Springville Area Irrigation and Drainage Group

Application Packet

Guide for Application, Review, and Approval Process with
Springville Area Irrigation and Drainage Group
For Encroachment upon Easements

Springville Irrigation Company
Wood Springs Irrigation Company
Coffman Springs Irrigation Company
Matson Springs Irrigation Company
Big Hollow Irrigation Company
Mill Pond Irrigation Company
Wash Creek Irrigation Company
Springville Drainage District

Revised 03/2025

Springville Area Irrigation and Drainage Group
General Instructions

There are seven irrigation companies and one drainage district that have come together to form the Springville Area Irrigation and Drainage Group (SIDG), consisting of:

- Springville Irrigation Company
- Wood Springs Irrigation Company
- Coffman Springs Irrigation Company
- Matson Springs Irrigation Company
- Big Hollow Irrigation Company
- Mill Pond Irrigation Company
- Wash Creek Irrigation Company
- Springville Drainage District

This packet is intended to assist Applicants in working with SIDG. All Applicants are required to obtain permission from SIDG to do work affecting SIDG facilities. SIDG facilities include: canals, irrigation ditches, land drain lines, drainage ditches, and some storm drains. Besides having many irrigation ditches throughout the area that are affected with development, the irrigation companies also have an agreement with Springville City to convey storm drainage through irrigation company facilities. This tie between Springville City and SIDG is part of the reason why there is so much involvement and coordination by SIDG in the Development Review Committee (DRC) process.

Any desired development that will affect SIDG facilities must go through the Application, Review, and Approval Process. This includes any time that work is done within SIDG easements. Franson Civil Engineers (Franson Civil) is the engineering firm for SIDG. Franson Civil will review all plans that affect SIDG facilities. This review process is in-depth and may be lengthy depending on the quality of the plans submitted for review. The following is a guideline for the Application, Review, and Approval Process affecting SIDG facilities:

- The Applicant meets with Springville City for pre-DRC meetings. The Applicant contacts Franson Civil to receive the application packet.

- The Applicant uses the guidelines in the application packet to design the affected facilities to SIDG standards and will coordinate with Franson Civil on ditch capacities and site-specific design elements.

- The development drawings are finalized for the Springville City DRC with all SIDG facilities designed and ready for final review.

- Franson Civil receives the **application**, **application fees**, and **drawings**. The application and fees have to be submitted to Franson Civil before the final drawings are submitted for the Springville City DRC. Otherwise, no review of the drawings will be completed by SIDG and no review comments will be submitted to DRC. This will delay the approval of the development.
- Franson Civil will **review** the drawings, including the plat map. A meeting will be held with Franson Civil, SIDG, and the Applicant (if desired) to discuss the development. Review comments will be sent to the Springville City DRC with a checklist of items that must be addressed prior to approval (generally 2-3 weeks for each review). Subsequent

reviews will take place with coordination directly between Franson Civil/SIDG and the Applicant. The reviews will repeat as explained above until all items from the checklist have been addressed and plans are to SIDG standards. This typically takes 2-3 reviews. **If the standards in the packet are strictly adhered to, and the improvements to the facilities are well designed, the time involved in this review process can be greatly reduced.**

- **Bonding** is required by SIDG. When the drawings are acceptable, the Applicant will provide a cost estimate to Franson Civil for the construction of SIDG facilities so the bonding amount can be determined. Once the bonding amount has been determined, reviewed and accepted by SIDG, the Applicant will be notified of the amount. An example of a bond letter which outlines the bonding requirements is included in this packet. Once the bonding amount is set, the Applicant should have their bank prepare the bond.
- **Easements** for SIDG facilities must be recorded with the Utah County Recorder. Easements shall be shown on the Plat Map for the subdivision. A signed statement from the landowner stating that the easement will be recorded must be submitted if the easement has not been recorded at this point in the process. Proof of record for the irrigation easements or the signed statement must be submitted to Franson Civil before the Encroachment Agreement will be prepared. Easements shall be in the name(s) of the individual SIDG company, not SIDG.
- An **Encroachment Agreement** will be prepared between the Applicant and the individual SIDG company (or companies) once all of the above mentioned items have been completed. Four copies of the agreement will be sent to each applicable SIDG company for signature. The Applicant will then be contacted to sign the agreement at the SIDG office in Springville.
    - A draft of the Encroachment Agreement will be sent to the Applicant and each applicable SIDG company for review when the drawing review is completed. The agreement stays the same for most projects, so it can save time by reviewing the example agreement that is included in the Instruction Packet.
    - Springville Drainage District will only review and approve agreements to be signed at their monthly board meeting, which is generally held on the fourth Wednesday of the month.
- Once the Encroachment Agreement has been signed by the Applicant and the individual SIDG company (or companies), permission has been granted to the Applicant to begin the construction phase in accordance with the agreement(s).
- The Applicant is required to notify SIDG and Franson Civil at least 24 hours in advance of beginning construction on irrigation facilities, as outlined in the agreement.
- A representative from SIDG will make occasional site visits for construction review of the facilities to ensure they are completed in accordance with the agreement.
- After construction is complete, a **final walkthrough** will be done by Franson Civil and SIDG to identify any final items that need to be completed before work is accepted by SIDG. A **punch list** will be prepared and sent to the Applicant listing items required, as applicable.
- Recording of easement(s) through the Utah County Recorder's Office should be completed (if not already done so) once construction is complete. If construction changes

altered where SIDG facilities were installed and the easement was already recorded, an updated easement document will need to be recorded prior to acceptance by SIDG.

- When all these items are complete, SIDG will send a **letter of acceptance** to the Applicant and Springville City stating the irrigation company facilities are complete.

Enclosed in this packet are:

- Large Subdivisions and General Encroachment Application
- Small Subdivisions Application
- Development Design Checklist (to assist the Applicant's engineer in designing plans to SIDG standards)
- Bond Letter Example
- Encroachment Agreement Example

The Design 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 Kyle DeVaney, P.E., at Franson Civil. The office phone number is 801-756-0309.

SPRINGVILLE AREA IRRIGATION AND DRAINAGE GROUP

LARGE SUBDIVISIONS AND GENERAL ENCROACHMENT

Application for Agreement to Encroach and Construct within
Springville Area Irrigation and Drainage Group (SIDG) Right-of-Way or Easement
(for developments greater than 2.5 acres)

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. Brief Description of Proposed Encroachment on SIDG facilities: _____
_____
_____

7. Submit one digital PDF copy of the plans to encroachment@fransoncivil.com. Plans shall be drawn to SFSIC standards. A Design Checklist is available to assist engineers in designing to SFSIC standards.

8. Attach a check for $12,000 for the application and review fee. The application fee will be used by SIDG for purposes of administration, coordination, engineer review, preparation of agreements, construction review, legal guidance, and any other expenses it incurs related to this application. If fees incurred by SIDG are greater than the application fee, the Applicant will be responsible to reimburse SIDG for the remainder of the expenses.
** Please make all checks payable to: **Springville Irrigation Company**.

9. Send application, plans, and application fee by mail or email to:

   Franson Civil Engineers
   Attn: Canal Reviews
   1276 South 820 East, Suite 100
   American Fork, UT 84003
   Telephone: (801) 756-0309
   Email: encroachment@fransoncivil.com

10. The following persons are available for consultation:

Roger Howe	(801) 427-2240	SIDG Coordinator
Albert Harmer	(801) 310-2344	SIDG Coordinator
Patricia Ayaa	(801) 756-0309	Franson Civil Engineers

NOTES:

1. The review process will not begin until the application fee is paid.
2. The SIDG bonding requirements are as follows: Bonding will equal the total cost of irrigation and drainage facilities. Eighty percent of the bond will be released upon completion of construction, approval by SIDG, and successful delivery of water through the system for a full irrigation season. Twenty percent of the bond will be released two years after the project has been accepted and approved by SIDG, pending no problems with the facilities. All bond releases are subject to approval by SIDG.
3. Easements for SIDG must be recorded with the Utah County Recorder. The recorded document, or a signed statement stating the easement will be recorded, must be provided to FCE prior to the encroachment agreement being released for signatures.
4. Starting construction without prior written approval in the form of an encroachment agreement from SIDG may result in an additional fee assessment of $10,000. This fee may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
5. If review costs exceed the fees paid with this application, additional costs will be the responsibility of the Applicant. Additional costs may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
6. This application is valid for six months from the date it is submitted. The encroachment agreement must be signed within this six month period. Once the encroachment agreement is signed, the Applicant has one year to complete work on irrigation and drainage facilities.
7. This application cannot be sold to other parties. If the Applicant chooses to sell the property associated with this application, the application is voided and the new owner is required to begin the application process again.

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

_____	_____	_____
Signature of Applicant	Printed	Date

SPRINGVILLE AREA IRRIGATION AND DRAINAGE GROUP

SMALL SUBDIVISIONS

Application for Agreement to Encroach and Construct within
Springville Area Irrigation and Drainage Group (SIDG) Right-of-Way or Easement
(for developments 2.49 acres or smaller)

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. Brief Description of Proposed Encroachment on SIDG facilities: _____
   _____
   _____

7. Submit one digital PDF copy of the plans to encroachment@fransoncivil.com. Plans shall be drawn to SFSIC standards. A Design Checklist is available to assist engineers in designing to SFSIC standards.

8. Attach a check for $8,500 for the application and review fee. The application fee will be used by SIDG for purposes of administration, coordination, engineer review, preparation of agreements, construction review, legal guidance, and any other expenses it incurs related to this application. If fees incurred by SIDG are greater than the application fee, the Applicant will be responsible to reimburse SIDG for the remainder of the expenses.
   ** Please make all checks payable to: **Springville Irrigation Company**.

9. Send application, plans, and application fee by mail or email to:

   Franson Civil Engineers
   Attn: Canal Reviews
   1276 South 820 East, Suite 100
   American Fork, UT 84003
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3. Easements for SIDG must be recorded with the Utah County Recorder. The recorded document, or a signed statement stating the easement will be recorded, must be provided to FCE prior to the encroachment agreement being released for signatures.
4. Starting construction without prior written approval in the form of an encroachment agreement from SIDG may result in an additional fee assessment of $10,000. This fee may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
5. If review costs exceed the fees paid with this application, additional costs will be the responsibility of the Applicant. Additional costs may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
6. This application is valid for six months from the date it is submitted. The encroachment agreement must be signed within this six month period. Once the encroachment agreement is signed, the Applicant has one year to complete work on irrigation and drainage facilities.
7. This application cannot be sold to other parties. If the Applicant chooses to sell the property associated with this application, the application is voided and the new owner is required to begin the application process again.

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

_____	_____	_____
Signature of Applicant	Printed	Date

DEVELOPMENT DESIGN CHECKLIST

This checklist is intended to assist engineers in designing projects to Springville Irrigation and Drainage Group (SIDG) standards. All projects seeking acceptance by SIDG 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 SIDG nor Franson Civil Engineers (Franson Civil) will have responsibility for design or construction of Applicant's facilities. It is the responsibility of the Applicant and their engineer to design the project to SIDG standards. No approval or acquiescence by SIDG or Franson Civil will operate as a waiver or modification of SIDG standards.

SIDG Standard Drawings (Standard Drawings) are available for reference and are to be used as design examples. Standard Drawings, being design examples, do not represent an actual site specific design and are not to be directly included in the drawings. Final development drawings must be designed and prepared by a licensed Professional Engineer.

The Applicant will install the facilities that are constructed through the application process with no interruption of SIDG operations.

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. SIDG reserves the right to make exceptions to the standards or impose other requirements, depending on the Applicant's project.

GENERAL

- ☐ Contractor must notify Franson Civil Engineers at least 24 hours before construction on Springville Irrigation and Drainage Group facilities. Call **Kyle DeVaney, P.E.,** with Franson Civil Engineers at 801-756-0309. Failure to do so may result in a $5,000 fine.
- ☐ Springville Irrigation and Drainage Group contact during construction: **Roger Howe, Water Master, 801-427-2240**.
- ☐ 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, P.E.,** of Franson Civil Engineers so a GPS survey of the location and elevation of the installed pipelines can be performed.
- ☐ Appropriate application must be filled out and all application fees submitted.
- ☐ All drawings must be stamped, signed, and dated by a licensed Professional Engineer, which can be completed after all drawing reviews by SIDG and Franson Civil.
- ☐ Show all existing irrigation ditches and drain lines affected by development, including storm drain discharge locations. The SIDG map can be found at Canal Crossing Applications & Standard Drawing Sets – Franson Civil Engineers. The exact location of drain lines is not always known. Potholing is required to locate the drain pipes before the design is started.

- ☐ If any SIDG facilities are located during construction that are not identified on the drawings, Applicant shall work with SIDG through drawing reviews and then shall perform what work is required to cause the SIDG facilities to remain functional for use by SIDG. All work shall be to SIDG standards. All costs are the responsibility of the Applicant.
- ☐ Show new location of all ditches and drain lines. All open channel ditches must be piped.
- ☐ Submit Plat Map; all SIDG facilities must have recorded easements (see Easements section).
- ☐ Before submitting drawings to Franson Civil, verify all notes, references, labels, and streets are clearly labeled.
- ☐ Bonding is required on all SIDG facility improvements. After drawings have been deemed acceptable by Franson Civil, please submit a detailed cost estimate of construction (materials and labor) of SIDG facilities. Once this has been checked, the bond amount will be set.
- ☐ All construction within the SIDG right-of-way must be designed to SIDG standards. The 'SIDG 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. This will help quicken the review process.
- ☐ Notes to be added to drawing set under heading labeled "Springville Irrigation and Drainage Group (SIDG) Notes"
    - Contractor must notify Franson Civil Engineers at least 24 hours before construction on SIDG facilities. Call Kyle DeVaney with Franson Civil Engineers at 801-756-0309. Failure to do so may result in a $5,000 fine.
    - SIDG contact during construction: Roger Howe, Water Master, 801-427-2240.
    - All construction affecting irrigation facilities and within the SIDG right-of-way must be done to SIDG Standards .
    - All backfill materials shall be compacted to a minimum of 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 concrete used in construction shall have a minimum compressive strength of 4,000 psi. The concrete mix shall include between 5% and 7% air entrainment.
    - Apply Waterstop RX, Swellstop, or an approved equivalent to all concrete cold joints.
    - PVC water stop, or equivalent, is required in all joints of cast-in-place concrete to prevent seepage between the surfaces.
    - Fences disturbed during construction activities must be replaced and returned to pre-construction conditions, or better.
    - Neither SIDG nor Franson Civil can verify the locations of underground facilities. Blue Stakes should always be called before digging (1-800-662-4111).

PIPES

- ☐ Plan and profile view of each pipe is required.
- ☐ All existing and new pipes on all drawings must be specifically labeled for pipe type and size (e.g., 24-inch RCP). Any pipe replacing a ditch shall have a minimum inside diameter of 18 inches.
- ☐ SIDG requires all new pipes to be RCP, except as noted in the following bullet item.
- ☐ Pipe placed in planting strips or areas where plants, other than grass, will be placed in the easement must be fused HDPE pipe. Specify inside diameter, pressure rating, etc. A DR Rating of 32.5 is required for all HDPE pipe. HDPE shall be specified using the inside diameter.
- ☐ Thrust restraints shall be installed on HDPE pipe when the pipe length exceeds 100 feet. Thrust restraints should be electrofusion-style restraints and shall be installed per manufacturer standards. Thrust restraints shall be installed into the center of the concrete collar or thrust block at each junction manhole or box.
- ☐ All pipe sizes must be designed to carry sufficient flow for irrigation and 25-year storm water events according to Springville City's Storm Water Master Plan. Also, an additional 20% capacity must be available in the pipe for future expansion and storm drain capacities. Coordinate with Franson Civil for flow requirements before beginning design of irrigation facilities.
- ☐ Trench detail is required showing bedding detail. SIDG 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 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.
- ☐ Notes to be added to drawing set under heading labeled "Springville Irrigation and Drainage Group 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.

BOXES DRAIN LINES (UNDERGROUND LAND DRAINS)

- ☐ DRAIN LINES (Underground Land Drains)
- ☐ Plan and profile view of each land drain is required.
- ☐ All existing drain lines shall be potholed at the development boundaries and shown on the plans. Label each location where the drain lines were potholed. Also, show the approximate location of existing drain lines by viewing the SIDG map on the Franson Civil website. A map of the area of your subdivision can be requested from Franson Civil.
- ☐ All existing land drains on the developed property, and under roads to be improved around the property, are required to be improved to current standards. Show proposed drain line locations. The new drain line shall connect with the existing drain line on adjacent properties.
- ☐ Pipe size should match the existing size of the underground land drain lines but shall have a minimum diameter of 8 inches.
- ☐ Pipe should be ADS N-12 with manufactured perforations.
- ☐ A trench detail of the proposed land drain is required.
- ☐ The soil is predominantly clay in the area. Backfill the perforated pipe with at least 1 foot of 1-inch crushed clean gravel around the pipe.
- ☐ Submit soils report:
    - If the native material is less than 20% fines, a geotextile fabric of at least Mirifi 140 N series or equivalent should be wrapped around the 1-inch crushed clean gravel. Any equivalent geotextile fabric must be approved by the SIDG engineer prior to approval of the drawings.
    - If the native material is greater or equal to 20% fines, the geotextile fabric only needs to cover the top of the 1-inch crushed clean gravel material, across the entire width of the trench.
- ☐ Metallic warning tape (labeled, “Caution: Buried Drain Line Below”) must be installed a minimum of 1 foot above the pipe. In some circumstances, a locating wire may be required.
- ☐ If drainpipes are being installed within 10 feet of trees, they should be solid pipe, and the installed length of solid pipe should be compensated for in another location within the development.
- ☐ An easement for all drain lines that are outside the public right-of-way must be recorded (see Easements section).
- ☐ Notes to be added to drawing set under heading labeled “Springville Irrigation and Drainage Group Notes”:
    - Clay cutoffs are required every 250 feet on sewer and other lines that are deeper than drain lines to prevent water from following the pipe trench. Clay cutoffs must be 2 feet long, keyed into the trench walls 1 foot, surrounding the pipe, and as high as the drain lines.

- 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 land drainpipe(s) shall have a minimum one-foot vertical clearance.
- Pipes or other utilities running parallel to the land drainpipe in a shared easement shall be placed a minimum of 5 feet horizontally distanced from the irrigation pipe.
- Pipes entering and exiting a cleanout box or manhole must be sealed and grouted.
- Pipes entering and exiting a cleanout box or manhole must be secured in place with a concrete collar.

IRRIGATION AND LAND DRAIN CLEANOUT BOXES AND MANHOLES

- ☐ Detail drawings are required for the cleanout boxes and manholes.
- ☐ Cleanout 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 shall be a minimum of 3-feet by 3-feet inside, and manholes shall be a minimum diameter of 5 feet.
- ☐ Boxes and manholes must show all pipes entering and exiting. 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.
    - Manhole lids must be marked as “DRAIN” only. Sewer, Water, Storm Drain, etc. is not acceptable.
    - Grates should be used on irrigation diversion boxes with gates and where debris will not enter.
- ☐ An overflow box is required on irrigation lines that carry storm water to allow high storm flows to bypass the gates.
- ☐ Notes to be added to drawing set under heading labeled “Springville Irrigation and Drainage Group 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/land drain 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.

INLET AND OUTLET STRUCTURES

- ☐ 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. SIDG standard is 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 can be 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 on center for most inlets, 8-inch spacing on center for pipes over 36 inches in size
  - Slope 2:1 (H: V) or flatter
  - Mounting details
- ☐ If transitioning to a soil-lined ditch, the detail should show riprap appropriately designed to protect the structure:
  - Riprap sized for velocities, and
  - Appropriate length and location for riprap.
- ☐ Notes to be added to drawing set under heading labeled “Springville Irrigation and Drainage Group Notes”:
  - Canal floor and embankment material removed for excavation shall be replaced with 12-inch minimum thickness of 10-6 cm/sec permeability clay material, compacted to 95% standard Proctor density in 6-inch maximum lifts.
  - Canal embankment shall be shaped to match the existing canal prism.

STORM WATER AND DETENTION BASINS

- ☐ Detention basins must be above the top of the discharge irrigation pipe to prevent backflow into the detention basin. Show elevations of the detention basin.
- ☐ The invert of the pipe discharging into the canal must be at least 6 inches above the high-water mark in the canal. Show the high-water mark elevation in the canal at the discharge locations.
- ☐ All storm drainage must route through an orifice and oil/water separator before entering SIDG facilities.
- ☐ Trash rack or grate is required on outlet of pond.

- ☐ For pipes discharging into Dry Creek and large canals, a concrete flared end section is required, with rip rap from the top of the bank to the bottom of the slope.
    - The riprap shall be appropriately designed and shall be laid flush with the canal banks and flared end.
    - The riprap shall be placed a width of 5 feet on either side of the pipe. For example, for a 2-foot pipe, the riprap shall be 12 feet wide.
    - The riprap shall have a minimum thickness of D50 x 2.
- ☐ Spillways along the canal banks will impact SIDG's access to operate, maintain and replace irrigation facilities, and will not be accepted. The irrigation company requires a minimum of 20-foot drivable access along the canal, on either side of the canal.
    - For Dry Creek and other large canals, rather than a spillway, the irrigation company suggests a box with a weir plate to discharge excess stormwater through a discharge pipe as stated above.
    - For smaller canals, a flared end section shall be used, with riprap appropriately designed (see requirements under Inlet and Outlet Structures).
- ☐ Additional design details can be found in the SIDG Standard Drawing Set.
- ☐ Notes to be added to drawing set under heading labeled "Springville Irrigation and Drainage Group Notes":
    - Orifice plate must be galvanized steel or aluminum and sized correctly. The acceptable flow rate into SIDG facilities is 0.15 cfs per acre of land. State the acreage of the development.
    - Canal floor and embankment material removed for excavation shall be replaced with 12-inch minimum thickness of 10-6 cm/sec permeability clay material, compacted to 95% standard Proctor density in 6-inch maximum lifts.
    - Canal embankment shall be shaped to match the existing canal prism.
    - Storm drain boxes and manholes should be placed outside the SIDG easement.

BOX AND PIPE CULVERTS – For road crossings of Dry Creek and large canals

- ☐ If extending an existing box culvert, SIDG 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 system, 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 SIDG easement.
    - Show the elevation and location of the top of the banks, bottom of the banks, and the channel 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.
- ☐ Culvert details should show riprap, appropriately designed to protect the banks and structure. Riprap shall be placed on the downstream end of the culvert.

- ☐ 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 45-degree angle then a 90-degree angle into the channel banks, a minimum of 2 feet perpendicular to the channel banks. The top of the wing walls shall be a minimum of 12 inches above the high-water mark in the channel.
- ☐ Wing walls shall be tied into the channel banks in a manner that provides a smooth transition from the channel into the culvert, and back out of the culvert on the outlet side.
- ☐ If using a pre-cast wing wall/end section, the wing walls, apron, and cutoff wall must be one piece.
- ☐ A concrete apron shall be between the wing walls. The flow line of the concrete apron shall match the flow line of the channel, and not the top of the current silt layer.
- ☐ Concrete cut-off walls are required on the inlet and outlet, a minimum of 2 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 channel. The Applicant is responsible for verifying maximum flows and designing appropriately. The culvert cannot cause water to back up further upstream. Neither SIDG nor Franson Civil has flow data available. The typical minimum culvert size is 6 feet tall. However, site conditions may determine that this dimension be altered.
- ☐ 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 an 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 approval by SIDG and Franson Civil.
- ☐ Identify existing conduits and utilities under the channel.
- ☐ 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, Occupying Existing Blank Conduit, or Directional Bore and Microtrenching sections, 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 SIDG Standard Drawing Set for additional requirements.

- ☐ Notes to be added to drawing set under heading labeled "Springville Irrigation and Drainage Group Notes":
    - Channel 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.
    - Channel embankment shall be shaped to match the existing channel 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 in 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 SIDG.

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/Boring" 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 solid wall, or fused PVC casing.
- ☐ Minimum thickness for steel casing 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.
- ☐ Casings under the canal must be shown on the plan and profile view.
- ☐ 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.
- ☐ 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 casing shall extend outside the canal corridor.
- ☐ Bore pits must be located outside the canal corridor.
- ☐ 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.
- ☐ See the "Canal Boring Plan and Section" in the SIDG Standard Drawing Set for additional requirements.
- ☐ Notes to be added to drawing set under heading labeled "Springville Irrigation and Drainage Group 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 pits must be placed completely outside the canal right-of-way.
    - 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.
    - Bore pit compaction shall be a minimum of 95% standard Proctor density.
    - 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.
    - 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.
    - 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.
    - Water line pipe inside the casing shall have restraining joints.
    - Thrust blocks are required on all bends for DIP, PVC, or PIP water lines.

DIRECTIONAL BORING / 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. Microtrentching involves the excavation of narrow shallow trenches, typically 1 to 2 inches wide and up to 12-16 inches deep into existing roadways and sidewalks to install fiber optic cables and other utilities.

- ☐ 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 or 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.
- ☐ The conduit shall extend outside the canal corridor.
- ☐ Bore pits must be located outside the canal corridor.
- ☐ 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.
- ☐ Bore pit compaction shall be a minimum of 95% standard Proctor density.
- ☐ See the "Directional Drilling and Microtrenching Details" in the SIDG Standard Drawing Set for additional requirements.
- ☐ Notes to be added to drawing set under heading labeled "Springville Irrigation and Drainage Group Notes":
    - Work cannot interfere with delivery of irrigation water. Installation activities can take place at any time provided SIDG'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 pits must be placed completely outside the canal right-of-way.
    - 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.
    - Bore pits shall be compacted to a minimum of 95% standard Proctor Density.

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.

EASEMENTS

- ☐ Easements are required to be recorded with the Utah County Recorder for all SIDG facilities:
    - Plat Maps are best to have these easements recorded.
    - If the plat has already been recorded, the owner can grant the easement with a legal description and have this recorded.
    - Proof of the record must be submitted to Franson Civil.
- ☐ For small ditches and pipes less than 36 inches in diameter, easements are 20-feet wide minimum, centered over the pipe. For Dry Creek and other large canals, easements extend 30 feet from the top of bank, on either side of the canal. For the Packard drain, and 4th South drain, easements extend 20 feet from the top of bank on either side of the canal. Any changes in the easement width will need to be reviewed by SIDG. Ditch easements should be in the name of the specific irrigation company. Drain line easements should be in the name of the Springville Drainage District.
- ☐ Note to be added to the Plat Map: "No trees, shrubs, telephone boxes, or power boxes are allowed in Irrigation Company or Springville Drainage District easements."
- ☐ If Applicant does not provide proper easements in a timely manner, SIDG may use the bond for any costs associated with procuring the easements necessary for their facilities.