

SPECIAL SPECIFICATION

SECTION 13125S

HAZARDOUS MATERIALS STORAGE BUILDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Pre-engineered hazardous materials storage building, Factory Mutual (FM) approved, weather proof, shop fabricated structural steel building frame; metal wall and sloped roof system including exterior doors and louvers, exhaust, electrical, fire protection, and all accessories. The hazardous storage building shall be complete and ready for connection to electrical power.

1.02 RELATED SECTIONS

- A. Section 03300 – Cast-In-Place Concrete: Execution requirements for placement of anchor bolts specified in this section in concrete.
- B. Section 13852S: Notifier Intelligent Fire Alarm System.
- C. Section 15310: Automatic Sprinklers and Water Based Fire Protection Systems.

1.03 REFERENCES

- A. ASTM A 36 - Carbon Structural Steel.
- B. ASTM A 500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- C. ASTM A 501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- D. ASTM A 529 - High-Strength Carbon-Manganese Steel of Structural Quality.
- E. ASTM A 572 - High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.
- F. ASTM C 665 - Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- G. ASTM C 991 - Flexible Glass Fiber Insulation for Pre-Engineered Metal Buildings.

Hazardous Materials Storage Building

- H. ASTM E-119 Fire Tests of Building Construction Materials
- I. AWS D1.1 - Structural Welding Code - Steel.
- J. UL – 263 Standard For Safety For Fire Tests of Building Construction and Materials.
- K. NFPA-17 Standard For Dry Chemical Extinguishing Systems.
- L. NFPA-13 Standard For Installation of Sprinkler Systems.

1.04 SYSTEM DESCRIPTION AND DESIGN REQUIREMENTS

- A. Exterior Dimension: See Drawings (90 day waste storage, MicroFab).
- B. Storage Bays: Three separated compartments with UL rated, 4 hour fire rated construction throughout enclosure and between bays.
- C. Loading:
 - Roof (snow): 20 psf,
 - Floor: 500 psf.
 - Horizontal:
 - Wind**
Per ASCE 7-98, Basic Wind Speed 96 mph, Exposure C, Importance Factor, 1 = 1.0
 - Seismic**
Per IBC 2000, Site Class D, Stiff Soil. Importance Factor, 1 = 1.5 For PC2 Site Specific Parameters: S_{ms} = 0.795, S_{ds} = 0.53, S_{ml} = 0.374, S_{dl} = 0.25 Seismic Design Category D.
 - ** Allowable 1/3 Stress Increase For Wind Or Seismic Loading.

1.05 SUBMITTALS

- A. Shop Drawings: Indicate assembly dimensions, locations structural members, connections, attachments, openings, and loads; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, and method of installation; framing anchor bolt settings, sizes, and locations from datum, and foundation loads; provide professional seal and signature.
- B. Product Data: Submit data on materials, dimensions, fasteners, and performance characteristics.

- C. Samples: Submit two samples of precoated metal panel construction, 12 inch by 12 inch in size illustrating construction, color, and texture of finish.
- D. Manufacturer's Instructions: Submit preparation requirements, and anchor bolt placement.
- E. Erection Drawings: Indicate lifting members, assembly sequence, and temporary erection bracing.
- F. Project Record Documents: Shop drawings recording actual locations of concealed components and utilities.

1.06 QUALITY ASSURANCE

- A. Design structural components, develop shop drawings, and perform shop work inspected by a professional engineer experienced in design of this Work.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.07 WARRANTY

- A. Provide a ten-year structural and five-year warranty to include coverage for exterior pre-finished surfaces color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Safety Storage, Inc. (www.safetystorage.com).
- B. Haz-Mat Containment Corporation, Inc. (www.haz-mat.com).

2.02 COMPONENTS - FRAMING

- A. Structural Steel Members: ASTM A 36 ASTM A 529 ASTM A572, Grade 50.
- B. Structural Tubing: ASTM A 500, Grade B ASTM A 501.
- C. Welding Materials: AWS D1.1; type required for materials being welded.

2.03 COMPONENTS – WALL, BASE, AND ROOF SYSTEM

- A. Building exterior wall construction: Double walled, weatherproof fire-rated noncombustible construction, shall be per UL-263 & ASTM E-119, with multiple layers of UL Classified fire-resistive gypsum wallboard encased between galvanized steel sheets and exterior welded heavy gauge steel sheets for maximum durability, weather resistance and rigidity. Gypsum wallboard layers shall be offset with overlapping joints for fire-resistance.
- B. Building Roof Construction: Double-walled, weatherproof fire-rated noncombustible construction, shall be same as exterior walls, utilizing galvanized steel sheets and continuously welded heavy gauge steel roof sheets for durability and weather resistance. Roof sloped to facilitate rainwater runoff. Roof/ceiling attached to exterior walls.
- C. Building Base: Open channel construction for visual inspection under building. Coated with a protective undercoating (60 mils dft) for corrosion resistance. Crane/forklift openings for ease in offloading and relocation. Four hold-down brackets for wind and seismic anchoring. One exterior static grounding connection, one 10-foot long 5/8" diameter copper-clad steel grounding rod, one #4AWG copper conductor, and interior grounding lug(s).

2.04 COMPONENTS - METAL DOORS AND FRAMES

- A. Doors and Frames: Provide two UL Classified and Labeled, three-hour fire-rated swinging type double doors (nominal 5 ft W x 7 ft. H) located on front of building on each bay with rain shields. Door frames and hardware are UL Listed and Labeled. Active door leaves (nominal 3 ft. W x 7 ft. H) shall be equipped with a UL Listed self-closer and an exterior UL Listed keyed security lock with an interior safety release lever handle. Inactive door leaves, not to exceed 36" in width, shall be equipped with manually-operated top and bottom UL Listed surface bolts. Each active door serves as personnel entrance and exit door complying with life safety and ADA requirements, while the double door openings facilitate pallet loading and unloading.

2.05 SECONDARY CONTAINMENT SUMP/FLOOR GRATING SYSTEM

- A. Sump wall construction: Fire-rated noncombustible construction, shall be same as exterior walls, utilizing interior and exterior continuously welded heavy gauge steel sheets for maximum spill containment protection in each bay.
- B. Sump capacity: Minimum of 25% of total storage capacity of building based on 55 gallon barrels in all bays.

- C. Floor grating supports: Corrosion resistant stainless steel supports in sump area shall provide foundation for removable floor grating sections and provide access to sump clean-up in the event of chemical spills.
- D. Removable steel floor grating: Steel bar grate design shall be hot-dipped galvanized steel finish for corrosion resistance. Main bearing bars shall be 1" x 1/8" and spaced 1-3/16" center-to-center. Cross bars shall be welded at right angles to bearing bars and spaced 4" center-to-center for maximum strength. Designed to sustain a uniformly distributed load of 500 psf.
- E. Provide individual exterior drain connection for draining each bay. Drain shall be 2" diameter steel pipe with removable threaded cap. Label each drain.

2.06 FIRE SPRINKLER ASSEMBLY

- A. **DRY CHEMICAL FIRE SUPPRESSION SYSTEM**
Provide pre-engineered, UL-Listed, FM Approved dry chemical fire suppression system rated for Class, A, B and C Fires. Fusible link detection for automatic actuation. Two exterior means of manual activation shall be provided. Interior nozzle(s) arranged for total flooding of compartment. One exterior UL Listed weatherproof audible alarm (120V, single-phase). Dry chemical agent storage cylinder (tank) and releasing device housed inside an exterior tamperproof (key lockable) enclosure per the requirements of NFPA 17 (Standard for Dry Chemical Extinguishing Systems). System shall be equipped with contacts (SPDT) for remote annunciation. Automatic ventilation system shutdown upon system actuation.
- B. Back-up fire sprinkler piping subassembly shall be equipped with UL Listed and FM Approved open sprinkler head(s) with guard(s) and an exterior Fire Department connection. Label connection.

2.07 FACTORY FINISHING

- A. Interior Surfaces of Components and Accessories: Two part epoxy (10 mil dft) finish, color gloss white manufacturer's standard.
- B. Exterior Surfaces of Components and Accessories: Two part epoxy primer (5 mil dft) on steel with two part polyurethane (5 mil dft) finish, color gloss white from manufacturer's standard.
- C. Signs: One permanent all-metal DOT hazard classification placard with rust-proof aluminum holder and stainless steel clips and one pressure sensitive NFPA 704 hazard rating sign on each door.

2.08 ELECTRICAL

- A. Pre-wired electrical system in accordance with the NEC including one UL Listed, weatherproof load center (NEMA 3R) with appropriate circuit breakers and main breakers as well as all necessary conduit, relays, and switches. Breaker panel (NEMA 3R) 120 VAC, 1-Phase, 40A customer service.
- B. All interior components are rated for Class I, Division 1, Hazardous Locations (explosion-proof).
- C. One interior UL-Listed explosion-proof compact fluorescent light fixtures each bay (120 V, 1-Phase), rated for Class I, Groups C & D, Division 1, Hazardous Locations. Each lighting fixture has a heavy-duty glass globe with a sealed heavy-duty aluminum housing and is equipped with a protective metal guard. System is activated by one exterior UL Listed light switch suitable for outdoor locations for each bay.

2.09 ELECTRO-MECHANICAL VENTILATION SYSTEM

- A. One UL Listed totally enclosed explosion-proof motor (120 V, 60 Hz, 1-Phase) for each bay rated for Class I, Group D, Division 1, Hazardous Locations. Non-static and non-sparking, cast aluminum fan blades. Interior fan housing shall be constructed of heavy gauge steel, epoxy coated inside and out for maximum chemical resistance. Interior exhaust vent located within 12 inches of the floor facilitating the extraction of heavier-than-air vapors. Exterior exhaust fan port opening protected with a UL Classified fire damper having a three-hour fire protection rating. Fire damper shall be galvanized steel frame, curtain-type galvanized steel blades, and a UL Listed 165oF fusible link. Exterior exhaust port equipped with a shutter assembly mounted high on the outside surface of an exterior wall. Automatic system shutdown upon fire suppression system activation. System shall provide a minimum one cubic foot of exhaust ventilation per square foot of floor area, in accordance with the requirements of the model building and fire codes IFC. System is activated by one exterior UL Listed exhaust fan switch (snap type) suitable for outdoor locations at each bay.
- B. Air inlet vents: Screened air inlet vents protected by a UL Classified and Labeled three-hour rated fire dampers. Each air vent shall be equipped with an exterior louver and interior screen for optimum air flow and preclusion of bird and animal entry. Each fire damper shall be galvanized steel frame and galvanized steel blades for maximum corrosion resistance. Each fire damper automatically closes upon actuation of a UL Listed 165°F fusible link.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that dimensions, foundation, mechanical and electrical utilities, and placed anchors are in correct position. Coordinate size of new hazardous materials storage building with existing unit being relocated.

3.02 ERECTION - INSTALLATION

- A. Install and anchor in accordance with manufacturer's instructions.
- B. Relocate, install, and anchor existing 90-day waste building as indicated on the drawings. Include all utility, anchoring, and grounding for complete operating installation.

END OF SECTION