PROJECT MANUAL
FOR
WELD COUNTY
CRIME LAB STORAGE BUILDING
2329 115TH AVENUE
GREELEY, COLORADO

OWNER
WELD COUNTY COLORADO

OWNERS REPRESENTATIVE
TOBY TAYLOR
1111 H STREET
GREELEY, COLORADO 80631
PH (970) 304-6531

ARCHITECT
ROBERT SHREVE ARCHITECTS & PLANNER, INC
801 8TH STREET, SUITE 120
GREELEY, COLORADO 80631
PH. (970) 346-0151
FAX (970) 352-8761
rsapinc@aol.com
BOB SHREVE

STRUCTURAL ENGINEERS
GALLOWAY & COMPANY, INC
6162 SOUTH WILLOW DRIVE, SUITE 320
GREENWOOD VILLAGE, COLORADO 80111

MECHANICAL ENGINEERS & ELECTRICAL ENGINEERS
G2, CONSULTING ENGINEERS INC
1039 MAIN STREET, UNIT G
WINDSOR, COLORADO 80550

ARCHITECT PROJECT NUMBER 1924
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Weld County
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SECTION 02200 - EARTHWORK

Site Information - The General Contractor and sub contractors shall be held to have examined the site, to ascertain the state thereof and the conditions under which the work is to be done. The drawings indicate the physical dimensions and general topography of the site, but do not show the extent of all obstructions and subsurface conditions. Contractor may perform soil and subsurface investigations, including borings and other exploratory actions, if necessary, to determine questionable conditions, as approved by the A-E. Weld County has requested and Northern Colorado Geotech has completed a soils investigation report titled:

GEOTECHNICAL ENGINEERING REPORT,
PROPOSED ADDITION
2329 115TH AVENUE
Greeley, COLORADO

Project no. 203-19
January 20, 2020

The Contractor, at his option and without additional cost to the Owner, may take borings and other exploratory actions to further determine conditions of the site and to provide for construction specified herein. It is expressly understood that Contractor assumes full responsibility for interpreting boring data and for the conclusions he draws from the information furnished him and from his inspection of the site and of available information.

Before commencing work, obtain information concerning location, type, and extent of concealed existing utilities on the site and adjacent properties. Consult records and personnel of local utility companies, municipal utility departments and Telephone Company, and request field locates on all affected utility lines at least 2 working days prior to commencement of excavation. Repair damages to utilities at no additional cost to the Owner.

Excavation - Perform excavation with suitable equipment to dimensions and elevations indicated. Excavation includes removal and disposition of all materials excavated regardless of the nature of materials encountered. Report to the A-E any unsuitable materials or unforeseen obstructions encountered during the excavation for proper disposition. Stockpile approved native material for use as structural fill or backfill as specified. Dispose of unsuitable and excess suitable materials off the site. Make excavations for footings, foundations, and similar work of adequate size to allow for placing, inspection and removal of forms, installation of services, and observation of the work. The forming of the sides of footings and foundations and/or the depositing of concrete directly against vertical earth faces is prohibited. The soils engineer or A-E
representative must be allowed to inspect all foundation material after excavation and before pouring of footings. They reserve the right to make adjustments to the foundations as deemed necessary. Contractor shall notify the A-E 48 hours before excavation is ready for inspection.

**Backfilling** - Do not begin backfilling until forms and shoring have been removed, construction below grade has been approved by the soils engineer or A-E; underground utility systems have been inspected, tested and have met specified requirements and trash and debris have been cleaned from the excavation. All material used for backfilling shall be obtained from excavation or imported from an approved borrow site. Material shall be free from expansive material, perishable matter, debris, frozen material, stones and cemented pieces larger than 4". Material shall be capable of being compacted to the specified density. Place backfill in 8" maximum loose layers for the full width of cross-section. Do not place fill or backfill on frozen or muddy subgrade. Do not settle backfill by puddling or allow excessive moisture around foundations at any time.

**Density Control and Testing** - Thoroughly compact each layer of structural fill or backfill for granular soils to at least 95% of the standard Proctor maximum dry density as determined by testing in accordance with ASTM D698, method as appropriate, with moisture content at -3% to +3% from optimum. Material under slabs on grade, walks, and pavements shall be tested to determine if the material has been compacted to the 95% standard Proctor density. Non-structural fill in grassed or landscaped areas shall be compacted to 90% of standard Proctor density.

Test for indicated densities in accordance with ASTM D1556 utilizing a 4" or 6" sand cone, or ASTM D2922 or D3017 with nuclear devices and methods, for each lift. Locations to be spaced to test areas of 400 square feet or less for slabs on grade, each 2,000 square feet or less for pavements and walks, and each 5,000 square feet or less for all other areas. Finished grades shall conform to drawings within a tolerance of 0.05 foot for buildings, 0.10 foot for pavements and walks, and 0.20 foot for grassed areas.

*End of Section*
SECTION 03290 - SITWORK CONCRETE

PART I - GENERAL

DESCRIPTION OF WORK

Work of this Section shall consist of furnishing and placing natural or tinted Portland cement concrete associated with the sitework shown on the drawings. This section includes, but is not necessarily limited walks, curbs and pads.

RELATED WORK SPECIFIED ELSEWHERE

Section 1400 Construction Testing
Section 3100 Concrete Formwork
Section 3200 Concrete Reinforcement

REFERENCE STANDARD

Sitework concrete placements shall conform with the applicable requirements of ACI 301-96 “Standard Specification for Structural Concrete” and ACI 302.1R-89, “Guide for Concrete Floor and Slab Construction.”

SUBMITTALS

Submit the following for approval:

Design Mixture  Contractor shall submit the proposed concrete design mixture per the requirements of ACI 301-96, Section 4.2. Include integral color for tinting if required.
Joint Placement Design  Unless indicated by the drawings, provide drawings indicating placement of isolation, expansion, contraction, control and construction joints on all concrete.
Product Data  Provide product samples and data sheets for all joint materials and curing/sealer compound.

QUALITY ASSURANCE

Construction tolerances, used as a basis of acceptance, shall conform to the requirements of ACI 117 - “Standard Tolerances for Concrete Construction and Materials” and shall meet the following minimum levels of acceptance:

1) Variations from level or from the grades indicated on the drawings in floors or slabs shall be 1/4 inch in 10’.
2) Variation in thickness of slabs and walls:  (minus) -1/4 inch, (plus) +1/2 inch
3) Variation in longitudinal or transverse slope:  + .003/ft, of what is indicated on the drawings.
4) Variation on established spot elevations:  + 0.05 ft., of what is indicated on the drawings.
Concrete work that exhibits excessive surface undulations, water entrapment, uneven surface color and/or texture, poor finish quality, or obvious structural failure such as freezing, surface spalling or excessive cracking, shall be removed and replaced at the Contractor’s expense.

**INSPECTION**

The contractor shall schedule concrete pours a minimum of 24 hours prior to placement. Unapproved concrete pours may result in the removal and replacement of concrete at the Contractor’s expense.

**TESTING**

See Section 01410 - Concrete Testing

**PART II - PRODUCTS**

**Concrete Materials**

- **Portland Cement:** Type II, ASTM C150.
- **Strength:** CDOT Class D Mix 4500 psi per minimum for all site work concrete.
- **Admixtures:** Air entrainment shall be 5% to 8%. Admixtures shall conform to ASTM C260.
- **Course Aggregate**
  - Aggregate shall be hard, durable, uncoated crushed stone or gravel conforming to ASTM C33. Maximum size aggregate shall be 1” total deleterious substances shall not exceed 1% of the aggregate by weight.
- **Slump**
  - 3” to 5” for formed construction, 3” to 5” for slabs and flatwork.
- **Water-Cement Ratio**
  - Maximum water-cement ratio for air-entrained shall be 0.44%.
- **Curing Compounds/Sealer**
  - Curing compounds/sealers shall be of the liquid membrane type, conforming to ASTM C309, Type 1 for all structure construction and repair. Use Sonneborn’s “Kure-N-Seal 0800,” hardener-sealer.
  - Follow mfg. Instructions

- **Expansion Joints**
  - ASTM D1752, Type II or Type III x 1/2” thick for concrete stoops, entry slabs, walks or curbs use a nonsag polyurethane caulking conforming to ASTM C920 and closed cell backer rod in diameters to tightly fill joint.

- **Bond Breaker**
  - ASTM D226 30 pound asphalt saturated felt extending full depth of the slab.

**PART III - EXECUTION**

RSAP C615
Union Colony Preparatory School
Remodel and Additions

03290-2
Placing Concrete
Prior to concrete placement, construct to the requirements of the drawings, excavations, formwork, reinforcement, and compacted aggregate subgrade placements to a 95% of maximum density as determined by AASHTO T180. Transport concrete from mixer to final position using a method which will prevent separation or loss of material. Maximum height of concrete free fall is 5’. Regulate rate of placement to insure concrete remains in a plastic state and flows into position. Deposit concrete in a continuous operation until section is completed.

Consolidating Concrete
Use mechanical vibrating equipment for consolidation. Do not use vibrators to transport concrete in forms. Vibrate concrete the minimum amount required for consolidation.

Patching Formed Surfaces of New Concrete
After the forms have been removed, all concrete surfaces shall be inspected and any joints, voids, stone pockets or other defective areas shall be patched before the concrete is thoroughly dry. Defective areas affect the structural integrity of the concrete placement shall be removed to the nearest construction joint and replaced at no cost to the owner. Defective areas which are superficial in nature shall be chipped away to a depth of not less than 1” with the edges perpendicular to the surface. Patching shall be completed with an approved mortar mixture. The area to be patched, and a space at least 6” wide entirely surrounding it, shall be wetted to prevent absorption of water from the patching mortar.

Finishing
All unformed flat surfaces (slabs) which are not permanently exposed to view or used as walkways shall be float finished. Immediately after the horizontal surface has been struck off to the required grade, the surface shall be hand finished to smooth and even surfaces by both longitudinal and transverse movement of wooden floats. After floating, but before hardening or curing, the surface shall be checked for trueness with a 10-foot straightedge and repairs made as necessary. All flatwork which is permanently exposed to weather and view shall be troweled to a smooth finish and receive a medium broom texture.

PROTECTION AND CURING

General
Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures and shall be maintained without drying at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete.

Initial Curing
Concrete shall be kept continuously moist at least overnight. One of the following materials or methods shall be used:
ponding or continuous sprinkling;
absorptive mat;
fabric or other covering kept continuously wet;
curing compound/sealers conforming to ASTM C390;

Such compounds shall be applied in accordance with the recommendations of the manufacturer and shall not be used on any surfaces against which additional concrete or other cementitious finishing materials are to be bonded, nor on surfaces on which such curing is prohibited by the project specifications.

Final Curing
Immediately following the initial curing and before the concrete has dried, additional curing shall be accomplished by one of the following methods or materials:
- continuing the method used in initial curing,
- waterproof paper conforming to ASTM C171,
- other moisture retaining coverings as approved.

Formed surfaces shall be final cured using waterproof sheets, tightly sealed, or a spray applied membrane curing compound/sealer as soon as forms are removed.

The final curing shall continue until the cumulative number of days or fractions thereof, not necessarily consecutive, during which temperature of the air in contact with the concrete is above 50 F. has totaled seven (7) days. If high early strength concrete has been used, the final curing shall continue for a total of three (3) days. Rapid drying shall be prevented.

Formed Surfaces
All wood forms in contact with the concrete during the final curing period shall be kept wet. If forms are to be removed during the curing period, one of the above curing methods or materials shall be employed immediately. Such curing shall be continued for the remainder of the curing period.

Sealer
Apply coatings of the curing compound/sealer to finished surfaces in strict accordance with manufacturer’s instructions.

Cold-Weather Temperature
When the mean daily temperature of the atmosphere is less than 40° F., the temperature of the concrete shall be maintained between 50° and 70° for the required curing period. When necessary, arrangements for heating, covering or insulating shall be made in advance of placement and shall be adequate to maintain the required temperature and moisture conditions without injury due to concentration of heat. Addition of calcium chloride shall not be permitted.

Contraction/Control Joints
Contraction/control joints shall be cut to a depth of at least 1” and shall be located as shown on drawings with a maximum 8’ on centers on sidewalks and
not less than every 80 sq. ft. on slabs. Contraction/control or score joints may be tooled or sawn. Joint sawing shall be timed properly with the setting of the concrete. Cutting shall be started as soon as the concrete has hardened sufficiently to prevent aggregates from being dislodged by the saw, and shall be completed before shrinkage stresses have developed sufficiently to induce cracking.

Construction joints shall be formed as indicated on the drawings. Dowels and keys shall be used where indicated or required.

Clean-Up
All concrete surfaces will be thoroughly cleaned prior to final acceptance. Concrete splatters shall be removed from adjacent surfaces and if necessary stoned from concrete surfaces. Completed concrete surfaces shall be washed

END OF SECTION
DIVISION 4 - MASONRY

SECTION 04200 – MASONRY

PRODUCT DELIVERY, STORAGE AND HANDLING
Deliver materials to the site in ample time to facilitate inspection and tests, give 24 hours notice prior to inspections required. Masonry materials shall be stored on platforms or pallets and be stored under cover in a dry place. Protect steel materials from moisture and keep free of loose scale and rust. Handle masonry materials carefully to avoid chipping, breakage or contact with soil or contaminating material.

ENVIRONMENTAL REQUIREMENTS
Hot Weather Conditions - Protect all masonry construction from direct exposure to wind and sun for 48 hours after installation when erected in an ambient air temperature of 99°F (37°C) in the shade with relative humidity less than 50%.

Cold Weather Conditions - Before erecting masonry during temperatures below 40°F (4°C), submit a written statement and receive approval on methods proposed to be used to heat masonry materials and protect masonry from freezing as required hereafter.

Keep masonry units completely covered and free of frost, ice and snow at all times, maintain a minimum temperature of 30° (-1°C) when laid. Maintain temperature of mortar and grout between 70°F (21°C) and 110°F (43°C). Do not exceed 160°F (71°C) temperature of mixing water or of water and sand introduced to cement. Maintain air temperature on both sides of masonry above 40°F (4°C) for at least 72 hours, 48 hours if high-early-strength cement is used in the mortar in lieu of portland cement or masonry cement. Do not build upon frozen work. Do not lay masonry at temperatures below 10°F (-23°C) unless authorized in writing.

Materials

Concrete Masonry Units (CMU-1)
Type Colored concrete masonry unit with single mortar groove in locations as noted on drawings (to match existing)
Hollow Units ASTM C90, Type I, Grade N-I or S-I
Aggregates ASTM C331, standard weight
Sizes Nominal 4” x 16” face dimensions and 4” width
Appearance Units schedule to be exposed to-view shall have a dense exposed surface, free of cracks, chips or deleterious matter.
Color Exterior units will have integral color, (Tan- Basalite 5609)
Concrete Masonry Units (CMU-2) M

**Type**  
Colored concrete masonry unit with single mortar groove in the exterior wall of the garage.

**Hollow Units**  
ASTM C90, Grade N-1 or S-1

**Aggregates**  
ASTM C331, standard weight

**Sizes**  
Standard 8” H x 8” W x 16” L

**Special Shapes**  
Provide closer, header, lintel, bond beam units, and special sizes as required for a complete installation

**Color**  
Exterior units will have integral color, (Tan- Basalite 5609)

Concrete Masonry Units (CMU-3)

**Interior walls**  
To be painted

**Type**  
Lightweight units

**Hollow Units**  
ASTM C90, Grade N-1 or S-1

**Solid Units**  
ASTM C145, Grade N-1 or S-1

**Aggregates**  
ASTM C331, lightweight

**Sizes**  
Standard 8”H x 4”W x 16”L, 8”H x 6”W x 16”L and 8”H x 8”W x 16”L units as indicated.

**Corners**  
Provide bullnose units of 1” radius for exposed outside corners of interior walls

**Special Shapes**  
Provide closer, header, lintel, bond beam units, and special sizes as required for a complete installation

**Color**  
Standard gray.

Concrete Masonry Units (CMU-4) to be used in Vault Wall

**Interior wall**  
To be painted

**Type**  
Normal weight units

**Hollow Units**  
ASTM C90, Grade N-1 or S-1

**Solid Units**  
ASTM C145, Grade N-1 or S-1CPCC

**Aggregates**  
ASTM C331, lightweight

**Sizes**  
Standard 8”H x 4”x 16”L, 8”H x 8”x 16”L and 8”H x 12”W x 16”L units as indicated.

**Corners**  
Provide bullnose units of 1” radius for exposed outside corners of interior walls

**Special Shapes**  
Provide closer, header, lintel, bond beam units, and special sizes as required for a complete installation

**Color**  
Standard gray.

Concrete Masonry Units (CMU-5)

**Type**  
Colored concrete masonry unit, color band at elevation 7’4”

**Hollow Units**  
ASTM C90, Grade N-1 or S-1

**Aggregates**  
ASTM C331, standard weight

**Sizes**  
Standard 8” H x 8” W x 16”L, 8”H x 4”x 16” L

**Color**  
Exterior units will have integral color, (Dark Red- Basalite 866) To match existing color band
Mortar and grout materials

- **Portland Cement**: ASTM C150, Type I or II
- **Blended Hydraulic Cement**: ASTM C595, Type IS, IP or S
- **Masonry Cement**: ASTM C91
- **Hydrated Lime Aggregates**: ASTM C207, Type S
- **Sand**: ASTM C144
- **Coarse for Grout**: ASTM C404, Size No. 8
- **Water**: Clear, clean and potable
- **Mortar Color**: tan/gray to match block, as selected from standard samples by the owner’s representative.

Mortar and grout mixes

- **Mortar mixes** - Conform to ASTM C270, and the following:
  - **Type “S” Mortar**, for all concrete masonry units
    - 1-part Portland Cement, 1/4 to ½ part hydrated lime, 2 ¾ to 4 ½ parts damp, loose sand, minimum compressive strength of 2000 psi
  - OR
  - ½ part Portland Cement, 1-part masonry cement, 3 3/8 to 4 ½ parts damp, loose sand

- **Masonry Grout Mix** - Conform to ASTM C476 and the following for Coarse Grout:
  - 1-part Portland Cement, 0 to 1/10 part hydrated lime, 2 ¼ to 3 parts damp, loose sand, 1 to 2 parts coarse aggregate. Meet physical requirements for grout as specified in ASTM C476.

Mixing Mortar and Grout - Mix mortars and grouts for at least three minutes in a mechanical batch mixer with the maximum amount of water consistent with workability. Retempering with water is permitted to provide better workability. Use mortar within 2 ½ hours after mixing. Accurately measure ingredients of each batch in accordance with mortar proportions. Mortar of uniform color and consistency is required.

Reinforcing

- **Reinforcing Bars and Rods**
  - **Conformance**: ASTM A615 or A616, Grade 60 (60,000 psi)
  - **Sizes**: As indicated on drawings or specified
  - **Joint Reinforcement**
    - **Type**: Truss or ladder type, factory fabricated
    - **Manufacturers**: AA Wire Products Co., Dur-O-Wall, or Lox-All
    - **Material**: ASTM A82, cold drawn wire
    - **Side Rods**: No. 9 gage galvanized deformed wire
    - **Cross Rods**: No. 9 gage galvanized wire
    - **Design**: Two or more parallel longitudinal side rods electrically welded to truss or cross rods in a single plane at 16" max. intervals to form a truss or ladder design
    - **Side Rod Spacing**: 2" less than nominal masonry wall thickness
    - **Intersections**: Factory-fabricated corner
Perimeter Insulation
See Division 7

Flashings
See Division 7

Masonry Sealer
Sherwin Williams Company HB-150 Water Repellant, (HB-15%) formulated with an oligomeric polysiloxane which reacts into a silicon resin upon evaporation of its solvents to form a barrier to moisture vapor transmission and to repel exterior water or approved equal. Apply with a low-pressure airless sprayer working from the bottom up with an 8” to 10” overlap. All exposed exterior masonry walls to receive two coats.
(Also shown in Division 9)

Testing - Perform following tests by an independent testing laboratory approved by the A-E at no additional cost to the Owner. Submit test results to the A-E.

- Concrete Masonry Units  ASTM C426
- Mortar  ASTM C270

Laboratory test results performed by an independent testing laboratory within the past 6 months may suffice in lieu of above tests provided results are in conformance with specification requirements and manufacturer certifies that test results pertain to materials furnished to the Contractor.

Tolerances - Conform to following tolerance limits:
Variation from plumb: Not to exceed 1/4” in 10 feet or 3/8” in 20 feet.
Variations of the linear building lines: Not to exceed 1/2” in 20 feet or 3/4” in 40 feet or more.

Installation - Lay all concrete block in running bond, true and plumb, except where otherwise indicated (soldier courses and corbelling are as indicated on drawings). Single mortar grooved concrete block lay with stack bond. Finish joints with tooled concave configuration at exposed joints, flush struck joints where concealed. Build masonry to hollow metal frames, set anchors in regular masonry joints, fill hollow metal frames solid with mortar or grout. Provide a minimum of 2 - #4 rebar in lintels and bond beams; 1 - #5 at jambs, corners, intersections, wall ends and at 32” o.c. Fill all cells containing reinforcement, anchor bolts or other embedded items with grout in lifts of 4’-0” maximum. Place joint reinforcement in second bed joint of all masonry walls and at 16” o.c. thereafter, lap splices 6”. Place joint reinforcement in first and second bed joints over openings, extend 24” beyond jambs. Space corrugated ties at 16” o.c. vertically at abutting masonry walls.

Reinforcement - Place joint reinforcement in the second bed joint of all masonry walls, and in every second horizontal joint (16” o.c.) thereafter. In addition, place reinforcement in first and second bed joints (8” apart) over openings and below sills. Extend reinforcement at all openings 24” beyond jambs. Place reinforcement so that longitudinal wires are centered on wall or wythe and are fully embedded in mortar for entire length. Lap side rods at least 6” at splices. Install factory-fabricated sections at corners and wall intersections.
Place reinforcing bars as indicated on drawings. Where not indicated, place a minimum of 2-#4 bars in each bond beam or lintel, and a minimum of one #4 bar at all jambs, corners, intersections and wall ends. Unless otherwise noted 8" load bearing wall shall have #5 @32" O.C. in center of wall with cell grouted full. Lap reinforcing bars 30 bar diameters or 15", whichever is greater, at all splices. Maintain a minimum of 1/2" between reinforcement and interior faces of units. Fill all cells containing reinforcement solid with mortar, grout, or concrete.

**Built-In-Work** - Consult other trades in advance and make provisions for installation of their work as the work progresses to avoid cutting and patching. Build in all bolts, anchors, steel lintels, sleeves thru wall vents, flashing, conduit, outlet boxes, and other items indicated to be built in. Fill cells receiving bolts, anchors, and similar items solid with mortar, grout or concrete.

**Hollow Metal Frames** - Build masonry to hollow metal frames. Set anchors in regular joints. Fill frames solid with mortar or grout as the work progresses. Do not disturb position of frames. Rake joints between masonry and frames 1/4" minimum.

**Masonry Unit Lintels** - When masonry lintels are indicated or scheduled provide reinforced concrete masonry unit lintels over square head openings. Reinforce lintels with reinforcing as indicated or scheduled, and fill units with concrete. Match adjacent units in face texture. Provide 8" minimum bearing at ends. Cure lintels for a minimum of 7 days or until testing of concrete cylinders indicates that concrete fill has attained a minimum compressive strength of 3,000 psi.

**Control Joints** - Provide control joints where indicated on drawings not to exceed 32'-0". Rake out mortar at control joints to 3/4" inside and outside and install backstop and exterior joint sealant at both faces as specified in Section 7900.

**Protection** - At end of each day or shutdown period, protect all exposed walls by covering with a strong waterproof membrane, extending at least 2 feet down each side of wall and secured in place.

**Unfinished Work** - When joining fresh masonry to partially or fully set masonry, remove loose mortar and thoroughly clean and roughen exposed joint. Dampen brick surfaces as required after cleaning to obtain the best possible bond with new work.

**Pointing** - Completely remove mortar from masonry to be exposed or painted before setting or hardening. Mortar smears will not be allowed on finished work. Before completion of work, cut out defective joints to a depth of 3/4", fill with mortar, and tool to match existing joints.

**Cleaning and Sealing** - Dry brush thoroughly at end of each day's work and after any required pointing. Avoid brush damage to mortar joints. For difficult stains, clean surface with a cleaning agent recommended by the manufacturer in strict accordance with printed instructions of the cleaning agent manufacturer or use muriatic acid in parts of 1 to 9. Use clean non-metallic containers. Presoak wall with clean water. Flush off all loose mortar.
and dirt, keep wall wet until cleaning solution is applied. Clean a small area at a time. Scrub wall thoroughly with cleaning agent and a stiff fiber brush, and rinse thoroughly with clean water before wall has a chance to dry. After cleaning, apply one coat of Masonry Sealer in strict accordance with the sealer manufacturer's printed application instructions. See Painting Section 9900. Masonry sealer to be applied two coats to exterior of CMU exposed to weather and one coat interior surface of exterior walls. Add#1.

End of Section
DIVISION 5 - METALS

SECTION 05100 - STRUCTURAL AND MISCELLANEOUS STEEL

Materials
- Structural Shapes: ASTM A36, shapes, angles, plates and bars of sizes indicated or required
- Structural Tubing: ASTM A500, Grade B, sizes and thickness as indicated
- Steel Pipe: ASTM A53, Type S, Grade B, standard weight, sizes as indicated
- Fasteners: Anchor and Common Bolts: ASTM A307, Grade A
  High strength bolts, nuts and washers: ASTM A325
  Plain Washers: ANSI B18.22.1
  Expansion Shields: Fed. Spec. FF-S-325
  Toggle Bolts: Fed. Spec. FF-B-588
- Filler Metals for Welding: Shielded Metal-Arc Welding: AWS A5.1 or A5.5
  Submerged Arc Welding: AWS A5.17
- Metal Primer: Tnemec 99 Rust-Inhibitive Metal Primer or similar, compatible with finish paint specified

Miscellaneous steel items include but not limited to deck angles at all second floor opening and edges floor slab, support beams and columns for stairs, hoist beam for elevator and supporting beam for movable partition in between Classrooms 145 and 145.

Fabrication - Fabricate structural steel in accordance with Section M2 of the AISC Specifications with modifications and additional requirements specified hereafter. Perform fabrication and assembly in the shop to the greatest extent possible. Fabricate architecturally exposed structural steel in accordance with Section 10 of the AISC Code.

Connections - Provide welded or bolted shop connections, or a combination of the two processes as required by the drawings.

Use high strength threaded fasteners for bolted connections except where standard threaded fasteners are permitted. High strength bolting shall conform to the AISC "Specifications for Structural Joints Using A325 or A490 Bolts". Tighten bolts in accordance with Section 8(c) using the turn-of-nut method of tightening.

Field Assembly - Accurately assemble structural steel frames to the lines and elevations indicated, within the specified erection tolerances. After assembly, accurately align and adjust various members forming parts of a complete frame or structure before fastening. Clean bearing surfaces and surfaces in permanent contact before assembly.

Miscellaneous Plates and Shapes - Provide all miscellaneous steel items such as lintels, sill angles, frames, equipment mountings, hangers and braces as indicated on the drawings or required to complete the work. Miscellaneous steel plates and shapes
shall conform to ASTM A36. Include welded anchors on embedded items where detailed.

End of Section

SECTION 05200 - STEEL JOISTS

See structural plans

End of Section

SECTION 05300 - METAL DECKING

Reference Standard - Conform to the Steel Deck Institute, Inc. (SDI) "Design Manual for Composite Decks, Form Decks and Roof Decks," latest edition, and as follows:

Floor deck
   Type Vulcraft or approved equal 1.0 C 22, Ga.
   Finish Galvanized coating to conform to ASTM A525 G60

Roof deck
   Type Vulcraft or approved equal 1.5 B 20 Ga.
   Finish Painted

See structural plans

End of Section

SECTION 05400 - COLD-FORMED METAL FRAMING

Reference Standard - Conform to the AISI Specification for the Design of Cold-Formed Steel Structural Members, latest edition.

Exterior and Interior Load Bearing Structural Studs

   Type Load bearing, "C" shaped, punched webs, MSF 4/O SS-WC-20 Structural C-studs, or equal
   Material ASTM A611, Grade C steel sheet, 33 ksi minimum yield
   Finish Manufacturer's standard rust-inhibitive prime paint
   Gage 20 gage minimum (.0359" minimum design thickness)
   Size 4" or 6" depth x 1-5/8" flanges width minimum
   Runner Tracks Same material, size and finish as studs
   Accessories Manufacturer's standard cold-formed straps, angles, channels, clips, bridging and other accessories as required for a complete installation, finish compatible with structural members
   Fasteners Manufacturer's standard screws, welds, bolts, expansion anchors or power-actuated fasteners as required for connection.

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Erection - Lay out and erect all cold-formed metal framing in accordance with the manufacturer's recommendations and approved shop drawings. Space studs at 16" O.C. maximum and joists at 24" O.C. maximum unless otherwise indicated on the drawings.

END OF SECTION

SECTION 05586 – ARCHITECTURAL METAL

Steel Handrail  Fabricate handrails of steel pipe as indicated on drawings. Miter and weld all connections and grind smooth. Attach handrails to walls with standard steel pipe flanges or handrail brackets specified. Anchor handrails to walls with expansion shields or toggle bolts as applicable. At railing splices, butt rails and reinforce with tight fitting sleeves not less than 6" long. If rail ends return to wall, cap rail ends flush. Weld handrails to stair stringers, framing or weld plates as applicable. At exterior slabs, ramps and stairs where handrails are to be installed provide a 4”x4”x1/4” weld plate with 6” long hooked anchor embedded in the concrete at each vertical post. Weld handrail post to weld plate.

Metal Ladders – Construct steel fixed-rail ladder 24” wide minimum as indicated on the drawings. Fabricate rails of ¼” x 2 ½” minimum steel bars. Make rungs of ¾” solid steel rods fitted into holes punched in rails, weld rung ends to rail and grind smooth. Space all rungs at 12” o.c. Fit rails with angle brackets at 6'-0” maximum spacing for anchorage to structure. Splices and connections shall have a smooth transition with original members without sharp projections.

Miscellaneous Plates and Shapes –  
Provide all miscellaneous steel items such as lintels at stair openings, deck angles at second floor slab edge, sill angles, frames, equipment mountings, hangers and braces for movable partition as indicated on the drawings or required to complete the work. Miscellaneous steel plates and shapes shall conform to ASTM A36. Include welded anchors on embedded items where detailed.

Field Touch-Up Painting
After erection of steel, thoroughly clean and touch-up field bolt heads and nuts, field welds, and abrasions in the shop paint coating with the same metal primer used for shop painting. Where galvanized surfaces need field repair, use a galvanizing repair compound conforming to Mil Spec. DOD-P-21035, applied in accordance with the manufacturer's printed directions.

END OF SECTION

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DIVISION 6 - WOOD AND PLASTICS

SECTION 06100 - ROUGH CARPENTRY

<table>
<thead>
<tr>
<th>Lumber</th>
<th>Conform to grading rules of the WWPA or WCLIB:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated Lumber</td>
<td>For posts, plates, nailers and blocking in contact with fresh</td>
</tr>
<tr>
<td></td>
<td>concrete or masonry; treated Douglas Fir, preservative treated</td>
</tr>
<tr>
<td></td>
<td>with CCA water-borne salts</td>
</tr>
<tr>
<td>Framing Lumber</td>
<td>WWPA No. 2 grade or better, DF-Larch or Hem-Fir</td>
</tr>
<tr>
<td>(2 x 6 &amp; over)</td>
<td></td>
</tr>
<tr>
<td>Light Framing</td>
<td>WWPA Standard grade, DF-Larch or Hem-Fir</td>
</tr>
<tr>
<td>(2 x 4 &amp; under)</td>
<td></td>
</tr>
</tbody>
</table>

Rough Hardware

<table>
<thead>
<tr>
<th>Nails or Staples</th>
<th>Fed. Spec. FF-N-105, type best suited to intended use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolts, Nuts and</td>
<td>Common bolts: ASTM A307, Grade A</td>
</tr>
<tr>
<td>Screws</td>
<td>Lag bolts and screws: Type best suited to intended use</td>
</tr>
<tr>
<td>Framing Anchors</td>
<td>Joist hangers, framing anchors and angles, Silver, Simpson, or</td>
</tr>
<tr>
<td></td>
<td>Teco, size and type best suited for use intended</td>
</tr>
</tbody>
</table>

Installation - Conform to Uniform Building Code, latest edition. Nailing shall conform to the UBC, Table 25-Q. Properly install framing and rough woodwork with joints closely fitted, members accurately set to required lines and levels, and rigidly secured in place.

Install blocking, steel strapping or plywood in stud space behind gypsum board partitions for attachment of wall stops, cabinets and other wall mounted accessories.

Install gypsum wall board over wood or metal framing where indicated on the drawings. Apply gypsum wall board at right angle to the studs, with ends and edges centered on framing members, and nail to wood framing with galvanized roofing nails 1-1/2" long, 11 gage, spaced at 4" o.c. at perimeter of boards, 8" o.c. at supports, or screw to metal framing with 1" - S12 screws spaced at 8" o.c. at perimeter of boards, 12" o.c. at supports.

End of Section

SECTION 06200 - FINISH CARPENTRY AND MILLWORK

Materials

| Hardwood Frames,  | Red Oak, first quality, for transparent finish |
| Rails and Trim    |                                                 |

| Millwork          | AWI "Custom" grade, reveal overlay construction, Vertical Grade 0.030" plastic laminate (PLM) covered on all exposed faces and edges as indicated. Colors of face material and countertops PLM to be selected from manufacturer standard samples. |

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Countertops

General Purpose 0.050" plastic laminate over 1-1/4" exterior grade plywood or particleboard. Plastic laminate countertops to in suede or non-gloss finish; pattern and color as selected by the A-E. Provide 4" square butt back-splash at walls. Self-edge all edges, ends and back-splashes.

Millwork Hardware

Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

Door and Drawer Pulls: Stanley 4484 with 4487 base
Door Hinges: Stanley 332 or 335 as applicable
Magnetic Catches: Stanley 41 or Knape & Vogt 915
Shelf Standards: Knape & Vogt 255 and 256
Drawer Slides: Knape & Vogt No. 1600, self-closing
Locks: C-8053-14A-KA by National Lock Company. Provide locks on all doors and drawers. Keyed alike or keyed differently and master keyed.

Nails
Fed. Spec. FF-N-105, size and type best suited for use intended

Screws and Bolts
Size and type best suited for use intended

Installation - Construct and install all finish carpentry and casework in accordance with AWI "Architectural Woodwork Quality Standards", 6th edition AWI "Custom" grade construction. Securely attach cabinets, shelving and casework to walls and bases. Install cabinets plumb and level and hardware operating properly.

End of Section
DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 07150 - FOUNDATION DAMPPROOFING

Materials

| Cold Solvent | Karnak 83, Sonneborn Hydrocide Semi-Mastic, W.R. or approved equal. |
| Mastic       | Meadows Semi-Mastic or equal asphalt compound reinforced with mineral fibers for brush, roller or spray application on dry or cured concrete foundation walls |
| Cold Emulsion| Karnak 220 AF, Sonneborn Hydrocide 700, W.R. Meadows |
| Mastic       | Sealmastic Type 2, or equal asphalt emulsion compound reinforced with mineral fibers for brush, roller, or spray application on exterior foundation walls. |

Installation - Remove fins and loose material from surfaces, fill holes and cracks with mortar, clean all surfaces free of dirt, oil, and grease. Apply mastic in 2 coats at a minimum rate of 25 square feet per gallon each coat in strict accordance with manufacturer's printed instructions. Apply to exterior face of exterior foundation walls from outside face of footing to 2" below finish grade.

End of Section

SECTION 07200 - BUILDING INSULATION

Rigid Insulation, Exterior walls

Polyurethane or Polyisocyanurate insulating foam board with foil facings both sides, thickness indicated on drawings, Celotex GA4000 or equal

Perimeter Insulation

Type Polystyrene insulation board, Dow Chemical Styrofoam "SM" or "TG", UC Industries "Foamular 250," or equal
Conformance ASTM C578 or 518 or Fed. Spec. HH-I-524, Type IV
Size 8-0”L x 2” or thick as indicated on drawings
R Value $R = 5.0$ minimum @ 75°F mean temperature per inch of thickness, 5 year aged
Installation Install horizontally on interior face of exterior walls where indicated bond to wall with spot applied adhesive. Place insulation below slab prior to placing floor slab.

Sound Attenuation Batts

Type Friction fit unfaced sound attenuation batts
Conformance ASTM C665 or Fed. Spec. HH-I-521, Type I
Thickness 3-1/2” nominal minimum thickness, 3 pcf density
Installation Install in interior partitions and over suspended ceiling panels where indicated on drawings, provide a snug fit for complete coverage free from voids, cut insulation for ceilings to same size as ceiling panels for ease of maintenance of ceiling space.

Isocyanate Roof Insulation Board

Type Rigid polyisocyanurate foam board with kraft/foil, fiberglass mat or other facings bonded on both sides, designed for use with loose-laid single-ply or built-up roofing systems

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Conformance Fed. Spec. HH-I-1972/1 or 2 and FM approved for Class 1 roof construction
Brand Types Carlisle “Sure-seal HP” or equal
Size 48” x 48” minimum panels x 4” approx. total thickness Provide insulation in 2 near equal thickness layers
Actual Thickness As required to provide an aged thermal resistance (R value), through insulation only, of R = 24.00 minimum

Tapered Insulation and Roof Crickets
Type Expanded polystyrene (EPS) foam bead board, or equal material compatible with single-ply roofing, factory fabricated to provide normal roof slopes of 1/4” per foot as indicated
Conformance ASTM C578 or Fed. Spec. HH-I-524, Type II
Brand Type Advance Foam Plastics "Contour Taper Tile", or equal
Size 48” x 48” panels, 1” slope, 1/4” minimum thickness
Density 1.5 pcf minimum

Installation
Apply insulation units starting at low point of roof with long joints continuous either parallel or at right angles to roof deck with end joints staggered. Apply insulation in 2 layers with all joints staggered between the layers. Place joints parallel to ribs over solid bearing. Bring boards into snug contact. Neatly cut boards to fit tight around roof penetrations and projections.

First layer of insulation board to be FM approved Class 1 construction. Mechanically attached both layers to deck with FM approved fasteners at the minimum rate of one fastener for every 2 square feet of board.

Stagger all joints off second layer of insulation with respect to joints of first layer. First layer of insulation board to be FM approved Class 1 construction. Mechanically attached both layers to deck with FM approved fasteners at the minimum rate of one fastener for every 2 square feet of board. Correlate installation of wood edge nailers with application of roof insulation as required.

Install tapered insulation crickets as indicated on approved shop drawings to provide positive roof slopes to roof drains and above mechanical units to form shapes that will provide positive drainage with no standing water. Secure insulation with spots of adhesive to hold in place during subsequent application of roofing membranes. Mechanically fasten boards as necessary.

Do not leave insulation exposed to weather or allow it to become wet at any time. Do not apply more insulation units than can be completely covered by roofing membrane at end of each day’s work or prior to onset of inclement weather. Protect exposed insulation edges with temporary cut-offs or water seals.

Protection - Do not leave insulation exposed to weather or allow it to become wet at any time. Do not apply more insulation units than can be completely covered by roofing membrane at end of each day’s work or prior to onset of inclement weather. Protect exposed insulation edges with temporary cut-offs or water seals. Refer to Section 07530 for installation of temporary cut-offs or water seals.
SECTION 07530 - EPDM SINGLE-PLY ROOFING SYSTEM

Manufacturers - This specification is based on products of Carlisle SynTec Systems, Division of Carlisle Corporation. Equivalent products of Firestone and Johns Manville manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products.

Warranty
Roof shall carry a 20-year manufacturer’s and installation warranty. The 20-year warranty will be for Labor and Materials. This will require inspections by the manufacturer to certify warranty. Results and certificates must be provided to County.

Roofing System
Install a new Carlisle’s Sure-Seal (black) .060 inch thick non-reinforced Design "A" Fully Adhered Roofing System in conjunction with polyisocyanurate insulation including the installation of wall and curb flashings and pre-molded pipe flashings as specified herein and as indicated on the drawings. Installation shall be in accordance with the manufacturer’s most current specifications and details. Tapered installation shall be installed as required to ensure the flow of water to roof drains and to minimize ponding.

Manufacturer
Carlisle EPDM Sure-Seal Design A - fully adhered Elastomeric Roofing System to meet FM- 90 rating requirements.

Construction
Roof shall be classified by Underwriter’s Laboratories, Inc. (UL) as a Class "A" sheathing material for use in construction of Class "A" roof coverings.

Approved Applicator
System applicator must be approved in writing by the membrane system manufacturer and have a minimum of 5 years of experience with the manufacturers system. The applicator shall have an office within a 50-mile radius of Greeley.

Inspection
Upon completion of the installation, an inspection shall be made by a representative of the system manufacturer to ascertain that the roofing system has been installed in accordance with the manufacturer’s published specifications and details. There shall be no deviation from this specification without prior written approval of the manufacturer.

Warranty
A representative of the manufacturer shall inspect the installation of the roofing system, and upon approval, the manufacturer will issue a 10-year watertight warranty and 20-year material warranty to the Owner. The applicator shall provide a 2-year installation warranty. The warranties will be in affect when the manufacturer is notified of completion.

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Job Conditions, Cautions and Warnings

When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

When loading materials onto the roof, the Manufacturers Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.

Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.

When necessary, new roof sections shall be protected and inspected upon completion for possible damage. Provide protection, such as ¾” thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.

The surface of the roofing membrane that is to receive splicing tape and where new flashings are to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.

Roofing shall be complete and weathertight at the end of the workday.

Products

All components of the specified roofing system shall be products of the membrane manufacturer or accepted by the membrane manufacturer as compatible.

Unless otherwise approved by the owner’s representative and accepted by the membrane manufacturer, all products (including insulation, fasteners, fastening plates and edgings) must be manufactured and supplied by the roofing system manufacturer and covered by the warranty.

Membrane

Furnish Sure-Seal .060-inch-thick non-reinforced EPDM (Ethylene, Propylene, and Diene Terpolymer) in the largest sheet possible. The membrane shall conform to the minimum physical properties of ASTM D4637. When a 10-foot-wide membrane is to be used, the membrane shall be manufactured in a single panel with no factory splices to reduce splice intersections. Flashing membranes to be Sure-Seal .060” thick non-reinforced membrane with pre-applied splice tape.

Insulation/underlayment

When applicable, insulation shall be installed in multiple layers. The first and second layer of insulation shall be mechanically fastened or adhered to the substrate in accordance with the manufacturer's published specifications.
Insulation shall be Sure-Seal rigid polycyocyanurate foam board, Minimum R-value required of R = 24.

Provide 1/4” DensDeck cover board between rigid insulation and membrane.

**Adhesives and Cleaners**

All products shall be furnished by roofing material supplier and specifically formulated for the intended purpose.

**Bonding Adhesive:** A high-strength, yellow colored, synthetic rubber adhesive used for bonding EPDM membrane

**Sure-Seal SecurTape™:** 3”, 6” or 12” wide by 100’ long splice tape used for splicing adjoining sections of EPDM membrane.

**Splicing Cement:** A high-strength, butyl-based contact cement that is used as a primer to prime the surface of aged EPDM membrane prior to the application of Pressure-Sensitive Cured Cover Strips or SecurTAPE.

**Sure-Seal EP-95 Splicing Cement:** Black splicing cement for use with Sure-Seal (black) Roofing Systems.

**Sure-Seal HP-250 Primer:** A solvent-based primer used to prepare the surface of new EPDM membrane for application of SecurTAPE or Pressure-Sensitive products. This Primer can also be used in conjunction with EP-95 Splicing Cement in lieu of Splice Cleaner.

**Lap Sealant:** A black, heavy-bodied material (trowel or gun-consistency) used to seal the exposed edges of EPDM membrane and the Pressure-Sensitive Cured Cover Strip as well as complete various flashing repairs.

**Membrane Cleaner:** A clear, solvent-based cleaner used to loosen and remove dirt and other contaminants from the surface of exposed EPDM membrane prior to applying a Pressure-Sensitive Cured Cover Strip or SecurTAPE.

**Flashing accessories**

**Sure-Seal/Sure-Black Pressure-Sensitive Cured Cover Strip:** 6”, 9” and 12” wide by 100’ long Sure-Seal 60-mil cured EPDM membrane laminated to a nominal 35-mil cured factory-applied SecurTAPE.

**Sure-Seal Pressure-Sensitive Uncured Elastoform Flashing:** 9” or 12” wide by 50’ long, 60-mil thick uncured EPDM Flashing laminated to a 35-mil factory-applied SecurTAPE

**Sure-Seal T-Joint Cover Overlayment:** A 40-mil thick, 12” x 12”, cured Elastoform Flashing with factory-applied SecurTAPE providing 75-mil of total thickness.
Fasteners and plates

**HP Fasteners:** A threaded, black epoxy electro-deposition coated fastener used with steel and wood roof decks.

**Pre-Assembled ASAP Fasteners:** A pre-assembled 3” diameter Plastic Plate and standard phillips head fastener used for insulation attachment into steel or wood decks. Installed using Olympic Fastening Tools.

**InsulFast Fasteners:** A threaded #12 fastener with #3 phillips head used for insulation attachment into steel or wood decks.

**HP Term Bar Nail-Ins:** A 1-1/4” long expansion anchor with a zinc plated steel drive pin used for fastening the Sure-Seal Termination Bar or Seam Fastening Plates to concrete block walls.

**Insulation Fastening Plates:** A 3” diameter FM approved metal plate used for insulation attachment.

**Seam Fastening Plates:** A 2” diameter FM approved metal plate used in conjunction with RUSS or with EPDM membrane for membrane securement.

Membrane terminations

**DensDeck Prime:** A recovery board with glass matt facing front and back and a core of water resistant gypsum, ½” thickness. It is compatible with solvent based bonding adhesives, over polyisocyanurate insulation.

**Sure-Seal Termination Bar:** a 1 inch wide and .098 inch thick extruded aluminum bar pre-punched 6 inches on center; incorporates a sealant ledge to support Lap Sealant and provide increased stability for membrane terminations.

Installation

**Insulation placement**

Install insulation over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch. Stagger joints both horizontally and vertically if multiple layers are provided. At tapered areas install a layer of ¼” tapered polyisocyanurate roof insulation. Minimum starting thickness shall be ½” at the roof drains.

Secure insulation to the substrate with the required mechanical fasteners or FAST Adhesive in accordance with the manufacturer’s specifications. Fasten to roof deck with fastener and plate every 4 square feet.

Install a layer of ¼” Georgia Pacific DensDeck Prime overlayment board. DensDeck shall be adhesively attached to installed roof insulation with a full-bed adhesion (100% coverage) of low-rise polyurethane foam insulation adhesive.
Membrane placement and bonding

Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour before bonding. Fold the sheet back onto itself so half the underside of the membrane is exposed.

Apply the Bonding Adhesive in accordance with the manufacturer's published instructions, to both the underside of the membrane and the substrate. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.

Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.

Fold back the unbonded half of the membrane sheet and repeat the bonding procedure.

Install adjoining membrane sheets in the same manner, overlapping edges approximately 4 inches. Do not apply bonding adhesive to the splice area.

Membrane splicing (adhesive splice)

Fold the top sheet back and clean the dry splice area (minimum 3 inches wide) of both membrane sheets by scrubbing with clean natural fiber rags saturated with Splice Cleaner or HP-250 Primer. When using Sure-Seal (black) PRE-KLEENED membrane, cleaning the splice area is not required unless contaminated with field dirt or other residue.

Apply Splicing Cement and In-Seam Sealant in accordance with the manufacturer's specifications and roll the top sheet onto the mating surface.

Roll the splice with a 2-inch-wide steel roller and wait at least 2 hours before applying Lap Sealant to the splice edge following the manufacturer's requirements.

Field splices without In-Seam Sealant must be overlaid with uncured flashing.

Membrane splicing (tape splice)

Overlap adjacent sheets and mark a line 1/2 inch out from the top sheet.

Fold the top sheet back and clean the dry splice area (minimum 2-1/2 inches wide) of both membrane sheets with Sure-Seal Primer as required by the membrane manufacturer.

Where Splice Tape is not pre-applied, apply Splice Tape to bottom sheet with the edge of the release film along the marked line. Press tape onto the sheet using hand pressure. Overlap tape roll ends a minimum of 1 inch.

Remove the release film and press the top sheet onto the tape using hand pressure.

Roll the seam toward the splice edge with a 2-inch-wide steel roller.

Install a 6-inch-wide section of Pressure-Sensitive Flashing or Electroform Flashing over all field splice intersections and seal edges of flashing with Lap Sealant.
The use of Lap Sealant with tape splices is optional except at tape overlaps and cut edges of reinforced membrane where Lap Sealant is required.

**Flashing**
Wall and curb flashing shall be cured EPDM membrane. Continue the deck membrane as wall flashing where practicable.
Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.

**Daily**
When the completion of flashings and terminations is not achieved by the end of the workday, a daily seal must be performed to temporarily close the membrane to prevent water infiltration. Use Sure-Seal Pourable Sealer or other acceptable membrane seal in accordance with the manufacturer's requirements.

**Clean up**
Perform daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.
Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

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**SECTION 07600 - SHEET METAL WORK**

**Materials**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cap Flashing</td>
<td>22-gauge, galvanized steel coated with Kynar 500 or equal with a drycoat thickness at 0.90 mil over 0.25 mil primer.</td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>Galvanized sheet, ASTM A525, mill phosphatized for field painting.</td>
</tr>
<tr>
<td>Coating class</td>
<td>1.25 commercial, coating designation G90</td>
</tr>
<tr>
<td>Thru-Wall Flashing</td>
<td>20 mil non-reinforced impermeable plastic sheeting based on Poly-vinyl-chloride made for flashings.</td>
</tr>
<tr>
<td>Expansion Joints</td>
<td>1. Roof expansion joint: Manville Corp., &quot;Expand-O-Flash,&quot; Type CF-4 and CF-EJ-4, or equal, 26 gage galvanized steel flanges, EPDM bellows, provide all necessary prefabricated shapes, fasteners, adhesives and splicing materials for a complete installation.</td>
</tr>
<tr>
<td></td>
<td>2. Surface mounted wall expansion joint cover: Inpro Jointmaster 817-A07-75 System</td>
</tr>
<tr>
<td></td>
<td>3. Exterior wall joint cover: Nystrom EJ-San 600</td>
</tr>
<tr>
<td>Fasteners</td>
<td>Galvanized or stainless steel, type best suited for use intended</td>
</tr>
<tr>
<td>Washers</td>
<td>Neoprene weather-seal type for exposed screw application</td>
</tr>
<tr>
<td>Solder</td>
<td>ASTM B32, 50% tin, 50% lead</td>
</tr>
<tr>
<td>Flux</td>
<td>Rosin or muriatic acid neutralized with zinc</td>
</tr>
<tr>
<td>Size and Shapes</td>
<td>Form all sheet metal work as indicated on the drawings and to match existing adjacent work</td>
</tr>
</tbody>
</table>

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Installation - Conform to applicable portions of the Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) "Architectural Sheet Metal Manual" for forming, cleating, nailing, expansion joints, etc., and details on the drawings. Use 26 gage minimum galvanized sheet material.

End of Section

SECTION 07900 - SEALANT AND CAULKING

Materials

Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products.

Exterior Sealant One-part self-priming urethane sealant, Fed. Spec. TT-S-00230, Sika Chemical Corp. "Sikaflex-la," or Sonneborn "Sonolastic NP1," or equal, in colors as selected by the A-E

Interior Sealant GE SCS 1702 Sanitary Sealant or Dow Corning 786 Mildew Resistant Silicone Sealant, Fed. Spec. TT-S-1543, Class B


Back-Up Extruded closed cell polyethylene foam rod for joints 3/4” and greater as recommended by caulking manufacturer

Primer As recommended by sealant manufacturer

Bond Preventative Polyethylene tape with pressure sensitive adhesive on one side

Application - Use exterior sealant around perimeter of exterior door and window frames, masonry control joints, around perimeter of pipes, mechanical and electrical devices built into exterior walls, at thresholds, and at all other locations where required to make building airtight and weathertight. Use silicone sealant at joints required to be caulked around fixtures, countertops and equipment in toilet rooms, kitchen and other "wet" areas, and at expansion joints in quarry and ceramic tile. Use pourable joint sealer where indicated on the structural drawings. Conform to sealant manufacturer's printed application instruction.

End of Section
### DIVISION 8 - DOORS AND WINDOWS

#### SECTION 08100 - HOLLOW METAL DOORS AND FRAMES

**Pressed Steel Door and Borrow Lite Window Frames**

<table>
<thead>
<tr>
<th>Material</th>
<th>ASTM A366 commercial grade cold-rolled steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conformance</td>
<td>NAAMM HMMA 861-87 specification</td>
</tr>
<tr>
<td>Gages</td>
<td>14 gage for exterior frames and interior frames 48&quot; wide and over, 16 gage for interior frames to 48&quot; wide.</td>
</tr>
<tr>
<td>Frame Type</td>
<td>Combination buck, frame, stop and trim, standard or drywall types as indicated, welded corners.</td>
</tr>
<tr>
<td>Anchors</td>
<td>Provide a minimum of 3 anchors per jamb, masonry, steel stud, wood stud type as required and two head anchors. One floor anchor at each jamb in steel stud walls.</td>
</tr>
<tr>
<td>Silencers</td>
<td>Provide factory installed silencers on all frames, 3 per strike jamb, 2 per head for doors in pairs.</td>
</tr>
<tr>
<td>Reinforcing</td>
<td>Manufacturer's standard hardware reinforcement (7 gauge) for hardware indicated in Section 08700 - Finish Hardware. Hinge pads shall be full width x 12&quot;. Provide mortar protection boxes behind each hinge cutout.</td>
</tr>
<tr>
<td>Mortar box</td>
<td>Provide mortar boxes on all frames to be installed in CMU walls.</td>
</tr>
<tr>
<td>Applied Glazing Stops</td>
<td>5/8&quot; x 5/8&quot; or 3/4&quot; x 3/4&quot; form of 20-gauge cold-rolled steel channel, with neat, close fitted, mitered corners, secure to frame at 12&quot; maximum intervals with countersunk sheet metal screws.</td>
</tr>
<tr>
<td>Finish</td>
<td>Bonderized and factory rust-inhibitive metal primer at all frames.</td>
</tr>
<tr>
<td>Fire Ratings</td>
<td>Provide fire-rated frames bearing permanent UL or FM labels indicating the proper fire resistance rating as scheduled on the drawings.</td>
</tr>
<tr>
<td>Hardware Preparation</td>
<td>Were required prepare frames for anchor hinges.</td>
</tr>
</tbody>
</table>

**Flush Hollow Metal Doors**

| Type | Full flush type, seamless, 1-3/4" thick, sizes as scheduled on drawings |
| Conformance | NAAMM HMMA 861-87 specification |
| Face Sheets | ASTM A366 commercial grade cold-rolled steel, 16-gage minimum for exterior doors, 16-gage minimum for interior doors. |
| Cores | All doors to have 22 gage steel stiffeners at 6" O.C. with polystyrene core. Interior fire-rated doors to be constructed and tested by UL or FM to meet requirements of ASTM E152. |
| Edge Profiles | Bevel vertical edges 1/8" in 2", spot weld, fill and grind smooth. Top and bottom edges, 14 gage steel channels, spot welded. |
| Glazing Stops | Provide 18 gage glass moldings and stops for fixed lights as indicated, weld fixed molding to door on security side, provide loose stops on interior side with neatly mitered corners, secure to
framed opening with cadmium-plated screws at 12" centers maximum.

Clearances
1/8" at head and jambs, 1/8" at meeting rails of double doors, 1/4" at thresholds, 3/4" at doors without thresholds.

Reinforcing
Hinge reinforcing: 3/16” plate
Lock reinforcing: 12 gauge
Closer reinforcing: 12 gauge
All other reinforcement manufacturer standard

Finish
Bonderized and factory rust-inhibited metal primer at all doors

Fire Ratings
Provide fire-rated doors bearing permanent UL or FM labels indicating the proper fire resistance rating as scheduled on the drawings

Frame Installation - Exercise care in setting frames to maintain scheduled dimensions, keep heads and jambs plumb, level and in true alignment, and rigidly secured. Set anchors at approximately hinge and strike levels. Fill frames in masonry walls solid with grout as the wall is laid up. Install labeled frames in accordance with NFPA No. 80 requirements.

Door Installation - Install doors plumb and in true alignment in conjunction with hardware application. Install labeled fire doors, including all operating characteristics and UL listed hardware, in accordance with NFPA No. 80 requirements.

END OF SECTION

SECTION 08200 - FLUSH WOOD DOORS

Interior Doors
Manufacturer Weyerhaeuser, Willamette or Algoma.
Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

Door Standards NWWDA I.S. 1 and AWI Quality Standard Section for 1300, Premium Grade, Factory finish of wood doors shall meet performance standard of AWI Quality standard Section 1500, Premium Grade

Door Sizes As indicated on the drawings
Thickness 1-3/4" for all swinging doors
Quality AWI "Custom" grade flush doors
Solid Cores AWI Type SLC (stave core)
Fire Door Cores AWI Type FD (stave core) of the appropriate fire rating as scheduled on the drawing:
20 minute rated door Weyerhaeuser DFS-45
Face Veneers AWI Type One, Oak (5 ply) with factory finish
Edges Hardwood, match face veneer
Light Openings for Fire Doors

- Slim line 18 gage cold rolled steel, UL labeled, manufacturer's standard straddle frame, baked enamel finish in color selected

Glazing
- As specified in Section 08800 - Glass and Glazing

Undercuts
- Undercuts to be made in factory, bottom rail is to be full height

Labels
- Provide appropriate fire rating labels permanently affixed to door edge and bearing UL serial number and rating for all fire doors

Installation
- Install doors in accordance with manufacturer's instructions. Use only skilled carpenters to install doors. Allow maximum clearances of 1/8" at head and jambs and 1/8" at sills with thresholds. 1/2" over floor finish except where undercut is scheduled. Bevel lock edges 1/8" in 2". Fit doors for width by use of a plane and for height by sawing the bottom. Install fire rated doors including all operating characteristics and UL listed hardware, in accordance with NFPA No. 80 and UL requirements.

END OF SECTION

SECTION 08305 - ACCESS DOORS

Metal Access Doors for Pipe and Utility Spaces

- Manufacturers: Milcor Metal Access Doors, Lima, OH 45004, or equal by JL Industries, Karp or Larsen.
- Styles: Milcor Style DW for drywall, Style M for masonry and Fire Rated where required by code or in fire rated wall.
- Sizes: 18" x 18" or as indicated on drawings or required to properly service mechanical or electrical equipment.
- Hardware: Concealed spring hinges, and flush, screwdriver operated, case hardened steel key operated cam locks, number standard with the manufacturer.
- Finish: Chemically bonded prime coat of baked enamel.

Installation
- Access doors required for access to mechanical or electrical equipment shall be furnished under Division 15 or Division 16 and installed by the trade responsible for the material in which the door is located. Provide additional blocking as required for support of access door.

END OF SECTION

SECTION 08360 - SECTIONAL OVERHEAD DOORS (EXTERIOR)

Materials and Construction

- Type: 20-gage steel sectional upward-acting doors
- Model Type: Raynor Door Series S-20, or equal
- Sizes: As indicated or scheduled on the drawings
- Framing Type: Standard headroom track framing - 2" track
- Wind Load: Design door to withstand a wind load 115 MPH
- Operation: Motor operated by push-button stations

END OF SECTION

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08000-3
Door Sections  Roll formed of 20 gage galvanized steel, ASTM A525, coating class 1.25 commercial, full 2" thick with ribbed outside face, formed with rabbet joint for weather tight closure between sections

Stiles  16 gage minimum channel-shaped center and end stiles, all stiles projection welded or riveted to door sections

Insulation  Polystyrene foam board sized to completely fill door panels, end and center stiles, maximum "U" value of 0.164

Back Cover  26-gauge minimum galvanized steel secured to section pans with retaining clips

Door Finish  Zinc-coated and prime painted both sides

Track  2" size, galvanized steel finish, 1.25 oz./square foot, with graduated seal for weather tight closing. Vertical tracks continuous angle mounted, horizontal tracks adequately reinforced for door size and weight

Hardware  All hinges and brackets made from galvanized steel, hardened steel ball bearing track rollers

Counterbalance  Heavy-duty torsion springs on continuous steel shaft, heavy-duty ball bearing brackets to support shaft, galvanized lifting cables, minimum safety factor of 5 to 1

Weatherseals  Neoprene or vinyl flexible weather-strip to seal bottom of door at floor, and neoprene or vinyl seals at head and jambs

Locking  Manufacturer’s standard interior locking mechanism

Electric Door Operator

Type  Drawbar (trolley) type, roller chain drive
Motor HP  ½ horsepower minimum
Power  115 volt, single phase
Model and Size  As recommended by door manufacturer
Operation  Interior 3-button flush-mounted controls, momentary contact on Open and Stop, constant contact on Close, wall mounted adjacent to each door.

In addition to wall mounted unit provide a remote operation controller for each door.

Standard Features  Totally enclosed, instant-reversing single phase motor

Inherent overload protection with automatic reset

High efficiency brake system

Limit switches

Start-reversing contractor type

Factory pre-wire units for factory pre-testing

Manual Override  Provide disconnect for manual operation in emergency

Door Speed  Standard 12 inches per second maximum

Installation – Sectional overhead doors and operators to be installed only the manufacturer’s authorized representative in openings prepared by the Contractor. Install doors in accordance with manufacturer’s printed instructions and approved shop and erection drawings.

END OF SECTION

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08000-4
SECTION 08700 - FINISH HARDWARE

Manufacturers - Hardware manufacturers listed are to establish quality and function required. Equivalent products of other manufacturers will not be acceptable.

Keying (Exterior doors only)
Locks shall be keyed into the existing master keying system. Existing system was manufactured by Best Corp. Master key locks on this Project, Cylinders, removable and interchangeable core system, Best Peaks small format 7-pin Construction master keys are required for all exterior locks on the Project. Use temporary construction keys until Substantial Completion; do not use permanent keys during construction. Prior to Final Completion, put permanent keys into operation and discard construction keys.

Keys
Stamp keys with lock manufacturer's name, change number, and inscription "Do Not Duplicate." Turn keys over to the owner's representative properly tagged and designated as to location and arranged in a container in sets or subsets as scheduled or designated.

Supply keys for the project as follows:
- Master Keys 1 keys each
- Individual Lock Keys 2 keys each
- Construction Keys 12 total
- Change keys 2 keys

Deliver construction keys with locksets. Deliver construction extractor keys and all other keys direct from manufacturer to the owner's representative after Substantial Completion, properly tagged for key cabinet storage.

Butt Hinges
Hinge Numbers Type letters indicated are based on McKinney Hinge Company
- A. McKinney T4A – T4B3386 pair and one-half, heavy weight ball bearing, 26D
- B. McKinney TA2714 pair and one half, standard weight, 26D
Type Full mortise template types for all standard hollow metal doors and frames and wood doors
Hinge Sizes 4 ½" high x 4 ½” wide
Number/Door 3 hinges per leaf on doors 90” or less in height, 4 hinges per leaf on doors over 90” in height or 36” in width.
Pins Stainless steel for bronze hinges, steel for steel hinges, with flat button tips
NRP Pins Provide non-removable pins (NRP) on outswinging exterior doors and on interior doors with reverse bevel and scheduled to be locked.

Mechanical lockset

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08000-5
Conformance: ANSI Standard A156.2, Grade 1; Series 4000, ADA compliant lever
Manufacturer: Best Keypad EZ Locks
Model: 93KZ7DV15KPS3612
Type: KZ – Cylindrical Lock Mechanical lockset series with key override, for interior doors
Function: Dead locking latchbolt operated by lever either side,
Latchbolt: 9/16” throw
Trim Design: Lever handle, #15
Backset: Standard 2-3/4”
Strikes: 4-7/8”, 1-1/4” x 1/8” mortise strike plate, Standard frame cut out, A115.1
Core: Best interchangeable core
Electronics: Alkaline battery pack
Keypad: Benzel, ABS, Keypad –silicone rubber

Locksets
Functions: Designations indicated are ANSI A156.13 functions
Manufacturer: Stanley - Best, no substitution
   F76 - privacy latch
   F82 - entrance or office lock
   F84 - classroom lock
   F86 - storeroom lock
Trim Design: Lever handle with return, 3 ½ " rose, LL lever, 26D finish
Backset: Standard 2 ½”
Strikes: Provide strike boxes for hollow metal frames set in CMU walls.
Keying: Key all locks into the existing master key system, consult with Owner to determine entire keying program. Master keys and change keys properly identified shall be forwarded to owner’s representative by registered mail in safety envelopes.
Cylinder: Best, Series 4000, Operational Grade 1, Extra- Heavy Duty, UL 10C listed

Deadlock: Refer to “Lock-Latch” column of Hardware Schedule
   DL –one cylinder outside, turn knob inside with deadlatch.

Exit Devices
Types: Sargent Type 2828 F rim device, 28-K-OB, pen
   Sargent Type 2828 F rim devices, 28-D-TP dummy trim and 28-K-TP exit trim and L980 x 96 keyed removable steel mullion.
   Sargent, MK CK
Trim: Screwless lever handle
Fire Doors: Provide fire exit hardware with UL labels where required
Dogging: Provide dog key dogging where permitted

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08000-6
<table>
<thead>
<tr>
<th><strong>Door Closers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Sargent 1430/1431, overhead surface mounted</td>
</tr>
</tbody>
</table>
| **Closer Numbers** | 1 - Mounted on push side, parallel arm  
2 - Mounted on the pull side, |
| **Sizes**       | As determined by manufacturers size tables |
| **Features**    | Provide following feature: Del - Delayed action  
EDA - Extra duty arms |

**Bored Locks**

<table>
<thead>
<tr>
<th><strong>Type</strong></th>
<th>Best- Classroom function with inside lever that will retract bolt but will not throw it.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finish</strong></td>
<td>US26D</td>
</tr>
</tbody>
</table>

**Miscellaneous Hardware - Refer to Hardware Schedule:**

**General - Door Silencers:** Glen Johnson No.64 - A door silencers for all hollow metal frames, 3 per strike jamb for single doors, 2 per head for pairs of doors.

1 - Weatherstripping: Pemko 45061CP - 8436 or 8472 at head and jambs, Pemko 18100CP sweeps at sill, Pemko 176A threshold and Pemko rain drip 346C. At double doors provide Pemko D88S mullion weatherstripping. Neatly cut threshold to receive removable mullion

2 - Kick Plates: BBW - K0050 8" high x door width less 2", beveled 4 sides, on push side of door, 18 GA x 630.

3 - Overhead door stop: Glynn-Johnson GJ414S – stop only

4 - Wall Stops: Baldwin – 4276-264 concave bumper, concealed mounting, and attachment as applicable

5 - Flush bolts: Quality No. 1357 extension bolt at head and sill x 1225 dustproof strike at floor, install on inactive leaf.

6 - Smoke Barrier seals: Pemko 45061CP-8436 or 8472  
Smoke seal thresholds: Pemko 176A x width of the door

7 - Overhead door stop: Glynn-Johnson GJ414H – hold open

**Manufacturers -** Hardware manufacturers listed are to establish quality and function required. Equivalent products of other manufacturers will not be acceptable.
Miscellaneous Expansion joints and Saddles - Provide hardware items corresponding to number to be installed in transition between wood gym floor and VCT, carpet or concrete. At exterior doors butt saddle over floor joint to threshold. Thresholds at doorways: National Guard 513SS stainless steel US32D, ¼” high X 6” wide x length as required. Neatly cut threshold at mullions.

Hardware Finishes
Provide hardware finishes in following BHMA Standard 1301 designations:
- Exposed Exterior Hardware: Dark oxidized bronze, 613 or 624
- Thresholds and Weather-stripping: Dark Bronze anodized aluminum
- All Other Hardware: US26D

Clear coated, at all locations except as follows:
Aluminum lacquer (AL) on closers and mullions as required to match adjacent hardware

Submittals - Submit a complete, detailed Finish Hardware Schedule in six copies minimum, to be forwarded to the owner’s representative for reviews, listing all hardware items to be furnished. For each door include complete door information, each item of hardware, manufacturer's names and catalog numbers, keying information, template numbers, hardware set identification, materials, finishes, fasteners and any other pertinent information necessary. An AHC member employed by the hardware supplier shall directly supervise the scheduling, detailing, marking and delivery of all finish hardware items. No hardware shall be ordered until a corrected copy of the hardware schedule is returned to supplier bearing the approval of the A-E. Upon request of the A-E, submit samples showing design, finish and function of any hardware item proposed.

Hardware Installation - Determine hardware heights and locations as stipulated by the Builders Hardware Manufacturer's Association (BHMA). Installation of all hardware shall be to factory specifications. No sex bolts are allowed.

END OF SECTION

SECTION 08800 - GLASS AND GLAZING

<table>
<thead>
<tr>
<th>Materials</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass “A”</td>
<td>1/4” plate/float glass conforming to ASTM C1048, Kind FT, Type I, glazing quality q³, Class 1, clear transparent.</td>
</tr>
<tr>
<td>Glass “B”</td>
<td>1/4” tempered plate/float glass conforming to ASTM C1048, Kind FT, Type I, glazing quality q³, Class 1, clear transparent.</td>
</tr>
<tr>
<td>Glass “C”</td>
<td>5/8” factory glazed in aluminum or aluminum clad windows. Glass conforming to ASTM C1036, Type I, glazing quality q³, Class 1 clear transparent interior pane, Class 3 tinted bronze exterior pane, Low “E”, Tempered.</td>
</tr>
</tbody>
</table>

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08000-8
Installation - Glaze all windows and doors in accordance with applicable portions of the Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual," and glass manufacturer's printed instructions. Use window manufacturer's standard vinyl or neoprene glazing beads or strips where applicable.

END OF SECTION
DIVISION 9 - FINISHES

SECTION 09250 - GYPSUM DRYWALL

Materials

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw Studs</td>
<td>ASTM C645, non-load bearing, &quot;C&quot; shaped, 25 gage steel,</td>
</tr>
<tr>
<td></td>
<td>electro-galvanized finish, 3-5/8&quot; and 5 5/8&quot; width.</td>
</tr>
<tr>
<td>Runner Tracks</td>
<td>Same material, size, and finish as screw studs</td>
</tr>
<tr>
<td>Furring Channels</td>
<td>16 gage cold-rolled, 1-1/2&quot; size, .475 lb./ft., galvanized</td>
</tr>
<tr>
<td>Wire</td>
<td>Galvanized and annealed low-carbon steel, Fed. Spec. QQ-W-461, Class 1</td>
</tr>
<tr>
<td></td>
<td>galvanizing weight, 8 gage for hanger wire, 16 gage for tie wire</td>
</tr>
<tr>
<td>Gypsum Wallboard</td>
<td>ASTM C36, Type R regular or Type X fire-retardant core as required for</td>
</tr>
<tr>
<td></td>
<td>fire rating, 5/8&quot; thick x 4'-0&quot; wide x length required to minimize</td>
</tr>
<tr>
<td></td>
<td>joints, side edges tapered for taping, insulating foil-backed at</td>
</tr>
<tr>
<td></td>
<td>exterior walls only.</td>
</tr>
<tr>
<td>Fasteners</td>
<td>Screws: ASTM C1002, type S or W screws, length as required to penetrate</td>
</tr>
<tr>
<td></td>
<td>metal 3/8&quot; min. or wood 3/4&quot; min.</td>
</tr>
<tr>
<td></td>
<td>Nails: ASTM C514, 4d coated nails, 1-1/2&quot; long, 1/4&quot; heads</td>
</tr>
<tr>
<td>Corner Beads</td>
<td>ANSI Type CB-1 x 114, 26 gage, for taping.</td>
</tr>
<tr>
<td>Casing Beads</td>
<td>ANSI Type LC-58, 26 gage, square nose, for taping.</td>
</tr>
<tr>
<td>Joint Treatment</td>
<td>ASTM C475, joint tape, joint compound and finishing or topping</td>
</tr>
<tr>
<td></td>
<td>compound as recommended by wallboard manufacturer.</td>
</tr>
<tr>
<td>Texture Coating</td>
<td>Gold Bond, or US Gypsum wall spray texture for an &quot;orange peel&quot; or</td>
</tr>
<tr>
<td></td>
<td>spatter finish on interior surfaces to be painted.</td>
</tr>
</tbody>
</table>

Metal Stud Installation - Conform to requirements of ASTM C754, Section 7.1 through 7.3 for installation of steel framing members. Accurately align the floor and ceiling runner tracks to partition layouts. Secure runner tracks at 24" o.c. and within 6" of ends with concrete stub nails or power driven fasteners. Space studs at 16" o.c. Provide 20 ga. double studs both jambs of hollow metal frames, behind wall mounted shelving and cabinet and behind wall mounted TV monitors. Provide diagonal bracing at head of stud walls that terminate above ceilings. Install acoustical insulation batts in all stud partitions where indicated on drawings.

Suspended Ceiling Installation - Conform to requirements of ASTM C754, Section 8. Space hanger wires at 4'-0" o.c. each way, and secure to overhead framing by approved means to develop full strength of the hanger. Place furring channels at 4'-0" o.c. and within 6" of abutting walls, position relative to indicated ceiling height, level and secure by saddle-tying with hanger wire. Place screw channels at 24" o.c. at right angles to furring channel and within 4" of abutting walls. Secure screw channel with furring channel clips or 16 gage tie wire.

Wallboard Installation - Conform to applicable portions of ASTM C840, Systems I, VIII, X, XI and XIV, and manufacturer's printed instructions for single-ply and two-ply wallboard, screw or nail attached to metal framing. Tape and treat all joints, corners and edges, treat...
all fastener heads with compound. Apply wall texture by spray to all walls and ceilings scheduled to be painted. Wallboard that are to extend to the underside of deck above between classrooms shall be installed on one side only of wall framing.

End of Section

SECTION 09300 – CERAMIC TILE

Reference Standards

- Handbook for Ceramic Tile Installation, Tile Council of America
- Porcelain Enamel Institute (PEI)
- American Society for Testing (ASTM)
  - A-108.1 Grout
  - A-118.1 Mortar

Materials

Provide tile that complies with ANSI A137.1 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors and pattern indicated on the Drawings and identified in the Schedule and the end of this Section. Tile shall also be provided in accordance with the following:

1. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.

2. Mounting: For factory mounted tile, provide back or edge mounted tile assemblies as standard with the manufacturer, unless otherwise specified.

3. Factory Applied Temporary Protective Coatings: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.

4. Glazed Ceramic Wall Tile (CT)

Glazed ceramic tile, mounted, conforming to ANSI A137.1, Section 6.1.1, Standard grade, matte glazed finish, cushioned edges, 4-1/4" x 4-1/4" x 5/16" thick, color and pattern as selected by the owners representative

Mosaic Tile

2”x2” ceramic tile, mounted, textured finish surface, Daltile Keystone or equal in color to be selected.

Trim Shapes

ANSI A137.1, surface bullnose and cove base type as required in color and pattern to match tile selected

Vapor barrier

Fluid applied elastomeric Membrane in accord with A118.10

Grout

Special latex grout additive mixed with portland cement grout complying with ANSI A108.1 A108.4. A108.5 and A108.7

Concrete masonry walls to receive ceramic tile in shower areas to have struck joints. Install ceramic tile by thin-set method using dry-set or latex-Portland cement mortar and grout in accordance with ANSI A108.5 and TCA

All tile joints shall be level and plumb and of consistent width. Grout shall be evenly applied and be finished to expose equal surface area for all joints.

Maintain temperature at least 70 degrees in place of storage prior to laying and in rooms where tile is to be laid, maintain temperature at least 70 degrees for 48 hours before installation. Upon completion clean all ceramic tile surfaces so they are free of foreign matter.

End of section

SECTION 09500 - ACOUSTICAL CEILING SYSTEMS

Materials
Specification is based on USG interiors products. Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products.

Acoustical Panels  ACT-1: USG Radar Acoustical Ceiling Panels (22441), 24" x 48" x 7/8", Class A, Fire rated, .6 NRC, STC: 35 to 39, for lay-in application, square edge, white color.

Suspension System  Exposed grid system, 24"x24" and 24" x 48" grid, conforming to ASTM C635 for intermediate duty, components formed of ASTM A366 commercial cold-rolled steel, electro-zinc coated and pre-painted white. System to have manufactured shapes at bullnosed corners.

Fire rated systems to be Chicago Metallic Corp. Series 1250, Donn USG Interior DXL-24 system or equal.
Non-fire rated systems to be Chicago Metallic Corp. Series 1200, USG Interior DX-24 system or equal.

Hanger Wire  Galvanized and annealed low-carbon steel, Fed. Spec. QQ-W-461, Class 1 galvanizing weight, 12 gage minimum

Extra Panels  Furnish to the Owner for replacement, approximately 2% of each size and design of acoustical panels, properly packaged and marked for storage

Installation  - Erect suspension systems in accordance with ASTM C636 and manufacturer's printed instructions to the pattern indicated on the drawings. Suspend hanger wires from overhead construction. Space main runners at 4'-0" O. C. maximum and cross runners at
2'-0” O.C.  Provide additional supports for lighting fixtures attached to suspended systems as required. Mount pyramidal diffusers in ceiling grid. Securely attach panels using lay-in hardware provided by manufacturer including 4 corner hooks suspended by wires from ceiling to corners of panels. For fire resistant assembly, install box, tent or flat covers for light fixtures and cabinet unit heaters for fire-rated protection applicable to ceiling assembly being provided.

Install hold down clips on ceiling tile in all vestibules or within 8'-0” of exterior door if no vestibule exists.

End of Section

SECTION 09650 - RESILIENT FLOORING AND BASE

Materials
Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products.

Rubber Base  Johnsonite cp 4” high, 1/8” thick, conforming to ASTM f 1861 type TV – vinyl thermoplastic, Style B coved., color as selected by the A-E

Adhesives  Armstrong S515 Clear Thin Spread Tile Adhesive, water based /latex Resin, moisture and alkali resistant, for use with VCT over high moisture concrete slabs and Armstrong S-725 wall base adhesive.

Extra Base  Furnish to the Owner for replacement, approximately 3% of each base, properly packaged and marked for storage.

Installation - Install resilient flooring and base only on clean, dry, level surfaces in strict accordance with manufacturer’s printed instructions. Do not lay flooring until other work, including painting, is substantially completed.

Lay tile starting from the axis of rooms or spaces to provide border tiles greater than 1/2 the tile width. Pattern shall be laid in one direction. Install reducer strips under doors where tile ends at door openings. Form resilient base corners by mitering, coping and bending.

Installation shall be in strict accord with manufactures recommendations and specifications. At completion of job, all loose, cracked, chipped, stained or otherwise defective tile or base shall be removed and replaced in a satisfactory manner.

End of Section
SECTION 09900 - PAINTING

Materials - Paint systems listed are Sherwin Williams (S-W) paints. First quality products or systems of other manufacturers will be acceptable subject to compliance with the specified system regarding type of paint, sheen, number of coats and spreading rate.

Exterior finishes

Steel
Primer: B50WZ0004 - Kem Bond® HS High Solids Alkyd Universal Metal Primer
  Off White
Finish: A82W00151 - A-100® Exterior Latex Satin Extra White (two coats)

Galvanized Metal
Primer: B66W00001 - DTM Acrylic Primer Finish White
Finish: A82W00151 - A-100® Exterior Latex Satin Extra White

Interior Paint Schedule

Masonry
Primer: B25W00025 - PrepRite® Block Filler White
Finish: B31W02251 - ProMar® 200 Interior Latex Semi-Gloss Extra White
  (two coats)

Masonry (Epoxy)
Primer: B42W00046 - Heavy Duty Block Filler White
Finish: B70W00211 - Waterbased Catalyzed Epoxy Extra White/Tint Base Part A
  (two coats)

Galvanized Metal
Primer: B66W00001 - DTM Acrylic Primer Finish White
Finish: B31W02251 - ProMar® 200 Interior Latex Semi-Gloss Extra White
  (two coats)

Drywall Ceilings
Primer: B28WJ0901 - Wasatch Interior Latex Hi Hide Primer White
Finish: B20W02251 - ProMar® 200 Interior Latex Eg-Shel Extra White
  (two coats)

Drywall Walls
Primer: B28WJ0901 - Wasatch Interior Latex Hi Hide Primer White
Finish: B31W02251 - ProMar® 200 Interior Latex Semi-Gloss Extra White (two coats)

Wood
Stain: S64T00050 - Sher-Wood® BAC Wiping Stain Clear Tint Base
Finish: A67V00001 - Wood Classics® Polyurethane Varnish High Gloss Clear

Wood Painted
Primer: B28WJ0901 - Wasatch Interior Latex Hi Hide Primer White
Finish: B31W02251 - ProMar® 200 Interior Latex Semi-Gloss Extra White
  (two coats)
COLORS

Concrete Block Masonry Walls  Color to be selected
Gypsum Drywall  Color to be selected
All Metal  Color to be selected
Stained Wood Trim
Roof top items, not factory finished, including but not limited to flashings, drains, vents intake and exhaust ducts, etc. Paint as specified for factory primed metals.  Color to be selected.

EXECUTION

Inspection
Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition by customary surface preparation work as specified in paragraph title Surface Preparation.  Do not proceed with surface preparation or coating application until conditions have been corrected and are suitable.

Surface Preparation

General - Remove, mask or otherwise protect hardware, fixture, plates, accessories, and similar items in place but not to be painted, prior to surface preparation and painting operations.  Remove doors as necessary to paint edges.  Reinstall items at completion of painting.  Use only skilled workmen for removing and reinstalling above items.  Surfaces to be painted must be cured, dry, firm, clean, and free of all contaminants before any materials are applied.  Remove oils and grease with cleaning solvents and clean cloths prior to mechanical cleaning.  Clean floors and adjacent surfaces as well as surfaces to be painted. Schedule cleaning so that dust and other contaminants will not fall on wet, newly painted surfaces.

Masonry - Remove efflorescence, laitance, dirt, loose or excess mortar and aggregate, and other foreign matter.  Roughen all glazed surfaces.  Where high alkalinity or efflorescence are present, neutralize, clean and dry surfaces as recommended in writing by the paint manufacturer.  Point up all cracks and voids in mortar joints before painting or sealing.

Drywall - Touch up surface imperfections with spackling compound, sand smooth and texture to match adjacent drywall surfaces.  Do not raise nap of paper on wallboard. Dust down with a soft brush or dry cloth.

Ferrous Metal - Remove grease, oil, dirt and dust with mineral spirits.  Remove all rust, mill scale and weld spatter by wire brushing, sanding, or sandblasting as required to produce a satisfactory painting surface.  Apply appropriate chipped or abraded areas of shop coated items with specified primer before proceeding with finish painting.
Galvanized Metal - Thoroughly clean and etch with solvent or a chemical wash pretreatment solution used as directed by manufacturer to remove all factory and mill compounds and apply recommended primer.

Application and Workmanship

Field painting is not required on items specified to be completely finished at factory or on aluminum (except wall louvers), brass, bronze, or other nonferrous metal. Paint all surfaces scheduled, noted on drawings, or specified herein. Paint all grilles, louvers, convector covers, access panels, electrical panels, and other shop primed metal on or in painted walls or ceilings except where specified to be baked enamel or nonferrous finish. Paint all exposed piping, insulated piping, conduit, ducts and other plumbing, heating and electrical work in rooms or areas scheduled or noted to be painted.

Surfaces to be coated shall be clean, dry, smooth and properly prepared to receive the specified coating. Manufacturer’s label directions for each product shall be strictly adhered to with respect to temperature, humidity, surface conditions, spreading rate, and method of application.

All piping exposed in occupied spaces and above suspended ceilings shall be marked as to content and direction of flow.

Apply materials at proper consistency, not thinned or otherwise altered except in accordance with manufacturer's printed directions. Apply each coat under adequate illumination, spread evenly and flowed on smoothly without runs, sags, skips, thin spots, brush marks, or any other defect. For opaque coatings, tint each coat to vary slightly from preceding coat. Allow each coat to dry thoroughly before applying the succeeding coats. Between coats, sand enamel and varnish finished applied to metal or wood with fine sandpaper, and dust thoroughly to produce a smooth surface.

Finish alcoves and closets the same as adjoining rooms unless otherwise specified. Finish top, bottom, and edges of doors the same as specified for door faces after fitting and installation. Finish all other surfaces the same as nearest or adjoining surfaces unless otherwise specified or directed by the owner’s representative

Protect paint work and adjacent work at all times by suitable covering. Upon completion of work, remove all paint spots from adjacent surfaces, remove all rubbish and accumulated materials of whatever nature, and leave work in a clean, orderly and acceptable condition

End of Section
DIVISION 10– SPECIALITIES

SECTION 10220 - CHAINLINK FENCING AND SLIDING GATE

Materials
Accessories indicated are products of Master Halco, Inc. Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials and finish of specified items. Provide each accessory complete with necessary mounting plates, anchors and fasteners suited for use with supporting construction.

Steel fence framework
Steel pipe Type I: ASTM F1043 Group IA, ASTM F1083 standard weight schedule 40 hot-dip galvanized pipe having a zinc coating of 1.8 oz/ft² on the outside surface and 1.8 oz/ft² (550 g/m²) on the inside surface.
Regular Grade: Minimum steel yield strength of 30,000 psi
Pipe End and Corner Post 2 7/8" O.D.
Pipeline Post 2 3/8" O.D.

Fabric
9 GA x2” Mesh

Fittings
Post caps: ASTM F626 galvanized pressed steel, malleable iron, or aluminum alloy weather tight closure cap for tubular posts. Provide one cap for each post. “C” shaped line post without top rail does not require post caps. When top rail is specified provide line post loop tops to secure top rail
Rail ends: Galvanized pressed steel per ASTM F626, for connection of rails to post using a brace band.
Top rail sleeves: 7” (178 mm) galvanized steel sleeve per ASTM F626.
Wire ties: 9 gauge (0.148") (3.76 mm) galvanized steel wire for attachment of fabric to line posts and rails. Pre-formed hog ring ties to be 9 gauge (0.148") (3.76 mm) galvanized steel or aluminum for attachment of fabric to tension wire. Tie wire and hog rings per ASTM F626.
Brace and tension (stretcher bar) bands: ASTM F626 galvanized 12-gauge pressed steel by 3/4” formed to a minimum 300-degree profile curvature for post attachment. Secure bands using minimum 5/16” (7.94 mm) galvanized carriage bolt and nut.
Truss rod assembly: Galvanized steel minimum 5/16” (7.9mm) diameter truss rod with pressed steeltightener, in accordance with ASTM F626
Carriage bolts and nuts: Galvanized of commercial quality

Tension wire
Tension wire: ASTM A824 Type II, zinc coated (galvanized) steel wire, 7-gauge, (0.177") (4.50 mm) diameter wire having a tensile strength of 75,000 psi (517 MPa).
Pipe Rail and Braces, 1.660 in. O.D

Horizontal slide gates
Cantilever Slide Gates: Incompliance with ASTM F1184 Type II
Class 1 – External Roller Design
single leaf 4'-0"_opening by high 6'-0" O.D. in compliance with Gate frame to be fabricated by

RSAP 1924
Weld County
Crime Lab Storage Building
welding, vertical and horizontal members located no greater than 5 ft. apart. The length of back frame support section shall be a minimum of 40% of the opening. Welded joints are to be protected by applying zinc-rich paint in accordance with ASTM Practice A780. Gates designed to open or close by applying an initial pull force no greater than 40 lbs. Match chain link fabric to that of the fence system. Positive locking latch fabricated galvanized pressed steel. Group IA ASTM F10983 sch 40 pipe. Provide 5-year warranty nylon cantilever external top and bottom rollers with safety protective guards.

Internal truck assemblies shall be capable of swiveling to accommodate gate movement and ensure full contact of the four support wheels and two guide wheels to the internal track surface. The galvanized steel truck assembly post bracket, truck assembly vertical support axle as well as the support wheels shall be designed to handle static and dynamic forces required to support and operate the gate. The truck assembly, support axle and internal wheels shall be comprised of stainless steel or galvanized steel components.

Galvanized steel bottom guide roller brackets containing two 3” (75 mm) rubber wheels shall be supplied to keep the bottom of the gate plumb and in proper alignment.

Single gates shall be supplied with a galvanized steel latch mechanism capable of securing the gate with a padlock accessible from either side.

Cantilever gate posts shall be 4.00” OD

**Chain link framework installation**

Install chain link fence system in accordance with ASTM F567 and manufacturer’s instructions. Locate terminal post at each fence termination and change in horizontal or vertical direction of 30° or more.

Bracing: Install horizontal brace and truss assembly at mid-height or above for fences 6’ at each fabric connection to the terminal post. The diagonal truss rod is installed at the point where the brace rail is attached to the terminal post and diagonally down to the bottom of the adjacent line post. Place the truss rod in tension by adjusting the turnbuckle.

Tension wire: Install tension wires so that it will be located 4” up from bottom the fabric. If top rail is not specified, install the tension wire so that it will be located 4” down from the top of the fabric. Stretch and install tension wire before installing the chain link fabric and attach it to each post using wire ties.

Top rail: Install in length as required. Connect ends with sleeves forming a rigid connection, allow for expansion and contraction.

Bottom Rails: Install bottom rails between posts and attach to post using rail end or line rail clamps.

**Chain link fabric installation**

Fabric: Install fabric on security side, pull fabric taut; thread the tension bar through fabric and cp fabric remains in tension after pulling force is released. Install fabric so that it is 2” +/- 1” above finish floor.

Secure fabric using wire ties to line posts at 15” on center and to rails and braces 24” on center, and to the tension wire using hog rings 24” on center. Tie wire shall be secured to the fabric by wrapping it two 360 degree turns around the chain link wire pickets. Cut off any excess wire and bend back.
Chain link gate installation
Install cantilever horizontal slide gates and gate posts in accordance with ASTM F567. Cantilever sliding gates shall be plumb in the closed position with minimal ground clearance and slide with an initial force of 40 lbs.

End of Section

SECTION 10400 - IDENTIFYING DEVICES

Interior Identification Signs

<table>
<thead>
<tr>
<th>Type</th>
<th>Best Manufacturing Company &quot;ES&quot; Plastic, or equal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Melamine thermoset plastic laminate, 1/8&quot; thick</td>
</tr>
<tr>
<td>Style</td>
<td>HC300 ADA Signage system, 1/8&quot; thick, 7/8&quot; high letters, square corner, square border</td>
</tr>
<tr>
<td>Sign Dimensions</td>
<td>6”x8” pictogram, 6”x8” room name,</td>
</tr>
<tr>
<td>Text</td>
<td>Room name signs: UNISEX, HC300D 4 ½”x 2 ¾” room name JANITOR,</td>
</tr>
<tr>
<td>Mounting</td>
<td>Provide pre-drilled holes and screws for mounting mechanically fastened to door or wall. Colors of letters and background to be selected from standard colors.</td>
</tr>
</tbody>
</table>

END OF SECTION

SECTION 10510 – PASS-THROUGH EVIDENCE LOCKER
This specification is based on products manufactured or furnished by:
Southwest Solutions Evidence Lockers
Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

<table>
<thead>
<tr>
<th>Type</th>
<th>Pass-through</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Keyless (push button)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Width and heights of door vary, see SECTION 1/A6</td>
</tr>
<tr>
<td>Frame depth</td>
<td>24”</td>
</tr>
<tr>
<td>Frame height</td>
<td>6’-10”</td>
</tr>
<tr>
<td>Frame</td>
<td>14 gauge.</td>
</tr>
<tr>
<td>Rear door</td>
<td>multiple, full height, full vision</td>
</tr>
<tr>
<td>Base</td>
<td>4” vertical metal base</td>
</tr>
</tbody>
</table>

End of Section

SECTION 10520 - FIRE EXTINGUISHERS AND CABINETS
Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products.
**Extinguishers**

- Type: Multi-purpose dry chemical, 10-pound capacity
- Series and Model: J.L. Industries Model Cosmic 10E, or equal
- UL Rating: 4A-80BC
- Shell Material: Enameled Steel
- Dimensions: 20-1/2"H x 9"W, 5"-cylinder diameter
- Weight: 18 pounds

**Cabinets (FEC)**

Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products.

- Type: Larsen Mfg. Model FS 2409-6R steel cabinet and door or equal
- Fire rated cabinet: to meet ASTM E814 (UBC Std. 43-6)
- Mounting: Recessed into masonry or stud walls as indicated
- Construction: 18 gauge cold-rolled steel lined with mfg. standard rate fire resistive material paint with acrylic enamel

  - “Operable doors glass doors,”

- Door: Duo Break Glass Door with tempered glazing. Furnish with red decal “FIRE EXTINGUISHER” for job site application.
- Door Hardware: Continuous hinge, self-adjusting roller latch, and zinc-plated pull handle
- Min. Interior dim.: 9-1/2"W x 24"H x 6"D
- Brackets (FEB): Larsen Mfg. 846 or equal

**Installation** - Install fire extinguisher cabinets at locations indicated "FEC" on the drawings, install brackets at locations indicated "FEB" on the drawings. Install cabinets and brackets in accordance with manufacturer's printed instructions. Install cabinet with the handle height 4'-0" off finished floor. Paint cabinets, color to be selected. Apply decals on cabinets after cabinets are field painted. The owner shall furnish fire extinguishers.

End of Section

**SECTION 10530 – TRANSACTION WINDOW**

This specification is based on products manufactured or furnished by:

- Covenant Security Equipment

Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

- Type: TW3-36S, Voice around
- Dimensions: 36" W x 4 1/2" D x 36" H
- Frame: Clear Anodized Aluminum
- Base Plate: Stainless Steel
- Service Tray: Dip/Deal 16 ga. stainless steel, 8" W x 11 ½" L x 2" D
- Vision panel: Level 1 Bullet Resistant glass clad polycarbonate
- Rough opening: 36 3/8" x 36 3/8"

End of Section

**SECTION 10550 –DROP BOX**

This specification is based on products manufactured or furnished by:

- Uline

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Crime Lab Storage Building
Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

Type Large, Steel, Freestanding Floor Parcel Lockable Drop Mail Box
Model H-6305
Dimensions 21" W x 12" D x 36" H
Frame Galvanized steel, powder coated
Access Door Front located lockable retrieval door (with 2 keys)
Slot opening 15” x 3 ½”
Mail Drop box 12” Deep
Vision panel Level 1 Bullet Resistant glass clad polycarbonate
Weight 50 lbs.

Installation
Locate Drop Box in room 111

End of Section

SECTION 10600 – EQUIPMENT STORAGE (BICYCLES)
Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products. Racking System on Rubbermaid FastTrack

Type FastTrack Garage 1- Bike Vertical Bike Hook (20 hooks)
Finish Powder -Coated Steel
Capacity 50 lbs.
Mounting Fast track hanging rail (24'-0” Lineal feet)

Installation
Attached 2- 2”x8”x12”-0” wood member on south CMU wall in room 131 using wedge anchors at 48” O.C. beginning 4'-0” west of door 131A
Attached 2- 2”x8”x8”-0” wood member on south CMU wall in room 131 using wedge anchors at 48” O.C. beginning 4'-0” east of door 131A
Install 24'-0” lineal feet of Fast track hanging rail on 2x8” on west side of door 131A.
Install 16'-0” lineal feet of Fast track hanging rail on 2x8” on east side of door 131A.
Install 8 hooks on 16'-0” hanging and 12 hooks on 24'-0” hanging rail.

End of Section

SECTION 10620 – PALLET RACKING SYSTEM
This specification is based on products manufactured or furnished by:
Steel King Pallet Rack Heavy-duty SK2000 tubular warehouse racking
Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

Racking System
Components of the system shall meet the requirements of ANSI MH16.1-2012 Specifications for design, testing and utilization Industrial steel storage racks.
Construction.
**Materials**

<table>
<thead>
<tr>
<th>Type</th>
<th>Selective system, single rack depth (96”x42”x96”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack height</td>
<td>96”</td>
</tr>
<tr>
<td>Rack depth</td>
<td>42”</td>
</tr>
<tr>
<td>Upright</td>
<td>3” x 3” with tear drop holes at that allow for 2” vertical beam adjustment</td>
</tr>
<tr>
<td>Load beams</td>
<td>Tear drop holes, 96” length</td>
</tr>
<tr>
<td>Beam capacity</td>
<td>4000 lbs. / 5080 lbs.</td>
</tr>
<tr>
<td>Decking</td>
<td>4-gauge wire spaced 2” x 4” with</td>
</tr>
<tr>
<td></td>
<td>3 channel support under wire</td>
</tr>
<tr>
<td>Diagonal bracing</td>
<td>2” x 2” tubes and 1.5”x1.5” angles</td>
</tr>
<tr>
<td>Foot pads</td>
<td>7gauge steel plate with multiple anchor holes</td>
</tr>
<tr>
<td>Finish</td>
<td>Powder coated</td>
</tr>
</tbody>
</table>

**Installation**

Provide 32’-0” lineal feet of racking on the north wall of room 130.
Install second row of racking 32’-0” lineal feet of racking facing the north wall of racking, 14’-0” south of north wall of room 130.

Racking shall be installed plumb, level, and square. Each column of each rack frame must be attached to floor with ½” diameter x 3 ¾” concrete expansion anchor per column.

**End of Section**

**SECTION 10640-WIRE SHELVING**

This specification is based on products manufactured or furnished by:

Uline

Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

<table>
<thead>
<tr>
<th>Type</th>
<th>wire shelving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>H-2942-96 (60”x18”x96”)</td>
</tr>
<tr>
<td>Quantity</td>
<td>2 sections, 6 shelves per unit</td>
</tr>
<tr>
<td>Model</td>
<td>H-2937-96 (48”x12”x96”)</td>
</tr>
<tr>
<td>Quantity</td>
<td>10 sections, 6 shelves per unit</td>
</tr>
<tr>
<td>Finish</td>
<td>Chrome</td>
</tr>
<tr>
<td>Accessories</td>
<td>Foot plates for anchoring each section</td>
</tr>
</tbody>
</table>

**Installation**

Install 24’-0” lineal feet of 12” shelving on the east wall of room 128.
Install 16’-0” lineal feet of 12” shelving on the west wall of room 128.
Install 10’-0” lineal feet of 18” shelving on the south wall of room 128.
Shelving shall be installed plumb, level, and square. Each leg of each shelving frame must be attached to floor with “ramset”

**End of Section**
SECTION 10660 - HIGH-DENSITY MOBILE STORAGE UNITS
(MECHANICALLY ASSISTED MOVEMENT)
This specification is based on products manufactured or furnished by:
Datum Storage Solutions,
Equivalent products of other manufacturers will be acceptable subject to compliance
with design, function, materials, finishes, and hardware of specified products.

Related work furnished by others
Base floor capable of withstanding line load weight distribution created by load
transfers from weight of system, storage housings, media, and occupants.
Finished floor will be sealed concrete.

Description
High-density mobile storage system consisting of storage housings mounted
on wheeled carriage assemblies riding on multiple steel rails. The term storage
housing shall refer to the shelving, rack, or cabinets which are a component of the
high-density mobile system herein specified.

The carriage shall be formed of a bolted structural steel frame with precision
machined and balanced steel wheels aligning to corresponding steel rails. All
bearings shall be permanently lubricated and shielded.

Drive Controls
Triple arm operating control with ergonomic user-friendly knobs shall be
provided on the drive ends. A minimum of one operation knob per carriage
shall be within ADA reach guidelines at all times.

Front drive control consisting of chain, sprocket, and upper drive bearing
assembly shall be completely self-contained and provide for drive chain tension
adjustment located conveniently below the drive handle without the need to
remove the carriage end panel. Carriage drive assemblies which require end
panel removal for drive chain tension adjustment shall be unacceptable
Carriage drive mechanism shall be a line shaft drive, or a synchro drive per
manufacturer recommendations to best provide a smooth, non-binding, and
non- racking movement. The drive to the wheels shall be a balanced design
providing drive torque from the midpoint of the length of the carriage out the
carriage ends. Drive system shall be designed to provide a movement of up to
4000 pounds (1814 Kg) of load with only 1 pound (0.4536 Kg) of user effort at
the drive control handle.

All bearings throughout the drive system shall be permanently lubricated
and shielded.
Safety Item
A user activated aisle safety locking mechanism shall be provided at every carriage control to prevent unintentional carriage movement. Aisle safety lock shall incorporate 2 points of contact to prevent unintentional movement of handle. Aisle safety lock knob mechanism shall contain a red indicator to alert user of lock status.

Systems that when engaged lock the carriage and prevent it from backing away from the safety activation point shall be unacceptable.

Finishes:

Metal Components and Assemblies:
All components shall be finished with an electrostatically applied powder coat. Finish shall consist of a non-glare raised surface that provides scuff and scratch resistance. Finish shall be a non-VOC emitting hybrid powder coat which meets or exceeds ASTM test criteria for adhesion, flexibility, hardness, and humidity resistance. A minimum of 8 standard manufacturer’s colors shall be offered at no additional charge and a minimum of 12 additional colors shall be available at an extended lead time. Any special color match shall be made available per the standard manufacturer’s published policy.

Laminate Panels: High Pressure Laminate Finish: To be selected from manufacturer’s 13 standard high-pressure colors and patterns.

Design Requirements
Consult floor plan A1 for desired widths of units.
Storage housing height: 8”-0”

Submittals
Submit manufacturer’s product literature and installation instructions.
Provide dimensional layout of complete system including elevations, adjacent room details including pertinent notations and descriptions.
Provide dimensional drawings including elevations of all storage housings locating on or adjacent to the system specified.
For initial selection of colors and finishes, submit manufacturer’s color chart(s) showing full range of colors and finishes available.
Provide manufacturer’s operation manual, maintenance and care

Basic materials
Provide materials and quality of workmanship, which meet or exceed established industry standards for products specified. Material selection and composition shall be manufacturer’s option unless indicated otherwise. Fabricate units from ASTM Class 1, cold-rolled commercial grade sheet or coil steel with all bends and radiuses consistent and true.

Laminate Panels
High Pressure Plastic Laminate:
  Shall conform to NEMA LD-3 .040 inch (1 mm) vertical grade.

Low Pressure Laminate:
  Shall be constructed from 3/4 inch (19 mm) 45 lb./cu. ft. (720 kg/m3) particleboard core panel with integral heat bonded laminated surface on face and back.

Rails
Rail shall be ASTM/AISI Type 1018 steel of manufacturer’s selection designed and manufactured to carry a load of 1000 pounds per lineal foot (1488 kg/m) of carriage length.

Rail surfaces at all wheel contact points shall be unfinished. For long term durability and aesthetics, paint or powder coat finishes shall be unacceptable.

Rail shall be designed to be anchored to structurally sound base floor capable of supporting fully loaded system and exhibiting a maximum deflection not to exceed L/700.

Rail shall be positioned, leveled and secured in accordance with the manufacturer’s instructions, providing a minimum of 1/4 inch (6 mm) of grout under the rail from the high spot on the floor. (optional): Void under leveled rail shall be completely filled with a non-shrink grout. Provide a minimum of 1/4 inch (6 mm) of grout under the rail from the high spot on the floor.

Rail shall be drilled and tapped to accommodate leveling screws adjacent to all anchor holes. All rails must extend completely under all stationary ranges. Rail leveling shall be a captive fastener type.
(optional): Install stationary carriage (platform) adjacent to the decking.

Rail shall be level not to exceed 1/16 inch (1.6 mm) maximum variation from true level within module and 1/16 inch (1.6 mm) maximum variation between adjacent rails perpendicular to rail direction. Each section of rail
shall be a minimum of 12 inches (305 mm) and a maximum of 72 inches (2134 mm) with shorter length used only to terminate each individual rail assembly.

Each end of the rail shall be connected by means of stainless steel dowels pinned between the rail splice. The splice shall be designed for the most severe operating conditions. Connection joints shall demonstrate vertical and horizontal continuity and provide a transfer of load to and from the adjoining rail sections. Butt splice joints and tongue and groove rail splice joints which only prevent movement in one direction are unacceptable.

Floor and Ramp
Floor shall be constructed of minimum of ¾” vinyl clad board flooring which requires no additional floor covering and provides a slip resistant surface. There shall be no open gaps between the floor and the rail. Fire retardant plywood to be available where required by code. Particle board is not permitted.

Ramps shall be constructed painted steel, stainless steel or galvanized steel.
Ramp shall not extend beyond carriage. The transition from the ramp edge to the floor shall be 1/8” with ramp having a maximum slope of 9 degrees.
Ramp shall extend under all mobile and stationary carriages.

Carriages:
Carriages are to be bolted or welded steel construction at the discretion of the manufacturer. Riveted carriages or components shall be unacceptable. Galvanized components are unacceptable. Components of unlike finish or material are unacceptable. Steel shall be ATSM-A1008 Commercial Type B or better.
Carriage side structural members shall be not less than 4.5 inches in height from bottom flange of carriage to storage housing base or foot.
Carriage shall be designed for a capacity of 1000 pounds per linear foot.
Carriage construction shall provide for shelving to be securely anchored with vibration-proof fasteners.
Carriages designed to recess the shelving or storage housing, thus creating a lip and causing the carriage to protrude beyond the plane of the face of the shelving or storage housing shall be unacceptable.
Carriages shall be powder coat finished inside and out. Galvanized
components and unfinished structural steel components shall be unacceptable.

Fixed carriages (platforms) shall be of the same construction and height as the mobile carriages. Fixed carriages (platforms) shall be securely anchored.

Splices shall be designed to maintain proper unit alignment with no visible fasteners on the outside of the carriage. Fasteners connecting any carriage splice joint shall be vibration-proof in design.

Carriages shall be straight and square. There shall be no movement in any splice, bolted, or welded connection when loaded to recommendation and normal operation is performed.

Wheels:
All wheels whether load or driven shall be a minimum of 5 inches (127 mm) in diameter to outer guide flange and precision machined for smooth operation and to ensure compatibility to the corresponding rail.

Bearings shall be permanently lubricated and shielded.

Dynamic load rating on wheel bearings shall be a minimum of 3500 pounds (1588 kg) per wheel.

Guides
A minimum of 2 guide rails shall be required to ensure precise carriage tracking alignment.

All guide rails shall have a flat top surface to provide friction-free alignment with the carriage guide wheel flanges.

All carriage wheels shall have a precision milled load surface which when coupled with the rail surface will ensure precise carriage tracking.

Roller guide and center flange methods of guidance shall be unacceptable.

Line Shaft Drive
Shaft shall be a minimum of 3/4 inch (19 mm) diameter solid steel.

Drive shaft shall be a non-load bearing member of the drive mechanism for ease of movement.

Couplers shall be securely keyed and locked into place to prevent
looseness in the drive mechanisms.

Drive mechanism must drive to midpoint of carriage length and transfer drive motion in a balanced manner to the carriage ends.

Operation
Gearing requirements unless specified will be at the discretion of the manufacturer based on anticipated weight load and carriage size. Reduction drive units must be available resulting in the noted carriage travel per revolution of the composite 3-spoke ergonomic operator control handle:

a. Single Reduction (.250 gear ratio) @ 3.487 inches (89 mm) carriage travel per handle revolution.

b. Double Reduction (.166 gear ratio) @ 2.316 inches (59 mm) carriage travel per handle revolution.

c. Triple Reduction (.125 gear ratio) @ 1.744 inches (44 mm) carriage travel per handle revolution.

Operator handles shall be provided in an ergonomic three-spoke design with three rotating knobs.

All operator handles shall be provided with a minimum 1.81” (46 mm) diameter ergonomic push-pull knob (Aisle Safety Lock) located at the center of the operator handle to secure adjacent carriages in place while an aisle is being occupied. Smaller knobs shall be unacceptable.

A red indicator on the Aisle Safety Lock Knob shall exhibit a red indicator visible when the aisle lock is pushed in and activated.

Operator handles and aisle access both into and around the system shall conform to all applicable codes including but not limited to the Americans with Disabilities Act.

End Panels:
End panels or chain box covers shall be provided to cover the drive chain mechanism and enhance the aesthetics of the system.

End panels must extend the full width of the carriage and extend from the bottom edge of the carriage to the top of the storage housing on the carriage.

Steel: Panels shall be fabricated from no less than 20-gauge material, 48 inches (1219 mm) in width shall be fabricated from 16-gauge powder coated
steel. Panels 48 inches (1219 mm) wide and greater may be fabricated from a lesser gauge sheet steel if additional reinforcing hat channel are provided. Finish and color shall be selected from manufacturer's full offering

Provide manufacturer’s standard. Location and quantity as indicated on the drawings.

Installation
Follow all manufacturer’s documented instructions and procedures for installation of rail, floor and ramp if applicable, fixed and movable carriages, shelving, panels and related accessories.

Replace components that are scratched, dented, or damaged in any manner with new items from the manufacturer. Surface scratches may be touched up but repair must be complete and undistinguishable.

Adjust all components and accessories to provide smooth operation and proper tracking alignment. Perform final visual check that all panels align when aisles are closed, and all gaps are consistent.

Demonstration and training
Schedule and conduct demonstration of the high-density mobile system. Review all safety features and proper carriage operation with owner’s personnel. Review any additional features or points of interest.

Schedule and conduct maintenance training with owner’s maintenance personnel. Training session should include a full operation demonstration and all preventative maintenance and minor repair procedures for the high-density mobile system that they would normally be expected to perform.

Warranty
Provide a written warranty, executed by contractor, installer, and manufacturer, agreeing to repair or replace equipment which fails in materials or workmanship within the established warranty period. This warranty shall be in addition to, and not a limitation of, other rights the owner may have under general conditions provisions of the contract documents.

In addition, manufacturer shall warrant the high-density mobile storage system against defects in material and workmanship for the life of the system from date of final acceptance by owner. Manufacturer shall provide labor for 2 years from date of final acceptance provided all terms of the most recent warranty statement release are met.

End of Section
SECTION 10800 - TOILET AND MISCELLANEOUS ACCESSORIES

Materials - Accessories indicated are products of Bobrick Washroom Equipment, Inc. Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials and finish of specified items. Provide each accessory complete with necessary mounting plates, anchors and fasteners suited for use with supporting construction.

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Model Numbers, Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mirrors w/ Shelf (SS)</td>
<td>B-165, 18&quot; W x 36&quot; H</td>
</tr>
<tr>
<td>Grab Bars</td>
<td>B-5806 x 48&quot; and B-5806 x 36&quot;, B-5806 x 18&quot;</td>
</tr>
<tr>
<td>Waste Receptacle</td>
<td>B-277, 12.0-gallon capacity surface mounted</td>
</tr>
<tr>
<td>Sanitary Napkin Disposal</td>
<td>B 270 furnished and installed by contractor</td>
</tr>
<tr>
<td>Electric Hand Dryer</td>
<td>B 751 with adjustable nozzle, white</td>
</tr>
<tr>
<td>Liquid Soap Dispenser</td>
<td>Provided by owner, installed by contractor</td>
</tr>
<tr>
<td>Paper Towel Dispenser</td>
<td>Provided by owner, installed by contractor</td>
</tr>
<tr>
<td>Sanitary Napkin Dispenser</td>
<td>Provided by owner, installed by contractor</td>
</tr>
<tr>
<td>Toilet Tissue Dispenser</td>
<td>Provided by owner, installed by contractor</td>
</tr>
</tbody>
</table>

Installation - Install accessories at locations indicated on drawing or as directed in accordance with manufacturer's printed instructions. Mount accessories at heights indicated unless otherwise directed. Completed work shall be solidly secured, plumb, and free from damage.

End of Section
## SECTION 12550 – LABORATORY HOOD

This specification is based on products manufactured or furnished by:
- LABCONCO Fiberglass 30 Hood (2 required)
- Locate in room 111 and 124

Equivalent products of other manufacturers will be acceptable subject to compliance with design, function, materials, finishes, and hardware of specified products.

### Material

<table>
<thead>
<tr>
<th>Type</th>
<th>Compact fiberglass hood (3030000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airflow</td>
<td>By-pass</td>
</tr>
<tr>
<td>Style</td>
<td>Benchtop</td>
</tr>
<tr>
<td>Conformance</td>
<td>ASHRAE 110, ASTM E84, NFPA 45</td>
</tr>
<tr>
<td>Dimensions</td>
<td>30” W x 30” D x 48” H</td>
</tr>
<tr>
<td>Sash</td>
<td>Vertical rising, 3/16” safety glass with aluminum handle</td>
</tr>
<tr>
<td>Electric</td>
<td>115-volt, 60 Hz., duplex receptacle kit (2834800)</td>
</tr>
<tr>
<td>Lighting</td>
<td>Vapor-proof incandescent</td>
</tr>
<tr>
<td>Blower</td>
<td>Integral</td>
</tr>
<tr>
<td>Ducting</td>
<td>6.7” ID fiberglass exhaust connection on top of unit</td>
</tr>
<tr>
<td>Weight</td>
<td>122 lbs.</td>
</tr>
<tr>
<td>Finish</td>
<td>Powder coated</td>
</tr>
<tr>
<td>Base</td>
<td>Standard storage cabinet (9900200)</td>
</tr>
<tr>
<td>Work surface</td>
<td>Solid epoxy (4882806)</td>
</tr>
</tbody>
</table>

### Installation

Install case level and plumb in accord with manufacturer instructions.

End of Section
DIVISION 13 – SPECIAL CONSTRUCTION

SECTION 13290 PRE-ENGINEERED METAL BUILDING

Work of this Section includes furnishing and erecting pre-engineered metal buildings at location indicated on the sited drawings. The Contractor shall provide all materials, labor and equipment necessary to construct a fully functional maintenance building and a covered storage building for the park. The structures will include administrative area, visitor area, receiving area, staff processing area, storage area, vaults, staff and visitor restrooms and automobile storage bays. It is the intent of this specification to establish a minimum level for the general design of a complete and finished facility. Detailed engineered designs will be required throughout a submittal and approval process and shall be considered incidental to the cost of the structure.

RELATED WORK SPECIFIED ELSEWHERE
Division 3 – Concrete
Division 6 - Wood
Division 7 - Thermal & Moisture Protection
Division 8 - Doors & Windows
Division 9 - Finishes
Division 10 - Specialties
Division 15 - Mechanical
Division 16 - Electrical

CODE COMPLIANCE AND STANDARDS
All work and materials shall comply with the latest industry building codes and regulations, including but not limited to the following:

- International Building Code (IBC) - 2018
- National Electrical Code (NEC) -2017
- International Mechanical Code (IMC) -2018
- International Plumbing Code (IPC)- 2018
- Department of Energy, Building Energy Codes Program Requirements

DESIGN REQUIREMENTS
Design shall be based on live and dead loads for roof, wind, snow, seismic, auxiliary, collateral, uplift, and/or impact forces acting on the structure as specified by applicable codes and manufacturer association standards. As minimums, the structure and building components shall be designed to accommodate a ground snow loading of 30 PSF, and a wind force of 115 MPH, Exposure C and Seismic, Zone 1.
SUBMITTALS

Shop Drawings - Provide construction plans and design calculations for the structure, stamped by a professional engineer, who is registered in the State of Colorado. The Contractor’s Engineer shall verify that designs for foundations, floors, building structure, electrical and mechanical systems meet the applicable codes. Exterior sidewalls and roof coverings shall be designed to produce a weatherproof building which meets the State Energy Conservation Code. Shop drawings shall exhibit complete plans and elevations, including size and dimensions of building components, material types and finishes, hardware, details and methods of assembling construction, joints and connections, details and layout of mechanical and electrical systems.

Product Data - Submit manufacturer’s standard literature and technical data on pre-engineered building system and components. Provide manufacturer’s assembly instructions, manufacturing certificates and testing reports. Provide literature and technical data for building components manufactured by companies other than the pre-engineered building manufacturer.

Samples - Provide color samples and standard color selection charts for exterior metal, roofing and liner panels.

SUBSTITUTIONS

All requests for substitutions or alternates to these specifications must be submitted in writing accompanied by enough samples or literature to allow the evaluation of equivalency or superiority. Samples must be clearly marked with the vendors name, contact person, and telephone number. Samples may be retained if necessary to properly evaluate their proposed use. It is the vendor’s responsibility to arrange for the return of the samples once the evaluation is completed. Substitution will not be allowed unless approved in writing by the owner’s representative.

QUALIFICATIONS/QUALITY ASSURANCE

The pre-engineered building manufacturer shall be a company specialized in manufacturing the products specified in this Section with a minimum of three years experience. The installer/contractor shall have a minimum of three years experience installing the type of building system proposed and must be recognized by the manufacturer as an authorized installer of their product. Experience references for both the manufacturer and the installer shall be made available to the owner and the architect.

WARRANTY

Provide a two year minimum warranty on all materials, parts and labor associated with the construction of this facility and for weather-tightness of the roof. Provide extended warranty, as indicated herein, for all building components supplied by manufacturers beyond the two year minimum. Include coverage for exterior prefinished surfaces to cover...
prefinished color coat against chipping, cracking or crazing, blistering, peeling, chalking or fading and for weather tightness of building.

PRODUCTS

These specifications include minimum requirements for materials, equipment and labor to erect weather-tight, prefabricated metal buildings on concrete foundations with concrete aprons, including all site electrical and mechanical and work specified elsewhere and herein. These specifications are intended for use as an outline of the performance requirements for the materials used within the metal building systems.

The following specified items are a part of this contract. All materials employed in the construction of the building shall be new and preapproved prior to the Contractor's assembly or installation.

1. Incorporation of Other Specifications: This technical specification for the construction of the pre-engineered metal building incorporates, by reference, industry standards for similar work. It also incorporates the other applicable sections of these specifications. Some of the applicable standards and specifications are indicated at the beginning of this specification.

2. Building size: The overall building will be 140'-0" x 80'-0". Actual as-built dimensions may vary slightly to accommodate standard building system dimensions.

3. Roof slope: 1/4" in 12"

4. Wall Heights: East wall height: 19'-0" West wall 16'-4"

   Door and frame: To be selected by user
   Exterior walls panels: To be selected by user
   Roof panels: To be selected by user
   Building trim: To be selected by user

6. Concrete Foundations and Flatwork: Concrete shall comply with the requirements of Division 3 - Concrete of these specifications. Concrete foundations shall be constructed in conformance with the approved shop drawings. Foundations shall extend below frost line and shall be of the spread footing type. All reinforcement shall be continuous around corners. The interior slab shall not be used as a tension tie, see sheet S1.

   Provisions shall be made for the embedment of pipes, conduits, anchors, anchor bolts etc. All penetrations through the concrete slab shall be isolated from the slab with 1/2" thick expansion joint material.

   Office area floor shall be 4" thick. A work bays and storage bays slabs on grade shall be 6" thick concrete. Interior floors shall be constructed and sloped as indicated on the
drawings. Exterior slabs shall have thickened edges shall be provided as indicated on the drawings. Apply approved sealer to all exposed finished surfaces and as otherwise described herein. See Site Plan for sizes and locations of concrete aprons and pads.

7. Building Structure and Framing: The building shall be a rigid frame, clear span metal building with steel rafter beams and columns, constructed as shown on the drawings and described herein. The wall girts shall be flush mounted to keep the walls as close as possible to the frame members.

Hot rolled steel framing shall conform to the requirements of ASTM A572, with a minimum yield point of 50,000 psi. Cold formed steel framing steel shall conform to the requirements of ASTM A570, with a minimum yield point of 50,000 psi. All structural framing members shall be cleaned to remove dirt, grease, oil and other contaminants and shall be given a minimum of one shop coat of rust inhibiting primer with a minimum coating thickness of 1 mil. Any other steel not specifically mentioned shall have G-90 class galvanization conforming to ASTM A446, or be primed. Uncoated steel shall not be used in the construction. Adjustable tension devices shall be supplied as necessary to stiffen the building against longitudinal loads.

Install a full base girt around the periphery of the structure. Vertical spacing between wall girts shall not exceed 4’- 0”. Second exterior girt shall be located 7’-11” above finished floor for attachment of liner panels.

8. Roof Panels: Roofing of the Building will slope from the east wall of the building to west side of the building. Minimum roof pitch shall be ¼” in 12”. Roofing shall be metal roof panels, 24 ga. Factory finish all exposed surfaces of roof and fascia panels, flashing, rake and drip flashings, and trim with a Kynar 500 Fluorocarbon coating applied on the coil coating line with a top side dry film thickness of 0.70 to 0.90 mil over 0.25 to 0.35 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil. Finish shall conform to all tests for adhesion, flexibility, and longevity as specified by Kynar 500 finish supplier, with a 20-year guarantee Factory finish interior surfaces of roof and fascia panels and other metal members with a primer for a minimum total dry film thickness of 0.25 mils. As selected by the owner's representative from manufacturer's standard colors

Metal roof panels shall have all seams joined in a weather-tight configuration. Standing seam must be capable of having snow guards attached. The metal roofing, as installed, shall have the ability to expand and contract with temperature changes. Except for the end laps, at eaves, along the ridge and at vent pipes, there shall be no "through the roof" fasteners or penetrations. The interlocks shall have mastic to completely seal the joint upon assembly. All roof panels shall be without staggered end laps. A positive seal at the eave and ridge is required. Jacks and flashing shall be of proper size, designed for weather tightness. Pipe jacks shall be EPDM rubber such as ITW's Buildex Dektite, MATO pipe jack or equivalent.

The roof system must be guaranteed against leakage as a result of joint failure under normal conditions for a minimum of 15 years. At eaves/overhang provide a metal skin of
the same material as the sidewalls on the underneath side so that all structural steel is enclosed and the structure is weather tight.

Roof panels and trim shall be factory finished with manufacturer's standard coatings consisting of a prime coat and a baked on exterior coat providing a guaranteed durability against fade, chalking and loss or adhesion resistance or other coating deterioration for a minimum of 20 years after final acceptance of the building. Color shall be selected from manufacturer's standard color samples.

9. Wall Panel Construction and Finish Coatings: Wall panels shall be 24 gauge longitudinally deformed (rolled) flat sheets which shall retain flat areas of not more than 12 inches in horizontal dimension, between major stiffeners. The wall panels shall have galvanized coating designation G-90 conforming to the requirements of ASTM A446, having a minimum yield point of 80,000 p.s.i. The panels shall be factory pre-painted or pre-coated. Wall girts shall be by pass mounted.

Provide the wall panel material in an "architectural" style steel panel conforming to above specifications. The wall panel be install as a reverse roll panel. Panels shall be supplied in full wall heights from base to eave, except at junctions with louvers, doors or other openings. Use concealed fasteners to fasten wall panels to girts. At the floor and eave lines, the panels shall be secured to the structural frame with fasteners approximately 12" on center. Exterior wall panels shall be installed so that all joints are tight and completely caulked and trimmed against the weather, at the eave and at lap joints. Side laps shall be laid away from the prevailing winds and shall be one configuration or rib. Joints between bottom of wall panels and concrete slab shall be made watertight around the entire perimeter of the building. Interior panel liners shall be installed to a height of 8'-0". Top of the liner panel shall be closed by the attachment of the panel to a girt. Panel liners shall be installed so that all joints are tight.

10. Rain Gutters: Rain gutters are required. See Building elevation sheets, building cross sections sheets and building wall section sheets. Gutters shall 6" wide custom box gutter with 5"x5" rain leaders. Finish to be Kynar 500 as selected by owner's representative.

11. Insulation: Simple saver system shall be used. Walls shall have a minimum insulation value of R-25. Ceilings shall have a minimum insulation value of R25. The ceiling and exterior walls shall be insulated with TIMA 202 MBI flexible fiberglass metal building type insulation as manufactured to conform with TIMA 202 standard or ASTM C991 Type 1 or approved equal. Insulation shall have a density of 3/4 pound per cubic foot minimum, and shall have a vapor barrier of embossed UL listed vinyl scrim reinforced, aluminum foil. Other approved vapor barriers may be used when insulation is not exposed. The color of the vinyl shall be white, or as approved. The center joint of the roof insulation shall be covered by metal trim. Insulation shall be attached to the walls and ceilings with 1-½" metal fasteners, on 18" centers, or with galvanized trim strips on 36" centers. Insulation shall be attached to the roof with 1-½" galvanized steel straps on 24" centers.
12. Caulking/Sealants: All caulking and sealant materials shall be preapproved for the uses they are intended. All building penetrations shall be sealed and caulked in a weather tight manner. Construction seams, points of connection between unlike materials, window and door framing, and penetrations for mechanical equipment shall be sealed and caulked in a weather tight manner. Seal all joints of exterior metal roofing panels. At exterior door thresholds, provide a full bed of sealant under threshold.

13. Overhead Doors: (See Section 08360) There shall be six, heavy duty, insulated, overhead doors. Electric operators shall be supplied on each overhead door. See Section 08360

14. Hollow Metal doors and Frames (See Section 08100): Building man doors and exterior doors of shall be flush hollow metal doors of the welded seamless construction type in 1¾" thicknesses. Doors shall be constructed of 16 gage minimum. See Section 8700 - Finish Hardware. See Door Schedule for type and finish.

16. Concrete Floors and Flatwork: Interior concrete floors shall have a smooth troweled finish and shall have a clear alkali resistant finish applied. See Division 3 for concrete specifications and sheets S-1and S-2.

OPERATION AND MAINTENANCE MANUAL

In conjunction with the as-built drawings, specified under Section 2010 - Construction Staking, the Contractor shall provide two bound and one electronic O&M manuals at the completion of the project. The electronic manual shall be in “pdf” format. The manuals shall include a complete set of approved shop drawing submittals, manufacturer’s product data, operating and parts ordering information on all building components, manufacturer’s warranty information. The Contractor shall provide a full day to demonstrate the workings of all facility components and give direct operations instruction to the staff at the time of project completion.

End of Section

SECTION 13300 – FABRICATED STRUCTURE

Equivalent products of other manufacturers will be acceptable subject to compliance with materials and performance characteristics of specified products. The unit listed is a product of Armac Corporation.

<table>
<thead>
<tr>
<th>Type</th>
<th>Secure, Modular Storage Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Single unit magazine</td>
</tr>
<tr>
<td></td>
<td>Storage of explosives (fireworks) and ammunition</td>
</tr>
</tbody>
</table>

Special requirement to be met:

- ATF specs 27 CFR 555.208
- DoD 56100.76M
- AR 190-11
- OPNAVINST 5530.13C
Materials
- Exterior surface: ¼” steel plate,
- Exterior finish: Sandblasted, painted with high solid urethane top coat
- Interior: Kiln dried military grade hardwood
- Floor: Heavily reinforced, mounted on 6” wide flange beams

Size: 6'-0” x 4'-0” x 7'-0”
Weight: 5,640 lbs.
Accessories: Four Anchor bracket and bolts, NFPA Ground kit, AFT padlock with 7/16” shackle with 1 1/16” clearance

End of Section