

OLY1401.004

October 26, 2015

Michael J. Anderson, P.E.
Safety of Dams
Nevada Division of Water Resources
901 South Stewart Street, Suite 2002
Carson City, NV 89701

**Subject: Amended Improvement Plans and Specifications for
Skye Canyon Detention Basin 1 (J-716)**

Dear Mr. Anderson:

Subsequent to initial submittal, CCRFCD review comments were issued that affected and resulted in revisions to the improvement plans and specifications that were previously submitted with signatures dated August 6, 2015. The following are the September 17, 2015 CCRFCD comments with individual responses reflected in the amended improvement plans and specifications included herewithin.

Comment: *Provide detention basin identification and flood warning signs. The Engineer must coordinate with City of Las Vegas for sign templates and sign locations.*

Response: The requested signs have been added to the plans at all access points from Grand Teton Drive, the pertinent corners of the project and in proximity to the emergency spillway.

Comment: *Provide a copy of the approved Emergency Action Plan (EAP) to the District upon availability.*

Response: Acknowledged, the EAP will be forwarded upon completion and approval.

Comment: *Sheet G-1:*

- a) *Detail 8/D-2: The inflow structures should be structurally engineered to control and confine the offsite inflow. The velocity is at the threshold (14.98 feet per second) for the low strength lining and therefore a more substantial design is recommended to prevent erosion and additional maintenance of the inflow structures. Revise accordingly.*
- b) *Detail 5/D-2: Provide cut-off wall depth on the plan for the OFF6 inflow. Provide appropriate cut-off depth for OFF4 inflow. Verify all cut-off wall depths and revise accordingly.*
- c) *Update "Summary of Detention Basin Performance Parameters" table. Provide parameters on the grading plan.*

- d) *Provide Detail 17 on Sheet D-2.*
- e) *Provide block and cable fencing limits along west boundary. Remove fencing line work where block and cable fencing is not proposed.*

Response: See below for individual responses.

- a) The inflow channels for offsite flow conveyed down the soil cement slope from Subbasins OFF4 and OFF5 have been adjusted from the previous 3:1 (H:V) slope that carried velocity at the maximum CCRFCD Manual threshold to a lesser 4:1 (H:V) slope to better control the velocity. As a result, maintenance and erosion concerns are within the normal range of acceptability.
- b) A concrete cut-off wall has been proposed at the top of slope for the transition from an average sloped riprap lined wash to steep soil cement lined detention basin slope for the inflow from Subbasins OFF4, OFF5 and OFF6. These concrete cut-off walls have been proposed as the typical 3-ft deep because the proposed riprap lining in the approach washes controls the velocity within the CCRFCD Manual range of acceptability.
- c) A current table that summarizes the performance parameters for the detention basin has been added to Sheet C-3.
- d) Detail 17/D-2 has been provided on the plans. This detail represents the concrete pad at the toe of slope intended to protect against the energy change as the flow transitions to the flat bottom of the basin.
- e) Block and cable fencing is provided around the entire perimeter of the basin, located at the line of 10-ft buffer from BLM property on the west. The only exception where the fencing isn't located is across the deep un-navigable wash where the emergency spillway and outlet pipe are located.

Comment: *Sheet G-2:*

- a) *Revise leader line to point to the flood threat station conduit.*
- b) *Extend Section 2/D-4 past property to match detail. Show block and cable fencing location and provide dimension from buffer on the detail.*

Response: See below for individual responses.

- a) The leader line has been corrected.
- b) Section 2/D-4 has been extended in plan view and all aspects including the block and cable fencing have been shown accurately in the detail.

Comment: *Sheet G-3:*

- a. *Extend the plan view to show that proposed channel between -Sta. 11+00 and -Sta. 14+00 is within the existing BLM Grant N-7772.*
- b. *Provide a detail to include location of block and cable fencing east of the channel in relation to the finished grade.*

Response: See below for individual responses.

- a) An additional leader showing the channel is within the existing BLM grant has been provided to the right viewport on Sheet G-3. Note the existing grant is extensive and extends off the page; however, after discussion with the reviewer this is considered acceptable.
- b) The block and cable fencing is proposed at the boundary of proposed drainage easement at both existing and proposed ground, and all applicable details have been updated accordingly to show accurately.

Comment: *Sheet G-4:*

- a. *Provide inlet structure ramp finished grades.*
- b. *Detail 4 on Sheets D-3 and D-4: Address access road elevation discrepancy (3,036 feet).*

Response: See below for individual responses.

- a) Ramp grades have been added to the plan on G-4.
- b) The access road to maintain the spillway has been adjusted on Detail 4/D-4 to show a 3037-ft finished grade to match plan and meet access requirements.

Comment: *Sheet G-5/Detail 5/D-4: Provide fall protection above 60-inch RCP headwall.*

Response: Post and cable fencing with plate and bolt connection to the top of headwall has been proposed for fall protection.

Comment: *Sheet D-3:*

- a. *Details 1 & 2: Clarify type and thickness of fill. Verify constructability of structural fill and the top thickened RCC section (fill between RCC and finished grade).*
- b. *Section 5: Provide Note 2 and provide specification/requirements for structural fill.*

Response: See below for individual responses.

- a) The RCC stepped spillway has been cleaned up for clarity. The relationship between fill, finished ground and RCC is now clearly shown. Additionally, all hatching has been updated to reflect distinct improvements in the spillway construction.
- b) Note 2 has been removed and refer to Section 207 of the standard specifications and special provisions for the requirements of the structural fill that the RCC is proposed on top.

Comment: *Sheet D-4:*

- a. *Detail 1: Show ramp location on detail.*
- b. *Detail 4: Consider a cut-off wall at end of the RCC apron.*

Response: See below for individual responses.

- a) The detail has been shown to show the maintenance access ramp.
- b) A 4-ft deep concrete cut-off wall has been proposed at the top of slope between the 3:1 (H:V) soil cement plated slope and the high strength soil cement that designates the stepped spillway.

Comment: *Sheet D-6, Detail 1: Revise details such that the dimensions are legible.*

Response: The detail has been adjusted for legibility.

Comment: *Sheet S-1, Note 2: Add to include the "Special Provisions".*

Response: The additional Special Provisions has been added to Note 2.

Comment: *Sheet S-3: Per Sheet S-2, the maximum expansion joint spacing is 180 feet. Per the HCDDM, for channels with expansion joints greater than 100 feet on center, the ratio of longitudinal steel area to concrete cross-sectional area shall be greater than 0.005. Verify reinforcement requirements and revise accordingly.*

Response: Longitudinal reinforcing as shown meets design criteria. Plans call out #5 bar @ 10" O.C. in a 6" slab which is 0.37 square inches per foot. (Required = 0.005 x 6" thick x 12" wide = 0.36 square inches per foot).

Comment: *Sheet S-7: Provide a manhole for District personnel to access the outlet structure sensor. Provide appropriate structural details.*

Response: A manhole for personnel access has been added to access the outlet sensor.

Comment: Sheet S-8:

- a. *The current design of the trash rack includes the top of the rack being secured by three hinges. Debris impacting the trash rack during a major storm event may damage the hinges and cause the rack to fail. Revise the trash rack to be hinged at the top of the back wall. Provide appropriate structural details.*
- b. *Provide transverse bar(s) to minimize debris that can pass thru the trash rack.*
- c. *It appears that the bottom of the rack is directly on the ramp slab. Consider a pedestal design for the racks. Provide bearing pad for the trash rack base column to absorb shocks during opening/closing the trash rack.*
- d. *Provide trash rack capacity calculation. Verify that the grate opening is adequate assuming a maximum velocity of 5 feet per second thru the grate. Account for 50% clogging factor. Address as necessary.*

Response: See below for individual responses.

- a) Trash rack hinge details have been revised. Revised hinge details are more stout and less susceptible to failure.
- b) The gap between bars in the grate is considered small enough to not require additional debris catching protection with extra transverse bars than proposed. After discussion with the reviewer, the proposed design's debris catchment is considered acceptable.
- c) Pedestals have been added with an elastomeric bearing pad, as requested.
- d) Including a 50% clogging factor on the grate's open area, the maximum flow to pass through the grate at a rate not exceeding 5 ft/s is 88.5 cfs. The design outflow from the detention basin is 71 cfs, or less than the maximum allowable flow; therefore, the grate design is considered acceptable.

Comment: Special Provisions:

- a. *Update Section 104 to reflect current detention basin design and parameters.*
- b. *Section 310: District recommends a minimum of 2,000 psi compressive strength for the RCC spillway (high strength soil cement).*

Response: See below for individual responses.

- a) The outlet structure has been adjusted to reflect the current design with one (1) 60-inch RCP outlet pipe.
- b) The specification for the strength of the high-strength soil cement has been adjusted to 2,000 psi. An updated geotechnical report, mix design and associated specifications have been provided.

Respectfully Submitted,

SLATER HANIFAN GROUP

Steve Jones, P.E.

Project Manager - Flood Control Division

cc: Marc Bolduc – Olympia Companies
Bobby Williamson – Olympia Companies
Jerry Slater, P.E. – SHG
Mark Failla, P.E., CFM – SHG
Rhonda Miller – SHG

