

West Field Irrigation Company

Application Packet

Guide for Application, Review, and Approval Process with
West Field Irrigation Company
For Encroachment upon Easements & Facilities

This packet is intended to assist Applicants in working with West Field Irrigation Company (WFIC). All Applicants are required to obtain permission from WFIC to do work affecting WFIC facilities. WFIC facilities mainly include irrigation ditches.

Any desired development that will affect WFIC facilities must go through the Application, Review, and Approval Process. This includes any time that work is done within WFIC easements. Franson Civil Engineers (Franson Civil) is the engineering firm for WFIC. Franson Civil will review all plans that affect WFIC 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 WFIC facilities:

- The Applicant uses the guidelines in the application packet to design the affected facilities to WFIC standards.
- Franson Civil receives the **application**, **application fees**, and **drawings**. The review process will not begin until these items have been received.
- Franson Civil will **review** the drawings, including the plat map. A meeting will be held with Franson Civil and WFIC to discuss the development. A redline comment letter will be sent to the Applicant with a checklist of items that must be addressed prior to approval (2-3 weeks for each review). The reviews will repeat as explained above until all items from the checklist have been addressed and plans are to WFIC 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 WFIC. When the drawings are acceptable, the Applicant will provide a cost estimate to Franson Civil for the construction of WFIC facilities so the bonding amount can be determined. Once the bonding amount has been determined, reviewed and accepted by WFIC, the Applicant will be notified of the amount. Once the bonding amount is set, the Applicant should have their bank prepare the bond, using a template that will be provided by Franson Civil.
- **Easements** for WFIC 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 of West Field Irrigation Company.
- An **Encroachment Agreement** will be prepared between the Applicant and WFIC once all of the above-mentioned items have been completed. An electronic copy of the agreement will be sent out for signature, or, if preferred, three copies of the agreement will be sent to or arranged for pick up by the Applicant for signature. If the Applicant wishes to request changes to the agreement, these changes will have to be discussed and approved by the WFIC President and Board.

- Once the Encroachment Agreement has been signed by the Applicant and WFIC, permission has been granted to the Applicant to begin the construction phase in accordance with the agreement.
- The Applicant is required to notify WFIC and Franson Civil at least 24 hours in advance of beginning construction on irrigation facilities, as outlined in the agreement.
- A representative from WFIC will make occasional site visits for construction review of the facilities to see construction progress. It is the responsibility of the Applicant to provide inspection of the work and to ensure the work is completed in accordance with the agreement.
- After construction is complete, a **final walkthrough** will be done by Franson Civil and WFIC to identify any final items that need to be completed before work is accepted by WFIC. 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 WFIC facilities were installed and the easement was already recorded, an updated easement document will need to be recorded prior to acceptance by WFIC.
- When all these items are complete, WFIC will send a **letter of acceptance** to the Applicant stating the irrigation company facilities are complete.

Enclosed in this packet are:

- Large Subdivisions – Application Type 1
- Small Subdivisions (2 Lots) – Application Type 2
- City or Utility Crossings (Bore, Overhead, Etc.) – Application Type 3
- Ditch Modifications (Homeowner, One Lot) – Application Type 4
- Development Design Checklist (assist Applicant in designing plans to WFIC standards)

WEST FIELD IRRIGATION COMPANY

LARGE SUBDIVISIONS – APPLICATION TYPE 1

Application for Agreement to Encroach and Construct within
West Field Irrigation Company (WFIC) Right-of-Way or Easement

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 #1): _____
Mailing Address: _____
Telephone Number: _____
Email: _____
4. Engineering Company: _____
Mailing Address: _____
Telephone Number: _____
Contact Person: _____
Email: _____
5. Description of Proposed Construction and Encroachment on WFIC Facilities (include location, and subdivision name if applicable): _____

6. Proposed start date: _____ Proposed completion date: _____
7. Email a digital PDF copy of the plans to Franson Civil Engineers (see #9). Plans shall be drawn to WFIC standards. A Design Checklist is available to assist engineers in designing to WFIC standards.
8. Attach a check for \$10,500 for the application and review fee. The application fee will be used by WFIC for purposes of coordination, engineer review, preparation of agreements, construction review and site visits, legal guidance, and any other expenses it incurs related to this application. \$1,000 of this fee will be retained by WFIC to cover their personnel and administrative costs and is non-refundable. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses.

Please make all checks payable to: **West Field 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:

Bill Beck	801-623-8508	WFIC Office
Patricia Ayaa	801-756-0309	Franson Civil Engineers

NOTES:

1. The WFIC bonding requirements are as follows: Bonding will be 110% of the total cost of irrigation facilities. Upon completion of construction, approval by WFIC, and successful delivery of water through the system, 100% of the bond will be released. One year after the project has been accepted and approved by WFIC, and pending no problems with the facilities, the remaining 10% of the bond will be released. All bond releases are subject to approval by WFIC.
2. Easements for WFIC 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 Franson Civil prior to the Encroachment Agreement being released for signatures.
3. Starting construction without prior written approval in the form of an Encroachment Agreement from WFIC 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.
4. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses. These additional costs may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
5. The review process will not begin until the application fee is paid.
6. 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 one year to complete work on irrigation 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

WEST FIELD IRRIGATION COMPANY

SMALL SUBDIVISIONS (2 LOTS) – APPLICATION TYPE 2

Application for Agreement to Encroach and Construct within
West Field Irrigation Company (WFIC) Right-of-Way or Easement

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 #1): _____
Mailing Address: _____
Telephone Number: _____
Email: _____
4. Engineering Company: _____
Mailing Address: _____
Telephone Number: _____
Contact Person: _____
Email: _____
5. Description of Proposed Construction and Encroachment on WFIC Facilities (include location, and subdivision name if applicable): _____

6. Proposed start date: _____ Proposed completion date: _____
7. Email a digital PDF copy of the plans to Franson Civil Engineers (see #9). Plans shall be drawn to WFIC standards. A Design Checklist is available to assist engineers in designing to WFIC standards.
8. Attach a check for \$8,000 for the application and review fee. The application fee will be used by WFIC for purposes of coordination, engineer review, preparation of agreements, construction review and site visits, legal guidance, and any other expenses it incurs related to this application. \$1,000 of this fee will be retained by WFIC to cover their personnel and administrative costs and is non-refundable. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses.

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NOTES:

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2. Easements for WFIC 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 Franson Civil prior to the Encroachment Agreement being released for signatures.
3. Starting construction without prior written approval in the form of an Encroachment Agreement from WFIC 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.
4. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses. These additional costs may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
5. The review process will not begin until the application fee is paid.
6. 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 one year to complete work on irrigation 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

WEST FIELD IRRIGATION COMPANY

CITY OR UTILITY CROSSINGS (BORE, OVERHEAD, ETC.) APPLICATION TYPE 3

Application for Agreement to Encroach and Construct within
West Field Irrigation Company (WFIC) Right-of-Way or Easement

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 #1): _____
Mailing Address: _____
Telephone Number: _____
Email: _____
4. Engineering Company: _____
Mailing Address: _____
Telephone Number: _____
Contact Person: _____
Email: _____
5. Description of Proposed Construction and Encroachment on WFIC Facilities (include location, and subdivision name if applicable): _____

6. Email a digital PDF copy of the plans to Franson Civil Engineers (see #9). Plans shall be drawn to WFIC standards. A Design Checklist is available to assist engineers in designing to WFIC standards.
7. Proposed start date: _____ Proposed completion date: _____
8. Attach a check for \$5,500 for the application and review fee. The application fee will be used by WFIC for purposes of coordination, engineer review, preparation of agreements, construction review and site visits, legal guidance, and any other expenses it incurs related to this application. \$1,000 of this fee will be retained by WFIC to cover their personnel and administrative costs and is non-refundable. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses.

Please make all checks payable to: **West Field Irrigation Company.**

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Franson Civil Engineers
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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:

Bill Beck	801-623-8508	WFIC Office
Patricia Ayaa	801-756-0309	Franson Civil Engineers

NOTES:

1. Starting construction without prior written approval in the form of an Encroachment Agreement from WFIC 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.
2. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses. These additional costs may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written 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 one year to complete work on irrigation facilities.
5. 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

WEST FIELD IRRIGATION COMPANY

DITCH MODIFICATIONS (HOMEOWNER, ONE LOT) – APPLICATION TYPE 4

Application for Agreement to Encroach and Construct within
West Field Irrigation Company (WFIC) Right-of-Way or Easement

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 #1): _____
Mailing Address: _____
Telephone Number: _____
Email: _____
4. Engineering Company: _____
Mailing Address: _____
Telephone Number: _____
Contact Person: _____
Email: _____
5. Description of Proposed Construction and Encroachment on WFIC Facilities (include location, and subdivision name if applicable): _____

6. Email a digital PDF copy of the plans to Franson Civil Engineers (see #9). Plans shall be drawn to WFIC standards. A Design Checklist is available to assist engineers in designing to WFIC standards.
7. Proposed start date: _____ Proposed completion date: _____
8. Attach a check for \$5,000 for the application and review fee. The application fee will be used by WFIC for purposes of coordination, engineer review, preparation of agreements, construction review and site visits, legal guidance, and any other expenses it incurs related to this application. \$1,000 of this fee will be retained by WFIC to cover their personnel and administrative costs and is non-refundable. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses.

Please make all checks payable to: **West Field Irrigation Company.**

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

Franson Civil Engineers
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Email: encroachment@fransoncivil.com

10. The following persons are available for consultation:

Bill Beck	801-623-8508	WFIC Office
Patricia Ayaa	801-756-0309	Franson Civil Engineers

NOTES:

1. The WFIC bonding requirements are as follows: Bonding will be 110% of the total cost of irrigation facilities. Upon completion of construction, approval by WFIC, and successful delivery of water through the system, 100% of the bond will be released. One year after the project has been accepted and approved by WFIC, and pending no problems with the facilities, the remaining 10% of the bond will be released. All bond releases are subject to approval by WFIC.
2. Easements for WFIC 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 Franson Civil prior to the Encroachment Agreement being released for signatures.
3. Starting construction without prior written approval in the form of an Encroachment Agreement from WFIC 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.
4. If costs incurred by WFIC are greater than the application fee, the Applicant will be responsible to reimburse WFIC for the remainder of the expenses. These additional costs may be taken from the bond if the Applicant does not pay within 30 days upon receipt of a written invoice.
5. The review process will not begin until the application fee is paid.
6. 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 one year to complete work on irrigation 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 West Field Irrigation Company (WFIC) standards. All projects seeking acceptance by WFIC 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 WFIC 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 WFIC standards. No approval or acquiescence by WFIC or Franson Civil will operate as a waiver or modification of WFIC standards.

WFIC Standard Drawings (Typical Drawings) are available for reference and are to be used as design examples. Typical Drawings, being design examples, do not represent an actual site specific design and are not to be directly included in the project plans. 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 WFIC operations.

Note: This checklist is updated when standards are amended. Checking for the latest version of this checklist at <http://www.fransoncivil.com/canal-applications> will ensure the most up-to-date information. WFIC reserves the right to make exceptions to the standards or impose other requirements, dependent upon the Applicant's project.

GENERAL

- ☐ Appropriate application must be filled out and all application fees submitted.
- ☐ All drawings must be stamped, signed, and dated by a licensed professional engineer and must be professionally designed and drafted to current engineering standards.
- ☐ Show all existing irrigation ditches affected by the development.
- ☐ Show new location of all ditches. All open channel ditches must be piped.
- ☐ Submit Plat Map; all West Field Irrigation Company (WFIC) facilities must have recorded easements (see Easements section).
- ☐ All streets must be labeled properly.
- ☐ Before submitting drawings to Franson Civil, please review and verify that all notes, references, and labels are correct and accurate.
- ☐ Bonding is required on all WFIC facility improvements. After drawings have been deemed acceptable by Franson Civil, please submit a detailed cost estimate of construction (materials and labor) of WFIC facilities. Once this has been checked, the bond amount will be set.

- ☐ Notes to be added to the drawing set under heading “West Field Irrigation Company Notes:”
 - Applicant must notify Franson Civil Engineers (Franson Civil) at least 24 hours before construction on WFIC facilities. Call Kyle DeVaney with Franson Civil at 801-756-0309. Failure to do so may result in a \$10,000 fine.
 - All construction must be done to WFIC standards.
 - WFIC contact during construction: Bill Beck, WFIC President, 801-836-6541.
 - Work cannot interfere with delivery of irrigation water. Construction activities that affect WFIC facilities must take place between October 31st and April 1st.
 - 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 and Applicant.
 - All backfill materials shall be compacted to a minimum of 95% standard Proctor density.
 - Applicant is required to perform compaction testing at 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 Swellstop, Waterstop RX, or WFIC Engineer approved equivalent to all concrete cold joints to prevent water seepage.
 - PVC, Waterstop, 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 condition, or better.
 - If any WFIC facilities are located during construction that are not identified on the drawings, Applicant shall work with WFIC through drawing reviews and then shall perform what work is required to cause the WFIC facilities to remain functional for use by WFIC. All work shall be to WFIC standards. All costs are the responsibility of the Applicant.
 - Neither WFIC nor Franson Civil can verify the location of underground facilities. Blue Stakes should always be called before digging (1-800-662-4111).

PIPES

- ☐ WFIC standards require a minimum of 30-inch reinforced concrete pipe (RCP). Fused high density polyethylene (HDPE) is also acceptable in some instances.
- ☐ When HDPE is being used, the pipe will need to be restrained when entering the cleanout boxes. A commonly used restraint is electro-fusing flex restraints onto the HDPE pipe and encasing it in concrete. Please add thrust restraint details on the drawings.

- ☐ All pipes on all drawings must be specifically labeled for pipe type and size (i.e. 30-inch RCP). If proposed pipe is fused HDPE, specify inside diameter, pressure rating, etc. HDPE pipe requires a minimum $\frac{3}{4}$ -inch wall thickness.
- ☐ Any pipe replacing a ditch shall have a minimum inside diameter of 30 inches.
- ☐ All pipe sizes must be designed to carry sufficient flow for irrigation demands. Coordinate with Franson Civil for flow requirements before beginning design of irrigation facilities.
- ☐ Plan and profile view of each pipe is required.
- ☐ Under roadways – trench detail is required showing bedding detail. WFIC standards require bedding 6 inches below pipe and 6 inches above, using a minimum of $\frac{3}{4}$ -inch clean crushed rock unless specified otherwise by manufacturer.
- ☐ Yards, fields, etc. – trench detail is required showing bedding detail. WFIC standards require bedding 6 inches below pipe up to the springline, using a minimum of $\frac{3}{4}$ -inch clean crushed rock unless specified otherwise by manufacturer.
- ☐ “Irrigation” marking tape shall be installed 18 inches above the pipe to help protect pipe from future excavations.
- ☐ Irrigation cleanout boxes are required every 500 feet, minimum, and at all alignment changes.
- ☐ Add the following notes to the drawings under heading “West Field Irrigation Company Notes”:
 - All new pipes must be documented by video camera after installation and backfill. Any problems with joints, levels, slopes, etc. discovered by the video must be repaired. A digital copy of the video shall be submitted to Franson Civil.
 - 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.
 - Pipes or other utilities running parallel to the irrigation pipe in a shared easement shall be placed a minimum of 5 feet horizontally from the irrigation pipe.
 - Pipes crossing perpendicularly over or under the irrigation pipe shall have a minimum 1-foot vertical clearance.
 - Pipes entering boxes shall be concreted on the outside and grouted on the inside.

IRRIGATION/CLEANOUT BOXES

- ☐ Detail drawings are required for irrigation boxes.
- ☐ All boxes must be correctly labeled showing size and dimensions.
- ☐ Boxes must show all pipes entering and exiting.
- ☐ Boxes shall have a minimum inside dimension of 4-feet by 4-feet. There shall be a minimum of 6 inches on each side of the pipe to the edge of the box.
- ☐ Boxes must be labeled to show distance between pipe and bottom of box (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 on all improvements.
- ☐ Lid/grate detail required:
 - Solid lids marked “IRRIGATION” are required when debris and soil can enter.
 - Grates should be used on diversion boxes with gates and where debris will not enter.
- ☐ Boxes are required at each direction change and/or on each side of a road crossing, and where two pipes of a different type come together.
- ☐ Boxes shall have metal sign attached to grate that reads:

Property of West Field Irrigation Company
Irrigation Box May Not Be Fenced Within Property
Company Must Have Access From City Street
- ☐ Add the following notes to the drawings under heading “West Field Irrigation Company Notes”:
 - Knock-out boxes are not allowed. All boxes shall be pre-cast with cored openings for the pipes or shall be cast-in-place.
 - Irrigation boxes shall not be completely buried. They shall extend 6 inches above the surface of the final grade. Any existing boxes that do not extend to the final grade surface shall be raised 6 inches above final grade.

INLET AND OUTLET STRUCTURES

- ☐ Concrete flared end sections are required (pre-fabricated 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.
- ☐ Trash racks are needed for all inlets from open ditches showing:
 - Spacing details: 4-inch on center for most inlets, 8-inch on center for pipes 36 inches or greater in diameter.
 - Slope 2:1 (H:V) or flatter.
 - Mounting details.
- ☐ If transitioning to or from a soil-lined ditch, the detail should show riprap appropriately designed to protect the structure:
 - Riprap sized for velocities.
 - Appropriate length and location for riprap.
- ☐ Add the following notes to the drawings under the heading “West Field Irrigation Company 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 minimum lifts.

- Canal embankment shall be shaped to match the existing canal prism.

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 Details” in the WFIC Standard Drawing Set for additional requirements.
- ☐ Add the following notes to the drawings under heading “West Field Irrigation Company Notes”:
 - 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 DRILLING/BORING

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/boring. Microtrenching 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 WFIC Standard Drawing Set for additional requirements.
- ☐ Add the following notes to the drawings under heading "West Field Irrigation Company Notes":
 - Work cannot interfere with delivery of irrigation water. Installation activities can take place at any time provided WFIC's access to operation, maintenance, and replacement of irrigation facilities is not impacted.

- 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 WFIC facilities:
 - Plat Maps are best to have these easements recorded.
 - If the plat has already been recorded, the owner can grant the easement by providing a legal description to Franson Civil for inclusion in an Easement Agreement that will be signed by the owner and then recorded.
 - Proof of the record must be submitted to Franson Civil.
- ☐ Easements are 20-feet wide minimum, centered over the pipe. Ditch easements shall be in the name of the West Field Irrigation Company.
- ☐ Notes to be added to the Plat Map:
 - No trees or shrubs in West Field Irrigation Company easements.
 - No telephone boxes or power boxes in West Field Irrigation Company easements.
 - Fences disturbed during construction activities must be replaced and returned to pre-construction condition, or better.
 - Irrigation boxes may not be fenced in yards. Direct access (not through fences) must be provided to West Field Irrigation Company from city streets.