| MATERIAL | | REFERENCE / TESTED BY | PURP. | SAMPLED BY / METHOD | MIN. FREQ. | MIN. QUANT. / CONTAINER | CERT. / DISTR. | SMALL QUANTITY | TYPICAL HANDLING TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| BACKFILL | Density | 701.08<br>Proj. Engr. | Accept. | Proj. Engr.<br>S 401 | 1/100 ft/ location/lift* side or pipe | ------ | ------ | ------ | ------ | *1/3 the pipe height & every 3 feet of backfill thereafter. Per compacted area. |
| | Density (Non-paved Side Drains) | 701.08<br>Proj. Engr. | Accept. | Proj. Engr.<br>S 401 | * | ------ | ------ | ------ | ------ | *Visual inspection & compaction to the satisfaction of the engineer with the exception of plastic pipe. |
| | Granular Material* | 701.02<br>1003.07<br>Dist. Lab | Accept. | Proj. Engr.<br>S 401 | 1/1000 $yd^3$ | 1 full sample sack | ------ | ----- | 4 days | *pH and resistivity required for metal pipe. Plastic pipe requires granular material. |
| | Flowable Fill | 701.08 (1)(d)<br>Mix Design | SEE SECTION 710 OF THIS MANUAL. | | | | | | | |
| | Protective Soil Blanket | 701.02<br>Dist. Lab | Accept. | Proj. Engr.<br>S 401 | 1/1000 $yd^3$* | 1 full sample sack | ------ | 300 $yd^3$ | 10 days | *Not required if tested & approved as required excavation or borrow pit material. |
| | Selected Soil* | 203.06<br>701.02<br>Dist. Lab | Accept. | Proj. Engr.<br>S 401 | 1/1000 $yd^3$ | 1 full sample sack | ------ | ------ | 10 days | *pH and resistivity required for metal pipe. Plastic pipe requires granular material. |
| | Usable Soil* | 203.06<br>701.08<br>Dist. Lab | Accept. | Proj. Engr.<br>S 401 | 1/1000 $yd^3$ | 1 full sample sack | ----- | ------ | 10 days | *Used only in non-paved side drains except plastic pipe. Plastic pipe requires granular material. pH and resistivity required for metal pipe. |
| BEDDING MATERIAL | | 701.02<br>701.04<br>1003.08<br>Proj. Engr. | Accept. | SEE SECTION 726 OF THIS MANUAL. | | | | | | |

| MATERIAL | | REFERENCE / TESTED BY | PURP. | SAMPLED BY / METHOD | MIN. FREQ. | MIN. QUANT. / CONTAINER | CERT. / DISTR. | SMALL QUANTITY | TYPICAL HANDLING TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE PIPE AND PIPE ARCH | Non- Reinforced (Concrete Sewer Pipe) | 701.02<br>1006.02<br>Mfr. & Const. Fab. Insp. | Prelim. Source Approval | Const. Fab. Insp.<br>S 601 | 1/160 joints/size | 1 joint | ----- | ------ | ------ | Three-edge-bearing test. Each joint shall be stamped when approved. |
| | | 701.02<br>1006.02<br>Proj. Engr. | Accept. | **INSPECTED, APPROVED AND STAMPED BY CONST. FAB. INSP. PRIOR TO USE.** | | | CD<br>1 & 6 | ------ | ------ | Visual inspection by Proj. Engr. CD includes test report lab no. for gasket materials. |
| | Reinforced (12 in. and larger in diameter) | 701.02<br>1006.03<br>1006.04<br>Mfr. | Prelim. Source Approval | MFR.<br>S 301<br>S 601 | 1/300 joints/size or 4 cyl/300 joints/size or 3 consecutive days production/ size* | 1 joint or 4 cyl 6 in. x 12 in. cylinder mold | CC<br>1 | ------ | ------ | (QPL 77)<br>Three-edge-bearing test or compressive strength test. Includes concrete pipe arch. *Shall not exceed 300 joints. The use of 6 in. x 12 in. compressive strength cylinders for Source Approval or Verification shall be at the discretion of the Const. Fab. Insp. Unit. Each joint shall be stamped when approved. |
| | | 1006.04<br>1006.03<br>701.02<br>Const. Fab. Insp. | Verif. | Const. Fab. Insp.<br>S 601 | 1/60 day production/plant | 1 joint or 4 cyl 6 in x 12 in. cylinder mold | ----- | ----- | ----- | |
| | | 701.02<br>1006 | Accept. | **INSPECTED APPROVED AND STAMPED BY MFR. PRIOR TO USE.** | | | CC<br>1 | ----- | ----- | (QPL 77)<br>Visual Insp. by proj. Engr. CC to include lot number for Gasket Materials. |
| | Reinforced (Circular with Elliptical Reinforcement) | 701.02<br>1006.03<br>1006.04<br>Mfr. | Prelim. Source Approval | MFR.<br>S 301<br>S 601 | 1/300 joints/size or 4 cyl/300 joints/size or 3 consecutive days production/ size* | 1 joint or 4 cyl 6 in. x 12 in. cylinder mold | CC<br>1 | ------ | ------ | (QPL 77)<br>Three-edge-bearing test or compressive strength test. The placement of elliptical reinforcement must be approved by the Const. Fab. Insp. Unit. The use of 6 in. x 12 in compressive strength cylinders for source Approval or Verification shall be at the discretion of the Const. Fab. Insp. Unit. Each joint shall be stamped when approved.<br>*Shall not exceed 300 joints. |
| | | 701.02<br>1006.03<br>1006.04<br>Const. Fab. Insp. | Verif. | Const. Fab. Insp.<br>S 601 | 1/60 day production/plant | 1 joint or 4 cyl 6 in. x 12 in cylinder mold | ----- | ----- | ----- | |
| | | 701.02<br>1006<br>Proj. Engr. | Accept. | **INSPECTED APPROVED AND STAMPED BY MFR. PRIOR TO USE.** | | | CC<br>1 | ----- | ----- | (QPL 77)<br>Visual Inspection by Proj. Engr. CC to include lot number for Gasket Materials. |

| MATERIAL | | REFERENCE / TESTED BY | PURP. | SAMPLED BY / METHOD | MIN. FREQ. | MIN. QUANT. / CONTAINER | CERT. / DISTR. | SMALL QUANTITY | TYPICAL HANDLING TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE PIPE AND PIPE ARCH (Cont'd) | Absorption Test | 701.02<br>1006.03<br>1006.04<br>Const. Fab. Insp. | Verif. | Const. Fab. Insp.<br>S 601 | * | ------ | ------ | ------ | ------ | *This test will be conducted at the discretion of the Const. Fab. Insp. Unit in cases where the pipe exhibits visual porosity. |
| | Admixtures | 701.02<br>1011.02<br>Mat. Lab | Accept. | Const. Fab. Insp.<br>S 601 | * | 1 pt<br>Friction top can | ------ | ------ | 14 days | (QPL 58)<br>*Visual inspection by Const. Fab. Insp. Unit. Sample only if questionable. |
| | Cement for Concrete Pipe | 701.02<br>1001<br>Mat. Lab | Verif.* | Const. Fab. Insp.<br>S 102 | ** | 1 gal<br>Friction top can** | CD<br>6 & 7 | ------ | 16 days | (QPL 7)<br>*See Section 901 of this manual.<br>**Visual inspection by Const. Fab. Insp. Unit. Sample only if questionable. |
| | Coarse & Fine Aggregate for Concrete Pipe | 701.02<br>1003.02<br>Mat. Lab | Verif. | Const. Fab. Insp.<br>S 101 | * | 1 full sample sack | ----- | ------ | ------ | (QPL 2)<br>*Visual inspection by Const. Fab. Insp. Unit. Sample only if questionable. |
| | Hydrostatic Test | 701.02<br>1007<br>Const. Fab. Insp. | **THIS TEST SHALL BE USED AS A BASIS FOR SOURCE APPROVAL OF NEW JOINT DESIGNS AND REPAIRS AND FOR EVALUATION OF NEW PRODUCTS SUCH AS GASKET MATERIALS, ETC.** | | | | ------ | ----- | ------ | ----- |
| | Mix Design | 701.02<br>1006<br>Const. Fab. Insp. | Design/ Accept. | Mfr.<br>ASTM C 76 | 1/plant/ source | ------ | ------ | ------ | ------ | ----- |
| | Permeability Test | 701.02<br>1006<br>Const. Fab. Insp. | Verif. | Const. Fab. Insp. | * | 1 joint | ------ | ------ | ------ | One pipe per lot of sizes up to and including 48 in. in diameter.<br>*This test will be conducted at the discretion of the Const. Fab. Insp. Unit in cases where the pipe exhibits visual porosity. |
| | Reinforcing Steel for Concrete Pipe | 701.02<br>1009<br>Mat. Lab | Verif. | Const. Fab. Insp.<br>S 501 | 1/12 month/ source | 36 in. x 36 in. | ------ | ------ | 10 days | Sample shall include an area which will have the welded splice at approximately the midpoint. |

| MATERIAL | | REFERENCE / TESTED BY | PURP. | SAMPLED BY / METHOD | MIN. FREQ. | MIN. QUANT. / CONTAINER | CERT. / DISTR. | SMALL QUANTITY | TYPICAL HANDLING TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE PIPE AND PIPE ARCH (Cont'd) | Water | 1018.01<br>Mat. Lab | Accept. | Const. Fab.<br>Insp.<br>S 303 | 1/source | 1 qt<br>Plastic bottle | ------ | ------ | 11 days | Drinkable water need not be sampled. |
| CONDUIT PLUG & COLLARS | Concrete (Class R) | 701.11<br>Proj. Engr. | Accept. | SEE SECTION 901 OF THIS MANUAL. | | | | | | |
| GASKET MATERIAL (For Pipe) | Flexible Plastic Gasket | 701.02<br>1006.06(b)<br>Mat. Lab | Prelim. Source Approval | Const. Fab.<br>Insp.<br>S 601 | 1/size/batch/ shipment | 3 ft length | ------ | ------ | 21 days | (QPL 4) |
| | | 701.02<br>1006.06(b)<br>Mat. Lab | Accept. | Proj. Engr. | * | 3 ft length | CC**<br>1 | ------ | 11 days | (QPL 4)<br>*Visual inspection by the Proj. Engr. Sample only if questionable.<br>**Gasket lot no. listed on pipe CC. Primer used according to gasket manufacturer's recommendation; sample not required. |
| | Rubber Gaskets | 701.02<br>1006.06(a)<br>Mat. Lab | Prelim. Source Approval | Const. Fab.<br>Insp.<br>S 601 | 1/size/batch/ shipment | 1 gasket | ----- | ----- | 21 days | (QPL 4) |
| | | 701.02<br>1006.06(a)<br>Mat. Lab | Accept. | Proj. Engr. | * | 1 gasket | CC**<br>1 | ----- | 17 days | (QPL 4)<br>*Visual inspection by the Proj. Engr. Sample only if questionable.<br>**Gasket lot no. listed on pipe CC. Lubricant used according to gasket manufacturer's recommendation; sample not required. |
| GEOTEXTILE FABRIC | | 701.02<br>1019.01<br>Mat. Lab | Prelim. Source Approval | Dist. Lab<br>S 614 | 1/type/lot/ source/ shipment | 3 lin ft/roll width of fabric* | ----- | ----- | 7 weeks | * Sample a minimum of 18 $ft^2$. |
| | | 701.02<br>1019.01<br>Mat. Lab | Accept. | Proj. Engr.<br>S 601 | 1/type/source/ shipment | 3 lin ft/roll width of fabric* | CD**<br>1 & 7 | 150 $yd^2$ | 11 days | (QPL 61)<br>*Sample a minimum of 18 $ft^2$.<br>**Sample when not accompanied by CD or questionable. |

| MATERIAL | | REFERENCE / TESTED BY | PURP. | SAMPLED BY / METHOD | MIN. FREQ. | MIN. QUANT. / CONTAINER | CERT. / DISTR. | SMALL QUANTITY | TYPICAL HANDLING TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| METAL PIPE | | 1007<br>Mat. Lab | Prelim.<br>Source<br>Approval | Const. Fab.<br>Insp. | 1/size/gage/<br>200 lin ft | 1 - 3 in.<br>triangle | ------ | ------ | ------ | Connecting bands for metal pipe shall be inspected, approved and the pipe lab no. painted on the band and in the pipe by MFR. |
| | Bituminous Coated Corrug. Steel Pipe & Pipe Arch | 701.02<br>1007.02<br>Mat. Lab | Accept. | **INSPECTED, APPROVED AND MARKED BY MFR. PRIOR TO USE.** | | | CD<br>1 & 6 | ----- | 10 days | Visual inspection by Proj. Engr. CD includes gage, diameter, coupling bands, gasket materials and hardware. |
| | Corrug. Aluminum Pipe & Pipe Arch | 701.02<br>100705<br>Mat. Lab | Accept. | **INSPECTED, APPROVED AND MARKED BY MFR. PRIOR TO USE.** | | | CD<br>1 & 6 | ------ | 11 days | Visual inspection by Proj. Engr. CD includes gage, diameter, coupling bands, gasket materials and hardware. |
| | Structural Plate Pipe & Pipe Arch | 701.02<br>1007.04<br>Mat. Lab | Accept. | **INSPECTED, APPROVED AND MARKED BY CONST. FAB. INSP. PRIOR TO USE.** | | | CD<br>1 & 6 | ------ | 11 days | Visual inspection by Proj. Engr. CD includes gage, diameter, coupling bands, gasket materials and hardware. |
| | Bituminous Material for Metal Pipe | 1007.02<br>Mat. Lab | Prelim.<br>Source<br>Approval | Const. Fab.<br>Insp.<br>S 601 | * | 1 qt<br>Friction top<br>can | CC | ------ | ------ | *Visual inspection by Const. Fab. Insp. Sample only if questionable. |
| | Galvanizing Repair Compound | 1007.01<br>1007.07<br>Mat. Lab | Accept. | Const. Fab.<br>Insp.<br>S 601 | 1/type* | 1 can | ------ | ------ | 10 days | (QPL 23)<br>*Visual inspection by Constr. Fab. Insp. Sample only if questionable. |

| MATERIAL | | REFERENCE / TESTED BY | PURP. | SAMPLED BY / METHOD | MIN. FREQ. | MIN. QUANT. / CONTAINER | CERT. / DISTR. | SMALL QUANTITY | TYPICAL HANDLING TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| METAL PIPE (Cont'd) | Hardware | 1007.(d)09 Mat. Lab | Prelim. Source Approval | Const. Fab. Insp. S 601 | 1/source/ shipment | 1 of each item* | ------ | ------ | 9 days | Visual inspection by Constr. Fab. Insp. Sample only if questionable. Includes steel rods, lugs, bolts and nuts. *One of each type of hardware used is to be submitted. |
| | Hydrostatic Test | 701.02 1006 Const. Fab. Insp. | THIS TEST SHALL BE USED AS A BASIS FOR SOURCE APPROVAL OF NEW JOINT DESIGNS AND REPAIRS AND FOR EVALUATION OF NEW PRODUCTS SUCH AS GASKET MATERIALS, ETC. | | | | ----- | ----- | ----- | ----- |
| | Steel Coils for Metal Pipe | 701.02 1007 Const. Fab. Insp. | Accept. | Const. Fab. Insp. | ------ | ------ | CA 6 | ------ | ----- | Const. Fab. Insp. reviews CA for acceptance. |
| MORTAR | Cement, Sand & Water | 701.02 702.02 Proj. Engr. | Accept. | ------ | ------ | ------ | ------ | ----- | ----- | Visual inspection by Proj. Engr. Sample only if questionable. |
| PLASTIC CULVERT PIPE | | 701.02 1006.07 MFR. | Prelim. Source Approval | Const. Fab. Insp. | 1/size/lot | ____ | CA | ------ | ----- | (QPL 66) |
| | | 701.02 1006.07 MFR | Accept. | INSPECTED AND APPROVED BY CONST. FAB. INSP. PRIOR TO USE. | | | CA & CD* 1 & 6 | ------ | ----- | (QPL 66) Visual inspection by Proj. Engr. CD includes split coupling bands, straps and gasket material. *In lieu of CD a letter from Const. Fab. Insp. to Proj. Engr. shall suffice. |
| | Hydrostatic Test | 701.02 1006 Const. Fab. Insp. | THIS TEST SHALL BE USED AS A BASIS FOR SOURCE APPROVAL OF NEW JOINT DESIGNS AND REPAIRS AND FOR EVALUATION OF NEW PRODUCTS SUCH AS GASKET MATERIALS, ETC. | | | | ----- | ----- | ----- | ----- |
| | Mandrel Test | 701.09(a) Contractor | Accept. | Contractor | 1/line of pipe | ----- | ------ | ----- | ------ | For 36 in. diameter or less. Proj. Engr. to observe and approve. For pipe larger than 36 inches in diameter deflection shall be determine by a method approved by the Engineer. |
| PLASTIC YARD DRAIN PIPE & JOINTS | | 701.02 1006.09 Mat. Lab | Accept. | Proj. Engr. S 601 | 1/type/size/ shipment* | 6 ft length or 1 item | CC 3 | ------ | 10 days | *Sample fittings & gasket material 1 per type per shipment. |