



2024 Standard Specification Training Seminar



2024 Standard Specifications Changes 500 Series Items Miscellaneous Construction



Changes to the Specifications

- Deleted wording : ~~wording is in red and struck through~~
- New wording: wording is in blue and underlined
- Changed wording: the ~~old~~ new wording

The information presented is a quick comparison between the 2014 and 2024 Standard Specifications Books.

Due to the number of revisions made, not every change is listed. Multiple Items have changes so significant that a quick comparison would not suffice. To familiarize yourself with the Items of the 2024 Standard Specifications Book, you will need to read the Item Specification in its entirety.



26 Items in the 2014 Spec Book

3 “New” Items

- Item 503 Portable Changeable Message Sign
- Item 505 Truck-Mounted Attenuator (TMA) and Trailer Attenuator (TA)
- Item 527 Colored Textured Concrete (Split from Item 528)

2 “Name Changes”

- Item 528 Landscape Pavers (Previously Colored Textured Concrete and Landscape Pavers)
- Item 533 Rumble Strips (Previously Milled Rumble Strips)

29 Items in the 2024 Spec Book



1. Description

- No changes

2. Measurement

- No changes

3. Payment

- [Material on hand will not be considered as a construction item earned when calculating mobilization payment.](#)



1. Description

- [Temporary work zone \(TWZ\) traffic control devices manufactured after December 31, 2019, must have been successfully tested to the crashworthiness requirements of the 2016 edition of the AASHTO Manual for Assessing Safety Hardware \(MASH\). An exception to the manufacture date applies when, based on the project's date of letting, a category of MASH-2016 compliant TWZ traffic control devices was not approved, or was not self-certified. In such case, devices that meet NCHRP-350 or MASH-2009 may be used.](#)
- [Temporary work zone \(TWZ\) traffic control devices manufactured on or before December 31, 2019, must at a minimum have been successfully tested to the crashworthiness requirements of NCHRP-350 or MASH-2009. These devices may continue to be used throughout their normal service lives.](#)
- [Such TWZ traffic control devices include portable sign supports, barricades, portable traffic barriers designated exclusively for use in TWZs, crash cushions designated exclusively for use in TWZs, longitudinal channelizers, and truck-mounted attenuators \(TMAs\) and trailer attenuators \(TAs\).](#)
- [Category I devices \(i.e., lightweight devices\), such as cones, tubular markers, and drums without lights or signs attached, may be self-certified by the vendor or provider, with documentation provided to the Department, or as shown on Department's Compliant Work Zone Traffic Control Device List.](#)

2. Construction

- No Changes

3. Measurement

- No Changes

4. Payment

4.1 Barricades, Signs, and Traffic Handling.

- [TMAs and TAs will be paid for under Item 505, "Truck-Mounted Attenuator \(TMA\) and Trailer Attenuator \(TA\)." Portable changeable message signs will be paid for under Item 503, "Portable Changeable Message Sign." Portable traffic signals will be paid for under Item 510, "One-Way Traffic Control," unless otherwise shown on the plans.](#)
- [In accordance with Section 7.2.3., "Safety Contingency," funds have been included in the project budget to improve the effectiveness of traffic handling and enhance safety during the course of this project.](#)



This New Item has been added to the Spec Book but was previously SS6001. Changes listed below were compared to the Special Specification. To best to familiarize yourself with the current information, **please read this Item Specification in its entirety.**

1. **Description**

- No changes

2. **Materials**

- **2.5. Cellular Telephone Modem.** ~~When~~ As shown on the plans, provide a cellular ~~telephone~~ modem connection to communicate with the PCMS unit remotely.

3. **Construction**

- No Changes

4. **Measurement**

- No Changes

5. **Payment**

- Reimbursement for the repair of damaged devices will be in accordance with Section 7.17.1., “Reimbursable Repair.”



Editorial and reorganization changes

General

- Restroom may be shared but must be accessible and in proximity to Engineer's field office and laboratory; portable toilet allowed unless otherwise shown on the plans.
- Provide reliable internet access when shown on the plans.
- When detailed on the plans, provide for storage of the nuclear gauge that meets the exposure and security requirements of the Department and Texas Department of State Health Services (DSHS).

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Buildings

- Buildings that were considered adequate by the Department before the implementation of these Standard Specifications, except for Type E structures, may remain in service for their useful life. Buildings may either be under shared roof with the Contractor and supplier facilities or separate facilities. Provide secured Department-only access to secure the Department's furnished equipment and files by portioning the rooms, separate laboratories, or other approved methods. All rooms will have a minimum 8-ft. ceiling and aisles at least 5 ft. in width.
- Furnish strong and stable landings, ramps, and steps to all exterior doors of the building if needed for access.
- For new buildings, coordinate with the Engineer on the layout to meet the requirements of this Item.



Field Offices

- Provide at least two workbenches or tables at least 30 in. wide and 5 ft. long, or as approved.

Laboratory

- Provide unless otherwise shown on the plans:
 - A minimum 4 x 4 ft. landing on all exterior doors when steps are necessary
 - Stable platforms for testing equipment
 - A floor strong and stable enough to support testing equipment
 - Exhaust fans for removing volatiles and aggregate fines from room air
 - An area for a desk that is minimum 30 in. x 5 ft., at least three drawers of filing cabinets, and at least one chair



Structure Types

- Type A Structure (Concrete Laboratory). Provide at least 100 sq. ft. of gross floor area and one exterior door.
- Type B Structure (Field Office and Concrete Laboratory). Provide at least 320 sq. ft. of gross floor area. Provide enough 30 in. width counter space for performing testing, to place test equipment, for a preparation area, and for a sink.
- Type C Structure (Field Office). Provide at least 200 sq. ft. of gross floor area with at least one exterior door and two windows.
- Type D Structure (Hot-Mix Asphalt Laboratory). Provide enough floor area that will accommodate 30 in. width counter space for performing testing, to place test equipment, for a preparation area, and for a sink. For gyratory presses that are shared, the equipment is not required to be locked behind the Department's secured access but must be under the same roof or in proximity to the Department's laboratory and must meet the Department's requirements including the requirements in test procedures, comparable and consistent test results, safety, efficiency, and accessibility.



Measurement and Payment

- The work performed, equipment, utilities, testing equipment as specified for Department use, labor, tools, and incidentals will not be paid for directly, but will be subsidiary to pertinent Items.



This New Item has been added to the Spec Book but was previously SS6185. Changes listed below were compared to the Special Specification. To best to familiarize yourself with the current information, please read this Item Specification in its entirety.

1. **Description**
 - No Changes
2. **Materials**
 - No Changes
3. **Construction**
 - The plans show the number of TMAs or TAs ~~needed~~ required, the number of days or hours, and for which construction phases.
4. **Measurement**
 - **4.1. Truck-Mounted Attenuator or Trailer Attenuator (Stationary).** This Item will be measured by ~~the each or by~~ the day. TMAs or TAs must be set up in a work area and operational before a calendar day can be considered measurable. ~~When measurement by the day is specified,~~ A day will be measured for each TMA or TA set up and operational on the worksite.
 - **4.2. Truck-Mounted Attenuator or Trailer Attenuator (Mobile Operation).** This Item will be measured by the hour or by the day. The time begins once the TMA or TA is ready for operation at the pre-determined site and stops upon Engineer notification. When measurement by the hour is specified, at least 4 hr. will be paid each day for each operating TMA or TA used in a mobile operation. When measurement by the day is specified, a day will be measured for each TMA or TA set up and operational on the worksite.
5. **Payment**
 - Reimbursement for the repair of damaged devices will be in accordance with Section 7.17.1., “Reimbursable Repair.”



1. Description

- Install, maintain, and remove erosion, sedimentation, and environmental control measures to prevent or reduce the discharge of pollutants [and protect environmental resources](#) in accordance with the Stormwater Pollution Prevention Plan (SWP3) [and environmental layout](#) as shown on the plans. [Comply with](#) Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) TXR150000 requirements. “Control measures” are defined as **Best Management Practices** BMPs used to prevent or reduce the discharge of pollutants and [measures to protect environmental resources](#).
- Erosion and sediment control devices must be selected from the Erosion Control Approved Products **or Sediment Control Approved Products** List. Perform work in a manner to prevent degradation of receiving waters, [protect environmental resources](#), facilitate project construction, and comply with applicable federal, state, and local regulations.

2. Materials

- **2.4 Construction Exits.** Provide materials ~~that meet the details~~ as shown on the plans and [in accordance with](#) this Section.
- **2.9 Temporary Sediment Control Fence.** Provide a net-reinforced fence using woven geotextile fabric. Logos visible to the traveling public ~~will~~ [are](#) not ~~be~~ allowed.

3. QUALIFICATIONS, TRAINING, AND EMPLOYEE REQUIREMENTS

- **3.1. Contractor Responsible Person Environmental (CRPE) Qualifications and Responsibilities.** Provide and designate in writing at the preconstruction conference a CRPE and alternate CRPE who have overall responsibility for ~~the storm water management program.~~ [managing environmental compliance](#). The CRPE will implement stormwater and erosion control practices, ~~will~~ oversee and observe stormwater control measure monitoring and management, ~~will~~ [oversee environmental compliance requirements](#), and monitor the project site daily and produce daily monitoring reports as long as there are BMPs in place or soil-disturbing activities are evident ~~to ensure compliance~~ [in accordance](#) with the SWP3 and TPDES CGP **General Permit** TXR150000. [Take required training in accordance with Section 7.7.4.4, “Training.”](#)
- [Maintain daily monitor reports and make them available within 24 hr. upon request.](#) During time suspensions when work is not occurring or on Contract non-workdays, daily inspections are not required unless a rain event has occurred. The CRPE will provide recommendations [pertinent](#) ~~on how to improve~~ [to improving](#) the effectiveness of control measures.



- Ensure training is completed in accordance with Section ~~7.7.4.4.(506.3.3)~~ by all pertinent applicable personnel before employees work on the project. Document, maintain, and submit a list and make available within 24 hr. of a request, a list, signed by the CRPE, of all pertinent applicable Contractor and subcontractor employees who have completed the training. Include the employee's name, the training course name, and the date the employee completed the training. ~~Provide the most current list at the preconstruction conference or before SWP3 or soil disturbing activities. Update the list as needed and provide the updated list when updated~~
- **3.2 Contractor Superintendent Qualifications and Responsibilities.** Provide a superintendent who that is competent, has experience with and knowledge of stormwater management, and is knowledgeable of the requirements and the conditions in accordance with TPDES CGP ~~General Permit~~ TXR150000. Take training as required in accordance with Section 7.7.4.4.
- ~~3.3 Training. All Contractor and subcontractor employees involved in soil disturbing activities, small or large structures, storm water control measures, and seeding activities must complete training as prescribed by the Department.~~

4. Construction

- **4.2.1 Commencement.** Implement the SWP3 as shown on the plans and as directed. Contractor-proposed recommendations for changes are will be allowed as approved. Act in accordance with Conform to the established guidelines in the TPDES CGP ~~General Permit~~ TXR150000 to make changes.
- 4.3.4 Restricted Activities and Required Precautions. Do not discharge onto the ground or into surface waters any pollutants such as chemicals, raw sewage, fuels, lubricants, coolants, hydraulic fluids, bitumens, or any other petroleum product.
- Immediately address chemical and hydrocarbon spills caused by the Contractor. Keep a spill kit onsite.

5. Measurement.

- No Changes

6. Payment.

- 6.1.1 Installation. Installation will be paid for as “Rock Filter Dams (Install)” of the type and slope as specified.
- 6.5.2 Maintenance Earthwork for Erosion and Sediment Control for Cleaning and Restoring Control Measures. This price is full compensation for excavation, embankment, and re-grading, including dewatering for removal of accumulated sediment...



1. Description

- Construct and maintain detours. Remove detours ~~when directed~~ unless otherwise directed or shown on the plans.

2. Materials

- No Changes

3. Construction

- Public traffic safety and convenience ~~is~~ are essential. Maintain detours in accordance with Section 7.2.4., “Public Safety and Convenience”; Article 7.17., “Contractor’s Responsibility for Work”; Section 7.17.4., “Detours”; and this Item.

4. Measurement

- No Changes

5. Payment

- Maintenance of detours constructed ~~will not be paid for directly but will be subsidiary to this item. will be paid for in accordance with Section 7.17.4. Maintenance of pavement on detours that use existing pavement will be paid for in accordance with Article 7.17, “Contractor’s Responsibility for Work.”~~ will be paid for in accordance with Section 7.17.4. Maintenance of pavement on detours that use existing pavement will be paid for in accordance with Article 7.17, “Contractor’s Responsibility for Work.”



1. Description

- No Changes

2. Work Methods

- **2.1. Flagger Control Method.** Furnish flaggers in accordance with ~~the requirements of~~ Article 7.2., “Safety,” ~~at all entry points to the work zone to stop traffic.~~ on each approach to the activity area to control traffic. Furnish additional flaggers at all intersections, public driveways, and commercial driveways as determined by the Engineer. Furnish a STOP/SLOW paddle ~~that meets the requirements of~~ in conformance with the TMUTCD for each flagger. If desired, use automated flagger assistance devices if approved.
- **2.2. Pilot Car Method.** Furnish a licensed driver and pilot vehicle with required signs attached. Furnish flaggers in accordance with Article 7.2. on each approach to the activity area to control traffic. Furnish additional flaggers at all intersections, public driveways, and commercial driveways as determined by the Engineer. ~~Provide~~ Furnish STOP/SLOW paddles and signs ~~that meet the requirements of~~ in conformance with the TMUTCD.

3. Measurement

- **3.2. Pilot Car Method.** Additional flaggers, when directed by the Engineer, will be measured by the flagger control method.

4. Payment

- No Changes



1. Description

- No Changes

2. Materials

- **2.1.2. Steel.** Barrier sections will be furnished as shown on the plans. ~~Barrier sections must meet the crash testing requirements of NCHRP 350 or MASH TL3 or TL4 specifications as per test matrix for Longitudinal Barriers.~~
- **2.1.3. Concrete and Steel.** The Engineer may approve the use of the product if:
 - the applicable crash test criteria in accordance with Item 502, “Barricades, Signs, and Traffic Handling,” are met.
- **2.1.4. Connection Hardware.** Provide connection hardware for Department-furnished barrier sections as shown on the plans. Provide the type of connection hardware as shown on the plans in accordance with Item 442. “Connection hardware” is defined as being sufficient hardware for one complete connection between two traffic barrier sections, including the required bolts, nuts, washers, structural steel shapes, and dowels. Connection hardware will be retained by the Department unless otherwise shown on the plans.
- **2.1.5. Furnished by the Department.** The Department will furnish connection hardware for Department-furnished barrier sections unless otherwise shown on the plans. “Connection hardware” is defined as being sufficient hardware for one complete connection between two traffic barrier sections, including the required bolts, nuts, washers, structural steel shapes, and dowels.

3. Construction

- ~~Remove formwork after the concrete has reached sufficient strength to prevent physical damage to the member. Move barrier sections to a storage area and place them on blocking to prevent damage when they have attained sufficient strength to permit handling without causing visible damage.~~ Once concrete has attained sufficient strength to resist stresses due to handling, remove formwork and place barrier sections on blocking in a designated storage area.
- For concrete barrier, the areas that require pinning will be as shown on the plans. For steel barrier, the acceptable deflection distance will be as shown on the plans.
- Repair or replace any pavement damaged in the process of installing, moving, or removing barrier sections at the Contractor’s expense.



4. Measurement

- [As shown on the plans, connection hardware will be measured by each complete connection between two traffic barrier sections for Department-furnished barrier. For pinning of concrete barrier as shown on the plans, pinning of the barrier will be measured by each pin.](#)

5. 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 as follows.
 - For concrete barrier only, bid for “Portable Traffic Barrier” of the work category (furnish and install, designated source, move, stockpile, remove, [or connection hardware](#)); shape (e.g., single-slope, F-shape, or low-profile); and type (e.g., Type 1, 2, or 3) of barrier sections specified. This price includes equipment, labor, tools, and incidentals.



1. Description

- No Changes

2. Equipment

- At the Contractor's option, an electronic ticket delivery system (e-ticketing) may be used instead of printed tickets. The use of e-ticketing will require written approval of the Engineer. At minimum, the approved system must:
 - provide real-time e-tickets in conformance with the applicable bid items,
 - automatically generate e-tickets using software and hardware fully integrated with the automated scale system used to weigh the material and designed such that data input cannot be altered by the Contractor or the Engineer,
 - provide the Engineer access to the e-ticketing data in real time using a web-based or app-based system compatible with iOS,
 - provide offline capabilities to prevent data loss if power or connectivity is lost; and
 - require the Contractor and the Engineer to accept or reject the e-ticket and provide the ability to record the information required by the applicable bid items, as well as any comments. Record the time of the approval or rejection and include it in the summary spreadsheet described below. Provide each party the capability to edit their respective actions and any entered information.
- The Contractor may discontinue use of the e-ticket system and provide printed tickets as needed to meet the requirements of the applicable bid items.

3. Measurement and Payment

- No Changes



1. Description

- No Changes

2. Materials

- Use **approved** dry-shake color hardener or integral concrete colorant unless otherwise shown on the plans. Ensure integral color, if used, is in accordance with ASTM C979. Provide colored wax as a curing membrane ~~meeting the requirements of~~ in accordance with ASTM C309 or as shown on the plans.

3. Construction

- If no type, size, color, or pattern is specified, use a brick shape with a minimum size of 3-3/4 in. long, 7-3/4 in. wide with 3/8-in. joints in a red color using a running bond pattern.

4. Measurement

- No Changes

5. Payment

- No Changes



1. Description

~~—Colored Textured Concrete. Furnish and place colored textured concrete.~~

2. Materials

~~—Colored Textured Concrete.~~

- **2.1.1. Pavers.** Furnish pavers meeting the requirements of ASTM C936; made using normal-weight aggregates ~~conforming to~~ in accordance with ASTM C33; and conforming to the shape, color, laying pattern, and dimensions shown on the plans. If no type, size, color, or pattern is given, use a brick-type paver with a minimum size of 3-3/4 in. long, 7-3/4 in. wide, and 2-3/8 in. tall, with a river red color or equivalent using a running bond pattern. Furnish certification from the manufacturer stating that the interlocking paving units have been tested and ~~meet all the requirements of~~ are in accordance with ASTM C936. Furnish additional paving units when required for testing by the Department.

3. Construction

~~—Colored Textured Concrete.~~

4. Measurement

- No Changes

5. Payment

~~—Excavation and embankment will not be paid for directly but will be subsidiary to this Item unless otherwise shown on the plans.~~

~~—Colored Textured Concrete.~~

Item 529 Concrete Curb, Gutter, and Combined Curb and Gutter



1. **Description**
 - No Changes
2. **Materials**
 - When curbs are monolithically placed with the concrete pavements, use the same class of concrete as the concrete pavement.
 - ~~When approved,~~ Use of fibers ~~meeting the requirements of~~ in accordance with DMS-4550, “Fibers for Concrete,” to replace reinforcing steel in Class A concrete is allowed unless otherwise shown on the plans.
3. **Construction**
 - Furnish and place reinforcing steel in accordance with Item 440 unless fiber-reinforced concrete is used.
 - **3.2. Extruded or Slipformed Concrete.** ~~Hand-tamp and sprinkle subgrade or foundation material before concrete placement.~~ Shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross-section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement.
 - **3.3. Curb Joints for Concrete Pavements.** Provide transverse expansion and contraction joints in the curb of the same type and location as the adjacent or underlying pavement. Use expansion joint material of the same thickness and type required for the pavement. Extend expansion joints through the curb. Place reinforcing steel for non-monolithic curb construction joints as shown on the plans, unless otherwise approved. Form or saw the contraction joint through the full depth of the monolithic curb.
4. **Measurement**
 - No Changes
5. **Payment**
 - No Changes



1. Description

- No Changes

2. Materials

- No Changes

3. Construction

- No Changes

4. Measurement

- This Item will be measured by the square yard of the final pavement surface, [as placed in the field, including radii and turnout.](#)

5. Payment

- No Changes



1. Description

- Construct hydraulic cement concrete sidewalks, [Americans with Disabilities Act ramps, and steps.](#)

2. Materials

- [Use of fibers in accordance with DMS-4550, “Fibers for Concrete,” to replace reinforcing steel in Class A concrete is allowed unless otherwise shown on the plans. Dose fibers in accordance with the Department’s MPL of prequalified fibers for concrete.](#)
- [Furnish detectable warning material in accordance with DMS-4350, “Detectable Warning Material.”](#)

3. Construction

- [Furnish and place reinforcing steel in accordance with Item 440 unless fiber-reinforced concrete is used.](#)
- Ensure that abrupt changes in sidewalk elevation do not exceed [1/4 in., sidewalk cross-slope does not exceed 2%, curb ramp grade does not exceed 8.3%, and flares adjacent to the ramp do not exceed 10% slope measured parallel to the curb line.](#) Ensure that the sidewalk depth and reinforcement are not less than the driveway cross-sectional details as shown on the plans where a sidewalk crosses [and is part of the](#) concrete driveway.
- [Use construction methods in conformance with manufacturers’ recommendations when installing detectable warning surface. Install detectable warning surface as shown on the plans.](#)

4. Measurement

- A curb ramp consists of the ramp, landing [or turning space](#), adjacent flares or side curb, and detectable warning surface as shown on the plans. [Steps will be measured by the square yard of horizontal surface area.](#)

5. 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 “Concrete Sidewalks” of the depth specified, [“Concrete Sidewalk \(Steps\),”](#) and “Curb Ramps” of the type specified.
- Sidewalks that cross and ~~connect to~~ [are part of the](#) concrete driveways or turnouts will be measured and paid for in accordance with Item 530, “Intersections, Driveways, and Turnouts.”

Item 533 Rumble Strips (Previously Milled Rumble Strips)



Changes to this Item include information from SS5062 and include filling of milled rumble strips. Due to the number of modifications that have been made, to best to familiarize yourself with the current information, **please read this Item Specification in its entirety.**

1. Description

- Construct milled rumble strips. [This Item also includes filling rumble strips in asphalt and concrete pavement to provide a smooth, stable surface with the line and grade conforming to the adjacent pavement.](#)

2. Materials

- [2.1. Filling Milled Asphalt Rumble Strips.](#)
- [2.2. Filling Milled Concrete Rumble Strips.](#)

3. Equipment

- [3.2. Filling Milled Asphalt Rumble Strips.](#)

4. Construction

- [4.2. Filling Milled Asphalt Rumble Strips.](#)
- [4.3. Filling Milled Concrete Rumble Strips.](#)

5. Measurement

- **5.1. Milled rumble strips.** ~~Rumble strips will be measured~~ Measurement will be longitudinally [along the roadway](#), by the foot.
- [5.2. Filling Milled Concrete and Asphalt Rumble Strips.](#) Measurement will be longitudinally along the roadway, by the foot, regardless of the rumble strip width or depth.

6. Payment

- **6.1. Milled Rumble Strips.** The work performed in accordance with this Item and [measured](#) as provided under “Measurement” will be paid for at the unit price bid for “[Milled Rumble Strips \(Asphalt\)\(Shoulder\)](#),” “[Milled Rumble Strips \(Asphalt\)\(Centerline\)](#),” “[Milled Rumble Strips \(Concrete\)\(Shoulder\)](#),” and “[Milled Rumble Strips \(Concrete\)\(Centerline\)](#).” This price is full compensation for equipment, labor, materials, tools, and incidentals.
- [6.2. Filling Milled Asphalt Rumble Strips.](#)
- [6.3. Filling Milled Concrete Rumble Strips.](#)



1. Description

- No Changes

2. Materials

- ~~When approved,~~ Use of fibers meeting the requirements of in accordance with DMS-4550, “Fibers for Concrete,” to replace reinforcing steel in Class A concrete is allowed unless otherwise shown on the plans.

3. Construction

- Furnish and place reinforcing steel in accordance with Item 440, unless fiber-reinforced concrete is used.

4. Measurement

- No Changes

5. Payment

- No Changes



1. Description

- No Changes

2. Materials

- **2.1. Metal Beam Rail Elements. Markings.** Permanently mark each metal beam rail element (including curved sections) with the information required in AASHTO M 180. ~~In addition, permanently mark all curved sections of metal beam rail element with the radius of the curved section in the format "R=XX ft." Markings must be on the back of the metal beam rail section away from traffic and visible after erection.~~
- ~~**Terminal Anchor Posts.** Furnish new terminal anchor posts from steel conforming to the material requirements of ASTM A36. Fabricate posts according to Item 441, "Steel Structures." Galvanize terminal anchor posts after fabrication according to Item 445, "Galvanizing."~~

3. Equipment

- ~~**Terminal Anchor Posts.**~~

4. Measurement

- ~~**Terminal Anchor Sections.**~~
- **4.6. Long-Span System.** Measurement will be by ~~the foot of fence~~ each long-span system, complete in place. Each long-span system will be from ~~Fence will be measured on the face of the rail, in place, between~~ the first CRT to the last CRT ~~posts~~ in the system.

5. Payment

- ~~**Terminal Anchor Section.**~~



1. Description

- No Changes

2. Construction

- Completely remove posts and any concrete or grout backfill surrounding the posts. Furnish backfill material and backfill the hole with material equal in composition and density to the surrounding soil unless otherwise directed.

3. Measurement

- No Changes

4. Payment

- Removal of mow strips or riprap will be paid for separately under the pertinent Items.
- Removal of curb ~~associated with~~ pertinent to the metal beam guard fence transitions will not be paid for directly but will be subsidiary to this Item.



Due to the number of modifications that have been made regarding relocation, removal, and installation to best to familiarize yourself with the current information, **please read this Item Specification in its entirety.**

1. Description

- Furnish and install, [relocate, or remove](#) cable barrier systems and cable barrier terminal sections at the locations shown on the plans.

2. Materials

- Cable barrier systems approved for use have passed NCHRP Report 350 or MASH of the test level specified (e.g., TL-3, TL-4) ~~with a maximum deflection of 8 ft.~~ [The post spacing and resulting deflection characteristics of the system will be such that contact with obstructions within the project site will be avoided when the system is impacted.](#)
- [Salvage approved material as shown on the plans.](#)

3. Construction

- ~~— Install cable barrier system in accordance with the details, dimensions, and requirements~~ [Perform work as shown on the plans and in accordance with manufacturer's recommendations.](#)
- [3.2. Relocate.](#)
- [3.3 Remove.](#)
- ~~— Training. Provide training as specified by the Department.~~

4. Measurement

- [4.2. Relocate.](#) Measurement will be by the foot of cable barrier system and by each cable barrier terminal system relocated.
- [4.3 Remove.](#) Measurement will be by the foot of cable barrier system and by each cable barrier terminal system removed.

5. Payment

- [5.1 Install.](#) The unit price bid for “Cable Barrier System (Install)” and “Cable Barrier Terminal Section (Install)” is full compensation for furnishing cable barrier system, cable barrier terminal section, concrete [foundations \(excluding mow strips\)](#), delineators, equipment, labor, tools, and incidentals.
- [5.2 Relocate.](#)
- [5.3 Remove.](#)

Item 545 Crash Cushion Attenuators



1. **Description**
 - [For permanent placement or temporary work zone locations](#), furnish and install, move and reset, or remove crash cushion attenuators.
2. **Materials**
 - [2.2. Work Zone Crash Cushion Attenuators](#). Furnish new or used crash cushion attenuators in accordance with Item 502, “Barricades, Signs, and Traffic Handling,” and as shown on the plans. Sacrificial water-filled crash cushion attenuators (which are designated for exclusive use in temporary work zone locations) may be reused for the applicable payment items as long as the crash cushions are undamaged, all parts from the pertinent installation manual are supplied, and the devices are not older than 7 yr. from the manufacture date. If the 7-yr. manufacture date occurs during project construction, the device may be used to the termination of the project up to 10 yr. from the manufacture date.
 - **2.3. Concrete**. Furnish ~~Glass-S~~ concrete for pads ~~that meets~~ [in accordance with](#) Item 421, “Hydraulic Cement Concrete,” [and the foundation requirements as shown on the plans](#).
3. **Construction**
 - **3.2. Moving and Resetting**. [New cushions that are initially placed in temporary work zone applications and later moved to a permanent location will be paid for under “Move and Reset.”](#)
 - **3.3. Removal**. [Retain and remove Contractor-furnished temporary work zone attenuators from the right of way when no longer in use. Existing attenuators salvaged from the project, meeting the above requirements, may be reused for temporary work zone installations unless otherwise shown on the plans. Retain and remove existing attenuators unless otherwise shown on the plans. For existing attenuators designated as salvageable, remove the crash cushion attenuators ~~from an existing location~~, clean ~~and repair units before inspection and return them to the Department~~, and stockpile in the area shown on the plans. Dispose of unsalvageable materials in ~~accordance~~ \[conformance\]\(#\) with federal, state, and local regulations.](#)
4. **Measurement**
 - No Changes
5. **Payment**
 - The work performed and materials furnished in accordance with this Item and measured as provided for under “Measurement” will be paid for at the unit price bid for “Crash Cushion Attenuator (Furnish and Install, Designated Source, Move and Reset, Stockpile, or Remove)” of the category, width (N or W), and test level, [and for work zones the width, test level, and designation “Work Zone.”](#)
 - [Incidental maintenance and incident repair and replacement will be paid for in accordance with Article 7.17., “Contractor’s Responsibility for Work,” and Article 9.7., “Payment for Extra Work and Force Account Method.”](#)
 - **5.5. Remove**. This price is full compensation for removing [an existing or Contractor-furnished](#) crash cushion attenuator from the project [site](#) and retention by the Contractor.



1. Description

- No Changes

2. Materials

- No Changes

3. Construction

- **3.4. Electrical Grounds.** [For fence placed on bridge structures, install grounds as shown on the plans.](#)

4. Measurement

- No Changes

5. Payment

- No Changes



1. Description

- No changes

2. Materials

- **2.4. Barbed Wire.** Furnish barbed wire in accordance with ASTM A121, [Class 1 and as shows on the plans.](#) ~~Use barbed wire consisting of 2 strands of 12-1/2 gauge wire, twisted with 2 point 14 gauge barbs spaced no more than 5 in. apart or other barbed wire as directed.~~
- **2.5. Wire Mesh.** Furnish wire mesh fabric in accordance with ASTM A116, ~~Class 1 to the height and design~~ [as](#) shown on the plans. ~~Use at least 10 gauge wire for the top and bottom wires and at least 12-1/2 gauge wire for the intermediate wires and vertical stays.~~

3. Construction

- Snub or guy fencing at the critical point of grade depressions [and fence sags](#), where stresses tend to pull posts out of the ground, with a double 9-gauge galvanized wire.
- Install corner, end, [pull](#), or angle post assembly before stretching the wire between posts. Connect existing cross fences to the new fences and corner posts at junctions with existing fences.
- [Unless otherwise directed, T-posts, steel pipe brace posts, steel pipe gate posts, steel pipe post assemblies, and water gap posts must remain in place.](#)
- [Posts removed for the convenience of the Contractor because of brush removal or other issues will be replaced at the Contractor's expense.](#)
- [Remove brush and trees from fence areas where work is performed. Dispose of debris off the right of way, in conformance with federal, state, and local regulations unless otherwise approved. When approved, chip debris and spread in a thin layer on the right of way.](#)
- [Install water gaps at locations as shown on the plans.](#)

4. Measurement

- Fencing will be measured by the foot of wire fence, excluding gates [and water gaps](#). Gates will be measured as each gate. [Water gaps will be measured by the foot as the distance between fence ends.](#)

5. 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 “Wire Fence,” [“Water Gap,”](#) or “Gate.” ~~of the type specified.~~ This price is full compensation for furnishing, preparing, hauling, and installing fence, [water gap](#), and gate materials; excavation, backfilling, and disposal of surplus material; removing and trimming of brush and tree limbs; and equipment, labor, tools, and incidentals.

Item 556 Pipe Underdrains



1. Description

- No Changes

2. Materials

- **XX2.2. Filter Material.** Furnish hard, durable, and clean sand, gravel, crushed stone, or crushed shell meeting the gradation by percent weight as shown in Table 2 unless otherwise shown on the plans. Filter material must be free of clay balls or other organic or deleterious matter ~~as determined by in accordance with Tex-413-A. Do not furnish crushed limestone unless shown on the plans.~~ Use of crushed limestone is allowed unless otherwise shown on the plans.
- Loss by decantation in accordance with Tex-406-A must not exceed 1% of the material retained on a No. 4 sieve or 4% of the material passing a No. 4 sieve. ~~Use Type B or Type C filter material around the underdrains unless otherwise shown on the plans. Do not place Type A or Type D filter material within 6 in. of perforations.~~ Use Type G filter material around the underdrains unless otherwise shown on the plans.

Table 2
Acceptable Gradations for Filter Material

Sieve Size	Type B	Type C	Type E	Type F	Type G
	% Retained on Sieve (Tex-401-A)				
1-1/2"	-	0-10	Grade 2 Coarse Aggregate ²	Grade 3 Coarse Aggregate ²	Grade 4 (57) Coarse Aggregate ²
3/4"	0-10	20-40			
3/8"	15-35	-			
#4	35-55	40-60			
#20	35-65 ¹	35-65 ¹			
#50	75-100 ¹	75-100 ¹			

1. Of the portion finer than No. 4 sieve.
2. Refer to Table 4 in Item 421, "Hydraulic Cement Concrete."

NOTE for Table 2: Sieve # 8, #16, #30, #100 no longer in the table because they were applicable only for Type A and Type D which have now been removed. Type E, Type F and Type G have been added. Gradation for Type B and Type C has not changed.

3. Construction

- No Changes

4. Measurement

- No Changes

5. Payment

- No Changes



Due to the number of modifications that have been made, to best to familiarize yourself with the current information, **please read this Item Specification in its entirety.**

1. Description

- No Changes

2. Equipment

- Changes to this Article include:
 - Removal of inertial profiler for Surface Test Type A.
 - Addition of “grooving” equipment and the tolerances specified

3. Work Methods

- Changes to this Article include:
 - The removal of “Transverse Profile” measurements
 - Surface Test Type A, as well as QC and referee testing for Surface Type B
 - Acceptance, payment adjustments, and corrective action for; Surface Type A, Surface Type B, IRI for concrete and asphalt pavement, and localized roughness

4. Measurement and Payment

- Changes to this Article include:
 - Table 1 address Ride Quality of Asphalt Pavements with Schedule 1, 2, and 3
 - Table 2 addresses Ride Quality of Concrete Pavements with Schedule 4 and 5



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