UTAH LAKE DISTRIBUTING COMPANY

SARATOGA BRANCH

Application Packet

Guide to obtain an Encroachment Agreement with
the Utah Lake Distributing Company (ULDC)

Revised March 2025

Saratoga Branch Background

The Utah Lake Distributing Company's (ULDC) Saratoga Branch begins below and near Camp Williams Military Base and flows south, eventually terminating at Tickville Gulch in the City of Saratoga Springs, Utah. The canal was designed and constructed by the U.S. Bureau of Reclamation (Reclamation) as a part of the Provo River Project in the early 1950s. Reclamation held an easement under the authority of the Act of August 30, 1890 (26 Stat. 371), commonly known as the Canal Act. The Canal Act essentially says that every patent to land west of the 100th meridian has an easement reserved to the U.S. and its contractors for ditches and canals that may be constructed in the future. All the lands under the Saratoga Branch were patented after the date of the Canal Act. On March 24, 2021, ownership of the Saratoga Branch was transferred from Reclamation to ULDC which makes ULDC solely responsible to authorize encroachments to the canal. The principal requirement is that encroachments not adversely impact the use, operation, or maintenance of the Saratoga Branch.

ULDC Application Process

This packet is intended to assist Applicants in working with ULDC. All entities or persons proposing projects within the ULDC corridor or affecting ULDC facilities must obtain permission from ULDC prior to performing work.

This permission is usually granted with an encroachment agreement. In the encroachment agreement, ULDC grants permission for the Applicant to encroach on its right-of-way. In most instances, ULDC owns the canal corridor in fee. In some limited locations, ULDC holds a deeded easement or a prescriptive easement for the canal corridor. An encroachment agreement is (1) a license, (2) a conditioned right to encroach upon ULDC lands, and (3) a collection of contractual rights and responsibilities. It is **not** an easement but is a contract that sets out the terms and conditions under which the Applicant may encroach on the ULDC right-of-way. An encroachment agreement, or any other agreement, must be signed by the Applicant and ULDC **before** construction begins.

Franson Civil Engineers (Franson Civil) is the engineer for ULDC. Neither ULDC nor Franson Civil are responsible for design or construction of encroaching project facilities. ULDC and Franson Civil review project designs and applications in a brief fashion for the purposes of protecting the operation and maintenance of the ULDC canal only. ULDC duties regarding an encroachment run only to its shareholders. Franson Civil duties run only to ULDC. Once an encroachment agreement is executed, limited field review may be provided by Franson Civil to observe that construction appears to be in accordance with the design drawings and the encroachment agreement. The person or entity constructing an encroaching project, and their project engineers and contractors, maintain all responsibility for design and construction. No review or approval waives or modifies any encroachment agreement terms or gives ULDC or Franson Civil any responsibility for design or construction, to workers on site, or the public. It is the responsibility of the Applicant to provide ULDC and Franson Civil with accurate information so a reasonable determination can be made if the project will meet ULDC standards and will not adversely affect ULDC facilities.

Easements

When the canal ownership was transferred from Reclamation to ULDC in 2021, the described easement in the title transfer was two rods on the downhill side of the canal (generally east) and one rod on the uphill side of the canal (generally west) measured from the center of the canal. However, there are locations that ULDC will claim a different prescriptive easement, such as south of 400 North since the canal road is on the opposite side or if the typical width does not encompass the land they need to operate and maintain the canal. In order to determine the prescriptive easement, a site visit with ULDC and Franson Civil will be required.

Application & Review Process Guidelines

The review process can be expedited by ensuring the first submittal to Franson Civil meets ULDC standards by carefully reviewing the checklist that is provided in this packet. The following is a guideline of the typical steps for the application, review, and encroachment agreement process, though projects may vary:

- Franson Civil receives the ULDC **application**, **application fees**, and **drawings**. The review process will **not** begin until these items have been received. The application must be submitted with sufficient time to review the drawings, write and execute the agreement, and construct the facilities between October 15 and April 1. Franson Civil reserves the right to decline applications or delay construction if they (or ULDC) believe the construction may interfere with delivery of water.
- Franson Civil will **review** the drawings. A meeting will be held as needed with Franson Civil, ULDC, and the Applicant to discuss the project. A redline comment letter will be sent to the Applicant with a checklist of items that must be addressed. The reviews will repeat as explained above until all items from the checklist have been addressed and plans are to the satisfaction of Franson Civil and ULDC. This typically takes two reviews.
- An **Encroachment Agreement** will be prepared between the Applicant and ULDC once all of the mentioned items above have been completed. Three copies of the agreement will be sent to the Applicant for signature.
    - After the Applicant has signed the agreement, they will need to secure the signature of the ULDC president.
- Once the agreement has been executed by all parties and the Applicant has their copy, permission has been granted to the Applicant to begin the construction phase of the project in accordance with the agreement.
- The Applicant is required to notify ULDC and Franson Civil at least 24 hours before beginning construction on ULDC facilities.
- Franson Civil and ULDC may perform limited field review to observe that construction appears to be in accordance with the design drawings and the encroachment agreement. It is the responsibility of the Applicant to perform adequate construction review to ensure the facilities are constructed to ULDC standards, and in accordance with their design drawings attached to the encroachment agreement.After construction is complete, the Applicant is required to schedule a **final walkthrough** that will be attended by Franson Civil and ULDC (at its option) to identify any final items that need to be completed before construction is accepted. A **punch list** will be prepared and sent to the Applicant listing items required.

The appropriate application can be obtained at www.fransoncivil.com/canal-applications.

Enclosed in this packet is a copy of the application for a general crossing and the installation of a turnout. Also included is a checklist to assist the Applicant's engineer in designing the plans to ULDC standards. This checklist is updated periodically, so downloading the most recent version of the packet for each new application is recommended.

Any questions regarding the application process can be directed to Patricia Ayaa at Franson Civil. The office phone number is 801-756-0309.

All applications can be submitted via email to encroachment@fransoncivil.com.

Revised March 2025

UTAH LAKE DISTRIBUTING COMPANY SARATOGA BRANCH

Application for Encroachment Agreement
Instructions and Application for Encroachment Agreement
to Construct Within or Cross Canal Right-of-Way

****Generally, the Applicant must be the governmental entity or utility that will eventually own, operate, and maintain the encroaching project facilities. One common exception is a weir for delivery of Utah Lake Distributing Company (ULDC) water to its shareholders.****

1. Applicant for Encroachment Agreement (Applicant): _____
   _____
   Mailing Address: _____
   Contact Person: _____
   Telephone Number: _____
   Email: _____

2. Legal Name of Owner for Agreement: _____
   Owner Mailing Address: _____
   Signatory Name: _____
   Telephone Number: _____
   Email: _____

3. Contact Person (if different than #2): _____
   Mailing Address: _____
   Telephone Number: _____
   Email: _____

4. Engineering Company: _____
   Mailing Address: _____
   Telephone Number: _____
   Contact Person: _____
   Email: _____

5. Brief Description of Proposed Construction (include location and subdivision name, if applicable): _____
   _____
   _____

6. Proposed Start and Completion Dates for Construction: _____

7. Submit one digital PDF copy of the plans to encroachment@fransoncivil.com. Plans shall be drawn to ULDC standards. A Standards Checklist has been prepared to assist engineers in designing to ULDC standards.

8. Application fees are listed below. For initial submittal, the fee below will begin the review process.

Application Type	Application Fee	Possible Refund Amount
Bridge or Box Culvert	$12,000	$3,000
Excavation of Canal	$10,500	$1,500
Large Bore (over 24 inches in diameter)	$9,300	$1,000
New Weir & Turnout	$9,300	Unused Application Fees
Small Boring or Directional Drilling	$5,700	$1,000
Overhead Crossing	$5,700	$3,000
Use of Existing Conduit	$2,500	$1,000

Application fees will be used by ULDC for purposes of administration, coordination, engineer review, preparation of agreements, review during construction, legal guidance, and any other expenses it incurs related to this application. If fees incurred by ULDC are greater than the application fee, the Applicant will be responsible to reimburse ULDC for the remainder of the expenses. Any refund amount shown is refundable upon satisfactory and timely completion of the project, as determined by ULDC. Applicant must submit written request for refund at the end of the project.

Please make all checks payable to: Utah Lake Distributing Company

9. Send ULDC application, plans, and application fee to: Franson Civil Engineers

Attn: Canal Encroachments
1276 South 820 East, Suite 100
American Fork, UT 84003

Telephone: (801) 756-0309
Email: encroachment@fransoncivil.com

NOTE:

1. Starting construction without prior written approval from ULDC may result in ULDC assessing an additional fee of $5,000.
2. If application costs exceed the fees paid, the Applicant will be responsible to reimburse ULDC within 30 days following receipt of an invoice.
3. The review process will not begin until the application fee is paid.
4. This application is valid for 6 months from the date it is submitted. The encroachment agreement must be signed within this 6-month period. Once the encroachment agreement is signed, the Applicant has 12 months to complete work of irrigation company facilities. A new application and fee must be submitted if these time frames are not met.
5. Other permits (i.e. city, county, etc.) are the responsibility of the Applicant.

Neither Franson Civil Engineers nor ULDC will have any responsibility for design or construction of the facilities related to this application.

I have read, understand, and agree to the terms of this application.

Signature of Applicant	Printed Name	Date

UTAH LAKE DISTRIBUTING COMPANY STANDARDS CHECKLIST

SARATOGA CANAL

The Utah Lake Distributing Company's (ULDC) Saratoga Canal begins below and near Camp Williams Military Base and flows south, eventually terminating at Tickville Gulch in the City of Saratoga Springs, Utah. The canal was designed and constructed by the U.S. Bureau of Reclamation (Reclamation) as a part of the Provo River Project in the early 1950s. Reclamation held an easement under the authority of the Act of August 30, 1890 (26 Stat. 371), commonly known as the Canal Act. The Canal Act essentially says that every patent to land west of the 100th meridian has an easement reserved to the U.S. and its contractors for ditches and canals that may be constructed in the future. All the lands under the Saratoga Canal were patented after the date of the Canal Act. On March 24, 2021, ownership of the Saratoga Canal was transferred from Reclamation to ULDC which makes ULDC solely responsible to authorize encroachments to the canal. The principal requirement is that encroachments not adversely impact the use, operation, or maintenance of the Saratoga Canal.

This checklist is intended to assist engineers in designing projects to ULDC standards. All projects seeking acceptance by ULDC must be designed to these standards. When used correctly, this checklist will expedite the review and encroachment agreement process. Not all items on this checklist will be applicable to every project.

Neither ULDC nor Franson Civil Engineers (Franson Civil) will have responsibility for design, construction, or maintenance of the Applicant's facilities. It is the responsibility of the Applicant and its engineer to design the project to ULDC standards. No approval or acquiescence by ULDC or Franson Civil will operate as a waiver or modification of ULDC standards.

In most instances, the Applicant will install, operate, maintain, inspect, repair, and replace the facilities that are constructed through the application process with no interruption of ULDC delivery of water or operation, maintenance, repair or replacement of ULDC facilities.

Note: This checklist is updated when standards are amended. Checking for the latest version of this checklist at www.fransoncivil.com/canal-applications will ensure the most up-to-date information. Standard drawings are also available on the website. ULDC reserves the right to make exceptions to the standards or impose other requirements, depending on the Applicant's project.

GENERAL INFORMATION AND REQUIREMENTS

- ☐ Submit an "Application for Encroachment Agreement" and all application fees.
- ☐ Bonding is required on all ULDC facility improvements. After drawings have been deemed acceptable by Franson Civil, please submit a detailed cost estimate of construction (materials and labor) of the ULDC facilities. Once this has been checked, the bond amount will be set. The bond will be equivalent to the project cost, for projects greater than $10,000. For projects less or equal to $10,000, the bond will be set at $10,000.
- ☐ ULDC maintains their irrigation facilities by burning weeds prior to each irrigation season and as needed. This should be considered while designing your project. ULDC only accepts concrete structures or pipes to be installed in their easement so they will not be damaged due to maintenance.
- ☐ ULDC requests that the types of fencing installed adjacent to their property be fire-resistant. During maintenance of the canals, it is possible that open flames will border the canal easement.
- ☐ Pipes, conduits, or other similar facilities are not allowed to be installed over the canal channel. Irrigation boxes, trees, or other facilities are not allowed to be installed in ULDC corridors. Turnouts, overhead power lines, etc. can be exceptions.
- ☐ All drawings must be stamped, signed, and dated by a licensed professional engineer. This can be completed after the project meets ULDC standards and is ready for the encroachment agreement.
- ☐ Before submitting drawings to Franson Civil for review, please verify that all notes, references, and labels are correct and accurate.
- ☐ All construction within the ULDC canal corridor must be designed to ULDC standards. The 'ULDC Standard Drawing Set' is available for reference and can be found at Canal Crossing Applications & Standard Drawing Sets – Franson Civil Engineers. Please use this as a guide and submit drawings with details specific to the proposed construction.

ALL SUBMITALS SHALL:

- ☐ Show the plan and profile view of the proposed facilities.
- ☐ Show all existing facilities in and around the project (i.e. canal O&M road, turnouts, pipes, box culverts, pipe outlets, etc.).
- ☐ Provide the location map, and if applicable, the plat map.
- ☐ Show the ULDC canal corridor on the drawings. The ULDC corridor is generally 16.5 feet on the uphill side and 33 feet on the downhill side, measured from the center of the canal (Standard Easement), but may vary in some locations.
- ☐ Applicant is responsible for checking surrounding property and labeling ULDC corridor as owned by ULDC or as an easement. If the land is owned, the actual ownership boundaries should be shown.

☐ Provide proposed dates for start and completion of construction. The start date should reflect adequate time to complete the application process and secure an encroachment agreement.

ADD THE FOLLOWING TO PLANS UNDER HEADING "ULDC CANAL NOTES"

☐ Notification must be given at least 24 hours prior to the beginning of construction work and re-notification of re-commencement of work following any cessation of work for more than 4 (four) days. Call Kyle DeVaney and the canal water master. Failure to do so may result in a $5,000 fine.

☐ Contact information for Franson Civil and ULDC:

- Kyle DeVaney, P.E., Franson Civil Engineers, 801-756-0309
- Patricia Ayaa, Franson Civil Engineers, 801-756-0309
- Greg Allred, President, Utah Lake Distributing Company
- Travis Calton, Water Master, ULDC Saratoga Canal, 801-420-5783

☐ Any changes in design drawings after the encroachment agreement has been executed must be reviewed and accepted by Franson Civil Engineers and Utah Lake Distributing Company.

☐ Work cannot interfere with delivery of water. Construction within canal corridors that impacts the canal or operation & maintenance road (O&M road) must be completed between October 15 and April 1.

☐ All construction within the canal corridor must be completed to Utah Lake Distributing Company standards.

☐ If disturbed, the canal O&M road shall be reinstalled following construction. O&M road must be available for use by canal personnel no later than April 1.

- The O&M road shall be graded at a 2% slope away from the canal.
- After placing and compacting native material, place a minimum of two inches of compacted roadbase on road surface. Compaction shall be 95% standard Proctor density.

☐ Stormwater runoff enters the canal during storm events or at other unexpected times. It is the responsibility of the Contractor to protect the work site. Any damage to the canal corridor caused by construction activities will be the responsibility of the Contractor.

☐ Neither ULDC nor Franson Civil can verify the locations of underground facilities. Blue Stakes should always be called before digging (1-800-662-4111).

☐ If disturbed, the canal O&M road shall be reinstalled following construction. O&M road must be available for use by canal personnel no later than April 1.

- The O&M road shall be graded at a 2% slope away from the canal.
- After placing and compacting native material, place a minimum of two inches of compacted roadbase on road surface. Compaction shall be 95% standard Proctor density.

☐ Applicant is required to perform compaction testing at the Applicant's cost. If requested, compaction test results shall be submitted to Franson Civil Engineers. All failed material

shall be removed and compacted to specifications. Testing must be performed by a licensed soils lab.

- ☐ All backfill materials placed within the canal right-of-way shall be compacted to a minimum of 95% standard Proctor density.
- ☐ All concrete used in the construction shall have a minimum compressive strength of 4,000 psi. The concrete mix shall include between 5% and 7% air entrainment.
- ☐ If cast-in-place concrete is placed next to pre-cast concrete, Waterstop RX, Swellstop, or an approved equivalent shall be placed to prevent seepage between the surfaces.
- ☐ PVC water stop, or equivalent, is required in all joints of cast-in-place concrete.

BORING

For the purpose of this application packet, boring refers to the installation of a casing under the canal without excavating the canal itself. Also see the "Directional Drilling and Microtrenching" section to see if your project qualifies for that section.

- ☐ All facilities (utilities, pipes, etc.) installed under the canal (even under box culverts) must be encased in a continuous welded steel, fused HDPE, or fused PVC casing. Verification that the conduit specifications are sufficient is the responsibility of the Applicant.
- ☐ Minimum steel casing thickness can be found in the ULDC Standard Drawing Set. Minimum HDPE casing thickness shall be DR 32.5. PVC casing shall have a minimum pressure rating of 50 psi. Verification that the minimum thickness is sufficient is the responsibility of the Applicant.
- ☐ In locations where steel casing pipe is used, soil tests for resistivity shall be completed by the Applicant and at the Applicant's expense. Test results shall be submitted to Franson Civil. Soils with a soil resistivity (ohm cm) of 2,500 or less shall have cathodic protection with a 25 year life or have cellular concrete placed in the annular space between the carrier pipe and casing pipe.
- ☐ Bore pits must be located outside the canal corridor.
- ☐ Casings under the canal must be shown in plan and profile.
- ☐ The casing shall extend outside the canal corridor.
- ☐ Casings must have a minimum of 2 feet between the top of the casing and the bottom of the box culvert or concrete-lined canal, and 4 feet between the top of the casing and the earthen canal bottom. In areas with sand or cobbles, this distance may need to be increased. The actual safe depth is to be determined by the Applicant's engineer.
- ☐ The carrier pipe shall have adequate casing spacers.
- ☐ The carrier pipe must have adequate steel-banded skids.
- ☐ Waterline pipes inside the casings shall have restraining joints.
- ☐ Adequate thrust blocks are required on all bends for DIP, PVC or PIP waterlines.

- ☐ A concrete-liner on the floor and banks, extending 5 feet on either side of casing is required. See ULDC Standard Drawing Set "Concrete Liner" details for more information.
- ☐ See the "Canal Boring Details" in the ULDC Standard Drawing Set for additional requirements.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Contractor to notify Kyle DeVaney of Franson Civil Engineers when trench plugs are installed. Verification of trench plug completion must be performed by Franson Civil Engineers before backfilling. Kyle can be reached at 801-756-0309.
- ☐ Trench plugs are to be placed at each end of the casing.
- ☐ Trench plugs are to extend the width of trench, 12 inches above and below casing pipes, and with a thickness of 24 inches.
- ☐ Trench plugs shall be 10% bentonite and 90% clay mixture. At least 40% of the backfill material must pass a No. 200 U.S. standard sieve prior to adding bentonite powder. The backfill material shall then be amended by adding and thoroughly mixing commercial bentonite powder with the backfill material at a ratio of one-part bentonite to nine parts backfill material. Impermeable flowable fill is an acceptable alternative.
- ☐ Bore pit compaction shall be 95% standard Proctor density.
- ☐ Fill bore pits with a mixture of native material and 10% bentonite powder to create a seal that will prevent water from following the new conduit.
- ☐ Silt collects at the bottom of the canal. The installation of the concrete liner shall match the bottom of the canal and not the current silt layer.
- ☐ Rebar for the canal liner shall be a minimum of #4 bar at 12 inches on center.
- ☐ A two-foot-deep concrete cutoff wall is required on both ends of the concrete liner.

DIRECTIONAL DRILLING AND MICROTRENCHING

For the purpose of this application packet, directional drilling refers to the installation of a smaller casing for a utility (usually under six inches in diameter) installed by directional drilling.

- ☐ Bore pits must be located outside the canal corridor.
- ☐ Conduits under the canal must be shown in plan and profile.
- ☐ The conduit shall extend outside the canal corridor.
- ☐ Label the conduit material and thickness. Verification that the conduit specifications are sufficient is the responsibility of the Applicant.
- ☐ Conduit must have a minimum of 2 feet between the top of the conduit and the bottom of a box culvert or concrete-lined canal, and 4 feet between the top of the conduit and the earthen canal bottom. In areas with sand or cobbles, this distance may need to be increased. The actual safe depth is to be determined by the Applicant's engineer.

- ☐ For directional bore and microtrench above the box or pipe culvert, there should be a minimum of 1 foot between the bottom of the conduit and the top of the box or pipe culvert.
- ☐ See the "Directional Drilling and Microtrenching Details" in the ULDC Standard Drawing Set for additional requirements.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Work cannot interfere with delivery of water. Installation activities may take place at any time provided ULDC's access to operation, maintenance, and replacement of irrigation facilities is not impacted.
- ☐ It is the responsibility of the contractor to protect the work site. Any damage to the canal corridor caused by construction activities will be the responsibility of the Contractor.
- ☐ Bore pit compaction shall be a minimum of 95% standard Proctor density.
- ☐ Fill bore pits with a mixture of native material and 10% bentonite powder to create a seal that will prevent water from following the new conduit.

OCCUPYING EXISTING BLANK CONDUIT/CASING

This section is used when an existing blank conduit is in place under the canal and the Applicant wishes to occupy the conduit. It is common for conduits to be installed at the same time as a box culvert; however, the placement of these conduits does **not** give permission for the utility to be installed in the conduit. An application, drawings, and fee need to be submitted and an encroachment agreement signed before the conduit is occupied. Drawings from the original conduit placement can be used if the Applicant can provide them.

- ☐ Show the plan and profile view of the existing blank conduit.
- ☐ Specify the existing conduit material and thickness.
- ☐ Show or note the details of the utility to be installed in the blank conduit.
- ☐ Show where and how the conduit will be accessed to install the utility.
- ☐ Show the canal corridor.

OPEN CUT OF CANAL CHANNEL

- ☐ All facilities (utilities, pipes, etc.) installed under the canal must be encased in a continuous welded steel, fused HDPE solid wall, or fused PVC casing. Minimum steel casing thickness can be found on the standard drawings.
- ☐ Minimum HDPE casing thickness shall be DR 32.5. PVC casing shall have a minimum pressure rating of 50 psi. Verification that the minimum thickness is sufficient is the responsibility of the Applicant.
- ☐ In locations where steel casing pipe is used, soil tests for resistivity shall be done and submitted to Franson Civil. Soils with a soil resistivity (ohm cm) of 2,500 or less shall have

cathodic protection with a 25-year life or have cellular concrete placed in the annular space between the carrier pipe and casing pipe.

- ☐ Casings under the canal must be shown in plan and profile.
- ☐ The casing shall extend outside the canal corridor.
- ☐ Casings must have a minimum of 2 feet between the top of the casing and the bottom of the box culvert or concrete-lined canal, and 4 feet between the top of the casing and the earthen canal bottom. In areas with sand or cobbles, this distance may need to be increased. The actual safe depth is to be determined by the Applicant's engineer.
- ☐ The carrier pipe must have adequate casing spacers.
- ☐ Waterline pipes inside the casings shall have restraining joints.
- ☐ Adequate thrust blocks are required on all bends for DIP, PVC or PIP waterlines.
- ☐ Bedding material must be shown, as appropriate for the design.
- ☐ A concrete-liner on the floor and banks, extending 5 feet on either side of casing is required. See standard drawing "Concrete Liner Details" for more information.
- ☐ See the "Open-Cut Trench Cross-Section" in the ULDC Standard Drawing Set for additional requirements.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Contractor to notify Kyle DeVaney of Franson Civil Engineers when trench plugs are installed. Verification of trench plug completion must be performed by Franson Civil Engineers before backfilling. Kyle can be reached at 801-756-0309.
- ☐ Trench plugs are to be placed at each end of the casing.
- ☐ Trench plugs are to extend the width of trench, 12 inches above and below casing pipes, and with a thickness of 24 inches.
- ☐ Trench plugs shall be a 10% bentonite and 90% clay mixture. At least 40% of the backfill material must pass a No. 200 U.S. standard sieve prior to adding bentonite powder. The backfill material shall then be amended by adding and thoroughly mixing commercial bentonite powder with the backfill material at a ratio of one-part bentonite to nine parts backfill material. Impermeable flowable fill is an acceptable alternative.
- ☐ Canal embankment shall be shaped to match the existing canal prism.
- ☐ Silt collects at the bottom of the canal. The installation of the concrete liner shall match the bottom of the canal and not the current silt layer.
- ☐ Rebar for the canal liner shall be a minimum of #4 bar at 12 inches on center.
- ☐ A two-foot-deep concrete cutoff wall is required on both ends of the concrete liner.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES" IF CANAL IS EARTHEN

- ☐ The canal floor and embankment material removed for excavation (excluding under concrete liner) shall be replaced with a 12-inch minimum thickness of 10-6 cm/sec permeability clay material, in 6-inch maximum lifts.
- ☐ All replaced materials shall be compacted to 95% standard Proctor density.
- ☐ The trench through the canal may be cut as little as ¼ horizontal to 1 vertical.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES" IF CANAL IS CONCRETE-LINED

- ☐ The existing concrete section must be sawcut to give a clean edge for the replacement section.
- ☐ The trench through the canal may be cut as little as ¼ horizontal to 1 vertical to minimize the amount of concrete liner that needs to be removed. It is the responsibility of the Contractor to verify that compaction will not be affected.
- ☐ Embankment material shall be compacted to a minimum of 95% standard Proctor density. Native material may be used.

BOX AND PIPE CULVERTS

- ☐ If extending an existing box culvert, ULDC recommends that the Applicant perform a reasonable inspection of the existing culvert to make a determination of whether it should be replaced instead of extended.
- ☐ Applicant is responsible for verifying that culvert design will not negatively impact the hydraulics of the canal, including other existing structures in the area.
- ☐ A plan view is required of the culvert showing the centerline of the canal, the top of banks, and the ULDC corridor boundaries.
    - Show the elevation and location of the top of the banks, bottom of the banks, and the canal prism, as well as new structures including box culvert and wing walls.
    - Silt collects at the bottom of the canal. The invert of the culvert is to match the bottom of the canal, not the top of the current silt layer.
- ☐ Trench detail is required showing bedding, backfill material, and compaction requirements.
- ☐ The dimensions and type of culvert must be labeled.
- ☐ Label the culvert with loading information and rebar details. Loading shall be determined by the Applicant.
- ☐ The culvert wing walls should flare at a 30 to 45-degree angle then a 90-degree angle into the canal banks, a minimum of two feet perpendicular to the canal banks. Placement of the wing walls cannot interfere with the O&M road. The top of the wing walls shall be a minimum of 12 inches above the high-water mark in the canal.

- ☐ Wing walls shall be tied into the canal banks in a manner that provides a smooth transition from the canal into the culvert, and back out of the culvert on the outlet side.
- ☐ If using a precast wing wall/end section, the wing walls, apron, and cutoff wall shall be one piece.
- ☐ A concrete apron shall be between the wing walls.
- ☐ Concrete cut-off walls are required on the inlet and outlet, a minimum of two feet below the bottom of the concrete slab (apron). These cutoffs are required to extend into the banks to the ends of the wing walls.
- ☐ The structure must be able to handle the maximum flow capacity of the canal. The Applicant is responsible for verifying maximum flows and designing appropriately. The culvert cannot cause water to backup further upstream. Neither ULDC nor Franson Civil has flow data available for the canal. The minimum culvert size is 6 feet tall by 12 feet wide. However, site conditions may determine that this dimension be altered.
- ☐ Riprap is not allowed in the canal.
- ☐ State on the plans the backfill material and methods for filling and compacting around the box and wing walls. Backfill around the box culvert shall meet manufacturer's specifications for compaction and materials, or a minimum of 95% standard Proctor density.
- ☐ Place a minimum of 24 inches of clay material behind wing walls, compacted to a minimum of 95% standard Proctor density.
- ☐ All other backfill material around head walls and in open canal channel to be compacted to a minimum of 95% standard Proctor density.
- ☐ A 6-foot chain-link fence or 4-foot parapet wall is required on all box culverts that carry pedestrian traffic. Exceptions may occur where local ordinances note otherwise, and upon agreement by ULDC and Franson Civil.
- ☐ Access to canal O&M road shall be installed with curb cuts at drive approaches and thickened concrete at sidewalks.
- ☐ Identify existing conduits and utilities under the canal.
- ☐ Casings/conduits and other utilities under or above the culvert must be shown on the plan and profile view.
- ☐ Identify each new conduit being placed under or above the culvert (see Boring, Open Cut of Canal Channel, Occupying Existing Blank Conduit, or Directional Bore and Microtrenching sections for instructions, whichever applies)
    - If the conduit owner/occupier is known, label as such.
    - If the conduit is to remain empty, label as such.
- ☐ See "Box Culvert Details" in the ULDC Standard Drawing set for additional requirements.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Canal floor and embankment material removed for excavation (between apron and undisturbed canal) shall be replaced with a 12 inch minimum thickness of 10-6 cm/sec permeability clay material in 6-inch maximum lifts.
- ☐ Compaction around the box culverts to meet manufacturer requirements or a minimum of 95% standard Proctor density.
- ☐ Canal embankment shall be shaped to match the existing canal prism.
- ☐ Open-cut trenches for the cutoff walls shall be cut at a minimum of 2 horizontal to 1 vertical so that backfill can be properly compacted.
- ☐ If extending an existing box culvert, Waterstop RX, Swellstop, or an approved equivalent, shall be placed between the old culvert and the new culvert to prevent seepage. Mastic is not acceptable.
- ☐ Conduits shown on these drawings do not give permission for the conduit to be occupied by an entity other than the original Applicant. Each entity crossing the canal must apply for, and receive, an encroachment agreement from the Utah Lake Distributing Company.
- ☐ Signs must be placed at each entrance to the canal O&M road that state:
    - No Trespassing. Warning: Canal Maintenance Road, Authorized Personnel Only. No Swimming or Tubing.

PIPES

- ☐ Plan and profile view of each pipe is required. Show the flow line profile and provide calculations.
- ☐ All existing and new pipes on all the drawings must be specifically labeled for pipe type, class, and size. For maintenance purposes, ULDC only accepts RCP to be installed in their corridor.
- ☐ All pipe sizes must be designed to carry sufficient flow for irrigation. The design flow for pipes on the main canal shall be 42 cfs. For turnouts or smaller canals, please coordinate with Franson Civil for flow requirements before beginning design of irrigation facilities. The minimum pipe size on lateral ditches shall be 12-inches.
- ☐ Trench detail is required showing bedding detail. ULDC standards require pipe bedding 6 inches below pipe up to the spring line, using a minimum of 1-inch clean crushed rock unless specified otherwise by the manufacturer. The rest of the trench shall be backfilled with 6" minus native material compacted to a minimum of 95% standard Proctor density.
- ☐ Metallic warning tape (labeled, "Caution: Buried Irrigation Line Below") must be installed a minimum of 1 foot above the pipe. In some circumstances, a locating wire may be required.
- ☐ Flared end sections are required (prefabricated or cast-in-place) where a pipe will connect to a soil-lined ditch. Where a pipe will connect to a concrete-lined ditch, cast-in-place concrete shall be used and formed as a gradual transition from the pipe to the ditch. ULDC standard requires a concrete flared end section.

- ☐ On small turnouts that enter an open ditch for a single field, a flared end is not required. Instead, a 6-foot-long pipe can be connected to the pipe, and native soil material used as a transition from the pipe to the ditch.
- ☐ Trash racks are needed for all inlets from open ditches showing:
    - Spacing details: 4-inch spacing for most inlets, 8-inch spacing for pipes over 36 inches in size
    - Slope 2:1 (H:V) or flatter
    - Mounting details
- ☐ If transitioning to a soil-lined ditch (for turnouts), the detail should show riprap appropriately designed to protect the structure:
    - Riprap sized for velocities, and
    - Appropriate length and location for riprap

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Contractor must document all new pipes by video camera after installation and backfill. Any problems with joints, levels, slopes, etc. discovered by the video technicians must be repaired. A digital copy of the video must be submitted to Franson Civil Engineers.
- ☐ Prior to backfilling of pipes, the contractor must notify Kyle DeVaney of Franson Civil Engineers so a GPS survey of the location and elevation of the installed pipelines can be performed.
- ☐ Pipes crossing perpendicularly over or under the irrigation pipe(s) shall have a minimum one-foot vertical clearance.
- ☐ Pipes or other utilities running parallel to the irrigation pipe in a shared easement shall be placed a minimum of 5 feet horizontally distanced from the irrigation pipe.
- ☐ Pipes entering or exiting a cleanout box or manhole should be sealed and grouted.
- ☐ Pipes entering a cleanout box or manhole must be secured in place with a concrete collar.

IRRIGATION BOXES AND MANHOLES

- ☐ Detail drawings are required for the irrigation/cleanout boxes and manholes.
- ☐ Boxes or manholes are required every 500 feet, at all alignment changes, on each side of a road crossing, and where two pipes of a different type come together.
- ☐ All boxes and manholes must be labeled to show inside and outside dimensions.
- ☐ Boxes and manholes must show all pipes entering and exiting. Irrigation boxes shall be a minimum of 3 feet by 3 feet. There shall be a minimum of 6 inches on each side of the pipe to the edge of the box. Manholes with pipes greater than 36 inches shall have a diameter at least 24 inches wider than the pipe diameter.

- ☐ Boxes and manholes must be labeled to show distance between pipe and bottom of box or manhole (typically 6 inches).
- ☐ Boxes must show all gates with gate detail or specifics as to gate type, size, flow direction, etc. Waterman C-10 canal gates are required.
- ☐ Lid/grate detail required:
    - Solid lids marked "IRRIGATION" are required on irrigation manholes, and boxes where debris and soil can enter.
    - Grates should be used on irrigation diversion boxes with gates and where debris will not enter.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Knock out boxes and manholes are not allowed. All boxes and manholes shall be pre-cast with cored openings for the pipes or shall be cast-in-place.
- ☐ Irrigation boxes and manholes shall not be buried. They shall extend to the surface of the final grade. Any existing boxes and manholes that will not extend to the final grade surface shall be extended to match the final grade. If the box has gates, the box shall extend 6 inches above the ground surface.

TURNOUT/WEIR

The turnout/weir structure being proposed shall at all times be subject to rights reserved by ULDC to reasonably use, operate, maintain, inspect, repair, replace and improve the canal. The turnout/weir structure to be built by the Applicant pursuant to the encroachment agreement shall be the sole responsibility of the Applicant for purposes of ongoing maintenance and repair, but the canal shall continue to be used exclusively by ULDC for its ongoing delivery of water to its shareholders. Any future repairs, excavation, removal or other work on the turnout/weir structure shall be subject to advanced review and approval by ULDC engineers.

- ☐ Submit an "Application for Encroachment Agreement" and "Application for Turnout/Weir."
- ☐ See "Weir Turnout Gate," "Check Structure and Turnout," and "3-foot Cipoletti Weir" sections in the ULDC Standard Drawing Set for additional requirements.
- ☐ A check structure is required to be designed and constructed at the same time as the turnout, even if a check structure may not be necessary at the time.
- ☐ If the turnout/weir is being built by another entity other than the shareholders that will use the turnout/weir, it is the responsibility of the Applicant to coordinate a meeting with the shareholders, canal water master, and Franson Civil Engineers to verify the required flows and any special conditions of the turnout/weir.
- ☐ Provide the cross-section showing the elevation and location of the turnout gate, weir, and any permanent structures in relation to the canal. Show the toe of the canal embankment, and the elevation of the existing canal invert.
    - Silt collects at the bottom of the canal. The placement of the turnout structure shall match

the bottom of the canal, not the top of the current silt layer.

- ☐ If vacating an old weir, it is the responsibility of the Applicant to remove the existing structure(s) and return the canal to proper functioning condition.
- ☐ Show compaction as appropriate for the design of weir boxes placed outside the canal corridor.

TURNOUT GATE & HEADWALL

- ☐ Provide specifications for the turnout gate. A water-tight Waterman gate, or equivalent, is required.
- ☐ Canal banks shall be tied into the wingwalls in a manner that provides a smooth transition around the headwall.
- ☐ The headwall should be placed in a manner so that the structure does not extend into the canal or the O&M road.
- ☐ The inlet structure shall be placed on undisturbed soils.
- ☐ The bottom of the pipe opening should be a minimum of 2 inches off the bottom of the canal floor.
- ☐ Rebar details are required on the submitted drawings. The rebar design must be appropriate for the proposed site and conditions.

PIPE FROM TURNOUT TO WEIR

- ☐ Open-cut trenches shall be cut at a minimum of 2 horizontal to 1 vertical so that the backfill can be properly compacted. See "Open-Cut Trench Cross-Section" in the ULDC Standard Drawing Set for additional requirements.
- ☐ Bedding material must be shown, as appropriate for the design.
- ☐ Pipe shall be reinforced concrete pipe through the canal corridor. Specify the pipe size and class.

WEIR (MEASUREMENT STRUCTURE)

- ☐ Provide specifications for the weir type.
    - The 3-foot Cipoletti Weir is shown as an example in the ULDC Standard Drawing Set. This exact weir type and/or size may not be optimal for your design.
- ☐ Show the details of the grate.
- ☐ Weir or transition boxes are not allowed in the canal corridor. The weir shall be placed outside the canal corridor, but in a convenient location for the canal water master to have access to verify and monitor the amount of water being taken by the shareholder(s).
- ☐ Box not to be placed in driveways, roads, or other traffic areas.
- ☐ All pipes into boxes shall be grouted and watertight.

ADD THE FOLLOWING NOTES TO PLANS UNDER HEADING "ULDC CANAL NOTES"

- ☐ Compaction of all replaced embankment material shall be impermeable material, meeting a standard Proctor density of 95%.
- ☐ A trench plug is required behind the head wall. Trench plug to be placed in location shown for width of trench, 12 inches above and below the pipe, and a thickness of 24 inches.
- ☐ Trench plugs shall be a 10% bentonite and 90% clay mixture. At least 40% of the backfill material must pass a No. 200 U.S. standard sieve prior to adding bentonite powder. The backfill material shall then be amended by adding and thoroughly mixing commercial bentonite powder with the backfill material at a ratio of one part bentonite to nine parts backfill material. Impermeable flowable fill is an acceptable alternative.

OVERHEAD CROSSING

- ☐ Provide a cross section showing the elevation of the overhead crossing and the elevation of the canal invert and banks.
- ☐ Show the location of power poles and any permanent structures in relation to the canal and toe of the canal embankment.
- ☐ Structures shall be located outside the ULDC corridor, which is generally 16.5 feet on the uphill side and 33 feet on the downhill side, measured from the center of the canal. In some instances, ULDC owns the land in fee and the width may vary.

EASEMENTS (Normally only required when relocating irrigation facilities)

- ☐ Easements are required to be recorded with the County Recorder for all ULDC facilities. Proof that the easement was recorded must be submitted to Franson Civil.
- ☐ Prior to any easements being recorded that affect ULDC, the legal description must be submitted to and reviewed by Franson Civil. Also, the entire document will be reviewed by ULDC's attorney.
- ☐ ULDC Saratoga Branch corridors are typically 16.5 feet on the uphill side and 33 feet on the downhill side, measured from the centerline of the canal. In some instances, ULDC owns the land in fee and the width may vary. For pipelines, easements are 30 feet wide, minimum, centered over the pipe. Easements should be in the name of the Utah Lake Distributing Company
- ☐ For any open canal that is piped, ULDC requires a vacation easement to be recorded for the canal, and a new 30-foot-wide exclusive easement for the new pipe which will replace the open canal.
- ☐ Title insurance may be required.
- ☐ Add a note to the drawings, stating: "No foliage, structures, or other unauthorized improvements are allowed in Utah Lake Distributing Company corridors."