432S.1 Description

This item shall govern the construction of Portland cement concrete sidewalks (Standard Detail No. 432S-1), as herein specified, on an approved subgrade and in conformance with the lines, grades and details indicated on the Drawings or as established by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text inch-pound units are given preference followed by SI units shown within parentheses.

432S.2 Submittals

The submittal requirements of this specification item include:

A. Class A portland cement (p.c). concrete mix design,
B. Type of Installation (i.e. Type I, Type II, etc.) and construction details (i.e. cushion layer, base, reinforcing steel, joints, curing membrane),
C. Identification of the type, source, mixture, Pure Live Seed (PLS) and rate of application of the seeding.
D. Number, manufacturer, model, construction, finish and installation details of streetscape appurtenances of bicycle racks, benches, chairs, trash receptacles, streetlights, tree wells and above grade tree planters [for sidewalks, 12 feet (3.66 meters) or wider].

432S.3 Materials

A. Portland Cement Concrete
   Portland cement concrete shall be Class A conforming to Specification Item No. 403S, "Concrete for Structures" or Specification Item No. 407S, "Fibrous Concrete".
B. Reinforcement
   Reinforcement shall conform to Specification Item No. 406S, "Reinforcing Steel" or Specification Item No. 407S, "Fibrous Concrete".
C. Expansion Joint Materials
   Expansion joint materials shall conform to Specification Item No. 408S, "Expansion Joint Materials".
D. Membrane Curing Compound
   Membrane curing compound shall conform to Specification Item No. 409S, "Membrane Curing".

432S.4 Construction Methods

The subgrade shall be excavated in accordance with Specification Item No. 111S, “Excavation”, prepared in accordance with Specification Item No. 201S, “Subgrade Preparation”, shaped to the lines, grades and cross section as indicated on the Drawings or as directed by the Engineer or designated representative and thoroughly compacted in accordance with Specification Item No. 201S. A granular cushion of a minimum thickness of 2 inches (50 mm) but maximum thickness of 5 inches (125 mm), composed of crusher screenings, gravel and sand, crushed rock or coarse sand,
shall be spread, wetted thoroughly, tamped and leveled. The granular cushion shall be moist at the
time the Portland cement concrete is placed.

If the subgrade is undercut by more than 4 inches (100 mm) or the elevation of the natural ground is
more than 4 inches (100 mm) below "top of subgrade", then a necessary backfill/embankment layer
of an approved material shall be placed and compacted with a mechanical tamper. Hand tamping
will not be permitted.

Where the subgrade is rock or gravel, 70 percent of which is rock; the 2-inch (50 mm) cushion need
not be used. The Engineer or designated representative will determine if the subgrade meets the
above requirements.

Sidewalk forms shall be constructed of metal or well-seasoned wood not less than 2 inches (50
mm) in thickness, with a section satisfactory to the Engineer or designated representative. The
forms shall be clean, straight, and free from warp with a depth equal to the thickness of the finished
work. All forms shall be securely staked to line and grade and maintained in a true position during
the deposition of Portland cement concrete. Before p.c. concrete is placed, the forms shall be
thoroughly oiled with a light form oil.

Expansion joint material 3/4 inch (19 mm) thick, shall be provided where the new construction abuts
an existing structure, sidewalk or driveway. Similar expansion material shall be placed around all
obstructions protruding through the sidewalk. The expansion joint material shall be placed vertically
and shall extend the full depth of the p.c. concrete. Maximum spacing of expansion joints shall be
40 feet (12 meters) as indicated on the Drawings or as directed by the Engineer or designated
representative. Weakened plane joints shall be spaced at 5 feet (1.5 meters) on center. Normal
dimensions of the weakened plane joints shall be 1/4 inch wide and 3/4 inch deep (6 mm wide and
19 mm deep). All joints shall be constructed perpendicular (90 degrees) to the centerline of walk
and shall match any previously placed concrete joints. For sidewalks with widths exceeding 6 feet
(1.83 meters) longitudinal weakened-plane tooled joints shall be provided as indicated on the
Drawings or as directed by the Engineer or designated representative.

Reinforcement for sidewalks shall consist either of polypropylene fibrillated fibers or 6” x 6” x W1.4
x W1.4 (150mm x 150mm x MW9 x MW9) welded wire fabric or one layer #3 (10M) reinforcing bars,
placed no more than 18 inches (450 mm) on center both directions. All reinforcement shall be
accurately placed at slab mid-depth, equidistant from the top and bottom of the p.c. concrete and
held firmly in place by means of bar supports of adequate strength and number that will prevent
displacement and keep the steel at its proper position during the placement of the p.c concrete. In
no instance shall the steel be placed directly on the subgrade or sand cushion layer.

Prior to placement of the concrete, the reinforcement installation shall be inspected by the Engineer
or designated representative to insure conformance with the drawings, specifications and this item.
In addition care shall be exercised to keep all steel in its proper position during placement of the
p.c. concrete. If during placement of the concrete, the reinforcement is observed to loose bar
support, float upward or move in any direction, the placement shall be stopped until corrective
action is taken.

Splices in wire fabric shall overlap sufficiently to allow two pairs of transverse wires to be tied
together and no splice of less than 6 inches (150 mm) will be permitted. Splices in the #3 (10M)
bars shall have a minimum lap of 12 inches (300 mm).

Where driveways cross sidewalks, additional reinforcing shall be placed in the sidewalk as indicated
on the Drawings.

Portland cement concrete shall be placed in the forms and spaded, tamped and thoroughly
consolidated until it covers the entire surface with a monolithic finish. The top surface shall be
floating and troweled to a uniform smooth surface; then finished with a broom or wood float to a
gritty texture unless indicated otherwise on the Drawings or as directed by the Engineer or
designated representative. The outer edges and joints shall be rounded with approved tools to a
1/4-inch (6 mm) radius. Care will be exercised to prevent loss of dummy joints or rounded edges when applying the brush finish.

Portland cement concrete sidewalk ramps shall be formed to produce a finished surface with detectable warnings (Standard Detail 432S-2A) in accordance with the requirements of the American Disabilities Act and Texas Accessibility Standards (TAS), including Sections 4.29.2 and A4.29.2. The p.c. concrete sidewalk ramps shall be constructed in accordance with appropriate City of Austin Standard Details (Standard Details 432S-3, 432S-3A through 432S-3H, 432S-5, 432S-5A, 432S-5B, etc.).* See modifications for additional information

Detectable warning for the ramps shall consist of raised truncated domes with a diameter of nominal 0.9 inch (23 mm), a height of nominal 0.2 inch (5 mm) and center-to-center spacing of nominal 2.35 inches (60 mm) and shall contrast visually with adjoining surfaces, either light on dark or dark-on-light. The material used to provide contrast shall be an integral part of the walking surface.

When indicated on the Drawings or as directed by the Engineer or designated representative, the construction of the sidewalk ramp shall include the installation of interlocking concrete paving units (Standard Specification Item No. 480S, "Concrete Paving Units"). The concrete paving units shall be constructed in accordance with Standard Specification Item No. 485S, "Concrete Paving Units for Sidewalk Ramps) and appropriate City of Austin Standard Details (Standard Details 432S-2A, 432S-3, 432S-3A through 432S-3H, 432S-5, 432S-5A and 432S-5B).* See modifications for additional information

At the proper time after finishing, the surface shall be protected by a membrane, compound curing agent or by wetted cotton or burlap mats, conforming to Item No.409S, "Membrane Curing". The sides of the p.c. concrete shall be cured in the forms. If the forms are removed during the curing process, the curing shall be continued by the placement of fill against the exposed concrete edges or by other procedures conforming to Item No. 410S, "Concrete Structures". The top 4 inches (100 mm) of fill shall be clean topsoil conforming to Item No. 604S, "Seeding for Erosion Control".

Existing sidewalk that is scheduled for removal and replacement shall be removed and the underlying material shaped to the lines, grades and cross section as indicated in the drawings or as directed by the Engineer or designated representative. The removal and/or relocation of obstructions, including but not limited to signs, trash cans and benches on concrete pads, abandoned manholes, sprinkler control valves and landscaping, shall be performed, as indicated on the drawings, in a manner acceptable to the Engineer or designated representative. Removal and/or relocation of obstructions will be considered incidental work to this item and will not be paid for directly.

Existing PVC pipe drains in and behind curb shall be removed and replaced as required in new sidewalk and/or curb and gutter. In areas of proposed sidewalk construction, where curb and gutter is to remain in place, existing PVC pipe shall be cut far enough behind the back of curb to allow sufficient room for joint fittings to connect to new or salvaged PVC pipe.

The Contractor shall be responsible for removing and replacing mailboxes that are located in the construction area, while assuring that mail delivery will not be interrupted as a result of the construction activities. Mailboxes shall not be laid on the ground. * See modifications for additional information

All necessary excavation, filling and grading of the slopes adjacent to the completed concrete sidewalks will be considered incidental work pertaining to this item and will not be paid for directly. The adjacent excavation and grading of the slopes shall be done in a manner acceptable to the Engineer or designated representative.

432S.5 Streetscape Furniture Installation Requirements

A. General General

432S 01/04/10 Portland Cement Concrete Sidewalks
Bicycle racks, benches and chairs, trash receptacles, tree wells and above grade tree wells and planters shall only be installed in sidewalks that are 12 feet (3.66 meters) or wider. When installation is indicated on the Drawings or directed by the Engineer or designated representative, these items shall be permanently installed as indicated in Standard Details 710S-4 and 710S-5; 432S-9B; 432S-7C, and 432S-7F; and 432S-8B. Above grade tree wells shall be installed in conformance with Standard Detail 432S-7E, while above grade tree planters shall be installed in conformance with Standard Detail Nos. 432S-7D and 432S-7G.

B. Location Requirements

1. Benches.

Bench shall be placed either perpendicular to the curb with the center of the bench on line with trees and light poles and facing toward the building entry, or parallel to the building and within 6” (150 mm) of the building wall, facing out to the street.

Bench siting shall be in conformance with Standard Detail No. 432S-9C in 12’ (3.6 M) or wider sidewalks and Standard Detail No. 432S-9D in sidewalks of width between 12’ (3.6 M) and 18’ (5.4 M).

2. Bike Racks.

Bike racks are to be placed perpendicular to the curb with the centerline of the rack on line with trees and light poles.

Bike rack siting shall be in conformance with Standard Detail No. 710S-6A in 12’ (3.6 M) or wider sidewalks and Standard Detail No. 710S-6B in sidewalks of width between 12’ (3.6 M) and 18’ (5.4 M).

3. Trash Receptacles.

Trash receptacles shall either be placed along the curb, with the center line of the receptacle on line with the trees and light poles, or shall be located at the building entry in alignment with the structural bay system of the building. If located at the entry there shall be no more than 1 foot (300 mm) clearance between the receptacle and the building wall.

Trash receptacle siting adjacent to curb ramps within an intersection shall be in conformance with Standard Detail No. 432S-8C in 12’ (3.6 M) or wider sidewalks.

P432S.6 Pedestrian Railing * See modifications for additional information

When a pedestrian railing installation is required along sidewalks for pedestrian protection as indicated on the Drawings or directed by the Engineer or designated representative, this type of pedestrian railing shall be permanently installed in conformance with one of the following designated Standard Details: 707S-1, 707S-2, 707S-3 or 707S-4.

When a pedestrian railing installation is required along portions of sidewalks identified as ‘ramps’ for ADA accessibility purposes as indicated on the Drawings or directed by the Engineer or designated representative, this type of pedestrian railing shall be permanently installed in conformance with one of the following designated Standard Details: 707S-2, 707S-3 or 707S-4.

432S.7 Measurement
Accepted work performed as prescribed by this item will be measured by the square foot (square meter: 1 square meter is equal to 10.764 square feet) of surface area of "Concrete Sidewalk".

Accepted work performed as prescribed by "Sidewalk Ramps" will be measured per each for the type of ramp indicated on the Drawings.

Accepted work performed as prescribed by "Streetscape Appurtenances" will be measured per each for the type of appurtenance indicated on the Drawings.

Accepted work performed as prescribed by "Pedestrian Railing" will be measured per lineal foot of the type of railing indicated on the Drawings.

* See modifications for additional information

432S.8 Payment

The work performed as prescribed by this item for concrete sidewalk will be paid for at the unit bid price per square foot for "Concrete Sidewalk" and/or “Sidewalks Reconstruction”; per each for "Concrete Sidewalk Ramps" and "Streetscape Appurtenances" or per lineal foot for “Pedestrian Railing”.

The unit bid price for new sidewalk shall include full compensation for excavating and/or removal and/or relocating obstructions, vegetating adjacent areas disturbed by sidewalk construction, preparing the subgrade; for furnishing and placing all materials including cushion material, all reinforcement, bar supports, joints, expansion joint materials, and for any other materials, manipulations, labor, tools, equipment, finishing, curing and incidentals necessary to complete the work.

The unit bid price for sidewalk reconstruction shall include full compensation for excavating and/or removal of existing sidewalk and other obstructions, relocating obstructions, replacing PVC drain pipe, re-vegetating adjacent areas disturbed by sidewalk construction, preparing the subgrade; for furnishing and placing all materials including cushion material, all reinforcement, bar supports, joints, expansion joint materials, and for any other materials, manipulations, labor, tools, equipment, finishing, curing and incidentals necessary to complete the work.

The unit bid price for ramps shall include full compensation for preparing the subgrade when not included as a separate item; for furnishing and placing all materials, manipulation, labor, tools, equipment and incidentals necessary to complete the work. All necessary excavation, filling and grading of the slopes adjacent to the completed concrete paver units will be included in the unit price bid for the item of construction in which this item is used, unless included as a separate pay item in the Contract bid form. * See modifications for additional information

The unit bid price for streetscape appurtenances shall include full compensation for the individual item (i.e. bench, chair, bicycle rack, trash receptacle, street light or above grade tree planter), as well as the removal of existing sidewalk, preparation of footings, furnishing and placing all materials, manipulation and finishing, labor, tools, equipment and incidentals necessary to complete the work.

The unit bid price for pedestrian railing shall include full compensation for the complete installation of the specific pedestrian railing including but not limited to preparation of footings or curb, furnishing and placing all materials, manipulation and finishing, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under one of the following: * See modifications for additional information
New Sidewalks

Pay Item 432S-4: New P.C. Concrete Sidewalks, 4 Inch thickness Per Square Foot.
Pay Item 432S-5: New P.C. Concrete Sidewalks, 5 Inch thickness Per Square Foot.
Pay Item 432S-6: New P.C. Concrete Sidewalks, 6 Inch thickness Per Square Foot.
Pay Item 432S-7: New P.C. Concrete Sidewalks, 7 Inch thickness Per Square Foot.

Sidewalks Reconstruction

Pay Item 432SR-4: Reconstruct Concrete Sidewalks to 4 Inch thickness, including removal of existing sidewalk Per Square Foot.
Pay Item 432SR-5: Reconstruct Concrete Sidewalks to 5 Inch thickness, including removal of existing sidewalk Per Square Foot.
Pay Item 432SR-6: Reconstruct Concrete Sidewalks to 6 Inch thickness, including removal of existing sidewalk Per Square Foot.
Pay Item 432SR-7: Reconstruct Concrete Sidewalks to 7 Inch thickness, including removal of existing sidewalk Per Square Foot.

Ramps * See modifications for additional information

Pay Item 432S-RP-1: P.C. Sidewalk Curb Ramp with Pavers (Type I) Per Each.
Pay Item 432S-RP-1A: P.C. Sidewalk Curb Ramp with Pavers (Type IA) Per Each.
Pay Item 432S-RP-1B: P.C. Sidewalk Curb Ramp with Pavers (Type IB) Per Each.

Streetscape Appurtenances

Pay Item 432S-SAC-1 Streetscape Bench (___ inches in length) Per Each.
Pay Item 432S-SAC-2 Streetscape Chair Per Each.
Pay Item 432S-SAC-3 Streetscape Bicycle Rack Per Each.
Pay Item 432S-SAC-4 Streetscape Trash Receptacle Per Each.
Pay Item 432S-SAC-5 Streetscape Street Light Per Each.
Pay Item 432S-SAC-7C Streetscape Tree Well for Concrete Sidewalks Per Each.
Pay Item 432S-SAC-7D Streetscape Above Grade Tree Planters with Bench Per Each.
Pay Item 432S-SAC-7E Streetscape Above Grade Tree Well with Seat Per Each.
Pay Item 432S-SAC-7F Streetscape Tree Well without Grate Per Each.
Pay Item 432S-SAC-7G Streetscape Above Grade Galvanized Steel Tree Planters Per Each.

Pedestrian Railing * See modifications for additional information

Pay Item 432S-PRC-1 Pedestrian Railing (Standard 707S-1) Per LF.
Pay Item 432S-PRC-2 Pedestrian ADA Railing – Option 1 (Standard 707S-2) Per LF.
Pay Item 432S-PRC-3 Pedestrian ADA Railing – Option 2 (Standard 707S-3) Per LF.
Pay Item 432S-PRC-4 Pedestrian ADA Railing – Option 3 (Standard 707S-4) Per LF.

* See modifications for additional information

End

SPECIFIC CROSS REFERENCE MATERIALS
Specification 432S, “P. C. Concrete Sidewalks”
### City of Austin Standard Specifications

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### City of Austin Standard Details

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710S-6B Furnishing Location in Greater than 12’ (3.6 M) or Less than 18’ (5.4 M) Sidewalks-Bicycle Rack Siting

American Disabilities Act, Federal Register; Volume 56, No. 144; July 26, 1991
ADA Accessibility Guidelines For Building And Facilities
Designation Description
Section 4.29 Detectable Warnings on Walking Surfaces
Section A4.29.2 Detectable Warnings on Walking Surfaces

Architectural Barriers; Texas Civil Statutes, Article 9102; June 14, 1995
Texas Accessibility Standards (TAS)
Designation Description
Section 4.29 Detectable Warnings on Walking Surfaces
Section A4.29.2 Detectable Warnings on Walking Surfaces

RELATED CROSS REFERENCE MATERIALS

City of Austin Standard Contract Documents
Designation Description
00700 General Conditions
01500 Temporary Facilities
01550 Public Safety and Convenience

City of Austin Utilities Criteria Manual
Designation Description
Section 5.2.3 Utility Adjustments For Roadway Construction Projects

City of Austin Standard Specifications
Designation Description
Item No. 102S.Clearing and Grubbing
Item No. 104S. Removing Portland Cement Concrete
Item No. 110S. Street Excavation
Item No. 132S. Embankment
Item No. 203S. Lime Treatment for Materials In Place
Item No. 204S. Portland Cement Treatment for Materials In Place
Item No. 230S. Rolling (Flat Wheel)
Item No. 232S. Rolling (Pneumatic Tire)
Item No. 234S. Rolling (Tamping)
Item No. 236S. Rolling (Proof)
Item No. 360S. Concrete Pavement
Item No. 402S. Controlled Low Strength Material
Item No. 404S. Pneumatically Placed Concrete
Item No. 405S. Concrete Admixtures
Item No. 411S. Surface Finishes for Concrete