SECTION 02752 - CONCRETE CULVERTS, HEADWALLS, AND MISCELLANEOUS DRAINAGE STRUCTURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The General Provision of the contract, including the General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this section.

B. This Section shall be in accordance with FAA Specification Item D-752 - Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures, as included as an attachment to this Section.

1.2 SUMMARY

This Section includes the requirements for furnishing and installing reinforced concrete culverts, headwalls, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the Engineer.

1.3 REFERENCES

A. FAA Specification Item D-752 – Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures as modified herein.

B. Section 02152, Excavation, Subgrade, and Embankment.

C. Section 02610, Concrete for Miscellaneous Structures.

D. Section 02751, Manholes, Catch Basins, Inlets and Inspections Holes.

1.4 SUBMITTALS

Prior to commencing Work in this Section, submit information on the following items according to Section 01300, Submittals:

A. Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures Product Information. Provide, at minimum the following:

1. Products and materials data and shop drawings, including reinforcement, steps, frame and cover.

2. Manufacturer’s calculations for precast concrete structures, signed and sealed by a licensed Engineer.

3. For cast-in-place structures – Provide a concrete mix design in accordance with Section 02610, Concrete for Miscellaneous Structures.

1.5 LOADING REQUIREMENTS

A. Unless otherwise noted, structures including frame and cover installed within the Runway/Taxiway Safety Areas shall be aircraft rated. Structures including frame and cover outside of Runway/Taxiway Safety Areas shall be full H-20 traffic rating.

PART 2 PRODUCTS

2.1 DRAINAGE STRUCTURES

Concrete Culverts, Headwalls, And Miscellaneous Drainage Structures and installation material shall be of the type called for on the plans and conform to the FAA Specification Item D-752.

A. Installation materials:

1. Frame and Cover: Frame and covers shall be manufactured in accordance with local regulatory specifications and shall be clearly embossed with manufacturer's product name. Frame and cover shall be aircraft or traffic load rated in accordance with Section 1.4.

2. Concrete shall conform to the Section 02610, Concrete for Miscellaneous Structures.

3. Ladders: Ladder rungs to be provided if shown on Plans.

PART 3 EXECUTION

3.1 DRAINAGE STRUCTURE INSTALLATION

A. Install Concrete Culverts, Headwalls, And Miscellaneous Drainage Structures per FAA Specification Item D-752

B. Excavate trenches per Section 02152, Excavation, Subgrade and Embankment.

3.2 CAST-IN-PLACE CONCRETE STRUCTURES

A. Do not drop concrete freely more than six feet or where reinforcing bars will cause segregation. Use spouts, elephant trunks, or other approved means prevent segregation.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. Method of measurement and payment shall be in accordance with FAA Specification Item D-752, paragraph 752-4.1.

4.2 BASIS OF PAYMENT

A. Basis for payment shall be in accordance with FAA Specification Item D-752, paragraph 752-5.1.

PART 5 ATTACHMENTS

5.1 FAA SPECIFICATIONS

A. D-752, Concrete Culverts, Headwalls, And Miscellaneous Drainage Structures

END OF SECTION 02752

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ITEM D-752 CONCRETE CULVERTS, HEADWALLS, AND MISCELLANEOUS DRAINAGE STRUCTURES

DESCRIPTION

752-1.1 This item shall consist of reinforced concrete culverts, headwalls, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

752-2.1 Concrete. Reinforced concrete shall meet the requirements of Item P-610.

CONSTRUCTION METHODS

752-3.1 Unclassified excavation.

a. Trenches and foundation pits for structures or structure footings shall be excavated to the lines and grades and elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only; and the RPR may approve, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing steel is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to perform and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for the structure.

d. All bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage the finished concrete. The cost of removal shall be included in the unit price bid for the structure.

e. After each excavation is completed, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

752-3.2 Backfilling.

a. After a structure has been completed, backfilling with approved material shall be accomplished by applying the fill in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted. The field density of the compacted material shall be at least 90% of the maximum density for cohesive soils and 95% of the maximum density for noncohesive soils. The

maximum density shall be determined in accordance with ASTM D698. The field density shall be determined in accordance with ASTM D1556.

b. No backfilling shall be placed against any structure until approved by the RPR. For concrete, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill or the placement methods.

c. Fill placed around concrete culverts shall be deposited on each side at the same time and to approximately the same elevation. All slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent wedge action against the structure.

d. Backfill will not be measured for direct payment. Performance of this work shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for "unclassified excavation for structures."

752-3.3 Weep holes. Weep holes shall be constructed as shown on the plans.

752-3.4 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankment, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

752-4.1 All work under this section will not be measured for payment.

BASIS OF PAYMENT

752-5.1 Items covered by this section will be paid by lump sum. The contract price paid shall be for full compensation for furnishing and placing all materials and all labor, equipment, tools, and incidentals necessary for each of the construction phases.

Payment will be made under:

Item No.	Description	Unit
02752.1A	Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures (Phases 0 through 3)	Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft^3 (600 kN-m/m^3))

ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

END OF ITEM D-752

END OF SECTION 02752