City of Ketchum

CITY COUNCIL MEETING AGENDA MEMO

Meeting Date:	February 3, 2025	Staff Member/Dept:	Ben Whipple – Public Works

Agenda Item: South Ketchum Redundant Water Line Project B

Recommended Motion:

Recommendation to approve Bid award and corresponding Purchase Order 25073 for South of Ketchum Redundant Water Line Project B to Canyon Excavation LLC.

Reasons for Recommendation:

- Canyon Excavation LLC submitted a low bid amongst five total bidders to complete the South Ketchum Redundant Water Line Project B
- The project consists of the construction of new water infrastructure to functionally replace existing water main in State Highway 75 Idaho Transportation Department right-of-way, east of State Highway 75 is proposed within Weyyakin Subdivision Block 5 open space.
- Coupled with Project A, this creates redundancy in this area and improves system resiliency by allowing back flow water to replace any section of line that could need to be worked on in the future.
- This new line, as well as the line in Project A, is required due to ITD reconstruction of Hwy 75 and the storm sewar system being placed.
- Recommendation includes authorization to process change orders up to 15% of total contract value without additional council approval
- Project is contingent on executed easement agreement with Weyyakin Subdivision

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

Sustainability Impact:

No direct impact.

Financial Impact:

None OR Adequate funds exist in account:	Adequate funds exist in the Water Fund CIP "New Weyyakin Mainline Ext." to cover this project

Attachments:

1. Purchase order 25073
2. Canyon Excavation LLC Bid for Project B
3. Drawings for South Ketchum Redundant Water Line Project B

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: 25073

To:	Ship to:
5046 CANYON EXCAVATION. LLC BOX 961 SHOSHONE ID 83352	CITY OF KETCHUM PO BOX 2315 KETCHUM ID 83340

P. O. Date	Created By	Requested By	Department	Req Number	Terms
01/28/2025	CCHING	CCHING			

Quantity	Description	Unit Price	Total
1.00	S KETCHUM REDUNDANT WATERLINE PROJ 64-4340-7810	351,198.30	351,198.30
	SHIPPING & HANDLING		0.00
	TOTAL PO AMOUNT		351,198.30

Authorized Signature

NOTE TO BIDDER: Use BLACK or BLUE in for completing this BID FORM

To: City of Ketchum

Address: 191 5th Street West, Ketchum, ID 83340
PO Box 2315, Ketchum, ID 83340

Project Identification: South Ketchum Redundant Water Main, Project B

1 BIDDER'S DECLARATION AND UNDERSTANDING

1.01 Bidder accepts all of the terms and conditions of the Advertisement and Instructions to Bidders, including without limitations those dealing with the dispositions of Bid Security. The bid will remain subject to acceptance for 30 days after the Bid Opening, or for such longer period of time that the Bidder may agree to in writing upon request of the Owner.

1.02 In compliance with the Instruction to Bidders, the BIDDER hereby proposes to perform all WORK for the construction of the KETCHUM MAIN STREET WATER MAIN RELOCATION project in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below. The BID prices shall include all labor, materials, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for. Prices shall also include all applicable taxes, overhead, profit, and fees.

1.03 By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to his own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

1.04 The BIDDER acknowledges that no special interpretation or inference of intent is to be given to any different formats of different Specifications sections.

1.05 In submitting this Bid, the BIDDER acknowledges and accepts the CONTRACTOR's representations as more fully set forth in the AGREEMENT.

1.06 The BIDDER understands that quantities listed are approximate and the OWNER reserves the right to increase or decrease individual items as may be, in his sole judgment, to his best interest depending upon conditions encountered or observed during the execution of the WORK.

1.07 In addition to this BID FORM, the BIDDER agrees that the following shall form part of this BID:

1.07.1 BID SECURITY
1.07.2 BID PROPOSAL – SCHEDULE OF ITEMS AND PRICES
1.07.3 LISTING OF SUBCONTRACTORS

1.08 BIDDER accepts the terms and conditions of the Bidding Documents.

2 CONTRACT EXECUTION AND BONDS

2.01 The Bidder understands and agrees that if a contract is awarded, OWNER may elect to modify the scope of Work as best serves the interests of OWNER.

2.02 The undersigned BIDDER agrees, if this Bid is accepted, to enter into an Agreement with OWNER on the form included in the Bidding Documents, to perform and furnish Work as specified or indicated in the Bidding documents for the Contract Price derived from the Bid and within the Contract Times indicated in the Agreement and in accordance with the other terms and conditions of the Bidding Documents.

3 ADDENDA

3.01 BIDDER acknowledges receipt of the following ADDENDUM No's.:: 1, 2, _____, _____, _____,

(BIDDER shall insert number of Addendum received) and agrees that Addenda issued are herby made part of the Contract Documents, and BIDDER further agrees that this BID includes impacts resulting from said Addenda.

4 BID SCHEDULES

4.01 In the event of a discrepancy, the amount in words shall prevail.

4.02 The BIDDER hereby acknowledges that the bid prices are based solely on the BIDDER's own estimate of costs, and includes all applicable taxes, overhead, and profit.

Respectfully submitted by: Canyon Excavation LLC

(Business Name)

LLC

(Type of Bidder: Individual, Partnership, Corporation, Joint Venture)

(State of Incorporation)

By: Jake Gage

(Name and Signature of Person Authorized to Sign)
For a Joint Venture, each Joint Venture must sign

Owner

(Title)

PUBLIC WORKS LICENSE NO.: 022954-A-4

(Corporate Seal)

Name, telephone number, and address for receipt of official communications and for additional information on this BID:

Name: Jake Gage
Title: Owner
Tel. No.: 208-731-1454
Address: Box 961
Shoshone ID 83352

DATE SUBMITTED: 1-22-25

BID BOND

BY THESE PRESENTS, that we, the undersigned, _____

Canyon Excavation LLC as Principal, and

American Alternative Insurance Corporation as Surety, are hereby held and firmly bound unto the CITY OF KETCHUM as OWNER in the penal sum of FIVE PERCENT OF THE TOTAL AMOUNT BID for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this 22nd day of January, 2025.

The Condition of the above obligation is such that whereas the Principal has submitted to the CITY OF KETCHUM certain BID attached hereto and hereby made a part hereof to enter into a contract in writing for the Work associated with SOUTH KETCHUM REDUNDANT WATER MAIN, PROJECT B.

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

SEAL (If BID is by a corporation)

AMERICAN ALTERNATIVE INSURANCE CORPORATION CORPORATE SEAL 1923 STATE OF DELAWARE

Canyon Excavation LLC

By: _____ (Signature) Attest: _____

Title: Owner

American Alternative Insurance Corporation

By: _____ (Signature) Witness: _____ (Signature)

Matthew Grenrood, Attorney-in-Fact

Jennifer Grenrood, Witness/Attest

IMPORTANT - Surety Companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

1. CONTRACT PRICE

Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents and amount in current funds equal to the sum of the amounts determined pursuant to table below.

1.01 For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work multiplied by the estimated quantity of that item as indicated below.

1.02 Estimated quantities are not guaranteed. All computations of the Contractor's compensation shall be based upon the quantities of work actually performed, whether greater or less than estimated quantities.

1.03 Each item to be bid shall be completely filled in by the Contractor.

No.	Description	Unit	Qty	Unit Price	Bid Amount
1	Mobilization	LS	1	14,500	14,500
2	8" C900 Water Main	LF	2,955	57.02	168,494.10
3	6" C900 Water Main	LF	198	50	9,900
4	4" C900 Water Main	LF	170	41	6,970
5	Water Main Connection - (W01a), sheet C1.10	EA	1	4,317	4,317
6	Water Main Connection - (W01b), sheet C1.10	EA	1	1,673	1,673
7	Water Main Connection - (W01c), sheet C1.10	EA	1	2,108	2,108
8	Water Main Connection - (W01d), sheet C1.10	EA	1	3,871	3,871
9	D.I. Fitting - 8" 11 1/4° Bend	EA	3	1000	3,000
10	D.I. Fitting - 8" 22 1/2° Bend	EA	3	1000	3,000
11	D.I. Fitting - 8" 45° Bend	EA	9	1000	9,000
12	D.I. Fitting - 6" 45° Bend	EA	2	1000	2,000
13	D.I. Fitting - 4" 45° Bend	EA	1	1000	1,000
14	D.I. Fitting - 8" 90° Bend	EA	3	1000	3,000
15	D.I. Fitting - 4" 90° Bend	EA	2	1000	2,000
16	D.I. Fitting - 8"x8"x8" Tee	EA	2	1,400	2,800
17	D.I. Fitting - 8"x8"x6" Tee	EA	3	1,400	4,200
18	D.I. Fitting - 8"x8"x4" Tee	EA	1	1,000	1,000
19	D.I. Fitting - 4"x4"x4" Tee	EA	1	1,000	1,000

20	D.I. Fitting - 12"x8" Reducer	EA	1	1,800	1,800
21	8" Gate Valve (not including valves at WM connections)	EA	4	3,000	12,000
22	6" Gate Valve	EA	3	2,100	6,300
23	4" Gate Valve	EA	2	2,100	4,200
24	4" Double Check Valve	EA	1	4,000	4,000
25	4" Blow-off / Air Release Valve	EA	1	3,500	3,500
26	Irrigation Main Drain / Drywell	EA	1	4,000	4,000
27	Fire Hydrant connections	EA	2	5,000	10,000
28	Install New Fire Hydrant	EA	1	8,270	8,270
29	Landscape Repair (Fence Reconstruction)	LS	1	4,000	4,000
30	Landscape Repair (Grass Re-seeding), Assumed 20' Wide along trench	SY	7,036	2.70	18,997.20
31	Landscape Repair (Irrigation Repair)	LS	1	4,000	4,000
32	Asphalt Repair	SY	158	81	12,798
33	Traffic Control	LS	1	500	500
34	Construction Surveying	LS	1	13,000	13,000
WATER IMPROVEMENTS TOTAL BID AMOUNT					351,198.30

Three Hundred Fifty One Thousand One Hundred Ninety Eight Dollars and 30/100

1. The BIDDER shall submit with the BID FORM a list of names of subcontracting firms or businesses that will be awarded subcontractors for portions of the Work as specified in Section 13 of the "Instructions to Bidders."

2. The Subcontractors list shall be completed and shall include the following information:

   2.01 Subcontractors, listing each subcontractor whose subcontract amount is more than ten percent (10%) of the Contract Price with whom the BIDDER, if awarded the Contract, will subcontract for performance.

   2.02 The categories of work those subcontractors will perform on the Contract.

   2.03 The subcontractors that will be performing Instrumentation, Mechanical, HVAC, Plumbing, and Electrical work.

3. A BID PROPOSAL will be considered non-responsive and will be rejected if the BIDDER does not correctly complete the Listing of Subcontractors contained herein, and include this list with the BID FORM.

4. List of Subcontractors to be used:

SUBCONTRACTOR	WORK	SUBCONTRACT AMOUNT	% OF CONTRACT PRICE
Webb Landscape	Landscape Repair	$18997.20	5.41

5. Material Suppliers List

SUPPLIER	MATERIAL		
Mountainland Supply	Pipe - fittings		

SOUTH KETCHUM REDUNDANT MAIN, PROJECT B

KETCHUM, IDAHO

DECEMBER 2024

GENERAL CONSTRUCTIONS NOTES

1. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE MOST CURRENT EDITION OF THE "IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION" (ISPWC) AND CITY OF KETCHUM STANDARDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND KEEPING A COPY OF THE ISPWC AND CITY OF KETCHUM 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, TO INCLUDE ANY AND ALL LANDSCAPE IRRIGATION, VEGETATION, STRUCTURES, AND FIXTURES.
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 MAXIMUM DENSITY AS DETERMINED BY ASTM D-698. 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, TYPE II (ITD STANDARD 703.04, 2"), SHALL BE PLACED IN CONFORMANCE WITH ISPWC SECTION 801 AND COMPACTED PER SECTION 202. MINIMUM COMPACTION OF PLACED MATERIAL SHALL BE 90% OF MAXIMUM LABORATORY DENSITY AS DETERMINED BY AASHTO T-99.
9. ALL 3/4" MINUS CRUSHED GRAVEL SHALL CONFORM TO ISPWC 802, TYPE I (ITD STANDARD 703.04, 3/4" B), SHALL BE PLACED IN CONFORMANCE WITH ISPWC SECTION 802 AND COMPACTED PER SECTION 202. MINIMUM COMPACTION OF PLACED MATERIAL SHALL BE 95% OF MAXIMUM LABORATORY DENSITY AS DETERMINED BY AASHTO T-99 OR ITD T-91.
10. ALL ASPHALTIC CONCRETE PAVEMENT WORK SHALL CONFORM TO ISPWC SECTION(S) 805, 810, AND 811 FOR CLASS II PAVEMENT. ASPHALT AGGREGATE SHALL BE 1/2" (13MM) NOMINAL SIZE CONFORMING TO TABLE 803B IN ISPWC SECTION 803. ASPHALT BINDER SHALL BE PG 58-28 CONFORMING TO TABLE A-1 IN ISPWC SECTION 805.
11. ASPHALT SAWCUTS SHALL BE AS INDICATED ON THE DRAWINGS, OR 24" INCHES FROM EDGE OF EXISTING ASPHALT, IF NOT INDICATED OTHERWISE SO AS TO PROVIDE A CLEAN PAVEMENT EDGE FOR MATCHING. NO WHEEL CUTTING SHALL BE ALLOWED.
12. 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).
13. ALL CONCRETE WORK SHALL CONFORM TO ISPWC SECTIONS 701, 703, AND 705. ALL CONCRETE SHALL BE 4,000 PSI MINIMUM, 28 DAY, AS DEFINED IN ISPWC SECTION 703, TABLE 1. IMMEDIATELY AFTER PLACEMENT PROTECT CONCRETE BY APPLYING MEMBRANE-FORMING CURING COMPOUND, TYPE 2, CLASS A PER ASTM C 309-94. APPLY CURING COMPOUND PER MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS.
14. ALL TRENCHING SHALL CONFORM TO ISPWC STANDARD DRAWING SD-301. TRENCHES SHALL BE BACKFILLED AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.
15. 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.
16. TOPOGRAPHIC, SITE, AND BOUNDARY SURVEYS SHOWN HEREON WERE CONDUCTED BY GALENA-BENCHMARK ENGINEERING. CONTOUR DATA IS PER BLAINE COUNTY LIDAR.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING A MATERIALS TESTING COMPANY DURING CONSTRUCTION TO VERIFY ALL COMPACTION AND MATERIAL PLAN AND SPECIFICATION REQUIREMENTS ARE MET. QUALITY CONTROL DOCUMENTATION OF TESTING FOR WORK IN RIGHT-OF-WAY MEETING CITY OF KETCHUM CODE SECTION 12.04.040 (CONCRETE, AGGREGATE BASE COMPACTION, ASPHALT COMPACTION) WILL BE NECESSARY FOR CERTIFICATE OF OCCUPANCY.

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.

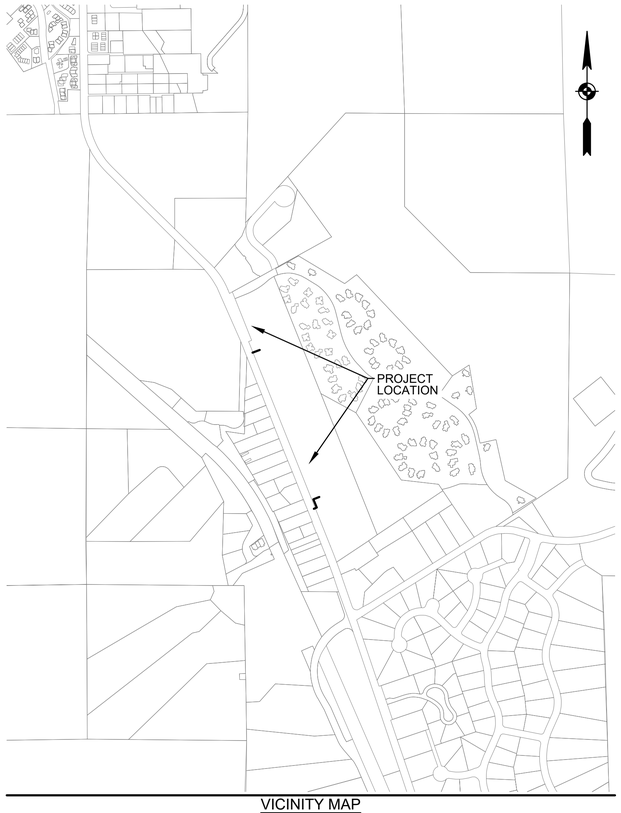
State of Idaho • Department of Environmental Quality

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.

Joseph Otero, P.E. — Reviewing DEQ Engineer:
Dec 13, 2024 — Approval Date:
Refer to approval conditions in letter to: City of Ketchum

SHEET INDEX



VICINITY MAP
N.T.S.

LEGEND

EXISTING CONDITIONS

- Property Line
- Right of Way Centerline
- Easements
- 5' Contour Interval
- 1' Contour Interval
- Edge ofSurface Water
- Edge of Asphalt
- Fence
- Concrete Masonry Unit
- Culvert
- Drywell
- Stormdrain Manhole
- Catch Basin
- Asphalt
- Building / Structure
- Dripline of Vegetation
- Conifer Tree
- Deciduous Tree
- Wetlands
- Sign
- Flowline
- CTL = Century Link Communication Line
- COX = COX Communication Line
- Fiber Optic Line
- Buried Television Line
- Fiber Optic Box
- Fiber Optic Line Marker
- Gas Line
- Gas Valve
- Gas Line Marker
- Telephone Line
- Telephone Riser
- Communication Vault
- Power Buried
- Power Line Marker
- Power Box
- Power Vault
- Power Pole
- Light
- Guywire
- Cable TV Riser
- Sewer Main
- Sewer Cleanout
- Sewer Manhole
- Sewer Service
- Sewer Reuse Line
- Water Main (size as shown)
- Fire Hydrant
- Frost Free Hydrant
- Water Valve

PROPOSED CONDITIONS

- 8" Water Main
- Water Main Fitting, see plans
- 8" Gate Valve
- Fire Hydrant

RECEIVED
Dec 03, 2024
DEQ Twin Falls Regional Office

CIVIL ENGINEER
SAMANTHA STAHLNECKER, PE
OPAL ENGINEERING, PLLC
416 S. MAIN STREET SUITE 204
PO BOX 2530
HAILEY, IDAHO 83333

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

PURPOSE: ISSUE FOR BID / D.E.Q. REVIEW (12-03-2024)

REVISION NO.	DATE	DESCRIPTION

PROFESSIONAL ENGINEER LICENSED 17618 12/03/2024 STATE OF IDAHO SAMANTHA STAHLNECKER

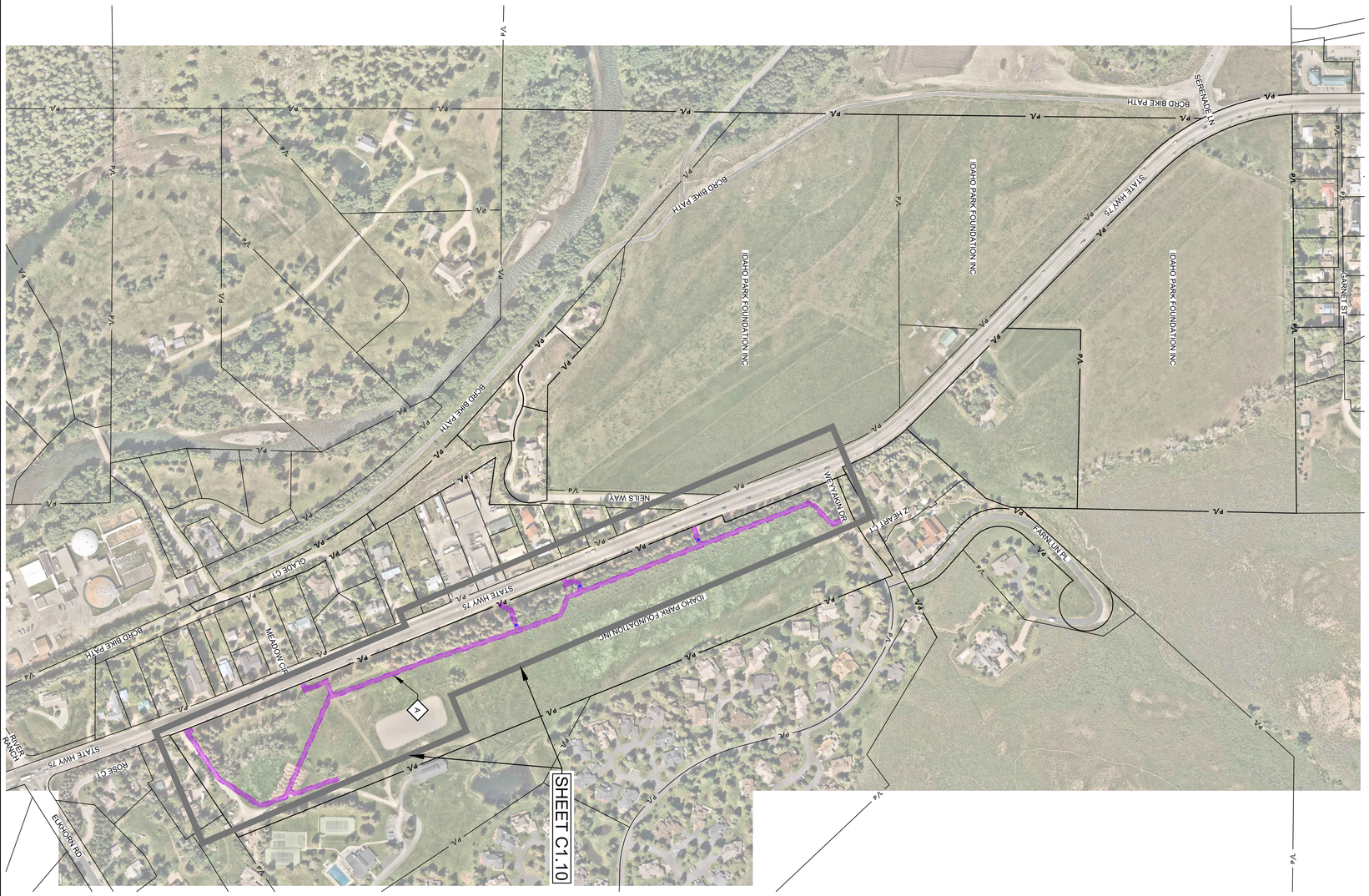
COVER SHEET

SOUTH KETCHUM REDUNDANT MAIN, PROJECT B

PREPARED FOR: CITY OF KETCHUM

22036-7.0
PROJECT NUMBER

C0.10



WATER MAIN EASEMENT LEGEND

PROPOSED WATER MAIN EASEMENT
WEYYAKIN RANCH PROPERTY OWNERS ASSOC.

GRAPHIC SCALE
0 200 400
Scale in Feet

C0.20

PROJECT NUMBER 22036-7.0

KET MAP AND EASEMENT OVERLAY MAP

SOUTH KETCHUM REDUNDANT MAIN, PROJECT B

PREPARED FOR: CITY OF KETCHUM

PROFESSIONAL ENGINEER LICENSED STATE OF IDAHO SAMANTHA STAHLNECKER 17618 12/20/2024

PURPOSE: ISSUE FOR BID / D.E.Q. REVIEW (12-03-2024)

REVISION NO.	DATE	DESCRIPTION

opal
OPAL ENGINEERING, PLLC
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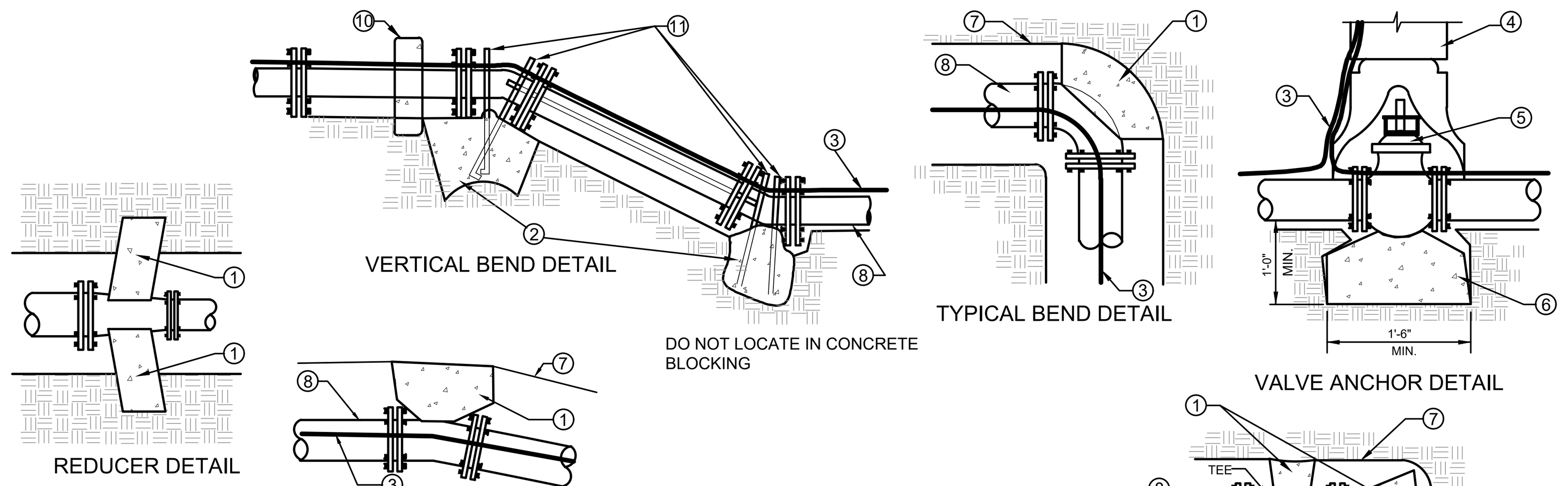
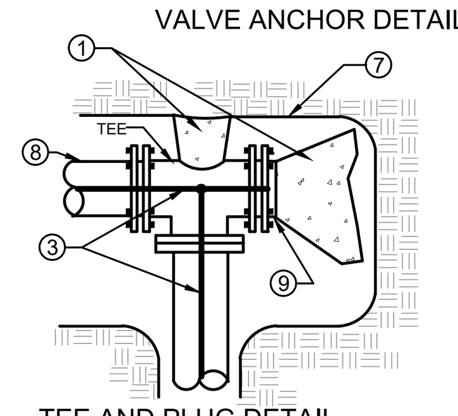




TEE AND PLUG DETAIL

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

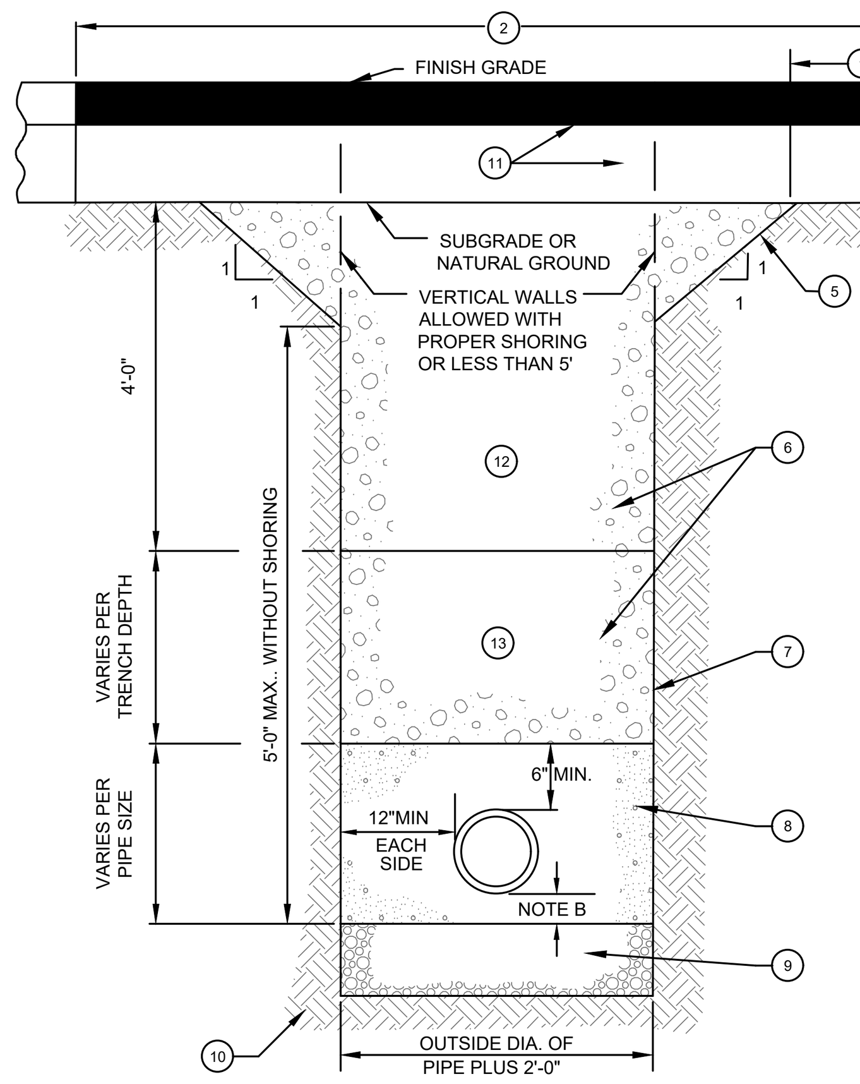
1. FOR HORIZONTAL PIPE BENDS, BEARING THRUST BLOCKS MUST PROVIDE 2500 PSI CONCRETE POURED AGAINST UNDISTURBED EARTH PER TABLE 1.
2. FOR VERTICAL PIPE BENDS, GRAVITY THRUST BLOCKS MUST PROVIDE A VOLUME OF CONCRETE POURED AGAINST UNDISTURBED EARTH WHICH IS SIZED FOR EXPECTED FORCES WITH A MINIMUM 1.5 FACTOR 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)

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.

1 / C1.00 THRUST BLOCK AND ANCHOR DETAILS

N.T.S.



LEGEND

1. 2' REQUIRED BOTH SIDES, SAWCUT REQUIRED.
2. SURFACE REPAIR WIDTH, 4' MINIMUM. SEE NOTE 5.
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" BELOW 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: REFER TO NOTES 4 & 5 BELOW. IF TRENCH IS LOCATED WITHIN PUBLIC RIGHT-OF-WAY, REFER TO "KETCHUM PUBLIC CONSTRUCTION SLURRY REQUIREMENT" BELOW.
12. UPPER COMPACTION ZONE; SEE "KETCHUM PUBLIC CONSTRUCTION SLURRY REQUIREMENT" BELOW IF LOCATED WITHIN PUBLIC RIGHT-OF-WAY.
13. LOWER COMPACTION ZONE

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 (3/8" MINUS) : 2,600 LBS
SAND : 800 LBS
PORTLAND CEMENT : 94 LBS
WATER : 11 GAL (MAX.)

WATER CONTENT IS MAXIMUM AND MAY BE REDUCED DOWNWARD. CARE 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.

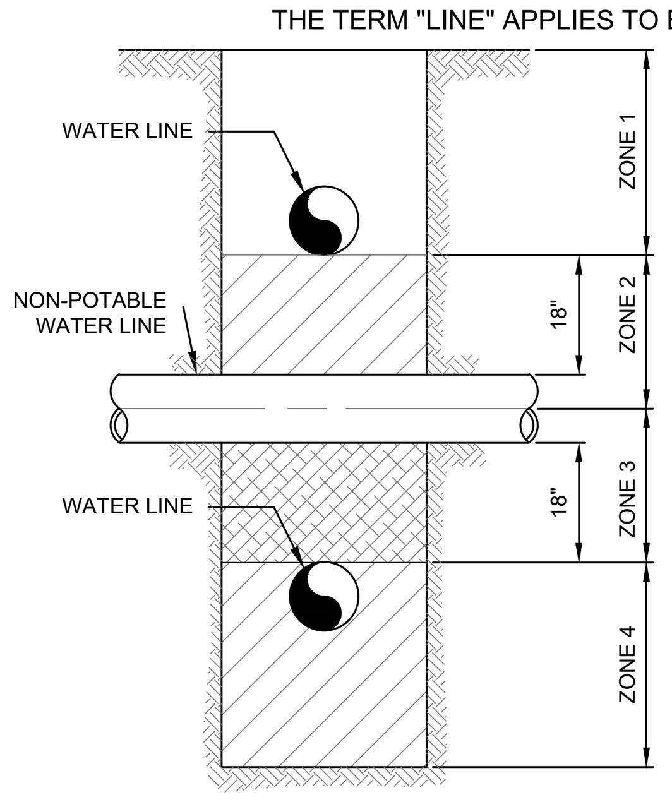
NOTES:

1. TRENCH EXCAVATION PER SECTION-301.
2. PIPE BEDDING PER SECTION-305.
3. BACKFILL AND COMPACTION PER SECTION-306.
4. SURFACE AND BASE REPAIR PER CITY OF KETCHUM STANDARD DRAWING DETAIL NO. 3, "TYPICAL STREET ASPHALT SECTION".
5. ASPHALT PAVEMENT FOR SURFACE REPAIR SHALL BE IN ACCORDANCE WITH PLANS AND ISPWC SECTIONS 805, 810, AND 811 FOR CLASS II PAVEMENT. ASPHALT AGGREGATE SHALL BE ½" (13MM) NOMINAL SIZE CONFORMING TO TABLE 803B IN ISPWC SECTION 803. ASPHALT BINDER SHALL BE PG 58-28 CONFORMING TO TABLE A-1 IN ISPWC SECTION 805.
6. IF TRENCH IMPACTS CROWN OF ROADWAY, CROWN MUST BE MAINTAINED AND POSITIVE DRAINAGE PROVIDED.

2 / C1.00 TYPICAL TRENCH SECTION

N.T.S.

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



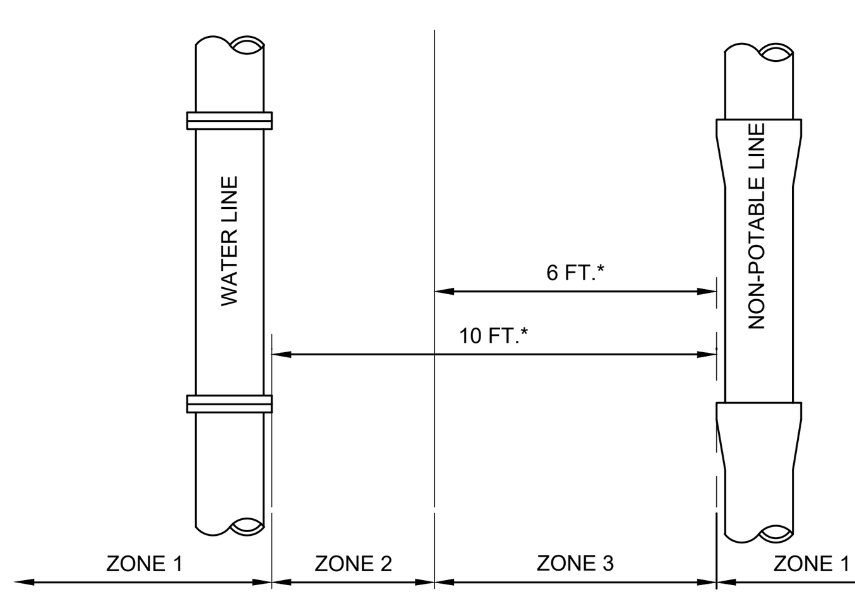
VERTICAL SEPARATION REQUIREMENTS

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 THE NPWL MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.



HORIZONTAL SEPARATION REQUIREMENTS

ZONE 1: A) NO SPECIAL REQUIREMENTS.

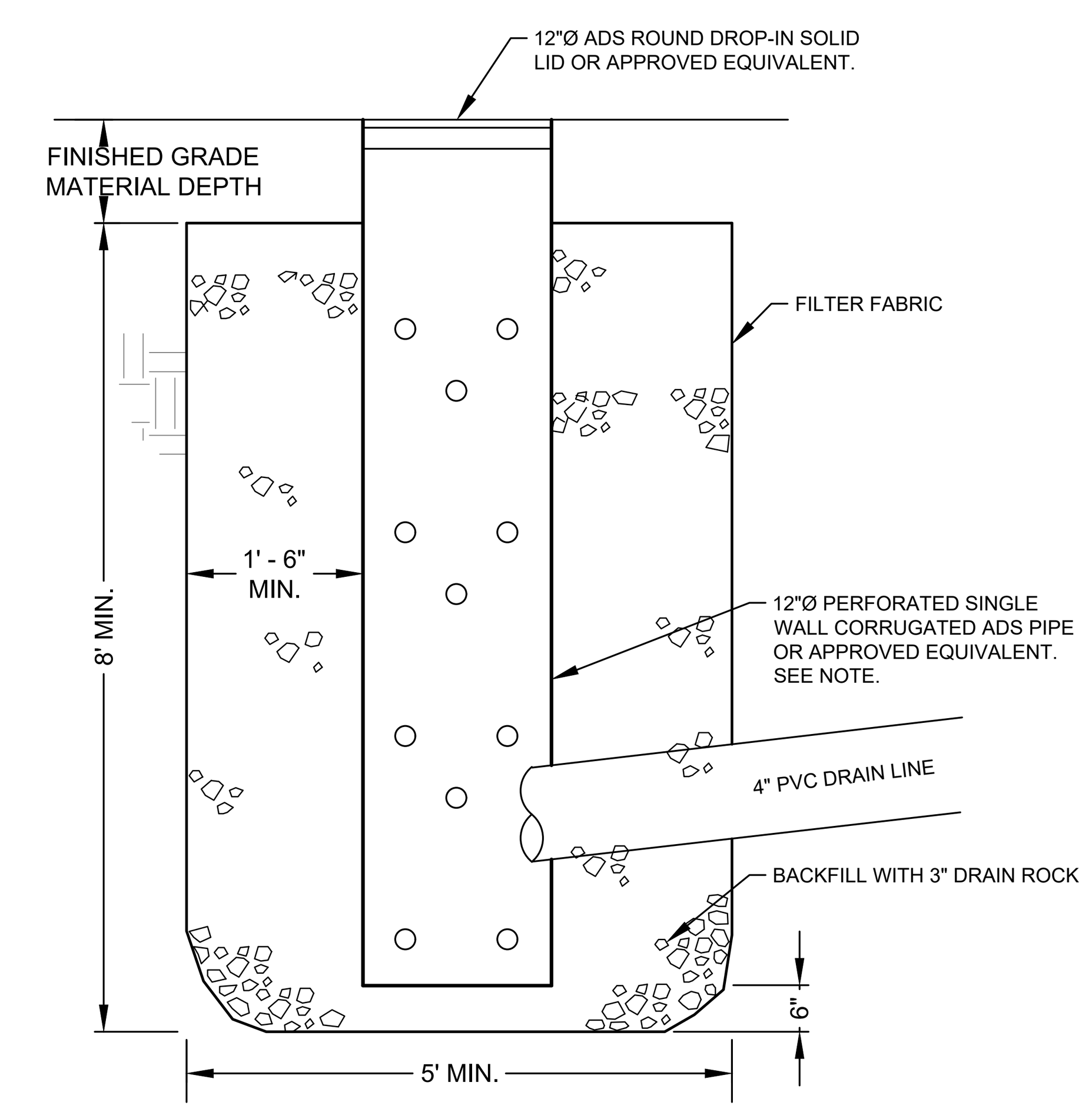
ZONE 2: A) NO SPECIAL REQUIREMENTS FOR POTABLE OR NON-POTABLE SERVICES
B) WATER AND NPWL SEPARATED BY AT LEAST 6 FEET AT OUTSIDE WALLS.
AND
C) WATER AT LEAST 18 INCHES HIGHER IN ELEVATION THAN THE NPWL.
AND EITHER
D) NPWL CONSTRUCTED TO POTABLE WATER MAIN STANDARDS AND PRESSURE TESTED FOR WATER TIGHTNESS.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

N.T.S.

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)			Hydrant Outlets	
Pipe Diam. (inch)	Velocity in Main, (Gpm)	Number of taps on pipe (2): (1)	(1-1/2)	(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

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PURPOSE: ISSUE FOR BID / D.E.Q. REVIEW (12-03-2024)

REVISION NO.	DATE	DESCRIPTION

PROFESSIONAL ENGINEER LICENSED 17618 12/03/2024 STATE OF IDAHO SAMANTHA STAHLNECKER

DETAIL SHEET

SOUTH KETCHUM REDUNDANT MAIN, PROJECT B
PREPARED FOR: CITY OF KETCHUM

22036-7.0
PROJECT NUMBER

C1.00

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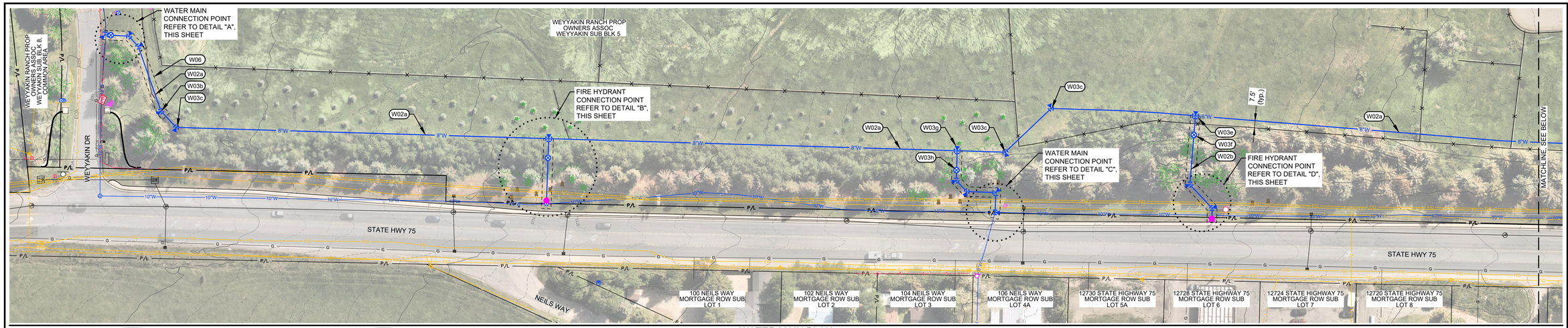
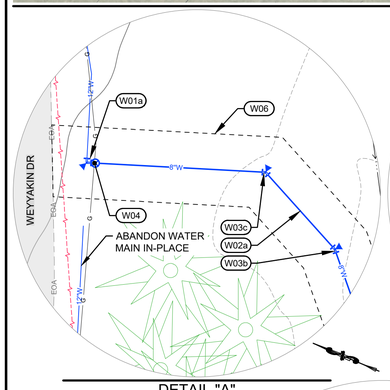


WATER MAIN PLAN



DETAIL "A"
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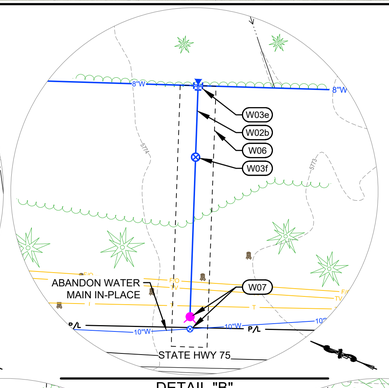

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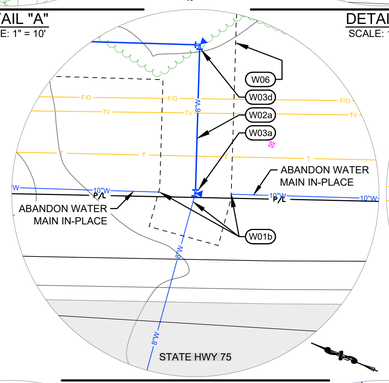

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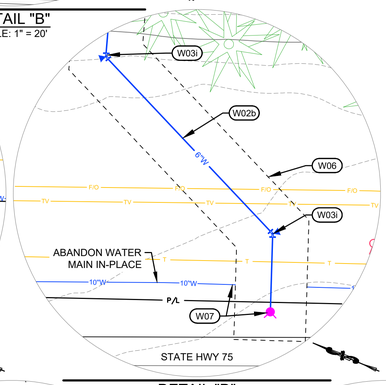

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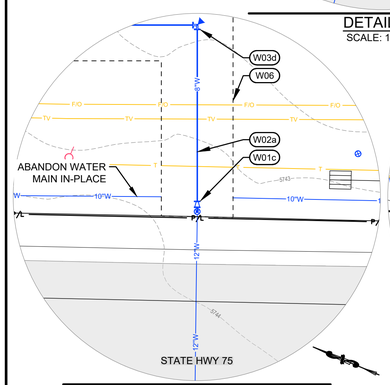
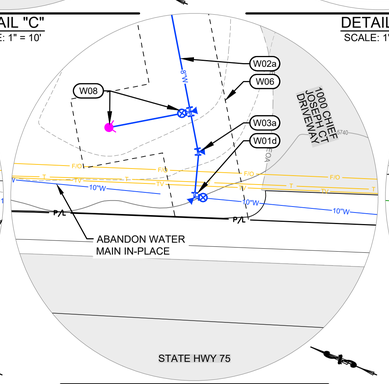
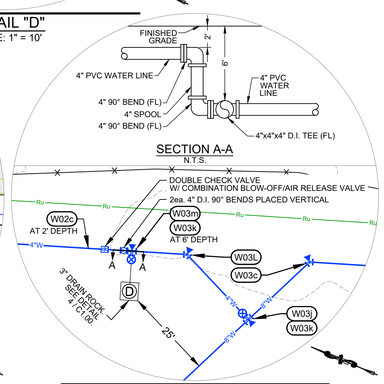


DETAIL "E"
SCALE: 1" = 10'

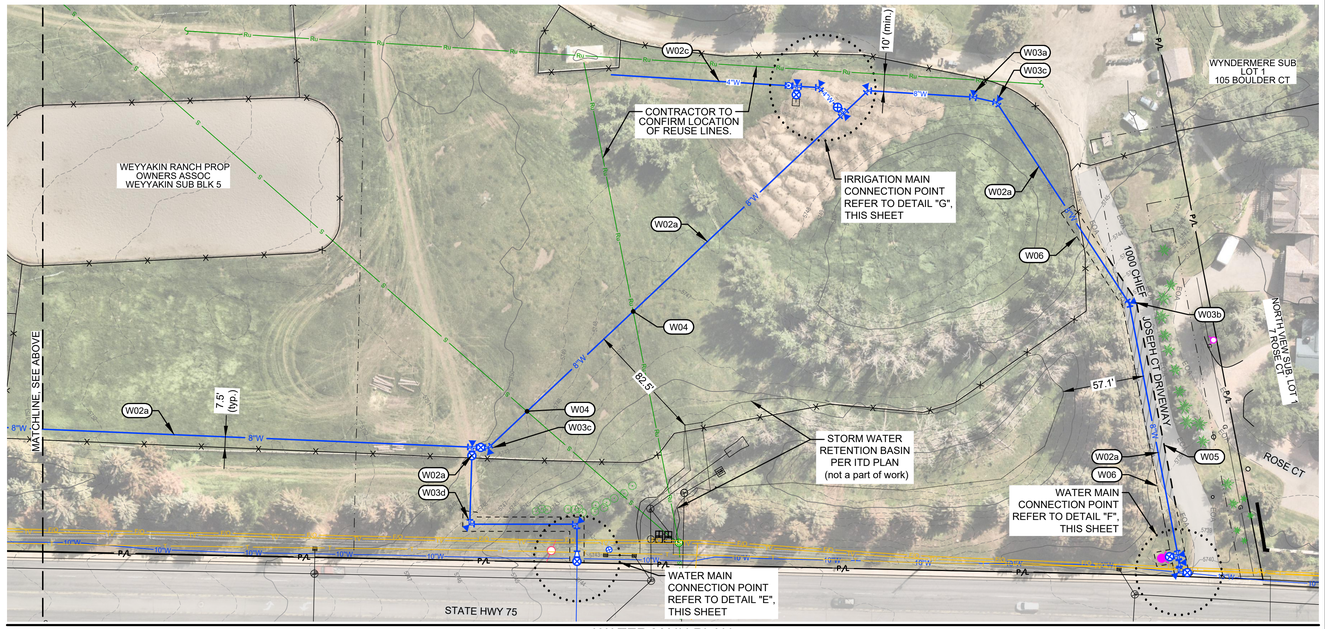


DETAIL "F"
SCALE: 1" = 10'



SECTION A-A
N.T.S.

DETAIL "G"
SCALE: 1" = 20'

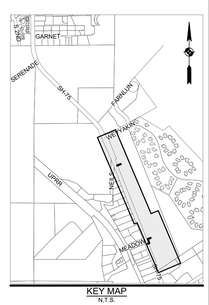


WATER MAIN PLAN

WATER KEY NOTES

- W01 POINT OF WATER CONNECTION. COORDINATE ACTIVITY WITH THE CITY.
  - a. CUT EXISTING 12" WATER MAIN. INSTALL 12"x8" D.I. REDUCING 90° BEND AND 8" GATE VALVE. W/ THRUST PROTECTION. REFER TO DETAIL 1 / C1.00.
  - b. REMOVE EXISTING 10" WATER MAIN CONNECTION. CONNECT NEW 8" WATER MAIN TO EXISTING 8" WATER MAIN. EXTRA WATER FITTINGS MAY BE NEEDED.
  - c. REMOVE EXISTING 10" WATER MAIN CONNECTION. CONNECT NEW 8" WATER MAIN TO EXISTING 12" WATER MAIN AT GATE VALVE WITH 12"x8" D.I. REDUCER AND THRUST PROTECTION. EXTRA WATER FITTINGS MAY BE NEEDED. REFER TO DETAIL 1 / C1.00.
  - d. CUT EXISTING 10" WATER MAIN. INSTALL 10"x8" D.I. REDUCING 90° BEND AND 8" GATE VALVE. W/ THRUST PROTECTION. REFER TO DETAIL 1 / C1.00.
- W02 INSTALL PVC C-900 WATER MAIN. REFER TO DETAIL 2 / C1.00 FOR TRENCHING.
  - a. 8 INCH
  - b. 6 INCH
  - c. 4 INCH
- W03 INSTALL DUCTILE IRON FITTINGS WITH THRUST BLOCK. REFER TO DETAIL 1 / C1.00 FOR THRUST PROTECTION.
  - a. 8" 11 1/4° BEND
  - b. 8" 22 1/2° BEND
  - c. 8" 45° BEND
  - d. 8" 90° BEND
  - e. 8"x8"x6" TEE
  - f. 6" GATE VALVE
  - g. 8"x8"x8" TEE
  - h. 8" GATE VALVE
  - i. 6" 45° BEND
  - j. 8"x8"x4" TEE
  - k. 4" GATE VALVE
  - L. 4" GATE VALVE
  - m. 4"x4"x4" TEE (FL)
- W04 POTABLE/NON-POTABLE CROSSING. SEE ISPWC DETAIL SD-407 AND/OR DETAIL 3 / C1.00 FOR SEPARATION REQUIREMENTS.
- W05 SAWCUT ASPHALT AND REPAIR. REFER TO DETAIL 2 / C1.00.
- W06 LANDSCAPE REPAIR: THE CONTRACTOR SHALL REPAIR LANDSCAPED AREA AFTER CONSTRUCTION SO THAT IT IS IN A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION. SUCH ITEMS IN MAY INCLUDE, BUT ARE NOT LIMITED TO, LAWN, IRRIGATION, FENCE, LANDSCAPE WALL, ETC.
- W07 REMOVE CONNECTION OF FIRE HYDRANT FROM EXISTING 10" WATER MAIN. CONNECT FIRE HYDRANT TO NEW 6" WATER MAIN.
- W08 INSTALL NEW FIRE HYDRANT ASSEMBLY. 8"x8"x6" D.I. TEE 6" GATE VALVE W/ THRUST BLOCKS

GRAPHIC SCALE
0 50 100
Scale in Feet



N.T.S.

opal
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PURPOSE: ISSUE FOR BID / D.E.Q. REVIEW (12-03-2024)

REVISION NO.	DATE	DESCRIPTION

PROFESSIONAL ENGINEER LICENSED 17618 12/03/2024 STATE OF IDAHO SAMANTHA STAHLNECKER

WATER MAIN PLAN THRU WEYYAKIN RANCH

SOUTH KETCHUM REDUNDANT MAIN, PROJECT B

PREPARED FOR: CITY OF KETCHUM

22036-7.0
PROJECT NUMBER

C1.10