

STANDARD PRACTICES

for
Salt Lake City Public Utilities

January 5, 2010

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PU:CCall: /

cc: Jeff Niermeyer, Tom Ward, Engineering Staff, Contracts, Maintenance, City Eng.,
Airport Eng., file/B/Eng.

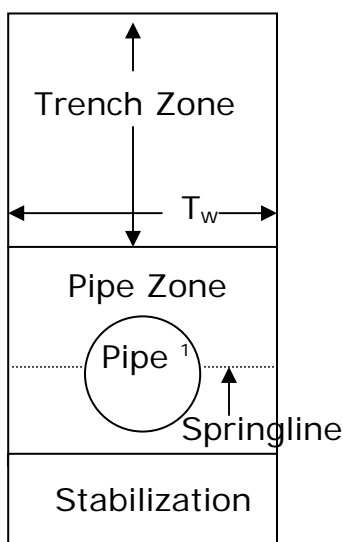
¹ Changes and revisions may be made to some of the standard practices from time to time and new standards will be added as needed. If you have questions, check for current version.

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STANDARD PRACTICE #1

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: January 14, 2010
SUBJECT: Trench Backfill Requirements (APWA Section 33 05 20)



Trench Zone Material

2-inch minus – Granular Backfill Borrow (APWA 31 05 13)

Notes: Material must be free of slag or recycled asphalt.

Material can be 2-inch minus pit run material.

Pipe Zone Material (12" above to 6" below the pipe)

Dry conditions – Grade $\frac{3}{4}$ UTBC (APWA 32 11 23) ²

Wet conditions - 2" minus sewer rock (APWA 31 05 13) ³

Note: Material must be free of slag or recycled asphalt.

Stabilization Material (starts 6" below pipe)

2" minus sewer rock (APWA 31 05 13)

Note: Material must be free of slag or recycled asphalt

Table 1 – Pipe zone material and minimum pipe zone width.

Pipe Material	Pipe Zone Material	Min. Pipe Zone Top Width (T_w)
PVC	3/4" minus well graded ²	$T_w = OD^4 + 24" \geq 36"$
HDPE-N12	3/4" minus well graded ⁵	$T_w = OD + 24" \geq 36"$
DI	3/4" minus well graded ²	$T_w = OD + 24" \geq 36"$
Concrete	3/4" minus well graded ²	$T_w = OD + 24" \geq 36"$

-
1. Center pipe in trench.
 2. Variations must be approved in advance by Chief Engineer.
 3. 2" minus sewer rock can be used in areas below water table when approved in advance by Chief Engineer.
 4. Outside diameter of the pipe.
 5. 2" minus material not permitted with PVC or HDPE pipe.

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STANDARD PRACTICE #2

SALT LAKE CITY PUBLIC UTILITY

TO: All Dept. personnel involved in construction inspection
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: December 17, 1999
SUBJECT: Project Inspection Standards

Types of construction projects within Salt Lake City Public Utilities:

- ❑ Water construction
- ❑ Sewer construction
- ❑ Drainage construction
- ❑ Development construction (city and county)
- ❑ In-house construction with maintenance crews
- ❑ Public Services contract construction
- ❑ Airport contract construction
- ❑ County contract construction
- ❑ UDOT contract construction
- ❑ UTA contract construction (TRAX and commuter rail)
- ❑ Specialty projects

What is the role of the inspector?

The project inspector –

- ❑ is the administrator of the project paperwork,
- ❑ starts and finishes the documentation,
- ❑ provides continuous quality control,
- ❑ represents the City on the project and looks out for City interests.
- ❑ is responsible for the success of their assigned construction projects.

When should inspectors be on-site for inspection?

The project inspector should be on the job site at appropriate times to –

- ❑ observe contractors procedures on the first day of construction.
- ❑ observe and document construction conditions, i.e. weather, soil conditions, equipment, personnel, installation methods and procedures, etc.
- ❑ observe installation methods and insure that construction meets or exceeds City standards.
- ❑ approve and inspect materials, i.e. fittings (valves, etc.) pipe (PVC, DI, CIPP liner, etc.), bedding materials, etc.
- ❑ monitor critical contractor work items (i.e. sewer by-pass pumping, etc.).
- ❑ monitor progress and measure bid quantities.
- ❑ check all bid schedule items.
- ❑ observe changed conditions.
- ❑ conduct water shut-downs.
- ❑ collect water samples.
- ❑ observe certain operational or long-term maintenance elements -

Minimum Inspector duties on all projects:

1. Reviews – As a member of a design team provide peer review when requested on all construction projects (***plan-in-hand*** site review for project constructability).
2. Measurement and payment – All pay items need to be measured as per description in specifications. This is done prior to progress payments and the final project closeout.

3. Document -- **Document in writing** anything that affects payment, warrantee, contract time, non-compliance with specifications, etc. (see following section on measurement and payment documentation).
4. Change orders – Working with the project engineer and designer accurately describe and process change orders.
5. Visit all active construction projects assigned to you at least daily to allow for communication between the Contractor and the City.
6. Conduct scheduled water shutdowns. The Contractor should not be turning our valves.
7. The inspector should carry a set of plans and specifications with them at all time.
8. Keep a daily diary of all project inspections.
9. Act as “point person” for all communication between the Contractor and the City.
10. Make sure all materials testing for acceptance is accomplished by the Contractor.
11. Submit acceptance test results applicable to trench backfill, roadbase, asphalt and concrete work to agency having jurisdiction.
12. Make sure the official contracts project file has all documentation.

Measurements and payment documentation

1. Take enough measurements to document **all** pay items listed in the project **bid schedule**.
2. Asphalt saw cut thickness will be measured and documented in the project inspectors’ diary on a daily basis.
 - In the City, minimum asphalt thickness is existing thickness plus one inch.

- Asphalt should be measured by the inspector and Contractor together.
- 3. On waterline projects, provide an open trench so accurate survey measurements can be made of the actual pipe and fittings installed.
- 4. Check grade of sewer and storm drain installations frequently.
- 5. Check minimum cover for waterline and service laterals. Provide a minimum of 4 feet ground cover from the top of the water main to finished grade or as noted on the plans, detail drawings or as directed by the Engineer.
- 6. Unless otherwise noted, minimum trench widths for water, sewer and storm drains will be as noted on Standard Practice #1.

What are the Department Administration responsibilities?

- 1. Provide appropriate training for all department personnel involved in inspection and safety procedures so that the minimum standards described in this document are met in all instances.
- 2. Provide cross training for Engineering designers and field maintenance personnel on construction inspection skills and duties.
- 3. Provide proper equipment so quality work can be performed.
- 4. Be available to resolve and approve change orders in a timely manner.
- 5. Provide safety equipment as needed.

Inspection Process (Contractor work):

1. Peer review of plans and specifications by inspector and another designer. Particular attention should be given to the project manual *Bid Schedule 00 43 00*. Standardized unit price descriptions will be used (see **(1) standard unit price descriptions**).
2. Pre-bid meeting conducted by the project manager (see **(2) pre-bid agenda**).
3. Bid received by City Recorder at 2:00 PM on Wednesdays at City and County Building.
4. Bid tabulation by Contracts Specialist within five working days after bid opening (see **(3) bid abstract** example).
5. Evaluation of bid and recommendation for award by project manager within 5 working days after bid opening.
6. Intent to Award bid by Department of Public Utilities Director (see **(4) intent to award letter** example).
7. Submission of bonds and Insurance by Contractor within 10-days after award letter (see **(5) insurance checklist**).
8. Pre-construction meeting set up within 10 working days after award. This is conducted by the project manager (see **(6) pre-construction agenda**).
9. Construction work order (CWO) issued in Project Tracker by Contracts Specialist (Linda Allred) for water, sewer and drainage projects and Contracts (Peggy Garcia) for subdivisions (see **(7) CWO**).
10. Contractor submittals are reviewed and approved in writing by design engineer, designer, inspector and maintenance (see **(8) Submittals form**).

11. Notification letters are prepared by Contracts Specialist (see **(9)** **notification letter** example) and distributed to affected customers by Contractor.
12. Start date for construction will generally be within 45 days of bid opening or adjusted according to City needs.
13. Compile project summary sheet (see **(10)** **Project Summary form**) and place in the project file located in the Contracts office vault.
14. Prepare daily inspection reports (see **(11)** **Daily Report form**) and attend weekly construction meetings with Contractor as necessary.
15. Collect appropriate quality control testing information from the Contractor or the testing company that it has hired for this purpose and perform separate City testing as necessary to verify the results (see **(12)** **Quality Control** in the specifications). These results should be filed in the Public Utilities project file with copies given to the appropriate Public Way agency (City, County, or UDOT). The approximate number of test results are as follows -
 - ❑ Proctors, Marshall's and gradations – one for each different material used.
 - ❑ In-place density tests (nuclear tests) – the number of randomly located tests for water, sewer and drainage pipe trenches are based on **one test per 200 feet of trench per 8-inch lift**. In a normal water trench this is about 4 tests at different random depths every 200 feet of trench or about **16 tests per block**. The appropriate number of passing tests should be documented in the project file.
 - ❑ The project inspector can request tests at any location where the compaction seems to be low.
16. Order surveys of all piping and coordinate with the surveyors so the pipe is exposed and assessable to them.

17. Process change orders as needed. **Inspectors are responsible for project change orders and have “ownership” of them from beginning to end.** The project engineer and designer should assist in evaluating change orders.
- ❑ No payment can be made to the Contractor for change order items until all the paperwork is completed.
 - ❑ Three kinds of change orders are (1) changed condition (initiated by contractor), (2) change of scope (initiated by the City) and (3) design deficiency (initiated by either the contractor or City).
 - ❑ Inspectors to prepare paperwork and recommend pricing. On larger change orders the project engineer, Engineering Administrator, Financial Administrator, Deputy Director and Director should be made aware of the construction problem and consulted at this stage of the negotiations.
 - ❑ Contracts Specialist to type paperwork for change orders (see **(13) change order form**).
 - ❑ Signatures on the change order form to be obtained by inspector — inspector, designer, design team leader, and Contractor. Contracts Specialist will get signatures from Engineering Administrator, Deputy Director, Financial Administrator and Director for final processing.
 - ❑ Goal of the designer and inspector is to keep CO's **less than 2%**.
 - ❑ Goal is to process all change orders in less than five days.
18. Contract payments are to be processed by inspector for all contract or change order items (see **(14) payment request form**). For normal payments the inspector will review and approve measured pay items, sign off for payment approval and give the payment form to the Contracts Specialist. No other signatures are required.
19. Contracts Specialist to prepare and process payment requests.

20. Final walk-through and close-out of project by inspector -

- ❑ A final walk-through on the project is held with the Contractor, inspector, maintenance representative and other affected parties.
- ❑ Punch list is prepared.
- ❑ Certificate of Substantial completion (see example **(15) Certificate of Substantial completion letter**).
- ❑ Punch list to be prepared by inspector and Contractor and attached to the certificate of substantial completion letter (see **(16) punch list**).
- ❑ Punch list items to be completed in the time stated in paragraph 2.3 of the Agreement (00 52 00). Usually this would be less than **14 DAYS**.
- ❑ Final payment is not made until the punch list items are certified as complete by the inspector.
- ❑ One year correction period (warranty) starts with date on substantial completion letter.
- ❑ The inspector should have been doing his paperwork all along so this step is to simply pull things together.
- ❑ **Close out change order** prepared using an Excel spreadsheet (see **(17) project closeout** example).
- ❑ Finalized quantities and document final pay amounts.
- ❑ Notify GIS group (GIS Supervisor) of completion of the new construction and update the maps in Contracts, Maintenance and Distribution.
- ❑ Should be completed while punch list items are being completed.

21. Final paper work –

- ❑ Fill out project completion report and put **ALL** project paperwork in the Contract office project construction file (see **(18) project completion report form**).

- ❑ **Close out files and all CWO's.**
- 22. One year correction period (warranty) inspection –
 - ❑ Completed 11 months after letter of Substantial Completion.
Contracts Specialist will notify inspector of the warranty at the 11-month time.
 - ❑ Final warranty sign off is made by the inspector on the project completion report in the Contracts file and Contracts Specialist is notified to send out a release letter to the Contractor (see **(19)** **warranty release** letter).

Inspection Process (In-house construction work):

1. Peer review and pre-construction evaluation by a team of engineering and maintenance personnel to determine if the work can best be done in-house.
2. Maintenance or construction work order (WO) issued.
3. Start construction.
4. Inspection is done by the construction supervisor. The in-house crews will meet the same construction standards as Contractors.
5. Maintenance Supervisor will be notified so department surveyors so that as-built surveys can be made while fittings, manholes, etc. are exposed.
6. Hold weekly construction meetings as necessary.
7. Complete appropriate quality control testing as necessary.
8. Inform Engineering of unusual or changed conditions.
9. Final walk through of project.
 - ❑ Prepare punch list (prepared by those who operate the facility)
 - ❑ Punch list items to be completed in **TWO WEEKS.**
10. Final close out of project by construction supervisor –

- ❑ Notify GIS group (GIS Supervisor) of completion of the new construction and update the maps in Contracts, Maintenance and Distribution.
- ❑ Close out all WO's.
- ❑ Should be completed in ONE WEEK.

11. Final paper work –

- ❑ Project completion report (form)
- ❑ Close out all WO's

12. One-year correction period inspection will be made by those who operate the facility about 1-year after construction is completed.

Maintenance Administrator will be notified of any operational deficiencies and modifications to in-house construction procedures will be made as necessary.

Minimum Survey Standards

1. Inspector and design team responsibilities – All project surveys will be scheduled by the project inspector through assigned Surveyor. Enough lead-time is given so the surveys can be done in an orderly fashion. If problems occur in scheduling surveys, the project inspector will be responsible to locate all fittings and take appropriate measurements. This information will be given to the surveyors and included on the final survey notes.

- ❑ No waterline work will be buried until the survey is completed.
- ❑ No sewer wyes will be buried until the survey has been completed.
- ❑ The project General Notes, as shown on the plans, will include a note that the Department surveyors will be notified 24-hours in advance of needing project as-built surveys. Inspector will coordinate.

- ❑ Project inspector will be responsible for making sure that all project surveys are completed.
 - ❑ Surveys will be done by trained personnel.
2. Waterline survey –
- ❑ Minimum water surveys will include measuring as-built horizontal and vertical location of all fittings.
 - ❑ This will be done while the pipes are exposed.
 - ❑ Several visits to the project site are anticipated.
3. Meter survey – If a meter location is substantially moved (different + station), the project inspector will notify the surveyors and a meter survey will be done. If the surveyors are not available, the project inspector will make the necessary measurements and turn those notes into Surveyor.
4. Sewer Survey –
- ❑ Minimum sewer surveys of mainline extensions will include tying down the as-built horizontal and vertical location of all manholes, wyes, grade changes, etc.
 - ❑ This will include measurements from the manhole ring down to the flowline invert.
 - ❑ This survey of sewer mainline replacements and new mainline extensions will generally be done after construction is substantially complete.
5. Sewer lateral survey –
- ❑ Minimum sewer lateral surveys are done as a courtesy to the property owner (**trial survey**), to obtain elevations at the tie-in point on the mainline and estimate lateral elevations at the property line.
 - ❑ This information is helpful on future designs.
 - ❑ Records of these surveys are kept in the contract office files.

6. Storm drain survey –

- ❑ Minimum surveys of new storm drains will include tying down the as-built horizontal and vertical location of all manholes, grade changes, catch basins, clean out boxes, etc
- ❑ This will include measurements from the manhole, cleanout box, or catch basin ring down to the flowline invert.
- ❑ This survey will generally be done after construction is substantially complete.

7. GIS database – Information from all surveys are given to GIS Supervisor within 30-days of substantial completion of the project. This information is then added to the GIS database within 60-days of substantial completion of the project.

STANDARD PRACTICE #3

SALT LAKE CITY PUBLIC UTILITY

TO: All developers and contractors doing work within the right-of-way for the Jordan & Salt Lake and East Jordan canals
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: April 18, 2001
SUBJECT: Jordan and Salt Lake Canal Standards

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

UTILITY PERMIT AGREEMENT: Canal Utility Permit Agreements shall be processed and approved through SLCPU prior to any work within the Canal property. Contact: **Department Property Manager (801-483-6769)**. The general Utility Permit Agreement requirements are:

1. Design drawings, specifications, and calculations submitted and approved.
2. Legal description of canal crossing as an exhibit to the Utility Permit Agreement, including the County Sidwell number.
3. Utility Permit Agreement signed and notarized.
4. Permit Fee (\$500 or as determined by the Director).

DESIGN

Design shall be completed and stamped by an engineer registered in the State of Utah, and shall be accompanied by survey data and hydraulic calculations as noted in the design criteria noted herein.

Design plans shall be submitted to Salt Lake City Public Utilities and written approval received by the Department prior to construction.

Design criteria –

- Slope = 1 foot per mile (0.0189% or 0.0002 ft/ft)
- Capacity, Qc:

- Canal crossings shall convey 150 cfs with no more than 0.2 feet of backwater through the proposed canal crossing structure (irrigation delivery flows)
- Canal crossings shall convey 300 cfs without submergence of proposed canal crossing structure (storm overflow capacity)
- Survey: Design shall be based upon actual design survey cross sections taken a minimum of 200 feet upstream and downstream of the canal, at the proposed culvert inlet and outlet, and at possible transition loss locations.
- Hydraulic analysis: Provide HY8 or equivalent hydraulic analysis. Results should confirm the proposed structure meets the above design capacity requirements under upstream and downstream flow control conditions using existing channel cross sections as defined above.
- Size and construction of box culverts: The minimum box culvert dimensions shall be 5-1/2 feet high x 22-feet wide. The structure shall be designed for H-20 loading. Larger sizes may be required to meet the special site conditions. Culverts shall have at least a 6-inch thick concrete bottom and tapered wing wall at the upstream and downstream ends. The upstream and downstream floor shall have a concrete cutoff wall extending at least 3-feet below the channel invert. All concrete structures shall be installed upon 18-inches of select structural fill as approved by the engineer. All concrete construction joints shall have a 2-inch x 4-inch keyways or 6-inch water-stop at all concrete construction joints.
- Erosion protection: Install apron riprap with $D_{50} = 12$ -inch to limits 12-feet from outlet face at channel bottom and sides. Upstream and downstream transition sections from culvert to open channel shall have $D_{50} = 12$ -inch riprap for full limits of transition.
- Grate: A removable, child-safe trash rack grate is required if culvert structure is more than 100 feet long.
- Access: Provide 14-foot driveway approaches with lockable gate on both sides of canal crossing. Approaches shall have space to park one vehicle off the roadway while unlocking the gate.
- Utility crossings:
 - Excavation of the canal banks and invert is strictly forbid, except where open channel is being replaced by box culvert.
 - Utility pipe crossings under the canal shall be encased and installed by boring methods under the canal. Top of casing shall be a minimum of 4-feet below the canal invert elevation. Casing inside diameter shall be equal to the carrier pipe OD plus 6-inches, minimum. Casing limits shall be a minimum of 5-feet horizontal distance from the outside edge of box culvert or top of

canal bank, plus a 2:1 excavation slope. In most instances, the casing limits are the full property extent.

- Materials: Provide manufacturer certification that precast concrete components are designed for appropriate dead and live load conditions with an HS-20 load rating as a minimum. Cast-in-place concrete canal structures shall be designed and stamped by a licensed structural engineer. Structural calculations shall be submitted for review.

CONSTRUCTION

1. Construction period: No work allowed is allowed on the canal or within the canal property from March 1st through October 1st to preserve and maintain irrigation delivery obligations.
2. Drainage control during construction: Contractor shall be responsible to convey all existing upstream storm drainage flows through the construction site during construction period in accordance with a temporary diversion plan approved by SLC Public Utilities. Contractor shall be liable for all damage resulting from his failure to adequately convey storm drainage flows or any other Contractor impact to site. Construction drainage or debris shall not be allowed to enter the canal. Permanent storm drain connections (discharge) into the canal are strictly forbidden.
3. Coordination: Salt Lake City Public Utilities **Irrigation Supervisor (483-6784)**, shall be contacted a minimum of two weeks prior to construction.

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STANDARD PRACTICE #4

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: June 2, 2000
SUBJECT: Flushing and de-chlorination

Purpose:

The purpose of this procedure is to assure that drinking water containing high dosages of chlorine is not willfully discharged into any natural waterway or stormdrain that discharge into any natural waterway where it could be harmful to wildlife, fish or aquatic life. When a new main water line is disinfected with a high dosage of chlorine, it is necessary to de-chlorinate the water as it is being discharged.

This standard applies to all aspects of department operations including construction, maintenance, main replacements and general operations. All construction work done for Public Utilities falls under this requirement.

Guiding principles:

- Highly chlorinated water will be discharged to sewer manholes. The appropriate requests and approvals will be obtained prior to discharge. De-chlorination of the water will be done if requested by the sewer company.
- Projects involving large volume discharges (i.e. storage reservoirs, large disinfected pipelines, etc.) that could possibly reach a live stream will require a plan to be submitted and approved by the State DEQ.
- At no time will chlorinated water, even treated drinking water, be released to a live stream.
- Routine system cleaning, flushing, and hydrant testing does not require dechlorination if in your best professional judgment, the location is far enough away from live stream that the flow will not impact the stream.
- Every employee is charged with the obligation to properly treat and dispose of chlorinated water.
- When necessary, de-chlorination will be done chemically using sodium thiosulfate. A de-chlorination ratio of 1:4 (1 pound of sodium thiosulfate to 4 pounds chlorine) will be used.

De-chlorination procedure:

1. Determine the volume of water to be discharged.
2. Determine the chlorine residual in the water.
3. Determine the expected discharge flow rate.
4. With the assistance of the Water Quality Administrator or designee determine how much de-chlorination chemical will be needed and the proper drip/injection rate.
5. There must be an injection or drip point provided where the water is to be discharged from the pipe to allow for the introduction of the de-chlorination chemical.
6. Chlorine residual at the outflow pipe must be tested to assure that the water does not have a chlorine residual greater than 0.011 PPM.
7. Monitor turbidity of the discharge water to provide the same level as the receiving stream. Because of this requirement, it is critical that all precautions be taken to keep pipes clean during installation.
8. A procedural documentation form must be completed and filed in the project file (see attached form).

De-chlorination Procedure Documentation Form

New Culinary Main Line Pipe Flushing

Supervisor _____ Project No. _____

Inspector _____

Date _____ Time _____

Estimate of discharge flow rate/Volume _____ / _____

Project notes and calculation:

The monitoring point was at _____

Date _____ Time _____ Chlorine Residual _____

Date _____ Time _____ Chlorine Residual _____

Date _____ Time _____ Chlorine Residual _____

Date _____ Time _____ Chlorine Residual _____

Date _____ Time _____ Chlorine Residual _____

The above procedure was followed, all data is correct.

By _____ Date _____

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STANDARD PRACTICE #5

SALT LAKE CITY PUBLIC UTILITY

TO: Whom it may concern
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: January 19, 2010
SUBJECT: Standard Plans and approved materials

Standard Plans

This document changes provisions specified in the Manual of Standard Plans published by the Utah Chapter of the American Public Works Association (APWA) 2007 Edition (available for download at www.utaht2.usu.edu). Unless the Chief Engineer gives a written variance, the following modifications to the APWA standard plans will apply to work performed for Salt Lake City Public Utilities (SLCPU):

Table 1 – Modification to the standard plans for water system

STD PLAN #	DESCRIPTION	MODIFICATION
381	Trench backfill	Refer to Salt Lake City Public Utility (SLCPU) - Standard Practice #1. Maximum depth for magnetic marking tape is 18 inches.
382	Pipe zone backfill	Refer to SLCPU – Standard Practice #1 and notes given in Table 3 – Modification to the standard plans for stormwater system
502	27" frame & cover	Use smooth surface "cross-hatch" pattern class 35 lid.
511	Fire hydrant	<ul style="list-style-type: none">The auxiliary valve is required to be connected to the fitting at the fire hydrant. No exceptions.If the pipe connecting the main to the hydrant is greater than 16 feet, a second shutoff valve is required at the fire hydrant.For new main installations, an additional valve may be installed on the tee at the main connection for ease of installation. This is in addition to the valve required at the fire hydrant.
521	¾" & 1" meter	<ul style="list-style-type: none">No material is to be backfilled inside meter box.Use 21" meter boxes unless otherwise required by the Chief Engineer.No CMP meter boxes.No boxes to be located in traffic areas unless required by Chief Engineer.
522-529	Various sized meters	See SLCPU standard drawings for Contractor checklist. Use the following dimensions on all meter boxes: <ul style="list-style-type: none">5-foot minimum clear space from gravel floor to concrete roof18-inch minimum clear space from wall to fittings6 to 12-inch minimum from gravel floor to pipingThrust restraint required on all pipe penetrations.
543		Not used
551	¾" & 1" service taps	<ul style="list-style-type: none">Depth of service line is 48" minimum (60" in special areas on the east bench)

		<ul style="list-style-type: none"> • Tap will be at 10 or 2 o'clock position. • Taps shall be a minimum of 36" apart. No taps within 36" of end of pipe.
552	1-1/2" & 2" service taps	<ul style="list-style-type: none"> • B – 2-piece cast iron roadway valve box with lid is required. • H – Type K–soft copper. • Taps shall be a minimum of 36" apart. No taps within 36" of end of pipe.
571	2" washout valve	• Increase washout pipe size to 3" minimum
572	Detector check valve	• Fitting D will be MJ x flange
574	Cover collar	Concrete supports required under traffic box.
575	Air release valve	Not used – refer to SLCPU drawing. Use PVC piping above air released valve

Table 2 - Modification to the standard plans for sewer collection system

STD PLAN #	DESCRIPTION	MODIFICATION
381	Trench backfill	Refer to SLCPU – Standard Practice #1.
382	Pipe zone backfill	Refer to SLCPU – Standard Practice #1 and notes given in Table 3 – Modification to the standard plans for stormwater system
402	30" frame & cover	Use smooth surface "cross-hatch" pattern class 35 lid. <ul style="list-style-type: none"> • Low profile (1") rings are not allowed.
411	Manhole	<ul style="list-style-type: none"> • 5-foot minimum manhole diameter required. • Eccentric manhole cones are not allowed. • Lateral connections directly to the manhole are not allowed. • Ramneck manhole section joint sealant and concrete grouting of manhole section joints is required. • On precast manhole bases provide base with neoprene or rubber coupling system and stainless steel clamps
412	Invert cover	<ul style="list-style-type: none"> • 2"x4" bracing only required at manholes with pipe entering above the mainline flowline. • Normal manholes will have the invert cover supported by the manhole "shelf".
431	Sewer lateral connection	<ul style="list-style-type: none"> • Prior Public Utilities approval and permit required for all lateral installations. • Salt Lake City will provide and install wye. • 24-hour notice required. • Stainless steel straps required.
432	Sewer lateral relocation	<ul style="list-style-type: none"> • Note 2– Salt Lake City will provide & install wye. • Material under bottom of obstruction will be loosely compacted ¾" minus well graded granular material or sand. Flowable fill not allowed.
433	Pipe drop	Alternate 2 – not used unless approved in writing by Chief Engineer.

Table 3 - Modification to the standard plans for stormwater system

STD PLAN #	DESCRIPTION	MODIFICATION
302	30" frame & cover	Use smooth surface "cross-hatch" pattern class 35 lid.
303	44" frame & cover	Use smooth surface "cross-hatch" pattern class 35 lid.
310	48" grate & frame	Not used
315	Catch basin	Do not use Type B. Use two Type A boxes separated by ten feet.

315 (cont.)		Note: Contractor to make back wall of box behind curb face opening as detailed.
317	Curb inlet/outlet	Not used. Use 331 as modified by SLCPU.
316	Combo Box	Use SLCPU modification to this combo box detail
320	Debris grate inlet	Not used
321	Automatic flap gate	Modify to include a clean-out box and lid over the flap gate.
322	Curb outlet	Not used
323	Access control rack	Engineer's permission required
330	Cleanout box	Not used
331	Cleanout box	Use SLCPU detail for this.
332	Cast-in-place manhole	Use with round 303 lid and not rectangular lids. See SLCPU detail.
341	Precast manhole	Engineer's permission required
360	Plastic Form	Not used
361	Concrete grade rings	Standard grade rings are acceptable
373	Concrete pier	Engineer's permission required
381	Trench backfill	Refer to SLCPU – Standard Practice #1.
382	Pipe zone backfill	<p>Refer to SLCPU – Standard Practice #1</p> <ul style="list-style-type: none"> • Pipe zone material will be Grade $\frac{3}{4}$" material as specified in APWA Section 32 11 23 – Crushed Aggregate Base. An exception may be granted for concrete pipe being installed below the water table. In these cases, the fill material below the pipe springline may be 2 inches minus sewer rock when approved in advance by the Chief Engineer. Sewer rock is not allowed with PVC and HDPE-N12 pipe. • In all cases, backfill in the pipe zone above springline of pipe will be Grade $\frac{3}{4}$" material ($\frac{3}{4}$" minus well graded material) as specified in APWA Section 32 11 23 – Crushed Aggregate Base. • The thickness of Type B – haunch material will be 6-inches below the outside diameter of the pipe.

Approved Materials

Unless the Maintenance Administrator gives a written variance, the following **materials** will be used on installations maintained by SLCPU:

Table 4 – Approved materials for use on the water system

STD PLAN #	DESCRIPTION	MODIFICATION
All	Main line pipe material	<ul style="list-style-type: none"> • Ductile iron – class 52 cement mortar lined • PVC – SDR 18 (C-900) diameters 8" to 12", AWWA C-905 and C-909 (when specified) for larger diameters <p>Notes: (1) Other materials may be considered but they require prior written approval by Maintenance Administrator, (2) Ductile iron pipe and <u>Grade S Nitrile rubber gasket</u> (AWWA C111) required in hydrocarbon contaminated areas</p>
All	Service line pipe material	Type K soft copper
	27" Frame and cover – smooth surface	D&L A-1005

502	"waffle" pattern	Olympic MHU-1000
503	38" Frame and double cover – smooth surface "cross-hatch" pattern	D&L A-1426 Notes: (1) Valves larger than 16" require larger ring and cover. Maintenance Administrator will specify size. (2) Contractor to provide 1" diameter lifting hole and pry notch in larger lids.
511	Hydrant	Mueller Centurion (A-423) M & H 129 (SLC Specs) Clow 2500 Clow Medallion Waterous WB-67 AVK 2700 AVK 2780 EJIW WaterMaster 5CD250
511	Two piece cast iron valve box (screw type)	Tyler 6850 D&L M-9042 Olympic VBU-8310
511	Two piece cast iron valve box (slip type)	D&L M-8042 Olympic VBU-8210 Tyler 6855
511	Gate valve	Resilient wedge gate valve AWWA C509 NRS
511, 552, 574	Ductile iron traffic box	Spanish Fork Foundry SVB 090 D&L M-9009
521	Meter box cover	Ford X32 Tyler 6150 with 1-1/32" bronze bolt
521	Meter box (notched out)	Rigid PVC Corrugated Polyethylene Amcor 1830 WMB concrete
521	3/4" meter setter	Mueller B-2470 with tie bar – 21" riser Ford VB-73-21W-44-33-G or Q AY McDonald 21D321WXTT33
521	1" meter setter	Mueller B-2470 with tie bar – 21" riser Ford VB-74-21W-44-44-G or Q AY McDonald 21-421WXTT44
521	Meter insulation	Ford meter pit insulation blanket
523, 525, 529	Top section of valve box with lid	D&L M-80 series
551	Corporation stop	Mueller B-25008 Ford FB1000-3-G or Q (3/4") Ford FB1000-4-G or Q (1") AY McDonald 4701BQ or BT
551 & 552	Service saddle for DI pipe	Ford 202B Ford FC202 Ford 202BS
551	Service saddle for	ROMAC 202N

	PVC and AC pipe	Ford FC202 for C900 PVC Ford 202BS for C900 PVC Ford 202BSD for C900 PVC Ford S90
552	Two piece cast iron roadway valve box	D&L M-9145 Olympic 6870 Castings, Inc. 145-R
552	Ball valve corp. stop	Ford FB1100-6-TA-G or Q (1-1/2") Ford FB1100-7-TA-G or Q (2") AY McDonald 4104BQ or BT
572	Gate valve (MJ x flange)	Gate valve AWWA C509 NRS
572	Detector check valve	Hersey Model DC or approved equal

Table 5 – Approved materials for use on the sewer collection system

STD PLAN #	DESCRIPTION	PART NUMBER
All	Pipe Materials	Reinforced Concrete – class III (18" through 96") Non-reinforced Concrete – class 3 (8" through 15") PVC – SDR 35 (4" through 27") Notes: (1) Other materials may be considered but they require prior written approval by Maintenance Administrator. (2) Special concrete mix may be required for concrete pipe or a poly lining for additional protection from hydrogen sulfide gas. (3) Rubber O-ring gaskets as per ASTM C-433.
402	30" Frame and cover – smooth surface "cross-hatch" pattern	D&L Supply A-1180, Olympic MHU-1060
402	Special Lid	D&L Supply A-1181, Olympic MHU-1070 Note: Required if surface water can enter manhole.
411	5' diameter pre-cast concrete manhole bases	Prior approval by Chief Engineer required.
411	Manhole section joint sealant	Ramneck Note: Concrete grouting of manhole section joints is required.
411	Manhole gaskets	Elastomeric rubber (ASTM C 443)
411	Manhole adapter/water stop gasket	Romac LCT
431	Pipe coupling	Fernco neoprene couplings, adapter, bushings
431	Inline integral wye fittings	Factory fabricated
431	Lateral connections	Inserta Tee Note: For connections to 18" and larger sewer mains only.

Table 6 – Approved materials for use on the stormwater system

STD PLAN #	DESCRIPTION	PART NUMBER
All	Pipe materials	Reinforced Concrete – class III HDPE–N12 pipe HDPE smooth wall SDR 21 (use for lining and Class A bedding installations) Note: Other materials used only after approval by Chief Engineer.
302	30" Frame and cover – smooth surface "cross-hatch" pattern	D&L Supply A-1180 (vented) D&L Supply A-1181 (solid) Olympic MHU–1060 & MHU–1070
303	44" Frame and cover – smooth surface "cross-hatch" pattern	D&L Supply A-1460,
304	48" Cover and frame – smooth surface "cross-hatch" pattern	D&L Supply H-1801,
305	51" Cover and frame – smooth surface "cross-hatch" pattern	D&L Supply H-1810
308	Grate and frame with adjustable curb box	D&L Supply I-3518
309	47-3/4" Grate and frame	D&L Supply I-1803
321	Automatic flap gate	TIDEFLEX or equal all rubber check valves required

STANDARD PRACTICE #6

SALT LAKE CITY PUBLIC UTILITY

TO: All designers
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: March 13, 2001 (revised 4/4/05)
SUBJECT: Waterline prioritization and replacement

Purpose:

The purpose of this standard is to assure that waterline replacement is evaluated and considered on all road reconstruction projects.

Guiding principles:

1. We should consider the opportunity to replace old waterlines whenever City or County streets are reconstructed and we have funding.
2. We should use pipe materials appropriate for the site conditions.
3. We should replace steel and other metal pipe that has been placed on the westside of Salt Lake City and in other corrosive areas of our service area with PVC pipe.
4. We should replace AC pipe whenever possible.

Procedure:

Waterline replacement should be considered on a case-by-case basis based on site-specific soils conditions and other factors. General rules for areas east and west of Main Street are given below. These are only presented as general guidelines.

If the existing pipe is less than 12-inches in diameter in a commercial or industrial area or 8-inches in a residential area, the pipe is to be replaced with a minimum of 12-inches in diameter for commercial or industrial areas or 8-inch minimum for residential areas.

East of Main Street —

If the pipe is a metal pipe, older than 80 years and funding is available in the 5-year budget; the pipe should be replaced as part of the City Engineering project, regardless of break history.

If the pipe is a metal pipe, newer than 80 years and funding is available in the 5-year budget; other factors should be considered in making a decision—i.e. break history, pipe type, pipe size, impact of the proposed construction, fire flow, type of new road surface (concrete vs. asphalt), etc.

If the pipe is PVC, the decision will be made based on the break history, pipe size and the impact of the proposed construction.

The replacement standard is Ductile Iron pipe (cement mortar lined Class 52). This standard will be modified if local conditions show high groundwater and corrosive organic soils.

West of Main Street —

If the pipe is a metal pipe, older than 50 years and funding is available in the 5-year budget; the pipe should be replaced as part of the City Engineering project, regardless of break history.

If the pipe is a metal pipe, newer than 50 years and funding is available in the 5-year budget; other factors should be considered in making a decision—i.e. break history, pipe type, pipe size, impact of the proposed construction, fire flow, type of new road surface (concrete vs. asphalt), etc.

If the pipe is PVC, the decision will be made based on the break history, pipe size and the impact of the proposed construction.

The replacement standard is to use PVC pipe (C-900 or 909) with locator tape or wire.

STANDARD PRACTICE #7

SALT LAKE CITY PUBLIC UTILITY

TO: All Department personnel involved in project design
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: March 30, 2005
SUBJECT: Design Standards

Types of design projects:

- Water contract construction
- Public Services contract construction
- Sewer contract construction
- County contract construction
- Drainage contract construction
- UDOT contract construction
- Airport contract construction
- Development construction (city and county)
- In-house construction with maintenance crews
- Specialty projects (i.e. light rail or developments)

Minimum Design Standards:

1. Provide peer review on all construction projects (*plan-in-hand* site review for project constructability).
2. Work with the project inspector to keep change orders less than 3% of bid price.
3. Prepare good quality, understandable plans and specifications for CIP projects.
4. Keep a log of the project communications and decisions.
5. Meet DEQ design requirements – i.e. 10' spacing between water and sewer lines.

What are the department administration responsibilities?

1. Provide appropriate training for all department personnel involved in design so that the minimum standards described in this document are met in all instances.
2. Provide cross training for Engineering designers and field maintenance personnel on construction inspection skills and duties.

CAD standards (See A-20 CAD Standards):

1. Project drawing standard size for the project manual is 11" x 17" (half scale).
2. Minimum font size is 0.1 inch.
3. Other standards as required.

Specification standards:

1. APWA (2007) standard specifications and Standard Plans as modified by Standard Practice #5, contained herein.
2. AWWA standards
3. DEQ standards
4. Other standards as written for and required by special project requirements.

Design Process (CIP project):

1. Project is placed on the CIP list by maintenance, engineering or others.
2. Project scoping document is prepared by Mike Lewis.
3. Projects are prioritized and placed on the 5-year plan (see Figure 1 CIP Budget Process).
4. Project is assigned to a design team.
5. Project manager and designer identify a bid date and a work plan.
6. Complete the design.

7. Peer review of plans and specifications by inspector and another designer. Particular attention should be given to the project Bid Schedule and constructability. Standardized unit price descriptions will be used (see **standard unit price descriptions**).
8. Advertise the project.
9. Pre-bid meeting conducted by the project designer (see example **pre-bid agenda**).
10. Bid received by City Recorder at 2:00 PM on a Wednesdays at City and County Building.
11. Bid tabulation within 5 working days after bid opening (see **bid abstract** example).
12. Evaluation of bid and recommendation for award by project manager within 2 working days.
13. Award of bid by Department Director (see **award letter** example). The Contractor has ten days to complete all the bond and insurance submittals.
14. Hold pre-construction meeting after Contract has been approved. This is conducted by the Team Leader (see example **pre-construction agenda**).
15. Construction management and inspection is done by the inspector assigned to the design team with assistance from designers. During construction, problems are resolved as a team with the inspector taking the lead. Improvements are incorporated into the design processes to eliminate future problems.
16. Notice to precede letter is sent to the Contractor by Contract Specialist.
17. Attend construction progress meetings as necessary (larger more complex projects).
18. Participate in the change orders process:

- Inspectors responsible for anticipating change orders and have ownership of them from beginning to end. The project designer should assist in evaluating change orders.
- No payment can be made to the Contractor for change order items until all the paperwork is completed.
- Three kinds of change orders are (1) changed condition (initiated by contractor), (2) change of scope (initiated by the City) and (3) design deficiency (initiated by either the contractor or City).
- Inspectors to draft paperwork and recommend pricing. On larger change orders the project manager, Engineering Administrator, Deputy Director and Director should be made aware of the construction problem and consulted at this stage of the negotiations.
- Contracts Specialist to type paperwork (see **(13) change order form**).
- Signatures on the change order form to be obtained by inspector — inspector, designer, design team leader, and Contractor. Contracts Specialist will get signatures from Engineering Administrator, Deputy Director, Financial Administrator and Director for final processing.
- Goal of the designer and inspector is to keep CO's less than 2%.
- Goal is to process all change orders in less than five days.

19. Participate in the final walk through of project.

- Help inspector prepare punch list (see **punch list**).

Design Process (In-house construction work):

1. Prepare project plan sheet or other construction documentation drawings.
2. Pre-construction evaluation and determination that work can best be done in-house.

3. Coordinate the construction with the construction supervisor. The in-house crews will meet the same construction standards as Contractors.
4. Attend weekly construction meetings as necessary.
5. Review unusual or changed conditions field conditions with construction supervisor.
6. Attend final walk through of project.
 - Prepare punch list (prepared by those who operate the facility)

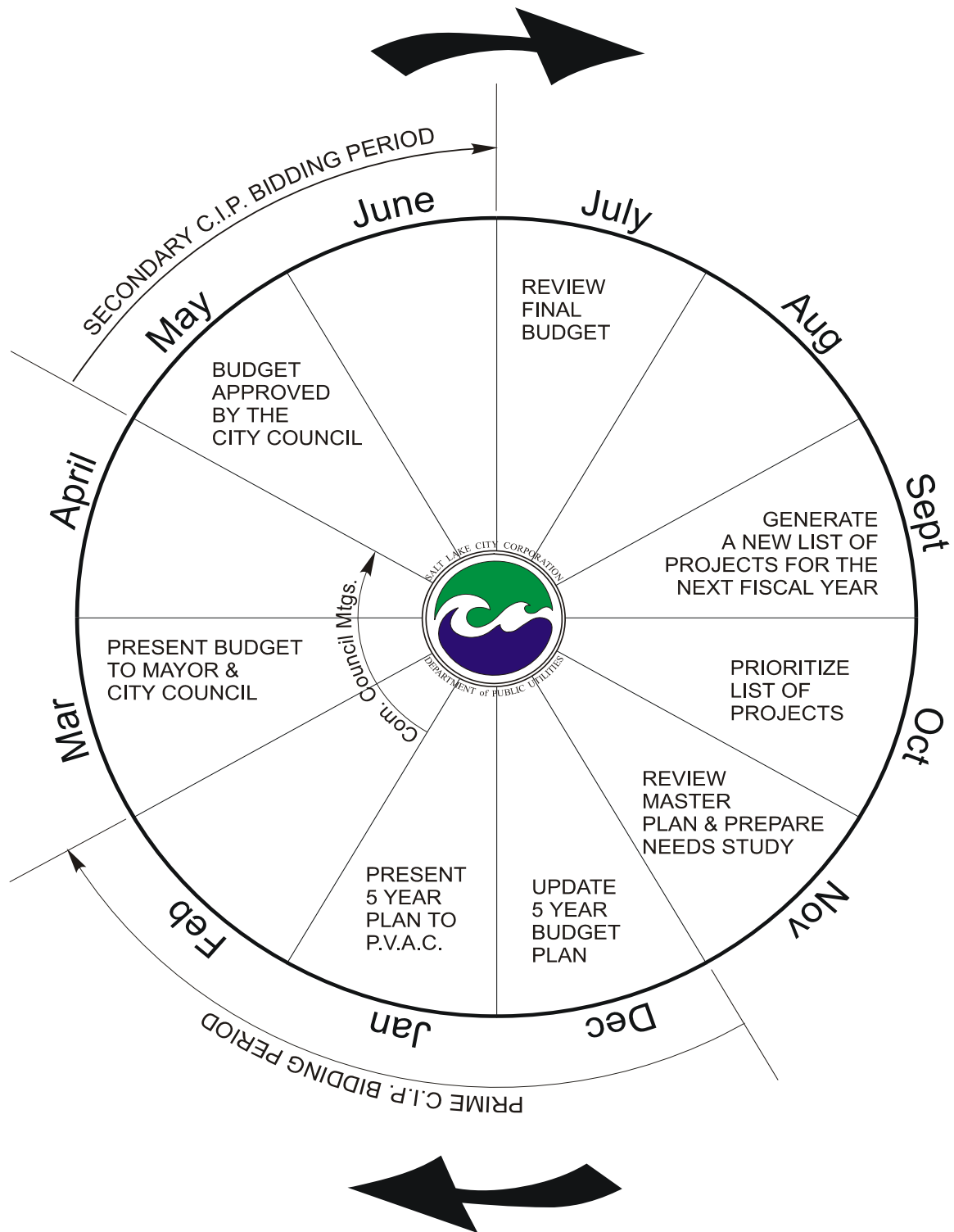


Figure 1- C.I.P. Budget Cycle

STANDARD PRACTICE #8

SALT LAKE CITY PUBLIC UTILITY

TO: Contractors who install cables in public streets
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: April 18, 2001
SUBJECT: Cable installations

1. Cable installations near SLC Public Utilities facilities need to provide a minimum of **3 feet clear** horizontal distance between waterlines and drainage lines and the cable and a minimum of **5 feet clear** horizontal distance between sewerlines and the cable. The clear horizontal distance is outside to outside distance between the SLC Public Utilities facility and the cable conduit. Vertical clearance for perpendicular crossings requires that no cable be located within the space from **18-inches above or 12-inches below** the utility. Steve Pack, SLC Public Utilities Engineering Division, will review these plans. As much as possible, these reviews will be completed within 48 hours of written request.
2. There may be times when these clearances cannot be met. In those cases, The SLCPU Cable Coordinator will take the lead in resolving issues and working out a location that works for Public Utilities maintenance. SLCPU Cable Coordinator will work with the Public Utilities Maintenance Administrator and participate with City Engineering to help resolve issues with the Cable Company. City Engineering will issue and administer the permit.
3. Based on the franchise or other agreement between the City and the Cable Company, any cable installations that interfere with a City pipeline, or are otherwise required to be moved, will be subject to relocation at the Cable Company's expense. In the County, based on the fact that generally the City waterline will predate the installation of cable lines, any cable installations that interfere with a City pipeline, or is otherwise required to be moved by the terms of any agreement, will be subject to relocation at the cable company's expense.
4. Any proposed cable that crosses any easements or property controlled by Public Utilities will require a Public Utilities permit. SLCPU Cable Coordinator will coordinate these issues with the Public Utilities Property Manager and follow the established process for these requests. These include Jordan & Salt Lake Canal, Goggin Drain, and other canals and drains.

5. Any proposed cable that crosses any easements or property controlled by Salt Lake County Flood Control will require a County permit. Within the City these include—City Creek, Red Butte Creek, Emigration Creek, Parley's Creek, Lee Drain, Goggin Drain, Surplus Canal, City Drain, Sewage Canal, CWA #2, CWA #3, CWA #1, 4th Avenue storm drain, and 8th South storm drains.

STANDARD PRACTICE #9

SALT LAKE CITY PUBLIC UTILITY

TO: Contractors who work on Public Utilities waterlines
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: March 14, 2001
SUBJECT: Water service kills

"Killing" of a water service is defined as removing all Tee's and tapping sleeves (saddle) and replacing with a sleeve and a section of pipe.

Smaller services will be "killed" by turning the main cock and cutting and crimping the pipe next to the main cock.

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STANDARD PRACTICE #10

SALT LAKE CITY PUBLIC UTILITY

TO: Designers and inspectors
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: May 1, 2001
SUBJECT: Cable Conflicts

We have had problems in the past with conflicts between our facilities and cable facilities.

On future projects, please be careful to identify these conflicts and enforce the terms of the Franchise Agreement. This means that when conflicts occurs on a City street covered by the Franchise Agreement, the cable company will be required to move their facility and bear all costs. A conflict is defined as their facility being located within the 1:1 excavation envelop around our facilities.

Please notify the cable company at the time you identify a conflict and send a written notice to them requiring them to make necessary modifications to their system prior to our construction. Typically, this will give the cable company about two months (bidding and award period) to make their system modifications.

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STANDARD PRACTICE #11

SALT LAKE CITY PUBLIC UTILITY

TO: Designers and inspectors
ISSUED BY: Charles H. Call, Jr., P.E., Chief Engineer
ISSUE DATE: March 10, 2005 revision
SUBJECT: Sewer Lateral Repair Methods

Physical replacement of the sewer lateral by normal "cut and fill" methods is acceptable. Newer in-situ pipe replacement methods will be allowed on a case-by-case basis. The Contractor should fill out a form provided by SLCPU Contracts office prior to doing any work and following the steps given below:

Cured-in-place pipe liner —

1. TV videotape — The lateral will be TV videotaped before and after the liner installation.
 - a. The pre-installation tape is to verify that the lateral pipe is sound and has not deflected more than 8%, there are no sags in the grade, that it is clean and to obtain good measurements of the length. The pre-installation tape will be submitted to and reviewed by Sewer Engineer **prior** to doing the project.
 - b. The post-installation video will be on the same tape and be provided to the City for documentation.
2. Standards — Complete installation according to all APWA and Salt Lake City Standards.
3. Submittals — Provide product submittals to the City for review and approval.
4. Permits — Obtain all permits and pay all fees. Salt Lake City will provide an inspector.
5. Repair — Properly repair existing lateral at any location that is dug up to insert the liner.
6. Contractor responsible and liable for all additional overtime costs for Public Utilities employees due to the contractor's failure to complete the project within normal working hours.

HDPE pipe bursting —

1. TV videotape — The lateral will be TV videotaped before and after the liner installation.
 - a. The pre-installation tape will be submitted to and reviewed by Sewer Engineer **prior** to doing the pipe bursting.
 - b. The post-installation video will be on the same tape and provided as documentation to the City of the completed work.
2. Standards — Complete installation according to all APWA and Salt Lake City Standards.
3. Submittals — Provide product submittals to the City for review and approval. The minimum approved HDPE insert pipe will be SDR 17 PE 3408.
4. Installation Standards — Entry pit length shall be as small as possible. The HDPE pipe is not to be deflected greater than the maximum amount as defined by the pipe manufacturer. Provisions for pipe expansion, contraction and elongation due to stress are to be provided. Provide written description and or material submittal of how this is addressed. Pipe is not to be stressed beyond limits as defined by the manufacturer and ASTM D3350. Provide appropriate equipment gauges.
5. Permits — Obtain all permits and pay all fees. Salt Lake City will provide an inspector.
6. Repair — Properly repair existing lateral at any location that is dug up to insert the liner.
7. Contractor responsible and liable for all additional overtime costs for Public Utilities employees due to the contractor's failure to complete the project within normal working hours.

STANDARD PRACTICE #12

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: March 30, 2005 revision
SUBJECT: Commissioning Waterlines

Purpose:

The purpose of this procedure is to assure that new water mains are properly tested and approved before service is provided to our customers.

This standard applies to all aspects of department operations including construction, maintenance, main replacements and general operations. All construction work done for Public Utilities falls under this requirement.

Guiding principles:

- Both AWWA Standard C651-99 – Disinfecting Water Mains and applicable Utah State standards will be followed.
- Two consecutive sets of samples will be taken from the new main at least 24-hours apart (see AWWA Standard C651-99 Section 5.1). One set of samples will be collected at the end of every 1,200 feet of main and any branches. These samples will be tested for bacteriological quality as per NELAC Standards.
- Samples will be chilled between collection and delivery to the Salt Lake City laboratory as per NELAC Standards.

Water line commissioning procedure:

1. Prevent contamination from entering the line during storage, construction or repair. For new construction, keep a plug on the end of the pipe except for when you are installing the next section of pipe.
2. Disinfect the line by placing granular or tablet chlorine (10 to 25 mg/l concentration for 24-hours) in the line during installation and filling the line with water.
3. De-chlorinate the line or dispose of it in an acceptable manner and flush the line (see Standard Practice #4).

4. Complete a hydrostatic test of the line according to AWWA Standards for the type of pipe used (i.e. for ductile iron pipe use AWWA Standard C600). This will include connecting an external pump to the pipe and applying a hydrostatic pressure as established for the project by the Chief Engineer. This will be at least 150 psi at the lowest point of the line. This pressure will be maintained within 5 psi for 2-hours and the amount of makeup water will be measured. The amount of makeup water shall be less than 1.5 gallons and 2.2 gallons per 1,000 feet of pipe for 8- and 12-inch pipe, respectively.
5. Flush after hydrostatic test and let the line sit for at least 16-hours before collecting a water sample.
6. Collect a water sample, place it in a cooler and deliver to the lab.
7. The lab will set-up the sample at 1:00 PM every work day. Samples delivered to the lab prior to noon each day will be included in the test group. Results of the tests will be available by noon the following day. The analyst will call the person listed on the sample test request form (see attached form). For samples collected on weekends and holidays, make special arrangements directly with the lab.
8. If the first sample is good, then a second sample is collected after 24-hours, placed in a cooler and delivered to the lab. If the first sample is bad, then the line is flushed and allowed to sit for at least 16-hours before another sample is collected.
9. The lab will process the next samples and report the results to the person listed on the sample test request form.
10. Once two acceptable samples have been obtained, the line is accepted and services can be connected.

NOTE: Sampling protocol for new water mains:

1. Obtain sample bottle and cooler from testing laboratory to be used.
2. Tap main within 5-feet of the end of the line to be tested.
3. Starting with a de-chlorinated pipeline, flush the test tap.
4. Fill and cap the sample bottle tightly (see note below).
5. Complete the paper work, fill out the sample label.
6. Put the bottle on blue ice in a cooler and transport to the laboratory for analysis.

Note: Be careful not to touch the rim or inside of the cap. Use a steady stream out of the tap. Do not rinse the bottle or allow anything but the water into the bottle. Do not touch the inside of the bottle with the tap or your hands.

STANDARD PRACTICE #13

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: March 28, 2005
SUBJECT: Commissioning large service and fire lines

Purpose:

The purpose of this procedure is to assure that large service and fire lines are properly tested and approved before they are put into service for our customers.

This standard applies to all aspects of work done to install large private service and fire lines.

Guiding principles:

- Both AWWA Standard C651-99 – Disinfecting Water Mains and applicable Utah State standards will be followed.
- Two consecutive sets of bacteriological samples will be taken from the service line at least 24-hours apart (see AWWA Standard C651-99 Section 5.1). These samples will be tested as per NELAC Standards.
- Samples will be chilled between collection and delivery to the Salt Lake City laboratory or a certified private laboratory as per NELAC Standards.

Commissioning procedure:

1. Prevent contamination from entering the line during storage, construction or repair. For new construction, keep a plug on the end of the pipe except for when installing the next section of pipe.
2. Disinfect the line by adding chlorine granules or tablets at the time of installation (25 ppm).
3. Fill the line and let sit for 24-hours.
4. Dispose of chlorinated water and flush the line in an acceptable manner (see notes below) so that chlorine residual is equal to that of existing system residual.
5. Pressure test the line as per industry standards.

6. Flush again and let line sit overnight (at least 16-hours).
7. Take bacteriological sample (first test).
8. If first test passes, take another bacteriological sample no less than 24-hours from the time first sample was taken.
9. If second test passes, line can be activated upon Department authorization. Contractor to submit certification and copies of all test results to the Department.

Notes:

- Highly chlorinated water will be discharged to sewer manholes. The appropriate requests and approvals will be obtained prior to discharge. De-chlorination of the water will be done if requested by the appropriate sewer agency.
- When necessary, de-chlorination will be done chemically using sodium thiosulfate. A de-chlorination ratio of 1:4 (1 pound of sodium thiosulfate to 4 pounds chlorine) will be used.
- At no time will chlorinated water be released to a live stream.

Contractor Certification Form

Large Services and Fire lines

DATE: _____
CONTRACTOR NAME: _____ Phone _____
CONTRACTOR ADDRESS: _____
PROJECT ADDRESS: _____
OWNER: _____ Phone _____

Contractor Certification:

I hereby certify that the service line installed at the above mentioned address was properly tested using the protocol given in this standard practice and is documented by the attached bacteriological tests.

By _____ Date _____

Notes:

Attachment: Test results (two tests take at least 24-hours apart)

Routing within Salt Lake City Public Utilities:

Contracts file (original), Arlene Larsen, Florence Reynolds (Water Quality Administrator), Inspector, Salt Lake City Building & Housing

A partial list of the certified private laboratories for the bacteriological tests is as flows:

Chemtech/Ford Chemical Laboratory ATT: David Gayer 6100 S Stratler Salt Lake City, Utah 84107 (801) 262-7299	Timpview Analytical Labs ATT: Dee Freeman 1165 N 1600 W Orem, Utah 84057 (801) 227-7340
Earth New Consulting, Inc. ATT: William Reyns 3930 Washington Blvd. South Ogden, Utah 84403 (435) 621-5510	Richards Laboratory ATT: Dean Richards 55 E Center St Pleasant Grove, Utah 84062 (801) 355-5579

To be analyzed in the City lab the sample has to arrive before noon for the test results to be available the next day (i.e. sample dropped off Monday at 9 AM, analyzed on Monday results on Tuesday PM). If the sample arrives later in the day they may be held back and analyzed the following day which extends the turn around time for results (i.e. samples dropped off Monday at 4 PM, analyzed on Tuesday, results on Wednesday about noon).

Note: If the test fails the Contractor is required to re-chlorinate and re-sample until the line passes. A passing test is required before the City will accept the installation. This certification form is the documentation that the tests passed.

SAMPLING PROTOCOL FOR LARGE SERVICE LINES AND FIRE LINES:

1. Pick up sample bottle and cooler from testing laboratory to be used.
2. Make a tap within 5 feet of the end of the line to be tested.
3. Starting with a de-chlorinated pipeline, flush the test tap.
4. Fill and cap the sample bottle tightly (see note below).
5. Complete the paper work, fill out the sample label.
6. Put the bottle on blue ice in a cooler and transport to the laboratory for analysis.

Note: Be careful not to touch the rim or inside of the cap. Use a steady stream out of the tap. Do not rinse the bottle or allow anything but the water into the bottle. Do not touch the inside of the bottle with the tap or your hands.

STANDARD PRACTICE #14

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: April 26, 2005
SUBJECT: Hydrostatic testing of water lines

Purpose:

The purpose of this procedure is to assure that water lines are properly tested and approved before they are put into service for our customers. This standard applies to all aspects of work done to water lines.

Guiding principles:

- Both AWWA Standards and applicable Utah State standards will be followed. Refer to Section 33 08 00 as modified below.
- Hydrostatic testing is done before bacteriological tests are collected as noted on Standard Practice #12 and 13.

Hydrostatic testing procedure:

- (1) Repair all visible pipe leakage prior to hydrostatic testing.
- (2) Expel all air from the line prior to pressure testing. This may require several cycles flushing and pressurizing before running the acceptance test.
- (3) Complete an acceptance hydrostatic test of the line according to AWWA Standards for the type of pipe used (i.e. for ductile iron pipe use AWWA Standard C600-93 and for PVC use C605). This will include connecting an external pump to the pipe and applying a hydrostatic pressure of at least 200 psi at the lowest point of the line. (Note: Static pressure will reduce at a rate of 0.433 psi per foot of elevation above the low spot.)
- (4) Maintain 200 psi pressure until the City inspector says that the test is acceptable.
- (5) A full test requires that 200 psi is maintained within 5 psi for 2-hours and the amount of makeup water is measured. (Note: Makeup water for a two hour test shall be less than 1.5 gallons and 2.2 gallons per 1,000 feet of pipe for 8- and 12-inch pipe, respectively, or as indicated by applicable AWWA charts.)

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STANDARD PRACTICE #15

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: August 25, 2006
SUBJECT: Tree pruning and root cutting

Purpose:

The purpose of this procedure is to assure that trees are protected on our projects and that they are properly taken care of when pruning or root cutting is necessary. This standard applies to all aspects of work done on our projects.

Guiding principles:

APWA Sections 32 01 91 and 32 01 93 will be followed with the following additional guidance.

TREE PRUNING PRACTICES ON UTILITY PROJECTS

Efforts should be taken to minimize impact to adjacent trees and root system; however this may not always be possible. When necessary follow these standards.

PRUNING LIMBS

Thinning cuts are the preferred method of tree pruning. The final cut should be located outside the branch bark ridge and the branch collar.

TREE ROOTS

If the decision to cut roots is made they should be cut with the same diligence that's applied to cutting branches. Backhoes, trenchers, and other ripping and shredding devices should not be used to sever tree roots. Roots selected for cutting should be severed with a circular root-cutting or rock-cutting saw at an angle that minimizes the surface area of the wound created. The cut surface should be smooth and the surrounding bark-like tissue securely attached to the wood beneath.

The location of the cut depends on the desired result. If the purpose of the cut is to stimulate the production of new roots, cut the root in a manner that leaves a stub. If the purpose is to eliminate the root and discourage re-growth, cut at the point of attachment with another root. Do not leave a stub.

Prior to any root cutting, carefully check the condition of the tree and root crown. If there is evidence of stress, past root cutting, decay, discoloration, insect activity, or cracking contact the Urban Forester. If none of these characteristics are detected, count the number of crown roots visible and determine their general direction of growth. Make sure to take into account the direction of prevailing winds, proximity of surrounding improvements and the trees current and future size.

The number and direction of anchorage roots must be taken into consideration before deciding which, if any, to cut. If possible avoid or minimize root cutting. If cutting is required generally no more than one-fourth of the crown root system should be involved in any single root cutting activity.

If the decision is made to cut a root, it should be completely severed and removed. Roots should not be "notched". If the root survives and develops wound-wood the conflict between the root and its surrounding will likely reoccur. If the tree's defensive system is unable to compartmentalize the area of defect, then the effort to save the root has failed.

Likewise, if the decision is made to cut a root, a length of at least four feet should be removed. If only a small length is removed the two pieces of root may reattach and resume growth.

It's important to limit the size, location and number of roots selected for cutting. When possible avoid cutting surface roots on mature trees that are 4 to 6 inches in diameter or larger; deep tensioning and contraction roots; and multiple cuts.

In advance of root cutting, soil excavation, or site alterations secure as much soil volume within the root zone as possible with protective fencing and/or deep layers of mulch. The trees should be hydrated throughout the term of construction and post-construction. Following construction ensure regular water is provided to compensate for reduced capacity if roots with removed and/or for altered soil volume or conditions.

PU:CCall:/1/21/2010

STANDARD PRACTICE #16

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: August 1, 2005
SUBJECT: Raising Manholes, Clean-out and Water Valve Boxes

Purpose:

The purpose of this procedure is to assure that raising manholes, clean-out boxes and water valve boxes on overlay projects is done properly. This standard applies to all aspects of work done to facilities owned and operated by SLC Public Utilities.

Guiding principles:

- Minimize future maintenance problems

Procedure for raising boxes:

- (1) Contact SLC Public Utilities Sewer Maintenance Supervisor at 801-483-6727 prior to doing any work to raise or lower manholes, clean-out boxes and valve boxes. An inspector will be assigned.
- (2) For sewer manholes:
 - a. Clean out sewerline prior to construction activity and place invert cover.
 - b. Set offset control points for future locating.
 - c. Adjust the grade below finished grade or milling depth. This may require removing a grade ring.
 - d. Invert the manhole lid and fill with cold mix asphalt.
 - e. Perform milling and overlay process.
 - f. Locate manhole and cut out the diameter plus one foot.
 - g. Place grade rings and position to match cross slope of road using hangers from 2x4's or some other acceptable method. Set grade of manhole to be about ½-inch below finished asphalt grade. The most important thing to accomplish is to get concrete bearing and support under the frame. Blocking the frame in place using rocks or bricks is not allowed.
 - h. Place concrete collar to hold manhole ring in place.
 - i. Remove invert cover as soon as possible.

- (3) For storm drain clean-out boxes:
- a. Clean out storm drain prior to construction activity and place invert cover.
 - b. Set offset control points for future locating.
 - c. Adjust the grade below finished grade. This may require cutting off the walls of the clean-out box.
 - d. Invert the cover and fill with cold mix asphalt.
 - e. Perform milling and overlay process.
 - f. Locate cleanout and cut out the new asphalt.
 - g. Pour new walls for the cleanout box and position frame to match cross slope of road. Set grade of cleanout box lid ½-inch below finished asphalt grade. The most important thing to accomplish is to get bearing and support under the frame and position it in the new wall of the box.
 - h. Clean out all construction debris from cleanout box.
- (4) For water valve boxes:
- a. Clean out valve box prior to construction activity.
 - b. Set offset control points for future locating.
 - c. Adjust the grade below finished grade by lowering the slip frame. This may require jack-hammering around the valve box.
 - d. Invert the cover and fill the top with cold mix asphalt.
 - e. Perform planning or overlay process.
 - f. Locate valve box and cut out the diameter plus one foot.
 - g. Position to match grade of road. Set grade of valve box to be ½-inch below finished asphalt grade.
 - h. Place concrete collar to hold valve box in place.
 - i. Clean out valve box as necessary.

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STANDARD PRACTICE #17

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: November 30, 2007
SUBJECT: Standard Fire Hydrant Colors

Purpose:

The purpose of this procedure is to standardize the color of fire hydrants to match their flow capacity during a peak summer day. This standard applies to all aspects of work done to facilities owned and operated by SLC Public Utilities.

Standard:

Salt Lake City Public Utilities hereby adopts the fire hydrant color scheme as given in AWWA C502-05, Appendix B. The tops and nozzle caps of hydrants are to be painted as follows:

Table 1. Fire Hydrant Color Codes

Color	Class	Flow (gpm) ²
#7724 Sail Blue	AA	Over 1500
#7538 Hunter Green	A	1000 to 1499
Orange	B	500 to 999
#7765 Regal Red	C	Less than 500
Black	Inactive or dry hydrant	

Hydrant colors shall signify only the approximate capacity of the individual hydrant as tested alone and not the capacity when more than one hydrant in the vicinity is in use. The marking of the hydrant is not to be considered as in any way guaranteeing the capacity indicated by the color.

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² Gallons per minute water flow at 20 pounds per square inch residual pressure for peak summer demand.

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STANDARD PRACTICE #18

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: April 21, 2008
SUBJECT: Disinfection Large Water Connections

Purpose:

The purpose of this procedure is to standardize the disinfection procedure for closure connections for large water pipes.

Standard:

- (1) Access the pipe through manway provided for welding and grouting of the closure connections.
- (2) Work is to be done with care at all times to not contaminate the piping.
- (3) Upon completion of the welding and grouting of the pipe a thorough wash down will be performed by the following procedure:
 - a. A 200 PPM chorine solution will be applied to the interior pipe surfaces and joints using a sprayer.
 - b. This will be accomplished a minimum of one hour prior to filling the pipe.
 - c. The person who will washing down the interior of the pipe shall wear Tyvek coverall protective suit, rubber boots and a respirator that are all disinfected with a chlorine solution.
 - d. Every effort shall be made to not introduce any contaminants to the interior of the pipe during this wash down operation.
- (4) Flush two exchanges of water through the new pipe section after the work has been done.

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STANDARD PRACTICE #19

SALT LAKE CITY PUBLIC UTILITY

TO: All contractors doing work for SLCPU
FROM: Charles H. Call, Jr., P.E., Chief Engineer
DATE: April 21, 2008
SUBJECT: Waterline Installations in Hydrocarbon Contaminated Areas

Purpose:

The purpose of this procedure is to standardize pipe installation standard and procedures for installing waterlines in known or suspected hydrocarbon contaminated areas (petroleum products consisting of diesel, gasoline, etc.).

Standard:

- (1) The pipe material will be ductile iron pipe.
- (2) The gaskets will be **Grade S Nitrile rubber gasket** (AWWA C111) which are resistant to hydrocarbon deterioration.
- (3) In areas where the soils are corrosive, the polyethylene sleeve will be used.
- (4) If other contaminants are present, the pipe manufacturer recommendations should be followed.

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APPENDIX 1 – Attachments for Standard Practice #2

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A-1 Standard Unit Price Descriptions (see DOCUMENT 00 43 00)

Standard measurement and payment descriptions will be as follows:

WATER

1. Bid Item No. ?? - Ductile Iron Pipe, [SIZE], Class 52

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the size and class indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of fittings, with no deduction for fittings.
- b. Payment Covers: installation of ductile iron pipe of the size and class indicated, including gaskets, bolts and nuts, tees, bends, sleeves, transition couplings, reducers, plugs, and caps; washout valve assemblies; joint retaining devices; miscellaneous fittings; greasing and wrapping all exposed fittings, bolts and nuts; pipeline dewatering; sewer pipeline repair if disturbed by contractors operations; capping or plugging of the existing water pipe(s) to be abandoned; [removal of the existing water pipe(s), fittings and structures;] [abandonment of the existing water pipe(s), fittings and structures;] salvaging and/or abandoning existing valves; disinfection and commissioning pipeline.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

2. Bid Item No. ?? - P.V.C. Pipe, [SIZE], SDR 18

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the sizes and types indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of fittings, with no deduction for fittings.
- b. Payment Covers: installation of P.V.C. pipe of the sizes and classes indicated, including gaskets, bolts and nuts, tees, bends, sleeves, transition couplings, reducers, plugs, and caps; washout valve assemblies; joint retaining devices; miscellaneous fittings; greasing and wrapping all exposed fittings, bolts and nuts; pipeline dewatering; concrete thrust restraints; locating wire and/or magnetic locating tape; sewer pipeline repair if disturbed by contractors operation; capping or plugging of the existing water pipe(s) to be abandoned; [removal of the existing water pipe(s), fittings and structures;] [abandonment of the existing water pipe(s), fittings and structures;] salvaging and/or abandoning existing valves; disinfection and commissioning pipeline.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

3. **Bid Item No. ?? - Steel Pipe, [SIZE], Schedule [??]**

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the sizes and schedules indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of fittings, with no deduction for fittings.
- b. Payment Covers: installation of steel pipe of the sizes and schedules indicated, including gaskets, slip-on welded flanges, bolts and nuts, tees, bends, sleeves, transition couplings, reducers, plugs, and caps; washout valve assemblies; joint retaining devices; welding as required; miscellaneous fittings; epoxy lining, coating and tape wrap; greasing and wrapping all exposed fittings, bolts and nuts; pipeline dewatering; concrete thrust restraints; sewer pipeline repair if disturbed by contractors operation; capping or plugging of the existing water pipe(s) to be abandoned; [removal of the existing water pipe(s), fittings and structures;] [abandonment of the existing water pipe(s), fittings and structures;] salvaging and/or abandoning existing valves; disinfection and commissioning pipeline.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

4. **Bid Item No. ?? - PCCP Pipe, [SIZE] [Gage ??]**

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the size indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of fittings, with no deduction for fittings.
- b. Payment Covers: installation of Pretensioned Concrete Cylinder Pipe (PCCP) pipe of the size indicated, including gaskets, insulation kits, electrolysis monitoring station(s), flanges, welded joints, joint bonding fasteners, bolts and nuts, tees, outlets, manways, bends, sleeves, transition couplings, reducers, plugs, caps; blow-off valve assemblies, drain assemblies; mud plugs, grout plugs, joint grouting; joint retaining devices; miscellaneous fittings; greasing and wrapping all exposed fittings, bolts and nuts; pipeline dewatering; concrete thrust restraints; capping or plugging of the existing water pipe(s) to be abandoned; removal or abandonment of the existing water pipe(s), fittings and structures; salvaging and/or abandoning existing valves; disinfection and commissioning pipeline.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

5. **Bid Item No. [??] - Gate Valve, [SIZE] [TYPE]**
 - a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed Gate Valve of the size and type indicated.
 - b. Payment Covers: installation of each Gate Valve of the size and type indicated including, nuts, bolts, gaskets; 2 pc. cast iron screw type valve box, [traffic] lid; greasing and wrapping all exposed fittings, bolts and nuts; adjustment of valve box lid(s) to final grade, concrete, concrete collars; and connection to existing and/or new water pipes.
6. **Bid Item No. [??] - Tapping Sleeve and Valve, [SIZE]**
 - a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed Tapping Sleeve and Valve of the size indicated.
 - b. Payment Covers: installation of each tapping sleeve and valve of the size indicated including, bolts, nuts, gaskets; 2 pc. cast iron screw type valve box, [traffic] lid; greasing and wrapping all exposed fittings, bolts and nuts; adjustment of valve box lid(s) to final grade, concrete, concrete collars; and connection to existing and/or new water pipes.
7. **Bid Item No. [??] - Butterfly Valve, [SIZE]**
 - a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed Butterfly Valve of the size indicated.
 - b. Payment Covers: installation of each butterfly valve of the size indicated including, bolts, nuts, gaskets; [run arounds;] [concrete valve box;] greasing and wrapping all exposed fittings, bolts and nuts; adjustment of valve box lid(s) to final grade, concrete, concrete collars; and connection to existing and/or new water pipes.
8. **Bid Item No. [??] - Automatic Air Release Valve Assembly**
 - a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed Automatic Air Release Valve Assembly.
 - b. Payment Covers: installation of each automatic air release valve assembly, including shut-off valve; automatic air release valve; brass riser pipe(s); miscellaneous fittings; concrete valve box; greasing and wrapping all exposed fittings, bolts and nuts; adjustment of valve box lid(s) to final grade, concrete, concrete collars; and connection to existing and/or new water pipes.
9. **Bid Item No. [??] - Pressure Reducing Valve Assembly, [SIZE]**

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed Automatic Pressure Reducing Valve Assembly of the size indicated.
- b. Payment Covers: installation of each pressure reducing valve assembly, including pressure reducing valve; isolation valves; bypass with valves; steel pipe; gaskets, slip-on welded flanges, bolts and nuts; thrust restraints; miscellaneous fittings; concrete valve box; adjustment of valve box lid(s) to final grade, concrete, concrete collars; and connection to existing and/or new water pipes.

10. Bid Item No. [??] - Water Main Loop, [SIZE & TYPE] Pipe

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed water main loop of the size and type pipe indicated.
- b. Payment Covers: installation of pipe of the size and type indicated, including gaskets, bolts and nuts, bends, sleeves, transition couplings; joint retaining devices; miscellaneous fittings; greasing and wrapping all exposed fittings, bolts and nuts; additional saw cut and removal of trench pavement, excavation, pipe dewatering, and roadbase outside the typical trench section due to the additional excavation required for the installation of the loop; concrete thrust restraints; disinfection and commissioning pipeline.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

11. Bid Item No. [??] - Replacement of Existing Water Service, [SIZE]

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each existing water service replaced of the size indicated.
- b. Payment Covers: replacement of water service of the size indicated including, installation of type "K" copper pipe of the size indicated; [service saddle clamp;] corporation stop [with 2 piece cast iron valve box with traffic lid]; [meter yoke;] [custom meter setter;] [meter box with [ductile iron] [cast iron] cover;] adapters necessary for a watertight connection to the existing service pipe within four feet of the residential side of the meter box; [concrete thrust restraints;] capping or plugging of the existing water service(s) to be abandoned; removal or abandonment of the existing water service(s), and fittings; flushing the service prior to acceptance; adjustment of valve box lid(s) and meter box lid to final grade.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

12. Bid Item No. [??] - Replacement of Existing Water Service, [SIZE] [TYPE] Pipe

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each existing water service replaced of the size and type indicated.
- b. Payment Covers: replacement of water service of the size indicated, installation of pipe of the size and type indicated; tees, gate valves, bends, fittings; [slip-on welded flanges;] concrete meter box with cast iron ring and cover(s); adapters necessary for a watertight connection to the existing service pipe within four feet of the residential side of the meter box; - pipe dewatering; [concrete thrust restraints;] capping or plugging of the existing water service(s) to be abandoned; removal or abandonment of the existing water service(s), and fittings; flushing the service prior to acceptance; adjustment of valve box lid(s) and meter box lid to final grade.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

13. Bid Item No. [??] - Reconnection of Existing Water Service, [SIZE]

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each existing water service reconnected of the size indicated.
- b. Payment Covers: reconnection of water service of the size indicated, installation of type "K" copper pipe of the size indicated; [service saddle clamp;] corporation stop [with 2 piece cast iron valve box with traffic lid]; adapters necessary for a watertight connection to the existing service pipe; - [concrete thrust restraints;] capping or plugging of the existing water service(s) to be abandoned; removal or abandonment of the existing water service(s), fittings and structures; flushing the service prior to acceptance; adjustment of valve box lid(s).

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

14. Bid Item No. [??] - Reconnection of Existing Water Service, [SIZE] [TYPE] Pipe

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each existing water service reconnected of the size and type pipe indicated.
- b. Payment Covers: reconnection of water service of the size and type indicated, installation of type pipe of the size indicated, tees, gate valves, bends, fittings, [slip-on welded flanges,] concrete meter box with cast iron ring and cover(s), adapters necessary for a watertight connection to the existing service

pipe, pipe dewatering, [concrete thrust restraints,] capping or plugging of the existing water service(s) to be abandoned, removal or abandonment of the existing water service(s), fittings and structures, flushing the service prior to acceptance, adjustment of valve box lid(s).

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

15. Bid Item No. [??] - New Water Service, [SIZE]

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed new water service of the size indicated.
- b. Payment Covers: installation of new water service of the size indicated, installation of [SIZE] type "K" copper pipe, [service saddle clamp,] corporation stop [with 2 piece cast iron valve box with traffic lid,] [meter yoke,] [custom meter setter,] meter box with [ductile iron] [cast iron] cover,] [adapters necessary for a watertight connection to the existing service pipe within four feet of the residential side of the meter box,] - [concrete thrust restraints,] fittings and structures, flushing the service prior to acceptance, adjustment of valve box lid(s) and meter box lid to final grade.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

16. Bid Item No. [??] - New Water Service, [SIZE] [TYPE] Pipe

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed new water service of the size indicated.
- b. Payment Covers: installation of new water service of the size indicated, tees, gate valves, bends, fittings, [slip-on welded flanges,] concrete meter box with cast iron ring and cover(s), [adapters necessary for a watertight connection to the existing service pipe within four feet of the residential side of the meter box,] pipe dewatering, [concrete thrust restraints,] fittings and structures, flushing the service prior to acceptance, adjustment of valve box lid(s) and meter box lid to final grade.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

17. Bid Item No. [??] - Reconnect Existing Fire Hydrant

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each existing fire hydrant reconnected.
- b. Payment Covers: reconnect existing fire hydrant to new water main, pipe, tees, bends, adapters, sleeves, fittings, gaskets,

couplings, and reducers of the size and type required, gate valve(s) with 2 pc. cast iron valve box(es) [with traffic lid(s)], approved joint restraining device(s), bolts and nuts, greasing and wrapping all exposed fittings, bolts and nuts, pipeline dewatering, concrete thrust restraints, [concrete box repair,] capping or plugging of the existing water pipe(s) to be abandoned, removal or abandonment of the existing water pipe(s), adjustment of valve box lid(s) to final grade, concrete, concrete collars.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

18. Bid Item No. [??] - New Fire Hydrant

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each new fire hydrant installed.
- b. Payment Covers: installation of new fire hydrant, with ductile iron, P.V.C. or epoxy lined and coated (exterior of pipe maybe tape wrapped) flanged steel pipe. Gate valve(s) with 2 pc. cast iron screw type valve box(es), [traffic lid(s)], tees, sleeves, bends, miscellaneous fittings, gaskets, bolts, nuts, approved joint restraining devices, greasing and wrapping all exposed fittings, bolts and nuts, pipeline dewatering, concrete thrust restraints, disinfection and commissioning pipeline, adjustment of valve box lid(s) to final grade, concrete, concrete collars; painting.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

19. Bid Item No. [??] - Abandon Existing Concrete Valve Box(es)

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each existing concrete valve box abandoned.
- b. Payment Covers: salvage cast iron rings and covers, [breaking off top of concrete valve box,] [salvage valve dome and gate assembly,] pipeline dewatering.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

SANITARY SEWER

1. Bid Item No. ?? - Concrete Sanitary Sewer Pipe, [SIZE], Class [??]

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the sizes and classes indicated in the Bid

Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of manholes, or other structures, or to the end of pipe where no structures exist, with no deduction for fittings.

- b. Payment covers: installation of concrete sanitary sewer pipe of the sizes and classes indicated, including couplings, gaskets, [wye connections,] adapters, plugs; capping or plugging of the existing sanitary sewer pipe(s) to be abandoned; [removal of the existing sanitary sewer pipe(s) and structures;] [abandonment of the existing sanitary sewer pipe(s) and structures;] water service loops; temporary sewer connections; by-pass pumping of sewage; connection of the existing sanitary sewer to the new sanitary sewer; connecting new sanitary sewer pipe to existing structures; cleaning new pipe prior to acceptance by OWNER, commissioning pipelines.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

2. Bid Item No. ?? - P.V.C. Sanitary Sewer Pipe, [SIZE], SDR 35

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the sizes and type indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of manholes, or other structures, or to the end of pipe where no structures exist, with no deduction for fittings.
- b. Payment covers: installation of P.V.C. sanitary sewer pipe of the sizes and classes indicated, including couplings, gaskets, [wye connections,] adapters, plugs; capping or plugging of the existing sanitary sewer pipe(s) to be abandoned; [removal of the existing sanitary sewer pipe(s) and structures;] [abandonment of the existing sanitary sewer pipe(s) and structures;] water service loops; temporary sewer connections; by-pass pumping of sewage; connection of the existing sanitary sewer to the new sanitary sewer; connecting new sanitary sewer pipe to existing structures; cleaning new pipe prior to acceptance by OWNER, commissioning pipelines.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

3. Bid Item No. ?? - CIPP Liner Installation in Existing [SIZE] Pipe

- a. Measurement: Measured and paid for on a lineal foot basis. Measurement to be by actual field measurement of lineal feet of Cured-In-Place-Pipe (CIPP) liner installed to the nearest foot, for sizes indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the existing pipe from center to center of manholes, catch basins or other structures.

- b. Payment Covers: engineering design of the liner; field verification of lengths and sizes of existing sanitary sewer pipe; **[cleaning the existing sanitary sewer pipe including removal of all roots and deposits, accumulations or protrusions that would interfere with the proper installation of the CIPP liner]**; television inspection before and after the installation of the liner; installation of the liner; by-pass pumping of sewage.
4. **Bid Item No. ?? - Slip Line Existing [SIZE] Pipe**
- a. Measurement: Measured and paid for on a lineal foot basis. Measurement to be by actual field measurement of lineal feet of existing pipe slip lined to the nearest foot, for sizes indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the existing pipe from center to center of manholes, catch basins or other structures.
 - b. Payment Covers: cleaning the existing sanitary sewer pipe; field verification of lengths and sizes of existing sanitary sewer pipe; television inspection before and after the slip lining operation; slip lining the existing pipe; by-pass pumping of sewage.
5. **Bid Item No. ?? - Pipe Bursting of Existing [SIZE] Pipe & Install [SIZE] O.D. HDPE SDR 17 Pipe**
- a. Measurement: Measured and paid for on a lineal foot basis. Measurement to be by actual field measurement of lineal feet of Pipe Bursting to the nearest foot, for sizes indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the existing pipe from center to center of manholes **[or connections]**.
 - b. Payment Covers: field verification of lengths and sizes of existing sanitary sewer pipe; pipe bursting of existing pipe; television inspection before and after the pipe bursting; removal of all obstructions in the existing pipe that will hinder the bursting process; by-pass pumping of sewage; installation of HDPE sanitary sewer pipe of the size and class indicated, including couplings, gaskets, adapters; capping or plugging of the existing sanitary sewer pipe(s) to be abandoned; temporary sewer connections; by-pass pumping of sewage; connection of the existing sanitary sewer to the new sanitary sewer; connecting new sanitary sewer to existing structures; cleaning new pipe prior to acceptance by OWNER, pressure testing pipelines, commissioning pipelines.
- There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.
6. **Bid Item No. ?? - Sanitary Sewer Manhole, [SIZE], Complete**

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed sanitary sewer manhole of the size indicated.
- b. Payment Covers: installation of each manhole of the size indicated; additional saw cut and removal of trench pavement, excavation, and roadbase outside the typical trench section due to the additional size of manhole; adjustment of ring and cover to final grade, concrete, concrete collars, concrete grade rings; and connection to existing and/or new sanitary sewer pipes.

7. Bid Item No. ?? - Sanitary Sewer Lateral, [SIZE & TYPE], Complete

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed sanitary sewer lateral of the size and type indicated.
- b. Payment Covers: installation of sanitary sewer lateral(s) of the size and type indicated; Salt Lake City Department of Public Utilities sewer connection and permit fees; [wye connection to the [new] [existing] sanitary sewer main;] sanitary sewer pipe , fittings, couplings and bends of the size and type specified; cleanouts; asphalt.

8. Bid Item No. ?? - Restoration of Pipe Connections

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of pipe connections restored.
- b. Payment Covers: locating each pipe connection to be restored and cutting liner for restoring connection.

9. Bid Item No. ?? - Cleaning Existing Pipe, Complete

- a. Measurement: Measured and paid for on a Lump Sum basis.
- b. Payment Covers: cleaning the existing sanitary sewer pipe including removal of all roots and deposits or accumulations that would interfere with the proper installation of the [CIPP] [PE] liner.

10. Bid Item No. ?? - Obstruction Removal

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each obstruction removed and the restoration of the site of the obstruction removal.
- b. Payment Covers: removal or repair of each obstruction; asphalt; by-pass pumping of sewage.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

c. This item to be used at the discretion of the ENGINEER.

11. Bid Item No. ?? - Reconnect Sanitary Sewer Lateral(s), [TYPE], Complete

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of reconnected sanitary sewer lateral(s).
- b. Payment Covers: reconnection of sanitary sewer lateral(s); [wyse connection to the [new] [existing] sanitary sewer main;] sanitary sewer pipe, fittings and bends of the type indicated.

12. Bid Item No. ?? - Relocate Sanitary Sewer Lateral(s), [TYPE], Complete

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of relocated sanitary sewer lateral(s).
- b. Payment Covers: relocation of sanitary sewer lateral(s); [wyse connection to the [new] [existing] sanitary sewer main;] sanitary sewer pipe, fittings and bends of the type indicated.

STORM DRAIN

1. Bid Item No. ?? - CONCRETE STORM DRAIN PIPE, [SIZE], CLASS [??]

- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the size and class indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe from center to center of manholes, catch basins or other structures, or to the end of pipe where no structures exist, with no deduction for fittings.
- b. Payment covers: installation of concrete storm drain pipe of the size and class indicated, including couplings, gaskets, adapters, plugs; capping or plugging of the existing storm drain pipe(s) to be abandoned; removal or abandonment of the existing storm drain pipe(s) and structures; water service loops; temporary sewer connections; by-pass pumping of storm water; connection of the existing storm drain to the new storm drain; reconnection of existing laterals into the new storm drain manholes; connecting new storm drain to existing structures; cleaning new pipe prior to acceptance by OWNER, commissioning pipelines.

There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

2. Bid Item No. ?? - Storm Drain Manhole No. [??], Complete

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed storm drain manhole of the number indicated.
 - b. Payment Covers: installation of each storm drain manhole of the number indicated; additional saw cut and removal of trench pavement, excavation, and roadbase outside the typical trench section due to the additional size of manhole; adjustment of ring and cover to final grade, concrete, concrete collars, concrete grade rings; and connection(s) to existing and/or new storm drain pipes.
3. **Bid Item No. ?? - Storm Drain Curb Inlet Catch Basin, Complete**
- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed storm drain curb inlet catch basin.
 - b. Payment Covers: installation of each storm drain curb inlet catch basin; connection to existing and/or new storm drain pipes.
4. **Bid Item No. ?? - Storm Drain Curb Outlet No. 1, Complete**
- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed storm drain curb outlet No. 1.
 - b. Payment Covers: installation of each storm drain curb outlet No. 1; connection to existing and/or new storm drain pipes.
5. **Bid Item No. ?? - Curb Inlet Box for Irrigation, Complete**
- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed curb inlet catch for irrigation.
 - b. Payment Covers: installation of each storm drain curb inlet catch basin; connection to existing and/or new storm drain pipes.
6. **Bid Item No. ?? - Irrigation Box Type [A] [B], Complete**
- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed irrigation box of the type indicated.
 - b. Payment Covers: installation of each irrigation box of the type indicated; connection to existing and/or new storm drain pipes.
7. **Bid Item No. ?? - Storm Drain Catch Basin No. 1 Single Grate Curb Opening, Complete**

- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed storm drain catch basin No. 1 single grate curb opening.
 - b. Payment Covers: installation of each storm drain catch basin No. 1 single grate curb opening; connection to existing and/or new storm drain pipes.
8. **Bid Item No. ?? - Storm Drain Catch Basin No. 2 Double Grate Curb Opening, Complete**
- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed storm drain catch basin No. 2 double grate curb opening.
 - b. Payment Covers: installation of each storm drain catch basin No. 2 double grate curb opening; connection to existing and/or new storm drain pipes.
9. **Bid Item No. ?? - Clean Out Box Type [??], Complete**
- a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each installed clean out box of the type indicated.
 - b. Payment Covers: installation of each clean out box type [??]; additional excavation, and roadbase outside the typical trench section due to the additional size of the structure; adjustment of frame and cover to final grade, concrete, concrete collars; and connection to existing and/or new storm drain pipes.

MISCELLANEOUS

1. **Bid Item No. ?? - Trench Stabilization Material**
- a. Measurement: Measured and paid for by the cubic yard as calculated by the engineer, using the depth required by the engineer, the bottom trench width of the typical trench section and the length of the trench.
 - b. Payment Covers: installation of trench stabilization material.
 - c. This item to be used at the discretion of the engineer.
2. **Bid Item No. [??] - Concrete Curb and Gutter Replacement**
- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the type of curb and gutter indicated in the Bid Schedule.
 - b. Payment Covers: removal and disposal of the existing curb and gutter, installation and compaction of the untreated base course, forming, placing, finishing, and testing of the concrete, replacement of concrete curb and gutter of the type indicated.

- c. Asphalt tie-in to be paid under the bid item for asphalt trench restoration.
- 3. **Bid Item No. [??] - Curb Return Removal, Installation of Handicap Access Ramp**
 - a. Measurement: Measured and paid for on a per each basis. Measurement to be by actual field count of each curb return removed and replaced with a handicap access ramp of the type indicated.
 - b. Payment Covers: removal and disposal of the existing curb & gutter, and sidewalk, installation and compaction of the untreated base course, installation of a concrete handicap ramp of the type indicated including forming, placing, finishing, and testing of the concrete.
 - c. Asphalt tie-in to be paid under the bid item for asphalt trench restoration.
- 4. **Bid Item No. [??] - Concrete Sidewalk Replacement**
 - a. Measurement: Measured and paid for on a square yard basis.
 - b. Payment Covers: removal and disposal of the existing sidewalk, installation and compaction of the untreated base course, forming, placing, finishing, and testing of the concrete, replacement of concrete sidewalk.
- 5. **Bid Item No. [??] - Asphalt Trench Restoration**
 - a. Measurement: Measured and paid for on a cubic yard basis as calculated by the engineer, as shown on Standard Plan No. 255.
 - b. Payment Covers: placing, compacting, and compaction density testing of the asphalt trench restoration material, tack coat, adjusting all street fixtures not specified elsewhere to final grade, concrete, and restriping and marking the new pavement.
 - c. Maximum width for payment shall be [??] feet.
- 6. **Bid Item No. [??] - Seal Coat Trench**
 - a. Measurement: Measured and paid for on a square yard basis as calculated by the engineer.
 - b. Payment Covers: placing, compacting, and compaction density testing of the seal coat material, tack coat, adjusting all street fixtures not specified elsewhere to final grade, concrete, and restriping and marking the new pavement.
- 7. **Bid Item No. [??] - UDOT Excavation Permit Fee and Inspection Charge**
 - a. Measurement: Measured and paid for on a Lump Sum basis.

- b. Payment Covers: Payment to be a lump sum amount and is to be the actual fee assessed to the contractor for the excavation permit and the UDOT inspection. Contractor to provide the actual billing invoice he receives from the Utah Department of Transportation. The lump sum amount shown on the bid schedule is an estimate for bidding purposes only.
8. **Bid Item No. [??] - Excavation Permit Fee**
- a. Measurement: Measured and paid for on a Lump Sum basis.
 - b. Payment Covers: Payment to be a lump sum amount and is to be the actual fee assessed to the contractor for the excavation permit. The lump sum amount shown on the bid schedule is an estimate for bidding purposes only. [Construction start date to be after April 1, 20[??], unless prior approval is obtained.]
9. **Bid Item No. [??] - Removal/Abandonment of Existing [TYPE] Pipeline**
- a. Measurement: Measured and paid for on a lineal foot basis, to the nearest foot, for the removal of pipeline of the type indicated in the Bid Schedule. Unless indicated otherwise, measurement to be along the pipe, with no deduction for fittings.
 - b. Payment Covers: removal and disposal of existing pipeline and fittings, [salvage valve dome and gate assembly,] salvage cast iron rings and covers, pipeline dewatering, capping or plugging of the existing pipeline(s) to be abandoned in place, water service loops, by-pass pumping, temporary connections.
- There will be no payment for over excavation unless approved in written form by the ENGINEER prior to the excavation.

END OF DOCUMENT

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A-2 Example Pre-bid Agenda

PRE-BID MEETING AGENDA

PROJECT NAME & NUMBER: Big Cottonwood Tanner Fire Flow Improvements, Phase II located at various locations within the corporate boundaries of Holladay City primarily along Walker Lane and Cottonwood Lane between Highland Drive and Holladay Boulevard, Project No. 513301977

MEETING PLACE: Public Utilities Engineering Conference, Room 101

DATE & TIME: Tuesday, September 22, 2009 at 11:00 A.M.

1. INTRODUCTION:

A. OWNER REPRESENTATIVES

CHIEF ENGINEERING ADMIN: Charles H. Call, P.E. – (801) 483-6840

PROJECT ENGINEER: Robert Sperling, P.E. – (801) 483-6888

DESIGNER: Keith Larson, P.E. – Bowen, Collins & Associates – (801) 495-2224

2. BRIEF DESCRIPTION OF THE WORK:

Installation of approximately 6,540 linear feet of new 12-inch Ductile Iron Pipe, Class 52 and connect to existing 6-inch and 8-inch waterlines. Install or reconnect 12 fire hydrants in various locations. Enclose a portion of the East Jordan Canal with 5'x3' reinforced box culvert including transitions to and from culvert.

3. INSTRUCTION TO BIDDERS:

- A. **CONTRACT TIME:** As per Agreement Section 00 52 00-3 of the project manual – 50 calendar days.
- B. **LIQUIDATED DAMAGES:** As per Agreement Section 00 52 00-3 the project manual - \$500.00 for each day that expires after the contract time until the work is substantially complete.
- C. **WORKING HOURS (START & STOP):** Based on 40 hr. work week, Monday through Friday.
- D. **UTILITY COORDINATION:** Contractor is responsible to notify Blue Stakes (801) 208-2100 for all utility locations.
- E. **TESTING & CERTIFICATION REQUIREMENT:** Contractor is required to have their own quality control, see Section 01 45 00 of the Project Manual.
- F. **CONSTRUCTION STAKING:** Contractor is responsible for own construction staking and layout.
- G. **MEASUREMENT & DOCUMENTATION OF QUANTITIES:** Coordinate with the City inspector and field person on site.

- H. **SAFETY:** Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The selected contractor will be required to submit a letter to the City describing the hazards present on the project and his plan to mitigate those hazards.

P. **BID OPENING:**

- A. Bid Documents: Section 00 41 00, 1.6A identifies all forms comprising the bid documents. Also, See Work Environment Form, Document 00 43 40. Submit Bid to the City Recorder's Office - 451 South State Street, Room 415 or in City Council Chambers, Room 315. Bid Opening is September 30, 2009 at 2:00 P.M., in the City Council Chambers, Room 315.
- B. Bid Bonds required or Certified Check: The bond amount must equal at least 5 percent of the total amount of the bid.
- C. The Bid shall contain an acknowledgement of receipt of all Addenda. The addenda numbers must be filled in on the Bid Form.
- D. The bidder must use only the Bid Form and Bid Schedules bound in the Contract Documents. The complete Contract Documents (excluding the Drawings) should be submitted as the Bid.

4. **GENERAL DISCUSSION/QUESTIONS:**

A-3 Bid Abstract

Jan 20 2010 - 07:37:10		Salt Lake City Department of Public Utilities		BID ABSTRACT		Requestor: cc9082		Page 1	
Project 513301977 BIG COTTONWOOD TANNER FIRE FLOW IMPROVEMENTS, PHASE II WALKER LANE FROM HIGHLAND DRIVE Budget Amount:						Engineers Estimate:			
		Unit Price		Item Amount		Unit Price		Item Amount	
7000.00 SQ. YARDS ASPHALT PAVEMENT, 6-INCH THICKNESS		1000.00		168000.00		38.25		267750.00	
1.00 EACH HOLLADAY CITY SPEED PUMP PROTECTION OR REPLACEMENT		24.00		1000.00		100.00		2650.00	
10.00 CUBIC YARDS CEMENT TREATED FLOWABLE FILL		100.00		1000.00		100.00		1000.00	
33.00 EACH CONCRETE VALVE BOX COLLAR		150.00		4950.00		150.00		4950.00	
6540.00 LINEAR FEET 12-INCH DUCTILE IRON PIPE, CLASS 52		49.16		321506.40		51.00		333540.00	
250.00 LINEAR FEET 8-INCH DUCTILE IRON PIPE, CLASS 52		66.26		16565.00		53.00		13250.00	
2.00 EACH CONNECTION TO EXISTING LATERALS OFF EXISTING 6-INCH WATER M		3200.00		6400.00		3550.00		7100.00	
2.00 EACH EXISTING FIRE HYDRANT RECONNECTED TO NEW WATER MAIN		1250.00		2500.00		2400.00		4800.00	
10.00 EACH NEW FIRE HYDRANT CONNECTED TO NEW WATER MAIN		3752.00		37520.00		4500.00		45000.00	
16.00 EACH 12-INCH GATE VALVE		2197.00		35152.00		2000.00		32000.00	
12.00 EACH 6-INCH GATE VALVE		912.00		10944.00		720.00		8640.00	
13.00 EACH 8-INCH GATE VALVE		1235.00		16055.00		1050.00		13650.00	
1.00 LUMP SUM MOBILIZATION		10000.00		10000.00		15000.00		15000.00	
1.00 LUMP SUM EXCAVATION PERMIT - HOLLADAY CITY		0.00		0.00		0.00		0.00	
5.00 EACH RECONNECT EXISTING COPPER WATER SERVICES TO NEW MAIN		800.00		4000.00		750.00		3750.00	
30.00 LINEAR FEET REPLACE CONCRETE CURB & GUTTER		20.00		600.00		30.00		900.00	
20.00 LINEAR FEET REPLACE CONCRETE WATERWAY		25.00		500.00		30.00		600.00	
2.00 EACH REPLACE GALVANIZED WATER SERVICE, 3/4-INCH OR 1-INCH		1250.00		2500.00		1200.00		2400.00	
1.00 LUMP SUM TRAFFIC CONTROL		300.00		600.00		600.00		1200.00	
50.00 CUBIC YARDS TRENCH STABILIZATION MATERIAL		7900.00		395000.00		22000.00		110000.00	
2.00 EACH 12-INCH WATERLINE LOOP - TYPE B		18.25		36.50		10.00		20.00	
220.00 LINEAR FEET 5 X 3 REINFORCED CONCRETE BOX CULVERT		16500.00		33000.00		3700.00		7400.00	
2.00 EACH CONCRETE BOX MANWAY WITH FRAME AND COVER		298.00		5960.00		240.00		480.00	
1.00 LUMP SUM TRANSITION STRUCTURE (DETAIL 1, SHEET C-1)		3500.00		7000.00		800.00		1600.00	
1.00 LUMP SUM HEADWALL		6250.00		12500.00		2000.00		4000.00	
1.00 LUMP SUM PHEASANT WAY BAR SCREEN		5950.00		11900.00		3500.00		7000.00	
1.00 LUMP SUM CLEAR & CRUB CANAL ENCLOSURE AREA		5300.00		10600.00		1800.00		3600.00	
1.00 LUMP SUM HARILYN JOHNSON 20-FOOT EASEMENT, SURFACE RESTORATION		10000.00		20000.00		2500.00		5000.00	
1.00 LUMP SUM SURVEY OF HARILYN JOHNSON PROPERTY		50000.00		50000.00		4500.00		9000.00	
1.00 LUMP SUM CANAL FENCE AND GATE		2500.00		2500.00		3000.00		3000.00	
1.00 LUMP SUM HAND RAIL		7500.00		7500.00		1800.00		1800.00	
1.00 LUMP SUM CANAL CROSSING		1250.00		1250.00		1000.00		1000.00	
Totals		17800.00		17800.00		25000.00		25000.00	
Bidder Totals		860714.90		885030.00		962510.00		972845.00	
Bidder Average \$1,012,469.14									

Project 513301977 - BIG COTTONWOOD TANNER FIRE FLOW IMPROVEMENTS - PHASE II WALKER LANE FROM HIGHLAND DRIVE Budget Amount:																Engineer's Estimate:															
B. JACKSON CONSTRUCTION				LYNDON JONES CONST.				NEWMAN CONSTRUCTION				WICKELSEN EXCAVATING				CLIFF JOHNSON EXC.				TERRY R. BROTHERTON				SSL INCORPORATED							
Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount	Unit Price	Item Amount
180.00	750.00	2000.00	2000.00	3090.00	3090.00	500.00	500.00	204.00	204.00	18000.00	18000.00	2500.00	2500.00	305410.00	305410.00	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	4850.54	
116.50	1165.00	120.00	1200.00	160.75	1607.50	80.00	800.00	90.00	900.00	150.00	1500.00	131.69	1316.90	120.00	1200.00	125.00	1250.00	125.00	1250.00	125.00	1250.00	125.00	1250.00	125.00	1250.00	125.00	1250.00	125.00	1250.00	125.00	1250.00
37.59	3717.78	300.00	9900.00	43.63	13089.00	125.00	4125.00	200.00	6000.00	125.00	4125.00	240.57	7938.81	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00
72.18	472057.20	60.00	392400.00	60.95	398613.00	65.50	428370.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00	78.60	514044.00
66.30	16575.00	94.00	23500.00	164.40	41100.00	94.57	23642.50	93.60	23400.00	85.06	16265.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00	84.36	21090.00
1783.42	3566.84	3000.00	6000.00	4492.50	8985.00	7334.00	14668.00	5368.00	10736.00	6306.25	12612.50	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74	6423.87	12847.74
1249.50	2499.00	3000.00	6000.00	1645.00	3290.00	2989.00	5938.00	3143.00	6286.00	3637.50	7275.00	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80	5815.90	11631.80
2965.83	29658.30	3500.00	35000.00	3830.00	38300.00	4107.00	41070.00	5100.00	51000.00	4050.00	40500.00	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30	5380.33	53803.30
1894.95	30319.20	2600.00	41600.00	2380.00	38080.00	2261.00	36176.00	1944.00	31104.00	2945.00	47120.00	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08	1887.88	30206.08
700.86	8410.32	730.00	8760.00	1017.75	12213.00	780.00	9360.00	852.00	10224.00	1037.50	12450.00	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08	763.34	9160.08
1030.04	13390.52	1100.00	14300.00	1421.40	18478.20	1062.00	13806.00	1148.00	14924.00	1524.38	19816.94	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24	1049.48	13643.24
22000.00	22000.00	35000.00	35000.00	8375.00	8375.00	15000.00	15000.00	8663.00	8663.00	38562.50	38562.50	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62	55735.62
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.23	1251.15	1800.00	9000.00	790.00	3950.00	913.00	4565.00	1708.00	8540.00	659.38	3296.90	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75	584.35	2921.75
47.00	1410.00	33.00	990.00	28.15	844.50	37.00	1110.00	40.00	1200.00	41.56	1246.80	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40	47.28	1418.40
37.00	1140.00	40.00	800.00	28.15	563.00	55.00	1100.00	60.00	1200.00	73.13	1462.60	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80	63.04	1260.80
881.65	1763.30	1200.00	2400.00	1270.00	2540.00	1301.00	2602.00	2284.00	4568.00	1297.50	2595.00	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68	1072.34	2144.68
945.80	945.80	1200.00	2400.00	750.00	1500.00	878.00	1756.00	849.00	1698.00	1635.63	3271.26	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32	560.16	1120.32
12733.60	12733.60	14000.00	14000.00	9905.00	24000.00	24000.00	24000.00	29427.00	29427.00	21250.00	21250.00	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11	18681.11
138.00	6900.00	33.00	1650.00	38.75	1937.50	15.00	750.00	20.00	1000.00	30.00	1500.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00	39.54	1577.00
3040.66	6081.32	6000.00	12000.00	9545.00	19090.00	11860.00	23720.00	4610.00	9220.00	7975.00	15950.00	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40	7529.20	15058.40
465.90	102498.00	360.00	79200.00	330.00	72600.00	469.00	103180.00	268.00	58960.00	373.13	82088.60	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40	453.17	99697.40
420.30	840.60	1500.00	3000.00	1575.00	3150.00	5683.00	11366.00	2965.00	5930.00	1031.25	2062.50	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68	1484.34	2968.68
4006.40	4006.40	8500.00	8500.00	6620.00	6620.00	4250.00	4250.00	7780.00	7780.00	6250.00	6250.00	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63	15005.63
3080.00	3080.00	5000.00	5000.00	5150.00	5150.00	2650.00	2650.00	5274.00	5274.00	4475.00	4475.00	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52	10228.52
1525.00	1525.00	10000.00	10000.00	4430.00	4430.00	8000.00	8000.00	2950.00	2950.00	10625.00	10625.00	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50	5467.50
14135.00	14135.00	10000.00	10000.00	4795.00	4795.00	16985.00	16985.00	6396.00	6396.00	15937.50	15937.50	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00	15159.00
3565.24	3565.24	12000.00	12000.00	11075.00	11075.00	12800.00	12800.00	4852.00	4852.00	8500.00	8500.00	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56	12262.56
4574.88	4574.88	4200.00	4200.00	4935.00	4935.00	2200.00	2200.00	8314.00	8314.00	8500.00	8500.00	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101.20	2101					

A-4 Example of Award Letter

October 26, 2009

Rolfe Excavating & Construction Co.
P.O. Box 900430
Sandy, Utah 84090

Gentlemen:

Written bids were received on September 30, 2009, for the Big Cottonwood Tanner Fire Flow Improvements, Phase II located at various locations within the corporate boundaries of Holladay City primarily along Walker Lane and cottonwood Lane between Highland Drive and Holladay Boulevard, Project No. 513301977. Your total base bid in the amount of \$860,714.90 is low bid and is accepted by Salt Lake City Corporation. Please submit to this office within (10) days the following:

1. Obtain three project manuals for signing and approval. Furnish the required performance and payment bonds using the City provided documents 00 61 13 and 00 61 14. Also, complete Document 00 52 00.
2. Furnish the required insurance naming your company and Salt Lake City Corporation as an additional insured. Follow the attached insurance instruction sheet.
3. Furnish a Certificate of Workmen's Compensation obtained from your own insurance company.
4. Return all three (3) signed project manuals to Salt Lake City Department of Public Utilities, Engineering Office, 1530 South West Temple, Salt Lake City, Utah 84115, Attn: Linda Allred.

The City has been awarded a grant to reimburse the City for this project, and is in the process of obtaining final grant approvals. In order to assure the grant reimbursement is not jeopardized, the City does not intend to sign the final construction agreement and issue an authorization to proceed until the City's NEPA approvals have been received from the US Bureau of Reclamation (USBR). The City anticipates that the USBR will provide these approvals in December.

If you have any questions, please call Charles H. Call at (801) 483-6840.

Sincerely,

Jeffrey T. Niermeyer
Director

Ika
Attachments
cc: File

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A-5 Insurance Checklist

SALT LAKE CITY CORPORATION INSURANCE CHECKLIST

Contractor: _____ **Contract #** _____

Term of Contract: _____

In order to meet City's requirements, all certificates of insurance must include the following:

- ____ 1) Issuance Date.
- ____ 2) Name and address of Producer (Insurance Agent).
- ____ 3) Name and address of Insured (the entity with whom the City is dealing i.e. entering contract, issuing a permit, etc.). In the case of a subdivision development contract, the named insured must be identical with the developer with whom the City has contracted.
- ____ 4) Name of Company(ies) Affording Coverage.
- ____ 5) A listing of commercial insurance policies to include at a minimum:
 - a. Commercial General Liability insurance showing coverage limits of at least \$2,000,000 per occurrence with a \$3,000,000 general aggregate and \$3,000,000 products and completed operations aggregate.
 - b. Commercial Auto Liability insurance showing a combined single limit of \$2,000,000 per occurrence or \$1,000,000 liability per person, \$2,000,000 liability per occurrence, and \$250,000 property damage.
 - c. Workers' Compensation Insurance with statutory coverage limits.

Note: The above policy and limit requirements are standard and should be sufficient for most contracts. Some contracts may require different coverage limits. They may also require additional or substitute types of insurance. In such cases, consult with the Office of the City Attorney or Risk Management in order to ensure that the City is properly protected.

- ____ 6) Effective dates of the policies covering the period of the grant, license, permit, etc.
- ____ 7) Salt Lake City Corporation listed as "Additional Insured."
- ____ 8) Salt Lake City Corporation listed as "Certificate Holder."
- ____ 9) The "Cancellation" block must have the number 30 written in the blank so that it reads as follows:

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF

ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

- ____10) Certificate must not contain any language which would detrimentally affect the interests of Salt Lake City Corporation.
- ____11) An original signature of an agent, broker or other representative authorized by all companies to issue certificates," (not a copy or stamp) **OR** a computer generated laser signature with a letter from the insurance company (letter to be kept on file in the department issuing the contract) stating that the signature on the certificate is a computer generated laser signature and that it will constitute an official signature which will bind the Company.

In addition to the foregoing, the following steps must be taken by the City representative monitoring the contract, permit, etc.:

- ____12) Verify that:
- (a) the company(ies) affording coverage is listed on the most current circular entitled "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds," published by the U.S. Department of the Treasury in the *Federal Register*;
- OR**
- (b) the insurer is rated with an A- or better rating with AM Best as verified on-line at <http://www.ambest.com/>, or, if the Internet is not available, in the most recent edition of *Best's Key Rating Guide* to property-casualty insurers in the United States. The rating must be at least as high as that required by the terms of the contract.
- AND – If the contract is construction related**
- (c) the insurer is included in the AM Best Financial Size Categories equal to or greater than VII.

- ____13) Verify that the Company(ies) Affording Coverage is currently licensed by the Utah Insurance Commissioner to do business in Utah.
- ____14) Verify that the Insured company doing business with the City is registered and is currently in good standing with the Utah Department of Commerce.
- ____15) Verify that the following statement has been added to all Certificates received from Workers' Compensation Fund of Utah: (They no longer do this)

IF CANCELLATION IS INITIATED BY THE WORKERS' COMPENSATION FUND OF UTAH A THIRTY DAY NOTICE WILL BE ISSUED TO YOU. A POLICYHOLDER MAY CANCEL THE POLICY WITH NO PRIOR NOTICE; IN THESE INSTANCES, PRIOR NOTIFICATION TO YOU WILL NOT BE POSSIBLE.

- ____16) In the case of payment and performance bonds required by subdivision and construction contracts, the bonds must cover the developer with whom the City has contracted (using the same name as shown in the contract) and must cover all contractors and subcontractors hired by the developer.

____17) In the case of payment and performance bonds, verify that the providers of bonds are qualified to do business in the State of Utah and that they meet the rating standards for insurers set forth above.

Completed by: _____

(Signature)

Title: _____

Division or Department: _____

Date: _____

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A-6 Example Pre-construction Agenda

PRE-CONSTRUCTION MEETING AGENDA

PROJECT NAME & NUMBER: Big Cottonwood Tanner Fire Flow Improvements, Phase II located at various locations within the corporate boundaries of Holladay City along Walker Lane and Cottonwood Lane between highland Drive and Holladay Blvd., Project No. 513301977

MEETING PLACE: Public Utilities Engineering Conference, Room 101

DATE & TIME: Tuesday, December 8, 2009 @ 11:00 A.M.

1. INTRODUCTION

A. OWNER REPRESENTATIVES

CHIEF ENGINEERING ADMINISTRATOR: Charles H. Call – (801) 483-6840

PROJECT ENGINEER: Robert Sperling – (801) 483-6888

DESIGNERS: Bowen, Collins & Associates – (801) 495-2224

Keith Larson, P.E. & Andrew McKinnon

INSPECTOR: Ryan Bagshaw, (801) 483-6891 Office, (801) 641-8932 Cell

SURVEY: Matt Briggs – (801) 483-6766

B. CONTRACTOR: _____

C. ADDRESS: _____

D. PROJECT MANAGER: _____

E. PROJECT SUPERINTENDENT: _____

2. ADMINISTRATIVE CHANNELS

LINES OF COMMUNICATION
SHALL BE FROM

1. INSPECTOR
2. PROJECT SUPERINTENDENT
3. PROJECT ENGINEER
4. CHIEF ENGINEER
5. ADMINISTRATION

3. **PROGRESS PAYMENTS:** Per General Conditions, Section 00 72 00, Part 14.2 - Progress payments shall not be processed more often than once a month. Final payments will not be made until punch list items are completed and approved by the inspector.

4. **CONTRACT CHANGE ORDERS:** As Per General Conditions, Section 00 72 00, Part 10.1C&E – No money will be paid to the contractor for any new or additional labor, materials or equipment furnished, unless it is made in writing and executed by the owner and contractor.

5. **SUBMITTALS:** Contractor shall submit to engineer, work plan procedures, progress schedule, preliminary shop drawings schedule, and mobilization plan.

6. **PERMITS:** Contractor is responsible to obtain all necessary permit(s) and comply with all requirements. Holladay City – 4580 South 2300 East, (801) 272-9450. Inspector – Tosh Kano, (801) 244-6103.
7. **QUALITY CONTROL:** Contractor is responsible for own quality control program, see Section 01 45 00 of the project manual.
8. **SAFETY & PROTECTION PLAN:** Contractor is responsible for maintaining, and supervising all safety precautions and programs in connection with the work. The City requires a letter from the Contractor describing the hazards present on the project and his plan to mitigate those hazards.
9. **SUPPLIERS:**
 - Pipe -
 - Asphalt -
 - Concrete -
 - Trench Stabilization Material -
 - Box Culvert -
10. **SUBCONTRACTORS:** As per Modifications to the General Conditions, Section 00 73 10, Part 5.2(4). In the event any work is subcontracted, the Contractor shall require its subcontractor, at no cost to the City, to secure and maintain all minimum insurance coverages required of the contractor.
11. **CONTRACT TIME:** See Section 00 52 00 -3 of the Project Manual – 50 Calendar Days.
12. **START DATE:**
13. **RESIDENT NOTIFICATIONS:** The Contractor is required to distribute a written notice to all occupants located in the construction area at least 48 hours prior to construction and 72 hours for commercial occupants.
14. **UTILITY NOTIFICATIONS & BLUE STAKES:** Contractor is responsible to notify Blue Stakes (801) 208-2100 for utility locations 48 hours prior to construction.
15. **SURVEY STAKES:** Contractor is responsible for own construction staking and layout.
16. **PLAN QUESTIONS/GENERAL DISCUSSION:**

A-7 Construction Work Order

See Contracts Specialist

WORK ORDER SEARCH -- HARDCOPY REPORT Page 1

1 Records Found. Search for work orders where the system-assigned identification number is 56253

DETAILS FOR WORK ORDER 16150 PHASE II - BIG COTTONWOOD TANNER IMPROVEMENT PROJECT WALKER LANE FROM HIGHLAND DRIVE TO 25235 EAST,
Entered On: 08/31/2009
Activity: INSPECTION
Description: BOWEN, COLLINS & ASSOCIATES TO DESIGN 12-INCH PIPE LINE
Assigned To: RYAN BAGSHAW Assigned on 08/31/2009
Manager: ROBERT SPERLING Assigned on 08/31/2009
Status: ACTIVE as of 08/31/2009
Project: 513301977
Last Comment:

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A – 8 Submittal Form

SUBMITTALS

Submittals must be responded to on a timely basis so that fabrication or long lead time items are not delayed.

SHOP DRAWINGS/SAMPLES

Date Submitted	Item	Date Rejected	Date Approved

VENDOR CERTIFICATES

Date Submitted	Item	Vendor	Comments

SUBMITTAL REVIEW

- | | |
|--|--|
| <input type="checkbox"/> REVIEWED, NO EXCEPTIONS TAKEN | <input type="checkbox"/> ARCHITECTURAL |
| <input type="checkbox"/> MAKE CORRECTIONS NOTED | <input type="checkbox"/> STRUCTURAL |
| <input type="checkbox"/> AMEND AND RESUBMIT | <input type="checkbox"/> CIVIL |
| <input type="checkbox"/> REJECTED - SEE REMARKS | <input type="checkbox"/> MECHANICAL |
| | <input type="checkbox"/> ELECTRICAL |

Review is for general compliance with contract documents only. The Contractor retains sole responsibility for correctness and verification of dimensions and quantities. The Contractor is not relieved of responsibility for variances from contract documents unless previous specific approval in writing has been granted.

REVIEWED BY _____

DATE _____

PROJECT NO. _____

SALT LAKE CITY
PUBLIC UTILITIES

A-9 Example Notification Letter

M E M O R A N D U M

TO: Residents

**FROM: Salt Lake City Department of Public Utilities
Jeffry T. Niermeyer, Director**

DATE: January 4, 2010

**RE: Big Cottonwood Tanner Fire Flow Improvements, Phase II
Project No. 513301977**

Salt Lake City Department of Public Utilities will be constructing the Big Cottonwood Tanner Fire Flow Improvements, Phase II from January through April 2010. This project involves installation of approximately 6,540 linear feet of 12-inch water main and approximately 250 linear feet of 8-inch water main located at various locations within the corporate boundaries of Holladay City primarily along Walker Lake and Cottonwood Lane between Highland Drive and Holladay Boulevard. Additionally, new fire hydrants at various locations will be installed.

Traffic and on-street parking will be affected when construction is on your street. It would be appreciated if you do not park on the street during construction.

The contractor for the work is Rolfe Excavating & Construction Company. Their phone number is (801) 255-6710. Kim Rolfe is the project manager and Kurt Rolfe is the project superintendent.

The SLC Public Utilities inspector is Ryan Bagshaw, his phone number is (801) 483-6891 Office or (801) 641-8932 Cell. Robert Sperling is the project engineer, his phone number is (801) 483-6888.

If you have any questions about this project or concerns during the construction, please call our inspector or Linda Allred at (801) 483-6763 or Stephanie Hansen at (801) 483-6781.

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A-10 Project Summary Form

See A-18 and front of Daily Log Book and Notice to Supervisors

NTS - BCT Fire Flow Improvements, Project No. 513301977

Contractor's Notice to Proceed – January 7, 2010

The contractor will start construction on the box culvert and work on the new canal crossing on the East Jordan Canal during January & February. The water line work will be done during warmer weather and should be completed before April 15, 2010.

Project Name & Location: Big Cottonwood Tanner Fire Flow Improvements, Phase II located at various locations within the corporate boundaries of Holladay City primarily along Walker Lane and Cottonwood Lane between Highland Drive and Holladay Boulevard, Project No. 513301977

Bid Amount: \$860,714.90

Account No: 51-01301-2773.10

Contractor: Rolfe Excavating & Construction Company
P.O. Box 900430
Sandy, Utah 84090
Phone: (801) 255-6710

Project Manager: Kim Rolfe – (801) 244-8453

Project Superintendent: Kurt Rolfe – (801) 231-4018

Owner Representatives

Chief Engineering Administrator: Chuck Call - (801) 483-6840

Project Engineer: Robert Sperling – (801) 483-6888

Designers: Bowen, Collins & Associates (801) 495-2224

Keith Larson, P.E. & Andrew McKinnon

Inspector: Ryan Bagshaw – (801) 483-6891 Office, (801) 641-8932 Cell

Backup Inspector: Chad Stratton – (801) 483-6738 Office, (801) 330-0960 Cell

Survey: Matt Briggs – (801) 483-6766

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A-11 Daily Report Form

SALT LAKE CITY ENGINEERING DAILY REPORT

DATE _____

DAY	S	II	I	II	III	I	S
-----	---	----	---	----	-----	---	---

PROJECT _____

CONTRACTOR

ENGINEER

INSPECTOR _____

WEATHER	Clear	Partly Cloudy	Overcast	Rain	Snow
---------	-------	---------------	----------	------	------

TEMP.	To 32	32-50	50-70	70-85	85 up
-------	-------	-------	-------	-------	-------

WIND	Still	Moder	High	Report No.
------	-------	-------	------	------------

HUMIDITY	Dry	Moder	Humid	
----------	-----	-------	-------	--

AVERAGE FIELD FORCE			
Name of Contractors	Non-manual	Manual	Remarks

VISITORS			
Time	Name	Representing	Remarks

EQUIPMENT AT THE SITE:
CONSTRUCTION ACTIVITIES:
FOLLOWUP INSPECTION OF PREVIOUSLY REPORTED DEFICIENCIES:
FIELD PROBLEMS (which could result in delay or claim), OR DEFICIENT TESTS:

☐ CONTINUED ON NEXT PAGE

BY _____

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A-12 Quality Control

See Section 01 45 00 Quality Control in the Project Manual

The Contractor is required to provide a "Quality Control Program Manager" who will monitor the quality of the work. For our projects this is usually someone from a soils testing lab who will be taking density tests and reporting those results.

Trench compaction – We have installed a lot of pipe over the recent years and we plan to continue to have an aggressive capital improvement program. Your individual effort on these projects is appreciated. There have, however, been some trench failures problems on some of our projects. In an effort to correct this problem we will be emphasizing trench inspection in regard to the following:

- a) A certified Proctor (soil moisture vs. density curve) will be required for all material used in the trench.
- b) Compaction will be closely monitored and test results will be required before progress payments will be made. The Contract testing requirement is 1 test per 200 lineal feet for each 8-inch lift (see Section 33 05 20 paragraph 1.8 B.). The test results will be summarized by the Contractor's testing company. As a minimum these summary sheets will show (see Section 01 45 00 Part 1.6 C.) but not be limited to:
 - i) date,
 - ii) project station,
 - iii) depth,
 - iv) material tested and
 - v) percent density of all tests and retests taken.

Trench compaction will be done in lifts not to exceed 8-inch loose thickness.

Service line documentation and "as-built" drawings – Documentation of the work done on individual water service lines has been poor and submittal of red-lined "as-built" plans. In an effort to do better, we will provide an extra set of plans for the Contractor to mark up and include a summary sheet of all the expected work on water services in the Project Manual. The Contractor will be required to keep a record of the changes to this project. Final payment will not be made until this information is submitted to the City by the Contractor.

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A-13 Change Order Example

ENGINEERING CONSTRUCTION CHANGE ORDER SALT LAKE CITY DEPARTMENT OF PUBLIC UTILITIES

CO #: _____ #1 Requested by: _____ CHC Representing: <u>Public Utilities</u> Date Requested: <u>3/09/09</u>	Project Number: <u>51410096</u> (Original contract work - Tanner Diversion Structure, Project No. 5129214) Description: Big Cottonwood intake structure repair located at 3400 East Big Cottonwood Canyon Road	Date Approved March 9, 2009
---	---	---------------------------------------

This document amends the above referenced contract dated Jan. 21, 2009 between Salt Lake City Corporation and J. Lynn Roberts & Sons, Inc. All other provisions of the contract remain unchanged and, except as specified herein, apply to the work defined. The prices set forth include all overhead and profit and represent the full cost to the City for the work. The time provided for completion of the contract is ☐ unchanged, ☐ increased, ☐ decreased by ____ calendar days.

Method of Payment <input type="checkbox"/> Unit Price <input type="checkbox"/> Force Amount XX Lump Sum	<input type="checkbox"/> OTHER <input type="checkbox"/> Estimated <input type="checkbox"/> Fixed Fee	Original Contract Price: \$39,893.00 Total All Prior CO'S: \$ -0- Pending CO's: \$ -0- This CO : <u>\$ 6,791.00</u> Proposed Contract Amount: \$46,684.00	Percentages: All Prior CO'S: <u>0 %</u> Pending CO's: <u>%</u> This CO : <u>NA %</u>
--	--	---	---

Description of change and summary of costs:

Original contract work - Tanner Diversion Structure, Project No. 5129214

The lump sum price for the above noted project is \$6,791.00.

This work includes mobilization/de-mobilization; bonds and insurance; saw cut, removal of existing wall in damaged area, forming and reconstructing the wall in-kind as shown on the attached drawing including using a bonding agent; and concrete cylinder testing.

Reason for Change:

This work is at the Big Cottonwood Water Treatment Plant and is being added to the Contractor for the Little Cottonwood Diversion Structure. This price was the low price of several different Contractor bids for this work. It is being done as a change order for the City convenience and because this was the low bid of several Contractors.

Inspector	Date	Designer	Date
Contractor Acceptance	Date	Public Utilities Director Approval	Date
Engineer Approval	Date	Finance Division Approval	Date
Contracts Office	Date	Mayor Approval	Date

**ENGINEERING CONSTRUCTION CHANGE ORDER JUSTIFICATION
SALT LAKE CITY DEPARTMENT OF PUBLIC UTILITIES**

FOR INTERNAL USE ONLY

CO #: _____ #1 Requested by: _____ CHC Representing: <u>Public Utilities</u> Date Requested: <u>3/09/09</u>	Project Number: <u>51410096</u> (Original contract work - Tanner Diversion Structure, Project No. 5129214) Description: Big Cottonwood intake structure repair located at 3400 East Big Cottonwood Canyon Road	Date Approved March 9, 2009
---	---	---------------------------------------

I. Reason for the change:

REASON	DESCRIPTION
Scope Change	This is an extra project added to the original Contract work. It was the City's convenience to do this as a change order.
Changed Condition	
Design Deficiency	

II. What work process is the root cause of this change order? (Examples: planning, design, construction management, etc.)

This is regular maintenance repair work at the Big Cottonwood WTP. It was the City's convenience to do this as a change order as part of an existing Contract.

III. What is being done to insure that this problem does not occur again?

NA

A-14 Pay Request Form

SALT LAKE CITY PUBLIC UTILITIES

PAY ESTIMATE

No.: 3

JOB No.: _____

TITLE: _____

DATE: 05-Apr-05

CONTRACTOR: _____

PROJECT ENGINEER: _____

MANAGER: _____

ITEM NO	DESCRIPTION OF WORK	QUANTITY	UNITS	QUANTITY TO DATE	VALUE EARNED TO DATE		TOTAL CONTRACT AMOUNT
					UNIT PRICE	AMOUNT	
1	Remove Inlet Box	3	Each	2	\$250.00	\$500.00	\$750.00
2	Remove Concrete Curb and Gutter	4,802	Ln.Ft	3739	\$1.98	\$7,403.22	\$9,507.96
3	Storm Drain Catch Basin Type A	8	Each	4	\$1,200.00	\$4,800.00	\$9,600.00
4	Storm Drain Cleanout Box	6	Each	3	\$1,300.00	\$3,900.00	\$7,800.00
5	Invert Cover	28	Each	19	\$400.00	\$7,600.00	\$11,200.00
6	12" RCP	19	Ln.Ft	22	\$30.00	\$660.00	\$570.00
7	15" RCP	37	Ln.Ft	15	\$32.00	\$480.00	\$1,184.00
8	15" HDPE	573	Ln.Ft	450	\$21.00	\$9,450.00	\$12,033.00
9	Curb and Gutter Type A	3,966	Ln.Ft	3493	\$7.88	\$27,524.84	\$31,252.08
10	Concrete Sidewalk	1,629	Sq.Yd	1685	\$19.85	\$33,447.25	\$32,335.65
11	Open Driveway Approach	895	Sq.Yd	887	\$31.50	\$27,940.50	\$28,192.50
12	Concrete Flatwork, 4" Thick	9	Sq.Yd	15	\$22.50	\$337.50	\$202.50
13	Concrete Flatwork, 6" Thick	137	Sq.Yd	269	\$27.00	\$7,263.00	\$3,699.00
14	Grass Sodding	933	Sq.Yd	0	\$5.00	\$0.00	\$4,665.00
15	Cement Concrete Pavement	23,772	Sq.Yd	18472	\$16.00	\$295,552.00	\$380,352.00
16	Adjust Manhole	24	Each	11	\$290.00	\$3,190.00	\$6,960.00
17	Reset Monument	3	Each		\$250.00	\$0.00	\$750.00
18	Adjust Cast Iron Water Valve Box	2	Each	2	\$225.00	\$450.00	\$450.00
19	Adjust Water Meter Box to Grade	33	Each		\$290.00	\$0.00	\$9,570.00
20	Asphalt Concrete Pavement Sawing	682	Ln.Ft	1128	\$1.00	\$1,128.00	\$682.00
21	Replace 1" Water Service Line	78	Ln.Ft	322	\$18.00	\$5,796.00	\$1,404.00
22	Replace 3/4" Water Service Line	1,035	Ln.Ft	83	\$17.00	\$1,411.00	\$17,595.00
23	Project Identification Sign	4	Each	4	\$500.00	\$2,000.00	\$2,000.00
CO-1	Wilmington Storm Drain					\$0.00	
	15" RCP pipe zone backfill	575	Ln.Ft	588	\$36.20	\$21,285.60	\$20,815.00
	18" RCP & pipe zone backfill	314	Ln.Ft	310	\$50.23	\$15,571.30	\$15,772.22
	Catch basins and backfill	12	Each	10	\$1,200.00	\$12,000.00	\$14,400.00
	Traffic Control	1	Lump	1	\$3,150.00	\$3,150.00	\$3,150.00
	Surveying	1	Lump	1	\$750.00	\$750.00	\$750.00
	Bond Premium	1	Lump	1	\$1,122.00	\$1,122.00	\$1,122.00
	Loop water lines	1	Lump	0	\$5,000.00	\$0.00	\$5,000.00
	Potholing	5	Each	5	\$350.00	\$1,750.00	\$1,750.00
CO-3	Asphalt Patch	3,300	Sq.Ft	1503	\$3.11	\$4,674.33	\$10,263.00
CO-4	Ex and Backfill under curb and gutter	3,200	Ln.Ft	3200	\$6.06	\$19,392.00	\$19,392.00
					VALUE EARNED TO DATE	\$520,528.54	\$665,168.91

AA_Pay Estimate form.xls

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A-15 Example Notice of Substantial Completion

April 19, 2010

Rolfe Excavating & Construction, Inc.
P.O. Box 900430
Sandy, Utah 84090

RE: Notice of Substantial Completion Big Cottonwood Tanner Fire Flow Improvements, Phase II located in Holladay City along Walker Lane and Cottonwood Lane between Highland Drive and Holladay Boulevard, Project No. 513301977

Gentlemen:

The work performed under the project contract was reviewed on April 15, 2010, and is declared substantially complete. The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the contract documents so the City can use or occupy the project as specified in the contract. The contractor's general warranty and guarantee will start from this date.

According to our inspector, Ryan Bagshaw, no punch list was required and the final inspection was done on April 15, 2010.

If you have any questions, please call Ryan Bagshaw at (801) 483-6891.

Very truly yours,

Jeffrey T. Niermeyer
Director

Ika

cc: Chuck Call, Robert Sperling, Ryan Bagshaw, Mark Stanley, File

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See Contracts Specialist

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A-17 Project Close-out Change Order

See Contracts Specialist

Project Closeout Summary Report								
2825 EAST - FORT UNION, 2870 East - Fort Union and Holly Hock Hills								
Item No.	Description	Bid/CO Quantity	Field Quantity	verify	Quantity Adjustment	Unit Price	Price Adjustment	New Contract Amount
2825 East Fort Union Boulevard (7000 South) to 7730, PROJECT NO. 513301884								
1	Ductile Iron Pipe 8", Class 52	1,550	LF	1,476.23	-73.77	\$41.50	(3,061.46)	\$61,263.55
2	Gate Valve, 8"	2	Ea	2	0	2,070.00	0.00	4,140.00
3	Replacement of existing water service 3/4" or 1" complete	17	Ea	10	-7	800.00	(5,600.00)	8,000.00
5	Reconnection of Existing water service 3/4" or 1" complete	22	Ea	31	9	450.00	4,050.00	13,950.00
6	Reconnection of Fire Hydrant	1	Ea	0	-1	2,000.00	(2,000.00)	0.00
7	New Fire Hydrant (complete)	2	Ea	2	0	5,050.00	0.00	10,100.00
8	Concrete Roll Gutter Replacement	400	LF	0	-400	1.00	(400.00)	0.00
10	Trench Compaction Test	28	Ea	28	0	31.00	0.00	868.00
11	Asphalt Trench Restoration	130	CY	118	-12	73.00	(876.00)	8,614.00
12	Excavation Permit Fee	1	LS	1	0	3,248.00	0.00	3,248.00
				Subtotals			(\$7,887.46)	\$110,183.55
2870 East Fort Union Boulevard (7000 South) to 7230 South, PROJECT NO. 513301885								
1	Ductile Iron Pipe 8", Class 52	1,550	LF	1,493.40	-56.6	\$41.50	(2,348.90)	\$61,976.10
2	Gate Valve 8"	2	Ea	2	0	2,510.00	0.00	5,020.00
3	Replacement of Existing Water Service 3/4" or 1" (complete)	10	Ea	10	0	900.00	0.00	9,000.00
5	Reconnection of Existing Water Service 3/4" or 1" (complete)	31	Ea	31	0	400.00	0.00	12,400.00
7	New Fire Hydrant (complete)	2	Ea	0	-2	5,050.00	(10,100.00)	0.00
8	Concrete Roll Gutter Replacement	400	LF	400	0	1.00	0.00	400.00
10	Trench Compaction Test	28	Ea	28	0	31.00	0.00	868.00
11	Asphalt Trench Restoration	130	CY	119	-11	73.00	(803.00)	8,687.00
12	Excavation Permit Fee	1	LS	1	0	3,281.00	0.00	3,281.00
				Subtotals			(\$13,251.90)	\$101,632.10
Holly Hock Hills, PROJECT NO. 513301883								
1	Ductile Iron Pipe 8", Class 52	1,220	LF	1063.51	-156.49	\$37.50	(5,868.38)	\$39,881.63
2	Gate Valve 8"	2	Ea	2	0	4,250.00	0.00	8,500.00
3	Replacement of Existing Water Service 3/4" or 1" (complete)	23	Ea	23	0	850.00	0.00	19,550.00
4	Move and Replace (7084 S) service 3/4" or 1" (complete)	1	Ea	1	0	1,000.00	0.00	1,000.00
5	Reconnection of Existing Water Service 3/4" or 1" (complete)	6	Ea	6	0	450.00	0.00	2,700.00
7	New Fire Hydrant (complete)	2	Ea	2	0	6,405.00	0.00	12,810.00
8	Concrete Roll Gutter Replacement	100	CY	100	0	1.00	0.00	100.00
9	Concrete Driveway Replacement	12	SQ	12	0	20.00	0.00	240.00
10	Trench Compaction Tests	24	Ea	24	0	31.00	0.00	744.00
11	Asphalt Trench Restoration	115	CY	85	-30	73.00	(2,190.00)	6,205.00
12	Lump Sum Excavation Permit Fee	1	LS	1	0	2,875.00	0.00	2,875.00
				Subtotals			(\$8,058.38)	\$105,250.77
							TOTAL COST	\$317,066.42
							CO #1	\$23,850.00
							payments	\$100,000.00
							Liquidated damages	(\$17,000.00)
							Amount Due	\$223,916.42
Change Order #1								
1	Add additional Ductile Iron Pipe 8", Class 52	500	LF	500	0	\$37.50	0.00	\$18,750.00
2	Add additional Gate Valve 8"	1	Ea	1	0	4,250.00	0.00	4,250.00
3	Additional Excavation Permit Fee	1	LS	1	0	850.00	0.00	850.00
				Subtotals			\$0.00	\$23,850.00
CONTRACT TIME CALCULATION								
	Start Date	3/28/2005						
	Contract Time	90	Calendar Days					
	Target completion date	6/26/2005						
	Date Completed	7/30/2005						
	Days of liquidated damages	34	Days	(\$500.00)		LD Amount	(\$17,000.00)	

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A-18 Project Completion Report Form

See in the front of the Daily Log book

SALT LAKE CITY PUBLIC UTILITIES CONSTRUCTION PROJECT SUMMARY FORM

PROJECT NAME: _____

PROJECT NUMBER: _____

LOCATION: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE NUMBERS: _____

PROJECT INSPECTORS: _____

PROJECT ENGINEER: _____

Prebid Meeting Date: _____ Bid Opening Date: _____

Contract Approval Date: _____ Notice to Proceed Date: _____

Preconstruction Meeting Date: _____ Preconstruction Photos: _____

Original Contract Period: _____ Time Extensions (if any): _____

Scheduled Completion Date: _____

Date Contractor requested substantially complete status: _____

Date of substantial completion (time stops): _____

Punch list mailed: _____

Contractor notified of final acceptance (punch list complete): _____

Project turned over to Public Utilities Maintenance Division on: _____

As built drawings submitted: _____

Manuals of Operation & keys submitted: _____

End of Warranty Period (1 year after punch list completion): _____

Warranty inspection held on _____, letter sent to contractor _____

Original Contract Amount: _____ Liquidated Damages (if any): _____

Revised Contract Amount: _____ Penalties (if any): _____

Total Payment Amount: _____ Overrun Authorization: _____

Comments: _____

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A-19 Example Warrantee Release Letter

April 19, 2011

Rolfe Excavating & Construction, Inc.
P.O. Box 900430
Sandy, Utah 84090

RE: Notice of Final Acceptance Big Cottonwood Tanner Fire Flow
Improvements, Phase II located in Holladay City along Walker Lane
and Cottonwood Lane between Highland Drive and Holladay Boulevard,
Project No. 513301977

Gentlemen:

The one year warranty period has been completed on the above noted project and no discrepancies or deficiencies have been found. Except for latent discrepancies, fraud or gross mistakes amounting to fraud, Salt Lake Public Utilities considers the project complete and issues this Notice of Final Acceptance.

Thank you for your work on this project. It has been a pleasure working with you.

Sincerely,

Jeffry T. Niermeyer
Director

Ika

cc: Chuck Call, Robert Sperling, Ryan Bagshaw, Mark Stanley, File

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SLCPU CAD System File Structure:

All PC's are networked or tied to each other which means that any user account or file can be accessed from the network **System Files** from any workstation. All user accounts are located on the NT file server call "slcipudata2". Each user has a unique directory on the system and each account uses its own user directory (you are the only one that can create or modify files within your directory). In each user directory resides other directories that you will use. In your unique directory in the "**Cad**" directory is where you need to create and store your AutoCAD drawings. By storing your files on the server they will be backed up regularly and can be restored if they are lost or corrupted. In your unique directory in the Cad directory you should make other directories to help organize your work. You could either make facility divisions such as Water, Sewer and Storm Drain or you could simply make each project its own subdirectory by EWO number i.e.; EWO2345 or Project number i.e.; 535002134. Within each of these subdirectories you can keep any information pertaining to that particular project, such as cad drawings, survey information, excel spreadsheets, specifications, etc.

The "**sys_cad**" directory is a system directory that contains files and drawings that all users might need to use on their drawings. All users can copy files or drawings from sys_cad and place the copy into the appropriate directory or drawing, **you can not copy anything back into the sys_cad directory.** Only a systems administrator can copy drawings and files back into the sys_cad directory. Once you have copied a drawing or file from sys_cad into your user directory you become the owner of the copy, the original drawing or file is still in the sys_cad directory. On a PC sys_cad is a separate directory that is mounted on which ever drive contains "slcipu2data".

Archived Drawing Files:

Drawings of projects that are completed need to be archived so that we have a permanent backup of the completed files that pertain to each completed project. The completed files along with a text file giving a brief description of what is in each of the files i.e.; AutoCAD title sheet, plan and profile, details, etc. When you have completed the design and the project is being constructed you should assemble your files and prepare them to be archived. In order for your files to be placed within the directory, you need to contact one of the system administrators to do this. Archived drawings will be located in "slcipu2data (usually the "O:" drive, but could be different)\Cad\Archive – Cad Drawings", these drawings will be stored here so that in the future you or someone else can use them as a reference or a continuation of the project. Note, only a system administrator can copy them back to the \Archive subdirectory. Each archived project will be given its own directory named **EWO####** where #### represents the project EWO number. The final version of each sheet (the version used to bid the project) will be located in the EWO#### directory, along with any other drawings or related files.

File Names – Names for files that are to be archived need to be changed into the following format using model space:

####s\$\$.dwg

Where #### represents the project EWO number, followed by the letter "s", \$\$ represents the sheet or drawing number.

Examples:

1. File 1607s2.dwg would be drawing or sheet 2.
2. File 80s12.dwg would be drawing or sheet 12.

You may want to use a different naming convention if you are using "layout" space for your drawings. You could use the project number or engineering

work order number then "main" for the drawing name and then each of the layout tabs will named "sheet 1", sheet 2, and so on.

AutoCAD Design Standards:

We have setup a template for new AutoCAD drawings based on our format of layers, pen styles, etc. You should start a drawing using this template; it will start with all of the available layers, and line types you are likely to use in your project. The template you should be using for most utility designs is "PU_ENG.dwt" located in "I:\Common Files\ACAD ITEMS\.

The following layers and line types will automatically be incorporated in your drawing if you use this template. You may want to setup other layers if you have a need.

Layer Names - The following information should be placed on the following layers:

- W##** - existing water facilities. Where ## is optional and represents water main size.
- PW##** - proposed water facilities. Where ## is optional and represents water main size. Text can be placed on this layer or layer **PW##T**.
- SS##** - existing sanitary sewer facilities. Where ## is optional and represents sewer main size.
- PSS##** - proposed sanitary sewer facilities. Where ## is optional and represents sewer main size. Text can be placed on this layer or layer **PSS##T**.
- UTIL** - all other existing utilities.

Note: utilities can be placed on their own layers as follows.

- GAS** - existing gas facilities.
- TEL** - existing telephone facilities.

SD -	existing storm drain facilities.
UPL -	existing electric facilities.
CTV -	existing cable TV facilities.
CL -	center line information.
ML -	monument line information.
BL -	base line information.
PL -	property line information.
CGS -	curb, gutter, and sidewalk information.
ASPH -	existing edge of asphalt/roadway information.
RW -	right of way and easement information.

Each layer has been set up with appropriate line types and colors and all are on the current acad1.dwg prototype drawing.

Line Types - The following line types are available to use in any AutoCAD or DCA drawing in addition to the standard line types provided by AutoCAD.

MONUMENT -	similar to a dashed line with shorter dashes.
PROPERTY -	same as AutoCAD standard phantom line type.
UTILITY1 -	line with breaks in it, each break is large enough to place a single letter in it.
UTILITY2 -	line with breaks in it, each break is large enough to place a two letters in it.
UTILITY3 -	line with breaks in it, each break is large enough to place a three letters in it.
PROPOSED -	similar to a dashed line with larger dashes.

Using Colors in AutoCAD Designs - If you are making a plot that will be used to run prints from you should remember that blue does not reproduce very well on a print. Blue is good to use for profile elevation lines or lines that

need to be shown but can be placed in the background such as topography. Green and red will show up almost as dark as black.

The way we have setup our pen assignments, the color of the line, object, etc. determines what size of pen will be used to plot that line, or object it is important to keep in mind how you want the line or object to look when printed. Center lines, monument lines, hidden lines, etc. should be drawn so that a .25 pen is used to plot them.

It is very important to use the correct size of pen when plotting text. The following guideline should be used for determining what pen you use (what color you make the text) for different sizes of text.

PLOTTED TEXT SIZE	PEN SIZE
Less than .10"	.25
.10" to .15"	.35
.15" to .20"	.50
Larger than .20"	.70

Note: **PLOTTED TEXT SIZE** is the size the text appears on your finished plot.

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A-21 CONTRACTOR'S SAFETY PLAN

Safety plan – Prior to award the Contractor will be required to submit a written description of the hazards present on the project and what they will do to mitigate those hazards. This will constitute the “safety plan” for the project. This will require the Contractor to think specifically about each project. Additionally it is assumed that the Contractor will have a more complete formal written safety program and that regular safety meetings will be held with his workers. The safety issues normally involved in our pipeline projects are shown on the following checklist.

CONTRACTOR'S SAFETY PLAN

Salt Lake City – Department of Public Utilities

Reviewed By _____ Date _____
Contractor _____ Dated _____

The Contractor is responsible to provide a Safety Plan that addresses the specific requirements of the Contract. They should analyze the planned methods of operation and incorporate any additional specific or unique safety requirements into their Plan. The Contractor is responsible to ensure that all applicable safety regulations are addressed as part of their Safety Plan. The Safety Plan shall include, but is not limited to, the following guidelines:

General Provisions

- ☐ 1. Acknowledgement / Contractor's Company Policy Statement – Contractor is totally responsible for compliance with and OSHA and EPA regulations and relevant to their contracted work with the Department of Public Utilities, including compliance with all Federal, State, and Local codes and requirements, which require a place of employment that is free of unsanitary or hazardous conditions that would expose an employee to unhealthy or unsafe environment.

- ☐ 2. On-site accident and incident reports – The Contractor's procedures for completing on-site accident investigation, reporting and incident reporting, including the immediate report of serious accidents (i.e., fatalities, accident due to excavation collapse, amputations, accident requiring the hospitalization of two or more employees, etc.) to the Department of Public Utilities.

- ☐ 3. Toolbox Safety Meetings – Form for reporting attendance and subjects covered in pre-job safety orientations, training to job hazard analysis for specific job-site activities, weekly toolbox safety meetings, etc.
- ☐ 4. Sub-Contractors – The General Contractor is responsible to make sure all Sub-Contractor safety procedures comply with their Safety Plan.
- ☐ 5. Plans and actions for providing medical service – Contractor personnel to be trained in first aid and CPR. Also, the following emergency numbers are to be posted at the work site:

Fire or Ambulance Telephone _____
Police Telephone _____

Job Site Safety

- ☐ 1. Safety Inspections – Designation of Contractor's Safety Representative, for the project. (Note: the contractor safety representative must meet the OSHA 29CFR 1926.32 (f) definition for "competent person" in all areas of the contractor's scope of work for the project).
- ☐ 2. Personal Protection Equipment – List of personal protection equipment required for all employees (i.e. hard hats, long pants, shirts with sleeves that completely cover the upper body and arms, at least to mid-bicep, safety glasses, hearing protection, respirator use, high visibility (orange) vests for employees working in traffic or around equipment, etc.)
- ☐ 3. Safety Training – Company policies for initial safety orientation training of all employees and plans for continued on-the-job safety education for all employees, including weekly toolbox safety meetings, training to specific job hazard analysis, etc.
- ☐ 4. Housekeeping – Company job site housekeeping rules or regulations.
- ☐ 5. Safe Site Working Conditions – Plans for providing adequate lighting, ventilation, noise control, and personal protective equipment, etc.

Special Provisions (all projects)

- ☐ 1. Mitigation of Traffic Hazards – Traffic control and marking of hazards, including a barricading plan – covering or barricading excavations, wall openings and floor openings. (i.e. traffic intersections, utilities, prohibited areas). Procedures for working safely in traffic areas; i.e., use of hard hats, highly visible clothing (orange vests, etc.). Flagging procedures if required for the project, etc.
- ☐ 2. Excavation Safety – Excavations including sloping and/or shoring protection based on class "C" soil criteria, guarding, barricades, spoil pile

placement and excavated (waste) material storage. Ladders used for trench access & egress, including ladder types and anchors to be utilized, etc.

- ☐ 3. Equipment Safety – Testing and inspecting equipment, and the provision of backup alarms for backhoes, dozers, forklifts, man lifts, cranes, etc. Use of and testing & inspection of equipment.
- ☐ 4. Hazardous Communication Program – Including a written program for the training of employees in the proper handling, storage and use of chemicals to be used on the job, labeling requirements, the use of material safety data sheets, etc.
- ☐ 5. Storm Water Pollution Prevention Plans – Including a written statement for the control of all storm water generated from the project area, etc.
- ☐ 6. Dust and Noise Control – Including the control of fugitive dust unnecessary noise.
- ☐ 7. Confined Space Program – Including a written program, entry permit forms, training for attendants, entrants, entry supervisors, atmospheric testing equipment, emergency extraction equipment, etc.
- ☐ 8. Other Project Specific Requirements –

Special Provisions (if required for the project)

- ☐ 1. Respiratory Protection program – Including a written program covering training requirements, medical evaluations, fit testing, hazard analysis, competent person training and availability, industrial hygiene sampling, etc.
- ☐ 2. Fire Preventions plans, including flammable/combustible liquids or gases – Storage and use requirements and procedures, placement and training for fire extinguisher use, etc.
- ☐ 3. Provisions for drinking water and sanitary site provisions – Including the provision of portable toilets, frequency at which toilet will be cleaned with soap and water, and sterilized.
- ☐ 4. Electrical Safety and Lockout/Tagout procedures – Including checking, testing and training for the use and care of electrical tools and appliances for the required ground and installation of electrical circuits, lockout / tagout work, etc. in accordance with the OSHA and the National Electric Code.

- ☐ 5. Fall Protection – Use of fall protection methods, lifelines and lanyards when necessary.
- ☐ 6. Hot Work – Providing welding protection, including shields, fire extinguishers, ventilation, hot work permits and fire watches.
- ☐ 7. Blasting Plan – Plan that includes procedures for blasting, permits, explosives handling, explosive storage, explosive transportation, hole loading, blast signals, and blaster qualifications.