

FORM OF PROPOSAL

Public Safety Training Center
Craven Community College
SCO-ID # 24-27879-01A

Contract: _____

Bidder: _____

Date: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the

Trustees of Craven Community College

in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of

New Public Safety Training Center

in full in complete accordance with the plans, specifications, and contract documents, to the full and entire satisfaction of the Trustees of

Craven Community College

with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

SINGLE PRIME CONTRACT:

Base Bid:

_____ Dollars(\$)_____

General Subcontractor:

_____ Lic _____

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

UNIT PRICES:

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

GENERAL CONTRACT:

No. G-1 Excavation of unsuitable soils and backfill with structural fill (CY) Unit Price (\$)_____

No. G-2 Additional structural concrete for foundations (material & labor) (CF) Unit Price (\$)_____

ALTERNATES:

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

GENERAL CONTRACT:

Bid Alternate 01: Provide burn drill tower. Including concrete foundation, and concrete floor systems

(Add) _____ Dollars (\$)

Bid Alternate 02: Provide modular classroom building, including accessible stairs/ramp and foundation

(Add) _____ Dollars (\$)

Bid Alternate 03: Provide (2) rehab shelters. Including lighting and foundation/slab for owner provided and installed metal canopies

(Add) _____ Dollars (\$)

Bid Alternate 04: Provide flood lighting for driver training pad. (4) fixtures, poles, foundations, associated power and controls

(Add) _____ Dollars (\$)

Bid Alternate 05: Provide concrete foundation and slab for gatehouse building. Provide mechanical system, power and lighting for owner provided and installed gatehouse structure.

(Add) _____ Dollars (\$)

Bid Alternate 06: Owner preferred alternate for indoor range equipment. Including range mechanical system, range stalls, ceiling baffles, wall baffles, target retrieval system & targets, steel containment trap and collection system, and range control system.

(Add) _____ Dollars (\$)

Bid Alternate 07: Provide owner preferred alternate for building mechanical system controls. See mechanical drawings.

(Add) _____ Dollars (\$)

Bid Alternate 08: Provide Centipede sod per Civil Drawings. Base bid is establishing grass with seed only per notes on sheet CG501.

(Add) _____ Dollars (\$)

MINORITY BUSINESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit **A**) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (**B**) to that effect in lieu of Affidavit (**A**) required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (**C**) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit **D** is not necessary;

*** OR ***

If less than the 10% goal, Affidavit (**D**) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A **or** Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

(Name of firm or corporation making bid)

WITNESS:

(Proprietorship or Partnership)

By: _____
Signature

Name: _____
Print or type

Title _____
(Owner/Partner/Pres./V.Pres)

Address _____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

License No. _____

Federal I.D. No. _____

Email Address: _____

(CORPORATE SEAL)

Addendum received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 _____ Addendum No. 5 _____ Addendum No. 6 _____

Addendum No. 2 _____ Addendum No. 4 _____ Addendum No. 6 _____ Addendum No. 7 _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

as

principal, and _____, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto Craven Community College as obligee, in the penal sum of _____ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of ____ 20__

WHEREAS, the said principal is herewith submitting proposal for _____ and the principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

09 84 33 ACOUSTICAL WALL TREATMENT (POROUS EXPANDED POLYPROPYLENE. P.E.P.P)

PART 1 GENERAL AND SUPPLEMENTARY PROVISIONS

PART 1 1.SCOPE OF WORK

PART 1 1.A. Section Includes: Porous Expanded Polypropylene [Acoustical Wall Panels]

PART 1 2.REFERENCES

PART 1 2.A. American Society for Testing and Materials (ASTM):

- PART 1 2.B. 1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM C423-99a: Sound Absorption by Reverberation Room Method.

PART 1 3.PRODUCT DESCRIPTION

PART 1 3.A. Performance Requirements:

1. Provide acoustical wall panels designed and tested to provide surface-burning characteristics (ASTM E84) as follows:
 - a. Flame spread: **[1" F/S – 3,] [2" – F/S – 5,]**
 - b. Smoke Developed: **[1" S/D – 84,] [2" S/D – 113.]**
2. Provide acoustical wall panels, which have been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating as follows:
 - a. Mechanical fastener mounting **2" panel with 1" CFAB backer: NRC .90**

4 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data and installation instructions.

Samples: Submit 1 sample: 6" x 6" for each PEPP required, showing full range of exposed texture to be expected in completed work.

B. Quality Assurance/Control Submittals: Submit the following:

1. Test reports: Upon request submit certified test reports from recognized test laboratories
2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

5 QUALITY ASSURANCE

- A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity
- B. Regulatory Requirements and Approvals: [Non required]

6 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirement Section.
- B. Delivery: Deliver material in the manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Provide labels indicating brand name, source of procurement, style, size and thickness
- D. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

7 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install acoustical panels until building is closed in.

PART 2 – PRODUCTS

2.1. ACOUSTICAL WALL PANELS

- A. Acoustical Wall Panels shall be as provided by Acoustical Surfaces Inc, 123 Columbia Court N. Chaska, Minn. 55318. Ph: 1 (800) 448 –0121
 - 1. Porous Expanded Polypropylene (PEPP) Acoustical Wall Panels:
 - a. Material description: Sound Silencer panels shall be manufactured from expanded polypropylene beads, which shall be capable of being recycled.
 - b. Thickness: 2" thick.
 - c. Color: Charcoal
 - d. Edge: Beveled
 - e. Width: 23 ¾"
 - f. Length: 47 ¾"
 - g. Mounting Style: Provide all fasteners, 2x4 Furring strips and CFAB backer for complete single source installation.
 - h. Acoustical panels shall be impervious to moisture, excessive humidity or water.

2.2 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted without express prior approval from Architect prior to bidding.

PART 3 – EXECUTION

1 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the instructions and recommendations of the acoustical panel manufacturer.
- B. Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.

2 EXAMINATION

- A. Site Verification of Conditions:
 - 1. Examine surfaces scheduled to receive furred out or directly attached acoustical units for unevenness, irregularities and dampness that would affect quality and execution of work.
 - 2. Do not proceed with installation of acoustical panels until unacceptable conditions are corrected.

3 INSTALLATION

- A. General: Do not begin installation until materials sufficient to complete an entire room are received and are ready for installation..

- 1. Field cut acoustical panels as required, in accordance with manufacturers recommended procedures and equipment

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel to comply with manufacturer's instructions for cleaning.
- B. Remove and replace tiles, which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION

SECTION 11 67 23.01- SHOOTING RANGE EQUIPMENT

1.1 TARGET RETRIEVERS

- A. Basis of Design: Pilot; as manufactured by Action Target Inc. (or similar equal)
1. Trusted partner warranty.
 2. Maximum Length: 100 meters (328 feet).
 3. Maximum Speed: 7 to 12 fps (7.7 to 13 kph).
 4. Carrier:
 - a. Deflector Plate: 3/8 inch (9.5 mm) AR500 steel.
 - b. Side Housings: 11 gauge, 0.1196 inch (3.038 mm) thick steel.
 - c. Weight: 111 pounds (50.3 kg).
 - d. Wireless Capabilities: Dual band compliant with 802.11 a/b/g/n/ac standards.
 - e. Stabilizer Wheels: 6 internal stabilizing wheels.
 - f. Home position shall be modifiable.
 - g. Positioning Accuracy: Plus or minus 1 inch (25 mm).
 - h. Includes 1 direct drive brushless drive motor.
 - i. Carrier Target Lighting:
 - 1) User dimmable white light.
 - 2) Muzzle blast strobe simulates return gun fire.
 - 3) 3 Strobe patterns of red, blue, and white.
 - 4) White Lighting: 40 fc of light at the center of target.
 - j. Includes strike watch technology to detect if carrier is shot. If carrier is shot, the following occurs:
 - 1) Warning Message appears on local control.
 - 2) Targets lights strobe red, visually notifying the shooter.
 - 3) If shot exceeds allowable limit set in master control, the target comes home, the session is terminated, and a warning message appears on SmartRange Axis Control System.
 - 4) Detect shots from .22LR calibers and up.
 - 5) Does not detect false positives from muzzle concussion.
 - k. Integrated Camera: Views and displays target in real time from anywhere on track on local control screen.
 - l. Clamp: Recessed into housing and hidden from shooter's view.
 - 1) No leading edges or exposed hardware that could be shot.
 - 2) Operable with one hand.
 - 3) Designed to hold cardboard or plastic backers.
 5. Track End Cap: Steel with powder coating. Includes lane numbers on rear of housing.
 6. Track:
 - a. Material: 11-gauge (0.1196 inch, 3.038 mm thick) steel.
 - b. Weight: 11.66 pounds per foot (5.29 kg per 304.8 mm).
 - c. Standard Track Section Length: 6 feet (1829 mm).
 - d. Down range portion of track shall be free of bus bars, cables, and tensioners.
 - e. Dead stops on both ends contain gas/oil dampers housed in steel structure and capable of stopping a 111 lbs (50.3 kg) carrier traveling 20 fps (6.1 m per sec).
 - f. Earth-grounded.
 - g. Requires removing a maximum 12 bolts to replace a track section.
 - 1) Does not require removing or adjusting adjacent track sections to remove a track section.
 - h. Track has a flat base that directs all rounds down range towards the bullet trap.
 - i. Track shall be supported by zinc-coated steel hanger brackets.
 7. Local Control Screen User Interface:
 - a. Size: 10 inch (254 mm), 1280 x 800 resolution.

SECTION 11 67 23.01- SHOOTING RANGE EQUIPMENT

- b. Abrasive resistant glass touch screen.
 - c. Power over Ethernet (PoE) powered.
 - d. Displays remaining lane time via SmartRange Axis Lane Management.
 - e. Three levels of screen brightness to allow for low-light training.
 - f. Integrated help button interfaces with SmartRange Axis control screen. When pressed:
 - 1) Target lights on carrier will strobe blue.
 - 2) Range staff are notified of required assistance via range's SmartRange Axis control screen.
 - g. Displays and requires acknowledgement of range rules before a session starts.
 - 8. SmartRange Axis Range Control System Integration: Integrates with SmartRange Axis Control system.
 - 9. No cables or wires to be exposed to direct or indirect projectile hits.
- B. Basis of Design: Dual Running Man Pro (DRM Pro); as manufactured by Action Target Inc. (or similar equal)
- 1. Performance Requirements:
 - a. Runner: Computerized programmable control system capable of:
 - 1) Automatic track length detection.
 - 2) Automatic trolley drift compensation.
 - 3) Trolley Speeds: Up to 20 fps (6 m per sec). Adjust without knobs or switches.
 - a) 10 fps (3 m per sec) requires 21 ft. (6.4 m) of track.
 - b) 15 fps (4.5 m per sec) requires 30 ft. (9.1 m) of track.
 - c) 20 fps (6 m per sec) requires 48 ft. (14.6 m) of track
 - 4) Change trolley direction and speed while moving.
 - 5) Position control within 6 inches (152 mm).
 - 6) Intelligent error reporting:
 - a) Cable slip detection.
 - b) Drive errors.
 - c) Proximity sensor errors.
 - d) Wiring errors.
 - 7) Status monitoring.
 - 8) Calibration.
 - 9) Data logging.
 - 10) In-field programming for feature add-ons and bug fixes.
 - 11) Capturing odometer data for maintenance scheduling and general use.
 - 12) Real-time speedometer for validation of speeds for consistent training.
 - 13) Capable of connecting to the Action Target cloud network for remote updates and diagnostics (network connection required).
 - b. Accelerating up to 0.5 g.
 - c. Accelerating the carrier to 10 fps (3 m per sec) within 5 ft. (1524 mm) of track
 - d. Operates in winds up to 30 mph (48 kph).
 - e. Temperature rating: Minus 20 to 120 degrees F (Minus 28 to 49 degrees C).
 - f. All system components rated to IP54 minimum environmental protection.
 - g. Runner uses electronic braking to stop without requiring mechanical braking.
 - h. Runner is able to operate without limit switches to determine end of track.
 - i. Runner will not make contact with end bumpers except during calibration runs.
 - 2. Trusted partner warranty.
 - 3. Runner System: Two trolleys operating on parallel tracks.
 - a. Trolleys:
 - 1) Adjustable for target widths from 12 to 24 inches (305 x 610 mm).
 - 2) Accept wooden 1 x 2 inch (25 x 51 mm) target holders.
 - 3) Powder coated and zinc plated components.

SECTION 11 67 23.01- SHOOTING RANGE EQUIPMENT

- 4) Ratcheting mechanism for quick cable adjustments.
 - 5) Integrated tension indicators for precise cable tensioning.
 - 6) Easily serviceable with use of standard hand tools.
4. Construction:
 - a. Motor Section: Induction motor. 3 phase, powered by single phase panel.
 - 1) High precision sealed encoders.
 - 2) Hardened tool-steel pulleys.
 - 3) Urethane bumpers.
 - b. Idler Section: Steel idler pulleys on bronze bushings for smooth operation.
 - 1) Urethane bumpers for trolley calibration.
 - c. Track: Modular to allow replacement or repair of individual damaged sections.
 - 1) Consists of universal 6-foot Action Target Accutrac sections.
 - 2) Fabricated from pre-galvanized material.
 - 3) Required Track Length: 10 lanes.
 - d. Mounting: Ground mounted on a concrete pad using wedge anchors.
 - e. Mounting: Inverted mounting from channel strut.
 - f. Downrange Control Panel: UL listed, with pre-terminated connectors.
 - g. Proximity Sensors: Reset trolley position and compensate for any drift.
 - h. Cable: 1/8 inch (3 mm) 7x19 galvanized steel cable for trolley movement.
 - i. Electronics: Rated for indoor or outdoor use.
 - 1) Wiring: Protected by metal-lined wide-temperature flexible conduit.
 - j. Electrical Requirements: Operate on 208-240 volt single phase 20 A service.
5. Control System: Standalone Wireless Controls.
 - a. Web-based graphical user interface.
 - b. Independent trolley control.
 - c. 3 user-adjustable speed controls.
 - d. Dynamic positioning.
 - e. Real-time speed, position, and status feedback.
 - f. Delay function for standalone training.
 - g. Continuous mode function.
 - h. Status, settings, and configurations.
 - i. Error reports.
 - j. System reset function.
 - k. Built-in user manual.
6. Control System: Mancom Master Control.
 - a. Requires server panel with communications bridge.
 - b. Includes standalone wireless controls.
7. Control System: Smart Range Application.
 - a. Requires server panel with communications bridge.
 - b. Includes standalone wireless controls.

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five] previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
- E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

- F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
- H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.4 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 REPORTS AND DOCUMENTS

- A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement of whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- B. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement of whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.6 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will

satisfy qualification requirements indicated and engage in the activities indicated.

1. Requirements of authorities having jurisdiction supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control

services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspection equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 083323 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Insulated service doors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type and size of overhead coiling door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain overhead coiling doors from single source from single manufacturer.

2.2 DOOR ASSEMBLY

A. Overhead Coiling Door: Insulated service overhead coiling door formed with curtain of interlocking metal slats.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Clopay Building Products
 - b. Cookson; a CornellCookson company
 - c. Cornell; a CornellCookson company
 - d. Overhead Door Corporation

- B. Operation Cycles: Door components and operators capable of operating for not less than 20,000 cycles. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.
 - 1. Include a tamperproof cycle counter.
- C. Insulated Door Curtain R-Value: 4.5 deg F x h x sq. ft./Btu.
- D. Insulated Door Assembly U-Factor: 0.90 Btu/deg F x h x sq. ft..
- E. Door Curtain Material: Steel.
- F. Door Curtain Slats: Flat profile slats of 1-7/8-inch center-to-center height.
 - 1. Insulated-Slat Interior Facing: Metal.
 - 2. Gasket Seal. Manufacturer's standard continuous gaskets between slats.
- G. Curtain Jamb Guides: Steel with exposed finish matching curtain slats.
- H. Hood: Match curtain material and finish.
 - 1. Shape: Cylinder
 - 2. Mounting: As indicated on Drawings.
- I. Locking Devices: Equip door with locking device assembly.
 - 1. Locking Device Assembly: Single-jamb side locking bars, operable from outside with cylinder.
- J. Manual Door Operator: Push-up operation.
 - 1. Provide operators with through-wall shaft operation.
 - 2. Provide operator with manufacturer's standard removable operating arm.
- K. Door Finish:
 - 1. Steel Finish: Factory finish, powder coat, color selected by Architect from manufacturer's standard colors .
 - 2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

2.3 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
 - 1. Door Curtain Slats: ASTM B209 sheet or ASTM B221 extrusions, alloy and temper standard with manufacturer for type of use and finish indicated; thickness of 0.050 inch; and as required.

2. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84 or UL 723. Enclose insulation completely within slat faces.
 3. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum thickness of 0.032 inch.
- B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.4 HOODS

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce the top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that project beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
1. Steel: 0.040-inch- thick sheet complying with ASTM B209, of alloy and temper recommended by manufacturer and finisher for type of use and finish indicated.
 2. Exterior-Mounted Doors: Fabricate hood to act as weather protection and with a perimeter sealant-joint-bead profile for applying joint sealant.

2.5 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.
- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
1. Lock Cylinders: As standard with manufacturer.
 2. Keys: Two for each cylinder.

2.6 COUNTERBALANCE MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, welded carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.

- C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.
- D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.7 MANUAL DOOR OPERATORS

- A. General: Equip door with manual door operator by door manufacturer.
- B. Push-up Door Operation: Lift handles and pull rope for raising and lowering doors, with counterbalance mechanism designed so that required lift or pull for door operation does not exceed 25 lbf.

2.8 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.
- C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

3.3 ADJUSTING

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
 - 1. Adjust exterior doors and components to be weather resistant.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust seals to provide tight fit around entire perimeter.

END OF SECTION 083323

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hinges.
2. Bored locks.
3. Push-pull latches.
4. Manual flush bolts.
5. Lock cylinders.
6. Astragals.
7. Surface closers.
8. Wall- and floor-mounted stops.
9. Door gasketing.
10. Thresholds.

1.2 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field-verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Hinges.
2. Bored locks.
3. Push-pull latches.
4. Manual flush bolts.
5. Lock cylinders.
6. Astragals.
7. Surface closers.
8. Wall- and floor-mounted stops.
9. Door gasketing.
10. Thresholds.
11. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Product Data Submittals: For each product.

- C. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of product data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - 2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
 - 3. Content: Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Fastenings and other installation information.
 - e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
 - f. Mounting locations for door hardware.
 - g. List of related door devices specified in other Sections for each door and frame.
- D. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.
- B. Schedules: Final keying schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lockup for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of door hardware from single manufacturer.

2.2 HINGES

- A. Hinges: ANSI/BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Baldwin; part of the Spectrum Brands Hardware and Home Improvement Group (HHI)
 - b. Bommer Industries, Inc
 - c. Hager Companies
 - d. McKinney Products Company; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
 - e. STANLEY; dormakaba USA, Inc.

2.3 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As indicated on Drawings.
 - 2. Levers: Cast.
 - 3. Escutcheons (Roses): Cast.
 - 4. Dummy Trim: Match lever lock trim and escutcheons.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
- F. Bored Locks: ANSI/BHMA A156.2, Grade 1, Series 4000.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Corbin Russwin, Inc.; an ASSA ABLOY Group company
 - b. dormakaba USA Inc.
 - c. Hager Companies
 - d. SARGENT Manufacturing Company; ASSA ABLOY
 - e. STANLEY; dormakaba USA, Inc.
- G. Push-Pull Latches: Surface mounted heavy duty barn door latch; with 3/8" thick striker arm and electroplated finish, capable of being opened from both sides of door.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hog Slat
 - b. Martell Hardware
 - c. RW Hardware
 - d. Trimco

2.4 MANUAL FLUSH BOLTS

- A. Manual Flush Bolts: ANSI/BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Adams Rite Manufacturing Company, an ASSA ABLOY Group company
 - b. Burns Manufacturing Incorporated
 - c. Don-Jo Mfg., Inc
 - d. Standard Metal Hardware Manufacturing LTD
 - e. Trimco
 - f. Precision Hardware, Inc.; dormakaba Group
 - g. SARGENT Manufacturing Company; ASSA ABLOY
 - h. STANLEY; dormakaba USA, Inc.
 - i. Yale Security Inc; ASSA ABLOY

2.5 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.
- 1. Manufacturers: Subject to compliance with requirements, provide products by the following provide products by one of the following:
 - a. Corbin Russwin, Inc.; an ASSA ABLOY Group company
 - b. Hager Companies
 - c. SARGENT Manufacturing Company; ASSA ABLOY
 - d. STANLEY; dormakaba USA, Inc.
 - e. Yale Security Inc; ASSA ABLOY

- B. Standard Lock Cylinders: ANSI/BHMA A156.5, Grade 1A permanent cores; face finished to match lockset.
 - 1. Core Type: Removable.
- C. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
- D. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.6 KEYING

- A. Keys: Brass.
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: Information to be furnished by Owner.

2.7 ACCESSORIES FOR PAIRS OF DOORS

- A. Astragals: ANSI/BHMA A156.22.

2.8 SURFACE CLOSERS

- A. Surface Closers: ANSI/BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Corbin Russwin, Inc.; an ASSA ABLOY Group company
 - b. Design Hardware; Mesker Openings Group; dormakaba
 - c. dormakaba USA Inc.
 - d. Hager Companies
 - e. SARGENT Manufacturing Company; ASSA ABLOY
 - f. STANLEY; dormakaba USA, Inc.
 - g. Yale Security Inc; ASSA ABLOY

2.9 MECHANICAL STOPS AND HOLDERS

- A. Wall- and Floor-Mounted Stops: ANSI/BHMA A156.16.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Architectural Builders Hardware Mfg., Inc
- b. ASI-American Specialties, Inc.
- c. Baldwin; part of the Spectrum Brands Hardware and Home Improvement Group (HHI)
- d. Hager Companies
- e. Rockwood Manufacturing Company; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
- f. Trimco

2.10 DOOR GASKETING

- A. Door Gasketing: ANSI/BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hager Companies
 - b. M-D Building Products, Inc
 - c. National Guard Products, Inc
 - d. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
 - e. Sealeze
- B. Maximum Air Leakage: When tested in accordance with ASTM E283/E283M with tested pressure differential of 0.3 inch wg, as follows:
 - 1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
 - 2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
 - 3. Gasketing on Double Doors: 0.50 cfm per ft. of door opening.

2.11 THRESHOLDS

- A. Thresholds: ANSI/BHMA A156.21; fabricated to full width of opening indicated.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hager Companies
 - b. Legacy Manufacturing
 - c. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY
 - d. Rixson Specialty Door Controls; ASSA ABLOY
 - e. Sealeze
 - f. Zero International; Allegion plc

2.12 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or

trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and ANSI/BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended; however, aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.13 FINISHES

- A. Provide finishes complying with ANSI/BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.
- B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.
 - 2. Furnish permanent cores to Owner for installation.
- F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Completion.

3.6 DOOR HARDWARE SCHEDULE

A. Hardware Set 1: Exterior Single Egress Door

(Indoor Range Doors: 101A, 110B, 110C, 110D) (Rehab Shelter Doors: 102A)

Each door to have the following:

1. Hinges.
2. Lockset
3. Weatherstrip
4. Threshold
5. Kickplate
6. Silencers
7. Closer

B. Hardware Set 2: Interior Single Passage Door

(Indoor Range Doors: 106A, 106B)

Each door to have the following:

1. Closer
2. Passage Set
3. Silencers
4. Doorstop

- C. Hardware Set 3: Interior Single Restroom Door
(Indoor Range Doors: 102A, 103A) (Rehab Shelter Doors: 101A, 103A)

Each door to have the following:

1. Hinges
2. Privacy Lockset
3. Silencers
4. Doorstop

- D. Hardware Set 4: Interior Single Door with Lock
(Indoor Range Doors: 104A, 105A, 107A, 109A)

Each door to have the following:

1. Hinges
2. Office Lockset
3. Silencers
4. Doorstop

- E. Hardware Set 5: Exterior Double Egress Door
(Indoor Range Doors: 108A, 110A)

Each set of doors to have the following:

1. Hinges
2. Lockset
3. Threshold
4. Weatherstripping
5. Closers
6. Astragal
7. Manual Flush Bolt
8. Dust proof Strike

- F. Hardware Set 6: Overhead Coiling Door
(Rehab Shelter Door 102B)
Door Hardware by Overhead Door Manufacturer

END OF SECTION 087100

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustical tiles.
2. Metal suspension system.
3. Metal edge moldings and trim.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Suspended Acoustical Tile Ceiling System: Obtain each type of acoustical ceiling tile and its suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing

agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A in accordance with ASTM E1264.
2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL TILES

A. Acoustical Tiles:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries
 - b. CertainTeed; SAINT-GOBAIN
 - c. Rockfon; ROCKWOOL International
 - d. USG Corporation
2. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E1264 classifications as designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
3. Color: White.
4. Light Reflectance (LR): Not less than 0.65.
5. Ceiling Attenuation Class (CAC): Not less than 25.
6. Noise Reduction Coefficient (NRC): Not less than 0.55.
7. Edge/Joint Detail: Square with tegular edge.
8. Thickness: 5/8 inch.
9. Modular Size: 24 x 24.

2.4 METAL SUSPENSION SYSTEM

A. Concealed or Semi-Exposed Metal Suspension System:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries
 - b. CertainTeed; SAINT-GOBAIN
 - c. USG Corporation
2. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, fully concealed, metal suspension system and accessories of type, structural classification, and finish indicated that complies with applicable requirements in ASTM C635/C635M.

2.5 ACCESSORIES

A. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft

temper.

2.6 METAL EDGE MOLDINGS AND TRIM

A. Metal Edge Moldings and Trim:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed; SAINT-GOBAIN
 - b. Rockfon; ROCKWOOL International
 - c. USG Corporation
2. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.
 - a. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine acoustical tiles before installation. Reject acoustical tiles that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION OF SUSPENDED ACOUSTICAL TILE CEILINGS

- A. Install suspended acoustical tile ceilings in accordance with ASTM C636/C636M and

manufacturer's written instructions.

- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 3. Do not attach hangers to steel deck tabs.
 - 4. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 5. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical tiles.
 - 1. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Arrange directionally patterned acoustical tiles as follows:
 - 1. Install tiles with pattern running in one direction parallel to long axis of space.
- F. Install acoustical tiles in coordination with suspension system and exposed moldings and trim.
 - 1. Fit adjoining tiles to form flush, tight joints. Scribe and cut tiles for accurate fit at borders and around penetrations through ceiling.

3.4 ADJUSTING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

SECTION 101423.16 - ROOM-IDENTIFICATION SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.
- B. Laminated Sheet Signs for Restroom identification
- C. Sliding Insert type room identification signs

1.2 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Product Schedule: Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Variable Component Materials: 12 replaceable text inserts of each type.
 - 2. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Allen Industries
 - b. ASE, Inc
 - c. ASI Sign Systems, Inc
 - d. Best Sign Systems, Inc.
 - e. Clarke Systems
 - f. Mohawk Sign Systems
 - g. Seton Identification Products; a Brady Corporation company
 - h. Vista System, LLC
 - i. Vomar Products, Inc
2. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
 - a. Composite-Sheet Thickness: Manufacturer's standard for size of sign.
 - b. Surface-Applied Graphics: Applied vinyl film.
 - c. Color(s): As selected by Architect from manufacturer's full range.
3. Sign-Panel Perimeter: Finish edges smooth.
 - a. Edge Condition at Horizontal Edges: Square cut.
 - b. Corner Condition in Elevation: Square.
4. Frame: Horizontal retainers.
 - a. Material: Aluminum.
 - b. Frame Depth: Convex-curved frame to receive removable face sheet and changeable subsurface graphics.
 - c. Profile: Square.
 - d. Corner Condition in Elevation: Square.
 - e. Finish and Color: As selected by Architect from manufacturer's full range.
5. Mounting: Manufacturer's standard method for substrates indicated with adhesive.
6. Text and Typeface: Accessible raised characters and Braille. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 SIGN MATERIALS

- A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 - 1. Use concealed fasteners and anchors unless indicated to be exposed.
- B. Adhesive: As recommended by sign manufacturer.
- C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
- B. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
 - 1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Furnish two blank inserts for each sign for Owner's use.

2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls according to the accessibility standard.
- C. Mounting Methods:
 - 1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423.16

SECTION 11 67 23- SHOOTING RANGE EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shooting range equipment including the following:
 - 1. Bullet traps and collection.
 - 2. Shooting stalls.
 - 3. Target systems.
 - 4. Range Control Systems.
 - 5. Safety baffles and ballistic barriers.
 - 6. Range ventilation systems.

1.2 REFERENCES

- A. Ballistic Rating:
 - 1. ATI Class 1 (Handgun).
 - a. Ammunition with velocities up to 1,485 fps and energy up to 1,175 ft/lbs.
 - 2. ATI Class 2 (Rifle).
 - a. Ammunition with velocities up to 3,388 fps and energy up to 3,600 ft/lbs.
 - b. No armor-piercing or enhanced penetration rounds.
- B. Conveyor Equipment Manufacturers Association (CEMA).
- C. European Committee for Standardization (EN):
 - 1. EN 1063 - Ballistic Standard.
- D. National Institute of Occupational Safety and Health (NIOSH):
 - 1. NIOSH 76-130 - Lead Exposure and Design Considerations for Indoor Firing Ranges.
- E. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).
- F. Society for Protective Coatings (SSPC):
 - 1. SSPC-SP6 - Commercial Blast Cleaning.
- G. U.S. Environmental Protection Agency (EPA):
 - 1. EPA 40 CFR 50.12 - National Primary and Secondary Ambient Air Quality Standards for Lead.
- H. US Department of Transportation (DOT).
- I. Underwriters Laboratories (UL):
 - 1. UL 94 HB - Horizontal Burning.
 - 2. UL 752 - Ratings of Bullet Resistant Materials.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data:
 - 1. Manufacturer's data sheets on each product to be used.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum 10 years documented experience.
- B. Equipment Installer Qualifications: Company specializing in performing Work of this section. Minimum five years documented experience with projects of similar scope and complexity.
 - 1. Range Ventilation Installer: Contractor experienced in design, construction, testing, commissioning, and operation of indoor shooting range ventilation systems.
- C. Source Limitations: Provide each product type from single manufacturer ensuring uniformity.

1.5 SEQUENCING

- A. Supply products to affected trades in time to prevent interruption of construction progress.

1.6 WARRANTY

1.7 Modular Total Containment Trap (TCT), All stall products, All target systems, Target Retrievers, Pilot target retrievers, Range control systems, Modular Ceiling Baffles, Wide-span ceiling baffles, Wall baffles.

- A. Manufacturer's Warranty:
 - 1. Manufacturer Warranty:
 - a. Manufacturers warrant products to be free from manufacturing defects. This warranty covers both parts and labor for a period of three years. During this time, the manufacturer warranty shall become void and the manufacturer shall have no obligation to repair or replace the manufacturer Work; pursuant to the Repair Warranty, if such Work was (collectively, "Exclusions"):
 - 1) Improperly used by Customer or others (i.e., exceeded the operational and/or functional scope for which it was intended, including use of unsupported bullets).
 - 2) Improperly maintained by Customer (regular maintenance items to be performed by Customer include, but are not limited to the following, light bulbs, circuit breakers, batteries, filters, oil, grease, consumable items including but not limited to those identified herein or accepted as consumables in the industry, etc. or complete maintenance records not kept in accordance with manufacturer instructions.

- 3) Modified or altered by Customer or others during and/or after implementation of Work (including the removal of manufacturer logos, badging and/or other branding from the manufacturer materials).
 - 4) Serviced incorrectly by any third party.
 - 5) Damaged or rendered inoperative as a result of:
 - a) The acts or omissions of Customer or others, including, but not limited to:
 - 1) Failure to implement recommended protection and/or armoring measures.
 - 2) Failure to comply with the manufacturer's printed instructions.
 - 3) Abuse.
 - 4) Rodents or pests.
 - b) Acts of nature, including, but not limited to, lightning, flood, fire, earthquake, etc.
 - c) Primary or secondary bullet strikes to or from non-impact surfaces (e.g., ceiling or wall baffles, moving target tracks, target trolleys, target stands, target holders, etc.).
 - d) Inadequate, incorrect, or unstable electricity supply.
 - e) Exposure to environmental conditions that exceed the scope of the product's design.
 - f) Corrosion, moisture contamination, abrasion, or normal wear and tear.
 - g) Power surge.
 - 6) Not operated in compliance with all applicable building, mechanical, plumbing, or electrical codes.
 - 7) Supplied and/or installed incorrectly by any third party.
 - 8) Damaged, in whole or in part, due to Customer's failure to give manufacturer timely notice of the alleged defect or non-conforming portion of the Work; or
 - 9) Covered under a non-ATI manufacturer's warranty.
- b. 3-year Warranty is applicable to the following products:
- 1) Modular Total Containment Trap
 - 2) Ballistic Stalls
 - 3) All Target Systems
 - 4) Target Retriever
 - 5) Target Retriever
 - 6) Range Control Systems
 - 7) Baffles and Deflectors

B. Manufacturer's Warranty: All products not covered under the 3-year manufacturer warranty are provided a standard one-year limited manufacturer's warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

SHOOTING RANGE EQUIPMENT

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- A. Owner preferred alternate Manufacturer: Action Target Inc., which is located at: 3411 Mountain Vista Pkwy.; Provo, UT 84606; Toll Free Tel: 888-377-8033; Tel: 801-377-8033; Email: [request info \(info@actiontarget.com\)](mailto:info@actiontarget.com); Web: <http://www.actiontarget.com>
- B. Milo
- C. ATS Targets

2.2 BULLET TRAPS AND COLLECTION

- A. Self-supporting, self-contained bullet backstop and containment unit of steel plate construction for heavy use on both indoor and outdoor high-volume ranges.
 - 1. Performance and Design Requirements:
 - a. Rating: ATI Class 2 (Rifle). 3/8 inch (9.5 mm) thick AR500 steel panels.
 - b. No EPA regulated substances.
 - c. No substances that might act as a solvent for spent bullets or their by-products.
 - d. Capable of capturing a .50 BMG round shot from 25 yards (22860 mm) or more from mouth of trap.
 - e. Non-fixture mounted.
 - f. No armor-piercing or enhanced penetration rounds.
 - g. Inside of Chamber: Readily accessible for inspection without removal of any deceleration medium.
 - 2. Trusted partner warranty.
 - 3. Modular Assembly: Trap and containment system shall be fully modular.
 - a. Shall not require permanent connection means.
 - b. Prefabricated for simple assembly on site.
 - 4. Fabrication: Cut by computer-controlled plasma equipment.
 - a. Plates: Prepared in compliance with painting specification SP6.
 - b. Primary Impact Plates: Arrange so bullets fired straight into the trap, impact plate at an angle of 16 degrees maximum.
 - c. All Surfaces Facing Shooters: AR500 steel minimum.
 - d. Joints: No exposed bolt heads.
 - 5. Configuration: Sloping funnel design.
 - a. Plates: 3 top and 5 bottom impact plates.
 - 1) Steel: 3/8 inch (9.5 mm) AR-500. Rating: ATI Class 2 (Rifle).
 - b. Modular Funnel Plates. Components must fit through a 36 inch (914 mm) door.
 - 6. Plate Width: As indicated on drawings and dependent on range lane width.
 - a. A combination of 36, 48, and 60 inch (914, 1219, and 1524 mm) plates.
 - 7. Height: 99.5 inches (2527 mm).
 - 8. Trap Design: Leading edge of side plates to be situated within a wall trench.
 - a. When wall trench is not available; wall deflector with additional consumable wall deflector shall be installed up-range of side plates.
 - 9. Bullet Components: Directed into a mechanical auger that collects and delivers spent rounds into DOT containers.
 - 10. Contained Lead Removal: No process that disturbs the settled state of lead particulates.
 - 11. Vortex Chamber: Multiple bent or multiple individual surfaces at angles that

- decelerate and break down the bullet.
- a. Material: Minimum 3/8 inch thick (9.5 mm) AR500 steel.
- b. Mouth Material: Minimum 1/2 inch thick (12.7 mm) AR550 steel.
- c. Seal: High-grade, closed-cell Neo/EPDM polymeric blend gaskets or high flexibility silicone adhesive gasket.
- d. Exterior Finish: High impact strike resistant paint.
- e. Easily disassembled for inspection or replacement of components.
- f. Unobstructed open mouth design.
- g. Shall not contain any vertical impact surfaces.
- h. Deceleration shall occur in free air and not in any other medium.
- 12. Mechanical Collection: Mechanical material collection system. Collects spent projectiles and debris from bullet trap directly into a sealed and transportable container.
 - a. Collection Container: Approved by EPA and DOT.
 - b. Fully sealed to prevent lead dust from escaping.
 - c. Requires no moving parts or electrical power.
 - d. Angled Hopper: Allows easy flow of projectiles into collection container.
 - e. Includes sight glass to allow for visual monitoring of level in each container.
 - f. Dolly: Wheeled dolly for easy movement of containers for recycling.
 - g. Containers: 20 gallon (76 L) drum.
 - 1) Weight: 500 pounds (227 kg) when 80 percent full (max capacity).
 - 2) One for each 3 foot (914 mm) section or two for each 4 or 5 foot (1219 or 1524 mm) section of TCT chamber.
- 13. Dust Collection: Dust Collection Unit. Removes and collects dust from deceleration chamber for easy recycling.
 - a. Filter: Self-cleaning filter system (MERV 15).
 - b. Control Unit: Electronic control unit with digital Magnahelic gauge.
 - c. Broken Bag Detector: Shuts system down if there is a leak.
 - d. Fan: Standard silencer.
 - e. Trap Width: As indicated on Drawings; 3 to 160 ft (914 to 48768 mm).
 - f. Filter: Self-cleaning HEPA filtration (MERV 17). Touch screen control unit.

2.3 SHOOTING STALLS

- A. Shooting Stall
 - 1. Performance Requirements:
 - a. Ammunition Rating: ATI Class 1 (Handgun).
 - 1) Complies with UL 752 standards for Level 3.
 - 2) Independently tested to validate ballistic standards.
 - b. Ammunition Rating: ATI Class 2 (Rifle).
 - 1) Complies with UL 752 standards for Levels 5, 6, 7, 8, 9, and 10.
 - 2) Independently tested to validate ballistic standards.
 - 2. Trusted partner warranty.
 - 3. A physical privacy barrier between shooters to protect against accidental discharge. Serves as physical mounting for target retriever controls.
 - 4. Steel Frame: Anchors to concrete; for mounting steel ballistic panels.
 - 5. Panels: Combination of wood, steel, and ABS, with stainless steel trim.

- a. Dimensions (WxHxD): 3 x 84 x 36 inches (76 x 2134 x 914 mm).
6. Wire Channel: Wiring routed within the stall wall through an integrated wire channel.
7. Table Configurations: Fixed table.
8. Table Configurations: Pivot table.
9. Table Configurations: Rifle table.
10. Table Configurations: Tactical cart.
11. Table Widths: 30 to 54 inches (762 to 1372 mm) in 6 inch (152 mm) increments.
12. Accessory: Under Table shelf (for Fixed Table only)

2.4 TARGET SYSTEMS (See Spec Section 11 67 23 Shooting Range Retrieval Systems)

2.5 RANGE CONTROL SYSTEMS

- A. SmartRange Axis Range Control System:
 1. Range Control System.
 2. Description: Centralized control of Fixed Lateral 360 Targets and HVAC System.
 3. Trusted partner warranty.
 4. Connects with network for software and content updates, remote troubleshooting, and technical assistance.
 5. Admin Management: Allowing unlimited users with unique logins.
 6. Allows customized range rules, range name, bay and lane numbering.
 7. Allows custom user groups to be defined that control the following features (if enabled) during a lane session:
 - a. Available programs.
 - b. Lighting control access.
 - c. Access to turning features of equipment (e.g. programs and time drills).
 8. Allows custom programs to be created and organized among custom folders in a program management directory.
 9. Capable of setting customized accent light coloring for Genesis Retrievers.
 10. System Components consists of:
 - a. Centralized server.
 - 1) Ethernet Communication; TCP/IP.
 - 2) 128GB SSD Hard Drive Minimum.
 - 3) 8GB Ram Minimum.
 - 4) Fanless.
 - 5) Intel X86 Processor.
 - 6) 187mm Long x 155mm Wide x 52mm Tall.
 - 7) Able to Communicate to Action Target Cloud Services for Remote Updates and Diagnostics.
 - b. Power over ethernet (PoE) Switch.
 - 1) 48 port minimum. 500 W PoE sourcing capacity minimum.
 - 2) Serve up to 15 Lanes per switch.
 - 3) Switch Size: 1U. 2 switches per 8U rack; 30 lanes per 8U rack.
 - c. Patch Panel: 2U panel size. 48 port Minimum. Cat6 certified.
 - d. Server Rack: 8U. 30 lanes per 8U rack. Add additional 8U rack per 30 lanes.
 - 1) Integrated shelf for server.

- 2) Power supply unit for powering rack.
 - e. Power Requirements: Isolated ground 120V 20A dedicated receptacle.
 - f. User Interface Configuration: 15 inch (381 mm) multi-touch display.
1920 x 1080 resolution.
 - 1) Dimensions: 15.2 x 9.8 x 1.5 inches (387 x 249 x 39 mm).
 - 2) Ram: 2GB minimum.
 - 3) Processor: N3160 quad-core.
 - 4) PoE Powered (no internal battery).
 - 5) Storage: 128 GB minimum.
 - 6) Up to 3 per range max.
 - a) Display Mounting Configuration: Tabletop.
 - b) Display Mounting Configuration: Stand.
 - c) Display Mounting Configuration: Wall.
 - g. User Interface Configuration: Portable tablet. 10.5 in (267 mm) multi-touch display with 1920 x 1200 WUXGA resolution.
 - 1) Dimensions: 10.25 x 6.34 x 0.31 inches (260 x 161 x 8 mm)
 - 2) Ram 3 GB Minimum.
 - 3) Battery: 7,300 mAh Minimum.
 - 4) Storage 32 GB Minimum.
 - 5) Processor 1.8 GHz Minimum.
 - 6) Unlimited quantity per range.
11. Genesis and Pilot Control System Integration:
- a. Includes lane management for assigning lane time.
 - 1) Ability to enter customers name and display it on the local control screen.
 - 2) Set time-out limits for lane use; carriers return home and session ends.
 - 3) Assign unique permissions to shooter's equipment.
 - b. Allows a cease fire causing targets to edge
 - c. Allows full control of one or many lanes, including:
 - 1) Synchronized program execution across one or multiple lanes
 - 2) Lighting control across one or multiple lanes including booth and target lighting.
12. HVAC Control:
- a. Integrates with recirculation and purge HVAC systems.
 - 1) Realtime status monitoring.
 - 2) Temperature and system control.
 - 3) Humidity monitoring.
 - 4) Provides visual reference of remaining filter life.
 - 5) Displays errors, warnings, faults and critical alarms on interface.
 - b. Interfaces with Genesis target retrievers (if installed) to automatically edge targets to call a cease fire when unsafe air conditions exist.
 - c. Ability to connect with Cloud Services for remote monitoring, diagnostics and troubleshooting.

2.6 SAFETY BAFFLES AND BALLISTIC BARRIERS

- A. Modular Ceiling Baffles; Interconnected baffles attached to building structure.
 - 1. Manufacturer warranty.

2. Metal Z-purlin for splatter protection attachment provides air gap to increase splatter protection material life.
 3. Depth: 48 inch (1219 mm) minimum to 144 inch (3658 mm) maximum.
 4. Configuration: Tactical.
 5. Configuration: Fixed firing position.
 6. Overall Width as indicated on drawings.
 7. Ballistic Rating: ATI Class 2 (Rifle). 3/8 inch (9.5 mm) thick AR500 steel panels.
 8. Connection type: Flexible cable hangers.
 9. Wall Attachment: Concrete or filled CMU block wall.
 10. Splatter Protection: Fire treated plywood - sealed.
 11. Acoustic Tile: 1/2 inch.
- B. Wall Baffles; Provide ballistic protection for wall structures.
1. Manufacturer warranty.
 2. Tied directly into existing wall structure.
 3. Size as indicated on drawings
 4. Thickness, Without Fascia: 3/4 inch (19 mm).
 5. Rating: ATI Class 2 (Rifle). Steel Panels: 3/8 inch (9.5 mm) thick AR500.
 6. Wall attachment: Concrete or filled CMU block wall
 7. Splatter Protection: Includes metal Z-purlin which provides air gap to increase splatter protection material life.
 - a. Plywood with 2 inch (51 mm) acoustical rubber panel.

2.7 RANGE VENTILATION SYSTEMS

- A. Recirculation Range Ventilation System
1. Supply Air:
 - a. Recirculates 75 percent of total range supply air with 25 percent outside air.
 - b. Supply air distribution utilizes radial diffuser plenum.
 - c. Serves range and bullet containment trap areas within the range envelope.
 - d. If outside air is less than 65 degrees F (18 degrees C), make-up air units enable heating to maintain supply air at 70 degrees F (21 degrees C).
 - e. Provide ability for range to set their temperature setpoints and humidity.
 - f. Provide laminar airflow across the shooter's breathing zone at 7 cfm minimum.
 - g. Distribution System: Per NIOSH, OSHA, and EPA requirements.
 2. Exhaust Air:
 - a. Flow shall be 10 percent higher than supply air flow.
 - b. Distributed across width of range located above bullet trap area.
 - c. Maintains a negative air pressure of minus 0.052 in/wc.
 - d. Includes two-stage filter bank, minimum, meeting recommendations of NIOSH 76-130 and EPA 40 CFR 50.12.
 - e. Filters: 99.97 percent high-efficiency particulate arrestor (HEPA) filters.
 3. Alarm will illuminate under any of the following conditions:
 - a. Negative air pressure fails for more than 2 minutes.
 - b. Range door is open for longer than 15 seconds during start up.
 - c. Range door is open for longer than 5 minutes during steady state.

- d. Filter pressure differential exceeds parameters.
- 4. System shall monitor and react to loss of range pressure.
- 5. Variable frequency drives provided for both supply and exhaust.
- 6. Heating: Direct gas or electric heating.
- 7. Cooling: Hydronic cooling (chiller) or mechanical cooling.
- 8. Supply and exhaust systems interlocked to run simultaneously.
- 9. Status on Control Screen:
 - a. Do Not Shoot. Activated by any of the following conditions:
 - 1) Supply fan is off.
 - 2) Exhaust fan is off.
 - 3) Supply pressure is below setpoint.
 - 4) Differential pressure is outside upper limit.
 - 5) Any door is open for longer than 15 seconds during system startup.
 - 6) Any range door is open for longer than 3 minutes also activates alarm.
 - 7) Any trap door is open also activates alarm.
 - b. Safe To Shoot. Activated by any of the following conditions:
 - 1) Exhaust pre-filter differential pressure is above set point.
 - 2) Exhaust HEPA filter differential pressure is above set point.
- 10. Physical status box with indicator lights.
 - a. Do Not Shoot. Activated by any of the following conditions:
 - 1) Supply fan is off.
 - 2) Exhaust fan is off.
 - 3) Supply pressure is below setpoint.
 - 4) Differential pressure is outside upper limit.
 - 5) Any door is open for longer than 15 seconds during system startup.
 - 6) Any range door is open for longer than 3 minutes. Also activates alarm.
 - 7) Any trap door is open. Also activates alarm.
 - b. Safe To Shoot.
 - 1) Warning. Activated by any of the following conditions:
 - a) Exhaust pre-filter differential pressure is above set point.
 - b) Exhaust HEPA filter differential pressure is above set point.
- 11. Direct Digital Control System:
 - a. Access available remotely through public IP address.
 - b. Remote display supplied with real-time data including range filter status, range space pressure, temperature values and set points, supply and return fan status, warnings, and alarms.
- 12. Ductwork: Constructed, installed, and reinforced per SMACNA standards and details.
 - a. Interior Surfaces: Smooth.
 - b. Sealed with water and fire-resistant sealant compatible with mating materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly constructed and prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions, approved submittals and in proper relationship with adjacent construction.

3.3 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
- B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.

3.4 CLEANING AND PROTECTION

- A. Clean products in accordance with the manufacturer's recommendations.
- B. Touch-up, repair or replace damaged products before Final Completion.

END OF SECTION

SECTION 123661.16 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid surface material countertops.
2. Solid surface material backsplashes.

1.2 ACTION SUBMITTALS

A. Product Data: For countertop materials.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.4 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.5 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Avonite Surfaces; a Brand of Aristech Surfaces LLC
 - b. DuPont; DuPont de Nemours, Inc.
 - c. Formica Corporation
 - d. Wilsonart LLC
2. Type: Provide Standard type unless Special Purpose type is indicated.
3. Colors and Patterns: As selected by Architect from manufacturer's full range.

B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged,

touch sanded.

2.2 FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Custom.
- B. Configuration:
 - 1. Front: Straight, slightly eased at top.
 - 2. Backsplash: Straight, slightly eased at corner.
 - 3. End Splash: None.
- C. Countertops:
 - 1. 1/2-inch- thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 1/2-inch- thick, solid surface material with wood-trimmed edges.
- E. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
- F. Joints:
 - 1. Fabricate countertops without joints.
- G. Cutouts and Holes:
 - 1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
 - b. Provide vertical edges, rounded to 3/8-inch radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting 3/16 inch into fixture opening.
 - c. Provide 3/4-inch full bullnose edges projecting 3/8 inch into fixture opening.

2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.
- B. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- C. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- D. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- E. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Pre-drill holes for screws as recommended by manufacturer.
- F. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
 - 1. Seal edges of cutouts in particleboard subtops by saturating with varnish.
- G. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.16