

SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Removal of Sidewalks, Shared Use Paths, and Driveways
- B. Installation of Sidewalks, Shared Use Paths, and Driveways

1.02 DESCRIPTION OF WORK

- A. Remove existing sidewalks, shared use paths, and driveways.
- B. Install shared use paths.
- C. Install sidewalk.
- D. Install driveway.

1.03 SUBMITTALS

Comply with Division 1 - General Provisions and Covenants, as well as the following:

- A. PCC mix design.
- B. HMA mix design.
- C. Brick source, absorption, compressive strength; samples of brick showing texture and color.
- D. Submit type and color of detectable warnings.
- E. Results of required testing.

1.04 SUBSTITUTIONS

Comply with Division 1 - General Provisions and Covenants.

1.05 DELIVERY, STORAGE, AND HANDLING

Comply with Division 1 - General Provisions and Covenants, as well as the following:

- A. Portland Cement Concrete:** See Section 7010.
- B. Hot Mix Asphalt:** See Section 7020.

1.06 SCHEDULING AND CONFLICTS

Comply with Division 1 - General Provisions and Covenants.

1.07 SPECIAL REQUIREMENTS

Provide 10 calendar days advance notification of a pedestrian path closure to the Engineer and the National Federation of the Blind of Iowa (www.nfbi.org).

1.08 MEASUREMENT AND PAYMENT**A. Removal of Sidewalk, Shared Use Path, or Driveway:**

1. **Measurement:** Measurement will be in square yards for the area of sidewalks, shared use paths, or driveways removed.
2. **Payment:** Payment will be at the unit price per square yard for the area of sidewalk, shared use path, or driveway removal.
3. **Includes:** Unit price includes, but is not limited to, sawing, hauling, and disposal of materials removed.

B. Removal of Curb:

1. **Measurement:** Measurement will be in linear feet for removal of curb by grinding or sawing, measured along the back of curb.
2. **Payment:** Payment will be at the unit price per linear foot for the removal of curb.
3. **Includes:** Unit price includes, but is not limited to, hauling and disposal of materials removed.

C. Shared Use Paths:

1. **Measurement:** Each type and thickness of shared use paths will be measured in square yards. The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.
2. **Payment:** Payment will be at the unit price per square yard for each type and thickness of shared use path.
3. **Includes:** Unit price includes, but is not limited to, subgrade preparation, jointing, sampling, smoothness testing and correction, and testing.

D. Special Subgrade Preparation for Shared Use Paths:

1. **Measurement:** Measurement will be in square yards for special subgrade preparation. Measured area will include 2 feet outside of the pavement on either side of the path.
2. **Payment:** Payment will be at the unit price per square yard for the area of special subgrade preparation.
3. **Includes:** Unit price includes, but is not limited to, water required to bring subgrade moisture content to within the required limits.

1.08 MEASUREMENT AND PAYMENT (Continued)**E. PCC Sidewalk:**

1. **Measurement:** Each thickness of PCC sidewalk will be measured in square yards. The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.
2. **Payment:** Payment will be at the unit price per square yard for each thickness of PCC sidewalk.
3. **Includes:** Unit price includes, but is not limited to, minor grade adjustments at driveways and other intersections, subgrade preparation, formwork, additional thickness at thickened edges, jointing, sampling, smoothness testing and correction, and testing.

F. Brick/Paver Sidewalk with Pavement Base:

1. **Measurement:** Measurement will be in square yards for the area of brick/paver sidewalk placed on a pavement base. The area of pavement base will not be measured separately.
2. **Payment:** Payment will be at the unit price per square yard for the area of brick/paver sidewalk.
3. **Includes:** Unit price includes, but is not limited to, subgrade preparation, pavement base, setting bed, neoprene asphalt adhesive for asphalt setting bed, setting the bricks/pavers, installing weep holes and associated materials, and sand/cement joint filler.

G. Detectable Warnings:

1. **Measurement:** Measurement will be in square feet for the area of detectable warnings installed. Paved area beneath detectable warnings will be measured with sidewalk or shared use path item.
2. **Payment:** Payment will be at the unit price per square foot for the area of detectable warnings installed.
3. **Includes:** Unit price includes, but is not limited to, steel bar supports and manufactured detectable warning panels.

1.08 MEASUREMENT AND PAYMENT (Continued)**H. Driveways:****1. Paved Driveways:**

- a. Measurement:** Each type and thickness will be measured in square yards. The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.
- b. Payment:** Payment will be at the unit price for each type and thickness of driveway.
- c. Includes:** Unit price includes, but is not limited to, excavation, subgrade preparation, jointing, sampling, and testing.

2. Granular Surfacing for Driveways:

- a. Measurement:** Measurement will be in square yards or tons, as specified in the contract documents, for the quantity of granular surfacing placed.
- b. Payment:** Payment will be at the unit price per square yard or ton, as specified.
- c. Includes:** Unit price includes, but is not limited to, excavation and preparation of subgrade.

I. Sidewalk, Shared Use Path, and Driveway Assurance Testing:

1. The Contractor will not be responsible for concrete compression or HMA density testing unless otherwise specified in the contract documents.
2. If the contract documents specify that the Contractor is responsible for concrete compression and HMA density testing, performed by an independent testing laboratory hired by the Contractor, measurement and payment will be as follows:
 - a. Measurement: Lump sum item; no measurement will be made.
 - b. Payment: Payment will be at the contract lump sum price.
3. The Contractor will be responsible for payments associated with all retesting resulting from failure of initial tests.

PART 2 - PRODUCTS**2.01 PORTLAND CEMENT CONCRETE**

- A. Class B or C concrete with materials complying with Section 7010. Use coarse aggregate of Class 2 durability or better.
- B. Comply with the following for PCC mixes for sidewalks, shared use paths, and driveways unless otherwise approved by the Engineer.

Table 7030.01: PCC Mixes

	Machine Finish	Hand Finish
Type of Concrete	Class B or C	Class B or C
Slump Minimum	1/2 in.	1/2 in.
Slump Maximum	2 1/2 in.	4 in.
Percent Air Content		
• Target	7%	7%
• Minimum	6%	6%
• Maximum	8 1/2%	8 1/2%

2.02 HOT MIX ASPHALT

Comply with Section 7020 for mix design.

- A. Use Low Traffic (LT), 1/2 inch or 3/8 inch mix.
- B. For shared use paths adjacent to pavement that also functions as the pavement shoulder, use Low Traffic (LT), 1/2 inch mix.
- C. Use asphalt binder complying with Section 7020 with a performance grade of PG 58-28S or 58-34S.

2.03 BRICKS/PAVERS

- A. **Clay Bricks:** Use 8 inch by 4 inch by 2 1/4 inch thick clay paving bricks with straight edges or a maximum chamfer of 1/8 inch manufactured to comply with ASTM C 902, Class SX, Type I. Color selection and surface texture as approved by the Engineer.
- B. **Concrete Pavers:** Supply as specified in the contract documents. Use pavers with straight edges or a maximum chamfer of 1/8 inch.

2.04 SETTING BED FOR BRICKS/PAVERS**A. HMA:**

- Mixture:** Proportion mix using 7% asphalt binder and 93% fine aggregate. Apportion each ton in the approximate ratio of 145 pounds asphalt binder to 1,855 pounds sand. Maintain mix temperature at approximately 250°F during placement.
- Asphalt Binder:** Use asphalt binder complying with Section 7020 with a performance grade of PG 58-28 or 64-22.
- Fine Aggregate:** Use clean, hard sand with durable particles free from adherent coating, lumps of clay, alkali salts, and organic matter. Use sand that is uniformly graded from coarse to fine with all passing the No. 4 sieve and meeting AASHTO T 27.

2.04 SETTING BED FOR BRICKS/PAVERS (CONTINUED)

- B. Pre-mixed High Performance Cold Mix:** If allowed, substitute a pre-mixed high performance cold mix product for the HMA setting bed generally meeting the HMA mixture requirements noted above.
- C. Sand:** Use clean, hand sand free from deleterious materials. Use sand meeting ASTM C 33 that is uniformly graded with all passing the No. 4 sieve and 3% or less passing the No. 200 sieve.

2.05 NEOPRENE MODIFIED ASPHALT ADHESIVE FOR BRICKS/PAVERS**A. Mastic (Asphalt Adhesive):**

Solids (Base):	74% to 76%
Pounds per Gallon:	8 to 8 1/2 pounds
Solvent:	Mineral spirits with a flash point above 100° F

B. Base (2% Neoprene, 10% Asbestos-free Fiber, 88% Asphalt):

Melting Point:	200° F minimum according to ASTM D 36
Penetration:	23 to 27 according to ASTM D 5
Ductility:	1250 mm minimum according to ASTM D 113 @ 25° C, and a rate of 50 mm/minute

2.06 BRICK/PAVER JOINT FILLER

Dry sand-cement mixture consisting of one part masonry cement complying with ASTM C 91 and three parts sand complying with ASTM C 144 and passing the No. 16 sieve. Provide colored cement as specified in the contract documents.

2.07 DETECTABLE WARNINGS

Use manufactured detectable warning panels with a non-slip surface and raised truncated domes. Comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (also known as PROWAG) for contrast and dimension requirements. Also comply with Iowa DOT Materials I.M. 411.

2.08 GRANULAR DRIVEWAY SURFACING

Class A crushed stone or Class C gravel complying with Iowa DOT Section 2315.

2.09 ISOLATION AND EXPANSION JOINT SEALANT

Use a polyurethane, self-leveling sealant complying with ASTM C 920. Application temperature range of 40 to 120°F. Minimum elongation 700%.

PART 3 - EXECUTION**3.01 REMOVALS**

- A. Remove sidewalks, shared use paths, driveways, bricks, and curbs to the removal limits specified in the contract documents.
- B. Saw pavement full depth in straight lines to the specified removal limits.
- C. Remove to the specified removal limits without damage to adjacent property, trees, utilities, or pavement that are to remain in place.
- D. Salvage and stockpile all bricks removed.
- E. Grind or saw existing curbs at locations specified in the contract documents to install sidewalks, shared use paths, and driveways.
- F. Dispose of rubble and debris resulting from removal operations.

3.02 SUBGRADE PREPARATION**A. Shared Use Paths:**

- 1. **Subgrade Preparation:** Comply with Iowa DOT Section 2109.
- 2. **Special Subgrade Preparation:**
 - a. Construct subgrade to final elevation.
 - b. Scarify and mix the top 6 inches of subgrade material to a width equal to that of the proposed pavement, plus 2 feet on each side.
 - c. Compact loose subgrade material with Type A compaction complying with Section 2010.
 - d. Proof roll compacted subgrade according to Section 2010.

B. Sidewalks and Driveways:

- 1. Remove all vegetation and roots from ground surface.
- 2. Construct grade to final subgrade elevation.
 - a. Cut area: Remove all material that will be displaced by the sidewalk.
 - b. Fill area: Scarify the surface to be covered with embankment to a depth of at least 6 inches and compact. Construct embankment in lifts of 6 inches or less and compact each lift. Tamp surface with a mechanical tamper until firm and unyielding.
- 3. Remove all soft, spongy, or yielding spots and fill the void with suitable backfill material.

3.03 ADJUSTMENT OF FIXTURES

- A. Adjust fixtures to conform to the finished pavement surface. Cooperate and coordinate with the utility agency to ensure proper fixture adjustment.
- B. Comply with Sections 5020, 6010, or 8010 as appropriate.

3.04 PCC SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS

A. Form Setting: Comply with Section 7010 with the following additional requirements and exceptions.

1. Slip form paving equipment may be allowed in lieu of setting forms, if approved by the Engineer.
2. Wood forms are allowed.
3. Use of an automated subgrade trimmer is not required.
4. Set forms true to line and grade and hold them rigidly in place by stakes placed outside the forms and flush with or below the top edge of the forms.
5. Measure or stake as required to construct project elements. If either of the following is met and construction survey is not a bid item, the Contracting Authority will verify that form work complies with the design requirements:
 - a. The tolerance between the design running slope and the maximum allowable running slope is less than 1.0%.
 - b. The tolerance between the design cross slope of the sidewalk, turning space, or shared use path and the maximum allowable cross slope is less than 0.5%.

If adequate tolerances are contained in the design, the Contracting Authority will not verify the form work for the construction of sidewalks or shared use paths. If field adjustments cause changes that will bring the facility into the range of tolerances shown above, notify the Engineer prior to construction.

B. Concrete Pavement Placement:

1. **Shared Use Paths:** Comply with Section 7010.
2. **Sidewalk:**
 - a. Maintain moist subgrade in front of paving operation
 - b. Deposit concrete on the subgrade as required to minimize rehandling to prevent segregation.
 - c. Hand spread with shovels, not rakes.
 - d. Place concrete as required to slightly overfill the space between the forms.
 - e. For thicknesses less than 5 inches, consolidate by knifing with hand tools. When thickness is 5 inches or greater, consolidate with hand or mechanical vibrators meeting Section 7010, 3.01, C, 3. Smooth by use of a straightedge.
 - f. Do not contaminate freshly mixed concrete with earth or other foreign materials.
3. **Driveways:** Comply with Figures 7030.101 and 7030.102 and Section 7010. The use of a paving machine is not required.

C. Finishing:

1. **Shared Use Paths and Driveways:**
 - a. Comply with Section 7010.
 - b. Provide a burlap drag or broom finish.
2. **Sidewalks:**
 - a. Use a wood float to depress the large aggregate and create a dense surface.
 - b. Allow concrete to set until all shine has disappeared from the surface.
 - c. Smooth with a metal trowel until surface is free from defects and blemishes.
 - d. Construct joints by sawing or by using a jointer or groover tool.
 - e. Finish edges of sidewalk or driveway with an edging tool having a radius of approximately 1/2 inch. Ensure tool marks do not appear on the finished surface.
 - f. Brush with a soft broom at right angles to the side forms to provide a non-skid surface.

3.04 PCC SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS (Continued)

- D. Curing:** When curing is specified in the contract documents, comply with Section 7010.
- E. Form Removal:** Comply with Section 7010.
- F. Jointing:**
- 1. Construction Joints:**
 - a. Locate construction joints to provide uniform joint spacing.
 - b. Place a construction joint at the close of each day's work or when depositing of concrete is stopped for 45 minutes or more.
 - c. Form construction joint by using a header board. Set perpendicular to the surface and at right angles to the centerline.
 - 2. Transverse Contraction Joints:**
 - a. Shared Use Paths:**
 - 1) Space transverse joints equal to the width of the shared use path, or as specified in the contract documents.
 - 2) Saw contraction joints according to Section 7010.
 - b. Sidewalks and Driveways:**
 - 1) Space sidewalk contraction joints equal to the width of the sidewalk.
 - 2) Space driveway contraction joints so panel length does not exceed 12 feet.
 - 3) Form transverse contraction joints to a depth of 1 1/4 inches with a pointed trowel or jointing tool. In lieu of forming, joints may be sawed within 12 hours of placement with a 1/8 inch blade saw to a depth of 1/3 the pavement thickness. Use a straightedge if joints are sawed with a hand-held saw.
 - 3. Longitudinal Contraction Joints:**
 - a. Shared Use Paths and Sidewalks:** Saw joint to 1/8 inch wide and to a depth of 1/3 the pavement thickness.
 - b. Driveways:**
 - 1) Space longitudinal contraction joints so panel width does not exceed 12 feet.
 - 2) Form longitudinal contraction joints to a depth of 1 1/4 inches with a pointed trowel or jointing tool. In lieu of forming, joints may be sawed with a 1/8 inch blade saw to a depth of 1/3 the pavement thickness. Use a straightedge if joints are sawed with a hand-held saw.
 - 4. Isolation Joints:**
 - a. Install isolation joints where sidewalks, shared use paths, or driveways abut roadway pavement, parking lots, buildings, and structures.
 - b. For a sidewalk constructed with a driveway, install an isolation joint on the property side of the sidewalk and a 'C' or 'E' joint on the street side of the sidewalk.
 - c. Install a 1/2 inch or 3/4 inch thick strip of preformed resilient joint material, according to Section 7010, to the full depth of concrete. Trim any isolation joint material protruding above the finished work to the level of the abutting concrete.
 - d. If the isolation joint is to be sealed, place the preformed material 1/2 inch below the level of the abutting concrete.
 - 5. Joint Sealing:**
 - a. Do not seal construction or contraction joints in sidewalks, shared use paths, or driveways.
 - b. If sealing of expansion or isolation joints is specified in the contract documents, trim preformed joint material to a depth of 1/2 inch below the concrete surface. Ensure the joint is clean and dry. Install joint sealant per manufacturer's recommendations.

3.05 HMA SHARED USE PATHS AND DRIVEWAYS

Comply with Section 7020.

3.06 BRICK/PAVER SIDEWALKS WITH A PAVEMENT BASE**A. General:**

1. Comply with Figure 7030.203.
2. Use a cross-section and patterns as specified in the contract documents or approved by the Engineer.
3. Do not use broken bricks or materials with stained faces in the paving areas.
4. Construct the concrete base to comply with PCC sidewalk construction specifications.

B. Setting Bed:

1. Place 3/4 inch depth control bars on the base to serve as guides for the striking board. Shim depth control bars as necessary to adjust bedding thickness and to ensure the top surface of pavers will be at the required finished grade.
2. Place bedding material between the parallel depth control bars. Pull striking board over bars several times. After each pass, spread fresh bedding material over low or porous spots to produce a smooth and even setting bed. After placing and smoothing each section, advance depth control bars to next section. After removal of depth control bars and shims, carefully fill any depressions that remain.
3. While still hot, roll the HMA setting bed with a power roller to a nominal depth of 3/4 inch.
4. Ensure the joints in the concrete base do not project through the HMA setting bed.
5. Apply neoprene modified asphalt adhesive over the top surface of the cooled asphalt setting bed with notched trowel with serration not exceeding 1/16 inch. Allow adhesive to dry to the touch before placing pavers.

C. Weep Holes:

1. Install 2 inch diameter, 12 inch long, PVC pipe even with the top of the asphalt setting bed at the locations identified on the plans.
2. Fill pipe with 3/4 inch clean rock and cover weep hole with engineering fabric.
3. Install minimum of 12 inch deep and 12 inch wide reservoir of clean 3/4 inch rock around the pipe below the PCC sidewalk base or extend the rock reservoir to the pavement subdrain.

D. Bricks/Pavers:

1. Place the bricks/pavers by hand in straight courses with hand tight joints and uniform top surface.
2. Sweep dry joint filler into joints until the joints are completely filled.
3. Fog surface lightly with water to cure cement.
4. Clean any cement stains from bricks/pavers surface. Remove stains from other concrete surfaces.

3.06 BRICK/PAVER SIDEWALKS WITH A PAVEMENT BASE (Continued)

- E. Protection:** Protect newly laid bricks/pavers at all times using panels of plywood. Panels can be advanced as work progresses; however, keep the plywood protection in areas that will be subjected to movement of materials, workers, and equipment. Take precautions in order to avoid depressions and protect brick/paver alignment until cured and ready for pedestrian or vehicle traffic.

3.07 DETECTABLE WARNING INSTALLATION

Set detectable warning panels in fresh concrete according to the manufacturer's recommendations and Figure 7030.210.

3.08 SLOPE AND SMOOTHNESS TESTING**A. Slope for Sidewalks, Curb Ramps, Turning Spaces, and Shared Use Paths:**

1. Complete slope measurements and documentation according to Iowa DOT Materials I.M. 363.
2. At no additional cost to the Contracting Authority, remove and replace all sections not meeting PROWAG requirements as detailed in SUDAS Design Manual Section 12A-2.

B. Smoothness for Shared Use Paths and Driveways:

1. Check finished surface with a 10 foot straightedge placed parallel to the centerline. Mark areas showing high spots of more than 1/4 of an inch in 10 feet.
2. If directed by the Engineer, correct marked areas by grinding down with an approved grinding tool to an elevation where the area will not show deviations in excess of 1/8 inch.

3.09 GRANULAR DRIVEWAY SURFACING

Comply with Iowa DOT Section 2315.

3.10 CLEANING

- A. Remove all litter and construction materials or tools immediately after the end of the curing period.
- B. Remove excess dirt from the site.
- C. Broom clean completed sidewalks, shared use paths, and driveways.

3.11 MATERIAL TESTING

- A. General:** When testing is specified in the contract documents as the Contractor's responsibility, provide testing using the services of an independent testing laboratory approved by the Engineer.
- B. Concrete Compression Tests:** When the concrete volume placed on a single day exceeds 20 cubic yards, comply with the following test requirements. When deficiencies are encountered, comply with Section 7010, 3.07, E.
 1. Prepare at least two test cylinders per day.
 2. If the concrete volume placed on a single day exceeds 200 cubic yards, prepare two test cylinders for each 200 cubic yards placed.

3.11 MATERIAL TESTING (Continued)

3. Provide 7 and 28 calendar day tests according to ASTM C 39. Minimum compressive strength is 2,000 psi at 7 days and 4,000 psi at 28 days.
- C. HMA Density and Thickness Tests:** When the area of HMA placed on a single day exceeds 100 square yards, comply with the following test requirement. When deficiencies are encountered, comply with Section 7020, 3.04, A.
1. Prepare at least two cores per day.
 2. If the area of HMA placed on a single day exceeds 2,000 square yards, prepare two cores for each 2,000 square yards placed.

3.12 SIDEWALK AND CURB RAMP COMPLIANCE

Compliance with cross slopes and grades, as well as all other elements, for sidewalks and curb ramps is crucial. If the construction cannot be completed as specified in the contract documents, it may be necessary to adjust slopes within the accepted legal limitations. Contact the Engineer prior to placement of the concrete if changes from the values specified in the contract documents are being made.

END OF SECTION