

# Highlighted Changes to the Johnson County Specifications

## Accepted by KDHE (2/24/10)

*Note: This is not a comprehensive list of all changes. This list is to only to highlight some of the main changes.*

The listed changes are broken down by their respected Section Number.

### Table of Contents

<u>SPECIFICATION SECTION</u>	<u>ORIGINATING SECTION</u>
▪ Section 1000 General Requirements	Sections 1000, 1100, 1200, 1300, 1600, 1700*
▪ Section 1310 Project Surface Video Recording	New
▪ Section 1400 Project Internal Television Inspection	New
▪ Section 2230 Site Preparation and Excavation	Section 2500
▪ Section 2315 Trenching and Backfilling	Section 2500
▪ Section 2410 Tunneling	Section 2300*
▪ Section 2445 Boring	Section 2301*
▪ Section 2530 Manholes and Special Structures	Section 2500
▪ Section 2531 JCW Manhole Ring And Cover Details	Unchanged
▪ Section 2532 Manhole and Structure Interior Coatings	New
▪ Section 2534 Sanitary Sewer Pipe	Section 2500
▪ Section 2536 Sewer Pipe Installation	Section 2500
▪ Section 2537 Cured-In-Place Pipe (CIPP)	New
▪ Section 2538 Pipe Bursting/Reaming	New
▪ Section 2539 Testing Requirements And Laboratory Services	Section 1500*
▪ Section 2920 Restoration	Section 2400*
▪ Section 2930 Native Seeding and Restoration Plantings	Section 2405*
▪ Section 2956 Slope and Stream Bank/Bed Stabilization	New
▪ Section 3000 Cast-In-Place Concrete	Section 2500
▪ Section 6650 Plastic Liner For Protection Of Concrete	New

\* Section in current use on publicly funded projects.

## **Section 1000 General Requirements**

- Addresses general items relevant to privately-funded projects that are typically found in the following sections
  - Section 1000 Summary of Work
  - Section 1100 Progress and Payment
  - Section 1300 Submittals
  - Section 1600 Temporary Facilities and Controls
- Publicly-funded projects managed by JCW shall replace the general Section 1000 with a more detailed project specific General Requirements
- Defines “Owner” versus “JCW” to ensure JCW role in privately funded projects
- Defines working hours
- Requires 2 sets of material certifications and shop drawings approved by the Engineer of record be given to JCW
- Outlines the minimum requirements for bypass pumping
- Defines the minimum public notification requirements

## **Section 1310 Project Surface Video Recording**

- Applies only when noted on the Drawings or for use on CIPP or Pipe Bursting specified projects

## **Section 1400 Project Internal Television Inspection**

- Applies only when noted on the Drawings or for use on CIPP or Pipe Bursting specified projects

## **Section 2230 Site Preparation and Excavation**

- Deletes classifications of “Earth Excavation” and “Rock Excavation”
- Adds more blasting requirements including:
  - Blasting engineer
  - Notification
  - Pre- and Post-Blast surveys

- Blast monitoring
- Sets radius for pre-blast survey at 500 feet but allowed for a greater radius required by governing authorities
  - Previous standard was 300 feet

### **Section 2315 Trenching and Backfilling**

- Adds filter fabric specification
- Removes references to VCP and associated maximum trench width tables
- Lists DIP, PVC pipe, HDPE pipe, and Fiberglass Wastewater Pipes as flexible pipe
  - Requires contractor to restore surface with minimum of 6" topsoil. Contractor must haul in topsoil if he does not segregate the topsoil or if less than 6" of topsoil exists prior to construction

### **Section 2410 Tunneling**

- Requires more detailed submittal of tunneling plan
- Requires a Kansas PE to design the tunnel
- Requires Contractor to submit as-constructed logs to document line and grade of tunnel
- Requires tolerances to be shown on the drawings
- Allows only new steel liner plate for initial tunnel support
- Specifies uncoated steel liner plates in lieu of galvanizing or bituminous coating
- Allows use of wood skids, stainless steel adjustable casing spacers (3 per pipe segment), or an alternate JCW approved support
- Allows an engineered grout fill as an alternative to sand
- Requires settlement and heave monitoring
- Requires Contractor to employ measures during grouting to insure maximum allowable temperature of carrier pipe is not exceeded

### **Section 2445 Boring**

- Requires more detailed submittal of boring plan
- Requires tolerances to be shown on the drawings

- Allows only new steel casing pipe
- Revises casing pipe thicknesses to match that of regional railroads
- Allows use of wood skids or stainless steel adjustable casing spacers (3 per pipe segment)
- Requires Contractor to employ measures during grouting to insure maximum allowable temperature of carrier pipe is not exceeded
- Requires neoprene rubber end seals in lieu of brick and mortar end seals on force mains and allows end seals on gravity mains.

### **Section 2530 Manholes and Special Structures**

- Removes large manholes from the description of special structures
- Removes brick and mortar from manhole materials
- Sets min. wall thickness at 5" regardless of the depth
- Requires monolithic base section if structure is precast
- Disallows horseshoe-shaped boxouts, or doghouses on any pipe smaller than 15 inches in diameter and only with permission from JCW for sewer mains larger than 15 inches.
- Adds gasket table
  - Replaced original A-Lok gasket with preferred A-Lok X-Cel
- Revises joint sealant
  - Changed the joint sealant to a preformed butyl rubber joint sealant with a minimum 60% butyl rubber for long-term viability
- Adds that rubber risers shall be used if manhole located in a paved area.
- Adds that rubber risers may be used if manhole located outside paved area.
- Requires internal lift holes
- Removes coal tar waterproofing which is no longer used by precast concrete manufacturers due to high VOCs
- Updated and included specifications on epoxy manhole liners and plastic liners
- Removes damp proofing which is only effective with water vapor not with groundwater
- Adds joint wraparound sleeves
  - Butyl rubber with EPDM backing (not polyethylene film backing)
  - Heat shrinkable sleeves
- Adds requirement for HS20 loading design for top slabs and reducer sections

- Restricts use of non-shrink grout
- Removes cast iron steps
- Allows the use of one row of joint sealant between seal wall section and cone
- Removes statement: "Pipe stubs shall be installed so that a pipe joint will be two (2) feet or less from the outside of manhole wall."
- Disallows use of precast inverts
- Allows an existing manhole to be adjusted up to 12"
- Disallows the use of brick and mortar adjustments

### **Section 2531 JCW Manhole Ring and Cover Details**

- Detail drawings of manhole rings and covers

### **Section 2532 Manhole and Structure Interior Coatings**

- Includes cementitious liner, epoxy liner, and flexible epoxy grade adjustment and frame seal liner
- Includes required experience of contractor
  - 15,000 vertical feet of cementitious liner
  - 15,000 vertical feet of epoxy liner
- Includes spark testing of epoxy liners

### **Section 2534 Sanitary Sewer Pipe**

- Lists Protecto 401 and PolyBond as only DIP liners
- Adds polyethylene encasement as a requirement for DIP pipe
- Changes PVC pressure pipe to AWWA C900 and C905 outside diameters and wall thicknesses
- Changes PVC resin compound testing to ASTM D2854 Standard Test Method for Ignition Loss of Cured Reinforced Resins
- Adds statement about design pressures and cyclical failure increasing wall thickness for pressure PVC pipe beyond DR18
- Changes minimum wall thickness for PVC gravity sewer pipe to SDR 26
- Changes large diameter PVC gravity sewer pipe spec to allow diameters up through 48"
- Removes requirement that tees and wyes be supplied by the same manufacturer as the pipe

- Changes minimum pipe stiffness for large diameter PVC gravity sewer pipe to 115
- Does not to name RCP manufacturers
- Removes elliptical reinforcement as an alternative to circular reinforcement
- Changes Portland Cement to a higher sulfate resistance
  - Type III (tricalcium aluminate  $\leq 5\%$ )
  - Type V (tricalcium aluminate  $\leq 5\%$ )
  - Type II with the addition of a Class F Pozzolan
- Adds preformed butyl rubber spec for RCP joint filler
- Removes specification for Prestressed Concrete Cylinder Pipe (PCCP)
- Adds specification for Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Wastewater Pipe for gravity sewer and force main
- Adds specification for HDPE for gravity sewer, force main and service line
- 

### Section 2536 Sewer Pipe Installation

- Due to concerns regarding availability of JCW embedment gradation, changes the granular embedment to ASTM C33 Size No. 67 which also matches MCIB's ¾" coarse aggregate

Sieve Size Gradations	Percentage Passing
1	100
¾	90 - 100
¾	20 - 55
No. 4	0 - 10
No. 8	0 - 5
No. 200	0 - 3

- Adds manhole markers for use when noted on the drawings
  - 6' long x 2" diameter PVC pipe slid over a 6' steel tee fence post

- Pipe embedment designations remain unchanged except added DIP as well as HDPE and FRP to the “Flexible Pipe Embedment”
- Adds installation tolerances to the specifications to ensure that JCW has clearly specified means to reject poor construction
  - Horizontal alignment tolerance = 12”
  - Vertical alignment tolerance = +0.1’
- Adds tracer wire and metallic backed tape spec for force main that is consistent with MARC Damage Prevention Practice doc.
- Adds JCW allowable couplings for dissimilar materials
- Adds impervious ditch checks
  - Removal of loose materials in trench
  - 500 psi flowable fill only
- Makes air testing the standard for gravity sewer
  - 48” and smaller by traditional air testing
  - 54” and larger by joint testing
  - Hydrostatic testing (infiltration and exfiltration) to be allowed only with JCW prior approval
- Allowable leakage (plant and field testing)

Criteria	Pipe Dia.	Leakage Rate
JCW Standard Specifications (1989-superseded)	8” to 21”	200 gpd/IDM
JCW Standard Specifications (1989-superseded)	≥ 24”	6000 gpd/mile
JCW Standard Specifications (2010)	8” to 21”	50 gpd/IDM
JCW Standard Specifications (2010)	≥ 24”	3,600 gpd/mile
KDHE		250 gpd/IDM
Olathe		50 gpd/IDM
Oklahoma City		10 gpd/IDM

- Updates mandrel tests

- Added definition of pipe ID
  - Avg. OD – 2 \* (Min. Wall Thickness)
- Updated table for new PVC specs

### **Section 2537 Cured-in-Place Pipe (CIPP)**

- Based on recent CIPP contract

### **Section 2538 Pipe Bursting/Reaming**

- Removes minimum wall thickness of HDPE
- Updates PVC spec to include JCW's standard PVC requirements
- Adds text to make Contractor responsible for damage caused by heaving
- Adds text to make Contractor monitor for heaving or settling
- Adds text to make Contractor provide equipment to protect existing facilities during installation
- Adds internal bead removal
- Allows use of PSX Boot gasket if wall was cored

### **Section 2539 Testing Laboratory Services**

- Refers to other sections for specific testing
- Provides means for JCW to require contractor to perform additional testing
- Provides language on payment for testing

### **Section 2920 Restoration**

- Establishes unconditional guarantee for and the quality of sodding and seeding at 1 year
- Defines seeds for turf-type fescue, K-31 fescue, brome, and buffalo grasses
- Defines sod by requiring it to match existing grass
- Restricts Contractor from removing top soil from a property
- Requires clean-up to be within 14 days of trench backfill
- Requires seeding or sodding within 14 days of trench backfill if in season



- Unless not substantially complete or access is needed for construction
- Defines seeding and sodding seasons
- Strengthens Maintenance and Acceptance
  - Requires Contractor to “provide/meet with each property owner and furnish a seeding maintenance manual(s)”
  - Defines Contractor maintenance prior to acceptance
- Enhanced specifications for pavement and fence replacement

### **Section 2930 Native Restoration**

- Based on JCW’s previous Section 2405
- Defines seed and plantings for 4 zones
  - Zone 1 is defined as stream bank areas
  - Zone 2 is defined as riparian and woodland areas
  - Zone 3 is defined as wetland areas
  - Zone 4 is defined as wooded wetland areas
- Simplifies seeds and plants by using only commonly available stock
- Defines seeding and planting seasons
  - Normal
  - Dormant
- Defines Maintenance and Acceptance
  - Requires Contractor to “provide/meet with each property owner and furnish a seeding maintenance manual(s)”
  - Defines Contractor maintenance prior to acceptance
  - Seeds = three healthy grass plants per sq. ft.
  - Plants = 80% survival rate

### **Section 2956 Slope and Stream Bank/Bed Stabilization**

- Develops spec for materials used in stream bank and stream bed stabilization
  - Graded rock, erosion control blanket (ECB), turf reinforced matrix (TRM), and wire reinforced TRM

- Limits the materials that can be installed in stream crossings to that which JCW is comfortable
- Requires Contractor to confirm gradation of graded rock via 1 of 3 procedures
- Basically requires Contractor to hand place graded rock to insure interlocking of small, medium, and large rock
- Defines method of placement of graded rock with some definition of uses for each class of graded rock
- Anchoring and pinning details must be provided on Drawing with use of ECB, TRM, and wire reinforced TRM

### **Section 3000 Cast-in-Place Concrete**

- A more detailed specification that provides JCW with
  - More authority to reject poor quality concrete
  - Standard mix designs
- Still maintains that Engineer of record is responsible for ensuring compliance with design intent
- Defines flowable fill strength as 500 psi
  - Less susceptible to damage during backfill and compaction than “diggable” flowable fill
- Engineer must approve add mixtures
- Defines 28-day strength of test cylinders at 15% greater than design
- Requires pumping of concrete when drop would be greater than 5 feet
- Defines criteria for safe removal of forms

### **Section 6650 Plastic Liner for Protection of Concrete**

- Provides spec for lining of both manholes and pipe
- Gives JCW the insurance of qualified applicators and welders
- Defines T-Lock by Ameron as standard
- Allows adhesive applied liner only with JCW approval
- Requires Contractor to give notification of liner installation in forms for cast-in-place concrete
- Requires JCW approval on some liner details
- Only allows weep channels with JCW approval
- Requires RCP joints to be dry before welding

- Defines acceptable methods for jointing in the field
- Requires JCW approval of repairs to liner during construction
- Requires spark testing of finished product

### **Standard Detail Sheet**

- Reorganizes details with better grouping
- Adds 5' and greater diameter manhole detail
  - Transition ring below cone to minimize loading on transition ring
- Revises ditch check detail
  - Match specification changes
  - 5' long
- Revises Tee Orientation and Riser Detail to match existing service connection standards
- Revises Casing Pipe detail
  - 3 skids is more stable than 4 skids
  - Includes a steel band and a stainless steel band to provide strength during installation and long term viability
  - Adds option for casing spacers as specified in Section 2445

*Note: This is not a comprehensive list of all changes. This list is to only to highlight some of the main changes.*