



To: Middlebury WCRS (23)
Project File

Date: June 10, 2016

Memorandum

Project #: 57603.00

From: Mark Colgan, P.E.
Peter Smiar, P.E.

Re: Middlebury WCRS (23) : Spill Containment Approach

Background

The WCRS(23) Project located in Middlebury, Vermont proposes to reconstruct and lower approximately 3,550 linear feet of traditional unimproved rail line with 1,425 linear feet of line installed in impervious U-shaped retaining wall, 340 linear feet of line installed in a box-shaped tunnel, and the remainder as traditional rail line. The U-shaped and tunnel portions of line will be drained via perforated PVC pipes laid within the bottom of the U-wall, at the base of the stone ballast. These perforated drain pipes slope from both directions along the U-wall and tunnel to the low point at station 24+50. From this point, the perforated system outlets to a deep manhole located to the west of the tunnel and into a series of proposed 36" diameter storm drainage lines that outlet to Otter Creek at the proposed project outfall just below the dam.

VHB has been asked to provide a concept to retain flows within the system in the event there is a rail car fuel spill or similar leakage of contaminated fluids along the railroad tracks. As all flows within the U-Wall and tunnels are directed into the 36" drainage outfall pipe, there is an interest of adding a mechanism to trap flows and allow mitigation of contaminants prior to flowing into Otter Creek. We've completed our initial analysis and this memo summarizes a feasible approach for trapping spills within the drainage system.

Proposed Approach

Access to the drainage system is limited due to the fact that the drainage system downstream of the tunnel is very deep (~35 ft.) and will be installed in bedrock via a microtunneling machine. As such, options for installing oil traps or other inline separators is very limited. Capture of spills at the outlet end of the primary outfall pipe emerged as the most viable opportunity for managing discharges to the river.

The proposed concept for containment of spills involves installing a means of closing the outlet end of the main drainage outfall pipe in the event of a spill. The 36" diameter pipe provides excess capacity for temporary storage of spilled material until a corrective action clean-up plan is implemented.

The attached pipe profile and detail shows a proposed 6 ft. x 6 ft. precast concrete manhole containing an aluminum slide gate that can be used to close the end of the pipe in the event of a spill and allows access to the spilled material within the manhole and pipe. This structure would be located just upstream of the drainage outfall headwall. Also attached is a product cut sheet for a sample slide gate.

The volume of the drainage system is estimated to be 3,053 CF (22,836 gallons) at the rim elevation of the slide gate structure (335 ft. outfall pipe length). This assumes 6 ft. internal diameter manholes and a 36 in. diameter drainage pipe.



Spill Response Plan

A spill response plan that details the procedure for operating the valve in the event of a spill will need to be incorporated into the operational phase plan for the tunnel. For the system to be effective, immediate response by designated personnel with backup responsibilities will be required involving Railroad, state, and municipal emergency response. Staff should be trained in understanding the valve location, operation, and general function. Documented semi-annual inspection of the valve and manhole structure will also be included in the operational plan.

Generally, spill cleanout is expected to involve pumping of spilled material from the pipe via the manhole into a truck tank, followed by cleaning of the drainage network itself. Contact information for private spill cleanup contractors should be included in the spill containment plan.

The response plan should establish a partnership with the MFD including the filing of copies of the spill plan at Station#1 on Seymour Street to provide additional redundancy in the response plan. Signage is also recommended at the outfall as well as the entrance to the U-wall and tunnel indicating that a valve must be turned in the event of a spill.

Comments/Considerations

Once we receive initial input from VTrans and the Town on this proposed spill containment system, we can further investigate specific details for the gate system or other alternatives as requested. The goal would be to incorporate the preferred system into the Contract 1 construction plans scheduled for construction this fall/winter.

If this gate system is advanced, we will investigate alternate handwheel options as the current option requires a threaded rod to be exposed approximately 4 ft. into the air and if bent or vandalized, would jeopardize the system function and require replacement. Refinement of the details may simply require modifying the manufacturer's details to add a protective metal sleeve around the threaded rod.

We would also recommend verifying the required design vehicle for a spill response truck and identify access to structure with hoses for this specific site location to ensure the operational plan accounts for all access needs.