

# DEPARTMENT OF WATER



*Service, Quality, Community*

September 25, 2017

Irene Hoiby  
Bureau of Reclamation  
Financial Assistance Operations 84-27814  
P.O. Box 25007  
Denver, CO 80225

Subject: Agreement No. R16AP00116 Final Project Report & Closeout Documentation

Dear Ms. Hoiby,

The City of Big Bear Lake, Department of Water and Power (DWP) completed the 12-inch Big Bear Boulevard Pipeline Replacement Project in March of 2017, prior to the June 30, 2017 project period end date. DWP submitted the final ASAP drawdown for this project on July 26, 2017. Reclamation's \$300,000 Grant partially funded DWP's 12-inch Big Bear Boulevard Pipeline Replacement Project. The completed project included the replacement of 4,000 linear feet of 69-year old, 12-inch riveted, unlined steel pipeline with a new 12-inch PVC pipe and thirty-nine commercial water services.

No equipment, real property, intangible, or intellectual property was obtained for the 12-inch Big Bear Blvd Pipeline Replacement Project, therefore there are no dispositions required or pending under 43 CFR 12.71, 12.72, 12.74, 12.932, 12.933, 12.934, 12.936 and/or 12.937. All materials acquired for the project by the general contractor were used in construction or returned to the contractor's supplier for credit or refund on account, therefore no disposition of supplies is required under 43 CFR 12.73 and/or 43 CFR 12.935.

Attachments to this cover letter are as follows:

Final Project Report  
SF – 425 Federal Financial Report  
DWP Sources and Uses Cost Table  
USBR Project Benefits Form  
USBR Release of Claims Form

It has been a pleasure working with USBR on this project and we appreciate your assistance with this very important DWP project. Please let me know if you require additional information.

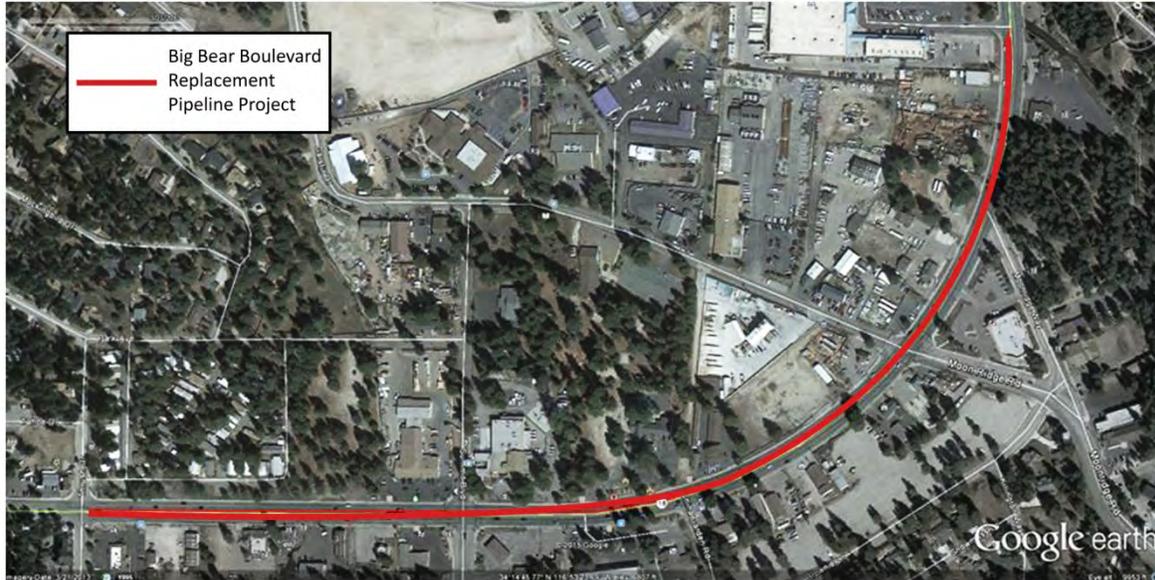
Respectfully,

Reginald A. Lamson  
Recipient Project Manager  
General Manager, DWP  
(909) 866-5050 ext. 201

# 12-inch Big Bear Boulevard Pipeline Replacement Project

(Big Bear Boulevard right-of-way, starting at Thrush Drive and ending at Catalina Rd.)

## Final Project Report



**R16AP00116**

**City of Big Bear Lake, Department of Water and Power  
41972 Garstin Drive / P.O. Box 1929  
Big Bear Lake, Ca. 92315**



**September 25, 2017**

**1. Recipient Information:**

Recipient Name:

City of Big Bear Lake, Department of Water and Power (DWP)  
Reginald A. Lamson  
P.O. Box 1929  
Big Bear Lake, CA 92315  
909-866-5050, Ext. 201  
rlamson@bbldwp.com

Project Name: 12-inch Big Bear Boulevard Pipeline Replacement Project

Assistance Agreement No.: R16AP0016

Date of Award: July 31, 2016

Estimated Completion Date: December 31, 2016

Actual Completion Date: March 29, 2017

**2. Final Funding Information:**

**Funding Amount:**

<u>Non-Federal Entities:</u> 1) IBANK	\$817,301.50
2) DWP	<u>\$65,079.62</u>
<u>Non-Federal Subtotal:</u>	\$882,381.12
<u>Requested Reclamation Funding:</u>	<u>\$300,000.00</u>
<u>Total Project Funding:</u>	\$1,182,381.12

**3. Project Summary:**

The 12-inch Big Bear Boulevard Pipeline Replacement Project includes the replacement of 4,000 linear feet of 12-inch riveted, unlined steel pipeline with a new 12-inch PVC pipe. The section of pipeline to be replaced is located within Big Bear Boulevard right-of-way, beginning at Catalina Road, proceeding westerly to Thrush Drive. There are thirty-nine businesses connected to this section of the Big Bear Boulevard Transmission Main and all of the commercial water service lines were replaced as part of the project. There were two commercial fire services and eight hydrants that were replaced as well.

#### 4. Final Project Description:

The 12-inch Big Bear Boulevard Pipeline Replacement Project was generally constructed in compliance with the construction drawings. The 12-inch PVC pipeline, water service laterals, and hydrant laterals were all constructed while leaving existing water facilities in service. After completing acceptance testing and disinfection of the new pipeline, two connections were then made to the existing system and the new pipeline was put into service. The two initial connections were made without disrupting services to our water customers. All customers were then connected to the new pipeline and they were each out of water service only a few minutes, while their meter was connected to the new service line. The remaining seven connections to the side street pipelines were then completed without disrupting water service to any operating commercial customer.

DWP has provided progress construction photos within the previously submitted progress reports. Selected completed project photos are included below:



Replacement hydrant at the northeast corner of Big Bear Blvd. and Moonridge Way. New location is more accessible for better fire protection.



Additional air valves added at pipeline high-points to improve overall system operations.



Replacement 8-inch backflow device and enclosure for Big Bear Sherriff's fire sprinkler system. Provides enhanced fire protection, freeze protection, and water quality protection.



New connection at Big Bear Blvd. and Summit Blvd. simplified piping at this intersection and will facilitate future pipeline replacement projects on Summit Blvd.



Additional hydrant at the southwest corner of Big Bear Blvd. and Summit Blvd. This new hydrant will provide enhanced fire protection for the businesses located on the south side of Big Bear Blvd.



Replacement hydrant at the north side of Big Bear Blvd. west of Summit Blvd. New location is more accessible for better fire protection.



The vertical pipeline alignment was adjusted during construction due to conflicts with existing and recently constructed utilities. The connections at Moonridge Road / Garstin Drive and Big Bear Boulevard required realignment because Southwest Gas Co. had recently constructed their new gas main in the same location that DWP's connection had originally been designed. The connection at Thrush Drive was redesigned due to inaccurate record drawings of the existing water system. The redesign connection simplified the piping at this intersection and increased operational flexibility.

## **5. Accomplishment of Project Goals:**

The two main goals of the 12-inch Big Bear Boulevard Pipeline Replacement Project was to reduce non-revenue water loss associated with major and minor leaks and to reduce pumping power usage associated with pumping the extra water lost to leaks and also by pumping through a much smoother and efficient pipeline. As stated in Section 4.1.1 of DWP's application, we estimated that we would save 5,544,000 gallons (17 AF) per year by eliminating major and minor leaks associated with the existing 69-year old steel pipeline. The majority (5,256,000 gallons) of this water loss was associated with continuous minor leaks. DWP had assumed that there were two minor continuous leaks along the 4,000 linear feet of steel water main. During construction, DWP's contractor and other contractors working in the area noticed wet soil at numerous locations, when they excavated near the existing steel water main. So the estimate of two minor water leaks is conservative at best. When the DWP contractor conducted acceptance testing, no pressure was lost during the test, indicating no leaks exist on the new pipeline. Because multiple minor leaks on the steel main were observed during construction and there was no pressure lost during pipeline acceptance testing, the goal of reducing non-revenue of 17 AF per year was easily accomplished.

As stated in Section 4.2.2 of DWP's application, we estimated that we would save 120,655 KWh per year by reducing pumping associated with leaks and by pumping through a smoother more efficient pipeline. As stated above, the goal of saving at least 17 AF per year associated with leaks was easily accomplished, so the power associated with pumping the water that was previously lost to leaks was also saved. New PVC pipe is significantly smoother (c-factor of 140 vs. c-factor of 90) than 69-year old riveted steel pipe. Therefore, the 1,965 GPM that is pumped for twelve hours per day through the new smooth pipeline saves an average of 105,120 KWh per year. Because pumping was reduced due to the elimination of leaks along the new pipeline and the new pipeline's material is more efficient, the goal of reducing energy usage was also accomplished.

There were five other agencies (Caltrans, Bear Valley Electric, Southwest Gas Co., Frontier, and Spectrum) constructing facilities within Big Bear Boulevard right-of-way during construction of DWP's pipeline project. DWP hosted weekly construction coordination meetings to help minimize conflicts during construction. DWP construction start date was delayed a month, while we waited for Southwest Gas to install their new gas main. This delay pushed the water main construction schedule into December and then winter weather caused additional delays. Fortunately, the water main contractor was a local Big Bear contractor and he was able to work on the project, as weather allowed,

without incurring additional move-in and move-out costs. Also, as mentioned above, minor water pipeline alignment revisions were needed to avoid conflicts with other utilities newly constructed facilities.

The original bid price for construction of the 12-inch Big Bear Boulevard Pipeline Replacement Project was \$1,193,314. The revised final construction cost was \$1,182,381.12, which was below the original construction cost.

## **6. Discussion of the Amount of Water Conserved:**

A. Recipient's Total Annual Average Water Supply: 2,228 AF/year

B. Amount of Water Conserved: 17 AF/year

C. Describe how 6.B was Calculated:

- 1) Data and Calculation of Project Benefits: The water conserved was by eliminating major and minor leaks. The most recent major leak on the existing steel water main was estimated to flow at 200 gallons per minute (GPM) for 24 hours or 288,000 gallons. It was estimated that there was at least two minor leaks on the existing steel water main. During 2015, the commercial meters were changed out along the existing steel water main. The new AMI meters provide hourly usage to DWP's office. The new AMI meter detected a 3.6 GPM leak on a customer's 1-inch service line. This leak never came to the surface but was detected with the new AMI meter. If a minor leak on a 1-inch service line resulted in a continuous loss of 3.6 GPM, it seemed reasonable to assume that a minor leak on the 12-inch water main would produce at least 5 GPM. Two continuous 5 GPM leaks would result in a water loss of 5,256,000 gallons per year. During construction of DWP's new water main and construction of the other five utilities underground facilities, the contractors reported encountering wet soil near DWP's exist steel water main on at least six occasions. During one of these occasions, DWP field crew had to place a repair clamp on the existing steel main because too much water was coming into Frontier Communication's trench. Because of the wet soil discovered during construction, DWP feels the estimate of two minor leaks is conservative. Therefore, at least 5,544,000 gallons (288,000 + 5,256,000) or 17 AF/year is being conserved by replacing the 69-year old steel water main with the PVC water main.
- 2) Reliability of Data: The volume of water produced from a minor leak that was never detected by observing water at the ground surface was estimated from actual flow data from a customer's AMI meter. The number of actual minor leaks observed along the existing steel main was greater than two. Therefore the estimate of 17 AF/year of water being conserved with the replacement of the steel water main appears to be conservative.
- 3) Attach Relevant Data: N/A
- 4) Use of Conserved Water: The conserved water remains in the Bear Valley's aquifers for future use.
- 5) Future Tracking of Project Benefits: N/A

## **7. Discussion of Renewable Energy Added: N/A**

**8. Describe how the Project Demonstrates Collaboration:**

The 12-inch Big Bear Boulevard Pipeline Replacement Project was constructed concurrently with Caltran's Sidewalk and Traffic Signal Project, Bear Valley Electric's Mainline Undergrounding Project, Southwest Gas Company's Gas Main Replacement Project, Frontier Communications Company's Undergrounding Project, and Spectrum Cable's Undergrounding Project. All of these projects needed to be completed ahead of Caltran's Big Bear Boulevard Paving Project, which was scheduled to begin in July of 2017. Big Bear Boulevard is the primary thoroughfare in the Bear Valley. Construction on Big Bear Boulevard significantly impacts the residents of Big Bear. DWP took the lead in minimizing the impact to the community by hosting and chairing weekly construction coordination meetings. During these meetings we organized where each contractor was going to work and then provided the public weekly road detour maps to minimize disruption. A minimum of one lane of travel in each direction was maintained within DWP's work area.

**9. Describe Other Pertinent Issues Regarding the Project:**

The 12-inch Big Bear Boulevard Pipeline Replacement Project would have been a complicated project if it were the only project being constructed on Big Bear Boulevard due to the number of existing utilities. Then between the time the project was designed and construction began, the other agencies mentioned above began constructing new or replacement facilities, which further congested the right-of-way. DWP staff worked long hours and did whatever it took to minimize the impacts to the 12-inch Big Bear Boulevard Pipeline Replacement Project. DWP staff negotiated six change orders with the Water pipeline contractor and ultimately there was a slight decrease in the final construction cost. Also, DWP staff provided most of the construction management services to reduce the projects overall costs and save our rate payers significant capital replacement costs associated with consultant fees.

**10. Feedback Regarding the WaterSMART Program:**

DWP greatly appreciates the WaterSMART Program. The 12-inch Big Bear Boulevard Pipeline Replacement Project was accelerated by one year due to Caltran's paving project. DWP would have had to use reserves to partially fund the project if we did not receive USBR's grant. USBR's staff was great to work with and they accommodated our aggressive project schedule. USBR's staff always responded promptly, sometimes during the weekend. DWP looks forward to working with USBR's staff on future WaterSMART projects.

**11. Attachments:**

- A. Project Record Drawings
- B. Project Notice of Completion
- C. September 30, 2016 Progress Report
- D. March 31, 2017 Progress Report

GWO #

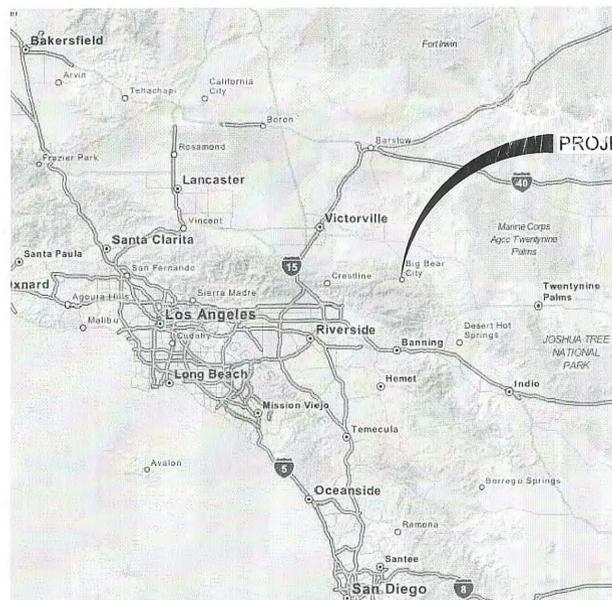
# CITY OF BIG BEAR LAKE



Service, Quality, Community

## DEPARTMENT OF WATER AND POWER

### CONSTRUCTION PLANS FOR 12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT AND 8" GEORGIA STREET DISTRIBUTION MAIN



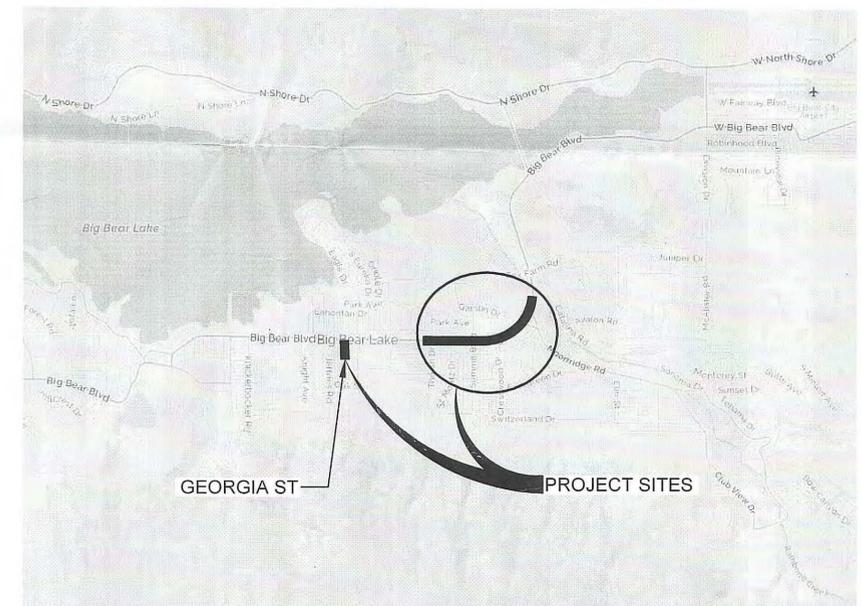
VICINITY MAP  
NO SCALE

#### BOARD OF DIRECTORS

DON SMITH	CHAIR
BOB TARRAS	VICE CHAIR
CRAIG HJORTH	TREASURER
ALAN LEE	COMMISSIONER
KRIS SAUKEL	COMMISSIONER

#### CONTACT LIST:

TITLE:	NUMBER:	CONTACT:
DWP OFFICE	909-866-5050	
DWP WATER SUPERINTENDENT	909-866-5050 x211	STEVE WILSON
CITY OF BIG BEAR LAKE	909-866-7521	
CALTRANS PERMITS (DIST. 8)	909-383-4526	
BV ELECTRIC	909-866-4678	ERIC CARDELLA
CHARTER	909-866-8316	
SW GAS	760-951-4166	
VERIZON	760-951-4166	
BIG BEAR FIRE DEPT	909-866-7566	
BIG BEAR SHERIFF	909-866-0100	



LOCATION MAP  
NO SCALE

UNDERGROUND SERVICE ALERT



CALL-TOLL FREE  
1-800-422-4133  
TWO WORKING DAYS BEFORE YOU DIG

CALTRANS PERMIT 08-16-N-UT-0295

GWO-16-001

CONFORMED FOR CONSTRUCTION

<p>WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.</p>		<p>DESIGNED CLS DRAWN MAH CHECKED JHR SCALE</p>	<p>PREPARED BY: <i>Christy L. Stevens</i> CHRISTY L. STEVENS RCE No.: 73124</p>	<p>REGISTERED PROFESSIONAL ENGINEER CAROLY L. STEVENS NO. 73124 Exp. 12/31/16 CIVIL STATE OF CALIFORNIA</p>	<p>DEPARTMENT OF WATER AND POWER CITY OF BIG BEAR LAKE 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315</p> <p>APPROVED: <i>Reginald A. Lamson</i> REGINALD A. LAMSON - GENERAL MANAGER</p>	<p>12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT AND 8" GEORGIA STREET DISTRIBUTION MAIN</p> <p>TITLE, VICINITY MAP &amp; LOCATION MAP</p>	<p>SHEET T-1 SHEET 1 OF 12 PROJECT # GWO 0100-16</p>
<p>REV 5/31/16 DATE</p>	<p>CLS BY</p>	<p>CALTRANS PERMIT APPLICATION COMMENTS DESCRIPTION</p>					

**LEGEND:**

EXISTING	CONSTRUCT
	SURVEY MONUMENT
	CENTERLINE
	EASEMENT LINE
	PROPERTY LINE
	RIGHT OF WAY
	STORM DRAIN
	WATERLINE
	SEWER
	ELECTRICAL
	COMMUNICATION
	FIBER OPTIC
	GAS
	OVERHEAD ELECTRIC
	TRAFFIC SIGNAL
	EDGE OF PAVEMENT
	NEW SIDEWALK, DO NOT DAMAGE OR SAWCUT
	GAS VALVE OR HAND HOLE
	FIRE HYDRANT ASSEMBLY
	WATER VALVE
	WATER SERVICE
	FIRE SERVICE
	CAP OR PLUG
	AIR VAC
	BLOW OFF
	REDUCER
	UTILITY PULL BOX
	POWER POLE
	SIGN
	TREE
	BUSH/TREES/BRUSH
	BORE HOLE
	WALL
	CONCRETE
	MAIL BOX
	SNOW POLE

**ABBREVIATIONS:**

~	APPROXIMATELY	HMA	HOT MIX ASPHALT
AC	ASBESTOS CEMENT PIPE	HPI	HORIZONTAL POINT OF INFLECTION
BBLDWP	BIG BEAR LAKE DEPARTMENT OF WATER AND POWER	IP	IRON PIPE
BFV	BUTTERFLY VALVE	LF	LINEAR FEET
BVCE	BEGIN VERTICAL CURVE ELEVATION	LT	LEFT
BVCS	BEGIN VERTICAL CURVE STATION	MIN	MINIMUM
BVE	BEAR VALLEY ELECTRIC	MJ	MECHANICAL JOINT
CI	CAST IRON	NC	NORMALLY CLOSED
CL	CENTER LINE	PC350	PRESSURE CLASS 350
CML&C	CEMENT MORTAR LINED & COATED	PCC	PORTLAND CEMENT CONCRETE
CSP	CORRUGATED STEEL PIPE	PL	PROPERTY LINE
CSPA	CORRUGATED STEEL PIPE ARCH	PP	POWER POLE
CVR	COVER	PVC	POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPE	R	RADIUS
DWY	DRIVEWAY	RC	RELATIVE COMPACTION
DWG	DRAWING	RCP	REINFORCED CONCRETE PIPE
ECC	ECCENTRIC	ROW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	RT	RIGHT
EVCE	END VERTICAL CURVE ELEVATION	SFT	SURVEY FEET (DECIMAL FEET)
EVCS	END VERTICAL CURVE STATION	SD	STORM DRAIN
EX or EXIST	EXISTING	SL	STREET LIGHT
FLG	FLANGED	SS	SEWER
FL or FL	FLOW LINE	STA	STATION
FL	FLOW LINE	STD	STANDARD
FH	FIRE HYDRANT	STL	STEEL
G	GAS		
GA	GAUGE		
GB	GRADE BREAK		
GV	GATE VALVE		
TEMP	TEMPORARY		
TOP	TOP OF PIPE		
VERT	VERTICAL		
VPI	VERTICAL POINT OF INFLECTION		
W	WATER		
W	UTILITY CROSSING		
E	ELECTRIC		
F/O	FIBER OPTIC		
T	TELEPHONE		

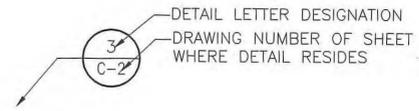
**SHEET INDEX:**

1.	T-1	TITLE, VICINITY MAP AND LOCATION MAP
2.	G-1	KEY MAP, SHEET INDEX, LEGEND AND ABBREVIATIONS
3.	G-2	GENERAL AND CONSTRUCTION NOTES
4.	DW-1	PLAN & PROFILE STA 68+00± to 76+40
5.	DW-2	PLAN & PROFILE STA 76+40 to 84+80
6.	DW-3	PLAN & PROFILE STA 84+80 to 93+20
7.	DW-4	PLAN & PROFILE STA 93+20 to 101+60
8.	DW-5	PLAN & PROFILE STA 101+60 to 108+00
9.	DW-6	PLAN & PROFILE GEORGIA ST
10.	DT-1	CONNECTION DETAILS
11.	DT-2	STANDARD DETAILS
12.	DT-3	STANDARD DETAILS

**BASIS OF BEARINGS**  
 US STATE PLANE 1983  
 NAD 1983 (CONUS) EPOCH 1992.88  
 CALIFORNIA ZONE 5 0405  
 GEO1D09 (CONUS)

**BENCHMARK**  
 SAN BERNARDINO COUNTY  
 BM-N535 (1991)  
 ELEVATION=6790.492' (NGVD 29)

**DETAIL NUMBERING SYSTEM**



**NOTES**

1. "-" IN DRAWING AREA INDICATES THAT SECTION OR DETAIL IS SHOWN ON THE SAME DRAWING THAT IT IS CUT FROM OR REFERRED TO.

**CONSTRUCTION PHASING:**

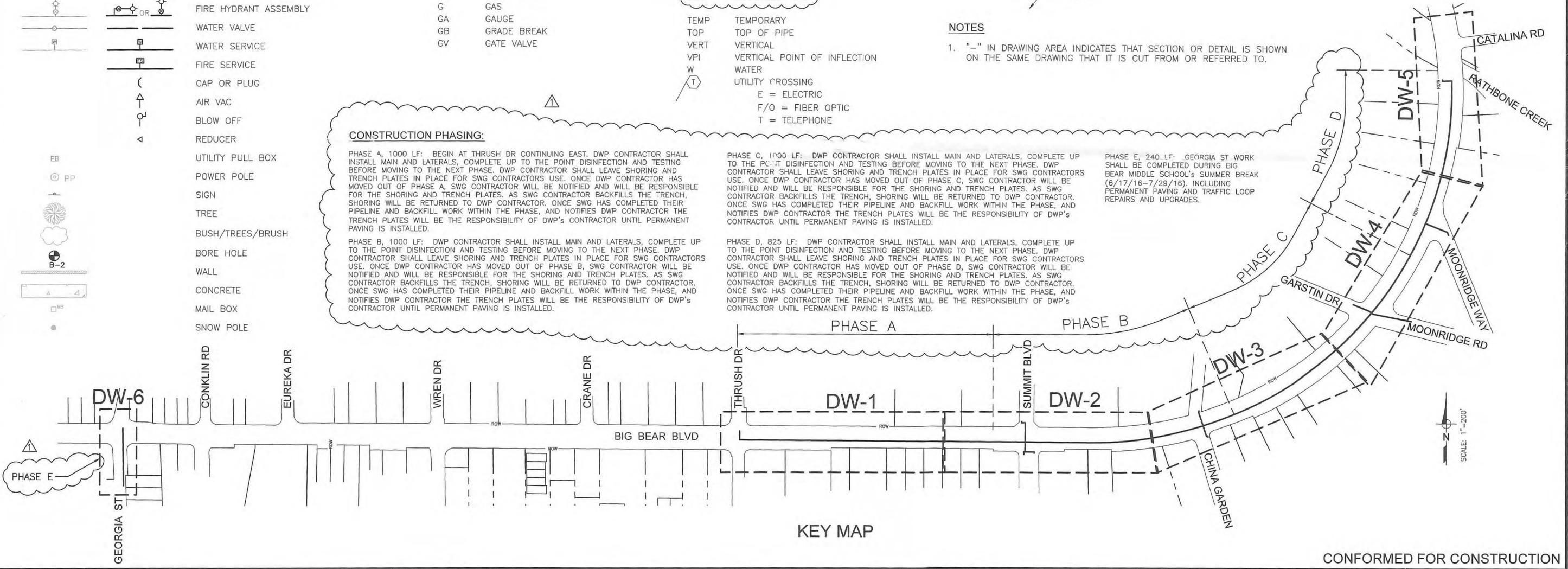
**PHASE A, 1000 LF:** BEGIN AT THRUSH DR CONTINUING EAST. DWP CONTRACTOR SHALL INSTALL MAIN AND LATERALS, COMPLETE UP TO THE POINT DISINFECTION AND TESTING BEFORE MOVING TO THE NEXT PHASE. DWP CONTRACTOR SHALL LEAVE SHORING AND TRENCH PLATES IN PLACE FOR SWG CONTRACTORS USE. ONCE DWP CONTRACTOR HAS MOVED OUT OF PHASE A, SWG CONTRACTOR WILL BE NOTIFIED AND WILL BE RESPONSIBLE FOR THE SHORING AND TRENCH PLATES. AS SWG CONTRACTOR BACKFILLS THE TRENCH, SHORING WILL BE RETURNED TO DWP CONTRACTOR. ONCE SWG HAS COMPLETED THEIR PIPELINE AND BACKFILL WORK WITHIN THE PHASE, AND NOTIFIES DWP CONTRACTOR THE TRENCH PLATES WILL BE THE RESPONSIBILITY OF DWP's CONTRACTOR UNTIL PERMANENT PAVING IS INSTALLED.

**PHASE B, 1000 LF:** DWP CONTRACTOR SHALL INSTALL MAIN AND LATERALS, COMPLETE UP TO THE POINT DISINFECTION AND TESTING BEFORE MOVING TO THE NEXT PHASE. DWP CONTRACTOR SHALL LEAVE SHORING AND TRENCH PLATES IN PLACE FOR SWG CONTRACTORS USE. ONCE DWP CONTRACTOR HAS MOVED OUT OF PHASE B, SWG CONTRACTOR WILL BE NOTIFIED AND WILL BE RESPONSIBLE FOR THE SHORING AND TRENCH PLATES. AS SWG CONTRACTOR BACKFILLS THE TRENCH, SHORING WILL BE RETURNED TO DWP CONTRACTOR. ONCE SWG HAS COMPLETED THEIR PIPELINE AND BACKFILL WORK WITHIN THE PHASE, AND NOTIFIES DWP CONTRACTOR THE TRENCH PLATES WILL BE THE RESPONSIBILITY OF DWP's CONTRACTOR UNTIL PERMANENT PAVING IS INSTALLED.

**PHASE C, 1000 LF:** DWP CONTRACTOR SHALL INSTALL MAIN AND LATERALS, COMPLETE UP TO THE POINT DISINFECTION AND TESTING BEFORE MOVING TO THE NEXT PHASE. DWP CONTRACTOR SHALL LEAVE SHORING AND TRENCH PLATES IN PLACE FOR SWG CONTRACTORS USE. ONCE DWP CONTRACTOR HAS MOVED OUT OF PHASE C, SWG CONTRACTOR WILL BE NOTIFIED AND WILL BE RESPONSIBLE FOR THE SHORING AND TRENCH PLATES. AS SWG CONTRACTOR BACKFILLS THE TRENCH, SHORING WILL BE RETURNED TO DWP CONTRACTOR. ONCE SWG HAS COMPLETED THEIR PIPELINE AND BACKFILL WORK WITHIN THE PHASE, AND NOTIFIES DWP CONTRACTOR THE TRENCH PLATES WILL BE THE RESPONSIBILITY OF DWP's CONTRACTOR UNTIL PERMANENT PAVING IS INSTALLED.

**PHASE D, 825 LF:** DWP CONTRACTOR SHALL INSTALL MAIN AND LATERALS, COMPLETE UP TO THE POINT DISINFECTION AND TESTING BEFORE MOVING TO THE NEXT PHASE. DWP CONTRACTOR SHALL LEAVE SHORING AND TRENCH PLATES IN PLACE FOR SWG CONTRACTORS USE. ONCE DWP CONTRACTOR HAS MOVED OUT OF PHASE D, SWG CONTRACTOR WILL BE NOTIFIED AND WILL BE RESPONSIBLE FOR THE SHORING AND TRENCH PLATES. AS SWG CONTRACTOR BACKFILLS THE TRENCH, SHORING WILL BE RETURNED TO DWP CONTRACTOR. ONCE SWG HAS COMPLETED THEIR PIPELINE AND BACKFILL WORK WITHIN THE PHASE, AND NOTIFIES DWP CONTRACTOR THE TRENCH PLATES WILL BE THE RESPONSIBILITY OF DWP's CONTRACTOR UNTIL PERMANENT PAVING IS INSTALLED.

**PHASE E, 240 LF:** GEORGIA ST WORK SHALL BE COMPLETED DURING BIG BEAR MIDDLE SCHOOL'S SUMMER BREAK (6/17/16-7/29/16), INCLUDING PERMANENT PAVING AND TRAFFIC LOOP REPAIRS AND UPGRADES.



**KEY MAP**

**CONFORMED FOR CONSTRUCTION**

REV 4/29/16 DATE BY DESCRIPTION	CLS MAH JHR	DESIGNED DRAWN CHECKED SCALE	PREPARED BY: Christy L. Stevens RCE No.: 73124		DEPARTMENT OF WATER AND POWER CITY OF BIG BEAR LAKE 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315	12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT AND 8" GEORGIA STREET DISTRIBUTION MAIN	SHEET <b>G-1</b>
	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.	APPROVED: REGINALD A. LAMSON - GENERAL MANAGER DATE: 6-2-16	WATER SYSTEMS CONSULTING, INC. 9375 ARCHIBALD AVE, SUITE 200, RANCHO CUCAMONGA, CA 91730 PHONE: (909)483-3200 FAX: (909)354-3482	KEY MAP, SHEET INDEX, LEGEND & ABBREVIATIONS	SHEET 2 OF 12 PROJECT # GWO 0100-16		

**ENGINEER'S NOTES:**

**GENERAL CONSTRUCTION:**

- ALL WORK SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE CITY OF BIG BEAR LAKE DEPARTMENT OF WATER AND POWER (DWP) STANDARD SPECIFICATIONS AND DRAWINGS.
- ALL SPECIFICATIONS, DRAWINGS, AND DETAILS INCLUDED IN THE CONTRACT DOCUMENTS SHALL FULLY APPLY TO THE WORK WHETHER OR NOT SPECIFICALLY REFERENCED. IF CONFLICTS ARISE, THE MORE STRINGENT REQUIREMENTS APPLY.
- UNLESS NOTED OTHERWISE, ALL WORK SHOWN IN THESE DOCUMENTS IS NEW AND TO BE PERFORMED UNDER THIS CONTRACT.
- CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THE PUBLIC RIGHT-OF-WAY, PERMANENT AND TEMPORARY EASEMENTS AND DWP OWNED PROPERTY. PORTIONS OF THE ADJACENT PROPERTY ARE OWNED BY THE UNITED STATES FOREST SERVICE (USFS); IN NO CASE SHALL THE CONTRACTOR ENCR OACH ONTO USFS PROPERTY.
- THE CONTRACTOR IS RESPONSIBLE FOR SECURING HIS OWN STAGING AREA. ALL ASSOCIATED FEES SHALL BE INCLUDED IN THE BID ITEM FOR MOBILIZATION.
- THRUSH DR TO SUMMIT BLVD WORKING HOURS ARE 7:00 AM TO 7:00 PM MONDAY THROUGH THURSDAY AND 7:00 AM TO 12 NOON ON FRIDAY. SUMMIT BLVD TO RATHBONE CREEK WORKING HOURS ARE 24 HOURS A DAY MONDAY THROUGH THURSDAY AS NEEDED AND THROUGH 12 NOON ON FRIDAY. NORMAL INSPECTION HOURS ARE 7:30 AM TO 4:30 PM, MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS, HOWEVER, IF NEEDED INSPECTION HOURS WILL CORRESPOND TO WORKING HOURS. EVERY EFFORT SHOULD BE MADE TO UTILIZE NORMAL INSPECTION HOURS. DWP SHALL BE NOTIFIED AT LEAST SEVEN (7) WORKING DAYS PRIOR TO START OF CONSTRUCTION. CONSTRUCTION WILL NOT TAKE PLACE ON WEEKENDS OR HOLIDAYS UNLESS SPECIFICALLY APPROVED BY DWP.
- THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUALLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL HOLD DWP AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
- DIMENSIONED DISTANCES SHALL GOVERN OVER SCALED DISTANCES.
- MAINTAIN ON-SITE THE LATEST SIGNED CONSTRUCTION DRAWINGS AT ALL TIMES. MAINTAIN A COMPLETE AND ACCURATE RECORD OF ALL CHANGES IN CONSTRUCTION FROM THAT SHOWN ON THE PLANS AND SPECIFICATIONS FOR THE PURPOSE OF PROVIDING A BASIS FOR RECORD DRAWINGS. NO CHANGES SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM DWP'S REPRESENTATIVE.
- WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROPRIATE ENCROACHMENT PERMITS FROM THE COUNTY OF SAN BERNARDINO AND THE STATE OF CALIFORNIA. DWP WILL APPLY FOR AND OBTAIN THESE PERMITS, HOWEVER, THE CONTRACTOR SHALL PREPARE ANY REQUIRED TRAFFIC CONTROL PLANS AND PROVIDE TO DWP.
- CONTRACTOR SHALL VIDEO TAPE AND DOCUMENT THE PRE-EXISTING CONDITIONS OF THE JOBSITE AND PROPERTIES ADJACENT TO THE PROJECT, AND SUBMIT THE VIDEO ON DVD TO DWP PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL PROTECT EXISTING JOBSITE CONDITIONS AND ADJACENT PROPERTIES DURING THE WORK AND REPAIR DAMAGE TO LANDSCAPING, PAVING, IRRIGATION, STRUCTURES, ETC., CAUSED BY THE WORK.
- CONTRACTOR SHALL MAINTAIN SAFE AND CONTINUOUS ACCESS TO ALL BUSINESSES, RESIDENCES, AND PUBLIC FACILITIES WITH REFERENCE TO THE WORK AREA TRAFFIC CONTROL HANDBOOK (W.A.T.C.H.) MANUAL.
- DUST SHALL BE CONTROLLED AT ALL TIMES BY APPROVED METHODS.
- IN ACCORDANCE WITH CALIFORNIA HEALTH AND SAFETY CODE SECTION 7050.5, THE CONTRACTOR SHALL NOTIFY THE COUNTY CORONER IF HUMAN REMAINS ARE DISCOVERED DURING THE COURSE OF THE WORK.

**CALTRANS NOTES:** (CURRENT CALTRANS STANDARD PLANS ARE 2015)

- THIS WORK IS BEING PROPOSED TO BE CONCURRENT WITH THE STATE HIGHWAY CONTRACT 0800000327 (EA0J9904). THE CONTRACTOR SHALL COORDINATE ALL ACTIVITIES WITH THE CALTRANS RESIDENT ENGINEER (RE). THE RESIDENT ENGINEER SHALL ORDER A SUSPENSION OF SUCH UTILITY WORK IF IT INTERFERES WITH STATE HIGHWAY CONSTRUCTION. THE STATE AND ITS AGENTS SHALL BE HELD HARMLESS FROM AND AGAINST ANY CLAIMS, DAMAGES, LOSSES, LIABILITIES, AND COSTS RELATING IN ANY MANNER, DIRECTLY OR INDIRECTLY, TO SUSPENSION OF SUCH WORK.
- CONTRACTOR MUST COORDINATE TRAFFIC CONTROL WITH THE OTHER UTILITY PURVEYORS CONDUCTING RELOCATIONS IN THE AREA AND FOLLOW THE LANE REQUIREMENT CHARTS AS ISSUED BY THE DISTRICT TMP MANAGER. PARTICIPATION IN WEEKLY COORDINATION MEETINGS TO COORDINATE TRAFFIC HANDLING AND RELOCATION SCHEDULES IS A MANDATORY COMPONENT OF PERMIT ISSUANCE.
- ALL BBLDWP VALVE BOXES, VAULTS, AND OTHER DEVICES SPECIFIED TO SET FLUSH WITH THE FINISH SURFACE SHALL BE ADJUSTED TO FINAL GRADE TO MEET THE PEDESTRIAN PASSAGE WAY CROSS SLOPE ESTABLISHED AT THE COMPLETION OF CALTRANS PROJECT EA 0J9904 (PROJECT ID #0800000327). CALTRANS RE WILL PROVIDE 2-DAY NOTICE TO BBLDWP TO PERFORM SUCH FINAL ADJUSTMENTS.
- CONTRACTOR SHALL ENSURE ALL NEWLY INSTALLED FHS, BLOW OFFS, AND OTHER ABOVE GRADE DEVICES MAINTAIN AT LEAST 4'-3" CLEARANCE, AS MEASURED FROM THE BACK OF CURB TO THE NEAREST POINT ON SUCH DEVICE.
- CALTRANS STANDARD PLANS RSP T11 FOR MULTILANE HIGHWAYS IS ACCEPTABLE FOR TEMPORARY TRAFFIC CONTROL, IN LIEU OF SITE SPECIFIC TRAFFIC CONTROL PLANS.
- CITY OF BIG BEAR LAKE WILL SET TRAFFIC SIGNALS TO RECALL TIMING IN THE EVENT TRAFFIC LOOPS ARE DESTROYED.
- ALL LANE CLOSURE REQUESTS SHALL BE SUBMITTED INTO LCS SYSTEM (DTM), 7 CALENDAR DAYS PRIOR TO REQUESTED CLOSURE DATE FOR ANY CLOSURE ON STATE RIGHT OF WAY.
- CALTRANS TRANSPORTATION PERMITS OFFICE REQUIRES 14-DAY NOTICE FOR THE REDUCTION OF WIDTH AND/OR HEIGHT ON MAINLINES, WHICH ARE/OR MAY BE USED AS PART OF THEIR ROUTING OF OVERSIZED LOADS.
- CALTRANS PUBLIC AFFAIRS OFFICE MUST BE MADE AWARE OF THE CONSTRUCTION ACTIVITIES ESPECIALLY LANE CLOSURE WITH REDUCTION OF WIDTH TO TRAFFIC LANES". IN THE EVENT THE CALTRANS PUBLIC AFFAIRS OFFICE IS ASKED TO ISSUE PRESS RELEASES, SAID INFORMATION IS REQUIRED 7 DAYS PRIOR TO THE CLOSURE.
- AN R-VALUE OF 5 WAS FOUND AT 3'-6" IN BORING B-3. REMOVE AND DISPOSE OF ALL POOR SOIL MATERIAL WITH R-VALUE OF 5. IF THIS POOR SOIL IS FOUND IN AREAS INTENDED TO SUPPORT STEEL PLATES DURING CONSTRUCTION, REMOVE AND REPLACE THE POOR SOIL. REPLACEMENT FILL SHALL HAVE AN R-VALUE OF AT LEAST 50. IF THE POOR SOIL IN THE TRENCH AREA IS NOT REMOVED, A STRUCTURAL SECTION OF 0.95' HMA OVER 1.20' AB SHOULD BE USED.
- HOT MIX ASPHALT (HMA) SHALL BE TYPE A, WITH 3/4-INCH AGGREGATE GRADATION AND PG 64-28 M ASPHALT BINDER, AND BE CONSTRUCTED IN LIFTS BETWEEN 0.20' AND 0.35' ACCORDING TO CALTRANS 2015 STANDARD SPECIFICATIONS SECTION 39 AND STANDARD SPECIAL PROVISION 39-2.02.
- PRIME COAT SHALL BE APPLIED TO THE BASE PRIOR TO PLACING THE HOT MIX ASPHALT. PRIME COAT SHALL CONFORM TO THE LATEST PROVISIONS IN STANDARD SPECIFICATIONS SECTION 93 AND THE CALTRANS STANDARD SPECIAL PROVISION 39-1.03C (3) (C).
- TACK COAT SHALL BE APPLIED TO EXISTING PAVEMENT INCLUDING PLANNED SURFACES, BETWEEN LAYERS OF HMA AND VERTICAL SURFACES OF CURBS, GUTTERS, AND CONSTRUCTION JOINTS. TACK COAT MUST COMPLY WITH THE SPECIFICATIONS FOR ASPHALTIC EMULSION IN STANDARD SPECIFICATIONS SECTION 94, "ASPHALTIC EMULSION," OR ASPHALT BINDER IN SECTION 92, "ASPHALTS." RELATIVE COMPACTION OF 95 PERCENT SHALL BE OBTAINED FOR A MINIMUM DEPTH OF 2.5 FEET BELOW THE FINISHED GRADE, FOR THE WIDTH OF THE TRAVELED WAY AND 3 FEET ON EACH SIDE ACCORDING TO STANDARD SPECIFICATIONS SECTION 19, "EARTHWORK". CONTROLLED LOW STRENGTH MATERIAL (CLSM) SHALL COMPLY WITH STANDARD SPECIFICATIONS SECTION 19-3.02G AND 19-3.03i. SLURRY CEMENT BACKFILL SHALL COMPLY WITH SECTION 19-3.02E AND 19-3.03F.
- AGGREGATE BASE (AB) SHOULD BE CLASS 2 AND CONSTRUCTED ACCORDING TO STANDARD SPECIFICATIONS SECTION 26, "AGGREGATE BASES".

**UNDERGROUND FACILITIES:**

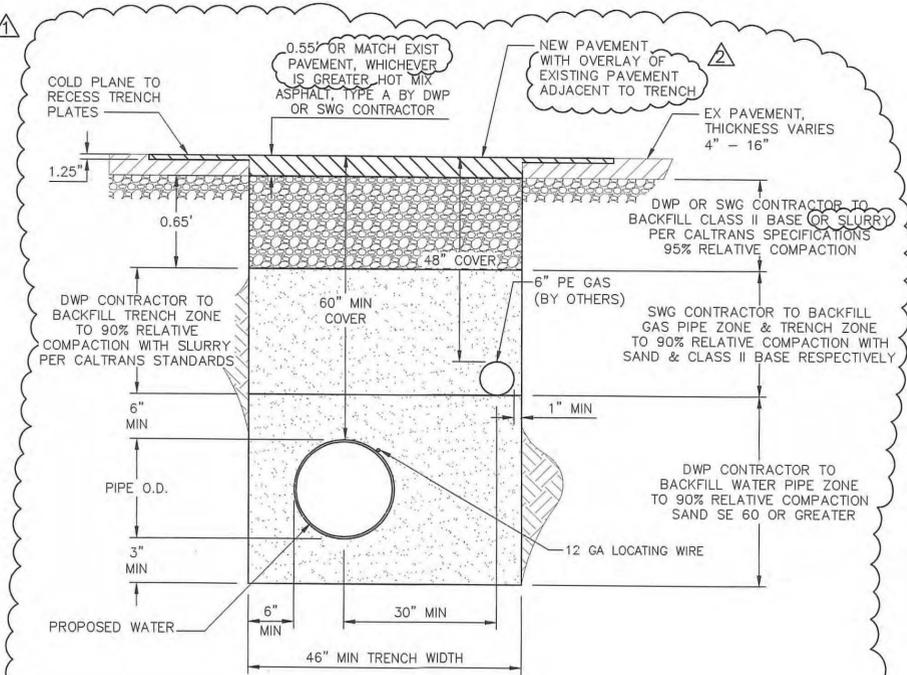
- ENGINEER HAS SEARCHED AVAILABLE KNOWN RECORDS FOR INFORMATION ABOUT UNDERGROUND FACILITIES INCLUDING FACILITIES PRESENTLY BEING DESIGNED IN THE VICINITY OF THE PROJECT. TO THE BEST OF THE ENGINEER'S ABILITY THOSE UNDERGROUND FACILITIES WHICH MAY AFFECT THE WORK ARE SHOWN ON THESE DRAWINGS. LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE BASED ON FACILITY DESIGN DRAWINGS AND ARE APPROXIMATE ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE PRESENCE AND LOCATION OF ALL EXISTING FACILITIES.
- AT LEAST 48 HOURS BEFORE COMMENCING ANY EXCAVATION, CONTRACTOR SHALL REQUEST UNDERGROUND SERVICE ALERT AND NON-MEMBER COMPANIES OR UTILITIES TO MARK OR OTHERWISE INDICATE THE LOCATION(S) OF THEIR SUBSURFACE FACILITIES.
- PRIOR TO PIPELINE EXCAVATION, CONTRACTOR SHALL EXCAVATE AND EXPOSE EXISTING FACILITIES (POTHOLE) IN LOCATIONS WHERE NEW FACILITIES ARE PROPOSED TO ESTABLISH THE EXACT LOCATION, SIZE, AND DEPTH, AND DETERMINE IF THERE WILL BE AN INTERFERENCE WITH PROPOSED FACILITIES. CHANGES OR DELAYS CAUSED BY CONTRACTOR'S FAILURE TO PERFORM "POTHOLING" AND INTERFERENCE LOCATION WORK SHALL NOT BE ELIGIBLE FOR EXTRA WORK COMPENSATION OR TIME EXTENSION. UPON LEARNING OF THE EXISTENCE OR LOCATION OF ANY UNDERGROUND FACILITY OMITTED OR SHOWN INCORRECTLY ON THESE DRAWINGS, OR IMPROPERLY MARKED OR OTHERWISE INDICATED, CONTRACTOR SHALL IMMEDIATELY NOTIFY DWP, PROVIDING FULL DETAILS AS DEPTH, LOCATION, SIZE, AND FUNCTION.
- CONTRACTOR SHALL PRESERVE ALL SURVEY MARKERS AND MONUMENTATION IN PLACE. IF ANY EXISTING MONUMENTS REQUIRE REMOVAL TO PERFORM THE WORK, CONTRACTOR SHALL NOTIFY DWP AT LEAST 7 DAYS IN ADVANCE OF CONSTRUCTION. SAID MONUMENTS WILL BE TIED OUT AND RE-ESTABLISHED BY DWP.
- CONTRACTOR SHALL PRESERVE ALL WATER PIPELINE MARKINGS. WATER MARKINGS DESTROYED WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

**GRADING AND SITE WORK NOTES:**

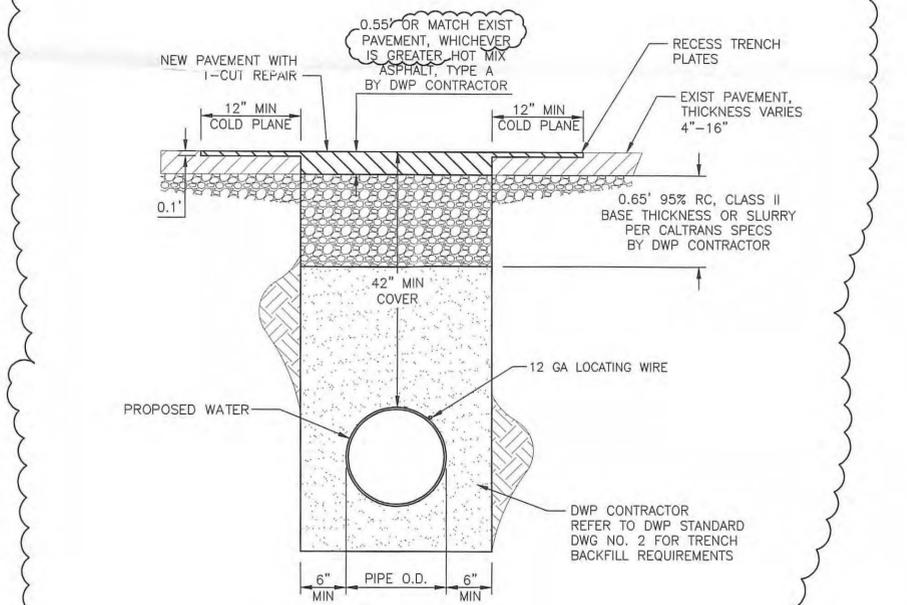
- CONTRACTOR SHALL CONTROL ALL RUNOFF FROM CONSTRUCTION ACTIVITIES AND SHALL IMPLEMENT THE PROVIDED WATER POLLUTION CONTROL PLAN (WPCP) OR SHALL DEVELOP AND IMPLEMENT THEIR OWN WPCP OR SWPPP. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLACEMENT AND MAINTENANCE OF ALL BMPs PRIOR TO ANY CONSTRUCTION ACTIVITIES OCCURRING AND THROUGHOUT THE DURATION OF THE PROJECT. REFER TO SPECIFICATION SECTION 01 57 23.
- BORING LOGS PER THE GEOTECHNICAL REPORT PREPARED BY LOR GEOTECHNICAL GROUP TITLED "SUBSURFACE SOILS INVESTIGATION PROPOSED 4,000 LF 12-INCH STEEL PIPE CALTRANS HIGHWAY 18 BIG BEAR BOULEVARD", DATED 10/5/2015 ARE INCLUDED IN THE SPECIFICATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO FAMILIARIZE HIMSELF WITH THE SITE CONDITIONS AND THE EXTENT OF CLEARING REQUIRED TO PERFORM THE WORK. CLEARING SHALL BE PERFORMED OUTSIDE NESTING SEASON, IN ACCORDANCE WITH SPECIFICATIONS.
- CONTRACTOR SHALL MINIMIZE CLEARING AND GRUBBING ACTIVITIES ONLY TO THE EXTENT REQUIRED TO PERFORM THE WORK. CONTRACTOR SHALL PROTECT ALL EXISTING TREES IN PLACE.
- ALL DEBRIS, BRUSH, AND RUBBISH WITHIN THE WORK AREA SHALL BE REMOVED AND DISPOSED OF DAILY, EXCEPT AS OTHERWISE REQUIRED. SAID MATERIALS SHALL BE LEGALLY DISPOSED OF IN AN APPROVED OFFSITE LOCATION. WHERE REMOVAL OF SUBSURFACE OBSTRUCTIONS IS NECESSARY, CAVITIES CREATED BY THE REMOVAL SHALL BE CLEARED OF ALL LOOSE DEBRIS AND SOIL AND SHAPED TO PROVIDE ACCESS FOR BACKFILLING AND COMPACTION EQUIPMENT.
- CONTRACTOR SHALL RESTORE DISTURBED EARTH UPON COMPLETION OF THE SITE WORK.
- EXISTING CONTOURS ARE SHOWN AT ± 2'.
- NEW CONCRETE SIDEWALK IS BEING INSTALLED BY CALTRANS. EVERY EFFORT SHALL BE MADE TO PROTECT THE SIDEWALK. CONTRACTOR SHALL REPLACE ANY DAMAGED SIDEWALK IN KIND.

**PIPELINE NOTES:**

- UNLESS OTHERWISE SHOWN, MINIMUM COVER ON BELOW GRADE PIPELINES SHALL BE 42" IN PAVED AREAS AND 48" IN UNPAVED AREAS UNLESS OTHERWISE DIRECTED BY THE DWP REPRESENTATIVE.
- PIPELINE ELEVATIONS SHOWN ARE FOR INVERT OF PIPE UNLESS NOTED OTHERWISE. PIPELINES SHALL SLOPE UNIFORMLY BETWEEN INVERT ELEVATIONS SHOWN. CONTRACTOR SHALL PROVIDE ALL SHORTS, SPOOLS, AND FITTINGS NECESSARY TO MEET ELEVATIONS SPECIFIED.
- ALL HORIZONTAL OR VERTICAL CHANGES IN PIPE ALIGNMENT DELINEATED ON THE PLANS AS SHOWN WITHOUT BENDS, SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FOR DUCTILE IRON PIPE, TOTAL ANGULAR DISPLACEMENT SHALL BE DISTRIBUTED THROUGH AS MANY JOINTS AS PRACTICABLE. FOR PVC PIPE, FITTINGS SHALL BE USED TO ACCOMPLISH ALL VERTICAL OR HORIZONTAL DEFLECTION IN EXCESS OF THE MANUFACTURER'S ALLOWABLE JOINT DEFLECTION. BENDING OF THE PIPE IS NOT PERMITTED.
- CONNECTIONS MADE BETWEEN DIFFERENT CLASSES OF PIPE SHALL BE MADE WITH MATERIALS RATED FOR THE HIGHER PRESSURE CLASS.
- ALL NEW VALVES SHALL BE FLANGED DIRECTLY TO A TEE, CROSS OR OTHER FITTING. VALVES SHALL BE ACCESSIBLE FOR OPERATION WITH COMPLETE VALVE BOX PRIOR TO CONNECTION TO EXISTING WATER SYSTEM.
- THE WATER SYSTEM SHALL BE HYDROSTATICALLY TESTED PRIOR TO PLACING COMPACTED BASE OR PAVEMENT.
- ALL HYDROSTATIC TESTING AND DISINFECTION SHALL BE MADE IN THE PRESENCE OF A DWP REPRESENTATIVE. HYDROSTATIC TEST PRESSURE SHALL BE 225 PSI. TESTING AGAINST VALVES OR THROUGH FLEX-TEND EXPANSION JOINTS IS NOT PERMITTED; CONTRACTOR SHALL INSTALL BULKHEADS AND TOP OUTLETS AS REQUIRED FOR TESTING. ENDCAPS SHALL BE INSTALLED ON THE NEWLY CONSTRUCTED SIDE OF ALL CONNECTION POINTS AND NEW PIPING SHALL PASS ALL TESTING PRIOR TO CONNECTION TO THE EXISTING WATER SYSTEM. ALL PIPING UNDER CONCRETE SLABS/FOUNDATIONS SHALL PASS PRESSURE TESTING PRIOR TO PLACING CONCRETE.
- CONTRACTOR SHALL COORDINATE ALL TIE-INS OF NEW WATER MAINS TO EXISTING MAINS WITH DWP TO MINIMIZE SERVICE INTERRUPTIONS. PROVIDE AT LEAST 3 WORKING DAYS NOTICE PRIOR TO TIE-INS. A DWP REPRESENTATIVE MUST BE PRESENT ON SITE TO WITNESS SAID TIE-INS. TIE-INS MAY NOT OCCUR ON FRIDAYS.
- WATER PIPELINE CROSSINGS OVER UTILITIES MUST HAVE A 1-FOOT VERTICAL CLEARANCE BETWEEN WATER PIPE AND UTILITY, UNLESS APPROVED BY DWP'S REPRESENTATIVE. PIPELINES CROSSING OVER SEWER OR STORM LINES MUST MEET MINIMUM CLEARANCE REQUIREMENTS AND ANGLE OF APPROACH AS REQUIRED BY THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH.
- CONTRACTOR SHALL ADJUST ALL VALVE BOXES, FIRE HYDRANTS, BLOW OFFS, AIR VACS, ETC. TO FINISHED GRADE UNLESS OTHERWISE SHOWN OR DIRECTED.
- FIRE HYDRANTS, METER BOXES, AIR VACS AND BLOW-OFFS SHALL BE LOCATED NO CLOSER THAN 5 FEET FROM BEGINNING OF CURB RETURN, DRIVEWAY, OR ANY OTHER UTILITY. FINAL APPURTENANCE PLACEMENT TO BE DETERMINED IN THE FIELD BY DWP REPRESENTATIVE AND SHALL BE PROTECTED WITH BARRICADES AS SHOWN ON STANDARD DRAWING No. 10 OR AS DIRECTED BY THE DWP REPRESENTATIVE.
- THE CONTRACTOR IS ALERTED THAT THERE IS ASBESTOS CEMENT (AC) PIPE IN THE SYSTEM AND THAT CONNECTIONS MAY BE MADE TO THIS MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THE CONNECTIONS, AND FOR ALL ANCILLARY WORK REQUIRED, INCLUDING THE HANDLING AND DISPOSAL OF HAZARDOUS MATERIALS. ALL HANDLING, REMOVAL AND DISPOSAL SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL LAWS AND STANDARDS.
- NEW CONTINUOUS SERVICE LATERALS ARE REQUIRED WITH NEW METER BOXES. NO SERVICE LATERAL COUPLINGS ARE ALLOWED.
- SAMPLING AND DISINFECTION SHALL BE PER BBLDWP STANDARD SPECIFICATIONS.
- TRANSITION COUPLINGS SHALL BE USED FOR PVC TO AC AND PVC TO STL CONNECTIONS. DUCTILE IRON REPAIR SLEEVES WITH MEGALUG RESTRAINTS SHALL BE USED FOR DIP TO PVC, PVC TO PVC, AND DIP TO DIP CONNECTIONS.



BIG BEAR BLVD, STA 10+38.55 TO STA 47+82.90  
**JOINT TRENCH DETAIL A**

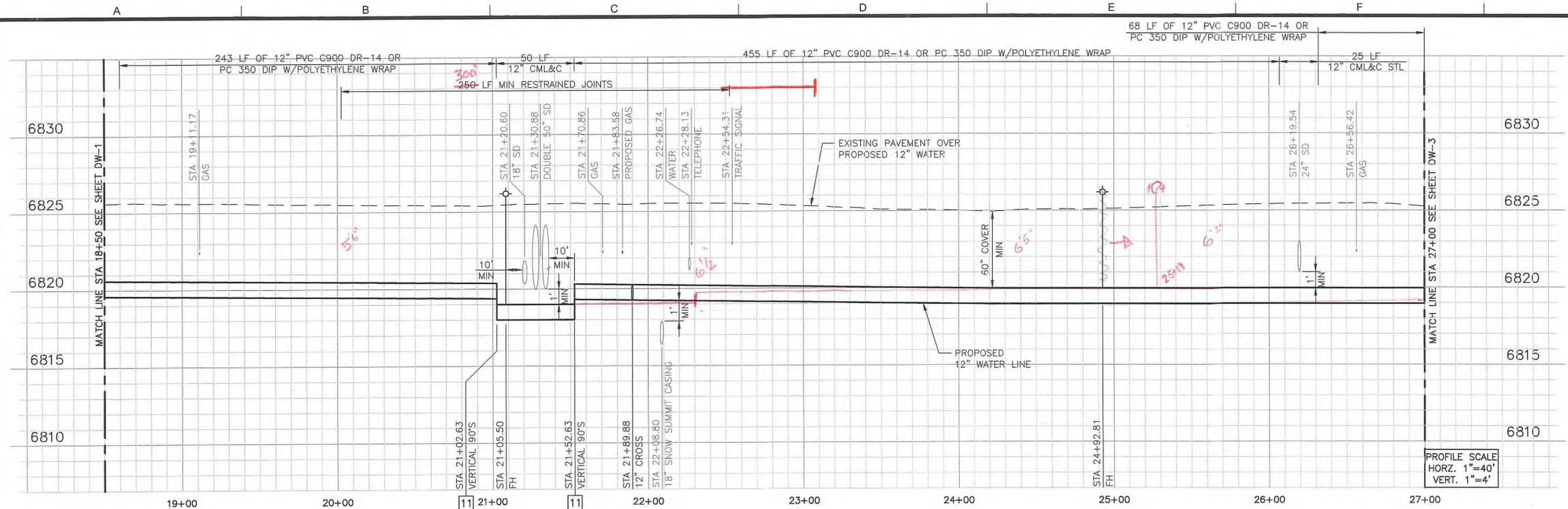


GEORGIA ST STA 1+00 TO 3+36  
THRUSH DR, SUMMIT BLVD, CHINA GARDEN RD,  
MOONRIDGE RD, MOONRIDGE WAY, BIG BEAR BLVD STA  
47+82.90 TO 48+24.38  
**NON-JOINT TRENCH DETAIL B**

CONFORMED FOR CONSTRUCTION

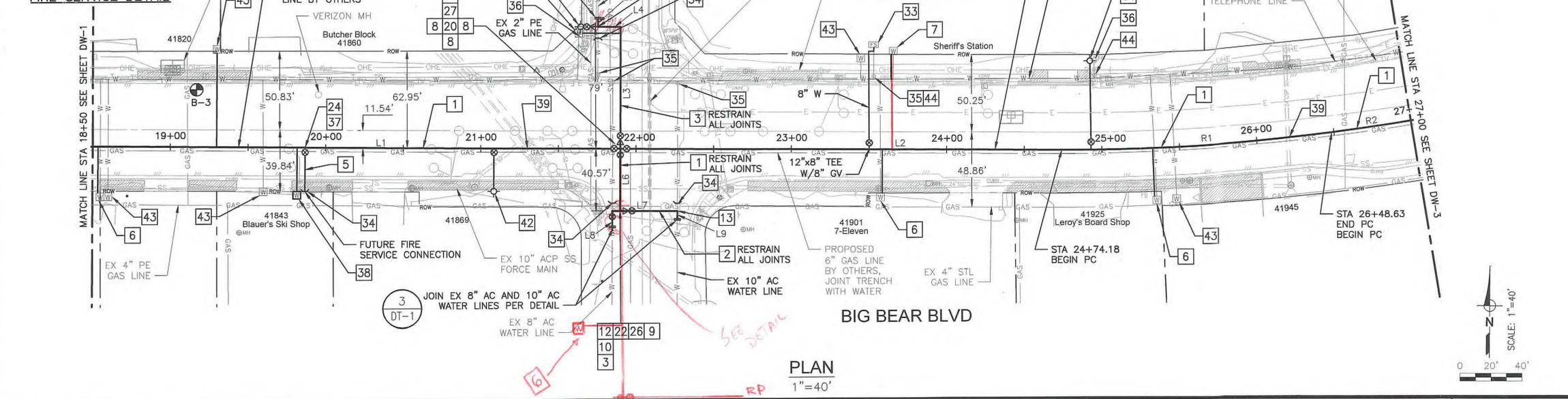
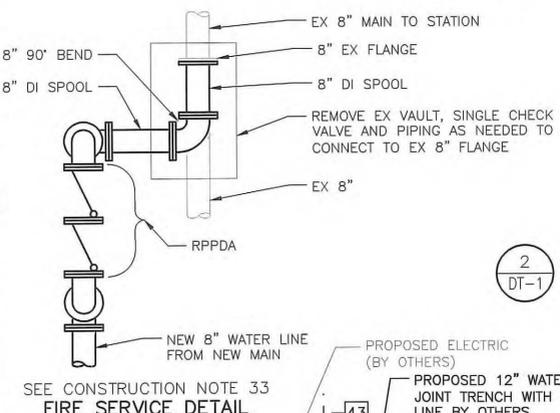
<table border="1"> <tr> <td>5/31/16</td> <td>CLS</td> <td>CALTRANS PERMIT APPLICATION COMMENTS</td> </tr> <tr> <td>4/29/16</td> <td>CLS</td> <td>ADDENDUM 2: REVISION DURING BIDDING</td> </tr> <tr> <td>REV</td> <td>DATE</td> <td>DESCRIPTION</td> </tr> </table>	5/31/16	CLS	CALTRANS PERMIT APPLICATION COMMENTS	4/29/16	CLS	ADDENDUM 2: REVISION DURING BIDDING	REV	DATE	DESCRIPTION	<p>WARNING 0 1/2 1</p> <p>IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.</p>	<p>DESIGNED: CLS DRAWN: MAH CHECKED: JHR SCALE:</p>	<p>PREPARED BY: <i>Clay L. Stevens</i> CHRISTOPHER L. STEVENS RCE No.: 73124</p>	<p><b>WSC</b> WATER SYSTEMS CONSULTING, INC. 9375 ARCHIBALD AVE, SUITE 200, RANCHO CUCAMONGA, CA 91730 PHONE: (909)483-3200 FAX: (909)354-3482</p>	<p>DEPARTMENT OF WATER AND POWER CITY OF BIG BEAR LAKE 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315</p> <p>APPROVED: <i>Reginald A. Lamson</i> REGINALD A. LAMSON - GENERAL MANAGER</p>	<p>12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT AND 8" GEORGIA STREET DISTRIBUTION MAIN</p> <p><b>GENERAL &amp; CONSTRUCTION NOTES &amp; TRENCH DETAIL</b></p>	<p>SHEET <b>G-2</b> SHEET 3 OF 12 PROJECT # GWO 0100-16</p>
5/31/16	CLS	CALTRANS PERMIT APPLICATION COMMENTS														
4/29/16	CLS	ADDENDUM 2: REVISION DURING BIDDING														
REV	DATE	DESCRIPTION														





**PROFILE**  
 H: 1"=40'  
 V: 1"=4'

ITEM	BEARING/RADIUS	LENGTH (FT)
L1	S 89°33'31" E	339.86'
L2	S 89°37'45" E	284.32'
L3	S 0°21'41" W	79.00'
L4	S 89°40'15" E	14.52'
L5	S 0°19'45" W	5.00'
L6	S 0°21'41" W	40.50'
L7	S 89°37'45" E	41.93'
L8	S 0°22'15" W	10.00'
L9	S 0°22'15" W	5.00'
R1	1273'	174.45'
R2	1493'	51.37'

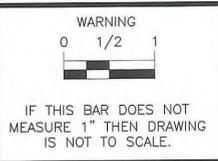


**PLAN**  
 1"=40'

- CONSTRUCTION NOTES**
- 12" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 10" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 8" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 4" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - NEW 1" WATER SERVICE AND METER BOX PER STD DWG NO. 11. TIE OVER NEW SERVICE TO EXISTING METER. CLOSE ANGLE METER VALVE AND BURY EXISTING WATER SERVICE TO ABANDON.
  - NEW 2" WATER SERVICE AND METER BOX PER STD DWG NO. 12. TIE OVER NEW SERVICE TO EXISTING METER. CLOSE ANGLE METER VALVE AND BURY EXISTING WATER SERVICE TO ABANDON.
  - 12" GATE VALVE PER STD DWG NO. 4
  - 10" GATE VALVE PER STD DWG NO. 4
  - 8" GATE VALVE PER STD DWG NO. 4
  - 12" 90° BEND
  - 12"x8" REDUCING 90° BEND
  - 10" 90° BEND
  - 8" 90° BEND
  - 12"x12" CROSS
  - 12"x12" TEE
  - 12"x4" TEE
  - 8"x8" TEE
  - 12"x10" ECCENTRIC REDUCER WITH TOP LEVEL
  - 12"x8" ECCENTRIC REDUCER WITH TOP LEVEL
  - 8"x6" ECCENTRIC REDUCER WITH TOP LEVEL
  - FIRE HYDRANT ASSEMBLY PER STD DWG NO. 6
  - 8" REDUCED PRESSURE PRINCIPAL DETECTOR ASSEMBLY (RPPDA) PER STD DWG NO. 16 RP. CONNECT TO EX PER FIRE SERVICE DETAIL SHEET DW-2.
  - CUT AND CAP OR PLUG WATERLINE
  - CLOSE EXISTING VALVE. REMOVE EXISTING VALVE CAN, LID & SLIP CAN AND BURY. DELIVER LID TO BBLDWP.
  - REMOVE EXISTING HYDRANT ASSEMBLY AND CAP, DELIVER HYDRANT TO BBLDWP. CLOSE HYDRANT VALVE, REMOVE EXISTING VALVE CAN, LID & SLIP CAN AND BURY.
  - 4" GATE VALVE PER BBLDWP STD DWG NO. 4
  - 1" WATER SERVICE AND METER BOX PER STD DWG NO. 11
  - 12" CML&C STEEL WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3 TRENCH PER DETAIL SHEET G-2. CONNECTIONS BETWEEN DIP & STL REQUIRE AN INSULATING FLANGE KIT.
  - FLUSH OUT FIRE HYDRANT PER STD DWG NO. 7 AND 19
  - EXISTING PRE-SET SERVICE, DO NOT REPLACE
  - SAWCUT SIDEWALK TO NEAREST INTACT CONCRETE JOINT AND REPLACE SIDEWALK WITH 3.5" THICK PCC SIDEWALK OVER 12" THICK CLASS II AGGREGATE BASE ONCE EX VALVE IS ABANDONED.

CONFORMED FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION



DESIGNED: CLS  
 DRAWN: MAH  
 CHECKED: JHR  
 SCALE: \_\_\_\_\_

PREPARED BY:  
 Christy L. Stevens  
 CIVIL ENGINEER  
 RCE No.: 73124  
 DATE: 6/2/16

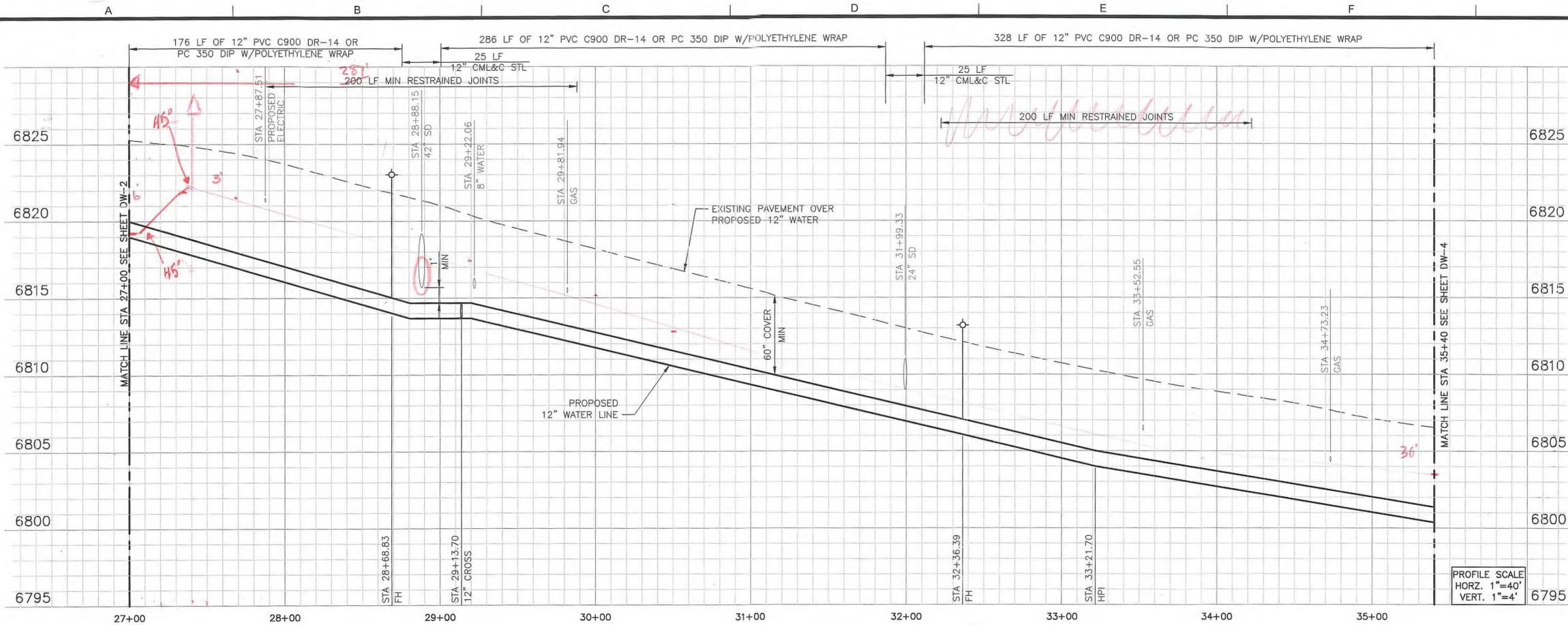


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DEPARTMENT OF WATER AND POWER  
 CITY OF BIG BEAR LAKE  
 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315  
 APPROVED: *Reginald A. Lamson*  
 REGINALD A. LAMSON - GENERAL MANAGER  
 DATE: 6-2-16

12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT  
 AND 8" GEORGIA STREET DISTRIBUTION MAIN  
 PLAN & PROFILE  
 STA 18+50 TO 27+00

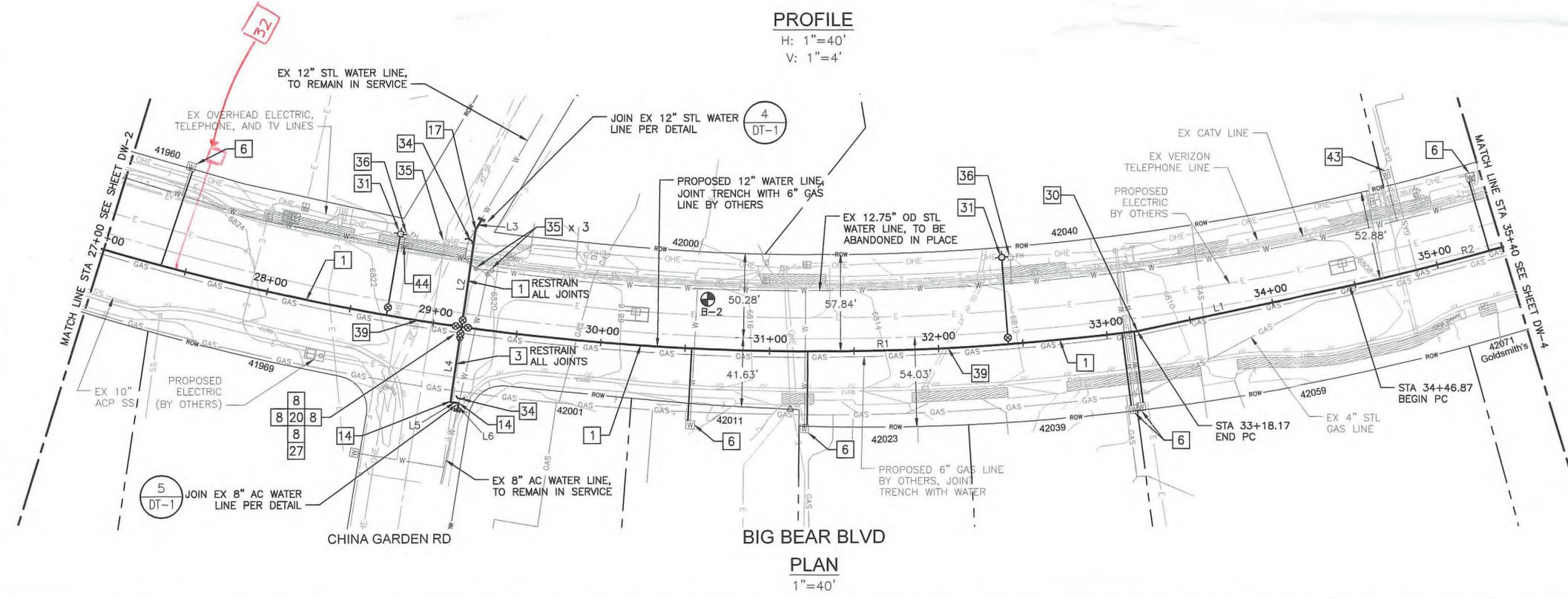
SHEET  
**DW-2**  
 SHEET 5 OF 12  
 PROJECT #  
 GWO 0100-16



- CONSTRUCTION NOTES**
- 1 12" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 3 8" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 6 1" WATER SERVICE AND METER BOX PER STD DWG NO. 11. TIE OVER NEW SERVICE TO EXISTING METER. CLOSE ANGLE METER VALVE AND BURY EXISTING WATER SERVICE TO ABANDON.
  - 8 12" GATE VALVE PER STD DWG NO. 4
  - 14 8" 90° BEND
  - 17 12" 22.5° BEND
  - 20 12"x12" CROSS
  - 27 12"x8" ECCENTRIC REDUCER WITH TOP LEVEL
  - 30 HIGH DEFLECTION COUPLING
  - 31 FIRE HYDRANT ASSEMBLY PER STD DWG NO. 6
  - 34 CUT AND CAP OR PLUG WATERLINE
  - 35 CLOSE EXISTING VALVE. REMOVE EXISTING VALVE CAN, LID & SLIP CAN AND BURY. DELIVER LID TO BBLDWP.
  - 36 REMOVE EXISTING HYDRANT ASSEMBLY AND CAP, DELIVER HYDRANT TO BBLDWP. CLOSE HYDRANT VALVE, REMOVE EXISTING VALVE CAN, LID & SLIP CAN AND BURY.
  - 39 12" CML&C STEEL WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3 TRENCH PER DETAIL SHEET G-2. CONNECTIONS BETWEEN DIP & STL REQUIRE AN INSULATING FLANGE KIT.
  - 43 EXISTING PRE-SET SERVICE, DO NOT REPLACE
  - 44 SAWCUT SIDEWALK TO NEAREST INTACT CONCRETE JOINT AND REPLACE SIDEWALK WITH 3.5" THICK PCC SIDEWALK OVER 12" THICK CLASS II AGGREGATE BASE ONCE EX VALVE IS ABANDONED.

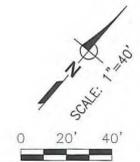
**PROFILE**  
 H: 1"=40'  
 V: 1"=4'

PROFILE SCALE  
 HORZ. 1"=40'  
 VERT. 1"=4'



**LINE BEARING & RADIUS TABLE**

ITEM	BEARING/RADIUS	LENGTH (FT)
R1	1493'	618.17'
L1	N 51°48'52" E	128.70'
R2	1435'	93.13'
L2	N 17°46'32" W	58.47'
L3	N 04°17'59" E	6.59'
L4	S 17°46'32" E	45.61'
L5	S 72°13'28" W	5.00'
L6	S 13°29'51" E	4.00'



CONFORMED FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

WARNING  
 0 1/2 1  
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: CLS  
 DRAWN: MAH  
 CHECKED: JHR  
 SCALE: \_\_\_\_\_

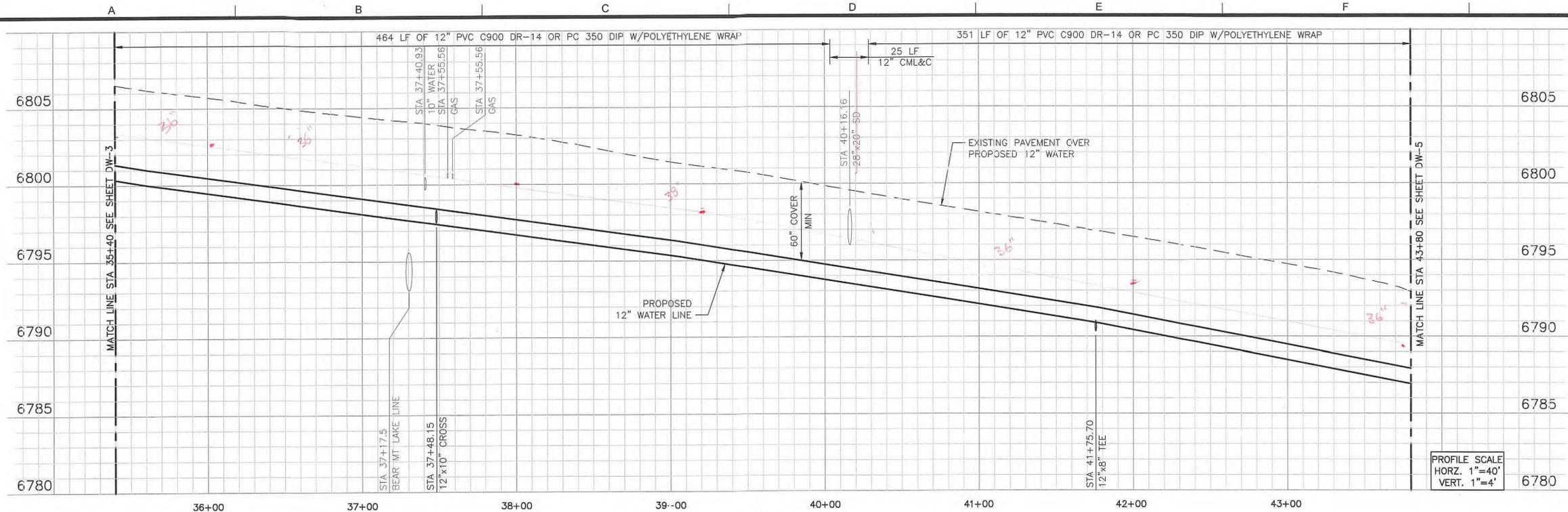
PREPARED BY:  
*Christ L. Stevens*  
 CHRIST L. STEVENS  
 RCE No.: 73124  
 DATE: \_\_\_\_\_

**WSC**  
 WATER SYSTEMS CONSULTING, INC.  
 9375 ARCHIBALD AVE, SUITE 200,  
 RANCHO CUCAMONGA, CA 91730  
 PHONE: (909)483-3200 FAX: (909)354-3482

DEPARTMENT OF WATER AND POWER  
 CITY OF BIG BEAR LAKE  
 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315  
 APPROVED:  
*Reginald A. Lamson*  
 REGINALD A. LAMSON - GENERAL MANAGER  
 DATE: 6-2-16

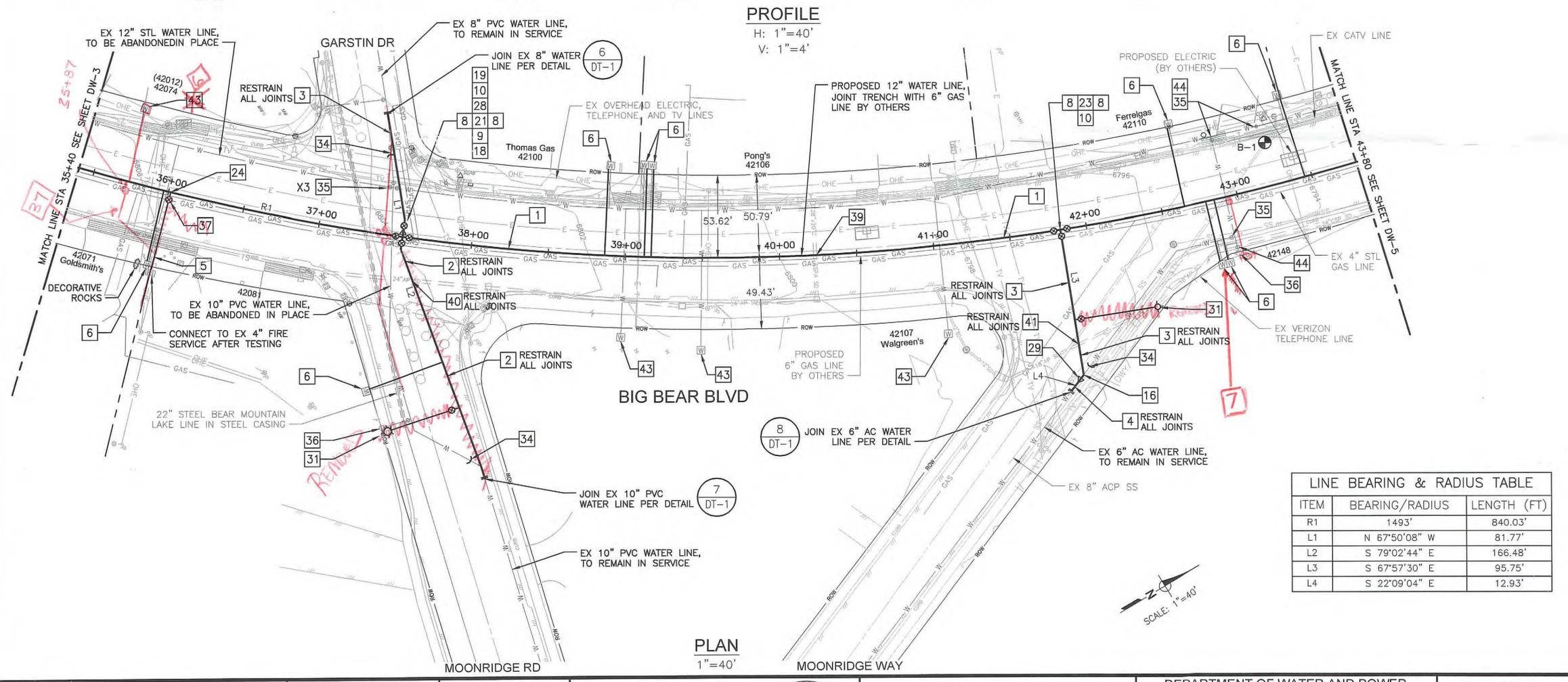
12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT  
 AND 8" GEORGIA STREET DISTRIBUTION MAIN  
 PLAN & PROFILE  
 STA 27+00 TO 35+40

SHEET  
**DW-3**  
 SHEET 6 OF 12  
 PROJECT #  
 GW0 0100-16



- CONSTRUCTION NOTES**
- 1 12" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 2 10" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 3 8" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 4 6" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 5 4" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
  - 6 NEW 1" WATER SERVICE AND METER BOX PER STD DWG NO. 11. TIE OVER NEW SERVICE TO EXISTING METER. CLOSE ANGLE METER VALVE AND BURY EXISTING WATER SERVICE TO ABANDON.
  - 8 12" GATE VALVE PER STD DWG NO. 4
  - 9 10" GATE VALVE PER STD DWG NO. 4
  - 10 8" GATE VALVE PER STD DWG NO. 4
  - 16 8" 45° BEND
  - 18 10" 22.5° BEND
  - 19 8" 11.25° BEND
  - 21 12"x10" CROSS
  - 23 12"x8" TEE
  - 24 12"x4" TEE
  - 28 10"x8" ECCENTRIC REDUCER WITH TOP LEVEL
  - 29 8"x6" ECCENTRIC REDUCER WITH TOP LEVEL
  - 31 FIRE HYDRANT ASSEMBLY PER STD DWG NO. 6
  - 34 CUT AND CAP OR PLUG WATERLINE
  - 35 CLOSE EXISTING VALVE. REMOVE EXISTING VALVE CAN, LID & SLIP CAN AND BURY. DELIVER LID TO BBLDWP.
  - 36 REMOVE EXISTING HYDRANT ASSEMBLY AND CAP. DELIVER HYDRANT TO BBLDWP. CLOSE HYDRANT VALVE, REMOVE EXISTING VALVE CAN, LID & SLIP CAN AND BURY.
  - 37 4" GATE VALVE PER STD DWG NO. 4
  - 39 12" CML&C STEEL WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3 TRENCH PER DETAIL SHEET G-2. CONNECTIONS BETWEEN DIP & STL REQUIRE AN INSULATING FLANGE KIT.
  - 40 10" CML&C STEEL WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3 TRENCH PER DETAIL, SHEET G-2. CONNECTIONS BETWEEN DIP & STL REQUIRE AN INSULATING FLANGE KIT.
  - 41 8" CML&C STEEL WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO.3. TRENCH PER DETAIL, SHEET G-2. CONNECTIONS BETWEEN DIP & STL REQUIRE AN INSULATING FLANGE KIT.
  - 43 EXISTING PRE-SET SERVICE, DO NOT REPLACE
  - 44 SAWCUT SIDEWALK TO NEAREST INTACT CONCRETE JOINT AND REPLACE SIDEWALK WITH 3.5" THICK PCC SIDEWALK OVER 12" THICK CLASS II AGGREGATE BASE ONCE EX VALVE IS ABANDONED.

PROFILE SCALE  
 HORZ. 1"=40'  
 VERT. 1"=4'



**LINE BEARING & RADIUS TABLE**

ITEM	BEARING/RADIUS	LENGTH (FT)
R1	1493'	840.03'
L1	N 67°50'08" W	81.77'
L2	S 79°02'44" E	166.48'
L3	S 67°57'30" E	95.75'
L4	S 22°09'04" E	12.93'

CONFORMED FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

WARNING  
 0 1/2 1  
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: CLS  
 DRAWN: MAH  
 CHECKED: JHR  
 SCALE: \_\_\_\_\_

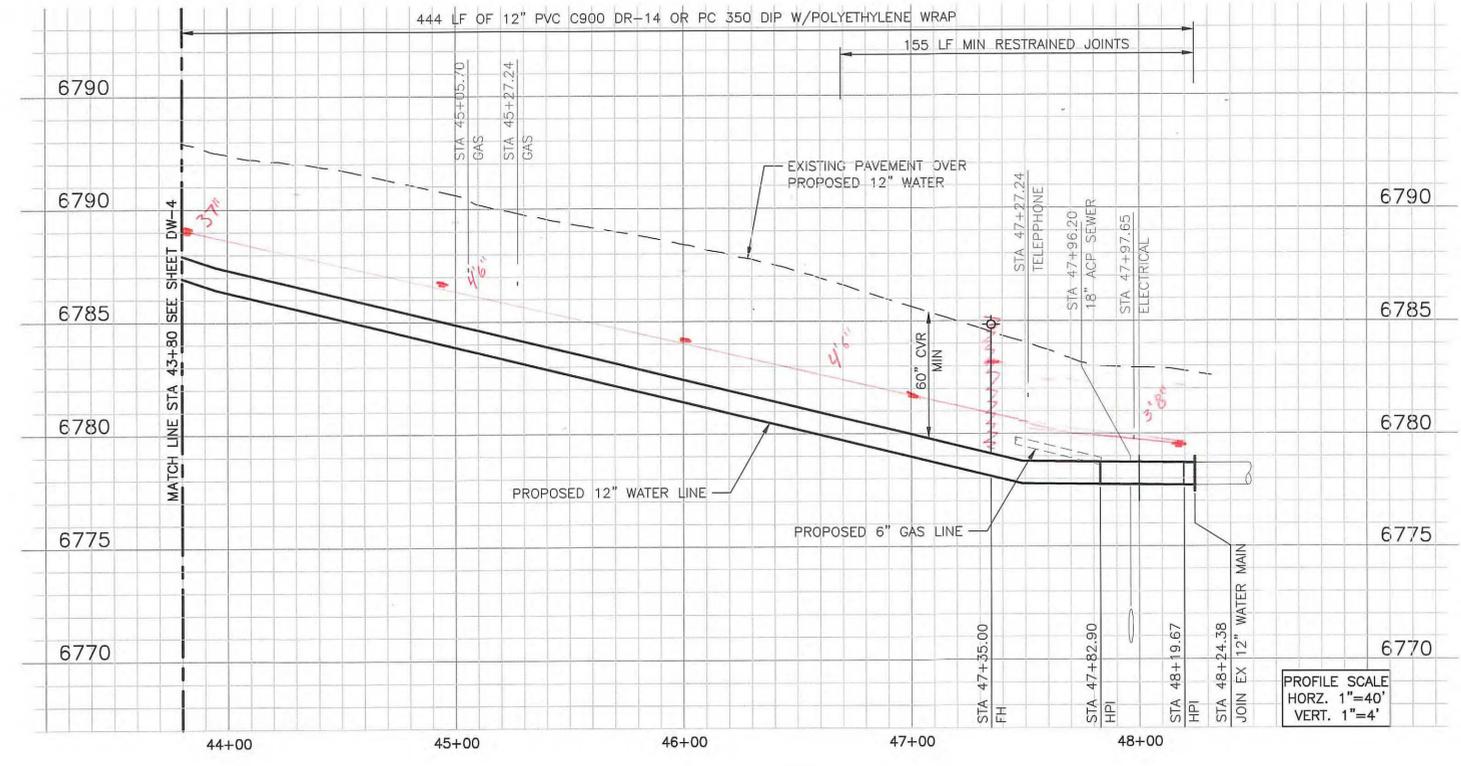
PREPARED BY:  
 CLY L. STEVENS  
 RCE No.: 73124  
 DATE: 12/31/16  
 REGISTERED PROFESSIONAL ENGINEER  
 CIVIL  
 STATE OF CALIFORNIA

**WSC**  
 WATER SYSTEMS CONSULTING, INC.  
 9375 ARCHIBALD AVE, SUITE 200,  
 RANCHO CUCAMONGA, CA 91730  
 PHONE: (909)483-3200 FAX: (909)354-3482

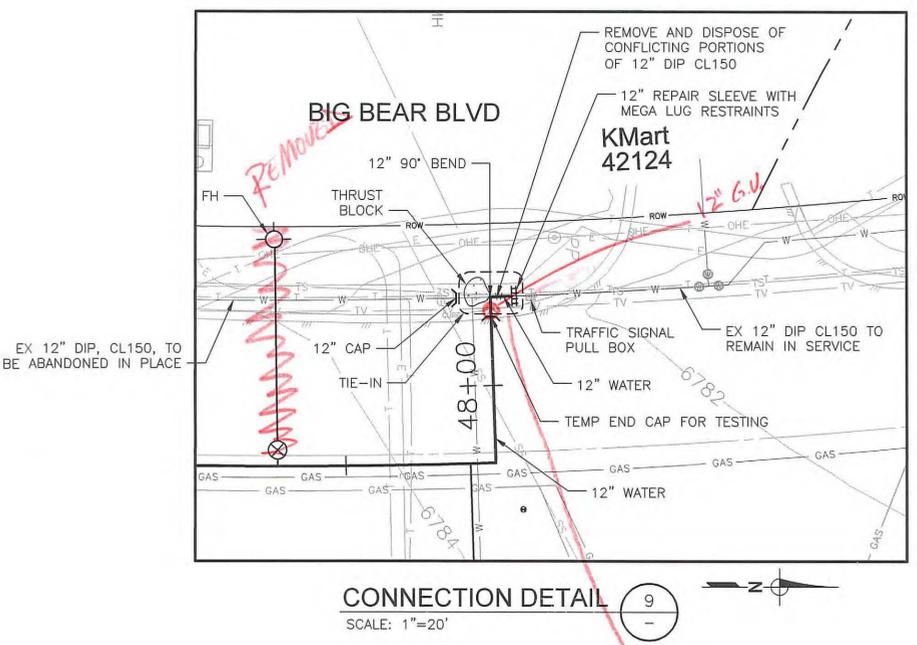
DEPARTMENT OF WATER AND POWER  
 CITY OF BIG BEAR LAKE  
 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315  
 APPROVED: \_\_\_\_\_  
 REGINALD A. LAMSON - GENERAL MANAGER  
 DATE: 6-2-16

12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT  
 AND 8" GEORGIA STREET DISTRIBUTION MAIN  
 PLAN & PROFILE  
 STA 35+40 TO 43+80

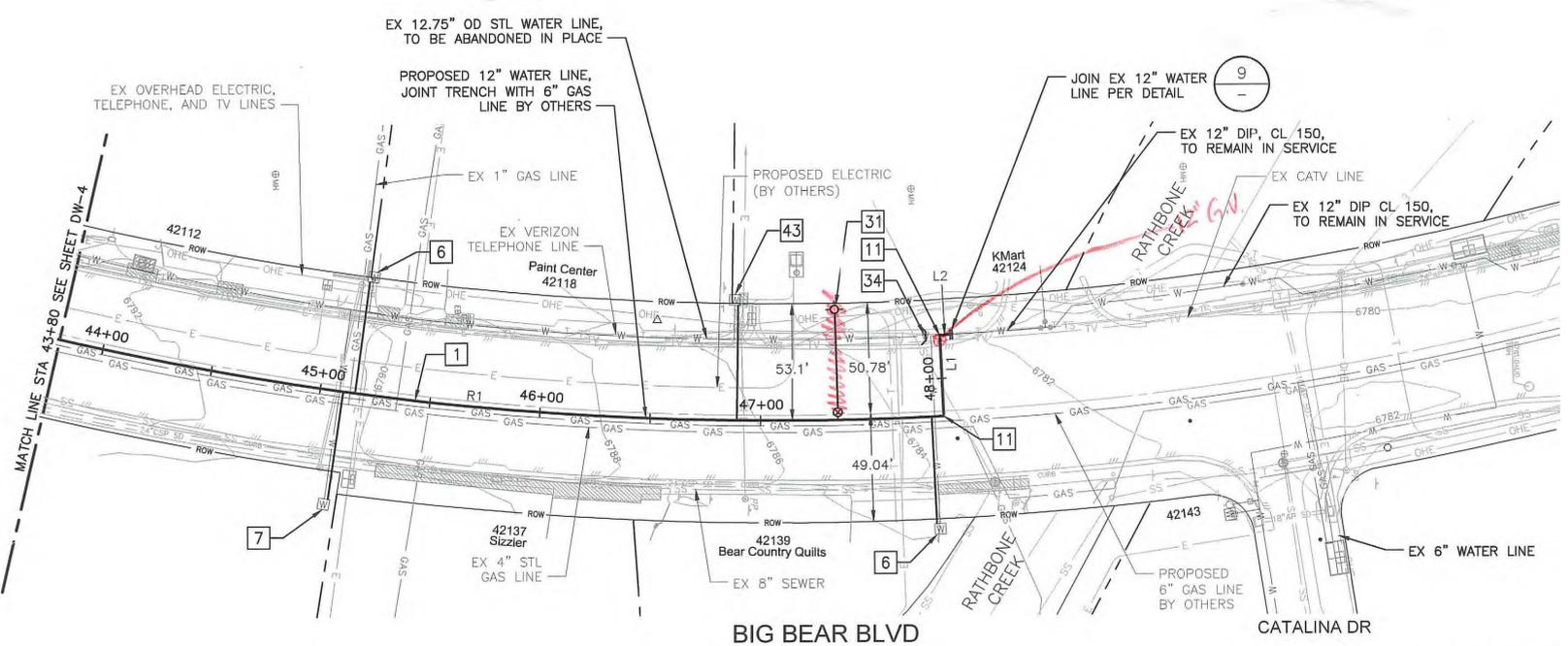
SHEET  
**DW-4**  
 SHEET 7 OF 12  
 PROJECT #  
 GWO 0100-16



**PROFILE**  
 H: 1"=40'  
 V: 1"=4'



**CONNECTION DETAIL** 9  
 SCALE: 1"=20'

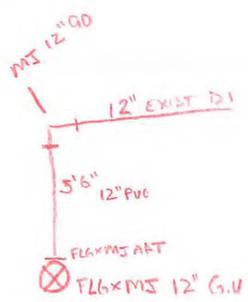


**PLAN**  
 1"=40'

LINE BEARING & RADIUS TABLE		
ITEM	BEARING/RADIUS	LENGTH (FT)
R1	1435'	402.87'
L1	S 88°15'48" W	36.77'
L2	N 02°17'08" W	5.00'

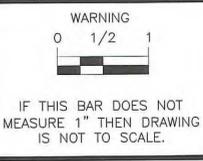
**CONSTRUCTION NOTES**

- 1 12" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
- 6 1" WATER SERVICE AND METER BOX PER STD DWG NO. 11. TIE OVER NEW SERVICE TO EXISTING METER. CLOSE ANGLE METER VALVE AND BURY EXISTING WATER SERVICE TO ABANDON.
- 7 NEW 2" WATER SERVICE AND METER BOX PER STD DWG NO. 12. TIE OVER NEW SERVICE TO EXISTING METER. CLOSE ANGLE METER VALVE AND BURY EXISTING WATER SERVICE TO ABANDON.
- 11 12" 90° BEND
- 31 FIRE HYDRANT ASSEMBLY PER STD DWG NO. 6
- 34 CUT AND CAP OR PLUG WATERLINE
- 43 EXISTING PRE-SET SERVICE, DO NOT REPLACE



CONFORMED FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION



DESIGNED: CLS  
 DRAWN: MAH  
 CHECKED: JHR  
 SCALE: \_\_\_\_\_

PREPARED BY:  
*Christy L. Stevens*  
 CHRISTY L. STEVENS  
 RCE No.: 73124  
 DATE: \_\_\_\_\_

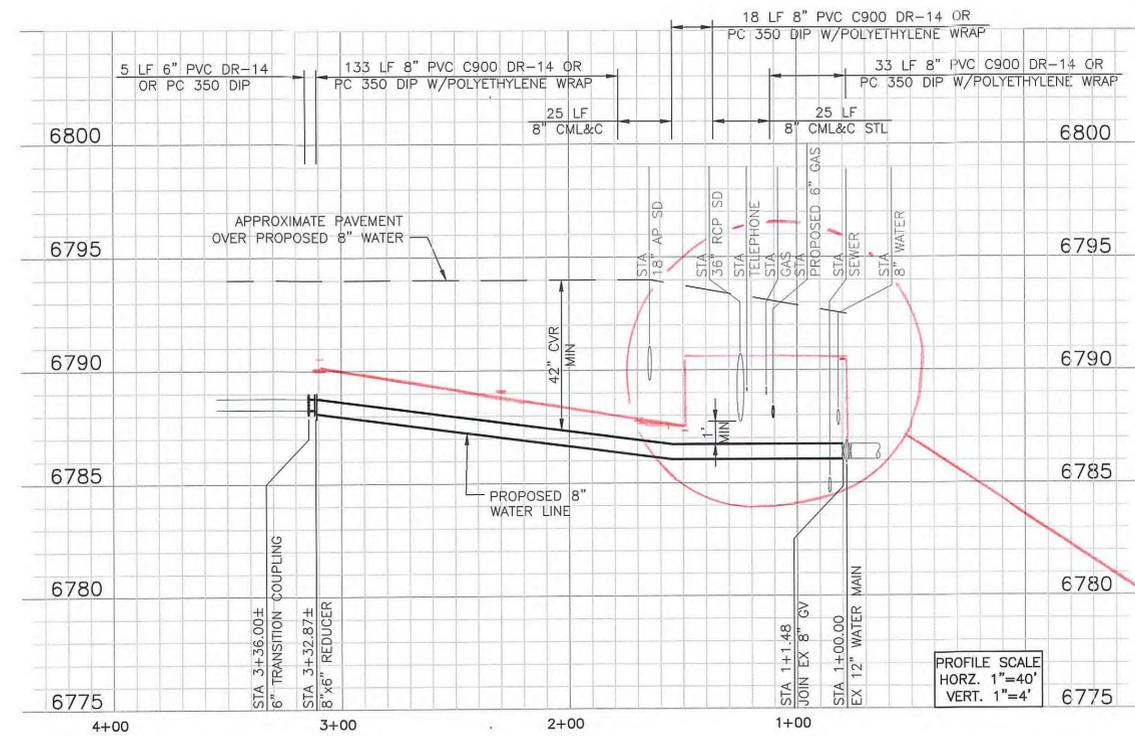


**WSC**  
 WATER SYSTEMS CONSULTING, INC.  
 9375 ARCHIBALD AVE, SUITE 200,  
 RANCHO CUCAMONGA, CA 91730  
 PHONE: (909)483-3200 FAX: (909)354-3482

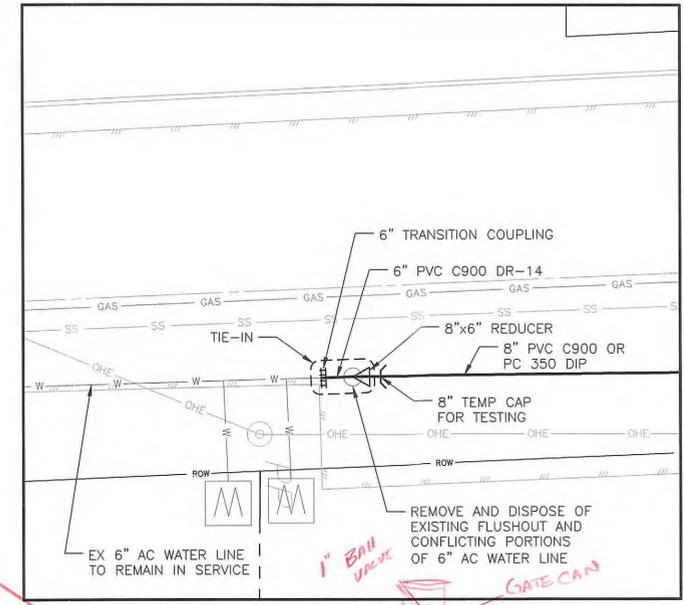
DEPARTMENT OF WATER AND POWER  
 CITY OF BIG BEAR LAKE  
 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315  
 APPROVED: \_\_\_\_\_  
 REGINALD A. LAMSON - GENERAL MANAGER  
 DATE: 6-2-16

12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT  
 AND 8" GEORGIA STREET DISTRIBUTION MAIN  
 PLAN & PROFILE  
 STA 43+80 to 48+25±

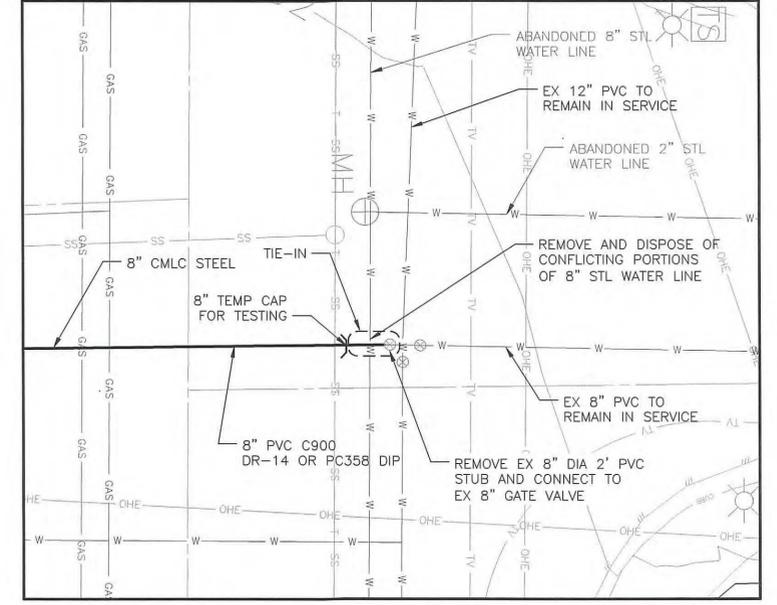
SHEET  
**DW-5**  
 SHEET 8 OF 12  
 PROJECT #  
 GWO 0100-16



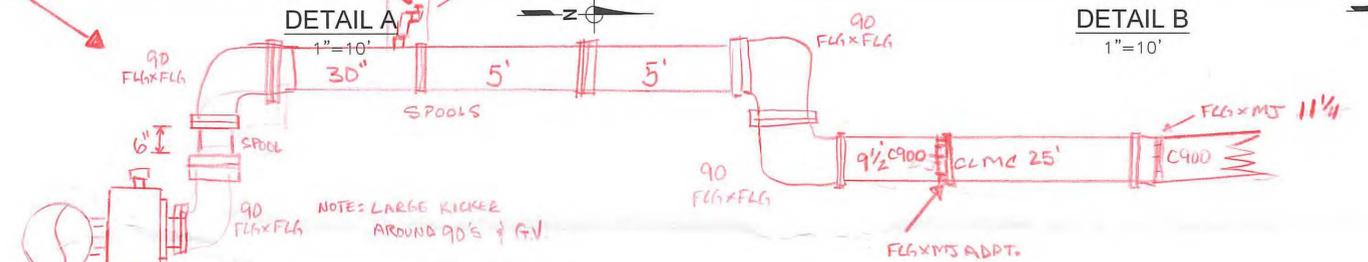
**PROFILE**  
H: 1"=40'  
V: 1"=4'



**DETAIL A**  
1"=10'



**DETAIL B**  
1"=10'



**LINE BEARING & RADIUS TABLE**

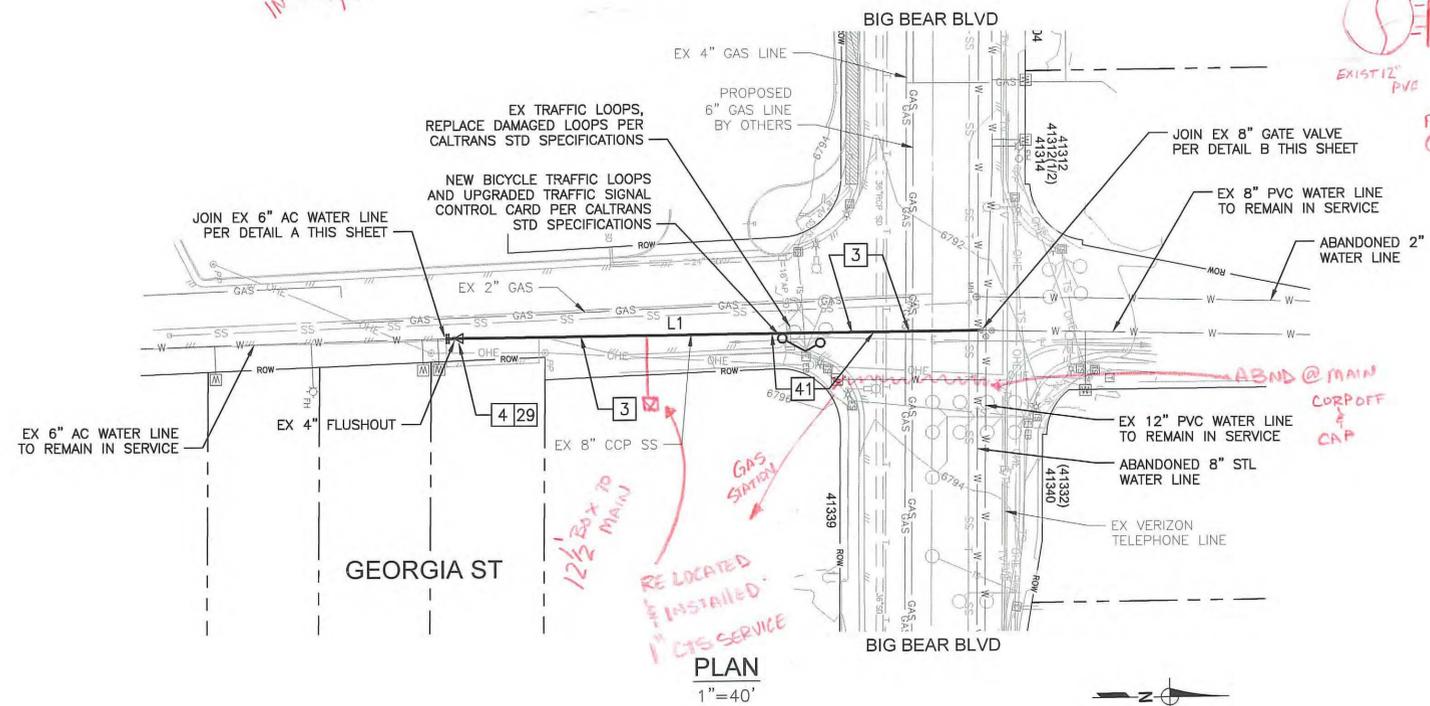
ITEM	BEARING/RADIUS	LENGTH (FT)
L1	S 0°37'55" E	231.32'

**CONSTRUCTION NOTES**

- 3 8" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
- 4 6" PVC C900 DR-14 OR PC 350 DIP WITH POLYETHYLENE WRAP WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO. 3. TRENCH PER DETAIL, SHEET G-2.
- 29 8"x6" ECCENTRIC REDUCER WITH TOP LEVEL.
- 41 8" CML&C STEEL WATERLINE AND LOCATING WIRE. RESTRAIN JOINTS PER STD DWG NO.3. TRENCH PER DETAIL, SHEET G-2. CONNECTIONS BETWEEN DIP & STL REQUIRE AN INSULATING FLANGE KIT.

**CALTRANS NOTES**

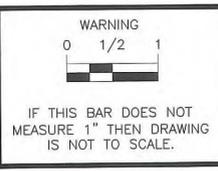
- GEORGIA STREET ELECTRICAL OPERATIONS:
- A. COORDINATE WITH CALTRANS ELECTRICAL MAINTENANCE STAFF FOR THE FIELD MEETING TO VERIFY THE LOCATIONS OF LOOPS AND LOOP ASSIGNMENTS SO THAT THE CONTRACTOR WILL SPLICE NEW LOOPS TO MATCH THE EXISTING.
  - B. BICYCLE DETECTION LOOPS SHALL BE ADDED TO IMPACTED TRAVEL LANES TO MEET THE FEDERAL LAW REQUIREMENT MANDATES.
  - C. A TYPICAL LOOP DETECTOR ASSIGNMENT SHEET E-1, IS PROVIDED ON SHEET DT-3. USE SHEET E-1 FOR ELECTRICAL WORK ON LOOPS AND SETBACKS FROM CROSSWALKS BASED ON THE POSTED SPEED LIMITS.
  - D. REPLACING THE EXISTING FRONT LOOPS WITH ONE D-LOOP AND TWO TYPE E LOOPS WILL REQUIRE THE REPLACEMENT OF EXISTING DETECTOR SENSOR CARD (222) WITH A (CANOGA 9004) INSIDE THE CONTROLLER CABINET.



**PLAN**  
1"=40'

CONFORMED FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION
5/31/16	5/31/16	CLS	CALTRANS PERMIT APPLICATION COMMENTS



DESIGNED	CLS
DRAWN	MAH
CHECKED	JHR
SCALE	

PREPARED BY:  
*Christy L. Stevens* 6/1/16  
DATE: 6/1/16  
RCE No.: 73124

DEPARTMENT OF WATER AND POWER  
CITY OF BIG BEAR LAKE  
41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315

APPROVED:  
*Reginald A. Lamson* 6-2-16  
REGINALD A. LAMSON - GENERAL MANAGER DATE

12" BIG BEAR BOULEVARD WATER MAIN REPLACEMENT AND 8" GEORGIA STREET DISTRIBUTION MAIN

**PLAN & PROFILE**  
STA 1+00 TO 3+36

SHEET  
**DW-6**  
SHEET 9 OF 12  
PROJECT #  
GWO 0100-16

RECORDED  
REQUEST OF  
Jack P. Roberts  
Escrow No.:  
Order No.

Recorded in Official Records, County of San Bernardino

3/29/2017  
1:29 PM  
EM  
SAN



**BOB DUTTON**  
ASSESSOR - RECORDER - CLERK  
  
P Counter

WHEN RECORDED MAIL TO:

This document is exempt from payment of a recording fee pursuant to California Government Code Section 27383.

City of Big Bear Lake  
Department of Water and Power  
PO Box 1929  
Big Bear Lake, CA 92315

Doc#: 2017-0130404



Titles: 1      Pages: 2  
Fees            0.00  
Taxes          0.00  
Other          0.00  
PAID            \$0.00

APN:N/A

SPACE ABOVE THIS LINE FOR RECORDER'S USE

## NOTICE OF COMPLETION

NOTICE IS HEREBY GIVEN THAT:

- The undersigned is OWNER or agent of the OWNER of the interest or estate stated below in the property hereinafter described.
- The FULL NAME of the OWNER is City of Big Bear Lake, Department of Water and Power
- The FULL ADDRESS of the OWNER is PO Box 1929, Big Bear Lake, CA 92315
- The NATURE OF THE INTEREST or ESTATE of the undersigned is: In fee.

(If other than fee, strike "in fee" and insert, for example, "purchaser under contract of purchase," or "lessee.")

5. The FULL NAMES and FULL ADDRESSES of ALL PERSONS, if any, WHO HOLD SUCH INTEREST or ESTATE with the undersigned as JOINT TENANTS or as TENANTS IN COMMON are:

NAMES	ADDRESSES
<u>N/A</u>	

6. The full names and full addresses of the predecessors in interest of the undersigned if the property was transferred subsequent to the commencement of the work of improvement herein referred to:

NAMES	ADDRESSES
<u>N/A</u>	

7. A work of improvement on the property hereinafter described was COMPLETED March 24, 2017

8. The work of improvement completed is described as follows: Water Pipeline Replacement

9. The NAME OF THE ORIGINAL CONTRACTOR, if any, for such work of improvement is Bear Valley Paving

10. The street address of said property is Big Bear Boulevard from Catalina Rd. to Trush Dr.

11. The property on which said work of improvement was completed is in the City of Big Bear Lake  
County of San Bernardino State of California, and is described as follows:

Date: 3/28/2017 Signature of Owner or agent of owner \_\_\_\_\_

*Reginald A. Lamson*  
Reginald A. Lamson  
General Manager  
City of Big Bear Lake Department of Water & Power  
Form 1054 (1/94)

Verification for INDIVIDUAL owner \_\_\_\_\_: I, the undersigned, declare under penalty of perjury under the laws of the State of California that I am the owner of the aforesaid interest or estate in the property described in the above notice; that I have read said notice, that I know and understand the contents thereof, and that the facts stated therein are true and correct.

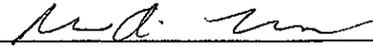
\_\_\_\_\_  
Date and Place

\_\_\_\_\_  
(Signature of owner named in paragraph 2)

Verification for NON-INDIVIDUAL owner: I, the undersigned, declare under penalty of perjury under the laws of the State of California that I am the General Manager of the aforesaid interest or estate in the property described "PRESIDENT, PARTNER; MANAGER, AGENT, ETC." in the above notice; that I have read the said notice, that I know and understand the contents thereof, and that the facts stated therein are true and correct.

3/28/2017

\_\_\_\_\_  
Date and Place



\_\_\_\_\_  
(Signature of person signing on behalf of owner)

Reginald A. Lamson

General Manager

City of Big Bear Lake, Department of Water & Power

Progress Report  
U.S. Department of the Interior  
Bureau of Reclamation  
Grant # R16AP00116  
City of Big Bear Lake Big Bear Boulevard Replacement Pipeline Project  
September 30, 2016

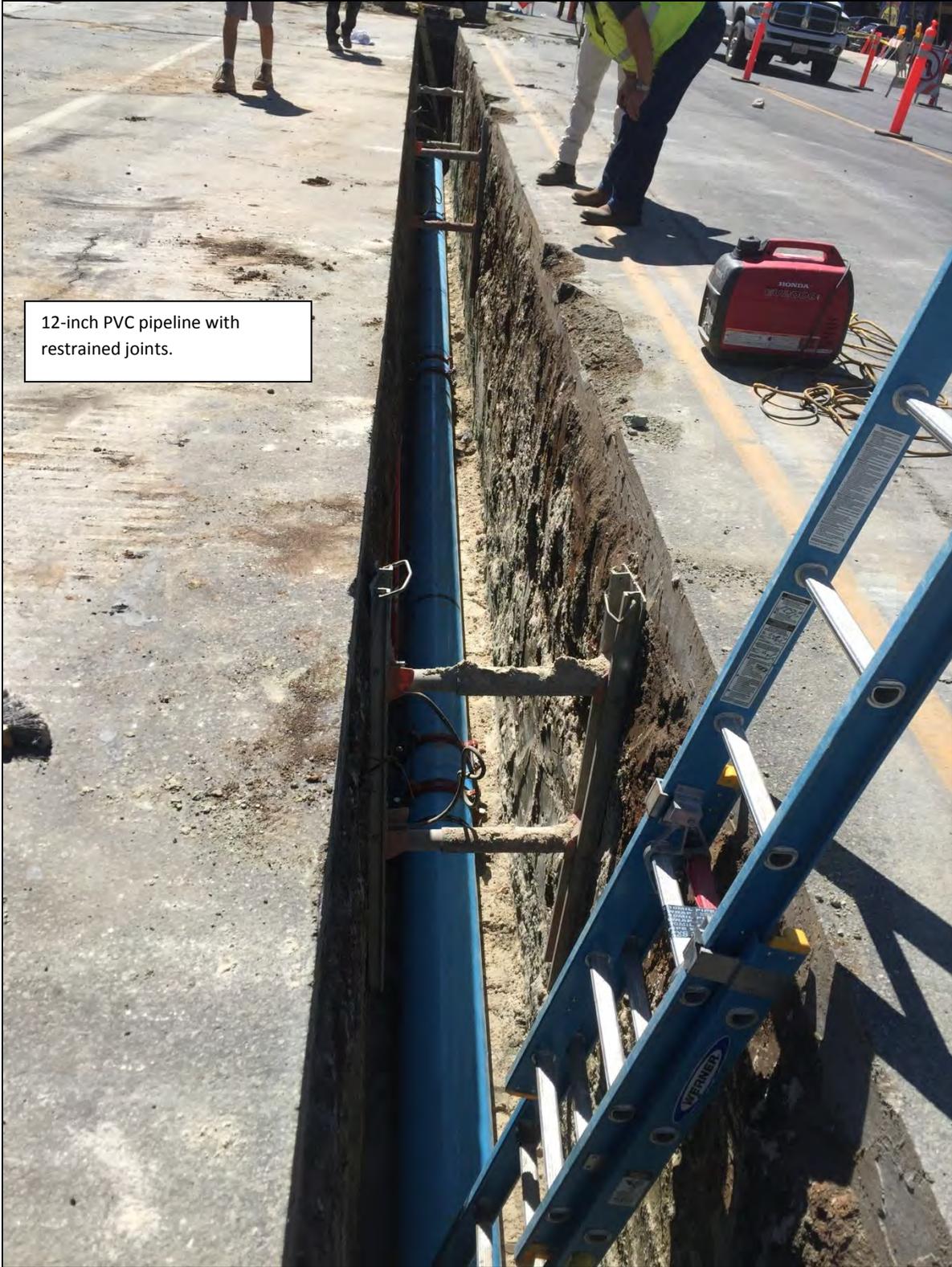
**Pipeline Construction Progress**

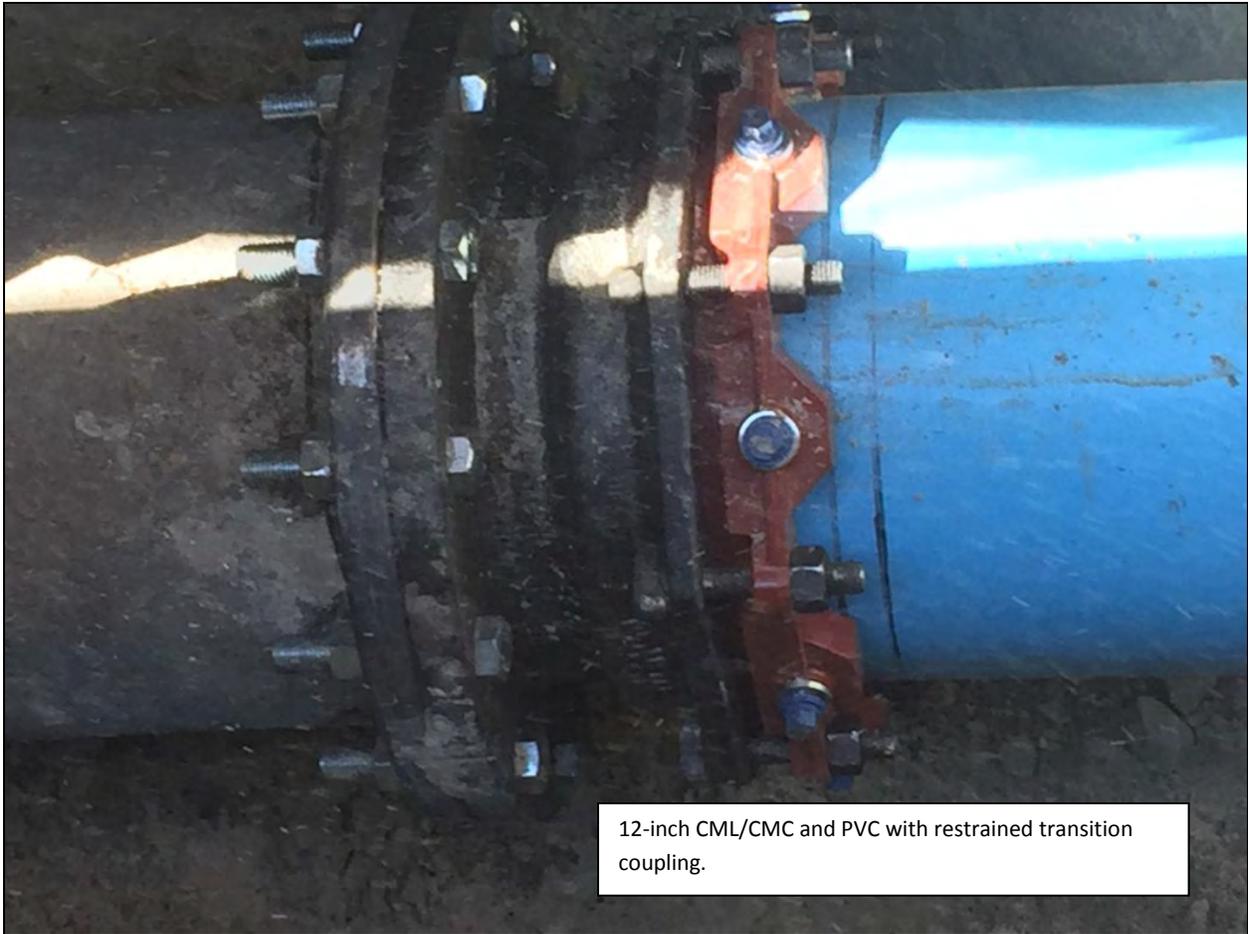
The City of Big Bear Lake – Department of Water and Power (the DWP) began construction of the Big Bear Boulevard Replacement Pipeline Project (BBB) in July of 2016. Pursuant to the Assistance Agreement R116AP00116, only construction costs are being considered eligible for reimbursement. The BBB project will replace 4,000 feet of 12-inch riveted steel pipeline that was installed in 1947 and was prone to leaks. The BBB project also includes pipeline connections to existing adjacent pipelines and connections to over thirty existing commercial customers. Through September 30, 2016, construction of the 12-inch PVC pipeline was completed. Connection to existing adjacent pipelines and connections to over thirty existing commercial customers is underway and is proving to be very time consuming due to conflicts with existing utilities and recently installed utilities.

Costs associated with the BBB project pursuant to the Assistance Agreement totaled \$735,649.72 for this reporting period. Based on construction cost, the project is 66% complete. Attached are construction progress photos:



First 20 foot piece of 12-inch PVC pipeline being installed.





12-inch CML/CMC and PVC with restrained transition coupling.

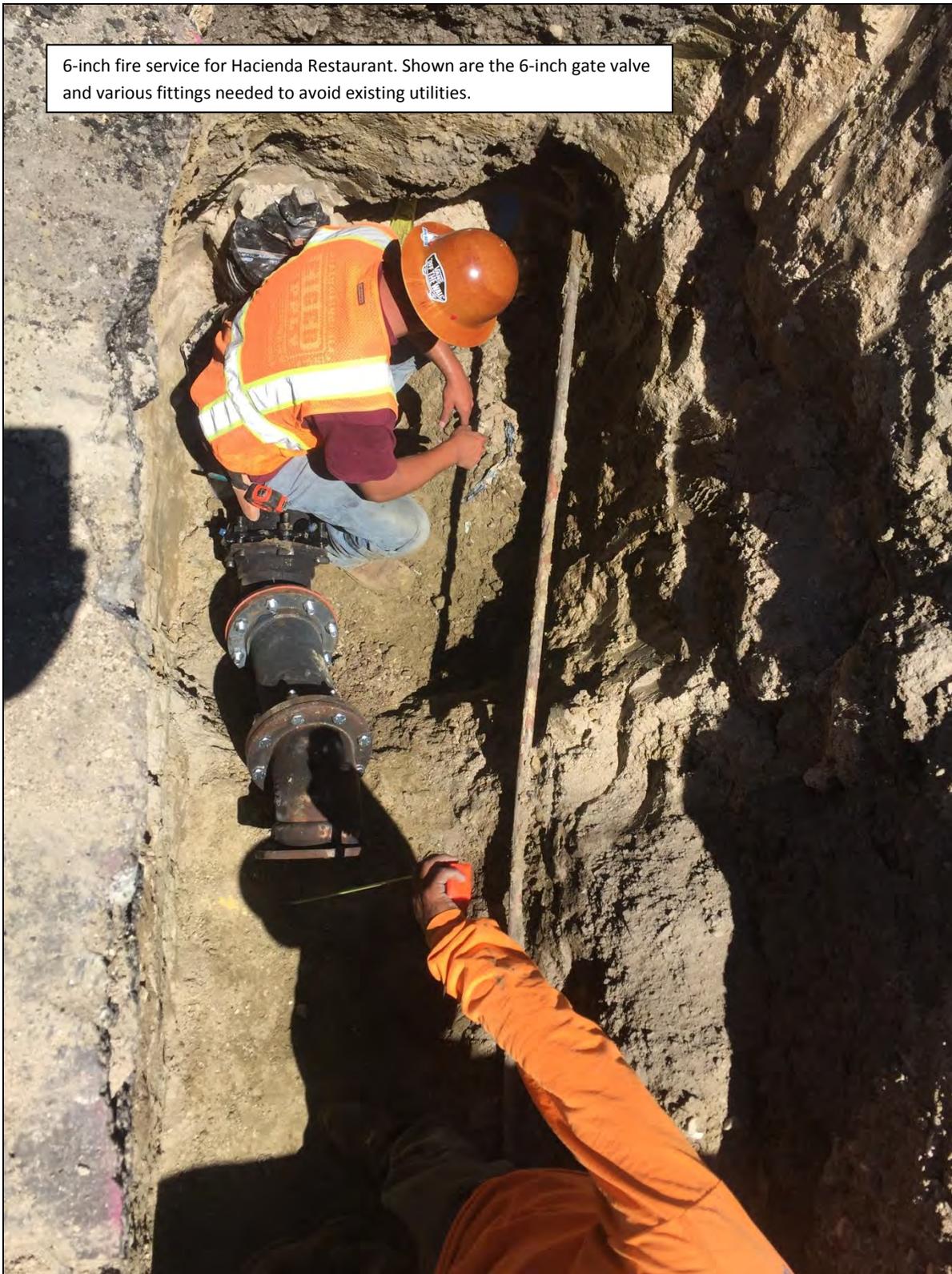


Base paving, 1 ½" grind, and 1 ½" pavement cap.



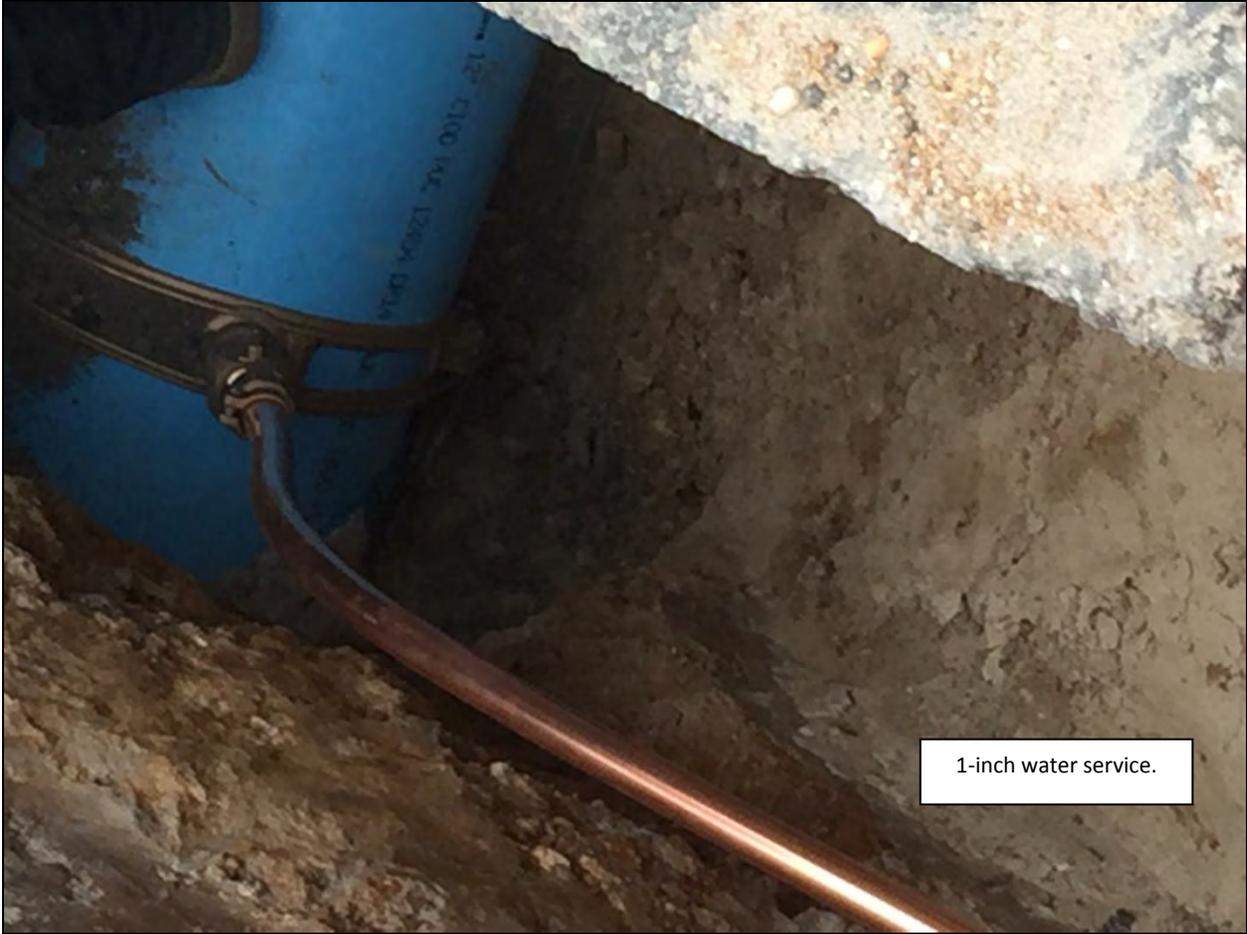
1 ½" pavement cap installation.

6-inch fire service for Hacienda Restaurant. Shown are the 6-inch gate valve and various fittings needed to avoid existing utilities.





6-inch Hacienda Restaurant fire service.





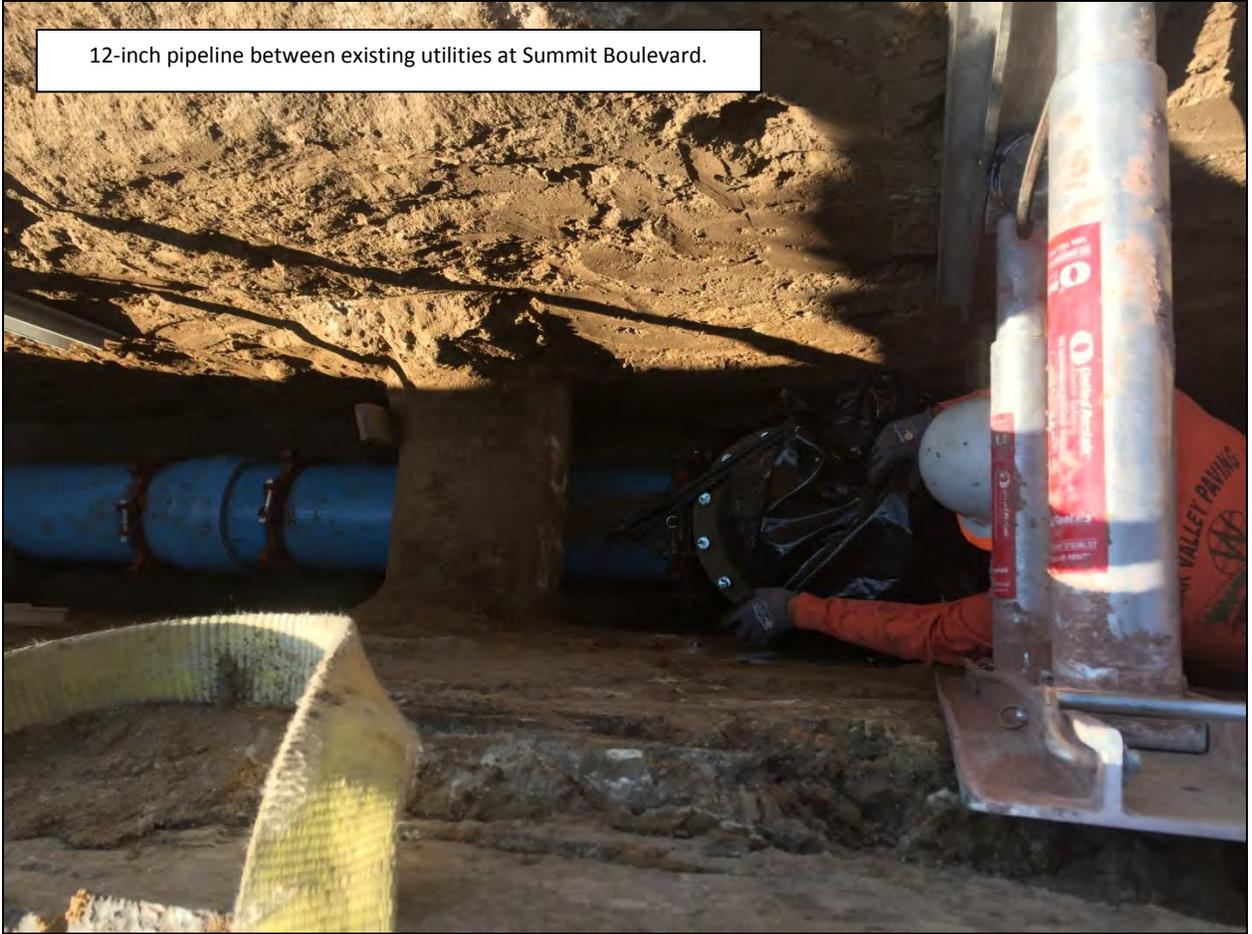


Existing utilities at Snow Summit Boulevard.





12-inch pipeline between existing utilities at Summit Boulevard.





12-inch cross with gate valves at Summit Boulevard.



Compacting backfill at Summit Boulevard.

12-inch pipeline just east of Summit Boulevard.



Progress Report  
U.S. Department of the Interior  
Bureau of Reclamation  
Grant # R16AP00116  
City of Big Bear Lake Big Bear Boulevard Replacement Pipeline Project  
March 31, 2017

**Pipeline Construction Progress**

The City of Big Bear Lake – Department of Water and Power (the DWP) began construction of the Big Bear Boulevard Replacement Pipeline Project (BBB) in July of 2016. Pursuant to the Assistance Agreement R116AP00116, only construction costs are being considered eligible for reimbursement. The BBB project replaced approximately 4,000 feet of 12-inch riveted steel pipeline that was installed in 1947 and was prone to leaks. The BBB project also includes pipeline connections to existing adjacent pipelines and connections to over thirty existing commercial customers. From September 30, 2016 to March 29, 2017, construction of the connections to existing adjacent pipelines, installation of hydrants, installation of fire services and connections to over thirty existing commercial customers was completed. The connection phase of construction proved to be very time consuming due to conflicts with existing utilities and recently installed utilities. Due to extreme winter weather, the DWP requested and was granted an extension for the completion milestone until June 30, 2017, however the milestone was achieved on March 29, 2017.

The original construction cost for the BBB project was \$1,193,914.25. During construction, a significant number of pipeline alignment revisions occurred due to conflicts with existing and recently constructed utilities. Some facilities were eliminated from the project, such as hydrants, commercial fire services, and commercial water services. These revisions resulted in four construction cost change orders resulting in a net decrease to the contract amount of \$11,533.13. The revised construction cost for the BBB project is \$1,182,381.12. Costs associated with the BBB project pursuant to the Assistance Agreement totaled \$446,731.40 for this reporting period. Notice of completion for this project was filed with San Bernardino County on March 29, 2017. Attached are construction progress photos:

Replacement hydrant installation. The new location is more accessible for fire fighting equipment.



Replacement commercial water service, prior to final connection.



12-inch gate valve with blind flange and test piping for final acceptance testing.





8-inch Interconnection at Big Bear Blvd. and Summit Blvd. North.



8-inch Interconnection at Big Bear Blvd. and Thrush Drive.



12-inch Interconnection at Big Bear Blvd. and China Garden Road North.

## FEDERAL FINANCIAL REPORT

(Follow form instructions)

1. Federal Agency and Organizational Element to Which Report is Submitted <b>US Department of the Interior Bureau of Reclamation</b>	2. Federal Grant or Other Identifying Number Assigned by Federal Agency (To report multiple grants, use FFR Attachment) <b>R16AP00116</b>	Page	of
		1	1
pages			

3. Recipient Organization (Name and complete address including Zip code)  
**City of Big Bear Lake Department of Water and Power PO Box 1929 Big Bear Lake CA 92315-1929**

4a. DUNS Number 624504635	4b. EIN 30-0678743	5. Recipient Account Number or Identifying Number (To report multiple grants, use FFR Attachment)  USBR-BBB	6. Report Type <input type="checkbox"/> Quarterly <input checked="" type="checkbox"/> Semi-Annual <input type="checkbox"/> Annual <input type="checkbox"/> Final	7. Basis of Accounting  <input type="checkbox"/> Cash <input checked="" type="checkbox"/> Accrual
------------------------------	-----------------------	--	--	---

8. Project/Grant Period From: (Month, Day, Year) <b>05/01/2016</b>	To: (Month, Day, Year) <b>06/30/17</b>	9. Reporting Period End Date (Month, Day, Year) <b>03/31/17</b>
--	---	---

**10. Transactions** Cumulative

*(Use lines a-c for single or multiple grant reporting)*

<b>Federal Cash (To report multiple grants, also use FFR Attachment):</b>	
a. Cash Receipts	\$234,967.13
b. Cash Disbursements	\$234,967.13
c. Cash on Hand (line a minus b)	-0-

*(Use lines d-o for single grant reporting)*

**Federal Expenditures and Unobligated Balance:**

d. Total Federal funds authorized	\$299,000.00
e. Federal share of expenditures	\$234,967.13
f. Federal share of unliquidated obligations	\$47,304.26
g. Total Federal share (sum of lines e and f)	\$282,271.39
h. Unobligated balance of Federal funds (line d minus g)	\$16,728.61

**Recipient Share:**

i. Total recipient share required	\$894,914.23
j. Recipient share of expenditures	\$846,814.17
k. Remaining recipient share to be provided (line i minus j)	\$48,100.06

**Program Income:**

l. Total Federal program income earned	\$-0-
m. Program income expended in accordance with the deduction alternative	
n. Program income expended in accordance with the addition alternative	
o. Unexpended program income (line l minus line m or line n)	

11. Indirect Expense	a. Type	b. Rate	c. Period From	Period To	d. Base	e. Amount Charged	f. Federal Share
g. Totals:							-0-

12. Remarks: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation:

13. Certification: By signing this report, I certify that it is true, complete, and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent information may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)

a. Typed or Printed Name and Title of Authorized Certifying Official <b>Reginald A. Lamson, General Manager - DWP</b>	c. Telephone (Area code, number and extension) 909-866-5050
b. Signature of Authorized Certifying Official 	d. Email address rlamson@bbldwp.com
	e. Date Report Submitted (Month, Day, Year) <b>04-28-2017</b>
14. Agency use only:	

Standard Form 425  
OMB Approval Number: 0348-0061  
Expiration Date: 10/31/2011

**Paperwork Burden Statement**  
 According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is 0348-0061. Public reporting burden for this collection of information is estimated to average 1.5 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0060), Washington, DC 20503.

## FEDERAL FINANCIAL REPORT

(Follow form instructions)

1. Federal Agency and Organizational Element to Which Report is Submitted <b>US Department of the Interior Bureau of Reclamation</b>	2. Federal Grant or Other Identifying Number Assigned by Federal Agency (To report multiple grants, use FFR Attachment) <b>R16AP00116</b>	Page	of
		1	1
pages			

3. Recipient Organization (Name and complete address including Zip code)  
**City of Big Bear Lake Department of Water and Power PO Box 1929 Big Bear Lake CA 92315-1929**

4a. DUNS Number 624504635	4b. EIN 30-0678743	5. Recipient Account Number or Identifying Number (To report multiple grants, use FFR Attachment) USBR-BBB	6. Report Type <input type="checkbox"/> Quarterly <input type="checkbox"/> Semi-Annual <input type="checkbox"/> Annual <input checked="" type="checkbox"/> Final	7. Basis of Accounting <input type="checkbox"/> Cash <input checked="" type="checkbox"/> Accrual
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8. Project/Grant Period From: (Month, Day, Year) <b>05/01/2016</b>	To: (Month, Day, Year) <b>06/30/17</b>	9. Reporting Period End Date (Month, Day, Year) <b>06/30/17</b>
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10. Transactions Cumulative

*(Use lines a-c for single or multiple grant reporting)*

**Federal Cash (To report multiple grants, also use FFR Attachment):**

a. Cash Receipts	\$300,000.00
b. Cash Disbursements	\$300,000.00
c. Cash on Hand (line a minus b)	-0-

*(Use lines d-o for single grant reporting)*

**Federal Expenditures and Unobligated Balance:**

d. Total Federal funds authorized	\$300,000.00
e. Federal share of expenditures	\$300,000.00
f. Federal share of unliquidated obligations	-0-
g. Total Federal share (sum of lines e and f)	\$300,000.00
h. Unobligated balance of Federal funds (line d minus g)	-0-

**Recipient Share:**

i. Total recipient share required	\$882,381.12
j. Recipient share of expenditures	\$882,381.12
k. Remaining recipient share to be provided (line i minus j)	\$-0-

**Program Income:**

l. Total Federal program income earned	\$-0-
m. Program income expended in accordance with the deduction alternative	
n. Program income expended in accordance with the addition alternative	
o. Unexpended program income (line l minus line m or line n)	

11. Indirect Expense	a. Type	b. Rate	c. Period From	Period To	d. Base	e. Amount Charged	f. Federal Share
g. Totals:							-0-

12. Remarks: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation:

13. Certification: By signing this report, I certify that it is true, complete, and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent information may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)

a. Typed or Printed Name and Title of Authorized Certifying Official <b>Reginald A. Lamson, General Manager - DWP</b> 	c. Telephone (Area code, number and extension) 909-866-5050  d. Email address rlamson@bbldwp.com  e. Date Report Submitted (Month, Day, Year) <b>09-25-2017</b>
b. Signature of Authorized Certifying Official	14. Agency use only:

Standard Form 425  
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**Sources**

	Big Bear Blvd	Georgia Main Ext	Blauer's Fire Service Line					Total
IBANK	\$ 960,821.00	\$ 89,179.00						\$ 1,050,000.00
USBR	300,000.00							300,000.00
DWP	65,079.62		3,130.00					68,209.62
<b>Total Sources</b>	<b>\$ 1,325,900.62</b>	<b>\$ 89,179.00</b>	<b>\$ 3,130.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,418,209.62</b>

**USES**

Construction	Big Bear Blvd	Georgia Main Ext	Blauers Service	Contract Total	Contingency		Grand Total
					Big Bear Blvd	Georgia Main Ext	
Original Purchase Order	\$ 1,257,820.00			\$ 1,257,820.00	\$ 62,891.00	\$ -	\$ 1,320,711.00
PO Amendment #1	(62,506.00)	62,506.00		-	(3,125.30)	3,125.30	-
PO amendment #2	(2,000.00)	2,000.00		-	(100.00)	100.00	-
PO amendment #3		13,644.70		13,644.70	(13,644.70)		-
PO amendment #4	(84,527.75)			(84,527.75)	84,527.75		-
PO Amendment #5	82,544.97	3,225.30		85,770.27	(82,544.97)	(3,225.30)	-
PO Amendment #6	(5,820.10)	3,000.00		(2,820.10)	2,820.10		-
PO Amendment #7	(3,130.00)		3,130.00	-			-
<b>PO Total</b>	<b>\$ 1,182,381.12</b>	<b>\$ 84,376.00</b>	<b>\$ 3,130.00</b>	<b>\$ 1,269,887.12</b>	<b>\$ 50,823.88</b>	<b>\$ -</b>	<b>\$ 1,320,711.00</b>
Original Contract	\$ 1,193,314.00	\$ 64,506.00		\$ 1,257,820.00	\$ 59,665.70	\$ 3,225.30	\$ 1,320,711.00
CO#1		16,870.00		16,870.00	(13,644.70)	(3,225.30)	-
CO#2	(84,527.75)			(84,527.75)	84,527.75		-
CO#3	82,544.97			82,544.97	(82,544.97)		-
CO#4	(5,820.10)	3,000.00		(2,820.10)	2,820.10		-
CO#5 & 6	(3,130.00)		3,130.00	-			-
<b>Revised Contract</b>	<b>\$ 1,182,381.12</b>	<b>\$ 84,376.00</b>	<b>\$ 3,130.00</b>	<b>\$ 1,269,887.12</b>	<b>\$ 50,823.88</b>	<b>\$ -</b>	<b>\$ 1,320,711.00</b>

Payments	Big Bear Blvd	Georgia Main Ext	Blauers Service					Total
7/7/2016	\$ 99,499.75							\$ 99,499.75
8/4/2016		77,307.20						77,307.20
9/1/2016	327,018.50							327,018.50
10/14/2016	309,131.47							309,131.47
10/28/2016	85,148.60							85,148.60
11/23/2016	96,270.20							96,270.20
12/22/2016	22,800.00							22,800.00
4/14/2017	186,367.04	2,850.00						189,217.04
4/28/2017	56,145.56	4,218.80	3,130.00					63,494.36
<b>Total Construction</b>	<b>\$ 1,182,381.12</b>	<b>\$ 84,376.00</b>	<b>\$ 3,130.00</b>					<b>\$ 1,269,887.12</b>

Unused contingency \$ 50,823.88 \$ 50,823.88

**Professional Services**

Payments	Big Bear Blvd	Georgia Main Ext	Blauers Service					Total
Environmental	\$ 1,000.00							\$ 1,000.00
Design	97,742.89	4,803.00						102,545.89
Plan reproduction	929.72							929.72
Construction Management	43,846.89							43,846.89
<b>Total Professional Services</b>	<b>\$ 143,519.50</b>	<b>\$ 4,803.00</b>	<b>\$ -</b>					<b>\$ 148,322.50</b>

**Total Project Costs**

Environmental	\$ 1,000.00							\$ 1,000.00
Design	97,742.89	4,803.00						102,545.89
Plan reproduction	929.72							929.72
Construction Management	43,846.89							43,846.89
Construction	1,182,381.12	84,376.00	3,130.00					1,269,887.12
<b>Total Project Costs</b>	<b>\$ 1,325,900.62</b>	<b>\$ 89,179.00</b>	<b>\$ 3,130.00</b>					<b>\$ 1,418,209.62</b>

**PAID BY:**

	IBANK		USBR		DWP		Total	
	Big Bear Blvd	Other	Big Bear Blvd	Other	Big Bear Blvd	Other	Big Bear Blvd	Other
Environmental	\$ 1,000.00		\$ -	\$ -			\$ 1,000.00	\$ -
Design	97,742.89	4,803.00	-	-	-	-	97,742.89	4,803.00
Plan reproduction	929.72		-	-	-	-	929.72	-
Construction Management	43,846.89		-	-	-	-	43,846.89	-
Construction	817,301.50	84,376.00	300,000.00	-	65,079.62	3,130.00	1,182,381.12	87,506.00
<b>Total Project Costs</b>	<b>\$ 960,821.00</b>	<b>\$ 89,179.00</b>	<b>\$ 300,000.00</b>	<b>\$ -</b>	<b>\$ 65,079.62</b>	<b>\$ 3,130.00</b>	<b>\$ 1,325,900.62</b>	<b>\$ 92,309.00</b>

## WATER CONSERVATION FIELD SERVICES PROGRAM PROJECT BENEFITS

Please check the appropriate water management benefits for agricultural or urban measures that you anticipate addressing in your proposal. Where available, please provide an estimate of the benefit to units (i.e. Acre Feet, Dollars, Percentages)

**It is essential to establish benefits of the Program. Please help us with your best estimate.**

Reduces Leaks and Seepage	<u>  17  </u> Acre Feet/Year
Reduces System Spills	<u>  N/A  </u> Acre Feet/Year
Makes More Water Available	<u>  17  </u> Acre Feet/Year
Reduces Operation Costs	<u>  N/A  </u> \$ /Year
Reduces Energy Costs	<u> \$38,000 </u> \$ /Year
Reduces Waste Treatment Costs	<u>  N/A  </u> \$ /Year
Improves Crop Yield	<u>  N/A  </u> Percent/Year
Reduces On-Farm Costs	<u>  N/A  </u> \$ /Year
Reduces Per Capita Use	<u>  0.6  </u> Gallons/Capita/Day
Provides Technical Training	<u>  N/A  </u> # of People
Provides Water Conservation Education	<u>  N/A  </u> # of People
Improves Water Supply Reliability	<u>  N/A  </u> Frequency (Years)*
* Estimate of how often the improvement will occur (i.e. 1 = each year)	
Delays Construction of New Supplies	<u>  one  </u> Years
Reduces Drainage/Erosion	<u>  N/A  </u> Tons
Improves Water Quality	<u>  N/A  </u> % reduction of <u>  N/A  </u>
Enhances Aquatic/Riparian Habitat	<u>  N/A  </u> Years

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION

Southern California Area Office

Agreement Number  
R16AP00116

Agreement Date  
July 31, 2016

**RELEASE OF CLAIMS**

WHEREAS, by the terms of the above-identified agreement for

**12-inch Big Bear Boulevard Pipeline Replacement Project**

entered into by the United States of America, hereinafter also referred to as the United States, and the grant recipient whose name appears on the agreement as

**City of Big Bear Lake, Department of Water and Power**

it is provided that after completion of all work, the grant recipient will furnish the United States with a release of all claims;

NOW, THEREFORE, in consideration of the above premises and the payment by the United States to the recipient the total amount of

**\$300,000.00**

the grant recipient hereby remises, releases, and forever discharges the United States, its officers, agents, and employees, of and from all manner of debts, dues, liabilities, obligations, accounts, claims, and demands whatsoever, in law and equity, under or by virtue of the said agreement except:

IN WITNESS WHEREOF, the agreement recipient has executed this release this 25th day of September, 2017.

By   
(Signature)

Reginald A. Lamson  
(Name -- Type or Print)

General Manager  
(Title)

City of Big Bear Lake, Department of Water and Power  
(Agreement Recipient)