DESIGN CONCEPT REPORT

CITY OF DOUGLAS LAND PORT OF ENTRY CONNECTOR ROAD
ADOT SOUTHEAST DISTRICT/COCHISE COUNTY, AZ

ADOT CONTRACT No. 2023-003
ADOT PROJECT No. F0534 01L
FEDERAL PROJECT No. 999-A(561)T

Prepared For:

ARIZONA DEPARTMENT OF TRANSPORTATION
MULTIMODAL PLANNING DIVISION CORRIDOR PLANNING GROUP

Prepared By:

Stantec

March 2025

ADOT
Infrastructure Delivery and Operations

PROJECT DETERMINATION FORM

Project Number	County and ADOT District	Project Name and Highway	Final Scoping Document Date
F0534 01L	Cochise County	CITY OF DOUGLAS LAND PORT OF ENTRY CONNECTOR ROAD	March 31, 2025
999-A(561)T	Southeast District	OFF-SYSTEM	

Project Description:	Design of a new proposed connector road from State Route 80 to the planned City of Douglas Land Port of Entry (LPOE) for commercial vehicles.

Existing Program	
Yes	No
X	

Program Year	Programmed Budget
2027	$27.50M
	Scoping Construction Cost Estimate
	$48.95M

Operating Partnership Category					
S	F	T	D	Z	N/A
X					

Public Hearing: In the Highway Development Process, at least one public hearing or the opportunity for a hearing will be offered for any project that:

	Requires a significant amount of new right-of-way:
	Substantially changes the layout or function of connecting roadway or the facility being improved;
	Has a significant adverse impact on abutting real property;

	Otherwise has a significant social, economic, environmental or other effect
	Is controversial on environmental grounds;
	Or has significant floodplain encroachment
X	None of the above conditions apply

Recommends:

Yes:	No:		Environmental Category		
	x	Public Forum			
	x	Offer a combined Location / Design Hearing	Class 1	Class II	Class III
	x	Offer Separate Location/Design Hearing		X	
	x	Hold a Design Public Hearing			

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Comments:

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List of Acronyms and Abbreviations

AADT	Average Annual Daily Traffic
AASHTO	American Association of Highway and Transportation Officials
ACS	American Community Survey
ADOT	Arizona Department of Transportation
ADT	Average Daily Traffic
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
APS	Arizona Public Service
ASM	Arizona State Museum
BG1	Block Group 1
BLM	Bureau of Land Management
CBC	Concrete Box Culvert
CBP	United States Customs and Border Patrol
CMPA	Corrugated Metal Pipe Arch
CT6	Census Tract 6
COV	Commercially Operated Vehicles
DCR	Design Concept Report
d-factor	Directional Split
EA	Environmental Assessment
EP&SR	El Paso and Southern Railroad
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
GSA	United States General Services Administration
HCM 6	Highway Capacity Manual, 6th Edition
HHS	United States Department of Health and Human Services
IAP2	International Association of Public Participation
ITE	Institute of Transportation Engineers
k-factor	Design Peak Hour Percentage of Daily Volume
LPOE	Land Port of Entry
LEP	Limited English Proficiency
LOS	Level of Service
MPH	Miles Per Hour
MSL	Mean Sea Level
MUTCD	Manual of Uniform Traffic Control Devices
NBI	National Bridge Inventory
NEPA	National Environmental Policy Act
PHF	Peak Hour Factor
PIP	Public Involvement Plan
POV	Personally Owned Vehicles
RCP	Reinforced Concrete Metal Pipe
SEAGO	Southeastern Arizona Governments Organization
SR 80	State Route 80
SVMPO	Sierra Vista Metropolitan Planning Organization
t-factor	Percentage of Trucks
TCE	Temporary Construction Easement
TDMS	Transportation Data Management System
TGP	Traffic Engineering Guidelines and Processes
TIP	Transportation Improvement Program
TWSC	Two-Way Stop Control
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VPD	Vehicles Per Day

EXECUTIVE SUMMARY

This Design Concept Report describes the development and evaluation of alignments for a new Connector Road that will link a new commercial Land Port of Entry (LPOE) being built by United States General Services Administration (GSA) to the Arizona State Highway network. The project is located in the Arizona Department of Transportation's (ADOT's) Southeast District, in Cochise County approximately 4.5 miles west of the City of Douglas. The proposed LPOE will be located approximately 1.5 miles south of State Route 80 (SR 80) on an 80.49-acre undeveloped parcel. Currently there is no all-weather roadway that connects to the site of the proposed LPOE.

The primary purpose of this study is to develop a Recommended Alternative alignment for the Connector Road, that will link the new LPOE to SR 80 and safely accommodate the commercial truck traffic that will be utilizing the new port. The following documents have been/will be developed in support of this study:

- Traffic Report
- Alternative Analysis Report
- American Association of Highway and Transportation Officials (AASHTO) Report
- Drainage Report
- Geotechnical Report
- Pavement Design Report
- ADA Compliance and Feasibility Report
- Environmental Assessment (EA)
- Design Concept Plans

BACKGROUND

The U.S. General Services Administration (GSA), in collaboration with the City of Douglas and community stakeholders, completed a regional feasibility study in 2019 and identified the need to separate commercial and non-commercial traffic flows in the City of Douglas. The new commercial port will be located 4.5 miles west of the Raul Hector Castro Land Port of Entry (LPOE) on an 80-acre site at the intersection of James Ranch Road and the U.S. / Mexico border. The new port would process commercial traffic for the binational region and provide cross-border access between the states of Arizona and Sonora, Mexico. Once construction of the Douglas LPOE has been completed, commercial operations will move from the Castro LPOE to the new facility. All recommended improvements must be approved, designed, and constructed by June 2028 at the latest, which is when GSA plans to open the new commercial LPOE.

Additionally, the City of Douglas and Cochise County plans to develop the area surrounding the future LPOE with an industrial warehouse and business park zone. In 2022, land use designations for 45 parcels in the vicinity of the LPOE were changed from Rural to Developing, Category B Community Growth Area in anticipation of this development. The City of Douglas and Cochise County have been developing utility expansion plans to support this development. Coordination is necessary between the utility expansion and design of the Preferred Alternative.

NEED FOR THE PROJECT

The project is needed to provide connectivity from the new commercial LPOE to the state highway network. The completion of this project will help to promote binational trade, relieve congested local roadways, and increase safety through the area.

DESIGN CONCEPT ALTERNATIVES

Three Build Alternatives were evaluated within this report. All alternatives involve the design of a four-lane divided highway with shoulders on both sides beginning at SR 80 and traveling south to connect with the main gate of the proposed LPOE located on the northern boundary of the parcel. An additional Access Road with a smaller typical section of two-lane roadway with shoulders on both sides will be provided along the eastern boundary of the parcel to allow GSA employees access to a separate employee gate located on the southeastern corner of the property. The design impacts of all three alternatives are similar, as the main differences are related to the length and location of each alternative. The alternatives evaluated in this report include:

- **Alternative 1: James Ranch Road** – This alignment would provide a straight connection from SR 80 and James Ranch Road to the northern boundary of the property where the LPOE will be built. Access to the new LPOE being provided on the northern boundary of the LPOE approximately 0.125 mi west of James Ranch Road.
- **Alternative 2: Quarter Mile West of James Ranch Road** – Alternative 2 consists of constructing a new at-grade four-lane divided roadway from SR 80 along the James Ranch Road alignment for approximately a half-mile, then west on the Puzzi Ranch Road alignment for a quarter mile, then south for approximately three quarters of a mile, where the alignment curves slightly east and follows the northern boundary of the proposed LPOE until it reaches the main gate of the facility.
- **Alternative 3: Brooks Road** – This alternative consists of constructing a new at-grade four-lane divided roadway along the Brooks Road alignment, beginning at the intersection of SR 80 and Brooks Road and heading south for one and a half miles, then turning east along the northern edge of the new LPOE, with access to the new LPOE being provided near the eastern end of the new LPOE's 80-acre parcel, approximately one quarter mile west of James Ranch Road.
- **No Build Alternative** – This alternative was evaluated in accordance with NEPA guidelines. The existing roadway network would remain in its present condition, and no connector road will be constructed to link the new LPOE to the state highway network.

All four alternatives were evaluated based on a series of criteria including meeting project purpose and need, environmental concerns, traffic operation performance, drainage impacts, utility impacts, earthwork, safety, right-of-way requirements, and constructability.

Alternative 1: James Ranch Road was selected as the Preferred Alternative due to less right-of-way acquisition, less drainage impacts, less disturbance to the project area, and estimated construction cost.

Figure 0-1: Connector Road Build Alternatives

MAJOR FEATURES OF THE PREFERRED ALTERNATIVE

The Preferred Alternative includes the following key roadway improvements:

- Constructing 1.37 miles of a four-lane divided highway with shoulders on both sides, beginning at SR 80 and James Ranch Road and extending south to the northeastern boundary of the proposed LPOE.
- Constructing 0.15 miles of a four-lane divided highway with shoulders on both sides, beginning at the northeast corner of the LPOE and extending west and connecting with the main entrance/exit to the proposed LPOE.
- Constructing 0.25 miles of a two-lane undivided access road with shoulders on both sides, beginning at the northeast corner of the LPOE and extending south to connect to an employee entrance to the LPOE located on the southeast corner of the parcel.
- Constructing two roundabouts, one at the main entrance to the LPOE, and one at the intersection of the Connector Road and Access Roadway.
- Reconstructing the intersection of SR 80 and James Ranch Road with additional turning lanes and storage length, and a traffic signal.
- Reconstructing 1.00 mile of SR 80, beginning at Sta 882+14.71, just east of West Point Road, and ending at Sta 934+94.32 to raise the vertical profile of SR 80 at James Ranch Road, due to drainage implications.

Other improvements include drainage facilities, signing and striping, and utility improvements including power, broadband, water and sewer. Coordination with concurrent construction projects, including GSA's construction of the LPOE, and the utility expansion planned by the City of Douglas and Cochise County.

Approximately 40.4 acres of land will need to be acquired for Right-of-Way, and 90 acres of land is needed for drainage easements.

An EA is being developed for this study that will include a list of mitigation measures to be implemented as part of the project to avoid, reduce or otherwise mitigate environmental impacts associated with the project.

1. INTRODUCTION

1.1 Foreword

A new commercial Land Port of Entry (LPOE) is planned to be constructed by the United States General Services Administration (GSA) linking Douglas, Arizona to Agua Prieta, Mexico by early 2028 on an 80.49-acre parcel that was donated to the GSA by the City of Douglas, Arizona. The proposed new LPOE will be located approximately 4.5 miles west of the existing Raul Hector Castro LPOE in Douglas, Arizona and approximately 1.5 miles south of SR 80 at James Ranch Road.

Once the new LPOE has been constructed, the existing Raul Hector Castro LPOE will be strictly dedicated to pedestrian, personally owned vehicles (POVs), and bus traffic, while the new LPOE will manage all commercial truck operations. The new LPOE will enhance trade between the United States and Mexico while reducing traffic and queue times and improving safety at the existing LPOE.

The Arizona Department of Transportation (ADOT), in partnership with the Federal Highway Administration (FHWA), Cochise County, City of Douglas and other federal, state, tribal, and local agency stakeholders is conducting a Phase I - Engineering and Environmental Study which will develop alternatives, evaluate, and recommend the location of the Connector Road that will link the new LPOE to the state highway system at State Route 80 (SR 80). This study will include the preparation of a Design Concept Report (DCR), 15% design plans, an Environmental Assessment (EA), and related studies and reports in order to define a set of recommendations and a recommended improvement alternative.

This Design Concept Report (DCR) describes the development and evaluation process for the connector roadway alternatives. Alternatives were evaluated based on several factors including evaluation of design criteria, traffic operational efficiency, environmental impacts, drainage impacts, right-of-way impacts, constructability, safety, project cost and agency and public input and a Preferred Alternative was selected. This study will follow the National Environmental Policy Act (NEPA) process and a Recommended Alternative will be named in the Final EA and Final DCR documents.

Throughout the evaluation process, several documents have been developed or are in the process of being developed in support of this study and information from these sources will be included within this DCR: These documents include:

- Traffic Report
- Alternative Analysis Report
- American Association of Highway and Transportation Officials (AASHTO) Controlling Design Criteria Report
- Drainage Report
- Geotechnical Report
- Pavement Design Report
- ADA Compliance and Feasibility Report
- Environmental Assessment (EA)
- Design Concept Plans

The results of this study will then be utilized for the Phase II - Design, which will involve the preparation of final design construction documents to build the Recommended Alternative determined by the Phase I - Study.

1.2 Project Location

The project is located within ADOT's Southeast District and is located west of the City of Douglas in Cochise County, Arizona. The location of the proposed LPOE is approximately 4.5 miles west of the existing Raul Hector Castro Port of Entry in Douglas, Arizona and approximately 1.5 miles south of SR 80 and James Ranch Road. The Project Location and Vicinity Map are shown in Figure 1-1. The area of study highlighted on the Vicinity Map shows the limits of the study area, which is bounded by SR 80 to the north, Brooks Road to the west, James Ranch Road to the east, and the U.S./Mexico border to the south.

1.3 Project Purpose and Need

The Raul Hector Castro Land Port of Entry is the second largest port of entry in the State of Arizona. Commercial and non-commercial traffic is not separated at the Raul Hector Castro Port of Entry, and the port is no longer able to accommodate traffic demands and United States Customs and Border Protection requirements. Additionally, due to the proximity to major mining and smelter developments in Mexico, there is a large amount of oversized and overweight vehicles continuously traveling through Douglas, and these vehicles disrupt cross-border traffic and pose environmental threats due to the materials that are being carried.

GSA's construction of the new commercial port of entry will alleviate commercial truck traffic through downtown Douglas, improve overall travel times, and improve pedestrian safety by reducing conflicts between pedestrians or non-commercial vehicles and commercial trucks. The port will also provide an opportunity for the City of Douglas and Cochise County to further develop the area, with plans for a new industrial warehouse and business park zone.

Construction of the Connector Road is needed because there is no all-weather roadway that exists between where the new Douglas LPOE will be constructed and SR 80. The primary goal of this project is to recommend a preferred connector road location and roadway typical section that can safely accommodate the commercial truck traffic that will be utilizing the

proposed LPOE. Operational efficiency is a priority to the design and selection of a Connector Road alternative.

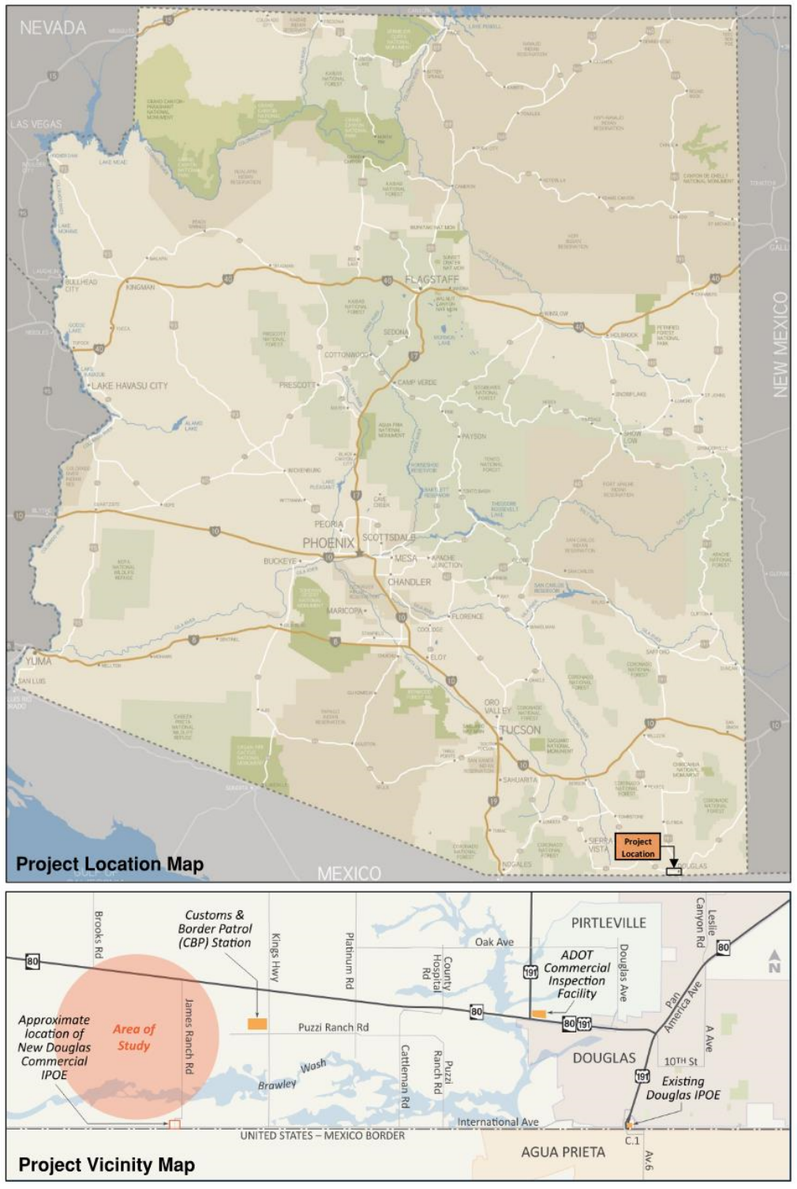

Figure 1-1: Project Location and Vicinity Map

As the GSA plans to open the new commercial LPOE in early 2028, completion of this study is a critical path element not just for the connector road's final design and construction, but for other projects being completed by the GSA, City of Douglas, and Cochise County.

1.4 Characteristics of the Corridor

There is no existing all-weather roadway that provides a connection from SR 80 to the site of the proposed LPOE. Therefore, the proposed Connector Road will provide a vital connection and improve efficiency for international trade between the United States and Mexico via the Arizona State Highway network. Additionally, the City of Douglas and Cochise County plans to develop the area surrounding the LPOE with a new industrial warehouse and business park zone. This growth will be supported by the development and construction of the proposed Connector Road.

1.4.1 Roadway Characteristics

Within the study area, SR 80 is a four-lane divided highway, located on the National Highway System, oriented in the east-west direction which is owned and maintained by ADOT and classified as a rural principal arterial. Once the roadway reaches Douglas City limits, the classification changes to an urban principal arterial. The travel lanes are approximately 12-feet wide, with paved shoulders that are approximately 4-foot wide on the inside and 10-foot wide on the outside. The median is unpaved, except for raised medians for left-turn lanes at intersections and bridge crossings.

James Ranch Road is currently an unpaved rural local roadway which is privately owned and maintained. It runs north-south and connects with SR 80, providing access to a couple of privately owned properties along the roadway, and terminates about halfway between SR 80 and the US/Mexico border. There is an existing cattle guard on James Ranch Road on both the north and south legs of the intersection with SR 80.

International Avenue and Puzzi Ranch Road are also located within the project area. International Avenue is an unpaved and unmarked roadway that parallels the international border wall and is mainly used for government operations. Puzzi Ranch Road is an unpaved roadway, oriented in the east-west direction, providing connectivity to private properties and nearby local roadways.

Just east of the project area, SR 80 connects with US 191, which is an urban minor arterial that is owned, operated, and maintained by ADOT. US 191 runs north-south and includes one 12-foot through lane in each direction separated by a 12-foot-wide two-way left-turn lane which transitions into an exclusive left-turn lane at the intersection with SR 80. The ADOT Commercial Inspection Facility is located at the northeast corner of the intersection of SR 80 and US 191. US 191 includes paved shoulders on each side of the roadway in addition to dedicated turn lanes into the ADOT Commercial Inspection Facility.

The intersection of SR 80 and US 191 is signalized. It is currently constructed as a four-legged intersection, but the southern leg is barricaded at this time. City of Douglas has plans to realign Chino Road, which is just east of this intersection, to tie into this intersection to create an operable four-legged intersection.

1.4.2 Existing Port of Entry, Commercial Inspection Facilities and Routes

The U.S. Border Patrol facility is located approximately one mile east of the proposed LPOE on Kings Highway, south of SR 80. Approximately four miles east of the proposed LPOE, the ADOT Commercial Inspection Facility is located on the northeast corner of SR 80 and US 191. This is where commercial vehicles undergo inspection after crossing the border into Arizona.

The existing Raul Hector Castro LPOE is located in Douglas, Arizona, approximately 4.5 miles east of the study area. Both the LPOE and the ADOT Commercial Inspection Facility are typically open between 9AM and 5PM daily. In addition to commercial vehicles entering the United States, all commercial traffic traveling in both directions on SR 80 and US 191 is required to be processed at the ADOT Commercial Inspection Facility when it is open.

1.4.3 Transit Facilities and Routes

The City of Douglas operates bus routes along SR 80 between the Raul Hector Castro LPOE and Cochise College, which is located approximately 2.5 miles west of James Ranch Road. Minimal pedestrian traffic is currently believed to exist within the study area due to the lack of development and no existing sidewalks or walking paths. There are no existing bike lanes in the study area, but bicyclists are able to use the paved shoulders along SR 80.

1.4.4 Topography and Natural Features

According to the United States Geological Survey (USGS) 7.5-Minute Topographic Quadrangle Map Series - Paul Spur, Arizona, the average site elevation is approximately 4,060 feet above sea level. Based on the information from this quadrangle map and the aerial survey completed for this project, the ground surface in the project vicinity generally slopes from west, down to east.

1.4.5 Land Use

In 2022, Cochise County amended the land use designation for the 45 parcels surrounding the proposed LPOE site in its comprehensive land map. The land use designations for these parcels were changed from Rural to Developing, Category B Community Growth Area. Refer to Figure 1-2 for a map of the amended parcels. The project area and surrounding parcels do not border any properties zoned for residences.

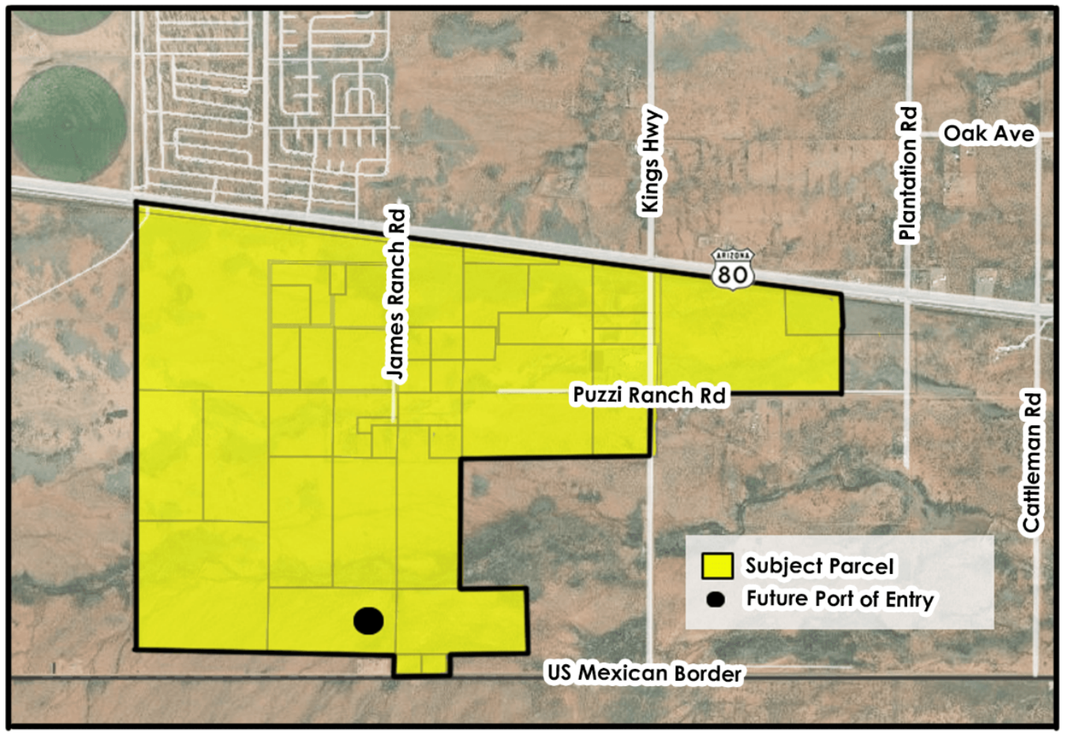

Figure 1-2: Land Use Map Amendment Boundaries

Additional existing development within the study area is minimal, with a few privately owned houses, and mostly undeveloped desert terrain. The vegetation within the study area is mainly native brush, moderately dense grass, and some trees.

Planned future development includes the LPOE, which will be located at James Ranch Road and the U.S./Mexico border on an 80.49-acre parcel that was donated to the GSA by the City of Douglas. Cochise County also plans to develop the area surrounding the proposed connector road with commercial and/or industrial facilities and warehouses.

Land ownership within the study area is a mix of privately-owned and government-owned properties. The majority of the properties are currently undeveloped parcels, with dwellings located on three properties within the study area.

1.4.6 Utilities and Railroad

Site visits and survey data confirm the presence of existing utilities within the project area, consisting of overhead power lines owned by Arizona Public Service (APS), water and

wastewater lines owned by Cochise County, and Cox and Comcast cable and broadband lines.

In addition, three high pressure gas lines owned by Kinder Morgan/El Paso Natural Gas run east/west along the alignment of Puzzi Ranch Road. As part of the project, Stantec will evaluate potential conflicts with the existing utilities, with the goal to minimize or eliminate conflicts. If conflicts are unavoidable, the design team will determine necessary adjustments and/or relocations required to construct each of the proposed alternatives. Proposed utilities within the study area include City of Douglas water and wastewater, upgraded APS and Cox facilities, and installation of signal and fiber conduit.

South of SR 80 is an abandoned railroad, which runs parallel to the state highway. The railroad was built by the Phelps Dodge owned El Paso and Southern Railroad (EP&SW). It was extended from Benson through Bisbee and Douglas to its termini in El Paso, Texas, by 1902. The railroad was essential to the copper mining industry, as the town of Douglas was founded as a smelter town for nearby mines. When the copper industry experienced a downturn in 1924, Phelps Dodge sold the EP&SW to the Southern Pacific. The railroad was abandoned in 1961. The City of Douglas bought and restored the train depot in 1985 and the tracks were removed in the 1990s. In 1996, Southern Pacific Railroad merged with Union Pacific Railroad.

1.4.7 Drainage

1.4.7.1 Surface Drainage

The land within the study area is relatively flat, with surface water draining in a west-to-east direction.

There is additional rainfall runoff that originates within Mexico and enters the study area. This runoff was observed to cross the active FerroMex railroad line located south of the border using large drainage structures, continuing until it reaches the United States-Mexico border. The international border wall consists of steel beams which are spaced approximately 6 inches apart, allowing the surface flow originating in Mexico to enter the study area. Once in the study area, the runoff continues to convey to the north or is captured within a channel that runs parallel to International Avenue.

1.4.7.2 Drainage Structures

Existing culverts were noted along SR 80, International Avenue, and the abandoned railroad that is located south of and parallel to SR 80. The culverts varied between corrugated metal pipe arch (CMPA) with and without end treatments, reinforced concrete pipe (RCP) with end treatments, and concrete box culverts. The condition of these culverts varied from being clear of sediment to being completely blocked.

The site investigation noted sediment deposition within all CMPA culvert barrels. Culverts consisting of RCP did not exhibit any sediment deposition within the pipe barrels except for pipes with diameters smaller than 36 inches. Within the RCP pipes less than 36 inches in diameter, some of the barrels were completely blocked with sediment, and/or the inlet/outlet of the pipe was completely depressed when compared to the surrounding terrain.

There are two concrete box culverts (CBCs) located on SR 80 within the project area. The first CBC was located approximately one-half mile west of Brooks Road and consists of a double barrel 10'x3' structure that is half-full of sediment. The second CBC was located approximately 1,600 feet east of the first CBC and consists of a single 8'x3' barrel that is nearly half-full of sediment.

Further detail about the existing drainage structures, including location, type, and field observations is included in the Initial Drainage Report. There are no existing drainage structures or facilities that exist along any of the three proposed alternative alignments for the connector road.

1.4.7.3 Floodplains

Additionally, review of Federal Emergency Management Agency (FEMA)'s Flood Insurance Rate Maps (FIRMs) shows that one floodplain zone exists within the study area. This area is designated as a Zone A, which is defined as an area with 1 percent annual chance of flooding. The associated FIRM map showing the designated floodplain zone is map number 04003C2860F and is included in the Initial Drainage Report for this project. Outside of the federal designation, Cochise County confirmed that no locally adopted floodplain zones exist within the study area.

1.4.8 Existing Right-of-Way

Right-of-way will need to be acquired to construct the proposed connector road. There is approximately 213 feet of right-of-way along SR 80, with 100 feet of right-of-way south of the survey centerline, and 113 feet of right of way north of the survey centerline.

In addition, right-of-way as-built records show that the abandoned Southern Pacific railroad, which runs parallel to SR 80, owns an additional 200 feet of right-of-way south of the SR 80 southern right-of-way limit. Additional research is being conducted to determine if Union Pacific still maintains the right-of-way once owned by Southern Pacific Railroad or if it was donated or sold when Southern Pacific abandoned the line.

1.4.9 Existing Structures

There are no existing bridge structures within the limits of any of the proposed alignments for the Connector Road study. The closest bridge to the project area is the White Water Draw Bridge located at Milepost 364.290 which is listed as being in Good condition on the Arizona National Bridge Inventory (NBI) Performance Summary website.

1.4.10 Geotechnical

1.4.10.1 Geology and Geotechnical Conditions

The project site is located in the Sonoran Desert Section of the Basin and Range physiographic province, which is typified by broad alluvial valleys separated by steep, discontinuous, subparallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to thousands of feet.

The basins and surrounding mountains were formed approximately 18 million years ago during the mid- to late-Tertiary age. Extensional tectonics resulted in the formation of horsts (mountains) and grabens (basins) with vertical displacement along high-angle normal faults. Intermittent volcanic activity also occurred during this time. The surrounding basins filled with alluvium from the erosion of the surrounding mountains as well as from the deposition from rivers. Courser-grained alluvial material was deposited at the margins of the basins near the mountains.

The Douglas basin is part of the Mexican Highland section of the Basin and Range physiographic province. The section is in an area characterized by isolated and dissected fault-block mountains separated by debris-filled desert valleys. The valley and mountain areas provide a convenient division for description of the Douglas basin. The central area consists of a relatively flat valley floor about 35 miles long and 15 miles wide whose axis trends northwest. This part of the basin is hereafter referred to as “the valley”. The valley slopes are gentle and concave upward from the axis to the sharply defined mountain fronts. Whitewater Draw, which derives its name from the white caliche deposits along the bank, drains the Douglas basin. The valley fill constitutes about 70 percent of the area of the Douglas basin. The valley fill consists mostly of a large variety of sediments derived by erosion from rocks in the adjacent mountain areas. The beds are generally unconsolidated to poorly consolidated clay, silt, sand, gravel, and occasional boulders. The materials were carried downslope by streams and sheet runoff, the larger fragments being deposited near the mountain source and the smaller fragments farther away as the carrying power of the transporting water diminished.

1.4.10.2 Soil Moisture and Groundwater Conditions

Several geotechnical evaluation reports have been previously prepared by the study team within the general project area of the alignment alternatives. Based on the review of these reports, the native alluvial soils in the general project area included deposits of sandy and gravelly material with variable percentages of silt and clay fractions. Cobbles and boulders, and zones of caliche cementation should also be anticipated. Some soils exhibited relative high plasticity and fines (defined as fraction passing the No. 200 sieve) contents. Many of these soils were also sensitive to moisture content fluctuations. They should be considered as poor roadway subgrade material, and some of them may call for improvement to satisfy the design/construction control R-value and provide a stable subgrade in variable climatic conditions.

Based on well data provided by the Arizona Department of Water Resources (ADWR) groundwater has been historically measured within the project area at depths of about 100 feet below ground surface and deeper. A historic map of the United States Department of the Interior Geological Survey shows groundwater depths on the order of 60 to 80 feet. However, it should be noted that groundwater levels near the site can fluctuate due to seasonal variations, flows in the washes, irrigation, groundwater withdrawal or injection, or other factors.

1.5 Agency and Public Involvement

Early and regular stakeholder agency coordination and open communication foster cooperation and reasonable outcomes, reducing the potential for future conflicts and protracted negotiations. Following an initial agency scoping meeting, monthly scoping progress meetings have been held with the following agencies to discuss and resolve issues as they arise: ADOT, FHWA, Stantec, GSA, Cochise County, City of Douglas, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service, and Arizona Game and Fish Department.

In close coordination with ADOT’s Communications and Community Relations team, Kaneen Advertising & PR (Kaneen) and Stantec created a Public Involvement Plan (PIP) to include dynamic, inclusive, open, and transparent engagement with the public, internal audiences, and other identified stakeholders. The PIP is rooted in the International Association of Public Participation (IAP2) process with diversity, equity, and inclusion principles. Public involvement includes a series of public meetings to present study progress and receive input and feedback from the public.

2. TRAFFIC AND ACCIDENT DATA

2.1 Existing Traffic Conditions

Within the study area, SR 80 currently has a posted speed of 65 miles per hour (mph), which reduces to 55 mph once it nears US 191.

2.1.1 Existing Traffic Volumes

AM and PM peak period traffic turning movement counts (TMCs) were estimated at the intersections of SR 80 and James Ranch Road and SR 80 and US 191 based on bi-directional average daily traffic (ADT) counts from the ADOT Transportation Data Management System (TDMS) and from the Southeastern Arizona Governments Organization (SEAGO) TDMS. Details of these traffic counts are included in Appendix 3 of the Traffic Report.

The eastbound and westbound through volumes at the intersection of SR 80 and James Ranch Road were estimated using the total AM and PM peak hour volumes from the ADOT TDMS counts. Existing volumes on James Ranch Road are anticipated to be very low due to the lack of development and dwellings along the existing unpaved roadway. Therefore, a small volume was assumed on all turning movements other than the SR 80 through movements for the purposes of obtaining existing level of service results.

Turning movement volumes at the existing intersection of SR 80 and US 191 were estimated based on the relative proportion of ADT volumes on each leg of the intersection. The existing lane configuration and estimated AM and PM peak turning movement volumes of the intersections of SR 80 with James Ranch Road and US 191 are displayed in Figure 2-1 and Figure 2-2.

ADOT reported the average annual daily traffic (AADT) on SR 80 east of James Ranch Road as 5,667 vehicles a day in 2021. The 2021 traffic count showed a nearly 50-50 daily directional split for eastbound and westbound traffic. However, turning movement counts showed the traffic is heavily directional in the morning peak hour, with westbound volumes over 100 percent greater than eastbound volumes, and moderately directional in the afternoon peak hour, with eastbound volumes approximately 30 percent greater than westbound volumes. The 2021 traffic count showed a heavy vehicle percentage of 5 percent and a medium vehicle percentage of 6 percent on SR 80 west of James Ranch Road.

Table 2-1 summarizes the existing ADT, K-factors (design peak hour percentage of daily volume), D-factors (directional split), T-factors (truck percentage), and percent medium and heavy vehicles (per the Federal Highway Administration [FHWA] 13-Class classification scheme detailed in Section 7 of the Traffic Report) obtained from the ADOT TDMS for the study area roadways.

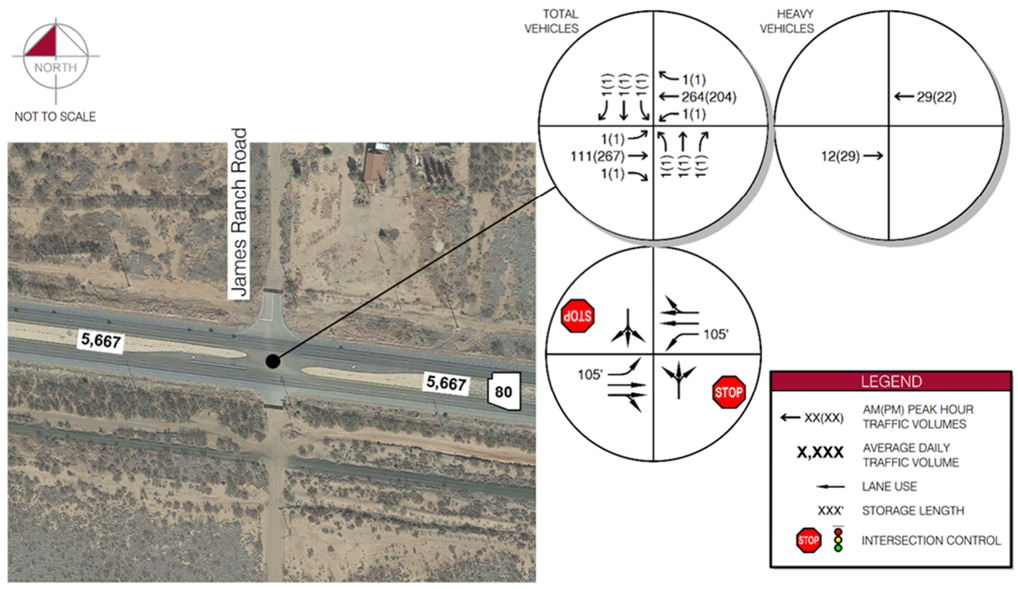

Figure 2-1: Existing Conditions – SR 80 and James Ranch Road

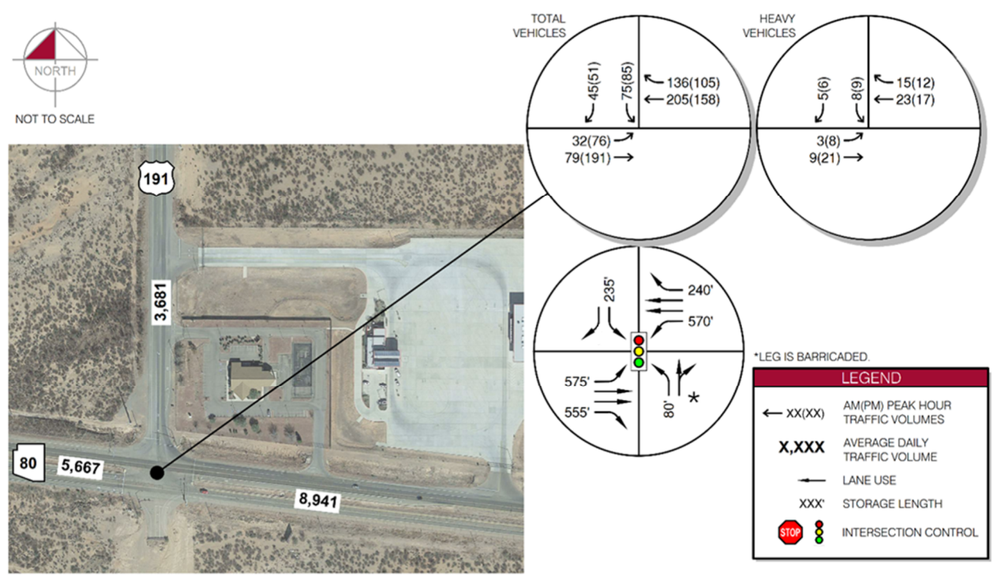

Figure 2-2: Existing Conditions – SR 80 and US 191

Table 2-1: Existing Traffic Data Summary

Input	SR 80 west of James Ranch Road	SR 80 / US 191			
		North Leg	South Leg	East Leg	West Leg
ADT (vpd)	5,667	3,681	-	8,941	5,667
K-Factor	9%	9%	-	8%	9%
D-Factor	59%	60%	-	54%	59%
T-Factor	11%	11%	-	11%	11%
Medium Vehicle %	6%	7%	-	9%	6%
Heavy Vehicle %	5%	4%	-	2%	5%

2.1.2 Existing Commercial Truck Traffic at the LPOE

Existing truck traffic volume data at the Raul Hector Castro LPOE was obtained from the Douglas Arizona Regional Feasibility Study prepared by Stantec in June 2018 (Stantec Study). The study obtained traffic data from the U.S. Customs and Border Patrol (CBP) collected from February 2017 to January 2018 for vehicles entering the United States. The collected vehicle data differentiated between passenger cars, also referred to as personally owned vehicles (POVs), and trucks, also referred to as commercially operated vehicles (COVs). The peak number of trucks processed at the Raul Hector Castro LPOE was 24 trucks per hour, with a total estimated demand of 31 trucks per hour. The truck volumes reported by the Stantec Study were utilized to represent anticipated truck volumes at the proposed commercial LPOE as detailed in Section 2.2.4 of this report.

ADOT provided 2021 and 2022 monthly statistics for processing of trucks at the ADOT Commercial Inspection Facility. This data indicates that truck volumes vary over time throughout the year, but the data is not broken out by hour or direction of travel.

2.2 Future Traffic Conditions

2.2.1 Available Future Conditions Models and Data

Future conditions data was obtained from the ADOT statewide model and the Sierra Vista Metropolitan Planning Organization (SVMPO) model. Analysis of these models showed that neither model was found to adequately predict future traffic conditions within the study area. The ADOT model within the study area has not been updated or calibrated in many years and the model's volumes and projected growth rates on SR 80 do not appear to reasonable compared to the existed counted volumes and anticipated growth rates in the area. The extents of the SVMPO model are in close proximity to the project area but the model does not actually include the project area. Therefore, instead of using model projections, the 2040 annual average daily traffic (AADT) projections from the ADOT TDMS were used to calculate an average annual growth rate for the study roadway segments. Based on the existing and 2040 AADT projections, a growth rate of two percent per year was applied to the existing traffic volumes on SR 80 and US 191 to estimate the opening year 2028 and horizon year 2050 daily and peak hour traffic volumes. Refer to the Traffic report for these calculations.

2.2.2 Future Build Analysis Alternatives

Three intersection configuration alternatives at the intersection of James Ranch Road and SR 80 were analyzed for this project for both the 2028 Build opening year and the 2050 Build horizon year conditions. These configurations include:

- Two-Way Stop Control (TWSC)
- Traffic Signal Control
- Roundabout

The TWSC configuration assumes the existing stop control on James Ranch Road for northbound and southbound traffic would remain; however, future lane geometry differing from the existing configuration was used for the analysis. The signal control configuration assumes the installation of a traffic signal at the study intersection using the proposed lane configuration. The roundabout configuration assumes the installation of a two-lane roundabout at the study intersection.

Additionally, all the aforementioned scenarios were analyzed at the intersection of SR 80 and US 191 to determine how the intersection would be impacted by the change in truck traffic which will be coming from the proposed commercial LPOE. The intersection was analyzed with its current lane geometry in the existing and No-Build scenarios. For the 2028 and 2050 Build scenarios, the Chino Road realignment which is described in Section 1.4.1., was assumed to have been completed. Therefore, the currently barricaded southern leg of the intersection (see Figure 2-3 was assumed to have been open and running in these scenarios.

Figure 2-3: Existing Barricades at Southern Leg of SR-80/US-191

2.2.3 Future Land Use Forecast

As noted in Section 1.4.6, the parcels along the James Ranch Road alignment south of SR 80 are zoned as "C-developing" by Cochise County and are anticipated to contain commercial and/or industrial land uses. An assumption was made for the purpose of estimating future traffic conditions, that the parcels fronting James Ranch Road and portions of other parcels near James Ranch Road will contribute traffic to the proposed Connector Road.

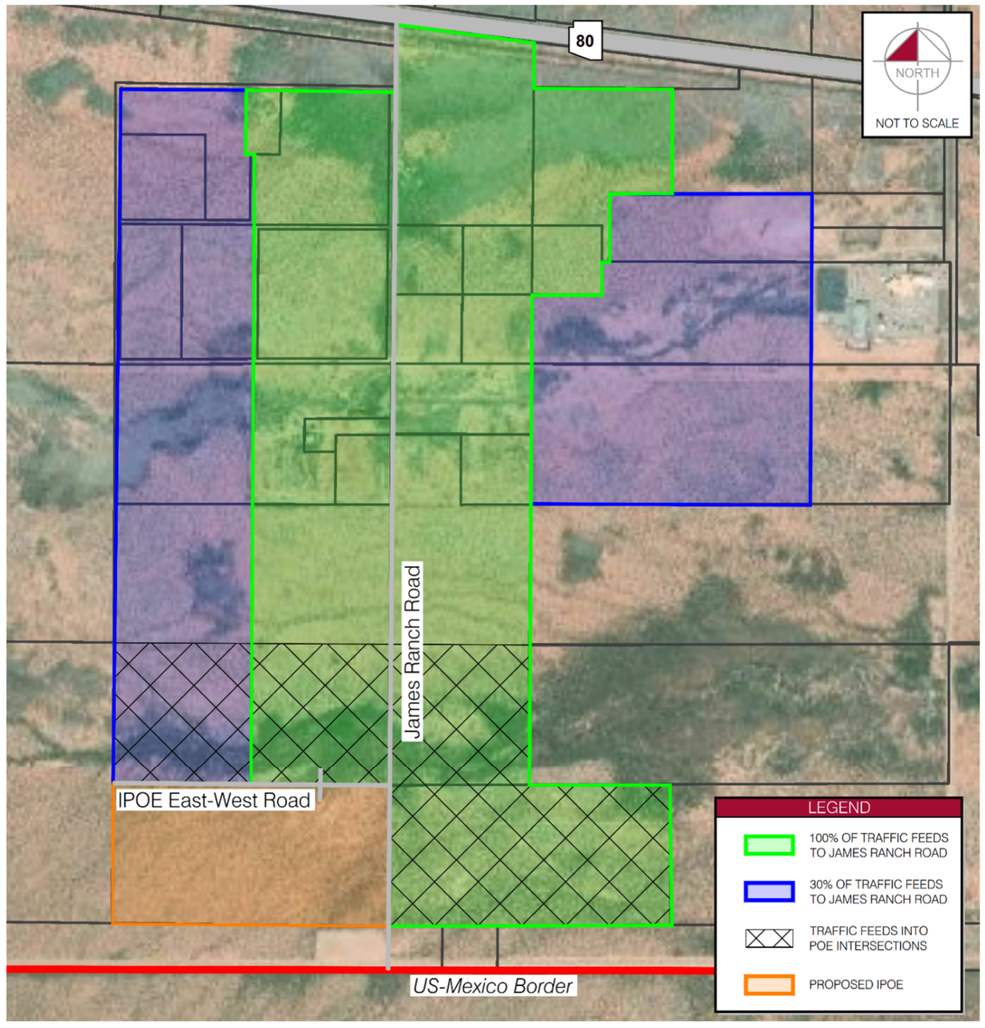

Figure 2-4: Adjacent Area Parcel Assumptions

Refer to Figure 2-4 for a map of the parcels that were assumed to contribute traffic to the Connector Road. As shown on Figure 2-4, it was assumed that 100% of traffic from the parcels fronting James Ranch Road would utilize the Connector Road and some of parcels adjacent to those would contribute about 30% of their total traffic to the Connector Road.

To estimate traffic at the new intersections adjacent to the proposed LPOE intersections, it was assumed that all traffic generated by the cross-hatched area in Figure 2-4 would feed exclusively into the proposed LPOE intersections.

2.2.4 Future Traffic Volumes

In order to predict future traffic volumes for the 2028 Opening and 2050 Horizon Years, the study team considered these three sources which would contribute to future volumes:

- Growth of Existing Traffic
- Commercial LPOE Traffic Volumes
- Traffic Generated from Proposed Developments Adjacent to Proposed LPOE

Future traffic volumes along SR 80 and US 191 were estimated based on a comparison of the existing and 2040 projected ADT volumes from the ADOT TDMS. From these volumes, an annual growth rate of two percent per year was determined. This rate was applied to the existing volumes along SR 80, US 191 and Chino Road to obtain opening year 2028 and horizon year 2050 traffic volumes. Like the existing conditions analysis, a small traffic volume was also assumed for movements at the study intersections that are not anticipated to be affected by development on James Ranch Road south of SR 80. This assumed volume was increased in each successive analysis year to account for potential growth.

Additionally, future volumes generated by the proposed commercial LPOE were estimated using existing traffic count data collected at the existing Raul Hector Castro Land Port of Entry from the past Stantec Study previously described in this report. The study utilized the peak volume day of the 90th percentile peak volume week to determine daily and hourly passenger vehicle and heavy vehicle volumes. After determining these volumes, a daily heavy vehicle peak hour volume was determined, and a demand factor of 1.3 was applied to account for additional traffic demand that arrived within the peak hour but was not processed. The same peak hour heavy vehicle demand volume was assumed for the proposed commercial LPOE's trip generation for both trips entering and exiting the United States during both the AM and PM peak hours and represents a conservative estimate of the expected commercial traffic.

At the time of the Traffic Report's completion, the assumption was that all commercial traffic would be required to travel to the ADOT Commercial Inspection Facility located on the northeast corner of the intersection of SR 80 and US 191 for additional processing. However, after the conclusion of the report, GSA announced that there would be new

commercial truck inspection facilities that will be constructed with the new commercial LPOE so these trucks will not be utilizing the existing Commercial Inspection Facility.

Therefore, the study team took the commercial traffic estimates that would be entering and exiting the proposed LPOE and distributed that traffic to the roadway network based on existing and anticipated patterns, including the assumption that these vehicles would need to be inspected at the existing Commercial Inspection Facility located on the northeast corner of SR 80 and US 191.

The study team estimated a growth factor for the traffic generated from the proposed commercial LPOE based on the average annual growth rate described in the previous Stantec Study, which was calculated at 1.1 percent per year. The proposed LPOE traffic was assumed to grow at this rate to the opening year 2028 and horizon year 2050. Calculations and additional description of the process used to determine these estimates is further detailed in the Traffic Study for this project.

Finally, traffic generated from proposed developments that will be surrounding the proposed LPOE was accounted for using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition* to estimate peak hour traffic that could be generated from these parcels based on the land use assumptions shown in Figure 2-4. Trip generation was calculated using the "peak hour of generator" rates for ITE Land Use 150, Warehousing, to provide an estimate of peak hour traffic that could be generated by the proposed development surrounding the proposed LPOE.

These adjacent development trips were then distributed to the roadway network based on anticipated traffic patterns to and from the proposed developments. Because most peak hour trips to and from warehousing land uses are commuters to and from residential areas, traffic is anticipated to be weighted heavily in the direction of Douglas. An estimated 85 percent of vehicle was assumed to travel to and from the east, while the remaining 15 percent of traffic was assumed to travel to and from the west on SR 80. Further information about the trip generation and the calculations are included in the Traffic Report for this project.

Using the ITE *Trip Generation Handbook, 3rd Edition* and a comparison of the heavy vehicle and total vehicle trip generation rates in the ITE *Trip Generation Manual*, 20 percent of trips to and from the adjacent developments were assumed to be heavy vehicles.

To conduct the operational analysis for the No-Build scenarios, it was assumed that the proposed commercial LPOE and future warehousing developments along James Ranch Road are not constructed and that there are no changes to the existing roadway geometry. The future traffic volumes in the No-Build scenarios would therefore only apply the growth rate to the existing traffic volumes.

For the Build scenarios, the existing traffic volumes and the proposed commercial LPOE volumes were grown by the average annual growth rates of 2 percent and 1.1 percent, respectively. The grown existing volumes, grown commercial LPOE volumes, and the estimated volumes from the adjacent developments were all added together to obtain the total traffic volume for the 2028 Opening year and 2050 Horizon year Build scenarios. In addition to the geometric improvements of the future Build analysis alternatives, the Build condition also assumes that the Chino Road realignment is completed by the 2028 Opening year.

The 2028 and 2050 traffic volumes and lane configurations for the different SR 80 and James Ranch Road including the No-Build configuration are shown in Figure 2-5 through Figure 2-8. The 2028 and 2050 traffic volumes and lane configurations for the different SR 80 and US 191 including the No-Build configuration are shown in Figure 2-9 through Figure 2-12.

Table 2-2 and Table 2-3 summarize the opening year 2028 and horizon year 2050 ADTs, K-factors, D-factors, T-factors for each leg of the SR 80 and James Ranch Road and SR 80 and US 191/Chino Road intersections, respectively.

Table 2-2: SR 80 and James Ranch Road Future Traffic Summary

Input	North Leg	South Leg	East Leg	West Leg
2028 ADT (vpd)	300	6,300	13,200	8,000
2050 ADT (vpd)	700	19,200	30,500	14,100
AM (PM) K-Factor	9% (9%)	9% (9%)	7% (8%)	7% (8%)
D-Factor	50%	55%	51%	56%
2028 T-Factor	2%	30%	21%	18%
2050 T-Factor	2%	24%	20%	17%

Table 2-3: SR 80 and US 191/ Chino Road Future Traffic Summary

Input	North Leg	South Leg	East Leg	West Leg
2028 ADT (vpd)	6,900	3,500	11,900	12,600
2050 ADT (vpd)	11,900	5,400	28,000	29,500
AM (PM) K-Factor	6% (8%)	7% (7%)	7% (8%)	6% (7%)
D-Factor	56%	63%	57%	50%
2028 T-Factor	27%	5%	15%	23%
2050 T-Factor	24%	5%	17%	21%

Note that the K-factors used in the future traffic summary differs from the existing K-factors as provided from the ADOT TDMS. For the future volumes analysis, the K-factors were recalculated from the hourly TMDS volume data for both the AM and PM peak hours separately to provide a more accurate estimate based on the available data for the future traffic conditions. Additionally, the T-factors were applied per turning movement instead of per approach in the analysis and represent the weighted average truck percentages by movement volume in the tables shown above.

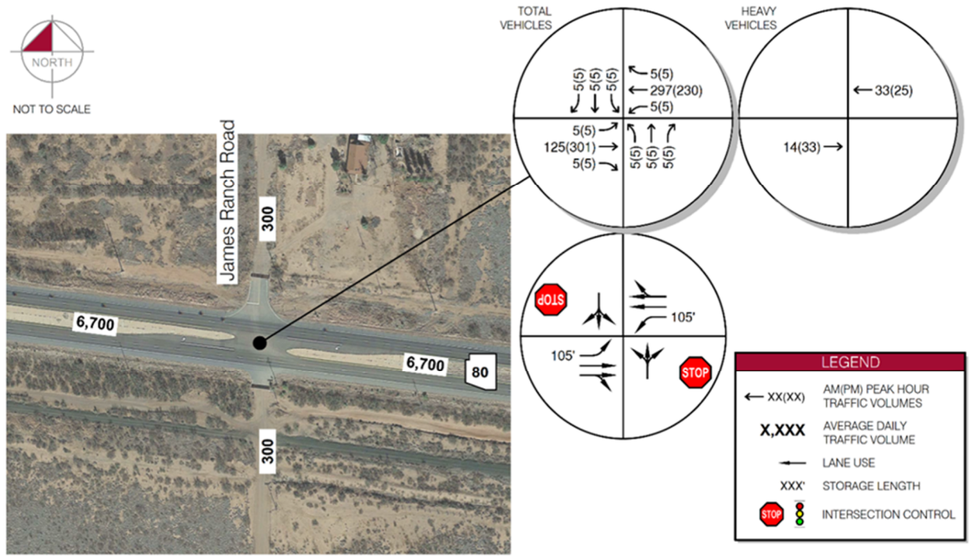

Figure 2-5: SR 80 and James Ranch Road - 2028 No-Build Volumes & Lane Configuration

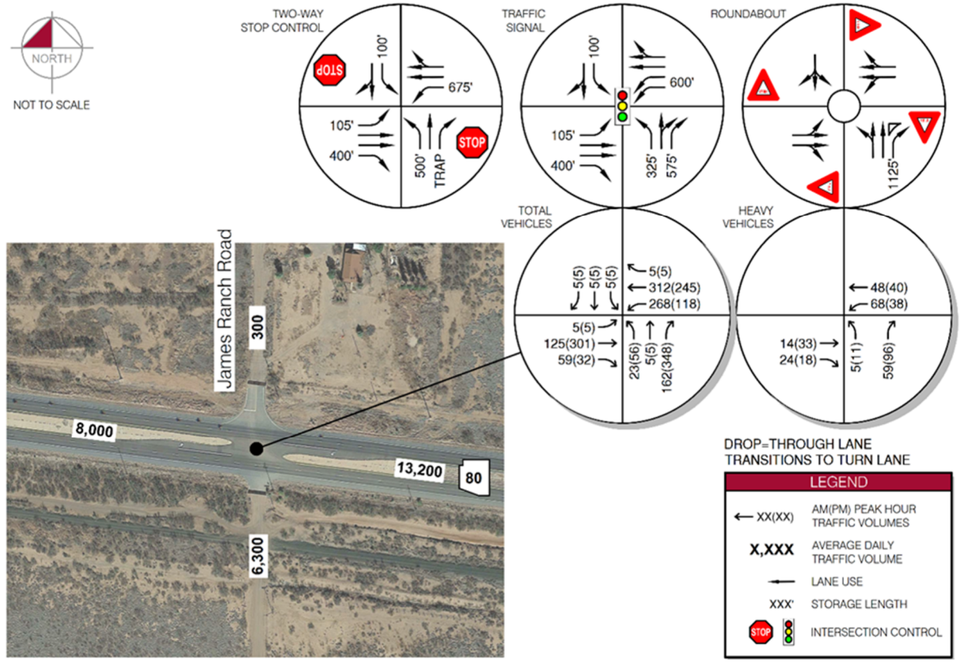

Figure 2-6: SR 80 and James Ranch Road - 2028 Build Volumes & Lane Configurations

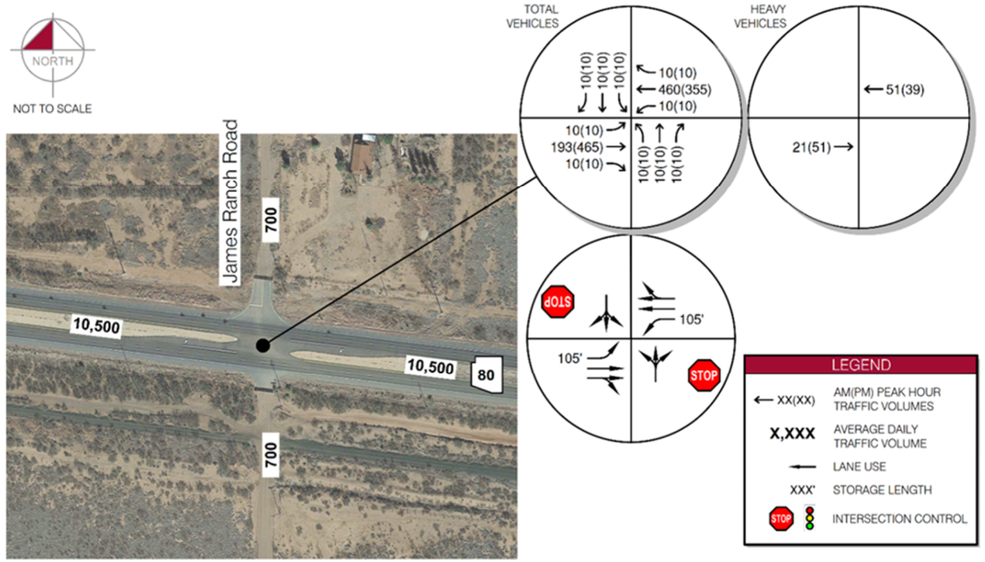

Figure 2-7: SR 80 and James Ranch Road - 2050 No-Build Volumes & Lane Configuration

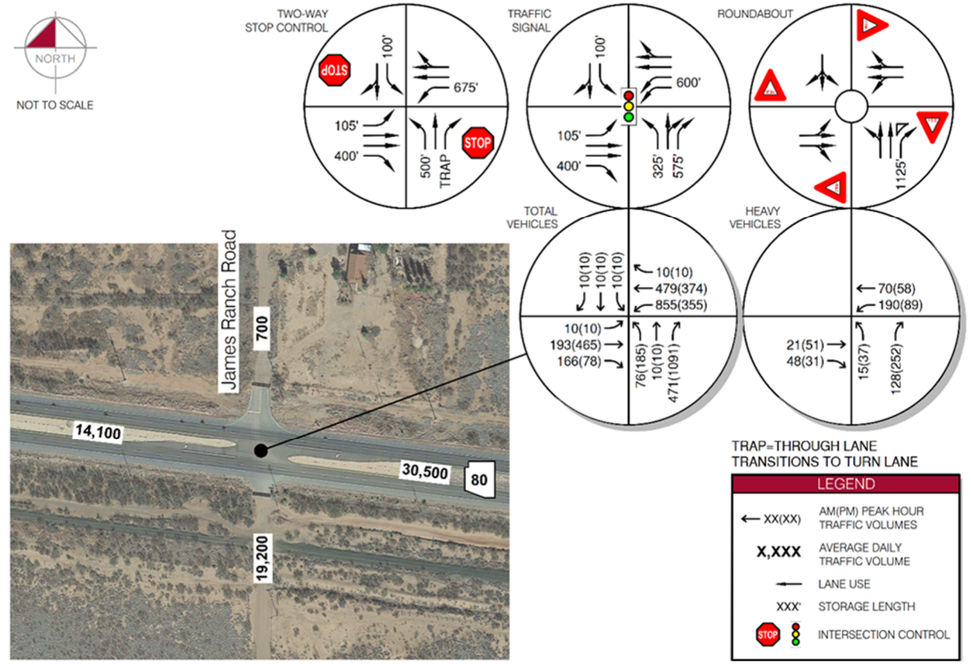

Figure 2-8: SR 80 and James Ranch Road - 2050 Build Volumes & Lane Configurations

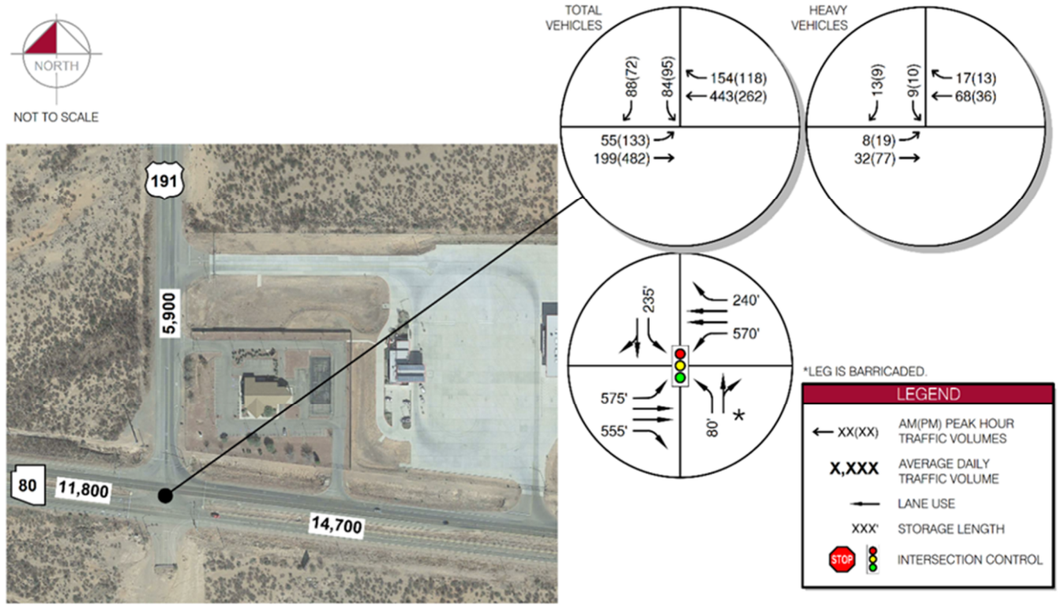

Figure 2-9: SR 80 and US 191 - 2028 No-Build Volumes and Lane Configurations

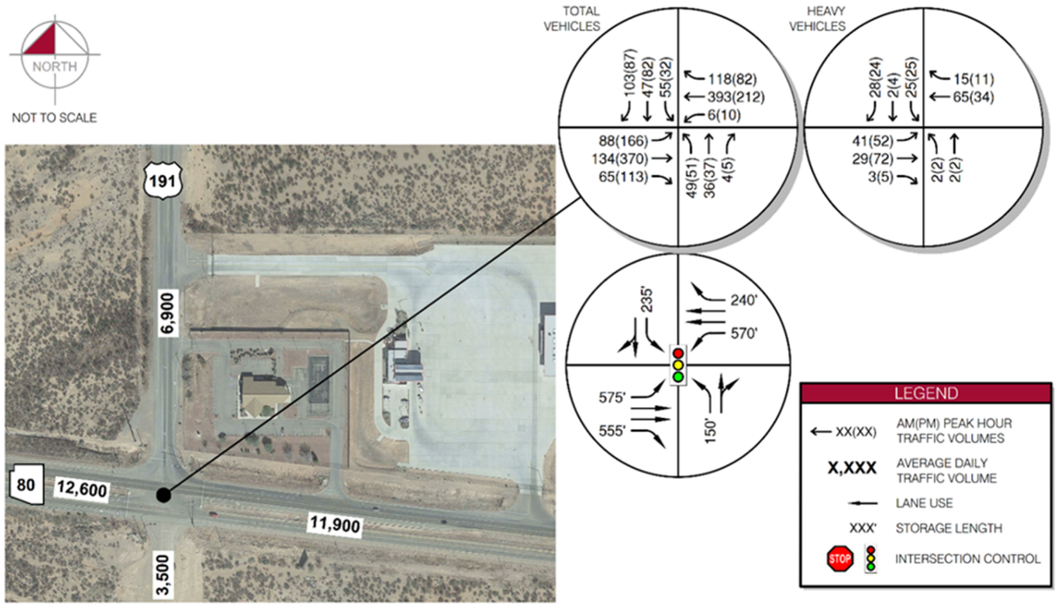

Figure 2-10: SR 80 and US 191 - 2028 Build Volumes and Lane Configurations

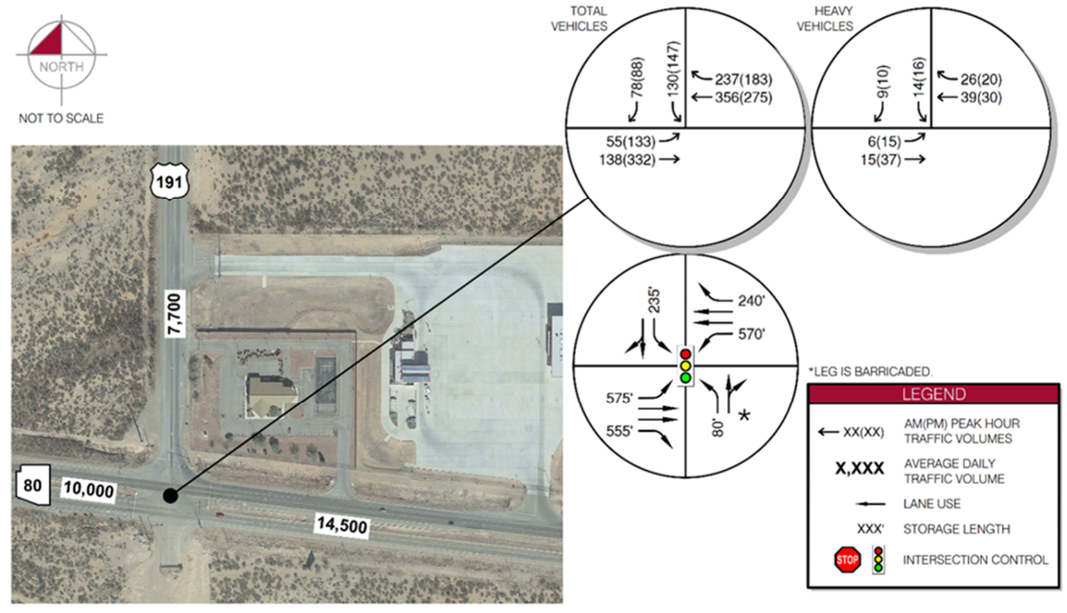

Figure 2-11: SR 80 and US 191 - 2050 No-Build Volumes and Lane Configurations

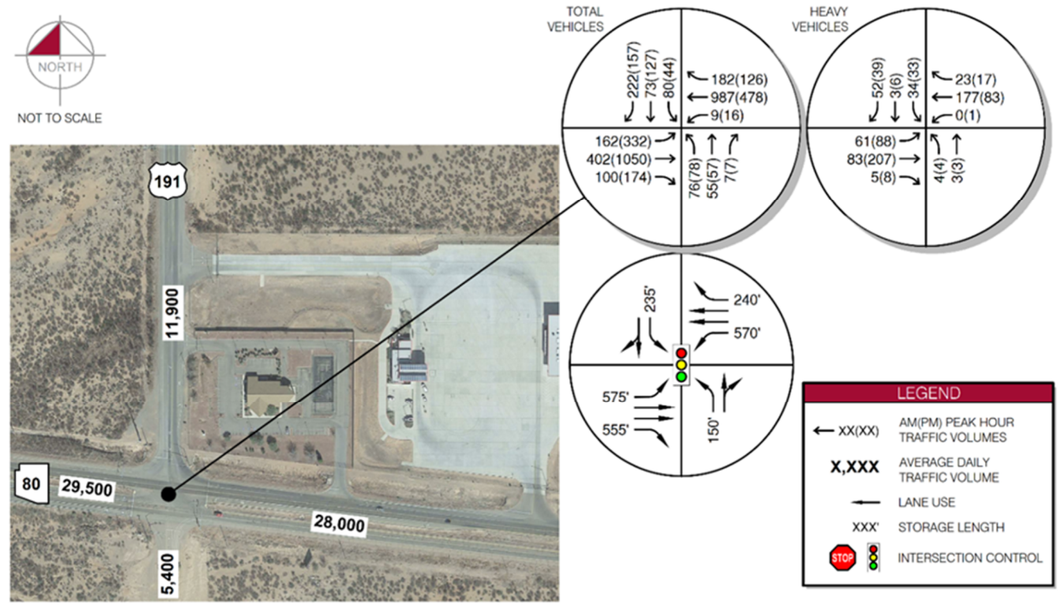

Figure 2-12: SR 80 and US 191 - 2050 Build Volumes and Lane Configurations

A similar analysis was conducted for the two proposed intersections located along the northern boundary of the proposed LPOE. Lane configurations at these intersections were assumed based on preliminary intersection plans and the lane geometry required to provide acceptable LOS and queuing results at the intersections.

Additionally, these intersections were analyzed with four legs at each intersection even though current plans do not include an east leg at the LPOE East intersection or a north leg at the LPOE West intersection. The analysis was completed with all four legs at each intersection to provide a conservative analysis of intersection operations with future development traffic. The 2028 and 2050 traffic volumes and lane configurations for these two LPOE intersections are presented in Figure 2-13 through Figure 2-16.

Table 2-4 and Table 2-5 summarize the opening year 2028 and horizon year 2050 ADTs, K-factors, D-factors, and T-factors for each leg of the intersections of LPOE East and LPOE West, respectively.

Table 2-4: LPOE East Future Traffic Summary

Input	North Leg	South Leg	East Leg	West Leg
2028 ADT (vpd)	3,600	1,300	1,300	1,600
2050 ADT (vpd)	7,900	1,600	4,000	3,600
AM (PM) K-Factor	9% (9%)	9% (9%)	9% (9%)	9% (9%)
D-Factor	51%	60%	53%	55%
2028 T-Factor	32%	2%	17%	54%
2050 T-Factor	29%	2%	18%	39%

Table 2-5: LPOE West Future Traffic Summary

Input	North Leg	South Leg	East Leg	West Leg
2028 ADT (vpd)	400	1,000	1,600	800
2050 ADT (vpd)	900	1,400	3,600	2,200
AM (PM) K-Factor	9% (9%)	9% (9%)	9% (9%)	9% (9%)
D-Factor	52%	50%	55%	53%
2028 T-Factor	37%	100%	54%	29%
2050 T-Factor	36%	100%	39%	27%

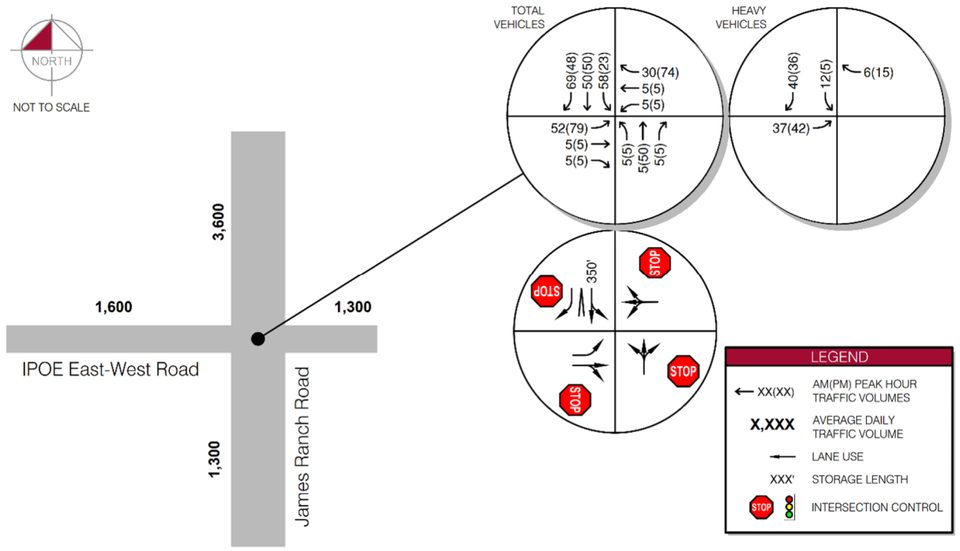

Figure 2-13: LPOE East Intersection – 2028 Build Volumes and Lane Configurations

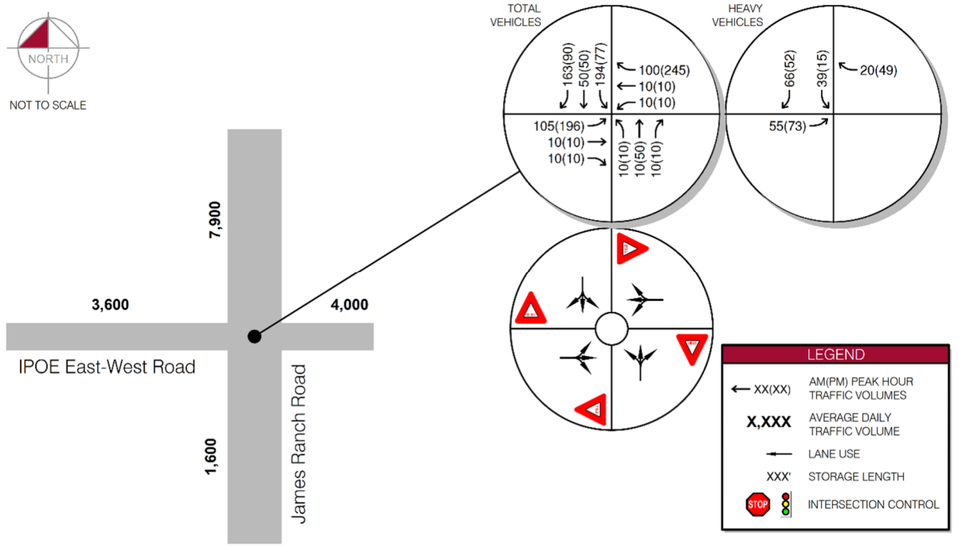

Figure 2-14: LPOE East Intersection – 2050 Build Volumes and Lane Configurations

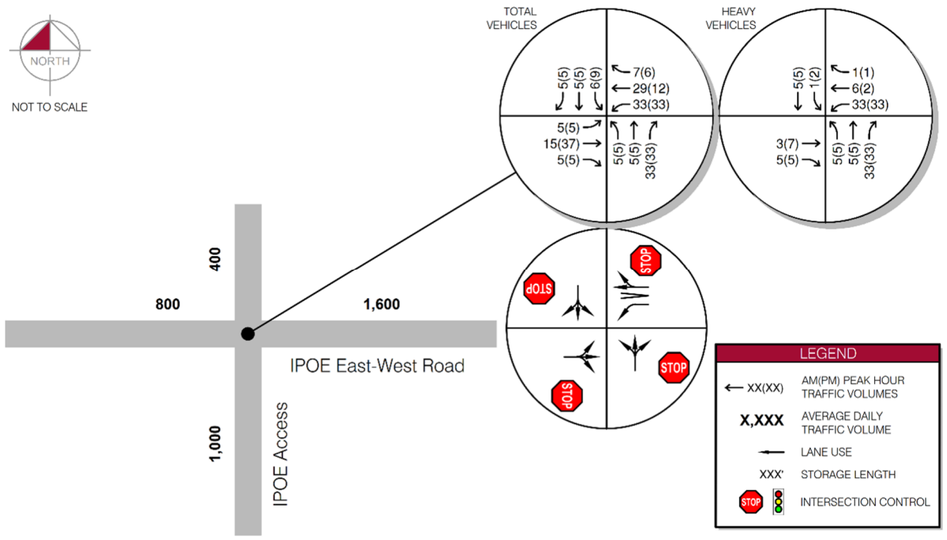

Figure 2-15: LPOE West Intersection - 2028 Build Volumes and Lane Configurations

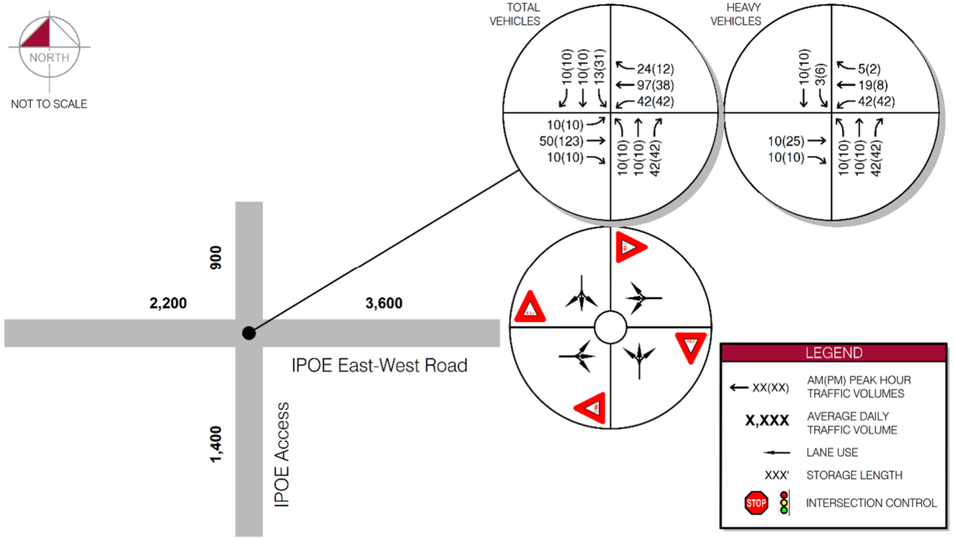

Figure 2-16: LPOE West Intersection - 2050 Build Volumes and Lane Configurations

Recommended storage lengths shown in Figure 2-13 through Figure 2-16 were determined using the methodology outlined in the ADOT Traffic Guidelines and Processes (TGP) Section 430. Tables 430-1 and 430-2 from the TGP were used to select an appropriate gap and braking distance, respectively. The 95th percentile queues from the different operational analyses presented in Section 5 of the Traffic Report for this project were used as the queue portion of the storage described in TGP 430.

Per ADOT TGP 245, an exclusive eastbound right-turn lane is warranted at the intersection of SR 80 and James Ranch Road based on both 2028 and 2050 peak hour turning movement volumes. Relevant excerpts from the TGP are included within Appendix 5 of the Traffic Report.

2.3 Crash Analysis

A crash summary was conducted for crashes occurring along SR 80 between approximately 1.5 miles west of James Ranch Road and 1.0 mile east of James Ranch Road to identify any crash patterns or trends that may be present within the study area.

Crash data was obtained from ADOT for the dates between January 1, 2017, and December 31, 2021, the five most current full years available.

Nineteen total crashes were reported along this SR 80 study segment. Of the 19 total crashes, there were two angle crashes (11 percent of total crashes). One angle crash occurred at the driveway on SR 80 approximately 1.5 miles west of James Ranch Road and the other occurred at the intersection of SR 80 / Kings Highway (1.0 mile east of James Ranch Road). The crash reported west of James Ranch Road resulted in a suspected serious injury, while the crash east of James Ranch Road resulted in no injury.

The remaining 17 crashes were all single-vehicle crashes along SR 80 (89 percent of total crashes). Of these crashes, 12 crashes involved an animal, 3 crashes involved an object, and 2 crashes were rollovers. Of the single-vehicle crashes, 13 crashes resulted in no injuries, 2 crashes resulted in possible injury, and 2 crashes resulted in suspected minor injury.

Overall, 12 of the 19 total crashes occurred in dark, not lighted conditions (63 percent), 1 occurred during dusk (5 percent), 1 occurred in dark, lighted conditions (5 percent), and 5 occurred in daylight (27 percent). This may indicate lighting issues on SR 80.

Summaries of the total crashes and crash severity by year are shown in Figure 2-17 and Figure 2-18, respectively. Figure 2-19 shows the locations of all crashes within the study period by injury severity. Note that in these figures, the crash type of one crash is classified as “other”. This crash was described as occurring with an “other non-fixed object” and was therefore included as a single-vehicle crash for the purposes of this analysis.

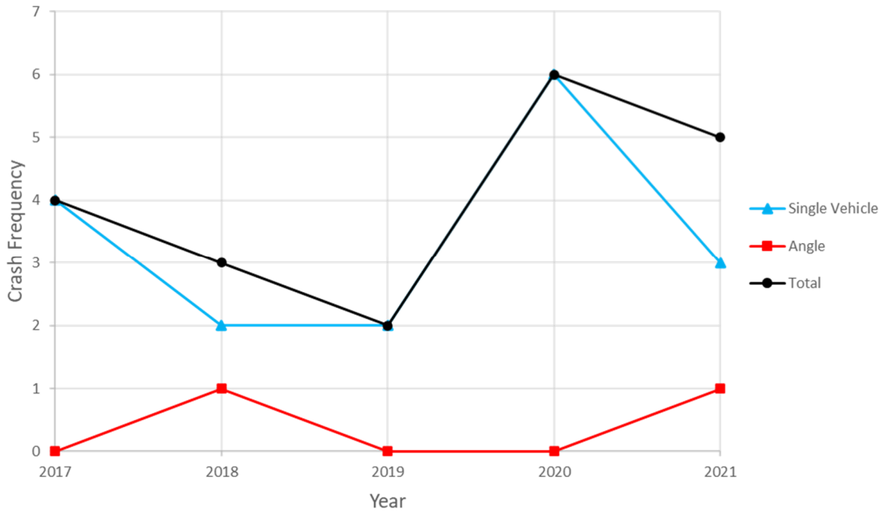

Figure 2-17: Crash Type by Year

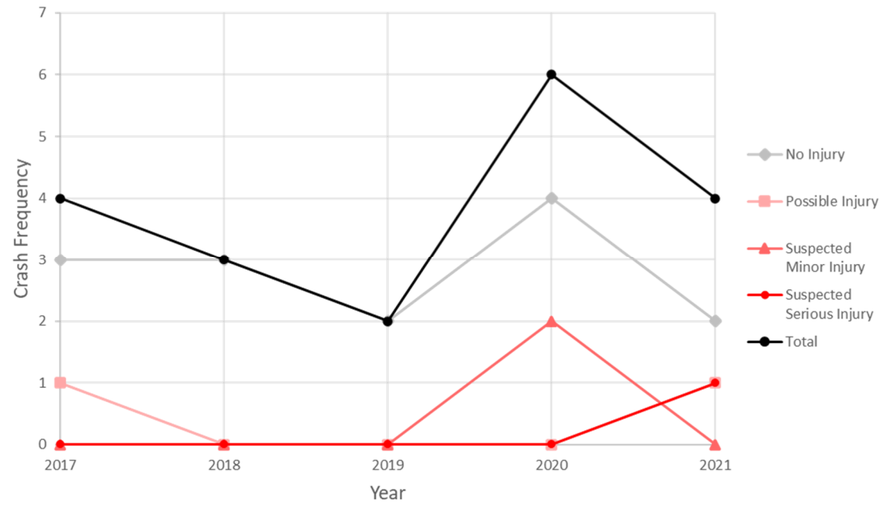

Figure 2-18: Crash Severity by Year

Figure 2-19: Crash Map (ADOT)

2.4 Summary of Operational Analysis

2.4.1 Intersection Analysis Methodology

An intersection operational analysis was performed at the intersections of SR 80 and James Ranch Road and SR 80 and US 191 for the Existing, 2028 No-Build, 2028 Build, and 2050 Build conditions. The intersection configuration alternatives described in Section 2.2.2 were applied to this analysis.

The level of service (LOS) and queuing analyses for the TWSC and traffic signal control alternatives were completed using the Highway Capacity Manual, 6th Edition, (HCM 6), methodology, via Synchro 11 analysis software. Existing signal timing data provided by ADOT was applied to the existing and future analyses at the intersection of SR 80 and US 191. Finally, Rodel 1.96 analysis software was used to complete the analysis of the roundabout alternative.

Each intersection, approach, or movement is given a letter designation from LOS A to LOS F. These designations are based on average control delay as defined Chapters 16 and 17 of the Highway Capacity Manual (HCM) where LOS A represents operational conditions with minimal delay and traffic volumes significantly less than available capacity, while LOS F represents poor operational conditions with a high degree of delay and/or traffic volumes greater than the available capacity. Table 2-6 shows the average vehicle delay ranges for signalized and unsignalized intersections (including roundabouts) that correspond with each LOS letter grade. Note that the HCM methodology does not provide an overall intersection LOS for TWSC intersections.

Table 2-6: LOS Thresholds for Signalized and Unsignalized Intersections

Level of Service	Control Delay (s/veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80 or v/c > 1.0*	> 50 or v/c > 1.0*

*v/c = volume-to-capacity ratio
Source: Highway Capacity Manual, 6th Edition

The existing peak hour factors (PHF) were adjusted in all future scenarios based on the projected traffic demand and proposed lane geometry in accordance with the following guidelines from the ADOT Traffic Engineering Guidelines and Processes (TGP) Section 240 for future PHFs:

- PHF= 0.80 for < 75 vehicles per hour (vph) per lane
- PHF = 0.85 for 75 – 300 vph per lane
- PHF = 0.90 for 300 vph per lane

2.4.2 Existing Intersection Conditions

The existing LOS, delay and 95th percentile queues at the study area intersections were evaluated using the existing traffic volumes and lane geometry described in Section 2.1 of this report. The SR 80 and US 191 intersection was analyzed using current signal timings provided by ADOT. The results of the Existing AM and Existing PM intersection capacity analyses are shown in Table 2-7 and Table 2-8. Refer to the Traffic Report for associated Synchro output reports and the ADOT provided traffic signal timing at the SR 80 and US 191 intersection used in these analyses.

Table 2-7: Existing Intersection Capacity Analysis Results - AM Peak Hour

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
SR 80 / James Ranch Road													
LOS	B			B			A	-		A	-		
Average Delay (s)	11			11			8	-		8	-		
95th Percentile Queue (ft)	0			0			0	-		0	-		
SR 80 / US 191													
LOS				B		B	A	A			A	A	A
Average Delay (s)				11		10	6	5			6	7	7
95th Percentile Queue (ft)				25		25	25	25			25	25	-

As demonstrated in Table 2-7 and Table 2-8, all movements at the study area intersections under existing conditions operate at LOS B or better in both the AM and PM peak hours with reported 95th percentile queues no greater than 25 feet long.

Table 2-8: Existing Intersection Capacity Analysis Results - PM Peak Hour

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
SR 80 / James Ranch Road													
LOS	B			B			A	-		A	-		
Average Delay (s)	11			11			8	-		8	-		
95th Percentile Queue (ft)	0			0			0	-		0	-		
SR 80 / US 191													
LOS				B		B	A	A			A	A	A
Average Delay (s)				11		10	7	6			6	6	7
95th Percentile Queue (ft)				25		25	25	25			25	25	-

2.4.3 No-Build Intersection Analysis

The 2028 and 2050 No-Build LOS, delay, and 95th percentile queues at the study area intersections were evaluated using the 2028 and 2050 No-Build volumes and the existing geometry. The No-Build scenarios assume the existing lane geometry, including the existing Chino Road alignment, and do not include proposed commercial LPOE or

warehousing traffic volumes. The results of the 2028 No-Build AM, 2028 No-Build PM, 2050 No-Build AM, and 2050 No-Build PM intersection capacity analyses are show in Table 2-9, Table 2-10, Table 2-11 and Table 2-12, respectively.

As demonstrated in Table 2-9 and Table 2-10, all movements at the study area intersections are expected to operate at LOS B or better in the 2028 No-Build scenario in the AM peak hour and PM peak hour with 95th percentile queues no greater than 25 feet long in both scenarios.

As demonstrated in the following tables, all movements at the study area intersections are expected to operate at LOS C or better in the 2050 No-Build scenario in the AM peak hour and PM peak hour with 95th percentile queues no greater than 50 feet long in both scenarios.

Table 2-9: 2028 No-Build Capacity Analysis Results - AM Peak Hour

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
SR 80 / James Ranch Road													
LOS	B			B			A		-	A		-	
Average Delay (s)	12			12			8		-	8		-	
95th Percentile Queue (ft)	25			25			0		-	0		-	
SR 80 / US 191													
LOS		B			B	A	A			A	A	A	
Average Delay (s)		11			12	7	5			6	7	7	
95th Percentile Queue (ft)		25			25	25	25			25	25	-	

Table 2-10: 2028 No-Build Capacity Analysis Results - PM Peak Hour

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
SR 80 / James Ranch Road													
LOS	B			B			A		-	A		-	
Average Delay (s)	13			12			8		-	9		-	
95th Percentile Queue (ft)	25			25			0		-	0		-	
SR 80 / US 191													
LOS		B			B	A	A			A	A	A	
Average Delay (s)		11			11	7	6			6	7	7	
95th Percentile Queue (ft)		25			25	25	25			25	25	-	

Table 2-11: 2050 No Build Capacity Analysis Results - AM Peak Hour

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
SR 80 / James Ranch Road													
LOS	B			B			A		-	A		-	
Average Delay (s)	15			16			9		-	8		-	
95th Percentile Queue (ft)	25			25			0		-	0		-	
SR 80 / US 191													
LOS		B			B	A	A			A	A	A	
Average Delay (s)		15			14	7	5			6	7	8	
95th Percentile Queue (ft)		50			25	25	25			25	50	-	

Table 2-12: 2050 No Build Capacity Analysis - PM Peak Hour

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
SR 80 / James Ranch Road													
LOS	C			C			A	-		A	-		
Average Delay (s)	20			18			8	-		9	-		
95th Percentile Queue (ft)	25			25			0	-		0	-		
SR 80 / US 191													
LOS				B		B	A	A			A	A	A
Average Delay (s)				16		15	8	5			5	6	8
95th Percentile Queue (ft)				50		50	25	25			25	25	-

2.4.4 Future Build Analysis

A traffic analysis was conducted for the 2028 Build Opening year and the 2050 Build Horizon year to determine LOS, delay, and 95th percentile queues at the SR 80 and James Ranch Road intersection. To conduct this analysis, the 2028 and 2050 Build volumes and the intersection configuration alternatives (TWSC, traffic signal control, and roundabout) were used as described earlier in this report and in further detail in the Traffic Report.

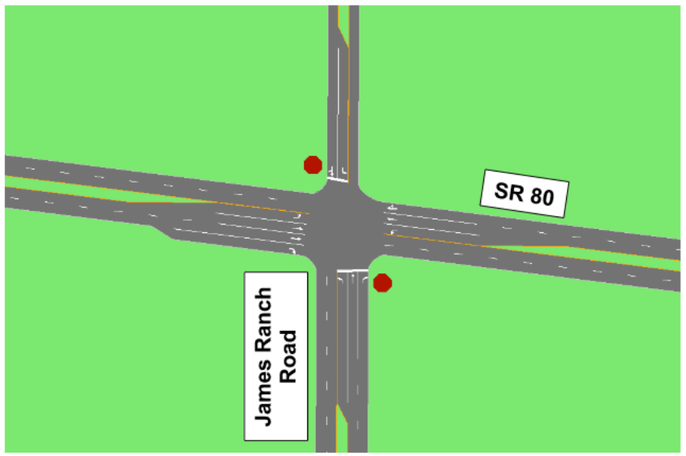

Figure 2-20: SR 80 / James Ranch Road TWSC Intersection Diagram

2.4.4.1 Two-Way Stop Controlled Intersection Capacity Analysis Results

For these analyses, the intersection was modeled in Synchro. An intersection diagram is displayed in Figure 2-20, which shows the lane geometry used in the 2028 and 2050 Build analyses, as well as the TWSC controlling the north and south legs of the intersection. The results of the 2028 Build AM Peak, 2028 Build PM Peak, 2050 Build AM Peak, and 2050 Build PM Peak are summarized in Table 2-13. The Synchro output reports from the TWSC analysis are included in Appendix 7 of the Traffic Report.

Table 2-13: SR 80 and James Ranch Road TWSC Capacity Analysis Results

Intersection	NB Approach			SB Approach			EB Approach			WB Approach		
	L	T	R	L	T	R	L	T	R	L	T	R
2028 Build AM Peak Hour												
LOS	E	D	B	E	C	A	-		A	-		
Average Delay (s)	38	32	10	43	22	8	-		9	-		
95th Percentile Queue (ft)	25	25	25	25	25	0	-		0	-		
2028 Build PM Peak Hour												
LOS	D	C	B	D	C	A	-		A	-		
Average Delay (s)	30	22	15	35	16	8	-		9	-		
95th Percentile Queue (ft)	50	25	75	25	25	0	-		25	-		
2050 Build AM Peak Hour												
LOS	F	F	C	F	F	A	-		E	-		
Average Delay (s)	*	*	16	*	*	9	-		38	-		
95th Percentile Queue (ft)	*	75	125	*	125	0	-		400	-		
2050 Build PM Peak Hour												
LOS	F	F	F	F	F	A	-		B	-		
Average Delay (s)	*	133	*	*	88	8	-		14	-		
95th Percentile Queue (ft)	*	25	*	*	50	0	-		75	-		

*Value not reported due to HCM limitations. Significant delays and queuing anticipated.

As shown in Table 2-13, for the 2028 Build AM Peak analysis, the NB and SB left-turn movements are anticipated to operate at LOS E. All other movements in both the 2028 Build AM and PM peak hours are anticipated to operate at LOS D or better. 95th percentile queues in the 2028 AM peak hour are anticipated to be no greater than 25

feet long, while the PM peak hour 95th percentile queues are anticipated to be no greater than 75 feet long.

As demonstrated in Table 2-13, during the 2050 AM peak hour analysis, the only movements that are not anticipated to operate at LOS F are the AM Peak Hour NB right, EB left, and WB left. The AM peak hour WB left is expected to operate at LOS E, with the other two movements operating at an LOS C or better. Significant queuing is expected on the NB and SB left-turn movements. Additionally, the WB left 95th percentile queue is anticipated to be 400 feet, which exceeds the provided storage length.

Similarly, the 2050 PM peak hour analysis shows that all movements except for the EB and WB left-turn movements will operate at a LOS F. The EB and WB left-turn movements are anticipated to operate at LOS B or better. Significant queuing in expected on the NB and SB left-turn movements and the NB right-turn movement. All other movements are anticipated to have 95th percentile queues that do not exceed 75 feet long in the analysis.

2.4.4.2 Signalized Intersection Capacity Analysis Results

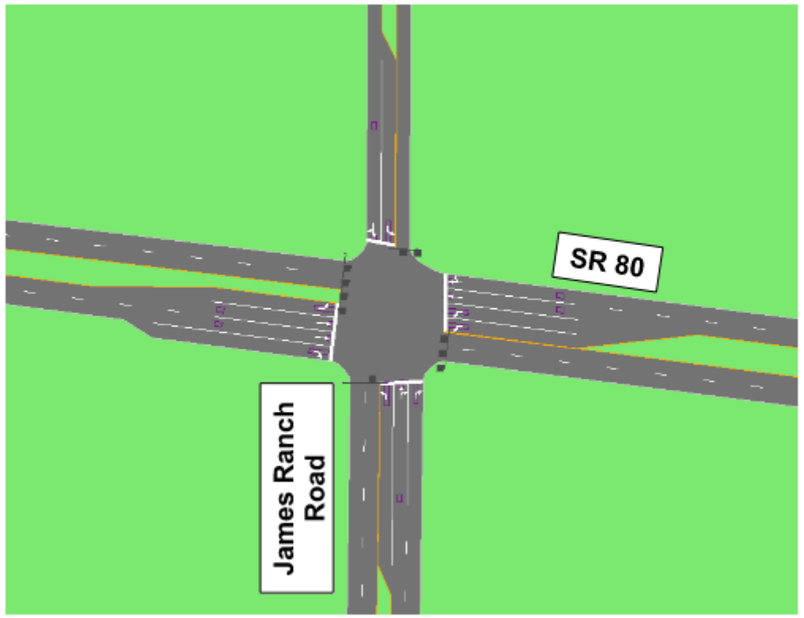

Figure 2-21: SR 80 / James Ranch Road Signalized Intersection Diagram

Figure 2-21 shows the lane configuration modeled in Synchro to analyze James Ranch Road and SR 80 as a signalized intersection for the 2028 Build and 2050 Build scenarios. The results of the 2028 Build AM, 2028 Build PM, 2050 Build AM, and 2050 Build PM are shown in Table 2-14. The Synchro output results tables is included within the Traffic Report.

Table 2-14: SR 80 and James Ranch Road Traffic Signal Capacity Analysis Results

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
2028 Build AM Peak Hour													
LOS	B	B	B	B	A	B	B	A	A	A			
Average Delay (s)	10	12	10	10	9	10	12	5	4	7			
95th Percentile Queue (ft)	25	25	0	25	0	25	25	25	25	-			
2028 Build PM Peak Hour													
LOS	B	B	A	A	B	B	B	A	A	B			
Average Delay (s)	11	13	10	10	11	13	12	7	5	10			
95th Percentile Queue (ft)	25	25	0	25	0	50	25	25	25	-			
2050 Build AM Peak Hour													
LOS	C	C	B	B	C	C	C	D	A	C			
Average Delay (s)	22	29	19	19	21	22	29	40	6	27			
95th Percentile Queue (ft)	75	175	25	25	25	75	125	325	50	-			
2050 Build PM Peak Hour													
LOS	B	C	B	B	C	C	C	D	B	C			
Average Delay (s)	16	33	13	12	25	32	29	49	15	30			
95th Percentile Queue (ft)	125	375	25	25	25	225	75	225	125	-			

The signalized intersection capacity results for 2028 Build AM peak showed the intersection operated at an overall LOS A, with all turning movements operating at LOS B or better and 95th percentile queues no greater than 25 feet long. The 2028 Build PM peak analysis shows the intersection is anticipated to operate at an overall LOS B, with all turning movements anticipated to operate at LOS B or better. The 95th percentile queues for the 2028 Build PM peak are anticipated to be 50 feet or less.

James Ranch Road and SR 80's signalized intersection analysis for the 2050 Build AM peak period shows the intersection will operate at an overall LOS C or better, with all turning movements anticipated to operate at LOS D or better. The longest 95th percentile queue is anticipated to be 325 feet long for westbound left-turn movements. The 2050

Build PM peak analysis estimates that the intersection will operate at an overall LOS C, with all turning movements anticipated to operate at LOS D or better. The 2050 Build PM peak period 95th percentile queues are estimated to be no longer than 375 feet in length.

2.4.4.3 SR 80 and James Ranch Road Roundabout Capacity Analysis Results

The roundabout lane geometry used in the 2028 and 2050 Build analyses is shown in Figure 2-22. Synchro was used to create Figure 2-22 for visualization of the roundabout, while the analyses were completed using Rodel.

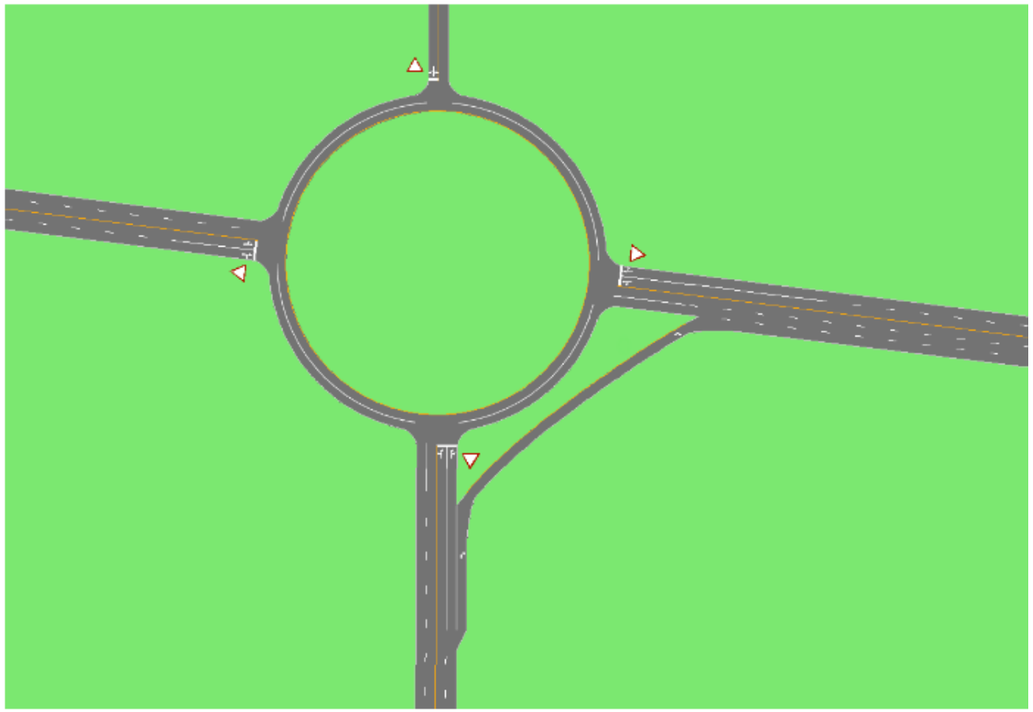

Figure 2-22: SR 80 / James Ranch Road Roundabout Diagram

Initially, the roundabout was analyzed without a NB right-turn bypass lane; however, the analysis found that this configuration would provide poor LOS during the 2050 PM peak scenario, so the analysis was modified to include the NB right-turn lane. This bypass lane provided increased capacity and better LOS projections.

The results of the 2028 Build AM, 2028 Build PM, 2050 Build AM, and 2050 Build PM intersection capacity analyses with the roundabout configuration are summarized in Table 2-15. The Rodel output reports for these analyses, including the initial configuration without the NB right-turn bypass lane, is included in the Traffic Report.

Table 2-15: SR 80 and James Ranch Road Roundabout Capacity Analysis Results

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
2028 Build AM Peak Hour													
LOS	A		A	A			A			A			A
Average Delay (s)	3		2	4			5			8			5
95th Percentile Queue (ft)	25		0	25			25			75			-
2028 Build PM Peak Hour													
LOS	A		A	A			A			A			A
Average Delay (s)	3		3	4			5			6			4
95th Percentile Queue (ft)	25		0	25			25			50			-
2050 Build AM Peak Hour													
LOS	A		A	A			A			C			B
Average Delay (s)	3		3	7			9			19			12
95th Percentile Queue (ft)	25		0	25			50			450			-
2050 Build PM Peak Hour													
LOS	A		C	A			A			B			B
Average Delay (s)	5		23	6			7			11			14
95th Percentile Queue (ft)	25		1,025	25			75			125			-

The James Ranch Road and SR 80 intersection is anticipated to operate at an overall LOS A in both the 2028 Build AM and PM peak hour using the roundabout configuration. All movements are anticipated to operate at LOS A in the AM peak, and all movements are anticipated to operate at LOS A or better in the PM peak period. The 95th percentile queues are not anticipated to exceed 50 feet in the AM peak period and 75 feet in the PM peak period.

For the 2050 Build AM peak, the intersection is anticipated to operate at an overall LOS B with the roundabout scenario, and all movements are anticipated to operate at LOS C or better. The 95th percentile queues are not anticipated to exceed 450 feet. For the 2050 Build PM peak, the roundabout configuration at the James Ranch Road and SR 80 intersection will operate at an overall LOS B. All turning movements during the 2050 Build PM peak are anticipated to operate at LOS C or better. The 95th percentile queue for the NB right-turn movement has a length of 1,025, but the 95th percentile queues for all other movements during the PM peak do not exceed 125 feet in length.

2.4.4.4 SR 80 and US 191 Future Build Analysis

The 2028 and 2050 Build LOS, delay, and 95th percentile queues at the SR 80 / US 191 intersection were evaluated using the 2028 and 2050 Build volumes and the existing intersection geometry. The Chino Road realignment, which is planned but not funded, was assumed to be complete in the 2028 and 2050 Build analyses; therefore, the south leg of the SR 80 / US 191 intersection was assumed to be open using its currently barricaded geometry except with an extended NB left-turn lane storage length. Signal timing and phasing were optimized at the intersection.

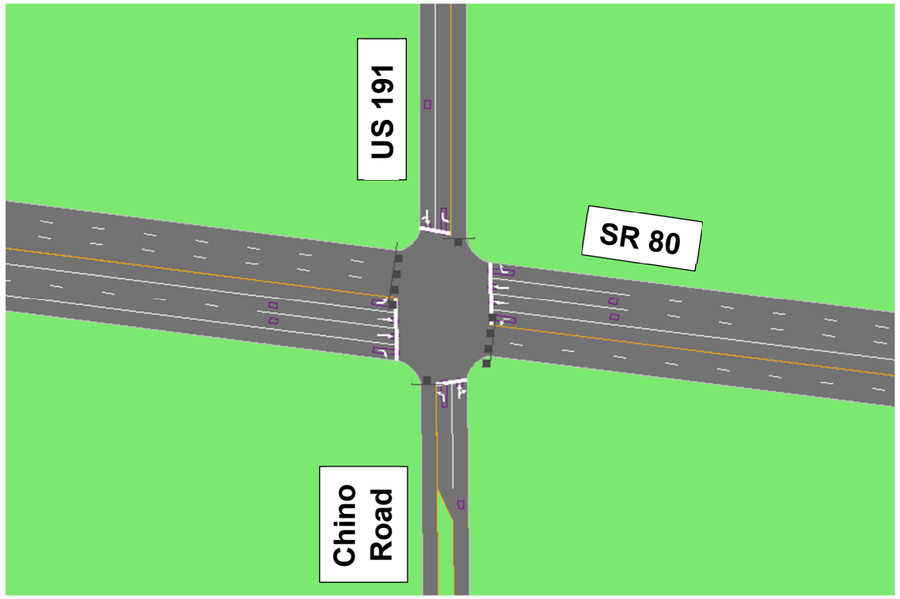

Figure 2-23: SR 80 / US 191 Intersection Geometry

An intersection diagram extracted from Synchro showing the lane geometry is displayed in Figure 2-23. The results of the 2028 Build AM, 2028 Build PM, 2050 Build AM, and 2050 Build PM peak intersection capacity analyses with the existing traffic signal configuration are summarized in Table 2-16. The synchro reports from these analyses are included in Appendix 7 of the Traffic Report.

Table 2-16: SR 80 and US 191 Build Capacity Analysis Results

Intersection	NB Approach			SB Approach			EB Approach			WB Approach			Over-all
	L	T	R	L	T	R	L	T	R	L	T	R	
2028 Build AM Peak Hour													
LOS	B	B		B	B		B	A	A	A	A	A	A
Average Delay (s)	16	13		14	14		10	6	6	6	7	6	9
95th Percentile Queue (ft)	25	25		25	50		25	25	25	0	25	25	-
2028 Build PM Peak Hour													
LOS	C	B		B	B		A	A	A	A	A	A	A
Average Delay (s)	21	16		17	18		10	6	6	7	6	6	9
95th Percentile Queue (ft)	50	25		25	75		50	50	25	25	25	25	-
2050 Build AM Peak Hour													
LOS	D	C		C	D		C	B	B	B	C	B	C
Average Delay (s)	46	24		28	41		25	11	10	13	25	17	24
95th Percentile Queue (ft)	100	50		75	300		100	100	50	25	350	125	-
2050 Build PM Peak Hour													
LOS	D	C		C	C		C	B	B	B	C	C	C
Average Delay (s)	36	22		24	29		31	21	13	19	25	23	24
95th Percentile Queue (ft)	100	50		50	250		250	325	100	25	200	100	-

The SR 80 and US 191 intersection is anticipated to operate at an overall LOS A in the 2028 Build scenario for both the AM and PM peak periods, using the existing signal timing and phasing provisions as provided by ADOT. All movements are anticipated to operate at LOS B or better with 95th percentile queues no greater than 50 feet long in the AM peak period, and all PM peak period movements are anticipated to operate at LOS C or better with 95th percentile queues no greater than 75 feet long.

Signal timing for the 2050 Build analyses was adjusted to add protected-permitted EB and WB left-turn signals at the SR 80 and US 191 intersection. The analysis shows that the intersection is anticipated to operate at LOS C in both the AM and PM peak periods in the 2050 Build scenario. For the AM peak period, all movements are anticipated to operate at LOS D or better, with the maximum 95th percentile queues estimated to be 350 feet in length. For the PM peak period, the 2050 Build analysis shows all movements will operate at LOS D or better, with 95th percentile queues no greater than 325 feet long. For all analyses, 95th percentile queues for all turning movements are anticipated to fit within the existing storage provisions.

2.4.4.5 Proposed LPOE Intersections

The 2028 and 2050 Build LOS, delay and 95th percentile queues at the two proposed intersections along the northern boundary of the LPOE were evaluated using the 2028 and 2050 Build volumes and proposed intersection geometry as previously described within this report.

Intersection diagrams from Synchro depicting intersection geometry at the LPOE East and LPOE West intersections for the 2028 Build are shown in Figure 2-24 and Figure 2-25, respectively. Please note that although the interim plans are proposing t-intersections at both the LPOE East and LPOE West intersections for the 2028 Build, all legs of these intersections were modeled to conservatively account for any future development surrounding the proposed commercial LPOE. The results of the 2028 Build AM and 2028 Build PM intersection capacity analyses are shown in Table 2-17.

All movements at the proposed LPOE intersections are expected to operate at LOS B or better in the 2028 Build scenario in the AM peak hour with 95th percentile queues no greater than 25 feet long.

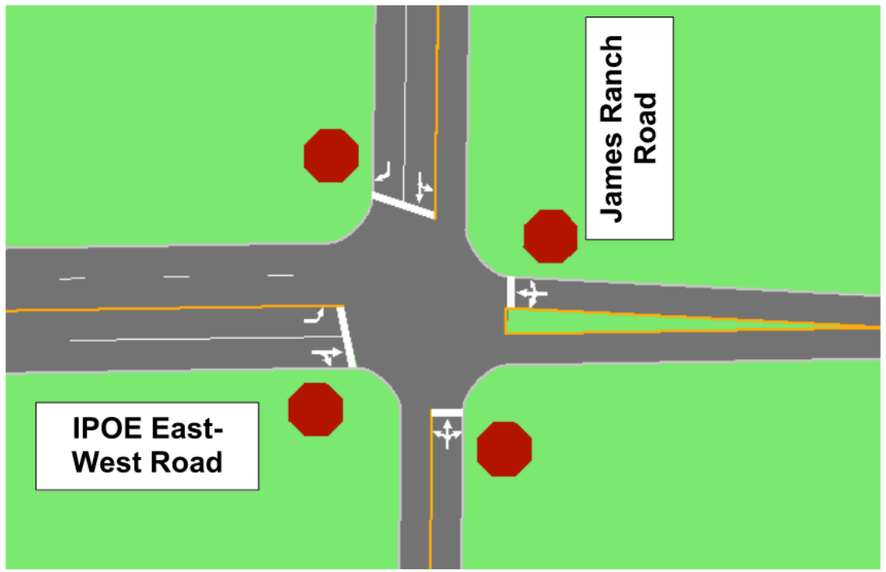

Figure 2-24: LPOE East Intersection Diagram – 2028 Build

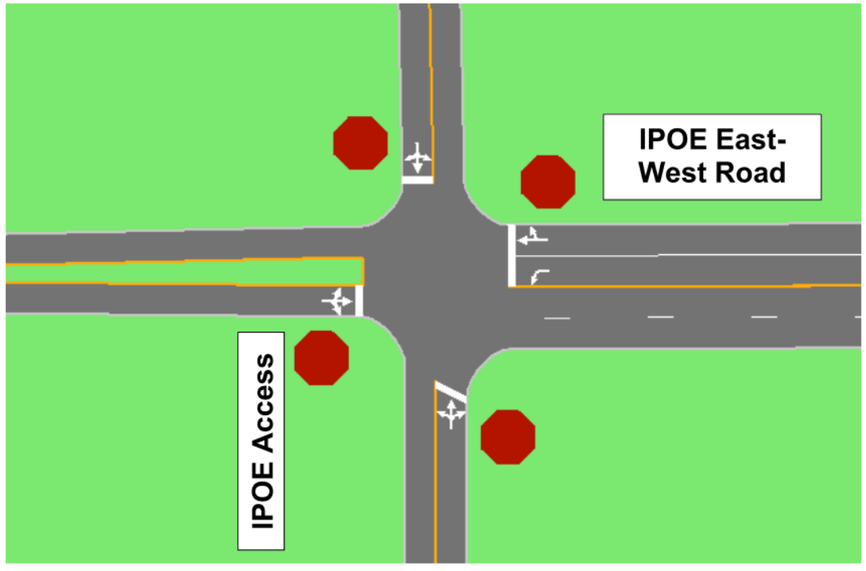

Figure 2-25: LPOE West Intersection Diagram – 2028 Build

Intersection	NB Approach			SB Approach			EB Approach			WB Approach		
	L	T	R	L	T	R	L	T	R	L	T	R
LPOE East Intersection												
LOS	A			A		A	B	A		A		
Average Delay (s)	8			10		7	11	8		8		
95th Percentile Queue (ft)	25			25		25	25	25		25		
LPOE West Intersection												
LOS	A			A			A			B	A	
Average Delay (s)	9			8			7			10	8	
95th Percentile Queue (ft)	25			25			25			25	25	

Table 2-17: LPOE Intersections – 2028 Build Capacity Analysis Results (AM Peak)

All movements at the LPOE intersections are expected to operate at LOS B or better in the 2028 Build scenario in the PM peak hour with 95th percentile queues no greater than 25 feet long.

Table 2-18: LPOE Intersections - 2028 Build Capacity Analysis Results (PM Peak)

Intersection	NB Approach			SB Approach			EB Approach			WB Approach		
	L	T	R	L	T	R	L	T	R	L	T	R
LPOE East Intersection												
LOS	A			A		A	B	A		A		
Average Delay (s)	9			9		8	11	8		9		
95th Percentile Queue (ft)	25			25		25	25	25		25		
LPOE West Intersection												
LOS	A			A			A			B	A	
Average Delay (s)	9			8			8			10	8	
95th Percentile Queue (ft)	25			25			25			25	25	

The 2050 Future Build analysis utilizes roundabouts at the LPOE East and LPOE West intersections. An intersection diagram extracted from Synchro showing the assumed lane geometry for the 2050 Build analysis is displayed in Figure 2-26. The results of the 2050 Build AM and 2050 Build PM intersection capacity analyses with the proposed roundabout configurations is summarized in Y and Z, respectively. Synchro output reports for these intersections are provided in the appendices of the Traffic Report.

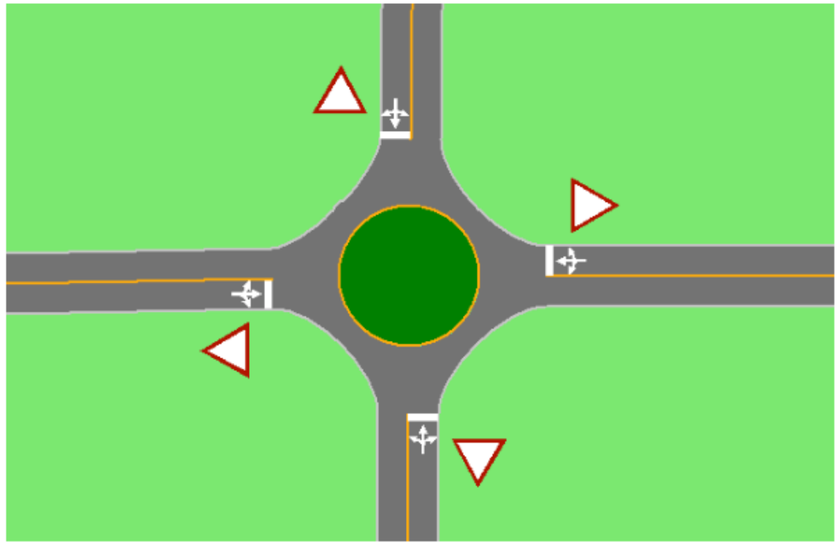

Figure 2-26: LPOE East/West Intersection Diagram - 2050 Build

Table 2-19: LPOE Intersections – 2050 Build Capacity Analysis Results (AM Peak)

Intersection	NB Approach			SB Approach			EB Approach			WB Approach		
	L	T	R	L	T	R	L	T	R	L	T	R
LPOE East Intersection												
LOS	A			A			A			A		
Average Delay (s)	5			8			8			5		
95th Percentile Queue (ft)	25			50			25			25		
LPOE West Intersection												
LOS	A			A			A			A		
Average Delay (s)	7			5			5			6		
95th Percentile Queue (ft)	25			25			25			25		

Table 2-20: LPOE Intersections - 2050 Build Capacity Analysis Results (PM Peak)

Intersection	NB Approach			SB Approach			EB Approach			WB Approach		
	L	T	R	L	T	R	L	T	R	L	T	R
LPOE East Intersection												
LOS	A			A			A			A		
Average Delay (s)	5			6			7			10		
95th Percentile Queue (ft)	25			25			25			50		
LPOE West Intersection												
LOS	A			A			A			A		
Average Delay (s)	8			5			5			6		
95th Percentile Queue (ft)	25			25			25			25		

All movements at the proposed LPOE intersections are expected to operate at LOS A in the 2050 Build scenario in the AM and PM peak hour with 95th percentile queues no greater than 50 feet long.

2.4.4.6 Grade Separation Sensitivity Analysis

The project team conducted an analysis to determine if grade separation was necessary for the intersection of SR 80 and James Ranch Road for the 2028 Build Opening year

or the 2050 Build Horizon Year. Based on the analysis, grade separation or a bridge is not anticipated to be necessary by the 2050 Build Horizon Year. A sensitivity analysis was performed to approximate at what point grade separation may need to be considered at the intersection. This analysis was performed using a combination of software including: HCM 6 methodology via Synchro for the LOS analysis of the signalized scenario, Rodel 2017 for the LOS analysis of the roundabout scenario, and SimTraffic to analyze queue build-ups over time during the AM and PM peak hours.

Total 2050 volumes were grown incrementally to determine the traffic level at which the at-grade intersection operations fail. Reasonable improvements were assumed for the signalized intersection alternative, including dual northbound right-turn lanes, northbound right-turn overlap phasing, an extension to the WB left-turn storage left, and signal timing modifications.

The analysis determined that grade separation may be needed if future traffic volumes at the signalized intersection alternative are more than 30 percent higher than the 2050 traffic volumes projected by this project's Traffic Report. This equates to approximately 700 or 800 more vehicles entering the intersection during the peak hour. For the roundabout alternative, grade separation may be required if future traffic volumes are more than 10 to 20 percent higher than the 2050 projected traffic volumes. This equates to approximately 300 to 500 more vehicles entering the roundabout during the peak hour. The reports for the grade separation sensitivity analysis are included in the Traffic Report.

2.4.4.7 Connector Road Cross-Section Analysis

Projected daily traffic volumes on the connector road were analyzed to determine an appropriate roadway cross-section for the 2050 Build Horizon Year. The connector roadway was analyzed as an urban roadway because access driveways are anticipated along the roadway to service the planned future development along the corridor. Exhibit 16-16 of the HCM 6 gives generalized daily service volumes of urban roadway facilities based on number of traffic lanes, K-factor, D-factor, and desired LOS. Based on the projected 2050 volumes, which is anticipated to be up to 19,200 vehicles per day, it is anticipated that a four-lane cross-section with two through lanes in each direction will provide LOS D or better for the proposed connector road. The referenced Exhibit 16-16 of the HCM 6 is displayed in Table 2-21.

Table 2-21: Generalized Daily Service Volumes for Urban Street Facilities (HCM 6, Exhibit 16-16)

K-Factor	D-Factor	Daily Service Volume by Lanes, LOS, and Speed (1,000 veh/day)											
		Two-Lane Streets				Four-Lane Streets				Six-Lane Streets			
		LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E
Posted Speed = 30 mi/h													
0.09	0.55	NA	1.7	11.8	17.8	NA	2.2	24.7	35.8	NA	2.6	38.7	54.0
	0.60	NA	1.6	10.8	16.4	NA	2.0	22.7	32.8	NA	2.4	35.6	49.5
0.10	0.55	NA	1.6	10.7	16.1	NA	2.0	22.3	32.2	NA	2.4	34.9	48.6
	0.60	NA	1.4	9.8	14.7	NA	1.8	20.4	29.5	NA	2.2	32.0	44.5
0.11	0.55	NA	1.4	9.7	14.6	NA	1.8	20.3	29.3	NA	2.1	31.7	44.1
	0.60	NA	1.3	8.9	13.4	NA	1.7	18.6	26.9	NA	2.0	29.1	40.5
Posted Speed = 45 mi/h													
0.09	0.55	NA	7.7	15.9	18.3	NA	16.5	33.6	36.8	NA	25.4	51.7	55.3
	0.60	NA	7.1	14.5	16.8	NA	15.1	30.8	33.7	NA	23.4	47.4	50.7
0.10	0.55	NA	7.0	14.3	16.5	NA	14.9	30.2	33.1	NA	23.0	46.5	49.7
	0.60	NA	6.4	13.1	15.1	NA	13.6	27.7	30.3	NA	21.0	42.7	45.6
0.11	0.55	NA	6.3	13.0	15.0	NA	13.5	27.5	30.1	NA	20.9	42.3	45.2
	0.60	NA	5.8	11.9	13.8	NA	12.4	25.2	27.6	NA	19.1	38.8	41.5

Notes: NA = not applicable; LOS cannot be achieved with the stated assumptions.
General assumptions include no roundabouts or all-way STOP-controlled intersections along the facility; coordinated, semiactuated traffic signals; Arrival Type 4; 120-s cycle time; protected left-turn phases; 0.45 weighted average g/C ratio; exclusive left-turn lanes with adequate queue storage provided at traffic signals; no exclusive right-turn lanes provided; no restrictive median; 2-mi facility length; 10% of traffic turns left and 10% turns right at each traffic signal; peak hour factor = 0.92; and base saturation flow rate = 1,900 pc/h/ln.
Additional assumptions for 30-mi/h facilities: signal spacing = 1,050 ft and 20 access points/mi.
Additional assumptions for 45-mi/h facilities: signal spacing = 1,500 ft and 10 access points/mi.

2.5 Additional Traffic Considerations

Additional traffic considerations were detailed within the traffic report that should be factored into determining the appropriate traffic control at the intersection of SR 80 and James Ranch Road. These items include safety, accommodations for oversized vehicles, transit opportunities. These topics are summarized below, please refer to the Traffic Report for a more detailed explanation of these considerations.

2.5.1 Safety

Safety considerations as related to motorists, pedestrians, and bicyclists were summarized in the traffic report. An important measure of motorist safety for intersection configurations is the number of vehicle conflict points, which are locations where there are increased opportunities for collisions if right-of-way rules are not followed. A standard four-legged intersection (signalized or TWSC) has 32 conflicts, including 16 crossing points, which

occur where vehicles traveling different directions could potentially collide. Whereas, a standard four-legged two-lane roundabout has 24 conflict points, including 8 crossing points. Additionally, roundabouts also have a reduced opportunity for head-on collisions and high speed crashes due to raised curves and roadway geometry.

Additionally, a TWSC alternative relies on drivers to safely judge gaps in order to turn onto or cross a mainline. A traffic signal removes this need for drives to judge gaps, however failure to properly yield right-of-way at a signalized intersection may lead to severe crashes. With a roundabout alternative, all drivers entering the roundabout are required to yield to traffic within the roundabout. While drivers still must safety judge gaps in order to access the roundabout, vehicles speeds within a roundabout are reduced and as previously stated there are less crossing conflict points which leads to roundabout crashes being less severe on average.

Pedestrians can be accommodated with the TWSC alternative on the north and south legs of the intersection but likely cannot accommodate pedestrians crossing SR 80 unless the intersection is signalized, or a grade-separated crossing is provided. Roundabouts are also challenging for those with disabilities to cross as there are typically no signalized crossings for pedestrians. Grade separated pedestrian crossings at roundabouts should be considered for this reason.

Additionally, bike lanes and sidewalk accommodations for pedestrians and bicyclists may be considered in the future due to the anticipated development within the project area.

2.5.2 Oversize Vehicle Accommodation

Because the Connector Road is anticipated to serve as a route for oversize commercial vehicles, the intersection of SR 80 and James Ranch Road should be designed to accommodate oversize vehicles were feasible, which includes providing adequate vertical clearance and turning radii.

Accommodations for oversized vehicles with the TWSC or signalized intersection include larger turning radii, adjustments for horizontal and vertical restrictions such as signal poles being placed at the right height and distance away from the curbs. A channelized bypass lane can also be considered to provide oversize vehicles with a larger turn radius and allow them to bypass the intersection. This lane can be free-flow, yield, or stop controlled, which eliminates height restrictions of a traffic signal mast arm.

Roundabouts can be designed to provide adequate turning radii for oversize vehicles by providing a truck apron and mountable curbs for the center island. One additional consideration is that roundabouts may be difficult for some low-clearance vehicles due to the varying elevation of the intersection due to the curbs and islands. A northbound right-turn movement is anticipated to experience high vehicle traffic volumes, and a channelized right-turn bypass lane should be considered in the roundabout scenario.

2.5.3 Transit Accommodation

Bus stops should be considered in the future along or near the Connector Road to accommodate any commuter traffic generated from future development around the proposed LPOE.

2.5.4 Truck Parking and Queues

Past experience at the existing RHC LPOE as well as other commercial LPOEs suggests trucks desiring to exit the U.S. may arrive prior to the LPOE opening in the morning and begin to queue. To avoid truck queues backing up onto the existing roadway awaiting the opening of the LPOE, it is recommended that a minimum 10-foot-wide paved shoulder be provided adjacent to the southbound approach of the LPOE East intersection for at least 500 feet to allow trucks to park and queue outside the traveled way until the LPOE opens.

2.5.5 ITS Devices

Current discussions between GSA and ADOT indicate the ADOT Commercial Inspection Facility will be relocated from the northeast corner of the intersection of SR 80 and US 191 to a location along the proposed Connector Road alignment. ITS needs

3. EVALUATION OF ALTERNATIVES

3.1 Background

GSA plans to open a new commercial Land Port of Entry (LPOE) in Douglas, Arizona which connect to Agua Prieta, Sonora, Mexico in the beginning of 2028. After the new Douglas LPOE is opened, the existing Raul Hector Castro Land Port of Entry will accommodate all personally owned vehicles, and pedestrian travel, while the new port will handle all of the commercial traffic. This new port and the traffic reconfiguration will reduce traffic and pollution, improve safety and reduce the number of heavy vehicles that are currently using local City of Douglas roadways.

In order to successfully complete GSA's project, an all-weather roadway connector roadway that can safely accommodate heavy commercial vehicle traffic will need to be constructed prior to the projected opening date of June 2028. This Design Concept Report will evaluate alignment alternatives for this connector road.

Refer to Figure 3-1 for a vicinity map of the project. The graphic shows the location of the new commercial Douglas LPOE in relation to the existing Raul Hector Castro LPOE, and the alignments of three build alternatives that would connect the new port to SR 80.

Figure 3-1: Project Vicinity and Build Alternatives Map

As summarized earlier in the report, the project area consists of privately owned undeveloped land, and therefore, right-of-way acquisition and as well as easements for drainage, construction and utilities will be required for all of the three Build alternatives.

Figure 3-2 provides a map of the existing parcels within the study area that may be impacted by one or more of the Build Alternatives.

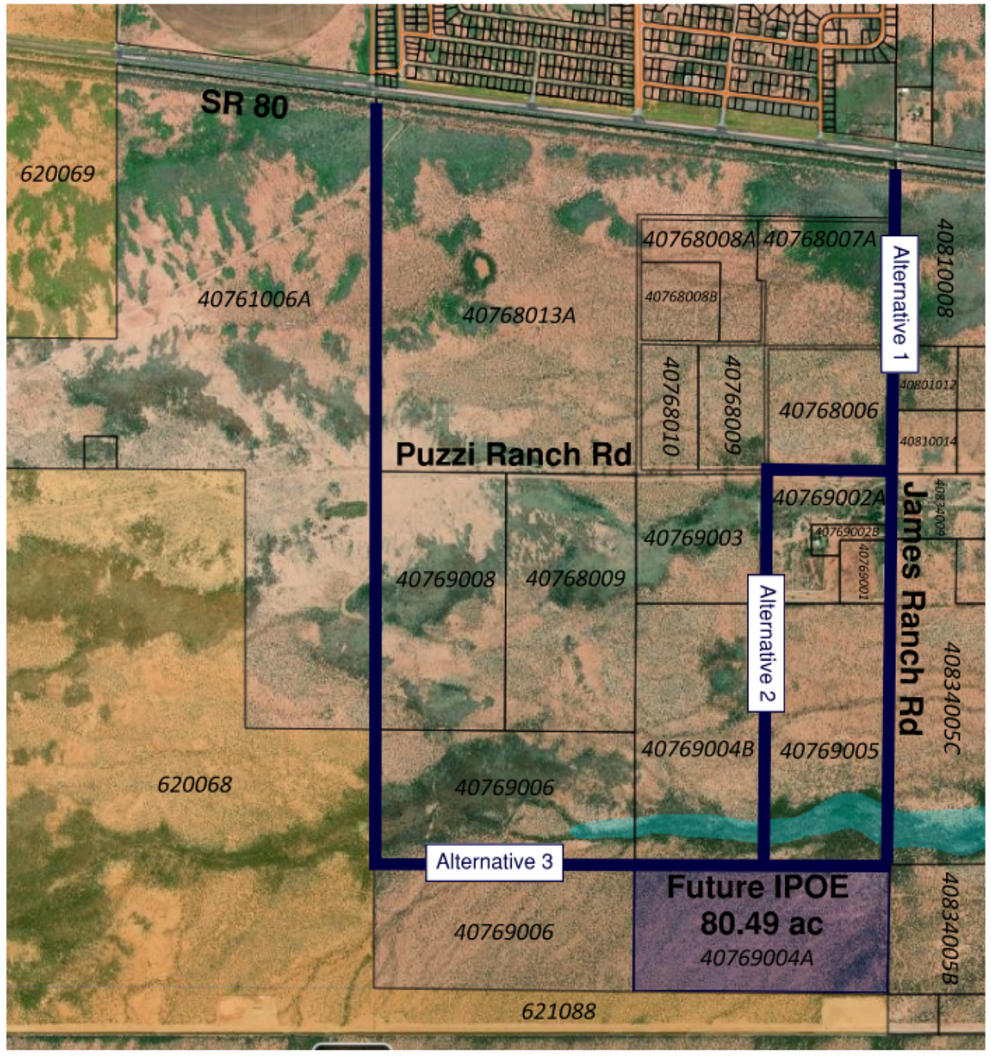

Figure 3-2: Study Area Parcel Map

Parcel number 40769004A is the 80.49 acres of undeveloped property that was donated to the GSA by the City of Douglas to be used to build the proposed LPOE. Parcel 621088, which separates the proposed LPOE from the border wall, is owned by the United States Bureau of Land Management (BLM) and any impacts to this parcel will be coordinated with GSA in the future. These parcels and the properties potentially impacted by the proposed connector road alignment alternatives listed in Table 1 1 are shown in Figure 1 3.

Table 3-1: Properties In Study Area

Parcel Number	Property Owner	Alignment Alternative that Potentially Impacts Parcel
40810008	TBJ Investment LLC	Alternatives 1 & 2
40768013A	Tactical Holdings LLC	Alternatives 1 & 2
40768007A	Tactical Holdings LLC	Alternatives 1 & 2
40760006	Randall B Pigg	Alternatives 1 & 2
40810014	Janet L Harris	Alternatives 1 & 2
40801012	Gary W James	Alternatives 1 & 2
40769002A	Roberta D & J W Bauer	Alternatives 1 & 2
40834009	Gary W James & Judy L Shelley – Trust	Alternative 1
4079002B	John Wesley & Roberta Diane Bauer	Alternative 1
40769001	JW & Roberta Bauer	Alternative 1
40834005C	Tactical Holdings LLC	Alternative 1
40834005B	Michael Dennis Antonovich	Alternatives 1, 2, & 3
40769005	Linda Swander	Alternatives 1, 2, & 3
40768009	Frederico Arthur Martinez	Alternative 2
40769003	Scott K & Olga J Aldrich	Alternative 2
40769004B	Raymond J Hufnagel III	Alternatives 2 & 3
40769006	City of Douglas	Alternative 3
40769008	City of Douglas	Alternative 3
40761006A	Larry W & Anne M Brasher	Alternative 3
620068	Arizona State Trust Land	Alternatives 3
620069	Arizona State Trust Land	Alternatives 1, 2, & 3
621088	United States Bureau of Land Management	Property Impacted by GSA's construction of the LPOE

3.2 Description of Alternatives

ADOT requirements for the alternative selection process include methods and technologies to ensure a comprehensive investigation of proposed alignments. The requirements state that the process should analyze all reasonable alternatives, support the iterative nature of the National Environmental Policy Act (NEPA) process, provide a summary of the investigation and selection process, and determine the optimal alignment alternatives subject to the project constraints, including environmental, engineering, social, and economic evaluations. The proposed build alternatives are consistent with the stated requirements and are described below and shown at the end of this chapter.

3.2.1 No-Build Alternative

The No-Build alternative assumes that the connector road, the proposed commercial LPOE, and the planned industrial and warehousing developments near the LPOE are not constructed. It also assumes that the planned Chino Road realignment to the intersection of SR 80 and US 191 is not completed, and the existing roadway geometry remains.

3.2.2 Alternative 1 – James Ranch Road Alignment

This alternative consists of constructing a new at-grade four-lane divided roadway along the James Ranch Road alignment. This alignment would provide a straight connection from SR 80 and James Ranch Road to the northern boundary of the LPOE. Access to the new LPOE being provided on the northern boundary of the LPOE approximately 0.125 mi west of James Ranch Road. There will be two roundabouts along the northern boundary of the LPOE, which will be how commercial trucks enter and exit the port. Additionally, a two-lane undivided access roadway with shoulders on each side will be provided along the eastern boundary of the LPOE. Refer to Figure 3-1 for the location and alignment of Alternative 1.

A conceptual layout of the new LPOE and the ultimate roadway connections to the port is depicted in Figure 3-3.

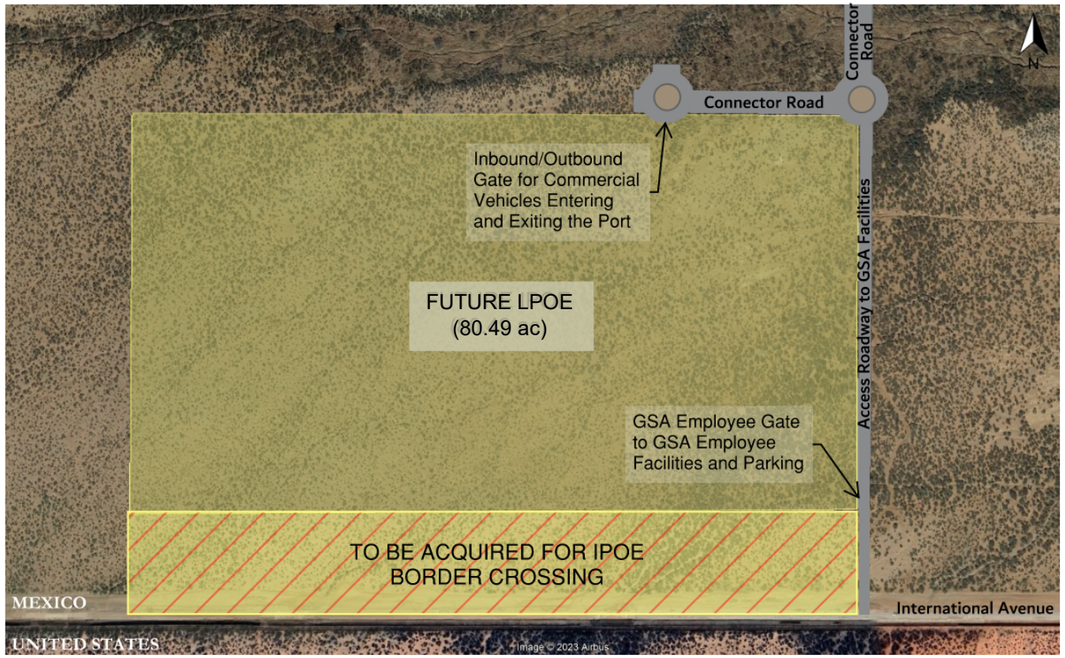

Figure 3-3: Conceptual Layout of Roadway Connections to the Proposed LPOE

The existing intersection of SR 80 and James Ranch Road will be improved to provide a dedicated EB right turn lane, extend the WB left turn lane, add a dedicated SB left-turn lane, and to change the southern leg of the intersection so that there is a dedicated NB left, NB thru and NB right turn lane. The Traffic Report, discussed earlier, identified a traffic

signal or a roundabout as viable traffic control options at the intersection of SR 80 and Alternative 1 for the new LPOE in 2028 and 2050.

This alignment would cross three washes. The hydraulic structure recommendations based on the drainage analysis for this alternative is shown in Table 3-2.

Table 3-2: Hydraulic Structure Recommendations for Alternative 1

Crossing	Barrel Numbers	Size Type
North Wash	17	10'x5'*/CBC
Middle Wash	6	10'x5'*/CBC
South Wash	11	10'x5'*/CBC

The 10'x5' CBC barrel size was selected due to stakeholder concerns related to the deposition of sediment within shallow barrels. Note that although the recommendation for the hydraulic structures is for 10'x5' concrete box culverts, the Drainage Report encourages the use of an equivalent 12'x3' ConArch system, if approved by ADOT.

When considering construction materials used in the development of project culverts, corrosion potential to both concrete and untreated metal should be noted. Please refer to the drainage report for more information about the risk of corrosion.

Additionally, the drainage design shows a need to raise the vertical alignment of SR 80 at the intersection of James Ranch Road by an estimated 30 inches, which will lead to approximately one mile of SR 80 to be rebuilt.

Drainage basins were considered but ultimately not incorporated into the design due to cost related to the extensive amount of earthen excavation that would be required.

3.2.3 Alternative 2 – Quarter Mile West of James Ranch Road

Alternative 2 consists of constructing a new at-grade four-lane divided roadway from SR 80 along the James Ranch Road alignment for approximately a half-mile, then west on the Puzzi Ranch Road alignment for a quarter mile, then south for approximately three quarters of a mile, where the alignment curves slightly east and follows the northern boundary of the proposed LPOE until it reaches the main gate of the facility.

Like Alternative 1, an access road for GSA employees will be provided along the eastern boundary of the LPOE. The configuration for the connection of the Connector Road to the access roadway along the eastern boundary would include a series of two roundabouts similar to the design explained in Alternative 1. Refer to Figure 3-1 for the location and alignment of Alternative 2.

The existing intersection of SR 80 and James Ranch Road will be improved to provide a dedicated EB right turn lane, extend the WB left turn lane, add a dedicated SB left-turn lane, and to change the southern leg of the intersection so that there is a dedicated NB left, NB thru and NB right turn lane. The aforementioned Traffic Report identified a traffic signal and a roundabout as viable traffic control options at the intersection of SR 80 and Alternative 2 for the new LPOE in 2028 and 2050.

This alignment would cross three washes, but the southern wash has two areas of diverted flow which require additional drainage structures. The hydraulic structure recommendations based on the drainage analysis for this alternative is shown in Table 3-3.

Table 3-3: Hydraulic Structure Recommendations for Alternative 2

Crossing	Barrel Numbers	Size/Type
North Wash	17	10'x5'*/CBC
Middle Wash	6	10'x5'*/CBC
Diverted flow from South Wash	4	36"/CMP
South Wash	12	10'x5'*/CBC
Diverted flow from South Wash	6	10'x5'*/CBC

Note that although the recommendation for the hydraulic structures is for 10'x5' concrete box culverts, the Drainage Report encourages the use of an equivalent 12'x3' ConArch system, if approved by ADOT. Additionally, the drainage design shows a need to raise the vertical alignment of SR 80 at the intersection of James Ranch Road by an estimated 30 inches, which will lead to approximately one mile of SR 80 to be rebuilt.

Drainage basins were considered but ultimately not incorporated into the design due to cost.

3.2.4 Alternative 3 – Brooks Road Alignment

This alternative consists of constructing a new at-grade four-lane divided roadway along the Brooks Road alignment, beginning at the intersection of SR 80 and Brooks Road and heading south for one and a half miles, then turning east along the northern edge of the new LPOE, with access to the new LPOE being provided near the eastern end of the new LPOE's 80-acre parcel, approximately one quarter mile west of James Ranch Road.

Like Alternative 1, an access road for GSA employees will be provided along the eastern boundary of the LPOE. The configuration for the connection of the Connector Road to the access roadway along the eastern boundary would include a series of two roundabouts similar to the design explained in Alternative 1. Refer to Figure 3-1 for the location and alignment of Alternative 3.

The existing intersection of SR 80 and Brooks Road is a t-intersection with Brooks Farm extending north from SR 80, with a paved turn out located on the southern leg of the intersection. This intersection will be improved to a four-legged intersection with the proposed geometry matching the geometry proposed for the James Ranch Road and SR

80 intersection in Alternatives 2 and 3. The proposed improvements to the intersection of SR 80 and Brooks Road include providing a dedicated left turn lane and shared thru/right turn lane on the southern leg The aforementioned Traffic Report identified a traffic signal and a roundabout as viable traffic control options at the intersection of SR 80 and Alternative 2 for the new LPOE in 2028 and 2050.

This alignment would cross three washes. The hydraulic structure recommendations based on the drainage analysis for this alternative is shown in Table 3-4.

Drainage basins were considered but ultimately not incorporated into the design due to cost.

Table 3-4: Hydraulic Structure Recommendations for Alternative 3

Crossing	Barrel Numbers	Size/Type
North Wash	12	10’x5’*/CBC
Upstream Distributary Path	3	10’x5’*/CBC
Upstream Distributary Path	2	10’x5’*/CBC
Middle Wash	4	10’x5’*/CBC
Diverted flow from South Wash	5	10’x5’*/CBC
South Wash	7	10’x5’*/CBC
Diverted flow from South Wash	3	10’x5’*/CBC

Note that although the recommendation for the hydraulic structures is for 10’x5’ concrete box culverts, the Drainage Report encourages the use of an equivalent 12’x3’ ConArch system, if approved by ADOT.

3.3 Alternative Evaluation Process

All alternatives were evaluated by eight criteria. The evaluation criteria are briefly described below, and the results of the evaluation are summarized in Table 3-5.

- **Meets Purpose and Need –** This criterion evaluates whether the alternative meets the project purpose and need as described in Section 1.3 of this report.
- **Environmental Concerns –** This criterion evaluates the effects on land ownership/land use, biological resources, wetland and riparian areas, floodplains, Section 404 and 401 of the Clean Water Act, noise, air quality, cultural and hazmat.
- **Traffic Operation Performance –** This criterion evaluates the connector road and SR 80 intersection LOS for projected 2028 and 2050 volumes.
- **Drainage Impacts –** This criterion identifies adverse drainage impacts created as a result of constructing each alternative.
- **Utility Impacts –** This criterion evaluates each alternative on the basis of utility adjustments or relocations required.
- **Safety –** This criterion evaluates the impact on public safety after an alternative is constructed.
- **Right-of-Way Requirements –** This criterion estimates the amount of right-of-way and drainage easements required for each alternative.
- **Constructability –** This criterion rates each alternative based on constructability.
- **Construction Cost –** This criterion rates each alternative based on estimated construction costs for each alternative.

Table 3-5: Alternative Screening Matrix

CRITERIA	NO-BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Meets Purpose and Need	Does Not Meet Purpose and Need	Meets Purpose and Need	Meets Purpose and Need	Meets Purpose and Need
Environmental Concerns	Existing environmental concerns regarding the materials being carried through the City of Douglas due to cross-border travel related to the nearby mines and smelter developments in Mexico will remain.	Minimal environmental impacts anticipated	Minimal environmental impacts anticipated	Minimal environmental impacts anticipated
Traffic Operation Performance	Does not provide LOS requirements	SR 80/Connector Road Intersection in 2028 operates at LOS B and in 2050 operates at LOS D	SR 80/Connector Road Intersection in 2028 operates at LOS B and in 2050 operates at LOS D	SR 80/Connector Road Intersection in 2028 operates at LOS B and in 2050 operates at LOS D
Drainage Impacts	None	Drainage analysis demonstrates a need to raise the vertical grade of SR 80 at James Ranch Road approximately 30” which will lead to one mile of SR 80 being reconstructed. A total of 34-10’x5’ CBC barrels are recommended along the three washes that are crossed by the alignment.	Drainage analysis demonstrates a need to raise the vertical grade of SR 80 at James Ranch Road approximately 30” which will lead to one mile of SR 80 being reconstructed. A total of 41-10’x5’ CBCs and 3-36” RCP barrels are recommended along the three washes and two areas of diverted flow that are crossed by the alignment.	Drainage analysis demonstrates a need to raise the vertical grade of SR 80 at Brooks Road approximately 30” which will lead to one mile of SR 80 being reconstructed. A total of 36-10’x5’ CBC barrels are recommended along the three washes, two areas of diverted flow, and two tributaries that are crossed by this alignment.
Utility Impacts	None	Minimal impacts identified	Minimal impacts identified	Minimal impacts identified
Safety	No impact on existing conditions. Safety concerns regarding interactions between heavy commercial vehicles and pedestrians and smaller personal vehicles would remain.	No safety concerns identified	No safety concerns identified	No safety concerns identified
Right-of-Way Requirements	None	40.4 Acres – ROW 90 Acres – Drainage Easements	44.4 Acres – ROW 90 Acres – Drainage Easements	61.6 Acres – ROW 90 Acres – Drainage Easements
Construction Cost	$0	$49.0M	$57.8M	$64.8M
Constructability	Not Applicable	Coordination and construction phasing needed to raise the vertical profile of SR 80. No issues identified with constructability of the alignment of Alternative 1.	Coordination and construction phasing needed to raise the vertical profile of SR 80. No issues identified with constructability of the alignment of Alternative 2.	Coordination and construction phasing needed to raise the vertical profile of SR 80. No issues identified with constructability of the alignment of Alternative 3.

3.4 Recommendation

Alternative 1 is recommended as the Preferred Alternative due to less right-of-way acquisition, less drainage impacts, less disturbance to the project area, and estimated construction cost.

The No-Build Alternative does not meet the project purpose and need, because if there is no Connector Road built, the proposed commercial LPOE will be unable to open. This means the existing issues with congestion, safety, will remain and the opportunity to facilitate easier and safer international trade will be limited to the existing Raul Hector Castro LPOE.

4. MAJOR DESIGN FEATURES OF THE PREFERRED ALTERNATIVE

4.1 Introduction

This section describes the design controls and design features for the Preferred Alternative for the Connector Road which will connect the proposed commercial LPOE being constructed by GSA to the Arizona State Highway system via SR 80 by the planned Opening Year of 2028. This Connector Road and the proposed commercial LPOE will help to alleviate congestion, reduce pollution, improve safety, and promote international trade.

4.2 Design Controls

The Connector Road is classified as Rural Major Collector Roadway. A summary of the design controls for the Connector Road from SR 80 to the northern border of the proposed LPOE is provided in Table 4-1. The typical section of the connector road will be a four-lane divided highway with shoulders on both sides. The proposed Connector Road is currently designed as a straight alignment, following the County Section Line which the existing James Ranch Road is based off. Any roadway curves will maintain a standard cross-slope and therefore will not be superelevated.

Table 4-1: Design Controls for the Proposed Connector Road

Description of Criteria	Values for Design
Design Year	2050
Design Speed	55 mph, with 35mph design speed at curves
Superelevation	-0.020 ft/ft
Cross Slope	2.0%
Lane Width	12 ft
Median Width	Varies, 8 ft – 20 ft
Outside Shoulder Width	10 ft
Inside Shoulder Width	4 ft
Right-Of-Way	200 ft
Maximum Radius of Horizontal Curve	510 ft
Minimum Gradient Maximum Gradient	0.2% 3%
Cut Slopes Fill Slopes	ADOT Std. C-02.20 Slopes
Minimum Vertical Clearance Sign Structures	 18 ft
Design Vehicle	WB-67

ADOT has also agreed to provide an extension of the Proposed Connector Road from the northern boundary of the parcel where the proposed LPOE will be constructed to the entrance of a GSA employee parking lot which will be located on the east side of the parcel. The extension will be classified as a Rural Local Roadway and the design controls for this extension is shown in Table 4-2. The typical section of the extension will be a two-lane roadway with shoulders on both sides.

Table 4-2: Design Controls for the Proposed Extension to GSA Employee Parking Lot

Description of Criteria	Values for Design
Design Year	2050
Design Speed	30 mph
Cross Slope	2.0%
Lane Width	12 ft
Northbound Shoulder Width	6 ft
Southbound Shoulder Width	6 ft
Minimum Gradient Maximum Gradient	0.2% 3%
Cut Slopes Fill Slopes	ADOT Std. C-02.30 Slopes
Design Vehicle	WB-67

Finally, the existing SR 80 is classified as a Rural Principal Arterial. A summary of the design controls for SR 80 throughout the project area is provided in Table 4-3.

Table 4-3: Design Controls for SR 80

Description of Criteria	Values for Design
Design Year	2050
Design Speed	70 mph
Superelevation	-0.020 ft/ft
Cross Slope	2.0%
Lane Width	12 ft
Median Width	Varies, 16 ft – 28 ft
Outside Shoulder Width	10 ft
Inside Shoulder Width	Varies, 4 ft – 16 ft
Maximum Horizontal Curve (Rate of Curvature)	2 degrees, 30 minutes
Minimum Gradient Maximum Gradient	0.2% 3%
Cut Slopes Fill Slopes	ADOT Std. C-02.10 Slopes
Minimum Vertical Clearance Highway Traffic Structures Sign Structures	 16.5 ft 18 ft
Design Vehicle	WB-67

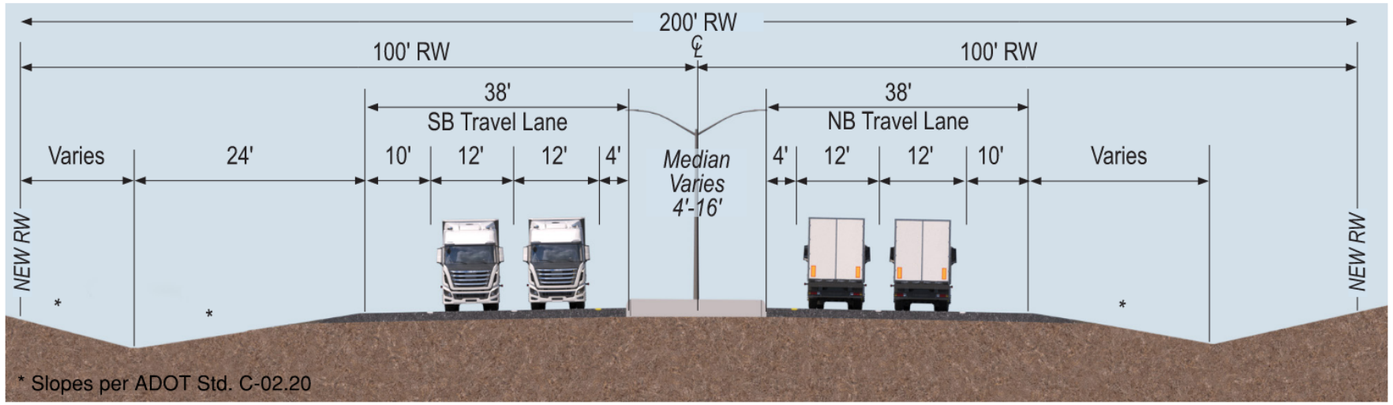

Figure 4-1: Typical Section - Preferred Alternative (Ultimate)

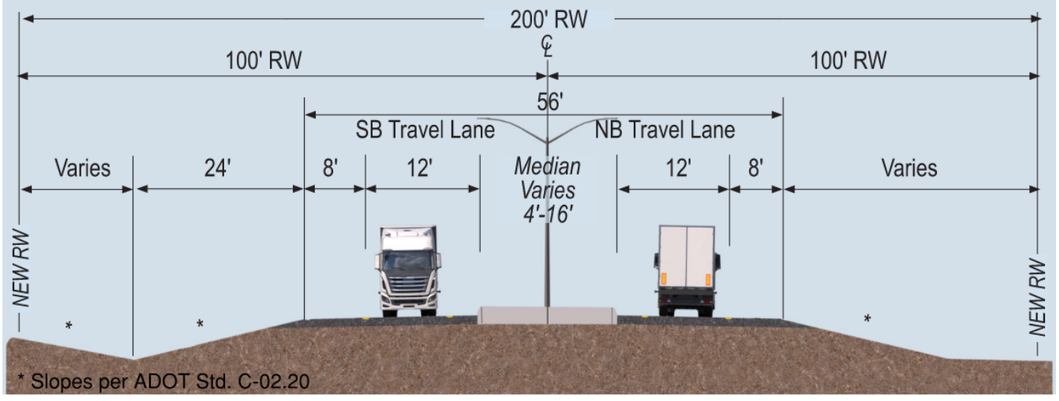

Figure 4-2: Typical Section - Preferred Alternative (Interim)

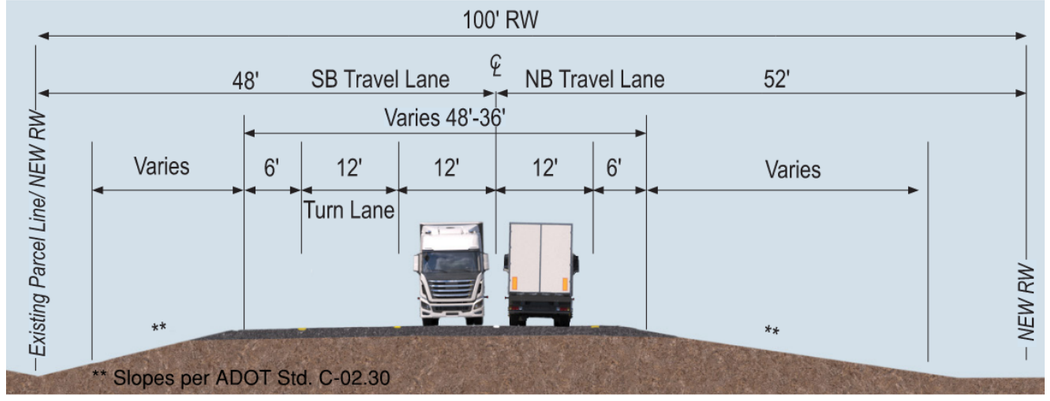

Figure 4-3: Typical Section – Extension to GSA Parking Lot

4.3 Access Control

The Preferred Alternative will be designed as an access-controlled connector roadway in accordance with ADOT and FHWA Access Control Policy Requirements. Turnouts are anticipated to be provided at Puzzi Ranch Road and at the entrance of the proposed LPOE.

4.4 Horizontal and Vertical Alignment

The Preferred Alternative will intersect with SR 80 at the existing intersection of SR 80 and James Ranch Road, which is labeled as County Section Line Road at Station 908+26.35 in ADOT As-Builts RF-016-1(18). The Preferred Alternative follows the alignment of the county section line and is stationed from south to north. The stationing begins at International Blvd and extends north to the southeast corner of Parcel 40769004A, which is where GSA's employee parking lot will be located. The beginning of the Preferred Alternative will follow the typical section of the extension road and the design controls listed in Table 4-2. At the northeast corner of the parcel, the typical section transitions to that of the Connector Road and the design controls listed in Table 4-1. The horizontal alignment of the Preferred Alternative continues north until it intersects with James Ranch Road. The entire alignment is straight; there are no horizontal curves within the Preferred Alternative's design.

The vertical alignment of the Preferred Alternative will be designed in accordance with ADOT Roadway Design Guidelines and AASHTO criteria. There are a total of three washes that the Preferred Alternative will cross.

The horizontal alignment for SR 80 will be maintained. The vertical alignment for SR 80 will be modified due to the drainage analysis. SR 80 is anticipated to be raised approximately 30 inches at the intersection of James Ranch Road. This will result in approximately one mile of SR 80 being reconstructed in both directions from the intersection.

4.5 Right-of-Way

The ROW and easement needs are shown on the Preferred Alternative Concept Plans in the appendix of this report. The total estimated right-of-way acquisition required for this alternative is 40.4 acres.

A total width of 200 ft of Right-of-Way is estimated to be acquired throughout the full length of the Preferred Alternative, with additional ROW obtained around the eastern roundabout proposed at the northeast corner of the LPOE. Along the proposed GSA extension road, a total width of 100 ft of ROW will need to be acquired from the northern boundary of the LPOE to International Blvd, which parallels the border wall.

Additionally, 90 acres of drainage easement is anticipated to be acquired throughout the length of the project. There is a drainage easement detail included within Appendix A that shows the limits of the proposed drainage easements. The basis of these limits is discussed in further detail within the Drainage Report.

Temporary Construction Easements (TCE) will also be required for the construction of the Preferred Alternative. Approximate TCE locations and limits are shown on the roadway plans in Appendix A and will be further refined in final design.

4.6 Drainage

The drainage was designed in accordance with ADOT's Highway Drainage Manual, ADOT's Roadway Design Guidelines, conversations with ADOT Roadway Drainage Section staff, and Cochise County Floodplain Regulations. The Preferred Alternative will have a Class 3 Drainage Classification, and therefore the design event for hydraulic structures is the 25-year recurrence event and structures beneath the Connector Road shall be designed to accommodate the design event without overtopping the roadway. Additional consideration during the design was given to meeting Cochise County Floodplain Regulations which limits overtopping of roadways to 1-foot during the 100-year recurrence event.

The drainage report recommends shallow concrete box or arch systems to accommodate surface drainage throughout the project area. The reasoning for this recommendation was to minimize diversion of flow, minimize increased water surface elevations when compared to the existing conditions, and to reduce erosion potential during the 25- and 100-year storm events. The addition of bridge systems and/or upstream detention basins are not recommended in the design as these types of alternatives would require increased roadway embankment materials and/or extensive excavation.

The Preferred Alternative crosses three washes, which will be referred to in this report and the Project's Drainage Report, as the North Wash, Middle Wash, and South Wash. The recommendations for the drainage structures are shown in Table 4-4 below.

Table 4-4: Proposed Drainage Structures of Preferred Alternative

James Ranch Centerline Station	Barrels (No.)	Size/Type	Comments
182+00	17	10'x5'*/CBC	North Wash crossing
153+50	6	10'x5'*/CBC	Middle Wash crossing
120+20	11	10'x5'*/CBC	South Wash crossing
183+70	---	---	Location of overtopping during 100-yr event, D<1-ft

It should be noted that although the concrete box culverts (CBCs) shown in the table are consistent in size at 10'x5', the hydraulic analysis used an equivalent 12'x3' ConArch system, which could be an alternative to the 10'x5' CBCs, if approved by ADOT.

Drainage modeling demonstrated a need to limit overtopping of SR 80 and minimize backwater impacts and/or drainage easement needs along SR 80 so the drainage design will lower the existing grade at several locations of at least two project culvert locations, which occur at the North and South Wash crossings. This will result in the need for additional right-of-way or temporary construction easements. Additionally, to reduce and/or eliminate overtopping of SR

80 during the 25-year storm in the vicinity of the intersection with the Preferred Alternative, the design recommendation is to raise SR 80 by approximately 30 inches at the intersection with James Ranch Road. This will result in SR 80 being rebuilt from Station 882+14.71 to Station 934+49.32, based on stationing provided in ADOT as-built F-FR-016-1(18), to accomplish the recommended raise in grade. Drainage grading recommendations could include partial or entire elimination of the abandoned railroad embankment, developing a diversion channel along SR 80 and transitioning to the culvert crossing at or near the North Wash, raising a portion of SR 80 or a combination of those recommendations.

The hydraulic analysis of the preferred alternative also revealed the need for a diversion berm west of the proposed commercial LPOE. Without this approach the diversion of the existing patterns to the southeast of the proposed Connector Road would occur which would require mitigation.

As noted in the drainage report, per conversations with ADOT Staff, the project must consider compensation of any related drainage impacts resulting from a given alternative and/or hydraulic structure configuration. Compensation may take the form of an easement or right-of-way. The variables considered when determining impacts are: 1) increase water surface elevation and 2) significant increase in flow velocity, both during the 100-year event. The areas where an increase in the maximum water surface elevation is anticipated to occur, and areas that are showing increased maximum flow velocity are included in the Drainage Report.

Other consideration was given to designing upstream detention basins at two locations; however, the results of the analysis determined extensive excavation and therefore was not cost effect for the project.

Culvert outlet scour protection will need to be evaluated during the design phase. However, when using a common FHWA riprap outlet basin (a.k.a. “plunge basin”) such would require dumped rock riprap placed along a length of 680-feet downstream of each culvert with a recommended median stone diameter (i.e., D50) of 9-inches.

The drainage analysis also showed differences of between -0.2 to -16.0 percent and -3.3 to -29.2 percent in the estimated peak discharge realized at the study’s outlet boundary during both existing and post-improvement conditions. The following table summarizes the existing and post-improvement condition peak discharge related to the major points of interest.

Table 4-5: Peak Discharge - Hydraulic Points of Interest

	Existing Conditions		Post-Improvement Conditions	
Reference Line No.	**25-yr** (cfs)	**100-yr** (cfs)	**25-yr** (cfs)	**100-yr** (cfs)
North Wash	4,241	7,126	4,188	6,671
Middle Wash	433	766	404	719
South Wash	1,945	3,673	1,930	3,414

Additionally, the project crosses the FEMA Zone A Flood Zone discussed in Section 1.4.7 of this report. The potential for the project to affect the 100-year floodplain will be further addressed in the Environmental Assessment completed for this project.

4.7 Earthwork

Approximately 45,200 cubic yards of excavation and 118,800 cubic yards of borrow are anticipated to be needed for this project. Greater detail about earthwork for this project is included in the Preliminary Geotechnical Evaluation dated September 6, 2023.

4.8 Intersections

The intersection of the Preferred Alternative and SR 80 occurs at the existing intersection of James Ranch Road and SR 80. The geometry of the intersection will be modified in accordance with the recommendations made in the Traffic Report for this project and based on ADOT and Highway Capacity Manual guidelines. The intersection of SR 80 and James Ranch Road will be modified to extend the WB left turn lane, and to add an EB right turn, a SB left turn, and add both a left and right turn lane for NB movements. These modifications are shown in greater detail on the draft engineering plans included in the appendix of this report.

A series of two roundabouts will be designed along the northern boundary of the LPOE, as conceptually displayed in Figure 3-3. The first roundabout would be located on the northeast corner of the parcel. The northern and western legs of this roundabout would comprise the Connector Road, which would link to SR 80 and the main entrance of the new LPOE. The southern leg of this roundabout would be the access roadway which will be utilized by GSA employees who would be traveling to the GSA employee gate located on the southeast corner of the parcel. The eastern leg would consist of a turnout that could be improved once the area is further developed in the future.

The second roundabout would be located at the main entrance which will be utilized by commercial vehicles who are entering and exiting the port. The southern leg of the roundabout would connect to the main entrance of the port. The eastern leg of roundabout would connect to the first roundabout located on the northeast corner of the parcel. The western leg of the roundabout would include a turnout that be developed in the future. There would be no northern leg to avoid further impacts to the South Wash.

These two roundabouts will initially be constructed as all-way stop-controlled t-intersections during the project’s opening year of 2028 with the interim phasing and will be improved to roundabouts during the construction of the ultimate phase of the project, which is anticipated to occur in 2044.

Refer to the plans included in the appendix of this report to review the proposed roundabouts and the interim t-intersections in greater detail.

Lastly, the GSA extension roadway will intersect with International Blvd. This intersection and its approaches are anticipated to only be used by federal officials who will use this roadway to monitor activities along the international border.

4.9 Utilities

Site visits, as-builts and survey data confirm the presence of existing utilities within the Preferred Alternative alignment. These utilities include Arizona Public Service (APS) power lines, water and wastewater lines owned by the City of Douglas, and Cox and Comcast cable and broadband lines. All existing utility lines will be evaluated for conflicts and coordination to address any conflicts will occur during the final design phase of this project.

In addition to existing utilities, the City of Douglas and Cochise County have plans for a utility corridor to provide utility service to the commercial LPOE and to the planned future industrial and warehousing development. The plans include water, wastewater and broadband utilities. These plans will be finalized and incorporated into the final design plans of the Preferred Alternative. Additionally, the existing power lines will need to be relocated and upgraded in order to be able to power the new LPOE facility.

Utility survey (designation) and potholing will be required during final design to ensure existing overhead and underground utilities within the project area are properly located and identified. In the event of horizontal or vertical conflicts, design modifications or utility relocations may be used to resolve the conflict.

4.10 Structures

There are no proposed bridges along the Preferred Alignment. A noise analysis for the project is being conducted for this project. The results of the noise analysis and any recommendations, including any potential recommendations for sound barrier walls, will be included in the Environmental Assessment that is being completed.

4.11 Pavement Design

A summary of the recommended structural pavement section for this project is shown in Table 4-6 below. The pavement section for the proposed Connector Roadway shown in Figure 4-4.

Table 4-6: Structural Pavement Section

Pavement Section Location	AB Class 2 (inches)	AC (3/4”) EP Special Mix (inches)	Friction Course (inches)	Total Thickness (inches)
Project Alignment	8	12 ½	½	21

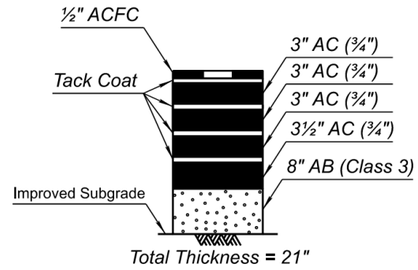

Figure 4-4: Connector Road Pavement Section

The preliminary recommended pavement section shown in Figure 4-4 was based on the design R-value, estimated traffic information, and the pavement design procedures outlined in the ADOT Pavement Design Manual dated September 29, 2017. A design R-value of 20 was utilized in the analysis of the new pavement section with a seasonal variation factor of 1.9 for the Douglas Area, as shown in Table 2.4 of the Pavement Design Manual. Further information about the engineering analyses behind the recommendations for the proposed pavement sections can be found in the Preliminary Pavement Design Summary completed for this project and attached in the appendices.

The portion of the GSA extension roadway that begins at James Ranch Road and International Blvd and ends at the southern boundary of the LPOE will have a reduced structural section. This portion of roadway is not intended for public access and therefore will not require the heavier section which was designed to accommodate the heavy commercial truck traffic that will occur along the main connector roadway. The pavement section for this roadway segment is shown in Figure 4-5.

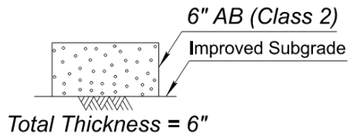

Figure 4-5: GSA Extension from International Blvd to LPOE Pavement Section

4.12 Design Exceptions

There are no design exceptions currently anticipated with the design of the Preferred Alternative.

4.13 Construction Phasing

Most of the construction of the Recommended Alternative will be completed on land that is currently undeveloped. Right-of-Way will be acquired for the Recommended Alternative, in addition to drainage easements and temporary easements needed to construct the

recommended improvements. At the time of this report, only three properties within the study area have dwellings, but one of the properties appears to be abandoned. Access to any inhabited properties to remain within the improvement area will need to be maintained throughout construction.

Due to the estimated project costs, a phased construction approach is recommended. Phased improvements include constructing a two-lane divided connector roadway and depending upon funding separating the SR 80 improvements from the Connector Roadway Project. The Ultimate improvements consisting of a four-lane divided connector roadway would be constructed based on traffic demand and the need to provide a level-of-service (LOS) D.

4.13.1 SR 80 Improvements

Any work completed on SR 80 will be managed through detailed traffic control plans and by procedures and guidelines specified in the Manual of Uniform Traffic Control Devices (MUTCD). Any SR 80 work will be phased to allow for traffic to be shifted to maintain one lane of eastbound and westbound traffic throughout the construction process. Access to properties along SR 80 will be maintained at all times. The final construction phasing and traffic control plans will be developed during final design.

4.13.2 Connector Roadway – Interim Condition

Due to the high cost of the proposed project, an interim condition is being considered to connect the new Commercial LPOE with SR 80 for the project's opening year of 2028. If the determination is made that the construction of this alternative will be phased and the Interim Condition is built, the typical section of the Interim Condition would be a two-lane divided roadway with shoulders on both sides. Additionally, the two roundabouts described in Section 4.6 would be constructed as t-intersections in the Interim Condition. Plan and profile of the proposed Interim improvements is included in Appendix B of this report.

4.13.3 Connector Roadway – Ultimate Condition

It is anticipated that the Interim Condition of the Connector Roadway will provide a LOS D or better until approximately 80 percent of the traffic from the proposed surrounding developments is realized, at which point it is recommended that Connector Roadway is improved to the Ultimate Condition consisting of a four-lane divided roadway with a raised median and shoulders. Based on an interpolation of the projected volumes between the opening year and horizon years, it is currently estimated that the ultimate improvements will be required in year 2044. Plan and profile of the proposed ultimate improvements is included in Appendix A of this report.

4.14 Funding

Cochise County obtained a $5 Million Dollar AZ Smart Grant on April 19, 2024 with the intention to help fund the Final Design of this project with those monies.

5. ITEMIZED COST ESTIMATE

The estimated project cost for the Preferred Alternative is $48,950,419 excluding the cost of acquisition of right-of-way and easements.

Table 5-1: Cost Estimate

Alternative Cost Comparison Matrix (Preliminary Estimate)									
	Item Description	Unit	Unit Price	Alternative 1 James Ranch Road Alignment		Alternative 2 Quarter-Mile West of JRR Alignment		Alternative 3 Brooks Road Alignment	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
2020009	Removal of Structural Concrete	CU.YD	$600	498	$298,800	498	$298,800	182	$109,417
2020020	Removal of Concrete Curb	L.FT.	$10	5,212	$52,120	5,212	$52,120	6,087	$60,870
2020036	Removal of Asphaltic Concrete Pavement (SY)	SQ.YD.	$10	52,435	$524,350	52,435	$524,350	52,435	$524,350
2030401	Drainage Excavation	CU.YD	$50	56,000	$2,800,000	58,500	$2,925,000	51,300	$2,565,000
2030900	Borrow (	CU.YD	$30	118,800	$3,564,000	175,000	$5,250,000	246,952	$7,408,560
3030002	Aggregate Base, Class 2	CU.YD	$60	270	$16,200	270	$16,200	270	$16,200
3030023	Aggregate Base, Class 3	CU.YD	$60	35,559	$2,133,540	38,105	$2,286,300	46,450	$2,787,000
4040002	Asphalt Cement	TON	$600	5,305	$3,183,000	5,668	$3,400,800	6,894	$4,136,400
4040111	Bituminous Tack Coat	TON	$700	136	$95,200	146	$102,200	176	$123,200
4040425	Mineral Admixture	TON	$90	996	$89,640	1,064	$95,760	1,294	$116,460
4070001	Asphaltic Concrete Friction Course	TON	$100	4,168	$416,800	4,454	$445,400	5,417	$541,700
4160002	Asphaltic Concrete (3/4" Mix) (End Product)	TON	$55	100,665	$5,536,575	107,552	$5,915,360	130,811	$7,194,605
5010025	Pipe, Corrugated Metal, 36"	L.FT.	$860	0	$0	532	$457,520	0	$0
5014036	Flared End Section, 36" (C-13.25)	EACH	$1,720	0	$0	8	$13,760	0	$0
6010002	Box Culvert Structural Concrete (Class S) (F'C = 3,000)	CU.YD	$400	6,828	$2,731,200	8,361	$3,344,400	7,020	$2,808,000
6050002	Box Culvert Reinforcing Steel	LB.	$2	981,696	$1,963,392	1,201,803	$2,403,606	1,002,583	$2,005,166
8030100	Decomposed Granite	CU.YD	$150	1,226	$183,900	1,226	$183,900	1,226	$183,900
9020003	Chain Link Fence, Type 1 (60”)	L.FT.	$30	18,703	$561,090	20,769	$623,070	37,868	$1,136,040
9080001	Concrete Curb (C-05.10) (Type A)	L.FT.	$25	22,202	$555,050	22,851	$571,275	37,674	$941,850
9210012	Median Paving (4” Thick, Class ‘B’ Concrete)	SQ.YD.	$25	6,206	$155,150	7,640	$191,000	8,030	$200,750
9130001	Dumped Riprap (CY)	CU.YD	$300	1,400	$420,000	2,340	$702,000	2,600	$780,000
60111XX	Safety Rail	L.FT.	$100	833	$83,300	1,024	$102,400	1,077	$107,700
60600XX	Bridge Sign Structure (EA)	EACH	$200,000	4	$800,000	4	$800,000	4	$800,000
736XXXX	Lighting (EA)	EACH	$10,000	30	$300,000	35	$350,000	40	$400,000
733XXXX	Signals (EA)	EACH	$300,000	1	$300,000	2	$600,000	2	$600,000
	Subtotal				**$26,763,307**		**$31,655,221**		**$35,547,168**
	Misc. Items & Contingencies (@ 30%)				$8,109,992		$9,577,566		$10,745,150

Alternative Cost Comparison Matrix (Preliminary Estimate)									
	Item Description	Unit	Unit Price	Alternative 1 James Ranch Road Alignment		Alternative 2 Quarter-Mile West of JRR Alignment		Alternative 3 Brooks Road Alignment	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
	Subtotal				**$34,792,299**		**$41,151,787**		**$46,211,318**
	New ROW Acquisition (Acres)			40.4	$0	44.4	$0	61.6	$0
	New Drainage Easements (Acres)			90.0	$0	90.0	$0	90.0	$0
	Utility Relocations Estimated (L.Sum)			1	$500,000	1	$500,000	1	$500,000
	Subtotal				**$35,292,299**		**$41,651,787**		**$46,711,318**
	Design Fees (8%)				$2,823,384		$3,332,143		$3,736,905
	Const Eng + PD + Cont (20%)				$7,058,460		$8,330,357		$9,342,264
	ADOT ICAP (10.7%)				$3,776,276		$4,456,741		$4,998,111
	Total Estimated Cost				**$48,950,419**		**$57,771,029**		**$64,788,598**

Notes:

1. James Ranch Road consists of a 5-Lane Section (ADOT Typical Section IS1 - MODIFIED SHOULDER).
2. Pavement consists of 0.5-inch ACFC on 12.5-inches AC on 8-inches of ABC (21-inches total).
3. Assume City of Douglas & Cochise County will acquire the New ROW and New Drainage Easements (No ROW or Easement Costs are included in this estimate).
4. Assume City of Douglas and/or Cochise County will provide the Water & Sewer Utility Services to the LPOE.
5. Assume Gas, OHD Power, OHD Telephone, Fiber Conduit, and any other Utilities will be provided by others.
6. Assume Utility Costs by ADOT includes the installation of Signal(s), median Lighting, Sign Bridge Lighting, and potential Utility Relocation Costs.
7. Assume no landscaping (only seeding) will be provided within the ROW limits. Seeding Costs included in Contingency line item.

6. SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

The project limits are within unincorporated rural, mostly undeveloped area in southeastern Arizona. There are no commercial businesses within the project limits; there are three residences within or immediately adjacent to the project limits.

6.1 Environmental Justice

Following the distribution of the Draft EA, the Executive Order 12898 (Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations) was rescinded by Presidential Action on January 21, 2025.

6.2 Biological Resources

The Arizona Game and Fish Department's (AGFD) on-line tool was accessed to identify animal and plant species within the study limits that might be considered endangered or threatened species or species of particular concern. The results of this research indicated that no endangered animal or plant species are present in the project vicinity.

On December 28, 2023, the U.S. Fish and Wildlife Service (USFWS) provided a list of threatened and endangered species that may occur within the vicinity of the proposed POE connector road project. The list identified 10 threatened, endangered, or candidate species that may occur in the area, including:

- Jaguar (Panthera onca) – Endangered
- Northern Aplomado falcon (Falco femoralis septentrionalis) – Experimental nonessential population
- Southwestern willow flycatcher (Empidonax trailii extimus) – Endangered
- Yellow-billed cuckoo (Coccyzus americanus) – Threatened
- Northern Mexican garter snake (Thamnophis eques megalops) - Threatened
- Chiricahua leopard frog (Rana chiricahuensis) – Threatened
- Yaqui catfish (Ictalurus pricei) – Threatened
- Yaqui chub (Gila purpurea) – Endangered
- Monarch butterfly (Danaus plexippus) – Candidate
- Wright's marsh thistle (Cirsium wrightii) – Threatened

No critical or suitable habitat for these species is present in the project area. The construction footprint and surrounding ROW is not located in the range or suitable habitat for bald and/or golden eagles. The project is not located within the Potential Linkage Zones identified in the Arizona Wildlife Linkages Assessment (Arizona Wildlife Linkage Workgroup 2006).

The construction footprint and surrounding ROW were surveyed for the presence of noxious and invasive plants on April 10–12, 2023. No noxious and/or invasive plants were reported within the construction footprint and surrounding ROW.

6.3 Cultural Resources

During fieldwork, four new archaeological sites and seven isolated occurrences were discovered and recorded with three of the new sites (AZ FF:10:89[ASM], AZ FF:10:90[ASM], and AZ FF:10:91[ASM]) encountered during the initial April 2023 survey, and one additional site (AZ FF:10:92[ASM]) encountered during an additional survey in December 2023.

Environmental Consequences–Selected Alternative

Sites (AZ FF:10:89[ASM], AZ FF:10:90[ASM], AZ FF:10:91[ASM], and AZ FF:10:92[ASM]) were recommended as Not Eligible for inclusion in the NRHP. These sites are newly recorded, recent historic sites and consist primarily of aboveground features. Any subsurface cultural deposits are limited to post holes for fencing or utility or light fixtures. These sites require no further archaeological work.

A Class III report was prepared to document the field survey findings. ADOT's Historic Preservation Team recommended these sites as not eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 consultation with the State Historic Preservation Office (SHPO) was documented in an October 9, 2024 letter, which indicated the project would have no adverse effect on cultural resources in the Area of Potential Effect.

6.4 Air Quality

The Paul Spur/Douglas planning area, which encompasses the Douglas LPOE Connector Road study area, is currently in non-attainment for large particulates, otherwise known PM10. As an isolated rural non-attainment area, the Paul Spur/Douglas planning area is subject to a regional air quality conformity process. The planned Douglas LPOE Connector Road is classified as regionally significant and is not within a conforming Transportation Improvement Program (TIP).

An Interagency Consultation (IAC) Group was established to guide the development of the regional air quality conformance analysis process as well as the local project conformity. Agency representation in this group included:

- ADOT
- FHWA
- EPA

- ADEQ
- Southeastern Arizona Governments Organization
- City of Douglas
- Cochise County

Interagency consultation on the modeling planning assumptions required under 40 CFR 93.105(c)(1)(i) concluded on **October 10, 2024**. FHWA determined regional and local project conformity on **January 15, 2025**.

6.5 Noise

Land ownership within the study area is a mix of privately owned and government owned properties. The majority of the properties are currently undeveloped parcels, with dwellings located on three properties within the study area and along the north side of SR 80. Noise measurements were taken at residential properties along James Ranch Road and SR 80 for comparison with ADOT's noise abatement criteria. A noise barrier may be required on the north side of SR 80 for the Selected Alternative.

6.6 Hazardous Materials

Environmental database listings for the study area did not identify any violations, outstanding enforcement actions, or known hazardous releases. Field surveys of the study area observed pole-mounted transformers that showed no indications of spills or leaks from these transformers, such as stains, distressed vegetation, or unusual odors. No staining or labeling were observed at the empty above-ground storage tanks and empty drums. The debris piles and the empty above- ground storage tank and drums represent a Low Risk to the project. Above- and below-ground utilities, utility hubs, high-voltage transmission lines, a high-pressure natural gas line, stormwater culverts, and utility vaults were observed in the project area at the time of the field reconnaissance and represent a Low Risk to the project.

No hazardous materials or staining were observed within the project area. No pits, ponds, and/or lagoons were observed on or adjoining to the project area. Also, there was no evidence of underground storage tanks during the field reconnaissance.

Based on these results, elevated risks associated with this project were not identified. However, Prior to the acquisition of right-of-way, a Phase I Environmental Site Assessment will need to be completed for each property to be acquired.

6.7 Visual Resources

The intersection of Highway 80 and James Ranch Road lies in a wide, flat rangeland. The elevation of the project area is approximately 4,000 feet above mean sea level and is located within the Chihuahuan Desert. The study area is surrounded by mountain ranges that rise sharply above the desert floor and creates a dramatic backdrop that frames the wide valley.

The visual assessment methodology utilized for this study is based on a blend of the Bureau of Land Management's (BLM) Visual Resource Management (VRM) classification system (BLM Manual 8410) and the FHWA Guidelines for Visual Impact Assessment of Highway Projects. The BLM methodology focuses on the visual contrast of the proposed change on natural settings. The FHWA Guidelines serves as a framework for assessing roadways and their secondary and cumulative impacts.

6.8 Water Resources

Aerial photography and field observations were used to determine the potential presence of jurisdictional Waters within the footprint of the Selected Alternative and associated drainage easements. Overland flow originates from within Mexico and is oriented in a direction of southwest to northeast until encountering the International Border. Once across the International Border, the direction of overland flow is from west to east. There are no designated impaired waters in the study area and no wetlands were identified, as confirmed by the USFWS in February 2023..

A field reconnaissance was conducted during Spring 2023, and seven drainages were identified. An Approved Jurisdictional Delineation (AJD) for the Selected Alternative was submitted for the U.S. Army Corps of Engineers (Corps) review in February 2025. The Corps issued its determination on March 6, 2025 that Section 404 Waters of the U.S. are not present in the project area. Therefore, a Section 404 permit and Section 401 water quality certification are not required for this project.

The construction footprint is not within 1 mile upstream or ½ mile downstream of an impaired, not- attaining, or Outstanding Arizona Water (OAW) or on a tributary to an impaired water or OAW and within 1 mile of the impaired water or OAW (Arizona Department of Environmental Quality 2023).

Overland flow originates from within Mexico and is oriented, in general, in a direction of southwest to northeast until encountering the International Border. Once across the International Border, the direction of overland flow is from west to east. Based on review of the FIS1 and FIRM panel(s) available within Cochise County in February 2023, only one approximate floodplain zone (i.e., Zone A) occurs within the general study area limits. It is located north of SR 80 on the east and west sides of North Brooks Road and outside the project study area south of SR 80. The Cochise County Flood Control District noted that no locally adopted floodplains occur within the study limits.

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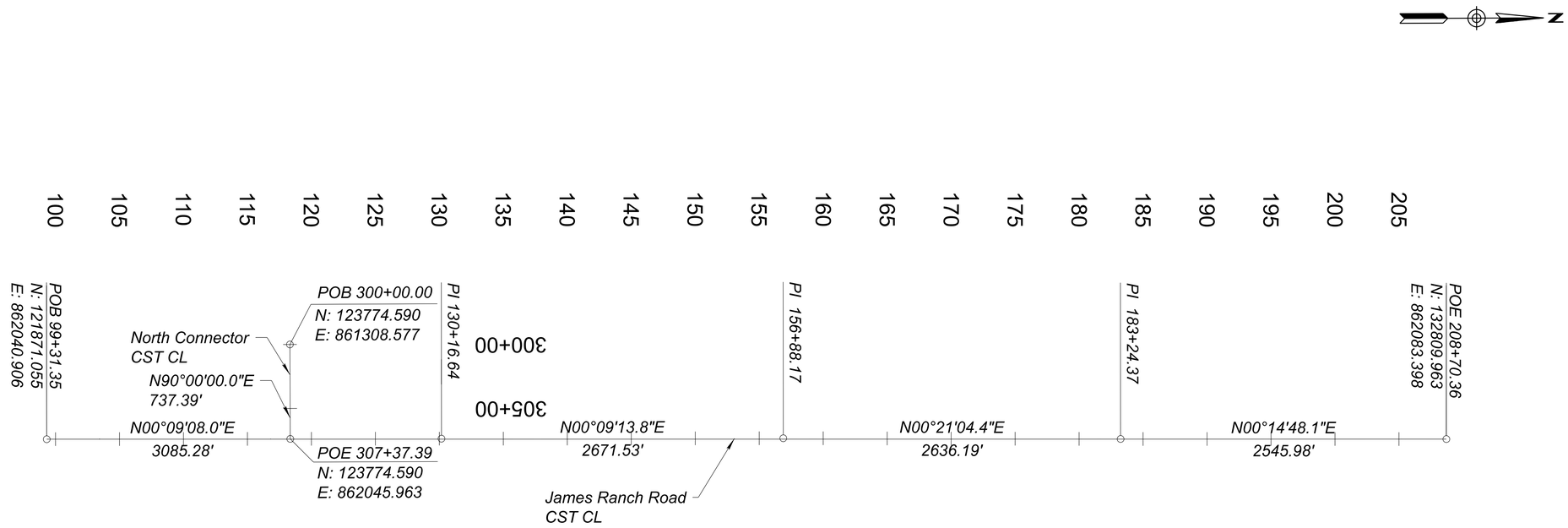
Appendix A – Plan and Profile of the Preferred Alternative (Alternative 1) – Ultimate Condition



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3333 East Frye Road, Suite 300
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC SHEET
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC PLAN
SR 80 ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

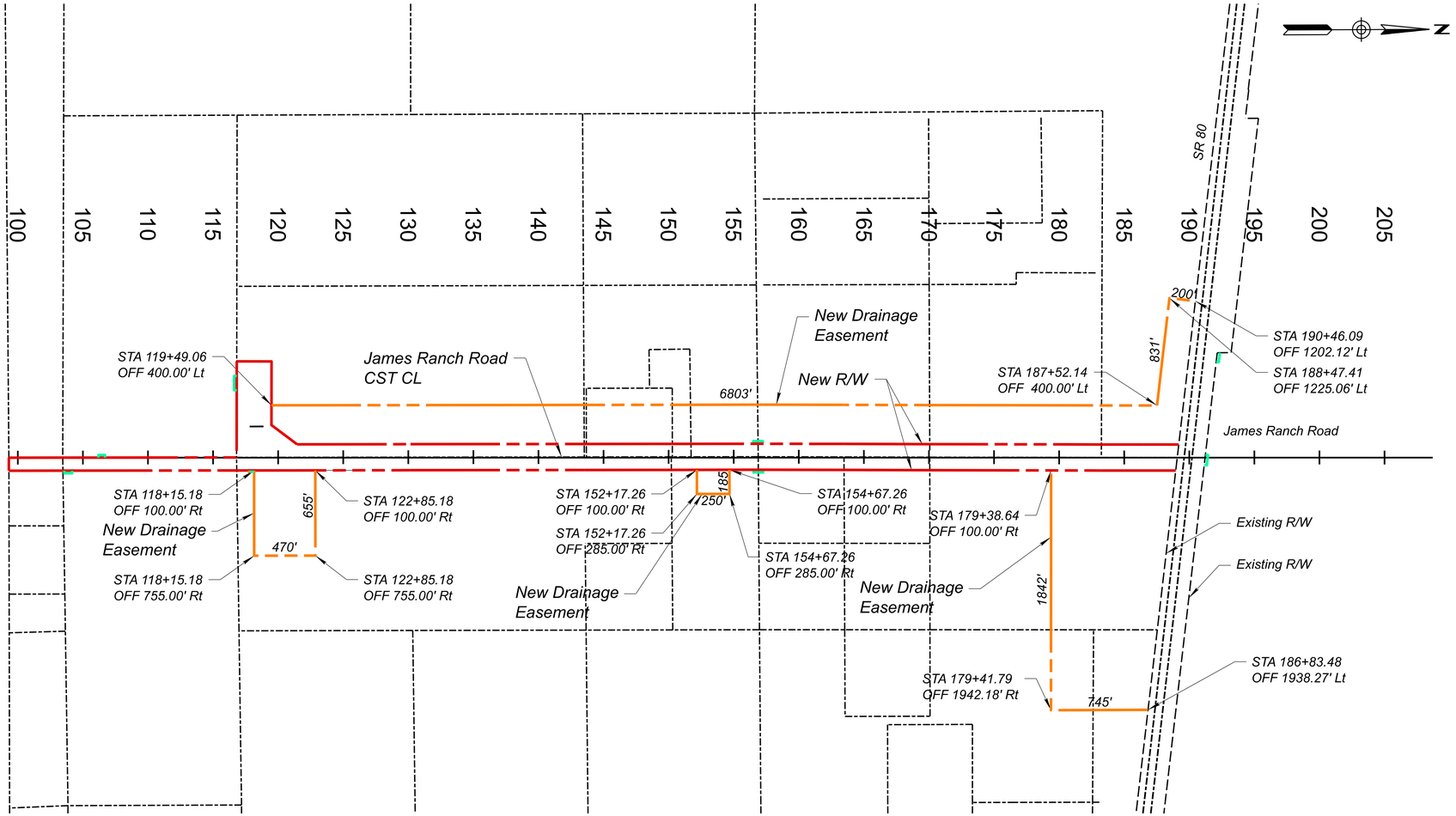
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	2	22	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET OF

TRACS NO. F0534 01L

____ OF____



PRELIMINARY
NOT FOR
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OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

DRAINAGE EASEMENT
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	3	22	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L

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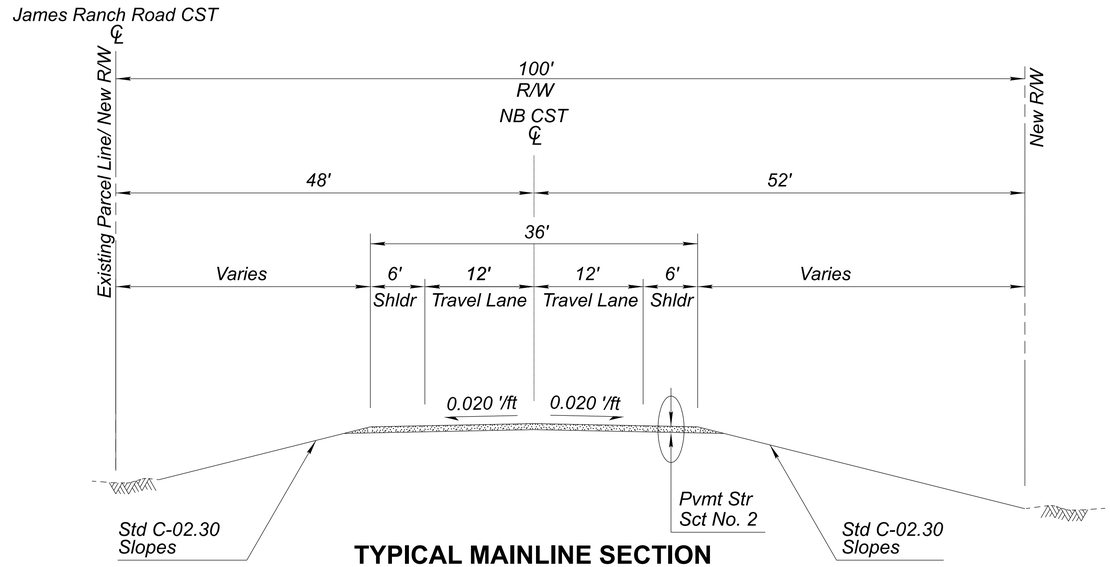
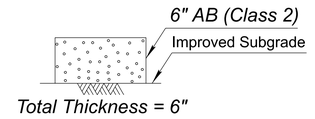


TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 99+80 to 103+71



SECTION NO. 2

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

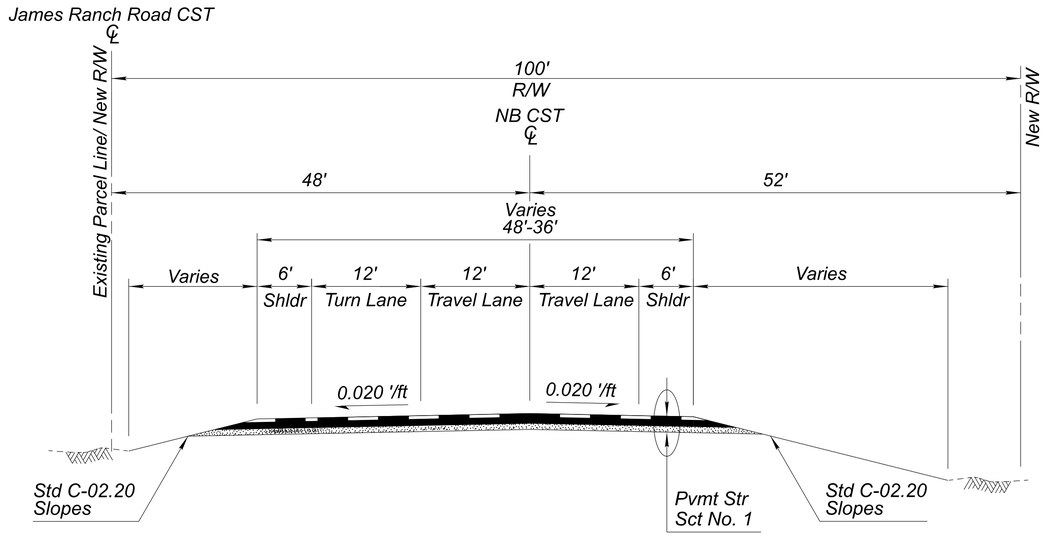
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	4	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

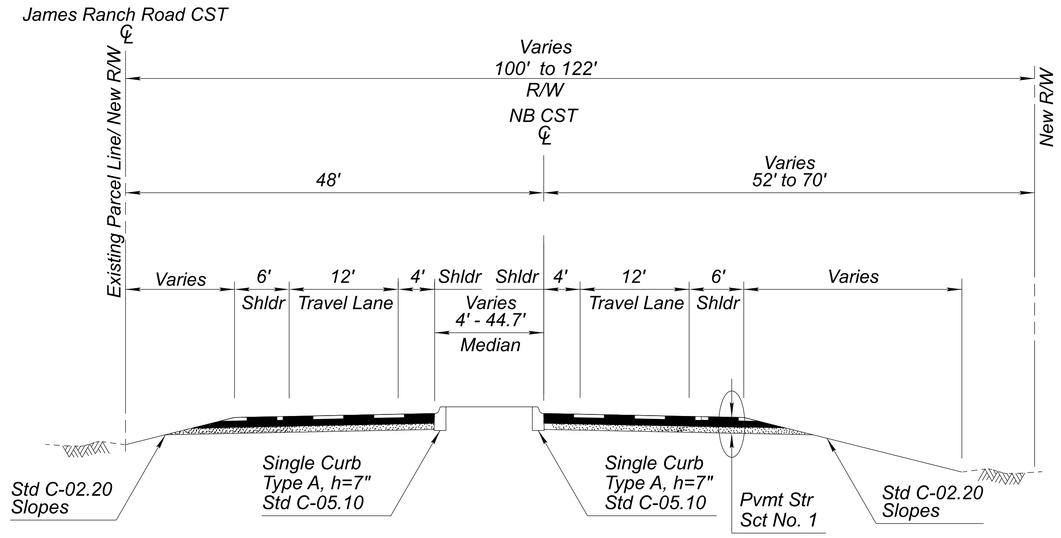
SHEET ____ OF ____

TRACS NO. F0534 01L



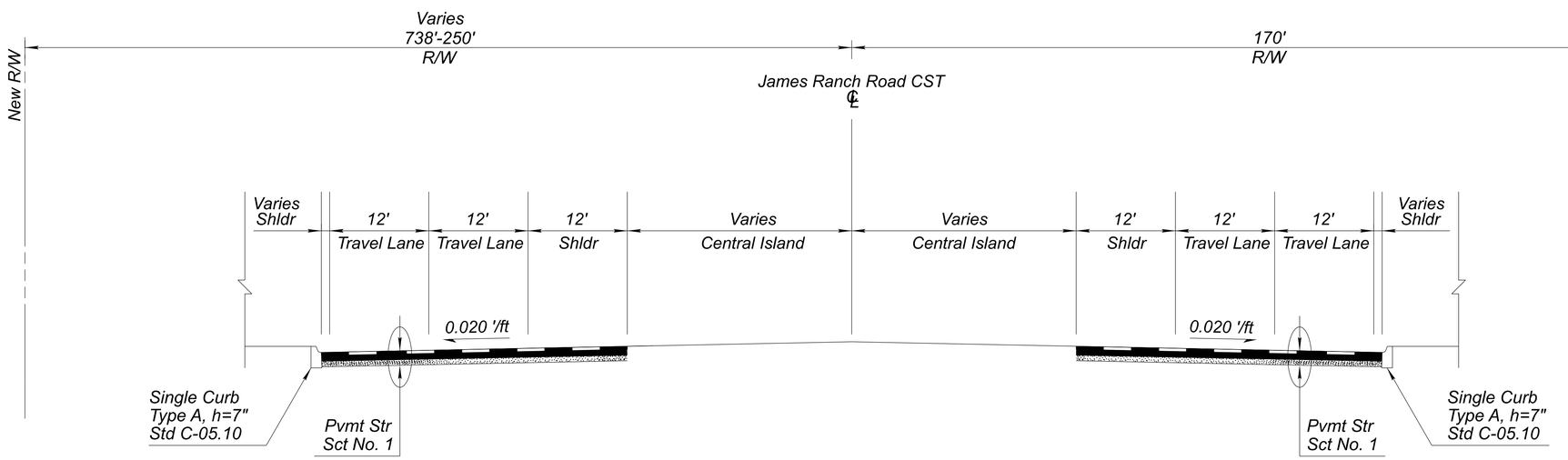
TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 103+71 to 114+31.53



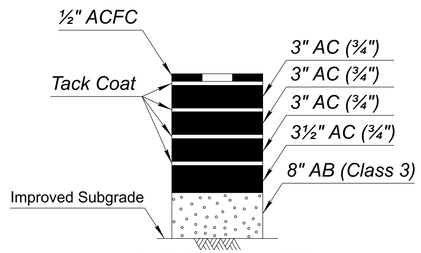
TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 114+31.53 to 117+42.33



TYPICAL ROUNDABOUT SECTION
JAMES RANCH ROAD

Sta 117+42.33 to 119+26.72



Total Thickness = 21"

SECTION NO. 1

PRELIMINARY
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OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
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INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

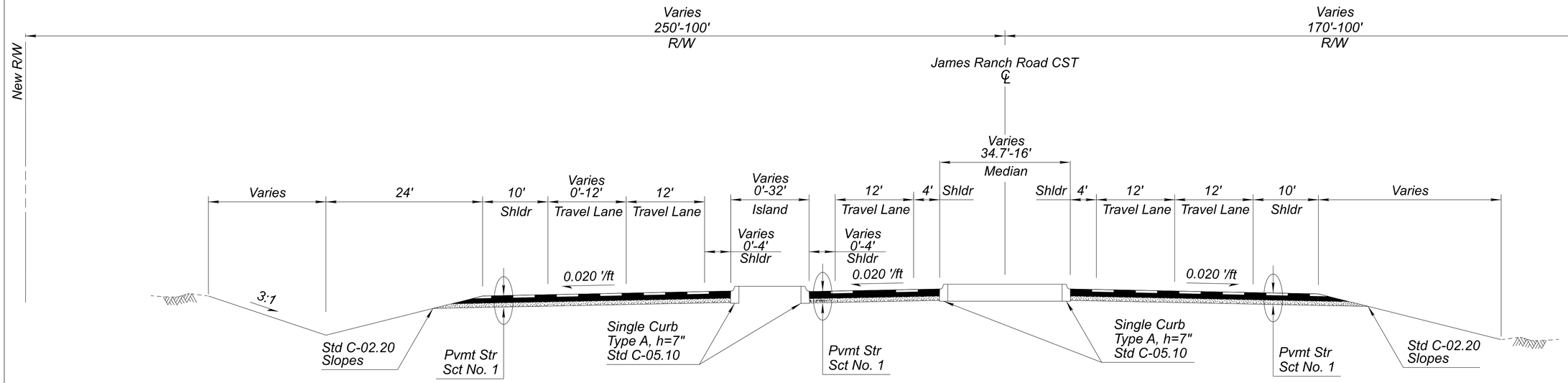
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	5	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

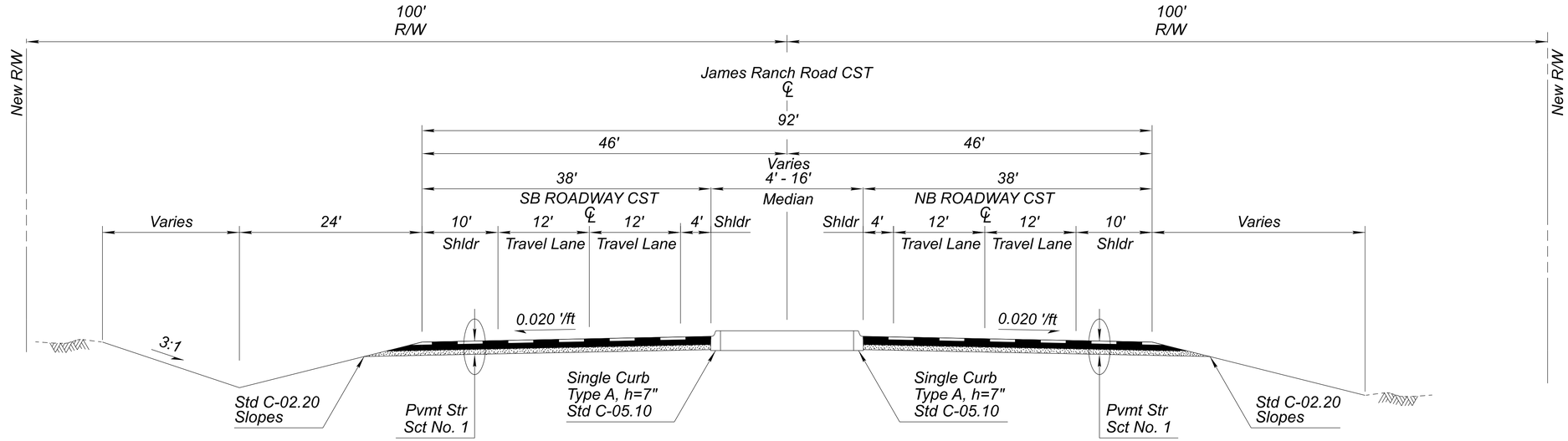
TRACS NO. F0534 01L

SHEET ____ OF ____



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 119+26.72 to 125+87.22



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 125+87.22 to 189+36.48

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

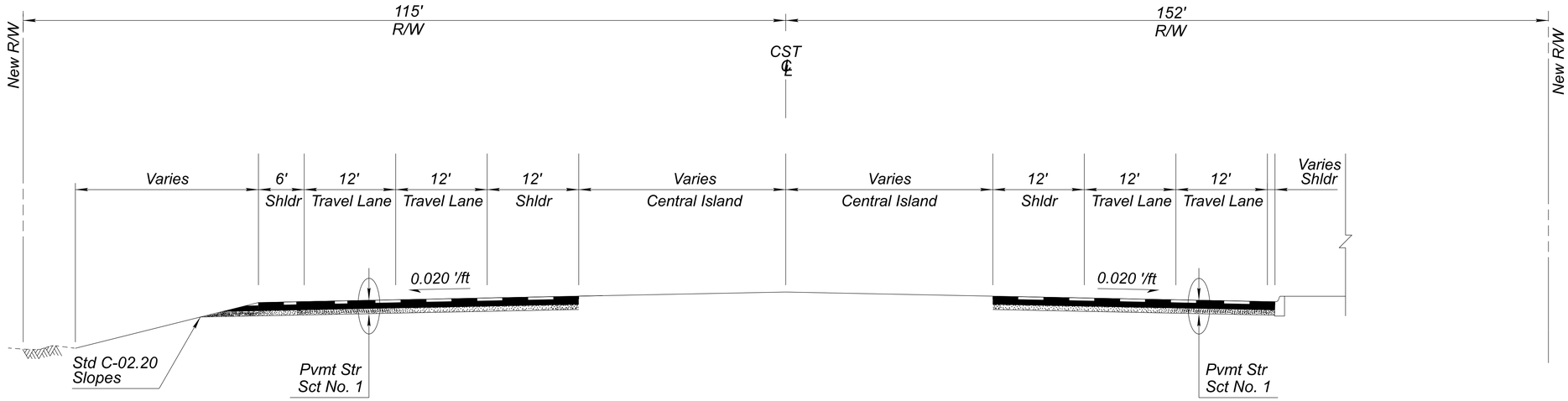
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	6	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

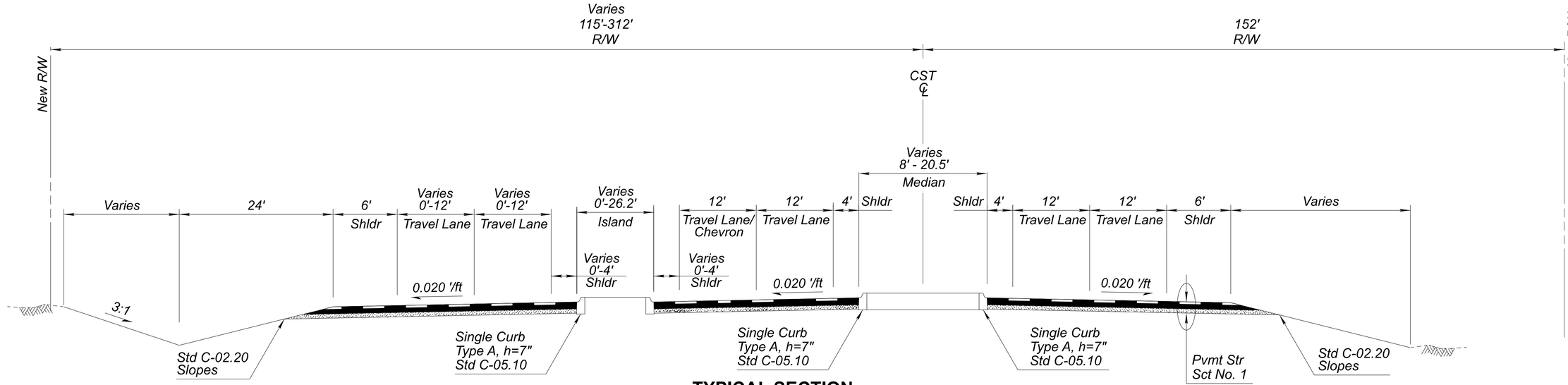
TRACS NO. F0534 01L

SHEET ____ OF ____



TYPICAL ROUNDABOUT SECTION
NORTH CONNECTOR ROAD

Sta 300+76.19 to 302+58.42



TYPICAL SECTION
NORTH CONNECTOR ROAD

Sta 302+58.42 to 306+46.42

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
NORTH CONNECTOR ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

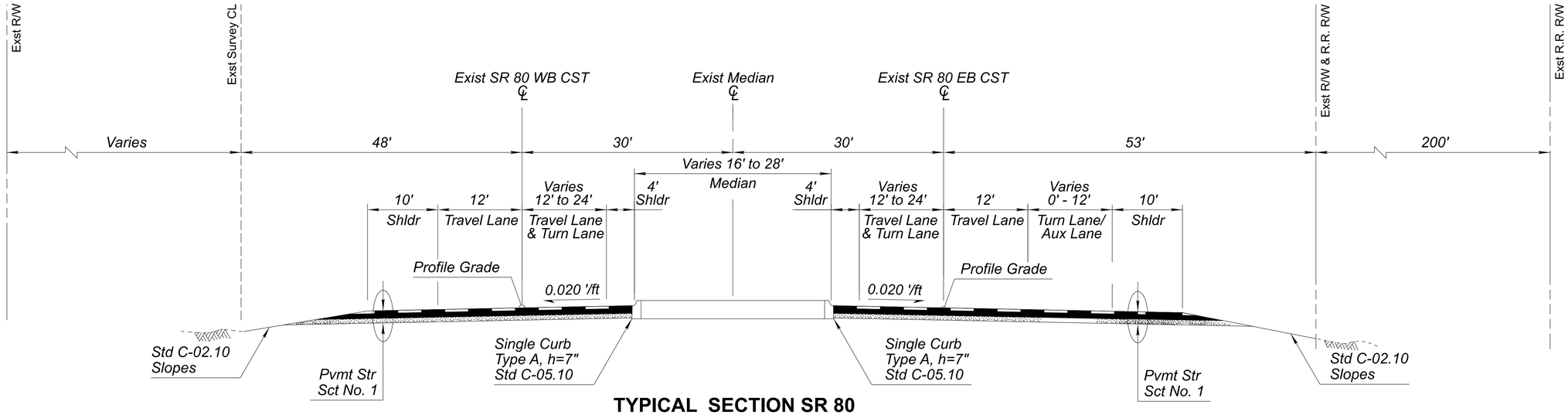
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	7	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET OF

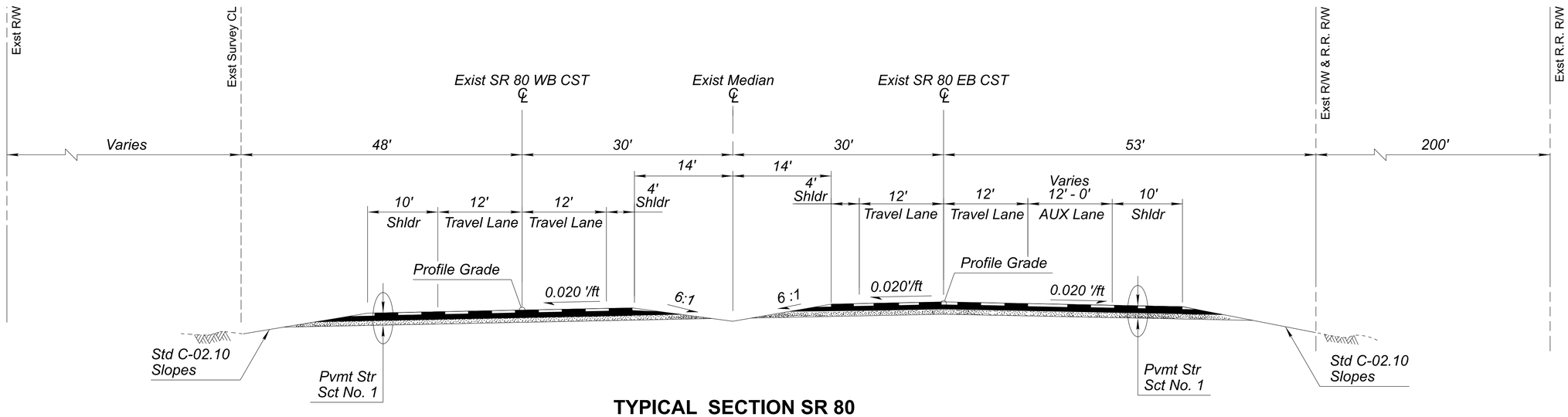
TRACS NO. F0534 01L

____ OF____



TYPICAL SECTION SR 80

Sta 882+14.71 to 916+41.30



TYPICAL SECTION SR 80

Sta 916+41.30 to 934+94.32

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
SR 80 ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

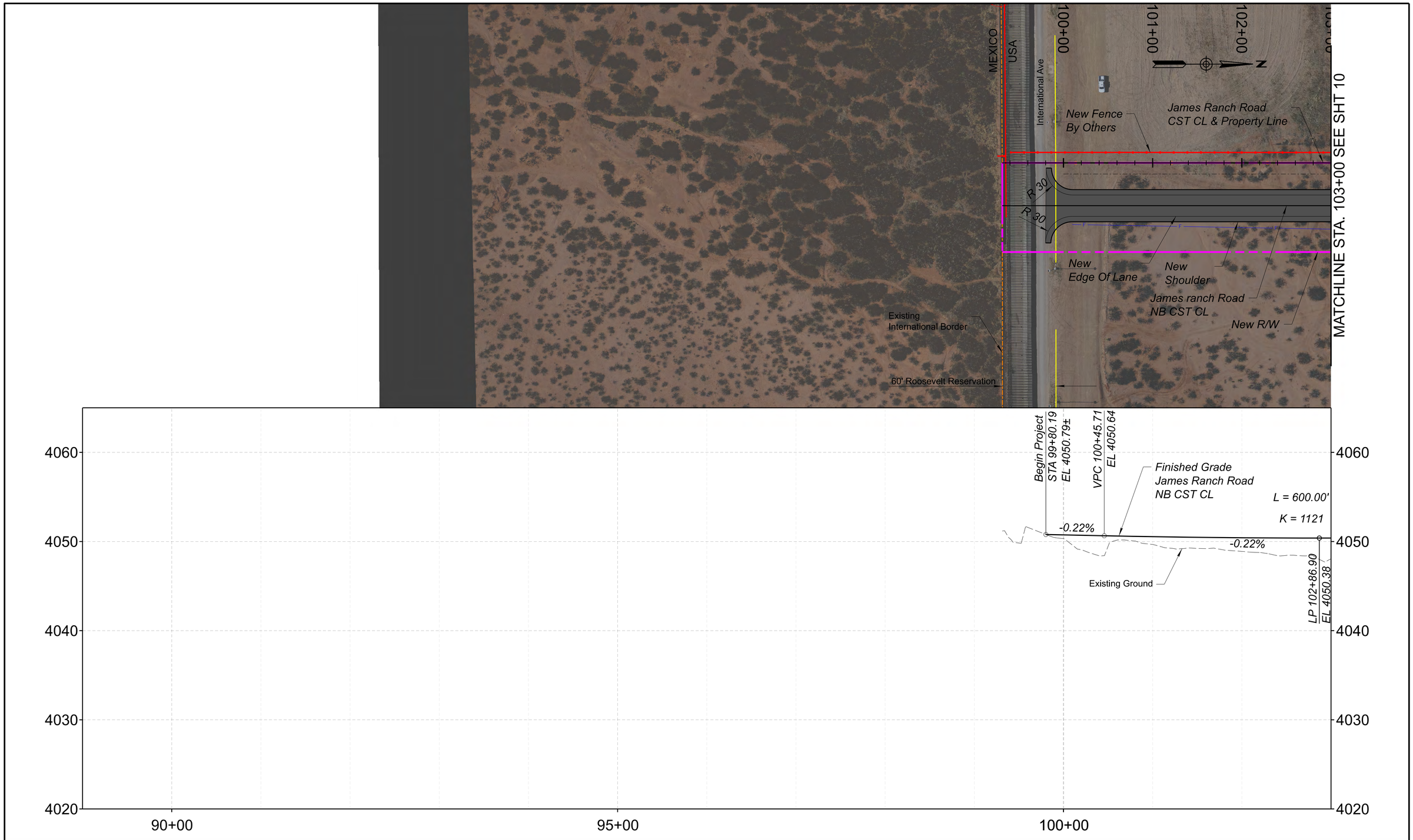
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	8	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA TO 99+80.19 TO 103+00

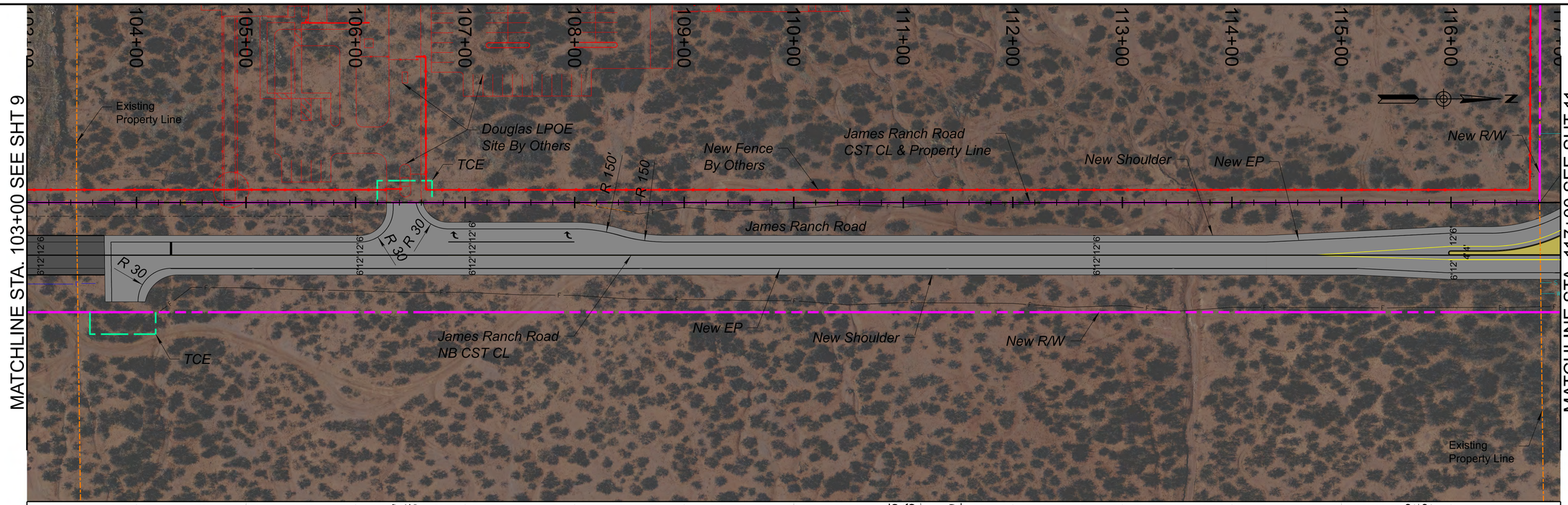
ROUTE
MILEPOST
STRUCTURE NO.

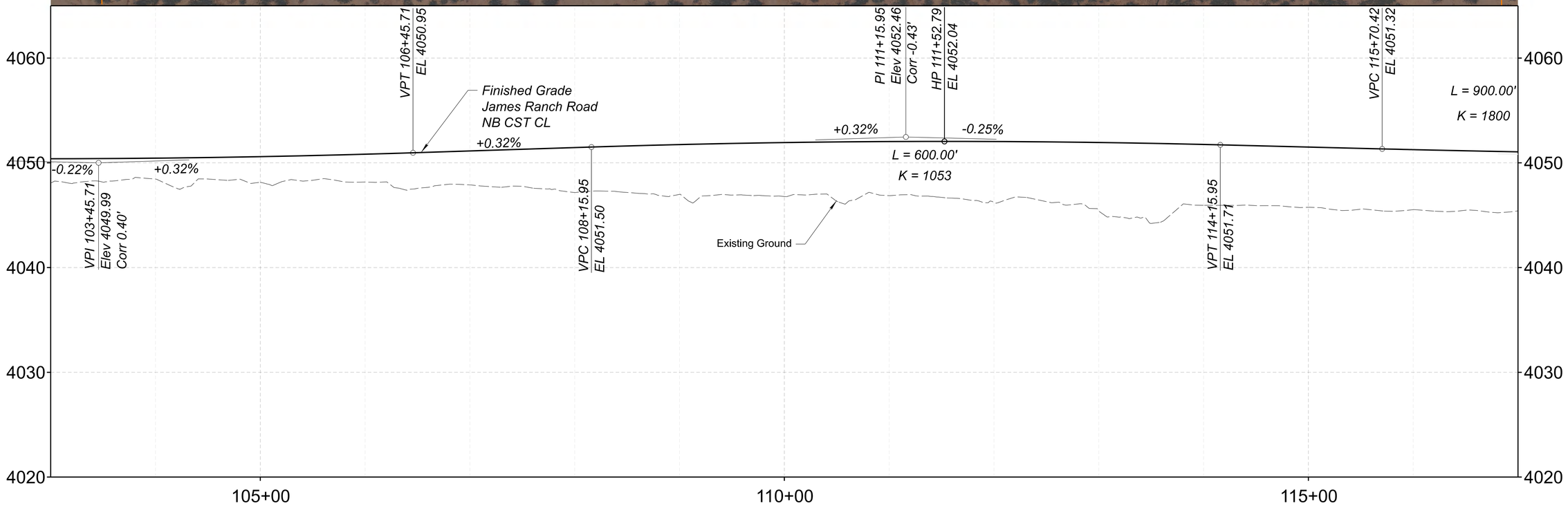
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	9	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 103+00 TO 117+00

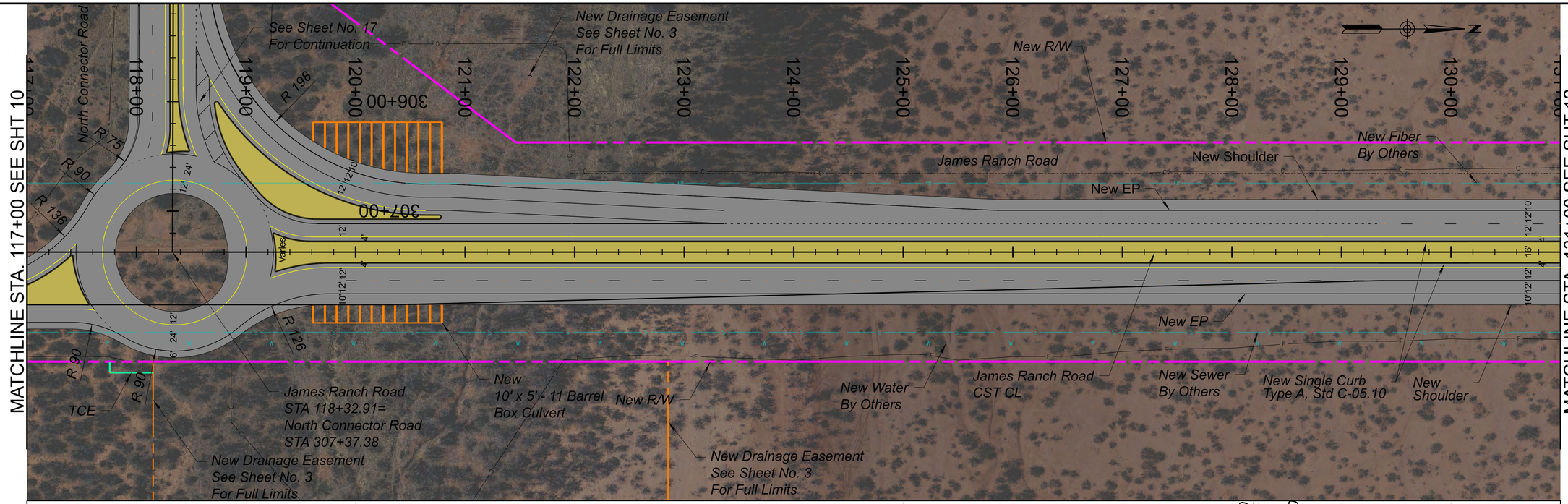
ROUTE
MILEPOST
STRUCTURE NO.

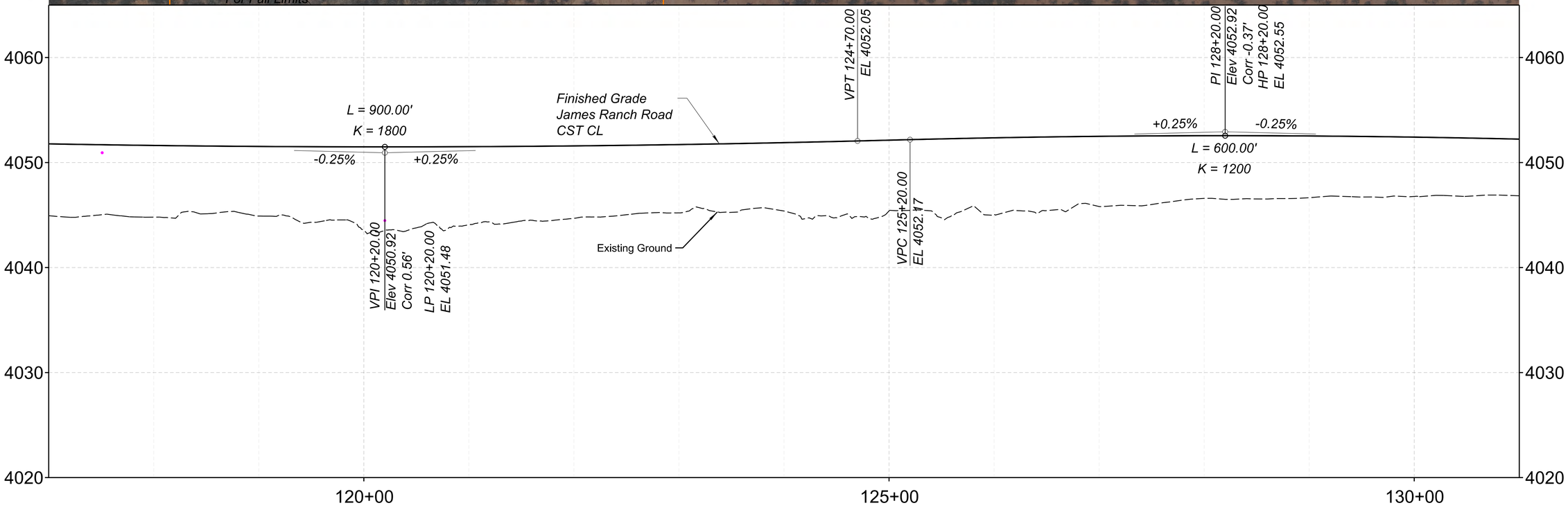
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	10	22	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
NOT FOR
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CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 117+00 TO 131+00

ROUTE
MILEPOST
STRUCTURE NO.

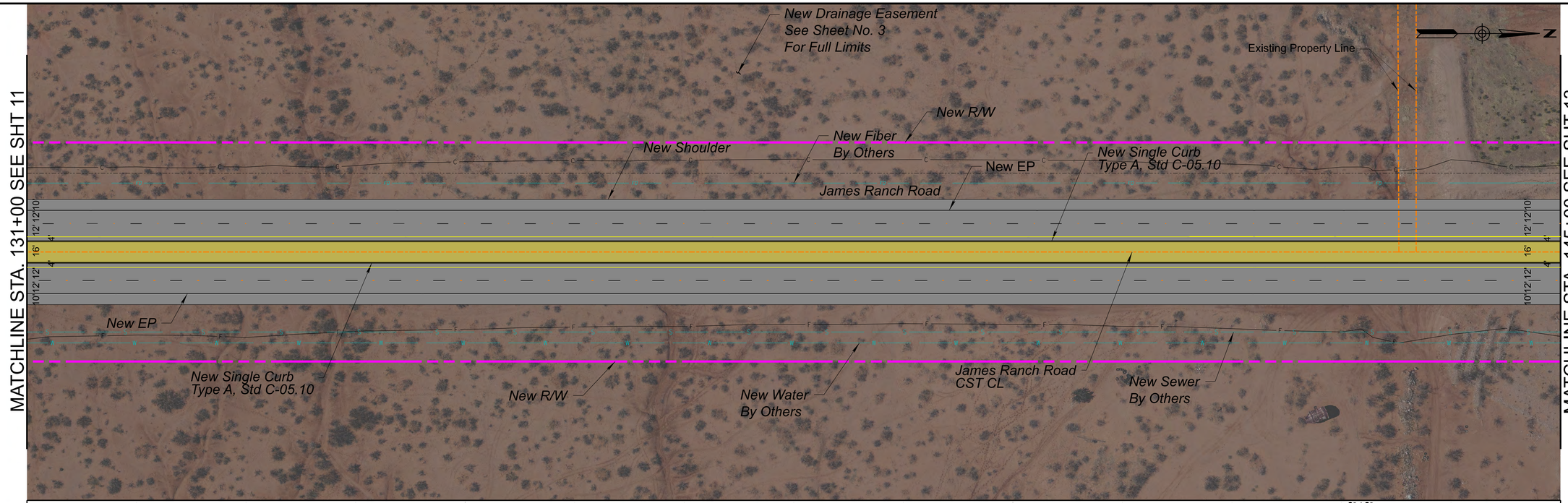
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	11	22	

LOCATION
CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____



PRELIMINARY
NOT FOR
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OR RECORDING

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CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 131+00 TO 145+00

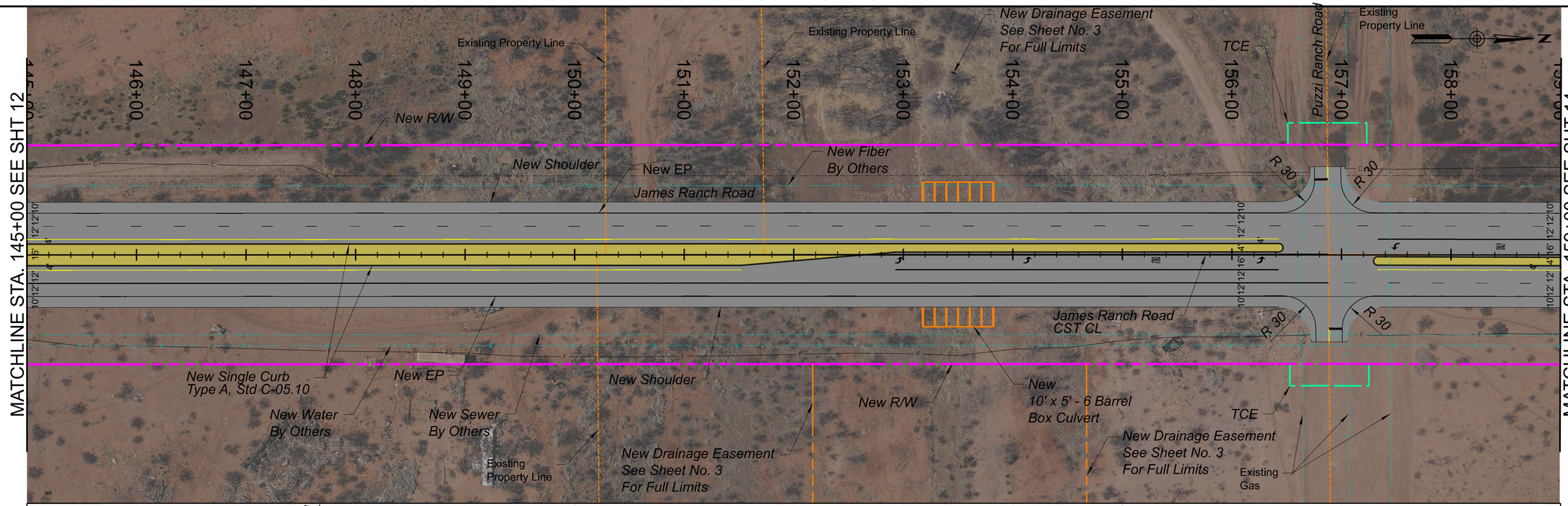
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	12	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____



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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 145+00 TO 159+00

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	13	22	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

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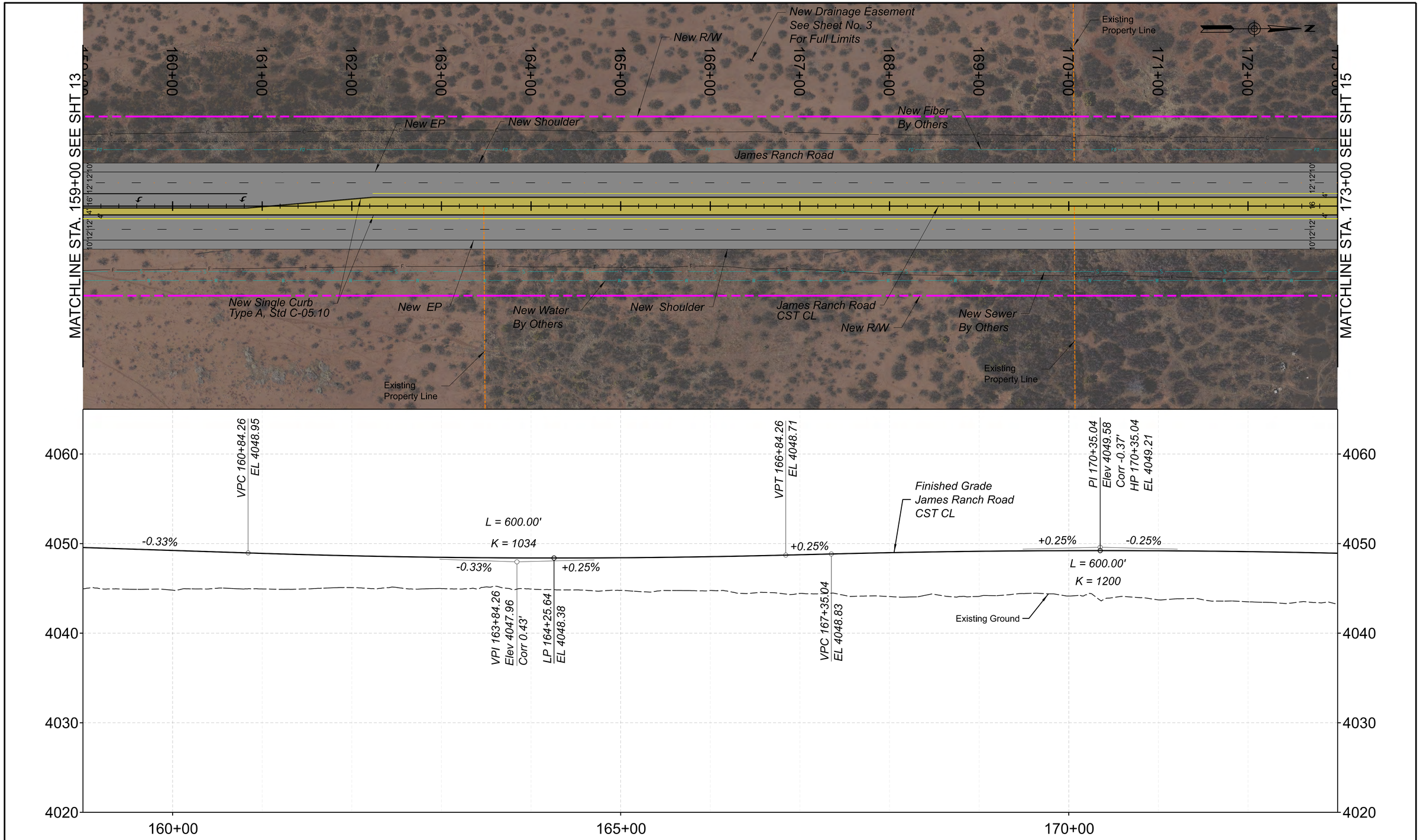

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 159+00 TO 173+00

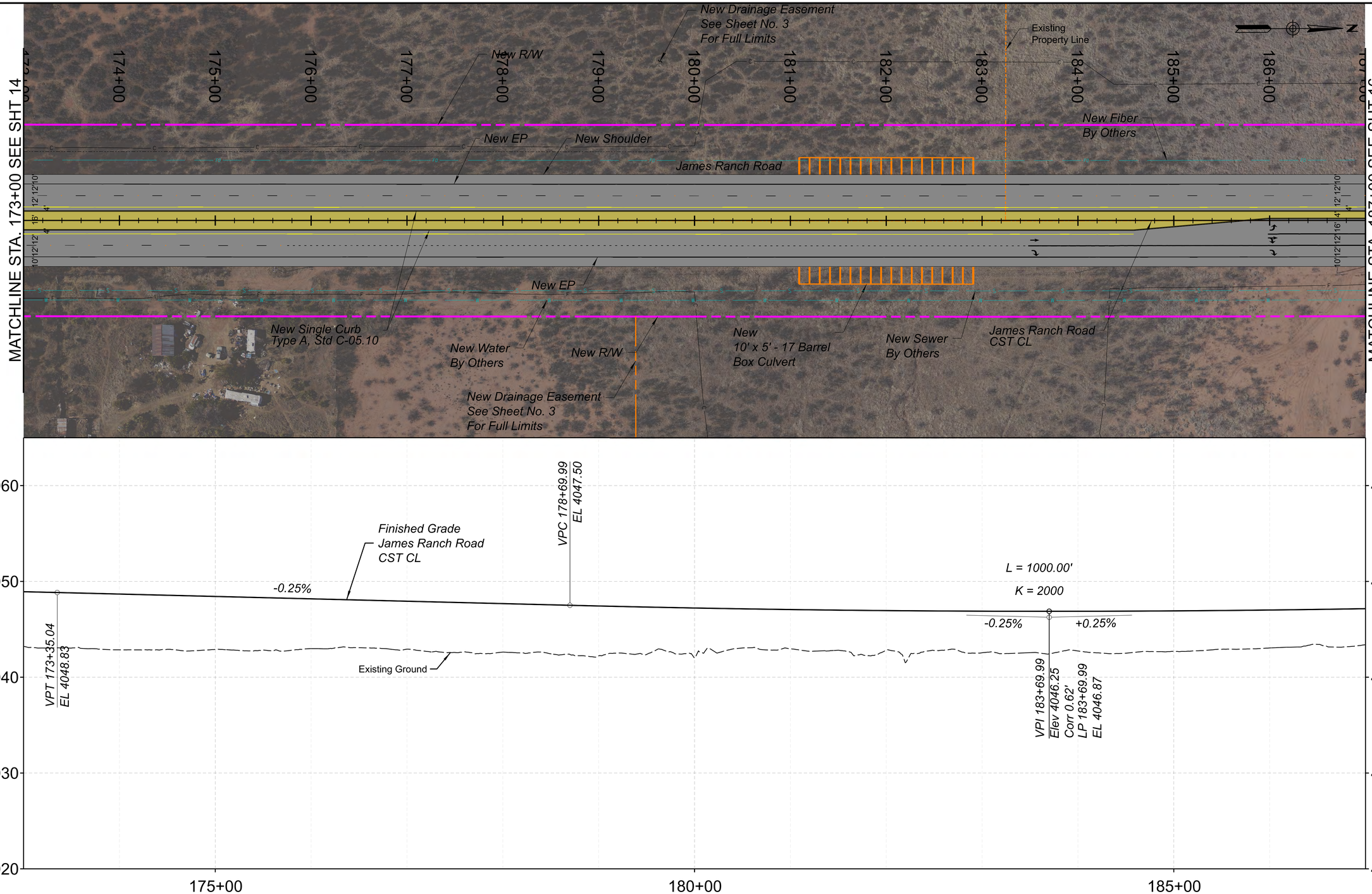
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	14	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



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Fx: (602) 436-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 173+00 TO 187+00

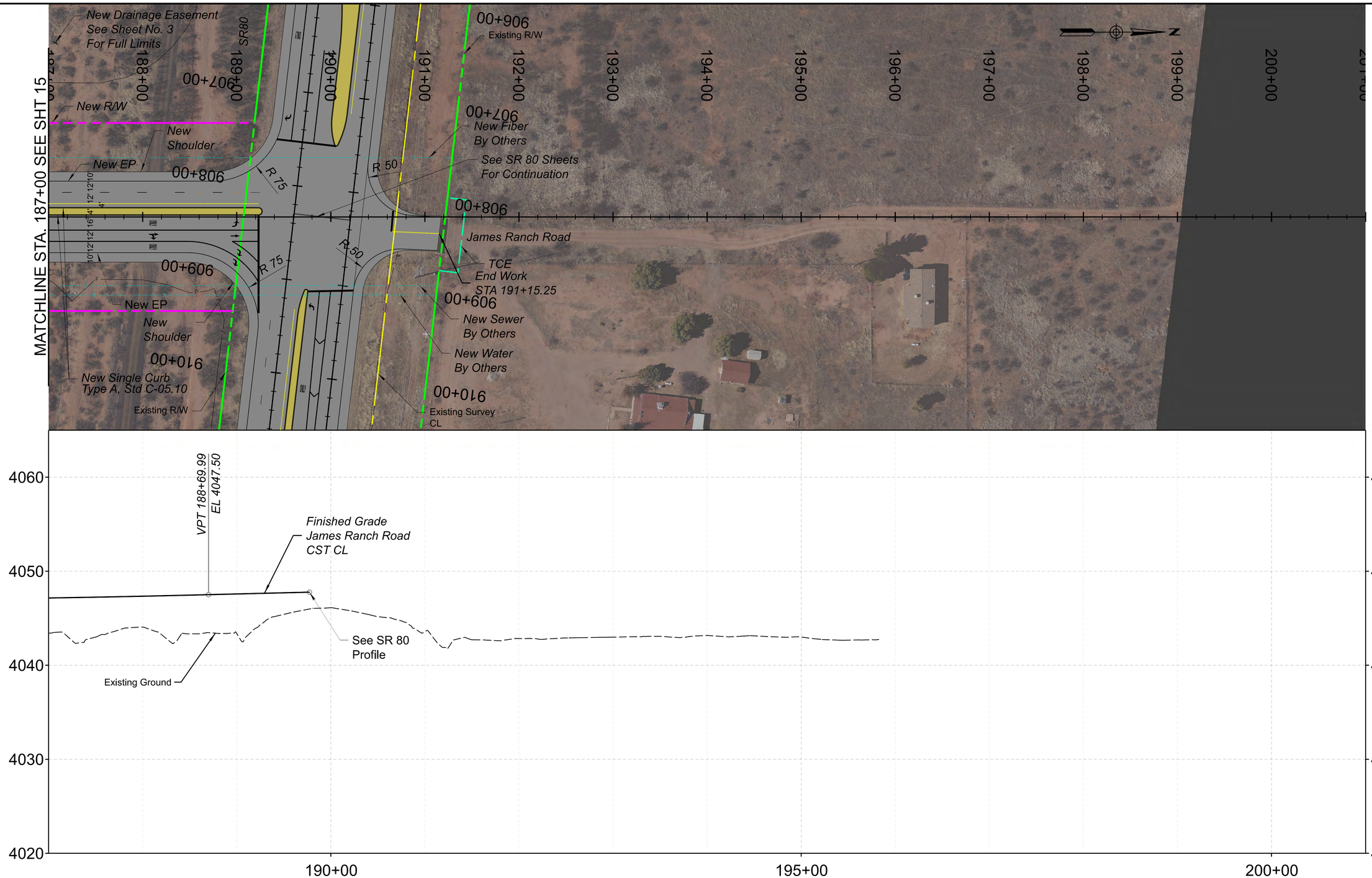
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	15	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
Ph: (480) 687-6000
Fx: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 187+00 TO 191+15.25

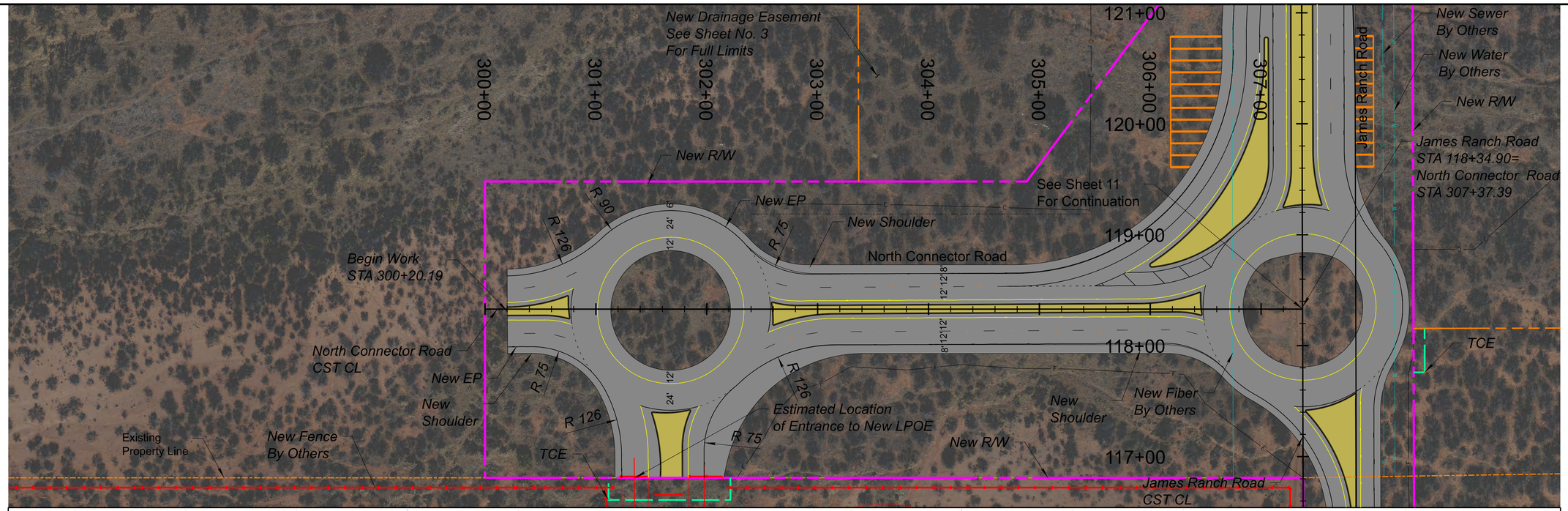
ROUTE
MILEPOST
STRUCTURE NO.

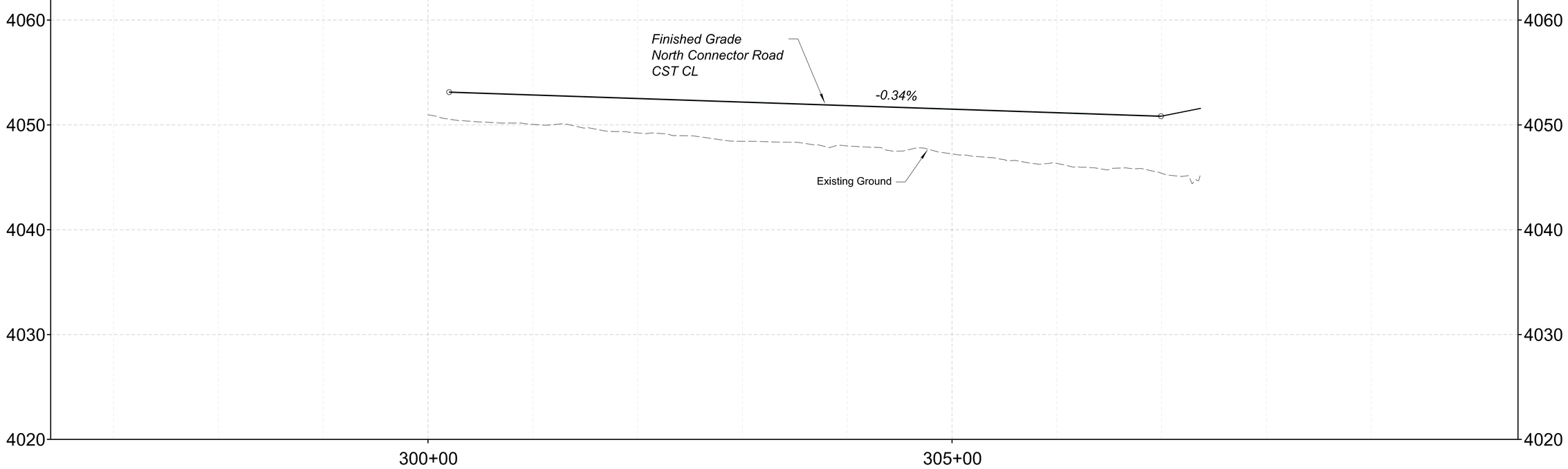
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	16	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L





PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING		
	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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3133 West Frye Road, Suite 300
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAND AND PROFILE SHEET
NORTH CONNECTOR ROAD ALTERNATIVE 1
STA 300+21.88 TO 307+69.13

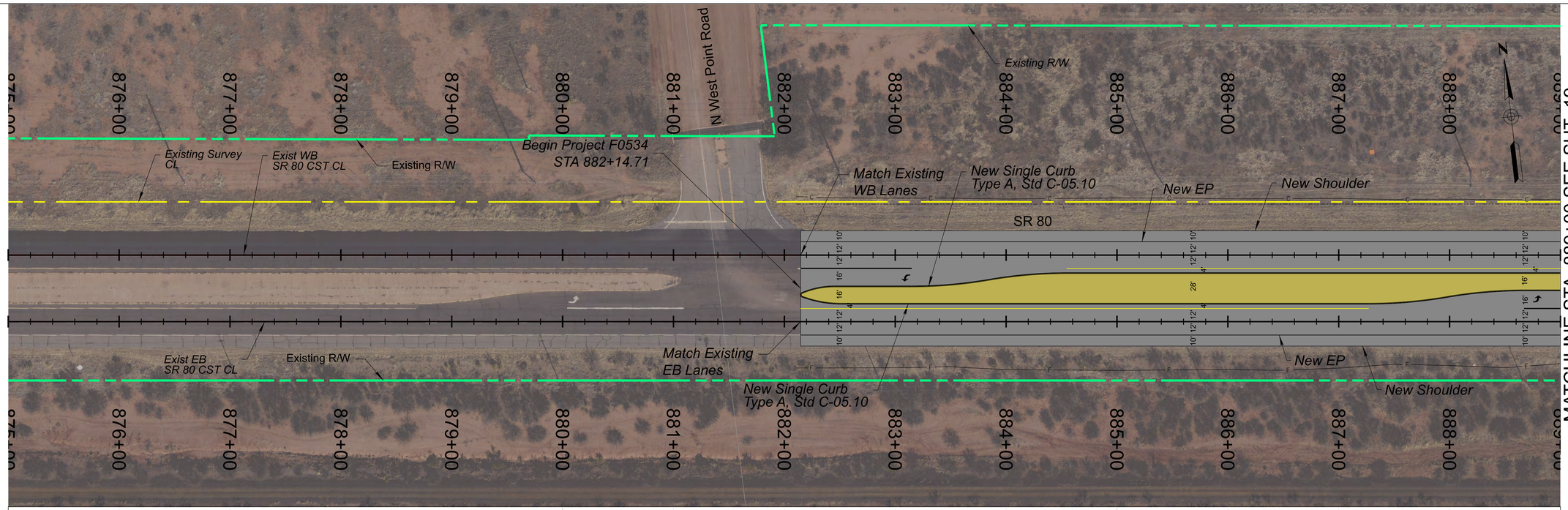
ROUTE
MILEPOST
STRUCTURE NO.

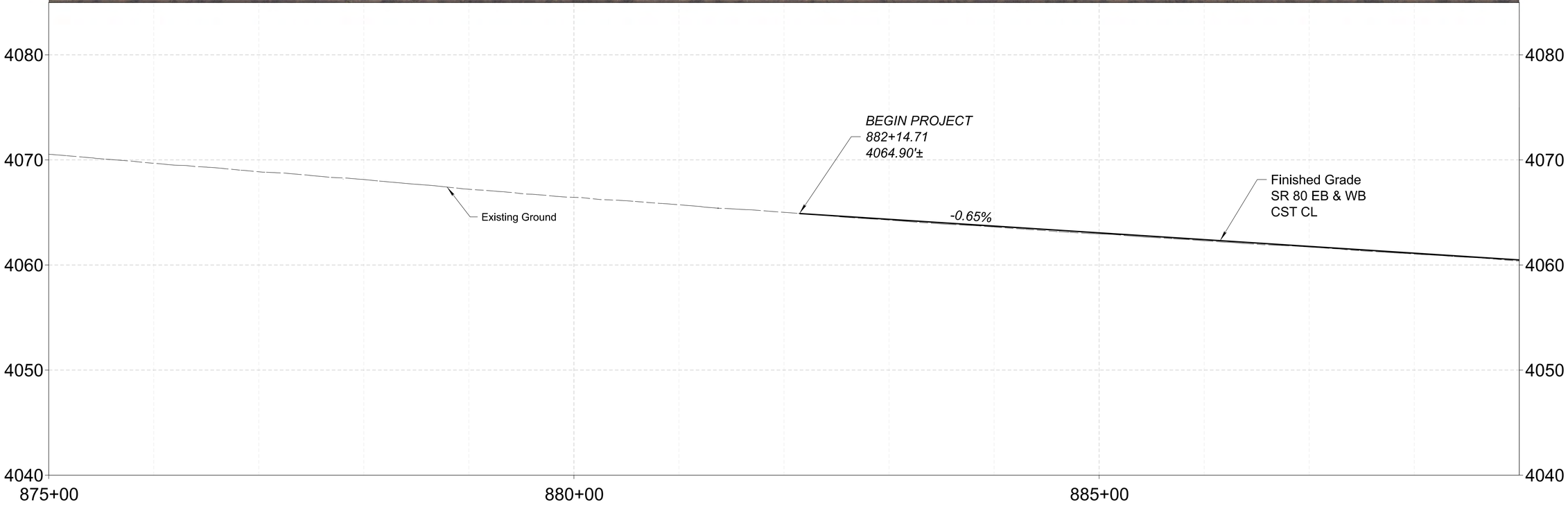
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	17	22	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 882+14.71 TO 889+00

ROUTE
MILEPOST
STRUCTURE NO.

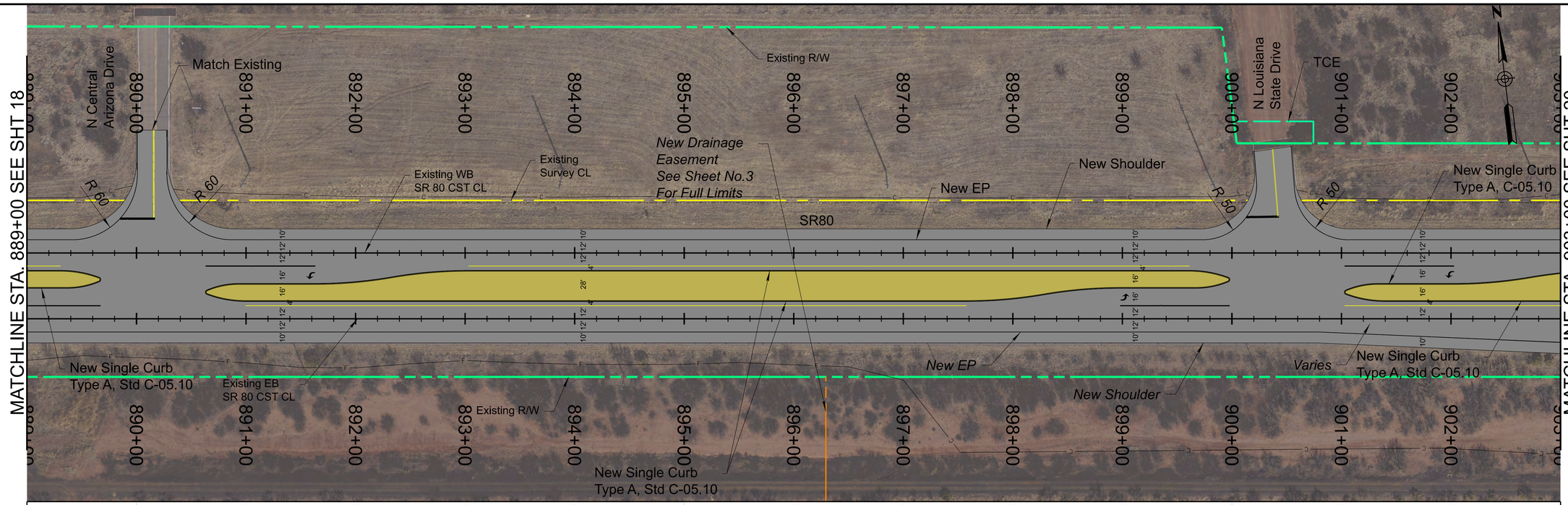
F.H.W.A. Arizona Division

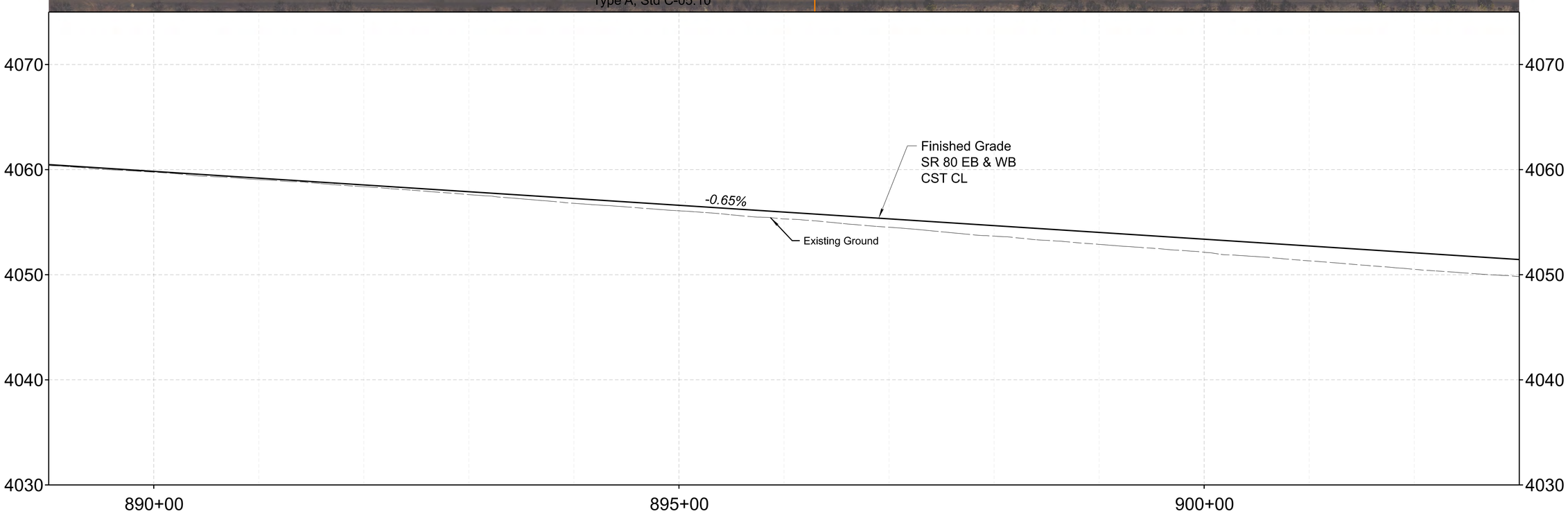
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	18	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





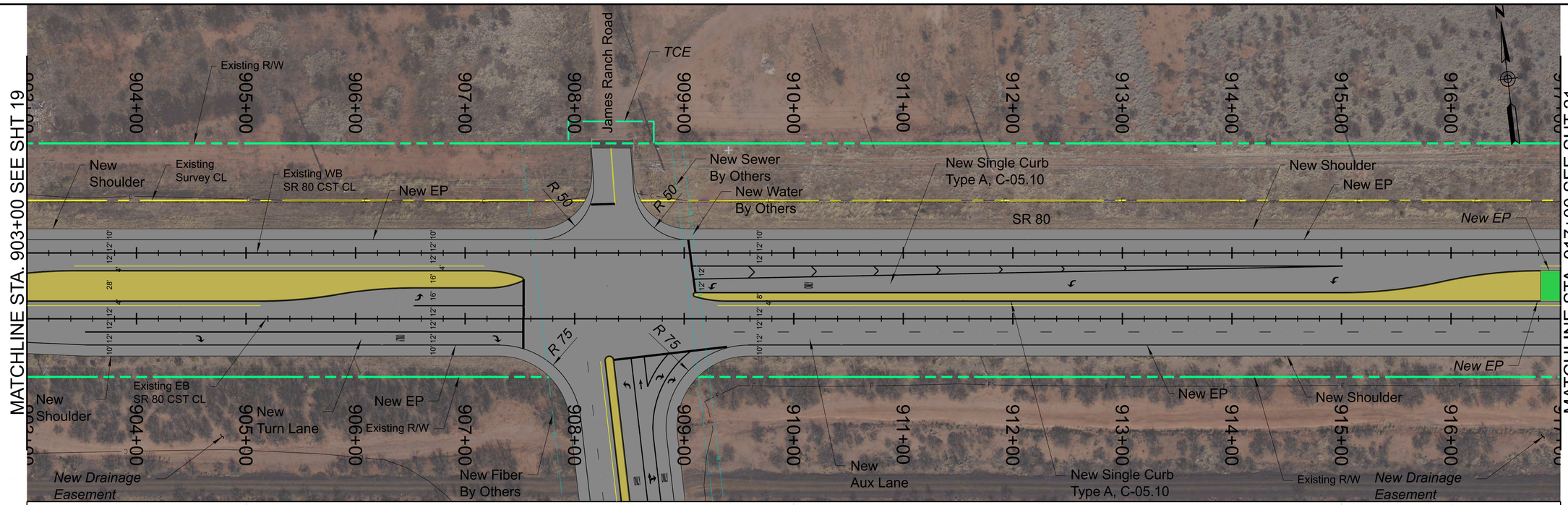
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING	NAME / DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP
	DESIGN M. HERNANDEZ 03/25 DRAWN M. HERNANDEZ 03/25 CHECKED R. LEMKE 03/25	PLAN AND PROFILE SHEET SR 80 ALTERNATIVE 1 STA 889+00 TO 903+00
	Stantec 3133 West Frye Road, Suite 300, Chandler, Arizona 85226, Ph: (480) 687-6400, Fx: (602) 431-9562	ROUTE / MILEPOST / STRUCTURE NO.

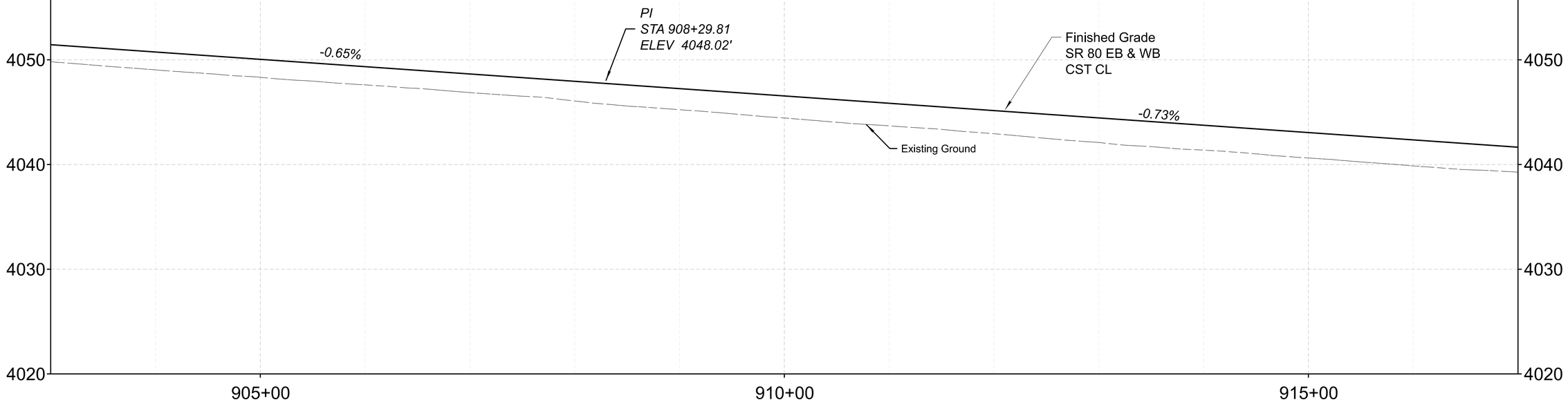
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	19	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L





PRELIMINARY
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 903+00 TO 917+00

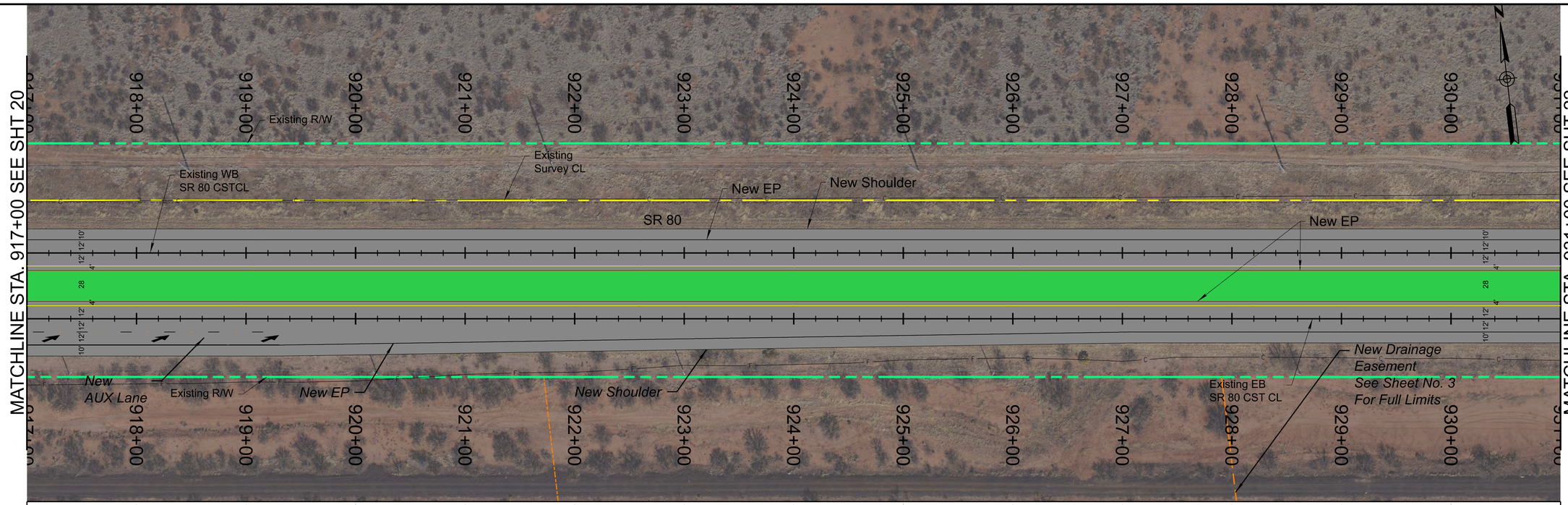
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	20	22	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
Suite 300
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Fx: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 917+00 TO 931+00

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	21	22	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

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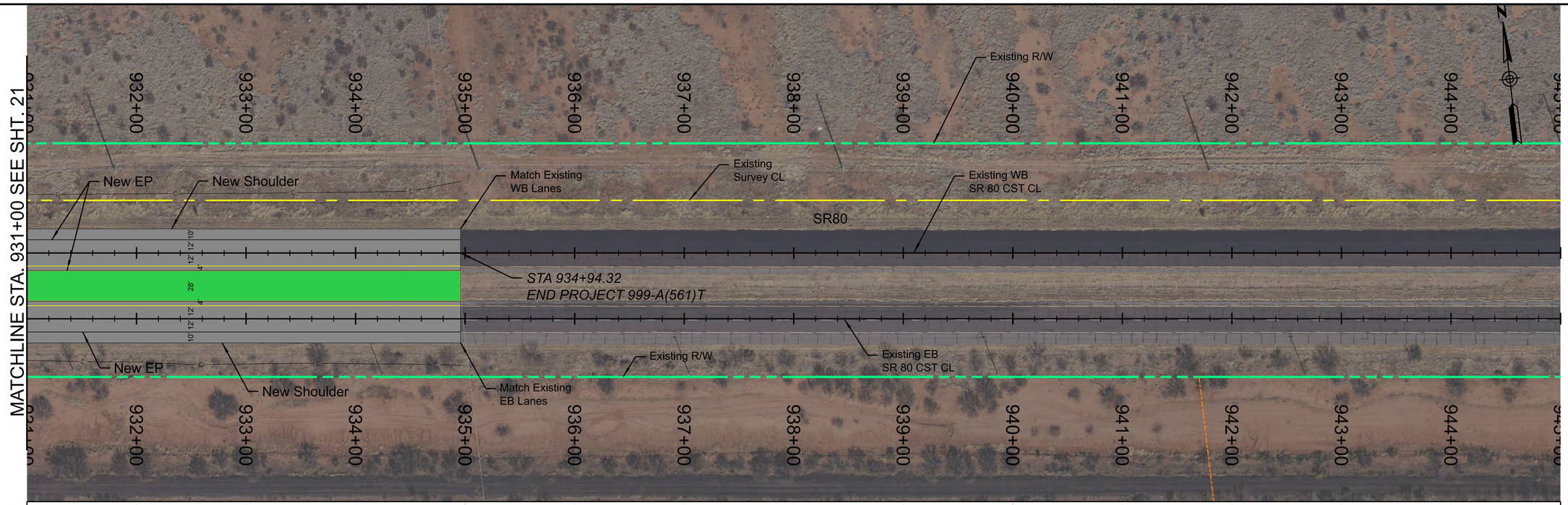

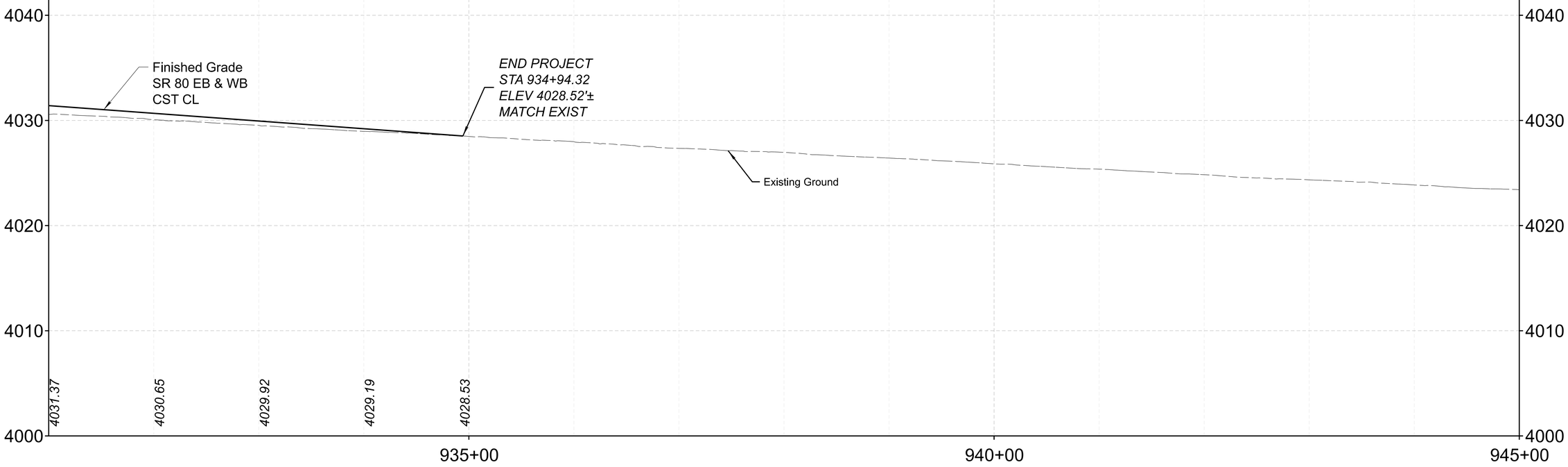

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 931+00 TO 934+94.32

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	22	22	

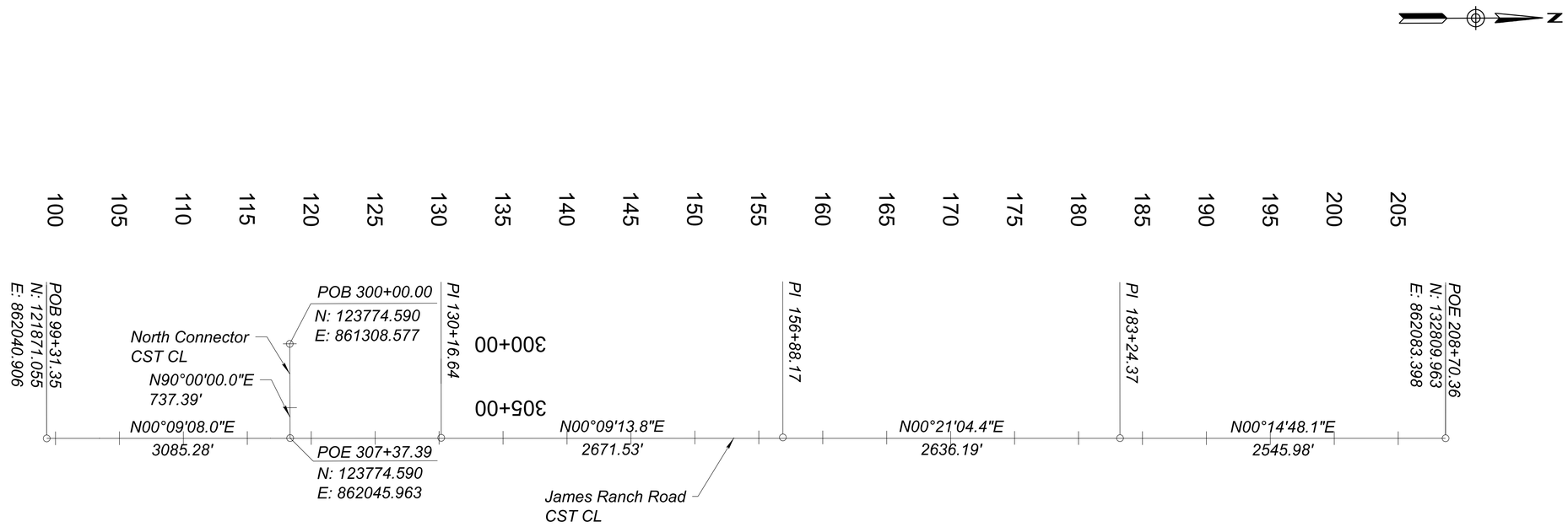
LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

MHERNANDEZJR 6/2024 11:06:40 AM c:\pw_working\infra03\mhernandezjr\d0110767\f0534_Plan_Profile_SR 80_Alt1.dgn \ Model Name: SR80 Exist WB CST - SR 80 Plans Alt 5 [Sheet]

Appendix B – Plan of the Preferred Alternative (Alternative 1) – Interim Condition



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3333 East Frye Road, Suite 300
Chandler, Arizona 85226
Ph: (480) 687-6400
Fax: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC SHEET
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ___ OF ___

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
PH: (480) 687-6100
FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC PLAN
SR 80 ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

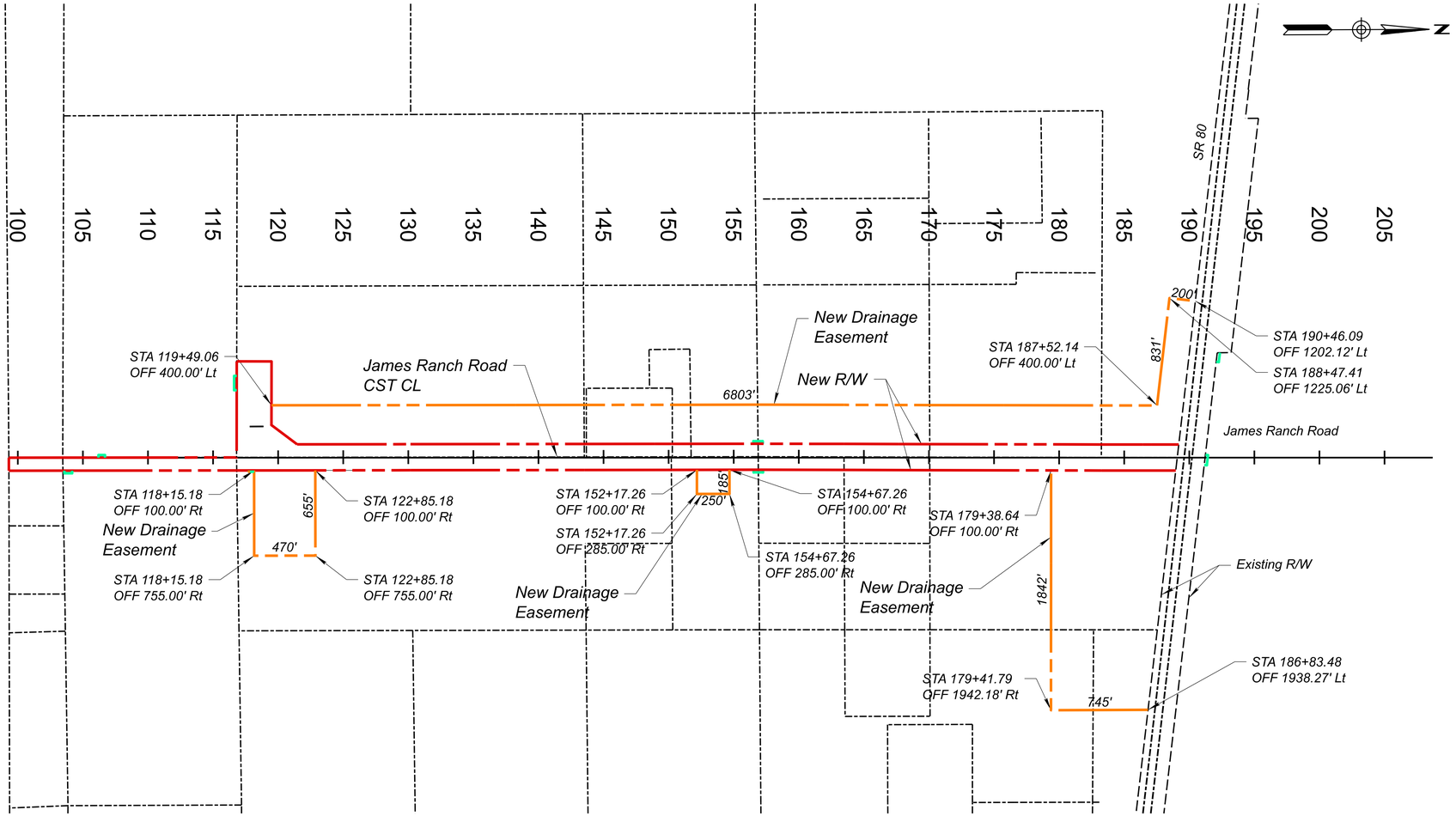
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	2	21	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET OF

TRACS NO. F0534 01L

____ OF____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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3133 West Frye Road,
Suite 300
Chandler, Arizona 85226
Ph: (480) 581-5000
Fx: (480) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

DRAINAGE EASEMENT
JAMES RANCH ROAD ALTERNATIVE 1

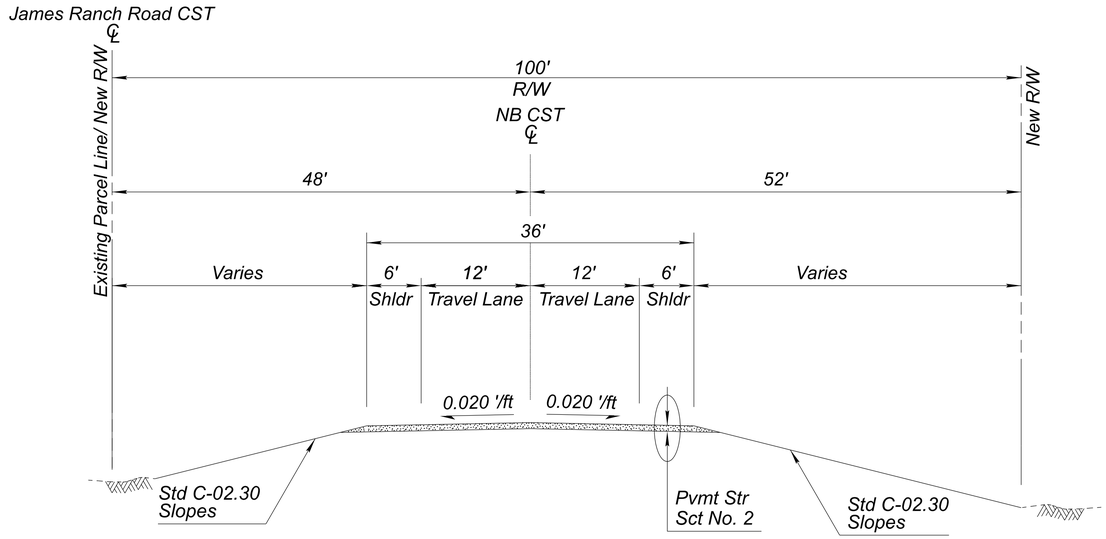
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	3	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

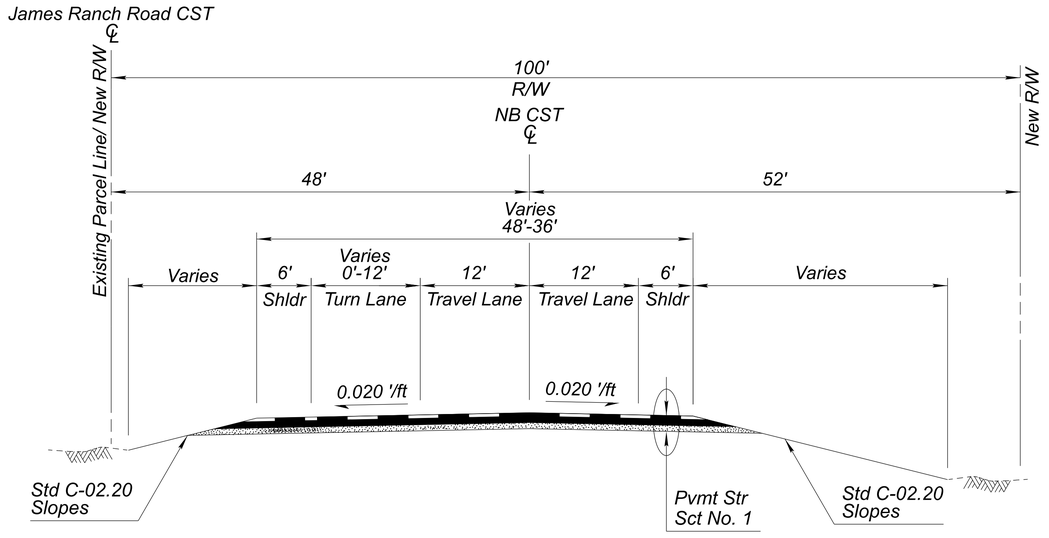
TRACS NO. F0534 01L

SHEET ___ OF ___



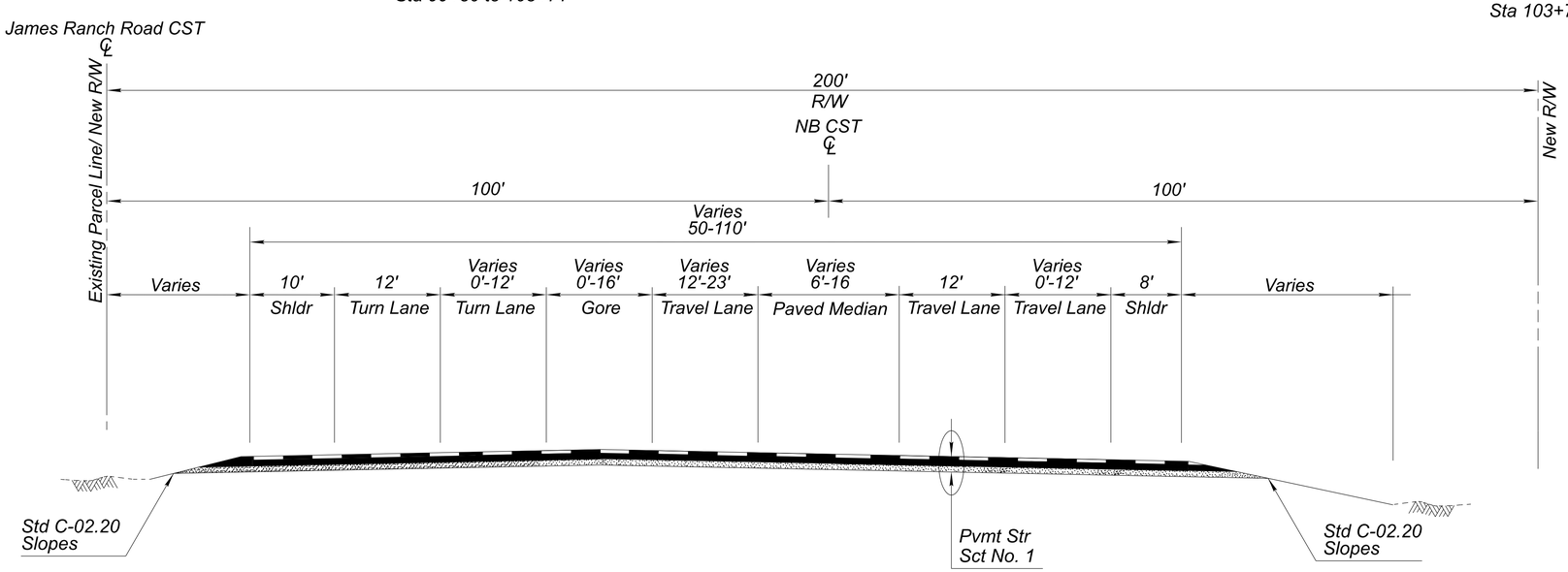
TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 99+80 to 103+71



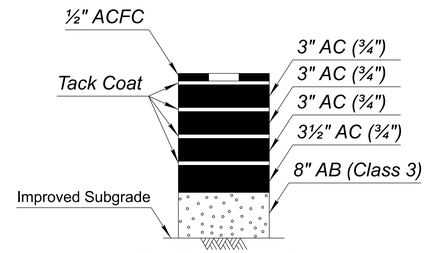
TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 103+71 to 118+00



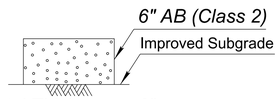
TYPICAL MAINLINE SECTION
JAMES RANCH ROAD (INTERIM)

Sta 118+00 to 128+00



Total Thickness = 21"

SECTION NO. 1



Total Thickness = 6"

SECTION NO. 2

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

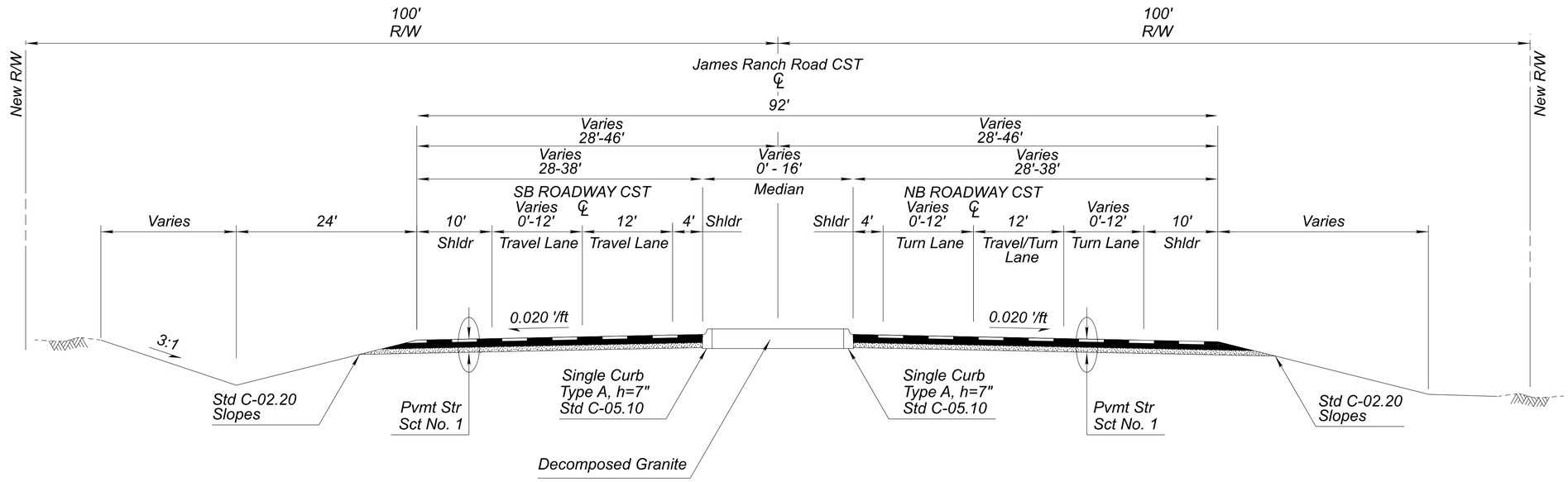
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	4	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

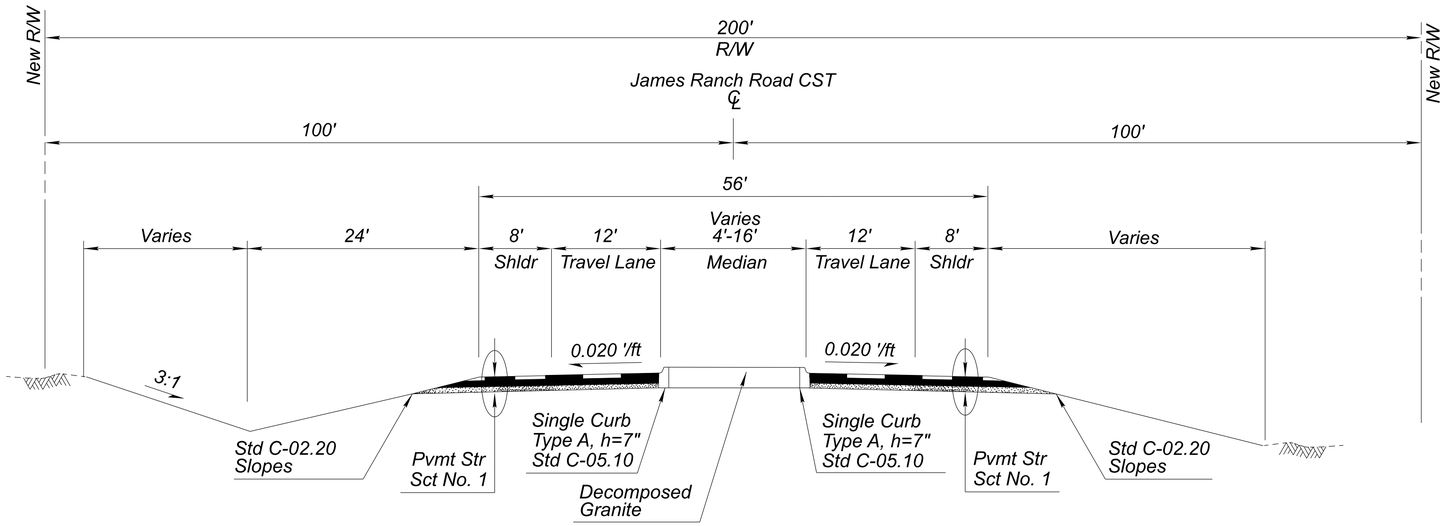
TRACS NO. F0534 01L

SHEET ____ OF ____



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD (INTERIM)

Sta 118+00 to 128+00
Sta 172+80 to 189+40



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD (INTERIM)

Sta 128+00 to 172+80

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

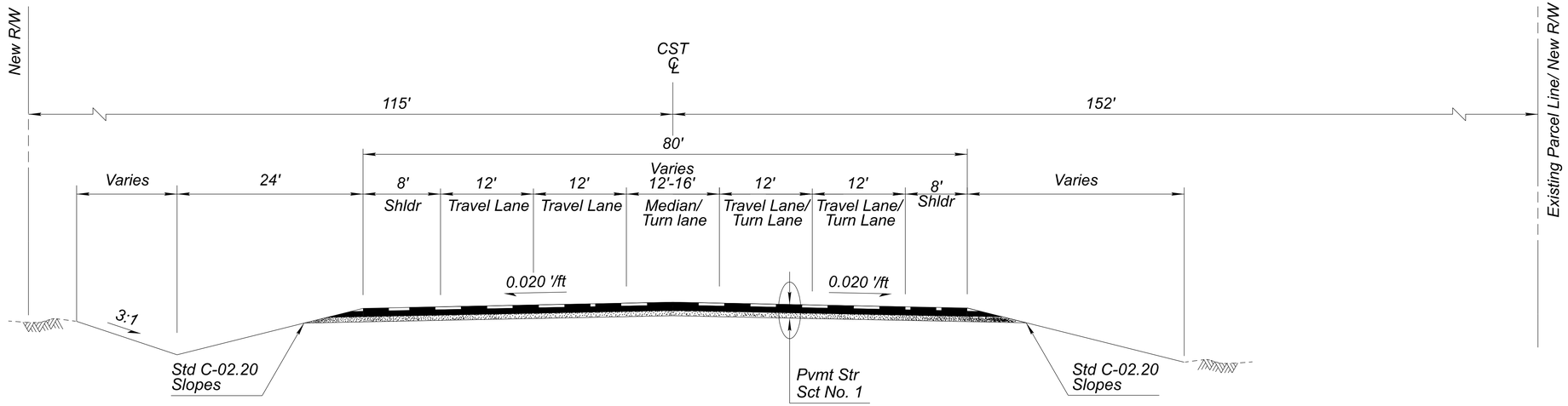
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	5	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



TYPICAL SECTION
NORTH CONNECTOR ROAD (INTERIM)

Sta 300+40.35 to 307+37.38

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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Suite 300
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FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
NORTH CONNECTOR ROAD ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	6	21	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET OF

TRACS NO. F0534 01L

____ OF____

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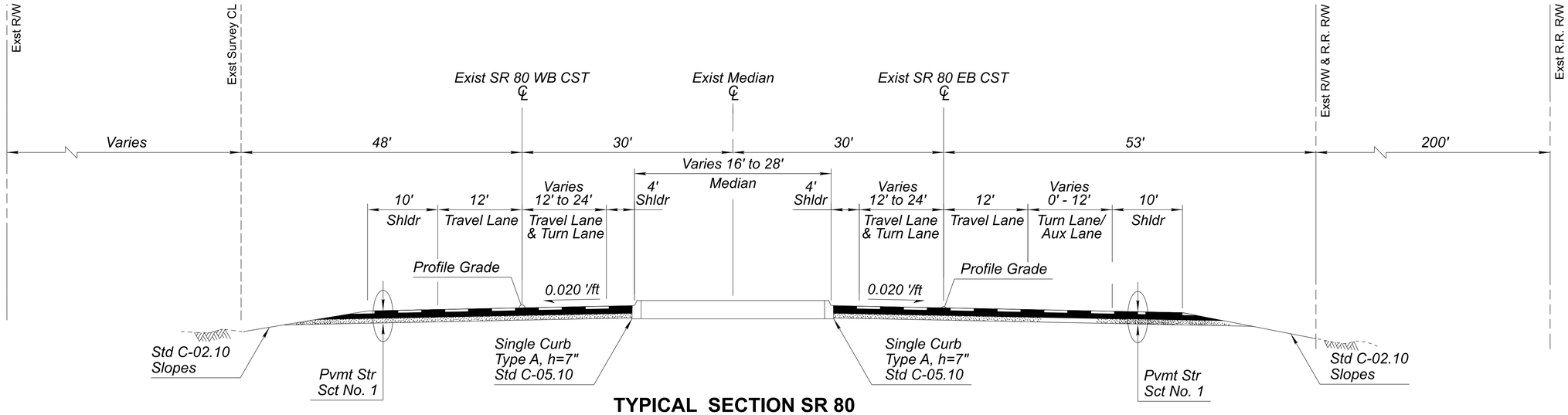
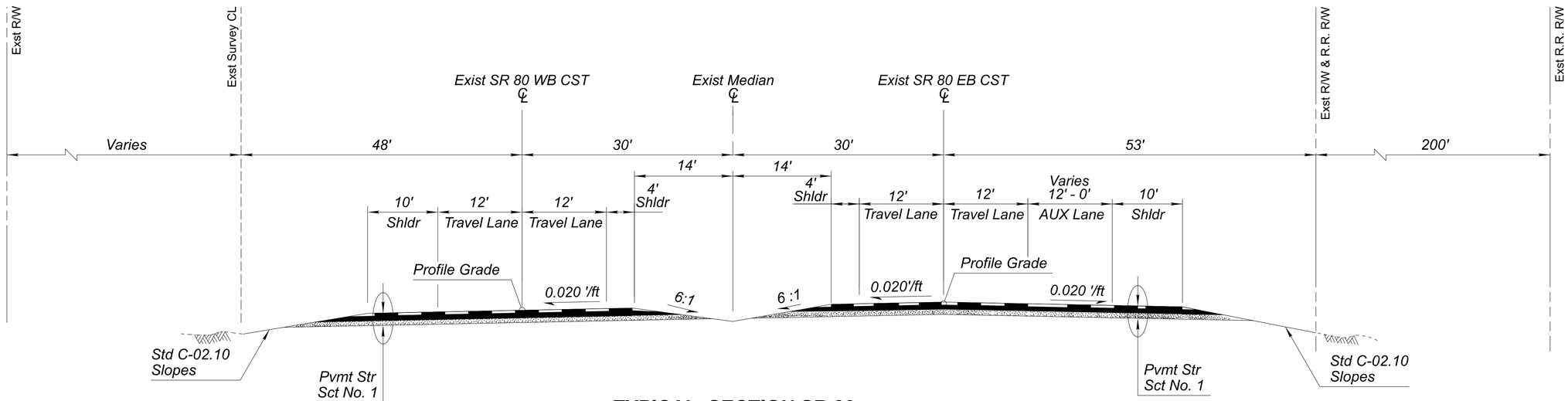


TYPICAL SECTION SR 80

Sta 882+14.71 to 916+41.30



TYPICAL SECTION SR 80

Sta 916+41.30 to 934+94.32

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
SR 80 ALTERNATIVE 1

ROUTE
MILEPOST
STRUCTURE NO.

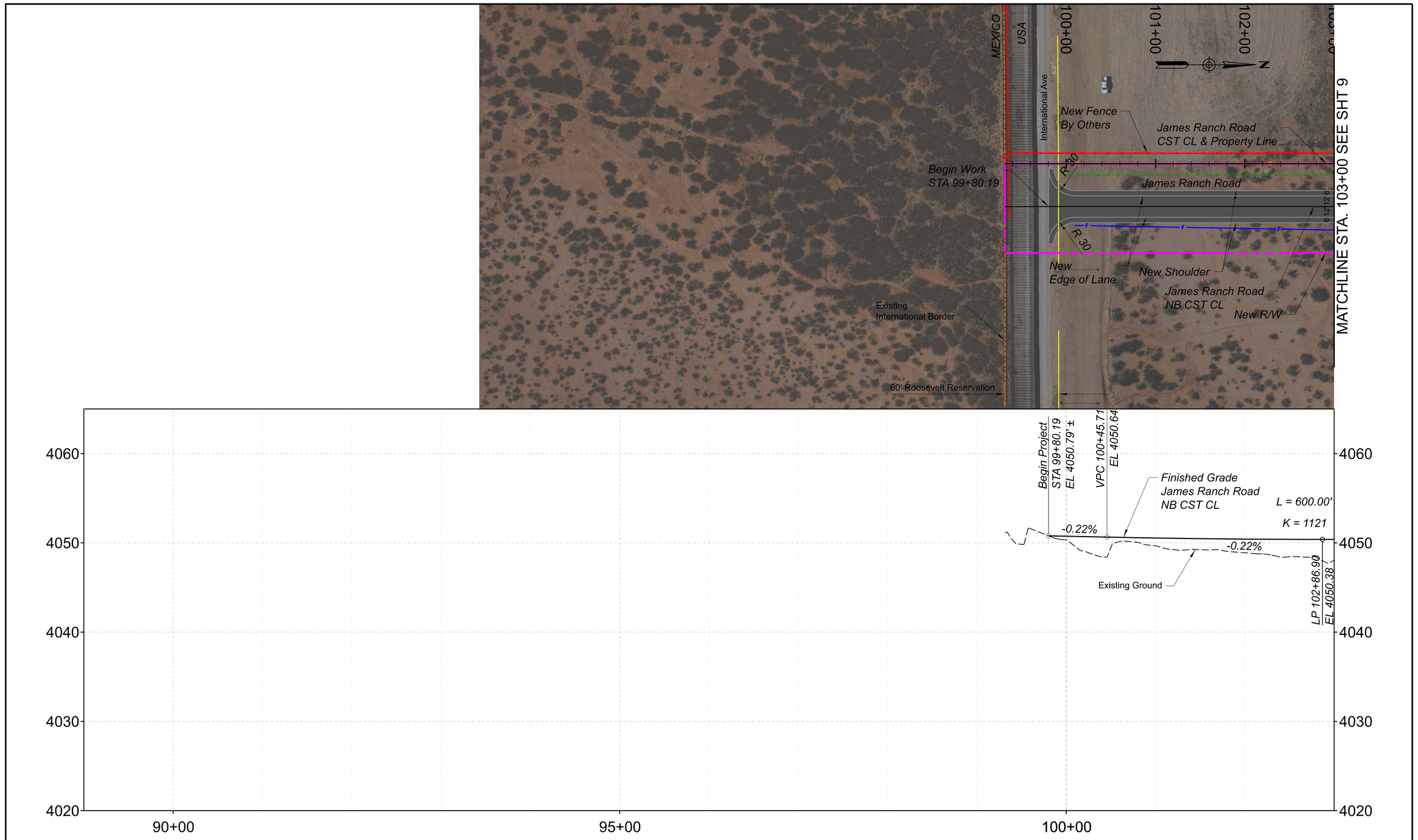
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	7	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
Suite 300
Chandler, Arizona 85226
Ph: (480) 687-6000
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES ROAD ALTERNATIVE 1
STA 99+80.19 TO 103+00

ROUTE
MILEPOST
STRUCTURE NO.

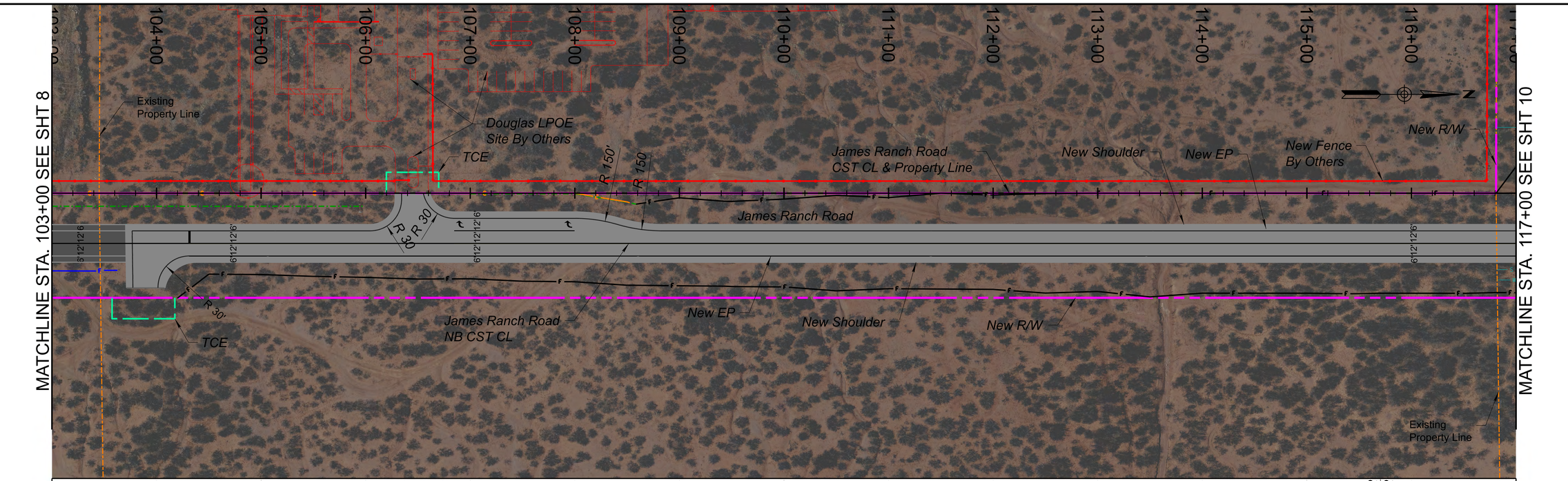
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	8	21	

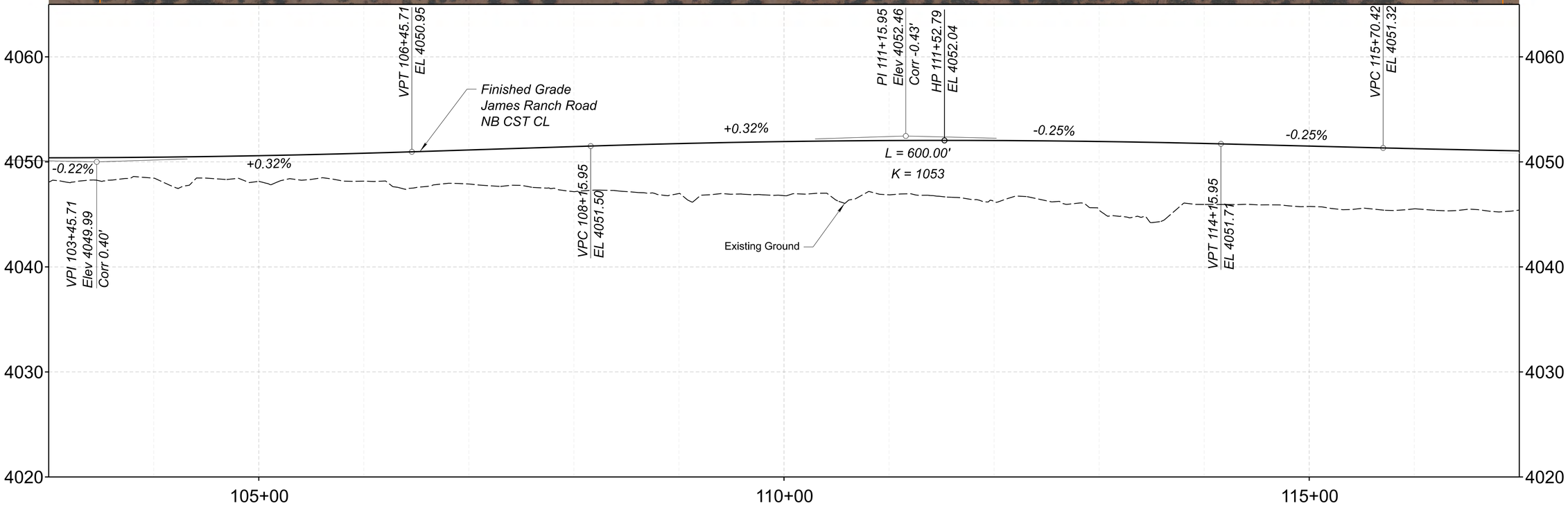
LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

MHERNANDEZJR 7/7/2025 8:24:56 PM c:\pw_working\infra03\mhernandezjr\d0110767\f0534_Plan_Profile_JamesRanchRd_Alt1_Interim.dgn \ Model Name: 01_James Ranch Road Alt 1 Int Plan 01 [Sheet]





PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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3135 East Frye Road, Suite 300
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 103+00 TO 117+00

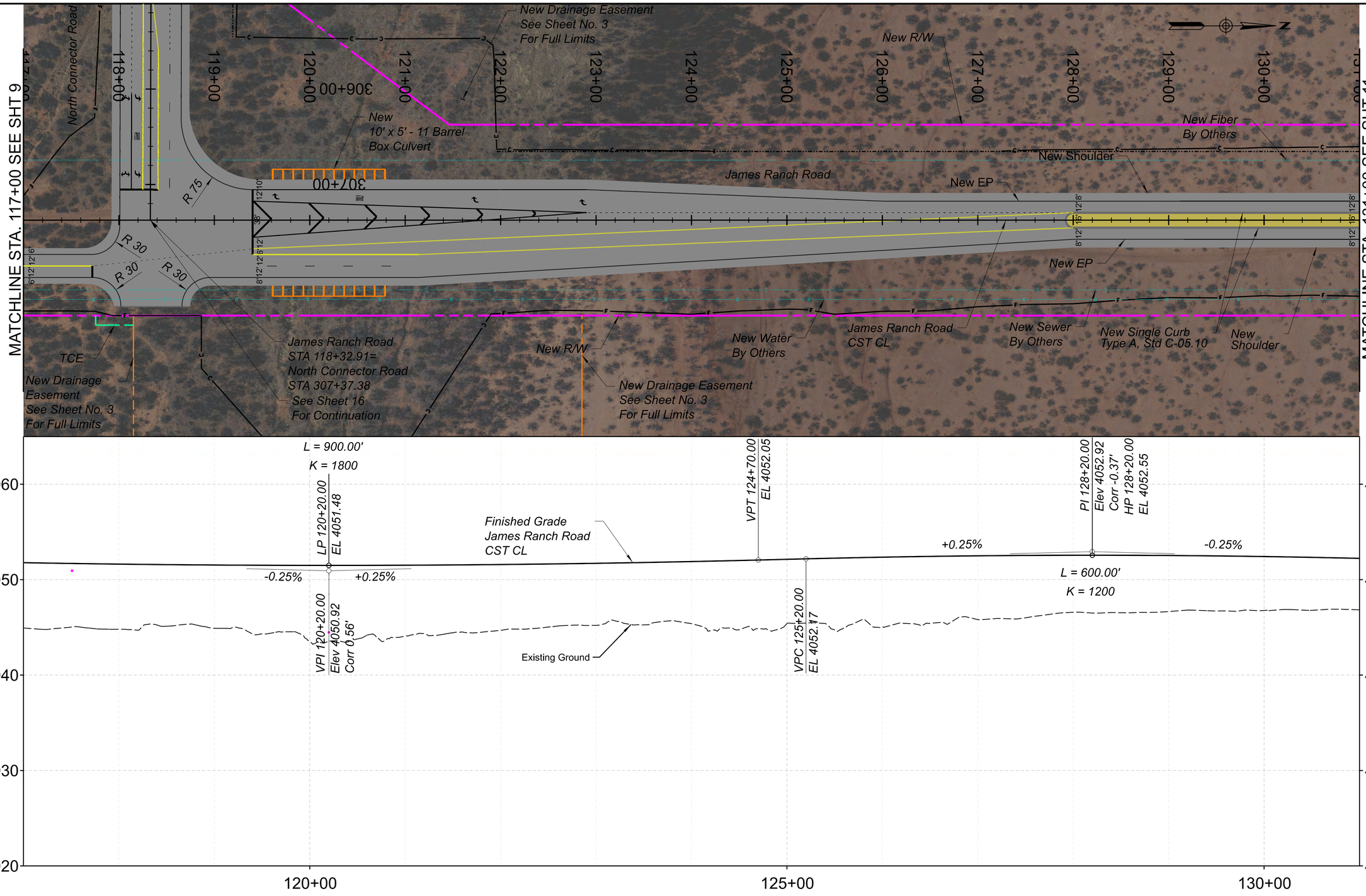
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	9	21	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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3133 West Frye Road,
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALT 1 (INTERIM)
STA 117+00 TO 131+00

ROUTE
MILEPOST
STRUCTURE NO.

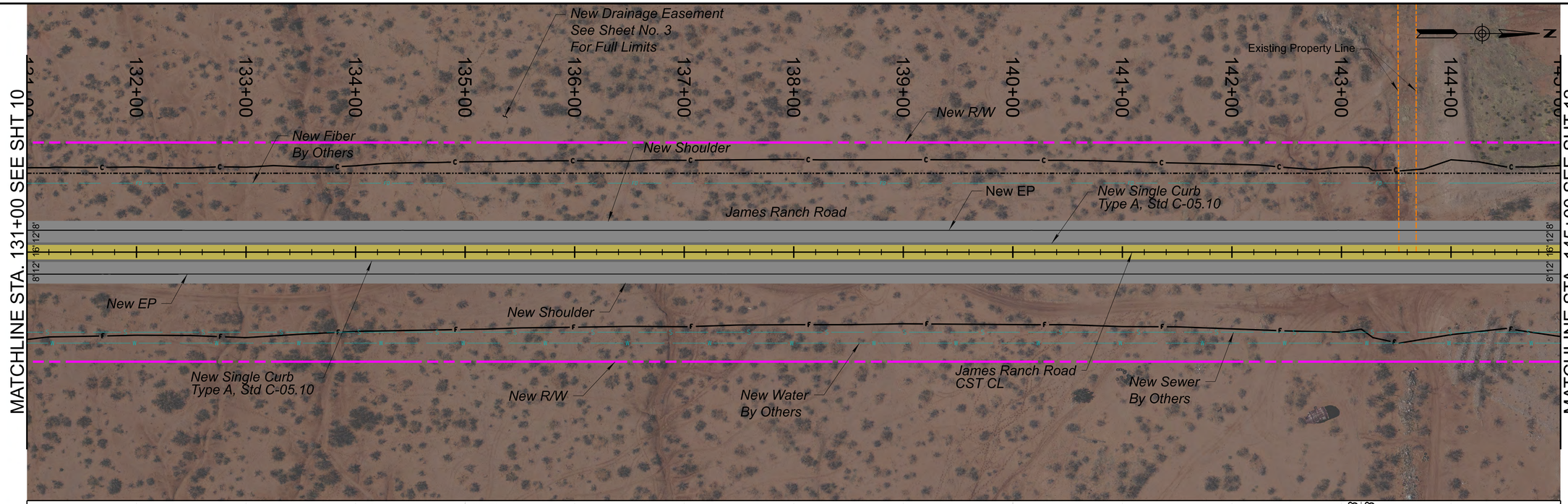
F.H.W.A. Arizona Division

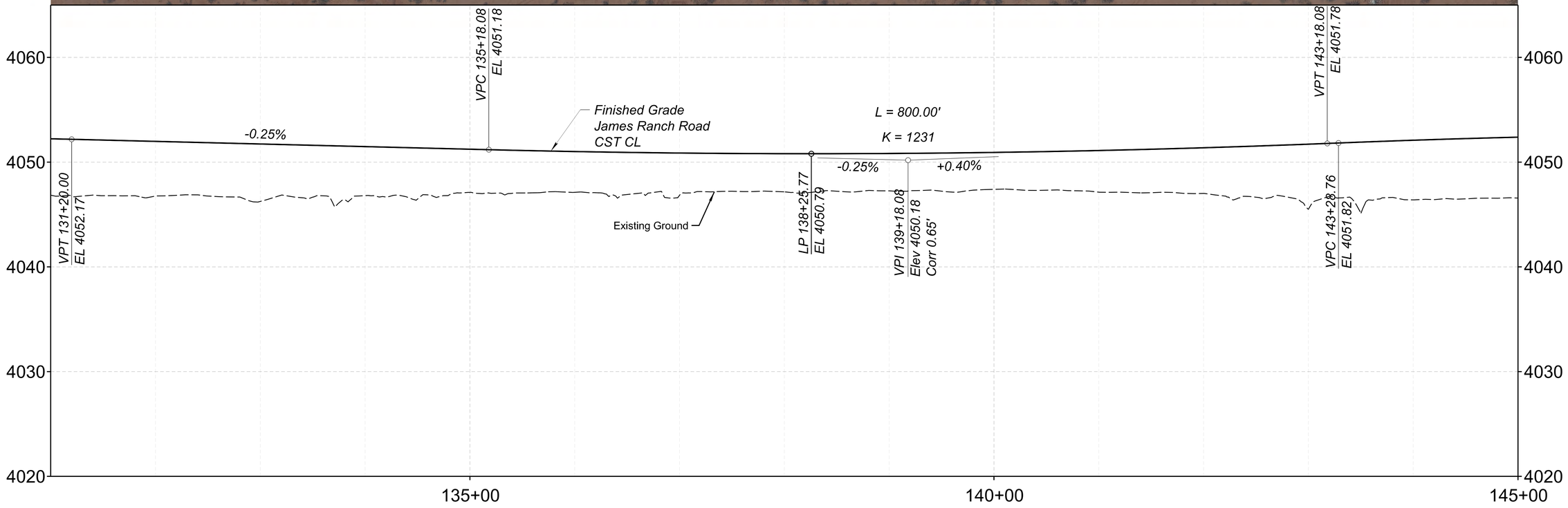
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	10	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALT 1 (INTERIM)
STA 131+00 TO 145+00

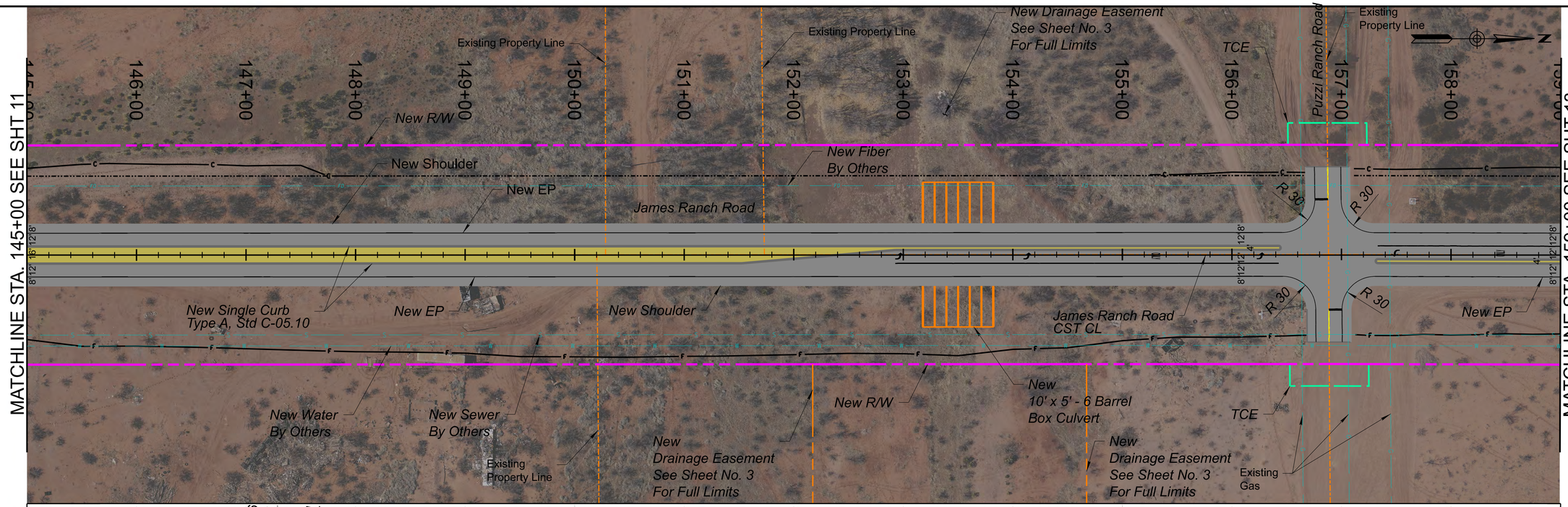
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	11	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALT 1 (INTERIM)
STA 145+00 TO 159+00

ROUTE
MILEPOST
STRUCTURE NO.

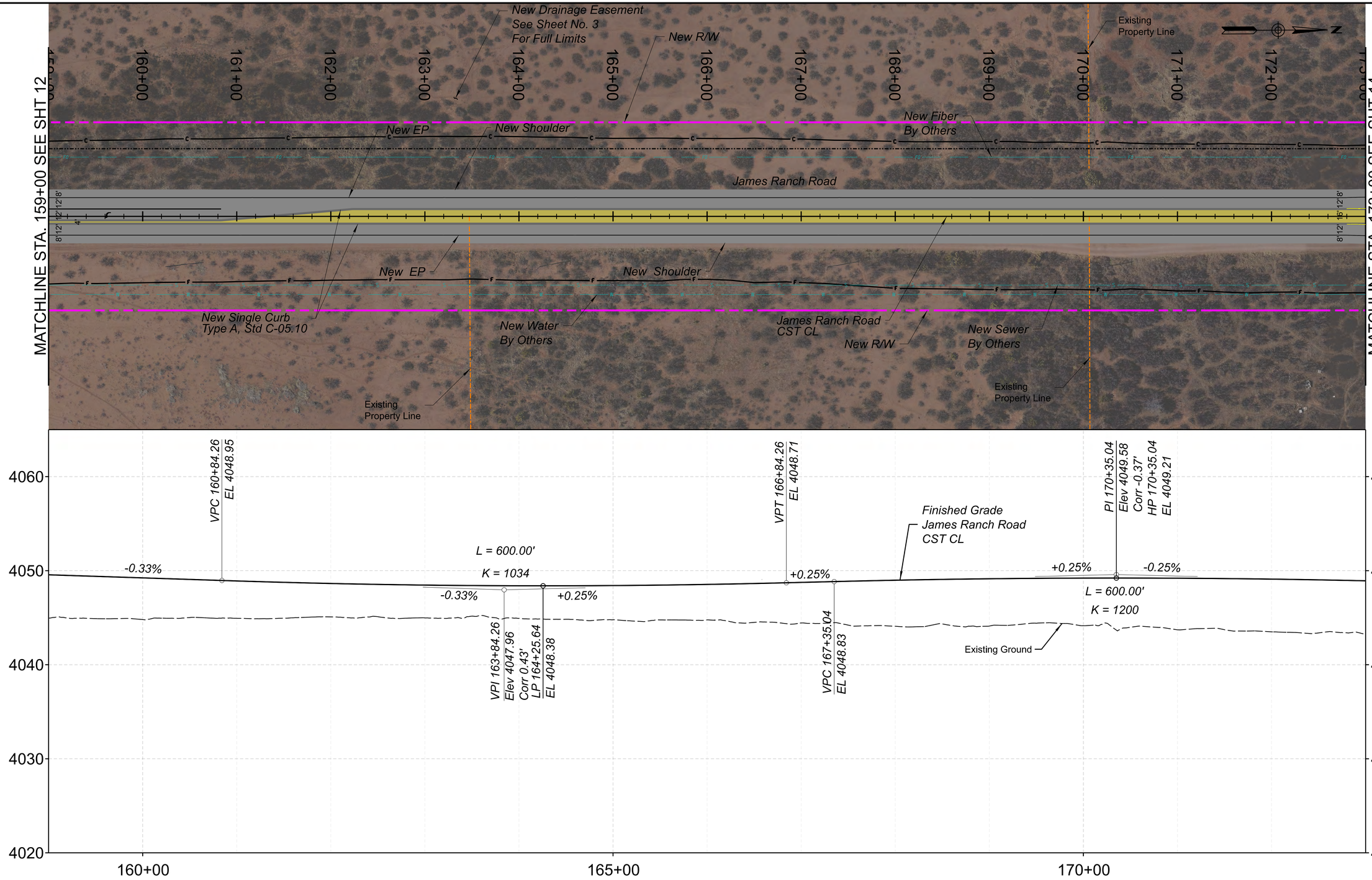
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	12	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALT 1 (INTERIM)
STA 159+00 TO 173+00

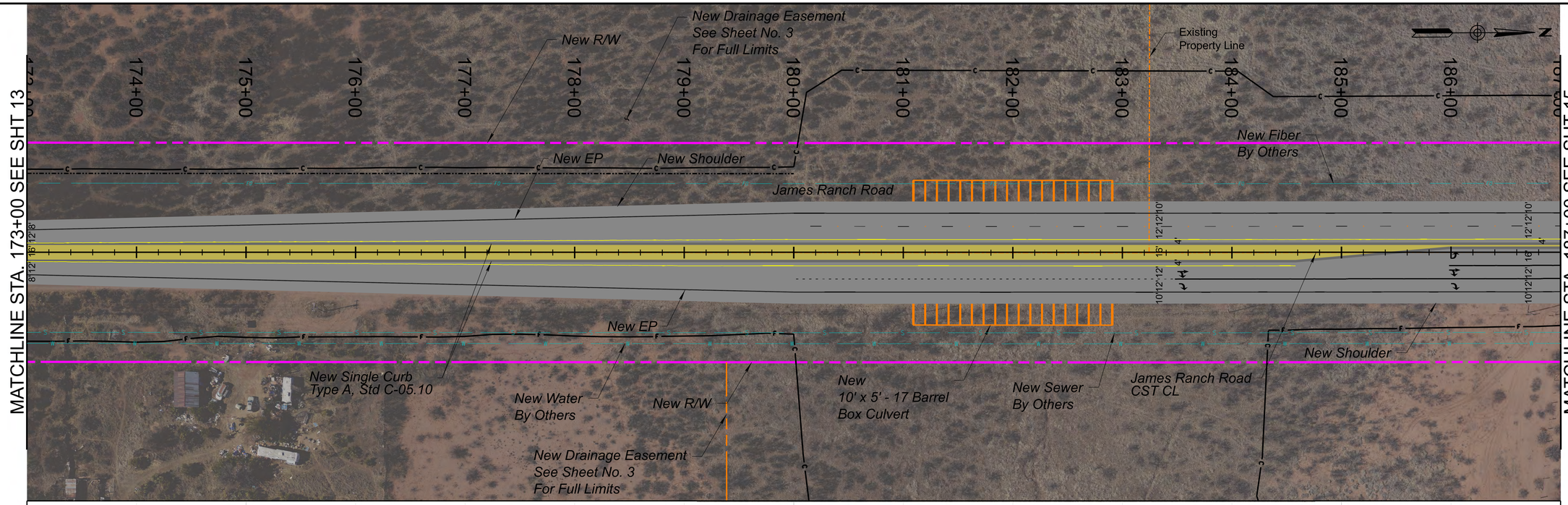
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	13	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
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CONSTRUCTION
OR RECORDING

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALT 1 (INTERIM)
STA 173+00 TO 187+00

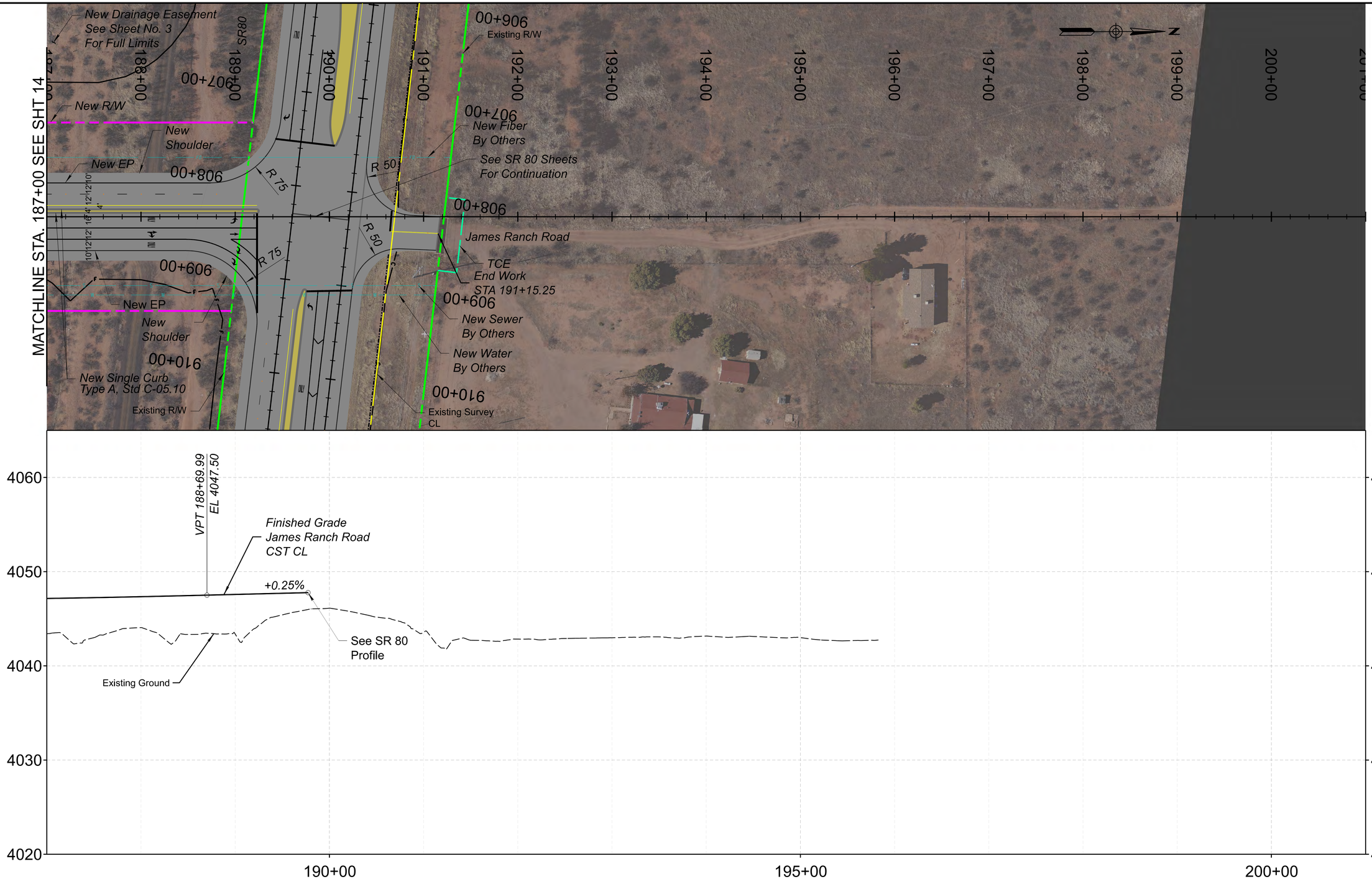
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	14	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
JAMES RANCH ROAD ALTERNATIVE 1
STA 187+00 TO 191+15.25

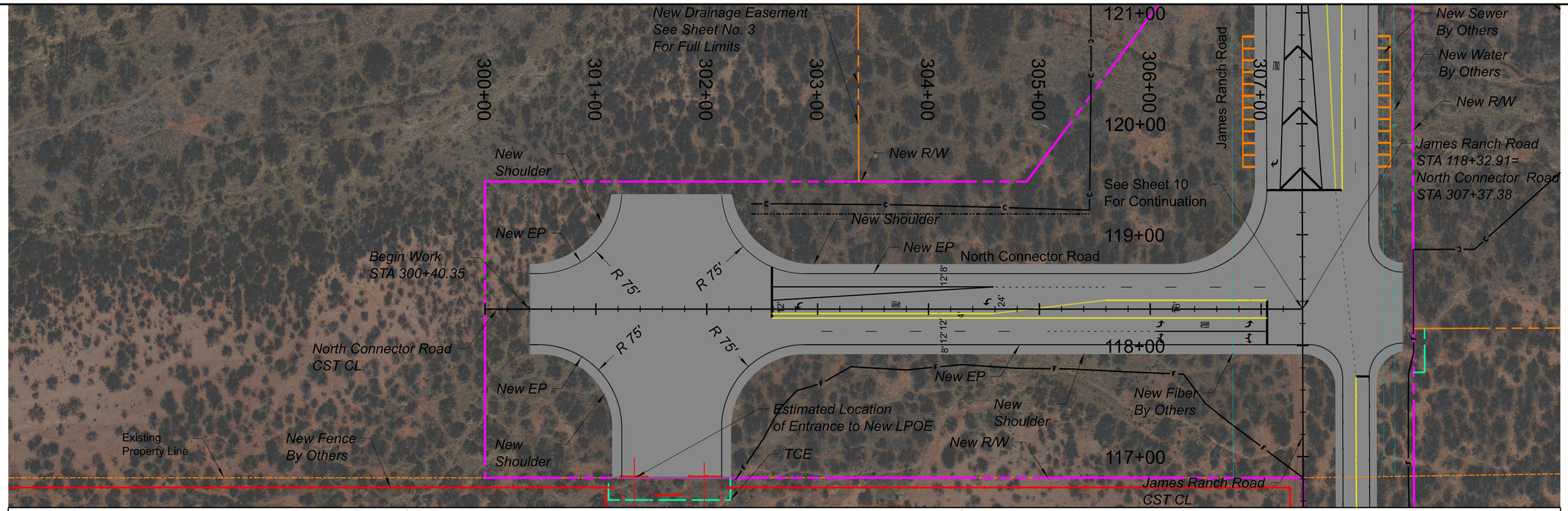
ROUTE
MILEPOST
STRUCTURE NO.

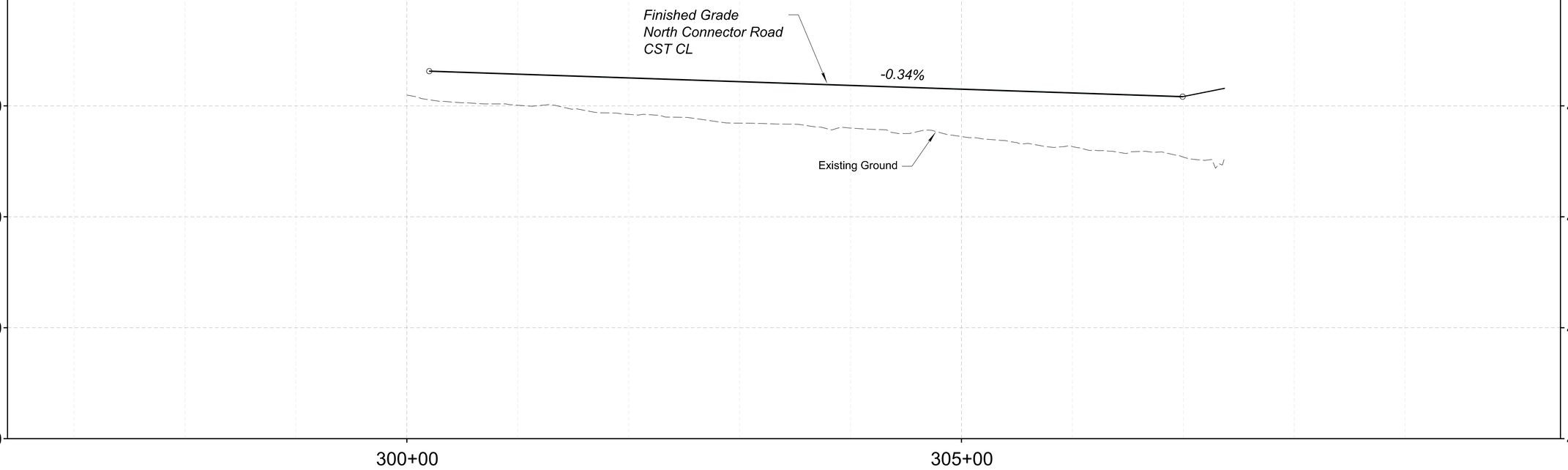
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	15	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L





PRELIMINARY
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OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAND AND PROFILE SHEET
NORTH CONNECTOR ROAD ALT 1 (INTERIM)
STA 300+40.35 TO 307+37.38

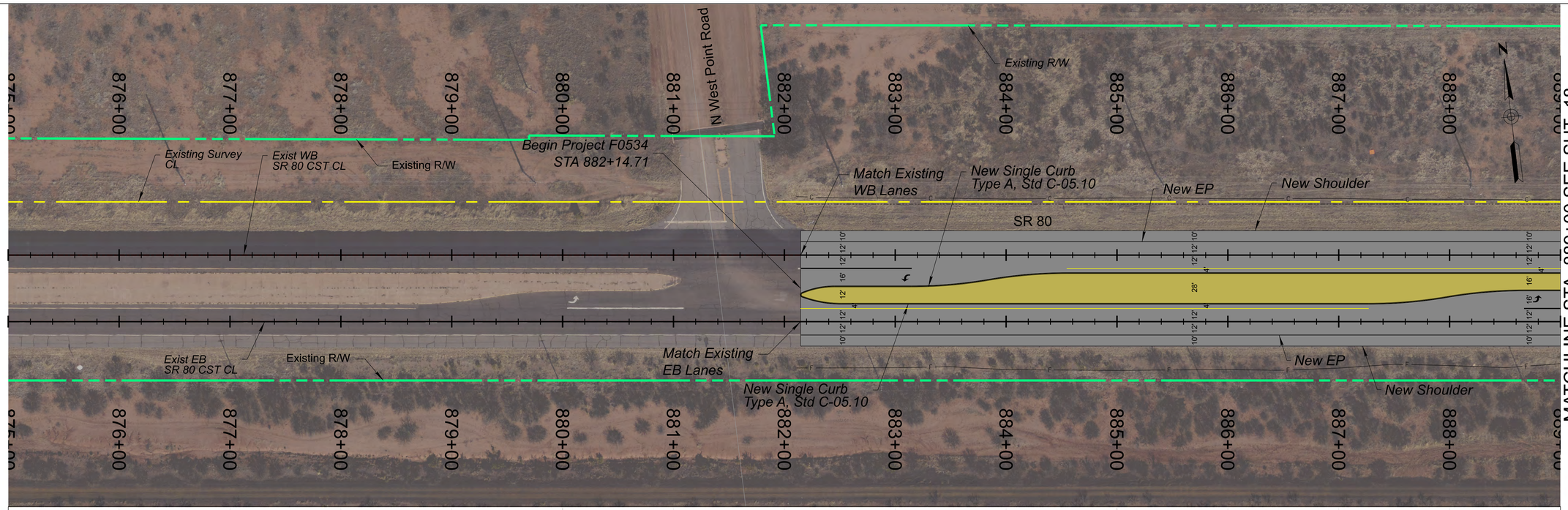
ROUTE
MILEPOST
STRUCTURE NO.

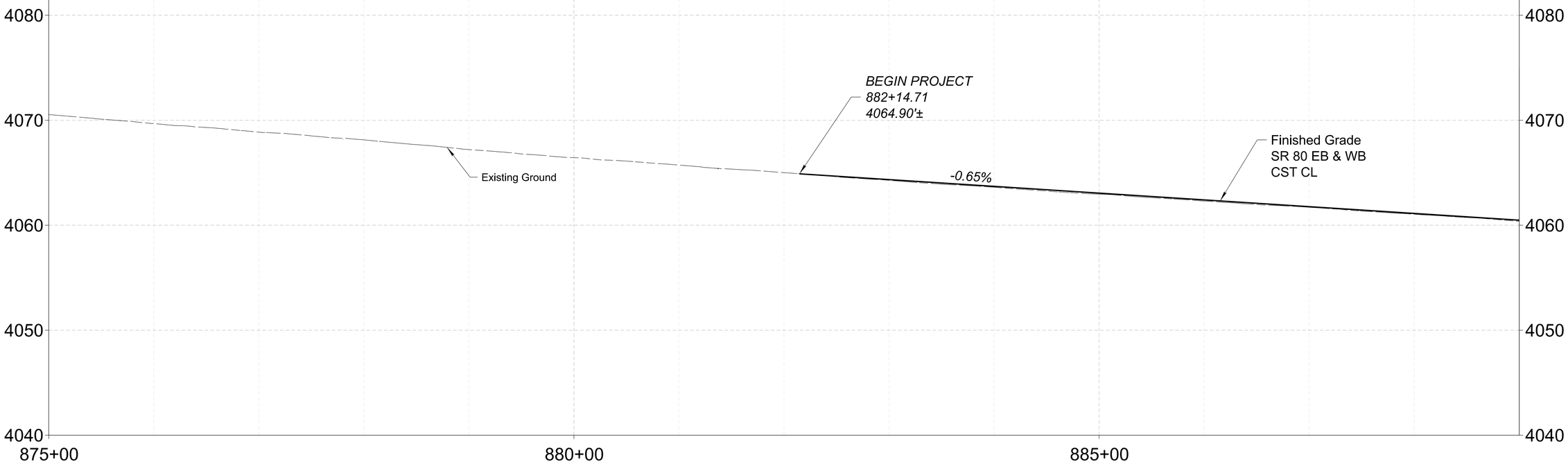
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	16	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 882+14.71 TO 889+00

ROUTE
MILEPOST
STRUCTURE NO.

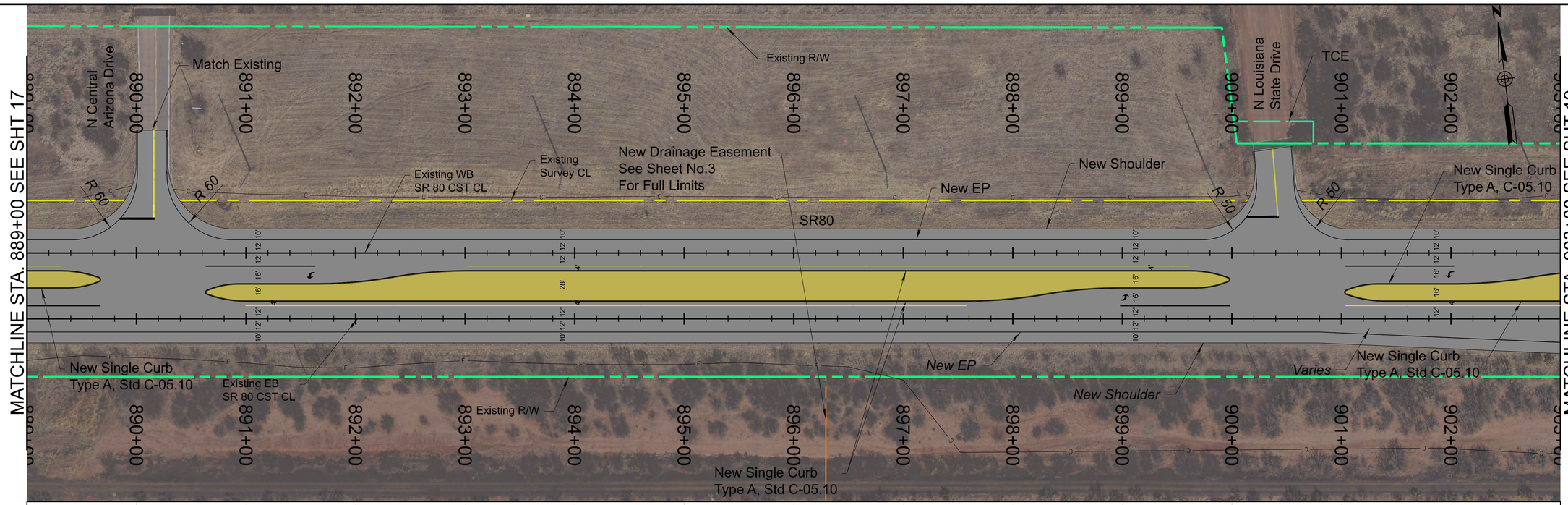
F.H.W.A. Arizona Division

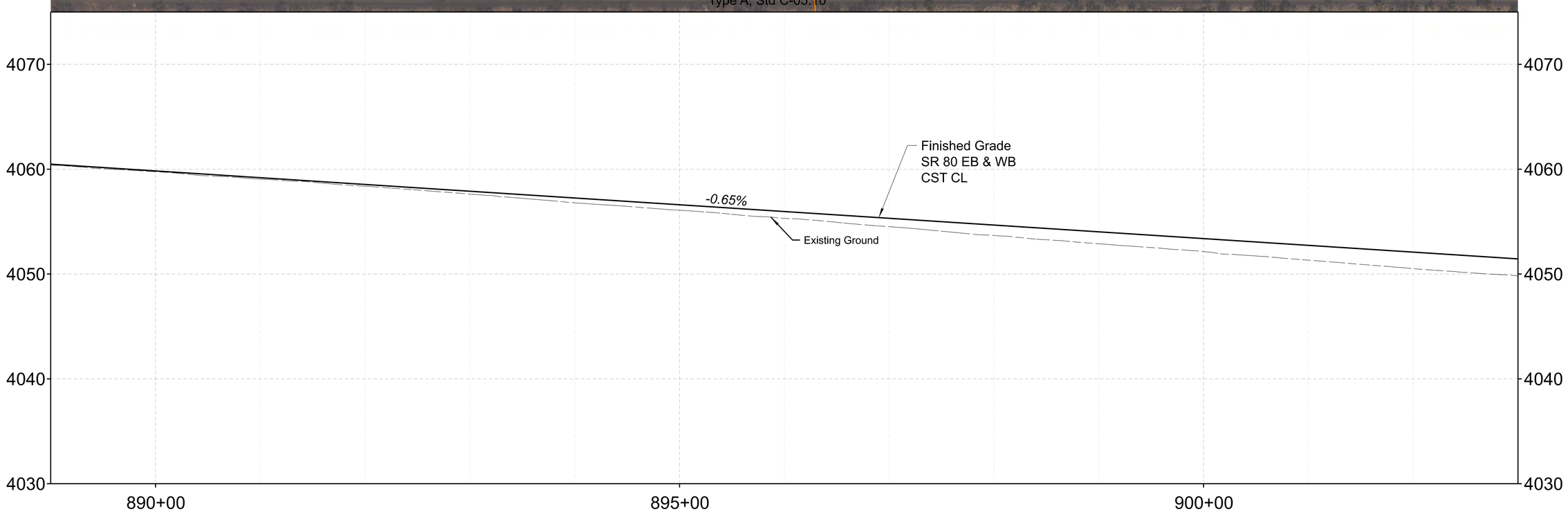
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	17	21	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
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OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 889+00 TO 903+00

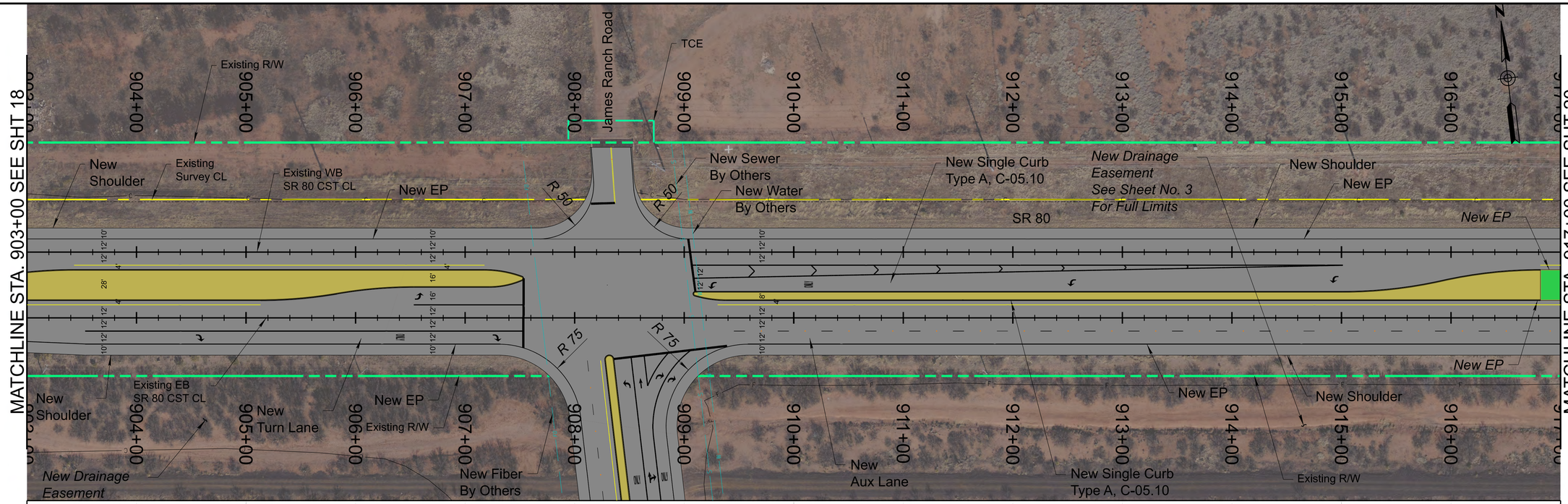
ROUTE
MILEPOST
STRUCTURE NO.

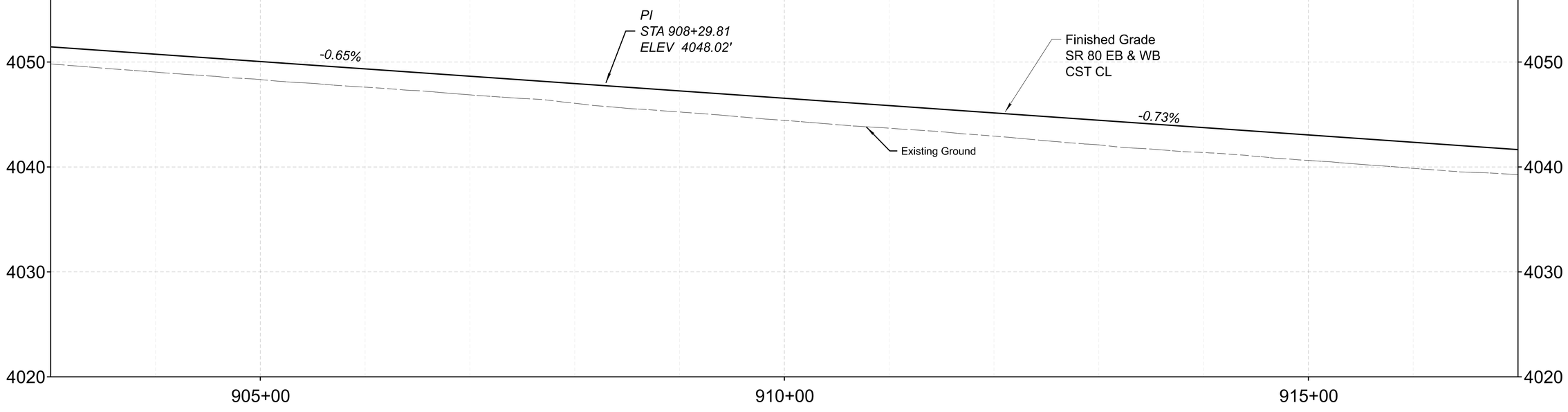
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	18	21	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L





PRELIMINARY
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	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
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CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 903+00 TO 917+00

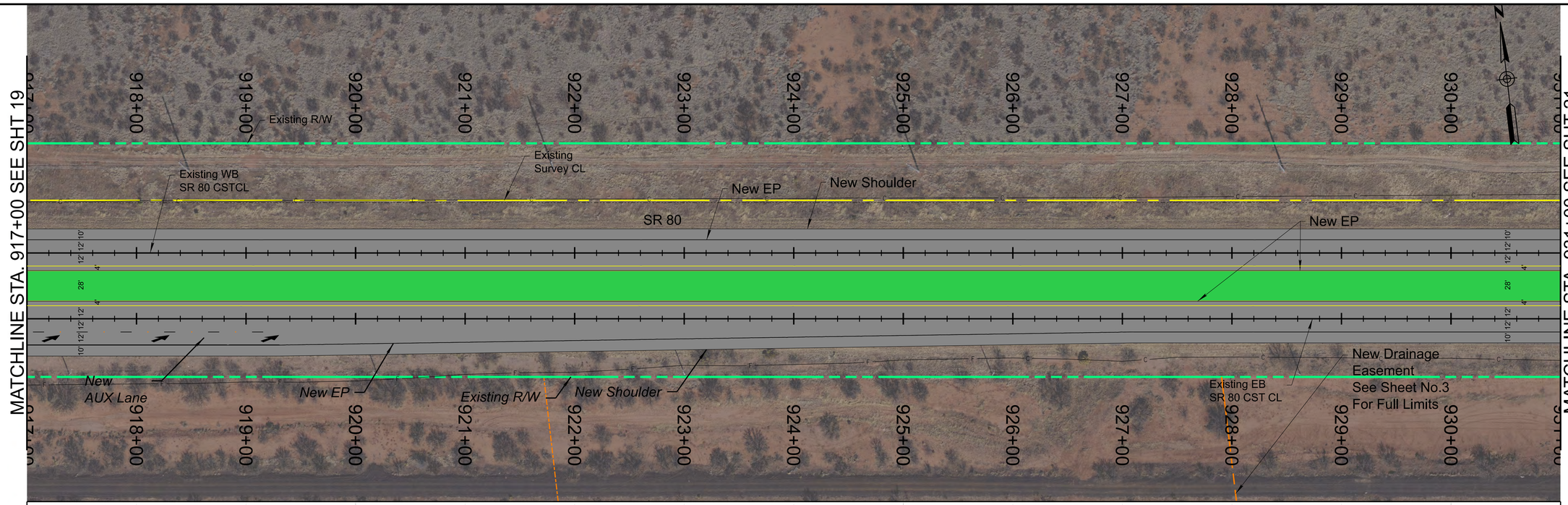
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	19	21	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 917+00 TO 931+00

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	20	21	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L

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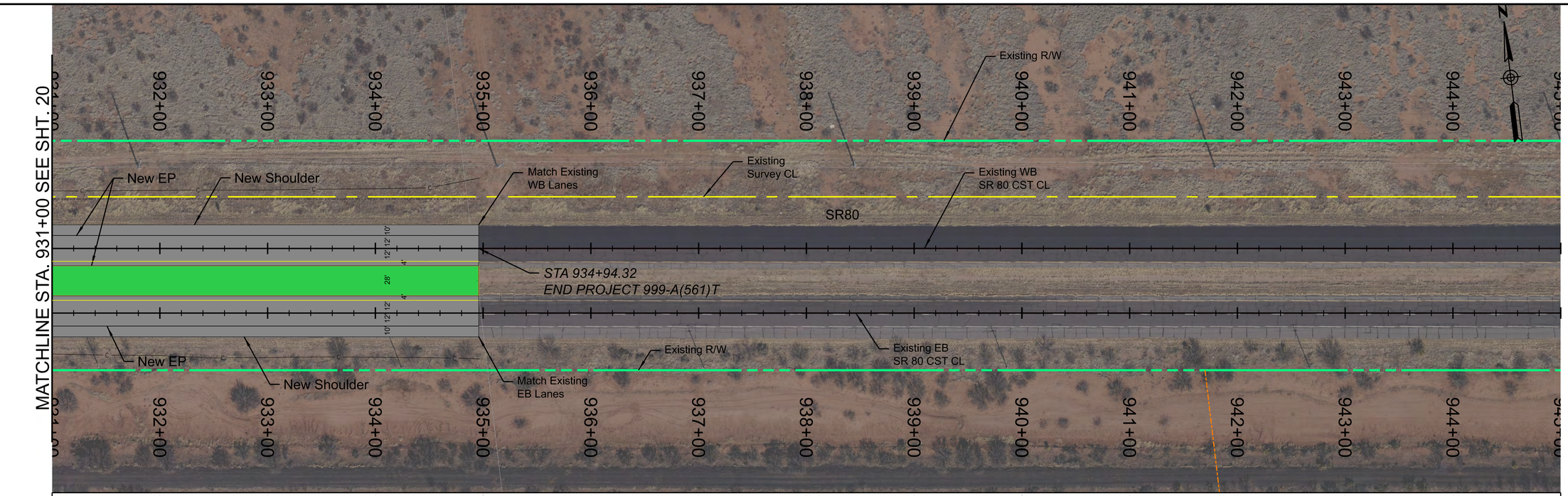

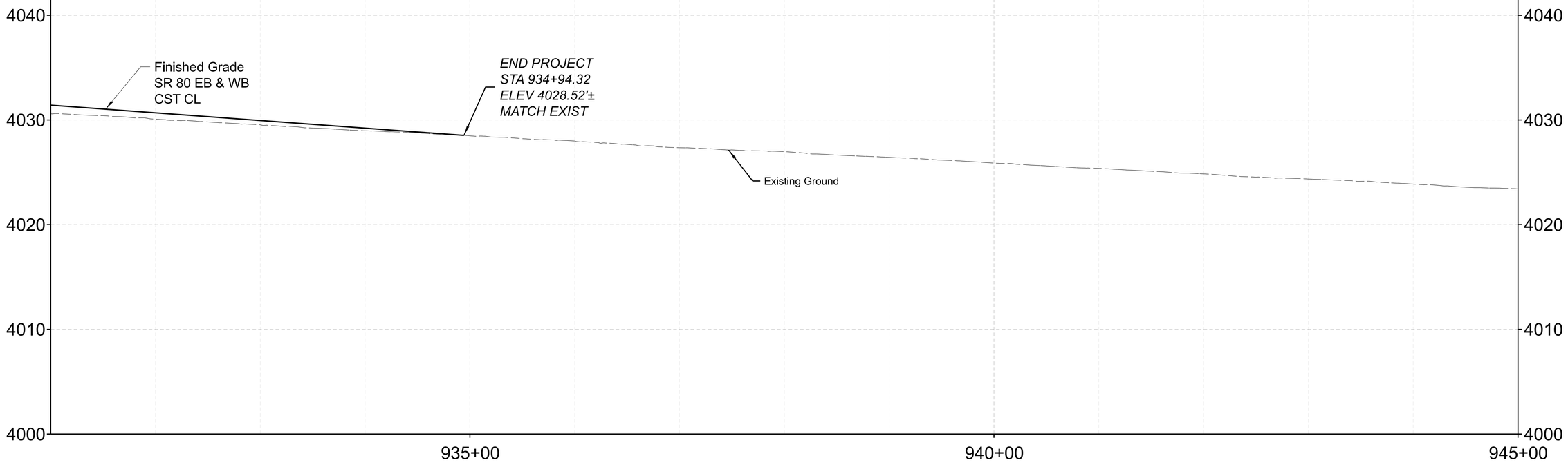

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN AND PROFILE SHEET
SR 80 ALTERNATIVE 1
STA 931+00 TO 934+94.32

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	21	21	

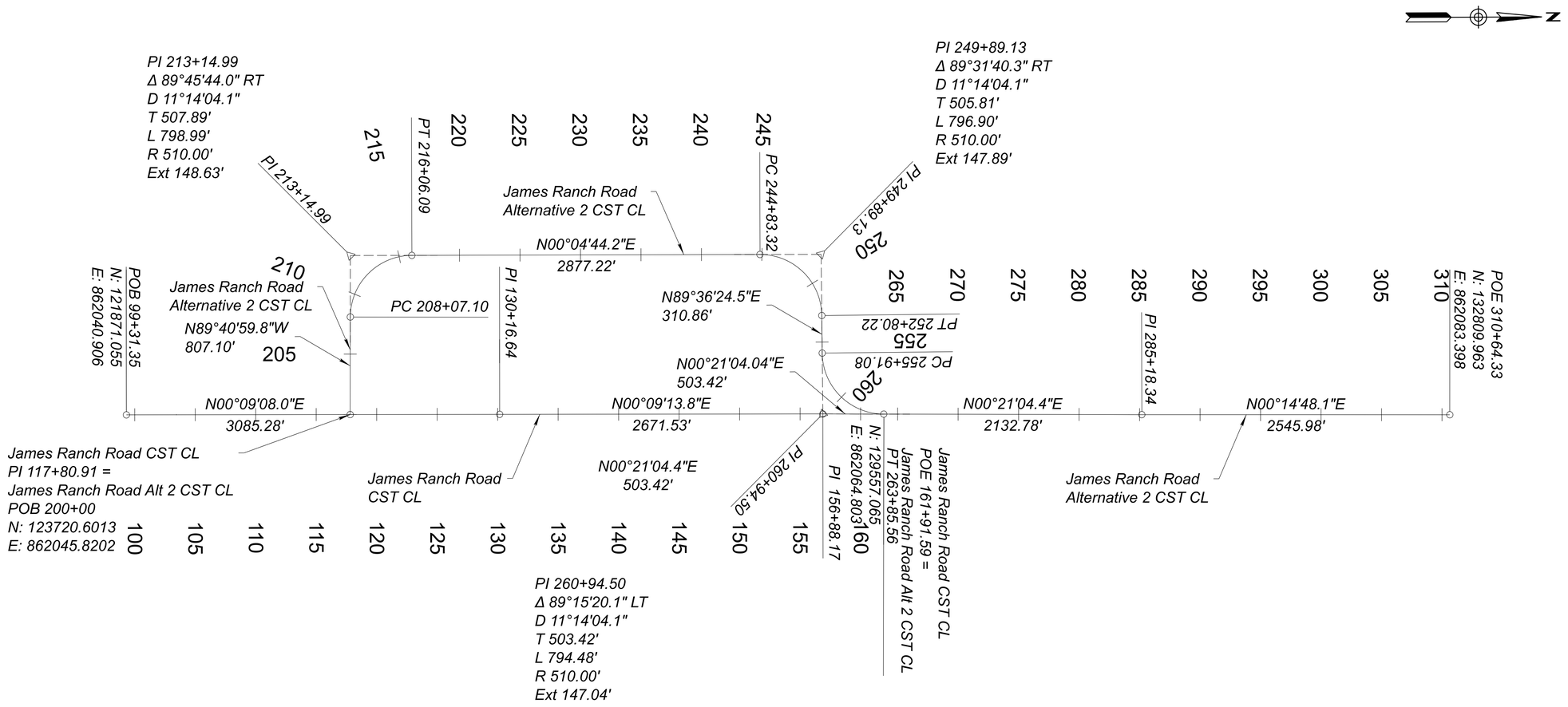
LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

MHERNANDEZJR 7/30/2024 5:00:34 PM c:\pw_working\infra03\mhernandezjr\d0110767\f0534_Plan_Profile_SR 80_Alt1_Interim.dgn \ Model Name: SR80 Exist WB CST - SR 80 Plans Alt 5 [Sheet]

Appendix C – Plan of Alternative 2



	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

PRELIMINARY
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC SHEET
JAMES RANCH ROAD ALTERNATIVE 2

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ___ OF ___

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PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC PLAN
SR 80 ALTERNATIVE 2

ROUTE
MILEPOST
STRUCTURE NO.

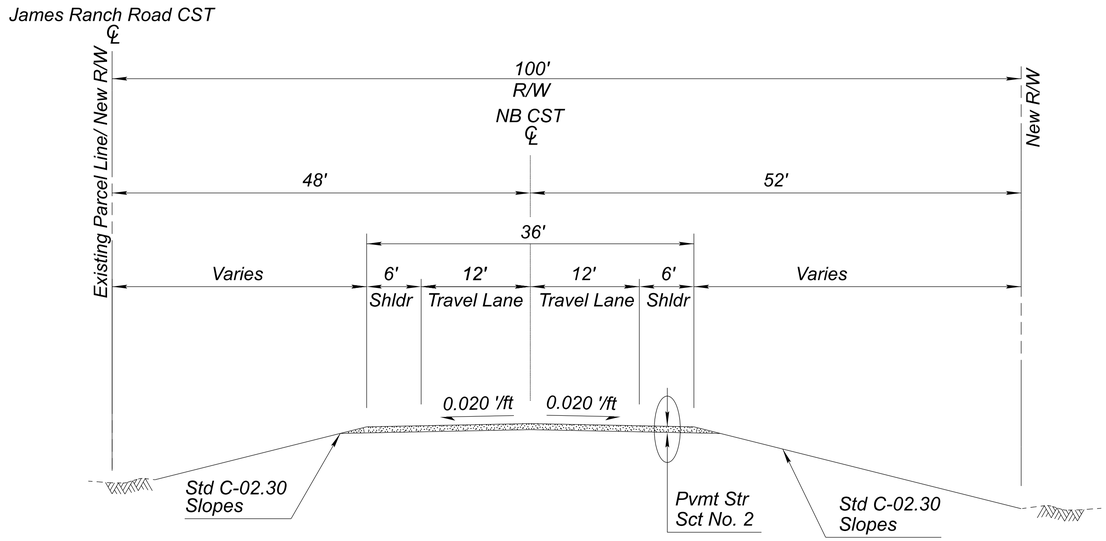
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	2	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

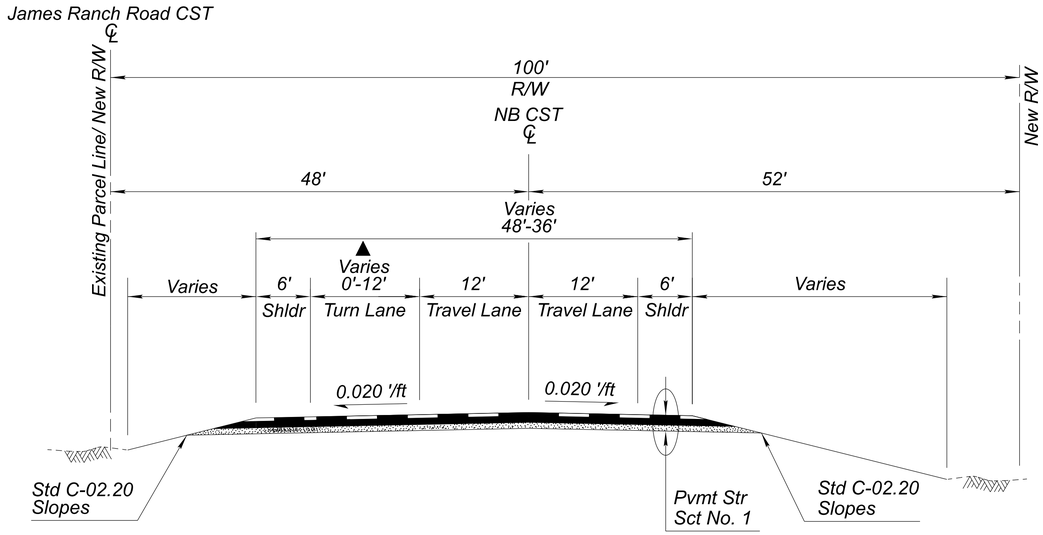
TRACS NO. F0534 01L

SHEET OF
____ OF____



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

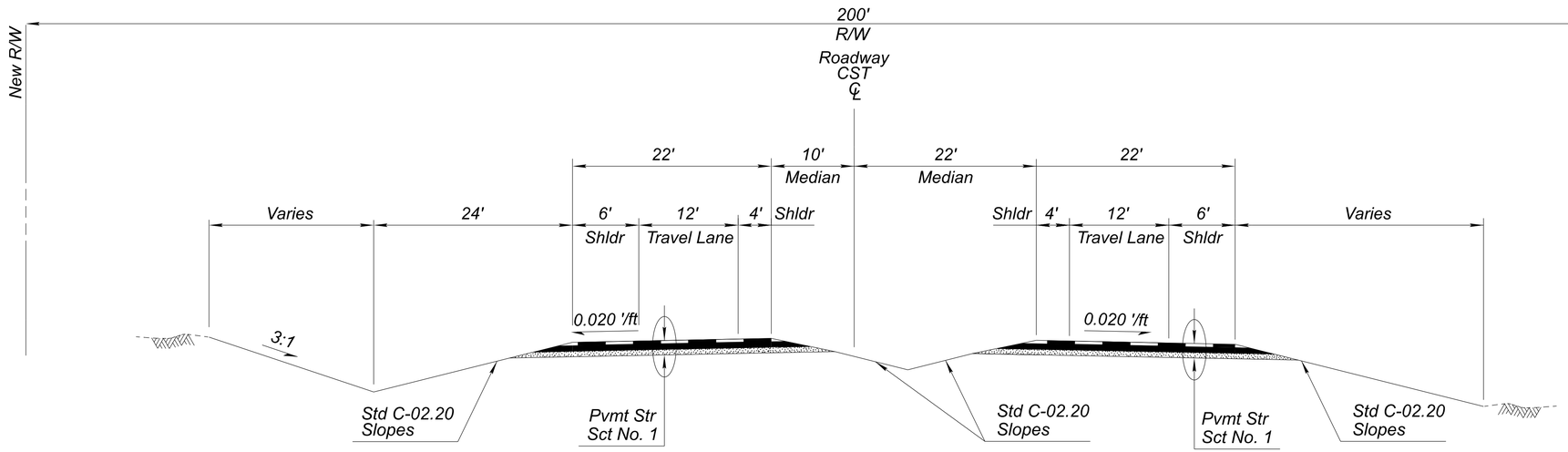
Sta 99+80 to 103+71



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

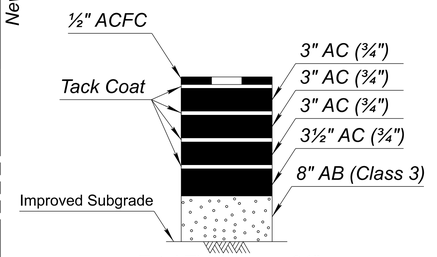
Sta 103+71 to 117+12.90

▲*Sta 103+71to 106+28.29 (0')*
Sta 106+28.29 to 107+99.73 (12')
Sta 107+99.73 to 108+83.78 (12'-0')
Sta 108+83.78 to 117+12.90 (0')



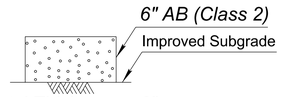
TYPICAL MAINLINE SECTION
BROOKS ROAD

Sta 200+00.00 to 205+24.18



Total Thickness = 21"

SECTION NO. 1



Total Thickness = 6"

SECTION NO. 2

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
PH: (480) 687-6100
FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 2

ROUTE
MILEPOST
STRUCTURE NO.

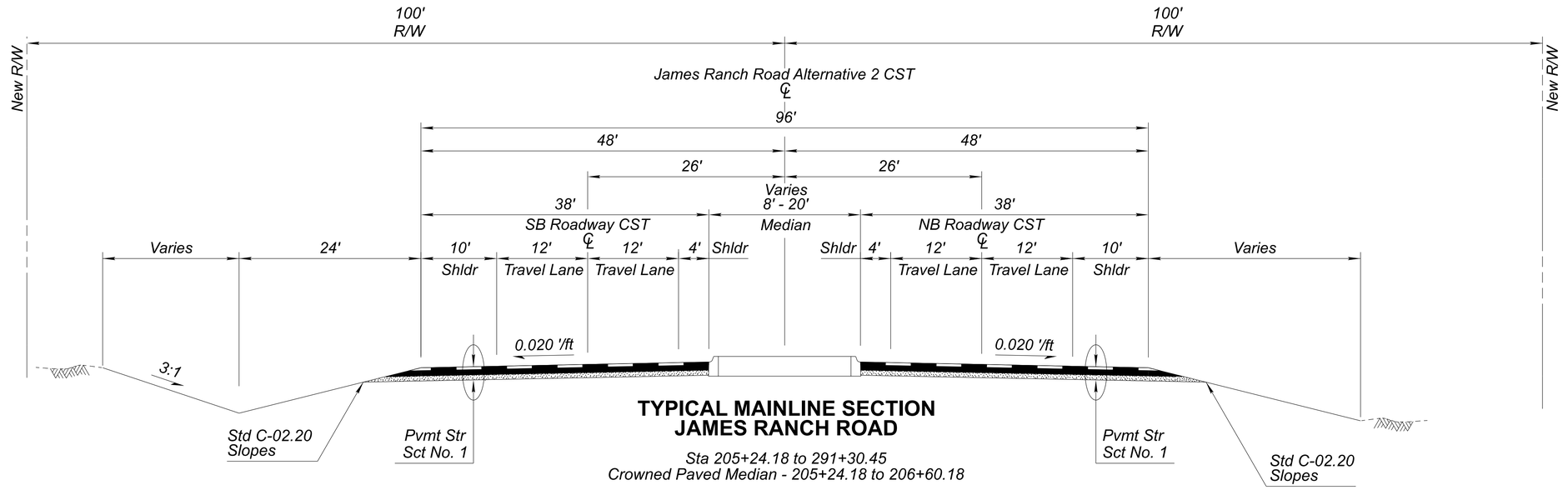
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	3	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

Sta 205+24.18 to 291+30.45
Crowned Paved Median - 205+24.18 to 206+60.18

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
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FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
JAMES RANCH ROAD ALTERNATIVE 2

ROUTE
MILEPOST
STRUCTURE NO.

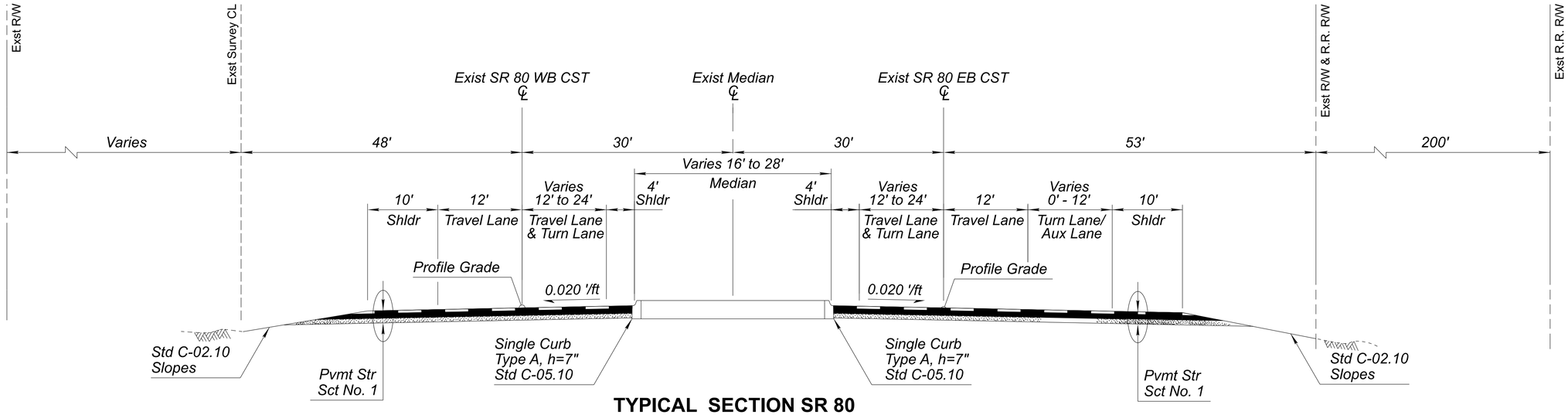
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	4	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

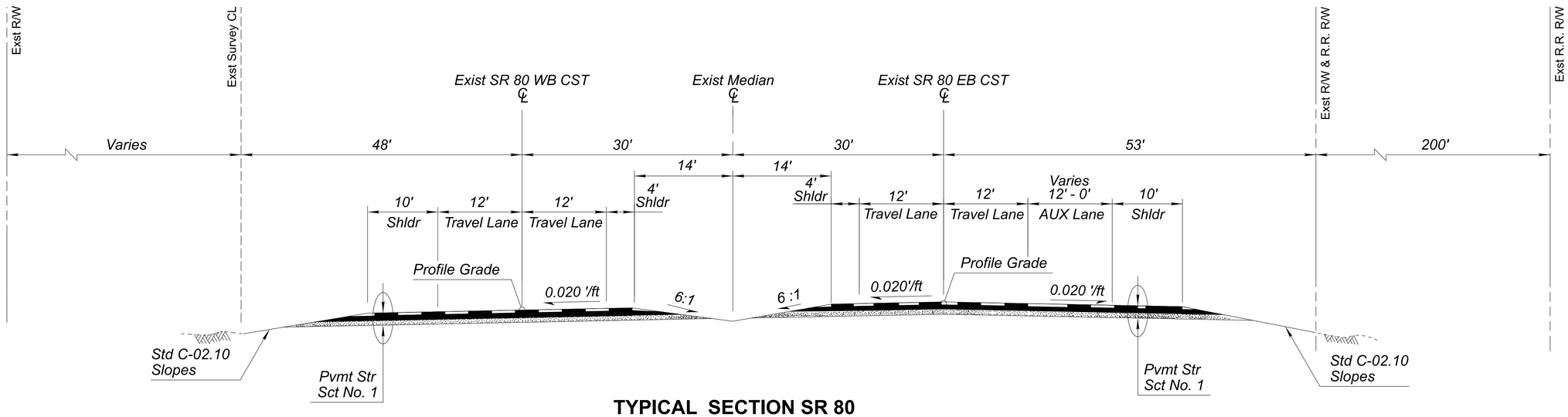
SHEET ____ OF ____

TRACS NO. F0534 01L



TYPICAL SECTION SR 80

Sta 882+14.71 to 916+41.30



TYPICAL SECTION SR 80

Sta 916+41.30 to 934+94.32

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
Suite 300
Chandler, Arizona 85226
PH: (480) 687-4100
FAX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
SR 80 ALTERNATIVE 2

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	5	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L

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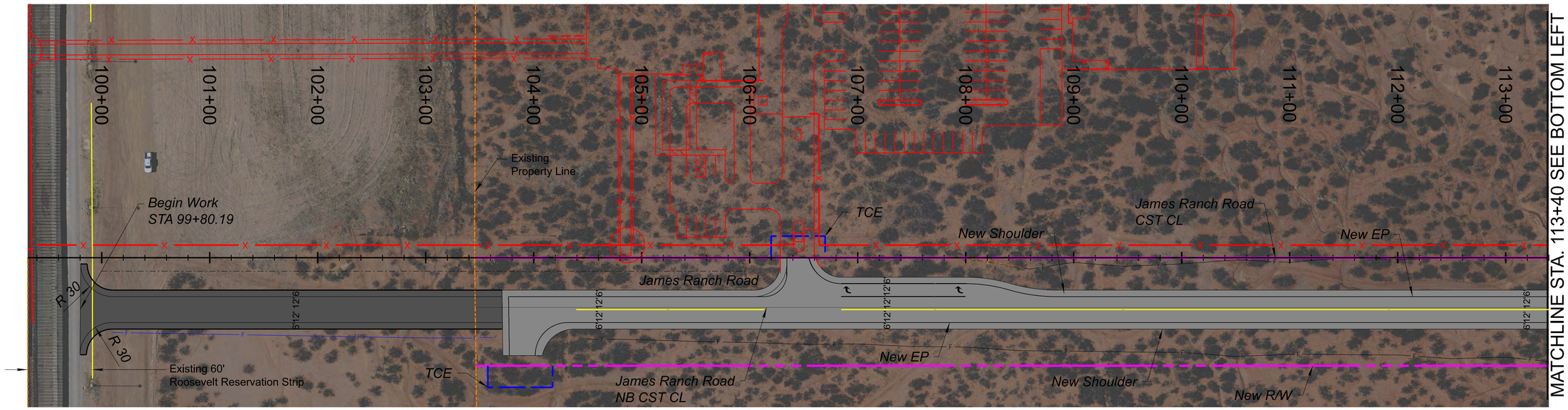

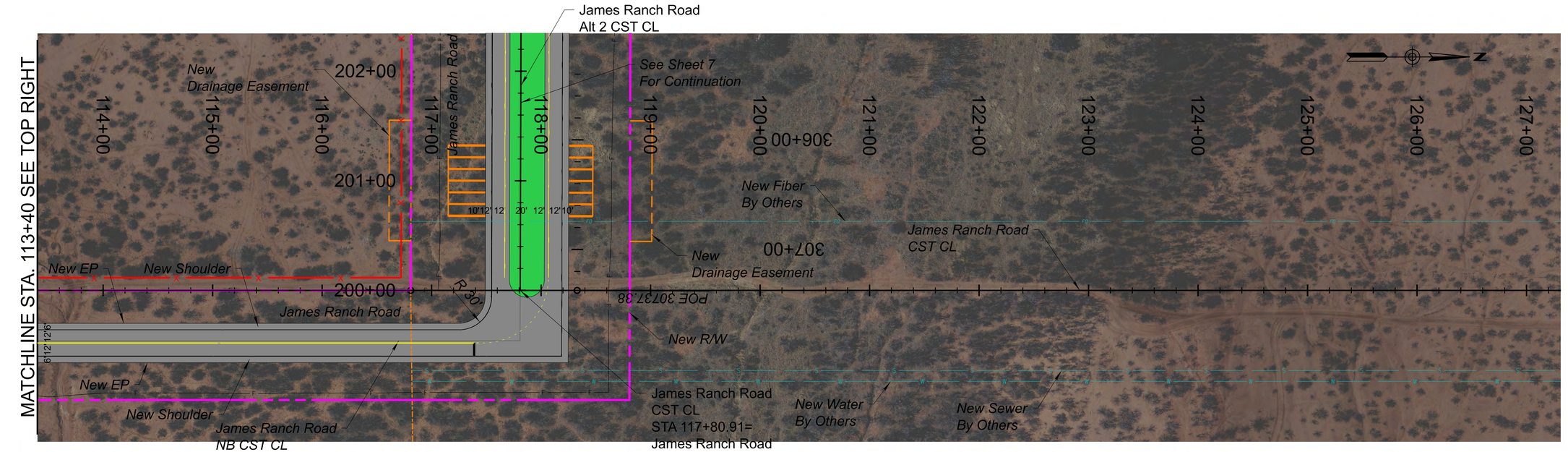

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3333 East Frye Road, Suite 300
Chandler, Arizona 85226
Ph: (480) 687-6000
Fx: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
JAMES RANCH ROAD ALTERNATIVE 2
STA 103+45.17 TO 117+80.91

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	6	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
JAMES RANCH ROAD ALTERNATIVE 2
STA 200+00 TO 228+00

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	7	13	

LOCATION: CITY OF DOUGLAS LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L

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PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING	

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
JAMES RANCH ROAD ALTERNATIVE 2
STA 228+00 TO 256+00

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	8	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L

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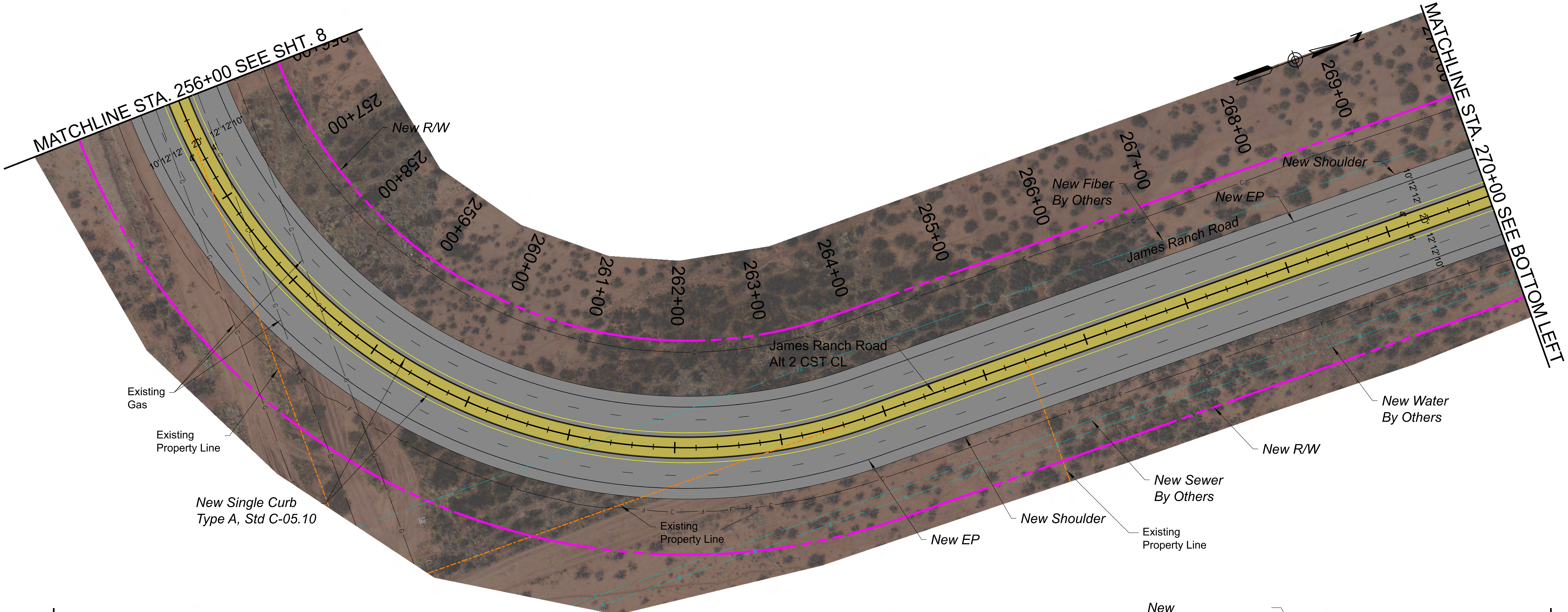

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
JAMES RANCH ROAD ALTERNATIVE 2
STA 256+00 TO 284+00

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	9	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____

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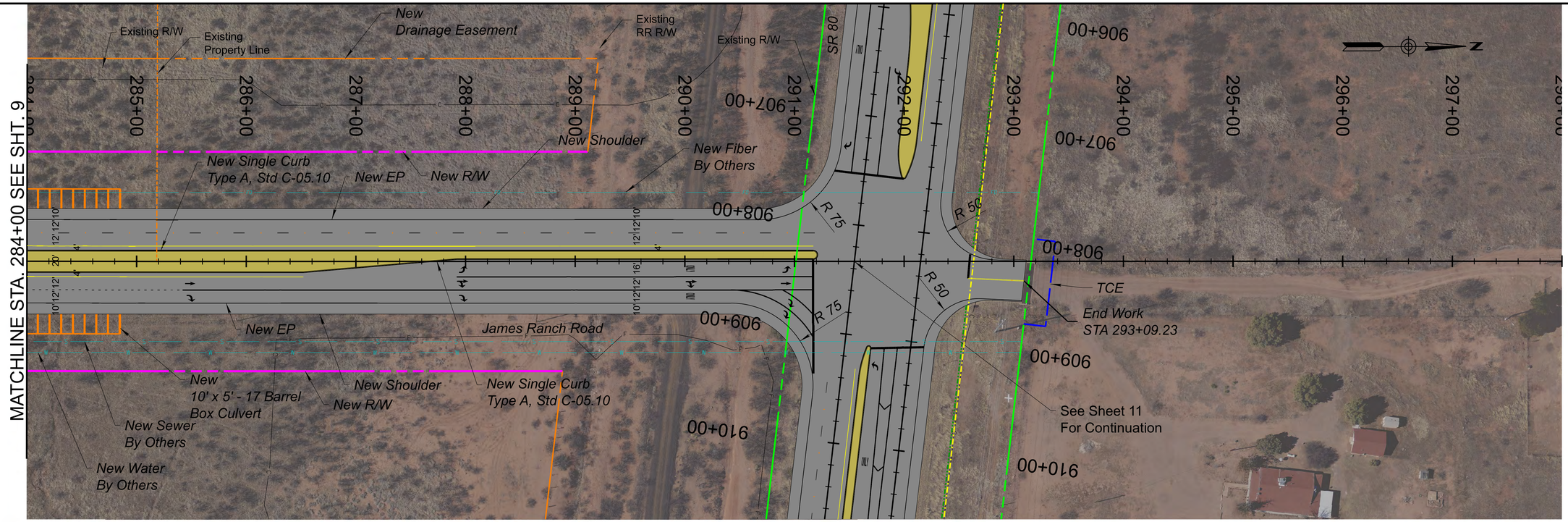


	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
Ph: (480) 687-5400
Fx: (602) 431-9562

PRELIMINARY
NOT FOR CONSTRUCTION OR RECORDING

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
JAMES RANCH ROAD ALTERNATIVE 2
STA 284+00 TO 293+09.23

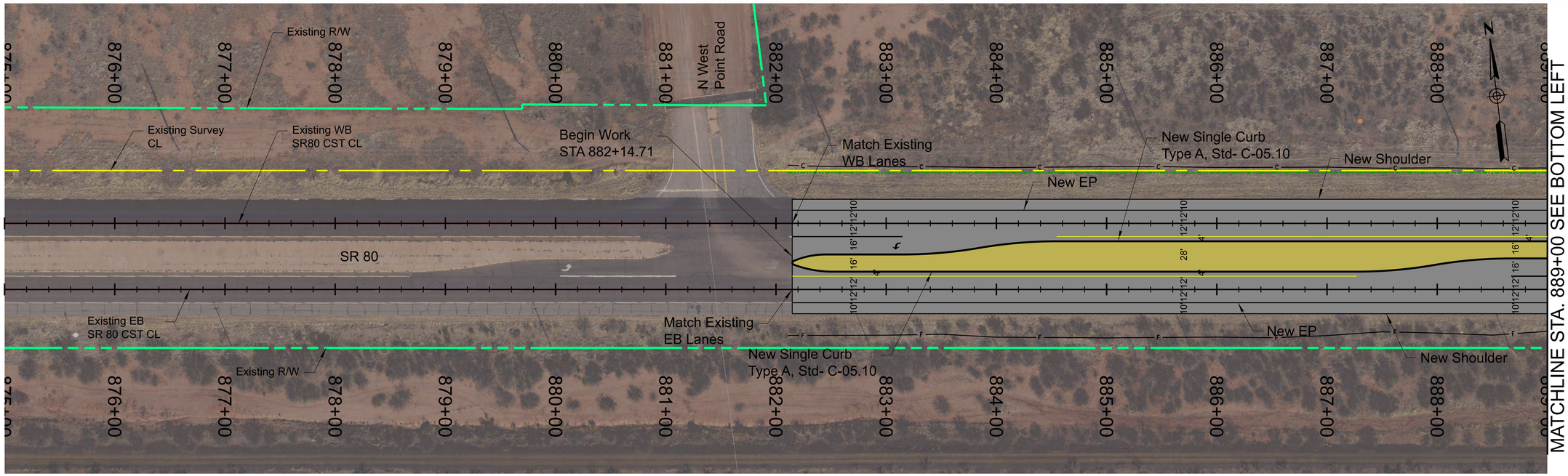
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	10	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
SR 80 ALTERNATIVE 2
STA 882+14.71 TO 903+00

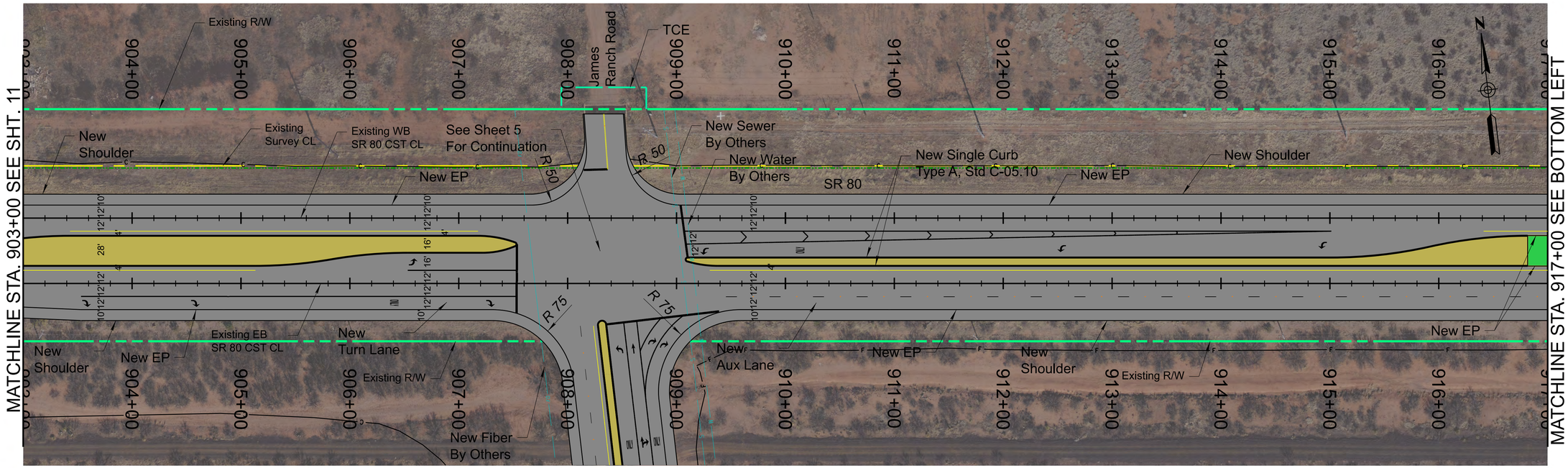
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	11	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ___ OF ___



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
933 East Frye Road, Suite 300
Chandler, Arizona 85286
Ph: (480) 687-5000
Fx: (602) 451-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
SR 80 ALTERNATIVE 2
STA 903+00 TO 931+00

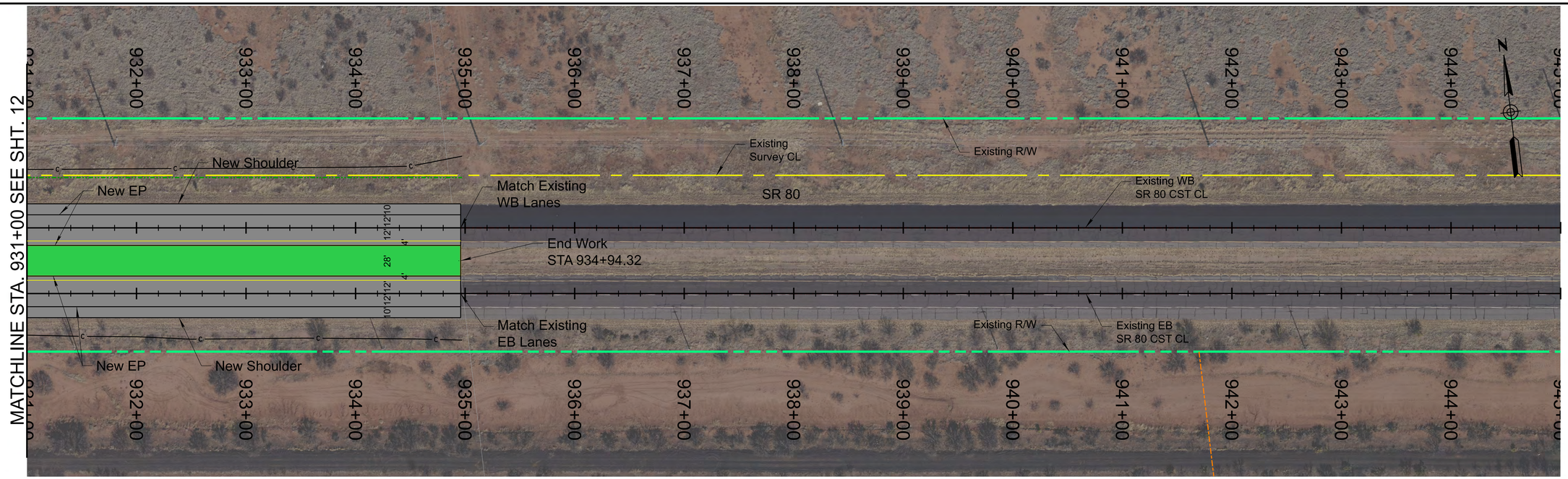
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	12	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
Suite 300
Chandler, Arizona 85226
Ph: (480) 687-6400
Fx: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
SR 80 ALTERNATIVE 2
STA 931+00 TO 934+94.32

ROUTE
MILEPOST
STRUCTURE NO.

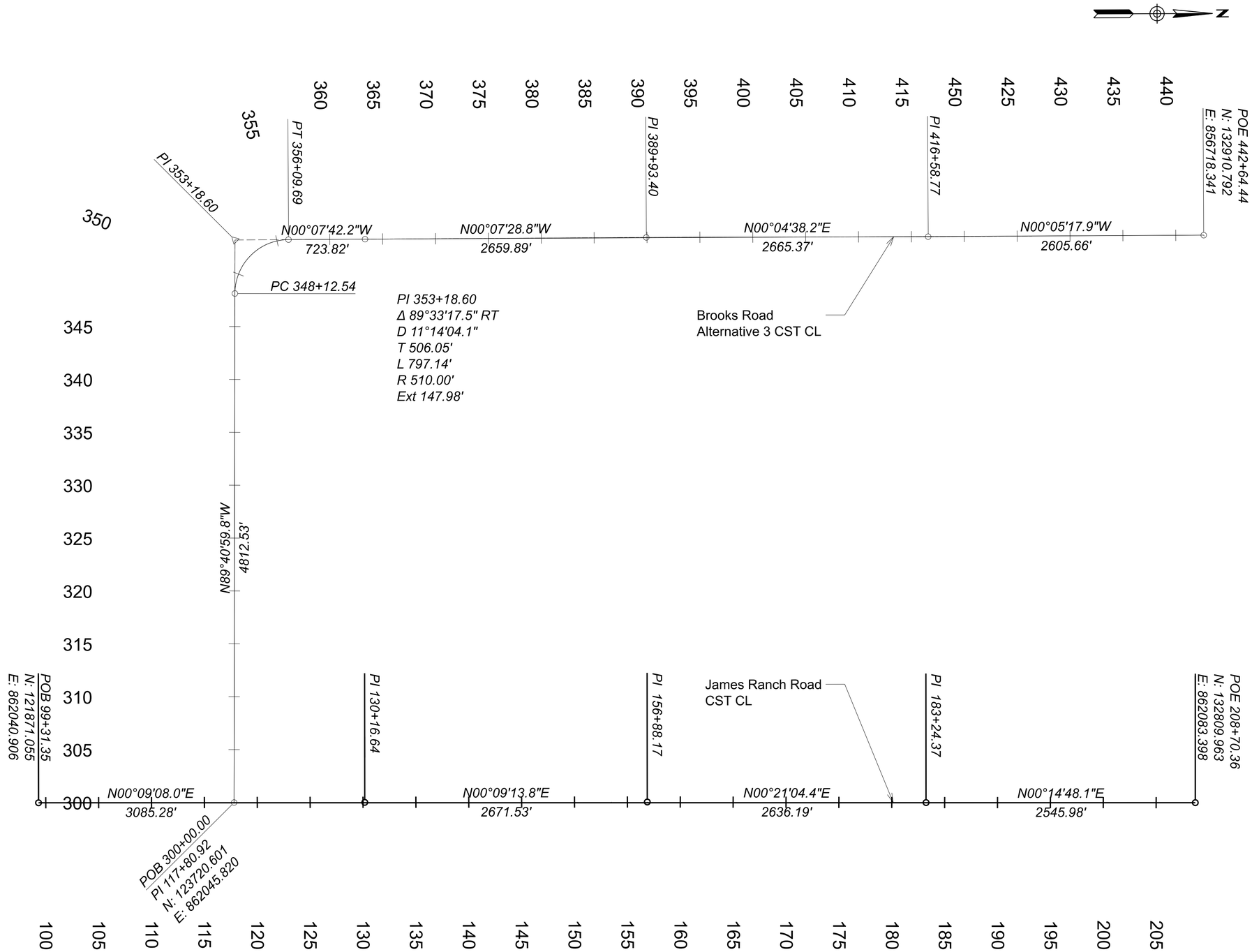
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	13	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L

Appendix D – Plan of Alternative 3



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
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Fax (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC SHEET
BROOKS ROAD ALTERNATIVE 3

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
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FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

GEOMETRIC PLAN
SR 80 ALTERNATIVE 3

ROUTE

MILEPOST

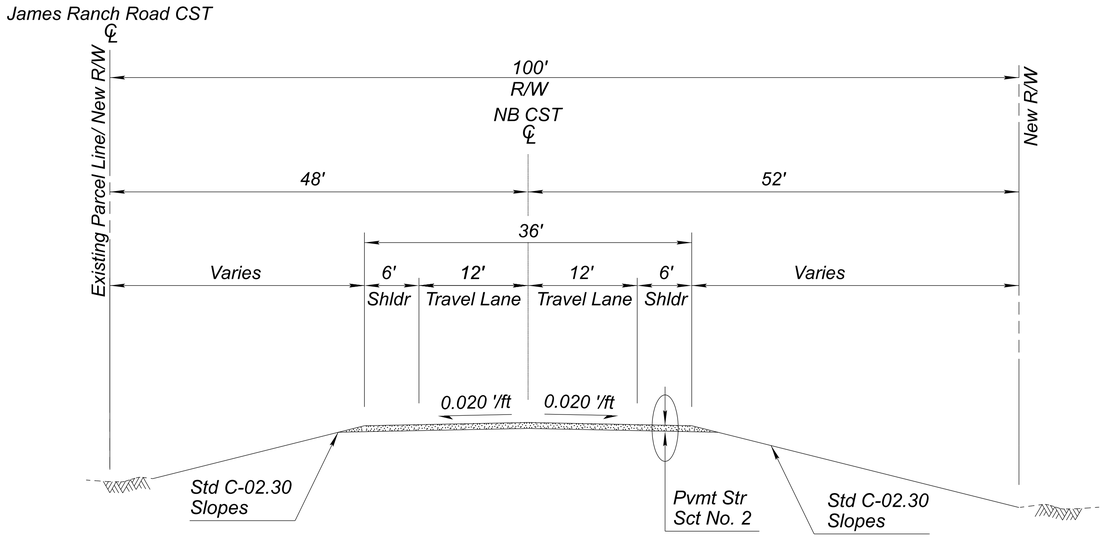
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	2	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

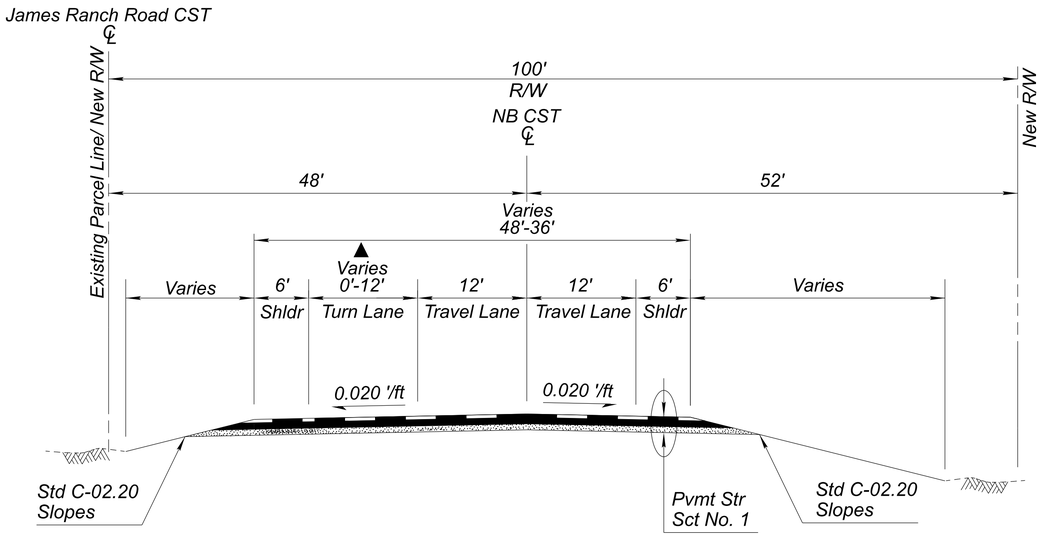
SHEET ____ OF ____

TRACS NO. F0534 01L



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

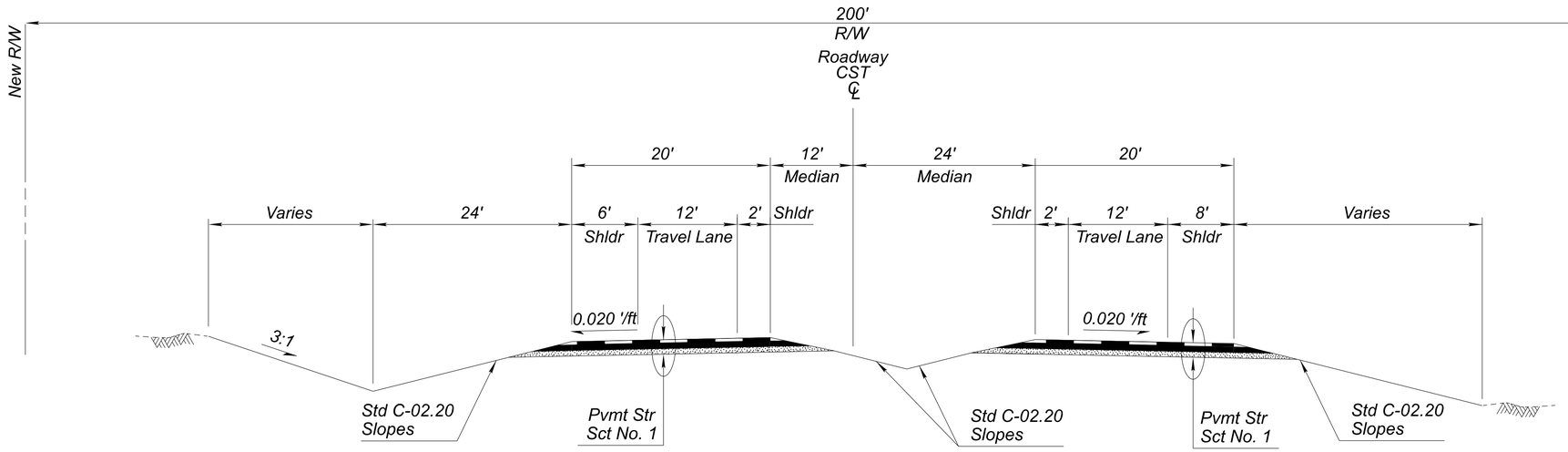
Sta 99+80 to 103+71



TYPICAL MAINLINE SECTION
JAMES RANCH ROAD

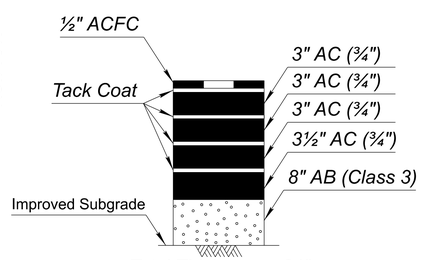
▲*Sta 103+71 to 106+28.29 (0')*
Sta 106+28.29 to 107+99.73 (12')
Sta 107+99.73 to 108+83.78 (12'-0')
Sta 108+83.78 to 117+24.89 (0')

Sta 103+71 to 117+24.89
Sta 117+24.89 to 118+24.91 (Intersection)



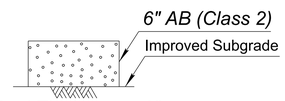
TYPICAL MAINLINE SECTION
BROOKS ROAD

Sta 300+00.00 to 305+24.18



Total Thickness = 21"

SECTION NO. 1



Total Thickness = 6"

SECTION NO. 2

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
BROOKS ROAD ALTERNATIVE 3

ROUTE
MILEPOST
STRUCTURE NO.

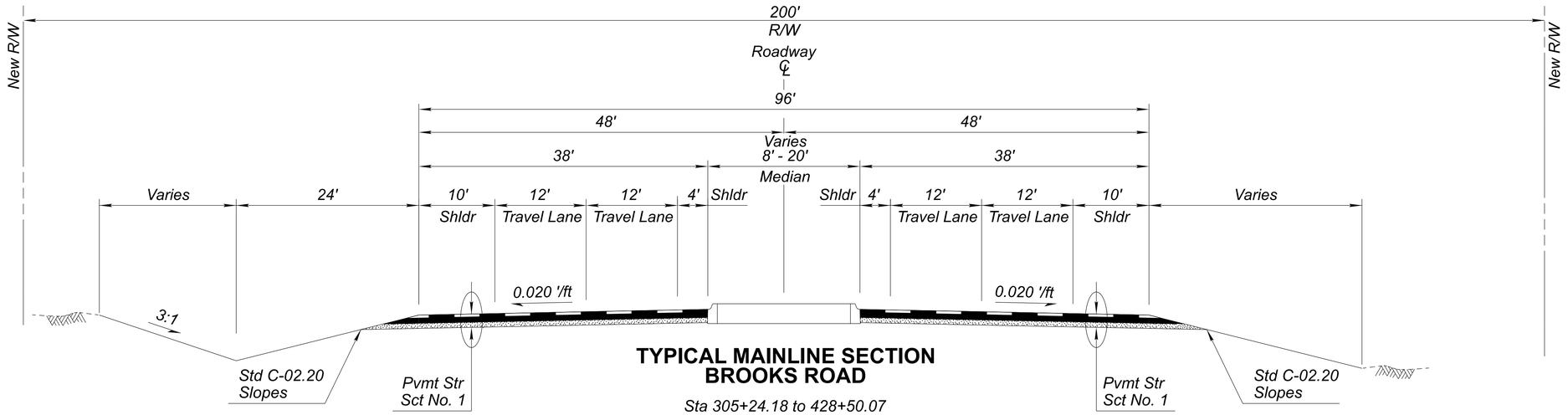
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	3	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



TYPICAL MAINLINE SECTION
BROOKS ROAD

Sta 305+24.18 to 428+50.07
Crowned Paved Median - 305+24.18 to 306+60.18
Crowned Paved Median - 389+64.48 to 390+57.28

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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FX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
SR 80 ALTERNATIVE 3

ROUTE
MILEPOST
STRUCTURE NO.

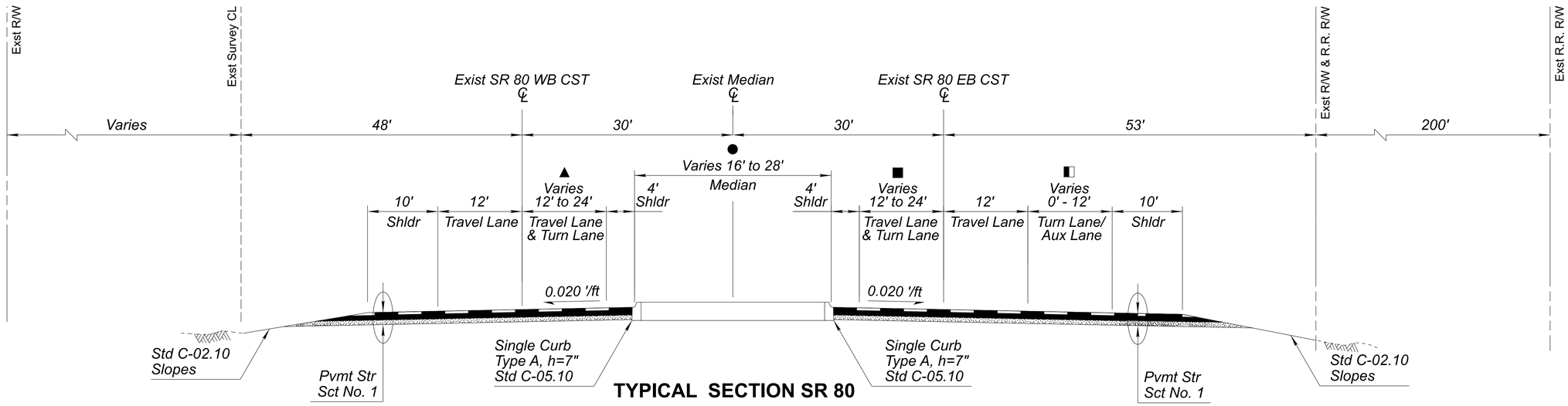
F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	4	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L



TYPICAL SECTION SR 80

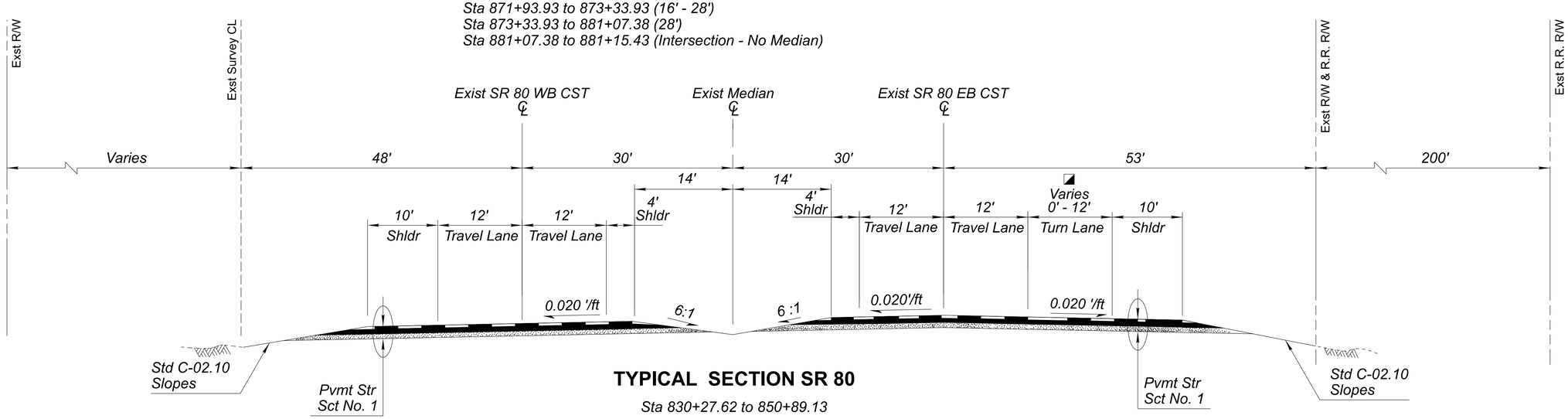
Sta 827+77.10 to 830+27.62
Sta 850+89.13 to 881+15.43

▲ Sta 827+77.10 to 828+80.52 (24')
Sta 828+80.52 to 830+27.62 (24' - 12')
Sta 850+89.13 to 853+41.71 (12')
Sta 854+81.47 to 860+81.18 (24')
Sta 860+81.18 to 862+21.18 (24' - 12')
Sta 862+21.18 to 869+98.53 (12')
Sta 870+93.92 to 871+93.93 (24')
Sta 871+93.93 to 873+33.93 (24' - 12')
Sta 873+33.93 to 881+15.43 (12')

● Sta 827+77.10 to 828+80.52 (16')
Sta 828+80.52 to 830+27.62 (16' - 28')
Sta 850+89.13 to 852+41.71 (28' - 16')
Sta 852+41.71 to 853+41.71 (16')
Sta 853+41.71 to 854+81.47 (Intersection - No Median)
Sta 854+81.47 to 860+81.18 (16')
Sta 860+81.18 to 862+21.18 (16' - 28')
Sta 862+21.18 to 869+98.53 (28')
Sta 869+98.53 to 870+93.92 (Intersection - No Median)
Sta 870+93.92 to 871+93.93 (16')
Sta 871+93.93 to 873+33.93 (16' - 28')
Sta 873+33.93 to 881+07.38 (28')
Sta 881+07.38 to 881+15.43 (Intersection - No Median)

■ Sta 827+77.10 to 830+27.62 (12')
Sta 850+89.13 to 852+41.71 (12' - 24')
Sta 852+41.71 to 853+41.71 (24')
Sta 854+81.47 to 867+58.52 (12')
Sta 867+58.52 to 868+98.52 (12' - 24')
Sta 868+98.52 to 869+98.52 (24')
Sta 870+93.92 to 878+67.36 (12')
Sta 878+67.36 to 880+07.36 (12' - 24')
Sta 880+07.36 to 881+07.38 (24')

◧ Sta 850+89.13 to 865+37.87 (12')
Sta 865+37.87 to 873+17.87 (12' - 0')



TYPICAL SECTION SR 80

Sta 830+27.62 to 850+89.13

◪ Sta 830+27.62 to 846+85.58 (0')
Sta 846+85.58 to 849+60.58 (0' - 12')
Sta 849+60.58 to 850+89.13 (12')

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road, Suite 300
Chandler, Arizona 85226
PH: (480) 687-6100
FAX: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TYPICAL SECTION
BROOKS ROAD ALTERNATIVE 3

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	5	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET OF

TRACS NO. F0534 01L

____ OF ____

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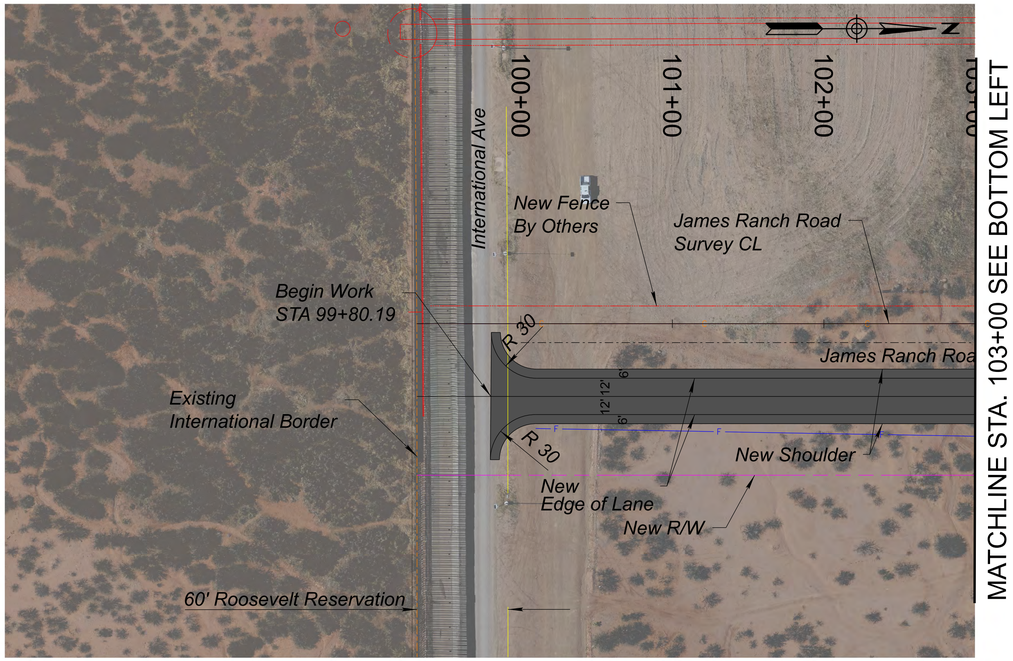

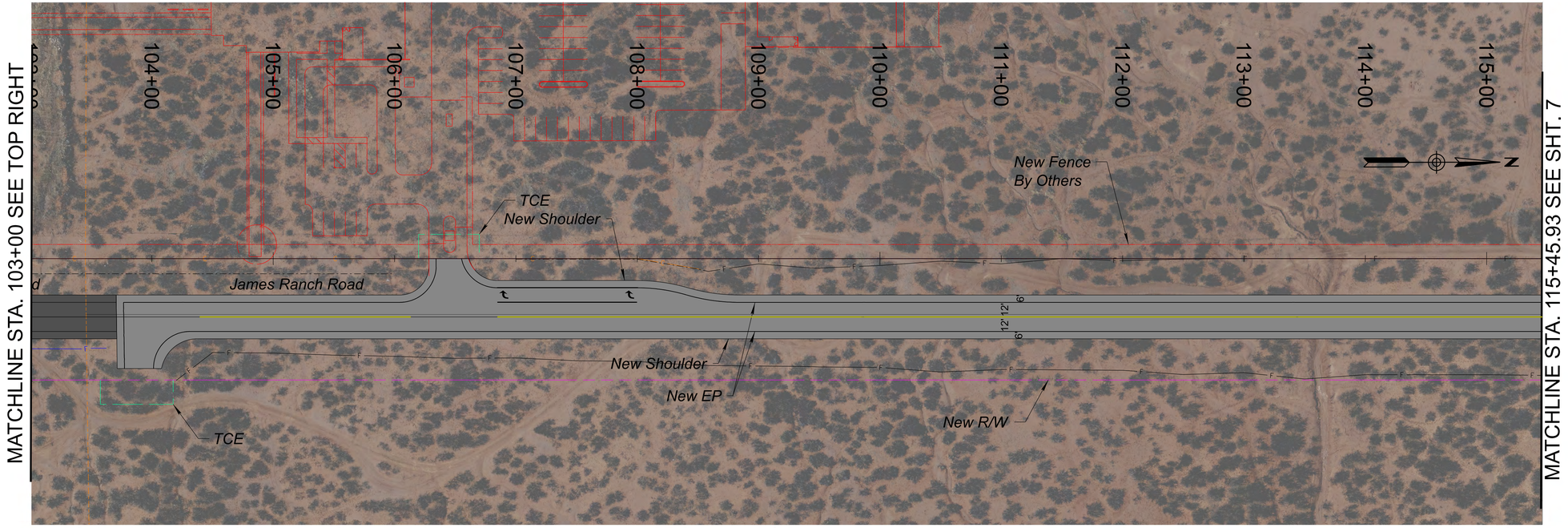

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
BROOKS ROAD ALTERNATIVE 3
STA 103+45.17 TO 115+45.93

ROUTE
MILEPOST
STRUCTURE NO.

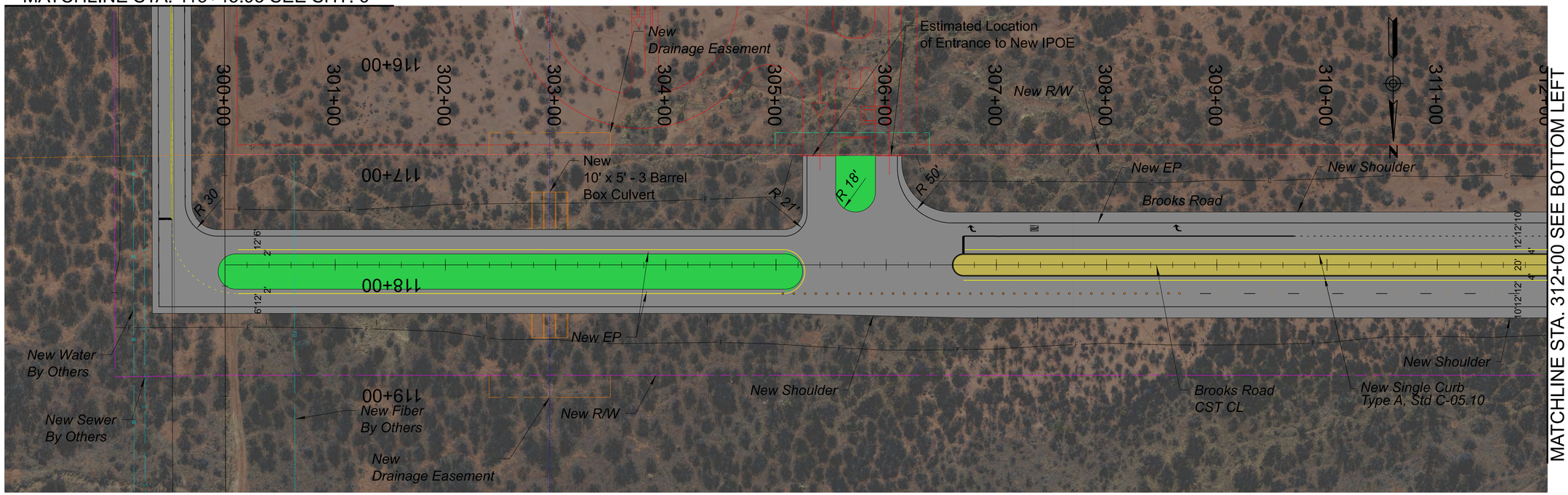
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	6	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

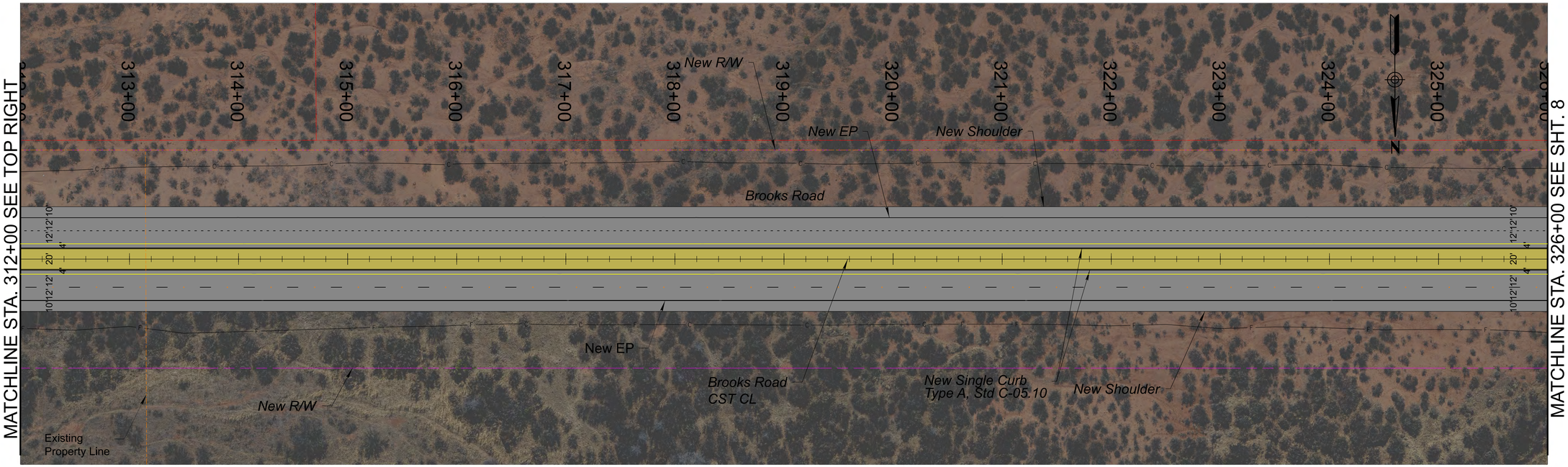
SHEET ____ OF ____

MATCHLINE STA. 115+45.93 SEE SHT. 6



MATCHLINE STA. 312+00 SEE BOTTOM LEFT

MATCHLINE STA. 312+00 SEE TOP RIGHT



MATCHLINE STA. 326+00 SEE SHT. 8

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
BROOKS ROAD ALTERNATIVE 3
STA 115+45.93 TO 326+00

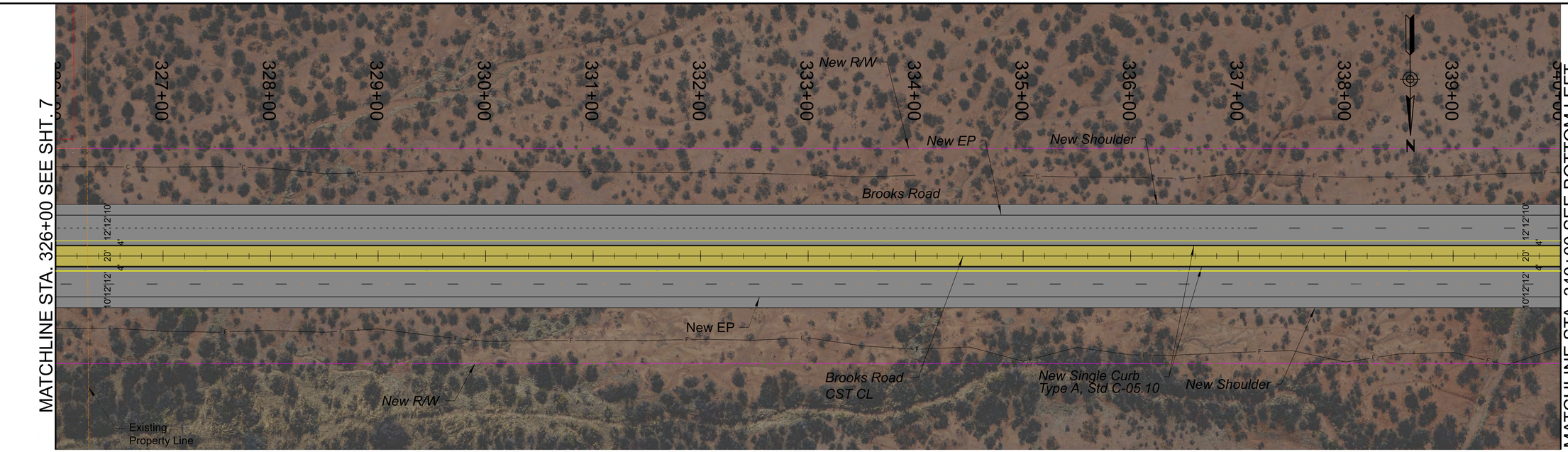
ROUTE
MILEPOST
STRUCTURE NO.

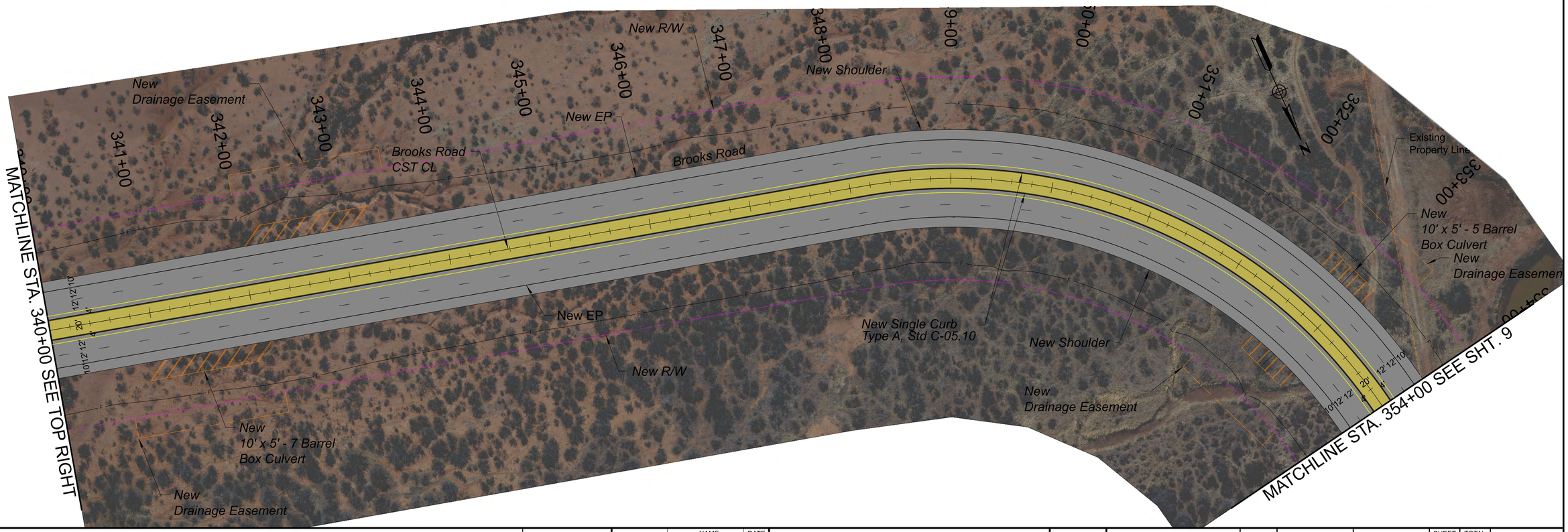
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	7	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
BROOKS ROAD ALTERNATIVE 3
STA 326+00 TO 354+00

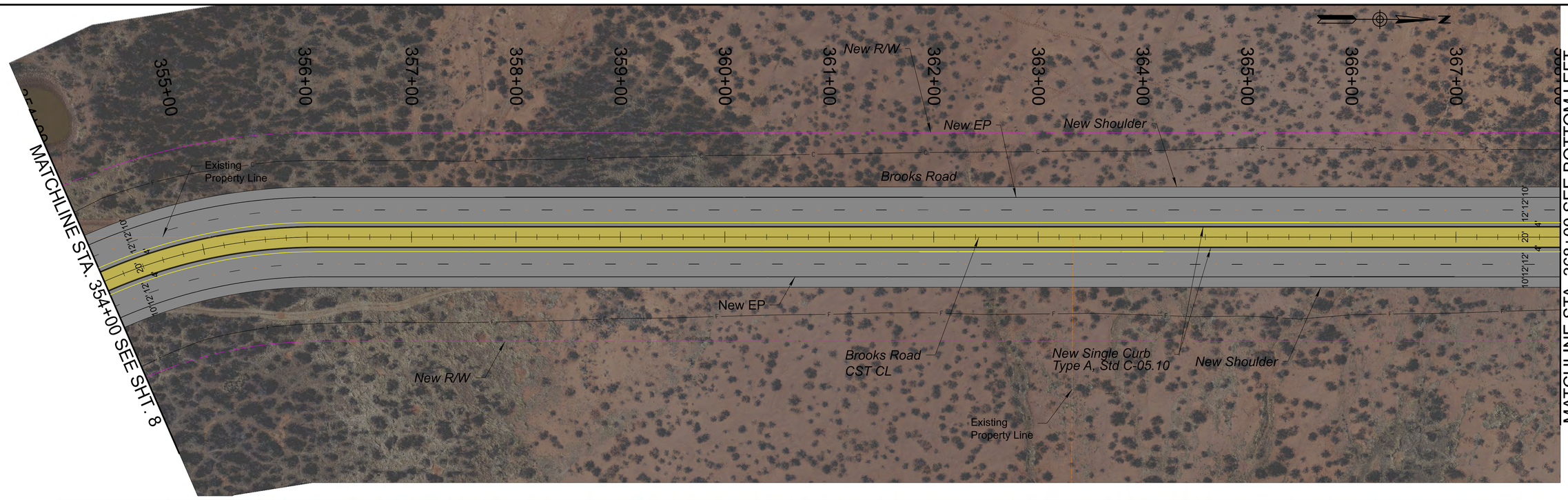
ROUTE
MILEPOST
STRUCTURE NO.

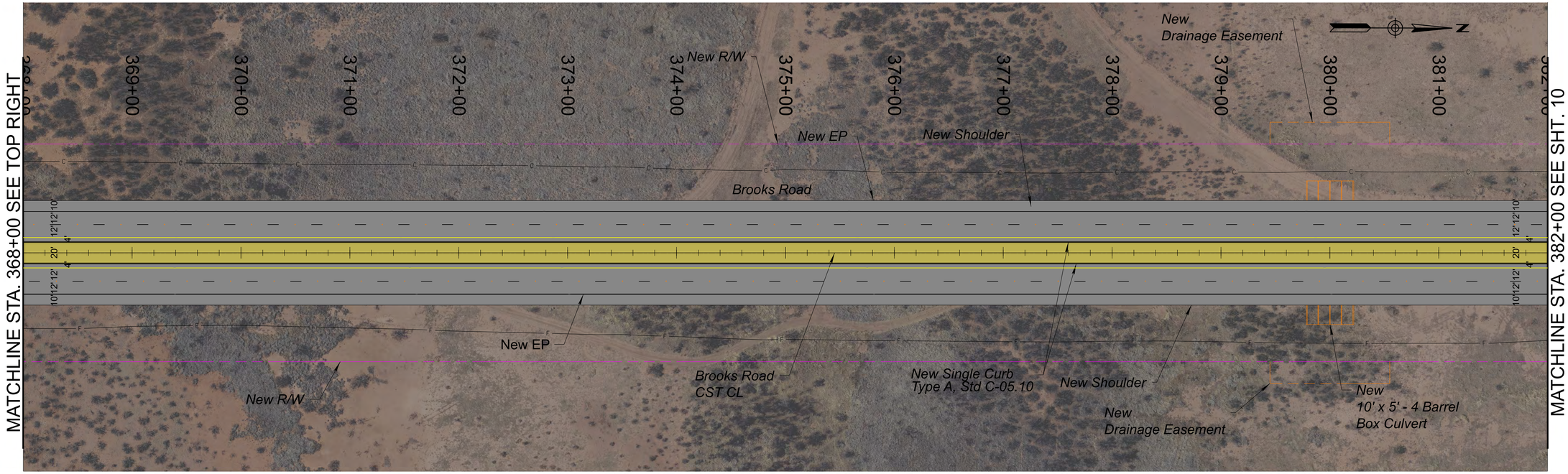
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	8	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L





PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec
3133 West Frye Road,
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
BROOKS ROAD ALTERNATIVE 3
STA 354+00 TO 382+00

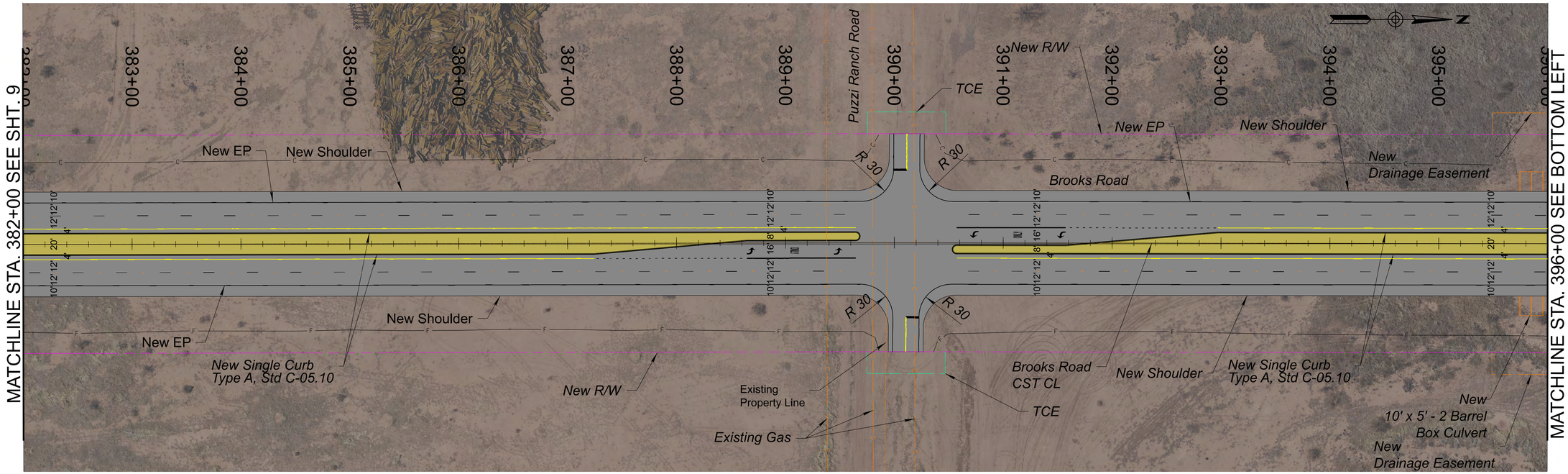
ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	9	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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533 East Frye Road, Suite 300
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
BROOKS ROAD ALTERNATIVE 3
STA 382+00 TO 410+00

ROUTE
MILEPOST
STRUCTURE NO.

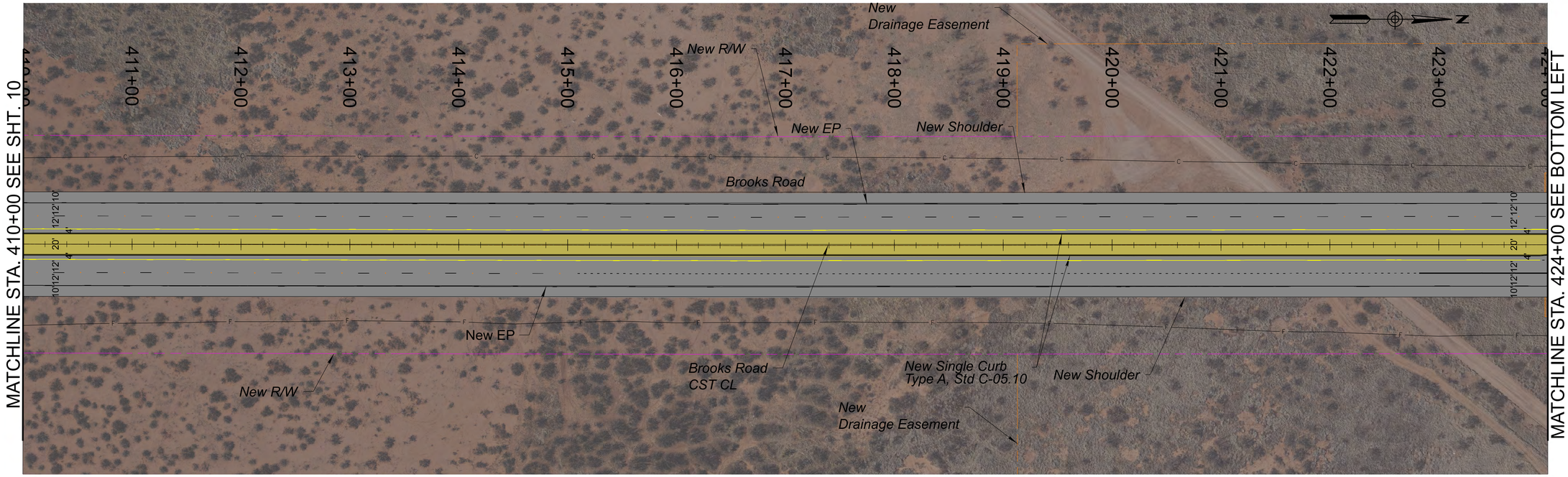
F.H.W.A. Arizona Division

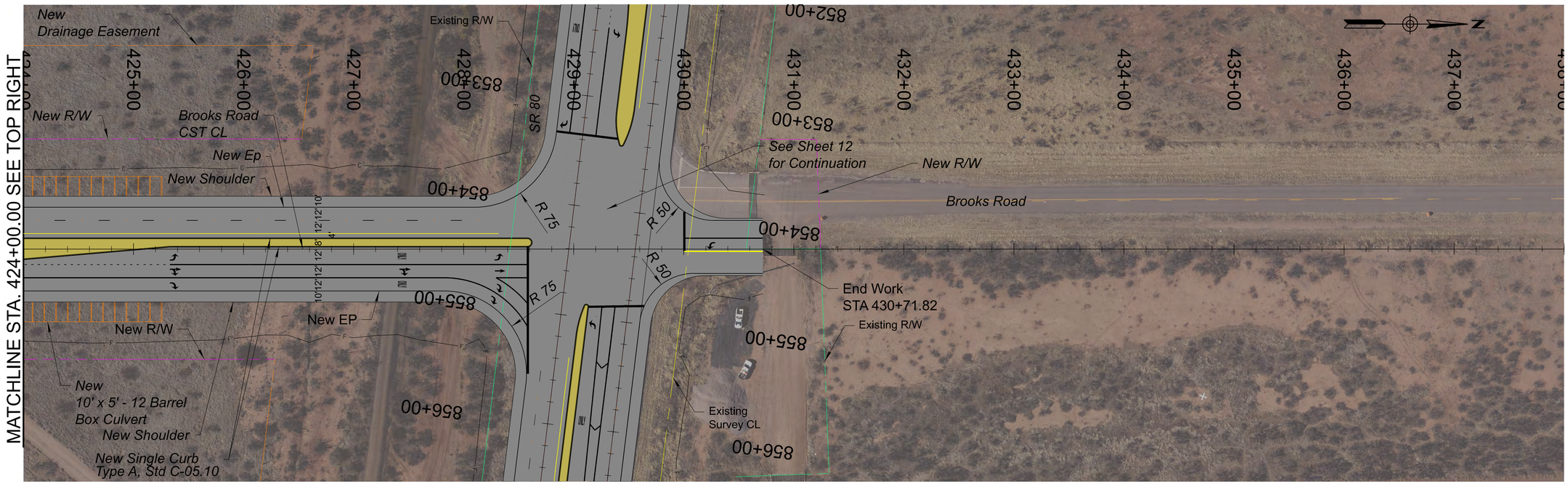
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	10	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET ____ OF ____





PRELIMINARY
NOT FOR
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OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
BROOKS ROAD ALTERNATIVE 3
STA 410+00 TO 430+71.82

ROUTE
MILEPOST
STRUCTURE NO.

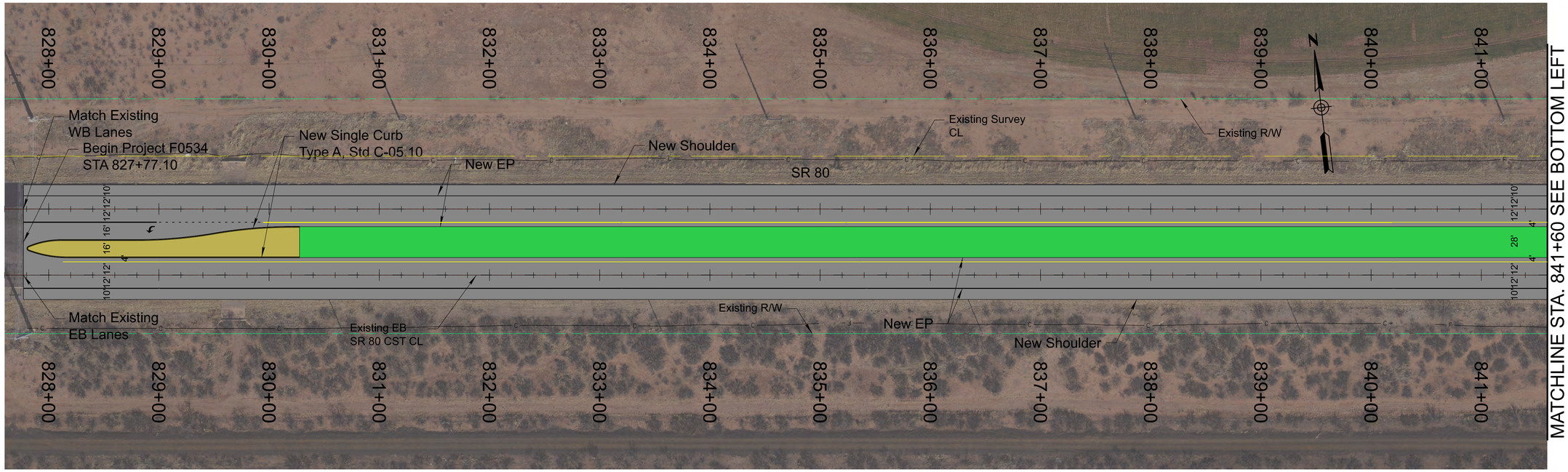
F.H.W.A. Arizona Division

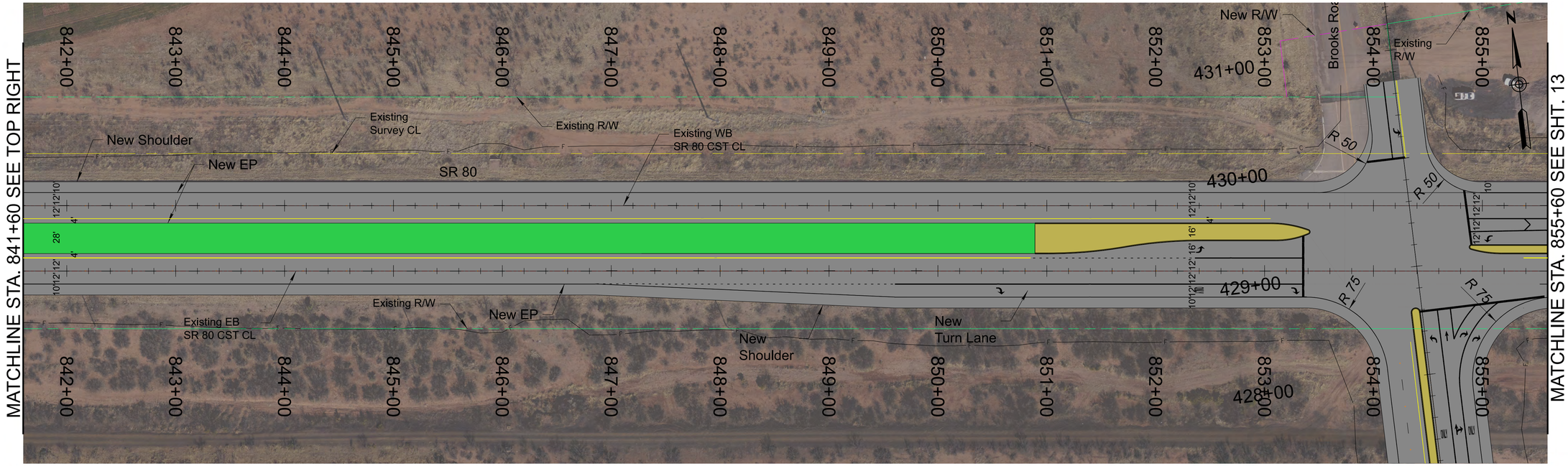
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	11	13	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ____ OF ____

TRACS NO. F0534 01L





PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
SR 80 ALTERNATIVE 3
STA 827+77.10 TO 885+60

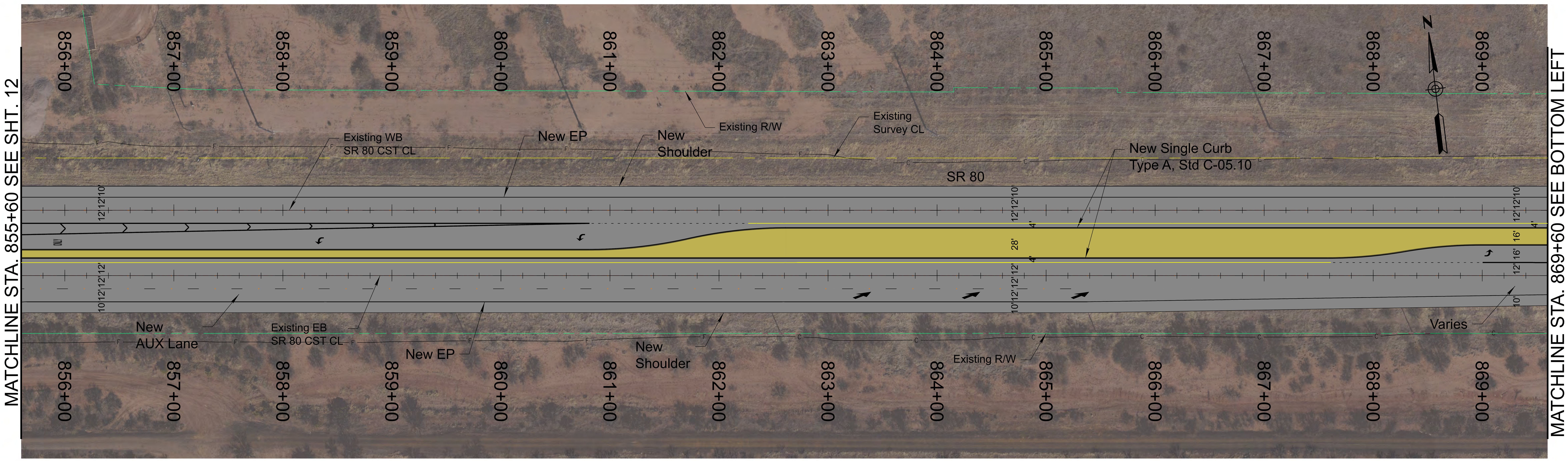
ROUTE
MILEPOST
STRUCTURE NO.

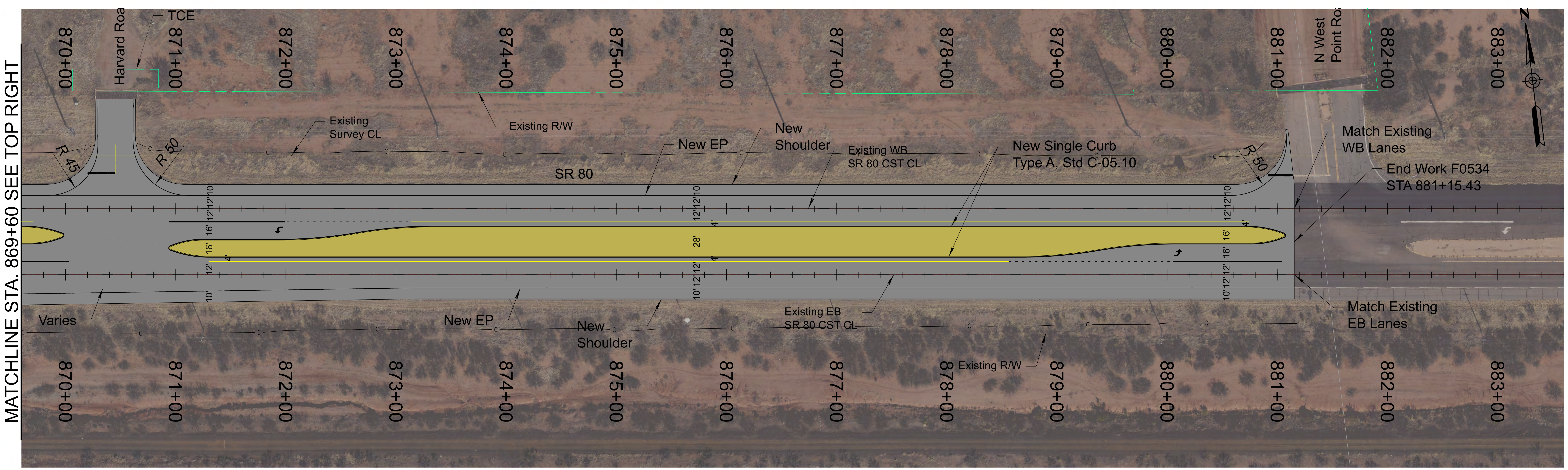
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	12	13	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

TRACS NO. F0534 01L

SHEET OF
___ OF___





PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	M. HERNANDEZ	03/25
DRAWN	M. HERNANDEZ	03/25
CHECKED	R. LEMKE	03/25

Stantec

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

PLAN SHEET
SR 80 ALTERNATIVE 3
STA 855+60 TO

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	13	13	

LOCATION: CITY OF DOUGLAS LAND PORT OF ENTRY CONNECTOR ROAD

SHEET ___ OF ___

TRACS NO. F0534 01L

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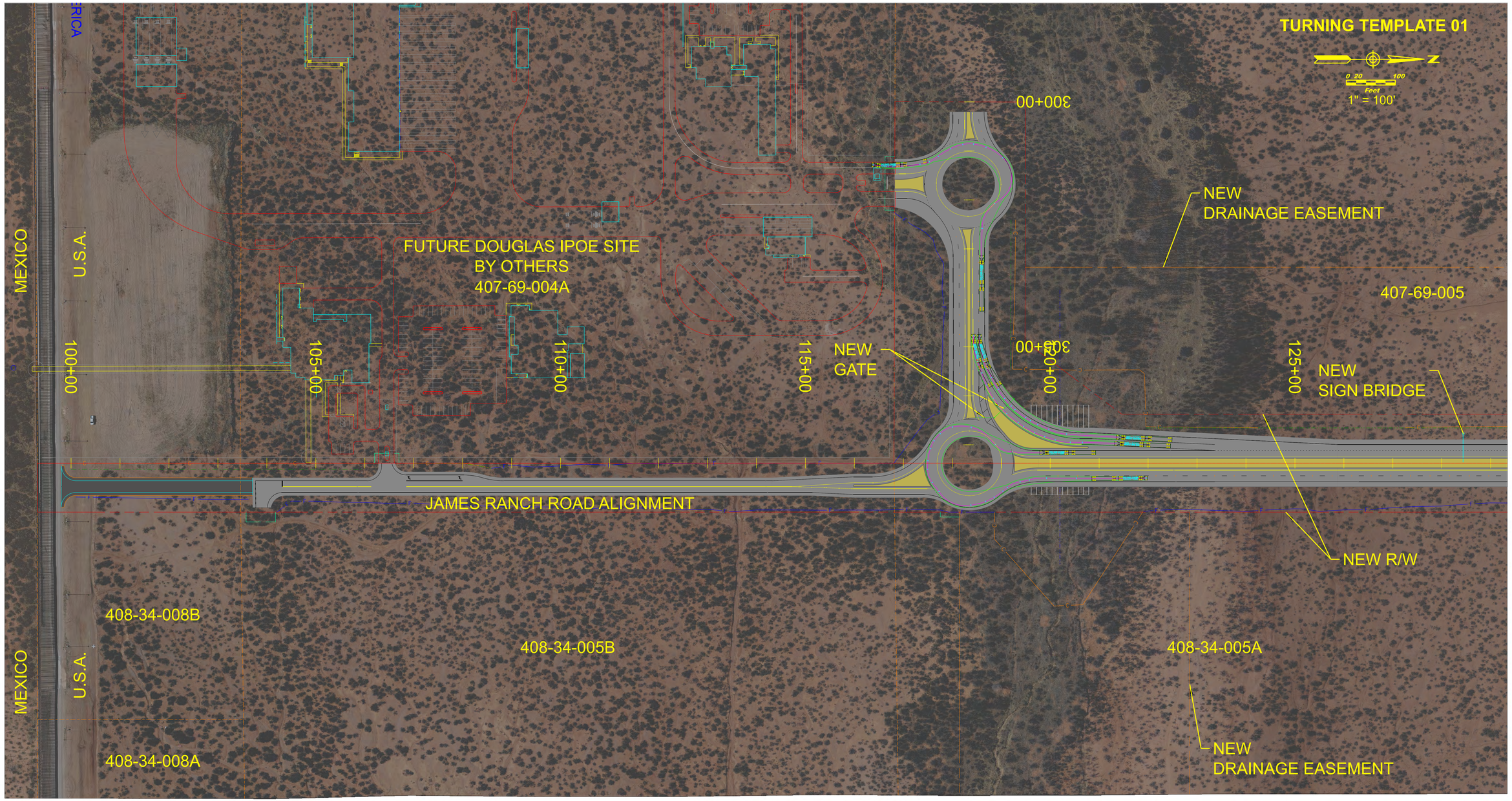
Appendix E – Roundabout Exhibit



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	STANTEC	03/25
DRAWN	STANTEC	03/25
CHECKED	STANTEC	03/25

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Fx: (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TURNING TEMPLATE EXHIBIT 01
ULTIMATE CONDITION

ROUTE
MILEPOST
STRUCTURE NO.

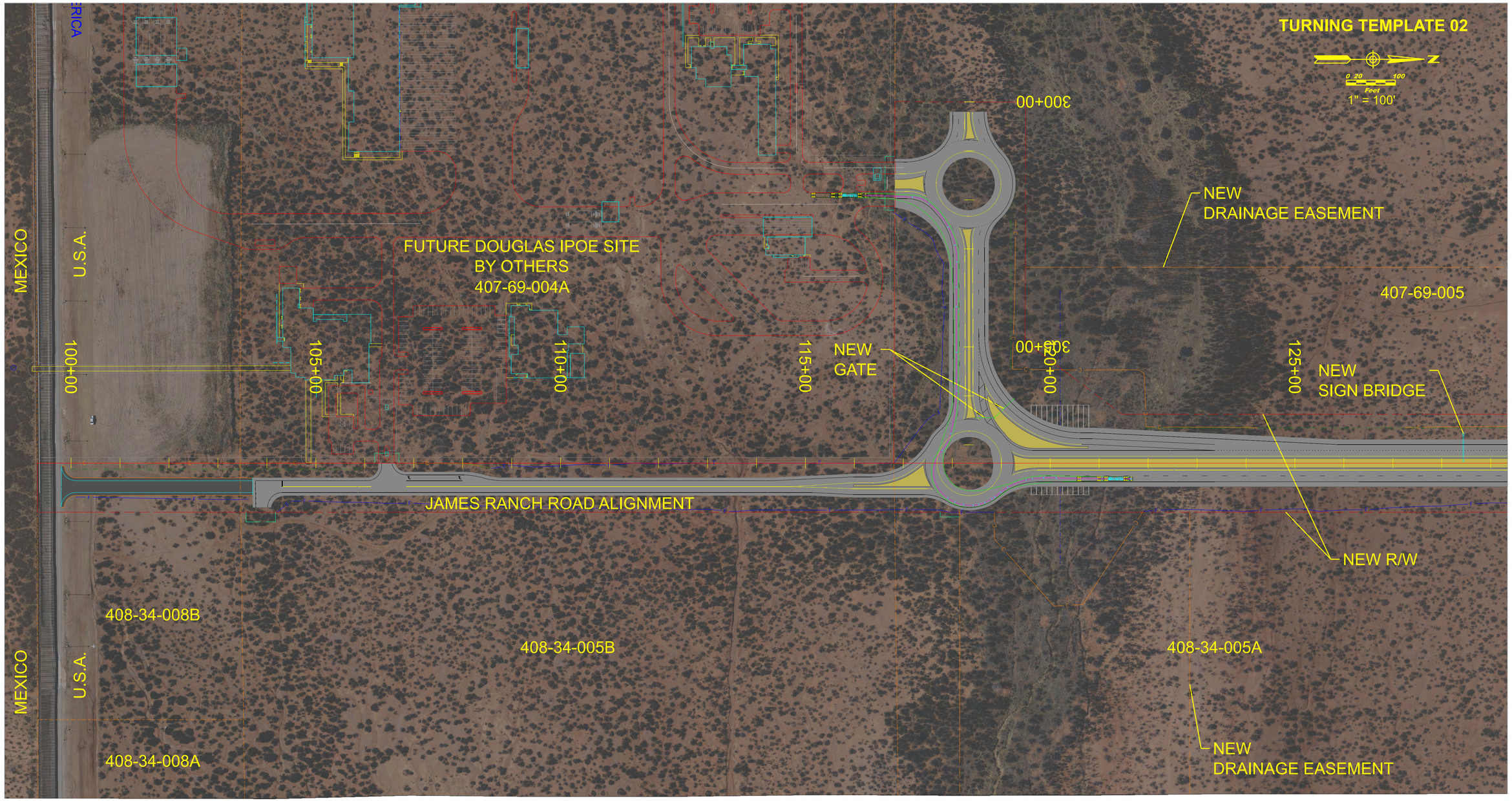
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	1	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET 1 OF 1

TRACS NO. F0534 01L

____ OF ____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	STANTEC	03/25
DRAWN	STANTEC	03/25
CHECKED	STANTEC	03/25

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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TURNING TEMPLATE EXHIBIT 02
ULTIMATE CONDITION

ROUTE
MILEPOST
STRUCTURE NO.

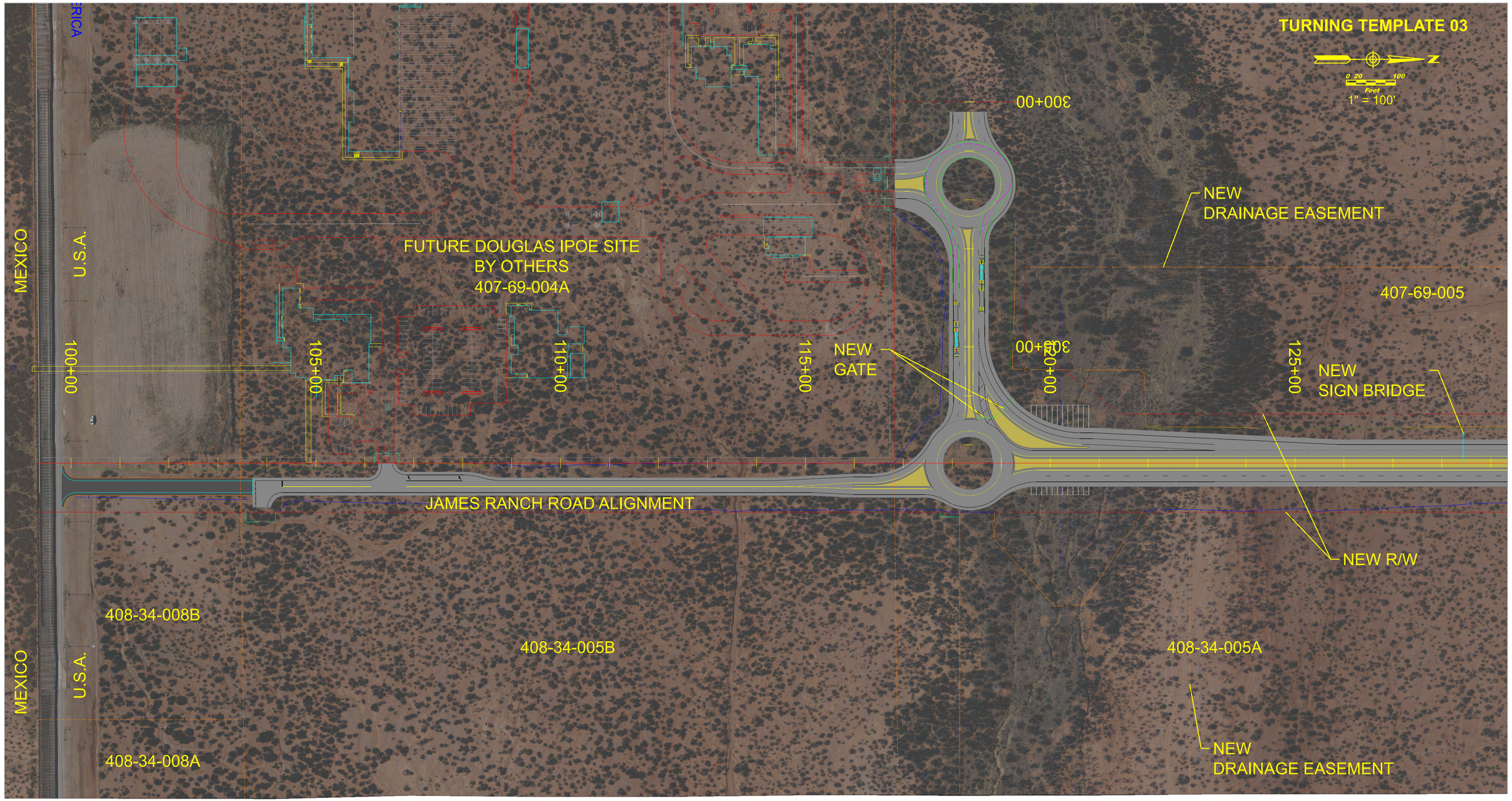
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	1	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET 1 OF 1

TRACS NO. F0534 01L

____ OF ____



PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	STANTEC	03/25
DRAWN	STANTEC	03/25
CHECKED	STANTEC	03/25

Stantec
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TURNING TEMPLATE EXHIBIT 03
ULTIMATE CONDITION

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	1	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET 1 OF 1

TRACS NO. F0534 01L

____ OF ____

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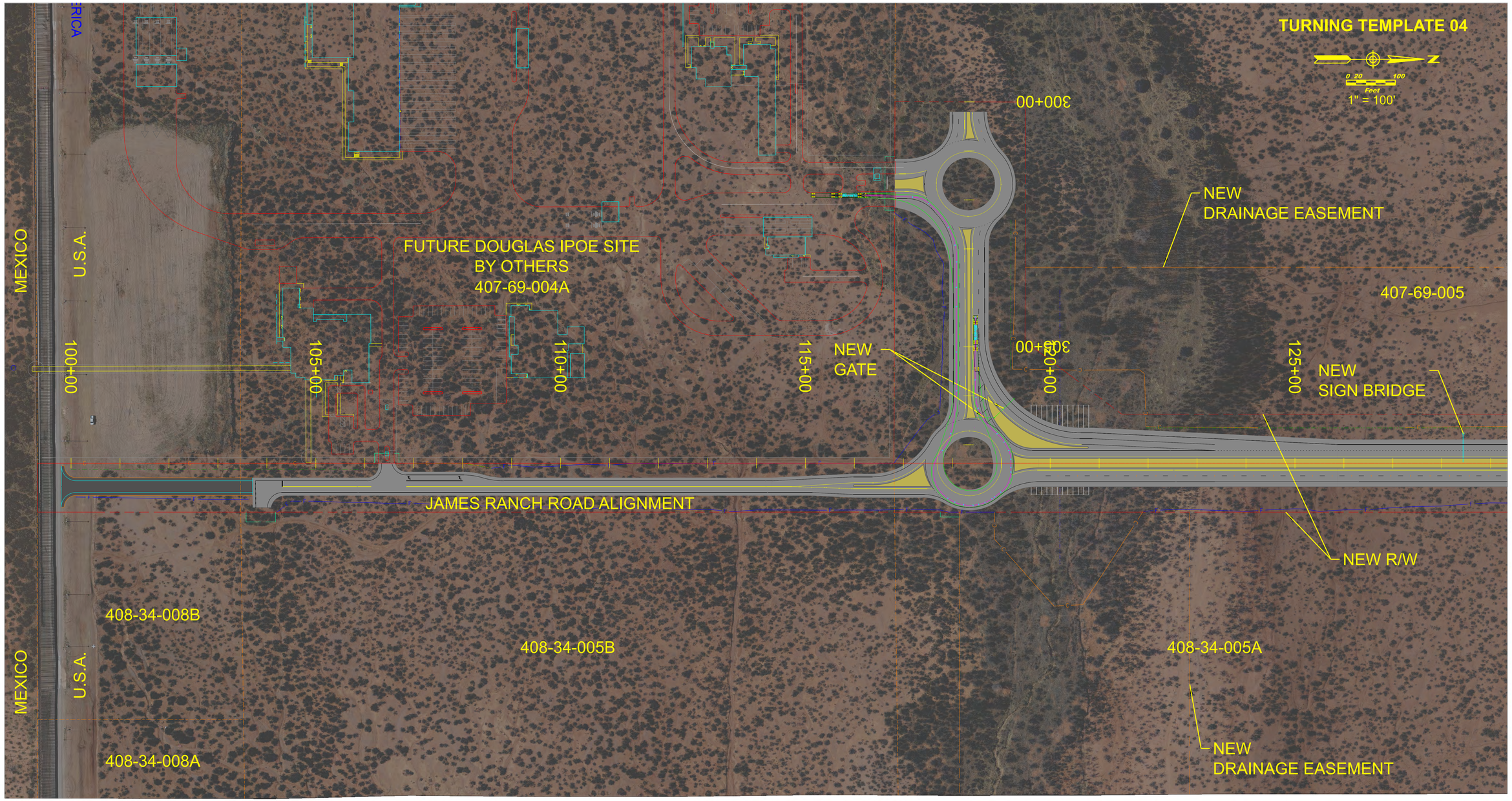

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	STANTEC	03/25
DRAWN	STANTEC	03/25
CHECKED	STANTEC	03/25

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3133 West Frye Road, Suite 300
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TURNING TEMPLATE EXHIBIT 04
ULTIMATE CONDITION

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.		999-A(561)T	1	1	

LOCATION CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET 1 OF 1

TRACS NO. F0534 01L

____ OF____

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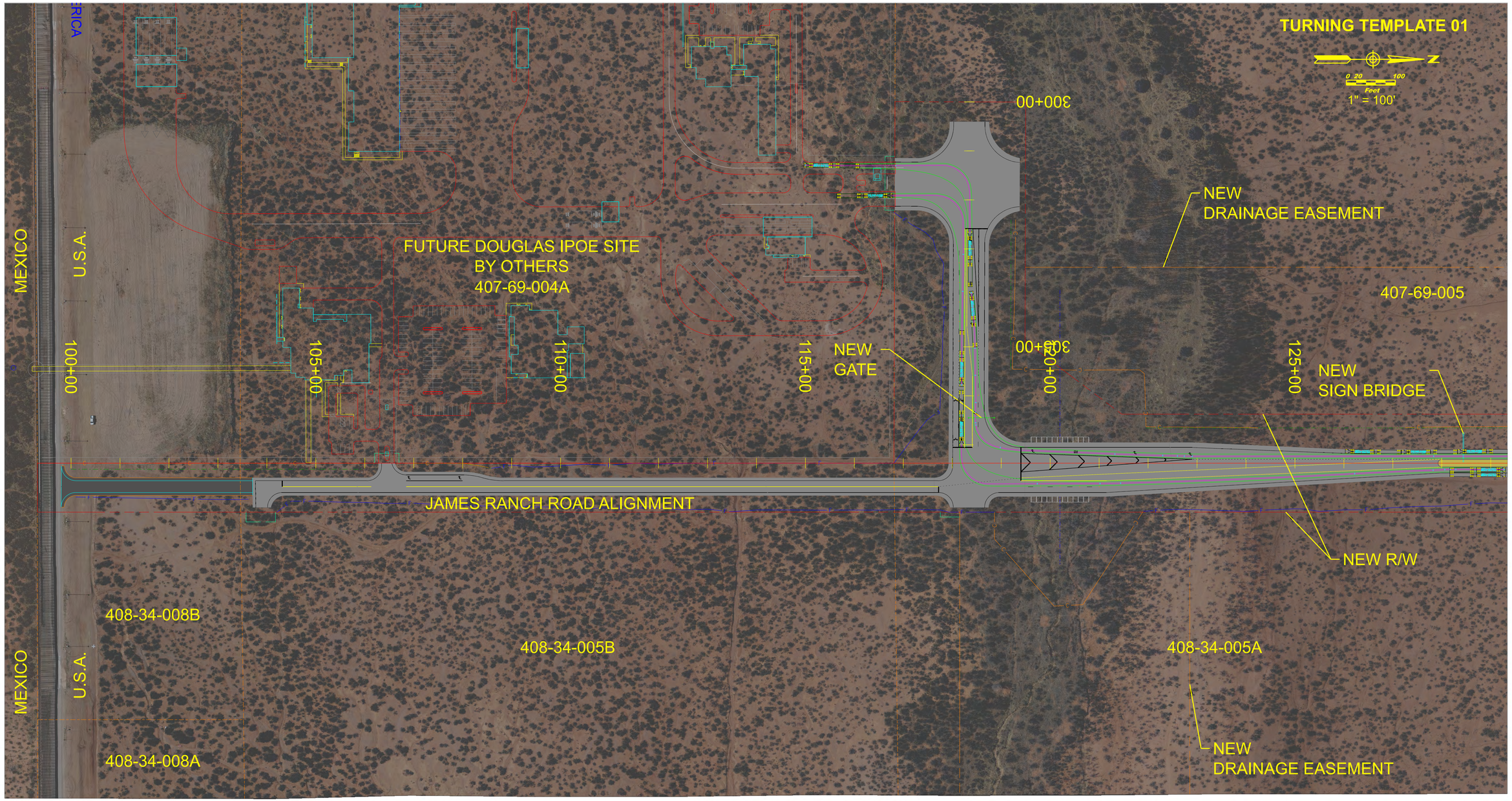

PRELIMINARY
NOT FOR
CONSTRUCTION
OR RECORDING

	NAME	DATE
DESIGN	STANTEC	03/25
DRAWN	STANTEC	03/25
CHECKED	STANTEC	03/25

Stantec
3333 East Frye Road, Suite 300
Chandler, Arizona 85226
PH (480) 687-5000
FAX (602) 431-9562

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP

TURNING TEMPLATE EXHIBIT 01
INTERIM CONDITION

ROUTE
MILEPOST
STRUCTURE NO.

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.		999-A(561)T	1	1	

LOCATION: CITY OF DOUGLAS
LAND PORT OF ENTRY CONNECTOR ROAD

SHEET 1 OF 1

TRACS NO. F0534 01L

____ OF ____

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