



Statement of Work

For

General Materials or Services

Title: Procurement of Live Fire Shoot House Facility for Project S-245

Date: December 14, 2017

Revision Number: 0



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1.0 BACKGROUND / SCOPE

1.1 Background

The Hanford Site, located in Washington State, was first established during the early 1940's to support the United States Government during World War II. Since its inception, the Hanford Site has required armed forces to protect the work occurring at Hanford. Security was provided by the military and internal police force until the 1950's after which the military was pulled out of Hanford and Hanford Patrol was created. Hanford Patrol is responsible for protecting special nuclear materials, government property, classified information, and safeguarding the lives of all Site personnel.

Hanford Patrol established the Patrol Training Academy (PTA) in the 1970's to support continual development of their highly trained protective security forces. In order to continue protecting the Hanford Site during the ongoing Cleanup Mission, Hanford Patrol must meet the requirements established in the Contractor Requirements Document (CRD) of U.S. Department of Energy Order (DOE O) 473.3, *Protection Program Operations*, including maintaining a Tactical Response Force (TRF). The TRF goes through rigorous training in defensive and offensive tactical operations that continually evolve to meet current and projected threats to Hanford. One of the important elements of the TRF training includes a Live Fire Shoot House (LFSH). The current PTA LFSH facility was constructed over 30 years ago and expanded capability is required.

Note: The LFSH *facility* is in reference to the partially enclosed structure that houses the LFSH.

1.2 General Scope

The purpose for Project S-245 is to provide the PTA with a new LFSH facility suitable to meet current and projected tactical training needs. However, the scope defined in this Statement of Work (SOW) represents only a portion of the scope for Project S-245. Herein after, the LFSH *facility* will refer to the pre-engineered metal building.

The new LFSH facility is a partially enclosed facility and will have an approximate 80' x 120' concrete slab foundation. The interior of the LFSH facility will be partially enclosed by an overhead steel roof structure.

The work performed under this subcontract is described in Section 3.0 of this SOW and, as previously stated, represents only a portion of the scope for Project S-245.

1.3 Work Performed by Subcontractor

The following are included within this SOW and further described in Section 3.1.

- The design and fabrication of the LFSH facility.
- The delivery of the LFSH facility components to the Site location in Richland, WA.



1.4 Work Performed by Others

The following are NOT included within this SOW.

- Design of the concrete foundation, interior LFSH, utilities, and all electrical components.
- Upon arrival on site, unloading of the LFSH facility components will be performed by others.
- Installation of the LFSH facility at the site location.
- Lighting for the LFSH will be from the overhead roof and is designed and installed by others.

2.0 OBJECTIVE

Mission Support Alliance, LLC (MSA) requires a Subcontractor specializing in the design and manufacturing of a pre-engineered metal building, which will be a partially enclosed structure. The objective of this subcontract is to have the Subcontractor complete the tasks described in Section 3.1.

3.0 DESCRIPTION OF WORK

3.1 Tasks

3.1.1. Task 1 - Design of the LFSH Facility

The Subcontractor shall review the attached specification including figures (#1-3) for the LFSH Facility. Based on the requirements provided in the specification, the Subcontractor shall submit recommendations to MSA, based on their standard manufacturing practices. This results in MSA receiving the best value possible for the work being requested. Recommendations shall be made via the Request for Clarification or Information (RCI) form (See Section 3.2 of this SOW). The Subcontractor recommendations are to be discussed with MSA early on during initial meetings. Upon agreement, the Subcontractor shall develop design calculations and shop drawings for the LFSH facility and submit to MSA for approval.

Subcontractor submittals shall include:

- a. Product data for metal building components: structural members, metal roof panels, wall panels, insulation system (Bid Option No. 01), doors, fasteners, and sealants.
- b. Selection samples for each finish product
- c. Structural design analysis calculation for metal building including design loads, design criteria, and building reactions, stamped and signed by a Washington State licensed Professional Engineer (PE)



- d. Anchor bolts: placement plan and column reaction and base plate details
- e. Shop drawings (stamped and signed by a Licensed Washington State PE):
 - 1. Complete erection drawings with identification and assembly of building components indicating assembly dimensions, locations of structural members, connections, attachments, openings, cambers, loads, wall and room system dimensions, panel layout, door and door frame installation, roof system and related details, general construction details, anchorages and methods of anchorage installation, and includes details of edge conditions, joints, panel profiles, corners, trim, flashings, closures and special details, distinguishing between factory- and field-assembled work; anchor bolt drawings showing location, projection, and embedment, and locations from datum.
 - 2. Structural design basis information, and materials specification information
 - 3. Accessory drawings and installation details: flashing and trim, gutters, downspouts
 - 4. Door schedule for doors, frames, and door hardware
- f. Manufacturer's written instructions for shipping, handling, storage, and protection
- g. Manufacturer's erection or installation instructions for building and components, indicating preparation requirements and proper sequence of installation
- h. Warranty

See Section 5.2 of this SOW for documentation and submittal requirements for calculations.

3.1.2. Task 2 – Manufacture and Delivery of the LFSH Facility

The Subcontractor shall manufacture the LFSH facility according to the approved shop drawings. Subcontractor shall provide man doors and frames, rollup door to be provided by others. MSA may request a visit to the Subcontractor's facility to inspect shipment prior to delivery. The Subcontractor shall arrange for delivery of the LFSH facility components to the Site location in Richland, WA. Upon arrival to the Site location, receipt inspections of the LFSH facility components for damage are to be performed by MSA personnel.

3.2 Organizational Interfaces

The Subcontractor shall interface with various MSA organizations through the Contract Specialist (CS) (or designee), as required, at points and frequency incorporated elsewhere in this SOW and Subcontract documents.



After contract award, requests for clarification or information are to be provided to the Buyer's Technical Representative (BTR), copy to CS, using the RCI form. The BTR will provide resolution in the form of a response recorded on the RCI.

3.3 Delivery, Storage, and Handling

The Subcontractor shall arrange for delivery of the LFSH facility components to the Site location in Richland, WA. The Subcontractor shall coordinate delivery of the LFSH facility with the BTR. The Subcontractor shall assure all loads are properly secured from shifting, rolling out, or loss while transporting.

MSA shall perform receipt inspections upon arrival to the Site. The Subcontractor shall arrange for immediate replacement of products found to be defective, damaged beyond repair, or in otherwise unacceptable condition.

MSA is responsible for unloading and storage of the LFSH facility components. Upon delivery, MSA will require a signature to transfer custody of all building components from the Subcontractor to MSA.

4.0 SUBMITTALS

All submittals shall be submitted to MSA Project Document Control at projservdoccon@rl.gov using the Subcontractor Document Submittal Form (Site Form A-6003-061). All required A/E submittals are in Attachment A, Submittal Register.

Forms are available at the following web address under the "Subcontractor Document Forms" link: <http://www.hanford.gov/pmm/page.cfm/ContractorForms>

Subcontractor information shall be submitted in either hard copy or electronic format (If electronic, it must be viewable using either Microsoft® Windows®, Microsoft® Office, Adobe® Acrobat® software, or AutoCAD® 2014).

Substitutes: a completed Subcontractor Document Submittal Form shall be submitted for each requested substitution. Substitution requires approval if an item is more hazardous than the specified product or if the product callout includes the phrase such as "or approved substitute". Submitted data shall show "fit, form, and function" equivalency, as well as cost savings, if any, to the contractually required item.

5.0 ENGINEERING REQUIREMENTS

5.1 Design Requirements

- Design Life – The facility shall have a minimum design life of 20 years.
- Approach to Natural Phenomenon – Natural phenomenon hazards (NPH) analysis and design shall be in accordance with Department of Energy standard



DOE-STD-1020-2012, *Natural Phenomena Hazards Analysis and Design Criteria for DOE Facilities*, Sections 1.3 and 2.1. NPH loading and criteria can also be found in MSC-STD-ENG-097, *MSC Engineering Design Codes, Standards and Site Specific Design Parameters*.

- LFSH Facility Building Exterior – The LFSH facility is a partially enclosed steel structure with a panel roof and 12 ft. high steel panel walls with single and double man-doors, and a manual rollup door in accordance with the figures located in the specification.
- Overhead Steel Roof Structure – Spans the entire footprint 80 ft. by 120 ft. The roof assembly shall meet the requirements for a Class 1 metal roof per Factory Mutual (FM) Data Sheet 1-31. Snow guards will be used along the eaves of the roof.
- The following codes and standards shall apply:

Table 1. Code of Record

American Institute of Steel Construction (AISC)	
AISC 325 (14 th Ed.)	AISC Steel Construction Manual
AISC 341-2010	Seismic Provisions for Structural Steel Buildings
AISC 360-2010	Specification for Structural Steel Buildings
American Society of Civil Engineers (ASCE)	
ASCE 7-2010	Minimum Design Loads Criteria for Buildings and Other Structures
American Welding Society (AWS)	
AWS D1.1/D1.1M-2010	Structural Steel Welding Code
FM Global Property Loss Prevention Data Sheets	
Data Sheet 1-31 (July 2016)	Panel Roof Systems
International Code Council (ICC)	
IBC-2015	International Building Code
National Fire Protection Association (NFPA)	
NFPA 1-2015	Fire Code
NFPA 10-2018	Standard for Portable Fire Extinguishers
NFPA 70-2017	National Electrical Code®
NFPA 70E-2009	Standard for Electrical Safety in the Workplace®
NFPA 101-2018	Life Safety Code®
NFPA 241-2013	Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 703-2018	Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials
NFPA 780-2017	Standard for the Installation of Lightning Protection Systems



Table 2. Regulations, Orders and Standards

Number	Title
29 CFR 1910	OSHA
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 1500-1508	NEPA
DOE O 420.1C, Chg. 1 (Supplement Rev. 0), Attachments 1 and 2 (Chapters II and IV only)	Facility Safety Chapter II. Fire Protection Chapter IV. Natural Phenomena Hazards Mitigation
DOE O 473.3	Protection Program Operations
DOE-STD-1020-2012	Natural Phenomena Hazards Analysis and Design Criteria for DOE Facilities
DOE-STD-1066-2012	Fire Protection
MSC-STD-ENG-097	MSC Engineering Design Codes, Standards and Site Specific Design Parameters
U.S. DOE <i>Range Design Criteria</i> , Section 6	Range Design Criteria Section 6. Live Fire Shoot House https://energy.gov/ea/downloads/range-design-criteria-june-4-2012

Table 3. National Consensus Standards

WAC No.	Title
RCW Chapter 19.27	State Building Code
WAC Title 51	Department of Enterprise Services (Building Code Council)

Table 4. National Consensus Standards

American Welding Society (AWS)	
AWS QC1	Standard for AWS Certification of Welding Inspectors
Metal Building Manufacturer's Association (MBMA)	
MBMA Manuals and Design Guides	MBMA publications for Pre-Engineered Metal Buildings. See: https://www.techstreet.com/mbma/pages/home

5.2 Documentation Requirements

The Subcontractor shall develop design analysis calculations and drawings in accordance with their own internal process and submit to MSA in accordance with Section 4 of this SOW.

Design analysis documentation shall include the following:

- Definition of the objective of the analysis



- Definition of analysis inputs and their sources
- Results of literature searches or other applicable background data
- Identification of assumptions and indication of those that must be verified as the design proceeds
- Identification of any computer calculation including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of or reference to computer program verification and the bases (or reference thereto) supporting application of the computer program to the specific physical problem
- Signature and Stamp from a Washington State licensed Professional Engineer (PE)
- Review and approval.

6.0 QUALITY REQUIREMENTS

This scope of this SOW has been designated as General Service, Quality Level 0.

6.1 Quality Assurance Requirements

MSA reserves the right to verify the quality of work at the Subcontractor's facility, including any lower-tier subcontractor's facility. Access to the Subcontractor's facility shall be requested through the Subcontractor and may be performed jointly with the Subcontractor. All requests for site visits will be requested through MSA's CS.

6.2 Requirements for Commercial-Off-the-Self Software

The Subcontractor shall submit the following documentation for all engineering analysis/design, data analysis/reduction, and engineering/environmental modeling commercial-off-the-shelf (COTS) software¹ (application) used in the performance of work activities. Submittal may be in the form of a letter.

NOTE: If the same COTS product is utilized for a range of calculations this documentation only needs to be submitted once, but documents/calculations shall be traceable back to No. 1 specified below and is subject to oversight activities.

1. Description of the COTS software, including:
 - a. Manufacturer's name and address
 - b. COTS application's title and version identifier

¹ COTS software refers to an existing application which will be implemented on a standard operating system without the need for modification of its executable/object code.



- c. Operating system and hardware platform that will be used
 - d. Manufacturer's Technical Specifications or other published description of the COTS.
2. Standard data set(s) used to verify operation of the COTS application.
- a. Data sets shall cover each function or mode of operation which will be used during the performance of the work activities.
 - b. When the COTS application's range of operation cannot be verified by a single data set, the subcontractor shall submit, as a minimum, data sets covering the upper and lower thirds of its range.
3. The Subcontractor shall notify MSA of any software errors relative to COTS deliverables.

6.3 Quality Assurance and Engineering Oversight

The Subcontractor activities are subject to Quality Assurance (QA) and Engineering oversight by MSA's QA or engineering representative at the Subcontractor's facility or the Subcontractor's lower-tier service provider(s). MSA shall be allowed access to these facilities for oversight activities with a reasonable notification to the Subcontractor. These oversight activities shall be coordinated through the Subcontractor's and MSA's Subcontract representatives.

6.4 Quality Submittals

The following shall be submitted by the Subcontractor:

- a. **PROCUREMENT OF POTENTIALLY SUSPECT OR COUNTERFEIT ITEMS:** Submit written statement that all items furnished under this Purchase Order/Contract Order are new and genuine (i.e., not suspect/counterfeit) and match the quality, test reports, markings and/or fitness for use required by the Purchase Order/Contract Order. This statement shall be on the Subcontractor's letterhead and signed by an authorized agent of the Subcontractor.
- b. Submit certification of the Subcontractor's warranty and details of necessary maintenance and care.
- c. Certification of installation is not included in the scope of this SOW and is to be observed by a vendor representative in a separate future contract.
- d. **Manufacturer's Qualifications:** The Company manufacturing the LFSH facility shall have a minimum of five (5) years documented experience in the manufacture of Metal Building Systems of similar to that specified.



- e. As a manufactured product, the design, detailing, and fabrication of the pre-engineered metal building shall be performed by a or under the direct supervision of a Registered Professional Engineer (PE) in the State of Washington, who is a permanent full-time employee of the manufacturer of the pre-engineered metal building.
- f. The metal building manufacturer shall be accredited under the International Accreditation Service (IAS) “Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems (AC472).”
- g. Certificate of design and manufacture conformance:
 - o Metal building system manufacturer shall submit written certification prepared and signed by a registered PE in the State of Washington verifying that building system design and metal roof system design (including panels, clips, and support system components) meet indicated loading requirements and codes of authorities having jurisdiction.
 - o Certification shall reference specified dead loads, live loads, snow loads, wind loads/speeds, tributary area load reductions (if applicable), concentrated loads, collateral loads, seismic loads, thermal forces loads, load factors and load combinations, end-use categories, governing code bodies, including year, and load application.
 - o Certificate shall be on metal building system manufacturer’s letterhead.

7.0 ENVIRONMENTAL, SAFETY, AND HEALTH (ES&H) REQUIREMENTS

No tasks require Subcontractor personnel to be present at the Site location. ES&H requirements will be addressed by the BTR during potential site visits.

8.0 PERSONNEL REQUIREMENTS

8.1 Training and Qualifications

8.1.1. Required Training

No work will be performed by the Subcontractor on the Hanford Site, therefore no Site-specific training is required.

8.1.2. Required Qualifications

The Subcontractor personnel performing services shall have appropriate training, experience, qualification and/or certification(s) to perform the work required. Documentation/certification of personnel qualifications shall be maintained by the Subcontractor and provided to MSA upon request. The Subcontractor personnel qualifications/certifications may be verified by MSA prior to performing work in order to provide reasonable assurance that the Subcontractor has assigned



personnel with sufficient documented training, education, and experience to satisfy the specified requirements. It is expected that the Subcontractor will identify and apply an appropriate mix of resources and experience to each task to ensure that MSA is receiving the best value possible for the services being requested.

8.2 Security and Badging Requirements

The Subcontractor employee(s) will be required to submit to vehicle searches and not personally carry or transport certain prohibited articles.

A security badge will be required for the delivery truck driver(s) to enter a restricted area. To obtain temporary access, the driver shall be a nationalized citizen and have two (2) valid forms of identification. The driver will also be required to check in at building 664 prior to accessing the delivery area.

8.3 Work Location / Potential Access Requirements

Tasks 1 and 2 (manufacture) activities (see Section 3.1 of this SOW) are expected to be performed off-Site at the Subcontractor's facilities.

The Site location for delivery is not a radiological controlled area and is not known to contain any other hazardous work conditions.

8.4 Site Access and Work Hours

Hanford personnel at the Hanford Site work a standard 4/10 schedule. The standard work week consists of ten (10) hours of work between 6:00 am and 4:30 pm, with one-half hour designated as an unpaid period for lunch, Monday through Thursday. The Subcontractor shall be cognizant of the Hanford work schedule when communicating with MSA. Work performed outside normal operating hours shall be coordinated and/or approved through the BTR and/or the Contract Specialist prior to performing work. Delivery shall take place during standard working hours.

8.5 Government Property

Government property is not required to be used by the Subcontractor for this scope of work.

9.0 MEETINGS

The Subcontractor shall participate in all meetings as required by the BTR.

The general purpose of meetings is for the coordination, control, and direction of the work. In addition to meetings addressed by this section, the Subcontractor may be required by other sections and other subcontract documents to conduct special-purpose meetings and various safety meetings and briefings.



MSA will issue meeting notices and prepare an agenda and minutes for each meeting addressed in this section. When applicable, minutes will identify action items, assigned actionees, and due dates. The purpose of the meetings is the exchange of work-related information.

- Kickoff Meeting – Before start of the work, MSA will conduct a conference at a time and location agreed to by the Subcontractor and MSA. Invited attendees will include MSA, the Subcontractor, key lower-tier subcontractors, and others having an interest in the work. Purpose of the conference is the coordination of work start up and familiarization of project participants with the work and worksite.
- Progress Meetings – On a routine bases (e.g., weekly, bi-weekly), MSA will conduct conferences at a time determined by MSA. Invited attendees may include MSA, the Subcontractor, and the A/E firm handling overall design (concrete foundation, utilities, lighting, etc.). The Subcontractor will be required to attend Design/Manufacturing Progress Meetings.

10.0 MILESTONES, SCHEDULE, AND PERIOD OF PERFORMANCE

10.1 Deliverables

Deliverables and dates for completion are as follows:

1.	Subcontractor’s schedule	Award + 1 week
2.	Manufacturer’s qualifications	Award + 1 week
3.	IAS quality certification	Award + 1 week
4.	Commercial-off-the-shelf documentation	Award + 1 week
5.	Shop drawings (SD)	Award + 2 weeks
6.	Selection samples	Award + 3 weeks
7.	Structural design analysis calculation for the metal building	Award + 3 weeks
8.	Product data	Shop Drawings + 2 weeks
9.	Anchor bolts: placement plan and column reaction and base plate details	Shop Drawings + 2 weeks
10.	Manufacturer’s erection or installation instructions for building and components including written instructions for shipping, handling, storage, and protection	3 weeks prior to Delivery
11.	Subcontractor’s warranty and maintenance data	3 weeks prior to Delivery



12.	Certificate of conformance	3 weeks prior to Delivery
13.	Certification of use of all new components	3 weeks prior to Delivery
14.	Written statement that all items are genuine, no counterfeit items	3 weeks prior to Delivery
15.	Transfer of custody	Upon Receipt on Site

10.2 Schedule

Submit project schedule for approval within one (1) calendar week after Notice of Award covering activities for the duration of the Subcontract. The schedule shall be in the form of a bar chart (P6 or Microsoft Project preferred, but not required) and shall identify logical sequence and relationship of activities for design, submittals, manufacture, delivery, subcontracted work, milestones, and testing and inspections of the work covered by the Subcontract. Activity durations shall be in working days (Monday through Thursday).

10.3 Period of Performance

Start Date of Subcontract: Date of Award

LFSH Facility Received on Site Date: April 12th, 2018

10.4 Milestones

Milestone payments are as shown in Table 3.

Table 5: Milestone Payments

At the completion of:	Percent of Payment
Task 1	5%
Task 2	95%
Total	100%

11.0 SPECIAL REQUIREMENTS

There are no special requirements for this SOW.



ATTACHMENT A

SUBMITTAL REGISTER

Submittal Register Definitions

1. Numerical submittal sequence number: Example: 1, 2, 3, 4, ... (or organized by topics and project assigned coding structure).
2. Number of Copies and electronic and/or hard copy: Example: E (Electronic only), 6 (Six Hard Copies), or Hard, 1: E, 1 (One Hard Copy, and Electronic).
3. Format: Describes the type of submittal required:

DWG An AutoCAD drawing

MFC Microsoft Format Compatible application (Word, Excel, Access, PowerPoint)

PDF Adobe Acrobat (Portable Document Format)
4. Submittal Type:

APW = Approval Required Prior to Work (Buyer must approve the Subcontractor's submittal prior to the Subcontractor being authorized to proceed with any activity/work associated with the submittal).

AP = Approval Required (Buyer must approve the Subcontractor's submittal, however, work associated with the submittal may proceed prior to Buyer approval).
5. Vendor Information: Mark Yes if document(s) are VI, otherwise leave blank.
6. Description / Document Title: Title or general description of the document.
7. Submittal Date: Actual date or number of Calendar Days before or after a milestone that a submittal is due from the Subcontractor: Example: June 1, 2005 or CD + 2 weeks [2 calendar weeks after Conceptual Design Complete]

A Date of Award
D Date of Delivery
8. Buyer Review Time (Hanford Site Work Days): Example: 1 week
9. Subcontract Reference: Cross reference to the Subcontract requirement that defines this submittal: Example: SOW Section 3.1.2.



Submittal Register:

The Subcontractor shall meet the required schedule and provide the documents specified in accordance with the following submittals.

Subcontract Number and Name: TBD						Revision: 0		
1. No.	2. No. of Copies* (See End Note)	3. Format	4. Type	5. Vendor Information – Mark Yes if VI, Otherwise Leave Blank	6. Description / Document Title	7. Submittal Date	8. Buyer Review Time	9. Subcontract Paragraph or Requirement Reference in SOW
1	E	PDF	AP		Subcontractor's schedule	A + 1 week	1 week	10.2
2	E	PDF	AP		Manufacturer's qualifications	A + 1 week	1 week	6.4.d 6.4.e
3	E	PDF	AP		IAS quality certification	A + 1 week	1 week	6.4.f
4	E	PDF MFC	AP		Commercial-off-the-shelf software documentation	A + 1 week	1 week	6.2
5	E	PDF DWG	APW		Shop drawings (SD)	A + 2 weeks	1 weeks	3.1.1.e
6	E	PDF	APW		Selection samples	A + 3 weeks	1 week	3.1.1.b
7	E	PDF MFC	APW		Structural design analysis calculation for the metal building	A + 3 weeks	1 week	3.1.1.c
8	E	PDF	AP		Product data	SD + 2 weeks	1 week	3.1.1.a
9	E	PDF DWG	APW		Anchor bolts: placement plan and column reaction and base plate details	SD + 2 weeks	1 week	3.1.1.d



Procurement of Live Fire Shoot House Facility for Project S-245
 Requisition No. 307173
 Project S-245, Patrol Training Academy Live Fire Shoot House Facility

Subcontract Number and Name: TBD						Revision: 0		
1. No.	2. No. of Copies* (See End Note)	3. Format	4. Type	5. Vendor Information – Mark Yes if VI, Otherwise Leave Blank	6. Description / Document Title	7. Submittal Date	8. Buyer Review Time	9. Subcontract Paragraph or Requirement Reference in SOW
10	E	PDF MFC	APW		Manufacturer’s erection or installation instructions for building and components including written instructions for shipping, handling, storage, and protection	3 weeks prior to D	1 week	3.1.1.f & 3.1.1.g
11	1:E	PDF MFC	AP		Subcontractor’s warranty and maintenance data	3 weeks prior to D	1 week	6.4.b
12	E	PDF MFC	AP		Certificate of conformance	3 weeks prior to D	1 week	6.4.g
13	E	PDF MFC	AP		Certification of use of all new components	3 weeks prior to D	1 week	6.4.a
14	E	PDF MFC	AP		Written statement that all items are genuine, no counterfeit items	3 weeks prior to D	1 week	6.4.a
15	1:E	PDF MFC	AP		Transfer of custody	Upon Receipt on Site	1 week	3.3

*For electronic submittals, the number of hard copies can be negotiated with the Contract Specialist and approved by the BTR

S-245-C1
Revision 0
December 2017

SPECIFICATION

LIVE FIRE SHOOT HOUSE

Prepared for
Mission Support Alliance

MISSION SUPPORT ALLIANCE

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MISSION SUPPORT ALLIANCE

SECTION 07 71 00

METAL ROOFING SPECIALTIES

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 The following documents and others referenced therein form part of Contract to extent designated in this Section. Referenced documents are those current as of the date of this Section unless otherwise indicated.

1.1.1.1 American Society for Testing and Materials (ASTM)

A 653 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

B 32 Solder Metal

1.1.1.2 Federal Specifications (FS)

SS-C-153 Cement, Bituminous, Plastic

1.1.1.3 International Code Council (ICC)

IBC International Building Code (2015)

1.1.1.4 International Association of Plumbing and Mechanical Officials (IAPMO)

UPC Uniform Plumbing Code

1.2 SUBMITTALS

1.2.1 See the Statement of Work for submittal procedures.

1.2.2 Approval Required

1.2.2.1 Shop Drawings: Submit shop drawings, hardware profile and attachment details for approval in accordance with the Statement of Work.

1.2.2.2 Installation Drawings: Before delivery, submit manufacturer's data, and installation instructions for gutters and snow guards.

1.2.2.3 Color Selection: Finish shall be as selected by Owner from manufacturers standard colors.

1.3 WARRANTY

1.3.1 Provide manufacturer's warranty for gutters, to be a minimum of 20 years.

PART 2 - PRODUCTS

2.1 MATERIALS

MISSION SUPPORT ALLIANCE

- 2.1.1 Sheet Metal: ASTM A 653, lock-forming quality, with G90 coating, 0.0217 inch/26 gauge minimum.
- 2.1.2 Solder: ASTM B 32, 95% tin, 5% antimony.
- 2.1.3 Bituminous Plastic Cement: FS SS-C-153, Type I.
- 2.2 FABRICATION
 - 2.2.1 General
 - 2.2.1.1 Size gutters and downspouts per UPC, Chapter 11 and Appendix D requirements.
 - 2.2.1.2 Form sheet metal accurately, free of buckles and waves.
 - 2.2.1.3 Hem exposed edges 1/2 inch.
 - 2.2.1.4 Fabrication shall have provisions for expansion and contraction.
 - 2.2.2 Downspouts : Fabricate with flat-lock longitudinal seams and with upper sections telescoping into lower sections 1-1/2 inches minimum.
 - 2.2.3 Gutters
 - 2.2.3.1 Rivet end caps at gutter ends where provided with downspouts.
 - 2.2.3.2 Provide expansion joints midway between downspouts and provide end caps spaced ½ inch. Close top of expansion joints with loose-lock covers. Extend cover over outer face of gutter.
 - 2.2.3.3 Provide 2-inch long thimble at each downspout. Make thimble 1/8 inch smaller than downspout and solder flange of thimble to gutter.
 - 2.2.3.4 Rivet lap joints with 1/8-inch, minimum, diameter rivets spaced 2 inches maximum.
 - 2.2.3.5 Provide bracing for gutters with galvanized and painted metal straps spaced 4 feet maximum.
 - 2.2.3.6 Provide removable galvanized metal basket type strainers at each downspout.
 - 2.2.4 Snow guards
 - 2.2.4.1 Snow guards shall be Model “4000T Snowguard” as manufactured by Alpine Snowguards or approved equal, with required accessories for a complete installed system.
 - 2.2.4.2 Snow guards shall use non-penetrating set screws that clamp to the standing seam, in accordance with manufacturer’s erection plans. Snow guards shall be located above each personnel and overhead coiling door location.

PART 3 - EXECUTION

Not Applicable

END OF SECTION

MISSION SUPPORT ALLIANCE

SECTION 07 60 00

PREFINISHED METAL SOFFIT AND FASCIA

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 The following documents and others referenced therein form part of Contract to extent designated in this Section. Referenced documents are those current as of the date of this Section unless otherwise indicated.

1.1.1.1 American Society for Testing and Materials (ASTM)

A 653 Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process

A 924 Steel Sheet, Metallic-Coated by the Hot-Dip Process

1.1.1.2 Underwriters Laboratories (UL)

UL 580 Tests for Uplift Resistance of Roof Assemblies

1.1.1.3 FM Global Property Loss Prevention Data Sheets

1-28 Wind Design

1-31 Panel Roof Systems

1.2 SUBMITTALS

1.2.1 See the Statement of Work for submittal procedures.

1.2.2 Approval Required

1.2.2.1 Fabricator Drawings: Before fabrication, submit fabrication and erection drawings that include description and quantities of materials, fabrication details and installation layout.

1.2.2.2 Material Samples: Before delivery, submit samples of panel material coated with specified finish and color in 3 x 5-inches minimum size. Describe material, coating and location where to be installed on reverse face of samples.

PART 2 - PRODUCTS

2.1 SUBSTITUTES

2.1.1 See the Statement of Work for substitution approvals.

MISSION SUPPORT ALLIANCE

2.2 MATERIALS

2.2.1 Metal Panels: Manufacturers standard concealed fastening system, fabricated from 0.0239-inch (24-gauge) galvanized G90, Grade D steel, conforming to ASTM A 653 and A 924 with factory color finish. Color shall match color selected for the Metal Building System in Section 13 34 19.

2.2.2 Closures and Sealants: Seal joints watertight.

2.2.3 Concealed Fasteners: Manufacturer's standard zinc coated steel product, designed to interlock with sheathing for attachment without visible panel perforation.

2.2.4 Soffit panel system shall use a concealed fastener, flat panel system, such as an MBCI "Artisan L-12" or equal. Panels shall be approximately 12 inches wide and shall be similar to profiles as shown on figures.

2.2.4.1 The panel system shall be self supporting between supports, and shall be designed to withstand a wind load of 30 psf velocity, proportioned and applied as horizontal and uplift forces according to design practices outlined in UL publication 580. Panels and trim shall be provided with factory color finish as scheduled.

2.2.5 Fascia Panel System: Same as wall panel system.

PART 3 - EXECUTION

Not Applicable

END OF SECTION

MISSION SUPPORT ALLIANCE

SECTION 08 11 13

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 The following documents and others referenced therein form part of Contract to extent designated in this Section. Referenced documents are those current as of the date of this Section unless otherwise indicated.

1.1.1.1 American National Standards Institute (ANSI)

A115 Series Steel Door Preparation Standards

A250.8 Specifications for Standard Steel Doors and Frames

1.1.1.2 American Society for Testing and Materials (ASTM)

A1008 Steel, Sheet, Carbon, Cold-Rolled, Carbon, Structural, High Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

A 1011 Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

1.1.1.3 Steel Door Institute (SDI)

100 Specifications for Standard Steel Doors and Frames

108 Selection and Usage for Standard Steel Doors

1.1.1.4 National Fire Protection Association

101 Life Safety Code (2018)

1.2 SUBMITTALS

1.2.1 See the Statement of Work for submittal procedures.

1.2.2 Approval Required

1.2.2.1 Fabricator Drawings: Before delivery, submit drawings showing size, elevations and location of each door and frame. Include location and details of hardware reinforcement, and frame anchors.

1.2.2.2 Color Selection: Finish shall be as selected by Owner from manufacturers standard colors.

MISSION SUPPORT ALLIANCE

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

- 2.1.1 Hollow Metal Doors: Full flush type doors, 1-3/4 inch thick, with no seams or joints on face, in accordance with ANSI A250.8, Grade 1, SDI 100 and 108.
 - 2.1.1.1 Reference Drawings for door sizes and configurations.
 - 2.1.1.2 Fabricate from ASTM A 1008 or A 1011 steel, 0.0478 inch/18 gauge, minimum, annealed and leveled.
 - 2.1.1.3 Fabricate with stiles and rails, 0.0598 inch/16 gauge minimum.
 - 2.1.1.4 Fabricate with 1/8-inch, maximum, clearance from frames.
 - 2.1.1.5 Doors shall be prepared for installation of locksets, bolts, closers, latchsets and strikes, and mortised for template hinges, in accordance with applicable standards of ANSI A115 series.
 - 2.1.1.6 Reinforce for hinges with 0.1345-inch/10-gauge minimum steel, for closers with 0.1046-inch/12-gauge, minimum, steel, and for locks with 0.0747-inch/14-gauge, minimum, steel. Reinforcement drilled and tapped, as required, for attachment of hardware.
 - 2.1.1.7 All surface welds shall be ground smooth.
- 2.1.2 Pressed Metal Frames
 - 2.1.2.1 Fabricate from ASTM A 1008 or A 1011 steel, 0.0598 inch/16 gauge, annealed and leveled.
 - 2.1.2.2 Corners shall be mitered, welded, and ground smooth.
 - 2.1.2.3 Temporary spreader shall be attached to bottom of each frame.
 - 2.1.2.4 Frames shall be prepared for hardware in accordance with applicable standards of ANSI A115 series.
 - 2.1.2.5 Reinforce for hinges with 0.1345-inch/10-gauge, minimum, steel and for strikes and closers with 0.1046-inch/12-gauge, minimum, steel. Reinforcement drilled and tapped, as required, for attachment of hardware.
 - 2.1.2.6 Rubber silencers shall be installed into factory predrilled holes in door frames. Adhesively applied silencers are not acceptable.
 - 2.1.2.7 Removable mullion to be installed as indicated on attached figures.
- 2.1.3 Shop Finish: Doors and frames shall be bonderized and painted with one coat of manufacturer's standard, baked-on, rust-inhibitive primer. Primer containing lead is not acceptable.

MISSION SUPPORT ALLIANCE

PART 3 - EXECUTION

Not Applicable

END OF SECTION

MISSION SUPPORT ALLIANCE

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 The following documents and others referenced therein form part of Contract to extent designated in this Section. Referenced documents are those current as of the date of this Section unless otherwise indicated.

1.1.1.1 Builders Hardware Manufacturers Association (BHMA)

A156.1	Butts and Hinges
A156.3	Exit Devices
A156.4	Door Controls—Closers
A156.5	Cylinders and Input Devices for Locks
A156.6	Architectural Door Trim
A156.13	Mortise Locks
A156.18	Materials and Finishes
A156.21	Thresholds
A156.22	Door Gasketing and Edge Seal Systems

1.1.1.2 National Fire Protection Association

101	Life Safety Code (2018)
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1.2 SUBMITTALS

1.2.1 See the Statement of Work for submittal procedures.

1.2.2 Approval Required

1.2.2.1 Hardware List: Concurrent with door and frame submittals, submit a complete hardware list. List hardware for each door and hardware requirement.

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Store hardware items separately with necessary fasteners and instructions for individual use.

MISSION SUPPORT ALLIANCE

PART 2 - PRODUCTS

2.1 SUBSTITUTES

2.1.1 See the Statement of Work for substitution approvals.

2.2 MANUFACTURED UNITS

2.2.1 Specific Requirements: See hardware schedule at end of this Section.

2.2.2 Manufacturer's Catalog Numbers: Catalog numbers in hardware schedule refer to the following manufacturers.

2.2.2.1 Steel Door Hinges: BHMA A156.1, types and sizes shown in schedule, with non-removable pins on exterior doors; Stanley.

2.2.2.2 Mortise Locksets: BHMA A156.13, Grade 1, type shown in schedule; Corbin Russwin.

2.2.2.3 Exit Devices: BHMA A156.3, Grade 1, type shown in schedule; Von Duprin.

2.2.2.4 Door Closers: BHMA A156.4, type and size shown in schedule; Corbin Russwin.

2.2.2.5 Kickplates: BHMA A156.6, type shown in schedule; Trimco.

2.2.2.6 Thresholds: BHMA 156.21, Type shown in schedule; PEMKO (Quality).

2.2.2.7 Weatherstripping: BHMA 156.22, Type shown in schedule; PEMKO (Quality).

2.2.2.8 Kick Down Door Holder: BHMA 156.16, Type as shown in schedule; Ives (Quality).

2.2.2.9 Rim and Mortise Lock Cylinders: Lock cylinders shall comply with BHMA A156.5, and be Medeco BIAXIAL interchangeable cores, #32W4201-B3-626, sub assembled. Cores shall be installed at the Medeco factory. Cylinder shells shall be appropriate to core and lockset application. The grand master keying system shall be matched to the site standard. Contact site locksmith for key way.

2.2.3 Fasteners: Furnish necessary screws, bolts, or other fasteners of suitable size and type to anchor hardware in position. Match hardware finish. Furnish with expansion shields, toggle bolts, or other appropriate anchors.

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Hardware Schedule for 6'-0" Pedestrian Doors			
Item	Qty. Per Door	Model	Finish
Closer	2	DC6210-A11-M54-M103	689
Lockset	1	ML2024	626, Armstrong Lever Handle
Kickplate	2	KOO50 8x34	630
Weatherstripping	20 ft	290 APK	--
Exit Device	2	99 Series	626 Trim
Door Bottom	2	217AV	Alum
Hinges	3 Pr	FBB199 Butts 4-1/2 x 4-1/2	626
Threshold	1x72	254X226T	Alum
Kickdown Door Holder	2	FS452-4	US28

Hardware Schedule for 3'-0" Pedestrian Doors			
Item	Qty. Per Door	Model	Finish
Closer	1	DC6210-A11-M54-M103	689
Lockset	1	ML2024	626, Armstrong Lever Handle
Kickplate	1	KOO50 8x34	630
Weatherstripping	17 ft	290 APK	--
Exit Device	1	99 Series	626 Trim
Door Bottom	1	217AV	Alum
Hinges	1 1/2 Pr	FBB199 Butts 4-1/2 x 4-1/2	626
Threshold	1x36	254X226T	Alum
Kickdown Door Holder	1	FS452-4	US28

PART 3 - EXECUTION

Not applicable.

END OF SECTION

MISSION SUPPORT ALLIANCE

SECTION 13 34 19

METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 The following documents and others referenced therein form part of Contract to extent designated in this Section. Referenced documents are those current as of the date of this Section unless otherwise indicated.

1.1.1.1 American Institute of Steel Construction, Inc (AISC)
325 Steel Construction Manual, 14th Edition

1.1.1.2 American Iron and Steel Institute (AISI)
D100 Cold-Formed Steel Design Manual

1.1.1.3 American Society of Civil Engineers (ASCE)
ASCE 7 Minimum Design Loads for Buildings and Other Structures

1.1.1.4 American Society for Testing and Materials (ASTM)
A 653 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.1.1.5 American Welding Society (AWS)
D1.1 Structural Welding Code-Steel
D1.3 Structural Welding Code – Sheet Steel

1.1.1.6 International Code Council (ICC)
IBC International Building Code (2015)

1.1.1.7 Metal Building Manufacturers Association (MBMA)
Metal Building Systems Manual

1.1.1.8 Underwriters Laboratories (UL) Building Materials Directory

1.2 SUBMITTALS

1.2.1 See Statement of Work for submittal procedures.

1.2.2 Approval Required

1.2.2.1 Erection instructions and diagrams: Submit documentation necessary to erect building and install components. Documentation shall include the following.

MISSION SUPPORT ALLIANCE

- a. Anchor bolt layouts and diameters
 - b. Structural connections
 - c. Roofing connections
 - d. Door and window frame installation
 - e. Flashings
 - f. Accessory installation
 - g. Details and instructions for assembly
 - h. Fabrication drawings to supplement instructions and diagrams
- 1.2.2.2 Shop drawings and structural calculations: Before fabrication, submit shop drawings and structural calculations, signed and sealed by Washington State licensed Professional Engineer showing compliance with 1.3.2. Drawings and calculations shall address the following:
- a. Building layout and framing members.
 - b. Building reactions (in calculations)
 - c. Exterior wall system including door details
 - d. Roof system and related details
- 1.2.2.3 Product Data: Submit metal building system manufacturer's product information, specifications, and installation instructions for building components and accessories.
- 1.2.2.4 Samples: Before delivery, submit color samples from manufacturer's standard selection.
- 1.2.2.5 Certificate of compliance: With delivery, submit a certificate signed by a registered professional engineer, stating design criteria and procedures used, and attesting to design adequacy and accuracy.
- 1.2.2.6 Warranty: Submit warranty documentation on manufacturer's letterhead, to be 20 year minimum.
- 1.3 SYSTEM DESCRIPTION
- 1.3.1 Metal Building: Single-span structure, rigid frame type.
- 1.3.1.1 Primary framing: Rigid frame with tapered columns, braced end frames, end wall columns and wind bracing. Column locations as noted on drawings.
- 1.3.1.2 Secondary framing: Purlins, girts, eave struts, flange bracing, sill supports, clips and other items required for complete installation.
- 1.3.1.3 Exterior wall and roof systems as noted within this specification.
- 1.3.2 Design Criteria: Building and component design shall be in accordance with applicable sections of AISC 325, AISI D100, MBMA Manual, IBC 2015 and ASCE 7-10. Metal roof covering design shall be in accordance with Specifications and Commentary for Steel Roof Deck section of SDI Publication 29.
- 1.3.2.1 Basic design shall include dead, live, snow, wind, collateral and seismic loads.
- 1.3.2.2 Dead loads include the weights of all permanent materials and equipment, including the structure's own weight. Design in accordance with ASCE 7-10.

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1.3.2.3 Live loads

Live loads are those loads produced by the use and occupancy of the building or other structure and do not include construction and environmental loads such as wind load, snow load, rain load, earthquake load, flood load, or dead load. Live loads on a roof are produced by maintenance workers and equipment.

- a. Live loads for buildings and other structures shall be not less than the minimum uniform load or concentrated load stipulated in ASCE 7-10.
- b. The minimum roof design live load shall be 20 lb/ft².

1.3.2.4 Snow loads

Snow loads, full or unbalanced, shall be substituted for roof live loads, where such loading results in larger members or connections. A ground snow load, P_g , of 15 lb/ft² with an importance factor $I_g = 1.0$ shall be used for calculating roof snow load. Unbalanced snow loads resulting from drifting or sliding and rain on snow shall be considered.

1.3.2.5 Wind loads: Design in accordance with ASCE 7-10, using the following site specific input.

- a. Ultimate Design Wind Speed: 110 mi/h – three seconds gust.
- b. Partially Enclosed Structure
- c. Exposure category: C.

The wind pressure increase resulting from nearby terrain features (wind speed-up over hills and escarpments), building torsion produced by wind, and biaxial wind loading of buildings are effects that must be structurally investigated as described in ASCE 7.

1.3.2.6 Earthquake loads

Earthquake design load shall comply with the IBC and ASCE 7 with the following site specific input:

Site Class: D
Risk Category: II
Seismic Importance Factor, $I_e = 1.0$

1.3.2.7 Thermal Forces

The design of structures shall include the effects of stresses and movements resulting from variations in temperature. Structures shall be designed for movements resulting from the maximum seasonal temperature change.

1.3.2.8 Load Factors and Load Combinations

Load factors, load combinations, allowable stresses, and strength requirements for structures, systems, and components shall comply with the IBC and ASCE7-10 or applicable system national codes and standards. Load combinations include live load, dead load, snow load, and normal operating loads for all systems.

1.3.2.9 Collateral loads: Design roof framing for a collateral load of 5 lb/ft² to accommodate loads imposed on building from lighting fixtures, and other attachments.

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- 1.3.2.10 Maximum deflection in main frame members shall not exceed 1/240th of the span. Roofing or roof panels shall not exceed 1/180th of spans, and maximum deflection in siding or wall panels shall not exceed 1/90th of spans.
- 1.3.2.11 Provide drainage to exterior for water entering or condensation occurring within cladding system.
- 1.4 DELIVERY, STORAGE, AND HANDLING
- 1.4.1 Deliver materials to site.
- 1.4.2 Damaged or defaced components may be repaired, if repairs are acceptable to The Buyer's Representative.
- 1.5 WARRANTY
- 1.5.1 Buildings shall be warranted for a minimum of 20 years against water leaks caused by normal atmospheric exposure.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL FRAMING SYSTEM

2.1.1 General:

Design of Structural System: Clear span rigid frame with tapered columns and roof beams, with gable slope roof with clear dimensions as noted on drawings.

2.1.2 Primary Framing:

2.1.2.1 Rigid Frames

- a. Frames: Welded-up plate section columns and roof beams, complete with necessary splice plates for bolted field assembly.

- 1) Base Plates, Cap Plates, Compression Splice Plates, and Stiffener Plates: Factory welded into place and connection holes factory fabricated.
- 2) Columns and Roof Beams: Fabricated complete with holes in webs and flanges for attachment of secondary structural members and bracing, except for fieldwork as noted on erection drawings.

- b. Bolts for Field Assembly of Frame Members: ASTM A 325 high-strength bolts as indicated on erection drawings furnished by metal building system manufacturer.

2.1.2.2 Endwall Structural Members: Cold-formed channel members designed in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members or rolled/welded-up plate sections designed in accordance with AISC Specification for Structural Steel Buildings.

- a. Endwall Frames: Endwall corner posts, endwall roof beams, and endwall posts as required by design criteria.

MISSION SUPPORT ALLIANCE

- 1) Splice Plates and Base Clips: Shop fabricated complete with bolt connection holes.
 - 2) Base Plates, Cap Plates, Compression Splice Plates, and Stiffener Plates: Factory welded into place and connection holes shop fabricated.
 - 3) Beams and Posts: Factory fabricated complete with holes for attachment of secondary structural members, except for field work as noted on erection drawings furnished by metal building system manufacturer.
- b. Intermediate Frames:
- 1) Where required, factory fabricates necessary endwall posts and holes for connection to intermediate frame used in endwall.
- c. Primary Structural Members: Paint with metal building system manufacturer's standard primer.
- 2.1.3 Secondary Structural Members:
- 2.1.3.1 Purlins
- a. Purlins: "Z"-shaped, precision-roll-formed, acrylic-coated G30 galvanized steel in different gauges to meet specified loading conditions.
 - b. Attach purlins to main frames and endwalls with ½-in-diameter bolts.
 - c. Brace purlins at intervals indicated on erection drawings.
 - d. Concentrated Loads: Hung at purlin panel points.
- 2.1.3.2 Eave Members:
- a. Eave Struts: Factory punched "C" sections, precision-roll-formed, acrylic-coated G30 galvanized steel in different gauges to meet specified loading conditions.
- 2.1.3.3 Girts:
- a. "Z" or "C"-shaped, precision-roll-formed, acrylic-coated G30 galvanized steel in different gauges to meet specified loading conditions.
- 2.1.3.4 Bracing:
- a. Locate bracing as indicated on the erection drawings.
- 2.1.4 Welding:
- a. Welding Procedures, Operator Qualifications, and Welding Quality Standards: AWS D1.1 - Structural Welding Code – Steel and AWS D1.3 - Structural Welding Code – Sheet Steel.
 - b. Shop Welding inspection, in accordance with fabricator's approved quality control and quality assurance plans and in accordance with AWS D1.1.
 - c. Certification of Welder Qualification in accordance with AWS D1.1.
- 2.2 METAL ROOF SYSTEM
- 2.2.1 Metal Roof System: Standing seam roof system.
- 2.2.1.1 Roof System Design:
- a. Design roof panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

MISSION SUPPORT ALLIANCE

- b. Design roof paneling system for a roof slope of 2 inches in 12 inches or as recommended by manufacturer.
- c. Design roof paneling system to support design live, snow, and wind loads.
- d. Endwall Trim and Roof Transition Flashings: Allow roof panels to move relative to wall panels and/or parapets as roof expands and contracts with temperature changes.

2.2.1.2 Roof System Performance Testing:

- a. UL Wind Uplift Classification Rating, UL 580: Class 90.
- b. Structural Performance Under Uniform Static Air Pressure Difference: Test roof system in accordance with ASTM E 1592.

2.2.1.3 Standing Seam Roof Panels:

- a. Factory roll-formed, 24 inches wide.
 - 1) For roof lengths not evenly divisible by the 2'-0" panel width, factory-manufactured variable-width (9-inch, 12-inch, 15-inch, 18-inch, and 21-inch-wide) panels shall be used to ensure modular, weathertight roof installation.
- b. Panel Material and Finish:
 - 1) Minimum 24-gauge galvanized steel, G90 coating, ASTM A 653, G90.
 - 2) Roof panels shall be bare galvalume.
 - 3) Provide an option for upgrading roof panel finish to: "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating. If option is selected provide 25 year coating warranty for product to not peel, crack or chip.
- c. Use panels of single length, eave to peak to eliminate end laps.
- d. Extend eave panels beyond structural line of sidewalls as noted on the Drawings.
- e. Panel End Laps: Locate directly over, but not fastened to, a supporting secondary roof structural member and be staggered, to avoid 4-panel lap-splice condition.
- f. Self-Drilling Fasteners: Not permitted.
- g. Ridge Assembly:
 - 1) Design ridge assembly to allow roof panels to move lengthwise with expansion and contraction as roof panel temperature changes.
 - 2) Install panel closures and interior reinforcing straps to seal panel ends at ridge.
 - 3) Do not expose attachment fasteners on weather side.
 - 4) Use lock seam plug to seal lock seam portion of panel.

2.2.1.4 Provision for Expansion and Contraction:

- a. Provision for Thermal Expansion Movement of Roof Panels: Concealed clips with movable tab.
- b. Provide for thermal expansion and contraction without detrimental effects on roof panels, with plus or minus 100-degree F temperature difference between interior structural framework of building and of roof panels.

2.2.1.5 Fasteners:

- a. Make connections of roof panels to structural members, except at eaves, with clips with movable stainless steel tabs, seamed into standing seam side lap.

MISSION SUPPORT ALLIANCE

2.3 METAL WALL SYSTEM

2.3.1 Exterior Metal Wall System: Manufacturer's standard purlin bearing rib (PBR) panel system.

2.3.2 Wall System Design: Design wall panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

2.3.3 Wall Panels:

2.3.3.1 Wall panels shall be 24-gauge PBR.

2.3.3.2 Panel Material and Finish:

- a. 24-gauge painted Galvalume aluminum-zinc alloy (approximately 55 percent aluminum, 45 percent zinc), ASTM A 792.
- b. Provide an option for upgrading wall panel finish to: "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating. If option is selected provide 25 year coating warranty for product to not peel, crack or chip.

2.3.3.3 Fasteners: Manufacturer's standard fasteners, factory painted to match wall color. Locate fasteners as indicated on erection drawings.

2.3.3.4 Accessories: Indicated on erection drawings furnished by metal building system manufacturer.

2.3.4 Metal Roofing Specialties: See Section 07 71 00.

2.3.5 Steel Doors and Frames: See Section 08 11 13.

2.3.6 Door Hardware: See Section 08 71 00.

2.3.7 Prefinished Metal Soffit and Fascia: See Section 07 60 00.

2.3.8 Finish: Precoated enamel on steel with color as selected by the Owner.

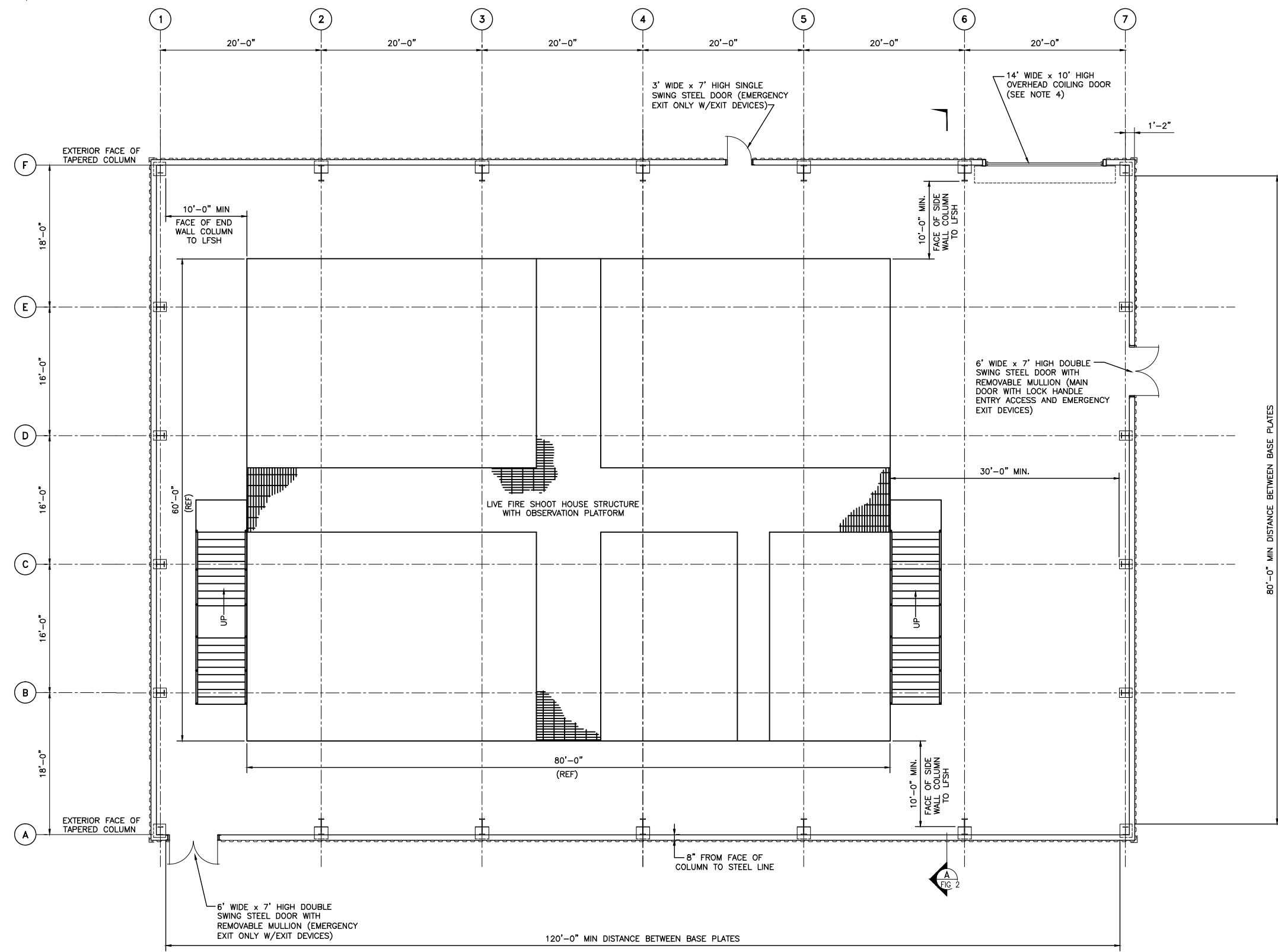
PART 3 - EXECUTION

Not Applicable

END OF SECTION

MISSION SUPPORT ALLIANCE

Figures

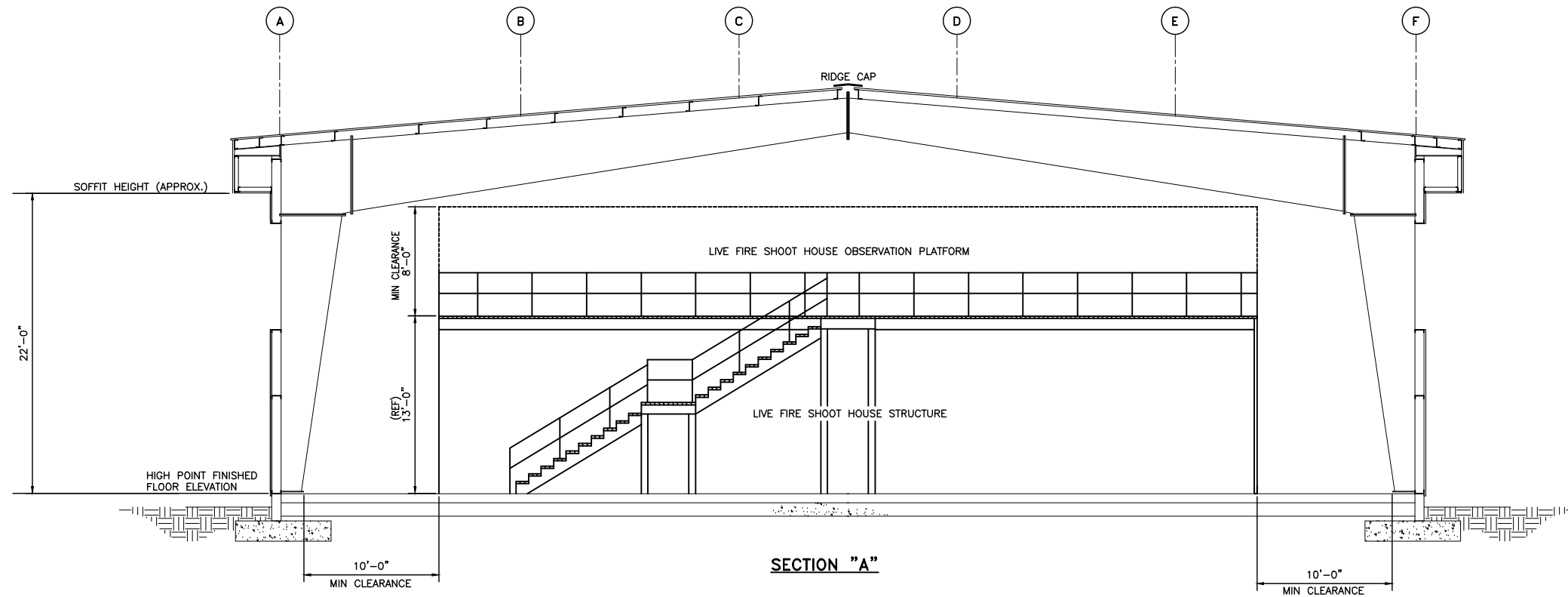


GENERAL NOTES

1. LIVE FIRE SHOOT HOUSE, PLATFORM, STAIRS, BUILDING FOUNDATIONS, CONCRETE PADS ARE PROVIDED BY OTHERS.
2. COLUMN SPACING DIMENSIONS ARE REFERENCE ONLY. PRE-ENGINEERED BUILDING CONTRACTOR TO PROVIDE 6 NORTH/SOUTH BAYS AND 5 EAST/WEST BAYS WITH APPROXIMATE EQUAL SPACING.
3. BRACED BAYS MAY BE PLACED ALONG ANY EXTERIOR COLUMN ROW BAY WITHOUT DOORS.
4. OVERHEAD COILING DOOR TO BE TO MODEL 610, BY OVERHEAD DOOR CORPORATION OR APPROVED EQUAL. DOOR TO BE MANUALLY OPERATED AND NON-INSULATED. DOOR CURTAIN TO BE STANDARD GALVANIZED STEEL SLATS WITH CURVED PROFILE. FINISH SHALL BE AS SELECTED BY OWNER FROM MANUFACTURERS STANDARD COLORS. SUBMIT SHOP DRAWINGS, HARDWARE PROFILE AND ATTACHMENT DETAILS FOR APPROVAL IN ACCORDANCE WITH STATEMENT OF WORK.

FLOOR PLAN

FIGURE 1



GENERAL NOTES

1. LIVE FIRE SHOOT HOUSE, PLATFORM, STAIRS, BUILDING FOUNDATIONS, CONCRETE PADS ARE PROVIDED BY OTHERS.
2. COLUMN SPACING DIMENSIONS ARE REFERENCE ONLY. PRE-ENGINEERED BUILDING CONTRACTOR TO PROVIDE 6 NORTH/SOUTH BAYS AND 5 EAST/WEST BAYS WITH APPROXIMATE EQUAL SPACING.
3. BRACED BAYS MAY BE PLACED ALONG ANY EXTERIOR COLUMN ROW BAY WITHOUT DOORS.
4. PBR STEEL SIDING SHEETS TO BE 12'-1/2" TO OVERLAP SHEETING NOTCH.

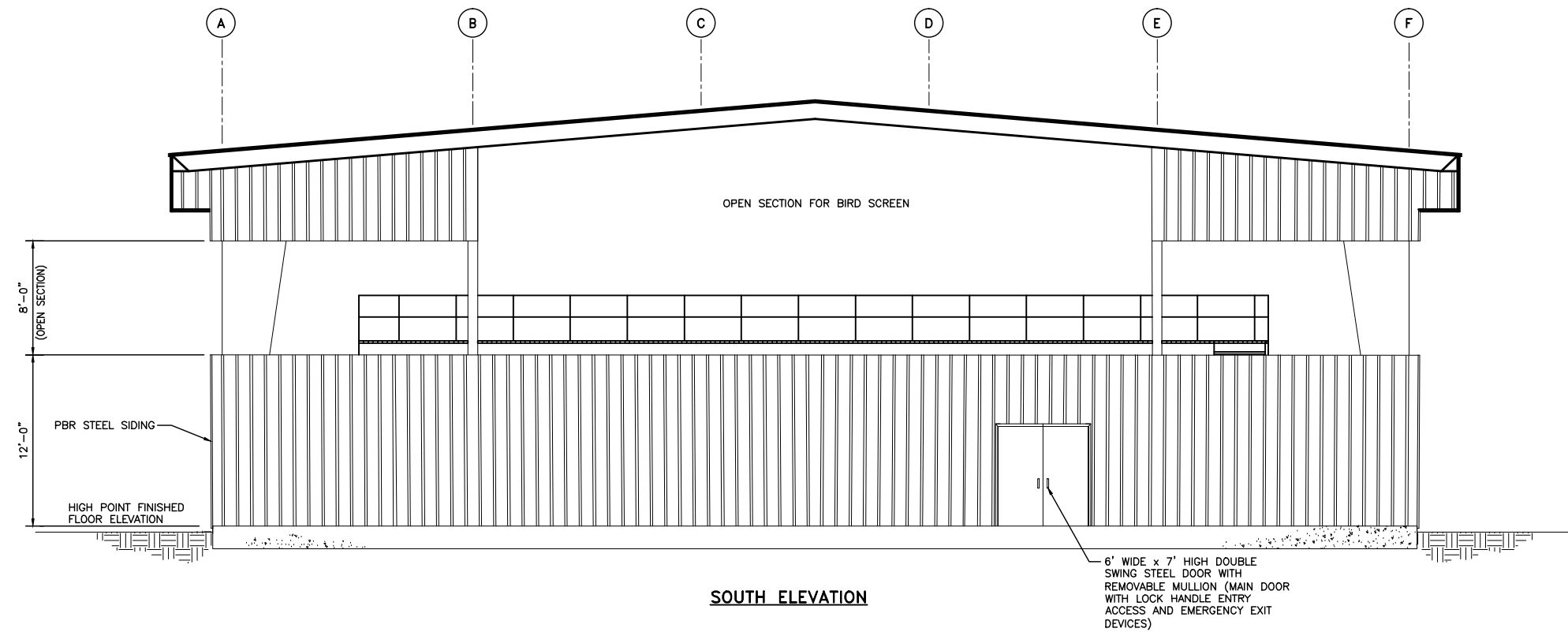
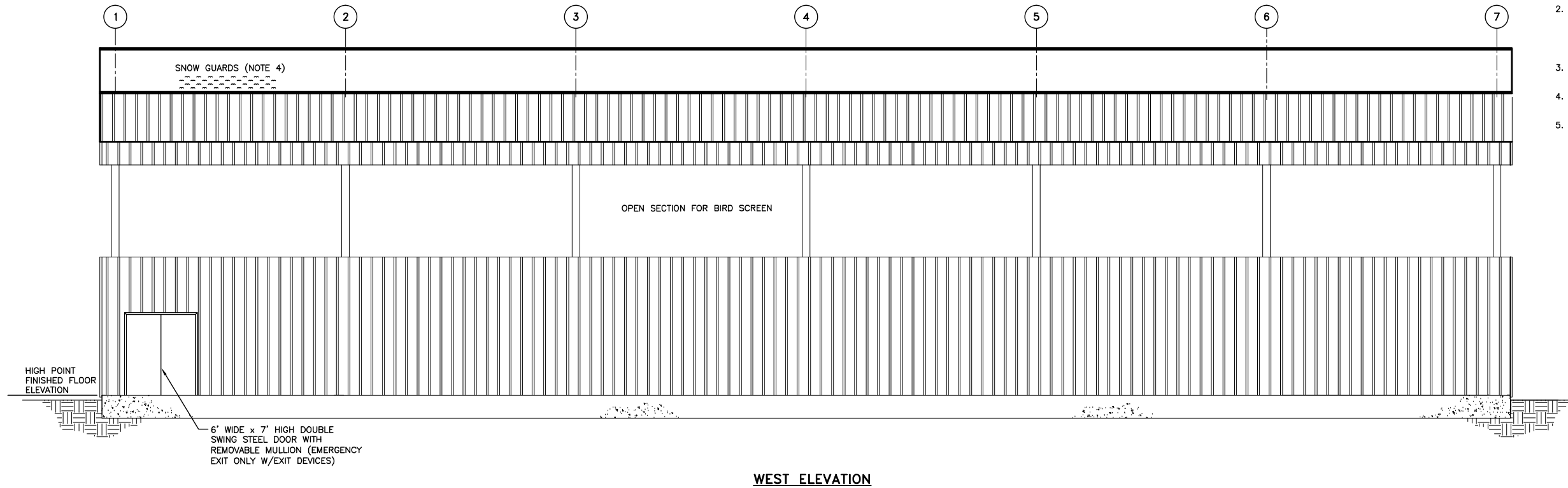


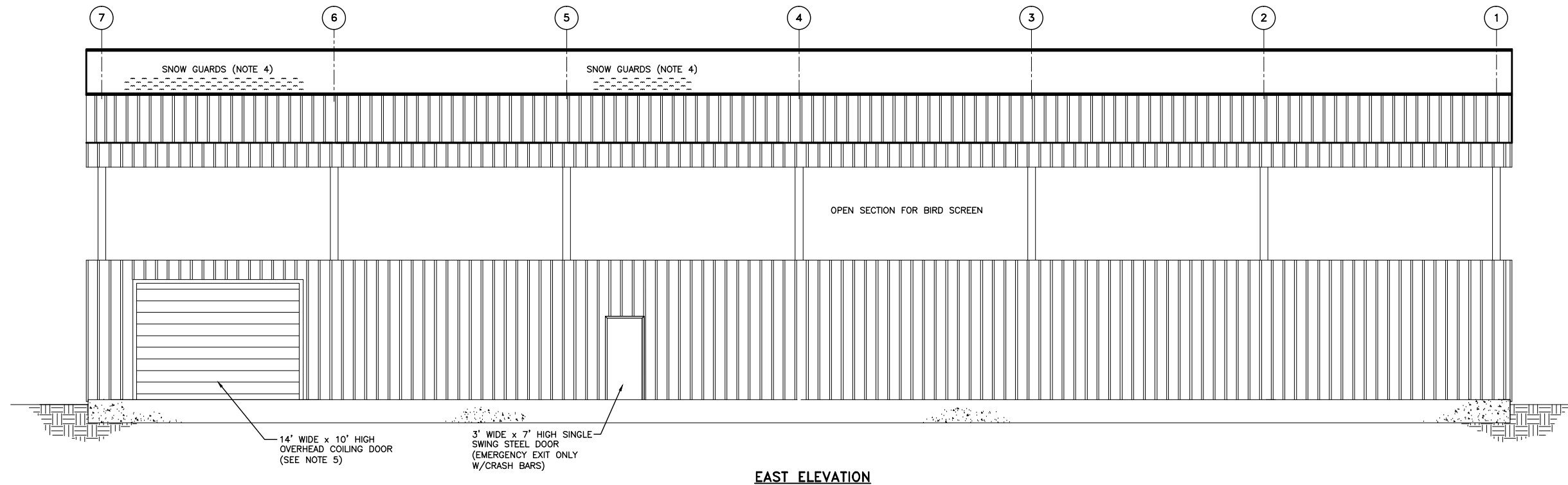
FIGURE 2

GENERAL NOTES

1. LIVE FIRE SHOOT HOUSE, PLATFORM, STAIRS, BUILDING FOUNDATIONS, CONCRETE PADS ARE PROVIDED BY OTHERS.
2. COLUMN SPACING DIMENSIONS ARE REFERENCE ONLY. PRE-ENGINEERED BUILDING CONTRACTOR TO PROVIDE 6 NORTH/SOUTH BAYS AND 5 EAST/WEST BAYS WITH APPROXIMATE EQUAL SPACING.
3. BRACED BAYS MAY BE PLACED ALONG ANY EXTERIOR COLUMN ROW BAY WITHOUT DOORS.
4. SNOW GUARDS TO BE INSTALLED ABOVE ALL PERSONNEL AND OVERHEAD COILING DOORS.
5. OVERHEAD COILING DOOR TO BE TO MODEL 610, BY OVERHEAD DOOR CORPORATION OR APPROVED EQUAL. DOOR TO BE MANUALLY OPERATED AND NON-INSULATED. DOOR CURTAIN TO BE STANDARD GALVANIZED STEEL SLATS WITH CURVED PROFILE. FINISH SHALL BE AS SELECTED BY OWNER FROM MANUFACTURERS STANDARD COLORS. SUBMIT SHOP DRAWINGS, HARDWARE PROFILE AND ATTACHMENT DETAILS FOR APPROVAL IN ACCORDANCE WITH STATEMENT OF WORK.



WEST ELEVATION



EAST ELEVATION

FIGURE 3