Replace Grand Canyon Railway Box Culvert

Wetland Statement of Findings

PEPC 90981

May 27, 2026

Recommended:

_____

Edward Keable — Date
Superintendent, Grand Canyon National Park

Certification of Technical Adequacy and Service-wide Consistency:

_____

Terry Fisk — Date
Acting Chief, Water Resources Division

Approved:

_____

Herbert C. Frost, Ph.D. — Date
Acting Regional Director, NPS Regions *6, 7, and 8*

Table of Contents

List of Figures

List of Abbreviations

AZ	Arizona
BA	Bright Angel
BMP	Best Management Practice
CWA	Clean Water Act
DO	Director's Order
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
GCR	Grand Canyon Railway
GRCA	Grand Canyon National Park
NEPA	National Environmental Policy Act
NHPA	National Historical Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
Park	Grand Canyon National Park
PEPC	Planning, Environment & Public Comment
PM	Procedural Manual
PMIS	Project Management Information System
USACE	U.S. Army Corps of Engineers
WASO	Washington Support Office
WOTUS	Waters of the United States
WRD	Water Resources Division
WSOF	Wetland Statement of Finding
WTI	Wetland Training Institute

Section 1. Preparers & Qualifications

Zach Kresl, Environmental Protection Specialist, Grand Canyon National Park

- Completed 40-hour Wetland Training Institute (WTI) Basic Wetland Delineation Training (April 22-26, 2013, Great Bend KS).
- 5 years of professional experience performing wetland delineations and preparing wetland delineation reports and Section 404 permit applications.
- Over 13 years of professional experience with general wetlands compliance.
- Over 13 years of professional experience with National Environmental Policy Act (NEPA), Endangered Species Act (ESA), National Historical Preservation Act (NHPA), and other environmental protection related laws, regulations, and policies.

Peter Sharpe, Deputy Wetlands Program Lead, Wetland Resources Division (WRD), National Park Service (NPS) Washington Support Office (WASO)

- 25 years of experience in applied wetland management techniques ranging from wetland delineations and habitat restoration to surface water and groundwater monitoring.
- Senior Professional Wetland Scientist – Society of Wetlands Scientists
- Academic background includes a PhD in Marine, Estuarine, and Environmental Science from the University of Maryland, an M.S. in Environmental Pollution Control from Penn State, and postdoctoral research at the Institute for Research and Technology in Agriculture (IRTA) in Catalonia, Spain.

Section 2. Introduction

Project Overview (Preferred Alternative)

The National Park Service (NPS) is evaluating a proposal by the Grand Canyon Railway (GCR) to replace a wooden triple box culvert (may also be referred to as a ballast bridge herein) that crosses Bright Angel Wash in Grand Canyon Village, Grand Canyon National Park, AZ. The coordinates of the box culvert are 36.05616, -112.14181. The wooden box culvert is located in the main developed area of the historic village, south of Bright Angel Lodge and between North Village Loop Road and Village Loop Bypass Road. The culvert carries the GCR wye track over Bright Angel Wash. Each box of the culvert is approximately 4 feet wide by three feet tall by 50 feet long. Figures 1 and 2 depict the project location. Figure 3 shows the existing wooden box culvert, and additional photos can be found in Appendix B.

The existing wooden box culvert would be replaced with three 120-feet-long by 60-inch-diameter steel pipe culverts. The headwalls of the replacement culvert would be finished with a stone façade. Figures 4 and 5 show the preliminary plan for the replacement and Figure 6 shows an example of what the proposed culvert structure would look like after construction. Design drawings are included in Appendix A.

The current wooden box culvert is a contributing feature of the Grand Canyon Railway Historic District and Grand Canyon Village National Historic Landmark District.

Figure 1. Project Location Overview Map

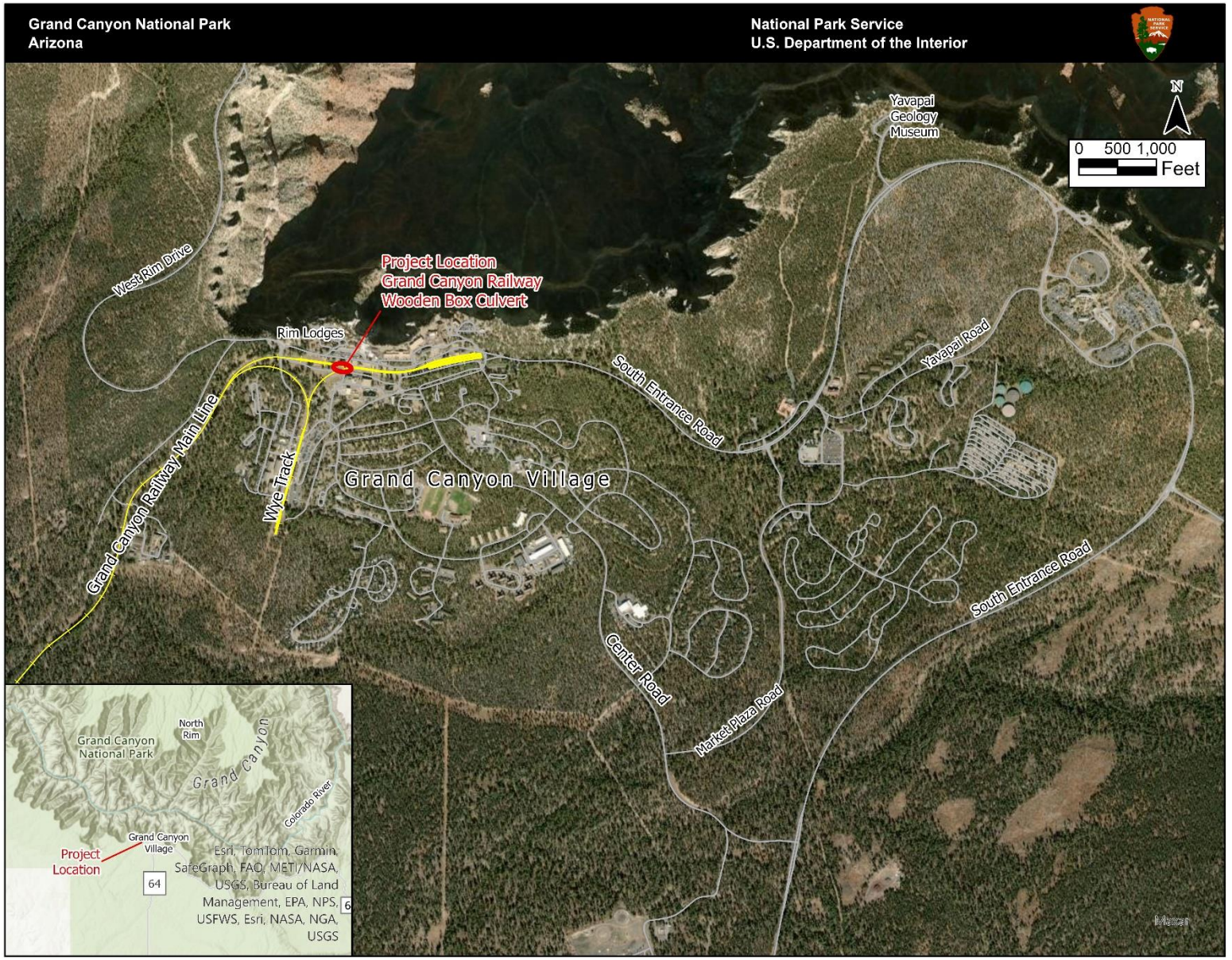


Figure 2. Project Site Map

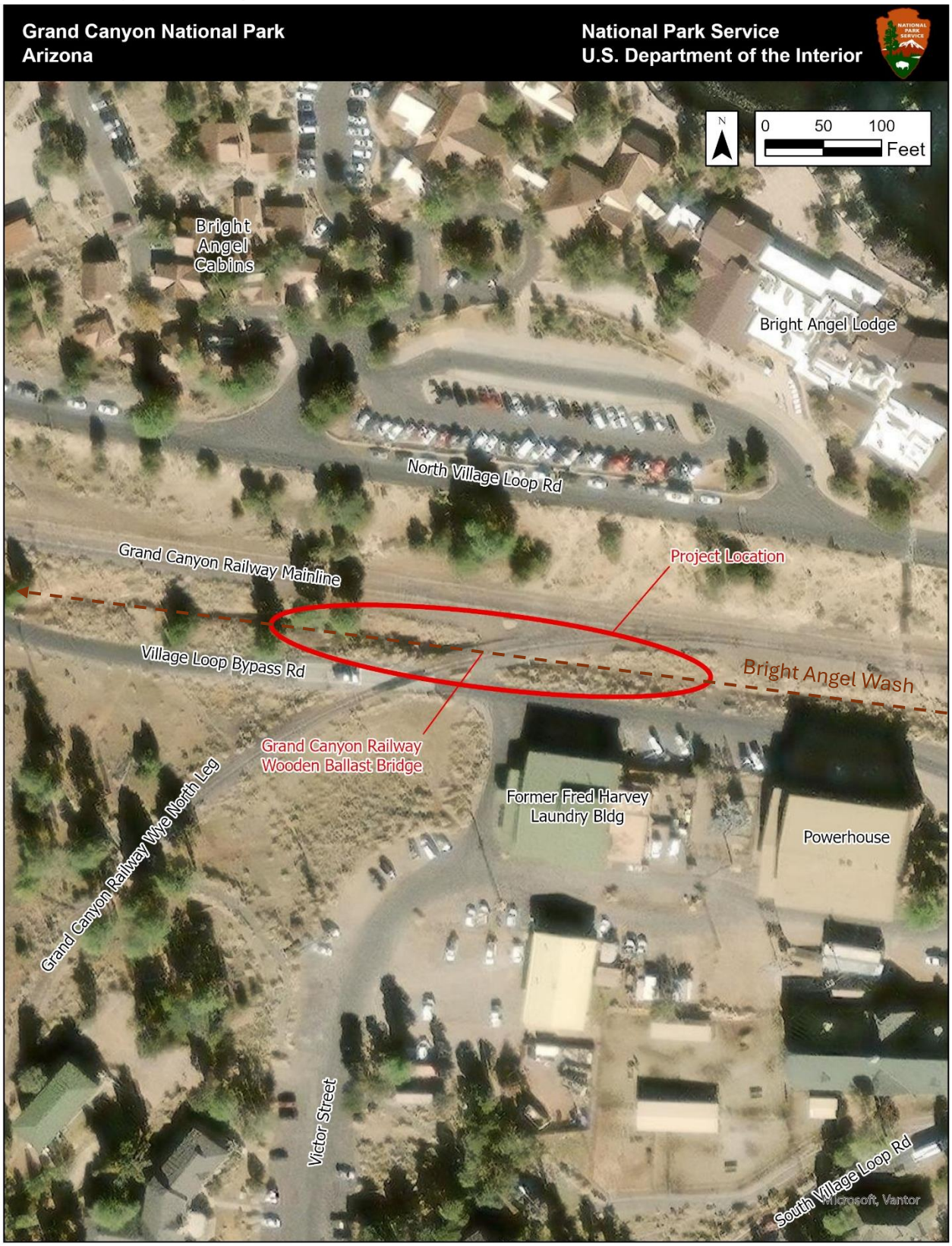


Figure 3. Existing Wooden Box Culvert

Figure 4. Plan for Wooden Box Culvert Replacement

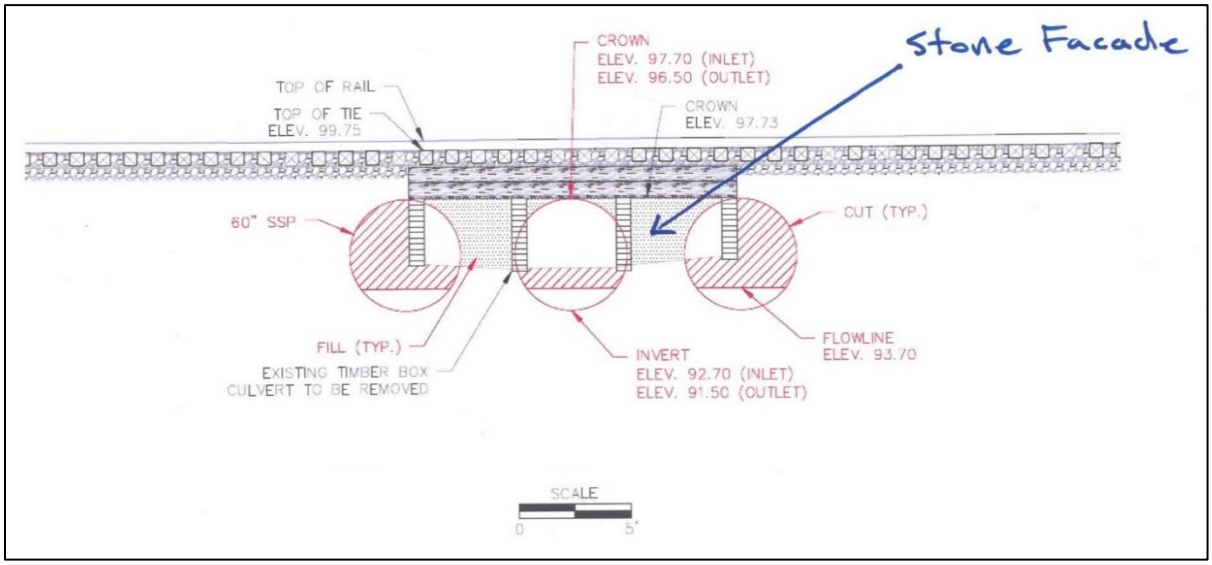


Figure 5. Plan for Wooden Box Culvert Replacement

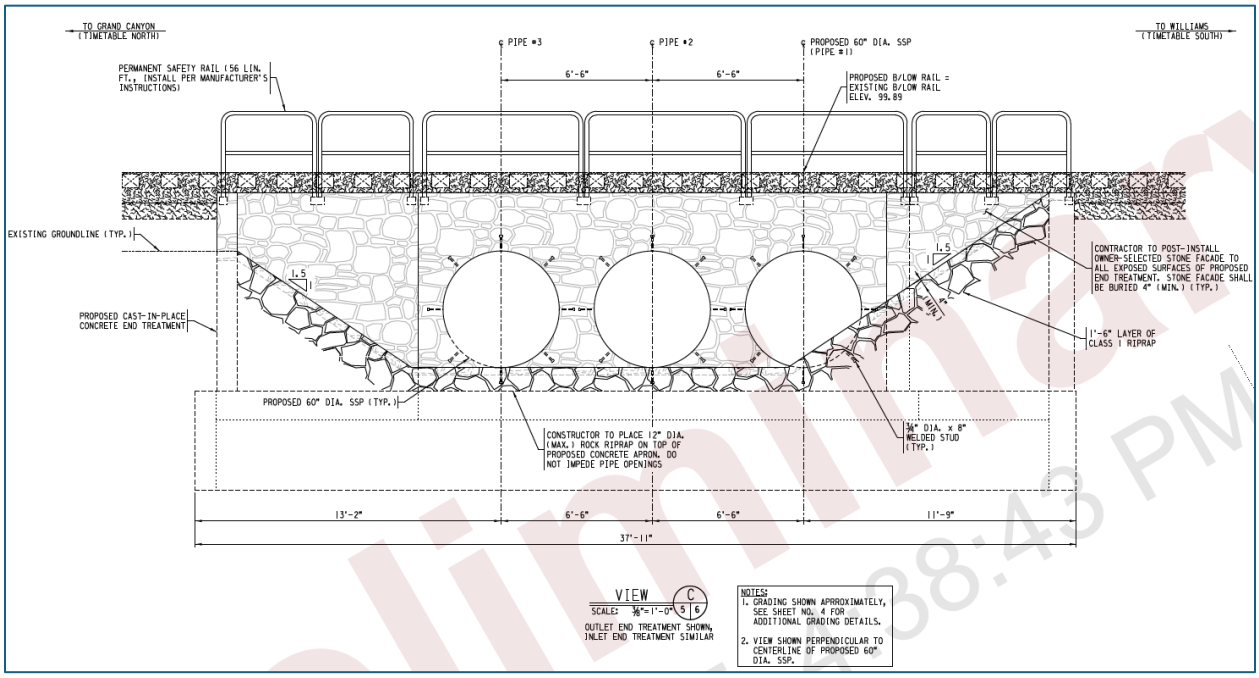


Figure 6. Example of Proposed Triple Steel Pipe Culvert Structure

Purpose and Need

The purpose of the project is to replace the deteriorating wooden crossing structure with a new crossing structure that can continue to carry rail traffic while meeting structural and hydraulic requirements. The project is needed because the existing crossing structure, constructed in 1926, is 100 years old, in poor condition, and presents safety concerns.

Federal Compliance and NPS Policy

Executive Order (EO) 11990, "Protection of Wetlands," issued May 24, 1977, directs all federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation.

To comply with EO 11990 within the context of the agency's mission, the National Park Service (NPS) has developed policies and procedures, found in Director's Order (DO) #77-1: Wetland Protection (NPS 2002) and Procedural Manual (PM) #77-1: Wetland Protection (NPS 2016). These policies and procedures emphasize: 1) exploring all practical alternatives to building on, or otherwise adversely affecting, wetlands; 2) reducing impacts to wetlands whenever possible; and 3) providing direct compensation for any unavoidable wetland impacts by restoring degraded or destroyed wetlands on NPS properties. If a preferred alternative would have adverse impacts on wetlands, a Wetland Statement of Findings (WSOF) must be prepared that documents the above steps and presents the rationale for choosing an alternative that would have adverse impacts on wetlands.

This WSOF identifies wetland resources that may be affected by the proposed project and documents compliance with DO #77-1 and PM #77-1 through avoidance and minimization of impacts and mitigation of unavoidable adverse impacts to these resources.

GRCA consulted with the U.S. Army Corps of Engineers (USACE) Regulatory Division, Arizona Branch regarding the jurisdictional status of Bright Angel Wash and the need for a Section 404 permit. USACE indicated that the wash appears to lack an ordinary high-water mark (OHWM) and that this section of Bright Angel Wash may be a swale, which is an excluded feature under the current Waters of the United States (WOTUS) definition. GRCA agrees that Bright Angel Wash meets the definition of a swale/erosional feature as defined in 33 CFR 328.3 and is therefore not a WOTUS. As such, a Clean Water Act (CWA) Section 404 permit is not required and will not be applied for. For more information regarding GRCA's WOTUS determination and coordination with USACE, see Appendix D, *Waters of the United States Determination for Bright Angel Wash, Railroad Ballast Bridge Project*. Section 3 also provides more information on the wetland characterization of Bright Angel Wash.

It should be noted that DO and PM #77-1 take a more comprehensive and broad approach to wetland definitions compared with current USACE regulatory protocols. Under current and proposed Environmental Protection Agency (EPA)/USACE WOTUS rules, ephemeral and intermittent features, such as Bright Angel Wash, will no longer be considered candidates for regulatory protection as they typically do not possess relatively permanent water surface water flow during the "wet season." NPS PM #77-1 does not make such narrow distinctions for wetlands and thus provides a measure of protection for these habitats that have been excluded from CWA protection for legal, rather than ecological, reasons.

Section 3. Wetland Delineation Methods & Results

An on-site wetland delineation by a qualified wetland professional was not conducted for the culvert replacement project. A desktop survey (National Wetlands Inventory, National Hydrology Dataset, topographic maps, aerial imagery) and field visits were conducted by Zach Kresl, which identified one potential wetland feature, Bright Angel Wash, within the project area. Figure 5 and the photos in Appendix B show the results of the desktop survey and various field visits.

In consultation with NPS WRD, Bright Angel Wash from top-of-bank to top-of-bank is being treated as an ephemeral waterway for purposes of compliance with DO 77-1; therefore, additional field wetland determinations and mapping were deemed unnecessary. For purposes of this Wetland Statement of Finding (WSOF), the classification of Bright Angel Wash is R4SB7.

In absence of more detailed site-specific data regarding hydrology, the NPS considers Bright Angel Wash as an ephemeral waterway under DO 77-1. While it likely functions as an upland feature for most of a given year—lacking an OHWM and possessing upland vegetation such as rabbitbrush (*Ericameria nauseosa*)—it exhibits a defined bed and banks and receives seasonal flow during heavier precipitation events. Arid western ephemeral and intermittent waterways are some of the most difficult habitats in which to delineate an OHWM (Lichvar and McColley, 2008). Bright Angel Wash appears to possess many of the classic characteristics of a discontinuous ephemeral channel as described by Lichvar and McColley (2008), including the presence of small depositional levees, benches, and changes in sediment particle sizes (coarser in the channel and transitioning to finer up the banks). These characteristics are sufficient to warrant protection under DO #77-1, particularly in the absence of a qualified wetland professional to conduct a formal delineation per PM #77-1.

Ephemeral features like Bright Angel Wash can provide meaningful ecological functions, including sediment transport, temporary habitat connectivity, and contributions to localized hydrology, reinforcing the importance of their consideration in resource management decisions.

Of note, this action would typically fall under PM 77-1 Exception 8, *Bridge Replacements (full reconstruction of existing bridges)*; however, for an action to excepted from WSOF and compensation requirements, the conditions and best management practices (BMPs) outlined in PM 77-1 must be met. Unfortunately, Condition 15 (Historic Properties), which states that the action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places (NRHP), is not met, thereby triggering the need for a WSOF.

> ***Related Consideration: Historic Properties Condition for Applying an Exception***
>
> *I strongly recommend that WRD removes condition 15 or revises it to allow an exception to be applied as long as the Section 106 of the National Historic Preservation Act (NHPA) process is satisfied, rather than making the use of exceptions contingent on whether there are adverse effects to a historic property. It is unclear why an adverse effect to historic properties would disqualify an action from an exception, as impacts to historic properties generally do not directly correspond to or influence wetland impacts. In most cases, adverse effects to historic properties are largely irrelevant to wetland protection and should not determine whether an exception applies or whether a WSOF must be prepared.*

Additionally, Section 106 is procedural – not substantive – and does not prohibit actions that result in adverse effects but requires that the process is followed[1]*; therefore, it is unclear why PM 77-1 prohibits an exception from being used when there is an adverse effect, and should instead rely on whether Section 106 has been satisfied.*

Furthermore, NEPA for actions resulting in an adverse effect to historic properties can still qualify for a Categorical Exclusion and are not automatically elevated to an Environmental Assessment. This further supports the conclusion that PM 77-1 exceptions should not be contingent upon adverse effects to historic properties, but instead be contingent on satisfying the Section 106 process. Moreover, Categorical Exclusions typically do not require public involvement, whereas a WSOF does, which adds time, cost, and unnecessary steps to the compliance and design processes when an action would otherwise qualify for an exception.

In summary, implementing the above suggestion would ensure that the Section 106 process is satisfied prior to applying an exception, while still allowing the use of exceptions when a historic property is adversely affected. This change would align with the intents of EO 11990, DO 77-1, NHPA, and NEPA, and would allow more projects to qualify for exceptions, resulting in a reduction of unnecessary paperwork and public involvement, and saving time and costs.

Section 4. Summary of Project Alternatives Considered but Dismissed

Two alternatives were considered but dismissed for this action. The first alternative, the no action alternative, would not meet the project purpose and need and eventually the culvert would be expected to fail, potentially resulting in damage to people and/or property, and greatly disrupting GCR's train service. Upon failure, the culvert would have to be replaced. Based on these considerations, this alternative was dismissed.

The second alternative included replacing the existing wooden box culvert with a similar wooden triple box culvert. This alternative was dismissed from further consideration because it would cost over one million dollars, whereas the triple steel pipe culvert (preferred alternative) is expected to cost around $350,000 and provide similar levels of functionality, reliability, and safety. Of note, either alternative – replacing with triple steel pipes or a wooden box culvert – would have resulted in an adverse effect on historic properties.

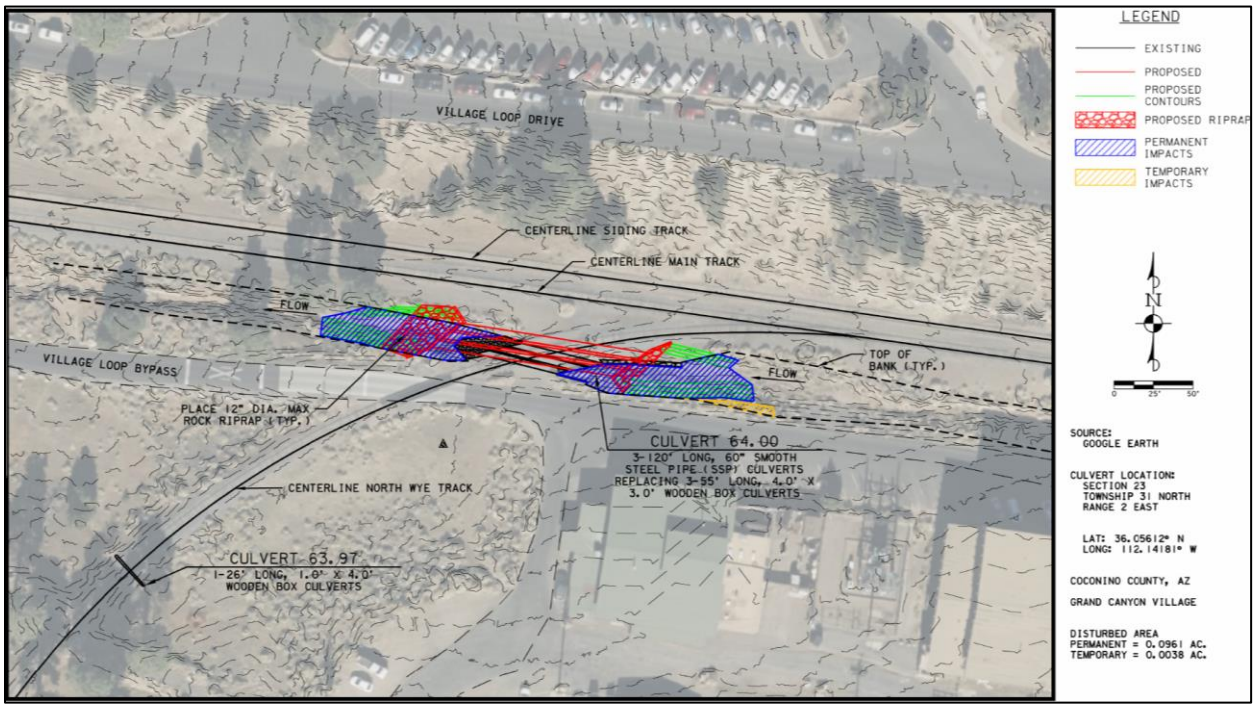
Section 5. Impacts from Preferred Alternative

The preferred alternative, replacing the wooden triple box culvert with a triple steel pipe culvert, would result in 0.0961 acres of permanent impact to Bright Angel Wash (see Figure 7 and Appendix A). Approximately 0.0038 acres of the wash would be temporarily disturbed and restored after

[1] "Section 106 *does not prohibit actions that result in adverse effects but it requires continued consultation to develop wither a Memorandum of Agreement (MOA) or a Programmatic Agreement (PA) to outline measures to avoid mitigate or minimize adverse effects" (https://www.epa.gov/system/files/documents/2023-07/NHPA-Overview.pdf).*

construction. The culvert cannot accomplish its intended purpose unless it is located in Bright Angel Wash, or unless major realignment of the railroad line and wye were to occur, which would be economically unfeasible and greatly increase environmental impacts; therefore, fully avoiding impacts to Bright Angel Wash is unfeasible and unreasonable.

Figure 7. Wetland Impacts



Section 6. Compensation/Mitigation

As noted above, fully avoiding impacts to Bright Angel Wash is not feasible or reasonable. Minimization efforts would include designing to reduce limits of disturbance as much as possible, employing erosion and siltation controls during construction, placing stockpiled materials outside of the wash, removing stockpiles upon construction completion, restoring temporarily disturbed ground, and reseeding disturbed areas with native vegetation.

Compensation is not proposed because impacts would be under 0.10 acre. A desktop assessment of the wetland function and value of Bright Angel Wash suggests that its primary functions center around groundwater recharge and storm water management from an NPS perspective. Under the proposed project these wetland functions will not be lost or diminished in any way.

Section 7. Conclusions/Summary

The proposed project would replace a wooden triple box culvert that crosses Bright Angel Wash in Grand Canyon Village and carries a GCR railroad wye track. The replacement structure would be a triple steel pipe culvert with headwalls finished with a stone façade. The purpose of the project is to replace the deteriorating wooden crossing structure with a new crossing structure that can continue to carry rail traffic while meeting structural and hydraulic requirements. The project is

needed because the existing crossing structure, constructed in 1926, is 100 years old, in poor condition, and presents safety concerns.

The no action alternative was dismissed because it would not meet the project's purpose and need. The alternative to replace the existing wooden box culvert with a new wooden box culvert was dismissed due to cost and because the preferred alternative (triple steel pipe culvert) would provide similar levels of functionality, reliability, and safety.

A wetland delineation by a qualified wetland professional and meeting the requirements of PM #77-1 was forgone due to the time and cost that would be incurred. Instead, Bright Angel Wash is being treated as an ephemeral waterway for purposes of compliance with DO 77-1 as it appears to possess the characteristics of a discontinuous ephemeral channel as described by Lichvar and McColley (2008).

The proposed project would permanently impact 0.0961 acres of Bright Angel Wash. Fully avoiding wetland impacts was determined to be unfeasible and unreasonable. Measures to minimize impacts would be employed. Compensation is not proposed.

Additionally, this action would typically fall under PM 77-1 Exception 8, *Bridge Replacements (full reconstruction of existing bridges)*; however, Condition 15 is unable to be met, as the replacement of the culvert results in an adverse effect to historic properties. As adverse effects to historic properties typically do not correspond to nor influence wetland impacts, and are therefore largely irrelevant to wetland protection, it is recommended that WRD removes condition 15 or revises it to allow an exception to be applied as long as the Section 106 process is satisfied. This change would align with the intents of EO 11990, DO 77-1, NHPA, and NEPA, and would allow more projects to qualify for exceptions, resulting in a reduction of unnecessary paperwork and public involvement, and saving time and costs.

Section 8. References

Cowardin, L. M., F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and Deepwater habitats of the United States. U.S. Department of Interior, Fish and Wildlife Service, Washington, D.C.

Google Earth Aerial imagery, various years. Desktop version. Accessed September 2025.

Lichvar, R.W. and S.M. McColley. August 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States – A Delineation Manual. Cold Regions Research and Engineering Laboratory. ERDC/CRREL TR-08-12.

National Hydrography Dataset. https://www.arcgis.com/apps/mapviewer/index.html?url=https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer&source=sd. Accessed September 2025.

National Park Service. 2016 (March 2016). National Park Service Procedural Manual #77-1: Wetland Protection.

National Wetland Inventory Wetland Mapper. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/. Accessed September 2025.

Topographical imagery, various years. https://ngmdb.usgs.gov/topoview/viewer/#4/40.01/-100.06. Accessed September 2025.

Appendices

Appendix A – Design Drawings

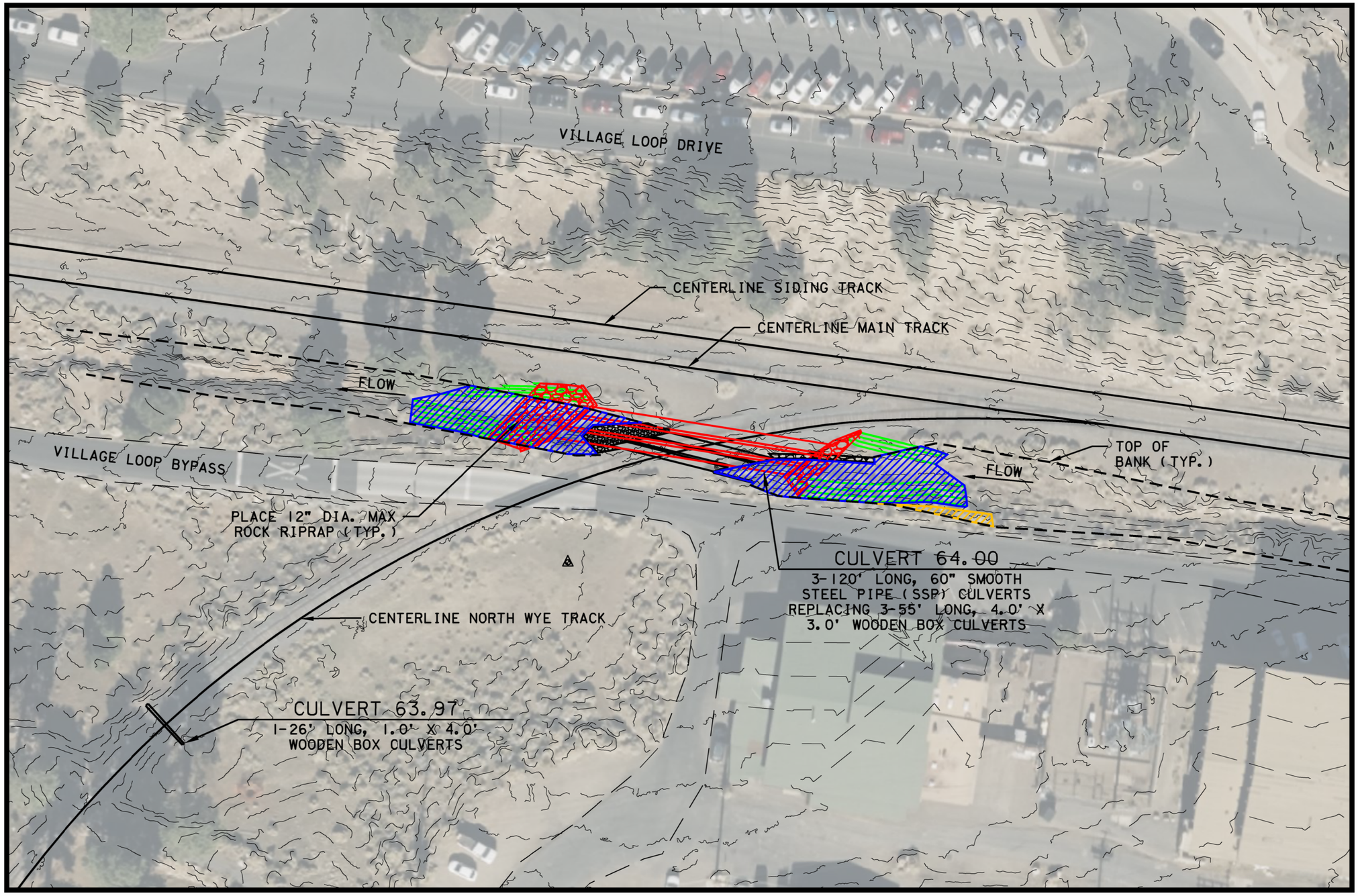
Appendix B – Photo Set

Appendix C – Wetland Function and Value Evaluation Form

Appendix D – Waters of the United States Determination for Bright Angel Wash, Railroad Ballast Bridge Project, PEPC 90981

Appendix A – Design Drawings

Appendix A – Design Drawings



LEGEND

- EXISTING
- PROPOSED
- PROPOSED CONTOURS
- PROPOSED RIPRAP
- PERMANENT IMPACTS
- TEMPORARY IMPACTS

N

0 25' 50'

SOURCE:
GOOGLE EARTH

CULVERT LOCATION:
SECTION 23
TOWNSHIP 31 NORTH
RANGE 2 EAST

LAT: 36.05612° N
LONG: 112.14181° W

COCONINO COUNTY, AZ

GRAND CANYON VILLAGE

DISTURBED AREA
PERMANENT = 0.0961 AC.
TEMPORARY = 0.0038 AC.

F:\2025\05001-05500\025-05141\140-Design\AutoCAD\Railroad\GCR6400_Permitting Figures.dwg
DATE: Mar 18, 2026 3:25pm USER: gpinkerton

PROJECT NO:	025-05141
DRAWN BY:	GVP
DATE:	03/18/2026

WETLAND IMPACTS

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TEL 402.474.6311
Olsson - Engineering
Arizona COA #10861-00

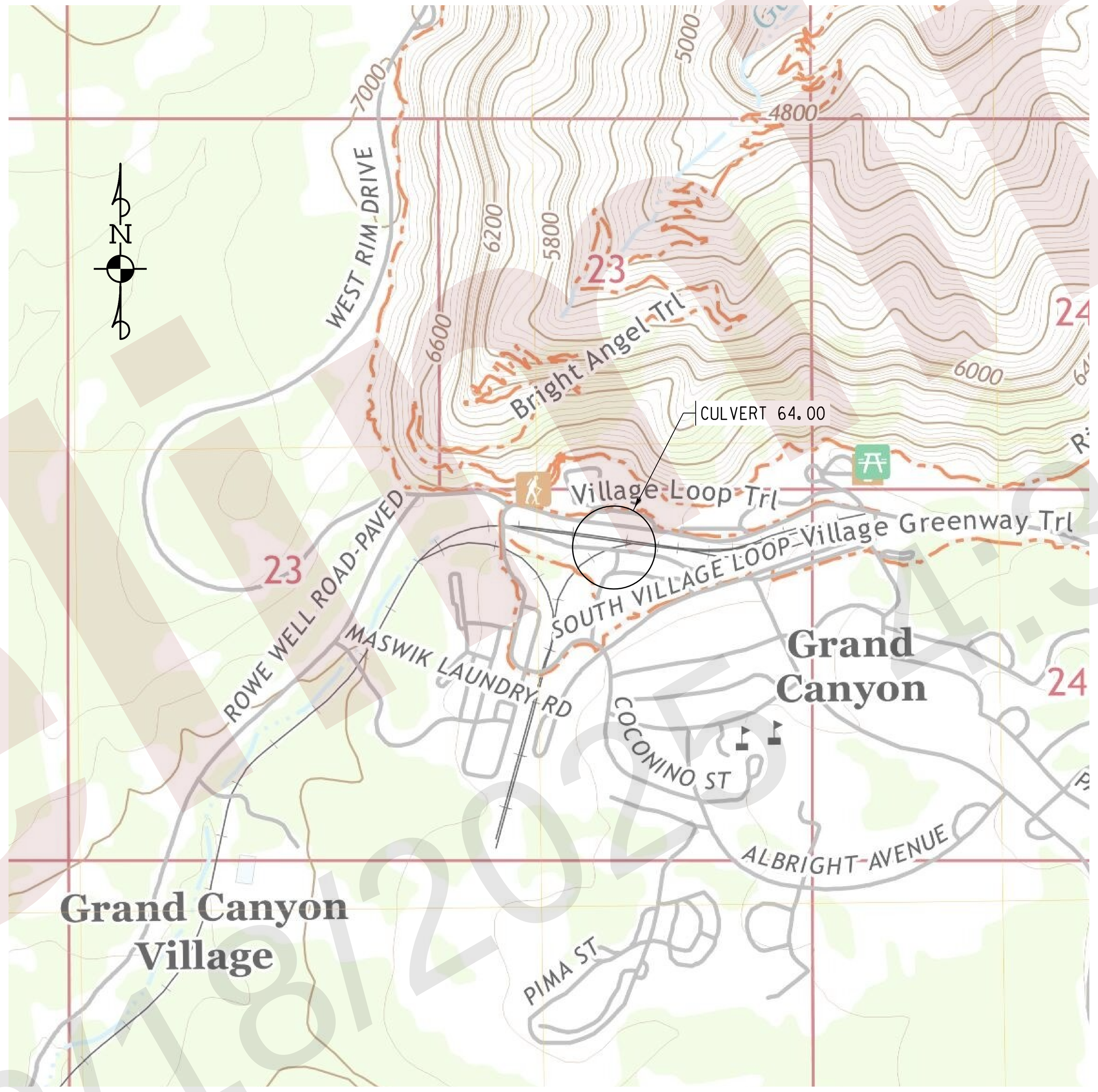
FIGURE 1

GRAND CANYON RAILWAY CULVERT 64.00

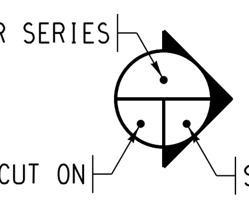
CULVERT REPLACEMENT

3-60" DIA. SSP x 120'

GRAND CANYON VILLAGE, AZ



LOCATION MAP
SCALE: NONE



SECTION DESIGNATION

PRELIMINARY 60% PLANS

NOT FOR CONSTRUCTION

60% PLANS ARE NOT ALL-ENCOMPASSING. CERTAIN SHEETS ARE INTENTIONALLY NOT INCLUDED WITHIN THIS SUBMITTAL.

DATE: 12/18/2025

DRAWING SCHEDULE

	SHEET NO.	DESCRIPTION
THIS SET	1	COVER SHEET
	2	SITE PLAN
	3	GENERAL NOTES, CONSTRUCTION SEQUENCE AND BILL OF MATERIAL
	4	GENERAL ARRANGEMENT
	5	TYPICAL SECTIONS AND CONSTRUCTION DETAILS (SHEET 1 OF 3)
	6	TYPICAL SECTIONS AND CONSTRUCTION DETAILS (SHEET 2 OF 3)
	7	TYPICAL SECTIONS AND CONSTRUCTION DETAILS (SHEET 3 OF 3)
	8	CAST-IN-PLACE CONCRETE END TREATMENT FRAMING DETAILS
	9	CAST-IN-PLACE CONCRETE END TREATMENT REINFORCING DETAILS (SHEET 1 OF 2)
	10	CAST-IN-PLACE CONCRETE END TREATMENT REINFORCING DETAILS (SHEET 2 OF 2)
	11	MISCELLANEOUS STEEL DETAILS

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FAX 402.341.5895
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GRAND CANYON RAILWAY

REV. NO.	DATE	REVISION

REVISIONS

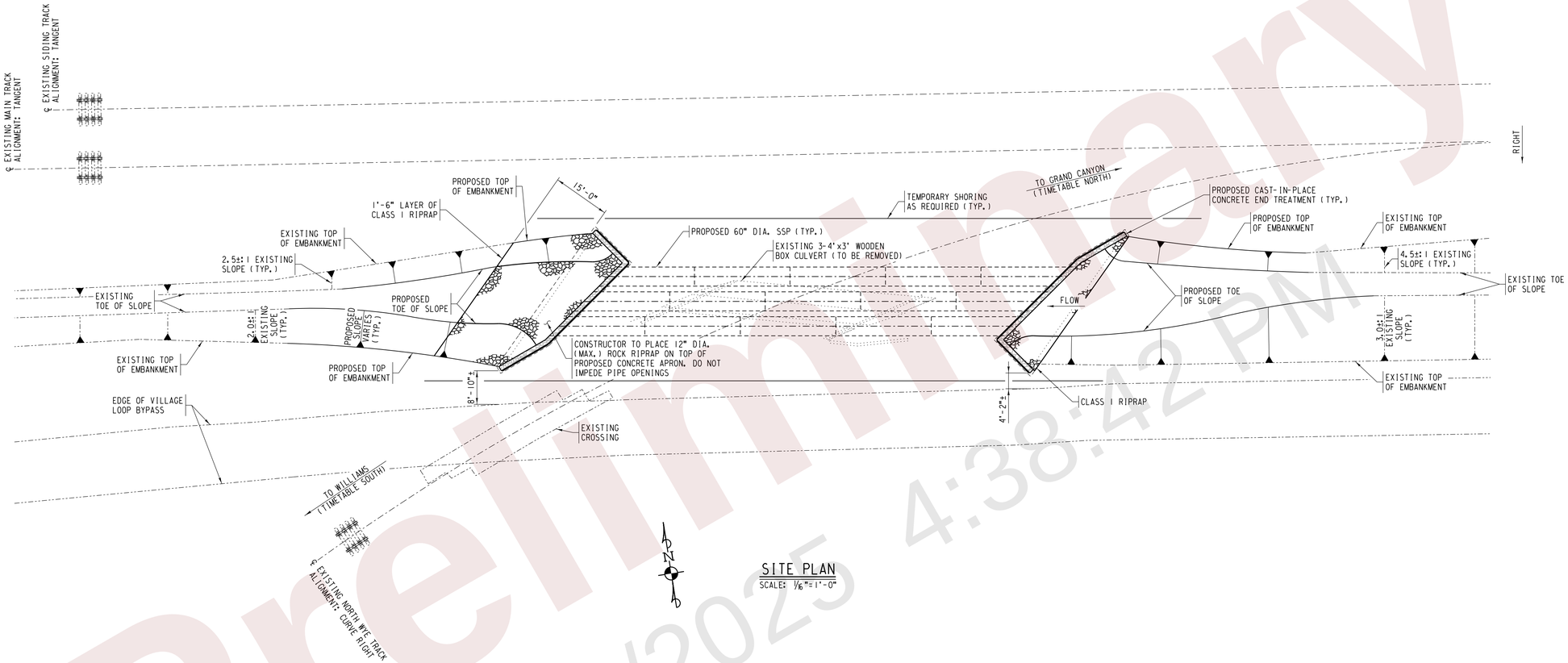
COVER SHEET

GRAND CANYON RAILWAY CULVERT 64.00
3-60" DIA. SSP x 120' REPLACING
3-4'x3' WOODEN BOX CULVERT x 55'

GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

2025

drawn by:	CLJ
checked by:	JAS
approved by:	KAS
QA/QC by:	KAS/MJH
project no.:	025-05141
drawing no.:	-
date:	XX/XX/2025



SITE PLAN
SCALE: 1/8"=1'-0"

NOTE:
LOCATION OF UTILITIES IS UNKNOWN. LOCATION SHALL BE VERIFIED PRIOR TO CONSTRUCTION. NOTIFY ARIZONA 811, 1-800-782-5348, AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

PRELIMINARY 60% PLANS

NOT FOR CONSTRUCTION

60% PLANS ARE NOT ALL-ENCOMPASSING. CERTAIN SHEETS ARE INTENTIONALLY NOT INCLUDED WITHIN THIS SUBMITTAL.

DATE: 12/18/2025

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GRAND CANYON RAILWAY

REV. NO.	DATE	REVISION

REVISIONS

SITE PLAN

GRAND CANYON RAILWAY CULVERT 64.00
3-60" DIA. SSP x 120' REPLACING
3-4'x3' WOODEN BOX CULVERT x 55'
GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

2025

drawn by: CJL
checked by: JAS
approved by: KAS
QA/QC by: KAS/MJH
project no.: 025-05141
drawing no.: -
date: XX/XX/2025

SHEET
2 OF 11

SHEET SIZE 22x34

FILE NAME: \\oa.ad.oaconsulting.com\fms-rss1\projects\2025\05001-05500\025-05141\40-Design\Microstation_RAIL\GCR Culvert 64.00 Replacement.dgn

SHEET SIZE 22x34

GENERAL NOTES

GENERAL

1. Do not scale dimensions from these drawings.
2. Unless noted otherwise, deviation from these plans is not allowed unless written approval is obtained from the design engineer.
3. All work requirements shown on the design and not otherwise detailed shall be accomplished as specified in the American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering. In the event of conflicts between specifications, the more restrictive shall apply.
4. Construction means and methods shall comply with the All Permits Issued (API) package.
5. All materials shall be in new or good condition.
6. **Contractor shall verify all elevations and dimensions prior to fabrication or construction.**
7. Location of known utilities is approximate. Location shall be verified prior to construction. Notify Call 811 "Call Before you Dig" number at least 48 hours pripor to construction.

GRADING

1. Provide and place all fill and subballast material per XXXXXXXXXXX. Perform grading as required to drain and match existing embankments and upstream and downstream channel flowline.
2. Perform grading as required for construction of the new structure and replace areas removed and disturbed in the course of construction to a condition equal to or better than existing.

CONTRACTOR NOTES

1. Provide and install ballast, ties, rail and OTM for proposed structure.
2. Provide material as shown in the Bill of Material.
3. Coordinate all construction activites with the Owner.
4. Before ordering any material, Contractor shall make a detailed field inspection of the site verifying all pertinent dimensions and elevations. Any variations in dimensions or elevations from those shown on the drawings shall be reported immediately to the design engineer.
5. Any modifications to this design shall be approved by the design engineer prior to construction.
6. Verify the location, relocation, abandonment, and/or temporary support of all utilities affected by the construction of the structure and embankment and coordinate these activities with the appropriate utility companies, agencies and/or authorities.
7. Apply for and obtain all construction permits necessary to perform the work.
8. Bill of Material and Schedules are provided for information only. Contractor shall be responsible for providing all material required to complete the work.
9. Provide all temporary structures (shoring, bracing and/or falsework) required to support and protect the existing embankments and structures affected by the work. All temporary structures shall be designed, signed and sealed by a professional engineer registered in Arizona.
10. Provide temporary guardrail system as required. Guardrails on shoring shall include but not be limited to the following:

    The top edge height of the top rail shall be 42" +/- 3" above the walking/working surface.

    At least one midrail shall be provided, evenly spaced between walking/working surface and top rail.

    Metal or timber posts or uprights shall be spaced at maximum intervals of 10'-0".

    Entire guardrail system, including anchorages, shall be capable of withstanding without failure, a force of 200 lbs. applied in any outward or downward at any point.

    Guardrail system shall be surfaced to prevent injuries from punctures and lacerations and prevent snagging of clothing. The ends of top rails and midrails shall not extend past the posts or uprights.

    If conditions warrant, i.e. pedestrian traffic/weather, additional protection shall be provided such as screens or mesh to prevent slipping between the midrail and walking/working surface.

11. Direct channel flow as required to perform work.

PROPOSED CONSTRUCTION SEQUENCE

Sequence to be provided in a later submittal.

DESIGN NOTES

LAYOUT

1. Temporary Benchmarks:
   TBM 1: Elev. 100.00, established by aluminum cap stamped GRCA 100 South of existing Culvert No. 64.00, 35.97' right of existing North WYE Track centerline. (Northing: 1839722.56, Easting: 633423.59)

   TBM 2: Elev. 101.42, established by PK nail on North edge of Village Loop Road South of existing Culvert No. 64.00, 29.12' right of existing North WYE Track centerline. (Northing: 1839752.23, Easting: 633499.98)
2. Profile: No change in rail elevation.
3. Alignment: Curve right.

DESIGN

1. All design is per the current AREMA Manual for Railway Engineering with other parameters as noted below.
2. The SSP has been designed for Cooper E-80 Live Load with Impact and cover depth ranging from 1'-6" to 18'-0".
3. The cast-in-place concrete end treatment has been designed for railroad surcharge, lateral earth pressure and a construction surcharge of 250 psf.

SAFETY

1. These drawings do not include provisions for construction safety. The contractor is solely responsible for construction safety.

SUBSURFACE PREPARATION NOTES

WELL-COMPACTED FILL

1. Well-compacted fill shall be well graded granular soil free of any organic material, stones larger than 1½ inches, frozen lumps, debris or excessive moisture. Fill shall be compacted to 95% of maximum dry density as defined in ASTM International D1557 (Modified Proctor). Fill shall be placed and compacted in layers not to exceed 6 inches. Fill shall be placed simultaneously on both sides of the arch and between multiple arches.

BEDDING

1. Bedding shall be granular material such as aggregates ordinarily specified and used in the construction of highway base and subbase. These aggregates include crushed stone, natural or crushed gravel, natural or manufactured sands, crush slag or a homogeneous miture of these materials. Bedding shall be compacted to 95% of maximum dry density as defined in ASTM International D1557 (Modified Proctor). Recommneded gradation is as follows:

SCREEN SIZE	% PASSING (BY WEIGHT)
1 inch	100
½ inch	60-90
⅜ inch	20-40
No. 4	10-20
No. 200	less than 5%

SUBGRADE STABILIZATION

1. If very moist to wet subgrades are observed the following measures should be taken to stabilize the subgrade:
   a. Foundation rock should be driven into the exposed subgrade until stable, using sheepfoot roller.
   b. Foundation rock gradation should be 3" maximum crushed rock meeting gradation requirements of ASTM C33, size 2.
   c. Multiple lifts of foundation rock could be considered; however, determining the need should be based on actual site conditions at time of construction.

SMOOTH STEEL PIPE (SSP) CONSTRUCTION NOTES

INSTALLATION

1. Installation of Smooth Steel Pipe (SSP) shall conform to the current American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Rail Engineering, Chapter 1, Part 4.

FIELD WELDING

1. Welders shall posses valid qualificiations.
   All welding per AWS D1.1, Structural Welding Code.

MATERIALS

1. Pipe shall be in accordance with ASTM International A139. Pipe to be Grade B and steel shall have a minimum yield strength of 35 ksi. A hydrostatic test is not required.
2. Smooth steel pipe shall have a welded straight longitudinal seam. Spiral seam is acceptable if 25% of weld is ultrasonically tested by an outside testing agency for the manufacturer in addition to required tensile tests of weld.
3. The ends of each section of pipe shall be square cut. One end shall be suitable beveled for field welding sections together.

CAST-IN-PLACE CONCRETE NOTES

CONCRETE

1. All concrete materials, placement nad workmanship shall be in accordance with Chapter 8: Concrete Structures and Foundations of the AREMA Manual for Railway Engineering.
2. Formwork tolerances shall be in accordance with CI 347 specifications.
3. Minimum compressive strength at 28 days shall be 4000 psi.
4. Exposed surfaces shall be formed in a manner which shall produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90° or less are to be chamfered ¾" x ¾". Top surfaces to have a smooth finish, free of all float or travel marks.
5. Concrete shall be proportioned such that the water - cement ratio (by weight) does not exceed 0.45. Concrete shall contain a minimum of 6 sacks of cement per cubic yard of concrete.
6. Cement shall be Type I, Type IL, Type II, or Type III Portland Cement in accordance with ASTM C150 or C595 specifications. Contractor shall consider sulfate presence in cement type selection.
7. Aggregates shall be graded in accordance with ASTM C33 specifications. Coarse aggregate shall be size no. 67. Fine aggregate shall be natural sand.
8. Air content shall be between 5% and 7% (by volume).
9. Admixtures shall not be used without approval by the Engineer of record.
10. Curing shall be accomplished by wet curing or membrance curing compound. Membrance curing compound shall conform to ASTM C309, Type 2.
11. Do not use calcium chloride or any admixture containing internationally added chloride ions. Testing for chloride ions is not required.
12. Apply a structural bonding agent to construction joints or when placing new concrete against existing concrete. Submit bonding agent to the Engineer for approval.

REINFORCING STEEL

1. Reinforcing steel shall be deformed, new billet bars per ASTM A615 specifications and meet Grade 60 requirements.
2. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of Standard Practice. Dimensions of bending details are out to out of bar.
3. Reinforcing steel shall be blocked and tied to proper location and securely wired against displacement. Tie wires shall be installed at every other bar intersection so that at least 50% of the intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcing not otherwise noted shall meet the AREMA Manual for Railway Engineering requirements.

MISCELLANEOUS STEEL NOTES

1. Materials, fabrications, workmanship and erection per the current AREMA Manual for Railway Engineering, Chapter 15, Steel Structures.
2. Material shall conform to the following requirements:

Plates	ASTM A36
Bolts	ASTM A307 Gr. A
Steel Washer	ASTM F436

   Studs shall be C1015, C1017 or C1020 cold drawn steel which conform to ASTM A108 Specifications.
3. Welding requirements:
   A. All welding shall be wtih the SAW, SMAW, or FCAW process.
   B. All welding per AWS D1.1, Structural Welding Code.
   C. Welders shall possess valid qualifications, including a Procedure Qualification Report (PQR) and Weld Procedure Specification (WPS) for each weld type to be performed as well as documentation verifying that they have performed the specific weld(s) within the prior six months.
4. Miscellaneous steel shall be plain unless noted otherwise.
5. Pieces or assemblies designated as galvanized shall be galvanized after fabrication in accordance with ASTM A123. After galvanizing, all elements shall be free of fins, abrasions, rough or sharp edges, and other surface defects.
6. Bolts and nuts to be plated in accordance with ASTM A153 unless noted otherwise.

RAILROAD CULVERT ACCOMMODATION NOTES

1. The contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad.
2. Regardless of underlying land ownership, all shoring systems within Railroad right-of-way or that may impact the Railroad's operations and/or supports the Railroad's embankment shall be designed and constructed per current Railroad Guidelines for Temporary Shoring.
3. The contractor submit and provide sufficient safety measures to protect unattended excavations to the Railroad for approval.
4. All demolitions/removals within the Railroad's right-of-way and/or that may impact the Railroad's tracks or peratons shall be in compliance with the current Railroad's Demolition Guidelines.
5. Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment.

BILL OF MATERIAL

TOTAL	UNIT	DESCRIPTION
		Material and quantity list to be provided in a later submittal.

EST. WT. OF SSP

OUTSIDE DIAMETER	WALL THICKNESS	LENGTH	WEIGHT (LB./LIN.FT.)	WEIGHT (LB.)	WEIGHT (TON)
60"	.75"	25'-0"	475	11,875	6.0

RIPRAP NOTES

1. Riprap shall be placed in such a manner as to avoid segregation of various sizes of rock, and distributed so that there will be no large accumulation of either the larger or smaller sizes of stone. Individual rocks shall be placed in tight contact with one another in such a way to produce the least amount of void spaces. Riprap shall be solid, unfractured rock or concrete, bulky in shape with sharp angular edges.

Individual rocks shall vary as shown:

RIPRAP CLASS	AVERAGE WEIGHT PER STONE (LBS.)	DIMENSION (INCHES)	UNIT OF MEASURE	LAYER THICKNESS, D	TYPICAL VELOCITIES
I	50 to 200	9 to 14	Ton	1'-6"	6 - 8 fps

CLASS I RIPRAP

1. Riprap shall be placed in such a manner as to avoid segregation of the various sizes of rock. Individual rocks shall be placed in tight contact with one another in such a way to produce the least amount of void spaces.
2. Riprap shall be solid, unfractured rock or concrete, bulky in shape with sharp angular edges. Weight of individual rocks shall vary from a minimum of 50 lb. to a maximum of 200 lb.

PRELIMINARY 60% PLANS
NOT FOR CONSTRUCTION

60% PLANS ARE NOT ALL-ENCOMPASSING. CERTAIN SHEETS ARE INTENTIONALLY NOT INCLUDED WITHIN THIS SUBMITTAL.

DATE: 12/18/2025

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GRAND CANYON RAILWAY

REVISIONS

REV. NO.	DATE	REVISION

GENERAL NOTES, CONSTRUCTION SEQUENCE AND BILL OF MATERIAL

GRAND CANYON RAILWAY CULVERT 64.00
3-60" DIA. SSP x 120' REPLACING
3-4'x3' WOODEN BOX CULVERT x 55'

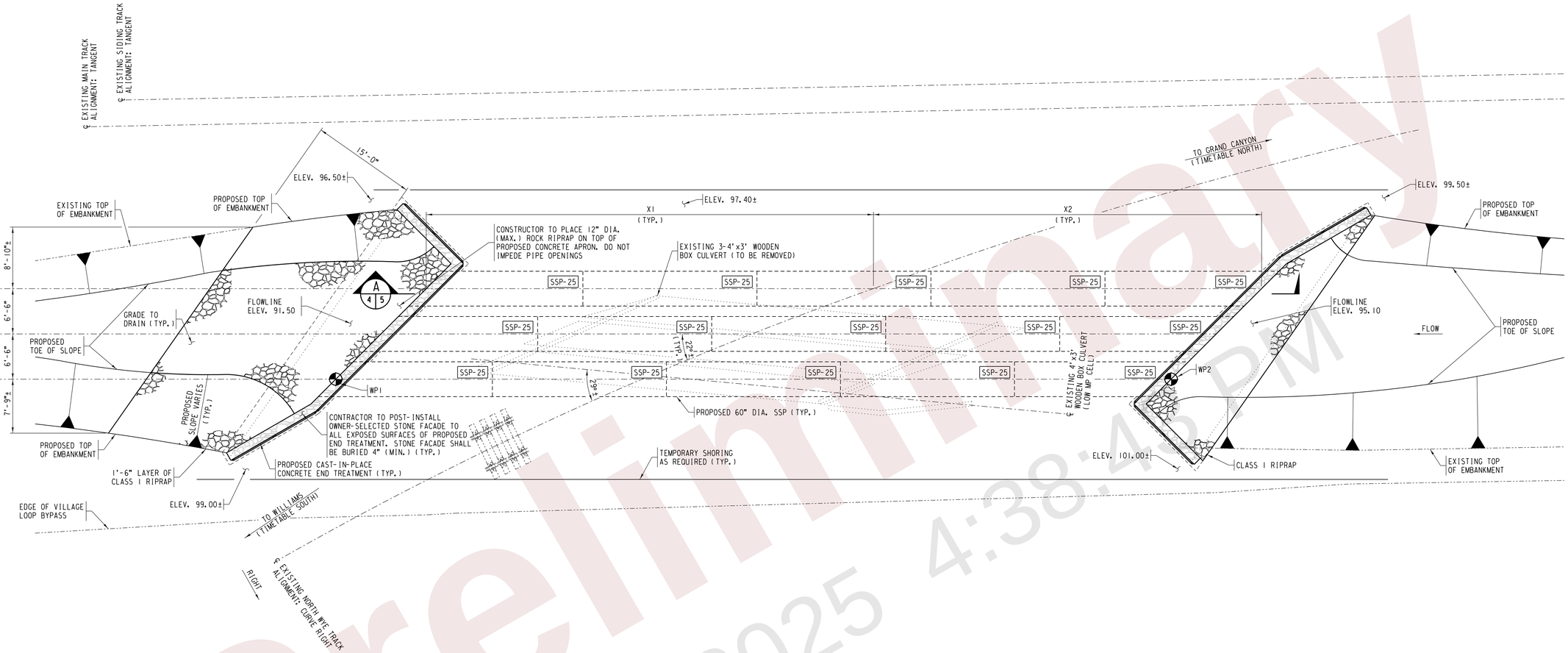
GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

2025

drawn by: CJ
checked by: JAS
approved by: KAS
QA/QC by: KAS/MJH
project no.: 025-05141
drawing no.: -
date: XX/XX/2025

SHEET
3 OF 11

FILE NAME: \\ca.ad.oaconsulting.com\fnts-vs1\projects\2025\05001-05500\025-05141\40-Design\Microstation_DGN\LOCR Culvert 64.00 Replacement.dgn



PLAN
SCALE: 1/8"=1'-0"

WORK POINT TABLE		
WORK POINT	NORTHING	EASTING
WP1	1839781.83	633426.01
WP2	1839763.23	633544.56

PIPE OFFSET TABLE		
LOCATION	X1	X2
PIPE #1	43'-11⅝"±	76'-0⅜"±
PIPE #2	53'-3⅜"±	66'-8⅝"±
PIPE #3	64'-2¾"±	55'-9¼"±

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GENERAL ARRANGEMENT

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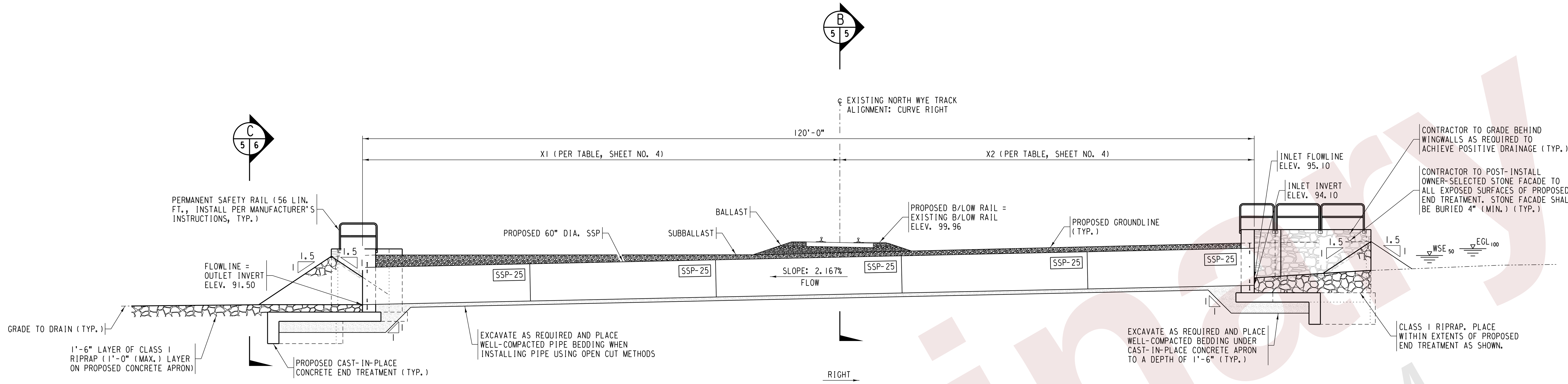
2025

drawn by: CLJ
checked by: JAS
approved by: KAS
QA/QC by: KAS/MJH
project no.: 025-05141
drawing no.: -
date: XX/XX/2025

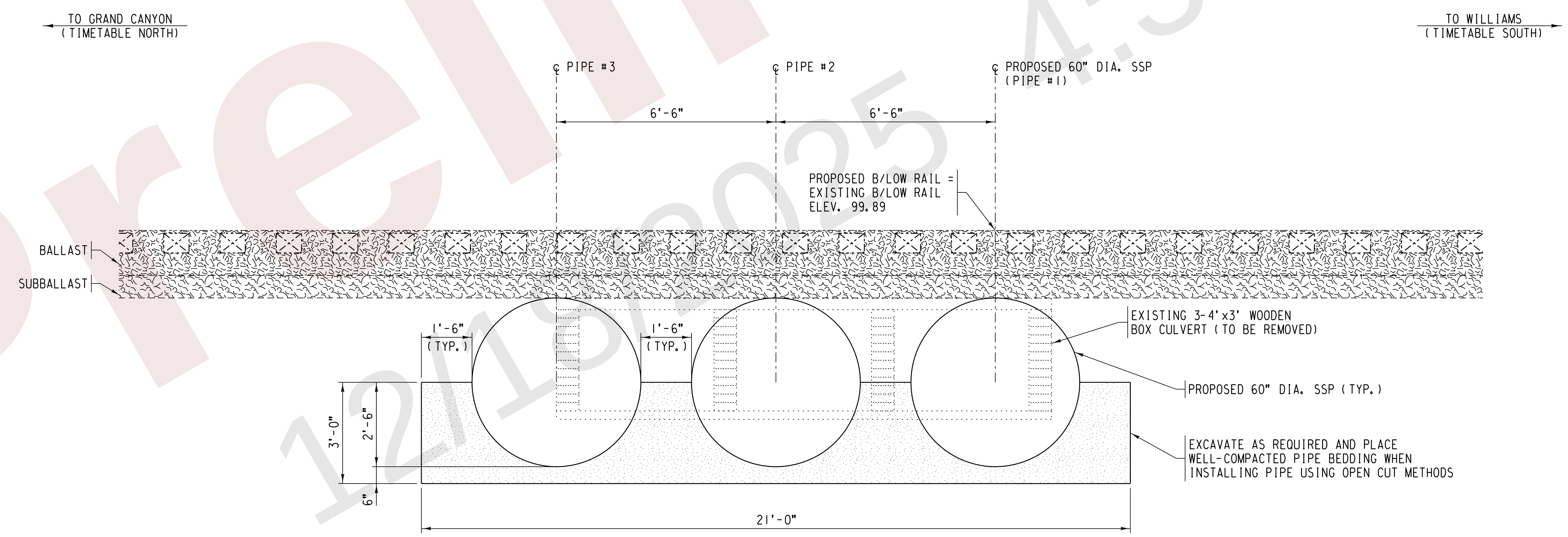


RIGHT

SECTION A (4/5)
SCALE: 1/8" = 1'-0"

WSE_{50} = 98.11
EGL_{100} = 99.04
VEL_{100} = 7.32 fps

NOTE:
GRADING SHOWN APPROXIMATELY, SEE SHEET NO. 4 FOR ADDITIONAL GRADING DETAILS.



SECTION B (5/5)
SCALE: 3/8" = 1'-0"

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GRAND CANYON RAILWAY

REV. NO.	DATE	REVISION

REVISIONS

TYPICAL SECTIONS AND CONSTRUCTION DETAILS (SHEET 1 OF 3)

GRAND CANYON RAILWAY CULVERT 64.00
3-60" DIA. SSP x 120' REPLACING
3-4'x3' WOODEN BOX CULVERT x 55'

GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

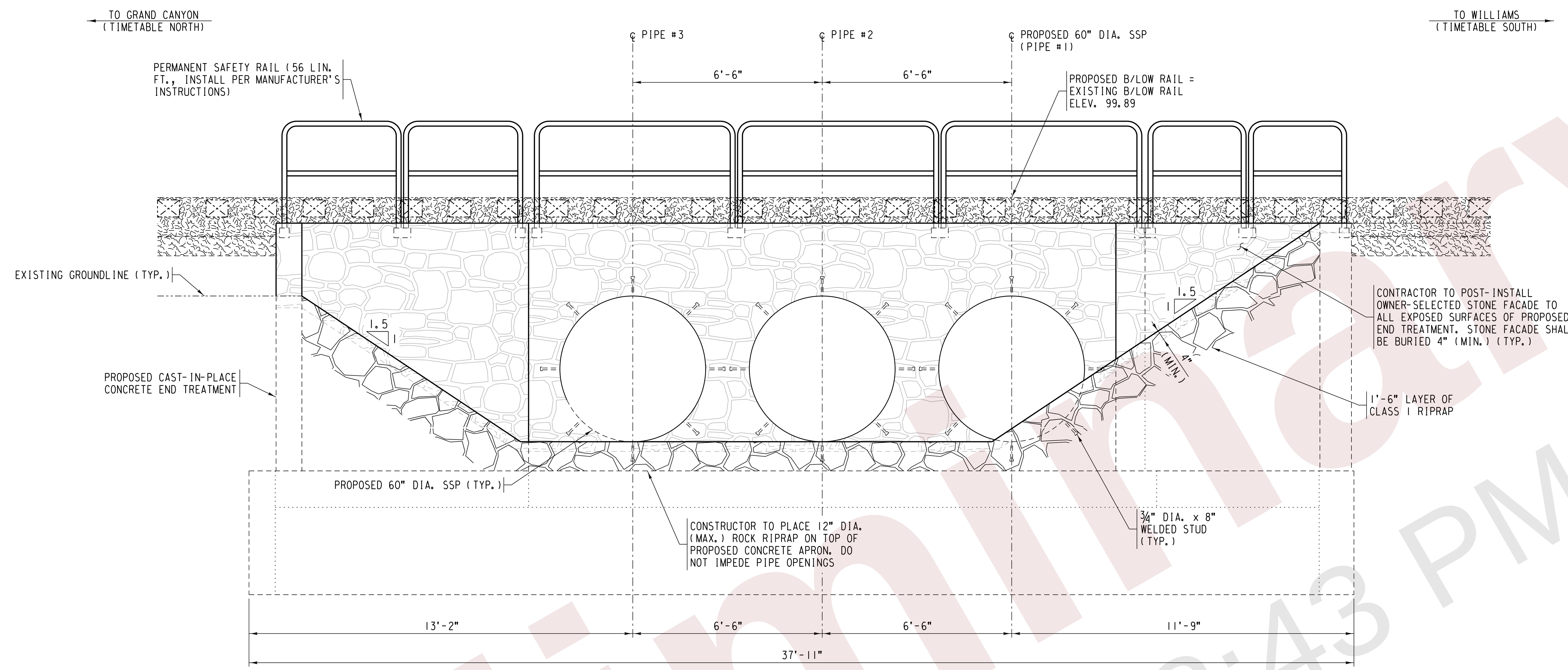
2025

drawn by:	QLJ
checked by:	JAS
approved by:	KAS
QA/QC by:	KAS/MJH
project no.:	025-05141
drawing no.:	-
date:	XX/XX/2025

SHEET
5 OF 11

SHEET SIZE 22x34

FILE NAME: \\oa.ad.oaconsulting.com\fnts-ns1\projects\2025\05001-05500\025-05141\40-Design\Microstation_RAIL\GCR Culvert 64.00 Replacement.dgn



VIEW (C / 5 6)
SCALE: ⅜"=1'-0"

OUTLET END TREATMENT SHOWN, INLET END TREATMENT SIMILAR

NOTES:
1. GRADING SHOWN APPROXIMATELY, SEE SHEET NO. 4 FOR ADDITIONAL GRADING DETAILS.
2. VIEW SHOWN PERPENDICULAR TO CENTERLINE OF PROPOSED 60" DIA. SSP.

PRELIMINARY 60% PLANS
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REV. NO.	DATE	REVISION

REVISIONS

TYPICAL SECTIONS AND CONSTRUCTION DETAILS (SHEET 2 OF 3)

GRAND CANYON RAILWAY CULVERT 64.00
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3-4'x3' WOODEN BOX CULVERT x 55'

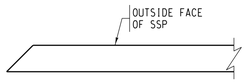
GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

2025

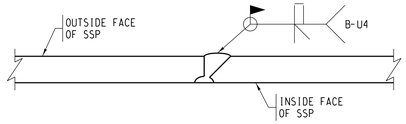
drawn by: CLJ
checked by: JAS
approved by: KAS
QA/QC by: KAS/MJH
project no.: 025-05141
drawing no.: -
date: XX/XX/2025

SHEET SIZE 22x34

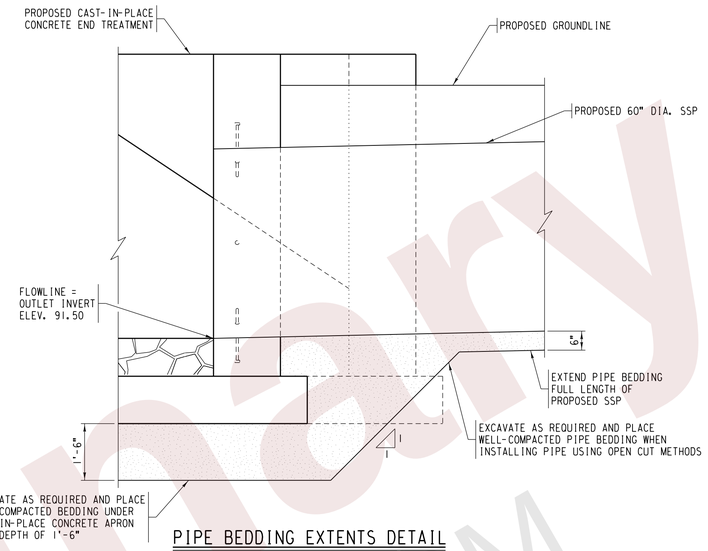
FILE NAME: \\oa.ad.oaconsulting.com\fnts-ns1\projects\2025\05001-05500\025-05141\40-Design\Microstation_RAIL\GCR Culvert 64.00 Replacement.dgn



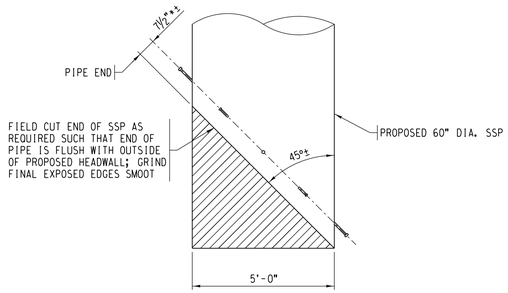
PIPE END BEVEL DETAIL
SCALE: NONE



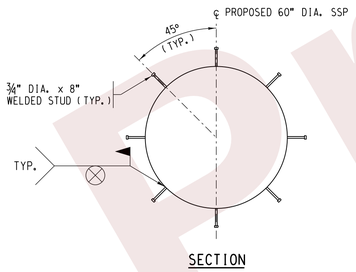
PIPE END WELD DETAIL
SCALE: NONE



PIPE BEDDING EXTENTS DETAIL
SCALE: 3/8"=1'-0"
OUTLET END TREATMENT SHOWN,
INLET END TREATMENT SIMILAR



PLAN



SECTION

ANCHOR LOCATION DETAIL
SCALE: 3/8"=1'-0"

LIMITS OF REMOVAL

NOTES:
1. INSTALL STUDS AFTER PIPE IS IN PLACE.
2. * MINIMALLY ADJUST OFFSET FROM PIPE END AS REQUIRED SUCH THAT WELDED STUDS ARE CENTERED WITHIN THE PROPOSED HEADWALL. 4" (MIN.) CLEARANCE TO HEADWALL FACE (EACH WAY) SHALL BE MAINTAINED.
3. FOR ¾" DIA. STUD MATERIAL NOTES, SEE MISCELLANEOUS STEEL NOTES, SHEET NO. 3.

PRELIMINARY 60% PLANS
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TYPICAL SECTIONS AND CONSTRUCTION DETAILS
(SHEET 3 OF 3)

GRAND CANYON RAILWAY CULVERT 64.00
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GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

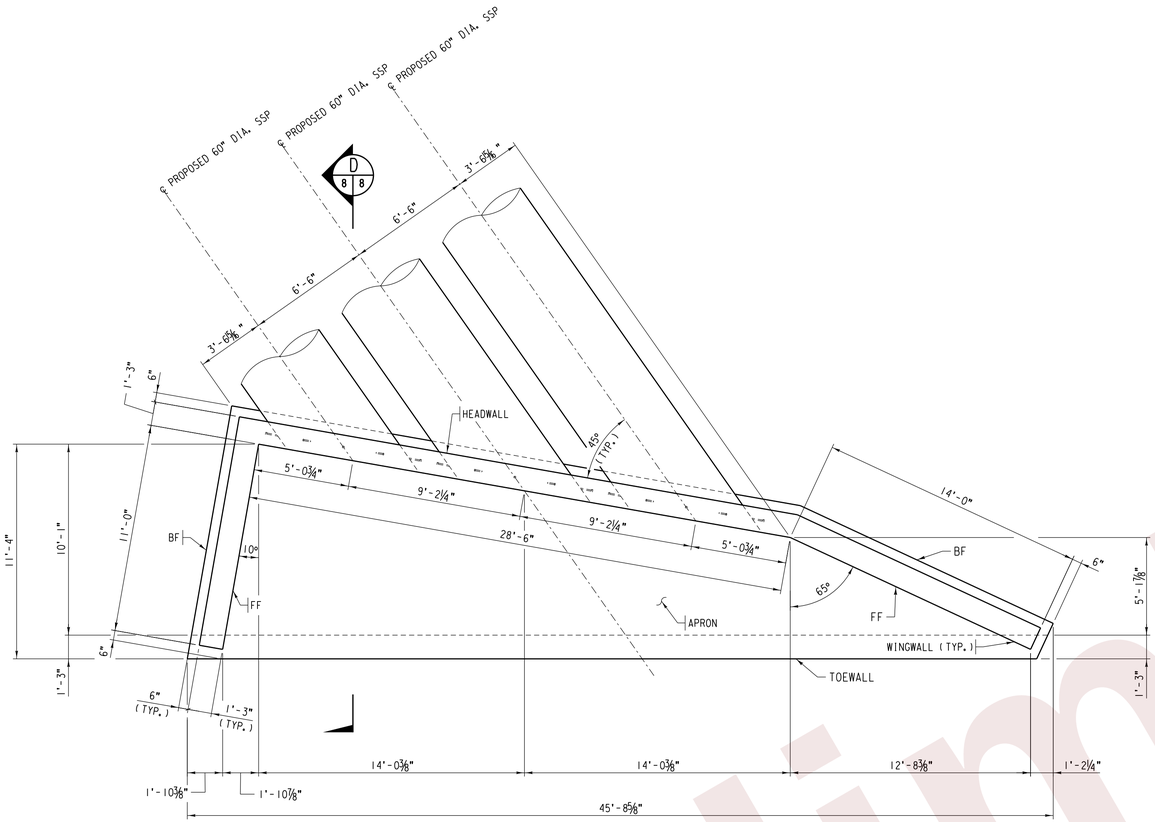
2025

drawn by: GLJ
checked by: JAS
approved by: KAS
QA/QC by: KAS/MJH
project no.: 025-05141
drawing no.:
date: XX/XX/2025

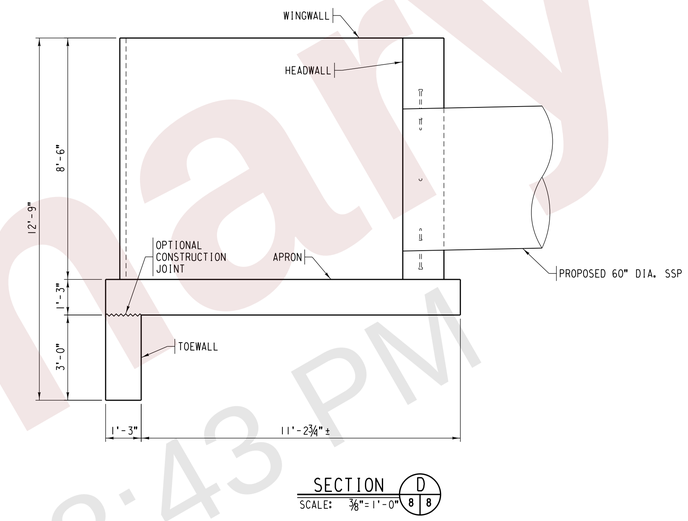
SHEET
7 OF 11

SHEET SIZE 22x34

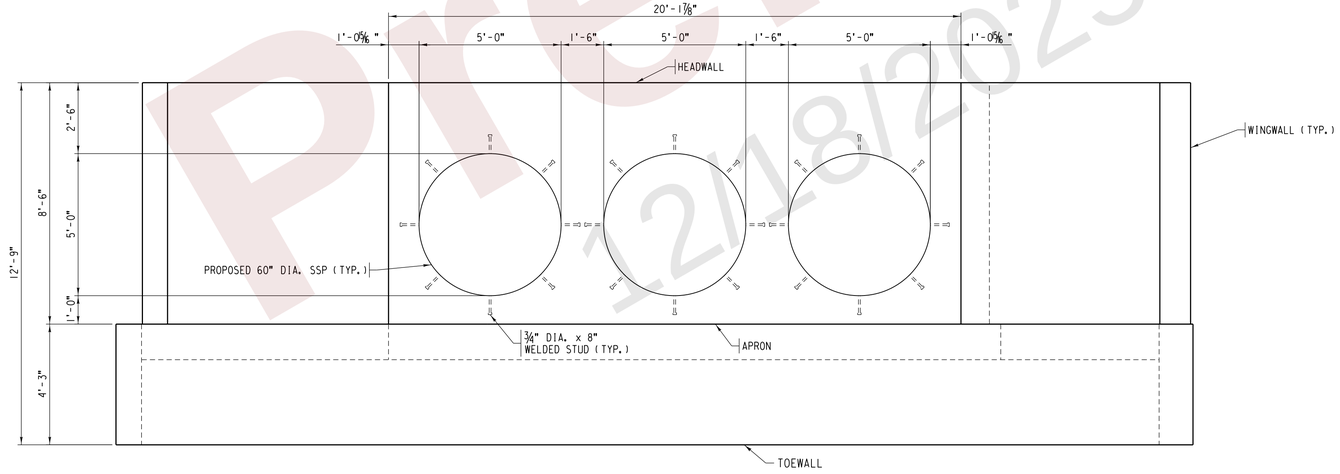
FILE NAME: \\oa.ad.oasconsulting.com\fmts-rst1\projects\2025\05501-05550\05025-05141\40-Design\Microstation_RAIL\GCR Culvert 64.00 Replacement.dgn



PLAN
SCALE: ¼"=1'-0"



SECTION D
SCALE: ⅜"=1'-0"



ELEVATION
SCALE: ⅜"=1'-0"

NOTE:
VIEW SHOWN PERPENDICULAR TO CENTERLINE OF PROPOSED 60" DIA. SSP.

NOTES:
1. FOR CAST-IN-PLACE CONCRETE NOTES, SEE SHEET NO. 3.
2. FOR END TREATMENT REINFORCING DETAILS, SEE SHEET NOS. 9 AND 10.
3. HANDRAILS NOT SHOWN FOR CLARITY. FOR HANDRAIL DETAILS, SEE SHEET NO. 6.
4. BF = BACK FACE
   FF = FRONT FACE

CONCRETE PLACEMENT QUANTITIES		
ITEM	UNIT	QTY.
APRON AND TOEWALL	CU. YD.	25.0
WINGWALLS AND HEADWALL	CU. YD.	18.9

PRELIMINARY 60% PLANS
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CAST-IN-PLACE CONCRETE END TREATMENT
FRAMING DETAILS

GRAND CANYON RAILWAY CULVERT 64.00
3-60" DIA. SSP x 120' REPLACING
3-4'x3' WOODEN BOX CULVERT x 55'
GRAND CANYON VILLAGE, AZ LAT.: 36.05614 LONG.: -112.14170

2025

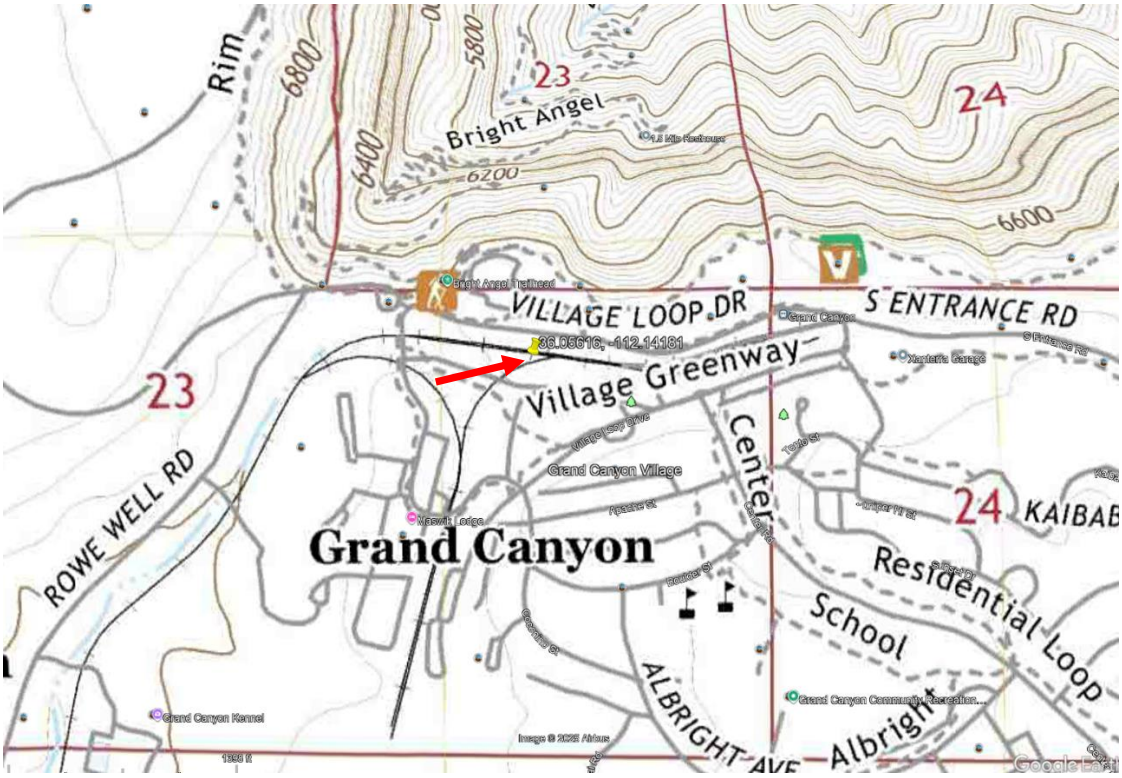
drawn by: CL
checked by: JAS
approved by: KAS
QA/QC by: KAS/MJH
project no.: 025-05141
drawing no.:
date: XX/XX/2025

Appendix B – Photo Set

Appendix B – Photo Set

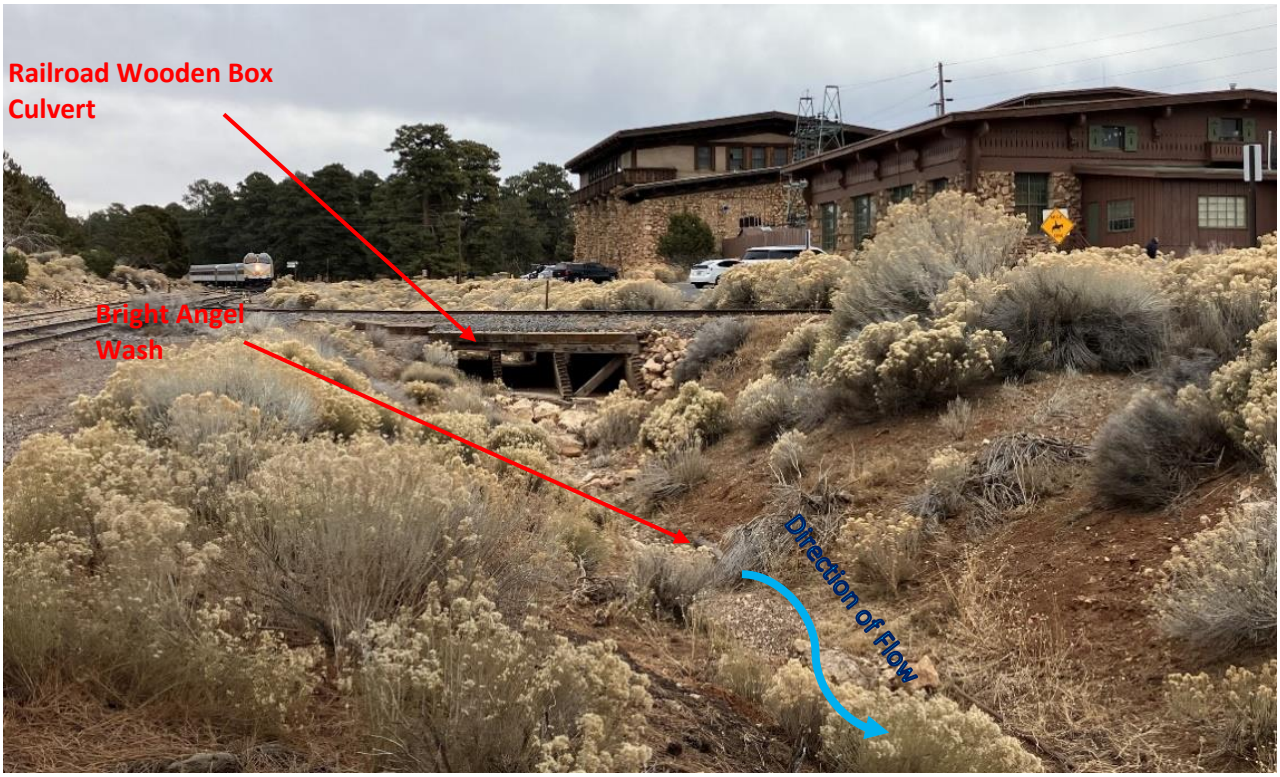
Photoset
Replace Grand Canyon Railway Wooden Box Culvert

Project Location Map (Aerial)



Project Location Map (Topo)

Photoset
Replace Grand Canyon Railway Wooden Box Culvert



Bright Angel Wash on the west side of wooden box culvert, looking east (January 3, 2024)

Bright Angel Wash on the west side of wooden box culvert, looking southeast (January 3, 2024)

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

View east showing Bright Angel Wash and the railroad crossing proposed for replacement. The Powerhouse building is visible on the right side of the photo (January 8, 2021).

View east showing Bright Angel Wash and the railroad crossing proposed for replacement. The Powerhouse building is visible on the right side of the photo (January 8, 2021).

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

Looking northeast along the railroad “Y”, looking northeast

View facing east from atop the box culvert showing Bright Angel Wash.

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

View east showing Bright Angel Wash and wooden box culvert.

Bright Angel Wash on the east side of the wooden box culvert, looking west (11/7/22)

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

East side of wooden box culvert, looking southwest

Bright Angel Wash on the east side of the wooden box culvert, looking west (11/7/22)

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

View west showing Bright Angel Wash and wooden box culvert.

View west showing Bright Angel Wash and wooden box culvert.

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

View west showing Bright Angel Wash and the railroad crossing proposed for replacement (January 8, 2021).

(Photos continued on next page)

Photoset
Replace Grand Canyon Railway Wooden Box Culvert

View west showing Bright Angel Wash and wooden box culvert (white arrow).

Appendix C – Wetland Function and Evaluation Form

Appendix C – Wetland Function and Evaluation Form

Wetland Function-Value Evaluation Form

Total area of wetland: NA Human made? Unknown Is wetland part of a wildlife corridor? No or a "habitat island"? No Adjacent land use: Railroad right-of-way, roadways and associated embankments, former industrial buildings, lodging Distance to nearest roadway or other development: 15 feet Dominant wetland systems present: None - ephemeral wash (swale) surrounded by UPL Contiguous undeveloped buffer zone present: No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Upper How many tributaries contribute to the wetland? None Wildlife & vegetation diversity/abundance (see attached list): None

Wetland I.D. Bright Angel Wash
Latitude 36.05616 Longitude -112.14181
Prepared by: ZK Date 9/26/2025
Wetland Impact:
Type NA Area NA

Evaluation based on:
Office X Field X
Corps manual wetland delineation completed? Y N X

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	X		4,7,15	4	Some groundwater recharge benefits are likely when the waterway has flows; however, flows are typically limited to during/immediately following heavier precipitation events.
Floodflow Alteration	X		2,7,9,11,13	11	The wash conveys storm water flows off NPS lands thereby protecting park structures and facilities from flood waters.
Fish and Shellfish Habitat		x			The dry wash does not offer fish/shellfish habitat.
Sediment/Toxicant Retention		x			The wash only flows in response to heavy precipitation events and provides little to no sediment/toxicant/pathogen retention.
Nutrient Removal		x			The wash only flows in response to heavy precipitation events and provides little to no nutrient removal. Additionally, excess nutrients, such as those from fertilizers, are uncommon in the vicinity as GRCA does not apply or authorize the use of fertilizers.
Production Export		x			The dry wash does not produce food or usable products for human or other organism consumption.
Sediment/Shoreline Stabilization		x			The dry wash with upland vegetation does not provide sediment/shoreline stabilization.
Wildlife Habitat		x			The dry wash with upland vegetation (primarily rabbitbrush) does not provide important habitat for wildlife. Wildlife may use this area in a transient manner, such as briefly passing through to feed or access other areas of the park. Additionally, the dry wash is in the heart of the Village developed which sees heavy human presence and developments (e.g., roads, buildings).
Recreation		x			The dry wash does not provide recreational value. It is in the middle of the Village developed area.
Educational/Scientific Value					The dry wash does not provide educational/scientific value.
Uniqueness/Heritage		x			The dry wash itself does not produce special values. It is in the middle of the Village developed area.

Visual Quality/Aesthetics		x			The dry wash does not provide visual/aesthetic values. It is within the developed area of the village and looks basically the same as surrounding areas.
ES Endangered Species Habitat		x			The dry wash does not provide T&E habitat. It is located in the middle of the Village developed area and therefore provides negligible habitat for the T&E species whose range includes the South Rim. The park has no records of T&E species using this area.
Other		x			

Notes: This is a dry ephemeral wash surrounded by uplands, and the wash itself is likely upland. This form is only being filled out due to need to prepare a wetland statement of finding.

* Refer to backup list of numbered considerations.

Appendix D – Wetland Function and Evaluation Form

Memo

Date: 9/3/2025

From: Zach Kresl, Environmental Protection Specialist, GRCA

Subject: Waters of the United States Determination for Bright Angel Wash, Railroad Ballast Bridge Project, PEPC 90981

Grand Canyon Railroad is proposing to replace a railroad crossing (wooden triple box culvert/ballast deck bridge) along Bright Angel Wash in Grand Canyon Village, AZ. The crossing coordinates are 36.05616, -112.14181. Preliminary plans call for the existing crossing structure to be replaced with a culvert consisting of three steel pipes. Maps, photos, and a preliminary plan sheet are included at the end of this document.

Per communications with Jesse Rice, Senior Project Manager, USACE Arizona Regulatory Branch (August 2025), Sackett v. Environmental Protection Agency and the amended 2023 waters of the United States (WOTUS) definition require jurisdictional tributaries to have relatively permanent water, an ordinary high-water mark (OHWM), and a downstream connection to a traditionally navigable water (TNW), for example, the Colorado River. Bright Angel Wash does not meet these criteria, as described below.

Relatively Permanent Water

"Under the interpretation provided in the preamble to the 2023 ["Revised Definition of 'Waters of the United States'"] Rule, relatively permanent tributaries are those with flowing or standing water year-round or continuously during certain times of the year and more than just a short duration in direct response to precipitation" (90 Federal Register 13428).

Bright Angel Wash is an ephemeral feature that only flows in direct response to precipitation; therefore, it does not meet the above definition of a relatively permanent water. Additionally, Bright Angel Was is better characterized as a swale as defined in 33 CFR 328.3(b)(8). Swales are explicitly called out in 33 CFR 328.3(b) as not a WOUTUS.

Based on the relatively permanent water standard alone, Bright Angel Wash is not considered to be a WOTUS.

OHWM

Bright Angel Wash does not exhibit a defined OHWM (see photos below showing the wash with upland vegetation (*Ericameria nauseosa*, rabbitbrush) growing at the bottom of the wash). This is at least partly due to the lack of regular water flows, as described above.

In addition to lacking an OHWM, Bright Angel Wash also lacks adjacent/abutting wetlands due to the infrequent presence of water in the wash. Grand Canyon Vegetation Specialist Cam Prophet confirmed there are no wetland plants in or adjacent to Bright Angel Wash in the project area. Dominant vegetation consists of *Ericameria nauseosa* (rabbitbrush). Based on this, Bright Angel Wash is considered to be an upland swale.

Connection to a TNW

Bright Angel Wash connects to Coconino Wash. Based on aerial imagery, Coconino Wash appears to lack a clear OHWM for most, if not all, of its length. Coconino Wash eventually enters Cactus Canyon where it connects to Heather Wash, approximately 20 miles west-southwest of the project site in a straight line. Heather Wash is where an OHWM first becomes distinguishable on aerial imagery. Heather Wash then connects to Cataract Creek in Cataract Canyon. Cataract Creek then becomes Havasu Creek, which ultimately connects to the Colorado River approximately 38 miles northwest of the project site in a straight line.

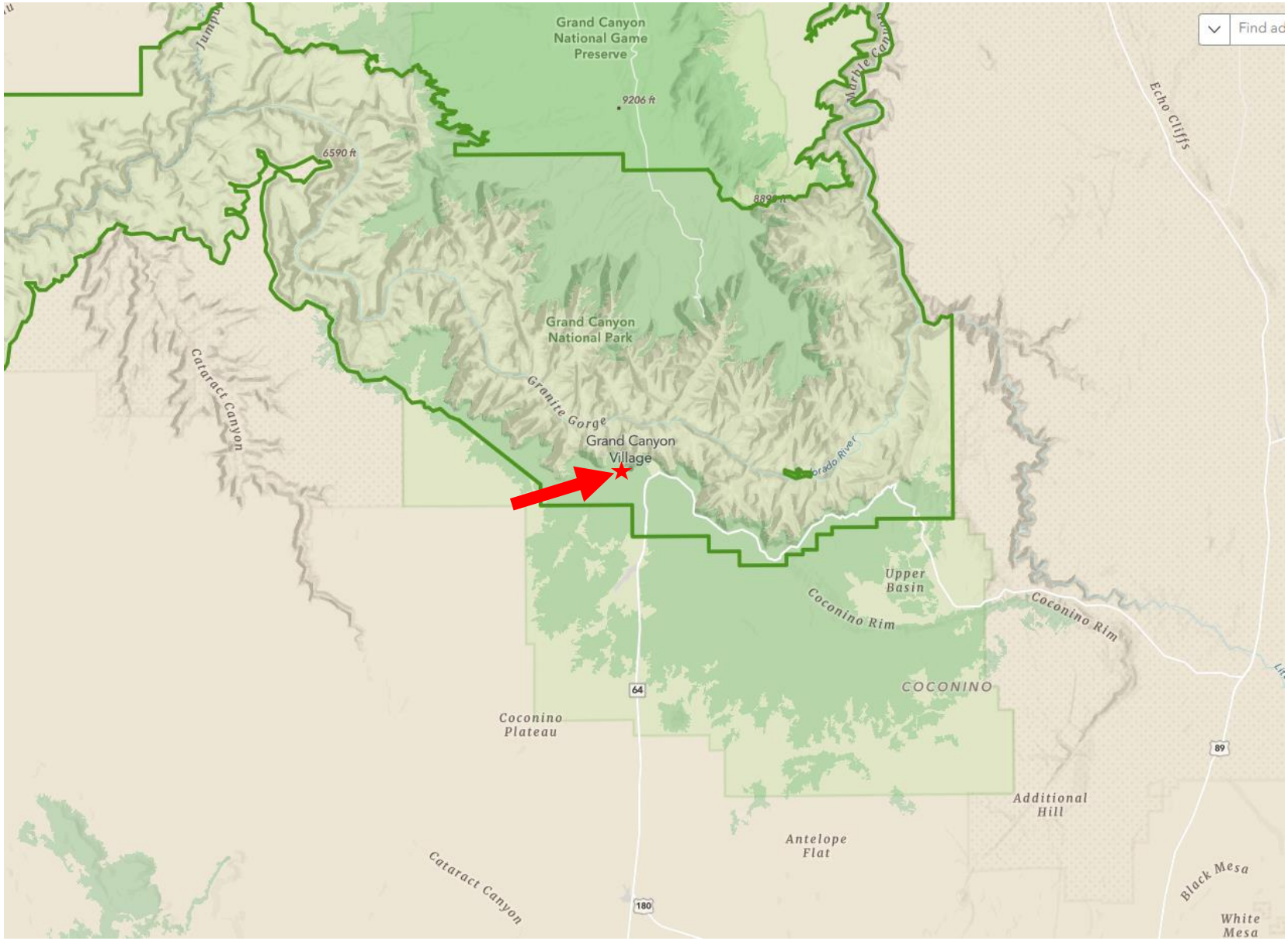
Based on aerial imagery, Coconino Wash appears largely dry (lacks flowing water), and any flows in Coconino Wash likely also rely directly on precipitation; therefore, Coconino Wash also likely does not meet the relatively permanent water standard. Additionally, as noted above, Coconino Wash also appears to lack a clear OHWM for most, if not all, of its length. Based on these observations, it is highly questionable that Coconino Wash would be considered an RPW and WOTUS, further supporting the rationale for Bright Angel Wash to be considered a non-WOTUS.

Conclusion

Based on the above information, Bright Angel Wash is not a WOTUS; therefore, a Clean Water Act Section 404 permit is not required.

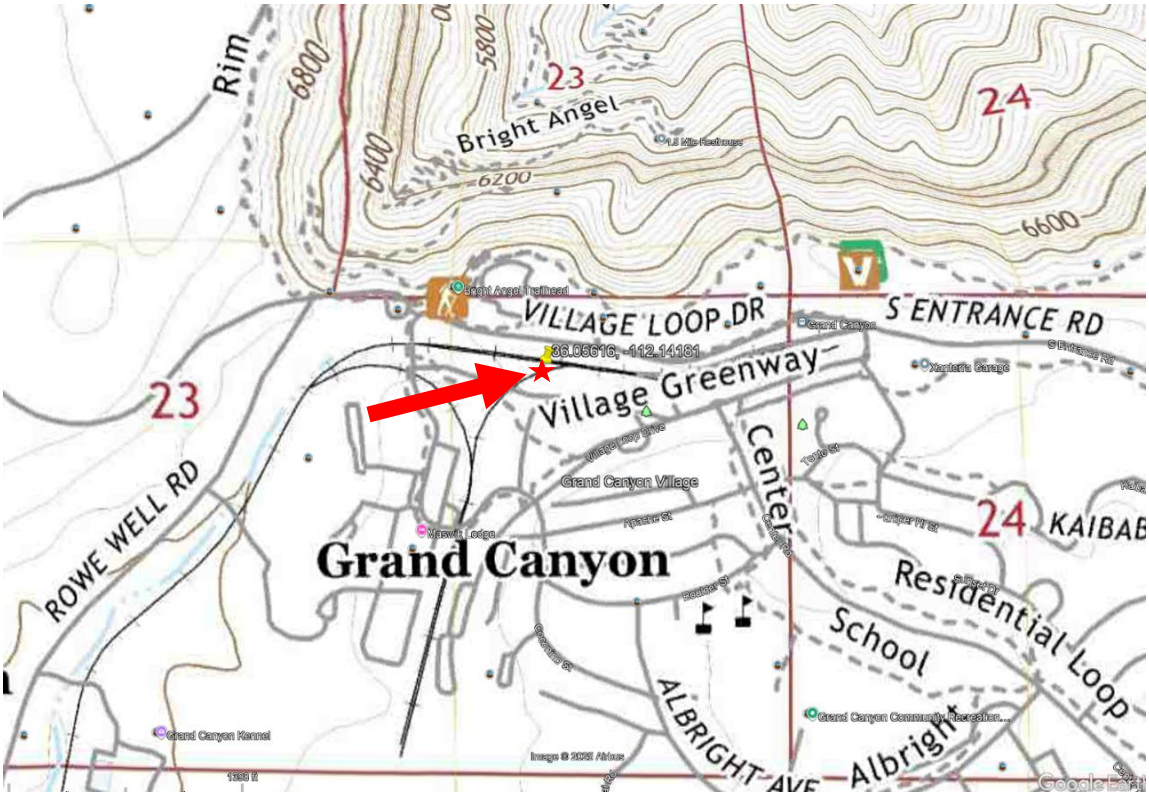
Maps, Photos, Plans

Continued on next page.



Project Location Overview Map

Project Location Map (Aerial)



Project Location Map (Topo)

Project site map

Bright Angel Wash on the west side of wooden ballast bridge, looking east (January 3, 2024)

Bright Angel Wash on the west side of wooden ballast bridge, looking southeast (January 3, 2024)

Bright Angel Wash on the east side of the wooden ballast bridge, looking west (11/7/22)

East side of wooden ballast bridge, looking southwest

Bright Angel Wash on the east side of the wooden ballast bridge & drainage, looking west (11/7/22)

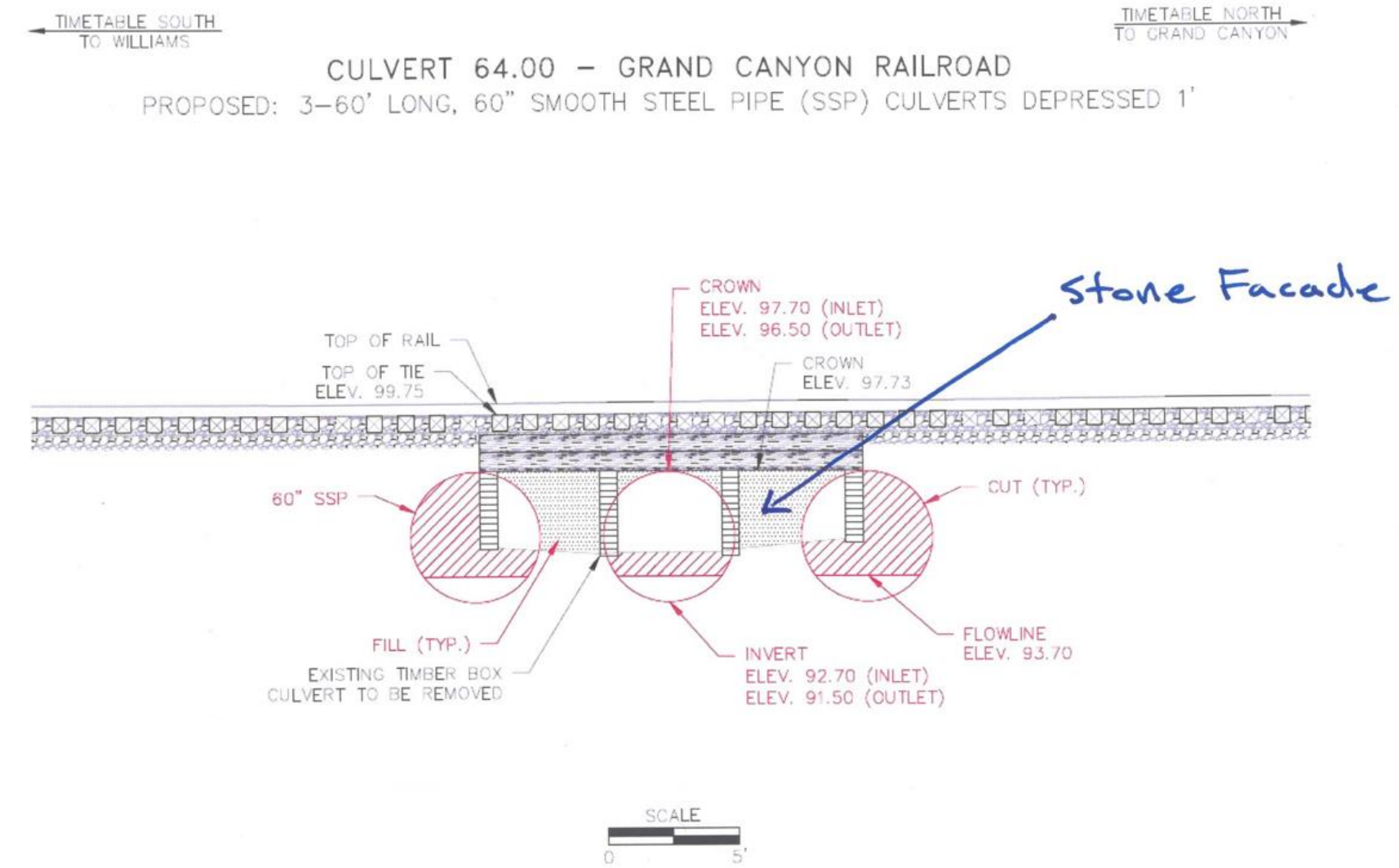
View east showing Bright Angel Wash and the railroad crossing proposed for replacement. The Powerhouse building is visible on the right side of the photo (January 8, 2021).

View east showing Bright Angel Wash and the railroad crossing proposed for replacement. The Powerhouse building is visible on the right side of the photo (January 8, 2021).

View west showing Bright Angel Wash and the railroad crossing proposed for replacement (January 8, 2021).

View west showing Bright Angel Wash and the railroad crossing proposed for replacement (January 8, 2021).

View west showing Bright Angel Wash and the railroad crossing proposed for replacement(January 8, 2021).


TIMETABLE SOUTH
TO WILLIAMS
TIMETABLE NORTH
TO GRAND CANYON
CULVERT 64.00 – GRAND CANYON RAILROAD
PROPOSED: 3–60' LONG, 60" SMOOTH STEEL PIPE (SSP) CULVERTS DEPRESSED 1'
Stone Facade
CROWN
ELEV. 97.70 (INLET)
ELEV. 96.50 (OUTLET)
TOP OF RAIL
TOP OF TIE
ELEV. 99.75
CROWN
ELEV. 97.73
60" SSP
CUT (TYP.)
FILL (TYP.)
EXISTING TIMBER BOX
CULVERT TO BE REMOVED
INVERT
ELEV. 92.70 (INLET)
ELEV. 91.50 (OUTLET)
FLOWLINE
ELEV. 93.70
SCALE
0
5'

From: Kresl, Zachary E
To: Rice, Jesse M CIV USARMY CESPL (USA)
Cc: Donehoo, Brian T
Subject: RE: [EXTERNAL] REQUEST: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ
Date: Friday, August 29, 2025 10:36:00 AM
Attachments: image006.png
image007.png
image008.png
image009.png
image010.png
image011.png

Hi Jesse,

No need for apologies at all, I appreciate you responding!

I think what makes most sense is to follow the first suggestion that you mentioned below, as I really don't think this wash would be considered jurisdictional and therefore wouldn't require a permit. I also think the wash lacks an OHWM and it only flows in direct response to precipitation, thereby meeting the definition of a swale/erosional feature in 33 CFR 328.3. I will draft up some documentation to add to our files.

Thank you again for your response and the great information. Have a good Labor Day weekend!

ZACH KRESL
Supervisory Environmental Protection Specialist
Division of Planning, Environment, and Projects
Grand Canyon National Park
928-405-2281
Duty Station 601 Riverfront Dr, Omaha, NE

From: Rice, Jesse M CIV USARMY CESPL (USA) <Jesse.M.Rice@usace.army.mil>
Sent: Thursday, August 28, 2025 11:53 AM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: RE: [EXTERNAL] REQUEST: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hi Zach,

Thanks for reaching out, and I apologize for the slow response. Like most federal agencies we've lost staff but the work keeping coming.

Anyway, I want to provide some background info and then offer some options for moving forward. You can then decide how to proceed and if you want to request anything from us.

In terms of jurisdiction, Sacket and the amended 2023 WOTUS definition cleared some things up for our region but there is still a lot of complexity. Jurisdictional streams (tributaries) must have

an Ordinary High Water Mark, have a downstream connection to a TNW (Colorado River), and have relatively permanent water (RPW). However, a tributary's RPW status is determined for the Strahler Stream Order reach which typically extends well outside of a project's boundary. From what I'm seeing in NHD Plus data, the effluent-fed portion of Bright Angel Wash is within the same 1st order reach as the culvert. The WOTUS definition is silent on source of flow, and RPWs only need to flow more than in direct response to precipitation. There is no minimum flow duration or frequency specified in the WOTUS definition (at this time).

However, I took at look at the culvert in Google Streetview and I'm not really seeing a defined ordinary high water mark at the culvert or at the Village Loop crossing to the west. It even looks like there's some young sagebrush in the bottom of it which tells me it may not flow often. This tells me that this section of Bright Angel Wash may be a swale, which is an excluded feature under the current WOTUS definition.

I'm not sure a permit would be needed for this project and it depends on what you all need for your documentation. Here are some suggestions for you:

1. Document to your files the lack of a defined ordinary high water mark and your determination that it is an excluded feature under the 2023 WOTUS rules (see 33 CFR 328.3(b)). Our technical documents describing Ordinary High Water Mark indicators are found at this link under the 'Stream Channel Identification and Delineation' header: https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/techbio/. No documentation would be provided by the Corps. However, if questions arise later on about the need for a permit, your documentation will assist both our agencies.

2. Submit a delineation report for the project to our office. We can provide an email which concurs with the delineation and notes that ephemeral features are not jurisdictional. You can also request an Approved Jurisdictional Determination (AJD) which would provide a formal decision on the feature's jurisdictional status. However, keep in mind that AJDs are lower priority for our agency and it may take up to 6 months to get a response. This option is the most complex and time consuming since we would need to document and evaluate and all of the factors I listed above.

If you have any questions, let me know and we can set up a call or continue via email. Thanks!

Jesse Rice
Senior Project Manager
Los Angeles District
Regulatory Division, Arizona Branch
Phoenix, AZ
Email: Jesse.M.Rice@usace.army.mil

Office: (602) 230-6854, forwards to cell: (602) 908-8028

Please use our electronic submittal system: https://rrs.usace.army.mil/rrs

Customer Survey: https://regulatory.ops.usace.army.mil/customer-service-survey/

From: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Sent: Tuesday, August 26, 2025 8:49 AM
To: Diebolt, Sarah (Sallie) CIV USARMY CESPL (USA) <Sallie.Diebolt@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>; Rice, Jesse M CIV USARMY CESPL (USA) <Jesse.M.Rice@usace.army.mil>
Subject: [Non-DoD Source] RE: [EXTERNAL] REQUEST: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Thank you Sarah!

Jesse, please let me know if you have any questions about the project. I am happy to reply through email or set up a meeting to walk through any questions you may have.

ZACH KRESL
Supervisory Environmental Protection Specialist
Division of Planning, Environment, and Projects
Grand Canyon National Park
928-405-2281
Duty Station 601 Riverfront Dr, Omaha, NE

From: Diebolt, Sarah (Sallie) CIV USARMY CESPL (USA) <Sallie.Diebolt@usace.army.mil>
Sent: Tuesday, August 26, 2025 10:44 AM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>; Rice, Jesse M CIV USARMY CESPL (USA) <Jesse.M.Rice@usace.army.mil>
Subject: RE: [EXTERNAL] REQUEST: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hello Zach,

Jesse Rice (copied here) will be your point of contact. I'm attaching our current directory for your information.

Thank you!

Sallie Diebolt, Branch Chief
Regulatory Division, Arizona Branch
Phoenix, AZ
Los Angeles District, U.S. Army Corps of Engineers
sallie.diebolt@usace.army.mil

Office: 602-230-6950
Mobile: 602-300-1761

Electronic submittal system (preferred): https://rrs.usace.army.mil/rrs
General Inquiries: splregulatoryaz@usace.army.mil
Customer survey: https://regulatory.ops.usace.army.mil/customer-service-survey/

From: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Sent: Tuesday, August 26, 2025 6:25 AM
To: Carpenter, Anne Therese (Therese) CIV USARMY CENAE (USA) <Anne.T.Carpenter@usace.army.mil>; Diebolt, Sarah (Sallie) CIV USARMY CESPL (USA) <Sallie.Diebolt@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [Non-DoD Source] RE: [EXTERNAL] REQUEST: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hi Therese,

Thanks a bunch for putting me in touch with the correct contact. Best of luck to you with your new District!

Sarah, please let me know the PM who will be assigned to this and if you or they require any further information.

ZACH KRESL
Supervisory Environmental Protection Specialist
Division of Planning, Environment, and Projects
Grand Canyon National Park
928-405-2281
Duty Station 601 Riverfront Dr, Omaha, NE

From: Carpenter, Anne Therese (Therese) CIV USARMY CENAE (USA) <Anne.T.Carpenter@usace.army.mil>
Sent: Monday, August 25, 2025 12:23 PM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>; Diebolt, Sarah (Sallie) CIV USARMY CESPL (USA) <Sallie.Diebolt@usace.army.mil>

Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [EXTERNAL] REQUEST: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hi Zach,

Great to hear from you, thank you so much for reaching out. Glad to hear the wheels are back on the proverbial track for this one, it's been in the hopper for a hot minute!

For the jurisdictional piece, you are likely well on track, but I need to defer to the Arizona Branch to make that call. I transferred to another District earlier this year, so looping in the Arizona Branch Chief, Sallie Diebolt, so that she can get you to the appropriate Project Manager for this area.

Again, thank you for reaching out, and best of luck with the crossing!

All the best,

Therese Carpenter
Senior Project Manager
Transportation and Utilities Section
U.S. Army Corps of Engineers
New England District, Maine Office
207-703-8264/ ☎ 978-318-8768

USACE is now accepting preconstruction notifications and applications through the Regulatory Request System (RRS)! In order to better serve you and the Nation, USACE intends to fully transition to the RRS. Effective September 1, 2025, all applicants will be directed to submit requests through the Regulatory Request System. To help ensure timely receipt and processing, please submit your pre-construction notifications and permit applications via the clickable RRS link below.

USACE RRS Promo 90-sec (youtube.com)

From: Kresl, Zachary E <Zachary_Kresl@nps.gov>

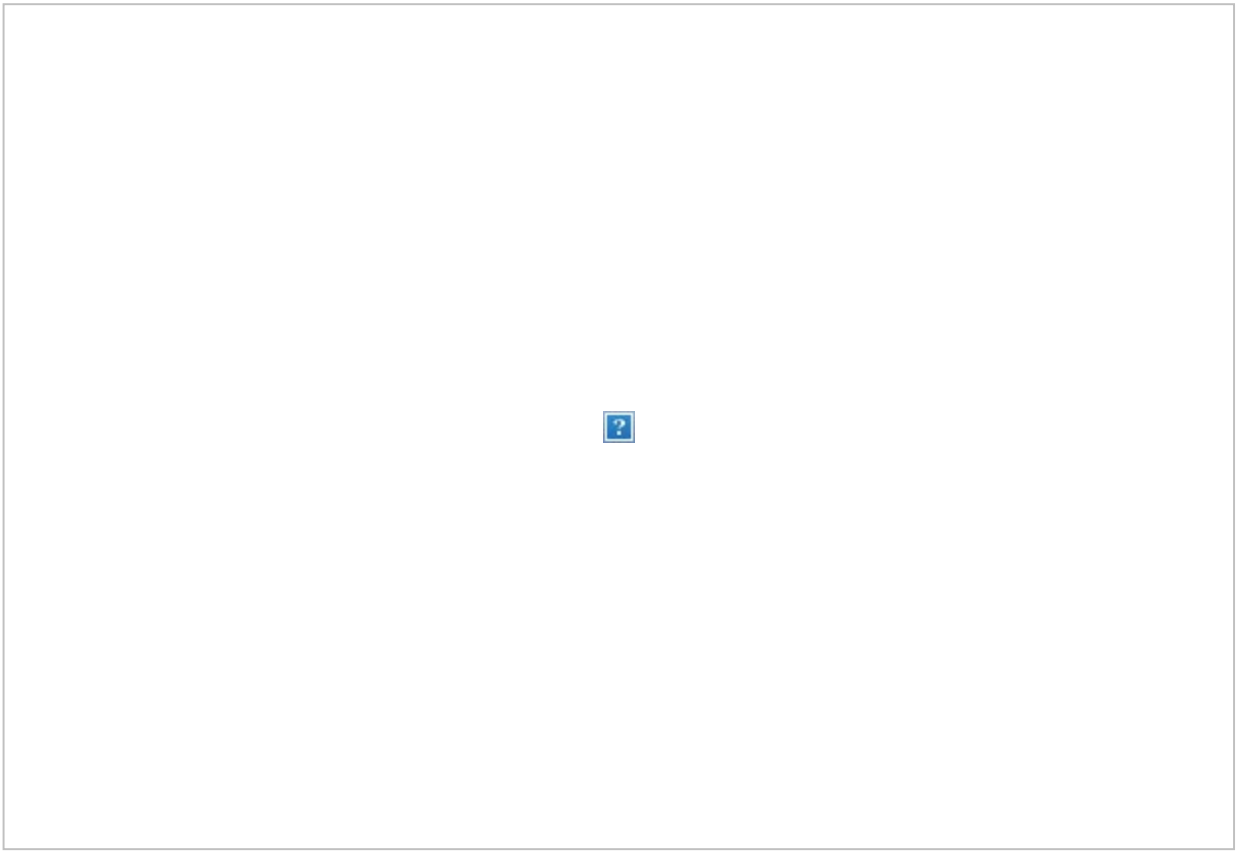
Sent: Friday, August 22, 2025 4:18 PM
To: Carpenter, Anne Therese (Therese) CIV USARMY CENAE (USA) <Anne.T.Carpenter@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [Non-DoD Source] Re: [EXTERNAL] FOLLOW-UP: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

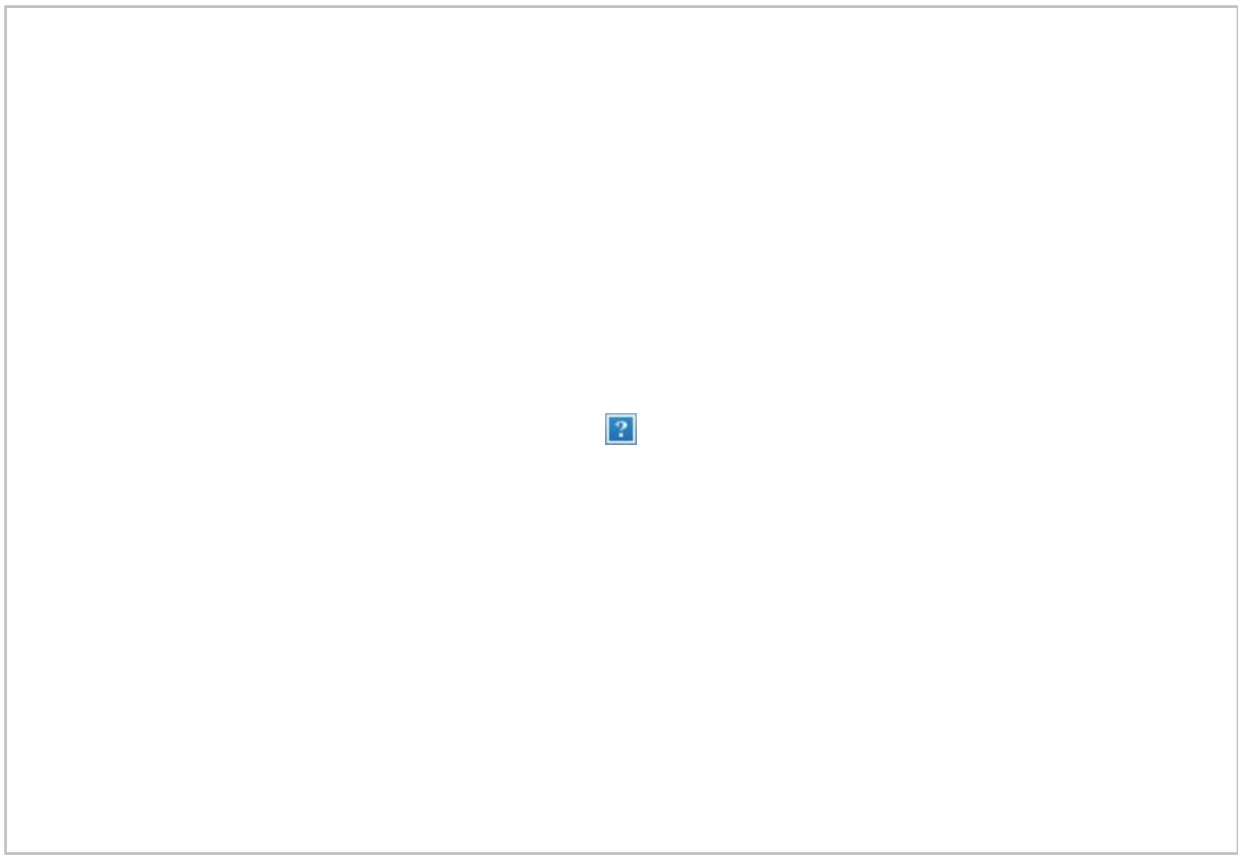
Hi Therese,

I am reaching out again regarding the project to replace a railroad culvert at Bright Angel Wash in Grand Canyon Village, AZ. The crossing coordinates are 36.05616, -112.14181 (screenshots of location also included below). This project is picking up steam again (hopefully for good this time) so I wanted to revisit any potential changes to the jurisdictionality of the wash (and needs for 404 permitting) due to Sackett vs EPA and the 2023 Final Rule, as well as any other regulatory changes I may not be abreast of that have occurred since we last spoke.

I guess my take would be that Bright Angel Wash at this location, which is dry the majority of the year, is not jurisdictional (not a WOUS) due to the changed definition of Tributaries (being waters that are relatively permanent, standing or continuously flowing). Am I on the right track, or completely off base?

Thanks for any help you can give. And if it'd be easier for us to discuss over a call, I'd be happy to set something up.





ZACH KRESL
Supervisory Environmental Protection Specialist
Division of Planning, Environment, and Projects
Grand Canyon National Park
928-405-2281
Duty Station 601 Riverfront Drive, Omaha, NE

Book time to meet with me

From: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Sent: Wednesday, October 5, 2022 12:39 PM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [EXTERNAL] FOLLOW-UP: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hi Zach,

Please find attached guidelines and sample documents to support a PJD as well as the PCN form for Nationwide Permits. You can also find the PCN here:

ENG Form 6082 URL: https://www.publications.usace.army.mil/USACE-Publications/Engineer-Forms/u43543q/36303832/

Thank you again for reaching out to coordinate on this project, I really do appreciate the collaboration. If there are additional questions that come up along the way, or on other matters, please don't hesitate to reach out.

Have a great afternoon!

All the best,

Therese Carpenter, Project Manager

Regulatory Division, Arizona Branch

Los Angeles District, U.S. Army Corps of Engineers

Anne.T.Carpenter@usace.army.mil

Office: (602) 230-6952

Government Mobile: (602) 621-7037

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From: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Sent: Tuesday, October 4, 2022 2:39 PM
To: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] RE: [EXTERNAL] RE: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Perfect, 10am tomorrow sounds good. I'll go ahead and send a teams invite. In case that doesn't work, I'll just plan to call your phone right at 10.

Zach Kresl

Environmental Protection Specialist

Division of Planning, Environment, and Projects

Grand Canyon National Park

928-405-2281

Remote: Omaha, NE (Central Time, +2 AZ Time)

Chat with me on Teams

From: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Sent: Tuesday, October 4, 2022 4:21 PM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>

Subject: RE: [EXTERNAL] RE: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

You hit the nail on the head with your last sentence. It's the presence of a historic feature/property, in this case a crossing, which requires SHPO consultation for effects.

I'm happy to have a call to discuss further. Based on the availability you outlined below, why don't we shoot for 10am tomorrow (10/5)? I can also be available Thursday at any of the times you provided.

All the best,

Therese Carpenter, Project Manager

Regulatory Division, Arizona Branch

Los Angeles District, U.S. Army Corps of Engineers

Anne.T.Carpenter@usace.army.mil

Office: (602) 230-6952

Government Mobile: (602) 621-7037

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From: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Sent: Tuesday, October 4, 2022 2:09 PM
To: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] RE: [EXTERNAL] RE: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

I'm still a little confused about why we/the railroad would need a PCN under GC 20, if it's not dependent on whether the permittee is federal or not. Would we be able to have a call to discuss a little further? Based on GC 20 (b), it doesn't appear that federal applicants need to submit a PCN under this GC unless the NWP otherwise calls for it. That's why I was thinking the need for a PCN for this project would be based on GC 23 and/or 32. But, I could be misinterpreting as well. As an FYI, the park is working with SHPO to prepare an MOA due to the adverse effect to the historic crossing structure.

Thanks for the info on the PJD and AJD, that's very helpful! I don't think I ever realized that the AJDs were only valid for 5 years. With that being the case, it's probably not worth us pursuing an AJD for general purposes.

If you're available for a call to discuss GC 20 (and the overall permitting strategy), here are some times I have available this week (all times Pacific):

- 10/5 7:30-12:30
- 10/6 7:30-8:45, 11:30-1:15
- 10/7 - anytime

Let me know if any of these would work for you. I think it'd be a pretty quick convo, ½ hour tops I'd guess. If this week doesn't work for you, I'd be happy to send you my availability for next week and we can see what might work for the both of us.

Best,

Zach Kresl

Environmental Protection Specialist

Division of Planning, Environment, and Projects

Grand Canyon National Park

928-405-2281

Remote: Omaha, NE (Central Time, +2 AZ Time)

Chat with me on Teams

From: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Sent: Tuesday, October 4, 2022 2:54 PM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: RE: [EXTERNAL] RE: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Of course!

So the historic significance is not necessarily because the permittee is non-federal, but because of the status of the bridge itself, i.e., requiring evaluation by SHPO.

With respect to the PJD, in general, if a PCN is required, a PJD is part of the application. The PJD clearly outlines the limits of jurisdictional areas so that impacts can be calculated. For the PCN itself, NWPs now require Form 6082 (it used to be Form 4345), which I have attached in both fillable and printed forms, since the fillable one can be finicky sometimes. You can also find the form on our website here: https://www.publications.usace.army.mil/USACE-Publications/Engineer-Forms/u43543q/36303832/

I'm passing on the summary table for all current Nationwide Permits for reference purposes. It's a handy little tool for figuring out what options there may be for projects under the multitudes of NWPs available without having to deep dive into them or try to navigate the LA District website. You can see at a glance what permits an activity could potentially use, the authority, impact limits and PCN thresholds as well as whether a delineation is required. This table is just a summary though, so once you determine what permit could work, you do need to do a deeper dive for the finer points and requirements.

With respect to an AJD, there's not an easy answer to that question. While you can certainly request an AJD outside of a particular project, the request does not guarantee Corps/EPA will concur, nor is it

eternally binding. AJDs are good for five years. I've attached the current AJD Form for context to help better demonstrate the level of effort/evaluation required to do a SNA.

More questions? Let me know!

All the best,

Therese Carpenter, Project Manager

Regulatory Division, Arizona Branch

Los Angeles District, U.S. Army Corps of Engineers

Anne.T.Carpenter@usace.army.mil

Office: (602) 230-6952

Government Mobile: (602) 621-7037

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Assist us in better serving you! Please complete our brief customer survey, located at the following link: https://regulatory.ops.usace.army.mil/customer-service-survey/

From: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Sent: Tuesday, October 4, 2022 11:23 AM
To: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] RE: [EXTERNAL] RE: Railroad Wood Box Culvert at

Bright Angel Wash, Grand Canyon Village, AZ

Thanks a lot Therese, the information you provided is very helpful! I have a couple follow-up questions below. I also left you a voicemail about these.

Regarding your comment about the crossing having historical significance and requiring a PCN under GC 20, is the need for the PCN because the permittee would be the railroad (i.e. a non-federal permittee)?

Another question – does the park/railroad need to request a PJD, or would it be more expeditious to assume jurisdiction and skip the PJD, and just go straight to submitting the PCN notice and 404 application? I might be not remembering correctly, but I thought a PJD is done any time a PCN and 404 app is submitted? Even if USACE calls the was non-jurisdictional under a PJD, we'd still need the AJD to fully confirm the non-jurisdictional status, so I guess I'm not clear on what benefits we/the railroad would get by submitting for a PJD. Any insight you have on this is appreciated!

On a related note, would we be able to get an AJD on BA Wash without there being a connection to a specific project? We don't want to hold up this railroad project on an AJD, but it'd be helpful for the park to have an AJD on the wash so that we know the jurisdictional status when future projects arise that could result in impacts.

Best,

Zach Kresl

Environmental Protection Specialist

Division of Planning, Environment, and Projects

Grand Canyon National Park

928-405-2281

Remote: Omaha, NE (Central Time, +2 AZ Time)

Chat with me on Teams

From: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Sent: Tuesday, October 4, 2022 11:17 AM
To: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [EXTERNAL] RE: Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hey, good morning Zach,

Thank you so much for reaching out to me on this.

I dug around our database, and it doesn't look like Bright Angel Wash itself has been formally delineated, but the area immediately north and east of Verkamp's Visitor Center does have a historic delineation on it (it's listed as "unnamed wash"). I believe at the time we were looking at this project previously, the decision was to do a PJD on Bright Angel because it is a) likely jurisdictional, and b) more expeditious to do a PJD than an AJD. As a recap, the only way that the Corps can decline jurisdiction on a waterway is to do an AJD which requires a significant nexus analysis (read: labor/time intensive) and review from both EPA and our Headquarters.

You are completely on point with your assessment of NWP3 and 14. The rationale for PCN is multi-fold on this one. With the crossing having historical significance, PCN would be required under GC 20, so could not be non-notifying, presuming jurisdiction. The mitigation tipping point is indeed 3/100 acre of permanent impacts, meaning you would look at areas of new impact that could not be restored. If the areas can be restored, we would consider those temporary, as long as the time period tied to the activities is six months or less.

Hopefully this is helpful, but please reach out with any additional questions. Also happy to have a call if needed.

I hope this finds you well, enjoying the change of season!

All the best,

Therese Carpenter, Project Manager

Regulatory Division, Arizona Branch

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From: Kresl, Zachary E <Zachary_Kresl@nps.gov>
Sent: Friday, September 30, 2022 12:55 PM
To: Carpenter, Anne Therese (Therese) CIV USARMY CESPL (USA) <Anne.T.Carpenter@usace.army.mil>
Cc: Donehoo, Brian T <Brian_Donehoo@nps.gov>
Subject: [Non-DoD Source] Railroad Wood Box Culvert at Bright Angel Wash, Grand Canyon Village, AZ

Hi Therese,

My colleagues contacted you a while back (see attached) regarding a proposal to replace a wooden triple box culvert that crosses Bright Angel Wash in Grand Canyon Village, AZ. The crossing coordinates are 36.05616, -112.14181. This project is picking up steam again so we're revisiting our 404 permitting options.

We're wondering if a jurisdictional determination has been made on Bright Angel Wash in the past? Is this something USACE would have in their systems? In the attached correspondence, Elly made a mention that you had clarified that Bright Angel Wash is under USACE jurisdiction; however, I didn't see that specifically in the email. Possibly this was something discussed over a phone call, or possibly it was a misinterpretation.

If BA wash is jurisdictional, or if we assume jurisdiction, it seems the project should be covered under a either non-notifying NWP 3 or NWP 14. However, based on General Conditions 23 and 32, it's my understanding that we would need a PCN and compensatory mitigation for any stream bed losses over 3/100 acre. We're still working on getting impacts figured out, so we may very well end up being under 3/100-acre of stream bed loss, but in the meantime we figured it'd be good to reach out and see if you have any info on past JDs on Bright Angel Wash.

Thanks in advance for any feedback you can offer!

Have a good weekend,

Zach Kresl

Environmental Protection Specialist

Division of Planning, Environment, and Projects

Grand Canyon National Park

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Displaying title 33, up to date as of 8/27/2025. Title 33 was last amended 8/27/2025.

Title 33 —Navigation and Navigable Waters
Chapter II —Corps of Engineers, Department of the Army, Department of Defense
Part 328 —Definition of Waters of the United States

§ 328.3 Definitions.

For the purpose of this regulation these terms are defined as follows:

(a) ***Waters of the United States*** means:

(1) Waters which are:

(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) The territorial seas; or

(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.,* gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) ***Wetlands*** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) ***Adjacent*** means having a continuous surface connection.

(3) ***High tide line*** means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(4) ***Ordinary high water mark*** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(5) ***Tidal waters*** means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

[88 FR 3142, Jan. 18, 2023, as amended at 88 FR 61968, Sept. 8, 2023]