

**Supplemental Specification
2012 Standard Specification Book**

SECTION 13553M

ATMS CONDUIT

Delete Article 1.3, paragraph G and replace with the following:

- G. State of Utah Administrative Rules

Delete Article 1.5 paragraph B and replace with the following:

- B. Refer to this Section articles 3.2 paragraph F4, 3.2 paragraph I1, and 3.7 paragraph A.

Delete Article 2.1 paragraph A3 and replace with the following:

- 3. HDPE conduit with ribbed or smooth interior.

Add Article 2.1, paragraph A6:

- 6. Microduct
 - a. HDPE microduct with an outside/inside diameter of 0.630/0.512 inch.
 - b. Microduct having a ribbed interior.
 - c. Watertight couplers rated for a minimum of 200 psi.
 - d. Microduct bundle within a single 0.070 inch thick polyethylene oversheath.
 - e. Microduct bundles must contain a factory installed #14 AWG solid, insulated locate wire and a minimum of two rip cords for removal of oversheath.

Add Article 2.1, paragraph B4 and 5:

- 4. Microduct types:
 - a. Individual 0.630/0.512 inch (16/13 mm) microducts installed loosely within new or existing conduit.
 - b. MD2, MD3, MD4 and MD7: microduct bundle containing two, three, four or seven 0.630/0.512 inch microducts respectively.

- c. Only factory-assembled bundles are allowed in bundled applications.
- 5. Color-code microducts and oversheaths as follows:
 - a. Individual microducts installed loosely within conduit or bundled within oversheath:
 - 1) blue
 - 2) orange
 - 3) green
 - 4) brown
 - 5) slate
 - 6) white
 - 7) red
 - 8) black
 - b. Oversheaths:

Bundle #1	orange
Bundle #2	blue
Bundle #3	green
Bundle #4	brown.

Add Article 2.1, paragraph H4 and 5:

- 4. Sand
 - a. Friable natural river or bank aggregate, free of loam, detrimental, or soluble or organic matter.
 - b. $\frac{3}{8}$ inch minus, well graded.
 - c. Refer to this Section, Article 3.3, paragraph C3 for placement and compaction requirements.
- 5. Hand-mix grout
 - a. Minimum strength – 50 psi
 - b. Maximum strength – 150 psi
 - c. Slump – 5 inches to 10 inches

Delete Article 3.1 paragraph B and replace with the following:

- B. The placement of conduit in areas of parallel utilities must meet Department Utilities and Local Utilities standards and be approved by the Engineer. Refer to State of Utah Administrative Rule R930-7.

Delete Article 3.1 paragraph H and replace with the following:

- H. Minimum Cover of Conduit**
 - 1. Minimum cover in pavement is 4ft and minimum cover in sidewalks is 3 ft.

2. Minimum cover in highway right-of-way, greater than 20 ft from the edge of the pavement is 3 ft.
3. Minimum cover in highway right-of-way, within 20 ft of the edge of the pavement is 5 ft.
4. Refer to State of Utah Administrative Rule 930-7.

Delete Article 3.2 paragraph F and replace with the following:

- F. Proof all conduit before installation of cabling and detectable pull tape.
1. Use a mandrel approved by the Engineer.
 2. Schedule proofing with the Engineer at least 5 working days in advance of performing the work.
 3. Proof all conduit with a Department representative witness present.
 4. Submit a completed Conduit Mandrel Test form to the Engineer for all ATMS conduit prior to Final Acceptance. Refer to <http://www.udot.utah.gov/go/standardsreferences>.
 5. Proof microducts using approved proofing balls.
 6. Mandrels and proofing balls must maintain a minimum 80 percent fill ratio of inside diameter of the conduit or microduct being tested.
 7. Proofing must occur after all junction boxes have been installed to final grade, including placement of flowable fill or hand-mix grout at junction box walls, and after all excavation in the immediate proximity of the conduit system has been completed.
 - a. Re-proof any conduit segment where excavation has occurred near the conduits following initial proof testing and prior to final project acceptance.

Add Article 3.2, paragraph G6:

6. Detectable pull tape not required in microducts.

Delete Article 3.2, paragraph K and replace with the following:

- K. Encase open trench conduit in sand backfill covered by flowable fill within existing roadway, proposed roadway and sidewalk pavement areas only.
1. Seal junction box wall around conduits using flowable fill or approved hand-mix grout.
 2. Use sand backfill in all other areas.
 3. Refer to AT Series Standard Drawings.

Delete Article 3.2 paragraph O and P and replace with the following:

- O. Install a bushing or adapter at ends of all nonmetallic conduit that contain a conductor according to the NEC.
- P. Furnish and install Utility Marker Posts along the longitudinal conduit running line. Refer to AT Series Standard Drawings.
- Q. Verify that the microduct bundle locate wire is detectable throughout its entire length by performing a continuity test or equivalent verification.

Delete Article 3.3, paragraph C3 and replace with the following:

- 3. Sand Backfill
 - a. Use sand backfill in trench sections outside of existing roadway, proposed roadway, and sidewalk pavement areas, including exposed conduit locations when plowing or boring.
 - b. Provide 12 inches of sand backfill above conduit in trench.
 - 1) Backfill trench above sand to finished grade using native material.
 - c. Compaction of sand backfill is not required.

Delete Article 3.3, paragraph F and G and replace with the following:

- F. Flowable Fill or Hand-mix Grout
 - 1. Install flowable fill or approved hand-mix grout to the wall of junction box to seal conduit entry into junction box.
 - 2. Clean excess flowable fill or hand-mix grout from the inside of the junction box.
- G. Install all conduits so the flowable fill or sand backfill completely encases all exterior surfaces of the conduit.
 - 1. Separate multi-duct conduits using a commercially available conduit spacer or approved equivalent.
 - 2. Place spacers no more than 4 ft apart and not more than 2 ft from each coupler.

Delete Article 3.3, paragraph J

Add Article 3.5, paragraph E:

- E. Intercept individual microducts from existing microduct bundle mid-span and reroute to new junction box location:
1. Type II-PC junction box
 - a. Bury at existing microduct bundle depth.
 - b. Notch the 24-inch box walls and install junction box over existing microduct bundle.
 - c. Provide 12 inches of free draining granular backfill borrow underneath junction box.
 - d. Encase all conduit in flowable fill or approved hand-mix grout where the conduit enters the junction box.
 - e. Place marker ball or disk in junction box.
 - f. Ground rod, concrete collar, and grout floor are not required.
 - g. Verify that flowable fill is not in contact with the junction box lid by placing 6 inches of untreated base course or sand backfill on lid to allow future access when flowable fill backfill is required to bottom of new pavement.
 2. Conduit and microduct bundle inside of buried Type II-PC junction box.
 - a. Install conduit from buried junction box to new junction box location for rerouting of individual microducts. Provide a #14 AWG solid, insulated locate wire inside of new conduit between junction boxes.
 - b. Extend conduit and microduct oversheath 6 inches beyond inside wall of the junction box.
 - c. Expose microducts by removing no more than 20 inches of oversheath.
 - d. Identify and cut only the individual microducts to be rerouted.
 - e. Use approved couplers and extend microducts to new junction box using corresponding microduct color.
 - f. Splice all locate wires together using an approved waterproof connector.
 - 1) Verify that the locate wire conductors are not exposed.
 3. New junction box location
 - a. Install new junction box within 20 ft of buried junction box or within 20 ft . of edge of roadway when existing microduct bundle is underneath roadway, to provide access to locate wire for mapping and locating purposes.

Add Article 3.6, paragraph E:

- E. Buried microduct bundle coupling and repair:
 - 1. Expose microducts by removing no more than 12 inches of oversheath beyond area to be coupled or repaired.
 - a. Trim microducts to length as necessary to eliminate all bends and deflection.
 - 2. Use approved couplers.
 - 3. Splice the locate wires together using an approved waterproof connector.
 - a. Verify that the locate wire conductors are not exposed.
 - 4. Protect exposed microducts, couplers and locate wire using split duct.
 - a. Seal split duct joints and split duct ends around microduct bundle oversheath using approved waterproof sealing tape prior to backfill.