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| REVIEW OF NEW SPECIFICATION OR SPECIFICATION CHANGE | | | | **Log No.**  603-6 |
| **Specification Section No.:** 603, 617, and 624 | | | **Item:** Table 624 - 1 | |
| **Originating Office:** Pipe Materials Task Group | | | **By:** Rees | |
| **Date Sent For Review:** November 17, 2010 | | | **Date Comments Due: December 15, 2010** | |
| Please submit response to: STANDARDS AND SPECIFICATIONS UNIT, ROOM 290, HEADQUARTERS, DENVER | | | | |
| **Reviewer** | **Concurrent Reviews – Others Commenting** | | The attached Draft Specification is submitted for your review and comments. If not returned by Date Comments Due, the draft specification will be considered to be approved unless the Specification Unit of Staff Design [(303) 757-9474, (303) 757-9402] is advised otherwise.  **REMARKS:**  If these proposed modifications are approved, this Table will be modified and a revised version of the Revision of Sections 603, 617, and 624, Culvert and Sewer Pipe, will be issued. | |
|  | **Spec Committee Members:** |  |
|  | Chairman: Aschenbrener | X |
|  | Region 1: Cox | **X** |
|  | Region 2: Burch | **X** |
|  | Region 3: Alexander | **X** |
|  | Region 4: Frieler | **X** |
|  | Region 5: Beller | **X** |
|  | Region 6: Koenig | **X** |
|  | Project Development: Lacey | **X** |
|  | Specifications: Brinck | **X** |
|  | Bridge: Hasan | **X** |
|  | Agreements: Wassenaar | **X** |
|  | Materials: Zufall | **X** |
|  | Traffic Engineering: Matthews | **X** | REVIEWER COMMENTS:  ( ) Approved ( ) Disapproved ( ) Modified  If disapproved or modified, give reason why and show any modifications on the attached draft copy:    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_  Name/Signature Date | |
|  | Maintenance: Mueller | **X** |
|  | FHWA: Urban | **X** |
|  | Attorney General: Spear | **X** |
|  | Attorney General: Morrow | **X** |
|  |  |  |
|  | **Others:** |  |
|  | Colorado Contractors Assoc.: Moody | **X** |
|  |  |  |
|  | **Technical Committees:** |  |
|  | Bridge |  |
|  | Culvert |  |
|  | Joint Co-op, CCA/CDOT |  |

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| **COLORADO DEPARTMENT OF TRANSPORTATION** **SUBMITTAL OF NEW SPECIFICATION OR SPECIFICATION CHANGE** | | | Log No. (Assigned by Standards and Specifications Unit) | |
| TO: Standards and Specifications Unit, Project Development, Suite 290 | | FROM:  PIpe Materials Task Group  (Region, Branch or Technical Committee) | | |
| SPECIFICATION SECTION NO.  603, 617, and 624 | ITEM  Culvert and Sewer Pipe | | | Priority  Routine Fast |
| Reason for this new or changed specification:  As part of the recent modifications to the CDOT Pipe Selection policy, this spec change is required to include PVC pipe to a higher level CR level (due to modifying abrasion level) | | | | |
| New or Revised Specification:  Included with email. | | | | |
| Note: See Procedural Directive 513.1 for a description of appropriate specification development procedures. | | | | |

**CDOT Form 1215 10/01**

REVISION OF SECTIONS 603, 617 and 624

CULVERT AND SEWER PIPE

**NOTICE**

This is a standard special provision that revises or modifies CDOT’s *Standard Specifications for Road and Bridge Construction* It has gone through a formal review and approval process and has been issued by CDOT’s Project Development Branch with formal instructions for its use on CDOT construction projects. It is to be used as written without change. Do not use modified versions of this special provision on CDOT construction projects, and do not use this special provision on CDOT projects in a manner other than that specified in the instructions unless such use is first approved by CDOT’s Standards and Specifications Unit. The instructions for use on CDOT construction projects appear below.

Other agencies which use the *Standard Specifications for Road and Bridge Construction* to administer construction projects may use this special provision as appropriate and at their own risk.

**Instructions for use on CDOT construction projects:**

Use in projects having culvert pipe.

REVISION OF SECTIONS 603, 617 and 624

CULVERT AND SEWER PIPE

Sections 603, 617, and 624 are hereby revised for this project as follows:

Delete subsection 603.01 and replace it with the following:

**603.01**  This work consists of the construction of culverts (cross drains), side drains, storm drains, and sanitary sewers hereinafter referred to as "conduit," where a specific pipe material is required, and nestable semicircular pipe for encasement. Work shall be in accordance with these specifications and in conformity with the lines and grades shown on the plans or established.

Delete Section 617.

Delete Section 624 and replace it with the following:

**SECTION 624**

**DRAINAGE PIPE**

**DESCRIPTION**

**624.01** This work consists of furnishing and installing pipe defined by class for culverts (cross drains), side drains, and storm sewers in accordance with these specifications and in conformity with the lines and grades shown on the plans or established.

**MATERIALS**

**624.02** Materials shall meet the requirements in the Contract and in the following subsections.

**Abbreviation Description Subsection**

CSP Corrugated Steel Pipe 707.02

Bit. Co. CSP Bituminous Coated

Corrugated Steel Pipe 707.03

A.F. Bo. CSP Aramid Fiber Bonded

Corrugated Steel Pipe 707.03

CAP Corrugated Aluminum Pipe 707.06

PCSP- both sides Precoated Corrugated Steel Pipe

coated on both sides with 10 mils

minimum 707.10

RCP Reinforced Concrete Pipe,

Type I, II, or V Cement 706.02

NRCP Nonreinforced Concrete Pipe,

Type I, II, or V Cement 706.01

Plastic Polyvinyl Chloride

and Polyethylene 712.13

All precoated sheet steel for PCSP culvert shall be tested by the manufacturer for coating holidays and certified to be free of defects. The coating will be visually inspected by the Engineer during construction and all damage found shall be repaired in an approved manner.

Connecting bands shall receive the same corrosion protection as the pipe with which they are used. Coatings conforming to the requirements of Sections 706 and 707 will be permitted as applicable. Connecting bands, and pipe extensions shall be of similar metal, or of non-metallic material, to avoid galvanic corrosion.

End sections shall be either concrete or steel or as designated in the plans. Plastic end sections will not be allowed for any applications.

The Contractor may furnish any pipe material allowed in Table 624-1 for the class of pipe specified in the Contract. The Contractor shall state at the preconstruction conference the pipe materials intended to be furnished.

**TABLE 624-1**

**Materials Allowed for Class of Pipe**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Material Allowed\*\*** | **Class of Pipe\*** | | | | | | | | | | |
| **0** | **1** | **2** | **3** | **4** | **5** | **6**4 | **7** | **8** | **9** | **10**4 |
| CSP | Y | N | N | N | N | N | N | N | N | N | N |
| Bit. Co. CSP | Y | Y1 | N | N | N | N | N | N | N | N | N |
| A.F. Bo. CSP | Y | Y | Y | Y | Y | Y | Y | N | N | N | N |
| CAP | Y | Y2 | Y2 | Y2 | Y2 | Y | N | N | N | N | N |
| PCSP - both sides | Y | Y | Y | Y | N | N | N | N | N | N | N |
| PVC6 | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| PE6 | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| RCP (SP0)3,5 | Y | Y | N | N | N | N | N | Y | N | N | N |
| RCP (SP1)3,5 | Y | Y | Y | N | N | N | N | Y | Y | N | N |
| RCP (SP2)3,5 | Y | Y | Y | Y | Y | N | N | Y | Y | Y | N |
| RCP (SP3)3,5 | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| \* As determined by the Department in accordance with the CDOT *Pipe Selection Guide*. Determination is based on abrasion and corrosion resistance.  \*\* Y=Yes; N=No.  1 Coated Steel Structural Plate Pipe of equal or greater diameter, conforming to Section 510, may be substituted for Bit. Co. CSP at no additional cost to the project.  2 Aluminum Alloy Structural Plate Pipe of equal or greater diameter, conforming to Section 510, may be substituted for CAP at no additional cost to the project.  3 SP= Class of Sulfate Protection required in accordance with subsection 601.04 as revised for this project. RCP shall be manufactured using the cementitious material required to meet the SP class specified.  4 For pipe classes 6 and 10, the RCP shall be coated in accordance with subsection 706.07 when the pH of either the soil or water is less than 5. The Contract will specify when RCP is to be coated.  5 Concrete shall have a compressive strength of 4500 psi or greater.  6 In accordance with subsection 712.13. | | | | | | | | | | | |

Where class of pipe specified allows the use of metal pipe, its use will be limited in accordance with the resistivity requirements in Table 624-2. The Contract will state whether the resistivity requirements apply.

**TABLE 624-2**

**Resistivity Requirements For Metal Pipes**

|  |  |  |
| --- | --- | --- |
| **SOIL SIDE** | | **MINIMUM REQUIRED GAUGE THICKNESS FOR METAL PIPE MATERIAL** |
| Resistivity, R (Ohm – cm) | pH |
| ≥1,500 | 5.0-9.0 | 16 Gauge Aluminized Type 2 |
| ≥250 | 3.0-12.0 | 16 Gauge Polymer Coated |

The minimum wall thickness for metal pipe shall be the gage shown on Standard Plan M-603-1 unless otherwise specified in the Contract.

**CONSTRUCTION REQUIREMENTS**

**624.03** Installation shall conform to the requirements of Section 603 or Section 510 as applicable.

Joining and installation of plastic pipe shall conform to ASTM D 2321 and the manufacturer's recommendations.

**METHOD OF MEASUREMENT**

**624.04** Drainage pipe will not be measured but will be the net length of pipe called for on the plans, except when field changes are ordered or when there are errors on the plans. In case of exceptions, the quantity to be measured shall be the actual net length of conduit measured along the bottom centerline of the installed pipe. The net length shall include end sections when required.

**BASIS OF PAYMENT**

**624.05**  The accepted quantities of drainage pipe will be paid for at the contract unit price per linear foot for the specified size and class.

Payment will be made under:

**Pay Item Pay Unit**

\_\_\_\_\_Inch Drainage Pipe (Class\_\_) Linear Foot

Structure excavation and structure backfill will be measured and paid for in accordance with Section 206.