Please Review
& Return Comments
7/17/00
to G Jones

Initial
Location/Design Concept Report

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

SR 85
Gila Bend to I-10

Contract No. 93-55
TRACS Project No. 085 MA 120 H 3225 01L
Federal Reference No. STP-023-1( )
Gila Bend - Buckeye Highway

June, 2000

Prepared For:

ADOT

ARIZONA DEPARTMENT OF TRANSPORTATION

Prepared By:

BRW
A DAMES & MOORE GROUP COMPANY

Logan Simpson Design
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(602) 506-1501
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7-13-00

MEMO TO: Greg Jones, P.E. Project Manager

FROM: Joe Tram, P.E., Floodplain Branch Manager

SUBJECT: SR85 Gila Bend to I-10

I have the following comments on the subject report:

Page	Comment
5	Top of page 1st line. *White Tanks* should be changed to *Buckeye* Add to end of 1st sentence *into the Gila River* 2nd paragraph delete *these* from 1st sentence. 2nd to last sentence Would water also be coming from the northeast, and if so, maybe it would be better saying that it flows south instead of including north, northwest and northeast. 3rd Paragraph, with respect to Floodplains - Federal Executive order 11988, CFR 60.12, ARS 48-3609.I and 48-3613.C should be sited with respect to designing, constructing and complying the National Flood insurance Act, State Statutes and local regulations. 3rd Paragraph should also address that the engineer doing the design will process a CLOMR/LOMR to FEMA including submittal of as-builts if the floodplain is modified.
4	Page 4 comes after page 5. Above comments concerning Executive Order 11988, CFR 60.12, ARS 483609.I, 48-3613.C and processing a CLOMR/LOMR for the new bridge should be assessed. Is it really under construction?
11	Right-of-way should consider adverse impacts to the floodplain or increase in ponding areas of culverts if extended upstream or elevation of the road, if applicable.
40	Coordination with the District's Gila Bend ADMS may be advantageous with respect to drainage impacts in the Gila Bend Area.
47	Drainage Impacts – fill within floodplains, especially ponding areas, must address compensation for displaced volume or remedial measures.

61	How is the drainage handled between the 25 structures? There appears to be more than 25 structures if pipes are included. Will the right-of-way be of sufficient width to pond and convey runoff between the structures?
B-4	Would appear extending right-of-way to the southeast would cause the flood pool to be modified adversely impacting property upstream.
B-5	Same as above.
B-6	Unless the structures under the +2% grade are designed accordingly, the fill will act as a barrier and force runoff to the south to structures that are being extended and were not designed for the additional runoff.
B-7	Same as above, except runoff will go north. Should the slope be a *positive* 0.0568?
B-8	Backwater caused by road elevation near station 5350+00 should be addressed. Will be conveyed south to new sag versus overtopping road at existing location
B-9	Assess backwater resulting from road elevation.
B-17	Diversion of runoff to the north and south needs to be addressed for future Interchange.
B-18	Assess backwater resulting from road elevation.
B-19	Assess backwater resulting from road elevation.
B-25	Impacts to Rainbow Wash floodplain needs to assessed.
B-27	Would appear pipe extension splits the tributary inflow to the original leaving two defined washes upstream.
B-28	Same comment as above for washes between 6405+00 to 6420+00.
B-31	Gila River floodplain needs to be addressed.
B-36	Lateral conveyance and compensation for volume displacement upstream of canals and railroads must be addressed.
B-37	Same as above

Above comments based upon a cursory review and *no site visit* which may alter some of the comments.

INITIAL

LOCATION/DESIGN CONCEPT REPORT

SR 85
Gila Bend to I-10

YUMA AND PHOENIX DISTRICTS	-	MARICOPA COUNTY
CONTRACT NO.:		93-55
TRACS PROJECT NO.:		085 MA 120 H 3225 01L
FEDERAL REFERENCE:		STP-023-1-( )
PHOENIX	-	YUMA HIGHWAY

Prepared for:

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Tucson, Arizona 85733

June, 2000

This report is prepared in accordance with Section 3.2.3 of the Arizona Department of Transportation Action Plan.

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MITIGATION MEASURES

Arizona Department of Transportation (ADOT) Environmental Planning Group Responsibilities:

1. Appropriate mitigation measures, including data recovery plans, have been developed and implemented by the Federal Highway Administration (FHWA) and ADOT Environmental Planning Group in consultation with the State Historic Preservation Office (SHPO) for those cultural resources that cannot be avoided, in accordance with the Programmatic Agreement.

2. Four locations are predicted to be at or above the noise abatement criteria of 65 dBA. Noise mitigation at these locations would be evaluated during design.

3. ADOT would participate in the Bureau of Land Management (BLM) desert tortoise program for acquiring offsetting lands in compensation for negative modification of desert tortoise habitat. Within Category II habitat, an offsetting ratio of 2:1 is applied.

4. An Initial Site Assessment (ISA) would be conducted by ADOT prior to design and construction to confirm or deny the presence of hazardous materials at the potential locations identified in the Preliminary Initial Site Assessment.

ADOT Roadside Development Section Responsibilities:

1. In accordance with the Arizona Native Plant Law, ADOT Roadside Development Section would submit a Notice of Intent to the Department of Agriculture to clear protected native plants at least sixty (60) days prior to any construction activity to afford commercial salvagers the opportunity to remove and salvage these plants.

2. Plant materials to be protected-in-place would be tagged by ADOT Roadside Development prior to any ground-disturbing construction activities.

3. ADOT Roadside Development Section would determine who would prepare the Storm Water Pollution Prevention Plan.

ADOT Design Responsibilities:

1. ADOT would coordinate with BLM's Phoenix Field Office on the location and design of the new fencing and gates on lands managed by BLM.

2. Native plant species adapted to the area would be used in all areas of disturbance. This may include native containerized or potted seedlings as well as seeds, bare root stocks and vegetation salvaged from within the construction limits. Non-native species may be used

on non-Bureau of Land Management (BLM) and non-Arizona Game & Fish Department lands where immediate protection of the ground surface is necessary.

3. Between Milepost (MP) 124 and MP 125, native, non-palatable plant species would be used in revegetation and erosion control efforts in order to avoid attracting large grazing animals to the roadway. Removal of native trees within the drainages would be minimized and where feasible, these trees would be inventoried, salvaged and replanted within the corridor according to plans developed during the design phase.

4. Tortoise-proof fencing would be incorporated into right-of-way fencing from MP 141.7 (Station 6280+00) to MP 146.5 (Station 6535+00). Before and during installation of desert tortoise fencing, BLM's 25 point Desert Tortoise Mitigation Plan would be followed. A copy of the Plan is included in Appendix F. The fencing would be installed for individual construction sites before the ground-disturbing activities begin. Design details for tortoise-proof fencing are included in the Environmental Assessment.

5. Culverts at least 54 inches in diameter would provide tortoise crossing under the highway from MP 141.7 (Station 6280+00) to MP 146.5 (Station 6535+00). Culverts would be located every 0.25 mile to 0.50 mile and would be designed, constructed, and maintained to assure continued accessibility by desert tortoise. The existing and proposed locations of drainage culverts would be used for the tortoise crossing where possible. Design details for the tortoise crossings are included in the Environmental Assessment.

6. The following measures apply to the rocky terrain between MP 137.8 and MP 138.6 and at the ridge near MP 136.7. Cut slope faces in these areas would blend with the form, line, color and texture of the surrounding landscape. Slope treatment techniques that would be used include warping, blending the ends of slopes, varying the slope ratios, utilizing staggered ledges and roughening the face of cut slopes, either by ripping or blasting. Rock slope surface treatment would be applied to cut slopes in competent rock areas as identified in the geotechnical testing results. These treatments include roughening of the cut face to incorporate short, staggered ledges, minor warping, and other irregularities in the rock that take on a natural appearance. Any small, remnant pieces of landform left by cut slopes would be removed completely.

ADOT District Responsibilities:

1. Access to Robbins Butte Wildlife Area, Buckeye Hills Recreation Area and the US Fish & Wildlife refuge status lands would be maintained throughout the construction of the roadway improvements.

2. Sonoran Desert Tortoise surveys would be completed within 45 days to two weeks prior to construction. Contact ADOT Environmental Planning Group at 602-712-7760 to arrange for the survey.

3. The following measures apply to the rocky terrain between MP 137.8 and MP 138.6 and at the ridge near MP 136.7: Cut slope faces in these areas would blend with the form, line, color and texture of the surrounding landscape. Slope treatment techniques that would be used include warping, blending the ends of slopes, varying the slope ratios, utilizing staggered ledges and roughening the face of cut slopes, either by ripping or blasting. Rock slope surface treatment would be applied to cut slopes in competent rock areas as identified in the geotechnical testing results. These treatments include roughening of the cut face to incorporate short, staggered ledges, minor warping, and other irregularities in the rock that take on a natural appearance. Any small, remnant pieces of landform left by cut slopes would be removed completely.

4. Asphalt material associated with abandoned roadway segments would be removed. The road bed would be ripped and regraded to match the surrounding terrain.

5. The District Construction Office would submit the Notice of Intent and the Notice of Termination to the U.S. Environmental Protection Agency and copies to the Arizona Department of Environmental Quality.

Contractor's Responsibilities

1. Access to Robbins Butte Wildlife Area, Buckeye Hills Recreation Area and the US Fish & Wildlife refuge status lands would be maintained throughout the construction of the roadway improvements.

2. The contractor would preserve and protect all vegetation on or adjacent to the work site within the natural wash areas which does not unreasonably interfere with the work requirements. The contractor would only remove trees when specifically authorized to do so by the ADOT Engineer and would avoid damaging vegetation that is to remain in place.

3. Tortoise-proof fencing would be incorporated into right-of-way fencing from MP 141.7 (Station 6280+00) to MP 146.5 (Station 6535+00). Before and during installation of desert tortoise fencing, BLM's 25 point Desert Tortoise Mitigation Plan would be followed. A copy of the Plan is included in the Environmental Assessment. The fencing would be installed before the roadway ground-disturbing activities begin. The contractor would have a biological monitor supervisor for the project.

4. Clearing of trees and large shrubs along an irregular edge adjacent to the recovery zone would be done to create a gradual transition or feathered edge.

5. Asphalt material associated with abandoned roadway segments would be removed. The road bed would be ripped and regraded to match the surrounding terrain.

6. The contractor would submit the Notice of Intent and the Notice of Termination to the U.S. Environmental Protection Agency and copies to the Arizona Department of Environmental quality.

7. The terms and conditions of the U.S. Army Corps of Engineer's Nationwide 404 Permits would be followed for work affecting any of the unnamed washes within the study area that are under the jurisdiction of the U.S. Army Corps of Engineers.

8. Discharges of dredged or fill material into "Waters of the US" would be minimized or avoided to the maximum extent practicable within the project area. No discharge of dredged or fill material into "Waters of the US" may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.), and material discharged would be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act). Any temporary fills would be removed in their entirety and the affected areas returned to their preexisting elevation. To the maximum extent practicable, discharges would not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

Standard Specifications included as Mitigation Measures:

1. According to *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, Section 107.06 Archaeological Features* (2000 Edition), if previously unidentified cultural resources are discovered during construction, the contractor would stop work immediately at the location, take all reasonable steps to secure the preservation of those features, and notify the ADOT Engineer. ADOT would, in turn, notify the appropriate agency(ies) to evaluate the significance of the resource.

2. According to *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 107.14 Prevention of Air and Noise Pollution* (2000 Edition) (Stored Specification 107APA, 02/26/99), ADOT's District Construction Office would direct the contractor to suspend all work activities until further notice in the event that the Governor declares an air pollution emergency for the project area.

3. Temporary air quality due to construction activities would be minimized through adherence to *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 107.14 Prevention to Air and Noise Pollution* (2000 Edition) (Stored Specifications 107APA, 02/26/99; 107MTBRN, 06/04/96; and DUST 107, 4052S, 04/01/94).

4. According to *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 107 Legal Relations and Responsibility to Public* (2000 Edition) (Stored Specification 107HAZMT, 01/15/93), if previously unidentified or suspect hazardous materials are encountered during construction, work would stop at that location and the ADOT Engineer would be contacted to arrange for proper treatment of those materials. Such locations would be investigated and proper action implemented prior to the continuation of work in that location.

EXECUTIVE SUMMARY

Project 085 MA 120 H 3225 01L [Project No. STP-023-1-( )] involves a study to determine the recommended improvements to the State Route (SR) 85 roadway from Gila Bend to I-10. This 36.69 mile route is located in the ADOT Phoenix and Yuma Districts within Maricopa County.

The results of the study indicate that based on the alternative evaluation, available accident information and current and forecast traffic volumes, a combination of Alternatives (a five-lane rural section, Uncontrolled Access Alternatives A-1D and A-1C1 and Controlled Access Alternatives A-1C, B-3, C and D-3) would provide the best overall design. These alternatives would provide:

SEGMENT A

A five-lane facility with outside shoulders from B-8 Milepost (MP) 122.28 to MP 122.83 transitioning to a four-lane divided facility with a 46-foot rural median from B-8 MP 120.34 to MP 122.28. A four-lane divided facility with a 16-foot raised median from SR 85 MP 120.32 to MP 122.38 transitioning to a four-lane divided facility with 84-foot rural median and future two-way frontage (local access) roads from SR 85 MP 122.38 to 122.66 continued to MP 124.00.

From B-8 MP 120.34 to MP 122.83 and SR 85 MP 120.32 to MP 122.38, local access will be provided by ADOT Permit directly to SR 85. From MP 122.38 to MP 124.00, local access will be provided to the nearest interchange by the two-way local access roads.

SEGMENT B

A four-lane divided facility with an 84-foot rural median and future two-way frontage (local access) roads from SR 85 MP 124.00 to MP 146.0. Local access from MP 124.00 to MP 146.00 will be provided to the nearest interchange by the two-way local access roads.

SEGMENT C

A four-lane divided facility with a 46-foot rural median from SR 85 MP 146.0 to MP 150.2. Future two-way frontage (local access) roads from MP 146.00 to MP 147.77. One-way frontage roads from MP 149.48 to MP 150.2.

Local access from MP 146.00 to MP 147.77 will be provided to the nearest interchange by the two-way local access roads. Local access from MP 149.48 to MP 150.2 will be provided by the one-way frontage roads. South of MP 149.48, access to Old US 80 on the west will be provided by a two-way local access road to Hazen Road.

SEGMENT D

A four-lane divided facility with an 84-foot rural median and one-way frontage roads from SR 85 MP 150.2 to MP 154.52. Local access will be provided by the one-way frontage roads from MP 150.2 to MP 154.52.

Other recommended improvements include extending existing pipe culverts and box culverts beyond recovery area, new barbed wire game fence, tortoise fencing, new signing and pavement markings, guardrail where needed, new retaining walls and noise walls, twenty-five new mainline and ramp structures and seeding of all disturbed areas.

New right-of-way will be required for the proposed improvements. The estimated right-of-way required for this project includes the acquisition of seven structures and 865 acres of land.

Access will be controlled through the ADOT Permit process until purchase of new right-of-way and access control rights is accomplished. Access by Permit to the 4-lane initial highway will be allowed until such time the frontage roads and interchanges are constructed.

The following projects are listed in the ADOT FY2000-2004 5-year Highway Construction Program.

FY	Begin Milepost	Type of Work	Estimate
2000	120.0	R/W Acquisition	$2,000,000
2000	122.0	Design (Interim)	$2,000,000
2002	122.0	Construct Roadway	$11,000,000
2002	137.8	Design (Roadway)	$2,500,000
2003	137.8	R/W Acquisition	$3,000,000
2004	137.8	Construct Roadway	$25,000,000

The estimated total project costs for the proposed ultimate (initial and future) improvements including frontage roads and interchanges as discussed above are $257,836,000 allocated as follows:

Final Design	$ 15,931,000
Right of Way	$ 10,636,000
Utility Relocation	$ 3,690,000
Construction	$ 227,579,000

Initial construction projects are described in the Final Implementation Plan, March 2000. The estimated total project costs for the proposed initial improvements are $109,246,000 allocated as follows:

Final Design	$ 6,210,000
Right of Way	$ 10,636,000
Utility Relocation	$ 3,690,000
Construction	$ 88,710,000

The initial projects were determined to support the long-range corridor goals as well as having estimated project costs likely to be programmed in the development process of the ADOT Five-Year Construction Program. The initial new construction projects will construct two additional lanes to provide a four-lane divided highway from I-8 in Gila Bend to I-10 in Buckeye.

As part of the initial construction projects, two new lanes will be constructed west of the existing highway and striped to provide the southbound SR 85 lanes from MP 122.99 to 142.49. As part of the initial construction projects a new four-lane divided highway with a curb median will be constructed from MP 120.54 to MP 122.94 to provide for northbound and southbound traffic. In the initial construction from B-8 MP 122.72 to MP 120.80 and from SR 85 MP 142.49 to 147.60 two new lanes will be constructed east of the existing highway and striped to provide the northbound SR 85 lanes. From Hazen Road (MP 149.48) to Lower Buckeye Road (MP 154.52) the West Frontage Road will be constructed and striped to provide the southbound SR 85 lanes as part of the initial construction. Also the existing Gila Bend Traffic Interchange will be reconstructed and new interchanges constructed at the Prison Entrance Road and Maricopa County Route 85 (MC 85) intersections. In addition, the right-of-way and access control rights for the ultimate design concept will be purchased or otherwise acquired in the initial projects.

The future projects will build onto the improvements of the initial construction projects to complete the ultimate facility concept. These future projects include: remainder of the SR 85 mainline from MP 149.00 to MP 154.52, two-way frontage (local access) roads from MP 122.99 to MP 147.60, potential new interchanges at MP 122.93, Woods Road, Buckeye Hills entrance, Hazen Road, Southern Avenue, and Broadway Road, and a grade separation at Lower Buckeye Road. The exact limits will be determined in Final Design.

1.0 INTRODUCTION

1.1 FOREWORD

This report presents the Location/Design Concept for the SR 85 Corridor Study from Gila Bend to I-10 which is located in south-central Arizona as shown in Figure 1. The entire corridor lies within Maricopa County and includes the following roadways:

B-8, MP 122.83 - MP 120.34
SR 85, MP 120.32 - MP 154.52

The total length of these roadways within the study corridor measures 36.69 miles. Portions of SR 85 and B-8 lie within the corporate boundaries of the Town of Gila Bend. Portions of SR 85 lie within the corporate boundaries of the Town of Buckeye. A vicinity map of the study area is shown in Figure 2.

1.2 CHARACTERISTICS OF THE CORRIDOR

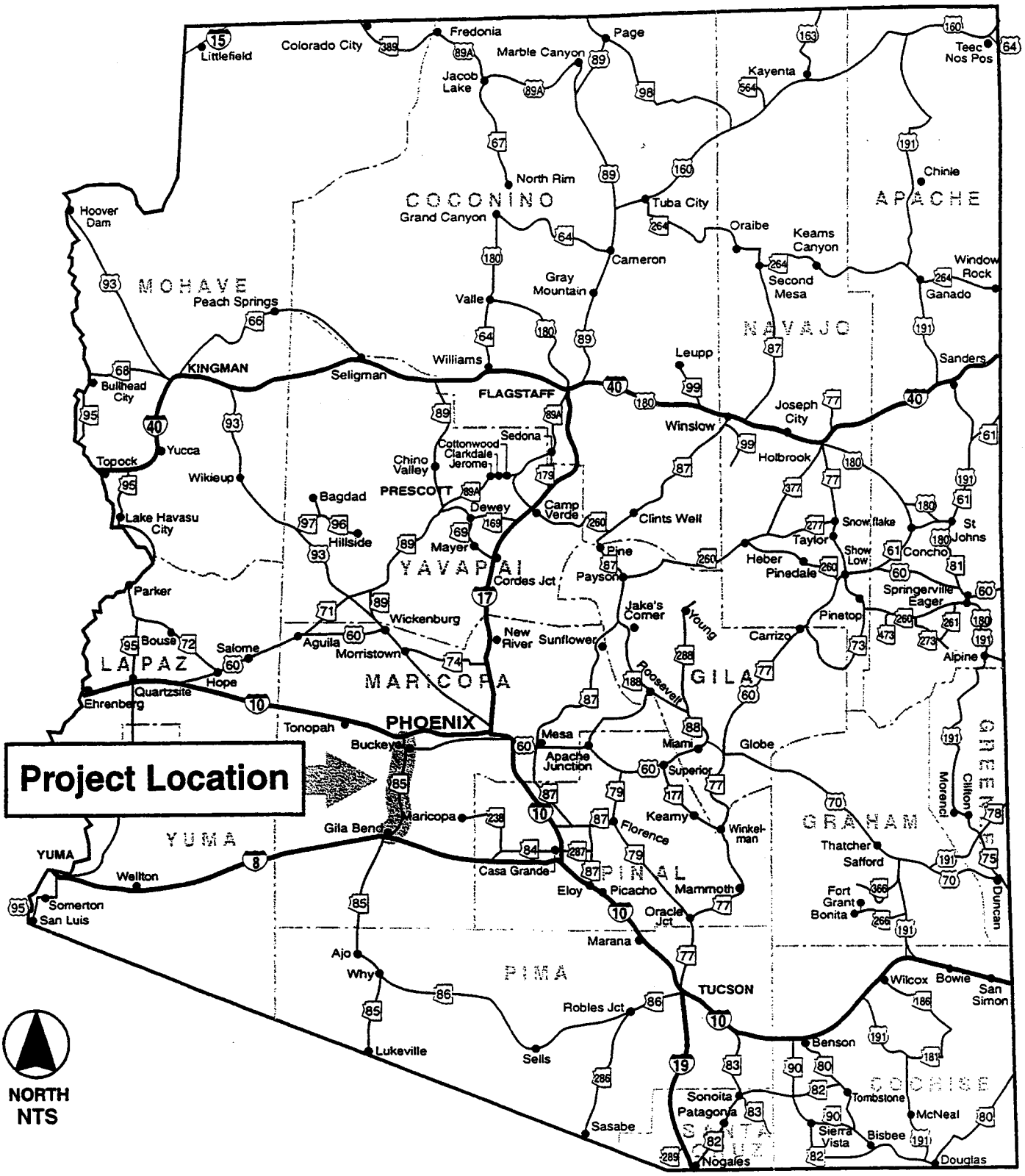
Roadway Characteristics

Each of the two highways within the study corridor (B-8 and SR 85) are asphalt surfaced roadways. B-8 and SR 85 are functionally classified as Principal Arterials. Interstate Highway interchanges within the study area include the I-8/East Gila Bend TI and I-10/SR 85 (Oglesby) TI. In addition, a grade-separated interchange, known as the Gila Bend TI, is located at the junction of B-8 and SR 85 on the northeast side of Gila Bend.

Within the corridor, B-8 is comprised of 0.39 miles of four-lane divided roadway, consisting of two 12-foot lanes with a 3-foot inside and outside shoulders and 2.1 miles of two-lane roadway, consisting of two 12-foot lanes with 8-foot shoulders. SR 85 consists of two 12-foot travel lanes with 8-foot shoulders with recently constructed climbing and passing lanes.

Posted speed limits in the corridor range from 35 to 65 miles per hour. Lower speed limits (35 to 45 mph) are posted on B-8 in Gila Bend; on SR 85 just north of the Gila Bend interchange and in the vicinity of the MC 85 intersection.

Traffic at intersections is controlled by STOP signs on the minor approaches, with the exception of the SR 85/MC 85 intersection, which is controlled by four-way STOP signs with flashing red lights for the northbound, southbound, and westbound approaches. The eastbound approach has no lights. The intersection of SR 85 and B-8 at the northeast end of Gila Bend is grade separated, with westbound B-8 crossing over SR 85 via an overpass to form the Gila Bend TI. No signalized intersections currently exist in the study corridor.



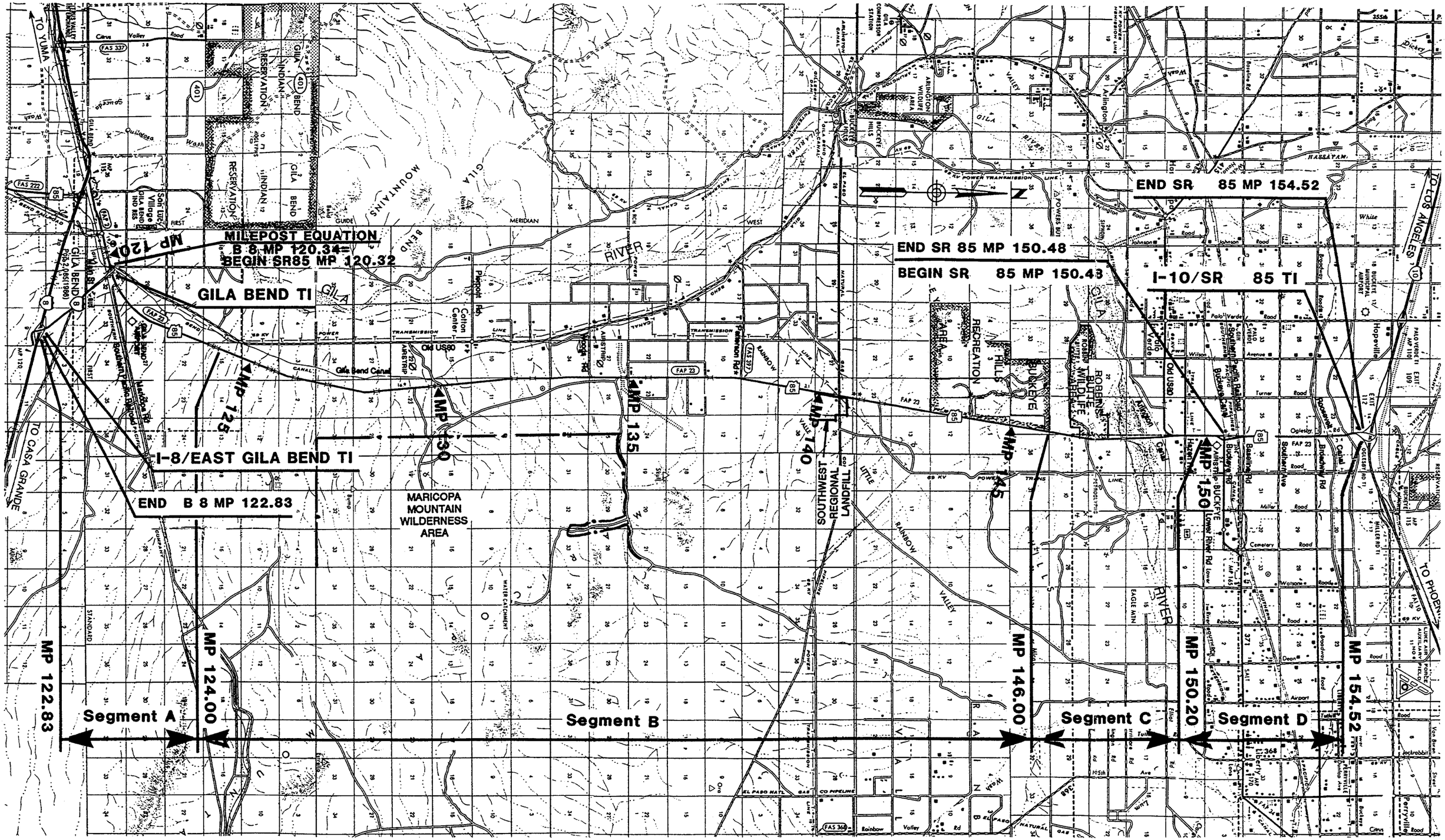
Source: BRW, Inc., November 1999

ADOT

SR 85 Design Concept Study

Gila Bend to I-10

Figure 1
Project Location



SR 85

Gila Bend to I-10

Figure 2
Vicinity Map

BRW

Previous to constructing the White Tanks Flood Retarding Structure along the north side of I-10, large runoff from the White Tank Mountains also flowed south over this land.

The development of agriculture has resulted in the replacement of these small braided washes with flat farm fields surrounded by irrigation ditches. Three delivery irrigation canals, (the Arlington, the Buckeye and the Roosevelt) flow east to west through these fields. Dikes along the north sides of these canals create a ponding situation by preventing water flow to the south. Earthen irrigation ditches exist along the west side of SR 85 and well-maintained concrete irrigation delivery ditches exist along the east side of SR 85. During large storm events, runoff will fill the irrigation ditches and flow toward the roadway from the north-northwest. Currently there is no defined outfall south past the canals to the Gila River. Therefore, rare storm events produce large runoffs that break through the canal north dikes, flow into the canals, overtop the canal south banks, and flow to the Gila River.

Several localized drainage problems associated with the existing roadway include erosion at upstream wingwalls, scouring at the bridges and culvert outlets, sedimentation at several culverts, and debris accumulation at a few structures.

Flood Insurance Rate Maps (FIRM) have been prepared and published by the Federal Emergency Management Agency (FEMA) for the length of the SR 85 Corridor. These maps are shown in Figures 3, 4, 5, 6 and 7. Current FIRMS, in general, delineate the majority of the land along SR 85 to be in Zone B outside the 100-year floodplain with localized areas of Zone A, 100-year floodplain. The 100-year floodplain areas occur near and through Gila Bend, along the Gila River and north of both the Buckeye and the Roosevelt Canals.

Further details are included in the Initial Drainage Report; SR 85 Gila Bend to I-10, dated November 1999.

Soils

Generally, the encountered site soils consist of poorly to well graded sands and silty to clayey sands with minor sandy clays, sandy silts, and gravels. Soils vary from loose to very dense, with loose soils being shallower. Most soils contain high percentages of gravel. Some soils encountered at the site display some degree of calcium carbonate (caliche) cementation, varying from weak to strong. Soils vary somewhat between the different features investigated for this project. Thin, weathered granite soils and caliche are common as pediment cover in the hilly to gently rolling zone between approximate MP 137 - 147. The southern portion of the corridor is dominated by flat, sandy outwash soils of appreciable thickness.

Rock conditions were noted between approximate MP 147.21 and 146.5 in hilly terrain, as well as in cuts occurring near MP 145, 141.9, 138.6, and 138.1. Rock will also occur in any cuts made due to eastward widening at MP 138.6 and 136.7. Rock conditions typically involve blocky to very heavily sheared granites.

Further details are included in the Preliminary Geotechnical Report; SR 85 Gila Bend to I-10, February 1994 and current revisions.

A new Gila River bridge has been constructed on SR 85 between MP 146.8 and MP 149.25. This structure was built to the west of the old bridge and ultimately will be the southbound roadway portion of a four lane divided highway. A second new Gila River bridge is under construction and will ultimately be the northbound roadway portion of the four-lane divided highway.

The existing roadway was evaluated for concurrence with AASHTO Controlling Design Criteria and the report is included in Appendix D. The elements that fail to meet current AASHTO design standards are listed in Chapter 6.

Land Use

With the exception of B-8 in Gila Bend, the study corridor is located in a rural area. Other land uses include agricultural and range land. The Robbins Butte Wildlife Area and the Buckeye Hills Recreation Area are located west of SR 85 between MP 143 and MP 148. B-8 within the corridor serves as one of the major streets for Gila Bend with land uses typical of a small urban area, including a restaurant, motel, convenience store and service station. SR 85 becomes Pima Street within the jurisdiction of Gila Bend, having mostly commercial land uses.

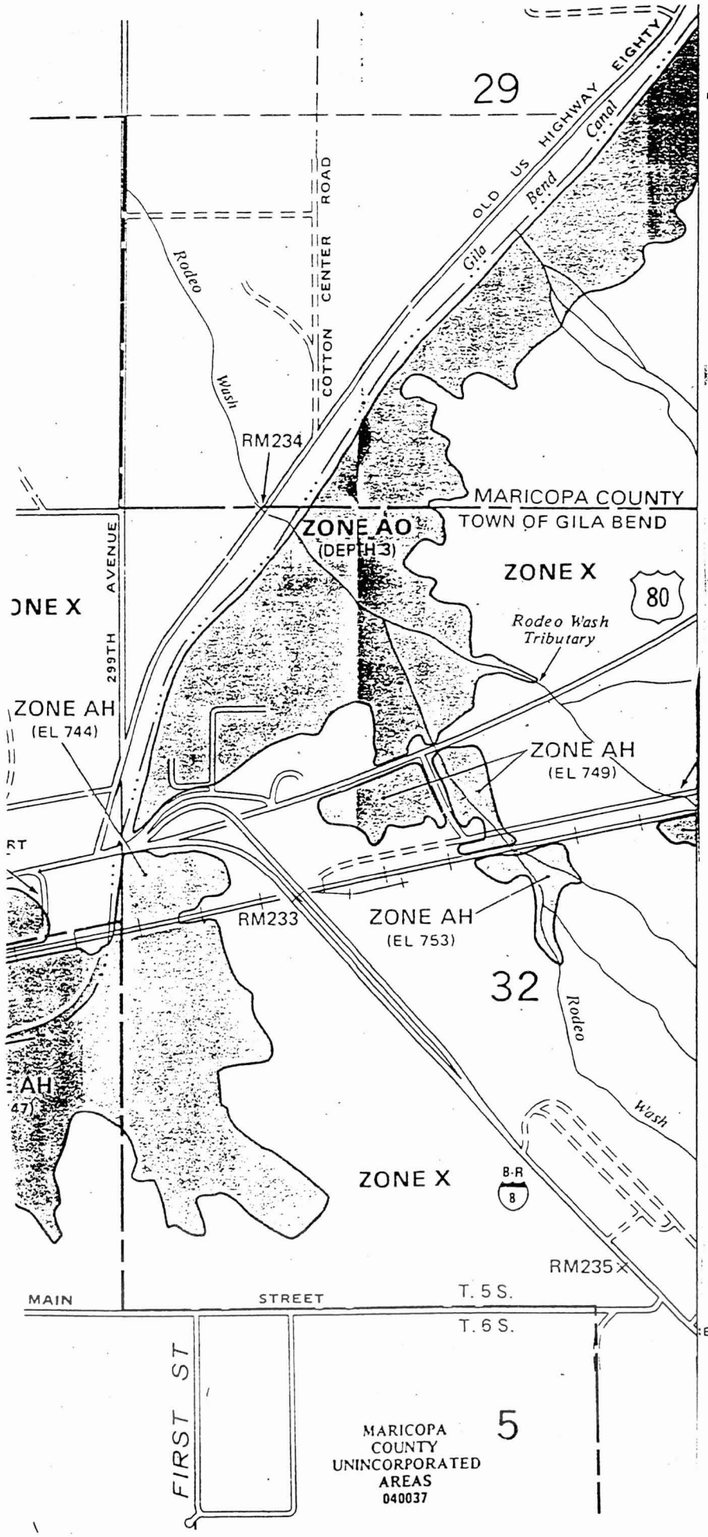
Discussions with the local communities of Buckeye and Gila Bend, as well as Maricopa County and the Arizona Department of Administration have taken place regarding future development. Buckeye has long-term commercial/retail development planned along the I-10/SR 85 area. There will likely be future commercial/retail and light industrial development along SR 85 through Buckeye. Gila Bend has long-term industrial development planned from the Gila Bend Municipal Airport south and along B-8. The Southwest Regional Landfill is located on the east side of SR 85 between MP 139.9 and 140.8. The Arizona Department of Administration has constructed the Lewis Prison on the west side and the State Women's and Juvenile Correction Center (SWJCC) on the east side of SR 85 north of Patterson Road near MP 138.35.

Drainage

Two types of off-site flow characteristics, divided by the Gila River, exist along SR 85. South of the Gila River, braided washes originating in the mountains cross the road at a perpendicular angle, and north of the Gila River, sheet flow from the north-northwest flows over irrigated land toward the roadway.

South of the Gila River, most of the flow occurs in wide shallow sheet flow patterns with numerous small braided stable washes and one major wash. This flow is conveyed under the road by box culverts, pipes and a bridge at Rainbow Wash. Dikes and ditches have been constructed at some locations to collect and direct both the sheet and the smaller wash flows to the appropriate drainage structure. Except for a short roadway segment, off-site flow originates in the mountain range to the east.

North of the Gila River, pre-agriculture drainage consisted of a wide shallow sheet flow pattern with numerous small braided transitory washes flowing south to the Gila River. Remnants of this pattern still exist in non-irrigated areas, such as southwest of the I-10/SR 85 interchange.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE A99	To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
ZONE V	Coastal flood with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X	Areas determined to be outside 500-year flood plain.
ZONE D	Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D Cross Section Line

(EL 987) Base Flood Elevation in Feet Where Uniform Within Zone*

RM7 X Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM232	740.88	Top pavement at centerline intersection of Washington Avenue and Locke Street.
RM233	781.20	U.S. Geological Survey brass cap in concrete cylinder in median on north side of Business Route Interstate 8 bridge over the Southern Pacific Railroad. Marked GILA.
RM234	738.36	AHD brass cap in center of north concrete headwall of culvert under old U.S. Highway 80. At first crossing of Rodeo Wash northeast of Gila Bend, north of rodeo grounds. Marked AHD, El. 738. 60, Sta. 75 + 19, 1930.
RM235	768.14	U.S. Geological brass cap in concrete cylinder 0.5 mile southeast of Southern Pacific Railroad along the westerly side of Business Route Interstate 8, southwest of entrance to trailer park. Marked R285.
RM1053	676.14	A 3 1/4" aluminum cap stamped "MCFCD bench mark Celia Barr Associates RLS 19324 1989", located at the northwest corner of a "T" intersection of Stout Road and a Dirt Road to the west. 1 mile north of Watermelon Road near Section corner 17, 18, 19, 20, T5S R4W, 2.5' south of a 4 strand barbed wire fence.
RM1054	646.94	GLO brass cap at Section corner 7, 8, 17, 18, T5S R4W. Located at the north end of Stout Road at the Gila River 10' ± northwest of the southeast corner of a barbed wire fence.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

MAP REPOSITORY

Refer to Repository Listing on Index Map

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:
Map revised DECEMBER 3, 1993 to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to update map format, to add roads and road names, to reflect updated topographic information, and to incorporate previously issued letters of map revision.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 3480 OF 4350

CONTAINS

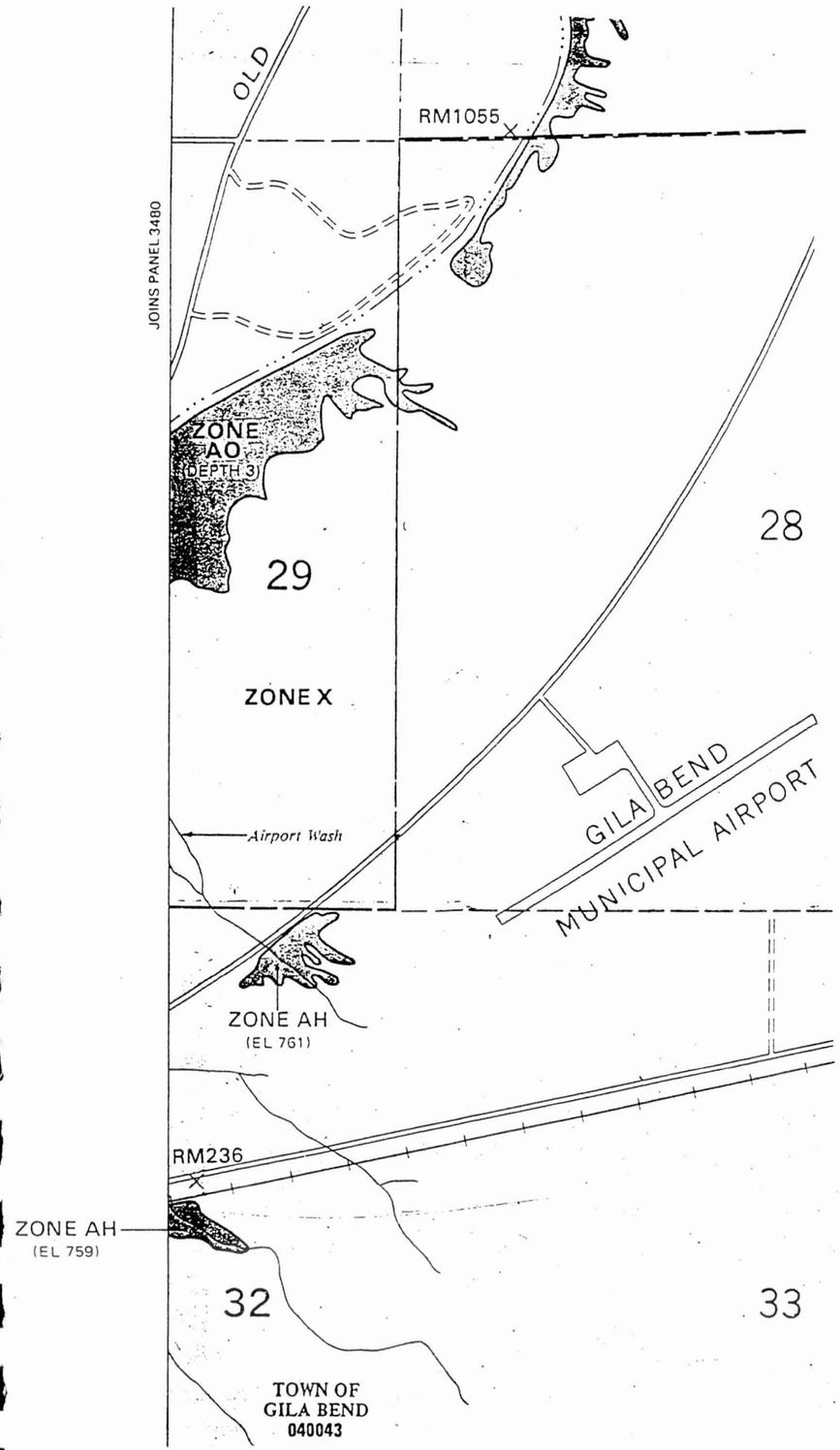
COMMUNITY	NUMBER	PANEL	SUFFIX
GILA BEND, TOWN OF	040043	3480	E
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	3480	E

MAP NUMBER
04013C3480 E

MAP REVISED:
DECEMBER 3, 1993

Federal Emergency Management Agency

Figure 3
FEMA 100-Year Floodplain



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This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index

MAP REPOSITORY

Refer to Repository Listing on Index Map

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:

APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:
Map revised DECEMBER 3, 1993 to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to update map format, to add roads and road names, to reflect updated topographic information, and to incorporate previously issued letters of map revision.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET

1000 0 1000

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A — No base flood elevations determined.
- ZONE AE — Base flood elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99 — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- ZONE V — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X — Areas determined to be outside 500-year flood plain.
- ZONE D — Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM7 — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 3485 OF 4350

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GILA BEND, TOWN OF	040043	3485	E
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	3485	E

MAP NUMBER
04013C3485 E

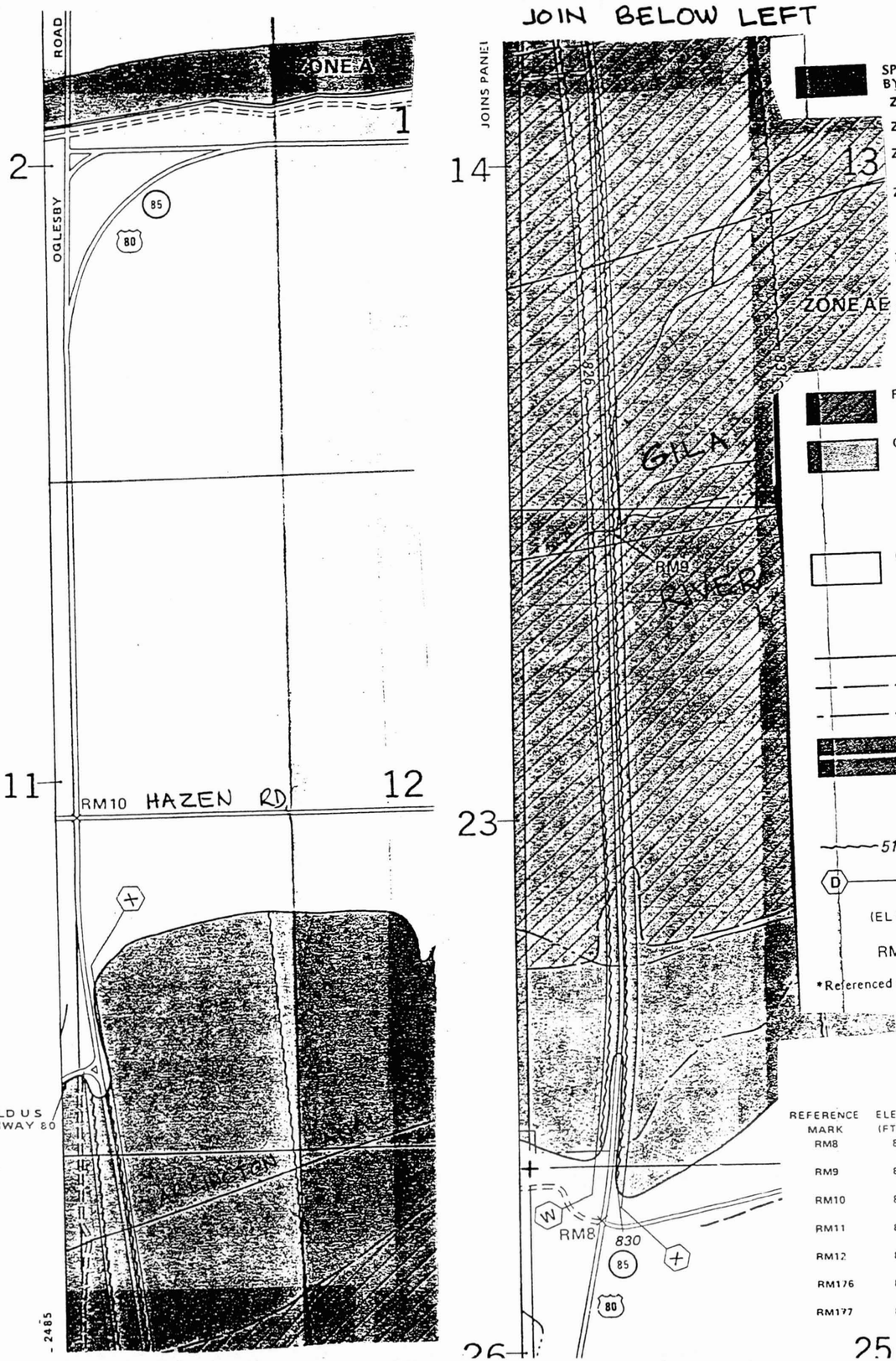
MAP REVISED:
DECEMBER 3, 1993

Federal Emergency Management Agency

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM236	764.01	U.S. Geological Survey brass cap in concrete cylinder, 45 feet north of north rail of Southern Pacific Railroad, 200 feet east of Rodeo Wash Tributary marked N285.
RM1055	741.60	Chiseled 2-inch square top, east headwall concrete irrigation box, 1.75 miles north Junction Old U.S. 80-SR 85, 0.3 east miles on Watermelon Road to station on left.
RM1056	746.90	Chiseled 2-inch square in northwest corner of concrete pump pad, 2.05 miles north Junction Old U.S. 80-SR 85, dirt road east 0.2 miles, north 0.4 miles along canal to station on left.
RM1057	733.70	United States Coast and Geodetic Survey brass cap stamped "B-361, 1967", 3.3 miles north Junction Old U.S. 80-SR 85, 50 feet west Old U.S. 80.

Figure 4
FEMA 100-Year Floodplain



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined.
- **ZONE AE** — Base flood elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year flood plain.
- **ZONE D** — Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM7 X — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION * (FT. NGVD)	DESCRIPTION OF LOCATION
RM8	836.08	Top of pavement at centerline of U.S. Highway 80, 1 mile south of Gila River bridge, at cross roads
RM9	827.66	AHD brass cap in northwest corner of Gila River bridge on U.S. Highway 80.
RM10	839.07	Rim of handhole at centerline intersection of U.S. Highway 80 and Hazen Road.
RM11	837.77	Top of pavement at centerline intersection of Hazen Road and Miller Road.
RM12	844.67	Rim of handhole at centerline intersection of Beloat Road, 1 mile east of Miller Road.
RM176	852.95	Rim of handhole at centerline intersection of Beloat Road and Miller Road.
RM177	871.09	Top of pavement at centerline intersection of Miller Road and U.S. Highway 80.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

MAP REPOSITORY

Refer to Repository Listing on Index Map

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:
Map revised September 4, 1991 to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to update map format, to add roads and road names and to incorporate previously issued letter of map revision.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET
1000 0 1000

NATIONAL FLOOD INSURANCE PROG

FIRM
FLOOD INSURANCE RATE M

MARICOPA COUNTY, ARIZONA AND INCORPORATED ARE

PANEL 2505 OF 4350

CONTAINS:

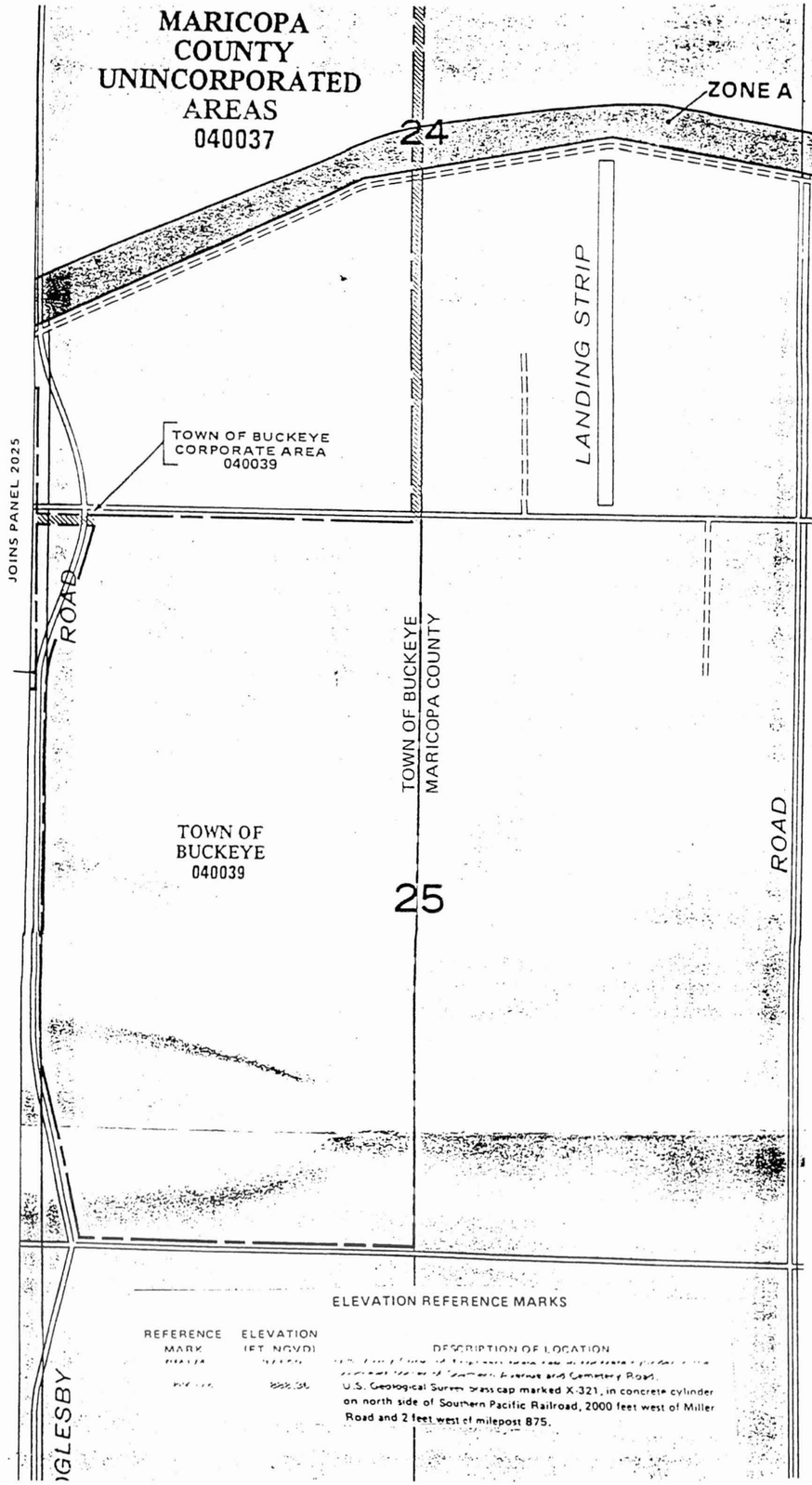
COMMUNITY	NUMBER	PANEL	S
BUCKEYE, TOWN OF	040039	2505	
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	2505	

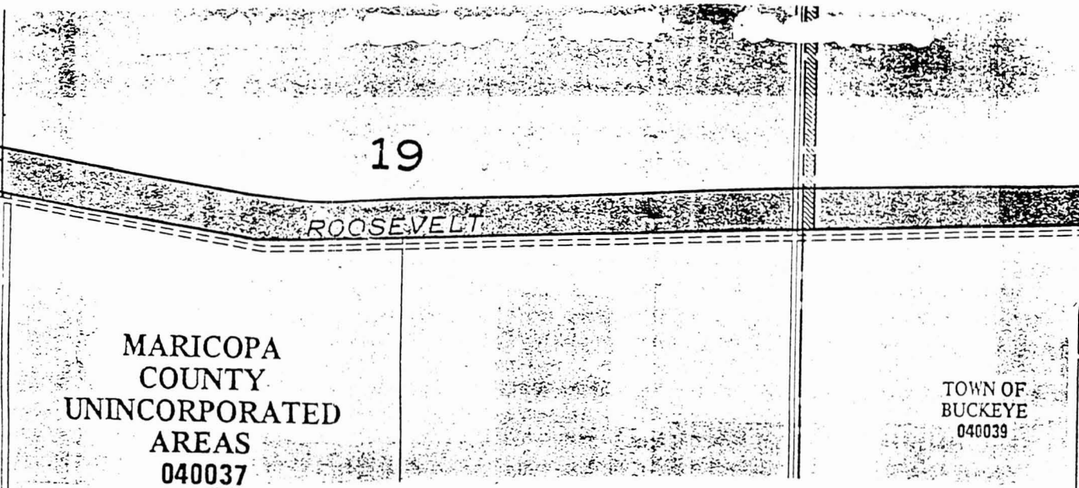
MAP NUMB
04013C2505

MAP REVISI
SEPTEMBER 4, 19

Federal Emergency Management Ag

Figure 5
FEMA 100-Year Floodplain





KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations
100-Year Flood Boundary
500-Year Flood Boundary
Base Flood Elevation Line With Elevation In Feet** — 513
Base Flood Elevation in Feet Where Uniform Within Zone** — (EL 987)
Elevation Reference Mark — RM7×
Zone D Boundary
River Mile — •M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave

NOTES TO USER

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Certain areas not in the Special Flood Hazard Areas (zones A and V) may be protected by flood control structures.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 5.4 of the Flood Insurance Study Report.

For adjoining map panels, see separately printed Map Index.

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:

APPROXIMATE SCALE IN FEET
1000 0 1000

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 2040 OF 4350

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BUCKEYE, TOWN OF	040039	2040	D
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	2040	D

MAP NUMBER
04013C2040 D

EFFECTIVE DATE:
APRIL 15, 1988

Federal Emergency Management Agency

Figure 6
FEMA 100-year Floodplain

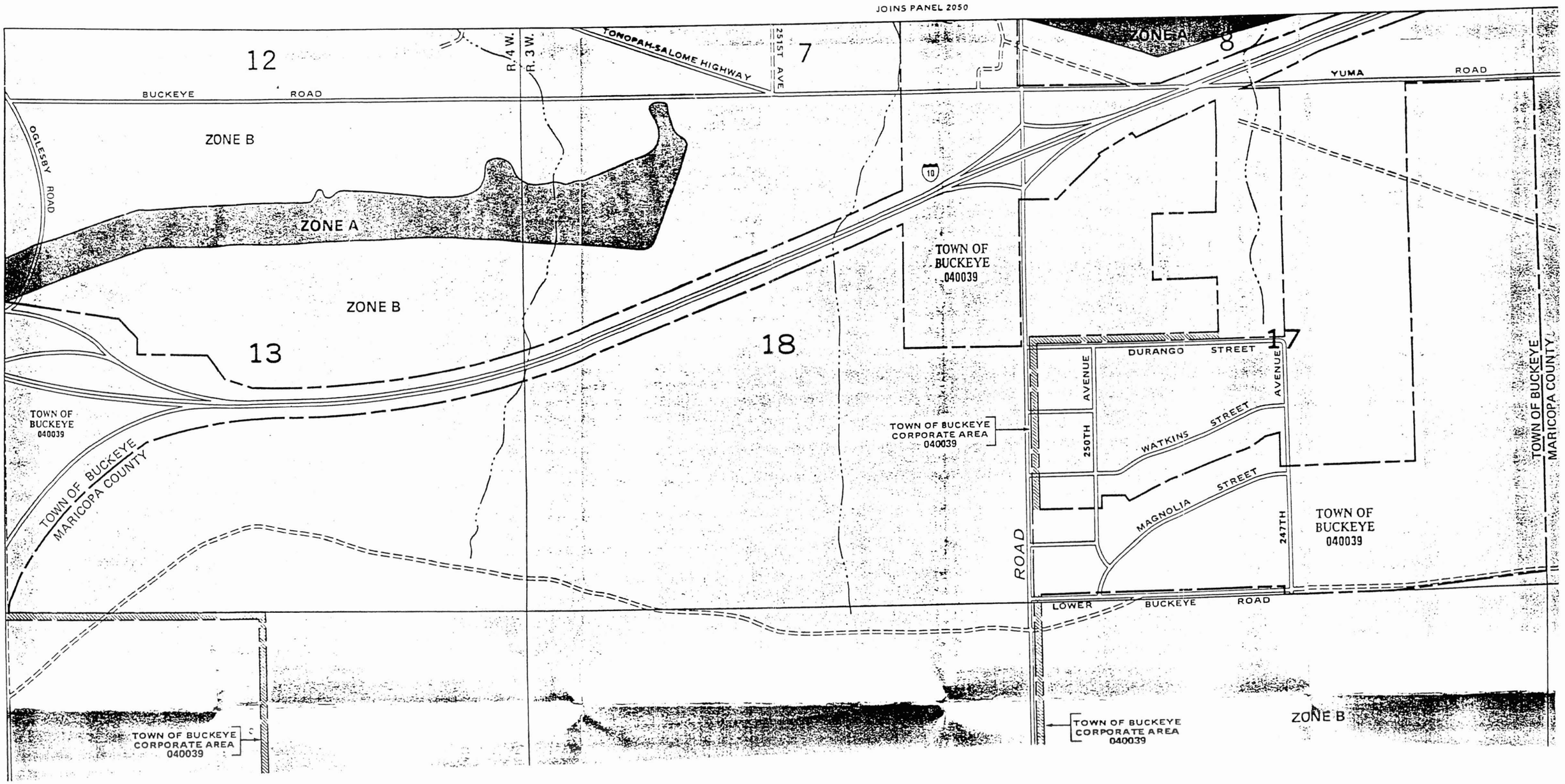


Figure 7
FEMA 100-Year Floodplain

Right-of-Way

The existing right-of-way throughout the corridor varies from a minimum of 115 feet to a maximum of 1150 feet. The general right-of-way widths are tabulated below in Table 1.

TABLE 1

EXISTING RIGHT-OF-WAY WIDTHS

Roadway	Location	Right-of-Way Width
B-8	MP 122.83 to MP 120.34	Varies 200' to 260'
SR 85	MP 120.32 to MP 146.00	200'
SR 85	MP 146.00 to MP 150.48	Varies 115' - 785'
SR 85	MP 150.48 to MP 154.52	Varies 400' - 1150'

Source: Arizona Department of Transportation Right-of-Way Plans and Maricopa County Assessor Maps.

Structures

There currently are nineteen box culverts and seven bridge structures with spans greater than 20 feet within the project limits. The location of each structure is noted below:

- Structure No. 584, B-8 MP 120.41, SR 85 overpass, 2 span structure 93' long
- Structure No. 118, B-8 MP 120.46, UPRR OP EB, 3 span structure 149' long
- Structure No. 618, B-8 MP 120.46, UPRR OP WB, 3 span structure 140' long
- Structure No. 6492, B-8 MP 122.18, 3-10'x6'x32' RCBC
- Structure No. 4442, SR 85 MP 120.85, 3-10'x7'x32' RCBC
- Structure No. 4443, SR 85 MP 123.84, 8-10'x6'x87' RCBC
- Structure No. 4444, SR 85 MP 123.91, 8-10'x6'x87' RCBC
- Structure No. 4445, SR 85 MP 125.14, 6-10'x5'x64' RCBC
- Structure No. 4446, SR 85 MP 125.50, 8-10'x6'x87' RCBC
- Structure No. 4447, SR 85 MP 125.65, 6-10'x5'x64' RCBC
- Structure No. 4448, SR 85 MP 126.22, 3-10'x5'x32' RCBC
- Structure No. 4449, SR 85 MP 127.15, 6-10'x5'x64' RCBC
- Structure No. 4450, SR 85 MP 128.44, 3-10'x5'x32' RCBC
- Structure No. 4451, SR 85 MP 129.98, 2-10'x6'x32' RCBC
- Structure No. 4452, SR 85 MP 130.10, 2-10'x7'x32' RCBC
- Structure No. 4453, SR 85 MP 131.99, 5-10'x8'x53' RCBC
- Structure No. 4454, SR 85 MP 132.35, 2-10'x6'x32' RCBC
- Structure No. 4455, SR 85 MP 134.68, 5-10'x4'x53' RCBC
- Structure No. 4456, SR 85 MP 135.38, 3-10'x3'x32' RCBC
- Structure No. 4457, SR 85 MP 136.95, 3-10'x7'x32' RCBC

- Structure No. 466, SR 85 MP 141.08, Rainbow Wash Bridge, 3 span structure 81' long
- Structure No. 4458, SR 85 MP 141.61, 3-10'x5'x32' RCBC
- Structure No. 4459, SR 85 MP 147.28, 4-10'x5'x87' RCBC
- Structure No. 2279, SR 85 MP 147.75, Southbound Gila River Bridge, 30 span structure 3,625' long, presently carrying 2-way traffic
- Structure No. 2280 SR 85 MP 147.75, Northbound Gila River Bridge, 30 span structure, 3,625' long scheduled to open in Summer 2000.
- Structure No. 1789, SR 85 MP 150.50, Buckeye Canal Bridge, single span structure 38' long
- Structure No. 1790, SR 85 MP, 153.35, Roosevelt Canal Bridge, single span structure 43' long

Each of these structures were reviewed utilizing the Arizona State Highway System Bridge record dated January, 1997. The bridge record indicates that all structures are structurally adequate and could remain in service.

1.3 NEED FOR THE PROJECT

B-8 and SR 85 form a critical link between Interstate 8 and Interstate 10 in south-central Arizona. The SR 85 corridor is the only non-Interstate portion of the principal route linking Phoenix with the Towns of Buckeye, Gila Bend and Yuma. The SR 85 corridor is heavily used by both commercial and non-commercial vehicles traveling between Phoenix and San Diego. Intercity trucks also use SR 85 to bypass the Phoenix area enroute to Tucson, after it was designated as a bypass of Phoenix in an effort to reduce air pollution. This portion of SR 85 is driven for travel from Phoenix to the increasingly popular Mexican resort of Rocky Point. The designation of B-8 and SR 85 as Principal Arterials reflects the statewide importance of the corridor.

SR 85 is already one of the most heavily traveled two-lane rural highways in Arizona, with traffic between Buckeye and Gila Bend projected to increase significantly over the next twenty-two years (2000-2022). ADOT has undertaken this study as the next step toward assuring safe, efficient and relatively uncongested traffic movement into the twenty-first century.

1.4 DESCRIPTION OF THE PROJECT

Project 085 MA 120 H 3225 01L [Project No. STP-023-1-( )] involves a study to determine the recommended improvements to the SR 85 roadway from Gila Bend to I-10. This 36.69 mile route is located in the ADOT Phoenix and Yuma Districts within Maricopa County.

Since the traffic on SR 85 is expected to increase between 60 and 70 percent over the next 22 years and 179 accidents have occurred during the 5 year study period from September 01, 1994, to August 31, 1999, ADOT has undertaken this study to increase the capacity and improve the traffic operations and safety of this route.

The results of the study indicate that based on the alternative evaluation, available accident information and current and forecast traffic volumes, a combination of Alternatives (a five-lane rural section, Uncontrolled Access Alternative A-1D and A-1C1 and Controlled Access Alternatives A-1C, B-3, B-4, C and D-3) would provide the best overall design. These alternatives would provide:

- A five-lane facility with outside shoulders from B-8 MP 122.28 to MP 122.83 transitioning to a four-lane divided facility with a 46-foot rural median from B-8 MP 120.34 to MP 122.28. A four-lane divided facility with a 16-foot raised median from SR 85 MP 120.53 to MP 122.38 transitioning to a four-lane divided facility with 84-foot rural median and future two-way frontage (local access) roads from SR 85 from MP 122.38 to 122.66 continued to MP 124.00.
- A four-lane divided facility with an 84-foot rural median and future two-way frontage (local access) roads from SR 85 MP 124.00 to MP 146.0.
- A four-lane divided facility with a 46-foot rural median, future two-way frontage (local access) roads from SR 85 MP 146.0 to MP 147.77 and one-way frontage roads from SR 85 MP 149.48 to MP 150.2.
- A four-lane divided facility with an 84-foot median and one-way frontage roads from SR 85 MP 150.2 to MP 154.52.

Other recommended improvements include extending existing pipe culverts and box culverts to outside of the recovery area, new barbed wire game fence, tortoise fence, new signing and pavement markings, guardrail where needed, new retaining walls, tortoise fence, twenty-five new mainline and ramp structures and seeding of all disturbed areas.

New right-of-way will be required for the proposed improvements. The estimated right-of-way required for this project includes the acquisition of seven structures and 865 acres of land. Land will be required from parcels owned privately (about 25%) or controlled by ASLD (about 50%) and BLM (about 25%).

The following projects are listed in the ADOT FY 2000-2004 5-Year Highway Construction Program.

FY	Begin Milepost	Type of Work	Estimate
2000	120.0	R/W Acquisition	$2,000,000
2000	122.0	Design (Interim)	$2,000,000
2002	122.0	Construction Roadway	$11,000,000
2002	137.8	Design (Roadway)	$2,500,000
2003	137.8	R/W Acquisition	$3,000,000
2004	137.8	Construct Roadway	$25,000,000
2005 (Tentative)	122.00	Four-Lane Divided, Phase III	$10,000,000

The estimated total project costs for the proposed ultimate improvements (initial and future) including frontage roads and interchanges as discussed above are detailed in Section 5.0 Itemized Cost Estimate.

Initial construction projects are described in the Final Implementation Plan, March 2000, and summarized in Section 3.4 Implementation. The estimated total project costs for the proposed initial improvements are detailed in Section 5.0 Itemized Cost Estimate.

2.0 TRAFFIC AND ACCIDENT DATA

2.1 SOURCE OF DATA

The existing 2000 and forecast 2022 traffic volumes and traffic factors were provided by the Arizona Department of Transportation, Transportation Planning Division, Travel and Facilities Branch in March, 2000. In January, 2000, Traffic Research and Analysis Inc., (TRA) collected 24-hour machine/classification counts on SR 85 both north and south of the Lewis Prison/SWJCC Facilities crossing (MP 138.35).

Accident data was provided by the Arizona Department of Transportation, Traffic Records Unit. The five-year period analyzed was from September 01, 1994, through August 31, 1999.

2.2 EXISTING AND FORECAST MAINLINE TRAFFIC DATA

The existing 2000 and forecast 2022 mainline Average Daily Traffic (ADT) and traffic factors are shown below in Table 2.

TABLE 2

EXISTING AND PROJECTED TRAFFIC DATA

Location	ADT				
	2000 (Existing)	2022 (Design)	K(%)	D(%)	T(%)
B-8, milepost 120.34 – 122.83	2,900	5,000	15	51	28
SR 85, milepost 120.32 – 138.35	6,067	9,700	11	54	28
SR 85, milepost 138.35 – 150.48	7,572	12,900	11	54	28
SR 85, milepost 150.48 – 154.48	8,500	14,000	11	54	28

ADT = Average Daily Traffic
K = Estimated peak hour traffic as a percentage of Average Daily Traffic
D = The percentage of peak hour traffic traveling in the heavier traffic direction
T = Commercial trucks as a percentage of all traffic

Source: ADOT Travel and Facilities Branch, March 2000 & TRA, January, 2000.

Forecast 2022 ADT ranges from 5,000 vehicles on B-8 to 14,000 vehicles on SR 85. These volumes represent an increase of 60 to 70 percent over current ADT. The forecasts reflect the increasing travel by commercial and non-commerical travel between Phoenix, Gila Bend, Yuma, Mexico, and San Diego. Intercity trucks also use SR 85 to bypass the Phoenix area of I-10.

2.3 EXISTING AND FORECAST RAMP VOLUMES

The existing 2000 and forecast 2022 ramp ADT's and traffic factors are shown below in Table 3.

TABLE 3

EXISTING 2000 AND FORECAST 2022 RAMP ADT'S AND TRAFFIC FACTORS

Interchange	ADT				
	2000 (Existing)	2022 (Design)	K(%)	D(%)	T(%)
I-8/E. Gila Bend TI					
EB off-ramp	643	1,100	15	100	28
EB on-ramp	1,995	3,300	15	100	28
WB off-ramp	1,664	2,750	15	100	28
WB on-ramp	584	1,000	15	100	28
B-8/Gila Bend TI					
EB to EB ramp	787	1,350	15	100	28
WB to WB ramp	600	1,050	15	100	28
I-10/SR 85 (Oglesby Road) TI					
EB off-ramp	1,205	1,950	10	100	29
EB on-ramp	3,758	6,050	10	100	29
WB off-ramp	3,348	5,400	10	100	29
WB on-ramp	1,219	2,000	10	100	29

Source: ADOT Travel and Facilities Branch, March 2000 & TRA, January, 2000.

ADOT did not forecast traffic for individual ramps, therefore, it was assumed that traffic will grow as the same rate as on the Mainline Freeway Segment to which the ramp connects. All traffic factors (K, D, and T) are assumed to remain constant over time.

2.4 EXISTING AND FORECAST INTERSECTION VOLUMES

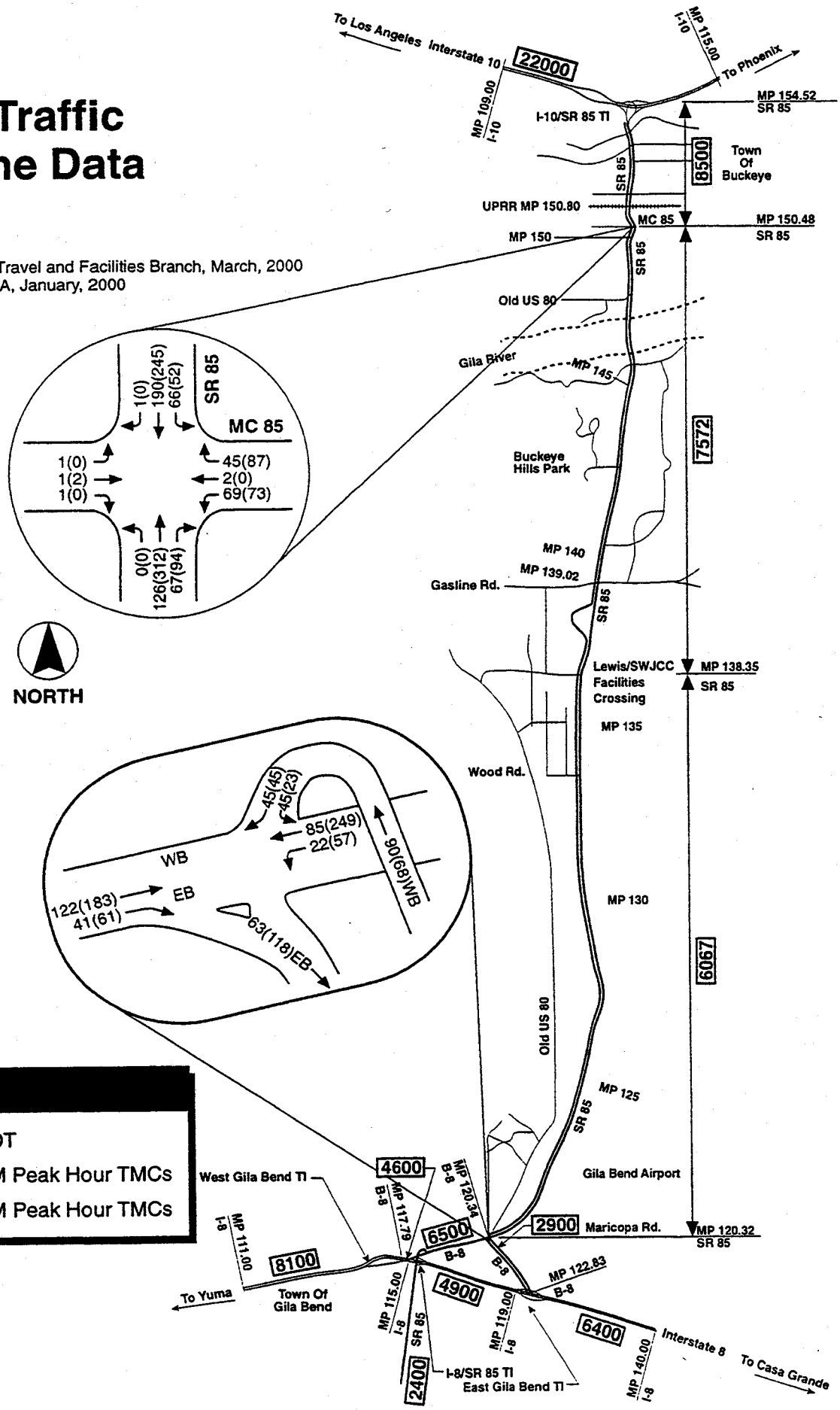
Figures 8 and 9 portray the existing 2000 and forecast 2022 PM Peak Hour Intersection Volumes at the following two intersections:

1. SR 85/MC 85 (4-way stop)
2. B-8/SR 85 (Gila Bend) Traffic Interchange (Stop on WB to WB and WB to NB ramps).

The turning movement volumes shown are those at buildout of these facilities, and growth in traffic volumes was applied only to the through volumes on SR 85.

2000 Traffic Volume Data

Source: ADOT Travel and Facilities Branch, March, 2000
and TRA, January, 2000



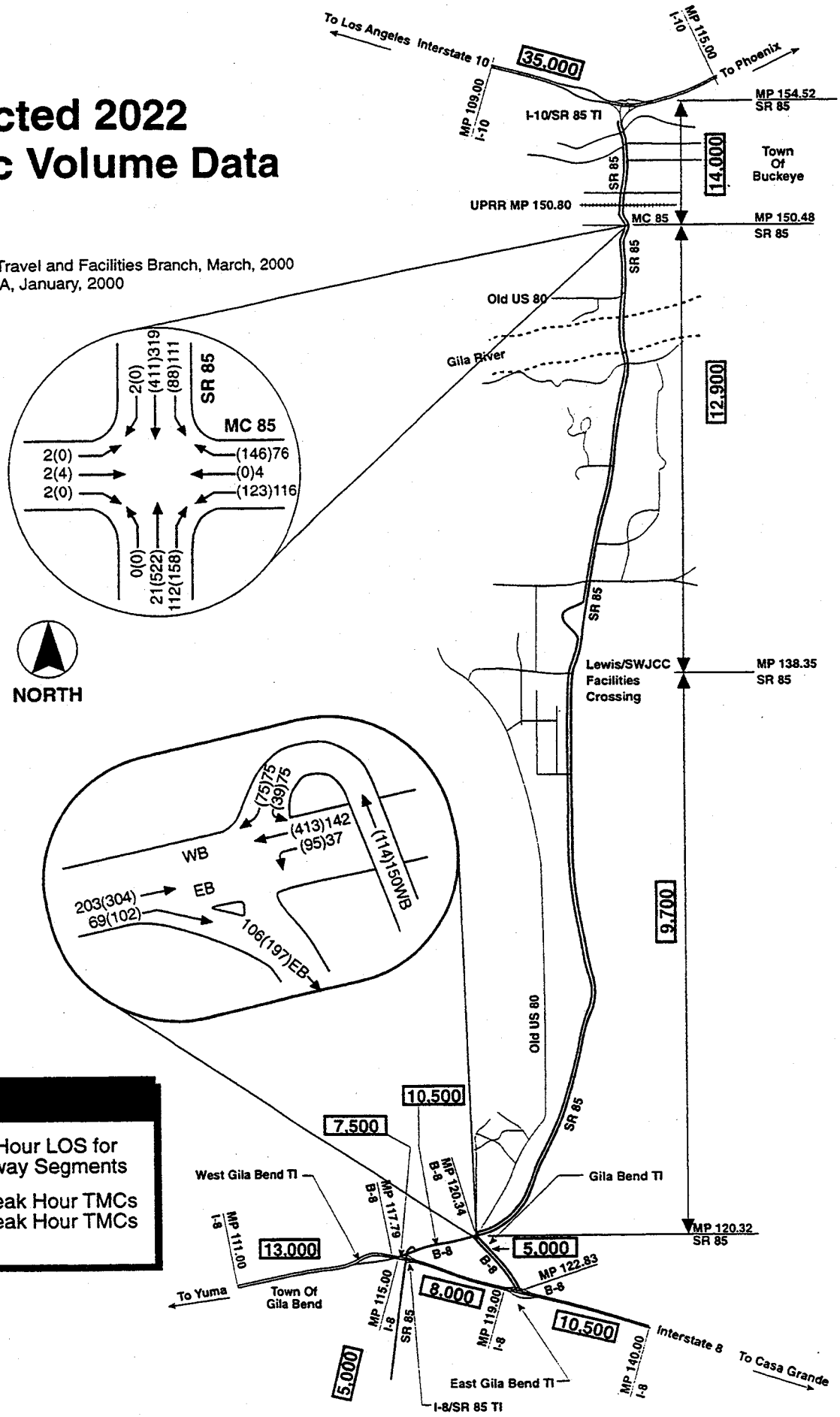
SR 85 *Gila Bend to I-10*

Traffic Operational Analysis Report

Figure 8

Projected 2022 Traffic Volume Data

Source: ADOT Travel and Facilities Branch, March, 2000 and TRA, January, 2000



ADOT

SR 85 *Gila Bend to I-10*

Figure 9

Traffic Operational Analysis Report 18

BRW

Future volumes were estimated by applying the projected growth rate of the adjacent sections of SR 85 to the turning movements recorded at each intersection.

2.5 2022 FORECAST MAINLINE LOS AND CAPACITY

Figure 10 displays the forecast 2022 peak hour Levels of Service (LOS) for the existing geometrics. If nothing is done to improve the capacity of the existing roadway, the increase in traffic over the next twenty years will result in poorer Levels of Service along the entire route, with significant peak hour congestion (LOS "D" or "E") throughout by 2022.

Table 4 compares the existing 2000 and forecast 2022 mainline Levels of Service with and without improvements to SR 85.

TABLE 4

EXISTING AND PROJECTED LEVELS OF SERVICE

Location	LOS			
	2000 (Existing)	2022 (Design) Existing Geometrics	Projected Year of Decline to LOS C	2022 (Design) Proposed 4-Lane Divided
B-8, milepost 120.58 – 120.99 (4-lane divided)	A	A	N/A	A
B-8, milepost 120.99 – 122.83 (2-lane undivided)	B	C	2003	A
SR 85, milepost 120.32 – 138.35 (2-lane undivided)	C	D	N/A	A
SR 85, milepost 138.35 - 150.48 (2-lane undivided)	D	E	N/A	A
SR 85, milepost 150.48 – 154.48 (2-lane undivided)	D	E	N/A	A

Source: BRW, Inc., April 2000, based on Highway Capacity Software analysis

As Table 4 indicates, improved Levels of Service of "B" or better would result if SR 85 was upgraded to a four-lane divided typical section. A four-lane divided cross-section would improve 2022 Levels of Service to "A".

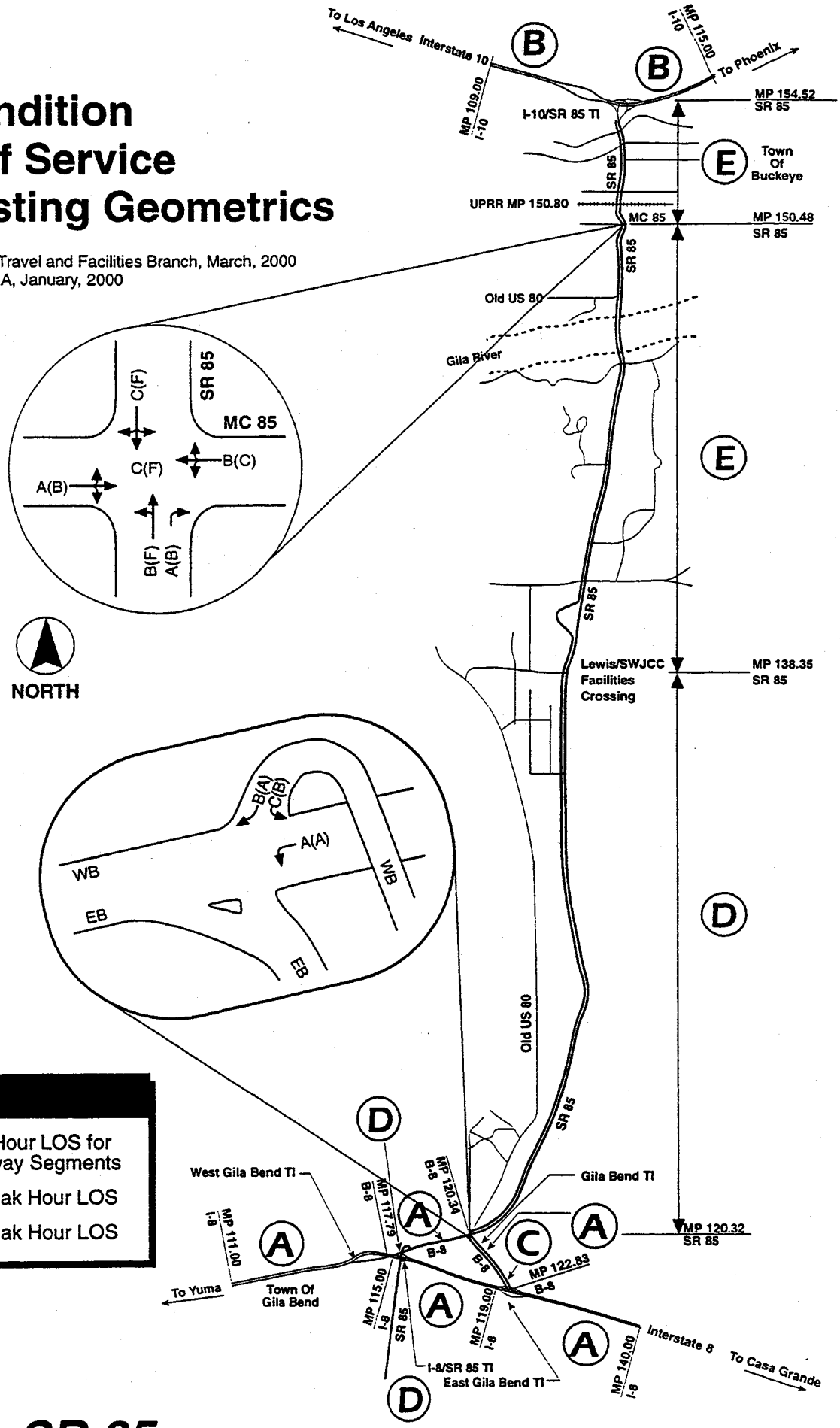
2.6 2022 FORECAST RAMP AND INTERSECTION LOS AND CAPACITY

Analysis of the ramp volumes for the East Gila TI, Gila Bend TI, and Oglesby Rd. TI indicates that all ramps will have a LOS "C" or better in the Design Year 2022.

Figure 10 also displays the forecast 2022 peak hour volumes at the two mainline intersections discussed in Section 2.4.

2022 Condition Levels of Service with Existing Geometrics

Source: ADOT Travel and Facilities Branch, March, 2000 and TRA, January, 2000



SR 85 *Gila Bend to I-10*

Figure 10

If no improvements are made to the MC 85/SR 85 intersection the LOS is projected to decline to "F" in 2022.

2.7 ACCIDENT DATA

Five-Year Accident Summary

Accidents are a key indicator of traffic safety. They occur for a variety of reasons involving driver error, vehicular failure, environmental factors such as weather, and roadway deficiencies. Accident analysis is an essential tool for pinpointing safety problems.

An accident evaluation was conducted for the five-year period between September 1, 1994 and August 31, 1999. The evaluation covered the Study Area roadway segments on SR 85 and B-8. This section summarizes the principal findings of the evaluation. Details of the evaluation are presented in Appendix B of the Traffic Report.

B-8, Milepost 117.79 - 122.83

During the five-year evaluation period, four (4) accidents were reported for this 5-mile segment of State Business Route 8, resulting in an average of less than (1) per year and an average annual accident rate of approximately 0.24/mvm (million vehicle miles) traveled. Three (3) of the reported accidents (75 percent) involved property damage only, and the other accident was an injury accident; no fatalities were reported. Three of the accidents were single vehicle accidents. In three (3) accidents reported, speed was too fast for condition. There are no indications that existing roadway geometrics contributed to any of the accidents.

SR 85, Milepost 120.32 - 138.35

During the five-year evaluation period, 69 accidents were reported for this 18.03-mile segment of State Route 85, resulting in an average of 13.8 per year and an average annual accident rate of 0.24/mvm traveled. Thirty-seven accidents (53.6 percent) involved property damage only, 25 (36.2 percent) were injury accidents, and 7 (10.2 percent) involved fatalities. Thirty-one accidents (44.9 percent) were collisions with other motor vehicles, 11 accidents (15.9 percent) involved overturning vehicles and 8 accidents (11.6 percent) involved a vehicle hitting a fixed object, a fence or a traffic sign. Five accidents (7.2 percent) involved hitting wild game or animal livestock while 4 accidents (5.8 percent) involved no collision. Thirty-six (52.2 percent) were single vehicle accidents. Other accident types were rear-end (4), angle (1), sideswipe (11), head-on (9), U-turn (2) and other miscellaneous (6). Nineteen (27.5 percent) accidents involved impaired drivers. All but 2 of the accidents occurred under dry conditions; these 2 occurred under wet conditions. The majority of accidents (37 or 53.6 percent) occurred during daylight hours and the remainder (32 or 46.4 percent) occurred during the nighttime hours. There are no indications that existing roadway geometrics contributed to any of the accidents.

SR 85, Milepost 138.35 - 150.48

During the five-year evaluation period, 79 accidents were reported for this 12.13-mile segment of State Route 85, resulting in an average of 15.8 per year and an average annual accident rate of 0.47/mvm traveled. Forty-six accidents (58.2 percent) involved property damage only, 29 (36.7 percent) were injury accidents and 4 (5.1 percent) involved fatalities. Forty-four accidents (55.7 percent) were collisions with other motor vehicles, 8 accidents (10.1 percent) involved overturning of vehicles, 3 accidents (3.8 percent) involved fire in vehicles and 14 accidents (17.7 percent) involved a vehicle hitting a fixed object, a fence, a bridge culvert, a guardrail or a traffic sign. Four accidents (5.1 percent) involved hitting wild game or animal livestock while 6 accidents (7.6 percent) involved no collision or breakage of vehicle. Thirty-six (45.6 percent) were single vehicle accidents. Other accident types were rear-end (16), angle (5), sideswipe (14), head-on (3), U-turn (2), left-turn (1) and other/miscellaneous (2). Fifteen (19.0) percent accidents involved drivers with impaired abilities. All but 4 of the accidents occurred under dry conditions; 3 of these occurred under foggy conditions while 1 accident occurred under wet conditions. The majority of accidents (49 or 62 percent) occurred during daylight hours and the remainder (30 or 38 percent) occurred during the nighttime, dusk or dawn hours. There are no indications that existing roadway geometrics contributed to any of the accidents.

SR 85, Milepost 150.48 - 154.48

During the five-year evaluation period, 27 accidents were reported for this 4.0-mile segment of State Route 85, resulting in an average of 5.4 per year and an average annual accident rate of 0.44/mvm traveled. Fourteen accidents (51.9 percent) involved property damage only, 11 (40.7 percent) were injury accidents, and 2 (7.4 percent) involved fatalities. Twenty-two accidents (81.5 percent) were collisions with other motor vehicles, 2 accidents (7.4 percent) involved a vehicle hitting a fixed object and 2 accidents (7.4 percent) involved fire in vehicles. Nine accidents (33.3 percent) were rear-end, 9 (33.3 percent) were angle while 5 (18.5 percent) were single vehicle accidents. Other accident types were sideswipe (1), head-on (1) and other/miscellaneous (2). Four (14.8 percent) accidents involved impaired drivers. All but 1 of the accidents occurred under dry conditions; this 1 accident occurred under wet conditions. The majority of accidents (19 or 70.4 percent) occurred during daylight hours and the remainder (8 or 29.6 percent) occurred during the nighttime and dusk hours. There are no indications that existing roadway geometrics contributed to any of the accidents.

2.8 SUMMARY AND RECOMMENDATIONS BASED UPON TRAFFIC AND ACCIDENT DATA

1. 2000 Average Daily Traffic (ADT) is highest on SR 85, which carries 8,500 vehicles per day (vpd) between I-10 and MC 85. South of this segment between MC 85 and Lewis/SWJCC facilities crossing, the ADT decreases to 7,572 and decreases further more to the south between Lewis/SWJCC Facilities crossing and Gila Bend to 6,067 vpd. The ADT is 2,900 vpd on B-8 from MP 120.34 to MP 122.83.

2. The percent of trucks (including recreational vehicles) is 28 percent within the study area.

3. Eleven to 15 percent of the Average Daily Traffic occurs during the peak hour.

4. 2000 daily traffic volumes on freeway ramps in the study area range from just over 600 vpd at the I-8/East Gila Bend interchange to over 3,700 vpd at the I-10/SR 85 (Oglesby Road) interchange.

5. During the five-year period from September 1, 1994 to August 31, 1999, 179 accidents were reported on B-8 and SR 85, in the study area. This represents an increase of 24.3 percent over the reported accidents during a previous five-year period (1991-1995). There were 100 (55.9 percent) property damage only accidents, 66 (36.9 percent) were non-fatal injury accidents, and 13 (7.2 percent) were fatal accidents. The majority of the accidents were single-vehicle incidents. There are no indications that existing roadway geometrics contributed to any of these accidents.

6. 2000 peak hour Levels of Service are "B" or better for all roadway segments, freeway ramps, and turning movements at the SR 85/MC85 intersection and B-8/Gila Bend TI except following locations:

   - LOS "C" and "D" at the two-lane segments of SR 85 between Gila Bend and I-10.
   - LOS "C" for northbound left/through movement at the intersection of SR 85 and MC 85 during PM peak hour.

7. Traffic on the study area roadways is projected to increase by 60 to 72 percent between 2000 and the design year 2022. The largest rate of increase (72 percent) is forecast for B-8 from MP 120.34 to MP 122.83.

8. The year in which the Level of Service is projected to decline from "B" to "C" varies by roadway segment. B-8 from milepost 120.99 to 122.83 is projected to reach LOS "C" in 2003. Segments of SR 85 and B-8, which already operate at unacceptable LOS will continue to deteriorate to LOS "D" and "E" by the year 2022 if no capacity improvement are made.

9. A peak hour LOS of "B" or better is forecast for all freeway ramps in the design year (2022) except the four ramps on I-10/SR 85 (Oglesby Road) interchange which are projected to operate at LOS "C" by the year 2022.

10. Peak hour turning movement forecasts indicate that the SR 85/MC 85 intersection is expected to meet the peak hour volume warrant for signalization much earlier than 2022. Without the recommended improvements, this intersection should be evaluated regularly in the future to determine whether various warrants for signalization are met. The intersection will deteriorate to a LOS "F" if the existing traffic control and geometrics remain in place.

11. All of the non-free flowing movements at B-8/Gila Bend TI will operate at LOS "B" or better except westbound left-turn movement which is expected to operate at LOS "C" by 2022. This movement can be mitigated to a LOS "B" or better by changing traffic control at this location from one-way stop to an all-way stop or reconstructing the Gila Bend TI.

12. Other intersections on SR 85 such as that of Old US 80 and Lewis/SWJCC facilities crossing should also be evaluated regularly in the future to determine whether various warrants for signalization are met before the recommended improvements are constructed.

13. It is recommended that SR 85 be widened to a four-lane facility in order to meet the goal of providing a Level of Service "B" or better in the design year 2022. If SR 85 were widened to a four-lane facility from Gila Bend to I-10, a LOS "A" would prevail on the entire roadway in the design year (2022). The same is true about the two-lane portions of B-8.

3.0 ALTERNATIVES CONSIDERED

3.1 INTRODUCTION

Based upon traffic volumes and patterns, existing right-of-way widths and a recently completed construction project, four roadway segments have been identified for evaluation purposes. These roadway segments do not necessarily represent specific portions of the corridor that will be programmed for construction; they are for evaluation purposes within this document. The Final Implementation Plan, March 2000, prepared for this project as a part of this study defines logical portions of the SR 85 corridor to be programmed for initial construction.

Each of the four roadway segments identified are described below.

1. Segment A (B-8; MP 122.83 to MP 120.34) and (SR 85; MP 120.32 to MP 124.0)

Segment A begins at the I-8/B-8 intersection of the East Gila Bend TI (MP 122.83) and traverses northwest through Gila Bend and intersects with SR 85 at the Gila Bend TI (B-8 MP 120.34 = SR 85 MP 120.32). From the Gila Bend TI the segment heads in the northeast direction and terminates at MP 124.0.

2. Segment B (SR 85; MP 124.0 to MP 146.0)

Segment B begins on SR 85 at MP 124.0 and traverses north to MP 146.0 near the beginning of the Gila River Bridge Project.

3. Segment C (SR 85; MP 146.0 to MP 150.2)

Segment C begins on SR 85 at MP 146.0 and traverses north over the recently constructed Gila River Bridges and its approaches to MP 150.2.

4. Segment D (SR 85; MP 150.2 to MP 150.48) and (SR 85; MP 150.48 to MP 154.52)

Segment D begins on SR 85 at MP 150.2 and travels in a northerly direction, terminating at I-10 (Oglesby Rd. TI) at MP 154.52.

Initially, thirty-eight alternatives were considered for this project. However, after the preparation of the Initial Alternatives Development Report, the recommendations were to develop alternatives that would address the future need for making the route a controlled-access facility at the suggestion of the Federal Highway Administration. This resulted in uncontrolled and controlled access alternatives A-1C, A-1D, A-2B, A-3B, A-5C and A-5D in Segment A, B-3 and B-4 in Segment B, C in Segment C and D-2, D-3 and D-4 in Segment D.

Uncontrolled access facility alternatives along the corridor would encourage progressive strip development which contributes to deteriorating traffic service and safety. As development

increases and traffic volumes rise, traffic signals are required and motorists look for alternate routes. Converting an uncontrolled access facility to a controlled access facility in the future would increase the social and economic impacts within the corridor, once development has occurred. Uncontrolled access alternatives along SR 85 would not fully meet the purpose and need of the project. A phased implementation of the proposed improvements allows for the acquisition of the needed right-of-way/easement while the corridor is still relatively undeveloped, and later, the remaining elements of a grade separated, fully access controlled facility would be constructed when warranted. Segment D is identified as an urban section for ultimate design while the other segments should be developed as rural in nature.

Access will be controlled through the ADOT Permit process until acquisition of new right-of-way and access control rights is accomplished. Access by current ADOT Permits to the initial highway will be allowed until such time the frontage (local access) roads and interchanges are constructed.

Initially, corridors outside the existing roadway corridor were considered, but eliminated from further study. The corridor improvements would have to utilize the existing traffic interchanges at I-10 and I-8. Alternative alignments outside of the existing roadway corridor either to the east or west were rejected for the following reasons. Alternative corridors would incur greater cost for right-of-way acquisition, disturb additional native vegetation and wildlife habitat, disrupt existing land uses, would be incongruous with zoning and community plans, adversely impact Buckeye Hills Recreational Area and Robbins Butte Wildlife Refuge Area, encroach upon the South Maricopa Mountains Wilderness Area, and require new crossings of the Gila River.

Thus, the Location/Design Concept Study developed and evaluated the "Do Nothing" alternative and Twenty-one Build alternatives. Each alternative is described below:

3.1.1 Do Nothing

The "Do Nothing" alternative would allow only maintenance of the existing roadway without expansion of the roadway surface or capacity. This alternative was considered and rejected, since the existing roadway would not enhance safety or provide an acceptable Level of Service of B for the forecasted traffic volumes in the design year 2022. No cost was associated with the "Do Nothing" alternative.

3.1.2 Segment A: Alternative A-1C (Uncontrolled Access)

Alternative A-1C (Uncontrolled Access) - Consists of constructing a parallel two lane eastbound/southbound roadway offset west of the existing B-8 and SR 85 centerlines. The existing roadway would be restricted to westbound/northbound traffic only and would be separated from the new roadway by a 46-to 84-foot rural median. Local access to these roadways would be via at-grade intersections. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $16,570,000.

3.1.3 Segment A: Alternative A-1D (Uncontrolled Access)

Alternative A-1D (Uncontrolled Access) - Consists of constructing a parallel two-lane westbound/northbound roadway offset east of the existing B-8 and SR 85 centerlines. The existing roadway would be restricted to eastbound/southbound traffic only and would be separated from the new roadway by a 46-to 84-foot rural median. Local access to these roadways would be via at-grade intersections. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $16,570,000.

3.1.4 Segment A: Alternative A-1C (Controlled Access)

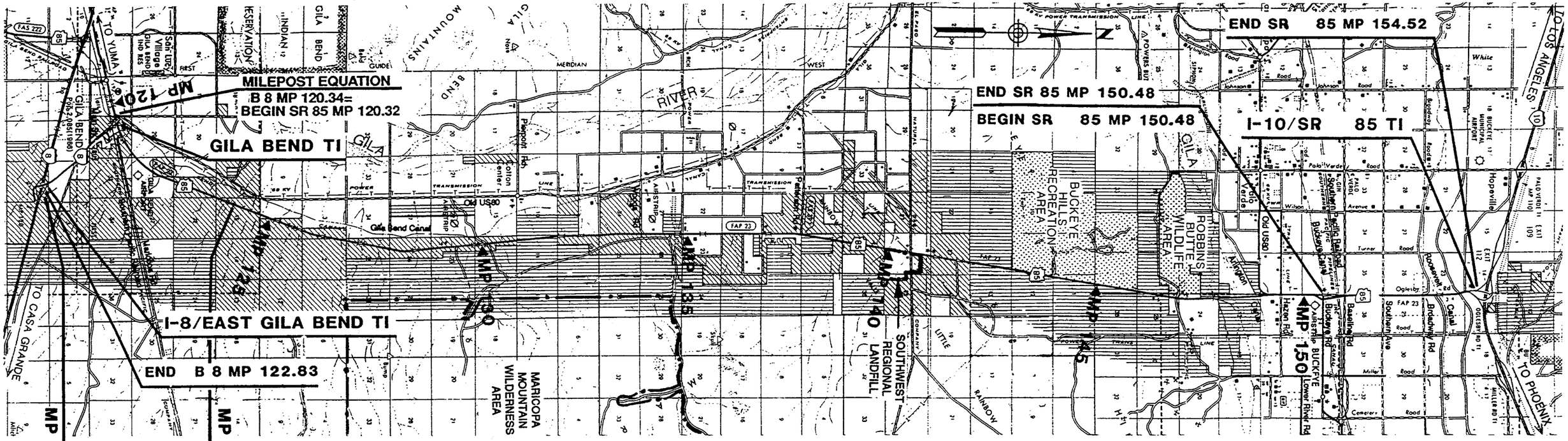
Alternative A-1C (Controlled Access) - Is the same as Alternative A-1C (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to B-8 would be via at-grade intersections. Local access to SR 85 would be via at-grade intersections or interchanges. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $26,174,000.

3.1.5 Segment A: Alternative A-1D (Controlled Access)

Alternative A-1D (Controlled Access) - Is the same as Alternative A-1D (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to B-8 would be via at-grade intersections. Local access to SR 85 would be via at-grade intersections or interchanges. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $26,174,000.

3.1.6 Segment A: Alternative A-2B (Uncontrolled Access)

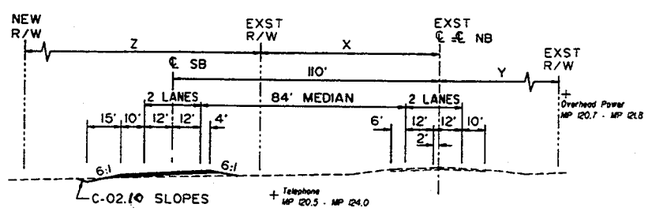
Alternative A-2B (Uncontrolled Access) - Consists of constructing a new four-lane divided roadway with an 84-foot rural median on a new alignment located west of existing B-8. This alternative would also require the reconfiguration of the existing diamond interchange on I-8. Local access to this new facility would be via at-grade intersections. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $38,177,000.



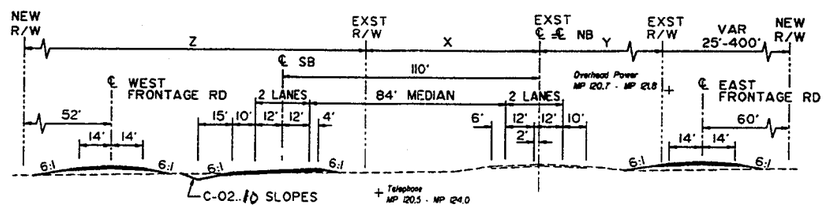
LEGEND:

- BLM Lands
- State Lands
- 4f Lands

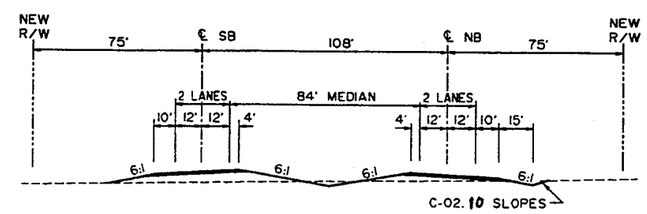
**Typical Section Shown Is For Alignment Outside Of The Existing R\W



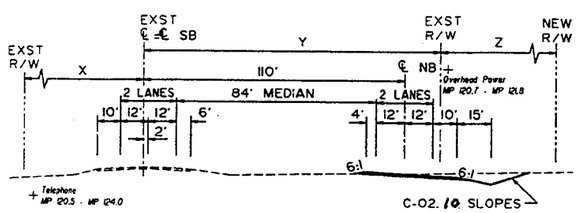
ALT. A-1C, A-5C; 84' MEDIAN, ℄ OFFSET WEST (UNCONTROLLED ACCESS)
SB-8 MP 122.83 to MP 120.34 ; X=Var 50'-100', Y=Var 100'-160', Z=Var 0'-130'
SR85 MP 120.32 to MP 124.00 ; X= 75', Y= 125', Z= 105'



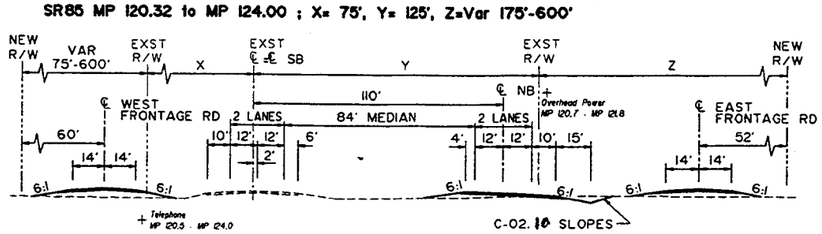
ALT. A-1C, A-5C; 84' MEDIAN, ℄ OFFSET WEST (CONTROLLED ACCESS)
SB-8 MP 122.83 to MP 120.34 ; X=Var 50'-100', Y=Var 100'-160', Z=Var 0'-400'
SR85 MP 120.32 to MP 124.00 ; X= 75', Y= 125', Z=Var 175'-600'



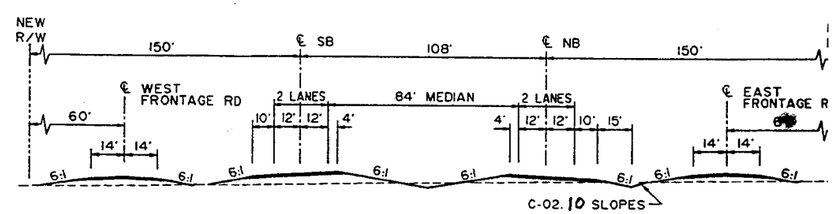
ALT A-2B & A-3B; 84' MEDIAN (UNCONTROLLED ACCESS)
I-8 to SR85 MP 124.00 **



ALT. A-1D, A-5D; 84' MEDIAN, ℄ OFFSET EAST (UNCONTROLLED ACCESS)
SB-8 MP 122.83 to MP 120.34 ; X=Var 50'-100', Y=Var 100'-160', Z=Var 0'-80'
SR85 MP 120.32 to MP 124.00 ; X= 75', Y= 125', Z= 55'



ALT. A-1D, A-5D; 84' MEDIAN, ℄ OFFSET EAST (CONTROLLED ACCESS)
SB-8 MP 122.83 to MP 120.34 ; X=Var 50'-100', Y=Var 100'-160', Z=Var 0'-400'
SR85 MP 120.32 to MP 124.00 ; X= 75', Y= 125', Z=Var 125'-400'



ALT. A-2B, A-3B; 84' MEDIAN (CONTROLLED ACCESS)
I-8 to SR85 MP 124.00 **

SR 85

Gila Bend to I-10

Figure 11
Segment A Typical Sections

BRW

3.1.7 Segment A: Alternative A-2B (Controlled Access)

Alternative A-2B (Controlled Access) - Is the same as Alternative A-2B (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to this new facility would be via at-grade intersections or interchanges. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $54,070,000.

3.1.8 Segment A: Alternative A-3B (Uncontrolled Access)

Alternative A-3B (Uncontrolled Access) - Consists of a new four lane divided roadway with an 84-foot rural median on a new alignment located east of existing B-8. This alternative would connect into the East Gila Bend interchange located on I-8. Local access to this new facility would be via at-grade intersections. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $20,968,000.

3.1.9 Segment A: Alternative A-3B (Controlled Access)

Alternative A-3B (Controlled Access) - Is the same as Alternative A-3B (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to this new facility would be via at-grade intersections or interchanges. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $33,053,000.

3.1.10 Segment A: Alternative A-5C (Uncontrolled Access)

Alternative A-5C (Uncontrolled Access) - Consists of constructing a parallel two lane southbound roadway offset west of the existing SR 85 centerline. No construction would occur on B-8. The existing roadway would be restricted to northbound traffic only and would be separated from the new roadway by an 84 foot rural median. Local access to the roadway would be via at-grade intersections. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $11,152,000.

3.1.11 Segment A: Alternative A-5D (Uncontrolled Access)

Alternative A-5D (Uncontrolled Access) - Consists of constructing a parallel two lane northbound roadway offset east of the existing SR 85 centerline. No construction would occur on B-8. The existing roadway would be restricted to southbound traffic only and would be separated from the new roadway by an 84-foot rural median. Local access to this roadway would be via at-grade intersections. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $11,152,000.

3.1.12 Segment A: Alternative A-5C (Controlled Access)

Alternative A-5C (Controlled Access) - Is the same as Alternative A-5C (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to SR 85 would be via at-grade intersections or interchanges. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $20,631,000.

3.1.13 Segment A: Alternative A-5D (Controlled Access)

Alternative A-5D (Controlled Access) - Is the same as Alternative A-5D (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to SR 85 would be via at-grade intersections or interchanges. The typical section of this alternative is shown in Figure 11. The estimated construction cost is $20,631,000.

3.1.14 Segment A: Alternative A-1C1 (Uncontrolled/Controlled Access)

Alternative A-1C1 (Uncontrolled/Controlled Access) – Consists of constructing a four-lane roadway with 16-foot raised median centered eight feet east of the existing SR 85 centerline. Local access would be provided by new grade-separated interchanges at the existing Gila Bend interchange (MP 120.3) and the future Airport interchange (MP 122.9). The intersection of Maricopa Road would be relocated approximately 0.4 miles to the north of its existing location and would remain an at-grade intersection. The typical section is shown in Figure 12. The estimated construction cost is $19,263,000.

3.1.15 Segment B: Alternative B-3 (Uncontrolled Access)

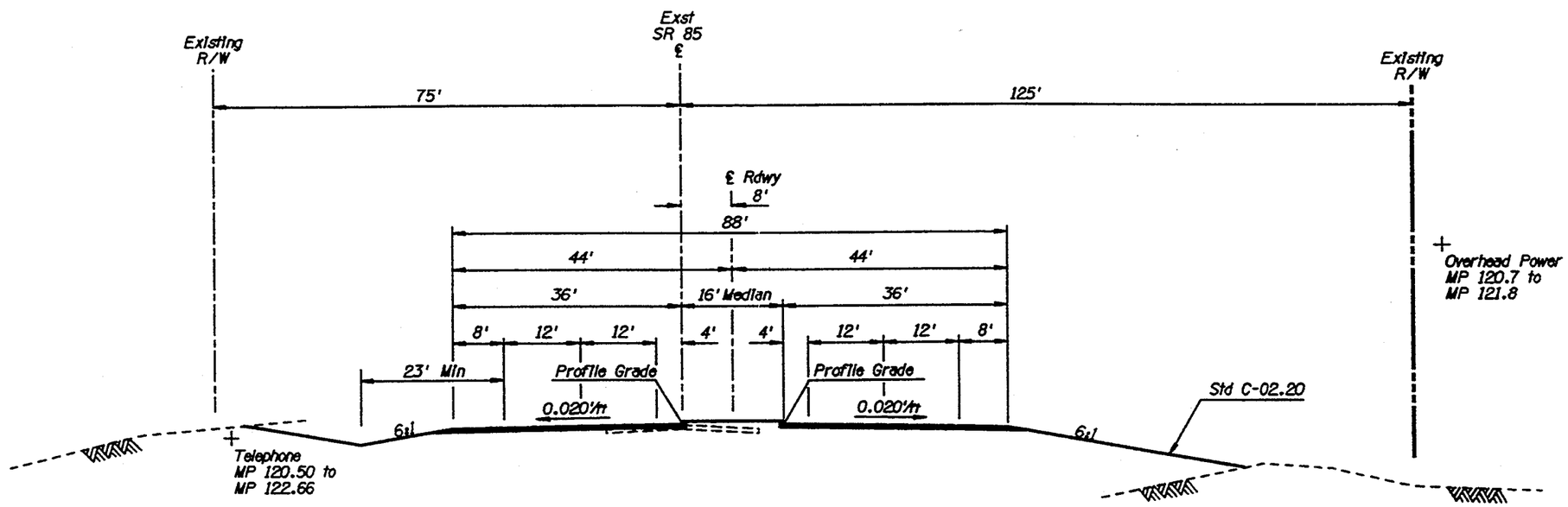
Alternative B-3 (Uncontrolled Access) - Consists of constructing a parallel two-lane southbound roadway offset west of the existing SR 85 centerline. The existing roadway would be restricted to northbound traffic only and would be separated from the new roadway by an 84-foot rural median. Local access to this roadway would be via at-grade intersections. The typical section of this alternative is shown in Figure 13. The estimated construction cost is $42,414,000.

3.1.16 Segment B: Alternative B-4 (Uncontrolled Access)

Alternative B-4 (Uncontrolled Access) - Consists of constructing a parallel two lane northbound roadway offset east of the existing SR 85 centerline. The existing roadway would be restricted to southbound traffic only and would be separated from the new roadway by an 84 foot rural median. Local access to this roadway would be via at-grade intersections. The typical section of this alternative is shown in Figure 13. The estimated construction cost is $42,414,000.

3.1.17 Segment B: Alternative B-3 (Controlled Access)

Alternative B-3 (Controlled Access) - Is the same as Alternative B-3 (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Access to SR 85 would be via frontage roads to interchanges. The typical section of this alternative is shown in Figure 13. The estimated construction cost is $113,177,000.



SEGMENT A
ALT. A-1C1; 16' MEDIAN, OFFSET 8' EAST (COMBINED CONTROLLED/UNCONTROLLED ACCESS)
SR 85 MP 120.32 TO MP 122.66

Figure 12
Segment A Typical Section

ADOT

SR 85 CORRIDOR STUDY
GILA BEND TO I-10
PREFERRED TYPICAL SECTIONS
ULTIMATE CONSTRUCTION

BRW

SCALE: As Noted A-2

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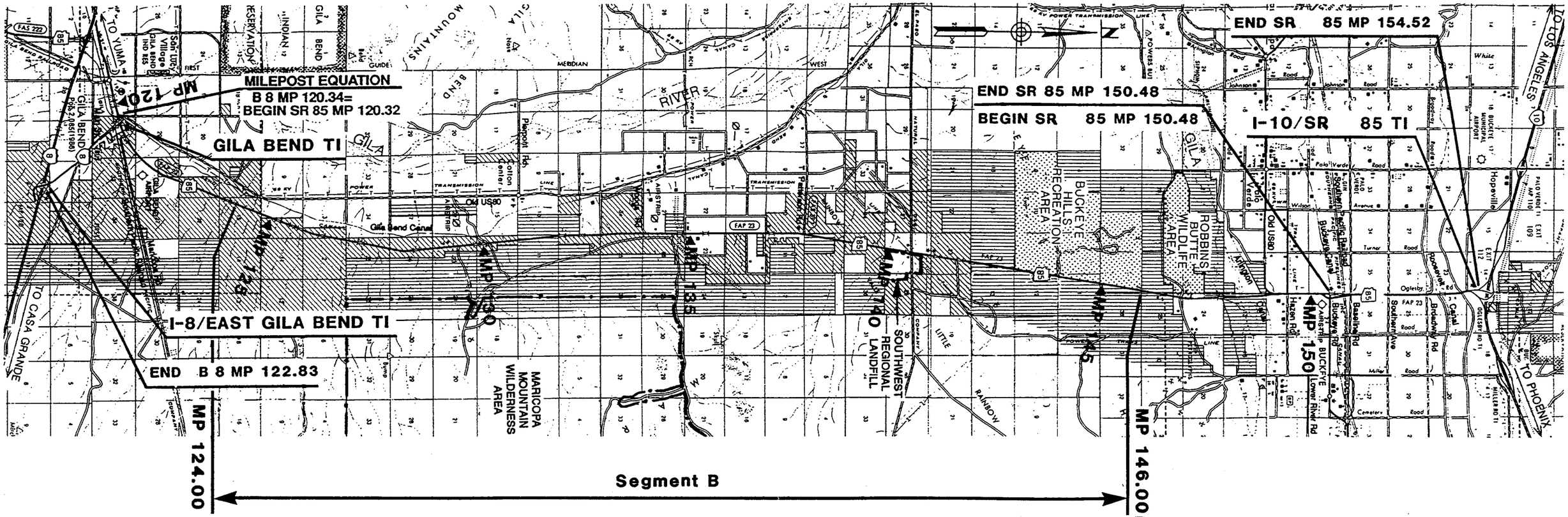
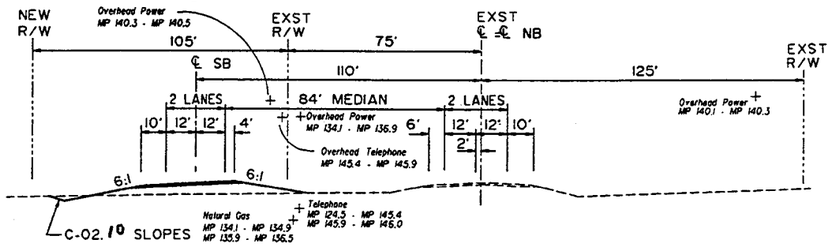
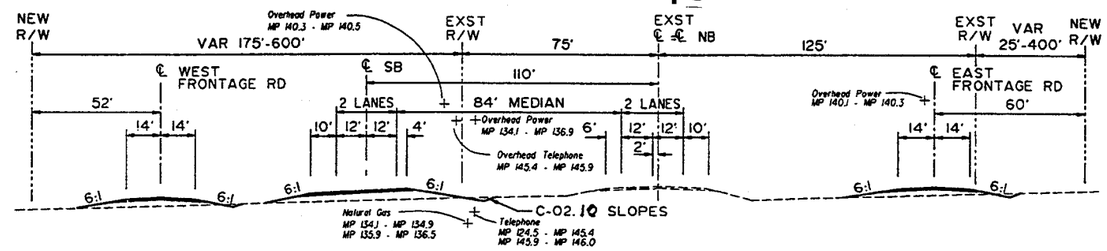
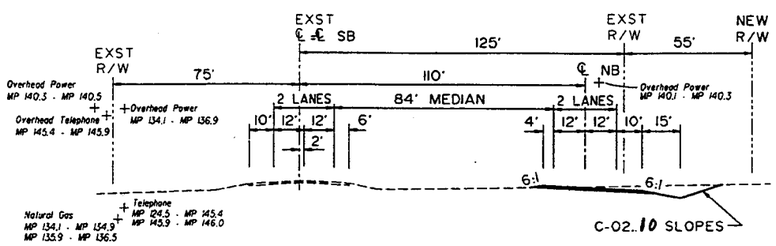




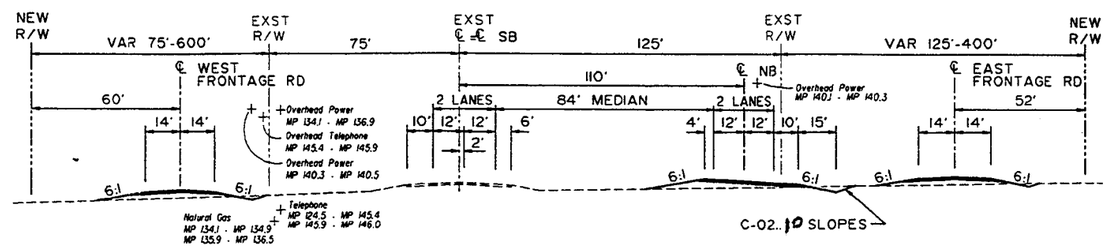
ALT. B-3; 84' MEDIAN, ℄ OFFSET WEST (UNCONTROLLED ACCESS)
MP 124.00 to MP 146.00



ALT. B-3; 84' MEDIAN, ℄ OFFSET WEST (CONTROLLED ACCESS)
MP 124.00 to MP 146.00



ALT. B-4; 84' MEDIAN, ℄ OFFSET EAST (UNCONTROLLED ACCESS)
MP 124.00 to MP 146.00



ALT. B-4; 84' MEDIAN, ℄ OFFSET EAST (CONTROLLED ACCESS)
MP 124.00 to MP 146.00

LEGEND:
- BLM Lands
- State Lands
- 4f Lands

SR 85
Gila Bend to I-10

Figure 13
Segment B Typical Sections

3.1.18 Segment B: Alternative B-4 (Controlled Access)

Alternative B-4 (Controlled Access) - Is the same as Alternative B-4 (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to SR 85 would be via frontage roads to interchanges. The typical section of this alternative is shown in Figure 13. The estimated construction cost is $113,177,000.

3.1.19 Segment C: Alternative C (Uncontrolled Access)

Alternative C (Uncontrolled Access) - Consists of constructing a parallel two-lane northbound roadway offset east of the existing SR 85 centerline. The existing roadway would be restricted to southbound traffic only and would be separated from the new roadway by a 46-foot rural median. Local access to this roadway would be via at-grade intersections. The typical section of this alternative is shown in Figure 14. The estimated construction cost is $20,849,000.

3.1.20 Segment C: Alternative C (Controlled Access)

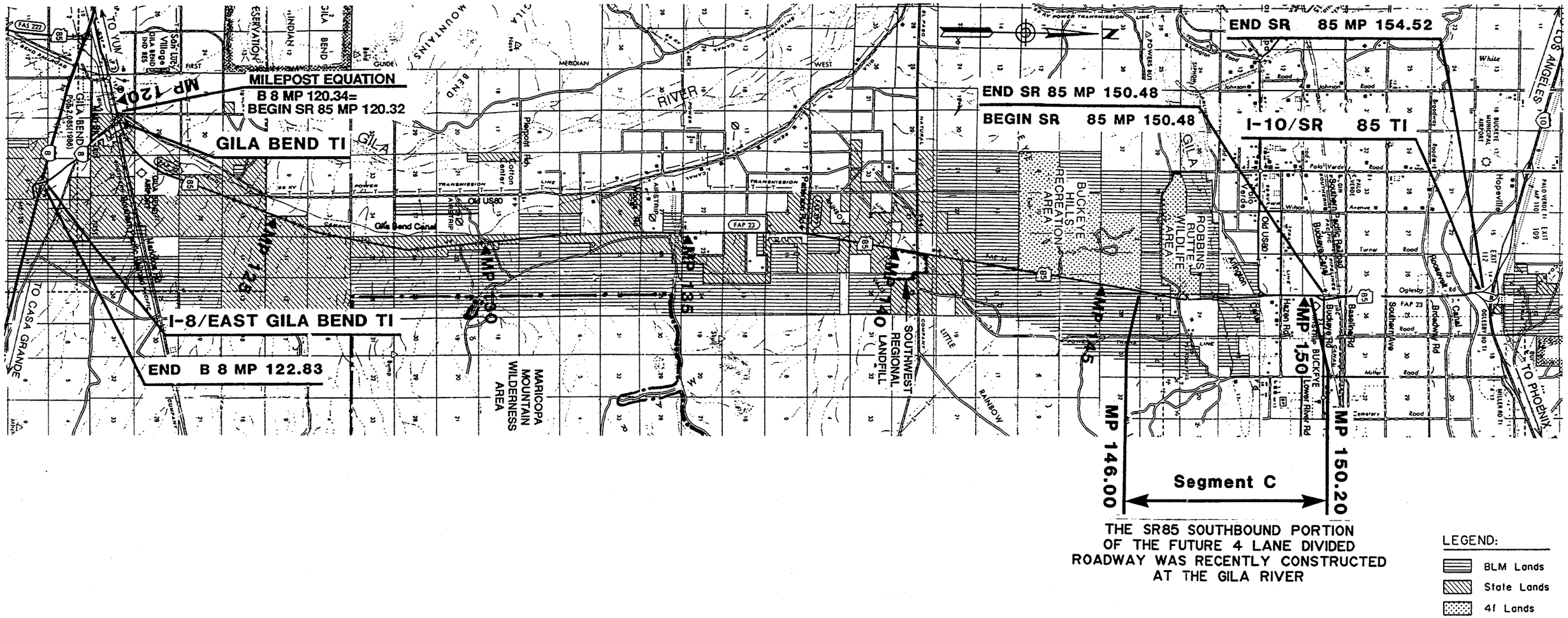
Alternative C (Controlled Access) - Is the same as Alternative C (Uncontrolled Access) with the addition of two-way frontage roads on both sides of the mainline. Local access to SR 85 would be via frontage roads to interchanges. The typical section of this alternative is shown in Figure 14. The estimated construction cost is $46,282,000.

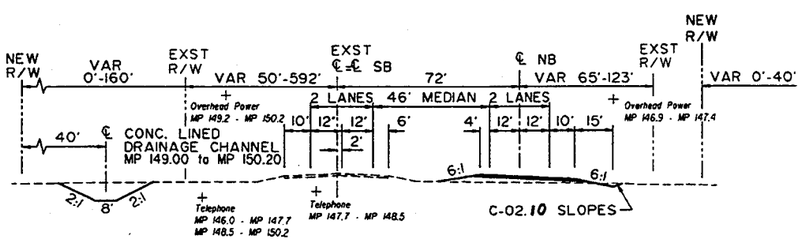
3.1.21 Segment D: Alternative D-2 (Uncontrolled Access)

Alternative D-2 (Uncontrolled Access) - Consists of constructing a parallel two-lane southbound roadway offset to the west of the existing centerline. The existing roadway would be restricted to northbound traffic only and would be separated from the new roadway by a 84-foot rural median. Access to these roadways would be via at-grade intersections except for new grade separations over Baseline Road and the UPRR. The typical section of this alternative is shown in Figure 15. The estimated construction cost is $6,839,000.

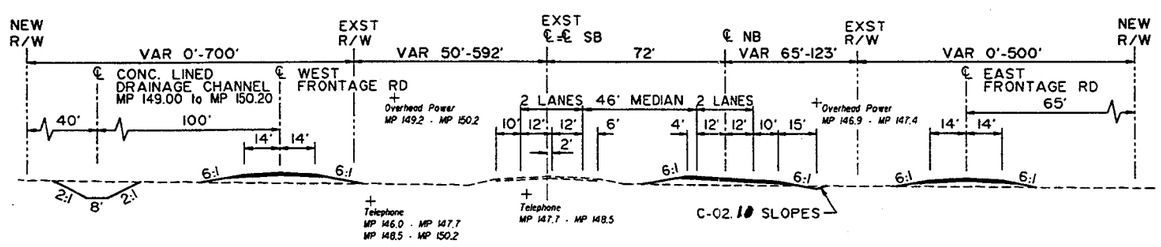
3.1.22 Segment D: Alternative D-3 (Controlled Access)

Alternative D-3 (Controlled Access) - Consists of constructing a four-lane divided roadway with a new one-way west frontage road. The existing roadway would become a one-way east frontage road. The northbound and southbound roadways would be separated by a 84-foot rural median and have freeway characteristics, (i.e. TIs and Ramps). The mainline crossings of MC 85, UPRR, Baseline Road, Southern Avenue, Broadway Road and Lower Buckeye Road would be elevated. Access to the mainline roadways would be via interchanges located at MC 85, Southern Avenue and Broadway Road. The typical section of this alternative is shown in Figure 15. The estimated construction cost is $45,201,000.





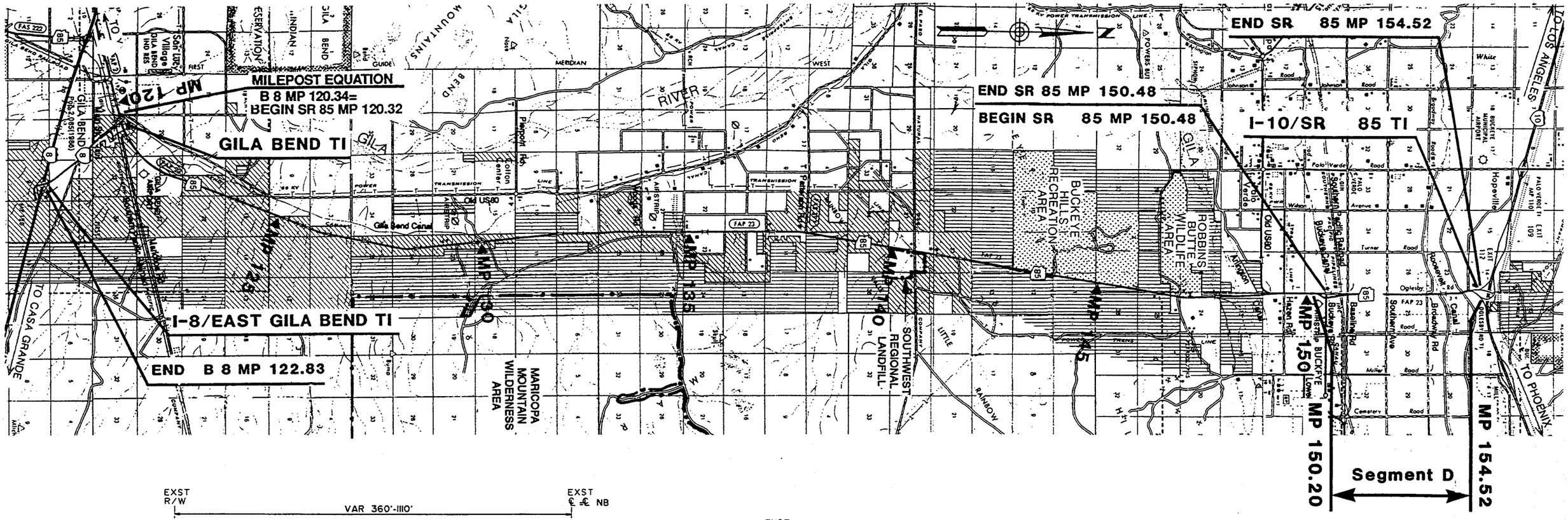
46' MEDIAN (UNCONTROLLED ACCESS)
MP 146.00 to MP 150.20

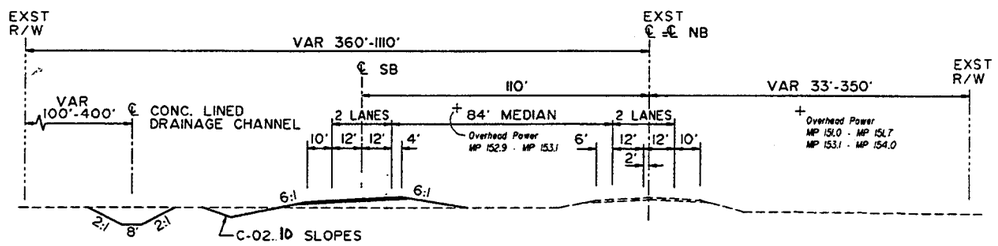


46' MEDIAN (CONTROLLED ACCESS)
MP 146.00 to MP 150.20

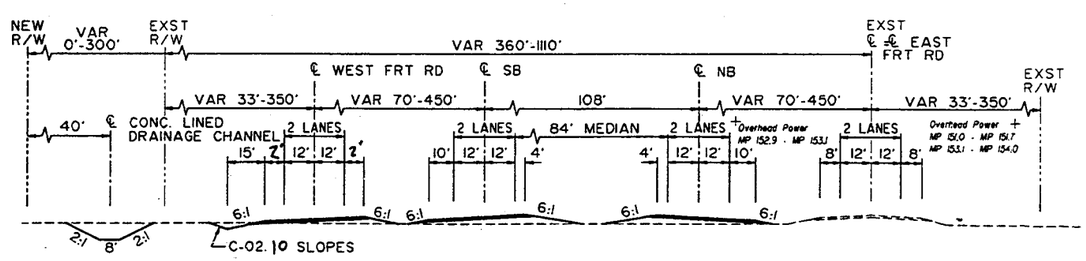
Figure 14
Segment C Typical Sections

BRW

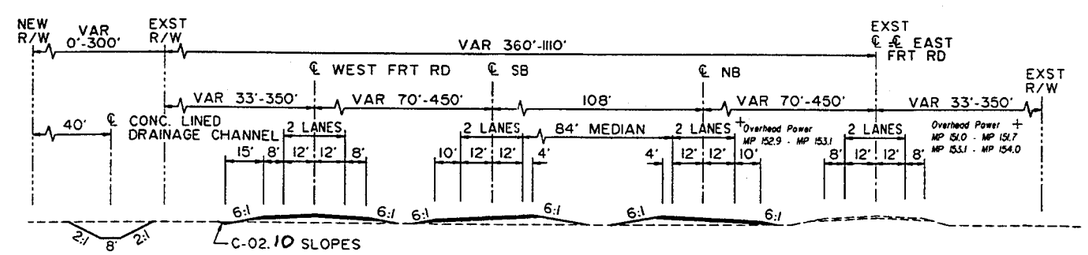




ALT. D-2; 84' MEDIAN, ℄ OFFSET WEST (UNCONTROLLED ACCESS)
MP 150.20 to MP 154.52



ALT. D-3; 84' MEDIAN, ℄ OFFSET WEST WITH ONE WAY FRONTAGE ROADS (CONTROLLED ACCESS)
MP 150.20 to MP 154.52



ALT. D-4; 84' MEDIAN, ℄ OFFSET WEST WITH TWO WAY FRONTAGE ROADS (CONTROLLED ACCESS)
MP 150.20 to MP 154.52

LEGEND:
- BLM Lands
- State Lands
- 4f Lands

SR 85 *Corridor Study*
Gila Bend to I-10

Figure 15
Segment D Typical Sections

BRW

3.1.23 Segment D: Alternative D-4 (Controlled Access)

Alternative D-4 (Controlled Access) - Consists of constructing a parallel four-lane divided roadway with a two-way west frontage road. The existing roadway would become a two-way east frontage road. The northbound and southbound roadways would be separated by a 84-foot rural median and have characteristics of a freeway, (i.e. TIs and Ramps). The mainline crossings of MC 85, UPRR, Baseline Road, Southern Avenue, Broadway Road and Lower Buckeye Road would be elevated. Access to the mainline roadways would be via interchanges located at MC 85, Southern Avenue and Broadway Road. The typical section of this alternative is shown in Figure 15. The estimated construction cost is $60,334,000.

3.2 EVALUATION OF ALTERNATIVES

Each alternative described above was evaluated by six criteria in order to determine the impacts of the proposed SR 85 improvement alternatives for segments A, B, C and D. The evaluation criteria included construction cost, potential environmental considerations, drainage impacts, right-of-way requirements, traffic separation/protection and utility impacts. Each evaluation criteria is described below. The results of the evaluation are summarized in Tables 5 to 14.

- ***Construction Cost*** - This criterion rates each alternative based on construction cost. Costs of the alternatives have been determined using rough estimates consistent with the level of study to date. This does not include utility relocation costs, right-of-way costs or final design costs.
- ***Potential Environmental Considerations*** - This criterion considers the preliminary social and economic considerations, amount of disturbance to developed areas and vegetation, potential noise impacts, and potential changes in visual character and quality. The need for federal regulatory permits is also included.
- ***Drainage Impacts*** - This criterion considers impacts on drainage and potential flooding problems in the corridor.
- ***Right-of-Way Requirements*** - This criterion evaluate each alternative based upon the amount of right-of-way required. Right-of-way needs have been tentatively estimated based upon the amount of right-of-way required for roadway and drainage construction. At this stage in the study, no additional width has been assumed for future utilities or pedestrian/bicycle amenities.
- ***Traffic Separation/Protection*** - This criterion evaluates the separation distance of opposing traffic on the mainline. In general, the wider the median the safer the roadway.
- ***Utility Impacts*** - This criterion evaluated each alternative on the basis of utility adjustments or relocations. The relocation or disruption of any utility entails an additional major cost to ADOT (if the utility has Prior Rights) or the utility company (if no Prior Rights exist). This item considers those parallel utilities that would be affected by construction. Utilities that simply cross the corridor do not, as a rule, affect the screening process because they are impacted equally by all alternatives.

TABLE 5

Alternatives Evaluation: Segment A, Alternative A-1C

Evaluation Criteria	Four-Lane Divided Roadway	
	A-1C Uncontrolled 46' - 84' Median Offset West	A-1C Controlled 84' Median Offset West
Construction Cost	$16,570,000	$26,174,000
Potential Environmental Considerations	▪ Maintains GSA facility. ▪ Relocation of Maricopa Road provides opportunity for commercial development. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Noise impact to two residences at MP 120.90 and MP 121.8 on B8. ▪ No disturbance to historic railroad overpass.	▪ Relocates GSA facility. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ Increases travel time for travelers on Maricopa Road. ▪ Disturbs one business on B8. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ No disturbance to historic railroad overpass. ▪ Noise impact to one residence at MP 120.90 on B8.
Drainage Impacts	▪ No impacts upstream east, minimal west	▪ No upstream impacts identified.
Right-of-Way Requirements	▪ 62 acres of new right-of-way required	▪ 167 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers.	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossroads. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 3000 LF OH telephone ▪ 17000 LF buried fiber optic telephone.	▪ 3000 LF OH telephone ▪ 17670 LF buried fiber optic telephone ▪ 5000 LF OH power.

TABLE 5 (Continued)

Alternatives Evaluation: Segment A, Alternative A-1D

Evaluation Criteria	Four-Lane Divided Roadway	
	A-1D Uncontrolled 46' - 84' Median Offset East	A-1D Controlled 84' Median Offset East
Construction Cost	$16,570,000	$26,174,000
Potential Environmental Considerations	▪ Maintains GSA facility. ▪ Direct access to GSA facility, eliminated. ▪ Relocation of Maricopa Road provides opportunity for commercial development. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Noise impact to one residence at MP 120.90 on B8. ▪ No disturbance to historic railroad overpass.	▪ Relocates GSA facility. ▪ Relocates three businesses on B8. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ Increases travel time for travelers on Maricopa Road. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ No disturbance to historic railroad overpass.
Drainage Impacts	▪ Some increased ponding east, west okay.	Increased ponding on east side of roadway.
Right-of-Way Requirements	▪ 29 acres of new right-of-way required.	▪ 141 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers.	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers. ▪ Control access guarantees separation of local traffic as development increases.
Utility Impacts	▪ 4000 LF OH power.	▪ 3000 LF OH telephone ▪ 17670 LF buried fiber optic telephone ▪ 5000 LF OH power.

TABLE 5 (Continued)

Alternatives Evaluation: Segment A, Alternative A-1C1

Evaluation Criteria	Four-Lane Divided Roadway A1-1C1 Combined Controlled/Uncontrolled 16'Median Offset 8' to East of Existing Conditions
Construction Cost	$19,263,000
Potential Environmental Considerations	▪ Maintains GSA facility. ▪ Relocation of Maricopa Road provides opportunity for commercial development. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ New B-8 traffic interchange and retaining wall creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Noise impact to one residence at MP 120.90 and MP 121.8 on B8. ▪ Requires relocation of Elks Lodge. ▪ No disturbance to historic railroad overpass. ▪ Avoids acquisition of right-of-way from BLM patents for Airport uses and Recreation and Public Purposes from MP 121.41 to MP 122.10.
Drainage Impacts	▪ No impacts upstream east, minimal west
Right-of-Way Requirements	▪ Approximately 89 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 16' median provides control of traffic for safety and access.
Utility Impacts	▪ 2,000 LF OH power lines. ▪ 3,000 LF OH telephone. ▪ 8,000 LF buried fiber optic telephone.

TABLE 6

Alternatives Evaluation: Segment A, Alternative A-2B

Evaluation Criteria	Four-Lane Divided Roadway	
	A-2B Uncontrolled 84' Median	A-2B Controlled 84' Median
Construction Cost	$38,177,000	$54,070,000
Potential Environmental Considerations	▪ Relocates GSA facility. ▪ "Mainline of SR 85 goes to I-8 and ramps go into Gila Bend. ▪ Potential loss of economic benefit to existing commercial businesses at existing B 8/I-8 interchange. ▪ Potential increased land values and economic development opportunity at new T.I. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Potential Individual 404 Permit required. ▪ Noise impact to two residences and one mobile home between I-8 and Main South. ▪ Potential disturbance to historic railroad overpass. Potential 4(f) consultation required.	▪ Relocates GSA facility. ▪ "Mainline" of SR 85 goes to I-8 and ramps go into Gila Bend. ▪ Potential loss of economic benefit to existing commercial businesses at existing B 8/I-8 interchange. ▪ Increases travel time to airport. ▪ Potential increased land values and economic development opportunity at new T.I. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Potential Individual 404 Permit required. ▪ Noise impact to two residences and one mobile home between I-8 and Main South. ▪ Potential disturbance to historic railroad overpass. Potential 4(f) consultation required.
Drainage Impacts	▪ Interchange located on Sand Tank Wash, extensive drainage facilities required ▪ Four new crossings of additional washes including Bender Wash ▪ Extensive encroachment fill within 100-year floodplain must meet FEMA requirements ▪ Potential increased upstream flooding, east	▪ Interchange located on Sand Tank Wash, extensive drainage facilities required ▪ Four new crossings of additional washes including Bender Wash ▪ Extensive encroachment fill within 100-year floodplain must meet FEMA requirements ▪ Potential increased upstream flooding, east
Right-of-Way Requirements	▪ 117 acres of new right-of-way required if aligned with Alternative B-3. ▪ 115 acres of new right-of-way required if aligned with Alternative B-4.	▪ 208 acres of new R/W if aligned with Alternative B-3. ▪ 205 acres of new R/W if aligned with Alternative B-4.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation between opposing traffic and affords easy U-turn movements at crossovers.	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 300 LF OH telephone, 17200 LF buried fiber optic telephone and 5000 LF OH power impacted if aligned with Alternative B-3. ▪ 300 LF OH telephone, 300 LF buried fiber optic telephone and 5740 LF OH power impacted if aligned with Alternative B-4.	▪ 400 LF OH telephone ▪ 18070 buried fiber optic telephone ▪ 5000 LF OH power.

TABLE 7

Alternatives Evaluation: Segment A, Alternative A-3B

Evaluation Criteria	Four-Lane Divided Roadway	
	A-3B Uncontrolled 84' Median	A-3B Controlled 84' Median
Construction Cost	$20,968,000	$33,053,000
Potential Environmental Considerations	▪ Relocates GSA facility. ▪ "Mainline" of SR 85 goes to I-8 and ramps go into Gila Bend. ▪ Relocates one residence. ▪ Inhibits extension of airport runway to the south. ▪ 30' grade separation creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Potential Individual 404 Permit required. ▪ No disturbance to historic railroad overpass.	▪ Relocates GSA facility. ▪ "Mainline" of SR 85 goes to I-8 and ramps go into Gila Bend. ▪ Increases travel time to airport. ▪ Relocates one residence. ▪ Inhibits extension of airport runway to the south. ▪ 30' grade separation creates prominent visual feature in the landscape visible from surrounding land uses. ▪ Potential Individual 404 Permit required. ▪ No disturbance to historic railroad overpass.
Drainage Impacts	▪ Four new crossings of Rodeo Wash tributaries ▪ Minimal encroachment fill within 100-year floodplain must meet FEMA requirements ▪ Potential increased upstream flooding, east	▪ Four new crossings of Rodeo Wash tributaries ▪ Minimal encroachment fill within 100-year floodplain must meet FEMA requirements ▪ Potential increased upstream flooding, east
Right-of-Way Requirements	▪ 134 acres of new right-of-way required if aligned with Alternative B-3. ▪ 109 acres of new right-of-way required if aligned with Alternative B-4.	▪ 200 acres of new R/W required if aligned with Alternative B-3. ▪ 201 acres of new R/W required if aligned with Alternative B-4.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation between opposing traffic and affords easy U-turn movement at crossovers	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 17000 LF buried fiber optic telephone, 5000 LF OH power and 2100 LF watermain impacted if aligned with Alternative B-3. ▪ 17670 LF buried fiber optic telephone, 4000 LF OH power and 2100 LF watermain impacted if aligned with Alternative B-4.	▪ 17670 LF buried fiber optic telephone, 5000 LF OH power and 2100 LF watermain impacted if aligned with either Alternative B-3 or B-4.

TABLE 8

Alternatives Evaluation: Segment A, Alternative A-5C

Evaluation Criteria	Four-Lane Divided Roadway	
	A-5C Uncontrolled 84' Median Offset West	A-5C Controlled 84' Median Offset West
Construction Cost	$11,152,000	$20,631,000
Potential Environmental Considerations	▪ Maintains GSA facility. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ No disturbance to historic railroad overpass. ▪ Noise impact to two residences and one mobile home between I-8 and Main South.	▪ Relocates GSA facility. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ Increases travel time for travelers on Maricopa Road. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ No disturbance to historic railroad overpass.
Drainage Impacts	▪ No impacts upstream, east ▪ Minimal impacts downstream, west	▪ Somewhat increased ponding, east ▪ Replace existing parallel ditches and dike system east of new roadway
Right-of-Way Requirements	▪ 47 acres of new right-of-way required	▪ 120 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movement at crossovers	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 17000 LF buried fiber optic telephone.	▪ 17670 LF buried fiber optic telephone ▪ 4000 LF OH power.

TABLE 8 (Continued)

Alternatives Evaluation: Segment A, Alternative A-5D

Evaluation Criteria	Four-Lane Divided Roadway	
	A-5D Uncontrolled 84' Median Offset East	A-5D Controlled 84' Median Offset East
Construction Cost	$11,152,000	$20,631,000
Potential Environmental Considerations	▪ Maintains GSA facility. ▪ Direct access to SR 85 from BLM facility eliminated. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ No disturbance to historic railroad overpass. ▪ Noise impact to two residences and one mobile home between I-8 and Main South.	▪ Relocates GSA facility. ▪ "Mainline" of SR 85 goes directly into Gila Bend. ▪ Increases travel time for travelers on Maricopa Road. ▪ 50' flyover creates prominent visual feature in the landscape visible from surrounding land uses. ▪ No disturbance to historic railroad overpass.
Drainage Impacts	▪ Somewhat increased ponding, east ▪ Replace existing parallel ditches and dike system east of new roadway	▪ Somewhat increased ponding, east ▪ Replace existing parallel ditches and dike system east of new roadway
Right-of-Way Requirements	▪ 24 acres of new right-of-way required	▪ 121 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movement at crossovers	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 4000 LF OH power.	▪ 17670 LF buried fiber optic telephone ▪ 4000 LF OH power.

TABLE 9

Alternatives Evaluation: Segment B, Alternative B-3 and B-4 Uncontrolled Access

Evaluation Criteria	Four-Lane Divided Roadway	
	B-3 Uncontrolled 84' Median Offset West	B-4 Uncontrolled 84' Median Offset East
Construction Cost	$42,414,000	$42,414,000
Potential Environmental Considerations	▪ Impact to Underground Storage Tank (UST) at former Cosmos Restaurant site. ▪ Maintains dense vegetation at drainage washes along existing roadway. ▪ Disturbs landform at MP 138.3. ▪ Potential Individual 404 Permit required. ▪ Roadside table at MP 128.6 maintained.	▪ No impact to Underground Storage Tank (UST) at former Cosmos Restaurant site. ▪ Eliminates dense vegetation at drainage washes along existing roadway. ▪ Creates substantial cut slopes on landform at MP 138.3. ▪ Potential Individual 404 Permit required. ▪ Eliminates roadside table at MP 128.6.
Drainage Impacts	▪ No impacts upstream, east ▪ Minimal impacts downstream, west	▪ Somewhat increases ponding, east ▪ Replace existing parallel ditch and dike system, east of new roadway
Right-of-Way Requirements	▪ 261 acres of new right-of-way required ▪ 10 acres of slope easement required	▪ 147 acres of new right-of-way required. ▪ 21 acres of drainage easement required. ▪ 11 acres of slope easement required.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movement at crossovers	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movement at crossovers
Utility Impacts	▪ 99720 LF buried fiber optic telephone ▪ 4400 LF OH power (prior rights) ▪ 10800 LF OH power ▪ 2 wells ▪ 6500 LF natural gas (prior rights).	▪ 2800 LF OH power, 1 well.

TABLE 10

Alternatives Evaluation: Segment B, Alternative B-3 and B-4 Controlled Access

Evaluation Criteria	Four-Lane Divided Roadway	
	B-3 Controlled 84' Median Offset West	B-4 Controlled 84' Median Offset East
Construction Cost	$113,177,000	$113,177,000
Potential Environmental Considerations	▪ Increased travel time for SW Regional Landfill, Patterson Road, Buckeye Hills Recreation Area, Prison and Bollinger Machine Shop users to access SR 85. ▪ Impact to Underground Storage Tank (UST) at former Cosmos Restaurant site. ▪ Eliminates more dense vegetation at drainage washes along existing roadway than Alternative B-4 Uncontrolled. ▪ Eliminates landform at MP 138.3. ▪ Potential Individual 404 Permit. ▪ Roadside table at MP 128.60 relocated. ▪ Alternative would create obvious change in visual character from rural 2-lane road to interstate-type facility.	▪ Increased travel time for SW Regional Landfill, Patterson Road, Buckeye Hills Recreation Area, Prison and Bollinger Machine Shop users to access SR 85. ▪ Potential impact to Underground Storage Tank (UST) at former Cosmos Restaurant site. ▪ Eliminates more dense vegetation at drainage washes along existing roadway than Alternative B-3 Controlled. ▪ Creates substantial cut slopes to existing landform at MP 138.3. ▪ Potential Individual 404 Permit required. ▪ Roadside table at MP 128.60 relocated. ▪ Alternative would create obvious change in visual character from rural 2-lane road to interstate-type facility.
Drainage Impacts	▪ Somewhat increases ponding, east ▪ Replace existing parallel ditch and dike system, east of new roadway	▪ Somewhat increases ponding, east ▪ Replace existing parallel ditch and dike system, east of new roadway
Right-of-Way Requirements	▪ 504 acres of new right-of-way required. ▪ 10 acres of slope easement required.	▪ 504 acres of new right-of-way required. ▪ 21 acres of drainage easement required. ▪ 11 acres of slope easement required.
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movement at crossovers. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movements at crossovers. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 99720 LF buried fiber optic telephone ▪ 4400 LF OH power (prior rights) ▪ 12800 LF OH power ▪ 3 wells, 6500 LF natural gas (prior rights) ▪ one 500 KV transmission tower.	▪ 99720 LF buried fiber optic telephone ▪ 4400 LF OH power (prior rights) ▪ 12800 LF OH power ▪ 2 wells, 6500 LF natural gas (prior rights) ▪ one 500 KV transmission tower.

TABLE 11

Alternatives Evaluation: Segment C, Alternative C

Evaluation Criteria	Four-Lane Divided Roadway	
	C Uncontrolled 46' Median	C Controlled 46' Median
Construction Cost	$20,849,000	$46,282,000
Potential Environmental Considerations	▪ Two residences relocated. ▪ All direct access to SR 85 maintained. ▪ 3 acres of riparian vegetation disturbed. ▪ Alternative would create change in visual character from rural 2-lane road to 4-lane. ▪ Noise impact to two residences south of Hazen Road.	▪ Three residences relocated. ▪ All direct access eliminated, except at Hazen Road. Access to SR 85 provided by 2-lane frontage roads. ▪ Direct access to SR 85 from Old US 80 eliminated. ▪ 11 acres of riparian vegetation disturbed. ▪ Alternative would create change in visual character from rural 2-lane road to interstate-type facility. ▪ Noise impact to two residences south of Hazen Road.
Drainage Impacts	MP 146.0 to MP 149.20 ▪ No impacts upstream, east ▪ Minimal impacts downstream, west ▪ Cross Arlington Canal MP 149.20 to MP 150.20 ▪ Construct new drainage channel, west side of road ▪ Encroachment fill within Gila River 100-year floodplain must meet FEMA requirements	MP 146.0 to MP 149.20 ▪ Minimal impacts upstream, east ▪ Minimal impacts downstream, west ▪ Cross Arlington Canal MP 149.20 to MP 150.20 ▪ Construct new drainage channel, west side of road ▪ Encroachment fill within Gila River 100-year floodplain must meet FEMA requirements
Right-of-Way Requirements	▪ 25 acres of new right-of-way required	▪ 145 acres of a new right-of-way required.
Traffic Separation/ Protection	▪ 46 foot median provides minimal separation between opposing traffic ▪ U-turns with some difficulty	▪ 46 foot median provides minimal separation between opposing traffic. ▪ U-turns with some difficulty. ▪ Control of access guarantees separation of local traffic from through traffic as development increases.
Utility Impacts	▪ 2400 LF buried fiber optic telephone ▪ 6800 LF OH power.	▪ 5400 LF buried fiber optic telephone ▪ 6800 LF OH power.

TABLE 12

Alternatives Evaluation: Segment D, Alternative D-2

Evaluation Criteria	Four-Lane Divided Roadway D-2 Uncontrolled 84' Median Offset West
Construction Cost	$6,839,000
Potential Environmental Considerations	▪ Access between Baseline Road and MC 85 eliminated. ▪ Access onto SR 85 from Baseline Road eliminated. ▪ Direct access for one business south of Baseline Road eliminated. Increases travel time to SR 85. ▪ Two existing wells are unaffected. ▪ New 28-foot high structure spanning SPRR and Baseline Road would dominate the landscape and alter the visual character/quality of the area.
Drainage Impacts	▪ Construct new drainage channel, west side of road, along with siphons under irrigation canals. ▪ Cross Buckeye and Roosevelt Canals. ▪ Encroachment fills within 100-year floodplains north of both irrigation canals must meet FEMA requirements. ▪ NPDES requirements may require construction of roadway ditches to eliminate discharges into irrigation ditches.
Right-of-Way Requirements	▪ None
Traffic Separation/ Protection	▪ 84 foot median provides ample separation of traffic and affords easy U-turn movement at crossovers.
Utility Impacts	▪ 3400 LF overhead power, and 1500 LF irrigation.

TABLE 13

Alternatives Evaluation: Segment D, Alternative D-3

Evaluation Criteria	Four-Lane Divided Roadway D-3 Controlled 84' Median Offset West with One-Way Frontage Roads
Construction Cost	$45,201,000
Potential Environmental Considerations	▪ One-way frontage road connects to existing 2-way access road at Lower Buckeye Road creating unexpected driver decision. ▪ Additional ROW required at the Roosevelt Canal. ▪ Absence of crossovers at Roosevelt Canal eliminates contiguous access along canal and creates additional travel time for maintenance operations. ▪ Potential compensation may be necessary for conversion of 2-way frontage road access, stated in deed restrictions, to one-way frontage roads. ▪ One-way frontage roads create additional travel distance (2miles maximum) for local agricultural users (12 on west and 11 on east). ▪ Access between Baseline Road and MC 85 is provided. ▪ Direct access from Baseline Road to SR 85 eliminated. ▪ Eliminates direct 2-way access for businesses in SE quadrant of SR 85 and MC 85. ▪ Access to one business south of Baseline Road is restricted to Baseline Road by one-way frontage road. ▪ One-way frontage roads provide better interim geometry prior to construction of mainline. ▪ Combining ramps and one-way frontage roads into a single intersection will reduce traffic backups and improve signal progression as traffic increases ▪ Alternative would create obvious change in visual character from rural 2-lane road to interstate-type facility. ▪ The five grade separated crossings would dominate the area seen from the adjacent land areas. ▪ Studies show an average reduction of 20% in accidents after conversion from two-way frontage roads. ▪ Interchange separation distance (less than 10,000 feet) favors one-way frontage road.
Drainage Impacts	▪ Construct new drainage channel, west side of road, along with siphons under irrigation canals. ▪ Cross Buckeye and Roosevelt Canals. ▪ Encroachment fills within small 100-year floodplains north of both irrigation canals must meet FEMA requirements. ▪ NPDES requirements may require construction of roadway ditches to eliminate discharges into irrigation ditches.
Right-of-Way Requirements	▪ 19 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 84-foot median provides ample separation of traffic. ▪ Control of access guarantees separation of local traffic from through traffic as development and traffic increases.
Utility Impacts	▪ 3400 LF overhead power ▪ 2500 LF irrigation.

TABLE 14

Alternatives Evaluation: Segment D, Alternative D-4

Evaluation Criteria	Four-Lane Divided Roadway D-4 Controlled 84' Median Offset West with Two-Way Frontage Roads
Construction Cost	$60,334,000
Potential Environmental Considerations	▪ Additional ROW required at the Roosevelt Canal. ▪ Absence of crossovers at Roosevelt Canal eliminates contiguous access along canal. Two-way frontage roads would require less travel distance for maintenance operations than Alternative D-3. ▪ Access between Baseline Road and MC 85 on the same side is more direct than Alternative D-3. ▪ Direct 2-way access for existing businesses is provided. These businesses would have slightly increased travel time to access SR 85; travel distance would be slightly less than for Alternative D-3. ▪ Introducing intersections on the crossroads within a quarter-mile of the ramps will cause traffic backups into adjacent intersections and poor signal progression as area develops and traffic increases. ▪ Alternative would create obvious change in visual character from rural 2-lane road to interstate-type facility. ▪ The five grade separated crossings would dominate the seen area from the adjacent land areas. ▪ One residence near Roosevelt Canal relocated.
Drainage Impacts	▪ Construct new drainage channel, west side of road, along with siphons under irrigation canals. ▪ Cross Buckeye and Roosevelt Canals. ▪ Encroachment fills within small 100-year floodplains north of both irrigation canals must meet FEMA requirements. ▪ NPDES requirements may require construction of roadway ditches to eliminate discharges into irrigation ditches.
Right-of-Way Requirements	▪ 29 acres of new right-of-way required.
Traffic Separation/ Protection	▪ 84-foot median provides ample separation of traffic. ▪ Control of access guarantees separation of local traffic from through traffic as development and traffic increases.
Utility Impacts	▪ 3400 LF overhead power ▪ 2500 LF irrigation.

3.3 PREFERRED ALTERNATIVES

The results of the study indicate that based upon the alternative evaluation, available accident information and current and forecast traffic volumes, a combination of Alternatives (a five-lane rural section, Uncontrolled Access Alternatives A-1D and A-1C1 and Controlled Access Alternatives A-1C, B-3, B-4, C and D-3) would provide the best overall design. As shown in Appendix B, these alternatives would provide:

SEGMENT A

A five-lane facility with outside shoulders from B-8 MP 122.28 to MP 122.83 (A-1D) transitioning to a four-lane divided facility with a 46-foot rural median from B-8 MP 120.34 to MP 122.28. A four-lane divided facility with a 16 foot raised median (A-1C1) from SR 85 MP 120.53 to MP 122.38 transitioning to a four-lane divided facility with 84-foot rural median and future two-way frontage (local access) roads (A-1C) from SR 85 MP 122.38 to 122.66 continued to MP 124.00.

A five-lane alternative is preferred from B-8 MP 122.28 to MP 122.83 due to the adjacent development and constrained right-of-way. Alternative A-1D is preferred from B-8 MP 120.34 to MP 122.28 to align with the existing bridges over the UPRR (including historic eastbound). Alternative A-1C1 is preferred from SR 85 MP 120.53 to MP 122.38 to avoid acquisition of right-of-way from BLM lands patented for Airport, Recreation and Public Purpose uses. Alternative A-1C is preferred from SR 85 MP 122.38 to MP 134.00 because of less drainage impact and utility relocation.

SEGMENT B

A four-lane divided facility with an 84-foot rural median and future two-way frontage (local access) roads from SR 85 MP 124.00 to MP 146.0.

Alternative B-3 (offset west) is preferred from MP 124.00 to MP 142.90 because it retains more dense vegetation upstream in the washes than Alternative B-4. Alternative B-4 (offset east) is preferred from MP 142.90 to MP 146.00 because it avoids right-of-way acquisition from Buckeye Hills Recreation Area and Robbins Butte Wildlife Area on the west side (both Federal 4-f sites).

SEGMENT C

A four-lane divided facility with a 46-foot rural median from SR 85 MP 146.0 to MP 150.2. Future two-way frontage roads (local access) from MP 146.00 to MP 147.77. One-way frontage roads from MP 149.48 to MP 150.20. Alternative C is preferred to match segments to the north and south.

SEGMENT D

A four-lane divided facility with an 84-foot rural median and one-way frontage roads from SR 85 MP 150.2 to MP 154.52 (D-3). Alternative D-3 is preferred due to less right-of-way requirements, reduced (by 20%) accident frequency over 2-way frontage roads, improved cross road operation, and better geometry of initial frontage road construction for interim mainline travel. This alternative should be developed with urban characteristics and the ultimate design completed as an urban freeway section.

Other recommended improvements include extending existing pipe culverts and box culverts beyond the recovery area, new barbed wire game fence, tortoise fencing, new signing and pavement markings, guardrail where warranted, new retaining walls and noise walls, twenty-five new mainline and ramp structures and seeding of all disturbed areas.

New right-of-way will be required for the proposed ultimate improvements. The estimated right-of-way required for this project includes the acquisition of seven structures and 865 acres of land.

3.4 IMPLEMENTATION

The initial projects were determined to support the long-range corridor goals as well as having estimated project costs likely to be programmed in the development process of the ADOT Five-Year Construction Program. Development of the recommended implementation priorities considered many factors including: available accident history, segment level of service, passing opportunities, location of remedial projects, and construction cost per mile. This recommendation development is further detailed in the Final Implementation Plan, March 2000. The recommended priorities of design and construction are shown in Figure 16.

The initial new construction projects will construct two additional lanes to provide a four-lane divided highway from I-8 in Gila Bend to I-10 in Buckeye. As part of the initial construction projects two new lanes will be constructed west of the existing highway and striped to provide the Southbound SR 85 lanes from MP 122.99 to MP 142.49. A new four-lane highway with a raised median will be constructed from MP 120.54 to MP 122.99 to provide for both the North- and Southbound SR 85 traffic. From B-8 MP 122.72 to MP 120.80 and from SR 85 MP 142.49 to MP 147.60, two new lanes will be constructed east of the existing highway and striped to provide the Northbound SR 85 lanes. From Hazen Road (MP 149.48) to Lower Buckeye Road (MP 154.52), the West Frontage Road will constructed and striped to provide the Southbound SR 85 lanes as part of the Initial Construction. Also the existing Gila Bend Traffic Interchange will be reconstructed and new interchanges will be built at the Prison Entrance Road and Maricopa County Route 85 (MC 85) intersections. In addition, the right-of-way and access control rights for the ultimate facility design concept will be purchased or otherwise acquired in the initial projects.

The future projects will build onto the improvements of the initial construction projects to complete the ultimate facility concept. These future projects include: remainder of the SR 85 mainline from MP 149.00 to MP 154.52, two-way frontage (local access) roads from MP 122.99 to MP 147.60, potential new interchanges at the new Airport Road (MP 122.93), Woods Road,

Buckeye Hills entrance, Hazen Road, Southern Avenue, and Broadway Road, and a grade separation at Lower Buckeye Road. The exact limits will be determined in Final Design.

As described in Section 1.4 Description of the Project, the programmed projects in the current ADOT Five-year Construction Program have a total amount of $45.5 million. The total estimated project cost for the ultimate design concept including initial and future projects is $257,836,000 as detailed in Section 5.0 Itemized Cost Estimate. The total estimated project cost for the initial projects is $109,246,000 as shown in Figure 16. The total project cost of the top five priority projects is $39,866,000, which is within the current programmed amount.

4.0 MAJOR DESIGN FEATURES

4.1 DESIGN CONTROLS

The following criteria are recommended to assure compliance with the Arizona Department of Transportation requirements.

a. B-8 Mainline MP 122.83 to MP 120.34 (SR 85 MP 120.32)

Design Year	2022
Design Speed	60 mph min
Superelevation	0.060'/ft. Max.
Slope Standards	C-02 Series
Minimum Vertical Curve Length	Length based on stopping sight distance. 800 feet desirable min.
Travel Lane Width	12 feet
Inside Shoulder Width	4 feet
Outside Shoulder Width	10 feet
Number of Travel Lanes Constructed	2
Median Width	12' flush to 46 feet (See Typical Section)
Maximum Degree of Curve	4° 15'
Maximum Gradient	3 percent
Access Control	Uncontrolled
Pavement Design	20 Years
Cross-slope	2 percent

b. SR 85 Mainline MP 120.32 to MP 122.38

Design Year	2022
Design Speed	60 mph min
Superelevation	0.060'/ft. Max.
Slope Standards	C-02 Series
Minimum Vertical Curve Length	Length based on stopping sight distance. 800 feet desirable min.
Travel Lane Width	12 feet
Inside Shoulder Width	4 feet
Outside Shoulder Width	10 feet
Number of Travel Lanes Constructed	2
Median Width	16-84 feet (See Typical Section)
Maximum Degree of Curve	4° 15'
Maximum Gradient	3 percent
Access Control	Combination Full Control & Uncontrolled
Pavement Design	20 Years
Cross-slope	2 percent

c. *SR 85 Mainline MP 122.38 to MP 150.20*

Design Year	2022
Design Speed	70 mph min
Superelevation	0.10'/ft. Max.
Slope Standards	C-02 Series
Minimum Vertical Curve Length	Length based on stopping sight distance. 1000 feet desirable min.
Travel Lane Width	12 feet
Inside Shoulder Width	4 feet
Outside Shoulder Width	10 feet
Number of Travel Lanes Constructed	2
Median Width	46-84 feet (See Typical Section)
Maximum Degree of Curve	2° 45'
Maximum Gradient	3 percent
Access Control	Full Control
Pavement Design	20 Years
Cross-slope	2 percent

d. *SR 85 Mainline MP 150.20 to MP 154.52*

Design Year	2022
Design Speed	70 mph min
Superelevation	0.060'/ft. Max.
Slope Standards	C-02 Series
Minimum Vertical Curve Length	Length based on stopping sight distance. 800 feet desirable min.
Travel Lane Width	12 feet
Inside Shoulder Width	4 feet
Outside Shoulder Width	10 feet
Number of Travel Lanes Constructed	2
Median Width	84 feet
Maximum Degree of Curve	4° 15'
Maximum Gradient	3 percent
Access Control	Full Control
Pavement Design	20 Years
Cross-slope	2 percent

e. *SR 85 Frontage Roads MP 122.38 to MP 154.52*

Design Year	2022
Design Speed	
On Tangent	50 mph min
Maximum Superelevation	0.10'/ft. Max.
Slope Standards	C-02 Series

Minimum Vertical Curve Length	Length based on stopping sight distance. 150 feet min.
Minimum Travel Lane Width	12 feet
Shoulder Widths	8 feet (two-way), 2 feet (one-way)
Number of Travel Lanes Constructed	2
Maximum Degree of Curve	8° 00'
Maximum Gradient	3 percent
Maximum Grade Break at Crossroad	4 percent
Access Control	By ADOT Permit
Pavement Design	20 Years
Cross-slope	2 percent

f. ***SR 85 Interchange Crossroads MP 120.3, 122.93, 133.84, 138.35, 146.27, 149.48, 150.48, 152.01 and 152.98***

Design Year	2022
Design Speed	50 mph min
Maximum Superelevation	0.040'/ft. Max.
Slope Standards	C-02 Series
Minimum Vertical Curve Length	Length based on stopping sight distance. 800 feet desirable min.
Minimum Travel Lane Width	12 feet
Minimum Left-Turn Lane Width	12 feet
Minimum Right-Turn Lane Width	12 feet
Shoulder Widths	8 feet
Number of Through Travel Lanes Constructed in each direction	2
Maximum Degree of Curve	8° 00'
Maximum Gradient	3 percent
Access Control	Fully controlled between ramp terminal, by permit beyond ramps
Pavement Design	20 Years
Cross-slope	2 percent

g. ***SR 85 Interchange Ramps MP 120.3, 122.93, 133.84, 138.35, 146.27, 149.48, 150.48, 152.01 and 152.98***

Design Year	2022
Design Speed	
At Nose	60 mph
On Ramp Proper Sections	50 mph min
Near the Crossroad	35 mph min
Superelevation	same as mainline
Slope Standards	C-02 Series
Minimum Vertical Curve Length	Length based on stopping sight distance, 400' minimum

TABLE 15

UTILITY CONTACTS

Utility Company	Contact Person	Telephone Number
All American Pipeline	Robert Brooks	1-602-926-4194
Arizona Public Service	Gary White	1-520-932-6678
Arlington Canal Company	Gary Gable	1-520-386-4788
Buckeye Irrigation Company	Jackie Meck	1-520-386-2196
City of Gila Bend	Gene Merritt	1-520-256-6509
Cotton Norton Stevenson Consulting, Inc.	Roger Stevenson	1-520-954-8812
El Paso Gas Company	Bill Ward	1-520-438-4224
MCI	Pat Kavanaugh	1-520-222-1244
Quest Communications	Jeff Davis	1-303-291-1764
Roosevelt Irrigation District	Stanley Ashby	1-520-386-2046
Salt River Project	Bill Phillips	1-602-236-8092
Santa Fe Pacific Pipeline	Daniel Tarango	1-602-278-2320
Southern Pacific Transportation Company	Christine Christmas	1-619-669-6712
Southwest Gas Corporation	Roy Archer	1-520-836-1156
US West	Bob Friess	1-602-954-5473

It is anticipated that adjustments and/or relocations will be required by several utility companies listed above.

4.11 STRUCTURES

This project will construct a total of 25. The structures and their locations are discussed below:

1.	Gila River Bridge (NB only) at Station 6608+50 (MP 147.75) under construction
2.	Rainbow Wash Bridge (SB only) at Station 6238+50 (MP 141.08)
3.	New B-8 Overpass at Station 5161+00 (MP 120.48)(Gila Bend TI)
4. & 5.	Parallel Overpasses at Station 5290+00 (MP 122.93)(Gila Bend Airport)
6. & 7.	Parallel Overpasses at Station 5856+00 (MP 133.84)(Woods Road)
8. & 9.	Parallel Overpasses at Station 6093+50 (MP 138.35)(Lewis Prison Entrance)
10. & 11.	Parallel Overpasses at Station 6512+00 (MP 146.27)(Buckeye Hills Recreational Area)
12. & 13.	Parallel Overpasses at Station 6681+00 (MP 149.48)(Hazen Road)
14. & 15.	Parallel Overpasses at Station 7349+24 (MP 150.48)(MC 85)
16. & 17.	Parallel Overpasses at Station 7373+50 (MP 150.93)(UPRR)
18. & 19.	Parallel Overpasses at Station 7377+00 (MP 151.01)(Baseline Road)
20. & 21.	Parallel Overpasses at Station 7431+00 (MP 152.01)(Southern Avenue)
22. & 23.	Parallel Overpasses at Station 7482+50 (MP 152.98)(Broadway Road)
24. & 25.	Parallel Overpasses at Station 7536+00 (MP 153.95)(Lower Buckeye Road)

The Gila River Bridge is a northbound structure under construction paralleling the existing southbound bridge built in 1995. Following its completion, traffic on the existing bridge will become one way southbound while northbound traffic will use the new bridge.

The new B-8 overpass (No. 3) will carry B-8 traffic over both southbound and northbound SR 85. Structure numbers 16 and 17 will also cross the UPRR tracks which substantially increases the embankment height in this area. Structures 4 & 5, 6 & 7, 8 & 9, 10 & 11, 12 & 13, 14 & 15, 20 & 21 and 22 & 23 will all serve new traffic interchanges. All of the other bridges will be grade separations.

The structure types will be determined during the preparation of the Bridge Selection Reports. These reports will be prepared during the Final Design phase.

5.0 ITEMIZED COST ESTIMATE (ULTIMATE FACILITY)

The estimated total project costs including final design, right-of-way, utility relocation and construction costs for the proposed ultimate improvements (initial and future) are $257,836,000 allocated as follows:

Final Design	$	15,931,000
Right-of-Way	$	10,636,000
Utility Relocation	$	3,690,000
Construction	$	227,579,000

The detailed itemized cost estimates are included in Appendix C. Construction costs were estimated in 2000 dollars based on unit prices obtained from ADOT's "Construction Costs 1999." The estimates are based upon the following structural sections obtained from ADOT materials pavement section:

New Roadway Alignments

B-8
- 9.5" AC on 6" AB
- ½" ACFC (on travel lanes)

SR 85
- 8.5" AC on 6" AB
- ½" ACFC (on travel lanes)

Ramps
- 8" AC on 6" AB

Frontage Roads
- 6.5" AC on 6" AB

Cross-Roads
- 8" AC on 6" AB

Existing Roadway Rehabilitation (not included in Cost Estimates)

B-8
- 4" AC overlay
- ½" ACFC (on travel lanes)

SR 85
- 5" AC overlay
- ½" ACFC (on travel lanes)

Initial construction projects are described in the Final Implementation Plan, March 2000. The estimates are based upon applicable pavement structural sections listed above. The estimated total project costs for the proposed initial improvements are $109,246,000 are shown in Figure 16 and allocated as follows:

Final Design	$	6,210,000
Right-of-Way	$	10,636,000
Utility Relocation	$	3,690,000
Construction	$	88,710,000

The initial projects were determined to support the long-range corridor goals as well as having estimated project costs likely to be programmed in the development process of the ADOT Five-Year Construction Program. The initial new construction projects will construct two additional lanes to provide a four-lane divided highway from I-8 in Gila Bend to I-10 in Buckeye. As part of the initial construction projects two new lanes will be constructed west of the existing highway and striped to provide the southbound SR 85 lanes from MP 122.99 to MP 142.49. A new four-lane highway with a raised median will be constructed from MP 120.54 to MP 122.99 to provide for both the north and southbound SR 85 traffic. From B-8 MP 122.72 to MP 120.80 and from SR 85 MP 142.49 to MP 147.60, two new lanes will be constructed east of the existing highway and striped to provide the northbound SR 85 lanes. From Hazen Road (MP 149.48) to Lower Buckeye Road (MP 154.52), the west frontage road will be constructed and striped to provide the southbound SR 85 lanes as part of the initial construction. Also the existing Gila Bend Traffic Interchange will be reconstructed and new interchanges will be built at the Prison Entrance Road and Maricopa County Route 85 (MC 85) intersections. In addition, the right-of-way and access control rights for the ultimate facility design concept will be purchased or otherwise acquired in the initial projects.

The future projects will build onto the improvements of the initial construction projects to complete the ultimate facility concept. These future projects include: remainder of the SR 85 mainline from MP 149.00 to MP 154.52, two-way frontage (local access) roads from MP 122.99 to MP 147.60, potential new interchanges at MP 122.93, Woods Road, Buckeye Hills entrance, Hazen Road, Southern Avenue, and Broadway Road, and a grade separation at Lower Buckeye Road. The exact limits will be determined in Final Design.

Proposed Initial Project Limits and Priorities

CONSTRUCTION PRIORITY	LIMITS (MILEPOSTS)	LENGTH (MILES)	ESTIMATED COST* DESIGN COST	RIGHT-OF-WAY COST	UTILITY RELOCATION COST	CONSTRUCTION COST	TOTAL PROJECT COST
1	149.00 - 150.48	1.48	$233,000	$852,000	$102,000	$3,339,000	$4,526,000
2	137.50 - 139.01	1.51	$453,000	$245,000	$80,000	$6,468,000	$7,246,000
3	125.40 - 130.45	5.05	$788,000	$2,054,000	$267,000	$11,254,000	$14,363,000
4	150.48 - 154.52	4.04	$391,000	$504,000	$347,000	$5,582,000	$6,824,000
5	139.01 - 142.49	3.48	$374,000	$890,000	$300,000	$5,343,000	$6,907,000
6	142.49 - 147.60	5.11	$723,000	$1,609,000	$299,000	$10,321,000	$12,952,000
7	130.45 - 137.50	7.05	$969,000	$3,622,000	$1,226,000	$13,838,000	$19,655,000
8	122.99 - 125.40	2.41	$468,000	$385,000	$136,000	$6,684,000	$7,673,000
9	120.54 - 122.99	2.45	$355,000	$291,000	$165,000	$5,074,000	$5,885,000
10	149.48 - 152.01	2.53	$982,000	$0	$711,000	$14,035,000	$15,728,000
11	120.32 - 120.54	0.22	$310,000	$170,000	$57,000	$4,429,000	$4,966,000
12	122.72 - 120.80	1.92	$164,000	$14,000	$0	$2,343,000	$2,521,000

* Estimated Costs do not include existing pavement rehabilitation to be done as part of routine pavement preservation.

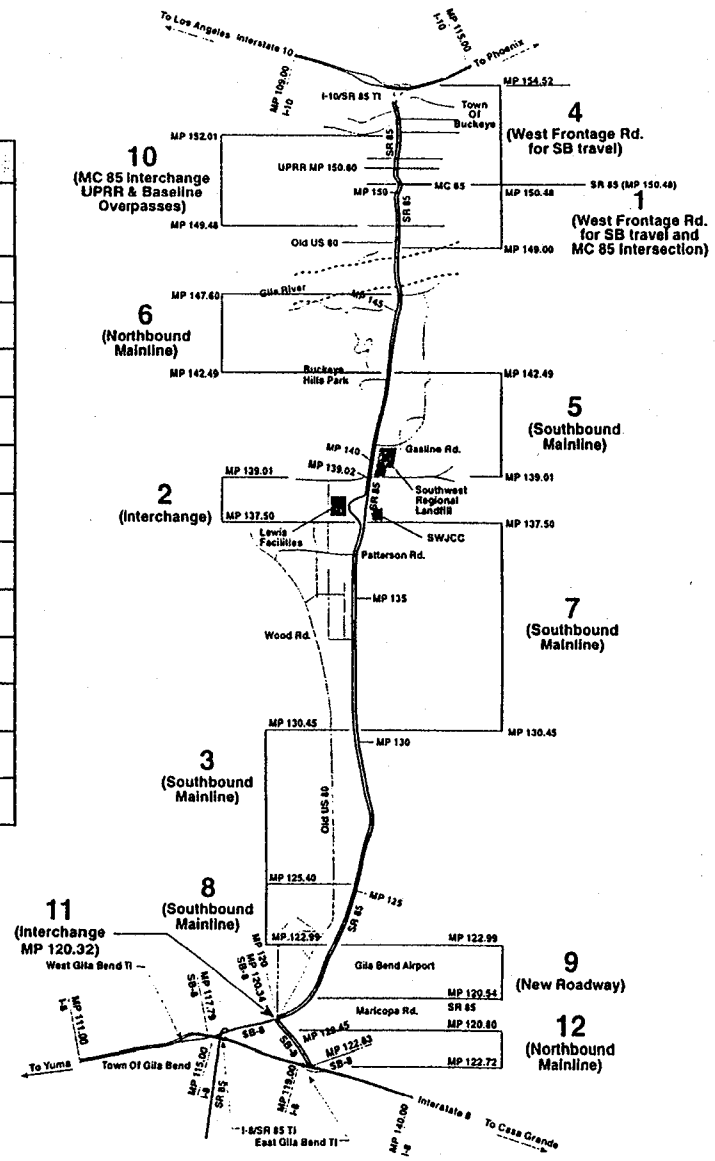


Figure 16
Proposed Project Limits and Priorities

March 20, 2000

6.0 DESIGN EXCEPTIONS

6.1 Non-Conforming Geometric Design Elements

American Association of State Highway and Transportation Officials (AASHTO) Controlling Design Criteria have been reviewed for the existing portions of the East Gila Bend TI, B-8, Gila Bend TI, SR 85, and SR 85/I-10 TI. The results are included in Appendix D, AASHTO Controlling Design Criteria Report. Design Exceptions are not being requested for roadways which were evaluated in the Report but are outside the ultimate concept limits. These are I-8 facilities including East Gila Bend TI, SB-8 from MP 117.79 to MP 120.29, and I-10/SR 85 ramps. The following features which do not meet current AASHTO (1990 Green Book) recommended guidelines will be retained in the ultimate facility concept for the reasons stated.

Gila Bend TI (B-8 MP 120.29 to MP 120.58)

(1) The existing structural capacity of the following structures is less than the recommended HS-20 minimum at the following locations:

a. Structure #0118 - (HS-19) UPRR OP EB
The bridge is carrying current traffic loads with no sign of structural distress although rated below HS-20, listed in National Register of Historic Places.

b. Structure #0618 - (HS-19) UPRR OP WB
The bridge is carrying current traffic loads with no signs of structural distress although rated below HS-20.

B-8 EB Divided (MP 120.58 to MP 120.99)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 650 foot minimum at the following locations:

a. MP 120.57 to 120.64 - 228 feet less than recommended
This is a sag curve and doesn't appear to have an operational problem.

b. MP 120.70 to 120.78 - 157 feet less than recommended
This is a sag curve and doesn't appear to have an operational problem.

<u>SR 85 Facilities</u>

SR 85

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 650 foot minimum at the following locations:

a. MP 150.52 to 150.56 - 195 feet less than recommended
This vertical curve is being retained as part of the local access road.

b. MP 150.89 to 150.91 - 302 feet less than recommended
This vertical curve is being retained as part of the east frontage road.

(2) The existing horizontal curve superelevation is less than the recommended AASHTO minimum at the following locations:

a. MP 146.98 to 147.20 - 0.009 feet/foot less than recommended
This horizontal curve is being retained as part of the west frontage road.

b. MP 150.12 to 150.28 - 0.021 feet/foot less than recommended
This horizontal curve is being retained as part of the east frontage road.

c. MP 150.32 to 150.38 - 0.022 feet/foot less than recommended
This horizontal curve is being retained as part of the local access road.

d. MP 150.68 to 150.76 - 0.032 feet/foot less than recommended
This horizontal curve is being retained as part of the east frontage road.

e. MP 150.89 to 150.96 - 0.035 feet/foot less than recommended
This horizontal curve is being retained as part of the east frontage road.

f. MP 150.98 to 151.00 - 0.077 feet/foot less than recommended
This horizontal curve is being retained as part of the east frontage road.

g. MP 151.14 to 151.23 - 0.006 feet/foot less than recommended
This horizontal curve is being retained as part of the east frontage road.

h. MP 153.18 to 153.20 - 0.016 feet/foot less than recommended
This horizontal curve is being retained as part of the east frontage road.

(3) The existing structural capacity of the following structure is less than the AASHTO recommended HS-20 minimum:

a. Structure #0466 - (HS-16)
The Rainbow Wash Bridge (MP 141.08) is being retained as part of the northbound SR 85 mainline. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS-20.

7.0 SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

7.1 INTRODUCTION

The purpose of this chapter is to summarize the project benefits and impacts associated with the proposed improvements as documented in the Environmental Assessment prepared for this project. In addition, a brief discussion regarding the public involvement and agency coordination is contained in this chapter for future reference.

7.2 PROJECT BENEFITS

The following benefits have been documented in the Environmental Assessment prepared for this project:

(1) The completion of this project will enhance the traffic safety, efficiency and increase the traffic capacity by providing additional lanes to create a four-lane divided roadway, a short segment of five-lane undivided roadway and a short segment of 4-lane roadway with a raised median in order to transition into existing roadway sections.

(2) Construction of this project will create local opportunities for temporary employment.

(3) This project reinforces the long range planning goals of Buckeye, Gila Bend and Maricopa County.

7.3 PROJECT IMPACTS

The following impacts have been documented in the Environmental Assessment prepared for this project:

(1) New right-of-way will be required,

(2) Short term impacts to land uses will result during project construction;

(3) Traffic delays and decreased accessibility will occur during construction;

(4) Public funds will be expended;

(5) Some natural resources will be expended during construction;

(6) Wildlife habitat in the roadway corridor will be somewhat degraded because of the increased presence of manmade development and the proposed highway.

7.4 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

A combined total of six public information meetings were held, (three each in Gila Bend and Buckeye), to obtain public comments regarding issues and concerns associated with improvements to this facility between I-8 and I-10. The date and location of each meeting is listed below:

28 September 1993 - Logan Auditorium in Gila Bend - 27 people attended.

30 September 1993 - Community Center in Buckeye - 22 people attended.
13 April 1994 - School Cafeteria in Gila Bend - 29 people attended.
14 April 1994 - Community Center in Buckeye - 22 people attended.
21 March 1995 - Community Center in Buckeye - 22 people attended.
22 March 1995 - School Cafeteria in Gila Bend - 18 people attended.

Project Team representatives were available to explain the project, answer questions and solicit public comments. Enlarged USGS mapping with typical sections were utilized to display project characteristics and handouts with comment forms were distributed to the attendees. Overall support for this project was indicated at each meeting held.

Three formal agency coordination meetings were held. A project scoping meeting was held on 21 September 1993. The scoping meeting was held at the Gila Bend council chambers. The purpose of this meeting was to inform the agencies of this Location/Design Concept Study and obtain input from the agencies prior to beginning the study. Agency preview meetings were held on 13 April 1994 at the Gila Bend council chambers and on 21 March 1995 at the Community Center in Buckeye. These agency preview meetings were held to familiarize the agencies with the materials to be presented at the public information meetings held later that evening on these same days.

In addition, there have been two partnering meetings held with a citizen's group organized as the Gila Bend SR 85 Committee. The meetings were held in Gila Bend on March 23, 1994 and February 16, 1995.

Coordination letters were sent to the following agencies:

- U.S. Army Corp of Engineers
- U.S. Department of Agriculture, Natural Resource Conservation Service
- U.S. Department of the Air Force/Goldwater Range
- U.S. Fish Wildlife Service
- Bureau of Indian Affairs, Papago Agency
- Gila Bend Indian Reservation
- Arizona Department of Agriculture
- Arizona Department of Environmental Quality
- Arizona Department of Public Safety
- Arizona Game and Fish Department
- Maricopa Association of Governments
- Maricopa County Department of Planning & Development
- Maricopa County Department of Transportation
- Flood Control District of Maricopa County
- Arlington Canal Company
- Arizona Public Service Company
- Buckeye Irrigation Company
- Buckeye Chamber of Commerce
- El Paso Natural Gas Company
- Gila Bend Chamber of Commerce
- Oglesby Road Association
- Roosevelt Irrigation District
- Union Pacific Railroad Company
- Town of Buckeye
- U.S. West Communications
- Woolsey Irrigation District

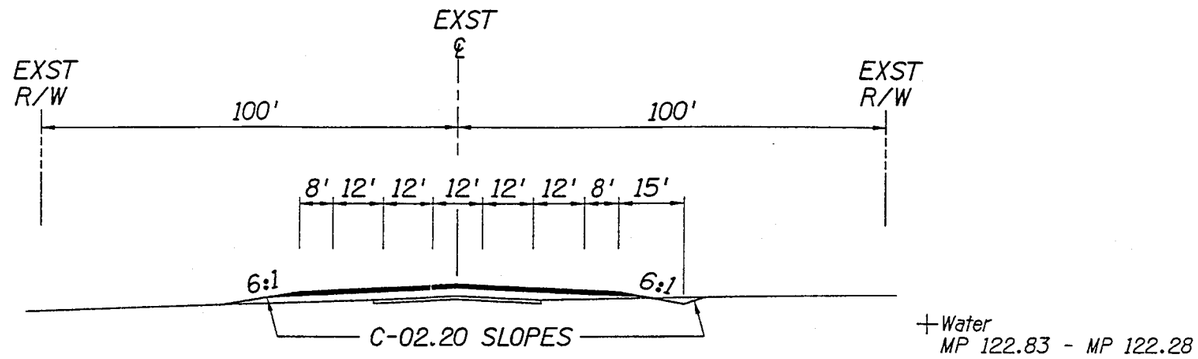
Public Hearings for this project were held as follows:

- 11 January 2000 – Community Center in Buckeye – 67 people attended.
- 13 January 2000 – School Cafeteria in Gila Bend – 26 people attended.

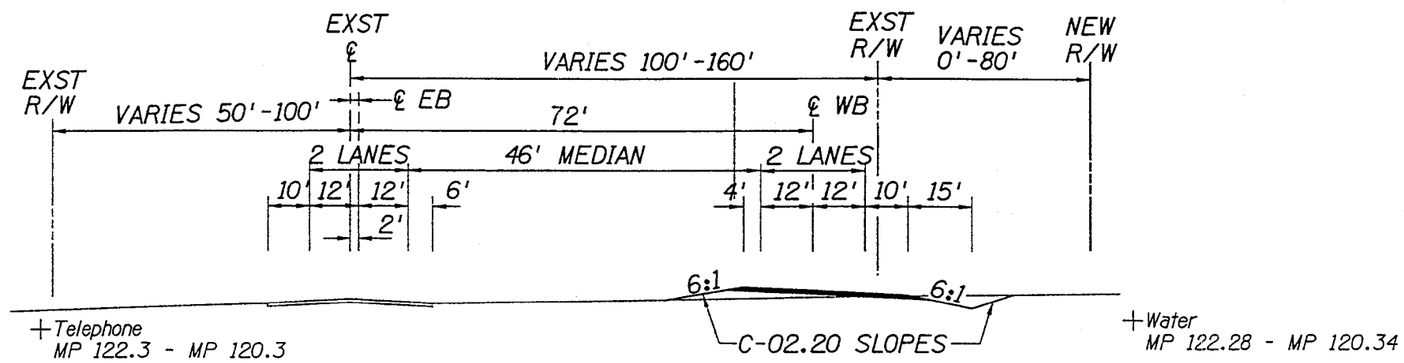
APPENDIX A

Proposed Typical Sections
(Ultimate Construction – Initial plus Future)

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	F-023-1-420			
		085-MA-120			



SEGMENT A
ALT. A-1D; 5-LANE RURAL (UNCONTROLLED ACCESS)
SB-8 MP 122.83 TO MP 122.28



SEGMENT A
ALT. A-1D; 84' MEDIAN, ℄ OFFSET NORTH (UNCONTROLLED ACCESS)
SB-8 MP 122.28 TO MP 120.34

	NAME	DATE
DESIGN	LTM	12/96
DRAWN	RDM	12/96
CHECKED	RLL	12/96

BRW
3003 N. Central Ave.
Suite 700
Phoenix, Arizona 85012
(602) 234-1591

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

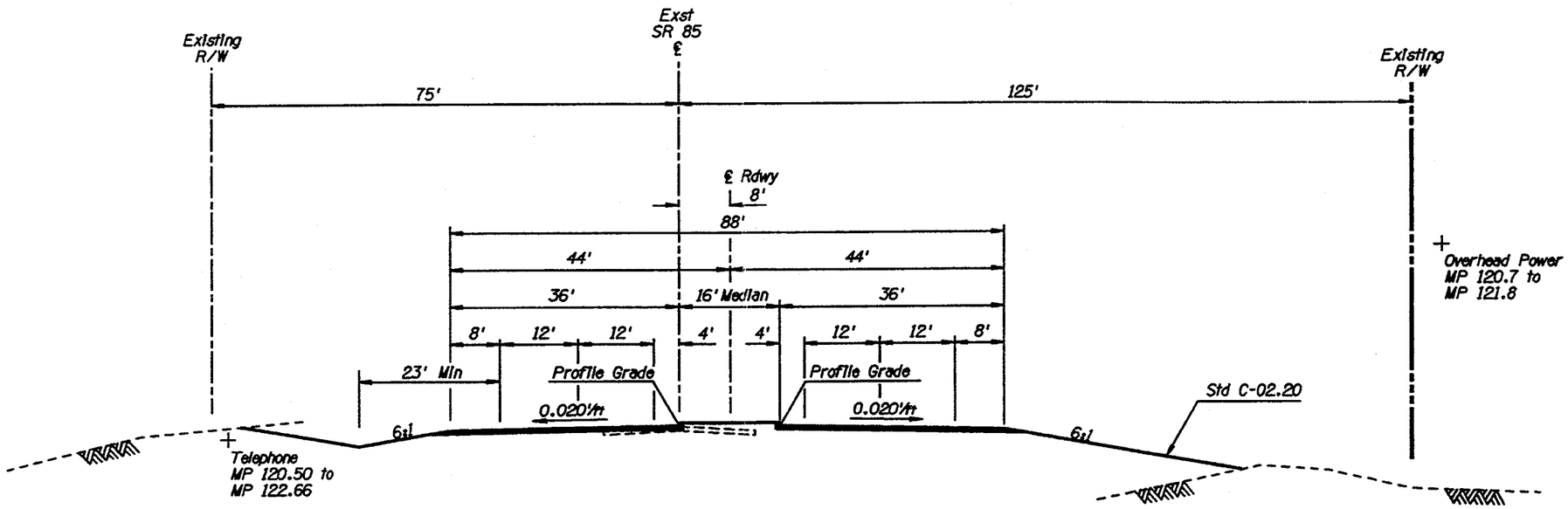
SR 85 TYPICAL SECTIONS
ULTIMATE CONSTRUCTION

NOT FOR CONSTRUCTION
PAH

ROUTE: SR 85
LOCATION: PHOENIX - YUMA HIGHWAY
SHEET OF

TRACS NO. H 3225 01L | F-023-1-420 | A-1

ooooooDGNoSPECIFICATIONoooooo
ooooooSYSTIMEoooooo
VIEW NAME:



SEGMENT A
ALT. A-1C1; 16' MEDIAN, OFFSET 8' EAST (COMBINED CONTROLLED/UNCONTROLLED ACCESS)
SR 85 MP 120.32 TO MP 122.66

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ADOT

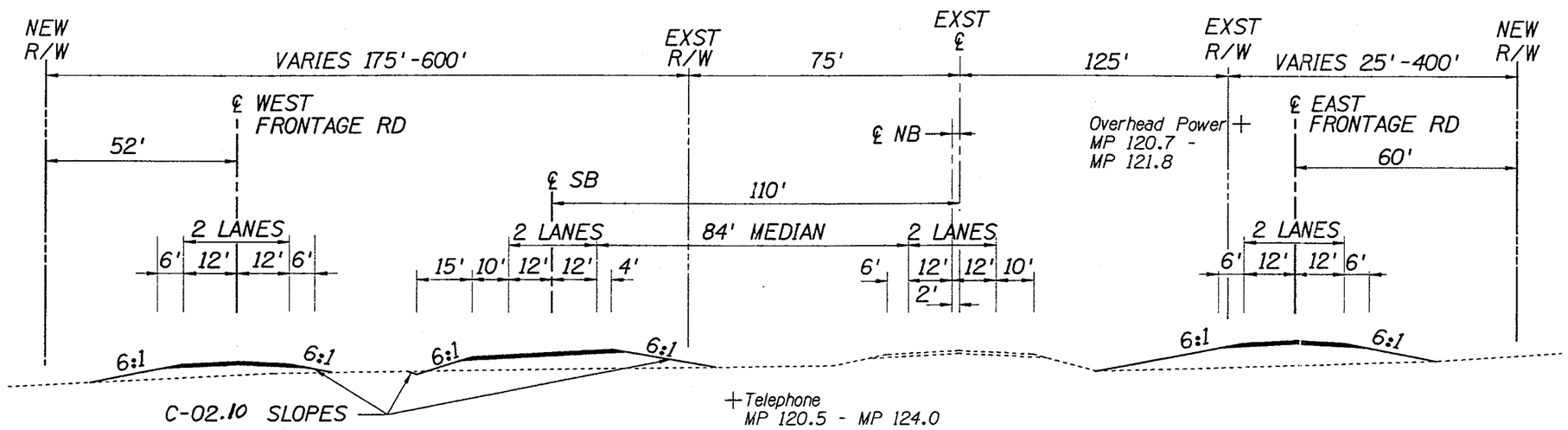
SR 85 CORRIDOR STUDY
GILA BEND TO I-10
PREFERRED TYPICAL SECTIONS
ULTIMATE CONSTRUCTION

BRW

SCALE: As Noted

A-2

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	F-023-1-420			
		085-MA-120			



SEGMENT A

ALT. A-1C; 84' MEDIAN, ℄ OFFSET WEST (CONTROLLED ACCESS)

SR 85 MP 122.66 TO MP 124.00

	NAME	DATE
DESIGN	LTM	12/96
DRAWN	ROM	12/96
CHECKED	RLL	12/96

BRW 3005 N. Central Ave. Suite 700 Phoenix, Arizona 85012 (602) 234-1971

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SR 85 TYPICAL SECTIONS
ULTIMATE CONSTRUCTION

NOT FOR CONSTRUCTION

ROUTE: SR 85 | LOCATION: PHOENIX - YUMA HIGHWAY

SHEET OF

cccccDGNcSPECIFICATIONccccc
cccccSYSTIMEccccc
VIEW NAME:

TRACS NO. H 3225 01L | F-023-1-420 | A-3

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
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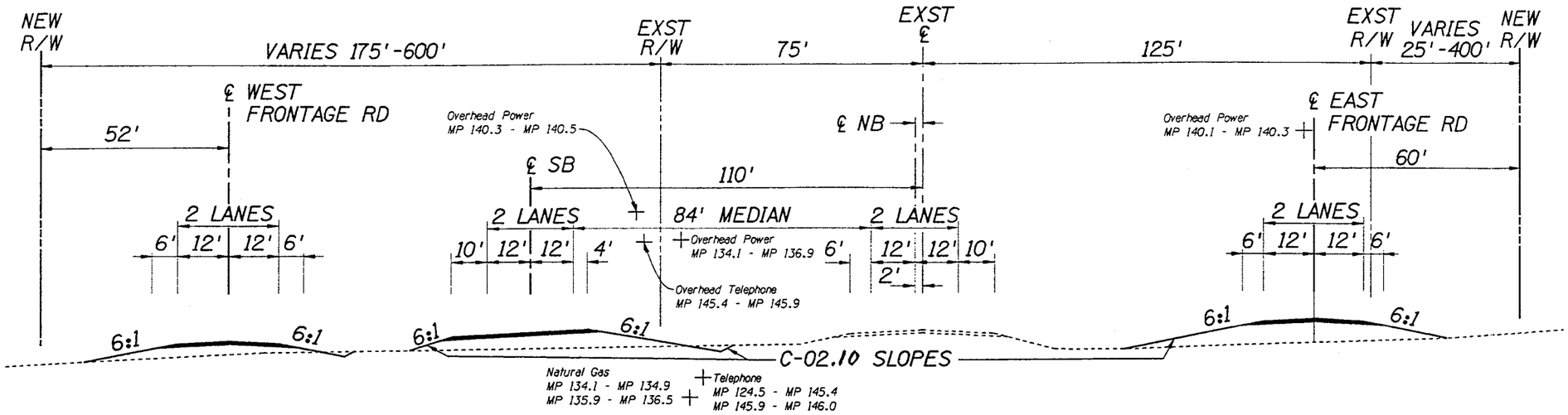
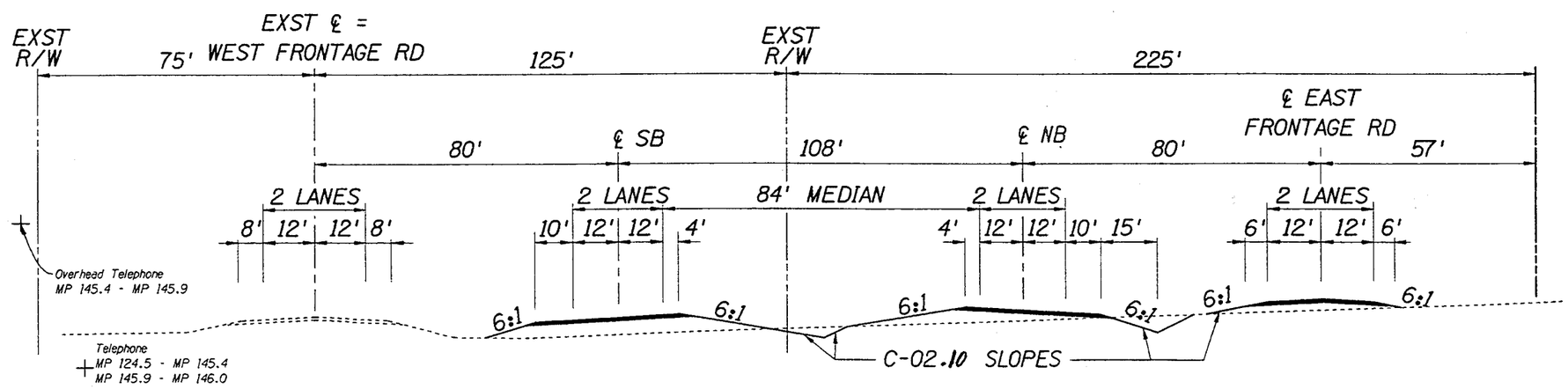
		085-MA-120			



SEGMENT B

ALT. B-3; 84' MEDIAN, ℄ OFFSET WEST (CONTROLLED ACCESS)

SR 85 MP 124.00 TO MP 142.89



SEGMENT B

ALT. B-4; 84' MEDIAN, ℄ OFFSET EAST (CONTROLLED ACCESS)

SR 85 MP 142.89 TO MP 146.00

	NAME	DATE
DESIGN	LTM	12/96
DRAWN	RDM	12/96
CHECKED	RLL	12/96

BRW 3003 N. Central Ave. Suite 700 Phoenix, Arizona 85012 (602) 234-1591

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SR 85 TYPICAL SECTIONS
ULTIMATE CONSTRUCTION

NOT FOR CONSTRUCTION

ROUTE: SR 85 | LOCATION: PHOENIX - YUMA HIGHWAY | SHEET OF

TRACS NO. H 3225 011 | F-023-1-420 | A-4

SHEET NO.	REVISIONS	LOCATION	DATE
	FINISHED PLANS		

cccccDGNcSPECIFICATIONcccccc VIEW NAME:

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
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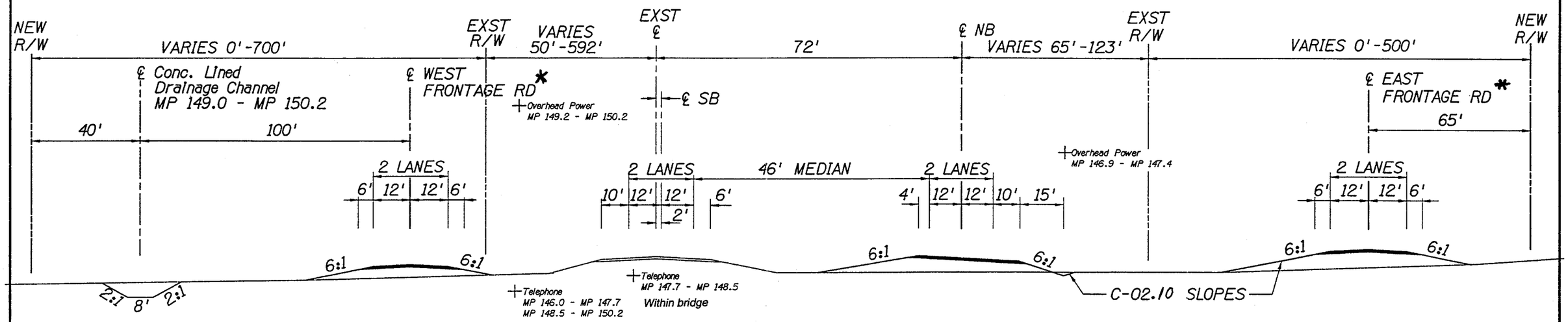
		085-MA-120			



SEGMENT C

ALT. C; 46' MEDIAN (CONTROLLED ACCESS)

SR 85 MP 146.00 TO MP 150.20

* WEST FRONTAGE ROAD LIMITS
MP 146.00 TO MP 147.30
MP 149.08 TO MP 150.20
EAST FRONTAGE ROAD LIMITS
MP 146.00 TO MP 147.77
MP 149.48 TO MP 150.20

	NAME	DATE
DESIGN	LTM	12/96
DRAWN	RDM	12/96
CHECKED	RLL	12/96

BRW 3003 N. Central Ave. Suite 700 Phoenix, Arizona 85012 (602) 234-1531

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SR 85 TYPICAL SECTIONS
ULTIMATE CONSTRUCTION

NOT FOR CONSTRUCTION PATH

ROUTE: SR 85 | LOCATION: PHOENIX - YUMA HIGHWAY | SHEET OF

SURVEY NO. | FINISHED PLANS | REVISIONS | LOCATION | DATE

ooooo DGN: SPECIFICATION ooooo
ooooo SYSTIME ooooo
VIEW NAME:

TRACS NO. H 3225 01L | F-023-1-420 | A-5

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
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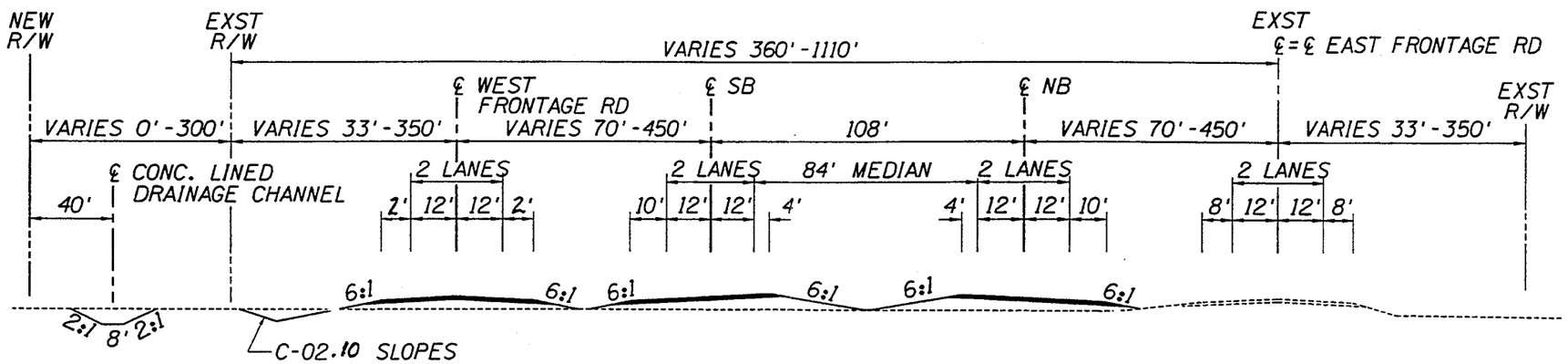
		085-MA-120			



ALT. D-3; 84' MEDIAN, ℄ OFFSET WEST WITH ONE-WAY FRONTAGE ROADS (CONTROLLED ACCESS)
MP 150.20 TO 154.52

	NAME	DATE
DESIGN	LTM	12/96
DRAWN	RDM	12/96
CHECKED	RLL	12/96

BRW 3003 N. Central Ave. Suite 700 Phoenix, Arizona 85012 (602) 234-1596

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SR 85 TYPICAL SECTIONS

ROUTE SR 85 | LOCATION PHOENIX - YUMA HIGHWAY

NOT FOR CONSTRUCTION

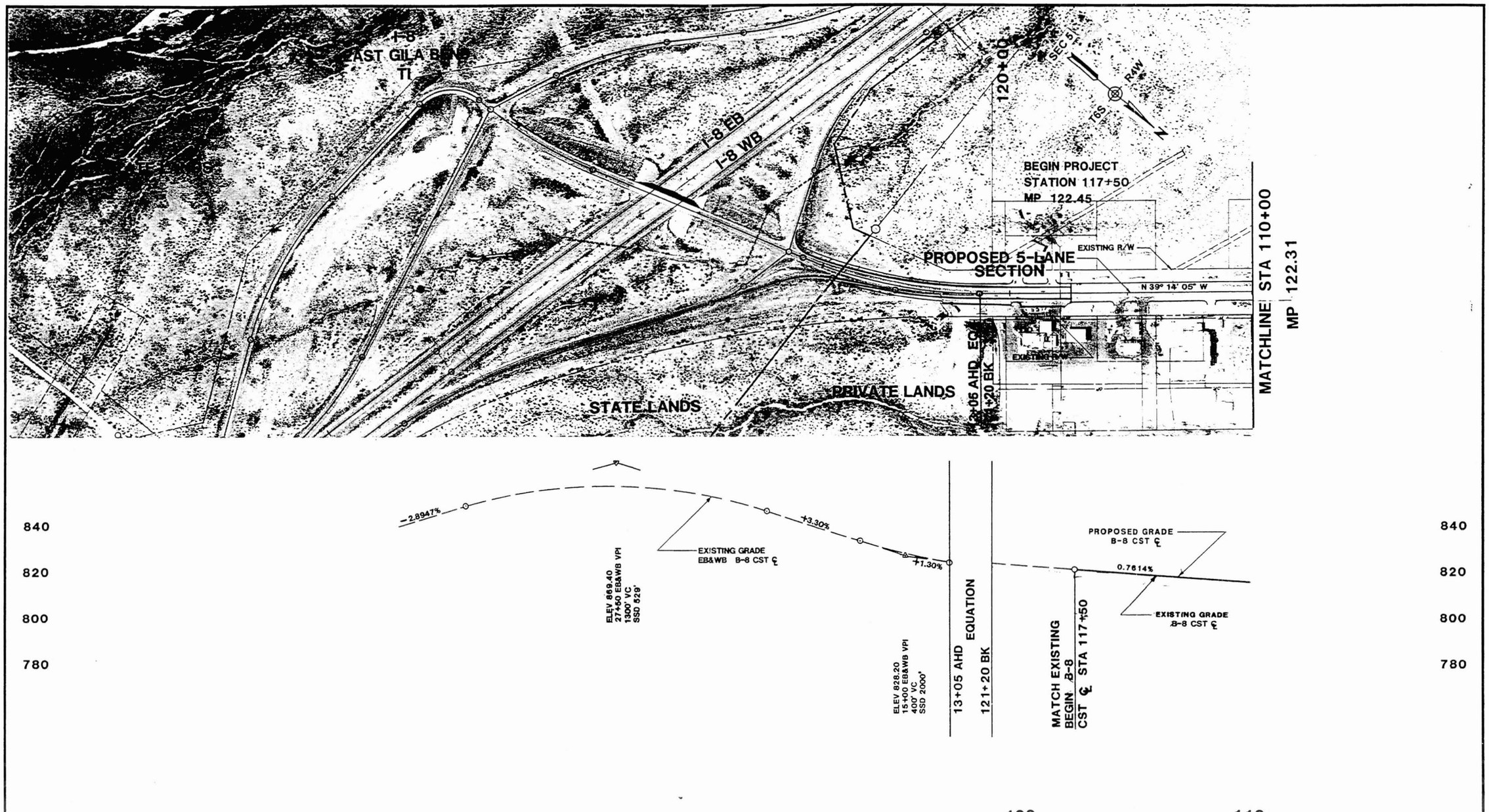
SHEET OF

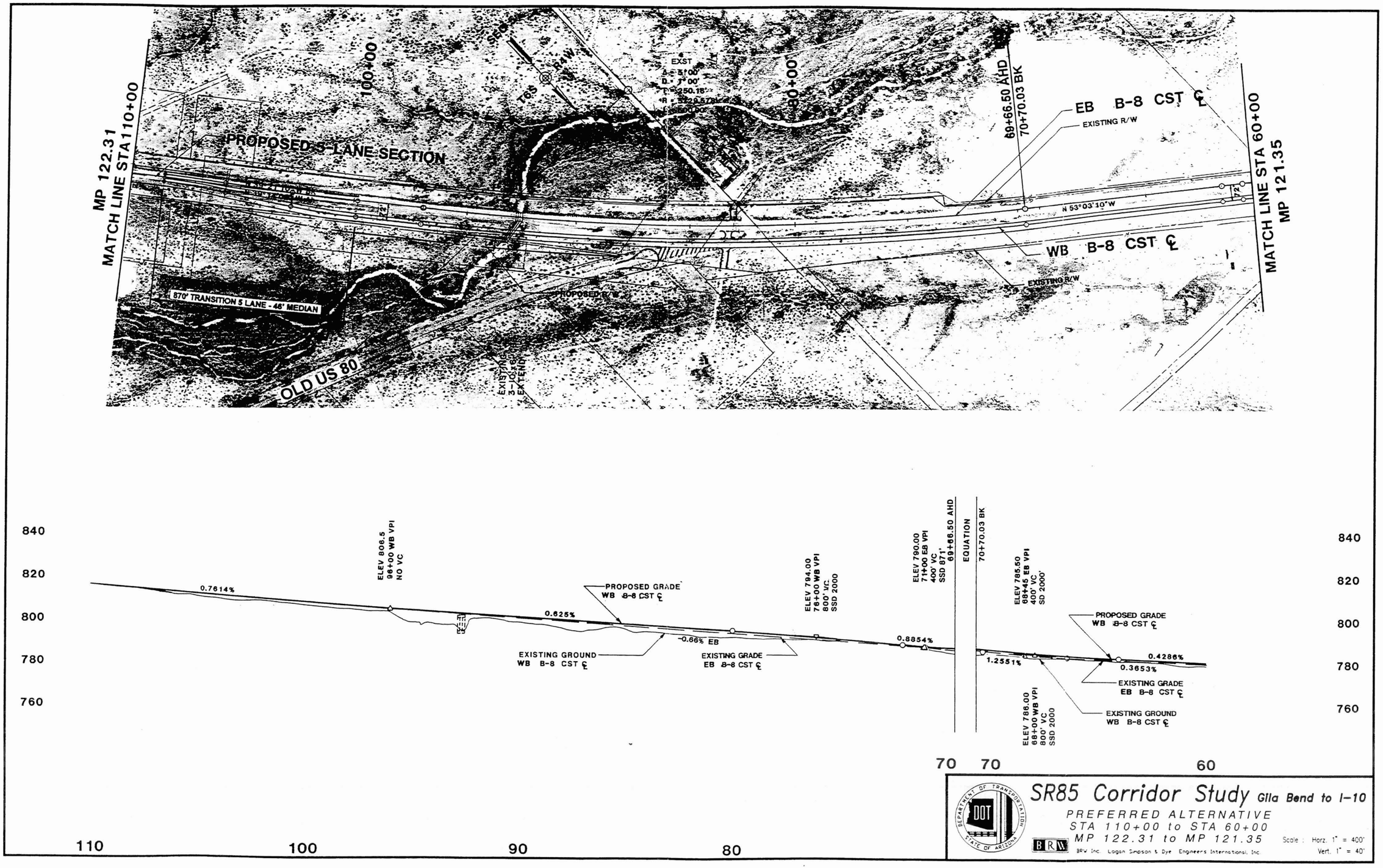
cccccDGNcSPECIFICATIONcccccc
cccccSYSTIMEcccccc
VIEW NAME:

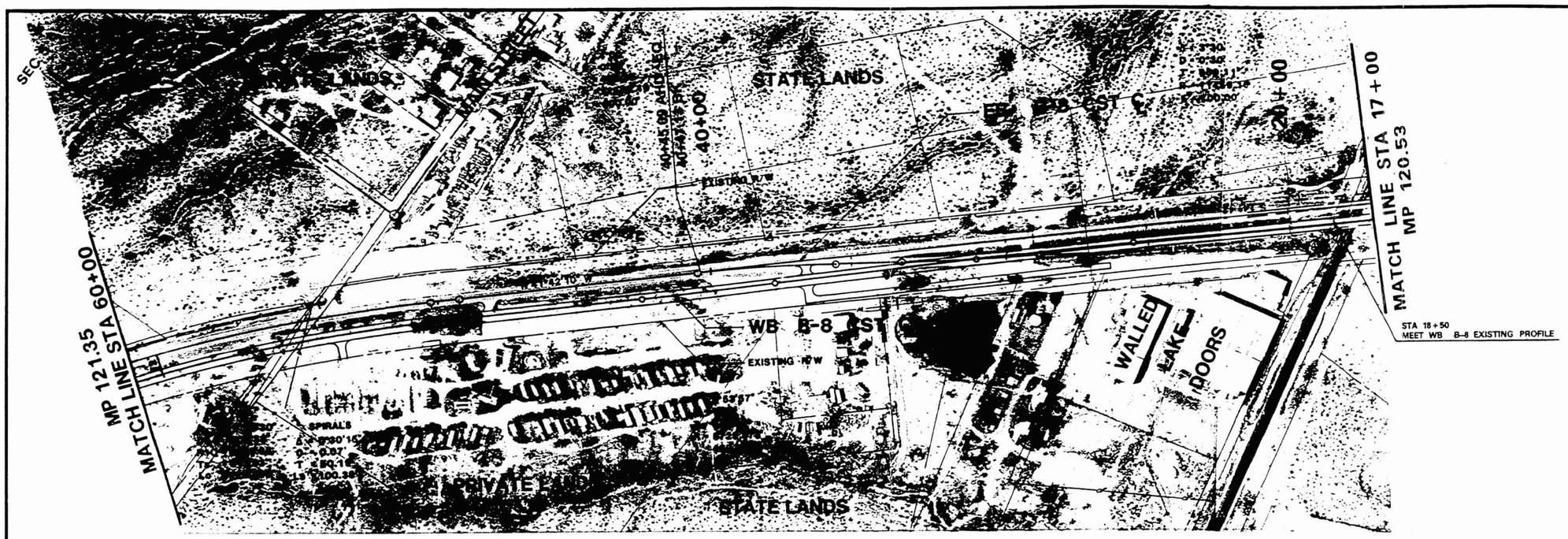
TRACS NO. H 3225 OIL | F-023-1-420 | A-6

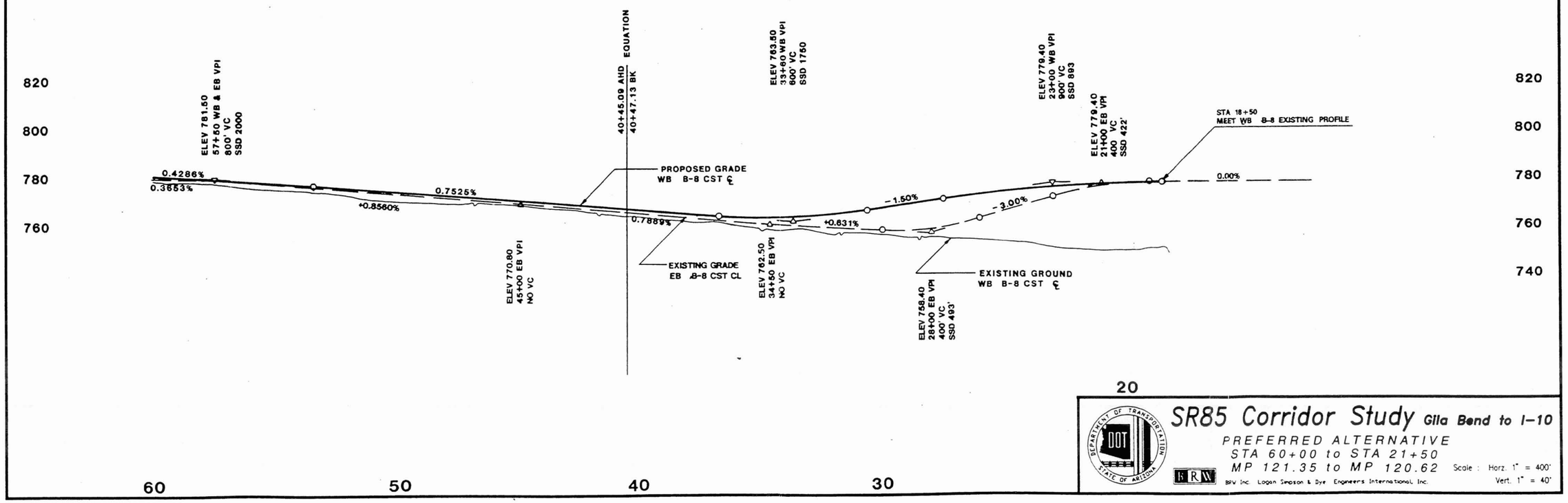
APPENDIX B

Proposed Horizontal and Vertical Alignments (Ultimate Construction – Initial plus Future)


I-8
EAST GILA BEND
TI
I-8 EB
I-8 WB
120+00
SEC 5
T6S
R4W
N
BEGIN PROJECT
STATION 117+50
MP 122.45
PROPOSED 5-LANE
SECTION
EXISTING R/W
N 39° 14' 05" W
EXISTING R/W
13+05 AHD EQ
121+20 BK
MATCHLINE STA 110+00
MP 122.31
STATE LANDS
PRIVATE LANDS
840
820
800
780
-2.8947%
+3.30%
+1.30%
EXISTING GRADE
EB&WB B-8 CST ℄
ELEV 869.40
27+60 EB&WB VPI
1300' VC
SSD 529'
ELEV 828.20
15+00 EB&WB VPI
400' VC
SSD 2000'
13+05 AHD
EQUATION
121+20 BK
PROPOSED GRADE
B-8 CST ℄
0.7614%
EXISTING GRADE
B-8 CST ℄
MATCH EXISTING
BEGIN B-8
CST ℄ STA 117+50
840
820
800
780
120
110
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 117+50 to STA 110+00
MP 122.45 to MP 122.31
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


MP 122.31
MATCH LINE STA 110+00
PROPOSED 5-LANE SECTION
100+00
90+00
T6S
R4W
EXST
69+66.50 AHD
70+70.03 BK
EB B-8 CST ℄
EXISTING R/W
N 53°03'10"W
WB B-8 CST ℄
MATCH LINE STA 60+00
MP 121.35
870' TRANSITION 5 LANE - 46' MEDIAN
PROPOSED R/W
EXISTING R/W
OLD US 80
840
820
800
780
760
ELEV 806.5
96+00 WB VPI
NO VC
0.7614%
0.625%
PROPOSED GRADE
WB B-8 CST ℄
-0.68% EB
EXISTING GROUND
WB B-8 CST ℄
EXISTING GRADE
EB B-8 CST ℄
ELEV 794.00
78+00 WB VPI
800' VC
SSD 2000
ELEV 790.00
71+00 EB VPI
400' VC
SSD 877'
69+66.50 AHD
0.8854%
EQUATION
70+70.03 BK
ELEV 785.50
68+45 EB VPI
400' VC
SD 2000'
1.2551%
ELEV 786.00
68+00 WB VPI
800' VC
SSD 2000
PROPOSED GRADE
WB B-8 CST ℄
0.4286%
0.3653%
EXISTING GRADE
EB B-8 CST ℄
EXISTING GROUND
WB B-8 CST ℄
70
70
60
110
100
90
80
DEPARTMENT OF TRANSPORTATION
DOT
STATE OF ARIZONA
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 110+00 to STA 60+00
MP 122.31 to MP 121.35
BRW
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
Scale : Horz. 1" = 400'
Vert. 1" = 40'



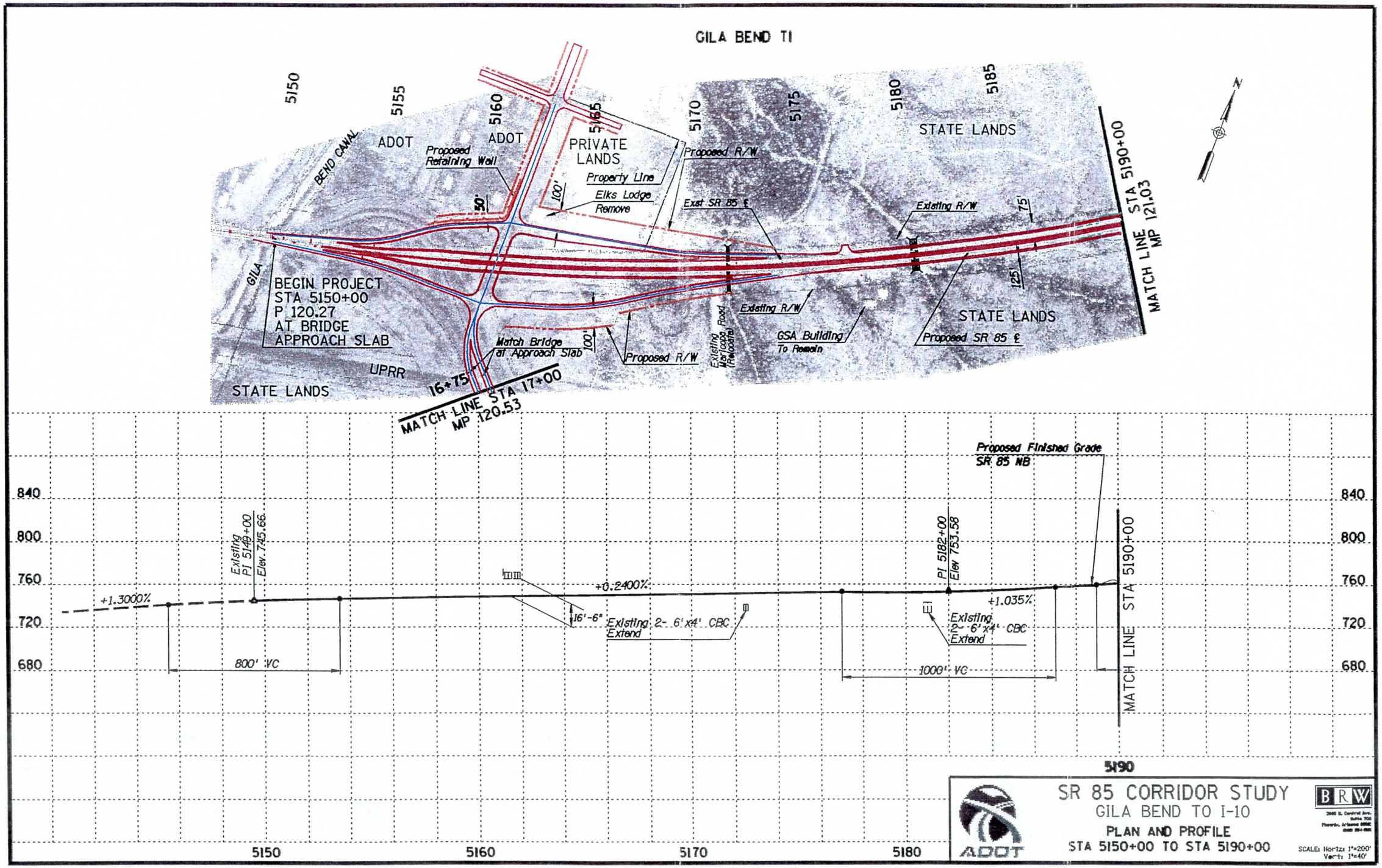


SR85 Corridor Study Gila Bend to I-10

PREFERRED ALTERNATIVE
STA 60+00 to STA 21+50
MP 121.35 to MP 120.62

Scale : Horz. 1" = 400'
Vert. 1" = 40'

BRW Inc. Logan Simpson & Dye Engineers International, Inc.



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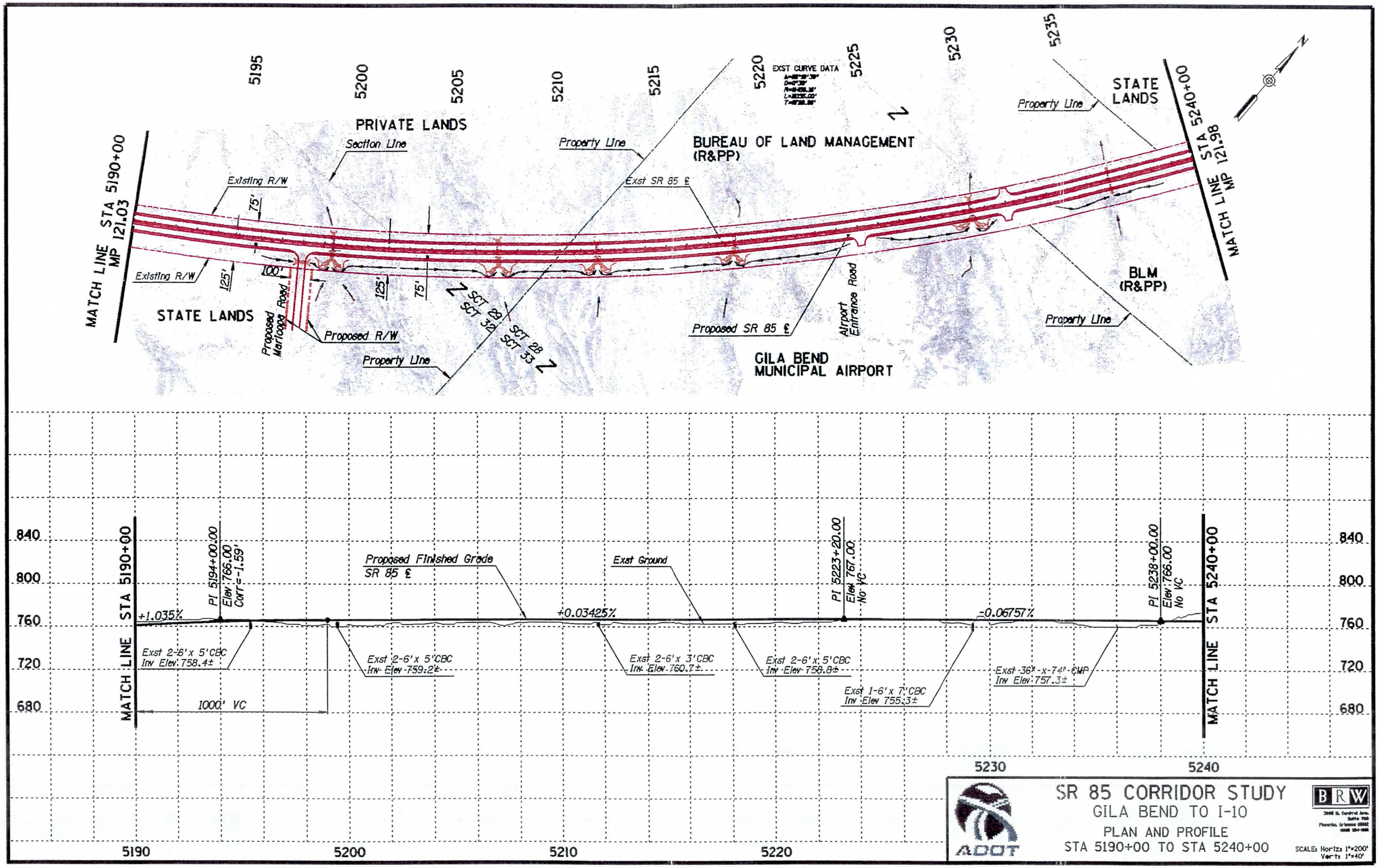

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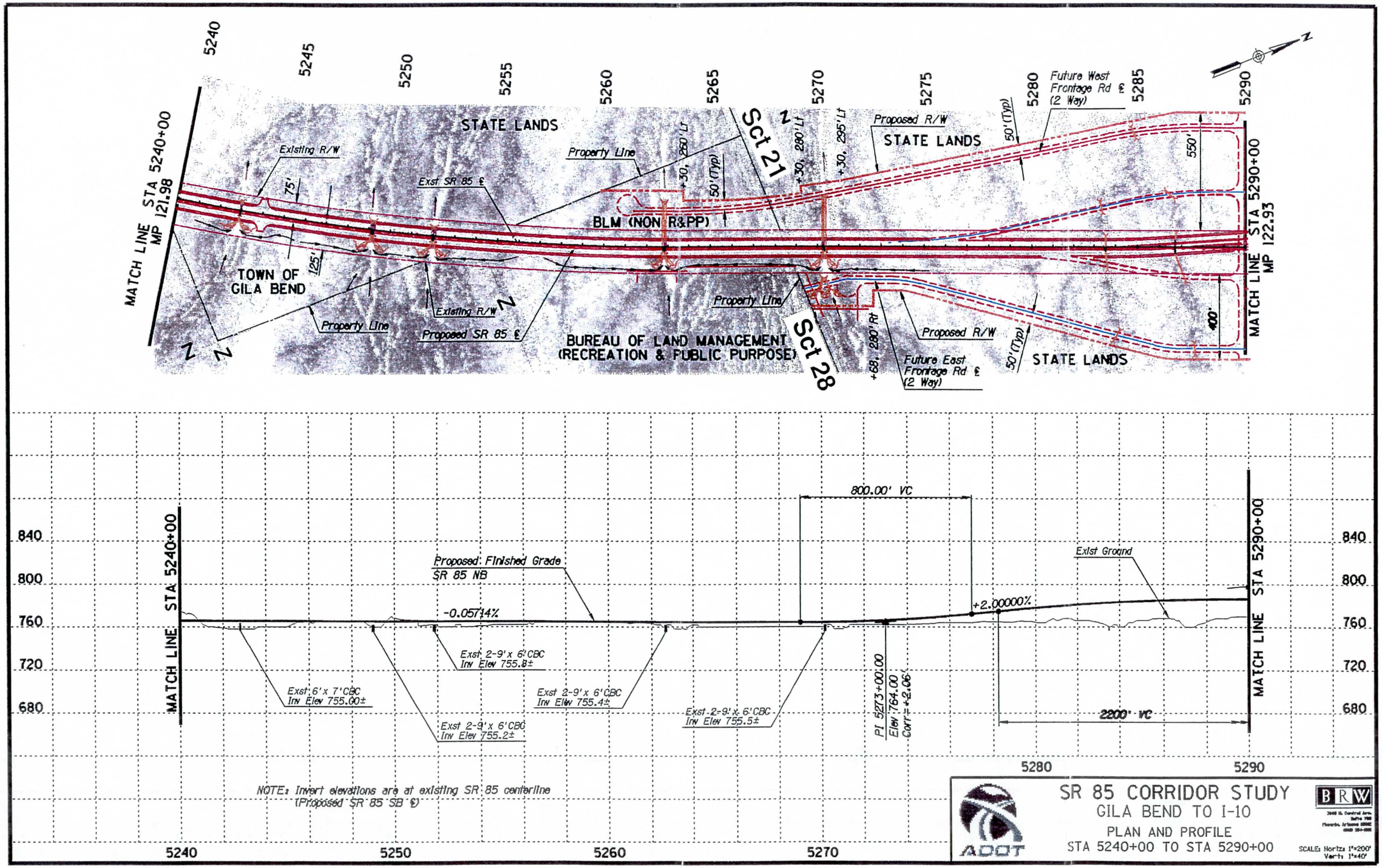
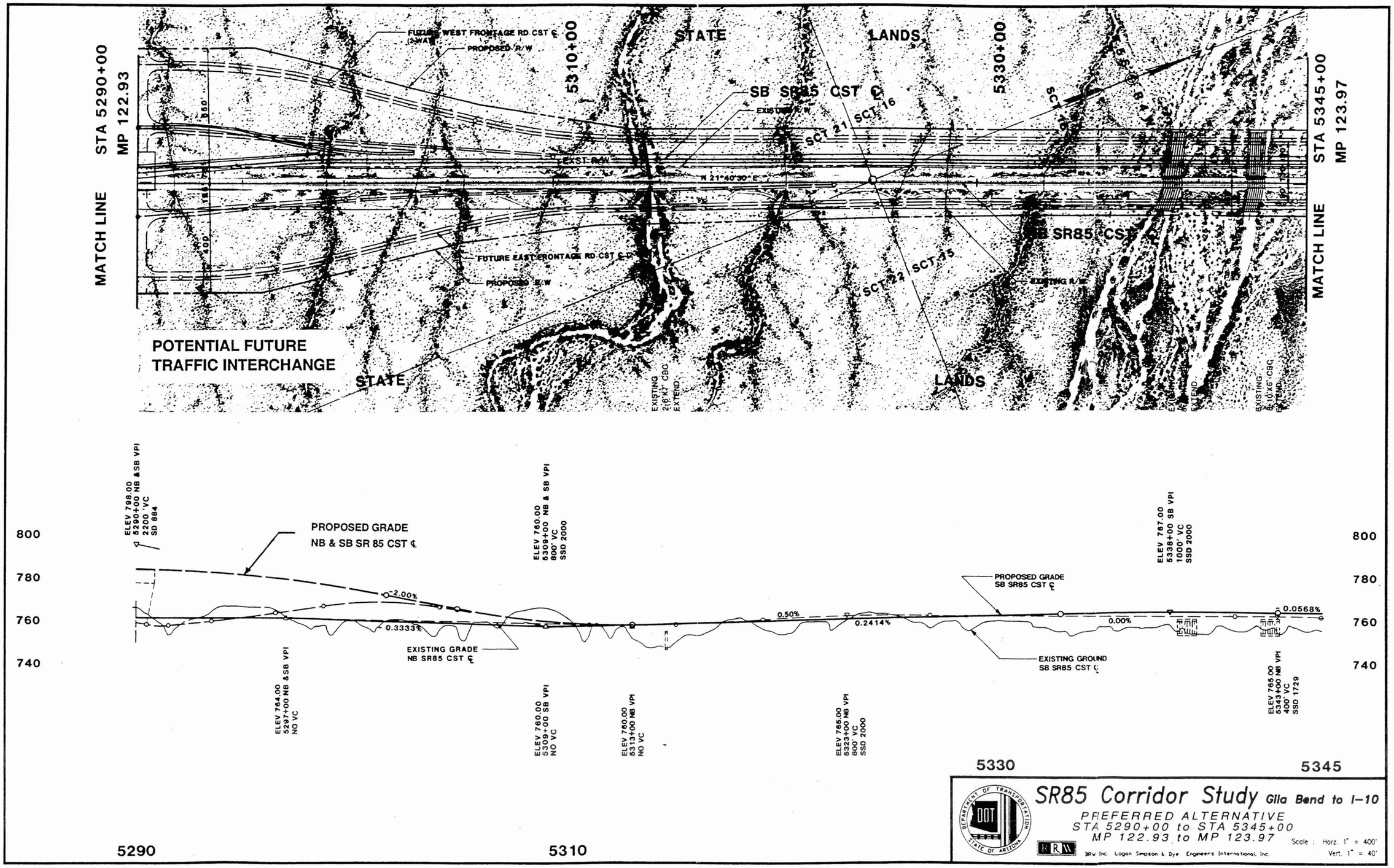
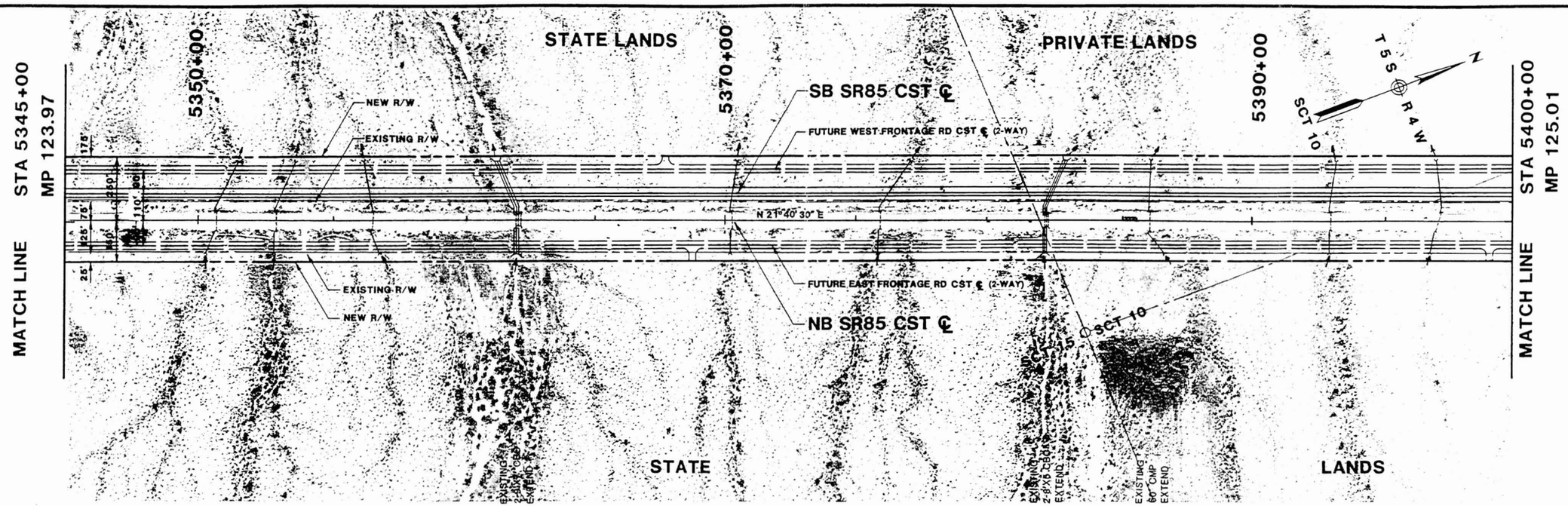
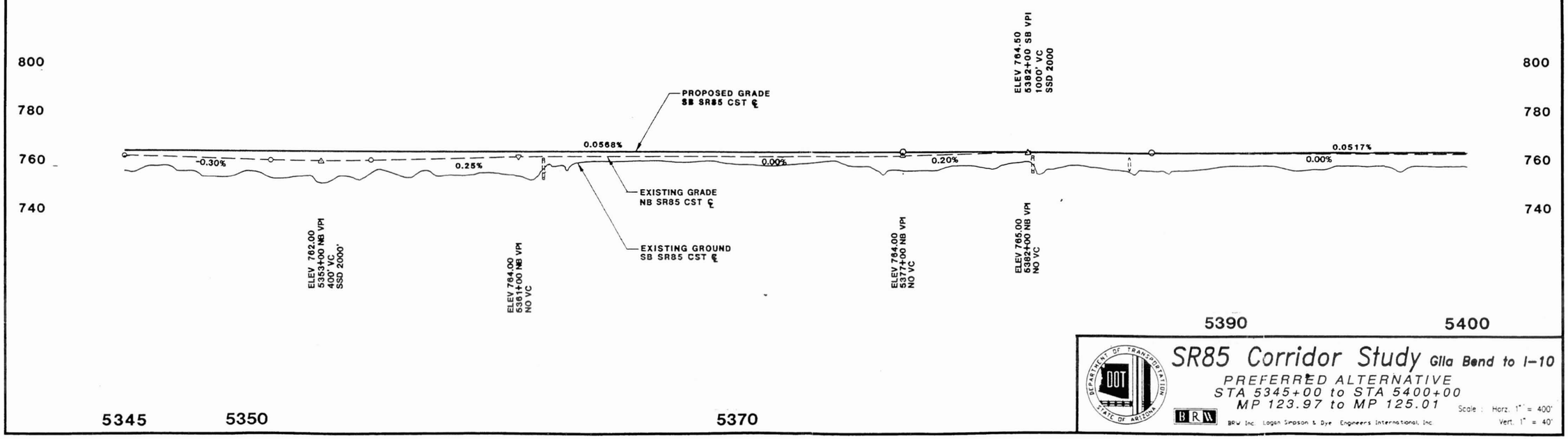

5240
5245
5250
5255
5260
5265
5270
5275
5280
5285
5290
MATCH LINE STA 5240+00 MP 121.98
STATE LANDS
Existing R/W
75'
Exist SR 85 ℄
Property Line
+30, 250' Lt
50' (Typ)
Sct 21
+30, 280' Lt
+30, 295' Lt
Proposed R/W
STATE LANDS
50' (Typ)
Future West Frontage Rd ℄ (2 Way)
550'
STA 5290+00 MP 122.93
MATCH LINE
BLM (NON R&PP)
125'
TOWN OF GILA BEND
Existing R/W
Property Line
Proposed SR 85 ℄
BUREAU OF LAND MANAGEMENT (RECREATION & PUBLIC PURPOSE)
Property Line
Sct 28
+68, 280' Rt
Proposed R/W
Future East Frontage Rd ℄ (2 Way)
50' (Typ)
STATE LANDS
400'
840
800
760
720
680
MATCH LINE STA 5240+00
Proposed Finished Grade SR 85 NB
-0.05714%
800.00' VC
+2.00000%
Exist Ground
Exst 2-9' x 6' CBC Inv Elev 755.8±
Exst 6' x 7' CBC Inv Elev 755.00±
Exst 2-9' x 6' CBC Inv Elev 755.4±
Exst 2-9' x 6' CBC Inv Elev 755.2±
Exst 2-9' x 6' CBC Inv Elev 755.5±
PI 5273+00.00
Elev 764.00
Corr = +2.06'
2200' VC
MATCH LINE STA 5290+00
NOTE: Invert elevations are at existing SR 85 centerline (Proposed SR 85 SB ℄)
ADOT
SR 85 CORRIDOR STUDY
GILA BEND TO I-10
PLAN AND PROFILE
STA 5240+00 TO STA 5290+00
BRW
SCALE: Horiz: 1"=200'
Vert: 1"=40'


MATCH LINE
STA 5290+00
MP 122.93
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
PROPOSED R/W
5310+00
STATE
LANDS
5330+00
SB SR85 CST ℄
EXISTING R/W
SCT 21
SCT 16
EAST R/W
N 21°40'30" E
FUTURE EAST FRONTAGE RD CST ℄
PROPOSED R/W
SCT 22
SCT 15
EXISTING R/W
EXISTING 2-8'X7' CBC EXTEND
STA 5345+00
MP 123.97
MATCH LINE
POTENTIAL FUTURE
TRAFFIC INTERCHANGE
ELEV 798.00
5290+00 NB & SB VPI
2200' VC
SD 884
PROPOSED GRADE
NB & SB SR 85 CST ℄
-2.00%
0.3333%
EXISTING GRADE
NB SR85 CST ℄
ELEV 764.00
5297+00 NB & SB VPI
NO VC
ELEV 760.00
5309+00 NB & SB VPI
800' VC
SSD 2000
ELEV 760.00
5309+00 SB VPI
NO VC
ELEV 760.00
5313+00 NB VPI
NO VC
0.50%
0.2414%
ELEV 765.00
5323+00 NB VPI
800' VC
SSD 2000
PROPOSED GRADE
SB SR85 CST ℄
0.00%
EXISTING GROUND
SB SR85 CST ℄
ELEV 767.00
5338+00 SB VPI
1000' VC
SSD 2000
0.0568%
ELEV 765.00
5343+00 NB VPI
400' VC
SSD 1729
800
780
760
740
5290
5310
5330
5345
DEPARTMENT OF TRANSPORTATION
STATE OF ARIZONA
DOT
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5290+00 to STA 5345+00
MP 122.93 to MP 123.97
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
Scale : Horz. 1" = 400'
Vert. 1" = 40'



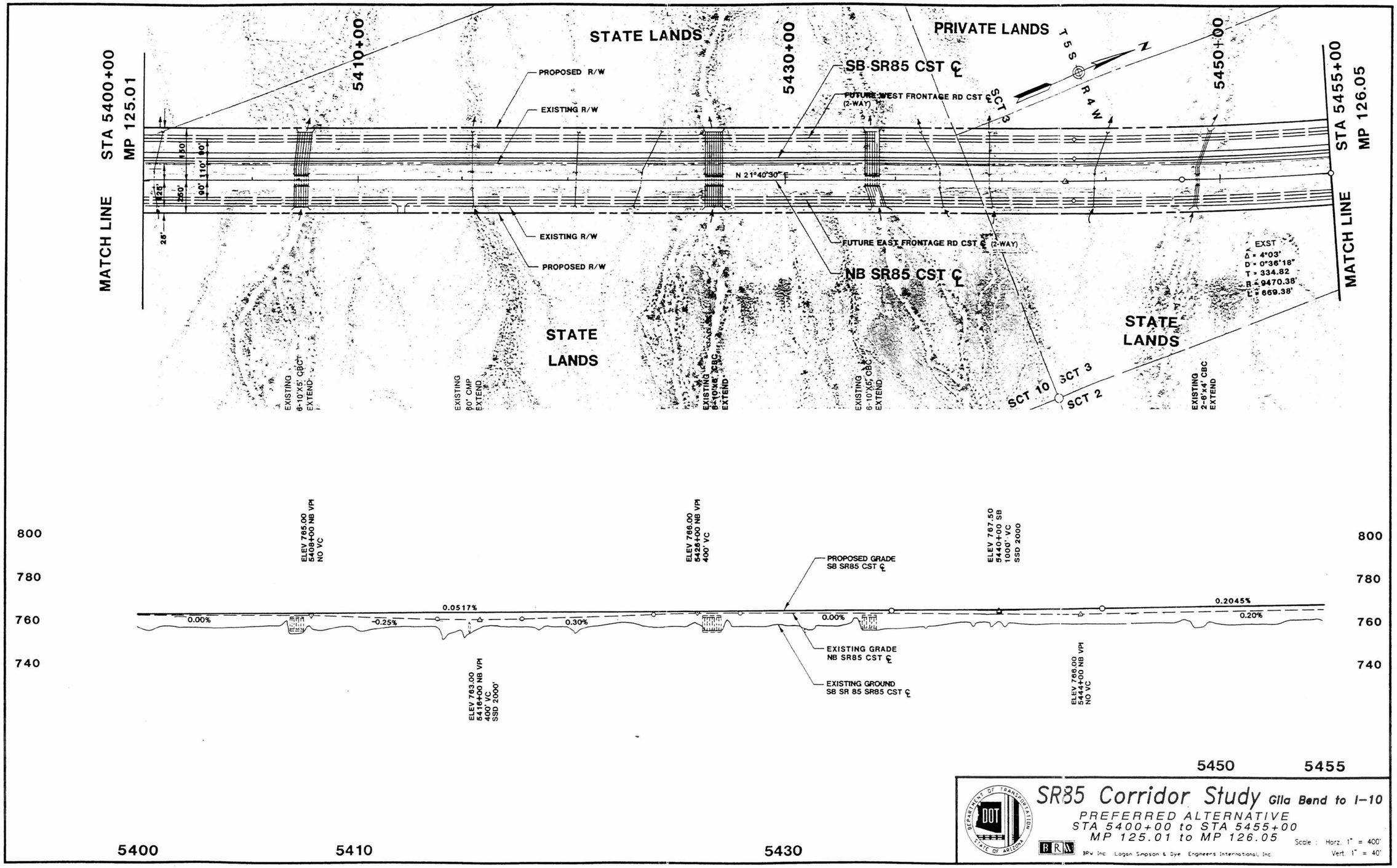


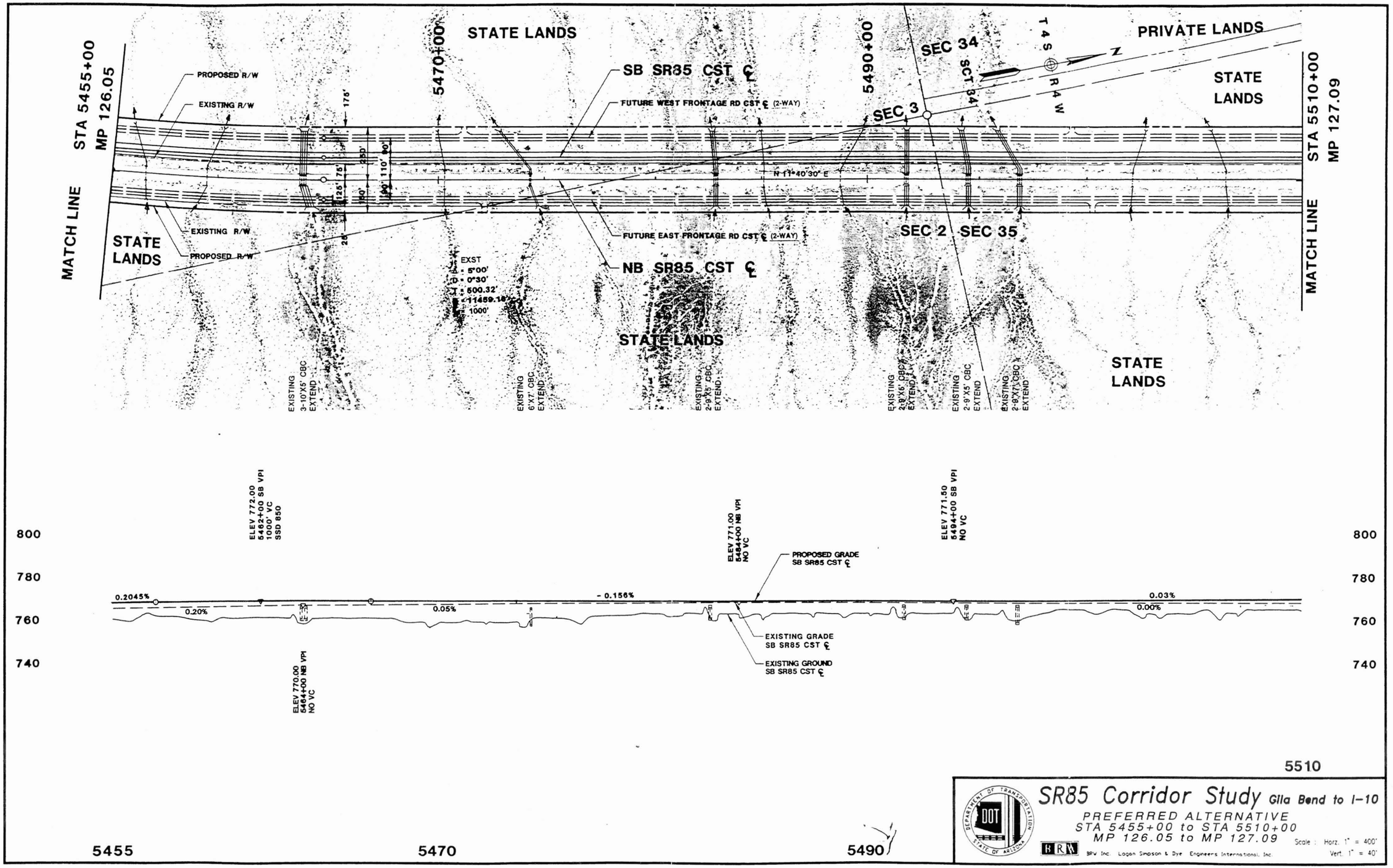
SR85 Corridor Study Gila Bend to I-10

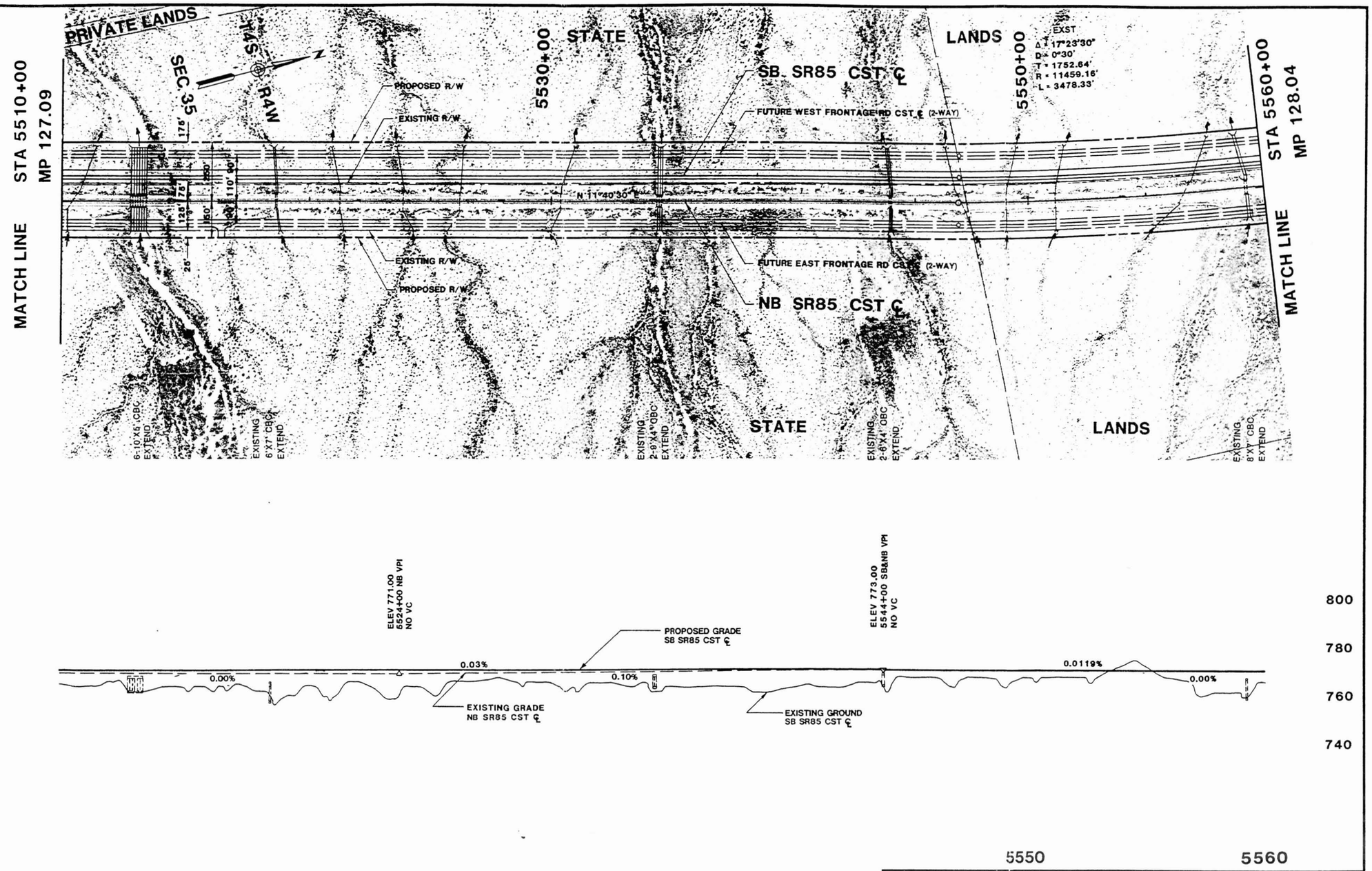
PREFERRED ALTERNATIVE
STA 5345+00 to STA 5400+00
MP 123.97 to MP 125.01

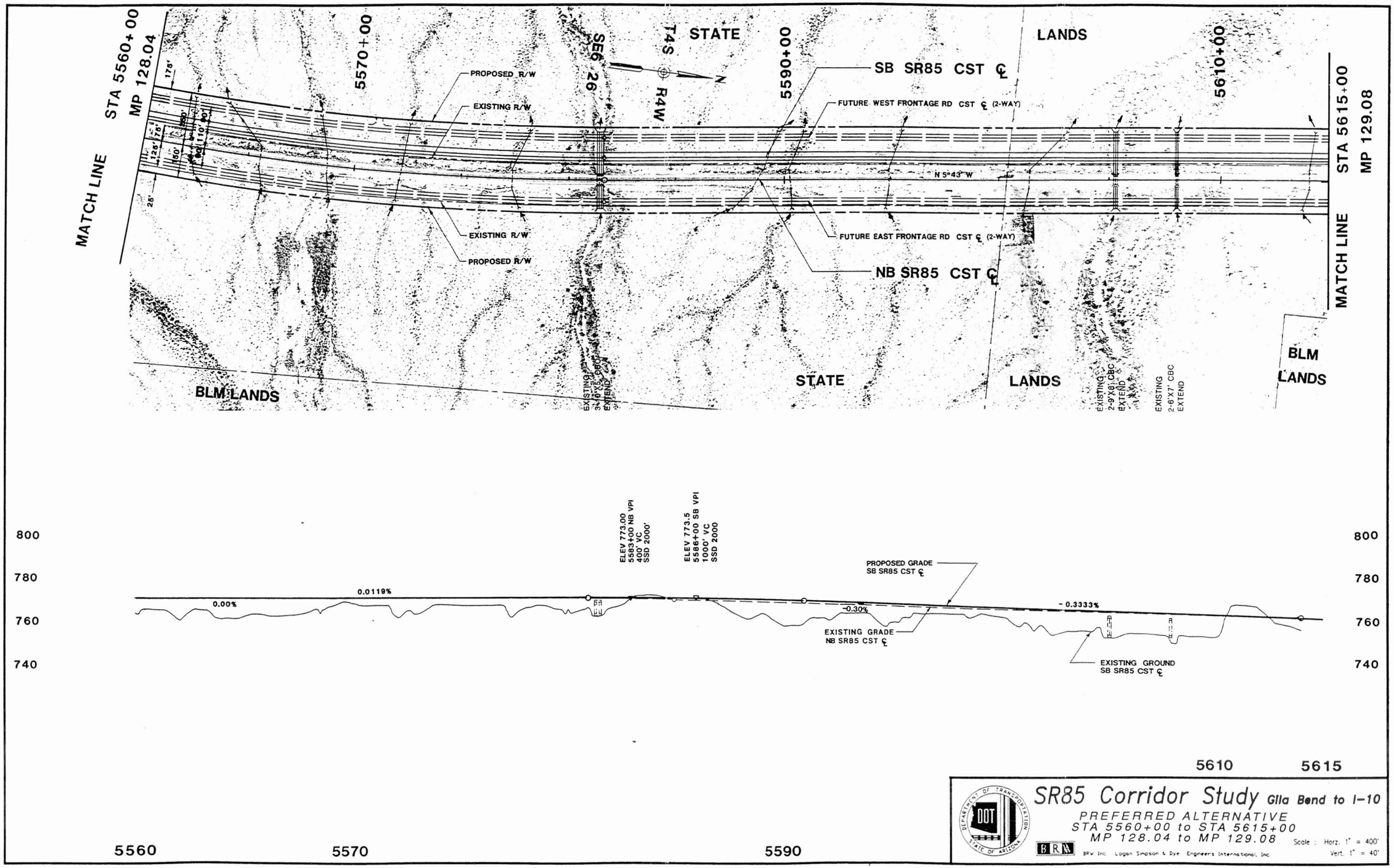
Scale : Horz. 1" = 400'
Vert. 1" = 40'

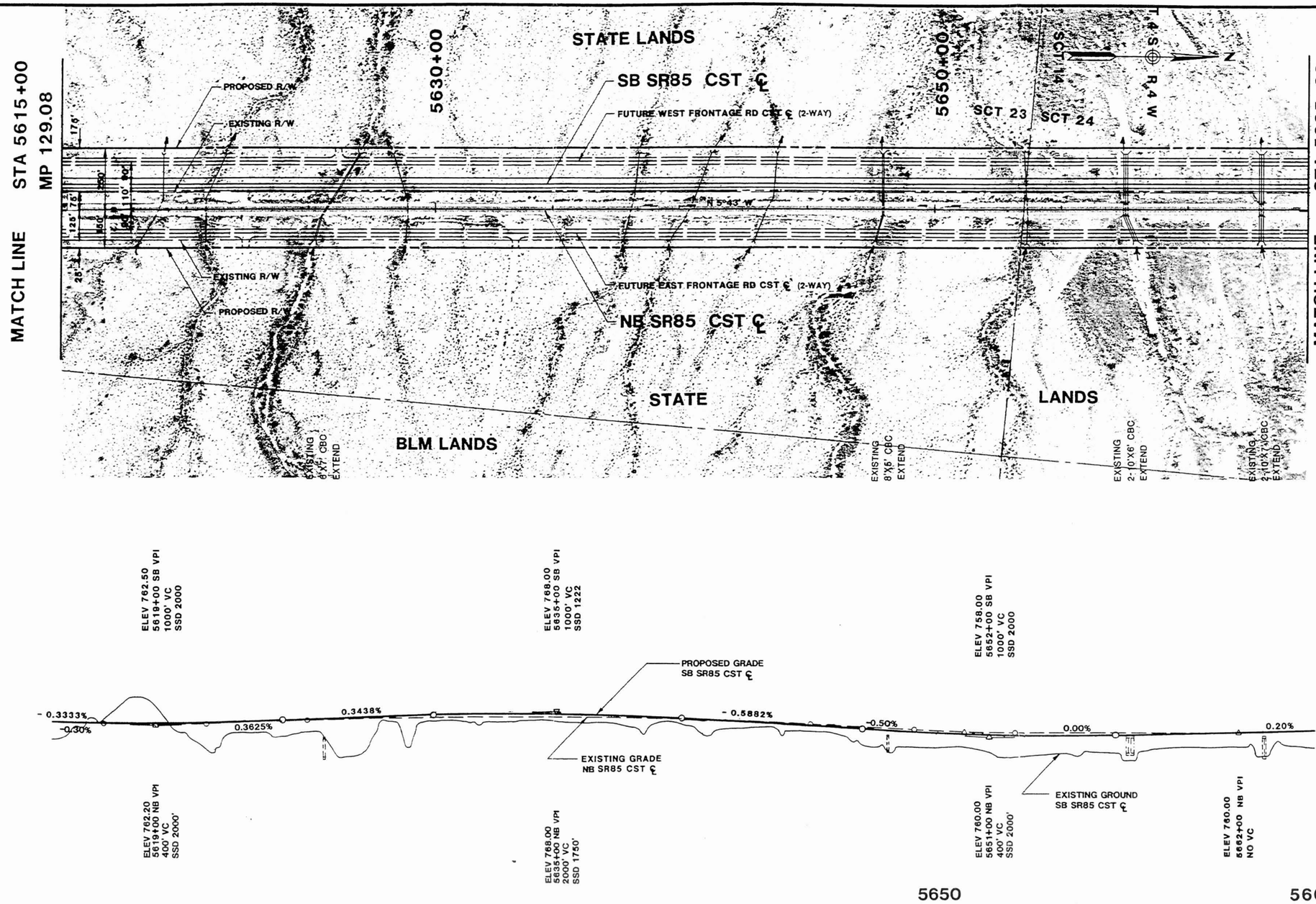
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


MATCH LINE
STA 5400+00
MP 125.01
5410+00
STATE LANDS
5430+00
PRIVATE LANDS
5450+00
STA 5455+00
MP 126.05
MATCH LINE
PROPOSED R/W
EXISTING R/W
SB SR85 CST ℄
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
SCT 3
T 5 S
R 4 W
N
N 21°40'30" E
EXISTING R/W
PROPOSED R/W
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
NB SR85 CST ℄
EXST
Δ = 4°03'
D = 0°36'18"
T = 334.82
R = 9470.38'
L = 669.38'
STATE LANDS
STATE LANDS
EXISTING 6-10'X5' CBC EXTEND
EXISTING 80" CMP EXTEND
EXISTING 6-10'X6' CBC EXTEND
EXISTING 6-10'X6' CBC EXTEND
SCT 10
SCT 3
SCT 2
EXISTING 2-6'x4' CBC EXTEND
28'
26'
250'
90'
110'
150
90'
800
780
760
740
ELEV 765.00
5408+00 NB VPI
NO VC
ELEV 766.00
5428+00 NB VPI
400' VC
ELEV 767.50
5440+00 SB
1000' VC
SSD 2000
PROPOSED GRADE
SB SR85 CST ℄
0.0517%
0.2045%
0.00%
-0.25%
0.30%
0.00%
0.20%
EXISTING GRADE
NB SR85 CST ℄
EXISTING GROUND
SB SR 85 SR85 CST ℄
ELEV 763.00
5416+00 NB VPI
400' VC
SSD 2000'
ELEV 766.00
5444+00 NB VPI
NO VC
5400
5410
5430
5450
5455
DEPARTMENT OF TRANSPORTATION
DOT
STATE OF ARIZONA
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5400+00 to STA 5455+00
MP 125.01 to MP 126.05
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
Scale : Horz. 1" = 400'
Vert. 1" = 40'


STA 5455+00
MP 126.05
MATCH LINE
STATE LANDS
PROPOSED R/W
EXISTING R/W
EXISTING R/W
PROPOSED R/W
5470+00
STATE LANDS
SB SR85 CST ℄
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
NB SR85 CST ℄
N 11°40'30" E
EXST
L = 5°00'
D = 0°30'
T = 500.32'
L = 11459.16'
1000'
STATE LANDS
5490+00
SEC 34
SCT 34
SEC 3
SEC 2
SEC 35
T 4 S
R 4 W
N
PRIVATE LANDS
STATE LANDS
STATE LANDS
STA 5510+00
MP 127.09
MATCH LINE
EXISTING 3-10'X5' CBC EXTEND
EXISTING 6'X7' CBC EXTEND
EXISTING 2-9'X5' CBC EXTEND
EXISTING 2-9'X6' CBC EXTEND
EXISTING 2-9'X5' CBC EXTEND
EXISTING 2-9'X7' CBC EXTEND
ELEV 772.00
5462+00 SB VPI
1000' VC
SSD 850
ELEV 770.00
5464+00 NB VPI
NO VC
ELEV 771.00
5484+00 NB VPI
NO VC
ELEV 771.50
5494+00 SB VPI
NO VC
PROPOSED GRADE
SB SR85 CST ℄
EXISTING GRADE
SB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
0.2045%
0.20%
0.05%
- 0.156%
0.03%
0.00%
800
780
760
740
5455
5470
5490
5510
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5455+00 to STA 5510+00
MP 126.05 to MP 127.09
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


PRIVATE LANDS
SEC 35
T4S
R4W
N
STA 5510+00
MP 127.09
MATCH LINE
5530+00
STATE
LANDS
5550+00
EXST
Δ = 17°23'30"
D = 0°30'
T = 1752.64'
R = 11459.16'
L = 3478.33'
STA 5560+00
MP 128.04
MATCH LINE
PROPOSED R/W
EXISTING R/W
SB SR85 CST ℄
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
N 11°40'30" E
EXISTING R/W
PROPOSED R/W
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
NB SR85 CST ℄
STATE
LANDS
6-10'X6' CBC EXTEND
EXISTING 6'X7' CBC EXTEND
EXISTING 2-6'X4' CBC EXTEND
EXISTING 2-6'X4' CBC EXTEND
EXISTING 8'X7' CBC EXTEND
ELEV 771.00
5524+00 NB VPI
NO VC
ELEV 773.00
5544+00 SB&NB VPI
NO VC
PROPOSED GRADE
SB SR85 CST ℄
0.03%
0.00%
0.10%
0.0119%
0.00%
EXISTING GRADE
NB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
800
780
760
740
5510
5530
5550
5560
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5510+00 to STA 5560+00
MP 127.09 to MP 128.04
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


STA 5560+00
MP 128.04
MATCH LINE
5570+00
SE6
26
T4S
R4W
STATE
5590+00
LANDS
5610+00
STA 5615+00
MP 129.08
MATCH LINE
PROPOSED R/W
EXISTING R/W
EXISTING R/W
PROPOSED R/W
SB SR85 CST ℄
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
N 5°43' W
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
NB SR85 CST ℄
BLM LANDS
STATE
LANDS
BLM LANDS
EXISTING 2-9'X8' CBC EXTEND
EXISTING 2-6'X7' CBC EXTEND
ELEV 773.00
5583+00 NB VPI
400' VC
SSD 2000'
ELEV 773.5
5586+00 SB VPI
1000' VC
SSD 2000
PROPOSED GRADE
SB SR85 CST ℄
0.00%
0.0119%
-0.30%
-0.3333%
EXISTING GRADE
NB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
800
780
760
740
5560
5570
5590
5610
5615
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5560+00 to STA 5615+00
MP 128.04 to MP 129.08
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.



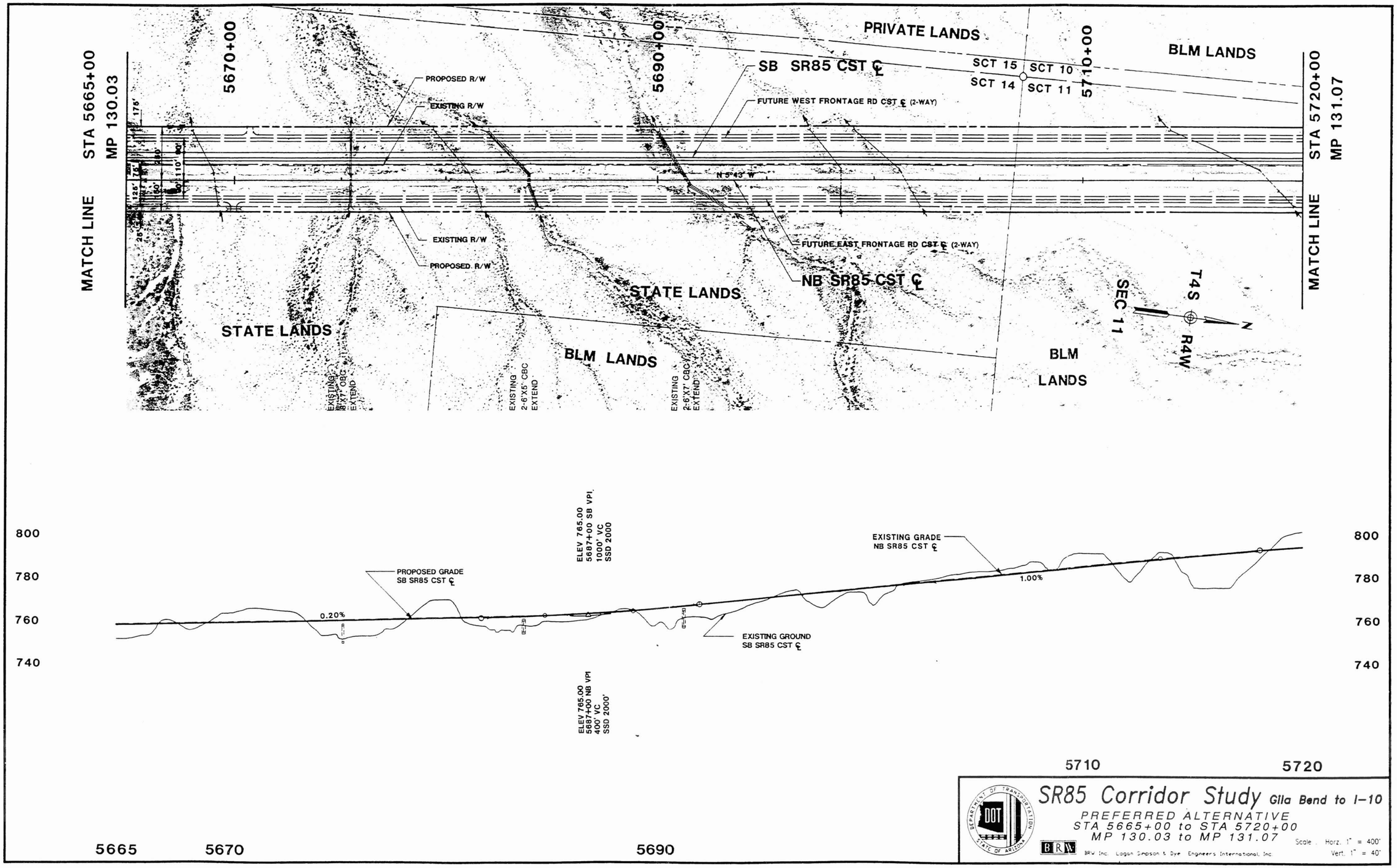
SR85 Corridor Study Gila Bend to I-10

PREFERRED ALTERNATIVE
STA 5615+00 to STA 5665+00
MP 129.08 to MP 130.03

DEPARTMENT OF TRANSPORTATION · DOT · STATE OF ARIZONA

BRW Inc. Logan Simpson & Dye Engineers International, Inc.

Scale : Horz. 1" = 400'
Vert. 1" = 40'

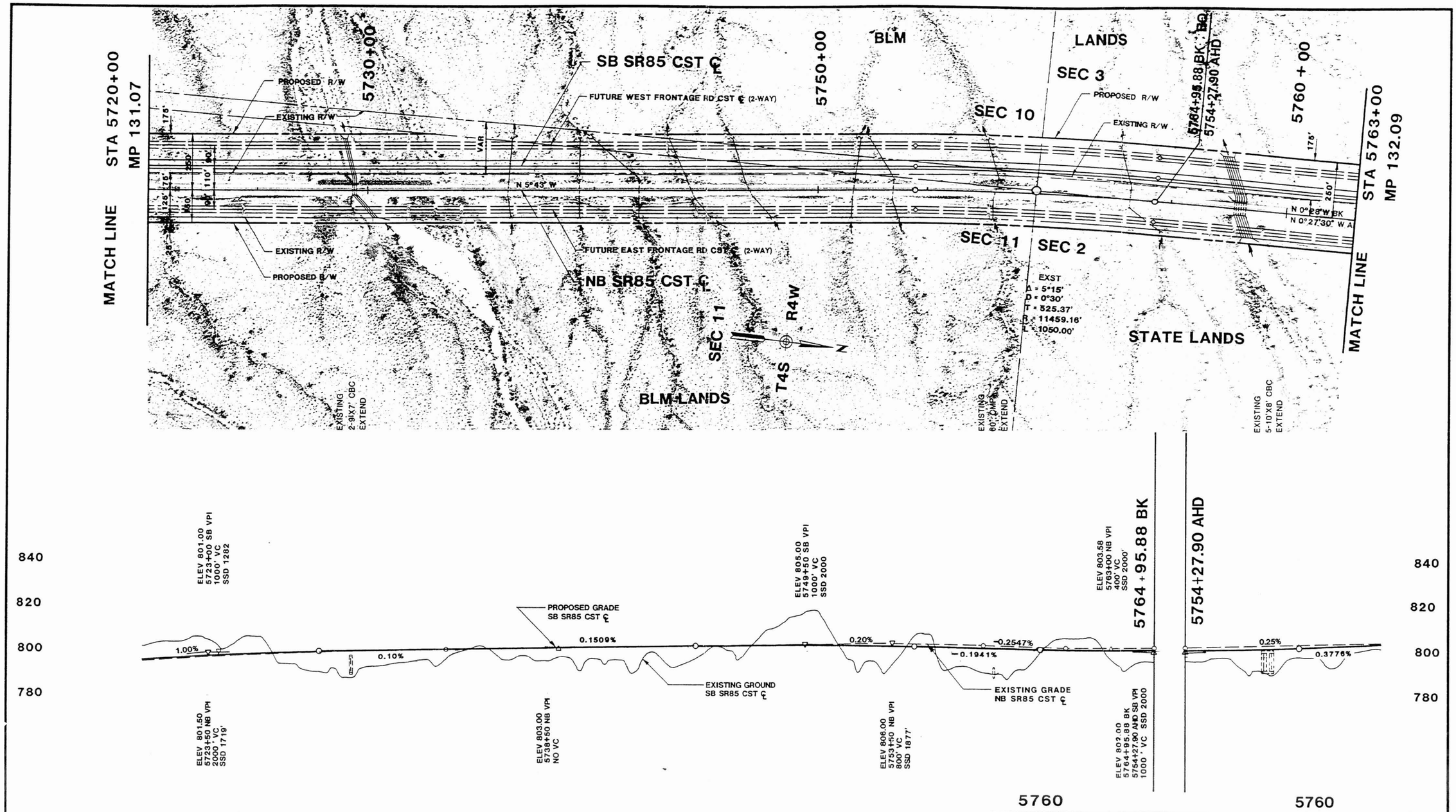


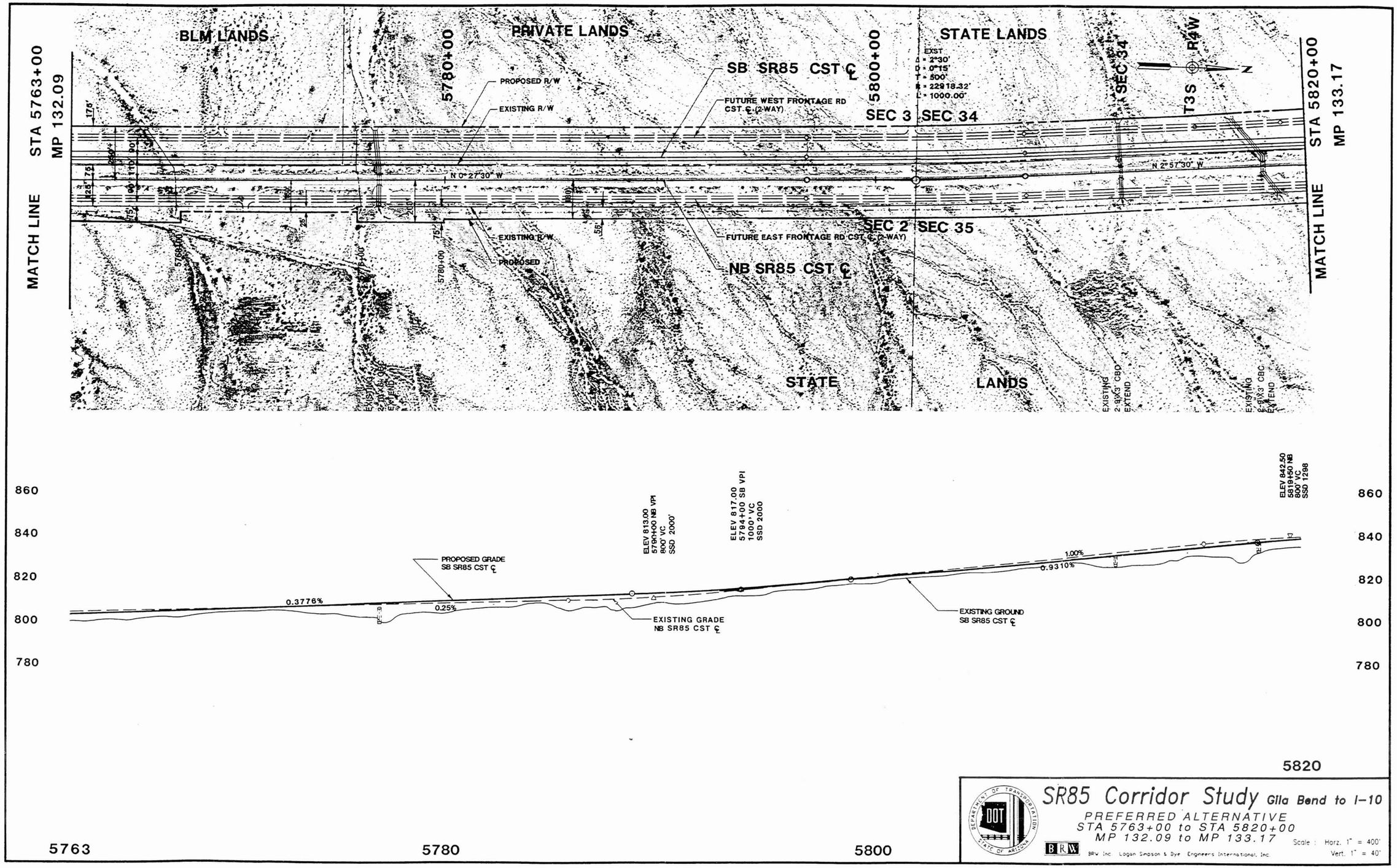
SR85 Corridor Study Gila Bend to I-10

PREFERRED ALTERNATIVE
STA 5665+00 to STA 5720+00
MP 130.03 to MP 131.07

Scale: Horz. 1" = 400'
Vert. 1" = 40'

BRW Inc. Logan Simpson & Dye Engineers International, Inc.


MATCH LINE
STA 5720+00
MP 131.07
5730+00
SB SR85 CST ℄
PROPOSED R/W
EXISTING R/W
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
NB SR85 CST ℄
N 5°43' W
VAR
5750+00
BLM
LANDS
SEC 3
SEC 10
SEC 11
SEC 2
5760 + 00
5764+95.88 BK
5754+27.90 AHD
N 0°28' W BK
N 0°27'30" W AHD
STA 5763+00
MP 132.09
MATCH LINE
EXST
Δ = 5°15'
D = 0°30'
T = 525.37'
R = 11459.16'
L = 1050.00'
STATE LANDS
BLM LANDS
R4W
T4S
N
EXISTING 2-9'X7' CBC EXTEND
EXISTING 60" CMP EXTEND
EXISTING 5-10'X8' CBC EXTEND
ELEV 801.00 5723+00 SB VPI 1000' VC SSD 1282
ELEV 801.50 5723+50 NB VPI 2000' VC SSD 1719'
ELEV 803.00 5738+50 NB VPI NO VC
ELEV 805.00 5749+50 SB VPI 1000' VC SSD 2000
ELEV 806.00 5759+50 NB VPI 800' VC SSD 1877'
ELEV 803.58 5763+00 NB VPI 400' VC SSD 2000'
ELEV 802.00 5764+95.88 BK 5754+27.90 AHD SB VPI 1000' VC SSD 2000
PROPOSED GRADE SB SR85 CST ℄
EXISTING GROUND SB SR85 CST ℄
EXISTING GRADE NB SR85 CST ℄
1.00%
0.10%
0.1509%
0.20%
-0.2547%
-0.1941%
0.25%
0.3776%
840
820
800
780
5720
5730
5750
5760
5764+95.88 BK
5754+27.90 AHD
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5720+00 to STA 5763+00
MP 131.07 to MP 132.09
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
DEPARTMENT OF TRANSPORTATION
DOT
STATE OF ARIZONA

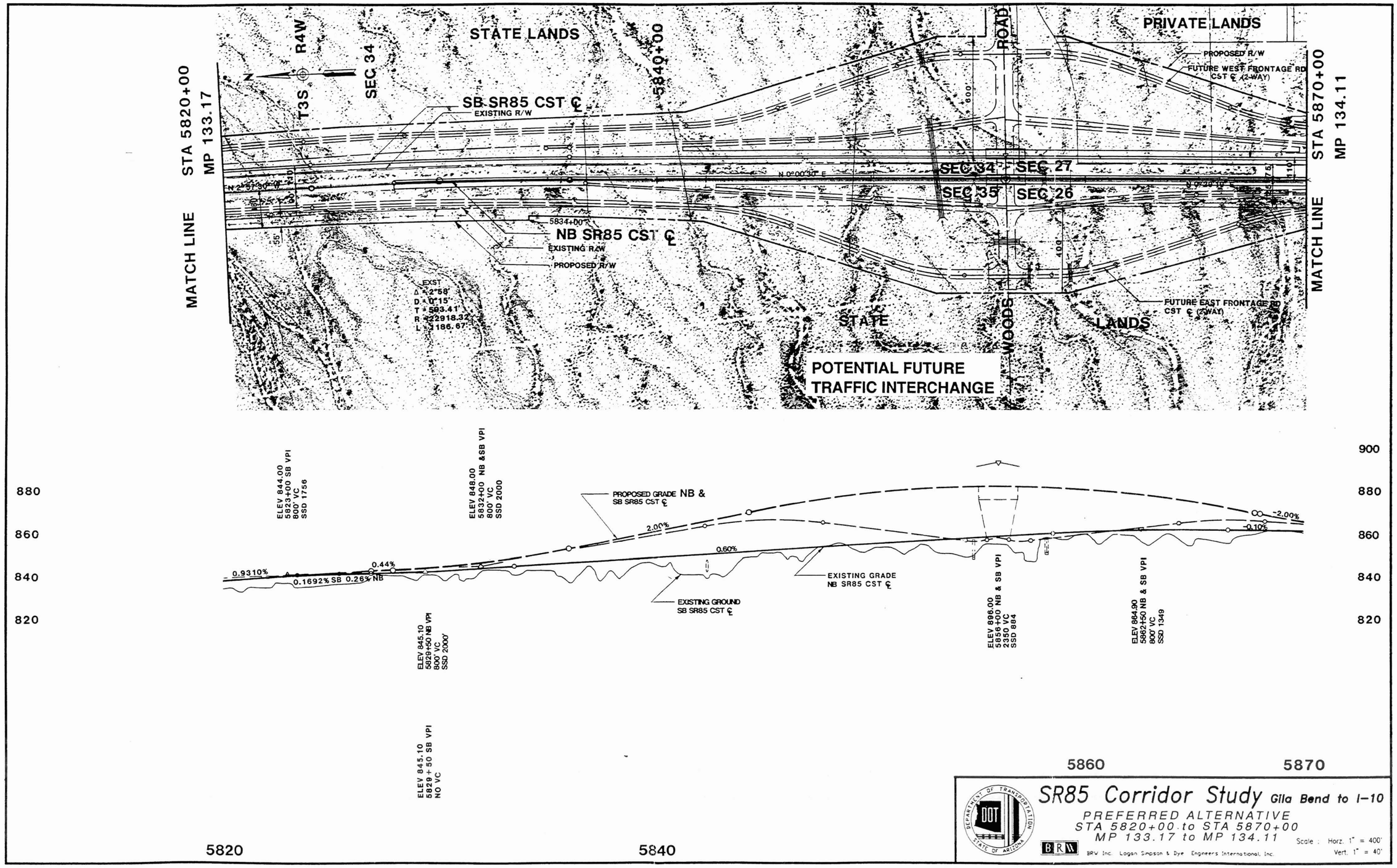


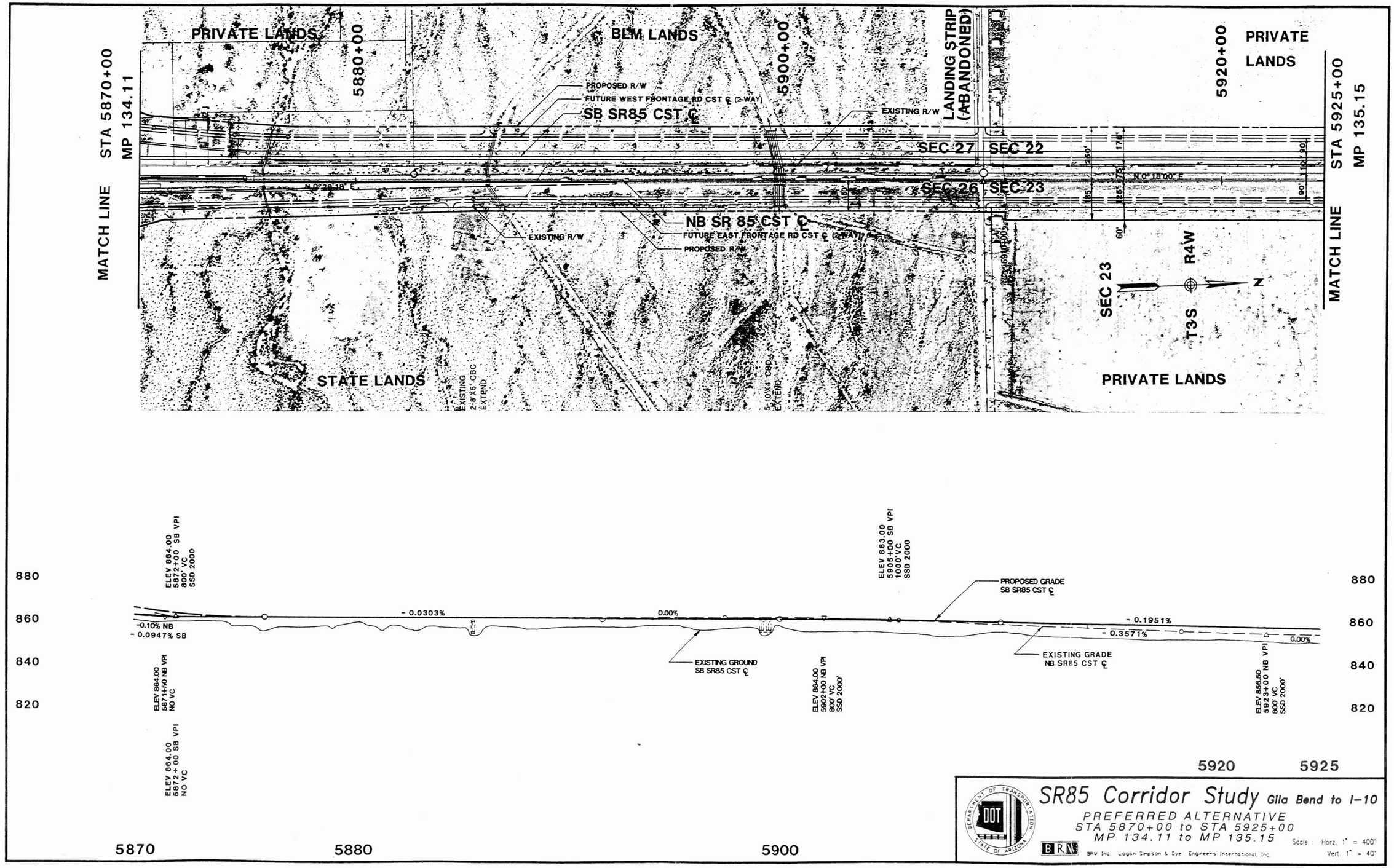
SR85 Corridor Study Gila Bend to I-10

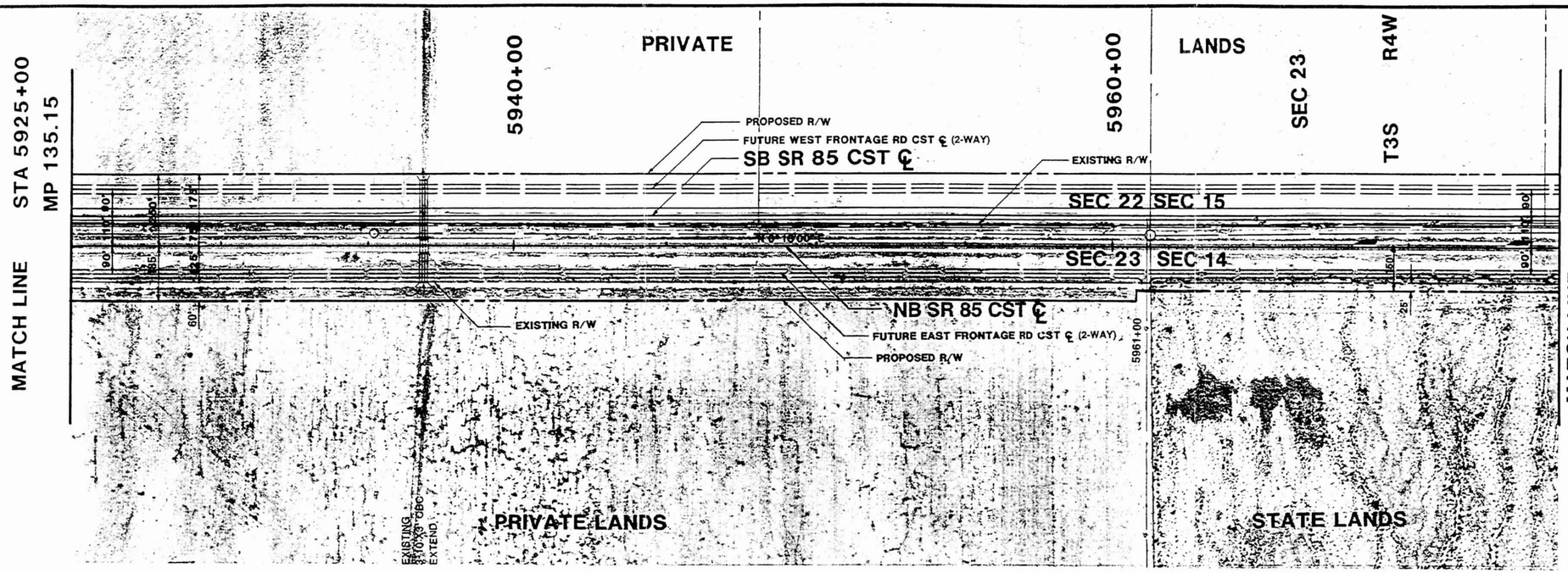
PREFERRED ALTERNATIVE
STA 5763+00 to STA 5820+00
MP 132.09 to MP 133.17

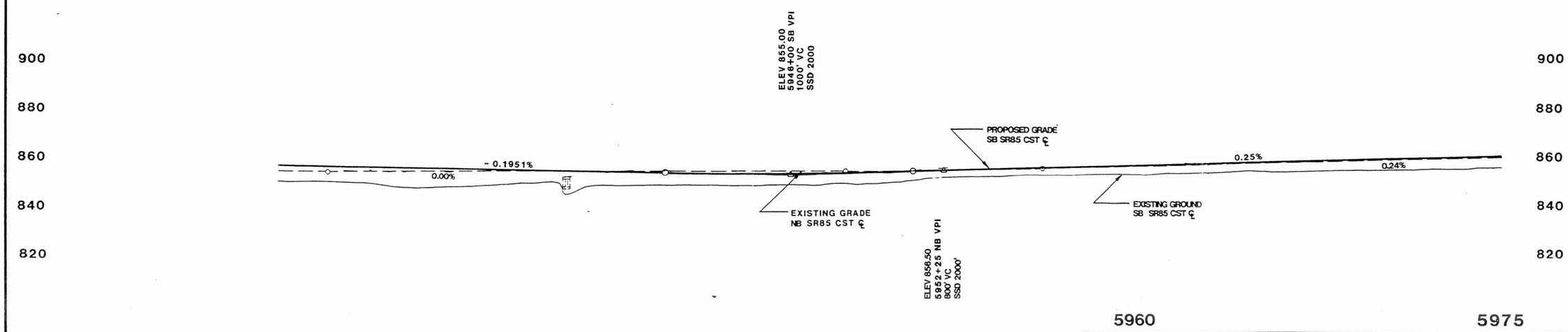
Scale : Horz. 1" = 400'
Vert. 1" = 40'

BRW Inc. Logan Simpson & Dye Engineers International, Inc.


STATE LANDS
PRIVATE LANDS
R4W
T3S
SEC 34
5840+00
ROAD
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
SB SR85 CST ℄
EXISTING R/W
STA 5820+00
MP 133.17
STA 5870+00
MP 134.11
SEC 34
SEC 27
SEC 35
SEC 26
N 0°00'30" E
5834+00
NB SR85 CST ℄
EXISTING R/W
PROPOSED R/W
MATCH LINE
MATCH LINE
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
STATE
WOODS
LANDS
POTENTIAL FUTURE
TRAFFIC INTERCHANGE
ELEV 844.00
5823+00 SB VPI
800' VC
SSD 1756
ELEV 848.00
5832+00 NB &SB VPI
800' VC
SSD 2000
PROPOSED GRADE NB &
SB SR85 CST ℄
2.00%
0.60%
-2.00%
-0.10%
0.9310%
0.44%
0.1692% SB 0.26% NB
EXISTING GRADE
NB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
ELEV 845.10
5829+50 NB VPI
800' VC
SSD 2000'
ELEV 845.10
5829 + 50 SB VPI
NO VC
ELEV 896.00
5856+00 NB & SB VPI
2350 VC
SSD 884
ELEV 864.90
5862+50 NB & SB VPI
800' VC
SSD 1349
880
860
840
820
900
880
860
840
820
5820
5840
5860
5870
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5820+00 to STA 5870+00
MP 133.17 to MP 134.11
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


PRIVATE LANDS
BLM LANDS
5880+00
5900+00
5920+00
PRIVATE LANDS
MATCH LINE STA 5870+00 MP 134.11
STA 5925+00 MP 135.15
MATCH LINE
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
SB SR85 CST ℄
EXISTING R/W
LANDING STRIP (ABANDONED)
SEC 27
SEC 22
SEC 26
SEC 23
N 0° 18' 00" E
NB SR 85 CST ℄
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
PROPOSED R/W
EXISTING R/W
SEC 23
T3S
R4W
STATE LANDS
PRIVATE LANDS
EXISTING 2-8'X5' CBC EXTEND
5-10'X4' CBC EXTEND
ELEV 864.00 5872+00 SB VPI 800' VC SSD 2000
ELEV 864.00 5871+50 NB VPI NO VC
ELEV 864.00 5872+00 SB VPI NO VC
ELEV 863.00 5905+00 SB VPI 1000'VC SSD 2000
ELEV 864.00 5902+00 NB VPI 800' VC SSD 2000'
ELEV 858.50 5923+00 NB VPI 800' VC SSD 2000'
PROPOSED GRADE SB SR85 CST ℄
EXISTING GRADE NB SR85 CST ℄
EXISTING GROUND SB SR85 CST ℄
-0.10% NB
- 0.0947% SB
- 0.0303%
0.00%
- 0.1951%
- 0.3571%
0.00%
880
860
840
820
5870
5880
5900
5920
5925
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5870+00 to STA 5925+00
MP 134.11 to MP 135.15
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.



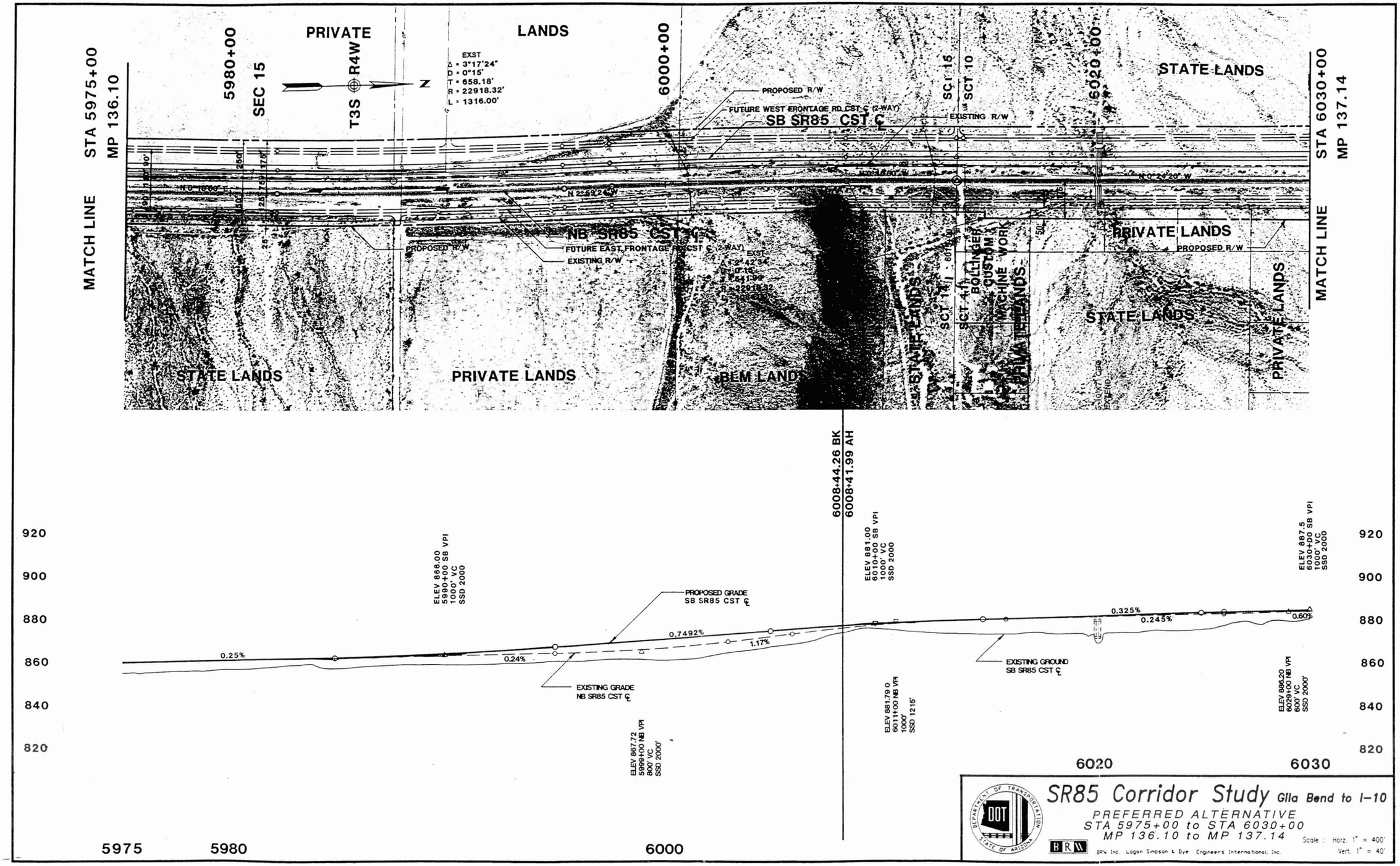


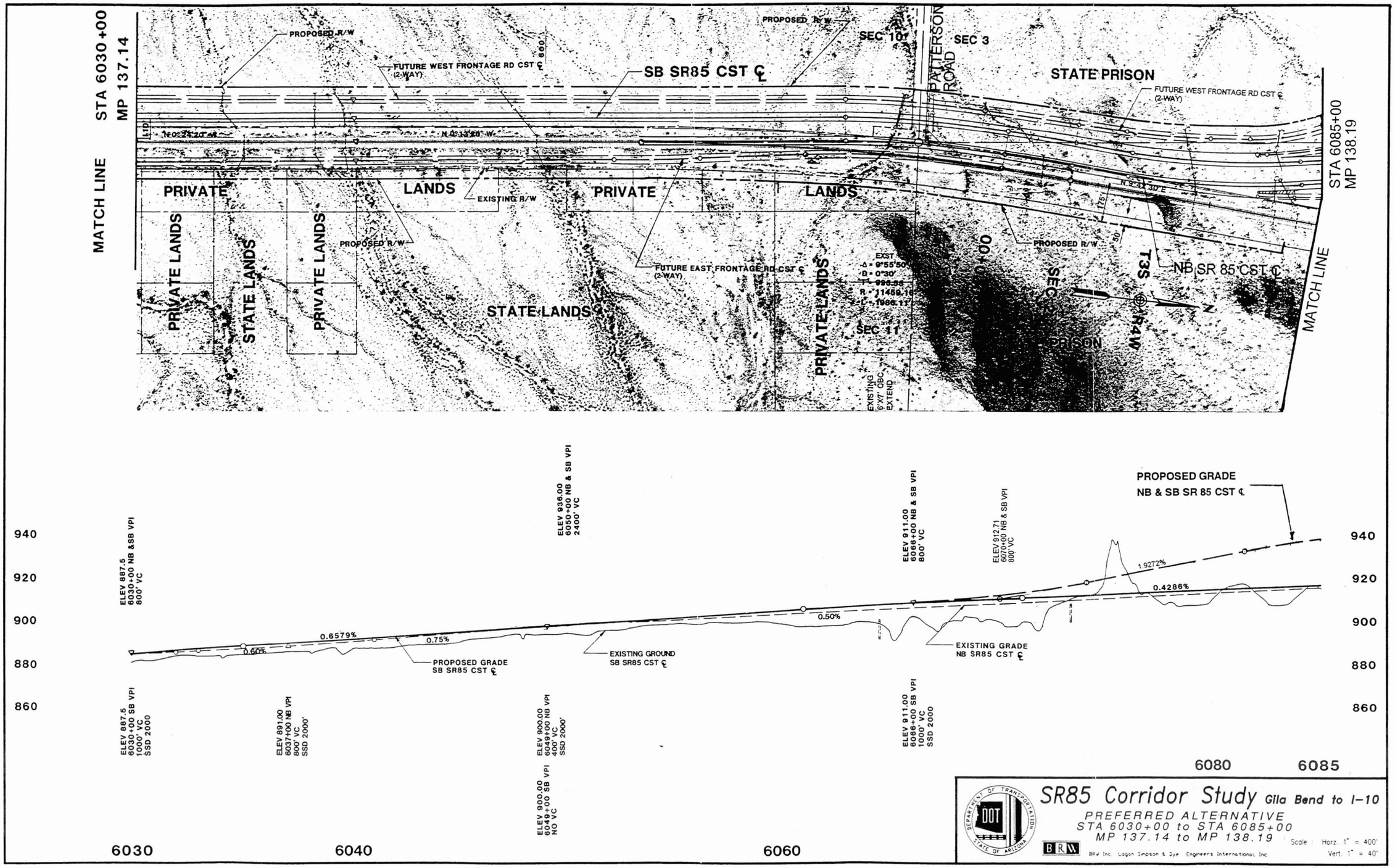
SR85 Corridor Study Gila Bend to I-10

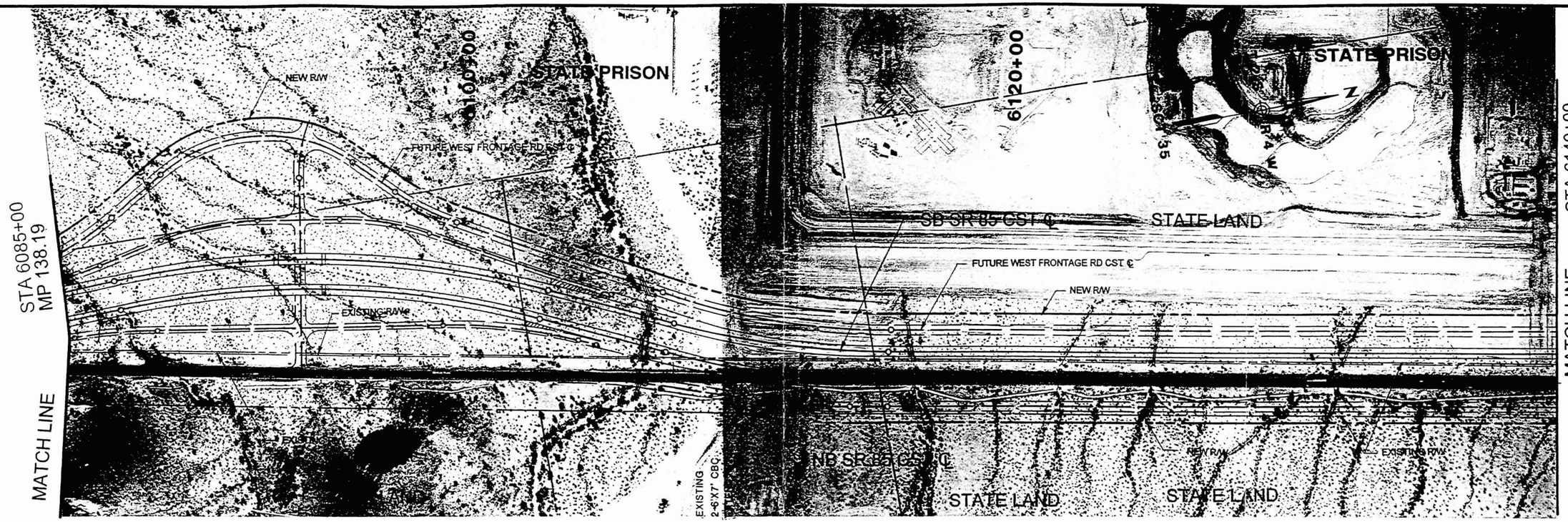
PREFERRED ALTERNATIVE
STA 5925+00 to STA 5975+00
MP 135.15 to MP 136.10

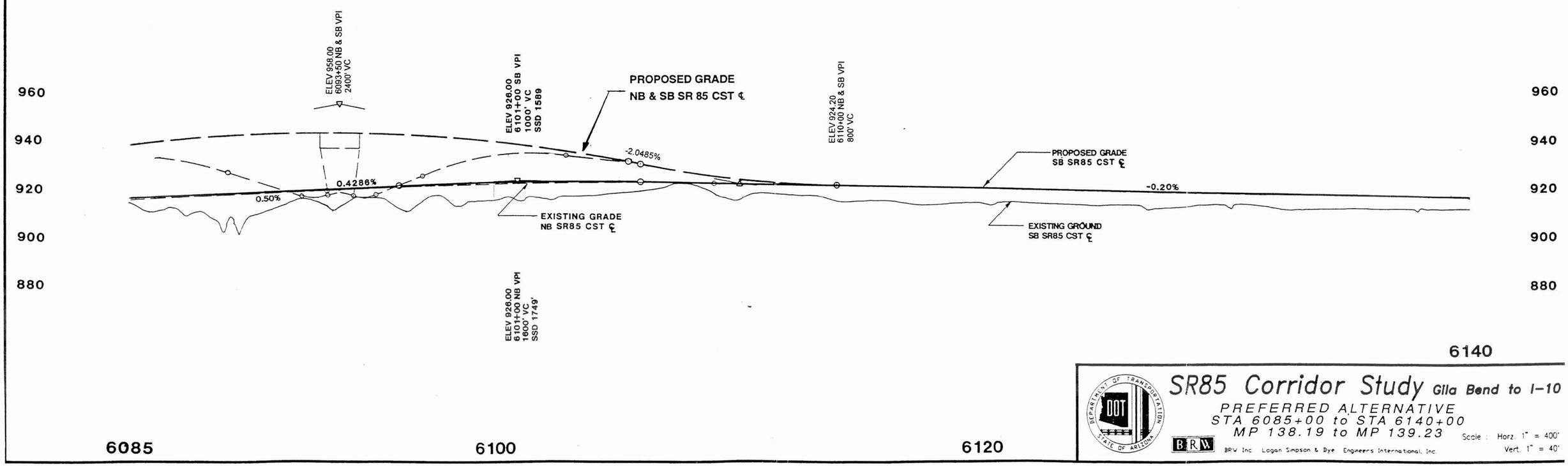
Scale: Horz. 1" = 400'
Vert. 1" = 40'

BRW Inc. Logan Simpson & Dye Engineers International, Inc.


STA 5975+00
MP 136.10
MATCH LINE
5980+00
SEC 15
T3S
R4W
PRIVATE
LANDS
EXST
Δ = 3°17'24"
D = 0°15'
T = 658.18'
R = 22918.32'
L = 1316.00'
6000+00
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST C (2-WAY)
SB SR85 CST ℄
EXISTING R/W
SCT 15
SCT 10
6020+00
STATE LANDS
STA 6030+00
MP 137.14
MATCH LINE
NB SR85 CST ℄
FUTURE EAST FRONTAGE RD CST C (2-WAY)
PROPOSED R/W
EXISTING R/W
STATE LANDS
PRIVATE LANDS
BLM LAND
STATE LANDS
SCT 11
SCT 14
BOLLINGER CUSTOM MACHINE WORK
PRIVATE LANDS
STATE LANDS
PRIVATE LANDS
PROPOSED R/W
6008+44.26 BK
6008+41.99 AH
920
900
880
860
840
820
ELEV 886.00
5990+00 SB VPI
1000' VC
SSD 2000
PROPOSED GRADE
SB SR85 CST ℄
0.7492%
1.17%
0.25%
0.24%
EXISTING GRADE
NB SR85 CST ℄
ELEV 867.72
5999+00 NB VPI
800' VC
SSD 2000'
ELEV 881.00
6010+00 SB VPI
1000' VC
SSD 2000
0.325%
0.245%
0.60%
EXISTING GROUND
SB SR85 CST ℄
ELEV 881.79
6011+00 NB VPI
1000'
SSD 1215'
ELEV 887.5
6030+00 SB VPI
1000' VC
SSD 2000
ELEV 886.20
6029+00 NB VPI
600' VC
SSD 2000'
6020
6030
5975
5980
6000
DEPARTMENT OF TRANSPORTATION
STATE OF ARIZONA
DOT
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 5975+00 to STA 6030+00
MP 136.10 to MP 137.14
BRW
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
Scale : Horz. 1" = 400'
Vert. 1" = 40'


MATCH LINE
STA 6030+00
MP 137.14
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
SB SR85 CST ℄
SEC 10
SEC 3
PATTERSON ROAD
STATE PRISON
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
STA 6085+00
MP 138.19
PRIVATE LANDS
STATE LANDS
PRIVATE LANDS
PRIVATE LANDS
EXISTING R/W
PROPOSED R/W
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
STATE LANDS
PRIVATE LANDS
SEC 11
EXISTING 6'X7' CBC EXTEND
PROPOSED R/W
SEC 2
PRISON
T3S
R4W
NB SR 85 CST ℄
MATCH LINE
PROPOSED GRADE
NB & SB SR 85 CST ℄
ELEV 887.5
6030+00 NB &SB VPI
800' VC
ELEV 936.00
6050+00 NB & SB VPI
2400' VC
ELEV 911.00
6068+00 NB & SB VPI
800' VC
ELEV 912.71
6070+00 NB & SB VPI
800' VC
1.9272%
0.4286%
0.50%
0.6579%
0.75%
0.60%
PROPOSED GRADE
SB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
EXISTING GRADE
NB SR85 CST ℄
ELEV 887.5
6030+00 SB VPI
1000' VC
SSD 2000
ELEV 891.00
6037+00 NB VPI
800' VC
SSD 2000'
ELEV 900.00
6049+00 NB VPI
400' VC
SSD 2000'
ELEV 900.00
6049+00 SB VPI
NO VC
ELEV 911.00
6066+00 SB VPI
1000' VC
SSD 2000
940
920
900
880
860
6030
6040
6060
6080
6085
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6030+00 to STA 6085+00
MP 137.14 to MP 138.19
Scale: Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.



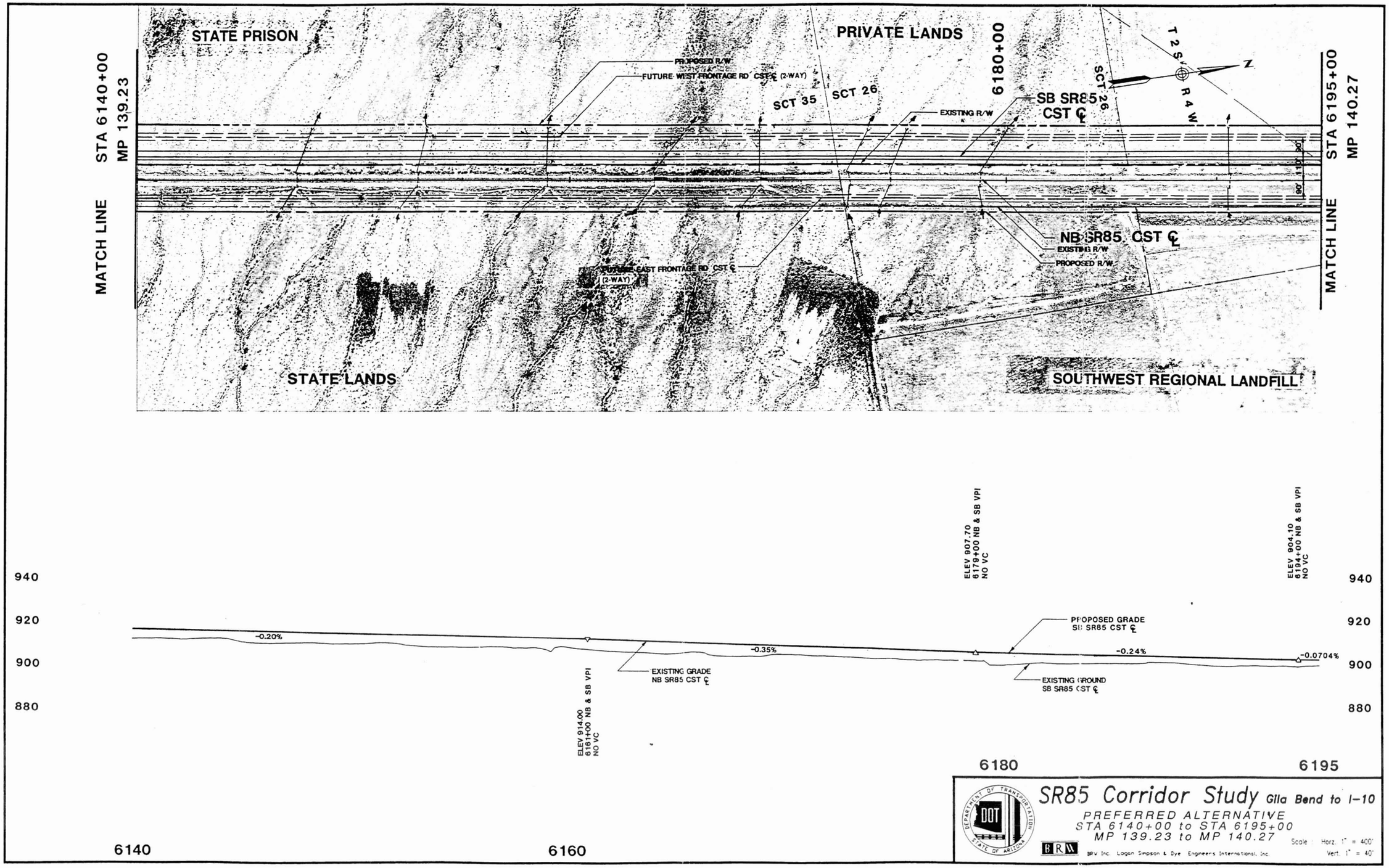


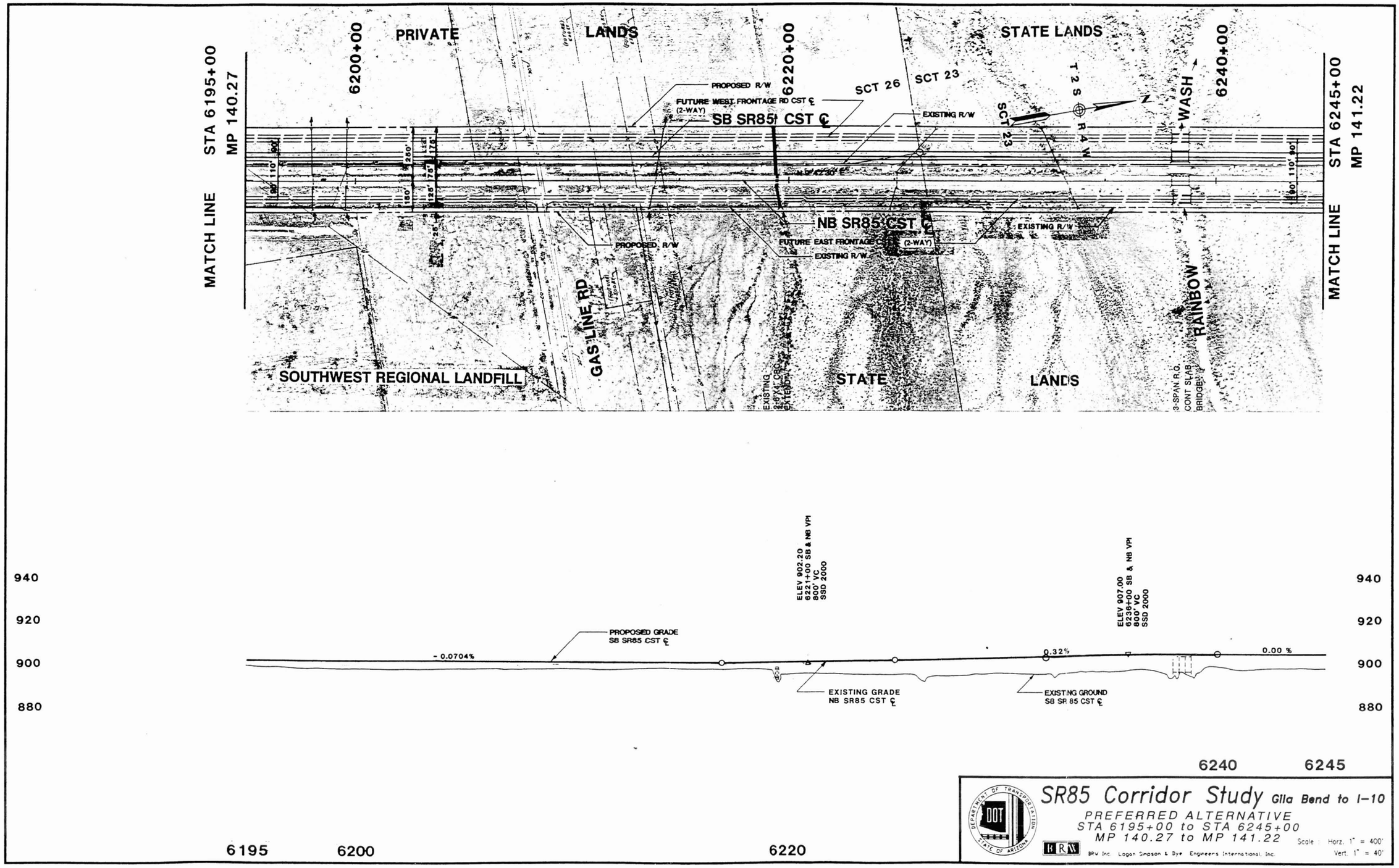
SR85 Corridor Study Gila Bend to I-10

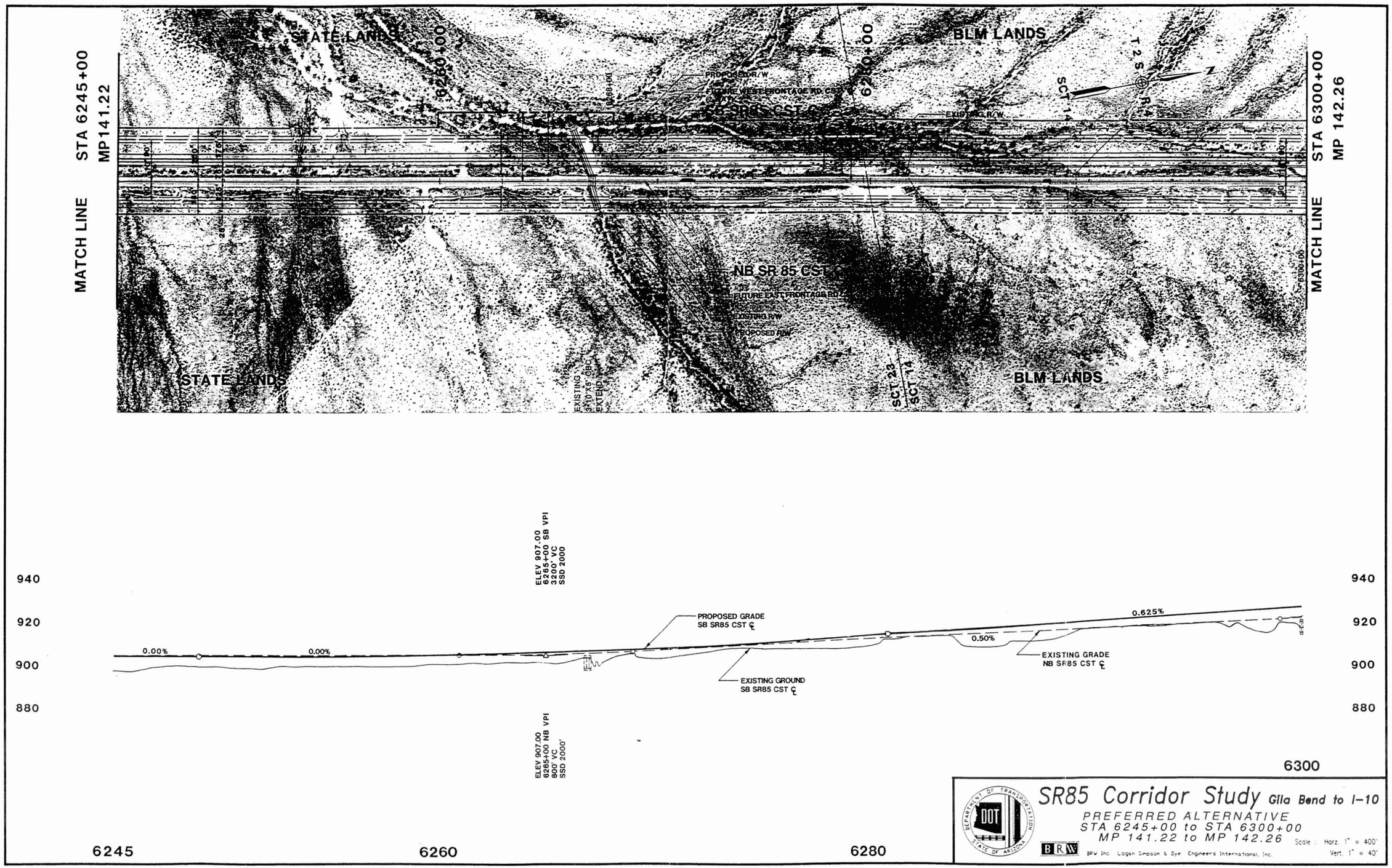
PREFERRED ALTERNATIVE
STA 6085+00 to STA 6140+00
MP 138.19 to MP 139.23

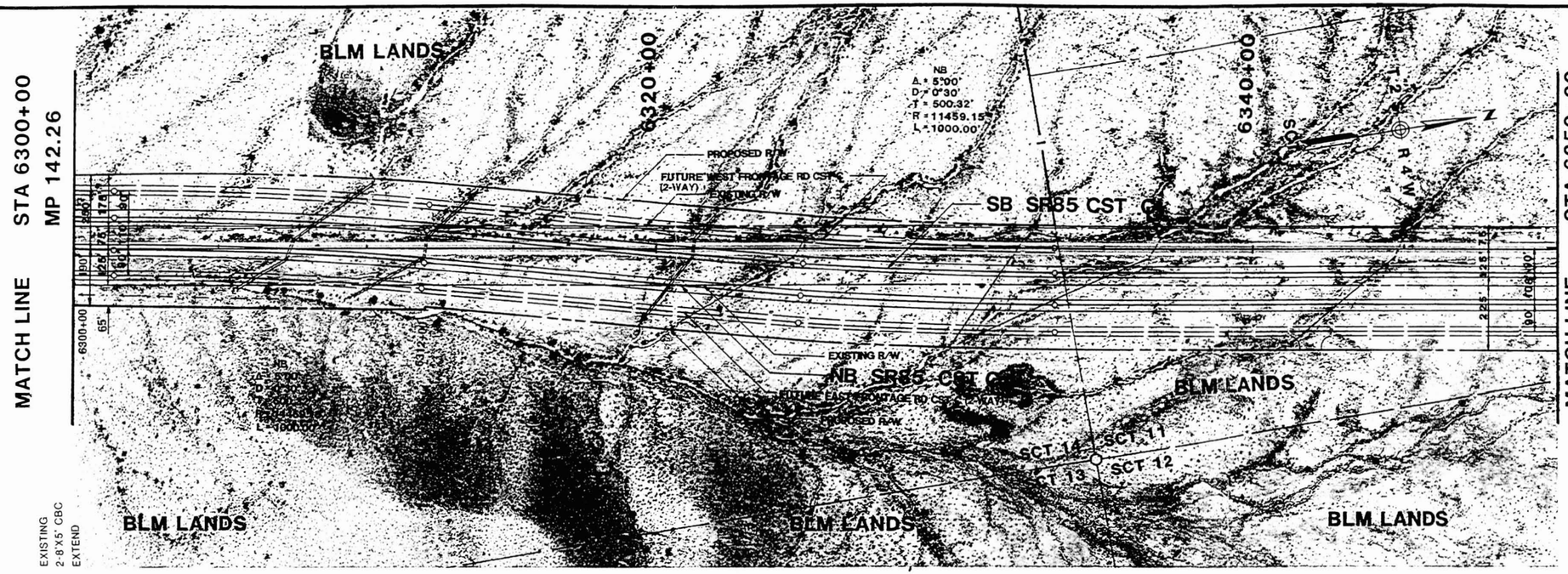
Scale : Horz. 1" = 400'
Vert. 1" = 40'

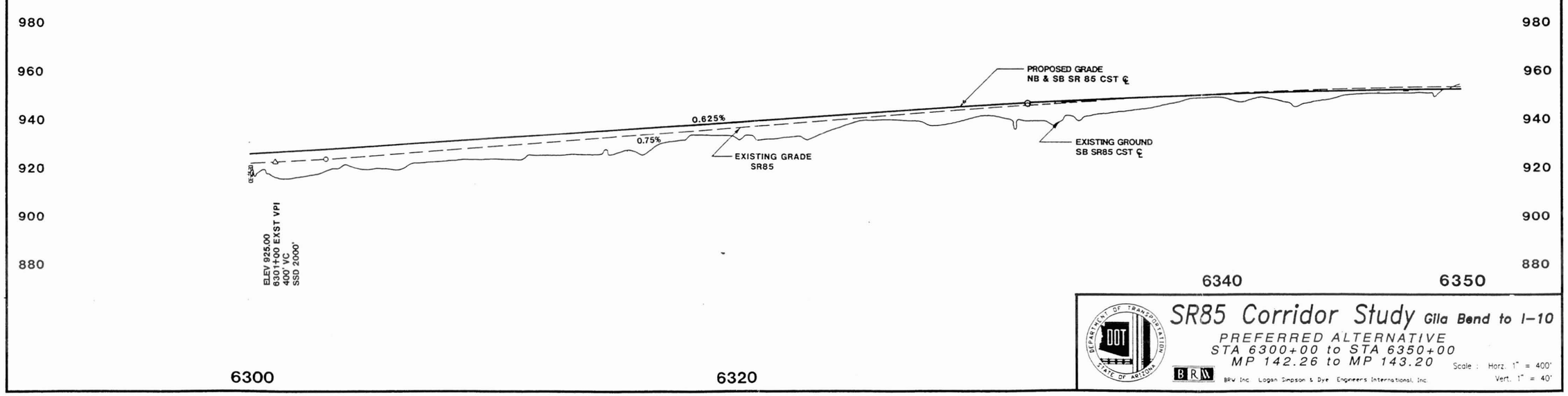
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


STATE PRISON
PRIVATE LANDS
STATE LANDS
SOUTHWEST REGIONAL LANDFILL
MATCH LINE
STA 6140+00
MP 139.23
STA 6195+00
MP 140.27
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
SCT 35
SCT 26
6180+00
EXISTING R/W
SB SR85 CST ℄
NB SR85 CST ℄
EXISTING R/W
PROPOSED R/W
T 2 S
R 4 W
N
ELEV 914.00
6161+00 NB & SB VPI
NO VC
ELEV 907.70
6179+00 NB & SB VPI
NO VC
ELEV 904.10
6194+00 NB & SB VPI
NO VC
940
920
900
880
-0.20%
-0.35%
-0.24%
-0.0704%
EXISTING GRADE
NB SR85 CST ℄
PROPOSED GRADE
SB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
6140
6160
6180
6195
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6140+00 to STA 6195+00
MP 139.23 to MP 140.27
Scale: Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


PRIVATE LANDS
STATE LANDS
6200+00
6220+00
6240+00
STA 6195+00
MP 140.27
STA 6245+00
MP 141.22
MATCH LINE
MATCH LINE
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST ℄
(2-WAY)
SB SR85 CST ℄
SCT 26
SCT 23
SCT 23
EXISTING R/W
T 2 S
R 4 W
WASH
NB SR85 CST ℄
FUTURE EAST FRONTAGE
(2-WAY)
EXISTING R/W
EXISTING R/W
PROPOSED R/W
GAS LINE RD
SOUTHWEST REGIONAL LANDFILL
EXISTING 6'X4' CBC EXTENDED
STATE LANDS
RAINBOW
3-SPAN R.C. CONT SLAB BRIDGE
940
920
900
880
PROPOSED GRADE
SB SR85 CST ℄
- 0.0704%
ELEV 902.20
6221+00 SB & NB VPI
800' VC
SSD 2000
EXISTING GRADE
NB SR85 CST ℄
0.32%
ELEV 907.00
6236+00 SB & NB VPI
800' VC
SSD 2000
EXISTING GROUND
SB SR85 CST ℄
0.00 %
6195
6200
6220
6240
6245
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6195+00 to STA 6245+00
MP 140.27 to MP 141.22
Scale: Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


MATCH LINE
STA 6245+00
MP 141.22
STATE LANDS
6260+00
6280+00
BLM LANDS
T 2 S
R 4
SCT 14
PROPOSED R/W
FUTURE WEST FRONTAGE RD. CST
SB SR85 CST
EXISTING R/W
NB SR 85 CST
FUTURE EAST FRONTAGE RD.
EXISTING R/W
PROPOSED R/W
EXISTING 30'X 15' CBC EXTENDED
SCT 23
SCT 14
STATE LANDS
BLM LANDS
MATCH LINE
STA 6300+00
MP 142.26
940
920
900
880
ELEV 907.00
6265+00 SB VPI
3200' VC
SSD 2000
PROPOSED GRADE
SB SR85 CST ℄
0.625%
0.50%
0.00%
0.00%
EXISTING GRADE
NB SR85 CST ℄
EXISTING GROUND
SB SR85 CST ℄
ELEV 907.00
6265+00 NB VPI
800' VC
SSD 2000'
6245
6260
6280
6300
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6245+00 to STA 6300+00
MP 141.22 to MP 142.26
Scale: Horz. 1" = 400'
Vert. 1" = 40'
DEPARTMENT OF TRANSPORTATION
STATE OF ARIZONA
DOT
BRW Inc. Logan Simpson & Dye Engineers International, Inc.



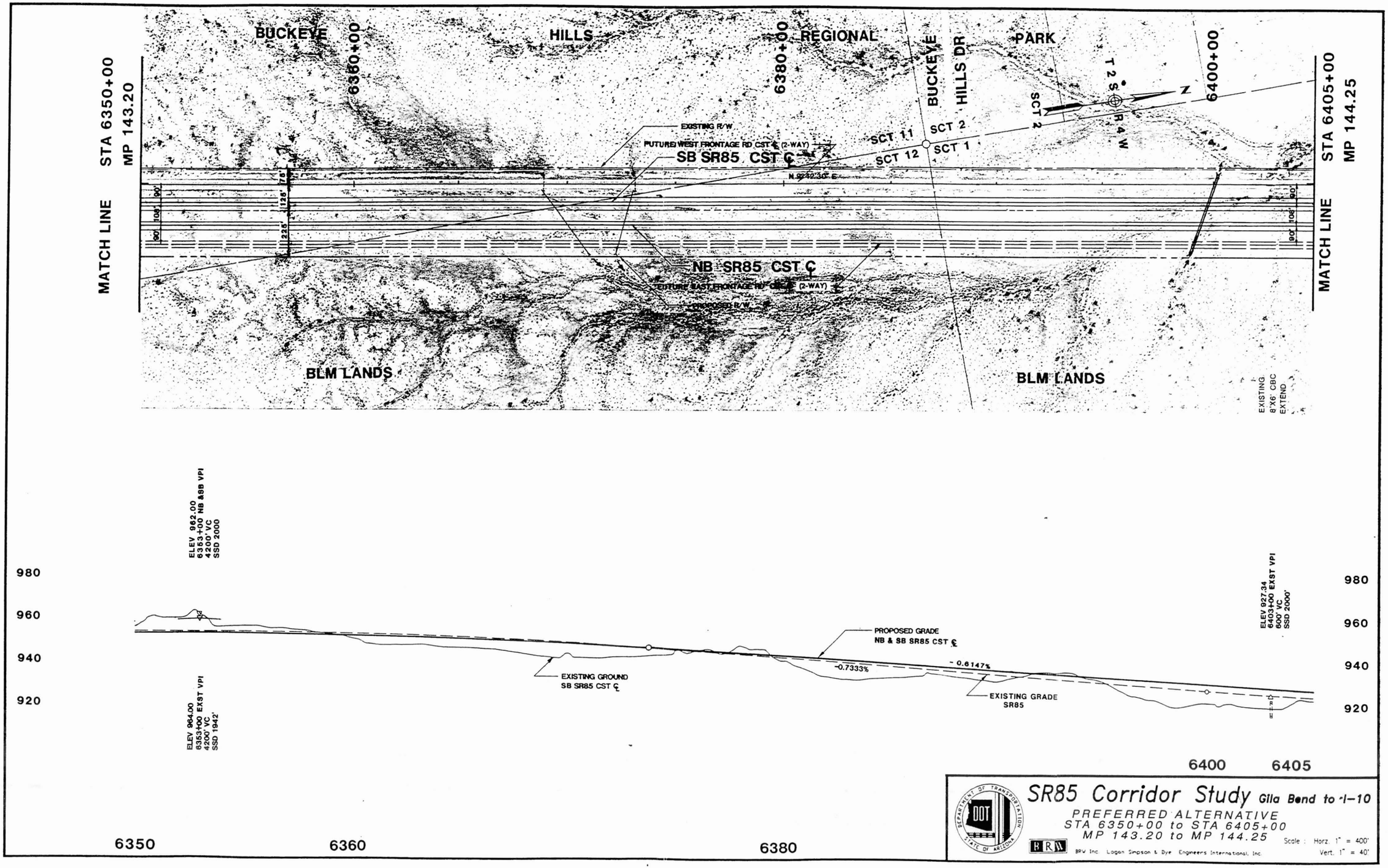


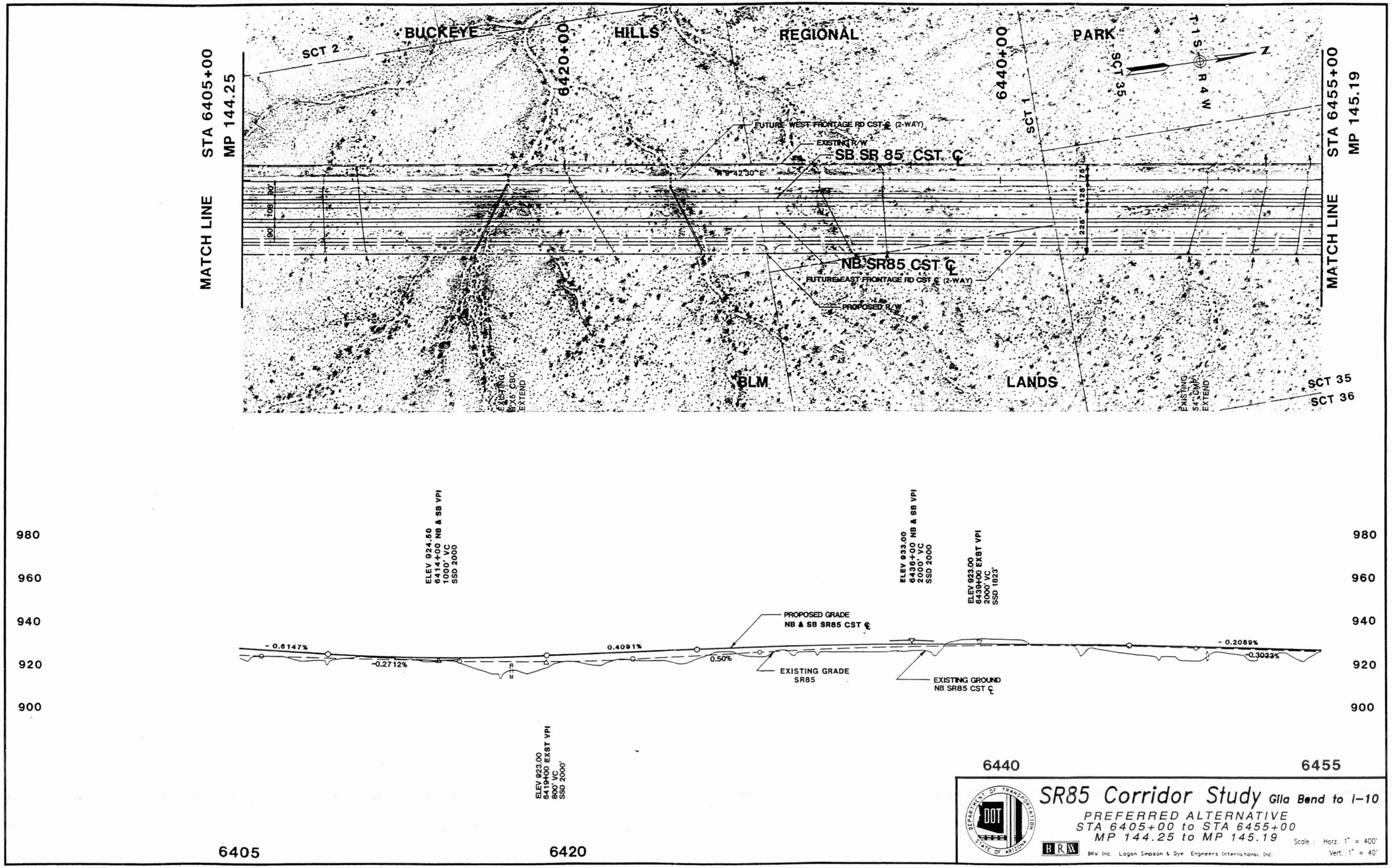
SR85 Corridor Study Gila Bend to I-10

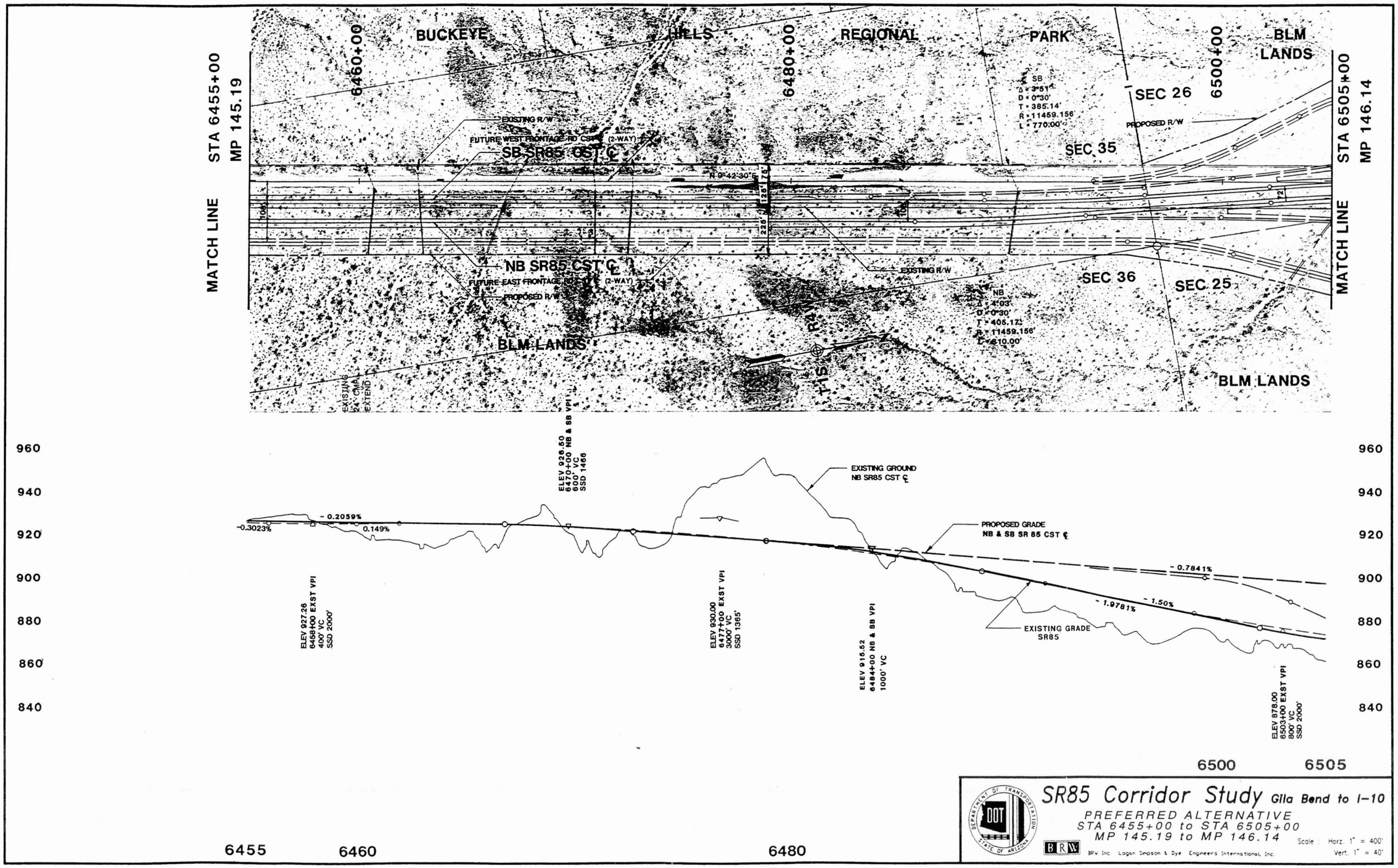
PREFERRED ALTERNATIVE
STA 6300+00 to STA 6350+00
MP 142.26 to MP 143.20

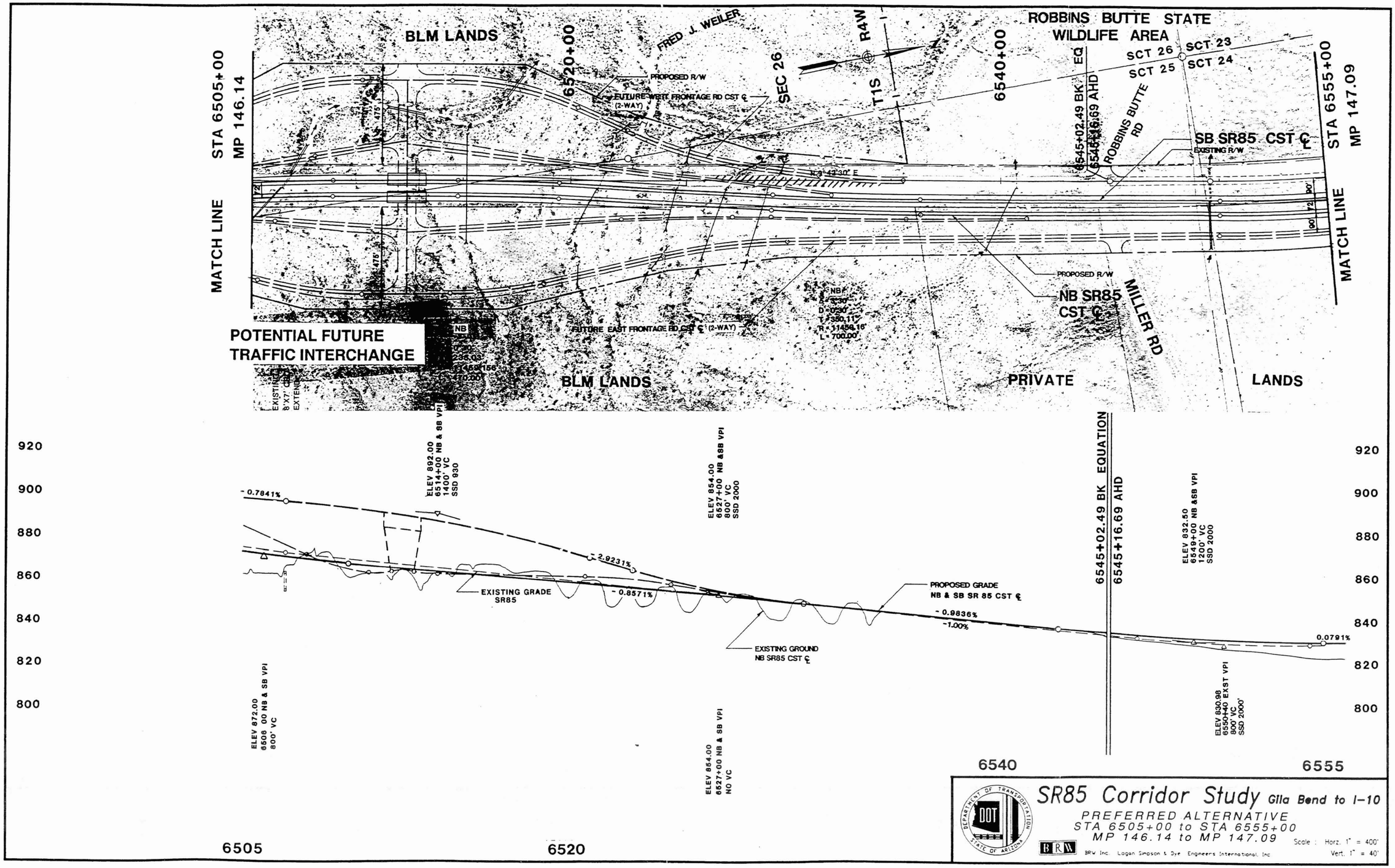
Scale : Horz. 1" = 400'
Vert. 1" = 40'

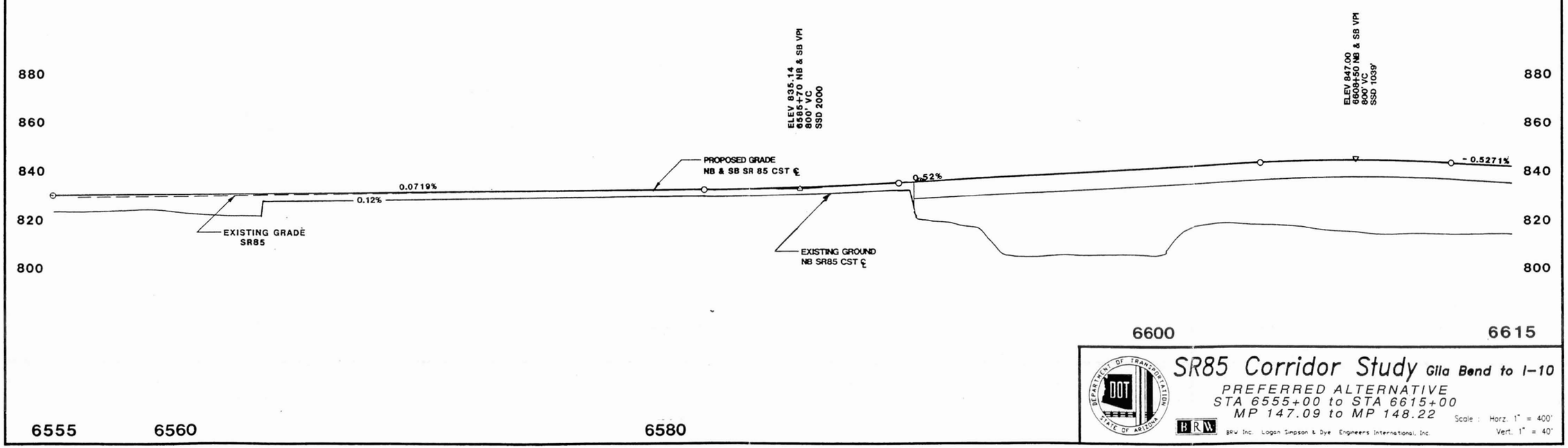
BRW Inc. Logan Simpson & Dye Engineers International, Inc.


BUCKEYE HILLS REGIONAL PARK
BUCKEYE HILLS DR
6360+00
6380+00
6400+00
STA 6350+00
MP 143.20
STA 6405+00
MP 144.25
MATCH LINE
EXISTING R/W
PUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
SB SR85 CST ℄
SCT 11
SCT 12
SCT 2
SCT 1
T 2 S
R 4 W
N
NB SR85 CST ℄
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
PROPOSED R/W
BLM LANDS
EXISTING 8'X6' CBC EXTEND
ELEV 962.00
6353+00 NB &SB VPI
4200' VC
SSD 2000
ELEV 984.00
6353+00 EXST VPI
4200' VC
SSD 1942'
ELEV 927.34
6403+00 EXST VPI
600' VC
SSD 2000'
980
960
940
920
PROPOSED GRADE
NB & SB SR85 CST ℄
-0.7333%
-0.6147%
EXISTING GROUND
SB SR85 CST ℄
EXISTING GRADE
SR85
6350
6360
6380
6400
6405
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6350+00 to STA 6405+00
MP 143.20 to MP 144.25
DEPARTMENT OF TRANSPORTATION STATE OF ARIZONA
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
Scale : Horz. 1" = 400'
Vert. 1" = 40'


BUCKEYE HILLS REGIONAL PARK
SCT 2
6420+00
6440+00
SCT 1
SCT 35
T 1 S
R 4 W
N
MATCH LINE
STA 6405+00
MP 144.25
STA 6455+00
MP 145.19
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
EXISTING R/W
SB SR 85 CST ℄
N 9°42'30" E
NB SR85 CST ℄
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
PROPOSED R/W
EXISTING 8'x6' CBC EXTEND
BLM LANDS
EXISTING 54" CMP EXTEND
SCT 35
SCT 36
980
960
940
920
900
ELEV 924.50
6414+00 NB & SB VPI
1000' VC
SSD 2000
ELEV 933.00
6438+00 NB & SB VPI
2000' VC
SSD 2000
ELEV 923.00
6439+00 EXST VPI
2000' VC
SSD 1823'
PROPOSED GRADE
NB & SB SR85 CST ℄
- 0.6147%
-0.2712%
0.4091%
0.50%
- 0.2059%
-0.3023%
EXISTING GRADE
SR85
EXISTING GROUND
NB SR85 CST ℄
ELEV 923.00
6419+00 EXST VPI
800' VC
SSD 2000'
6405
6420
6440
6455
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6405+00 to STA 6455+00
MP 144.25 to MP 145.19
DEPARTMENT OF TRANSPORTATION
STATE OF ARIZONA
DOT
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
Scale : Horz. 1" = 400'
Vert. 1" = 40'


BUCKEYE HILLS REGIONAL PARK
BLM LANDS
6460+00
6480+00
6500+00
STA 6455+00
MP 145.19
STA 6505+00
MP 146.14
MATCH LINE
EXISTING R/W
FUTURE WEST FRONTAGE RD CSM (2-WAY)
SB SR85 CST ℄
N 9°42'30"
NB SR85 CST ℄
FUTURE EAST FRONTAGE RD CSM (2-WAY)
PROPOSED R/W
BLM LANDS
SB
Δ = 3°51'
D = 0°30'
T = 385.14'
R = 11459.156'
L = 770.00'
SEC 26
SEC 35
SEC 36
SEC 25
NB
Δ = 4°03'
D = 0°30'
T = 405.17'
R = 11459.156'
L = 810.00'
R4
T1S
BLM LANDS
EXISTING 24" CMP EXTEND
ELEV 926.50
6470+00 NB & SB VPI
600' VC
SSD 1466
EXISTING GROUND
NB SR85 CST ℄
PROPOSED GRADE
NB & SB SR 85 CST ℄
-0.3023%
-0.2059%
0.149%
-0.7841%
-1.9781%
-1.50%
EXISTING GRADE
SR85
ELEV 927.26
6458+00 EXST VPI
400' VC
SSD 2000'
ELEV 930.00
6477+00 EXST VPI
300' VC
SSD 1365'
ELEV 915.52
6484+00 NB & SB VPI
1000' VC
ELEV 878.00
6503+00 EXST VPI
900 VC
SSD 2000'
960
940
920
900
880
860
840
6455
6460
6480
6500
6505
DEPARTMENT OF TRANSPORTATION
DOT
STATE OF ARIZONA
BRW
BRW Inc. Logan Simpson & Dye Engineers International, Inc.
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6455+00 to STA 6505+00
MP 145.19 to MP 146.14
Scale: Horz. 1" = 400'
Vert. 1" = 40'


BLM LANDS
FRED J. WEILER
6520+00
PROPOSED R/W
FUTURE WEST FRONTAGE RD CST ℄ (2-WAY)
SEC 26
R4W
T1S
6540+00
ROBBINS BUTTE STATE WILDLIFE AREA
SCT 26
SCT 23
SCT 25
SCT 24
6545+02.49 BK EQ
6545+16.69 AHD
ROBBINS BUTTE RD
SB SR85 CST ℄
EXISTING R/W
STA 6505+00
MP 146.14
STA 6555+00
MP 147.09
MATCH LINE
MATCH LINE
N 3°42'30" E
PROPOSED R/W
NB SR85 CST ℄
MILLER RD
POTENTIAL FUTURE TRAFFIC INTERCHANGE
FUTURE EAST FRONTAGE RD CST ℄ (2-WAY)
BLM LANDS
PRIVATE
LANDS
920
900
880
860
840
820
800
-0.7841%
ELEV 872.00
6506+00 NB & SB VPI
800' VC
ELEV 892.00
6514+00 NB & SB VPI
1400' VC
SSD 930
-2.9231%
-0.8571%
EXISTING GRADE SR85
ELEV 854.00
6527+00 NB & SB VPI
800' VC
SSD 2000
ELEV 854.00
6527+00 NB & SB VPI
NO VC
PROPOSED GRADE
NB & SB SR 85 CST ℄
-0.9836%
-1.00%
EXISTING GROUND
NB SR85 CST ℄
6545+02.49 BK EQUATION
6545+16.69 AHD
ELEV 832.50
6549+00 NB & SB VPI
1200' VC
SSD 2000
0.0791%
ELEV 830.98
6550+40 EXIST VPI
800' VC
SSD 2000'
6505
6520
6540
6555
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6505+00 to STA 6555+00
MP 146.14 to MP 147.09
Scale : Horz. 1" = 400'
Vert. 1" = 40'
BRW Inc. Logan Simpson & Dye Engineers International, Inc.



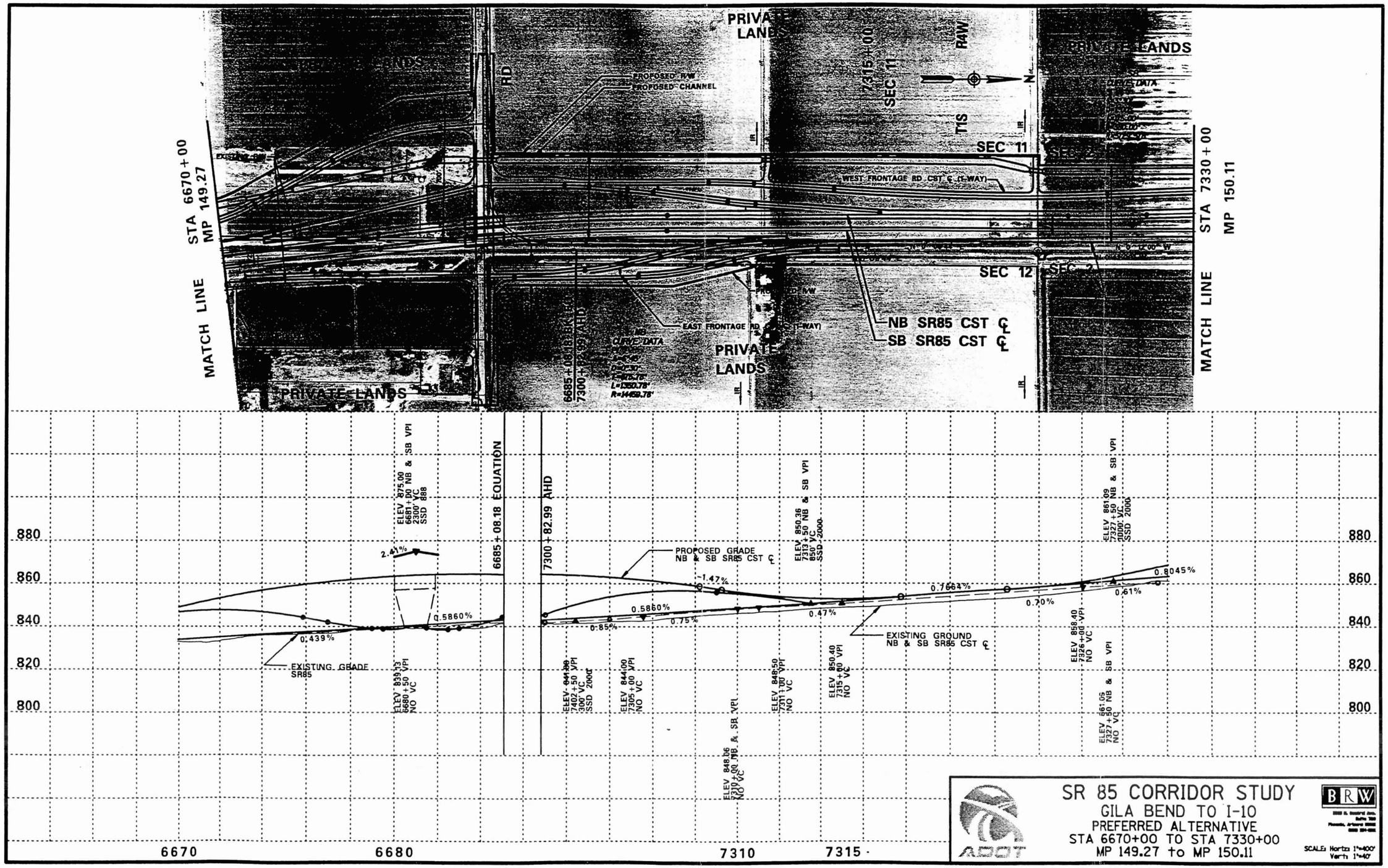
SR85 Corridor Study Gila Bend to I-10

PREFERRED ALTERNATIVE
STA 6555+00 to STA 6615+00
MP 147.09 to MP 148.22

Scale : Horz. 1" = 400'
Vert. 1" = 40'

BRW Inc. Logan Simpson & Dye Engineers International, Inc.

MATCH LINE
STA 6615+00
MP 148.22
EXST
OLD
US 80
PRIVATE LANDS
SCT 11
SCT 14
SCT 12
T 1 S
R 4 W
SCT 11
N
STA 6670+00
MP 149.27
MATCH LINE
PROPOSED R/W
PRIVATE LANDS
6643+22.99 BK EQUATION
6643+26.10 AHD
ELEV 835.14
6631+00 NB & SB VPI
800' VC
SSD 2000'
ELEV 829.14
6662+00 NB VPI
1000' VC
SSD 1750
ELEV 829.14
6662+00 SB VPI
800' VC
SSD 2000'
-0.5271%
-0.1937%
2.41%
0.5866%
PROPOSED GRADE
NB SR85 CST ℄
EXISTING GROUND
NB SR85 CST ℄
EXISTING GRADE
SB SR85 CST ℄
860
840
820
800
780
6615
6620
6640
6660
6670
DEPARTMENT OF TRANSPORTATION
STATE OF ARIZONA
DOT
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 6615+00 to STA 6670+00
MP 148.22 to MP 149.27
BRW Inc. Logan Simpson & Dye Engineers International, Inc
Scale : Horz. 1" = 400'
Vert. 1" = 40'

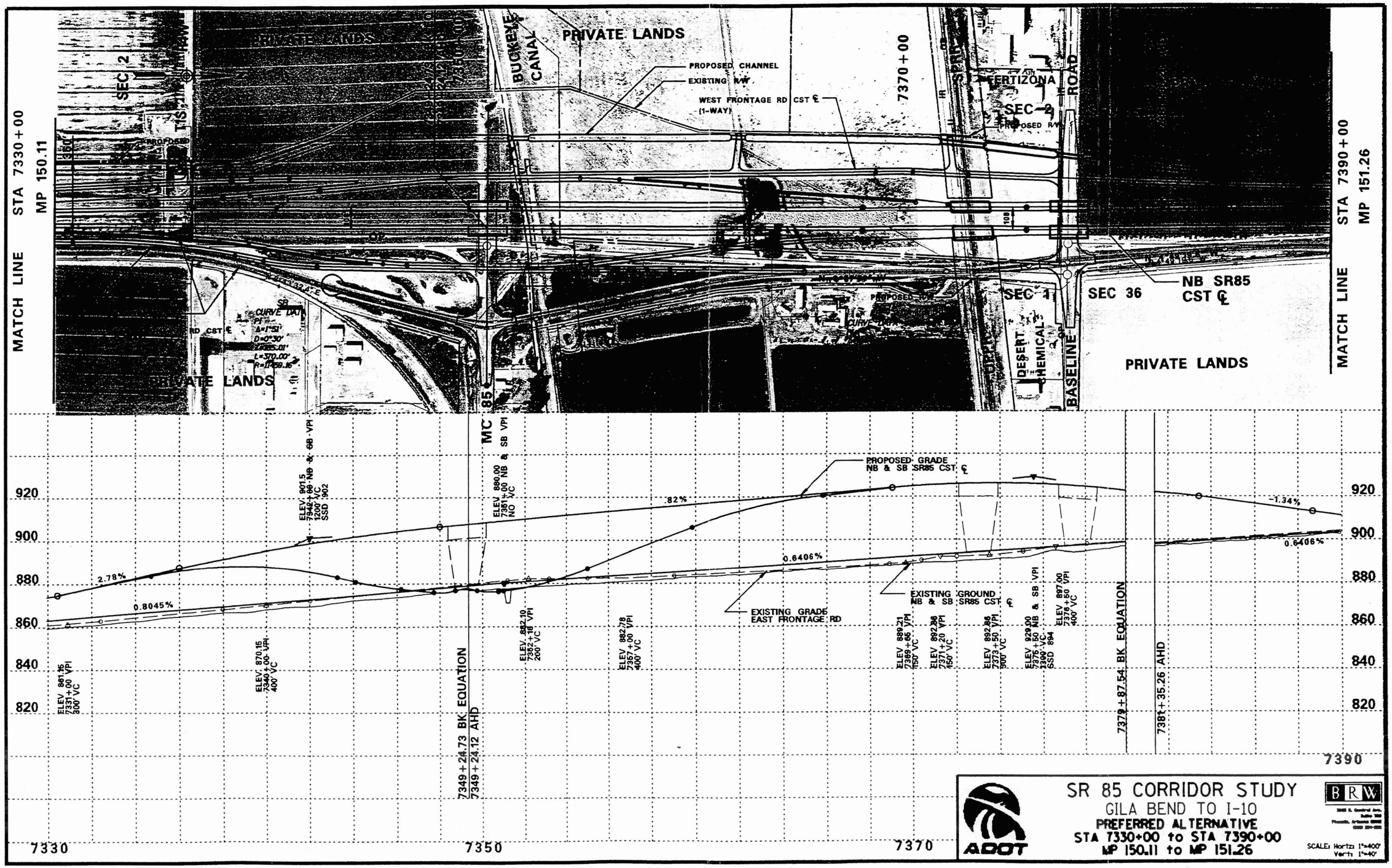


SR 85 CORRIDOR STUDY
GILA BEND TO I-10
PREFERRED ALTERNATIVE
STA 6670+00 TO STA 7330+00
MP 149.27 to MP 150.11

ADOT

BRW

SCALE: Horiz 1"=400'
Vert 1"=40'



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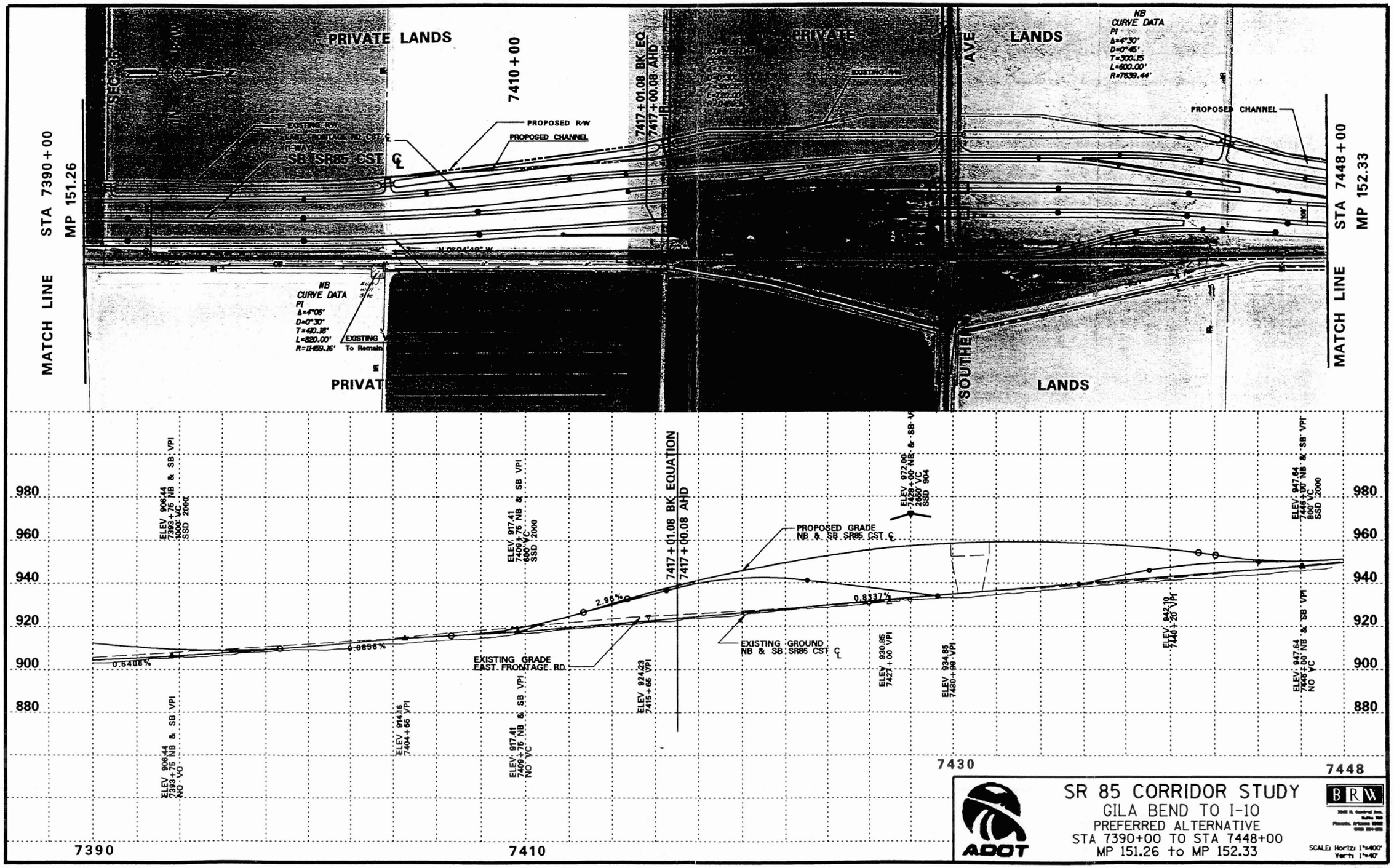

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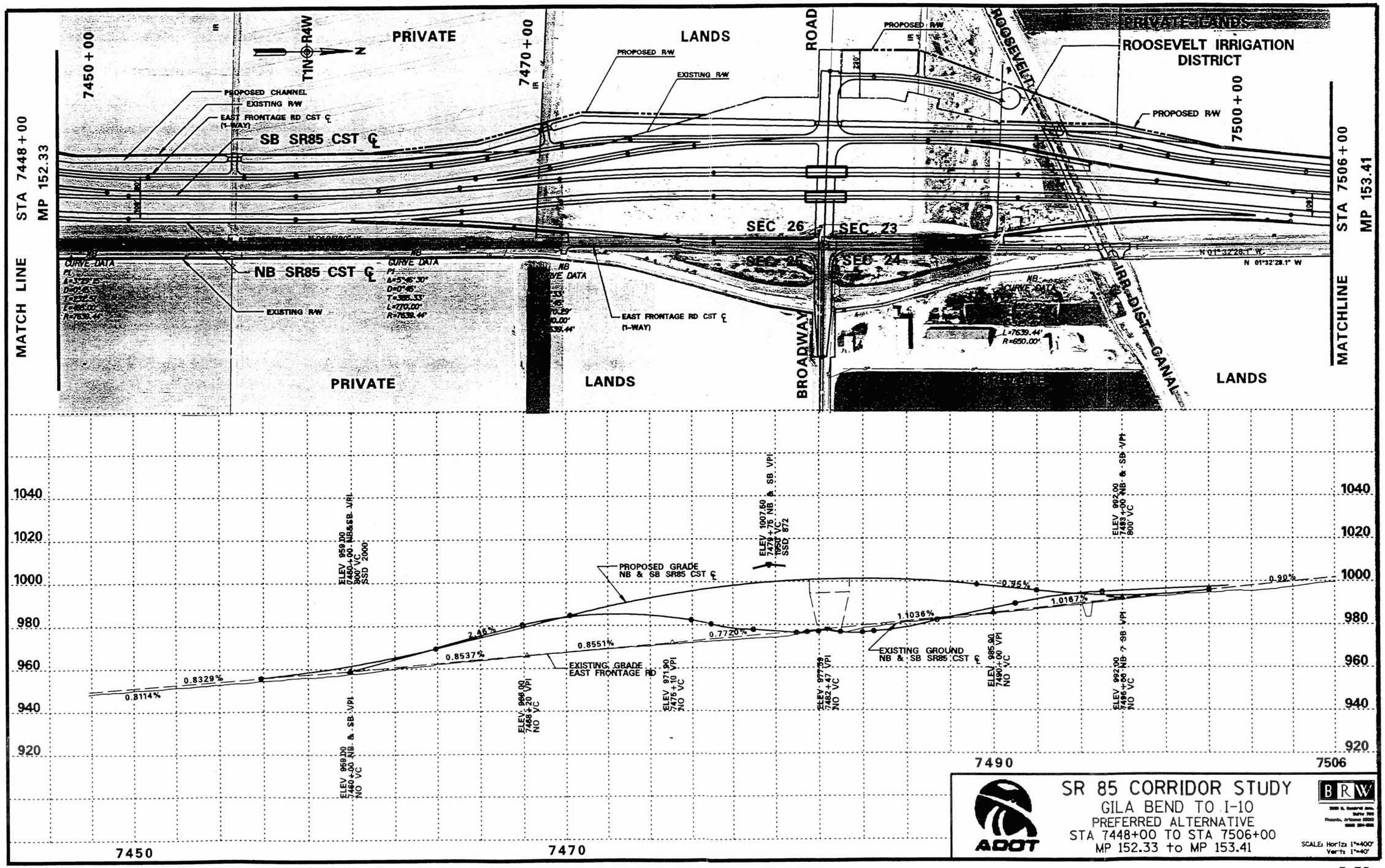

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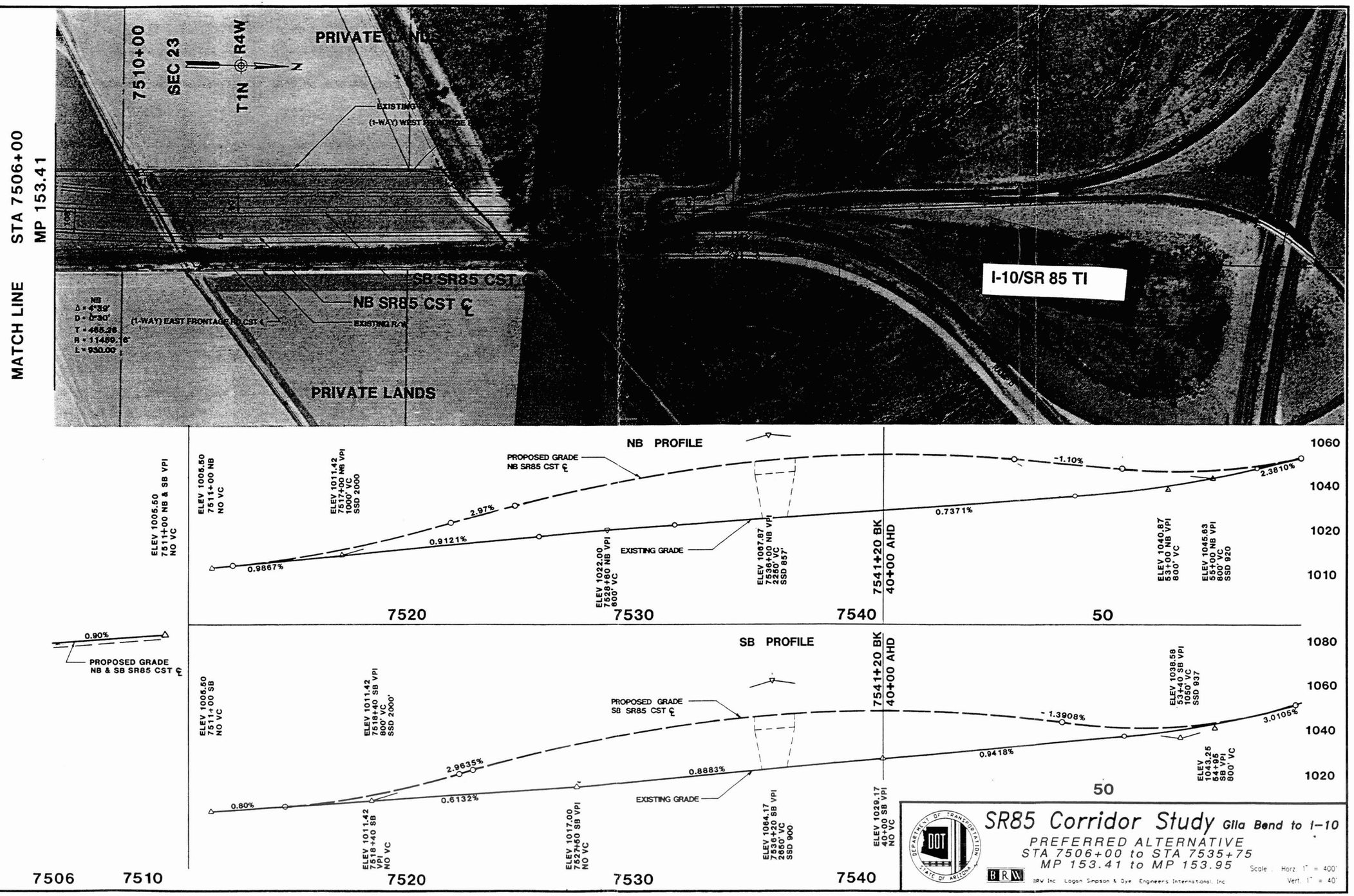
MATCH LINE
STA 7506+00
MP 153.41
7510+00
SEC 23
T1N
R4W
N
PRIVATE LANDS
EXISTING R/W
(1-WAY) WEST FRONTAGE RD CST ℄
SB SR85 CST ℄
NB SR85 CST ℄
NB
Δ = 4°39'
D = 0°30'
T = 465.26
R = 11459.16'
L = 930.00'
(1-WAY) EAST FRONTAGE RD CST ℄
EXISTING R/W
PRIVATE LANDS
I-10/SR 85 TI
NB PROFILE
PROPOSED GRADE NB SR85 CST ℄
EXISTING GRADE
ELEV 1005.50 7511+00 NB & SB VPI NO VC
ELEV 1005.50 7511+00 NB NO VC
ELEV 1011.42 7517+00 NB VPI 1000' VC SSD 2000
ELEV 1022.00 7528+80 NB VPI 600' VC
ELEV 1067.87 7538+00 NB VPI 2250' VC SSD 857'
7541+20 BK 40+00 AHD
ELEV 1040.87 55+00 NB VPI 800' VC
ELEV 1045.63 55+00 NB VPI 800' VC SSD 920
0.9867%
2.97%
0.9121%
0.7371%
-1.10%
2.3810%
1040
1020
1000
980
1060
1040
1020
1010
7520
7530
7540
50
0.90%
PROPOSED GRADE NB & SB SR85 CST ℄
SB PROFILE
PROPOSED GRADE SB SR85 CST ℄
EXISTING GRADE
ELEV 1005.50 7511+00 SB NO VC
ELEV 1011.42 7518+40 SB VPI 800' VC SSD 2000'
ELEV 1011.42 7518+40 SB VPI NO VC
ELEV 1017.00 7527+50 SB VPI NO VC
ELEV 1064.17 7536+20 SB VPI 2850' VC SSD 900
ELEV 1029.17 40+00 SB VPI NO VC
7541+20 BK 40+00 AHD
ELEV 1038.58 53+40 SB VPI 1050' VC SSD 937
ELEV 1043.25 54+95 SB VPI 800' VC
0.80%
2.9635%
0.6132%
0.8883%
0.9418%
-1.3908%
3.0105%
1080
1060
1040
1020
7506
7510
7520
7530
7540
50
DEPARTMENT OF TRANSPORTATION
DOT
STATE OF ARIZONA
SR85 Corridor Study Gila Bend to I-10
PREFERRED ALTERNATIVE
STA 7506+00 to STA 7535+75
MP 153.41 to MP 153.95
Scale: Horz. 1" = 400'
Vert. 1" = 40'
BRW
BRW Inc. Logan Simpson & Dye Engineers International, Inc.

APPENDIX C

Estimated Total Project Costs (Ultimate Construction)

DETAILED ESTIMATE - ULTIMATE CONSTRUCTION
ALTERNATIVE A-1D UNCONTROLLED (B-8 MP 122.83-MP 120.34)

Project TRACS: 085 MA 120 H 3225 01L
Location: Gila Bend to I-10
Route: SR 85; Phoenix - Yuma Highway

ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Removal of Structures and Obstructions	L. Sum	1	$ 20,000.00	$ 20,000.00
Remove Asphaltic Concrete Pavement	SY	1780	$ 4.00	$ 7,120.00
Remove Portland Cement Concrete Pavement	LF	0	$ 9.00	$ -
Roadway Excavation	CY	0	$ 5.00	$ -
Drainage Excavation	CY	0	$ 8.00	$ -
Borrow	CY	53,500	$ 5.00	$ 267,500.00
Aggregate Base	CY	10,350	$ 20.00	$ 207,000.00
Asphaltic Cement (AC-20) (For ACFC)	TON	100	$ 170.00	$ 17,000.00
Asphalt Cement (AC-20) (For 3/4" Mix)	TON	1,850	$ 150.00	$ 277,500.00
Bituminous Tack Coat	TON	69	$ 200.00	$ 13,800.00
Asphalt Concrete (3/4" Mix)	TON	37,005	$ 25.00	$ 925,125.00
Asphaltic Concrete Friction Course	TON	1,670	$ 30.00	$ 50,100.00
Pipe Culvert, 24"	LF	320	$ 50.00	$ 16,000.00
Pipe Culvert, 30"	LF	26	$ 65.00	$ 1,690.00
Pipe Culvert, 36"	LF	338	$ 80.00	$ 27,040.00
Pipe Culvert, 48"	LF	18	$ 110.00	$ 1,980.00
Pipe Culvert, 60"	LF	24	$ 140.00	$ 3,360.00
Pipe Culvert, 72"	LF	14	$ 170.00	$ 2,380.00
Structural Concrete (f'c=3000)	CY	514	$ 200.00	$ 102,800.00
Reinforcing Steel	LB	67,000	$ 0.40	$ 26,800.00
Concrete CB	EA	0	$ 4,000.00	$ -
Bridge Construction	SF	0	$ 55.00	$ -
Signing	L. Sum	1	$ 100,000.00	$ 100,000.00
Pavement Marking	LF	46,950	$ 0.50	$ 23,475.00
Traffic Signal System	L. Sum	1	$ 200,000.00	$ 200,000.00
Roadway Lighting	EA	0	$ 5,000.00	$ -
Guard Rail, W-Beam, Single Face	LF	0	$ 20.00	$ -
Concrete Curb and Gutter	LF	0	$ 10.00	$ -
Concrete Sidewalk (C-05.20)	SF	0	$ 3.00	$ -
Concrete Barrier (Special Half)	LF	100	$ 70.00	$ 7,000.00
Concrete Channel Lining (6")	SY	0	$ 45.00	$ -
Retaining Wall	SF	0	$ 25.00	$ -
Noise Barrier Wall	SF	0	$ 17.00	$ -
Cattleguard (4 Unit)	EA	4	$ 15,000.00	$ 60,000.00
Barbed Wire Game Fence	LF	8000	$ 4.00	$ 32,000.00
Desert Tortoise Fence	LF	0	$ 6.00	$ -
Seeding (Class II)	Acre	16	$ 2,000.00	$ 32,000.00
Subtotal				**$ 2,421,670.00**
Water Supply/Dust Palliative (2%)				$ 48,433.40
Misc. Items (NPDES, QC, Other) (5%)				$ 121,083.50
Maintenance/Protection of Traffic (7%)				$ 169,516.90
Mobilization (7%)				$ 169,516.90
Construction Engineering and Contingencies (30%)				$ 726,501.00
CONSTRUCTION TOTAL				**$ 3,656,721.70**
Final Design Costs (7%)				$ 255,970.52
Utility Relocation Costs				$ -
Right-of-Way Costs				$ 12,500.00
TOTAL PROJECT COST				**$ 3,925,192.22**

DETAILED ESTIMATE - ULTIMATE CONSTRUCTION
ALTERNATIVE B-3 CONTROLLED (SR 85 MP 124.00-MP 146.00)

Project TRACS: 085 MA 120 H 3225 01L
Location: Gila Bend to I-10
Route: SR 85; Phoenix - Yuma Highway

ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Removal of Structures and Obstructions	L. Sum	1	$ 472,000.00	$ 472,000.00
Remove Asphaltic Concrete Pavement	SY	4,500	$ 4.00	$ 18,000.00
Remove Portland Cement Concrete Pavement	LF	0	$ 9.00	$ -
Roadway Excavation	CY	1,500,000	$ 5.00	$ 7,500,000.00
Drainage Excavation	CY	0	$ 8.00	$ -
Borrow	CY	5,000,000	$ 5.00	$ 25,000,000.00
Aggregate Base	CY	273,500	$ 20.00	$ 5,470,000.00
Asphaltic Cement (AC-20) (For ACFC)	TON	580	$ 170.00	$ 98,600.00
Asphalt Cement (AC-20) (For 3/4" Mix)	TON	27,900	$ 150.00	$ 4,185,000.00
Bituminous Tack Coat	TON	800	$ 200.00	$ 160,000.00
Asphalt Concrete (3/4" Mix)	TON	557,300	$ 25.00	$ 13,932,500.00
Asphaltic Concrete Friction Course	TON	9,600	$ 30.00	$ 288,000.00
Pipe Culvert, 24"	LF	10,650	$ 50.00	$ 532,500.00
Pipe Culvert, 30"	LF	2,010	$ 65.00	$ 130,650.00
Pipe Culvert, 36"	LF	8,070	$ 80.00	$ 645,600.00
Pipe Culvert, 48"	LF	8,820	$ 110.00	$ 970,200.00
Pipe Culvert, 60"	LF	5,800	$ 140.00	$ 812,000.00
Pipe Culvert, 72"	LF	330	$ 170.00	$ 56,100.00
Structural Concrete (f'c=3000)	CY	32,374	$ 200.00	$ 6,474,800.00
Reinforcing Steel	LB	4,380,000	$ 0.40	$ 1,752,000.00
Concrete CB	EA	4	$ 4,000.00	$ 16,000.00
Bridge Construction	SF	16,000	$ 55.00	$ 880,000.00
Signing	L. Sum	1	$ 600,000.00	$ 600,000.00
Pavement Marking	LF	340,000	$ 0.50	$ 170,000.00
Traffic Signal System	L. Sum	1	$ 200,000.00	$ 200,000.00
Roadway Lighting	EA	14	$ 5,000.00	$ 70,000.00
Guard Rail, W-Beam, Single Face	LF	65,000	$ 20.00	$ 1,300,000.00
Concrete Curb and Gutter	LF	3,600	$ 10.00	$ 36,000.00
Concrete Sidewalk (C-05.20)	SF	10,000	$ 3.00	$ 30,000.00
Concrete Barrier (Special Half)	LF	120	$ 70.00	$ 8,400.00
Concrete Channel Lining (6")	SY	0	$ 45.00	$ -
Retaining Wall	SF	1,600	$ 25.00	$ 40,000.00
Noise Barrier Wall	SF	0	$ 17.00	$ -
Cattleguard (4 Unit)	EA	88	$ 15,000.00	$ 1,320,000.00
Barbed Wire Game Fence	LF	233,300	$ 4.00	$ 933,200.00
Desert Tortoise Fence	LF	53,000	$ 6.00	$ 318,000.00
Seeding (Class II)	Acre	266	$ 2,000.00	$ 532,000.00
Subtotal				**$ 74,951,550.00**
Water Supply/Dust Palliative (2%)				$ 1,499,031.00
Misc. Items (NPDES, QC, Other) (5%)				$ 3,747,577.50
Maintenance/Protection of Traffic (7%)				$ 5,246,608.50
Mobilization (7%)				$ 5,246,608.50
Construction Engineering and Contingencies (30%)				$ 22,485,465.00
CONSTRUCTION TOTAL				**$ 113,176,840.50**
Final Design Costs (7%)				$ 7,922,378.84
Utility Relocation Costs				$ 2,020,000.00
Right-of-Way Costs				$ 3,920,000.00
TOTAL PROJECT COST				**$ 127,039,219.34**

DETAILED ESTIMATE - ULTIMATE CONSTRUCTION
ALTERNATIVE D-3 CONTROLLED (SR 85 MP 150.20 TO I-10)
Project TRACS: 085 MA 120 H 3225 01L
Location: Gila Bend to I-10
Route: SR 85; Phoenix - Yuma Highway

ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Removal of Structures and Obstructions	L. Sum	1	$ 50,000.00	$ 50,000.00
Remove Asphaltic Concrete Pavement	SY	127,700	$ 4.00	$ 510,800.00
Remove Portland Cement Concrete Pavement	LF	7,200	$ 9.00	$ 64,800.00
Roadway Excavation	CY	38,800	$ 5.00	$ 194,000.00
Drainage Excavation	CY	9,500	$ 8.00	$ 76,000.00
Borrow	CY	2,634,400	$ 5.00	$ 13,172,000.00
Aggregate Base	CY	37,552	$ 20.00	$ 751,040.00
Asphaltic Cement (AC-20) (For ACFC)	TON	279	$ 170.00	$ 47,430.00
Asphalt Cement (AC-20) (For 3/4" Mix)	TON	4,775	$ 150.00	$ 716,250.00
Bituminous Tack Coat	TON	91	$ 200.00	$ 18,200.00
Asphalt Concrete (3/4" Mix)	TON	95,580	$ 25.00	$ 2,389,500.00
Asphaltic Concrete Friction Course	TON	4,636	$ 30.00	$ 139,080.00
Pipe Culvert, 24"	LF	830	$ 50.00	$ 41,500.00
Pipe Culvert, 30"	LF	1,110	$ 65.00	$ 72,150.00
Pipe Culvert, 36"	LF	440	$ 80.00	$ 35,200.00
Pipe Culvert, 48"	LF	0	$ 110.00	$ -
Pipe Culvert, 60"	LF	0	$ 140.00	$ -
Pipe Culvert, 72"	LF	0	$ 170.00	$ -
Structural Concrete (f'c=3000)	CY	1,290	$ 200.00	$ 258,000.00
Reinforcing Steel	LB	197,100	$ 0.40	$ 78,840.00
Concrete CB	EA	36	$ 4,000.00	$ 144,000.00
Bridge Construction	SF	121,860	$ 55.00	$ 6,702,300.00
Signing	LF	43820	$ 45.00	$ 1,971,900.00
Pavement Marking	LF	43820	$ 0.50	$ 21,910.00
Traffic Signal System	L. Sum	0	$ 1,100,000.00	$ -
Roadway Lighting	EA	14	$ 5,000.00	$ 70,000.00
Guard Rail, W-Beam, Single Face	LF	52,800	$ 20.00	$ 1,056,000.00
Concrete Curb and Gutter	LF	21,000	$ 10.00	$ 210,000.00
Concrete Sidewalk (C-05.20)	SF	40,000	$ 3.00	$ 120,000.00
Concrete Barrier (Special Half)	LF	1,020	$ 70.00	$ 71,400.00
Concrete Channel Lining (6")	CY	10,745	$ 30.00	$ 322,350.00
Retaining Wall	SF	6,400	$ 25.00	$ 160,000.00
Noise Barrier Wall	SF	0	$ 17.00	$ -
Cattleguard (4 Unit)	EA	0	$ 15,000.00	$ -
Barbed Wire Game Fence	LF	20,970	$ 4.00	$ 83,880.00
Chain Link Fence, Type I (48")	LF	26,500	$ 8.00	$ 212,000.00
Seeding (Class II)	Acre	87	$ 2,000.00	$ 174,000.00
Subtotal				**$ 29,934,530.00**
Water Supply/Dust Palliative (2%)				$ 598,690.60
Misc. Items (NPDES, QC, Other) (5%)				$ 1,496,726.50
Maintenance/Protection of Traffic (7%)				$ 2,095,417.10
Mobilization (7%)				$ 2,095,417.10
Construction Engineering and Contingencies (30%)				$ 8,980,359.00
CONSTRUCTION TOTAL				**$ 45,201,140.30**
Final Design Costs (7%)				$ 3,164,079.82
Utility Relocation Costs				$ 347,100.00
Right-of-Way Costs				$ 573,600.00
TOTAL PROJECT COST				**$ 49,285,920.12**

APPENDIX D

AASHTO Controlling Design Criteria Report

AASHTO Controlling Design Criteria Report

SR 85

Contract No. 93-55
TRACS No. 085 MA 120 H 3225 01 L
Federal Reference No. F-023-1-420
Gila Bend to I-10
Phoenix - Yuma Highway

October, 1993

Prepared For

ARIZONA DEPARTMENT OF TRANSPORTATION

Prepared By

PLANNING TRANSPORTATION ENGINEERING URBAN DESIGN
BRW, INC. 2700 NORTH CENTRAL AVENUE, SUITE 1000, PHOENIX, AZ 85004

AASHTO CONTROLLING DESIGN CRITERIA REPORT
SR 85

TRACS PROJECT NO.: 085 MA 120 H 3225 01L
FEDERAL REFERENCE NO.: F-023-1-420
GILA BEND TO I-10
PHOENIX - YUMA HIGHWAY

Prepared for:

Arizona Department of Transportation
1739 West Jackson
Phoenix, Arizona 85007

Prepared by:

BRW, Inc.
2700 North Central Avenue, Suite 1000
Phoenix, Arizona 85004

October, 1993

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SUMMARY OF NON-CONFORMING DESIGN FEATURES

Following is a summary of existing project design features that do not meet current AASHTO (1990 Green Book) recommended guidelines:

I-8 FACILITIES

I-8 Mainline EB (MP 114.00 to MP 120.00)

(1) The existing 3.0827 percent gradient is 0.0827 percent greater than the recommended maximum.

(2) The existing vertical curve stopping sight distance is less than the AASHTO recommended 850 feet at the following locations:

a. MP 115.01 to 115.23 - 53 feet less than recommended
b. MP 116.10 to 116.36 - 111 feet less than recommended

(3) The existing horizontal curve superelevation is less than the AASHTO recommended minimum at the following locations:

a. MP 114.11 to 114.43 - 0.033 feet/foot less than recommended
b. MP 114.45 to 115.14 - 0.034 feet/foot less than recommended

(4) The existing structural capacity of the following structures are less than the recommended HS-20 minimum.

a. Structure # 1394 - (HS-12)
b. Structure # 1341 - (HS-19)

(5) The existing bridge rail geometry and bridge rail structure are less than adequate for the following structures:

a. Structure # 1394
b. Structure # 1339
c. Structure # 1341

I-8 Mainline WB (MP 114.00 to MP 120.00)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 850 feet at the following locations:

a. MP 116.36 to 116.10 - 86 feet less than recommended
b. MP 115.29 to 115.06 - 97 feet less than recommended

(2) The existing horizontal curve superelevation is less than the AASHTO recommended 0.054 feet/foot minimum at the following locations:

a. MP 115.14 to 114.44 - 0.033 feet/foot less than recommended
b. MP 114.43 to 114.11 - 0.034 feet/foot less than recommended

(3) The existing structural capacity of the following structures are less than the recommended HS-20 minimum:

a. Structure # 1395 - (HS-13)
b. Structure # 1342 - (HS-19)

(4) The existing bridge rail geometry and bridge rail structure are less than adequate for the following structures:

a. Structure # 1395
b. Structure # 1340
c. Structure # 1342

West Gila Bend TI (MP 115.14)

Ramp 115A (EB Off-Ramp)

(1) The existing horizontal curve superelevation is less than the AASHTO recommended minimum at the following locations:

a. HPI Sta. 2+50.36 - 0.011 feet/foot less than recommended
b. HPI Sta. 9+49.65 - 0.072 feet/foot less than recommended
c. HPI Sta. 16+68.55 - 0.051 feet/foot less than recommended

Ramp 115J (WB On-Ramp)

(1) The existing horizontal curve superelevation is less than the AASHTO recommended minimum at the following locations:

a. HPI Sta. 20+72.15 - 0.051 feet/foot less than recommended
b. HPI Sta. 8+75.37 - 0.011 feet/foot less than recommended

I-8/SR 85 TI (MP 115.62)

Ramp 115C (WB Off-Ramp)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 475 foot minimum at the following locations:

a. VPI Sta. 7+00 - 47 feet less than recommended
b. VPI Sta. 2+00 - 8 feet less than recommended

(2) The existing horizontal curve superelevation is less than the AASHTO recommended 0.044 feet/foot minimum at the following location:

a. HPI Sta. 6+11.73 - 0.024 feet/foot less than recommended

(3) The existing horizontal curvature exceeds the AASHTO recommended 8°15' maximum at the following location:

a. HPI Sta. 1+04.59 - 29°56'50" greater than recommended

Ramp 115G (EB On-Ramp)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 475 foot minimum at the following location:

a. VPI Sta. 6+00 – 26 feet less than recommended

(2) The existing horizontal curve superelevation is less than the AASHTO recommended 0.071 feet/foot minimum at the following location:

a. HPI Sta. 4+72.14 – 0.051 feet/foot less than recommended

SR 85 Crossroad

(1) The existing horizontal curve superelevation is less than the AASHTO recommended 0.021 feet/foot minimum at the following location:

a. HPI Sta. 2147+45.93 – 0.006 feet/foot less than recommended

East Gila Bend TI (MP 119.42)

Ramp 119A (EB Off-Ramp)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 475 foot minimum at the following location:

a. VPI Sta. 22+00 – 50 feet less than recommended

(2) The existing horizontal curve superelevation is less than the AASHTO recommended 0.071 feet/foot minimum at the following location:

a. HPI Sta. 19+73.92 – 0.021 feet/foot less than recommended

Ramp 119C (WB Off-Ramp)

(1) The existing horizontal curvature exceeds the AASHTO recommended 8°15' maximum at the following location:

a. HPI Sta. 3+30 – 3°45' greater than recommended

SB-8 Crossroad

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 475 foot minimum at the following location:

a. VPI Sta. 38+00 – 13 feet less than recommended

SB-8 FACILITIES

SB-8 Rural Undivided (MP 117.79 to MP 118.23)

(1) The existing structural capacity of the following structure is less than the recommended HS-20 minimum:

a. Structure # 0443 - (HS-13)

(2) The existing bridge rail geometry and bridge rail structure is less than adequate for the following structure:

a. Structure # 0702

SB-8 Urban Undivided (MP 118.23 to MP 120.29)

(1) The existing structural capacity of the following structures are less than the recommended HS-20 minimum:

a. Structure # 0444 - (HS-8)
b. Structure # 0465 - (HS-13)

(2) The existing bridge rail geometry and bridge rail structure are less than adequate for the following structures:

a. Structure # 0444
b. Structure # 0465

(3) The existing horizontal curve superelevation is less than the AASHTO recommended 0.021 feet/foot minimum at the following locations:

a. MP 118.41 to 118.56 - 0.006 feet/foot less than recommended
b. MP 118.79 to 118.94 - 0.006 feet/foot less than recommended

Gila Bend TI (MP 120.29 to MP 120.58)

Ramp EB to SB (EB Off-Ramp)

(1) The existing structural capacity of the following structure is less than the recommended HS-20 minimum at the following location:

a. Structure # 0118 - (HS-19)

Ramp NB to WB (WB On-Ramp)

(1) The existing horizontal curvature exceeds the AASHTO recommended 8°15' maximum at the following locations:

a. HPI Sta. 9+61.83 - 10°15' greater than recommended
b. HPI Sta. 3+91.16 - 10°15' greater than recommended

(2) The existing structural capacity of the following structures is less than the recommended HS-20 minimum at the following locations:

a. Structure # 0584 - (HS-14)
b. Structure # 0618 - (HS-19)

SB-8 EB Divided (MP 120.58 to MP 120.99)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 650 foot minimum at the following locations:

a. MP 120.57 to 120.64 - 228 feet less than recommended
b. MP 120.70 to 120.78 - 157 feet less than recommended

SB-8 WB Divided (MP 120.58 to MP 120.99)

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 650 foot minimum at the following locations:

a. MP 120.80 to 120.73 - 193 feet less than recommended
b. MP 120.68 to 120.45 - 159 feet less than recommended

(2) The existing horizontal curve superelevation is less than the AASHTO recommended 0.029 feet/foot minimum at the following locations:

a. MP 120.99 to 120.90 - 0.014 feet/foot less than recommended
b. MP 120.86 to 120.76 - 0.014 feet/foot less than recommended

(3) The existing 3.2 percent gradient is 0.2 percent greater than the AASHTO recommended maximum.

SB-8 Rural Undivided (MP 120.99 to MP 122.52)

(1) The existing horizontal curve superelevation is less than the AASHTO recommended 0.029 feet/foot minimum at the following location:

a. MP 120.99 to 120.90 - 0.014 feet/foot less than recommended

SR 85 FACILITIES

SR 85

(1) The existing horizontal curve superelevation is less than the recommended AASHTO minimum at the following locations:

a. MP 146.98 to 147.20 – 0.009 feet/foot less than recommended
b. MP 148.64 to 148.76 – 0.009 feet/foot less than recommended
c. MP 150.12 to 150.28 – 0.021 feet/foot less than recommended
d. MP 150.32 to 150.38 – 0.022 feet/foot less than recommended

(2) The existing structural capacity of the following structures are less than the AASHTO recommended HS-20 minimum:

a. Structure # 0466 – (HS-16)
b. Structure # 1274 – (HS-19)

Spur 85

(1) The existing vertical curve stopping sight distance is less than the AASHTO recommended 650 foot minimum at the following locations:

a. MP 150.52 to 150.56 – 195 feet less than recommended
b. MP 150.89 to 150.91 – 302 feet less than recommended

(2) The existing horizontal curve superelevation is less than the AASHTO recommended minimum at the following locations:

a. MP 150.68 to 150.76 – 0.032 feet/foot less than recommended
b. MP 150.89 to 150.96 – 0.035 feet/foot less than recommended
c. MP 150.98 to 151.00 – 0.077 feet/foot less than recommended
d. MP 151.14 to 151.23 – 0.006 feet/foot less than recommended
e. MP 153.18 to 153.20 – 0.016 feet/foot less than recommended
f. MP 153.79 to 153.95 – 0.005 feet/foot less than recommended

I-10/Spur 85 TI

Ramp 112G (EB On-Ramp)

(1) The existing horizontal curve superelevation is less than the AASHTO recommended 0.071 feet/foot at the following location:

a. HPI Sta. 15+70.51 – 0.038 feet/foot less than recommended

Ramp 112J (WB On-Ramp)

(1) The existing horizontal curve superelevation is less than the AASHTO recommended 0.071 feet/foot at the following location:

a. HPI Sta. 90+61.74 – 0.038 feet/foot less than recommended

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (DIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** I-8 EB

FUNCTIONAL CLASSIFICATION: Rural Freeway (Interstate)

HIGHWAY SECTION: Yuma - Casa Grande **MILEPOST LIMITS:** 114.00 - 120.00

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Inside Shoulder Width:	4	4
Outside Shoulder Width:	10	10

DESIGN SPEED

The design speed of the highway is 70 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 1

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 2

GRADES

Existing maximum grade is 3.0827%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5% to 2.0%. AASHTO allowable range is 1.5% to 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance
1345	119.42	16'-8"	16'-8"	16'-0"

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
1555	38.0'	31.0'	Yes	Yes	HS20 +	HS20
1558	38.0'	37.5'	Yes	Yes	HS20	HS20
1394	47.7' Min.	47.5'	No	No	HS14	HS20
1339	38.0'	37.5'	No	No	HS20 +	HS20
1341	38.0'	37.5'	No	No	HS19	HS20
1343	38.0'	37.5'	Yes	Yes	HS20 +	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

	MP 114-115	MP 115-119	MP 119-120
ADT (Program Year 1998) =	8925 K=12 %	4125 K=12 %	4925 K=12 %
ADT (Design Year 2018) =	13025 D=56 %	6225 D=56 %	7425 D=56 %
	T=28 %	T=35 %	T=30 %

INTERSECTION SIGHT DISTANCE

Not Applicable - No At-Grade Intersections

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8 EB SUMMARY
ATTACHMENT NO. 1

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
4965+67.52	114.11	114.11	G.B.	-0.0703	-0.0786	G.B.	G.B.	G.B.	G.B.	70
4970+00	114.19	114.19	G.B.	-0.0786	+0.116	G.B.	G.B.	G.B.	G.B.	70
5006+00	114.80	114.95	800(S)	+0.116	+2.4062	2000 +	838	850	99 +	70
5019+00	115.01	115.23	1200(C)	+2.4062	-0.1135	* 797	842	850	68	70
5027+50	115.27	115.27	G.B.	-0.1135	-0.0907	G.B.	G.B.	G.B.	G.B.	70
5048+00	115.66	115.66	G.B.	-0.0907	-0.1742	G.B.	G.B.	G.B.	G.B.	70
5067+00	115.94	116.10	800(S)	-0.1742	+3.0827	1000	844	850	78	70
5078+00	116.10	116.36	1400(C)	+3.0827	-0.3352	* 739	847	850	66	70
5111+00	116.78	116.93	800(C)	-0.3352	-0.673	2000 +	854	850	99 +	70
5121+50	116.98	117.13	800(S)	-0.673	+0.6294	2000 +	854	850	99 +	70
5130+00	117.14	117.29	800(C)	+0.6294	+0.23	2000 +	835	850	99 +	70
5156+00	117.71	117.71	G.B.	+0.23	+0.357	G.B.	G.B.	G.B.	G.B.	70
5176+00	118.01	118.16	800(S)	+0.357	+0.7113	2000 +	833	850	99 +	70
5200+00	118.54	118.54	G.B.	+0.7113	+0.6267	G.B.	G.B.	G.B.	G.B.	70
5215+00	118.82	118.82	G.B.	+0.6267	+0.816	G.B.	G.B.	G.B.	G.B.	70
5240+00	119.30	119.30	G.B.	+0.816	+0.6483	G.B.	G.B.	G.B.	G.B.	70
5252+00	119.52	119.52	G.B.	+0.6483	+0.8150	G.B.	G.B.	G.B.	G.B.	70
144+00 Ahd	119.64	119.64	G.B.	+0.8150	+0.8158	G.B.	G.B.	G.B.	G.B.	70
159+00	119.93	119.93	G.B.	+0.8158	+0.8215	G.B.	G.B.	G.B.	G.B.	70

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break
* = Existing Stopping Sight Distance less than AAHSTO minimum

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8 EB SUMMARY
ATTACHMENT NO. 2

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
4974+33.25	114.11	114.43	0.10	** 0.02	0.053	3°30'	1°28'44.7"	>70	70
5002+97.31	114.45	115.14	0.10	** 0.02	0.054	3°30'	1°31'17.4"	>70	70
5108+79.89	116.67	116.95	0.10	0.015	NC	3°30'	0°14'57.9"	>70	70

NC = Normal Crown
** = Existing Superelevation outside AASHTO Recommended Range of Values

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 16 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
I-8 MP 119.42	1345 E. Gila Bend TI UP	40.0'	H-2-1	Yes	Yes	None	NA	NA	HS20+
		Min. vertical clearance: 16'-8" EB; 17'-0" WB.							
SB-8 MP 118.23	0702 State Rte. 85 op	52.0'	*	No	No	3"	If needed	Not to exceed 2"	HS20+
		N. side: Double rail with parapet & 5' sidewalk S. side: Double rail with parapet & 9" curb } design exception recommended. Min. vertical clearance: 14'-9"							

Reviewed by: Al Y. Ho Date Returned 8-25-93

† 64-0405 7/87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 16 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
I-10 MP 112.75	1725 Oglesby Rd Ramp B UP	26.0'	H-2-1	Yes	Yes	None	NA	NA	HS20
		Min. vertical clearance : 17'-6" EB ; 18'-2" WB.							
I-10 MP 112.83	1727 Oglesby Rd Ramp C OP	26.0'	H-2-1	Yes	Yes	None	NA	NA	HS20
		Min. vertical clearance : 17'-8"							
I-10 MP 112.92	Oglesby Rd Ramp C UP 1726	26.0'	H-2-1	Yes	Yes	None	NA	NA	HS20
		Min. vertical clearance : 17'-9" EB; 20'-4" WB.							

Reviewed by: Al Y. Ho Date Returned 8-25-93

64-0405 7/87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 16 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
SR 85 MP 141.08	0466 Rainbow Wash Bridge	41.8'	Std. Concrete barrier	Yes	Yes	3"	Yes	Yes - Not to exceed 2"	HS16
		The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20.							
SR 85 MP 147.60	1274 Gila River Bridge	40.0'	H-2-1	Yes	Yes	None	NA	NA	HS19
		The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20.							

Reviewed by: Al Y. Ho Date Returned 8-25-93

† 64-0405 7-87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 16 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
Spur 85 MP 150.50	1789 Buckeye Canal Bridge	41.2'	Std. concrete barrier	Yes	Yes	2"±	If needed	*	HS20
		* Thickness of new AC should vary across the deck and should be in accordance with the as built plans.							
Spur 85 MP 153.35	1790 Roosevelt Canal Bridge	41.2'	Std. concrete barrier	Yes	Yes	2"±	No	No	HS20

Reviewed by: Al Y. Ho Date Returned 8-25-93

† ● 64-0405 7/87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 18 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
SB-8 MP 118.15	Wash Bridge 0443	40.0'	W-Beam guardrail	Yes	Yes	6"	No	No	HS 13
		The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20.							
SB-8 MP 119.76	Sand Tank Wash Bridge 0444	64.0'	*	No	No	3"± (varies)	No	No	HS 8
		*Aluminum baluster rail with 5' sidewalk - Rail retrofit recommended. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20.							
SB-8 MP 120.25	Gillespie Canal Bridge 0465	76.0'	*	No	No	2"	If needed	Not to exceed 2"	HS 13
		*Aluminum baluster rail with 5' sidewalk - Rail retrofit recommended. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20.							
SB-8 MP 120.41	Rte. 85 OP WB 0584	31.8'	*	Yes	Yes	None	NA	NA	HS 14
		*Standard concrete barrier - under construction. Min. vert. clearance: 15'-7" EB; 14'-2" WB. Do not reduce further. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS 20.							

Reviewed by: H. Y. Ho Date Returned 9-3-93

• 64-0405 7/87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 18 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
SB-8 MP 120.46	SPRR OP EB 0118	22.1'	*	Yes	Yes	$2\frac{1}{2}$"**	NA	NA	HS 19
		*Standard concrete barrier - under construction. **Under construction. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20. Listed on National Register of Historic Places.							
SB-8 MP 120.46	SPRR OP WB 0618	30.0'	*	Yes	Yes	None	NA	NA	HS 19
		*Standard concrete barrier - Under construction. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS20.							

Reviewed by: Al Y. Ho Date Returned 9-3-93

†• 64-0405 7/87

ATTACHMENT NO. 3
LOCATION SECTION

ADVANCE ENGINEERING SERVICES
DATE 18 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L
Highway: SR 85
Location: Gila Bend to I-10
M.P. Limits: 120.32 to 154.52
Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
I-8 MP 115.14	SB 8 & SPRR OP EB 1555	38.0'	H-2-1	Yes	Yes	None	NA	NA	HS 20+
		Min vert. clearance: 25'+ over SB-8							
I-8 MP 115.14	SB 8 & SPRR OP WB 1556	38.0'	H-2-1	Yes	Yes	None	NA	NA	HS 20+
		Min. vert. clearance: 25'+ over SB-8							
I-8 MP 115.62	Hwy 85 OP WB 1557	38.0'	H-2-1	Yes	Yes	None	NA	NA	HS20
		Min. vert. clearance: 15'-3". Do not decrease further. Some settlement at approach slabs.							
I-8 MP 115.62	Hwy 85 OP EB 1558	38.0'	H-2-1	Yes	Yes	None	NA	NA	HS20
		Min. vert. clearance: 15'-4". Do not decrease further. Some settlement at approach slabs.							

Reviewed by: dl H. Ho Date Returned 9-3-93

† 64-0405 7/87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 18 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
I-8 MP 115.95	Gila Bend Canal Bridge EB 1394	47.7' Min. & varies	Conc. * parapet	No	No	None	NA	NA	HS 14
		*Rail retrofit with standard concrete barrier recommended. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS 20.							
I-8 MP 115.95	Gila Bend Canal Bridge WB 1395	38.0'	Conc. * parapet	No	No	None	NA	NA	HS 13
		* Rail retrofit with standard concrete barrier recommended. The bridge is carrying current traffic loads with no sign of structural distress although rated below HS 20.							
I-8 MP 116.35	TC & GBRR OP EB 1339	38.0'	Conc. * parapet	No	No	None	NA	NA	HS20+
		* Rail retrofit with standard concrete barrier recommended. Retrofit of deck joints at abutments recommended.							
I-8 MP 116.35	TC & GBRR OP WB 1340	38.0'	Conc. * parapet	No	No	None	NA	NA	HS20+
		* Rail retrofit with standard concrete barrier recommended. Retrofit of deck joints at abutments recommended.							

Reviewed by: Ale Y. Ho Date Returned 9-3-93

† 64-0405 7/87

ATTACHMENT NO. 3

LOCATION SECTION

ADVANCE ENGINEERING SERVICES

DATE 18 August 1993

TO: BRIDGE OPERATIONS ENGINEER-MANAGER
STRUCTURES SECTION 613E

FROM: Mr. Harold Shanahan, TEAM LEADER
ADVANCE ENGINEERING SERVICES 050-P

SUBJECT: BRIDGE EVALUATION REQUEST

Project No.: 085 MA 120 H 3225 01 L

Highway: SR 85

Location: Gila Bend to I-10

M.P. Limits: 120.32 to 154.52

Project Description: Corridor Study

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE RAIL			AC OVERLAY			BRIDGE STRUC. CAPAC.
			TYPE	GEOM. OK	STRUC OK	THICK-NESS	REMOVE	REPLACE	
I-8 MP 116.76	Country Rd OP EB 1341	38.0'	Conc. * parapet	No	No	None	NA	NA	HS 19
		* Rail retrofit with standard concrete barrier recommended. Min. vertical clearance: 15'-3" The bridge is carrying current traffic loads with no sign of structural distress although rated below HS 20.							
I-8 MP 116.76	Country Rd OP WB 1342	38.0'	Conc * parapet	No	No	None	NA	NA	HS 19
		* Rail retrofit with standard concrete barrier recommended. Min. vertical clearance: 15'-6" The bridge is carrying current traffic loads with no sign of structural distress although rated below HS 20.							
I-8 MP 117.43	Sand Tanks Wash Bridge EB 1343	38.0'	H-2-1	Yes	Yes	None	NA	NA	HS 20+
I-8 MP 117.43	Sand Tanks Wash Bridge WB 1344	38.0'	H-2-1	Yes	Yes	None	NA	NA	HS20+

Reviewed by: Al Y. Ho Date Returned 9-3-93

† 64-0405 7/87

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (DIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** I-8 WB
FUNCTIONAL CLASSIFICATION: Rural Freeway (Interstate)
HIGHWAY SECTION: Yuma - Casa Grande **MILEPOST LIMITS:** 114.00 - 120.00

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Inside Shoulder Width:	4	4
Outside Shoulder Width:	10	10

DESIGN SPEED

The design speed of the highway is 70 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 4

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 5

GRADES

Existing maximum grade is 2.8546%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5% to 2.0%. AASHTO allowable range is 1.5% to 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance
1345	119.42	17'-0"	17'-0"	16'-0"

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
1556	38.0'	31.0'	Yes	Yes	HS20 +	HS20
1557	38.0'	37.5'	Yes	Yes	HS20	HS20
1395	38.0'	37.5'	No	No	HS13	HS20
1340	38.0'	37.5'	No	No	HS20 +	HS20
1342	38.0'	37.5'	No	No	HS19	HS20
1344	38.0'	37.5'	Yes	Yes	HS20 +	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

	MP 114-115	MP 115-119	MP 119-120
ADT (Program Year 1998) =	8925 K=12 %	4125 K=12 %	4925 K=12 %
ADT (Design Year 2018) =	13025 D=56 %	6225 D=56 %	7425 D=56 %
	T=28 %	T=35 %	T=30 %

INTERSECTION SIGHT DISTANCE

Not Applicable - No At-Grade Intersections

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8 WB SUMMARY
ATTACHMENT NO. 4

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
159+00	119.93	119.93	G.B.	-0.8215	-0.8207	G.B.	G.B.	G.B.	G.B.	70
144+00 Ahd	119.64	119.64	G.B.	-0.8207	-0.8124	G.B.	G.B.	G.B.	G.B.	70
5252+00	119.52	119.52	G.B.	-0.8124	-0.63	G.B.	G.B.	G.B.	G.B.	70
5240+00	119.30	119.30	G.B.	-0.63	-0.8113	G.B.	G.B.	G.B.	G.B.	70
5213+50	118.80	118.80	G.B.	-0.8113	-0.7072	G.B.	G.B.	G.B.	G.B.	70
5179+00	118.22	118.07	800(S)	-0.7072	-0.3573	2000 +	855	850	99 +	70
5156+00	117.71	117.71	G.B.	-0.3573	-0.23	G.B.	G.B.	G.B.	G.B.	70
5130+00	117.29	117.14	800(C)	-0.23	-0.68	1877	855	850	99 +	70
5121+50	117.13	116.98	800(S)	-0.68	+0.7052	2000 +	855	850	99 +	70
5111+00	116.93	116.78	800(C)	+0.7052	+0.34	2000 +	833	850	99 +	70
5078+00	116.36	116.10	1400(C)	+0.34	-2.8546	* 764	906	850	67	70
5065+00	116.10	115.87	1200(S)	-2.8546	+0.1835	1577	906	850	99 +	70
5048+00	115.67	115.67	G.B.	+0.1835	+0.2677	G.B.	G.B.	G.B.	G.B.	70
5021+51.91	115.29	115.06	1200(C)	+0.2677	-2.5546	* 753	899	850	66	70
5009+00	115.01	114.85	800(S)	-2.5546	-0.0804	1650	899	850	99 +	70
4970+00	114.19	114.19	G.B.	-0.0804	+0.062	G.B.	G.B.	G.B.	G.B.	70

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break
* = Existing Stopping Sight Distance less than AAHSTO minimum

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8 WB SUMMARY
ATTACHMENT NO. 5

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
5108+76.41	116.95	116.67	0.10	0.015	NC	3°30'	0°15'02.1"	>70	70
5003+48.81	115.14	114.44	0.10	** 0.02	0.053	3°30'	1°28'44.7"	>70	70
4974+13.25	114.43	114.11	0.10	** 0.02	0.054	3°30'	1°31'17.4"	>70	70

NC = Normal Crown
** = Existing Superelevation outside AASHTO Recommended Range of Values

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 115 A

TRAFFIC INTERCHANGE: West Gila Bend TI

DESCRIPTION: EB Off-Ramp **MILEPOST:** 115.14

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	946.93

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 6

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 6

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
0.2560	NA	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 3100
ADT (Design Year 2018) = 4524

Traffic Factors
K = 12 %
D =100 %
T = 35 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
WEST GILA BEND TI
RAMP 115 A SUMMARY
ATTACHMENT NO. 6

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
10+00	115.14	115.14	800(C)	+0.256	+0.1007	2000 *	460	475	99 *	50

(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
2+50.36	115.14	115.14	0.10	** 0.02	0.031	8°15'	1°30'	>70	50
9+49.65	115.14	115.14	0.10	** 0.02	0.092	8°15'	6°00'	48	50
16+68.55	115.14	115.14	0.10	** 0.02	0.071	8°15'	4°00'	56	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 115 J

TRAFFIC INTERCHANGE: West Gila Bend TI

DESCRIPTION: WB On-Ramp **MILEPOST:** 115.14

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1424.40

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 7

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 7

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
0.6813	0.2923	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)
Not Applicable - No structures over ramp.				

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
Not Applicable - No structures located on ramp.						

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 2579
ADT (Design Year 2018) = 3764

Traffic Factors
K = 12 %
D =100 %
T = 35 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
WEST GILA BEND TI
RAMP 115 J SUMMARY
ATTACHMENT NO. 7

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
19+00	115.14	115.14	1000(S)	-0.2923	+0.6813	2000 *	464	475	99 *	50
10+00	115.14	115.14	800(C)	+0.6813	-0.12	1231	462	475	87	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
20+72.15	115.14	115.14	0.10	** 0.02	0.071	8°15'	4°00'	56	50
8+75.37	115.14	115.14	0.10	** 0.02	0.031	8°15'	1°30'	>70	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 115 C

TRAFFIC INTERCHANGE: I-8/SR 85 TI

DESCRIPTION: WB Off-Ramp **MILEPOST:** 115.62

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	2538.48

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 8

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 8

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
0.1460	4.2140	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 234
ADT (Design Year 2018) = 332

Traffic Factors
K = 12 %
D =100 %
T = 35 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8/SR 85 TI
RAMP 115 C SUMMARY
ATTACHMENT NO. 8

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
7+00	115.62	115.62	600(C)	+0.146	-4.214	* 428	506	475	48	50
2+00	115.62	115.62	300(S)	-4.214	-1.00	* 467	506	475	50	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
* = Existing Stopping Sight Distance less than AASHTO minimum.

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
6+11.73	115.62	115.62	0.10	** 0.02	0.044	8°15'	2°15'	68	50
1+04.59	115.62	115.62	0.10	0.02	#	8°15'	# 38°11'50"	21	50

**. = Existing Superelevation outside AASHTO Recommended Range of Values.
\# = Existing degree of curve exceeds AASHTO Recommended maximum.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 115 G

TRAFFIC INTERCHANGE: I-8/SR 85 TI

DESCRIPTION: EB On-Ramp **MILEPOST:** 115.62

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1424.40

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 9

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 9

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
2.54	0.1346	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 263
ADT (Design Year 2018) = 373

Traffic Factors
K = 12 %
D =100 %
T = 35 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8/SR 85 TI
RAMP 115 G SUMMARY
ATTACHMENT NO. 9

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
1+50	115.62	115.62	200(S)	+1.50	+2.54	2000 *	448	475	99 *	50
6+00	115.62	115.62	400(C)	+2.54	-0.1346	* 449	462	475	49	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
* = Existing Stopping Sight Distance less than AASHTO minimum

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
4+72.14	115.62	115.62	0.10	** 0.02	0.071	8°15'	4°00'	56	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
CROSSROAD SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **MILEPOST:** 115.62

FUNCTIONAL CLASSIFICATION: Rural Arterial

CROSSROAD: SR 85

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Width of Paved Usable Shoulder (each side):	8	8

DESIGN SPEED

The design speed is 60 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 10

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 10

GRADES

Existing maximum grade is 2.9432%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5%. AASHTO allowable range is 1.5%–2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance
0702	115.62	14'-9"	14'-9"	14'-0"
0734	115.62	15'-7"	15'-7"	14'-0"
1557	115.62	15'-3"	15'-3"	14'-0"
1558	115.62	15'-4"	15'-4"	14'-0"

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable – No structures located on Crossroad.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 2463
ADT (Program Year 2018) = 3485

Traffic Factors

K = 12%
D = 56 %
T = 35%

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-8/SR 85 TI
SR 85 CROSSROAD SUMMARY
ATTACHMENT NO. 10

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
2159+00	115.62	115.62	1600(C)	-0.2292	-2.9432	884	491	475	72	50
2171+50	115.62	115.62	700(S)	-2.9432	+2.21	571	491	475	57	50
2178+50	115.62	115.62	600(C)	+2.21	+0.8228	778	148	150	67	25

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
2147+45.93	115.62	115.62	0.10	** 0.015	0.021	8°15'	1°00'	>70	50
NA	115.62	115.62	0.10	0.065	0.059	11°30'	11°30'	>40	25

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 119 A

TRAFFIC INTERCHANGE: East Gila Bend TI

DESCRIPTION: EB Off-Ramp **MILEPOST:** 119.42

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1418.39

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 11

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 11

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
2.9575	NA	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% – 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable – No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable – No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 616
ADT (Design Year 2018) = 929

Traffic Factors
K = 12 %
D =100 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
EAST GILA BEND TI
RAMP 119 A SUMMARY
ATTACHMENT NO. 11

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
18+00	119.42	119.42	400(S)	+0.80	+2.9575	1575	454	475	99 *	50
22+00	119.42	119.42	400(C)	+2.9575	0.00	* 425	461	475	48	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
* = Existing Stopping Sight Distance less than AASHTO minimum

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
9+64.95	119.42	119.42	0.10	0.079	0.057	8°15'	3°00'	>70	50
19+73.92	119.42	119.42	0.10	** 0.05	0.071	8°15'	4°00'	60	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 119 C

TRAFFIC INTERCHANGE: East Gila Bend TI

DESCRIPTION: WB Off-Ramp **MILEPOST:** 119.42

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	22	28	477.47

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 12

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 12

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
0.5755	0.7158	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 2290
ADT (Design Year 2018) = 3452

Traffic Factors
K = 12 %
D =100 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
EAST GILA BEND TI
RAMP 119 C SUMMARY
ATTACHMENT NO. 12

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
14+00	119.42	119.42	800(S)	-0.7158	+0.5755	2000 *	468	475	99 *	50
3+00	119.42	119.42	500(C)	+0.5755	0.00	1416	461	475	95	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
3+30	119.42	119.42	0.10	0.077	#	8°15'	# 12°00'	40	50

= Existing degree of curve exceeds AASHTO recommended maximum.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 119 G

TRAFFIC INTERCHANGE: East Gila Bend TI

DESCRIPTION: EB On-Ramp **MILEPOST:** 119.42

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1424.39

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 13

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 13

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
0.5981	0.90	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) =
ADT (Design Year 2018) =

Traffic Factors
K = 12 %
D =100 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
EAST GILA BEND TI
RAMP 119 G SUMMARY
ATTACHMENT NO. 13

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5+00	119.42	119.42	400(S)	-0.90	+0.5981	2000 *	470	475	99 *	50

(S) = Sag Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
15+27.04	119.42	119.42	0.10	0.093	0.071	8°15'	4°00'	66	50

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** 119 J

TRAFFIC INTERCHANGE: East Gila Bend TI

DESCRIPTION: WB On-Ramp **MILEPOST:** 119.42

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	22	27	946.93

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 14

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 14

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
NA	3.3547	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% – 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable – No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable – No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 534
ADT (Design Year 2018) = 805

Traffic Factors
K = 12 %
D =100 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
EAST GILA BEND TI
RAMP 119 J SUMMARY
ATTACHMENT NO. 14

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5+00	119.42	119.42	800(S)	–3.3547	–0.8513	1600	496	475	99 *	50

(S) = Sag Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
4+79.70	119.42	119.42	0.10	0.10	0.092	8°15'	6°00'	57	50

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
CROSSROAD SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **MILEPOST:** 119.42

FUNCTIONAL CLASSIFICATION: Rural Arterial

CROSSROAD: SB-8

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Width of Paved Usable Shoulder (each side):	8	8

DESIGN SPEED

The design speed is 60 mph. Terrain is rolling.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 15

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 15

GRADES

Existing maximum grade is 3.29%. AASHTO allowable maximum grade is 4.0%.

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5%-2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable - No structures over Crossroad.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
1345	40.0'	28.0'	Yes	Yes	HS20+	HS20

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 2914
ADT (Program Year 2018) = 4393

Traffic Factors

K = 12%
D = 56 %
T = 30%

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
EAST GILA BEND TI
SB-8 CROSSROAD SUMMARY
ATTACHMENT NO. 15

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
15+00	119.42	119.42	400(S)	+1.30	+3.296	2000 *	495	475	99 *	50
27+50	119.42	119.42	1300(C)	+3.296	-2.8947	529	495	475	54	50
38+00	119.42	119.42	400(S)	-2.8947	+0.96	* 462	491	475	50	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
* = Existing Stopping Sight Distance less than AASHTO minimum

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
17+17.33	119.42	119.42	0.10	0.059	0.057	8°15'	3°00'	68	50
33+16.01	119.42	119.42	0.10	0.059	0.057	8°15'	3°00'	68	50

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (UNDIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** SB-8
FUNCTIONAL CLASSIFICATION: Rural Arterial
HIGHWAY SECTION: Gila Bend **MILEPOST LIMITS:** 117.79 - 118.23

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Width of Paved Usable Shoulder (each side):	8	8

DESIGN SPEED

The design speed of the highway is 50 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 16

HORIZONTAL ALIGNMENT AND SUPERELEVATION

Not Applicable - Horizontal Alignment on Tangent

GRADES

Existing maximum grade is 0.6464%. AASHTO allowable maximum grade is 6.0%.

CROSS SLOPE

Existing cross slope is 1.5%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance
1555	115.14 (I-8)	25'+	25'+	16'-0"
1556	115.14 (I-8)	25'+	25'+	16'-0"

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
0443	40.0'	32.0'	Yes	Yes	HS13	HS20
0702	52.0'	52.0'	No	No	HS20+	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 4575
ADT (Design Year 2018) = 6475

Traffic Factors
K = 10 %
D = 57 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 SUMMARY (UNDIVIDED)
ATTACHMENT NO. 16

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5005+00	117.43	117.62	1000(C)	+0.235	-0.365	1626	465	475	99 *	50
5024+00	117.83	117.95	600(S)	-0.365	+0.20	2000 *	465	475	99 *	50
5039+00	118.12	118.23	600(S)	+0.20	+0.6464	2000 *	467	475	99 *	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (UNDIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** SB-8
FUNCTIONAL CLASSIFICATION: Urban Arterial
HIGHWAY SECTION: Gila Bend **MILEPOST LIMITS:** 118.23 - 120.29

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12, 14	10
Width of Paved Usable Shoulder (each side):	0	NA

DESIGN SPEED

The design speed of the highway is 50 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 17

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 18

GRADES

Existing maximum grade is 1.4527%. AASHTO allowable maximum grade is 6.0%.

CROSS SLOPE

Existing cross slope is 1.5% - 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable - No structures over roadway.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
0444	64.0'	64.0'	No	No	HS8	HS20
0465	76.0'	64.0'	No	No	HS13	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

		Traffic Factors
ADT (Program Year 1998)	= 4575	K = 10 %
ADT (Design Year 2018)	= 6475	D = 57 %
		T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 SUMMARY (UNDIVIDED)
ATTACHMENT NO. 17

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5043+00	118.25	118.25	G.B.	+0.6464	+0.3565	G.B.	G.B.	G.B.	G.B.	50
5051+50	118.38	118.44	300(C)	+0.3565	-0.7533	754	468	475	66	50
5056+00	118.44	118.55	600(S)	-0.7533	-0.12	2000 +	468	475	99 +	50
5060+75	118.58	118.58	G.B.	-0.12	+0.0906	G.B.	G.B.	G.B.	G.B.	50
5065+00	118.64	118.68	200(S)	+0.0906	+0.4775	2000 +	466	475	99 +	50
5069+00	118.74	118.74	G.B.	+0.4775	+0.4267	G.B.	G.B.	G.B	G.B.	50
5072+00	118.76	118.83	350(S)	+0.4267	+1.4527	2000 +	475	475	99 +	50
5077+50	118.86	118.94	400(C)	+1.4527	-0.0902	631	475	475	60	50
5084+00	118.98	119.06	400(C)	-0.0902	-1.1229	845	472	475	70	50
5087+50	119.06	119.12	300(S)	-1.1229	+0.136	2000 +	472	475	99 +	50
5092+50	119.14	119.22	400(S)	+0.136	+0.9636	2000 +	470	475	99 +	50
5095+25	119.22	119.25	150(C)	+0.9636	-0.58	506	470	475	53	50
5096+75	119.25	119.28	150(S)	-0.58	-0.0962	2000 +	467	475	99 +	50
5099+00	119.29	119.32	150(S)	-0.0962	+0.2041	2000 +	463	475	99 +	50
5101+00	119.33	119.36	150(C)	+0.2041	-0.1231	2000 +	463	475	99 +	50
5103+60	119.38	119.41	150(C)	-0.1231	-1.0909	760	472	475	67	50
5105+80	119.42	119.45	150(S)	-1.0909	+0.9048	1455	472	475	96	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 SUMMARY (UNDIVIDED)
ATTACHMENT NO. 17 (CONT.)

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5110+00	119.49	119.54	300(C)	+0.9048	-0.5667	605	470	475	58	50
5116+00	119.58	119.68	500(S)	-0.5667	+0.317	2000 *	466	475	99 *	50
5122+31	119.75	119.75	G.B.	+0.317	+0.092	G.B.	G.B.	G.B.	G.B.	50
5123+94	119.78	119.78	G.B.	+0.092	+0.15	G.B.	G.B.	G.B.	G.B.	50
5130+50	119.91	119.91	G.B.	+0.15	+0.0617	G.B.	G.B.	G.B.	G.B.	50
5142+00	120.09	120.17	400(S)	+0.0617	+1.10	2000 *	472	475	99 *	50
5145+00	120.17	120.21	200(S)	+1.10	+1.3838	2000 *	475	475	99 *	50
5148+70	120.25	120.28	150(C)	+1.3838	+0.44	782	475	475	67	50
5149+45	120.28	120.28	G.B.	+0.44	+0.66	G.B.	G.B.	G.B.	G.B.	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 SUMMARY (UNDIVIDED)
ATTACHMENT NO. 18

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
5055+70.67	118.41	118.56	0.10	** 0.015	0.021	8°15'	1°00'	>70	50
5075+86.47	118.79	118.94	0.10	** 0.015	0.021	8°15'	1°00'	>70	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** EB to SB

TRAFFIC INTERCHANGE: Gila Bend TI

DESCRIPTION: EB Off-Ramp **MILEPOST:** 120.29 - 120.58

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	943.93

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

Not Applicable - No As-Built Drawing for Vertical Alignment.

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 19

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
Not Available	Not Available	8	8

CROSS SLOPE

Existing cross slope is Unknown. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
0118	22.1'	22.0'	Yes	Yes	HS19	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = Not Available
ADT (Design Year 2018) = Not Available

Traffic Factors

K = Not Available
D = Not Available
T = Not Available

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
GILA BEND TI
RAMP EB TO SB SUMMARY
ATTACHMENT NO. 19

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
12+26.68	120.32	120.52	0.10	Unknown	0.092	8°15'	6°00'	47	50

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** NB to WB

TRAFFIC INTERCHANGE: Gila Bend TI

DESCRIPTION: WB On-Ramp **MILEPOST:** 120.29 - 120.58

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
30	22	28	294.71

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 20

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 20

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
3.20	3.70	8	8

CROSS SLOPE

Existing cross slope is 1.5%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
0584	31.8'	22.0'	Yes	Yes	HS14	HS20
0618	30.0'	22.0'	Yes	Yes	HS19	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = Not Available
ADT (Design Year 2018) = Not Available

Traffic Factors
K = Not Available
D = Not Available
T = Not Available

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
GILA BEND TI
RAMP NB TO WB SUMMARY
ATTACHMENT NO. 20

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
18+00	120.68	120.45	1250(C)	+3.20	–3.70	491	500	475	52	50
5+50	120.37	120.29	400(S)	–3.70	–0.24	522	500	475	54	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
9+61.83	120.44	120.35	0.10	0.10	#	8°15'	# 18°30'	34	50
3+91.16	120.31	120.29	0.10	0.10	#	8°15'	# 18°30'	34	50

= Existing degree of curve exceeds AASHTO recommended maximum.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (DIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** SB-8 EB
FUNCTIONAL CLASSIFICATION: Rural Arterial
HIGHWAY SECTION: Gila Bend - Casa Grande **MILEPOST LIMITS:** 120.58 - 120.99

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Inside Shoulder Width:	4	4
Outside Shoulder Width:	10	10

DESIGN SPEED

The design speed of the highway is 60 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 21

HORIZONTAL ALIGNMENT AND SUPERELEVATION

Not Applicable - Horizontal Alignment on tangent.

GRADES

Existing maximum grade is 3.0%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable - No structures over roadway.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on roadway.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 6700
ADT (Design Year 2018) = 9100

Traffic Factors

K = 10 %
D = 57 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersections Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 EB SUMMARY (DIVIDED)
ATTACHMENT NO. 21

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
21+00	120.57	120.64	400(C)	0.00	-3.0	* 422	682	650	48	60
28+00	120.70	120.78	400(S)	-3.0	+0.631	* 493	682	650	52	60
34+50	120.87	120.87	G.B.	+0.631	+0.7905	G.B.	G.B.	G.B	G.B.	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break
* = Existing Stopping Sight Distance less than AASHTO minimum

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (DIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** SB-8 WB
FUNCTIONAL CLASSIFICATION: Rural Arterial
HIGHWAY SECTION: Gila Bend - Casa Grande **MILEPOST LIMITS:** 120.58 - 120.99

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Inside Shoulder Width:	4	4
Outside Shoulder Width:	10	10

DESIGN SPEED

The design speed of the highway is 60 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 22

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 22

GRADES

Existing maximum grade is 3.2%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable - No structures over roadway.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on roadway.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 6700
ADT (Design Year 2018) = 9100

Traffic Factors

K = 10 %
D = 57 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 WB SUMMARY (DIVIDED)
ATTACHMENT NO. 22

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
30+50	120.80	120.80	G.B.	-0.7673	-0.6950	G.B.	G.B.	G.B.	G.B.	60
28+50	120.80	120.73	400(S)	-0.6950	+3.20	* 457	644	650	50	60
18+00	120.68	120.45	1250(C)	+3.20	-3.70	* 491	694	650	52	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break
* = Existing Stopping Sight Distance less than AASHTO minimum

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
38+02.30	120.99	120.90	0.10	** 0.015	0.029	5°15'	1°00'	>70	60
31+00	120.86	120.76	0.10	** 0.015	0.029	5°15'	1°00'	>70	60

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (UNDIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** SB-8
FUNCTIONAL CLASSIFICATION: Rural Arterial
HIGHWAY SECTION: Gila Bend - Casa Grande **MILEPOST LIMITS:** 120.99 - 122.52

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Width of Paved Usable Shoulder (each side):	8	8

DESIGN SPEED

The design speed of the highway is 60 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 23

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 23

GRADES

Existing maximum grade is 1.65%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable - No structures over roadway.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on roadway.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 6700
ADT (Design Year 2018) = 9100

Traffic Factors
K = 10 %
D = 57 %
T = 30 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SB-8 SUMMARY (UNDIVIDED)
ATTACHMENT NO. 23

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
45+00	121.07	121.07	G.B.	+0.7905	+0.856	G.B.	G.B.	G.B.	G.B.	60
57+50	121.27	121.34	400(C)	+0.856	+0.366	1556	646	650	99 *	60
68+45	121.47	121.54	400(S)	+0.366	+1.25	2000 *	652	650	99 *	60
71+00	121.54	121.61	400(C)	+1.65	+0.66	871	659	650	72	60
96+00	122.04	122.04	G.B.	+0.66	+0.7614	G.B.	G.B.	G.B.	G.B.	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
55+35.35	121.15	121.38	0.10	** 0.015	0.029	5°15'	1°00'38"	>70	60
83+43.06	121.55	122.06	0.10	0.015	RC	5°15'	0°30'	>70	60

RC = Remove Adverse Crown.
** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (UNDIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** SR 85
FUNCTIONAL CLASSIFICATION: Rural Arterial
HIGHWAY SECTION: Phoenix – Yuma **MILEPOST LIMITS:** 120.32 – 150.48

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Width of Paved Usable Shoulder (each side):	8	8

DESIGN SPEED

The design speed of the highway is 60 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 24

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 25

GRADES

Existing maximum grade is 2.0%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 1.5% – 2.0%. AASHTO allowable range is 1.5% – 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable – No structures over SR 85.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
0466	41.8'	28'	Yes	Yes	HS16	HS20
1274	40.0'	28'	Yes	Yes	HS19	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 9925
ADT (Design Year 2018) = 17,625

Traffic Factors
K = 9 %
D = 57 %
T = 18 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SR 85 SUMMARY
ATTACHMENT NO. 24

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5149+00	120.18	120.33	800(C)	+1.30	+0.24	1027	653	650	79	60
5182+00	120.84	120.92	400(S)	+0.24	+1.035	2000 *	649	650	99 *	60
5194+00	121.01	121.20	1000(C)	+1.035	0.00	1145	649	650	84	60
5238+00	121.94	121.94	G.B.	0.00	-0.20	G.B.	G.B.	G.B.	G.B.	60
5248+00	122.13	122.13	G.B.	-0.20	0.00	G.B.	G.B.	G.B.	G.B.	60
5297+00	123.06	123.06	G.B.	0.00	-0.25	G.B.	G.B.	G.B.	G.B.	60
5313+00	123.32	123.40	400(S)	-0.25	+0.50	2000 *	641	650	99 *	60
5323+00	123.48	123.63	800(C)	+0.50	0.00	1729	641	650	99 *	60
5343+00	123.89	123.97	400(C)	0.00	-0.30	2000 *	638	650	99 *	60
5353+00	124.08	124.16	400(S)	-0.30	+0.25	2000 *	638	650	99 *	60
5361+00	124.27	124.27	G.B.	+0.25	0.00	G.B.	G.B.	G.B.	G.B.	60
5377+00	124.57	124.57	G.B.	0.00	+0.20	G.B.	G.B.	G.B.	G.B.	60
5382+00	124.67	124.67	G.B.	+0.20	0.00	G.B.	G.B.	G.B.	G.B.	60
5408+00	125.16	125.16	G.B.	0.00	-0.25	G.B.	G.B.	G.B.	G.B.	60
5416+00	125.27	125.35	400(S)	-0.25	+0.30	2000 *	638	650	99 *	60
5426+00	125.46	125.54	400(C)	+0.30	0.00	2000 *	638	650	99 *	60
5444+00	125.84	125.84	G.B.	0.00	+0.20	G.B.	G.B.	G.B.	G.B.	60
5464+00	126.22	126.22	G.B.	+0.20	+0.05	G.B.	G.B.	G.B.	G.B.	60
5484+00	126.60	126.60	G.B.	+0.05	0.00	G.B.	G.B.	G.B.	G.B.	60
5524+00	127.36	127.36	G.B.	0.00	+0.10	G.B.	G.B.	G.B.	G.B.	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SR 85 SUMMARY
ATTACHMENT NO. 24 (CONT.)

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
5544+00	127.74	127.74	G.B.	+0.10	0.00	G.B.	G.B.	G.B.	G.B.	60
5583+00	128.44	128.51	400(C)	0.00	-0.30	2000 *	638	650	99 *	60
5619+00	129.12	129.20	400(S)	-0.30	+0.3625	2000 *	639	650	99 *	60
5635+00	129.27	129.65	2000(C)	+0.3625	-0.50	1758	641	650	99 *	60
5651+00	129.73	129.80	400(S)	-0.50	0.00	2000 *	641	650	99 *	60
5662+00	129.97	129.97	G.B.	0.00	+0.20	G.B.	G.B.	G.B.	G.B.	60
5687+00	130.41	130.48	400(S)	+0.20	+1.00	2000 *	649	650	99 *	60
5723+50	130.95	131.33	2000(C)	+1.00	+0.10	1719	649	650	99 *	60
5738+50	131.42	131.42	G.B.	+0.10	+0.20	G.B.	G.B.	G.B.	G.B.	60
5753+50	131.63	131.78	800(C)	+0.20	-0.2547	1877	637	650	99 *	60
5763+00	131.85	131.92	400(S)	-0.2547	+0.25	2000 *	637	650	99 *	60
5790+00	132.52	132.67	800(S)	+0.25	+1.00	2000 *	649	650	99 *	60
5819+50	133.08	133.23	800(C)	+1.00	+0.26	1298	649	650	90	60
5829+50	133.27	133.42	800(S)	+0.26	+0.60	2000 *	643	650	99 *	60
5862+50	133.90	134.05	800(C)	+0.60	-0.10	1349	643	650	92	60
5871+50	134.14	134.14	G.B.	-0.10	0.00	G.B.	G.B.	G.B.	G.B.	60
5902+00	134.64	134.80	800(C)	0.00	-0.36	2000 *	639	650	99 *	60
5922+83.33	135.04	135.19	800(S)	-0.36	0.00	2000 *	639	650	99 *	60
5925+25	135.60	135.75	800(S)	0.00	+0.24	2000 *	637	650	99 *	60
5999+00	136.48	136.63	800(S)	+0.24	+1.1703	2000 *	651	650	99 *	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SR 85 SUMMARY
ATTACHMENT NO. 24 (CONT.)

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
6011+00	136.69	136.88	1000(C)	+1.1703	+0.245	1215	651	650	87	60
6029+00	137.07	137.18	600(S)	+0.245	+0.60	2000 *	643	650	99 *	60
6037+00	137.20	137.35	800(S)	+0.60	+0.75	2000 *	645	650	99 *	60
6049+00	137.47	137.54	400(C)	+0.75	+0.50	2000 *	645	650	99 *	60
6101+00	138.34	138.64	1600(C)	+0.50	-0.20	1749	641	650	99 *	60
6161+00	139.63	139.63	G.B.	-0.20	-0.35	G.B.	G.B.	G.B.	G.B.	60
6179+00	139.97	139.97	G.B.	-0.35	-0.24	G.B.	G.B.	G.B.	G.B.	60
6194+00	140.25	140.25	G.B.	-0.24	-0.07	G.B.	G.B.	G.B.	G.B.	60
6221+00	140.69	140.84	800(S)	-0.07	+0.32	2000 *	638	650	99 *	60
6236+00	141.01	141.08	400(C)	+0.32	0.00	2000 *	638	650	99 *	60
6265+00	141.52	141.67	800(S)	0.00	+0.50	2000 *	641	650	99 *	60
6301+00	142.24	142.31	400(S)	+0.50	+0.75	2000 *	645	650	99 *	60
6353+00	142.86	143.66	4200(C)	+0.75	-0.7333	1942	645	650	99 *	60
6403+00	144.15	144.27	600(S)	-0.7333	-0.2712	2000 *	645	650	99 *	60
6419+00	144.44	144.59	800(S)	-0.2712	+ 0.50	2000 *	641	650	99 *	60
6439+00	144.70	145.08	2000(C)	+0.50	-0.3023	1823	641	650	99 *	60
6458+00	145.21	145.29	400(S)	-0.3023	+0.144	2000 *	638	650	99 *	60
6477+00	145.33	145.89	3000(C)	+0.144	-2.00	1365	664	650	93	60
6503+00	146.03	146.18	800(S)	-2.00	-1.00	2000 *	664	650	99 *	60
6550+40	146.92	147.08	800(S)	-1.00	+0.1179	2000 *	649	650	99 *	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SR 85 SUMMARY
ATTACHMENT NO. 24 (CONT.)

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
6585+70	147.59	147.74	800(S)	+0.1179	+0.5202	2000 *	641	650	99 *	60
6608+50	148.02	148.18	800(C)	+0.5202	-0.5202	1039	641	650	79	60
6631+30	148.46	148.61	800(S)	-0.5202	-0.1956	2000 *	641	650	99 *	60
6662+00	149.03	149.19	800(S)	-0.1956	+0.54	2000 *	642	650	99 *	60
6680+50	149.46	149.46	G.B.	+0.54	+0.496	G.B.	G.B.	G.B.	G.B.	60
7302+50	149.55	149.61	300(S)	+0.496	+0.85	2000 *	646	650	99 *	60
7305+00	149.63	149.63	G.B.	+0.85	+0.75	G.B.	G.B.	G.B.	G.B.	60
7311+00	149.74	149.74	G.B.	+0.75	+0.475	G.B.	G.B.	G.B.	G.B.	60
7315+00	149.82	149.82	G.B.	+0.475	+0.70	G.B.	G.B.	G.B.	G.B.	60
7326+00	150.03	150.03	G.B.	+0.70	+0.61	G.B.	G.B.	G.B.	G.B.	60
7331+00	150.09	150.15	300(S)	+0.61	+1.00	2000 *	649	650	99 *	60
7338+75	150.25	150.28	150(C)	+1.00	+0.8035	2000 *	649	650	99 *	60
36+05	150.28	150.33	250(C)	+0.8035	+0.3782	1670	646	650	99 *	60
38+55	150.33	150.38	250(S)	+0.3782	+0.7932	2000 *	645	650	99 *	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SR 85 SUMMARY
ATTACHMENT NO. 25

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
5212+18.17	120.32	122.41	0.10	0.015	RC	5°15'	0°30'	>70	60
5451+62.70	125.92	126.05	0.10	0.015	RC	5°15'	0°36'18"	>70	60
5459+97.77	126.05	126.24	0.10	0.015	RC	5°15'	0°30'	>70	60
5564+39.84	127.79	128.45	0.10	0.015	RC	5°15'	0°30'	>70	60
5759+71.25	131.72	131.92	0.10	0.015	RC	5°15'	0°30'	>70	60
5801+87.51	132.73	132.92	0.10	0.015	NC	5°15'	0°15'	>70	60
5830+02.87	133.24	133.47	0.10	0.015	NC	5°15'	0°15'	>70	60
5988+71.03	136.24	136.49	0.10	0.015	NC	5°15'	0°15'	>70	60
6003+02.24	136.53	136.74	0.10	0.015	NC	5°15'	0°15'	>70	60
6063+35.73	137.59	137.96	0.10	0.015	RC	5°15'	0°30'	>70	60
6555+25.04	146.98	147.20	0.10	** 0.02	0.029	5°15'	1°00'	>70	60
6640+22.84	148.64	148.76	0.10	** 0.02	0.029	5°15'	1°00'	>70	60
6669+67.67	148.97	149.55	0.10	0.02	NC	5°15'	0°15'	>70	60
7345+22.90	150.12	150.28	0.10	** 0.071	0.092	5°15'	4°00'	63	60
38+33.94	150.32	150.38	0.10	** NC	0.042	5°15'	1°30'	>70	60

** = Existing Superelevation outside AASHTO Recommended Range of Values.
RC = Remove Adverse Crown.
NC = Normal Crown.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAINLINE SUMMARY (UNDIVIDED)

PROJECT NUMBER: 085 MA 120 H 3225 01 L **ROUTE NUMBER:** Spur 85
FUNCTIONAL CLASSIFICATION: Rural Arterial
HIGHWAY SECTION: Phoenix - Yuma **MILEPOST LIMITS:** 150.48 - 154.52

LANE AND SHOULDER WIDTHS

	Existing (feet)	AASHTO Recommended Minimum (feet)
Lane Width:	12	12
Width of Paved Usable Shoulder (each side):	8	8

DESIGN SPEED

The design speed of the highway is 60 mph. Terrain is level.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 26

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 27

GRADES

Existing maximum grade is 2.43%. AASHTO allowable maximum grade is 3.0%.

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance	Post-Construction Clearance	AASHTO Minimum Allowable Clearance

Not Applicable - No structures over Spur 85.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
1789	41.2'	28'	Yes	Yes	HS20	HS20
1790	41.2'	28'	Yes	Yes	HS20	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 4575
ADT (Design Year 2018) = 6475

Traffic Factors
K = 9 %
D = 56 %
T = 24 %

INTERSECTION SIGHT DISTANCE

No At-Grade Intersection Sight Restrictions Identified.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SPUR 85 SUMMARY
ATTACHMENT NO. 26

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
48+00	150.52	150.56	200(C)	+2.00	+0.136	* 455	664	650	50	60
53+00	150.59	150.67	400(S)	+0.136	+0.5085	2000 *	641	650	99 *	60
65+65	150.86	150.89	150(S)	+0.5085	+2.4333	1915	672	650	99 *	60
67+15	150.89	150.91	150(C)	+2.4333	0.00	* 348	672	650	43	60
69+50	150.92	150.97	300(S)	0.00	+0.701	2000 *	644	650	99 *	60
72+50	151.01	151.08	400(C)	+0.701	+0.7184	2000 *	644	650	99 *	60
97+00	151.51	151.51	G.B.	+0.7184	+0.8118	G.B.	G.B.	G.B.	G.B.	60
108+86	151.73	151.73	G.B.	+0.8118	+0.6222	G.B.	G.B.	G.B.	G.B.	60
119+50	151.91	151.95	200(S)	+0.6222	+1.1274	2000 *	650	650	99 *	60
123+14.57	151.98	152.02	200(C)	+1.1274	+0.7246	1761	650	650	99 *	60
133+00	152.17	152.21	200(S)	+0.7246	+1.0686	2000 *	650	650	99 *	60
142+00	152.35	152.35	G.B.	+1.0686	+0.7778	G.B.	G.B.	G.B.	G.B.	60
151+00	152.52	152.52	G.B.	+0.7778	+0.8009	G.B.	G.B.	G.B.	G.B.	60
161+06	152.71	152.71	G.B.	+0.8009	+0.8285	G.B.	G.B.	G.B.	G.B.	60
168+00	152.84	152.84	G.B.	+0.8285	+0.7786	G.B.	G.B.	G.B.	G.B.	60
175+30.76	152.96	153.00	200(S)	+0.7786	+1.0803	2000 *	650	650	99 *	60
183+00	153.13	153.13	G.B.	+1.0803	+1.0881	G.B.	G.B.	G.B.	G.B.	60
187+77.91BK	153.22	153.22	G.B.	+1.0881	+0.839	G.B.	G.B.	G.B.	G.B.	60
188+62.5	153.22	153.22	75(S)	+0.839	+0.7686	2000 *	646	650	99 *	60
195+00	153.34	153.34	G.B.	+0.7686	+0.873	G.B.	G.B.	G.B.	G.B.	60
2+00	153.79	153.87	400(S)	+0.873	+1.43	2000 *	655	650	99 *	60
6+00	153.87	153.94	400(C)	+1.43	+1.0847	2000 *	655	650	99 *	60

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break
* = Existing Stopping Sight Distance less than AASHTO minimum

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
SPUR 85 SUMMARY
ATTACHMENT NO. 27

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
57+71.99	150.68	150.76	0.10	**0.034	0.066	5°15'	2°30'	68	60
68+31.78	150.89	150.96	0.10	** 0.02	0.055	5°15'	2°00'	67	60
71+75.43	150.98	151.00	0.10	** 0.02	0.097	5°15'	4°31'29"	51	60
79+84.81	151.14	151.23	0.10	**0.023	0.029	5°15'	1°00'	>70	60
186+44.09	153.18	153.20	0.10	** 0.02	0.036	5°15'	1°15'	>70	60
201+01.54	153.44	153.48	0.10	0.02	RC	5°15'	0°30'	>70	60
4+34.54	153.79	153.95	0.10	** 0.05	0.055	5°15'	2°00'	>70	60
12+63.95	153.96	154.10	0.10	0.06	0.055	5°15'	2°00'	>70	60

** = Existing Superelevation outside AASHTO Recommended Range of Values.
RC = Remove Adverse Crown.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** Ramp 112 A

TRAFFIC INTERCHANGE: I-10/Spur 85 TI

DESCRIPTION: EB Off-Ramp **MILEPOST:** 112.83

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
28	21	27	1418.39

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 28

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 28

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
NA	1.7876	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)
Not Applicable - No structures over ramp.				

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
Not Applicable - No structures located on ramp.						

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 1192
ADT (Design Year 2018) = 1898

Traffic Factors
K = 10 %
D =100 %
T = 32 %

INTERSECTION SIGHT DISTANCE

Not Applicable - No At-Grade Intersections.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-10/SPUR 85 TI
RAMP 112 A SUMMARY
ATTACHMENT NO. 28

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
12+50	154.52	154.52	800(S)	-1.7876	-0.8785	2000 *	479	475	99 *	50

(S) = Sag Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
17+92.69	154.52	154.52	0.10	0.093	0.071	8°15'	4°00'	66	50

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** Ramp 112 C

TRAFFIC INTERCHANGE: I-10/Spur 85 TI

DESCRIPTION: WB Off-Ramp **MILEPOST:** 112.83

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2

TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1027.74

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 29

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 29

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
3.00	3.0105	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)
1727	112.83	17'-8"	17'-8"	16'-00"

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
1725	26.0'	22.0'	Yes	Yes	HS20	HS20

See Attachment No. 3 for ADOT Evaluation.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 2008

ADT (Design Year 2018) = 3196

Traffic Factors

K = 10 %

D = 100 %

T = 32 %

INTERSECTION SIGHT DISTANCE

Not Applicable - No At-Grade Intersections.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-10/SPUR 85 TI
RAMP 112 C SUMMARY
ATTACHMENT NO. 29

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
89+00	154.52	154.52	800(S)	-0.8397	+0.5567	2000 *	469	475	99 *	50
74+00	154.52	154.52	800(S)	+0.5567	+3.00	1686	456	475	99 *	50
64+50	154.52	154.52	1100(C)	+3.00	-3.0105	493	492	475	52	50
54+95	154.52	154.52	800(S)	-3.0105	-0.90	2000 *	492	475	99 *	50
50+99.69	154.52	154.52	G.B.	-0.90	-0.7667	G.B.	G.B.	G.B.	G.B.	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve
G.B. = Not Calculated - Grade Break

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
96+62.82	154.52	154.52	0.10	0.024	RC	8°15'	0°45'	>70	50
89+03.51	154.52	154.52	0.10	0.093	0.071	8°15'	4°00'	66	50
77+09.04	154.52	154.52	0.10	0.100	0.088	8°15'	5°30'	59	50

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** Ramp 112 G

TRAFFIC INTERCHANGE: I-10/Spur 85 TI

DESCRIPTION: EB On-Ramp **MILEPOST:** 112.83

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2
TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1424.39

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 30

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 30

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
2.0384	0.9313	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width (ft.)	Required Bridge Width (ft.)	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity

Not Applicable - No structures located on ramp.

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 2108
ADT (Design Year 2018) = 3355

Traffic Factors
K = 10 %
D =100 %
T = 32 %

INTERSECTION SIGHT DISTANCE

Not Applicable - No At-Grade Intersections.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-10/SPUR 85 TI
RAMP 112 G SUMMARY
ATTACHMENT NO. 30

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
8+81.18	154.52	154.52	800(C)	+2.0384	-0.9313	599	470	475	58	50

(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
15+70.51	154.52	154.52	0.10	** 0.033	0.071	8°15'	4°00'	58	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
RAMP SUMMARY

PROJECT NUMBER: 085 MA 120 H 3225 01 L **RAMP NAME:** Ramp 112 J

TRAFFIC INTERCHANGE: I-10/Spur 85 TI

DESCRIPTION: WB On-Ramp **MILEPOST:** 112.83

PAVEMENT WIDTH

CASE (1 OR 2 OR 3): 2

TRAFFIC CONDITION (A OR B OR C): C

Total Pavement Width (feet)

Existing	AASHTO Minimum	AASHTO Maximum	Existing Minimum Inside Radius (Feet)
22	21	27	1027.74

DESIGN SPEED

The AASHTO recommended minimum ramp design speed is 50 mph.

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

See Attachment No. 31

HORIZONTAL ALIGNMENT AND SUPERELEVATION

See Attachment No. 31

GRADES

Existing maximum grade (%)		AASHTO allowable maximum grade (%)	
Ascending	Descending	Ascending	Descending
2.3809	2.3453	8	8

CROSS SLOPE

Existing cross slope is 2.0%. AASHTO allowable range is 1.5% - 2.0%.

VERTICAL CLEARANCES

Structure	Milepost	Pre-Construction Clearance (ft.)	Post-Construction Clearance (ft.)	AASHTO Minimum Allowable Clearance (ft.)

Not Applicable - No structures over ramp.

STRUCTURES

Structure	Existing Bridge Width	Required Bridge Width	Bridge Rail Geometry Adequate	Bridge Rail Structure Adequate	Existing Structural Capacity	Required Structural Capacity
1726	26.0'	22.0'	Yes	Yes	HS20	HS20
1727	26.0'	22.0'	Yes	Yes	HS20	HS20

TRAFFIC VOLUMES AND FACTORS

ADT (Program Year 1998) = 1063

ADT (Design Year 2018) = 1692

Traffic Factors

K = 10 %

D =100 %

T = 32 %

INTERSECTION SIGHT DISTANCE

Not Applicable - No At-Grade Intersections.

SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
I-10/SPUR 85 TI
RAMP 112 J SUMMARY
ATTACHMENT NO. 31

EXISTING VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI Station	Begin Curve (MP)	End Curve (MP)	Length Of Curve (feet)	Approach Grade (percent)	Departure Grade (percent)	Existing SSD (feet)	ADOT Min. SSD (feet)	AASHTO Min. SSD (feet)	Existing Design Speed (mph)	Required Design Speed (mph)
53+00	154.52	154.52	800(S)	+0.90	+2.3809	2000 *	453	475	99 *	50
71+80	154.52	154.52	1210(C)	+2.3809	-2.3453	584	485	475	57	50
85+50	154.52	154.52	1200(S)	-2.3453	+1.5653	1181	485	475	85	50

(S) = Sag Vertical Curve
(C) = Crest Vertical Curve

EXISTING HORIZONTAL ALIGNMENT AND SUPERELEVATION

HPI Station	Begin Curve (MP)	End Curve (MP)	AASHTO Maximum Superelevation (ft/ft)	Existing Superelevation (ft/ft)	AASHTO Minimum Superelevation (ft/ft)	Maximum Allowable Degree of Curve	Existing Degree of Curve	Existing Design Speed (mph)	Required Design Speed (mph)
46+19.93	154.52	154.52	0.10	0.073	0.071	8°15'	4°00'	63	50
NA	154.52	154.52	0.10	0.100	0.088	8°15'	5°30'	59	50
90+61.74	154.52	154.52	0.10	** 0.033	0.071	8°15'	4°00'	58	50

** = Existing Superelevation outside AASHTO Recommended Range of Values.