

ITEM NO. RR 700 MOBILIZATION

700.1 - Description

Establish and remove offices, plants, and facilities. Move personnel, equipment and supplies to and from the work site or vicinity of the work site to begin work or complete work on contract items. Bonds and insurance are required for performing mobilization.

700.2 - Measurement

This Item will be measured by the lump sum as the Work progresses.

Mobilization is calculated on the base bid only and will not be paid for separately on any additive alternate items added to the Contract.

700.3 - Payment

For this Item, the adjusted Contract amount will be calculated as the total Contract amount less the lump sum for mobilization.

Mobilization will be paid in partial payments as follows:

- Payment will be made upon presentation of a paid invoice for the payment bond, performance bond, and required insurance;
- Payment will be made upon verification of documented expenditures for necessary plant and facility setup. The combined amount for all these facilities will be no more than 10% of the mobilization lump sum or 1% of the total Contract amount, whichever is less;
- When 1% of the adjusted Contract amount for construction Items is earned, 50% of the mobilization lump sum bid or 5% of the total Contract amount, whichever is less, will be paid. Previous payments under this Item will be deducted from this amount;
- When 5% of the adjusted Contract amount for construction Items is earned, 100% of the mobilization lump sum bid or 10% of the total Contract amount, whichever is less, will be paid. Previous payments under the Item will be deducted from this amount;
- Payment for the remainder of the lump sum bid for "Mobilization", if any, will be made after all submittals and record drawings/as-builts are received, final quantities have been determined and when any separate vegetative establishment and maintenance, test, and performance periods provided for in the Contract have been successfully completed.

For projects with extended maintenance or performance periods, payment for the remainder of the lump sum bid for "Mobilization" will be made 6 months after final acceptance.

For Contracts with callout or emergency work, "Mobilization" will be paid as follows:

- Payment will be made upon presentation of a paid invoice for the payment of performance bonds and required insurance,

- Mobilization for callout work will be paid for each callout work request, and
- Mobilization for emergency work will be paid for each emergency work request.

Payment will be made under:

Mobilization - Per Lump Sum

End

**ITEM NO. RR 701
FENCING****701.1 - Description**

Furnish and install fencing and gates at locations shown on the drawings or directed. Use only new materials.

701.2 - Submittals

Prior to installation of the fencing, furnish to the Engineer a certification from the manufacturer that all fencing materials comply with the requirements in this Item.

701.3 - Materials**A. Chain Link Fabric**

1. Provide wire fabric for fencing to be 9 gauge (0.148 in. diameter) steel wire with a minimum breaking strength of 1,290 pounds. The overall height of the fence when erected shall be as shown on the drawings. Provide fabric woven into an approximately 2-inch \pm 1/8-inch mesh such that in a vertical dimension of 23 inches along the diagonals of the openings there shall be at least 7 meshes. Unless shown otherwise on the drawings, provide fabric with a knuckled (K) and twisted (T) finish for the top and bottom selvages respectively. Provide fabric wire to withstand a minimum tensile strength test of 75,000 psi after galvanizing. Except as provided herein, provide chain link fence fabric conforming to ASTM A392, Class I or ASTM A491.
2. Provide fabric that is hot-dip galvanized after weaving with a minimum coating of 1.2 ounces per square foot of uncoated surface conforming to ASTM A392, Class I.
3. Between posts, fasten the fabric at 12-inch intervals to a top and bottom tension wire. When a top rail is shown on the drawings, fashion the fabric in the same manner. On gate frames, fasten the fabric to top and bottom of the gate frame at all 12-inch intervals. Provide steel or aluminum wire fabric ties with a minimum 9 gauge diameter.

B. Woven Wire Fencing

Provide either galvanized steel wire fencing or aluminum-coated steel wire fencing conforming to the following requirements:

1. Galvanized steel wire fencing conforming to ASTM A116, Class 1.
2. Aluminum-coated steel wire conforming to the requirement for galvanized steel wire fencing, except the wire shall be aluminum coated. The wire shall not have less than 0.40 ounce coating of aluminum alloy per square foot of uncoated surface in accordance with ASTM A491.

C. Wire Fencing

Provide either galvanized or aluminum alloy coated 9 gage steel wire conforming to the specifications for galvanized steel or aluminum alloy coated woven wire fencing above.

D. Wood Fencing

Provide pressured treated pine, cedar or as shown on the drawings. Provide timber that is sound and free from all decay, shakes, splits or any other defects, which would make it structurally unsuitable for the intended purpose.

E. Metal Posts, Top Rails, Braces and Gates

Provide steel pipe used for posts, top rails, braces and gate frames conforming to ASTM A53. Provide good commercial quality weldable steel. Used, re-rolled or open seam material will not be permitted. Provide posts to meet the weight and length requirements indicated on the Drawings. Provide fabric bands and steel wire ties conforming to the gauge and spacing indicated and of suitable design to fasten fabric to the posts. Wire ties of the gauge shown may be used in lieu of fabric bands. Provide fittings required for posts of pressed or rolled steel, forge steel, malleable iron or wrought iron of good commercial quality and spaced as indicated on the Drawings.

1. Line Posts

Line posts may be either C-section or tubular. Provide tubular line posts with watertight malleable iron caps. Furnish line posts in sufficient quantity to provide a maximum spacing of 10 feet.

2. Terminal Posts

All end, corner and pull posts shall be known as terminal posts and shall be of either round or square sections. Furnish all terminal posts with watertight malleable iron caps. Fasten fabric to terminal posts by steel stretcher bars and stretcher bar bands fitted with carriage bolts and nuts of the size and spacing indicated on the Drawings.

3. Gate Posts

Gateposts shall be either round or square. Furnish all gateposts with watertight malleable iron caps. Fasten fabric to the gateposts by means of steel stretcher bars and stretcher bar bands fitted with carriage bolts and nuts of the size and spacing indicated on the Drawings.

4. Post Caps

Post caps for pipe sections shall be designed to exclude all moisture. Where a top rail is shown on the Drawings, post caps shall have an opening for the top rail. All post caps shall have a 2-inch skirt for rigidity. When barbed wire is allowed for topping a six-foot or higher fence the barbed wire support arms shall be integral with post caps.

5. Gates

a. Single Swing Gate

Fabricate gate frames from sections either round or square of the size and weight indicated on the Drawings and fill out with the same type fabric specified for the chain link fence. Equip all gates with approved malleable iron or steel latches, stops and center rest. Provide a satisfactory locking device suitable for padlocking. The gates shall be hung by at least 2 steel or malleable iron hinges securely fastened to the posts. Hinges shall not twist or turn under the action of the gate, shall be capable of allowing a full 180 degree opening turn, shall be so arranged that a closed gate cannot be lifted off the hinges to obtain entry and shall be easily operated by one person.

b. Double Swing Gate

Furnish and install double swing gates as indicated on the Drawings. Gates shall be of the same height as the fence and shall have a single vertical mat of barbed wire. The gates shall be hinged to swing 180 degrees from closed to open. The gates shall be complete with frames, latches, stops, keepers, hinges, fabric, braces, padlocks and three strands of barbed wire. Gates shall have intermediate members and diagonal truss rods as required for rigid construction and shall be free from sag and twist. Gates shall be fitted with vertical extension arms or shall have frame end members intended to carry barbed wire.

Hinges shall be pinned type, heavy pattern with large bearing surface and shall not twist or turn under the action of gate. Latches for double swing gates shall be plunger bar type, full gate height, and arranged to engage the gate stop. Stops shall consist of a roadway plate with anchor set in Portland Cement concrete and arranged to engage the plunger. Keepers shall consist of mechanical devices for securing and supporting the free end when in the full open position. Latches shall be arranged for padlocking with padlock accessible from sides of the gate. Gates shall be installed so that they cannot be removed without disassembly of the hardware. Hardware attachment bolt shall be peened to prevent easy removal.

6. Top Rail

The top rail shall be of size and weight indicated on the Drawings and shall be furnished in random lengths, not less than 18 feet per section with outside sleeve type couplings at least 6 inches long and having a wall thickness of not less than 0.70-inch. One coupling in five shall have a heavy spring to take up expansion and contraction of the rail. The top rail shall be installed before installing chain link fabric and shall pass through post tops.

7. Braces

All braces shall be of the size, weight and length indicated on the Drawings. All braces shall be trussed with rods and turnbuckles of the dimensions indicated on the Drawings. Braces shall be installed on all terminal posts and shall extend to the adjacent line posts. All corner and pull posts shall have braces on each side of terminal.

8. Fittings, Bolts and Other Miscellaneous Hardware

All fittings, bolts and miscellaneous hardware shall be hot dip galvanized in conformance with TxDOT Standard Specification Item No. 445, "Galvanizing".

9. Tension Wire

Between posts, the fabric shall be fastened to a top and bottom tension wire or to the top rail and bottom tension wire by steel wire ties of the gauge and spacing indicated on the Drawings. The tension wire shall be at least 7 gauge galvanized coil spring steel of good commercial quality.

Tension wire shall have a minimum coating of 0.8 ounce per square foot of uncoated surface when tested in conformance with ASTM A116.

10. Security Fence

The security fence shall be 8 feet high with brackets and 3 strands barbed wire.

Barbed wire, when shown on the Drawings, shall be 12.5 gauge wire, twisted with two-point 14 gauge barbs spaced approximately 5 inches apart and shall conform to ASTM A121 or ASTM A585. Three strands of barbed wire will be required when a barbed wire top is specified on the Drawings.

Barbed wire support arms shall be at an angle of 45 degrees from vertical and shall have clips for attaching three (3) strands of barbed wire to each support arm. Each support arm shall be of sufficient strength to support a 200-pound weight applied at the outer strand of barbed wire.

11. Galvanizing

Thin-wall, high-strength pipe posts shall be externally hot-dip galvanized with a minimum weight of coating of 0.9 ounce per square foot. After galvanizing, thin-wall, high-strength pipe posts shall be externally chromated by total immersion followed by application of clear polyurethane finish.

Interior surfaces shall have a hot-dip galvanized coating, a zinc base coating with thickness $0.5 \text{ mil} \pm 0.2 \text{ mil}$. The coating shall be 94 percent zinc powder by weight.

All tubular posts, rails and braces shall comply with the following salt spray performance requirements when tested in accordance with ASTM B117.

Exterior - 1250 hours to maximum 5 % red rust

Interior - 650 hours to maximum 5 % red rust

The uniformity of the zinc coating shall be determined by visual inspection. If, in the opinion of the Engineer, visual examination is not conclusive, he may use the Preece Test as described in ASTM A239. When so tested, all items shall withstand a minimum of 6 one-minute dips except for those items designated in ASTM A153 as Class B-2, B-3, C and D, which shall withstand a minimum of 4 one-minute dips.

Careful visual inspection shall be made to determine the quality of the zinc coating. Excessive roughness, blisters, salammoniac spots, bruises and flaking if present to any considerable extent, shall provide a basis for rejection. Where practicable, all inspection and tests shall be made at the place of manufacturer prior to shipment and shall be so conducted as not to interfere unnecessarily with the progress of the work.

Damaged spelter coating shall be repaired by thoroughly wire brushing the damaged area and removing all loose, cracked or weld-burner spelter coating. The cleaned area shall be painted with 2 coats of zinc oxide-zinc dust paint conforming to the requirements of Federal Specification TT-P-641B. The paint shall be furnished at the Contractor's expense.

F. Concrete Post Anchorages

Concrete for post footings, catch blocks, anchors and other such items related to the fence construction, shall be Class B Concrete conforming to Item No. 421 "Hydraulic Cement Concrete" or as indicated on the Drawings. Maximum size of aggregate shall be $\frac{3}{4}$ inch. Hand mixing of concrete will be permitted on batches under $\frac{1}{2}$ cubic yard. All batches exceeding this volume will be machine mixed.

Concrete shall be placed promptly and without segregation after mixing. The Contractor shall consolidate the concrete satisfactorily by tamping or vibrating. Excess excavation from footings shall be satisfactorily disposed of.

The tops of post footings shall extend slightly above ground and shall be steel troweled to a smooth finish sloped to drain away from posts. Posts, braces and other units shall be centered in footings.

G. Mowing Strip

Mowing strips shall be Class A concrete, 24 inches wide and a minimum of 4 inches thick. Three (3) #4 reinforcing bars shall be evenly spaced and supported along the full length of the mow strip, and a #4 reinforcing bar shall be cross-tied every 4 feet. Fence posts shall be installed in center of mow strip.

701.4 - Inspection and Sampling

The Contractor shall furnish upon request of the Engineer samples of each component part of the fence including fittings. These samples shall be subjected to the galvanizing, weight, and where required, strength tests. A sample may be taken for each project or for each shipment to a project, when requested by the Engineer. All samples shall be furnished to the City free of charge.

If any specimen tested fails to meet the requirements of this specification, two (2) additional specimens shall be cut from the remainder of the sample and tested, both of which shall meet the requirements in every respect or the lot represented by the sample may be rejected.

701.5 - Construction Methods

The Chain Link Fence shall be erected to lines and grades established by the Engineer in accordance with the details indicated on the Drawings. The fence shall be true to line, taut and shall comply with the best practice for fence construction of this type.

Stake the locations for corner posts and terminal posts prior to beginning installation of the fence. Level off minor irregularities in the path of the fencing.

A. Clearing and Grading

The Contractor shall perform all clearing of brush, rocks and debris necessary for the installation of this fencing.

B. Erection of Posts

Posts shall be set plumb and permanently positioned and anchorages firmly set before fabric is placed. Posts shall be set in concrete, unless otherwise indicated on the Drawings.

Concrete footings shall be carried to the depth and dimensions indicated on the Drawings. Where rock is encountered within the required depth to which the post is to be erected, a hole of a diameter slightly larger than the largest dimension of the post may be drilled into the rock and the post grouted in. The regular dimensioned concrete footing as indicated on the Drawings shall then be placed between the top of the rock and required grade indicated on the Drawings. Posts shall be approximately centered in their footings. All concrete shall be placed promptly and compacted by tamping or other approved methods. Concrete shall be finished in a dome and shall be cured a minimum of 48 hours before further work is done on the posts.

Pull posts shall be placed not over 500 feet apart in straight runs and at each vertical angle point, all as directed by the Engineer. Corner posts shall be placed at each horizontal angle point greater than 15 degrees. Corner and pull posts shall have horizontal braces and tie rods as specified above and as indicated on the Drawings, or as otherwise directed by the Engineer.

C. Erection of Top Rail and Tension Wire

The top rail and bottom tension wire and/or top and bottom tension wires shall be installed before installing the chain link fabric. The top rail shall be firmly attached in final position. Tension wires shall be within 4 inches of the top and bottom of the fabric and shall be pulled taut.

D. Erection of Fabric

After all posts have been permanently positioned and anchorages firmly set with the cables drawn taut with the turnbuckles, the fabric shall be placed by securing one end and applying sufficient tension to the other end to remove all slack before making attachments. Unless otherwise indicated on the Drawings, the fabric shall be cut, and each span shall be attached independently at all corner posts and pull posts.

Fabric shall be fastened as indicated on the Drawings, and the bottom of the fabric shall be placed a normal distance of 2 inches above the ground line; however, over irregular ground this distance may vary between 1 inch and 6 inches for a distance not to exceed 8 feet. Any necessary backfilling required, in order to comply with these provisions, will be considered as incidental work.

E. Fence Grounding

This fence shall be grounded where a power line passes over the fence. In any case, a ground shall be provided at locations not to exceed 1,000 feet apart in straight runs of fence. Each individual section of fence shall have at least 1 ground. The ground shall consist of a copper-weld rod 8 feet long and a minimum of 5/8 inch in diameter driven or drilled in vertically until the top of the rod is approximately 6 inches below the top of the ground. A No. 6 solid copper conductor shall be brazed to the rod and to the fence in such a manner that each element of the fence is grounded.

F. Erection of Wood Fencing Material

After all posts have been permanently positioned and anchorages firmly set, stringers shall be placed and boards secured to the stringers. Other techniques utilizing modular precut panels may be used, when indicated on the Drawings.

G. Repair of Coatings

Repair damaged zinc coating in accordance with Item 445.3.5 "Repairs".

701.6 - Measurement

Fencing will be measured by the linear foot of fence measured at the bottom of the fence along the centerline of fence from center to center of terminal posts, excluding gates, complete in place.

Gates, of each type, height, and opening specified, will be measured as each gate, complete in place.

701.7 - Payment

The work performed and materials furnished as prescribed by this item, measured as provided under "Measurement" will be paid for at the unit bid price for "Fence" of the

height and type specified. The unit bid price shall include full compensation for furnishing and installing all fencing materials (except gates) including all miscellaneous fittings, braces, post caps, line wires, connection clips or wires; digging post holes and grouting in rock where required; furnishing and placing concrete for setting posts; furnishing and installing all electrical grounds; all hauling and handling charges; and for all manipulations, labor, tools, equipment and incidentals necessary to complete the work, including excavation, backfilling and disposal of surplus material.

Gates measured as provided under "Measurement" will be paid for at the unit bid price for "Pedestrian Gate" or "Vehicular Gate", of the type, height and opening specified. The unit bid price shall include full compensation for furnishing all materials; fabricating, preparation, hauling, handling charges and erecting, including all miscellaneous fittings, braces, latches, gate hinges, stops and center anchorage; and for all manipulations, labor, tools, equipment and incidentals necessary for complete installation.

Payment will be made under one of the following:

Chain Link Fence - _____ Foot	Per Linear Foot.
Chain Link Pedestrian Single Swing Gate, ___ Foot. × ___ Foot.	Per Each.
Chain Link Pedestrian Double Swing Gate, ___ Foot. × ___ Foot.	Per Each
Chain Link Vehicular Single Swing Gate, ___ Foot. × ___ Foot.	Per Each.
Chain Link Vehicular Double Swing Gate, ___ Foot. × ___ Foot.	Per Each
Wire Fence	Per Linear Foot.
Wood Fence	Per Linear Foot.
Wood Fence Pedestrian Gate, ___ Foot. × ___ Foot.	Per Each.
Wood Fence Vehicular Gate, ___ Foot. × ___ Foot.	Per Each.
Security Fence, ___ Foot High, Type _____	Per Linear Foot.
Temporary Fence, ___ Foot High, Type _____	Per Linear Foot.
Mowing Strip	Per Linear Foot

End

Reference Specifications:	
<u>American Society For Testing And Materials (ASTM)</u>	
<u>Designation</u>	<u>Description</u>
A 53/A 53M	Specification For Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
A 116	Specification For Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric
A 121	Specification For Zinc-Coated (Galvanized) Steel Barbed Wire
A 153/A 153M	Specification For Zinc-Coated (Hot-Dip) on Iron and Steel Hardware
A 239	Practice for Locating the Thinnest Spot in a Zinc (Galvanized) Coating on Iron and Steel Articles
A 392	Specification For Zinc-Coated Steel Chain-Link Fence Fabric
A 491	Specification For Aluminum-Coated Steel Chain-Link Fence Fabric
A 585	Specification For Aluminum-Coated Steel Barbed Wire
B 117	Practice for Operating Salt Spray (Fog) Apparatus Federal Specification TT-P-641B

Texas Department of Transportation: Current edition of Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 421	Hydraulic Cement Concrete
Item No. 445	Galvanizing

ITEM NO. RR 702 REMOVAL AND RELOCATION OF EXISTING FENCES

702.1 - Description

Remove and relocate existing fence, gates and hardware to a new alignment in conformance to the typical details shown on the drawings or as directed by the Engineer.

702.2 - Removal of Existing Materials

Carefully remove, bundle, roll and stockpile the existing boards, fabric, posts, wire, rails, braces, hardware, gates and miscellaneous items as shown on the drawings for installation at the new fence assignment. Remove and handle shall be such that the fence materials may be reused in the relocated fence.

A. Removal of Fabric and Wire

Carefully untie or disassemble the fabric and wire of all types from the posts and other appurtenances, and roll the fabric in bundles of a size that will allow handling with ordinary equipment.

B. Removal of Posts

Carefully remove posts from the ground and remove the concrete footing. Dispose of the concrete footing off site. Fill post holes with suitable embankment material and thoroughly compact.

C. Removal of Boards

Carefully disassemble boards of all types from the rails and other appurtenances to facilitate removal in panels. Dispose of excess material removed as indicated below.

D. Storage of Materials

Store all salvageable materials that will be reinstalled at a new location, on-site or at such other locations as the Contractor may elect, subject to approval by the Engineer. Secure and maintain the salvageable materials.

E. Excess Materials

Materials, that are damaged, unsuitable for reinstallation or unnecessary for completion of the scope of the fence work in the new alignment will be considered as excess but shall be offered to the Owner before removal from the site.

702.3 - New Materials

Provide new materials required to complete the fence relocation at the location shown on the drawings of equal quality to the existing materials. Used materials from other projects or from the Contractor's own used material stocks will not be allowed. The new materials to be furnished will be those necessary to replace items from the existing

fence which were damaged during removal operations or which for other reasons cannot be reused.

702.4 - Construction Methods

Install the removed fence at the new assignment in accordance with the typical details shown on the drawings and in accordance with Item RR 701, "Fencing" and the best practice for fence construction of the specified type.

702.5 - Measurement

This Item will be measured by the linear foot of fence in its new location measured at the bottom of the fence along the centerline of the fence from center to center of terminal posts, excluding gates.

Removal and relocation of gates will be measured by the each.

702.6 - Payment

The work performed and material furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Removal and Relocation of Existing Fences", or "Removal and Relocation of Existing Gates", of the size and type specified to be relocated. This is full compensation for removing, salvaging, storing and handling all existing fence or gate materials; furnishing new posts, boards, rails, braces, tie wires, connection clips, fabric, rails, brace rods, center anchorage blocks, latches and catch blocks and any other fence or gate component items that were damaged during removal and necessitating new material being furnished to complete the project; digging post holes and grouting in rock where required; furnishing concrete for post footings; and for all equipment, labor, materials, tools, and incidentals.

Payment will be made under one of the following:

Removing and Relocating Existing ____ Ft. Chain Link Fence	Per Linear Foot.
Removing and Relocating Existing ____ Ft. × ____ Ft. Chain Link Pedestrian Gate	Per Each.
Removing and Relocating Existing ____ Ft. × ____ Ft. Chain Link Vehicular Gate	Per Each.
Removing and Relocating Existing ____ Ft. Wooden Fence	Per Linear Foot.
Removing and Relocating Existing ____ Ft. × ____ Ft. Wooden Pedestrian Gate	Per Each.

Removing and Relocating Existing ____ Ft. × ____ Ft. Wooden Vehicular Gate	Per Each.
Removing and Relocating Existing ____ Ft. Wire Fence	Per Linear Foot.
Removing and Relocating Existing ____ Ft. × ____ Ft. Metal Gate	Per Each.
Removing Existing ____ Ft. Wooden Fence	Per Linear Foot.
Removing Existing ____ Ft. Chain Link Fence	Per Linear Foot.

End

Reference Specification: <u>American Society For Testing And Materials (ASTM)</u>	
<u>Designation</u>	<u>Description</u>
A 53/A 53M	Specification For Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
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A 392	Specification For Zinc-Coated Steel Chain-Link Fence Fabric
A 491	Specification For Aluminum-Coated Steel Chain-Link Fence Fabric
A 585	Specification For Aluminum-Coated Steel Barbed Wire
B 117	Practice for Operating Salt Spray (Fog) Apparatus Federal Specification TT-P-641B

**ITEM NO. RR 703
SAFETY FENCING****703.1 - Description**

Install temporary safety fencing supported on posts and constructed of materials as indicated and remove when excavation is backfilled. Place fencing when excavations are required to be left open during non-working hours, and as directed.

703.2 - Materials**A. Fabric**

1. Provide fabric 4 feet in width, made of high density polyethylene resin, extruded and stretched to provide a highly visible international orange, non-fading fence which will remain flexible from -60 F to 200 F, and be inert to most chemicals and acid. Pattern may vary from diamond to circular with a minimum weight per foot of 0.4 lbs./ft., a 4 foot width minimum tensile yield strength (Horiz.) of 2000 psi, ultimate tensile strength of 2680 psi (Horiz.) and a maximum opening no greater than 2 inches.

B. Metal Posts

1. Provide steel pipe, tee posts, "U" posts or 2" x 4" timber posts, 5½ feet in length minimum, spaced no more than 8 feet on centers. Secure the fabric to posts by bands or wire ties.

703.3 - Construction Methods

Prior to commencing construction, install suitable barricades, signs and traffic handling devices to protect workers and the public in accordance with Item No. 502 "Barricades, Signs, and Traffic Handling". Erect safety fencing to lines and grades indicated. Excavations within 750 ft. of schools or day care centers require special attention to secure entry while work is in progress. Install the fence prior to excavation and maintain until excavation is backfilled. Place fence a minimum of 4 feet from edge of excavation. Drive posts in ground a minimum of 18 inches. At completion of each day's work, pull safety fencing taut, and secure entry. When safety fence is no longer needed, remove fence and posts and patch any damage to surfaces.

703.4 - Measurement

This Item will be measured by the linear foot of fence measured along the ground; gates will not be measured separately.

703.5 - Payment

The work performed and materials furnished in accordance with this Item will be paid for at the unit price bid for "Safety Fencing". This is full compensation for furnishing, installing and removing safety fencing and gates, including posts, bands or ties, and equipment, labor, materials, tools, and incidentals.

Payment will be made under:

Safety Fencing	Per Linear Foot
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End

**ITEM NO. RR 710
BICYCLE RACKS****710.1 - Description**

Install Class II and Class III bicycle racks and associated support medium as shown on the drawings.

A Class II bicycle rack shall be a single "U/Hoop" (see Standard Detail Drawing ST-19).

A Class III bicycle rack shall be a single "U/Hoop" (see Standard Detail Drawing ST-20) with two coiler cables attached to the cable bar.

Refer to Standard Details for installation details.

710.2 - Submittals

The submittal requirements of this Item include:

- A. Class, type and capacity of bicycles per rack.
- B. Fabrication and installation details, color and finish of the rack(s).
- C. Support medium (i.e. existing slab, new pad, concrete filled excavation, etc.) and details of installation.
- D. Complete manufacturer's warranty against defects for a period not less than one year from date of installation.

710.3 - Materials

- A. Steel

Provide steel conforming to ASTM A-36 1010-1018 low carbon prime steel with tamper-proof screws, nuts and bolts plated with commercial zinc. Provide hot dipped galvanized bicycle racks conforming to ASTM A 123, unless the drawings indicate that the rack assembly shall be provided in a specific color with a polyester-vinyl coated finish, a powder coated finish, or a polyvinyl thermoplastic finish.

- B. Concrete

Provide Class "A" concrete in accordance with Item 421 "Hydraulic Cement Concrete".

- C. Reinforcement

Provide reinforcement in accordance with Item 440 "Reinforcement for Concrete". Welded Wire Fabric (sheets or rolls) is not permitted for concrete reinforcement.

D. Expansion Joint Materials

Provide Class 5 or 8 joint-sealant materials and fillers in accordance with TxDOT DMS-6310, "Joint Sealants and Fillers", unless otherwise shown on the drawings.

E. Membrane Curing Compound

Provide Type 2 membrane curing compound in accordance with o TxDOT DMS-4650.

710.4 - Fabrication of Racks

A. Class II Bicycle Rack

Provide Class II racks with a locking system, which will secure both bicycle wheels and the frame with one (1) lock without the removal of either wheel.

B. Class III Bicycle Rack

Provide Class III racks with one piece welded inverted U/Hoop assembly of Schedule 40 steel pipe with an outside diameter (OD) of 1.9 inches on a minimum 0.25" thick base plate.

C. Base plates

Provide base plates with two ½" diameter holes per plate for mounting. Base Plates are not required when the drawings indicate the bicycle rack is to be set in concrete below ground level per Standard Details.

1. Rectangular

Dimensions are 6" by 2". Bolt holes will be equidistant between the pole and edge of plate.

2. Round

Diameter must be at least 6" with a 4.5" bolt circle. Bolt holes will be equidistant between the pole and edge of plate.

3. Oval

Length must be at least 6" with a width of at least 4". Bolt holes will be equidistant between the pole and edge of plate, with the center of the bolt hole at least 0.75" from the base plate edge.

D. Each bike rack will be hot dip galvanized after fabrication, unless otherwise indicated.

E. Support bicycle racks as shown on the drawings. Support Class II and Class III racks on either existing or newly placed Portland cement concrete slabs.

710.5 - Installation of Bicycle Racks

Mark the location of bicycle racks as shown on the drawings for Engineer's approval prior to installation.

Install bicycle racks in existing paver sidewalks, new paver sidewalks and/or concrete sidewalks in accordance with the Standard Details.

Construct new bicycle parking pads in accordance with Item 531 "Sidewalks". Unless noted otherwise on the Drawings, provide pads 4 inches in thickness.

710.6 - Measurement

Bicycle Racks will be measured by each rack Bicycle Parking Pads will be measured by the square yard.

710.7 - Payment

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid price for "Bicycle Racks" of the Class specified, or Bicycle Parking Pads". This price is full compensation for the specified equipment items; the excavation, removal and disposal of existing sidewalk, placement and installation of bicycle parking pads and racks, finishing the pad; all materials, equipment, labor, tools, and incidentals.

Payment will be made under:

Class II Bicycle Rack, hot dipped galvanized	Per Each.
Class II Bicycle Rack, polyester-vinyl coated finish, (color)	Per Each.
Class II Bicycle Rack, polyester-vinyl thermoplastic finish, (color)	Per Each.
Class II Bicycle rack, powder coated finish, (color)	Per Each.
Class III, Bicycle Rack, hot dipped galvanized	Per Each.
Class III Bicycle Rack, polyester-vinyl coated finish (color)	Per Each.
Class III Bicycle Rack, polyester-vinyl thermoplastic finish, (color)	Per Each.
Class III Bicycle Rack, powder coated finish, (color)	Per Each.
Bicycle Parking Pads (concrete)	Per Square Yard

<u>SPECIFIC TxDOT CROSS REFERENCE MATERIALS</u>	
<u>Designation</u>	<u>Description</u>
Item No. 421	Hydraulic Cement Concrete
Item No. 440	Reinforcement for Concrete
Item No. 420	Concrete Substructures
Item No. 531	Sidewalks
DMS 4650	Hydraulic Cement Concrete Curing Materials and Evaporation Retardants
DMS 6310	Joint Sealants and Fillers

End

ITEM NO. RR 725 SURVEY MARKERS

725.1 - Description

Install permanent survey markers at locations shown on the drawings or as directed.

725.2 - Submittals

The submittal requirements of this Item include:

- A. Class A concrete in accordance with Item 421 "Hydraulic Cement Concrete".
- B. Type of survey marker and associated construction details.

725.3 - Materials

Survey marker types are as follows:

Standard monument: $\frac{3}{4}$ " (#6) reinforcing bar or pipe 24" long embedded in poured concrete 6" wide by 12" deep minimum;

Subdivision lot boundary marker: $\frac{1}{2}$ " (#4) reinforcing bar or pipe 24" long driven in unexcavated soil; and,

Permanent monument/benchmark: 2" diameter, non-corrosive metal plate, provided by the City of Round Rock, anchored in top of concrete with monument number stamped into plate. Embed monument in poured concrete 18" diameter by 48" minimum depth with four $\frac{1}{2}$ " (#4) reinforcing bars.

725.4 - Construction Methods

Install survey markers of the type specified at locations as shown on the drawings or as directed. They shall be properly referenced by a Registered Professional Land Surveyor licensed in the State of Texas and set at locations that are clear of obstructions that would interfere with the setup of tripods and survey instruments over the marker.

Existing City survey control monument information can be found at <http://www.roundrocktexas.gov/departments/gis/city-survey-control-monuments/>. A hard copy may be reviewed at the Planning and Development Services Department or a CD ROM may be purchased.

Furnish field records and documentation used to establish the new monuments.

Install one (1) permanent monument at a minimum of one of the subdivision boundary corners. Reference permanent monuments to the City of Round Rock Horizontal and Vertical Control Network.

Install standard monuments at all subdivision boundary corners. Indicate coordinates for these monuments on the subdivision plat. Reference standard monuments to the City of Round Rock Horizontal and Vertical Control Network. Indicate mathematical closure for the subdivision on the Final Plat.

Place a standard monument in unexcavated soil at all block corners, P.C.'s and P.T.'s along the dedicated street right-of-way, and at all lot corners. Where conditions prevent the placement of iron pins or pipes, other monumentation such as drill holes; chiseled marks in stone, concrete or steel; punch marks; precast bronze or aluminum discs; etc. placed on objects of a stable and permanent nature shall be installed. Where rocks or caliche soils prevent specified lengths of iron pins or pipes, the rod shall be of such length so as to be driven to refusal at such depth where it will remain stable against an applied force from any direction of approximately ten (10) pounds, for duration in time of at least ten (10) seconds.

Place a minimum of one (1) permanent benchmark for each subdivision at a location readily accessible for use by other surveyors. The City may waive the requirement for installation of a benchmark for subdivisions smaller than fifty (50) acres when at least two (2) permanent benchmarks are located within one-quarter (1/4) mile of the subdivision boundaries.

All required monuments, markers and benchmarks shall be in place prior to the City's acceptance of any street improvements.

Preserve and protect existing survey markers. Replace any that are disturbed or destroyed by Contractor's operations by a Registered Professional Land Surveyor licensed in the State of Texas at Contractor's expense. Notify the City and furnish field records for any survey markers that are replaced.

725.5 - Measurement

When survey markers are specified on the plans to be a pay item, measurement will be by each marker of the type specified.

725.6 - Payment

Unless otherwise specified on the plans, the work performed and materials furnished in accordance with this Item will not be paid for directly but will be subsidiary to pertinent bid items.

Existing survey markers destroyed or disturbed shall be replaced in accordance with this Item at Contractor's expense.

When survey markers are specified on the plans to be a pay item, the work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Survey Marker" of the type specified. This price is full compensation for furnishing all material equipment, labor, tools, and incidentals.

If specified on the plans, payment will be made under the following marker types:

Standard Monument	Per Each.
Subdivision Lot Boundary Marker	Per Each.
Permanent Monument/Benchmark	Per Each.

End

ITEM NO. RR 726
PREFABRICATED PEDESTRIAN STEEL TRUSS SPAN

726.1 - Description

Design, fabricate, and install prefabricated pedestrian steel truss bridge spans including bearing devices, anchor bolts, bridge deck, and pedestrian railings. This Item does not govern the design or construction of bridge substructure, including piers, abutments, and foundations.

726.2 - Design

The Contractor is responsible for the structural adequacy of the prefabricated pedestrian steel truss bridge span design. Submit to the Engineer details and design calculations bearing the seal of a licensed professional engineer (State of Texas) for review and approval. Include the steel truss span superstructure, bearing devices, anchor bolts, bridge deck, and bridge railing with accessibility handrails when required. Provide at least 28 calendar days' notice before the start of fabrication. Design in compliance with the current *AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges*. The City will not grant additional time for rejection or correction of design submissions.

Design the truss for pedestrian live load, maintenance vehicles, wind load and load combinations using the current *AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges*.

Design railing as 42 in. pedestrian railing in accordance with the latest AASHTO requirements for pedestrian railing. Railing may be integral with through truss members provided it satisfies LRFD Specification requirements.

The top of the top chord of the truss shall not be less than 54 inches above the deck (measured from the high point of the riding surface) on bike path structures.

Design bridge deck surfaces to meet the requirements of Texas Accessibility Standards (TAS) Section 302, "Floor and Ground Surfaces."

When bridge deck grade is equal to or greater than 5%, provide accessible handrails meeting the requirements of the TAS Section 505, "Handrails."

726.2 - Materials

Provide materials in accordance with the following Texas Department of Transportation's *Standard Specifications for Construction and Maintenance of Highways Streets and Bridges*:

- Item 421, "Hydraulic Cement Concrete"
- Item 422, "Concrete Superstructures"
- Item 434, "Bridge Bearings"
- Item 440, "Reinforcement for Concrete"
- Item 441, "Steel Structures"

- Item 442, “Metal for Structures”
- Item 447, “Structural Bolting”
- Item 448, “Structural Field Welding”
- Item 449, “Anchor Bolts”
- Item 491, “Timber for Structures”

Paint, galvanize, or leave the steel truss surfaces exposed as shown on the Drawings. When specified, galvanize as directed by Item 445, “Galvanizing.” When painting, use Paint System II in accordance with Item 446, “Field Cleaning and Painting Steel.” Paint a concrete gray appearance coat (Federal Standard 595C, color 35630), unless otherwise shown on the plans. Provide a Society for Protective Coatings SSPC SP6 cleaning for exposed weathering steel.

726.3 - Fabrication

Fabricate the trusses, bearing devices, and other permanent metal components for the steel truss span in accordance with Item 441, “Steel Structures.” Fabricators performing the work must be approved by the City of Round Rock before producing the steel truss spans for city projects. Approval of the fabricator is based on the following:

Obtain certification by the American Institute of Steel Construction (AISC) Quality Certification Program as a fabrication shop for Major Steel Bridges (CBR);

Obtain an AISC Sophisticated Coatings Endorsement when painted bridges are specified;

Demonstrate the ability to design and fabricate pedestrian steel truss bridge spans that provide quality workmanship, detailing, structural integrity, and satisfactory aesthetics; and

Have readily available access to the services of a licensed professional engineer (State of Texas), experienced in the design of pedestrian steel truss bridge spans.

Prepare and submit detailed shop drawings for the steel truss span, bearing devices, bridge deck, deck joints, bridge railings, and accessibility handrails. Submit 3 complete copies of the shop drawings (plus the number to be returned to the Contractor) for review and approval. Give the Engineer at least 28 calendar days to review and approve each shop drawing submittal. Include unique drawings that illustrate specific portions of the work to be done. Clearly show all relevant design information such as member sizes and connections.

726.4 - Construction Methods

Erect the span and construct the deck in accordance with the following Items:

- Item 422, “Concrete Superstructures”
- Item 441, “Steel Structures”
- Item 491, “Timber for Structures”

Construct bridge deck surfaces that meet the requirements of TAS Section 302, “Floor and Ground Surfaces.”

726.5 - Measurement

This Item will be measured by each pedestrian truss bridge span.

726.6 - Payment

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Prefabricated Pedestrian Steel Truss Span" of the length specified. This price is full compensation for design, fabrication, transportation, erection, deck construction, and final finishing; and for equipment, labor, tools, and incidentals.

Payment will be made under:

Prefabricated Pedestrian Steel Truss Bridge Span (__ feet)	Each
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End

Standard Specifications Manual Change Control Record
<u>SERIES 700 – Incidental Construction</u>

CoRR Item	Title	Revision	Status	TxDOT Item	Title
RR 700	Mobilization	5/21/2018	Revised	-	-
RR 701	Fencing	5/21/2018	Revised	-	-
RR 702	Removal and Relocation of Existing Fences	5/21/2018	Revised	-	-
RR 703	Safety Fencing	5/21/2018	Revised	-	-
704	Metal Beam Guard Railing	5/21/2018	Replaced	Item 540	Metal Beam Guard Fence
705	Remove and Relocate Existing Metal Beam Guard Railing	5/21/2018	Replaced	Item 542	Removing Metal Beam Guard Fence
706	Bridge and Culvert Railing	5/21/2018	Replaced	Item 450	Railing
RR 710	Bicycle Racks	5/21/2018	Revised	-	-
720	Metal For Structures	5/21/2018	Replaced	Items 407, 442, 449, 540	Steel Piling; Metal for Structures; Anchor Bolts; Metal Beam Guard Fence
721	Steel Structures	5/21/2018	Replaced	Item 441	Steel Structures; A514/A517 steel will be specified as needed
722	Paint and Painting	5/21/2018	Replaced	Item 446	Field Cleaning and Painting Steel
723	Structural Welding	5/21/2018	Replaced	Item 448	Structural Field Welding
RR 725	Survey Markers	5/21/2018	Revised	-	-
RR 726	Prefabricated Pedestrian Steel Truss Span	5/21/2018	Added	-	-