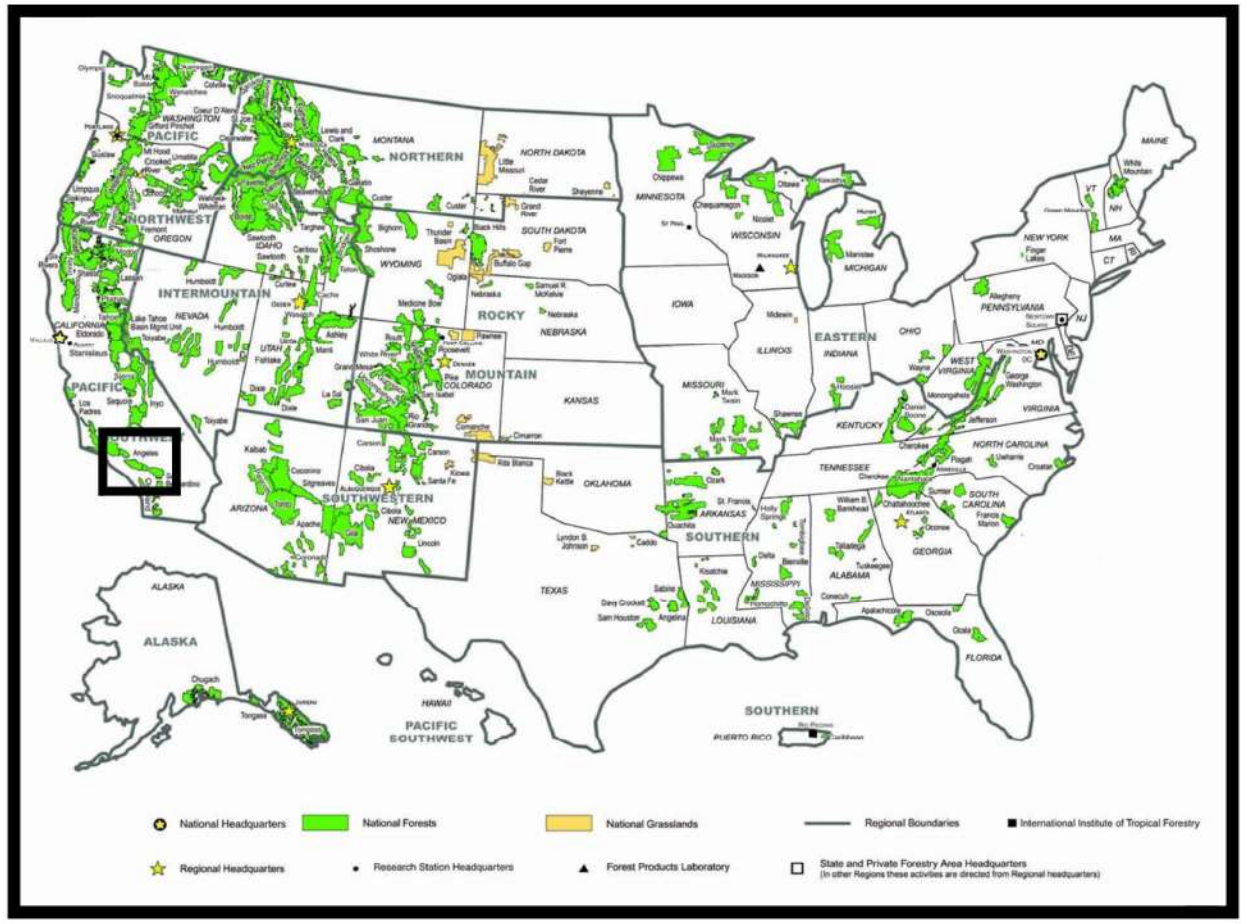
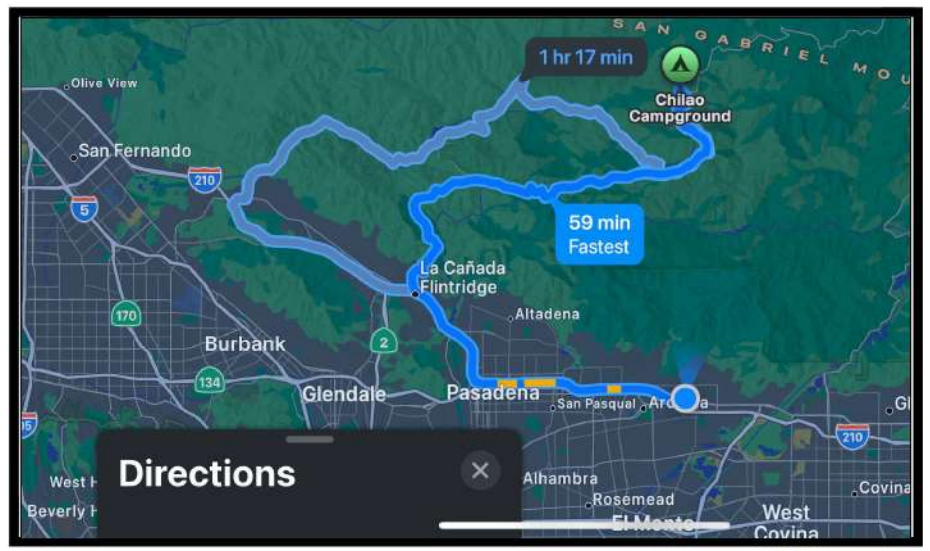
United States Department of Agriculture
Forest Service

CALIFORNIA
LOS ANGELES
(R05) PACIFIC SOUTHWEST REGION
ANGELES NATIONAL FOREST
SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

CHILAO CAMPGROUND COMPLEX WATER SYSTEM REHABILITATION



FOREST LOCATION MAP



PROJECT LOCATION MAP

TRAVEL DIRECTIONS:

DIRECTIONS FROM NEAREST FOREST SERVICE OFFICE:
FROM ARCADIA SUPERVISOR'S OFFICE, TRAVEL ON I-210 WEST FOR ~12 MILES TAKING EXIT 20 FOR CA-2/ANGELES CREST HWY TOWARDS LA CANADA FLINTRIDGE. PROCEED ~26 MILES ON CA-2/ANGELES CREST HWY/ANGELES SCENIC BYWY UNTIL YOU REACH THE CHILAO CAMPGROUND AREA ON THE LEFT HAND SIDE. 34.326768, -118.005877

INDEX OF SHEETS

SHEET	SHEET TITLE	DATE
G-01	COVERSHEET	
G-02	GENERAL NOTES	
G-03	OVERALL LAYOUT	
C-01	VISITOR CENTER TO STATION	
C-02	STATION CONNECTION	
C-03	MANZANITA CONNECTION	
C-04	STATION TANK REHAB	
C-05	MANZANITA TANK REHAB	
C-06	WELL REHAB	
D-01	PIPE DETAILS	
D-02	STREAM CROSSING DETAILS	
D-03	TYPICAL ROAD DETAILS 1	
D-04	TYPICAL ROAD DETAILS 2	
D-05	WELL REHAB DETAILS 1	
D-06	WELL REHAB DETAILS 2	

RECOMMENDED BY:

FOREST ENGINEER _____ DATE _____

DISTRICT RANGER _____ DATE _____

FOREST SUPERVISOR _____ DATE _____

RO FACILITIES PROGRAM MANAGER _____ DATE _____

APPROVED:

DIRECTOR OF ENGINEERING _____ DATE _____

08/26 11:00 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GA\CHILAO_CONTOURS_EXPORTCAD.DWG;

General Notes:

1. The contractor shall at once report to the Contracting Officer (CO) any errors, inconsistencies or omissions discovered in the contract documents and with information furnished by the U.S. Forest Service. If the contractor performs any construction activity knowing it involved a recognized error, without such notice to the CO, the contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

2. All sections mentioned below refer to "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-24 latest edition, Federal Highways Administration. Specifications are in US customary units.

3. All instances in contracting documents which refer to "Plans" or "Project Plans", "Drawings" or "Project Drawings" refer to this set of drawings.

4. It is highly recommended that contractor visit the site to clarify site access for all equipment and material deliveries. All existing site features are approximate and shall be verified by the contractor.

5. Water availability for the contractor use from Forest Service Infrastructure cannot be guaranteed. All water is considered incidental to individual work items. Contractor shall secure their own water source and water secured shall be free of all deleterious material.

6. Prior to construction COR and Contractor will flag appropriate areas for parking, storing and material stockpile areas.

7. No telephone will be available for contractor use and there is no network connectivity in remote areas. Contractor is permitted to use sanitary facilities at the Picnic Area.

8. All Staging areas, bypass locations and other areas disturbed by construction activities shall be restored to previous condition as approved by CO.

9. Clean up and jobsite safety: Contractor shall clean up all debris on a daily basis. Contractor shall at all times secure and cover all tools, building materials, shoring and scaffolding in such a manner that persons cannot climb on them or have access to them.

10. Contractor shall remove from Forest Service land all material generated by on-site activities and not used in the final product.

11. Contractor shall submit a schedule of work for approval at least 10 business days prior to start of work.

12. The General Contractor shall control and supervise the performance of the work of various disciplines prior to and during respective performance of work.

13. All construction activities shall be in accordance with caltrans storm water pollution control best management practices and Forest Service provided BMP's. Contractor shall submit to the COR a written storm water management plan at least 5 business days prior to beginning work. In the event of inclement weather, this plan shall include actions to provide protective covering for excavated or soil stockpile areas and all work in progress.

14. Caltrans storm water quality handbook, Construction Site Best Management Practices Manual can be purchased from the California Department of Transportation, Publications Distribution Unit, (916) 445-3520. Caltrans Best Management Practices, WM-8 Waste Management, procedures shall be followed for all construction activities where slurries containing asphalt concrete or portland cement concrete are generated, such as from saw cutting, grinding, and grooving, and where concrete trucks and other concrete coated equipment are washed on site.

15. Soil erosion and storm water pollution control measures shall be in accordance with Section 157 Soil Erosion Control and Caltrans Best Management Practices (BMP) SC-5 fiber roll. Only temporary fiber roll materials as listed in Caltrans BMP SC-5 are approved for use on this project. All applicable material shall be certified weed and seed free.

16. Control points for project are established by the Forest Service and will be provided at pre-construction conference. Contractor to be responsible for staking in accordance with Section 152 Construction Survey and Staking. All construction staking for elevation control, grade control, site layout, structure components and roadway shall be the responsibility of the contractor. Contractor shall stake location of all structure components for CO approval before any installation takes place. Approval of the construction staking will not relieve the contractor of the responsibility for maintaining the survey work and correcting errors, whether the errors are discovered during the actual survey work or in subsequent phases of the contract. Tie all new contours to existing.

17. It is the responsibility of the Contractor to ensure proper clearance for their equipment. All Clearing and Grubbing shall be in accordance with Section 201 Clearing and Grubbing. All brush, stumps and trees within project limits that interfere with construction activities may be removed only with prior approval of COR. Contractor should notify the COR of any necessary Clearing and Grubbing at least 5 working days prior to the start of work. Construction slash shall be removed and disposed of off National Forest Land at a suitable disposal site or chipped in suitable locations determined by the Forest Service. Care shall be taken to avoid damaging all live trees.

18. All roadway pulverization and compaction shall be in accordance with Section 304 Full Depth Reclamation and Section 204.11 Compaction in the FP-14. All unsuitable or excess excavated material shall be placed in areas within project limits or as designated by the CO. Any imported material used in the project shall by from a commercial source and the contractor shall furnish a material certificate of compliance that meets all requirement and is clean and does not contain any noxious weeds or seeds. Imported materials shall be subject to approval by the CO

19. Written dimensions shall take precedence over scaled dimensions.

20. All work shall be performed in accordance with applicable safety standards.

21. Asphalt concrete shall be hot bituminous plant mix (commercial source) per Caltrans ½ inch Maximum (medium). Bituminous binder shall be PG 64-10, 4% to 6% by weight of dry mineral aggregate, Two (2) inch compacted thickness, in accordance with Section 418 Asphalt Pavement Full Depth Patch, Type 2. Asphalt tack coat to be furnished and carefully applied to surfaces where old and new asphalt meet and in accordance with Section 412 Asphalt Tack Coat. Asphalt tack coat is incidental to asphalt paving work. Only release agents approved by the contracting officer shall be used on this project. Substances used to coat asphalt transport trucks, asphalt trucks and asphalt spreading equipment shall not contain soap and shall be non-foaming and non-toxic. All areas where new asphalt ties to old asphalt shall be sealed with SS1H and sand after new asphalt has cured. The SS1H shall be placed to completely cover the seam and six (6) inches beyond the seam on both sides where the new asphalt ties to the existing asphalt.

United States Department of Agriculture
Forest Service

(R5)
PACIFIC SOUTHWEST REGION

STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

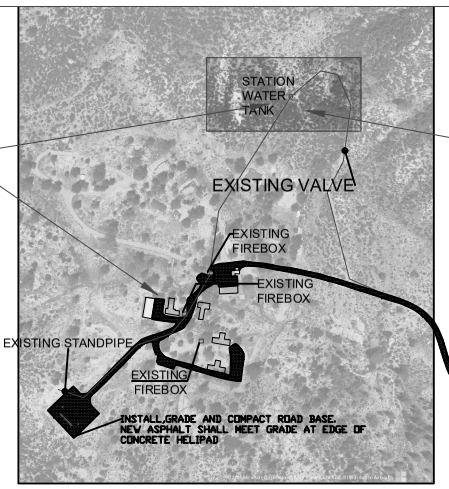
SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

DRAWING TITLE

GENERAL NOTES

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. G-02
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 2 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;



STATION TANK TO STATION LINE

VISITOR CENTER LINE TO STATION TANK

EXISTING VALVE

EXISTING CREEK CROSSING VALVE

NEW CREEK CROSSING BOX LOCATION

EXISTING VALVE

PRV LOCATION

EXISTING VALVE

NEW STANDPIPE

NEW STANDPIPE

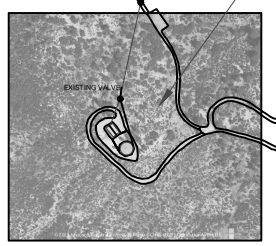
CREEK CROSSING TO MANZANITA TANK

CHILAO VISITOR CENTER ENTRANCE

REINSTALL STOP BAR AND STOP TEXT
18' STOP BAR WITH 72" STOP TEXT

REINSTALL STOP BAR AND STOP TEXT
18' STOP BAR WITH 72" STOP TEXT
AND TRAFFIC DIRECTIONAL ARROWS

EXISTING VALVE



STATE HIGHWAY 2 (CALTRANS)

CHILAO CAMPGROUND ACCESS

ROAD AND PIPELINE INFORMATION

NAME	LENGTH (FT)
3N21 VISITOR CENTER TO STATION TANK ROAD	8450
VISITOR CENTER TO STATION TANK PIPELINE	9250
3N14A1 FIRE STATION, BARRACKS, HELISPOT ROAD	1585
STATION TANK TO FIRESTATION PIPELINE	1650
3N21 CREEK CROSSING TO MANZANITA LOOP ROAD	2115
CREEK CROSSING TO MANZANITA TANK PIPELINE	3975

NOTES:

1. REPLACE EXISTING 2 ½" GALVANIZED STEEL PIPE WITH 2 ½" HDPE PIPE UNLESS EXPOSED, WHERE NEW 2 ½" GALVANIZED STEEL WILL BE USED.
2. PIPELINE WILL USE ALIGNMENT OF EXISTING PIPELINE AND VALVE BOXES BEING PLACED ALONGSIDE EXISTING PIPE THAT WILL BE LEFT IN PLACE. ALL COMPONENTS WITHIN VALVE BOXES WILL BE REPLACED IN KIND.
3. EXISTING CREEK CROSSING VALVE BOX WILL BE ABANDONED AND RELOCATED TO NEW SPOT WITH SAME PIPING CONFIGURATION AS EXISTING.
4. 2" WOODFORD STAND PIPES WILL BE USED FOR MARKED HYDRANT LOCATIONS AS LISTED IN SPECIFICATIONS.

United States Department of Agriculture
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(R5)
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NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

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CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

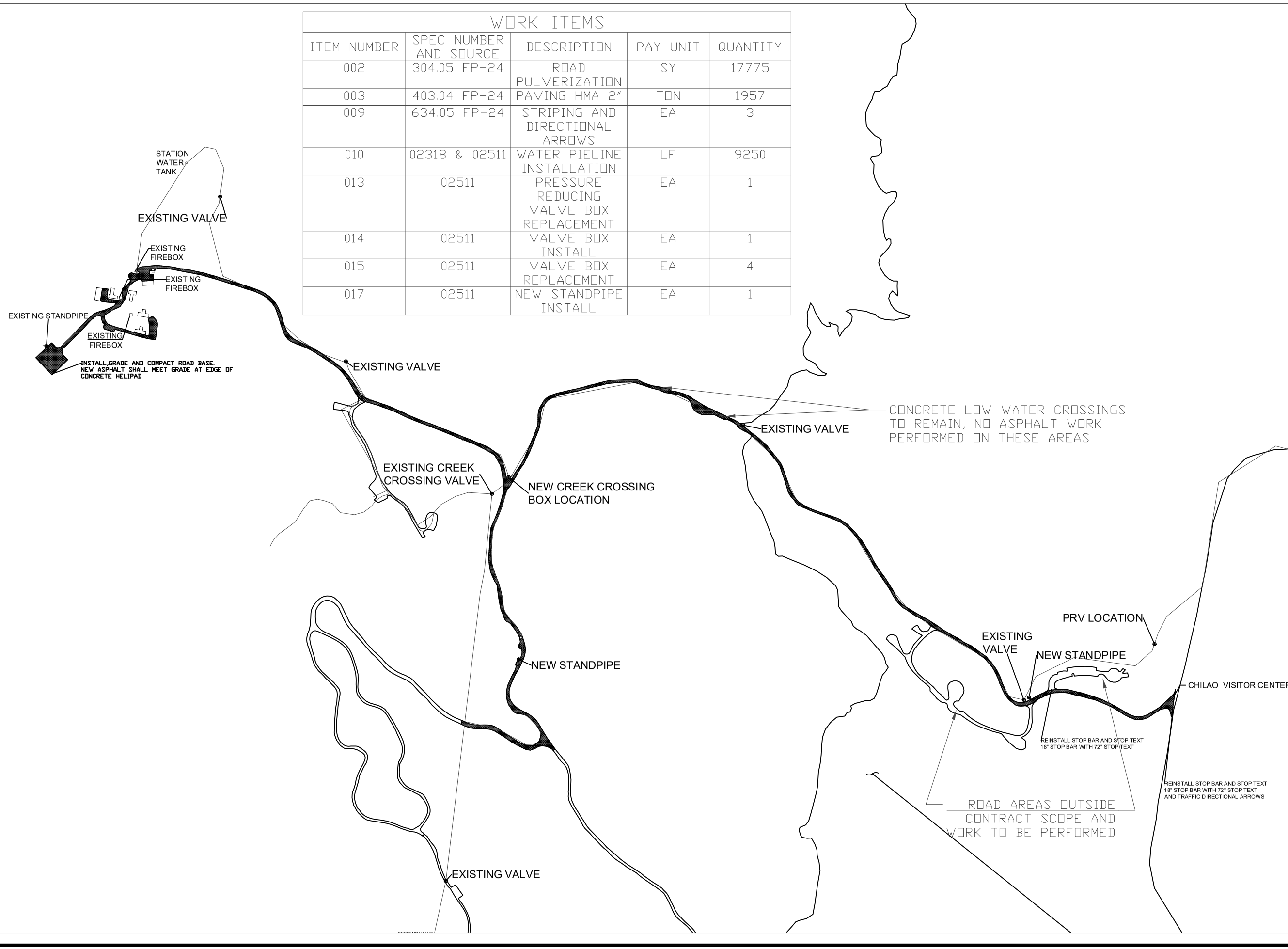
DRAWING TITLE

OVERALL LAYOUT

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. G-03
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 3 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

WORK ITEMS				
ITEM NUMBER	SPEC NUMBER AND SOURCE	DESCRIPTION	PAY UNIT	QUANTITY
002	304.05 FP-24	ROAD PULVERIZATION	SY	17775
003	403.04 FP-24	PAVING HMA 2"	TON	1957
009	634.05 FP-24	STRIPING AND DIRECTIONAL ARROWS	EA	3
010	02318 & 02511	WATER PIELINE INSTALLATION	LF	9250
013	02511	PRESSURE REDUCING VALVE BOX REPLACEMENT	EA	1
014	02511	VALVE BOX INSTALL	EA	1
015	02511	VALVE BOX REPLACEMENT	EA	4
017	02511	NEW STANDPIPE INSTALL	EA	1



United States Department of Agriculture
Forest Service

(R5)
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STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

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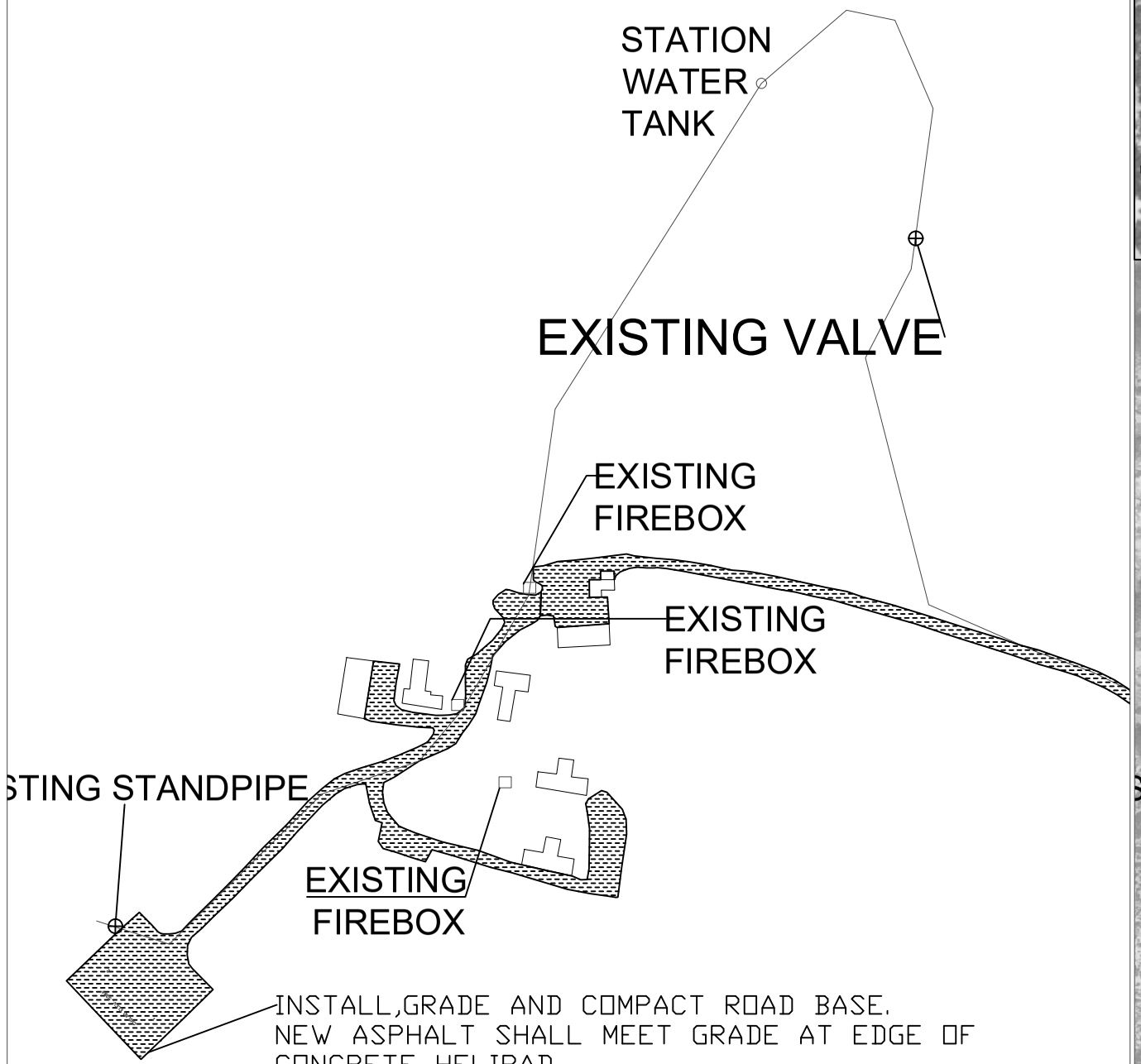
DRAWING TITLE

VISITOR CENTER TO STATION

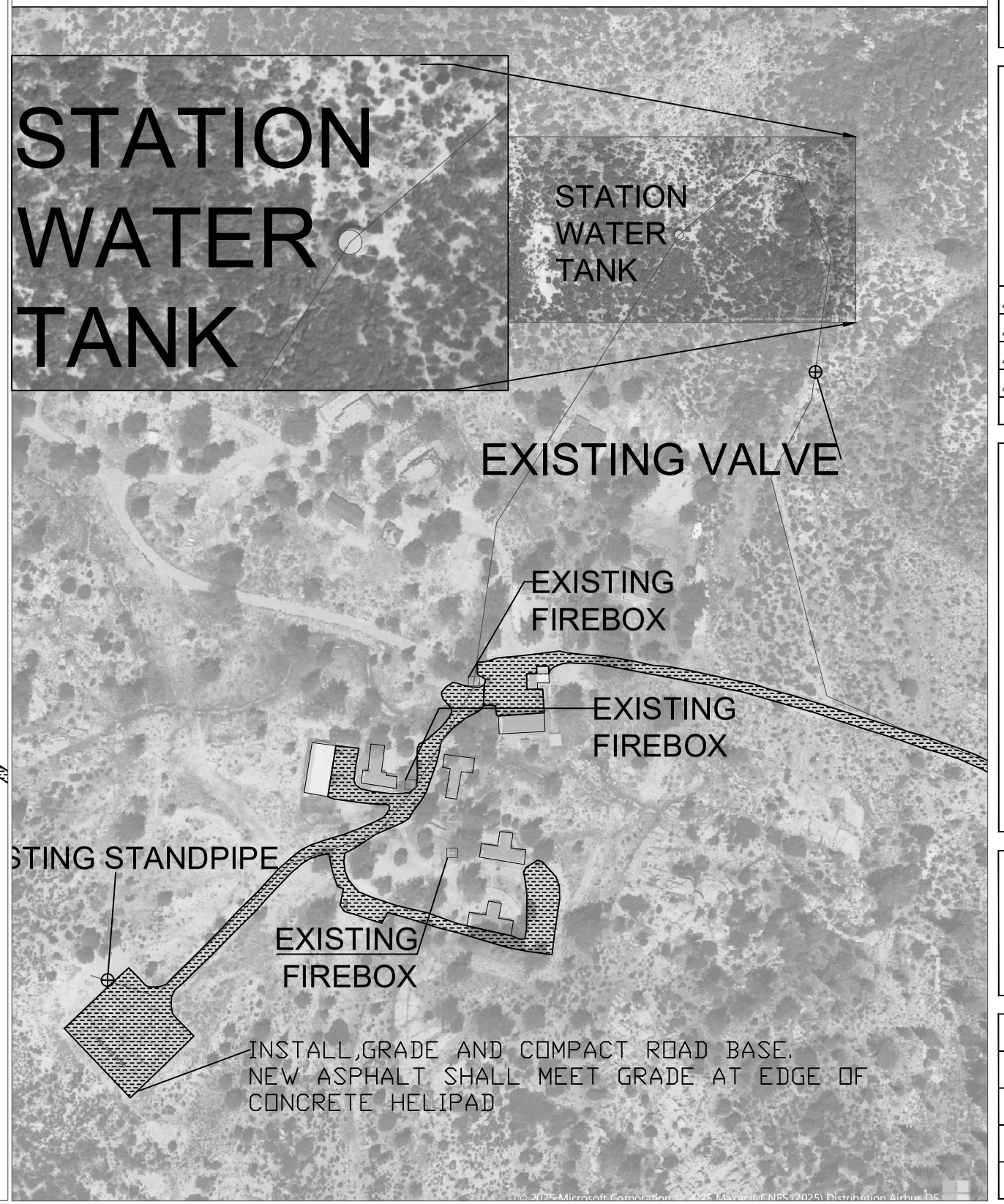
DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. C-01
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 4 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

WORK ITEMS				
ITEM NUMBER	SPEC NUMBER AND SOURCE	DESCRIPTION	PAY UNIT	QUANTITY
004	304.05 FP-24	ROAD PULVERIZATION	SY	6000
005	301.03b FP-24	AGGREGATE BASE	CY	240
006	403.04 FP-24	ROAD PAVING 3"HMA	TON	1005
011	02318 & 02511	WATERLINE INSTALLATION	FT	1650
016	02511	STAND PIPE BOX REHAB	EA	4



*CONTRACTOR IS RESPONSIBLE FOR RETURNING SERVICE TO ALL EXISTING CONNECTIONS



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United States Department of Agriculture
Forest Service

(R5)
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STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

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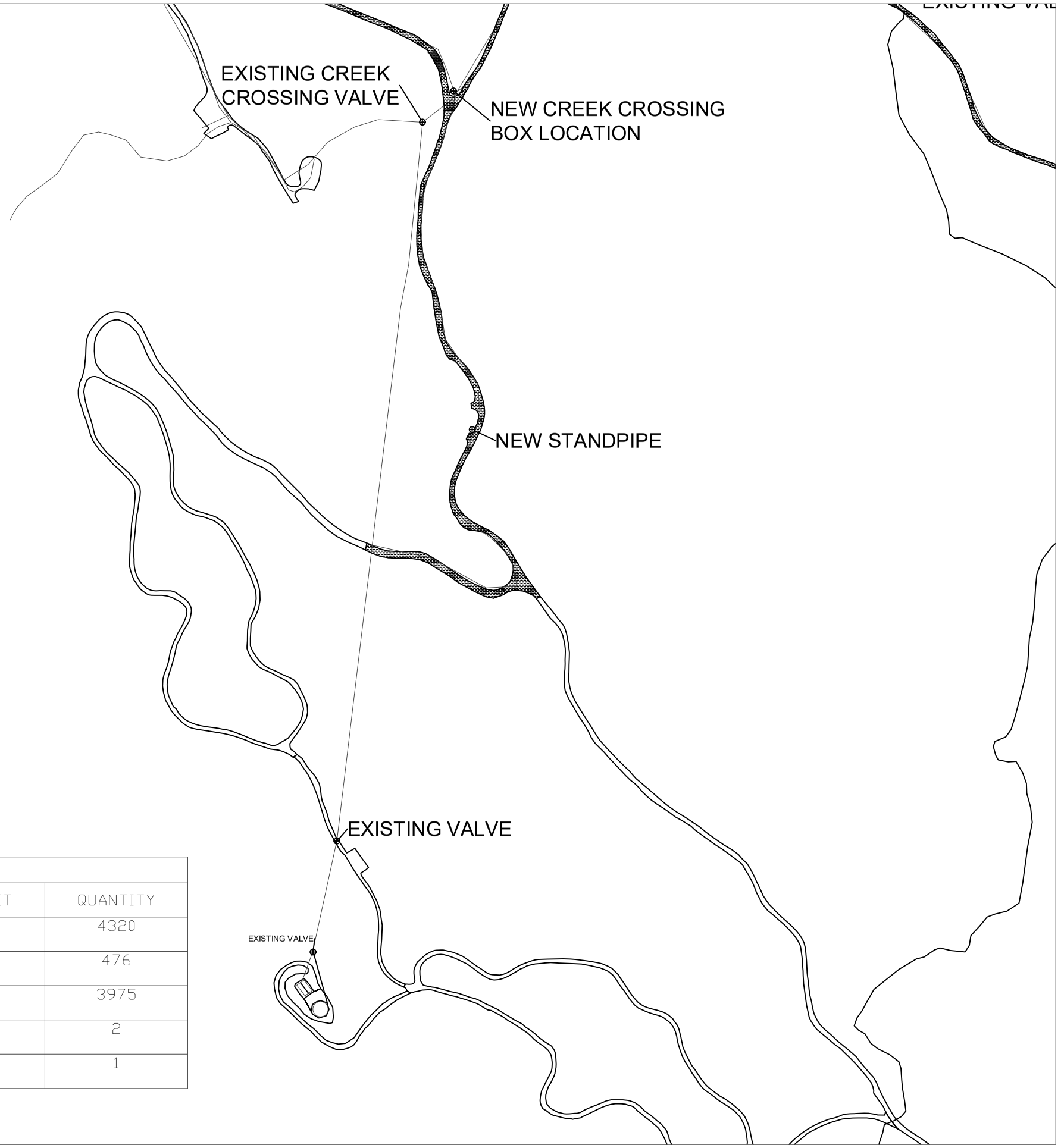
STATION CONNECTION

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. C-02
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 5 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;



WORK ITEMS				
ITEM NUMBER	SPEC NUMBER AND SOURCE	DESCRIPTION	PAY UNIT	QUANTITY
007	304.05 FP-24	ROAD PULVERIZATION	SY	4320
008	403.04 FP-24	ROAD PAVING HMA 2"	TON	476
012	02318 & 02511	WATERLINE INSTALLATION	LF	3975
015	02511	VALVE BOX REPLACEMENT	EA	2
017	02511	NEW STANDPIPE INSTALL	EA	1

(R5)
PACIFIC SOUTHWEST REGION

STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

DRAWING TITLE

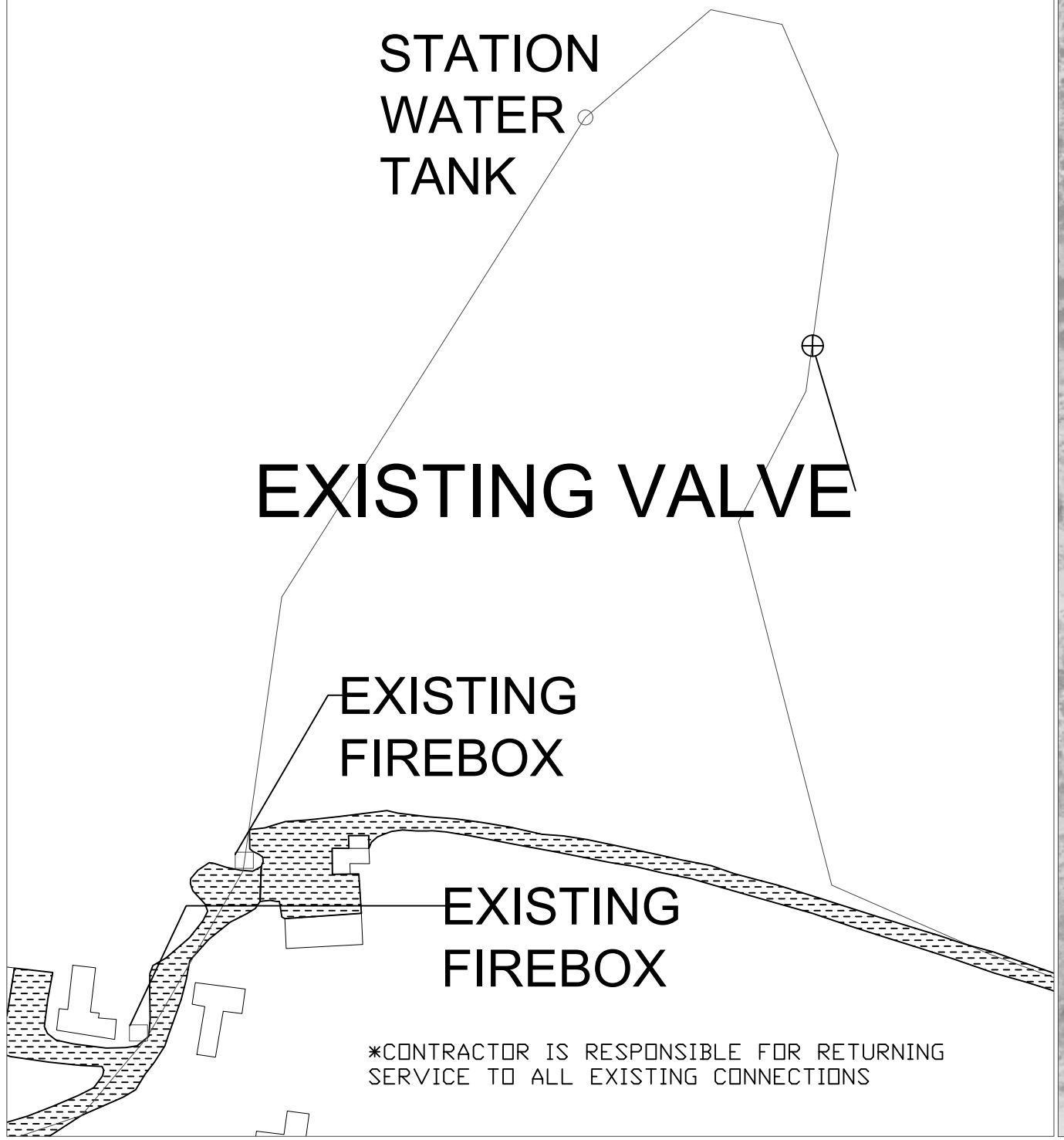
CREEK TO MANZANITA

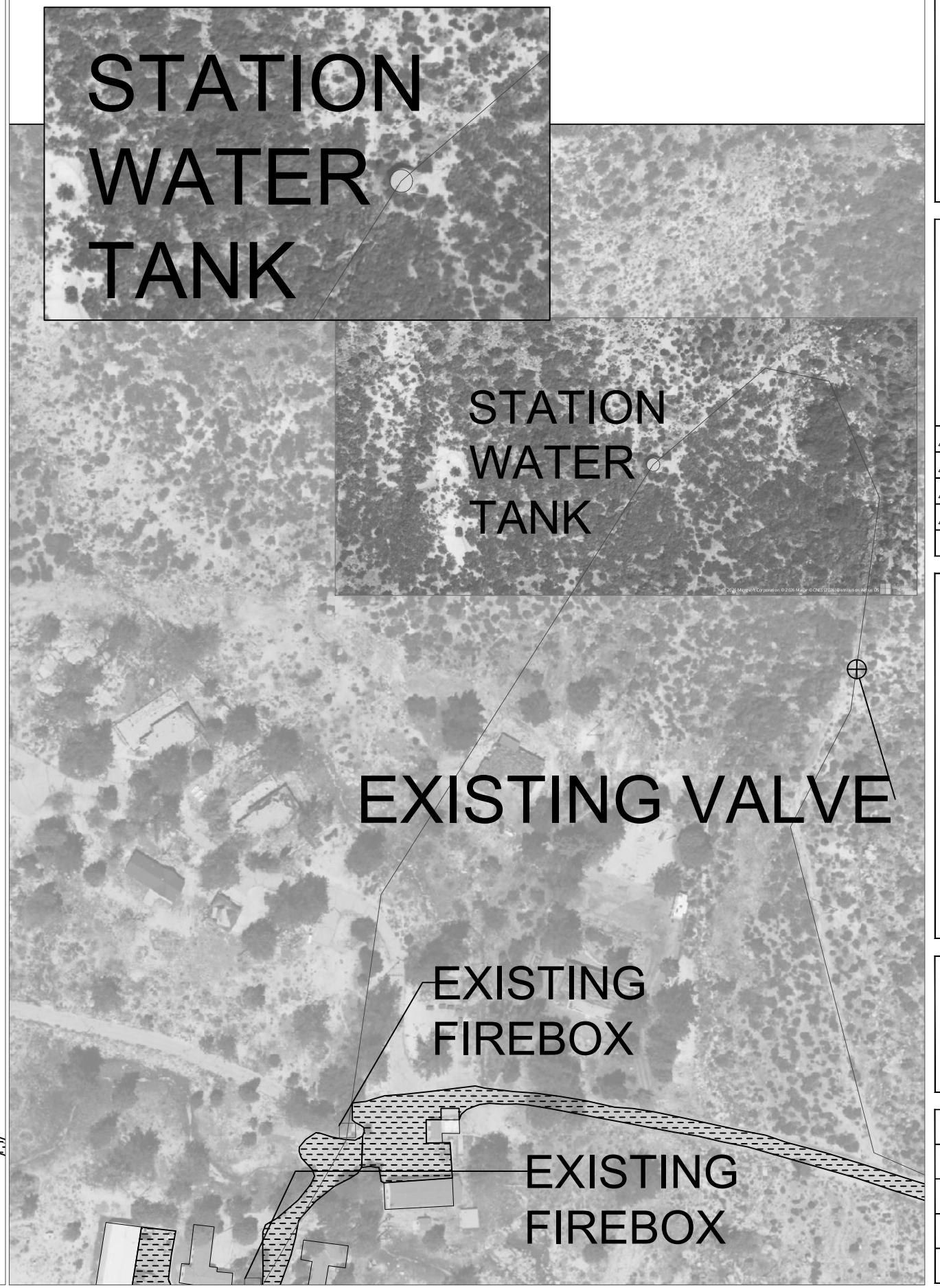
DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. C-03
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 6 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

WORK ITEMS				
ITEM NUMBER	SPEC NUMBER AND SOURCE	DESCRIPTION	PAY UNIT	QUANTITY
018	09960	STATION TANK COATING	EA	1
019	03400	CRACK REHAB	EA	1
020	15010	REHAB VALVE AND LADDER	EA	1

NOTES:
1. CONTRACTOR WILL DRAIN TANK, FIX CRACKS, AND APPLY COATING TO THE TWO MANZANITA TANKS.
2. CONTRACTOR WILL INSTALL A LADDER, NEW FLOAT VALVE, AND LEVEL INDICATOR.





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United States Department of Agriculture
Forest Service

(R5)
PACIFIC SOUTHWEST REGION

STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

DRAWING TITLE

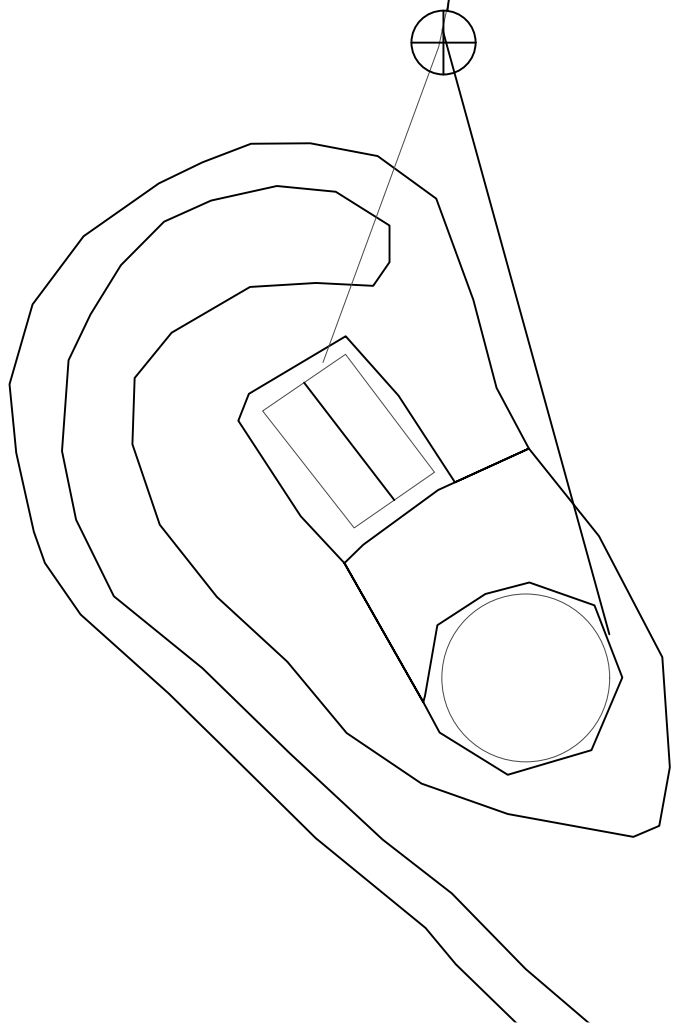
STATION TANK REHAB

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. C-04
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 7 OF 15

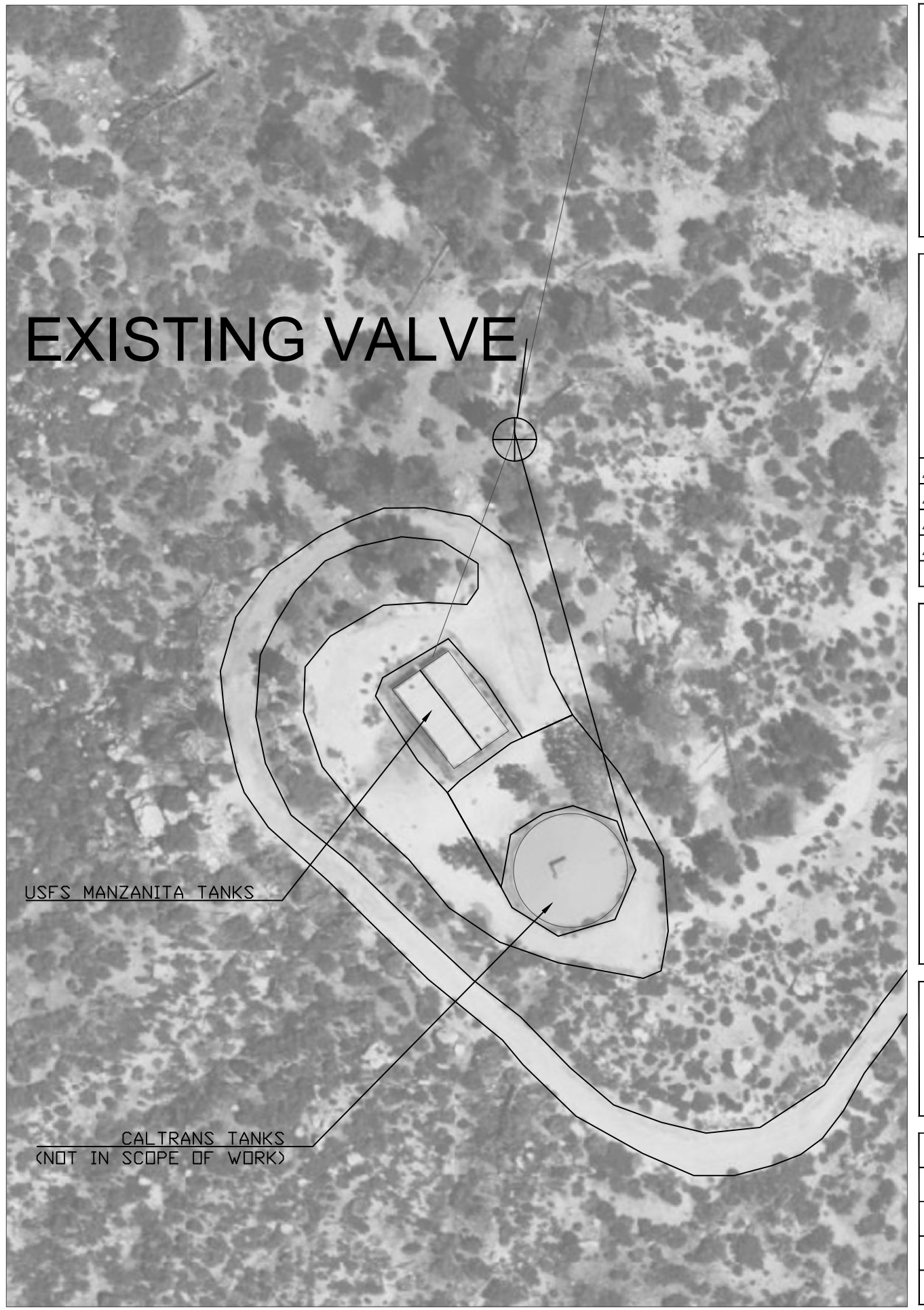
6/6/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

WORK ITEMS				
ITEM NUMBER	SPEC NUMBER AND SOURCE	DESCRIPTION	PAY UNIT	QUANTITY
021	09960	MANZANITA TANKS COATING	EA	2
022	03400	TANKS CRACK REHABILITATION	EA	2

EXISTING VALVE



NOTES:
1. CONTRACTOR WILL DRAIN TANK, FIX CRACKS, AND APPLY COATING TO THE TWO MANZANITA TANKS.
2. CONTRACTOR WILL PAINT OUTSIDE OF TANK TO REMOVE GRAFFITI FROM THE MANZANITA TANKS.



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United States Department of Agriculture
Forest Service

(R5)
PACIFIC SOUTHWEST REGION

STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

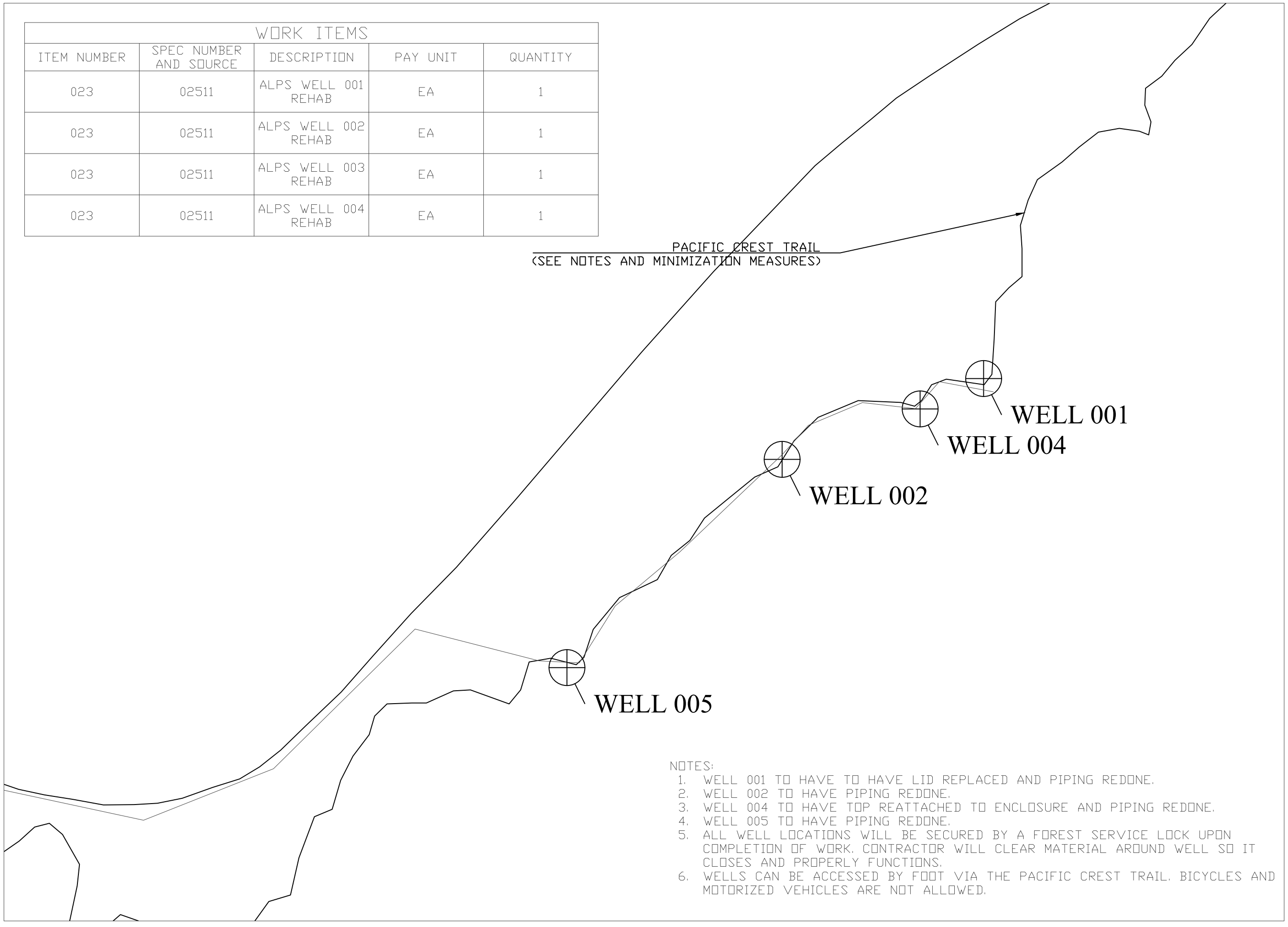
DRAWING TITLE

MANZANITA TANK REHAB

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. C-05
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 8 OF 15

6/26/25 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

WORK ITEMS				
ITEM NUMBER	SPEC NUMBER AND SOURCE	DESCRIPTION	PAY UNIT	QUANTITY
023	02511	ALPS WELL 001 REHAB	EA	1
023	02511	ALPS WELL 002 REHAB	EA	1
023	02511	ALPS WELL 003 REHAB	EA	1
023	02511	ALPS WELL 004 REHAB	EA	1



NOTES:

1. WELL 001 TO HAVE TO HAVE LID REPLACED AND PIPING REDONE.
2. WELL 002 TO HAVE PIPING REDONE.
3. WELL 004 TO HAVE TOP REATTACHED TO ENCLOSURE AND PIPING REDONE.
4. WELL 005 TO HAVE PIPING REDONE.
5. ALL WELL LOCATIONS WILL BE SECURED BY A FOREST SERVICE LOCK UPON COMPLETION OF WORK. CONTRACTOR WILL CLEAR MATERIAL AROUND WELL SO IT CLOSES AND PROPERLY FUNCTIONS.
6. WELLS CAN BE ACCESSED BY FOOT VIA THE PACIFIC CREST TRAIL. BICYCLES AND MOTORIZED VEHICLES ARE NOT ALLOWED.

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4		
3		
2		
1		

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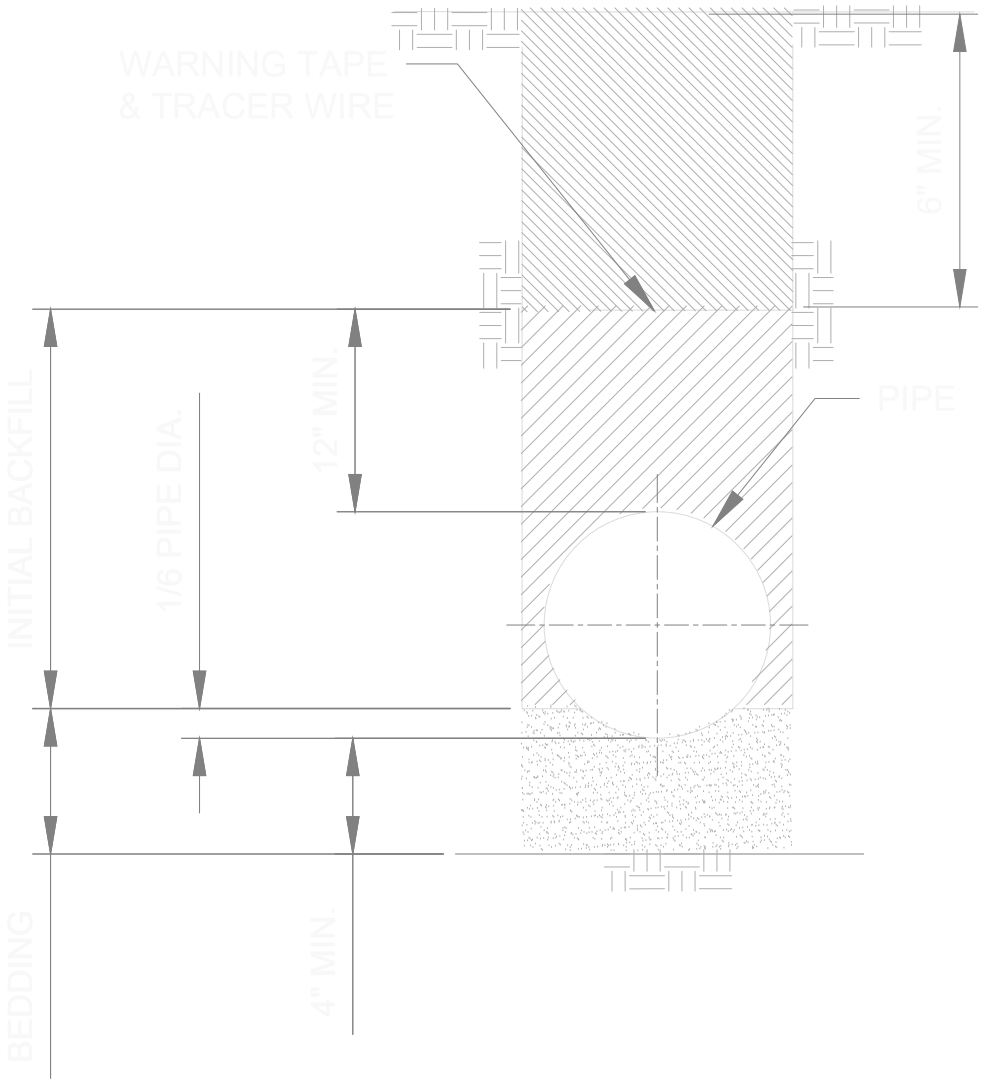
WELL REHAB

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. C-06
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 9 OF 15

6/8/25 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

RIGID PIPE



A14 TRENCH BEDDING

SCALE: NONE

USDA FOREST SERVICE

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Forest Service

(R5)
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NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

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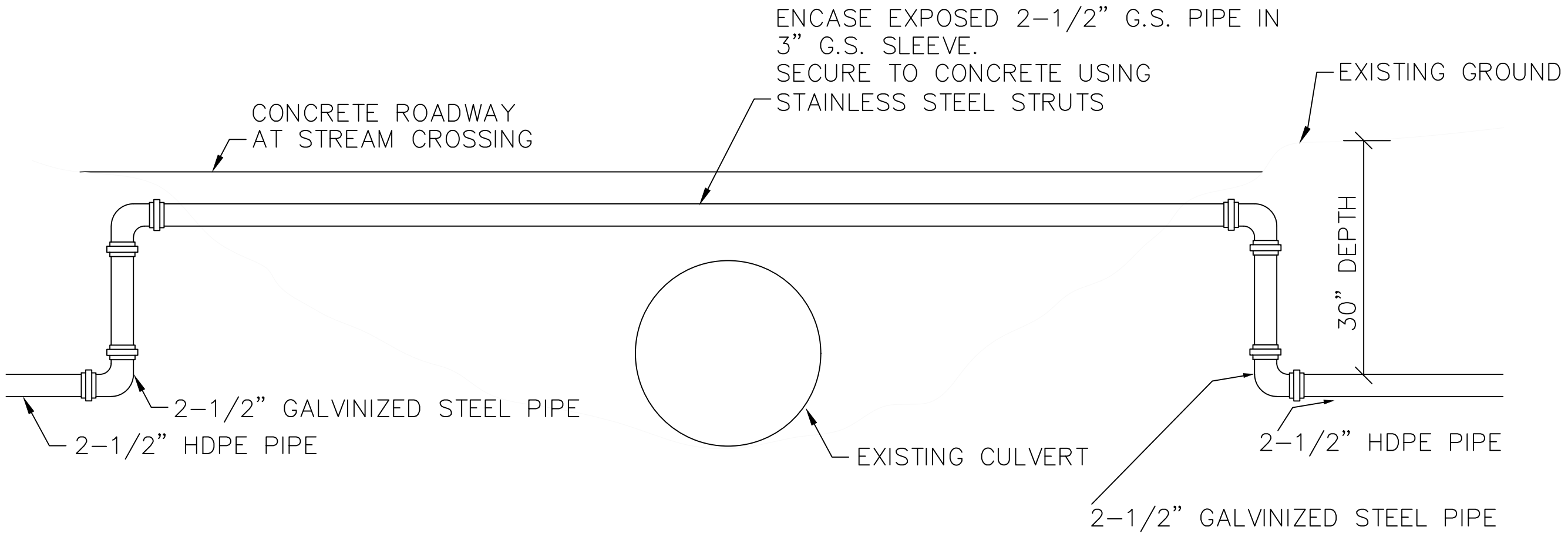
DRAWING TITLE

PIPE DETAIL

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. D-01
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 10 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;



PIPE LINE DETAIL AT STREAM CROSSING

N.T.S.

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Forest Service

(R5)
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NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

DRAWING TITLE

STREAM CROSSING DETAIL

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. D-02
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 11 OF 15

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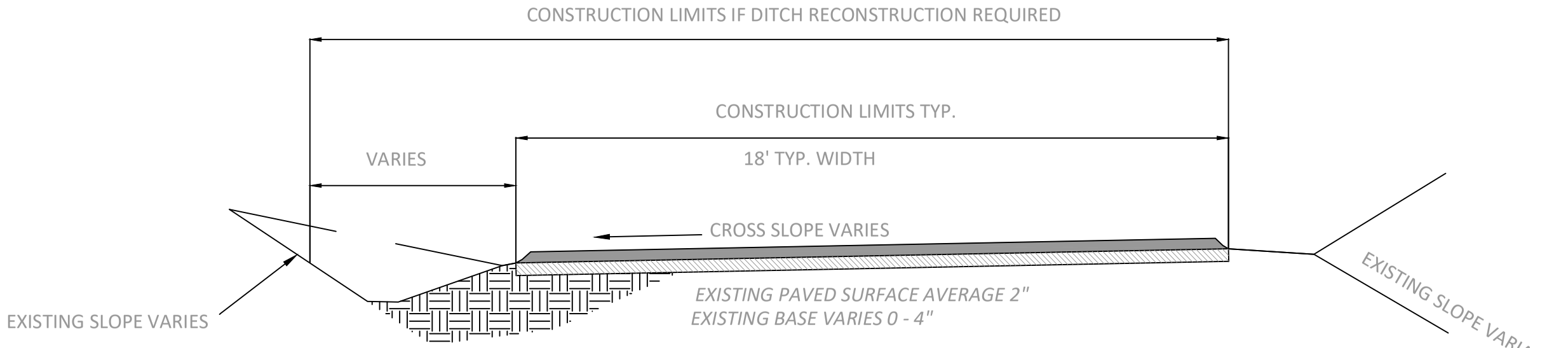
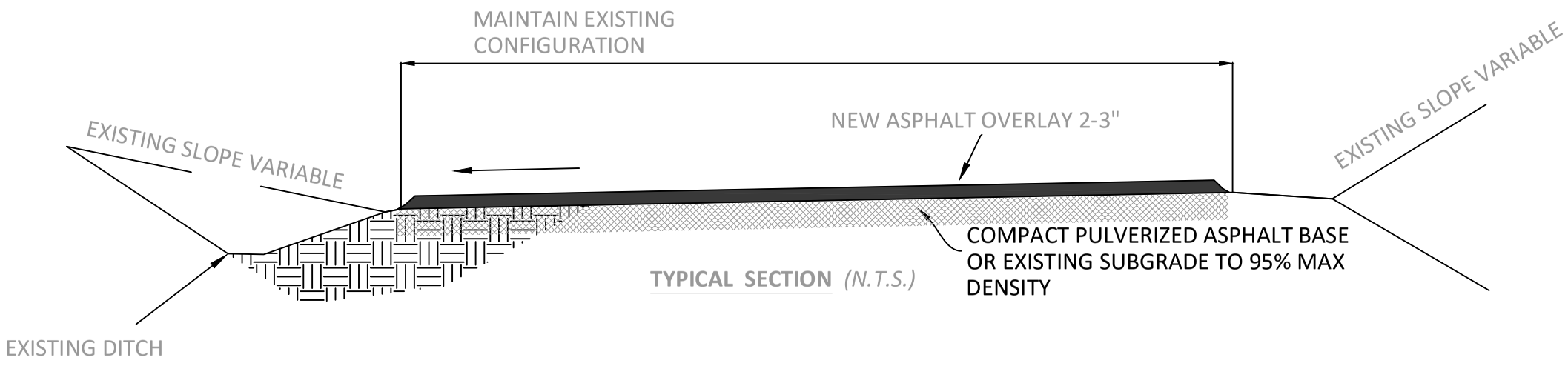


TYPICAL EXISTING SECTION *(N.T.S.)*



TYPICAL SECTION *(N.T.S.)*

ALL EXISTING ROAD DRAINAGE AND INFRASTRUCTURE SHALL REMAIN IN PLACE, FOR MORE DETAILS PLEASE SEE ROAD MINIMIZATION MEASURES

United States Department of Agriculture
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(R5)
PACIFIC SOUTHWEST REGION

STAMPS, LOGOS, AND SEALS

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

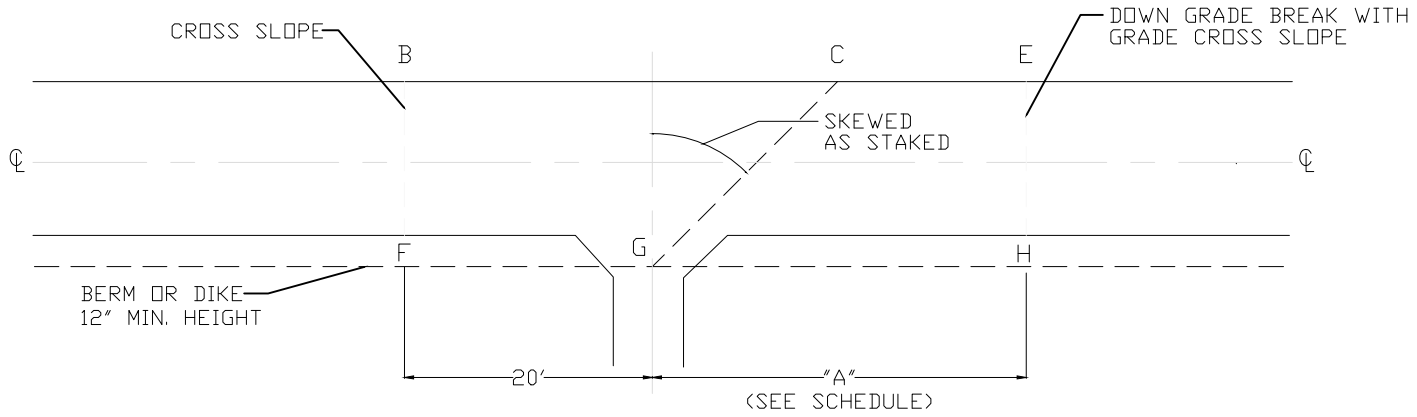
SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

DRAWING TITLE

TYPICAL ROAD DETAILS 1

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. D-03
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 12 OF 15

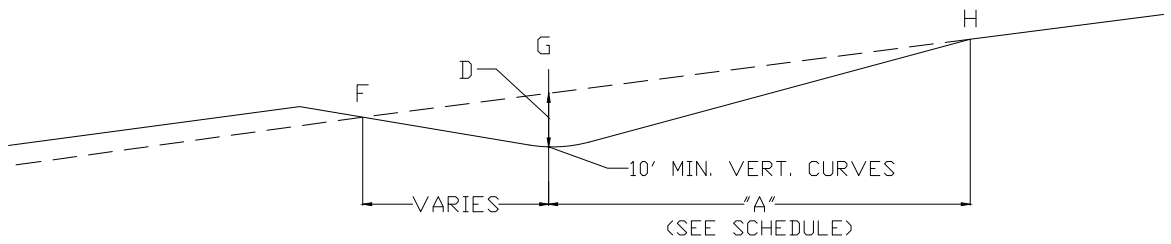
6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;



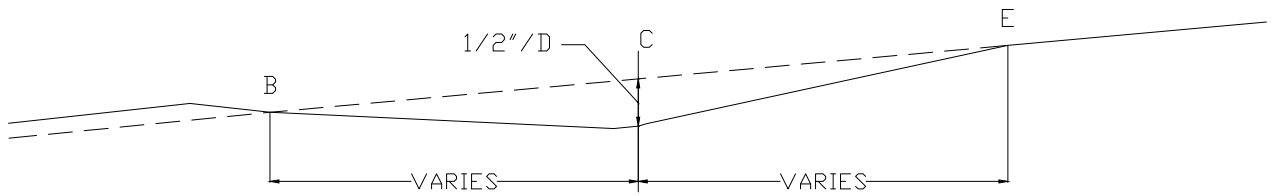
PLAN VIEW

% OF GRADE	UNDER 5	6	7	8	9	10	12
"A" LENGTH	45'	50'	55'	60'	65'	70'	80
"D" DEPTH	2.1'	2.2'	2.3'	2.5'	2.6'	2.8'	3.0'

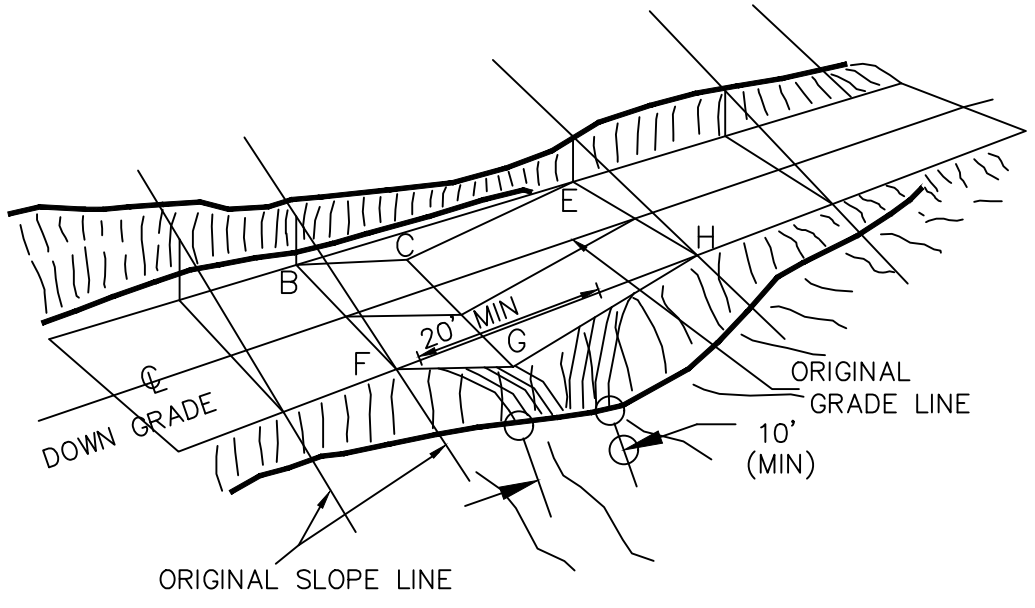
DIMENSION SCHEDULE



PROFILE F.G.H



PROFILE B.C.E.



PERSPECTIVE VIEW

NOTES:

(1) MATERIAL EXCAVATED SHALL BE PLACED BY COMPACTION METHOD SPECIFIED FOR ADJACENT ROADBED.

(2) BERM NOT REQUIRED WHEN DIP EMPTIES ONTO NATURAL GROUND OR IN INSLOPED ROADS.

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(R5)
PACIFIC SOUTHWEST REGION

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NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

CHILAO GAOA

ANGELES NATIONAL FOREST

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

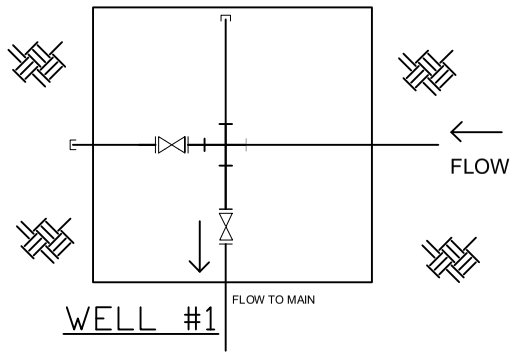
DRAWING TITLE

TYPICAL ROAD DETAILS 2

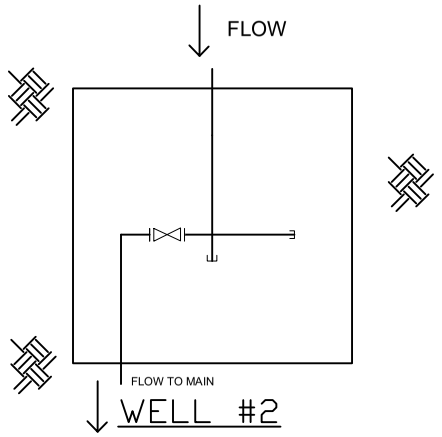
DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ	DRAWING SHEET NO. D-04
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 13 OF 15

6/8/26 11:13 ZACHARYBINVERSIE C:\USERS\ZACHARYBINVERSIE\ONEDRIVE - USDA\CHILAO GAOA\CHILAO_CONTOURS_EXPORTCAD.DWG;

ALPS WELLS



WELL #1



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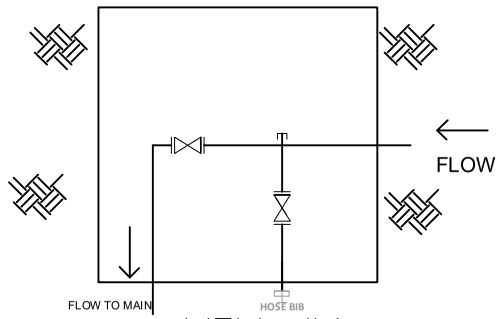

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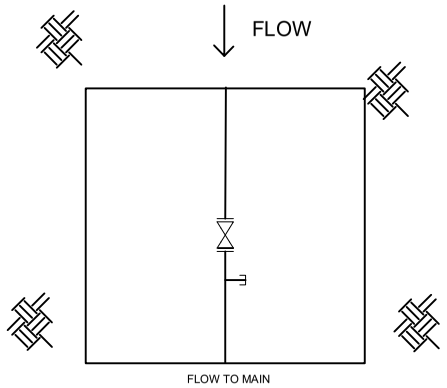
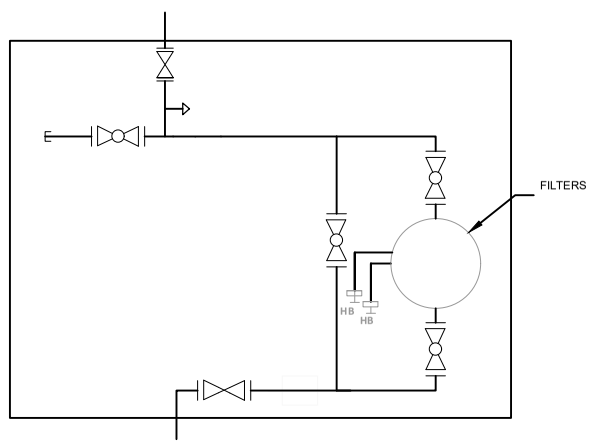


WELL #5

FLOW TO MAIN ——— FLOW

PROPOSED

NOTES:
1. WELLS WILL BE REPIPED SO SOURCE WATER CAN BE SAMPLED, FLOW MEASUREMENTS TAKEN, AND FLOW CAN BE SHUT OFF AT THE SOURCE.
2. WELLS PROCEED TO ALPS WELL BOX BEFORE HEADING DOWN HIGHWAY 2 TO REACH CHILAO SYSTEM.



ALPS WELL BOX

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4		
3		
2		
1		

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ANGELES NATIONAL FOREST

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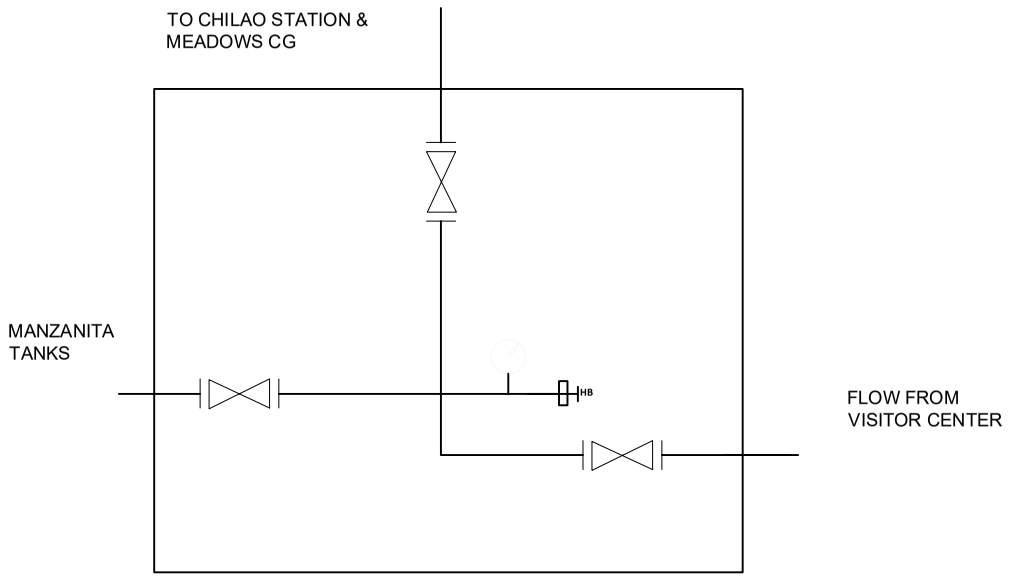
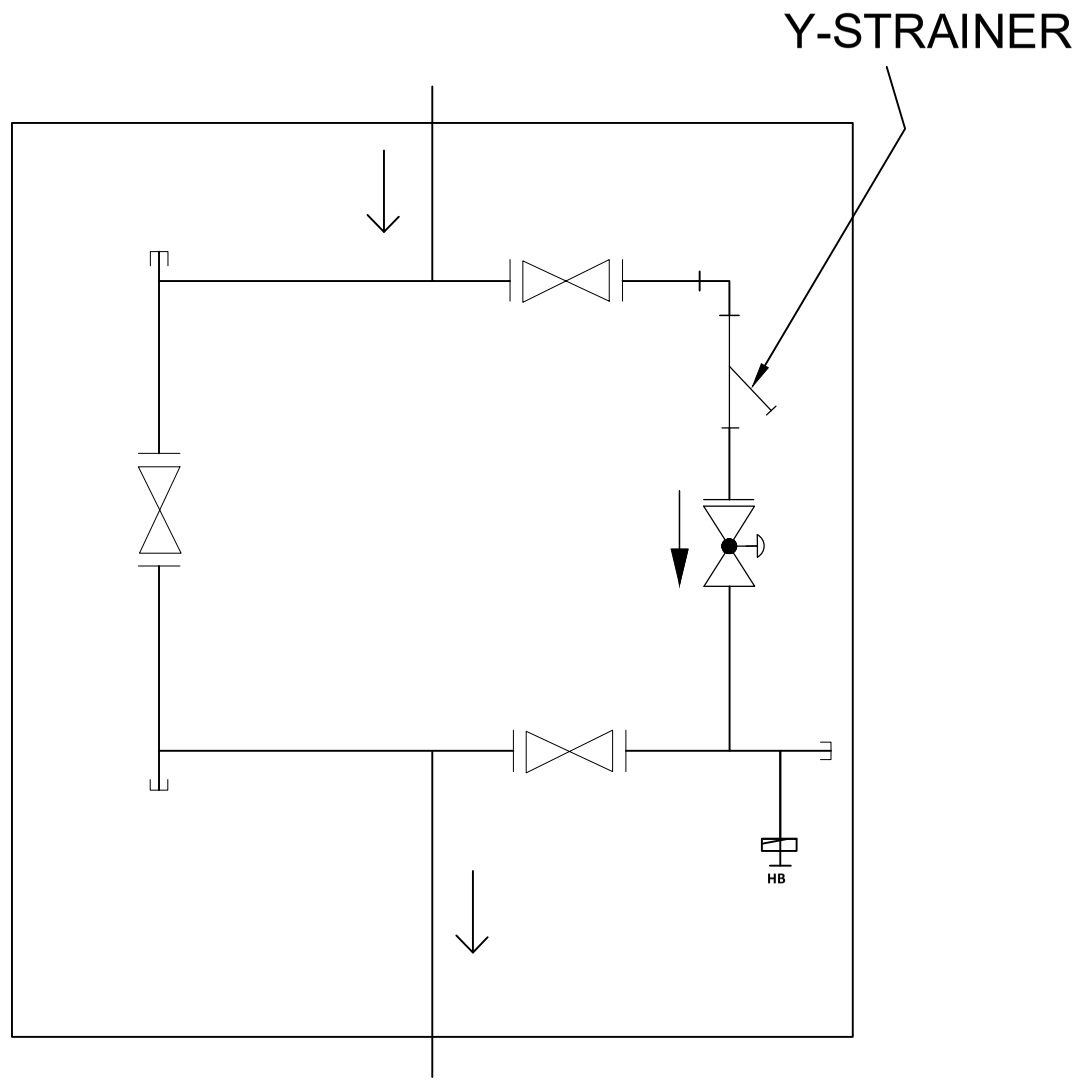
DRAWING TITLE

WELL REHAB DETAIL 1

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ /	DRAWING SHEET NO. D-05
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 14 OF 15



CREEK CROSSING



VISITOR CENTER
TRAIL VALVE BOX

NOTES:
1. WELLS WILL BE REPIPED SO SOURCE WATER CAN BE SAMPLED, FLOW MEASUREMENTS TAKEN, AND FLOW CAN BE SHUT OFF AT THE SOURCE.
2. WELLS PROCEED TO ALPS WELL BOX BEFORE HEADING DOWN HIGHWAY 2 TO REACH CHILAO SYSTEM.

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4		
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2		
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WELL REHAB DETAIL 2

DATE 02/27/2025	ARCHIVE NO.
DESIGNER K. HERNANDEZ /	DRAWING SHEET NO. D-06
DRAWN Z. BINVERSIE	
CHECKED R. LOPEZ	
PROJECT NO.	SHEET 15 OF 15