ADDENDUM NO. 2

October 7, 2024

Whiteland High School Ph 2: Café Kitchen Band Choir Auditorium
300 E. Main Street
Whiteland, IN 46184

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated August 30, 2024, by Lancer Associates Architecture. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Page ADD 1-1, and Lancer Associates Architecture Addendum No. 2, dated October 10, 2024, consisting of 6 Pages, Specification Section 23 73 43.16 – Outdoor, Semi-Custom Air-Handling Units, and 22 Revised Drawings.

A. SPECIFICATION SECTION 01 12 00 MULTIPLE CONTRACT SUMMARY

N. BID CATEGORY NO.14 – MECHANICAL

Add the following Specification Section

Section 23 73 43.16 Outdoor, Semi-Custom Air-Handling Units

LANCER ASSOCIATES ARCHITECTURE

ADDENDUM NO. TWO

PROJECT: CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL ADDITION
PHASE 2

PROJECT NUMBER: 22130

DATE OF ADDENDUM: October 10, 2024

THIS ADDENDUM FORMS A PART OF THE CONTRACT DOCUMENTS AND IS ISSUED IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS. ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY SIGNING THE ADDDENDUM ACKNOWLEDGMENT SECTION OF THE BID FORM.

QUESTIONS

Q: Where are Portable Uniform Racks used?
A: Delete any reference to Portable Uniform or Garment Racks, these items will be owner-furnished item

Q: Spec Section 12 35 83. specifies standard width music library units. Drawing A721P.2 shows oversized width music library units. The existing music library units are Wenger standard width. Can it please be confirmed whether standard width or oversized width units are required for this project?
A: Provide oversized as specified

Q: Spec Section 12 35 83 specifies oblique file system accessory
Can it please be confirmed that the oblique file system accessory is desired in lieu of shelves in the music library system for this project?
A: Provide shelving

LANCER ASSOCIATES ARCHITECTURE

SPECIFICATIONS

1. **Spec Section 10 60 00 – Portable Uniform Racks**
- Delete Spec Section in its entirety

2. **Spec Section 11 40 00 - Foodservice Equipment**

Item #111, #120, #127, #135, #139, #146, #160, #169 - All Serving Counters
- Add LED underlighting to the underside of the extended trayslide overhang
- Replace entire cabinet base specification verbiage with the following:

3. Cabinet Base:
   a. 16 ga. stainless steel where exposed with galvanized steel structural framing members
   b. 3/4" marine-grade plywood laminated exterior panels with matching vinyl edge banding
      1. Laminate: Selected by Owner/Architect from manufacturer's standard collection
      2. Vertical outside corners to have 3/4"x3/4" stainless steel corner guards
      3. Underside of laminate to have stainless steel protector strip (see detail on FS5.0)
   c. 3form translucent resin standoff panels mounted on 1" metal standoffs
      1. Resin panel design: Selected by Owner/Architect from manufacturer's standard collection
      2. Metal standoff finish: Selected by Owner/Architect from manufacturer's standard finishes/colors
   d. Mount cabinet base on 4" curb with necessary access to MEP utilities stubbed up from ground
      1. Finish: Selected by Owner/Architect from manufacturer's standard finishes/colors
   e. Refer to foodservice drawing set for all electrical equipment requirements

Item #208 - Open Air Heated Merchandiser
- Add reflective sliding rear access doors to merchandiser for rear loading capabilities

3. **Spec Section 11 60 00 – Sound Control Doors**
- Delete 1.4.B (ESTA Certification)

4. **Spec Section 11 60 10 Music Library System**
- Delete Spec Section in its entirety as it is covered in section 12 35 83

5. **Spec Section 12 35 83 – Instrument Storage and Music Library**

- 1.3.B.1, 3.2.A.1 – Change wording to eliminate seismic anchoring. Seismic anchoring is not required for this project
- Delete paragraphs 2.2.A.2, 2.2.C, 2.2.D and 2.2.E. Material to be particle board thermoset panels with no urea formaldehyde added
- Change 2.3.A to Say " Basis of Design: UltraStor Storage Cabinets and AcoustiCabinets as manufactured by Wenger Corporation. Modular instrument storage casework with integral bases, adjustable levelers, and through-bolted fastening, enabling owner reconfiguration of unit layout. Ultrastore cabinets with solid doors to be used in the corridor P1001. AcoustiCabinet with grille doors to be used inside classrooms and storage rooms
- Add Stevens Industries 2200 Instrument Storage as an approved equal
- Add Stevens Industries Music Library System

6. **Specification Section 089119, "Fixed Louvers".**
- Add Louvers and Dampers as an approved manufacturer.
- Add Construction Specialties as an approved manufacturer.

7. **Specification Section 230713 "Duct Insulation"**
- Add Part 2.2 H. Add Part 2.4 D. Revise Part 3.6. Revise Part 3.10. Add Part 3.11. Refer to attached revised specification section for more information.

8. **Specification Section 232116, "Hydronic Piping Specialties".**
- Add Taco Comfort Solutions; a Taco Family Company as an approved manufacturer.
- Add Grundfos as an approved manufacturer.

9. **Specification Section 232123, "Hydronic Pumps".**
- Add Taco Comfort Solutions; a Taco Family Company as an approved manufacturer.
- Add Grundfos as an approved manufacturer.

10. **Specification Section 237343.16, "Outdoor, Semi-Custom Air-Handling Units".**
- Add Specification Section in its entirety. Refer to attached Specification Section.

11. **Spec Section 32 33 00 SITE FURNISHINGS**
- Section 2.03 ALTERNATE: ATHLETIC BARRIER NETTING
- Chane the length of the Athletic Barrier Netting to 140'-0".

DRAWINGS REVISIONS:

1. **Title Sheet (sheet 100):**
- Revised Plan Index to include new plan sheets (i.e. Electric Plan and Profile – sheet 1100 and Telecom Plan and Profile – sheet 1101).

2. **Utility Plan (sheets 400 to 402):**
- Revised Utility Note #6 to indicate that all water lines shall be installed with 5' minimum of cover from finished grade.

LANCER ASSOCIATES ARCHITECTURE

3. **Utility Plan (sheet 403):**
- Revised Utility Plan Note #6 to indicate that all water lines shall be installed with 5' minimum of cover from finished grade.
- Revised plan view and Sanitary Sewer Lateral Table to show Schier GB-1500 grease interceptor to match plumbing plans prepared by Primary Engineering.

4. **Miscellaneous Details (sheet 1001):**
- Revised "Reinforced Concrete Pavement Layout (G1)" detail based on revised Schier GB1500 grease interceptor dimensions.

5. **Electric Plan and Profile (sheet 1100):**
- Added plan sheet to show profile of electrical conduits to be installed as part of the project for the Town of Bargersville/Johnson Co. REMC relocation of the 3-phase electrical service**.**

6. **Telecom Plan and Profile (sheet 1101):**
- Added plan sheet to show profile of telecommunications conduits to be installed as part of the project for the JC Fiber, Metronet, and Brightspeed relocations. It should be noted that the conduits shown on the "Alignment – Telecom West" plan and profile has been included for reference only because the conduits will be installed by the respective utility companies.

7. **Drawing Sheet A721P.2 - INTERIOR FINISH PLAN - FIRST FLOOR - UNIT P.2:**
- Change flooring in room P113 to EPX-1

8. **Drawing Sheet A721P.2 - DOOR SCHEDULE:**
- Change door material to steel to match spec section 11 60 00 for the following doors:
    - P108c, P108d, P108e, P108f, P109e, P109f, P110f, P110g.1, P110g.2, P115c, P208b, P208c, and P208d
- Change door frames to be split frames to match basis of design for the following doors:
    - P108c, P108d, P108e, P108f, P109e, P109f, P110f, P110g.1, P110g.2, P115c, P208b, P208c, and P208d

9. **Drawing Sheet P100A.**
- Revise underground plumbing. Refer to attached drawing revision for more information

10. **Drawing Sheet P100B.**
- Revise underground plumbing. Refer to attached drawing revision for more information.

11. **Drawing Sheet P501.**

- Solids and Grease Interceptor Schedule: Revise GI-1 to be Schier GB-1500. Refer to attached drawing revision for more information.

12. Drawing Sheet M104.
- Add condensate drain piping to air handling unit DOAS-3. Refer to attached drawing revision for more information.

13. Drawing Sheet M302.
- Add condensate drain piping to air handling units AHU-P-4 and AHU-P-5. Refer to attached drawing revision for more information.

14. Drawing Sheet M303.
- Add condensate drain piping to air handling units AHU-P-1, AHU-P-2, and AHU-P-3. Refer to attached drawing revision for more information.

15. Drawing Sheet M405.
- Revise Dual Temperature and Reheat Heat Pump Flow Diagram to include 3-way control valves and manual balance valves. Refer to attached drawing revision for more information.

16. Drawing Sheet M502.
- Water-to-Water Heat Pump Schedule: add control valve information. Refer to attached drawing revision for more information.

17. Drawing Sheet FS100 - Foodservice Notes, Symbols & Legends

- Perspective views included on sheet were altered to show the raised panels added to the serving counter front elevations

18. Drawing Sheet FS503 - Foodservice Equipment Details & Elevations

- Detail #4: Wash sink section view added to Item #86: Three Compartment Sink
- Detail #5: Updated elevation view for Item #103: Open Air Dry Goods Merchandiser to include lockable storage cabinet
- Detail #6: Updated section view for Item #103: Open Air Dry Goods Merchandiser to include lockable storage cabinet

19. Drawings Sheet FS504 - Foodservice Equipment Details & Elevations

- Detail #1: Updated Item #111: Grilled Food Serving Counter to include raised panels added to the front of serving counter elevation
- Detail #2: Updated Item #120: Deli/Salads Serving Counter to include raised panels added to the front of serving counter elevation

- Detail #3: Updated Item #127: Make-Your-Own Serving Counter to include raised panels added to the front of serving counter elevation
- Detail #4: Updated Item #135: Fresh Foods Serving Counter to include raised panels added to the front of serving counter
- Detail #6: Updated Item #169: Fresh Foods Serving Counter to include raised panels added to the front of serving counter

20. **Drawing Sheet FS505 - Foodservice Equipment Details & Elevations**
    - Detail #1: Updated Item #146: Warrior Favorites Serving Counter to include raised panels added to the front of serving counter elevation
    - Detail #3: Updated serving counter section views to include raised panels added to the front of serving counter elevation
    - Detail #4: Updated Item #160: Pizza/Italian Serving Counter to include raised panels added to the front of serving counter

Soccer Complex:

1. **Sheet L110 SITE MATERIALS PLAN – PHASE 2**
- A. Athletic Barrier Netting has been revised.

2. **Sheet L210 SITE LAYOUT PLAN – PHASE 2**
- A. Athletic Barrier Netting layout has been revised.

Attachments:
Specification: 23 07 13, 23 73 43.16

Drawings : 100, 400, 401, 402, 403, 1001, 1100, 1101, P100A, P100B, P501, M104, M302, M303, M405, M502

Soccer Complex: L110, L210

End of Addendum 2

Section 23 0713 - Duct Insulation

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating the following duct services:
1. Indoor, concealed supply and outdoor air.
2. Indoor, exposed supply and outdoor air.
3. Indoor, concealed return located in unconditioned space.
4. Indoor, exposed return located in unconditioned space.
5. Indoor, concealed, Type I, commercial, kitchen hood exhaust.
6. Indoor, exposed, Type I, commercial, kitchen hood exhaust.
7. Indoor, concealed oven and warewash exhaust.
8. Indoor, exposed oven and warewash exhaust.
9. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
10. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
11. Outdoor, concealed supply and return.
12. Outdoor, exposed supply and return.

B. Related Requirements:
1. Section 23 0716 "HVAC Equipment Insulation."
2. Section 23 0719 "HVAC Piping Insulation."
3. Section 23 3113 "Metal Ducts" for duct liners.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
3. Detail application of field-applied jackets.
4. Detail application at linkages of control devices.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.4 QUALITY ASSURANCE

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers are to be marked with the manufacturer's name, appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 23 0529 "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation, jacket materials, adhesive, mastic, tapes, and cement material containers with appropriate markings of applicable testing agency.
   1. All Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2.2 INSULATION MATERIALS

A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials are to be applied.

B. Products do not contain asbestos, lead, formaldehyde, mercury, or mercury compounds.

C. Products that come in contact with stainless steel have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.

D. Insulation materials for use on austenitic stainless steel are qualified as acceptable in accordance with ASTM C795.

E. Foam insulation materials do not use CFC or HCFC blowing agents in the manufacturing process.

F. Glass-Fiber Blanket: Glass fibers bonded with a formaldehyde free thermosetting resin; suitable for maximum use temperature up to 450 deg F in accordance with ASTM C411. Comply with ASTM C553, Type II, and ASTM C1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. CertainTeed Corporation.
    b. Johns Manville; a Berkshire Hathaway company.
    c. Knauf Insulation.
    d. Owens Corning

G. Glass-Fiber Board Insulation: Glass fibers bonded with a thermosetting resin; suitable for maximum use temperature between 35 deg F and 250 deg F for jacketed and between 35 deg F and 450 deg F for unfaced in accordance with ASTM C411. Comply with ASTM C612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. CertainTeed Corporation.
    b. Johns Manville; a Berkshire Hathaway company.
    c. Knauf Insulation.
    d. Owens Corning.

H. Flexible Elastomeric Insulation: EPDM Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C117, C518, Type I for tubular materials.
1. Products: Subject to compliance with requirements, provide one of the following:
    a. Aeroflex USA, Inc.; Aerocel EPDM.
    b. Armacell; UT Solaflex EPDM.

2. Properties:
    a. K-value: 0.25 (Btu-in/sq.ft.-hr-deg F) at 75 deg F mean temperature.
    b. Service temperature: -70 deg F to 257 deg F without drying or hardening.
    c. Water vapor permeability: 0.08 perm-inch per ASTM C355.
    d. UV weather resistance: ASTM G23 standard requiring no additional coatings or jacket.
    e. Flammability, Smoke Density: 25/50 per ASTM 84.

2.3 FIRE-RATED INSULATION SYSTEMS

A. Fire-Rated Board: Structural-grade, press-molded, xonolite calcium silicate, fireproofing board suitable for operating temperatures up to 1700 deg F. Comply with ASTM C656, Type II, Grade 6. Tested and certified to provide a [**1**] [**2**]-hour fire rating by an NRTL acceptable to authorities having jurisdiction.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

    a. Johns Manville; a Berkshire Hathaway company.

B. Fire-Rated Blanket: High-temperature, flexible, blanket insulation with FSK jacket that is tested and certified to provide a 1-hour fire rating by an NRTL acceptable to authorities having jurisdiction.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. 3M.
    b. CertainTeed Corporation.
    c. Johns Manville; a Berkshire Hathaway company.

2.4 ADHESIVES

A. Materials are compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Glass-Fiber and Mineral Wool Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Childers Brand; H. B. Fuller Construction Products.
    b. Eagle Bridges - Marathon Industries.
    c. Foster Brand; H. B. Fuller Construction Products.
    d. Mon-Eco Industries, Inc.

2. Fiberglass adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

3. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Childers Brand; H. B. Fuller Construction Products.
b. Eagle Bridges - Marathon Industries.
c. Foster Brand; H. B. Fuller Construction Products.
d. Mon-Eco Industries, Inc.

2. Adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

3. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

D. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Aeroflex USA, Inc.
b. Foster Brand; H. B. Fuller Construction Products.

2. Adhesives shall have a VOC content of 50 g/L or less.

3. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.5 MASTICS AND COATINGS

A. Materials are compatible with insulation materials, jackets, and substrates.

1. VOC Content: 300 g/L or less.
2. Low-Emitting Materials: Mastic coatings shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.6 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Childers Brand; H. B. Fuller Construction Products.
b. Eagle Bridges - Marathon Industries.
c. Foster Brand; H. B. Fuller Construction Products.
d. Mon-Eco Industries, Inc.

2. Materials are compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.

4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. Sealant shall have a VOC content of 420 g/L or less.
7. Sealant shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
   1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C1136, Type I.
   2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C1136, Type I.
   3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C1136, Type II.
   4. FSP Jacket: Aluminum-foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C1136, Type II.
   5. Vinyl Jacket: White vinyl with a permeance of 1.3 perms when tested in accordance with ASTM E96/E96M, Procedure A, and complying with NFPA 90A and NFPA 90B.
   6. ASJ+: All-service jacket composed of aluminum foil reinforced with glass scrim bonded to a kraft paper interleaving with an outer film leaving no paper exposed; complying with ASTM C1136, Types I, II, III, IV, and VII.
   7. PSK Jacket: Aluminum foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C1136, Type II.

2.8 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C1136.

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

      a. Avery Dennison Corporation, Specialty Tapes Division.
      b. Compac Corporation.
      c. Ideal Tape Co., Inc., an American Biltrite Company.
      d. Knauf Insulation.
   2. Width: 3 inches.
   3. Thickness: 11.5 mils.
   4. Adhesion: 90 ounces force/inch in width.
   5. Elongation: 2 percent.
   6. Tensile Strength: 40 lbf/inch in width.
   7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Avery Dennison Corporation, Specialty Tapes Division.
    b. Compac Corporation.
    c. Ideal Tape Co., Inc., an American Biltrite Company.
    d. Knauf Insulation.
2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Avery Dennison Corporation, Specialty Tapes Division.
    b. Compac Corporation.
    c. Ideal Tape Co., Inc., an American Biltrite Company.
    d. Knauf Insulation.
2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

2.9 SECUREMENTS

A. Bands:
1. Aluminum: ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with closed seal.
2. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:
1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch- diameter shank, length to suit depth of insulation indicated.

    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

        1) AGM Industries, Inc.
        2) Gemco.
        3) Midwest Fasteners, Inc.
2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) AGM Industries, Inc.
2) Gemco.
3) Midwest Fasteners, Inc.

b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

2.10 CORNER ANGLES

A. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum in accordance with ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, compress, or otherwise damage insulation or jacket.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing. Replace insulation materials that get wet during storage or in the installation process before being properly covered and sealed in accordance with Contract Documents.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
   1. Install insulation continuously through hangers and around anchor attachments.
   2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
   3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:
   1. Draw jacket tight and smooth, but not to the extent of creating wrinkles or areas of compression in the insulation.
   2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
   3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
      a. For below ambient services, apply vapor-barrier mastic over staples.
   4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
   5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
   1. Seal penetrations with flashing sealant.
   2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor

insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.

3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.
1. Comply with requirements in Section 07 8413 "Penetration Firestopping."

E. Insulation Installation at Floor Penetrations:
1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 07 8413 "Penetration Firestopping."

3.5 INSTALLATION OF GLASS-FIBER AND MINERAL-WOOL INSULATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

B. Comply with manufacturer's written installation instructions.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
    a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.

b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
d. Do not overcompress insulation during installation.
e. Impale insulation over pins and attach speed washers.
f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

C. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
   a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
   b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
   c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
   d. Do not overcompress insulation during installation.

e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC AND POLYOLEFIN INSULATION

A. Comply with manufacturer's written installation instructions and ASTM C1710.

B. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Square and Rectangular Ducts and Plenums:
   1. Provide 1/4 inch more per side for a tight, compression fit.
   2. Cut sheet insulation with the following dimensions:
      a. Width of duct plus 1/4 inch, one piece.
      b. Height of duct plus 1/4 inch, plus thickness of insulation, two pieces.
      c. Width of duct plus 1/4 inch, plus two times the thickness of insulation, one piece.
   3. Insulate the bottom of the duct with the sheet from (a) above, then the sides with the two sheets from (b) above, and finally the top of the duct with the sheet from (c) above.
   4. Insulation without self-adhering backing:
      a. Apply 100 percent coverage of manufacturer adhesive on the metal surface, then the insulation, except for the last 1/4 inch where sheets will butt together.
      b. Roll sheet down into position.
      c. Press two sheets together under compression and apply adhesive at the butt joint to seal the two sheets together.
   5. Insulation with self-adhering backing:
      a. Peel back release paper in 6- to 8-inch increments and line up sheet.

b. Press firmly to activate adhesive.
c. Align material and continue to line up correctly, pressing firmly while slowly removing release paper.
d. Allow 1/4-inch overlap for compression at butt joints.
e. Apply adhesive at the butt joint to seal the two sheets together.

6. Insulate duct brackets following manufacturer's written installation instructions.

D. Circular Ducts:
1. Determine the circumference of the duct, using a strip of insulation the same thickness as to be used.
2. Cut the sheet to the required size.
3. Apply 100 percent coverage of manufacturer adhesive on the metal surface then the insulation.
4. Apply manufacturer adhesive to the cut surfaces along 100 percent of the longitudinal seam. Press together the seam at the ends and then the middle. Close the entire seam starting from the middle.

3.7 FINISHES

A. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended ultra-violet protective coating on all insulation located outside.

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

C. Do not field paint aluminum or stainless steel jackets.

3.8 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:
1. Inspect ductwork, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection is limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.9 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:
1. Indoor, concealed supply and outdoor air.
2. Indoor, exposed supply and outdoor air.
3. Indoor, concealed return located in unconditioned space.
4. Indoor, exposed return located in unconditioned space.
5. Indoor, concealed, Type I, commercial, kitchen hood exhaust.
6. Indoor, exposed, Type I, commercial, kitchen hood exhaust.
7. Indoor, concealed oven and warewash exhaust.

8. Indoor, exposed oven and warewash exhaust.
9. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
10. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
11. Outdoor, concealed supply and return.
12. Outdoor, exposed supply and return.

B. Items Not Insulated:
1. Fibrous-glass ducts.
2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
3. Factory-insulated flexible ducts.
4. Factory-insulated plenums and casings.
5. Flexible connectors.
6. Vibration-control devices.
7. Factory-insulated access panels and doors.

3.10 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Concealed, rectangular, round and flat-oval, supply-air duct insulation is the following:
1. Glass-Fiber Blanket: 1-1/2 inches thick and 0.75 lb/cu. ft. nominal density (R-5.1 minimum).

B. Concealed, rectangular, round and flat-oval, return-air duct insulation is the following:
1. Glass-Fiber Blanket: 1-1/2 inches thick and 0.75 lb/cu. ft. nominal density (R-5.1 minimum).

C. Concealed, rectangular, round and flat-oval, outdoor-air duct insulation is the following:
1. Glass-Fiber Blanket: 3 inches thick and 0.75 lb/cu. ft. nominal density (R-10.2 minimum).

D. Concealed, rectangular, round and flat-oval, exhaust-air duct insulation between the damper and point of building penetration is the following:
1. Glass-Fiber Blanket: 3 inches thick and 0.75 lb/cu. ft. nominal density (R-10.2 minimum).

E. Concealed, supply-air plenum insulation is one of the following:
1. Glass-Fiber Board: 1-1/2 inches thick and 1.6 lb/cu. ft. nominal density (R-6.3 minimum).

F. Concealed, return-air plenum insulation is the following:
1. Glass-Fiber Board: 1-1/2 inches thick and 1.6 lb/cu. ft. nominal density (R-6.3 minimum).

G. Concealed, outdoor-air plenum insulation is the following:
1. Glass-Fiber Board: 3 inches thick and 1.6 lb/cu. ft. nominal density (R-12.5 minimum).

H. Concealed, exhaust-air plenum insulation between the damper and point of building penetration is the following:

1. Glass-Fiber Board: 3 inches thick and 1.6 lb/cu. ft. nominal density (R-12.5 minimum).

I. Exposed, rectangular, round and flat-oval, supply-air duct insulation is the following:
1. Glass-Fiber Blanket: 1-1/2 inches thick and 0.75 lb/cu. ft. nominal density (R-5.1 minimum).

J. Exposed, rectangular, round and flat-oval, return-air duct insulation is the following:
1. Glass-Fiber Blanket: 1-1/2 inches thick and 0.75 lb/cu. ft. nominal density (R-5.1 minimum).

K. Exposed, variable air volume terminal coil insulation is the following:
1. Glass-Fiber Blanket: 1-1/2 inches thick and 1.6 lb/cu. ft. nominal density (R-6.3 minimum).

L. Exposed, rectangular, round and flat-oval, outdoor-air duct insulation is the following:
1. Glass-Fiber Blanket: 3 inches thick and 0.75 lb/cu. ft. nominal density (R-10.2 minimum).

M. Exposed, round and flat-oval, exhaust-air duct insulation between the damper and point of building penetration is the following:
1. Glass-Fiber Blanket: 3 inches thick and 0.75 lb/cu. ft. nominal density (R-10.2 minimum).

N. Exposed, supply-air plenum insulation is one of the following:
1. Flexible Elastomeric: 1 inch thick (R-4.2 minimum).
2. Glass-Fiber Board: 1-1/2 inches thick and 1.6 lb/cu. ft. nominal density (R-6.3 minimum).

O. Exposed, return-air plenum insulation is one of the following:
1. Flexible Elastomeric: 1 inch thick (R-4.2 minimum).
2. Glass-Fiber Board: 1-1/2 inches thick and 1.6 lb/cu. ft. nominal density (R-6.3 minimum).

P. Exposed, outdoor-air plenum insulation is one of the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).
2. Glass-Fiber Board: 3 inches thick and 1.6 lb/cu. ft. nominal density (R-12.5 minimum).

Q. Exposed, exhaust-air plenum insulation between the damper and point of building penetration is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).
2. Glass-Fiber Board: 3 inches thick and 1.6 lb/cu. ft. nominal density (R-12.5 minimum).

3.11 ABOVEGROUND, OUTDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Insulation materials and thicknesses are identified below. If more than one material is listed for a duct system, selection from materials listed is Contractor's option.

B. Concealed, rectangular, round and flat-oval, supply-air duct insulation is the following:

1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

C. Concealed, rectangular, round and flat-oval, return-air duct insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

D. Concealed, rectangular, round and flat-oval, exhaust-air duct insulation is the following:
1. Flexible Elastomeric: 1 inch thick (R-4.2 minimum).

E. Concealed, supply-air plenum insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

F. Concealed, return-air plenum insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

G. Concealed, exhaust-air plenum insulation is the following:
1. Flexible Elastomeric: 1 inch thick (R-4.2 minimum).

H. Exposed, rectangular, round and flat-oval, supply-air duct insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

I. Exposed, rectangular, round and flat-oval, return-air duct insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

J. Exposed, rectangular, round and flat-oval, exhaust-air duct insulation is the following:
1. Flexible Elastomeric: 1 inch thick (R-4.2 minimum).

K. Exposed, supply-air plenum insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

L. Exposed, return-air plenum insulation is the following:
1. Flexible Elastomeric: 2 inches thick (R-8 minimum).

M. Exposed, exhaust-air plenum insulation is the following:
1. Flexible Elastomeric: 1 inch thick (R-4.2 minimum).

END OF SECTION 23 0713

Section 23 73 43.16 - Outdoor, Semi-Custom Air-Handling Units

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes outdoor, semi-custom air-handling units that are factory assembled using multiple section components; including:
   1. Unit casings.
   2. Fan, drive, and motor section.
   3. Coil section.
   4. Air filtration section.
   5. Dampers.
   6. Diffusers.
   7. Roof curbs.
   8. Intake and relief air openings.

1.2 ACTION SUBMITTALS

A. Product Data: For each air-handling unit.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
   2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
   3. Include unit dimensions and weight.
   4. Include cabinet material, metal thickness, finishes, insulation, and accessories.
   5. Fans:
      a. Include certified fan-performance curves with system operating conditions indicated.
      b. Include certified fan-sound power ratings.
      c. Include fan construction and accessories.
      d. Include motor ratings, electrical characteristics, and motor accessories.
   6. Include certified coil-performance ratings with system operating conditions indicated.
   7. Include dampers, including housings, linkages, and operators.

B. Shop Drawings: For each outdoor, semi-custom air-handling unit.
   1. Include plans, elevations, sections, and mounting details.
   2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   3. Detail fabrication and assembly of outdoor, semi-custom air-handling units, as well as procedure and diagrams.
   4. Include diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans and other details, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.

B. Sample Warranty: For manufacturer's warranty.

C. Source quality-control reports.

D. Startup service reports.

E. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air-handling units to include in emergency, operation, and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Filters: One set(s) for each air-handling unit.
2. Gaskets: One set(s) for each access door.
3. Fan Belts: One set(s) for each air-handling unit fan.

1.6 WARRANTY

A. Warranty: Manufacturer agrees to repair or replace components of outdoor, semi-custom, air-handling unit that fail in materials or workmanship within specified warranty period.
1. Warranty Period for Entire Unit: Manufacturer's standard but not less than two year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of air-handling units and components.

C. ASHRAE 62.1 Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

E. Structural Performance:
1. Casing Panels: Self-supporting and capable of withstanding positive/negative 8-inch wg internal static pressure, without exceeding a midpoint deflection of 0.0042 inch/inch of panel span.
2. Floor and Roof Panels: Self-supporting and capable of withstanding 300-lb static load at midspan, without exceeding a midpoint deflection of 0.0042 inch/inch.

3. Roof Panels: Self-supporting and capable of withstanding a static snow load of 30 lb/sq. ft., without exceeding a midpoint deflection of 0.0042 inch/inch.

F. Casing Leakage Performance: ASHRAE 111, Class 6 leakage or better at plus or minus 8-inch wg.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Innovent
2. Temtrol

B. Source Limitations: Obtain from single source from single manufacturer.

2.3 UNIT CASINGS

A. Frame: Modular and providing overall structural integrity without reliance on casing panels for structural support.

B. Base Rail:
1. Material: Galvanized steel.

C. Casing Joints: Hermetically sealed at each corner and around entire perimeter.

D. Double-Wall Construction:
1. Outside Casing Wall:
a. Material, Galvanized Steel
b. Factory Finish: Provide manufacturer's standard finish.
2. Inside Casing Wall:
a. Material, Galvanized Steel

E. Floor Plate:
1. Material:
a. Aluminum, minimum 18 gauge thick.

F. Roof: Cross-broken and pitched with "C" caps over joints to provide watertight seal.

G. Piping Vestibule: Insulated with same insulation and thickness as casing, 42 inches deep by full width of piping connections.

H. Casing Insulation:
1. Materials: Glass-fiber blanket or board insulation, Type I or Type II ASTM C1071 or injected polyurethane foam insulation.
2. Casing Panel R-Value: Minimum R-13.
3. Thermal Break: Provide continuity of insulation with no through-casing metal in casing walls, floors, or roofs of air-handling unit.

I. Airstream Surfaces: Surfaces in contact with airstream shall comply with requirements in ASHRAE 62.1.

J. Static-Pressure Classifications:
   1. For Unit Sections Upstream of Fans: Minus 6-inch wg.
   2. For Unit Sections Downstream and Including Fans: 6-inch wg.

K. Panels, Doors, and Windows:
   1. Panels:
      a. Fabrication: Formed and reinforced, double-wall and insulated panels of same materials and thicknesses as casing.
      b. Fasteners: Two or more camlock type for panel lift-out operation. Arrangement shall allow panels to be opened against airflow
      c. Gasket: Neoprene, applied around entire perimeters of panel frames.
      d. Size: Large enough to allow unobstructed access for inspection and maintenance of air-handling unit's internal components. At least 18 inches wide by full height of unit casing up to a maximum height of 60 inches.
   2. Doors:
      a. Fabrication: Formed and reinforced, double-wall and insulated panels of same materials and thicknesses as casing.
      b. Hinges: A minimum of two ball-bearing hinges or stainless-steel piano hinge and two wedge-lever latches, operable from inside and outside. Arrange doors to be opened against airflow. Provide safety latch retainers on doors so that doors do not open uncontrollably.
      c. Gasket: Neoprene, applied around entire perimeters of panel frames.
      d. Size: Large enough to allow for unobstructed access for inspection and maintenance of air-handling unit's internal components. At least 18 inches wide by full height of unit casing up to a maximum height of 60 inches.

L. Condensate Drain Pans:
   1. Location: Each type of cooling coil.
   2. Construction:
      a. Double-wall, stainless-steel sheet with space between walls filled with foam insulation and moisture-tight seal.
   3. Drain Connection:
      a. Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.
      b. Minimum Connection Size: NPS 2.
   4. Slope: Minimum 0.125-in./ft. slope, to comply with ASHRAE 62.1, in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and from humidifiers and to direct water toward drain connection.
   5. Length: Extend drain pan downstream from leaving face for distance to comply with ASHRAE 62.1.
   6. Width: Entire width of water producing device.
   7. Depth: A minimum of 2 inches deep.
   8. Formed sections.
   9. Pan-Top Surface Coating for Galvanized-Steel Drain Pans: Asphaltic waterproofing compound.
   10. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

2.4 FAN, DRIVE, AND MOTOR SECTION

A. Fan and Drive Assemblies: Statically and dynamically balanced and designed for continuous operation at maximum-rated fan speed and motor horsepower.

B. Fans: Centrifugal, galvanized steel; mounted on solid-steel shaft.
   1. Shafts: With field-adjustable alignment.
      a. Turned, ground, and polished hot-rolled steel with keyway.
   2. Shaft Bearings:
      a. Prelubricated and Sealed, Ball Bearings: Self-aligning, pillow-block type with an L-50 rated life of 200,000 hours according to ABMA 9.
      b. Grease-Lubricated, Tapered-Roller Bearings: Self-aligning, pillow-block type with double-locking collars and two-piece, cast-iron housing and an L-50 rated life of 200,000 hours according to ABMA 11.
      c. Grease-Lubricated Bearings: Self-aligning, pillow-block-type, ball or roller bearings with adapter mount and two-piece, cast-iron housing and an L-50 rated life of 200,000.
   3. Housings: Formed- and reinforced-steel panels to form curved scroll housings with shaped cutoff and spun-metal inlet bell.
      a. Bracing: Steel angle or channel supports for mounting and supporting fan scroll, wheel, motor, and accessories.
   4. Housings, Plenum Fans: Steel frame and panel; fabricated without fan scroll and volute housing. Provide inlet screens for Type SWSI fans.
   5. Backward-Inclined, Centrifugal Fan Wheels: Construction with curved inlet flange, backplate, backward-inclined blades welded or riveted to flange and backplate; aluminum hub riveted to backplate and fastened to shaft with setscrews.
   6. Forward-Curved, Centrifugal Fan Wheels: Inlet flange, backplate, and shallow blades with inlet and tip curved forward in direction of airflow and mechanically fastened to flange and backplate; aluminum hub swaged to backplate and fastened to shaft with setscrews.
   7. Airfoil, Centrifugal Fan Wheels (Plenum Fan Wheels): Smooth-curved inlet flange, backplate, and hollow die-formed airfoil-shaped blades continuously welded at tip flange and backplate; steel hub riveted to backplate and fastened to shaft with setscrews.
   8. Mounting: For internal vibration isolation. Factory-mount fans with manufacturer's standard restrained vibration isolation mounting devices having a minimum static deflection of 1 inch.
   9. Shaft Lubrication Lines: Extended to a location outside the casing.
   10. Flexible Connector: Factory fabricated with a fabric strip minimum 5-3/4 inches wide, attached to two strips of minimum 2-3/4-inch-wide by 0.028-inch-thick, galvanized-steel sheet.
      a. Flexible Connector Fabric: Glass fabric, double coated with neoprene. Fabrics, coatings, and adhesives shall comply with UL 181, Class 1.
         1) Fabric Minimum Weight: 26 oz./sq. yd..
         2) Fabric Minimum Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
         3) Fabric Minimum Service Temperature Range: Minus 40 to plus 200 deg F.

C. Drive, Direct: Factory-mounted, direct drive.

D. Motors:
1. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."
2. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
3. Efficiency: Premium efficient as defined in NEMA MG 1.
4. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in electrical Sections.

E. Comply with Section 26 29 23 "Variable-Frequency Motor Controllers."

2.5 COIL SECTION

A. General Requirements for Coil Section:
1. Comply with AHRI 410.
2. Fabricate coil section to allow removal and replacement of coil for maintenance and to allow in-place access for service and maintenance of coil(s).
3. For multizone units, provide air deflectors and air baffles to balance airflow across coils.
4. Coils shall not act as structural component of unit.

B. Preheat Coils:
1. Hot-Water Coils
a. Tube Material: Copper.
b. Fin Type: Plate.
c. Fin Material: Aluminum.
d. Fin and Tube Joint: Mechanical bond.
e. Headers:
1) Seamless copper tube with brazed joints, prime coated.
2) Provide insulated cover to conceal exposed outside casings of headers.
f. Frames: Channel frame, 0.052-inch-thick, galvanized steel.
g. Coil Working-Pressure Ratings: 200 psig, 325 deg F.

C. Heating Coils:
1. Hot-Water Coils
a. Tube Material: Copper.
b. Fin Type: Plate.
c. Fin Material: Aluminum.
d. Fin and Tube Joint: Mechanical bond.
e. Headers:
1) Seamless copper tube with brazed joints, prime coated.
2) Provide insulated cover to conceal exposed outside casings of headers.
f. Frames: Channel frame, 0.052-inch-thick, galvanized steel.
g. Coil Working-Pressure Ratings: 200 psig, 325 deg F.

D. Cooling Coils:
1. Chilled-Water Coil
a. Tube Material: Copper.

b. Fin Type: Plate.
c. Fin Material: Aluminum.
d. Fin and Tube Joint: Mechanical bond.
e. Headers:
1) Seamless copper tube with brazed joints, prime coated.
2) Provide insulated cover to conceal exposed outside casings of headers.
f. Frames: Channel frame, 0.0625-inch-thick, stainless steel.
g. Working-Pressure Ratings: 200 psig, 325 deg F.

2. Refrigerant Coil:
a. Tubes: Copper.
b. Fins:
1) Material: Aluminum.
c. Fin and Tube Joints: Mechanical bond.
d. Headers: Seamless-copper headers with brazed connections.
e. Frames: Stainless steel.
f. Ratings: Designed, tested, and rated according to ASHRAE 33 and AHRI 410.
1) Working Pressure: Minimum 300 psig.

2.6 AIR FILTRATION SECTION

A. Particulate air filtration is specified in Section 23 41 00 "Particulate Air Filtration."

B. High-efficiency particulate air (HEPA) filtration is specified in Section 23 41 33 "High-Efficiency Particulate Air Filtration."

C. Gas-phase air filtration is specified in Section 23 42 00 "Gas-Phase Air Filtration."

D. Panel Filters:
1. Description: Pleated factory-fabricated, self-supported, disposable air filters with holding frames.
2. Filter Unit Class: UL 900.
3. Media: Interlaced glass, synthetic, or cotton fibers coated with nonflammable adhesive.
4. Filter-Media Frame: Beverage board with perforated metal retainer, or metal grid, on outlet side.

E. Adhesive, Sustainability Projects: As recommended by air-filter manufacturer and with a VOC content of 80 g/L or less.

F. Adhesive, LEED for Schools Projects: As recommended by air-filter manufacturer and that complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

G. Front- or Back-Access Filter Mounting Frames:
1. Particulate Air Filter Frames: Galvanized-steel framing members with access for filter servicing, cut to size and prepunched for assembly into modules. Vertically support filters to prevent deflection of horizontal members without interfering with either filter installation or operation.

a. Prefilters: Incorporate a separate 2-inch- thick track with spring clips, with same access as primary filter.
b. Sealing: Full periphery foam gaskets.

H. Side-Access Filter Mounting Frames:
1. Particulate Air Filter Frames: Match inner casing and outer casing material, and insulation thickness. Galvanized steel track.
a. Prefilters: Incorporate an integral 2-inch- thick track with same access as primary filter.
b. Sealing: Incorporate positive-sealing device to ensure seal between gasketed material on channels to seal top and bottom of filter cartridge frames to prevent bypass of unfiltered air.

2.7 DAMPERS

A. Dampers: Comply with requirements in Section 23 09 23.12 "Control Dampers."

B. Outdoor- and Return-Air Dampers: Low-leakage, double-skin, airfoil-blade, aluminum dampers with compressible jamb seals and extruded-vinyl blade edge seals in opposed-blade arrangement with zinc-replated steel operating rods rotating in stainless steel sleeve bearings mounted in a single aluminum frame, and with operating rods connected with a common linkage. Leakage rate shall not exceed 4 cfm/sq. ft. at 1-inch wg and 8 cfm/sq. ft. at 4-inch wg, leakage Class 1, tested, rated, and labeled in accordance with AMCA 511.

C. Face-and-Bypass Dampers: Opposed-blade, aluminum dampers with zinc-plated steel operating rods rotating in sintered bronze or nylon bearings mounted in a single aluminum frame and with operating rods connected with a common linkage. Provide blade gaskets and edge seals, and mechanically fasten blades to operating rod.

D. Damper Operators: Comply with requirements in Section 23 09 23.12 "Control Dampers."

E. Electronic Damper Operators:
1. Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.
2. Electronic damper position indicator shall have visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.
3. Operator Motors:
a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."
b. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
c. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.
4. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.

5. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.
6. Size dampers for running torque calculated as follows:
   a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
   b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
   c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft. of damper.
   d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.
   e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
   f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.
7. Coupling: V-bolt and V-shaped, toothed cradle.
8. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
9. Fail-Safe Operation: Mechanical, spring-return mechanism with external, manual gear release on nonspring-return actuators.
10. Power Requirements (Two-Position Spring Return): 24 V dc.
11. Power Requirements (Modulating): Maximum 10 VA at 24 V ac or 8 W at 24 V dc.
12. Proportional Signal: 2 to 10 V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
13. Temperature Rating: Minus 22 to plus 122 deg F.
14. Run Time: 60 seconds.

F. Mixing Section: Multiple-blade, air-mixer assembly located immediately downstream of mixing section.

G. Combination Filter and Mixing Section:
1. Cabinet support members shall hold 2-inch- thick, pleated, flat, permanent or throwaway filters.
2. Multiple-blade, air-mixer assembly shall mix air to prevent stratification, located immediately downstream of mixing box.

2.8 ROOF CURBS

A. Roof curbs with vibration isolators restraints are specified in Section 23 05 48.13 "Vibration Controls for HVAC."

B. Materials: Galvanized steel with corrosion-resistant coating, watertight gaskets, and factory-installed wood nailer; complying with NRCA standards.
1. Curb Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.
   a. Materials: ASTM C1071, Type I or II.
   b. Thickness: 1-1/2 inches.
2. Application: Factory applied with adhesive and mechanical fasteners to the internal surface of curb.
   a. Liner Adhesive: Comply with ASTM C916, Type I.
   b. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in cabinet.

c. Liner materials applied in this location shall have airstream surface coated with a temperature-resistant coating or faced with a plain or coated fibrous mat or fabric depending on service air velocity.

C. Curb Dimensions: Height of 24 inches.

2.9 INTAKE AND RELIEF AIR OPENINGS

A. Provide hood, including moisture eliminator, over all unit intake and relief openings. Match material and finish of casing exterior.

2.10 MATERIALS

A. Steel:
1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for steel sheet.

B. Stainless Steel:
1. Manufacturer's standard grade for casing.
2. Manufacturer's standard type, ASTM A240/A240M for bare steel exposed to airstream or moisture.

C. Galvanized Steel: ASTM A653/A653M.

D. Aluminum: ASTM B209.

E. Comply with Section 23 05 46 "Coatings for HVAC" for corrosion-resistant coating.

2.11 SOURCE QUALITY CONTROL

A. AHRI 430 Certification: Test, rate, and label air-handling units and their components in accordance with AHRI 430.

B. AHRI 1060 Certification: Test, rate, and label air-handling units that include air-to-air energy recovery devices in accordance with AHRI 1060.

C. AHRI 260 or AMCA 311 Sound Performance Rating Certification: Test, rate, and label in accordance with AHRI 260 or AMCA 311.

D. Fan Aerodynamic Performance Rating: Test and rate fan performance for airflow, pressure, power, air density, rotation speed, and efficiency in accordance with AMCA 210.

E. Fan Energy Index (FEI): Test in accordance with AMCA 210 and rate in accordance with AMCA 99, AMCA 207, and AMCA 208.

F. Fan Operating Limits: Classify fans in accordance with AMCA 99, Section 14.

G. Water Coils: Factory tested to 300 psig according to AHRI 410 and ASHRAE 33.

H. Steam Coils: Factory tested to 300 and 200 psig underwater according to AHRI 410 and ASHRAE 33.

I. Refrigerant Coils: Factory tested to minimum 450-psig internal pressure and to minimum 300-psig internal pressure while underwater, according to AHRI 410 and ASHRAE 33.

J. Witnessed Casing Leakage Tests:
1. Pay for all expenses, for one representative designated by Owner, to travel to the factory to witness cabinet air-leakage testing on the specific assembled unit(s) prior to release for delivery to Project site.
2. If the unit(s) does not meet specified leakage requirements, perform factory modifications and retest. Do not release unit for shipment until tested leakage is measured to be within specified leakage and leakage testing report has been accepted by Owner's designated representative.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine casing insulation materials and filter media before air-handling unit installation. Reject insulation materials and filter media that are wet, moisture damaged, or mold damaged.

C. Examine roughing-in for steam, hydronic, and condensate drainage piping systems and electrical services to verify actual locations of connections before installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Roof Curb: Install on roof structure or concrete base, level and secure, according to NRCA's "NRCA Roofing Manual: Membrane Roof Systems." Install units on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 07 72 00 "Roof Accessories." Secure units to upper curb rail, and secure curb base to roof framing or concrete base with anchor bolts. Coordinate sizes and locations of roof curbs with actual equipment provided.

B. Unit Support: Install unit level on structural curbs. Coordinate roof penetrations and flashing with roof construction. Secure units to structural support with anchor bolts. Coordinate sizes and locations of curbs with actual equipment provided.
1. Comply with requirements for vibration isolation devices specified in Section 23 05 48.13 "Vibration Controls for HVAC."

C. Arrange installation of units to provide access space around air-handling units for service and maintenance.

D. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing, with new, clean filters.

E. Install filter-gauge, static-pressure taps upstream and downstream of filters. Mount filter gauges on outside of filter housing or filter plenum in accessible position. Provide filter gauges on filter banks, installed with separate static-pressure taps upstream and downstream of filters.

F. Connect duct to air-handling units with flexible connections. Comply with requirements in Section 23 33 00 "Air Duct Accessories."

3.3 PIPING CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to air-handling unit, allow space for service and maintenance.

C. Connect piping to air-handling units mounted on vibration isolators with flexible connectors.

D. Connect condensate drain pans using NPS 1-1/4, ASTM B88, Type M copper tubing. Extend to nearest equipment or roof drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.

E. Hot- and Chilled-Water Piping: Comply with applicable requirements in Section 23 21 13 "Hydronic Piping" and Section 23 21 16 "Hydronic Piping Specialties." Install shutoff valve and union or flange at each coil supply connection. Install balancing valve and union or flange at each coil return connection.

F. Refrigerant Piping: Comply with applicable requirements in Section 23 23 00 "Refrigerant Piping." Install shutoff valve and union or flange at each supply and return connection.

3.4 ELECTRICAL CONNECTIONS

A. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
   1. Nameplate shall be laminated acrylic or melamine plastic signs, as specified in Section 26 05 53 "Identification for Electrical Systems."
   2. Nameplate shall be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch high.

3.5 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect control wiring according to Section 26 05 23 "Control-Voltage Electrical Power Cables."

3.6 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.
   1. Complete installation and startup checks according to manufacturer's written instructions.
   2. Verify that shipping, blocking, and bracing are removed.
   3. Verify that unit is secure on mountings and supporting devices and that connections to piping, ducts, and electrical systems are complete. Verify that proper thermal-overload protection is installed in motors, controllers, and switches.
   4. Verify proper motor rotation direction, free fan wheel rotation, and smooth bearing operations. Reconnect fan drive system, align belts, and install belt guards.
   5. Verify that bearings, pulleys, belts, and other moving parts are lubricated with factory-recommended lubricants.
   6. Verify that zone dampers fully open and close for each zone.
   7. Verify that face-and-bypass dampers provide full face flow.
   8. Verify that outdoor- and return-air mixing dampers open and close, and maintain minimum outdoor-air setting.
   9. Comb coil fins for parallel orientation.
   10. Verify that proper thermal-overload protection is installed for electric coils.
   11. Install new, clean filters.
   12. Verify that manual and automatic volume control and fire and smoke dampers in connected duct systems are in fully open position.

B. Starting procedures for air-handling units include the following:
   1. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated rpm. Replace fan and motor pulleys as required to achieve design conditions.
   2. Measure and record motor electrical values for voltage and amperage.
   3. Manually operate dampers from fully closed to fully open position and record fan performance.

3.7 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Comply with requirements in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC" for air-handling system testing, adjusting, and balancing.

3.8 CLEANING

A. After completing system installation and testing, adjusting, and balancing air-handling unit and air-distribution systems and after completing startup service, clean air-

handling units internally to remove foreign material and construction dirt and dust. Clean fan wheels, cabinets, dampers, coils, and filter housings, and install new, clean filters.

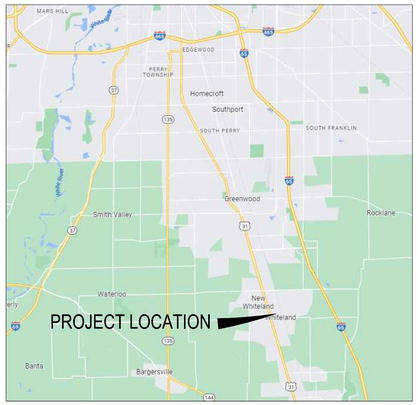
3.9 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Leak Test: After installation, fill water and steam coils with water, and test coils and connections for leaks.
   2. Charge refrigerant coils with refrigerant and test for leaks.
   3. Fan Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
   4. HEPA Filters: Pressurize housing to a minimum of 3-inch wg or to designed operating pressure, whichever is higher; test housing joints, door seals, and sealing edges of filter with soapy water to check for air leaks.
   5. HEPA Filters, Critical Applications: Pressurize housing to a minimum of 3-inch wg or to designed operating pressure, whichever is higher; test housing joints, door seals, and sealing edges of filter for air leaks according to ASME AG-1, pressure-decay method.
   6. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
   7. Air-handling unit and components will be considered defective if unit or components do not pass tests and inspections.
   8. Prepare test and inspection reports.

End Of Section 23 73 43.16

FINAL CONSTRUCTION PLANS

WHITELAND COMMUNITY HIGH SCHOOL
PHASE 2
300 E. MAIN STREET
WHITELAND, INDIANA



VICINITY MAP
NO SCALE

LOCATION MAP
NO SCALE

OWNER
CLARK-PLEASANT COMMUNITY
SCHOOL CORPORATION
50 CENTER STREET
WHITELAND, IN 46184
PHONE: (317) 535-3277
CONTACT: SAM ARNES
EMAIL: sarnes@cpcsc.k12.in.us

ENGINEER
CROSSROAD ENGINEERS, PC
115 N. 17TH AVENUE
BEECH GROVE, IN 46107
PHONE: (317) 780-1555
CONTACT: GREGORY J. ILKO
EMAIL: gilko@crossroadengineers.com

PLAN INDEX	
SHEET #	SUBJECT
100	TITLE SHEET
200	OVERALL TOPOGRAPHICAL SURVEY
201–206	TOPOGRAPHICAL SURVEY
207	OVERALL DEMOLITION PLAN
208–211	DEMOLITION PLAN
300A	OVERALL SITE LAYOUT
300–303	SITE DIMENSION PLAN
400–403	UTILITY PLAN
500–503	GRADING PLAN
504	GRADING DETAIL PLAN
600	EMERGENCY FLOOD ROUTE
700	SANITARY PLAN AND PROFILES
800–802	STORM PLAN AND PROFILE
900	OVERALL EROSION CONTROL PLAN
901–904	EROSION CONTROL PLAN
905	STORMWATER POLLUTION PREVENTION PLAN
1000–1002	MISCELLANEOUS DETAILS
1003	CURB RAMP DETAILS
1100	ELECTRIC PLAN AND PROFILE
1101	TELECOM PLAN AND PROFILE

JOHNSON CO. LEGAL DRAIN NOTES

- NO STRUCTURES, OR IMPROVEMENTS SHALL BE PERMITTED WITHIN THE LEGAL DRAIN EASEMENT. ALL UTILITIES, BUILDINGS, STRUCTURES, PLANTINGS, CROPS, TREES, SHRUBS, AND WOODY VEGETATION GROWN WITHIN THE EASEMENT, OR ALONG THE LEGAL DRAIN ARE AT THE RISK OF OWNER AND SUBJECT TO REMOVAL WITH MINIMAL NOTICE, WITHOUT RESTITUTION, AND SUBJECT TO SPECIAL ASSESSMENT (IC 36-9-27-33).
- THIS SITE PLOTS BY SCALE AS BEING WITHIN A REGULATED WATERSHED. ANY AND ALL SITE IMPROVEMENTS WITHIN A REGULATED WATERSHED ARE SUBJECT TO REVIEW BY THE JOHNSON COUNTY DRAINAGE BOARD. ALL TRACTS WITHIN A REGULATED DRAIN WATERSHED ARE SUBJECT TO ASSESSMENTS FOR MAINTENANCE (IC 36-9- 27-44), AND WHEN PRACTICABLE, RECONSTRUCTION (IC 36-9-27-51).
- NO CONSTRUCTION, OR IMPROVEMENTS SHALL IMPAIR OR NEGATIVELY IMPACT ANY PRIVATE DRAIN TILE (IC 36-9-27-2) KNOWN OR UNKNOWN. NO CONSTRUCTION, OR IMPROVEMENTS SHALL IMPAIR, IMPEDE, OR NEGATIVELY IMPACT, A NATURAL SURFACE WATERCOURSE (IC 36-9-27.4-3). WHEN ENCOUNTERED SAID TILE OR WATERCOURSE WILL BE DESIGNED, AND RE-ROUTED SO NOT TO IMPEDE, IMPAIR, OR NEGATIVELY IMPACT SURFACE OR SUBSURFACE WATER FLOW.
- PRIVATE TILES, AND MUTUAL DRAIN CONNECTIONS TO REGULATED DRAIN (IC 36-27-9-17). ALL CONNECTIONS, OR OUT-LETS INTO A REGULATED DRAIN ARE SUBJECT TO APPROVAL BY THE COUNTY SURVEYOR (≤ 10"), OR THE JOHNSON COUNTY DRAINAGE BOARD (> 11"). APPLICATIONS ARE AVAILABLE IN THE COUNTY SURVEYOR'S OFFICE AND SHOULD INCLUDE ALL MAPS, PLANS, SPECIFICATIONS, BONDING, EASEMENT VERBIAGE, APPLICATION FEES AND OWNERS STATEMENT OF WATER QUALITY (IC 36-27-9-23), PRIOR TO APPROVAL.

FLOODPLAIN BFE NOTE

THE BASE FLOOD ELEVATION (BFE) SHOWN FROM THE FEMA FLOOD MAPS FOR THIS SITE ARE FOR REFERENCE ONLY AND MAY NOT PRESENT THE TRUE EXTENTS OF THE FLOODPLAIN RELATIVE TO THE ACTUAL ONSITE TOPOGRAPHY.

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th Avenue, Beech Grove, IN 46107 (317) 780-1555

SHEET 100

TITLE SHEET

WHITELAND HIGH SCHOOL PHASE 2

JOB No. - | DRAWN KLF | CHECKED TEN | APPR. GJI
DATE AUGUST 30, 2024 | DESIGNED DMS | DRAWN DMS | CHECKED GJI | APPR. GJI

GREGORY J. ILKO
REGISTERED
NO. 10300059
STATE OF INDIANA
PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS
1	09.24.24	REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS
2	10.04.24	REVISIONS PER ADDENDUM #2

SHEET 100

DIRECTORY PATH : R:\Active\Laurel+Bald\Whiteland High School\Design\CAD\Plans\PHASE 2B
FILENAME : 100 TITLE SHEET PH 2B.dwg
DATE/USER : 10/3/2024 5:25 PM / Dsnyder

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- PERMANENT FENCE
- DITCH LINE
- SANITARY SEWER WITH MANHOLE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/MANHOLE & END SECTION
- ELECTRIC LINE
- TELECOMM CONDUIT
- FIRE SUPPRESSION/WATER LINE
- GAS SERVICE LINE
- STORM MANHOLES
- STORM INLETS
- STORM CURB INLETS
- AQUA-SWIRL UNITS
- SIGN
- WATER FITTING BENDS
- TAPPING SLEEVE
- WATER VALVE
- FIRE HYDRANT ASSEMBLIES
- FIRE DEPARTMENT CONNECTION
- PERMANENT CONSTRUCTION FENCE WITH SCREENING ON DRIVEN POSTS
- TEMPORARY CONSTRUCTION FENCE ON STANDS WITH SAND BAGS

UTILITY NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK.
2. CONTRACTOR SHALL REFER TO THE ELECTRICAL SITE PLAN PREPARED BY PRIMARY ENGINEERING, INC. FOR PARKING LOT LIGHTING AND SPECIFICATIONS.
3. ALL STORM SEWER CASTINGS SHALL BE NPDES PHASE II COMPLIANT. CASTINGS SHALL BE MANUFACTURED WITH A STATEMENT SAYING: "DUMP NO WASTE, DRAINS TO RIVER" IN ½" RAISED LETTERS.
4. ALL FIELD TILES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED/CONNECTED TO NEW STORMWATER FACILITIES.
5. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING UNDERGROUND STORMWATER DETENTION CHAMBERS DURING THE ENTIRE DURATION OF THE PROJECT. CONTRACTOR SHALL COORDINATE WITH ADVANCED DRAINAGE SOLUTIONS, INC. (ADS) TO DETERMINE THE MINIMUM COVER REQUIRED OVER THE EXISTING CHAMBERS DURING CONSTRUCTION, AS WELL AS, THE APPROPRIATE EQUIPMENT AND OPERATIONS TO PROTECT THE CHAMBERS.
6. WATER MAIN INSTALLATION AND MATERIALS SHALL CONFORM TO THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS. ALL WATER LINES SHALL BE INSTALLED WITH 5' MIN. OF COVER FROM FINISHED GRADE.
7. TAPPING SLEEVES AND VALVES SHALL BE EJP OR MUELLER H-615, H-616 OR STAINLESS STEEL SLEEVES. TAPPING VALVES SHALL BE 2360 SERIES BY MEUELLER OR AFC 2500.
8. FIRE HYDRANT ASSEMBLIES SHALL BE SUPER CENTURION 250 HYDRANT BY MEULLER CO. WITH STORZ FITTING ON STEAMER WITH 5'-6" MIN. BURIAL DEPTH.
9. ALL FITTINGS SHALL BE DUCTILE IRON (D.I.) WITH MECHANICAL JOINTS (M.J.) CONFORMING TO AWWA C-110, C-111, C-153, AND NSF-61. ALL WATER MAIN FITTINGS SHALL BE RESTRAINED IN ACCORDANCE WITH THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS.
10. MEG-A-LUG RETAINER GLANDS BY EBBA IRON, INC. , FIELD-LOK GASKETS, OR ONE BOLT RESTRAINED FITTINGS SHALL BE USED ON EACH SIDE OF FITTINGS WHERE THE WATER MAIN CHANGES DIRECTION.
11. CONTRACTOR SHALL COORDINATE CONSTRUCTION SEQUENCE WITH THE OWNER AND SKILLMAN CORPORATION AND MAINTAIN ACTIVE UTILITY SERVICES AT ALL TIMES. ALL TEMPORARY UTILITY SERVICE INTERRUPTIONS MUST BE APPROVED BY THE OWNER AND SKILLMAN CORPORATION PRIOR TO INSTALLATION OF IMPROVEMENTS.
12. EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY.
13. CONTRACTOR SHALL CONNECT ROOF DRAINS TO STORM STRUCTURES AS SHOWN. CONFIRM ROOF DRAIN LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.
14. CONTRACTOR SHALL CONFIRM SANITARY LATERAL LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.

EXISTING LEGEND

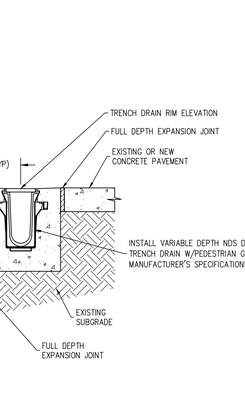
- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- LIGHT POLE
- ELECTRIC METER
- ELECTRIC BOX
- YARD LIGHT
- GUIDE WIRE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- WATER VALVE
- FIRE HYDRANT
- WELL
- WATER MANHOLE
- WATER METER
- GAS VALVE
- GAS VALVE
- CABLE TV RISER
- CLEANOUT
- SIGN
- MAILBOX
- STORM ROUND INLET
- STORM CURB INLET
- RIGHT-OF-WAY MARKER
- TREE, BUSH & STUMP
- TEMP. BENCHMARK
- MONUMENT FOUND
- CONTOURS
- PROPERTY LINE
- SECTION LINE
- RIGHT-OF-WAY
- EASEMENT
- ADJOINER LINE
- PAVEMENT LINE
- FIELD LINE
- PRIVACY FENCE
- CHAINLINK FENCE
- SPLIT RAIL FENCE
- WIRE FENCE
- DITCH
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- CABLE TV LINE
- ELECTRIC LINE
- OVERHEAD UTILITY LINE
- TREE LINE
- SANITARY SEWER
- W/MANHOLE
- STORM SEWER W/ MANHOLE & END SECTION

(D) DEED (M) MEASURE (PS) PLAT SURVEY

ASPHALT BUILDING CONCRETE GRAVEL

INDIANA 811 Know what's below. Call before you dig.

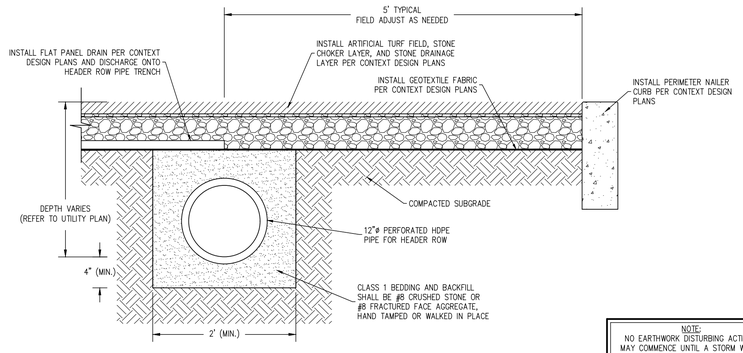
SCALE: 1" = 30'



BACKSTOP TRENCH DRAIN DETAIL
NOT TO SCALE

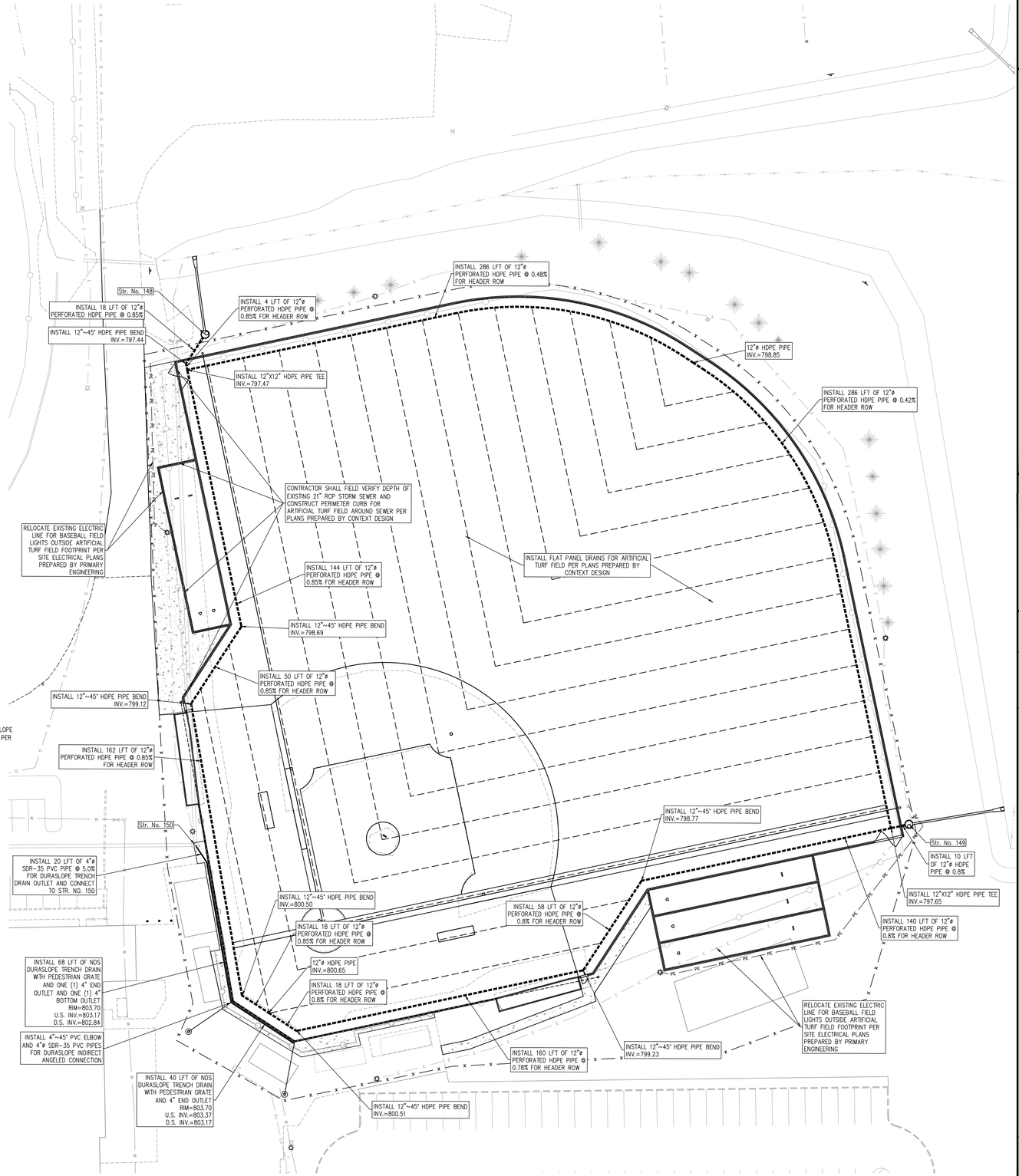
EXISTING STORM SEWER STRUCTURE TABLE
STR. DATA
STR. NO. 150 EXISTING STORM MANHOLE FIELD VERIFY LOCATION MECHANICALLY CORE AND CONNECT 4" OUTLET PIPE FROM NDS DURASLOPE TRENCH DRAIN AND RECONSTRUCT TO GRADE (EX. RIM=UNKNOWN/BURIED) PROP. RIM=803.65 EX. INV IN (21"~W)=799.00 INV IN (4"~SE)=799.82 EX. INV OUT (21"~N)=799.00
NOTE: CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE INVERTS IN STR. NO. 150 AND REPORT TO ENGINEER PRIOR TO CONSTRUCTION

STORM SEWER STRUCTURE TABLE
STR. DATA
STR. NO. 148 INSTALL TYPE 'C' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND ONE (1) CONCRETE PIPE END SECTION WITH ANIMAL GUARD AND 41 LFT OF 12"ø HDPE PIPE @ 1.17% RIM=800.59 INV IN (12"~SW)=797.28 INV OUT (12"~N)=797.28
STR. NO. 149 INSTALL TYPE 'C' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND ONE (1) CONCRETE PIPE END SECTION WITH ANIMAL GUARD AND 51 LFT OF 12"ø HDPE PIPE @ 3.56% RIM=800.80 INV IN (12"~W)=797.57 INV OUT (12"~E)=796.20



TURF FIELD HEADER ROW DETAIL
NOT TO SCALE

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.



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CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th Ave., Suite 200, Beech Grove, IN 46107 (317) 780-1555

SHEET 400

UTILITY PLAN

WHITELAND HIGH SCHOOL PHASE 2

JOB No.	.	DRAWN	KLF	CHECKED	TEN
DATE	AUGUST 30, 2024	DESIGNED	DMS	APPR.	CJI

DEREK M. SNYDER NO. 11200008 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	09.24.24	REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS	DMS	CJI
2	10.04.24	REVISIONS PER ADDENDUM #2	DMS	CJI
3				
4				
5				
6				
7				
8				
9				

SHEET 400

EXISTING LEGEND

- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- LIGHT POLE
- ELECTRIC METER
- ELECTRIC BOX
- YARD LIGHT
- GUIDE WIRE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- WATER VALVE
- FIRE HYDRANT
- WELL
- WATER MANHOLE
- WATER METER
- GAS VALVE
- GAS VALVE
- CABLE TV RISER
- CLEANOUT
- SIGN
- MAILBOX
- STORM ROUND INLET
- STORM CURB INLET
- RIGHT-OF-WAY MARKER
- TREE, BUSH & STUMP
- TEMP. BENCHMARK
- MONUMENT FOUND
- 800 CONTOURS
- PROPERTY LINE
- SECTION LINE
- RIGHT-OF-WAY
- EASEMENT
- ADJOINER LINE
- PAVEMENT LINE
- FIELD LINE
- PRIVACY FENCE
- CHAINLINK FENCE
- SPLIT RAIL FENCE
- WIRE FENCE
- DITCH
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- CABLE TV LINE
- ELECTRIC LINE
- OVERHEAD UTILITY LINE
- TREE LINE
- SANITARY SEWER W/MANHOLE
- STORM SEWER W/ MANHOLE & END SECTION

(D) DEED (M) MEASURE (PS) PLAT SURVEY

ASPHALT BUILDING CONCRETE GRAVEL

UTILITY NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK.
2. CONTRACTOR SHALL REFER TO THE ELECTRICAL SITE PLAN PREPARED BY PRIMARY ENGINEERING, INC. FOR PARKING LOT LIGHTING AND SPECIFICATIONS.
3. ALL STORM SEWER CASTINGS SHALL BE NPDES PHASE II COMPLIANT. CASTINGS SHALL BE MANUFACTURED WITH A STATEMENT SAYING: "DUMP NO WASTE, DRAINS TO RIVER" IN ½" RAISED LETTERS.
4. ALL FIELD TILES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED/CONNECTED TO NEW STORMWATER FACILITIES.
5. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING UNDERGROUND STORMWATER DETENTION CHAMBERS DURING THE ENTIRE DURATION OF THE PROJECT. CONTRACTOR SHALL COORDINATE WITH ADVANCED DRAINAGE SOLUTIONS, INC. (ADS) TO DETERMINE THE MINIMUM COVER REQUIRED OVER THE EXISTING CHAMBERS DURING CONSTRUCTION, AS WELL AS, THE APPROPRIATE EQUIPMENT AND OPERATIONS TO PROTECT THE CHAMBERS.
6. WATER MAIN INSTALLATION AND MATERIALS SHALL CONFORM TO THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS. ALL WATER LINES SHALL BE INSTALLED WITH 5' MIN. OF COVER FROM FINISHED GRADE.
7. TAPPING SLEEVES AND VALVES SHALL BE EJP OR MUELLER H-615, H-616 OR STAINLESS STEEL SLEEVES. TAPPING VALVES SHALL BE 2360 SERIES BY MEULLER OR AFC 2500.
8. FIRE HYDRANT ASSEMBLIES SHALL BE SUPER CENTURION 250 HYDRANT BY MEULLER CO. WITH STORZ FITTING ON STEAMER WITH 5'-6" MIN. BURIAL DEPTH.
9. ALL FITTINGS SHALL BE DUCTILE IRON (D.I.) WITH MECHANICAL JOINTS (M.J.) CONFORMING TO AWWA C-110, C-111, C-153, AND NSF-61. ALL WATER MAIN FITTINGS SHALL BE RESTRAINED IN ACCORDANCE WITH THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS.
10. MEG-A-LUG RETAINER GLANDS BY EBBA IRON, INC. , FIELD-LOK GASKETS, OR ONE BOLT RESTRAINED FITTINGS SHALL BE USED ON EACH SIDE OF FITTINGS WHERE THE WATER MAIN CHANGES DIRECTION.
11. CONTRACTOR SHALL COORDINATE CONSTRUCTION SEQUENCE WITH THE OWNER AND SKILLMAN CORPORATION AND MAINTAIN ACTIVE UTILITY SERVICES AT ALL TIMES. ALL TEMPORARY UTILITY SERVICE INTERRUPTIONS MUST BE APPROVED BY THE OWNER AND SKILLMAN CORPORATION PRIOR TO INSTALLATION OF IMPROVEMENTS.
12. EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY.
13. CONTRACTOR SHALL CONNECT ROOF DRAINS TO STORM STRUCTURES AS SHOWN. CONFIRM ROOF DRAIN LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.
14. CONTRACTOR SHALL CONFIRM SANITARY LATERAL LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- PERMANENT FENCE
- DITCH LINE
- SANITARY SEWER WITH MANHOLE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/MANHOLE & END SECTION
- ELECTRIC LINE
- TELECOMM CONDUIT
- FIRE SUPPRESSION/WATER LINE
- GAS SERVICE LINE
- STORM MANHOLES
- STORM INLETS
- STORM CURB INLETS
- AQUA-SWIRL UNITS
- SIGN
- WATER FITTING BENDS
- TAPPING SLEEVE
- WATER VALVE
- FIRE HYDRANT ASSEMBLIES
- FIRE DEPARTMENT CONNECTION
- PERMANENT CONSTRUCTION FENCE WITH SCREENING ON DRIVEN POSTS
- TEMPORARY CONSTRUCTION FENCE ON STANDS WITH SAND BAGS

EXISTING STORM SEWER STRUCTURE TABLE
STR. DATA
STR. NO. 128 EXISTING NYLOPLAST DRAIN RECONSTRUCT TO GRADE MECHANICALLY CORE AND CONNECT 4" UNDERDRAINS FROM LONG JUMP PIT USING ADD-A-BRANCH ADAPTERS (EX. RIM=801.61) PROP. RIM=802.61 EX. INV IN (4"-N)=797.70 EX. INV OUT (12"-S)=797.70
STR. NO. 129 EXISTING NYLOPLAST DRAIN RECONSTRUCT TO GRADE (EX. RIM=801.62) PROP. RIM=802.94 EX. INV IN (12"-N)=797.51 EX. INV OUT (12"-S)=797.47

STORM SEWER STRUCTURE TABLE
STR. DATA
STR. NO. 147 INSTALL 6 LFT OF NEENAH R-4999-DD TRENCH DRAIN

NORTH

30 0 30 60

SCALE: 1" = 30'

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

INSTALL 410 LFT (TOTAL) OF 4"ø PERFORATED HDPE UNDERDRAIN WITH FILTER SOCK @ 0.5% FOR LONG JUMP PIT DRAINAGE.

Str. No. 128

Str. No. 129

CONTRACTOR SHALL COORDINATE WITH TOWN OF BARGERSVILLE AND JOHNSON CO. REMC FOR 3-PHASE PRIMARY ELECTRICAL SERVICE INSTALLATION FOR HIGH SCHOOL BUILDING AND FOOTBALL LOCKER ROOM

INSTALL 4-3"ø PVC ELECTRICAL CONDUITS FOR 3-PHASE PRIMARY ELECTRICAL SERVICE PER SITE ELECTRICAL PLAN PREPARED BY PRIMARY ENGINEERING. CONFIRM LAYOUT, NUMBER OF CONDUITS, DIAMETER, AND MATERIAL SPECIFICATIONS WITH THE TOWN OF BARGERSVILLE AND JOHNSON CO. REMC PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL REFEED FOOTBALL LOCKER ROOM ELECTRICAL METER AND SERVICE PER SITE ELECTRICAL PLAN PREPARED BY PRIMARY ENGINEERING

CONTRACTOR SHALL COORDINATE WITH CENTERPOINT ENERGY FOR GAS SERVICE RELOCATION

CONTRACTOR SHALL INSTALL ELECTRICAL PULL BOX PER SITE ELECTRICAL PLAN PREPARED BY PRIMARY ENGINEERING

CONTRACTOR SHALL COORDINATE WITH TOWN OF BARGERSVILLE, JOHNSON CO. REMC, JC FIBER, METRONET, COMCAST, AND BRIGHTSPEED FOR RELOCATION OF POWER POLES AND AERIAL ELECTRIC AND TELECOMMUNICATIONS

CONTRACTOR SHALL COORDINATE WITH TOWN OF BARGERSVILLE, JC FIBER, METRONET, AND BRIGHTSPEED FOR TELECOMMUNICATIONS CONDUIT INSTALLATIONS AND AERIAL UTILITY RELOCATIONS.

FUTURE (PHASE 3) STUDENT ACTIVITY CENTER ADDITION

INSTALL SIGN FOR EXISTING FDC (SEE DETAIL-SHEET 1000)

INSTALL SIGN FOR EXISTING FDC (SEE DETAIL-SHEET 1000)

CONTRACTOR SHALL COORDINATE WITH JC FIBER, METRONET, AND BRIGHTSPEED FOR INSTALLATION OF CONDUITS AND FOR UTILITY RELOCATIONS

INSTALL 3-3"ø PVC ELECTRICAL CONDUITS FOR 3-PHASE PRIMARY ELECTRICAL SERVICE PER SITE ELECTRICAL PLAN PREPARED BY PRIMARY ENGINEERING. CONFIRM LAYOUT, NUMBER OF CONDUITS, DIAMETER, AND MATERIAL SPECIFICATIONS WITH THE TOWN OF BARGERSVILLE AND JOHNSON CO. REMC PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL REMOVE EXISTING 8"ø PVC SANITARY SEWER AFTER PROPOSED SANITARY SEWER SHOWN ON SHEET 402 HAS BEEN INSTALLED, INSPECTED, TESTED, AND APPROVED AND AFTER INTERNAL PLUMBING HAS BEEN RECONNECTED TO THE PROPOSED SEWER

EXISTING HIGH SCHOOL

MATCHLINE - SEE SHEET 402

DIRECTORY PATH : R:\Active\Lyons+Bethel\Whiteland High School\Design\CAD\Plans\PHASE 2B
FILENAME : 40 UTILITY PLAN PH 2B.dwg
DATE/USER : 10/3/2024 5:36 PM / Dsnyder

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVE. BEECH GROVE, IN 46107 (317) 780-1555

SHEET 401

UTILITY PLAN

WHITELAND HIGH SCHOOL PHASE 2

JOB No.	-	CHECKED	TEN		CJI
DATE	AUGUST 30, 2024	DESIGNED	DMS	APPR.	CJI
		DRAWN	KLF		

REVISIONS PER ADDENDUM #2

REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS

REVISIONS

NO.	DATE	BY	APPR.
1	09.24.24	DMS	CJI
2	10.04.24	DMS	CJI

REGISTERED ENGINEER DEREK M. SNYDER NO. 11200008 STATE OF INDIANA PROFESSIONAL

SHEET 401

UTILITY NOTES

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14. CONTRACTOR SHALL CONFIRM SANITARY LATERAL LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.

EXISTING LEGEND

- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- LIGHT POLE
- ELECTRIC METER
- ELECTRIC BOX
- YARD LIGHT
- GUIDE WIRE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- WATER VALVE
- FIRE HYDRANT
- WELL
- WATER MANHOLE
- WATER METER
- GAS VALVE
- GAS VALVE
- CABLE TV RISER
- CLEANOUT
- SIGN
- MAILBOX
- STORM ROUND INLET
- STORM CURB INLET
- RIGHT-OF-WAY MARKER
- TREE, BUSH & STUMP
- TEMP. BENCHMARK
- MONUMENT FOUND
- 800 CONTOURS
- PROPERTY LINE
- SECTION LINE
- RIGHT-OF-WAY
- EASEMENT
- ADJOINER LINE
- PAVEMENT LINE
- FIELD LINE
- PRIVACY FENCE
- CHAINLINK FENCE
- SPLIT RAIL FENCE
- WIRE FENCE
- DITCH
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- OVERHEAD UTILITY LINE
- TREE LINE
- SANITARY SEWER
- STORM SEWER W/ MANHOLE & END SECTION

(D) DEED (M) MEASURE (PS) PLAT SURVEY

ASPHALT BUILDING CONCRETE GRAVEL

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- PERMANENT FENCE
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- SANITARY SEWER WITH MANHOLE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/MANHOLE & END SECTION
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- TELECOMM CONDUIT
- FIRE SUPPRESSION/WATER LINE
- GAS SERVICE LINE
- STORM MANHOLES
- STORM INLETS
- STORM CURB INLETS
- AQUA-SWIRL UNITS
- SIGN
- WATER FITTING BENDS
- TAPPING SLEEVE
- WATER VALVE
- FIRE HYDRANT ASSEMBLIES
- FIRE DEPARTMENT CONNECTION
- PERMANENT CONSTRUCTION FENCE WITH SCREENING ON DRIVEN POSTS
- TEMPORARY CONSTRUCTION FENCE ON STANDS WITH SAND BAGS

INDIANA 811 dig right. It's the law. Know what's below. Call before you.

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

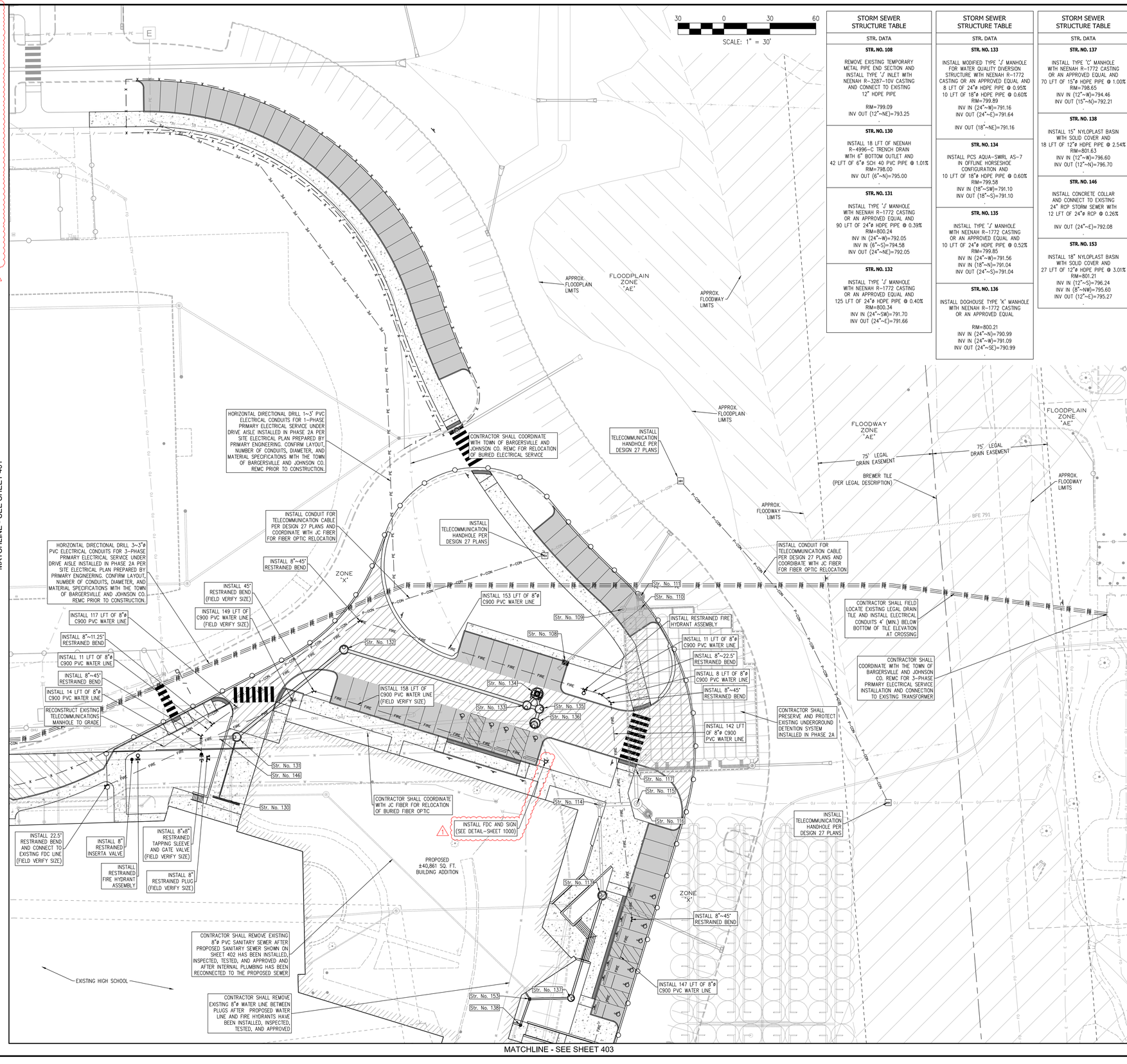
EXISTING STORM SEWER STRUCTURE TABLE	
STR.	DATA
STR. NO. 109	EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=797.08 EX. INV IN (12"~SW)=793.00 EX. INV IN (12"~NE)=791.35 EX. INV OUT (12"~E)=790.24
STR. NO. 110	EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=796.58 EX. INV IN (12"~W)=790.14 EX. INV IN (12"~E)=792.00 EX. INV IN (12"~N)=789.98 EX. INV OUT (24"~S)=789.98 EX. INV OUT (12"~N)=790.14
STR. NO. 111	EXISTING AQUA-SWIRL UNIT NO WORK REQUIRED PROP. RIM=796.44 EX. INV IN (12"~S)=790.06 EX. INV OUT (12"~S)=790.06
STR. NO. 113	EXISTING STORM MANHOLE ADJUST CASTING TO GRADE MECHANICALLY CORE AND CONNECT 15" HDPE PIPE FROM STR. NO. 137 PROP. RIM=798.05 EX. INV IN (15"~S)=791.51 EX. INV IN (12"~SE)=791.00 EX. INV OUT (18"~N)=791.26

EXISTING STORM SEWER STRUCTURE TABLE	
STR.	DATA
STR. NO. 114	EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=799.56 EX. INV IN (18"~S)=790.88 EX. INV IN (24"~NW)=790.60 EX. INV OUT (24"~E)=790.50
STR. NO. 115	EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=798.83 EX. INV IN (24"~W)=790.31 EX. INV IN (15"~SE)=790.19 EX. INV OUT (24"~N)=790.19 EX. INV OUT (15"~SE)=790.31
STR. NO. 116	EXISTING AQUA-SWIRL UNIT ADJUST CASTING TO GRADE PROP. RIM=798.59 EX. INV IN (15"~NW)=790.25 EX. INV OUT (15"~NW)=790.25
STR. NO. 117	EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=798.93 EX. INV IN (24"~S)=791.01 EX. INV IN (24"~E)=791.01 EX. INV OUT (24"~N)=790.01

STORM SEWER STRUCTURE TABLE	
STR.	DATA
STR. NO. 108	REMOVE EXISTING TEMPORARY METAL PIPE END SECTION AND INSTALL TYPE 'J' INLET WITH NEENAH R-3287-10V CASTING AND CONNECT TO EXISTING 12" HDPE PIPE RIM=799.09 INV OUT (12"~NE)=793.25
STR. NO. 130	INSTALL 18 LFT OF NEENAH R-4996-C TRENCH DRAIN WITH 6" BOTTOM OUTLET AND 42 LFT OF 6"ø SCH 40 PVC PIPE @ 1.01% RIM=798.00 INV OUT (6"~N)=795.00
STR. NO. 131	INSTALL TYPE 'J' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 90 LFT OF 24"ø HDPE PIPE @ 0.39% RIM=800.24 INV IN (24"~W)=792.05 INV IN (6"~S)=794.58 INV OUT (24"~NE)=792.05
STR. NO. 132	INSTALL TYPE 'J' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 125 LFT OF 24"ø HDPE PIPE @ 0.40% RIM=800.34 INV IN (24"~SW)=791.70 INV OUT (24"~E)=791.66

STORM SEWER STRUCTURE TABLE	
STR.	DATA
STR. NO. 133	INSTALL MODIFIED TYPE 'J' MANHOLE FOR WATER QUALITY DIVERSION STRUCTURE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 8 LFT OF 24"ø HDPE PIPE @ 0.95% 10 LFT OF 18"ø HDPE PIPE @ 0.60% RIM=799.89 INV IN (24"~W)=791.16 INV OUT (24"~E)=791.64 INV OUT (18"~NE)=791.16
STR. NO. 134	INSTALL PCS AQUA-SWIRL AS-7 IN OFFLINE HORSESHOE CONFIGURATION AND 10 LFT OF 18"ø HDPE PIPE @ 0.60% RIM=799.58 INV IN (18"~SW)=791.10 INV OUT (18"~S)=791.10
STR. NO. 135	INSTALL TYPE 'J' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 10 LFT OF 24"ø HDPE PIPE @ 0.52% RIM=799.85 INV IN (24"~W)=791.56 INV IN (18"~N)=791.04 INV OUT (24"~S)=791.04
STR. NO. 136	INSTALL DOGHOUSE TYPE 'K' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL RIM=800.21 INV IN (24"~N)=790.99 INV IN (24"~W)=791.09 INV OUT (24"~SE)=790.99

STORM SEWER STRUCTURE TABLE	
STR.	DATA
STR. NO. 137	INSTALL TYPE 'C' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 70 LFT OF 15"ø HDPE PIPE @ 1.00% RIM=798.65 INV IN (12"~W)=794.46 INV OUT (15"~N)=792.21
STR. NO. 138	INSTALL 15" NYLOPLAST BASIN WITH SOLID COVER AND 18 LFT OF 12"ø HDPE PIPE @ 2.54% RIM=801.63 INV IN (12"~W)=796.60 INV OUT (12"~N)=796.70
STR. NO. 146	INSTALL CONCRETE COLLAR AND CONNECT TO EXISTING 24" RCP STORM SEWER WITH 12 LFT OF 24"ø RCP @ 0.26% INV OUT (24"~E)=792.08
STR. NO. 153	INSTALL 18" NYLOPLAST BASIN WITH SOLID COVER AND 27 LFT OF 12"ø HDPE PIPE @ 3.01% RIM=801.21 INV IN (12"~S)=796.24 INV IN (8"~NW)=795.60 INV OUT (12"~E)=795.27



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CROSSROAD ENGINEERS, PC
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UTILITY PLAN

WHITELAND HIGH SCHOOL PHASE 2

JOB No.	DRAWN	CHECKED	SHEET
.	KLF	TEN	402

DATE AUGUST 30, 2024 DESIGNED DMS APPR. CJI

REGISTERED DEREK M. SNYDER NO. 11200008 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.
1	09.24.24	DMS	CJI
2	10.04.24	DMS	CJI

REVISIONS
REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS
REVISIONS PER ADDENDUM #2

SHEET 402

30 0 30 60

SCALE: 1" = 30'

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- PERMANENT FENCE
- DITCH LINE
- SANITARY SEWER WITH MANHOLE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/MANHOLE & END SECTION
- ELECTRIC LINE
- TELECOMM CONDUIT
- FIRE SUPPRESSION/WATER LINE
- GAS SERVICE LINE
- STORM MANHOLES
- STORM INLETS
- STORM CURB INLETS
- AQUA-SWIRL UNITS
- SIGN
- WATER FITTING BENDS
- TAPPING SLEEVE
- WATER VALVE
- FIRE HYDRANT ASSEMBLIES
- FIRE DEPARTMENT CONNECTION
- PERMANENT CONSTRUCTION FENCE WITH SCREENING ON DRIVEN POSTS
- TEMPORARY CONSTRUCTION FENCE ON STANDS WITH SAND BAGS

EXISTING LEGEND

- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- LIGHT POLE
- ELECTRIC METER
- ELECTRIC BOX
- YARD LIGHT
- GUIDE WIRE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- WATER VALVE
- FIRE HYDRANT
- WELL
- WATER MANHOLE
- WATER METER
- GAS VALVE
- GAS VALVE
- CABLE TV RISER
- CLEANOUT
- SIGN
- MAILBOX
- STORM ROUND INLET
- STORM CURB INLET
- RIGHT-OF-WAY MARKER
- TREE, BUSH & STUMP
- TEMP. BENCHMARK
- MONUMENT FOUND
- CONTOURS
- PROPERTY LINE
- SECTION LINE
- RIGHT-OF-WAY
- EASEMENT
- ADJOINER LINE
- PAVEMENT LINE
- FIELD LINE
- PRIVACY FENCE
- CHAINLINK FENCE
- SPLIT RAIL FENCE
- WIRE FENCE
- DITCH
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- CABLE TV LINE
- ELECTRIC LINE
- OVERHEAD UTILITY LINE
- TREE LINE
- SANITARY SEWER W/MANHOLE
- STORM SEWER W/ MANHOLE & END SECTION

(D) DEED (M) MEASURE (PS) PLAT SURVEY

ASPHALT BUILDING CONCRETE GRAVEL

UTILITY NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK.
2. CONTRACTOR SHALL REFER TO THE ELECTRICAL SITE PLAN PREPARED BY PRIMARY ENGINEERING, INC. FOR PARKING LOT LIGHTING AND SPECIFICATIONS.
3. ALL STORM SEWER CASTINGS SHALL BE NPDES PHASE II COMPLIANT. CASTINGS SHALL BE MANUFACTURED WITH A STATEMENT SAYING: "DUMP NO WASTE, DRAINS TO RIVER" IN ½" RAISED LETTERS.
4. ALL FIELD TILES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED/CONNECTED TO NEW STORMWATER FACILITIES.
5. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING UNDERGROUND STORMWATER DETENTION CHAMBERS DURING THE ENTIRE DURATION OF THE PROJECT. CONTRACTOR SHALL COORDINATE WITH ADVANCED DRAINAGE SOLUTIONS, INC. (ADS) TO DETERMINE THE MINIMUM COVER REQUIRED OVER THE EXISTING CHAMBERS DURING CONSTRUCTION, AS WELL AS, THE APPROPRIATE EQUIPMENT AND OPERATIONS TO PROTECT THE CHAMBERS.
6. WATER MAIN INSTALLATION AND MATERIALS SHALL CONFORM TO THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS.
7. TAPPING SLEEVES AND VALVES SHALL BE EJP OR MUELLER H-615, H-616 OR STAINLESS STEEL SLEEVES. TAPPING VALVES SHALL BE 2360 SERIES BY MEULLER OR AFC 2500.
8. FIRE HYDRANT ASSEMBLIES SHALL BE SUPER CENTURION 250 HYDRANT BY MEULLER CO. WITH STORZ FITTING ON STEAMER WITH 5"-6" MIN. BURIAL DEPTH.
9. ALL FITTINGS SHALL BE DUCTILE IRON (D.I.) WITH MECHANICAL JOINTS (M.J.) CONFORMING TO AWWA C-110, C-111, C-153, AND NSF-61. ALL WATER MAIN FITTINGS SHALL BE RESTRAINED IN ACCORDANCE WITH THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS.
10. MEG-A-LUG RETAINER GLANDS BY EBBA IRON, INC. , FIELD-LOK GASKETS, OR ONE BOLT RESTRAINED FITTINGS SHALL BE USED ON EACH SIDE OF FITTINGS WHERE THE WATER MAIN CHANGES DIRECTION.
11. CONTRACTOR SHALL COORDINATE CONSTRUCTION SEQUENCE WITH THE OWNER AND SKILLMAN CORPORATION AND MAINTAIN ACTIVE UTILITY SERVICES AT ALL TIMES. ALL TEMPORARY UTILITY SERVICE INTERRUPTIONS MUST BE APPROVED BY THE OWNER AND SKILLMAN CORPORATION PRIOR TO INSTALLATION OF IMPROVEMENTS.
12. EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY.
13. CONTRACTOR SHALL CONNECT ROOF DRAINS TO STORM STRUCTURES AS SHOWN. CONFIRM ROOF DRAIN LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.
14. CONTRACTOR SHALL CONFIRM SANITARY LATERAL LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.

STORM SEWER STRUCTURE TABLE

STR. DATA
STR. NO. 120 EXISTING STORM MANHOLE ADJUST CASTING TO GRADE MECHANICALLY CORE AND CONNECT 18" HDPE PIPE FROM STR. NO. 140 RIM=798.82 INV IN (12"~E)=792.36 INV IN (18"~NW)=792.92 INV OUT (24"~S)=791.36
STR. NO. 139 INSTALL TYPE 'C' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL 33 LFT OF 15"ø HDPE PIPE @ 2.00% RIM=800.70 INV IN (12"~N)=796.15 INV IN (12"~W)=794.72 INV OUT (15"~S)=794.47
STR. NO. 140 INSTALL TYPE 'C' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 38 LFT OF 18"ø HDPE PIPE @ 1.70% RIM=800.24 INV IN (15"~N)=793.81 INV IN (12"~S)=794.42 INV OUT (18"~SE)=793.56
STR. NO. 141 INSTALL TYPE 'C' MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 93 LFT OF 12"ø HDPE PIPE @ 1.00% RIM=799.30 INV IN (12"~W)=795.35 INV OUT (12"~N)=795.35
STR. NO. 142 INSTALL 15" NYLOPLAST BASIN WITH SOLID COVER AND 52 LFT OF 12"ø HDPE PIPE @ 1.00% RIM=801.55 INV IN (8"~W)=797.90 INV IN (6"~S)=797.07 INV IN (8"~N)=796.20 INV OUT (12"~E)=795.87

STORM SEWER STRUCTURE TABLE

STR. DATA
STR. NO. 143 INSTALL STORM SEWER CLEANOUT FOR ROOF DRAIN CONNECTION AND 52 LFT OF 6"ø SCH 40 PVC PIPE @ 2.96% RIM=800.28 INV IN (6"~W)=798.60 INV OUT (6"~N)=798.60
1 **STR. NO. 144** INSTALL STORM SEWER CLEANOUT FOR ROOF DRAIN CONNECTION AND 34 LFT OF 8"ø SCH 40 PVC PIPE @ 3.00% RIM=801.55 INV IN (6"~W)=798.60 INV IN (8"~N)=797.21 INV OUT (8"~S)=797.21
STR. NO. 145 INSTALL STORM SEWER CLEANOUT FOR ROOF DRAIN CONNECTION AND 22 LFT OF 8"ø SCH 40 PVC PIPE @ 3.00% RIM=801.60 INV IN (6"~W)=798.60 INV OUT (8"~S)=797.87
STR. NO. 151 INSTALL STORM SEWER CLEANOUT FOR ROOF DRAIN CONNECTION AND 46 LFT OF 12"ø SCH 40 PVC PIPE @ 2.01% RIM=801.63 INV IN (12"~W)=795.64 INV OUT (12"~E)=795.64
STR. NO. 152 INSTALL STORM SEWER CLEANOUT FOR ROOF DRAIN CONNECTION AND 22 LFT OF 12"ø SCH 40 PVC PIPE @ 2.02% RIM=801.47 INV IN (12"~N)=796.60 INV OUT (12"~S)=796.60

EXISTING STORM SEWER STRUCTURE TABLE

STR. DATA
STR. NO. 121 EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=798.69 EX. INV IN (24"~N)=791.31 EX. INV OUT (24"~S)=791.31 EX. INV IN (18"~E)=791.31
STR. NO. 123 EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=798.35 EX. INV IN (24"~N)=791.15 EX. INV IN (24"~E)=792.16 EX. INV IN (24"~W)=792.16 EX. INV OUT (24"~S)=791.15
STR. NO. 125 EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=797.24 EX. INV IN (18"~N)=791.10 EX. INV IN (18"~E)=791.10 EX. INV IN (6"~SE)=789.45 EX. INV IN (6"~NW)=789.45 EX. INV OUT (12"~SW)=789.45
STR. NO. 126 EXISTING STORM MANHOLE ADJUST CASTING TO GRADE PROP. RIM=797.01 EX. INV IN (12"~NE)=789.39 EX. INV IN (24"~N)=789.30 EX. INV OUT (24"~S)=789.30

SANITARY SEWER STRUCTURE TABLE

STR. DATA
STR. NO. SS-10 INSTALL SANITARY DOGHOUSE MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL RIM=797.30 INV IN (8"~N)=792.97 INV IN (8"~E)=792.87 INV OUT (8"~W)=792.87
STR. NO. SS-11 INSTALL SANITARY MANHOLE WITH NEENAH R-1772 CASTING OR AN APPROVED EQUAL AND 245 LFT OF 8"ø SDR-35 PVC PIPE @ 0.45% RIM=801.64 INV OUT (8"~S)=794.07

2

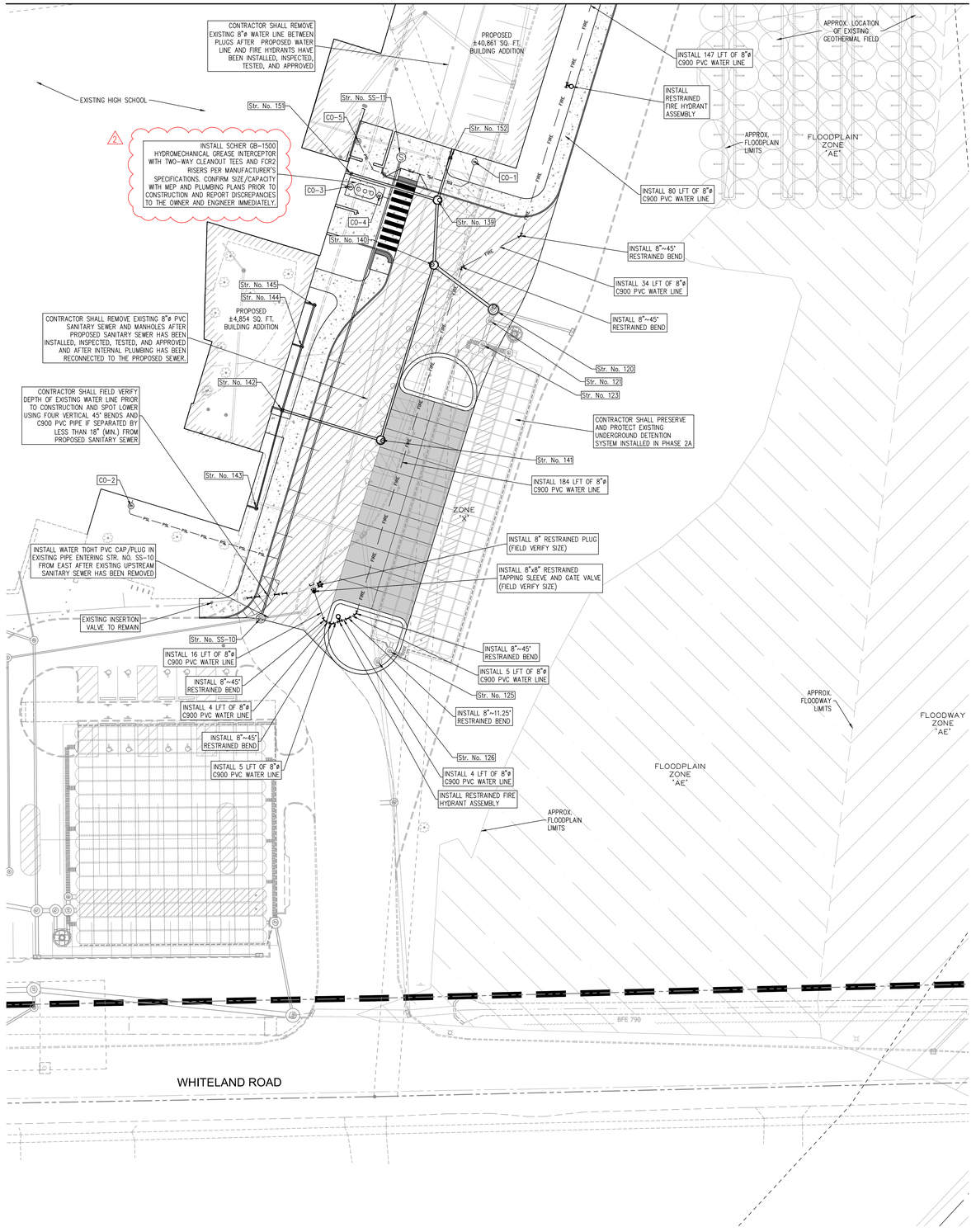
SANITARY SEWER LATERAL TABLE

INSTALL SANITARY SEWER CLEANOUT AND SDR-35 PVC SANITARY LATERAL AS INDICATED BELOW. MINIMUM SLOPE SHALL BE 1.04%. CONTRACTOR SHALL CONFIRM LATERAL CONNECTION LOCATIONS AND DEPTH/INVERT WITH PLUMBING PLANS

RUN	CO TYPE	DIAMETER	LENGTH	SLOPE	U.S. INV.	RIM EL.
CO-1	TYPE 1	6"	49'	2%	795.70	801.39
CO-2	TYPE 1	6"	83'	3.5%	797.20	801.39
CO-3	TYPE 2	6"	2'	2%	796.10	801.60
CO-4	TYPE 2	6"	5'	2%	795.60	801.23
CO-5	TYPE 2	6"	28'	2%	797.62	801.74
GB-1500	GB-1500	6"	2'	2%	795.64	801.42

NOTE: UPSTREAM (U.S.) INVERT ELEVATION OF THE SCHIER GB-1500 GREASE INTERCEPTOR CORRESPONDS TO THE INVERT ELEVATION OF THE 6" OUTLET FROM THE UNIT. RIM ELEVATION CORRESPONDS TO FINISHED GRADE ELEVATION AT THE CENTER OF THE UNIT.

MATCHLINE - SEE SHEET 402



DIRECTORY PATH : R:\Active\Lennar-Reabe\Whiteland High School\Design\CAD\Plans\PHASE 2B
FILENAME : 401 UTILITY PLAN PH 2B.dwg
DATE/USER : 10/3/2024 5:32 PM / Dsnyder

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th Ave., Suite 200, Beech Grove, IN 46107 (317) 780-1555

SHEET 403

UTILITY PLAN

WHITELAND HIGH SCHOOL PHASE 2

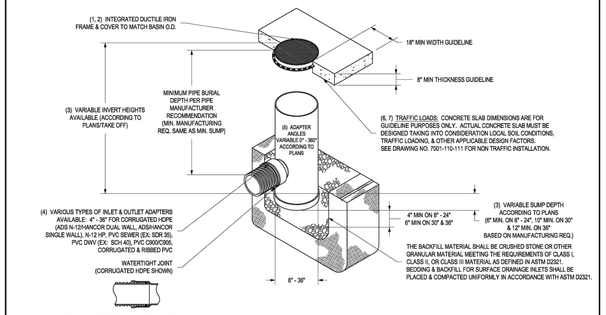
JOB No.	.	DRAWN	KLF	CHECKED	TEN	APPR.	CJI
DATE	AUGUST 30, 2024	DESIGNED	DMS				

DEREK M. SNYDER REGISTERED NO. 11200008 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	09.24.24	REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS	DMS	CJI
2	10.04.24	REVISIONS PER ADDENDUM #2	DMS	CJI

SHEET 403

NYLOPLAST DRAIN BASIN WITH SOLID COVER



1 - 8" - 30" SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
8" & 10" SOLID COVERS FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. CONTACT YOUR LOCAL REPRESENTATIVE FOR LEAD TIMES BEYOND 6" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-060.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" SOLID COVERS SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" SOLID COVERS ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

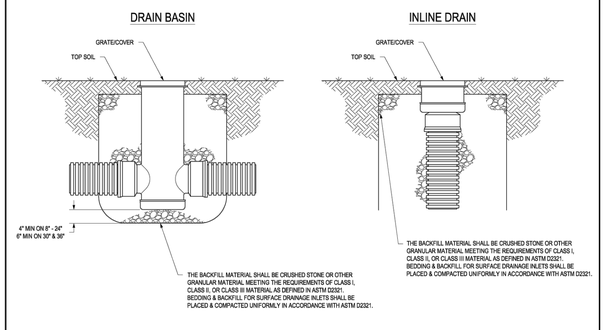
DRAWN BY	EBC	MATERIAL	
DATE	08-14-07		
REVISED BY	MBH	PROJECT NO./NAME	
DATE	06-13-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 933-2443 FAX (770) 932-3490 www.nyloplast-usa.com

TITLE: DRAIN BASIN WITH SOLID COVER QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-250 REV E

NON TRAFFIC INSTALLATION

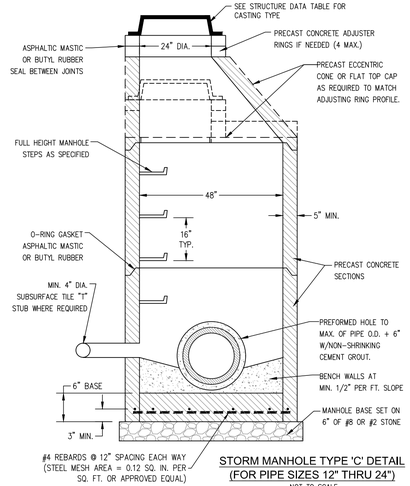


DRAWN BY	CJA	MATERIAL	
DATE	9-30-09		
REVISED BY	MBH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:25	SHEET 1 OF 1

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 933-2443 FAX (770) 932-3490 www.nyloplast-usa.com

TITLE: DRAIN BASIN & INLINE DRAIN NON TRAFFIC INSTALLATION

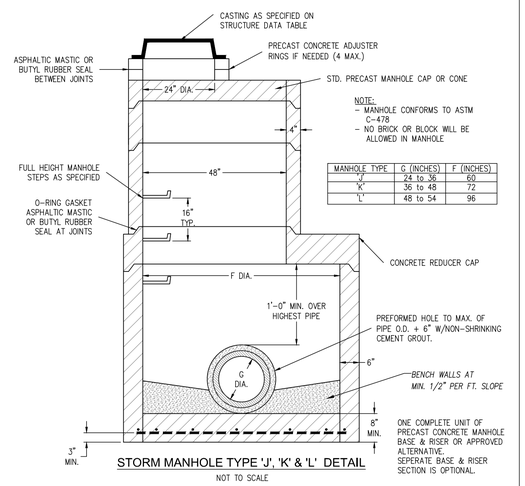
DWG NO. 7001-110-111 REV F



#4 REBARDS @ 12" SPACING EACH WAY (STEEL MESH AREA = 0.12 SQ. IN. PER SQ. FT. OR APPROVED EQUAL)

STORM MANHOLE TYPE 'C' DETAIL (FOR PIPE SIZES 12" THRU 24")

NOT TO SCALE

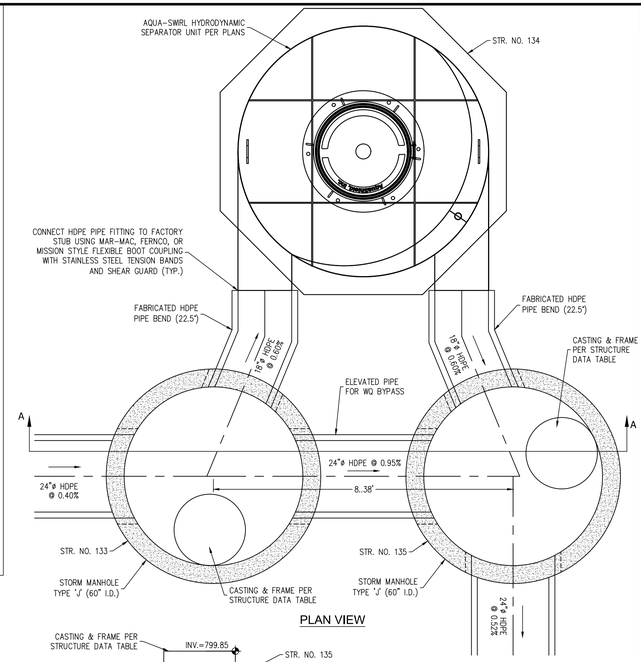


NOTE:
- MANHOLE CONFORMS TO ASTM C-478
- NO BRICK OR BLOCK WILL BE ALLOWED IN MANHOLE

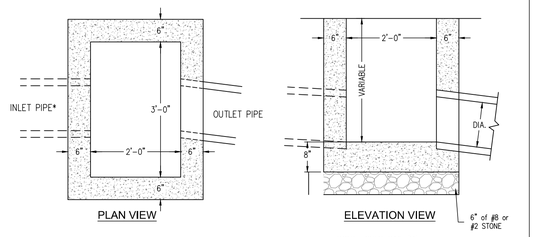
MANHOLE TYPE	G (INCHES)	F (INCHES)
'J'	24 to 36	60
'K'	36 to 48	72
'L'	48 to 54	96

STORM MANHOLE TYPE 'J', 'K' & 'L' DETAIL

NOT TO SCALE



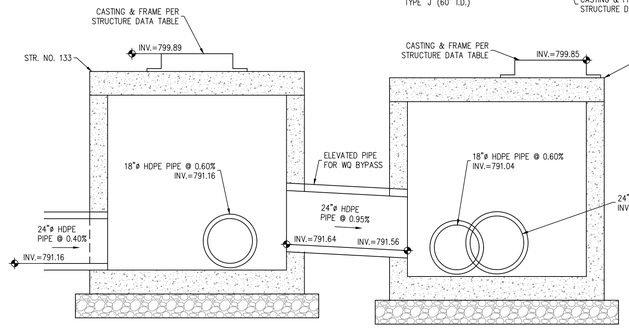
PLAN VIEW



INLET TYPE 'J'/'M'

NOT TO SCALE

*NOTE: ONLY TYPE 'M' INLETS INCLUDE INLET PIPES.



ELEVATION VIEW 'A-A'

DIVERSION STRUCTURE DETAIL STR. NO. 133 & 135

NOT TO SCALE

REVISIONS PER ADDENDUM #2

REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS

NO.	DATE	BY
1	09.24.24	DMS
2	10.04.24	DMS

CROSSROAD ENGINEERS, PC — Transportation & Development Consultants — 115 S. 17th Street, Suite 300 • Bedford, IN 47421 • (812) 278-1613

SHEET 1001

MISCELLANEOUS DETAILS

WHITELAND HIGH SCHOOL PHASE 2

JOB No.	.	DRAWN	KLF	CHECKED	TEN	APPR.	CJI
DATE	AUGUST 30, 2024	DESIGNED	DMS				

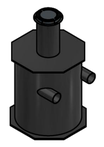
REGISTERED DEREK M. SNYDER NO. 11200008 STATE OF INDIANA PROFESSIONAL ENGINEER

Derek M. Snyder

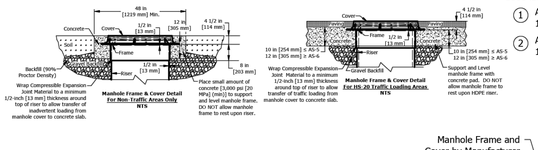
SHEET 1001

DIRECTORY PATH : R:\Active\Lennon Reed\Whiteland High School\Design\CAD\Plans\PHASE 2B
FILENAME : 1000 MISCELLANEOUS DETAILS.dwg
DATE/USER : 10/3/2024 5:14 PM / Dsnyder

Aqua-Swirl High Density Polyethylene (HDPE) Stormwater Treatment System

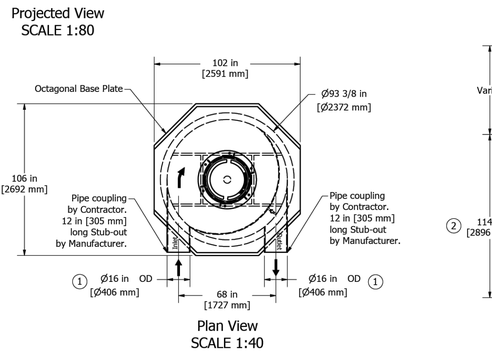


Projected View
SCALE 1:80

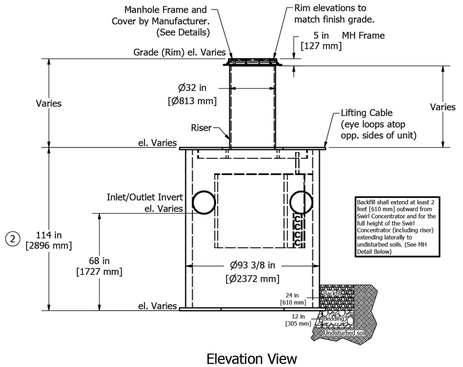


Please see accompanied Aqua-Swirl specification notes. See Site Plan for actual system orientation. Approximate dry (pick) weight: 3800 lbs [1700 kg].

1. AS-7 inlet/outlet pipe size ranges from 4 in [102 mm] to 18 in [457 mm].
2. AS-7 chamber height may vary from 84 in [2134 mm] to 114 in [2896 mm], depending on inlet/outlet pipe size.



Plan View
SCALE 1:40



Elevation View
SCALE 1:40

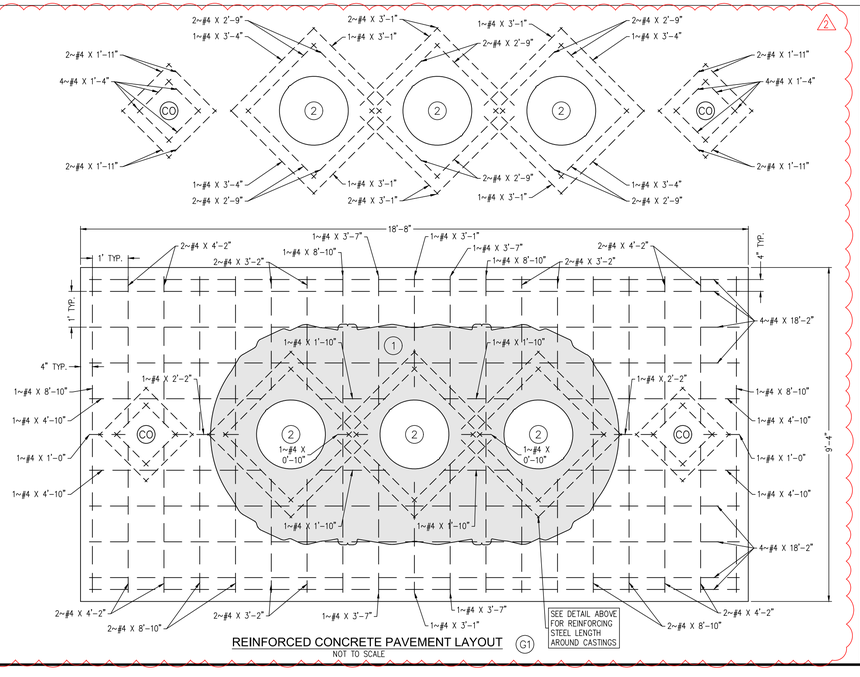
AquaShield	Aqua-Swirl Concentrator AS-7 HorseShoe CW STD	Structure #:	AS-7 STD	Rvwed	Rvw. Date
2733 Kanasita Drive, Suite 111, Chattanooga, TN 37343 Phone (888) 344-9644 Fax (423) 826-2112 www.aquashieldinc.com	Aqua-Swirl Concentrator Model Standard Detail	Drawn By:	Offones		
		Scale:	As Shown		
		Date:	4/17/2019		
		U.S. Patent No. 8524473 and other Patent Pending			

BILL OF MATERIALS REINFORCING STEEL

SIZE	QUANTITY	LENGTH	ORIENTATION
#4	8	18'-2"	PARALLEL
#4	4	4'-10"	
#4	6	1'-10"	
#4	2	1'-0"	
#4	2	0'-10"	
#4	8	8'-10"	PERPENDICULAR
#4	8	4'-2"	
#4	8	3'-2"	
#4	2	3'-1"	
#4	4	3'-7"	
#4	8	1'-11"	45°
#4	8	1'-4"	
#4	4	3'-4"	
#4	12	2'-9"	
#4	8	3'-1"	
TOTAL #4 REINFORCING		426'-2"	

NOTES:
1. CONCRETE SHALL HAVE A 28 DAY COMPRESSION STRENGTH OF 4,000 PSI.
2. REINFORCING STEEL SHALL BE #4 BAR (½" DIA.) GRADE 60 PER ASTM A615. REBAR SHALL BE CONNECTED WITH TIE WIRE.
3. REBAR SHALL BE 2 ½" (MIN.) FROM THE EDGE OF CONCRETE. TYPICAL REBAR SPACING SHALL BE 12" ON CENTER (SEE DETAIL FOR VARIATIONS). REBAR SPACING SHALL BE 4" AROUND CASTINGS.

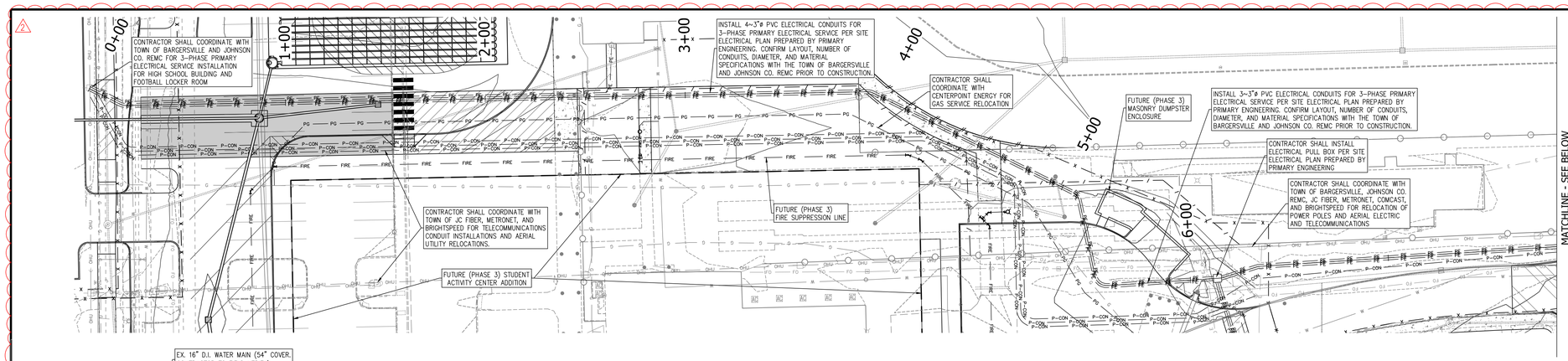
(1) SCHIER QB-1500 GREASE INTERCEPTOR
(2) CAST IRON H-20 RATED C24HP COVERS WITH FCR2 RISERS
(CO) TWO-WAY CLEANOUT TEE WITH NEENAH R-1976 CASTING OR AN APPROVED EQUAL



REINFORCED CONCRETE PAVEMENT LAYOUT

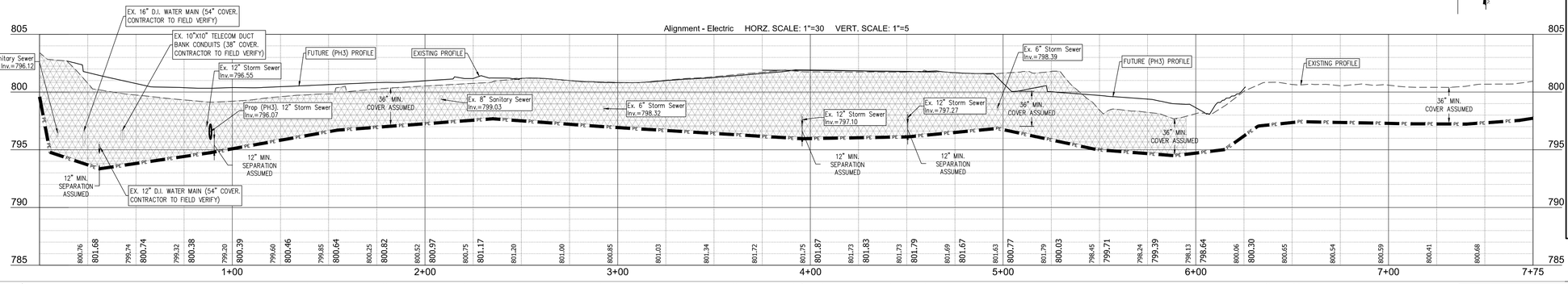
NOT TO SCALE (G1)

SEE DETAIL ABOVE FOR REINFORCING STEEL LENGTH AROUND CASTINGS



PLAN & PROFILE NOTES

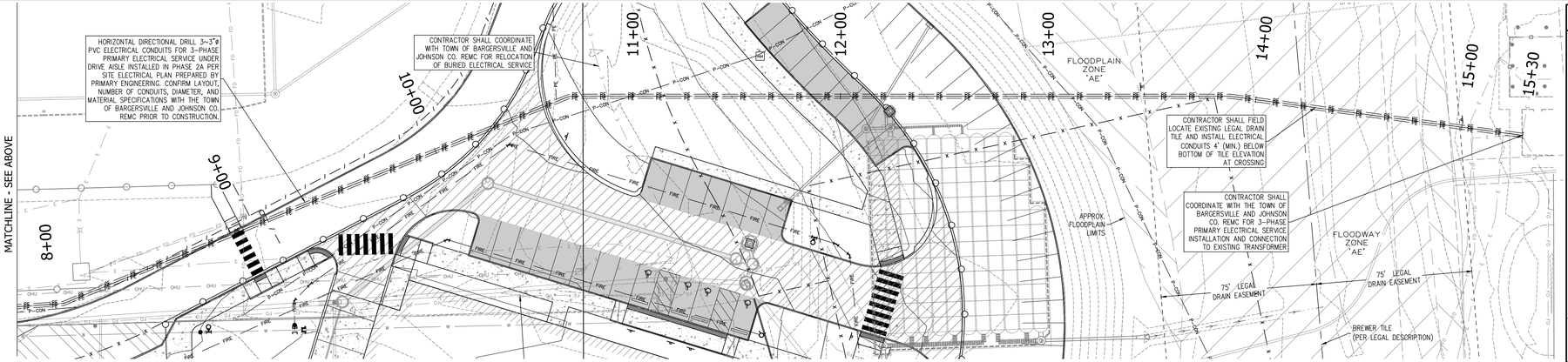
1. CONTRACTOR SHALL INSTALL THE ELECTRICAL CONDUITS SHOWN HEREON IN ACCORDANCE WITH THE SITE ELECTRICAL PLANS PREPARED BY PRIMARY ENGINEERING. THE CONTRACTOR SHALL CONFIRM MINIMUM COVER AND MINIMUM VERTICAL SEPARATION FROM OTHER UTILITIES WITH PRIMARY ENGINEERING, TOWN OF BARGERSVILLE, AND JOHNSON CO. REMC PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING UTILITIES AND REPORT CONFLICTS TO THE OWNER AND ENGINEER IMMEDIATELY.
3. CONDUIT PROFILES SHOWN ARE BASED ON THE ASSUMED MINIMUM COVER INDICATED AS MEASURED FROM THE LOWEST EXISTING, PROPOSED (PH2), OR FUTURE (PH3) PROFILE GRADE OVER THE UTILITY.
4. ALL UTILITY CONDUITS INSTALLED UNDER ASPHALT OR CONCRETE PAVEMENT SHALL BE BACKFILLED WITH GRANULAR BACKFILL TO BE COMPACTED TO 95% PROCTOR DENSITY IN 6" MAX. LIFTS.
5. CONTRACTOR SHALL CONFIRM LEGAL DRAIN CROSSING REQUIREMENTS WITH THE JOHNSON CO. SURVEYOR'S OFFICE PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL INSTALL PULL STRING IN CONDUITS AND PVC SWEEPS AT ALL CHANGES IN VERTICAL AND HORIZONTAL ALIGNMENT TO ENSURE CABLING CAN BE PULLED THROUGH CONDUITS WITHOUT DAMAGING IT.



PROPOSED LEGEND

- PROPERTY LINE / SECTION LINE
- PERMANENT FENCE / DITCH LINE
- SANITARY SEWER WITH MANHOLE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/MANHOLE & END SECTION
- ELECTRIC LINE
- TELECOM CONDUIT
- FIRE SUPPRESSION/WATER LINE
- GAS SERVICE LINE
- STORM MANHOLES
- STORM INLETS
- STORM CURB INLETS
- AQUA-SWIRL UNITS
- SIGN
- WATER FITTING BENDS
- TAPPING SLEEVE
- WATER VALVE
- FIRE HYDRANT ASSEMBLIES
- FIRE DEPARTMENT CONNECTION
- PERMANENT CONSTRUCTION FENCE WITH SCREENING ON DRIVEN POSTS
- TEMPORARY CONSTRUCTION FENCE ON STANDS WITH SAND BAGS

DENOTES APPROXIMATE LIMITS OF GRANULAR BACKFILL TO BE COMPACTED TO 95% PROCTOR DENSITY IN 6" MAX LIFTS

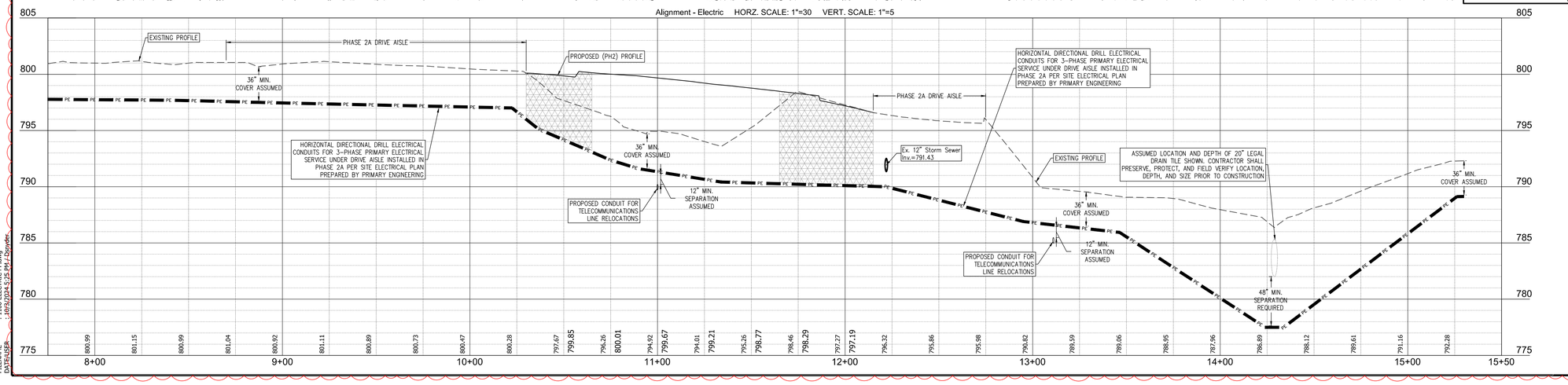


EXISTING LEGEND

- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- LIGHT POLE
- ELECTRIC METER
- ELECTRIC BOX
- YARD LIGHT
- GUIDE WIRE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- WATER VALVE
- FIRE HYDRANT
- WELL
- WATER MANHOLE
- WATER METER
- GAS VALVE
- GAS VALVE
- CABLE TV RISER
- CLEANOUT
- SIGN
- MAILBOX
- STORM ROUND INLET
- STORM CURB INLET
- RIGHT-OF-WAY MARKER
- TREE, BUSH & STUMP
- TEMP. BENCHMARK
- MONUMENT FOUND
- CONTOURS
- PROPERTY LINE
- SECTION LINE
- RIGHT-OF-WAY
- EASEMENT
- ADJOINER LINE
- PAVEMENT LINE
- FIELD LINE
- PRIVACY FENCE
- CHAINLINK FENCE
- SPLIT RAIL FENCE
- WIRE FENCE
- DITCH
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- CABLE TV LINE
- ELECTRIC LINE
- OVERHEAD UTILITY LINE
- TREE LINE
- SANITARY SEWER W/MANHOLE
- STORM SEWER W/ MANHOLE & END SECTION

(D) DEED (M) MEASURE (PS) PLAT SURVEY

ASPHALT BUILDING CONCRETE GRAVEL



NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

INDIANA Call before you dig 811 Know what's below. Call before you dig.

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SHEET 1100

ELECTRIC PLAN AND PROFILE

WHITELAND HIGH SCHOOL PHASE 2

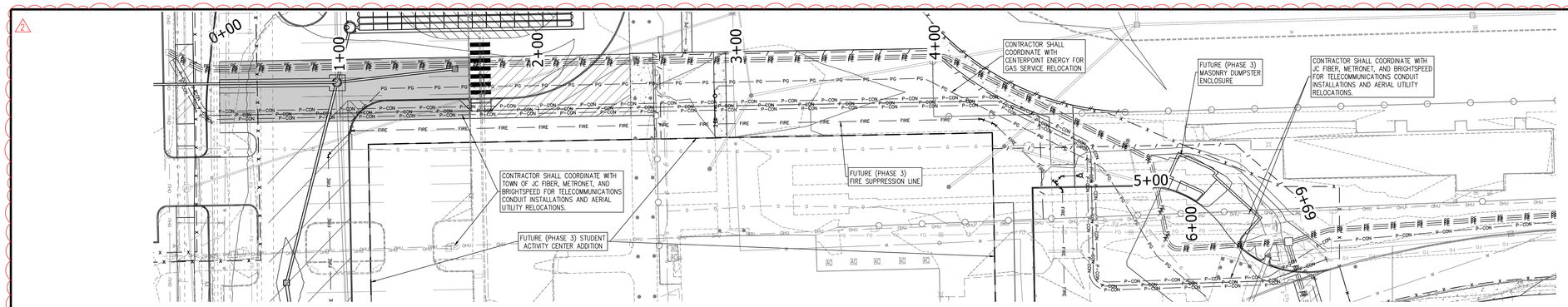
JOB No.	.	DRAWN	KLF	CHECKED	TEN	APPR.	CJI
DATE	AUGUST 30, 2024	DESIGNED	DMS				

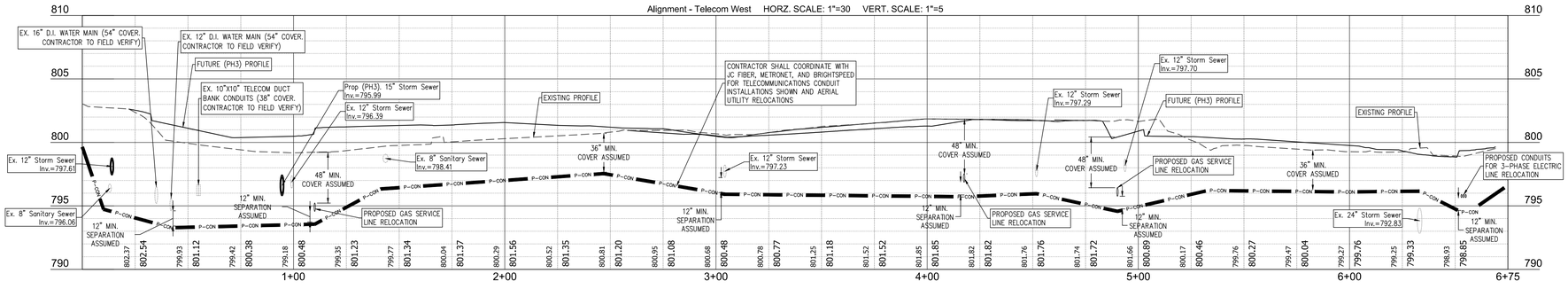
REVISIONS

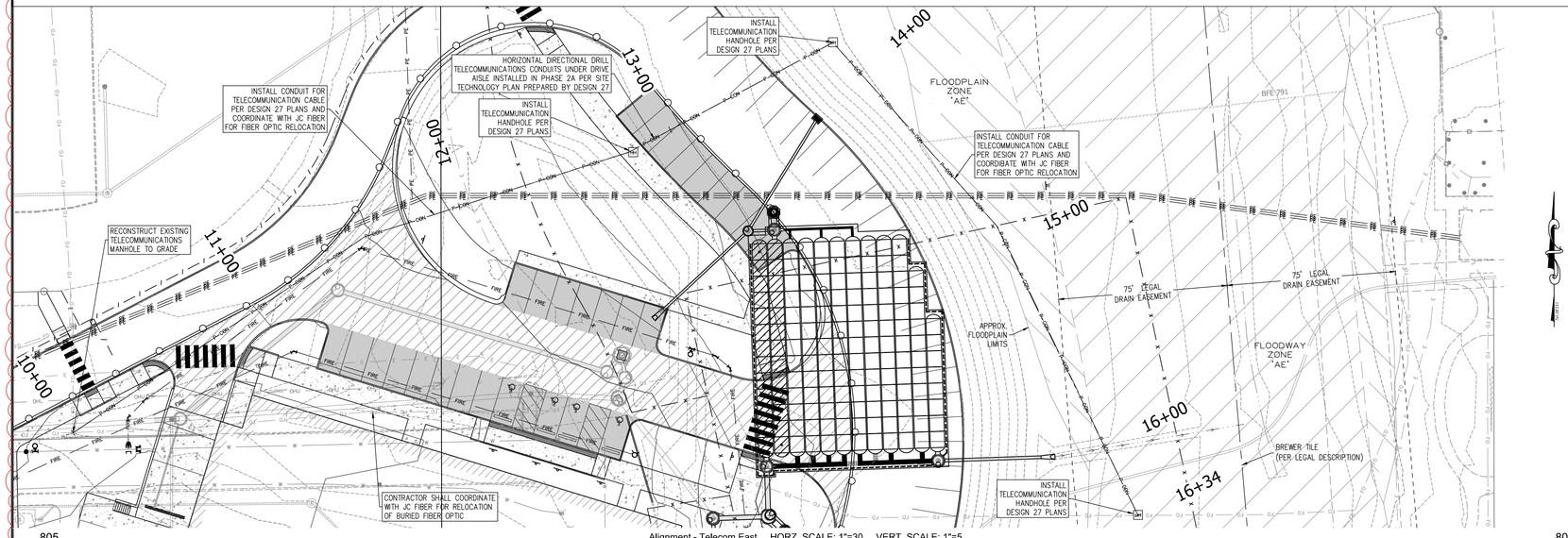
NO.	DATE	BY	APPR.
1	09.24.24	DMS	CJI
2	10.04.24	DMS	CJI
3	REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS		
4	REVISIONS PER ADDENDUM #2		
5			
6			
7			
8			
9			

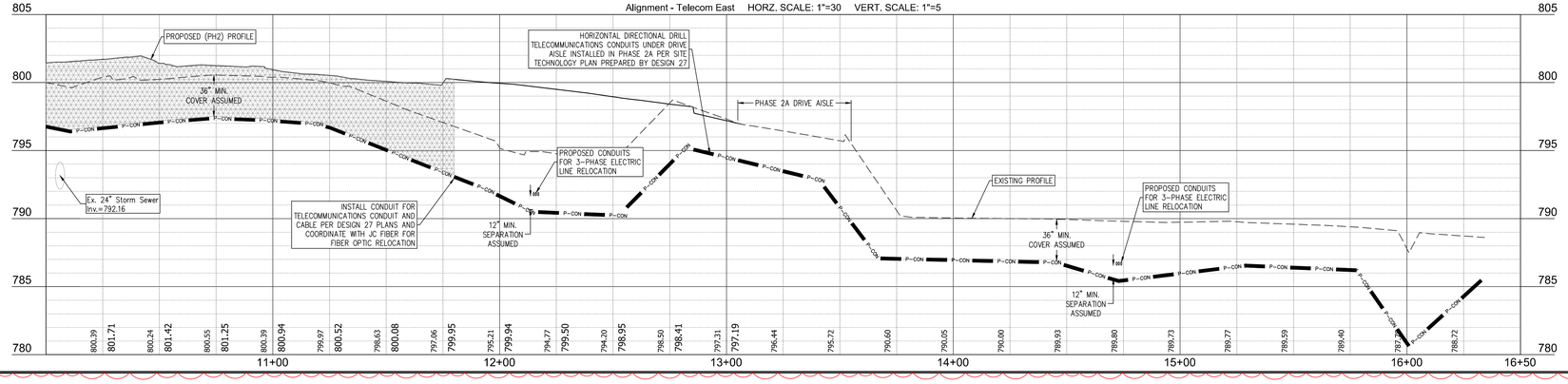
DEREK M. SNYDER NO. 11200008 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER

DIRECTORY PATH : R:\Active\Jones+Beale\Whiteland High School\Design\CAD\Plans\PHASE 2B
FILENAME : 1100 ELECTRIC PP.dwg
DATE/USER : 10/3/2024 5:25 PM / DSnyder









PROPOSED LEGEND

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- SANITARY SEWER LATERAL WITH CLEANOUT
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- WATER VALVE
- FIRE HYDRANT ASSEMBLIES
- FIRE DEPARTMENT CONNECTION
- PERMANENT CONSTRUCTION FENCE WITH SCREENING ON DRIVEN POSTS
- TEMPORARY CONSTRUCTION FENCE ON STANDS WITH SAND BAGS

SCALE: 1" = 30'

PLAN & PROFILE NOTES

1. THE TELECOM CONDUITS SHOWN ON THE "ALIGNMENT-TELECOM WEST" PLAN AND PROFILE SHALL BE INSTALLED BY THE RESPECTIVE UTILITY COMPANIES. THE CONTRACTOR SHALL COORDINATE WITH JC FIBER, METRONET, AND BRIGHTSPEED FOR CONDUIT INSTALLATIONS AND UTILITY RELOCATIONS.
2. CONTRACTOR SHALL INSTALL THE TELECOM CONDUITS SHOWN ON THE "ALIGNMENT-TELECOM EAST" PLAN AND PROFILE IN ACCORDANCE WITH THE SITE TECHNOLOGY PLANS PREPARED BY DESIGN 27. THE CONTRACTOR SHALL CONFIRM MINIMUM COVER AND MINIMUM VERTICAL SEPARATION FROM OTHER UTILITIES WITH DESIGN 27 PRIOR TO CONSTRUCTION.
3. CONDUIT PROFILES SHOWN ARE BASED ON THE ASSUMED MINIMUM COVER INDICATED AS MEASURED FROM THE LOWEST EXISTING, PROPOSED (PH2), OR FUTURE (PH3) PROFILE GRADE OVER THE UTILITY.
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DENOTES APPROXIMATE LIMITS OF GRANULAR BACKFILL TO BE COMPACTED TO 95% PROCTOR DENSITY IN 6" MAX LIFTS

NOTE:
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EXISTING LEGEND

- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- LIGHT POLE
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- ELECTRIC BOX
- YARD LIGHT
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- TELEPHONE MANHOLE
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- SANITARY SEWER W/MANHOLE
- STORM SEWER W/ MANHOLE & END SECTION
- (D) DEED (M) MEASURE (PS) PLAT SURVEY
- ASPHALT
- BUILDING
- CONCRETE
- GRAVEL

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SHEET 1101

TELECOM PLAN AND PROFILE

WHITELAND HIGH SCHOOL PHASE 2

JOB No.	.	DRAWN	KLF	CHECKED	TEN	CJI
DATE	AUGUST 30, 2024	DESIGNED	DMS	APPR.		

DEREK M. SNYDER REGISTERED ENGINEER NO. 11200008 STATE OF INDIANA PROFESSIONAL

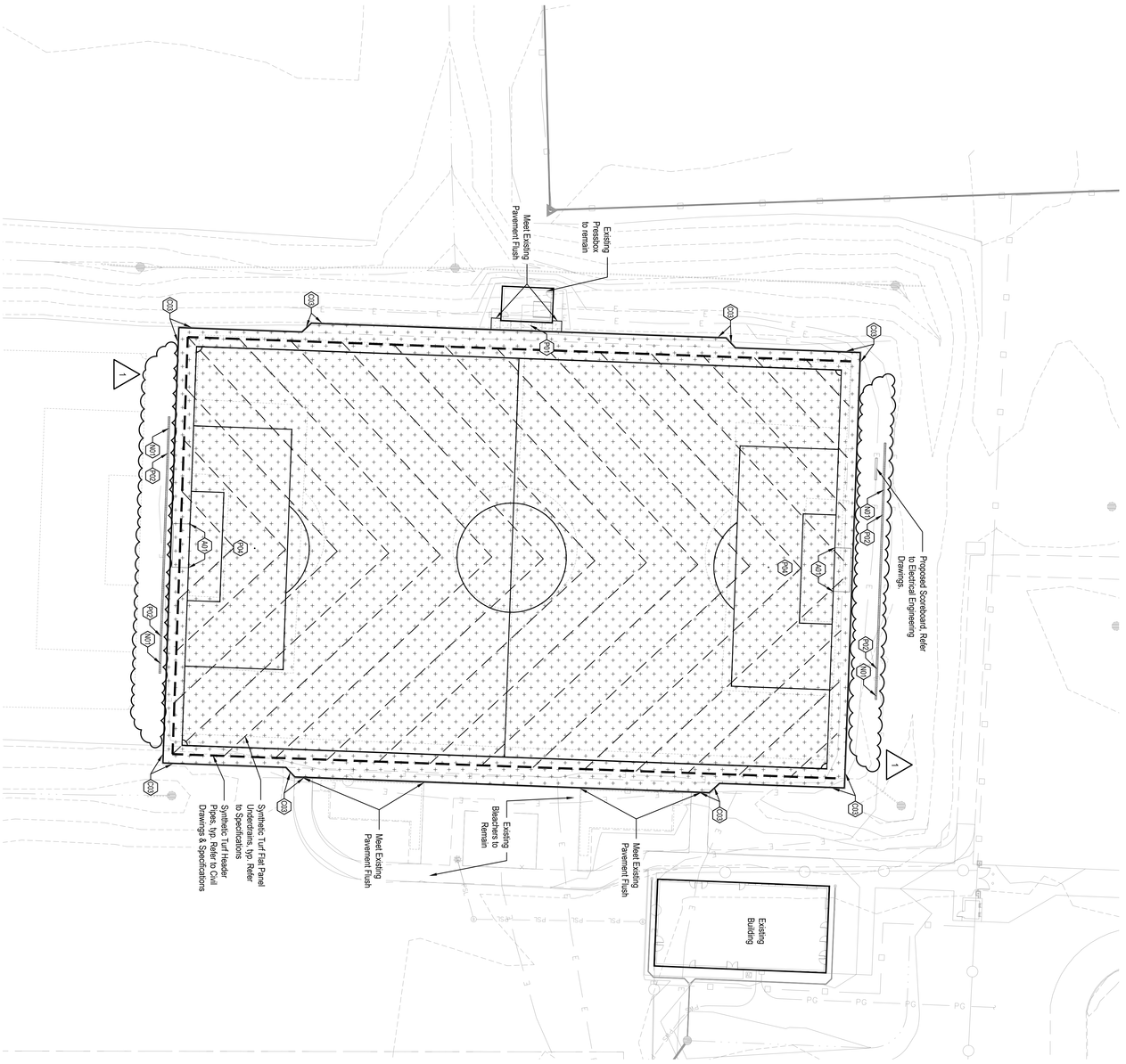
NO.	DATE	REVISIONS	BY	APPR.
1	09.24.24	REVISIONS PER TOWN OF WHITELAND TAC AND JOHNSON CO. SURVEYOR'S OFFICE REVIEW COMMENTS	DMS	CJI
2	10.04.24	REVISIONS PER ADDENDUM #2	DMS	CJI

SHEET 1101

DIRECTORY PATH : R:\Active\Lance-Rhoda\Whiteland High School\Design\CAD\Plans\PHASE 2B
FILENAME : 1101 TELECOM PP.dwg
DATE/USER : 10/9/2024 5:14 PM / Cboyden

Know what's below. Call before you dig. INDIANA 811

PLOT DATE/TIME: 8/26/2024 11:58:37 AM



	ATHLETIC COMPONENTS
KEY	DESCRIPTION / REFERENCE
G01	SOCCER GOAL REFER TO SPEC. 32 91 15

	MATERIAL KEYNOTES
	CURBS
KEY	DESCRIPTION / REFERENCE
C01	PERIMETER NAILER CURB REFER TO SITE DETAIL 71.1610

	NETTING
KEY	DESCRIPTION / REFERENCE
N01	ALTERNATE: PLAYER BARRIER NETTING REFER TO SPEC. 32 31 00

	PAVEMENTS
KEY	DESCRIPTION / REFERENCE
P01	CONCRETE, STANDARD REFER TO SITE DETAILS 1-3&1610
P02	MAINTENANCE EDGE, 1'-0" REFER TO SITE DETAIL 66.1610

	PAVEMENTS, SPECIALTY
KEY	DESCRIPTION / REFERENCE
P04	SYNTHETIC TURF - SOCCER FIELD. REFER TO SITE DETAIL 74.600 AND SPEC. 32 91 15

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PH 2 SOCCER
139 W TRACY RD
NEW WHITELAND, IN 46184

context DESIGN

LANCER ASSOCIATES ARCHITECTURE
145 NORTH EAST STREET
INDIANAPOLIS, IN 46204

REVISIONS:

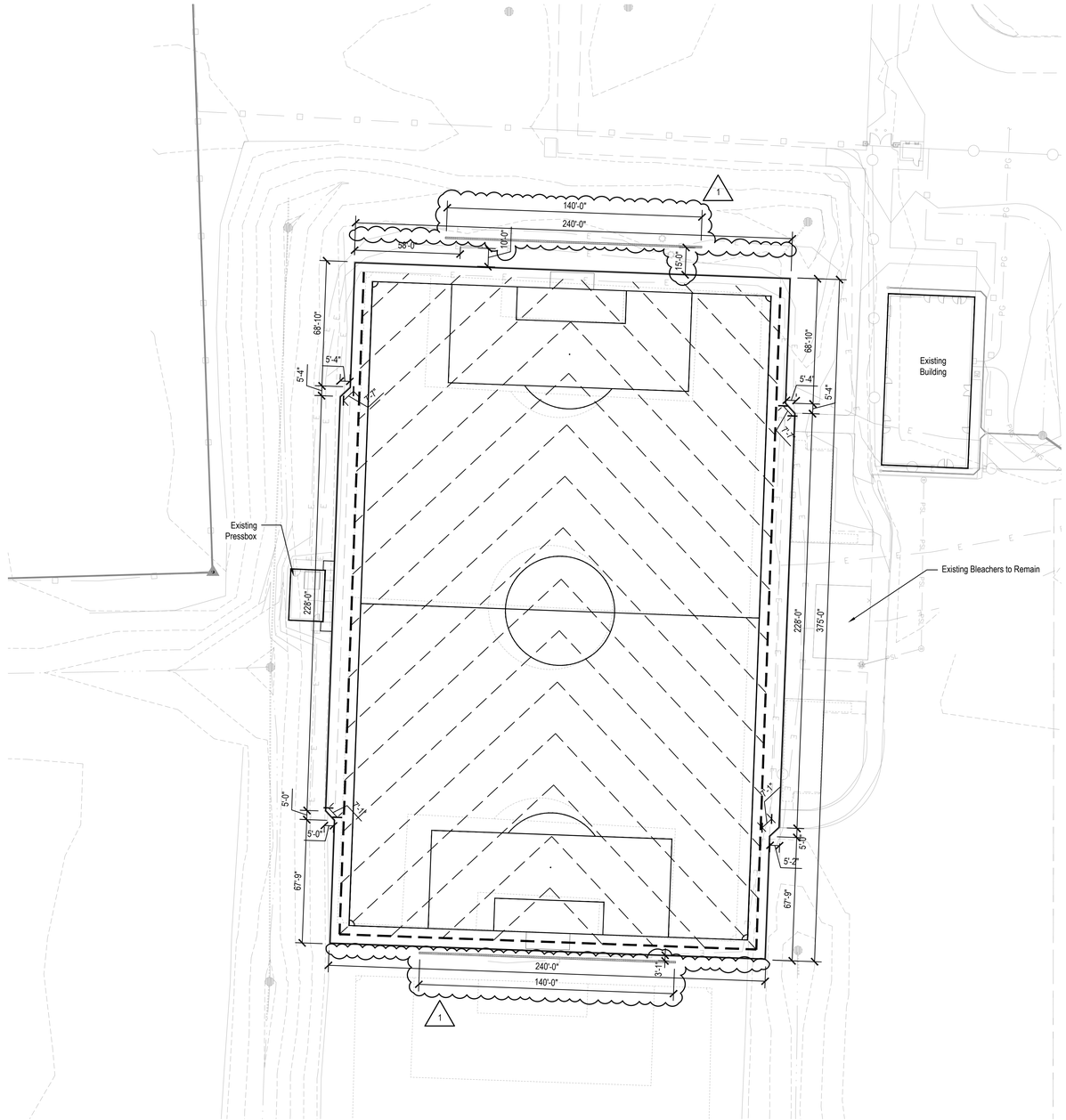
#	Date	Desc.
1	10-04-2024	Addenda 1

FREDDIE J. PRATHER REGISTERED No. 20200002 STATE OF INDIANA ARCHITECT EXPIRES 12-31-2025

100% CONSTRUCTION DOCUMENTS
PROJECT #22130
DRAWN BY: JM/CH
CHECKED BY: MA/CH

SITE MATERIALS PLAN - PHASE 2

L110



LAYOUT NOTES

1. Dimensions are shown to Face of Curb unless otherwise noted.
2. Contractor shall coordinate final joint locations in the field with the Landscape Architect. Align to existing conditions when practical, including at building and wall corners, connections to existing work, and to centerlines of doors.
3. Space control joints evenly between all bands and expansion joints as shown, unless otherwise dimensioned. Space interim joints equally whenever possible.
4. Digital AutoCAD files will be provided to the successful bidder as a courtesy to assist with field layout. The Contractor maintains all responsibility for the use, accuracy, and confirmation of such data.
5. All pavement striping shown shall adhere to Specifications. The Contractor shall include in their bid any miscellaneous copy, striping, or curb painting that may be requested by the Fire Marshal.
6. All disturbed areas not proposed to receive pavements shall be dressed with topsoil and seeded per Specifications.
7. Contractor shall provide and install One (1) Accessible Parking Sign per accessible parking space indicated in plans. Coordinate final location in the field with Landscape Architect.

LANCER ASSOCIATES ARCHITECTURE
145 NORTH EAST STREET
INDIANAPOLIS, IN 46204

context DESIGN

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PH 2 SOCCER
139 W TRACY RD
NEW WHITELAND, IN 46184

FREDDIE J. PRAZEAU
REGISTERED
No. 2020-0052
STATE OF INDIANA
LANDSCAPE ARCHITECT
EXPIRES 12-31-2025

REVISIONS:

#	Date	Desc.
1	10-04-2024	Addenda 1

100% CONSTRUCTION DOCUMENTS

PROJECT: #22130
DATE: 08-30-2024
DRAWN BY: MA/CH

SITE LAYOUT PLAN - PHASE 2

L210

PLOT DATE/TIME: 9/9/2024 11:56:37 AM

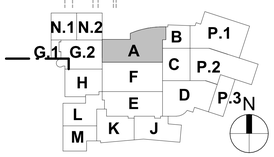
GENERAL NOTES

1. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR NEW AND EXISTING FINISHED FLOOR ELEVATIONS THROUGHOUT BUILDING.

(X) PLAN NOTES

1. SAW-CUT AND REMOVE EXISTING FLOOR AS REQUIRED TO INSTALL NEW UNDERGROUND PIPING AND TIE-IN TO EXISTING. BACKFILL WITH COMPACTIBLE FILL, DOWEL INTO EXISTING SLAB, AND POUR NEW SAME THICKNESS.

1 UNDERGROUND - PLUMBING PLAN - UNIT A
SCALE: 1/8" = 1'-0"



SCALE: 1/16" = 1'-0" | SCALE: 3/32" = 1'-0" | SCALE: 1/8" = 1'-0" | SCALE: 1/4" = 1'-0" | SCALE: 1/2" = 1'-0" | SCALE: 3/4" = 1'-0" | SCALE: 1" = 1'-0"

IF THE WHEEL PRINTED BELOW IS NOT SHOWN IN COLOR, THIS SET OF PRINTS IS NOT REPRESENTING ALL LINE TYPES CORRECTLY. CONTACT THE ARCHITECT/ ENGINEERING FOR DIRECTIONS ON HOW TO OBTAIN A FULL COLOR SET OF PRINTS

PLOT DATE/TIME: 10/3/2024 1:37:36 PM

LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com

Indianapolis
9755 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
www.primary-eng.com

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PHASE 2
300 E MAIN ST, WHITELAND, IN 46184

ANDREW STEPHEN LUCIBRACK
REGISTERED
PE11700017
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	10-4-2024	ADDENDUM #2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#22130
DATE:	08-30-2024
DRAWN BY:	ASL

UNDERGROUND - PLUMBING PLAN - UNIT A

P100A

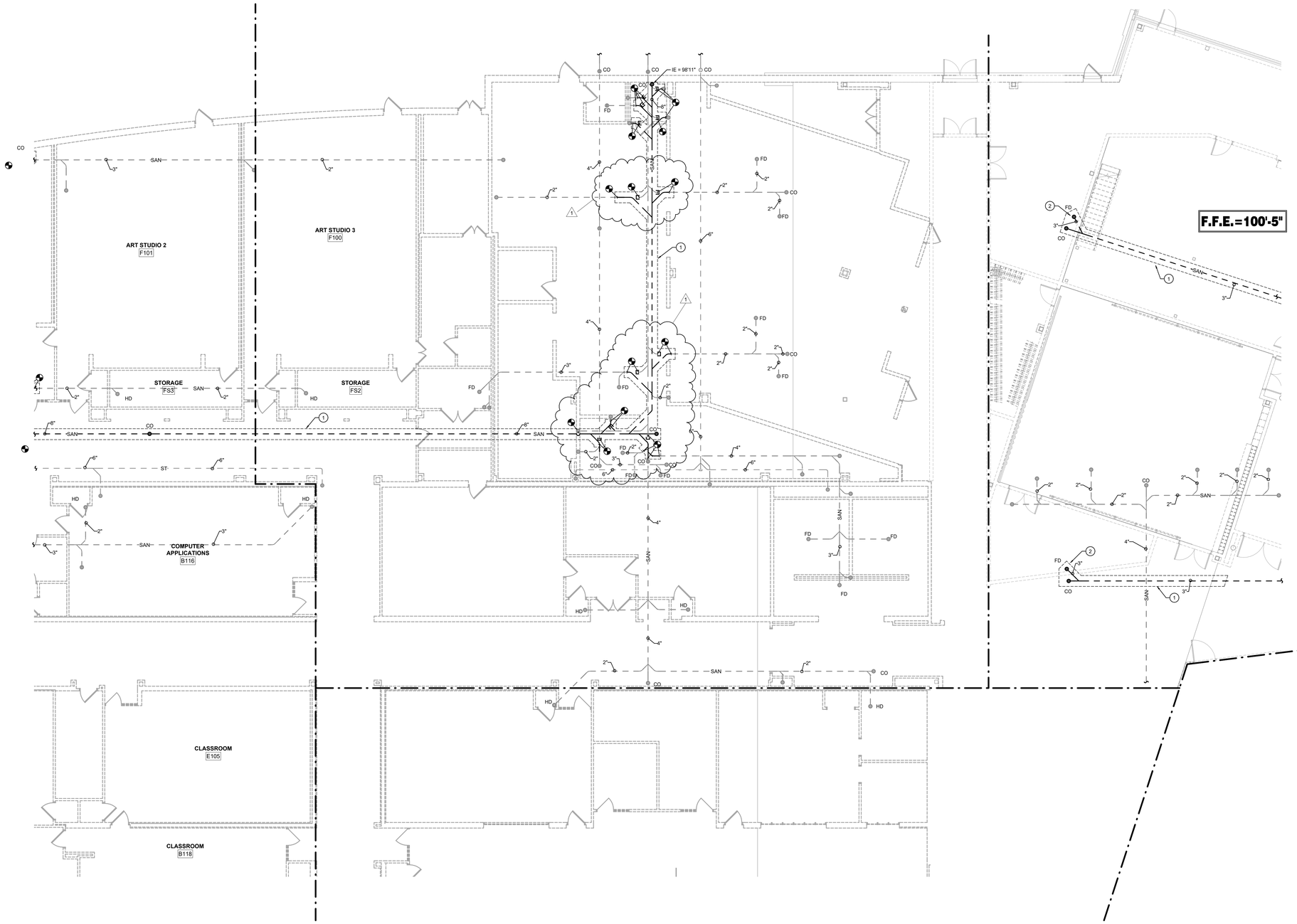
PRIMARY JOB # 23536

GENERAL NOTES

1. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR NEW AND EXISTING FINISHED FLOOR ELEVATIONS THROUGHOUT BUILDING.

(X) PLAN NOTES

1. SAW-CUT AND REMOVE EXISTING FLOOR AS REQUIRED TO INSTALL NEW UNDERGROUND PIPING AND TIE-IN TO EXISTING. BACKFILL WITH COMPACTIBLE FILL, DOWEL INTO EXISTING SLAB, AND POUR NEW SAME THICKNESS.
2. COORDINATE LOCATION OF DRAINS WITH LOCATION OF HVAC EQUIPMENT.



1 UNDERGROUND - PLUMBING PLAN - UNIT B
SCALE: 1/8" = 1'-0"

SCALE: 1/16" = 1'-0" | SCALE: 3/32" = 1'-0" | SCALE: 1/8" = 1'-0" | SCALE: 1/4" = 1'-0" | SCALE: 1/2" = 1'-0" | SCALE: 3/4" = 1'-0" | SCALE: 1" = 1'-0"

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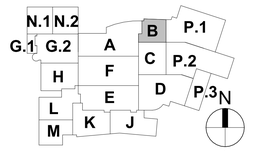
PLOT DATE/TIME: 10/3/2024 1:37:36 PM



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INDIANAPOLIS, IN 46203

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CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PHASE 2
300 E MAIN ST, WHITELAND, IN 46184

ANDREW STEPHEN LOCKBACK
REGISTERED
PE11700017
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	10-4-2024	ADDENDUM #2

100% CONSTRUCTION DOCUMENTS

PROJECT: #22130
DATE: 08-30-2024
DRAWN BY: ASL

UNDERGROUND - PLUMBING PLAN - UNIT B

P100B

PRIMARY JOB # 23536

PLUMBING FIXTURE SCHEDULE

TAG	MFR.	MODEL	TRIM MFR.	TRIM MODEL	FLOW RATE (GPF OR GPM)	TRIM TYPE	WASTE	VENT	CW	HW	COLOR	REMARKS
WC-1	AMERICAN STD.	2257.101	SLOAN	ROYAL 111	1.6	MANUAL FLUSH VALVE	3"	2"	1"	-	WHITE	1, 2
WC-1H	AMERICAN STD.	2257.101	SLOAN	ROYAL 111	1.6	MANUAL FLUSH VALVE	3"	2"	1"	-	WHITE	1, 2
UR-1	AMERICAN STD.	6590.001	SLOAN	ROYAL 186	0.5	MANUAL FLUSH VALVE	2"	1-1/4"	1"	-	WHITE	1
UR-1H	AMERICAN STD.	6590.001	SLOAN	ROYAL 186	0.5	MANUAL FLUSH VALVE	2"	1-1/4"	1"	-	WHITE	1
L-1H	AMERICAN STD.	0355.012	DELTA	501-TP-DST	1.5	LEVER HANDLE	1-1/4"	1-1/4"	1/2"	1/2"	WHITE	1, 3, 4, 5, 6
L-2H	SLOAN	EHS-1000	SLOAN	501-TP-DST	1.5	LEVER HANDLE	1-1/4"	1-1/4"	1/2"	1/2"	STAINLESS	1, 3, 5, 6, 11
SK-1H	ELKAY	ELUHAD211550	CHICAGO	1100-317XKABCP	2.2	4" WRISTBLADE	2"	1-1/2"	3/4"	3/4"	STAINLESS	3, 5, 6
SK-2	ELKAY	ELUH211510PD	CHICAGO	1100-317XKABCP	2.2	4" WRISTBLADE	2"	1-1/2"	3/4"	3/4"	STAINLESS	3, 5, 6
SK-3H	ELKAY	LRAD331955	CHICAGO	1100-317XKABCP	2.2	4" WRISTBLADE	2"	1-1/2"	3/4"	3/4"	STAINLESS	3, 5, 6
WF-1H	BRADLEY	LVRD3	DELTA	(3) 501-TP-DST	1.5	LEVER HANDLE	1-1/2"	1-1/2"	3/4"	3/4"	-	1, 3, 5, 6, 7
EWC-1H	ELKAY	EMABFDWSSK	-	SINGLE W/ BOTTLE FILL	-	MECH VALVE	1-1/4"	1-1/4"	1/2"	-	STAINLESS	1, 8
EWC-2H	ELKAY	EMABFTL8WSSK	-	HIGH-LOW W/ BOTTLE FILL	-	MECH VALVE	1-1/4"	1-1/4"	1/2"	-	STAINLESS	1, 8
MSB-1	FIAT	MSB2424	CHICAGO	(1) 897-CP & (1) 998-RCF	1.5	DUAL HANDLE	3"	1-1/2"	1/2"	1/2"	WHITE	6, 9
WH-1	WOODFORD	B67	-	-	-	WALL RECESSED	-	-	3/4"	-	CHROME	-
RH-1	WOODFORD	SRH-MS	-	-	-	ROOF HYDRANT	-	-	3/4"	-	PAINTED	-
HB-1	CHICAGO	998-RCF	-	-	-	-	-	-	3/4"	-	CHROME	-
WB-1	IPS CORP	AB1200HA	82930	-	-	-	-	-	1/2"	-	WHITE	10
WB-2	IPS CORP	MB1200HA	82914	-	-	-	2"	-	1/2"	1/2"	WHITE	10
FD-1	JR SMITH	2005Y-A05	CAST IRON	2692 TRAP SEAL	-	ROUND TOP	-	-	-	-	NIKALOY	12
FD-2	JR SMITH	2005Y-F37	CAST IRON	2692 TRAP SEAL	-	EXTENDED RIM	-	-	-	-	NIKALOY	12
FS-1	JR SMITH	3100Y	CAST IRON	2692 TRAP SEAL	-	HALF GRATE	-	-	-	-	NIKALOY	12
CO-1	JR SMITH	4024S	CAST IRON	-	-	FLOOR ROUND	-	-	-	-	NIKALOY	12
CO-2	JR SMITH	4254S	CAST IRON	-	-	EXTERIOR	-	-	-	-	CAST IRON	12
CO-3	JR SMITH	4532Y-SS	CAST IRON	-	-	WALL W/COVER	-	-	-	-	STAINLESS	12
CO-4	JR SMITH	4422-SS	CAST IRON	-	-	END FERRULE	-	-	-	-	CAST IRON	12
RD-1	JR SMITH	1010Y-AD-RDP	ALUM	-	-	-	-	-	-	-	CAST IRON	12
ORD-1	JR SMITH	1080Y-AD-RDP	ALUM	-	-	-	-	-	-	-	CAST IRON	12

REMARKS:
1. PROVIDE AND INSTALL WITH FLOOR MOUNTED FIXTURE CARRIER.
2. PROVIDE AND INSTALL WITH HEAVY DUTY, WHITE, ELONGATED, SOLID PLASTIC OPEN FRONT SEAT.
3. PROVIDE AND INSTALL WITH CHICAGO LOOSE KEY ANGLE STOP AND SUPPLY RISER.
4. PROVIDE AND INSTALL WITH OFFSET DRAIN AND INSULATION KIT ON ALL WASTE AND SUPPLY PIPING. TRUEBRO OR APPVD EQUAL.
5. PROVIDE AND INSTALL WITH 17 GA. CAST BRASS P-TRAP W/ CO AND GRID STRAINER.
6. PROVIDE AND INSTALL WITH CERAMIC CARTRIDGES.
7. COLOR SELECTION BY ARCHITECT.
8. PROVIDE WATER COOLER WITHOUT ANY INLINE FILTERS.
9. PROVIDE AND INSTALL WITH STAINLESS STEEL STRAINER, STAINLESS STEEL BUMPER GUARDS, STAINLESS STEEL WALL GUARD, MOP BRACKET, HOSE, AND CHICAGO SILLCOCK 998-XKRCF. REFER TO DRAWING DETAILS FOR MORE INFORMATION.
10. PROVIDE AND INSTALL WITH INTEGRAL PISTON TYPE WATER HAMMER ARRESTOR(S).
11. FIELD-MODIFY FAUCET HOLES AS REQUIRED.
12. REFER TO PLANS FOR SIZES.

NOTES:
1. "-H" DESIGNATES HANDICAP ACCESSIBLE FIXTURES.

GAS REGULATOR SCHEDULE

TAG	MFR.	MODEL	CAPACITY (CFH)	TURNDOWN	INLET (PSI)	INLET SIZE (IN)	OUTLET (IN WC)	OUTLET SIZE (IN)	EQUIP SERVED	REGULATOR LOCATION	REMARKS
GR-1	PIETRO FIORENTINI	31153-OPD	484	500:1	5	2	14	2	KITCHEN PREP MAU	EXTERIOR	1, 2, 3
GR-2	PIETRO FIORENTINI	31153-OPD	176	500:1	5	1 1/4	14	1 1/4	VEG PREP MAU	EXTERIOR	1, 2, 3
GR-3	PIETRO FIORENTINI	31153-QPD	1595	500:1	5	2	14	3	GENERATOR	EXTERIOR	1, 2, 3

REMARKS:
1. PROVIDE AND INSTALL WITH VENT PIPED TO EXTERIOR.
2. VERIFY EXACT REGULATOR SIZE BASED ON ACTUAL EQUIPMENT INSTALLED PRIOR TO ORDERING.
3. PROVIDE WITH EXTERNAL DOWNSTREAM CONTROL LINE, FIELD INSTALLED.

SOLIDS AND GREASE INTERCEPTOR SCHEDULE

TAG	MFR.	MODEL	SERVICE	MAX FLOW (GPM)	MIN GREASE CAP (LBS)	LIQ CAP (GAL)	AVG EFF %	MAX WATER TEMP (DEG F)	SIZE WxLxH (IN)	PIPE CONN (IN)	FLOW CONTROL	REMARKS
GI-1	SCHIER	GB-1500	KITCHEN	100	10,061	1,588	98.8	220	137 x 74 x 72	4	INTEGRAL	1, 2, 3, 4, 5
GI-2	SCHIER	GB1	GREASE	20	70	10	97.3	220	27 x 23 x 12	3	INTEGRAL	1, 3, 8

1

REMARKS:
1. EFFICIENCY MEASURED PER ASME A112.14.3
2. LID SHALL BE RATED FOR 300 LB LOAD PER CSA B481.0.
3. PROVIDE AND INSTALL WITH RISERS AS REQUIRED TO BE FLUSH WITH GRADE.
4. PROVIDE AND INSTALL WITH BUILT-IN FLOW CONTROL AND TEST CAPS.
5. PROVIDE WITH WASTEWATER SAMPLING PORT EQUAL TO SHER "SV24-L4" DOWN STREAM OF GREASE INTERCEPTOR.

PLUMBING PUMP SCHEDULE

TAG	MFR.	MODEL	FLOW (GPM)	HEAD (FT)	MOTOR (HP)	MOTOR (BHP)	EFF (+/- 5%)	RPM	ELEC (V/PH)	SERVICE	REMARKS
HWRP-1	BELL & GOSSETT	ECOCIRC XL 110-180	10	75	3.0	-	-	3366	460/3	DOM HW 140 RECIRC	1, 2, 3

REMARKS:
1. ALL LEAD-FREE BRONZE OR STAINLESS STEEL CONSTRUCTION.
2. PROVIDE AND INSTALL WITH STRAP-ON AQUASTAT SENSOR WIRED TO CONTROL PUMP, ON AT 100 DEG F./OFF AT 120 DEG F.
3. PROVIDE AND INSTALL WITH ISOLATION BALL VALVES, DISCHARGE CHECK VALVE, MANUAL BALANCE VALVE, AND PRESSURE TAPS IN AND OUT.

LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com

Indianapolis
9755 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
www.primary-eng.com

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PHASE 2
300 E MAIN ST, WHITELAND, IN 46184

JAMES STEPHEN LUDEBECK
REGISTERED
PE11700017
STATE OF
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PROFESSIONAL ENGINEER

REVISIONS:

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PROJECT: #22130
DATE: 08-30-2024
DRAWN BY: ASL

PLUMBING SCHEDULES

P501

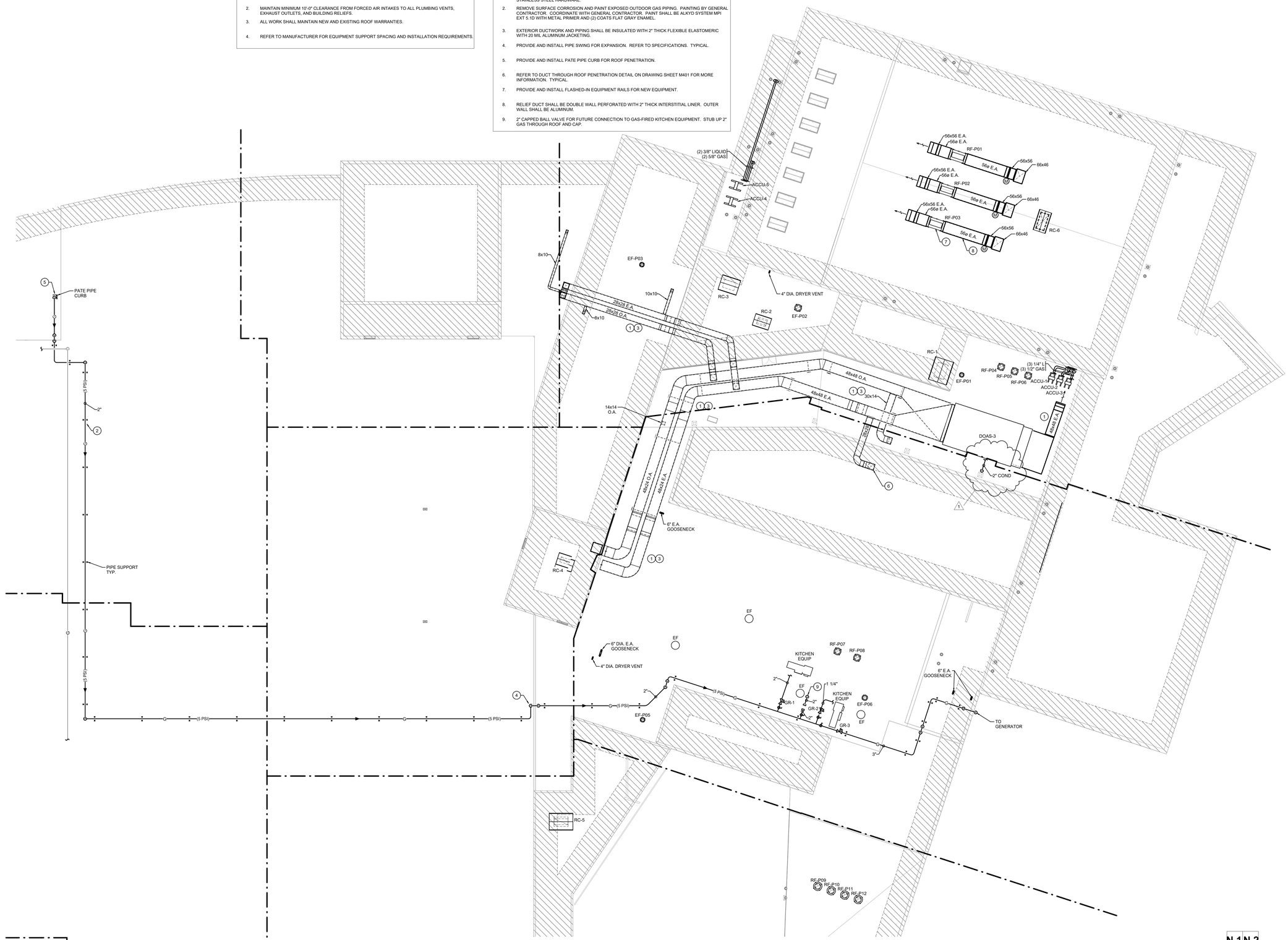
PRIMARY JOB # 23536

GENERAL NOTES

1. MAINTAIN MINIMUM 10'-0" CLEARANCE FROM EDGE OF ROOF TO ALL EQUIPMENT.
2. MAINTAIN MINIMUM 10'-0" CLEARANCE FROM FORCED AIR INTAKES TO ALL PLUMBING VENTS, EXHAUST OUTLETS, AND BUILDING RELIEFS.
3. ALL WORK SHALL MAINTAIN NEW AND EXISTING ROOF WARRANTIES.
4. REFER TO MANUFACTURER FOR EQUIPMENT SUPPORT SPACING AND INSTALLATION REQUIREMENTS.

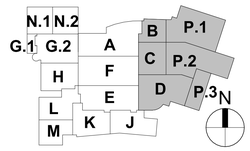
(X) PLAN NOTES

1. SUPPORT DUCT AND PIPE FROM ROOF USING B-LINE DURA-BLOCK ROOF SUPPORTS WITH ALL STAINLESS STEEL HARDWARE.
2. REMOVE SURFACE CORROSION AND PAINT EXPOSED OUTDOOR GAS PIPING. PAINTING BY GENERAL CONTRACTOR. COORDINATE WITH GENERAL CONTRACTOR. PAINT SHALL BE ALKYD SYSTEM MPI EXT 5.1D WITH METAL PRIMER AND (2) COATS FLAT GRAY ENAMEL.
3. EXTERIOR DUCTWORK AND PIPING SHALL BE INSULATED WITH 2" THICK FLEXIBLE ELASTOMERIC WITH 20 MIL ALUMINUM JACKETING.
4. PROVIDE AND INSTALL PIPE SWING FOR EXPANSION. REFER TO SPECIFICATIONS. TYPICAL.
5. PROVIDE AND INSTALL PATE PIPE CURB FOR ROOF PENETRATION.
6. REFER TO DUCT THROUGH ROOF PENETRATION DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
7. PROVIDE AND INSTALL FLASHED-IN EQUIPMENT RAILS FOR NEW EQUIPMENT.
8. RELIEF DUCT SHALL BE DOUBLE WALL PERFORATED WITH 2" THICK INTERSTITIAL LINER. OUTER WALL SHALL BE ALUMINUM.
9. 2" CAPPED BALL VALVE FOR FUTURE CONNECTION TO GAS-FIRED KITCHEN EQUIPMENT. STUB UP 2" GAS THROUGH ROOF AND CAP.



1 PARTIAL ROOF PLAN MECHANICAL AND PLUMBING PLAN

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



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IF THE WHEEL PRINTED BELOW IS NOT SHOWN IN COLOR, THIS SET OF PRINTS IS NOT REPRESENTING ALL LINE TYPES CORRECTLY. CONTACT CITELLI & HUDY ENGINEERING FOR DIRECTIONS ON HOW TO OBTAIN A FULL COLOR SET OF PRINTS

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LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com
Indianapolis
9755 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
www.primary-eng.com

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL
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PROJECT:	#22130
DATE:	08-30-2024
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PARTIAL ROOF PLAN MECHANICAL AND PLUMBING PLAN

M104

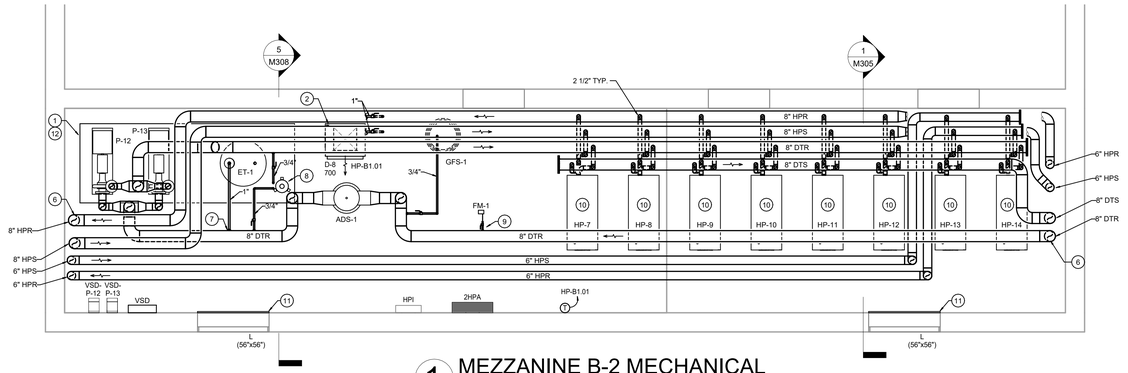
PRIMARY JOB # 23536

GENERAL NOTES

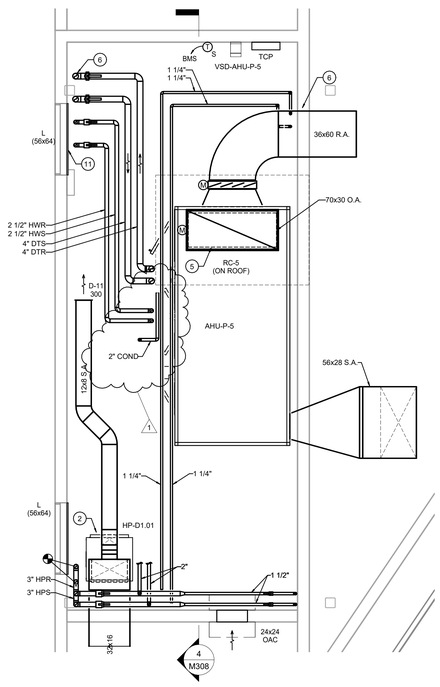
1. UNLESS NOTED OTHERWISE, PROVIDE AND INSTALL 20 MIL ALUMINUM JACKETING ON ALL PIPE INSULATION BELOW 6'-0" AFF WITHIN MECHANICAL MEZZANINES. EXTEND JACKETING TO NEAREST FITTING ABOVE 6'-0" AFF.

(X) PLAN NOTES

1. PROVIDE AND INSTALL EQUIPMENT ON NEW 4" TALL CONCRETE HOUSEKEEPING PAD.
2. HEAT PUMP SUPPLIED BY OWNER, INSTALLED BY CONTRACTOR. REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. EXTEND CONDENSATE TO NEAREST DRAIN.
3. RECONNECT TO EXISTING DUCTWORK/PIPING.
4. PROVIDE AND INSTALL MANUAL VOLUME DAMPER. BALANCE AIRFLOW TO CFM SHOWN.
5. CUT/CORE EXISTING ROOF AS REQUIRED TO ROUTE NEW MECHANICAL. MAINTAIN EXISTING ROOF WARRANTY. REFER TO ROOF PLAN ON DRAWING SHEET M104 FOR CONTINUATION. TYPICAL.
6. CUT/CORE EXISTING WALL/FLOOR AS REQUIRED TO ROUTE NEW MECHANICAL. TYPICAL.
7. SIDE TAP MAIN FOR BRANCH PIPING TO EXPANSION TANK.
8. PROVIDE AND INSTALL NEW BYPASS FILTER FEEDER, FURNISHED BY CHEMICAL TREATMENT PROVIDER. REFER TO WATER TREATMENT SPECIFICATIONS AND CHEMICAL SHOT FEEDER DETAIL ON DRAWING SHEET M402 FOR MORE INFORMATION.
9. PROVIDE AND INSTALL NEW FLOW METER. INSTALL PER MANUFACTURER'S INSTALLATION REQUIREMENTS FOR SERVICE CLEARANCE AND STRAIGHT PIPE DIAMETERS.
10. WATER-TO-WATER HEAT PUMP FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. REFER TO DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR CLEARANCE AND PIPING.
11. CAP AND ABANDON EXISTING LOUVER WITH 2" THICK RIGID POLYISOCYANURATE BOARD INSULATION COVERED ON ALL SIDES WITH 22 GAUGE ALUMINUM SHEET METAL. SEAL AIR AND WATER TIGHT.
12. REFER TO VARIABLE SPEED PUMP DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION.



1 MEZZANINE B-2 MECHANICAL
SCALE: 1/4" = 1'-0"



3 MEZZANINE C-1 - MECHANICAL
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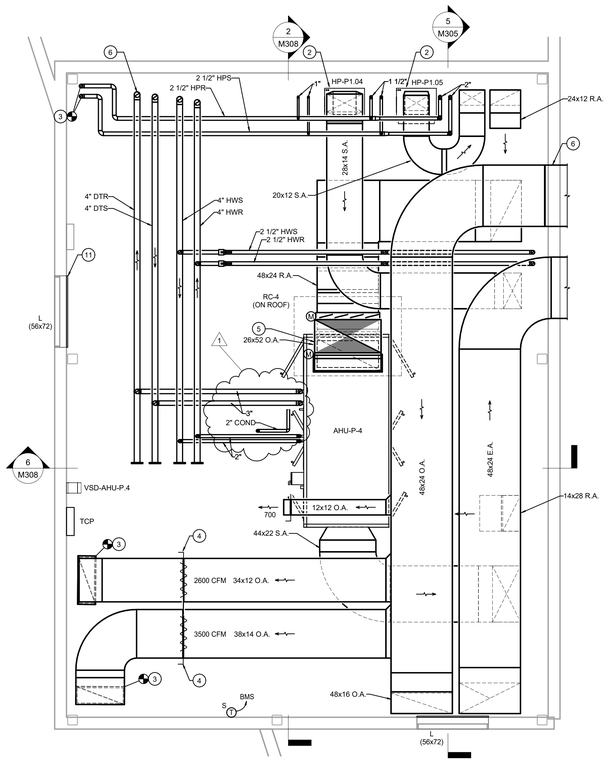

2 MEZZANINE B-1 MECHANICAL
SCALE: 1/4" = 1'-0"

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0 8 16 24 32 SCALE: 3/32" = 1'-0"
0 8 16 24 SCALE: 1/8" = 1'-0"
0 4 8 12 SCALE: 1/4" = 1'-0"
0 2 4 6 SCALE: 1/2" = 1'-0"
0 2 4 SCALE: 3/4" = 1'-0"
0 1 2 3 SCALE: 1" = 1'-0"

LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com
Indianapolis
9755 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
www.primary-eng.com

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL
300 E MAIN ST, WHITELAND, IN 46184

ADAM STEPHEN LOUDERBACK
REGISTERED
PE11700017
STATE OF INDIANA
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1	10-4-2024	ADDENDUM #2

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PROJECT: #22130
DATE: 08-30-2024
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ENLARGED MEZZANINE PLANS

N
TRUE NORTH

M302

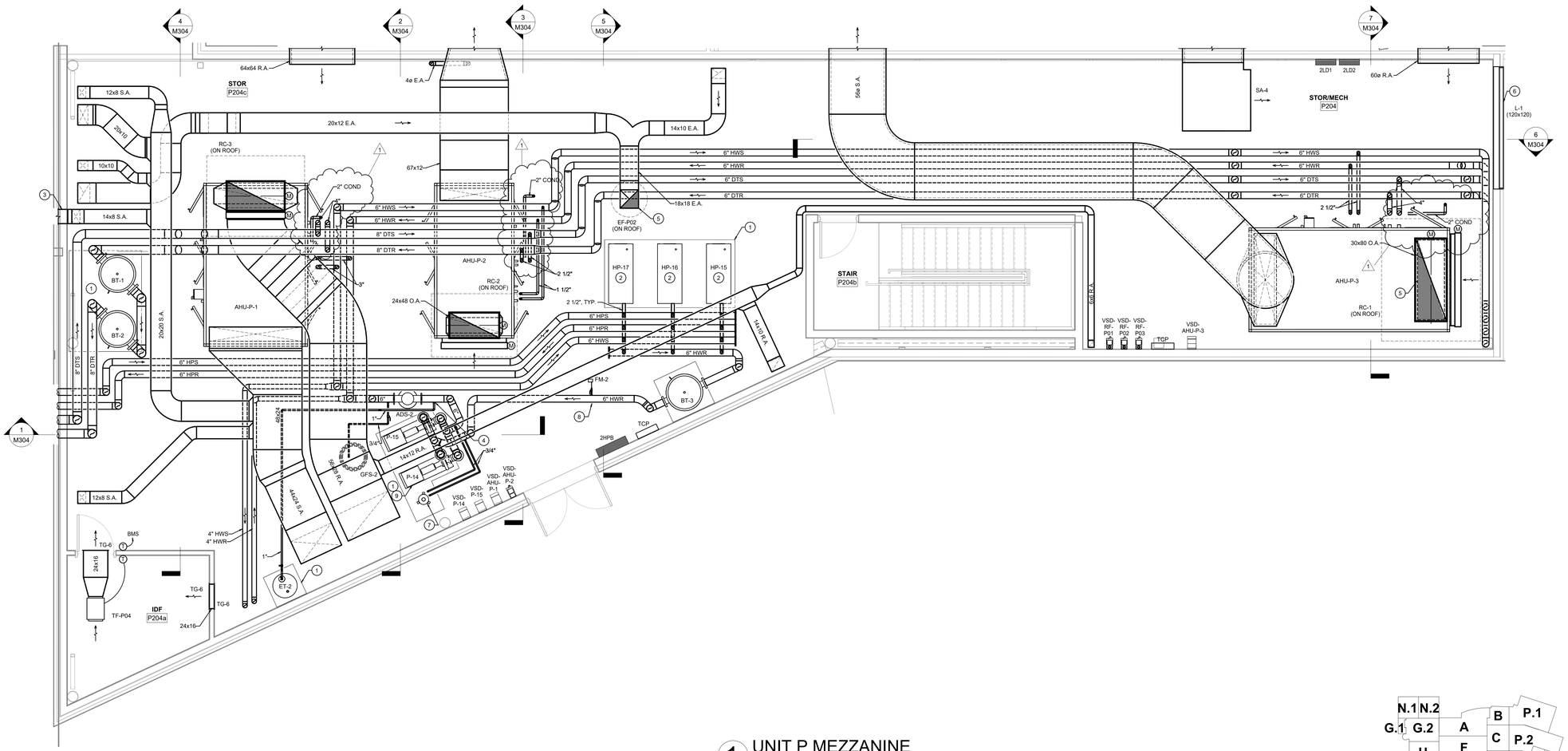
PRIMARY JOB # 23536

GENERAL NOTES

1. UNLESS NOTED OTHERWISE, PROVIDE AND INSTALL 20 MIL ALUMINUM JACKETING ON ALL PIPE INSULATION BELOW 6'-0" AFF WITHIN MECHANICAL MEZZANINES. EXTEND JACKETING TO NEAREST FITTING ABOVE 6'-0" AFF.
2. COORDINATE WITH GENERAL CONTRACTOR FOR FACTORY SLEEVES THROUGH PRE-CAST PANELS FOR ALL MECHANICAL PENETRATIONS.

(X) PLAN NOTES

1. PROVIDE AND INSTALL EQUIPMENT ON NEW 4" TALL CONCRETE HOUSEKEEPING PAD.
2. WATER-TO-WATER HEAT PUMP FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. REFER TO DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR CLEARANCE AND PIPING.
3. CUT/CORE EXISTING WALL/FLOOR AS REQUIRED TO ROUTE NEW MECHANICAL. TYPICAL.
4. SIDE TAP MAIN FOR BRANCH PIPING TO EXPANSION TANK.
5. CONTROL DAMPERS FOR THROUGH-ROOF DUCT PENETRATIONS SHALL BE LOCATED BELOW ROOF DECK AND SHALL BE ACCESSIBLE FROM ROOF. REFER TO EQUIPMENT SCHEDULES AND DETAILS FOR MORE INFORMATION.
6. NEW LOUVER SHOWN FOR EQUIPMENT ACCESS. MAINTAIN CLEARANCE THROUGHOUT UNIT P MEZZANINE FOR FUTURE REPLACEMENT OF EQUIPMENT.
7. PROVIDE AND INSTALL NEW BYPASS FILTER FEEDER, FURNISHED BY CHEMICAL TREATMENT PROVIDER. REFER TO WATER TREATMENT SPECIFICATIONS AND CHEMICAL SHOT FEEDER DETAIL ON DRAWING SHEET M402 FOR MORE INFORMATION.
8. PROVIDE AND INSTALL NEW FLOW METER. INSTALL PER MANUFACTURER'S INSTALLATION REQUIREMENTS FOR SERVICE CLEARANCE AND STRAIGHT PIPE DIAMETERS.
9. REFER TO VARIABLE SPEED PUMP DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION.



1 UNIT P MEZZANINE

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

SCALE: 1/16" = 1'-0" | SCALE: 3/32" = 1'-0" | SCALE: 1/8" = 1'-0" | SCALE: 1/4" = 1'-0" | SCALE: 1/2" = 1'-0" | SCALE: 3/4" = 1'-0" | SCALE: 1" = 1'-0"

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427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com

Indianapolis
9755 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
www.primary-eng.com

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL
300 E MAIN ST, WHITELAND, IN 46184

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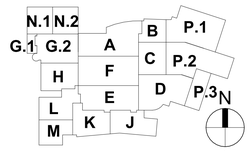
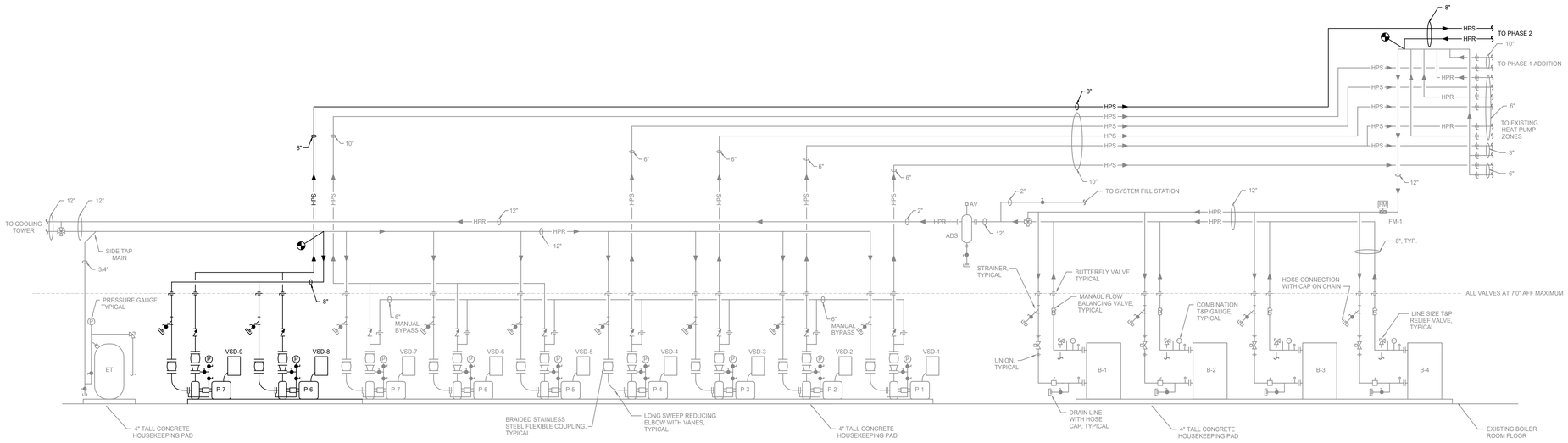
ENLARGED MEZZANINE PLANS

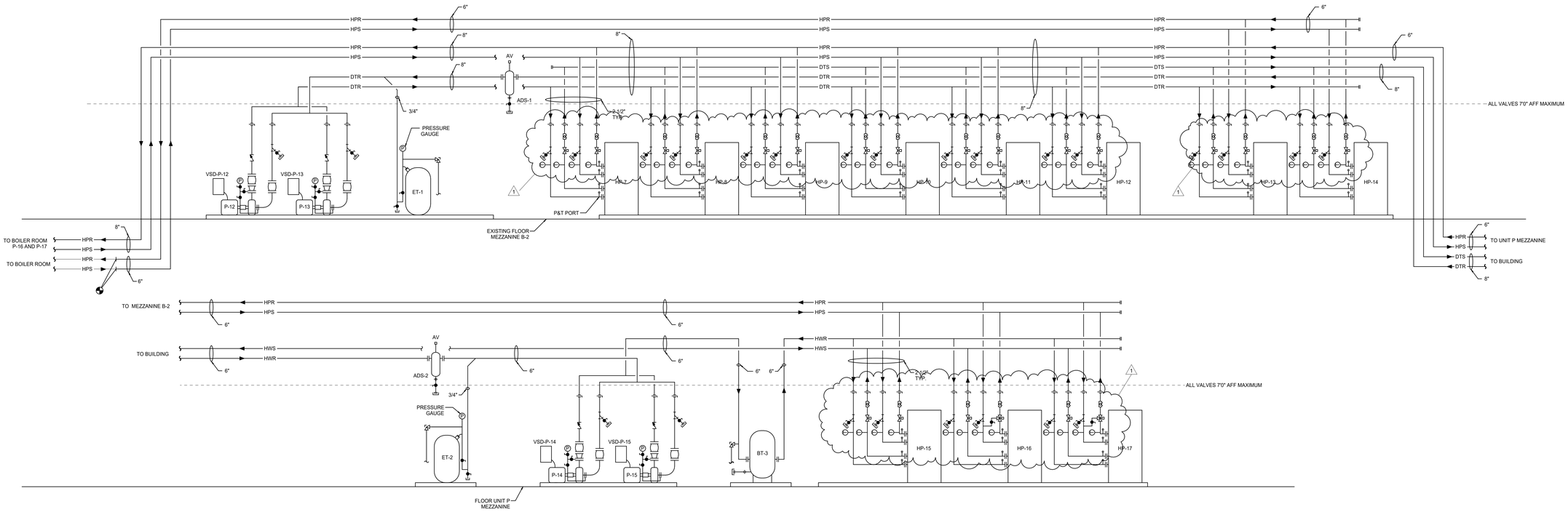


M303

PRIMARY JOB # 23536



2 BOILER FLOW DIAGRAM
NOT TO SCALE



1 DUAL TEMPURATURE AND REHEAT HEAT PUMP FLOW DIAGRAM
NOT TO SCALE

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427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com

Indianapolis
9755 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
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CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL
300 E MAIN ST, WHITELAND, IN 46184

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PROJECT: #22130
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MECHANICAL DETAILS

M405

PRIMARY JOB # 23536

OWNER FURNISHED CONTRACTOR INSTALLED WATER-TO-AIR HEAT PUMP SCHEDULE

												COOLING							HEATING											
TAG	MFR.	SERVICE	MODEL	SIZE	QUANTITY	AIRFLOW (CFM)	ESP (IN W.C.)	FILTER	MOTOR (HP)	FLOW (GPM)	WPD (FT)	TOT. CAP. (MBH)	SENS. CAP. (MBH)	HEAT OF REJCT (MBH)	EDB / EWB (DEG F)	LAT (DEG F)	EWT (DEG F)	EER	TOT. CAP. (MBH)	HEAT OF EXTRC (MBH)	EAT (DEG F)	LAT (DEG F)	EWT (DEG F)	COP	REFRIG.	ELEC (V/PH)	FLA	MCA	MAX FUSE SIZE	REMARKS
HP-B1.01	WATERFURNACE	MEZZANINE B-2	UVV	026	1	700	0.58	2" MERV 8	1/2	6.0	5.6	25.1	16.8	30.5	75 / 63	52.8	90	15.8	30.6	24.6	70.0	110.7	70	5.0	R410A	277/1	13.2	15.5	20	1, 2, 3, 4, 5, 6, 7, 8
HP-P1.01	WATERFURNACE	SCENE SHOP B102	UVV	036	1	1200	0.5	2" MERV 8	1/2	9.0	5.4	34.3	26.6	41.8	75 / 63	55.0	90	15.5	46.7	38.0	70.0	105.0	70	5.3	R410A	460/3	8.7	9.8	15	1, 2, 3, 4, 5, 6, 7
HP-P1.02	WATERFURNACE	DELIVERY B101	UVV	036	1	1200	0.5	2" MERV 8	1/2	9.0	5.4	34.3	26.6	41.8	75 / 63	55.0	90	15.5	46.7	38.0	70.0	105.0	70	5.3	R410A	460/3	8.7	9.8	15	1, 2, 3, 4, 5, 6, 7
HP-P1.03	WATERFURNACE	DANCE B103	UVV	060	1	2000	0.5	2" MERV 8	1.0	16.0	12.8	54.1	42.6	68.0	75 / 63	55.0	90	13.3	76.4	61.4	70.0	105.0	70	5.1	R410A	460/3	13.0	14.7	20	1, 2, 3, 4, 5, 6, 7
HP-P1.04	WATERFURNACE	JAZZ P115	UVV	120	1	2400	0.5	2" MERV 8	4.8	23.0	3.9	73.7	47.6	95.2	75 / 63	56.0	90	11.7	87.2	61.3	70.0	103.0	70	3.4	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7
HP-P1.05	WATERFURNACE	WORK ROOM P115	UVV	060	1	1800	0.5	2" MERV 8	1.0	16.0	12.8	53.7	41.1	67.3	75 / 63	55.0	90	13.5	75.9	60.7	70.0	107.0	70	5.0	R410A	460/3	13.0	14.7	20	1, 2, 3, 4, 5, 6, 7
HP-P1.06	WATERFURNACE	CHOIR 2 P111	UVV	120	1	3500	0.5	2" MERV 8	4.80	28.0	4.7	107.1	76.1	140.3	75 / 63	55.0	90	11.0	125.3	90.5	70.0	102.0	70	3.6	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7
HP-P1.07	WATERFURNACE	COFFEE SHOP P123	UVH	024	1	400	0.5	2" MERV 8	1/2	4.0	0.6	8.0	5.9	9.5	75 / 63	61.8	90	18.1	11.2	9.3	70.0	95.0	70	6.0	R410A	460/3	7.1	7.9	10.15	1, 2, 3, 4, 5, 6, 7
HP-P1.08	WATERFURNACE	PERCUSSION P109	UVV	120	1	3700	0.5	2" MERV 8	4.80	30.0	5.7	118.3	85.8	154.5	75 / 63	55.0	90	11.2	140.2	102.6	70.0	104.0	70	3.7	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7
HP-P1.09	WATERFURNACE	CHOIR P110	UVV	120	1	3800	0.5	2" MERV 8	4.80	30.0	5.7	118.3	85.8	154.5	75 / 63	55.0	90	11.2	140.2	102.6	70.0	104.0	70	3.7	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7
HP-P1.10	WATERFURNACE	BAND P108	UVV	120	1	4750	0.5	2" MERV 8	4.8	30.0	5.7	121.5	97.6	160.7	75 / 63	56.0	90	10.6	143.4	107.4	70.0	97.0	70	4.0	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7
HP-P1.11	WATERFURNACE	BAND P108	UVV	120	1	4750	0.5	2" MERV 8	4.8	30.0	5.7	121.5	97.6	160.7	75 / 63	56.0	90	10.6	143.4	107.4	70.0	97.0	70	4.0	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7
HP-P1.12	WATERFURNACE	UNIT C CORRIDOR	UVV	024	1	500	0.5	2" MERV 8	1/2	5.0	0.6	11.5	8.6	14.0	75 / 63	59.0	90	16.5	16.1	13.2	70.0	98.0	70	5.5	R410A	460/3	7.1	7.9	10.15	1, 2, 3, 4, 5, 6, 7
HP-P1.13	WATERFURNACE	WAREWASH P117	UVV	024	1	500	0.5	2" MERV 8	1/2	5.0	0.6	11.5	8.6	14.0	75 / 63	59.0	90	16.5	16.1	13.2	70.0	98.0	70	5.5	R410A	460/3	7.1	7.9	10.15	1, 2, 3, 4, 5, 6, 7
HP-D1.01	WATERFURNACE	UNIT D LOBBY	UVV	120	1	4300	0.5	2" MERV 8	4.8	30.0	5.7	119.7	90.3	156.9	75 / 63	55.0	90	11.0	141.5	104.7	70.0	101.0	70	3.8	R410A	460/3	24.5	28.9	45	1, 2, 3, 4, 5, 6, 7

REMARKS:
1. FURNISHED WITH SOUND BLANKET ON COMPRESSOR.
2. FURNISHED WITH 36" LONG HOSE KIT WITH STRAINER, BALL VALVES, AUTOMATIC BALANCE VALVE, AND CONTROL VALVE. REFER TO HEAT PUMP PIPING DETAIL THIS SHEET.
3. FURNISHED WITH STAINLESS STEEL DRAIN PAN AND FLOAT SWITCH WIRED TO SHUT DOWN SUPPLY FAN.
4. FURNISHED WITH VARIABLE SPEED ELECTRONICALLY COMMUTED MOTOR SUPPLY FAN.
5. FURNISHED WITH PACKAGED CONTROLS, MODULATING CONTROL VALVE, FACTORY OPEN PROTOCOL BACNET CONTROLLER CARD, DXM SEQUENCER CARD, AND WATERFURNACE ZS PLUS WALL MOUNTED THERMOSTAT OR EQUIVALENT.
6. FURNISHED WITH FACTORY WIRED ELECTRICAL DISCONNECT.
7. FURNISHED WITH MODULATING VARIABLE SPEED COMPRESSORS AND ELECTRONIC EXPANSION VALVES.
8. FURNISHED WITH FACTORY WIRED INTERNAL 460/3 NEUTRAL WIRE FOR EXISTING FIELD WIRING WITHOUT EXTERNAL 460/3 NEUTRAL WIRE.

OWNER FURNISHED CONTRACTOR INSTALLED WATER-TO-WATER HEAT PUMP SCHEDULE

			COOLING											HEATING																	
			LOAD					SOURCE						LOAD					SOURCE						CONTROL VALVE						
TAG	MFR.	MODEL	TOTAL COOL (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	HEAT REJECT (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	EER	TOTAL HEAT (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	HEAT EXTRACT (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	COP	SOURCE	LOAD	ELEC (V/PH)	FLA	MIN. CIR. AMPS	MAX FUSE SIZE	REMARKS
HP-7	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-8	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-9	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-10	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-11	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-12	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-13	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-14	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-15	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	2-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-16	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	3-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6
HP-17	WATERFURNACE	NXW 600	564	55 / 45	30% PG	116	10.4	726	90 / 100	WATER	145	8.1	11.9	752	100 / 110	30% PG	155	13.4	581	70 / 60	WATER	116	7.4	4.4	3-WAY	2-WAY	460/3	79.4	89.3	125	1, 2, 3, 4, 5, 6

REMARKS:
1. PROVIDE AND INSTALL WITH NEOPRENE VIBRATION ISOLATION MOUNTS.
2. PROVIDE AND INSTALL WITH (2) TWO-POSITION AUTOMATIC CONTROL VALVES AND 120V ACTUATORS TO ISOLATE LOAD AND SOURCE SIDES. CONTROL VALVE AND ACTUATOR FURNISHED BY TCC.
3. FURNISHED WITH FACTORY WIRED ELECTRICAL DISCONNECT.
4. FURNISHED WITH ELECTRICAL PHASE LOSS PROTECTION.
5. FURNISHED WITH COMPRESSOR SOUND BLANKETS.
6. FURNISHED WITH FLOW PROVING SWITCH.

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VARIABLE SPEED DRIVE SCHEDULE

TAG	MFR.	MODEL	EQUIPMENT SERVED	MOTOR SIZE (HP)	ELEC (V/PH)	MAX HARMONIC DIST.	BYPASS	ENCLOSURE	REMARKS
VSD-P-12	ABB	ACH580	P-12	25.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-P-13	ABB	ACH580	P-13	25.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-P-14	ABB	ACH580	P-14	25.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-P-15	ABB	ACH580	P-15	25.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-P-16	ABB	ACH580	P-16	20.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-P-17	ABB	ACH580	P-17	20.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-AHU-P-1	ABB	ACH580	AHU-P-1	25.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-AHU-P-2	ABB	ACH580	AHU-P-2	15.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-AHU-P-3	ABB	ACH580	AHU-P-3	30.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-AHU-P-4	ABB	ACH580	AHU-P-4	20.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-AHU-P-5	ABB	ACH580	AHU-P-5	30.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-RF-P01	ABB	ACH580	RF-P01	3.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-RF-P02	ABB	ACH580	RF-P01	3.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5
VSD-RF-P03	ABB	ACH580	RF-P01	3.0	460/3	5%	NONE	NEMA 1	1, 2, 3, 4, 5

REMARKS:
1. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS AND INFORMATION.
2. COORDINATE EXACT MOTOR DATA WITH EQUIPMENT BEING SERVED BY THIS DRIVE.
3. PROVIDE WITH MANUAL LOCKABLE DISCONNECT SWITCH INTEGRAL TO DRIVE.
4. PROVIDE WITH BACNET INTERFACE FOR FULL INTEGRATION INTO BMS.
5. STARTUP AND OWNER TRAINING SHALL BE PROVIDED BY THE FACTORY AUTHORIZED REPRESENTATIVE TO ENABLE FULL FACTORY WARRANTY.

ELECTRIC RADIANT CEILING PANEL SCHEDULE

TAG	MFR.	MODEL	SIZE (IN)	CAPACITY (WATTS)	ELEC (V/PH)	REMARKS
RCP-1	QMARK	CP751F	24"x48"	750	120/1	1
RCP-2	QMARK	CP751F	24"x48"	750	120/1	1
RCP-3	QMARK	CP751F	24"x48"	750	120/1	1
RCP-4	QMARK	CP751F	24"x48"	750	120/1	1
RCP-5	QMARK	CP251F	24"x24"	250	120/1	1

REMARKS:
1. COLOR SECETION BY ARCHITECT.

MINI-SPLIT HVAC INDOOR UNITS

TAG	MFR.	MODEL	TYPE	COOLING CAP (MBH) AT 95 DEG F	HEATING CAP (MBH) AT 17 DEG F	CFM	REFRIG.	CONTROL TYPE	ELEC (V/PH)	MCA (A)	REMARKS
HVAC-1	MITSUBISHI	PKA-A18HA7	WALL	18.0	-	425	R410A	WIRED WALL	208/1	1.0	1, 2, 3, 4, 5
HVAC-2	MITSUBISHI	PKA-A18HA7	WALL	18.0	-	425	R410A	WIRED WALL	208/1	1.0	1, 2, 3, 4, 5
HVAC-3	MITSUBISHI	PKA-A18HA7	WALL	18.0	-	425	R410A	WIRED WALL	208/1	1.0	1, 2, 3, 4, 5
HVAC-4	MITSUBISHI	PKA-A36HA7	WALL	36.0	-	635	R410A	WIRED WALL	208/1	1.0	1, 2, 3, 4, 5
HVAC-5	MITSUBISHI	PKA-A36HA7	WALL	36.0	-	635	R410A	WIRED WALL	208/1	1.0	1, 2, 3, 4, 5

REMARKS:
1. E.C. SHALL PROVIDE AND INSTALL DISCONNECT SWITCH. COORDINATE LOCATION PRIOR TO ROUGH-IN.
2. PROVIDE WITH REMOTE WALL MOUNTED THERMOSTAT AND PACKAGED CONTROLS.
3. PROVIDE WITH GOBI INTEGRAL CONDENSATE PUMP.
4. PROVIDE AND INSTALL WITH WHITE PVC "LINE HIDE" CONDUIT SYSTEM TO CONCEAL ALL PIPING/WIRING IN EXPOSED LOCATIONS.
5. REFRIGERANT LINE SETS AND CONDENSATE LINES SHALL BE INSULATED WITH 1/2" AEROCEL EPDM OR ARMAFLEX UT SOLAR EPDM TO INCLUDE CONDENSATE TUBING.

ENERGY RECOVERY UNIT SCHEDULE

			EXHAUST AIR				OUTSIDE VENTILATION AIR				
TAG	MFR.	TYPE	AIRFLOW (CFM)	MODE	EDB/ERH (DEG F/%)	LDB/LRH (DEG F/%)	AIRFLOW (CFM)	MODE	EDB/EWB (DEG F)	LDB/LWB (DEG F)	REMARKS
DOAS-3	INNOVENT	SENSIBLE FIXED PLATE	36000	**SUMMER**	75 / 50	85.2 / 35.9	36000	**SUMMER**	92 / 76	81.8 / 73.2	1
[redacted]			36000	**WINTER**	70 / 30	28.6 / 100	36000	**WINTER**	-10 / -10	39.2 / 26.9	

REMARKS:
1. PROVIDE AND INSTALL WITH ALUMINUM SENSIBLE CROSS FLOW HEAT EXCHANGER WITH ALUMINUM FRAME, END PLATES, AND STAINLESS STEEL DRAIN PAN.

LOUVER SCHEDULE

TAG	MFR.	MODEL	FACE SIZE (IN)	FREE AREA (SF)	AIRFLOW (CFM)	FACE VELOCITY (FPM)	THICKNESS (IN)	WATER PEN EFF (**)	FINISH	SERVICE	REMARKS
L-1	GREENHECK	EHH-601	120x120	-	-	-	4	99.6	2.0 mil 70% KYNAR	MEZZANINE	1, 2

REMARKS:
1. PROVIDE AND INSTALL WITH CHANNEL FRAME AND EXTENDED SILL.
2. COLOR SHALL BE SELECTED BY ARCHITECT.

NOTE: PRIOR TO ORDERING ANY LOUVER, CONTRACTOR SHALL FIELD VERIFY ANY EXISTING OPENINGS THAT LOUVERS MUST BE INSTALLED IN.
** WATER PENETRATION EFFECTIVENESS WITH 3 IN/HR RAINFALL AND 29 MPH WIND.

ROOF CAP SCHEDULE

TAG	MFR.	MODEL	THROAT SIZE (IN x IN)	FUNCTION	AIRFLOW (CFM)	MAX P.D. (IN)	MAX HOOD VEL (FPM)	MATERIAL	REMARKS
RC-1	GREENHECK	FGI	54x72	AHU-P-1 INTAKE	25000	0.12	470	ALUMINUM	1, 2
RC-2	GREENHECK	FGI	36x48	AHU-P-2 INTAKE	10000	0.12	470	ALUMINUM	1, 2
RC-3	GREENHECK	FGI	42x54	AHU-P-3 INTAKE	15000	0.12	470	ALUMINUM	1, 2
RC-4	GREENHECK	FGI	36x54	INTAKE	12000	0.12	470	ALUMINUM	1, 2
RC-5	GREENHECK	FGI	48x72	INTAKE	22000	0.12	470	ALUMINUM	1, 2
RC-6	GREENHECK	FGR	42x84	RELIEF	10240	0.04	420	ALUMINUM	1, 2

REMARKS:
1. PROVIDE WITH ALUMINUM WIRE MESH BIRD SCREEN.
2. PROVIDE WITH HINGED TOP AND LOCKDOWN FASTENER.

GLYCOL FILL STATION SCHEDULE

TAG	MFR.	MODEL	CAPACITY (GAL)	MAX. PRESSURE (PSI)	FLOW RATE (GPM)	MOTOR SIZE (HP)	ELEC (V/PH)	REMARKS
GFS-1	ADVANTAGE CONTROLS	GF-1A1A0	55	60	5	1/3	120/1	1, 2, 3
GFS-2	ADVANTAGE CONTROLS	GF-1A1A0	55	60	5	1/3	120/1	1, 2, 3

REMARKS:
1. PROVIDE AND INSTALL WITH FULLY PIPED PRESSURE SWITCH, PRESSURE GAUGE, AND LOW LEVEL ALARM SYSTEM.
2. PROVIDE WITH AUXILLARY ALARM CONTACT FOR LOW LEVEL FOR BMS INTEGRATION.
3. FURNISHED BY CHEMICAL TREATMENT PROVIDER, INSTALLED BY MC. COORDINATE WITH CHEMICAL TREATMENT PROVIDER.

HYDRONIC PUMP SCHEDULE

TAG	MFR.	MODEL	FRAME SIZE	IMPELLER DIA (IN)	FLUID	FLOW (GPM)	HEAD (FT)	MOTOR (HP)	MOTOR (BHP)	EFF (+/- 5%)	PLEV (%)	MOTOR RPM	DESIGN RPM	ELEC (V/PH)	SERVICE	REMARKS
P-12	BELL & GOSSETT	E-1510 4EB	284T	11	30% PG	500	110	25	18.4	77.6	69.7	1800	1714	460/3	PHASE 2 DUAL TEMP	1, 2, 3, 4, 5, 6
P-13	BELL & GOSSETT	E-1510 4EB	284T	11	30% PG	500	110	25	18.4	77.6	69.7	1800	1714	460/3	PHASE 2 DUAL TEMP	1, 2, 3, 4, 5, 6
P-14	BELL & GOSSETT	E-1510 3GB	284T	12.5	30% PG	500	110	25	19.4	73.3	73.2	1800	1651	460/3	PHASE 2 REHEAT	1, 2, 3, 4, 5
P-15	BELL & GOSSETT	E-1510 3GB	284T	12.5	30% PG	500	110	25	19.4	73.3	73.2	1800	1651	460/3	PHASE 2 REHEAT	1, 2, 3, 4, 5
P-16	BELL & GOSSETT	E-1510 4EB	256T	10.5	WATER	560	85	20	14.9	80.3	75.3	1800	1642	460/3	PHASE 2 HEAT PUMP	1, 2, 3, 4, 5, 7
P-17	BELL & GOSSETT	E-1510 4EB	256T	10.5	WATER	560	85	20	14.9	80.3	75.3	1800	1642	460/3	PHASE 2 HEAT PUMP	1, 2, 3, 4, 5, 7

REMARKS:
1. ALL MOTORS SHALL BE NON-OVERLOADING.
2. MOTOR SHALL BE MULTI-TAP 460/240/208 BALDOR SUPER-E WITH INTEGRAL SHAFT GROUNDING RING AND COMPLY WITH NEMA MG1 FOR VARIABLE SPEED OPERATION.
3. MOTOR SHALL HAVE CLASS F INSULATION FOR USE WITH VARIABLE SPEED DRIVE.
4. MFR SHALL ALIGN PUMP SHAFT IN THE FIELD, PRIOR TO START-UP. PROVIDE WRITTEN REPORT OF ALIGNMENT AND STARTUP.
5. PROVIDE WITH IMPELLER SIZE LISTED, VSD WILL BE USED TO BALANCE FLOW TO DESIGN POINT.
6. LEAD-LAG, PARALLEL PUMPING OPERATION, COMBINED FLOW 1000 GPM AT 110 FEET HEAD.
7. LEAD-LAG, PARALLEL PUMPING OPERATION, COMBINED FLOW 1125 GPM AT 85 FEET HEAD.

SOUND ATTENUATOR SCHEDULE

									DYNAMIC INSERTION LOSS dB								
TAG	MFR.	MODEL	SERVICE	CONFIGURATION	AIRFLOW (CFM)	AIR VEL. (FPM)	DUCT SIZE (IN)	APD (IN W.C.)	63 HZ	125 HZ	250 HZ	500 HZ	1000 HZ	2000 HZ	4000 HZ	8000 HZ	REMARKS
SA-1	PRICE	CS	AHU-P-2 SUPPLY	INLINE CIRCULAR	10000	1270	38 DIA.	0.08	4	6	14	24	26	21	13	11	1
SA-2	PRICE	ERM50/UA	AHU-P-2 RETURN	ELBOW RECTANGULAR	10000	352	64x64	0.01	6	9	10	14	13	13	12	11	1
SA-3	PRICE	CS	AHU-P-3 SUPPLY	INLINE CIRCULAR	25000	1572	54 DIA.	0.01	2	4	7	5	4	3	4	2	1
SA-4	PRICE	ERM44/9A	AHU-P-3 RETURN	ELBOW RECTANGULAR	6250	469	60x32	0.01	6	9	12	16	16	16	14	13	1
SA-5	PRICE	CS	AHU-P-3 RETURN	INLINE CIRCULAR	18750	1096	56 DIA.	0.01	3	5	10	7	5	3	3	2	1

REMARKS:
1. PROVIDE AND INSTALL WITH GLASS FIBER MEDIA, GALVANIZED CASING, AND GALVANIZED PERFORATED LINER.

RADIANT PANEL SCHEDULE

TAG	MFR.	MODEL	WIDTH (IN)	LENGTH (FT)	MEAN WATER TEMP (DEG F)	CAPCITY (BTUH/FT)	FLOW (GPM)	WTD (DEG F)	WPD (FT)	INST TYPE	COLOR	REMARKS
RAD-1	VULCAN	PR3F-10	5	8	120	1145	0.91	20	10.0	WALL	WHITE	1, 2
RAD-2	VULCAN	PR3F-10	5	6	120	1145	0.69	20	10.0	WALL	WHITE	1, 2
RAD-3	VULCAN	PR3F-10	5	4	120	1145	0.46	20	10.0	WALL	WHITE	1, 2
RAD-4	VULCAN	PR3F-10	5	6	120	1145	0.69	20	10.0	WALL	WHITE	1, 2
RAD-5	VULCAN	PR3F-10	5	4	120	1145	0.46	20	10.0	WALL	WHITE	1, 2
RAD-6	VULCAN	PR3F-10	5	6	120	1145	0.69	20	10.0	WALL	WHITE	1, 2

REMARKS:
1. ALL CAPACITIES BASED ON ROOM AIR TEMPERATURE OF 65 DEG F.
2. PROVIDE AND INSTALL WITH ALL END CAPS/TRIM PIECES FOR COMPLETE INSTALLATION. REFER TO PLANS FOR ADDITIONAL INFORMATION.

NEEDLEPOINT BIPOLAR IONIZER SCHEDULE

TAG	MFR.	MODEL	SERVICE	COIL AIRFLOW (CFM)	COIL DIM WxH (IN)	ION OUTPUT (ions/cc/sec/inch)	OUTPUT VOLTAGE	ELEC	MAX. CIR. AMPS	MAX FUSE SIZE	REMARKS
NPI-1	GLOBAL PLASMA SOLUTIONS	GPS-IMOD	AHU-P-1	15,000	102x60	140 M	5 kV RMS	24 V	0.5	-	1, 2, 3
NPI-2	GLOBAL PLASMA SOLUTIONS	GPS-IMOD	AHU-P-2	10,000	78x57	140 M	5 kV RMS	24 V	0.5	-	1, 2, 3
NPI-3	GLOBAL PLASMA SOLUTIONS	GPS-IMOD	AHU-P-3	25,000	102x96	140 M	5 kV RMS	24 V	0.5	-	1, 2, 3
NPI-4	GLOBAL PLASMA SOLUTIONS	GPS-IMOD	AHU-P-4	12,000	69x75	140 M	5 kV RMS	24 V	0.5	-	1, 2, 3
NPI-5	GLOBAL PLASMA SOLUTIONS	GPS-IMOD	AHU-P-5	22,000	90x102	140 M	5 kV RMS	24 V	0.5	-	1, 2, 3

REMA...
1. SYSTEM SHALL COMPLY WITH UL2998, UL 867, AND IAQP STANDARDS WITH INDEPENDENT TEST DATA.
2. PROVIDE AND INSTALL WITH PACKAGED CONTROLS.
3. PROVIDE MODULAR BARS AND ALL ASSOCIATED CABLING REQUIRED TO SERVE THE COIL SIZE LISTED. INCLUDE ALL REQUIRED MOUNTING HARDWARED. MOUNT ALL DEVICES INSIDE UNIT.

MINI-SPLIT OUTDOOR UNIT SCHEDULE

TAG	MFR.	MODEL	EQUIP. SERVED	COOLING CAP (MBH) AT 95 DEG F	HEATING CAP (MBH) AT 17 DEG F	MAX REF LINE LENGTH (FT)	COOLING SEER	HEATING COP	REFRIG	ELEC (V/PH)	MCA	MOP	REMARKS
ACCU-1	MITSUBISHI	PUY-A18NKA7	HVAC-1	18.0	-	165	19.8	-	R410A	208/1	11	28	1, 2, 3, 4, 5
ACCU-2	MITSUBISHI	PUY-A18NKA7	HVAC-2	18.0	-	165	19.8	-	R410A	208/1	11	28	1, 2, 3, 4, 5
ACCU-3	MITSUBISHI	PUY-A18NKA7	HVAC-3	18.0	-	165	19.8	-	R410A	208/1	11	28	1, 2, 3, 4, 5
ACCU-4	MITSUBISHI	PUY-A36NKA7	HVAC-4	36.0	-	225	18.8		R410A	208/1	25	31	1, 2, 3, 4, 5
ACCU-5	MITSUBISHI	PUY-A36NKA7	HVAC-5	36.0	-	225	18.8		R410A	208/1	25	31	1, 2, 3, 4, 5

REMARKS:
1. MC SHALL PROVIDE AND INSTALL INTERLOCK WIRING AND CONTROLS AS REQUIRED FOR A COMPLETE INSTALLATION.
2. PROVIDE AND INSTALL WITH BACNET INTERFACE.
3. PROVIDE AND INSTALL WITH LOW AMBIENT COOLING KIT.
4. PROVIDE AND INSTALL WITH LOUVERED HAIL GUARD.
5. PROVIDE AND INSTALL ON 24" TALL MOUNTING STAND.

IF THE WHEEL PRINTED BELOW IS NOT SHOWN IN COLOR, THIS SET OF PRINTS IS NOT REPRESENTING ALL LINE TYPES CORRECTLY. CONTACT PRIMARY ENGINEERING FOR DIRECTIONS ON HOW TO OBTAIN A FULL COLOR SET OF PRINTS

PLOT DATE/TIME:10/3/2024 2:23:49 PM

LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE
INDIANAPOLIS, IN 46203

PRIMARY ENGINEERING INC
Fort Wayne
2828 Lake Ave.
Fort Wayne, Indiana 46805
260.424.0444 ph
info@primary-eng.com
Indianapolis
9785 Crosspoint Blvd., Suite 103
Indianapolis, Indiana 46256
317.324.1221 ph
www.primary-eng.com

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL
300 E MAIN ST, WHITELAND, IN 46184

ANDREW STEPHEN LOUDERBACK
REGISTERED
PE11700017
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	10-4-2024	ADDENDUM #2

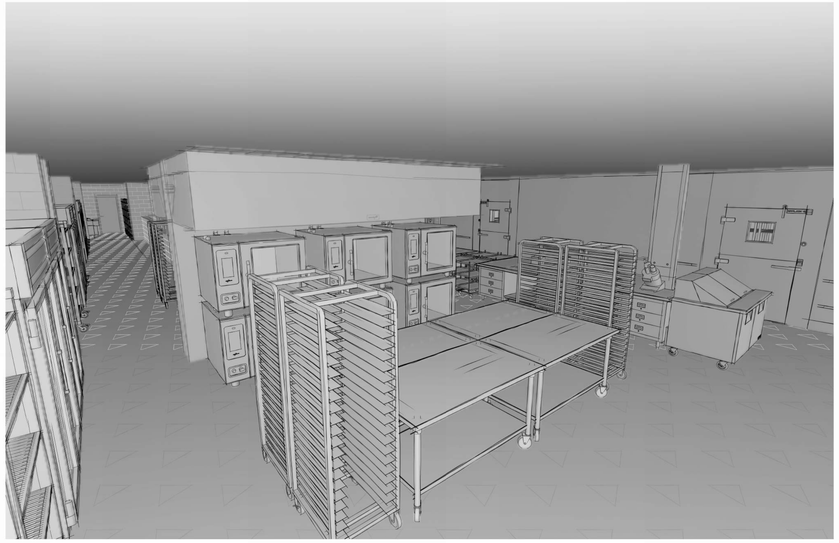
100% CONSTRUCTION DOCUMENTS

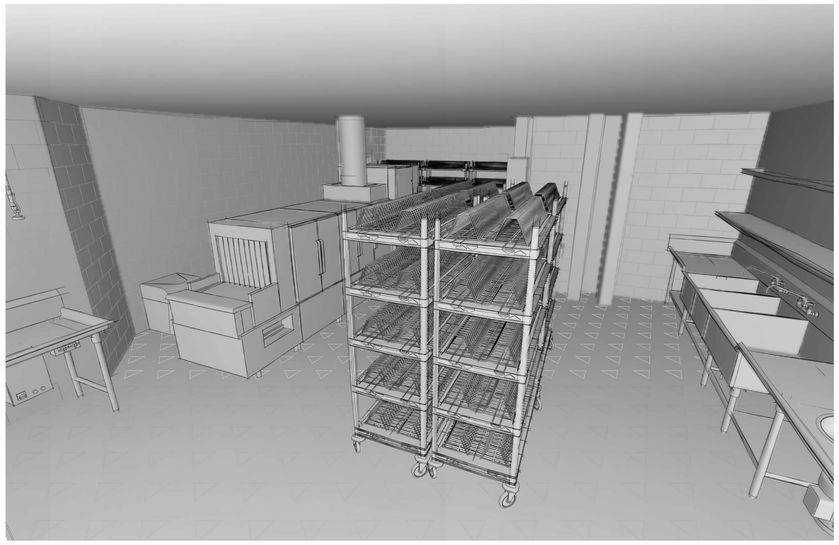
PROJECT: #22130
DATE: 08-30-2024
DRAWN BY: ASL

MECHANICAL SCHEDULES

M502

PRIMARY JOB # 23536





Foodservice Equipment Drawing Index

SHEET	DESCRIPTION
FS100	Foodservice Notes, Symbols & Legends
FS101	Foodservice Equipment Layout & Schedule
FS102	Foodservice Equipment Layout & Schedule
FS103	Foodservice Equipment Layout & Schedule
FS104	Foodservice Equipment Special Conditions
FS200	Foodservice Equipment Spot Location Schedules
FS201	Foodservice Equipment Spot Location Layout
FS202	Foodservice Equipment Spot Location Layout
FS203	Foodservice Equipment Spot Location Layout
FS204	Foodservice Equipment Spot Location Layout
FS300	Walk-In Beverage Cooler/Bulk Cooler
FS301	Walk-In Small Freezer/Large Freezer
FS400	Exhaust Ventilation System Drawing
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FS501	Foodservice Equipment Details & Elevations
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FS504	Foodservice Equipment Details & Elevations
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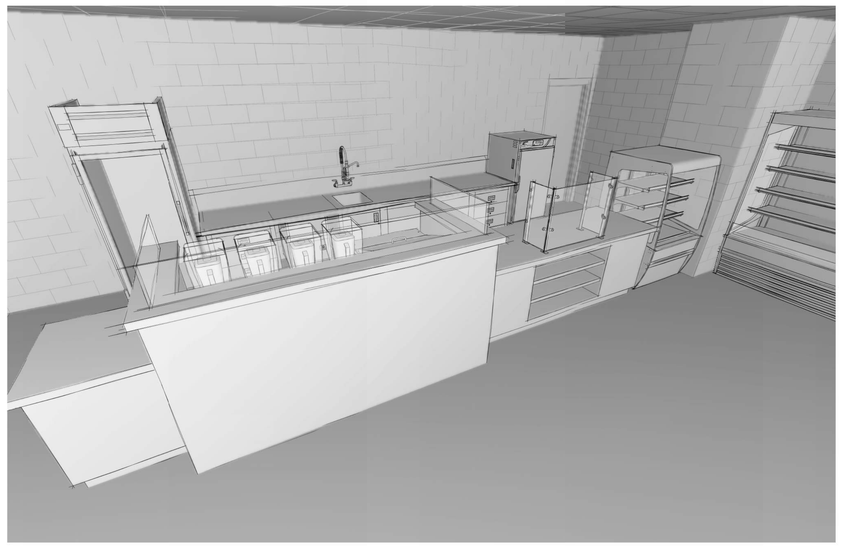

Foodservice Symbols & Note Legend

(1) Equipment Item Number Tag	(1 / FS7.0) Equipment Elevation/Tag	(E1) Mech/Elec Spot Location Tag
(A) Equipment Requiring Water Filtration	(B) Fire Suppression System Cabinet	(C) Walk-In Cooler/Freezer Compressor

Foodservice Abbreviation Legend

AFF Above Finished Floor	ED Electrical Division	MECH Mechanical
AMPS Amperage	ELEC Electric, Electrical	MFG Manufacturer
ARCH Architectural	GA Gauge	MISC Miscellaneous
BLDG Building	GALV Galvanized	NIKEC Not In KEC Contract
BTU British Thermal Unit	GC General Contractor	NTS Not To Scale
CFM Cubic Feet Per Minute	GD General Division	PC Plumbing Contractor
CLG Ceiling	GPH Gallons Per Hour	PD Plumbing Division
CMU Concrete Masonry Unit	HP Horsepower	PH Phase
CONN Connection	HVAC Heating, Ventilation & Air Conditioning	PSI Pounds Per Square Inch
CW Cold Water	HW Hot Water	SHT Sheet
DCO Duplex Convenience Outlet	KEC Kitchen Equipment Contractor	STD Standard
DFA Drop From Above	KW Kilowatt	STUB Stub Up From Floor
DIM Dimension	MBTU 1,000 BTU'S	TYP Typical
DWG Drawing	MC Mechanical Contractor	V Voltage
EC Electrical Contractor	MD Mechanical Division	VOLT Voltage

Foodservice Equipment Drawing Notes

These drawings and accompanying specifications are for bidding purposes only, are not to be used in any way for construction and must be considered a complete body of work. Any work called for in one or the other, together with such work as can reasonably be considered a part of the installation and necessary to complete same, shall be included. Any discrepancies between these drawings, accompanying specifications, building code, and local code requirements that may affect installation, fabrication, and/or overall work in any way shall be brought to the attention of Vorndran & Associates. Vorndran & Associates assumes no responsibility for any changes made necessary by the local building codes, ordinances, structural conditions, or changes made necessary in equipment shown on these drawings.

The basis of design for all drawings, specifications, and detail references is the first manufacturer and model listed. If another listed manufacturer is chosen by the KEC, it is the responsibility of the KEC to provide a model that is equal in production capabilities, capacity, and performance to the first manufacturer and model listed. The KEC is also to verify, coordinate, and allow for proper installation of equipment; considering possible revisions for utility connections, loads, and physical sizes. In the event there are any additional costs or change orders by other trades because of the KEC submitting another listed manufacturer, those charges shall be the sole responsibility of the KEC.

The KEC is responsible to review the plans for accuracy and verify all dimensions and existing conditions prior to the fabrication of any equipment. Vorndran & Associates assumes no responsibility for the accuracy of measurements taken from these drawings. Fabricators, contractors, and other parties utilizing these plans, in connection with this job, are responsible for securing their own measurements. Verify all equipment clearances thru building doors, hallways, or entry points as not all equipment will fit thru standard openings. The KEC is to notify Vorndran & Associates of any errors, omissions, ambiguities, discrepancies, or irregularities prior to start of construction.

These drawings refer to work to be performed by other trades not intended to be part of the KEC's scope of work. Work referenced by other trades is not for assigning work to a specified trade, but rather to clarify the coordination between the KEC and all other trades. The General Contractor is responsible for all notes on these drawings and transmitting the required information to the respective subcontractors.

Foodservice Equipment General Notes

All foodservice equipment shall be manufactured, fabricated, furnished and installed in strict accordance with, and bear the emblem of, the National Sanitation Foundation (NSF) as well as any federal, state and local code requirements.

Equipment which is fixed and where it abuts other fixed equipment, building walls or floor shall be sealed thereto with silicone. Gaps between equipment exceeding 3/8" in width must be trimmed out with stainless steel angled trim or matching material trim prior to being sealed.

Fabrication of custom equipment should not begin until all field dimensions and conditions have been verified and coordinated with fabrication details. All counters are to be fabricated properly to support the specified counter top material in accordance with the material manufacturer's guidelines. All "drop-in" equipment and other equipment "attached to", "set on" or "built-in" to the counter top material to be installed in accordance with the material manufacturer's guidelines and technical bulletins for the installation of commercial foodservice equipment.

The KEC is to assist the various trades with the proper installation of components which are furnished as part of the kitchen equipment package. Provide the various trades with piping diagrams and installation instructions where applicable and as required/requested.

Hot water supply to all lavatory, food preparation, and three compartment sinks shall be 120-degrees minimum. Hot water supply to all dishmachines shall be 140-degrees minimum unless otherwise specified.

Mechanical Work By Other Trades

(See Multiple Contract Summary Specification Section For Final Scope Assignment)

Install all faucet assemblies, pre-rinse spray assemblies, quick-disconnect assemblies, hose assemblies, pot filler assemblies, vacuum breakers, check valves, flow control valves, solenoid valves, water pressure reducing valves, gas pressure reducing valves, temperature gauges, pressure gauges, water hammer shock absorbers and water filtration systems furnished by the KEC.

Furnish and install all water, gas and steam supply lines, drain manifolds and tailpieces, traps, shut-off valves, vent piping, gas supply line strainers/filters, back flow prevention devices, floor drains and floor sinks as required for equipment installation and any code requirements. All supply lines servicing equipment adjacent to an exterior wall are to be ran along interior face of wall to avoid potential freezing.

Furnish and install chrome plated, or painted, piping on all exposed water or gas piping above counter height or in "direct" line of sight to the owner/operator. Furnish and install stainless steel or chrome plated brass escutcheons or flanges for all penetrating utility lines and seal water-tight and vermin proof.

Furnish and install type "I" copper tubing drain lines from all applicable equipment to floor sinks (including walk-in cooler and freezer coils) and to insulate all drain lines as required. Install drain lines so they do not affect undercounter storage and other operational functions of the fixtures.

Furnish and install all 12"x12"x8" floor sinks with half grates. Floor sinks to be mounted in floor such that the top of the rim will be flush with finished floor elevation unless otherwise directed by state and local codes. Floor sinks for dishmachines and all cooking equipment to have a minimum of 3" drain connection. Do not slope floor to floor sinks/drains in foodservice areas!!! Finished floors below all kitchen equipment to be smooth and level unless shown otherwise.

Utilize existing floor drains, floor sinks, direct plumbing drains, gas connections and water connections where possible for new equipment and cap off any existing services made obsolete by these drawings.

Electrical Work By Other Trades

(See Multiple Contract Summary Specification Section For Final Scope Assignment)

Install all control panels, starters, solenoid valves, junction boxes and disconnect switches furnished by the KEC.

Furnish and install all wiring, electrical outlets, starters, junction boxes, disconnect switches and conduit required for equipment installation in accordance with manufacturer's specifications and electrical code requirements. Electrical receptacles to be flush mounted unless otherwise noted.

Furnish and install grounding wire to all foodservice equipment in addition to the number of wires noted in individual services. Furnish and install ground fault protection for any receptacle within the kitchen and serving areas. Furnish and install shunt trip breakers for all electrical service to equipment under exhaust hoods when fire suppression system is required.

Furnish 6'-0" pigtail flex conduit at all direct connection stub-outs and extend to final connection on equipment. Verify all foodservice equipment with direct connection to be in line of sight of kitchen electrical distribution panel, and if not, furnish and install a fused quick disconnect adjacent to equipment. Provide caps and cords for all items which use convenience outlets when not supplied by the manufacturer and shorten any cords if necessary.

Utilize existing electrical connections where possible for new equipment and cap off any existing services made obsolete by these plans.

Foodservice Spot Location Symbols

(H) Hot Water Connection	Exhaust Ventilation Connection	Refer To Schedules For More Information
(C) Cold Water Connection	Supply Ventilation Connection	(D) Disconnect Switch Located On Equipment
(W) Direct Waste Connection	Dedicated Electrical Connection (Wall)	Light Fixture Connection
Gas Connection	Dedicated Electrical Connection (DFA)	(T) Defrost Time Clock Located On Equipment
(R) Refrigeration Connection	Dedicated Electrical Connection (Stub)	(S) Solenoid Valve Connection
Steam Supply Connection	Duplex Convenience Outlet	(T) Thermostat Connection
Steam Return Connection	Special Purpose Convenience Outlet	(D) Telephone/Data Connection
Indirect 12"x12" Floor Sink	(J) Junction Box Located On Equipment	Piping/Wiring By Mech/Elec Division
Indirect Floor Drain	(FS) Fire Suppression System Pull Station	Piping/Wiring By KEC

The included spot location schedules and drawings are for the convenience of bidding, to be used only as a guide for foodservice equipment electrical, plumbing and exhaust ventilation spot locations and are not intended for use on the jobsite for rough-in purposes. The included spot location schedules and drawings have been created per the basis of design equipment and are specific to the equipment shown on the foodservice equipment plan. The KEC shall be responsible for creating actual rough-in schedules and drawings (per the equipment submitted on their unit price form) showing accurate locations for utilities specific to each piece of equipment and work to be installed in accordance with all federal, state and local codes. If the KEC chooses to submit another listed manufacturer, the KEC shall be solely responsible for any up charges and/or change orders by other trades accrued as a result of the changes required for the equipment provided. Refer to architectural, plumbing, and electrical drawing sets and accompanying specifications for additional requirements not shown.

LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE. SUITE 103
INDIANAPOLIS, IN 46203

VORNDRAN and ASSOCIATES
PROFESSIONAL FOOD SERVICE DESIGN

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PHASE 2
300 E MAIN ST, WHITELAND, IN 46184

FOODSERVICE CONSULTANTS SOCIETY INTERNATIONAL — JIM KESSENICH — FCSI 9508165 — PROFESSIONAL MEMBER

REVISIONS:

#	Date	Desc.
1	10/04/24	Addendum #2

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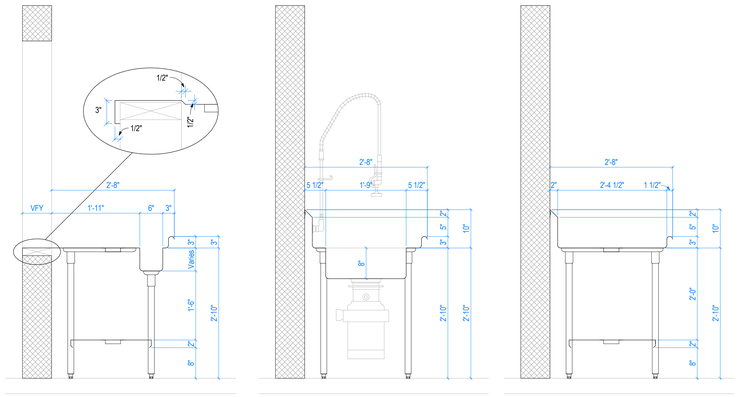
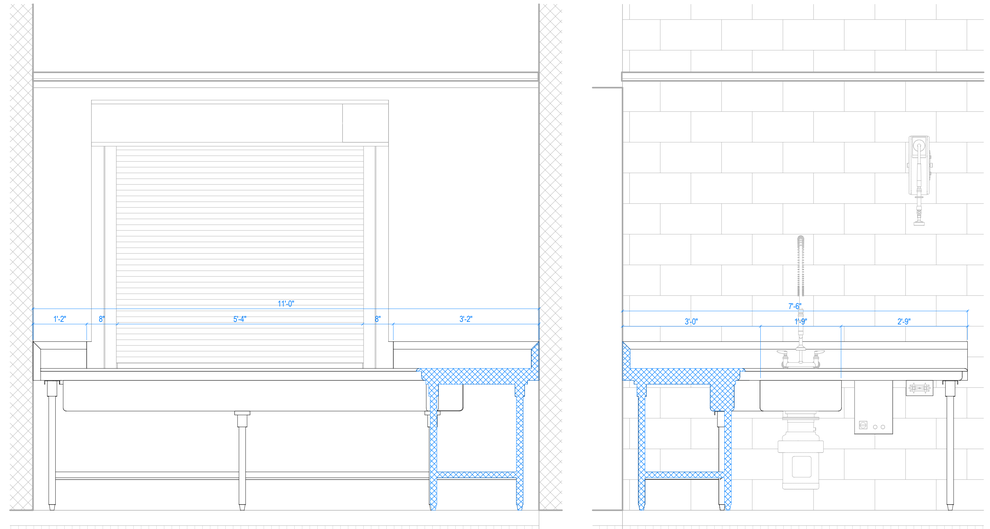
PROJECT: #22130
DATE: 08/30/2024
DRAWN BY: JAK

Foodservice Notes, Symbols & Legends

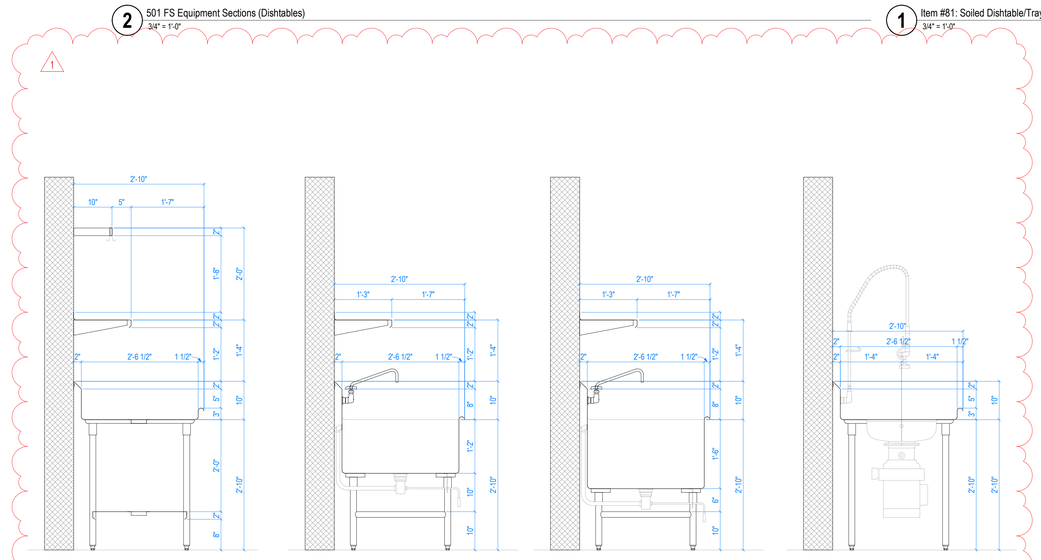
FS100



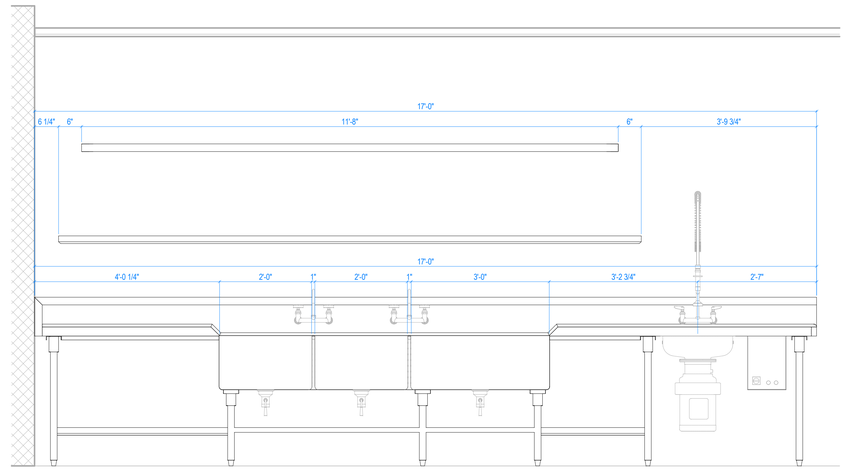
2 501 FS Equipment Sections (Dishtables)
3/4" = 1'-0"



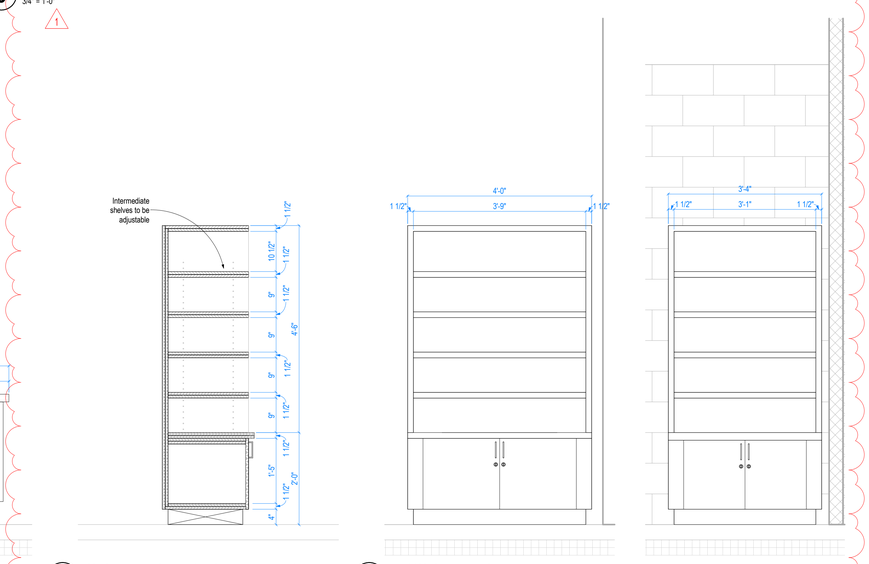
1 Item #81: Soiled Dishtable/Tray Drop-Off
3/4" = 1'-0"



4 501 FS Equipment Sections (Three Compartment Sink)
3/4" = 1'-0"

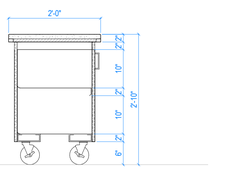


3 Item #86: Three Compartment Sink
3/4" = 1'-0"

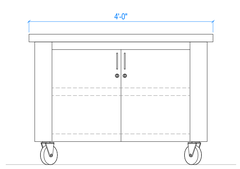


6 502 FS Equipment Sections (Dry Goods Merchandiser)
3/4" = 1'-0"

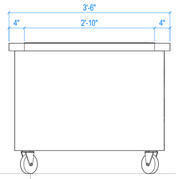
5 Item #103: Open Air Dry Goods Merchandiser
3/4" = 1'-0"



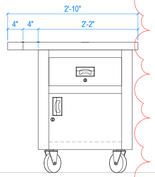
9 502 FS Equipment Section (Mobile Condiment Counter)
3/4" = 1'-0"



8 Item #179: Mobile Condiment Cart
3/4" = 1'-0"



7 Item #177: Single Sided Cashier Counter
3/4" = 1'-0"



LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE. SUITE 103
INDIANAPOLIS, IN 46203

VORNDRAN and ASSOCIATES
PROFESSIONAL FOOD SERVICE DESIGN

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PHASE 2
300 E MAIN ST, WHITELAND, IN 46184

FOODSERVICE CONSULTANTS SOCIETY INTERNATIONAL
JIM KESSENICH
FCS 9508165
PROFESSIONAL MEMBER

REVISIONS:

#	Date	Desc.
1	10/04/24	Addendum #2

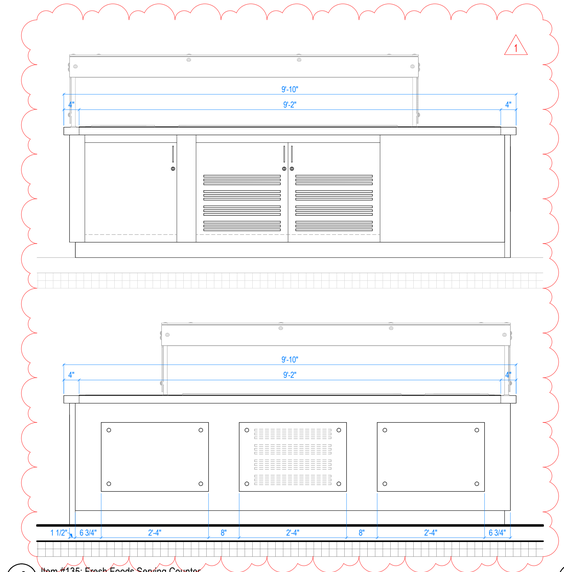
100% CONSTRUCTION DOCUMENTS

PROJECT: #22130
DATE: 08/30/2024
DRAWN BY: JAK

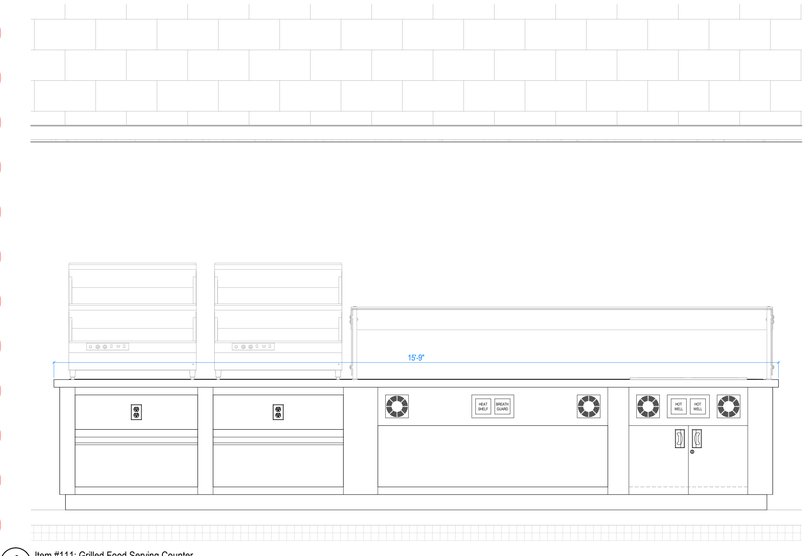
Foodservice Equipment Details & Elevations

FS503

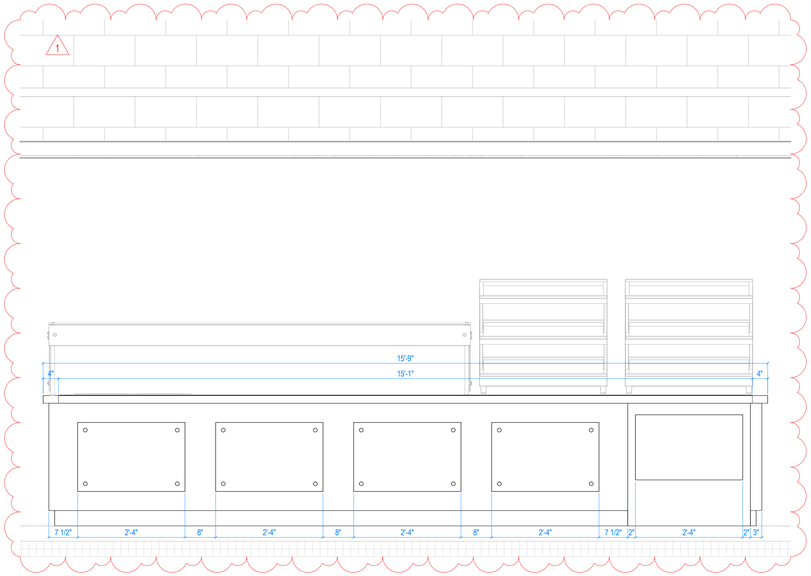
PLOT DATE/TIME: 10/2/2024 12:15:32 PM

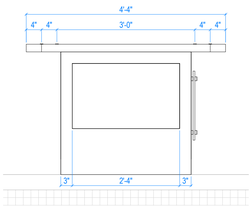


4 Item #135: Fresh Foods Serving Counter
3/4" = 1'-0"

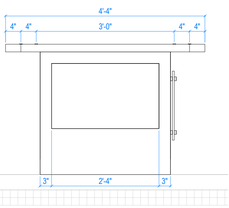


1 Item #111: Grilled Food Serving Counter
3/4" = 1'-0"

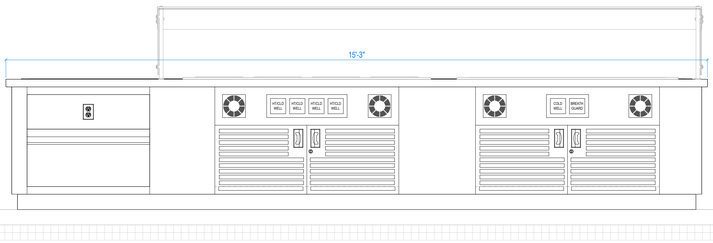




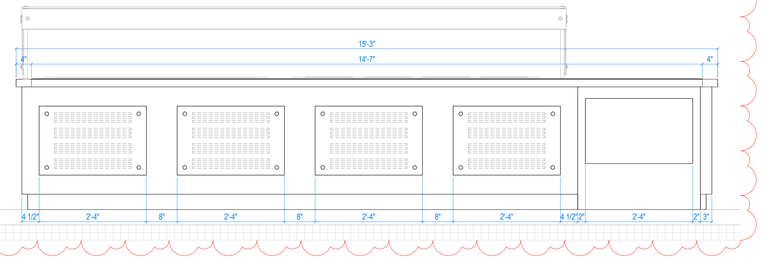
5 Item #135 (End Elevation)
3/4" = 1'-0"

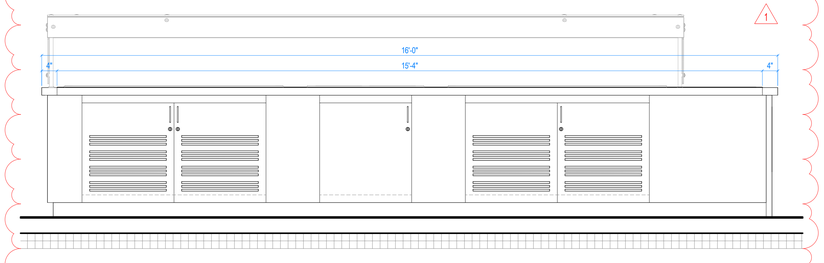


7 Item #169 (End Elevation)
3/4" = 1'-0"

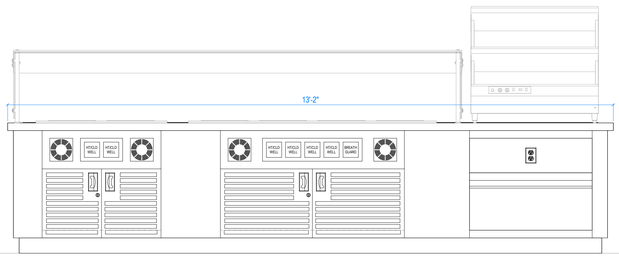


2 Item #120: Deli/Salads Serving Counter
3/4" = 1'-0"





6 Item #169: Fresh Foods Serving Counter
3/4" = 1'-0"



3 Item #127: Make-Your-Own Serving Counter
3/4" = 1'-0"

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427 S. COLLEGE AVE. SUITE 103
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FOODSERVICE CONSULTANTS SOCIETY INTERNATIONAL
JIM KESSENICH
FCS 9508165
PROFESSIONAL MEMBER

REVISIONS:

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1	10/04/24	Addendum #2

100% CONSTRUCTION DOCUMENTS

PROJECT: #22130
DATE: 08/30/2024
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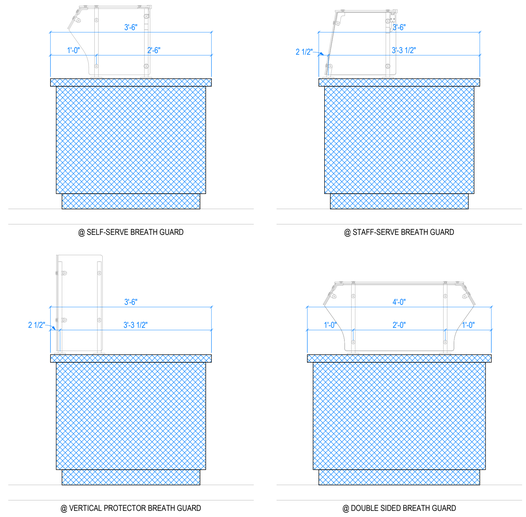
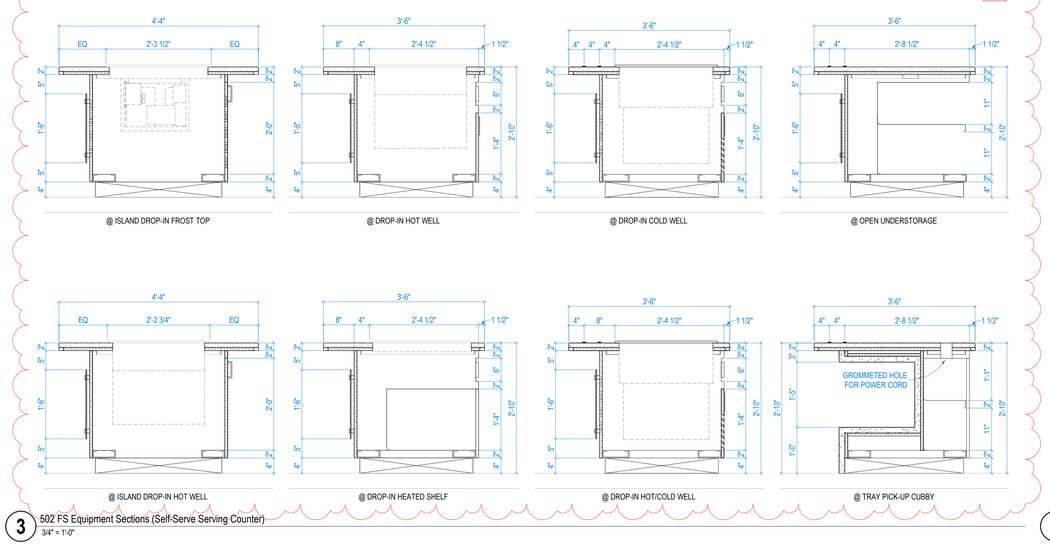
Foodservice Equipment Details & Elevations

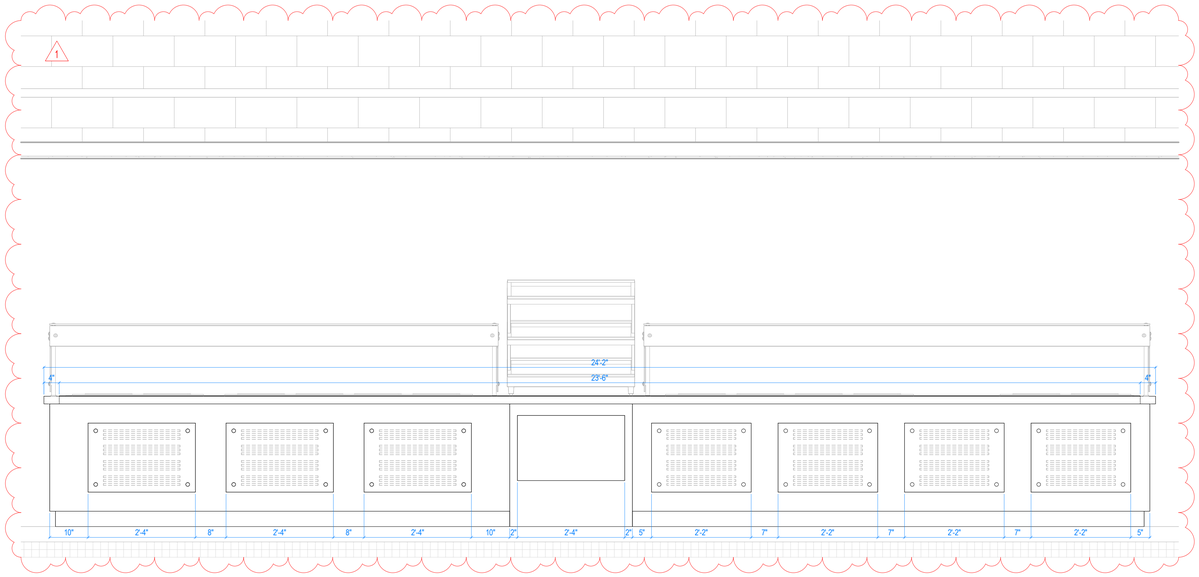
FS504

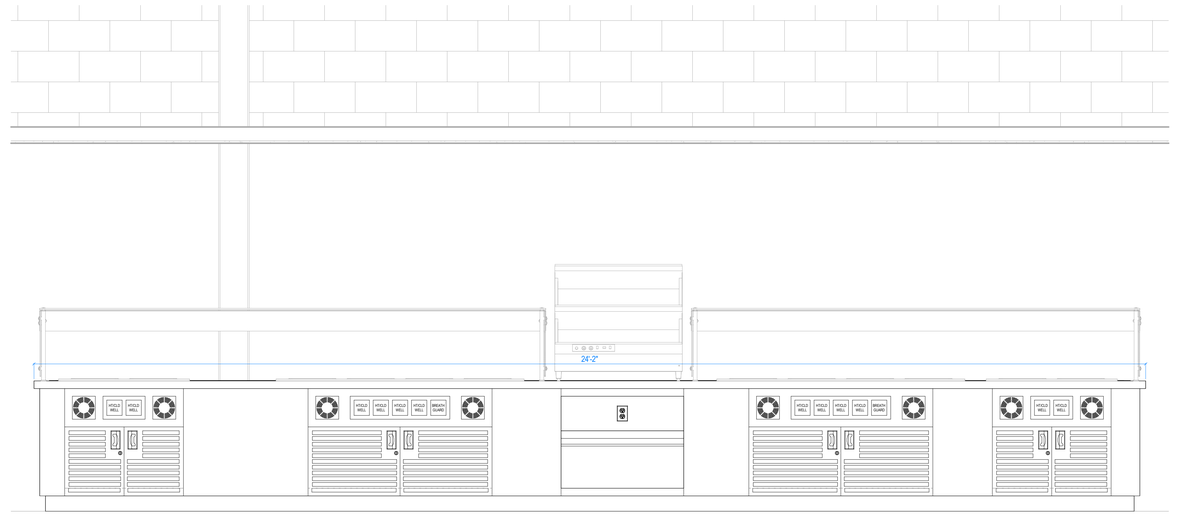


2 Breathguard Location Detail
3/4" = 1'-0"

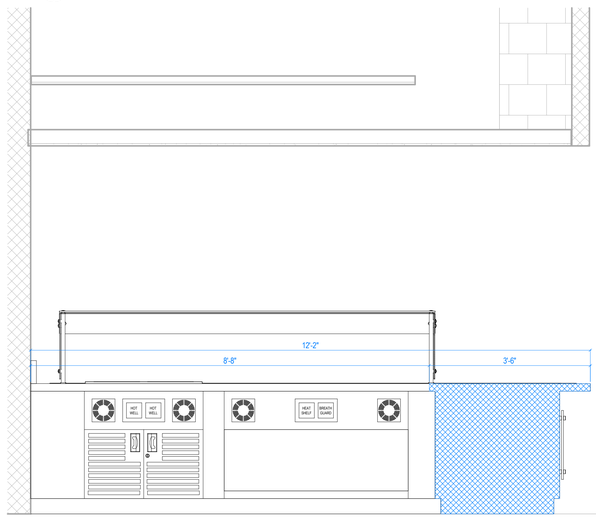


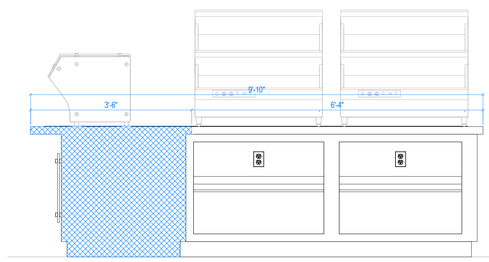
3 502 FS Equipment Sections (Self-Serve Serving Counter)
3/4" = 1'-0"

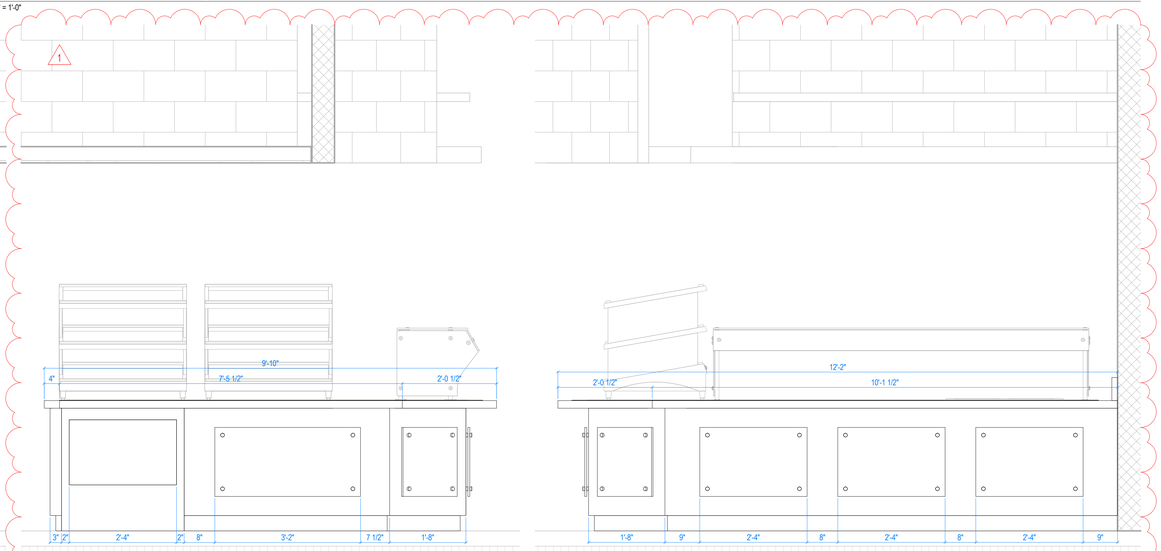




1 Item #146: Warrior Favorites/International Foods Serving Counter
3/4" = 1'-0"







4 Item #160: Pizza/Italian Serving Counter
3/4" = 1'-0"

LANCER ASSOCIATES ARCHITECTURE
427 S. COLLEGE AVE. SUITE 103
INDIANAPOLIS, IN 46203

VORNDRAN and ASSOCIATES
PROFESSIONAL FOOD SERVICE DESIGN

CLARK-PLEASANT COMMUNITY SCHOOL CORP.
WHITELAND COMM. HIGH SCHOOL PHASE 2
300 E MAIN ST, WHITELAND, IN 46184

FOODSERVICE CONSULTANTS SOCIETY INTERNATIONAL
JIM KESSENICH
FCS 9508165
PROFESSIONAL MEMBER

REVISIONS:

#	Date	Desc.
1	10/04/24	Addendum #2

100% CONSTRUCTION DOCUMENTS

PROJECT: #22130
DATE: 08/30/2024
DRAWN BY: JAK

Foodservice Equipment Details & Elevations

FS505

PLOT DATE/TIME: 10/2/2024 12:15:38 PM