City of Ketchum

CITY COUNCIL MEETING AGENDA MEMO

Meeting Date:	May 19, 2025	Staff Member/Dept:	Ben Whipple – Public Works

Agenda Item: Water Main Relocate Gem St.-Garnet St. Project

Recommended Motion:

"Council moves to award the Water Main Relocate Gem St.-Garnet St. Project to Lunceford Excavation"

Reasons for Recommendation:

- Per Idaho procurement laws, the project was solicited to 3 local contractors for pricing
- Per ITD Elkhorn to River Project, the city will be required to offset the water main in 4 locations between Gem St. and Garnet St. on HWY 75 South of town to make room for ITD proposed catch basins.
- Each offset will be about 50 ft in length. This work will also consist of relocation of a fire hydrant at the corner of Garnet St and HWY 75 along with re-tapping the service supply to the Lift Tower Lodge. The work will coincide with ITD and Knife River's work in that section when scheduled this summer.

Policy Analysis and Background (non-consent items only):

Sustainability Impact:

No impact

Financial Impact:

None OR Adequate funds exist in account:	Adequate funds exist in the Water CIP Fund

Attachments:

1. Drawings for proposed project
2. Lunceford Excavation Bid
3. Lunceford PO #25126

KETCHUM WATER MAIN MODIFICATIONS BETWEEN GARNET ST. & GEM ST.

KETCHUM, IDAHO

MARCH 2025

GENERAL CONSTRUCTIONS NOTES

1. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH CITY OF KETCHUM STANDARDS AND THE MOST CURRENT EDITION OF THE "IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION" (ISPWC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND KEEPING A COPY OF THE CITY OF KETCHUM AND ISPWC STANDARDS ON SITE DURING CONSTRUCTION.
2. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS IN AN APPROXIMATE WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING UTILITIES PRIOR TO COMMENCING AND DURING THE CONSTRUCTION. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH RESULT FROM HIS FAILURE TO ACCURATELY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. CONTRACTOR SHALL CALL DIGLINE (1-800-342-1585) TO LOCATE ALL EXISTING UNDERGROUND UTILITIES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.
3. CONTRACTOR SHALL COORDINATE RELOCATIONS OF DRY UTILITY FACILITIES (POWER, CABLE, PHONE, TV) WITH THE APPROPRIATE UTILITY FRANCHISE.
4. THE CONTRACTOR SHALL CLEAN UP THE SITE AFTER CONSTRUCTION SO THAT IT IS IN A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION (THIS INCLUDES, BUT IS NOT LIMITED TO, ENCROACHMENT PERMITS AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION GENERAL PERMIT (CGP) PERMIT COVERAGE).
6. ALL CLEARING & GRUBBING SHALL CONFORM TO ISPWC SECTION 201.
7. ALL EXCAVATION & EMBANKMENT SHALL CONFORM TO ISPWC SECTION 202. SUBGRADE SHALL BE EXCAVATED AND SHAPED TO LINE, GRADE, AND CROSS-SECTION SHOWN ON THE PLANS. THE SUBGRADE SHALL BE COMPACTED TO 95% OF STANDARD DENSITY PER ISPWC SECTION 202. THE CONTRACTOR SHALL WATER OR AERATE SUBGRADE AS NECESSARY TO OBTAIN OPTIMUM MOISTURE CONTENT. IN-LIEU OF DENSITY MEASUREMENTS, THE SUBGRADE MAY BE PROOF-ROLLED TO THE APPROVAL OF THE ENGINEER.
   - PROOF-ROLLING: AFTER EXCAVATION TO THE SUBGRADE ELEVATION AND PRIOR TO PLACING COURSE GRAVEL, THE CONTRACTOR SHALL PROOF ROLL THE SUBGRADE WITH A 5-TON SMOOTH DRUM ROLLER, LOADED WATER TRUCK, OR LOADED DUMP TRUCK, AS ACCEPTED BY THE ENGINEER. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF UNSUITABLE SUBGRADE MATERIAL AREAS, AND/OR AREAS NOT CAPABLE OF COMPACTION ACCORDING TO THESE SPECIFICATIONS. UNSUITABLE OR DAMAGED SUBGRADE IS WHEN THE SOIL MOVES, PUMPS AND/OR DISPLACES UNDER ANY TYPE OF PRESSURE INCLUDING FOOT TRAFFIC LOADS.
   - IF, IN THE OPINION OF THE ENGINEER, THE CONTRACTOR'S OPERATIONS RESULT IN DAMAGE TO, OR PROTECTION OF, THE SUBGRADE, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, REPAIR THE DAMAGED SUBGRADE BY OVER-EXCAVATION OF UNSUITABLE MATERIAL TO FIRM SUBSOIL, LINE EXCAVATION WITH GEOTEXTILE FABRIC, AND BACKFILL WITH PIT RUN GRAVEL.
8. ALL 2" MINUS GRAVEL SHALL CONFORM TO ISPWC 802, TABLE 1, TYPE II. THE AGGREGATE SHALL BE PLACED AND COMPACTED IN CONFORMANCE WITH ISPWC SECTION 802.
9. ALL 3/4" MINUS CRUSHED GRAVEL SHALL CONFORM TO ISPWC 802, TABLE 1, TYPE I. THE AGGREGATE SHALL BE PLACED IN CONFORMANCE WITH ISPWC SECTION 802.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL PER THE CURRENT EDITION OF THE US DEPARTMENT OF TRANSPORTATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). A TRAFFIC CONTROL PLAN SHALL BE APPROVED BY THE CITY OF KETCHUM AND THE IDAHO TRANSPORTATION DEPARTMENT (ITD) PRIOR TO CONSTRUCTION.
11. ALL TRENCHING SHALL CONFORM TO ISPWC STANDARD DRAWING SD-301 (SEE DETAIL 1 / C0.2).
12. PER IDAHO CODE § 55-1613, THE CONTRACTOR SHALL RETAIN AND PROTECT ALL MONUMENTS, ACCESSORIES TO CORNERS, BENCHMARKS AND POINTS SET IN CONTROL SURVEYS; ALL MONUMENTS, ACCESSORIES TO CORNERS, BENCHMARKS AND POINTS SET IN CONTROL SURVEYS THAT ARE LOST OR DISTURBED BY CONSTRUCTION SHALL BE REESTABLISHED AND RE-MONUMENTED, AT THE EXPENSE OF THE AGENCY OR PERSON CAUSING THEIR LOSS OR DISTURBANCE AT THEIR ORIGINAL LOCATION OR BY SETTING OF A WITNESS CORNER OR REFERENCE POINT OR A REPLACEMENT BENCHMARK OR CONTROL POINT, BY OR UNDER THE DIRECTION OF A PROFESSIONAL LAND SURVEYOR.
13. EXISTING CONDITIONS, BOUNDARIES, AND EASEMENTS SHOWN HEREON ARE PER A SURVEY RECEIVED ON APRIL11, 2023, FROM IDAHO TRANSPORTATION DEPARTMENT (ITD).
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING A MATERIALS TESTING COMPANY TO VERIFY ALL COMPACTION AND MATERIAL PLAN AND SPECIFICATION REQUIREMENTS ARE MET.

WATER MAIN CONSTRUCTION NOTES

1. WATER MAIN AND SERVICE CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE CITY OF KETCHUM STANDARDS. NO WATER MAIN OR SERVICES SHALL BE BACKFILLED UNTIL THEY HAVE BEEN INSPECTED AND APPROVED BY THE CITY.
2. WATER MAINS AND SERVICES SHALL HAVE A MINIMUM COVER OF SIX FEET (6.0'), MEASURED FROM FINISHED GRADE.
3. ALL 4" AND LARGER WATER MAINS SHALL BE CONSTRUCTED WITH AWWA C-900, CLASS 235 PVC PIPE. ALL WATER MAINS SHALL BE PRESSURE TESTED IN CONFORMANCE WITH ISPWC SECTION 401.3.6 AND THE CITY OF KETCHUM STANDARDS. TRACER WIRE SHALL BE NO. 12 GAUGE COPPER LOCATING WIRE INSULATED PER ISPWC SECTION 401 AND THE CITY OF KETCHUM SPECIFICATIONS.
4. SEE FLUSHING AND DISINFECTION REQUIREMENTS THIS SHEET. ALL BACTERIA TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER AND THE CITY OF KETCHUM WATER AND SEWER DEPARTMENT FOR FINAL APPROVAL AND ACCEPTANCE PRIOR TO ACTIVATION OF THE WATER MAIN AND SERVICES.
5. ALL WATER DISTRIBUTION AND WATER SERVICE INSTALLATION MATERIALS AND CHEMICALS USED TO DISINFECT POTABLE WATER COMPONENTS MUST BE COMPLIANT WITH ANSI/NSF STANDARD 60/61. ALL MATERIALS MUST BE COMPLIANT WITH THE LOW LEAD RULE (<0.25%Pb BY WEIGHT).
6. ALL TEES, PLUGS, CAPS AND BENDS SHALL BE SECURED AND ANCHORED BY SUITABLE THRUST BLOCKING (MECHANICAL RESTRAINTS ARE NOT ALLOWED). THRUST BLOCKS SHALL CONFORM TO ISPWC SD-403 AND THE CITY OF KETCHUM STANDARDS.
7. ALL VALVES SHALL BE GATE VALVES WITH NON-RISING STEM, "O" RING SEALS, AND TWO-INCH OPERATING NUTS MEETING AWWA STANDARDS PER ISPWC SECTION 402. ALL GATE VALVES LOCATED IN PAVEMENT SHALL BE FITTED WITH CAST IRON VALVE BOXES WITH CONCRETE COLLARS PER ISPWC SD-406 AND THE CITY OF KETCHUM SPEFICIATIONS.
8. ALL WATER MAIN FITTINGS SHALL BE DUCTILE IRON CONFORMING TO THE REQUIREMENTS OF AWWA C-110 FOR 250 PSI WORKING PRESSURE. JOINTS ON BURIED VALVES SHALL BE MECHANICAL JOINTS UNLESS OTHERWISE NOTED. FLANGED JOINTS SHOULD IN GENERAL BE AVOIDED UNDERGROUND.
10. ALL TAPPING SADDLES SHALL BE CONSTRUCTED FROM T-304 STAINLESS STEEL WITH ANSI/AWWA C-207 CLASS 150 FLANGES. ALL WELDS SHALL CONFORM TO ASTM A-380. THE TEST OUTLET SHALL BE 3/4" NPT WITH 3/4" NPT PLUG.
11. ALL WATER MAINS SHALL COMPLY WITH IDAPA 58.01.08.542.07.a AND IDAPA 58.01.08.542.07.b WHICH ADDRESS THE REQUIREMENTS FOR SEPARATION DISTANCES BETWEEN POTABLE WATER LINES (INCLUDING MAINS AND SERVICE LINES) WITH NON-POTABLE LINES (SEE ILLUSTRATION OF THESE SEPARATION REQUIREMENTS ON THIS SHEET). IN ADDITION, WATER MAINS SHALL BE CONSTRUCTED WITH AT LEAST 25 FEET HORIZONTAL SEPARATION FROM INFILTRATION TRENCHES AND DRY WELLS.
12. ALL WATER SERVICES SHALL BE IN COMPLIANCE WITH ISPWC SECTION 404 AND THE CITY OF KETCHUM STANDARDS. A USC EC APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE INSTALLED ON PRIMARY SERVICE CONNECTIONS (INCLUDING FIRE SUPPRESSION SERVICES, IF APPLICABLE) IN ACCORDANCE WITH THE CITY OF KETCHUM WATER DEPARTMENT, FIRE MARSHAL, PLUMBING BUREAU, AND STATE OF IDAHO BACKFLOW PREVENTION REQUIREMENTS. IN AREAS WHERE MULTIPLE WATER SERVICE LINES ARE IN SAME TRENCH SEPARATE LINES BY 6".
13. THE CONTRACTOR SHALL KEEP THE EXISTING WATER DISTRIBUTION SYSTEM LIVE, TO THE GREATEST EXTENT POSSIBLE, WHILE INSTALLING THE NEW WATER MAIN AND SERVICES MINIMIZING DISRUPTION TO EXISTING WATER SYSTEM USERS. THE NEW WATER MAIN AND SERVICES SHALL BE INSTALLED, BACKFILLED, PRESSURE TESTED AND DISINFECTED AND FLUSHED PRIOR TO CONNECTING THE NEW MAIN TO THE EXISTING MAIN. THE MAXIMUM ALLOWABLE SERVICE OUTAGE FOR ANY SHUTDOWN IS 4 HOURS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROMPTLY REMOVING AND DISPOSING OF WATER ENTERING THE TRENCH DURING THE TIME THE TRENCH IS BEING PREPARED FOR INSTALLATION OF THE UTILITY, INCLUDING COMPLETION OF BACKFILL OF THE PIPE ZONE, AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL DISPOSE OF THE WATER IN A SUITABLE MANNER WITHOUT CAUSING DAMAGE TO PROPERTY.
15. EXTRA FITTINGS MAY BE NECESSARY IN ADDITION TO THOSE SHOWN HEREON TO CONTROL ELEVATION AND AVOID UNDERGROUND CONFLICTS.

VICINITY MAP

N.T.S.

SHEET INDEX

CIVIL ENGINEER

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OPAL ENGINEERING, PLLC
416 S. MAIN STREET SUITE 204
PO BOX 2530
HAILEY, IDAHO 83333

State of Idaho • Department of Environmental Quality

PLANS & SPECIFICATIONS REVIEW

These plans and/or specifications have been reviewed for compliance with Department of Environmental Quality rules. This review does not relieve the owner, engineer, or the contractor of the responsibility to design or construct these facilities in compliance with all current applicable federal, state, and local laws, rules, regulations, or ordinances. Plans and/or specifications must be resubmitted for review if construction is not completed within one year from approval date.

Jeff Kennedy, P.E. — Reviewing DEQ Engineer:

Apr 18, 2025 — Approval Date:

Refer to approval conditions in letter to: Jade Riley

RECEIVED
Apr 17, 2025
DEQ Twin Falls Regional Office

OPAL ENGINEERING, PLLC
416 S. MAIN STREET SUITE 204
PO BOX 2530
HAILEY, IDAHO 83333
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PURPOSE: ISSUE FOR D.E.Q. REVIEW (03/05/2025)

REVISION NO.	DATE	DESCRIPTION
1	04/01/25	Add "Burrito Wrap" Sleeving to WM
2	04/16/25	Re-design WM improvements with new layout.

PROFESSIONAL ENGINEER LICENSED 17618 04/16/2025 STATE OF IDAHO SAMANTHA STAHLNECKER

COVER SHEET

KETCHUM WATER MAIN MODIFICATIONS BETWEEN GARNET ST. & GEM ST.

PREPARED FOR CITY OF KETCHUM

22036-3.0
PROJECT NUMBER

C0.10

FLUSHING AND DISINFECTION

A. FLUSHING PRIOR TO DISINFECTION

1. BEFORE CHLORINATION, FLUSH THE MAINS THOROUGHLY AFTER THE PRESSURE AND LEAKAGE TEST ARE COMPLETE.
2. USE A MINIMUM FLUSHING VELOCITY IN THE MAIN OF 2.5 FEET/SECOND.
3. IF NO HYDRANT IS INSTALLED AT THE END OF THE MAIN, PROVIDE A TAP OF THE SIZE SUFFICIENT TO PRODUCE A VELOCITY IN THE MAIN OF AT LEAST 2.5 FEET/SECOND.
4. TABLE 1 SHOWS THE RATES OF FLOW REQUIRED TO PRODUCE A VELOCITY OF 2.5 FEET/SECOND IN VARIOUS SIZE PIPES.
5. EXERCISE EXTREME CARE AND CONDUCT A THOROUGH INSPECTION DURING THE WATER MAIN LAYING TO PREVENT AND DETECT SMALL STONES, PIECES OF CONCRETE, PARTICLES OF MATERIAL, OR OTHER FOREIGN MATERIAL THAT MAY HAVE ENTERED THE MAINS.
6. CLEAN LARGE MATERIAL BY FLUSHING AND INSPECTING ALL HYDRANTS ON THE LINES TO ENSURE THAT THE ENTIRE VALVE OPERATING MECHANISM OF EACH HYDRANT IS IN GOOD CONDITION.

B. DISINFECTION OF WATER PIPES

1. GENERAL,
   a. COMPLY WITH ANSI/AWWA C 651: DISINFECTING WATER MAINS, THESE SPECIFICATIONS, AND ENGINEER'S DIRECTION.
   b. KEEP THE INTERIOR OF ALL PIPE, FITTINGS AND APPURTENANCES FREE FROM DIRT, HEAVY AND FOREIGN PARTICLES.
   c. DISINFECT ALL WATER PIPES AND APPURTENANCES PRIOR TO PLACING IN SERVICE.

2. FORM OF CHLORINE USED TO BE PRE-APPROVED BY THE ENGINEER.
   a. LIQUID CHLORINE.
      1) FORM: LIQUID CONTAINING 100% AVAILABLE CHLORINE UNDER PRESSURE IN STEEL CONTAINERS.
      2) STANDARD: ANSI/AWWA B 301.
      3) EXECUTION: USED ONLY BY TRAINED PERSONNEL WITH APPROPRIATE GAS-FLOW CHLORINATORS AND EJECTORS.
      4) AUTHORIZATION: ONLY WITH WRITTEN AUTHORIZATION OF THE ENGINEER.
   b. SODIUM HYPOCHLORITE.
      1) FORM: LIQUID CONTAINING APPROXIMATELY 5% TO 15% AVAILABLE CHLORINE.
      2) STANDARD: ANSI/AWWA B 300.
   c. CALCIUM HYPOCHLORITE.
      1) FORM: GRANULAR OR IN 5G TABLETS CONTAINING APPROXIMATELY 65% AVAILABLE CHLORINE BY WEIGHT.
      2) STANDARD: ANSI/AWWA B 300.

3. METHODS OF CHLORINATION USED TO BE PRE-APPROVED BY THE ENGINEER.
   a. TABLET OR GRANULE METHOD.
      1) SOLUTION STRENGTH: 25 MG/L MINIMUM.
      2) USE: ONLY IF THE PIPES AND APPURTENANCES ARE KEPT CLEAN AND DRY DURING CONSTRUCTION. DO NOT USE SOLVENT WELDED PLASTIC OR SCREWED JOINT STEEL PIPE.
      3) PLACEMENT WHEN USING GRANULES: DURING CONSTRUCTION, PLACE CALCIUM HYPOCHLORITE GRANULES AT THE UPSTREAM END OF EACH BRANCH MAIN, AND AT 500-FOOT INTERVALS.
      4) GRANULAR QUANTITY: REFER TO TABLE 2
      5) PLACEMENT WHEN USING TABLETS: DURING CONSTRUCTION, PLACE 5G CALCIUM HYPOCHLORITE TABLES IN EACH SECTION OF PIPE AND ALSO PLACE ONE TABLET IN EACH HYDRANT, HYDRANT BRANCH AND OTHER APPURTENANCES. ATTACH TABLETS TO THE INSIDE OF THE PIPE USING AN ADHESIVE SUCH AS PERMATEX NO. 2 OR APPROVED SUBSTITUTION. ASSURE NO ADHESIVE IS ON THE TABLET EXCEPT ON THE BROAD SIDE ATTACHED TO THE SURFACE OF THE PIPE. ATTACH ALL THE TABLETS AT THE INSIDE TIP OF THE MAIN, WITH APPROXIMATELY EQUAL NUMBERS OF TABLETS AT EACH END OF A GIVEN PIPE LENGTH. IF THE TABLES ARE ATTACHED BEFORE THE PIPE SECTION IS PLACED IN THE TRENCH, MARK THEIR POSITION ON THE SECTION SO IT CAN BE READILY DETERMINED THAT THE PIPE IS INSTALLED WITH THE TABLES AT THE TOP.
      6) TABLET QUANTITY: REFER TO TABLE 3
      (1) ADJUST FOR PIPE LENGTH OTHER THAN 18 FEET.
      (2) BASED ON 3.25G AVAILABLE CHLORINE PER TABLET.
      7) FILLING PROCEDURE: WHEN GRANULE OR TABLET INSTALLATION HAS BEEN COMPLETED, FILL THE MAIN WITH CLEAN WATER AT A VELOCITY NOT EXCEEDING 1 FPS. TAKE PRECAUTIONS TO ASSURE THAT AIR POCKETS ARE ELIMINATED. LEAVE THIS WATER IN THE PIPE FOR AT LEAST 24 HOURS. IF THE WATER TEMPERATURE IS LESS THAN 41° F, LEAVE THE WATER IN THE PIPE FOR AT LEAST 48 HOURS. POSITION VALVE SO THAT THE CHLORINE SOLUTION IN THE MAIN BEING TREATED WILL NOT FLOW INTO WATER MAINS IN ACTIVE SERVICE.
   b. CONTINUOUS FEED METHOD.
      1) SOLUTION STRENGTH: DOSE AT 25 MG/L FOR 4 HOURS.
      2) RESIDUAL: 10 MG/L AT 24 HOURS.
      3) DOSING METHODS:
         a) LIQUID CHLORINE: SOLUTION FEED VACUUM-OPERATED CHLORINATOR IN COMBINATION WITH A BOOSTER PUMP.
         b) DIRECT FEED: NOT ALLOWED.
         c) HYPOCHLORITE SOLUTION: CHEMICAL FEED PUMP DESIGNED FOR FEEDING CHLORINE SOLUTIONS.
         d) CALCIUM HYPOCHLORITE GRANULES: REFER TO PREVIOUS SECTION.
      4) FILLING PROCEDURE: USE APPROVED SOURCE TO FLOW CLEAN WATER AT A CONSTANT, MEASURED RATE INTO THE NEWLY LAID WATER MAIN. FILL AT A POINT NOT MORE THAN 10 FEET DOWNSTREAM FROM THE BEGINNING OF THE NEW MAIN. MEASURE THE CHLORINE CONCENTRATION AT REGULAR INTERVALS AND ENSURE A 25 MG/L DOES. POSITION VALVES SO THAT THE CHLORINE SOLUTION IN THE MAIN BEING TREATED DOES NOT FLOW INTO WATER MAINS IN ACTIVE SERVICE. DO NOT STOP CHLORINE APPLICATION UNTIL THE ENTIRE MAIN IS FILLED WITH CHLORINATED WATER. RETAIN THE CHLORINATED WATER IN THE MAIN FOR AT LEAST 4 HOURS, OPERATING ALL VALVES AND HYDRANTS IN THE SECTION TREATED. AT THE END ON THE 24 HOUR PERIOD, VERIFY THE TREATED WATER IN ALL PORTIONS OF THE MAIN HAS RESIDUAL OF 10 MG/L FREE CHLORINE.
   c. SLUG METHOD.
      1) SOLUTION STRENGTH: 100 MG/L.
      2) DOSING METHODS: PER ENGINEER'S DIRECTION.
      3) FILLING PROCEDURE: USE APPROVED SOURCE TO FLOW CLEAN WATER AT A CONSTANT, MEASURED RATE INTO THE NEWLY LAID WATER MAIN. FILL AT A POINT NOT MORE THAN 10 FEET DOWNSTREAM FROM THE BEGINNING OF THE NEW MAIN. MEASURE CONCENTRATION AT REGULAR INTERVALS TO ENSURE 100 MG/L DOSE. APPLY THE CHLORINE CONTINUOUSLY AND FOR THE TIME REQUIRED TO DEVELOP A SOLID COLUMN OR "SLUG" OF CHLORINATED WATER THAT WILL, AS IT MOVES THROUGH THE MAIN, EXPOSE ALL INTERIOR SURFACES TO A 100 MG/L FOR AT LEAST 3 HOURS. MEASURE THE CHLORINE RESIDUAL IN THE SLUG AS IT MOVES THROUGH THE MAIN. IF AT ANY TIME IT DROPS BELOW 50 MG/L, STOP FLOW AND RELOCATE CHLORINATION EQUIPMENT AT THE HEAD OF THE SLUG, AND AS FLOW IS RESUMED, ADD CHLORINE TO RESTORE THE FREE CHLORINE IN THE SLUG TO NOT LESS THAN 100 MG/L. AS THE CHLORINATED WATER FLOWS PAST FITTINGS AND VALVES, OPERATE VALVES AND HYDRANTS TO DISINFECT APPURTENANCES AND PIPE BRANCHES.

C. FINAL FLUSHING.

1. AFTER THE RETENTION PERIOD, FLUSH THE CHLORINATED WATER FROM THE MAIN UNTIL CHLORINE MEASUREMENTS SHOW THAT THE CONCENTRATION IN THE WATER LEAVING THE MAIN IS NO HIGHER THAN THAT IN THE SYSTEM, OR IS ACCEPTABLE FOR DOMESTIC USE.
2. DISPOSAL OF FLUSHING WATER TO BE DONE IN A MANNER SO THAT IT DOES NOT:
   a. REACH SURFACE WATERS OR WATERS OF THE STATE
   b. DAMAGE SURROUNDING PROPERTIES
   c. TAKE PLACE DURING PERIODS WHEN THE AMBIENT TEMPERATURE IS ABOVE 85° WITHOUT PRIOR APPROVAL OF THE ENGINEER
3. IF WATER CAN NOT BE RETAINED ON SITE AND IF IT IS NOT ALLOWED TO ENTER THE SANITARY SEWER COLLECTION SYSTEM, WATER SHALL BE DECHLORINATED TO HAVE A MAXIMUM AVAILABLE CHLORINE CONCENTRATION OF 0.13 MG/L AND THE APPROPRIATE PRIVATE, FEDERAL AND STATE DISCHARGE AND DISPOSAL APPROVALS SHALL BE ACQUIRED PRIOR TO COMMENCEMENT OF FLUSHING ACTIVITIES. SHOULD THERE BE A POTENTIAL FOR THE GROUNDWATER RULE TO BE VIOLATED AS A RESULT OF A CHLORINATED DISCHARGE THE ENGINEER SHALL COORDINATE DISPOSAL WITH REGIONAL DEQ STAFF PRIOR TO FLUSHING.

D. BACTERIOLOGICAL TESTS.

1. AFTER FINAL FLUSHING AND BEFORE THE WATER MAIN IS PLACED IN SERVICE, TEST SAMPLES COLLECTED FROM THE MAIN(S) FOR COLIFORM BACTERIA. TAKE 2 SAMPLES FROM EACH LOCATION AT LEAST 24 HOURS APART.
2. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, COLLECT SAMPLES FROM EACH 1,200 FEET ON THE NEW MAIN AND ONE FROM EACH BRANCH.

E. REDISINFECTION.

1. IF THE INITIAL DISINFECTION FAILS TO PRODUCE APPROVED BACTERIOLOGICAL SAMPLES, REFLUSH AND RESAMPLE THE MAIN.
2. IF CHECK SAMPLES SHOW BACTERIAL CONTAMINATION, RE-CHLORINATE THE MAIN UNTIL APPROVED RESULTS ARE OBTAINED.

F. SWABBING.

1. IF CONNECTIONS ARE NOT DISINFECTED ALONG WITH THE NEWLY INSTALLED MAIN, SWAB OR SPRAY THE INTERIOR OF ALL PIPES AND FITTINGS USED IN MAKING THE CONNECTIONS WITH A 1% HYPOCHLORITE SOLUTION BEFORE INSTALLATION.

TABLE 1
REQUIRED FLOW AND OPENINGS TO FLUSH PIPELINES
40 PSI RESIDUAL PRESSURE IN WATER MAIN (1)

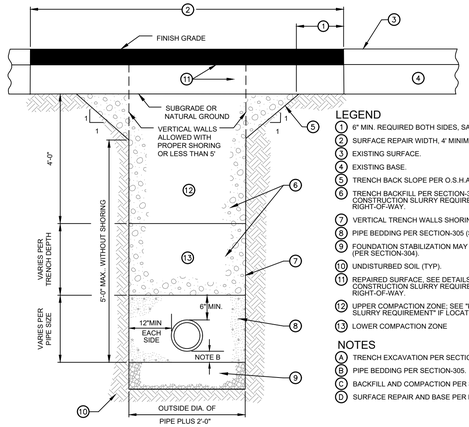
	Flow Required to Produce 2.5 fps (approx)	Size of Tap (inch) (1) (1-1/2) (2)			Hydrant Outlets	
Pipe Diam. (inch)	Velocity in Main, (Gpm)	Number of taps on pipe (2)			Number	Size in (inch)
4	100	1			1	2-1/2
6	220		1		1	2-1/2
8	400		2	1	1	2-1/2
10	600		3	2	1	2-1/2
12	900			2	2	2-1/2
16	1600			4	2	2-1/2
1)	With a 40 psi pressure in the main with the hydrant flowing to atmosphere, a 2- 1/2 inch hydrant outlet will discharge approximately 1,000 gpm and a 4-1/2 inch hydrant will discharge approximately 2500 gpm.					
2)	Number of taps on pipe based on discharge through 5 feet of galvanized iron (GI) pipe with one 90° elbow.					

TABLE 2
OUNCES OF GRANULES

Pipe Diameter (inches)	Amount (ounces)
4	1.7
6	3.8
8	6.7
10	10.5
12	15.1
16	26.8
18	34.0
20	41.9
24	60.4

TABLE 3
NUMBER OF TABLETS (1)

Pipe Diameter (inches)	Number of 5g Tablets (2)
4	1
6	1
8	2
10	3
12	4
16	6
18	7
20	9
24	13



LEGEND

1. 6" MIN. REQUIRED BOTH SIDES, SAWCUT REQUIRED.
2. SURFACE REPAIR WIDTH, 4' MINIMUM.
3. EXISTING SURFACE.
4. EXISTING BASE.
5. TRENCH BACK SLOPE PER O.S.H.A. OR SUITABLE SHORING.
6. TRENCH BACKFILL PER SECTION-306, OR SEE "KETCHUM PUBLIC CONSTRUCTION SLURRY REQUIREMENT" IF LOCATED WITHIN PUBLIC RIGHT-OF-WAY.
7. VERTICAL TRENCH WALLS SHORING PER O.S.H.A..
8. PIPE BEDDING PER SECTION-305 (SEE SD-302).
9. FOUNDATION STABILIZATION MAY VARY PER SOIL TYPE AND STABILITY (PER SECTION-304).
10. UNDISTURBED SOIL (TYP).
11. REPAIRED SURFACE, SEE DETAILS 1 AND 2, SEE "KETCHUM PUBLIC CONSTRUCTION SLURRY REQUIREMENT" IF LOCATED WITHIN PUBLIC RIGHT-OF-WAY.
12. UPPER COMPACTION ZONE; SEE "KETCHUM PUBLIC CONSTRUCTION SLURRY REQUIREMENT" IF LOCATED WITHIN PUBLIC RIGHT-OF-WAY.
13. LOWER COMPACTION ZONE

NOTES

A. TRENCH EXCAVATION PER SECTION-301.
B. PIPE BEDDING PER SECTION-305.
C. BACKFILL AND COMPACTION PER SECTION-306.
D. SURFACE REPAIR AND BASE PER DETAIL 3/C20

KETCHUM PUBLIC CONSTRUCTION SLURRY REQUIREMENT

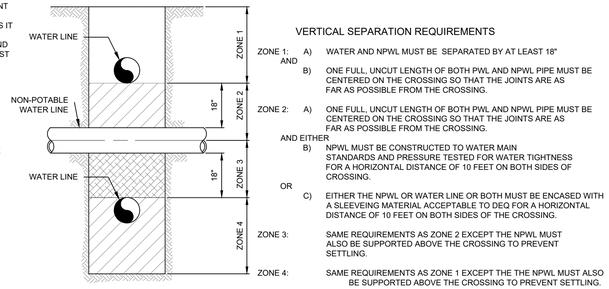
IN AREAS WHERE IT IS NECESSARY TO CUT THE ASPHALT PAVEMENT AND DIG A TRENCH FOR BURIAL OF CONDUIT CABLE OR OTHER CITY UTILITY, THE TRENCH SHALL BE BACKFILLED WITH A LEAN CONCRETE MIX TO THE BOTTOM OF FINISH SURFACE MATERIAL WITH THE FOLLOWING PROPORTIONS OF MATERIALS:

COARSE AGGREGATE (½" MINUS)	2,600 LBS.
SAND	800 LBS.
PORTLAND CEMENT	94 LBS.
WATER	11 GAL (MAX.)

WATER CONTENT IS MAXIMUM AND MAY BE REDUCING DOWNWARD. CARES SHALL BE TAKEN TO ASSURE THAT EXCESS WATER IS NOT PRESENT IN THE MIXING DRUM PRIOR TO CHARGING THE MIXER WITH MATERIALS. THOROUGH MIXING WILL BE REQUIRED PRIOR TO DISCHARGE.

NO COMPACTION, VIBRATION OR FINISHING IS REQUIRED. THE LEAN CONCRETE MIX SHALL BE STRUCK OFF AT OR BELOW THE ELEVATION OF THE PLANTMIX SURFACING WITH A SQUARE-NOSE SHOVEL OR SIMILAR HAND TOOL. THE BACKFILL MIX SHALL BE ALLOWED TO SET FOR A MINIMUM OF 2 HOURS BEFORE THE PERMANENT PLANTMIX SURFACING IS PLACED TO COMPLETE THE TRENCH REPAIR. TEMPORARY PLACEMENT OF ASPHALT COLD MIX SURFACING MAY BE NECESSARY TO ACCOMMODATE TRAFFIC WITHIN THE FIRST 2 HOURS OF BACKFILL PLACEMENT PRIOR TO COMPLETING THE PERMANENT REPAIR.

1 / C1.00 TYPICAL TRENCH SECTION
N.T.S.



THE TERM "LINE" APPLIES TO BOTH MAIN LINES AND SERVICE LINES

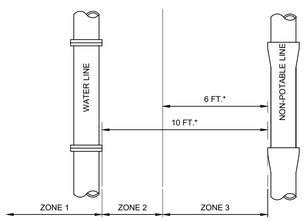
VERTICAL SEPARATION REQUIREMENTS

ZONE 1: A) WATER AND NPWL MUST BE SEPARATED BY AT LEAST 18"
AND
B) ONE FULL, UNCUT LENGTH OF BOTH PWL AND NPWL PIPE MUST BE CENTERED ON THE CROSSING SO THAT THE JOINTS ARE AS FAR AS POSSIBLE FROM THE CROSSING.

ZONE 2: A) ONE FULL, UNCUT LENGTH OF BOTH PWL AND NPWL PIPE MUST BE CENTERED ON THE CROSSING SO THAT THE JOINTS ARE AS FAR AS POSSIBLE FROM THE CROSSING.
AND EITHER
B) NPWL MUST BE CONSTRUCTED TO WATER MAIN STANDARDS AND PRESSURE TESTED FOR WATER TIGHTNESS FOR A HORIZONTAL DISTANCE OF 10 FEET ON BOTH SIDES OF CROSSING.
OR
C) EITHER THE NPWL OR WATER LINE OR BOTH MUST BE ENCASED WITH A SLEEVEING MATERIAL ACCEPTABLE TO DEQ FOR A HORIZONTAL DISTANCE OF 10 FEET ON BOTH SIDES OF THE CROSSING.

ZONE 3: SAME REQUIREMENTS AS ZONE 2 EXCEPT THE NPWL MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.

ZONE 4: SAME REQUIREMENTS AS ZONE 1 EXCEPT THE NPWL MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.



* DISTANCES ARE HORIZONTAL

HORIZONTAL SEPARATION REQUIREMENTS

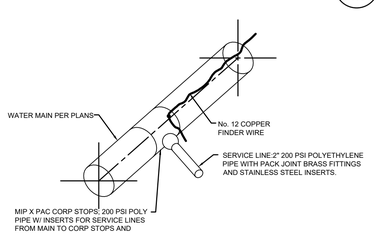
ZONE 1: A) NO SPECIAL REQUIREMENTS.

ZONE 2: A) NO SPECIAL REQUIREMENTS FOR POTABLE OR NON-POTABLE SERVICES
B) WATER AND NPWL SEPARATED BY AT LEAST 6 FEET AT OUTSIDE WALLS.
AND
C) WATER AT LEAST 18 INCHES HIGHER IN ELEVATION THAN THE NPWL.
AND EITHER
D) NPWL CONSTRUCTED TO POTABLE WATER MAIN STANDARDS AND PRESSURE TESTED FOR WATER TIGHTNESS.
OR
E) SITE SPECIFIC REQUIREMENTS APPROVED BY DEQ.

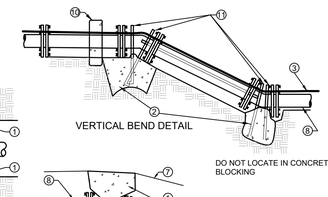
ZONE 3: NOT ALLOWED WITHOUT DEQ WAIVER.

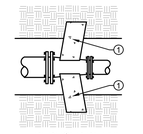
NOTE: SANITARY SEWER FORCE MAINS MUST HAVE MIN. 10' HORIZONTAL SEPARATION AND 18" VERTICAL SEPARATION. ZONE 2 AND ZONE 3 PLACEMENTS ARE NOT ALLOWED WITHOUT A WAIVER GRANTED BY DEQ.

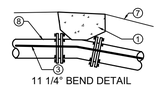
3 / C1.00 POTABLE AND NON-POTABLE WATER LINE (NPWL) SEPARATION
N.T.S.

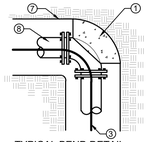


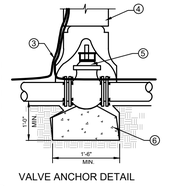
4 / C1.00 WATER SERVICE RE-CONNECTION DETAIL
N.T.S.




REDUCER DETAIL


11 1/4" BEND DETAIL


TYPICAL BEND DETAIL



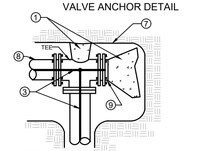


TABLE 1
THRUST AREA FOR HORIZONTAL BENDS***

SOIL BEARING PRESSURE	= 2000 PSF
WORKING PRESSURE RATING	= 150 PSI
SAFTEY FACTOR	= 1.5

PIPE SIZE	MINIMUM SQUARE FEET OF THRUST AREA ONTO UNDISTURBED EARTH*			
	TEE, PLUG OF VALVE	90° BEND**	45° BEND	22.5°, 11.25° BENDS OR REDUCER
3"	0.8	1.1	0.6	0.3
4"	1.4	2.0	1.1	0.6
6"	3.2	4.5	2.4	1.2
8"	5.7	8.0	4.3	2.2
10"	8.8	12.5	6.8	3.4
12"	12.7	18.0	9.7	5.0
14"	17.3	24.5	13.3	6.8
16"	22.6	32.0	17.3	8.8
18"	28.6	40.5	21.9	11.2

* MUST BE INCREASED BASED ON DIFFERENT CONDITIONS (HIGHER WORKING PRESSURE OR LOWER SOIL BEARING STRENGTH).
** OR TEE ACTING AS A 90° BEND
***THRUST BLOCK DEPTH TO BE A MINIMUM PF 12" FOR PIPE SIZES 3"-8" AND 18" FOR PIPE SIZES 10"-18" OR THE SQUARE ROOT OF THE REQUIRED BEARING AREA, WHICHEVER IS GREATER.

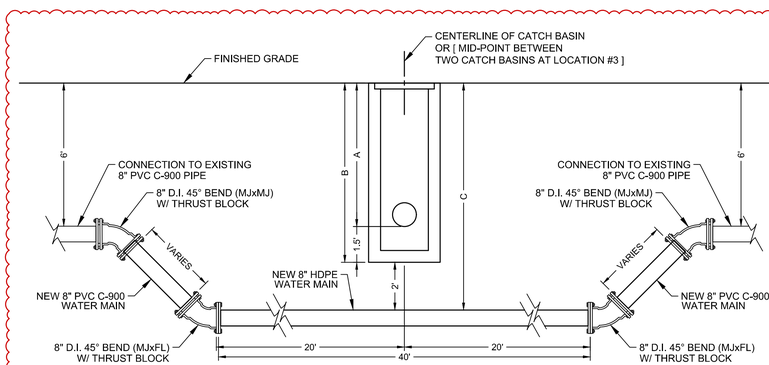
LEGEND

1. FOR HORIZONTAL PIPE BENDS, BEARING THRUST BLOCKS MUST PROVIDE 2500 PSI CONCRETE POURED AGAINST UNDISTURBED EARTH PER TABLE 1.
2. FOR VERTICAL PIPE BENDS, GRAVITY THRUST BLOCKS MUST PROVIDE A VOLUME OF CONCRETE POURED AGAINST UNDISTURBED EARTH WHICH IS SIZED FOR EXPECTED FORCES WITH A MINIMUM 1.5 FACTOR OF SAFETY.
3. NO. 12 COPPER FINDER WIRE. SEE SD-514 FOR SPLICING.
4. C.I. VALVE BOX WITH COVER.
5. C.I. GATE VALVE (M.J.).
6. PRECAST BLOCK FOR CUT IN TEE AND VALVE OR CAST IN PLACE WITH 2-1/2"Ø MIN REBAR.
7. TRENCH SIDE.
8. PIPE.
9. PLUG.
10. HAMMERHEAD THRUST BLOCKING.
11. ANCHOR BARS (1/2"Ø MIN)

2 / C1.00 THRUST BLOCK AND ANCHOR DETAILS
N.T.S.

NOTES:

A. ANCHOR ALL VALVES CONNECTED TO P.V.C. PIPE AS SHOWN.
B. COVER BOLTS AND FLANGES WITH PLASTIC TO PROTECT FROM CONCRETE ADHERENCE DURING CONSTRUCTION OF THRUST BLOCKS.
C. SEE CHART FOR MIN THRUST BLOCKS BEARING AREAS.
D. ALL CONCRETE TO BE 2500 P.S.I. STRENGTH POURED AGAINST UNDISTURBED EARTH.
E. PROVIDE 6 MIL POLYPROPYLENE BETWEEN FITTINGS AND CONCRETE.
F. NOTIFY ENGINEER FOR ANY CONDITION OR PIPE SIZE NOT INDICATED.
G. ALL BLOCKS TO BE CENTERED AROUND PIPE SPRING LINE.



WATER MAIN PIPE BURIAL DEPTH (AS MEASURED FROM FG)

LOCATION #	CATCH BASIN INVERT [A]	BOTTOM OF STRUCTURE [B]	MINIMUM DEPTH TO TOP OF WATER MAIN [C]
1	6.02'	7.52'	9.52'
2	5.44'	6.94'	8.94'
3	3.15'	4.65'	6.65'
4	3.31'	4.81'	6.81'

NOTES

1. REFER TO DETAIL 2 / C1.00 FOR THRUST PROTECTION.
2. REFER TO DETAIL 1 / C1.00 FOR TRENCHING. SLURRY BACKFILL NOT REQUIRED IF WATER MAIN IS INSTALLED IN CONJUNCTION WITH ITD ROAD AND STORMWATER IMPROVEMENTS

2 / 5 / C1.00 WATER MAIN DEPTH DETAIL
N.T.S.

opal
OPAL ENGINEERING, PLLC
POST FALLS, IDAHO 83854
WWW.OPALENGINEERING.COM

PURPOSE: ISSUE FOR D.E.Q. REVIEW (03/05/2025)

REVISION NO.	DATE	DESCRIPTION
1	04/01/25	Add "Burrito Wrap" Sleeving to WM
2	04/16/25	Re-design WM improvements with new layout.

PROFESSIONAL ENGINEER LICENSED 17618 04/16/2025 STATE OF IDAHO SAMANTHA STAHLNECKER

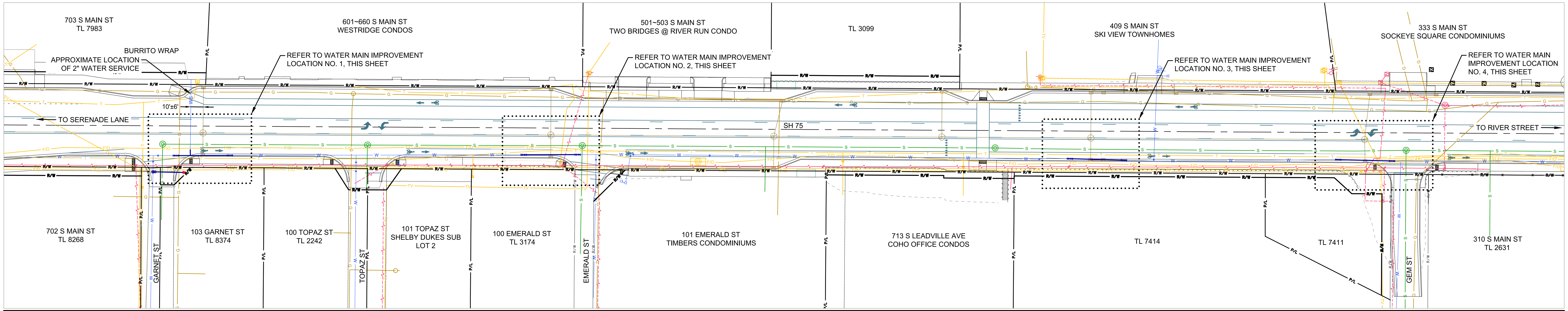
WATER MAIN FLUSHING AND DISINFECTION NOTES AND DETAILS

KETCHUM WATER MAIN MODIFICATIONS BETWEEN GARNET ST. & GEM ST.

PREPARED FOR CITY OF KETCHUM

22036-3.0
PROJECT NUMBER

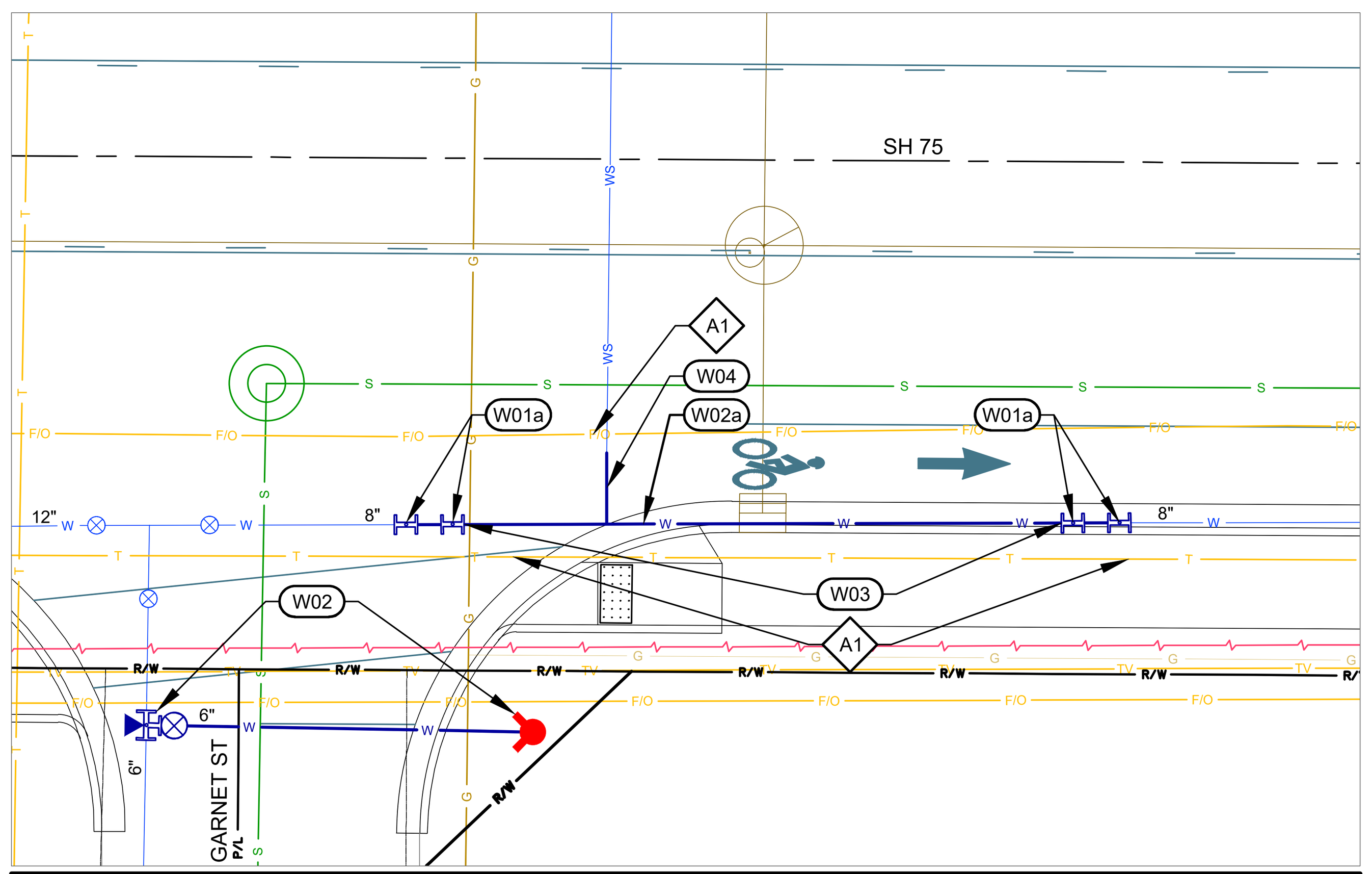
C1.00



OVERALL WATER MAIN IMPROVEMENT SITE PLAN

SCALE: 1" = 40'

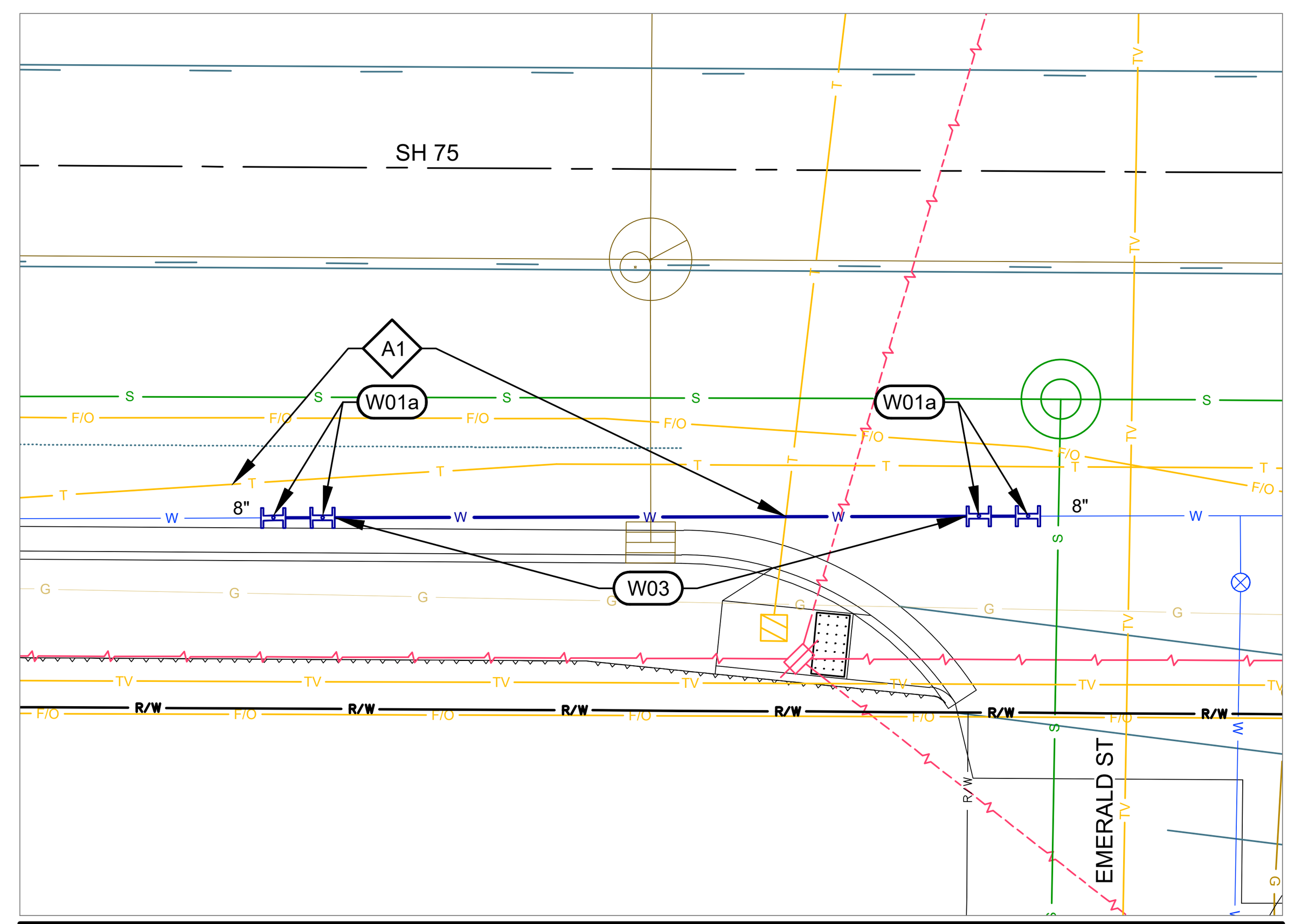
GRAPHIC SCALE
0 40 80
Scale in Feet



WATER MAIN IMPROVEMENT LOCATION NO. 1

SCALE: 1" = 10'

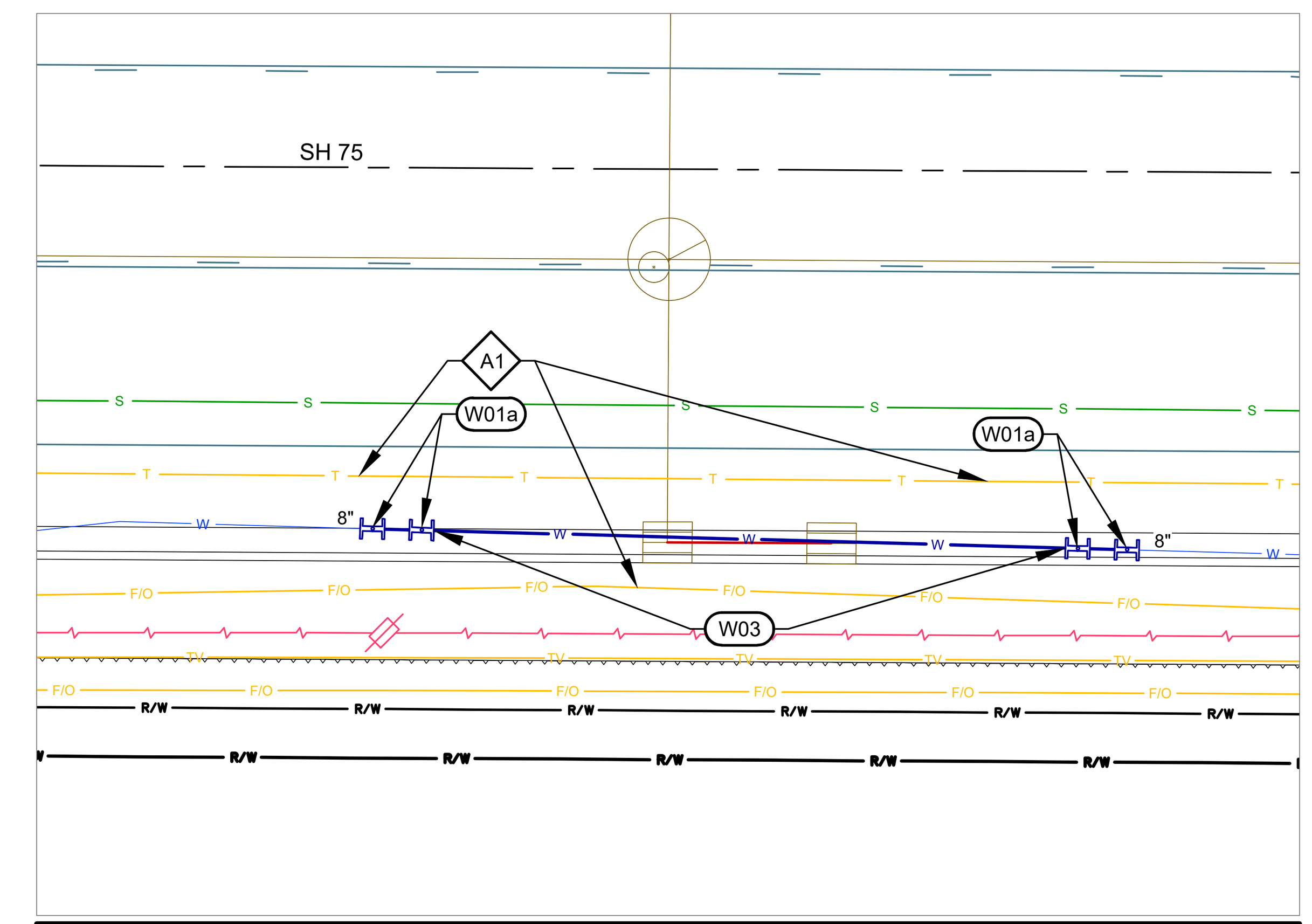
GRAPHIC SCALE
0 10 20
Scale in Feet



WATER MAIN IMPROVEMENT LOCATION NO. 2

SCALE: 1" = 10'

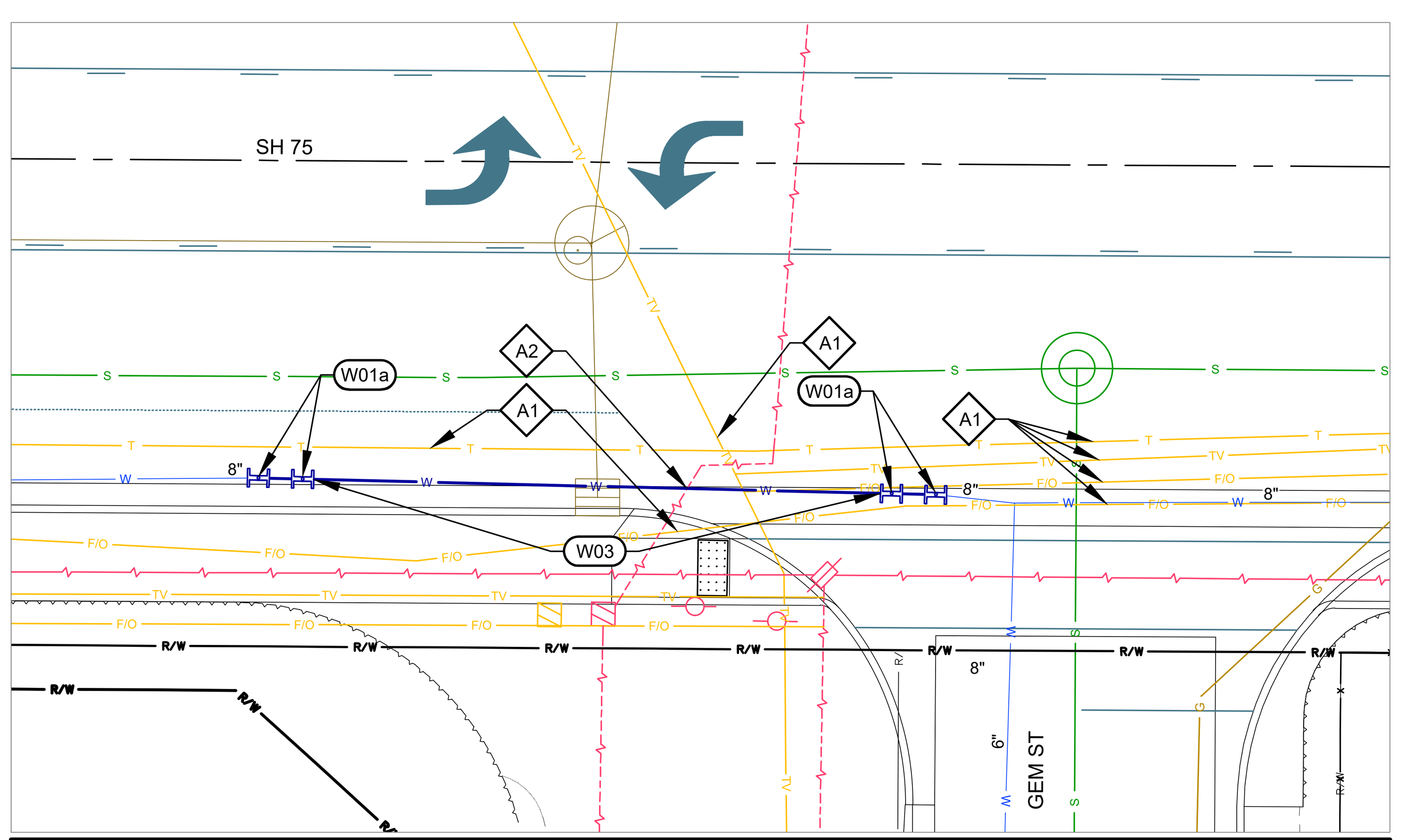
GRAPHIC SCALE
0 10 20
Scale in Feet



WATER MAIN IMPROVEMENT LOCATION NO. 3

SCALE: 1" = 10'

GRAPHIC SCALE
0 10 20
Scale in Feet



WATER MAIN IMPROVEMENT LOCATION NO. 4

SCALE: 1" = 10'

GRAPHIC SCALE
0 10 20
Scale in Feet

LEGEND

EXISTING ITEMS

- Property Line
- Existing Right-of-way
- Future Right-of-way
- Centerline of Right-of-way
- Concrete Sidewalk Curb & Gutter
- Retaining Wall
- Fiber Optic Line
- Gas Main
- Gas Main, to be abandoned
- Gas Valve
- Cable TV Buried
- Cable TV Riser
- Buried Telephone Line
- Buried Power Line
- Overhead Power Line
- Power Meter
- Power Pole
- Sewer Main
- Sewer Manhole
- Water Main
- Water Valve
- Road Paint Striping and Symbols

ITEMS TO BE CONSTRUCTED BY ITD

- Storm Drain
- Catch Basin
- Storm Drain Manhole

PROPOSED ITEMS

- Water Main
- Water Fittings
- Water Valve
- Fire Hydrant

WATER MAIN INSTALLATION KEY NOTES

- W01 — INSTALL D.I. 8" 45° BEND (VERTICAL) W/ THRUST BLOCK. REFER TO DETAIL 2 / C1.00 FOR THRUST PROTECTION AND DETAIL 5 / C1.00 FOR PLACEMENT.
- W02 — INSTALL CITY OF KETCHUM FIRE HYDRANT ASSEMBLY WITH MOUNTAIN EXTENSION.
  - 6"x6"x6" D.I. TEE
  - 6" GATE VALVE
  - W/ THRUST BLOCKS
- W03 — RELOCATE EXISTING WATER MAIN PER DETAIL 5 / C1.00. REFER TO DETAIL 3 / C1.00 FOR POTABLE / NON-POTABLE WATER LINE CROSSING.
- W04 — CONTRACTOR SHALL LOCATE EXISTING 2" DIA. SERVICE LINE, DISCONNECT FROM EXISTING MAIN LINE, AND CONNECT TO PROPOSED MAIN LINE WITH STAINLESS STEEL TAPPING SADDLE AND CORP STOP. CONTRACTOR SHALL VERIFY THERE IS NO CONFLICT BETWEEN REMAINING 2" WATER SERVICE AND ITD'S PROPOSED STORM DRAIN PIPE. CONTRACTOR SHALL COORDINATE ACTIVITY WITH CITY OF KETCHUM. REFER TO DETAIL 4 / C1.00.
- A — RETAIN AND PROTECT
  1. COMMUNICATION LINES
  2. BURIED POWER LINE

NOTES

1. SEE SHEET C0.10 FOR GENERAL CONSTRUCTION NOTES, WATER MAIN CONSTRUCTION NOTES, AND LEGEND.
2. SEE SHEET C1.00 FOR WATER MAIN FLUSHING AND DISINFECTION NOTES AND DETAILS.

opal
OPAL ENGINEERING, PLLC
PO BOX 2530; HAILEY, ID 83333
WWW.OPAL-ENGINEERING.COM

PURPOSE: ISSUE FOR D.E.Q. REVIEW (03/05/2025)

REVISION NO.	DATE	DESCRIPTION
1	04/01/25	Add "Burrito Wrap" Sleeving to WM
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PROFESSIONAL ENGINEER
LICENSED
17618
04/16/2025
STATE OF IDAHO
SAMANTHA STAHLNECKER

WATER MAIN IMPROVEMENT PLAN

KETCHUM WATER MAIN MODIFICATIONS BETWEEN GARNET ST. & GEM ST.

PREPARED FOR CITY OF KETCHUM

22036-3.0
PROJECT NUMBER

2 C1.10

Lunceford Excavation
alabama626@gmail.com
P.O. Box 416
Bellevue, ID 83313

Prepared For
Ketchum Utilities Department
P.O. Box 2315
Ketchum 83340

Estimate Date
04/25/2025

Estimate Number
16767

Reference
Main St.-Garnet-Gem St.

Description	Rate	Qty	Line Total
Main St. Water Main-Garnet St-Gem St	$0.00	1	$0.00
Excavate-Re-Route Water Main-Backfill-Install Fire Hydrant	$17,400.00	4	$69,600.00

Subtotal	69,600.00
Tax	0.00
Estimate Total (USD)	$69,600.00

Terms

NOTE: This proposal may be withdrawn by us if not accepted within 30 days. All material is guaranteed to be as specified. All work to be completed in a substantial workman like manner according to specifications submitted per standard practices. Any alteration or deviation from above specifications involving extra costs will be expected only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents, or delays beyond our control. Owner to carry fire, flood, and other necessary insurance. Our workers are fully covered by Workman's Compensation Insurance.

Any asbestos or other unforeseen conditions will be billed on a Time and Materials basis

All abnormal soil conditions,such as rock,caliche,water in excavation and any other unforeseen soil conditions will be billed on an agreed upon amount between client and Lunceford Excavation

ACCEPTANCE OF PROPOSAL: The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payments will be made as outlined above.

X_____ (Client)

X_____ (Lunceford Excavation)

CITY OF KETCHUM

PO BOX 2315 * 191 5TH ST. * KETCHUM, ID 83340
Administration 208-726-3841 (fax) 208-726-8234

PURCHASE ORDER

BUDGETED ITEM? ____ Yes ____ No

PURCHASE ORDER - NUMBER: 25126

To:	**Ship to:**
2901 LUNCEFORD EXCAVATION, INC. PO BOX 416 BELLEVUE ID 83313	CITY OF KETCHUM PO BOX 2315 KETCHUM ID 83340

P. O. Date	Created By	Requested By	Department	Req Number	Terms
05/13/2025	KCHOMA	KCHOMA			

Quantity	Description		Unit Price	Total
1.00	Water Main Relocate Gem St.-Garnett St	64-4340-7800	69,600.00	69,600.00
		SHIPPING & HANDLING		0.00
		TOTAL PO AMOUNT		69,600.00

Authorized Signature