August 14, 2012

TO: All Bidders

REF: **Buckhannon Readiness Center, Buckhannon, West Virginia**
West Virginia Army National Guard
RFQ No: DEFK 13000

SUBJ: **Addendum Bulletin No. 2**

This Addendum Bulletin shall be incorporated in the Construction Documents including the Drawings and Specifications for the Project referenced above. All work amended as listed herein shall be included in your Bid Proposal and the bidder shall acknowledge this addendum bulletin in accordance with the Request for Quotation**.**

The Construction Contract Documents shall be amended as follows:

SPECIFICATIONS:

Addendum 02 - Item 1. BID DATE EXTENSION:
a. REVISE Bid date has been extended to August 30th, 2012

Addendum 02 - Item 2. TABLE OF CONTENTS:
a. REPLACE Table of Contents with Table of Contents, Revised 8-9-12

Addendum 02 - Item 3. BID FORM SECTIONS I, II & III:
a. REPLACE Bid Forms Sections I, II & III dated 06-28-12 with Bid Forms I, II & III, Revised 8-14-12, in enclosure of this addendum.

Addendum 02 - Item 4. DIVISION 00:
a. CLARIFICATION Contractor will be required to execute an "Indemnification and Hold Harmless" agreement prior to receiving Notice to Proceed. The State of West Virginia, the Adjutant General's Department, the State Armory Board, the West Virginia National Guard, the Upshur County Development Authority, the City of Buckhannon, and Linda K. Wellings shall be listed as shown in the example of the agreement attached. ***See enclosures (Indemnity, Hold Harmless and General Release Provision)***

b. REPLACE Item No. 15 "Insurance Coverage", of "INFORMATION AND INSTRUCTIONS TO BIDDERS" ***with the following:***

"15. Insurance Coverage

The successful Contractor shall present evidence to the OWNER of adequate coverage of Public Liability and Property Damage Insurance to

protect the OWNER **(State of West Virginia, State Armory Board, Adjutant General's Department, WV National Guard); Upshur County Development Authority; City of Buckhannon; and Linda K. Wellings** from any claim of damage which might arise from any accident or carelessness during the life of this contract.

Insurance coverage types and minimum coverage amounts are indicated on sample Certificate of Insurance bound herein."

Addendum 02 - Item 5. DIVISION 01, SECTION 012100:
a. REPLACE Section 012100-Allowances dated 06-28-12 with Section 012100 with Section 012100 –Allowances dated 08-14-12, in enclosures of this addendum.

Addendum 02 - Item 6. DIVISION 01, SECTION 011000-2:
a. DELETE 1.3d. 2. BUSINESS AND OCCUPATION TAX RETURN

Addendum 02 - Item 7. DIVISION 01, SECTION 012300:
a. REPLACE Section 012300 – Alternates dated 06-28-12 with Section 012300 Alternates dated 08-14-12, in enclosures of this addendum.

Addendum 02 - Item 8. DIVISION 04, SECTION 047200:
a. ADD the following manufacturers to the list of approved manufacturers in article 2.2/A:

i. CAPITAL CAST STONE
ii. SOUTHERN CASTINGS, INC.
iii. ARCHITECTURAL CONRETE CASTINGS, INC.

Addendum 02 - Item 9. DIVISION 09, SECTION 096723:
a. ADD the following manufacturers to the list of approved manufacturers in article 2.1/A:

i. PALMA INC, PALMALITE NOVOLAC 185.

Addendum 02 - Item 10. DIVISION 10, SECTION 101100:
a. DELETE Tackboards from section

Addendum 02 - Item 11. DIVISION 12, 122113:
a. DELETE Section 122113 in its entirety.

Addendum 02 - Item 12. DIVISION 12, SECTION 122413:
a. ADD Section 122413 Roller Window Shades

Addendum 02 - Item 13. DIVISION 13, SECTION 133419:
a. ADD Section 133419 Metal Building Systems

Addendum 02 - Item 14. DIVISION 22, SECTION 221313:

a. ADD Section 221313 Facility Sanitary Sewers

Addendum 02 - Item 15. DIVISION 22, SECTION 221319:

a. ADD article 2.10 ***to read the following:***

"2.10 GREASE INTERCEPTORS

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

      a. Josam Company; Josam Div.
      b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
      c. Tyler Pipe; Wade Div.
      d. Watts Drainage Products Inc.
      e. Zurn Plumbing Products Group; Specification Drainage Operation.

   2. Standard: ASME A112.14.3 and PDI-G101, for intercepting and retaining fats, oils, and greases from food-preparation wastewater.
   4. Plumbing and Drainage Institute Seal: Required.
   5. Body Material: Fabricated Steel.
   6. Interior Lining: Corrosion-resistant enamel.
   7. Exterior Coating: Corrosion-resistant enamel.
   8. Body Dimensions: 24-1/2 inch x 30 inch x 21-1/2 inch high.
   9. Body Extension: Required.
   11. Flow Rate: 50 GPM
   13. Grease Retention Capacity: 100 LBS.
   14. Inlet and Outlet Size: 3 inch
   15. End Connections: Threaded.
   16. Cleanout: Integral or field installed on outlet.
   17. Mounting: Recessed in acid-resistant, coated steel frame and cradle.
   18. Flow-Control Fitting: Required.
   19. Operation: Manual cleaning.
   20. Model: Z-1160-RE manufactured by Zurn."

Addendum 02 - Item 16. DIVISION 22, SECTION 224000:

a. CHANGE article 2.1 ***to read the following:***

"2.1 LAVATORY FAUCETS

B. Lavatory Faucets (L-1 & L-2):

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

a. American Standard.
b. Moen.
c. Chicago Faucets.
d. Sloan.

2. Description: Single-control mixing valve. Coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.

a. Body Material: Commercial, solid brass.
b. Finish: Polished chrome plate.
c. Maximum Flow Rate: 0.5 gpm (1.5 L/min.).
d. Retain subparagraph above or first subparagraph below.
e. Centers: 4 inches (102 mm).
f. Mounting: Deck, exposed.
g. Valve Handle(s): Not applicable.
h. Inlet(s): NPS 3/8 (DN 10) tubing, plain end.
i. Spout: Rigid type.
j. Spout Outlet: Spray, 0.5 gpm (1.5 L/min.).
k. Operation: Sensor - battery.
l. Drain: Grid.
m. Tempering Device: Thermostatic that meets ASSE 1070.
n. Model EBF-655 manufactured by Sloan. Provide ASSE 1070 mixing valve (specified in section 221119 – 2.3E) below deck."

b. CHANGE Article 2.5 ***to read the following:***

"2.5 FLUSHOMETERS

A. Flushometers (WC-1 & WC-2):

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

a. Sloan Valve Company.
b. Moen Commercial.
c. Zurn Plumbing Products Group; Commercial Brass Operation.

4. Description: Flushometer for water closet-type fixture. Include brass body with corrosion-resistant internal components, non-hold-open feature, control stop with check valve, vacuum breaker,

copper or brass tubing, and polished chrome-plated finish on exposed parts.

a. Internal Design: Diaphragm operation.
b. Style: Exposed.
c. Inlet Size: NPS 1 (DN 25).
d. Trip Mechanism: Battery operated sensor actuator.
e. Consumption: 1.28 gal./flush.
f. Tailpiece Size: NPS 1-1/2 (DN 40).
g. Part of Model WETS 2050.1401-1.28 “G2” package manufactured by Sloan.

C. Flushometers (U-1 and U-2):

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

a. Sloan Valve Company.
b. Moen Commercial.
c. Zurn Plumbing Products Group; Commercial Brass Operation.

2. Description: Flushometer for urinal-type fixture. Include brass body with corrosion-resistant internal components, non-hold open feature, control stop with check valve, vacuum breaker, copper or brass tubing, and polished chrome-plated finish on exposed parts.

a. Internal Design: Diaphragm operation.
b. Style: Exposed.
c. Inlet Size: NPS 3/4 (DN 20).
d. Trip Mechanism: Battery operated sensor actuator.
e. Consumption: 0.125 gal./flush.
f. Tailpiece Size: NPS 3/4 (DN 20).
g. Part of Model WEUS-1000.1401-0.125 “ECOS” manufactured by Sloan.”

c. CHANGE Article 2.9 ***to read the following:***

“2.9 WATER CLOSETS

A. Water Closet (WC-1) Wall-hung, Flush Valve, Standard Height:

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

a. American Standard Companies, Inc.
b. Sloan.
c. Zurn.

2. Description Wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

a. Style: Battery operated, flushometer valve.

1) Bowl Type: Elongated, siphon-jet design.
2) Design Consumption: 1.28 gal./flush.
3) Color: White.

b. Flushometer: See this specification above for WC-1 flushometer.
c. Toilet Seat: See this specification above for WC-1 toilet seat.
d. Fixture Support: See this specification above for WC-1 water closet support combination carrier.
e. Part of Model WETS 2050.1401-1.28 “G2” package manufactured by Sloan.

B. Water Closet (WC-2) Wall-hung, Flush Valve, ADA Height:

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

a. American Standard Companies, Inc.
b. Sloan.
c. Zurn.

2. Description: Accesssible, Wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

a. Style: Battery operated, flushometer valve.

1) Bowl Type: Elongated siphon-jet design.
2) Design Consumption: 1.28 gal./flush.
3) Color: White.

b. Flushometer: See this specification above for WC-2 flushometer.
c. Toilet Seat: See this specification above for WC-2 toilet seat.
d. Fixture Support: See this specification above for WC-2 water closet support combination carrier.
e. Part of Model WETS 2050.1401-1.28 “G2” package manufactured by Sloan.”

d. CHANGE Article 2.10 ***to read the following:***

"2.10 URINALS

C. Urinal (U-1) Wall-hung, Flush Valve, Standard Height:

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

   a. American Standard Companies, Inc.
   b. Sloan.
   c. Zurn.

2. Description: Wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

   a. Type: Washout with extended shields.
   b. Strainer or Trapway: Open trapway with integral trap.
   c. Design Consumption: 0.125 gal./flush.
   d. Color: White.
   e. Supply Spud Size: NPS 3/4 (DN 20).
   f. Outlet Size: NPS 2 (DN 50).
   g. Flushometer: See this specification above for U-1 flushometer.
   h. Fixture Support: See this specification above for U-1 urinal chair carrier.
   i. Part of Model WEUS-1000.1401-0.125 "ECOS" package manufactured by Sloan.

D. Urinal (U-2) Wall-hung, Flush Valve, ADA Height:

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

   a. American Standard Companies, Inc.
   b. Sloan.
   c. Zurn.

2. Description: Accessible, wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

   a. Type: Washout with extended shields.
   b. Strainer or Trapway: Open trapway with integral trap.

c. Design Consumption: 0.125 gal./flush.
d. Color: White.
e. Supply Spud Size: NPS 3/4 (DN 20).
f. Outlet Size: NPS 2 (DN 50).
g. Flushometer: See this specification above for U-2 flushometer.
h. Fixture Support: See this specification above for U-2 urinal chair carrier.
i. Part of Model WEUS-1000.1401-0.125 "ECOS" package manufactured by Sloan."

Addendum 02 - Item 17. DIVISION 23, SECTION 230700:

a. ADD article 2.10 ***to read as follows:***

"2.10 FIRE-RATED INSULATION SYSTEMS

A. Fire-Rated Blanket: High-temperature, flexible, blanket insulation with FSK jacket that is tested and certified to provide a 2-hour fire rating by a NRTL.

1. Products: Subject to compliance with requirements, provide the following:
2. CertainTeed Corp.; FlameChek.
3. Johns Manville; Firetemp Wrap.
4 Nelson Firestop Products; Nelson FSB Flameshield Blanket.
5. Thermal Ceramics; FireMaster Duct Wrap.
6. 3M; Fire Barrier Wrap Products.
7. Unifrax Corporation; FyreWrap.
8. Vesuvius; PYROSCAT FP FASTR Duct Wrap."

b. CHANGE In article 3.11, "Insulation Schedule for Ducts and Plenums Installed Indoors," **ADD** paragraph J ***to read as follows:***

"J. Concealed or Exposed, Type I, commercial, kitchen hood exhaust duct and plenum insulation shall be the following:

1. Fire-rated blanket: Thickness shall be as required to achieve 2-hour fire rating."

c. ADD article 3-18 ***to read as follows:***

"3.18 FIRE-RATED INSULATION SYSTEM INSTALLATION

A. Where fire-rated insulation system is indicated, secure system to ducts and duct hangers and supports to maintain a continuous fire rating.

B. Insulate duct access panels and doors to achieve same fire rating as duct.

C. Install firestopping at penetrations through fire-rated assemblies. Fire-stop systems are specified in Division 07 Section "Penetration Firestopping."

Addendum 02 - Item 18. DIVISION 23, SECTION 230993:

a. In article 3.7, **ADD** paragraph G ***to read as follows:***

"G. Manual Control: The ATC Subcontractor shall provide all interconnecting control wiring between the ON/OFF switch and fan.

1. ON/OFF Kitchen Hood Switch: The fans serving kitchen hoods shall be started and stopped via a ON/OFF switch (furnished by ATC Subcontractor) mounted to the face of the kitchen hood it serves or by a heat sensor (furnished by the kitchen hood manufacturer) when the sensor detects heat. The ATC Subcontractor shall provide all interconnecting wiring between the heat sensor, ON/OFF switch and fan. Coordinate location of each switch with the Architect and Owner.

2. Dishwasher Hood Switch: The dishwasher hood exhaust fan shall be started and stopped via a ON/OFF switch mounted to the face of the dishwasher hood or to an adjacent wall. Coordinate location of switch with the Architect and Owner."

b. ADD article 3.17 ***to read as follows:***

"3.17 AUTOMATIC AIR DAMPERS

A. The automatic air damper shall be controlled such that it is fully open when kitchen hood exhaust fan EF-6 is de-energized and it is fully closed when kitchen hood exhaust fan EF-6 is energized."

c. ADD article 3.18 ***to read as follows:***

"3.18 MAKE-UP AIR UNIT

A. The constant volume rooftop make-up air unit (MAU) consists of an outside-air damper, an a supply fan, a refrigerant cooling coil, and a hot water heating coil. All actuators shall be electronic.

B. When kitchen hood exhaust fan EF-6 is energized, the rooftop MAU shall be energized and shall be controlled as follows:

1. Supply Fan: The supply fan shall run continuously.
2. Outside Air Air Dampers: The outside air damper shall be full (100%) open.
3. The remote condensing unit shall be controlled (cycled and staged) to maintain a discharge air temperature of 58°F (adjustable). In addition, the unit's hot gas reheat coil shall be modulated to maintain a space air temperature of 75°F (adjustable). When the heating coil is in operation, the condensing unit shall be locked out.
4. The hot water heating coil control valve shall be modulated to maintain a space temperature 70°F. When outdoor air temperature is above 70°F (adjustable), the heating coil shall be locked out. In addition, when the condensing unit is operating the heating coil shall be locked out.

C. When kitchen hood exhaust fan EF-6 is de-energized, the rooftop MAU shall be controlled as follows:

1. Supply Fan: The supply fan shall be de-energized.
2. Outside Air Damper: When the supply fan is not operating, the outside air damper shall be fully (100%) closed.
3. The remote condensing unit shall be de-energized.
4. The hot water heating coil control valve shall be closed.

D. Provide a freezestat mounted in the unit discharge to stop the supply fan, de-energize the remote condensing unit, close the heating coil control valve, and close the outside air damper when discharge air temperature drops below 45°F (adjustable).

E. DDC Points List for Rooftop Make-up Air Unit :

1. AI Discharge Air Temperature (at unit outlet)
2. AI Space Air Temperature
3. DI Supply Fan Status
4. DI Freezestat
5. AO Hot Water Heating Coil Valve
6. AO Discharge Air Temperature Setpoint Adjust
7. DO Supply Fan Start/Stop
8. DO Outdoor Air Damper Open/Close
9. DO Condensing Unit Start/Stop

F. Coordinate the control system requirements with the requirements described in Division 23 Section "Packaged, Outdoor, Heating and Cooling Makeup Air-Conditioners."

Addendum 02 - Item 19. DIVISION 23, SECTION 233113:

b. ADD paragraph D, in article 2.4, "Sheet Metal Materials", ***to read as follows:***

"D. Aluminum Sheets: Comply with ASTM B 209 (ASTM B 209M) Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view."

c. CHANGE paragraph A in article 3.12, "Duct Schedule", t***o read as follows:***

"A. Duct Material: Fabricate ducts with galvanized sheet steel except as otherwise indicated on the Drawings and as follows:

1. Kitchen Hood Exhaust Ducts:
   a) Concealed: Minimum 16-gauge welded black steel or minimum 18-gauge welded 304 stainless steel with No. 2B finish.
   b) Exposed: Minimum 18-gauge welded 304 stainless steel with No. 2B finish."
2. Dishwasher Exhaust Ducts: Minimum 18-gauge 304 stainless steel with No. 2B finish.
3. Exhaust Ducts Serving Shower Areas: Aluminum."

c. ADD subparagraph 9 in paragraph B of article 3.12, "Duct Schedules", ***to read as follows:***

"9. Kitchen Hood Exhaust-Air Ductwork:
   a. Pressure Class: Negative 3-inches wg (750- Pa).
   b. Seal Class: B.
   c. SMACNA Leakage Class for Rectangular: 12.
   d. SMACNA Leakage Class for Round and Flat Oval: 6."

d. ADD article 3.13 ***to read as follows:***

"3.13 ADDITIONAL INSTALLATION REQUIREMENTS FOR COMMERCIAL KITCHEN HOOD EXHAUST DUCT

A. Install commercial kitchen hood exhaust ducts without dips and traps that may hold grease, and sloped a minimum of 2 percent to drain grease back to the hood.

B. Install fire-rated access panel assemblies at each change in direction and at maximum intervals of 20-feet (6-m) in horizontal ducts, and at every floor for vertical ducts, or as indicated on Drawings. Locate access panel on top or sides of duct a minimum of 1½-inches (38-mm) from bottom of duct.

C. Do not penetrate fire-rated assemblies except as allowed by applicable building codes and authorities having jurisdiction.

D. Refer to Division 23 Section "HVAC Insulation" for application requirements of zero-clearance fire-rated insulation for kitchen hood exhaust duct."

Addendum 02 - Item 20. DIVISION 23, SECTION 233423:

a. ADD subparagraph 2 to paragraph B, "Housing," in article 2.1,"Centrifugal Roof Ventilators", ***to read as follows***:

"2. Upblast Units: Provide spun-aluminum discharge baffle to direct discharge air upward, with rain and snow drains and grease collector."

b. ADD paragraph J in article 2.1, "Centrifugal Roof Ventilators," ***to read as follows:***

"J. Belt Drives: Resiliently mounted to housing, with the following features:

1. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.

2. Shaft Bearings: Permanently lubricated, permanently sealed,

self-aligning ball bearings.

3. Pulleys: Cast-iron, adjustable-pitch motor pulley.

4. Fan and motor isolated from exhaust airstream."

Addendum 02 - Item 21. DIVISION 23, SECTION 237433:

a. ADD Section 237443 Split-Section Make-Up Air Unit

Addendum 02 - Item 22. DIVISION 27, SECTION 274115:

a. ADD 'Electronic Specialty Company' to Article 1.5-A, as approved equal.

Addendum 02 - Item 23. DIVISION 31, SECTION 312000:

a. REPLACE paragraph 2.1.B ***with the following***:

"B: Satisfactory Soils: Soil Classification Groups GW, GP, GM, GC, SW, SP, SM, SC, CL, CH, ML, CL-ML, and SP-SM according to ASTM D 2487, free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter and with Atterberg Limits meeting the criteria below.

i. Liquid Limit: See table in Section 3.13.
ii. Plasticity Index: See table in Section 3.13.
iii. Organic Content: Less than 4%.

b. REPLACE paragraph 2.1.D ***with the following***:

"D. Unsuitable Soils: Soil Classification Groups OL, MH, OH, and PT according to ASTM D 2487, or a combination of these groups."

c. REPLACE paragraph 3.15.C.1 ***with the following:***

"1. Under structures, building slabs, steps, and pavements, and within ten feet of any of these, scarify and recompact top 24 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent."

Addendum 02 - Item 24. DIVISION 32, SECTION 329200:

a. ADD paragraph 3.7.A.3, ***as follows:***

"3. Type III Seed (All areas outside the WVARNG property): Provide certified grass-seed blends or mixes, proportioned by weight, at 60 lbs per acre, as follows:

Proportion	Name	Min. Pct. Germ.	Min.Pct. Pure Sd.	Max.Pct. Weed Sd.
20 pct.	Turf type tall fescue	85	90	
25 pct.	Orchardgrass	85	90	
25 pct.	Timothy/Climax	85	90	
10 pct.	Perennial Ryegrass	85	95	
10 pct.	Medium Red Clover	85	90	
10 pct.	White Clover	85	90	

DRAWINGS:

Addendum 02 - Item 25. Drawing G-1.1:

a. **ADD** Drawing 'C1-7.2 BORROW AREA EROSION AND SEDIMENT CONTROL PLAN' to Drawing List

b. **ADD** Drawing 'A-5.7 SIGNAGE PLANS & DETAILS' to Drawing List

Addendum 02 - Item 26. DRAWING G-1.2:

a. **REPLACE** drawing G-1.2 with Drawing G-1.2, Revised 8-9-12

Addendum 02 - Item 27. Drawing C1-3:

a. **REPLACE** drawing with Drawings C1-3, Revised 8-6-12

Addendum 02 - Item 28. Drawing C1-3.2:

a. **REPLACE** drawing with Drawing C1-3.2, Revised 8-6-12

Addendum 02 - Item 29. Drawing C1-4:

a. **REPLACE** drawing with Drawing C1-4, Revised 8-6-12

Addendum 02 - Item 30. Drawing C1-4.3:

a. **REPLACE** drawing with Drawing C1-4.3, Revised 8-6-12

Addendum 02 - Item 31. DRAWING C1-4.4:

a. **REPLACE** drawing with Drawing C1-4.4, Revised 8-6-12

Addendum 02 - Item 32. DRAWING C1-4.5:

a. **REPLACE** drawing with Drawing C1-4.5, Revised 8-6-12

Addendum 02 - Item 33. DRAWING C1-4.6:

a. **REPLACE** drawing with Drawing C1-4.6, Revised 8-6-12

Addendum 02 - Item 34. DRAWING C1-4.7:

a. **REPLACE** drawing with Drawing C1-4.7, Revised 8-6-12

Addendum 02 - Item 35. DRAWING C1-6:

a. **REPLACE** drawing with Drawing C1-6, Revised 8-6-12

Addendum 02 - Item 36. DRAWING C1-6.1:

a. **REPLACE** drawing with Drawing C1-6.1, Revised 8-6-12

Addendum 02 - Item 37. DRAWING C1-7:

a. REPLACE drawing with Drawing C1-7, Revised 8-6-12

Addendum 02 - Item 38. DRAWING C1-7.1:

a. REPLACE drawing with Drawing C1-7.1, Revised 8-6-12

Addendum 02 - Item 39. DRAWING C1-7.2:

a. ADD Drawing C1-7.2, Issued 8-8-12

Addendum 02 - Item 40. DRAWING C2-1:

a. REPLACE drawing with Drawing C2-1, Revised 8-6-12

Addendum 02 - Item 41. DRAWING C2-2:

a. REPLACE drawing with Drawing C2-2, Revised 8-6-12

Addendum 02 - Item 42. DRAWING C2-3:

a. REPLACE drawing with Drawing C2-3, Revised 8-6-12

Addendum 02 - Item 43. DRAWING C2-12:

a. REPLACE drawing with Drawing C2-12, Revised 8-6-12

Addendum 02 - Item 44. DRAWING C2-13:

a. REPLACE drawing with Drawing C2-13, Revised 8-6-12

Addendum 02 - Item 45. DRAWING S-1.0:

a. REPLACE drawing with Drawing S-1.0, Revised 7-30-12

Addendum 02 - Item 46. DRAWING S-1.1:

a. REPLACE drawing with Drawing S-1.1, Revised 7-30-12

Addendum 02 - Item 47. DRAWING S-1.2:

a. REPLACE drawing with Drawing S-1.2, Revised 7-30-12

Addendum 02 - Item 48. DRAWING S-2.0:

a. REPLACE drawing with Drawing S-2.0, Revised 7-30-12

Addendum 02 - Item 49. DRAWING S-2.1:

a. REPLACE drawing with Drawing S-2.1, Revised 7-30-12

Addendum 02 - Item 50. DRAWING S-2.2:

a. REPLACE drawing with Drawing S-2.2, Revised 7-30-12

Addendum 02 - Item 51. DRAWING S-3.1:

a. REPLACE drawing with Drawing S-3.1, Revised 7-30-12

Addendum 02 - Item 52. DRAWING S-4.0:

a. REPLACE drawing with Drawing S-4.0, Revised 7-30-12

Addendum 02 - Item 53. DRAWING S-5.0:

a. REPLACE drawing with Drawing S-5.0, Revised 7-30-12

Addendum 02 - Item 54. DRAWING S-5.2:

a. REPLACE drawing with Drawing S-5.2, Revised 7-30-12

Addendum 02 - Item 55. DRAWING S-5.6:

a. REPLACE drawing with Drawing S-5.6, Revised 7-30-12

Addendum 02 - Item 56. DRAWING S-5.7:

a. REPLACE drawing with Drawing S-5.7, Revised 7-30-12

Addendum 02 - Item 57. DRAWING S-5.8:

a. REPLACE drawing with Drawing S-5.8, Revised 7-30-12

Addendum 02 - Item 58. DRAWING S-6.2:

a. REPLACE drawing with Drawing S-6.2, Revised 7-30-12

Addendum 02 - Item 59. DRAWING S-6.4:

a. REPLACE drawing with Drawing S-6.4, Revised 7-30-12

Addendum 02 - Item 60. DRAWING A-1.1:

a. REPLACE drawing with Drawing A-1.1, Revised 8-9-12

Addendum 02 - Item 61. DRAWING A-1.2:

a. REPLACE drawing with Drawing A-1.2, Revised 8-9-12

b. ADD Dry Erase boards (8'-0" W. x 4'-0" H.) to rooms 203 and 204

Addendum 02 - Item 62. DRAWING A-1.3:

a. ADD drawing SKA001, Issued/Revised 8-9-12; Referenced to Drawing (1/A-1.3)

Addendum 02 - Item 63. DRAWING A-1.4:

a. ADD drawing SKA002, Issued/Revised 8-9-12; Referenced to Drawing (1/A-1.4)

Addendum 02 - Item 64. DRAWING A-1.5:

a. REPLACE drawing with Drawing A-1.5, Revised 8-9-12

Addendum 02 - Item 65. DRAWING A-1.6:

a. REPLACE drawing with Drawing A-1.6, Revised 8-9-12

Addendum 02 - Item 66. DRAWING A-1.7:

a. REPLACE drawing with DRAWING A-1.7, Revised 8-9-12

Addendum 02 - Item 67. DRAWING A-5.1:

- **a. DELETE** detail 7/A-5.1 Detail – Bollard
- **b. CHANGE** wall type F16 to UL415 1 Hour rated Shaft Wall

Addendum 02 - Item 68. DRAWING A-5.2:

- **a. REPLACE drawing** with Drawing A-5.2, Revised 8-9-12

Addendum 02 - Item 69. DRAWING A5.3:

- **a. ADD** Note to Detail H7, "PAINTED BREAK METAL, TO MATCH DOOR FRAMES, TO COVER EXPOSED SHEATHING, BETWEEN DOOR FRAME & STRUCTURE"
- **b. ADD** Note to Detail H8, "PAINTED BREAK METAL, TO MATCH DOOR FRAMES, TO COVER EXPOSED SHEATHING, BETWEEN DOOR FRAME & STRUCTURE"
- **c. ADD** Masonry Anchors to Detail J-6/A-5.3
- **d. ADD** Masonry Anchors to Detail J-7/A-5.3
- **e. ADD** Masonry Anchors to Detail J-8/A-5.3
- **f. ADD** Masonry Anchors to Detail J-9/A-5.3
- **g. ADD** Masonry Anchors to Detail J-10/A-5.3
- **h. ADD** Masonry Anchors to Detail J-11/A-5.3
- **i. ADD** Masonry Anchors to Detail J-12/A-5.3
- **j. ADD** Masonry Anchors to Detail J-15/A-5.3
- **k. ADD** Masonry Anchors to Detail J-16/A-5.3
- **l.** CHANGE note in Detail H4/A-5.3 FROM "1 ½" METAL STUDS ON 16" O.C." TO "2 ½" METAL STUDS @ 16" O.C."

Addendum 02 - Item 70. DRAWING A-5.6:

- **a. REPLACE** drawing with Drawing A-5.6, Revised 8-9-12

Addendum 02 - Item 71. DRAWING A-5.7:

- **a. ADD** Drawing A-5.7 SIGNAGE PLANS & DETAILS, Revised/Issued 8-9-12

Addendum 02 - Item 72. DRAWING A-6.1:

- **a. REPLACE** section 1/A-6.1 with SKA003, Revised 8-9-12
- **b. REPLACE** detail 5/A-6.1 with SKA004, Revised 8-9-12

Addendum 02 - Item 73. DRAWING A-6.6:

- **a. CHANGE** note in details 1/A-6-6 and 5/A-6.6 ***FROM*** "3/4" FIRE RETARDANT PART. BOARD CORE PANEL W/ HARDWOOD VENEER ON ALL EXPOSED SURFACES. (TYPICAL)" ***TO*** Note "3/4" PART. BOARD CORE PANEL W/ HARDWOOD VENEER ON ALL EXPOSED SURFACES. (TYPICAL)

Addendum 02 - Item 74. DRAWING A-6.2:

- **a. REPLACE** section 4/A-6.2 with SKA005, Revised 8-9-12

Addendum 02 - Item 75. DRAWING A-6.9:

a. **DISREGARD** duplicate pendant light fixtures in the lobby interior views, only one set of pendants is needed for each view shown.

Addendum 02 - Item 76. DRAWING A-7.2:

a. **CHANGE** ceiling height in KITCHEN (Room 132) ***FROM*** 10'-0" A.F.F. ***TO*** 9'-0" A.F.F.

Addendum 02 - Item 77. DRAWING A-8.1:

a. **ADD** note indicating Trench Drain locations in the Shower rooms, 120A & 121A, as shown in Drawing A-1.1, Revised 8-9-12

Addendum 02 - Item 78. DRAWING H-1.1:

a. **REPLACE** drawing with Drawing H-1.1, Revised 8-14-12

Addendum 02 - Item 79. DRAWING H-1.2:

a. **REPLACE** drawing with Drawing H-1.2, Revised 8-14-12

Addendum 02 - Item 80. DRAWING H-1.5:

a. **REPLACE** drawing with Drawing H-1.5, Revised 8-14-12

Addendum 02 - Item 81. DRAWING H-1.8:

a. **REPLACE** drawing with Drawing H-1.8, Revised 8-14-12

Addendum 02 - Item 82. DRAWING H-4.1:

a. **REPLACE** drawing with Drawing H-1.1, Revised 8-14-12

Addendum 02 - Item 83. DRAWING H-4.1:

a. **REPLACE** drawing with Drawing H-1.1, Revised 8-14-12

Addendum 02 - Item 84. DRAWING ES-0.1:

a. **ADD** reference to Coded Note No. 5 at underground conduit shown next to trench designated with 5/ES-0.2.

Addendum 02 - Item 85. DRAWING ES-0.2:

a. **MODIFY** Detail 2/ES0.2 by reducing number of conduits to four (4) 4" conduits.

Addendum 02 - Item 86. DRAWING E-0.1

a. **CLARIFICATION** Under 'Power' heading, the 'Combination Power/Data Floor Box' should refer to detail 9/E-5.1.

b. **CLARIFICATION** Heading 'Audio/Visual System Rough-in' should read 'Audio/Visual System'.

c. **CLARIFICATION** Under 'Audio/Visual System Rough-in' heading, the 'Cable Television Outlet' should refer to detail 2/E-5.1.

d. **CLARIFICATION** Under 'Voice/Data Communications System' heading, the 'Voice/Data Modular Jack' should refer to detail 2/E-5.1.

e. **CLARIFICATION** Under 'Security System Rough-in' heading, the Security System Door Entry Intercom Master Station' and the 'Security System Fixed Video Station' should refer to detail 8/E-5.1.

f. **CLARIFICATION** Under 'General Notes', Note B-2 should refer to detail 3/E-5.1.

Addendum 02 - Item 87. DRAWING E-1.1:

a. **CHANGE** the following items in Recruiting (Room 101):

i. **Revise** reference to Coded Note No. 2 to be Coded Note No. 1.

ii. **Revise** dual switch to be single switch.

b. **ADD** wall switch and two (2) occupancy sensors for lighting to Mechanical 01 (Room 106)

Addendum 02 - Item 88. DRAWING E-1.2:

a. **CHANGE** dual switch to be single switch in the following rooms:

i. Supply Sgt (Room 109A)
ii. Admin (Room 111A)
iii. 1935th Office (Room 111)
iv. Admin (Room 111B)
v. Admin (Room 111C)
vi. Admin (Room 111D)
vii. Classroom (Room 112)
viii. Admin (Room 115A)
ix. Admin (Room 115B)
x. 229th Office (Room 115)
xi. Break Room (Room 117A)

b. **CLARIFICATION** Light fixtures should be Type G04 on circuit '5-1H1'in Supply Sgt (Room 109A)

c. **DELETE** one of the wall-box occupancy sensor light switches, in Storage (Room 114B)

d. **RELOCATE** three-way switches to be adjacent to the doors in Supply Room (Room 114)

e. **RELOCATE** switch shown outside door to inside door in Women 2 (Room 120)

f. **ADD** Type E02 light fixture on circuit '1-1H1' wired ahead of any local switching in Stor 02 (Room 122)

Addendum 02 - Item 89. DRAWING E-1.3:

a. **CHANGE** dual switch to be single-switch in the following rooms:

i. Admin (Room 202B)
ii. Admin (Room 202A)
iii. 601st Open Office (Room 202)
iv. Admin 202C, Admin (Room 202D)
v. 601st Platoon Office (Room 203)
vi. 601st Platoon Office (Room 204)

b. **REVISE** circuiting to Type G12 light fixtures to be 'N13-RP1' and 'E7-RP1' respectively, in the Upper Lobby.

Addendum 02 - Item 90. DRAWING E-2.1:

a. **DELETE** Coded Note No. 1 in its entirety.

b. **ADD** the following to Coded Note No. 11:

"LOCATE SWITCHES AT 48" A.F.F. ON WALL ADJACENT TO HOOD."

c. **CHANGE** the following in Lobby Area 01 (Room 100):
i. **REVISE** circuiting on one of the duplex receptacles designated with 'VM' to be '10-1L2' instead of '8-1L2'.

ii. **RELOCATE** three (3) duplex receptacles designated with 'VM' to west wall of Lobby 100B. Coordinate exact location with architect.

d. **CHANGE** the following in IT (Room 102)
i. **REVISE** Fire Alarm Control Panel (FACP) to be Fire Command Center (FCC).

ii. **PROVIDE** smoke detector on ceiling at FCC.

e. **DELETE** two (2) junction boxes referencing Coded Note No.1 and associated circuiting in Women 1 (Room 104)

f. **DELETE** two (2) junction boxes referencing Coded Note No. 1 and associated circuiting, in Men 1 (Room 105)

g. **ADD** duplex receptacle on north wall on circuit '56-1L1' at 48" A.F.F. for data rack in Storage (Room 119)

h. **CHANGE** the following in Kitchen (Room 132):

i. **REVISE** two disconnect switches to be NEMA 4X instead of NEMA 3R housings.

ii. **PROVIDE** power and fire alarm connection to Ansul panel, provided by HC. ***Refer to detail 10/E-5.1.***

iii. **PROVIDE** shunt-trip circuit breakers for items K1, K2, K3, K8 and K9. Connect shunt trip breakers to Ansul panel. ***Refer to detail 10/E-5.1 for requirements.***

Addendum 02 - Item 91. SHEET E-2.2:

a. **DELETE** Coded Note No. 1 in its entirety.

b. **CHANGE** the following to Vest 01 (Room 100A):

i. **ADD** Fire Alarm Annunciator Panel on east wall.

ii. **ADD** Area of Refuge Annunciator Panel on east wall. Provide power to panel from circuit '2-1NEL1'. ***Refer to Detail 11/E5.1 for system requirements.***

c. **RELOCATE** Fire Alarm Pull Station to be next to door in 601st Supply Room (Room 109)

d. **RELOCATE** Fire Alarm Pull Station to be next to door in 229th Supply Room (Room 114)

e. **ADD** the following in 229th Lab (Room 116):

i. 50' of two-channel steel raceway, Wiremold 4000 series or equal. Provide ten (10) duplex receptacles evenly spaced in raceway on circuits '58, 60, 62-1L1'. Coordinate exact location of raceway with architect in field.

ii. Receptacle for microwave on circuit '64-1L1'. Coordinate exact location with architect in field.

f. **PROVIDE** GFI type circuit breaker on circuit '1L1-27' in Break Room (Room 117A)

g. **DELETE** two (2) junction boxes designated by Coded Note No. 1 and associated circuiting in Women 2 (Room 120)

h. **DELETE** two (2) junction boxes designated by Coded Note No. 1 and associated circuiting in Men 2 (Room 121)

i. **ADD** smoke detector to Stor 02 (Room 122)

j. **ADD** smoke detector to Elec 01 (Room 122A)

k. **ADD** ceiling-mounted combination smoke/carbon monoxide detector in Sleeping Room (Room 125)

l. **ADD** ceiling-mounted combination smoke/carbon monoxide detector in Sleeping Room (Room 126)

Addendum 02 - Item 92. DRAWING E-.2.3:

a. **DELETE** Coded Note No. 1 in its entirety.

b. **PROVIDE,** in Jan 02 (Room 200), two (2) 4" conduits from end of cable tray, routed down wall, through floor and stubbed into accessible ceiling below.

c. **DELETE** two (2) junction boxes designated by Coded Note No. 1 and associated circuiting in Restroom (Room 201)

d. **ADD** Area of Refuge call station at elevator IN Corridor C5. ***Refer to detail 11/E5.1 for system requirements.***

e. **ADD** smoke detector and heat detector at top of Elevator Shaft.

Addendum 02 - Item 93. DRAWING E-3.1:

a. **REPLACE** drawing with Drawing E-3.1, Revised 8-14-2012

Addendum 02 - Item 94. DRAWING E-3.2:

a. **CLARIFICATION** Panel 1H1 should have 125A Main Lugs.

b. **CLARIFICATION** Panel 1H2 should have 125A Main Lugs ***(main circuit breaker is not required).***

c. **CLARIFICATION** Panel 1NEH2 should have 200A/3P Main Circuit Breaker.

Addendum 02 - Item 95. DRAWING E-4.1:

a. **CHANGE** detail reference on tag for DWH-1 to be 6/E5.3 in Mechanical 01 (Room 106)

b. **CHANGE** DHU-1 to be DH-1 in Vault (Room 109C)

c. **CHANGE** DHU-2 to be DH-2 in Vault (Room 114C)

d. **CHANGE** FPB-10 to be on circuit '2-1H1' in 229th Supply Room (Room 114)

e. **CHANGE** RP-2 and DWH-1 to be on circuit '51-1L1' in Mech 02 (Room 118)

f. **ADD** power connection to SFC-2 from circuit '61-1L1 in Stor 02 (Room 122). ***Reference detail 1/E5.3.***

g. **ADD** power connection to SFC-3 from circuit '63/65-1L1' in Elec 01 (Room 122A). ***Reference detail 1/E5.3.***

h. **CHANGE** the following in Kitchen (Room 132) (Roof Above):

i. **ADD** power connection to ACC-1 from Panelboard 1DH1. ***Provide*** 60A disconnect switch in NEMA 3R enclosure fused at 60A. ***Reference detail 2/E5.3.***

ii. **ADD** power connection to RTU-7 from Panelboard 1DH1. ***Provide*** 30A disconnect switch in NEMA 3R enclosure fused at 25A. ***Reference detail 2/E5.3.***

iii. **ADD** power connection to EF-6 from Panelboard 1DH1. ***Reference detail 3/E5.3.***

iv. **ADD** power connection EF-7 from circuit '7-1L2'. ***Reference detail 5/E5.3***.

i. **ADD** power connection to CU-2 next to CU-3 from circuit '61-1L1' at Roof. ***Reference detail 1/E5.3.***

Addendum 02 - Item 96. DRAWING E-5.1:

a. **DELETE** Fire Alarm System Note No. 2 in its entirety ***from*** Detail 5/E-5.1 Addressable Fire Alarm/Mass Notification System Typical Riser.

b. **ADD** Detail 10/E5.1 Ansul System Interconnect Wiring Diagram as shown in sketch SKE-E-5.1, Issued 8-14-12.

c. **ADD** Detail 11/E5.1 Area of Refuge Riser Diagram as shown in sketch SKE-E-5.1, Issued 8-14-12.

Addendum 02 - Item 97. DRAWING E-5.2:

a. **CHANGE** the folloing in the Lighting Fixture Schedule :

v. **DELETE** 'Step-Dim' from Type G04 ballast requirement.

vi. **PROVIDE** Bodine Emergency Transfer Ballast for fixture types G01, G02, G04, G05 and G12 where shown on drawings.

vii. **PROVIDE** integral photocell and dimming ballast for Type G05, where indicated on drawings.

b. CHANGE Detail 6/E5.2 Conference Center Dimming Rack Control Wiring Diagram - Entrance Station is typical of four locations, not two.

c. CHANGE the following in Detail 7/E5.2 Low Voltage Lighting Control Riser :

i. **ADD** Relays N13 and E7 to respective sections of panel RP1 to control lighting in Lobby. Lighting control shall be time clock with occ sensor and ambient light sensor override.

ii. **CLARIFICATION** Relays N1 and E1 shall also be controlled with ambient light sensor.

iii. **CLARIFICATION** Relays N3 and E3 shall not be controlled with ambient light sensor.

iv. **ADD** three additional spare relays to normal section and one additional spare relay to emergency section to make a 24-relay panel.

v. **DELETE** General Notes 'B' and 'E' in their entirety.

Addendum 02 - Item 98. DRAWING E-5.3:

a. CHANGE the following in the Mechanical Equipment Schedule:

vi. **CHANGE** circuit breaker associated with JP-1 to be 15A/3P instead of 20A/3P. Feeder shall remain as scheduled.

vii. **CHANGE** circuit breaker associated with RTU-6 to be 60A/3P instead of 50A/3P. Revise feeder to be 3-#4AWG and 1-#10AWG in 1 ¼" conduit.

viii. **ADD** the following:

EQUIP. TAG	DESCRIPTION	LOAD	VOLTAGE & PHASE	BRANCH CIRCUIT PROTECTION	BRANCH CIRCUIT SIZE AND TYPE					CONDUIT SIZE
					CONDUCTORS			GROUND		
					NO.	SIZE	TYPE	SIZE	TYPE	

ACC-1	AIR COOLED CONDENSER	39.7 MCA	480V, 3%%C, 3W	60A/3P	3	4AWG	CU THWN	10AWG	CU THWN	1 1/4"
EF-6	EXHAUST FAN	2 HP	480V, 3%%C, 3W	15A/3P	3	12AWG	CU THWN	12AWG	CU THWN	3/4"
EF-7	EXHAUST FAN	1/4 HP	120V, 1%%C, 2W	20A/1P	2	12AWG	CU THWN	12AWG	CU THWN	3/4"
RTU-7	ROOF-TOP UNIT	16 MCA	480V, 3%%C, 3W	25A/3P	3	10AWG	CU THWN	10AWG	CU THWN	3/4"

Addendum 02 - Item 99. DRAWING E-5.4:

a. CHANGE the following in Detail 2/T311:

ix. **CLARIFICATION** Detail should be numbered 1/E-5.4.

x. **CHANGE** tag at 12 Port Fiber Optic Distribution Shelf to be C10 instead of C09 and **Revise** description to be 72 Port Fiber Optic Distribution Shelf.

xi. **ADD** second data rack. Rack shall be wall-mounted, enclosed rack, item tag A02. Rack should have 24 Port Fiber Optic Distribution Shelf, 48 Port Telephone Patch Panel and a minimum of two (2) 48 port Category 6e patch panels (exact quantity as required by quantity of data jacks as described in Rack Requirements Note E). Provide 24 strand fiber optic (6 multi-mode, 6 single-mode) and 50-pair Category 3 backbone cabling between data rack in IT 102 and new data rack in Storage 119. Provide all required terminations.

b. **CLARIFICATION** Detail 1/E-7.5 should be detail 2/E-5.4.

Addendum 02 - Item 100. DRAWING E-7.2:

a. ADD data jack at Area of Refuge Annunciator Panel in Vest 01 (Room 100A)

b. ADD ten (10) data jacks evenly spaced in surface mounted raceway in 229th Lab (Room 116). Coordinate exact location with architect in field.

c. ADD wall-mounted data rack on north wall in Storage (Room 119). Coordinate exact location with architect.

d. ADD data jack with one (1) cable for switchboard metering in Elec 01 (Room 122A). Coordinate exact location and connection requirements with switchboard manufacturer's recommendations.

Addendum 02 - Item 101. DRAWING P-0.0:

a. CHANGE the fixture descriptions ***to read the following:***

"L-1: Basin integral with Countertop; Battery Infrared Faucet, ADA, 0.5 GPM.

L-2: ADA Wall-hung Lavatory; Battery Infrared Faucet, ADA, 0.5 GPM.
U-1: Wall Hung; Battery Infrared Flush Valve; 0.125 GPF.
U-2: Wall Hung; Battery Infrared Flush Valve; 0.125 GPF, ADA.
WC-1: Wall Hung; Battery Infrared Flush Valve; 1.28 GPF.
WC-2: Wall Hung; Battery Infrared Flush Valve; 1.28 GPF, ADA."

b. ADD note to the plumbing general notes:

"Y: All plumbing lines to be concealed in walls."

Addendum 02 - Item 102. DRAWING P-01:

a. DISREGARD detail #7: Wiring Diagram for Electronic Flush Valves.

b. ADD the following note to the Downspout boot detail:

"PAINT CAST IRON DOWNSPOUT BOOT TO MATCH DOWNSPOUT"

Addendum 02 - Item 103. DRAWING P-1.1:

a. **REPLACE** drawing with Drawing P-1.1, Revised 8-14-12

Addendum 02 - Item 104. DRAWING P-1.2:

b. **REPLACE** drawing with Drawing P-1.2, Revised 8-14-12

Addendum 02 - Item 105. DRAWING P-1.3:

a. CLARIFICATION, The 4" rainwater conductor piping from the canopy drain shall drop at column lines 7 & N in lieu of column lines 6 & N.

Addendum 02 - Item 106. DRAWING P-2.1:

a. DISREGARD coded notes #8 & #9 on the drawing.
b. DISREGARD all the junction boxes and control wiring that coded notes #8 & #9 are referencing in details #1, #2, & #3.

Addendum 02 - Item 107. DRAWING FP-1.0:

a. PROVIDE an alarm panel for the fire pump on the Corridor C5 wall right outside Sprinkler Entrance 134. ***Specifications for the alarm panel is provided in section 213113.***

Addendum 02 - Item 108. DRAWING FP-1.3:

a. PROVIDE a water curtain for sprinkler heads at 6' spacing on both sides of the glazing between Lobby Area 01 & Corridor C5. This glazing is located outside and between the 2nd floor stairwell and the elevator.

FOR CLARIFICATION / INFORMATION

1. Pre-Construction Meeting Minutes and Sign-in Sheet are included with this addendum.

2. This project is not tax exempt and the contractor will be required to pay all applicable state and local taxes.

3. The shop drawing submittal schedule is to be submitted indicating when submittals are anticipated to be submitted and the required time for return. Long lead time items such as foundation and framing steel drawings and submittals that require MEP or Civil review are to be given extra time for consultant review.

4. Phase 1 of the Unheated Storage Building shall be located 35' from the Readiness Center main building. The drawings and bid forms included in the addendum do not reflect the revised distance between the two buildings.

REQUESTS FOR INFORMATION:

Be it known that the following written requests for information were received through the end of business August 9th, 2012. Each written request for information is followed by the appropriate answer.

1. **Q: How will bid item "Unclassified Excavation" be measured?**
   - ***a.*** *It will be measured using before and after surveyed cross sections and the average end area formula for volume. The description for this bid item will be revised in an addendum.*

2. **Q**: **Can overhead and profit be added to bid items that are an allowance?**
   - ***a.*** *No, the allowance items are a direct reimbursement for an invoice received, with no markups of any kind.*

3. **Q: What is the "Subgrade Preparation" bid item?**
   - ***a.*** *It is the removal and recompaction of 24" of soil subgrade in areas of cut that do not pass a proof roll.*

4. **Q: How large is the "waste" area?**
   - ***a.*** *The project does not have an area to waste unwanted soils. However, there is an area designated for excess fill material. Any material placed in that area must be placed and compacted as fill to a minimum of 85% of maximum dry unit weight according to ASTM D1557. The*

area designated for excess fill will be shown on the revised grading plan to be issued in an addendum.

5. **Q: Can the deadline for RFI's be extended?**
   - **a.** *No, the August 9th deadline is already an extension*

6. **Q: I cannot find a pier schedule. It is referred to several times.**
   - ***a.*** *There is no Pier Schedule, Pier Reinforcing is on a Typical Detail, Pier Sizes are on the Foundation Plans, and the Top Pier Elevation is on the Column Schedule.*

7. **Q: The door hardware schedule in the specs does not match the door schedule on A-5.2.**
   - ***a.*** *Resubmitting sheet A-5.2, Revised 8-9-12, in Addendum 02.*

8. **Q: There is no specification for the vault doors.**
   - ***a.*** *Sheet A-5.2, Revised 08-09-12 included in Addendum 02 includes Vault Door specifications.*

9. **Q: There is no specification for the metal building for unheated storage. The only foundation shown is a slab on grade, no details. There are usually piers and footing for the columns.**
   - ***a.*** *Resubmitting Sheet A-1.7, Revised 8-9-12, in Addendum 02.*

10. **Q: Are the unit prices listed in the alternates, suppose to have the same unit price value listed in the base bid? Or, can a different unit cost be provided for the alternates?**
    - ***a.*** *Submit required substitution information per spec section 016350*

11. **Q: Requesting approval to bid the following suppliers for Section 102226, Operable Partitions.**
    1. **Kwik-Wall**
    2. **Moderco (Moderco is a new supplier.)**
    - ***a.*** *Submit required substitution information per spec section 016350*

12. **Q: Specs call for ivany block at the stairs and elevator. No horizontal reinforcement is shown.**
    - ***a.*** *Disregard Ivany Block requirement*

13. **Q: What is the vertical reinforcement spacing for the 8" cmu walls?**
    - ***a.*** *The Wall Sections for the Elevator and Stair Towers Show the Reinforcing*

14. **Q: Doors 115 and 117 should be frame F3?**

a. *Door 115 to be frame F3 and Door 117 to be frame F3M (mirrored)*

15. Q: Doors 110A,B,C and 132B,C do not show door or frame types.

a. *Resubmitting sheet A-5.2, Revised 8-9-12, in Addendum 02.*

16. Q: Which windows get horizontal louver blinds?

a. *The following rooms are to have horizontal louver blinds:*

Rooms 110, 111, 111A, 111B, 112, 115A, 115, 117A, 125, 126, 127, 128, 129, 202, 202C, 203, & 204

17. Q: Visual display boards are spec'd but none shown.

a. *Resubmitting Sheets A-1.1 and A-1.2, Revised 8-9-12, in Addendum 02.*

18. Q: Signs for rooms are not indicated.

a. *Adding sheet "A-5.7 SIGNAGE PLANS AND DETAILS", Issued/Revised 8-9-12, in Addendum 02.*

19. Q: There is no spec for the fire retardant particle board core panel with hardwood veneer.

a. *See notes for changes to Drawings 1/A-6.6 and 5/A-6.6.*

20. Q: There is no Division 13 specification included in the project manual. Please provide specifications for the pre-engineered building.

a. *Submitting Specification Section 133419 Metal Building Systems in Addendum 02.*

21. Q: In section 2 of the bid form, there are breakout and unit prices shown to be submitted with the bid. The number of these breakouts, along with the number of proposals that invariably arrive close to the time for submission of the bid, is going to make it very difficult on bid day to ensure that we are using the best responsible subcontractor bids, and breaking everything out correctly. The requirement to submit this information with the bid has been waived on State of West Virginia projects that we have bid in the past, and altered to allow submission of this information within a given time after bids are submitted. Could this requirement be adjusted to allow submission of the information after the bid is submitted?

a. *This requirement is not being adjusted or waived.*

22. Q: Specification section 101100 indicates markerboards and tackboards, but does not list size requirements or locations. I cannot locate this information on the plans. What sizes are required for these items, and where are they located?

a. *Marker Boards required in rooms:*

(Sheet A-1.1 Rev 8-9-12) 111, 112, 116, & 117

(Sheet A-1.2 Rev 8-9-12) 127 & 129

(As noted per Add 02) 203 & 204

b. *Remove Tackboards from Specification 101100.*

23. Q: Does specification section 105113 apply to both the personnel lockers located in Rooms 120 and 121, and to the lockers in Room 124?

a. *For rooms 120 & 121, provide lockers with louvered doors and un-perforated sides*

b. *For room 124, provide lockers with perforated doors and sides.*

24. Is there a list of approved manufacturers for the locker benches?

a. *Refer to list of Metal Locker Manufacturers in Section 105113.*

THE OMNI ASSOCIATES - ARCHITECTS

Richard T. Forren, AIA, NCARB
Principal

STATE OF WEST VIRGINIA
RICHARD T. FORREN No 2230
REGISTERED ARCHITECT

END OF ADDENDUM

Enclosures:

1. Revised “Table of Contents”
2. Bid Form Section I
3. Addendum Bid Form Sect II
4. Addendum Bid Item Descriptions III
5. Indemnity and Hold Harmless Agreement
6. Sample Certificates of Insurances
7. Specification Section 012100 Allowances
8. Specification Section 012300 Alternates
9. Specification Section 087100 Door Hardware
10. Specification Section 122413 Roller Window Shades
11. Specification Section 133419 Metal Building Systems
12. Specification Section 221313 Facility Sanitary Sewers
13. Specification Section 237433 Make-Up Air Units
14. Drawing G-1.2
15. Drawing C1-3
16. Drawing C1-3.2
17. Drawing C1-4
18. Drawing C1-4.3
19. Drawing C1-4.4
20. Drawing C1-4.5
21. Drawing C1-4.6
22. Drawing C1-4.7
23. Drawing C1-6
24. Drawing C1-6.1
25. Drawing C1-7
26. Drawing C1-7.1
27. Drawing C1-7.2
28. Drawing C2-1
29. Drawing C2-2
30. Drawing C2-3
31. Drawing C2-12
32. Drawing C2-13
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WVARNG Buckhannon Armed Forces Readiness Center
BID FORM - SECTION I
(Base Bid and Alternates)

Dated:_____
(Bidder to insert date bid submitted)

SUBMITTED BY:

_____ *(Hereinafter called "Bidder")*

West Virginia Contractor's License Number: WV_____

SUBMITTED TO:

The State of West Virginia *(hereinafter called "Owner")*

The Bidder, being familiar with local conditions affecting the cost of the Work and the contract documents, including Instructions to Bidders, Bid Form, General Conditions, Drawings, Specifications, and any Addenda or Clarifications issued, hereby proposes to furnish all material, labor, tools, taxes, transportation and expendable equipment and all service necessary to complete in a workman like manner all the work required for:

The Buckhannon Armed Forces Readiness Center
West Virginia Army National Guard
Buckhannon, Upshur, West Virginia

All in accordance with the Drawings and Specifications as prepared by Omni Associates-Architects, Inc., 1543 Fairmont Avenue, Fairmont, West Virginia 26554 (304)367-1417.

BASE BID:

For the Sum of:

_____

_____

_____ ($_____)

(The Base Bid includes the summation of items as described in Section II of the Bid Form.)

ALTERNATES:
The stated base bid is subject to the following additions for Alternates which the Owner may select. ('Provide' means 'furnish and install.' Include in bids below all related coordination and modification requirements associated with the Work of each Alternate.)

The OWNER may or may not select the deductive alternate.

The contract will be awarded based on the grand total of the Base Bid, the Deductive Alternate if selected, and any Alternate Bid Items. OWNER will select Alternate Bid Items by funding source in the order presented in the bid documents, and OWNER reserves the right to accept or reject the alternate bid(s) if the costs exceed the amount budgeted by funding source for the Project. This language supersedes any language contained in the AIA A701 with reference to the acceptance of bid (award).

Refer to Section 012300 entitled "Alternates" for description of Alternates *(Amount to be shown in both words and numbers.)***:**

DEDUCTIVE ALTERNATES (Federal Funding):

Alternate No. 1: Asphalt Paving – **CIRCLE DEDUCT OR ADD**

DEDUCT or ADD the sum of: _____

_____($_____).

ADDITIVE ALTERNATES (Federal Funding):

Alternate No. 2: Wash Rack

ADD the sum of: _____

_____($_____).

Alternate No. 3: Loading Ramp

ADD the sum of: _____

_____($_____).

Alternate No. 6: Military Equipment Parking Concrete Paving

ADD the sum of: _____

_____($_____).

Alternate No. 7: Fuel Point

ADD the sum of: _____

_____($_____).

Alternate No. 8: Roof Screen

ADD the sum of: _____

_____($_____).

Alternate No. 9: Wall Coverings for Rooms 130 & 131

ADD the sum of: _____

_____($_____).

ADDITIVE ALTERNATES (State Funding):

Alternate No. 4: Operable Partition Walls

ADD the sum of: _____

_____($_____).

Alternate No. 5: AV and Lighting Controls for Conference Center and Classrooms

ADD the sum of: _____

_____($_____).

Alternate No. 10: Security Fencing Upgrade

ADD the sum of: _____

_____($_____).

Alternate No. 11: Increase Size of Emergency Generator

ADD the sum of: _____

_____($_____).

If awarded contract on Base Bid, I (we) agree to perform the work to completion and ready for operation and use no later than **730 days** from Notice to Proceed. The Contractor has up to 90 days to request Notice to Proceed. In addition to liquidated damages specified in Federal Guidelines, General Provisions 54, an additional fee of $1,250.00 for the first day to cover expenses to the Government will be assessed. Total liquidated damages are $2,750.00 first day and $1,500.00 per day thereafter for work not completed after contract completion date.

For the purpose of this contract, one calendar day is counted from midnight to midnight and also any part of that 24-hour day period shall be counted as one calendar day. The Bidder certifies that this bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this bid with any other bidder or with any competitor. The Bidder agrees that the Owner reserves the right to reject any or all bids, and to waive any formalities in the bidding. The Bidder agrees that this bid shall be good and binding and may not be withdrawn for a period of 120 days.

The Bidder acknowledges receipt of the following Addenda: (Please list by number and date.)

_____ _____ _____ _____

SIGNATURE OF BIDDER:

Firm: _____ By: _____

Address: _____ Title: _____

Address: _____ Phone: _____

Address: _____ Fax: _____

Tax Cert#: _____

END OF SECTION I

BID FORM - SECTION II – (Unit Prices)

The costs indicated below are included in, and are a breakdown of, the Base Bid. In the event the total segregated prices shown below differ from the Base Bid indicated above, the Base Bid will govern.

In the event that unit quantities stated below differ from quantities required for completion of the Work, unit costs as stated below shall be the basis of adjustments in Contract Sum, in accordance with Contract Conditions, Section 012200 – Unit Prices.

Item No.	Description	Unit	Quantity	Unit Price	Amount
General Contract Administration					
1	Armed Forces Readiness Center	LS	1		
1a	Fire Pump	LS	1		
1b	Kitchen, Chair/Table Storage, Corridor	LS	1		
2	Mobilization/Demobilization	LS	1		
3	General Administration	LS	1		
4	Project Quality Control	LS	1		
Site Preparation					
5	WVDOH Encroachment Permit (Allowance No. 1)	LS	1	$2,000.00	
6	Site Preparation	LS	1		
7	Building Demolition	LS	1		
8	Sediment and Erosion Control	LS	1		
9	Retention Pond	LS	1		
10	Waste Removal	TN	2		
11	Utility Relocation (Allowance No. 2)	LS	1	$5,000.00	
Earthwork					
12	Unclassified Excavation	CY	64,000		
13	Lean concrete Backfill	CY	200		

14	Subgrade Preparation	SY	30,000		
15	Soil Drying	TN	100		
16	Removal and Replacement	CY	2,000		
17	Over-Excavation	SY	500		
18	6” Subsurface Drains	LF	1,500		
Roads and Paving					
19	7” Concrete Paving	SY	13,600		
20	Free Draining Base Trench and Piping	LF	4,078		
21	Fabric Separation	SY	13,600		
22	Fabric Woven	SY	10,180		
23	Hardstand Paving	SY	10,180		
24	Pavement Marking	LS	1		
25	Wheel Stops	EA	146		
26	Concrete Curbing	LF	58		
27	Signage	LS	1		
28	Gravel Apron	LF	758		
Miscellaneous					
29	Sidewalk	SY	1,100		
30	Type I Lawns	LS	1		
31	Type II Lawns	LS	1		
32	Type III Ground Cover	LS	1		
33	Farm Gate	EA	1		
34	5’ Personnel Gate	EA	2		
35	16’ Double Swing Gate	EA	2		

36	20’ Sliding Gate	EA	1		
37	24’ Sliding Gate	EA	1		
38	Field Fencing	LF	3,045		
39	Security Fencing	LF	1,252		
40	40’ Flagpole	EA	1		
41	Force Protection Wall	LF	960		
42	Loading Dock Wall	LS	1		
43	Bollards 8”	EA	13		
44	Bollards 12”	EA	2		
45	Bollards Removable	EA	3		
46	Trash Enclosure	LS	1		
47	Fuel Truck Pad	LS	1		
48	Gravel Maintenance Strip	LF	652		
Water					
49	4” PVC Water	LF	15		
50	6” PVC Water	LF	1,795		
51	10” PVC Water	LF	143		
52	12” PVC Water	LF	244		
53	12” DIP Water	LF	40		
54	Fire Hydrant	EA	3		
Sewer					
55	Manholes, Sanitary Sewer	VF	35		
56	Frame and Cover, Sanitary Sewer	EA	5		
57	4” PVC Sanitary Sewer	LF	50		

58	6” PVC Sanitary Sewer	LF	181		
59	8” PVC Sanitary Sewer	LF	350		
60	8” DIP Sanitary Sewer	LF	40		
Gas					
61	3” Gas Service Line	LF	652		
Storm Drainage					
62	6” PVC Storm	LF	518		
63	8”PVC Storm	LF	815		
64	12” PVC Storm	LF	245		
65	12” HDPE Storm	LF	232		
66	18” HDPE Storm	LF	1,152		
67	24” HDPE Storm	LF	707		
68	30” HDPE Storm	LF	459		
69	Type 2 Ditch	LF	30		
70	Type 4 Ditch	LF	3,488		
71	Junction Box	EA	3		
72	Type “B” Drop Inlets	EA	19		
73	Type “G” Drop Inlets	EA	3		
74	12” In-Line Yard Drain	EA	4		
75	Drain Basin	EA	15		
76	Trench Drain and Grate	LF	24		
77	Concrete Headwall	EA	4		
				BASE BID TOTAL	

BID ALTERNATES - DEDUCTIVE

BID ALTERNATE #1 – Asphalt Paving –WRITE IN DEDUCT OR ADD ----------→

78	HMA Wearing Course	TN	1,006		
79	HMA Base Course	TN	4,348		
80	Free Draining Base	TN	2,818		
19	7” Concrete Paving (Deduct)	SY	-3,201		
				Alt. Total	

BID ALTERNATES - ADDITIVE

BID ALTERNATE #2 – Wash Rack

19	7” Concrete Paving	SY	700		
20	Free Draining Base Trench and Piping	LF	176		
21	Fabric Separation	SY	700		
81	1-1/2” PVC Water	LF	636		
58	6” PVC Sanitary Sewer	LF	68		
82	Cleanout, Sanitary Sewer	EA	1		
83	Oil/Water Separator	EA	1		
84	Vehicle Wash Rack	LS	1		
				Alt. Total	

BID ALTERNATE #3 – Loading Ramp					
19	7” Concrete Paving	SY	1,390		
20	Free Draining Base Trench and Piping	LF	40		
21	Fabric Separation	SY	1,390		
88	30’ Double Swing Gate	EA	1		
65	12” HDPE Storm	LF	130		
72	Type “B” Drop Inlets	EA	2		
89	Loading Ramp	LS	1		
				Alt. Total	

BID ALTERNATE #6 – Military Equipment Parking Concrete Paving					
19	7” Concrete Paving	SY	9,393		
21	Fabric Separation	SY	9,393		
22	Fabric Woven (Deduct)	SY	-9,393		
23	Hardstand Paving (Deduct)	SY	-9,393		
				Alt. Total	

BID ALTERNATE #7 – Fuel Point					
19	7” Concrete Paving	SY	855		
20	Free Draining Base Trench and Piping	LF	223		
21	Fabric Separation	SY	855		
58	6” PVC Sanitary Sewer	LF	110		
60	8” DIP Sanitary Sewer	LF	40		
82	Cleanout, Sanitary Sewer	EA	1		
85	Fuel Point	LS	1		
86	Fuel Dispensing System (Allowance No. 3)	LS	1	$66,000.00	
				Alt. Total	

BID ALTERNATE #10 – Security Fencing Upgrade					
87	Upgrade to 8’ Fabric	LS	1		
				Alt. Total	

SECTION III – DESCRIPTION OF BID ITEMS

Bid Item 1: **Armed Forces Readiness Center**

Unit: Lump Sum (LS)

Description: The item shall consist of any and all material, equipment, and labor for items required by the contract documents to provide a complete and functional Armed Forces Readiness Center building and/or assembly as shown under Base Bid in the drawings and Specifications. The Readiness Center includes lobbies, corridors, administration space, recruiting and family support space, educational facilities, storage, locker rooms, physical training rooms, mail rooms, toilets, janitor closets, as well as mechanical, electrical, and data rooms.

This item shall include any additional items related to Site Construction where a unit cost has not been requested. Additionally, this work shall include site utilities, excavation and backfill to foundation Subgrade for utilities and foundations, and grading within five feet of the building perimeter. The work shall include, but is not limited to, all materials, labor, equipment, and incidentals to construct the facility within the terms and conditions of the plans and specifications. This work also includes, but is not limited to: building excavation; backfill; foundation systems; gravel dry beds; concrete; masonry; veneer brick; structural steel; metal stud framing; pre-engineered; metal trusses; carpentry and wood decking; waterproofing; insulation; roofing; interior and exterior walls; railings; doors; windows; finishes; casework; mechanical systems; electrical systems; fire suppression systems (see item 1a for separate line item pricing of Fire Pump); fire alarm; and data systems. The full extent of this work is defined by the Contract Documents, including the Drawings and Project Manual as well as any addenda issued during the bidding process. Work shall include, but is not limited to, providing labor, materials, equipment, and incidentals necessary to perform all items of work.

Measurement: Measurement will be based on completion of the work described and accepted by the Contraction Officer Technical Representative (COTR)

Payment: Payment for item will be in accordance with the specifications

Bid Item 1a: **Fire Pump**

Unit: Lump Sum (LS)

Description: The item shall consist of any and all material, equipment, and labor for items required by the contract documents to provide a complete and functional Fire Pump and associated items as shown under Base Bid in the drawings and Specifications.

Measurement: Measurement will be based on completion of the work described and accepted by the Contraction Officer Technical Representative (COTR)

Payment: Payment for item will be in accordance with the specifications

Bid Item 1b:	**Kitchen, Table/Chair Storage, Corridor (Rooms 132, 133 and C3)**
Unit:	Lump Sum (LS)

Description: Due to Funding Source requirements list as a lump sum the price for all items required for the construction of the Kitchen, Table Storage, Corridor section of the building. The cost should include all structure, mechanical, electrical, plumbing and finishes required to complete the indicated area. All items such as the RTU's over this area that are required for other parts of the building are to be priced under Item No. 1 "Armed Forces Readiness Center".

Measurement: Measurement will be based on completion of the work described and accepted by the Contraction Officer Technical Representative (COTR)

Payment: Payment for item will be in accordance with the specifications

Bid Item 2:	**Mobilization/Demobilization**
Unit:	Lump Sum (LS)

Description: This work shall consist of the performance of construction preparatory operations, including the movement of personnel, equipment, and materials to and from the project site; payment of performance bond, guaranty bond, and other insurance premiums; establishment and removal of the contractor's field office and storage facilities, including fenced enclosure of staging area.

Measurement: Measurement will be based on completion of the work described, prorated from lump sum amounts according to the Basis of Payment below.

Payment: Payment for item will be in three installments. The first payment of 50 percent of the lump sum price will be made on the first estimate following partial mobilization including the placement or erection of the Contractor's office and storage facilities and the initiation of construction work. The second payment of 25 percent will be made on the next estimate following completion of substantial mobilization. The remaining 25 percent will be paid upon demobilization and satisfactory restoration of the contractor's staging and work area and final completion of the Project.

Bid Item 3:	**General Administration**
Unit:	Lump Sum (LS)

Description: This work shall consist of performing the construction administrative duties associated with managing the construction of the Project as stated in Division 1 and throughout the Specifications, providing construction layout, providing temporary utilities for the site until 100% acceptance of the project by the COTR, and coordination of permanent utility installation and tie-in of site grading and access roads, administration and maintenance of all required permits for the project, including permit fees, and City of Fairmont Business and Occupation Taxes. In addition to any State and Federal permits, the City of Fairmont requires a "Grading, Filling, or Clearing" permit. West Virginia Department of Highways Encroachment and Highway Entrance Permits are included in this bid item.

Measurement: Measurement will be based on completion of the work described, prorated from lump sum amounts according to the Basis of Payment below.

Payment: Payment for item will be in three installments. The first payment of 25 percent of the lump sum price will be made upon 25 percent of completion of the Project. The second payment of 50 percent will be made upon the completion of 75 percent of completion of the Project. The remaining 25 percent will be paid upon completion of the Project.

Bid Item 4: Project Quality Control

Unit: Lump Sum (LS)

Description: This work shall consist of establishing and maintaining a Quality Control Program throughout the duration of the project.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item

Payment: This item will be paid for at the contract lump sum price, based on percentage of completion.

Bid Item 5: WVDOH Encroachment Permit (Allowance)

Unit: Lump Sum (LS) (Allowance No. 1)

Description: This work shall consist of obtaining encroachment permit(s) for the access road tie-in, grading, and stormwater drainage on WVDOH right of ways as shown on the Plans or as required by the WVDOH. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The Contractor will not bid on this work, but will be reimbursed the actual permit fee(s). The Contractor shall submit an estimate for the permit(s) to the COTR for approval prior to submitting the application(s).

Payment: This item shall be reimbursed by submitting the permit fee(s) receipt(s), based on acceptance of the encroachment(s) by the WVDOH and the COTR.

Bid Item 6: Site Preparation

Unit: Lump Sum (LS)

Description: This work shall consist of the removal of trees and other vegetation, topsoil stripping and stockpiling, removal of existing utilities, installation of temporary utilities, and clearing and grubbing of all areas disturbed by the Contractor. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the contractor in completing this item.

Payment: Payment shall be made at the contract unit price per lump sum.

Bid Item 7: Building Demolition

Unit: Lump Sum (LS)

Description: This work shall consist of the demolition of structures as shown on the plans, salvaging specified equipment and disposing of all materials off site in an approved landfill or other approved disposal facility.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract per lump sum price upon satisfactory completion and acceptance by the COTR.

Bid Item 8: Sediment and Erosion Control

Unit: Lump Sum (LS)

Description: This item shall consist of furnishing, installation, maintenance and subsequent removal of necessary storm water structures, best management practices, and other work required to prevent escape of sediment from disturbed areas of project site. Also included is the preparation of a modification to the existing WV NPDES permit, submission, and administrative maintenance of any permits required by the West Virginia Department of Environmental Protection (WVDEP) or other agencies. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the contractor in completing this item.

Payment: Payment for item shall be in three installments. The first payment of 50% of the lump sum price shall be made on the first estimate following issuance of a modification to the existing WV NPDES Construction Stormwater Permit and installation of best management practices required by the approved Stormwater Pollution Prevention Plan. The second payment of 25% shall be made on the next estimate following finish grading and stabilization of all waste and borrow areas. The remaining 25% shall be paid upon termination of the WV NPDES permit by the WVDEP for properly stabilizing the site, demobilization, and final completion of the Project.

Bid Item 9: Retention Pond

Unit: Lump Sum (LS)

Description: This work shall consist of constructing the sediment/retention pond as shown in the Plans. The work includes excavation, concrete, backfill, inlet and outlet structures, pipes, inlet and outlet protection, sediment removal and maintenance. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price per lump sum.

Bid Item 10: Waste Removal

Unit: Ton (TN)

Description: This work shall include, but is not limited to, removal and disposal of rubbish, trash, scrap, and other materials encountered at the site that require disposal at a sanitary landfill, except that material associated with the existing structures. The work includes sorting, loading, hauling, and disposal. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work completed shall be measured in tons as evidenced by weigh tickets from a legally operating sanitary landfill and certified by the contractor to be correct.

Payment: Payment shall be made at the contract unit price per ton.

Bid Item 11: Utility Relocation (Allowance)

Unit: Lump Sum (LS) (Allowance No. 2)

Description: This work shall consist of relocating the existing Mon Power guy pole to the new location shown on the Plans or as required by the utilities. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The contractor will not bid on this utility work, but will be reimbursed the actual approved invoice cost. The contractor shall submit an estimate for the relocation work to the COTR for approval prior to execution.

Payment: This item shall be paid for the approved invoice from the utility company, based on acceptance of the relocation by the affected utility and the COTR.

Bid Item 12: Unclassified Excavation

Unit: Lump Sum (LS)

Description: This work shall consist of, but is not limited to, unclassified excavation, loading and hauling of excavated material, placement and compaction, and shall include final grading, shaping and contouring of the excavation and fill areas. The terms for earthwork used in the remainder of this Section imply excavation in native materials. The Contractor, with approval of the COTR, shall adjust the final grades as necessary to create a finished project. The Contractor shall excavate to the lines and grades shown on the Plans. The Contractor shall perform all excavation of every description and of whatever materials encountered to the depths indicated on the Plans. No additional compensation shall be considered for rock excavation. Over-excavation and/or fill not shown on the Plans or specified herein shall be at the Contractor's expense, unless approved by the COTR prior to commencing such work.

Except at locations where excavation of unsuitable material is required, care shall be taken not to excavate below the depths specified. Final shaping and contouring of the areas shall be performed to the satisfaction of the COTR.

This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The method of measurement for determining the quantity of unclassified excavation required for grading work as described above shall be on a cubic yard for placed fill material which includes excavation, loading, hauling, placing and recompacting material to the surfaces as shown on the Plans. Method of measurement shall be before and after surveyed cross-sections of the fill area(s) and the average-end-area method for computing volume performed by a Professional Surveyor licensed in West Virginia. Cross sections are subject to the approval of the COTR. Fill placed outside the lines and grades in the plans will not be considered for payment.

Borrow areas (on- or off-site) shall be regraded and reclaimed, including sediment and erosion control and revegetation, at no additional cost to the COTR. Disposal of surplus and waste materials, if encountered, are incidental to this bid item and shall be performed at no additional cost to the COTR.

Payment: This item will be paid for at the contract unit price per cubic yard.

Bid Item 13: Lean Concrete Backfill

Unit: Cubic Yard (CY)

Description: This work consists of furnishing and complete installation of lean concrete backfill under the building footings and as directed by the COTR. Excavation, concrete, concrete placement, and disposal of excavated soils are included with this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in cubic yards. The quantity shall be determined by the Contractor from the total delivery slips for each vehicle and certified by the Contractor to be correct. Each delivery slip shall indicate the contract item numbers for the material being delivered. Only work accepted by the COTR shall be included, any work rejected or materials used for other items or purposes shall be deducted.

Payment: Payment shall be made at the contract price per cubic yard.

Bid Item 14: Subgrade Preparation

Unit: Square Yard (SY)

Description: This work shall include, but is not limited to, excavation, scarification, and recompaction of the top 24 inches of in-place subgrade under structures, building slabs, steps, and pavements in excavated areas. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work. Manipulation of the excavated material to achieve optimum moisture content shall be considered incidental to the work. If additional satisfactory soil fill is required to achieve subgrade elevations after compaction, it shall be considered incidental to the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Material prepared beyond approved limits shall not be included in the measured quantity. Subgrade preparation of other areas, such as walkways and lawn areas, is incidental to earthwork and shall not be paid for by this bid item.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 15: Soil Drying

Unit: Ton (TN)

Description: This work shall include, but is not limited to, quicklime application and mixing of stockpiles of existing satisfactory soils with high moisture content. The required demonstration of proposed techniques is incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work completed shall be measured in tons of quicklime used as evidenced by weigh tickets for bulk loads or delivery slips for packaged materials certified by the contractor to be correct.

Payment: Payment shall be made at the contract unit price per ton.

Bid Item 16: Removal and Replacement

Unit: Cubic Yard (CY)

Description: This work shall include, but is not limited to, excavation, transportation and disposal of excavated materials, importation of satisfactory material, placement of new material, and compaction. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work. Manipulation of the excavated material to achieve optimum moisture content shall be considered incidental to the work.

Measurement: Measurement shall be based on cubic yards of area completed for the work described as measured by the COTR or his designated representative. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract price per cubic yard.

Bid Item 17: Over-Excavation

Unit: Square Yard (SY)

Description: This work shall include, but is not limited to, excavation below subgrade, transportation and disposal of unsuitable materials, placement of geogrid and AASHTO #1 stone, and proof-rolling areas of unsuitable soils in locations directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 18: 6" Subsurface Drains

Unit: Linear Foot (LF)

Description: This work shall consist of installation of 6" subsurface drains in locations specified on the plans or directed by the COTR. The drains are to be installed in locations that will intercept the maximum amount of seepage. Subsurface drain work includes dewatering, excavation, drainage fabric, stone, pipe, fittings, cleanouts and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including

labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of drains in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings as typical pipe section in the pipe being measured.

Payment: This item shall be paid for at the contract price per linear foot.

Bid Item 19: 7" Concrete Paving

Unit: Square Yard (SY)

Description: This work consists of furnishing and complete installation of Portland cement concrete pavement, reinforcing, joints, sealants, and No. 57 aggregate at the areas as shown on the plans. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 20: Free Draining Base Trench and Piping

Unit: Linear Foot (LF)

Description: This work shall consist of constructing free draining base trenches and outlet pipes in reasonably close conformity with the lines, grades, dimensions, and locations shown on the Plans or established by the COTR. Excavation, perforated pipe, filter material, outlet pipe, aggregate backfill, and disposing of all surplus material is included with this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured by the linear foot of free draining base trench installed, complete in place and accepted. The perforated pipe, geotextile, and aggregate backfill is a component of the free draining base trench. Length shall be determined from actual measurements once the free draining base trench is in place. No deductions shall be made for placement of the drop connection required at outlet pipe locations. Outlet pipes required from the free draining base trench to daylight or another drainage structure are incidental to this item.

Payment: The quantities, determined as provided above, shall be paid for at the contract unit price per linear foot.

Bid Items 21-22: Fabric Separation, Fabric Woven

Unit: Square Yard (SY)

Description: This work shall consist of furnishing and installing geotextile fabric of designated types in pavement sections as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond design limits shall not be included in the measured quantity. Fabric used in free draining base trench is not included in this pay item.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 23: Hardstand Paving

Unit: Square Yard (SY)

Description: This work includes, but is not limited to, furnishing and complete installation of AASHTO #1 and WVDOH Class 1 aggregates for pavements. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 24: Pavement Marking

Unit: Lump Sum (LS)

Description: Pavement markings shall consist of furnishing and installing various types of markings, as shown on the plans and an additional 1,000 sq ft for miscellaneous marking as directed by the COTR. It shall include, but is not limited to, edge lines, center lines, handicapped symbols, parking lines, shoulders, stop lines and pedestrian crossing markings. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of labor, materials and services provided by the contractor in completing this item.

Payment: This item shall be paid for at the contract lump sum price upon satisfactory completion of all pavement markings shown on the plans.

Bid Item 25: Wheel Stops

Unit: Each (EA)

Description: This work includes, but is not limited to, furnishing and complete installation of plastic wheel stops as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured per each wheel stop completely installed.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 26: Concrete Curbing

Unit: Linear Foot (LF)

Description: This work shall includes, but is not limited to, the construction of cast-in-place concrete curbing at the locations shown on the Plans, or as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Curbing shall be measured along the front face of the section at the finish grade elevation.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 27: Signage

Unit: Lump Sum (LS)

Description: This item includes, but is not limited to, furnishing and installing miscellaneous signs, stop, parking, informational, etc. as noted on the Plans or as directed by the COTR. Signs, posts, foundations, and necessary hardware are included. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of work described.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 28: Gravel Apron

Unit: Linear Foot (LF)

Description: This work shall consist of installation of the gravel apron in locations specified on the plans or as directed by the COTR. Gravel apron work includes excavation, geotextile fabric, stone, and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of gravel apron in place, completed, and accepted by the COTR.

Payment: This item shall be paid for at the contract price per linear foot.

Bid Item 29: Sidewalk

Unit: Square Yard (SY)

Description: This work shall consist of furnishing and installing welded wire mesh reinforcing, 4,000 psi air-entrained concrete, Class 1 stone, formwork and incidentals associated with concrete sidewalks and pads as detailed on the Plans. The areas adjacent to the building shall also include drainage fill and foam insulation. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Items 30–32: Type I Lawns, Type II Lawns, Type III Ground Cover

Unit: Lump Sum (LS)

Description: This work shall consist of various types of lawns and ground cover as shown on the Drawings and specified in Section 329200, "Turfs and Grasses". The bid item shall include fine grading and preparing lawn areas, furnishing and applying soil amendments and fertilizers, seeding lawn areas, protection and maintenance of lawn areas. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of work described.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 33: Farm Gate

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of a Farm Gate for vehicular access through the field fence. The price shall include excavating, trenching, concrete footings, backfilling, hardware, chain, and locks. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per each gate completely installed.

Payment: The accepted quantities of gates shall be paid for at the contract unit price per each complete in place.

Bid Items 34–37: 5' Personnel Gate; Double Swing Gate – 16'; Sliding Gate – 20', 24'

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of various types of gates for chain link fences and site security. The price shall include excavating, trenching, concrete footings, backfilling, grouting posts in place, grounding, bonding, barbed wire, and locks. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per each gate completely installed.

Payment: The accepted quantities of gates shall be paid for at the contract unit price per each complete in place.

Bid Item 38: Field Fencing

Unit: Linear Foot (LF)

Description: This work consists of furnishing and complete installation of field fencing. The price will include clearing vegetation, excavating, backfilling, fence fabric, diagonal bracing, and wooden posts. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be along the bottom wire of the fence from outside to outside of end posts for each continuous run of fence, excluding lengths occupied by vehicular gates.

Payment: The accepted quantities of fencing materials shall be paid for at the contract unit price per linear foot complete in place.

Bid Item 39: Security Fencing

Unit: Linear Foot (LF)

Description: This work consists of furnishing and complete installation of chain link fencing. The price will include excavating, trenching, concrete footings, backfilling, grouting posts in place, grounding, bonding, and barbed wire. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be along the bottom wire of the fence from outside to outside of end posts for each continuous run of fence, excluding lengths occupied by gates.

Payment: The accepted quantities of fencing materials shall be paid for at the contract unit price per linear foot complete in place.

Bid Item 40: 40' Flagpole

Unit: Each (EA)

Description: This item includes furnishing and installing the 40' aluminum flagpole in front of the facility. The foundation, including excavation, aggregate, concrete and miscellaneous hardware are incidental to this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for each.

Bid Item 41: Force Protection Wall

Unit: Linear Foot (LF)

Description: This item of work consists of furnishing and installing precast concrete block exterior walls as shown on the Plans. Excavation, gravel foundations, backfill, and associated subsurface drainage are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be by the linear foot along the front face of the wall at the finished grade elevation.

Payment: Payment shall be made at the contract unit price for linear foot.

Bid Item 42: Loading Dock Wall

Unit: Lump Sum (LS)

Description: This item of work is a pour in place concrete retaining wall. Excavation, backfill, handrail, concrete finishing, and associated subsurface drainage are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Items 43–45: Bollards 8", 12", Removable

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of bollards. The unit price shall include furnishing and installing metal posts, and associated hardware, concrete footings, excavation, backfill, and compensation for doing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, and incidentals required to complete the work.

Measurement: The quantity of work done shall be measured per each bollard completely installed and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 46: Trash Enclosure

Unit: Lump Sum (LS)

Description: This work shall consist of constructing a pad and fencing at the back of the main building as shown in the Plans. Excavation, concrete, aggregate base, privacy fencing, and other ancillary equipment are incidental to this item of work. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 47: Fuel Truck Pad

Unit: Lump Sum (LS)

Description: This work shall consist of a cast-in-place concrete fuel truck pad as shown in the Plans. This shall include excavation, concrete, reinforcing, grounding hardware, aggregate base and any other incidentals necessary for a complete and functional pad. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 48: Gravel Maintenance Strip

Unit: Linear Foot (LF)

Description: This work shall consist of installation of the gravel maintenance strip in locations specified on the plans or as directed by the COTR. Gravel maintenance strip work includes excavation, geotextile fabric, stone, and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of gravel maintenance strip in place, completed, and accepted by the COTR.

Payment: This item shall be paid for at the contract price per linear foot.

Bid Items 49–53: Water Line, PVC – 4", 6", 10", 12"; Water Line, DIP – 12"

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing various sizes of water line. These prices shall fully compensate the Contractor for providing pipe, fittings, valves, bedding, excavation, backfill, concrete thrust blocks, concrete encasement, steel casing pipe, asphalt repair, curb stops, flushing, testing, coordination with the City of Buckhannon and agencies having jurisdiction for acceptance. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of water line in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings and appurtenances associated with the water line.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 54: Fire Hydrant

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of exterior fire hydrants. The unit price shall include furnishing and installing a fire hydrant, fittings, excavation, bedding, backfill, concrete thrust blocks, saw-cutting of pipe, and testing and inspection. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured per unit fire hydrant acceptably installed.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 55: Manholes, Sanitary Sewer

Unit: Vertical Foot (VF)

Description: This work shall include, but is not limited to, installing pre-cast concrete manholes at the locations specified in the plans. Excavation, bedding, manhole section and grade ring installation, backfill, and testing and inspection are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on vertical feet of manhole in place, as measured from the invert to the top of concrete or spacer ring, completed and accepted by the COTR and authorities having jurisdiction.

Payment: Payment shall be made at the contract unit price per vertical foot.

Bid Item 56: Frame & Cover, Sanitary Sewer

Unit: Each (EA)

Description: This work consists of furnishing, placing and installing the frame and cover for sanitary manholes as detailed in the Plans. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per frame and cover installed and accepted by the COTR.

Payment: Payment shall be made at the contract price per each.

Bid Items 57-60: Sanitary Sewer Line, PVC – 4", 6", 8"; DIP – 8"

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing various sizes of sanitary sewer piping. These prices shall fully compensate the Contractor for providing pipe, bedding, excavation, backfill, fittings, cleanouts, casing pipes, pavement repairs, testing and coordination with the City of Buckhannon for acceptance. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of sanitary sewer piping in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings, appurtenances, and cleanouts associated with the sanitary sewer piping.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 61: 3" Gas Service Line

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing 3" gas lines from the building to point of connection on the Plans. These prices shall fully compensate the Contractor for providing pipe, bedding, excavation, backfill, valves, existing utility tie-ins, pavement restoration, and casing pipes. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of gas line in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings and appurtenances associated with the gas line.

Payment: Payment shall be made at the contract unit price per linear foot of line in service.

Bid Items 62–64: Storm Line, PVC – 6", 8", 12"

Unit: Linear Foot (LF)

Description: This work consists of the furnishing and complete installation of PVC pipe for storm drainage outside the building. This price shall fully compensate the Contractor for providing pipe, bedding, excavation, backfill, fill, fittings, and pavement repairs. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Conduit of the different types and sizes, shall be measured by the linear foot in place, the measurement being made along the centerline of each pipe installed. Branch connections, tees, wyes, and elbows shall be measured along their centerlines and these lengths included in the total lengths of the appropriate conduit. Wyes, tees, and other branch connections shall be measured along the centerlines to points of intersection. The portion of pipe extending through to the inside face of headwalls of all types, manholes, inlets, boxes, or other structures shall be included in the measurement.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Items 65–68: Storm Line, HDPE – 12", 18", 24", 30"

Unit: Linear Foot (LF)

Description: This work consists of the furnishing and complete installation of high density polyethylene pipe for storm drainage. Pipe, bedding, excavation, backfill, fill, fittings, and pavement repairs, are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Conduit of the different types and sizes, shall be measured by the linear foot in place, the measurement being made along the centerline of each pipe installed. Branch connections, tees, wyes, and elbows shall be measured along their centerlines and these lengths included in the total lengths of the appropriate conduit. Wyes, tees, and other branch connections shall be measured along the centerlines to points of intersection.

The portion of pipe extending through to the inside face of headwalls of all types, manholes, inlets, boxes, or other structures shall be included in the measurement.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 69: Type 2 Ditch

Unit: Linear Foot (LF)

Description: This work shall consist of the construction of open flow ways for surface drainage, using geotextile fabric and riprap. Excavation, shaping and lining and geotextile fabric are incidental.

Measurement: The quantity of work done shall be measured along the flow line of the ditch, from the first point of design depth to the point where the ditch breaks the plane of the drainage structure it empties into.

Payment: Payment shall be made by the contract unit price per linear foot.

Bid Item 70: Type 4 Ditch

Unit: Linear Foot (LF)

Description: This work shall consist of the construction of open flow ways for surface drainage, using permanent erosion control matting. Excavation, shaping, seeding, and lining are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured along the flow line of the ditch, from the first point of design depth to the point where the ditch breaks the plane of the drainage structure it empties into.

Payment: Payment shall be made by the contract unit price per linear foot.

Bid Item 71: Junction Box

Unit: Each (EA)

Description: This work shall consist of installing pre-cast or cast-in-place concrete junction boxes for storm drainage. Pipe connection, bedding, excavation, backfill, fill, fittings, frames and covers, and pavement repairs, are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each junction box in place completed, and accepted by the COTR.

Payment: Payment shall be made at the contract unit price for each.

Bid Items 72–73: Type "B" Drop Inlets, Type "G" Drop Inlets

Unit: Each (EA)

Description: This work shall consist of installing pre-cast or cast-in-place concrete inlets for storm drainage. Pipe connection, bedding, excavation, backfill, fill, fittings, grates, frames, and pavement repairs, are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each drain inlet in place completed, and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Items 74-75: 12" In-Line Yard Drain, Drain Basin

Unit: Each (EA)

Description: This work shall consist of installing inlets for storm drainage. Inlets, grates, pipe, excavation, bedding, backfill, fill, fittings and pavement repairs are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each drain inlet in place completed, and accepted by the COTR

Payment: Payment shall be made at the contract unit price for each.

Bid Item 76: Trench Drain & Grate

Unit: Linear Foot (LF)

Description: This work shall consist of installing a vehicular trench drain for storm drainage. Pipe connection, bedding, excavation, backfill, reinforcement, concrete, fittings, frames and grates are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear foot of trench drain installed and accepted by the COTR, measured along the center-line from end of grate to end of grate.

Payment: Payment shall be made by the contract unit price per linear foot.

Bid Item 77: Concrete Headwall

Unit: Each (EA)

Description: This work shall consist of installing cast-in-place concrete headwalls for storm drainage. Excavation, forming, reinforcement, concrete, pipe connection, aggregate bedding, backfill, and concrete finishing are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be for each headwall completely installed.

Payment: Payment shall be made at the contract unit price for each complete and in place.

ALTERNATE BID ITEMS

DEDUCTIVE ALTERNATES

Alternate Bid Item #1D – Asphalt Paving

Description: This work shall consist of changing the 7" Concrete Paving in the base bid to Type 1 and Type 2 Asphalt Pavements as identified in the Plans.

Bid Item 78: HMA Wearing Course

Unit: Ton (TN)

Description: This work shall consist of furnishing and installing designated scratch course and wearing course asphalt in accordance with the Plans and Specifications. The completed pavement shall be accepted, with respect to compaction, on a lot-to-lot basis. Each lot shall consist of approximately 2,000 SF of each layer or course by shall be taken at a random location of each of the five sub-lots.

The target percentage of density shall be 96 percent.

The compaction density of the asphalt shall be considered satisfactory so long as the averages of all the five consecutive compaction results equal to or exceed the specified compaction percent of 96% and no individual strength test result falls below the specified compaction by more than 5 percent. If the average of five consecutive compaction results is below the 96 percent, then a payment adjustment shall be made for that tonnage of asphalt representing the area of placement.

This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed upon automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered.

Payment: Payment shall be made at the contract unit price per ton.

The quantities, determined as provided per the specifications, shall be paid for at the Contract unit prices bid for the items listed, which prices and payments shall be full compensation for furnishing all materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, field laboratory, supplies and incidentals necessary to complete the work.

Adjustment of Price: Bituminous concrete found not in compliance with the tolerance requirements shall be paid for at an adjusted contract price specified

The payment adjustment to tonnage of work places is as follows with percentages rounded to the nearest tenth:

Average Compaction % for a Lot	Percent of Contract Price Paid
96	100
94-95.9	98
92-93.9	93
89-91.9	90
Less than 89	No acceptance

Bid Item 79: HMA Base Course

Unit: Ton (TN)

Description: This work shall consist of furnishing and installing designated base course asphalt in accordance with the Plans and Specifications. Scratch course is incidental to the overlaying wearing course. The completed pavement shall be accepted, with respect to compaction, on a lot-to-lot basis. Each lot shall consist of approximately 2,000 SF of each layer or course by shall be taken at a random location of each of the five sub-lots.

The target percentage of density shall be 96 percent.

The compaction density of the asphalt shall be considered satisfactory so long as the averages of all the five consecutive compaction results equal to or exceed the specified compaction percent of 96% and no individual strength test result falls below the specified compaction by more than 5 percent. If the average of five consecutive compaction results is below the 96 percent, then a payment adjustment shall be made for that tonnage of asphalt representing the area of placement.

This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed upon automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered.

Payment: Payment shall be made at the contract unit price per ton.

The quantities, determined as provided per the specifications, shall be paid for at the Contract unit prices bid for the items listed, which prices and payments shall be full compensation for furnishing all materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, field laboratory, supplies and incidentals necessary to complete the work.

Adjustment of Price: Bituminous concrete found not in compliance with the tolerance requirements shall be paid for at an adjusted contract price specified

The payment adjustment to tonnage of work places is as follows with percentages rounded to the nearest tenth:

Average Compaction % for a Lot	Percent of Contract Price Paid
96	100
94-95.9	98
92-93.9	93
89-91.9	90
Less than 89	No acceptance

Bid Item 80: Free Draining Base

Unit: Ton (TN)

Description: This work consists of furnishing and complete installation of open graded free draining base course for pavements. Aggregate, compaction, binder material, and curing are included with this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed on an approved standard scale or from digital print-out slips from an automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered. Only work accepted by the COTR shall be included, any work rejected or materials used for other items or purposes shall be deducted.

Payment: Payment shall be made at the contract price per ton.

ADDITIVE ALTERNATES

Alternate Bid Item 1 – Wash Rack

Description: This work shall consist of adding a Vehicle Wash Rack and access to it. The grading and drainage associated with the wash rack are included in the base bid.

Bid Item 81: Water Line, PVC – 1-1/2”

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing 1-1/2” water line. These prices shall

fully compensate the Contractor for providing pipe, fittings, valves, bedding, excavation, backfill, concrete thrust blocks, concrete encasement, steel casing pipe, asphalt repair, curb stops, flushing, testing, coordination with the City of Buckhannon and agencies having jurisdiction for acceptance. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of water line in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings and appurtenances associated with the water line.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 82: Cleanout, Sanitary Sewer

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of cleanout. The unit price shall include furnishing and installing pipe, fittings, concrete apron, excavation, and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured per each cleanout completely installed and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 83: Oil/Water Separator

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of an underground separator designed for gravity separation of free oils (hydrocarbons and other petroleum products) and settable solids from wastewater. Excavation, backfill, concrete pad, bedding material, manways, piping and fittings to a point beyond the outline of the tank, alarm and control panel, electrical and data wiring, and vent piping are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of the work described according to the Basis of Payment below.

Payment: Payment shall be made at the contract unit price for each.

Bid Item 84: Vehicle Wash Rack

Unit: Lump Sum (LS)

Description: This work shall consist of adding a Vehicle Wash Rack as shown in the Plans. Excavation, concrete, aggregate base, waterstops, associated drainage structures, piping, conduits, canopy system, post hydrant, hose reels and hose, and other ancillary equipment within the boundary created by the edge of the concrete pad are incidental to this item of work. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Alternate Bid Item 2 – Fuel Point

Description: This work shall consist of adding a Vehicle Fuel Point and access to it. The grading and drainage are included in the base bid.

Bid Item 85: Fuel Point

Unit: Lump Sum (LS)

Description: This work shall consist of installing a Fuel Point as shown in the Plans. Excavation, concrete, aggregate base, waterstops, associated drainage structures, piping, conduits, canopy system, bollards, and other ancillary equipment within the boundary created by the edge of the concrete pad are incidental to this item of work. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 86: Fuel Dispensing System (Allowance)

Unit: Lump Sum (LS) (Allowance No. 3)

Description: This work shall consist of adding a Fuel Dispensing System as shown in the Plans. This item is an allowance to be used for procurement of a dual compartment, UL 142 Model 10C1, 3,000 gallon and 500 gallon, storage and dispensing system via GSA Contract #07F-0512U; Bryant Fuel and Power Systems, Inc. of Bakersfield, California; 800-873-3566, POC George Adam. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: This item shall be paid for the approved invoice from the GSA contracted supplier of the system, based on acceptance of the installed system by the COTR.

Alternate Bid Item #3 – Security Fencing Upgrade

Description: This work shall consist of upgrading all security fencing, swing gates, sliding gates, and alternate bid items to an eight foot chain-link fabric height.

Bid Item 87: Fencing/Gate Upgrade

Unit: Lump Sum (LS)

Description: This work shall consist of upgrading all security fencing, swing gates, sliding gates, and alternate bid items to an eight foot chain-link fabric height. Force Protection Gate is not included. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Alternate Bid Item #4 – Military Equipment Parking Concrete Paving

Description: This work shall consist of installing 7" Concrete Paving instead of Hardstand Paving for the indicated areas within the Military Equipment Parking (MEP).

Alternate Bid Item #5 – Loading Ramp

Description: This work shall consist of adding a Loading Ramp in the MEP. The grading and drainage associated with this item are included in the base bid.

Bid Item 88: Double Swing Gate – 30'

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of 30' double swing gates for chain link fences and site security. The price shall include excavating, trenching, concrete footings, backfilling, grouting posts in place, grounding, bonding, barbed wire, and locks. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per each gate completely installed.

Payment: The accepted quantities of gates shall be paid for at the contract unit price per each complete in place.

Bid Item 89:	**Loading Ramp**
Unit:	Lump Sum (LS)

Description: This item of work is a cast-in-place reinforced concrete loading ramp with two levels. The aggregate, backfill, dock bumpers, bollards, excavation and soil backfill, and any other ancillary equipment required are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement for materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

END OF SECTION

INDEMNITY AND HOLD HARMLESS CONTRACT PROVISION

Indemnification, Hold Harmless and General Release: The State of West Virginia, the Adjutant General's Department, the State Armory Board, the West Virginia National Guard, the Upshur County Development Authority, the City of Buckhannon, and Linda Wellings shall not be held liable for any claims for damage which may arise on account of any use of the Premises by [INSERT COMPANY NAME], and [INSERT COMPANY NAME] shall indemnify, defend and hold harmless the State of West Virginia, the Adjutant General's Department, the State Armory Board, the West Virginia National Guard, the Upshur County Development Authority, the City of Buckhannon, and Linda Wellings, their employees, agents, contractors, successors, and assigns (hereinafter "Owners") from and against all claims, losses, costs, expenses or damages, including reasonable attorneys' fees, incurred or sustained as a result of injury to persons or damage to property arising out of or occurring in or resulting from the Work or Contract, whether from any act or omission to act. Moreover, [INSERT COMPANY NAME] hereby releases, acquits and discharges Owners from any and all actions, causes of action, claims, demands, losses, expenses, damages, costs, injuries and liabilities incurred or which may be incurred by [INSERT COMPANY NAME] now or in the future on account of any known or unknown injuries, losses or damages, whether direct or indirect, sustained in connection with or arising out of or incurring in or resulting from [INSERT COMPANY NAME] 's use of the Premises under the Contract.

In WITNESS WHEREOF, [INSERT COMPANY NAME] executed this instrument as a part of the Contract between the State of West Virginia and [INSERT COMPANY NAME] for the construction of the Buckhannon Readiness Center in Buckhannon, WV.

Signed

_____

By _____

Its _____

SAMPLE

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public in and for said County and State, hereby certify that _____, whose name as _____ of _____, is signed to the foregoing instrument, and who is known to me, acknowledged before me on this day that, being informed of the contents of this instrument, he, as such officer and with full authority, executed the same voluntarily for and as the act of said company.

Given under my hand and official seal this the _____ day of _____, 2012.

_____

SAMPLE

ACORD® CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
INSURANCE AGENCY'S NAME AND ADDRESS	INSURERS AFFORDING COVERAGE	NAIC #
INSURED	INSURER A: INSURER'S NAME	
	INSURER B: INSURER'S NAME	
CONTRACTOR'S NAME AND ADDRESS	INSURER C: INSURER'S NAME	
	INSURER D:	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
A		GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC				EACH OCCURRENCE	$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$ 50,000
						MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 2,000,000
						PRODUCTS - COMP/OP AGG	$ 2,000,000
A		AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
B		EXCESS / UMBRELLA LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $				EACH OCCURRENCE	$ 5,000,000
						AGGREGATE	$ 5,000,000
							$
							$
							$
C		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory In NH) Y/N [ ] If yes, describe under SPECIAL PROVISIONS below				[X] WC STATU-TORY LIMITS [ ] OTH-ER	
						E.L. EACH ACCIDENT	$ 500,000
						E.L. DISEASE - EA EMPLOYEE	$ 500,000
						E.L. DISEASE - POLICY LIMIT	$ 500,000
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Employers liability includes coverage for W. Va. Code §23-4-2 (Mandolidis). Owner, Architect, Architect's Consultants, and Landowners are to be named as additional insureds. (Insert project's name and address)

CERTIFICATE HOLDER	CANCELLATION
STATE AGENCY'S NAME AND ADDRESS	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.
	AUTHORIZED REPRESENTATIVE

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ACORD™ CERTIFICATE OF PROPERTY INSURANCE

DATE

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
INSURANCE AGENCY'S NAME AND ADDRESS	**COMPANIES AFFORDING COVERAGE**
	COMPANY A: INSURER'S NAME
INSURED	COMPANY B:
CONTRACTOR'S NAME AND ADDRESS	COMPANY C:
	COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	COVERED PROPERTY	LIMITS
	[ ] PROPERTY				[ ] BUILDING	$
	CAUSES OF LOSS				[ ] PERSONAL PROPERTY	$
	[ ] BASIC				[ ] BUSINESS INCOME	$
	[ ] BROAD				[ ] EXTRA EXPENSE	$
	[ ] SPECIAL				[ ] BLANKET BUILDING	$
	[ ] EARTHQUAKE				[ ] BLANKET PERS PROP	$
	[ ] FLOOD				[ ] BLANKET BLDG & PP	$
						$
						$
A	[X] INLAND MARINE				[X] BUILDING	$ CONTRACT AMT.
	TYPE OF POLICY				[X] TRANSIT	$ 20%
	Inst/Builder's Risk	(if applicable)			[X] OFF-SITE	$ 20%
	CAUSES OF LOSS				[ ] STORAGE	$
	[ ] NAMED PERILS					$
	[ ] OTHER					$
	[ ] CRIME					$
	TYPE OF POLICY					$
						$
	[ ] BOILER & MACHINERY					$
						$
	[ ] OTHER					

LOCATION OF PREMISES/DESCRIPTION OF PROPERTY

PROJECT NAME AND ADDRESS

SPECIAL CONDITIONS/OTHER COVERAGES

Owner is to be named as additional insured.

CERTIFICATE HOLDER

STATE AGENCY'S NAME AND ADDRESS

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

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IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

This Certificate of Insurance does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and for the Contractor to make direct payment to a Supplier or Sub-Contractor for Work preformed under agreement with the Owner. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.4 INFORMATIONAL SUBMITTALS

A. Submit invoices from vendors to show actual Work completed for use in fulfillment of each allowance.

B. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 UNIT-COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials selected by Owner under allowance and shall include taxes, freight, and delivery to Project site.

B. Contractor's costs for coordinating, receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: WVDOH Encroachment Permit the WVDOH Encroachment Permit Allowance of $2,000.00 is intended to cover the cost of obtaining encroachment permits(s) for the access road tie-in, grading, and stormwater drainage on WVDOH right of ways.

B. Allowance No. 2: Utility Relocation the Utility Relocation Allowance of $5,000.00 is intended to cover the cost of relocating the existing Mon Power guy pole to the new location shown on the Plans or as required by the utilities.

C. Allowance No. 3: Fuel Dispensing System the Fuel Dispensing System Allowance of $66,000.00 is intended to cover the cost of the fuel dispensing system used in association with the Fuel Point.

END OF SECTION 012100

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Provisions apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for Alternates.

B. Definition: An Alternate is a change to the proposed scope of work described in the Bid and Contract Documents, separately priced by the bidders, and accepted at the sole option of the Owner. An Alternate can be a change in quantity, or a change in the products, materials, equipment, systems, or specified methods.

C. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that work affected by each accepted Alternate is complete and fully integrated into the Project.

D. Schedule: A "Schedule of Alternates" is included at the end of this Section. Proposed price for each Alternate shall include miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation, whether or not specifically mentioned as part of the Alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

	Alternate Bid Item #1 – Asphalt Paving (Federal Funds)
Description:	This work shall consist of changing the 7” Concrete Paving in the base bid to Type 1 and Type 2 Asphalt Pavements as identified in the Plans.

	Alternate Bid Item #2 – Wash Rack (Federal Funds)
Description:	This work shall consist of adding a Vehicle Wash Rack and access to it. The grading and drainage associated with the wash rack are included in the base bid.

	Alternate Bid Item #3 – Loading Ramp (Federal Funds)
Description:	This work shall consist of adding a Loading Ramp. The grading and drainage associated with the loading ramp are included in the base bid.

Alternate Bid Item #4 – Operable Partition Walls (State Funds)

Description: This work shall consist of providing the 16 foot high Operable Partition Walls used to divide Rooms C4 (Corridor), 130 (Conference 2) and 131 (Conference Center) as described in the drawings and specifications. Base Bid includes all track in place ready for installation of the Wall Panels and all required structural framing.

Alternate Bid Item #5 – AV and Lighting Controls for Conference Center and Classrooms (Federal Funds)

Description: Provide audio/visual systems (projector mounts, sound system, speaker, A/V jacks, controllers, etc.) in rooms Classroom 127, Classroom 128, Classroom 129 Corridor C4, Conference 130 and Conference Center 131. Provide dimming system tied into A/V system for control of lighting in these spaces.
Under base bid, do not provide audio/visual systems (projector mounts, sound system, speakers, A/V jacks, controllers, etc.) in these rooms. Provide standard fluorescent dimmer switches in each space for local control of lighting.

Alternate Bid Item #6 – Military Equipment Parking Concrete Paving (Federal Funds)

Description: This work shall consist of installing 7" Concrete Paving instead of Hardstand Paving for the indicated areas within the Military Equipment Parking (MEP).

Alternate Bid Item #7 – Fuel Point (Federal Funds)

Description: This work shall consist of adding a Vehicle Fuel Point and access to it. The grading and drainage are included in the base bid.

Alternate Bid Item #8 – Roof Screen (Federal/State Funds)

Description: This work shall consist of adding an Equipment Screen on the roof as detailed in the drawings.

Alternate Bid Item #9 – Wall Coverings for Rooms 130 & 131 (Federal Funds)

Description: This work shall consist of providing Type II Wall Coverings on the West, South and East walls of Rooms 130 and 131 from the top of the wainscot to the ceiling and as described in the drawings and specifications.

Alternate Bid Item #10 – Security Fencing Upgrade (Federal Funds)

Description: This work shall consist of upgrading all security fencing, swing gates, sliding gates, and alternate bid items to an eight foot chain-link fabric height.

Alternate Bid Item #11 – Increase Size of Emergency Generator (State Funds)

Description: Provide 250KW/313KVA diesel fueled generator and associated transfer switches, panelboards, transformers, circuit breakers, disconnect switches and feeders as shown on the drawings.
Under Base Bid, provide 100KW/125 KVA diesel fuled generator and associated transfer switches, panelboards, transformers, circuit breakers, disconnect switches and feeders as shown on the drawings.

END OF SECTION 012300

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for the following:
   a. Swinging doors.
   b. Other doors to the extent indicated.
2. Hardware for Aluminum Doors
3. Electrified door hardware.

B. Related Sections include the following:

1. Division 8 Section "Flush Wood Doors" for integral intumescent seals provided as part of fire-rated labeled assemblies.
2. Division 8 Section "Overhead Coiling Doors" for door hardware provided as part of overhead door assemblies, except cylinders specified in this Section.
3. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrance door hardware, except cylinders specified in this Section.
4. Division 26 Section "Addressable Fire Alarm System" for connections to building fire alarm system.
5. Division 16 Sections for connections to electrical power system and for low-voltage wiring work.

C. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.

1. Hardware on aluminum and glass entrance doors.
2. Cylinders for locks on caging doors.

1.3 SUBMITTALS

A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Details of electrified door hardware, indicating the following:

1. Wiring Diagrams: Power, signal, and control wiring. Include the following:
   a. System schematic.
   b. Point-to-point wiring diagram.
   c. Riser diagram.
   d. Elevation of each door.
2. Detail interface between electrified door hardware and fire alarm, access control system.

3. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.

C. Product Certificates: For electrified door hardware, signed by product manufacturer.

1. Certify that door hardware approved for use on types and sizes of labeled fire doors complies with listed fire door assemblies.

D. Qualification Data: For Architectural Hardware Consultant.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for locks, latches, and closers.

F. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

G. Warranty: Special warranty specified in this Section.

H. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
   b. Content: Include the following information:
      1) Identification number, location, hand, fire rating, and material of each door and frame.
      2) Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.
      3) Complete designations of every item required for each door or opening including name and manufacturer.
      4) Fastenings and other pertinent information.
      5) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
      6) Explanation of abbreviations, symbols, and codes contained in schedule.
      7) Mounting locations for door hardware.
      8) Door and frame sizes and materials.
      9) Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.
         a) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.

10) List of related door devices specified in other Sections for each door and frame.

c. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by lock manufacturer.

1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
2. Installer shall have warehousing facilities in Project's vicinity.
3. Scheduling Responsibility: Preparation of door hardware and keying schedules.

B. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

1. Positive Pressure Test: After 5 minutes into the test, the neutral pressure level in furnace shall be established at 40 inches (1000 mm) or less above the sill.

E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." In addition to Owner, Construction Manager, and Contractor, conference participants shall also include installer's Architectural Hardware Consultant[and Owner's security consultant].

Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1. **Preinstallation Conference is required for the coordination of all electrified door hardware and access controls.**

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

D. Deliver keys to Owner by registered mail or overnight package service.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures including excessive deflection, cracking, or breakage.
   b. Faulty operation of operators and door hardware.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Three years from date of Substantial Completion, except as follows:
   a. Exit Devices: Three years from date of Substantial Completion.

b. Manual Closers: Ten years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.

C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

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

2.2 HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Sizes: Provide the following, unless otherwise indicated:

1. 4-1/2 inches high: For all doors with widths of 35 inches or less.
2. 5 inches high: For all doors with widths greater than 35 inches.

D. Hinge Base Metal Thickness: Provide the following, unless otherwise indicated:

1. Medium Weight Doors with Medium Frequency: 0.134 inches thick.
2. Heavy Weight Doors with High Frequancy: 0.180 inches thick.

E. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior Hinges: Stainless steel, with stainless-steel pin.
2. Interior Hinges: Steel, with steel pin.
3. Hinges for Fire-Rated Assemblies: Steel, with steel pin.

F. Hinge Options: Where indicated in door hardware sets or on Drawings:

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging exterior doors and outswinging corridor doors with locks.
2. Corners: Square.
3. Width of Hinges: Shall be sufficient to clear all trim.

G. Fasteners: Provide Phillips flat-head screws comply with the following::

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Wood Screws: For wood doors and frames.
3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
4. Finish screw heads to match surface of hinges.

H. Finish: Except as otherwise indicated, provide finishes as follows:

1. Exterior Doors: US32D / 630
2. Interior Doors: US26D / 652

2.3 HINGES

A. Butts and Hinges: BHMA A156.1,

B. Template Hinge Dimensions: BHMA A156.7.

C. Manufacturers:

1. Bommer Industries, Inc. (BI).
2. Hager Companies (HAG).
3. Ives Hardware; an Ingersoll-Rand Company (IVE).

2.4 CONTINUOUS HINGES

A. Standard: BHMA A156.26.

B. General: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4 inches (102 mm); fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

C. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves; joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

1. Manufacturers:

a. Hager Companies (HAG).
b. Ives Hardware; an Ingersoll-Rand Company (IVE).
c. Select Products Limited (SPL).

D. Finish: Provide continuous gear-type hinges with clear anodized finish, unless noted otherwise.

E. Coordinators:

1. Soffit Mounted:
   a. Door coordinator shall prevent the active door from closing before inactive door. Stop mounted channel 1-5/8" x 5/8" steel tubing x length to suit door opening. Coordinator shall be UL listed. Furnish filler bars to fill gap between end of coordinator and inactive door frame. Furnish mounting brackets for all stop mounted hardware such as exit device strikes, door closer PA shoes, etc. Coordinators shall be prepared (cutout) at the factory for surface applied or concealed vertical rod panic devices if required.
   b. Furnish with carry bar CB1 when required for proper operation.
   c. Manufacturers:
      1) Ives; an Ingersoll Rand Company, COR x length to suit (IVE).
      2) Equal products of any BHMA manufacturer.

2.5 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and the FED-STD-795, "Uniform Federal Accessibility Standards."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Electrified Locking Devices: BHMA A156.25.

D. Lock Trim:

1. Levers: Cast.
2. Escutcheons (Roses): Wrought.
3. Dummy Trim: Match lever lock trim and escutcheons.

E. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

F. Finish: Provide locks with US26D finish, unless noted otherwise.

G. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:

2.6 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:

B. Mortise Locks: Stamped steel case with steel or brass parts; BHMA A156.13, Grade 1; Series 1000.

1. Products:
   a. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
      1) L9000 Series 17A Design (owner standard)

2.7 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Flush Bolts: Minimum 3/4-inch (19-mm) throw.

B. Dustproof Strikes: BHMA A156.16, Grade 1.

C. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1; designed for mortising into door edge.

1. Manufacturers:
   a. Door Controls International (DCI).
   b. Hager Companies (HAG).
   c. IVES Hardware; an Ingersoll-Rand Company (IVE).

2.8 EXIT DEVICES

A. Exit Devices: BHMA A156.3, Grade 1.

B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and FED-STD-795, "Uniform Federal Accessibility Standards."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

E. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

F. Removable Mullions: BHMA A156.3.

G. Fire-Exit Removable Mullions: Provide removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252. Mullions shall be used only with exit devices for which they have been tested.

H. Outside Trim: Lever with cylinder, unless indicated otherwise in Part 3 "Door Hardware Sets"; material and finish to match locksets, unless otherwise indicated.

1. Match design for locksets and latchsets, unless otherwise indicated.

I. Through Bolts: For exit devices and trim on metal doors, non-fire-rated wood doors, and fire-rated wood doors.

J. Strikes: Unless otherwise indicated, provide the following:

1. Roller Strikes: For rim & surface mounted vertical rod devices:

K. Security Dead-Latching Feature: All devices are to be provided with a security dead-latching feature.

L. Electronic Exit Bars: Electronic latch retraction device, activated by a control station, continuous duty solenoid; listed and labeled as panic exit hardware. Fabricate bar from extruded aluminum, and provide door and frame transfer device and 16 feet (4.9 m) of cord to route wiring off the door frame.

M. Manufacturers:

1. Von Duprin; an Ingersoll-Rand Company (VON) – (owner standard)
   a. 33A/99 Series

2.9 LOCK CYLINDERS

A. Standard Lock Cylinders: BHMA A156.5, Grade 1.

B. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

1. Number of Pins: Six or Seven to match existing system.
2. Keyway: Match existing system - Primus Level 9N, national exclusivity.
3. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Construction Keying: Comply with the following:

1. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys and two control keys.

a. Replace construction cores with permanent cores as indicated in keying schedule.
b. Permanent Cores shall be installed by General Contractor

E. Manufacturer: Schlage; an Ingersoll Rand Company (SCH).

2.10 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:

1. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
   a. Notation: "DO NOT DUPLICATE."
2. Quantity: In addition to one extra key blank for each lock, provide the following:
   a. Cylinder Change Keys: Three.
   b. Master Keys: Six.
   c. Grand Master Keys: Six.
   d. Great-Grand Master Keys: Six.
   e. Control Keys: Two.

2.11 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.5, Grade 1; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

1. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

B. Cross-Index System: Single-index system for recording key information. Include three receipt forms for each key-holding hook. Set up by key control manufacturer.

1. Available Manufacturers:
   a. Key Control Systems, Inc. (KCS).
   b. Lund Equipment Co., Inc. (LUN).
   c. MMF Industries (MMF).

C. Key Control System Software: BHMA A156.5, Grade 1; multiple-index system for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.

1. Manufacturers:
   a. Best Access Systems; Div. of The Stanley Works (BAS).
   b. Sargent Manufacturing Company; an ASSA ABLOY Group company (SGT).
   c. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).

2.12 CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and FED-STD-795, "Uniform Federal Accessibility Standards."

1. Comply with the following maximum opening-force requirements:
   a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
   b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

C. Power-Assist Closers: As specified in Division 8 Section "Power Door Operators" for access doors for people with disabilities or where listed in the door hardware sets.

D. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

E. Surface Closers: BHMA A156.4, Grade 1. Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.

1. Manufacturers:
   a. LCN; an Ingersoll-Rand Company (LCN) – (owner standard).
      1) 4100/4011 Series.

2.13 PROTECTIVE TRIM UNITS

A. Size:

1. Single Door: 1 1/2 inches (50 mm) less than door width, by height specified in door hardware sets.
2. Pair of Doors: 1/2 inch (25 mm) less than door width, by height specified in door hardware sets.

B. Fasteners: Manufacturer's standard machine or self-tapping screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled top and 2 sides; fabricated from the following material, unless indicated in door hardware sets:

1. Material: 0.050-inch- (1.3-mm-) thick stainless steel.
2. Manufacturers:
   a. Hager Companies (HAG).
   b. IVES Hardware; an Ingersoll-Rand Company (IVE).
   c. Rockwood Manufacturing Company (RM).

2.14 STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless not appropriate. Where wall stops are not appropriate, provide overhead holders.
   a. Basis of Design Product:
      1) Wall Stop: WS402 as manufactured by Ives Manufacturing (IVE).
      2) Overhead Stop/Holder: 100 Series x US26D as manufactured by Glynn-Johnson; an Ingersoll-Rand Company (GLY).
         a) Holder function shall not be included on units located on fire-rated or smoke-rated doors.

2.15 DOOR GASKETING

A. Standard: BHMA A156.22.

B. Exterior Doors, General: Provide continuous weather-strip gasketing on exterior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
3. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

C. Interior Doors, General: Provide continuous gasketing for smoke, fire, light, or sound gasketing on interior doors where indicated or scheduled.

D. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.

E. Smoke-Labeled Gasketing: Assemblies complying with UL10C that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.

1. Provide Category ‘H’ smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors that comply with IBC 715.3.3.

F. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL10C, UL 1784, and comply with IBC 715.3.3.

1. Positive Test Pressure: After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1016 mm) or less above the sill.

G. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

H. Gasketing Materials: ASTM D 2000 and AAMA 701/702.

I. Door Bottoms: Provide solid neoprene wiper or nylon sweep seal. Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

J. Manufacturers:

1. National Guard Products (NGP).
2. Pemko Manufacturing Co. (PEM).
3. Reese Enterprises (RE).

2.16 THRESHOLDS

A. Standard: BHMA A156.21.

B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and FED-STD-795, "Uniform Federal Accessibility Standards."

1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
2. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 3/4 inch (19 mm) high for exterior sliding doors.

C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.

D. Manufacturers:

1. Hager Companies (HAG).
2. National Guard Products (NGP).
3. Pemko Manufacturing Co. (PEM).
4. Reese Enterprises (RE).
5. Zero International (ZRO).

2.17 FABRICATION

A. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware, unless

specified. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Steel Machine or Wood Screws: For the following fire-rated applications:
   a. Mortise hinges to doors.
   b. Strike plates to frames.
   c. Closers to doors and frames.
3. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:
   a. Surface hinges to doors.
   b. Closers to doors and frames.
   c. Surface-mounted exit devices.
4. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
5. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

2.18 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. General: Refer to “Door Hardware Sets” Article in Part 3 and Articles for each hardware type in Part 2, for hardware finishes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

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

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
3. All door hardware items are to be field installed. Shop installation of door hardware is not acceptable.

C. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 1 Section "Demonstration and Training."

3.7 DOOR HARDWARE SETS

A. Catalog Numbers: Product designations are from the following manufacturers:

1. Butts: Ives Manufacturing, an Ingersoll Rand Company (IVE)
2. Continuous Hinges: Ives Manufacturing, an Ingersoll Rand Company (IVE)
3. Lock Sets: Schlage; Commercial Lock Division; an Ingersoll-Rand Company (SCH).
4. Exit Devices: Von Duprin; an Ingersoll-Rand Company (VON).
5. Closers: LCN; an Ingersoll-Rand Company (LCN).
6. Overhead Stops and Holders: Glynn-Johnson; an Ingersoll-Rand Company (GLY).
7. Thresholds, Gasketing : National Guard Products, Inc. (NGP).
8. Flush Bolts, Door Stops & Bumpers: Ives Manufacturing, an Ingersoll Rand Company (IVE).

Hardware Set No. 01

For use on door #(s):
102

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	OH STOP	100S	630	GLY
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 02

For use on door #(s):
103 106 107 111 114B 115 117119 122 123

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5020B	BRN	NGP

Hardware Set No. 03

For use on door #(s):
104 105 132C

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PULL PLATE	8305 8" 4"X16"	654	IVE
1	EA	PUSHPLATE	8200 4"X16"	654	IVE
1	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
1	EA	MOP PLATE	8400 4" X 1" LDW	654	IVE
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 04

For use on door #(s):
108

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	L9080T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH MC	MTLPC	LCN
1	SET	SEALS	5020B	BRN	NGP

Hardware Set No. 05

For use on door #(s):
109A 111A 111B 111C 111D 115A 115B, 115C, 202A202B 202C 202D

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	OFFICE/ENTRY LOCK	L9050T 17A L583-363	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 06

For use on door #(s):
110 112 118

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5020B	BRN	NGP

Hardware Set No. 07

For use on door #(s):
109B 110A 110B 114A

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	OFFICE/ENTRY LOCK	L9050T 17A L583-363	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 08

For use on door #(s):
Not Used

Hardware Set No. 09

For use on door #(s):
Not Used

Hardware Set No. 10

For use on door #(s):
124 124A 125 126

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM DEAD LOCK	L463T	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	PUSHPLATE	8200 4"X16"	654	IVE
1	EA	PULL PLATE	8305 8" 4"X16"	654	IVE
1	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
1	EA	MOP PLATE	8400 4" X 1" LDW	654	IVE
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 11

For use on door #(s):
SF-18

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PUSH/PULL COMBO	9190-33-8	626	IVE
1	EA	HOUSINGINDER	20-079	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
1	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
1	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
1	EA	BLADE STOP SPACER	4040-61	689	LCN

Hardware Set No. 12

For use on door #(s):
130A 131A

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	PANIC HARDWARE	9927-L-LBR-17	626	VON
2	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
2	EA	FSIC HOUSING	26-094	626	SCH
2	EA	HOUSINGINDER	20-079	626	SCH
2	EA	KICK PLATE	8400 10" X 1" LDW	654	IVE
2	EA	WALL STOP/HOLDER	FS495	626	IVE
2	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 13

For use on door #(s):
127 128 129 130 131

Qty		Description	Catalog Number	Finish	Mfr
1	EA	ALL HARDWARE	BY PARTITION MANUFACTURER		B/O
		PANIC HARDWARE		626	
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH

Hardware Set No. 14

For use on door #(s):
109 114 133

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	654	IVE
1	SET	SEALS	5020B	BRN	NGP

Hardware Set No. 15

For use on door #(s):
116 132 132A 132B 202 203 204

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 16

For use on door #(s):
ST-1 ST-2 ST-1B ST-2B 122A

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	99-L-F-17-SNB	626	VON
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
1	EA	SURFACE CLOSER	4040XP MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5020B	BRN	NGP

1	EA	INTUMESCENT SEAL	BY WOOD DOOR MANUF	B/O

Hardware Set No. 17

For use on door #(s):
C-1 ST-1A ST-2A 110C

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	99-NL-OP	626	VON
1	EA	TRIM	550-DT	626	VON
1	EA	HOUSINGINDER	20-079	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	700SA	CL	NGP
1	EA	DOOR SWEEP	95WH	AL	NGP
1	EA	DRIP CAP	16 A 40” SMS-TEKS 6X34”		NA
1	EA	THRESHOLD	896V MS/LA	AL	NGP

Hardware Set No. 18

For use on door #(s):
200

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	SET	SEALS	5020B	BRN	NGP

Hardware Set No. 19

For use on door #(s):
201

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PRIVACY W/DEADBOLT	L9440 17A	626	SCH
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 20

For use on door #(s):
109D, 114D, 116A

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP1	626	IVE
1	EA	CLASSROOM LOCK	L9070T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
1	SET	SEALS	700SA	CL	NGP
1	EA	MULLION SEAL	5100	BLK	NGP
1	EA	OVERLAPPING ASTRAGAL	BY HM DOOR SUPPLIER	600	B/O
2	EA	DOOR SWEEP	95WH	AL	NGP
1	EA	THRESHOLD	896V MS/LA	AL	NGP
2	EA	DOOR POSITION SWITCH	BY ACCESS CONTROL SUPPLIER		B/O

MULLION SEAL USED ON OVERLAPPING ASTRAGAL

Hardware Set No. 21

For use on door #(s):
V-1 V-2

Qty		Description	Catalog Number	Finish	Mfr
1	EA	ALL HARDWARE	BY VAULT MANUF		B/O

Hardware Set No. 22

For use on door #(s):
C-2A C-3A U-100, U-101, U-102

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	KEYED REMOVABLE MULLION	KR4954-MT54	689	VON
1	EA	PANIC HARDWARE	99-EO	626	VON
1	EA	PANIC HARDWARE	99-NL-OP	626	VON
2	EA	TRIM	550-DT	626	VON
1	EA	HOUSINGINDER	20-079	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	654	IVE
2	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	700SA	CL	NGP
1	EA	MULLION SEAL	5100	BLK	NGP
2	EA	DOOR SWEEP	95WH	AL	NGP
1	EA	THRESHOLD	896V MS/LA	AL	NGP
1	EA	DRIP CAP	16 A 40” SMS-TEKS 6X34”		NA
2	EA	DOOR POSITION SWITCH	BY ACCESS CONTROL SUPPLIER		B/O

Hardware Set No. 23

For use on door #(s):
C-2

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	9927-EO-F-LBR	626	VON
2	EA	FIRE/LIFE WALL MAG	SEM1960	689	LCN
2	EA	SURFACE CLOSER	4040XP EDA MC	MTLPC	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	654	IVE
1	SET	SEALS	5020B	BRN	NGP

Hardware Set No. 24

For use on door #(s):
134

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	STOREROOM LOCK	L9080T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW	654	IVE
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	700SA	CL	NGP
1	EA	DOOR SWEEP	95WH	AL	NGP
1	EA	THRESHOLD	896V MS/LA	AL	NGP
1	EA	DOOR POSITION SWITCH	BY ACCESS CONTROL SUPPLIER		B/O

Hardware Set No. 25

For use on door #(s):
SF-16A

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	ELECTRIFIED MULLION	KR9854	689	VON
1	EA	ELECTRIC STRIKE	6111	626	VON
1	EA	PANIC HARDWARE	99-EO	626	VON
1	EA	PANIC HARDWARE	99-NL-OP	626	VON
2	EA	TRIM	550-DT	626	VON
1	EA	HOUSINGINDER	20-079	626	SCH
2	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
2	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
2	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
2	EA	BLADE STOP SPACER	4040-61	689	LCN
1	EA	WEATHERSTRIP	BY ALUM DOOR MANUF		B/O
1	EA	MULLION SEAL	5100	BLK	NGP
2	EA	DOOR SWEEP	BY ALUM DOOR MANUF		B/O
1	EA	THRESHOLD	896V MS/LA	AL	NGP
2	EA	DOOR POSITION SWITCH	BY ACCESS CONTROL SUPPLIER		B/O
1	EA	POWER ASSIST OPENER	LOW ENERGY POWER OPERATOR SWING DOOR		HORT ON

Hardware Set No. 26

For use on door #(s):
SF-16B

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	KEYED REMOVABLE MULLION	KR4954-MT54	689	VON
2	EA	PANIC HARDWARE	99-EO	626	VON
2	EA	TRIM	550-DT	626	VON
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
2	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
2	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
2	EA	BLADE STOP SPACER	4040-61	689	LCN
1	EA	WEATHERSTRIP	BY ALUM DOOR MANUF		B/O
1	EA	MULLION SEAL	5100	BLK	NGP
2	EA	DOOR SWEEP	BY ALUM DOOR MANUF		B/O
1	EA	THRESHOLD	896V MS/LA	AL	NGP

Hardware Set No. 27

For use on door #(s):
SF-17B SF-19A SF-19B

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
2	EA	DUMMY PUSH BAR	330-EO	626	VON
2	EA	TRIM	550-DT	626	VON
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
2	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
2	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
2	EA	BLADE STOP SPACER	4040-61	689	LCN

Hardware Set No. 28

For use on door #(s):
OP-1 OP-2 OP-3 OP-4 OP-5

Qty		Description	Catalog Number	Finish	Mfr
1	EA	ALL HARDWARE	BY FOLDING PARTITION MANUF		B/O

Hardware Set No. 29

For use on door #(s):
C-3

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
2	EA	FIRE EXIT HARDWARE	9927-L-F-LBR-17-SNB	626	VON
1	EA	FSIC HOUSING	26-094	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
2	EA	SURFACE CLOSER	4040XP EDA MC	MTLPC	LCN
2	EA	FIRE/LIFE WALL MAG	SEM1960	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	654	IVE
1	SET	SEALS	5020B	BRN	NGP
1	EA	INTUMESCENT SEAL	BY WOOD DOOR MANUF		B/O

Hardware Set No. 30

For use on door #(s):
109C 114C

Qty		Description	Catalog Number	Finish	Mfr
2	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080T 17A	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
2	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 31

For use on door #(s):
SF-17A

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
2	EA	DUMMY PUSH BAR	330-EO	626	VON
2	EA	TRIM	550-DT	626	VON
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
2	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
2	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
2	EA	BLADE STOP SPACER	4040-61	689	LCN
2	EA	DOOR POSITION SWITCH	BY ACCESS CONTROL SUPPLIER		B/O
1	EA	POWER ASSIST OPENER	LOW ENERGY POWER OPERATOR SWING DOOR		HORT ON

Hardware Set No. 32

For use on door #(s):
SF-20

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
2	EA	FIRE EXIT HARDWARE	9927-L-F-LBR-17-SNB	626	VON
2	EA	TRIM	550-DT	626	VON
1	EA	HOUSINGINDER	20-079	626	SCH
2	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
2	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
2	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
2	EA	BLADE STOP SPACER	4040-61	689	LCN

Hardware Set No. 33

For use on door #(s):
120 121

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PASSAGE LATCH	L9010 17A	626	SCH
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

Hardware Set No. 34

Caging Locks
All Caging Doors

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CYLINDER	Coordinate with Caging Manuf.	626 SCH	
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH

Hardware Set No. 35

Not Used

Hardware Set No. 36

For use on door #(s):
SF-04A

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	ELECTRIC STRIKE	6111	626	VON
1	EA	PANIC HARDWARE	99-NL-OP	626	VON
1	EA	TRIM	550-DT	626	VON
1	EA	HOUSINGINDER	20-079	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
1	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
1	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
1	EA	BLADE STOP SPACER	4040-61	689	LCN
1	EA	WEATHERSTRIP	BY ALUM DOOR MANUF		B/O
1	EA	MULLION SEAL	5100	BLK	NGP
1	EA	DOOR SWEEP	BY ALUM DOOR MANUF		B/O
1	EA	THRESHOLD	896V MS/LA	AL	NGP
2	EA	DOOR POSITION SWITCH	BY ACCESS CONTROL SUPPLIER		B/O
1	EA	THRESHOLD	896V MS/LA	AL	NGP
1	EA	POWER ASSIST OPENER	LOW ENERGY POWER OPERATOR SWING DOOR		HORTON

Hardware Set No. 37

For use on door #(s):
SF-04B SF-04C

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	99-NL-OP	626	VON
1	EA	TRIM	550-DT	626	VON
1	EA	HOUSINGINDER	20-079	626	SCH
1	EA	FSIC PRIMUS-XP CORE	20-740-XP	626	SCH
1	EA	FSIC HOUSING	26-094	626	SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH MC	MTLPC	LCN
1	EA	PARALLEL ARM MOUNTING PLATE	4040-18PA	689	LCN
1	EA	CUSH SHOE SUPPORT	4040-30	689	LCN
1	EA	BLADE STOP SPACER	4040-61	689	LCN

1	EA	WEATHERSTRIP	BY ALUM DOOR MANUF		B/O
1	EA	MULLION SEAL	5100	BLK	NGP
1	EA	DOOR SWEEP	BY ALUM DOOR MANUF		B/O
1	EA	THRESHOLD	896V MS/LA	AL	NGP

Miscellaneous Items

Qty		Description	Catalog Number	Finish	Mfr
1	EA	KEY CABINET	1205 (350 CAP)	GRY	LUN

END OF SECTION 087100

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manually operated roller shades for skylights.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
2. Section 079200 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

C. Samples: For each exposed product and for each color and texture specified, 10 inches (250 mm) long.

D. Samples for Initial Selection: For each type and color of shadeband material.

1. Include Samples of accessories involving color selection.

E. Samples for Verification: For each type of roller shade.

1. Shadeband Material: Not less than 10 inches (250 mm) square. Mark inside face of material if applicable.
2. Roller Shade: Full-size operating unit, not less than 16 inches (400 mm) wide by 36 inches (900 mm) long for each type of roller shade indicated.

3. Installation Accessories: Full-size unit, not less than 10 inches (250 mm) long.

F. Roller-Shade Schedule: Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of shadeband material, signed by product manufacturer.

C. Product Test Reports: For each type of shadeband material, for tests performed by manufacturer and witnessed by a qualified testing agency.

1.5 LEED SUBMITTALS

A. Credit MR 4: Recycled Content

1. Percentages by weight of post-consumer and pre-consumer recycled content.
2. Total weight of products provided.
3. Include statement indicating costs for each product having recycled content.

B. Credit IEQ 4.2: Low-Emitting Materials: Paints and Coatings

1. Manufacturer's letter stating that any coating applied to any surface of the metal wall panels is coil-applied prior to forming of the panel, and as a result, no VOC's are generated at the jobsite from field-painting operations.

C. Credit ID 1: Innovation in Design: Cradle to Cradle Certification

1. Manufacturer's evidence that metal wall panels have Cradle to Cradle certification at the silver level as administered by MBDC.

D. Credit EA 1: Optimize Energy Performance.

1. Include statement indicating contribution to reduction of energy use.

E. Credit EQ 7.1: Thermal Comfort; Design

1. Include statement indicating contribution to thermal comfort of building occupants.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Hunter Douglas Contract, RB 500 Roller Shade or comparable product by one of the following:

1. Draper Inc.
2. Lutron Electronics Co., Inc.
3. MechoShade Systems, Inc.
4. Nysan Solar Control Inc.; Hunter Douglas Company.
5. OEM Shades Inc.
6. Shade Techniques, LLC.
7. Silent Gliss USA, Inc.

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

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: #10 Stainless steel (90-lb. test)

a. Loop Length: Full length of roller shade.
b. Limit Stops: Provide upper and lower ball stops.
c. Chain-Retainer Type: Chain tensioner, jamb mounted.

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.

a. Provide for shadebands that weigh more than 10 lb (4.5 kg) or for shades as recommended by manufacturer, whichever criteria are more stringent.

B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right side of inside face of shade.
2. Direction of Shadeband Roll: Regular, from back of roller.
3. Shadeband-to-Roller Attachment: Manufacturer's standard method.

C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

D. Shadebands:

1. Shadeband Material: Light-filtering fabric.
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

a. Type: Enclosed in sealed pocket of shadeband material.
b. Color and Finish: As selected by Architect from manufacturer's full range.

E. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: Curved.
b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open, but not less than 4 inches (102 mm).

2. Endcap Covers: To cover exposed endcaps.

3. Bottom (Sill) Channel or Angle: With light seals and designed to eliminate light gaps at bottoms of shades when shades are closed.
4. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.

1. Source: Roller-shade manufacturer.
2. Type: Woven PVC-coated fiberglass and PVC-coated polyester.
3. Weight: 6.00-20.70 oz./sq. yd.
4. Orientation on Shadeband: Up the bolt.
5. Openness Factor: 15 percent.
6. Color: As selected by Architect from manufacturer's full range.

2.4 ROLLER-SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

3.2 ROLLER-SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Shadebands: Located so shadeband is not closer than 2 inches (51 mm) to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413

SECTION 133419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal wall panels.
4. Thermal insulation.
5. Accessories.
6. Foundation Design Requirements
7. Doors and frames.

B. Related Sections:

1. Division 08 Section “Door Hardware.”
2. Division 08 Section “Hollow Metal Doors and Frames.”
3. Division 03 Section “Cast in Place Concrete.”
4. Division 03 Section “Concrete Reinforcing.:”

1.3 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in referenced standards.

B. LEED Submittals:

1. Product Test Reports for Credit SS 7.2: For roof panels, documentation indicating that panels comply with Solar Reflectance Index requirement.
2. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

1. Structural-steel-framing system.
2. Metal roof panels.
3. Metal wall panels.
4. Insulation and vapor retarder facings.
5. Flashing and trim.
6. Accessories.

B. Initial Selection: For each type of roof and wall panel indicated. Provide manufacturer's brochures showing complete lineup of profiles and colors.

C. Shop Drawings: For the following metal building system components. Include plans, elevations, sections, details, and attachments to other work.

1. Anchor-Bolt Plans: Submit anchor-bolt plans and templates before foundation work begins. Include location, diameter, and projection of anchor bolts required to attach metal building to foundation. Indicate maximum load combination column reactions at each location.
2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.

    a. Show provisions for attaching roof curbs and pipe racks.

3. Metal Roof and Wall Panel Layout Drawings: Show layouts of metal panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.

    a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
    b. Show wall-mounted items including doors, windows, louvers, and lighting fixtures.
    c. Show translucent panels.

4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:8):

    a. Flashing and trim.
    b. Gutters.
    c. Downspouts.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of sizes indicated below:

1. Metal Panels: Nominal 12 inches (300 mm) long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
2. Flashing and Trim: Nominal 12 inches (300 mm) long. Include fasteners and other exposed accessories.
3. Vapor-Retarder Facings: Nominal 6-inch- (150-mm-) square Samples.
4. Accessories: Nominal 12-inch- (300-mm-) long Samples for each type of accessory.

E. Delegated-Design Submittal: For metal building systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

F. Foundation Design Drawings and Calculations sealed by a WV Professional Engineer, utilizing the column reactions supplied by the Metal Building Manufacturer.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified erector.

B. Welding certificates.

C. Metal Building System Certificates: For each type of metal building system, from manufacturer.

1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

   a. Name and location of Project.
   b. Order number.
   c. Name of manufacturer.
   d. Name of Contractor.
   e. Building dimensions including width, length, height, and roof slope.
   f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
   g. Governing building code and year of edition.
   h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
   i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
   j. Building-Use Category: Indicate category of building use and its effect on load importance factors.
   k. AISC Certification for Category MB: Include statement that metal building system and components were designed and produced in an AISC-Certified Facility by an AISC-Certified Manufacturer.

D. Erector Certificates: For each product, from manufacturer.

E. Manufacturer Certificates: For each product, from manufacturer.

F. Material Test Reports: For each of the following products:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for insulation and vapor-retarder facings. Include reports for thermal resistance, fire-test-response characteristics, water-vapor transmission, and water absorption.

H. Source quality-control reports.

I. Field quality-control reports.

J. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.

K. Maintenance Data: For metal panel finishes to be included in maintenance manuals.

L. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer and member of MBMA.

1. AISC Certification for Category MB: An AISC-Certified Manufacturer that designs and produces metal building systems and components in an AISC-Certified Facility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Land Surveyor Qualifications: A professional land surveyor who practices in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.

C. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

D. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

E. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

F. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

G. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings," for design requirements and allowable stresses.

H. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

I. Fire-Resistance Ratings: Where indicated, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
2. Combustion Characteristics: ASTM E 136.

J. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

K. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to metal building systems including, but not limited to, the following:

    a. Condition of foundations and other preparatory work performed by other trades.
    b. Structural load limitations.
    c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
    d. Required tests, inspections, and certifications.
    e. Unfavorable weather and forecasted weather conditions.

2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:

    a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
    b. Structural limitations of purlins and rafters during and after roofing.
    c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
    d. Temporary protection requirements for metal roof panel assembly during and after installation.
    e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:

    a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
    b. Structural limitations of girts and columns during and after wall panel installation.
    c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.

d. Temporary protection requirements for metal wall panel assembly during and after installation.
e. Wall observation and repair after metal wall panel installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect foam-plastic insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
3. Complete installation and concealment of foam-plastic materials as rapidly as possible in each area of construction.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements:

1. Established Dimensions for Foundations: Comply with established dimensions on approved anchor-bolt plans, establishing foundation dimensions and proceeding with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.
2. Established Dimensions for Metal Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal panels without field measurements, or allow for field trimming metal panels. Coordinate construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.9 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."

B. Coordinate installation of roof curbs equipment supports and roof penetrations, which are specified in Division 07 Section "Roof Accessories."

C. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. A&S Building Systems, Inc.; Division of NCI Building Systems, L.P.
2. American Buildings Company; Division of Magnatrax Corp.
3. American Steel Building Co., Inc.
4. Behlen Mfg. Co.
5. Butler Manufacturing Company; a BlueScope Steel company.
6. Ceco Building Systems; Division of NCI Building Systems, L.P.
7. Kirby Building Systems; Division of Magnatrax Corp.

8. Nucor Building Systems.
9. Oakland Metal Buildings, Inc.
10. Olympia Steel Building Systems.
11. VP Buildings; a United Dominion company.
12. Vulcan Steel Structures, Inc.

2.2 METAL BUILDING SYSTEMS

A. Description: Provide a complete, integrated set of metal building system manufacturer's standard mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

1. Provide metal building system of size and with bay spacings, roof slopes, and spans indicated.

B. Primary-Frame Type:

1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.

C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of load-bearing end-wall and corner columns and rafters.

D. Secondary-Frame Type: Manufacturer's standard purlins and joists and flush-framed girts.

E. Eave Height: Manufacturer's standard height, as indicated by nominal height on Drawings.

F. Bay Spacing: As determined by clearances required on Drawings.

G. Roof Slope: 2 inch per 12 inches (1:12).

H. Roof System: Manufacturer's standard vertical-rib, standing-seam metal roof panels with field-installed insulation.

I. Exterior Wall System: Manufacturer's standard concealed-fastener metal wall panels.

2.3 METAL BUILDING SYSTEM PERFORMANCE

A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads: Roof Live Load= 30 psf + 8 psf auxiliary load
2. Design Loads: As required by MBMA's "Metal Building Systems Manual."
3. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:

a. Purlins and Rafters: Vertical deflection of 1/240 of the span.
b. Girts: Horizontal deflection of 1/240 of the span.
c. Metal Roof Panels: Vertical deflection of 1/240 of the span.
d. Metal Wall Panels: Horizontal deflection of 1/240 of the span.
e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.

4. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:

a. Lateral Drift: Maximum of 1/400 of the building height.

5. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E 1592.

C. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

D. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Air Infiltration for Metal Roof Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) of roof area when tested according to ASTM E 1680 at negative test-pressure difference of 1.57 lbf/sq. ft. (75 Pa).

F. Air Infiltration for Metal Wall Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) of wall area when tested according to ASTM E 283 at static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa).

G. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 at test-pressure difference of 2.86 lbf/sq. ft. (137 Pa).

H. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E 331 at a wind-load design pressure of not less than 2.86 lbf/sq. ft. (137 Pa).

I. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for Class 30.

J. Thermal Performance: Provide insulated metal panel assemblies with the following maximum U-factors and minimum R-values for opaque elements when tested according to ASTM C 1363 or ASTM C 518:

1. Metal Roof Panel Assemblies:

a. R-Value: 19.

K. Energy Performance: Provide roof panels with Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

2.4 STRUCTURAL-STEEL FRAMING

A. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

    a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.

2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
3. Frame Configuration: One-directional sloped.
4. Exterior Column Type: Uniform depth.
5. Rafter Type: Tapered.

B. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:

1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.
2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.

C. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:

1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- (64-mm-) wide flanges.

    a. Depth: As needed to comply with system performance requirements.

2. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- (64-mm-) wide flanges.

    a. Depth: As required to comply with system performance requirements.

3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.

4. Flange Bracing: Minimum 2-by-2-by-1/8-inch (51-by-51-by-3-mm) structural-steel angles or 1-inch (- (25-mm-) diameter, cold-formed structural tubing to stiffen primary-frame flanges.
5. Sag Bracing: Minimum 1-by-1-by-1/8-inch (25-by-25-by-3-mm) structural-steel angles.
6. Base or Sill Angles: Minimum 3-by-2-inch (76-by-51-mm) zinc-coated (galvanized) steel sheet.
7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
8. Secondary End-Wall Framing: Manufacturer's standard sections fabricated from structural-steel sheet.
9. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
10. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

D. Bracing: Provide adjustable wind bracing as follows:

1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 (345); or ASTM A 529/A 529M, Grade 50 (345); minimum 1/2-inch- (13-mm-) diameter steel; threaded full length or threaded a minimum of 6 inches (152 mm) at each end.
2. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
3. Fixed-Base Columns: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
4. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels.
5. Bracing: Provide wind bracing using any method specified above, at manufacturer's option.

E. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide hot-dip galvanized bolts for structural-framing components that are galvanized.

F. Materials:

1. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55 (345 or 380); or ASTM A 529/A 529M, Grade 50 or 55 (345 or 380).
2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55 (345 or 380); or ASTM A 529/A 529M, Grade 50 or 55 (345 or 380).
3. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55 (345 or 380); or ASTM A 529/A 529M, Grade 50 or 55 (345 or 380).
4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55 (205 through 380), or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70 (310 through 480); or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80 (170 through 550), or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70 (310 through 480).

7. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80 (230 through 550), or High-Strength Low-Alloy Steel (HSLAS), Grades 50 through 80 (340 through 550); with G60 (Z180) coating designation; mill phosphatized.
8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

    a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80 (230 through 550), or High-Strength Low-Alloy Steel (HSLAS), Grades 50 through 80 (340 through 550); with G90 (Z275) coating designation.
    b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Structural Steel (SS), Grade 50 or 80 (340 or 550); with Class AZ50 (AZM150) coating.

9. Joist Girders: Manufactured according to "Standard Specifications for Joist Girders," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated and required for primary framing.
10. Steel Joists: Manufactured according to "Standard Specifications for Open Web Steel Joists, K-Series," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated and required for secondary framing.

11. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563 (ASTM A 563M) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M) hardened carbon-steel washers.

    a. Finish: Plain.
12. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex-head steel structural bolts with spline ends.

    a. Finish: Plain.

13. Unheaded Anchor Rods: ASTM F 1554, Grade 36.

    a. Configuration: Straight.
    b. Nuts: ASTM A 563 (ASTM A 563M) hex carbon steel.
    c. Plate Washers: ASTM A 36/A 36M carbon steel.
    d. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
    e. Finish: Plain.

14. Headed Anchor Rods: ASTM F 1554, Grade 36.

    a. Configuration: Straight.
    b. Nuts: ASTM A 563 (ASTM A 563M) hex carbon steel.
    c. Plate Washers: ASTM A 36/A 36M carbon steel.
    d. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
    e. Finish: Plain.

15. Threaded Rods: ASTM A 193/A 193M.

a. Nuts: ASTM A 563 (ASTM A 563M) hex carbon steel.
b. Washers: ASTM A 36/A 36M carbon steel.
c. Finish: Plain.

16. Recycled Content of Steel Products: Provide steel products with an average recycled content so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

G. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

1. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil (0.025 mm).

a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil (0.013 mm) on each side.

2. Prime galvanized members with specified primer after phosphoric acid pretreatment.
3. Primer: SSPC-Paint 15, Type I, red oxide.

2.5 METAL ROOF PANELS

A. Vertical-Rib, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.

1. Material: Aluminum-zinc alloy-coated steel sheet, 0.028-inch (0.71-mm) nominal thickness.

a. Exterior Finish: Fluoropolymer.
b. Color: As selected by Architect from manufacturer's full range of standard or custom colors.

2. Clips: Manufacturer's standard, fixed type; fabricated from zinc-coated (galvanized) steel sheet.
3. Joint Type: Mechanically seamed, folded according to manufacturer's standard.
4. Panel Coverage: 16 inches (406 mm) approx. To be determined by profile selected.
5. Panel Height: 2 inches (51 mm) approx. To be determined by profile selected.
6. Uplift Rating: UL 30.

B. Materials:

1. Metallic-Coated Steel Sheet: Restricted-flatness steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 (Class AZM150 coating designation, Grade 275); structural quality.
b. Surface: Smooth, flat finish.

C. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.6 METAL WALL PANELS

A. Concealed-Fastener Metal Wall Panels: Profile to be selected from Manufacturer’s standard concealed-fastener selections; designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps.

1. Material: Zinc-coated (galvanized) steel sheet, 0.028-inch (0.71-mm) nominal thickness.

a. Exterior Finish: Fluoropolymer.
b. Color: As selected by Architect from manufacturer's full range of standard or custom colors.

2. Panel Coverage: 16 inches (406 mm) approx. To be determined by profile selected.
3. Panel Height: 2 inches (51 mm) approx. To be determined by profile selected.

B. Materials:

1. Metallic-Coated Steel Sheet: Restricted-flatness steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 (Class AZM150 coating designation, Grade 275); structural quality.
b. Surface: Smooth, flat finish.

C. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.7 THERMAL INSULATION (Roof)

A. Faced Metal Building Insulation: ASTM C 991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. (8-kg/cu. m) density; 2-inch- (51-mm-) wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.8 DOORS AND FRAMES

A. Swinging Personnel Doors and Frames: As specified in Division 08 Section "Hollow Metal Doors and Frames."

2.9 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
2. Clips: Manufacturer's standard, formed from steel sheet, designed to withstand negative-load requirements.
3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from steel sheet.
4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets,

fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Formed from 0.022-inch (0.56-mm) nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match adjacent metal panels.

1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Opening Trim: Formed from 0.034-inch (0.86-mm) nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

E. Gutters: Formed from 0.022-inch (0.56-mm) nominal-thickness, aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2438-mm-) long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."

1. Gutter Supports: Fabricated from same material and finish as gutters.
2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.

F. Downspouts: Formed from 0.022-inch (0.56-mm) nominal-thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- (3-m-) long sections, complete with formed elbows and offsets.

1. Mounting Straps: Fabricated from same material and finish as gutters.

G. Roof Curbs: Fabricated from minimum 0.052-inch (1.32-mm) nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal roof panels; with welded top box and bottom skirt, and integral full-length cricket; capable of withstanding loads of size and height indicated.

1. Curb Subframing: Fabricated from 0.064-inch (1.63-mm) nominal-thickness, angle-, C-, or Z-shaped metallic-coated steel sheet.
2. Insulation: 1-inch- (25-mm-) thick, rigid type.

H. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

I. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.

    a. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
    b. Fasteners for Metal Wall Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head.
    c. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.

2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:

    a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
    b. Joint Sealant: ASTM C 920; one-part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate product.

B. Special Inspector: Owner may engage a qualified special inspector to perform the following tests and inspections and to submit reports. Special inspector will verify that manufacturer maintains detailed fabrication and quality-control procedures and will review the completeness and adequacy of those procedures to perform the Work.

1. Special inspections will not be required if fabrication is performed by manufacturer registered and approved by authorities having jurisdiction to perform such Work without special inspection.

    a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

C. Testing: Test and inspect shop connections for metal buildings according to the following:

1. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

2. Welded Connections: In addition to visual inspection, shop-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:

   a. Liquid Penetrant Inspection: ASTM E 165.
   b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   c. Ultrasonic Inspection: ASTM E 164.
   d. Radiographic Inspection: ASTM E 94.

D. Product will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

2.11 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Make shop connections by welding or by using high-strength bolts.
2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
4. Weld clips to frames for attaching secondary framing.
5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written erection instructions and erection drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.

    a. Joint Type: Snug tightened or pretensioned.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Locate canopy framing as indicated.
4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

B. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over, but not attached to, structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.

1. Install clips to supports with self-drilling or self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement due to thermal expansion and contraction. Predrill panels for fasteners.
6. Provide metal closures at peaks rake edges rake walls and each side of ridge caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated; or, if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m), nonaccumulative, on level, plumb, and on location lines as indicated, and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
4. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation, with both sets of facing tabs sealed, to provide a complete vapor retarder.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.

    a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

2. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.8 DOOR AND FRAME INSTALLATION

A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.

B. Personnel Doors and Frames: Install doors and frames according to SDI A250.8. Fit non-fire-rated doors accurately in their respective frames, with the following clearances:

1. Between Doors and Frames at Jambs and Head: 1/8 inch (3 mm).
2. Between Edges of Pairs of Doors: 1/8 inch (3 mm).
3. At Door Sills with Threshold: 3/8 inch (9.5 mm).

C. Door Hardware: Mount units at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

1. Install surface-mounted items after finishes have been completed on substrates involved.
2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
4. Set thresholds for exterior doors in full bed of butyl-rubber sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.9 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

D. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.

1. Tie downspouts to underground drainage system indicated.

E. Louvers: Locate and place louver units level, plumb, and at indicated alignment with adjacent work.

1. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
2. Provide perimeter reveals and openings of uniform width for sealants and joint fillers.
3. Protect galvanized- and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of corrosion-resistant paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.
4. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Division 07 Section "Joint Sealants" for sealants applied during louver installation.

F. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.

G. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.10 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Inspection of fabricators.
2. Steel construction.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Tests and Inspections:

1. High-Strength, Field-Bolted Connections: Connections shall be tested and inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
2. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:

    a. Liquid Penetrant Inspection: ASTM E 165.
    b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
    c. Ultrasonic Inspection: ASTM E 164.
    d. Radiographic Inspection: ASTM E 94.

D. Product will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.11 ADJUSTING

A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.

B. Door Hardware: Adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate as intended.

3.12 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing and accessories.

1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

E. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

F. Doors and Frames: Immediately after installation, sand rusted or damaged areas of prime coat until smooth and apply touchup of compatible air-drying primer.

1. Immediately before final inspection, remove protective wrappings from doors and frames.

G. Louvers: Clean exposed surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.

1. Restore louvers damaged during installation and construction period so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

a. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 133419

SECTION 221313 – FACILITY SANITARY SEWERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes sanitary sewerage outside the building.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. EPDM: Ethylene-propylene-diene-monomer rubber.

C. PE: Polyethylene plastic.

D. PVC: Polyvinyl chloride plastic.

1.4 PERFORMANCE REQUIREMENTS

A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Valves and cleanouts.
2. Pipe.
3. Casing pipe.
4. Tracer wire.
5. Precast concrete products.
6. Frames and covers.

B. Coordination Drawings: Show manholes and other structures, pipe sizes, locations, and elevations. Include details of underground structures and connections. Show other piping in same trench and clearances from sewerage system piping. Indicate interface and spatial relationship between piping and proximate structures.

C. Coordination Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5

feet. Indicate underground structures and pipe. Show types, sizes, materials, and elevations of other utilities crossing system piping.

D. Design Mix Reports and Calculations: For each class of cast-in-place concrete.

E. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic structures, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

1.7 PROJECT CONDITIONS

A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.

B. Locate existing structures and piping to be closed and abandoned.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by WVARNG or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify COTR not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without COTR's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe and fitting materials.

2.2 PIPES AND FITTINGS

A. PVC Sewer Pipe and Fittings: According to the following:

1. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D 3034, SDR 35, for solvent-cemented or gasketed joints.

a. Gaskets: ASTM F 477, elastomeric seals.

B. Mechanical-Joint Piping:

1. Pipe: AWWA C151, with bolt holes in bell.
2. Standard Fittings: AWWA C110, ductile or gray iron, with bolt holes in bell.
3. Compact Fittings: AWWA C153, with bolt holes in bells.
4. Glands: Cast or ductile iron; with bolt holes and high-strength, cast-iron or high-strength, low-alloy steel bolts and nuts.
5. Gaskets: AWWA C111, rubber, of shape matching pipe, fittings, and glands.
6. Lining: AWWA C104, cement mortar.

C. Casing: Steel pipe complying with ASTM A 53/A 53M, Schedule 40, black steel, Type E or S, Grade B, with corrosion-protective coating covering.

2.3 SPECIAL PIPE COUPLINGS AND FITTINGS

A. Sleeve-Type Pipe Couplings: ASTM C 1173, rubber or elastomeric sleeve and band assembly fabricated to mate with OD of pipes to be joined, for nonpressure joints.

1. Sleeve Material for Cast-Iron Soil Pipe: ASTM C 564, rubber.
2. Sleeve Material for Plastic Pipe: ASTM F 477, elastomeric seal.
3. Sleeve Material for Dissimilar Pipe: Compatible with pipe materials being joined.
4. Bands: Stainless steel, at least one at each pipe insert.

B. Bushing-Type Pipe Couplings: ASTM C 1173, rubber or elastomeric bushing fabricated to mate with OD of smaller pipe and ID of adjoining larger pipe, for nonpressure joints.

1. Material for Cast-Iron Soil Pipe: ASTM C 564, rubber.
2. Material for Plastic Pipe: ASTM F 477, elastomeric seal.
3. Material for Dissimilar Pipe: Compatible with pipe materials being joined.

2.4 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches minimum unless otherwise indicated.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section; with separate base slab or base section with integral floor.
5. Riser Sections: 4-inch minimum thickness, of length to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated; with top of cone of size that matches grade rings.
7. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
8. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
9. Steps: Individual FRP steps or FRP ladder; wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps

10. Adjusting Rings: Interlocking HDPE rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
11. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Manhole Frames and Covers:

1. Description: Ferrous; 24-inch ID by 7- to 9-inch riser, with 4-inch- minimum-width flange and 26-inch- diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER."
2. Material: ASTM A 48, Class 35 gray iron unless otherwise indicated.

C. Manhole-Cover Inserts:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. FRW Industries; a Syneco Systems, Inc. company.
    b. Knutson Enterprises.
    c. L. F. Manufacturing, Inc.
    d. Parson Environmental Products, Inc.

2. Description; Manufactured, plastic form, of size to fit between manhole frame and cover and designed to prevent stormwater inflow. Include handle for removal and gasket for gastight sealing.
3. Type: Solid.

2.5 CLEANOUTS

A. Gray-Iron Cleanouts: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug. Use units with top-loading classifications according to the following applications:

1. Light Duty: In earth or grass foot-traffic areas.
2. Medium Duty: In paved foot-traffic areas.
3. Extra-Heavy Duty: In roads and parking areas.
4. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

2.6 CONCRETE

A. General: Cast-in-place concrete complying with ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615, Grade 60 (420 MPa) deformed steel.

C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.

a. Invert Slope: 2 percent through manhole.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 IDENTIFICATION

A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.

1. Use warning tape or detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.3 SPECIAL PIPE COUPLING AND FITTING APPLICATIONS

A. Special Pipe Couplings: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.

1. Use the following pipe couplings for nonpressure applications:

a. Sleeve type to join piping, of same size, or with small difference in OD.
b. Increaser/reducer-pattern, sleeve type to join piping of different sizes.
c. Bushing type to join piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

B. Special Pipe Fittings: Use where indicated. Include PE film, pipe encasement.

3.4 INSTALLATION, GENERAL

A. General Locations and Arrangements: Contract Drawing and details indicate general location and arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.

C. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.

D. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. Install gravity-flow piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.

1. Install piping pitched down in direction of flow, at minimum slope of 0.5 percent, unless otherwise indicated.
2. Install piping with 36-inch minimum cover.

F. Tunneling: Install pipe under streets or other obstructions that cannot be disturbed by tunneling, jacking, or a combination of both.

3.5 PIPE JOINT CONSTRUCTION AND INSTALLATION

A. PVC Sewer Pipe and Fittings: As follows:

1. Join pipe and gasketed fittings with gaskets according to ASTM D 2321.
2. Join profile sewer pipe fittings with gaskets according to ASTM D 2321 and manufacturer's written instructions.
3. Install according to ASTM D 2321.

B. System Piping Joints: Make joints using system manufacturer's couplings, unless otherwise indicated.

C. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

D. Install with top surfaces of components, except piping, flush with finished surface.

3.6 CLEANOUT INSTALLATION

A. Install cleanouts and riser extension from sewer pipe to cleanout at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.

3.7 TAP CONNECTIONS

A. Make connections to existing piping and underground structures so finished Work complies as nearly as practical with requirements specified for new Work.

B. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.

C. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.8 FIELD QUALITY CONTROL

A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.

1. Place plug in end of incomplete piping at end of day and when work stops.
2. Flush piping between manholes and other structures to remove collected debris.

B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    c. Crushed, broken, cracked, or otherwise damaged piping.
    d. Infiltration: Water leakage into piping.
    e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

2. Test completed piping systems according to authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate reports for each test.
5. If authorities having jurisdiction do not have published procedures, perform tests as follows:

    a. Sanitary Sewerage: Perform hydrostatic test.

        1) Allowable leakage is maximum of 50 gal. per inch of nominal pipe size per mile of pipe, during 24-hour period.
        2) Close openings in system and fill with water.
        3) Purge air and refill with water.
        4) Disconnect water supply.
        5) Test and inspect joints for leaks.
        6) Option: Test ductile-iron piping according to AWWA C600, Section "Hydrostatic Testing." Use test pressure of at least 10 psig.

    b. Sanitary Sewerage: Pneumatic pressure testing is prohibited.

6. Manholes: Perform hydraulic test according to ASTM C 969.
7. Leaks and loss in test pressure constitute defects that must be repaired.
8. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.9 ACCEPTANCE

A. Coordinate for inspection, testing, and acceptance of the completed line by the City of Buckhannon upon completion of installation. Any costs incurred for inspection, testing, and acceptance shall be paid by the Contractor.

END OF SECTION 221313

SECTION 237443 – SPLIT-SYSTEM MAKE-UP AIR UNIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All Division 23 Specification Sections also apply to this Section.

1.2 SUMMARY

A. This Section includes split-sytem, make-up air units for outdoor rooftop installation with the following components and accessories:

1. Rooftop Air Handling unit containing the following:

a. Refrigerant cooling coil and hot gas reheat coil.
b. Hot water heating coil.
c. Filters and filter rack.
d. Supply fan.
e. Roof curbs.

2. Remote Condensing unit.

1.3 DEFINITIONS

A. DDC: Direct digital controls.

B. MAU: As used in this Section, this abbreviation means split system make-up air unit. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design MAU supports to comply with wind performance requirements.

B. Wind-Restraint Performance:

1. Basic Wind Speed: 90 mph.
2. Minimum 10lb/sq. ft (48.8 kg/sq. m) multiplied by the maximum area of the mechanical component projected on a vertical plane that is normal to the wind direction, and 45 degrees either side of normal.

1.5 SUBMITTALS

A. Product Data: Include manufacturer's technical data for each MAU, including rated capacities, characteristics, furnished specialties, and accessories. Also indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Wiring Diagrams: Power, signal, and control wiring.
2. Certified fan-sound power ratings.
3. Certified fan-performance curves with system operating conditions indicated.
4. Filters with performance characteristics.
5. Fan construction and accessories.
6. Motor ratings, electrical characteristics, and motor accessories.

B. Operation and Maintenance Data: For RTUs to include in emergency, operation, and maintenance manuals.

C. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

A. ARI Compliance: Air-handling units and their components shall be factory tested according to ARI 430, "Central-Station Air-Handling Units," and shall be listed and labeled by ARI.

B. NFPA Compliance: Comply with NFPA 90A and NFPA 90B.

C. UL Compliance: Comply with UL 1995.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.7 COORDINATION

A. Coordinate sizes and locations of structural-steel support members, with actual equipment provided.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fan Belts: One set for each belt-driven fan.
2. Filters: One set of filters for each unit.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Aaon.
2. Reznor.
3. Engineered Air.
4. Jackson & Church.
5. Trane.

2.2 MAKE-UP AIR UNITS

A. General:

1. Each split system make-up air unit shall be factory-assembled, with hot water heating coil, refrigerant cooling coil, refrigerant hot gas reheat coil, supply fan, and filters along with a remote condensing unit.
2. Contained within the make-up air unit enclosure shall be:

    a. All factory wiring
    b. All refrigerant piping including a full refrigerant charge (R-410A) and operating oil charge
    c. Supply fan with motor and drive
    d. Hot water heating coil
    e. Evaporator cooling coil
    f. Hot gas reheat coil
    g. Microprocessor based control system and associated hardware
    h. All special features required prior to field start-up.

3. Contained the remote condensing unit enclosures shall be:

    a. All factory wiring
    b. All refrigerant piping including a full refrigerant charge (R-410A) and operating oil charge
    c. A condensing section including compressors, condenser coil(s), single refrigerant circuit or dual refrigerant circuits, liquid sub-cooling coil, and condenser fan(s)
    d. Microprocessor based control system and associated hardware
    e. All special features required prior to field start-up.

4. The unit shall be factory assembled and tested including leak testing of the coils and run testing of the completed unit. Run test report shall be supplied with the unit in the controls compartment’s literature pocket.
5. The unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.

6. The unit components shall be labeled, including pipe stub outs and electrical and controls components.
7. Estimated sound power levels (dB) shall be shown on the unit ratings sheet.
8. Installation, Operation, and Maintenance manual shall be supplied within the unit.
9. Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment's access door.
10. A unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit, and affixed to the interior of the control compartment's access door.
11. The make-up air unit shall be designed for downward discharge.

B. Make-Up Air Unit Cabinet:

1. Each unit shall be a double wall design, constructed of G-90 galvanized steel, bonderized and pre-coated with a baked enamel finish. The Top cover shall be 18-gage sheet metal with 4.0-lb density, closed cell insulation with a 24-gage sheet metal interior liner. Interior cabinet surfaces shall be lined with 24 gauge galvanized steel. Corner and center posts shall be 16-gage galvanized steel. Base rail shall be 14-gage galvanized steel. Unit casing shall be capable of withstanding 1000-hour salt spray exposure per ASTM B117 (scribed specimen).
2. Unit shall have insulated hinged access doors for easy access to the control box and other areas requiring servicing. Each door shall seal against a rubber gasket to help prevent air and water leakage and be equipped to permit ease and safety during servicing.Access panels and doors shall be 20-gage sheet metal with 4.0-lb density, closed cell insulation with a 24-gage sheet metal interior liner. Access doors shall be equipped with stainless steel hinges and quarter turn, adjustable, cam-action latches.
3. Base pans shall be 16-gage galvanized steel. All openings through the base pan shall have upturned flanges at least 0.5 inches in height. Basepans shall be insulated with 0.375-in. thick closed cell foam insulation.
4. Compressor rail shall be 12-gage galvanized steel. Unit shall have vinyl coated security grille to protect the condenser and compressor section.
5. Unit shall have a factory-installed sloped condensate drain connection fabricated of stainless steel. Condensate pan shall be 16-gage stainless steel insulated with closed cell neoprene insulation.
6. Fan deck (indoor and outdoor section) shall be 16-gage galvanized steel.
7. Roof sections shall be sloped for proper drainage.
8. Unit shall be equipped with rigging openings in frame rails to facilitate overhead rigging.
9. Filters shall be accessible through a hinged access panel.
10. The outdoor air opening shall have a factory-installed hood with bird screen.

C. Supply Fan:

1. Indoor Evaporator Fan:

   a. Evaporator fan(s) shall be double-width/double-inlet, centrifugal, belt driven, forward-curved type with single outlet discharge. Fan shaft bearings shall be of the pillow block type with positive locking collar and are permanently lubricated. Fans shall be statically and dynamically balanced.
   b. Evaporator fan shaft bearings shall have a minimum L10 life of 30,000 hours.
   c. Fan assembly shall be on a slide-out deck that is removable for maintenance and service. The fan assembly shall be mounted in rubber vibration isolators.

D. Evaporator Coil and Hot Gas Reheat Coil:

1. The evaporator coil shall have enhanced surface aluminum plate fins mechanically bonded to six rows of seamless internally grooved copper tubes with all joints brazed.
2. The hot gas reheat coil shall have enhanced surface aluminum plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
3. Coils shall be pressure tested at 650 psig prior to unit assembly; leaks tested at 150 psig and undergo final testing at 475 psig.

E. Hot Water Heating Coil:

1. The hot water heating coil shall have enhanced surface aluminum plate fins mechanically bonded to two rows of seamless copper tubes.
2. The coil shall be installed downstream of the evaporator coil and shall be provided with air vents. Coil connection stubs shall be located inside the unit cabinet.
3. Hydronic coil control valves shall be furnished by the ATC Subcontractor to the rooftop unit manufacturer who shall install them inside the unit in the factory.

F. Filter Section:

1. The filter section shall be supplied with 2-inch thick MERV-8 fiberglass filters.
2. The unit shall include a Magnehelic gauge mounted in the controls compartment.

G. Controls and Safeties:

1. Microprocessor Controls: Unit shall have factory installed DDC-type unit controls with the following features:

    a. The unit shall include a field-installed space temperature sensor with communication port.
    b. The unit shall be provided with an interface device that will provide full BACnet, Modbus, or LonWorks protocol communication capability.
    c. The unit shall be provided with a 5°F temperature difference between cooling and heating set points to meet ASHRAE 90.1, energy standard.
    d. The unit shall be provided with an alarm indicator and an audible alarm signal.
    e. The unit shall be provided with a display showing a current alarm list and an alarm history list.
    f. The unit shall be provided with compressor minimum run time (3 minutes) and minimum off time (5 minutes) relays.
    g. The unit shall be provided with service run test capability.
    h. The unit shall be provided with a service diagnostic mode.
    i. The unit shall be provided with a minimum of 2 capacity stages (single circuit) or 3 capacity stages (dual circuit) of mechanical capacity control (excluding hot gas bypass) controlled with logic to maintain supply-air temperature set point.
    j. The unit shall be provided with a complete self-contained low voltage control circuit.

H. Operating Characteristics:

1. The unit shall be capable of starting and running at 115 F ambient outdoor temperatures per maximum load criteria of AHRI Standard 340/360.
2. The unit shall be equipped with a factory installed weatherproof, full-size, outside-air intake hood and bird screen.

I. Electrical Requirements:

1. All unit power wiring shall enter unit cabinet at a single location.

J. Motors:

1. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have either internal line break thermal and current overload protection or external current overload modules with compressor temperature sensors.
2. All condenser-fan motors shall be open drip proof with permanently lubricated ball bearings, class F insulation and manual reset overload protection.
3. All indoor-fan motors 5 hp and larger shall meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT).
4. All indoor fan motors shall be open drip proof design.
5. Refer to Division 23 Section “Common Motor Requirements for HVAC Equipment” for additional requirements.

K. Additional Features:

1. Non-Fused Disconnect Switch: The unit shall be provided with a factory-installed, internally mounted, and UL approved non-fused disconnect switch. The disconnect switch shall provide unit power shutoff and shall be accessible from outside the unit. The disconnect switch shall provide power off lockout capability.
2. Phase/Voltage Monitor: The unit shall be provided with a factory-installed under-voltage and phase loss sensor that shall stop the unit whenever voltage is too low, phases are out of sequence, or a phase is dropped. The unit shall restart automatically within five minutes after the correct power is supplied.
3. Full Perimeter Roof Curb: The roof curb shall be factory built and shall be of box section design, constructed of minimum 14-gauge galvanized steel with continuous welded corner seams, factory installed wood nailer, and insulated with 1-1/2 inch, 3 pound density rigid fiberglass board and shall be capable of supporting entire unit weight. Roof curb shall have integral 1-inch vibration isolation. Isolation shall come installed from the roof curb manufacturer. Refer to Division 23 Section “Vibration Controls for HVAC Piping and Equipment” for additional vibration isolation roof curb-rail requirements.
    a. If required, ship the roof curb knocked down and provide instructions for field assembly.
    b. The roof curb shall be manufactured in accordance with the National Roofing Contractors Association guidelines for rooftop equipment support.
    c. The roof curb shall be sloped to match the contour of the roof area on which it is to be installed in order to provide a level unit installation.

d. For the make-up air unit, the roof curb shall have an integral supply-air plenum and an integral return air plenum along with integral supply-air and return-air duct connections fabricated in the side of the curb for horizontal discharge and horizontal inlet.

L. Remote Condensing Unit:

1. Condenser Fans:

a. Fans shall be direct-driven propeller type only, with corrosion-resistant blades riveted to corrosion-resistant steel supports. Fans shall discharge air vertically upward and be protected by PVC coated steel wire safety guards. Fans shall be statically and dynamically balanced.
b. Condenser fans shall have factory mounted VF drives.

2. Condenser Coils:

a. Condenser coil shall be enhanced surface aluminum fins formed on multiple rows of seamless rifled copper tubing arranged in staggered tube configuration with galvanized steel header plates. The tubes shall be mechanically expanded, firmly bonding the tube to the shoulder of each fin. Copper tubes shall have brazed joints.
b. Coils shall be pressure tested at 650 psig prior to unit assembly; leaks tested at 150 psig and undergo final testing at 475 psig.

3. Compressors:

a. Compressors shall be the fully hermetic, scroll type with overload protection and short cycle protection with minimum on and off timers. The lead compressor shall be the fully hermetic, digital scroll type.

1) The lead compressor shall be the fully hermetic, digital scroll type. The unit control system shall be capable of unloading the compressor(s) in an unlimited number of steps from 100% capacity down to 10% capacity.

b. Compressors shall be mounted on factory installed rubber-in-shear vibration isolators for vibration isolation.
c. Compressors shall have reverse rotation protection.
d. Crankcase heaters shall be provided and shall only be activated during compressor off mode.
e. Hot gas reheat piping, valves, controls and accessories shall be provided.

4. Refrigerant Components:

a. The unit shall be equipped with a single refrigerant circuit or dual refrigerant circuits. Each refrigerant circuit shall contain:

1) Solid core filter drier.
2) Adjustable thermostatic expansion valve.
3) Minimum load valve (hot gas bypass).
4) Gage connection ports.

b. The unit shall be equipped with variable-speed low ambient head pressure control

5. Safeties:

   a. The unit shall incorporate a solid-state compressor lockout which provides optional reset capability at the space thermostat should any of the following safety devices trip and shut off compressor:

      1) Compressor lockout protection provided for either internal or external overload.
      2) Low-pressure protection.
      3) Freeze protection (evaporator coil).
      4) High-pressure protection.
      5) Loss of charge protection.

   b. A supply-air temperature sensor shall be located in the unit and shall be used for compressor stage control.
   c. The unit shall be equipped with a supply fan status switch to protect the system in the event of a fan drive failure.

6. Operating Characteristics:

   a. The unit shall be capable of starting and running at 115 F ambient outdoor temperatures per maximum load criteria of AHRI Standard 340/360.

7. Electrical Requirements:

   a. All unit power wiring shall enter unit cabinet at a single location.

M. Automatic Temperature Controls: Refer to Division 23 Section "Automatic Temperature Control for HVAC" for automatic temperature control requirements.

1. Installation of ATC Subcontractor Furnished Controls: The ATC Subcontractor shall furnish all automatic temperature controls that are to be mounted within the make-up air unit to the make-up air unit manufacturer who shall mount and wire those controls in the factory.

N. Sequence of Operations: Refer to Division 23 Section "Sequence of Operation for HVAC Controls" for operating sequence requirements.

O. Capacities and Characteristics: Refer to the schedule on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Examine roughing-in for MAUs to verify actual locations of piping and duct connections before equipment installation.

C. Examine roofs for suitable conditions where MAUs will be installed.

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

3.2 INSTALLATION

A. Roof Curb: Install rooftop air handling units on roof structure or concrete base, level and secure, according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." Install rooftop air handling units on curbs and coordinate roof penetrations and flashing with roof construction specified in Division 07. Secure rooftop air handling units to upper curb rail, and secure curb base to roof framing with anchor bolts.

B. Install rooftop units according to manufacturer's written instructions

3.3 CONNECTIONS

A. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.

B. Install piping to allow service and maintenance.

1. Hot Water Piping: Comply with applicable requirements in Division 23 Section "Hydronic Piping." Install shutoff valve and union or flange at each coil supply connection. Install balancing valve and union or flange at each coil return connection.

C. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory service technician to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Tests and Inspections:

1. After installing MAUs and after electrical circuitry has been energized, test units for compliance with requirements.
2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

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

3.5 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Complete installation and startup checks according to manufacturer's written instructions and do the following:

1. Inspect for visible damage to unit casing.
2. Inspect for visible damage to furnace combustion chamber.
3. Inspect for visible damage to compressor, coils, and fans.
4. Inspect internal insulation.
5. Verify that labels are clearly visible.
6. Verify that clearances have been provided for servicing.
7. Verify that controls are connected and operable.
8. Verify that filters are installed.
9. Clean condenser coil and inspect for construction debris.
10. Clean furnace flue and inspect for construction debris.
11. Connect and purge gas line.
12. Remove packing from vibration isolators.
13. Inspect operation of barometric relief dampers.
14. Verify lubrication on fan and motor bearings.
15. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
16. Adjust fan belts to proper alignment and tension.
17. Start unit according to manufacturer's written instructions.
    a. Start refrigeration system.
    b. Do not operate below recommended low-ambient temperature.
    c. Complete startup sheets and attach copy with Contractor's startup report.
18. Inspect and record performance of interlocks and protective devices; verify sequences.
19. Operate unit for an initial period as recommended or required by manufacturer.
20. Perform the following operations for both minimum and maximum firing. Adjust burner for peak efficiency.
    a. Measure gas pressure on manifold.
    b. Inspect operation of power vents.
    c. Measure combustion-air temperature at inlet to combustion chamber.
    d. Measure flue-gas temperature at furnace discharge.
    e. Perform flue-gas analysis. Measure and record flue-gas carbon dioxide and oxygen concentration.
    f. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.
21. Calibrate thermostats.
22. Adjust and inspect high-temperature limits.
23. Inspect outdoor-air dampers for proper stroke and interlock with return-air dampers.
24. Start refrigeration system and measure and record the following when ambient is a minimum of 15 deg F (8 deg C) above return-air temperature:
    a. Coil leaving-air, dry- and wet-bulb temperatures.
    b. Coil entering-air, dry- and wet-bulb temperatures.

c. Outdoor-air, dry-bulb temperature.
d. Outdoor-air-coil, discharge-air, dry-bulb temperature.

25. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
26. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.

    a. Supply-air volume.
    b. Return-air volume.
    c. Relief-air volume.
    d. Outdoor-air intake volume.

27. Simulate maximum cooling demand and inspect the following:

    a. Compressor refrigerant suction and hot-gas pressures.
    b. Short circuiting of air through condenser coil or from condenser fans to outdoor-air intake.

28. Verify operation of remote panel including pilot-light operation and failure modes. Inspect the following:

    a. High-temperature limit on gas-fired heat exchanger.
    b. Low-temperature safety operation.
    c. Filter high-pressure differential alarm.
    d. Economizer to minimum outdoor-air changeover.
    e. Relief-air fan operation.
    f. Smoke and firestat alarms.

29. After startup and performance testing and prior to Substantial Completion, replace existing filters with new filters.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain MAUs. Refer to Division 01.

END OF SECTION 237443

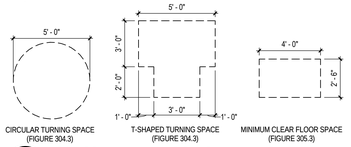
CODE STUDY RESULTS:

IBC (INTERNATIONAL BUILDING CODE) | NFPA | WV STATE FIRE CODE

Section	Result	Section	Result	Section	Result
3	USE AND OCCUPANCY CLASSIFICATION OCCUPANCY CLASSIFICATION(S): Separated Mixed Occupancies: (B) Business, (A-2) Assembly, (R-2) Hotel & Dormitory (S-1/S-2) Storage HAZARD OF CONTENTS:	6.1	B, A-2, R-2, S-1/S-2 Low/ Ordinary		
4	SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY SPECIAL REQUIREMENTS:				
5 TABLE 503	GENERAL BUILDING HEIGHTS AND AREAS ALLOWABLE BUILDING HEIGHT: 2 Story max for A-2 Assembly (actual 14 ft.) ALLOWABLE BUILDING AREA: Varies per Occupancy Type (actual 30,150 s.f.)	CHAP. TBL. 1.6	1-Story	87-1-10 & APPENDIX B	2-STORY
SECTION 506	BUILDING AREA MODIFICATIONS: Sprinkler and 25% Open perimeter req'd	CHAP. SUB. 1.6	Sprinkler req'd		
TABLE 508.4	REQUIRED SEPARATION OF OCCUPANCIES: 1-hr (with NFPA 13 sprinkler system)	TBL. 6.1.14.4.1(a)	1-hr		
6 TABLE 601	TYPES OF CONSTRUCTION CONSTRUCTION TYPE: IIB	TABLE A.8.2.1.2	II-000	APPENDIX B	II-000
TABLE 601	FIRE RESISTANCE RATING BY BUILDING ELEMENT: PRIMARY STRUCTURAL FRAME: 0 HOUR(S) BEARING WALLS: 0 HOUR(S) 0 HOUR(S) NONBEARING WALLS AND PARTITIONS: 0 HOUR(S) 0 HOUR(S) FLOOR CONSTRUCTION AND SECONDARY MEMBERS: 0 HOUR(S) ROOF CONSTRUCTION AND SECONDARY MEMBERS: 0 HOUR(S)	TABLE A.8.2.1.2	0-hr 0 0 0 0		
TABLE 602	EXTERIOR WALL RATING: 0 HOUR(S)		0		
7 TABLE 705.8 SECTION 708.4 SECTION 717	FIRE AND SMOKE PROTECTION FEATURES MAXIMUM AREA OF EXTERIOR OPENINGS: Unlimited except if adj building <10 ft fire separation SHAFT FIRE RATING: 1-hr FIREBLOCKING AND DRAFTSTOPPING: As required at smoke and fire-rated walls. Not req'd generally for Type II-000/ IIB const.	8.6.4 & 8.6.5	1-hr		
8 TABLE 803.9	INTERIOR FINISHES INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY EXIT ENCLOSURES: A or B/ I or II for Business CORRIDORS: A or B/ I or II for Business and Assembly ROOMS AND ENCLOSED SPACES: A or B - Assembly, A, B or C for rest	TABLE A.10.2.2	Same Same Same		
9 SECTION 903	FIRE PROTECTION SYSTEMS WHERE SPRINKLERS ARE REQUIRED: Throughout	9.7 & CHAP. SUB. 3.5	Throughout	87-1-6 & APPENDIX B	
TABLE 906.3(1)	PORTABLE FIRE EXTINGUISHERS: SIZE AND DISTRIBUTION: Req'd in all occupancies	CHAP. SUB. 3.5	Req'd in Business		
SECTION 906.1 & TABLE 906.1	ADDITIONAL REQUIRED LOCATIONS WITHIN 30 FEET OF COMMERCIAL COOKING EQUIPMENT WHERE FLAMMABLE OR COMBUSTIBLE LIQUIDS ARE STORED SPECIAL HAZARD AREAS ADDITIONAL LOCATIONS (SEE REFERENCED CODES)				
SECTION 907	FIRE ALARM REQUIREMENTS: Req'd	CHAP. SUB. 3.4	Req'd	87-1-11	Req'd
10 TBL. 1004.1.1	MEANS OF EGRESS MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT: SEE OCCUPANCY TABLE	TABLE 7.3.1.2	SEE OCCUPANCY TABLE		
SECTION 1005 & 1028	REQUIRED EGRESS WIDTH STAIRS: 0.3 DOORS (MIN. 32"): 0.2 RAMPS: NA	TABLE 7.3.3.1 TABLE 7.3.3.1 TBL. 7.2.5.2(a) & TBL. 7.3.3.1	0.3 0.2 NA		
SEC. 1008.1.10	PANIC HARWARE REQUIREMENTS: Req'd in Assembly spaces > 50 people	CHAP. SUB. 2.2.2	Assembly >100p		
SEC. 1014.3	COMMON PATH OF EGRESS TRAVEL DISTANCE: B-100 ft, A-2 - 250 ft., S - 100 ft. R- 75 ft.	TABLE A.7.6	B:100 A:75, R:50		
TABLE 1016.1	EXIT ACCESS TRAVEL DISTANCE: B- 300 ft, R, A-2 & S-1 - 250 ft., S-2 - 400 ft.	TABLE A.7.6	B:300 A:250 R: 250 S:400		
TABLE 1018.1	CORRIDOR FIRE-RESISTANCE RATING: 1/2-hr for R, 0-hr for B, A-2, S-1, S-2	CHAP. SUB. 3.6	Same as IBC		
SEC. 1018.2	CORRIDOR WIDTH: 44" min. except 36 in. in open office w/ < 30 people	TABLE 7.3.3.1	Same		
SEC. 1018.4	DEAD END ALLOWABLE DEPTH: A-20 ft., B, R-2, S-1/ S-2 - 50 ft.	TABLE A.7.6	Same		
TABLE 1021.1 & 1021.2	REQUIRED NUMBER OF EXITS PER STORY: 2 typ. Special at Assembly	7.4	Same		
11 SECTION 1104	ACCESSIBILITY ACCESSIBLE ROUTE: SEE SITE PLAN AND FLOOR PLANS				
TBL. 1106.1	REQUIRED NUMBER OF ACCESSIBLE PARKING SPACES TOTAL PARKING SPACES: REQUIRED ACCESSIBLE SPACES: ACCESSIBLE SPACES PROVIDED IN DESIGN:				

ADDITIONAL NOTES:

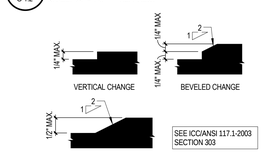
1. THE CODE STUDY RESULTS SHOWN HERE ARE NOT COMPREHENSIVE. ADDITIONAL CODES MAY APPLY.
2. LOCAL CODES ARE NOT SHOWN IN THIS REPORT AND MAY SUPERCEDE THE REQUIREMENTS LISTED.
3. IN NFPA REFERENCES, "CHAP." = CHAPTER (VARIES BY OCCUPANCY), "SUB." = SUBSECTION, "TBL." = TABLE



CIRCULAR TURNING SPACE (FIGURE 304.3) | T-SHAPED TURNING SPACE (FIGURE 304.3) | MINIMUM CLEAR FLOOR SPACE (FIGURE 305.3)

3 G-1.2 ACCESSIBILITY - FLOOR CLEARANCES

SCALE: 1/4" = 1'-0" REF. VIEW:

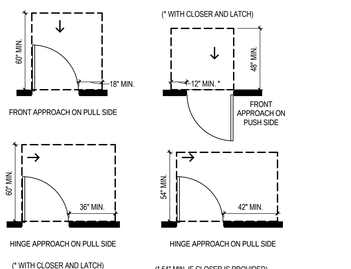


VERTICAL CHANGE | BEVELED CHANGE | BEVELED CHANGE

SEE ICC/ANSI 117.1-2003 SECTION 303

7 G-1.2 ACCESSIBILITY - CHANGES IN LEVEL

SCALE: 6" = 1'-0" REF. VIEW:



FRONT APPROACH ON PULL SIDE | FRONT APPROACH ON PUSH SIDE

HINGE APPROACH ON PULL SIDE | HINGE APPROACH ON PULL SIDE

HINGE APPROACH ON PUSH SIDE | LATCH APPROACH ON PULL SIDE

LATCH APPROACH ON PUSH SIDE

SECTION 403.5: ACCESSIBLE ROUTE SHALL BE 36" MIN. CLEAR WIDTH.

SECTION 404.2.2: DOORWAYS IN AN ACCESSIBLE ROUTE SHALL HAVE A CLEAR OPENING WIDTH OF NO LESS THAN 32".

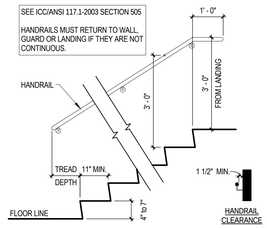
SEE ICC/ANSI A117.1-2003 SECTION 404 FOR ADDITIONAL ACCESSIBILITY REQUIREMENTS PERTAINING TO DOORS.

6 G-1.2 ACCESSIBILITY - SWING DOOR CLEARANCES

SCALE: 1/4" = 1'-0" REF. VIEW:

SEE ICC/ANSI 117.1-2003 SECTION 505

HANDRAILS MUST RETURN TO WALL, GUARD OR LANDING IF THEY ARE NOT CONTINUOUS.

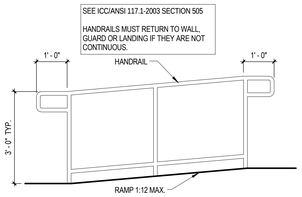


5 G-1.2 ACCESSIBILITY - STAIR HANDRAIL

SCALE: 1/2" = 1'-0" REF. VIEW:

SEE ICC/ANSI 117.1-2003 SECTION 505

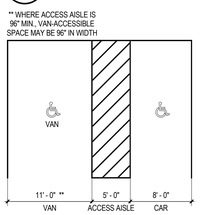
HANDRAILS MUST RETURN TO WALL, GUARD OR LANDING IF THEY ARE NOT CONTINUOUS.



4 G-1.2 ACCESSIBILITY - RAMP HANDRAIL

SCALE: 1/2" = 1'-0" REF. VIEW:

** WHERE ACCESS AISLE IS 96" MIN., VAN-ACCESSIBLE SPACE MAY BE 96" IN WIDTH



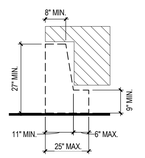
SEE ICC/ANSI 117.1-2003 SECTION 502 FOR MORE INFO.

SEE IBC TABLE 1106.1 FOR REQUIRED NUMBER OF ACCESSIBLE PARKING SPACES.

IBC SECTION 1106.5: ONE (1) OUT OF EVERY SIX (6) REQUIRED ACCESSIBLE SPACES SHALL BE VAN-ACCESSIBLE.

9 G-1.2 ACCESSIBILITY - PARKING

SCALE: 1/8" = 1'-0" REF. VIEW:



KNEE AND TOE CLEARANCE BENEATH ELEMENTS (FIGURES 306.2 AND 306.3)

8 G-1.2 ACCESSIBILITY - KNEE AND TOE CLEARANCE

SCALE: 1/2" = 1'-0" REF. VIEW:

CONSTRUCTION TYPE & CODE INFORMATION

Number of Stories / Area	1 with Mezzanine / 30,150 GSF 1st Floor, 5,100 GSF 2nd Floor = 35,250 GSF
Construction Type	TYPE 2 - 000
Sprinklered NFPA 13	WET PIPE INTERIOR - DRY PIPE EXTERIOR COVERED AREAS
Building Code(s)	WV State Building Code (2009 Edition) International Building Code (2009 Edition)
Fire Code(s)	WV State Fire Code (2009 Edition) NFPA Life Safety Code 101 (2009 Edition)
Decription of construction	Exterior Walls: Steel frame, non-load bearing metal studs with masonry/metal panel cladding Interior Partitions: Non-load bearing metal studs/dryall assemblies/ masonry
Occupancy Type(s):	NFPA 101 Occupancy - Business, Assembly (A-2), Hotel & Dormitory (R-2), Storage (S-1/ S-2)
Buckhannon City Zoning	NA

EGRESS LINES SCHEDULE

Line Series Number	Egress Length	Comments
L1A	63'	REMOTE POINT IN CONF 130 VIA CORR C2 TO EXIT
L1B	98'	REMOTE POINT CLASSROOM 127 VIA CORR C4 TO EXIT
L1C	82'	REMOTE POINT IN CLASSROOM 127 VIA LOBBY 100 TO MAIN ENTRY
L2A	113'	REMOTE POINT IN CLASSROOM 112 VIA CORR C1 TO STAIR 1
L2B	113'	REMOTE POINT IN CLASSROOM 112 VIA CORR C1 TO STAIR 2
L3A	33'	DEAD END <50 FT.
L3B	112'	REMOTE POINT IN LOCKERS 124 TO STAIR 2
L4	112'	REMOTE POINT IN SLEEPING ROOM 125 VIA CORR C1 TO STAIR 2
L5A	72'	REMOTE POINT IN OPEN 601ST OPEN OFFICE 202 VIA CORR C2 TO STAIR 1
L5B	148'	REMOTE POINT IN CLASSROOM 112 VIA CORR C2 TO STAIR 1 AND DOWN TO EXIT DISCHARGE
L6	152'	REMOTE POINT IN CLASSROOM 112 VIA CORR C2 TO STAIR 2 AND DOWN TO EXIT DISCHARGE

PROJECT INFORMATION

PROJECT NAME:
WVARNG BUCKHANNON AFRC

PROJECT LOCATION:
BUCKHANNON, WV

INTERNATIONAL AND ACCESSIBILITY CODES ARE AVAILABLE AT THE WEBSITE ABOVE

PROJECT DESCRIPTION:
1-STORY W/ MEZZANINE BUILDING OF NON-COMBUSTIBLE CONSTRUCTION USED AS NATIONAL GUARD READINESS CENTER

APPLICABLE CODES

BUILDING:
- WEST VIRGINIA STATE BUILDING CODE (CURRENT EDITION)
- INTERNATIONAL BUILDING CODE (2009 EDITION)

FIRE:
- WEST VIRGINIA STATE FIRE CODE (CURRENT EDITION)
- NFPA 101 LIFE SAFETY CODE (2009 EDITION)

ACCESSIBILITY:
- ICC/ANSI A117.1-2003
- AMERICANS WITH DISABILITIES ACT STANDARD 2010

ENERGY:
- INTERNATIONAL ENERGY CONSERVATION CODE (2003 EDITION)

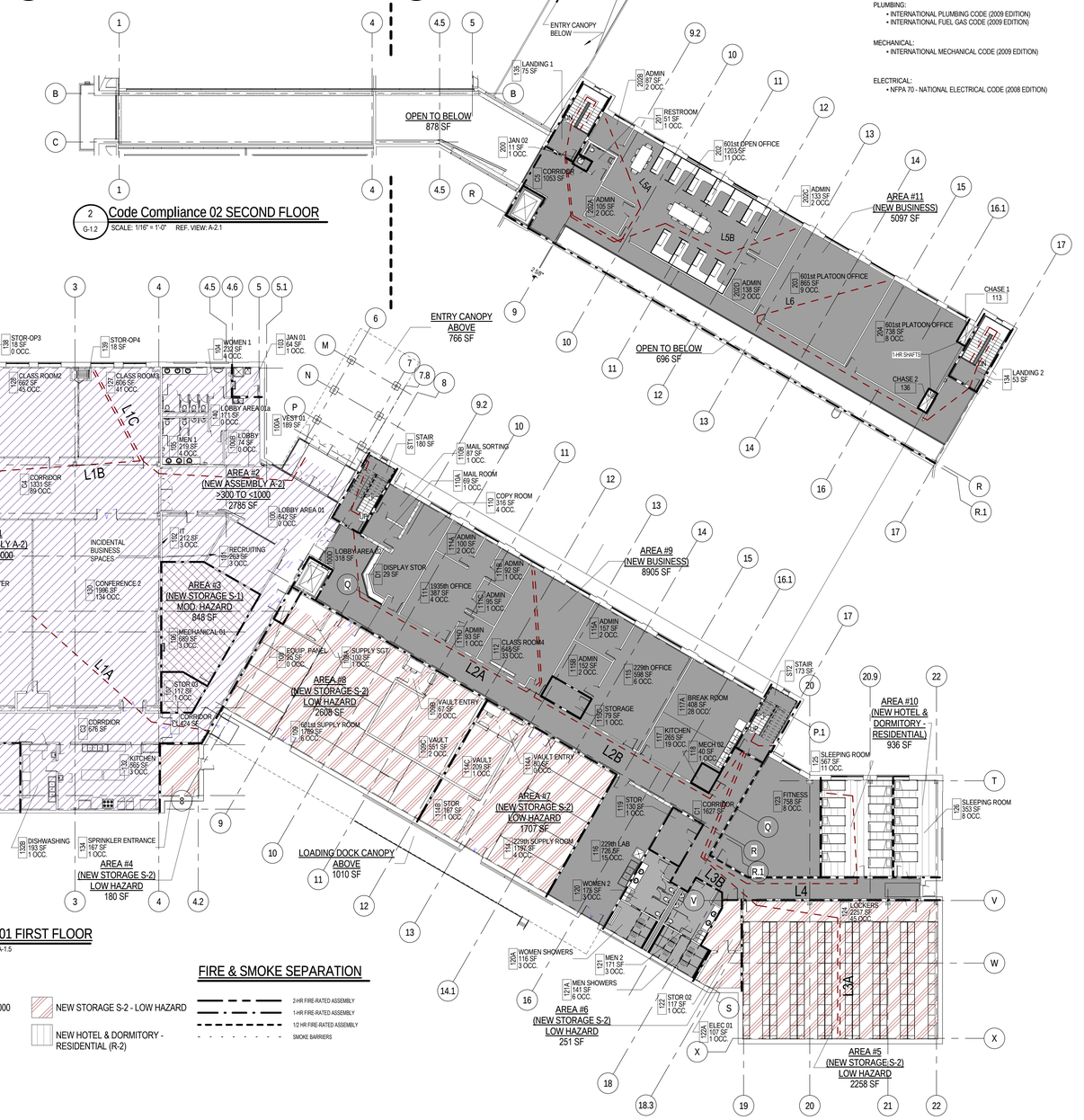
PLUMBING:
- INTERNATIONAL PLUMBING CODE (2009 EDITION)
- INTERNATIONAL FUEL GAS CODE (2009 EDITION)

MECHANICAL:
- INTERNATIONAL MECHANICAL CODE (2009 EDITION)

ELECTRICAL:
- NFPA 70 - NATIONAL ELECTRICAL CODE (2008 EDITION)

2 G-1.2 Code Compliance 02 SECOND FLOOR

SCALE: 1/16" = 1'-0" REF. VIEW: A-2.1



1 G-1.2 Code Compliance 01 FIRST FLOOR

SCALE: 1/16" = 1'-0" REF. VIEW: A-1.5

OCCUPANCY TYPE

- NEW ASSEMBLY A-2 >300<1000
- NEW BUSINESS B
- NEW STORAGE S-1 - MOD. HAZARD
- NEW STORAGE S-2 - LOW HAZARD
- NEW HOTEL & DORMITORY - RESIDENTIAL (R-2)

FIRE & SMOKE SEPARATION

- 2-HR FIRE-RATED ASSEMBLY
- 1-HR FIRE-RATED ASSEMBLY
- 1/2 HR FIRE-RATED ASSEMBLY
- SMOKE BARRIERS

01 FIRST FLOOR - CODE COMPLIANCE AREA SCHEDULE (NET)

Number	Name	Occupancy	Area	SF/Person	No. of tlts/ urinals	Occupant Load
CIRCULATION & UNOCCUPIABLE SPACES						
100	LOBBY AREA 01	BUSINESS (B)	842 SF	0 SF		
100A	VEST 01	BUSINESS (B)	189 SF	0 SF		
100B	LOBBY	BUSINESS (B)	74 SF	0 SF		
100D	LOBBY AREA 02	ASSEMBLY (A-2)	318 SF	0 SF		
105	EQUIP. PANEL	STORAGE (S-2)	25 SF	0 SF		
130A	STOR-OP5	ASSEMBLY (A-2)	45 SF			
130B	STOR-OP1	ASSEMBLY (A-2)	60 SF	0 SF		
137	STOR-OP2	ASSEMBLY (A-2)	61 SF	0 SF		
138	STOR-OP3	ASSEMBLY (A-2)	18 SF	0 SF		
139	STOR-OP4	ASSEMBLY (A-2)	18 SF	0 SF		
140	LOBBY AREA 01a	ASSEMBLY (A-2)	171 SF	0 SF		
C1	CORRIDOR	BUSINESS (B)	1627 SF	0 SF		
C2	CORRIDOR	BUSINESS (B)	424 SF	0 SF		
C3	CORRIDOR	ASSEMBLY (A-2)	676 SF	0 SF		
EV100	ELEV SHAFT	BUSINESS (B)	65 SF	0 SF		
ST1	STAIR	BUSINESS (B)	180 SF	0 SF		
ST2	STAIR	BUSINESS (B)	173 SF	0 SF		
			4966 SF		0	0
GENERAL						
101	RECRUITING	BUSINESS (B)	263 SF	100 SF		3
102	IT	BUSINESS (B)	212 SF	100 SF		3
103	JAN 01	STORAGE (S-1)	64 SF	300 SF		1
106	MECHANICAL 01	STORAGE (S-2)	689 SF	300 SF		3
107	STOR 03	BUSINESS (B)	117 SF	300 SF		1
110A	MAIL ROOM		69 SF			
112	CLASS ROOM4	BUSINESS (B)	648 SF	20 SF		33
115C	STORAGE	BUSINESS (B)	79 SF	300 SF		1
116	229th LAB	BUSINESS (B)	726 SF	50 SF		15
118	MECH 02	STORAGE (S-2)	40 SF	300 SF		1
119	STOR	STORAGE (S-2)	130 SF	300 SF		1
122	STOR 02	STORAGE (S-1)	117 SF	300 SF		1
122A	ELEC 01	STORAGE (S-2)	107 SF	300 SF		1
123	FITNESS	BUSINESS (B)	758 SF	100 SF		8
124	LOCKERS	STORAGE (S-2)	2257 SF	50 SF		46
125	SLEEPING ROOM	RESIDENTIAL (R-1)	567 SF	50 SF		12
126	SLEEPING ROOM	RESIDENTIAL (R-1)	353 SF	50 SF		8
127	CLASS ROOM3	ASSEMBLY (A-2)	606 SF	15 SF		41
128	CLASS ROOM2	ASSEMBLY (A-2)	662 SF	15 SF		45
129	CLASS ROOM1	ASSEMBLY (A-2)	625 SF	15 SF		42
130	CONFERENCE 2	ASSEMBLY (A-2)	1996 SF	15 SF		134
131	CONFERENCE CENTER	ASSEMBLY (A-2)	2002 SF	15 SF		134
132	KITCHEN	ASSEMBLY (A-2)	565 SF	200 SF		3
132B	DISHWASHING	ASSEMBLY (A-2)	193 SF	200 SF		1
133	TABLE / CHAIR STOR	STORAGE (S-1)	640 SF	300 SF		3
134	SPRINKLER ENTRANCE	STORAGE (S-2)	167 SF	300 SF		1
C4	CORRIDOR	ASSEMBLY (A-2)	1331 SF	15 SF		89
D1	DISPLAY STOR	BUSINESS (B)	29 SF	0 SF		
			16009 SF		0	631
SUITE 109						
109	601st SUPPLY ROOM	STORAGE (S-1)	1769 SF	300 SF		6
109A	SUPPLY SGT	BUSINESS (B)	100 SF	100 SF		2
109B	VAULT ENTRY	STORAGE (S-1)	67 SF	0 SF		
109C	VAULT	STORAGE (S-1)	551 SF	300 SF		2
			2486 SF		0	10
SUITE 110						
110	COPY ROOM	BUSINESS (B)	316 SF	100 SF		4
110B	MAIL SORTING	BUSINESS (B)	87 SF	100 SF		1
			404 SF		0	5
SUITE 111						
111	1935th OFFICE	BUSINESS (B)	387 SF	100 SF		4
111A	ADMIN	BUSINESS (B)	100 SF	100 SF		1
111B	ADMIN	BUSINESS (B)	92 SF	100 SF		1
111C	ADMIN	BUSINESS (B)	95 SF	100 SF		1
111D	ADMIN	BUSINESS (B)	93 SF	100 SF		1
			767 SF		0	8
SUITE 114						
114	229th SUPPLY ROOM	STORAGE (S-1)	1197 SF	300 SF		4
114A	VAULT ENTRY	STORAGE (S-1)	80 SF	0 SF		
114B	STOR	STORAGE (S-1)	167 SF	300 SF		1
114C	VAULT	STORAGE (S-1)	209 SF	300 SF		1
			1653 SF		0	6
SUITE 115						
115	229th OFFICE	BUSINESS (B)	598 SF	100 SF		6
115A	ADMIN	BUSINESS (B)	157 SF	100 SF		2
115B	ADMIN	BUSINESS (B)	152 SF	100 SF		2
			907 SF		0	10
SUITE 117						
117	KITCHEN	BUSINESS (B)	265 SF	15 SF		18
117A	BREAK ROOM	BUSINESS (B)	408 SF	15 SF		28
			673 SF		0	46
TOILET RMS						
104	WOMEN 1	BUSINESS (B)	232 SF		4	
105	MEN 1	BUSINESS (B)	219 SF		4	
120	WOMEN 2	BUSINESS (B)	175 SF		3	
120A	WOMEN SHOWERS	BUSINESS (B)	116 SF		3	
121	MEN 2	BUSINESS (B)	171 SF		3	
121A	MEN SHOWERS	BUSINESS (B)	141 SF		6	
			1054 SF		23	0
			28919 SF		23	716

02 SECOND FLOOR - CODE COMPLIANCE AREA SCHEDULE (NET)

Number	Name	Occupancy	Area	SF/Person	No. of tlts/ urinals	Occupant Load
CIRCULATION & UNOCCUPIABLE SPACES						
113	CHASE 1		14 SF		0	0
134	LANDING 2	BUSINESS (B)	53 SF	0 SF	0	0
135	LANDING 1	BUSINESS (B)	75 SF	0 SF	0	0
136	CHASE 2		15 SF		0	0
C5	CORRIDOR	BUSINESS (B)	1053 SF	0 SF	0	0
			1210 SF		0	0
GENERAL						
200	JAN 02	BUSINESS (B)	11 SF	300 SF	0	1
203	601st PLATOON OFFICE	BUSINESS (B)	865 SF	100 SF	0	9
204	601st PLATOON OFFICE	BUSINESS (B)	738 SF	100 SF	0	8
			1614 SF		0	18
SUITE 202						
202	601st OPEN OFFICE	BUSINESS (B)	1203 SF	100 SF	0	13
202A	ADMIN	BUSINESS (B)	105 SF	100 SF	0	2
202B	ADMIN	BUSINESS (B)	87 SF	100 SF	0	1
202C	ADMIN	BUSINESS (B)	133 SF	100 SF	0	2
202D	ADMIN	BUSINESS (B)	138 SF	100 SF	0	2
			1668 SF		0	20
TOILET RMS						
201	RESTROOM	BUSINESS (B)	51 SF		1	0
			51 SF		1	0
			4543 SF		1	38

01 FIRST FLOOR - CODE COMPLIANCE AREA SCHEDULE (GROSS)

	Name		Area	SF/Person	Occupant Load
01 FIRST FLOOR					
FIRE AREA #1					
AREA #1	(NEW ASSEMBLY A-2)	>300 TO <1000	9677 SF	15 SF	646
AREA #2	(NEW ASSEMBLY A-2)	>300 TO <1000	2785 SF	100 SF	28
AREA #3	(NEW STORAGE S-1)	MOD. HAZARD	848 SF	300 SF	3
AREA #4	(NEW STORAGE S-2)	LOW HAZARD	180 SF	300 SF	1
			13489 SF		678
FIRE AREA #2					
AREA #5	(NEW STORAGE S-2)	LOW HAZARD	2258 SF	300 SF	8
AREA #6	(NEW STORAGE S-2)	LOW HAZARD	251 SF	300 SF	1
AREA #7	(NEW STORAGE S-2)	LOW HAZARD	1707 SF	300 SF	6
AREA #8	(NEW STORAGE S-2)	LOW HAZARD	2608 SF	300 SF	9
AREA #9	(NEW BUSINESS)		8905 SF	100 SF	90
AREA #10	(NEW HOTEL & DORMITORY - RESIDENTIAL)		936 SF	50 SF	19
			16664 SF		133
			30153 SF		811
02 SECOND FLOOR					
FIRE AREA #3					
AREA #11	(NEW BUSINESS)		5097 SF	100 SF	51
			5097 SF		51
			5097 SF		51
			35250 SF		862

ADDENDUM 02

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

CODE COMPLIANCE PLANS

DRAWN BY: kmt, gam, kmt
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE: 2012 AUG 09

Drawing Revisions	
No.	Date
2	2012.AUG.09

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 G-1.2

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
- ○ FOR BIDDING
- ● CONSTRUCTION DOCUMENT
- ○

STATE OF WEST VIRGINIA — RICHARD A. FORREN No. 9000 — REGISTERED ARCHITECT

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SHEET NO.

G-1.2

MAPPING NOTES

1. ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE LOCATIONS AND ARE BASED ON UTILITY COMPANY MARKINGS, EXISTING STRUCTURE LOCATIONS AND PLAN INFORMATION PROVIDED BY OTHERS. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION.

2. TOPOGRAPHIC MAPPING COMPILED FROM AERIAL SURVEY PERFORMED BY GEO ONE, REYNOLDSBURG, OH. ON FEBRUARY 19 2011. SURVEY CONTROL AND TOPOGRAPHIC DATA RANDOMLY CHECKED FOR ACCURACY BY CAPITOL ENGINEERING, INC. BY FIELD SURVEY.

3. PROPERTY INFORMATION OBTAINED FROM A PLAT NAMED "PLAT OF PARTITION SURVEY FOR THE UPSHUR COUNTY DEVELOPMENT AUTHORITY" PREPARED AND SURVEYED BY BENNETT SURVEYING, BUCKHANNON, WV NOVEMBER 29, 2010.

LAYOUT NOTE KEY

1. CONCRETE PAVEMENT - SEE DETAIL 2 / C2-2
2. BUCKHANNON READINESS CENTER
3. CAST IN PLACE CURB - SEE DETAIL 5 / C2-2
4. UNHEATED METAL STORAGE BUILDING - SEE ARCHITECTURAL DRAWAINGS
5. 18" PRECAST CONCRETE WALL - SEE DETAIL 3 / C2-12
6. CONCRETE PAVING - SEE DETAIL 2 / C2-2
7. 5'-0" WIDE CONCRETE SIDEWALK - SEE DETAIL 6 / C2-2
8. INTEGRAL CURB AND SIDEWALK - SEE DETAIL 5 / C2-2
9. CURB RAMP - SEE DETAIL 2 / C2-3
10. 30' DOUBLE SWING GATE - SEE DETAIL 8 / C2-5
11. HANDICAPPED PARKING SPACE - SEE DETAILS 4 / C2-3
12. PARKING SPACE STRIPING - SEE DETAILS 5 / C2-3
13. ACCESS ROAD STRIPING - SEE DETAILS 8 / C2-3
14. CHAIN LINK SECURITY FENCE - SEE DETAIL SHEET C2-4
15. 24'-0" WIDE SLIDING GATE - SEE DETAIL SHEET C2-5
16. REMOVABLE BOLLARD - SEE DETAIL 2 / C2-12
17. 20'-0" WIDE SLIDING GATE - SEE DETAIL 1&2 / C2-5
18. FUEL POINT WITH CANOPY (ALT. BID) - SEE DETAIL SHEET C2-13
19. LOADING RAMP - SEE DETAIL SHEET C2-8
20. WASH RACK WITH CANOPY (ALT. BID) - SEE DETAIL SHEET C2-9 & C2-10
21. CONCRETE WALKWAY - SEE DETAIL 6 / C2-2
22. 40' FLAGPOLE - SEE DETAIL 7 / C2-12
23. HARDSTAND PAVING - SEE DETAIL 1 / C2-2
24. EQUIPMENT PAD - SEE ELECTRICAL PLANS
25. STOP SIGN - SEE DETAIL 6 / C2-3
26. 24" STOP BAR - SEE DETAIL 8 / C2-3
27. NO HEAVY TRUCKS SIGN - SEE DETAIL 6 / C2-3
28. GRAVEL MAINTENANCE STRIP - SEE DETAIL 4 / C2-11
29. PEDESTRIAN CROSSING STRIP - SEE DETAIL 3 / C2-3
30. TYPE 1 LAWN - SEE SPECIFICATION 02920 "LAWNS AND GRASSES"
31. TYPE 2 LAWN - SEE SPECIFICATION 02920 "LAWNS AND GRASSES"
32. ENTRANCE SIGN - SEE ARCHITECTURAL DRAWINGS
33. 8" BOLLARD - SEE DETAIL 1 / C2-12
34. GRAVEL APRON - SEE DETAIL 7 / C2-2
35. 5' SWING GATE - SEE DETAIL 9 / C2-4
36. HEV SIGN - SEE DETAIL 6 / C2-3
37. DUMPSTER PAD - SEE DETAIL 2 / C2-2
38. LOADING DOCK RETAINING WALL - SEE DETAIL 8 / C2-12
39. TRANSFORMER PAD - SEE ELECTRICAL PLANS
40. FIELD FENCE - SEE DETAIL 5 / C2-12
41. FARM (FIELD FENCE) GATE - SEE DETAIL 6 / C2-12
42. 16' DOUBLE SWING GATE - SEE SHEET C2-5
43. TYPE 1 ASPHALT PAVEMENT (ALT. BID) - SEE SHEET C2-2
44. TYPE 1 ASPHALT PAVEMENT (ALT. BID) - SEE SHEET C2-2
45. AUTHORIZED VEHICLES ONLY SIGN - SEE DETAIL 6 / C2-3
46. CHAIN LINK SECURITY FENCE WITH PRIVACY SLATS SEE SHEET C2-4

NOTE: ALL PARKING SPACES TO HAVE WHEEL STOPS SEE DETAIL 1 / C2-3

LEGEND

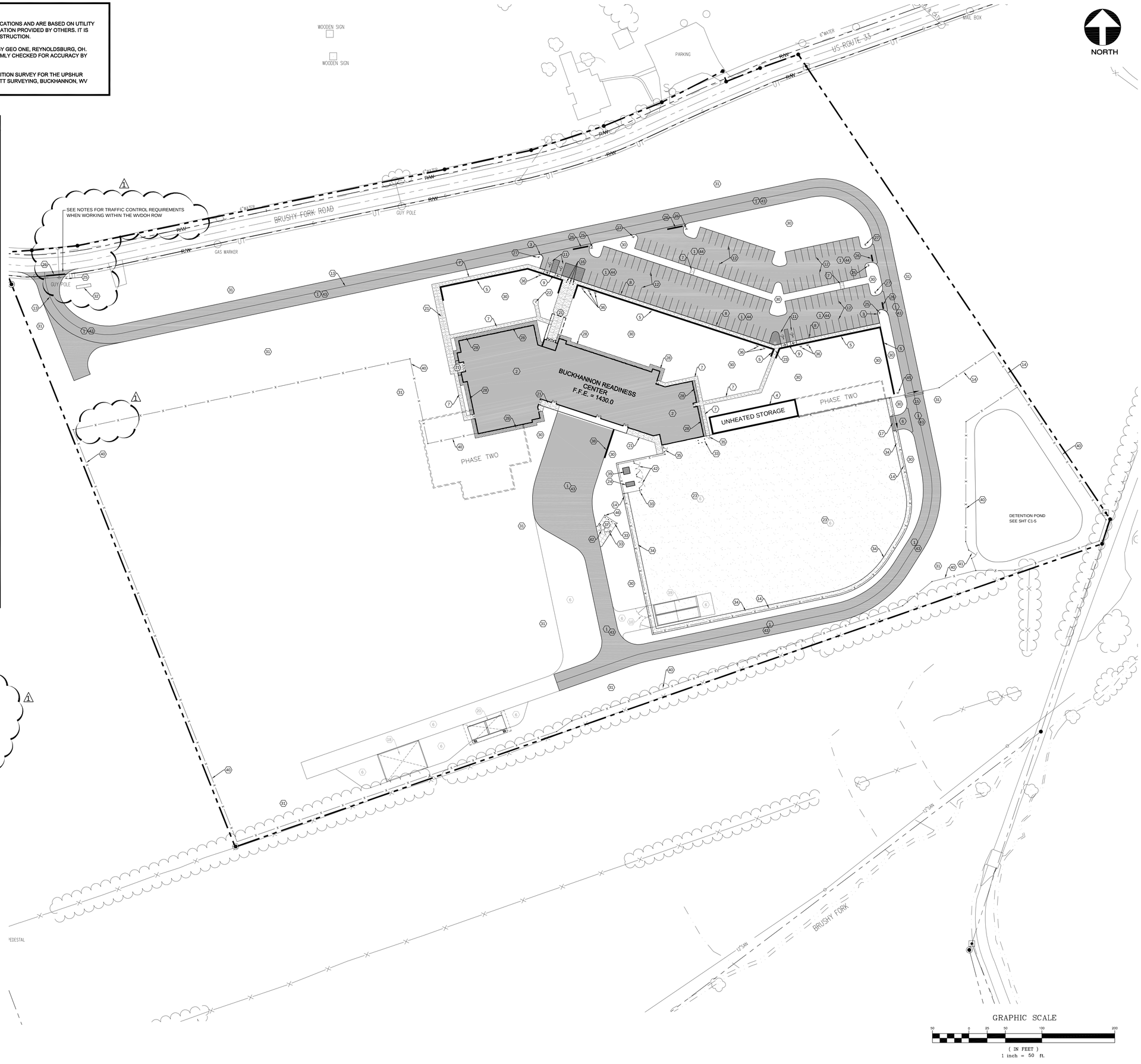
SLOPE INDICATION ARROW (FOR REFERENCE ONLY)

NOTES:

1. CONTRACTOR MUST NOTIFY THE WVDOH DISTRICT SEVEN PERMIT SUPERVISOR PRIOR TO INITIATING WORK WITHIN THE WVDOH RIGHT OF WAY.

2. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH SECTION 636 OF THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS ROADS AND BRIDGES, ADOPTED 2000, AND THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 1, 2009 AND THE MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS, 2006 EDITION.

3. CASE A6 OF THE MANUAL FOR TEMPORARY TRAFFIC CONTROL OF STREETS AND HIGHWAYS 2006 EDITION SHALL BE USED FOR MAINTENANCE OF TRAFFIC AS WORK CONDITIONS REQUIRE.



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Voice 304.367.1417 • omniassociates.com

ARMY NATIONAL GUARD

WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

SITE LAYOUT PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 ADDED NOTES AND DELETED FARM GATE

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-3

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
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ROBERT M. FINNELL 14181 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER
8 August 2012

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SHEET NO.

C1-3

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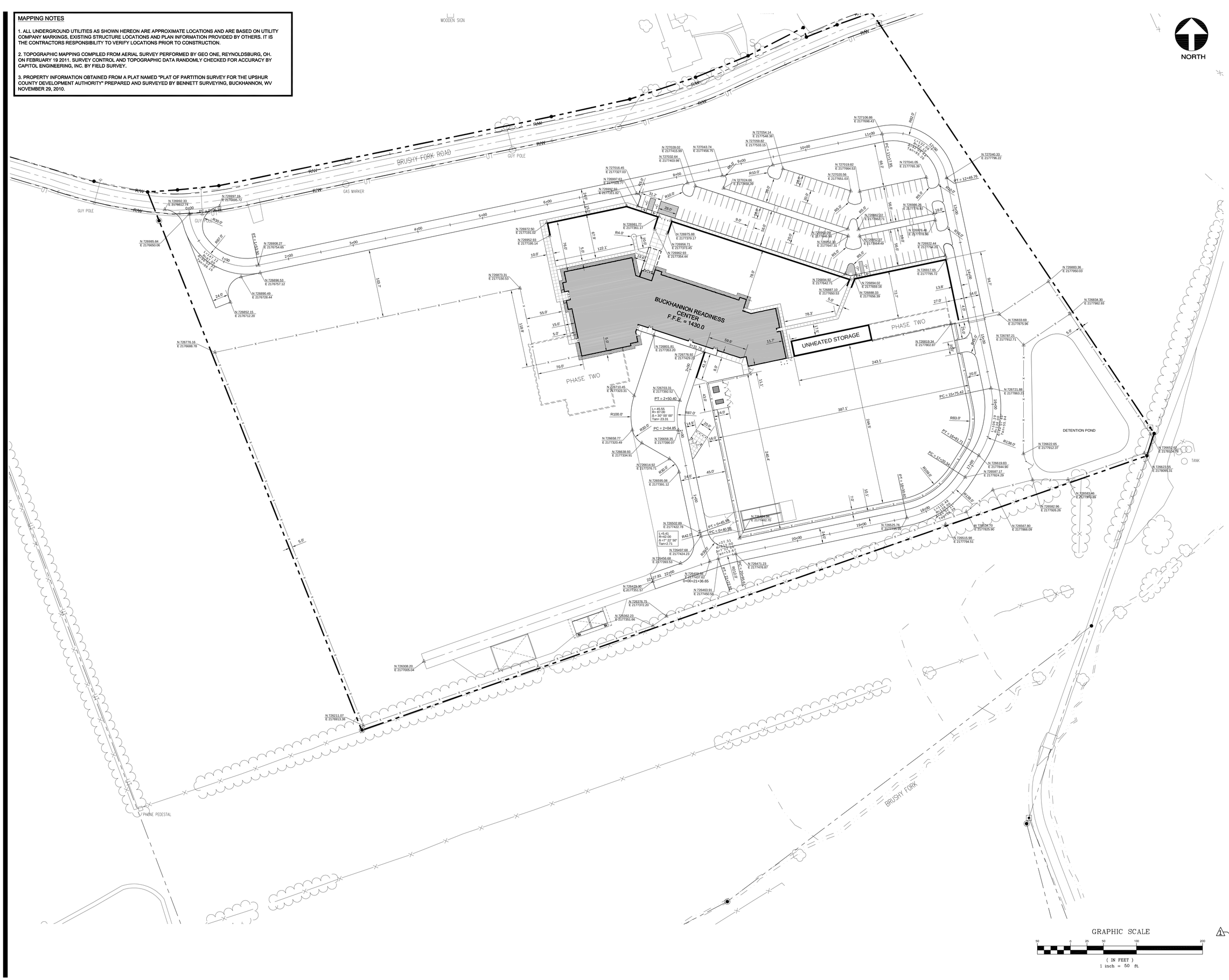

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BUCKHANNON AFRC

BUCKHANNON, WV

CONSTRUCTION STAKEOUT PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 UPDATED DIMENSIONS AND ADDED ROAD STATIONING

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-3.2

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
- ● FOR BIDDING
- ○ CONSTRUCTION DOCUMENT
- ○

ROBERT M. FUNK
14181
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER
8 August 2012

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SHEET NO.

C1-3.2

MAPPING NOTES

1. ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE LOCATIONS AND ARE BASED ON UTILITY COMPANY MARKINGS, EXISTING STRUCTURE LOCATIONS AND PLAN INFORMATION PROVIDED BY OTHERS. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION.

2. TOPOGRAPHIC MAPPING COMPILED FROM AERIAL SURVEY PERFORMED BY GEO ONE, REYNOLDSBURG, OH. ON FEBRUARY 19 2011. SURVEY CONTROL AND TOPOGRAPHIC DATA RANDOMLY CHECKED FOR ACCURACY BY CAPITOL ENGINEERING, INC. BY FIELD SURVEY.

3. PROPERTY INFORMATION OBTAINED FROM A PLAT NAMED "PLAT OF PARTITION SURVEY FOR THE UPSHUR COUNTY DEVELOPMENT AUTHORITY" PREPARED AND SURVEYED BY BENNETT SURVEYING, BUCKHANNON, WV NOVEMBER 29, 2010.

GRADING NOTES:

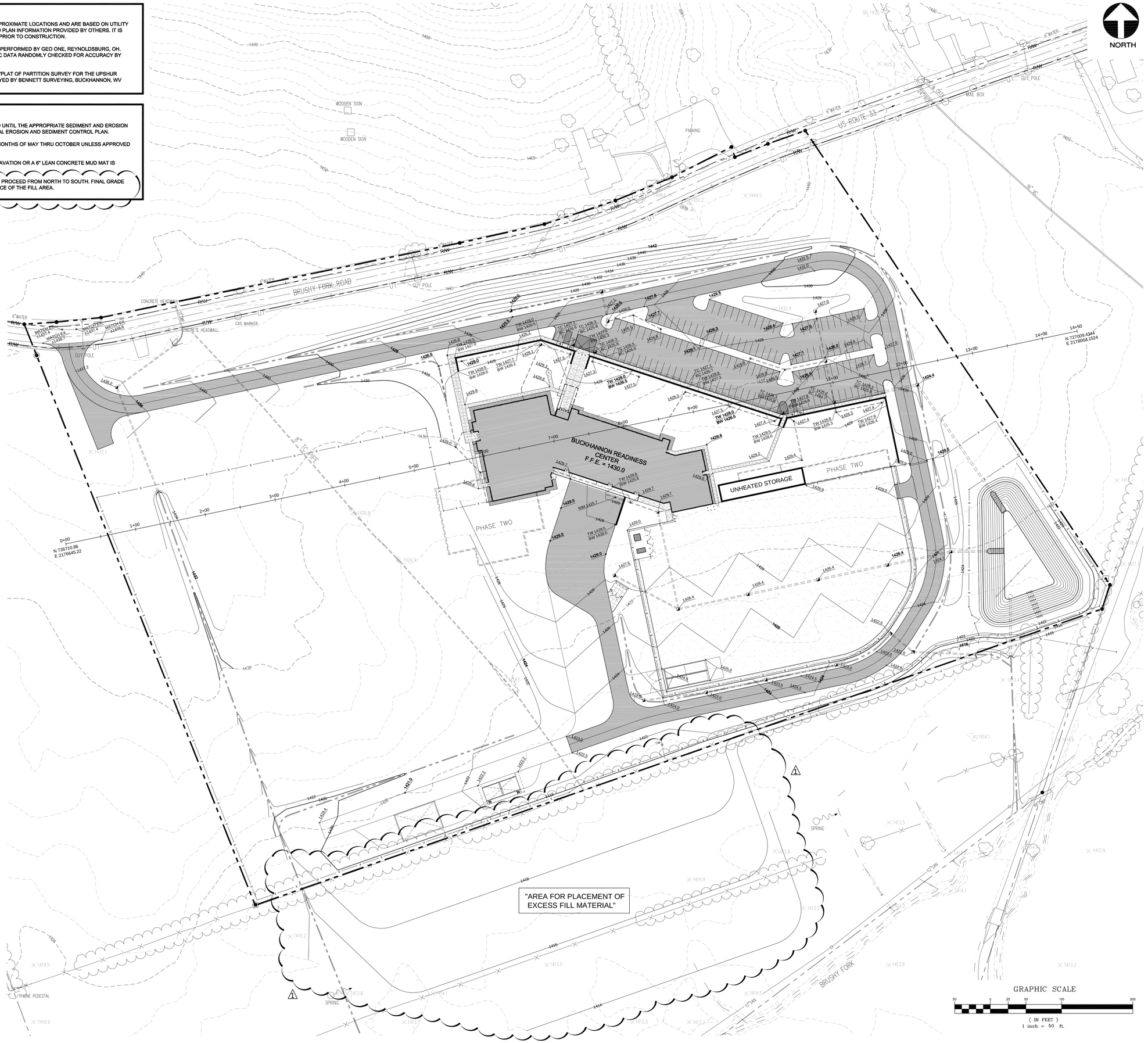
1. EARTH DISTURBING ACTIVITIES SHALL NOT BE PERFORMED UNTIL THE APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES ARE IN PLACE. SEE SHEET C1-7 "INITIAL EROSION AND SEDIMENT CONTROL PLAN.

2. BULK EARTH MOVING MUST BE PERFORMED DURING THE MONTHS OF MAY THRU OCTOBER UNLESS APPROVED IN WRITING BY THE COTR.

3. FOOTINGS MUST BE POURED WITHIN FOUR HOURS OF EXCAVATION OR A 6" LEAN CONCRETE MUD MAT IS REQUIRED (WITHIN FOUR HOURS OF EXCAVATION).

4. FILL PLACEMENT IN THE EXCESS FILL MATERIAL AREA WILL PROCEED FROM NORTH TO SOUTH. FINAL GRADE SHALL BE ACHIEVED EVENLY ACROSS THE EAST - WEST FACE OF THE FILL AREA.

1



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BUCKHANNON, WV

GRADING PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 REVISED EXCESS FILL PLACEMENT AREA AND NOTE

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-4

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ROBERT M. FINNELL
14181
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PROFESSIONAL ENGINEER
8 August 2012

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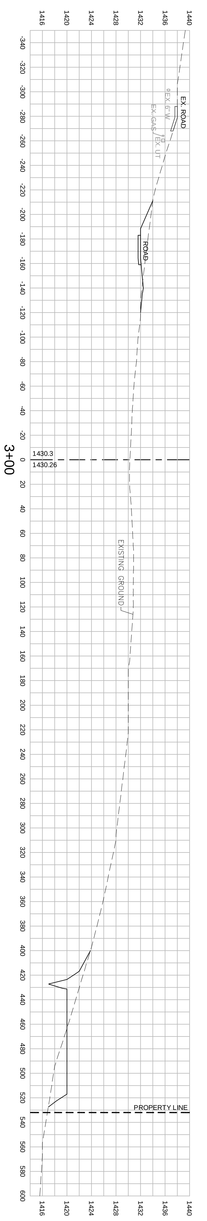
SHEET NO.

C1-4



1" = 50'
SCALE
HORIZONTAL
50 0 50 100
FEET

1" = 10'
SCALE
VERTICAL
10 0 10 20
FEET

SITE CROSS SECTIONS
0+00 - 3+00

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DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions

No.	Date
1	8-17-12 REVISED UNDERGROUND UTILITIES

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-4.3

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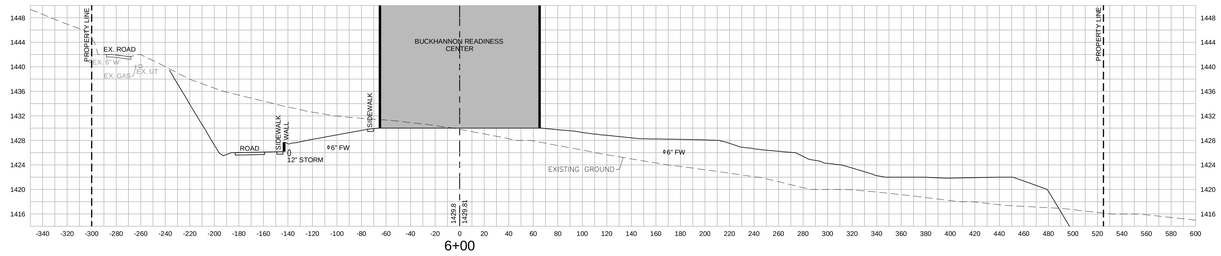
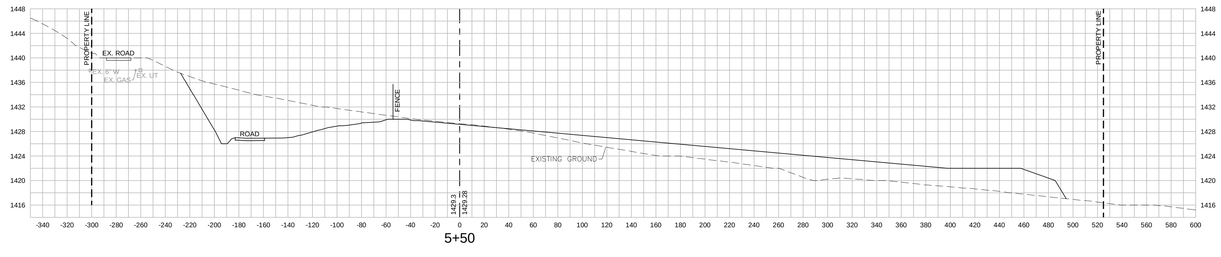
SHEET
C1-4.3



6+00



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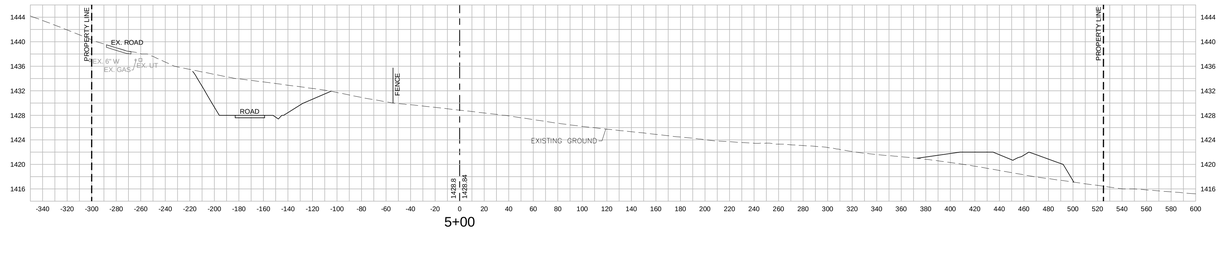

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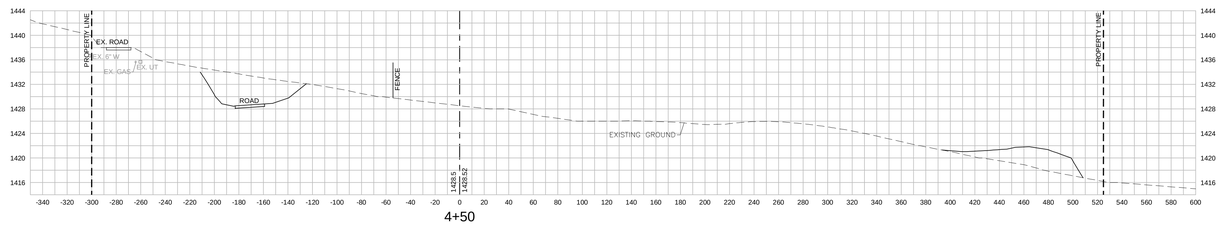
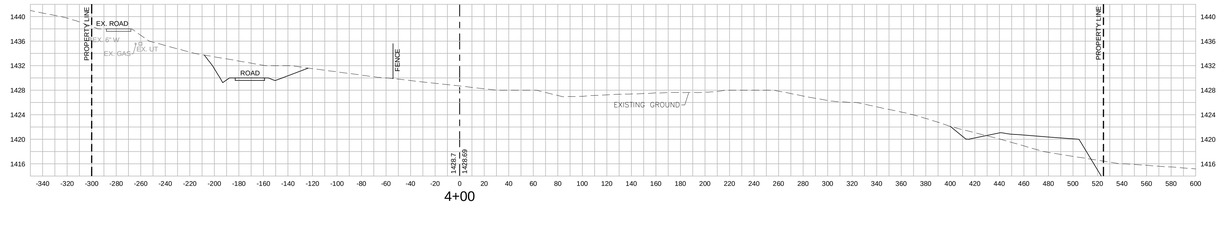
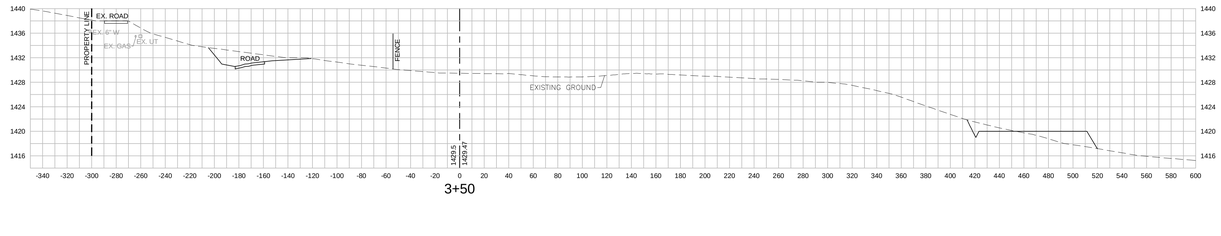


4+50



4+00



3+50

1" = 10'
SCALE
VERTICAL
FEET
10 0 10 20

1" = 50'
SCALE
HORIZONTAL
FEET
50 0 50 100

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SITE CROSS SECTIONS
3+50 - 6+00

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 REVISED UNDERGROUND UTILITIES

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-4.4

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ROBERT M. FINNELL
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PROFESSIONAL ENGINEER
8 August 2012

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SHEET NO.
C1-4.4

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SITE CROSS SECTIONS
6+50 - 8+50

DRAWN BY: JAS
PROJECT ISSUE DATE: 6 - 29 - 12
SHEET ISSUE DATE: 6 - 29 - 12

No.	Drawing Revisions Date
1	8-6-12 REVISED UNDERGROUND UTILITIES

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-4.5

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JAMES M. FITZPATRICK
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8/6/2012

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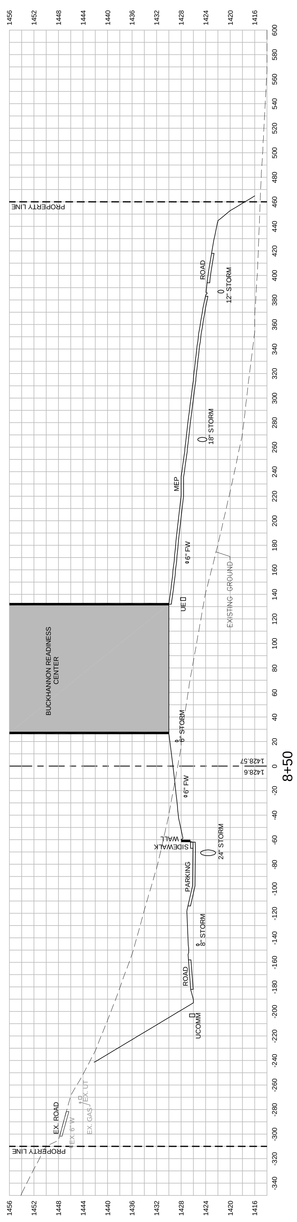
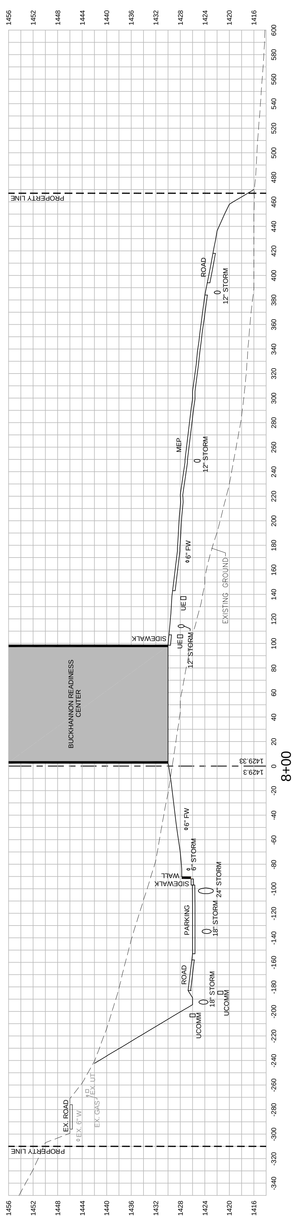
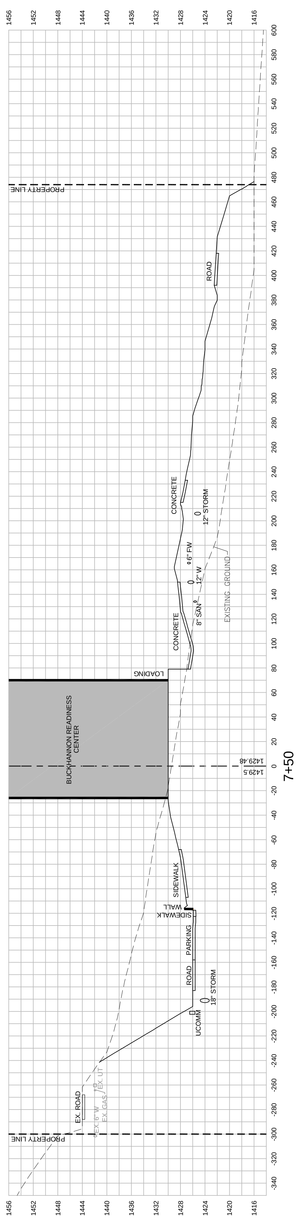
SHEET NO. C1-4.5

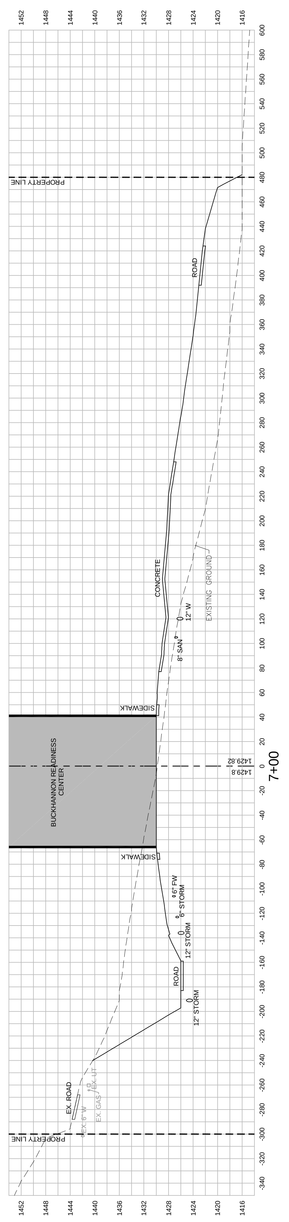
1" = 10' SCALE VERTICAL: 10 0 10 20 FEET

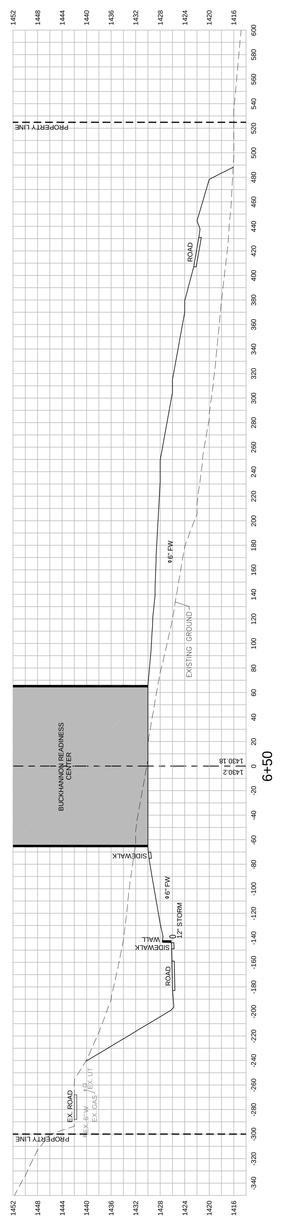
1" = 50' SCALE HORIZONTAL: 50 0 50 100 FEET











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SITE CROSS SECTIONS
9+00 - 11+00

DRAWN BY: JAS
PROJECT ISSUE DATE: 6 - 29 - 12
SHEET ISSUE DATE: 6 - 29 - 12

No.	Drawing Revisions Date
1	8-6-12 REVISED UNDERGROUND UTILITIES

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-4.6

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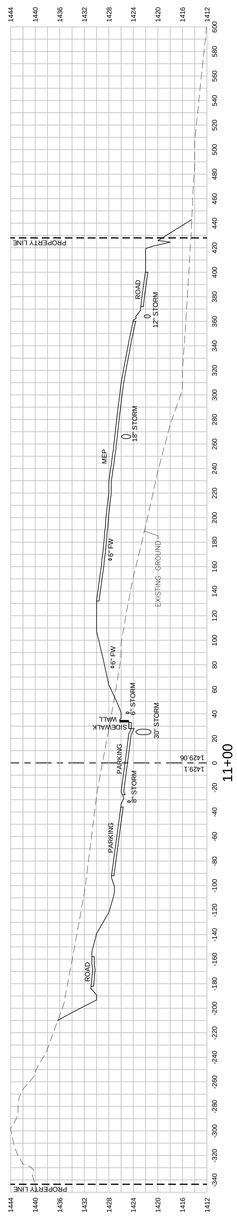
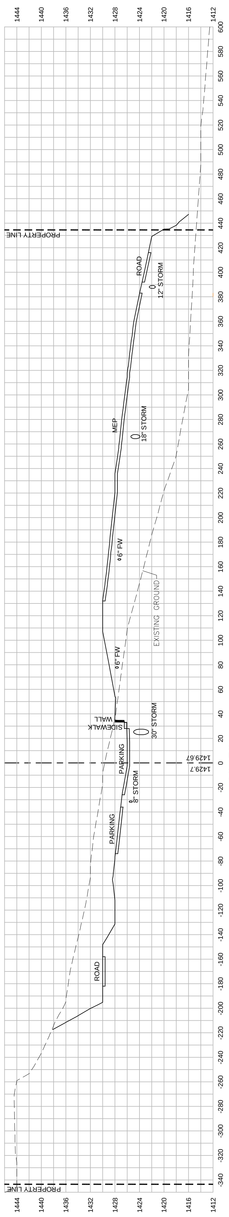
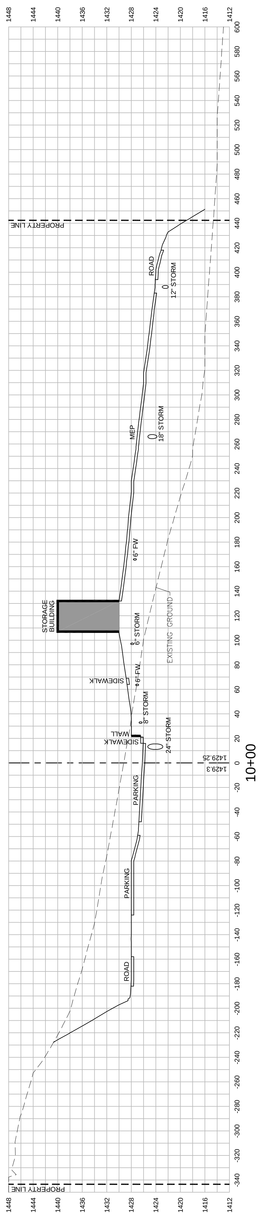
SHEET No. C1-4.6

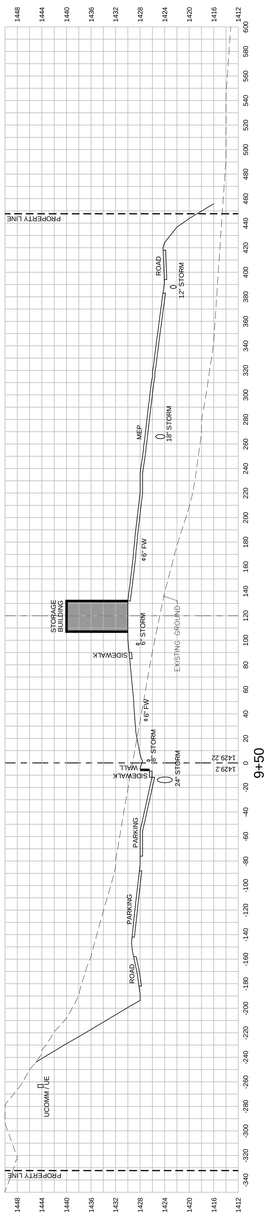
1" = 10' SCALE 10 0 10 20 FEET VERTICAL

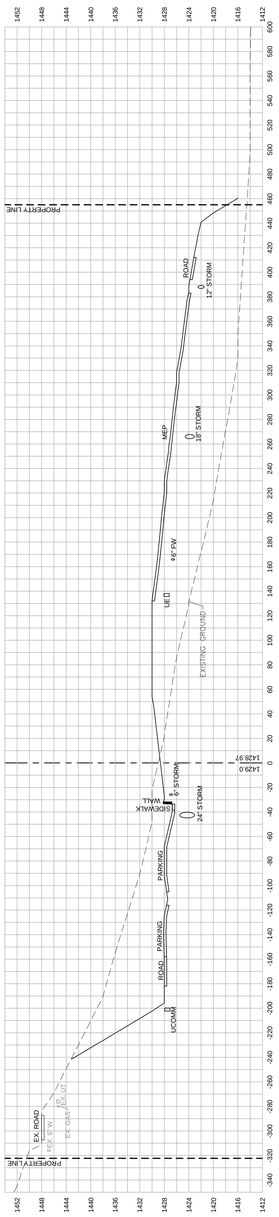
1" = 50' SCALE 50 0 50 100 FEET HORIZONTAL

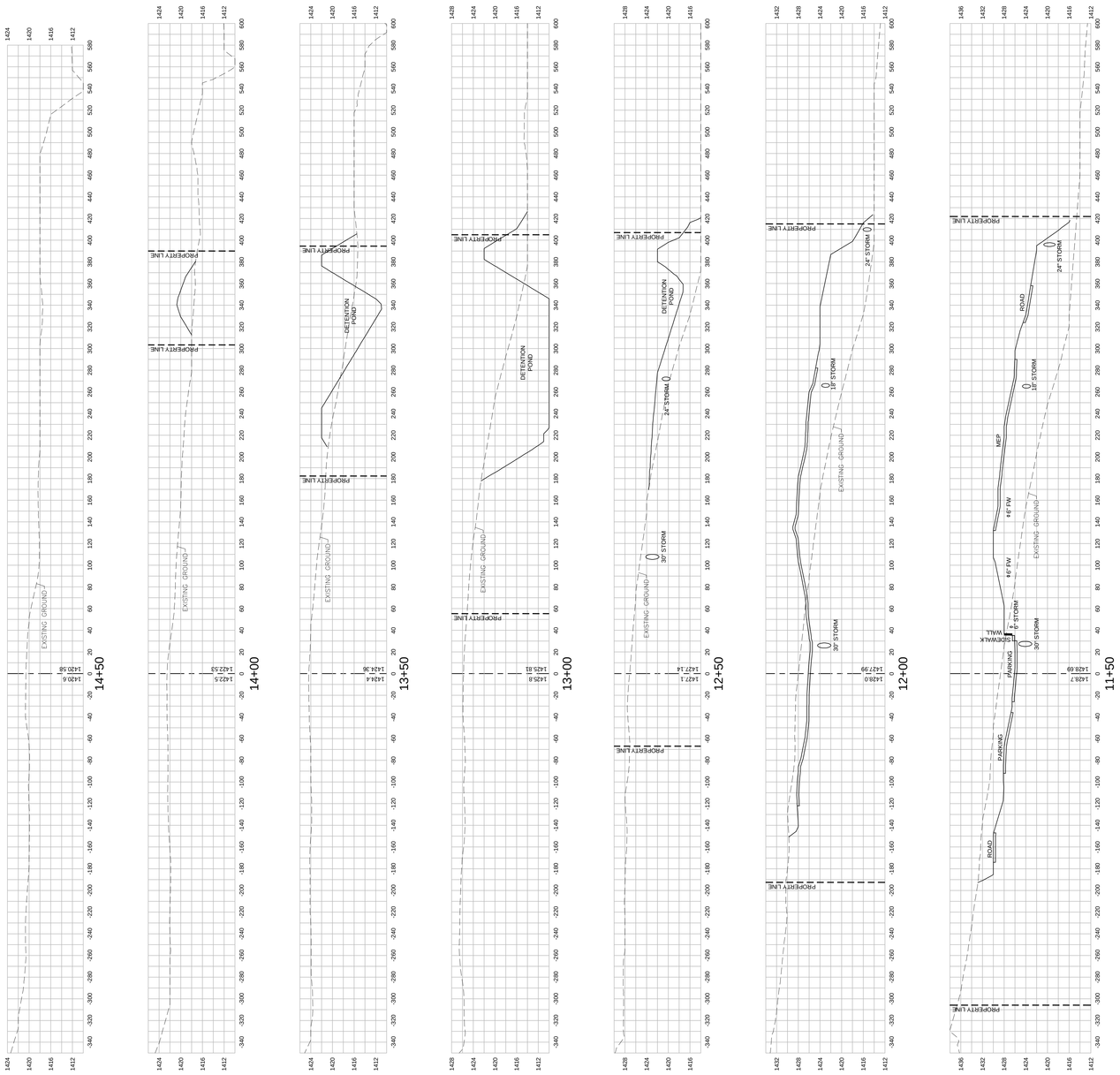












1" = 10'

SCALE

10 0 10 20

FEET

VERTICAL

1" = 50'

SCALE

50 0 50 100

FEET

HORIZONTAL

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SITE CROSS SECTIONS
11+50 - 14+50

DRAWN BY: JAS
PROJECT ISSUE DATE: 6. 29. 12
SHEET ISSUE DATE: 6. 29. 12

No.	Drawing Revisions Date
1	8-6-12 REVISED UNDERGROUND UTILITIES

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-4.7

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JAMES A. SPENCER
14415
STATE OF
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6/29/2012

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SHEET NO.

C1-4.7

MAPPING NOTES

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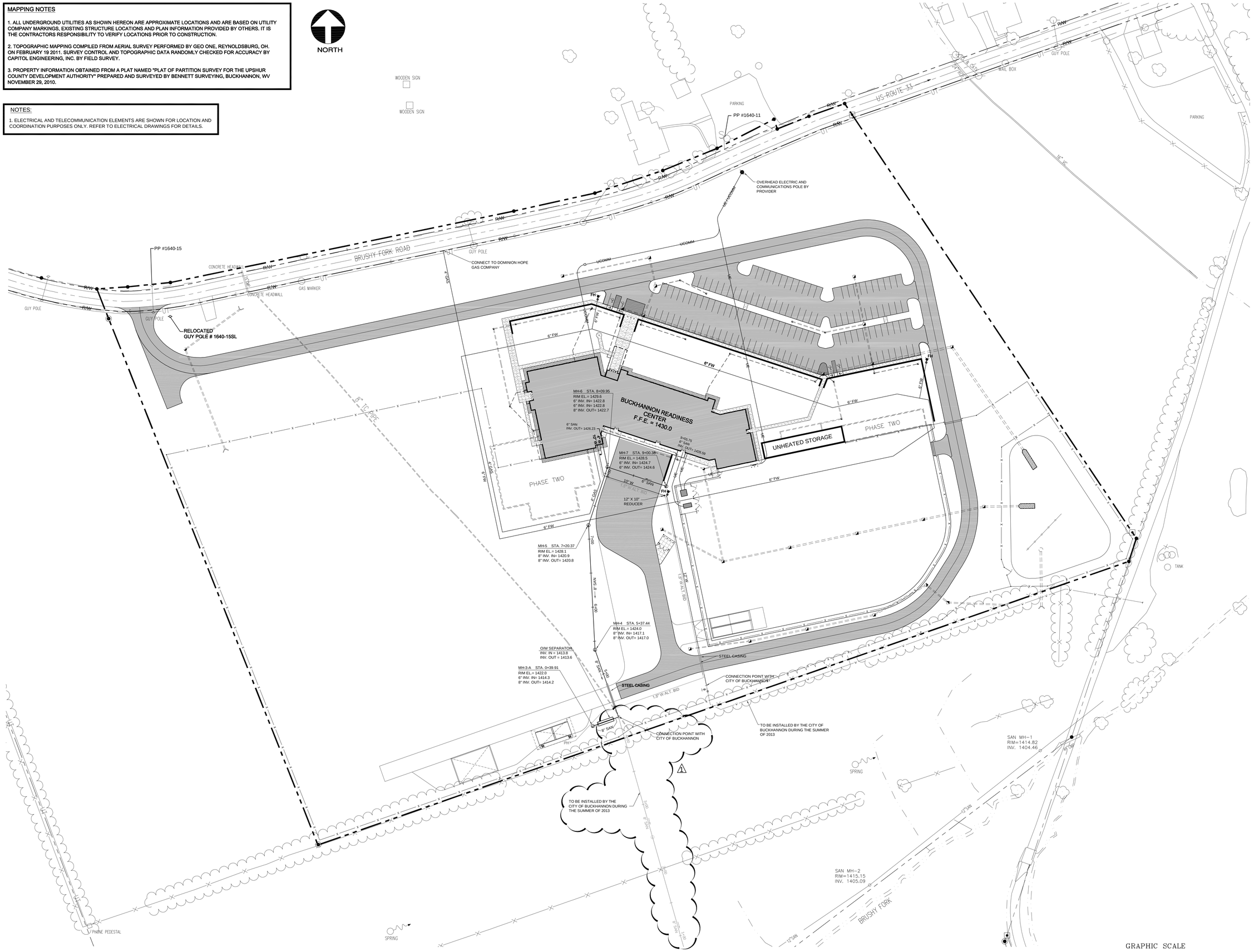
NOTES:

1. ELECTRICAL AND TELECOMMUNICATION ELEMENTS ARE SHOWN FOR LOCATION AND COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.

NORTH



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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WVARNG BUCKHANNON AFRC

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UTILITY PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 REVISED SANITARY FROM MH-1 MH-3

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-6

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JEFFREY M. FINK
14181
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER
8 August 2012

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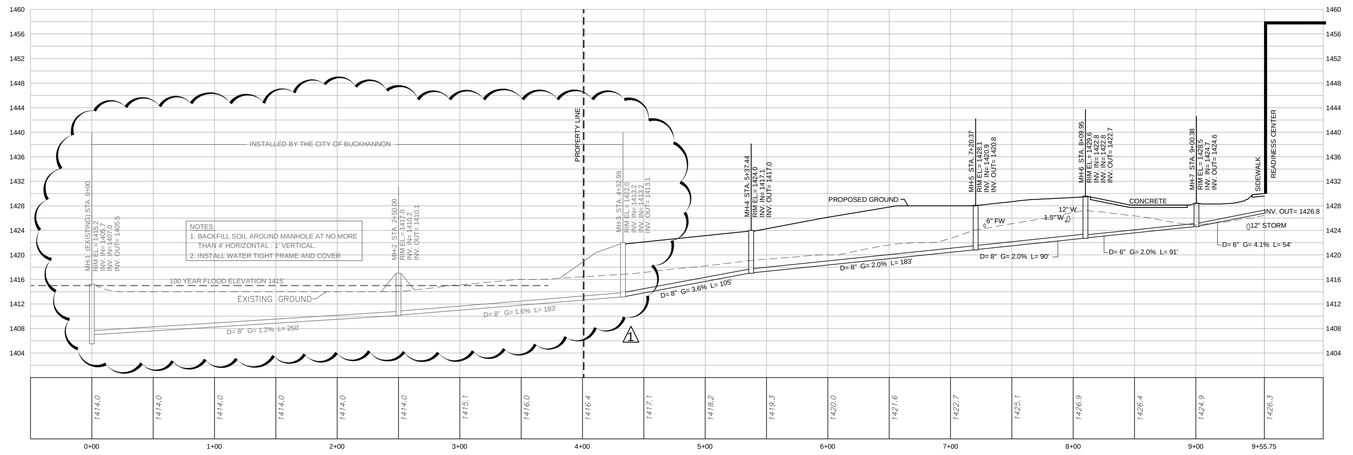
SHEET NO.

C1-6



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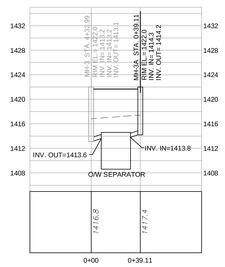

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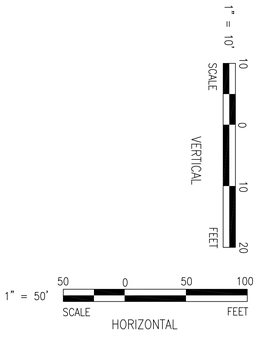

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SANITARY PROFILES

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
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Drawing Revisions	
No.	Date
1	8-6-12 REVISED PROFILE

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-6.1

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VINCENT M. [illegible]
1418T
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
8 August 2012

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SHEET NO.

C1-6.1

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LEGEND

1. STABILIZED CONSTRUCTION ENTRANCE
2. OUTLET PROTECTION
3. TEMPORARY DIVERSION
4. INLET PROTECTION
5. SILT FENCE
6. ROCK CHECK DAM WITH SUMP
7. TYPE 4 DITCH
8. FLOATING BAFFLE
9. WATTLES

NOTES:

1. SEDIMENT CONTROL BMP'S SHALL BE INSPECTED EVERY SEVEN DAYS AND AFTER EVERY RAINFALL EVENT OF 1/2" OR MORE.
2. ALL DISTURBED AREAS OUTSIDE OF THE WVARNG PROPERTY WILL BE REVEGETATED WITH TYPE 3 SEED. SEE SPECIFICATION SECTION 329200 " TURFS AND GRASSES"

NORTH

WOODEN SIGN
WOODEN SIGN
PARKING
MAIL BOX
6" WATER
US ROUTE 33
BRUSHY FORK ROAD
CONCRETE HEADWALL
GAS MARKER
QUY POLE
TYPE 2 DITCH
20' RADIUS
CONCRETE HEADWALL
18" HDPE
JUNCTION BOX D1
RIM EL.= 1436.2
18" INVERT IN= 1433.2
18" INVERT OUT= 1433.1
18" HDPE
8" T.C. PIPE
CONCRETE HEADWALL
INVERT= 1431.5
STORMWATER BYPASS MEASURE
IS NOT TO BE INSTALLED UNTIL
6" SUBSURFACE DRAINS ARE INSTALLED
NOTE:
STORMWATER BY-PASS MEASURES MUST BE INSTALLED PRIOR TO ANY WORK. THIS INCLUDES THE 18" HDPE CULVERT AND THE DITCHES (TYPE 2 AND 4).
SEDIMENT POND
SEE SHEET C1-5
SEDIMENT TRAP #1
SEE DETAIL 11 SHT. C2-1
TYPE 4 DITCH
SEDIMENT TRAP #2
SEE DETAIL 11 SHT. C2-1
TYPE 4 DITCH
PHONE PEDESTAL
SPRING
SPRING
BRUSHY FORK
EXTEND TYPE 4 DITCH TO CREEK
12" SAN
1460
1450
1440
1430
1420

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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ARMY NATIONAL GUARD

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BUCKHANNON AFRC

BUCKHANNON, WV

INITIAL EROSION AND SEDIMENT CONTROL PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 ADDED SEDIMENT TRAP #2 AND ASSOCIATED DIVERSIONS

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-7

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS ____
- ○ PERMIT ACQUISITION
- ● FOR BIDDING
- ○ CONSTRUCTION DOCUMENT
- ○

ROBERT M. FINNELL
14181
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
8 August 2012

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SHEET NO.

C1-7

MAPPING NOTES

1. ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE LOCATIONS AND ARE BASED ON UTILITY COMPANY MARKINGS, EXISTING STRUCTURE LOCATIONS AND PLAN INFORMATION PROVIDED BY OTHERS. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION.

2. TOPOGRAPHIC MAPPING COMPILED FROM AERIAL SURVEY PERFORMED BY GEO ONE, REYNOLDSBURG, OH. ON FEBRUARY 19 2011. SURVEY CONTROL AND TOPOGRAPHIC DATA RANDOMLY CHECKED FOR ACCURACY BY CAPITOL ENGINEERING, INC. BY FIELD SURVEY.

3. PROPERTY INFORMATION OBTAINED FROM A PLAT NAMED "PLAT OF PARTITION SURVEY FOR THE UPSHUR COUNTY DEVELOPMENT AUTHORITY" PREPARED AND SURVEYED BYBENNETT SURVEYING, BUCKHANNON, WV NOVEMBER 29, 2010.

LEGEND

1. STABILIZED CONSTRUCTION ENTRANCE
2. OUTLET PROTECTION
3. TEMPORARY DIVERSION
4. INLET PROTECTION
5. SILT FENCE
6. ROCK CHECK DAM WITH SUMP
7. TYPE 4 DITCH
8. FLOATING BAFFLE
9. EROSION CONTROL MATTING

NOTE: SEDIMENT CONTROL BMP'S SHALL BE INSPECTED EVERY SEVEN DAYS AND AFTER EVERY RAINFALL EVENT OF 1/2" OR MORE.

BORROW AREA INFORMATION SEE SHEET C1-7.2 FOR

BUCKHANNON READINESS CENTER F.F.E. = 1430.0

UNHEATED STORAGE

PHASE TWO

BRUSHY FORK ROAD

US ROUTE 33

BRUSHY FORK

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NORTH

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

EROSION AND SEDIMENT CONTROL PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 -28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 ADDED EXCESS FILL AREA E & S CONTROL

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-7.1

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
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8 August 2012

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SHEET NO.

C1-7.1

MAPPING NOTES

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2. TOPOGRAPHIC MAPPING COMPILED FROM AERIAL SURVEY PERFORMED BY GEO ONE, REYNOLDSBURG, OH. ON FEBRUARY 19 2011. SURVEY CONTROL AND TOPOGRAPHIC DATA RANDOMLY CHECKED FOR ACCURACY BY CAPITOL ENGINEERING, INC. BY FIELD SURVEY.

3. PROPERTY INFORMATION OBTAINED FROM A PLAT NAMED "PLAT OF PARTITION SURVEY FOR THE UPSHUR COUNTY DEVELOPMENT AUTHORITY" PREPARED AND SURVEYED BY BENNETT SURVEYING, BUCKHANNON, WV NOVEMBER 29, 2010.

LEGEND

1. STABILIZED CONSTRUCTION ENTRANCE
2. OUTLET PROTECTION
3. TEMPORARY DIVERSION
4. INLET PROTECTION
5. SILT FENCE
6. ROCK CHECK DAM WITH SUMP
7. TYPE 4 DITCH
8. FLOATING BAFFLE
9. ALL SLOPES STEEPER THAN 4H TO 1V SHALL BE COVERED WITH EROSION CONTROL MATTING IMMEDIATELY AFTER SEEDING.

NOTES:

1. SEDIMENT CONTROL BMP'S SHALL BE INSPECTED EVERY SEVEN DAYS AND AFTER EVERY RAINFALL EVENT OF 1/2" OR MORE.

2. BORROW AREA EXCAVATION SHALL PROCEED FROM SOUTH TO NORTH AND FROM EAST TO WEST REGARDLESS OF THE MATERIALS ENCOUNTERED.

3. BORROW AREA SHALL BE REVEGETATED WITH TYPE 3 SEED MIX SEE SPECIFICATION SECTION 329200 "TURF AND GRASSES"

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BORROW AREA EROSION AND SEDIMENT CONTROL PLAN

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 8 - 08 - 12

Drawing Revisions	
No.	Date

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C1-7.2

APPROVED DRAWING USE:

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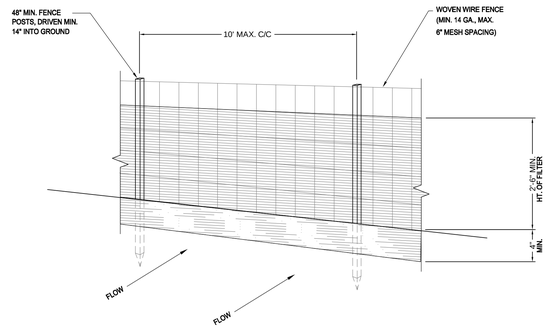
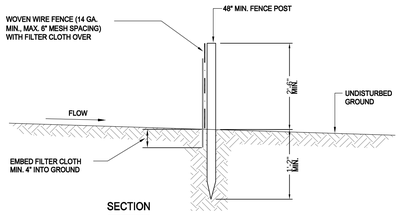
SHEET NO.

C1-7.2



PERSPECTIVE VIEW



SECTION

NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE. CHECK AFTER EACH STORM AND REMOVE SEDIMENT.
5. POSTS SHALL BE CONSTRUCTED OF STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD.
6. FILTER CLOTH SHALL BE "FILTER X", "MIRAFI 100X", "LINKA T140N", "EXXON GTF 180" OR APPROVED EQUAL.
7. WIRE MESH IS NOT REQUIRED FOR PREFABRICATED FENCING WHICH INCLUDES AN INTERNAL REINFORCING MESH.

MAINTENANCE NOTES:

1. SILT FENCE SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL OF GREATER THAN 0.5" AND AT LEAST DAILY DURING PROLONGED RAINFALL OR ONCE A WEEK. ANY REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE IMMEDIATELY.

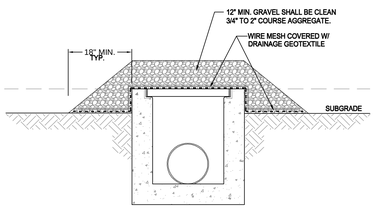
2. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING. IF THE FENCE IS NOT INSTALLED ON THE CONTOUR (PERPENDICULAR TO THE FLOW OF THE WATER) BOTH OF THESE CONDITIONS CAN OCCUR.

3. SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

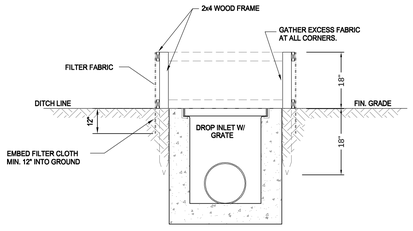
4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY 1/2 THE HEIGHT OF THE BARRIER.

5. IF ANY SECTION OF SILT FENCE IS KNOCKED DOWN DURING A RAIN EVENT (BECAUSE IT WAS INSTALLED IN AN AREA OF CONCENTRATED FLOW) THEN OTHER MEASURES SUCH AS A SEDIMENT TRAP AND DIVERSION OR SUPER SILT FENCE MUST BE INSTALLED.

1 / C2-1 — SILT FENCE DETAIL
NO SCALE:



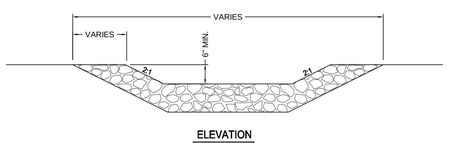
2 / C2-1 — INLET PROTECTION DETAIL (UNPAVED)
NO SCALE



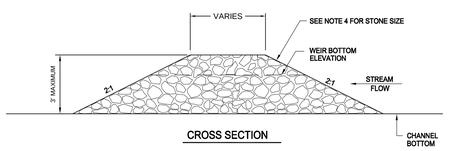
3 / C2-1 — SILT FENCE INLET PROTECTION
NO SCALE

MAINTENANCE NOTES:

1. INSPECT AFTER EACH 1/2" OF RAINFALL AND AT LEAST ONCE A WEEK AND REPAIRS MADE AS NEEDED.
2. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE TRAP.
3. INLET PROTECTION SHOULD REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA IS COMPLETELY STABILIZED.



ELEVATION



CROSS SECTION

4 / C2-1 — STONE CHECK DAM DETAIL
NO SCALE

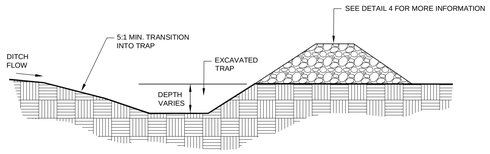
STONE CHECK DAM WITH OR WITHOUT SUMP MAINTENANCE REQUIREMENTS

1. INSPECT EACH CHECK DAM AT A MINIMUM ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5" OF RAIN PER 24 HOUR PERIOD. CHECK TO SEE IF WATER HAS FLOWED AROUND THE EDGES OF THE STRUCTURE.

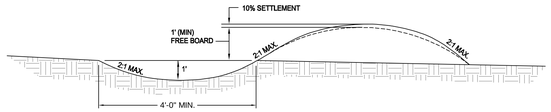
2. REPLACE STONE AND REPAIR DAMS AS NECESSARY TO MAINTAIN CORRECT HEIGHT AND CONFIGURATION.

3. SEDIMENT SHOULD BE REMOVED FROM BEHIND THE CHECK DAMS WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE DAM. DISPOSE OF THE SEDIMENT IN AN APPROPRIATE PLACE.

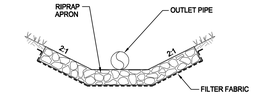
4. DRAINAGE AREA OF 2 ACRES OR LESS USE AASHTO #1 STONE. FOR DRAINAGE AREAS OF OVER 2 ACRES USE CLASS 1 RIPRAP.



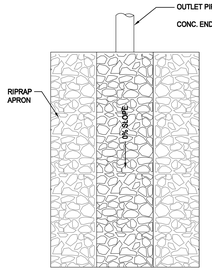
5 / C2-1 — STONE CHECK DAM WITH SUMP DETAIL
NO SCALE



6 / C2-1 — TEMPORARY DIVERSION
NO SCALE



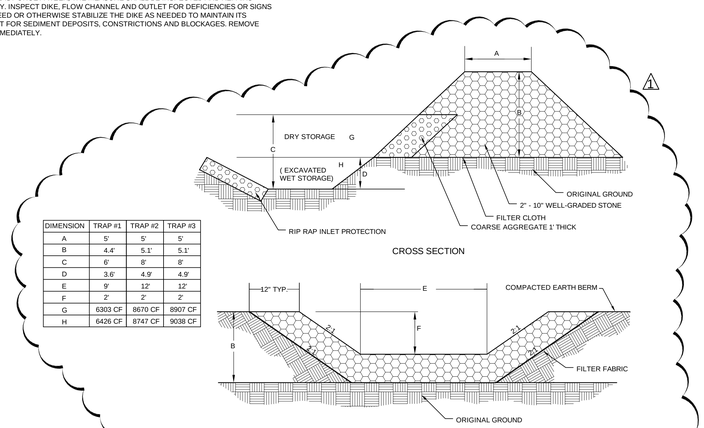
SECTION



PLAN

7 / C2-1 — OUTLET PROTECTION DETAIL
NO SCALE

MAINTENANCE NOTES: INSPECT AFTER EVERY STORM OF 0.5" AND REPAIRS MADE AS NECESSARY AT LEAST ONCE A WEEK. THE MEASURE SHALL BE INSPECTED AND REPAIRS MADE IMMEDIATELY. INSPECT DIKE, FLOW CHANNEL AND OUTLET FOR DEFICIENCIES OR SIGNS OF EROSION. RESEED OR OTHERWISE STABILIZE THE DIKE AS NEEDED TO MAINTAIN ITS STABILITY. INSPECT FOR SEDIMENT DEPOSITS, CONSTRICTIONS AND BLOCKAGES. REMOVE ANY BLOCKAGE IMMEDIATELY.



CROSS SECTION

DIMENSION	TRAP #1	TRAP #2	TRAP #3
A	5'	5'	5'
B	4.4'	5.1'	5.1'
C	6'	8'	8'
D	3.6'	4.9'	4.9'
E	9'	12'	12'
F	2'	2'	2'
G	6303 CF	8670 CF	8907 CF
H	6426 CF	8747 CF	9038 CF

ELEVATION

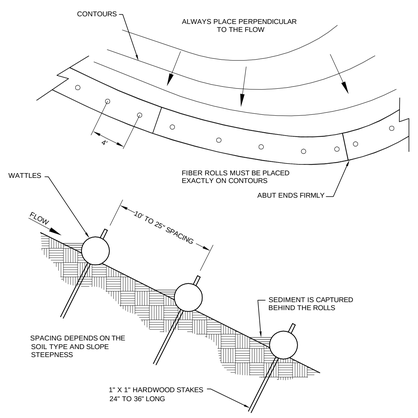
8 / C2-1 — ROCK OUTLET SEDIMENT TRAP DETAIL
N.T.S.
TRAP #1 70' X 30'
TRAP #2 70' X 30'
TRAP #3 60' X 30'

MAINTENANCE NOTES:

1. SEDIMENT SHOULD BE REMOVED FROM THE TRAP BEFORE THE TRAPS WET STORAGE VOLUME IS REDUCED BY ONE-HALF. SEDIMENT REMOVED FROM THE TRAP SHOULD BE STORED OR DISPOSED IN A MANNER IN WHICH WILL NOT CREATED AN EROSION OR SEDIMENT PROBLEM.

2. FILTER STONE SHOULD BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHOULD BE REMOVED AND CLEANED OR REPLACED.

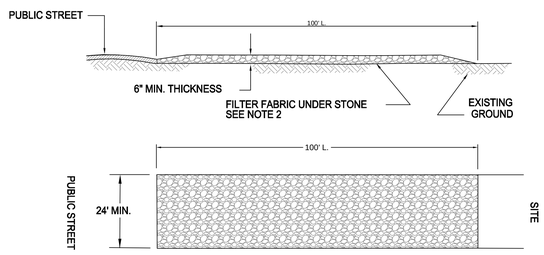
3. THE STRUCTURE SHALL BE CHECKED EVERY SEVEN DAYS AND/OR AFTER 0.5" OF RAIN TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT DAMAGED.



9 / C2-1 — WATTLE DETAIL
N.T.S.

MAINTENANCE NOTES:

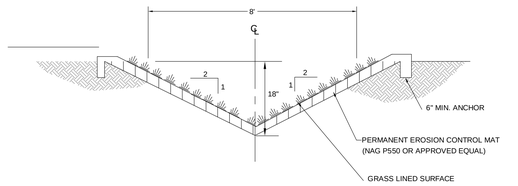
1. INSPECT WATTLES AT LEAST ONCE A WEEK AND AFTER EACH RAIN EVENT GREATER THAN 0.5".
2. REPAIR OR REPLACE SPLIT,TORN,RAVELING, OR SLUMPING WATTLES.
3. REMOVE SEDIMENT ACCUMULATIONS WHEN EXCEEDING 1/2 THE HEIGHT BETWEEN THE TOP OF THE WATTLE AND THE GROUND SURFACE.
4. REPAIR ANY RILLS OR GULLIES PROMPTLY. RESEED OR REPLANT VEGETATION IF NECESSARY UNTIL THE SLOPE IS STABILIZED.



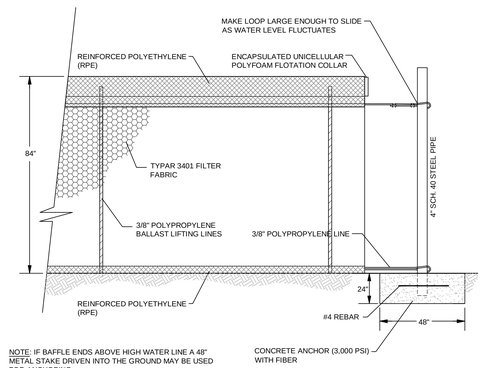
NOTES:

1. ANY SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
2. FILTER FABRIC OR CRUSHER RUN MAY BE USED AS A BASE COURSE FOR THE CONSTRUCTION ENTRANCE.
3. A STABILIZED ENTRANCE PAD OF #5 WASHED STONE OR RAILROAD BALLAST SHALL BE LOCATED WHERE TRAFFIC WILL LEAVE OR ENTER THE CONSTRUCTION SITE ONTO A PUBLIC ROAD.
4. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS WARRANT AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
5. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET.

10 / C2-1 — TEMPORARY CONSTRUCTION ENTRANCE DETAIL
NO SCALE

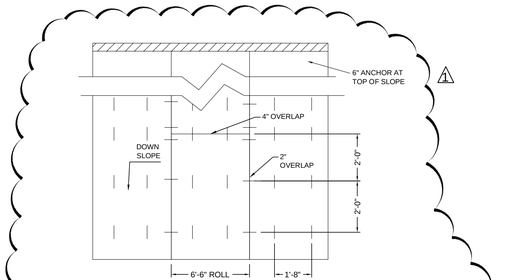


11 / C2-1 — ECM LINED DITCH DETAIL
N.T.S.



NOTE: IF BAFFLE ENDS ABOVE HIGH WATER LINE A 48" METAL STAKE DRIVEN INTO THE GROUND MAY BE USED FOR ANCHORING.

12 / C2-1 — FLOATING BAFFLE DETAIL
N.T.S.



13 / C2-1 — SLOPE PROTECTION EROSION CONTROL MATTING STAPLE PATTERN DETAIL
N.T.S.

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EROSION AND SEDIMENT CONTROL DETAILS

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 REVISED DETAIL 8 AND ADDED DETAIL 13

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C2-1

APPROVED DRAWING USE:

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VINCENT M. FINAMORE
14181
STATE OF
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August 2012

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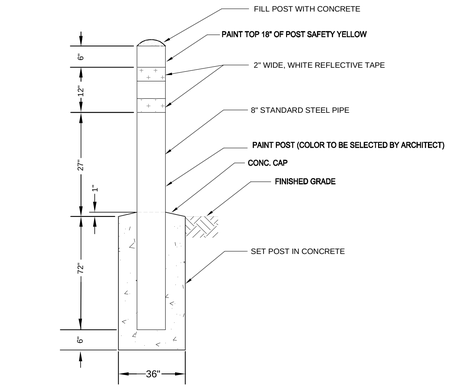
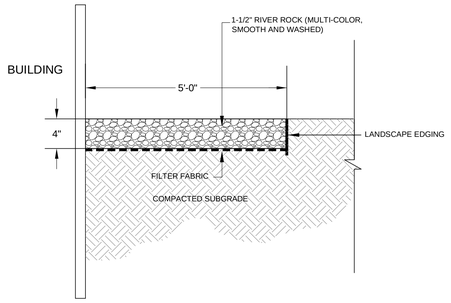
SHEET NO.

C2-1



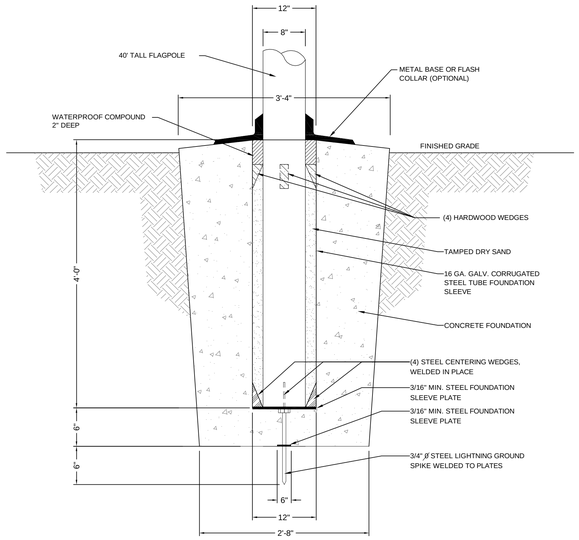
1 C2-12 — 8" BOLLARD DETAIL

N.T.S.



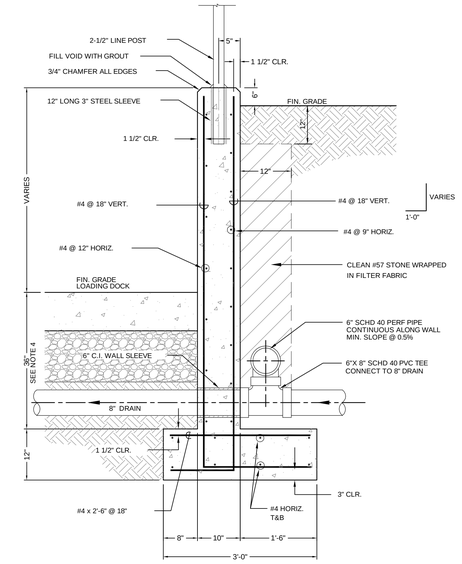
4 C2-12 — MAINTENANCE STRIP/ STONE MULCH

NO SCALE



7 C2-12 — 40' TALL FLAGPOLE DETAIL

NO SCALE

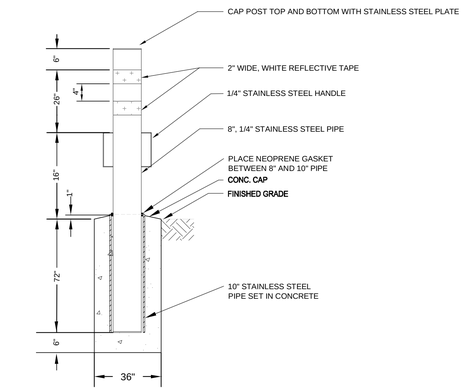


NOTES:

1. WALL IS TO BE BACKFILLED EQUALLY ON BOTH SIDES OF WALL AND COMPACTED TO THE SUBGRADE LEVEL PRIOR TO PLACEMENT OF FILL HIGH ON STEM.
2. ALL REBAR LAPPED 30 BAR DIAMETERS. (MIN.)
3. PROVIDE 1/2" ASPHALT-SATURATED CELULOSIC FIBER EXPANSION JOINT BETWEEN BUILDING AND WALL END.
4. STEP FOOTER AS NEEDED TO MAINTAIN 36" DEPTH BELOW FINISHED GRADE AND TO TIE INTO LOADING DOCK FOOTER.
5. EXCAVATION SHALL NOT BE LEFT EXPOSED MORE THAN 4 HOURS.

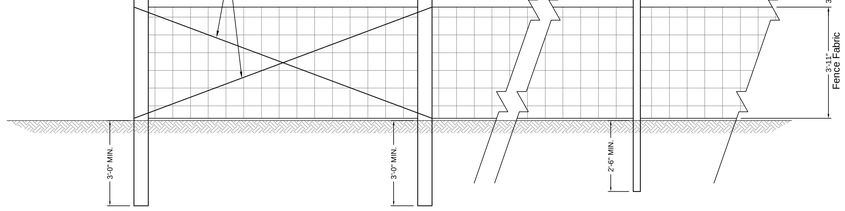
8 C2-12 — LOADING DOCK WALL DETAIL

NO SCALE



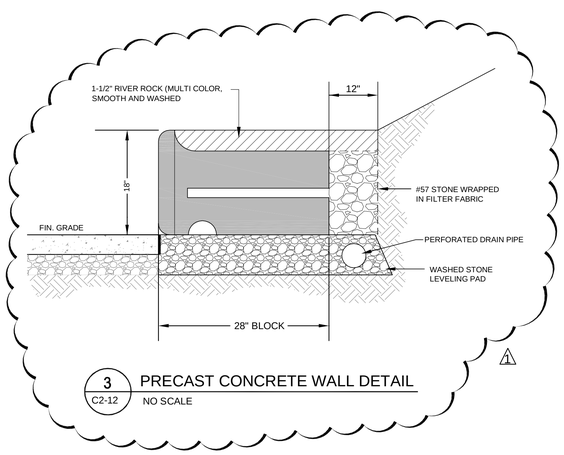
2 C2-12 — REMOVABLE BOLLARD DETAIL

N.T.S.



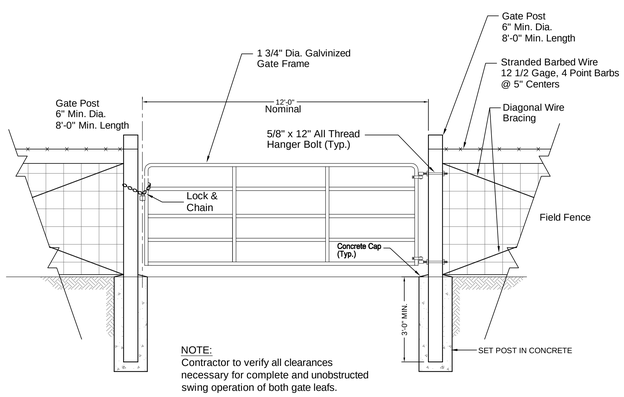
5 C2-12 — FIELD FENCE DETAIL

NO SCALE



3 C2-12 — PRECAST CONCRETE WALL DETAIL

NO SCALE



NOTE:
Contractor to verify all clearances necessary for complete and unobstructed swing operation of both gate leafs.

6 C2-12 — FARM (FIELD FENCE) GATE DETAIL

NO SCALE

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Voice 304.367.1417 • omniassociates.com

ARMY NATIONAL GUARD

WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

MISCELLANEOUS DETAILS

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 REVISED DETAIL 3

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C2-12

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
- ● FOR BIDDING
- ○ CONSTRUCTION DOCUMENT
- ○

ROBERT M. FUNK 14181 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER
8 August 2012

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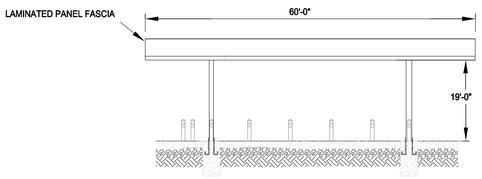
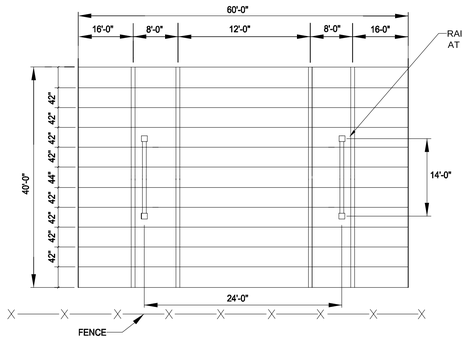
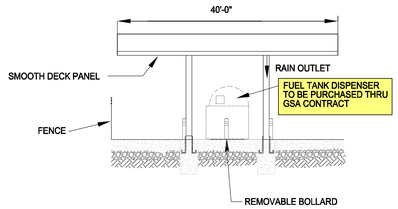
SHEET NO.

C2-12





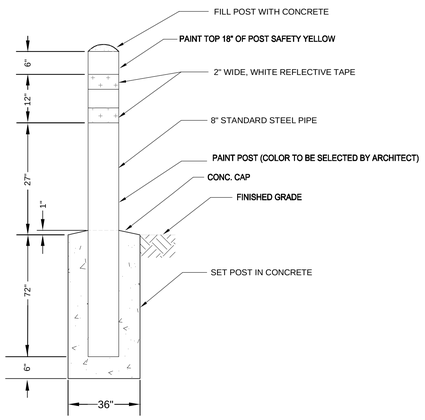


1 C2-13 **FUELING PAD CANOPY CONCEPT**

NO SCALE:

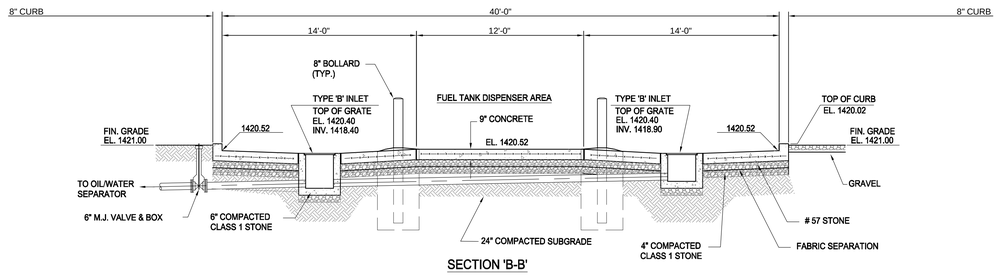
FUEL POINT CANOPY SPECIFICATIONS:

SIZE:	40' X 60'
NO. OF COLUMNS:	4
CLEAR HEIGHT:	19'
COLUMNS:	STRUCTURAL STEEL ASTM A500 GRADE B
ROOF:	STANDARD "BOTTOM DECK" STYLE (20 GAUGE STEEL)
FASCIA:	36" LAMINATED PANELS (24 GAUGE STEEL)
DRAINS:	EXTERNAL DRAINS WITH GUTTER ON LOW SIDE
LIGHTING:	NONE
CONDUITS:	NONE
CONDITIONS:	PER LOCAL CODE
COLOR:	CEILING - WHITE FASCIA - TO BE SELECTED TO MATCH BUILDINGS STRUCTURAL STEEL - TO BE SELECTED TO MATCH BUILDINGS
SUBMITTALS REQUIRED:	SHOP DRAWINGS WITH WV PROFESSIONAL ENGINEER STAMP PAINT AND STEEL PANEL COLORS.

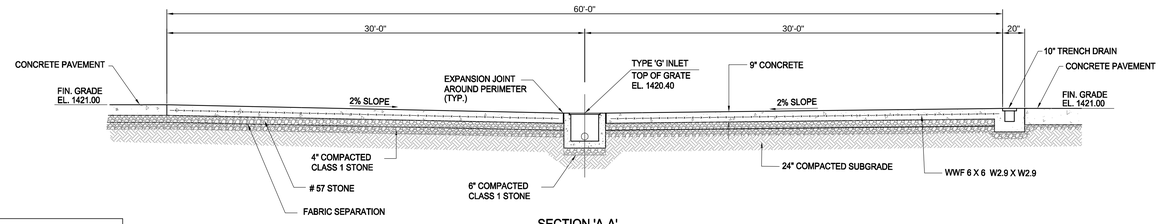


3 C2-13 **8" BOLLARD DETAIL**

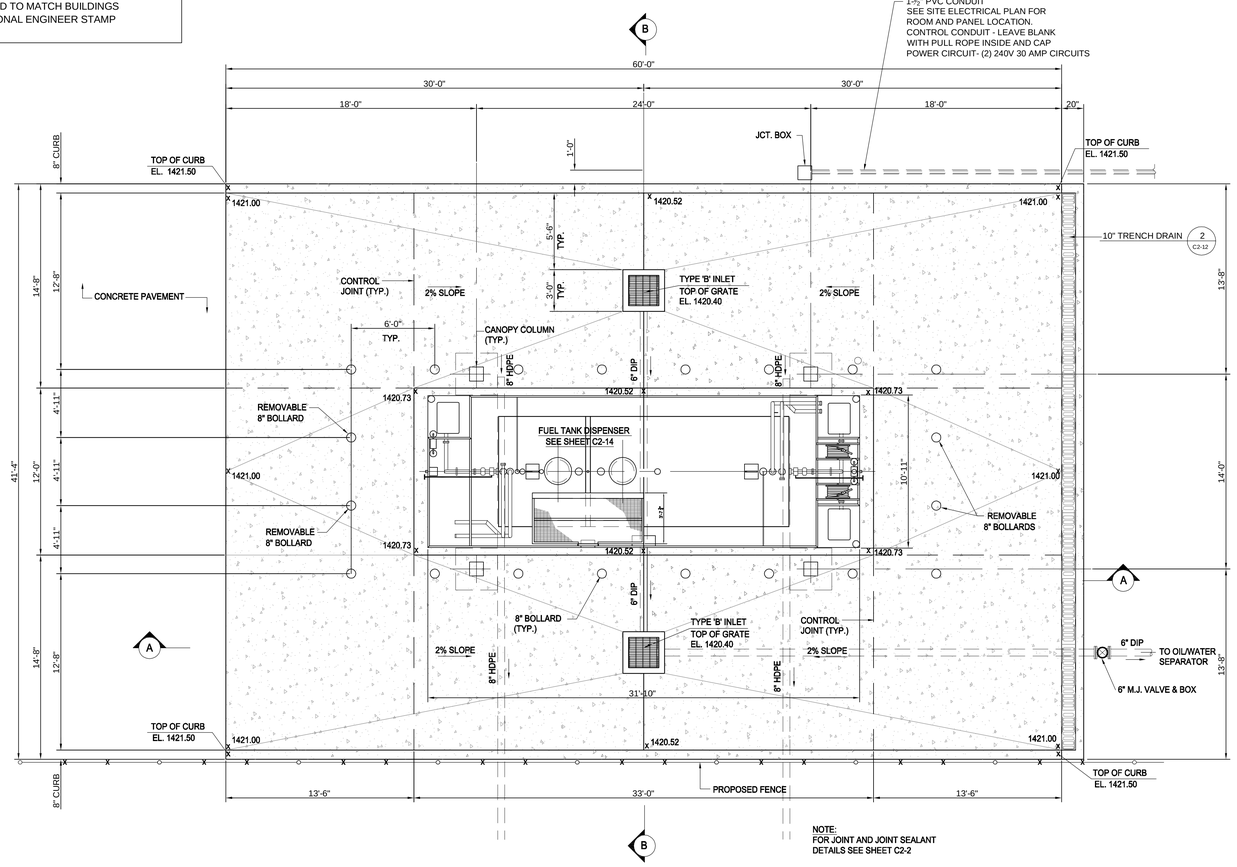
N.T.S.



SECTION 'B-B'



SECTION 'A-A'



NOTE:
FOR JOINT AND JOINT SEALANT DETAILS SEE SHEET C2-2

PLAN VIEW

2 C2-13 **FUELING PAD DETAIL**

NO SCALE:

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Voice 304.367.1417 • omniassociates.com

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

FUEL POINT & CANOPY DETAILS

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C2-13

APPROVED DRAWING USE:

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ROBERT M. PERRY
14181
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
27 June 2012

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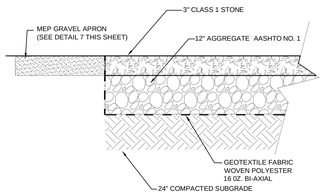
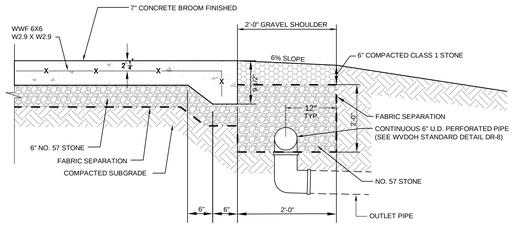
SHEET NO.

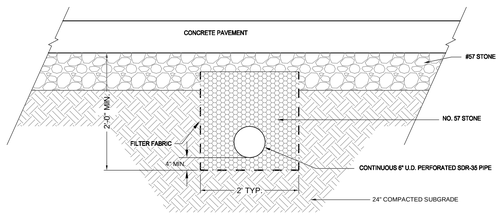
C2-13



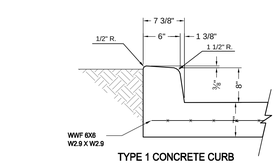
1 C2-2 HARDSTAND PAVING DETAIL
N.T.S.



2 C2-2 7" CONCRETE PAVEMENT DETAIL
N.T.S.
SEE DETAIL 8 THIS SHEET FOR JOINTS

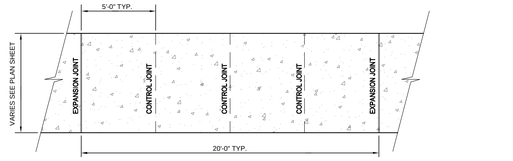


4 C2-2 FREE DRAINING BASE TRENCH & PIPING DETAIL
NO SCALE:

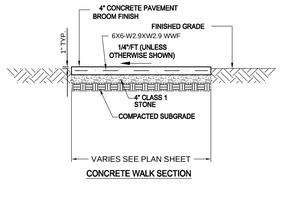


TYPE 1 CONCRETE CURB

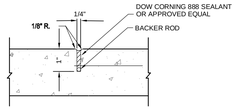
5 C2-2 INTEGRAL CONCRETE CURBING DETAIL
N.T.S.



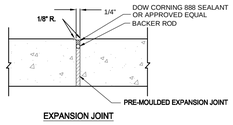
CONCRETE WALK PLAN



CONCRETE WALK SECTION



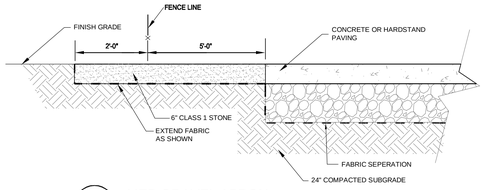
CONTROL JOINT



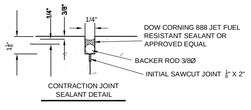
EXPANSION JOINT

6 C2-2 TYPICAL CONCRETE WALK DETAILS
N.T.S.

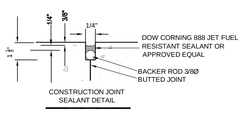
NOTE: SEE DETAIL 7 SHEET C2-4 FOR WALKS ADJACENT TO DOORS



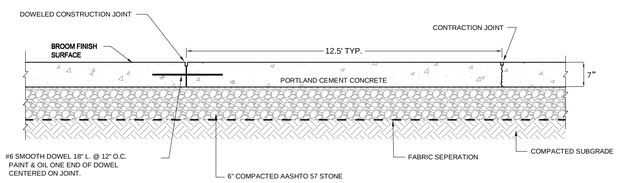
7 C2-2 MEP GRAVEL APRON
N.T.S.



CONTRACTION JOINT
SEALANT DETAIL

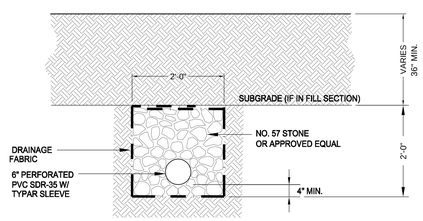


CONSTRUCTION JOINT
SEALANT DETAIL



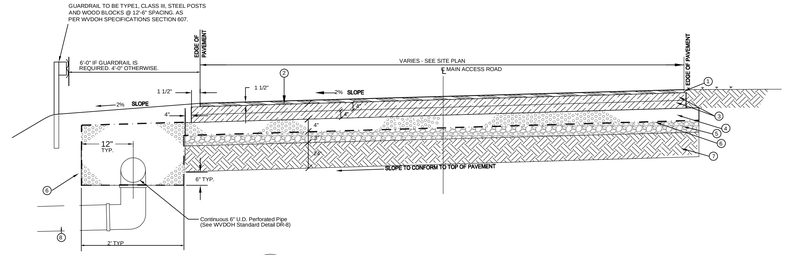
LONGITUDINAL SECTION

8 C2-2 TYPICAL CONCRETE PAVEMENT JOINTS
N.T.S.

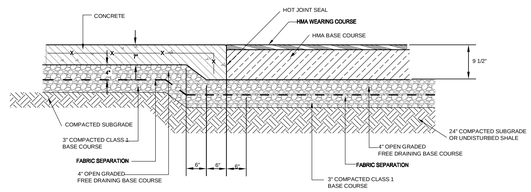


9 C2-2 SUBSURFACE DRAIN DETAIL
N.T.S.

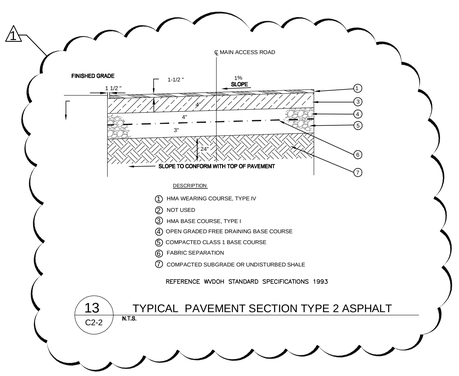
ALTERNATE BID DETAILS



11 C2-2 TYPICAL PAVEMENT SINGLE SLOPE SECTION - TYPE 1 ASPHALT
N.T.S.



12 C2-2 TYPICAL RIGID & FLEXIBLE PAVEMENT CONNECTION DETAIL
N.T.S.



DESCRIPTION:
1. HMA WEARING COURSE, TYPE IV
2. NOT USED
3. HMA BASE COURSE, TYPE I
4. OPEN GRADED FREE DRAINING BASE COURSE
5. COMPACTED CLASS 1 BASE COURSE
6. FABRIC SEPARATION
7. COMPACTED SUBGRADE OR UNDISTURBED SHALE

REFERENCE WVDOH STANDARD SPECIFICATIONS 1993

13 C2-2 TYPICAL PAVEMENT SECTION TYPE 2 ASPHALT
N.T.S.

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PAVING DETAILS

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 DELETED NOTE

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C2-2

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JAMES M. HILL
14181
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
8 August 2012

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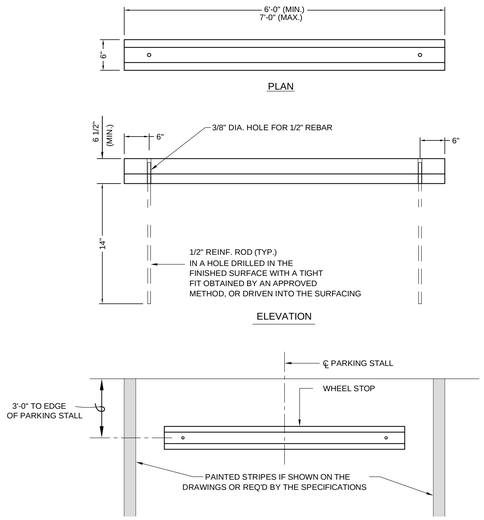
SHEET NO.

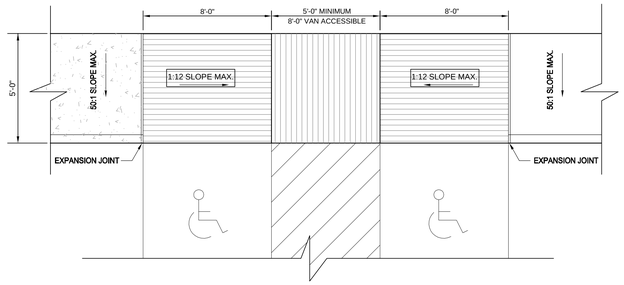
C2-2



1 C2-3 WHEEL STOP DETAILS

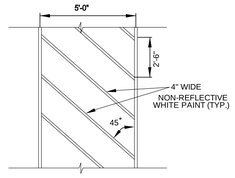
N.T.S.

INSTALLATION PLAN



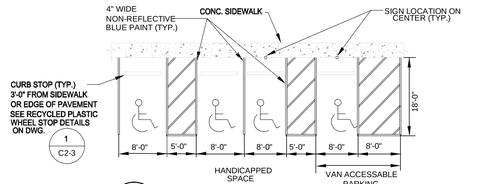
2 C2-3 CURB RAMP 1 DETAIL

N.T.S.



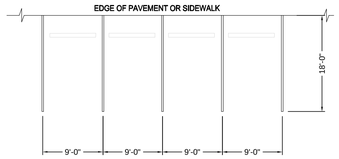
3 C2-3 PEDESTRIAN CROSSING STRIP

N.T.S.



4 C2-3 HANDICAPPED PARKING SPACE STRIPING

N.T.S.



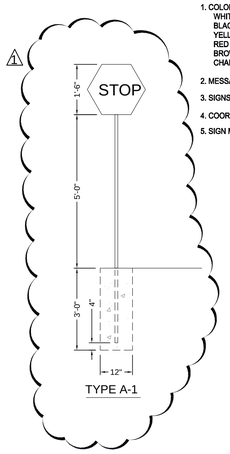
5 C2-3 PARKING SPACE STRIPING

N.T.S.

EXTERIOR SIGN SCHEDULE			
SIGN TYPE	SIZE	MESSAGE	REMARKS
A-1	1'-6"W X 1'-6"H	STOP	
A-2	1'-0"W X 1'-6"H	HANDICAPPED RESERVED PARKING	
A-3	1'-0"W X 9"H	VAN ACCESSABLE PARKING	
A-4	2'-0"W X 12"H	US GOVERNMENT PROPERTY NO TRESPASSING	SPACE SIGNS 150' APART ON EXTERIOR OF MOTOR POOL FENCES AND PERIMETER FENCES.
A-5	1'-0"W X 1'-6"H	NO HEAVY TRUCKS	
A-6	1'-0"W X 1'-6"H	SPEED LIMIT 25	
A-7	1'-0"W X 1'-6"H	HEV PREFERRED PARKING	
A-8	2'-0"W X 1'-0"H	AUTHORIZED VEHICLES ONLY	

NOTES:

1. COLORS SHALL BE FEDERAL STANDARD 595A AS FOLLOWS:
   WHITE - 27875
   BLACK - 27038
   YELLOW - 23655
   RED - 21105
   BROWN - 20059
   CHARCOAL - 36118
2. MESSAGES SHOWN ON SIGNAGE DETAILS ARE FOR EXAMPLE ONLY.
3. SIGNS MAY BE FOR OPPOSITE HAND LOCATIONS.
4. COORDINATE EXTERIOR SIGN COLORS WITH C&FMO.
5. SIGN MATERIAL TO BE GRADE 3000 ALUMINIUM - 0.08" THICK

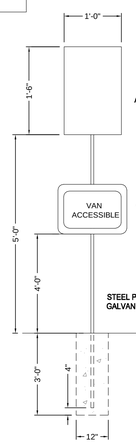


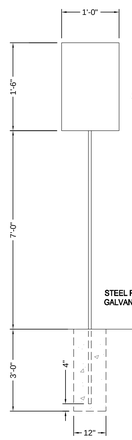
TYPE A-1

TYPE A-2

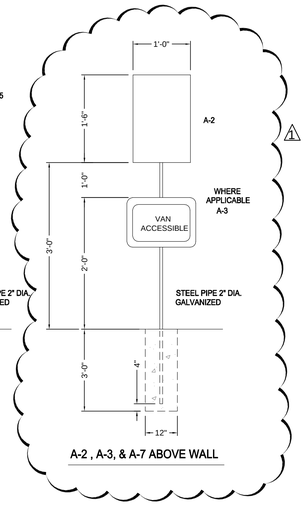
TYPE A-3

GREEN LEGEND AND BORDER ON WHITE BACKGROUND





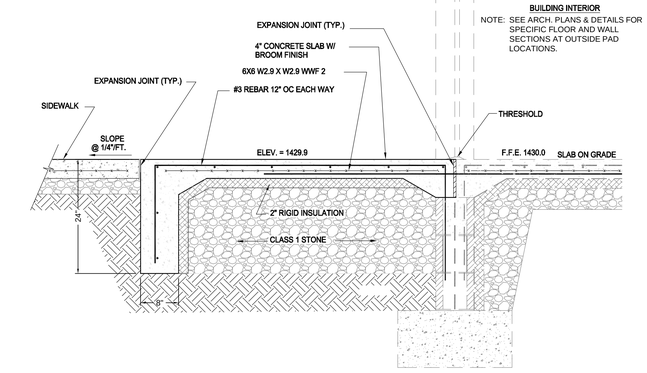
TYPE A-5 & A-6



A-2 , A-3, & A-7 ABOVE WALL

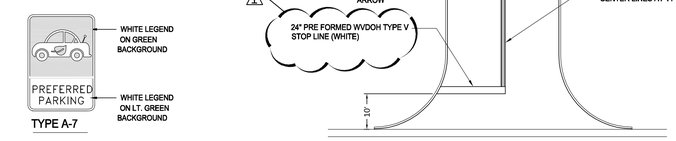
6 C2-3 SITE SIGN DETAIL

N.T.S.



7 C2-3 DOOR STOOP DETAIL

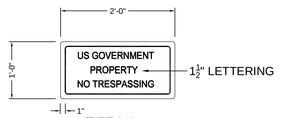
N.T.S.



8 C2-3 ACCESS ROAD STRIPING DETAIL

N.T.S.

TYPE A-7



TYPE A-4

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

PAVING DETAILS

DRAWN BY: JMS
PROJECT ISSUE DATE: 6 - 28 - 12
SHEET ISSUE DATE: 6 - 28 - 12

Drawing Revisions	
No.	Date
1	8-6-12 ADDED NOTE

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 C2-3

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
- ● FOR BIDDING
- ○ CONSTRUCTION DOCUMENT
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SHEET NO.

C2-3

FOUNDATION SCHEDULE		
DESIGNATION	FOOTING SIZE (WxLxD) or (WxD)	REINFORCEMENT
"SLAB 1"	5" Concrete Slab	#3 @9" O.C. BOTTOM, E.W.
"SLAB 2"	6" Concrete Slab	#4 @9" O.C. BOTTOM, E.W.
19'x32'x2' MAT	19'x32' MAT	LONGITUDINAL-#7@9"B, #7@9"T----TRANSVERSE #7@12"B, #7@10" T
ELEVATOR PIT MAT	ELEVATOR PIT MAT	LONGITUDINAL #7 @12"T&B----------TRANSVERSE #7@9"T&B
SF3	3'-0"x3'-0"x1'-0"	5-#5 BOTTOM E.W.
SF4	4'-0"x4'-0"x1'-6"	6-#5 BOTTOM E.W.
SF5	5'-0"x5'-0"x1'-6"	8-#5 BOTTOM E.W.
SF7	7'-0"x7'-0"x1'-6"	9-#5 BOTTOM E.W.
SF8	8'-0"x8'-0"x1'-6"	9-#5 BOTTOM E.W.
SF10	10'-0"x10'-0"x1'-6"	12-#6 BOTTOM E.W.
SF10-2.5	10'-0"x10'-0"x2'-6"	10-#7 BOTTOM E.W.
SF11	11'-0"x11'-0"x2'-0"	10-#7 BOTTOM E.W.
WF1	2'-0" x 1'-0" WALL FOOTING	3 #4 T&B LONGITUDINAL, #5 @ 12" O.C. TRANSVERSE W/HOOKED ENDS
WF2	Wall Footing - 3'-0" x 1'-0"	4 #5 LONGITUDINAL T&B, #5 @ 12" TRANSVERSE T&B
WF3	Beamng Footing - 3'-0" x 1'-8"	4 #5 LONGITUDINAL T&B, #5 @ 12" TRANSVERSE T&B

FOUNDATION AND STRUCTURE ON COLUMN LINE K, DESIGNED FOR FUTURE 25 FT. BAY EXPANSION, 1 STORY

NOTES:
1) T/SLAB GROUND LEVEL REFERENCE EL = (0'-0"). VERIFY SLAB ELEVATION MATCHES EXISTING.
2) ALL WALL FOOTINGS ARE WF1 UNLESS NOTED OTHERWISE

1 S-1.0 FOUNDATION PLAN
SCALE: 3/32" = 1'-0"

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ARMY NATIONAL GUARD

BUCKHANNON AFRC

Buckhannon, WV

FOUNDATION PLAN

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-1.0

APPROVED DRAWING USE:

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- PROGRESS _____
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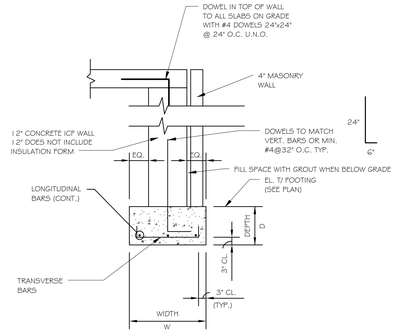
SHEET NO.

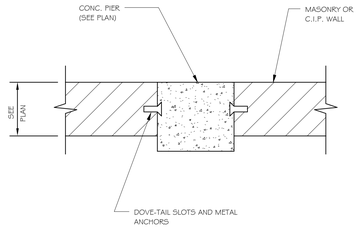
S-1.0



1 S-1.1

TYPICAL CONTINUOUS WALL FOOTING DETAIL

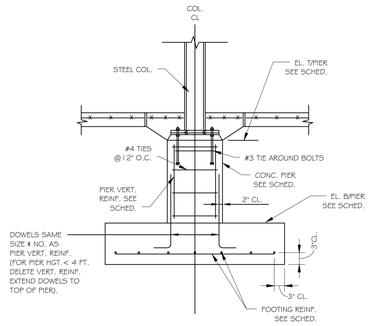
SCALE: 3/4" = 1'-0"



2 S-1.1

TYPICAL DETAIL AT CONCRETE PIERS

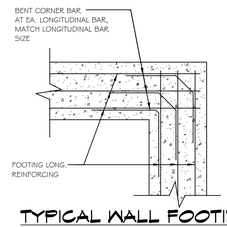
SCALE: 3/4" = 1'-0"



3 S-1.1

TYPICAL STEEL COLUMN SPREAD FOOTING DETAIL

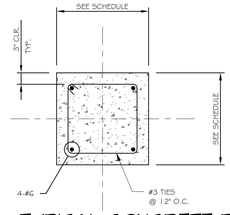
SCALE: 3/4" = 1'-0"



4 S-1.1

TYPICAL WALL FOOTING CORNER DETAIL

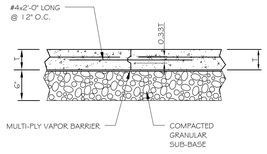
SCALE: 3/4" = 1'-0"



5 S-1.1

TYPICAL CONCRETE PIER DETAIL

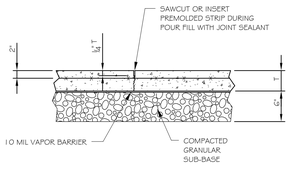
SCALE: 3/4" = 1'-0"



6 S-1.1

TYPICAL CONSTRUCTION JOINT DETAIL

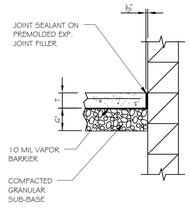
SCALE: 3/4" = 1'-0"



7 S-1.1

TYPICAL CONTROL JOINT DETAIL

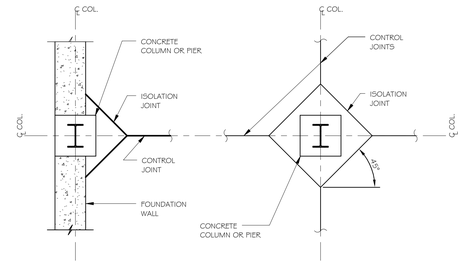
SCALE: 3/4" = 1'-0"



8 S-1.1

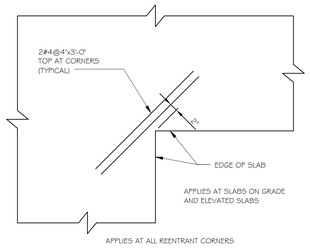
TYPICAL ISOLATION JOINT DETAIL

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



PLAN VIEW AT EXTERIOR COLUMN

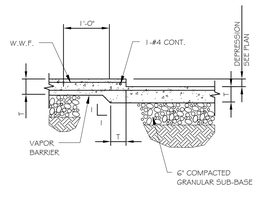
PLAN VIEW AT INTERIOR COLUMN



9 S-1.1

TYPICAL REINFORCING AT RE-ENTRANT CORNERS

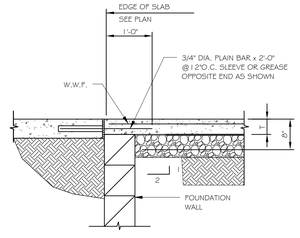
SCALE: 3/4" = 1'-0"



10 S-1.1

TYPICAL SLAB-ON-GRADE DEPRESSION DETAIL

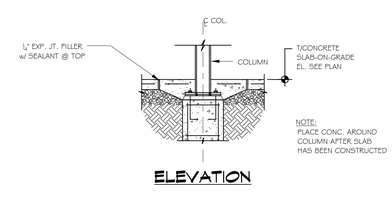
SCALE: 3/4" = 1'-0"



11 S-1.1

TYPICAL SLAB-ON-GRADE ENTRY DETAIL

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

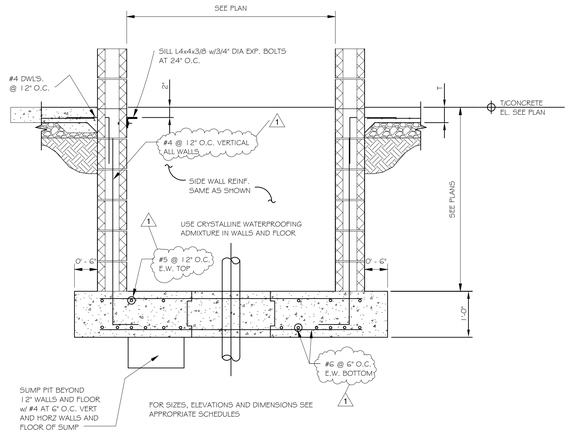


ELEVATION

12 S-1.1

TYPICAL SLAB-ON-GRADE ISOLATION JOINT AT COLUMN DETAIL

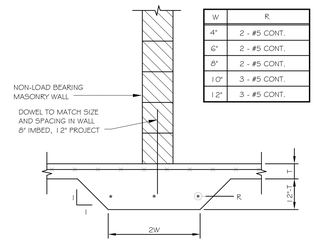
SCALE: 3/4" = 1'-0"



13 S-1.1

TYPICAL ELEVATOR PIT DETAIL

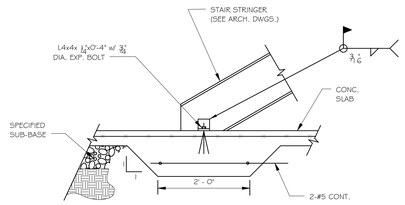
SCALE: 3/4" = 1'-0"



14 S-1.1

TYPICAL THICKENED CONCRETE SLAB-ON-GRADE DETAIL

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



15 S-1.1

TYPICAL THICKENED SLAB-ON-GRADE AT STAIR STRINGER DETAIL

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

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BUCKHANNON AFRC

Buckhannon, WV

TYP FOUNDATION DETAILS

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 04/25/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-1.1

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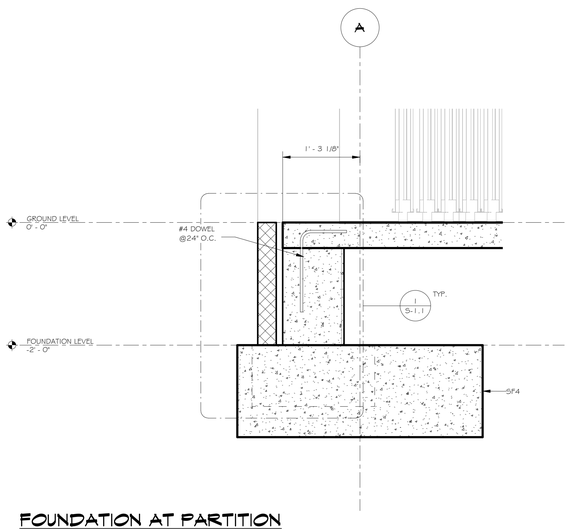
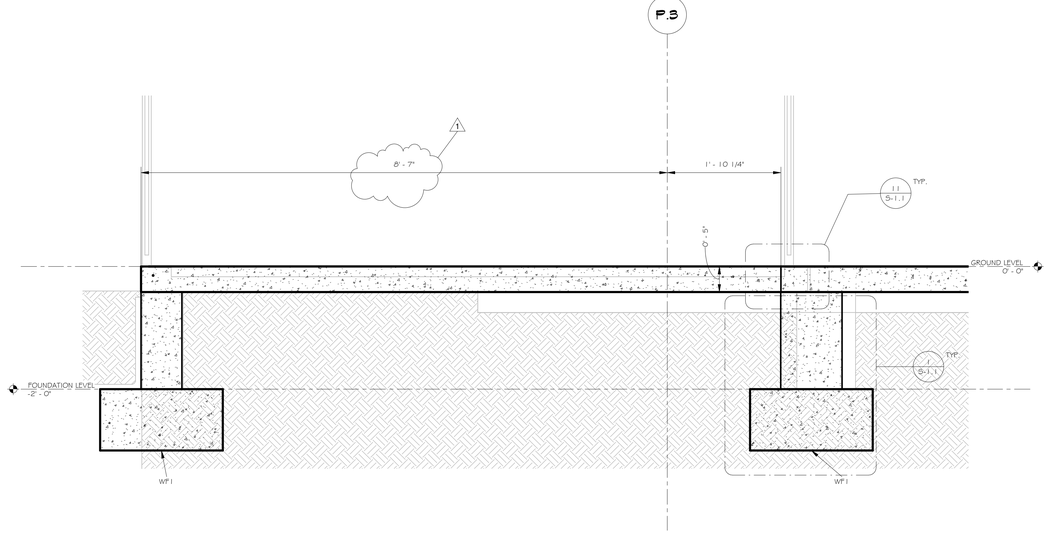
S-1.1



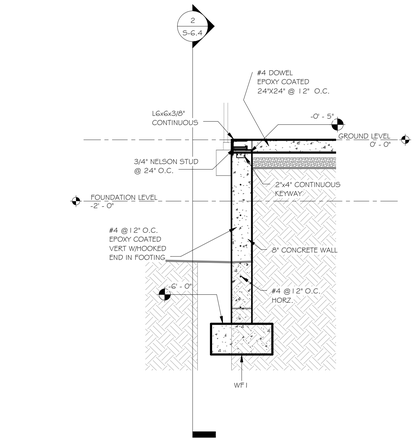
1 S-1.2 **FOUNDATION AT PARTITION ENCLOSURES**

SCALE: 1" = 1'-0"



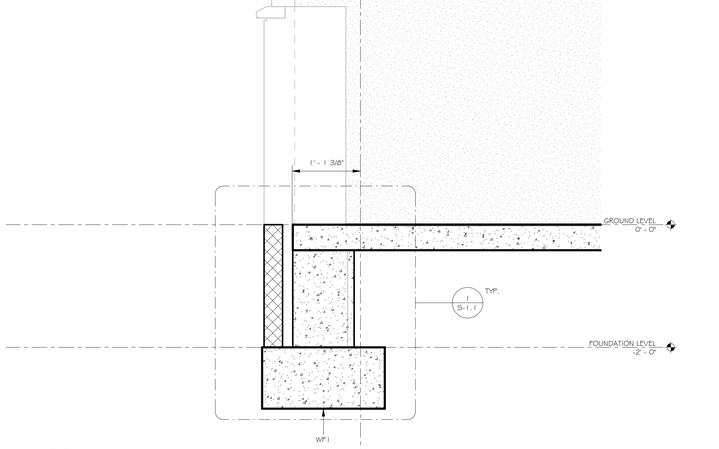
2 S-1.2 **FOUNDATION SECTION AT ENTRANCE**

SCALE: 1" = 1'-0"



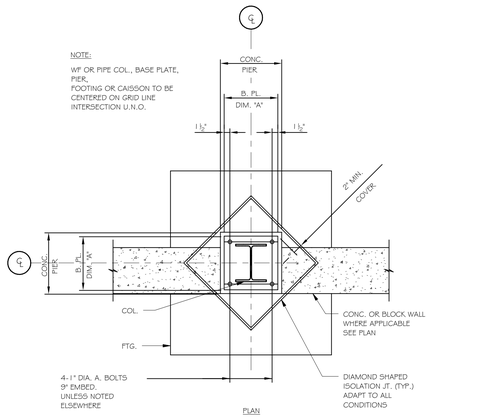
5 S-1.2 **LOADING DOCK WALL**

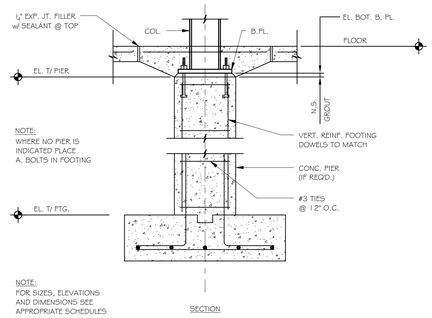
SCALE: 1/2" = 1'-0"



5 S-1.2 **LINE P.1 FOUNDATION SECTION**

SCALE: 1" = 1'-0"





4 S-1.2 **TYPICAL COLUMN BASE AT SPREAD FOOTING DETAIL**

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

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BUCKHANNON AFRC

Buckhannon, WV

FOUNDATION DETAILS

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 04/27/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-1.2

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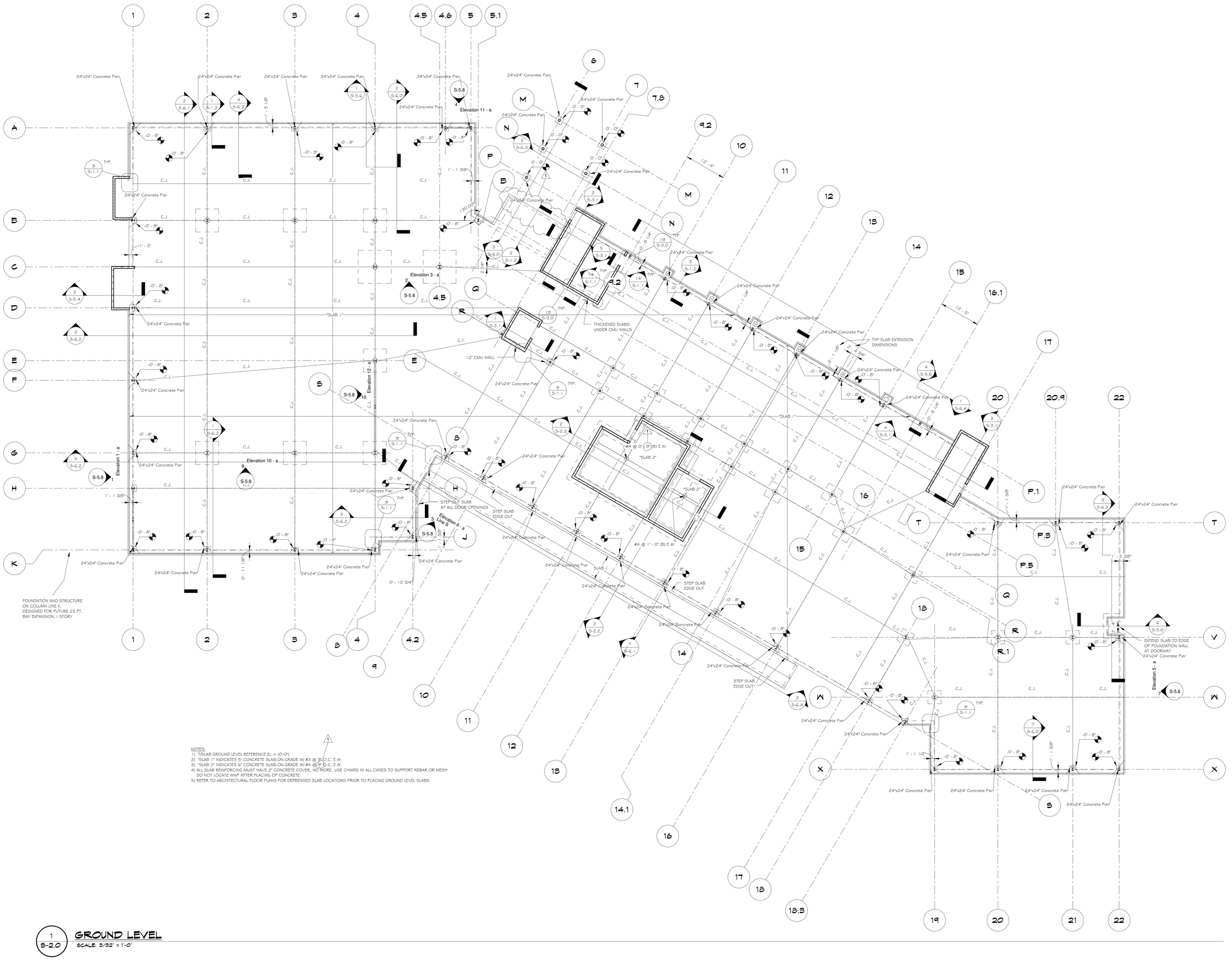
SHEET NO.

S-1.2



NOTES:
1) T/SLAB GROUND LEVEL REFERENCE EL. = (0'-0")
2) "SLAB 1" INDICATES 5" CONCRETE SLAB-ON-GRADE W/ #3 @ 30" O.C. E.W.
3) "SLAB 2" INDICATES 5" CONCRETE SLAB-ON-GRADE W/ #4 @ 9" O.C. E.W.
4) ALL SLAB REINFORCING MUST HAVE 2" CONCRETE COVER, NO MORE. USE CHAIRS IN ALL CASES TO SUPPORT REBAR OR MESH DO NOT LOCATE WWF AFTER PLACING OF CONCRETE.
5) REFER TO ARCHITECTURAL FLOOR PLANS FOR DEPRESSED SLAB LOCATIONS PRIOR TO PLACING GROUND LEVEL SLABS

1 / S-2.0 **GROUND LEVEL**
SCALE: 3/32" = 1'-0"

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BUCKHANNON AFRC

Buckhannon, WV

GROUND FLOOR PLAN

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 03/14/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-2.0

APPROVED DRAWING USE:

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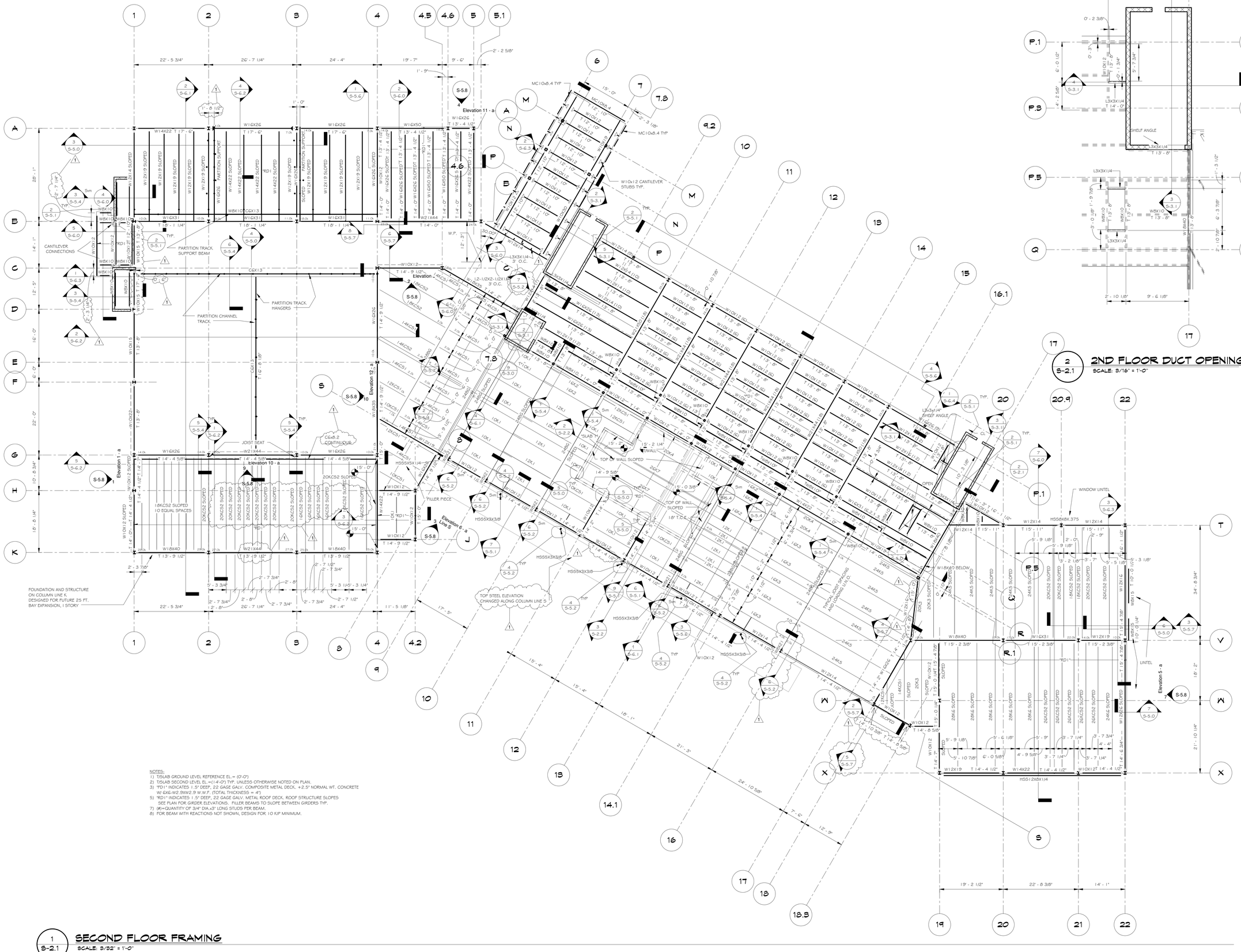
SHEET NO.
S-2.0


NOTES:
1) T/SLAB GROUND LEVEL REFERENCE EL. = (0'-0")
2) T/SLAB SECOND LEVEL EL. = (14'-0") TYP. UNLESS OTHERWISE NOTED ON PLAN.
3) "FD.1" INDICATES 1.5" DEEP, 22 GAGE GALV. COMPOSITE METAL DECK, +2.5" NORMAL WT. CONCRETE W/ 6X6-W2.9XW2.9 W.W.F. (TOTAL THICKNESS = 4")
5) "RD.1" INDICATES 1.5" DEEP, 22 GAGE GALV. METAL ROOF DECK. ROOF STRUCTURE SLOPES SEE PLAN FOR GIRDER ELEVATIONS. FILLER BEAMS TO SLOPE BETWEEN GIRDERS TYP.
7) (#)=QUANTITY OF 3/4" DIA.x3" LONG STUDS PER BEAM.
8) FOR BEAM WITH REACTIONS NOT SHOWN, DESIGN FOR 10 KIP MINIMUM.
FOUNDATION AND STRUCTURE ON COLUMN LINE K DESIGNED FOR FUTURE 25 FT. BAY EXPANSION, 1 STORY
PARTITION TRACK SUPPORT BEAM
PARTITION CHANNEL TRACK
PARTITION TRACK HANGERS
CANTILEVER CONNECTIONS
JOIST SEAT
TOP STEEL ELEVATION CHANGED ALONG COLUMN LINE 5
TYPICAL JOIST SPACING AND LOADING U.N.O.
FILLER PIECE
W.P.
Elevation 1 - a
Elevation 10 - a
Elevation 12 - a
Elevation 6 - a
Line S
Elevation 11 - a
Elevation 5 - a
22' - 5 3/4"
26' - 7 1/4"
24' - 4"
19' - 7"
9' - 6"
2' - 2 5/8"
1' - 9"
1' - 0"
1' - 8 1/2"
W14X22 T 17' - 6"
W16X26 T 17' - 6"
W16X50 T 13' - 4 1/2"
W16X31 T 18' - 1 1/4"
W18X40 T 13' - 9 1/2"
W21X44 T 14' - 4 5/8"
W21X44 T 14' - 0"
W21X44 T 13' - 9 1/2"
W10X12 T 14' - 9 1/2"
W10X12 T 14' - 4 1/2"
W10X12 T 14' - 0"
W10X12 T 13' - 9"
W10X12 T 13' - 6"
W10X12 T 13' - 3"
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W10X12 T 5' - 9"
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W10X12 T 2' - 3"
W10X12 T 2' - 0"
W10X12 T 1' - 9"
W10X12 T 1' - 6"
W10X12 T 1' - 3"
W10X12 T 1' - 0"
W10X12 T 0' - 9"
W10X12 T 0' - 6"
W10X12 T 0' - 3"
W10X12 T 0' - 0"
W8X10
W8X31
W8X40
W12X14
W12X19
W14X22
W16X26
W16X31
W16X40
W16X50
W18X40
W21X44
W21X62
W24X55
W24X62
W24X68
W24X76
W24X84
W24X94
W24X103
W24X131
W24X146
W24X162
W24X176
W24X192
W24X207
W24X229
W24X250
W24X279
W24X306
W24X335
W24X370
W24X408
W24X450
W24X492
W24X535
W24X583
W24X629
W24X679
W24X720
W24X762
W24X807
W24X848
W24X894
W24X939
W24X992
W24X1041
W24X1088
W24X1146
W24X1192
W24X1249
W24X1304
W24X1355
W24X1406
W24X1462
W24X1523
W24X1584
W24X1650
W24X1711
W24X1772
W24X1833
W24X1894
W24X1955
W24X2016
W24X2077
W24X2138
W24X2199
W24X2260
W24X2321
W24X2382
W24X2443
W24X2504
W24X2565
W24X2626
W24X2687
W24X2748
W24X2809
W24X2870
W24X2931
W24X2992
W24X3053
W24X3114
W24X3175
W24X3236
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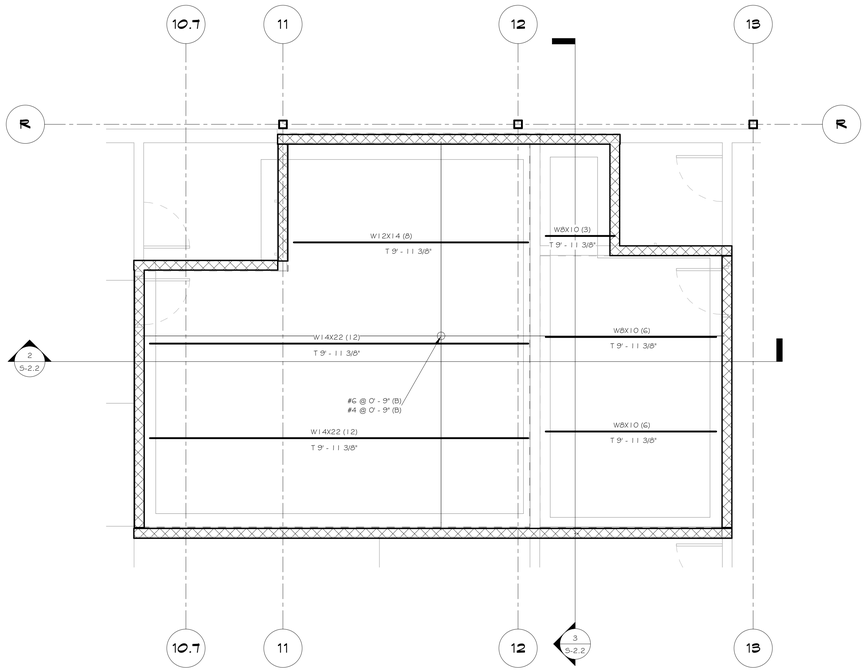
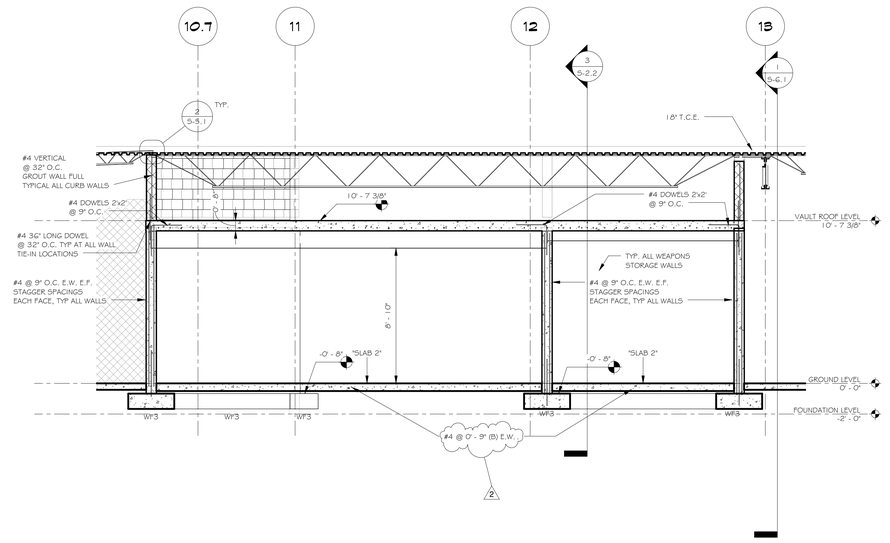
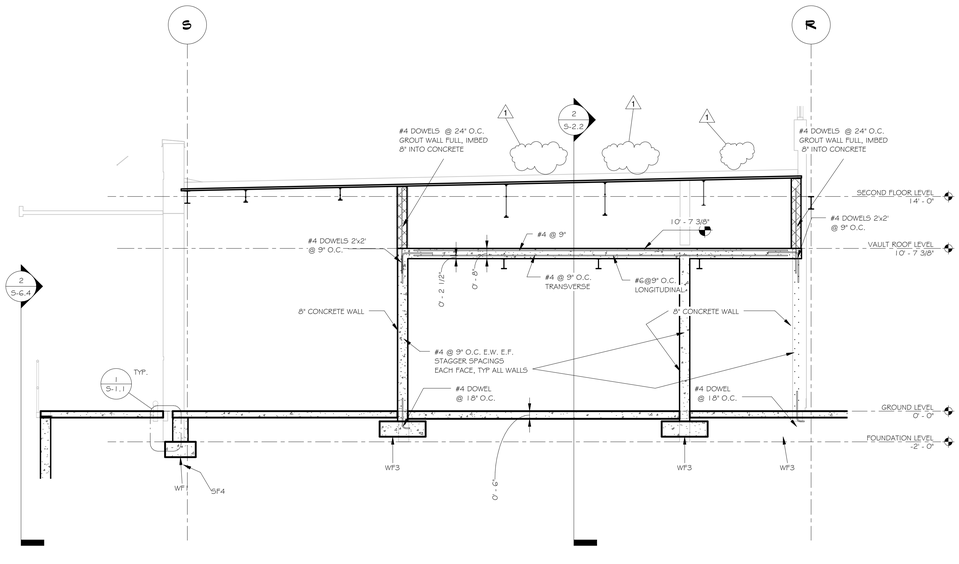
W24X3968
W24X4029



1 / S-2.2 **4VAULT CEILING PLAN**
SCALE: 1/4" = 1'-0"



2 / S-2.2 **VAULT SECTION**
SCALE: 1/4" = 1'-0"



3 / S-2.2 **LOADING DOCK AND WEAPONS STORAGE SECTION**
SCALE: 1/4" = 1'-0"

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BUCKHANNON AFRC

Buckhannon, WV

ARMS STORAGE DETAILS

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 07/03/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)
2	

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-2.2

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DAVID R. SWISHER
LICENSED
15154
7-3-12
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

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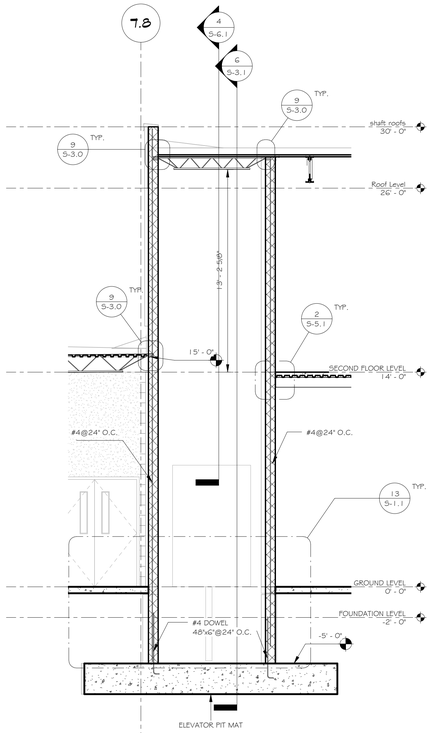
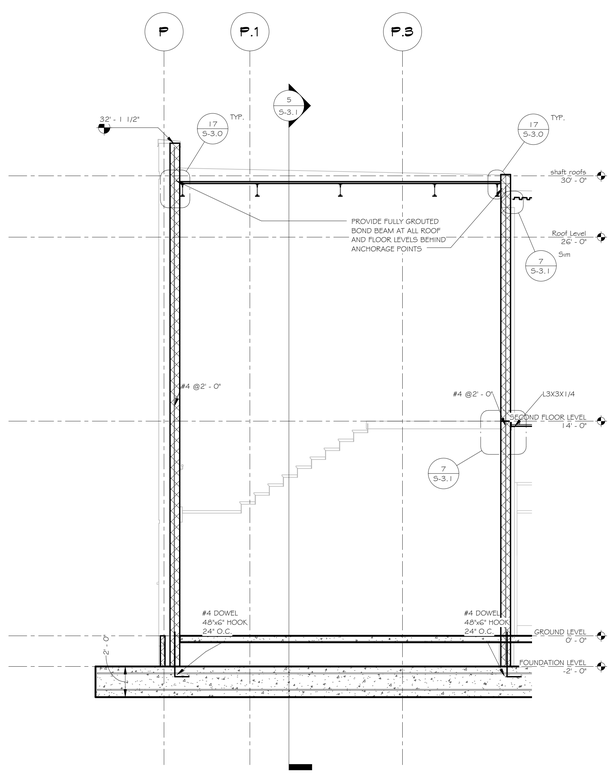
SHEET NO.

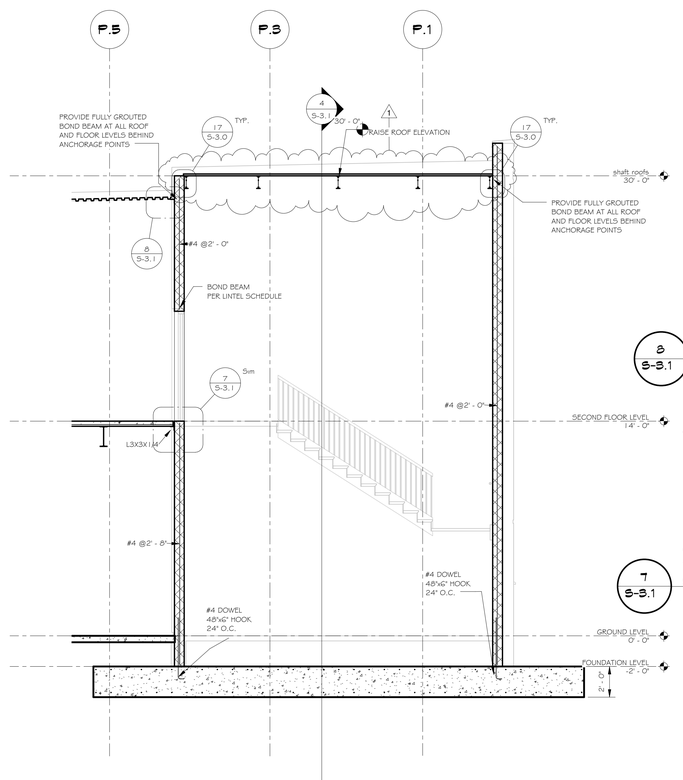
S-2.2



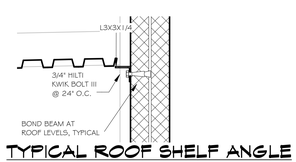
1 S-3.1 **ELEVATOR SHAFT SECTION**
SCALE: 1/4" = 1'-0"



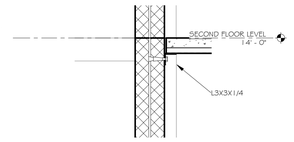
2 S-3.1 **STAIR "ST1" LONGITUDINAL SECTION**
SCALE: 1/4" = 1'-0"



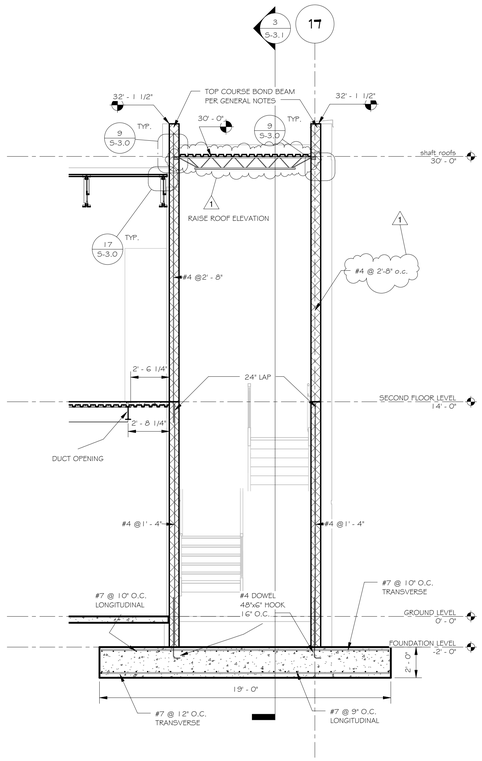
3 S-3.1 **STAIR "ST 2" LONGITUDINAL SECTION**
SCALE: 1/4" = 1'-0"



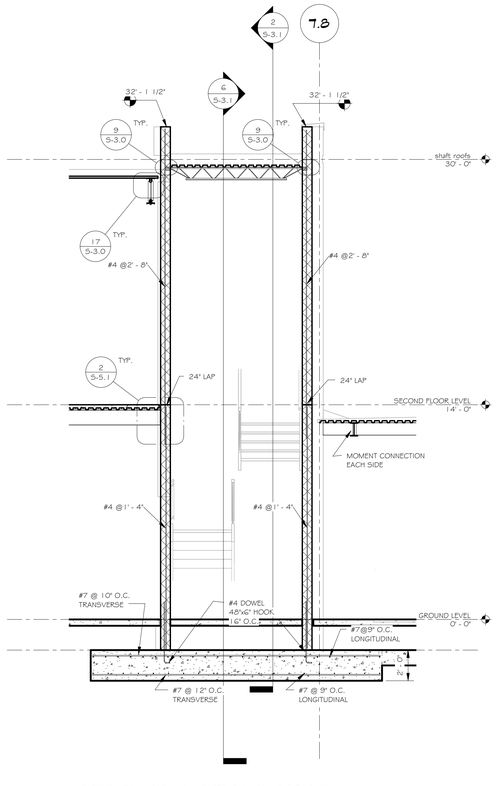
8 S-3.1 **TYPICAL ROOF SHELF ANGLE CONNECTION TO CMU**
SCALE: 1" = 1'-0"



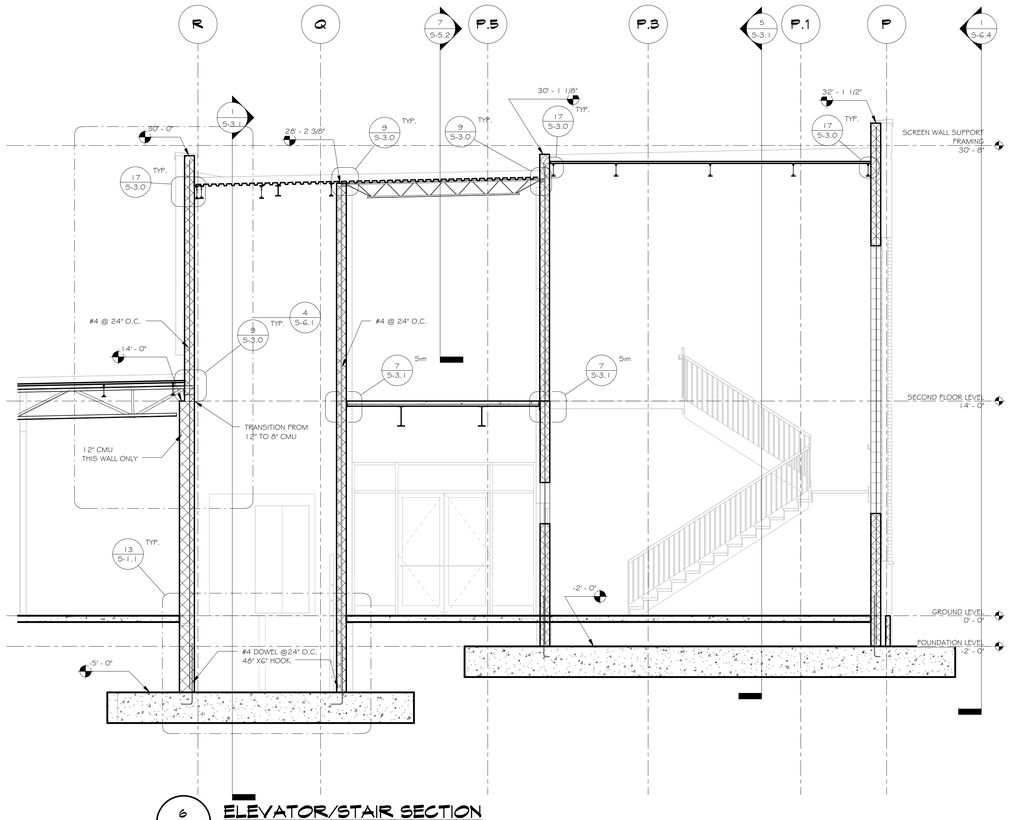
7 S-3.1 **TYPICAL SHELF ANGLE TO CMU WALLS**
SCALE: 3/4" = 1'-0"



4 S-3.1 **STAIR "ST 2" TRANSVERSE SECTION**
SCALE: 1/4" = 1'-0"



5 S-3.1 **STAIR "ST 1" TRANSVERSE SECTION**
SCALE: 1/4" = 1'-0"



6 S-3.1 **ELEVATOR/STAIR SECTION**
SCALE: 1/4" = 1'-0"

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ARMY NATIONAL GUARD

BUCKHANNON AFRC

Buckhannon, WV

MASONRY WALL SECTIONS/ ELEVATIONS

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 04/24/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-3.1

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DAVID R. SWISHER — 17154 — STATE OF WEST VIRGINIA — PROFESSIONAL ENGINEER

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SHEET NO.

S-3.1

COLUMN SCHEDULE

	A-1, A-2, A-3, A-4	A-4.6, A-5	B-1	B-2	B-3	B-4	B-5.1, G-1	C-4	C-4.5	D-1, F-1	E-4	G-2	G-3	G-4	H-1, 5-10, 5-11, 5-12, 5-13, 5-14.1, 5-16	H-4.2, J-4.2
SCREEN WALL SUPPORT FRAMING shaft roofs																
30' - 8" / 30' - 0" Roof Level			24' - 5 1/2"	25' - 7 1/2"	26' - 2 1/4"	26' - 0 1/2"	26' - 0"	27' - 4 1/2"	26' - 0"	25' - 9 1/2"	27' - 4 1/2"	26' - 5 5/8"	27' - 0 1/8"	27' - 7"		
26' - 0" LOW ROOF	17' - 6"															
19' - 0" SECOND FLOOR LEVEL		13' - 4 1/2"													14' - 4 1/2"	15' - 0"
14' - 0" VAULT ROOF LEVEL																
10' - 7 3/8" GROUND LEVEL	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X49 -0' - 8"	W10X49 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"
FOUNDATION LEVEL																
-2' - 0"																
Column Locations																

	K-1, K-2, K-3	K-4	M-6, M-7	N-6, N-7, P-6	P.1(0' - 8 1/4")-9.2	P.1-10, P.1-11, P.1-12, P.1-13, P.1-14, P.1-15	P.1(0' - 8 1/4")-16.1	P.2-10, P.2-11, P.2-12, P.2-13, P.2-14, P.2-15	P.3-10, P.3-10.7	P.3-11, P.3-12, P.3-13, P.3-14, P.3-14.2, P.3-15	P.5-10, P.5-10.7, P.5-14.2, P.5-15	Q-10	Q-10.7	Q-11, Q-12, Q-13, Q-14	Q-14.2	Q-15
SCREEN WALL SUPPORT FRAMING shaft roofs																
30' - 8" / 30' - 0" Roof Level																
26' - 0" LOW ROOF																
19' - 0" SECOND FLOOR LEVEL	14' - 0"	14' - 9 1/2"	12' - 0 1/8"	12' - 10"	SLOTTED CONNECTION 27' - 2 1/2"	28' - 6"	SLOTTED CONNECTION 27' - 0 1/2"	30' - 8"	30' - 8"	30' - 8"	30' - 8"	30' - 8"	30' - 8"		30' - 8"	30' - 8"
14' - 0" VAULT ROOF LEVEL								HSS4X4X1/4 28' - 10 1/2"	HSS4X4X1/4 28' - 7 5/8"	HSS4X4X1/4 28' - 7 3/4"	HSS4X4X1/4 28' - 4 7/8"	HSS4X4X1/4 28' - 2 1/4"	HSS4X4X1/4 28' - 2 1/4"		HSS4X4X1/4 28' - 2"	HSS4X4X1/4 28' - 2"
10' - 7 3/8" GROUND LEVEL	W10X33 -0' - 8"	W10X33 -0' - 8"	HSS6X6X1/4 0' - 0"	HSS6X6X1/4 0' - 0"	HSS6X6X1/4 0' - 0"	W10X33 -0' - 8"	HSS6X6X1/4 0' - 0"					HSS6X6X1/4 -0' - 8"		HSS6X6X1/4 -0' - 8"		HSS6X6X1/4 -0' - 8"
FOUNDATION LEVEL																
-2' - 0"																
Column Locations																

	R-7.8	R-9	R-10, R-11, R-12, R-13, R-14, R-16	R.1-17	S-8	S-9	S-18, X-19, X-20, X-21, X-22	S-18.3	T-20, T-22	T-20.9	V-18	V-20, V-21	V-22	W-19
SCREEN WALL SUPPORT FRAMING shaft roofs														
30' - 8" / 30' - 0" Roof Level		27' - 7"	27' - 7"	28' - 0"										
26' - 0" LOW ROOF														
19' - 0" SECOND FLOOR LEVEL	15' - 2 1/2"				14' - 7"	14' - 4 1/2"	14' - 7"	14' - 11 1/8"	16' - 1 1/2"	16' - 2"	15' - 4"	14' - 0"	15' - 4 7/8"	15' - 0 1/4"
14' - 0" VAULT ROOF LEVEL														
10' - 7 3/8" GROUND LEVEL	HSS6X6X1/4 -0' - 8"	HSS6X6X3/8 -0' - 8"	HSS6X6X3/8 -0' - 8"	HSS6X6X5/8 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"	W10X33 -0' - 8"
FOUNDATION LEVEL														
-2' - 0"														
Column Locations														

NO CHANGES OTHER THAN TOP ELEVATIONS +/- A COUPLE OF INCHES

1

ALL BOTTOM OF COLUMN ELEVATIONS ARE MEASURED TO THE BOTTOM OF THE BASE PLATE

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BUCKHANNON AFRC

Buckhannon, WV

COLUMN SCHEDULE

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 05/22/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-4.0

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DAVID R. SIMPSON — LICENSED PROFESSIONAL ENGINEER — 7-3-12 — STATE OF WEST VIRGINIA — PROFESSIONAL ENGINEER

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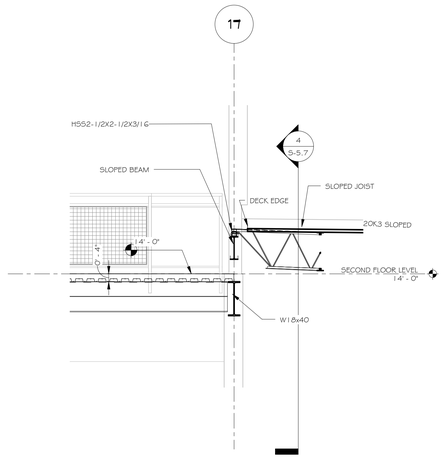
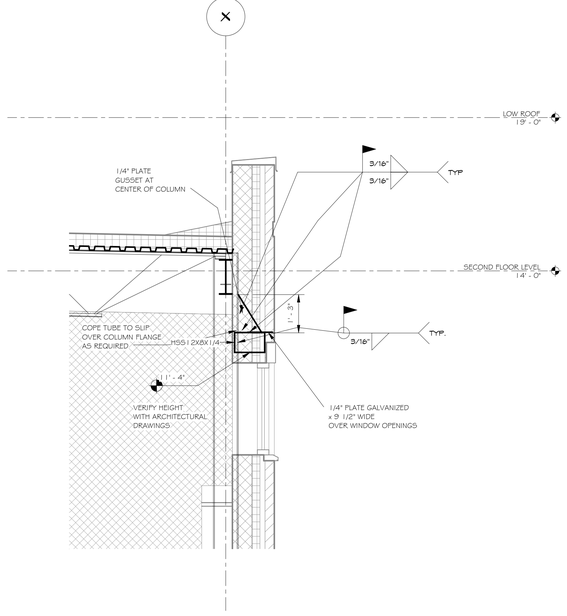
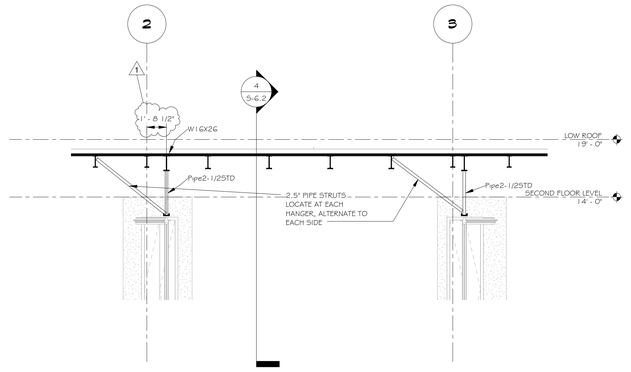
S-4.0



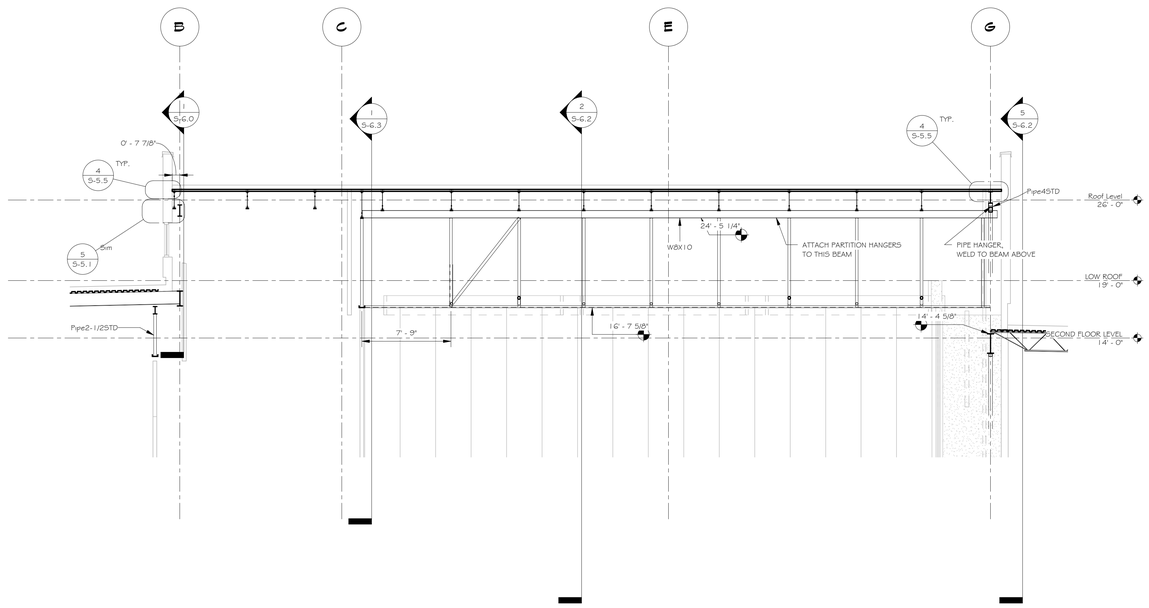
1 S-5.0 **SECTION THROUGH BALCONY**
SCALE: 3/8" = 1'-0"



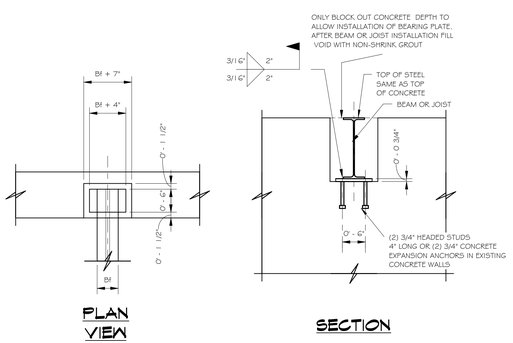
2 S-5.0 **LINE X LINTEL DETAIL**
SCALE: 1/2" = 1'-0"



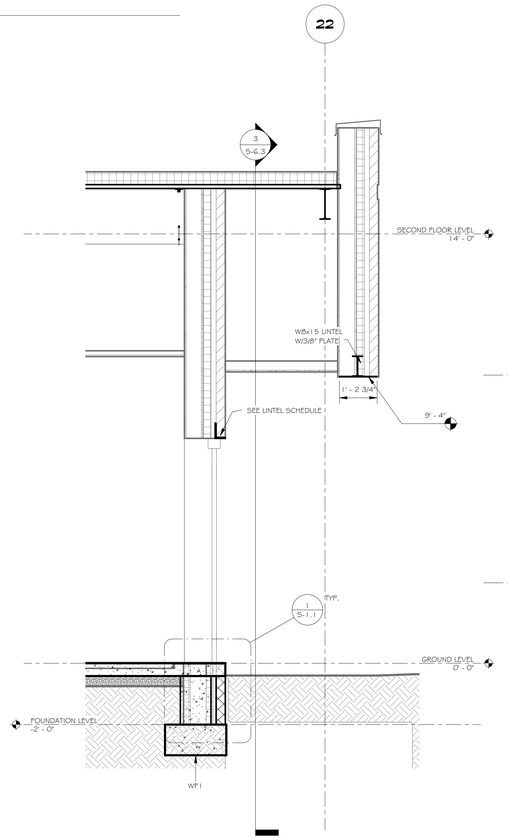
3 S-5.0 **PARTITION ENCLOSURE ELEVATION**
SCALE: 3/16" = 1'-0"



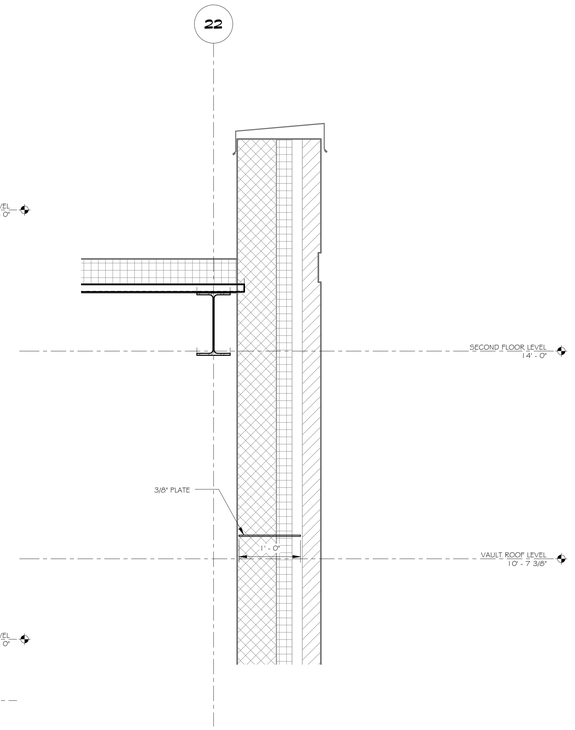
4 S-5.0 **PARTITION SUPPORT BEAM**
SCALE: 3/16" = 1'-0"



5 S-5.0 **BEAM BEARING IN CONCRETE WALL POCKET**
SCALE: 3/4" = 1'-0"



6 S-5.0 **DOOR C1 SOFFIT WALL SUPPORT**
SCALE: 1/2" = 1'-0"



7 S-5.0 **LINTELS SUPPORTING CMU/BRICK**
SCALE: 1" = 1'-0"

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BUCKHANNON AFRC

Buckhannon, WV

SECTIONS AND DETAILS

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 03/15/12

Drawing Revisions	
No.	Date
1	Adden #2-(7-30-12)

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ARCHITECT CAD NUMBER: 21020 S-5.0

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7-3-12
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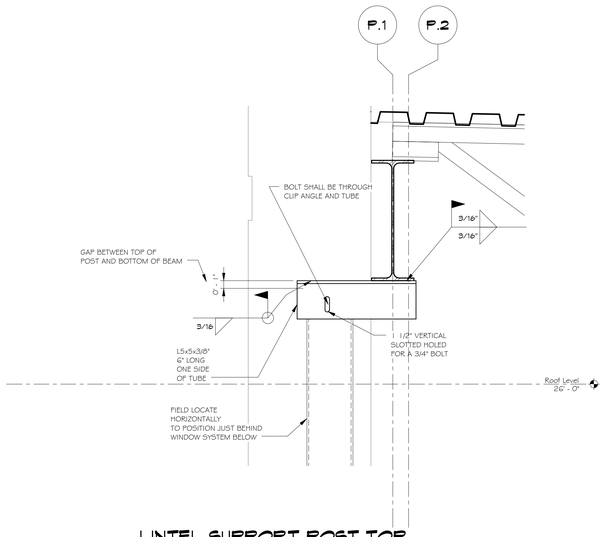
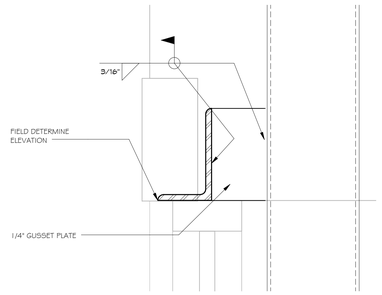
SHEET NO.

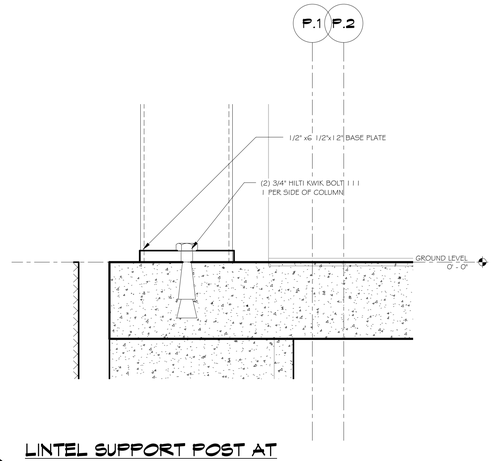
S-5.0



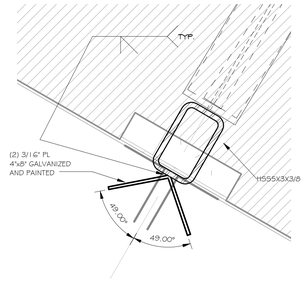
1 S-5.2 **LINTEL SUPPORT POST TOP CONNECTION**
SCALE: 1 1/2" = 1'-0"



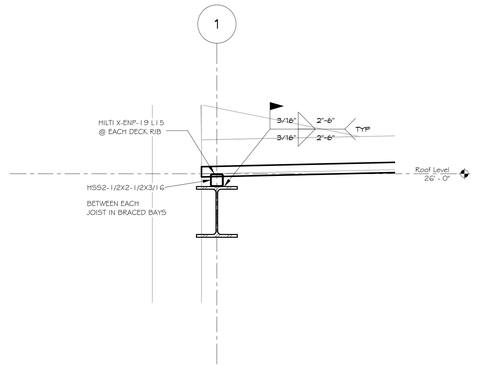
2 S-5.2 **LINTEL CONNECTION TO POST**
SCALE: 3" = 1'-0"



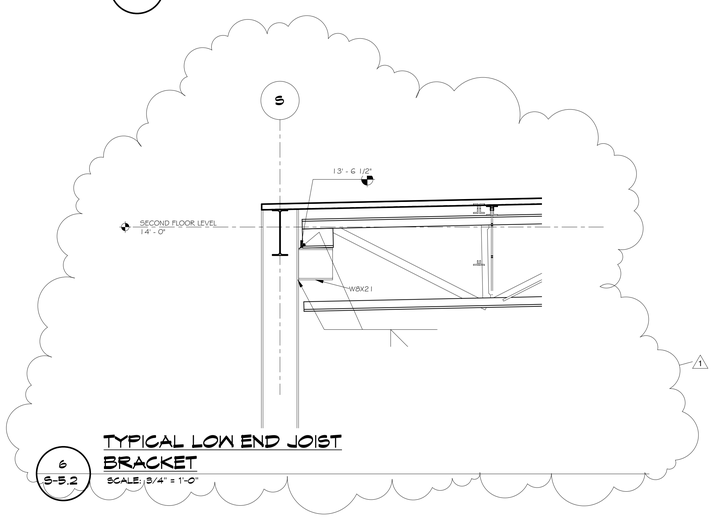
3 S-5.2 **LINTEL SUPPORT POST AT BASE**
SCALE: 3" = 1'-0"



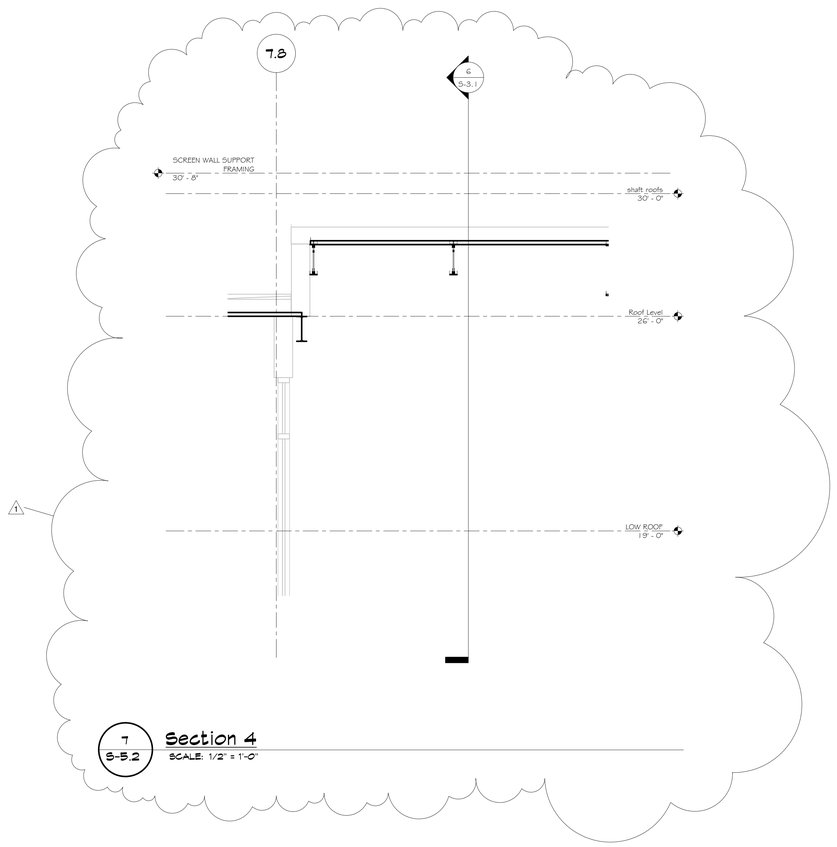
4 S-5.2 **CABLE ATTACHMENT PLATES**
SCALE: 3" = 1'-0"



5 S-5.2 **SHEAR COLLECTOR DETAIL**
SCALE: 1" = 1'-0"



6 S-5.2 **TYPICAL LOW END JOIST BRACKET**
SCALE: 3/4" = 1'-0"



7 S-5.2 **Section 4**
SCALE: 1/2" = 1'-0"

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ARMY NATIONAL GUARD

BUCKHANNON AFRC

Buckhannon, WV

STEEL DETAILS

DRAWN BY: Author
PROJECT ISSUE DATE: JUNE 28, 2012
SHEET ISSUE DATE: 05/31/12

Drawing Revisions	
No.	**Date**
1	Adden #2-(7-30-12)

ARCHITECT PROJECT NUMBER: 21020
ARCHITECT CAD NUMBER: 21020 S-5.2

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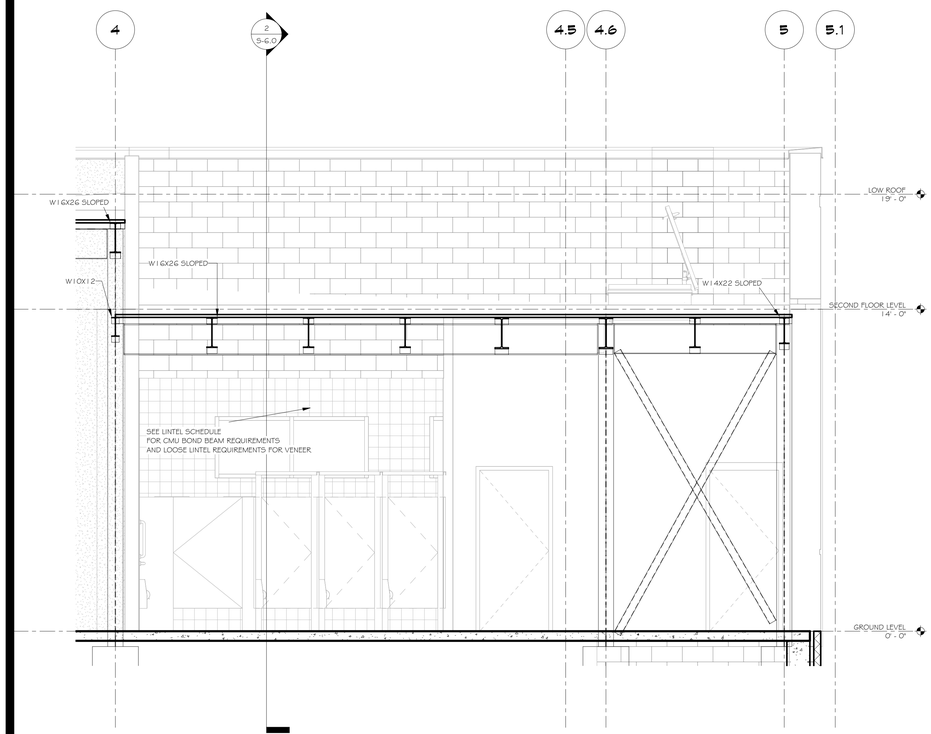
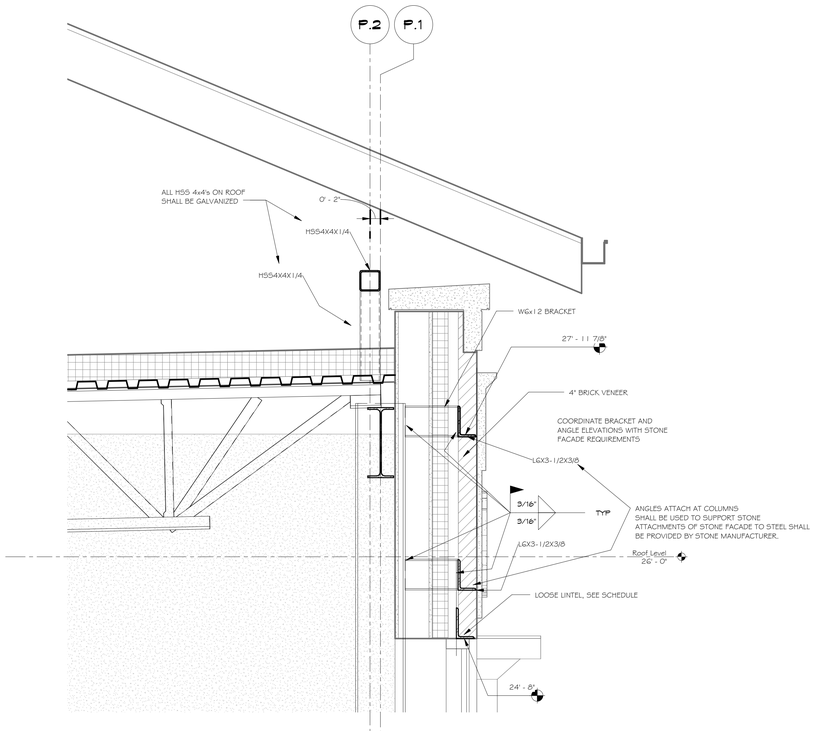
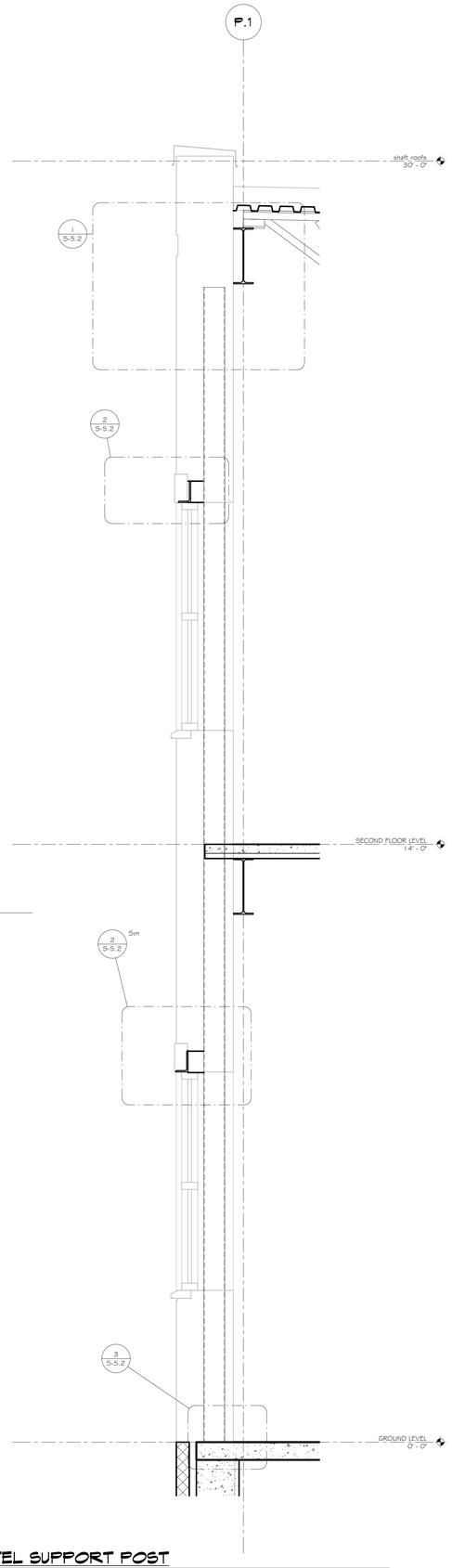
S-5.2



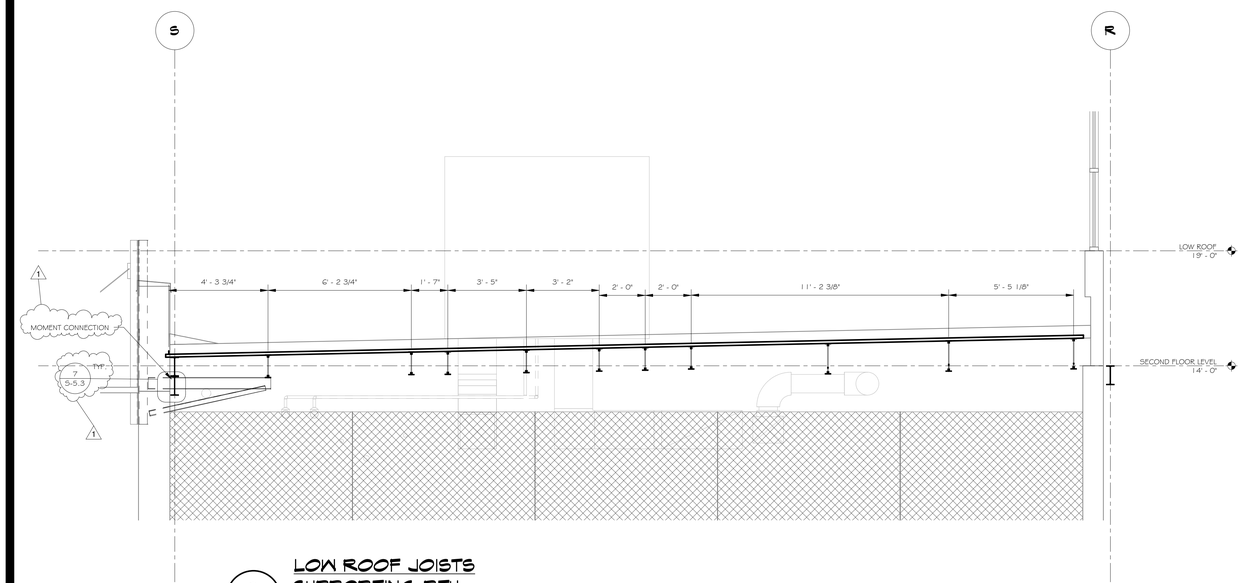
1 S-5.6 **LOW ROOF CROSS SECTION**
SCALE: 3/8" = 1'-0"



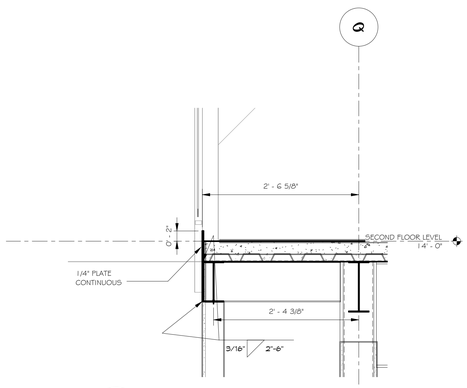
2 S-5.6 **FRONT CORNICE DETAIL**
SCALE: 1" = 1'-0"



4 S-5.6 **LINTEL SUPPORT POST**
SCALE: 3/4" = 1'-0"



3 S-5.6 **LOW ROOF JOISTS SUPPORTING RTU**
SCALE: 3/8" = 1'-0"



5 S-5.6 **BALCONY EDGE**
SCALE: 1" = 1'-0"

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BUCKHANNON AFRC

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ROOF AND FLOOR DETAILS

DRAWN BY: Author
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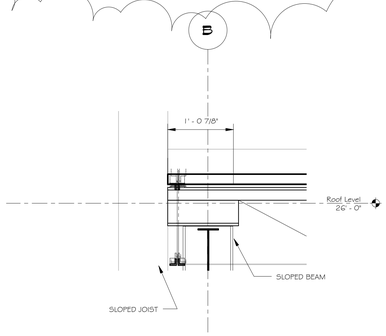
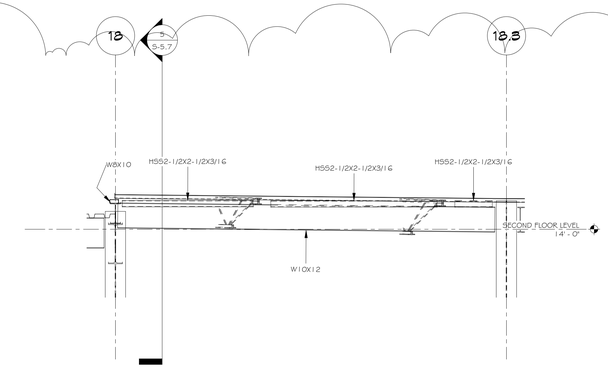


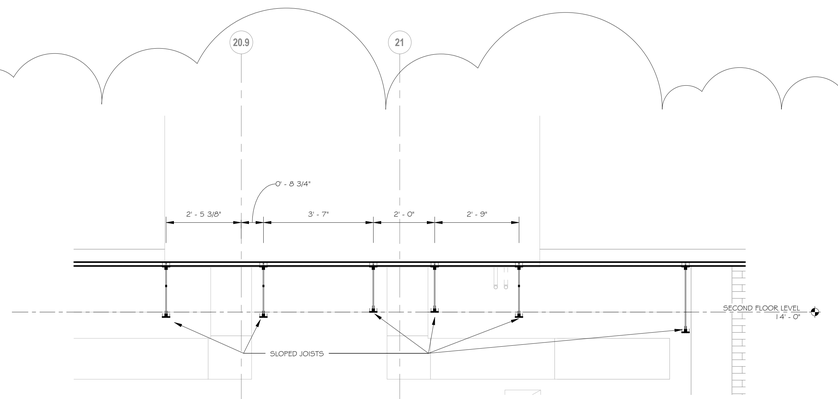
1 S-5.7 ROOF EDGE AT JOIST OVERHANG

SCALE: 1" = 1'-0"



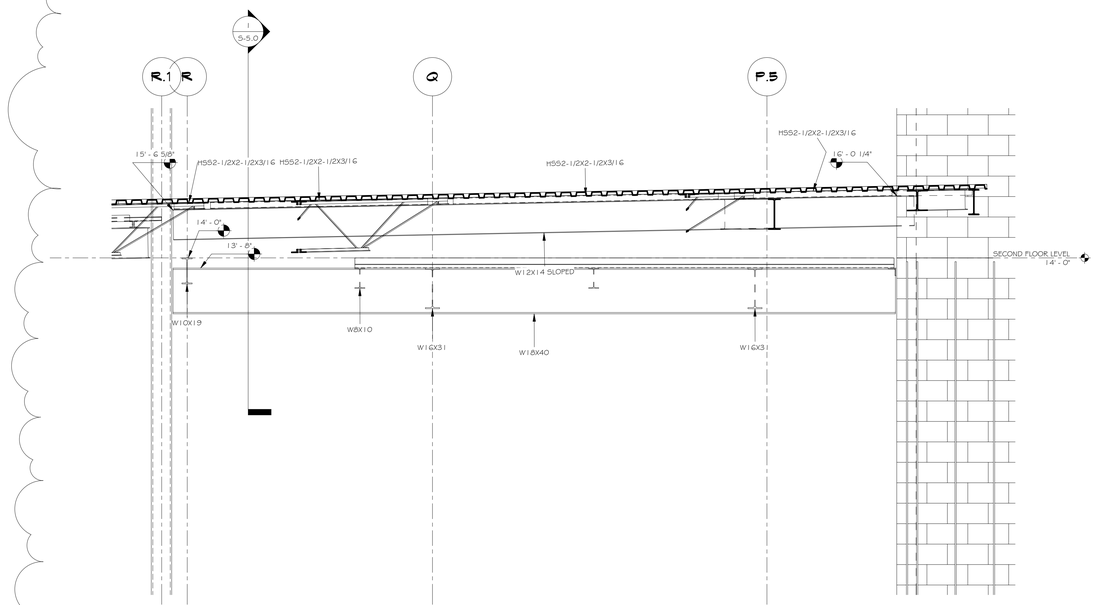
2 S-5.7 ROOF TRANSITION AT LINE 18

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



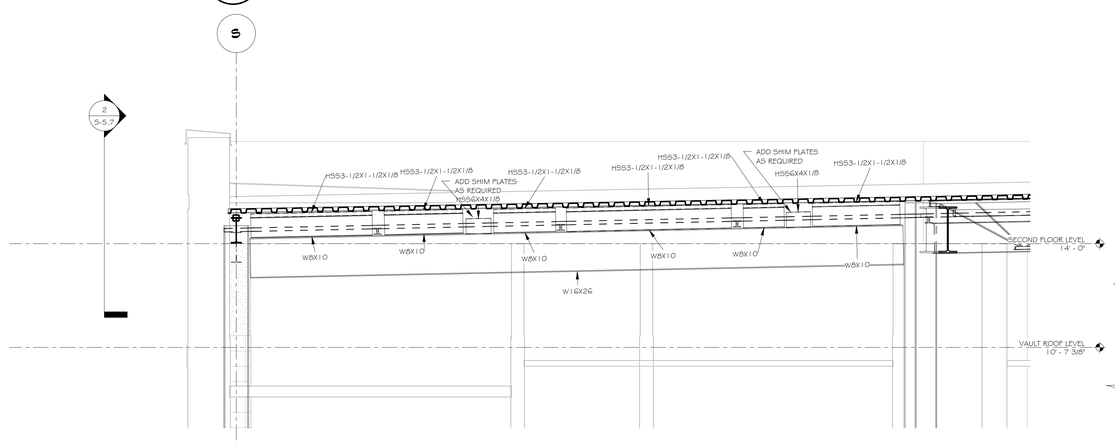
3 S-5.7 LOCKER ROOM RTU SUPPORT

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



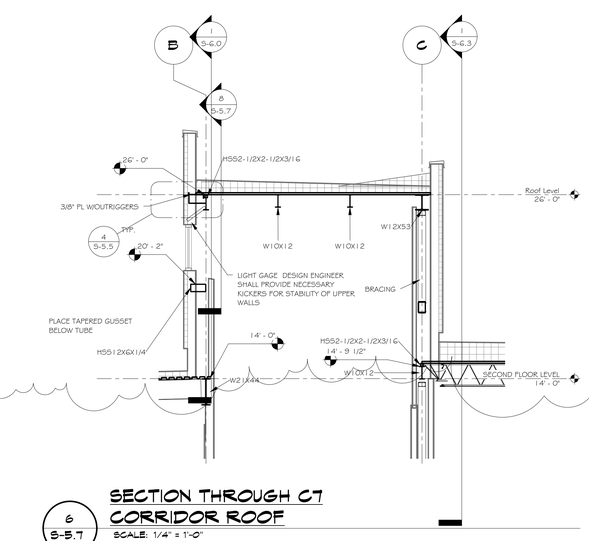
4 S-5.7 SECOND FLOOR/SLOPED ROOF TRANSITION

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



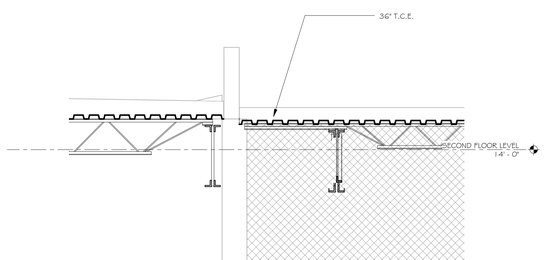
5 S-5.7 SECTION THROUGH ROOF TRANSITION LINE

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



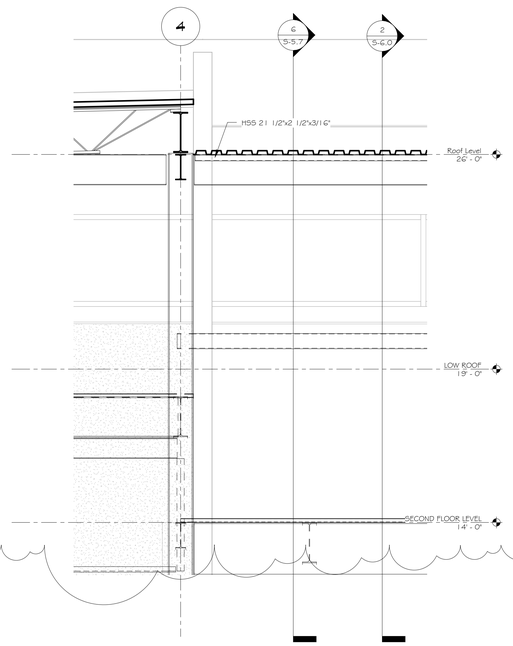
6 S-5.7 SECTION THROUGH C7 CORRIDOR ROOF

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



7 S-5.7 TRANSITION FLAT TO SLOPED ROOF

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



8 S-5.7 ROOF TRANSITION AT LINE 4

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

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BUCKHANNON AFRC

Buckhannon, WV

ROOF AND FLOOR DETAILS

DRAWN BY: Author
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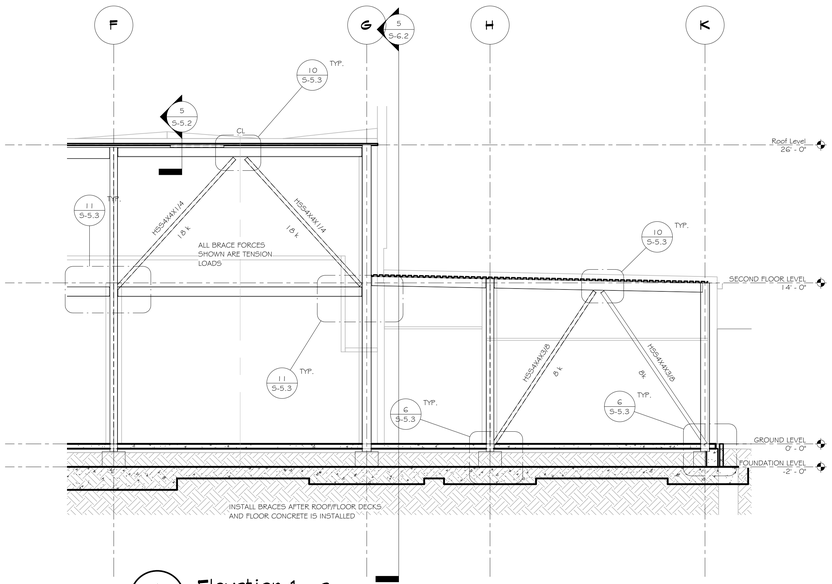
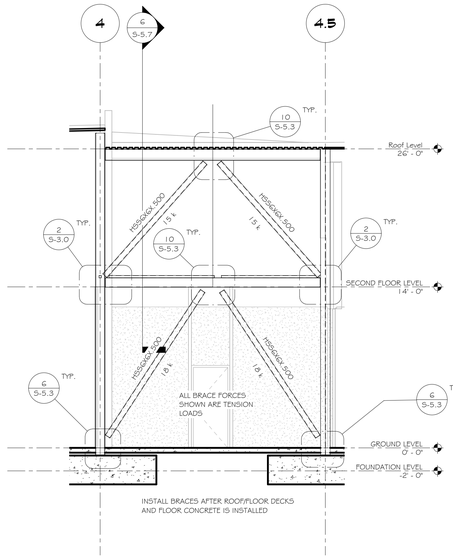
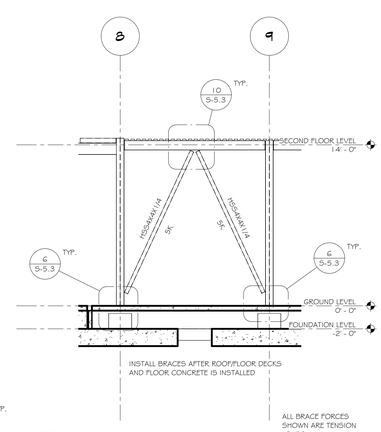


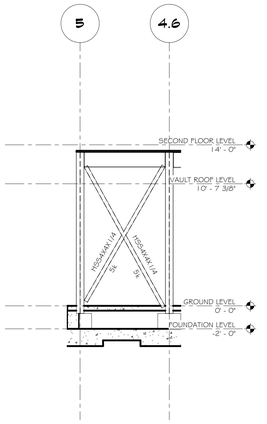
1 S-5.8 **Elevation 1 - a**
SCALE: 3/16" = 1'-0"



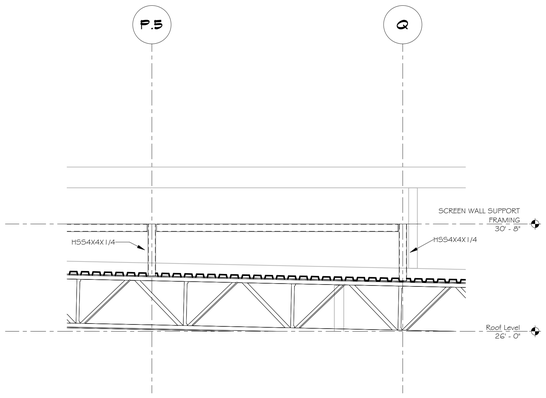
2 S-5.8 **Elevation 3 - a**
SCALE: 3/16" = 1'-0"



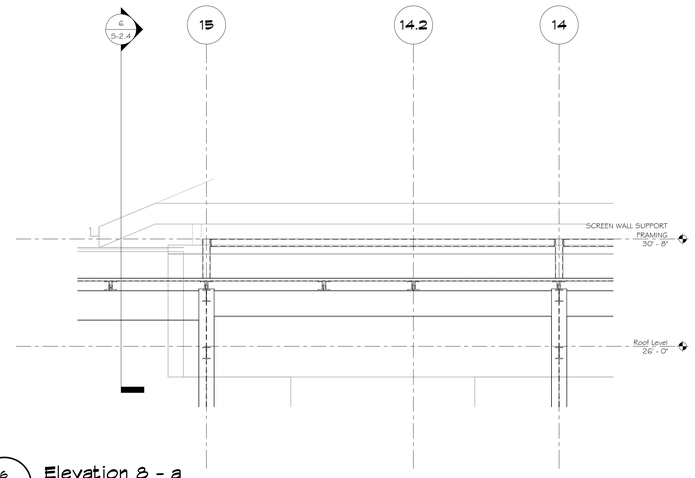
3 S-5.8 **Elevation 6 - a Line 9**
SCALE: 3/16" = 1'-0"



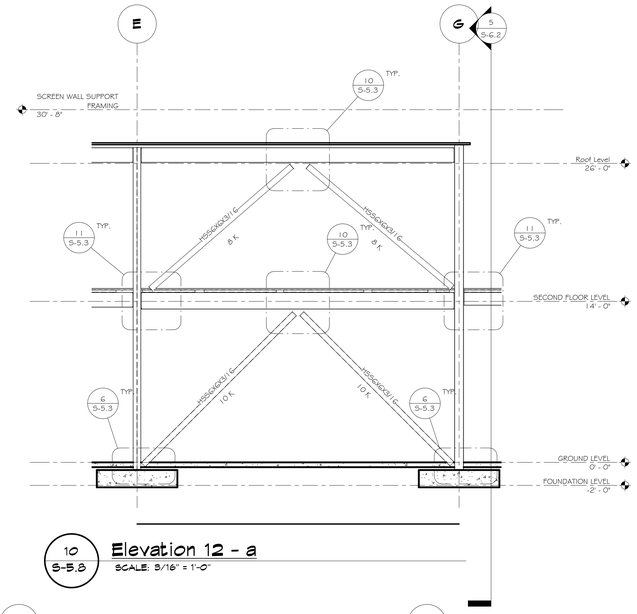
4 S-5.8 **Elevation 11 - a**
SCALE: 3/16" = 1'-0"



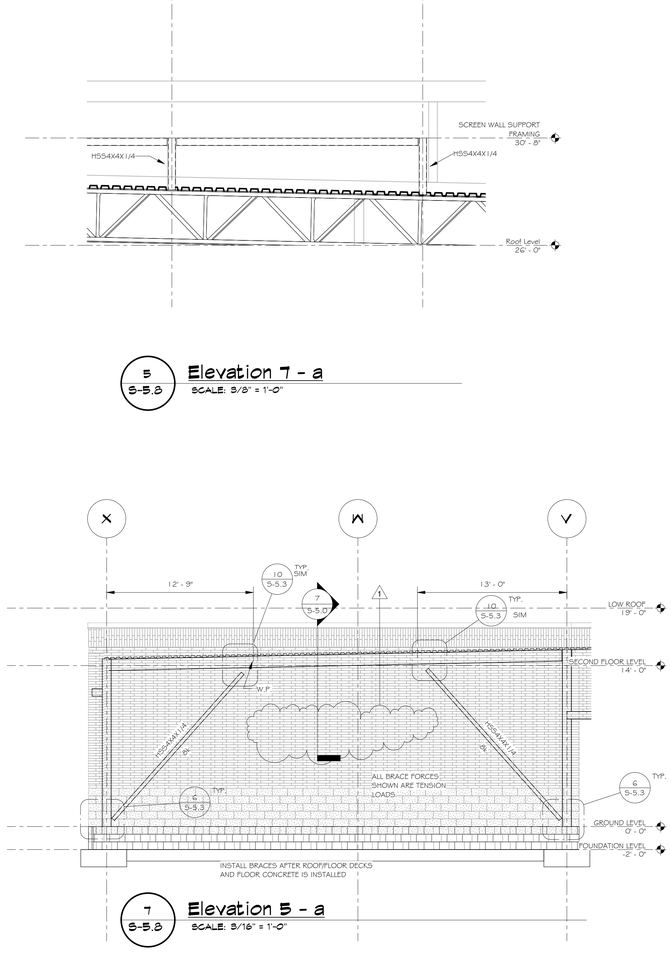
5 S-5.8 **Elevation 7 - a**
SCALE: 3/8" = 1'-0"



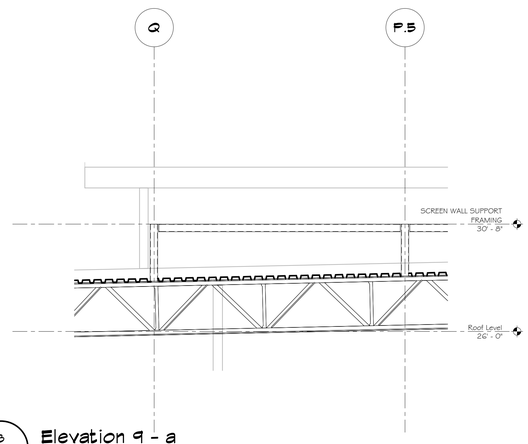
6 S-5.8 **Elevation 8 - a**
SCALE: 3/8" = 1'-0"



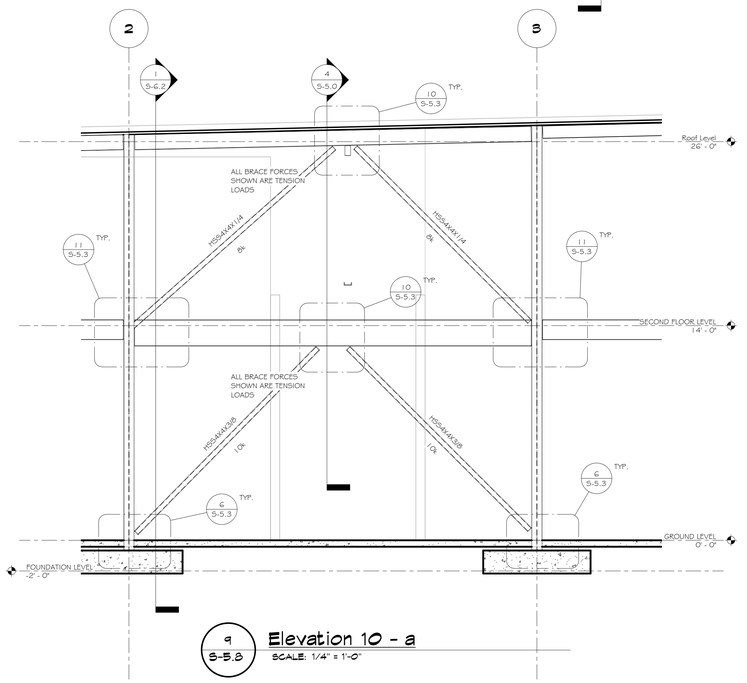
10 S-5.8 **Elevation 12 - a**
SCALE: 3/16" = 1'-0"



7 S-5.8 **Elevation 5 - a**
SCALE: 3/16" = 1'-0"



8 S-5.8 **Elevation 9 - a**
SCALE: 3/8" = 1'-0"



9 S-5.8 **Elevation 10 - a**
SCALE: 1/4" = 1'-0"

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BUCKHANNON AFRC

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BRACING ELEVATIONS

DRAWN BY: Author
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SHEET ISSUE DATE: 04/24/12

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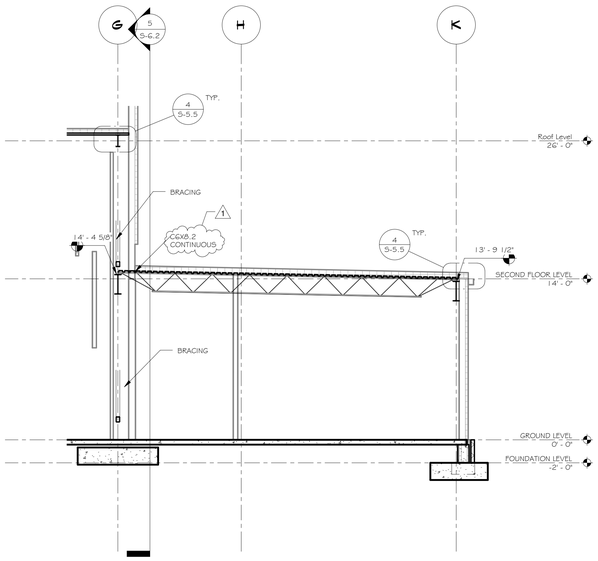
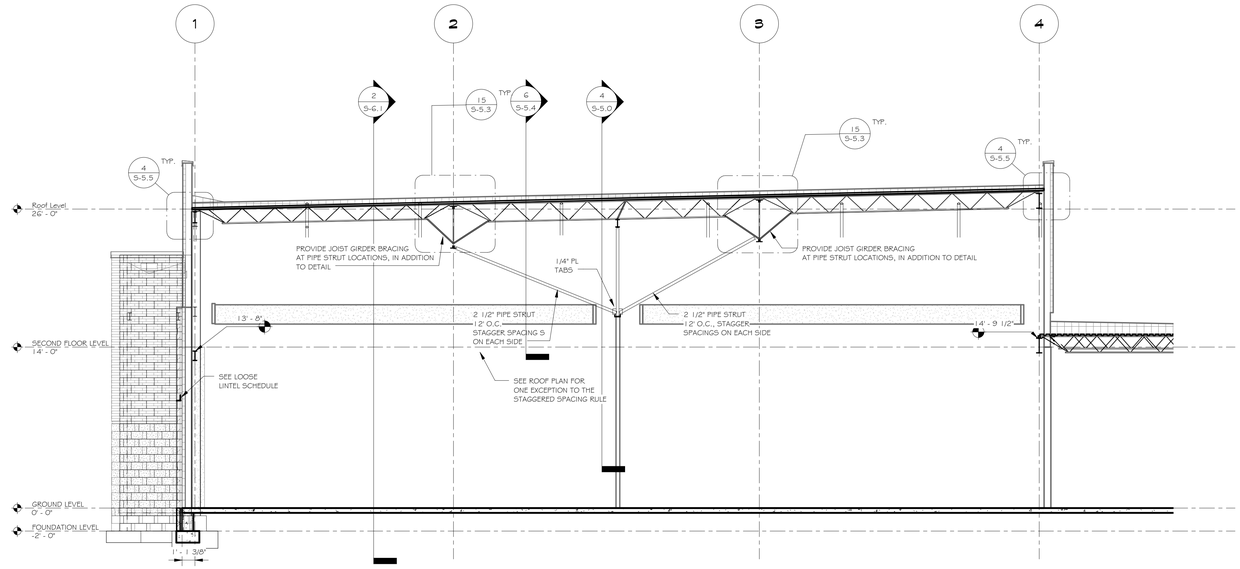
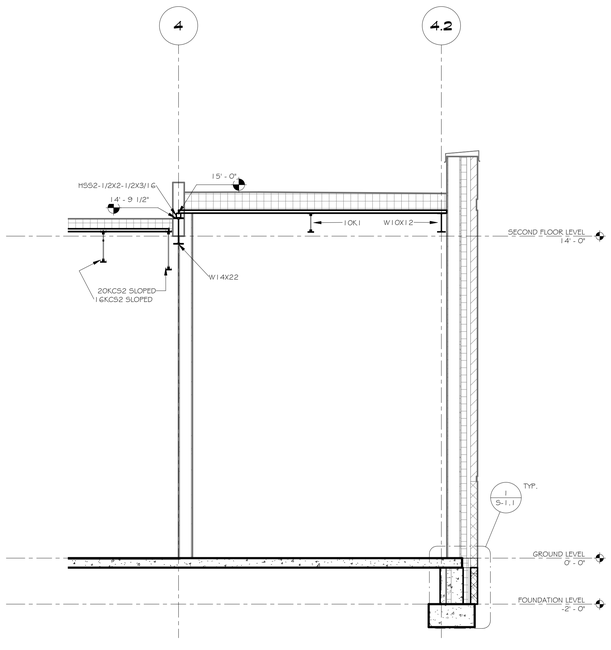


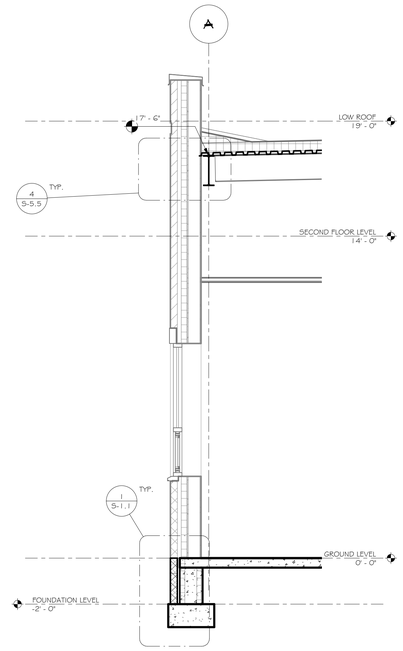
1 S-6.2 **SECTION THROUGH KITCHEN**
SCALE: 3/16" = 1'-0"



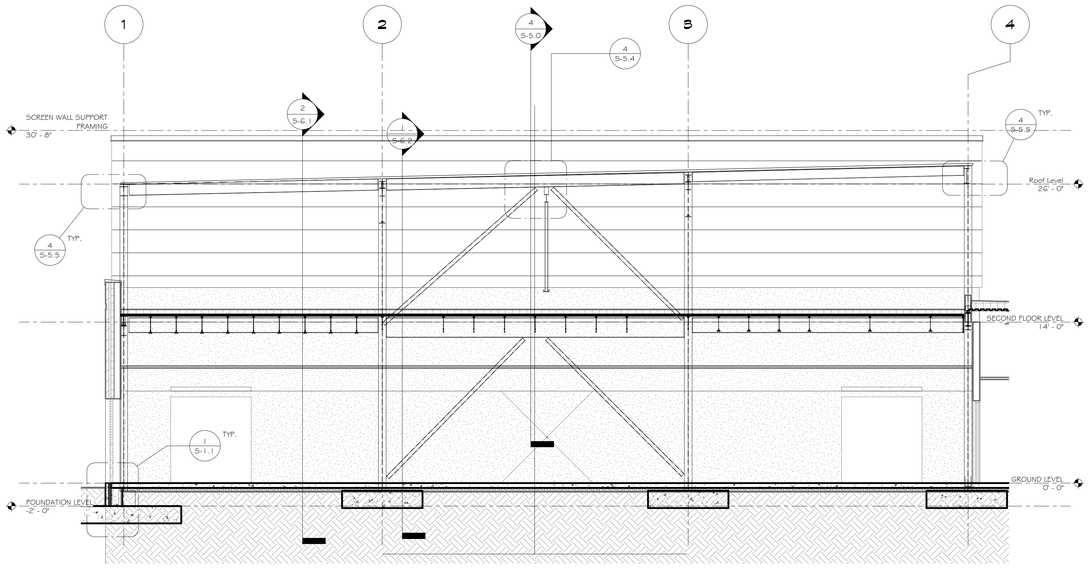
2 S-6.2 **TRANSVERSE SECTION THROUGH CONFERENCE CENTER**
SCALE: 3/16" = 1'-0"



3 S-6.2 **SECTION THROUGH ROOM 134**
SCALE: 3/8" = 1'-0"



4 S-6.2 **WALL SECTION LINE A**
SCALE: 3/8" = 1'-0"



5 S-6.2 **SECTION ALONG LINE G**
SCALE: 3/16" = 1'-0"

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BUCKHANNON AFRC

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BUILDING SECTION

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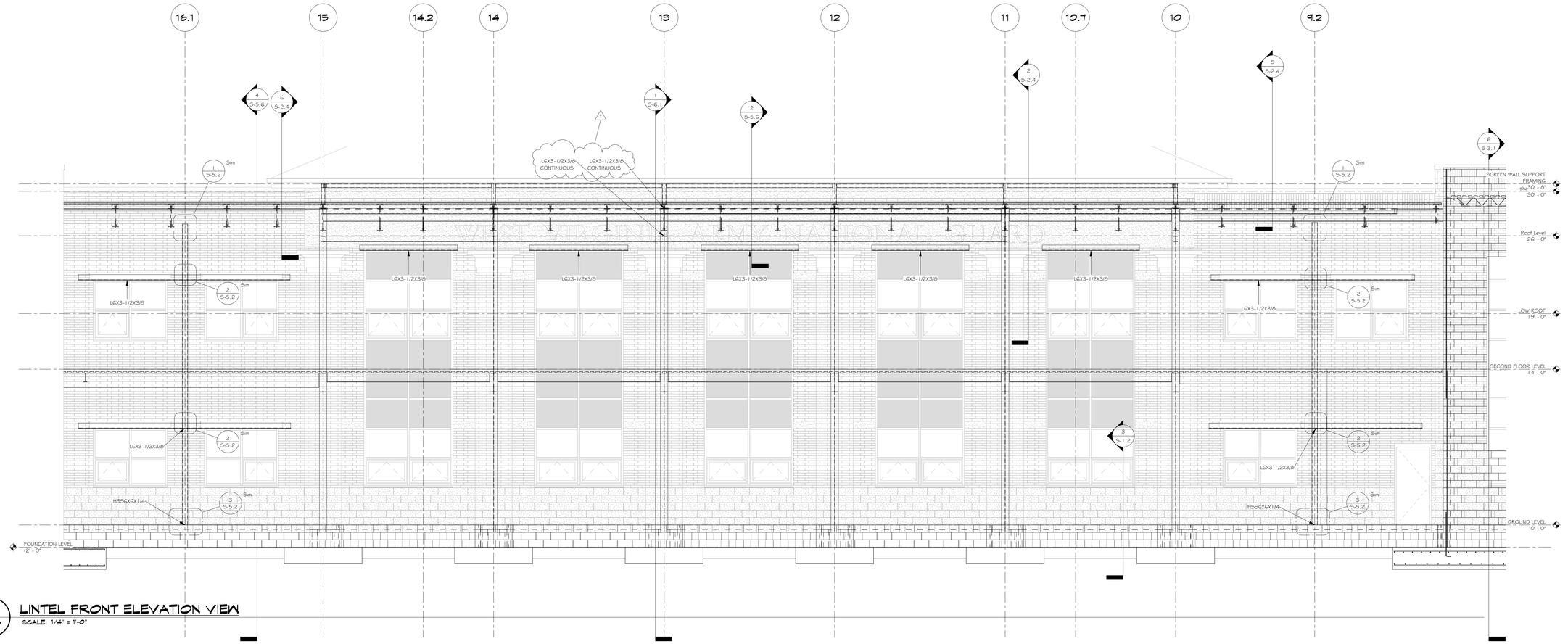
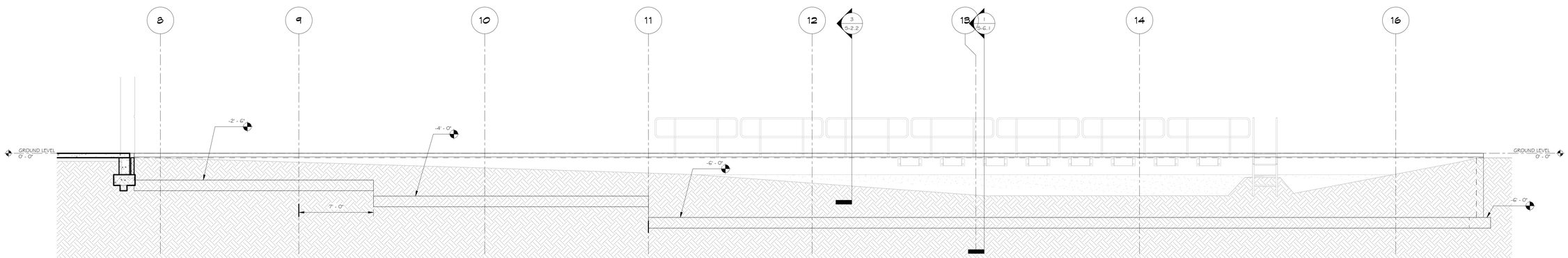


1 S-6.4 **LINTEL FRONT ELEVATION VIEW**

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



2 S-6.4 **LOADING DOCK ELEVATION**

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

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BUCKHANNON AFRC

Buckhannon, WV

EXTERIOR ELEVATIONS

DRAWN BY: Author
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SHEET ISSUE DATE: 05/31/12

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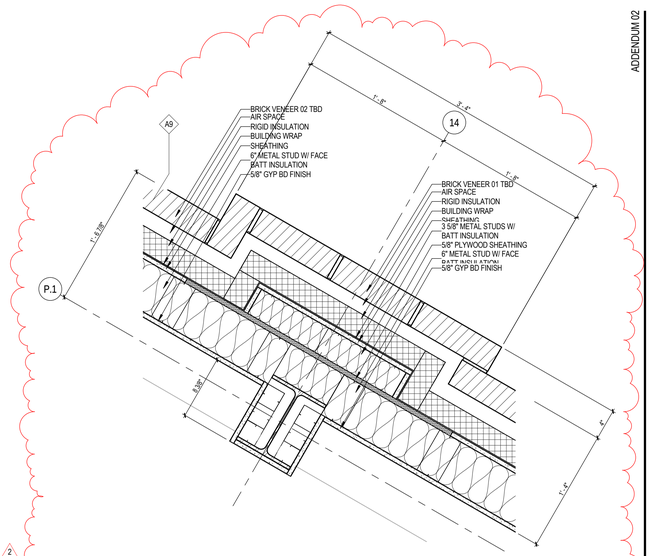
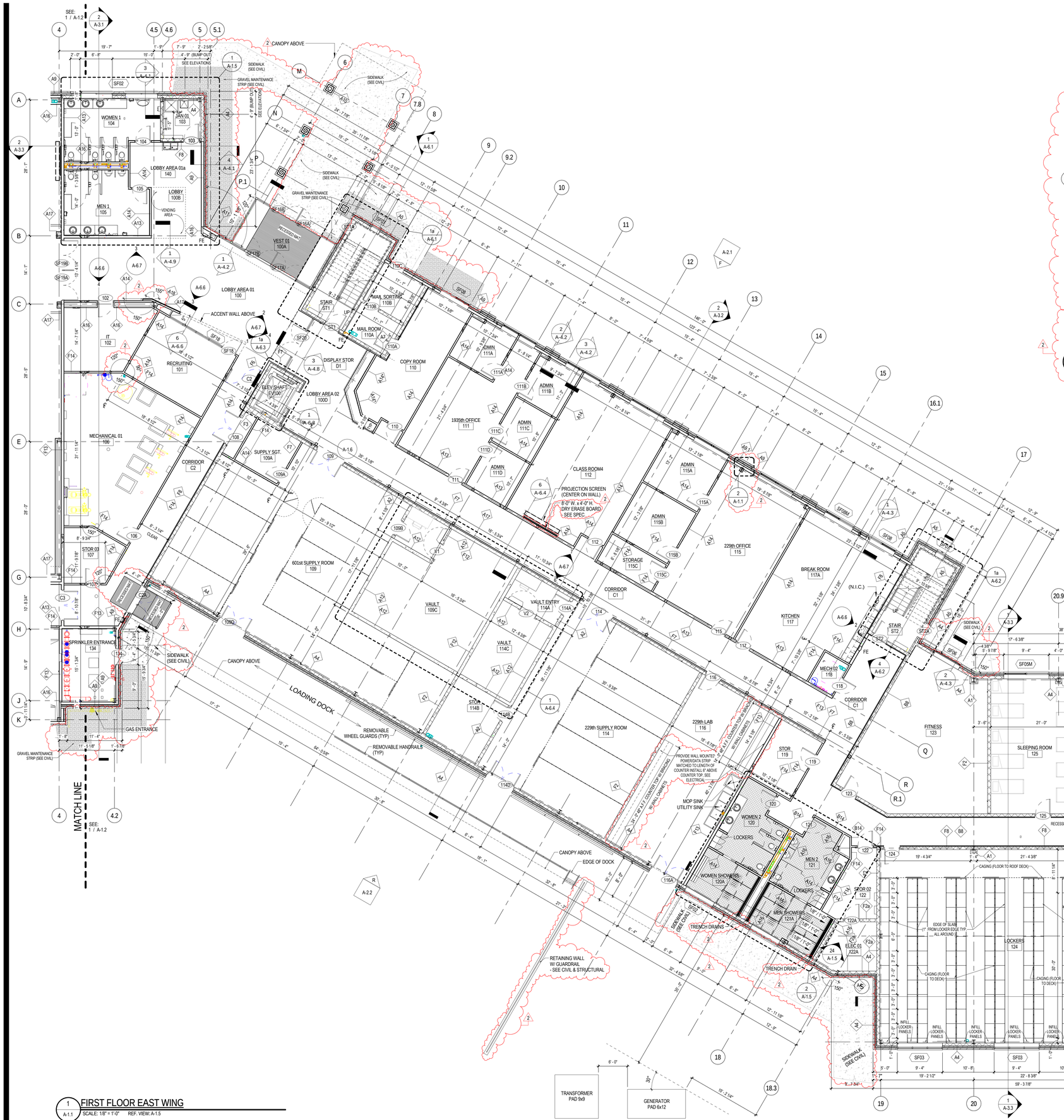
ADDENDUM 02



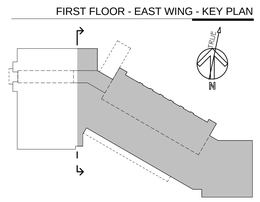
2 A-1.1 — PILASTER WALL PLAN DETAIL
SCALE: 1 1/2" = 1'-0" REF. VIEW: A-1.1



1 A-1.1 — FIRST FLOOR EAST WING
SCALE: 1/8" = 1'-0" REF. VIEW: A-1.5

LOCKER ROOM NOTES
1. PROVIDE CAGING FROM FLOOR TO ROOF DECK.
2. CYLINDER LOCKS FOR CAGING PROVIDED BY HARDWARE SUPPLIER.
3. LOCKERS PLACED ON ELEVATED SLAB (4"). EDGE OF SLAB 1" IN FROM LOCKER FACES ALL AROUND.
4. TOTAL LOCKER COUNT = 152

FIRST FLOOR - EAST WING - KEY PLAN



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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

FIRST FLOOR EAST WING PLAN

DRAWN BY: jmm, gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE: 2012 AUG 09

Drawing Revisions	
No.	Date
2	2012.AUG.09

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 A-1.1

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- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
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- ● CONSTRUCTION DOCUMENT
- ○

RICHARD T. FORREN No. 9000 REGISTERED ARCHITECT STATE OF WEST VIRGINIA

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ARMY NATIONAL GUARD

WVARNG
BUCKHANNON AFRC

BUCKHANNON, WV

FIRST FLOOR WEST WING PLAN

DRAWN BY: jmm, gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE:

No.	Drawing Revisions	Date
1		2012 JUNE 28
2		2012 AUG 09

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 - A1-2

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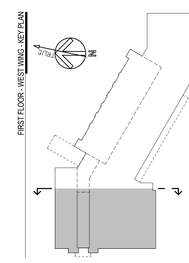

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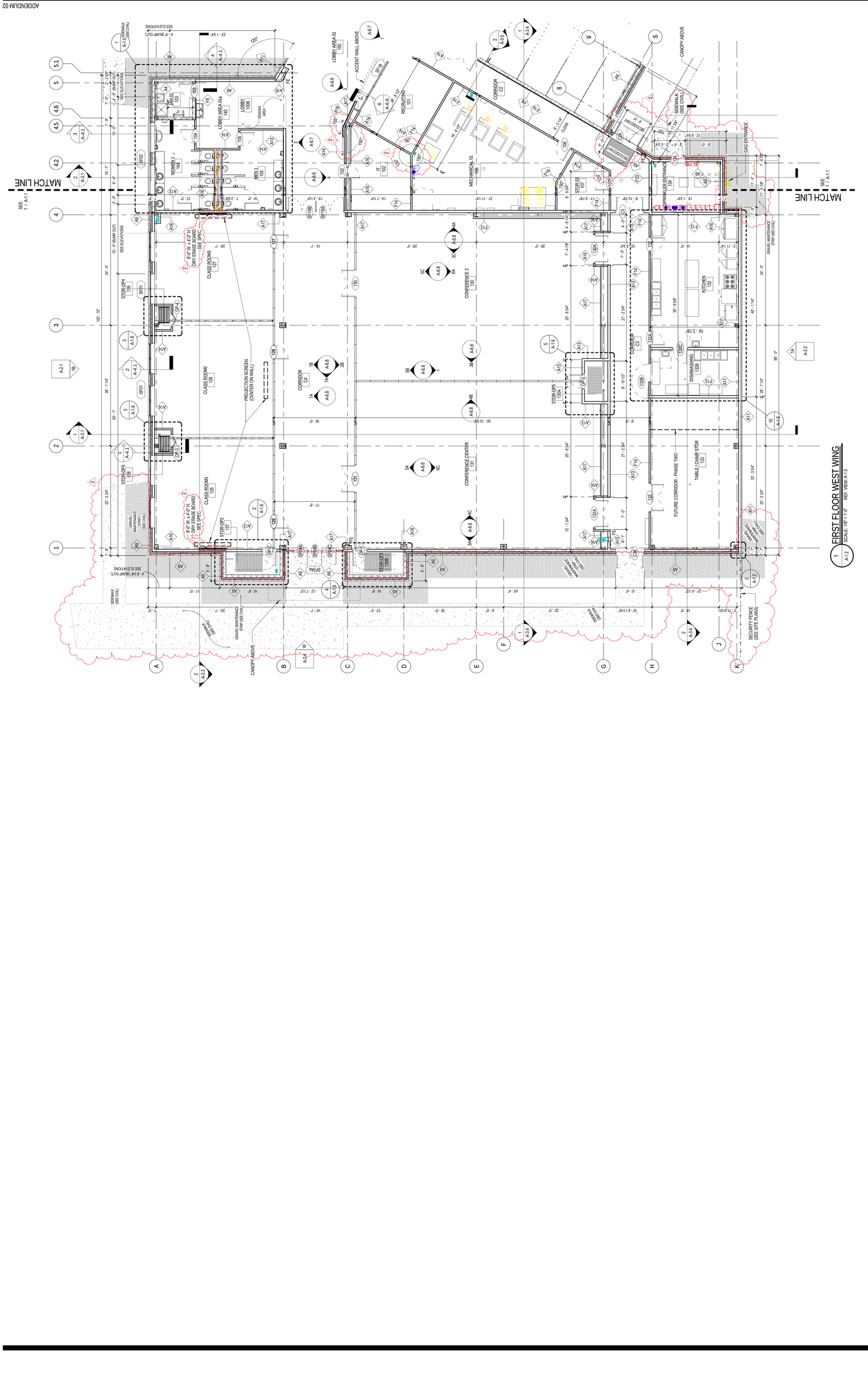
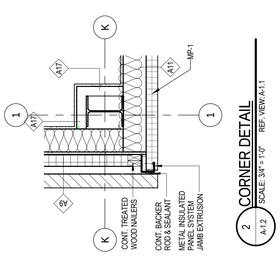
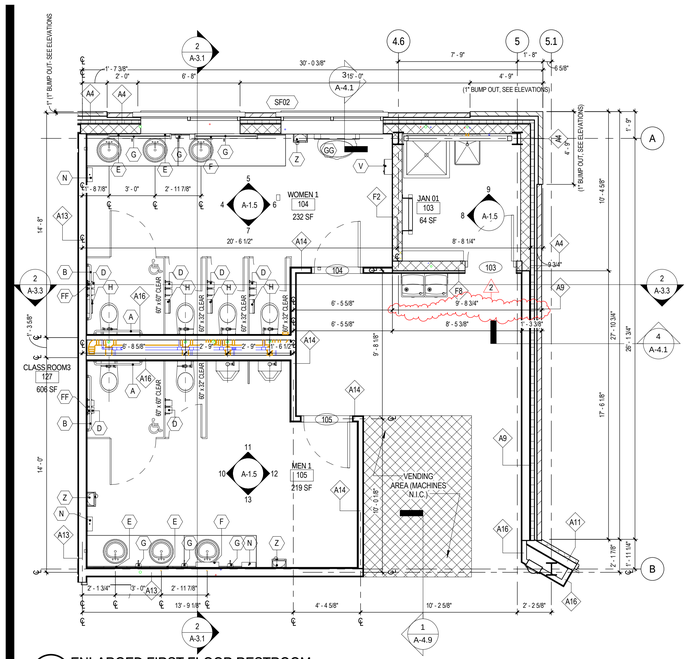
A-1.2



1 FIRST FLOOR WEST WING
SCALE: 1/8" = 1'-0" REF. VIEW A-1.5



2 CORNER DETAIL
SCALE: 3/4" = 1'-0" REF. VIEW A-1.1


WOMEN 1
104
233 SF
JAN 01
103
64 SF
CLASS ROOM3
127
606 SF
MEN 1
105
219 SF
VENDING
AREA (MACHINES
N.I.C.)
SF02
SF03
SF04
SF05
SF06
SF07
SF08
SF09
SF10
SF11
SF12
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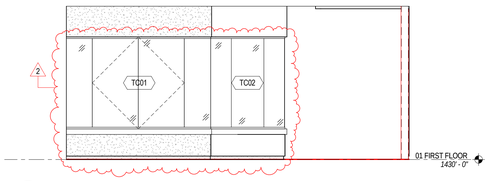
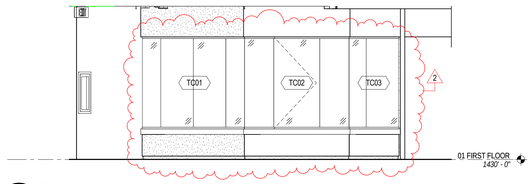
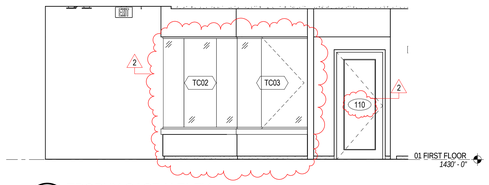
SF41



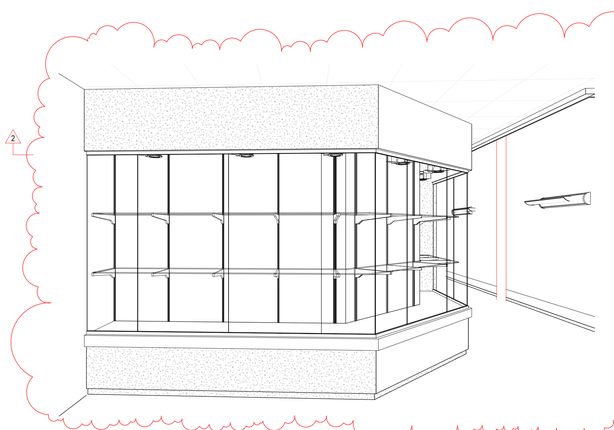
6 A-1.6 TROPHY CASE E ELEV
SCALE: 1/4" = 1'-0" REF. VIEW: A-1.6



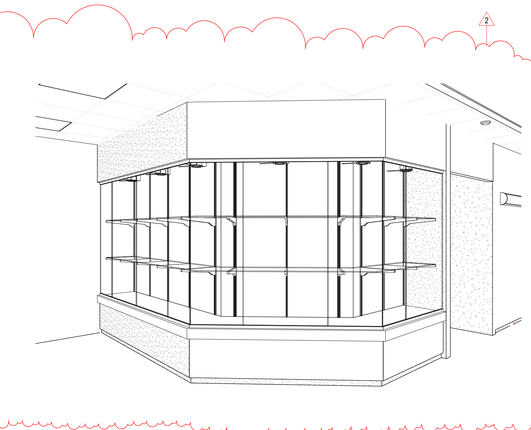
7 A-1.6 TROPHY CASE NE ELEV
SCALE: 1/4" = 1'-0" REF. VIEW: A-1.6



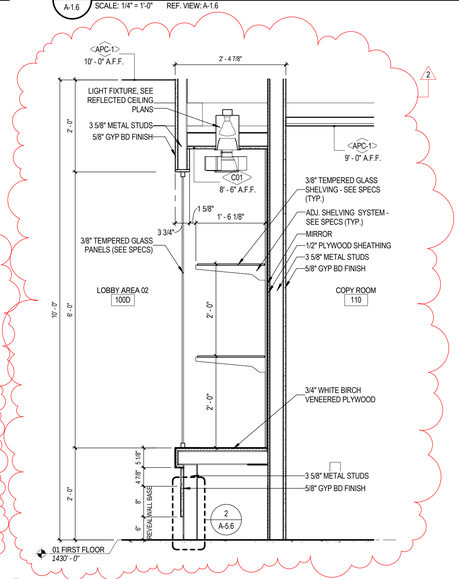
8 A-1.6 TROPHY CASE N ELEV
SCALE: 1/4" = 1'-0" REF. VIEW: A-1.6



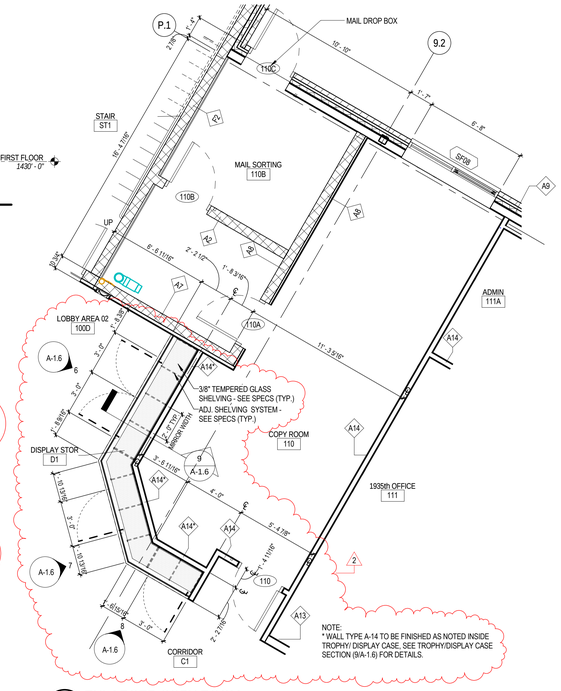
TROPHY / DISPLAY VIEW 01



TROPHY / DISPLAY VIEW 02

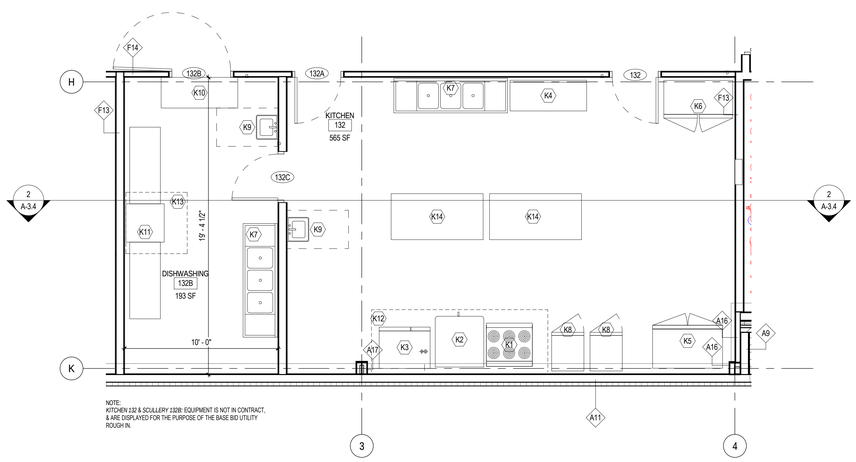


9 A-1.6 TROPHY / DIPLAY CASE SECTION
SCALE: 3/4" = 1'-0" REF. VIEW: A-1.6

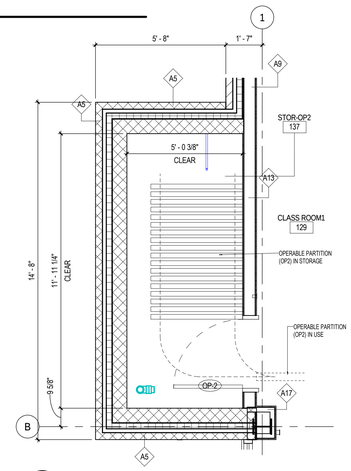


1 A-1.6 ENLARGED COPY ROOM
SCALE: 1/4" = 1'-0" REF. VIEW: A-1.5

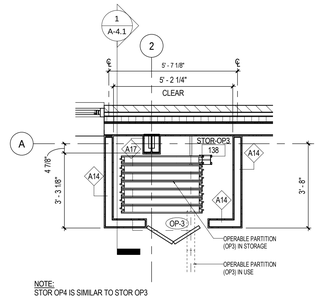
KITCHEN EQUIPMENT (NOT IN CONTRACT)		
Type Mark	Description	Comments
K1	GAS RANGE	
K2	GAS CONVECTION OVEN	
K3	CONVECTION STEAMER	
K4	SS WORK TABLE 24D x 60L W/ BACKSPLASH	
K5	REACH-IN REFRIGERATOR	
K6	REACH-N FREEZER	
K7	SS THREE BOWL SINK	
K8	HEATING/PROOFING CABINET	
K9	HAND WASHING STATION	
K10	BUSSING TABLE	
K11	PASS THROUGH DISH WASHER	
K12	HOOD	
K13	HOOD	
K14	SS WORK TABLE 36D x 72L	



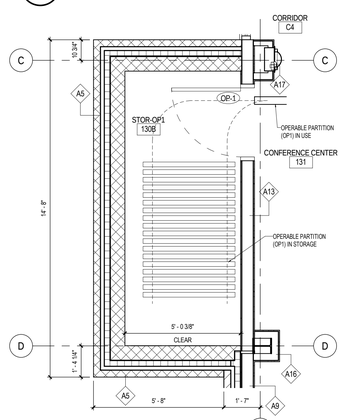
10 A-1.6 ENLARGED KITCHEN PLAN
SCALE: 1/4" = 1'-0" REF. VIEW: A-1.2



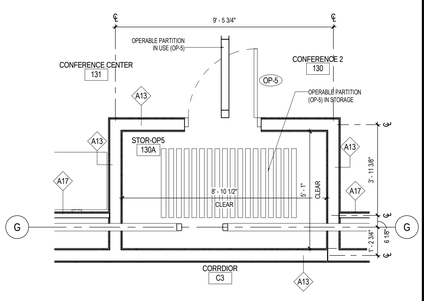
2 A-1.6 STOR OP2 - ENLARGED PLAN
SCALE: 3/8" = 1'-0" REF. VIEW: A-1.1



3 A-1.6 STOR OP3 ENLARGED PLAN
SCALE: 3/8" = 1'-0" REF. VIEW: A-1.1



4 A-1.6 STOR OP1 - ENLARGED PLAN
SCALE: 3/8" = 1'-0" REF. VIEW: A-1.2



5 A-1.6 STOR OP5 - ENLARGED PLAN
SCALE: 3/8" = 1'-0" REF. VIEW: A-1.2

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

ENLARGED PLANS

DRAWN BY: gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE: 2012 AUG 09

Drawing Revisions	
No.	Date
2	2012.AUG.09

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 A-1.6

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STATE OF WEST VIRGINIA
RICHARD T. FORREN
No. 9820
REGISTERED ARCHITECT

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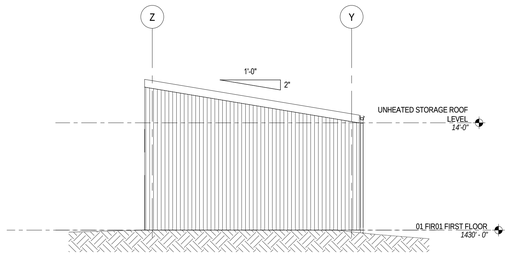
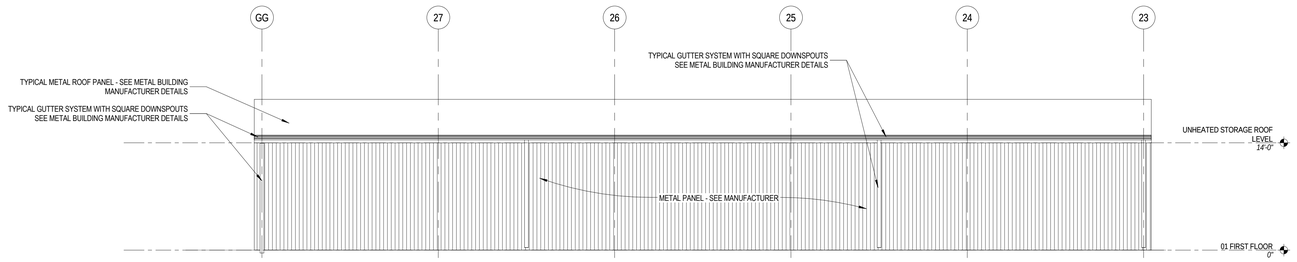
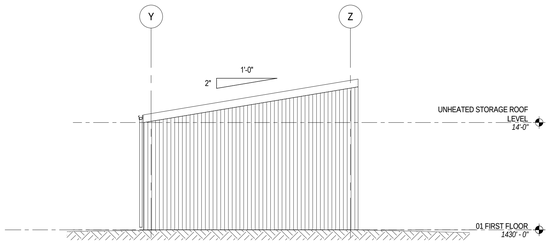
A-1.6



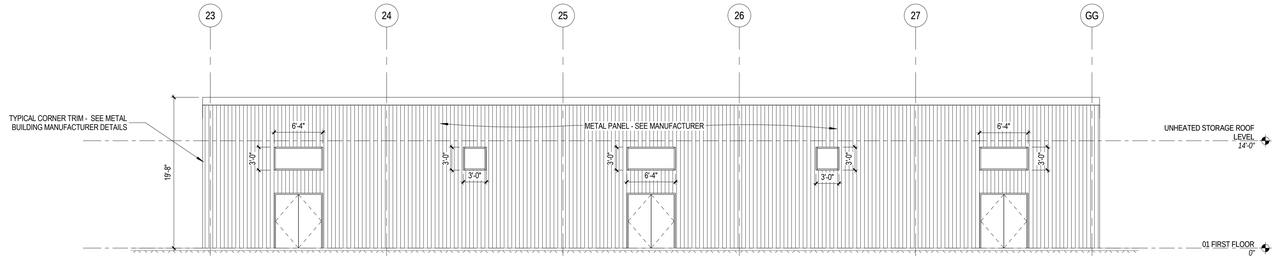
3 A-1.7 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" REF. VIEW: A-1.7



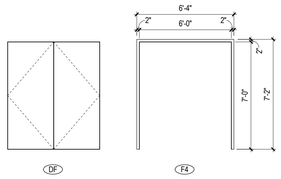
4 A-1.7 **REAR ELEVATION**
SCALE: 1/8" = 1'-0" REF. VIEW: A-1.7



5 A-1.7 **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" REF. VIEW: A-1.7



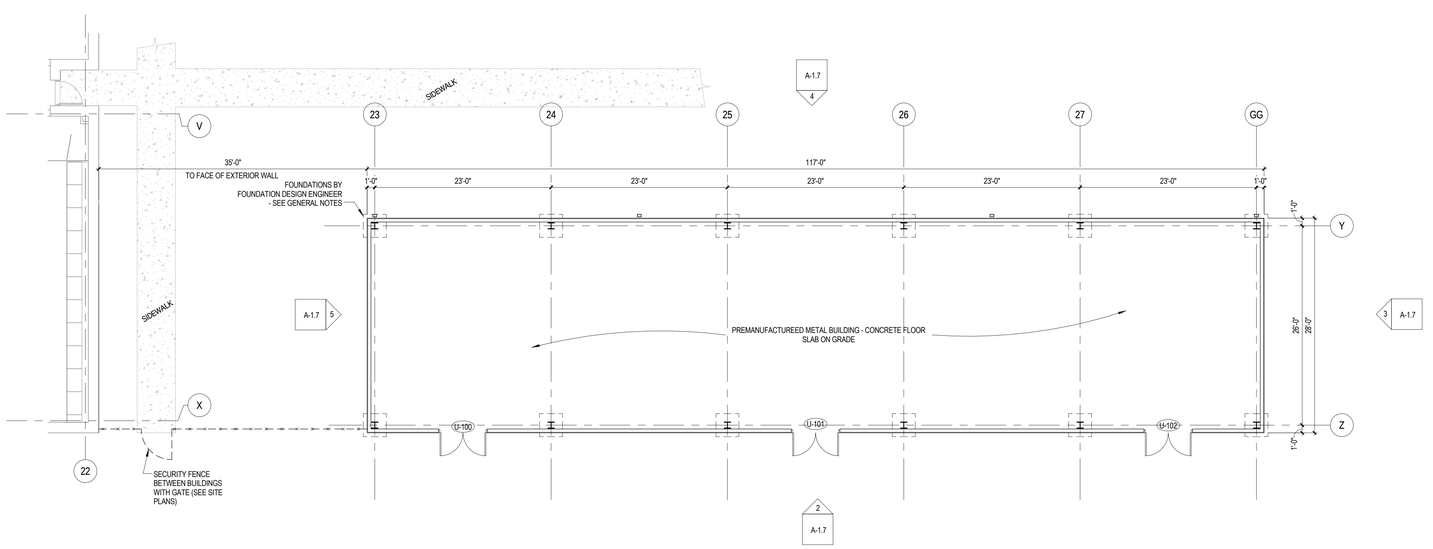
2 A-1.7 **FRONT ELEVATION**
SCALE: 1/8" = 1'-0" REF. VIEW: A-1.7



DOOR SCHEDULE - UNHEATED STORAGE BUILDING														
			DOOR			FRAME			DETAILS					
MARK	WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	JAMB	HEAD	THRESHOLD	FIRE RATING	HARDWARE SET	COMMENTS
U-100	6'-0"	7'-0"	DF	IM	PT	F4	STL	PT					22	
U-101	6'-0"	7'-0"	DF	IM	PT	F4	STL	PT					22	
U-102	6'-0"	7'-0"	DF	IM	PT	F4	STL	PT					22	

DOOR AND FRAME TYPES FOR UNHEATED STORAGE BUILDING

GENERAL NOTES:
1. FOUNDATION AND SLABS ARE TO BE DESIGNED BY THE CONTRACTOR'S PRE-ENGINEERED BUILDING FOUNDATION DESIGN ENGINEER.
2. THE SLAB IS TO BE 5" W/ MINIMUM REINFORCING PER ACI.
3. THE BOTTOMS OF THE FOOTINGS ARE TO BE BELOW THE FROST LINE (MINIMUM 30")



1 A-1.7 **01 FIRST FLOOR**
SCALE: 1/8" = 1'-0" REF. VIEW: A-1.7

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UNHEATED STORAGE BUILDING
FLOOR PLAN & ELEVATIONS

DRAWN BY: jmm, gam, jmm, gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE: 2012 AUG 09

Drawing Revisions	
No.	Date
2	2012 AUG 09

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 A-1.7

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STATE OF WEST VIRGINIA
RICHARD T. FORREN
No. 13010
REGISTERED ARCHITECT

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A-1.7

ADDENDUM 02

DOOR SCHEDULE - FIRST FLOOR

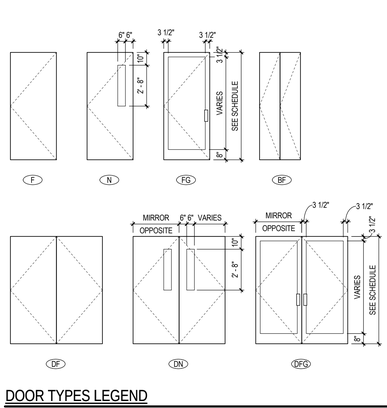
MARK	WIDTH	HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS JAMB	DETAILS HEAD	DETAILS THRESHOLD	FIRE RATING	HARDWARE SET	COMMENTS
102	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			01	
103	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		45 MINUTE	02	
104	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			03	
105	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			03	
106	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	02	
107	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	02	
108	6' - 0"	7' - 0"	DF	WD	PRE	F5	STL	PT	J8	H3		60 MINUTE	04	
109	6' - 0"	7' - 0"	DF	WD	PRE	F5	STL	PT	J9	H4			14	
109A	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
109B	3' - 0"	7' - 0"	F	STL	PT	F2	STL	PT	J7	H2			07	
109C	3' - 0"	3' - 0"	F	STL	PT	F7	STL	PT	J7	H2			30	VAULT CRAWL SPACE ACCESS DOOR
109D	6' - 0"	7' - 0"	DF	IM	PT	F5	STL	PT	J16	H6	T4		20	
110	3' - 0"	7' - 0"	FG	WD	PRE	F1	STL	PT	J1	J1 SIM			06	
110A	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3			07	
110B	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J7	H2			07	
110C	3' - 0"	7' - 0"							J12	H8	T1		17	
111	3' - 0"	7' - 0"	F	WD	PRE	F3	STL	PT	J2	J2 SIM			02	
111A	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
111B	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
111C	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
111D	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
112	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			06	
114	6' - 0"	7' - 0"	DF	WD	PRE	F5	STL	PT	J9	H4			14	
114A	3' - 0"	7' - 0"	F	STL	PT	F2	STL	PT	J7	H2			07	
114B	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J7	H2			02	
114C	3' - 0"	3' - 0"	F	STL	PT	F7	STL	PT	J7	H2			30	VAULT CRAWL SPACE ACCESS DOOR
114D	6' - 0"	7' - 0"	DF	IM	PT	F5	STL	PT	J16	H6	T4		20	
115	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J2	J2 SIM			02	
115A	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
115B	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
115C	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	05	
116	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J9	H4			15	
116A	6' - 0"	7' - 0"	DF	IM	PT	F5	STL	PT	J16	H6	T4		20	
117	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J2	J2 SIM			02	
118	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	06	
119	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	02	
120	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		20 MINUTE	33	
121	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		20 MINUTE	33	
122	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	02	
122A	3' - 0"	7' - 0"	F	STL	PT	F2	STL	PT	J7	H2		90 MINUTE	16	
123	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		20 MINUTE	02	
124	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		45 MINUTE	10	
124A	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		45 MINUTE	10	
125	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		45 MINUTE	10	
126	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		45 MINUTE	10	
127	3' - 0"	7' - 0"	OPF	SPECIAL	PRE	F1	SPECIAL	PRE					13	COMPONENT IN OPERABLE PARTITION (OP2) ASSEMBLY
128	3' - 0"	7' - 0"	OPF	SPECIAL	PRE	F1	SPECIAL	PRE					13	COMPONENT IN OPERABLE PARTITION (OP2) ASSEMBLY
129	3' - 0"	7' - 0"	OPF	SPECIAL	PRE	F1	SPECIAL	PRE					13	COMPONENT IN OPERABLE PARTITION (OP2) ASSEMBLY
130	6' - 0"	7' - 0"	OPF	SPECIAL	PRE	F1	SPECIAL	PRE					13	COMPONENT IN OPERABLE PARTITION (OP1) ASSEMBLY
130A	6' - 0"	7' - 0"	DN	WD	PRE	F4	STL	PT	J1	J1 SIM			12	
131	6' - 0"	7' - 0"	OPF	SPECIAL	PRE	F1	SPECIAL	PRE					13	COMPONENT IN OPERABLE PARTITION (OP1) ASSEMBLY
131A	6' - 0"	7' - 0"	DN	WD	PRE	F4	STL	PT	J1	J1 SIM			12	
132	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		60 MINUTE	15	
132A	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		60 MINUTE	15	
132B	3' - 10"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			15	
132C	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J2	J2 SIM			03	
133	6' - 0"	7' - 0"	DF	WD	PRE	F4	STL	PT	J1	J1 SIM		45 MINUTE	14	
134	3' - 0"	7' - 0"	F	IM	PT	F2	STL	PT	J13	H7	T2		24	
C1	3' - 0"	7' - 0"	F	IM	PT	F2	STL	PT	J13, J14	H8	T1		17	
C2	5' - 6"	7' - 0"	DN	WD	PRE	F6	STL	PT	J5 SIM	J1 SIM			23	
C2A	6' - 0"	7' - 0"	DF	IM	PT	F5	STL	PT	J13	H7	T3		22	
C3	6' - 0"	7' - 0"	DN	WD	PRE	F4	STL	PT	J2	J2 SIM			29	
C3A	6' - 0"	7' - 0"	DF	IM	PT	F5	STL	PT	J13	H7	T2		22	
OP-1	3' - 0"	16' - 0"	F	WD	PRE		STL	PT					28	COMPONENT IN OPERABLE PARTITION (OP1) ASSEMBLY
OP-2	3' - 0"	12' - 0"	F	WD	PRE		STL	PT					28	COMPONENT IN OPERABLE PARTITION (OP2) ASSEMBLY
OP-3	2' - 8"	12' - 0"	BF	WD	PRE		STL	PT					28	COMPONENT IN OPERABLE PARTITION (OP3) ASSEMBLY
OP-4	2' - 8"	12' - 0"	BF	WD	PRE		STL	PT					28	COMPONENT IN OPERABLE PARTITION (OP4) ASSEMBLY
OP-5	3' - 0"	16' - 0"	F	WD	PRE		STL	PT					28	COMPONENT IN OPERABLE PARTITION (OP5) ASSEMBLY
SF04A	3' - 0"	7' - 0"	FG	AL	PRE		AL	PRE					36	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF04B	3' - 0"	7' - 0"	FG	AL	PRE		AL	PRE					37	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF04C	3' - 0"	7' - 0"	FG	AL	PRE		AL	PRE					37	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF16A	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					25	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF16B	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					26	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF17A	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					31	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF17B	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					27	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF18	3' - 0"	7' - 0"	FG	AL	PRE		AL	PRE					11	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF19A	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					27	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF19B	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					27	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
SF20	6' - 0"	8' - 0"	DFG	AL	PRE		AL	PRE					32	SEE STOREFRONT ELEVS & DTLS ON SHTS A-5.4 & A-5.5
ST1	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J9	H4		60 MINUTE	16	
ST1A	3' - 0"	7' - 0"	F	IM	PT	F2	STL	PT	J12,J15	H8	T1	60 MINUTE	17	
ST2	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		60 MINUTE	16	
ST2A	3' - 0"	7' - 0"	F	IM	PT	F2	STL	PT	J12	H8	T1	60 MINUTE	17	
V1	3' - 4"	6' - 6"	VAULT	SPECIAL	PRE	VAULT	SPECIAL	PRE	J11	H5			21	(1)
V2	3' - 4"	6' - 6"	VAULT	SPECIAL	PRE	VAULT	SPECIAL	PRE	J11	H5			21	(1)

DOOR SCHEDULE - SECOND FLOOR

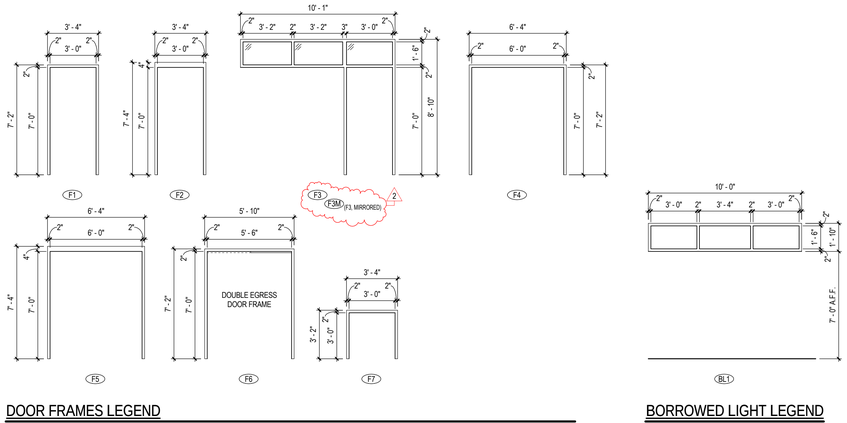
MARK	WIDTH	HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS JAMB	DETAILS HEAD	DETAILS THRESHOLD	FIRE RATING	HARDWARE SET	COMMENTS
200	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM		45 MINUTE	18	
201	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			19	
202	3' - 0"	7' - 0"	F	WD	PRE	F3	STL	PT	J1	J1 SIM			15	
202A	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
202B	3' - 0"	7' - 0"	FG	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
202C	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
202D	3' - 0"	7' - 0"	F	WD	PRE	F1	STL	PT	J1	J1 SIM			05	
203	3' - 0"	7' - 0"	F	WD	PRE	F3	STL	PT	J1	J1 SIM			15	
204	3' - 0"	7' - 0"	F	WD	PRE	F3	STL	PT	J1	J1 SIM			15	
ST1B	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J9	H4		60 MINUTE	16	
ST2B	3' - 0"	7' - 0"	F	WD	PRE	F2	STL	PT	J8	H3		60 MINUTE	16	

(1) THE VAULT DOORS WILL BE GSA APPROVED CLASS 5 ARMORY DOOR PER GSA FED SPEC AA-D-600D(4). DOOR FRAMES WILL BE PER FED SPEC AA-D-600D(4).

NOTES: 1 - SEE SHEET A-1.7 FOR UNHEATED STORAGE BUILDING DOOR SCHEDULE
2 - HARDWARE SET 28 - PROVIDE CULINDER LOCKS & CORES FOR ALL CAGING DOORS



DOOR TYPES LEGEND



DOOR FRAMES LEGEND

BORROWED LIGHT LEGEND

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ARMY NATIONAL GUARD

WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

DOORS

DRAWN BY: gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE: 2012 AUGUST 9

Drawing Revisions	
No.	Date
2	2012.AUG.09

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 A-5.2

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STATE OF WEST VIRGINIA
RICHARD T. FORREN
No. 13000
REGISTERED PROFESSIONAL ARCHITECT

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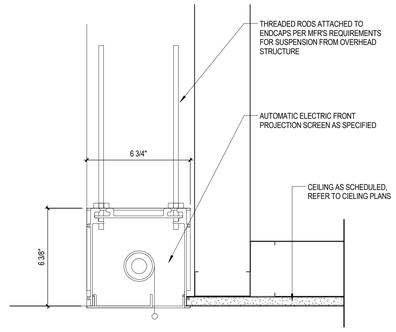
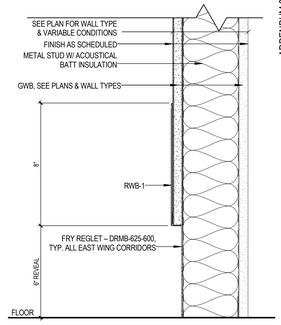
SHEET NO.

A-5.2

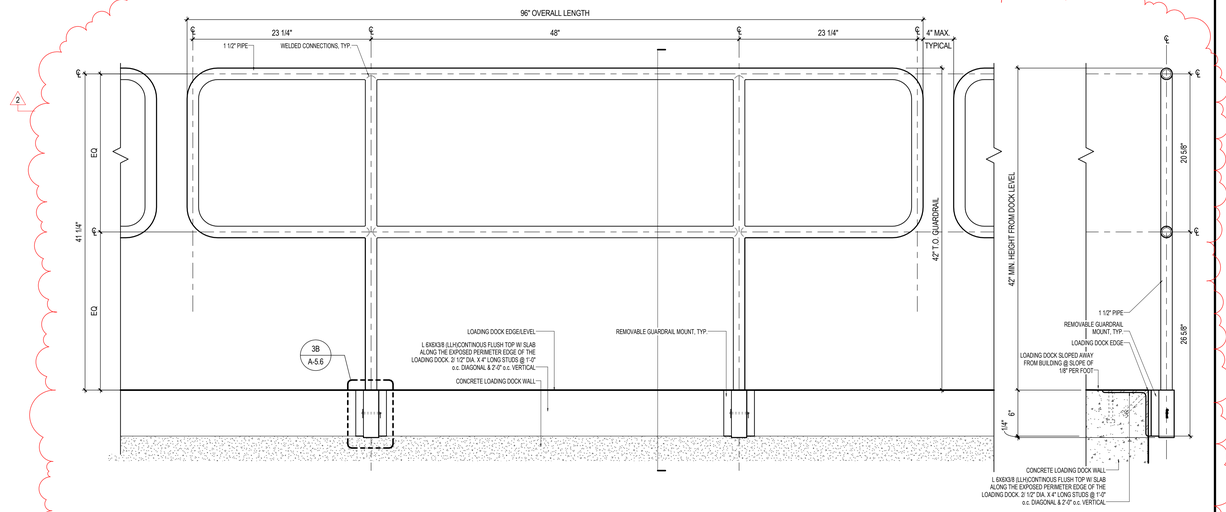
ADDENDUM 02



1 A-5.6 PROJECTION SCREEN DETAIL
SCALE: 3" = 1'-0" REF. VIEW:

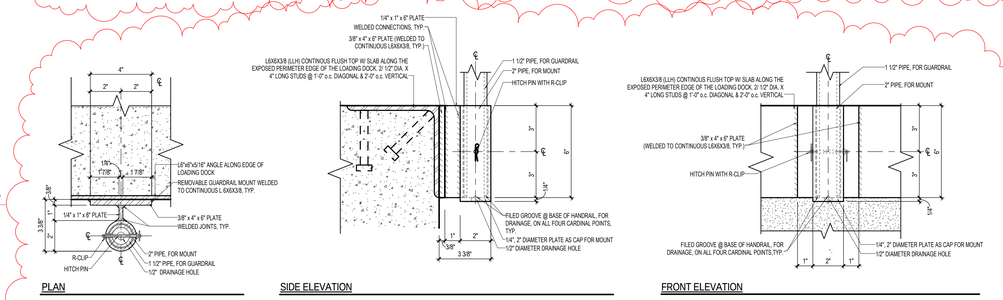


2 A-5.6 WALL BASE DETAIL
SCALE: 3" = 1'-0" REF. VIEW: A-1.6



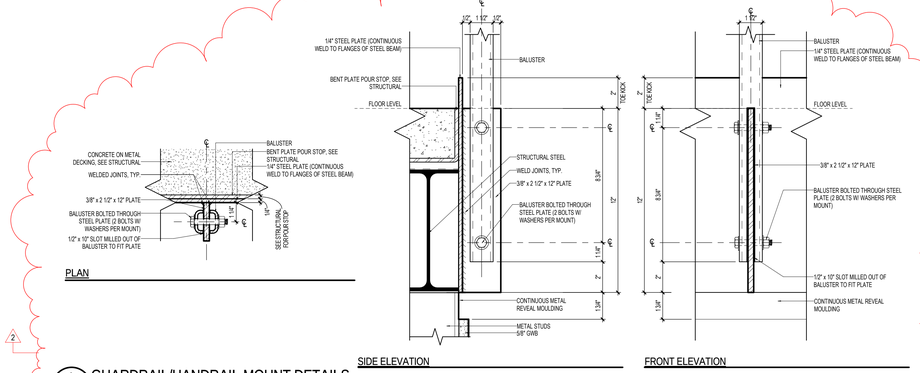
ELEVATION SECTION

3A A-5.6 REMOVABLE GUARDRAIL ELEVATION/SECTION
SCALE: 1 1/2" = 1'-0" REF. VIEW:



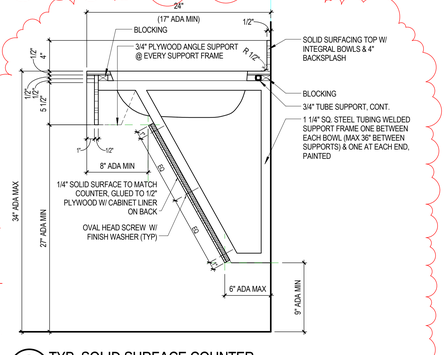
PLAN SIDE ELEVATION FRONT ELEVATION

3B A-5.6 REMOVABLE GUARDRAIL MOUNT DETAILS
SCALE: 3" = 1'-0" REF. VIEW: A-5.6

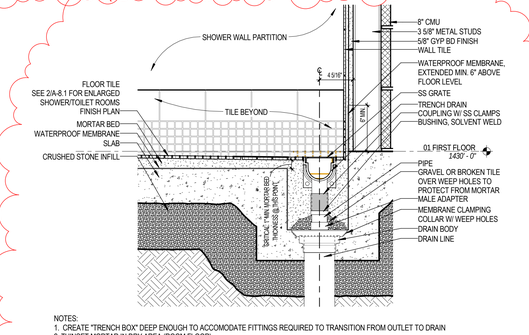


PLAN SIDE ELEVATION FRONT ELEVATION

6 A-5.6 GUARDRAIL/HANDRAIL MOUNT DETAILS
SCALE: 3" = 1'-0" REF. VIEW: A-6.1



5 A-5.6 TYP. SOLID SURFACE COUNTER
SCALE: 1 1/2" = 1'-0" REF. VIEW: A-1.5



NOTES:
1. CREATE "TRENCH BOX" DEEP ENOUGH TO ACCOMODATE FITTINGS REQUIRED TO TRANSITION FROM OUTLET TO DRAIN
2. THINSET MORTAR IN DRY AREA (ROOM FLOOR)
3. COORDINATE PIPE SIZES WITH PLUMBING DRAWINGS.

4 A-5.6 SHOWER DRAIN SECTION
SCALE: 1 1/2" = 1'-0" REF. VIEW: A-1.5

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

MISCELLANEOUS DETAILS

DRAWN BY: gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE:

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ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 A-5.6

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RICHARD T. FORREN No. 9000
REGISTERED ARCHITECT

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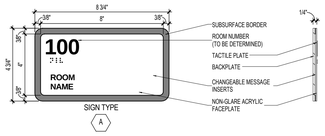
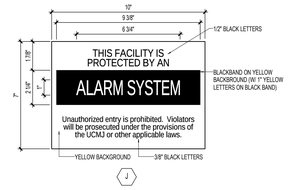
A-5.6

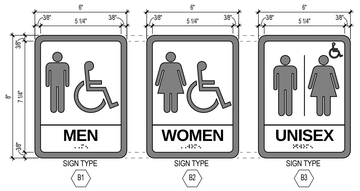


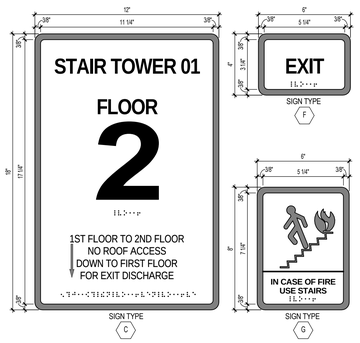


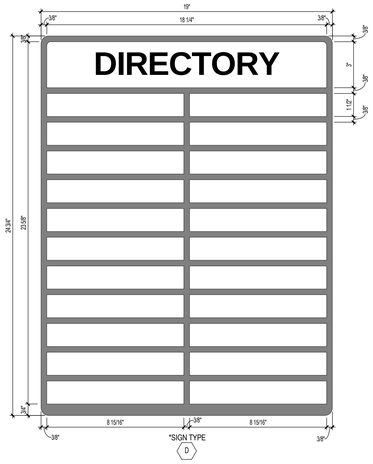
4 A-5.7 SECURITY SIGN
SCALE: 3" = 1'-0" REF. VIEW:

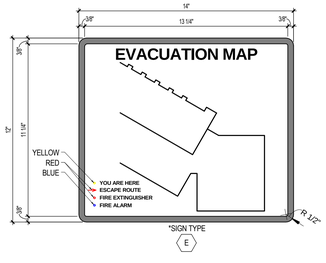
5 A-5.7 ENTRANCE LETTERING
SCALE: 3" = 1'-0" REF. VIEW:

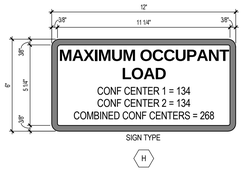
SIGN SCHEDULE		
MARK	SIGN TYPE	COMMENTS
A	ROOM SIGN	ROOM DESIGNATION TO BE ASSIGNED BY ARCHITECT
B1	MEN'S ROOM - ADA	
B2	LADIES ROOM - ADA	
B3	UNISEX REST ROOM - ADA	
C	STAIR TOWER SIGN	STAIR TOWERS PROVIDE ACCESS FROM GROUND TO 1ST FLOOR, NO ROOF ACCESS, EXITS LOCATED ON GROUND FLOOR (STAIR TOWER 1 & 2 HAVE THE SAME CONDITIONS)
D	DIRECTORY SIGN	DIRECTORY INFORMATION TO BE ASSIGNED BY ARCHITECT
E	EVACUATION MAP SIGN	
F	EXIT DISCHARGE SIGN	
G	IN CASE OF FIRE USE STAIRS	
H	OCCUPANCY LOAD	OCCUPANCY LOAD VARIES ON CONDITIONS OF USE, LIST ALL TYPICAL LAYOUT OCCUPANCY LIMITS
J	SECURITY WARNING SIGN	











SIGNAGE NOTES:
1. CONTRASTING COLORS TO BE SELECTED BY ARCHITECT.
2. STAIR SIGNAGE TO BE PLACED ON INSIDE AND OUTSIDE OF STAIRWELL AT EACH FLOOR.
3. RESTROOM SIGNS AT EVERY RESTROOM.
4. DIMENSIONS INDICATED ARE APPROXIMATE.
5. SAMPLE TEXT SHOWN FOR LAYOUT ONLY.
6. SEE PROJECT SPECIFICATIONS FOR SIGNAGE REQUIREMENTS.
7. SIGNS MARKED WITH "" TO HAVE PROFILE SIMILAR TO SIGN TYPE 'A'

3 A-5.7 STANDARD SIGNS
SCALE: 3" = 1'-0" REF. VIEW:

1 A-5.7 01 FIRST FLOOR PLAN - SIGNAGE
SCALE: 3/32" = 1'-0" REF. VIEW: A-1.5

2 A-5.7 02 SECOND FLOOR PLAN - SIGNAGE
SCALE: 3/32" = 1'-0" REF. VIEW: A-2.1

ADDENDUM 02

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BUCKHANNON, WV

SIGNAGE PLANS & DETAILS

DRAWN BY: gam
PROJECT ISSUE DATE: 2012 JUNE 28
SHEET ISSUE DATE: 2012 AUG 09

Drawing Revisions	
No.	Date
1	NONE

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ARCHITECT CAD NUMBER: 21117 A-5.7

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SHEET NO.
A-5.7

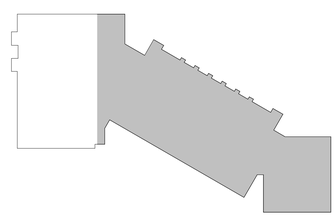
1 HVAC Ductwork First Floor Plan - East Wing
1/8" = 1'-0"

CODED NOTES:

(THIS DRAWING)

1. 44/16 SUPPLY AIR DUCT DOWN FROM ROOFTOP UNIT RTU-5 ON ROOF ABOVE. TRANSITION DUCT AS NECESSARY FROM RTU-5 SUPPLY AIR CONNECTION.
2. 44/16 RETURN AIR DUCT UP TO ROOFTOP UNIT RTU-5 ON ROOF ABOVE. TRANSITION DUCT AS NECESSARY AND CONNECT TO RTU-5 RETURN AIR CONNECTION.
3. 36/20 SUPPLY AIR DUCT DOWN FROM ROOFTOP UNIT RTU-6 ON ROOF ABOVE. TRANSITION DUCT AS NECESSARY FROM RTU-6 SUPPLY AIR CONNECTION. SPLIT THE 36/20 DUCT IN VERTICAL RISER USING A WYE TYPE FITTING INTO A SINGLE 20/19 DUCT AND A SINGLE 20/17 DUCT.
4. 36/20 RETURN AIR DUCT UP TO ROOFTOP UNIT RTU-6 ON ROOF ABOVE. TRANSITION DUCT AS NECESSARY AND CONNECT TO RTU-6 RETURN AIR CONNECTION.
5. 54/19 SUPPLY AIR DUCT DOWN FROM FLOOR ABOVE. PROVIDE FIRE DAMPER AT FLOOR PENETRATION. REFER TO DRAWING H-1.3 FOR CONTINUATION OF DUCT.
6. 64/20 RETURN AIR DUCT UP TO FLOOR ABOVE. PROVIDE FIRE DAMPER AT FLOOR PENETRATION. REFER TO DRAWING H-1.3 FOR CONTINUATION OF DUCT.
7. COMBINE IN VERTICAL RISER A 12/8 EXHAUST AIR DUCT AND A 12/10 EXHAUST AIR DUCT INTO A SINGLE 18/12 DUCT USING A WYE TYPE FITTING. TRANSITION THE 18/12 DUCT AS NECESSARY AND CONNECT TO EXHAUST FAN EF-2 ON ROOF ABOVE.
8. 8/4 EXHAUST AIR DUCT UP TO FLOOR ABOVE. PROVIDE FIRE DAMPER AT FLOOR PENETRATION. REFER TO DRAWING H-1.3 FOR CONTINUATION OF DUCT.
9. 12" WIDE X 4" HIGH X 4" DEEP RUSKIN BRICK VENT, MODEL BV100. COORDINATE INSTALLATION OF BRICK VENT WITH BRICK LAYOUT OF EXTERIOR WALL.
10. PROVIDE DUCT SECURITY BARS AT WALL PENETRATION. REFER TO HVAC DUCT SECURITY BARS DETAIL ON DRAWING H-3.2.
11. 6"Ø OUTDOOR AIR DUCT DOWN FROM ROOF ABOVE. PROVIDE A DUCT CURB AT ROOF PENETRATION. REFER TO DRAWING H-1.7 FOR CONTINUATION OF DUCT.
12. 6"Ø EXHAUST AIR DUCT UP THROUGH ROOF ABOVE. PROVIDE A DUCT CURB AT ROOF PENETRATION. REFER TO DRAWING H-1.7 FOR CONTINUATION OF DUCT.
13. PLENUM GRILLE. DO NOT CONNECT TO DUCT ABOVE.
14. SUSPEND DEHUMIDIFIER FROM STRUCTURE ABOVE. BOTTOM OF UNIT SHALL BE 7'-6" AFF.

EAST WING - KEY PLAN



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HVAC Ductwork First Floor Plan - East Wing

DRAWN BY: TOWER
PROJECT ISSUE DATE: June 28, 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
1	8/14/12

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 H-1.1

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THOMAS J. GYSEKI
REGISTERED
11973
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
6-28-2012

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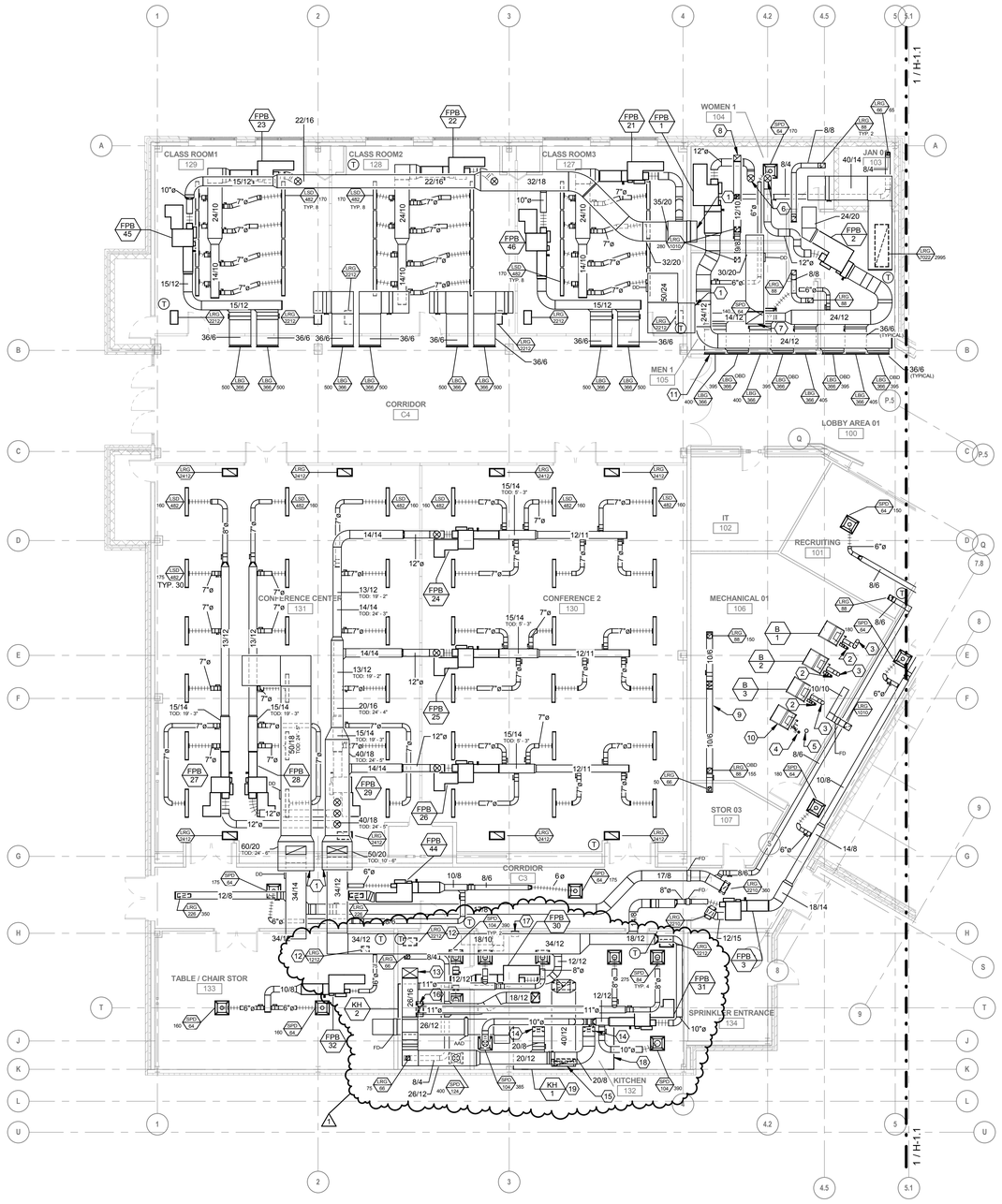
SHEET NO.

H-1.1



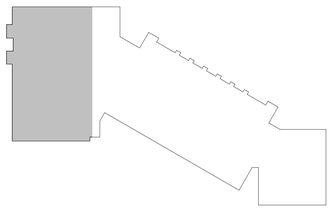
1 HVAC Ductwork First Floor Plan - West Wing
1/8" = 1'-0"

CODED NOTES:

(THIS DRAWING)

1. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
2. 4"Ø COMBUSTION AIR DUCT DOWN FROM ROOF ABOVE. PROVIDE DUCT CURB AT ROOF PENETRATION. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
3. 6"Ø EXHAUST FLUE UP THROUGH ROOF. PROVIDE DUCT CURB AT ROOF PENETRATION. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
4. 6"Ø COMBUSTION AIR DUCT DOWN FROM ROOF ABOVE. PROVIDE DUCT CURB AT ROOF PENETRATION. EXTEND DUCT 2'-0" BELOW BOTTOM CORD OF ROOF JOISTS IN MECHANICAL ROOM AND CAP. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
5. 8"Ø EXHAUST FLUE UP THROUGH ROOF. PROVIDE DUCT CURB AT ROOF PENETRATION. EXTEND FLUE 2'-0" BELOW BOTTOM CORD OF ROOF JOISTS IN MECHANICAL ROOM AND CAP. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
6. 12"Ø SUPPLY AIR DUCT DOWN FROM 50/20 MAIN SUPPLY AIR DUCT ON ROOF ABOVE. PROVIDE DUCT CURB AT ROOF PENETRATION. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
7. 24/24 RETURN AIR DUCT UP TO ROOF ABOVE. CONNECT TO 64/20 MAIN RETURN DUCT ON ROOF. PROVIDE A DUCT CURB AT ROOF PENETRATION. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
8. 12/10 EXHAUST AIR DUCT UP TO EXHAUST FAN EF-1 ON ROOF ABOVE. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
9. COMBINE A 10/6 EXHAUST AIR DUCT AND A 10/6 EXHAUST AIR DUCT INTO A SINGLE 10/12 EXHAUST AIR DUCT USING A WYE TYPE FITTING. CONTINUE THE 10/12 DUCT UP TO EXHAUST FAN EF-3 ON ROOF ABOVE. REFER TO DRAWING H-1.8 FOR CONTINUATION OF DUCT.
10. FUTURE BOILER.
11. PROVIDE TWO 26" LONG CONTINUOUS LINEAR BAR GRILLES STACKED. CONNECT TO EACH GRILLE THE NUMBER AND SIZE OF DUCTS AS INDICATED ON THE DRAWINGS. PROVIDE BLANK OFF STIPS BEHIND THE GRILLE WHERE THERE ARE NO DUCT CONNECTIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATIONS.
12. PLENUM GRILLE. DO NOT CONNECT TO DUCT ABOVE.
13. 26/16 SUPPLY AIR DUCT DOWN FROM ROOFTOP UNIT RTU-7 ON ROOF ABOVE. TRANSITION FROM RTU-7 SUPPLY AIR OPENING AS NECESSARY.
14. 20/12 SUPPLY AIR DUCT DOWN TO KITCHEN HOOD KH-1. TRANSITION DUCT AS NECESSARY AND CONNECT TO HOOD.
15. 40/12 EXHAUST AIR DUCT UP FROM KITCHEN HOOD KH-1. TRANSITION DUCT AS NECESSARY FROM KH-1 EXHAUST AIR CONNECTION. WRAP EXHAUST DUCT IN 0-INCHES TO COMBUSTIBLE FIRE WRAP INSULATION FROM HOOD TO EXHAUST FAN. CONTINUE DUCT UP THROUGH ROOF TO EXHAUST FAN EF-6 ON ROOF ABOVE. TRANSITION DUCT AS NECESSARY AND CONNECT TO EXHAUST FAN.
16. 18/12 EXHAUST AIR DUCT UP FROM KITCHEN HOOD KH-2. TRANSITION DUCT AS NECESSARY FROM KH-2 EXHAUST AIR CONNECTION. CONTINUE DUCT UP THROUGH ROOF TO EXHAUST FAN EF-7 ON ROOF ABOVE. TRANSITION DUCT AS NECESSARY AND CONNECT TO EXHAUST FAN.
17. MOUNT FIRE SUPRESSION PULL STATION ON WALL.
18. MOUNT ANSUL CABINET TO HOOD.
19. PROVIDE A STAINLESS STEEL SKIRT AROUND PERIMETER OF HOOD THAT EXTENDS FROM TOP OF HOOD TO 2-INCHES ABOVE CEILING.

WEST WING - KEY PLAN



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HVAC Ductwork First Floor Plan - West Wing

DRAWN BY: TOWER
PROJECT ISSUE DATE: June 28, 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
1	8/14/12

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 H-1.2

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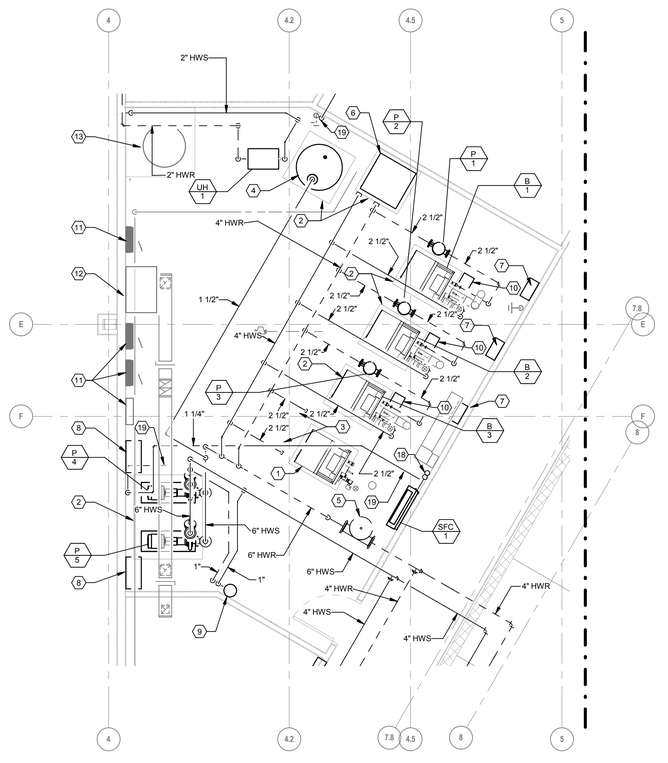
SHEET NO.

H-1.2

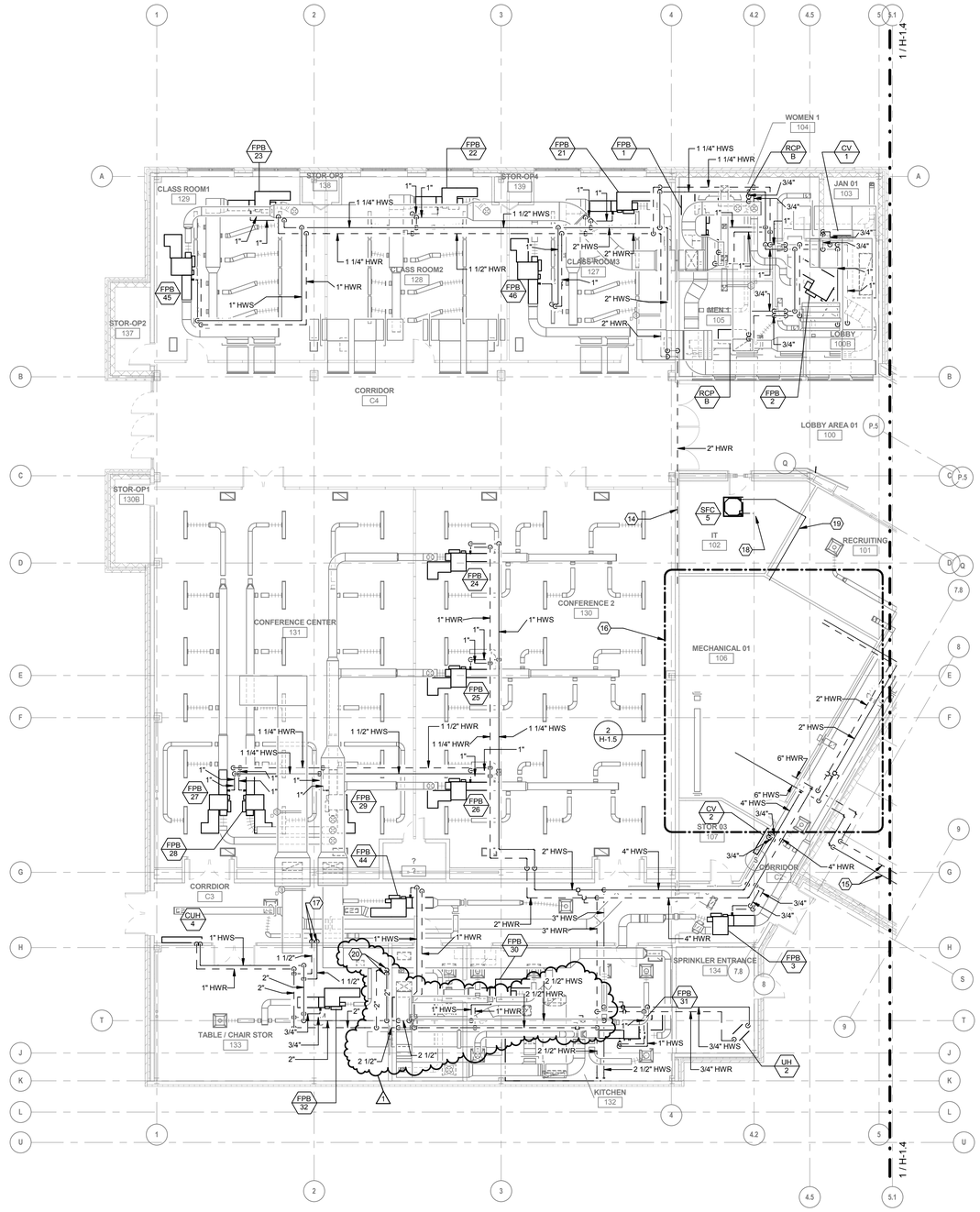
CODED NOTES:

(THIS DRAWING)

1. FUTURE BOILER AND FUTURE CONCRETE EQUIPMENT PAD.
2. PROVIDE A 4-INCH THICK CONCRETE EQUIPMENT PAD. THE PAD SHALL EXTEND BEYOND THE FOOTPRINT OF THE EQUIPMENT BY 3-INCHES ON ALL SIDES.
3. PROVIDE A BUTTERFLY VALVE AND CAP FOR FUTURE EXTENSION OF PIPING TO FUTURE BOILER.
4. EXPANSION TANK. SIMILAR TO BELL & GOSSETT MODEL B1200.
5. AIR SEPARATOR. SIMILAR TO BELL & GOSSETT MODEL R-6.
6. GLYCOL FEED UNIT.
7. MOTOR STARTER FOR BOILER PUMP.
8. VARIABLE FREQUENCY DRIVE FOR BUILDING PUMP.
9. CHEMICAL FEEDER. MOUNT TO WALL USING UNISTRUT.
10. ACID NEUTRALIZATION BOX. EXTEND DRAIN PIPING FROM BOILER, COMBUSTION AIR INTAKE RISER, AND BOILER FLUE RISER TO INLET OF BOX. EXTEND DISCHARGE FROM BOX TO NEAREST FLOOR DRAIN.
11. ELECTRICAL PANELBOARDS PROVIDED BY THE ELECTRICAL TRADE.
12. ELECTRICAL TRANSFORMER PROVIDED BY THE ELECTRICAL TRADE.
13. DOMESTIC WATER HEATER PROVIDED BY THE PLUMBING TRADE.
14. RUN 2" HWS & HWR STACKED INSIDE WALL.
15. SEE DRAWING H-1.5 FOR CONTINUATION OF PIPING.
16. SEE ENLARGED PLAN THIS SHEET FOR WORK IN THE MECHANICAL ROOM.
17. RUN 1-1/2" HWS & HWR PIPING UP THROUGH ROOF AND INSIDE ROOF CURB AND MAKE CONNECTION TO RTU-1.
18. RUN REFRIGERANT LIQUID AND REFRIGERANT SUCTION PIPING UP THROUGH ROOF TO CONDENSING UNIT. THE HVAC TRADE SHALL COORDINATE WITH THE MANUFACTURER FOR PROPER SIZE OF REFRIGERANT PIPING AND SHALL INSTALL THE PIPING IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. SEE DRAWING H-1.7 FOR CONTINUATION OF PIPING.
19. RUN 1-1/4" COIL CONDENSATE DRAIN LINE OVER TO FLOOR DRAIN IN MECHANICAL ROOM. TERMINATE PIPE OVER FLOOR DRAIN UNLESS IT WILL PRESENT A TRIPPING HAZARD, IN WICH CASE TERMINATE THE PIPE AS CLOSE TO THE FLOOR DRAIN AS PRACTICAL. SEE PLUMBING DRAWINGS FOR LOCATION OF FLOOR DRAIN.
20. RUN 2" HWS & HWR PIPING UP THROUGH ROOF AND INSIDE ROOF CURB AND MAKE CONNECTION TO RTU-7.

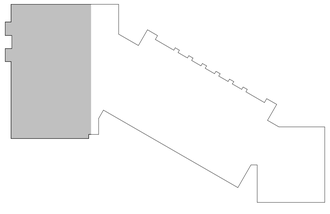


2 Enlarged Mechanical Room HVAC Piping Plan
1/4" = 1'-0"



1 HVAC Piping First Floor Plan - West Wing
1/8" = 1'-0"

WEST WING - KEY PLAN



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HVAC Piping First Floor Plan - West Wing

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PROJECT ISSUE DATE: June 28, 2012
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THOMAS J. GOSNEY REGISTERED 11973 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 6-28-2012

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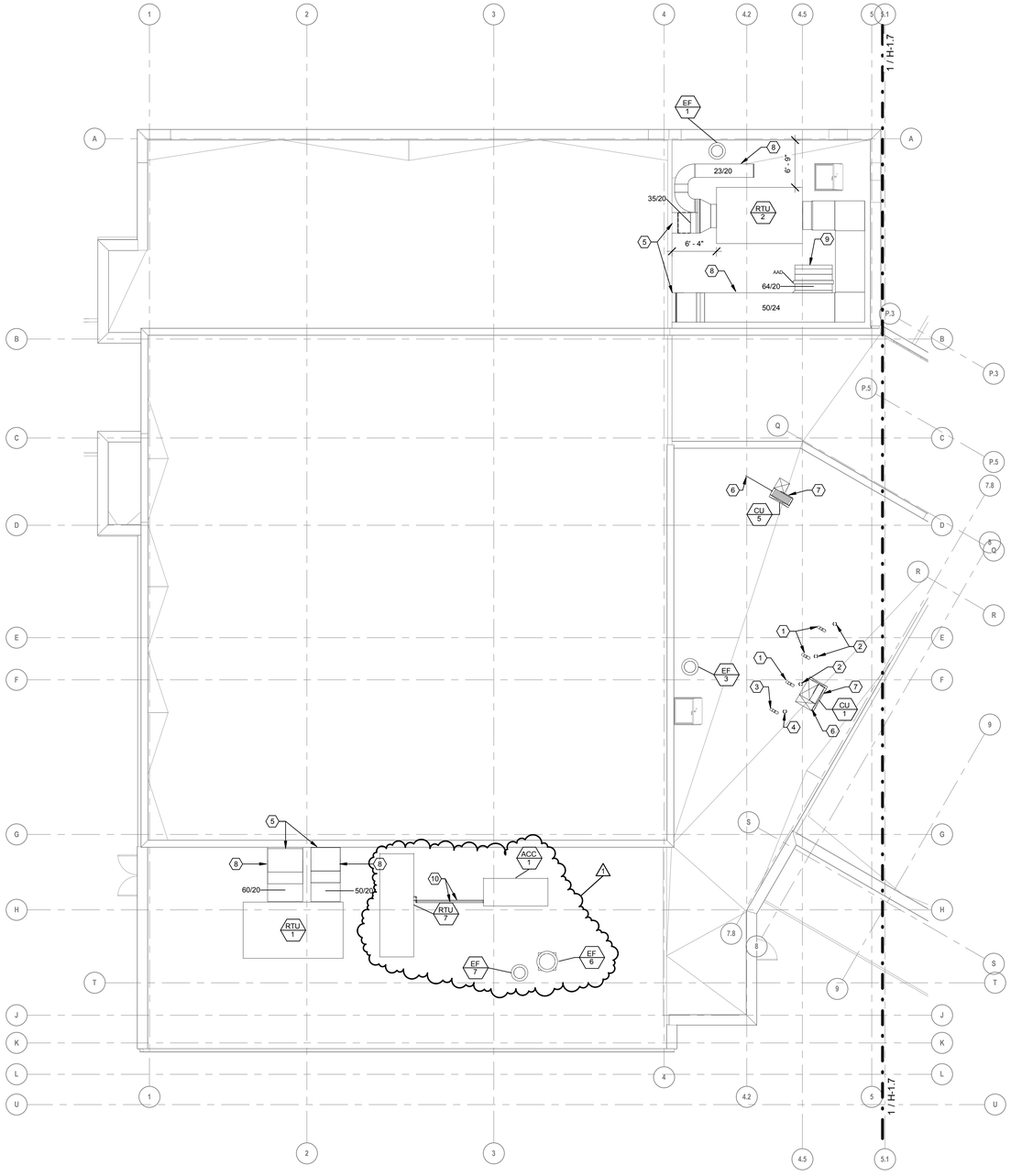
SHEET NO.

H-1.5



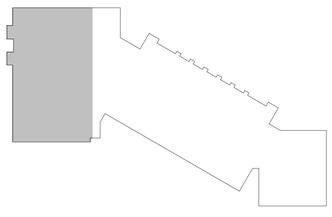
CODED NOTES:

(THIS DRAWING)

1. 4"Ø COMBUSTION AIR DUCT DOWN TO FLOOR BELOW. TERMINATE COMBUSTION AIR DUCT OPEN-ENDED AT A 45° DOWNWARD ANGLE A MINIMUM 2'-0" ABOVE ROOF SURFACE. COVER THE OPENING WITH A BIRDSCREEN. REFER TO DRAWING H-1.2 FOR CONTINUATION OF DUCT.
2. 6"Ø EXHAUST FLUE UP FROM FLOOR BELOW. TERMINATE FLUE WITH AN EXIT CONE A MINIMUM 4'-0" ABOVE THE ROOF SURFACE. PROVIDE A ROOF THIMBLE OR DUCT CURB AS RECOMMENDED BY THE FLUE MANUFACTURER WHERE THE FLUE PENETRATES THE ROOF. PROVIDE GUY WIRES AS REQUIRED FOR SUPPORT OF THE FLUE. REFER TO DRAWING H-1.2 FOR CONTINUATION OF FLUE.
3. 6"Ø COMBUSTION AIR DUCT DOWN TO FLOOR BELOW. PROVIDE A DUCT CURB AT ROOF PENETRATION. EXTEND DUCT 2'-0" ABOVE THE DUCT CURB AND CAP. REFER TO DRAWING H-1.2 FOR CONTINUATION OF DUCT.
4. 8"Ø EXHAUST FLUE UP FROM FLOOR BELOW. PROVIDE A DUCT CURB AT ROOF PENETRATION. EXTEND FLUE 2'-0" ABOVE THE DUCT CURB AND CAP. REFER TO DRAWING H-1.2 FOR CONTINUATION OF FLUE.
5. REFER TO DRAWING H-1.2 FOR CONTINUATION OF DUCT.
6. RUN REFRIGERANT LIQUID AND REFRIGERANT SUCTION PIPING DOWN THROUGH ROOF TO SPLIT FAN COIL UNIT. THE HVAC TRADE SHALL COORDINATE WITH THE MANUFACTURER FOR PROPER SIZE OF REFRIGERANT PIPING AND SHALL INSTALL THE PIPING IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. PROVIDE A PIPE PORTAL WHERE THE PIPING PENETRATES THE ROOF. REFER TO DRAWING H-1.5 FOR CONTINUATION OF PIPING.
7. PROVIDE EQUIPMENT RAILS FOR SUPPORT OF CONDENSING UNIT. ALSO PROVIDE VIBRATION ISOLATION PADS FOR THE CONDENSING UNIT. SECURE CONDENSING UNIT AND VIBRATION ISOLATION PADS TO EQUIPMENT RAILS.
8. PROVIDE EQUIPMENT RAILS FOR SUPPORT OF DUCTWORK ON ROOF. SECURE DUCTWORK TO EQUIPMENT RAILS.
9. TERMINATE THE 64/20 RELIEF AIR DUCT OPEN-ENDED AT A 45° DOWNWARD ELBOW. PROVIDE A BIRDSCREEN IN OPEN END OF DUCT.
10. RUN REFRIGERANT PIPING FROM AIR COOLED CONDENSER ACC-1 TO ROOFTOP UNIT RTU-7. SIZE PIPING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

1 HVAC Roof Plan - West Wing
1/8" = 1'-0"

WEST WING - KEY PLAN



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SHEET NO.

H-1.8

ROOFTOP UNIT WITH ENERGY RECOVERY SCHEDULE

UNIT NO.	SERVES	TOTAL AIRFLOW (CFM)	MIN. OA (CFM)	SUPPLY FAN E.S.P. (in WG)	SUPPLY FAN MOTOR HP	POWER EXHAUST E.S.P. (in WG)	POWER EXHAUST MOTOR HP	HEAT RECOVERY WHEEL OA AIRFLOW (CFM)	HEAT RECOVERY WHEEL EA AIRFLOW (CFM)	HEAT RECOVERY WHEEL SUMMER LAT (°F Db)	HEAT RECOVERY WHEEL SUMMER LAT (°F wB)	HEAT RECOVERY WHEEL WINTER LAT (°F Db)	HEAT RECOVERY WHEEL WINTER LAT (°F wB)	DX COOLING EAT dB (°F)	DX COOLING EAT wB (°F)	DX COOLING LAT dB (°F)	DX COOLING LAT wB (°F)	TOTAL MBH	SENS. MBH	EER	HOT WATER HEATING EAT (° F)	HOT WATER HEATING LAT (° F)	TOTAL MBH	WATER FLOW (GPM)	MAX. COIL FACE VEL. (FPM)	NO. OF ROWS	FINS PER FOOT	W.P.D. (FT. WG)	A.P.D. (IN. WG)	ELECTRICAL DATA UNIT MCA	UNIT MOCP	V/PH	WEIGHT LB	BASED ON MANUF.	MODEL	REMARKS
RTU-1	CONFERENCE AREA	8950	5260	2.80	15.0		5.0	5260	5260	79.7	66.3	43.9	37.2	77.8	64.8	53.3	52.7	320.7	241.0	11.1	43.9	70.7	260	18	752	2	120	0.50	0.93	75	90	460/3	4600	ADDISON	TRSA	1,2,3,4,5,6,7,8

REMARKS:
1. SINGLE POINT POWER CONNECTION WITH DISCONNECT SWITCH.
2. 2" THICK, MERV 8 OUTSIDE AIR FILTERS.
3. POWERED GFI RECEPTACLE.
4. COMPARATIVE ENTHALPY ECONOMIZER.
5. ALL COMPRESSORS SHALL BE DIGITAL SCROLL TYPE.
6. VARIABLE FREQUENCY DRIVE ON EXHAUST FAN.
7. 2" THICK, MERV 8 EXHAUST AIR FILTERS UPSTREAM OF HEAT WHEEL.
8. 52" MAX. HEIGHT VIBRATION ISOLATION CURB WITH SIDE DUCT CONNECTIONS.

DESIGN CONDITIONS:
OUTDOOR: (SUMMER @ 89°F DB, 72°F WB), (WINTER @ 0°F DB)
INDOOR: (SUMMER @ 75°F DB, 62.5°F WB), (WINTER @ 72°F DB, 62.0°F WB)

HOT WATER BOILER SCHEDULE

UNIT NO.	FUEL	GROSS INPUT (MBH)	GROSS OUTPUT (MBH)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WATER PRESSURE DROP (FT.)	RELIEF VALVE (PSI)	ELECTRICAL VOLTS	ELECTRICAL PHASE	BASED ON MANUF.	BASED ON MODEL	REMARKS
B-1	NATURAL GAS	750.0	574.2	110	140	50	23.00	125	120	1	AJAX	ATLAS	1
B-2	NATURAL GAS	750.0	574.2	110	140	50	23.00	125	120	1	AJAX	ATLAS	1
B-3	NATURAL GAS	750.0	574.2	110	140	50	23.00	125	120	1	AJAX	ATLAS	1

REMARKS:
1. OUTPUT CAPACITIES INDICATED ARE BASED ON A 30% PROPYLENE GLYCOL SOLUTION.

PUMP SCHEDULE

UNIT NO.	SERVES	TYPE	FLOW RATE (GPM)	TOTAL HEAD (FT)	PUMPING TEMP. (°F)	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLTS/PHASE	BASED ON MANUF.	BASED ON SERIES	BASED ON MODEL	REMARKS
P-1	BOILER B-1	IN-LINE	50	45	110	1-1/2	1750	480 / 3	BELL & GOSSETT	80	1-1/2 x 1-1/2 x 7B	1, 2, 5
P-2	BOILER B-2	IN-LINE	50	45	110	1-1/2	1750	480 / 3	BELL & GOSSETT	80	1-1/2 x 1-1/2 x 7B	1, 2, 5
P-3	BOILER B-3	IN-LINE	50	45	110	1-1/2	1750	480 / 3	BELL & GOSSETT	80	1-1/2 x 1-1/2 x 7B	1, 2, 5
P-4	BLDG HOT WATER SYSTEM	BASE MTD.	314	90	140	15	1750	480 / 3	BELL & GOSSETT	1510	3E	1, 2, 4, 6
P-5	BLDG HOT WATER SYSTEM	BASE MTD.	314	90	140	15	1750	480 / 3	BELL & GOSSETT	1510	3E	1, 3, 4, 6

REMARKS:
1. HIGH EFFICIENCY MOTOR.
2. PRIMARY OPERATION
3. STAND-BY OPERATION.
4. VARIABLE FREQUENCY DRIVE BY H.C.
5. COMBINATION MOTOR STARTER/DISCONNECT BY H.C.
6. FUTURE FLOW RATE IS LISTED IN THE SCHEDULE. CURRENT FLOW RATE SHALL BE BALANCED TO 244 GPM.
7. THE PERFORMANCE DATA SCHEDULED IS BASED ON A SYSTEM FLUID OF 30% PROPYLENE GLYCOL AND WATER.

FAN POWERED BOX SCHEDULE

UNIT NO.	SPACE/ZONE SERVED	PRIMARY AIR FLOW LOW MIN (CFM)	PRIMARY AIR FLOW HIGH MIN (CFM)	PRIMARY AIR FLOW MAX (CFM)	FAN AIR FLOW (CFM)	FAN MOTOR HP	FAN MOTOR VOLTAGE	HOT WATER COIL EAT °F	HOT WATER COIL LAT °F	HOT WATER COIL EWT °F	HOT WATER COIL LWT °F	HOT WATER COIL CAPACITY (MBH)	HOT WATER COIL FLUID FLOW (GPM)	HOT WATER COIL MAX COIL APD (IN.WG)	COIL WPD (FT.WG)	ROWS	NC MAX DSCH. NC	NC MAX RAD. NC	BASED ON MANUF.	BASED ON MODEL	SIZE	INLET SIZE	REMARKS
FPB-1	100 LOBBY	600	600	1750	1150	1.0	277/1	65.6	91.9	140.0	110.0	49.6	3.50	0.24	7.37	2 HC	<=20	26	PRICE	FDV	5012	12	1,2,3,4,5,6,7,10
FPB-2	100 LOBBY	600	600	1750	1150	1.0	277/1	65.6	91.9	140.0	110.0	49.6	3.50	0.24	7.37	2 HC	<=20	26	PRICE	FDV	5012	12	1,2,3,4,5,6,7,10
FPB-3	101 & C2	170	170	520	350	1/8	277/1	66.4	104.4	140.0	123.2	21.3	2.75	0.10	5.78	2 HC	<=20	<=20	PRICE	FDV	2008	8	1,2,3,4,5,6,7,10
FPB-4	109 601st SUPPLY ROOM	360	360	960	600	1/4	277/1	72.0	83.0	140.0	117.4	18.6	1.75	0.12	2.64	2 HC	<=20	21	PRICE	FDV	3012	12	1,2,3,4,5,6,7,9
FPB-5	109 601st SUPPLY ROOM	620	620	940	320	1/8	277/1	58.1	86.2	140.0	110.9	28.5	2.00	0.27	3.61	2 HC	<=20	25	PRICE	FDV	2010	10	1,2,3,4,5,6,7,10
FPB-6	111 OPEN OFFICE, 111A ADMIN & 111B ADMIN	350	350	1000	650	1/4	277/1	66.0	92.1	140.0	115.5	28.2	2.50	0.30	4.83	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-7	111 OPEN OFFICE, 111C ADMIN & 111D ADMIN	320	320	860	540	1/4	277/1	72.0	84.0	140.0	118.9	17.1	1.70	0.10	1.20	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,9
FPB-8	112 CLASSROOM 4	310	510	1020	510	1/2	277/1	63.5	89.4	140.0	113.4	28.5	2.25	0.31	4.24	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-9	112 CLASSROOM 4	310	510	1020	510	1/2	277/1	63.5	89.4	140.0	113.4	28.5	2.25	0.31	4.24	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-10	114 229th SUPPLY ROOM	605	695	1240	545	1/4	277/1	60.2	86.1	140.0	115.2	34.6	3.00	0.43	6.90	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-11	115 229th OFFICE & 115B ADMIN	400	400	1230	830	1/2	277/1	72.0	89.0	140.0	123.9	29.8	3.90	0.11	7.90	2 HC	20	26	PRICE	FDV	4012	12	1,2,3,4,5,6,7,9
FPB-12	115 229th OFFICE & 115A ADMIN	230	230	710	480	1/8	277/1	72.0	89.0	140.0	121.5	17.2	1.40	0.12	0.66	2 HC	<=20	25	PRICE	FDV	2008	8	1,2,3,4,5,6,7,9
FPB-13	116 229th LAB	540	1000	1000	460	1/4	277/1	60.1	92.7	140.0	120.9	33.6	3.75	0.28	10.57	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-14	116 229th CLASS	360	360	960	600	1/4	277/1	64.9	90.0	140.0	116.8	33.6	3.40	0.21	9.61	2 HC	<=20	26	PRICE	FDV	4012	12	1,2,3,4,5,6,7,10
FPB-15	117 KITCHEN	250	350	800	450	1/8	277/1	72.0	82.0	140.0	118.9	15.1	1.50	0.07	1.00	2 HC	21	27	PRICE	FDV	2008	8	1,2,3,4,5,6,7,9
FPB-16	123 FITNESS	925	925	925	360	1/4	277/1	51.8	86.9	140.0	124.6	48.5	6.75	0.46	16.77	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-17	123 FITNESS	925	925	925	360	1/4	277/1	51.8	86.9	140.0	124.6	48.5	6.75	0.46	16.77	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-18	124 LOCKERS	900	900	900	300	1/4	277/1	59.2	93.0	140.0	127.1	43.8	7.25	0.41	19.11	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-19	124 LOCKERS	900	900	900	300	1/4	277/1	59.2	93.0	140.0	127.1	43.8	7.25	0.41	19.11	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-20	125 & 126 SLEEPING ROOM	500	500	1010	510	1/4	277/1	64.0	98.0	140.0	128.6	39.0	7.25	0.33	19.22	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-21	127 CLASSROOM 3	1100	1100	1350	250	1/4	277/1	58.1	89.0	140.0	124.0	45.0	6.00	0.50	13.80	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-22	128 CLASSROOM 2	1100	1100	1350	250	1/4	277/1	58.1	89.0	140.0	124.0	45.0	6.00	0.50	13.80	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-23	129 CLASSROOM 1	1100	1100	1350	250	1/4	277/1	58.1	89.0	140.0	124.0	45.0	6.00	0.50	13.80	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-24	130 CONFERENCE 2	305	1035	1035	285	1/4	277/1	58.7	88.5	140.0	122.1	42.4	5.00	0.49	10.18	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,8,10
FPB-25	130 CONFERENCE 2	305	1035	1035	285	1/4	277/1	58.7	88.5	140.0	122.1	42.4	5.00	0.49	10.18	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,8,10
FPB-26	130 CONFERENCE 2	305	1035	1035	285	1/4	277/1	58.7	88.5	140.0	122.1	42.4	5.00	0.49	10.18	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,8,10
FPB-27	131 CONFERENCE	305	1035	1035	285	1/4	277/1	58.7	90.1	140.0	124.8	44.7	6.25	0.49	14.95	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,8,10
FPB-28	131 CONFERENCE	305	1035	1035	285	1/4	277/1	58.7	90.1	140.0	124.8	44.7	6.25	0.49	14.95	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,8,10
FPB-29	131 CONFERENCE	305	1035	1035	285	1/4	277/1	58.7	90.1	140.0	124.8	44.7	6.25	0.49	14.95	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,8,10
FPB-30	132 KITCHEN	775	775	775	360	1/8	277/1	60.4	89.7	140.0	119.4	35.9	3.75	0.37	10.40	2 HC	<=20	21	PRICE	FDV	2010	10	1,2,3,4,5,6,7,10
FPB-31	132 KITCHEN	775	775	775	360	1/8	277/1	60.4	89.7	140.0	119.4	35.9	3.75	0.37	10.40	2 HC	<=20	21	PRICE	FDV	2010	10	1,2,3,4,5,6,7,10
FPB-32	133 TABLE/CHAIR STORAGE	200	200	320	120	1/8	277/1	61.2	101.5	140.0	116.9	13.7	1.25	0.04	1.47	2 HC	<=20	<=20	PRICE	FDV	2006	6	1,2,3,4,5,6,7,10
FPB-33	202 601st OPEN OFFICE	400	400	1040	640	1/4	277/1	65.5	94.2	140.0	121.1	32.2	3.50	0.32	9.93	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-34	202 601st OPEN OFFICE	390	390	950	560	1/4	277/1	65.0	91.8	140.0	114.9	27.5	2.25	0.27	4.43	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-35	202 601st OPEN OFFICE	480	480	980	500	1/4	277/1	63.7	85.6	140.0	107.6	23.2	1.50	0.29	2.06	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-36	203 601st PLATOON OFFICE	350	350	1000	650	1/4	277/1	64.0	93.2	140.0	119.8	31.5	3.25	0.30	8.47	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-37	203 601st PLATOON OFFICE	350	350	1000	650	1/4	277/1	64.0	87.6	140.0	110.3	25.5	1.75	0.30	2.85	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-38	204 601st PLATOON OFFICE	235	235	745	510	1/4	277/1	64.7	92.6	140.0	112.8	22.4	1.75	0.18	2.65	2 HC	<=20	22	PRICE	FDV	3010	10	1,2,3,4,5,6,7,10
FPB-39	204 601st PLATOON OFFICE	235	235	745	510	1/4	277/1	72.0	89.0	140.0	120.6	18.1	2.00	0.09	3.31	2 HC	<=20	24	PRICE	FDV	3010	10	1,2,3,4,5,6,7,9
FPB-40	C1 CORRIDOR	380	380	945	565	1/4	277/1	65.2	93.8	140.0	118.8	29.1	3.00	0.27	6.67	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-41	C1 CORRIDOR	380	380	945	565	1/4	277/1	65.2	93.8	140.0	118.8	29.1	3.00	0.27	6.67	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-42	C1A CORRIDOR	830	830	1330	500	1/4	277/1	60.5	80.5	140.0	105.0	26.5	1.75	0.49	2.27	2 HC	<=20	<=20	PRICE	FDV	3012	12	1,2,3,4,5,6,7,10
FPB-43	C2 CORRIDOR 2nd FLOOR	250	250	600	350	1/8	277/1	62.4	91.2	140.0	109.9	18.7	1.25	0.12	1.59	2 HC	<=20	<=20	PRICE	FDV	2008	8	1,2,3,4,5,6,7,10
FPB-44	C3 CORRIDOR	105	105	350	245	1/8	277/1	72.0	102.0	140.0	134.3	13.5	5.00	0.03	10.34	2 HC	<=20	<=20	PRICE	FDV	2006	6	1,2,3,4,5,6,7,9
FPB-45	C4 CORRIDOR	300	300	1000	700	1/2	277/1	66.9	98.8	140.0	117.0	34.4	3.25	0.16	8.88	2 HC	<=20	<=20	PRICE	FDV	4010	10	1,2,3,4,5,6,7,10
FPB-46	C4 CORRIDOR	300	300	1000	700	1/2	277/1	66.9	98.8	140.0	117.0	34.4	3.25	0.16	8.88	2 HC	<=20	<=20	PRICE	FDV	4010	10	1,2,3,4,5,6,7,10

REMARKS:
1. FURNISH WITH INTEGRAL DISCONNECT.
2. FURNISH WITH FILTER MOUNTED ON RETURN INLET OF FAN POWERED BOX.
3. FURNISH WITH A 3'-0" DISCHARGE SILENCER UNLESS SHOWN OTHERWISE ON DRAWINGS.
4. FURNISH WITH A 90° ELBOW RETURN ATTENUATOR UNLESS SHOWN OTHERWISE ON DRAWINGS.
5. SOUND TEST DATA IS OBTAINED IN ACCORDANCE WITH ARI STANDARD 880-98.
6. BLANK SPACES (-) INDICATE NCS LESS THAN 20.
7. PERFORMANCE DATA INDICATED IS BASED ON USE OF A 30% PROPYLENE GLYCOL SOLUTION.
8. PROVIDE CO2 SENSOR IN SPACE
9. FURNISH WITH THE HOT WATER COIL MOUNTED AT THE RETURN AIR INLET OF THE TERMINAL BOX.
10. FURNISH WITH THE HOT WATER COIL MOUNTED AT THE DISCHARGE OF THE TERMINAL BOX.

ROOFTOP UNIT SCHEDULE

UNIT NO.	AREA SERVED	SYSTEM TYPE	TOTAL AIRFLOW (CFM)	MIN. OA (CFM)	MAX. EXHAUST AIR (CFM)	MIN. EXHAUST AIR (CFM)	SUPPLY FAN SPEED (RPM)	SUPPLY FAN E.S.P. (in W.G.)	SUPPLY FAN T.S.P. (in W.G.)	SUPPLY FAN NO.	SUPPLY FAN MOTOR HP EACH	EXHAUST FAN SPEED (RPM)	EXHAUST FAN T.S.P. (in W.G.)	EXHAUST FAN NO.	EXHAUST FAN MOTOR HP EACH	DX COOLING COIL ENTERING AIR °dB	DX COOLING COIL ENTERING AIR °wB	DX COOLING COIL LEAVING AIR °dB	DX COOLING COIL LEAVING AIR °wB	DX COOLING COIL TOTAL MBH	DX COOLING COIL SENS. MBH	DX COOLING COIL NO. STAGES	HOT WATER HEATING COIL EAT (°F)	HOT WATER HEATING COIL LAT (°F)	HOT WATER HEATING COIL EWT (°F)	HOT WATER HEATING COIL LWT (°F)	HOT WATER HEATING COIL TOTAL CAPACITY (MBH)	HOT WATER HEATING COIL WATER FLOW (GPM)	HOT WATER HEATING COIL MAX. COIL FACE VEL. (FPM)	HOT WATER HEATING COIL NO. OF ROWS	HOT WATER HEATING COIL FINS PER FOOT	HOT WATER HEATING COIL W.P.D. (ft HEAD)	HOT WATER HEATING COIL A.P.D. (in W.G.)	ELECTRICAL VOLTS/PHASE	MCA	MOCP	WEIGHT (LBS)	BASED ON MANUF	BASED ON MODEL	REMARKS
RTU-2	CLASSROOMS	VAV	9550	1740	9005	1195	2259	2.80	3.70	1	15.0	2097	2.43	1	10.0	77.6	64.3	53.6	52.9	321.0	251.7	2	---	---	---	---	---	---	---	---	---	---	---	---	460/3	80	90	4600	ADDISON	TRSA	1, 2, 4, 6
RTU-3	FIRST FLOOR ADMIN	VAV	9425	1430	9425	1430	2330	3.50	4.39	1	15.0	2193	3.32	1	10.0	77.1	64.0	53.1	52.4	319.1	248.8	2	---	---	---	---	---	---	---	---	---	---	---	---	460/3	80	90	4600	ADDISON	TRSA	1, 2, 3, 4
RTU-4	SECOND FLOOR ADMIN	VAV	7550	2480	7550	2480	2636	2.25	3.30	1	15.0	2469	2.13	1	10.0	79.6	65.7	51.5	51.5	316.4	233.8	2	---	---	---	---	---	---	---	---	---	---	---	---	460/3	80	90	4750	ADDISON	TRSA	1, 2, 3, 4
RTU-5	LOCKERS AND SLEEPING AREAS	VAV	5800	2250	4950	1400	2644	2.70	5.51	1	10.0	3592	3.61	1	10.0	80.4	66.2	53.9	53.9	217.5	169.5	2	51.0	69.4	140.0	93.3	115.6	5	916	2	120	0.20	1.54	460/3	64	70	3100	ADDISON	TRSA	1, 2, 3, 4, 5
RTU-6	SUPPLY ROOMS	VAV	4090	1290	4090	1290	2868	2.15	4.24	1	5.0	3075	2.00	1	5.0	79.2	65.4	52.0	52.0	153.0	122.4	2	---	---	---	---	---	---	---	---	---	---	---	---	460/3	42	50	2800	ADDISON	TRSA	1, 2, 3, 4
RTU-7	KITCHEN	SZCV	3050	3050	0	0	950	0.75	1.18	1	2.0	---	---	---	---	89.0	72.0	57.1	56.8	204.3	120.6	2	0.0	82.0	140.0	109.0	415.9	28.0	337.0	4.0	144.0	4.0	0.1	460/3	16	25	2400	REZNOR	RXH	

SYSTEM TYPES:
VAV- VARIABLE AIR VOLUME
SZCV - SINGLE ZONE, CONSTANT VOLUME

FAN TYPES:
AF - AIR FOIL
FC - FORWARD CURVE

REMARKS:
1. THE UNIT SHALL BE PROVIDED WITH A VARIABLE FREQUENCY DRIVE ON ITS SUPPLY FAN AND ON ITS EXHAUST FAN.
2. PROVIDE 30% EFFICIENT FILTERS (MERV-8) DOWNSTREAM OF THE MIXING SECTION.
3. PROVIDE A 24" HIGH ROOF CURB.
4. PROVIDE A COMPARATIVE ENTHALPY ECONOMIZER.
5. COIL PERFORMANCE SHALL BE BASED ON A 30% PROPYLENE GLYCOL SOLUTION.
6. THE HEIGHT OF THE UNIT SHALL BE A MAX. 83" HIGH.

DESIGN CONDITIONS:
OUTDOOR: (SUMMER @ 89°FDB, 72°FWB), (WINTER @ 0°FDB)
INDOOR: (SUMMER @ 75°FDB, 62.5°FWB), (WINTER @ 72°FDB, 62.0 FWB)

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WVARNG
BUCKHANNON AFRC
--- BUCKHANNON, WV

HVAC Schedules

DRAWN BY: TOWER
PROJECT ISSUE DATE: 28 JUNE 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
1	8/09/12

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER:

APPROVED DRAWING USE:
- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
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THOMAS A. TOWER REGISTERED 11973 STATE OF WEST VIRGINIA
6-28-2012

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SHEET NO.
H-4.1

EXHAUST HOOD SCHEDULE

UNIT NO.	AREA SERVED	EXHAUST AIRFLOW (CFM)	SUPPLY AIRFLOW (CFM)	E.S.P. (in WG)	HOOD SIZE WIDTH (IN)	HOOD SIZE LENGTH (IN)	HOOD SIZE HEIGHT (IN)	BASED ON MANUF.	BASED ON MODEL	REMARKS
KH-1	KITCHEN	3500	1540	0.5	60	168	24	GREENHECK	GHEW	1, 2, 3, 4
KH-2	DISHWASHER	1050	---	0.03	72	84	24	GREENHECK	GO	3, 4

REMARKS:
1. INTEGRAL GREASE FILTERS.
2. INTEGRAL VAPORPROOF INCANDENSCENT LIGHT FIXTURES.
3. STAINLESS STEEL CONSTRUCTION.
4. BOTTOM OF HOOD SHALL BE MOUNTED 78-INCHES AFF.

AIR COOLED CONDENSER SCHEDULE

TAG	SERVING	TOTAL CAPACITY MBH	AMBIENT TEMPERATURE (°F)	REFRIGERANT TYPE	WEIGHT (LBS.)	ELECTRICAL DATA UNIT MCA	UNIT MOCP	NO. OF FANS	FAN HP EACH	V/PH	BASED ON MANUF.	BASED ON MODEL	REMARKS
ACC-1	RTU-7	180	89	R-410A	1100	39.7	60	2	690 W	460 / 3	REZNOR	MASA	

REMARKS

AIR DIFFUSER SCHEDULE

TAG	TYPE	MAX AIRFLOW (CFM)	NECK SIZE (in)	NOMINAL FACE SIZE (in x in)	MAX T.P. (in WG)	NC RATING	BASED ON MANUF.	BASED ON MODEL	REMARKS
LSD-482	LINEAR SLOT	200	7	48 x 4	0.10	<=20	PRICE	SDA-100	2, 3, 4
SPD-6x	SQUARE PLAQUE	180	6	24 x 24	0.06	<=20	PRICE	SPD	1
SPD-8x	SQUARE PLAQUE	290	8	24 x 24	0.08	<=20	PRICE	SPD	1
SPD-10x	SQUARE PLAQUE	400	10	24 x 24	0.10	<=20	PRICE	SPD	1
SPD-12x	SQUARE PLAQUE	530	12	24 x 24	0.13	<=20	PRICE	SPD	1
SPD-14x	SQUARE PLAQUE	700	14	24 x 24	0.15	<=20	PRICE	SPD	1

REMARKS:
1. X = AIR PATTERN. X=1, 1 WAY. X=2, 2 WAY. X=3, 3 WAY. X=4, 4 WAY. SEE PLANS FOR AIR PATTERN FOR EACH DIFFUSER.
2. PROVIDE INSULATED PLENUM EQUIVALENT TO PRICE SDAI100 PLENUM.
3. DIFFUSER SHALL HAVE 2 SLOTS.
4. SLOT PATTERN SHALL BE IN THE OPPOSED POSITION.

AIR GRILLE SCHEDULE

TAG	TYPE	MAX AIRFLOW (CFM)	NECK SIZE (in x in)	NOMINAL FACE SIZE (in x in)	NC RATING	MAX S.P. (in WG)	BASED ON MANUF.	BASED ON MODEL	REMARKS
LRG-66	LOUVERED RETURN	115	6 x 6	8 x 8	<=20	0.08	PRICE	535	3
LRG-88	LOUVERED RETURN	190	8 x 8	10 x 10	<=20	0.08	PRICE	535	3
LRG-1010	LOUVERED RETURN	290	10 x 10	12 x 12	<=20	0.08	PRICE	535	3
LRG-126	LOUVERED RETURN	210	12 x 6	14 x 8	<=20	0.10	PRICE	535	3
LRG-1212	LOUVERED RETURN	410	12 x 12	14 x 14	<=20	0.07	PRICE	535	3
LRG-226	LOUVERED RETURN	370	22 x 6	24 x 8	<=20	0.07	PRICE	535	3
LRG-228	LOUVERED RETURN	490	22 x 8	24 x 10	<=20	0.07	PRICE	535	3
LRG-2210	LOUVERED RETURN	610	22 x 10	24 x 12	<=20	0.06	PRICE	535	3
LRG-2212	LOUVERED RETURN	725	22 x 12	24 x 14	<=20	0.06	PRICE	535	3
LRG-2222	LOUVERED RETURN	1200	22 x 22	24 x 24	<=20	0.05	PRICE	535	3
LRG-2412	LOUVERED RETURN	780	24 x 12	26 x 14	<=20	0.06	PRICE	535	3
LRG-4622	LOUVERED RETURN	2400	46 x 22	48 x 24	<=20	0.05	PRICE	535	3, 4
LRG-7022	LOUVERED RETURN	3500	70 x 22	72 x 24	<=20	0.05	PRICE	535	3, 4
LBG-366	LINEAR BAR	500	36 x 6	38 x 8	23	0.05	PRICE	LBP - 26C	1
SDG-65	SINGLE DEFLECTION	150	6 x 5	8 x 7	<=20	0.13	PRICE	510	2
SDG-124	SINGLE DEFLECTION	240	12 x 4	14 x 6	<=20	0.13	PRICE	510	2
SDG-1212	SINGLE DEFLECTION	680	12 x 12	14 x 14	<=20	0.09	PRICE	510	2

REMARKS:
1. GRILLE SHALL HAVE HORIZONTAL BLADES THAT HAVE A 15 DEGREE DEFLECTION ANGLE.
2. GRILLE SHALL HAVE HORIZONTAL BLADES THAT HAVE A 22.5 DEGREE DEFLECTION ANGLE.
3. GRILLE SHALL HAVE HORIZONTAL BLADES THAT HAVE A 45 DEGREE DEFLECTION ANGLE.
4. FURNISH GRILLE WITH MULLIONS

CONDENSING UNIT SCHEDULE

TAG	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	REFRIGERANT TYPE	ELECTRICAL DATA UNIT MCA	UNIT MOCP	V/PH	BASED ON MANUF.	BASED ON MODEL	REMARKS
CU-1	18.0	---	R-410A	13	20	208 / 1	MITSUBISHI	PUY-A18NHA	1, 2, 3
CU-2	9.5	---	R-410A	13	15	115 / 1	MITSUBISHI	PUY-A12NHA	1, 2, 3
CU-3	18.0	19.0	R-410A	13	20	208 / 1	MITSUBISHI	PUZ-A18NHA	1, 2, 3
CU-4	18.0	19.0	R-410A	13	20	208 / 1	MITSUBISHI	PUZ-A18NHA	1, 2, 3
CU-5	24.0	---	R-410A	18	30	208 / 1	MITSUBISHI	PUY-A24NHA	1, 2, 3

REMARKS:
1. COOLING CAPACITIES BASED ON 95°F AMBIENT DRY BULB TEMPERATURE.
2. LOW AMBIENT OPERATION TO -4°F.
3. HEATING CAPACITY BASED ON 47°F DRY BULB TEMPERATURE OUTDOOR / 70°F DRY BULB TEMPERATURE INDOOR.
4. PROVIDE AUTOMATIC RESTART AFTER POWER FAILURE.
5. DISCONNECT SWITCH FOR CONDENSING UNITS BY E.C.
6. UNIT HAS INDIVIDUAL POWER FEEDERS.

EXHAUST FAN SCHEDULE

UNIT NO.	AREA SERVED	TYPE	TOTAL AIRFLOW (CFM)	E.S.P. (in WG)	FAN SPEED	MOTOR RPM	MOTOR HP	MOTOR V/PH	CONTROL	SONES	BASED ON MANUF.	BASED ON MODEL	REMARKS
EF-1	104, 105 WOMEN & MEN	CRE-D	625	0.35	1396	1550	1/8	115/1	DDC	7.2	GREENHECK	G-095-D	1,2,3,4
EF-2	120, 121 WOMEN & MEN	CRE-D	950	0.40	1376	1725	1/3	115/1	DDC	8.2	GREENHECK	G-103-A	1,2,3,4
EF-3	106 MECHANICAL	CRE-D	360	0.30	1401	1550	1/20	115/1	THERMOSTAT	6.1	GREENHECK	G-085-D	1,2,3,4
EF-4	201 RESTROOM	CRE-D	120	0.30	1476	1550	1/30	115/1	DDC	3.5	GREENHECK	G-065-D	1,2,3,4
EF-5	110A MAIL	CRE-D	70	0.30	854	860	1/8	115/1	DDC	2.5	GREENHECK	G-087-C	1,2,3,4
EF-6	132 KITCHEN	CRE-B	3500	1.1	1243	1725	2.0	460/3	SWITCH / HEAT SENSOR	16.7	GREENHECK	CUBE-180-20	1,3,5,6
EF-7	132 KITCHEN	CRE-D	1200	0.5	1135	1140	1/4	115/1	SWITCH	8.7	GREENHECK	G-133-B	1,2,3,4

TYPE:
CRE-D CENTRIFUGAL ROOF EXHAUST - DIRECT DRIVE
CRE-B CENTRIFUGAL ROOF EXHAUST - BELT DRIVE

REMARKS:
1. INTEGRAL DISCONNECT.
2. INTEGRAL SPEED CONTROL.
3. 24" ROOF CURB.
4. MOTORIZED DAMPER
5. FURNISH A GREASE TERMINATION.
6. FAN SHALL COMPLY WITH UL-762.

SPLIT FAN COIL UNIT SCHEDULE

UNIT NO.	AREA SERVED	TOTAL COOLING MBH	TOTAL HEATING MBH	ELECTRICAL DATA UNIT MCA	UNIT MOCP	BASED ON MANUF.	BASED ON MODEL	ASSOCIATED CONDENSING UNIT	REMARKS
SFC-1	106 MECH	18.0	---	1	15	MITSUBISHI	PKA-A18GA	CU-1	1, 2, 3, 4
SFC-2	119 ELEC	12.0	---	1	15	MITSUBISHI	PKA-A12GA	CU-2	1, 2, 3, 4
SFC-3	122 STORAGE	18.0	19.0	1	15	MITSUBISHI	PKA-A18GA	CU-3	1, 2, 3, 4, 6
SFC-4	110A MAIL	18.0	19.0	1	15	MITSUBISHI	PLA-A18AA	CU-4	1, 2, 3, 5, 6
SFC-5	102 IT	24.0	---	1	15	MITSUBISHI	PLA-A24AA	CU-5	1, 2, 3, 5

REMARKS:
1. PROVIDE AN INTEGRAL CONDENSATE PUMP.
2. PROVIDE INTEGRAL DISCONNECT SWITCH.
3. PROVIDE WIRED REMOTE CONTROLLER .
4. WALL MOUNTED CONFIGURATION.
5. CEILING MOUNTED CONFIGURATION
6. HEATING CAPACITY IS BASED ON OUTDOOR AIR TEMP. OF 47°F DB/43°F WB

DEHUMIDIFIER SCHEDULE

TAG	SERVING	MOISTURE REMOVAL (LBS./HR.)	AIRFLOW (CFM)	MIN. E.S.P. REGEN. (in. W.G.)	MIN. E.S.P. REGEN. (in. W.G.)	HEATER CAPACITY (WATTS)	FULL LOAD AMPS	VOLTS/PHASE	BASED ON MANUF.	BASED ON MODEL	REMARKS
DHU-1	VAULT 109B	2.0	100	0.3	0.3	1350	13.0	115 / 1	STULZ	DH100	1
DHU-2	VAULT 114A	2.0	100	0.3	0.3	1350	13.0	115 / 1	STULZ	DH100	1

REMARKS:
1. BUILT IN ADJUSTABLE HUMIDISTAT CONTROL.

HOT WATER RADIANT CEILING PANEL SCHEDULE

TAG	W (in)	L (in)	MIN CAP. (MBH)	ENTERING TEMPS AIR (°F)	ENTERING TEMPS WATER (°F)	WATER FLOW (GPM)	WTD (°F)	BASED ON MANUF.	BASED ON MODEL	REMARKS
RCP-A	24	24	0.38	70	140	1.0	30	FRENGER	MODULAR	1,2
RCP-B	24	48	0.76	70	140	1.0	30	FRENGER	MODULAR	1,2

REMARKS:
1. PERFORMACE SHALL BE BASED ON USE OF A 30% PROPYLENE GLYCOL SOLUTION.
2. COORDINATE PANEL MOUNTING WITH CEILING TYPE.

HOT WATER CONVECTOR SCHEDULE

UNIT NO.	AREA SERVED	NOMINAL LENGTH (IN)	NOMINAL HEIGHT (IN)	NOMINAL DEPTH (IN)	HOT WATER COIL AWT (°F)	HOT WATER COIL EAT (°F)	HOT WATER COIL CAPACITY (MBH)	HOT WATER COIL WATER FLOW (GPM)	BASED ON MANUF.	BASED ON MODEL	REMARKS
CV-1	103 JAN 01	48	26	8	125	65	2.5	1.0	RITTLING	SL	1
CV-2	107 STOR 03	48	26	4	125	65	1.1	1.0	RITTLING	PL	1
CV-3	135 LANDING 1	36	32	6	125	65	1.3	1.0	RITTLING	FL	1
CV-4	136 LANDING 2	36	32	6	125	65	1.3	1.0	RITTLING	FL	1

REMARKS:
1. HOT WATER CAPACITIES LISTED ARE CORRECTED FOR A 30% PROPYLENE GLYCOL SOLUTION

UNIT HEATER SCHEDULE

UNIT NO.	AREA SERVED	TOTAL AIRFLOW (CFM)	HOT WATER COIL EAT (°F)	HOT WATER COIL LAT (°F)	HOT WATER COIL EWT (°F)	HOT WATER COIL LWT (°F)	HOT WATER COIL CAPACITY (MBH)	HOT WATER COIL WATER FLOW (GPM)	HOT WATER COIL W.P.D. (ft HEAD)	ELECTRICAL MOTOR HP	ELECTRICAL V/PH	BASED ON MFGR.	BASED ON MODEL	REMARKS
UH-1	106 MECHANICAL	450	60	76.7	140	110	8.1	1.00	0.83	1/30	115/1	RITTLING	RH	1,2,3,4
UH-2	134 SPRINKLER ENTRANCE	400	60	73.9	140	110	6.0	0.80	0.49	1/30	115/1	RITTLING	RH	1,2,3,4
UH-3	109 SUPPLY ROOM	1550	70	89.5	140	110	32.7	5.00	0.35	1/8	115/1	RITTLING	RH	1,2,3,4
UH-4	114 SUPPLY ROOM	1550	70	89.5	140	110	32.7	5.00	0.35	1/8	115/1	RITTLING	RH	1,2,3,4

REMARKS:
1. PROVIDE AN INTEGRAL DISCONNECT.
2. PROVIDE AN AQUASTAT.
3. PROVIDE ADJUSTABLE DISCHARGE LOUVERS.
4. HOT WATER CAPACITIES LISTED ARE CORRECTED FOR A 30% PROPYLENE GLYCOL SOLUTION

CABINET UNIT HEATER SCHEDULE

UNIT NO.	AREA SERVED	TOTAL AIRFLOW (CFM)	MOTOR QUANTITY	MOTOR HP	HOT WATER COIL EAT (°F)	HOT WATER COIL LAT (°F)	HOT WATER COIL EWT (°F)	HOT WATER COIL LWT (°F)	HOT WATER COIL CAPACITY (MBH)	HOT WATER COIL WATER FLOW (GPM)	HOT WATER COIL W.P.D. (ft HEAD)	HOT WATER COIL # OF ROWS	ELECTRICAL V/PH	BASED ON MANUF.	BASED ON MODEL	REMARKS
CUH-1	100A VESTIBULE 01	1130	2	1/15	60.0	97.9	140.0	110.0	46.2	7.75	1.93	2	115/1	RITTLING	RFRC-420	1, 2, 3, 4
CUH-2	100A VESTIBULE 01	1130	2	1/15	60.0	97.9	140.0	110.0	46.2	7.75	1.93	2	115/1	RITTLING	RFRC-420	1, 2, 3, 4
CUH-3	C1 CORRIDOR	700	1	1/15	70.0	90.5	140.0	110.0	15.5	3.25	1.15	1	115/1	RITTLING	RFRC-420	1, 2, 3, 4
CUH-4	C3 CORRIDOR	870	2	1/30, 1/15	70.0	102.4	140.0	110.0	30.4	6.00	1.10	2	115/1	RITTLING	RF-220	1, 2, 3, 4
CUH-5	ST1 STAIR	370	1	1/30	60.0	82.0	140.0	110.0	8.8	1.75	0.23	1	115/1	RITTLING	RF-220	1, 2, 3, 4
CUH-6	ST2 STAIR	370	1	1/30	60.0	82.0	140.0	110.0	8.8	1.75	0.23	1	115/1	RITTLING	RF-220	1, 2, 3, 4

REMARKS:
1. PROVIDE AN INTEGRAL DISCONNECT SWITCH.
2. PROVIDE AN AQUASTAT.
3. PROVIDE MERV-5 DISPOSABLE FILTERS.
4. HOT WATER CAPACITIES LISTED ARE CORRECTED FOR A 30% PROPYLENE GLYCOL SOLUTION

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HVAC Schedules

DRAWN BY: TOWER
PROJECT ISSUE DATE: 28 JUNE 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
1	8/09/12

ARCHITECT PROJECT NUMBER: 21117
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APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS ——
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THOMAS J. COMBS REGISTERED 11973 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER
6-28-2012

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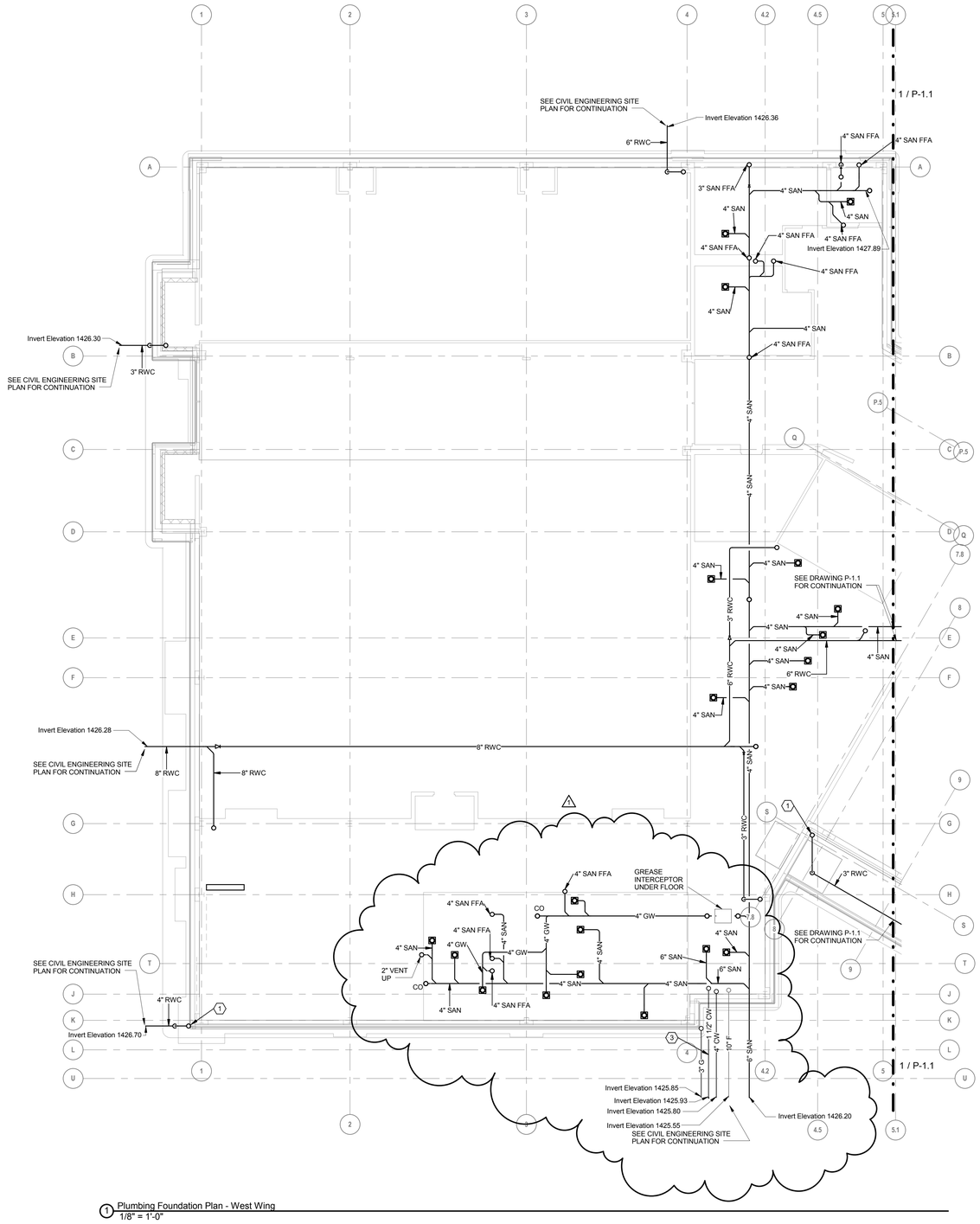
SHEET NO.

H-4.2



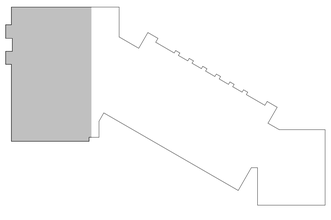
1 Plumbing Foundation Plan - West Wing
1/8" = 1'-0"

CODED NOTES:

(THIS DRAWING)

1. PROVIDE A DOWNSPOUT BOOT WITH CLEANOUT PLUG. SEE DETAIL ON DRAWING P-0.1.
2. NOT USED.
3. 1-1/2" CW SERVICE TO BE PROVIDED UNDER WASH RACK ALTERNATE ONLY.

WEST WING - KEY PLAN



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ARMY NATIONAL GUARD

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BUCKHANNON AFRC

BUCKHANNON, WV

Plumbing Foundation Plan - West Wing

DRAWN BY: TOWER
PROJECT ISSUE DATE: June 28, 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
1	8/14/12

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER: 21117 P-1.0

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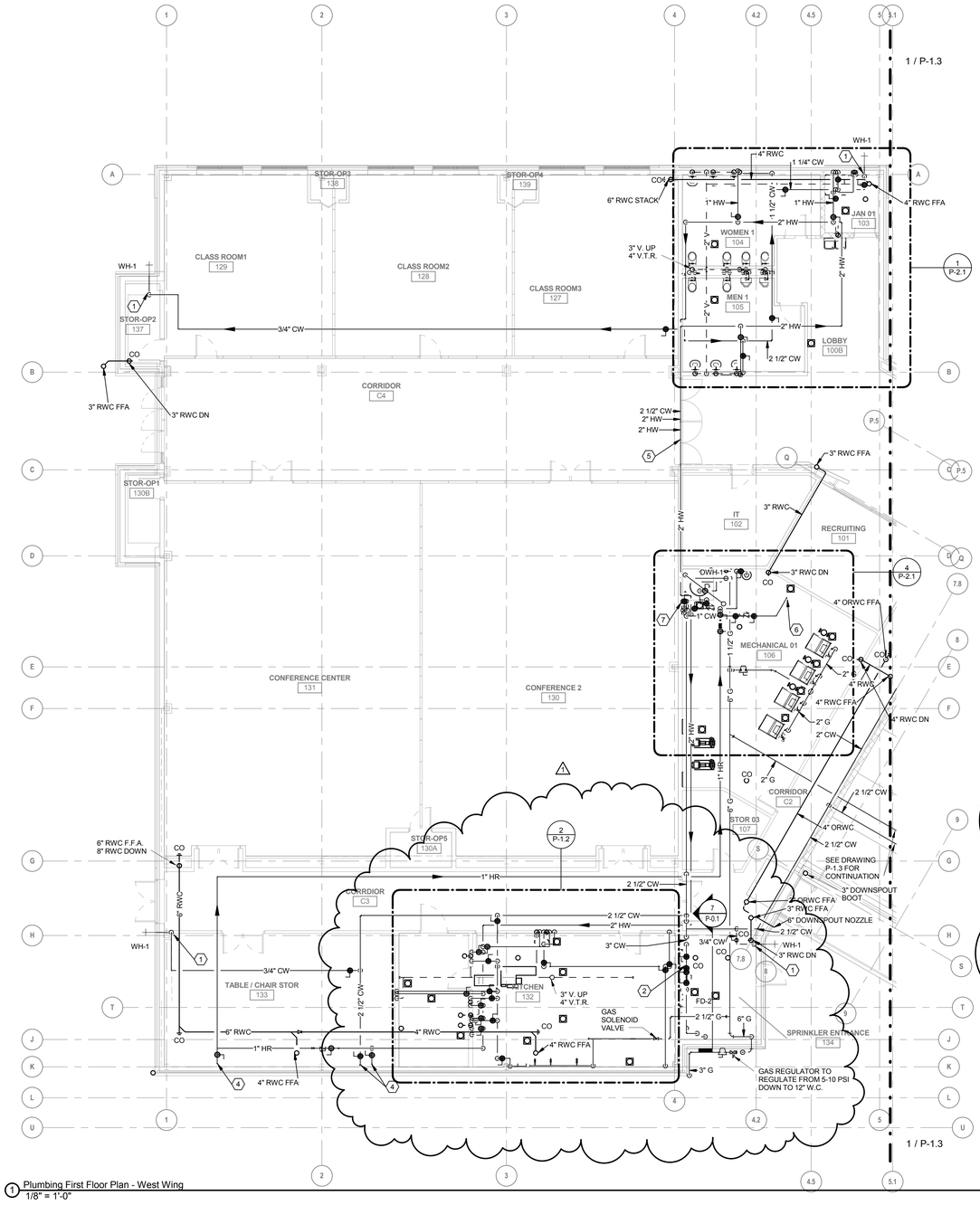
SHEET NO.

P-1.0

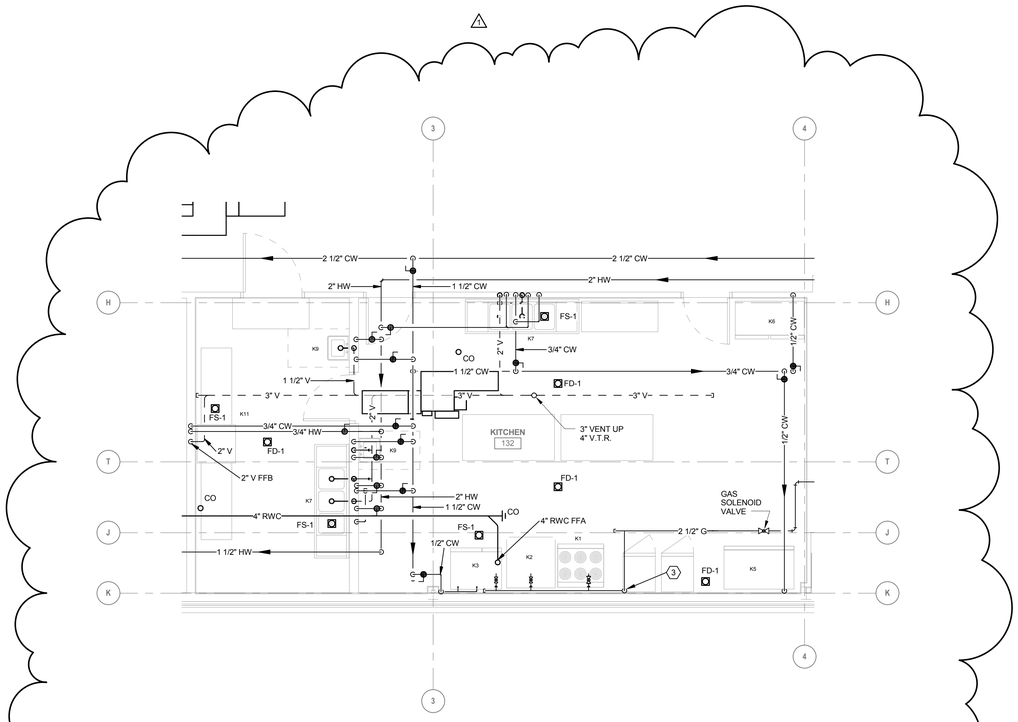
CODED NOTES:

(THIS DRAWING)

1. 3/4" CW DOWN TO WALL HYDRANT.
2. WATER SERVICE ENTRANCE. SEE DETAIL ON DRAWING P-0.1.
3. 2-1/2" GAS DOWN ALONG WALL TO GAS APPLIANCES UNDER HOOD. RUN 2-1/2" GAS HEADER.
4. PROVIDE CAPPED CW, HW, HR, & VENT LINES FOR FUTURE ADDITION.
5. STACK 2" CW & (2) 2" HW LINES IN THIS AREA TO CROSS CORRIDOR. COORDINATE W/HVAC PIPING.
6. 1" MAKE-UP WATER LINE FOR USE BY HVAC CONTRACTOR. PROVIDE (2) BALL VALVES, STRAINER, AND RPZ BACKFLOW PREVENTER. ROUTE DISCHARGE FROM BACKFLOW PREVENTER TO CLOSEST FLOOR DRAIN.
7. 3/4" CW DOWN TO HOSE BIBB.



1 Plumbing First Floor Plan - West Wing
1/8" = 1'-0"



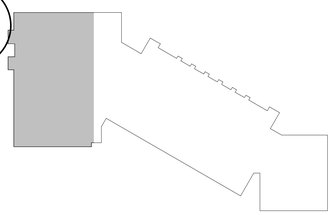
2 Enlarged Plumbing Plan - Kitchen 132
1/4" = 1'-0"

KITCHEN EQUIPMENT SCHEDULE

ITEM NUMBER	DESCRIPTION	CW	HW	WASTE	VENT	GAS (MBH)
K1	GAS RANGE	-	-	-	-	1-1/2" (270)
K2	GAS CONVECTION OVEN	-	-	-	-	1" (120)
K3	CONVECTON STEAMER	(2) 1/2"	-	FS	-	1" (125)
K5	REACH-IN REFRIGERATOR	1/2"	-	-	-	-
K6	REACH-IN FREEZER	1/2"	-	-	-	-
K7	SS THREE BOWL SINK	(2) 1/2"	(2) 1/2"	(3) 2", FS	(3) 1-1/2"	-
K9	HAND WASHING STATION	1/2"	1/2"	1-1/2"	1-1/2"	-
K11	PASS THROUGH DISH WASHER	3/4"	3/4"	FS	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

NOTES:
1. FIXTURE TYPES SHALL BE CONFIRMED WITH THE FOOD SERVICE EQUIPMENT CONTRACTOR BEFORE ORDERING AND/OR INSTALLATION.
2. COORDINATE EXACT LOCATION OF EACH FIXTURE WITH THE FOOD SERVICE EQUIPMENT CONTRACTOR BEFORE ROUGH-IN.
3. MAKE ALL FINAL CONNECTION TO EQUIPMENT AS RECOMENDED BY THE MANUFACTURER. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR PLUMBER'S RESPONSIBILITY.
4. P.C. RESPONSIBLE FOR FLEXIBLE DRAIN HOSES FROM EQUIPMENT.

WEST WING - KEY PLAN



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Plumbing First Floor Plan - West Wing

DRAWN BY: TOWER
PROJECT ISSUE DATE: June 28, 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
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ARCHITECT PROJECT NUMBER: 21117
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- ○ DESIGN DEVELOPMENT
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5-28-2012

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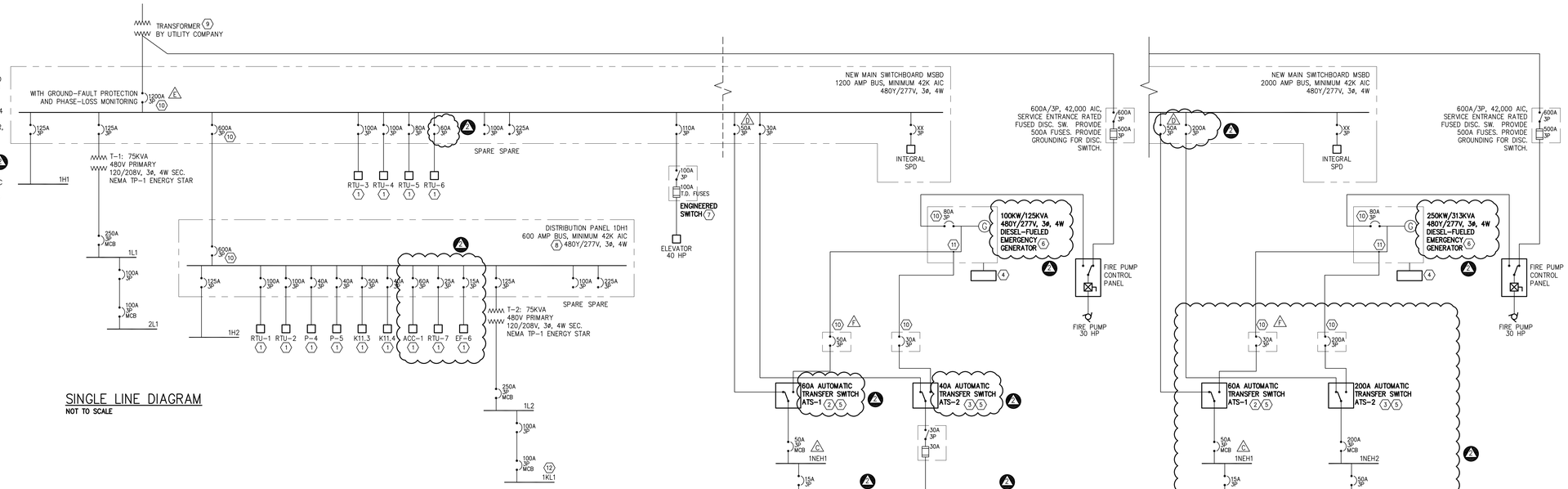
SHEET NO.

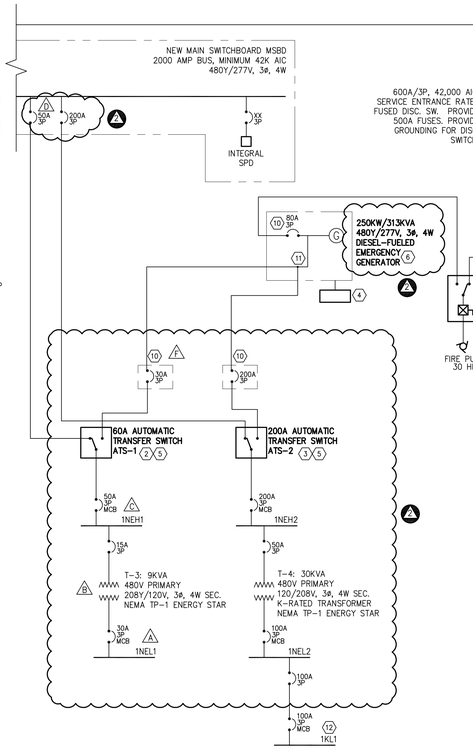
P-1.2

CODED NOTES: (SINGLE-LINE DIAGRAM-STEM ADDITION)

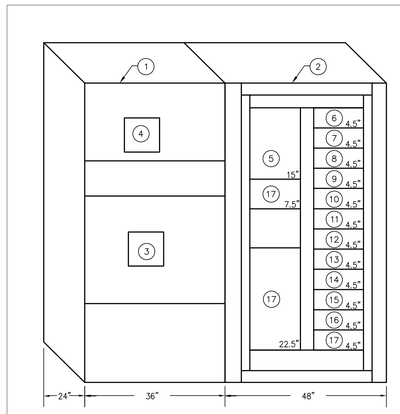
1. REFER TO THE MECHANICAL/KITCHEN EQUIPMENT SCHEDULE FOR FEEDER SIZES.
2. PROVIDE A 40 AMP, 480Y/277 VOLT, 3ø, 4 WIRE, 4 POLE AUTOMATIC TRANSFER SWITCH WITH AN A.I.C. RATING OF 35K AND 3 CYCLE WITHSTAND RATING. ALL LOADS CONNECTED TO THIS ATS SHALL TRANSFER WITHIN 10 SECONDS OF LOSS OF POWER.
3. PROVIDE A 40 AMP (ALTERNATE BID 200A), 480Y/277 VOLT, 3ø, 4 WIRE, 4 POLE AUTOMATIC TRANSFER SWITCH WITH AN A.I.C. RATING OF 55K. ALL LOADS CONNECTED TO THIS ATS SHALL OPERATE ON A DELAYED TRANSFER, SO THAT ALL LOADS ON ATS-1 SHALL TRANSFER FIRST BEFORE ATS-2 BEGINS TRANSFER.
4. EMERGENCY GENERATOR REMOTE ANNUNCIATOR PANEL. COORDINATE LOCATION OF ANNUNCIATOR PANEL WITH ARCHITECT IN FIELD.
5. PROVIDE LOW VOLTAGE CONTROL WIRING IN 3/4" CONDUIT FROM AUTOMATIC TRANSFER SWITCH TO EMERGENCY GENERATOR CONTROL PANEL FOR START-UP SIGNAL. COORDINATE CABLING REQUIREMENTS WITH EMERGENCY GENERATOR MANUFACTURER.
6. PROVIDE A BOND BETWEEN THE NEUTRAL AND GROUND BUS IN THE GENERATOR.
7. EC TO VERIFY SIZE OF CIRCUIT BREAKER AND ENGINEERED SWITCH WITH ELEVATOR MANUFACTURER PRIOR TO PURCHASING EQUIPMENT.
8. PROVIDE CUSTOMER METERING AT DISTRIBUTION PANELBOARD, SQUARE D PM820 OR EQUAL.
9. TAP SECONDARY LUGS OF TRANSFORMER TO FEED FIRE PUMP.
10. PROVIDE 100% RATED CIRCUIT BREAKER.
11. CONNECT CONDUCTORS TO LUGS INSIDE COMPARTMENT MOUNTED ON EMERGENCY GENERATOR.
12. UNDER ALTERNATE BID, FEED PANEL 1KL1 FROM PANEL 1NEL2 INSTEAD OF PANEL 1L2.



SINGLE LINE DIAGRAM
NOT TO SCALE

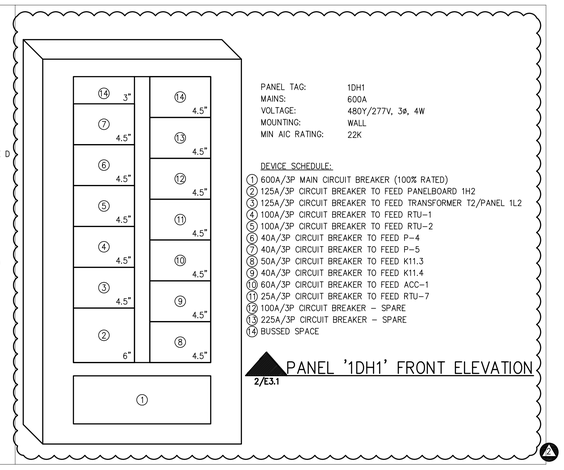


PARTIAL SINGLE LINE DIAGRAM (ALTERNATE BID)
NOT TO SCALE



1. BOTTOM FEED, FRONT ACCESSIBLE, 1200 AMP, 480Y/277V, 3ø, 4W MAIN CIRCUIT BREAKER SECTION.
2. FRONT ACCESSIBLE, 480Y/277V, 3ø, 4W DISTRIBUTION SECTION WITH 1200 AMP RATED VERTICAL BUS AND 1200 AMP RATED HORIZONTAL BUS.
3. 480V, 1200 AMP, 3 POLE ELECTRONIC MAIN CIRCUIT BREAKER, SQUARE D MASTERPACT NW SERIES OR APPROVED EQUIVALENT WITH LSIG TRIP FUNCTIONS, METERING FUNCTIONS AND SHUNT TRIP.
4. CUSTOMER METERING - SQUARE D POWERLOGIC CIRCUIT METER CM3350 OR APPROVED EQUIVALENT.
5. 600A/3P (100% RATED) CIRCUIT BREAKER TO FEED PANELBOARD 1DH1
6. 30A/3P (225A/3P ALT. BID) CIRCUIT BREAKER TO FEED ATS-2
7. 125A/3P CIRCUIT BREAKER TO FEED PANELBOARD 1H1
8. 125A/3P CIRCUIT BREAKER TO FEED TRANSFORMER T-1/PANEL 1L1
9. 110A/3P CIRCUIT BREAKER TO FEED ELEVATOR
10. 50A/3P CIRCUIT BREAKER TO FEED ATS-1/PANELS 1NEH1 AND 1NEL1
11. 100A/3P CIRCUIT BREAKER TO FEED RTU-3
12. 100A/3P CIRCUIT BREAKER TO FEED RTU-4
13. 80A/3P CIRCUIT BREAKER TO FEED RTU-5
14. 60A/3P CIRCUIT BREAKER TO FEED RTU-6
15. 225A/3P CIRCUIT BREAKER - SPARE
16. 100A/3P CIRCUIT BREAKER - SPARE
17. PREPARED SPACE

MAIN SWITCHBOARD 'SWBD' FRONT ELEVATION
1/E3.1 **NOT TO SCALE**



DEVICE SCHEDULE:

1. 600A/3P MAIN CIRCUIT BREAKER (100% RATED)
2. 125A/3P CIRCUIT BREAKER TO FEED PANELBOARD 1H2
3. 125A/3P CIRCUIT BREAKER TO FEED TRANSFORMER T2/PANEL 1L2
4. 100A/3P CIRCUIT BREAKER TO FEED RTU-1
5. 100A/3P CIRCUIT BREAKER TO FEED RTU-2
6. 40A/3P CIRCUIT BREAKER TO FEED P-4
7. 40A/3P CIRCUIT BREAKER TO FEED P-5
8. 50A/3P CIRCUIT BREAKER TO FEED K11.3
9. 40A/3P CIRCUIT BREAKER TO FEED K11.4
10. 60A/3P CIRCUIT BREAKER TO FEED ACC-1
11. 25A/3P CIRCUIT BREAKER TO FEED RTU-7
12. 100A/3P CIRCUIT BREAKER - SPARE
13. 225A/3P CIRCUIT BREAKER - SPARE
14. BUSSED SPACE

PANEL '1DH1' FRONT ELEVATION
2/E3.1

SELECTIVE COORDINATION GENERAL NOTES:

A. PROVIDE FOR SELECTIVE COORDINATE FOR LEGALLY REQUIRED STANDBY SYSTEM IN ACCORDANCE WITH NFPA 99, 2012 EDITION. PROVIDE BREAKERS AS INDICATED BELOW AND TAGGED ON SINGLE LINE. BASIS OF DESIGN IS SQUARE D. ALTERNATE MANUFACTURERS SHALL PROVIDE PROOF OF SELECTIVE COORDINATION WITH THEIR SUBMITTAL. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL COST OF CHANGES TO SYSTEM ASSOCIATED WITH USING AN ALTERNATE MANUFACTURER.

SELECTIVE COORDINATION CODED NOTES:

(A) AVAILABLE FAULT CURRENT: 0.889 KA
BREAKERS: SQUARE D TYPE HD MAIN, TYPE QOB BRANCH CIRCUIT BREAKERS
(SEE PANEL SCHEDULE FOR BREAKER SIZES)

(B) TRANSFORMER: 9KVA, 480V TO 208Y/120V, MINIMUM IMPEDANCE: 2.6%

(C) AVAILABLE FAULT CURRENT: 13.776 KA
BREAKERS: SQUARE D POWERPACT H-FRAME MAIN BREAKER WITH MICROLOGIC 5.2 TRIP UNIT, TYPE HD, 150A FRAME, 100A PLUG, TRIP SETTINGS: Ir: 50 (50A), tr: 4, Isd: 10, tsd: 0.4, I2t: OUT, Ii: 10 (1000A)
SQUARE D TYPE EH BRANCH CIRCUIT BREAKERS (3-PHASE)
SQUARE D TYPE ED BRANCH CIRCUIT BREAKERS (1, 2-PHASE)
(SEE PANEL SCHEDULE FOR BREAKER SIZES)

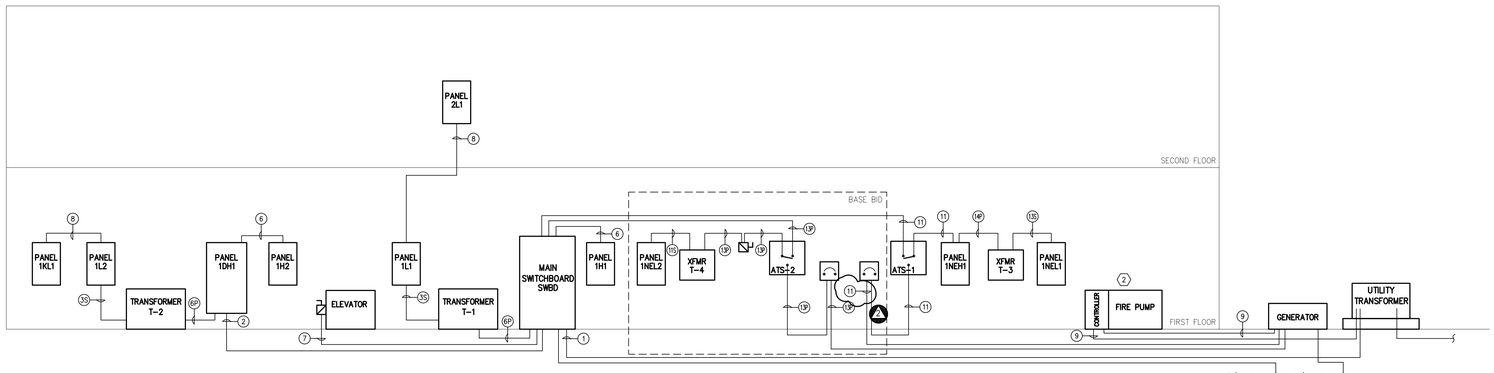
(D) AVAILABLE FAULT CURRENT: 32.802 KA
BREAKERS: SQUARE D POWERPACT H-FRAME MAIN BREAKER WITH MICROLOGIC 5.2 TRIP UNIT, TYPE HJ, 150A FRAME, 100A PLUG, TRIP SETTINGS: Ir: 50 (50A), tr: 4, Isd: 10, tsd: 0.4, I2t: OUT, Ii: 10 (1000A)

(E) AVAILABLE FAULT CURRENT: 32.802 KA
BREAKER: SQUARE D PJ POWERPACT W/ MICROLOGIC 6.0 TRIP UNIT, 1200A FRAME, 1200A SENSOR, TRIP UNIT SETTINGS: LTPU: 1.0 (1200A), LTD: 2, STPU: 6, STD: 0.2, I2t: OUT, INST: 15 (18000A)

(F) AVAILABLE FAULT CURRENT: 0.998 KA
BREAKERS: SQUARE D POWERPACT H-FRAME MAIN BREAKER WITH MICROLOGIC 5.2 TRIP UNIT, TYPE HD, 150A FRAME, 100A PLUG, TRIP SETTINGS: Ir: 50 (50A), tr: 4, Isd: 10, tsd: 0.4, I2t: OUT, Ii: 10 (1000A)

FEEDER SCHEDULE

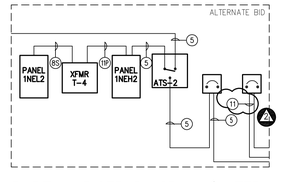
TAG	SETS	CONDUIT (PER SET)		CONDUCTORS (PER SET) PHASE			NEUTRAL			GROUND			SIZE OF OVERCURRENT PROTECTION
		SIZE	TYPE	NO.	SIZE	TYPE	NO.	SIZE	TYPE	NO.	SIZE	TYPE	
1	3	4"	PVC	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	---	---	---	1200A
2	2	3"	PVC	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	1/0AWG	CU THWN	600A
3	1	2 1/2"	EMT	3	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	4AWG	CU THWN	250A
3S	1	2 1/2"	EMT	3	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	2AWG	CU THWN	250A
4	1	2"	EMT	3	4/0AWG	CU THWN	1	4/0AWG	CU THWN	1	4AWG	CU THWN	225A
5	1	2"	EMT	3	3/0AWG	CU THWN	1	3/0AWG	CU THWN	1	6AWG	CU THWN	200A
6	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	125A
6P	1	2"	EMT	3	1/0AWG	CU THWN	---	---	---	1	6AWG	CU THWN	125A
7	1	1 1/2"	EMT/PVC	3	1AWG	CU THWN	1	1AWG	CU THWN	1	6AWG	CU THWN	110A
8	1	1 1/2"	EMT/PVC	3	1AWG	CU THWN	1	1AWG	CU THWN	1	6AWG	CU THWN	100A
8S	1	1 1/2"	EMT/PVC	3	1AWG	CU THWN	1	1AWG	CU THWN	1	6AWG	CU THWN	100A
9	1	1 1/2"	EMT/PVC	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	80A
10	1	1 1/4"	EMT/PVC	3	4AWG	CU THWN	1	4AWG	CU THWN	1	10AWG	CU THWN	60A
11	1	1"	EMT/PVC	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	50A
11P	1	1"	EMT/PVC	3	6AWG	CU THWN	---	---	---	---	---	---	50A
11S	1	1"	EMT/PVC	3	6AWG	CU THWN	1	6AWG	CU THWN	1	8AWG	CU THWN	50A
12	1	1"	EMT/PVC	3	8AWG	CU THWN	1	8AWG	CU THWN	1	10AWG	CU THWN	40A
13	1	1"	EMT/PVC	3	10AWG	CU THWN	1	10AWG	CU THWN	1	10AWG	CU THWN	30A
13P	1	1"	EMT/PVC	3	10AWG	CU THWN	---	---	---	1	10AWG	CU THWN	30A
13S	1	1"	EMT/PVC	3	10AWG	CU THWN	1	10AWG	CU THWN	1	8AWG	CU THWN	30A
14	1	3/4"	EMT/PVC	3	12AWG	CU THWN	1	12AWG	CU THWN	1	12AWG	CU THWN	15A
14P	1	3/4"	EMT/PVC	3	12AWG	CU THWN	---	---	---	1	12AWG	CU THWN	15A



RISER DIAGRAM
NOT TO SCALE

CODED NOTES: (RISER DIAGRAM)

1. GROUNDING TRIAD. REFER TO DETAIL 4/E5.1 FOR REQUIREMENTS.
2. FEEDERS TO FIRE PUMP SHALL BE ROUTED BELOW GRADE. WHERE FEEDERS CANNOT BE ROUTED BELOW BUILDING, TRANSITION CABLES TO MINERAL INSULATED (MI) CABLE AND COMPLETE ROUTING TO FIRE PUMP CONTROLLER. PROVIDE 3-#10AWG CONTROL CONDUCTORS IN 1" PVC CONDUIT FROM EMERGENCY GENERATOR TO FIRE PUMP CONTROLLER FOR START SIGNAL. ROUTE CONDUCTORS BELOW GRADE. WHERE CONTROL CONDUCTORS CANNOT BE ROUTED BELOW BUILDING, TRANSITION CABLES TO MI CABLE AND COMPLETE ROUTING TO FIRE PUMP CONTROLLER.



PARTIAL RISER DIAGRAM (ALTERNATE BID)
NOT TO SCALE

TOWER ENGINEERING
115 Evergreen Heights Drive, Suite 400
Pittsburgh, Pennsylvania 15229
Phone: (412) 931-8888
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Project Number: 2017228

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WVARNG BUCKHANNON AFRC

BUCKHANNON, WV

ELECTRICAL RISER & SINGLE-LINE DIAGRAMS

DRAWN BY: TSBOWER
PROJECT ISSUE DATE: 28 JUNE 2012
SHEET ISSUE DATE:

Drawing Revisions	
No.	Date
2	2012.08.14 ADDENDUM #2

ARCHITECT PROJECT NUMBER: 21117
ARCHITECT CAD NUMBER:

APPROVED DRAWING USE:

- ○ DESIGN DEVELOPMENT
- ○ PROGRESS _____
- ○ PERMIT ACQUISITION
- ○ FOR BIDDING
- ● CONSTRUCTION DOCUMENT
- ○

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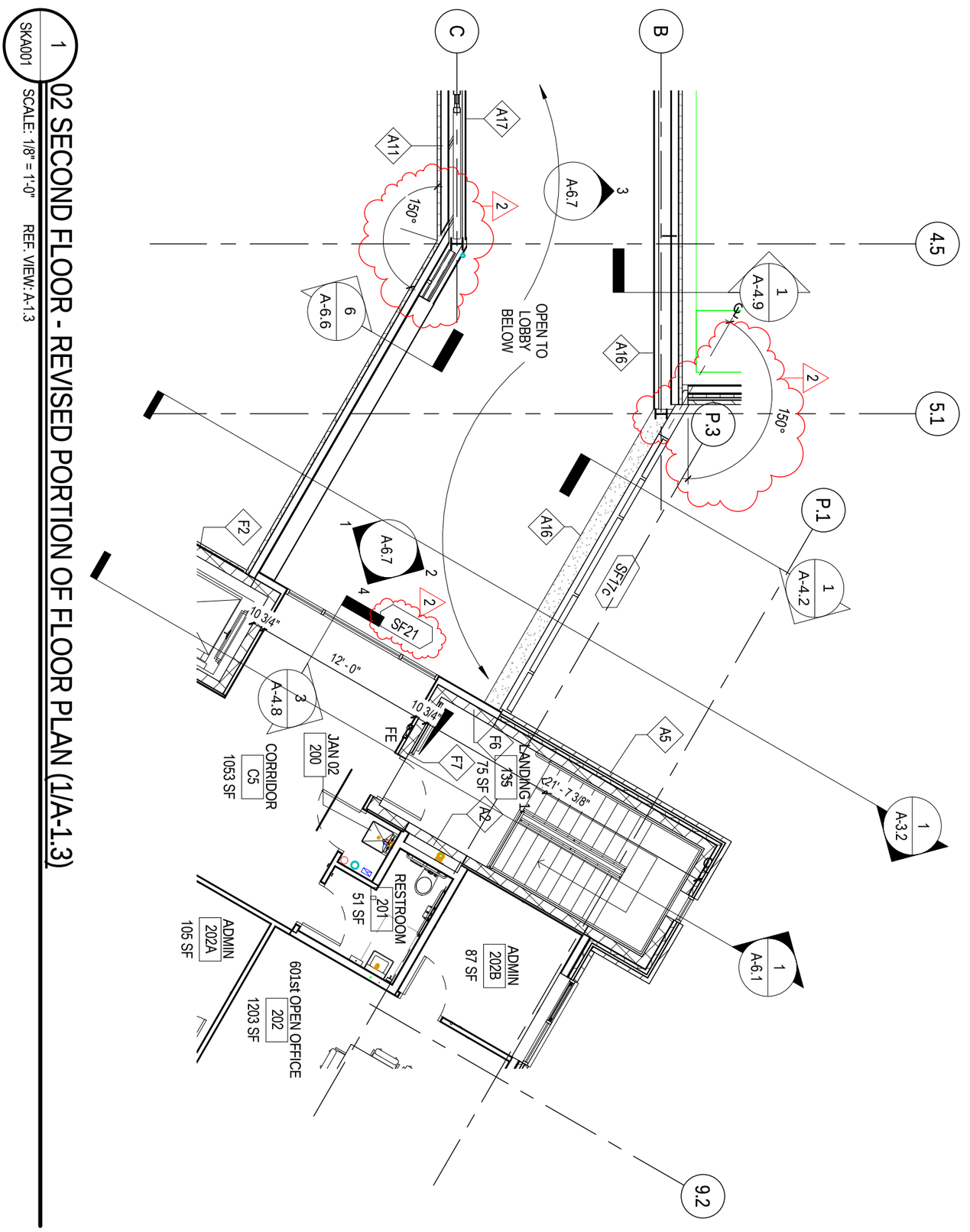
SHEET NO.

E-3.1



1 SKA001

02 SECOND FLOOR - REVISED PORTION OF FLOOR PLAN (1/A-1.3)

SCALE: 1/8" = 1'-0" REF. VIEW: A-1.3

ADDENDUM 02

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SECOND FLOOR PLAN - ADD 02 (1/A-1.3)

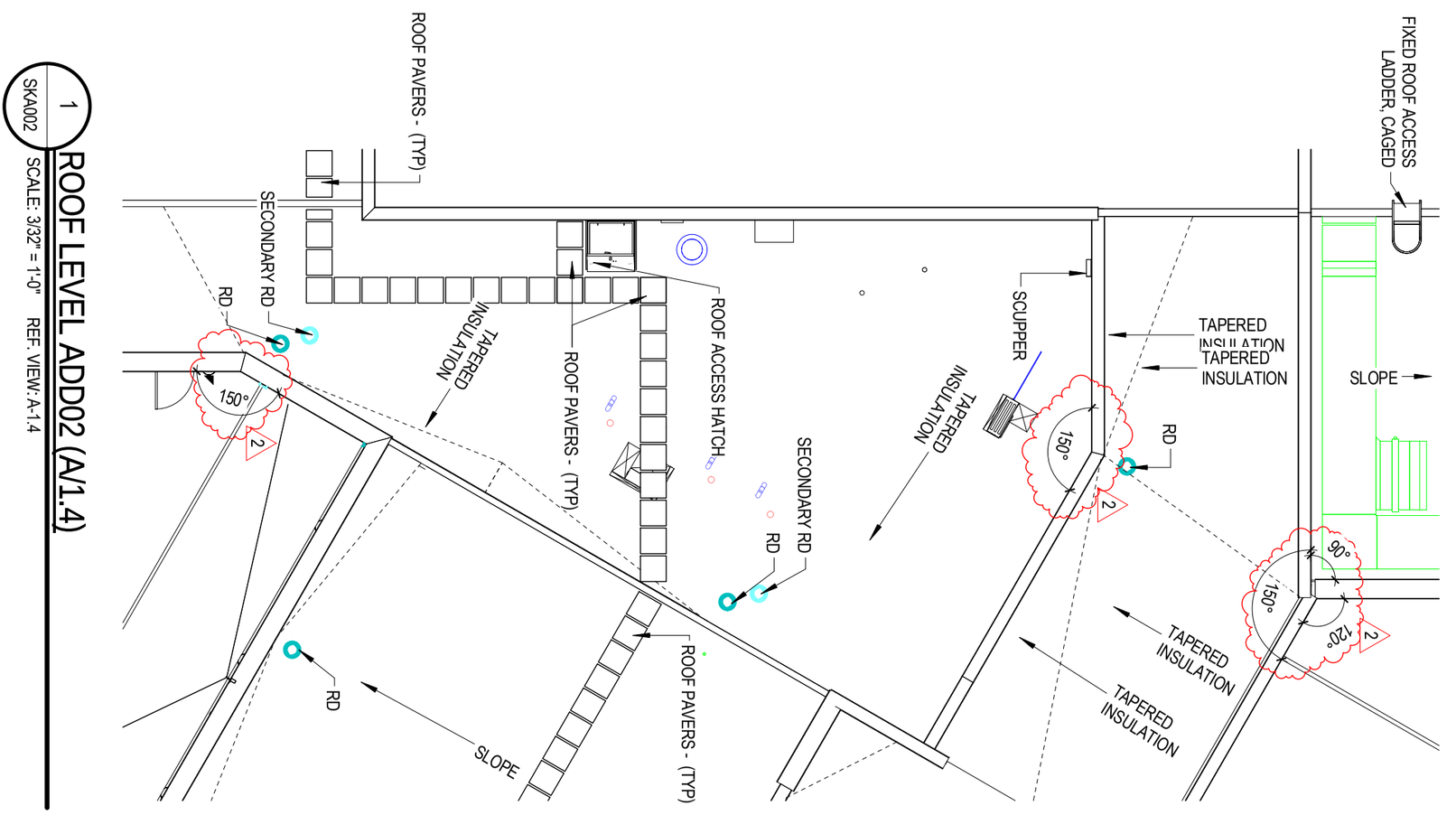
DRAWN BY: gam

ISSUE DATE: 2012 AUG 09

ARCHITECT PROJECT NO. 21117

SHEET NO.

SKA001



1 SKA002

ROOF LEVEL ADD02 (A/1.4)

SCALE: 3/32" = 1'-0" REF. VIEW: A-1.4

ADDENDUM 02

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ROOF LEVEL ADD02 (1/A-1.4)

DRAWN BY: gam

ISSUE DATE: 08/09/12

ARCHITECT PROJECT NO. 21117

SHEET NO.

SKA002

R
P.5
P.3
P.1
P
2
A-6.3
1
A-6.3
3
A-6.1
ADDENDUM 02
ISSUE DATE: 2012 AUG 09
DRAWN BY: gam
ARCHITECT PROJECT NO. 21117
SHEET NO. SKA003
ROOF LEVEL 1458' - 0"
CONFERENCE CTR ROOF 1456' - 0"
LANDING 1
135
75 SF
8' - 8 1/4"
8' - 3"
4' - 0"
9 TREADS @ 11"
5
A-6.1
SF21
CORRIDOR
C5
1053 SF
42"
T.O. GUARDRAIL
36"
T.O. HANDRAIL
CANOPY BEYOND
02 SECOND FLOOR 1444' - 0"
2
36"
T.O. HANDRAIL
5' - 10"
10 RISERS @ 7"
ELEV SHAFT
EV100
65 SF
STAIR
ST1
12"
180 SF
8' - 2"
14 RISERS @ 7"
ST1A
SUPPLY SGT
109A
100 SF
SF20
SF20
LOBBY AREA 02
100D
318 SF
5' - 0 1/4"
11' - 11"
4' - 0"
13 TREADS @ 11"
01 FIRST FLOOR 1430' - 0"
T.O. FOOTING 1428' - 0"
1
SKA003
SECTION STAIR TOWER 01 ADD02 (1/A-6.1)
SCALE: 1/4" = 1'-0"
REF. VIEW: 1/A-1.1
BUCKHANNON AFRC
WVARNG
STAIR TOWER SECTION 01 (ADD02)
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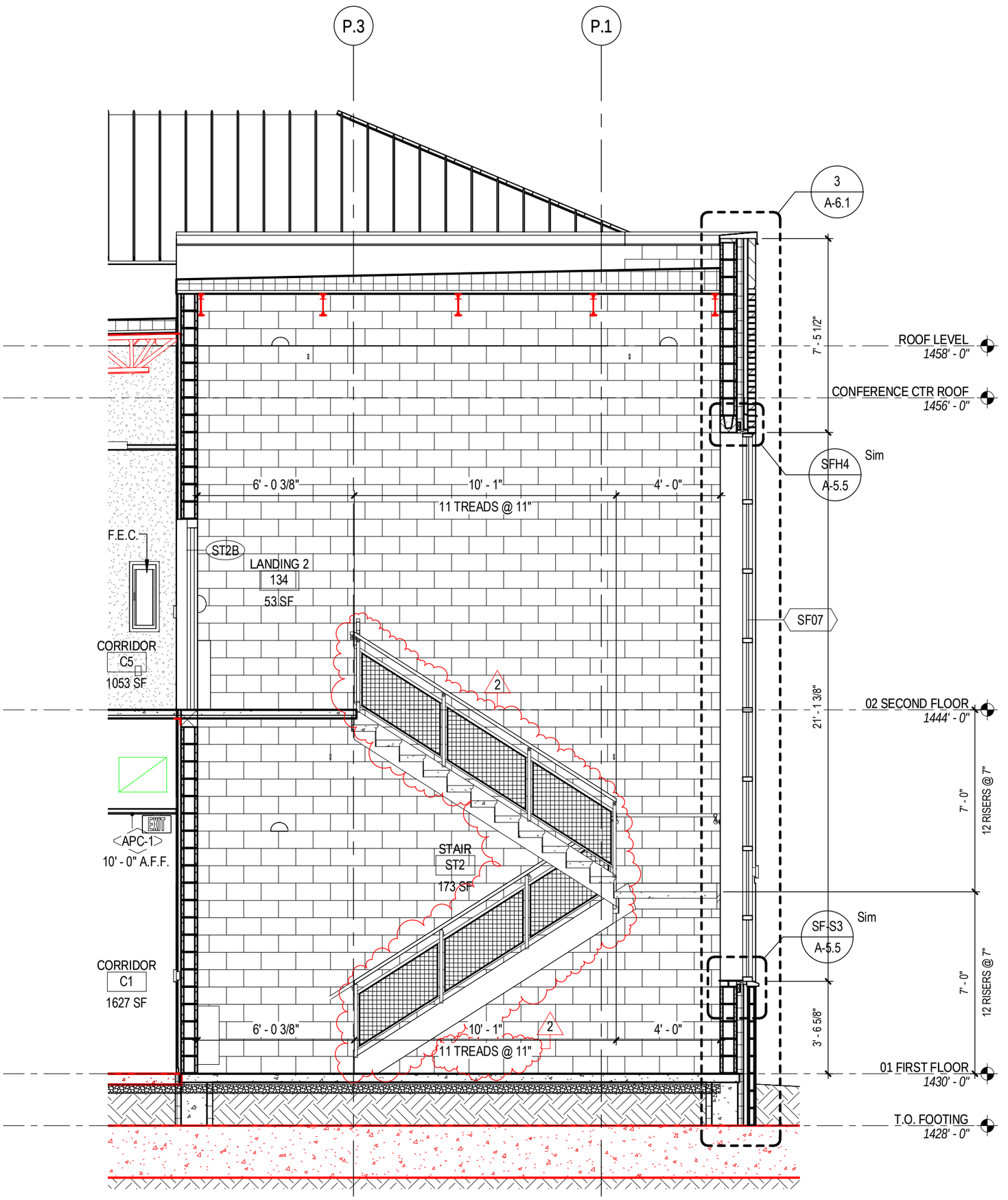

1 SKA005

SECTION STAIR TOWER 02 ADD02 (4/A-6.2)

SCALE: 1/4" = 1'-0" REF. VIEW: A-6.2

ADDENDUM 02

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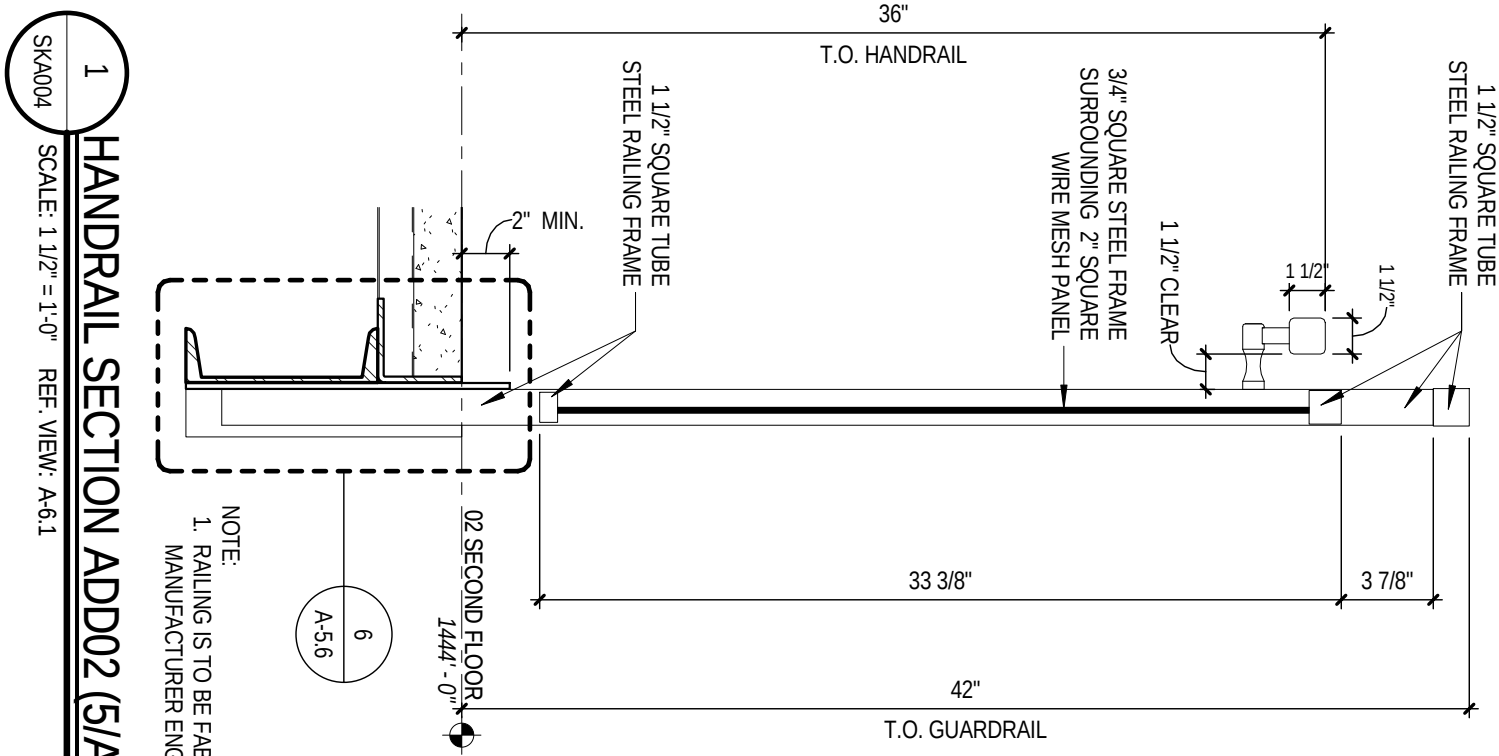
STAIR TOWER 02 SECTION ADD02 (A-6.2)

DRAWN BY: gam
ISSUE DATE: 2012 AUG 09
ARCHITECT PROJECT NO. 21117

SHEET NO. SKA005



1 SKA004

HANDRAIL SECTION ADD02 (5/A-6.1)

SCALE: 1 1/2" = 1'-0" REF. VIEW: A-6.1

ADDENDUM 02

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AFRC

HANDRAIL SECTION ADD02 (5/A-6.1)

DRAWN BY: gam
PROJECT #: 21117
DATE: 2012 AUG 09

SKA004

Appendix G

1. Notes for constructing the Arms Vault Rooms 109C and 114C.

a. Walls. Walls will be of 8 inches of concrete reinforced with No. 4 reinforcing bars at 9 inches on center in each direction in each face of the wall. Reinforcement in the two faces of the wall will be staggered on each face to form a projected grid approximately 4-1/2 inches square. Reinforcement in the walls will be tied into floors and ceilings in accordance with American Concrete Institute standards.

b. Ceiling and roofs. Ceilings and roofs will be of reinforced concrete construction. The thinnest portion may not be less than 6 inches. Reinforcing bar spacing will form a grid so that the area of any opening does not exceed 96 square inches using No. 4 bars or larger.

c. Floors. Floors, of on grade, will be a minimum of 6-inch thick reinforced concrete construction reinforced with 6 inches by 6 inches, W4 by W4 welded wire fabric or equivalent steel reinforcing bars (based on area of steel per square foot). Where the floor slab acts as the ceiling of an underlying room or area, the ceiling standards will apply. Where equivalent steel reinforcing bars are used, bar spacing will form a grid so that the area of any opening does not exceed 96 square inches.

d. Doors and door frames. The door will be GSA approved Class 5 armory door per GSA Fed Spec AA-D-600D(4). A GSA approved Class 5 vault door is not encouraged due to its electromechanical lock. Double door protection for arms storage facilities is not required. Door frames will be per Fed Spec AA-D-600D(4).

e. Windows and other openings. Windows are not authorized. Ducts, vents, and other openings of 96 square inches or more with the least dimension greater than 6 inches will be secured in accordance with one of the following methods and otherwise limited to the minimum number and size that are essential:

(1) Sealed with material comparable to that forming the adjacent walls.

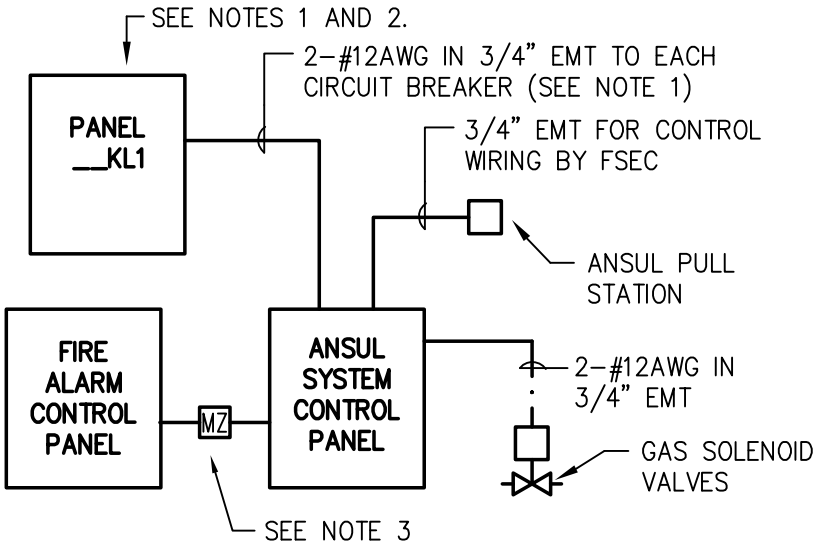
(2) Fitted with any of the barriers below with bars or steel mesh securely embedded in the structure of the building or welded to a steel frame that will be securely attached to the wall with fastenings inaccessible from the exterior of arms storage facility.

(a) Three-eighth inch or larger hardened steel bars with vertical bars not more than 4 inches apart and with horizontal bars welded to the vertical bars so that the openings do not exceed 32 square inches.

(b) A minimum of 8-gauge high carbon manganese steel mesh with 2-inch diamond grid.

(c) A 6-gauge cold drawn steel wire mesh with 2-inch diamond grid when 8-gauge mesh above is not available.

APPENDIX G TO BE COORDINATED BETWEEN SHEETS S-2.2, A-6.4, H-1.4 & H-3.2

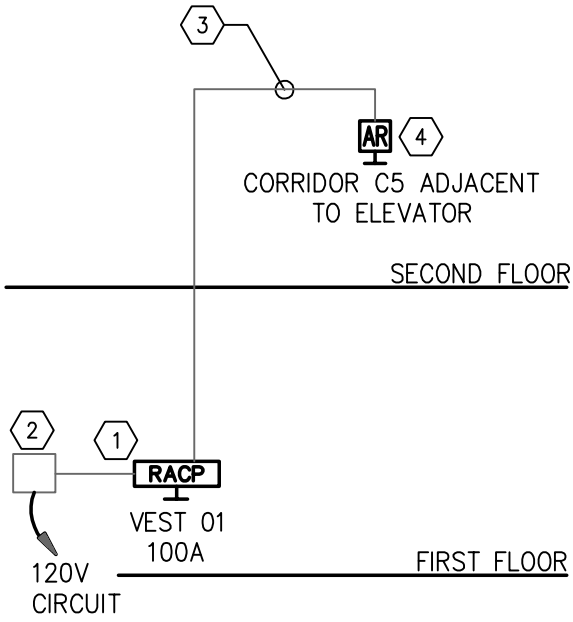


NOTES:

1. PROVIDE SHUNT TRIP BREAKERS FOR ALL ITEMS UNDER HOODS.
2. CONNECT TO SHUNT TRIP CIRCUIT BREAKERS IN PANELBOARD(S) __KL1.
3. PROVIDE ADDRESSABLE MONITORING MODULE FOR EACH ANSUL SYSTEM CONTROL PANEL FOR CONNECTION TO BUILDING FIRE ALARM SYSTEM.

10/E5.1 ANSUL SYSTEM INTERCONNECT WIRING DIAGRAM

NOT TO SCALE



CODED NOTES: (AREA OF REFUGE RISER)

1. AREA OF REFUGE ANNUNCIATOR WITH 4-ZONES AS SHOWN FOR CALL STATIONS - CORNELL MODEL NO. A4228 OR APPROVED EQUIVALENT. MOUNT 48" AFF TO TOP OF BOX. FACTORY SHALL LABEL EACH ZONE AS DESCRIBED ON THIS RISER. RECESS ANNUNCIATOR IN WALL. PROVIDE ANNUNCIATOR WITH TELEPHONE ACCESS KIT, TAK4200 OR EQUAL, FOR AUTO-DIALER FUNCTIONALITY.
2. BATTERY BACK-UP / POWER SUPPLY FOR AREA OF REFUGE ANNUNCIATOR CORNELL MODEL NO. C5243 OR APPROVED EQUIVALENT. SURFACE MOUNT ABOVE THE FINISHED CEILING IN VESTIBULE. PROVIDE 18AWG, 2 CONDUCTOR WIRING BETWEEN BATTERY BACK-UP AND ANNUNCIATOR AND CONCEAL WIRING IN WALL.
3. WIRING FROM AREA OF REFUGE CALL STATION TO ANNUNCIATOR SHALL BE 22AWG, 4 CONDUCTOR PLENUM RATED WIRING IN 3/4". ROUTE WIRING CONCEALED.
4. AREA OF REFUGE CALL STATION WITH INSTRUCTIONS FOR USE OF COMMUNICATOR - CORNELL MODEL NO. 4201B OR APPROVED EQUIVALENT, MOUNT 48" AFF TO TOP OF BOX. RECESS CALL STATION IN WALL.

11/E5.1 AREA OF REFUGE RISER DIAGRAM

NOT TO SCALE

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DETAILS 10/E-5.1 AND 11/E-5.1

SKE-E-5.1

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PROJECT NO. 21117
ISSUE DATE: 08/14/12