

**ADDENDUM ONE  
HCSO-CPD TARGET SYSTEM  
CONTRACT NO. P-16-005-201  
CITY OF CHATTANOOGA, TENNESSEE**

The following changes shall be made to the Contract Documents, Specifications, and Drawings:

**I. Contract Documents**

- A. Replace Section 00301 Bid Schedule, 01010 Scope of Work, 13100 Range Target System, and other pertinent sections with the included revised documents.**
- B. Revised drawings are included in this Addendum.**
- C. All bidders must be licensed and shall comply with all requirements of the State of Tennessee Contractor's Licensing Act.**
- D. Bidders are referred to the insurance requirements of Section 00830, General Provisions.**

**II. Pre-Bid Meeting: Notes**

- A. The Pre-Bid meeting was not mandatory.**
- B. The sign-in sheet from the meeting is included for reference.**
- C. Target system actuators are to be pneumatic, not electric.**
- D. Existing target trench has a history of drainage issues. Attempts to improve the drainage in the trench are underway.**
- E. Electric and pneumatic lines will be installed to locations on the target trench as specified by the Target System Contractor. These electric and pneumatic service lines will be installed by other service providers selected by the City.**
- F. The existing air compressor will be reused. Bidders will need to provide filters, driers, and other devices that would be necessary to adequately operate their pneumatic systems.**
- G. Target systems shall be operated wirelessly by remote control.**
- H. The Protective Kneewall described in Add Alternate 1 will only be required if the current drainage improvements underway in the trench are not adequate to prevent ponding water. If this is the case, additional work will be performed (by others) to raise the target mounting level, and the Protective Kneewall would be needed to protect the actuator mechanisms and other operating components.**
- I. The existing Department 36" wide steel target frames shall be re-used.**

**III. Bid opening date**

- A. The bid opening date is extended to December 14, 2017. Time and place of opening are unchanged.

**IV. Photographs**

- A. A number of photographs of the existing target trench are provided for reference.

November 15, 2017

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/s/ Justin C. Holland, Administrator  
City of Chattanooga  
Department of Public Works

# RANGE TARGETS

SIGN-IN SHEET

PROJECT: RANGE TARGETS PREPARED P-16-005-201

	NAME	COMPANY	PHONE	EMAIL
1	Andrew Hursell	COC	423-643-6045	AHURSELL@CHATTANOOGA.GOV
2	Garrison Smith	SPIRE RANGES	801-717-6898	gsmith@spiresanges.com
3	BONNIE KUMMONGER DODSON	COC	143 6031	BMUMPMONER@CHATTANOOGA.GOV
4	Debbie Talley	COC	423-643-7230	HTalley@chattanooga.gov
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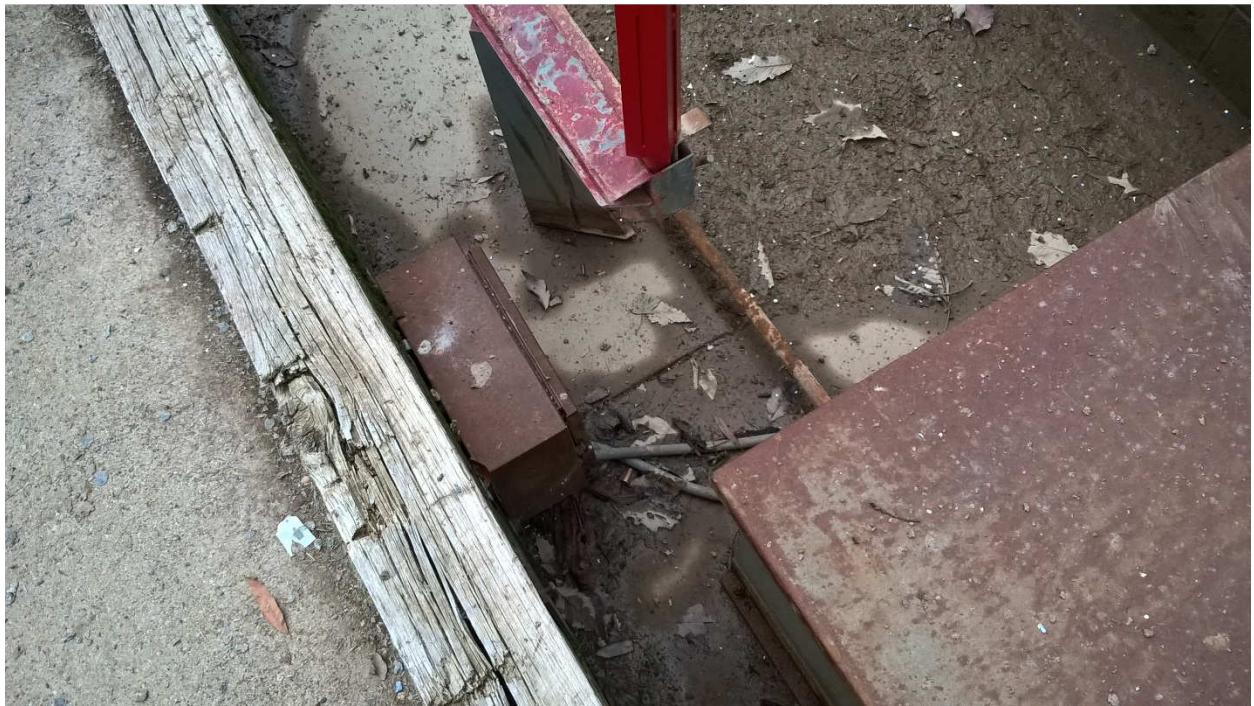


















## ***BID SCHEDULE***

### ***HCSO-CPD TARGET SYSTEM***

***CONTRACT NUMBER P-16-005-201***

***CHATTANOOGA, TENNESSEE***

#### **DESCRIPTION**

Providing 30 new air-actuated, remoted-controlled, fully programmable rotating targets and providing on-site installation with sufficient supervision and coordination with electric and pneumatic system installers to ensure proper installation of all components.

#### **TOTAL PROJECT BID**

**TOTAL PROJECT BID \$** \_\_\_\_\_

**(Sum of A + B)** \$ \_\_\_\_\_

**Total Base Bid \$** \_\_\_\_\_

**(A)** \$ \_\_\_\_\_

**Total of Add \$** \_\_\_\_\_

**Alternates (B)** \$ \_\_\_\_\_

*Note : Dollar amounts are to be shown in both words and figures. In case of discrepancy, dollar amounts shown in words will govern.*

**Contractor certifies that he has reviewed the plans and specifications, and that all items of work not specifically listed in the Bid Schedule are included in the prices for the various items listed on the Bid Schedule.**

**BIDDER:**

**DATE:**

**BY:**

**(Signature) TITLE:**

**ADDRESS:**

**CITY:**

**STATE:**

**ZIP CODE:**

**TELEPHONE NUMBER:**

**Bid Schedule****Contract Number P-16-005-201****HCSO-CPD TARGET SYSTEM****City of Chattanooga**

<b>CONTRACT NUMBER P-16-005-201</b>					
<b>Item No.</b>	<b>Description</b>	<b>Estimated Qty.</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Total Price</b>
<b>BASE BID</b>					
717	Mobilization	1	LS		
13100-1	ALL NEW Rotating Target Systems	30	EA		
13100-2	Construct New Target Control System and Power Wiring	1	LS		
13100-3	System Setup and Training	1	LS		
13100-4	**Provide full on-site installation and setup of target systems IN EXISTING TARGET TRENCH.	1	LS		

**BASE BID P-16-005-201 \$****\*\*The existing French drain in the trench will be replaced by others.**



**Bid Schedule**

**Contract Number P-16-005-201**

**HCSO-CPD TARGET SYSTEM**

**City of Chattanooga**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Qty.</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Total Price</b>
<b>ADD ALTERNATE 1</b>					
13100-5	Design and Provide Protective Kneewall	340	LF		
13100-6	Perform full on-site construction of knee wall system	1	LS		

**ADD ALTERNATE 1 TOTAL \$**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Qty.</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Total Price</b>
<b>ADD ALTERNATE 2</b>					
13100-7	ALL NEW 'Running Man' System	1	LS		

**ADD ALTERNATE 2 TOTAL \$**

**TOTAL OF ADD ALTERNATES \$**

00301-3

## **SECTION 01010 SUMMARY OF WORK**

### **PART 1 – GENERAL**

#### **1.1 Section Includes**

- A. Description of Work
- B. Items regulating the execution of the Work

#### **1.2 Description of the Work**

- A. The work covered by this Contract includes, but is not limited to:
  - A. Base Bid Work includes:
    - 1. Providing and installing thirty (30) new rotating targets, bases, brackets, supports, power and control wiring, conduits, actuators, steel shields, controllers, and other miscellaneous equipment, materials and labor necessary for making these targets functional. The targets shall be designed to allow re-use of the HCSO-CPD's existing target frames.
    - 2. Design, provide, and construct a new target control system, control wiring, provide input to and coordination with City's electrical contractor for placement and sizing of power wiring, and provide wireless controllers to operate the targets and running man systems. Targets must be independently operable, customer-programmable, and capable of being wirelessly operated from a standard computer using the Windows operating system.
    - 3. Provide complete system install, setup, configuration, training, and minimum warranty as described in the Contract Documents.
  - B. The City Engineer reserves the right to substitute, add, delete, increase, decrease in any form or fashion as necessary the scope of work under the provisions of this Contract, including the projects noted above.
  - C. This project shall be assigned a unique project number by the Engineer. The Contractor shall execute this project in complete compliance with the requirements of this contract. All records of the Contractor shall conspicuously identify them to be associated with the unique project number assigned by the Engineer.
  - D. The work covered under this project shall consist of furnishing all materials, equipment and labor for the full depth reclamation of designated streets including but not limited to mobilization, parking sign placement, public notification,



placement of traffic control devices per MUTCD, cleaning and conditioning of the roadways, repair of base failures as needed, the adjustment of sanitary manholes and other publicly owned structures as required, milling as directed, cement and water addition, grading, compaction, saw cutting and installation of traffic signal loop wires where required and placement of temporary and permanent pavement markings as required.

- E. The Engineer shall provide a set of standard City details, as needed, which shall be applicable to this project. The Contractor shall be called in for a Pre-Construction meeting at which time the Engineer shall issue notice to proceed. The Contractor shall have ten (10) days or an agreed-to start date to start construction.

### 1.3 Items regulating the Execution of the Work.

- A. Attention to Work

For this project, the Contractor shall give his personal attention to and shall supervise the work to the end that it shall be prosecuted faithfully; and, when he is not personally present on the work, he shall at all times be represented by a competent superintendent or foreman who shall be present at the work and who shall receive and obey all instruction or orders given under this Contract, and who shall have full authority to execute the same, and to supply materials, tools and labor without delay, and who shall be the legal representative of the Contractor. The Contractor shall be liable for the faithful observance of any instructions delivered to him or to his authorized representatives.

- B. Access to Work

The Contractor shall at all times provide proper facilities for access and inspection of the work by representatives of the Owner and of such official Governmental agencies as may be designated by the Owner as having jurisdictional rights to inspect the work.

- C. No Parking Signs

The Contractor shall place "NO PARKING" signs 48 hours prior to beginning work at a project location. The Contractor shall notify the City's designated Inspector/ Project Manager when the signs have been placed and if vehicles have not been moved at such time as work is scheduled to begin. No additional cost shall be paid to the Contractor while the Owner is making arrangements to get the vehicle moved or towed.

- D. Work on State Highway

Where the work on this project encroaches upon the right-of-way of any State or Interstate Highway right-of-way, the owner will execute a contract with proper authorities for the proposed work.

The Contractor shall notify the proper authorities prior to entering upon such right-of-way and shall be responsible for all damage and for satisfying the requirements of these authorities.

- E. Work on Private Property

Where the work on this project encroaches upon private property, the Owner shall provide easements and/or right-of-entry in or onto said property. Work performed in such easements is subject to the provisions of the easement agreement on file with the City of Chattanooga Engineering Department.

The Contractor shall be responsible for obtaining any additional agreements which may be deemed necessary for the storage of equipment or materials outside of public easements or rights of ways for this project. The Contractor shall obtain a written agreement between the Contractor and Land Owner and forward it to the Engineer prior to use of said property.

The Contractor shall be responsible for the preservation of and shall use every precaution to prevent damage to all trees, shrubbery, fences, culverts, mailboxes, bridges, pavements, driveways, sidewalks, houses or building and all water, sewer, gas, telephone and electric lines thereto and all other private and public property along or adjacent to the work.

Any damage that occurs will be restored to a like condition as existed prior to construction, in the Contract Documents, unless otherwise indicated or specified.

Forty-eight (48) hours prior to construction on any easement or streets the Contractor shall notify in writing the affected property owners in the area. This notification shall include the Contractor's name and the name and phone number of the contact person.

F. Monthly Job Site Meetings

Once a month, on a date mutually agreed upon by the Contractor and the Engineer, a job site meeting shall be held for review of the Project, including, but not limited to: The construction schedule, traffic control, pending submittals, and any other issues that may arise. This meeting shall be used to review the contractor's monthly applications for payment.

G. Contract Working Hours

All work shall be performed during regular working hours unless mutually agreed upon and approved in writing by the City Engineer. The Contractor will not permit overtime work or the performance of work on Sunday or any legal holiday without the Owner's written consent given after prior 24 hour written notice to the Engineer. Saturday work shall also require prior 24 hour written notice. Regular working hours are Monday through Saturday from 7:00 A.M. to 8:00 P.M. The actual costs of the Owner's and Engineer's inspection of the work performed outside of regular working hours will be billed to the Contractor and deducted from the Contractor's application for payment as they occur.

END OF DOCUMENT



## SECTION 13100

### RANGE TARGET SYSTEMS

REV. 11/15/2017

#### PART 1 – GENERAL

##### 1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing and performing the following:

1. The Contractor shall provide a fully functional targeting system for the HCSO-CPD firing range, including the following:

a. **BASE BID:**

I. Thirty (30) rotating targets:

- i. New fully functioning pneumatically-actuated rotating targets capable of rotating 90° from edge to face in ½ second or less, and from face to edge in ½ second or less.
- ii. Targets shall include new bases, brackets, anchors, supports, power and control wiring, conduits, actuators, steel shields, controllers, and all other miscellaneous equipment, hardware, and labor necessary for independent operation of 30 firing lanes. All equipment and hardware shall be new, except:
  - (a). Existing 36” wide fabricated steel target holders shall be reused.
  - (b). Existing air compressor and air tank shall be reused.
- iii. Electric power shall be provided to outlets located at the target line and pneumatic supply headers shall be provided at locations on the target line as specified by the Contractor to permit proper operation of the new targets. These shall be installed by others, but the Contractor shall be responsible for ensuring the installation is adequately coordinated with their targeting system.

II. Target control system:

- i. System shall permit independent control of each target or bank of targets and a ‘running man’ target from a wireless controller. Turning targets banks must be capable of customer programming and operation from either a handheld wireless controller or a laptop computer with wireless modem.
- ii. Target system manufacturer shall provide target-controlling software, permanent site software use license, required connectivity cables, transmitters, receivers, drivers.
- iii. A minimum of two wireless controllers shall be provided.
- iv. The controllers shall be able to control the installed targets at a range of 200 yards minimum. Wireless system shall be required to permit control of targets using the controllers from inside the range control tower, as well as from any location on the main range.
- v. Wireless controllers shall be adaptable to permit expansion or modification of the target systems. Controllers shall be customer-programmable.

## SECTION 13100

### RANGE TARGET SYSTEMS

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- vi. Power and signal supply leads running from the wall to the target system shall be protected from ricochet/bullet splatter with flexible metal shielding. The system shall be mounted so that it is below the top of the target trench.

#### III. System setup, configuration, training, and warranty

- i. Contractor shall provide the services of target system manufacturer representative for setup and configuration of targeting system, in order to make the system fully operational and meet the operational requirements of the HCSO-CPD Rangemaster.
- ii. The target system manufacturer shall provide on-site maintenance, operation, and program training for the HCSO-CPD Rangemaster and range staff. This training shall consist of a minimum of three (3) days of training, and a price per day shall be established for additional days, if required.
- iii. Target system manufacturer to provide lifetime telephone technical support from 8 am to 5 pm, Monday through Friday.
- iv. Target system manufacturer to provide a minimum of one year of free software/firmware updates for target system, controllers, and computer software.
- v. A detailed Operations and Maintenance manual documenting the target system components, configuration, and instructions for operating and modifying the system shall be provided.
- vi. The entire target system, including target bases, target frames, actuators, motors, power and signal wiring, mounts, pneumatics, electronics, sensors and switches, and all accessories necessary for a fully-operational target system and 'running man' target system shall have a minimum two (2) year warranty.

#### IV. Provide full on-site installation of target systems in existing target trench

- i. Contractor shall provide this equipment and perform full on-site installation and setup for the targeting system. This work shall also include installing or modifying any base plate anchors and installing a non-shrink grout under all baseplates.
- ii. The Contractor shall coordinate these services with the City's electrical and plumbing contractors, where needed.
- iii. Targets shall be installed in the existing target trench. Electric and pneumatic connections shall be made above the level of the bottom of the trench to aid in water resistance.

#### b. ADD ALTERNATE 1

##### I. Design and construct protective knee wall

- i. For the work of this Add Alternate, the existing target trench area will be modified by complete or partial filling and by construction of concrete slab(s) to raise the mounting height of the targets. The target

## SECTION 13100

### RANGE TARGET SYSTEMS

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trench will be filled, slab(s) constructed, and trench area otherwise prepared BY OTHERS. This preparation work is not part of this Contract.

- ii. Contractor shall design a protective knee wall to protect the target system. The knee wall shall be designed to use readily-available, off-the-shelf components to the fullest extent. Any components that must be replaced as part of regular maintenance that cannot be obtained from typical home improvement stores or landscaping suppliers shall be provided in duplicate. The wall shall be designed to allow maintenance operations to be performed by Range staff with hand tools.
- iii. The protective knee wall shall extend a minimum of 24" above the top of the concrete target mounting level and shall run the length of the target area.
- iv. The knee wall shall be a combination of wood, steel, rubber, and/or ballistic material to provide bullet protection for the target system and eliminate ricochet to shooters.
- v. One knee wall shall provide protection to both the turning targets and the 'running man' system of Add Alternate 2.
- vi. The Contractor shall be responsible for configuration and construction of the knee wall to be stable, resistant to toppling, safe for live firing activities, to eliminate the possibility of ricochet to shooters and toward the firing line, durable, weather-resistant, and to be easily repairable.
- vii. The Contractor shall submit design plans for the knee wall to the Owner for review and approval prior to construction.
- viii. The Contractor shall certify that the knee wall has been constructed in accordance with the design.

#### II. Perform full on-site construction of knee wall system

- i. The Contractor shall perform full on-site construction of the protective knee wall system.

#### c. ADD ALTERNATE 2

- I. Provide and install one (1) new fully functioning 'running man' target system, with approximately 80' of track (in existing trench or behind protective kneewall as described in Add Alternate 1 above):
  - i. This system shall be operated by 120 volt AC electrical power, and be mounted on a durable track.
  - ii. The 'running man' target system shall be operated by a portable, moisture-resistant wireless controller with speed and direction controls for up to two (2) separate target carriages.
  - iii. The system shall include one (1) moving target carriage, and shall be easily field-modified to add a second independently-controlled and -operated target carriage.



## **SECTION 13100**

### **RANGE TARGET SYSTEMS**

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- iv. Place non-shrink epoxy grout under target baseplates for support and leveling.

#### **1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS**

A. Except as otherwise indicated, the Contractor shall comply with the Reference Standards specified in Section 1080, as well as the following Codes:

- 1. International Building Code 2012 (IBC 2012)
- 2. National Electric Code (Current Edition)
- 3. ANSI B36.20
- 4. ASME B31.9

#### **1.03 SHOP DRAWINGS AND SAMPLES**

A. The following shall be submitted in compliance with Section 01300:

- 1. General
  - a. Drawings including the following:
    - I. Manufacturers' equipment drawings.
  - b. Manufacturer's product data including the following:
    - I. Catalogue cuts, bulletins, brochures, or photocopies of applicable pages for mass-produced, non-custom-manufacture products stamped to indicate the project name, applicable Specification section and paragraph, model number, ratings, and options.
  - c. Lists of the following:
    - I. Materials, equipment, apparatus and fixtures proposed for use; with the list including sizes, names of manufacturers, catalog numbers, and such other information required to identify the items.
  - d. Test reports of the following:
    - I. Factory-fabricated products.

#### **1.04 FIELD TESTING**

## **SECTION 13100**

### **RANGE TARGET SYSTEMS**

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- A. Testing: Products shall be field-tested for compliance with the indicated requirements.
- B. Witnesses: The Owner and the ENGINEER (at the option of either) reserves the right to witness field tests.

#### **1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Delivery of Materials: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- B. Storage: Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements. Products shall not be damaged, marred, or splattered with water, foam, plaster, or paint. Moving parts shall be kept clean and dry.
- C. Replacement: Damaged materials or equipment shall be replaced or refinished by the manufacturer at no expense to the Owner.

### **PART 2 -- PRODUCTS**

#### **2.01 MATERIALS**

- A. Target Systems
  - 1. Air Connections
    - a. All air hose connections for flexible air hose shall be quick-connect, push-in air fittings for use with flexible air tubing.
  - 2. Target Turning Mechanisms
    - a. Target turning mechanisms shall be water resistant and designed to withstand outdoor weather conditions.
    - b. Target turning mechanisms shall be constructed such that minor repairs may be accomplished by standard range personnel, with the guidance of the manufacturer/service representative, so that the warranty remains intact.
    - c. The target turning mechanisms' housings shall be covered with a galvanized or powder coated material.
    - d. The target turning mechanisms' bearings must be sealed and require no maintenance.
    - e. All steel components must be painted or powder-coated black.
  - 3. Target bases
    - a. All target bases, brackets, and turning mechanisms shall be installed behind and below a protective knee wall to eliminate the potential of ricochet toward the firing line.
    - b. All exposed carbon steel or non-weather-resistant metals and materials shall be powder coated or painted (two coats of high-solids) to prevent corrosion.
  - 4. Running Man System

## **SECTION 13100**

### **RANGE TARGET SYSTEMS**

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- a. Running man steel track components must be hot dipped galvanized, powder coated, or painted (two coats of high-solids minimum) to withstand extreme weather conditions.
- b. Drive cable/cord to be non-corrosive.
- c. The running man system must have sensors at each end of the track to eliminate hard mechanical stops.
- d. The running man system must be controlled by a handheld wireless transmitter with rotary speed dial and direction control switch for each target carriage.
- e. The running man system must be capable of being controlled for varying speed while in motion and stop automatically at end of travel locations.
- 5. Target System Control Unit
  - a. The target control unit must provide wireless remote control of the target system, be capable of operating a minimum of 42 targets with individual control of each target.
  - b. The target control unit software must cover a broad range of training requirements, and be programmable by the Rangemaster.
  - c. The target control unit keypads must feature full sized keys, be moisture resistant, and operate off DC current.
  - d. The target control unit keypad must be portable and lightweight.
  - e. The target control unit receiver must be waterproof.
- 6. General Target System Requirements
  - a. Any permanent, stationary outdoor control panels or controller cabinets must be moisture-resistant, and weatherproof.
  - b. The target systems must be capable of withstanding prolonged exposure to extreme temperatures, both hot and cold, as well as prolonged exposure to rain and moisture, without compromising the systems' ability to function properly.

## **PART 3 -- EXECUTION**

### **3.01 GENERAL**

- A. The Contractor shall perform work in a safe, professional, and workmanlike manner, in accordance with applicable codes and regulations.
- B. The Contractor is responsible for locating any and all utilities.
- C. All work shall be performed in a professional, workmanlike manner, with work performed evenly and neatly. The Contractor shall keep work areas as clean as possible, and when stopping work for the day shall leave work areas and equipment in such a state as to not obstruct use of the balance of the HCSO-CPD Range.
- D. The Contractor shall be responsible for properly collecting and disposing of any construction waste and debris. Any materials subject to erosion shall be properly stockpiled outside the 100-year floodplain and shall be protected with appropriate erosion control measures.



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### RANGE TARGET SYSTEMS

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- E. The Contractor shall coordinate all work with City of Chattanooga Police Department Rangemaster in order to ensure any and all work activities do not conflict with planned training by any agencies served by the HCSO-CPD Range.
- F. Range 1 will be closed for 30 calendar days MAXIMUM to allow construction of the target systems and other improvements. Liquidated damages will be assessed if the Range 1 closure exceeds 30 days.
- G. During the closure of Range 1, the Contractor is advised that training will likely be taking place elsewhere on the HCSO-CPD Range property, and so consideration for and coordination with the HCSO-CPD and other agencies is necessary.
- H. Any damage to the concrete sidewalks, any drainage structures, earth rutting, or other damage to the HCSO-CPD Range during improvements to Range 1 will be repaired at the Contractor's expense.
- I. The Contractor is advised that the HCSO-CPD Range is an active firing range that has been in use for several decades, and is known to contain a substantial amount of lead projectiles and other byproducts of an active outdoor firing range. Therefore, the Contractor should follow all OSHA and NIOSH recommendations for working in such an environment, including but not limited to:
  - 1. Attending training, following safe work practices, and participating in health monitoring programs.
  - 2. Employees should be encouraged to report symptoms to the Contractor and get medical attention for:
    - a. Common health effects of lead poisoning including reproductive effects, nausea, diarrhea, vomiting, poor appetite, weight loss, anemia, fatigue, hyperactivity, headaches, stomach pain, and kidney problems.
    - b. Exposure to high noise levels can cause hearing loss, tinnitus (ringing in the ear), stress, high blood pressure, fatigue, and gastro-intestinal problems.
    - c. If the employee suspects exposure to high levels of lead, even if showing no symptoms, the employee should have their BLL (Blood Lead Level) tested.
  - 3. Employees should be encouraged to practice good hygiene:
    - a. Wash hands and face with soap and water or clean them with lead decontamination wipes after shooting, handling spent cartridge cases, or cleaning weapons, especially before eating, drinking, or smoking. Wipes for cleaning skin without water are commercially available and should be used if access to soap and water is limited.
    - b. Change clothes before leaving the range and wash clothes separately from other family clothing.
  - 4. Employees should be advised to use personal protective equipment (PPE):
    - a. Wear double hearing protection when shooting or around shooting.
    - b. Wear properly-fitted respirators and full protective outer clothing for maintenance activities that involve close contact with lead dust or spent bullets.

## **SECTION 13100**

### **RANGE TARGET SYSTEMS**

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- c. Wear gloves and eye protection when using chemical to clean firearms or to clean equipment that has come in close contact with lead dust or spent bullets.
- 5. Limit the length of time that workers use the firing range: rotate assignments and provided quiet, clean break areas.
- 6. The Contractor SHALL provide all workers with training and information about the hazards, including:
  - a. Inform workers about the importance of hygiene in reducing potential lead exposures, post warning signs, and provide convenient washing facilities to encourage frequent hand washing.
  - b. Prohibit eating, smoking, chewing gum, or tobacco use in areas potentially contaminated with lead.
  - c. Inform pregnant workers about possible risks to the fetus.
  - d. Ensure that workers are aware of symptoms that may indicate a health problem.
  - e. Tell workers about participating in medical surveillance programs and getting their BLLs tested, even if they don't show symptoms.
- 7. Review OSHA requirements for medical monitoring for lead (29 CFR 1910.1025(j)).
- 8. For best medical and lead management practices, consult the Association of Occupational and Environmental Clinics.
- 9. Provide workers with protective equipment, including:
  - a. Hygiene and cleaning kits
  - b. Skin protection, eye protection, and NIOSH-approved respirators for workers who clean lead-contaminated areas
  - c. Provide knee or full-body pads to limit transfer of lead to clothing.

**\*\*END OF SECTION\*\***







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- Diagram illustrating the cross-section of a concrete slab with reinforcement details:
- Top reinforcement: #4 @ 12" (Typ.)
  - Bottom reinforcement: #4 @ 12" (Typ.)
  - Slab thickness: 6.5" AVG. DEPTH
  - Concrete type: CLASS A CONCRETE
  - Top edge detail: 0'-2" Cir. (Top)
  - Bottom edge detail: 0'-7 1/2" (Typ.)
  - Top edge detail: 0'-3" Cir. (Typ. @ Edges)
  - Bottom edge detail: 0'-5 1/2" (Typ.)
  - Top edge detail: #5 @ Edges
  - Bottom edge detail: #5 @ Edges
  - Top edge detail: 2% SLOPE (TYP.)

6'-6" (TYP.)

2'-8" DESIRED

36"x46" BACKER

36"x70" TARGET FRAME

1/4" CROSSBAR

ACTUATOR

(ADD ALTERNATE 2 ONLY)

NEW 'RUNNING MAN' TARGET SYSTEM.

ELECTRICAL OUTLET AT EACH END FOR MOTORS, OR AS REQ'D BY MANUFACTURER.

DESIGN AND CONSTRUCT PROTECTIVE KNEEWALL TO 24" MIN. ABOVE NEAR EDGE OF SLAB OR AS REQUIRED TO PROTECT ACTUATORS AND OTHER MECHANISMS. KNEEWALL MUST ELIMINATE POTENTIAL OF RICOCHET TOWARD FIRING LINE AND BE STABILIZED TO PREVENT TOPPLING.

EX. GROUND LINE

ROUTE SIGNAL WIRING, ELECTRICAL WIRING, AND PNEUMATIC LINES IN CONDUIT TO PULLBOXES/HANDHOLES IN NEW CONCRETE SLAB (BY OTHERS)

1'-0"± (TYP.)

2'-0" (TYP.)

1'-6" (TYP.)

2'-0"± (TYP.)

CLEAN WASHED #57 MINERAL AGGREGATE (BY OTHERS)

EXISTING CMU AND CONCRETE TARGET TRENCH

NOTE: EX. STEEL TARGET FRAMES MAY REQUIRE MODIFICATION TO PRODUCE DESIRED HEIGHT AND CONFIGURATION. THE COST TO MODIFY FRAMES SHALL BE INCLUDED IN THE COST OF THE ROTATING TARGET SYSTEM. ACTUATOR, KNEEWALL, AND FRAME HEIGHT SHALL BE SET TO MINIMIZE THE CHANGE IN THE VERTICAL CENTER OF THE TARGETS AS MEASURED FROM THE FIRING LINES.

(FOR ADD ALTERNATE 1)

