Gordon Drive & Bacon Creek Constructability Review

Project:	NHSX-012-1(038)--3H-97 Reconstruction of the Gordon Drive Viaduct in Sioux City
Subject:	Constructability Review No. 2
Date:	Monday, March 02, 2026
Location:	Iowa DOT District 3 Office Virtual (Microsoft Teams)

1. Meeting Purpose

The purpose of the meeting was to review constructability of the proposed Gordon Drive Viaduct and Bacon Creek Conduit (BCC) reconstruction project, with an emphasis on the Gordon Drive Bridge over the Floyd River and Union Pacific Railroad (UP) mainline, and the proposed BCC. The meeting primarily gathered feedback from industry partners on construction access and staging. Notes from the November 24th meeting, which discussed the Gordon Drive Bridge over the Bacon Creek channel and Burlington Norther Santa Fe Railway, are available on BidX.

2. Gordon Drive Bridge over the Floyd River and UP mainline

a. Floyd River Location and Context

- The proposed Gordon Dr project begins at Virginia St on the west and ends at roughly Rustin St on the east. The project will replace the approximately 4,000'-long viaduct with two structures separated by a fill plug that facilitates a Cunningham Dr connection to the Yards.
- Lewis Blvd will be realigned and raised in elevation to create an at-grade intersection on Gordon Dr. Profile adjustments on Gordon Dr will also facilitate double-stacked trains under the proposed structures.
- One of the focus points of today's meeting is the proposed west structure, which crosses the Floyd River.
- The proposed bridge features two 274'-long spans, one of which spans the Floyd River.

b. Floyd River Staging Constraints

- The preferred alternative alignment has been shifted south so the existing viaduct can be used for maintenance of traffic during construction, provided no issues arise during annual inspections, which occur in May every year.
- The existing viaduct was originally constructed in 1936 and modified in the 1960s for relocation of the Floyd River. The existing structure foundations are primarily timber piling. The piers in and adjacent to the Floyd River are founded on steel H-piles.
- The existing viaduct remains load posted at 20 tons with one lane of travel in each direction. DOT does not currently anticipate any material delivery on the existing structure and restrictions on top-down demolition will be in place.
- During the November 24th constructability review, contractors asked whether DOT would consider load rating the structure for construction. Iowa DOT's Bridges and Structures Bureau (BSB) has preliminarily stated their preference for the winning contractor to perform their own load rating of the existing structure for their proposed method of demolition, though the conversation regarding construction load rating is ongoing within DOT.
- Project staging anticipates use of the wider overbank area on the east side of the Floyd River channel.

c. Floyd River Channel Constraints

- A levee constructed with the 1960s Floyd River Flood Control Project terminates about 800 feet north of the proposed Gordon Dr bridge.
- This project will require a Section 408 permit from the US Army Corps of Engineers and there will be limitations on work to be performed in the channel.
- The Floyd River is also a designated paddling route beneath Gordon Dr.

d. Floyd River Railroad Constraints

- The Andersons are served by a spur under proposed Span No. 2. Rail traffic is on an as-needed basis and typically consists of about 5 cars per train.
- The UP mainline runs under proposed Span No. 4. The UP mainline carries around six through trains per day with about 100 cars each. UP's ROW is about 100'-wide, which will be clear spanned. Work windows over the UP mainline will be limited.
- Transco is served by UP and BNSF on an as-needed basis on the spur track under proposed Span No. 5.

e. Floyd River Utility Constraints

- A MidAmerican Energy 16" high-pressure gas main crosses under Gordon Dr west of proposed Pier No. 2. The gas main will be protected in place and remain in service during construction.
- A Sparklight fiber optic line is also present west of proposed Pier No. 2 and will be protected in place during construction.
- The MidAmerican high voltage transmission line over proposed Span No. 4 will be relocated in-line to provide vertical clearance. The proposed clearance is unknown now, but MidAmerican indicates it will be higher than existing conditions.
- The MidAmerican 16" high-pressure gas main paralleling proposed Span Nos. 4, 5, and 6 will be maintained in place. The same line east of Steuben St will be relocated prior to construction.

f. Floyd River Right-of-Way Constraints

- Construction easements are being acquired between Floyd Blvd and The Andersons spur south of existing Gordon Dr.
- Construction easements are being acquired in the Floyd River Channel south of existing Gordon Dr.
- Construction easements are being acquired between the UP mainline and the Transco spur south of existing Gordon Dr.
- Iowa DOT is currently working to acquire the Sapp Brothers filling station west of Steuben St.

3. Gordon Drive Bridge over the Floyd River and UP mainline (Industry Input)

Issue #1 – Railroad Crossings

Contractor Concerns

- The contractors do not feel they will be able to negotiate the temporary crossings after project letting without impacting the construction schedule.
- The railroads have recently begun to prohibit the use of public grade crossings near project areas for construction traffic. Some railroads have indicated prohibition on public grade crossings includes legal loads, not just construction equipment. However, the contractors do not believe the railroads can prohibit legal loads on public grade crossings.

- The contractors indicated that costs for flaggers, insurance, and observation could be significant for three separate tracks operated by two railroads. Those costs are difficult to estimate unless well defined in the agreements. Flaggers cost up to $3,000 per day, which could total hundreds of thousands of dollars. Observers, if required, are typically capped at $1,600 per day in the special provisions.

Industry Suggestions

- The contractors recommended that permits for temporary grade crossings of The Andersons spur, the UP mainline, and the Transco spur be obtained by DOT. The temporary crossings would facilitate the movement of assembled cranes between worksites rather than requiring them to be disassembled for their relocation.
- The contractors expressed a preference for a minimum 35'-wide temporary track crossings sited 30'-50' from the proposed Floyd River Bridge.
- The contractor recommended that flagging and observation requirements be defined during the railroad agreement phase and communicated to the contractor so they can be accurately estimated during bid preparation.

Issue #2 –Space Available for Construction

DOT Questions to Contractor

- Does the ROW provided south of the proposed bridge provide sufficient space for construction?
- Iowa DOT noted that they retained possession of the area in the Floyd Blvd interchange area for use as storage during this project. Iowa DOT also noted City-owned lots west of Bacon Creek, property being acquired east of Bacon Creek, and property being acquired west of Steuben St as potential laydown areas for the project.

Contractor Concerns

- While the space south of the proposed bridge appears to be sufficient for construction, an offsite yard will likely be required for material and equipment storage due to lack of space outside railroad ROW and beyond the Floyd River inundation limits.
- The need for offsite yard space is more critical if the temporary rail crossings suggested by the industry cannot be installed.

Industry Suggestions

- Provide additional laydown area for storage of materials and equipment and denote locations in the project plans.

Issue #3 – Floyd River Permitting

DOT Questions to Contractor

- Project plans do not explicitly define crossings of the Floyd River channel. Would the contractors pursue construction of Floyd River crossings? Will a channel crossing or platform in the channel be required for bridge construction?

Contractor Concerns

- The overbank areas appear to be below the highwater elevation, which will require permits to work in any case.
- Would excavation be allowed in the channel or is it not allowed due to presence of levees?
- Does the Floyd River paddling route designation affect what drainage structures could be used to maintain flow? DOT will investigate effects of the paddling route designation on what work can be performed in the channel.

Contractor Recommendations

- The contractors believe that either temporary channel crossings or work pads will be required to construct the proposed Floyd River Bridge. The contractors recommended that both approaches be permitted to give the contractor flexibility in their approach, which could change once onsite.

Issue #4 – Foundation Construction

DOT Questions to Contractor

- The proposed channel pier footings are deep with respect to the channel itself and significantly below the gas main and fiber optic lines west of proposed Pier No. 2 that are to be protected in place. Are there any concerns with the depth of coffer dams or installing them nearby utilities that are to be protected in place?
- Iowa DOT noted that utility survey files would be shared with the contractors.
- Iowa DOT noted that a test pile program will be implemented to assess vibration impacts due to driving pile adjacent to nearby structures, utilities, and railroads. This program will be in a separate letting and will be completed prior to this project letting.

Contractor Concerns

- Coffer dams will be a large project expense and difficult to construct because of their depth.
- Coffer dam tiebacks would be difficult to install given the proximity of the utilities to remain in place.
- The contractors noted vibration from continuous pounding to install each conventional pile will have a cumulative effect.

Contractor Recommendations

- The contractors believe that drilled shafts in lieu of coffer dams and driven piles would be a better foundation option, as noted in the first constructability review. They see particular benefit for piers near utilities. The contractors would like to see the top of the shafts installed as close to the surface as possible to negate the need for coffer dams.
- The bedrock depth does not concern the contractors and potentially bolsters the case for drilled shafts. The contractors noted that the drilled shafts to construct the Bacon Creek bridge over I-29 had foundations that exceeded 150' in length.
- The contractors asked to limit the diameter of the drilled shafts if they are pursued, so the cages are easier to handle.

Issue #4 – Viaduct Demolition

DOT Questions to Contractors

- The proposed south shift in alignment provides about 19' of clearance from the north dripline of the proposed structure to the south dripline of the existing structure. West of Floyd Blvd, the distance from the north dripline of the existing structure to the ROW line bordering the Kellogg substation is approximately 18'. As a result, the demolition will probably proceed linearly. Other constraints on removal include the presence of overhead power and railroads.
- Does the amount of ROW north of the existing viaduct or the other constraints concern contractors?
- Does a more linear demolition approach that stays within ROW concern the contractors?
- Would access to the westbound lanes of the new Floyd River bridge benefit the contractors during demolition?
- Are contractors concerned with the 20-ton load posting limiting the size of equipment on the existing viaduct?
- No channel crossing is planned for the north side. Will a channel crossing or platform in the channel be required for the viaduct's removal?

- Would any contractors pursue using railcars to haul materials away from the bridge demo sites?

Contractor Concerns

- Working days for viaduct demolition need to be sufficient for demolition. The smaller the equipment used for demolition increases the time it takes.

Contractor Recommendations

- Provide the bridge load rating details to contractors so they can better assess the limitations of the existing structure for construction equipment and traffic.
- Contractors indicated that the proposed bridge may be too far from the existing structure for removal equipment to be placed on the new bridge's westbound lanes.
- Provide the same number of available rail crossings on the north side of the existing viaduct for removal as are available on the south side of the proposed bridge for construction.
- Provide the same channel crossings permitted for the new bridge's construction on the north side for removal of the old bridge. The most cost-effective way to remove the old bridge is to drop the deck and pick it off the ground – Access to the channel will be required to retrieve debris. The channel access will also be needed to pick the existing beams.
- The contractors suggested that bridge demolition will take at least a full construction season.
- The demolition approach will vary by contractor and depend on factors like their other workload and the availability of incentives.
- The contractors do not believe the railroads would allow them to use their tracks for railcars to transport material to or from the worksites. The contractors believe the agreements required for switching would be too difficult and that they would rather assume the potential for damage to their own crane mats than seek approval for rolling stock on the railroad facilities.

4. Bacon Creek Conduit

a. Location and Context

- The existing BCC is comprised of three separate culverts. The 8' x 10' south conduit was constructed in 1909, the 12' x 12' center conduit was constructed in the 1930s, and the 8' x 10' north conduit was constructed in the 1960s, along with new outfalls for the south and center conduits.

- The existing south conduit is considered eligible for listing on the National Register of Historic Places (NRHP) and will be preserved in place.

b. Proposed Structure

- The existing Bacon Creek Conduit (BCC) will be replaced by a new larger twin 16' x 10' x 2,500'-long reinforced concrete box culvert (RCB). Cast-in-place (CIP) and precast alternates are going to be considered. The increased capacity will reduce flooding in the area.
- While the inlet and outlet locations of the proposed RCB will remain in their current location, much of the new RCB will be constructed off alignment between the existing south and center conduits. Much of the north conduit will be replaced by an open ditch.
- The outlet section of the proposed structure overlaps with the existing conduit to minimize impacts to the downstream historic channel and BNSF Railway bridges. The south wall of the proposed box culvert generally aligns with the existing south wall of the BCC, but the interior walls are offset to provide space for lap splices between stages.

c. Bacon Creek Staging

- BCC staging is being developed to maintain the base flows of Bacon Creek in at least one barrel of the BCC system and could use baffles upstream or within the conduit itself to shift flows while the outlet overlap section is constructed.
- Staging plans anticipate temporary junctions to tie the existing conduits to the proposed RCB so flows can be maintained in the existing BCC once the overlap section is complete.
- Upstream of the outlet overlap section, a dry worksite should be maintained since base flows will not be conveyed through it. The staging plans show construction proceeding from downstream to upstream to maximize the dry worksite.
- The proposed BCC under Fairmount St has been identified as a potential early project so the Gordon Dr/Fairmount St intersection is available for use in detours later in the project. While the early project is to be constructed in the clear, dewatering of the sump excavation would be required.
- Once the Fairmount St intersection is complete and reopened to traffic, construction would move to the outlet section of the proposed conduit. The outlet section construction would begin with closures of some Lewis Blvd interchange movements.
- Staging breaks in the conduit are provided for construction of utility crossings.

- The segment of the proposed BCC from Westcott St to Fairmount St will be constructed between Gordon Dr and Correctionville Rd, which will be the narrowest work site on the project.
- The proposed conduit construction crosses the existing center conduit east of Fairmount St, after which flows would be diverted to the new conduit or the existing south conduit.

d. Bacon Creek Flood Mapping

- 100-year flood events bypass the Rustin St inlet of the existing BCC, which contributes mapped flood areas between Lewis Blvd and Rustin St.
- The proposed conduit will be larger so that flows contained in the channel upstream east of Rustin St will be wholly contained in the new conduit. As a result, the mapped flood area should greatly diminish.
- The BCC worksite will need to be configured so that there will be no temporary backwater rises during construction.

e. Bacon Creek Excavation

- The excavation for the new BCC is anticipated to be about 52'-wide, which accounts for the proposed twin 16' x 10' RCB with an 8'-wide allowance from the walls to the shoring on each side. For comparison, the curb-to-curb distance between Correctionville Rd and Gordon Dr is about 83'. The trench would be similar for both CIP and precast alternates.
- The excavation would generally be about 20'-deep, with deeper 20' to 25'-deep excavations in the Lewis Blvd vicinity. The proposed shoring heights are too tall for typical cantilever shoring installation.
- The designers intend to provide shoring profiles in the plans but a vendor would have to develop and seal the actual shoring designs.

f. Bacon Creek Available ROW

- Right-of-way is most constricted between Gordon Dr and Correctionville Rd from Westcott St to Fairmount St.
- Staging plans generally try to maximize space available for existing traffic, though lane closures will also be required for delivery of materials and operation of equipment. For example, Correctionville Rd could be reduced to one-way single-lane operations.

g. Bacon Creek Utility Relocations

- A 24" water main paralleling Lewis Blvd will be reconstructed over the outlet of the proposed conduit.
- A proposed 16" water main will be constructed parallel to the BCC from the reconstructed 24" Lewis main to Westcott St. The Westcott St water main over the BCC will also need to be reconstructed. A handful of smaller water line crossings of the proposed BCC will also need to be constructed.
- Two SDR26 sanitary lines will be collocated in the BCC trench to replace existing lines running in the existing center conduit.
- Several storm sewers will be tapped into the proposed BCC.

h. Bacon Creek Historic Resource

- Since the south conduit is eligible for NRHP listing, the environmental document has committed to minimize impacts to it during its abandonment. The abandonment procedure has been coordinated with the State Historic Preservation Office (SHPO).
- The south conduit will be filled with lightweight foamed concrete (LWCF) to preserve the south BCC in place while supporting the Gordon Dr pavement above. Prior to its filling, the floor of the conduit will be covered with a granular drainage layer and a bond breaker applied to the conduit walls to prevent adhesion of the LWFC fill.
- Commitments made to SHPO include 5' x 5' access ports for placing LWFC fill at about 200' to 300' spacing and two larger 8' x 8' access points to get equipment into the BCC.
- Similar LWFC fill will be used for the center and north conduit abandonments, but with fewer limitations on access and preparation.

5. Bacon Creek Conduit (Industry Input)

Issue #1 – General Constructability

DOT Questions to Contractor

- Could BCC project staging have the contractor place their cranes on top of the completed and backfilled sections as they work longitudinally down the culvert alignment?
- Does construction of a short, isolated segment of culvert under Fairmount St as an early project concern the contractors? Are there concerns about protecting the culvert in-place?

- Would any contractors consider building the BCC a cell at a time, staggering their construction as they work down the conduit.

Contractor Concerns

- The contractors noted limited work area between Gordon Dr and Correctionville Rd.
- The lack of space between the shoring for the conduit excavation and the Gordon Dr and Correctionville Rd curb lines is very limiting to the contractors. Even small crane swing radii would want to swing into traffic.
- Contractors believe the crane loads to handle precast segments would be too much to be supported by the completed culvert in a linear construction scenario.
- Contractors asked about the groundwater elevation. HDR noted borings showed the groundwater about 29' from the surface.
- The contract duration will be longer than normal due to lower production rates than typical projects.

Contractor Recommendations

- Depict the water table elevation in the shoring and/or culvert plans so contractors don't have to flip between plan sheets to determine where the water table is at.
- Contractors believe it would be beneficial if plans allow mixed use of precast and CIP culver segments.
- Though it would be inconvenient, the contractors believe in-place protection of the short Fairmount St culvert segment would be feasible. The plans should provide minimum requirements and details for bulkheads and in-place protection. Some contractors may propose other ways of temporarily stabilizing the segment.
- Pay special attention to contract durations and working days due to anticipated lower production rates than normal.

Issue #2 – Maintenance of Flow During Construction

DOT Questions to Contractor

- Would BCC maintenance of flow staging details in the contract plans benefit the contractors or should that be left to the contractors?

Contractor Recommendations

- One contractor suggested that flow maintenance could be facilitated by using shoring to redirect water from the existing conduit to the completed segments in lieu of junction segments.
- Provide a flow maintenance plan and include drainage features, such as temporary junctions to tie the existing BCC to the proposed conduit in the plans. The contractor could propose alternatives, such as using shoring to manage flows, as value engineering proposals.
- Provide information regarding minimum flows that must be maintained in the BCC system during construction. The information could be existing normal flow averages per month.

Issue #3 – Shoring

DOT Questions to Contractor

- Do the contractors anticipate procuring 100% of the shoring in advance or will there be ability to reuse shoring in multiple sites? Can shoring be pulled and reused at other sites?
- Is uplift during sheet pile removal a concern, particularly for the proposed sanitary lines to be installed in the proposed BCC trench?

Contractor Concerns

- Shoring is a significant piece of the BCC project and will be a differentiator as to which contractor wins the project.
- The exposed face height of the shoring will probably require tie-backs or internal bracing. Tie-backs will probably require sacrificial lower supports or preclude shoring removal altogether.
- Existing and proposed utilities need to be well defined in the plans due to potential conflicts with sheet piling and tie-back systems.
- It seems unlikely that a single internal brace near the top of the excavations would be sufficient to support the sheet pile walls. Additional braces may be required lower in the section near the culvert construction, though lower internal bracing the shoring would conflict with the culvert construction itself.
- Shoring will be expensive, though its reuse is dependent on whether vibration or uplift concerns preclude it being removed and whether the project schedule will allow time for its removal.
- Are there any historic sites with stringent vibration limits? DOT noted the presence of two archaeological sites in the Lewis Blvd interchange. DOT noted

that Tastee Inn & Out is also eligible for NRHP listing and will require vibration monitoring.

- Contractors noted there is also potential for street or structure uplift or settlement when steel sheet piling is removed.
- Shoring will need to be designed for crane loads, which will be significant for the precast alternative.

Contractor Recommendations

- Some contractors may try to reuse shoring, though it was recommended to assume the entire shoring need be quantified in the plans.
- Some contractors may try to internally brace the shoring since tie-backs may have issues with utilities and hinder reusability.

Issue #4 – Utilities

Contractor Concerns

- The contractors questioned whether the utilities will be relocated prior to removal of the existing utilities. HDR noted that the timing of the utility relocations will be noted in the staging plans.
- Do the existing sanitary lines in the area need to be maintained during construction. DOT noted the existing lines are in the existing center conduit and would remain in service until the new downstream lines collocated in the new BCC trench are complete.

Contractor Recommendations

- Clearly depict all utilities on the plans and share utility base mapping with the contractors.

Issue #5 – Existing BCC abandonment

DOT Questions to Contractor

- Does the worksite provide sufficient space for LWFC delivery to fill the existing conduit sections?
- Are there contractor concerns regarding working within the conduit for its preparation and filling?
- Do the contractors see any issues with the volume of LWFC, its placement under existing pavement, and completing the work under traffic?
- How many details for filling the BCC should be shown in the project plans? Should specific details like bulkhead locations, lift depths, and fill staging be depicted?

Contractor Concerns

- LWFC infiltration of the subdrain could be an issue. LWFC has a fairly light consistency, which could infiltrate the drainable layer and clog the subdrains.
- Contractors will need to pay attention to the filling operation since fill material can escape through cracks in the culvert, resulting in material loss.
- The contractors do not believe that the filling operation under traffic is allowable. The contractors would prefer that traffic be shifted away from the fill ports.
- Overnight filling operations would be difficult since it would be difficult to open a port in the box culvert and get it closed back up before reopening the roadway.
- Displacement of the subdrains and drainable base layer may occur as LWFC is pumped into the existing box culverts. However, the displacement would be difficult to verify if it occurred during filling.

Contractor Recommendations

- Provide detail in the plans regarding the access ports, including those that would be mandatory or optional to use, and any limitations regarding impacts to the conduit. More detail benefits the contractors by helping them understand better what is expected of them.
- Lift depths should be limited so the LWFC at the bottom of the section is not crushed by its own weight above.
- Consider using porous concrete in the bottom of the box culvert for drainage in lieu of a sand base layer with a subdrain. Regular LWFC could be used above the porous material at the bottom of the culvert. The contractors believe placing porous concrete would be easier than placing and spreading a sand layer with subdrains.

6. Project Letting Information

- Iowa DOT anticipates a minimum twelve-week advertisement. A pre-advertisement meeting is being considered.
- Iowa DOT anticipates an early project, which will probably include work on detour routes and a few other key areas, but the bulk of the Gordon Drive and Bacon Creek Conduit work will be in one project. The primary project will include both bridges, all bridge demo, most of the BCC construction, and most of the roadway construction.

Attendees: Brittany Anderson Ryan Klassmeyer

Janee Becker

Darwin Bishop

Tom Busta

John Carter

Ryan Cheeseman

Jennifer Crumbliss

Christine Dekker

Mitch Dillavou

Jim Ellis

Jessica Felix

Kyle Frame

Jason Gall

Ryan Haggin

Alan Hayes

Mark Holm

Brian Jacob

Jarret Kasan

Henry Kelly

Ryan Kipp

Jason Klemme

Paul Knievel

Mark Leusink

Kevin Merryman

Rollin Nemitz

Scott Nixon

Dusten Olds

Jesse Peterson

Gordon Phair

Dave Phillips

Justin Pottorff

Dylan Pryor

Mustafa Qaisi

Garret Reeder

Mike Tarver

Shane Tymkowicz

Sarah Tracy

Lili Yang