



## Jordan & Salt Lake Canal Design Criteria and Submittal Requirements

The Jordan & Salt Lake Canal is owned, operated and maintained by Salt Lake City Department of Public Utilities (SLCPU). A Utility Permit Agreement must be processed and approved through the Property Division of the Public Utilities Department prior to any access and work within the canal property limits, including crossings of roadway, utilities and other facilities. SLCPU owns the canal property outright, which extends as a minimum 33 feet each side from center line of canal (66 foot property width), but may be wider in some reaches.

**AGREEMENTS (i.e. lease; revocable permit; utility permit)** All canal use agreements must be processed and approved through SLCPU prior to any work within the Canal property.

Contact: **Karryn Greenleaf** (801-483-6769). Preliminary Agreement requirements are:

1. Design drawings, specifications, and calculations submitted and approved
2. Legal description of canal property to be used as an exhibit to the Agreement, including the county sidwell number
3. Agreement, signed and notarized
4. Agreement Fee paid- currently a minimum of \$1000.00 or as determined by Director.

### DESIGN

1. Design shall be completed and stamped by an engineer registered in the State of Utah, and shall be accompanied by survey data and hydraulic calculations as noted in the design criteria noted herein. Design and construction shall meet all requirements of this document and any other governing agency, unless specifically identified and approved by Salt Lake City.
2. Design plans shall be submitted to Salt Lake City Public Utilities and written approval received by the Department prior to construction.
3. Design criteria
  - Slope = 1 foot per mile (0.0189% or 0.0002 ft/ft)
  - Open Channel, 2H:1V side slopes with 8' minimum wide bottom.
  - Capacity, Qc:
    - Canal crossings shall convey 150 cfs irrigation flows with no more than 0.2 feet of backwater through, or submergence of, the proposed crossing structure.
    - Canal crossings shall convey 300 cfs storm overflow capacity without overflowing the canal bank or proposed canal crossing structure.
    - Permanent storm drain connections (discharge) into the canal are strictly forbidden.
  - Survey: Design shall be based upon actual design survey cross sections taken at 50 foot intervals a minimum of 200 feet upstream and downstream of the canal, at the proposed culvert inlet and outlet, and at possible hydraulic transition loss locations.
  - Hydraulic analysis: Provide HY8 or equivalent hydraulic analysis. Results should confirm the proposed structure meets the above design capacity requirements under upstream and downstream flow control conditions using existing channel cross sections as defined above.
  - Size and construction of box culverts: The minimum box culvert dimensions shall be 5'-6" high x 22' wide. Larger sizes may be required to meet the special site conditions. The



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structure shall be designed for H-20 loading. Rebar shall be epoxy coated. Culverts shall have at least a 6-inch thick concrete bottom and tapered wing wall at the upstream and downstream ends. The upstream floor shall have a concrete cutoff wall extending at least 3-feet below the channel invert and the downstream floor shall have a cutoff wall extending at least 5-feet below the channel invert. All concrete structures shall be installed upon 18-inches, minimum, of select structural fill as approved by the engineer. All concrete construction joints shall have a 2-inch x 4-inch keyways and 6-inch waterstop, Swellstop or equal. The design should be considered water tight.

- Erosion protection: Install apron riprap with  $D_{50} = 12$ -inch to limits 12-feet from outlet face at channel bottom and sides. Upstream and downstream transition sections from culvert to open channel shall have  $D_{50} = 12$ -inch riprap for full limits of transition.
- Grate and Fence: A removable or hinged, child-safe (OSHA approved) trash rack grate is required if culvert structure is more than 100 feet long. A cat-walk maybe required if the distance from the platform to the bottom of the grate is longer than eight-feet. Provide a 6-foot high barrier (galvanized chain link, wrought iron and/or concrete) above both canal inlet and outlet structure.
- Access: Provide 14-foot driveway approaches with 14' to 16' wide lockable gate on both sides of canal, both sides of crossing (four gates total) as determined by SLCDPU. Approaches shall have space to park one vehicle off the roadway while unlocking the gate.
- Utility crossings:
  - Excavation of the canal banks and invert is strictly forbid, except where open channel is being replaced by box culvert.
  - Utility pipe crossings under the canal shall be encased and installed by boring methods under the canal. Top of casing shall be a minimum of 4-feet below the canal invert elevation. Casing inside diameter shall be equal to the carrier pipe OD plus 6-inches, minimum. Casing limits shall be a minimum of 5-feet horizontal distance from the outside edge of box culvert or top of canal bank, plus a 2:1 excavation slope. In most instances, the casing limits are the full property extent.
- Materials: Provide manufacturer certification that pre-cast concrete components are designed for appropriate dead and live load conditions with an HS-20 load rating as a minimum. Cast-in-place concrete canal structures shall be designed and stamped by a licensed structural engineer. Structural calculations shall be submitted for review.

### CONSTRUCTION

1. Coordination: Salt Lake City Public Utilities Irrigation Supervisor, **Dave Maiorano (483-6784)**, shall be contacted a minimum of two weeks prior to construction.
2. Construction Period: No work allowed is allowed on the canal or within the canal property during the summer from March 1<sup>st</sup> through October 1<sup>st</sup> to preserve and maintain irrigation delivery contract obligations.
3. Drainage control during construction: Contractor shall be responsible to convey all existing upstream storm drainage flows through the construction site during construction period in



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accordance with a temporary diversion plan approved by SLC Public Utilities. Contractor shall be liable for all damage resulting from his failure to adequately convey storm drainage flows or any other Contractor impact to site. Construction drainage or debris shall not be allowed to enter the canal. Permanent storm drain connections (discharge) into the canal are strictly forbidden.