

Memorandum

To: File 1010C5A – Storm Sewer
From: M. E. Stites, D/SE1, OC48
Date: December 15, 2011
Re: **OUTFALL 002 INSPECTION**

An interior inspection of the Outfall 002 system main trunk line was conducted on December 15, 2011 by Ernest Dibal (FES) and Colm Chomicky (Burns & McDonnell). Refer to Figure 1 for locations identified in this narrative. Elaine Brewer (FES) served as confined space attendant. The inspection team entered the 002 system at the Abandoned Indian Creek Outfall (AICO) drop inlet and proceeded south to the flap gate where the inspection was initiated. The team inspected the interval from the flap gate at Indian Creek north (upstream) to the meter pit, then east to the dog-leg, then north to the Outfall 001 crossover.

Weather was clear. Rainfall had occurred the previous 3 days as follows: December 12 (approx. 0.06 inch), December 13 (approx. 0.45 inch), and December 14 (approx. 0.14 inch). As a result of completion of the 002 reroute system during 2005, base flow rates (i.e., non-rain event flows) in the 002 system downstream of the dog-leg have been eliminated.

Overall, the interior condition of the 002 storm sewer piping is in excellent condition with the exception of one area noted below. Only minor sediment deposits were noted during the inspection. Therefore, cleaning of the main trunk line is not needed at this time.

BOX CULVERT INTERVAL

The 5' x 7' box culvert section of piping begins at the AICO inlet and runs south to the termination of the box culvert at the flap gate structure. Only minor sediment deposits were observed in this interval. No active groundwater seeps were noted during the inspection. All joints in the box culvert have been grout-injected on the ceiling and sidewalls. In addition, floor joints were grout-injected during October 2008 and appeared in very good condition. Minor blemishes were observed at Joint 16 (loose patching, no seepage) and a crack at Joint 7 (dry crack with ¼-inch offset, no seepage). Blemishes and minor cracking at these pipe joints will continue to be evaluated during semi-annual interior pipe condition inspections. Joints 16 and 7 (although not leaking) will be evaluated for potential repairs prior to next inspection.

Although areas of the box culvert contained minor ponded water from the preceding days precipitation; due to the action of the 002 reroute system, there was no flow exiting the flap gate.

AICO to METER PIT

This interval of pipe extends from AICO upstream to the meter pit location immediately south of the southeast corner of the main manufacturing building. The original 60-inch diameter pipe located immediately upstream of AICO was In-Situ Form lined in 1988 from AICO to the meter pit. Based on repair plans discussed in last year's December 2010 Inspection Memo, new piping (60-inch HOBAS pipe) was installed from near the AICO inlet in lower interval of this section of pipe (~180 feet) using open excavation and then slip-lining the remaining portion of the line (~140 feet) to the meter pit.

The December 2011 inspection of the new HOBAS pipe from near the AICO to the meter pit showed the new pipe and joints to be in excellent condition, with exception of infiltration staining at one joint adjacent (north) of a new manhole just upstream of the AICO inlet. This joint will be evaluated for repair.

METER PIT TO DOGLEG TO CROSSOVER TO OUTFALL 001 SYSTEM

These sections showed no infiltration or sediment accumulation other than a few light areas of granular sediment. No debris was encountered. No damage to the liner system was observed.

At the dog-leg, the Outfall 002 base flow reroute system has been in full time operation since March 8, 2005. The system is effectively capturing and rerouting all base flows upstream of this point to the groundwater treatment system. The dog leg manhole where the reroute system is located is configured to act as a sediment trap with the bottom of the manhole approximately 3.5 ft. below the outlet. Base flow (i.e., non-rain event flows comprised of air conditioning condensate) entering the dog leg manhole was estimated at 2 gpm. Base flow of up to 12 gpm is diverted by the 002 reroute system to the Groundwater Treatment System. Inspection showed that the pump was operating properly and low flow is being 100 percent captured.

CONCLUSION

New 60-inch HOBAS piping was installed just upstream of the AICO inlet to the meter pit. One joint shows evidence of infiltration. A repair will be evaluated for this joint.

Minor flaking of patching material was observed at Joint 16 in the box culvert section and a crack was observed at Joint 7. No infiltration is observed at these joints. These joints will be evaluated for repair.

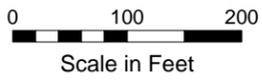
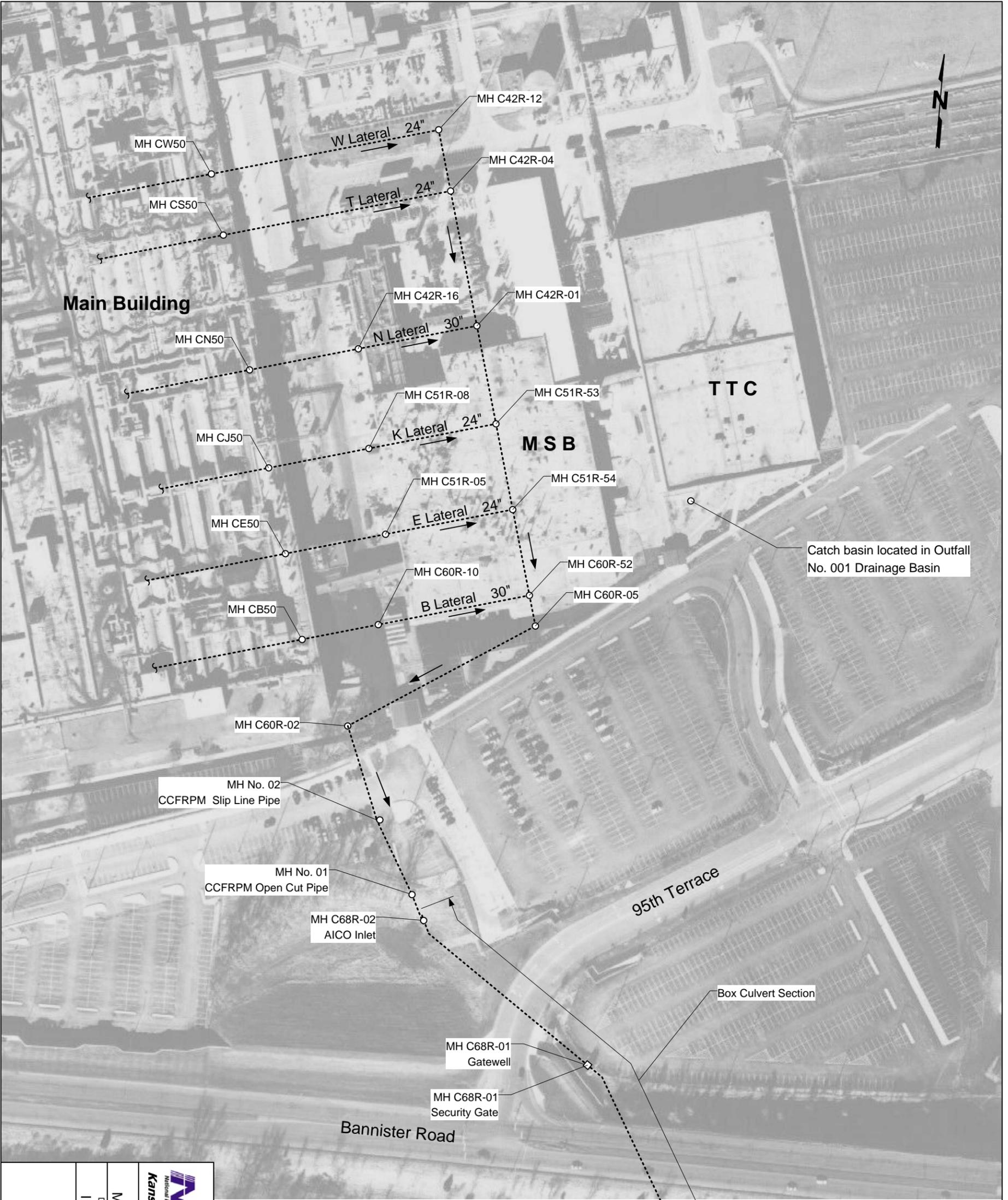
Only minor deposits of sediments were observed at the sluice gate in the southeast parking lot and cleaning is not required at this time. The Outfall 002 reroute system continues to effectively reroute all base flow within the system resulting in no discharge during periods of no precipitation.

If you have any questions or require additional information, please contact me at extension 7192.

Mike Stites
Senior Engineer Environmental Compliance

Attachments

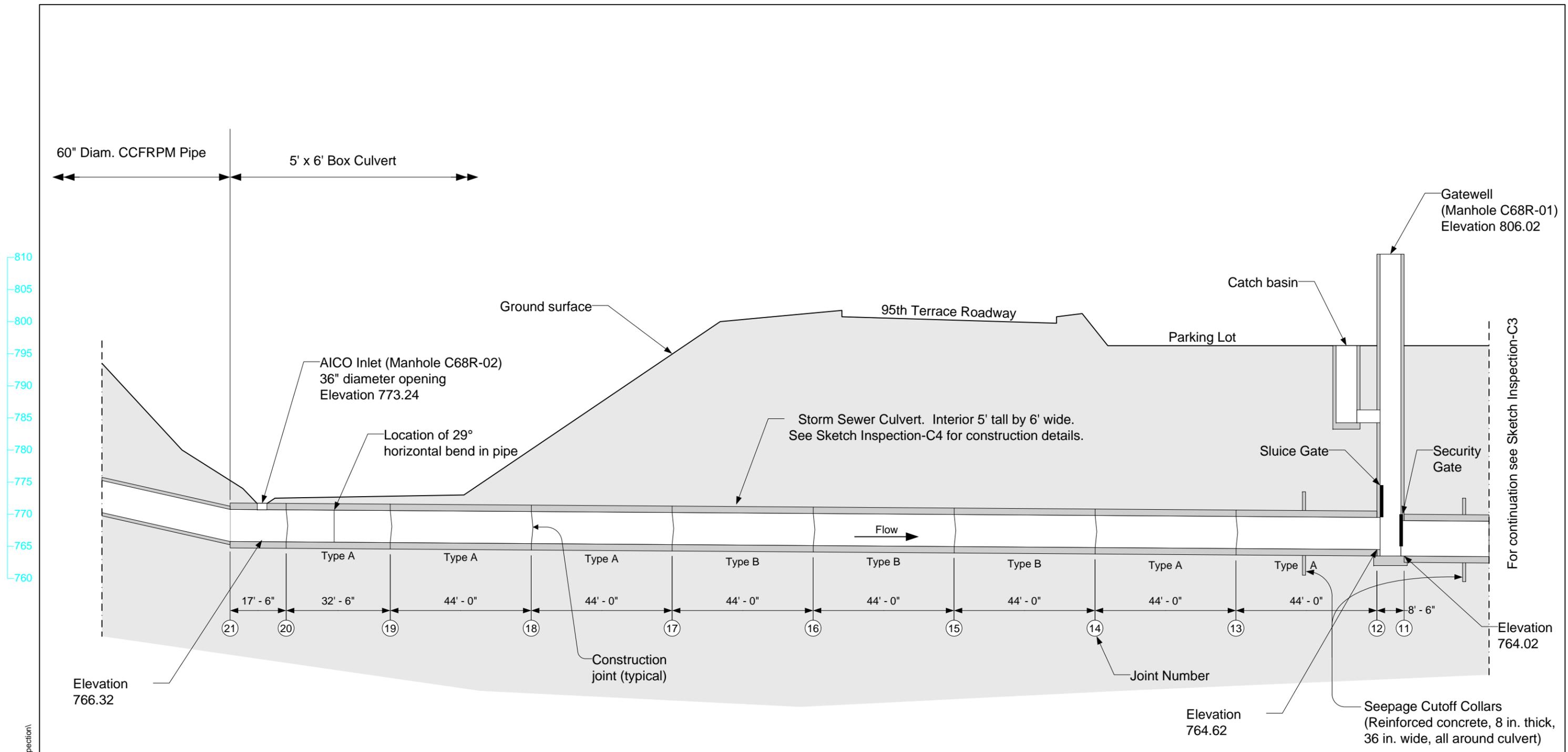
cc: D. M. Caughey, NNSA, 1D49
J. L. Baker, D/SE1, OC48
M. R. Wear, D/FE1, 1B31



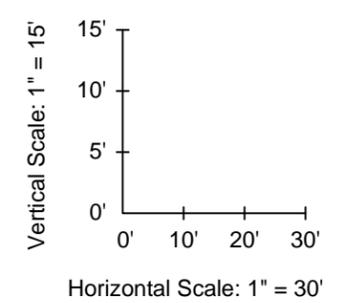
Key: MH = Manhole

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|--|--|---|------------------------------------|
| Outfall 002 System Layout Storm Sewer Outfall 002 Inspection | Owner | Operator | Project Manager |
| | ENGINEER M. R. Wear DB Project N.O. Inspection | CHECKED BY Honeywell Federal Manufacturing & Technologies | DATE 12/29/2011 |
| | TITLE Inspection | WORK ORDER NO. Inspection | SKETCH NO. Inspection-C1 |

Outfall No. 002 Raceway Channel See Project 98799340 Drawings for Details



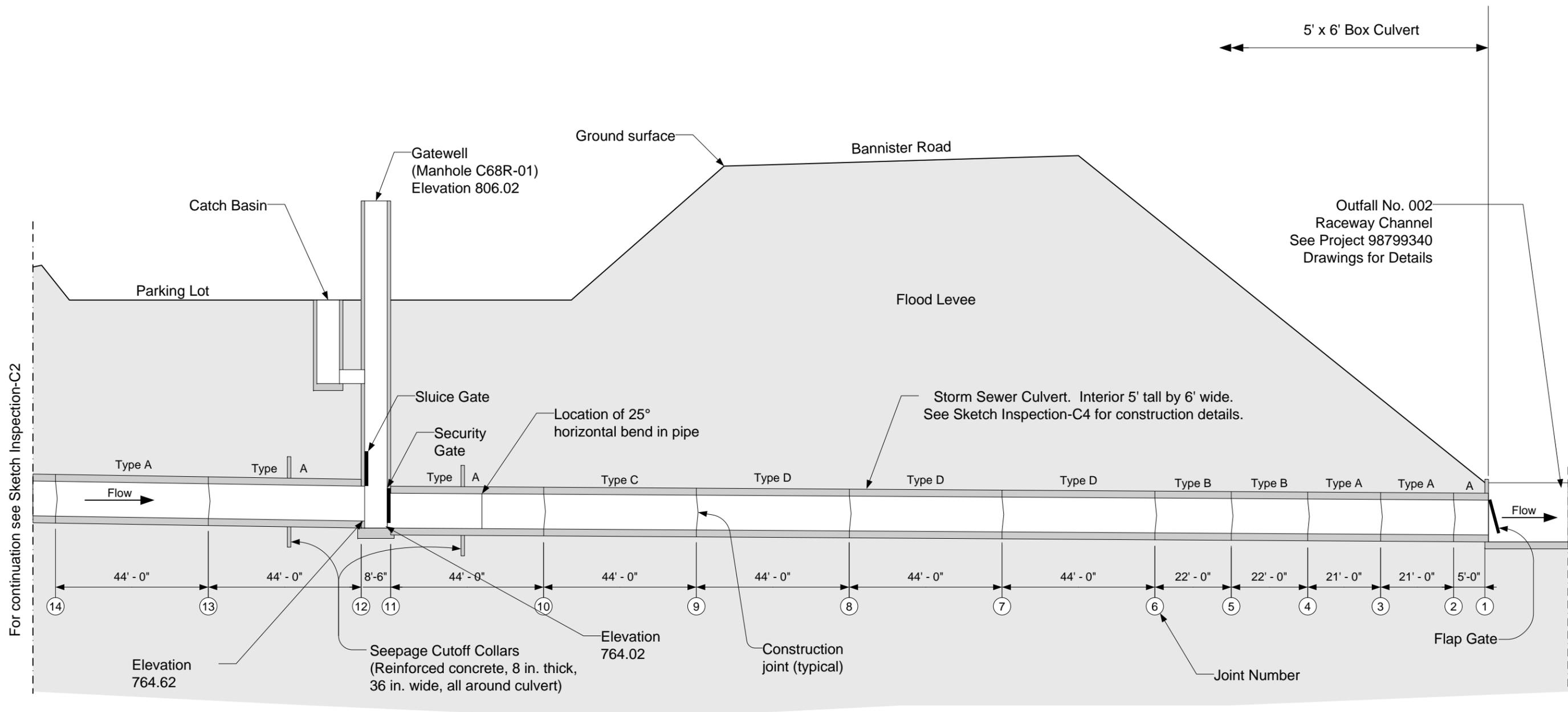
- Notes:
1. Based on Missouri Highway Department construction drawings.
 2. The "Type" designation above each culvert segment refers to cross-section dimensions of that segment. See Sketch Inspection-C4 for details.



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|--|--|---|
| Owner  National Nuclear Security Administration Kansas City Plant | Operator Honeywell Federal Manufacturing & Technologies | Project Manager  Facility Engineering Services KCP, LLC |
| ENGINEER M. R. Wear | CHECKED BY Inspection | DATE 12/29/2011 |
| DDB Project N.O. Inspection | WORK ORDER NO. Inspection | SKETCH NO. Inspection-C2 |
| TITLE Box Culvert Storm Sewer Outfall 002 Culvert Profile - North | | |

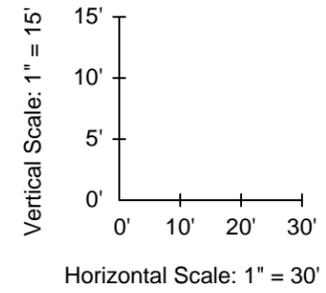
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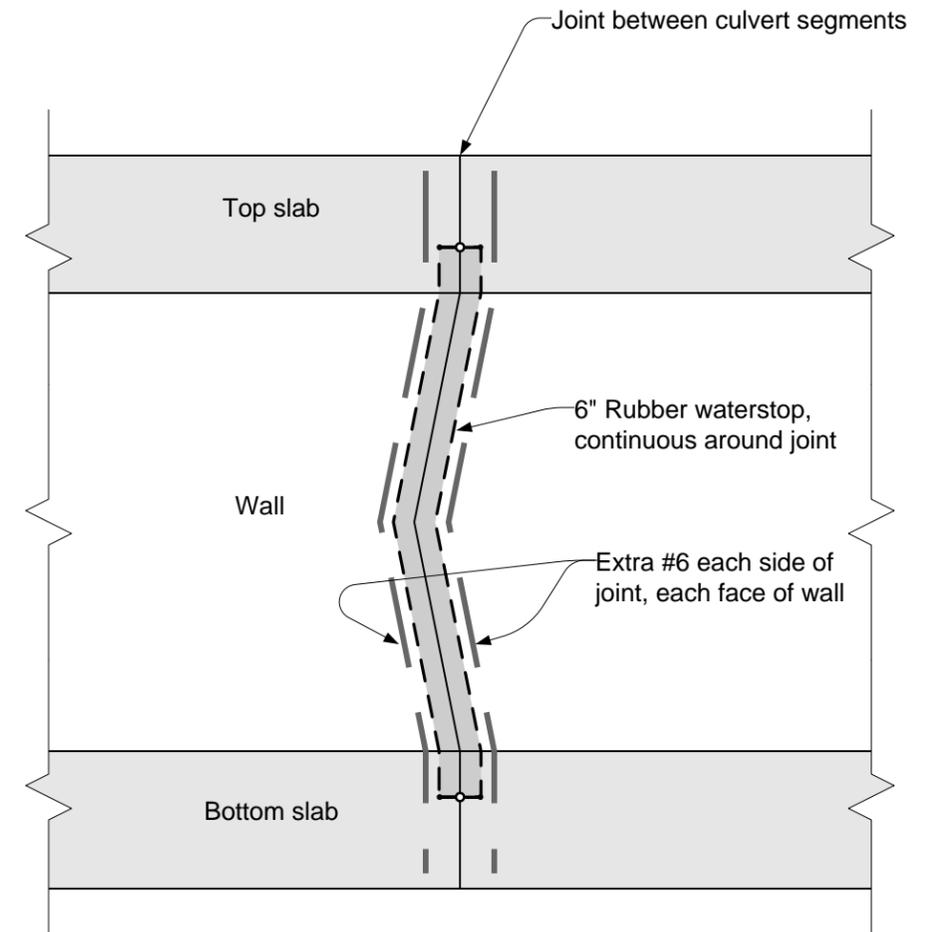
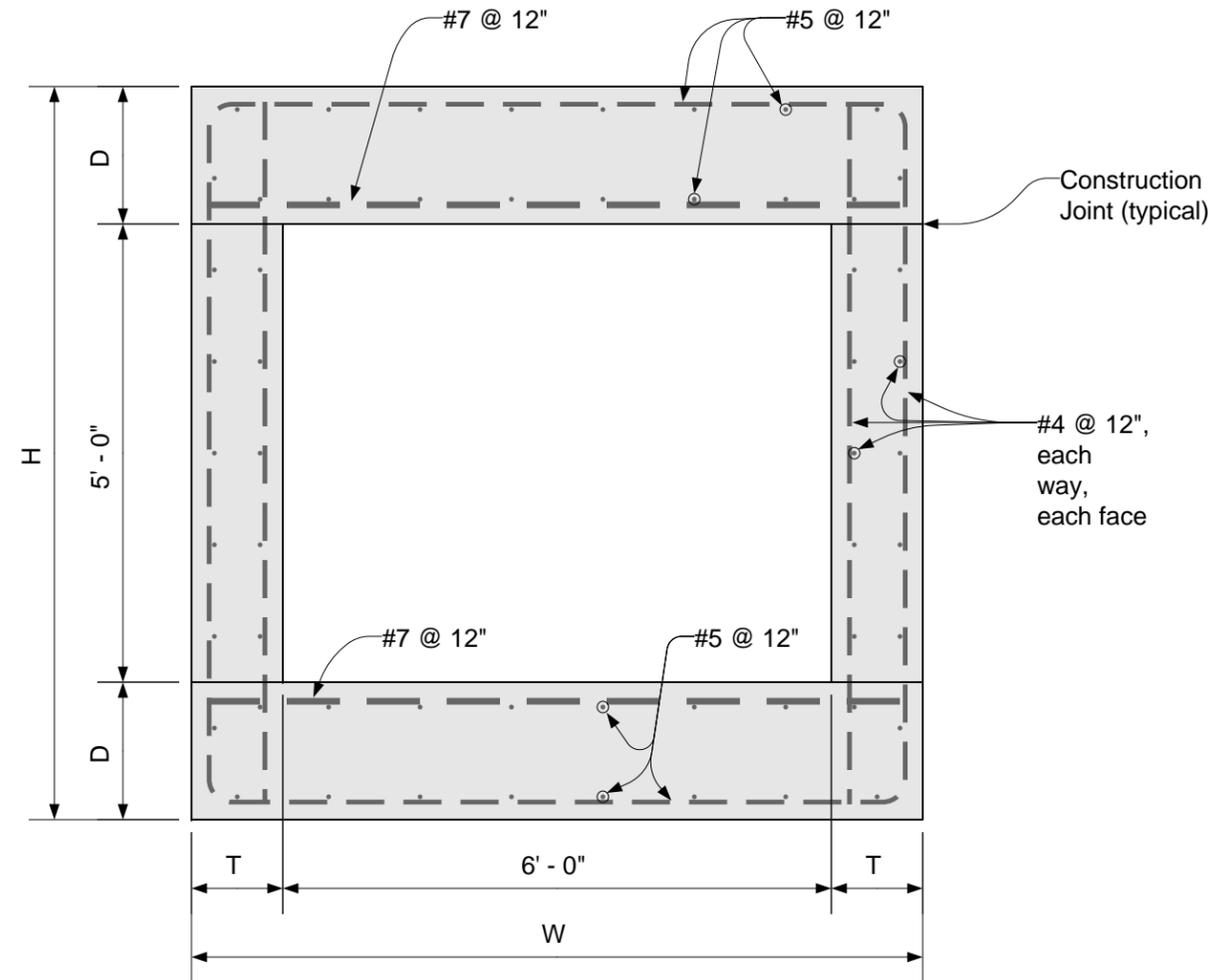
For continuation see Sketch Inspection-C2

- Notes:
1. Based on Missouri Highway Department construction drawings.
 2. The "Type" designation above each culvert segment refers to cross-section dimensions of that segment. See Sketch Inspection-C4 for details.



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|---|---|--|
| Owner  NNSA National Nuclear Security Administration Kansas City Plant | Operator Honeywell Federal Manufacturing & Technologies | Project Manager  Facility Engineering Services KCP, LLC |
| ENGINEER M. R. Wear | CHECKED BY | DATE 12/29/2011 |
| DDB Project N.O. Inspection | WORK ORDER NO. Inspection | SKETCH NO. Inspection-C3 |
| TITLE Box Culvert Storm Sewer Outfall 002 Culvert Profile - South | | |

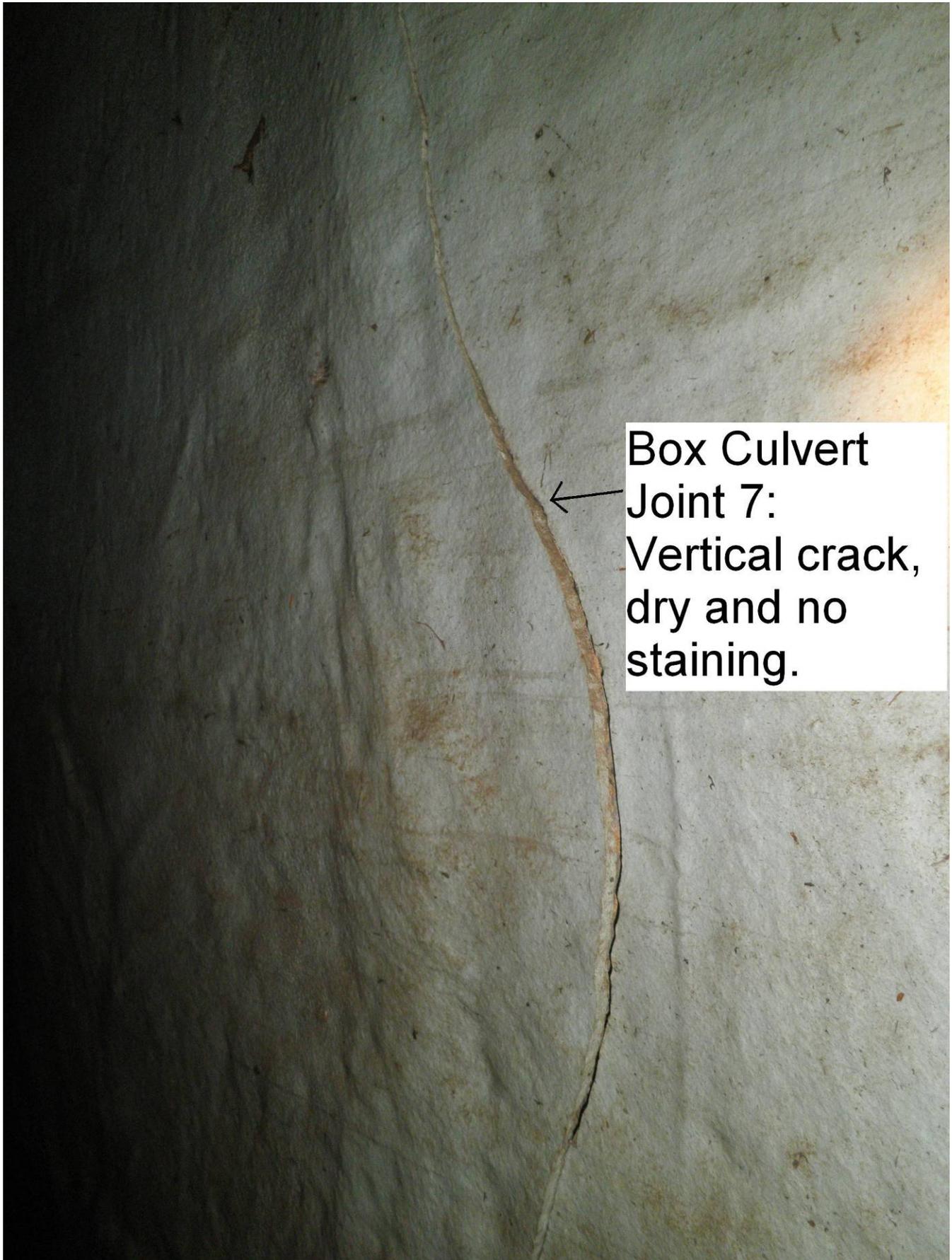
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Note: Regular reinforcement not shown in this view for clarity.

| Segment Type | Slab Depth D | Overall Height H | Wall Thickness T | Overall Width W |
|--------------|--------------|------------------|------------------|-----------------|
| A | 16" | 7' - 8" | 12" | 8' - 0" |
| B | 18" | 8' - 0" | 12" | 8' - 0" |
| C | 21" | 8' - 6" | 16" | 8' - 8" |
| D | 24" | 9' - 0" | 16" | 8' - 8" |

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|--|--|---|
| Owner  National Nuclear Security Administration Kansas City Plant | Operator Honeywell Federal Manufacturing & Technologies | Project Manager  Facility Engineering Services KCP, LLC |
| ENGINEER M. R. Wear | CHECKED BY Inspection | DATE 12/29/2011 |
| DDB Project N O. Inspection | WORK ORDER NO. Inspection | SKETCH NO. Inspection-C4 |
| TITLE Box Culvert Storm Sewer Outfall 002 Box Culvert Construction Details | | |



Box Culvert
Joint 7:
Vertical crack,
dry and no
staining.



Joint 16: Flaking of gray patching material, no staining, no visible infiltration

North of AICO and new manhole: Pipe joint with mineral deposits associated with seepage at crown.

