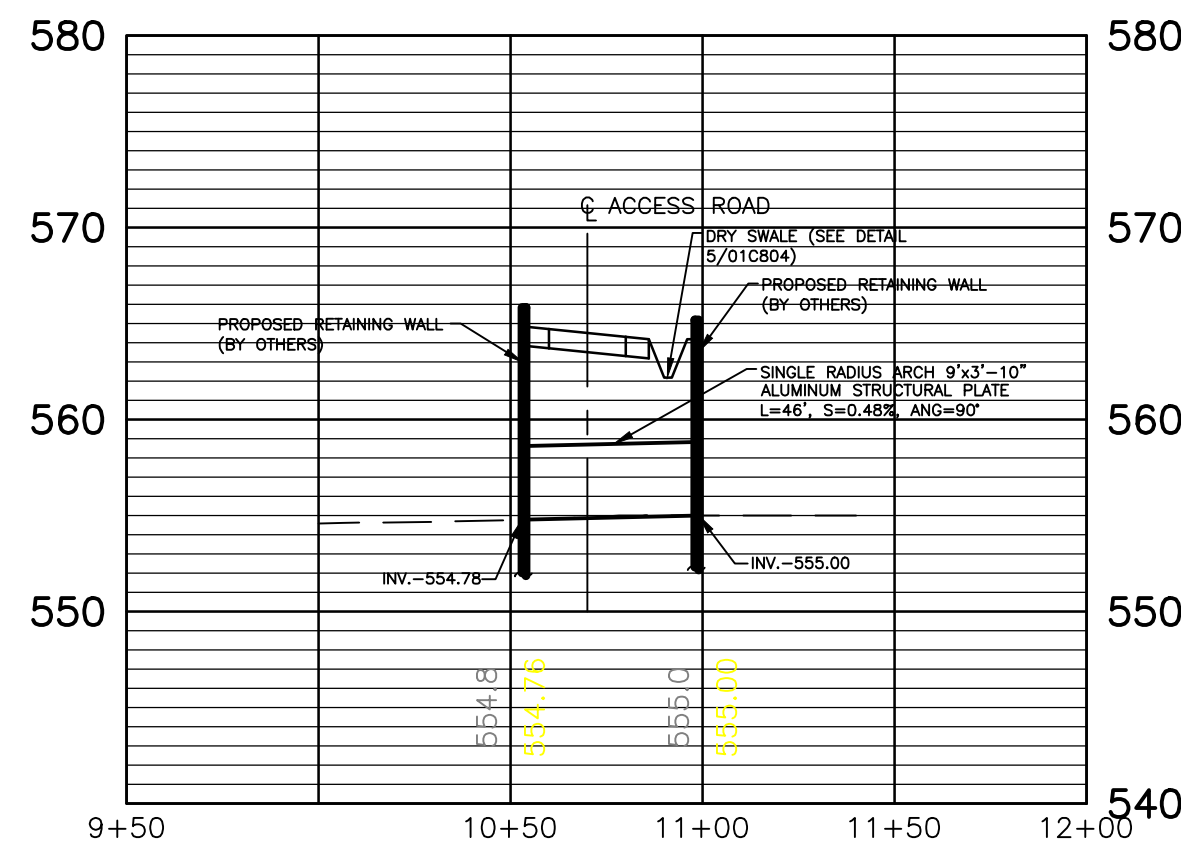
| WATER DEPTH SCHEDULE | | |
|----------------------|-------------|-----------|
| | STORM EVENT | ELEVATION |
| A | 1 YR PEAK | 533.00 |
| B | 10 YR PEAK | 533.76 |
| C | 100 YR PEAK | 534.96 |



WILDLIFE PASSAGE #1 SECTION

SCALE: HOR- 1"=50' VER- 1"=5'

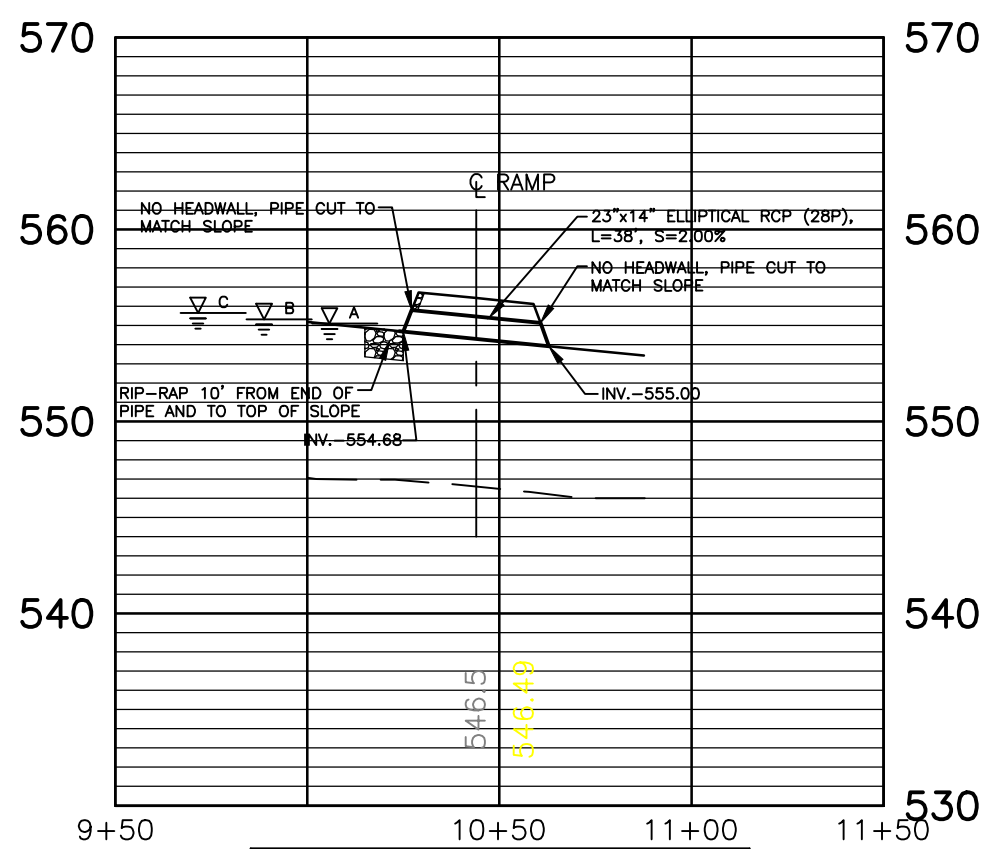
3
01C805



WILDLIFE PASSAGE #2 SECTION

SCALE: HOR- 1"=50' VER- 1"=5'

4
01C805

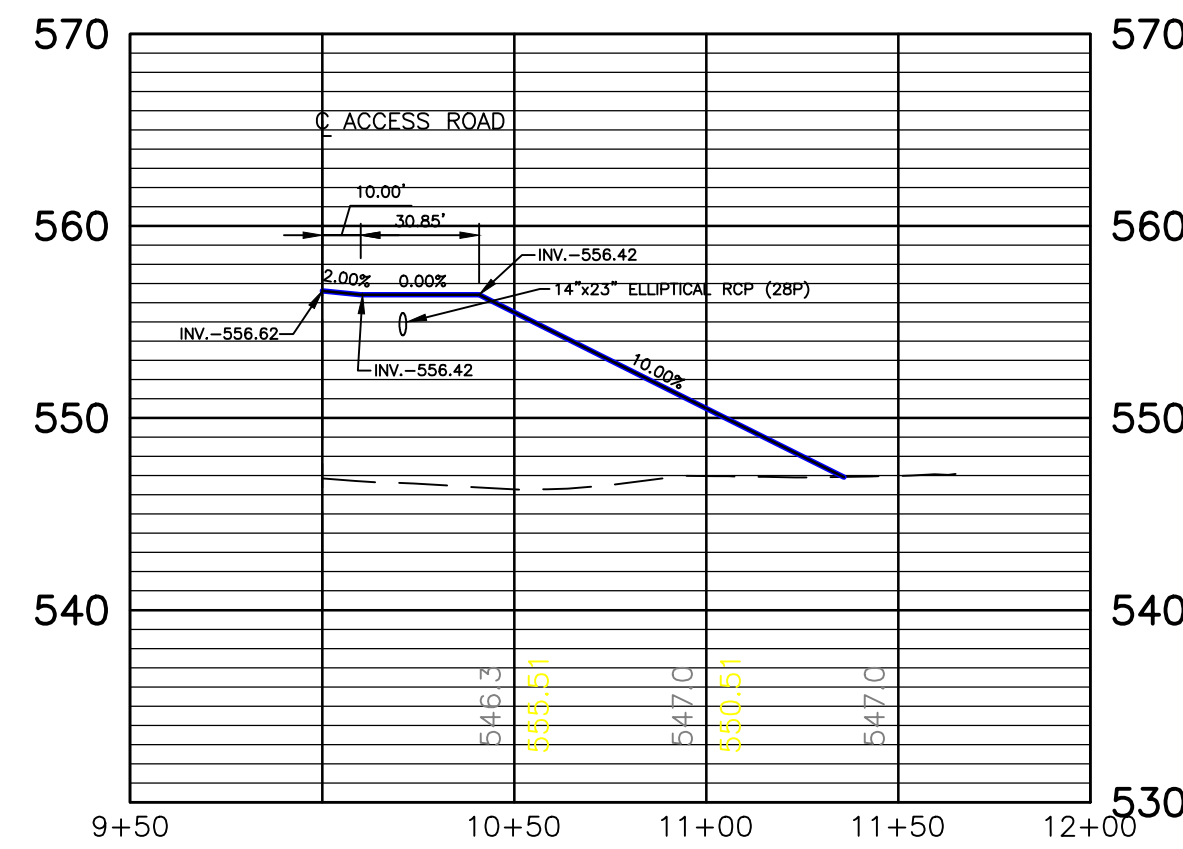


RAMP PIPE SECTION (28P)

SCALE: HOR- 1"=50' VER- 1"=5'

5
01C805

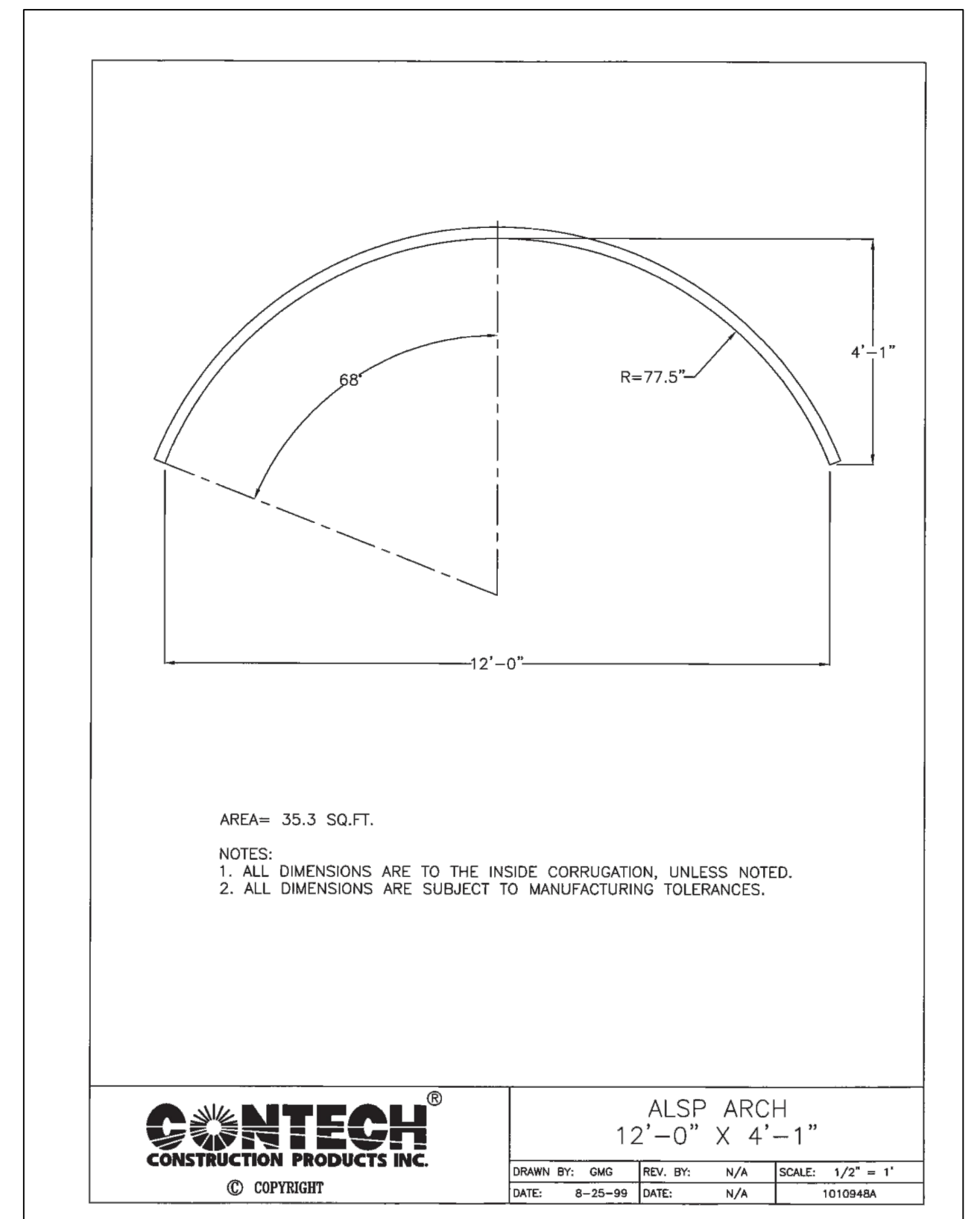
| WATER DEPTH SCHEDULE | | |
|----------------------|-------------|-----------|
| | STORM EVENT | ELEVATION |
| A | 1 YR PEAK | 555.02 |
| B | 10 YR PEAK | 555.25 |
| C | 100 YR PEAK | 555.57 |



RAMP PIPE SECTION (28P)

SCALE: HOR- 1"=50' VER- 1"=5'

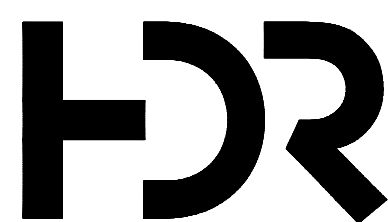
6
01C805



ALSP ARCH 12'-0" X 4'-1"

NTS

7
01C805



| PROJECT MANAGER C. JACOBS | | |
|---------------------------|-----------------|-------------|
| ISSUE | DATE | DESCRIPTION |
| | | |
| | | |
| | | |
| | | |
| PROJECT NUMBER | 000000000238926 | |

CLEAR RIVER ENERGY CENTER
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED SITE
DRAINAGE DETAILS



FILENAME 01C805.dwg
SCALE AS SHOWN

SHEET
01C805

SYMBOLS

DRAWING TITLE



COLUMN GRID AND NUMBER



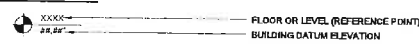
SECTION CUT



BUILDING ELEVATION



ELEVATION TARGET



CONSTRUCTION NOTE



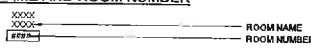
DOOR NUMBER



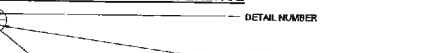
WALL TYPE



ROOM NAME AND ROOM NUMBER



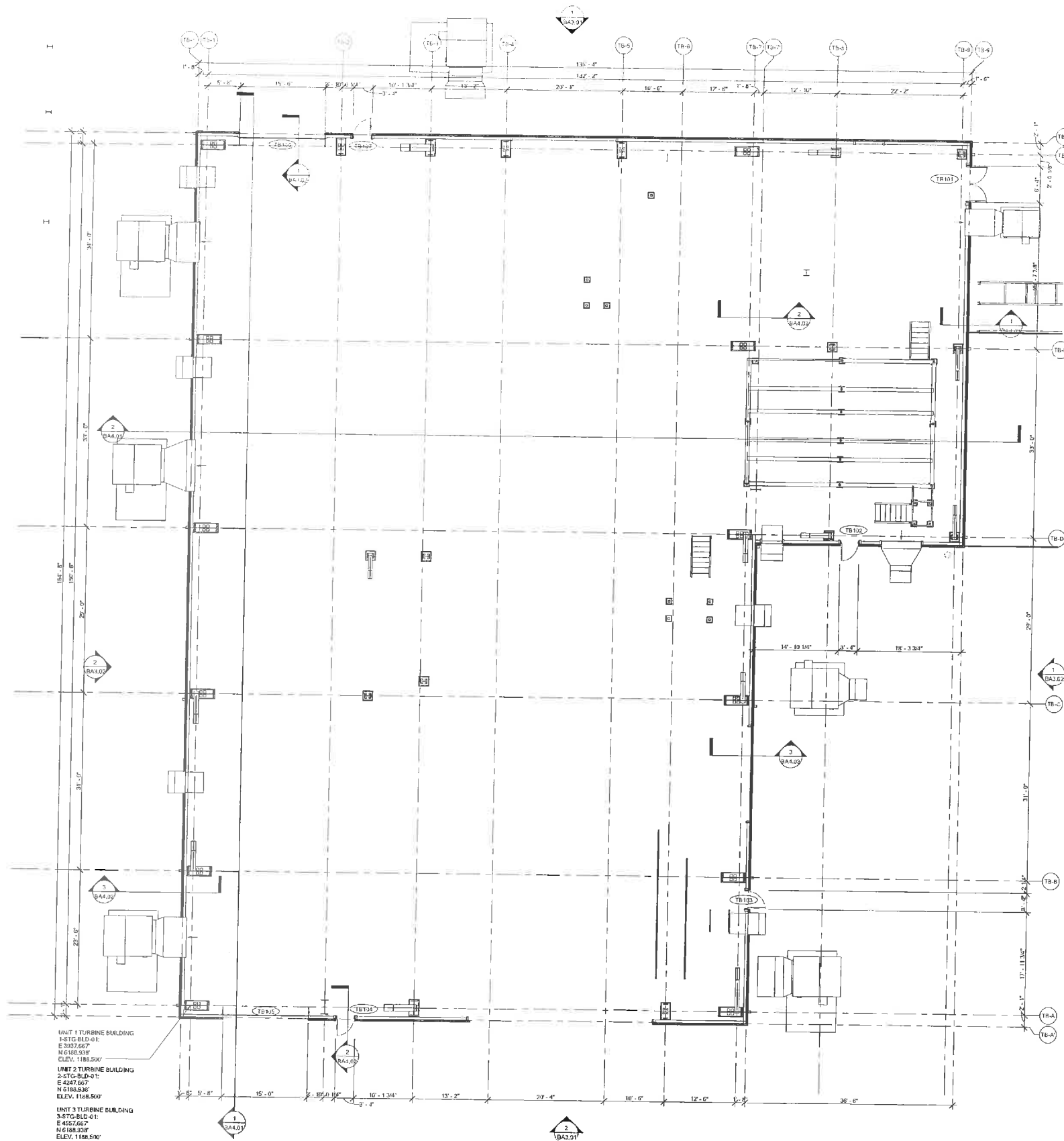
DETAIL OR ENLARGED PLAN REFERENCE



INTERIOR ELEVATION



REVISION BUBBLE



ARCHITECTURAL FLOOR PLAN - LEVEL 1

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



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| REV | DESIGN BY | DRAWN BY | CHECKED BY |
| | | | DATE |

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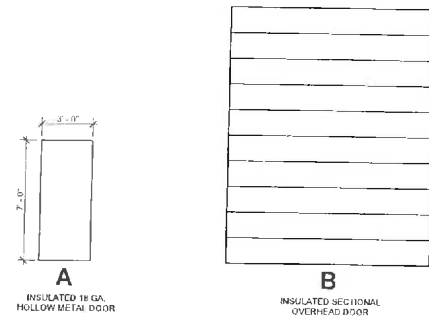
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UNITS 1, 2 & 3 TURBINE BUILDING
ARCHITECTURAL FLOOR PLAN

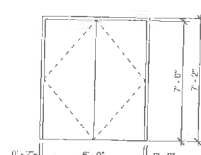
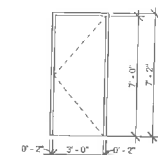
DRAWING NUMBER

2014-087-199-BA1.10



DOOR TYPES

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

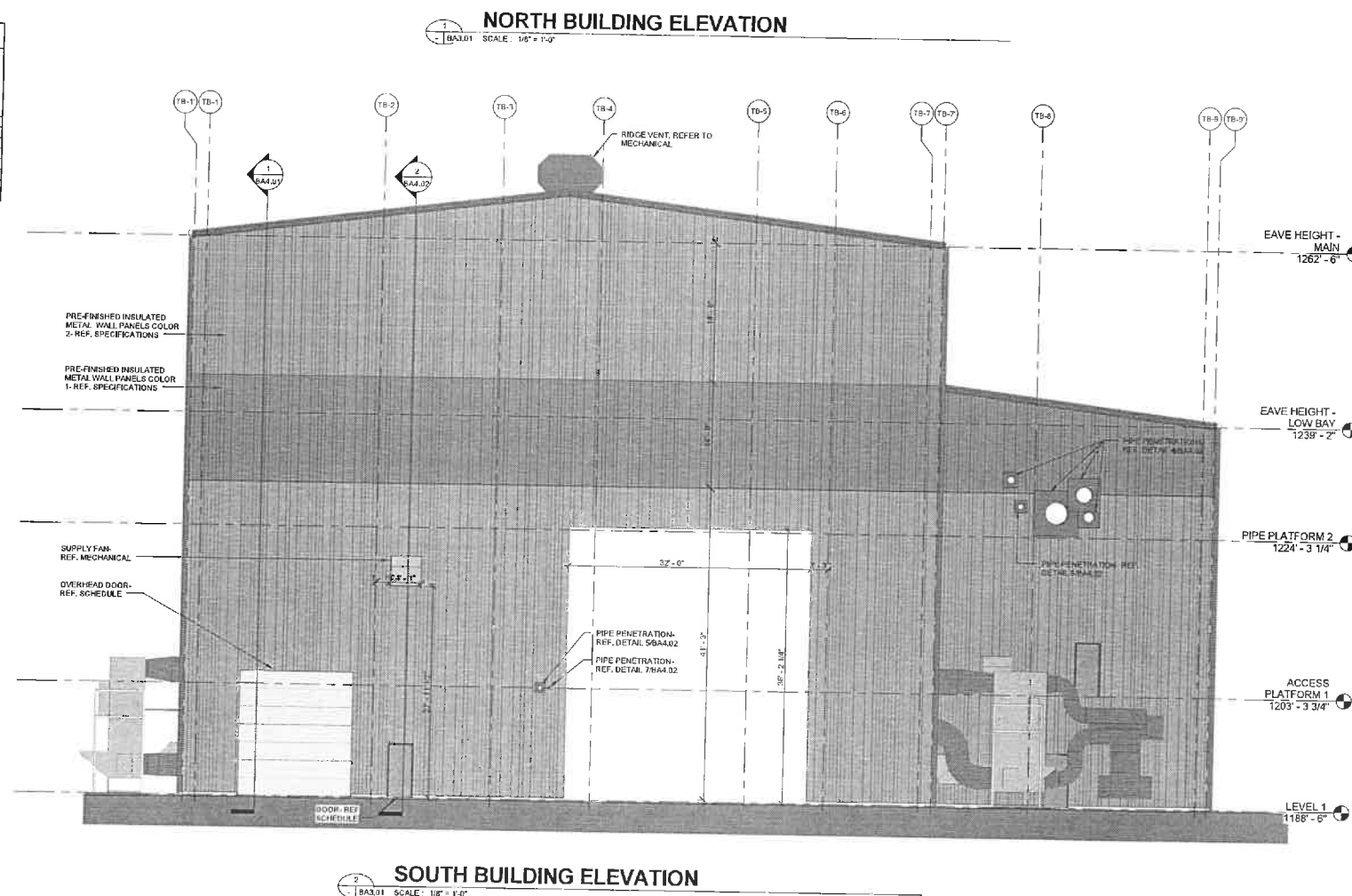
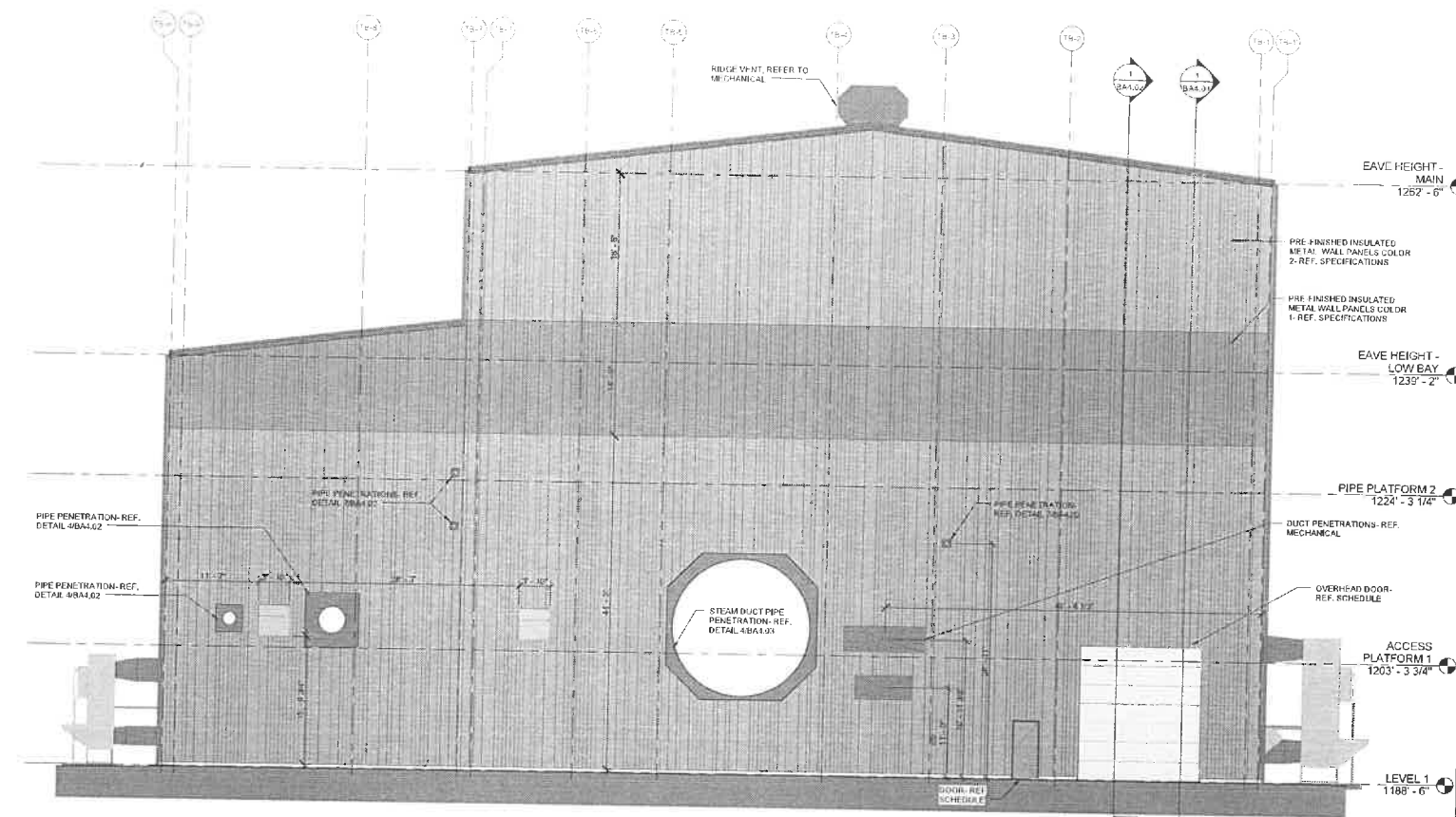


HM FRAME TYPES

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

DOOR SCHEDULE

| NO. | DOOR | | FRAME | | DETAILS | | | REMARKS | UL RATING | REF. SPEC SECTION DB7000 |
|-------|-------------------------|------|----------|------|----------|---------|---------|---------|-----------|--------------------------|
| | SIZE (WxHxT) | TYPE | MATERIAL | TYPE | MATERIAL | SILL | HEAD | | | |
| TB101 | RS 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB102 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB103 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB104 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB105 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB106 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB107 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB108 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB109 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |
| TB110 | 3'-0" x 7'-0" x 1/4" | A | STL | S1 | H.M. | 3BA6.01 | 1BA6.01 | 2BA6.01 | | 01 |



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| CHECKED BY | | |
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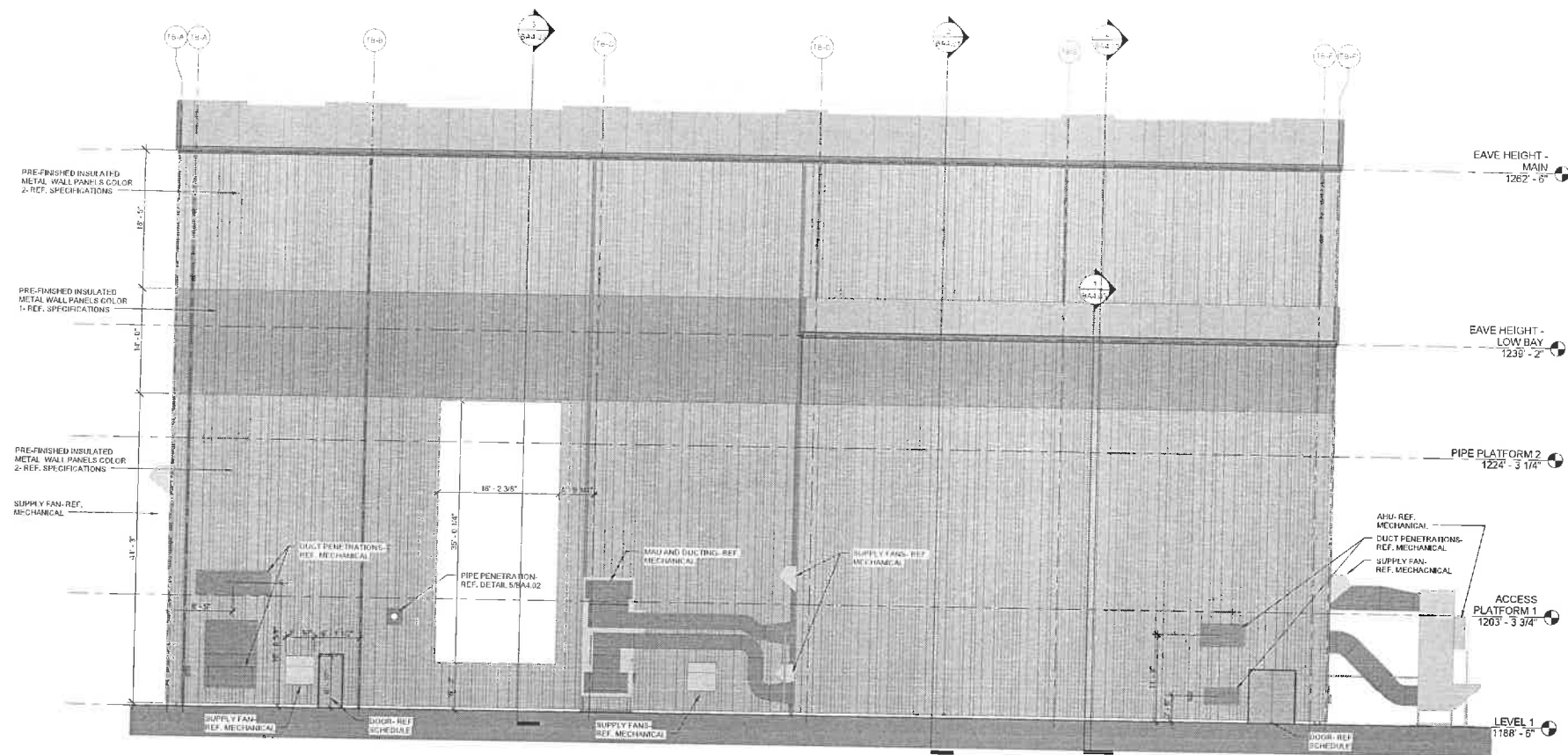
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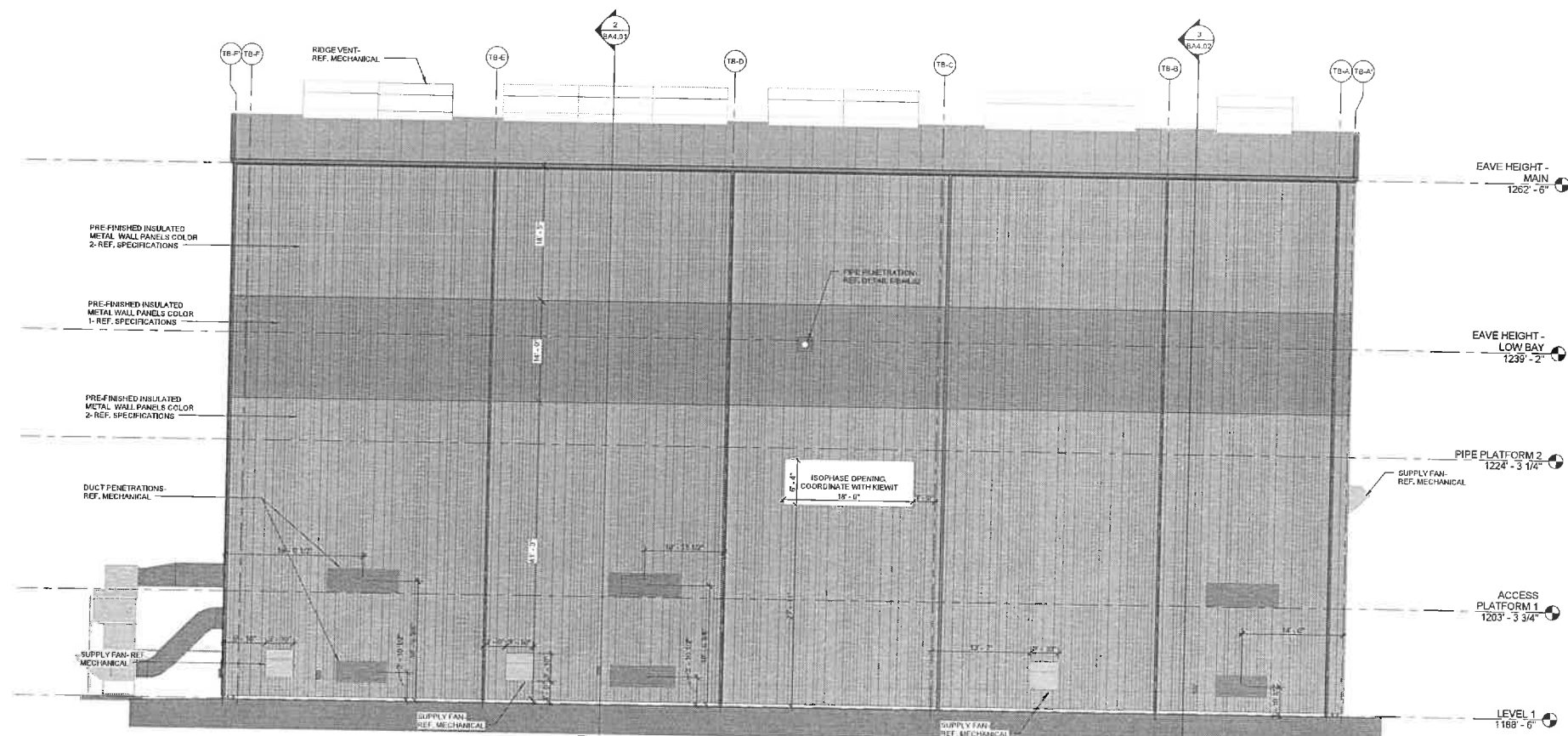
UNITS 1, 2 & 3 TURBINE BUILDING
EXTERIOR ELEVATIONS

DRAWING NUMBER

2014-087-199-BA3.01



EAST BUILDING ELEVATION
1 BA3.02 SCALE: 1/8" = 1'-0"



WEST BUILDING ELEVATION
2 BA3.02 SCALE: 1/8" = 1'-0"

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Larkinsville Energy Center, LLC

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Lenexa, Kansas 66150
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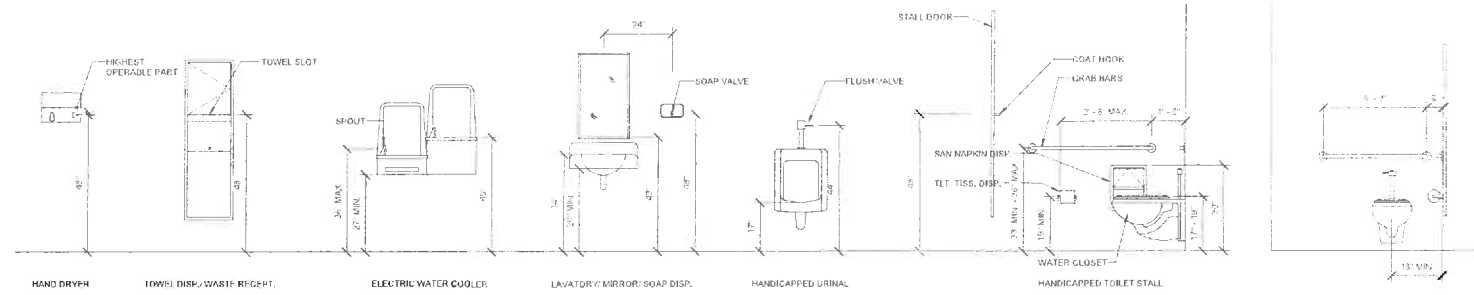
**UNITS 1, 2 & 3 TURBINE BUILDING
EXTERIOR ELEVATIONS**

DRAWING NUMBER

2014-087-199-BA3.02

SYMBOLS

| | |
|--|---|
| DRAWING TITLE | DRAWING NUMBER |
| DRAWING TITLE | DRAWING NAME |
| COLUMN GRID AND NUMBER | DRAWING SCALE |
| | CURRENT SHEET NUMBER |
| | SHEET NUMBER DETAIL IS REFERENCED FROM |
| | COLUMN NUMBER DESIGNATION |
| | COLUMN LETTER DESIGNATION |
| SECTION CUT | COLUMN LINE |
| | DIRECTION OF SECTION CUT |
| | SECTION NUMBER |
| BUILDING ELEVATION | SHEET NUMBER SECTION IS REFERENCED FROM |
| | DIRECTION OF ELEVATION |
| | ELEVATION NUMBER |
| ELEVATION TARGET | SHEET NUMBER ELEVATION IS REFERENCED FROM |
| | FLOOR OR LEVEL (REFERENCE POINT) |
| | BUILDING DATUM ELEVATION |
| CONSTRUCTION NOTE | DESCRIPTIVE TEXT |
| | CONSTRUCTION NOTE NUMBER |
| DOOR NUMBER | DOOR LETTER |
| WALL TYPE | ROOM NUMBER REFERENCE |
| | WALL TYPE INDICATOR |
| | WALL TYPE REFERENCE NUMBER |
| ROOM NAME AND ROOM NUMBER | ROOM NAME |
| | ROOM NUMBER |
| DETAIL OR ENLARGED PLAN REFERENCE | DETAIL NUMBER |
| | SHEET NUMBER DETAIL IS REFERENCED FROM |
| | BOUNDARY DEFINITION |
| INTERIOR ELEVATION | DIRECTION OF ELEVATION |
| | SHEET REFERENCE NUMBER |
| | ELEVATION NUMBER |
| REVISION BUBBLE | REVISION AREA CLOUDED |
| REVISION SYMBOL | REVISION NOTE NUMBER |



TYPICAL TOILET FIXTURE & ACCESSORY MOUNTING HEIGHTS

NOTE: ACCESSORIES WITH LEADING EDGE 1/2" AND 3/4" AS F. SHALL NOT PROJECT MORE THAN 1" HORIZONTALLY INTO CIRCULATION PATH.

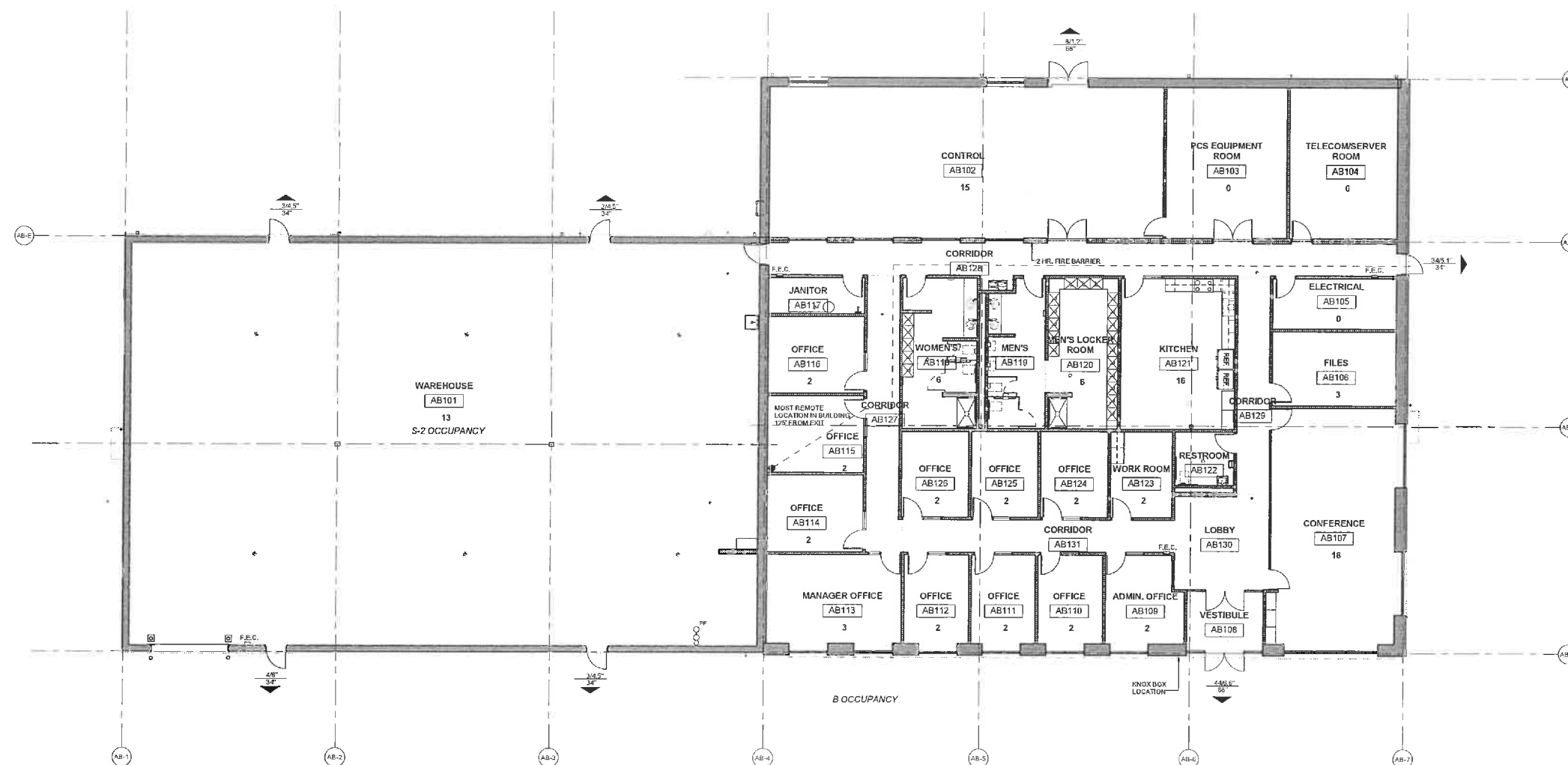
| | | | | |
|---|---|---|---|---|
| <p>GYP. BOARD CONTROL JOINT DETAIL</p> <p>SCALE: 1/2" = 1'-0"</p> <p>1 BA0.1</p> | <p>WALL TYPE 12A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>12A INSULATED</p> | <p>WALL TYPE 11A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>11A INSULATED</p> | <p>WALL TYPE 10A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>10A INSULATED</p> | <p>WALL TYPE 9A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>9A INSULATED</p> |
| <p>TYP. EXTERIOR BOLLARD DETAIL</p> <p>SCALE: 1/2" = 1'-0"</p> <p>2 BA0.1</p> | <p>WALL TYPE 8A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>8A INSULATED</p> | <p>WALL TYPE 7A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>7A INSULATED</p> | <p>WALL TYPE 6A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>6A INSULATED</p> | <p>WALL TYPE 5A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>5A INSULATED</p> |
| <p>TYP. INTERIOR BOLLARD DETAIL</p> <p>SCALE: 1/2" = 1'-0"</p> <p>3 BA0.1</p> | <p>WALL TYPE 4A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>4A INSULATED</p> | <p>WALL TYPE 3A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>3A INSULATED</p> | <p>WALL TYPE 2A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>2A INSULATED</p> | <p>WALL TYPE 1A</p> <p>SCALE: 3/4" = 1'-0"</p> <p>1A INSULATED</p> |

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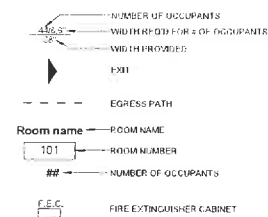
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| DATE | DATE | DATE |
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| DRAWING NUMBER | | |
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CODE SYMBOLS LEGEND



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Lenexa, Kansas 66218
913-492-0100 www.gbapam.com

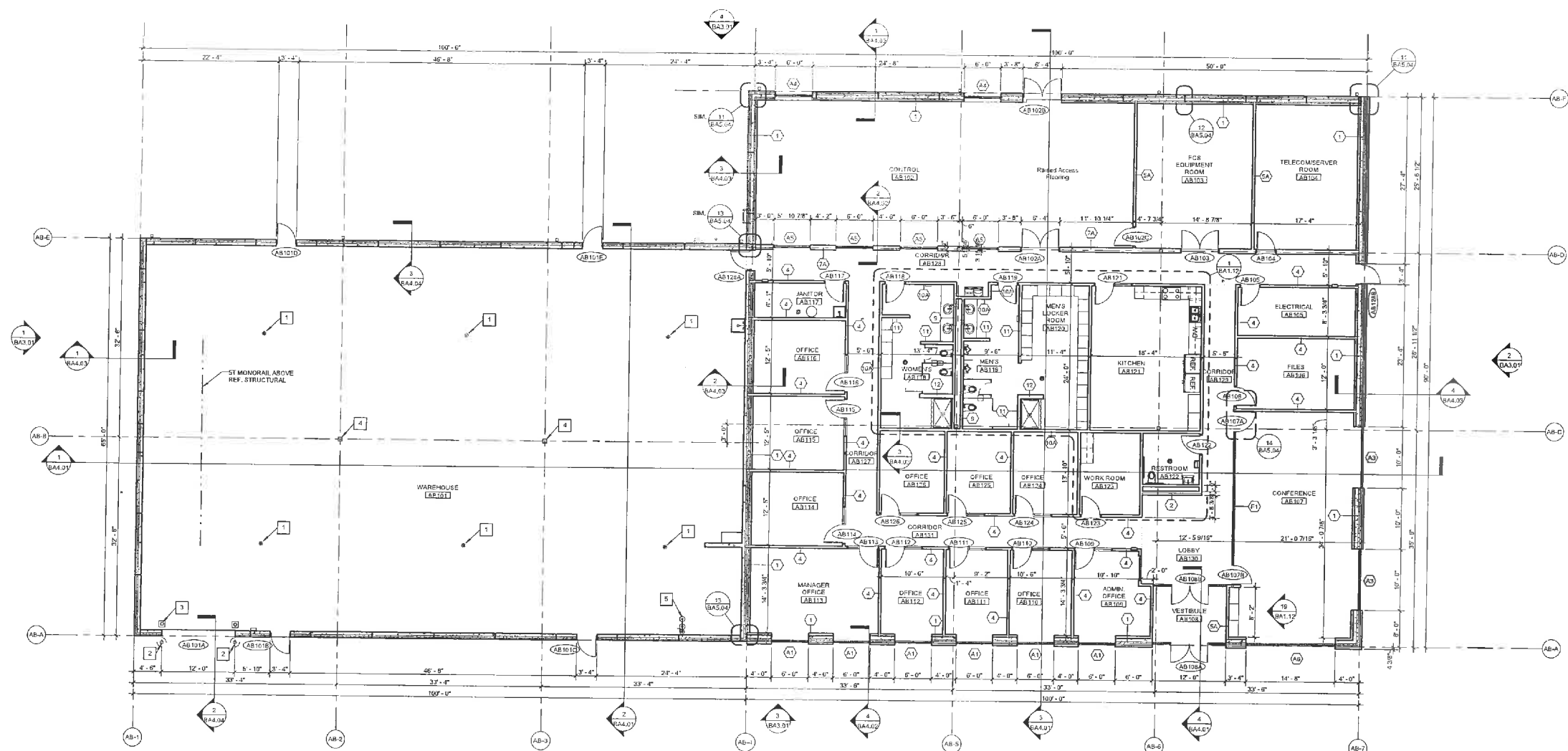
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001 - ADMINISTRATION BUILDING
CODE ANALYSIS

DRAWING NUMBER
2014-087-001-BA0.02

CODE COMPLIANCE PLAN
SCALE: 1/8" = 1'-0"





1 ARCHITECTURAL FLOOR PLAN
SCALE: 1/8" = 1'-0"



GENERAL NOTES

- ALL DIMENSIONS ARE TO THE FINISH FACE OF NEW PARTITIONS OR FLOORING (GIR WALL AND PARTIAL).
- PROVIDE CONTROL JOINT IN GYP. BOARD WALLS @ 8'-0" O.C. MAX. SEE DETAIL 18A01.01.
- ALL GYPSUM BOARD TO BE 5/8" TYPE "X" UNLESS NOTED OTHERWISE.
- USE MOISTURE RESISTANT GYPSUM BOARD AT ALL TOILET ROOMS AND WET ENVIRONMENTS.
- REFER TO 18A01.01 FOR TOP OF WALL DEFLECTION TRACK DETAIL.
- REFER TO DETAIL 18A01.01 FOR GYP. BOARD CONTROL JOINT DETAIL.

CONSTRUCTION NOTES

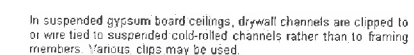
- FLOOR DRAIN: PROVIDE 12" RADIUS SWEEP, SLOPED TO DRAIN. MAX. SLOPE 1/4" PER FT. REFERENCE PLUMBING DRAWINGS.
- EXTERIOR 6" CONCRETE FILLED PIPE BOLLARDS, REF. DETAIL 28A01.01.
- INTERIOR 6" CONCRETE FILLED PIPE BOLLARDS, REF. DETAIL 28A01.01.
- PAINT EXPOSED COLUMNS TYP.
- EMERGENCY SHOWER STATION REFER TO PLUMBING.

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| DRAWING NUMBER | | |
| 2014-087-001-BA1.10 | | |

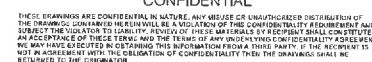
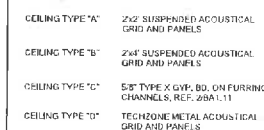


1. GYPSUM BOARD CEILING AT LOBBY HING FROM ROOF STRUCTURE
REF. 2/20.0 BASIS OF DESIGN CLARK-FRECH. SHAPED CARRIER
CHANNELS AND 7/8" HAT CHANNELS. REF. SPECIFICATIONS.

2. GYPSUM BOARD CEILINGS BETWEEN COLUMNS 1 AND 2 ARE JOIST
SUPPORTED. REF. WALL TYPES

3. FIXTURES SHOWN ON REFLECTED CEILING PLANS ARE FOR
REFERENCE ONLY. REFER TO ELECTRICAL AND MECHANICAL
DRAWING.

- 1 HEADER AT CEILING, REF. JBA1.11
- 2 ST MONORAIL, REF. STRUCTURAL.
- 3 STEEL AWNING, REF. STRUCTURAL.
- 4 PRE-FINISHED SHEET METAL SOFFIT.



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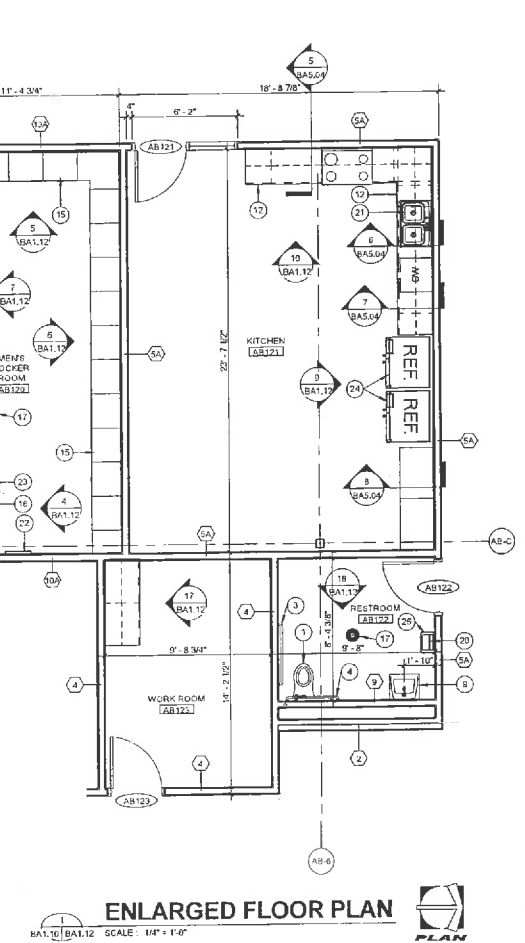
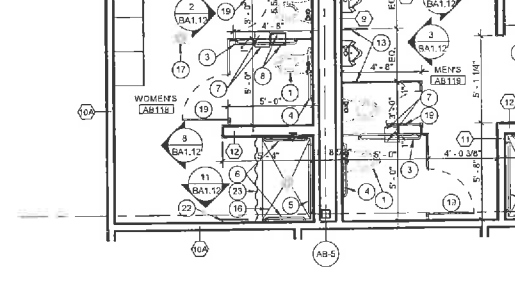
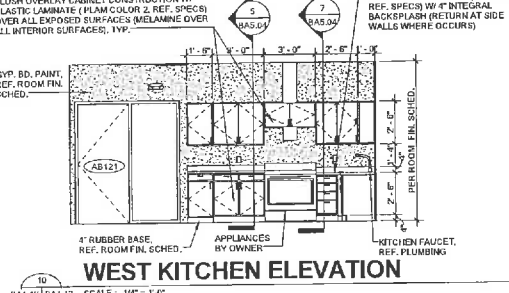
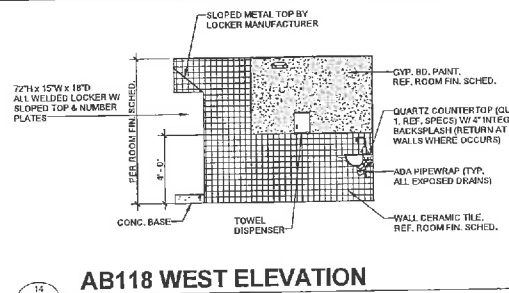
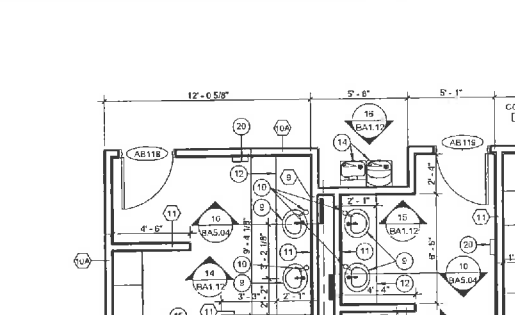
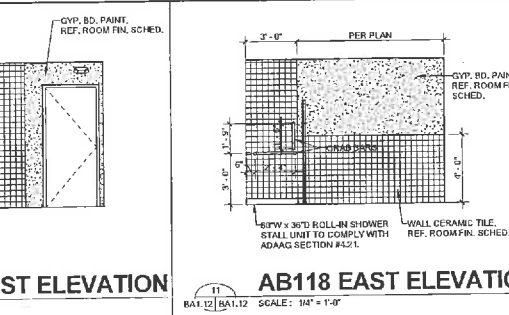
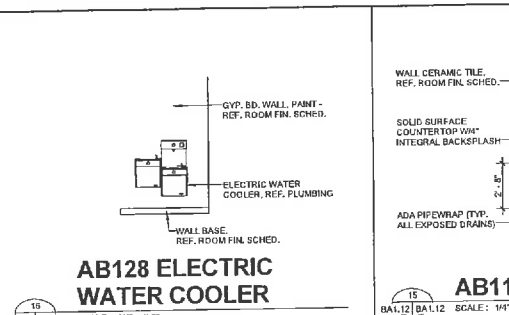
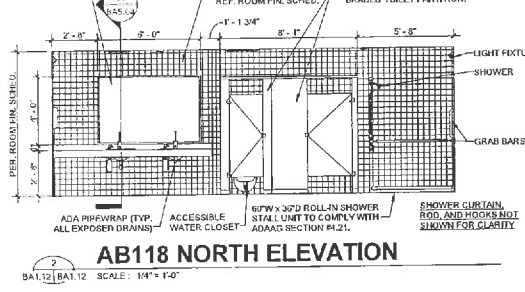
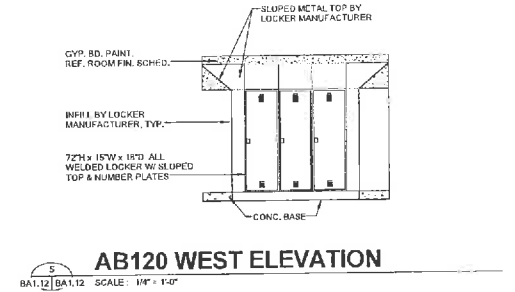
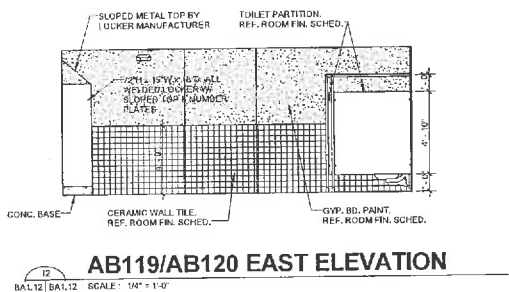
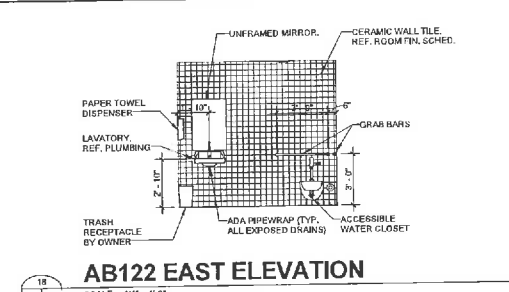
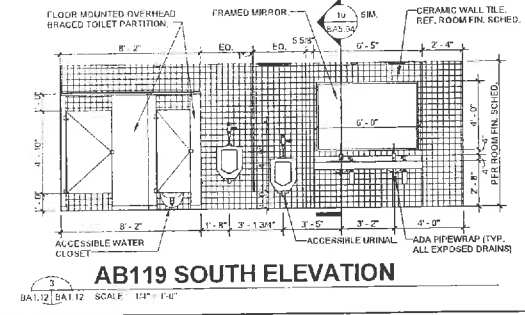
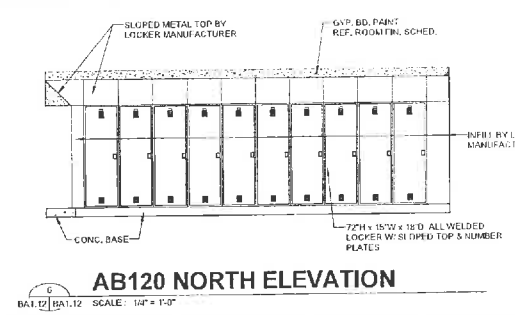
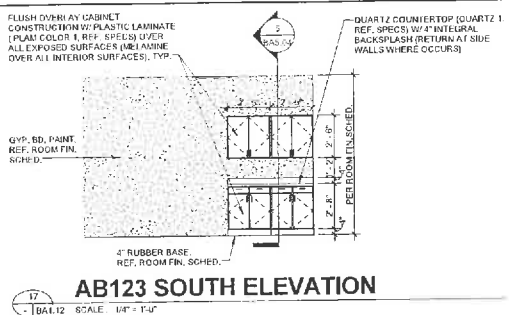
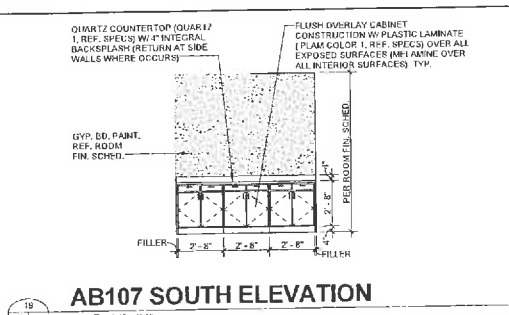
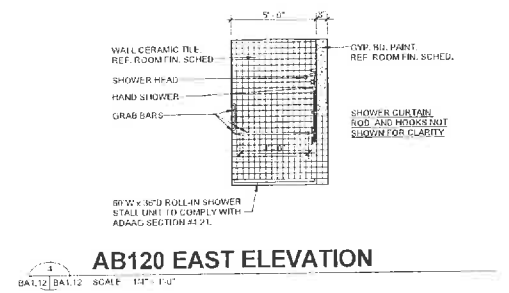
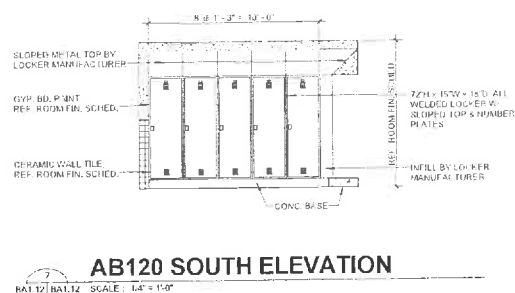
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001 - ADMINISTRATION BUILDING
REFLECTED CEILING PLAN

DRAWING NUMBER

2014-087-001-BA1.11





GENERAL NOTES

- ALL DIMENSIONS ARE TO THE FINISH FACE OF PARTITIONS OR FURNISHING (DRYWALL AND PAINT).
- PROVIDE CONTRAST JOINTS IN GYP. BOARD WALLS AT 30\"/>

FIGURE NOTES

ALL OF THESE SHALL BE PROVIDED UNLESS AN APPROVED EQUIV. IS AUTHORIZED BY ARCHITECT

- ACCESSIBLE WATER CLOSET TO COMPLY WITH ADAAG SECTION 4.16 REF. PLUMB. DWGS
- ACCESSIBLE URINAL TO COMPLY WITH ADAAG SECTION 4.18
- 42\"/>

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| 2 | T. WILLSON | 05/07/15 |
| 3 | C. ROGGE | 05/07/15 |
| 4 | C. ROGGE | 05/07/15 |

Invenergy

KIEWIT POWER CONSTRUCTORS CO.

GBA P.A.
Association
2501 River Boulevard
Lenexa, Kansas 66219
913.492.9490 www.gbainc.com

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001 - ADMINISTRATION BUILDING
ENLARGED RESTROOM PLANS & ELEVATIONS

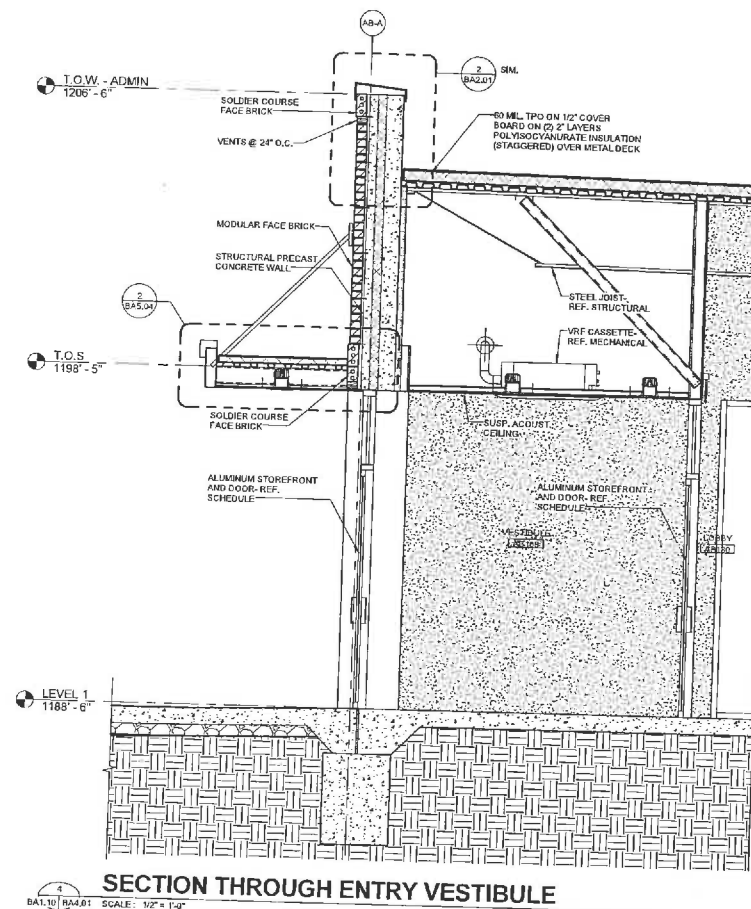
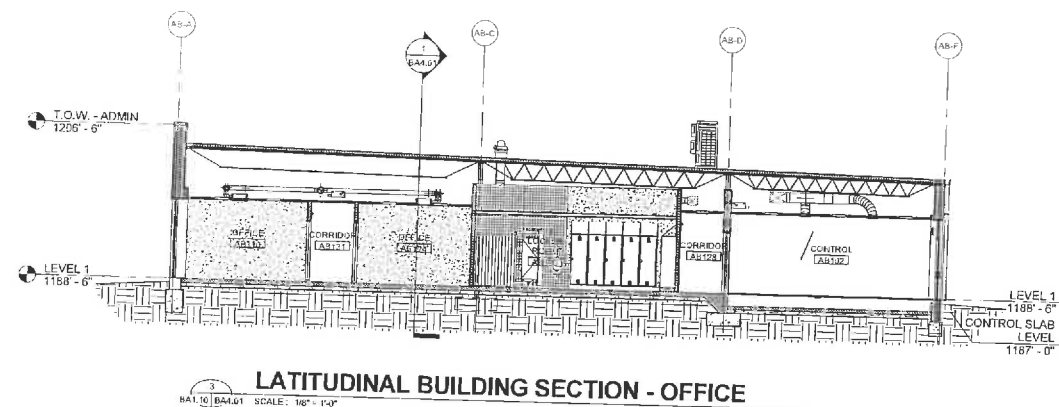
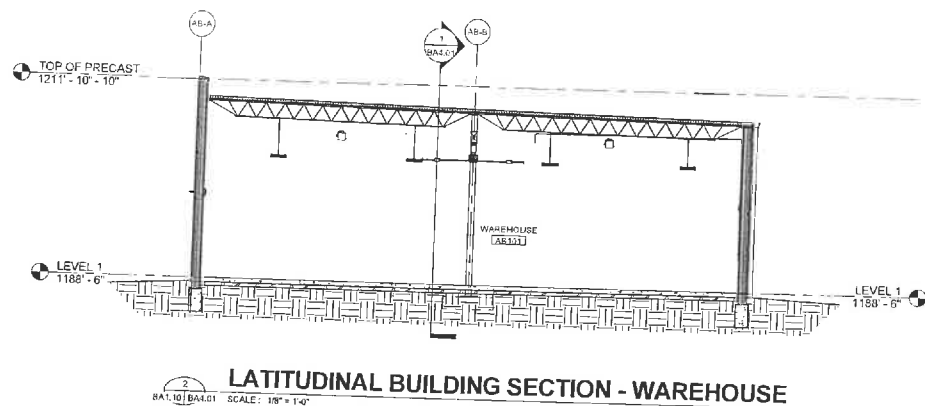
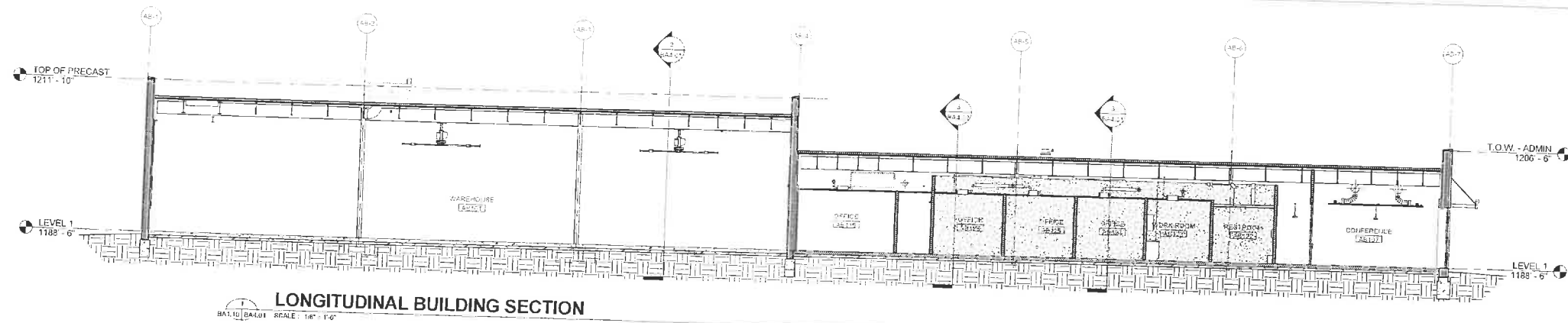
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| No. | Description | | | | Date | | | | | |
| | T. WILLSON | T. WILLSON | C. ROGGE | 06/07/16 | | | | | | |
| REV | DESIGN BY | DRAWN BY | CHECKED BY | DATE | | | | | | |
| <p style="text-align: center;"><u>Lackmanns Energy Center LLC</u></p> <h2 style="text-align: center;">Invenergy</h2> | | | | | | | | | | |
| <p style="text-align: center;">KIEWIT POWER CONSTRUCTORS CO.</p> | | | | | | | | | | |
| <p>GBA P.A. Association 3601 Rennie Boulevard Lenexa, Kansas 66219 913.402.0400 www.gbafarm.com</p> | | | <p style="text-align: center;">NOT FOR CONSTRUCTION</p> | | | | | | | |
| <p style="text-align: center;">001 - ADMINISTRATION BUILDING ROOF PLAN & DETAILS</p> | | | | | | | | | | |
| DRAWING NUMBER | | | | | | | | | | |
| 2014-087-001-BA2.01 | | | | | | | | | | |



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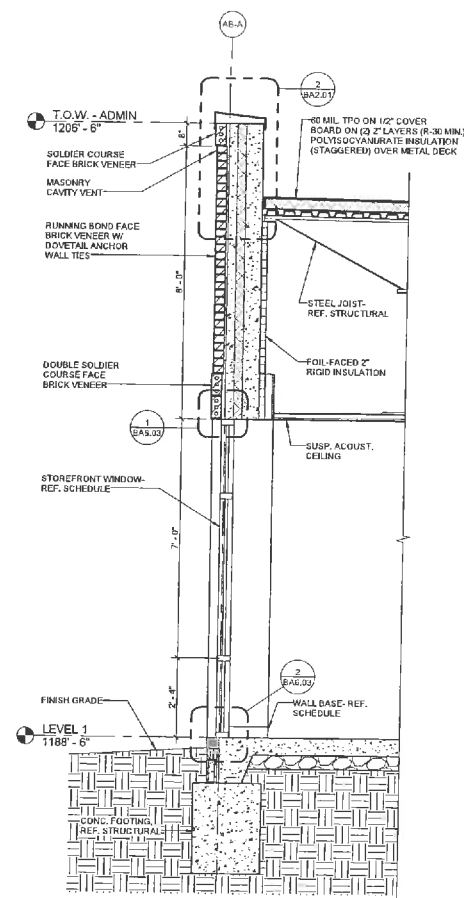
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| 2 | C. ROOKE | 06/07/16 |
| 3 | DR. J. W. WILSON | 06/07/16 |
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| 5 | DR. J. W. WILSON | 06/07/16 |
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| 99 | DR. J. W. WILSON | 06/07/16 |
| 100 | DR. J. W. WILSON | 06/07/16 |

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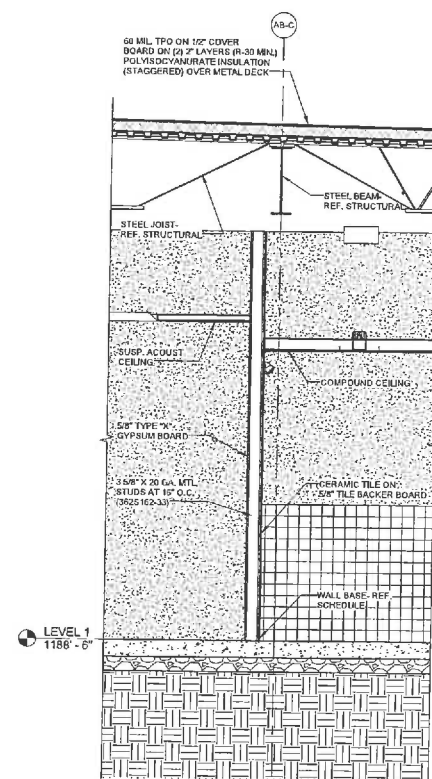
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DRAWING NUMBER
2014-087-001-BA.01



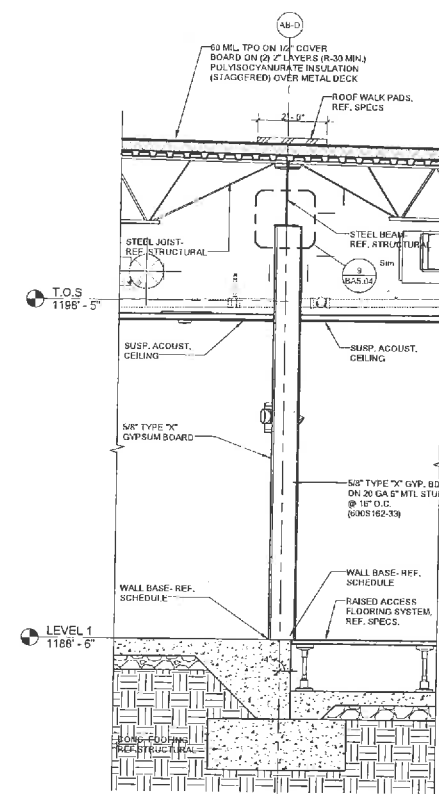
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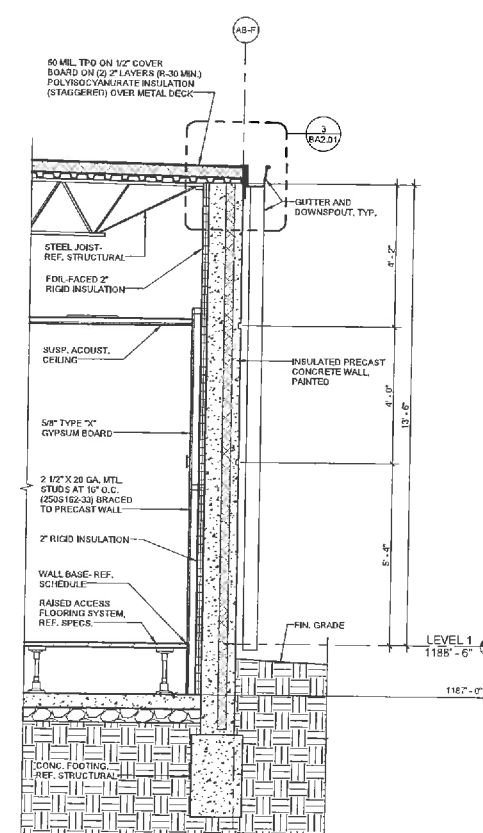
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WALL SECTION - EAST CONTROL

BAT.101|BA4.02 SCALE: 1/2" = 1'-0"



WALL SECTION - WEST WALL

BAT.101|BA4.02 SCALE: 1/2" = 1'-0"

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| 3 | DESIGN BY | DRAWN BY |
| 4 | CHECKED BY | DATE |

For Kansas Energy Center LLC

Invenergy

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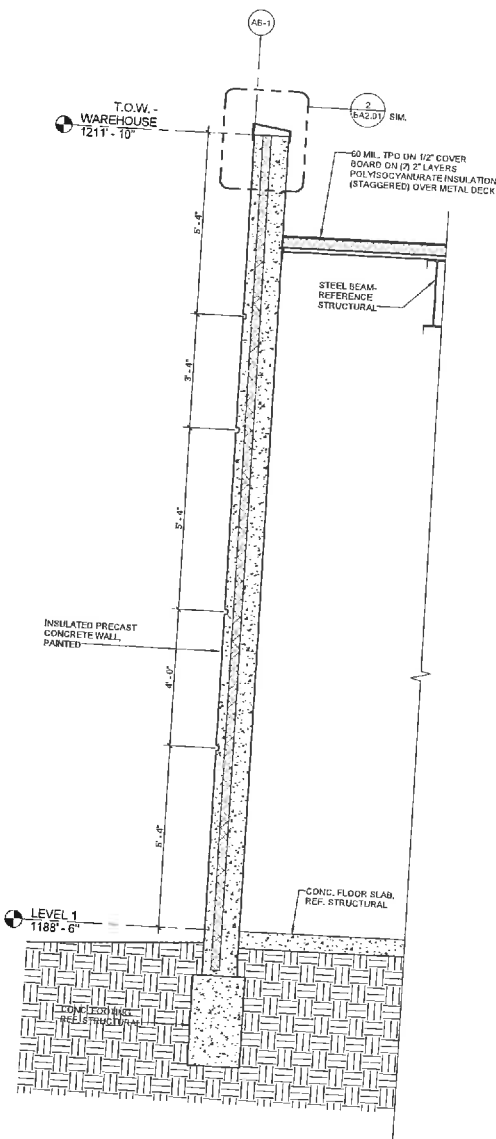
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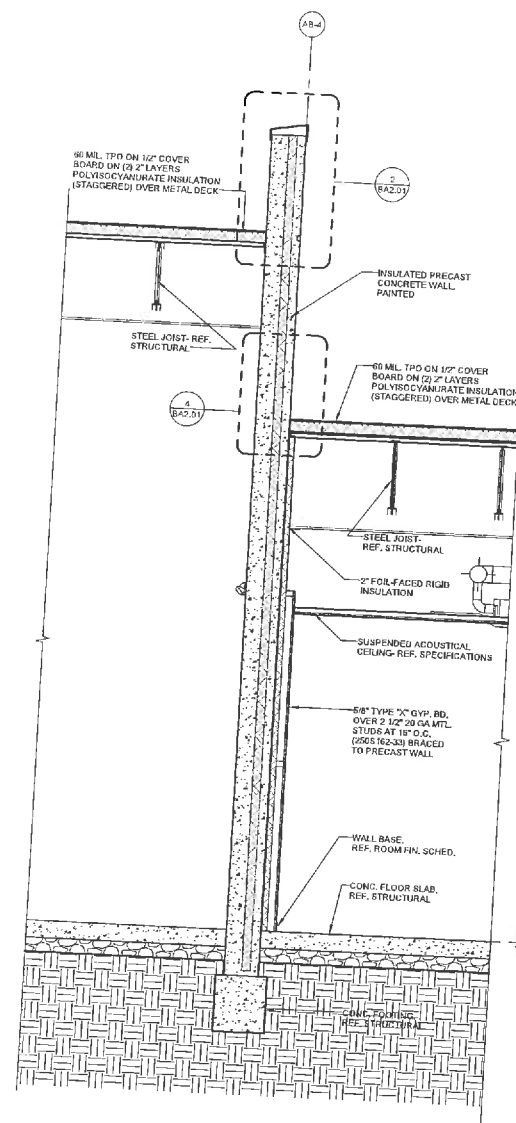
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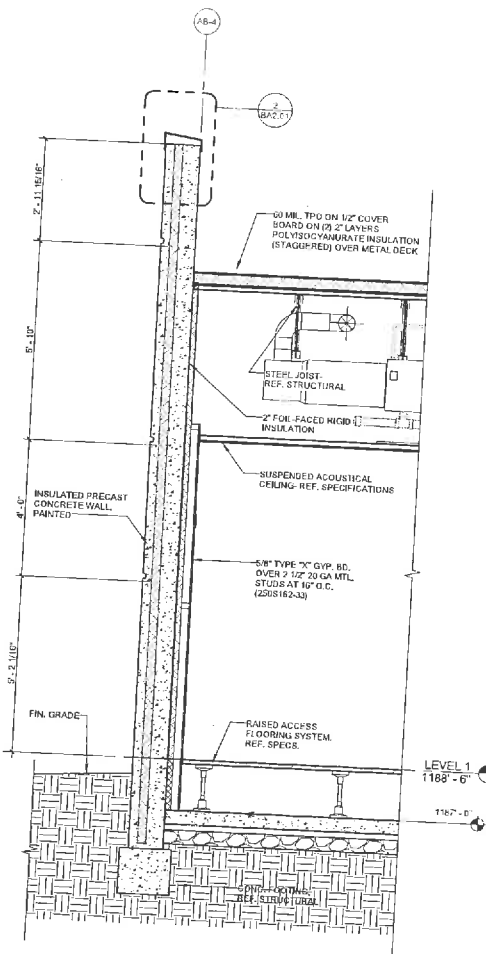
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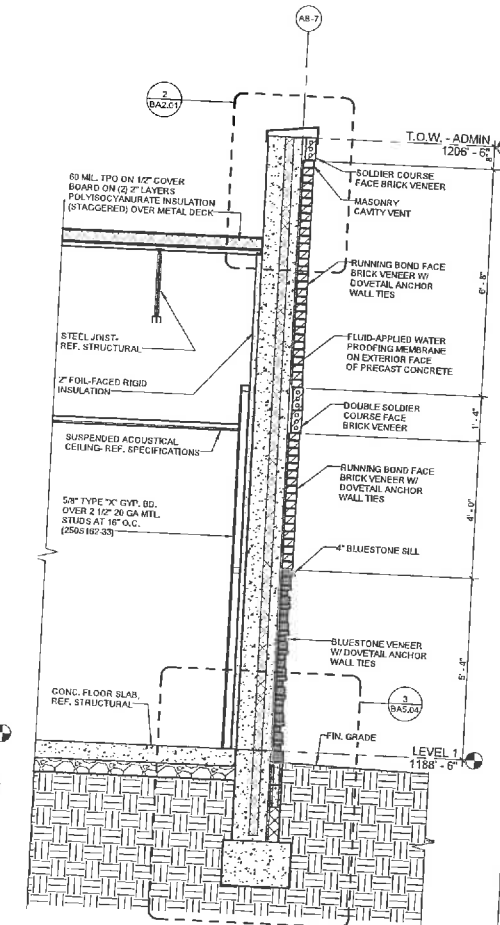
WALL SECTION - SOUTH WALL
 SCALE: 1/2" = 1'-0"



WALL SECTION - NORTH WALL OF WAREHOUSE
 SCALE: 1/2" = 1'-0"



WALL SECTION - SOUTH WALL OF CONTROL
 SCALE: 1/2" = 1'-0"



WALL SECTION - NORTH WALL
 SCALE: 1/2" = 1'-0"

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| 5 | DRAWN BY | |
| 6 | CHECKED BY | |
| 7 | DATE | |

Lacharrette, Kasper, Cline, LLC

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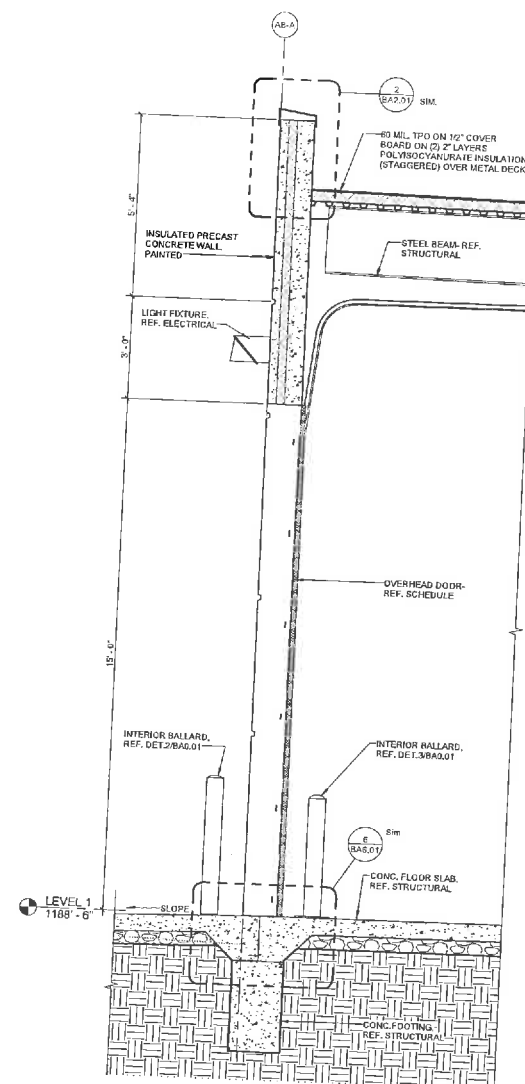
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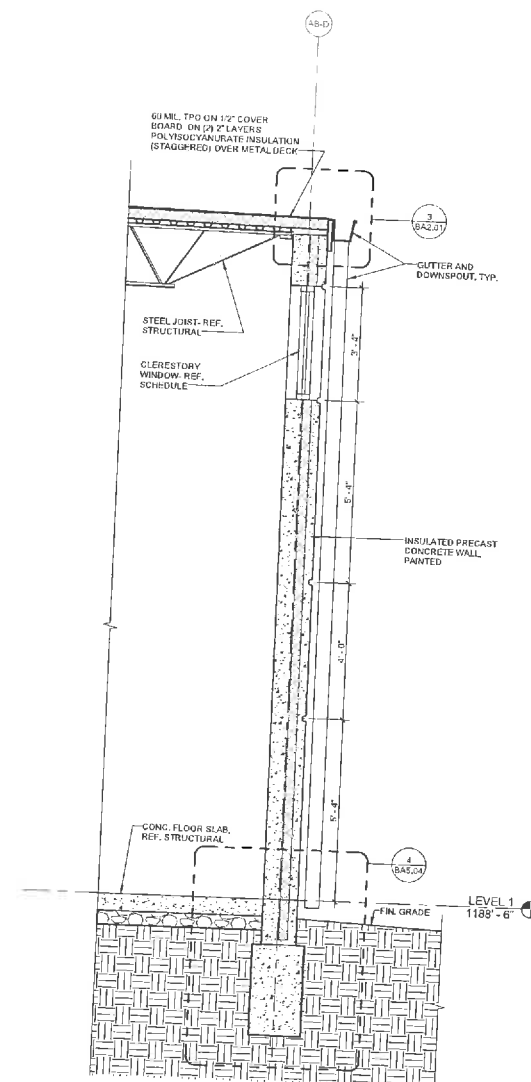
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 WALL SECTIONS

DRAWING NUMBER

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WALL SECTION - EAST WALL OF WAREHOUSE
 SCALE: 1/2" = 1'-0"



WALL SECTION - WEST WALL OF WAREHOUSE
 SCALE: 1/2" = 1'-0"

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| 3 | C. ROGUE | 06/07/16 |
| 4 | DESIGNED BY | CHECKED BY |
| 5 | DRAWN BY | DATE |

Lackman Energy Center LLC

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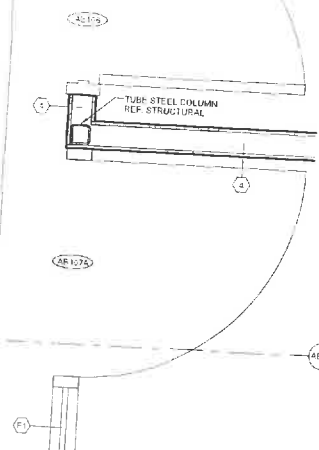
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 5801 Renner Boulevard
 Omaha, Kansas 68119
 913.492.5400 www.gbainc.com

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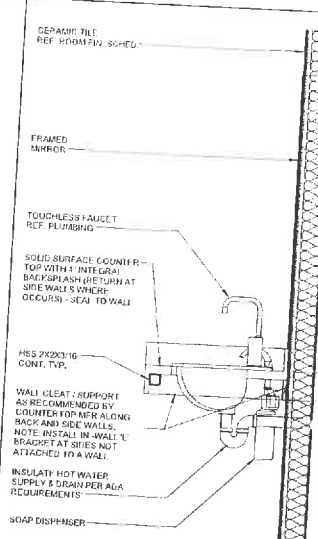
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DRAWING NUMBER

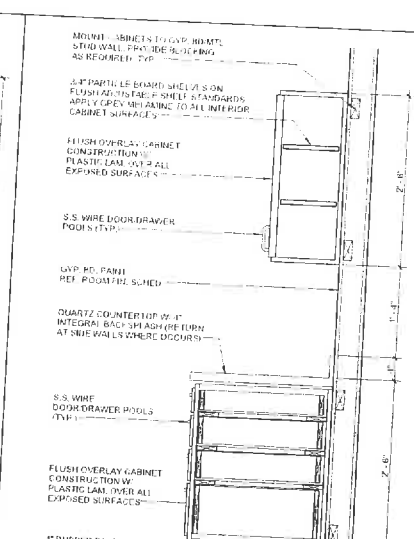
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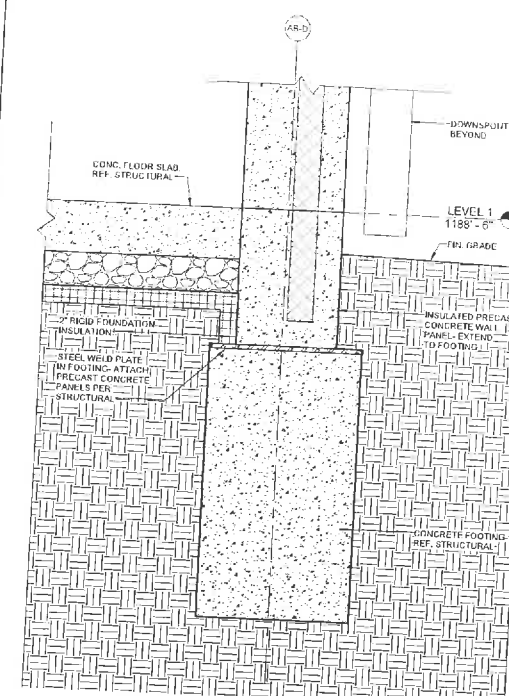
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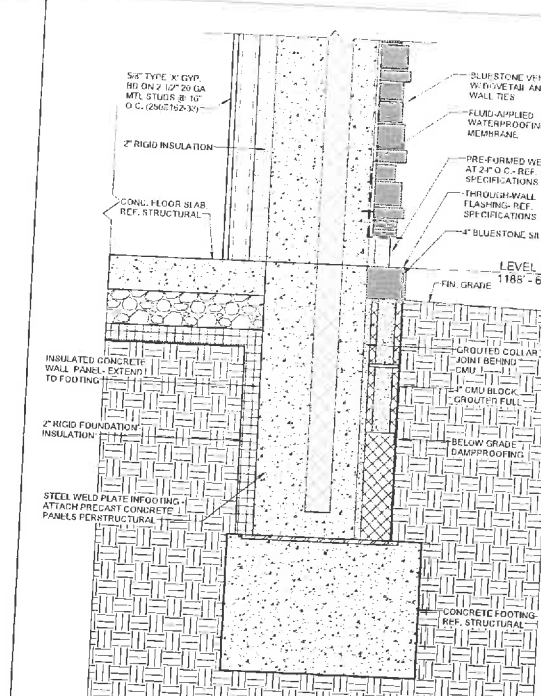
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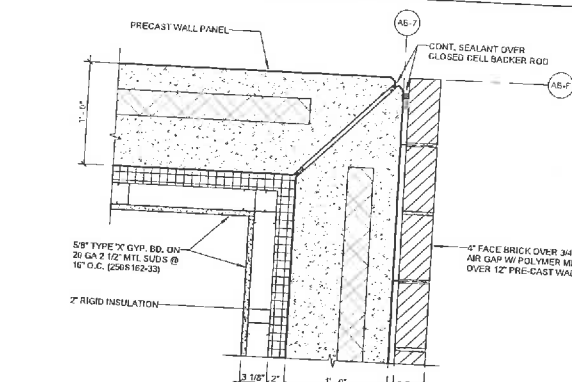
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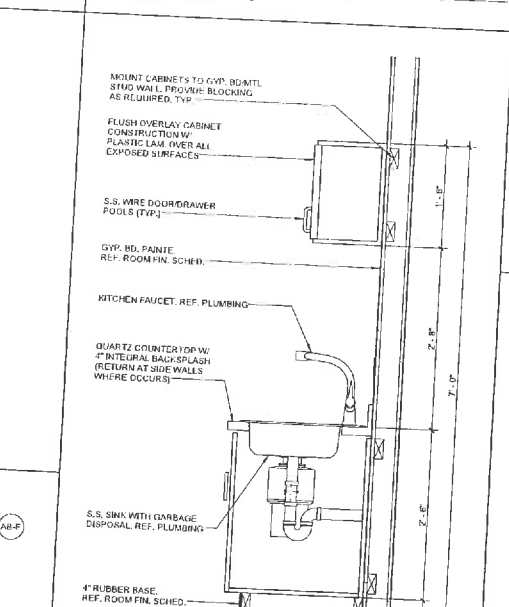
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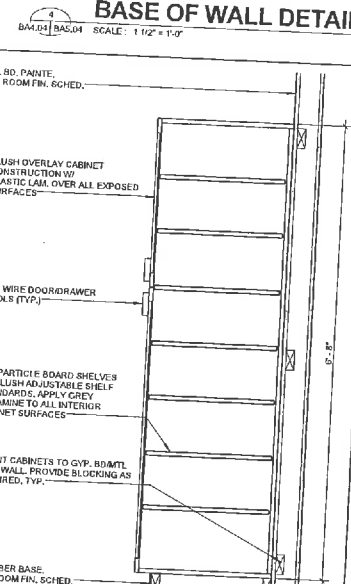
BASE OF WALL DETAIL - MASONRY
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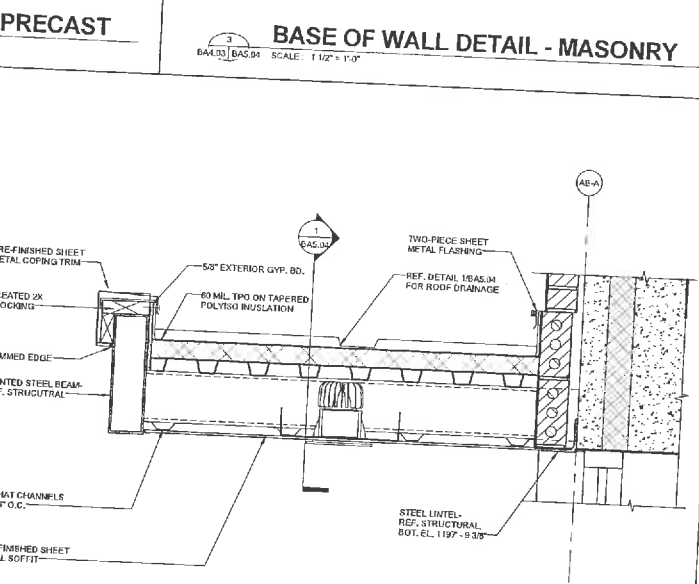
PRECAST WALL CORNER DETAIL
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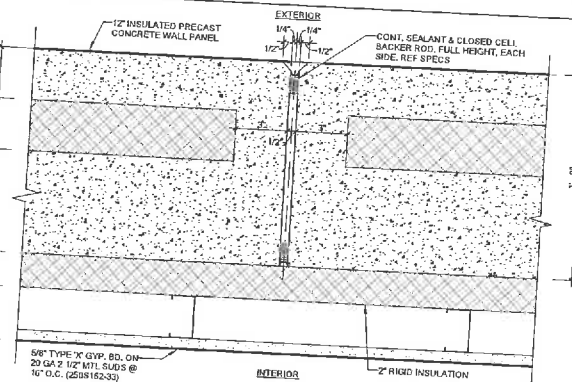
SECTION @ SINK
SCALE: 1" = 1'-0"



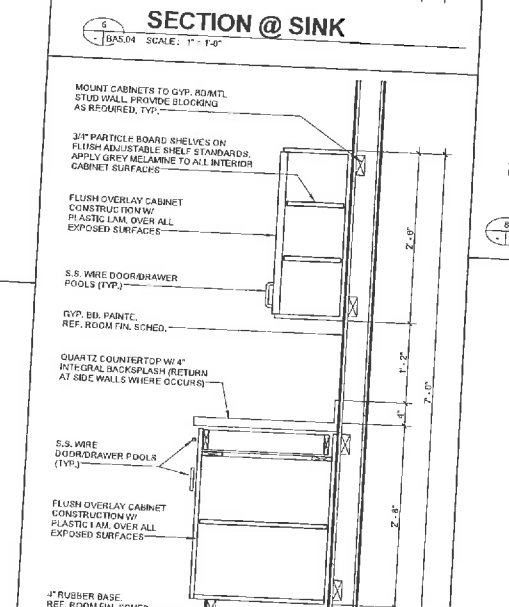
SECTION @ TALL CABINETS
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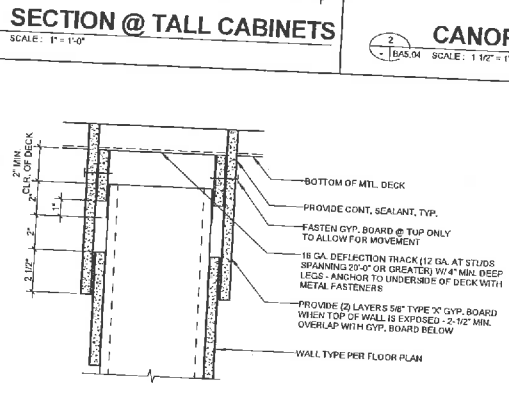
CANOPY ROOF DETAIL
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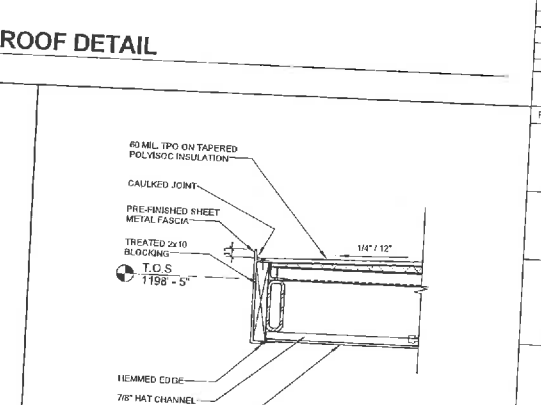
PRECAST PANEL JOINT DETAIL
SCALE: 3" = 1'-0"



SECTION @ WALL AND BASE CABINETS
SCALE: 1" = 1'-0"



STANDARD DEFLECTION TRACK DETAIL
SCALE: 3" = 1'-0"



CANOPY EDGE DETAIL
SCALE: 1 1/2" = 1'-0"

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| No. | Description | Date |
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| REV | T. WILLSON DESIGN BY | T. WILLSON DRAWN BY |
| | G. ROGGE CHECKED BY | 06/07/15 DATE |
| Lockwood Greene Corp. LLC | | |
| Invenergy | | |
| KIEWIT POWER CONSTRUCTORS CO. | | |
| GBA P.A. Association 3601 Ravenna Boulevard Lenexa, Kansas 66151 913.452.9400 www.gbapainc.com | | |
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| 001 - ADMINISTRATION BUILDING MISCELLANEOUS DETAILS | | |
| DRAWING NUMBER 2014-087-001-BA.04 | | |

ROOM FINISH SCHEDULE

| ROOM NAME | FLOOR FINISH | BASE FINISH | WALLS | CEILING | REMARKS |
|---------------------------|--------------|-------------|-------|---------|---------|
| AB001 WAREHOUSE | S.C. | NONE | PT1 | PT1 | |
| AB002 CONTROL | PT1 | PT1 | PT1 | PT1 | |
| AB003 PC/EQUIPMENT ROOM | PT1 | PT1 | PT1 | PT1 | |
| AB004 TELECOM/SERVER ROOM | PT1 | PT1 | PT1 | PT1 | |
| AB005 ELECTRICAL | PT1 | PT1 | PT1 | PT1 | |
| AB006 FILES | PT1 | PT1 | PT1 | PT1 | |
| AB007 CONFERENCE | PT1 | PT1 | PT1 | PT1 | |
| AB008 VESTIBULE | PT1 | PT1 | PT1 | PT1 | |
| AB009 ADMIN OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB010 LOBBY | PT1 | PT1 | PT1 | PT1 | |
| AB011 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB012 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB013 MANAGER OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB014 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB015 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB016 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB017 JANITOR | PT1 | PT1 | PT1 | PT1 | |
| AB018 WOMEN'S | PT1 | PT1 | PT1 | PT1 | |
| AB019 MEN'S | PT1 | PT1 | PT1 | PT1 | |
| AB020 MEN'S LOCKER ROOM | PT1 | PT1 | PT1 | PT1 | |
| AB021 KITCHEN | PT1 | PT1 | PT1 | PT1 | |
| AB022 RESTROOM | PT1 | PT1 | PT1 | PT1 | |
| AB023 TOWEL ROOM | PT1 | PT1 | PT1 | PT1 | |
| AB024 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB025 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB026 OFFICE | PT1 | PT1 | PT1 | PT1 | |
| AB027 CORRIDOR | PT1 | PT1 | PT1 | PT1 | |
| AB028 CORRIDOR | PT1 | PT1 | PT1 | PT1 | |
| AB029 CORRIDOR | PT1 | PT1 | PT1 | PT1 | |
| AB030 LOBBY | PT1 | PT1 | PT1 | PT1 | |
| AB031 CORRIDOR | PT1 | PT1 | PT1 | PT1 | |

ROOM FINISH LEGEND

FLOOR FINISHES
 S.C. SCALED CONCRETE
 PT1 CARPET TYPE 1
 PT2 CARPET TYPE 2
 PT3 CARPET TYPE 3
 WOM WALK-OFF MAT
 PFT1 PORCELAIN FLOOR TILE
 LVT1 LUXURY VINYL TILE

BASE FINISHES
 2"RB 2" RESILIENT BASE
 4"RB 4" RESILIENT BASE

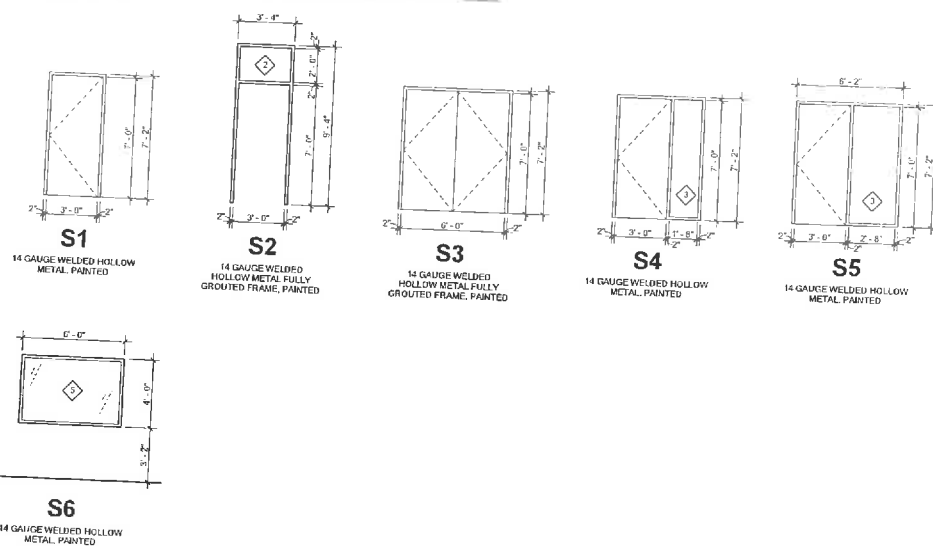
WALL FINISHES
 PT1 PAINT COLOR 1
 PT2 PAINT COLOR 2
 PT3 PAINT COLOR 3
 PT4 PAINT COLOR 4
 CWT1 CERAMIC WALL TILE
 NST BLUE STONE VENEER

DOOR SCHEDULE

| ROOM NAME | DOOR | FRAME | DETAILS | REMARKS | UL RATING |
|-----------|-----------------|-------|---------|---------|-----------|
| AB001 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB002 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB003 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB004 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB005 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB006 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB007 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB008 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB009 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB010 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB011 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB012 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB013 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB014 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB015 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB016 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB017 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB018 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB019 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB020 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB021 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB022 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB023 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB024 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB025 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB026 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB027 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB028 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB029 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB030 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |
| AB031 | 12'-0" x 10'-0" | A | STL | 3BA5.01 | 3BA5.01 |

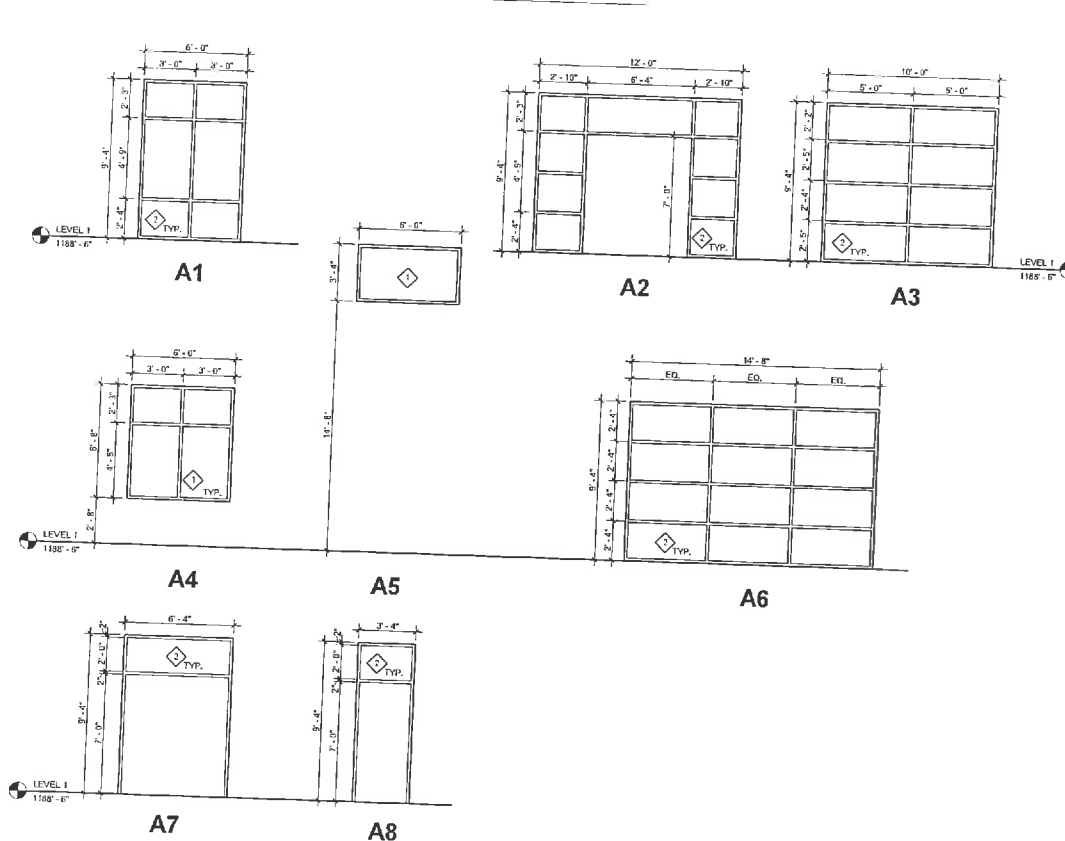
HOL. MTL. FRAME TYPES

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



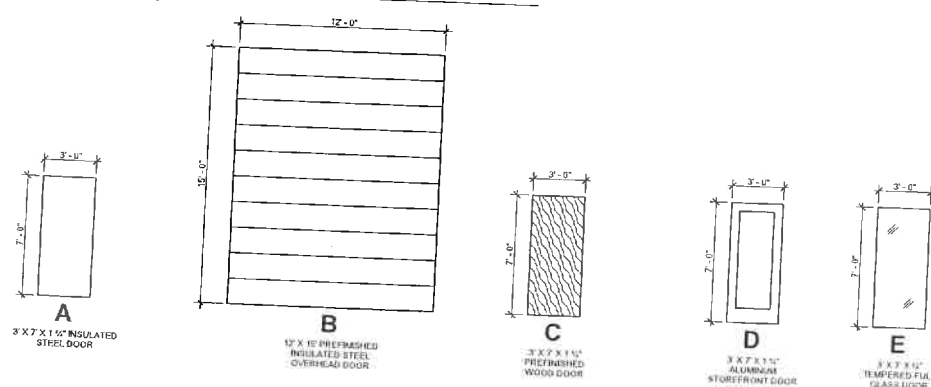
ALUMINUM FRAME TYPES

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



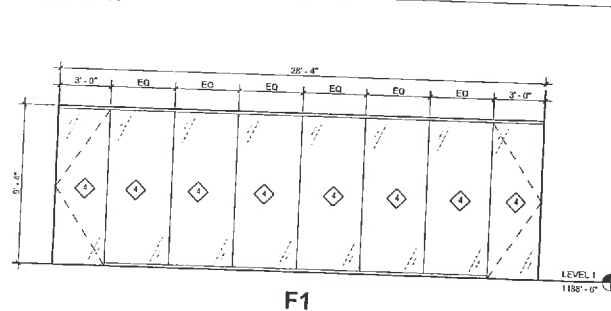
DOOR TYPES

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



FRAMELESS WALL SYSTEMS

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



GLAZING LEGEND

- 1" INSULATED GLAZING
- 1" INSULATED GLAZING, TEMPERED
- 1/4" TEMPERED PLATE GLASS
- 1/2" TEMPERED PLATE GLASS
- 1/2" 2 HOUR RATED FIRE GLASS

REFER TO SPECIFICATIONS SECTION 08000 FOR ADDITIONAL GLAZING INFORMATION

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| 2 | T. WILLSON | 06/07/15 |
| 3 | C. ROOGE | 06/07/15 |
| 4 | CHECKED BY | DATE |

Los Angeles Energy Center LLC

Invenergy

KIEWIT POWER CONSTRUCTORS CO.

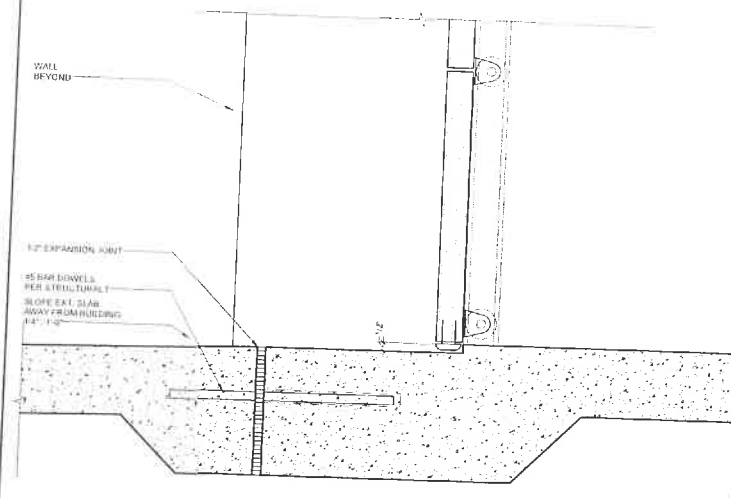
GBA P.A.
 Association
 9801 Renner Boulevard
 Lenexa, Kansas 66219
 913.403.3933 www.gbainst.com

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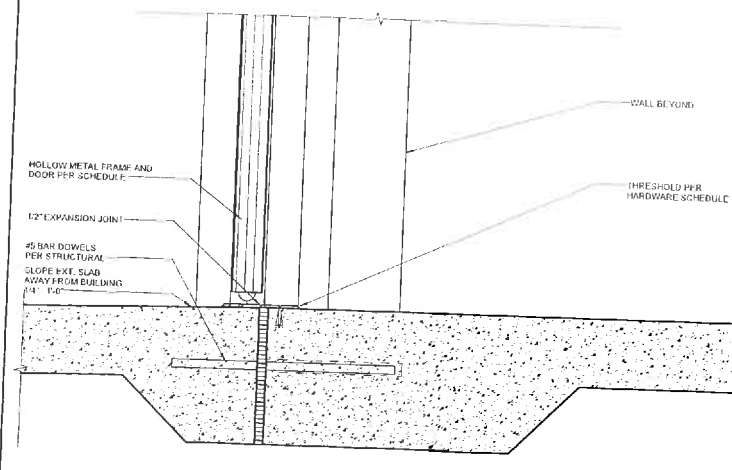
001 - ADMINISTRATION BUILDING
 DOOR & ROOM FINISH SCHEDULES

DRAWING NUMBER

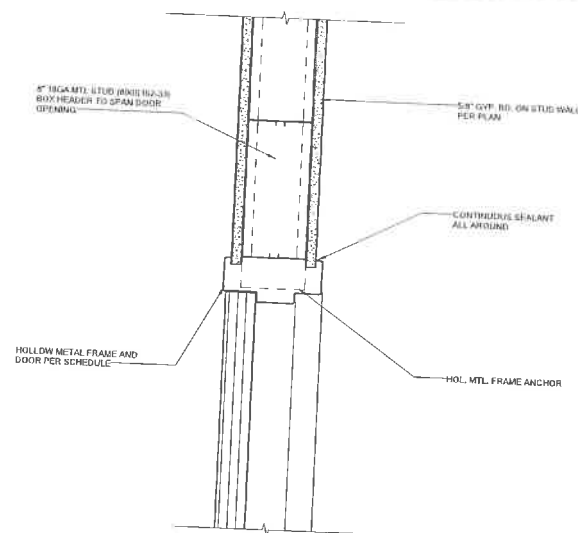
2014-087-001-BA.6.00



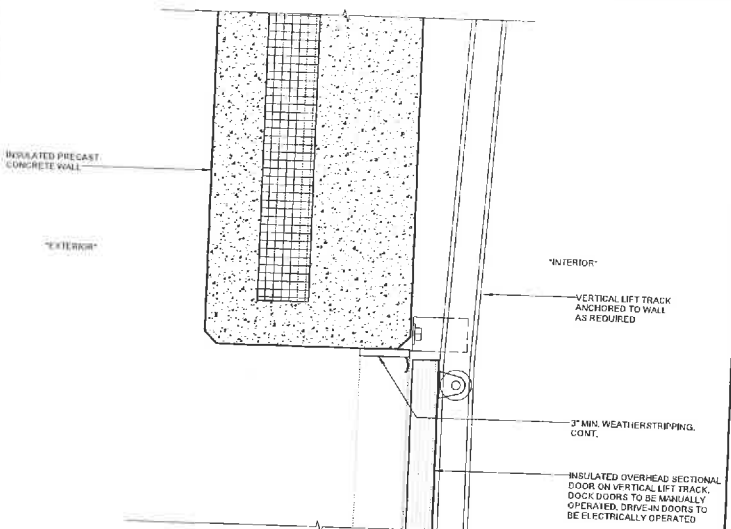
SILL DETAIL - OVERHEAD DOOR IN EXT. WALL
 1 BA6.01 SCALE: 3" = 1'-0"



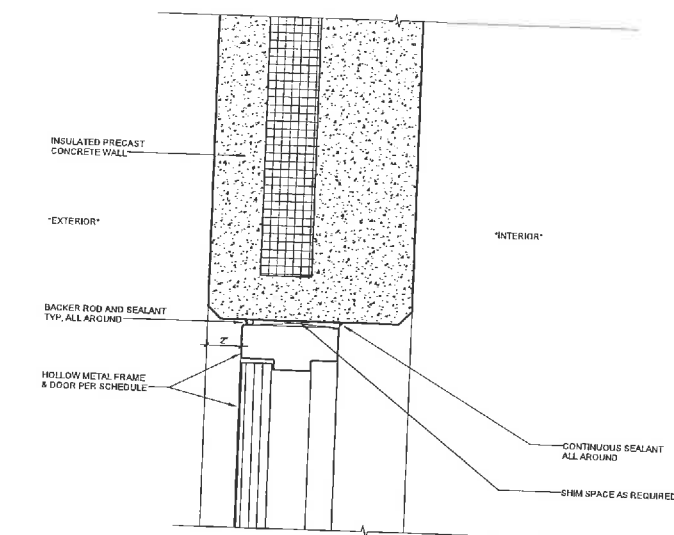
SILL DETAIL - HOL. MTL. FRAME IN EXT. WALL
 1 BA6.01 SCALE: 3" = 1'-0"



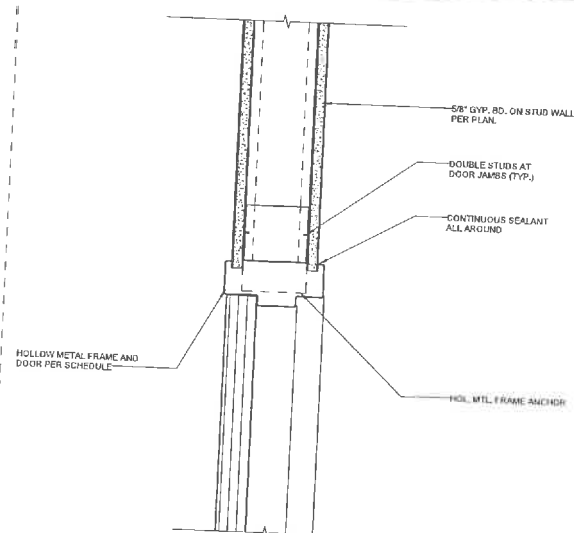
HEAD DETAIL - HOL. MTL. FRAME IN GYP. WALL
 1 BA6.01 SCALE: 3" = 1'-0"



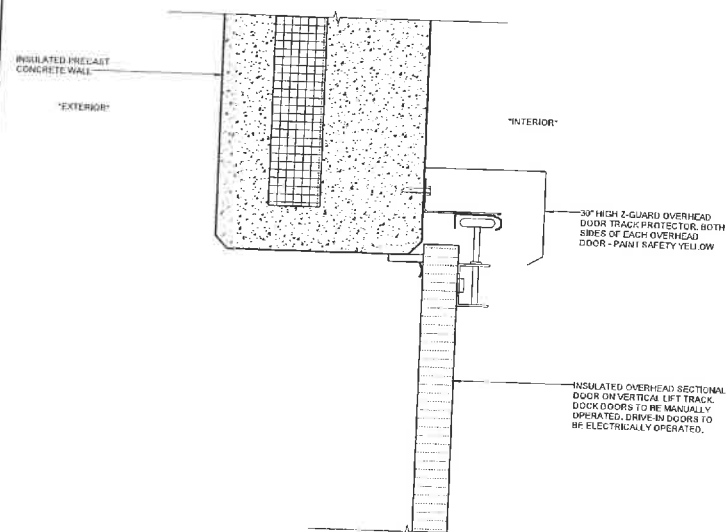
HEAD DETAIL - OVERHEAD DOOR IN EXT. WALL
 1 BA6.01 SCALE: 3" = 1'-0"



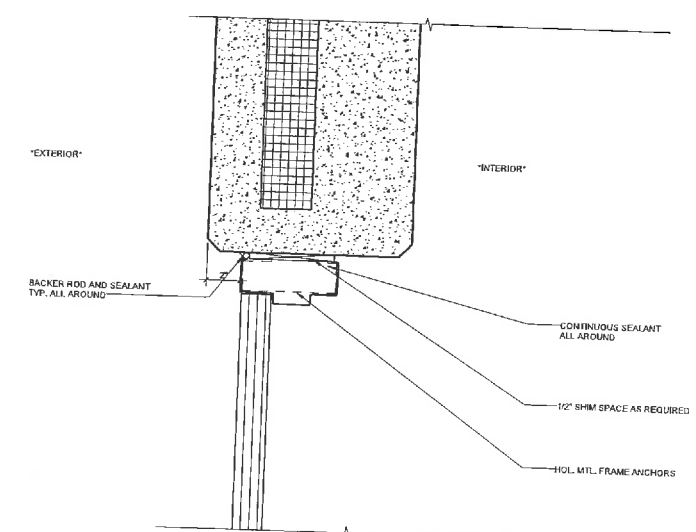
HEAD DETAIL - HOL. MTL. FRAME IN EXT. WALL
 2 BA6.01 SCALE: 3" = 1'-0"



JAMB DETAIL - HOL. MTL. FRAME IN INT. GYP. WALL
 1 BA6.01 SCALE: 3" = 1'-0"



JAMB DETAIL - OVERHEAD DOOR IN EXT. WALL
 1 BA6.01 SCALE: 3" = 1'-0"



JAMB DETAIL - HOL. MTL. FRAME IN EXT. WALL
 1 BA6.01 SCALE: 3" = 1'-0"

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| No. | Description | Date |
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| 1 | T. WILLSON | |
| 2 | T. WILLSON | |
| 3 | C. ROGGE | 05/07/15 |
| 4 | DESIGN BY | CHECKED BY |
| 5 | DRAWN BY | DATE |

Lawrence Energy Control LLC

Invenergy

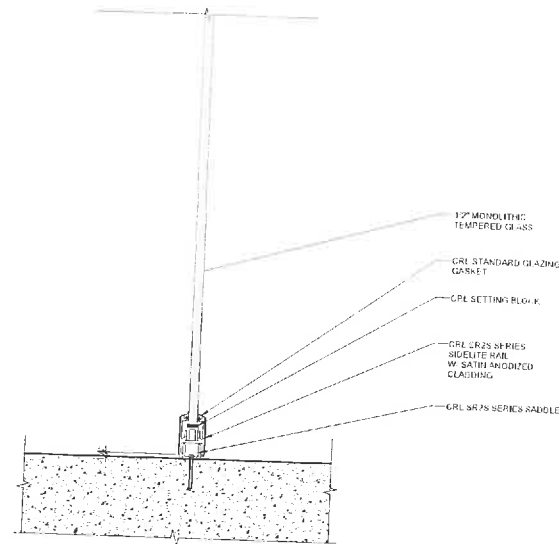
KIEWIT POWER CONSTRUCTORS CO.

GBA P.A.
 Association
 5501 Renner Boulevard
 Lenexa, Kansas 66215
 (913) 452-0001 www.gba-ny.com

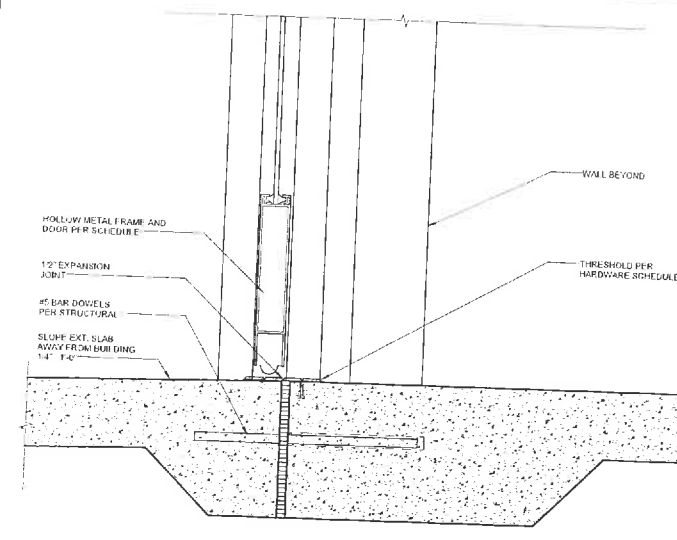
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001 - ADMINISTRATION BUILDING
 DOOR AND WINDOW DETAILS

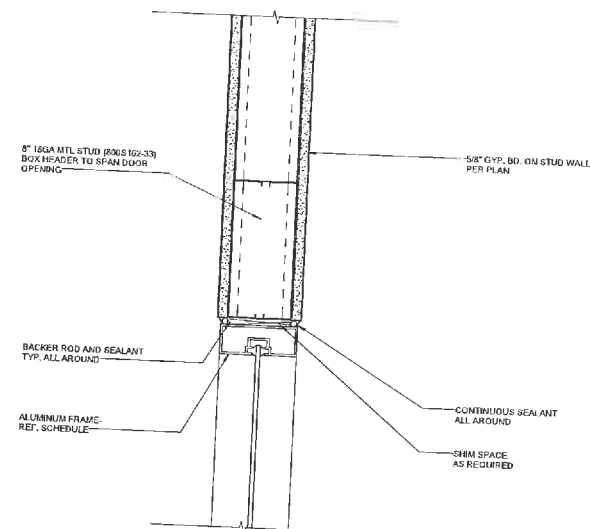
DRAWING NUMBER
 2014-087-001-BA6.01



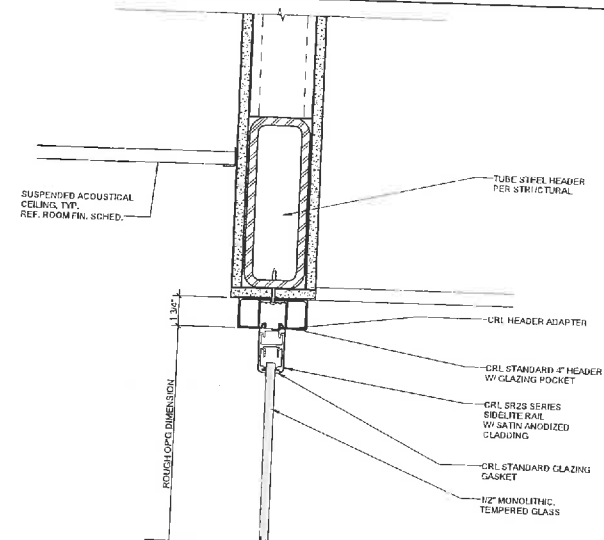
SILL DETAIL - FRAMELESS SYSTEM
BA6.02 SCALE: 3" = 1'-0"



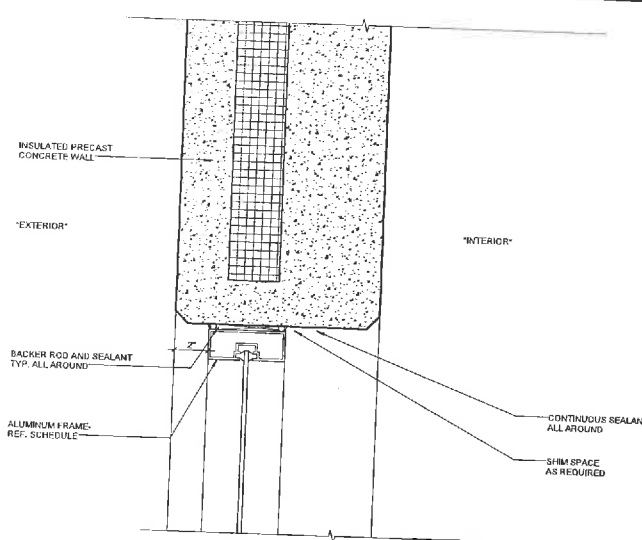
SILL DETAIL - ALUM. FRAME IN EXT. WALL
BA6.02 SCALE: 3" = 1'-0"



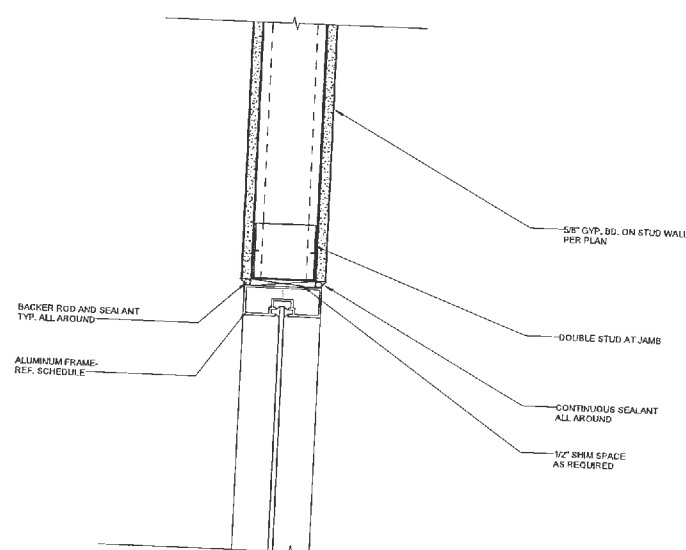
HEAD DETAIL - ALUM. FRAME IN GYP. WALL
BA6.02 SCALE: 3" = 1'-0"



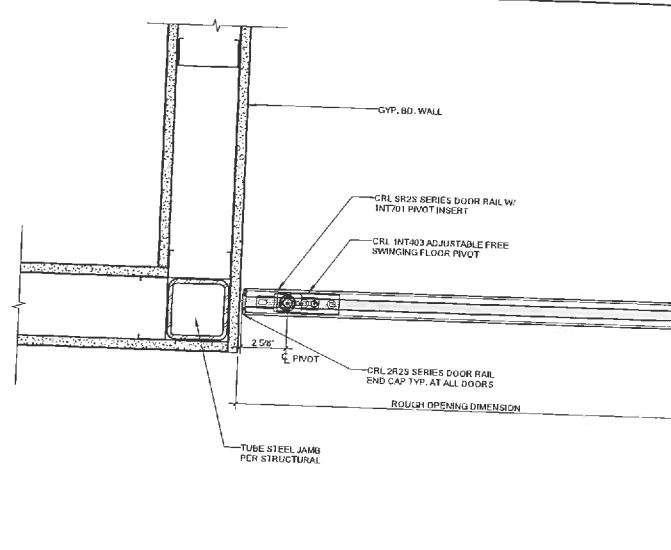
HEAD DETAIL - FRAMELESS SYSTEM
BA6.02 SCALE: 3" = 1'-0"



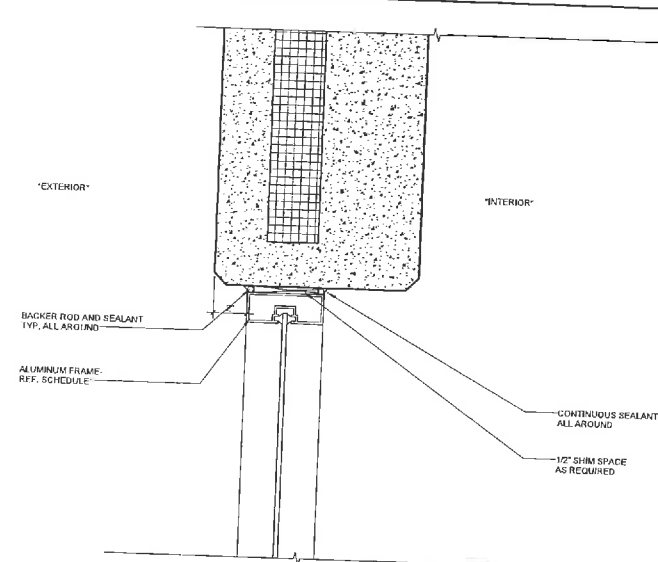
HEAD DETAIL - ALUM. FRAME IN EXT. WALL
BA6.02 SCALE: 3" = 1'-0"



JAMB DETAIL - ALUM. FRAME IN GYP. WALL
BA6.02 SCALE: 3" = 1'-0"



JAMB DETAIL - FRAMELESS SYSTEM
BA6.02 SCALE: 3" = 1'-0"



JAMB DETAIL - ALUM. FRAME IN EXT. WALL
BA6.02 SCALE: 3" = 1'-0"

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| | T. WILLSON DRAWN BY | |
| | C. ROKKE CHECKED BY | |

Luckman Engineering LLC

Invernergy

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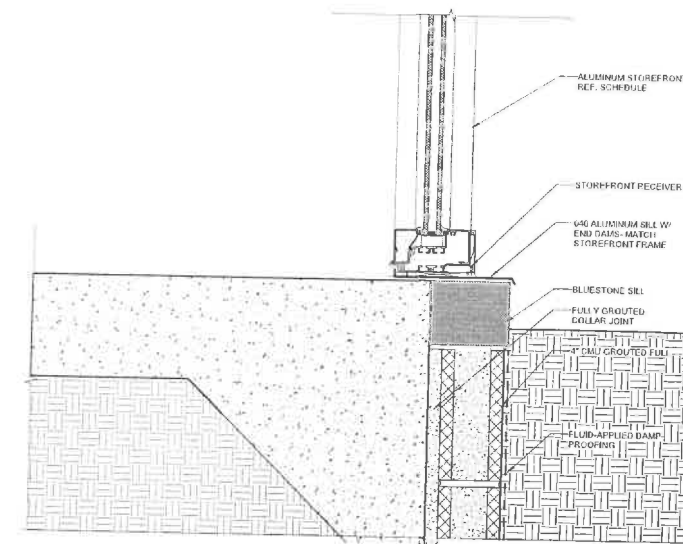
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1901 S. River Boulevard
Lenexa, Kansas 66215
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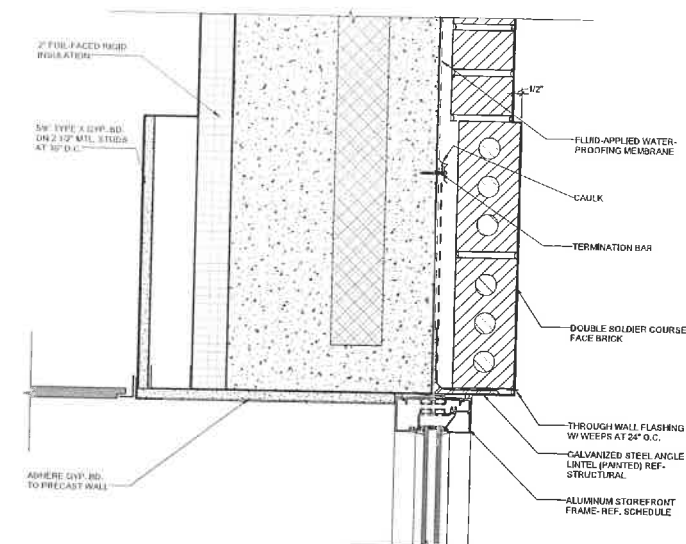
001 - ADMINISTRATION BUILDING
DOOR AND WINDOW DETAILS

DRAWING NUMBER

2014-087-001-BA6.02



SILL DETAIL - ALUMINUM AT EXT. MASONRY
 BAS-03 SCALE: 3\"/>



HEAD DETAIL - ALUM. AT EXT. MASONRY
 BAS-03 SCALE: 3\"/>

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| 1 | T. WILLSON | T. WILLSON |
| 2 | C. ROGGE | 9/27/15 |
| 3 | DESIGN BY | DRAWN BY |
| 4 | CHECKED BY | DATE |

Larksway Energy Center LLC

Invenergy

KIEWIT POWER CONSTRUCTORS CO.

GBA P.A.
 Association
 2001 River Boulevard
 Lenexa, Kansas 66219
 913.462.0400 www.gbapainc.com

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001 - ADMINISTRATION BUILDING
 DOOR AND WINDOW DETAILS

DRAWING NUMBER
 2014-087-001-BA6.03

GENERAL NOTES

GENERAL NOTES - STRUCTURAL

DESIGN SPECIFICATIONS ACI 318R-11, AUG 14TH EDITION

GOVERNING BUILDING CODE: IBC 2009

RISK (OCCUPANCY) CATEGORY: III

| ROOF DESIGN LOADS | |
|--------------------|-----------------|
| ROOFING/INSULATION | 7 psf |
| DECKING | 3.5 psf |
| FRAMING | SELF WT. |
| COLLATERAL | 20 psf |
| LIVE LOAD | 23.7 psf (SHOW) |

| | |
|-------|------------|
| P_s | = 28 psf |
| P_t | = 23.7 psf |
| C_s | = 1.1 |
| C_d | = 1.1 |
| C_e | = 1.0 |

SNOW DRIFT AND RAIN ON SNOW LOADING IN ACCORDANCE WITH GOVERNING BUILDING CODE

CANOPY DESIGN LOADS

| | |
|-------------------------|-----------------|
| ROOFING/INSULATION/SOFT | 10 psf |
| FRAMING | SELF WT. |
| LIVE LOAD | 23.7 psf (SHOW) |

| | |
|-------------------------|----------|
| SEISMIC DESIGN CATEGORY | = A |
| V_s | = 1.25 |
| S_s | = 0.2g |
| S_1 | = 0.08g |
| SITE CLASS | = C |
| S_{a1} | = 1.60g |
| S_{a2} | = 0.857g |

BASIC SEISMIC-FORCE-RESISTING SYSTEM - WAREHOUSE

DESIGN BASE SHEAR (N/S DIRECTION) = 6.1 K

DESIGN BASE SHEAR (E/W DIRECTION) = 4.7 K

BASIC SEISMIC-FORCE-RESISTING SYSTEM - OFFICE

DESIGN BASE SHEAR (N/S DIRECTION) = 4.6 K

DESIGN BASE SHEAR (E/W DIRECTION) = 4.5 K

EQUIVALENT LATERAL FORCE PROCEDURE

| | |
|-------------------|----------|
| WIND LOAD: | |
| V_{50} | = 50 MPH |
| V | = 1.15 |
| V_s | = 1.15 |
| EXPOSURE CATEGORY | = C |
| GCP | = ±0.18 |

| WIND COMPONENTS & CLADDING - WAREHOUSE WALL ELEMENTS | | | |
|--|-------------------------|-----------|-----------|
| LOCATION | GROSS WIND PRESSURE "W" | EDGE ZONE | |
| | ZONE 4 | ZONE 5 | |
| AREA < 10 FT ² | ± 24.2 | ± 25.9 | 6'-6" FT. |
| AREA = 50 FT ² | ± 22.3 | ± 23.1 | 6'-6" FT. |
| AREA > 100 FT ² | ± 21.4 | ± 23.3 | 6'-6" FT. |

| WIND COMPONENTS & CLADDING - OFFICE WALL ELEMENTS | | | |
|---|-------------------------|-----------|-----------|
| LOCATION | GROSS WIND PRESSURE "W" | EDGE ZONE | |
| | ZONE 4 | ZONE 5 | |
| AREA < 10 FT ² | ± 22.3 | ± 23.3 | 7'-3" FT. |
| AREA = 50 FT ² | ± 21.1 | ± 23.8 | 7'-3" FT. |
| AREA > 100 FT ² | ± 20.2 | ± 22.0 | 7'-3" FT. |

LINEAR INTERPOLATION IS PERMITTED.

WALL COMPONENTS & FASTENERS SHALL BE DESIGNED FOR THE WIND PRESSURES, W, SHOWN IN THE TABLE. APPLICABLE LOAD COMBINATION FACTORS (1.0K, 0.6K, ETC.) SHALL BE APPLIED TO THE GROSS WIND PRESSURES PER THE GOVERNING BUILDING CODE.

ZONE 5 WIND PRESSURES APPLY TO WALL COMPONENTS & FASTENERS THAT ARE IN THE EDGE ZONE - THE DISTANCE FROM ALL CORNERS OF THE BUILDING. ZONE 4 WIND PRESSURES APPLY TO ALL AREAS NOT IN THE EDGE ZONE.

REFERENCE THE ROOF FRAMING PLAN FOR WIND COMPONENTS AND CLADDING UPLIFT PRESSURES ON ROOF ELEMENTS, IF APPLICABLE.

GENERAL:

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY OBSERVED DISCREPANCIES IN DIMENSIONS, DETAILING, OR OTHER ITEMS AS SHOWN ON THE PLANS OR SPECIFIED PRIOR TO PROCEEDING WITH WORK RELATING TO SAID DISCREPANCIES.

2. THE CONTRACTOR SHALL NOT ALTER OR MODIFY WORK SHOWN ON THE STRUCTURAL DRAWINGS WITHOUT RECEIVING WRITTEN APPROVAL FROM THE ENGINEER.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING SHOP DRAWINGS FOR CONCRETE WALL PANELS, JOIST GIRDERS, BAR JOISTS, STRUCTURAL STEEL, METAL DECK, REINFORCING STEEL, CONCRETE MIX DESIGNS, GEOPHORS, AND POST-INSTALLED ANCHORS. SHOP DRAWINGS MUST BE REVIEWED FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND SAFETY PRECAUTIONS. SHOP DRAWINGS SHALL BE STAMPED "APPROVED" BY THE CONTRACTOR PRIOR TO SUBMITTAL. SHOP DRAWINGS SUBMITTED WITHOUT THE CONTRACTOR'S STAMPED APPROVAL WILL BE RETURNED REJECTED. ALL SHOP DRAWINGS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.

4. THE STRUCTURAL SYSTEMS SHOWN ON THESE DOCUMENTS HAVE BEEN DESIGNED FOR THE FINAL IN PLACE USAGE OF THE STRUCTURE BASED ON THE INTENDED OCCUPANCY AND CODE REQUIREMENTS. WHILE GENERAL CONSTRUCTIBILITY HAS BEEN CONSIDERED, THE STRUCTURAL SYSTEMS HAVE NOT BEEN DESIGNED TO ACCOMMODATE SPECIFIC CONSTRUCTION MEANS AND METHODS THAT MIGHT BE UTILIZED BY THE CONTRACTOR.

5. THE BUILDING IS NOT STRUCTURALLY STABLE UNTIL ALL CONNECTIONS, FRAMING, SHEARWALLS, PERMANENT BRACING, METAL DECKING AND EXTERIOR LOAD BEARING WALLS (WHERE APPLICABLE) ARE COMPLETE AND HAVE ACHIEVED THEIR DESIGN STRENGTH. CONTRACTOR IS SOLELY RESPONSIBLE FOR MAINTAINING STRUCTURAL STABILITY DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SYSTEMS ARE NOT TO BE REMOVED UNTIL STRUCTURAL WORK IS COMPLETE.

6. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR OTHER PERTINENT INFORMATION RELATED TO THE STRUCTURAL WORK AND COORDINATE AS REQUIRED. THESE STRUCTURAL DRAWINGS ARE INTENDED TO BE UTILIZED AS A COMPLETE SET OF DOCUMENTS THAT REPRESENT THE BUILDING'S STRUCTURAL SYSTEMS. NO SINGLE SHEET OR SERIES OF SHEETS IS INTENDED TO "STAND ALONE". TYPICAL DETAILS ARE NOT SHOWN AT SPECIFIC LOCATIONS THROUGHOUT THE DRAWINGS, BUT ARE TO BE APPLIED WHERE REQUIRED. THESE DETAILS, INCLUDING BUT NOT LIMITED TO: ARCHITECTURAL DRAWINGS, CIVIL DRAWINGS, AND MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS. CONTRACTOR SHALL VERIFY COORDINATION OF THESE DRAWINGS WITH CONTENTS OF ABOVE SETS SPECIFIED AND ONLY PROCEED WITH BUILDING AND CONSTRUCTION AFTER SUCH HAS TAKEN PLACE.

7. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCE, AND SAFETY PRECAUTIONS AND

PROGRAMS. THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

8. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF GBA, IF PROVIDED, IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN GENERAL ACCORDANCE WITH THE STRUCTURAL DRAWINGS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSIDERED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PREPARED IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.

SLAB ON GRADE:

1. THE CONCRETE SLAB-ON-GRADE HAS BEEN DESIGNED FOR ITS FINAL USE AND NOT FOR CONSTRUCTION CONSIDERATIONS. CONTRACTOR SHALL COORDINATE THE SLAB DESIGN WITH CONSTRUCTION NEEDS. THE SLAB DESIGN INDICATED ON THESE DRAWINGS IS TO BE CONSIDERED A MINIMUM. SUBMIT CHANGES TO THE SLAB DESIGN TO THE ENGINEER FOR REVIEW.

2. WELDED WIRE FABRIC SHALL BE SUPPLIED IN SHEETS ONLY. ROLLS WILL NOT BE PERMITTED.

3. WELDED WIRE FABRIC, WHEN USED, SHALL BE SUPPORTED ON CHAIRS OR BLOCKS PRIOR TO CONCRETE PLACEMENT. MESH SHALL NOT BE MOVED AND PULLED UP DURING CONCRETE PLACEMENT.

4. WELDED WIRE FABRIC SHALL HAVE END LAPS OF ONE FULL MESH PLUS 2" BETWEEN CROSS WIRES. WIRE ALL LAPS SECURELY TOGETHER.

5. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

6. SLABS TO RECEIVE MOISTURE SENSITIVE FLOOR COVERINGS. SLABS TO BE COVERED WITH MOISTURE SENSITIVE FLOORING, SUCH AS SEAMLESS SHEET VINYL FLOORING AND WHICH UTILIZE A MOISTURE SENSITIVE ADHESIVE, SHALL BE CONSTRUCTED AS FOLLOWS:

| | |
|----------------|---|
| VAPOR RETARDER | 1/2" ML THICKNESS MEETING ASTM F1745 CLASS A LOCATE BARRIER IN DIRECT CONTACT WITH THE CONCRETE SLAB. INSTALL VAPOR BARRIER PER ASTM E1643 TAPE ALL SEAMS TAPE ALL PENETRATIONS THROUGH VAPOR BARRIER SEAL ANY PUNCTURES OR HOLES MADE IN VAPOR BARRIER |
| SURFACE FINISH | LIGHT TROWEL WITH LIGHT BROOM FINISH |
| CURING | IMPERVIOUS SHEET CURING - 3 DAYS NO CURING COMPOUNDS TO BE APPLIED TO SURFACE OF CONCRETE SOURCES OF WATER TO BE AVOIDED: RAIN, WET GRINDING, SAWCUTTING, POWER WASHING |
| REWEETING | |

FOUNDATIONS:

1. FOUNDATIONS FOR THIS PROJECT HAVE BEEN DESIGNED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN A SOILS REPORT PREPARED BY KLEINFELDER DATED DECEMBER 23, 2004, AND AN ADDENDUM DATED AUGUST 1, 2005. CONTIGUOUS AND INDIVIDUAL FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING VALUE OF 1500 PSF UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL REFER TO SOIL COLUMN FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN SHOP DRAWINGS PROVIDED BY GEOTECHNICAL ENGINEERING DATED 04-20-16. MEZZANINE COLUINS FOUNDATIONS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING VALUE OF 5000 PSF. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR ALL REQUIREMENTS AND RECOMMENDATIONS PERTAINING TO THIS PROJECT. REFER TO FOUNDATION PLAN, 51-10 FOR MEZZANINE FOOTING LOAD VALUES.

2. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GR. 36 AND SHALL BE LOCATED BY MEANS OF A TEMPLATE. PROVIDE A NUT ABOVE AND BELOW TEMPLATE TO ASSURE PROPER VERTICAL ALIGNMENT.

3. ALL FOUNDATIONS SHALL BE SQUARE AND LEVEL.

4. GROUT BELOW COLUMN BASE PLATES. GROUT SHALL BE DRY AND STIFF TO PREVENT SHRINKAGE, WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI THOROUGHLY COMPACT GROUT BENEATH BASE PLATE.

5. GROUT BELOW CONCRETE WALL PANELS. GROUT MIX SHALL BE SHRINK-RESISTANT WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.

CONCRETE AND REINFORCING STEEL:

1. CONCRETE MIX DESIGNS SHALL MEET THE FOLLOWING REQUIREMENTS: (TAKEN FROM ACI 211.1)

| LOCATION | MINIMUM COMPRESSIVE STRENGTH (psi) | MAXIMUM AGGREGATE SIZE (in.) | MIN. CEMENT (lbs.) | MAXIMUM WATER/CEMENT RATIO | MAXIMUM SLUMP (in.) | AIR ENTRAINMENT PERCENT (%) |
|-----------------------|------------------------------------|------------------------------|--------------------|----------------------------|---------------------|-----------------------------|
| INTERIOR SLABS | 4000 | 3/4" | 611 | .48 | 4 | 0 |
| EXTERIOR SLABS | 4000 | 3/4" | 611 | .48 | 4 | 6±1 |
| INTERIOR FOUNDATIONS | 4000 | 3/4" | 611 | .48 | 4 | 0 |
| PERIMETER FOUNDATIONS | 4000 | 3/4" | 611 | .48 | 4 | 6±1 |

NOTE: DO NOT ADD WATER TO CONCRETE DURING DELIVERY, AT PROJECT SITE, OR DURING PLACEMENT. THE INTENT OF THESE SPECIFICATIONS IS THAT THE CONTRACTOR SUPPLY CONCRETE MIXES WITH A MINIMUM AMOUNT OF MIX WATER IN ORDER TO LIMIT PLASTIC SHRINKAGE CRACKING. IT IS EXPECTED THAT WORKABILITY FOR CONCRETE MIXES WILL REQUIRE THE ADDITION OF WATER-REDUCING AND/OR SUPER-PLASTICIZING ADJUTANTS.

2. FLY ASH SHALL BE CLASS C AND MAY BE USED IN ALL CONCRETE MIXES UNLESS HIGH EARLY STRENGTH MIXES ARE SPECIFIED. FLY ASH, IF USED, SHALL CONFORM TO ASTM C618. DO NOT EXCEED 25% OF THE TOTAL CEMENT VOLUME.

3. ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY CALLED OUT AS UNREINFORCED. REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH SAME STEEL AS IN SIMILAR SECTIONS OR AREAS.

4. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE OR PLACED IN CONTACT WITH CONCRETE.

5. CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST AMERICAN CONCRETE INSTITUTE DOCUMENTS: AC301, 305, 306, 315, 316, AND 347 UNLESS OTHERWISE NOTED IN THESE CONTRACT DOCUMENTS.

6. PRIOR TO PLACING CONCRETE IN ANY LOCATION, IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO HAVE THOROUGHLY CHECKED AND COORDINATED ALL DIMENSIONS, ELEVATIONS, OPENINGS, RECESSES, AND BLOCKOUTS SHOWN ON THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS. IN THE EVENT ERRORS, CONFLICTS, OR OMISSIONS EXIST, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE ARCHITECT OR ENGINEER FOR NECESSARY CORRECTIVE ACTION.

7. REINFORCING BARS #4 AND LARGER (EXCEPT TIES AND STIRRUPS) SHALL MEET ASTM A615 WITH SUPPLEMENTARY REQUIREMENTS (S1), GRADE 60. SMALLER BARS SHALL BE GRADE 40.

8. CONCRETE COVERAGE OF REINFORCEMENT SHALL HAVE THE FOLLOWING CLEAR DISTANCES UNLESS NOTED OTHERWISE ON THE DRAWINGS:

| | |
|---|----|
| CAST AGAINST EARTH | 3" |
| FORMED CONCRETE EXPOSED TO EARTH OR WEATHER | 2" |
| NOT EXPOSED TO EARTH OR WEATHER | 1" |
| SLABS, 1-8" BEAMS AND COLUMNS | |

9. CONSTRUCTION JOINTS IN GRADE BEAMS SHALL BE AT MIDSPAN UNLESS NOTED OTHERWISE. REINFORCING STEEL SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.

10. EMBEDDED AND ALL REINFORCING BARS MARKED CONTINUOUS SHALL BE EMBEDDED TO DEVELOP THE FULL TENSION CAPACITY OF THE BAR. LAPS SHALL BE CLASS B TENSION LAPS UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS. UNLESS SHOWN OTHERWISE, SPLICE TOP BARS NEAR MIDSPAN AND SPLICE BOTTOM BARS OVER SUPPORTS.

11. SUPPLY CORNER BARS 4'-0" LONG (MIN. 2'-0" IN EACH DIRECTION) IN OUTSIDE FACE OF CONCRETE AT CORNERS OF ALL WALLS AND GRADE BEAMS, MATCHING SIZE AND SPACING OF HORIZONTAL BARS, WHERE THERE ARE NO VERTICAL BARS IN OUTSIDE FACE OF WALL. SUPPLY THREE (3) #4 VERTICAL SUPPORT BARS FOR CORNER BARS.

12. ALL BARS ARE TO BE SUPPORTED IN FORMS AND SPACED WITH WIRE BAR SUPPORTS PER ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES" (LATEST EDITION). BARS SHALL BE SECURELY WIRDED PER LATEST EDITION OF CRSI'S "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS." ACCESSORIES FOR EXPOSED CONCRETE SHALL BE PLASTIC OR HAVE PLASTIC-TIPPED FEET.

13. CONCRETE PLACED DURING COLD WEATHER SHALL CONFORM TO THE REQUIREMENTS OF ACI 306R-88. COLD WEATHER IS DEFINED AS A PERIOD WHEN, FOR MORE THAN 3 SUCCESSIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40°F.

14. CONCRETE PLACED DURING HOT WEATHER SHALL CONFORM TO THE REQUIREMENTS OF ACI 306R-88. HOT WEATHER IS DEFINED AS THAT COMBINATION OF AIR TEMPERATURE, RELATIVE HUMIDITY AND WIND SPEED THAT WILL CAUSE A RATE OF EVAPORATION OF 0.2 LB/50 SQ. FT./HR. OR MORE AS DEFINED BY FIGURE 2.1.5 OF ACI 306R-88.

15. CHAMFER ALL EXPOSED CORNERS OF CONCRETE SLABS, WALLS, BEAMS AND COLUMNS 3/4", UNLESS NOTED OTHERWISE ON DETAILS.

STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:

| | |
|-------------------------------|--|
| STRUCTURAL STEEL WIDE FLANGES | = ASTM A592, GRADE 50 |
| MISCELLANEOUS STEEL | = ASTM A36 |
| HOLLOW STRUCTURAL SECTION | = ASTM A500, GRADE B (F _y = 46 ksi) |
| STEEL PIPE | = ASTM A53, TYPE E OR S, GRADE 40 |

2. CONNECTIONS NOT SHOWN SHALL BE DESIGNED BY THE FABRICATOR. NON-COMPOSITE BEAM CONNECTIONS SHALL DEVELOP 50% OF THE TOTAL UNIFORM LOAD CAPACITY AS GIVEN IN THE TABLES FOR "ALLOWABLE LOADS ON BEAMS." FOR GIVEN SIZE, SPAN AND GRADE OF THE CONNECTED MEMBER, UNLESS NOTED OTHERWISE. COMPOSITE BEAM CONNECTIONS SHALL DEVELOP 75% OF THE UNIFORM LOAD CAPACITY FOR THE GIVEN SIZE, SPAN AND GRADE OF THE CONNECTED MEMBER, UNLESS NOTED OTHERWISE. BOLTS SHALL BE AS FOLLOWS:

| | |
|-----------------------|--------------------------------------|
| CONNECTION BOLTS | = ASTM A325 |
| ANCHOR BOLTS | = ASTM F1554, GR. 36 OR ASTM A325 |
| SHEAR STUD CONNECTORS | = ASTM A108, GRADE 1215 THROUGH 1020 |

3. BOLDING SHALL CONFORM TO THE CRSI'S "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS."

4. WELDING SHALL BE PERFORMED BY A QUALIFIED WELDER AND CONFORM TO THE LATEST PUBLICATION OF APPLICABLE CODES SET FORTH BY THE AMERICAN WELDING SOCIETY. WELDING ELECTRODES SHALL BE E70XX.

5. WELD ALL JOISTS TO SUPPORTING MEMBERS WITH 3/4" x 2" LONG FILLET WELD ON EACH SIDE OR GREATER PER S4 IN STEEL FRAMES, WHERE COLUMNS ARE NOT FRAMED IN AT LEAST TWO DIRECTIONS WITH STRUCTURAL STEEL MEMBERS. JOISTS AT COLUMN LINES SHALL BE FIELD BOLTED AT THE COLUMNS TO PROVIDE LATERAL STABILITY DURING CONSTRUCTION.

6. ALL ROOF BAR JOISTS SHALL BE DESIGNED FOR UPLIFT AS STIPULATED BY THE APPLICABLE BUILDING CODE. EXTRA BRACING SHALL BE ADDED AS REQUIRED, AND THE JOIST MANUFACTURER SHALL CERTIFY THAT THE JOISTS HAVE BEEN DESIGNED FOR REVERSE BENDING DUE TO UPLIFT.

7. ALL BAR JOISTS SHALL HAVE HORIZONTAL BRIDGING AS RECOMMENDED BY THE STEEL JOIST INSTITUTE. PROVIDE RIGID "X" BRIDGING IN ADDITION TO HORIZONTAL BRIDGING WHERE HORIZONTAL BRIDGING IS DISCONTINUOUS, UNLESS HORIZONTAL BRIDGING IS CONNECTED TO A WALL TOP AND BOTTOM OF JOIST. THE PRECTOR SHALL FOLLOW THE LATEST REQUIREMENTS OF THE STEEL JOIST INSTITUTE REGARDING ADDITIONAL BOLTED "X" BRIDGING REQUIRED FOR ERECTION STABILITY.

8. ALL HANGERS SUPPORTING PIPE, EQUIPMENT, CONDUIT, ETC. OF MORE THAN 200 LBS. SUPPORTED FROM STEEL BAR JOISTS OR JOIST GIRDERS SHALL BE HUNG FROM TOP CHORDS AND WITHIN 2" OF WEB PANEL. POINTS, IF INTERFERENCES EXIST THAT WILL NOT ALLOW PIPE TO BE HUNG IN THIS MANNER, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR REQUIRED MODIFICATIONS.

9. ALL OPENINGS IN THE ROOF SHALL BE FRAMED WITH A 4 X 4 X 1/4 ANGLE MINIMUM, UNLESS NOTED OTHERWISE. MECHANICAL UNITS SHALL BE SUPPORTED WITH STRUCTURAL STEEL FRAMES AS REQUIRED. IF FRAMING IS NOT SHOWN FOR MECHANICAL UNITS, NOTIFY THE ENGINEER.

10. PROVIDE 1/4 INCH THICK CLOSURE PLATES ON ENDS OF ALL HSS SECTIONS, UNLESS NOTED OTHERWISE.

POST-INSTALLED ANCHORS AND REBAR:

1. POST-INSTALLED ANCHORS AND REBAR SHALL BE INSTALLED USING AN ADHESIVE UNLESS SPECIFICALLY NOTED OTHERWISE. ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES, AS PROVIDED BY Hilti, Inc.:

- ANCHORAGE TO CONCRETE
- (1) HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT (TE-CD OR TE-YD)
- (2) STEEL ANCHOR ELEMENT SHALL BE HILTI HAS-E THREADED ROD PER ICC ESR-3187.
- REBAR DOWELING INTO CONCRETE
- (1) HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT (TE-CD OR TE-YD) AND CONTINUOUSLY DEFORMED REBAR PER ICC ESR-3187.

2. CONTACT HILTI AT (800) 679-8500 FOR PRODUCT RELATED QUESTIONS.

3. IF THE CONTRACTOR CHOOSES TO SUBMIT A SUBSTITUTION FOR APPROVAL, THEY MUST ATTACH CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED SHOWING THAT THE SUBSTITUTION IS "EQUAL" TO THE SPECIFIED PRODUCT. THE CONTRACTOR MUST ALSO BE SUBMITTED FOR REVIEW. THE CONTRACTOR SHALL NOTE THAT THE ICC-REPORT MAY INDICATE ADDITIONAL SPECIAL INSPECTION REQUIREMENTS. ANY ADDITIONAL SPECIAL INSPECTION REQUIREMENTS MUST BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.

4. INSTALL ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.

5. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ON-SITE INSTALLATION TRAINING FOR ALL OF THE ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.

6. OVERHEAD ADHESIVE ANCHORS MUST BE INSTALLED USING THE HILTI PROF SYSTEM.

7. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

8. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE MEASURES TO LOCATE THE POSITIONS OF THE EXISTING REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY HILTI FERROSCAN, GPR, X-RAY, CHIPPING OR OTHER MEANS.

STRUCTURAL PRECAST OR SITE CAST TILT-UP CONCRETE WALL PANELS:

1. GBA HAS NOT BEEN RETAINED TO DESIGN THE CONCRETE WALL PANELS ON THIS PROJECT. THE PRECAST/TILT-UP COMPONENTS OF THE STRUCTURE SHOWN ON THESE DRAWINGS SHALL BE DESIGNED BY THE PRECAST/TILT-UP CONTRACTOR AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE JURISDICTION WHERE THE PROJECT IS LOCATED. WALL PANELS SHALL BE DESIGNED TO COMPLY WITH ALL LOCAL CODES, WITH THE PRECAST/TILT-UP INDUSTRY STANDARDS AND TO SAFELY CARRY THE LOADS SHOWN ON THESE DRAWINGS AND AS REQUIRED BY CODE. THE PRECAST/TILT-UP DESIGN SHALL INCLUDE ALL BOLTS, PLATES, BRACES, AND WELD SIZES FOR ALL CONNECTIONS BETWEEN THE PRECAST/TILT-UP AND THE SUPPORTING STRUCTURE AND FOUNDATIONS. THE PRECAST/TILT-UP CONTRACTOR SHALL PROVIDE A COMPLETE VERTICAL AND LATERAL SYSTEM TO SAFELY CARRY THE PRESCRIBED AND REQUIRED LOADS SAFELY TO THE FOUNDATION.

2. DESIGN CALCULATIONS SHALL CONSIDER AND SHOW STRESS FROM DEAD LOAD OF PANEL, DEAD LOAD OF STRUCTURE, LIVE LOAD OF STRUCTURE, SHOW LOAD, WIND LOAD, SEISMIC LOAD AND TEMPERATURE DIFFERENTIAL LOAD. BOTH PANEL AND CONNECTION DESIGN SHALL CONSIDER EXCEEDING CONDITIONS COORDINATED WITH CONNECTIONS USED FOR FRAMING MEMBER SUPPORTS. DESIGN OF THE WALL PANELS BY THE CONTRACTOR SHALL INCLUDE A DESIGN TO RESIST THE STRESSES CAUSED BY BOTH THE ERECTION OF THE WALL PANELS AND ANY TEMPORARY BRACING USED FOR ERECTION OF THE PANELS UNTIL THE PERMANENT STRUCTURAL SYSTEMS ARE IN PLACE.

3. ALL PRECAST/TILT-UP CONCRETE SHALL COMPLY WITH ACI 301, CONCRETE REINFORCING STEEL INSTITUTE, "MANUAL OF STANDARD PRACTICE", AND "AMERICAN WELDING SOCIETY".

4. TYPICAL SUGGESTED GRAVITY AND LATERAL PANEL CONNECTIONS ARE SHOWN ON THE DRAWINGS. DETAILS SHOWN ARE TYPICAL ONLY AND DO NOT COVER ALL SITUATIONS. THE PRECAST/TILT-UP FABRICATOR MAY CONSIDER OTHER CONNECTION TYPES PROVIDED THAT THE DESIGN INTENT IS NOT CHANGED FROM THAT SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS. SUGGESTED DETAILS ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS AND PREVAILING BUILDING CODES.

5. PRECAST/TILT-UP CONCRETE CONNECTIONS SHALL NOT INDUCE ANY TORSION INTO SUPPORTING STEEL BEAMS OR COLUMNS.

6. CONNECTION DESIGN SHALL ACKNOWLEDGE THE CONSTRUCTION SEQUENCING OF THE ENTIRE PROJECT AS A WHOLE. CONNECTION DESIGN SHALL TAKE INTO CONSIDERATION PANEL VOLUME CHANGES, FROM THE CONCRETE CURING PROCESS, FROM LONG TERM CREEP AND SHRINKAGE, AND FROM TEMPERATURE DIFFERENTIALS, BOTH SEASONAL AND ON OPPOSITE FACES OF THE PANEL.

7. ALL STEEL PLATES SHALL BE A36 STEEL UNLESS NOTED OTHERWISE. ANCHORS SHALL BE HEADED STUDS OR DEFORMED BAR ANCHORS AS INDICATED ON THE DRAWINGS. REINFORCING STEEL WELDED TO STEEL PLATES SHALL NOT BE USED AS ANCHORS.

8. ALL STEEL PLATES, SHAPES, AND ANCHORS USED FOR PRECAST/TILT-UP GRAVITY AND LATERAL SUPPORTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. BOLT, NUTS, AND WELDS FOR SUCH CONNECTIONS SHALL ALL BE GALVANIZED. ALL WELDS SHALL BE PAINTED WITH ZINC RICH REPAIR PAINT AFTER WELDING. BRACES BACK TO THE STRUCTURAL FRAME SHALL BE SHOP PRIMED.

9. FIELD WELDING SHALL BE PERFORMED BY A QUALIFIED WELDER AND CONFORM TO THE LATEST PUBLICATION OF APPLICABLE CODES SET FORTH BY THE AMERICAN WELDING SOCIETY. WELDING ELECTRODES SHALL BE E70XX.

10. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR DIMENSIONAL FINISH, AND OTHER REQUIREMENTS OF PRECAST/TILT-UP CONCRETE PANELS.

11. ALL BRACING (AND CONNECTIONS) REQUIRED TO LATERALLY BRACE THE PRECAST/TILT-UP SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR.

12. ALL EMBEDDED ITEMS IN THE PRECAST/TILT-UP PANELS, STRUCTURAL FRAME AND FOUNDATIONS AND ALL MATERIAL FOR SETTING BOLTS, WASHERS, PLATES, SHAPES, ETC. USED TO SUPPORT THE PRECAST/TILT-UP BOTH VERTICALLY AND LATERALLY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

13. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ERECT THE PANELS IN A MANNER THAT WILL BE SAFE FOR PERSONNEL AND PROPERTY, AND TO BRACE AND OTHERWISE PROTECT THE PANELS AGAINST WIND, SEISMIC, PERMANENT STRUCTURAL SYSTEM ARE IN PLACE.

14. ERECTION TOLERANCE SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE SPECIFICATIONS, LATEST EDITION.

15. DEFLECTIONS OF THE SUPPORTING FRAME MAY OCCUR AS PANELS ARE ERECTED, NECESSITATING READJUSTMENT, REALIGNMENT, AND POSSIBLY RESETTING OF CERTAIN PANELS IN ORDER TO MEET SPECIFIED TOLERANCES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSIDER SUCH DEFLECTIONS, WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT AND PROVIDE FOR THE SAME DURING THE ERECTION PROCESS AT NO ADDITIONAL COST TO THE OWNER.

16. DESIGN CALCULATIONS, SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE JURISDICTION WHERE THE PROJECT IS LOCATED, SHALL BE SUBMITTED FOR ARCHITECTS/ENGINEERS RECORD. CALCULATIONS WILL NOT BE RETURNED. THE CALCULATIONS MUST BE BOUND WITH THE ENGINEER'S SIGNATURE, SEAL, AND DATE SEALED ON THE COVER SHEET. CALCULATIONS MUST BE INDEXED BY PRECAST/TILT-UP ELEMENT AND ARRANGED IN A LOGICAL, ORDERLY FASHION. INCOMPLETE OR PARTIAL SUBMITTALS WILL BE REJECTED.

17. THE CONTRACTOR SHALL SUBMIT COMPLETE ERECTION DRAWINGS SHOWING DIMENSIONED PLANS, ELEVATIONS, SECTIONS, AND DETAILS WITH PRECAST/TILT-UP UNIT MARKS FOR EACH ELEMENT.

18. THE CONTRACTOR SHALL SUBMIT PRODUCTION DRAWINGS OF PRECAST/TILT-UP MEMBERS SHOWING ALL DIMENSIONS AND INFORMATION NECESSARY TO CONSTRUCT THE PANEL. THIS INFORMATION SHALL INCLUDE, BUT NOT BE LIMITED TO, DIMENSIONS, REINFORCING STEEL, EMBED LOCATIONS, CAST-IN INSERTS, JOINTS, BLOCKOUTS, REGLET'S, REVEALS AND ANY OTHER ITEMS. INCLUDE LAYOUT OF WYTHE CONNECTIONS FOR SANGUICH PANELS. PANEL DRAWINGS SHALL TAKE INTO CONSIDERATIONS REQUIREMENTS SHOWN ON ALL CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND PLUMBING. PRODUCTION DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE JURISDICTION WHERE THE PROJECT IS LOCATED.

19. SHOP DRAWINGS SHALL INDICATE ADDITIONAL STEEL REINFORCEMENT REQUIRED TO RESIST HOISTING AND ERECTION STRESSES. SHOW LOCATIONS OF HOISTING POINTS AND LIFTING DEVICES FOR HANDLING AND ERECTIONS.

20. CONTRACTOR SHALL REVIEW SLAB-ON-GRADE DESIGN FOR CRANE USE OR WIND BRACING REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADDITIONAL DESIGN REQUIREMENTS FOR SLAB-ON-GRADE OR WIND BRACING ANCHORS, IF REQUIRED.

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE AND ARE NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER OF RECORD. ANY VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT WILL BE SUBJECT TO LEGAL ACTION. THE USER OF THESE DRAWINGS SHALL BE RESPONSIBLE FOR THE PROTECTION OF THESE DRAWINGS. ANY REPRODUCTION OR TRANSMISSION OF THESE DRAWINGS WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER OF RECORD SHALL BE SUBJECT TO LEGAL ACTION. THE USER OF THESE DRAWINGS SHALL BE RESPONSIBLE FOR THE PROTECTION OF THESE DRAWINGS. ANY REPRODUCTION OR TRANSMISSION OF THESE DRAWINGS WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER OF RECORD SHALL BE SUBJECT TO LEGAL ACTION.

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| SCHEDULE OF SPECIAL INSPECTION SERVICES | | | |
|--|--|----------------------------|---|
| MATERIAL OR ACTIVITY | SERVICE | APPLICABLE TO THIS PROJECT | |
| | | Y/N | EXTENT |
| 1704.2.5 INSPECTION OF FABRICATORS | | | |
| VERIFY FABRICATION/QUALITY CONTROL PROCEDURES | IN-PLANT REVIEW UNLESS APPROVED IN ACCORDANCE W/ SECTION 1704.2.5.1 & 1704.2.5.2 | Y | PERIODIC |
| 1705.2 STEEL CONSTRUCTION | | | |
| MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS, AND WASHERS | REVIEW MATERIAL MARKINGS AND CERTIFICATES OF COMPLIANCE | Y | PERIODIC |
| INSPECTION OF HIGH STRENGTH BOLTING | FIELD INSPECTION | | |
| A. BEARING-TYPE CONNECTION | | Y | PERIODIC |
| B. PRE-TENSIONED OR SLIP CRITICAL CONNECTIONS | | | |
| 1) TURN-OFF-NUT WITH MATCHING MARKINGS | | Y | PERIODIC |
| 2) DIRECT TENSION INDICATOR | | Y | PERIODIC |
| 3) TWIST-OFF BOLT | | Y | PERIODIC |
| 4) TURN-OFF-NUT WITHOUT MATCHING MARKS | | Y | CONTINUOUS |
| 5) CALIBRATED WRENCH | | Y | CONTINUOUS |
| MATERIAL VERIFICATION OF STRUCTURAL STEEL | | | |
| A. IDENTIFICATION MARKINGS | FIELD INSPECTION | Y | PERIODIC |
| B. CERTIFIED MILL TESTS | REVIEW SUBMITTALS | Y | EACH SUBMITTAL |
| WELD FILLER MATERIALS | REVIEW CERTIFICATE OF COMPLIANCE AND FIELD VERIFICATION | Y | PERIODIC AND EACH SUBMITTAL |
| STRUCTURAL STEEL WELDING | SHOP AND FIELD INSPECTION | | |
| A. COMPLETE AND PARTIAL PENETRATION GROOVE WELDS | | N | CONTINUOUS |
| B. MULTI-PASS FILLET WELDS | | N | CONTINUOUS |
| C. SINGLE-PASS FILLET WELDS GREATER THAN 3/16" | | N | CONTINUOUS |
| D. SINGLE-PASS FILLET WELDS LESS THAN OR EQUAL TO 3/16" | | Y | PERIODIC |
| COLD-FORMED STEEL DECK | | | |
| A. FLOOR AND ROOF DECK WELDS | | Y | PERIODIC |
| REINFORCING STEEL WELDING | SHOP AND FIELD INSPECTION | | |
| A. VERIFICATION OF WELDABILITY OF STEEL OTHER THAN ASTM A 706 | | N | PERIODIC |
| B. REINFORCING STEEL - RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS, AND SHEAR REINFORCEMENT | | N | CONTINUOUS |
| C. SHEAR REINFORCEMENT | | N | CONTINUOUS |
| D. OTHER REINFORCING STEEL | | N | PERIODIC |
| INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS | FIELD INSPECTION | | |
| A. DETAILS SUCH AS BRACING AND STIFFENING | | Y | PERIODIC |
| B. MEMBER LOCATIONS | | Y | PERIODIC |
| C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION | | Y | PERIODIC |
| 1705.3 CONCRETE CONSTRUCTION | | | |
| INSPECTION OF REINFORCING STEEL INCLUDING PRESTRESSING TENDONS, AND PLACEMENT | FIELD INSPECTION | Y | PERIODIC |
| INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2 ITEM 28 | | N | |
| INSPECTION OF ANCHORS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED | FIELD INSPECTION | N | PERIODIC |
| INSPECTION OF ANCHORS POST INSTALLED IN HARDENED CONCRETE MEMBERS | | Y | PERIODIC |
| VERIFYING USE OF REQUIRED DESIGN MIX | REVIEW SUBMITTALS | Y | PERIODIC |
| AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE | FIELD TESTING | Y | CONTINUOUS |
| INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES | FIELD REVIEW | Y | CONTINUOUS |
| INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES | FIELD REVIEW | Y | PERIODIC |
| INSPECTION OF PRESTRESSED CONCRETE | | | |
| A. APPLICATION OF PRESTRESSING FORCES | | N | CONTINUOUS |
| B. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC FORCE-RESISTING SYSTEM | | N | CONTINUOUS |
| ERECTION OF PRECAST CONCRETE MEMBERS | FIELD REVIEW | Y | PERIODIC |
| VERIFICATION OF IN-SITU CONCRETE STRENGTH PRIOR TO STRESSING OF TENDONS IN POST TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS | REVIEW FIELD TESTING AND LABORATORY REPORTS | N | PERIODIC |
| INSPECTION OF FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED | FIELD INSPECTION | Y | PERIODIC |
| POST-INSTALLED ANCHORS IN CONCRETE & MASONRY | | | |
| VERIFICATION OF ANCHOR TYPE, SIZE, LENGTH, AND MATERIAL. VERIFICATION OF CONFORMANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. VERIFICATION OF CONCRETE TYPE (WHEN APPLICABLE). CONCRETE COMPRESSIVE STRENGTH (WHEN APPLICABLE). ADHESIVE IDENTIFICATION & EXPIRATION DATE, HOLE DIMENSIONS, HOLE CLEANING PROCEDURES, ANCHOR SPACING, EDGE DISTANCES, CONCRETE THICKNESS, ANCHOR EMBEDMENT & TIGHTENING TORQUE | FIELD INSPECTION | Y | CONTINUOUS INSPECTION AS OUTLINED BY APPLICABLE PRODUCT EVALUATION REPORT. PERIODIC INSPECTION ONLY WHEN ALLOWED BY APPLICABLE PRODUCT EVALUATION REPORT. |

| SCHEDULE OF SPECIAL INSPECTION SERVICES | | | |
|--|---|----------------------------|---------------------|
| MATERIAL OR ACTIVITY | SERVICE | APPLICABLE TO THIS PROJECT | |
| | | Y/N | EXTENT |
| 1705.4 MASONRY CONSTRUCTION | | | |
| VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS | | N | PERIODIC |
| AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE: | | | |
| A. PROPORTIONS OF SITE-PREPARED MORTAR | | N | PERIODIC |
| B. CONSTRUCTION OF MORTAR JOINTS | | N | PERIODIC |
| C. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES | | N | PERIODIC |
| D. LOCATION OF REINFORCEMENT, CONNECTORS AND PRESTRESSING TENDONS AND ANCHORAGES | | N | PERIODIC |
| E. PRESTRESSING TECHNIQUE | | N | PERIODIC |
| F. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY | | N | CONTINUOUS/PERIODIC |
| PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE: | | | |
| A. GROUT SPACE | | N | CONTINUOUS |
| B. GRADE, TYPE, SIZE AND LOCATION OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES | | N | PERIODIC |
| C. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES | | N | PERIODIC |
| D. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS | | N | PERIODIC |
| E. CONSTRUCTION MORTAR JOINTS | | N | PERIODIC |
| VERIFY DURING CONSTRUCTION: | | | |
| A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS | | N | PERIODIC |
| B. TYPE, SIZE AND LOCATION OF ANCHORS INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION | | N | PERIODIC |
| C. WELDING OF REINFORCEMENT | | N | CONTINUOUS |
| D. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C)) | | N | PERIODIC |
| E. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE | | N | CONTINUOUS |
| F. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE | | N | CONTINUOUS |
| G. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS | | N | CONTINUOUS |
| OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS | | N | CONTINUOUS |
| 1705.5 WOOD CONSTRUCTION | | | |
| PREFABRICATED WOOD STRUCTURAL ELEMENTS AND ASSEMBLIES | IN ACCORDANCE W/ SECTION 1704.2.5 | N | PERIODIC |
| WOOD-FRAME DIAPHRAGMS AND SHEAR WALLS | | | |
| A. WOOD STRUCTURAL PANEL THICKNESS AND GRADE | FIELD INSPECTION | N | PERIODIC |
| B. NOMINAL SIZE OF FRAMING MEMBERS AT ADJOINING PANEL EDGES | FIELD INSPECTION | N | PERIODIC |
| C. FASTENER TYPE, SIZE AND LENGTH | FIELD INSPECTION | N | PERIODIC |
| D. FASTENER PATTERN AND SPACING | FIELD INSPECTION | N | PERIODIC |
| METAL-PLATE-CONNECTED WOOD TRUSSES | FIELD VERIFY TEMPORARY AND PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINTS/BRACING INSTALLATIONS ARE IN ACCORDANCE W/ APPROVED TRUSS SUBMITTAL PACKAGE | N | PERIODIC |
| 1705.6 SOILS | | | |
| VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY | FIELD INSPECTION | Y | PERIODIC |
| VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL | FIELD INSPECTION | Y | PERIODIC |
| PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS | FIELD INSPECTION | Y | PERIODIC |
| VERIFY SITE PREPARATION COMPLIES WITH APPROVED GEOTECHNICAL REPORT | FIELD INSPECTION | Y | CONTINUOUS |
| VERIFY PLACEMENT OF COMPACTION OF FILL MATERIALS COMPLIES WITH APPROVED GEOTECHNICAL REPORT | FIELD INSPECTION | Y | CONTINUOUS |
| VERIFY DRY-DENSITY OF COMPACTION FILL COMPLIES WITH APPROVED GEOTECHNICAL REPORT | REVIEW FIELD TESTING | Y | PERIODIC |
| 1705.10.1 STRUCTURAL WOOD CONSTRUCTION FOR WIND RESISTANCE | | | |
| INSPECTION OF NAILING, BOLTING, ANCHORING AND OTHER FASTENING COMPONENTS OF DESIGNATED WOOD-FRAME DIAPHRAGMS, SHEAR WALLS, COLLECTORS (DRAG STRUTS), BRACES AND HOLD DOWNS | FIELD INSPECTION | N | PERIODIC |
| 1705.10.2 COLD-FORMED STEEL CONSTRUCTION FOR WIND RESISTANCE | | | |
| INSPECTION OF SCREW ATTACHMENT, BOLTING, ANCHORING AND OTHER FASTENING COMPONENTS OF DESIGNATED COLD-FORMED DIAPHRAGMS, SHEAR WALLS, COLLECTORS (DRAG STRUTS), BRACES AND HOLD DOWNS | FIELD INSPECTION | N | PERIODIC |
| 1705.10.3 WIND RESISTANCE COMPONENTS | | | |
| 1. ROOF CLADDING | FIELD INSPECTION | N | PERIODIC |
| 2. WALL CLADDING | FIELD INSPECTION | N | PERIODIC |
| 1705.11.1 STRUCTURAL STEEL | | | |
| CONTINUOUS INSPECTION OF STRUCTURAL WELDING IN ACCORDANCE WITH AISC SEISMIC PROVISIONS | SHOP AND FIELD INSPECTION | N | CONTINUOUS |
| 1705.12.1 REINFORCING AND PRESTRESSING STEEL | | | |
| REVIEW CERTIFIED MILL TEST REPORTS | FIELD REVIEW | N | EACH SUBMITTAL |
| VERIFY REINFORCING STEEL WELDABILITY | REVIEW TESTING REPORTS | N | EACH SUBMITTAL |
| 1705.12.2 STRUCTURAL STEEL TESTING FOR SEISMIC RESISTANCE | | | |
| ULTRASONICALLY TEST FOR DISCONTINUITIES BEHIND AND ADJACENT TO WELDS WITH BASE METAL THICKER THAN 1.5 INCHES WHERE SUBJECT TO THROUGH-THICKNESS WELD SHRINKAGE STRAINS | SHOP AND FIELD TESTING | N | EACH OCCURRENCE |

| SCHEDULE OF SPECIAL INSPECTION SERVICES | | | |
|---|------------------|----------------------------|------------|
| MATERIAL OR ACTIVITY | SERVICE | APPLICABLE TO THIS PROJECT | |
| | | Y/N | EXTENT |
| 1705.13 SPRAYED FIRE-RESISTANT MATERIALS | | | |
| SPECIAL INSPECTIONS FOR SPRAYED FIRE-RESISTANT MATERIALS APPLIED TO FLOOR, ROOF, AND WALL ASSEMBLIES AND STRUCTURAL MEMBERS SHALL BE IN ACCORDANCE WITH SECTIONS 1705.13.1 & 1705.13.5 | FIELD INSPECTION | N | CONTINUOUS |
| 1705.16 FIRE-RESISTANT PENETRATIONS AND JOINTS | | | |
| SPECIAL INSPECTIONS FOR THROUGH-PENETRATIONS, MEMBRANE PENETRATION FIRESTOPS, FIRE-RESISTANT JOINT SYSTEMS, AND PERIMETER FIRE BARRIER SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION 1705.16.1 OR 1705.16.2 | FIELD INSPECTION | N | CONTINUOUS |

SPECIAL INSPECTION GENERAL NOTES

- ALL SPECIAL INSPECTIONS SHALL MEET THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, CHAPTER 17 AND THESE DOCUMENTS. THE CONTRACTOR SHALL RETAIN THE SPECIAL INSPECTOR.
- JURISDICTIONAL INSPECTION IS NOT A SUBSTITUTE FOR SPECIAL INSPECTION.
- ANY WORK WHICH HAS BEEN COVERED OR OTHERWISE MADE UNACCESSIBLE PRIOR TO REVIEW BY THE SPECIAL INSPECTOR AND/OR THE INSPECTOR OF THE GOVERNING JURISDICTION IS SUBJECT TO REMOVAL OR EXPOSURE.
- CONTINUOUS INSPECTION IS REQUIRED AS SPECIFICALLY NOTED. THIS MAY BE A REQUIREMENT OF THE BUILDING CODE, THE GOVERNING JURISDICTION OR THE MANUFACTURER.
- THE SPECIAL INSPECTOR SHALL BE CERTIFIED TO PERFORM THE TYPES OF INSPECTION SPECIFIED AND SHALL DEMONSTRATE COMPETENCY TO THE SATISFACTION OF THE BUILDING OFFICIAL.
- THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE SPECIAL INSPECTOR AND THE JURISDICTIONAL INSPECTOR A MINIMUM OF ONE DAY BEFORE THE WORK IS TO BE PERFORMED.
- THE SPECIAL INSPECTOR SHALL BE PERSONALLY FAMILIAR WITH THE CONTRACT DOCUMENTS AND PROJECT SPECIFICATIONS AND MUST PERSONALLY OBSERVE ALL OF THE WORK REPORTED ON.
- THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING DEPARTMENT, THE ARCHITECT AND THE ENGINEER OF RECORD. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION AND TO THE ATTENTION OF THE ARCHITECT AND THE ENGINEER OF RECORD.
- THE FINAL REPORT OF INSPECTIONS SHALL BE SIGNED BY AN PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL STATE, AT A MINIMUM, THAT THE WORK WAS COMPLETED IN CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE.

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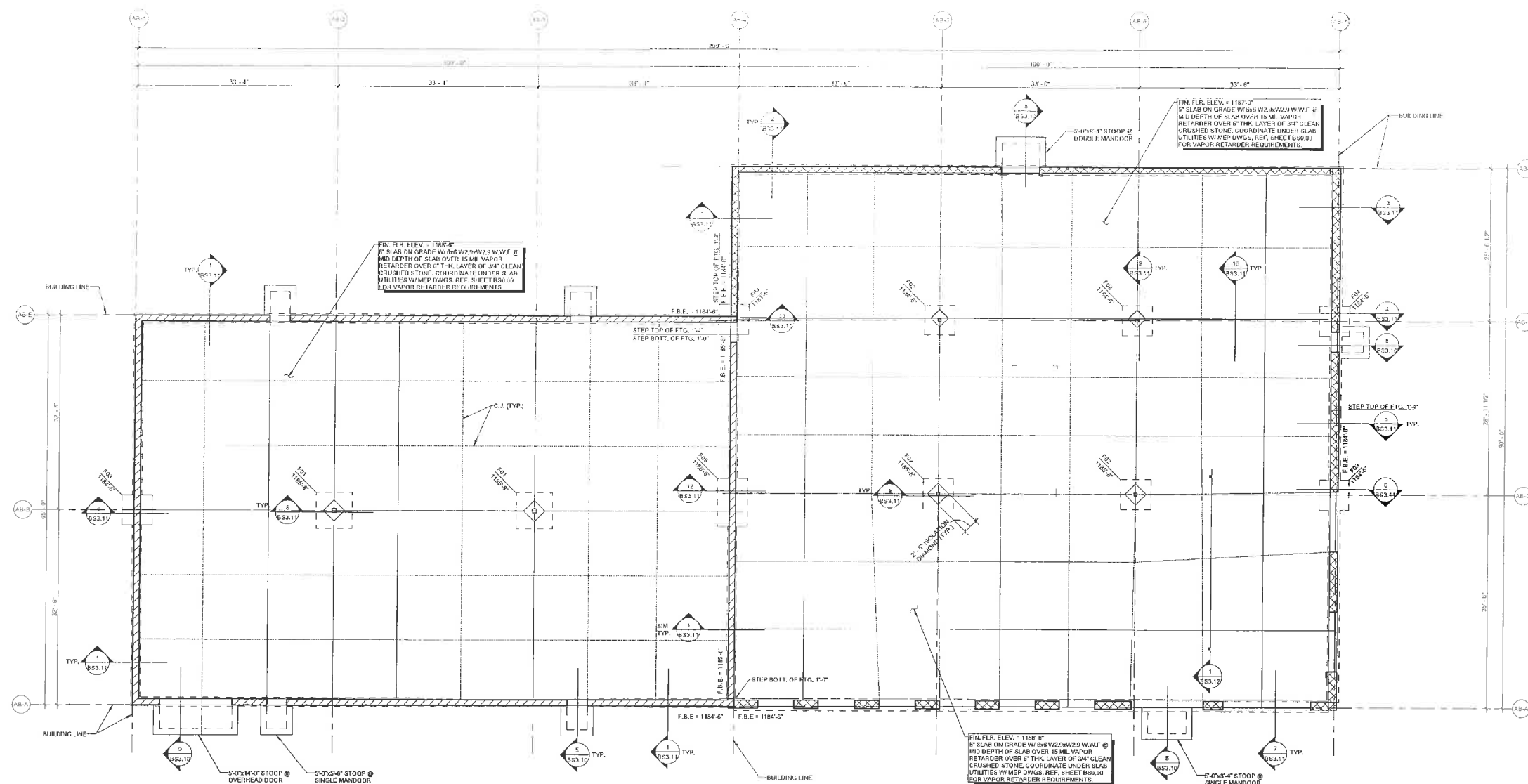
KIEWIT POWER CONSTRUCTORS CO.

GBA P.A.
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Lima, PA 17043
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001 - ADMINISTRATION BUILDING
SPECIAL INSPECTIONS

014-087-001-BS0.01



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



| FOOTING SCHEDULE | | |
|------------------|-----------------------|---|
| DESIG. | SIZE | REINF. |
| F01 | 6'-0" x 5'-0" x 1'-6" | (8) 36 EA. WAY, BOTT. |
| F02 | 5'-0" x 5'-0" x 1'-6" | (8) 25 EA. WAY, BOTT. |
| F03 | 5'-0" x 5'-0" x 2'-6" | (8) 36 EA. WAY, BOTT. |
| F04 | 5'-0" x 5'-0" x 1'-0" | (8) 25 EA. WAY, BOTT. |
| F05 | 8'-0" x 5'-0" x 1'-8" | (12) 45 NO. DIR. BOTT. (8) 45 EW. DIR. BOTT. |

- LEGEND:**
- 1'-0" INSULATED PRECAST WALL PANEL. REFERENCE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS.
 - 1'-0" INSULATED PRECAST WALL PANEL WITH BRICK FACADE. REFERENCE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS.
 - FOOTING DESIGNATION (REFERENCE FOUNDATION SCHEDULE THIS SHEET)
 - COLUMN SCHEDULE MARK (REFERENCE COLUMN SCHEDULE ON SHEET BS1-2A)

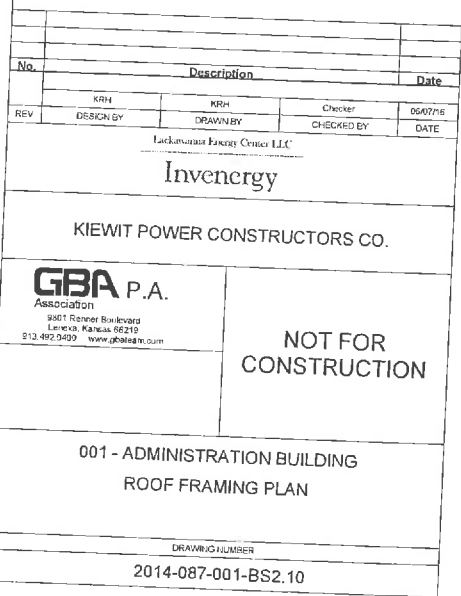
- ABBREVIATIONS:**
- F.B.E. - FOOTING BEARING ELEVATION
 - F.F.E. - FINISHED FLOOR ELEVATION
 - C.J. - CONTROL JOINT
 - W.W.F. - WELDED WIRE FABRIC

- GENERAL NOTES:**
- REFERENCE TYPICAL SLAB AND FOUNDATION DETAILS ON SHEET BS1-10.
 - REFERENCE ARCHITECTURAL PLUMBING, ELECTRICAL, MECHANICAL, FIRE PROTECTION, AND CIVIL DRAWINGS FOR ANY BELOW GRADE PIPING, DRAINS, UTILITIES, STRUCTURES, ETC. WHERE UTILITY TRENCHES PASS BENEATH BUILDING FOUNDATIONS, FLOOR SLAB & MOVEMENT JOINTS, BACKFILL TRENCH PER GEOTECHNICAL REPORT RECOMMENDATIONS.
 - THE FINISHED SURFACE OF CONCRETE FLOOR SLAB-ON-GRADE SHALL BE MADE FLAT AND LEVEL CONFORMING TO ASTM F1555 FLATNESS (F) SPECIFIED OVERALL VALUE (500' GREATER THAN OR EQUAL TO 25 AND LEVELNESS (F) GREATER THAN OR EQUAL TO 20 WITHIN MINIMUM LOCAL VALUES (MIL) OR FLATNESS (F) GREATER THAN OR EQUAL TO 17 AND LEVELNESS (F) GREATER THAN OR EQUAL TO 15.
 - REFERENCE BASE PLATE DETAILS ON SHEET BS4-10.

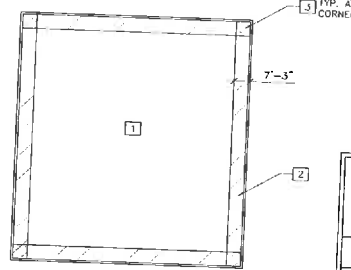
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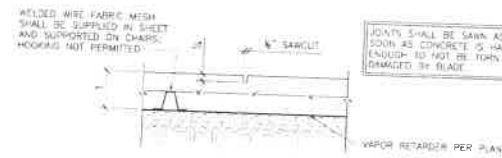
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| DESIGNED BY | DRAWN BY | CHECKED BY |
| Lickanovita Energy Center LLC | | |
| Invenergy | | |
| KIEWIT POWER CONSTRUCTORS CO. | | |
| GBA P.A. Association 9501 Renner Boulevard Lenexa, Kansas 66215 913-492-0403 www.gba.com | | NOT FOR CONSTRUCTION |
| 001 - ADMINISTRATION BUILDING FOUNDATION PLAN | | |
| DRAWING NUMBER 2014-087-001-BS1.10 | | |

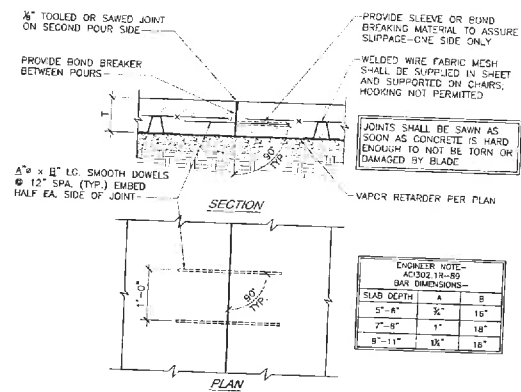


| LOCATION | GROSS WIND UPLIFT PRESSURE "W" (PSF) | | | EDGE ZONE |
|----------------------------|---|--------|--------|--------------|
| | ZONE 1 | ZONE 2 | ZONE 3 | |
| AREA < 10 FT ² | -21.1 | -35.4 | -53.28 | 7'-3" FT. |
| AREA = 50 FT ² | -19.76 | -26.46 | -31.83 | 7'-3" FT. |
| AREA = 100 FT ² | -19.31 | -22.89 | -22.89 | 7'-3" FT. |

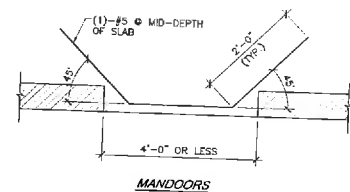




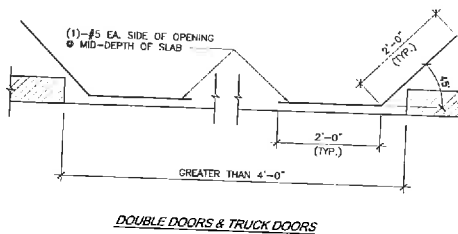
TYP. CONTROL JOINT DETAIL
SCALE: N.T.S.



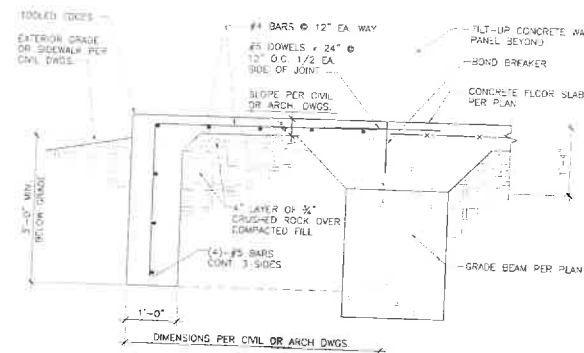
TYP. CONSTRUCTION JOINT DETAIL
SCALE: N.T.S.



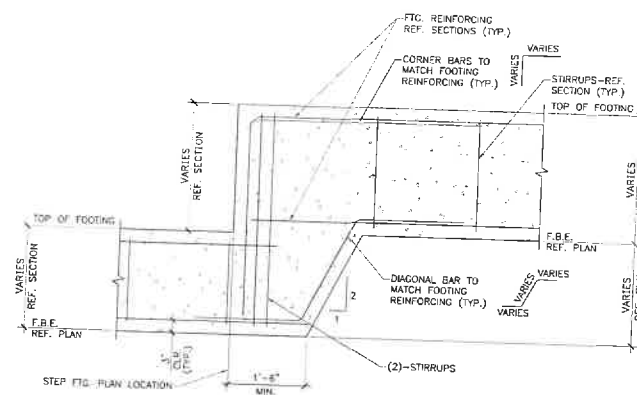
TYP. SLAB REINF. @ INSIDE CORNERS
SCALE: N.T.S.



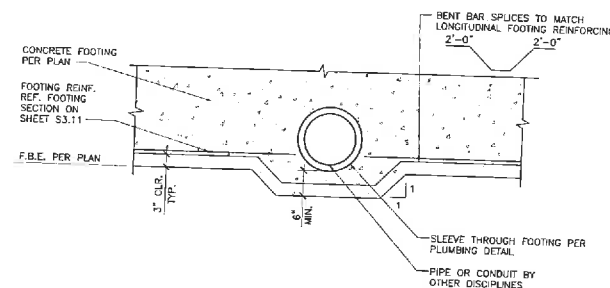
TYP. RE-ENTRANT CORNER REINF.
SCALE: N.T.S.



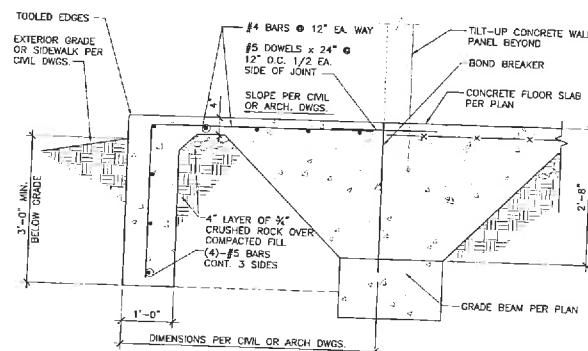
TYP. DOOR STOOP DETAIL
SCALE: 3/4" = 1'-0"



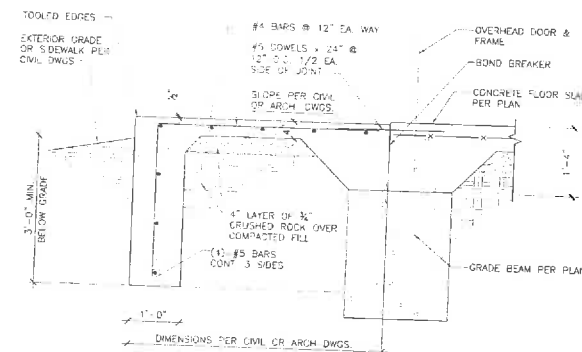
TYP. STEPPED GRADE BEAM DETAIL
SCALE: 3/4" = 1'-0"



TYP. PIPE UNDER FOOTING DETAIL
SCALE: N.T.S.



TYP. LOWER DOOR STOOP DETAIL
SCALE: 3/4" = 1'-0"



TYP. OVERHEAD DOOR STOOP DETAIL
SCALE: 3/4" = 1'-0"

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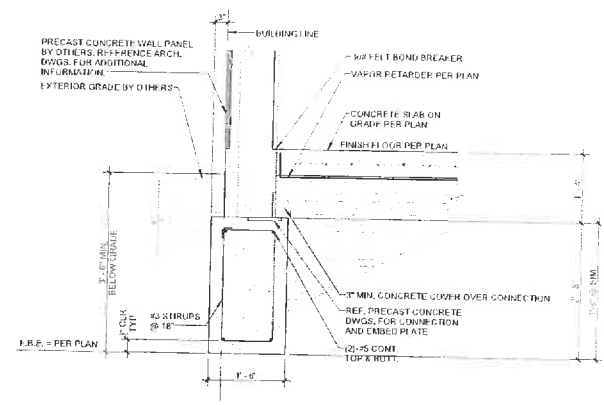
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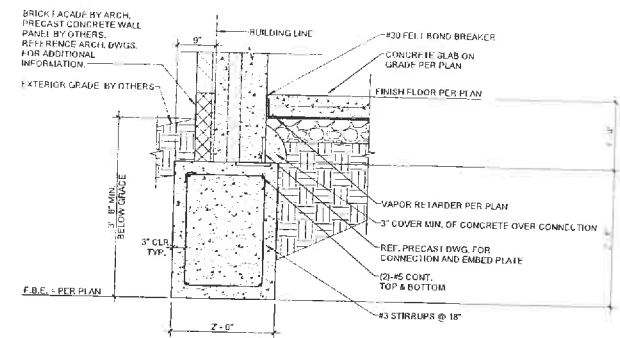
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001 - ADMINISTRATION BUILDING
TYP. FOUNDATION DETAILS

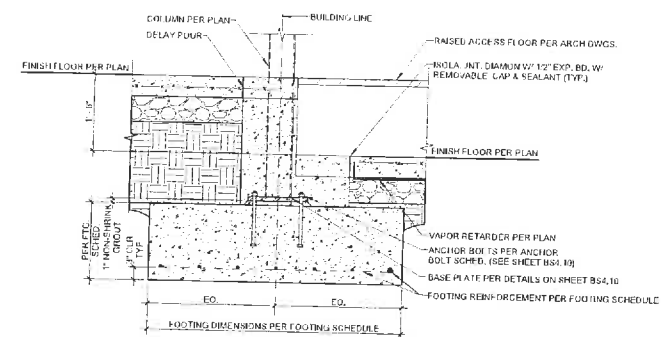
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2014-087-001-BS3.10



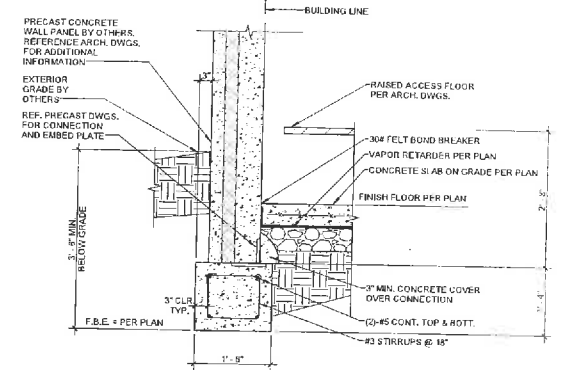
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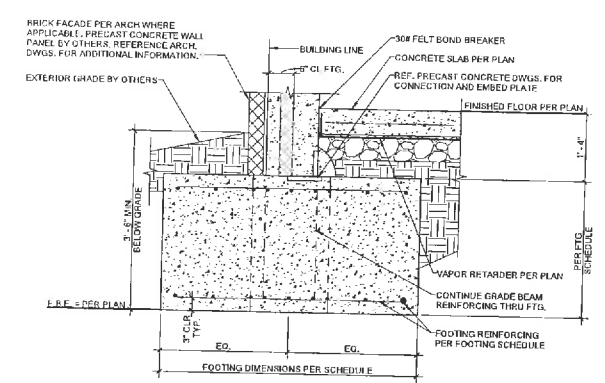
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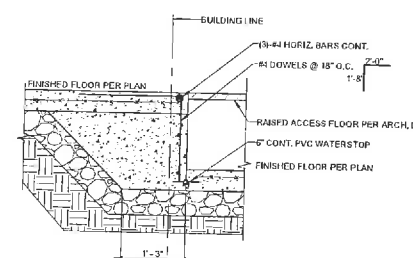
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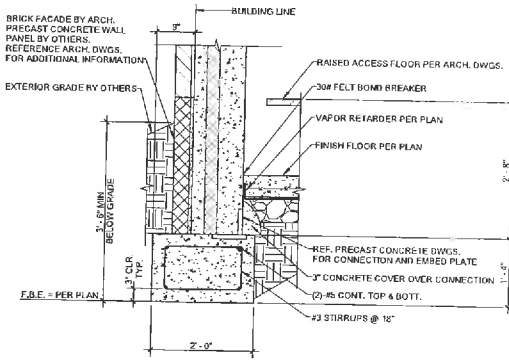
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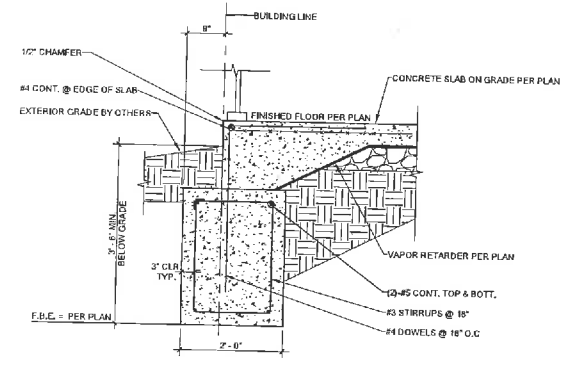
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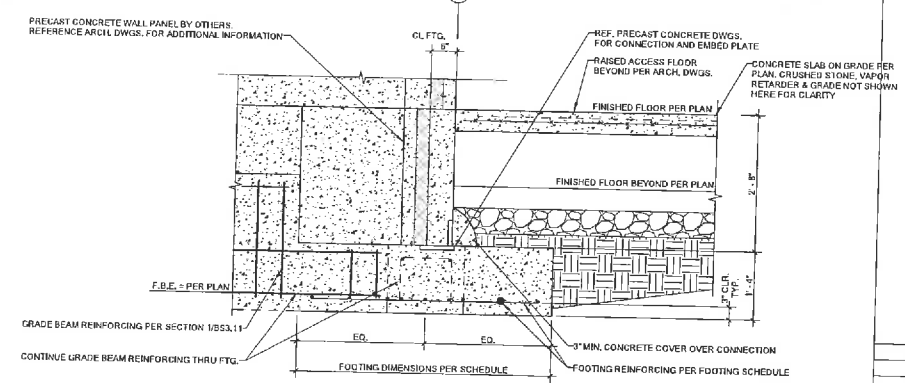
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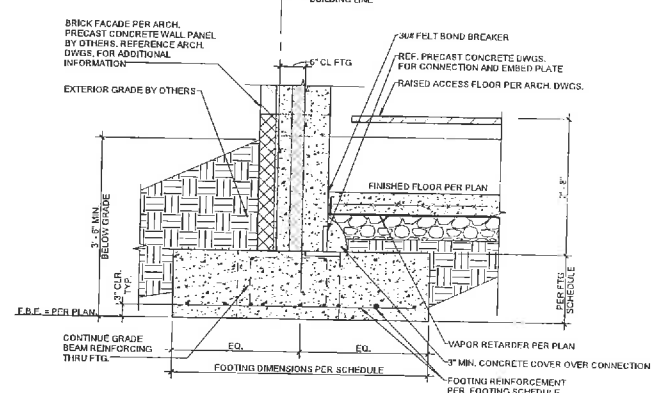
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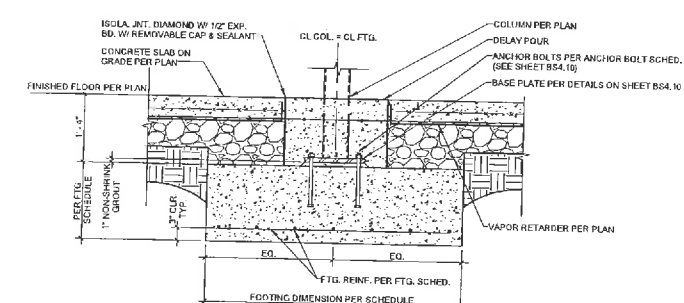
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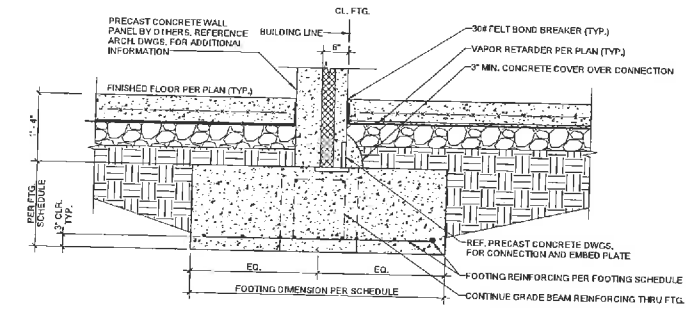
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SCALE: 3/4" = 1'-0"



SECTION 10
SCALE: 3/4" = 1'-0"



SECTION 11
SCALE: 3/4" = 1'-0"



SECTION 12
SCALE: 3/4" = 1'-0"

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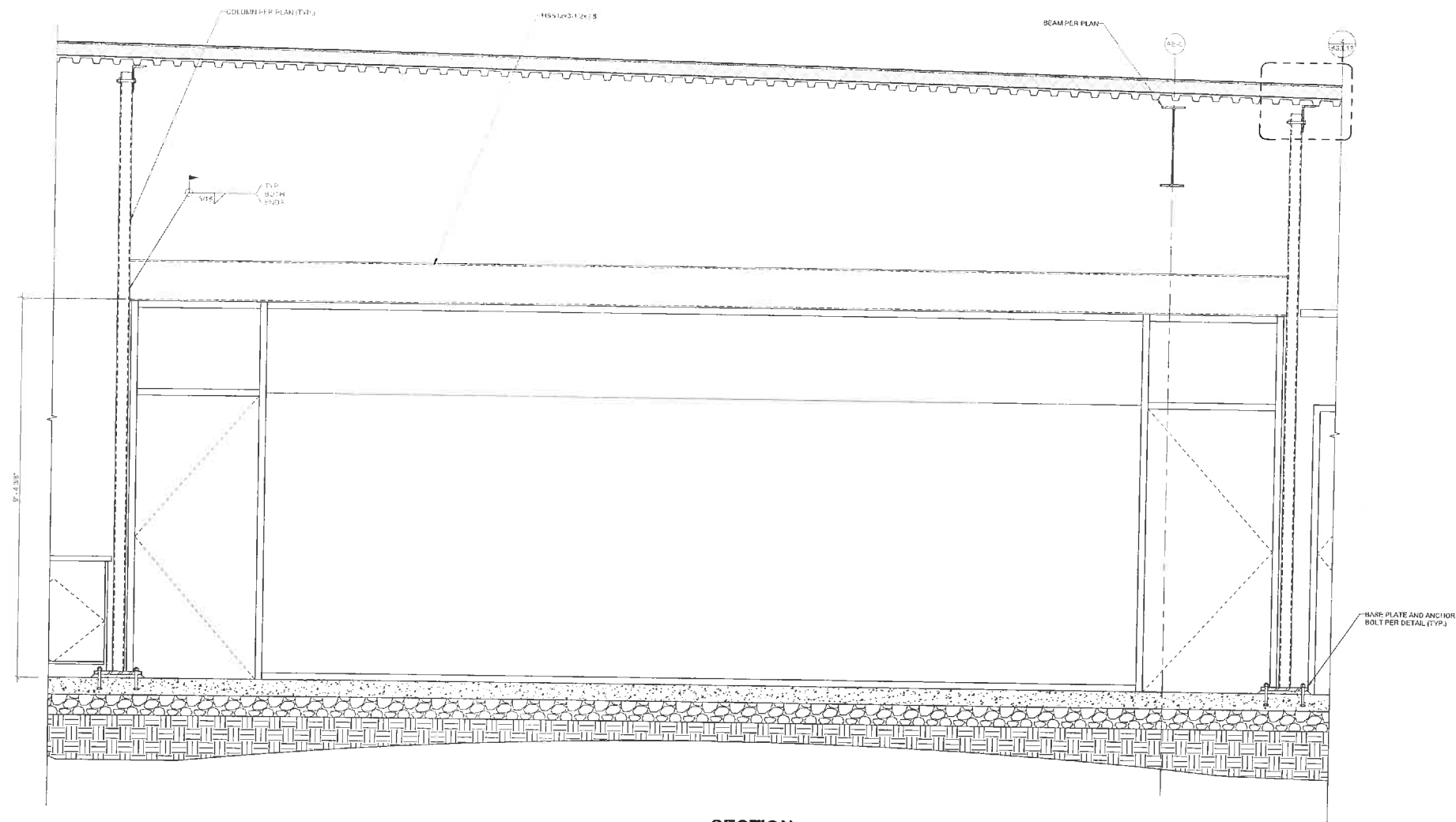
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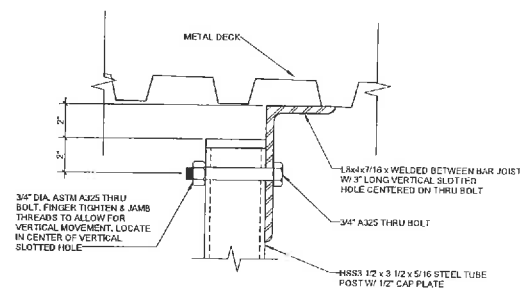
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001 - ADMINISTRATION BUILDING
FOUNDATION SECTIONS & DETAILS

DRAWING NUMBER
2014-087-001-BS3.11



SECTION
BS3.12 SCALE: 3/4" = 1'-0"



SECTION
BS3.12 SCALE: 3/4" = 1'-0"

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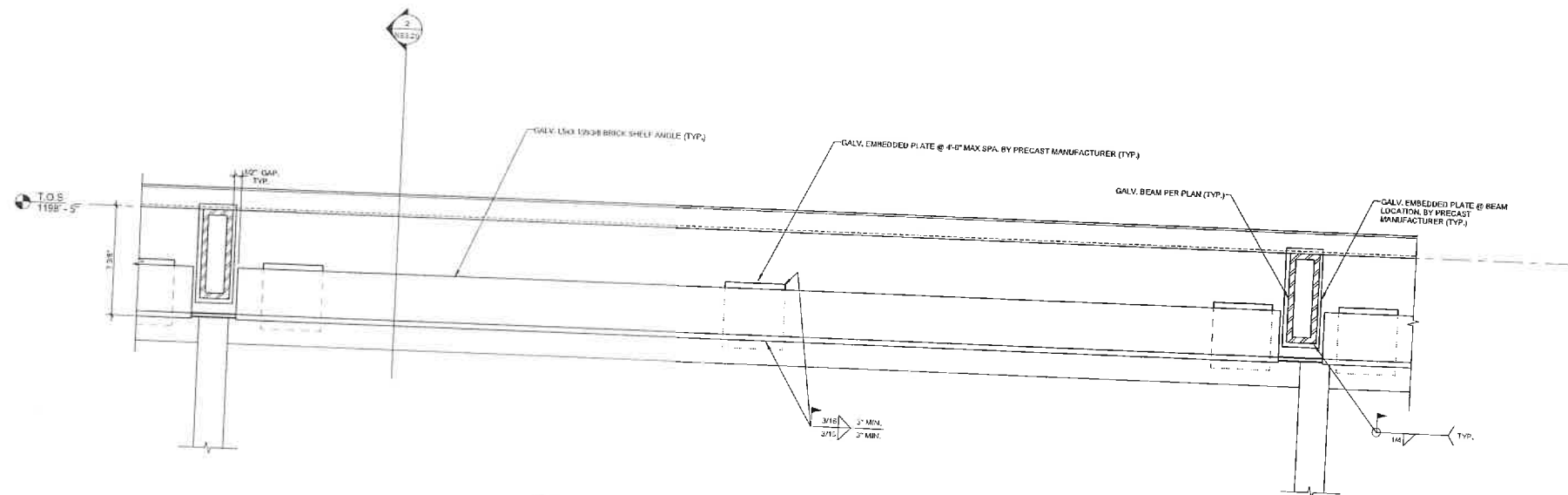
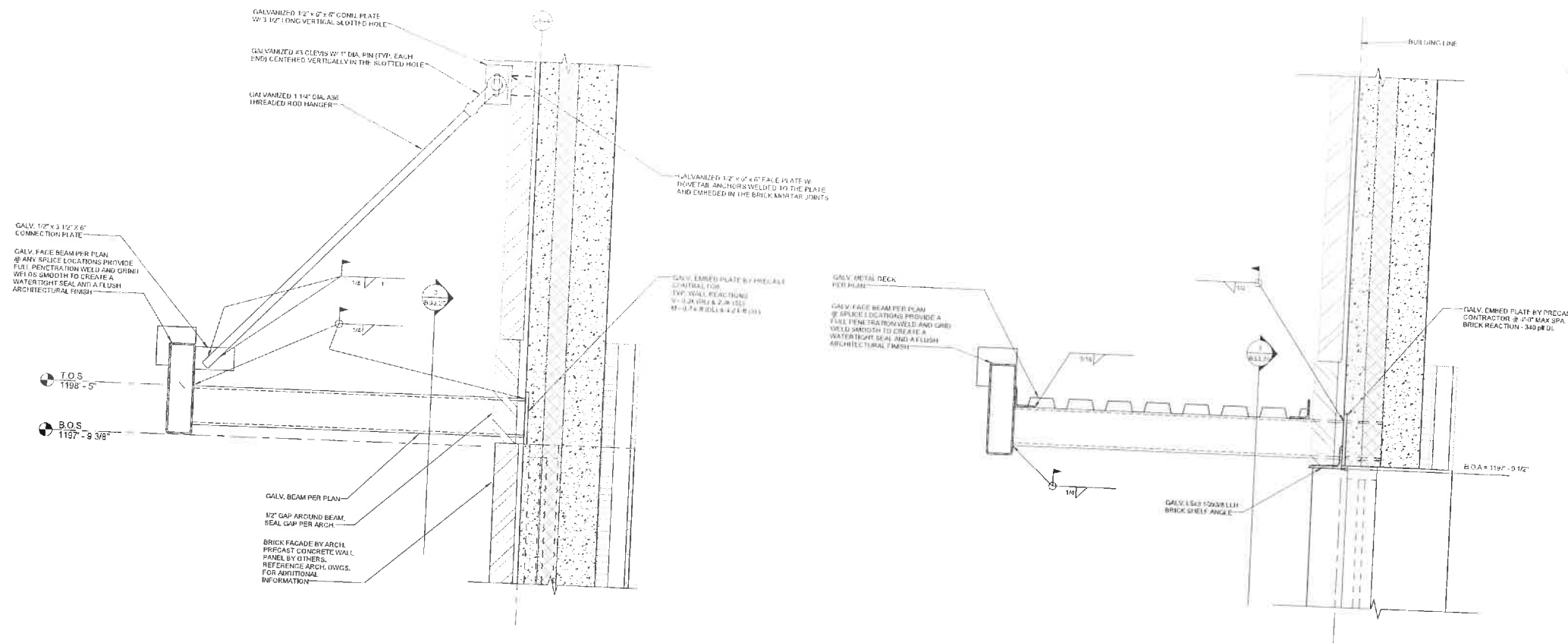
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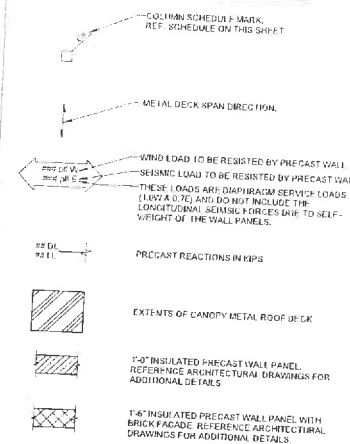
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GLASS WALL HEADER ELEVATION

DRAWING NUMBER

2014-087-001-BS3.12



LEGEND:



ABBREVIATIONS:

J.S.E. JOIST BEARING ELEVATION
B.O.S. BOTTOM OF STEEL ELEVATION
S.J.I. STEEL JOIST INSTITUTE

GENERAL NOTES:

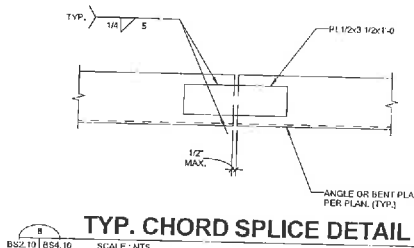
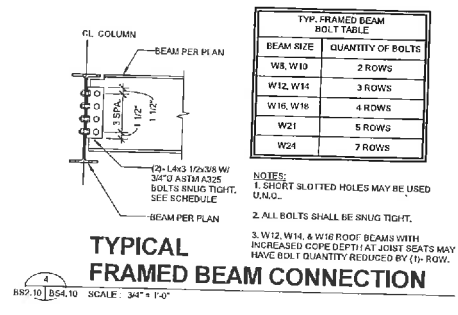
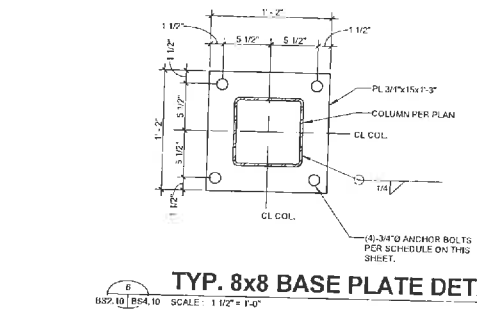
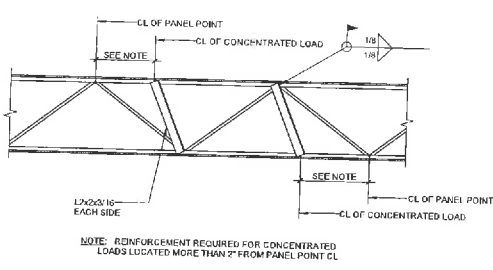
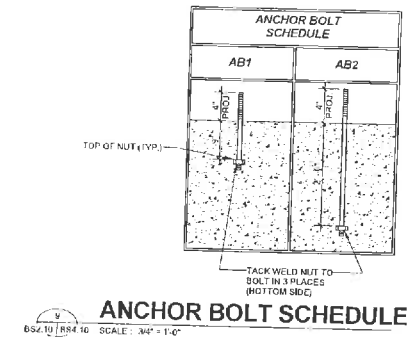
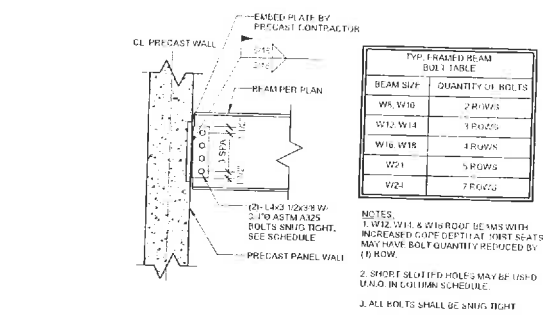
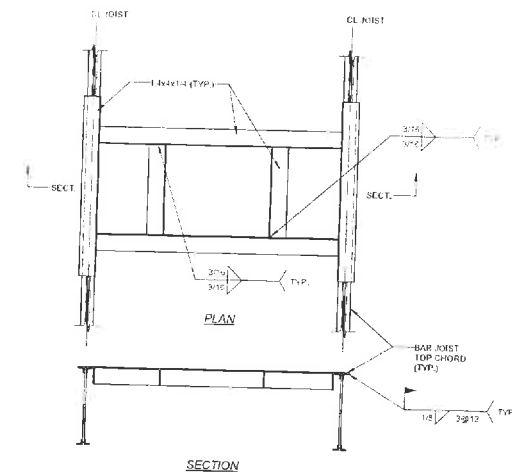
- REFERENCE TYPICAL ROOF FRAMING DETAILS ON SHEET BS4.10.
- REFERENCE ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND FIRE PROTECTION DRAWINGS FOR ANY ROOF PENETRATIONS, ETC.
- PROVIDE ANGLE FRAMING TO SUPPORT ROOF DECK AT ROOF PENETRATIONS PER DETAIL 1 ON SHEET BS4.10.
- SUPPLY METAL ROOF DECKING IN 3-SPAN LENGTHS OR GREATER

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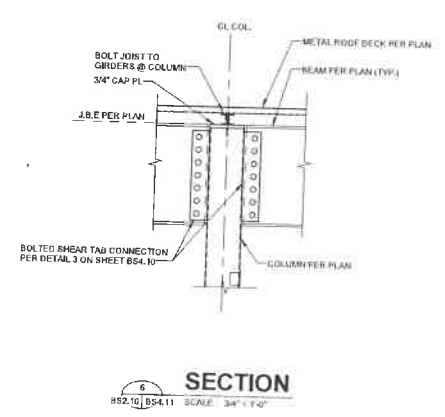
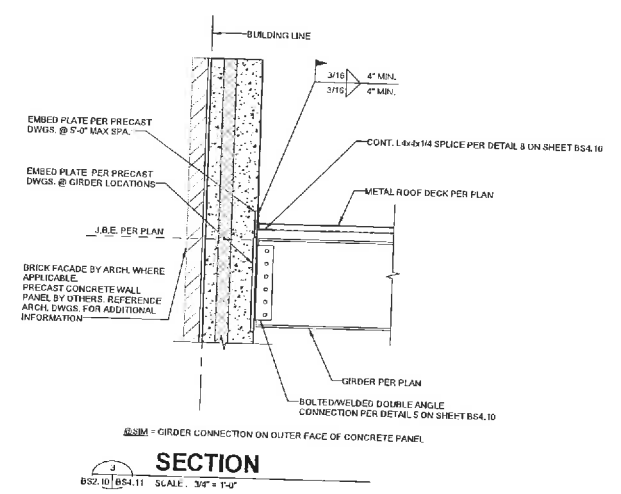
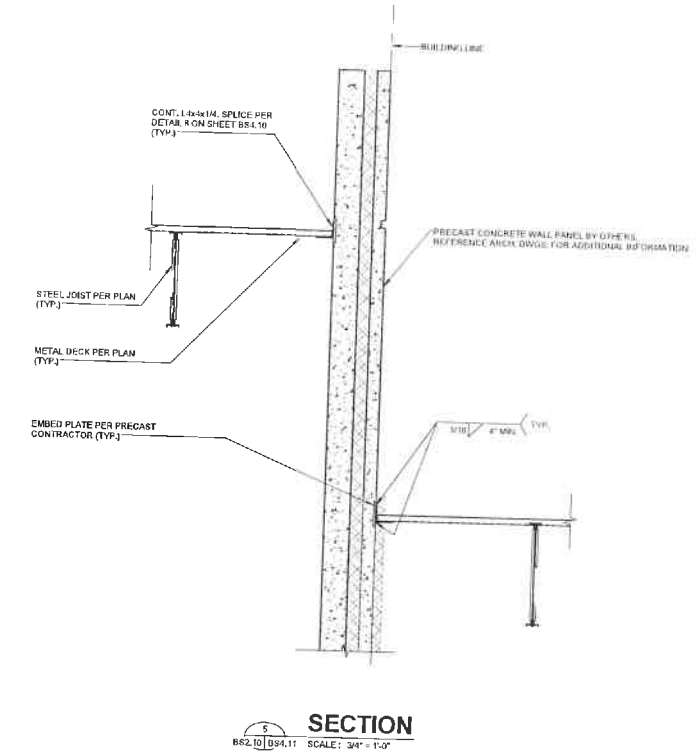
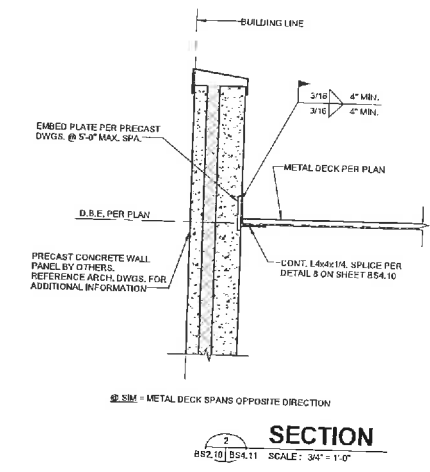
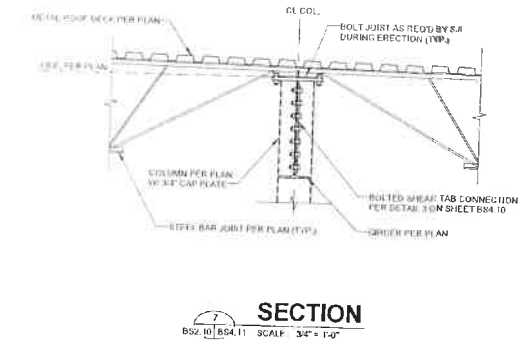
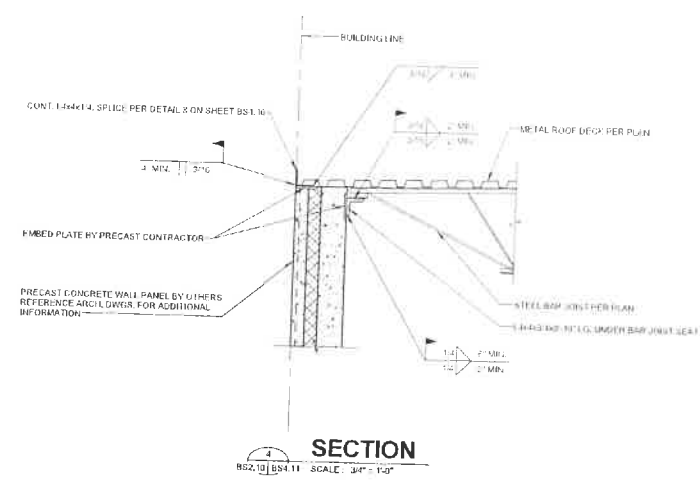
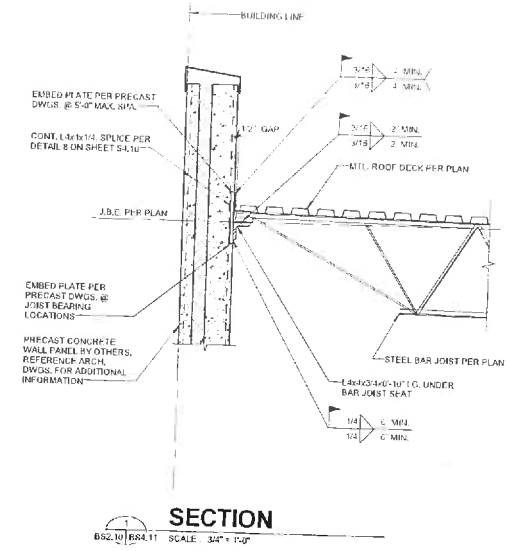


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|  5601 Renner Boulevard Lenexa, Kansas 66219 913.452.1400 www.gbaa.org | | NOT FOR CONSTRUCTION | | |
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| 2 | Author | |
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| 4 | Drawn By | |
| 5 | Checked By | |
| 6 | Date | |

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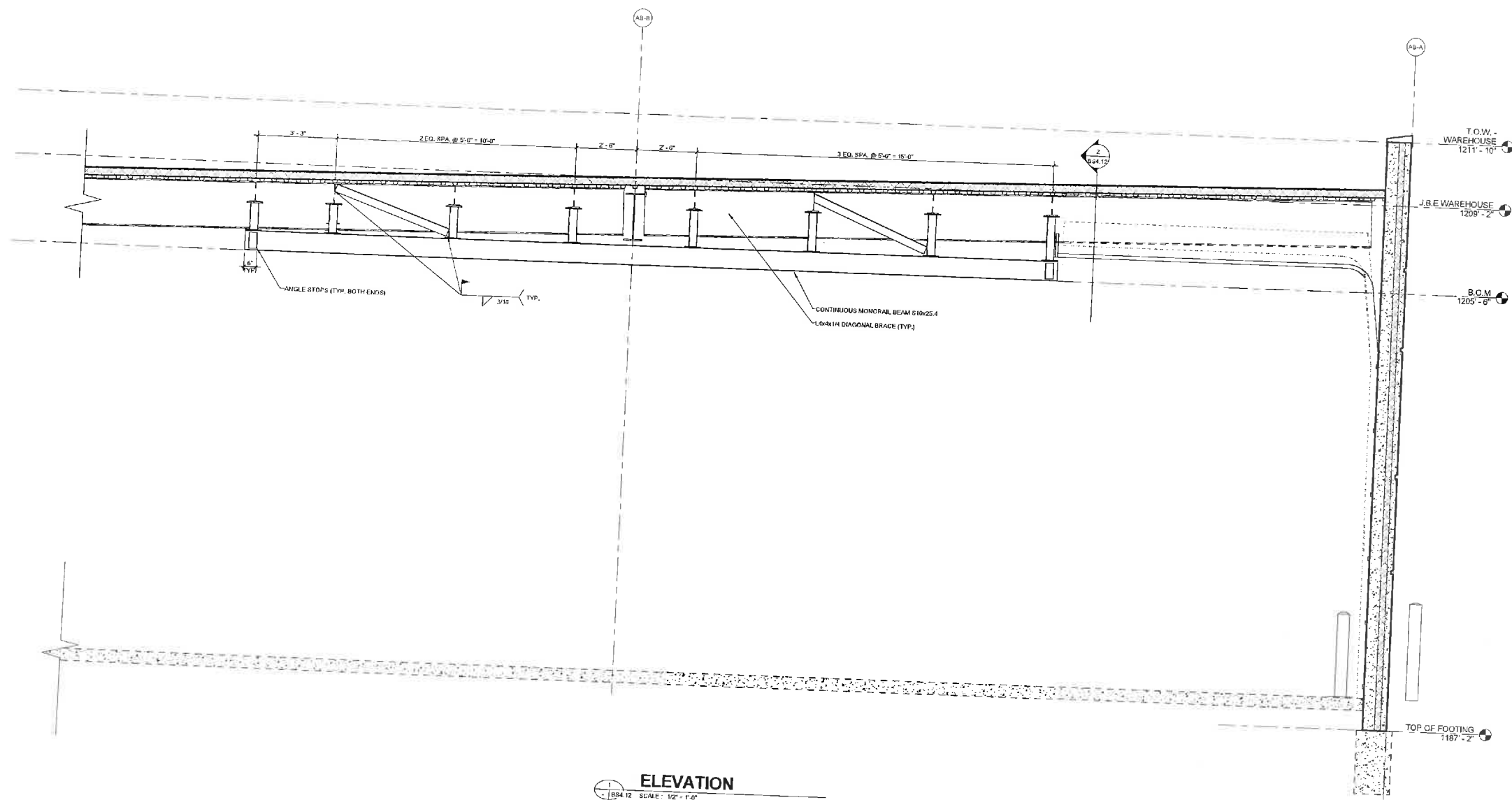
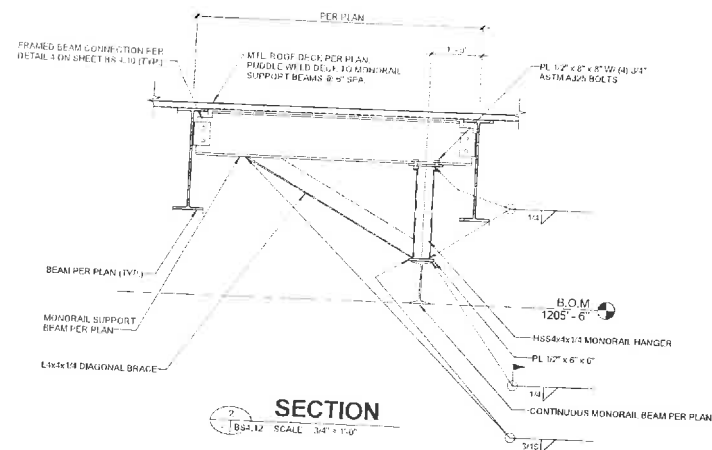
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001 - ADMINISTRATION BUILDING
ROOF FRAMING SECTIONS & DETAILS

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2014-087-001-BS4.11



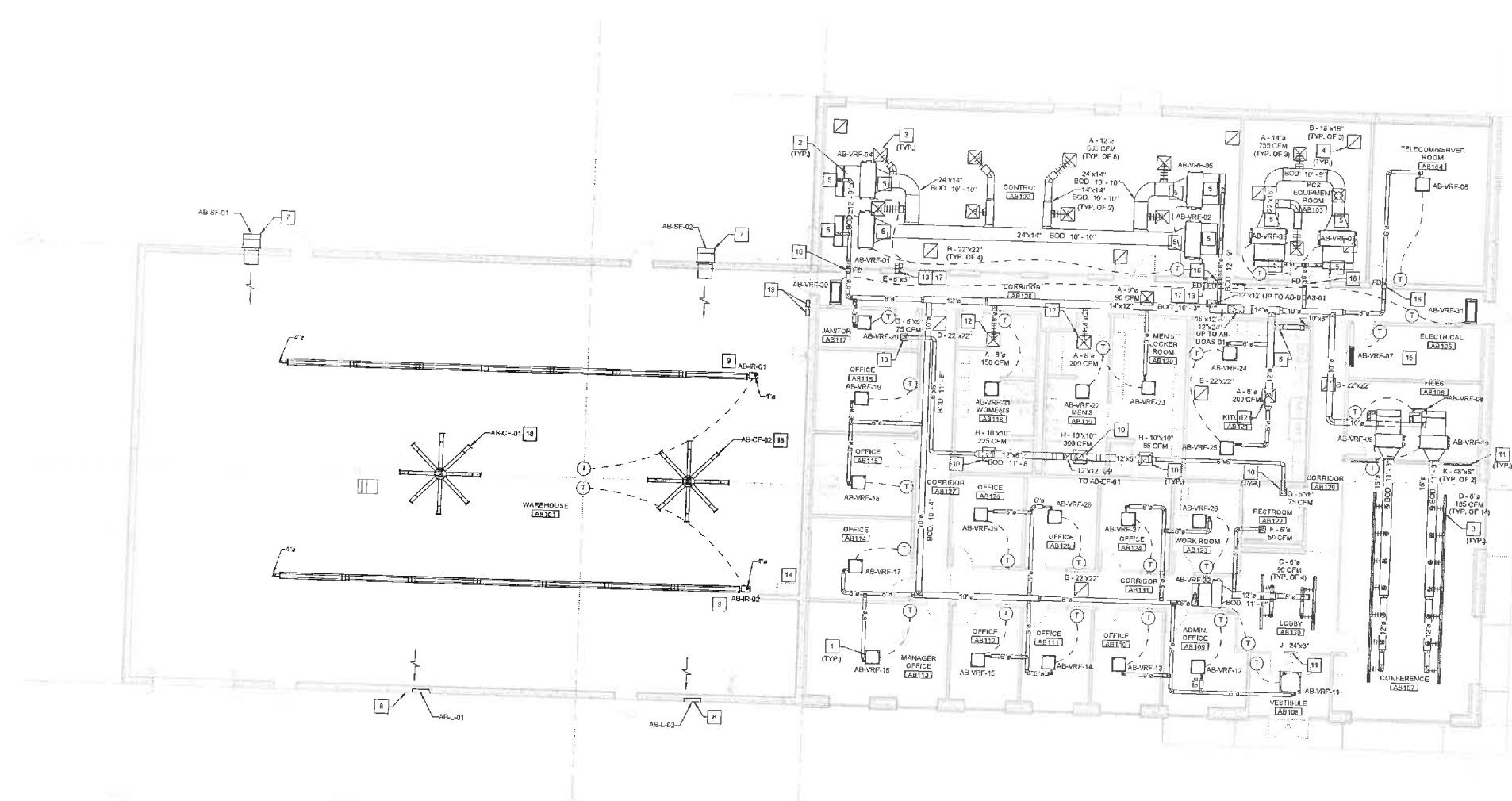
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DRAWING NUMBER
2014-087-001-BM0.00



MECHANICAL HVAC FIRST FLOOR PLAN
 1/8" = 1'-0" SCALE

- GENERAL NOTES**
1. ALL RETURN AND EXHAUST DUCTS TO WALLS AND SUPPLY AND OUTSIDE AIR DUCTS TO ROOFS SHALL HAVE MANUAL BALANCING DAMPERS INSTALLED IN AN ACCESSIBLE LOCATION FOR DAMPERS THAT MUST BE PLACED ABOVE HARD CEILING ACCESSORIES SHALL BE INSTALLED TO ADJUST DAMPERS.
 2. DISMATE DUCT PER SPECIFICATION SECTION 23.01.2. DUCT INSULATION.
 3. REFERENCE SHEET BM1.11 FOR MECHANICAL PIPING PLAN.
 4. REFERENCE SHEET BM1.12 FOR MECHANICAL DUCTS.
 5. REFERENCE SHEETS BM1.01 AND BM1.02 FOR MECHANICAL SCHEDULES.
 6. REFERENCE SHEETS BM1.01 AND BM1.02 FOR MECHANICAL CONTROLS DRAWINGS.
 7. REFERENCE SHEET BM1.03 FOR DEDICATED OUTDOOR AIR SYSTEM FLOW DIAGRAM.

- CONSTRUCTION NOTES**
1. FURNISH AND INSTALL VRF SYSTEM INCLUDING CASSETTE. MAKE CONNECTION WITH OUTSIDE AIR DUCT AND ROUTE AS SHOWN TO AB-04.01 ON ROOF. REFERENCE SHEET BM1.11 FOR CONNECTION TO REFRIGERANT PIPING SYSTEM. REFERENCE SHEET BM1.03 FOR VRF TERMINAL UNIT SCHEDULE.
 2. FURNISH AND INSTALL VRF SYSTEM DUCTED INDOOR UNIT. MAKE CONNECTION WITH SUPPLY DUCT AND ROUTE AS SHOWN TO SUPPLY UP USERS. MAKE CONNECTION FROM MAIN DUCT TO OUTSIDE AIR DUCT. REFERENCE SHEET BM1.11 FOR CONNECTION TO REFRIGERANT PIPING PLAN. REFERENCE SHEET BM1.03 FOR VRF TERMINAL UNIT SCHEDULE.
 3. FURNISH AND INSTALL SUPPLY AIR DIFFUSER. REFERENCE SHEET BM1.01 FOR AIR TERMINAL SCHEDULE.
 4. FURNISH AND INSTALL RETURN AIR GRILLE. REFERENCE SHEET BM1.01 FOR RETURN AIR BOOT DETAIL. REFERENCE SHEET BM1.01 FOR AIR TERMINAL SCHEDULE.
 5. FURNISH AND INSTALL MOTORIZED DAMPER IN DUCT. REFERENCE VRF SYSTEM CONTROL DIAGRAM SHEET BM1.01.
 6. FURNISH AND INSTALL 10" x 8" EXHAUST AIR DUCT UP TO GROUND ON ROOF. MAKE CONNECTION TO EXHAUST HOOD. REFERENCE SHEET BM1.02 FOR KITCHEN HOOD CONTROL DIAGRAM.
 7. FURNISH AND INSTALL SUPPLY FAN AT 5" ON CENTER ABOVE FINISH FLOOR. REFERENCE SHEET BM1.01 FOR SUPPLY FAN DETAIL. REFERENCE SHEET BM1.03 FOR SUPPLY FAN SCHEDULE. REFERENCE SHEET BM1.02 FOR SUPPLY FAN CONTROL DIAGRAM.
 8. FURNISH AND INSTALL RELIEF LOUVER. COLOR TO BE SELECTED BY ARCHITECT. FURNISH LOUVER WITH GRAVITY BACKDRAFT DAMPER MODEL 80242 WITH EXTRUDED ALUMINUM FRAME AND BLADES. DAMPER SHALL MATCH LOUVER SIZE. REFERENCE SHEET BM1.03 FOR RELIEF LOUVER DETAIL. REFERENCE SHEET BM1.03 FOR LOUVER SCHEDULE.
 9. FURNISH AND INSTALL INFRARED HEATER PER MANUFACTURER RECOMMENDATIONS. INSTALL THERMOSTAT PROVIDED WITH HEATER. REFERENCE SHEET BM1.03 FOR INFRARED HEATER DETAIL. ROUTE COMBUSTION EXHAUST AIR DUCT FROM INFRARED HEATER UP THROUGH ROOF. REFERENCE SHEET BM1.02 FOR CONTINUATION. REFERENCE SHEET BM1.03 FOR INFRARED HEATER SCHEDULE. REFERENCE SHEET BM1.03 FOR INFRARED HEATER CONTROL DIAGRAM.
 10. FURNISH AND INSTALL EXHAUST GRILLE. REFERENCE SHEET BM1.01 AIR TERMINAL SCHEDULE.
 11. FURNISH AND INSTALL TRANSFER GRILLE AT 12" ABOVE FINISH FLOOR. REFERENCE SHEET BM1.01 AIR TERMINAL SCHEDULE.
 12. FURNISH AND INSTALL OUTSIDE AIR DIFFUSER. MAKE CONNECTION TO DEDICATED OUTDOOR AIR SYSTEM. REFERENCE SHEET BM1.01 FOR AIR TERMINAL SCHEDULE.
 13. FURNISH AND INSTALL TRANSFER GRILLE ON BOTH SIDES OF WALL AT 12" ABOVE FINISH FLOOR.
 14. FURNISH AND INSTALL VENTILATION MODEL S110 PORTABLE WELDING VENT CAPTURE SYSTEM WITH MOVABLE 6" x 18" FINE ARM.
 15. FURNISH AND INSTALL VRF SYSTEM WALL MOUNTED UNIT. REFERENCE SHEET BM1.11 FOR CONNECTION TO REFRIGERANT PIPING SYSTEM. REFERENCE SHEET BM1.03 FOR VRF TERMINAL UNIT SCHEDULE. FURNISH WALL MOUNTED UNIT WITHIN 48" OF CONDENSATE REMOVAL PLANT WITH POWER CABLE VENTILATOR TUBE. ANTI-SUCK DEVICE INLET HOSE AND DRAIN CONNECTOR KIT.
 16. FURNISH AND INSTALL RUSHIN 6" HOUSING FIRE DAMPER MODEL FDR2. DAMPER SHALL BE 1.5 HOUR DYNAMIC UL555 RATED. CURTAIN TYPE. DAMPERS SHALL BE OUT OF THE AIR STRIP.
 17. FURNISH AND INSTALL RUSHIN 6" x 6" FIRE DAMPER MODEL DR2. DAMPER SHALL BE 1.5 HOUR DYNAMIC UL555 RATED. CURTAIN TYPE. DAMPERS SHALL BE OUT OF THE AIR STRIP.
 18. FURNISH AND INSTALL BIG ASS FAN MODEL PVX-12 OR APPROVED EQUAL. FAN SHALL BE 12" DIAMETER WITH 10" EXTRUDED ALUMINUM ARTFOIL BLADES WITH MOTOR AND FACTORY PROGRAMMED AND A 15 FOOT POWER CORD WITH NEMA 1-16-20P TWIST-LOCK PLUG. MOTOR SHALL BE 3/4 HP VOLT 3-PHASE. AG INDUCTION TYPE INVERTER. IEC WITH IP22 NEMA CLASSIFICATION. NEMA 50C STANDARD FRAME AND CABLE AND UPPER TEMPERATURE SENSOR. INSTALL PER MANUFACTURER RECOMMENDATIONS.
 19. FURNISH AND INSTALL BIG ASS FAN SMART SENSE WALL CONTROLLER AND AUXILIARY CONTROLLER. CONTROLLERS SHALL SERVO DOWN FANS AB-01-01 AND AB-01-02. CONTROLLERS SHALL INCLUDE 16-30 VDC PILOT RELAY FOR 24VDC FIRE CONTROL PANEL. INTEGRATION PROVIDED. 16 FOOT CAT5 CABLE TO BOTH FANS. WALL CONTROLLER SHALL BE PROVIDED WITH CLASS B AC ADAPTER POWER CORD.

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001 - ADMINISTRATION BUILDING
 MECHANICAL HVAC FIRST FLOOR PLAN

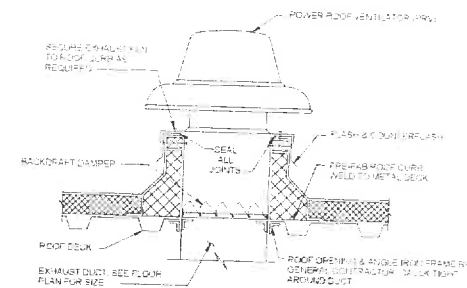
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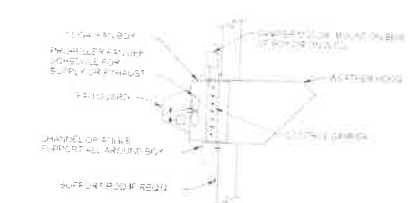
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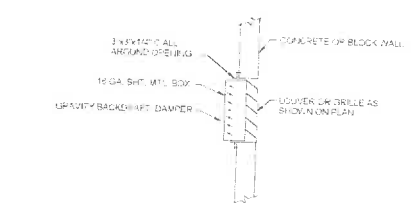
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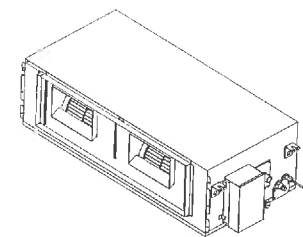
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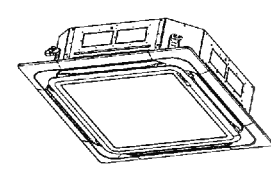
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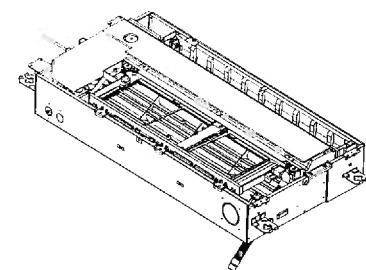
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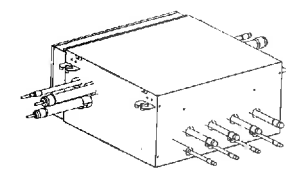
VRF DUCTED UNIT DETAIL
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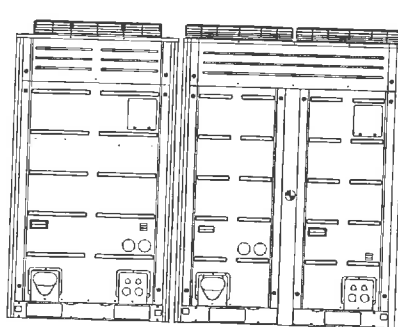
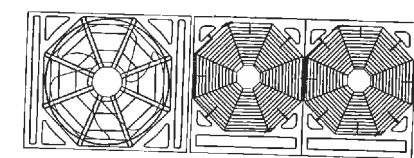
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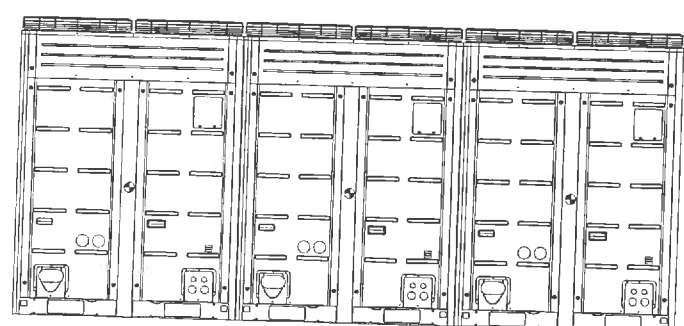
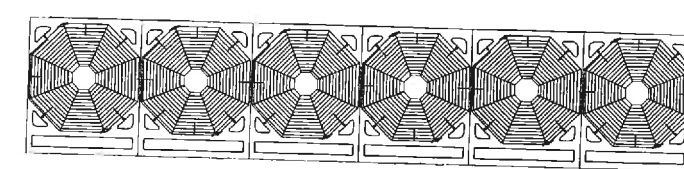
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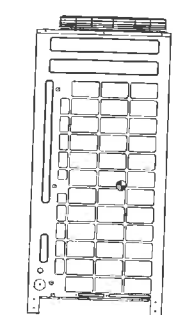
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VRF OUTDOOR UNIT ODU-02 DETAIL
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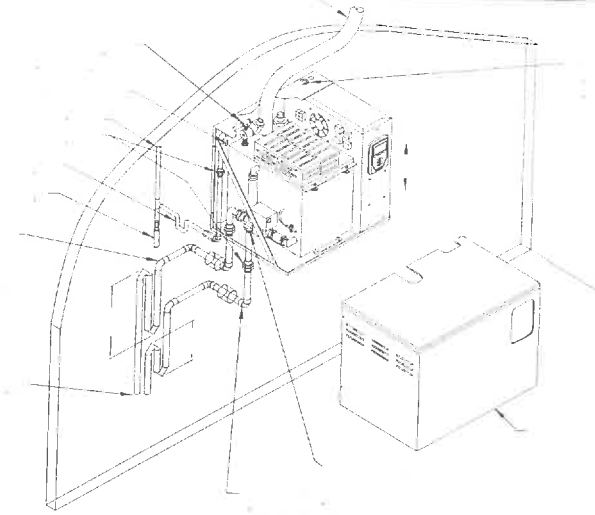


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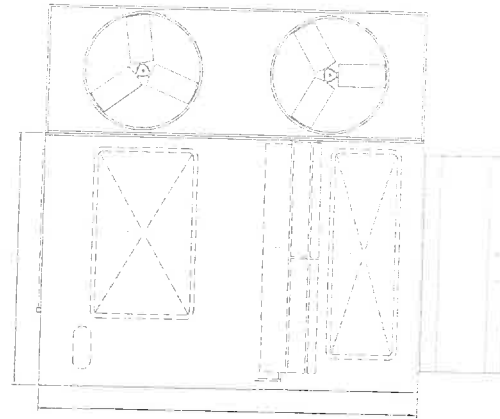


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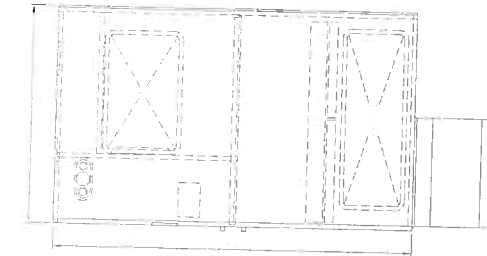
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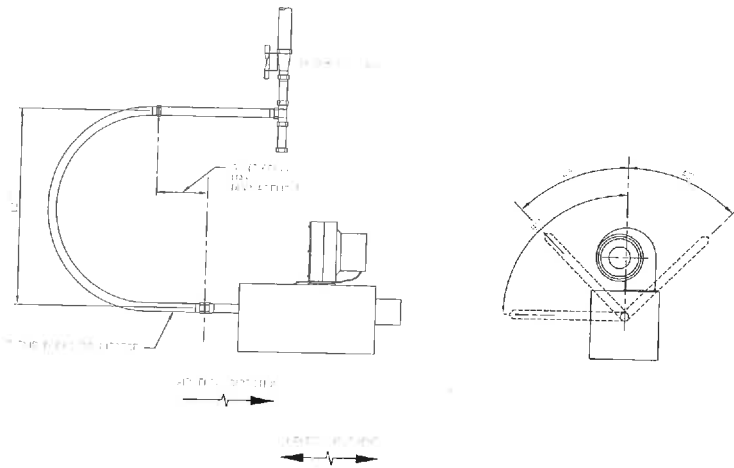
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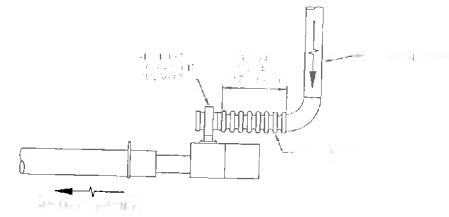
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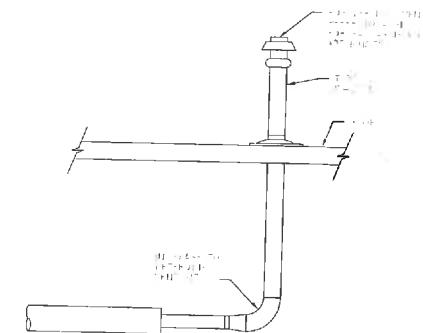
AB-DOAS-02 DETAIL



INFRARED HEATER GAS CONNECTION DETAIL



INFRARED HEATER OUTSIDE AIR DETAIL



INFRARED HEATER VENT DETAIL

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001 - ADMINISTRATION BUILDING
 MECHANICAL DETAILS

DRAWING NUMBER
 2014-087-001-BM3.01

[illegible]

2. FURNISH WITH TOWLED EXHAUST FAN MINIMUM 24" HIGH INSULATED FACTORY ROOF CURB HAVE GUARD, MODULATING NATURAL GAS HEAT VALVE ASSEMBLY, SUPPLY AND RETURN AIR SMOKE DETECTOR, DIGITAL SCROLL COMPRESSORS R410A REFRIGERANT, HOT GAS EXHAUST COIL, 115V CONVENIENCE OUTLET, UNIT MOUNTED DISCONNECT SWITCH, MOTOR STARTER AND STAINLESS STEEL HEAT EXCHANGER.

3. FURNISH WITH MINIMUM 24" HIGH INSULATED FACTORY ROOF CURB, TWO-STAGE NATURAL GAS HEAT VALVE ASSEMBLY, SUPPLY SMOKE DETECTOR, 115V CONVENIENCE OUTLET, UNIT MOUNTED DISCONNECT SWITCH, MOTOR STARTER AND STAINLESS STEEL HEAT EXCHANGER.

1. DERATED TOTAL CAPACITIES SHOWN ARE AT SUMMER AMBIENT TEMPERATURES OF 105°F AND WINTER AMBIENT TEMPERATURE OF -10°F.
2. FURNISH UNIT WITH OPTIONAL VENTILATION KIT PTVK410 AND PTVK420.
3. FURNISH UNIT WITH OPTIONAL VENTILATION KIT PTVK430.
4. FURNISH UNIT WITH UNIT MOUNTED DISCONNECT SWITCH.

2014-087-001-BM4.00

| VARIABLE REFRIGERANT FLOW OUTDOOR UNIT SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------------------|--------------------------------------|----------------|---------------------------------------|--------------|----------------------|----------------------|-----------------------|------------|----------------------|------------|-------------|------|-----------------|------|-------------------|--------------|-------|-----------------------------------|-----------------|-----|---------------------|--------------|--------------|-------|-------------|-----|
| MARK | UNIT TYPE | TOTAL CAPACITY DERATED DATA CAPACITY | | TOTAL POWER INPUT DERATED POWER INPUT | | INDOOR TEMPERATURES | | | | OUTDOOR TEMPERATURES | | | | CONDENSER | | FANS | | | | ELECTRICAL DATA | | SOUND PRESSURE (dB) | WEIGHT (LBS) | MANUFACTURER | MODEL | REMARKS | |
| | | COOLING (Tons) | HEATING (Tons) | COOLING (kW) | HEATING (kW) | SUMMER DRY-BULB (°F) | SUMMER WET-BULB (°F) | AVERAGE DRY-BULB (°F) | WATER (°F) | REFRIG (°F) | WATER (°F) | REFRIG (°F) | TYPE | QUANTITY | TYPE | MOTOR OUTPUT (kW) | FAN QUANTITY | MOTOR | DRIVE | VOLTS | PH | | | | | | |
| AB-0001 | TABLE FRAME HEAT RECOVERY UNIT | 2440 35.1 | 52.0 7.3 | 247 24.6 | 25.1 7.3 | 15 | 64 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | ASSISTED SCROLL | 1 | PROPELLER | 0.5 | 0 | BRUSHLESS ELECTRICALLY CONTROLLED | DIRECT | 480 | 3 | 64 | 1894 | US | AB-0001-001 | 1.2 |
| AB-0002 | DOUBLE FRAME HEAT PUMPS | 2150 35.9 | 109.0 17.4 | 15 11.2 | 10.1 15.4 | 15 | 64 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | ASSISTED SCROLL | 1 | PROPELLER | 0.5 | 0 | BRUSHLESS ELECTRICALLY CONTROLLED | DIRECT | 480 | 3 | 62 | 1058 | US | AB-0002-001 | 1.2 |
| NOTES: | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| LOUVER SCHEDULE | | | | | | | |
|-----------------|-------------|------------|--------|-------------|---------------|--------------|---------|
| MARK | AREA SERVED | DIMENSIONS | | FRAME DEPTH | PRESSURE DROP | MANUFACTURER | MODEL |
| | | WIDTH | HEIGHT | | | | |
| AB-L-01 | WAREHOUSE | 30" | 24" | 4.75" | 0.05 inwg | Stalco | EL-1000 |
| AB-L-02 | WAREHOUSE | 30" | 24" | 4.75" | 0.05 inwg | Stalco | EL-1000 |

NOTES:
1. FURNISH WITH 1/4" ALUMINUM BIRD SCREEN IN REMOVABLE FRAME.
2. LOUVER SHALL BE EXTRUDED ALUMINUM GRABRIT, STATIONARY TYPE.

| FAN SCHEDULE | | | | | | | | | | | | |
|--------------|-------------|--------------------|----------|-----------|---------|-----------------|-------|--------------------|------------------|--------------------|----------|--------------|
| MARK | AREA SERVED | FAN LOCATION | CFM | TOTAL SP | FAN RPM | OUTLET VELOCITY | MOTOR | | | | FAN DATA | |
| | | | | | | | HP | ELECTRICAL VOLTAGE | ELECTRICAL PHASE | FAN TYPE | DRIVE | MANUFACTURER |
| AB-F-01 | OFFICE | ROOF | 750 CFM | 0.50 inwg | 904 | 115 V | 1.5 | 115 V | 1 | ALUMINUM | DIRECT | COOK |
| AB-F-02 | WAREHOUSE | WEST EXTERIOR WALL | 2500 CFM | 0.25 inwg | 1026 | 115 V | 1.5 | 115 V | 1 | ALUMINUM PROPELLER | DIRECT | COOK |

NOTES:
1. FURNISH WITH MOTOR STARTER, DISCONNECT SWITCH, WEATHER HOOD, MOTORIZED CENTER PIVOT DAMPER, 115V WALL COLLAR AND GROUNDING LAMP MOTOR SIDE.
2. FURNISH WITH MOTOR STARTER, DISCONNECT SWITCH, ALUMINUM BIRD SCREEN, AND SLOPED (1/4" PER FOOT) ALUMINUM RIB CURB WITH WOOD NAILER.

| AIR TERMINAL SCHEDULE | | | | | | | | | | | | |
|-----------------------|---|-----------|-------------|---------------|--------------------|----------|----------------|---------------|---------------|------------------|--------------|---------|
| TAG | TYPE | NECK SIZE | MODULE SIZE | PRESSURE DROP | NECK CRITERIA (in) | MATERIAL | FINISH | HANGER TYPE | BLADE SPACING | BLADE DEFLECTION | MANUFACTURER | MODEL |
| | | | | | | | | | | | | |
| A | High Performance Square Cone Diffuser | NOTE 2 | 24" x 24" | 0.05 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | TMS-AA |
| B | Lowest Square Diffuser for Lay-In Ceiling | NOTE 2 | 24" x 24" | 0.07 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | TDC-AA |
| C | High Capacity Linear Slot Diffuser | | 8" x 48" | 0.05 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | PL-15-1 |
| D | High Capacity Linear Slot Diffuser | | 8" x 48" | 0.08 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | PL-15-1 |
| E | Round Ceiling with 35 Degree Deflection | | 6" x 6" | 0.05 inwg | 25 | Aluminum | STANDARD WHITE | SURFACE MOUNT | 3/4" | 30.00" | TAB | RL-15-1 |
| F | High Performance Square Cone Diffuser | | 6" x 6" | 0.07 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | 350FL |
| G | Lowest Square Diffuser for Lay-In Ceiling | | 6" x 6" | 0.05 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | TDC-AA |
| H | Lowest Square Diffuser for Lay-In Ceiling | | 10" x 10" | 0.05 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | TDC-AA |
| J | High Capacity Linear Slot Diffuser | | 3" x 24" | 0.05 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | PL-30-1 |
| K | High Capacity Linear Slot Diffuser | | 6" x 48" | 0.08 inwg | 25 | Aluminum | STANDARD WHITE | LAY-BU | | | TAB | PL-30-1 |

NOTES:
1. SHALL BE COMPATIBLE WITH ARMSTRONG TECHZONE CEILING SYSTEM.
2. REFERENCE PLANS FOR NECK SIZE.

| STEAM GENERATOR AND DISPERSION SCHEDULE | | | | | | | | | | | | | | |
|---|------|-------------|------|------------|----------------|---------------|---------------|--------------|------------------------|-----------------|------------------|---------------|--------------|---------------------|
| MARK | EAT | ENTERING RH | LAT | LEAVING RH | AIR FLOW (CFM) | OA PERCENTAGE | LOAD (BTU/Hr) | CURRENT DRAW | MANUFACTURER | GENERATOR MODEL | DISPERSION MODEL | TUBE QUANTITY | TUBE SPACING | ABSORPTION DISTANCE |
| | | | | | | | | | | | | | | |
| AB-HU-01 | 72 F | 64 | 74 F | 50% | 1200 | 100% | 53.2 | 25 A | DR-H-STEAM Corporation | VAPORMIST 21-1 | RAPIDSORB-13" | 2 | 12" | 2' |

NOTES:
1. FURNISH UNIT WITH OPTIONAL WALL BRACKET, DISCONNECT SWITCH, 2" ORISTEEM HOSE, END-OF-SEASON DRAIN, 304 STAINLESS STEEL TANK WITH INSULATION, VAPOR LOGIC HUMIDIFIER CONTROLLER WITH 88R OPERATING MODE, RACNET INTEROPERABILITY, KEYPAD DISPLAY WITH FIVE FOOT CABLE, INPUT SIGNAL FOR ROOM MOUNTED HUMIDITY TRANSMITTER, ELECTRIC MODULATING HIGH LIMIT HUMIDISTAT, ELECTRIC PRESSURE AIRFLOW PROTECT SWITCH, FACTORY MOUNTED CONTROL CABINET AND ROOM HUMIDITY TRANSMITTER.
2. CONTRACTOR SHALL ADJUST WATER SKIMMER TO ACTIVATE AS OFTEN AS POSSIBLE TO REDUCE SCALE.
3. FURNISH AND INSTALL CONDENSATE DRAIN AND TRAP ON HUMIDIFIER HEADER.

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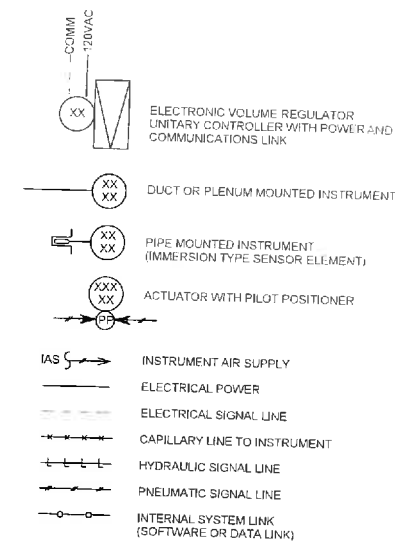
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| DATE | DATE | DATE |
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| 001 - ADMINISTRATION BUILDING MECHANICAL HVAC SCHEDULES | | |
| DRAWING NUMBER 2014-087-001-BM4.01 | | |

SCHEMATIC DRAWING SYMBOLOGY

SCHEMATIC DRAWING SYMBOLOGY

HVAC INSTRUMENTATION FLOW DIAGRAM SYMBOLS



CONTROL DEVICE LOCATIONS ABBREVIATIONS

| | |
|----|-------------------|
| CW | CHILLED WATER |
| EA | EXHAUST AIR |
| EF | EXHAUST FAN |
| HU | HUMIDIFIER |
| MA | MIXED AIR |
| MI | MASTER INTERLOCK |
| OA | OUTSIDE AIR |
| PH | PREHEAT |
| RA | RETURN AIR |
| RF | RETURN FAN |
| RM | ROOM |
| SA | SUPPLY AIR |
| SF | SUPPLY FAN |
| SS | SYSTEM STOP/START |

| FACILITIES CONTROLS STANDARD INSTRUMENT IDENTIFICATION AND LOOP NUMBERING | | | | | | | | | | | | | | | | | |
|---|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| ABBREV. | DESCRIPTION | OA | MA | PH | CW | HU | SF | SA | RA | EA | RF | EF | MI | SS | RM | | |
| CR | CONTROL RELAY | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| IS | CURRENT SWITCH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| IP | CURRENT TO PRESSURE TRANSDUCER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FCZ | FLOW CONTROL ACTUATOR | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FC | FLOW CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FE | FLOW ELEMENT | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FIC | FLOW INDICATING CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FSH | FLOW SWITCH HIGH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FSL | FLOW SWITCH LOW | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| FT | FLOW TRANSMITTER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| HS | HAND OPERATED SWITCH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| LCZ | LEVEL CONTROL ACTUATOR | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| MCZ | LEVEL CONTROL ACTUATOR | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| MC | MOISTURE CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| ME | MOISTURE ELEMENT | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| MIC | MOISTURE INDICATING CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| MSH | MOISTURE SWITCH HIGH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| MSL | MOISTURE SWITCH LOW | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| MT | MOISTURE TRANSMITTER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PCZ | PRESSURE CONTROL ACTUATOR | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PC | PRESSURE CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PDSH | PRESSURE DIFFERENTIAL SWITCH HIGH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PDSL | PRESSURE DIFFERENTIAL SWITCH LOW | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PDT | PRESSURE DIFFERENTIAL TRANSMITTER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PIC | PRESSURE INDICATING CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PSH | PRESSURE SWITCH HIGH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PSL | PRESSURE SWITCH LOW | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| PT | PRESSURE TRANSMITTER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| NS | SMOKE DETECTOR | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| SV | SOLENOID VALVE | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TCZ | TEMPERATURE CONTROL ACTUATOR | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TC | TEMPERATURE CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TE | TEMPERATURE ELEMENT | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TIC | TEMPERATURE INDICATING CONTROLLER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TSH | TEMPERATURE SWITCH HIGH | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TSL | TEMPERATURE SWITCH LOW | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TT | TEMPERATURE TRANSMITTER | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |
| TV | THERMOWELL | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 20 | | |

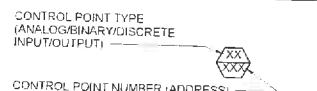
CONTROL DEVICE LOCATIONS ABBREVIATIONS

| | | |
|------|------------------|-------------------|
| ROOM | SUPPLY AIR | SYSTEM STOP/START |
| RM | SUPPLY AIR | SYSTEM STOP/START |
| MA | MASTER INTERLOCK | OUTSIDE AIR |
| PH | PREHEAT | RETURN AIR |
| RF | RETURN FAN | RETURN FAN |
| EA | EXHAUST AIR | EXHAUST FAN |
| EF | EXHAUST FAN | EXHAUST FAN |
| MA | MIXED AIR | MIXED AIR |
| CW | CHILLED WATER | CHILLED WATER |
| EA | EXHAUST AIR | EXHAUST AIR |
| EF | EXHAUST FAN | EXHAUST FAN |
| MA | MIXED AIR | MIXED AIR |

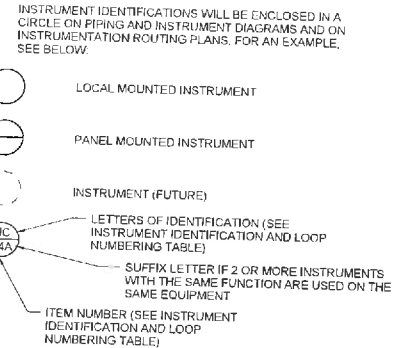
SCHEMATIC DRAWING SYMBOLOGY

(CONTINUED)

SPECIAL SYMBOLS AND COMPONENT ABBREVIATIONS FOR HVAC INSTRUMENTATION FLOW DIAGRAMS



CONTROLLER DESIGNATION



PLAN DRAWING SYMBOLOGY

- UNITARY CONTROLLER
- JUNCTION BOX
- ELECTRIC / ELECTRONIC INSTRUMENT OR CONTROL DEVICE
- PNEUMATIC INSTRUMENT OR CONTROL DEVICE
- #18 AWG TWISTED SHIELDED PAIR IN CONDUIT, QUANTITY INDICATED.
- #18 AWG TWISTED PAIR IN CONDUIT, QUANTITY INDICATED.
- #14 AWG SINGLE CONDUCTOR (TYPE THHN) IN CONDUIT, QUANTITY INDICATED.
- #12 AWG SINGLE CONDUCTOR (TYPE THHN) IN CONDUIT, QUANTITY INDICATED.
- COMMUNICATIONS CABLE BETWEEN UNITARY CONTROLLERS ON NETWORK TO BE #18 AWG TWISTED SHIELDED PAIR W/B BLUE JACKET IN CONDUIT, QUANTITY INDICATED.
- COMMUNICATIONS CABLE BETWEEN ICP's TO BE (3) INDIVIDUAL #18 AWG TWISTED SHIELDED PAIRS W/B BLUE JACKETS IN CONDUIT, QUANTITY INDICATED.
- CABLE BETWEEN UNITARY CONTROLLERS AND SOLID/STATS TO BE #18 AWG SIX SHIELDED CONDUCTORS IN CONDUIT, QUANTITY INDICATED. CABLE BETWEEN UNITARY CONTROLLERS AND TEG/STATS TO BE 6C TELEPHONE CABLE W/ PLUG-IN JACK IN CONDUIT, QUANTITY INDICATED.

PLAN DRAWING SYMBOLOGY

(CONTINUED)

UNLESS OTHERWISE NOTED ON DRAWINGS THE FOLLOWING WIRE COLOR CODE IS TO BE USED FOR THE INSTRUMENTATION CONTROL SYSTEM.

POWER AND DIGITAL CONTROL WIRING

| | |
|--------------|-------------------------|
| BLACK | AC LINE |
| WHITE | AC COMMON |
| GREEN | AC GROUND |
| BROWN/BLACK | 24VAC LINE |
| BROWN/WHITE | 24VAC COMMON |
| BROWN/GREEN | 24VAC GROUND |
| RED | SAFETY INTERLOCK WIRING |
| PURPLE | DIGITAL INPUT WIRING |
| YELLOW | DIGITAL OUTPUT WIRING |
| RED/BLACK | 5VDC |
| RED/WHITE | 5VDC+ |
| ORANGE/BLACK | 15VDC+ |
| ORANGE/WHITE | 15VDC- |
| ORANGE/GREEN | 15VDC GROUND |
| BLUE/BLACK | 24VDC |
| BLUE/WHITE | 24VDC+ |

ANALOG SIGNAL WIRING

| | |
|----------------|--------|
| CLEAR OR WHITE | 24VDC- |
| BLACK | 24VDC+ |

FOR TUBING RUNS, CROSS SECTIONAL AREA OF TUBING INSTALLED IN CONDUIT SHALL NOT EXCEED 50% OF THE TOTAL CROSS SECTIONAL AREA OF CONDUIT.

- 1/4" FLEXIBLE TUBING IN CONDUIT, QUANTITY INDICATED. MAX. NUMBER PER CONDUIT SIZE AS FOLLOWS:

| CONDUIT SIZE | 1/4" 1/4L |
|--------------|-----------|
| 1/2" | 2 |
| 3/4" | 5 |
| 1" | 6 |
| 1 1/4" | 13 |
| 1 1/2" | 18 |

- 1/4" O.D. HD COPPER TUBING, QUANTITY INDICATED

GENERAL CONSTRUCTION NOTES:

- FURNISH AND INSTALL CONTROLS REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM. CONTROL SYSTEM SHALL CONSIST OF SENSORS, INDICATORS, ACTUATORS, FINAL CONTROL ELEMENTS, INTERFACE EQUIPMENT, OTHER APPARATUS, AND ACCESSORIES TO CONTROL MECHANICAL SYSTEMS.
- ALL INSTRUMENTATION CONDUIT TO BE ELECTRICAL METALLIC TUBING. IN ALL AREAS EXCEPT WHERE SPECIFICALLY INDICATED THAT INTERMEDIATE METAL CONDUIT IS REQUIRED.
- EXCEPT WHERE NOTED OTHERWISE, CONCEAL CONDUITS IN FINISHED AREAS (THOSE AREAS IN BASEMENT AND ON FIRST FLOOR WITH SUSPENDED CEILINGS), WHERE POSSIBLE, FLUSH MOUNT DEVICES. IN FINISHED AREAS, FOR DEVICES (I.e. THERMOSTATS) WHICH CANNOT BE FLUSH MOUNTED, SURFACE MOUNT THE DEVICE AND PROVIDE A BACK BOX WHOSE FACE IS FLUSH MOUNTED WITH FINISHED FACE OF WALL. FOR DEVICES IN UNFINISHED AREAS (I.e. EQUIPMENT ROOMS, PENTHOUSE, MEZZANINES) AND FOR DEVICES WHICH MUST MOUNT ON POURED MASONRY WALLS, SURFACE MOUNT DEVICES AND CONDUIT.
- PROVIDE SEAL FITTINGS IN CONDUITS THAT ENTER CONDITIONED AREAS FROM NON-CONDITIONED AREAS.
- CONTRACTOR IS RESPONSIBLE FOR ALL FLOOR AND WALL PENETRATIONS, FOR CONDUIT RUNS, ETC.

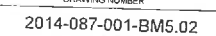
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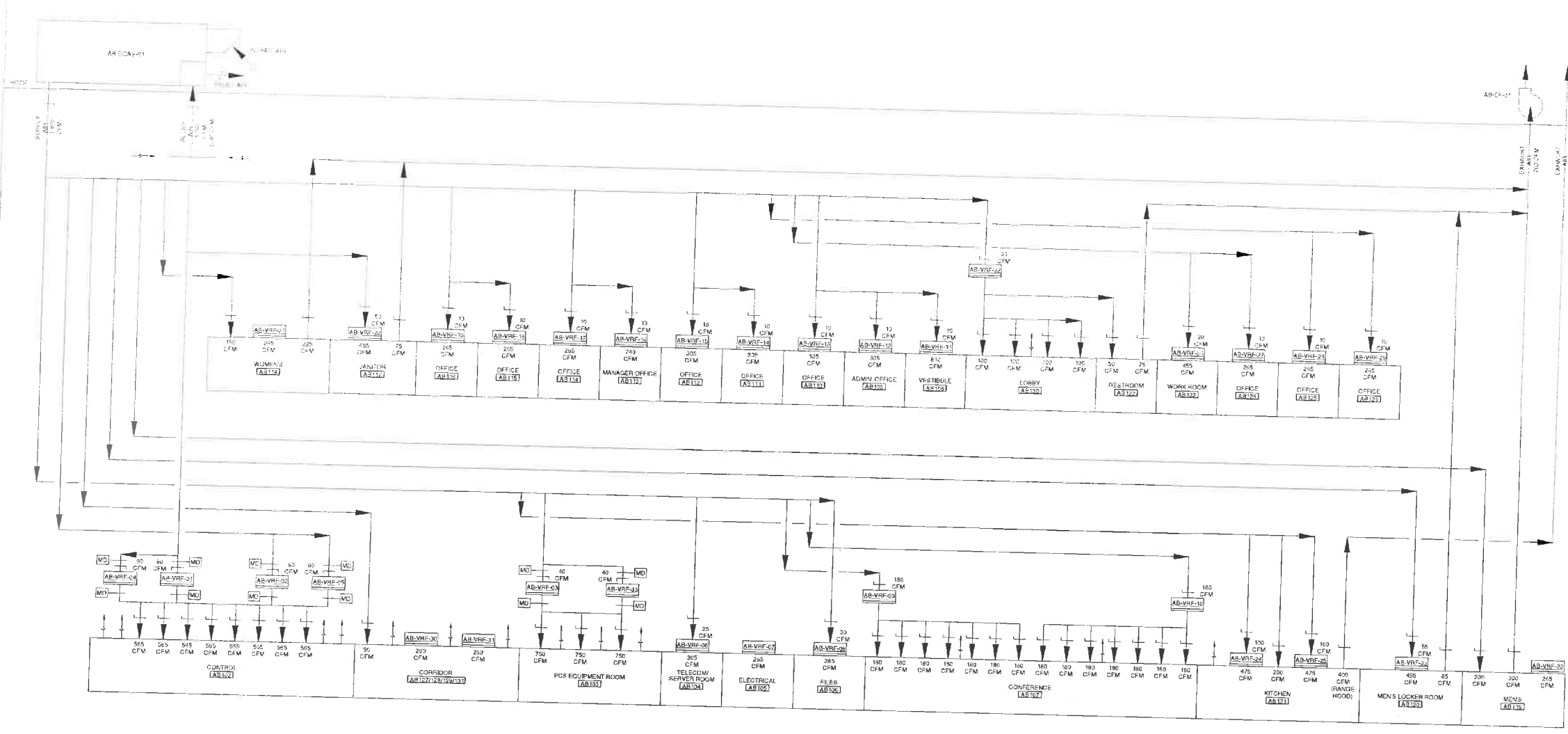
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| DRAWING NUMBER | | |
| 2014-087-001-BM5.00 | | |

2014-087-001-BM5 01





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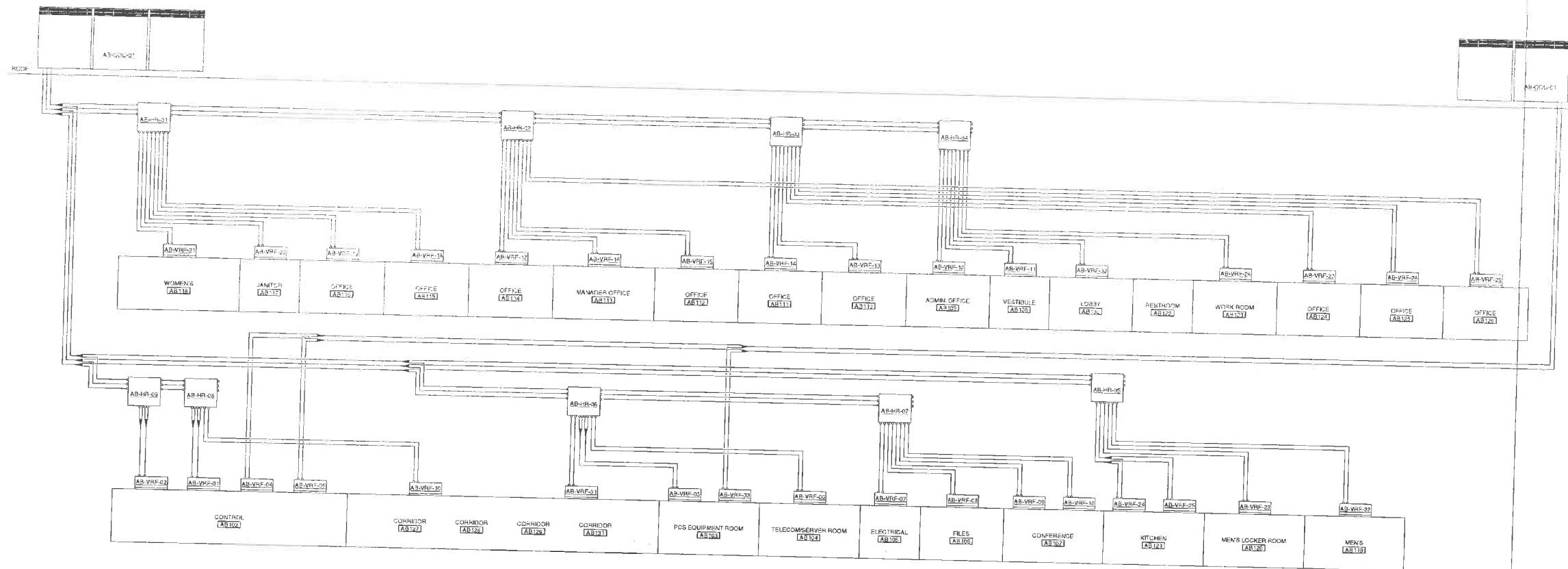
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001 - ADMINISTRATION BUILDING
MECHANICAL HVAC FLOW DIAGRAM

DRAWING NUMBER
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001 - ADMINISTRATION BUILDING
MECHANICAL VRF SYSTEM DIAGRAM

DRAWING NUMBER

2014-087-001-BM6.01



BP2.01
PLUMBING

PLUMBING ABBREVIATIONS

PLUMBING SYMBOLS

| | | | | | | | | | |
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| 1. WATER | 2. SEWER | 3. GAS | 4. VENT | 5. DRAIN | 6. RAIN | 7. CONDENSATE | 8. FIRE | 9. SMOKE | 10. EXHAUST |
| 11. HYDRAULIC | 12. PNEUMATIC | 13. MECHANICAL | 14. ELECTRICAL | 15. TELEPHONE | 16. CABLE | 17. FIBER OPTIC | 18. RADIANT | 19. SOLAR | 20. GEOTHERMAL |
| 21. AIR | 22. WATER | 23. GAS | 24. VENT | 25. DRAIN | 26. RAIN | 27. CONDENSATE | 28. FIRE | 29. SMOKE | 30. EXHAUST |
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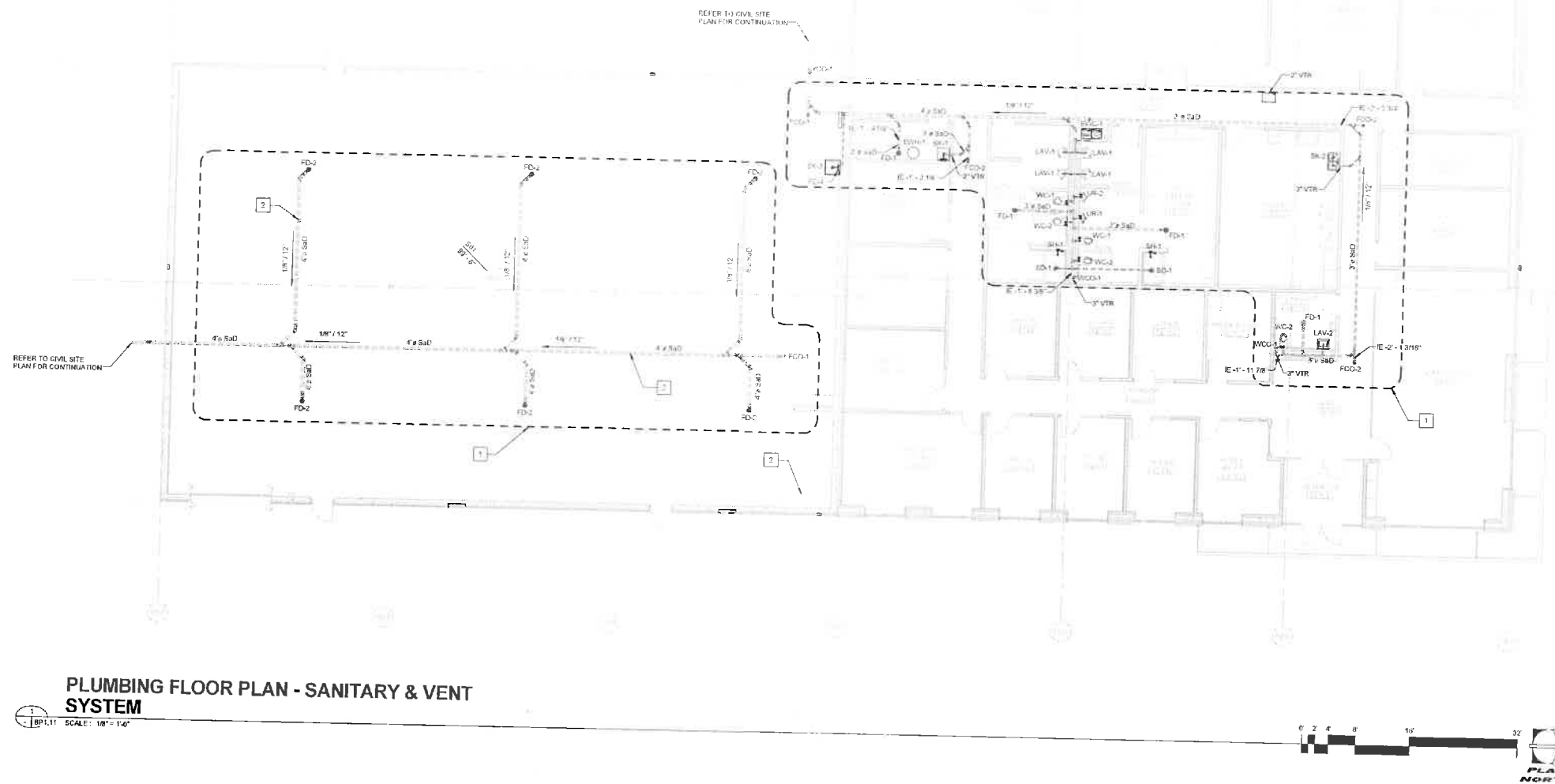
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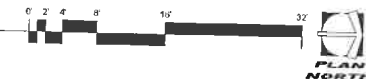
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| DRAWING NUMBER 2014-087-001-BP0.00 | | |



PLUMBING FLOOR PLAN - SANITARY & VENT SYSTEM

1 BP1.11 SCALE: 1/8" = 1'-0"



- GENERAL NOTES**
1. ALL HORIZONTAL SANITARY PIPES GREATER THAN 2" IN DIAMETER SHALL BE SLOPED AT A MINIMUM OF 1/8" PER FT. UNLESS NOTED OTHERWISE. ALL PIPES LESS THAN OR EQUAL TO 2" SHALL BE SLOPED AT A MINIMUM OF 1/4" PER FT. UNLESS NOTED OTHERWISE.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, PAYING ALL FEES AND FOR OBTAINING COMPLIANCE WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
 3. RESTROOM FLOOR URINALS AND PLUMBING FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHED FLOOR ELEVATIONS.
 4. REFERENCE DRAWING BP1.06 FOR PLUMBING FIXTURE SCHEDULES.
 5. ALL PIPE ELEVATIONS ARE TO INVERT BOTTOM OF PIPE RELATIVE TO FIRST FLOOR.
 6. REFERENCE DRAWING BP1.08 FOR ISOMETRIC SANITARY AND VENT PIPER.

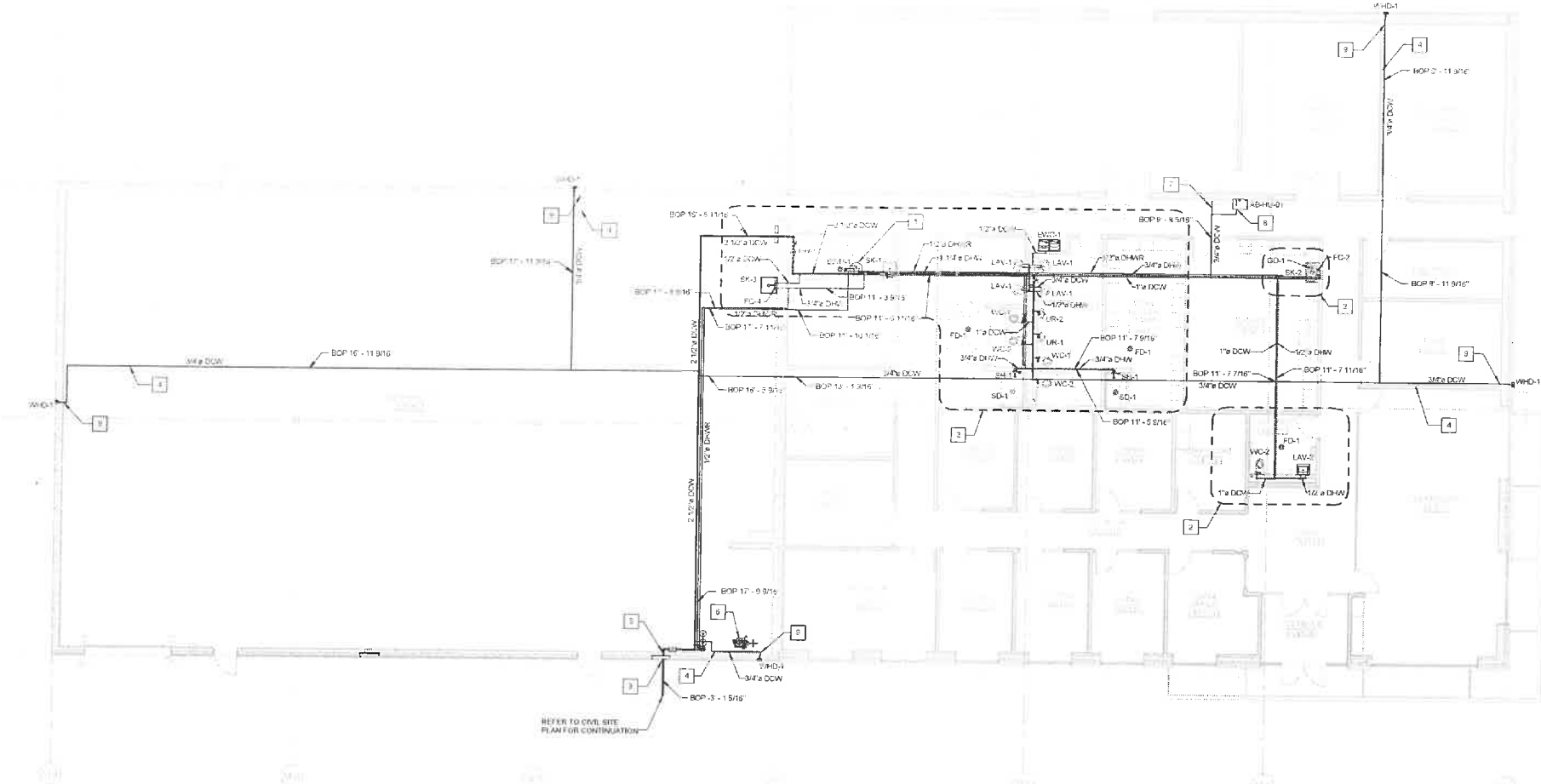
- CONSTRUCTION NOTES**
1. REFER TO SANITARY DRAIN/VENT ISOMETRIC RISER DETAIL 1, ON SHEET BP1.06 FOR PLUMBING FIXTURE LAYOUT IN OUTLETTED AREAS.
 2. ALL UNDER-FLOOR DRAINAGE TYPING DOWN IN WAREHOUSE IS FOR REFERENCE ONLY. THE FINAL DESIGN AND INSTALLATION IS BY NEWIT.

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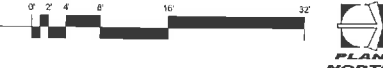
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| KIEWIT POWER CONSTRUCTORS CO. | | |
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| PLUMBING FLOOR PLAN - SANITARY VENT SYSTEM | | |
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PLUMBING FLOOR PLAN - DOMESTIC HOT & COLD WATER

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



- GENERAL NOTES**
1. ALL HORIZONTAL DOMESTIC PIPES (GREATER THAN 2" IN DIAMETER) SHALL BE SLOPED AT A MINIMUM OF 1/8" PER FT. UNLESS NOTED OTHERWISE. ALL PIPES LESS THAN OR EQUAL TO 2" SHALL BE SLOPED AT A MINIMUM OF 1/4" PER FT. UNLESS NOTED OTHERWISE.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, PAYING ALL FEES, AND FOR OBTAINING COMPLIANCE WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
 3. INSTALL FLOOR DRAINS AND PLUMBING FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHED FLOOR ELEVATIONS.
 4. REFERENCE DRAWING BP-02 FOR PLUMBING FIXTURE SCHEDULES.
 5. ALL PIPE ELEVATIONS ARE TO FINISH BOTTOM OF PIPE RELATIVE TO FIRST FLOOR.
 6. REFERENCE DRAWING BP-03 FOR ISOMETRIC DOMESTIC COLD AND HOT WATER RISER.

- CONSTRUCTION NOTES**
1. FURNISH AND INSTALL 50 GALLON PER HOUR WATER HEATER (ELECTRIC) REFER TO WATER HEATER SCHEDULE ON SHEET BP-01 FOR SPECIFIC REQUIREMENTS.
 2. REFER TO DOMESTIC HOT & COLD WATER ISOMETRIC RISER DETAIL 1 ON SHEET BP-01 FOR PLUMBING PIPING LAYOUT IN OUTLINED AREAS.
 3. 2" DOMESTIC WATER SERVICE ENTRANCE AT 3'-0" BELOW GRADE. SEE DOMESTIC WATER RISER DETAIL ON SHEET BP-01 FOR CONTINUATION.
 4. ROUTE 3/4" COLD WATER LINE TO WALL HYDRANTS AT ELEVATION 4" BELOW STRUCTURE.
 5. SEAL PIPE THRU PENETRATION WITH INK SEAL TYPE PENETRATION TO MAKE WEATHERTIGHT FLOOR INSTALLATION. REFERENCE SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
 6. FIRE PROTECTION RISER LOCATION SHOWN. FIRE PROTECTION RISER TO BE FURNISHED AND INSTALLED BY OTHER.
 7. MAKE 1/2" COLD WATER CONNECTION TO DRAIN TEMPERING VALVE. FURNISH WITH ISOLATION VALVE.
 8. MAKE 3/4" COLD WATER CONNECTION TO HINDRIP AS-HU-01. FURNISH WITH ISOLATION VALVE.
 9. DROP 3/4" COLD WATER DOWN TO 1'-6" ABOVE FLOOR AND EXTEND THRU WALL TO WALL HYDRANT (WH-1). ALL DROPS SHALL BE LOCATED ON INTERIOR SIDE OF EXTERIOR WALL.

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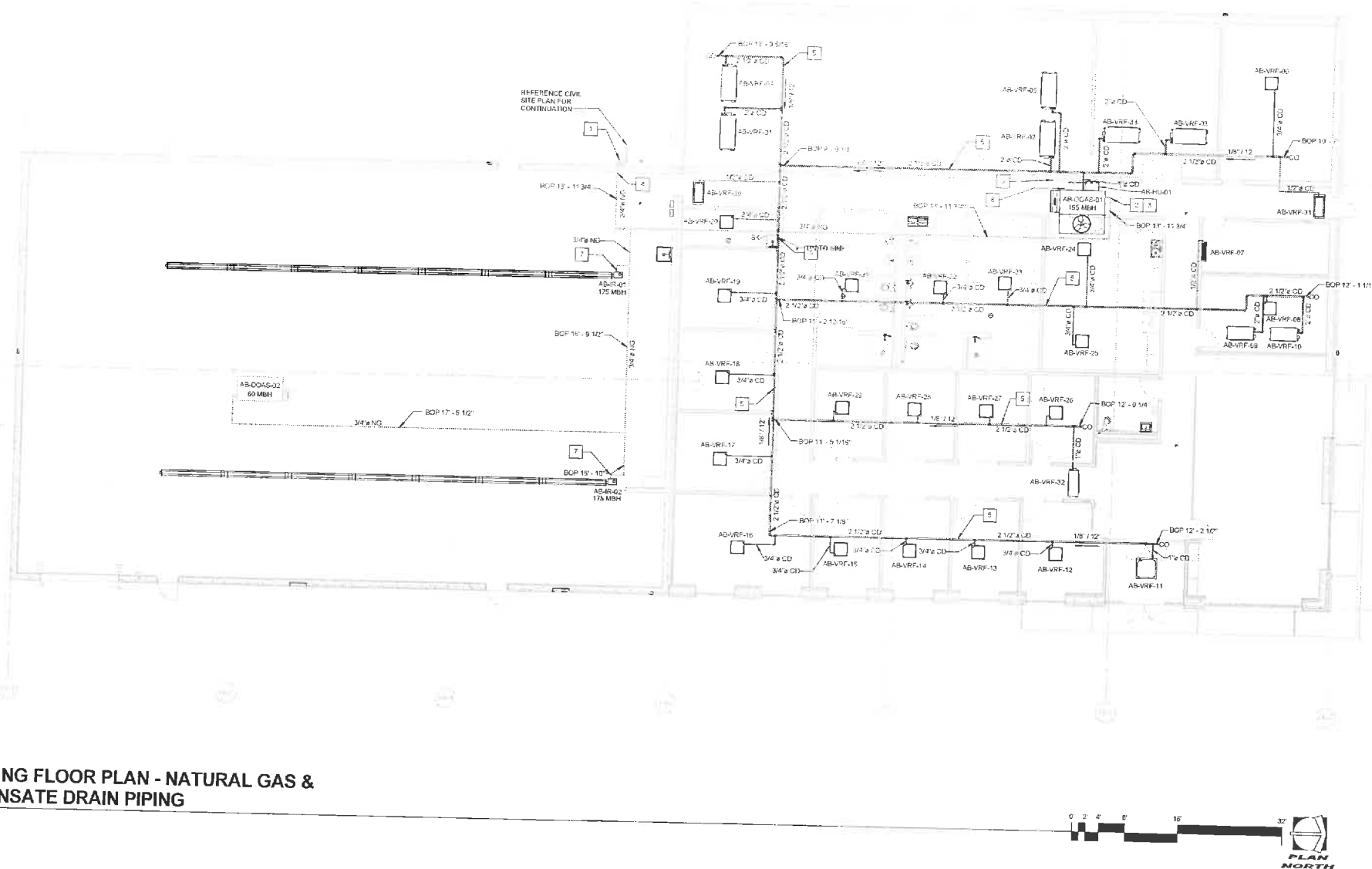
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| Lockmanus Energy Center LLC | | | | | |
| Invenergy | | | | | |
| KIEWIT POWER CONSTRUCTORS CO. | | | | | |
| GBA P.A. Association 9031 Parker Boulevard Lenexa, Kansas 66150 213.862.9393 www.gbaassociation.com | | | NOT FOR CONSTRUCTION | | |
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| 001 - ADMINISTRATION BUILDING PLUMBING FLOOR PLAN - DOMESTIC WATER SYSTEM | | | | | |
| DRAWING NUMBER | | | | | |
| 2014-087-001-BP1.12 | | | | | |

PLUMBING FLOOR PLAN - NATURAL GAS & CONDENSATE DRAIN PIPING

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



GENERAL NOTES

1. ALL HORIZONTAL CONDENSATE PIPES (GREATER THAN 2" DIAMETER) SHALL BE SLOPED AT A MINIMUM OF 1/8" PER 1' UNLESS NOTED OTHERWISE. ALL PIPES LESS THAN OR EQUAL TO 2" SHALL BE SLOPED AT A MINIMUM OF 1/4" PER 1' UNLESS NOTED OTHERWISE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, PAYING ALL FEES, AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
3. INSTALL FLOOR DRAINS AND PLUMBING FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHED FLOOR ELEVATIONS.
4. REFERENCE DRAWING BP4-00 FOR PLUMBING FIXTURE SCHEDULES.
5. ALL PIPE ELEVATIONS ARE TO INVERT BOTTOM OF PIPE RELATIVE TO FIRST FLOOR.
6. REFERENCE DRAWING BP2-02 FOR ISOMETRIC NATURAL GAS AND CONDENSATE RISER.

CONSTRUCTION NOTES

1. GAS METER 365 MBH TOTAL LOAD (REGULATE TO 5 PSI GAS PRESSURE).
2. ROUTE 3/4" GAS LINE UP THRU ROOF TO MAKE-UP AIR UNIT (MUA-1) AND MAKE CONNECTION ON UNIT. PROVIDE GAS SHUT-OFF VALVE AND GAS PRESSURE REGULATING VALVE PER MANUFACTURER'S RECOMMENDATIONS.
3. REFER TO ARCHITECTURAL SHEET FOR PIPE THRU ROOF CURB INSTALLATION REQUIREMENTS.
4. ROUTE 1 1/2" GAS PIPING THRU EXTERIOR WALL ABOVE H OUR SLAB. EXTEND 1 1/2" GAS PIPING UP ALONG WALL TO ELEVATION SHOWN.
5. 2" GRAVITY CONDENSATE DRAIN LINE. SLOPE DRAIN LINE @ 1/8" PER FOOT. REFERENCE ISOMETRIC RISER OF FILL ON SHEET BP2-02.
6. DROP 2 1/2" GRAVITY CONDENSATE DRAIN LINE DOWN ALONG WALL AND DAYLITE INTO MOP SINK (SINK SHOWN). PROVIDE MINIMUM 3" AIR GAP ABOVE RESERVOIR OF MOP SINK.
7. UNUP GAS LINE AS SHOWN ON PLAN DOWN TO RADIANT HEATER AND MAKE CONNECTION. REFER TO DETAIL 4 ON SHEET BP2-01 FOR ADDITIONAL INFORMATION.
8. FURNISH AND INSTALL THERM-O-MECA-TECH 1/2" DRAIN TEMPERING VALVE (DTS) CONNECT TO IT CONDENSING OUTLET FROM HEATER AND 1/2" COLD WATER SHOWN ON SHEET 11. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. ROUTE IT CONDENSATE FROM DTS TO CONDENSATE PUMP AB-FU-01.
9. FURNISH AND INSTALL CONDENSATE PUMP AB-FU-01. WALL MOUNT UNIT ABOVE CEILING. PUMP SHALL BE LITTLE GIANI MODEL WRSC-5 OR APPROVED EQUAL.

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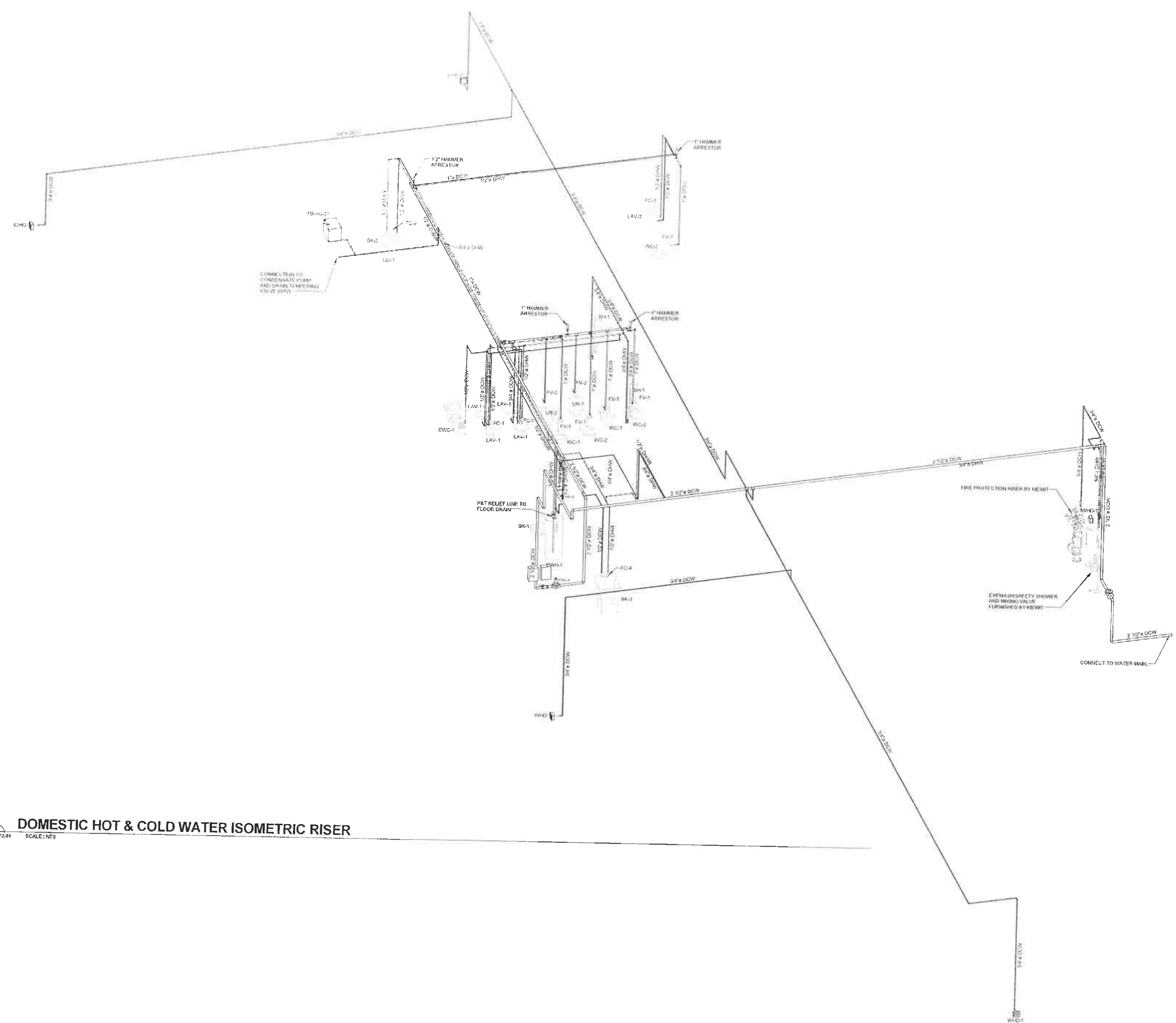
KIEWIT POWER CONSTRUCTORS CO.

GBA P.A.
Association
1801 Renner Boulevard
Lenexa, Kansas 66151
913.452.0200 www.gba.com

NOT FOR CONSTRUCTION

001 - ADMINISTRATION BUILDING
PLUMBING PLAN - GAS AND CONDENSATE SYSTEM

DRAWING NUMBER
2014-087-001-BP1.13



DOMESTIC HOT & COLD WATER ISOMETRIC RISER
SCALE: NTS

- GENERAL NOTES**
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, PAYING ALL FEES, AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS DURING THE WORK.
 2. INSTALL ALL HUB AND FLANGE FITTINGS PER MANUFACTURER'S RECOMMENDATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHED FLOOR ELEVATIONS.
 3. REFERENCE DRAWING BP-101 FOR PLUMBING FIXTURE SCHEDULES.
 4. REFERENCE DRAWING BP-200 FOR SANITARY AND VENT ISOMETRIC RISER.
 5. REFERENCE DRAWING BP-110 FOR PIPE ELEVATIONS.

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GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, PAYING ALL FEES AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
2. INSTALL FLOOR DRAINS AND PLUMBING FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FLOOR FINISH ELEVATIONS.
3. REFERENCE DRAWING BP2-04 FOR PLUMBING FIXTURE SCHEDULES.
4. REFERENCE DRAWING BP1-13 FOR PIPE ELEVATIONS.

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| KIEWIT POWER CONSTRUCTORS CO. | | |
| GBA P.A. Association 9651 Renner Boulevard Lenexa, Kansas 66150 913.492.9400 www.gbainc.com | | |
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| 001 - ADMINISTRATION BUILDING GAS & CONDENSATE DRAIN ISOMETRIC RISER | | |
| DRAWING NUMBER | | |
| 2014-087-001-BP2.02 | | |

NATURAL GAS AND CONDENSATE PIPING ISOMETRIC RISER

1
BP2.02

SCALE: NTS

CONDENSATE CONNECTION DETAIL

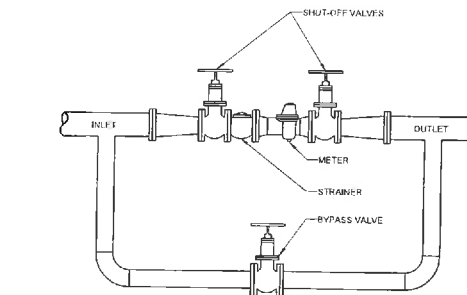
1
BP2.02

SCALE: NTS

| WATER HEATER SCHEDULE | | | | | | | | | | |
|-----------------------|--------------|-------|----------------|---------------------|---------------|---------|-------|---------|----------------|------------------|
| Mark | Manufacturer | Type | Location | Recovery Rate (GPH) | Element Watts | Voltage | Phase | Volume | Nominal Height | Natural Diameter |
| 12H-1 | A. O. Smith | PH-32 | 7000-A-8117-21 | 3000 L2 | 1500 W | 120 V | 3 | 200 gal | 54 7/8" | 20 1/2" |

| Mark | Manufacturer | Type | Location | Recovery Rate (GPH) | Element Voltage | Voltage | Phase | Volume | Nominal Height | Nominal Diameter |
|------|--------------|---------|---------------------|---------------------|-----------------|---------|-------|----------|----------------|------------------|
| EW-1 | A. O. Smith | EF-4-S2 | San Jose - AB117-23 | | 3900 V | 250 V | 3 | 69.0 gal | 54.78" | 20.15" |

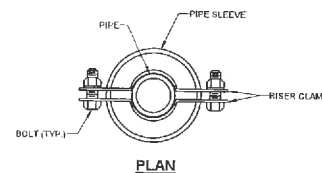
1. FURNISH UNIT WITH RECIRCULATION PUMP WITH 15 GPM. 10 FEET OF HEAD.
2. FURNISH UNIT WITH EXPANSION TANK AND ADJUSTER.
3. FURNISH UNIT WITH DUAL HEATER ELEMENTS CAPABLE OF SIMULTANEOUS OPERATION.



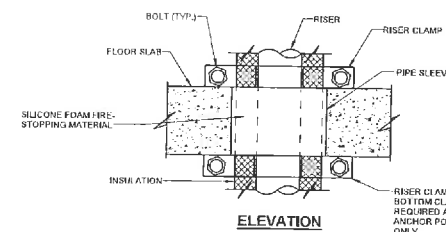
WATER METER DETAIL

NOTES

1. METER, STRAINER AND SHUT-OFF VALVES TO BE FURNISHED AND INSTALLED BY OWNER.
2. PIPING AND BYPASS VALVE TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
3. METER TO BE MOUNTED 30" - 42" ABOVE FLOOR.



PLAN

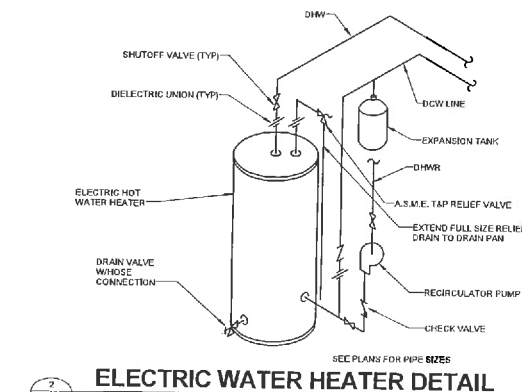


ELEVATION

SUPPORT/ANCHOR FOR PIPE RISERS

NOTE:

1. PROVIDE ANCHRS ONLY WHERE SHOWN ON DRAWINGS.
2. EXTEND SLEEVE ABOVE FLOOR WHERE SPECIFIED.

[illegible][illegible]

2
- 18P4.00

ELECTRIC WATER HEATER DETAIL

SCALE: NTS

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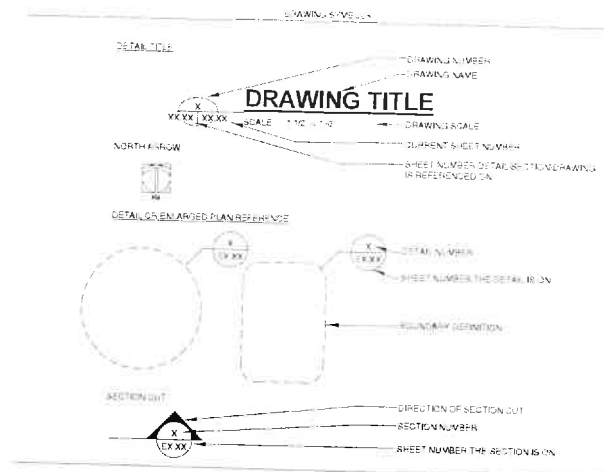
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001 - ADMINISTRATION BUILDING
PLUMBING SCHEDULES AND DETAILS

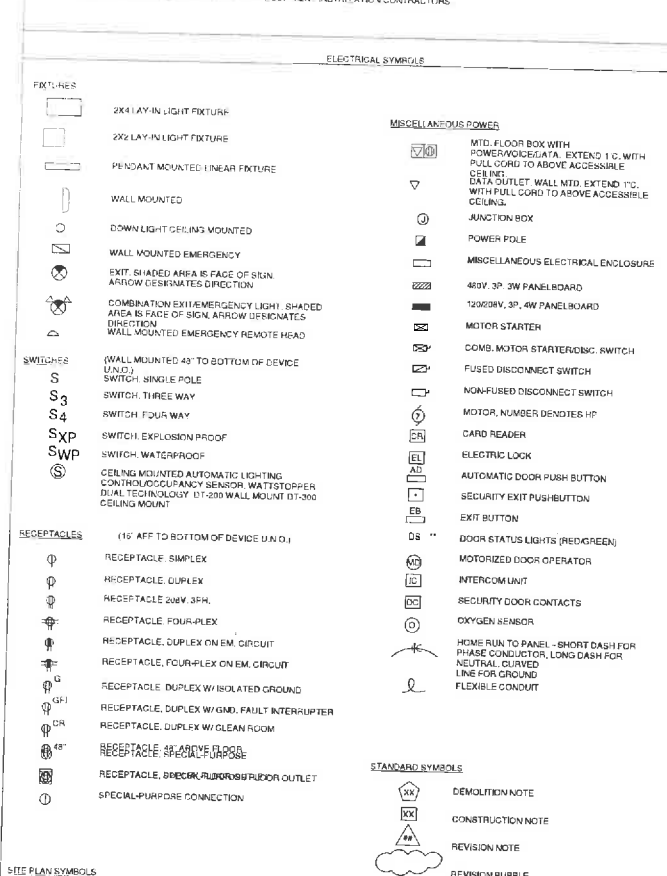
DRAWING NUMBER

2014-087-001-BP4.00



| ABBREVIATIONS | |
|---------------|--|
| A | AMPERES |
| AC | ACROSS |
| AF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AH | AIR HANDLING UNIT |
| AG | AMPERES INTERRUPTING CAPACITY |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AWD | AMERICAN WIRE GAUGE |
| B | BUILDING |
| BLDG | BUILDING |
| C | CIRCUIT BREAKER |
| CCTV | CAMERA SURVEILLANCE |
| CKT | CIRCUIT |
| CL | CENTRAL LINE |
| CLG | CABLE TRAY |
| CT | CONDUIT |
| CU FT | CUBIC FOOT (FEET) |
| CU YD | CUBIC YARD(S) |
| DC | DIRECT CURRENT |
| DISC | DISCONNECT |
| DWG | DIRECT DIGITAL CONTROLLER |
| EC | ELECTRICAL CONTRACTOR |
| EDF | ELECTRICAL DRINKING FOUNTAIN |
| EF | EXHAUST FAN |
| ELC | ELECTRICAL (AL) |
| EMER | EMERGENCY |
| EMT | ELECTRICAL METAL TUBING |
| ENCLOS | ENCLOSURE |
| EXT | EXTENDING |
| EXP | EXPANSION |
| FA | FIRE ALARM ANNUNCIATOR |
| FAP | FIRE ALARM CONTROL PANEL |
| FAN | FAN COIL UNIT |
| FBN | FOUNDATION |
| FI | FIRE FIGHTING INSTALL |
| FLA | FULL LOAD AMPS |
| FLUOR | FLUORESCENT |
| FSD | FURNISHED BY OTHERS |
| FTG | FOOTING |
| G | GENERAL CONTRACTOR |
| GD | GAS GAS DISPOSAL |
| GF | GROUND FAULT CURRENT INTERRUPTER |
| GND | GROUND |
| GRS | GALVANIZED RIGID STEEL CONDUIT |
| H | HOMEPower |
| HP | HEATING, VENTILATING, AND AIR CONDITIONING |
| I | INSIDE DIAMETER |
| IG | ISOLATED GROUND |
| IMC | INTERMEDIATE METAL CONDUIT |
| INT | INTERIOR |
| IO | INFORMATION OUTLET |
| J | JUNCTION BOX |
| K | THOUSAND CIRCULAR MILS |
| KVA | KILOVOLT AMPERE |
| KVAR | KILOVOLT AMPERE REACTIVE |
| KW | KILOWATT |
| L | LINK BOX |
| LB | LIQUID TIGHT FLEXIBLE METALLIC CONDUIT |
| LFMC | LIQUID TIGHT FLEXIBLE METALLIC CONDUIT |
| LFIC | LIQUID TIGHT FLEXIBLE METALLIC CONDUIT |
| M | MAXIMUM |
| MB | MAIN BREAKER |
| M.C. | MOTOR CONTROL CENTER |
| MCC | MOTOR CONTROL CENTER |
| MDP | MAIN DISTRIBUTION PANEL |
| MD | MINIMUM |
| MDG | MISCELLANEOUS |
| MLO | MAIN LUG ONLY |
| MOD | MODIFIED |
| MTD | MOUNTED |
| MTG | MOUNTING |
| N | NEUTRAL |
| NA | NOT APPLICABLE |
| NEC | NATIONAL ELECTRICAL CODE |
| NEL | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| N.T.S. | NOT TO SCALE |
| O | ON CENTER |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| P | POLE |
| PC | PULL BOX |
| PC | PREFABRICATED CONCRETE |
| PC | PHASE |
| PV | POST INDICATOR VALVE |
| PMS | PAIN MOUNT SWITCHGEAR |
| PMT | PAD MOUNT TRANSFORMER |
| PML | PANELLBOARD |
| PWC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| R | RECESSED |
| REF | REFERENCE |
| REQD | REQUIRED |
| S | STAINLESS STEEL |
| SS | SUSPENDED |
| SW | SWITCH |
| SWBD | SWITCHBOARD |
| SWGR | SWITCHGEAR |
| T | TELEPHONE/DATA |
| TYP. | TYPICAL |
| U | UNDER COUNTER |
| UC | UNDERGROUND |
| UL | UNDERWRITERS LABORATORY |
| UND | UNLESS NOTED OTHERWISE |
| USG | UNIT SUBSTITUTION |
| V | VOLTAJE, VOLTS |
| VFD | VARIABLE FREQUENCY DRIVE |
| W | WATT |
| WV | WITH |
| WV | WITHOUT |
| WP | WATERPROOFING |
| WWF | WELDED WIRE FABRIC |
| X | TRANSFORMER |
| XP | EXPLOSION PROOF |

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1. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR A COMPLETE AND PROPERLY OPERATING ELECTRICAL INSTALLATION.
2. ALL MATERIAL AND EQUIPMENT FURNISHED SHALL BE NEW AND FIRST QUALITY OF A STANDARD MANUFACTURER.
3. ALL WORKMANSHIP SHALL BE FIRST CLASS AND IN ACCORDANCE WITH NECA AND OTHER APPLICABLE INDUSTRY STANDARDS.
4. COORDINATE ELECTRICAL EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
5. JUNCTION AND PULL BOX LOCATIONS ARE SHOWN IN APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL SIZE AND INSTALL ELECTRICAL JUNCTION AND PULL BOXES FOR A COMPLETE AND DURABLE INSTALLATION PER THE NEC. LARGER BOXES SHALL BE COORDINATED WITH ALL DISCIPLINES PRIOR TO INITIATING WORK TO AVOID CONFLICTS.
6. PROVIDE WHERE USED ON THESE DOCUMENTS MEANS THAT THE CONTRACTOR SHALL FINISH AND PROPERLY INSTALL ALL REFERENCED EQUIPMENT AND MATERIALS (N.D.).
7. WHERE THE WORK (CONDUIT OR CABLE) IS USED IN THESE DOCUMENTS, THEY MEAN CONDUIT WIRE AND ASSOCIATED BOXES.
8. WHEREVER POSSIBLE, ROUTE CONDUIT CLOSE TO CEILING IN THE AREAS THAT DO NOT HAVE A SUSPENDED CEILING.
9. WHEREVER POSSIBLE, ROUTE CONDUIT CLOSE TO CEILING IN THE WAREHOUSE AREA AND IN OTHER AREAS THAT DO NOT HAVE A SUSPENDED CEILING.
10. LABEL COVER PLATES FOR UPS BACKUP REGULATOR WITH UPS.
11. COORDINATE FLOOR BOX LOCATIONS WITH FLOOR TILES AND CONTROL STATION LAYOUT.

GENERAL INSTALLATION NOTES

1. ALL CONDUITS SHALL BE RIGID STEEL UNLESS OTHERWISE NOTED AND SHALL BE MINIMUM OF 3/4" WITH THE FOLLOWING EXCEPTION:
FLEXIBLE WIP ELECTRICAL DROP CONNECTIONS ARE ALLOWED ABOVE THE ACOUSTICAL SUSPENDED CEILING AND OPEN AREAS TO INNER CONDUIT RIGID CONDUIT RUNS TO THE BUILDING SUSPENDED LIGHT FIXTURES. NOTES: WHIPS CAN HAVE A MAXIMUM LENGTH OF 6'.
2. ALL CONDUITS ARE SHOWN DIAGRAMMATICALLY. EXCEPT WHERE LOCATED BY DIMENSIONS, THE EXACT LOCATION SHALL BE DETERMINED BY THE CONSTRUCTOR. THE CONSTRUCTOR SHALL ALSO DETERMINE THE METHOD OF SUPPORT IN THE ABSENCE OF SPECIFICATIONS AND ENGINEER'S INSTRUCTIONS. WHERE CONDUIT IS NOT EMBEDDED IT SHALL BE RUN EXPOSED. CONSTRUCTION SHALL PROVIDE ADDITIONAL PULL BOXES OR FITTINGS AS REQUIRED. CONDUIT RUNS BETWEEN BOXES OR PULL POINTS SHALL NOT CONTAIN MORE THAN 360 DEGREE TOTAL BENDS.
3. ALL METALLIC CONDUITS SHALL BE CUT SQUARE, THREADED AND REAMED TO REMOVE BURRS AND SHARP EDGES. FIELD THREADS SHALL BE OF THE SAME TYPE AND LENGTH AS FACTORY CUT THREADS. FIELD CUT THREADS ON GALVANIZED CONDUIT SHALL BE COATED WITH A PROTECTIVE COATING TO PREVENT RUSTING. FIELD CUT THREADS ON ALUMINUM CONDUIT SHALL BE COATED WITH AN ANTI-SEIZE COMPOUND COMPATIBLE WITH ALUMINUM.
4. ALL CONDUITS TO BE EMBEDDED IN CONCRETE SHALL BE INSPECTED TO ASSURE CONTINUITY AND CORRECT POSITION BEFORE CONCRETE IS POURED.
5. ALL EMBEDDED CONDUITS SHALL BE SLOPED TOWARD BOXES, HANDHOLES TO MANHOLES FOR DRAINAGE, IF SUBJECT TO WATER ENTRANCE.
6. ALL CONDUITS LOCATED IN SCREENWELLS, UNDERGROUND TUNNELS, PITS AND OUTDOORS ON EXTERIOR WALLS SHALL BE MOUNTED SO THERE IS AT LEAST ONE-QUARTER INCH AIR SPACE BETWEEN THE CONDUIT AND THE SUPPORTING SURFACE.
7. WHERE UNDERGROUND CONDUCTORS ENTER A CONDUIT IN A CABINET, PULL BOX, JUNCTION BOX, OR AUXILIARY GUTTER, THE CONDUCTORS SHALL BE PROTECTED BY A SUBSTANTIAL BUSHING, OR ELECTRICAL MANUFACTURING COMPANY TYPE IBC, OR APPROVED EQUIVALENT, PROVIDING A SMOOTHLY ROUNDED INSULATING SURFACE. UNLESS THE CONDUCTORS ARE SEPARATED FROM THE CONDUIT FITTINGS BY SUBSTANTIAL INSULATING MATERIAL, SECURELY FASTENED IN PLACE, WHERE CONDUIT BUSHINGS ARE CONSTRUCTED WHOLLY OF INSULATING MATERIAL, A LOCKNUT SHALL BE INSTALLED BOTH INSIDE AND OUTSIDE THE ENCLOSURE TO WHICH THE CONDUIT IS ATTACHED.
8. ALL CONDUIT ENDS SHALL BE CLOSED DURING CONSTRUCTION. END OF SPARE CONDUIT SHALL BE PLUGGED OR CAPPED.
9. IN OUTDOOR LOCATIONS WHERE DISSIMILAR METALS ARE CONNECTED TOGETHER SUCH AS ALUMINUM CONDUIT TO STEEL BOXES, USE BURNDY "PENETROX" OR GROUND HINDS "STL" OR APPROVED EQUIVALENT.
10. ALL CONDUITS CONNECTIONS TO ALL MOTORS, VIBRATING EQUIPMENT, BELT DRIVEN EQUIPMENT, PRESSURE AND LEVEL SWITCHES, THERMOCOUPLES, ETC., TO BE MADE WITH FLEXIBLE CONDUIT.
11. ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN CONCRETE.
12. CONDUIT ENTERING SHEET STEEL OR ALUMINUM BOXES WITHOUT HUBS, EXPOSED TO WATER OR RAIN, SHALL BE TERMINATED WITH A CONDUIT FITTING (APPLETON ELECTRIC COMPANY TYPE "HUB", THOMAS & BETTS COMPANY BULLET HUB SERIES 370 OR APPROVED EQUAL).
13. ALL REDUCERS SHALL BE THREADED TYPE AND OF THE SAME MATERIAL AS THE CONDUIT.
14. CABLE PULLING LINES SHALL BE SELECTED AND ARRANGED SO AS NOT TO DAMAGE THE CONDUIT OR CABLE.
15. ALL CONDUITS SHALL BE CAREFULLY CLEANED INSIDE BEFORE THE INSTALLATION OF THE CABLES.
16. DUCT LINES SHALL BE IN WELL-PACKED SOIL FREE OF ROCKS.
17. CHECK THE ROUTING OF EACH CONDUIT TO SEE IF ANY OF THE FOLLOWING PHYSICAL HAZARDS WILL CAUSE DIFFICULTIES:
A. HOT PIPES
B. FLOODING
C. OPERATIONAL HAZARDS (CRANES, FORKLIFTS, EQUIPMENT REMOVAL, ETC., JET IMPINGEMENTS)
18. WHEN WALLS OR FLOORS ARE BREACHED BY CORE DRILLING OR CHIPPING ACTIVITIES TO INSTALL RIGID STEEL CONDUITS, THE SPACE AROUND THE CONDUIT SLEEVE SHALL BE SEALED BY GROUT OR RTV SEALANT TO ENSURE A WATER, SMOKE, OR DUST PROOF SEAL.
19. REFERENCE THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

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001 - ADMINISTRATION BUILDING
ELECTRICAL SYMBOLS & ABBREVIATIONS

DRAWING NUMBER
2014-087-001-BE0.00

| LIGHT FIXTURE SCHEDULE | | | | | | | | | |
|------------------------|--------|------|---|----------------|-------------------|-------------------------|------|------|-------|
| CALLOUT | SYMBOL | LAMP | DESCRIPTION | DRIVER/HAIR MT | MOUNTING | MODEL | WATT | FEET | VOLTS |
| A | | LED | GENERAL PURPOSE LED TRIPPER 2'x4' WITH LENS (400LM) | ELECTRONIC | CEILING | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| B | | LED | GENERAL PURPOSE LED TRIPPER 2'x4' WITH LENS (400LM) | ELECTRONIC | CEILING | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| C | | LED | GENERAL PURPOSE LED TRIPPER 2'x4' WITH LENS (400LM) | ELECTRONIC | CEILING | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| E1 | | OMNI | EMERGENCY EXIT LIGHT (OMNI) (RECESSED) MOUNT AT 1'0" ABOVE CENTER OF WORK HEAD | ELECTRONIC | WALL | QW20150 R HO | 7.5 | | 120V |
| E2 | | LED | REMOTE EXPRESS LIGHT MOUNT AT 8'0" AFF | ELECTRONIC | WALL | EL4 T 5'00W P 0259 | 7 | | 120V |
| E4 | | LED | EMERGENCY EXIT LIGHT (OMNI) | ELECTRONIC | CEILING | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| EM1 | | LED | EMERGENCY EXIT LIGHT (OMNI) | ELECTRONIC | WALL | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| F | | LED | TRACK LED WITH 1200 NOMINAL LUMENS WIDE DISTRIBUTION AND 4000 TO 11000S DCC CERTIFIED | ELECTRONIC | SURFACED RECESSED | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| G | | LED | EXTERIOR LED WALL PACK MOUNT AT 17'0" AFF | ELECTRONIC | WALL | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| L | | LED | RECESSED DOWNLIGHT FIXTURE (SHOWER) | ELECTRONIC | CEILING | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| M | | LED | PENDANT MOUNT LINEAR LED DIRECT/INDIRECT FIXTURE | ELECTRONIC | PENDANT | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| N | | LED | EXTERIOR LED WALL PACK MOUNT AT 17'0" AFF | ELECTRONIC | WALL | QW1440L MOUNT 221 (240) | 15.0 | | 120V |
| P | | LED | PENDANT MOUNT INDUSTRIAL LIGHT FIXTURE | ELECTRONIC | PENDANT | QW1440L MOUNT 221 (240) | 15.0 | | 120V |

NOTE: ALL LIGHTING DESIGNED AROUND LITHONIA LIGHTING LIGHT FIXTURES. (WILL ACCEPT "ENGINEER APPROVED" EQUAL BY COOPER LIGHTING OR H.E. WILLIAMS LIGHTING)

| SWITCH SCHEDULE | | | | |
|----------------------|--------|--|--|------------------------------|
| CALLOUT | SYMBOL | NOTE 1 | NOTE 2 | NOTE 3 |
| TRIPPER SWITCH | | MOUNT BOTTOM @ 48" AFF | | |
| FOURWAY SWITCH | | MOUNT BOTTOM @ 48" AFF | | |
| GENERAL SWITCH | | MOUNT BOTTOM @ 48" AFF | | |
| OCCUPANCY SENSOR Q01 | | SENSOR WALL SWITCH | OCCUPANCY SENSOR TO BE MOUNTED AT 2' AFF | MOUNT # 10510-11 (ELEVATION) |
| OCCUPANCY SENSOR Q02 | | CEILING MOUNT WITH POWER PACK (MODEL # SPEC-01) PER ROOM | WIRE PER WIRING SCHEDULE (DRAWING E-30) | MOUNT # 10510-11 (ELEVATION) |
| OCCUPANCY SENSOR Q03 | | CEILING MOUNT WITH POWER PACK (MODEL # SPEC-01) PER ROOM | WIRE PER WIRING SCHEDULE (DRAWING E-30) | MOUNT # 10510-11 (ELEVATION) |
| THREEWAY SWITCH | | MOUNT BOTTOM @ 48" AFF | | |

| RECEPTACLE SCHEDULE | | | | | | |
|------------------------------------|--------|-------------------------------|------------|--|---|--------------------------------------|
| CALLOUT | SYMBOL | NEMA | VOLTS | NOTE 1 | NOTE 2 | NOTE 3 |
| CEILING OUTLET DUPLEX | | 5-20R | 120V 1P 2W | PROVIDE CEILING MOUNTED 30AMP EX OUTLET FOR TV | * VERIFY CONNECTION POINT WITH OWNER | |
| DUPLEX | | 5-20R | 120V 1P 2W | MOUNT @ BOTTOM 18" AFF. UNLESS OTHERWISE NOTED | | |
| FLOOR BOX COMMUNICATION POWER/DATA | | 5-20R | 120V 1P 2W | 2 DUPLEX OUTLETS PROVIDED | 2 DATA OUTLETS PROVIDED | * VERIFY CONNECTION POINT WITH OWNER |
| GFCI DUPLEX | | 20 AMP GFCI | 120V 1P 2W | MOUNT @ BOTTOM 18" AFF. UNLESS OTHERWISE NOTED | * VERIFY WATER COOLER LOCATION WITH MECHANICAL CONTRACTOR | |
| QUAD | | 5-20R | 120V 1P 2W | MOUNT @ BOTTOM 18" AFF. UNLESS OTHERWISE NOTED | | |
| WEATHERPROOF DUPLEX | | 20 AMP WEATHER RESISTANT GFCI | 120V 1P 2W | MOUNT BOTTOM @ 24" AFF | PROVIDE METAL WEATHERPROOF & USE COVER W/WEATHER RESISTANT GFCI | |

| DATA SCHEDULE | | | |
|---------------|--|---|---|
| SYMBOL | NOTE 1 | NOTE 2 | NOTE 3 |
| | MOUNT @ BOTTOM 18" AFF. UNLESS OTHERWISE NOTED | SINGLE GANG 2 PORT DATA (2 CAT 6A) PROVIDED | * VERIFY REQUIREMENTS WITH OWNER FOR FLOORBOX LOCATIONS |
| | TELEVISION COMMUNICATION CONNECTION(S) | SINGLE GANG 2 PORT DATA (1 CAT 6A & 1 RG-6 COAX) PROVIDED | PROVIDE CONNECTION FROM CEILING MOUNT. VERIFY REQUIREMENTS WITH DATA VENDOR |

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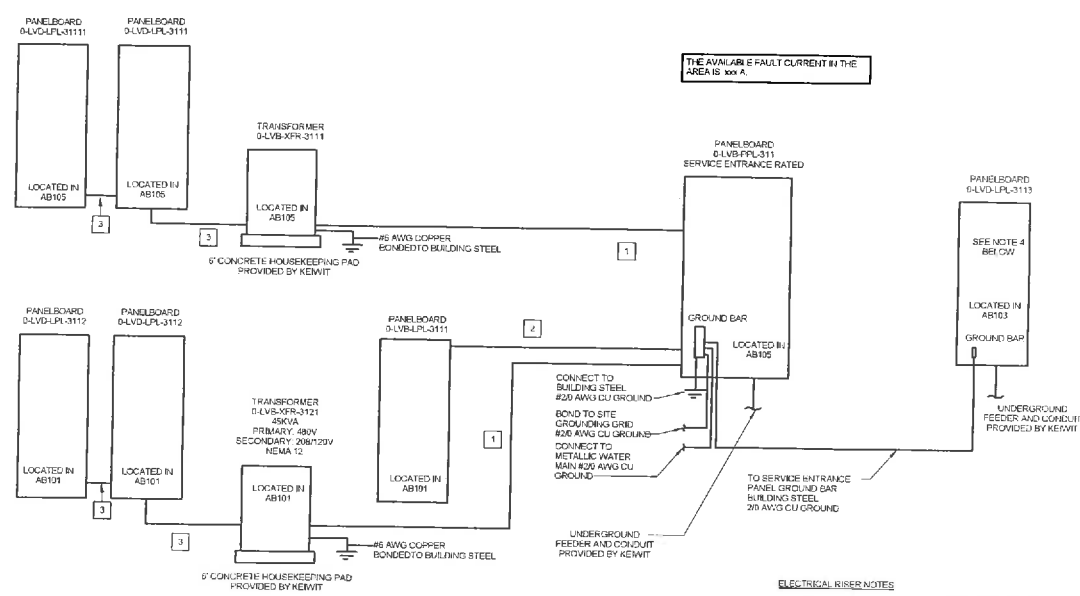
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001 - ADMINISTRATION BUILDING
LIGHT FIXTURE AND DEVICE SCHEDULES

DRAWING NUMBER
2014-087-001-BE0.01

PANEL SCHEDULE table with columns: CALLOUT, TOTAL CONNECTED KVA, TOTAL CALCULATED KVA, TOTAL CALCULATED AMPS, TOTAL (PHASE) AMPS, VOLTS, BUS BARS, MAIN DISCONNECT TYPE, MAIN DISCONNECT AMP, MIN. DISCONNECT, PANEL NEUTRAL, POLES, LOSS, NOTE, AC RATING, UPSTREAM OCP, FEEDER SIZE, UPSTREAM DEVICE, UPSTREAM BREAKER AND POLES

TRANSFORMER SCHEDULE table with columns: CALLOUT, TOTAL CONNECTED KVA, TOTAL CALCULATED KVA, TOTAL CALCULATED AMPS, TOTAL (PHASE) AMPS, KVA, PRIMARY VOLTS, SECONDARY VOLTS, NUMBER OF TAP, NOTE, SECONDARY BREAKER RATING, UPSTREAM OCP, FEEDER SIZE, UPSTREAM DEVICE, UPSTREAM CIRCUIT, UPSTREAM BREAKER AND POLES



- ELECTRICAL RISER NOTES
- 1. PROVIDE THE FOLLOWING SIGNAGE AT THE SERVICE ENTRANCE PANEL 04-VB-PP-011. ENTRANCE PANEL 04-VB-PP-011 IS ONE OF TWO SERVICES INTO THE BUILDING. THE OTHER IS THE UPS PANEL 04-VB-PP-011 LOCATED DGS 101.
- 2. PROVIDE THE FOLLOWING SIGNAGE AT THE SERVICE UPS PANEL 06-PNL-11-001. UPS PANEL 04-VB-PP-011 IS ONE OF TWO SERVICES INTO THE BUILDING. THE OTHER IS THE PANEL 04-VB-PP-011 LOCATED ELECTRICAL 101.
- 3. THE ELECTRICAL CONTRACTOR SHALL VERIFY IF A NEUTRAL-GROUND BOND IS REQUIRED ON PANEL 04-VB-PP-011 COORDINATE WITH THE ENGINEER.
- 4. THE UPS PANEL 04-VB-PP-011 IS FURNISHED AND INSTALLED BY THE CLIENT. COORDINATE WITH THE ENGINEER.
- 5. CONTRACTOR SHALL DETERMINE THE GROUNDING ARRANGEMENT FOR THE SOURCE OF ELECTRICITY SERVING THE BUILDING. IF THE BUILDING IS SERVED BY A SERVICE OR DEDICATED TRANSFORMER, PANEL 04-VB-PP-011 SHALL BE SERVICE RATED AND INCLUDE A NEUTRAL-GROUND BONDING JUMPER. OTHERWISE THE CIRCUIT SHALL BE CONSIDERED A FEEDER. FEEDERS MUST INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR AND THE MAIN PANEL SHALL NOT BE SERVICE RATED.

FEEDER SCHEDULE table with columns: ID, FEEDER AMPS, CONDUIT AND FEEDER, FEEDING THESE DEVICES

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001 - ADMINISTRATION BUILDING
EQUIPMENT SCHEDULE AND ONE-LINE DIAGRAM

DRAWING NUMBER
2014-087-001-BE0.02

| EQUIPMENT SCHEDULE | | | | | | | |
|--------------------|--------|-----------|------|-------|----|-------------------------|------------------------|
| UNIT | SYMBOL | VOLTS | AMPS | KVA | HP | COMMENTS | DISCONNECT SUPPLIED BY |
| AB-R-01 | | 120 1P 2W | 1 | | | P-114-5501-12 | |
| AB-R-02 | | 120 1P 2W | 1 | | | P-114-5501-12 | |
| AB-ODU-01 | | 480 3P 3W | 25 | 23.4 | | P-109-5501-7, 9, 11 | SEA FUSED AT 80A |
| AB-ODU-02 | | 480 3P 3W | 4 | 3.3 | | P-109-5501-7, 9, 11 | SEA FUSED AT 15A |
| AB-VRF-01 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-02 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-03 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-04 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-05 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-06 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-07 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-08 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-09 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-10 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-11 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-12 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-13 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-14 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-15 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-16 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-17 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-18 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-19 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-20 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-21 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-22 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-23 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-24 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-25 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-26 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-27 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-28 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-29 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-30 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-VRF-31 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-VRF-32 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-VRF-33 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-HR-01 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-HR-02 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-HR-03 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-HR-04 | | 208 1P 2W | | 0.300 | | P-114-5501-13, 15 | |
| AB-HR-05 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-HR-06 | | 208 1P 2W | | 0.300 | | P-114-5501-3, 5 | |
| AB-HR-07 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-HR-08 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-HR-09 | | 208 1P 2W | | 0.300 | | P-114-5501-2, 4 | |
| AB-ODU-01 | | 480 3P 3W | 23.2 | 10.3 | | P-109-5501-7, 9, 11 | SEA FUSED AT 80A |
| | | 480 3P 4W | 35.8 | 29.8 | | P-109-5501-2, 4, 6 | SEA FUSED AT 80A |
| | | 480 3P 4W | 35.8 | 29.8 | | P-109-5501-1, 3, 5 | SEA FUSED AT 80A |
| AB-ODU-02 | | 480 3P 3W | 32 | 26.8 | | P-109-5501-7, 9, 11, 30 | SEA FUSED AT 80A |
| | | 480 3P 3W | 17 | 14.1 | | P-109-5501-25, 27, 29 | SEA FUSED AT 80A |
| AB-EF-01 | | 120 1P 2W | | 0.864 | | P-114-5501-31 | SEA FUSED AT 10A |
| AB-EF-01 | | 120 1P 2W | | 0.529 | | P-114-5501-17 | SEA FUSED AT 10A |
| AB-EF-02 | | 120 1P 2W | | 0.529 | | P-114-5501-10 | SEA FUSED AT 10A |
| AB-L-01 | | 120 1P 2W | | 0.300 | | P-114-5501-15 | |
| AB-L-02 | | 120 1P 2W | | 0.300 | | P-114-5501-15 | |

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KIEWIT POWER CONSTRUCTORS CO.

GBA P.A.
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5801 Roney Boulevard
Lenexa, Kansas 66215
313.402.9490 www.gbapainc.com

NOT FOR
CONSTRUCTION

001 - ADMINISTRATION BUILDING
EQUIPMENT SCHEDULE

DRAWING NUMBER

2014-087-001-BE0.03

Location: 22499102, BE - 0211
Supply From: 22499102
Mounting: 50000
Enclosure: Type 12

Volts: 230.00
Phases: 3
Wires: 3

A.I.C. Rating: 2.09
Mains Type: CU
Mains Rating: 2.04 A
MCB Rating: 1.75 A

Notes

[illegible]

Legend

[illegible]

Notes

Location: WAREHOUSE AB10
Supply From: LVE-PFR-011
Mounting: SURFACE
Enclosure: ~~ENCLOSURE~~

Volts: ~~480~~ 240
Phases: 3
Wires: 3

A.I.C. Rating: 5.0
Moist Type: CR
Main Rating: 4.0
MCB Rating: 22.4

Notes:

| CRT | Circuit Description | Trip | Poles | A | B | C | Poles | Trip | Circuit Description | CRT |
|-------------|-----------------------|------|-------|----------|----------|----------|-------|------|-----------------------|-----|
| 1 | Electric Water Heater | 30 A | 3 | 1600 VA | 1500 VA | 1500 VA | 3 | 30 A | Tankless Water Heater | 1 |
| 2 | — | — | — | — | 1500 VA | 1500 VA | — | — | — | 2 |
| 3 | — | — | — | — | — | 1500 VA | — | — | — | 3 |
| 4 | HB (C4045-02) | 25 A | 3 | 1100 VA | 1100 VA | 660 VA | 3 | 30 A | Waterproof Fan | 4 |
| 5 | — | — | — | — | 1100 VA | 660 VA | — | — | — | 5 |
| 6 | — | — | — | — | — | 1100 VA | — | — | — | 6 |
| 13 | Other | 20 A | 3 | 660 VA | 0 VA | — | — | — | Refrigerator | 13 |
| 14 | — | — | — | — | 660 VA | 3 VA | — | — | Refrigerator | 14 |
| 15 | — | — | — | — | — | 660 VA | 3 VA | — | Refrigerator | 15 |
| 17 | Space | — | — | 3 VA | 0 VA | — | — | — | Refrigerator | 17 |
| 21 | Space | — | — | — | 3 VA | 3 VA | — | — | Refrigerator | 21 |
| 23 | Space | — | — | — | — | 0 VA | 3 VA | — | Refrigerator | 23 |
| 26 | Space | — | — | 2 VA | 0 VA | — | — | — | Refrigerator | 26 |
| 27 | Space | — | — | — | 3 VA | 0 VA | — | — | Refrigerator | 27 |
| 29 | Space | — | — | — | — | 0 VA | 3 VA | — | Refrigerator | 29 |
| 31 | Space | — | — | 0 VA | 0 VA | — | — | — | Refrigerator | 31 |
| 32 | Space | — | — | — | 3 VA | 0 VA | — | — | Refrigerator | 32 |
| 35 | Space | — | — | — | — | 0 VA | 3 VA | — | Refrigerator | 35 |
| 37 | Space | — | — | 3 VA | 3 VA | — | — | — | Refrigerator | 37 |
| 38 | Space | — | — | — | 3 VA | 0 VA | — | — | Refrigerator | 38 |
| 41 | Space | — | — | — | — | 3 VA | 3 VA | — | Refrigerator | 41 |
| Total Load: | | | | 11411 VA | 11411 VA | 11411 VA | | | | |
| Total Amps: | | | | 41 A | 41 A | 41 A | | | | |
| 2885 VA | | | | 100.00% | | 3880 VA | | | | |

Legend

[illegible]

Note

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| REV | | WEY | | Author | | F.W. | | 06/17/1 | | | |
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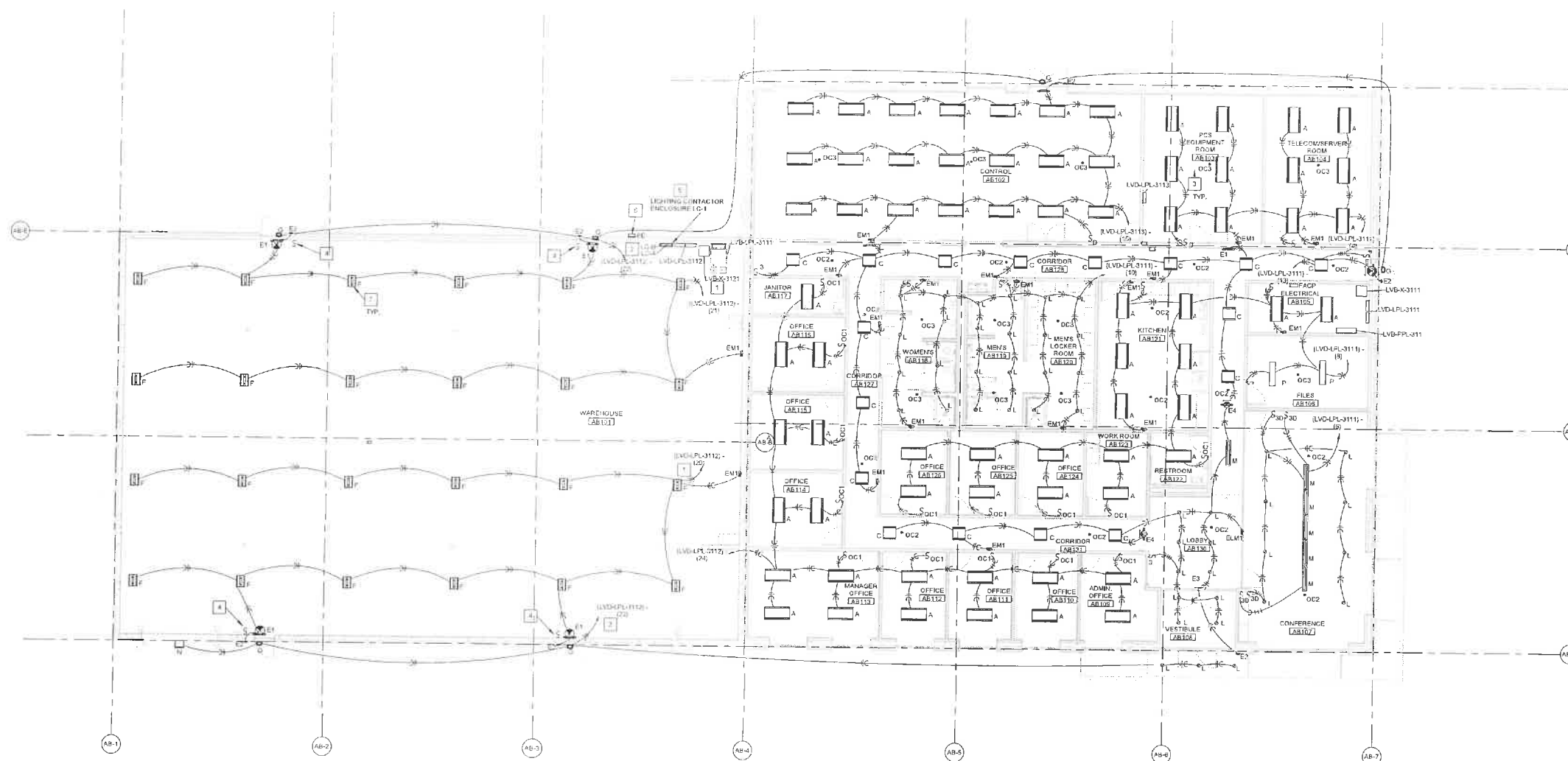
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NOT FOR
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001 - ADMINISTRATION BUILDING
ELECTRICAL PANEL SCHEDULES

DRAWING NUMBER

2014-087-001-BE0.05



LIGHTING FLOOR PLAN
 1 BE1.11 SCALE: 1/8" = 1'-0"

| PANEL SCHEDULE & TRANSFORMER NAME ABBREVIATIONS SCHEDULE | |
|--|-------------------------|
| PANEL NAME | PANEL NAME ABBREVIATION |
| ELV-PPL-311 | ELV-PPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |
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| ELV-LPL-311 | ELV-LPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |
| ELV-LPL-311 | ELV-LPL-311 |

- CONSTRUCTION NOTES:**
1. LIGHTING CIRCUIT TO BE CONTROLLED BY LIGHTING CONTROLLER L.C. 1. REFER TO DETAIL 1 ON DRAWING E3.00.
 2. EXTERIOR LIGHTING CIRCUIT TO BE CONTROLLED BY LIGHTING CONTROLLER L.C. 2 AND PHOTOCELL. REFER TO DETAIL 2 ON DRAWING E3.00.
 3. EXTERIOR LIGHTING CIRCUIT TO BE CONTROLLED BY LIGHTING CONTROLLER L.C. 3 AND PHOTOCELL. REFER TO DETAIL 3 ON DRAWING E3.00.
 4. LIGHT SWITCH CONTROLS THE LIGHTING CONTROLLER. REFER TO DETAIL 4 ON DRAWING E3.00.
 5. HAND/OFF/AUTO AND LIGHTING CONTROLS LOCATED IN ENCLOSURE L.C. 1. REFER TO DETAIL 5 ON DRAWING E3.00.
 6. EXTERIOR PHOTOCELL IS TO BE MOUNTED NEAR EAVE HEIGHT IN LOCATION SHOWN. MOUNT THE PHOTOCELL TO A JUNCTION BOX AND MOUNT NORTH FACING. REFER TO DETAIL 6 ON DRAWING E3.00.
 7. HIGH BAY LED LIGHT FIXTURE TO BE MOUNTED ON RIGID POST TO A HEIGHT OF 15' TO THE BOTTOM OF FIXTURE.

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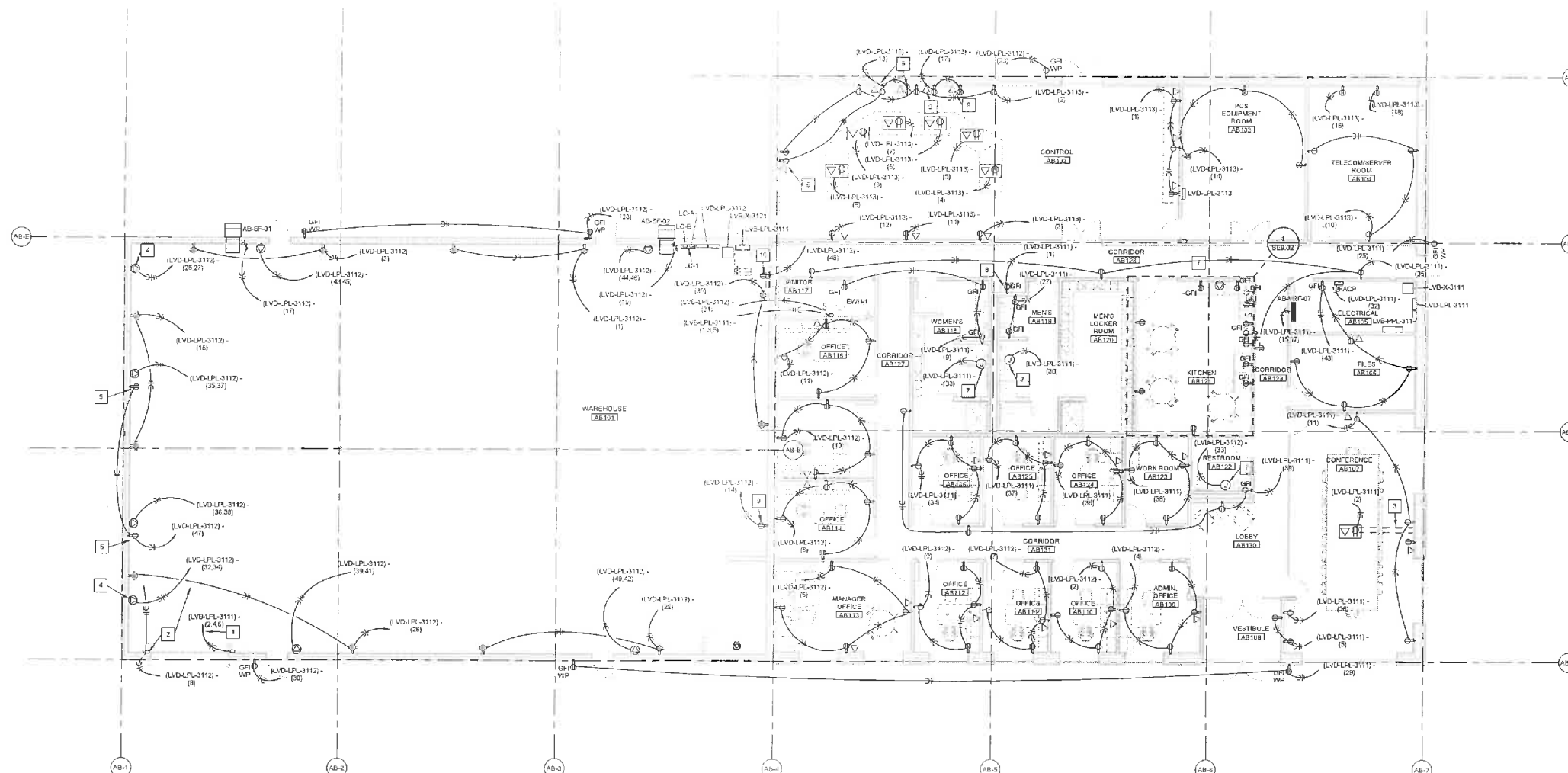
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 417.462.0400 www.gba.com

NOT FOR CONSTRUCTION

001 - ADMINISTRATION BUILDING
 LIGHTING FLOOR PLAN

DRAWING NUMBER
 2014-087-001-BE1.11



POWER FLOOR PLAN
 1 BE2.11 SCALE: 1/8" = 1'-0"

GENERAL NOTES

GENERAL NOTES

1. ALL EXTERIOR RECEPTACLES DESIGNED WEATHERPROOF (WP) ARE TO BE WITH WEATHERPROOF COVERPLATE.
2. REFERENCE DRAWING E013 FOR EQUIPMENT CIRCULARITY AND DISCONNECTS.

CONSTRUCTION NOTES

1. 30A, 480V, 3 PHASE DISCONNECT FOR 5 TON MONORAIL CRANE POWER.
2. 20A, 120V, 1 PHASE DISCONNECT AND JUNCTION BOX FOR OVERHEAD LUMINAIRES.
3. 1A, 125' CONDUITS INSTALLED UNDERGROUND FROM FLOOR BOX TO INTERIOR WALL AND STUBBED UP ABOVE DROP CEILING FOR ROUTING COMMUNICATION CABLES FROM TV.
4. 60A, 200V, 1 PHASE, NEMA TO 60A RECESSED RECEPTACLE FOR WELDING STATION. PROVIDE 2 1/2" IN 4" CONDUIT TO FEED THIS RECEPTACLE.
5. 20A, 120V, 1 PHASE, DUPLEX RECEPTACLE FOR WELDMET EXHAUST MOTOR.
6. 01E INSTRUCTIONS: DUPLEX RECEPTACLE AND DATA FOR CEILING MOUNTED TV. CONTROLS TO BE ROUTED IN CONDUIT TO CONTROL DESK. REFER TO NOTE 3 ON THIS DRAWING.
7. JUNCTION BOX ABOVE CEILING WITH 120V SINGLE PHASE POWER FOR PLUMBING FIXTURE REPAIRS.
8. 20A, 120V, 1 PHASE, GFI DUPLEX RECEPTACLE FOR ELECTRIC WATER COOLER 120V.
9. 20A, 120V RECEPTACLE AND IV OUTLET MOUNTED AT 8'-4" FOR TV/MONITOR. PROVIDE A 1" CONDUIT INSTALLED UNDERGROUND FROM CONTROL DESK TO INTERIOR WALL TV OUTLET LOCATION FOR ROUTING OF CABLES TO IV'S.
10. 20A, 120V, 1 PHASE, DUPLEX RECEPTACLE FOR FAN CONTROLLER. VERIFY LOCATION OF THE FAN PRIOR TO INSTALLATION. SEE MECHANICAL DRAWING RM1.11.

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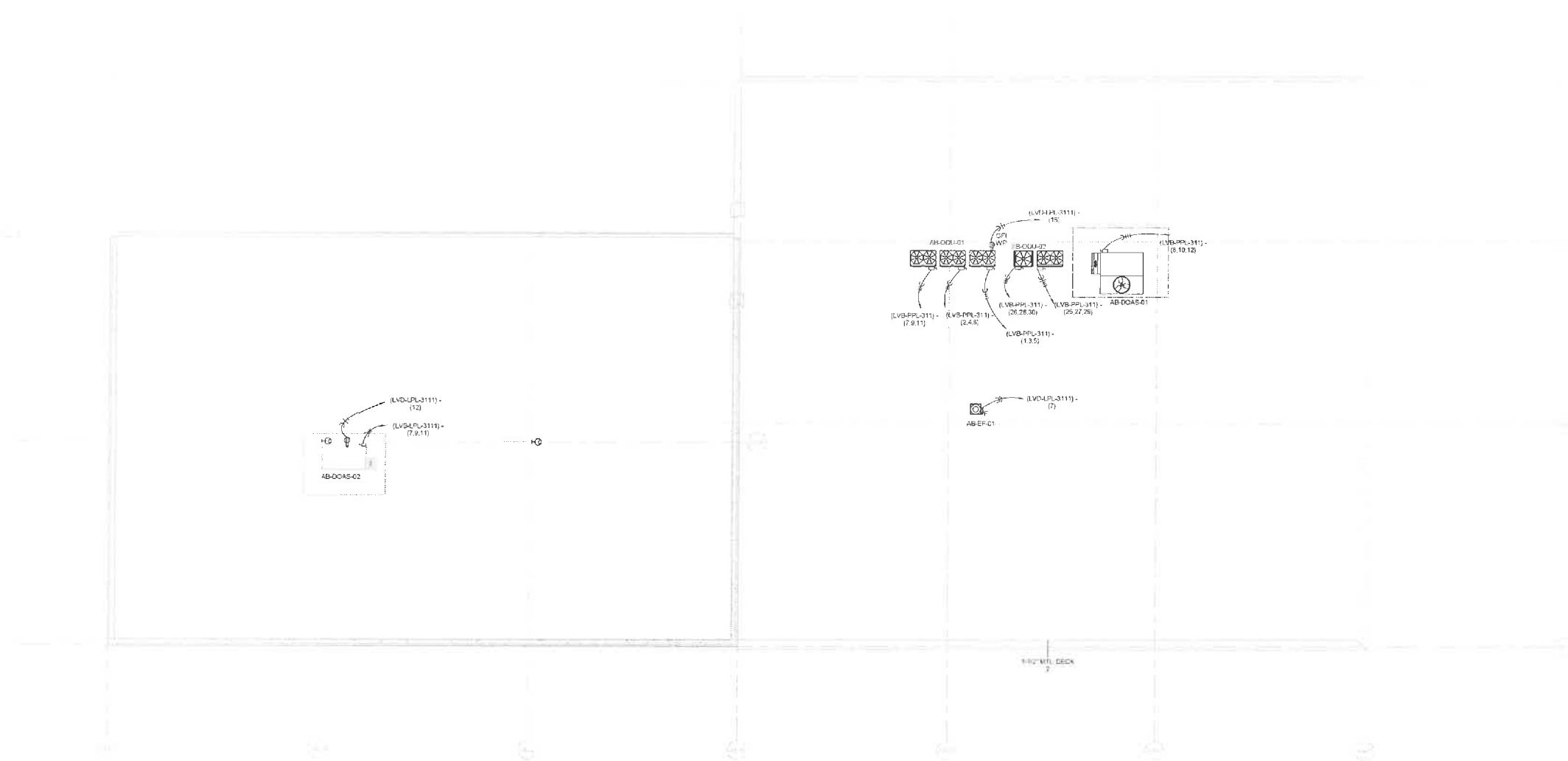
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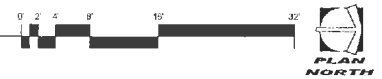
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001 - ADMINISTRATION BUILDING
 POWER FLOOR PLAN - LEVEL 1

DRAWING NUMBER
 2014-087-001-BE2.11



ELECTRICAL ROOF PLAN
SCALE: 1/8" = 1'-0"



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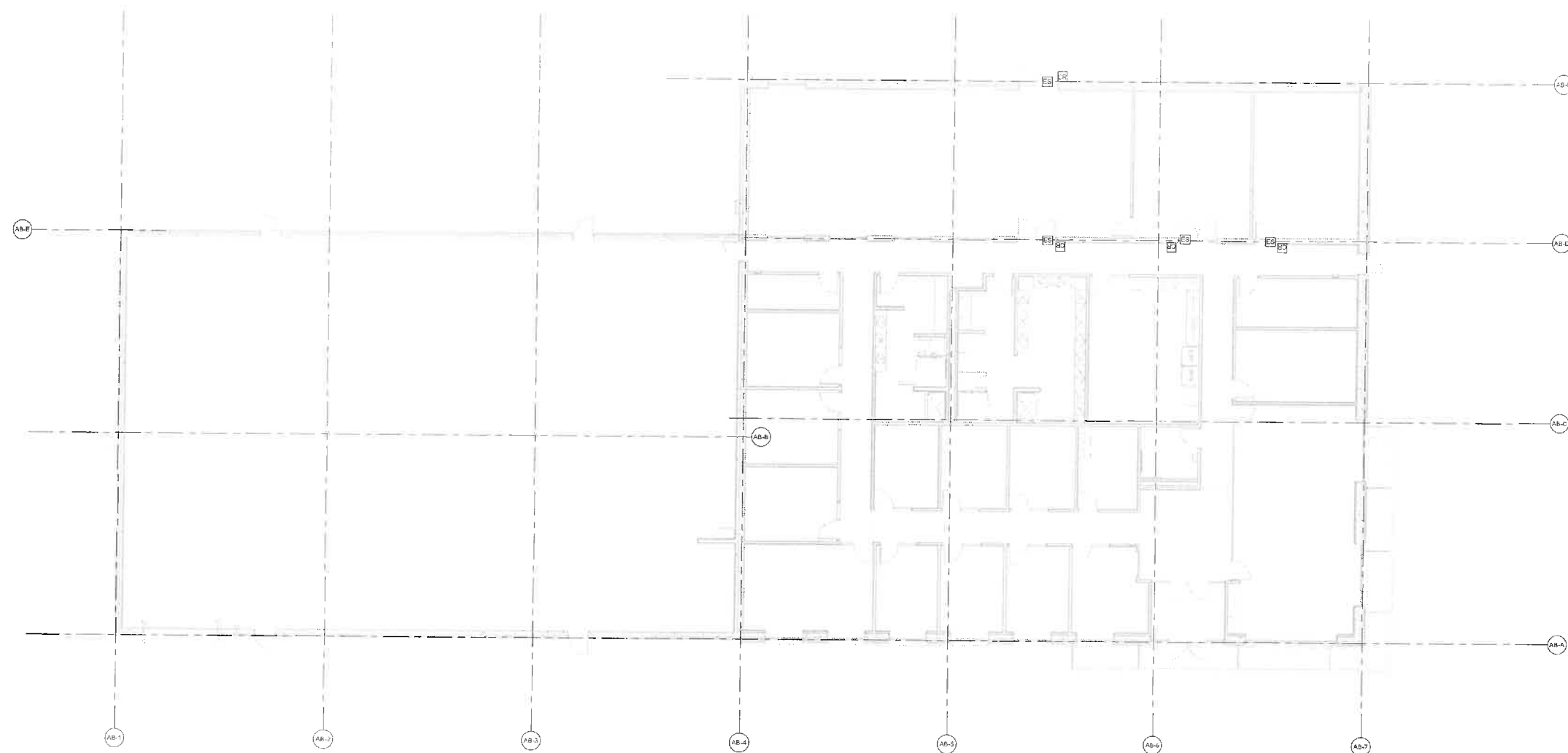
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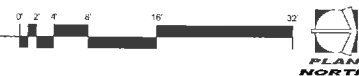
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ELECTRICAL ROOF PLAN

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SECURITY FLOOR PLAN - LEVEL 1

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



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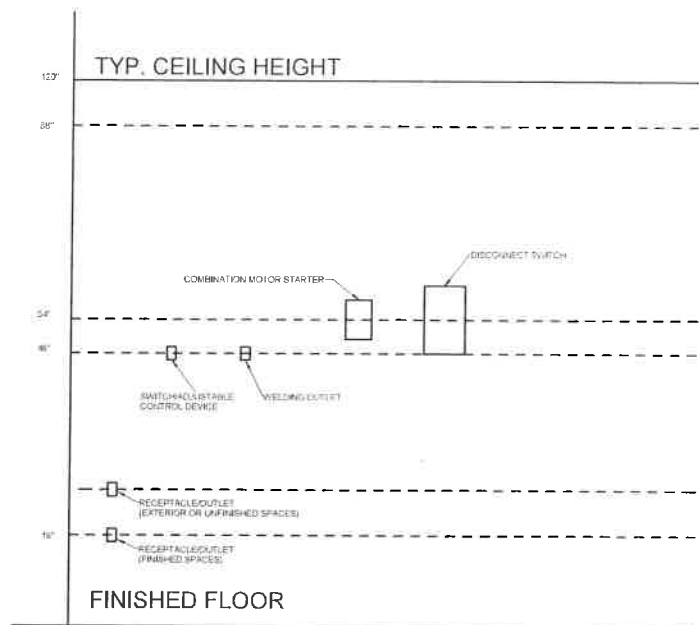
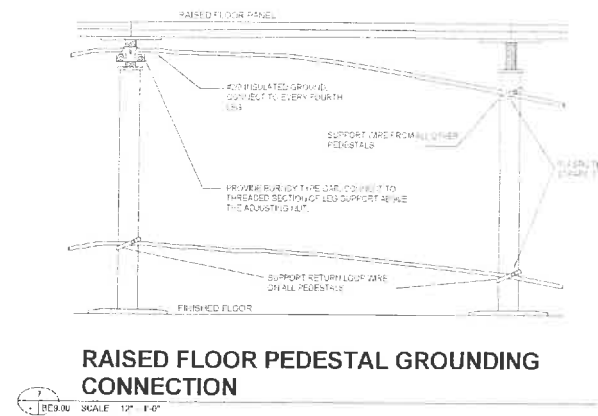
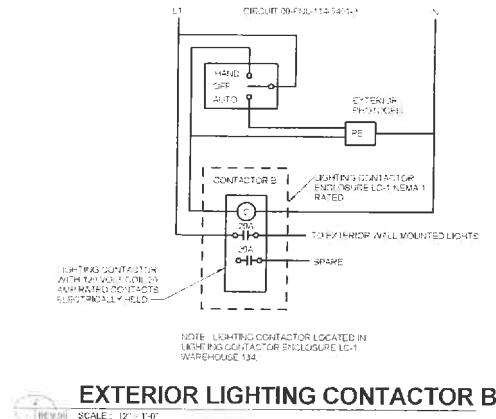
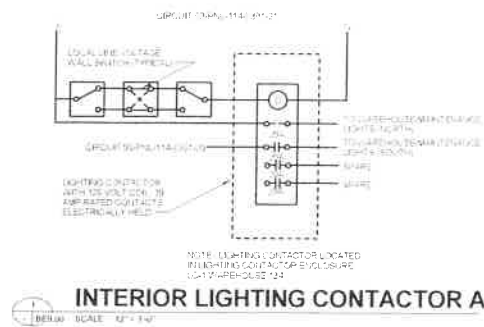
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SECURITY FLOOR PLAN - LEVEL 1

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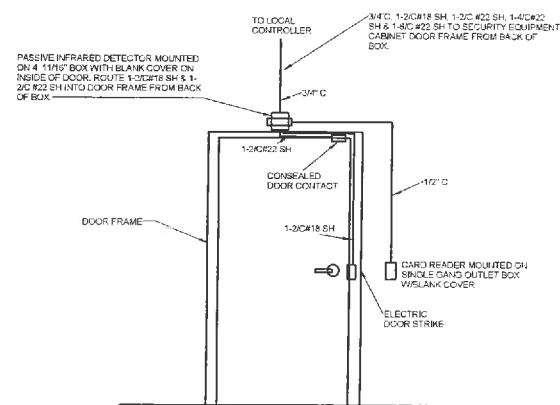
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NOTE: ALL DEVICE HEIGHTS SHOWN ARE NOT TO EXCEED VALUES, UNLESS NOTED OTHERWISE. DETAIL INDICATES TYPICAL MOUNTING HEIGHTS ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

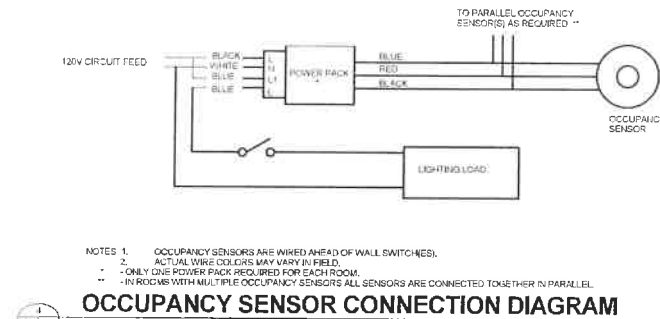
TYPICAL MOUNTING HEIGHTS

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



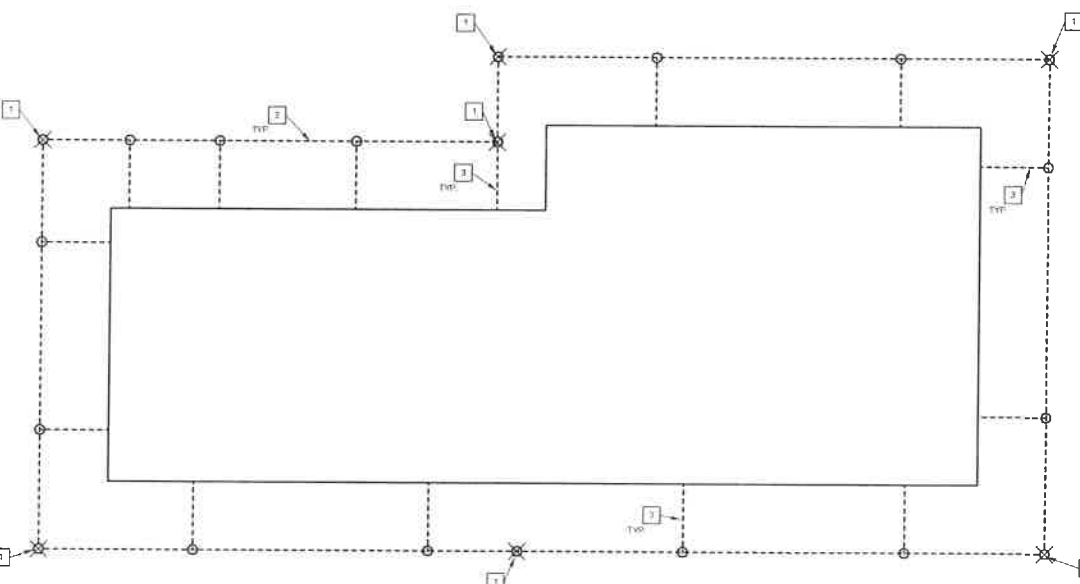
SECURITY SYSTEM DOOR ROUGH-IN

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



NOTES: 1. OCCUPANCY SENSORS ARE WIRED AHEAD OF WALL SWITCHES. 2. ACTUAL WIRE COLORS MAY VARY IN FIELD. 3. ONLY ONE POWER PACK REQUIRED FOR EACH ROOM. 4. IN ROOMS WITH MULTIPLE OCCUPANCY SENSORS ALL SENSORS ARE CONNECTED TOGETHER IN PARALLEL.

OCCUPANCY SENSOR CONNECTION DIAGRAM



GENERAL GROUNDING NOTES: 1. THE CONTRACTOR PROVIDE THE BUILDING GROUNDING PER THE SPECIFICATIONS. 2. CONNECT EXTERIOR BUILDING EQUIPMENT TO THE NEAREST GROUND LOOP LOCATION.

GROUNDING DETAIL NOTES: 1. 3/4"x1/2" GROUND ROD COPPER CLAD CAD WELD OR NON-REVERSING COMPRESSION CONNECTION. AND CONNECT TO THE GROUND LOOP. 2. INSTALL BARE TINNED COPPER CONDUCTOR. NO 20 AWG MINIMUM. BURY AT LEAST 24 INCHES BELOW GRADE 3' FROM THE BUILDING. 3. INSTALL TINNED COPPER #6 AWG TO BUILDING STEEL.

GROUNDING DETAILS

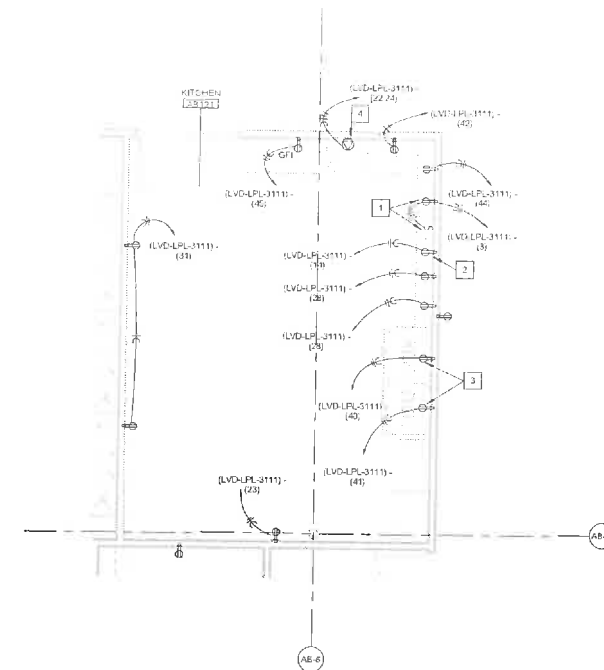
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| ELECTRICAL DETAILS | | |
| DRAWING NUMBER | | |
| 2014-087-001-BE9.00 | | |



ENLARGED POWER FLOOR PLAN
 SCALE: 1/4" = 1'-0"
 PLAN NORTH

- CONSTRUCTION NOTES:**
1. SWITCH ABOVE COUNTERTOP AND SWITCHED RECEPTACLE BELOW COUNTERTOP FOR POWER AND CONTROL OF GARBAGE DISPOSAL.
 2. DUPLEX RECEPTACLE BELOW COUNTERTOP FOR DISHWASHER.
 3. DUPLEX RECEPTACLE MOUNTED AT 3' AFF FOR REFRIGERATOR.
 4. 50A, 208V, 1 PHASE, NEMA 13-66R RECESSED RECEPTACLE FOR RANGE.

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 Architecture CQA# AX011135

| No. | Description | Date |
|--|-------------------|-----------------------------|
| REV | WEY DESIGN BY | WEY DRAWN BY |
| | ALL CHECKED BY | DATE |
| Lackawanna Energy Center LLC | | |
| Invenergy | | |
| KIEWIT POWER CONSTRUCTORS CO. | | |
| GBA P.A. Association 9801 Renner Boulevard Lenexa, Kansas 66219 913.432.2402 www.gbasam.com | | NOT FOR CONSTRUCTION |
| 001 - ADMINISTRATION BUILDING ENLARGED POWER PLAN | | |
| DRAWING NUMBER | | |
| 2014-087-001-BE9.01 | | |