Report Version 5

Hazardous Materials Initial Site Assessment (ISA)

February, 13 2018

District: San Antonio

CSJ: 0915-12-585 - Blanco Road Phase II

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

TxDOT Environmental Affairs Division
Effective Date: April 2017
510.02.DS
Version 5

Hazardous Materials Initial Site Assessment (ISA) Report

This ISA complies with the Federal Highway Administration's (FHWA's) policy dealing with hazardous materials discussed in FHWA's *Supplemental Hazardous Waste Guidance* (January 16, 1997) located at http://www.environment.fhwa.dot.gov/guidebook/vol1/doc7b.pdf.

FHWA's policy emphasizes three objectives: 1) identify and assess potentially contaminated sites early in project development, 2) coordinate early with federal/ state/ local agencies to assess the contamination and the cleanup needed; and 3) determine and implement measures early to avoid or minimize involvement with substantially contaminated properties.

In addition, completing the ISA will aid in identifying hazardous material issues early, avoiding construction delays, and reducing the department's liability associated with the purchase of contaminated right of way.

Maintain a copy of the completed ISA report with all applicable attachments in the project file.

For additional information, refer to TxDOT's online manual: *Hazardous Materials in Project Development:* http://onlinemanuals.txdot.gov/txdotmanuals/haz/index.htm and the Hazardous Materials Toolkit Site: http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/haz-mat.html

Abbreviations and Acronyms

CALF	Closed and Abandoned Landfill
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
EA	Environmental Assessment
EIS	Environmental Impact Statement
ECOS	Environmental Compliance Oversight System
ERNS	Emergency Response Notification System
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
HAZMAT	Hazardous Materials
MS4	Municipal Separate Storm Sewer System
MSWLF	Municipal Solid Waste Landfill
NPL	National Priorities List
RCRA	Resource Conservation and Recovery Act
ROW	Right of Way
SEMS	Superfund Enterprise Management System
TCEQ	Texas Commission on Environmental Quality
TRRC	Texas Railroad Commission
US	United States
USGS	United States Geological Survey
VCP	Voluntary Cleanup Program

TxDOT Hazardous Materials Initial Site Assessment (ISA) Report

Project Information			
CSJ No:0915-12-585	City:San Antonio	Zip Code:78260	County:Bexar
HWY:Blanco Road	Limits:West Oak Estates Drive to Borgfeld Drive		

Section 1: Identify Previously Completed Environmental Site Assessments, Known Hazmat Conditions, Preliminary Project Design, and Right-of-Way Requirements	
Note: Obtain information/comments from design, right-of-way, and/or environmental staff. Attach maps and/or details as appropriate.	
☒ Yes ☐ No ☐ Unknown	Are there any previous environmental assessments, testing, or studies performed within the proposed project area related to contamination issues (to include Phase I ESAs)? If yes, explain here if there are any concerns to the proposed project:No concerns observed within the project area as noted in the July 2006 categorical exlcusion document for FM 2696 (attached).
☒Yes ☐ No	Have the project schematics and/or plan-profile sheets (if available) been reviewed?* Look for substantial excavations (including utilities and storm sewer designs), new ROW and easements, and bridge demolitions or renovations.

* For consultants: this information shall be supplied by TxDOT.

Section 2: Demolition and Renovation Information Related to Asbestos and Lead-Containing-Paint	
☐Yes ☒No	Are there proposed bridges or building demolitions or renovations for this project?
Note: If "Yes" is selected, buildings or structures being acquired through the acquisition process are assessed and mitigated for asbestos, as needed, within the ROW process according to the TxDOT ROW Manual ROW Vol. 6 Miscellaneous -Chapter 1 Section 5. Bridge structures being demolished or renovated are assessed and mitigated for asbestos and lead-containing-paint, as needed, within the construction process according to Standard Specification Item 6.10 (and applicable Provisions), and the TxDOT guidance document: Guidance for Handling Asbestos in Construction Projects, dated January 26, 2007.	

Section 3: Project Screening	
Note: Section 3.1 is only applicable for Categorically Excluded (CE) projects. If you are uncertain of the project type, select "No" and continue to Section 3.2. **Section 3.1** Determine if the proposed project has a low potential to encounter contamination. Refer to the preliminary schematics for project limits and internet-based maps for surrounding land use.	
☐ Yes ☒ No or an EA or EIS Project	Are the limits of the proposed project within a historically undeveloped area and outside the boundaries of a designated MS4 permitted area? Historically undeveloped areas are locations where no commercial buildings are located within one-half (0.5) miles of the proposed project limits and the surrounding land use is historically agricultural, forest, or ranch lands.
If "Yes" is selected, the ISA is complete. The proposed project has a low potential to encounter contamination. Complete Sections 9 and 10 of this ISA and maintain a copy and all applicable attachments in the project file. If "No" is selected, proceed to Section 3.2 of this ISA.	
Section 3.2 **Note:** Determine if the project includes any of the activities listed below:	
☒ Yes ☐ No	**Project Excavations:** Will the work consist of substantial excavation operations. Substantial excavation includes, but is not necessarily limited to: • Underpass construction, • Storm sewer installations, and • Trenching or tunneling that would require temporary or permanent shoring.

☐ Yes ☒ No	**Dewatering of Groundwater:** Are there proposed de-watering operations. If yes, what is the estimated depth to groundwater? Bores created within the project limit went to a depth of 10ft and did not encounter any groundwater. Therefore, no de-watering operations are proposed for the project area.
☐ Yes ☒ No	**Encroachments:** Are there known or potential encroachments into the project area? Encroachments include soil and groundwater contamination, dump sites, tanks, and other issues in the ROW.
☐ Yes ☒ No	**ROW and Easements:** Are there any acquisitions of new ROW, easements, temporary construction easements planned for the project?

3.3 Complete the appropriate box below:

☒ If Section 3.2 contains any "Yes" answers, please proceed to Section 4.

☐ If Section 3.2 contains all "No" answers, proceed to Section 6, Site Survey. Please perform a site survey documenting the results in Section 6 and then mark the appropriate box below. If a Phase I ESA has been prepared for this project, you may use the applicable site survey information from the Phase I ESA.

☐ The site survey did not identify evidence of any environmental concerns listed in Section 6. The ISA is complete. Complete Sections 9 and 10 and maintain a copy of the ISA and all applicable attachments in the project file.

☐ The site survey identified evidence of environmental concerns listed in Section 6. Continue with Section 4.

Section 4: Current and Past Land Use Information

Note: Review and assess current and past land use (up to 50 years) in the project area. Document and attach sources that were reviewed. If one or more Phase I ESAs were prepared for this project, please use applicable information from the Phase I ESAs to help complete this section of the ISA.

☒ Yes
☐ No
☐ Not Available
☐ Not Applicable

4.1 Review Current and Past USGS 7.5 Minute Topographic Maps of the project area: Look for oil & gas pipelines, tanks, landfills, or other industrial features.

Describe any concerns:No concerns noted. Topographic maps attached.

List Topo Maps Reviewed:	Dates:	Comments:
Camp Bullis quadrangle	1965, 1992, 2010, 2013, 2016	No structures of note.

☒ Yes
☐ No
☐ Not Available
☐ Not Applicable

4.2 Review Current and Past Aerial Photographs of the project area: Look for oil & gas pipelines, tanks, landfills, or other industrial features.

Describe any concerns:No structures of note within the ROW. Aerial photos are provided as an attachment.

List All Aerial Photos Reviewed:	Photo Dates:	Comments:
USDA USDA USDA USGS TxDOT Frame 215 ASCS Frame 273-43 USGS Frame 2-68 AMS Frame 784 ASCS Frame 18-44	2016 2010 2004 1996 12/05/1985 01/28/1973 02/05/1963 12/12/1952 11/17/1938	Gas station near Blanco Rd & Midnight Dr visible starting 2004 and still visible in current aerials. Gas station is mapped as outside of the current ROW and is not expect to impact the project area.

☒Yes ☐ No ☐ Not Available ☐ Not Applicable	**4.3 Review Current and Past Right-of-Way Maps/Files*:** Look for oil & gas pipelines, tanks, landfills, or other industrial features. Describe any concerns:No features of note.	
	List Maps/ Files & Dates Reviewed:	Comments:
	Survey Report Right of Way Retracement FM 2696 (Blanco Road)	CSJ 2708-01-022 to -025, no features of note.
☐Yes ☐ No ☒ Not Available ☐ Not Applicable	**4.4 Review Sanborn Fire Insurance Maps/Files:** Look for tanks, oil & gas pipelines, landfills, or other industrial features. Describe any concerns:Sanborn Fire Insurance Maps do not exist for the project area.	
	List Maps/ Files & Dates Reviewed:	Comments:
☐Yes ☐ No ☒ Not Available ☐ Not Applicable	**4.5 Review TxDOT As-Built Plans*:** Were any concerns identified during previous work within the project limits? If yes, explain: If known, what is the previous Project CSJ:	
☒Yes ☐ No ☐ Not Available ☐ Not Applicable	**4.6 Review TxDOT Geotechnical Soil Boring Logs*:** Were any concerns noted on the boring logs such as unusual odors, visible contamination, trash, waste or debris? If yes, explain:No concerns noted.	
☐Yes ☐ No ☒ Not Available	**4.7 Review TxDOT Temporary Use ROW Agreements (permits issued by the district to entities to occupy a portion of the ROW)*:** Were any concerns such as monitor wells or treatment systems identified within the ROW? For consultants: this information shall be supplied by TxDOT. If yes, explain:	
☐Yes ☐ No ☒ Not Available	**4.8 Review Notifications of Contamination to TxDOT*** (These are typically letters from TCEQ or third parties explaining the presence of contamination on TxDOT ROW): Were any concerns regarding contamination of ROW from off-site sources? If yes, explain:	

* For consultants: this information shall be supplied by TxDOT. If no information is supplied by TxDOT, then select Not Available.

Section 5: Complete a Regulatory Records Review (Database Search)

Note: Use the comment field in Section 5.1 to provide a synopsis of the total number of sites identified within the search distances of the regulatory record reviewed. No comments are required when no sites were identified or the regulatory record was not reviewed.

Select the appropriate box below:

☒ A Database search was conducted through a contracted service. Indicate in Section 5.1, and if applicable, Section 5.2, the regulatory records searched. Maintain a complete copy of the database search findings (contractor's report deliverable) in the project file with the ISA.

☐ A Database search was conducted in-house. For in-house database searches, not all databases need to be reviewed, but at a minimum the databases listed in Section 5.1 marked in **bold with a star(*)** must be reviewed. Include database records that list potential issues in the project file with the ISA. It is not necessary to include records of negative findings.

Section 5.1 Standard Database Sources of Environmental Information from Government Agency Records

Findings	Regulatory Record
☐**Sites Identified** ☒**No Sites Identified**	**Federal Active NPL or Not NPL list (CERCLIS or SEMS sites)*** **https://cumulis.epa.gov/supercpad/CurSites/srchsites.cfm; and/or https://www.epa.gov/cleanups/cleanups-my-community**

	(1 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**Federal Archived NPL or Not NPL list (CERCLIS or SEMS sites)*** **https://cumulis.epa.gov/supercpad/CurSites/srchsites.cfm** (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐Sites Identified ☒No Sites Identified ☐Not Reviewed	US EPA Brownfield Properties **https://www.epa.gov/cleanups/cleanups-my-community** (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐Sites Identified ☒No Sites Identified ☐Not Reviewed	Federal RCRA Corrective Action (CORRACTS) list https://www.epa.gov/cleanups/cleanups-my-community, and/or http://www.epa.gov/enviro/ (1 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐Sites Identified ☒No Sites Identified ☐Not Reviewed	Federal RCRA non-CORRACTS Treatment Storage Disposal (TSD) facilities list http://www.envcap.org/statetools/tsdf/ and/or http://www.epa.gov/enviro/ (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐Sites Identified ☒No Sites Identified ☐Not Reviewed	Federal RCRA generators http://www.epa.gov/enviro/ (acquired property and adjoining properties)
Comments for Sites Identified:	
☐Sites Identified ☒No Sites Identified ☐Not Reviewed	Federal ERNS (or Responses) https://www.epa.gov/cleanups/cleanups-my-community (acquired property and adjoining properties)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**TCEQ Industrial Hazardous Waste Corrective Action (IHWCA) sites only*** **http://www15.tceq.texas.gov/crpub/** (1 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**TCEQ Superfund sites*** **http://www15.tceq.texas.gov/crpub/ and/or** **https://www.tceq.texas.gov/remediation/superfund/sites/index.html** (1 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**Closed and abandoned municipal solid waste landfill sites*** **http://www.tceq.texas.gov/permitting/waste_permits/msw_permits/msw-data** (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**TCEQ leaking petroleum storage tank remediation lists (LPST)*** **http://www15.tceq.texas.gov/crpub/** (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	

☒**Sites Identified** ☐**No Sites Identified**	**TCEQ registered petroleum storage tank lists (PST)*** **http://www15.tceq.texas.gov/crpub/** (acquired property and adjoining properties)
Comments for Sites Identified: Site ID 37913 (Map ID #1) reported as inactive with all associated tanks listed as removed from ground as of 1997 and is not expected to impact the project area. Site ID 37914 (Map ID #1) reported as inactive with all associated tanks listed as removed from ground as of 1993 and is not expected to impact the project area. Site ID 69358 (Map ID #5) reported as active as of 03/2017 with one underground tank, imediately adjacent to Blanco Rd ROW; this site is not expected to impact the project area. Site ID 77770 (Map ID #6) reported as active as of 01/2006 with three aboveground storage tanks. Site 77770 is located southwest of the southern limit of the project area and is not anticipated to impact the project area.	
☐**Sites Identified** ☒**No Sites Identified**	**TCEQ voluntary cleanup program (VCP) sites*** **http://www15.tceq.texas.gov/crpub/** (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐Sites Identified ☒No Sites Identified ☐Not Reviewed	TCEQ Innocent Owner/ Operator (IOP) sites http://www15.tceq.texas.gov/crpub/ (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**TCEQ Dry Cleaners remediation only Database*** http://www15.tceq.texas.gov/crpub/ (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
☐**Sites Identified** ☒**No Sites Identified**	**Texas Railroad Commission VCP sites*** **http://www.rrc.state.tx.us/oil-gas/environmental-cleanup-programs/site-remediation/voluntary-cleanup-program/** (0.5 mile minimum search distance from project limits)
Comments for Sites Identified:	
Section 5.2 List below other pertinent records reviewed such as local records and/or additional state records	
Record Source and Comments: Alamo Area Council of Governments (AAGOG) Closed Landfills Maps - no records found for project area.	
Record Source and Comments: FRSTX - 7 sites identifiied in radius report, none of which are expected to impact the project area; NOV - 1 site identified, futher research places site well outside of project area and therefore not expect to impact the project area; SPILLS - 3 sites identified, all reported as resolved and therefore not expect to impact the project area; TRI - 1 site identified, further research places site well outside of project area and therefore not expected to impact the project area; DOD - 1 site identified, Camp Bullis borders Blanco Road ROW to east; EAP - 2 sites identified, associated with improvements made to Blanco Road south of the project area and not expected to impact the project area; DCR - 2 sites identified, no environmental liens or remedial actions reported for these sites and are threrefore not expected to impact the project area. Details on these records are provided in the attached radius report.	

Section 6: Complete a Project Site Survey

Note: Do not document site survey concerns that were previously identified by the regulatory list search, by the Current and Past Land Use review, or both. In Section 6.1, describe the location and size of the concern. Attach site maps and photographs, as appropriate. If a Phase I ESA has been prepared for this project, you may use the applicable site survey information from the Phase I ESA and updated current site conditions, as needed.

Possible Site Survey Concerns: The following items are to be used as a guide to help identify potential hazardous material issues during a site survey.

- underground storage tanks
- aboveground storage tanks
- injection wells, cisterns, sumps, dry wells
- vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground
- electrical and transformer equipment storage or evidence of release
- groundwater monitoring wells and groundwater treatment systems

- floor drains, walls stained by substances other than water or emitting foul odors
- stockpiling, storage of material
- surface dumping of trash, garbage, refuse, rubbish, debris half exposed/buried, etc.
- stained, discolored, barren, exposed or foreign (fill) soil
- oil sheen or film on surface water, seeps, lagoons, ponds, or drainage basins
- changes in drainage patterns from possible fill areas
- Dead animals (fish, birds, etc.)
- vats, 55-gallon drums (labeled/unlabeled), canisters, barrels, bottles, etc.
- evidence of liquid spills
- damaged or discarded automotive or industrial batteries
- dead, damaged, or stressed vegetation
- pits, ponds, or lagoons associated with waste treatment or waste disposal
- security fencing, protected areas, placards, warning signs

Site Survey Date(s): November 28, 2017 and December 1, 2017

6.1 Describe Concerns Observed During the Site Survey. **Do not** include concerns previously identified during the regulatory list search, the current and past land use review or both. Indicate if the concern is associated with existing ROW, proposed ROW, adjacent property, or easements. Provide address location (or relative location) and any additional information about the evidence identified; include photographs as an attachment to the ISA.

Comments or Concerns Identified: Signage and fencing lines the southbound ROW (western side) of Blanco Road and denotes the boundary of Camp Bullis, an adjacent military installation. Several 55-gallon barrels were identified near dumpster at 27070 Blanco Road (a private property) with unknown contents. This property is immediately adjacent to the ROW and ROE was not granted at the time of field investigations; prior to construction, the area should be visually surveyed to ensure no spills have impacted the project area. A small debris pile containing a full trash bag of unknown contents and old wooden pallets was found near 27018 Blanco Road within the ROW, this site is not anticipated to neagtively impact the project as it is likely a collection point for local waste management services. A pile of concrete debris and a fill mound was found at approximately 332 ft and 380 ft (respectively) south of Slumber Pass on the northbound side of Blanco Road within the ROW, these sites are not anticipated to negatively impact the project area. Several electrical transformers were observed within the ROW but no staining or stressed/dead vegetation were observed around any transformer, these should be noted as existing low-risk conditions within the project area. A natural gas line indicator was found approximately 371 ft south of Slumber Pass on the southbound side of Blanco Road within the ROW. A strong gas odor was noted in the vicinity of the indicator, this site may pose a contamination and/or safety risk within the project area. Bexar County authorities were notified of this potential hazard, no futher action should be necessary. Photos of the concerns noted here as well as a map indicating the location of specific concerns are attached.

Section 7: Interviews

Section 7.1 Were interviews conducted? ☐**Yes** ☒**No**

Possible interviewees include local residents, TxDOT staff, fire department personnel, city or county department of health/environmental staff, city or county planning staff, TCEQ staff, TRRC staff, and current and former property owners or operators.

If one or more Phase I ESAs were prepared for this project, please use applicable interview information from the Phase I ESAs to help complete this section of the ISA.

Section 7.2 Interview Summary: Complete this section if interviews were conducted. Add additional rows as needed. Attach record of communications to the ISA.

Name:	Title:	Date:
Describe any potential concerns:		
Name:	Title:	Date:
Describe any potential concerns:		

Name:	Title:	Date:
Describe any potential concerns:		

Section 8: Hazardous Material Concerns
On the list below, indicate if a concern is resolved or unresolved. "Unresolved" indicates additional investigation or research is required. "Resolved" indicates the concern has been resolved during the preparation of this ISA. If a concern is "Unresolved" or "Resolved", include a statement explaining the planned next steps to resolve the issue. If no concerns were identified, select "No Issue". For additional information regarding scheduling considerations, internal/external coordination and recommended practices for resolving hazmat issues please refer to TxDOT's *Environmental Tool Kit* web site. Contact TxDOT ENV Hazardous Material Management (HMM) for additional assistance.

8.1 Identify Type of Hazardous Material Concerns	
Resolution	**Type of Concern**
☐**Unresolved** ☐**Resolved** ☒**No Issue**	**Current or Past Land Use Concerns:** These concerns are associated with hazardous material issues identified in Section 4 that were not discovered during the database search in Section 5.1 or during the Site Survey in Section 6.1. Note: *For ECOS IIR development, the Available Contaminated Media would be "Other".*
Explain Unresolved or Resolved Issues:N/A	
☐**Unresolved** ☒**Resolved** ☐**No Issue**	**Site Visit Concerns:** These concerns are associated with hazardous material issues discovered following the completion of Section 6 that were not previously discovered during the database search in Section 5.1 or during the current and past land use review in Section 4. Note: *For ECOS IIR development, the Available Contaminated Media would be "Other".*
Explain Unresolved or Resolved Issues:55-gallon drums observed at 27070 Blanco Road have the potential to spill into project area and contents are unknown. Strong odor around gas line observed within the ROW on southbound Blanco Road approximately 371 ft south of Slumber Pass could potentially indicate a leak or faulty equipment. Bexar County authorities were notified of this potential hazard, no further action should be necessary.	
☐**Unresolved** ☐**Resolved** ☐**No Issue** ☒**N/A**	**Interview Concerns:** These concerns are associated with any hazardous material issues discovered during an interview listed in Section 7, that were not previously discovered during the database search in Section 5.1, during the current and past land use review in Section 4, or during the Site Survey in Section 6.1. Note: *For ECOS IIR development, the Available Contaminated Media would be "Other".*
Explain Unresolved or Resolved Issues:N/A	

☐**Unresolved** ☐**Resolved** ☒**No Issue**	**Petroleum Storage Tanks (PSTs) Concerns discovered during the database search:** PSTs are underground or aboveground storage tanks used to store fuel or other petroleum substances. Typically, these are found at gasoline and diesel refueling facilities. Select below all that apply.	
	☐Yes ☒No	ROW acquisition or partial acquisition of a parcel with one or more PSTs.
	☐Yes ☒No	Other- Describe:
Explain Unresolved or Resolved Issues:N/A		
☐**Unresolved** ☐**Resolved** ☒**No Issue**	**Leaking Petroleum Storage Tanks (LPSTs) Concerns discovered during the database search:** LPSTs are PSTs that have caused or are suspected to have caused a release of fuel or other petroleum substances to the environment.	
	☐Yes ☒No	Additional Research is needed or uncertain of impacts from one or more LPSTs. Request assistance from ENV.
	☐Yes ☒No	ROW acquisition or partial acquisition of a parcel with one or more LPSTs.
	☐Yes ☒No	One or more LPSTs are located within 0.25 miles of the project.
	☐Yes ☒No	Other- Describe:
Explain Unresolved or Resolved Issues:N/A		
☐**Unresolved** ☐**Resolved** ☒**No Issue**	**Oil and Gas Activity Concerns**: TxDOT is concerned with the acquisition of oil and gas wells (and ancillary equipment) such as process, piping, production equipment, pipelines, etc. Select below all that apply.	
	☐Yes ☒No	Additional Research needed or uncertain of impacts. Request assistance from ENV.
	☐Yes ☒No	Database search identified TRRC VCP Site within 0.5 miles of project.
	☐Yes ☒No	Oil/ Gas Wells within future ROW.
	☐Yes ☒No	Spills or other Contamination Issues associated with ancillary equipment or pipelines.
	☐Yes ☒No	Other- Describe:
Explain Unresolved or Resolved Issues:N/A		
☐**Unresolved** ☐**Resolved** ☒**No Issue**	**Non-LPST Source Contamination Concerns discovered during the database search**: These are sites or locations that have a potential for soil and groundwater contamination and are not associated with LPST sites. Select below all that apply.	
	☐Yes ☒No	Additional Research is needed or uncertain of impacts from a Non-LPST site. Request assistance from ENV.
	☐Yes ☒No	Database search identified SEMS Active NPL or Not NPL site(s) within 1 mile of the project. This may be identified on a database search as a CERCLIS or NPL site.
	☐Yes ☒No	Database search identified SEMS Archived NPL or Not NPL site(s) within 0.5 miles of the project. This may be identified on a database search as a CERCLIS NFRAP.
	☐Yes ☒No	Database search identified RCRA Corrective Action(s) site within 1 mile of project.
	☐Yes ☒No	Database search identified RCRA TSD facilities within 0.5 miles of project.
	☐Yes ☒No	Database search identified TCEQ IHW Corrective Action sites within 1 mile of project.
	☐Yes ☒No	Database search identified TCEQ Superfund sites within 1 mile of project.
	☐Yes ☒No	Database search identified TCEQ VCP sites within 0.5 miles of project.
	☐Yes ☒No	Database search identified TCEQ IOP sites within 0.5 miles of project.
	☐Yes ☒No	Other- Describe:

Explain Unresolved or Resolved Issues:		
☐**Unresolved** ☐**Resolved** ☒**No Issue**	**Landfills/Waste Pits/Dump Site Concerns:** These concerns are associated with any known or suspected (based on visual observations) landfills, dump sites, or waste pits. These concerns may appear on a database search as CALF or MSWLF site. Additionally, the local Council of Governments (COG) maintains a list of closed and open landfills in your project area. Select below all that apply.	
	☐Yes ☒No	Additional research is needed or uncertain of impacts. Request assistance from ENV.
	☐Yes ☒No	Database search identified active/closed/abandoned CALF or MSWLF landfill sites within .5 miles of the project.
	☐Yes ☒No	Other- Describe:
Explain Unresolved or Resolved Issues:N/A		

8.3 Did the ISA identify any Unresolved Hazardous Material concerns?

☒ No, unresolved hazardous materials concerns were identified and/or all potential concerns were resolved within the ISA. No further hazardous materials action is required. The ISA is complete for this project. Any unanticipated hazardous materials impacts encountered during the project construction phase shall be addressed in accordance with regulatory requirements and TxDOT standard specifications. Complete Sections 9 and 10 and maintain a copy of the ISA and all applicable attachments in the project file.

☐ Yes, the ISA identified one or more unresolved hazardous materials concerns requiring additional investigations or assessments. An Issues, Identification, and Resolution (IIR) form shalll be completed in ECOS to track the additional investigations and assessments. Complete Sections 9 and 10 and maintain a copy of the ISA and all applicable attachments in the project file.

Section 9: Reference Materials Utilized (Identify any referenced materials and attach them to the ISA or in the project file.			
Referenced Materials Used	☒ Project Map	☒ USGS Topo Maps	☒ Aerial Photographs
	☒ ROW Maps/Files	☐ Sanborn Fire Insurance Maps	☐ Temporary Use Agreements
	☐ TxDOT As-Built Plans	☐ Notifications	☒ Photographs
	☒ Project Schematics/Profiles	☒ Regulatory Database	☐ Record of Interviews
	☒ Other:Geotechnical report, AACOG closed landfill maps, CE report, Field Observations Exhibit		

Section 10: Contact/Completed by		
Name:	Chelsea Miller	**Tel: 210-798-2301**
Title:	Biologist	
Firm (District Section):	CP&Y, Inc.	
Address:	12500 San Pedro Ave, Suite 450 San Antonio, TX 78216	
Signature:	Chelsea Miller	**Date:2/13/2018**

Appendix A

The following table shows the revision history for this guidance document.

Revision History	
Effective Date	**Reason for and Description of the Change**
April 2017	Version 5 The cover page has additional fields related to specific project information. This is added to personalize the ISA to a project. Section 2 was modified to acknowledge that asbestos or lead-in-paint issues might exist on our construction projects, but the identification and resolution to these issues are outside of the ISA process and are handled programmatically by TxDOT (usually in CST or the ROW processes). Section 3 was modified by adding an additional screening option. You are now able to screen out of performing a full ISA if your project meets the parameters described. Section 6 was reformatted to remove the numerous selections related to the Possible Site Survey Concerns. Additionally, redundant questions were removed to make the section easier to use. Under the new format, the preparer is required to insert the survey dates and a description of what was identified during the survey. Minor changes were made to terminology throughout the ISA, this was performed to clarify and streamline the process. Section 8.1 has been modified to provide resolution to potential hazardous materials issues that can be resolved easily during the ISA process. Additionally, a comment field was added to provide direction related to issues requiring further action to resolve. This will streamline the process in reducing the amount of IIR entries requires in ECOS and will reduce the time required to review a project.
June 2016	Version 4 Modifications to Section 5: Web links and database names were modified based on changes made by regulatory agency websites.
October 2014	Version 3 Modifications to Section 2: Clarified this section to better define what are asbestos and lead-in-paint concerns. Changes were made due to numerous comments from the end-user. An additional note was added to this section. This note directs end-users to ENV-HMM for further assistance related to lead-in-paint issues. Modifications to Section 3: The question concerning Project Excavations in Section 3.1 was modified to match the definition used in Scoping Procedure for Categorically Excluded TxDOT Projects for Hazardous Materials found in the NEPA and Project Development Toolkit. Modifications to Section 5: Web links were modified based on changes made by regulatory agency websites. Modifications to 8.2: Clarified the “Yes” answer in 8.2 to remove the need for additional assessments for all identified hazardous materials concerns. The question was modified due to comments by the end-user.

August 2014	Version 2 Removed introductory note describing ISA threshold criteria. Note was removed because the ISA threshold criteria are located in other TxDOT guidance.
April 2014	Version 1 Released

Blanco Road Phase II Improvements

Hazardous Materials Initial Site Assessment

Attachment	**Page**
Project Vicinity Map	001
USGS Topographic Maps	002
Field Observations Map	007
Photo Log	008
Historic Aerial Photographs	012
GeoSearch Radius Report	033
ROW Files	108
Geotechnical Report	147
Categorical Exemption Document	261
AACOG Closed Landfill Inventory Map	381

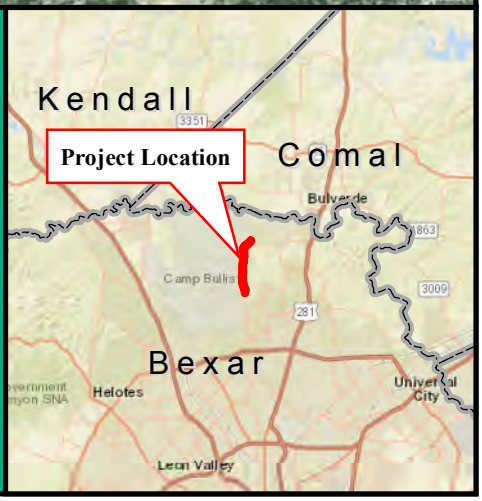
Project Location Map
Blanco Road Phase II Improvements

Bexar County, Texas
CSJ: 0915-12-585
From West Oak Estates Drive
To Borgfeld Drive

N

0 0.25 0.5 Miles

Source: ESRI Base Map, TxDOT



Project Area

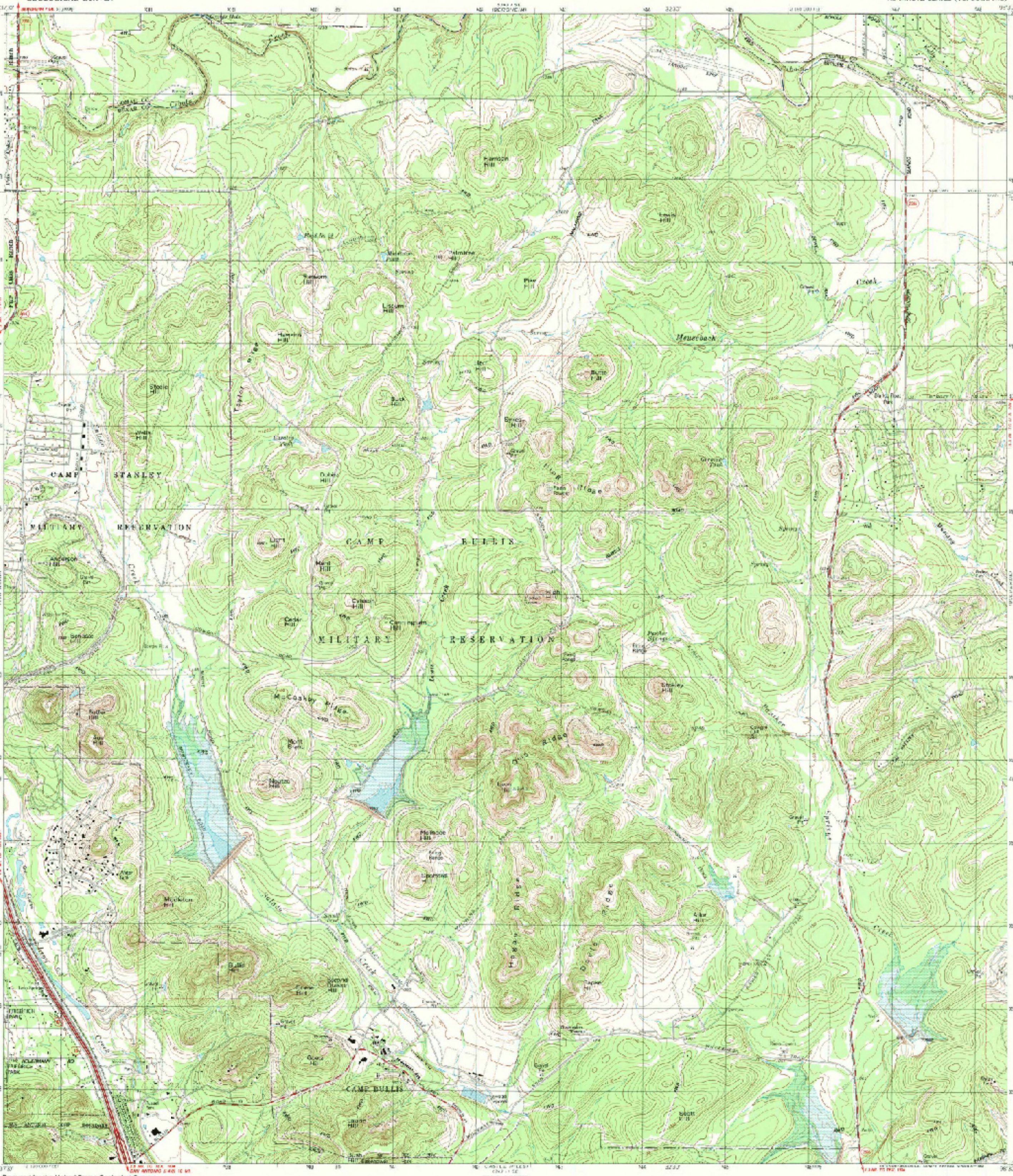
County Limits

Major Roadway

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CAMP BULLIS QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)
CAMP STANLEY
CAMP BULLIS
MILITARY RESERVATION
McCackey Ridge
Mapped by the Army Map Service
Edited and published by the Geological Survey
SCALE 1:24 000
ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route
QUADRANGLE LOCATION
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
HISTORICAL FILE
TOPOGRAPHIC DIVISION
CAMP BULLIS TEX.
PHOTOREVISED 1973

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CAMP BULLIS QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)



Produced by the United States Geological Survey

Control by USGS, NOS/NOAA and USCE

Compiled by Defense Mapping Agency from aerial photographs taken 1952. Revised from aerial photographs taken 1985. Field checked 1986. Map edited 1992

North American Datum of 1927 (NAD 27). Projection and 10,000-foot grid ticks: Texas Coordinate System, south central zone (Lambert Conformal Conic). 1000-meter Universal Transverse Mercator grid, zone 14

The difference between NAD 27 and North American Datum of 1983 (NAD 83) for 7.5 minute intersections is given in USGS Bulletin 1875. The NAD 83 is shown by dashed corner ticks

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Areas covered by dashed light-blue pattern are subject to controlled inundation

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1992 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

2003-314

ROAD CLASSIFICATION

Primary highway, hard surface	Light-duty road, hard or improved surface
Secondary highway, hard surface	Unimproved road
Interstate Route	U. S. Route · State Route

JAN 29 1996
REC'D FILE COPY

CAMP BULLIS, TEXAS
29098-F5-TF-024
1992
DMA 6243 II NE-SERIES V882

U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

The National Map
US Topo

CAMP BULLIS QUADRANGLE
TEXAS
7.5-MINUTE SERIES

29°37'30" 98°37'30" 2 090 000 FEET 538 539 540 35' 541 542 543 544 32'30" 545 546 547 548000mE 98°30' 29°37'30"

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 14R
10 000-foot ticks: Texas Coordinate System of 1983
(south central zone)

Imagery........................NAIP, June 2008
Roads........................US Census Bureau TIGER data
with limited USGS updates, 2006
Names........................GNIS, 2008
Hydrography........................National Hydrography Dataset, 1995
Contours........................National Elevation Dataset, 2003

MN GN 5° 12' 92 MILS 0° 13' 4 MILS

UTM GRID AND 2010 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID NT
Grid Zone Designation 14R

SCALE 1:24 000

KILOMETERS 1 0.5 0 1 2
METERS 1000 500 0 1000 2000
MILES 1 0.5 0 1
FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 10 FEET

This map was produced to conform with version 0.5.10 of the
draft USGS Standards for 7.5-Minute Quadrangle Maps.
A metadata file associated with this product is also draft version 0.5.10

TEXAS

QUADRANGLE LOCATION

Boerne	Bergheim	Anhalt
Van Raub	Camp Bullis	Bulverde
Helotes	Castle Hills	Longhorn

ADJOINING 7.5' QUADRANGLES
TX 2998-314

ROAD CLASSIFICATION

Interstate Route	State Route
US Route	Local Road
Ramp	4WD

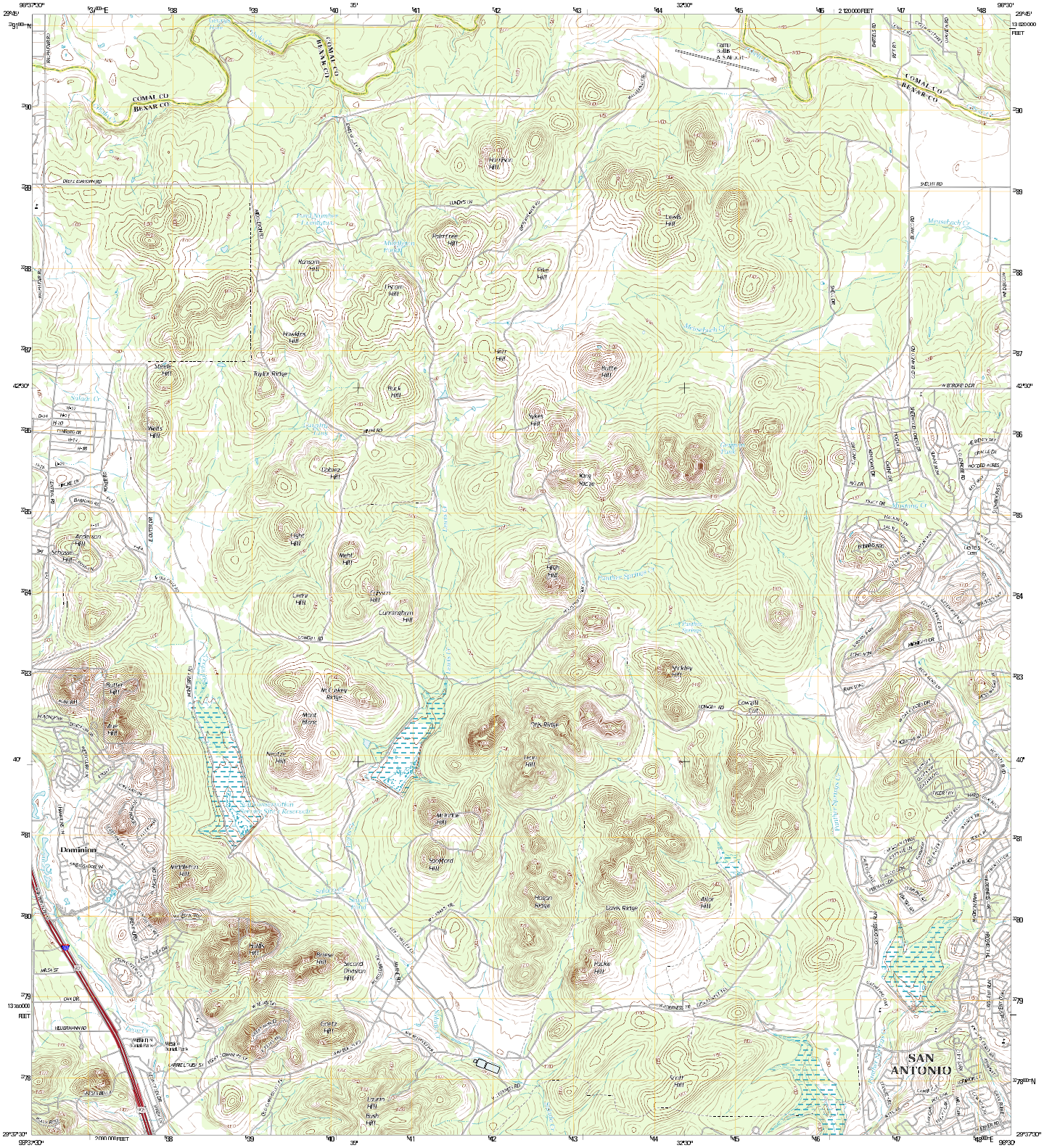
Interstate Route US Route State Route

CAMP BULLIS, TX
2010

U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

The National Map
US Topo

CAMP BULLIS QUADRANGLE
TEXAS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 14R
10 000-foot ticks: Texas Coordinate System of 1983 (south central zone)

Imagery ---------- NAIP, May 2010
Roads ---------- ©2006-2012 TomTom
Names ---------- GNIS, 2012
Hydrography ---------- National Hydrography Dataset, 2010
Contours ---------- National Elevation Dataset, 2013
Boundaries ---------- Census, TIGER, ESRI, USGS, 1972 - 2012

UTM GRID AND 2013 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

UTM Zone 14	
SPHEROID=Clarke 1866	
HT	
Grid zone designation	
14R	

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.7

QUADRANGLE LOCATION

Boerne	Bergheim	Anhalt
Van Ness	Camp Bullis	Bulverde
Helotes	Castle Hills	Longhorn

ADJOINING 7.5' QUADRANGLES

ROAD CLASSIFICATION

Interstate Route — US Route — State Route — Local Road — 4WD — Ramp

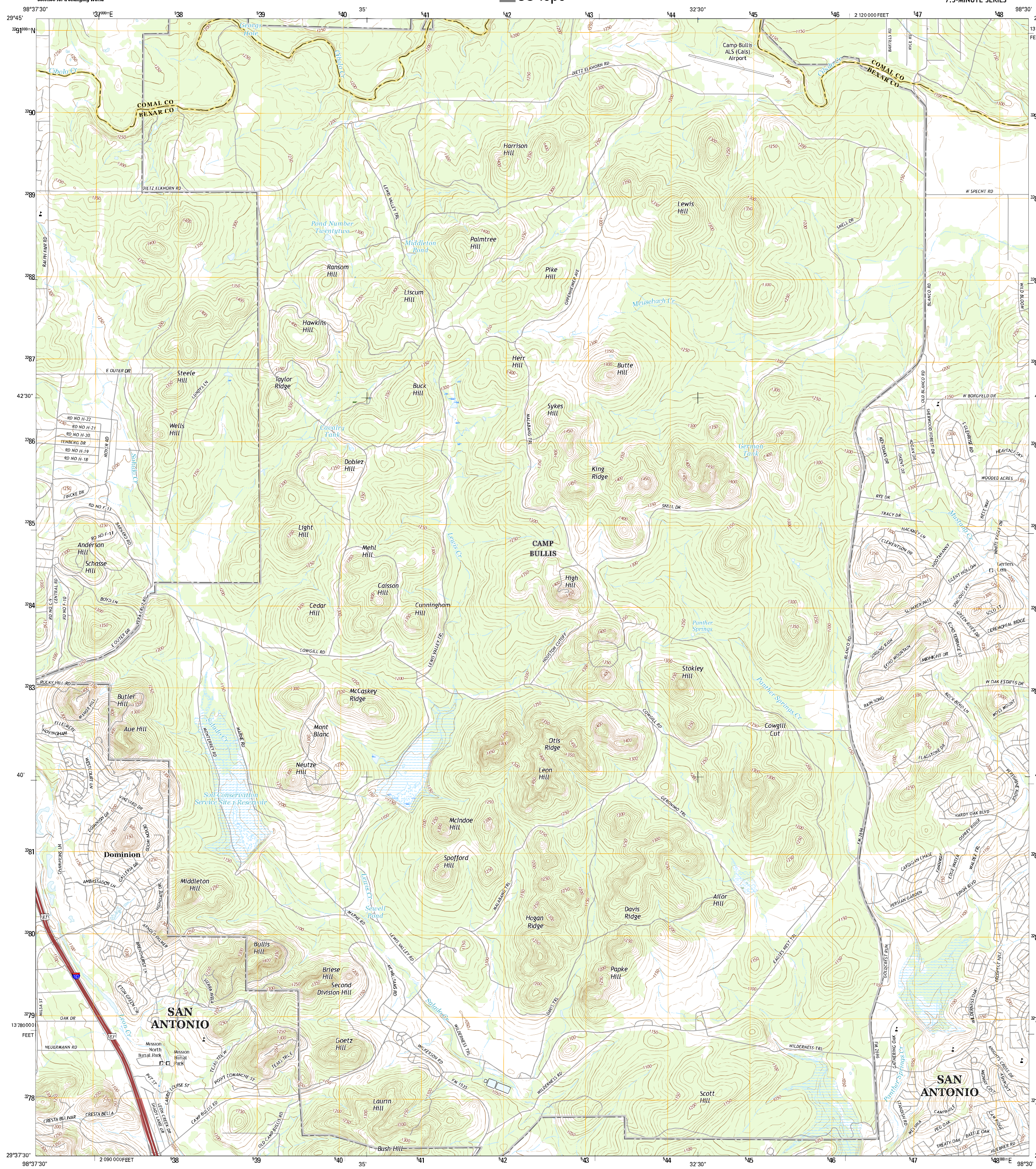
Interstate Route — US Route — State Route

CAMP BULLIS, TX
2013

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

CAMP BULLIS QUADRANGLE
TEXAS
7.5-MINUTE SERIES



Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 14R
10 000-foot ticks: Texas Coordinate System of 1983 (south central zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery..NAIP, August 2014
Roads.............................. U.S. Census Bureau, 2014 - 2015
Names...GNIS, 2015
Hydrography...................National Hydrography Dataset, 2014
Contours.........................National Elevation Dataset, 2003
Boundaries...........Multiple sources; see metadata file 1972 - 2015

Wetlands.........FWS National Wetlands Inventory 1977 - 2014

MN
GN
4° 31´
80 MILS
0° 13´
4 MILS

UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
NT
Grid Zone Designation 14R

SCALE 1:24 000

KILOMETERS · METERS · MILES · FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.19

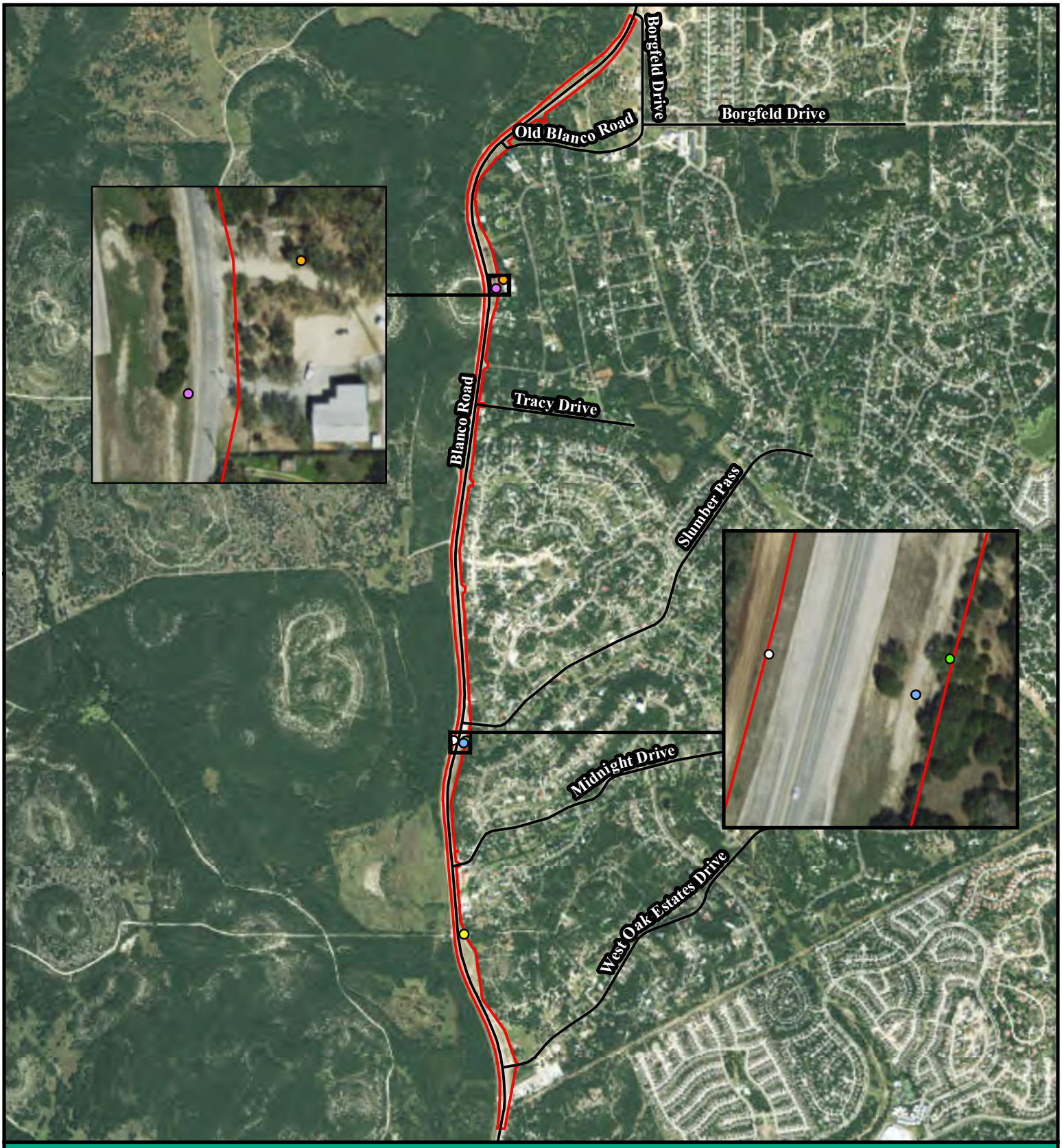
TEXAS
QUADRANGLE LOCATION

ADJOINING QUADRANGLES
1 Boerne
2 Bergheim
3 Anhalt
4 Van Raub
5 Bulverde
6 Helotes
7 Castle Hills
8 Longhorn

ROAD CLASSIFICATION
Expressway · Local Connector
Secondary Hwy · Local Road
Ramp · 4WD
Interstate Route · US Route · State Route

CAMP BULLIS, TX
2016

NSN. 7643016395368
NGA REF NO. USGSX24K6908



Notable Sites from Field Investigations
Blanco Road Phase II

Bexar County, Texas
CSJ: 0915-12-585
From West Oak Estates Drive
To Borgfeld Drive

0 0.25 0.5 Miles

N

- Project Area
- Major Roadway
- Example Transformer
- 8-foot Fill Mound
- Gas Line with Odor
- Concrete Debris Pile
- Small Debris Pile
- 55-Gallon Barrels

Source: ESRI Base Map, TxDOT

Photo 1. An example of the electrical transformers located throughout the project area. No staining or stressed/dead vegetation was observed beneath any of the transformers.

Photo 2. Gas station (PST) located at Midnight Drive and Blanco Road (Map ID #5 in database report). This site is not anticipated to adversely impact the project area.

Photo 3. Small debris pile found at 27018 Blanco Road within the project area. Debris appears to be household trash and is not expected to pose a notable hazard to the project area.

Photo 4. Unmarked 55-gallon barrels near a dumpster found at 27070 Blanco Road, directly adjacent to the project area.

Photo 5. Pile of concrete debris found approximately 332 feet south of Slumber Pass on the northbound side of Blanco Road. The fill mound can be seen at left.

Photo 6. Traffic signal control equipment located at the intersection of Slumber Pass and Blanco Road. No staining or stressed/dead vegetation was observed nearby.

Photo 7. Gas line indicator found within the southbound ROW of Blanco Road approximately 371 feet south of Slumber Pass. A strong gas odor was noted in the vicinity.

Photo 8. An example of the signage and fencing installed along the southbound ROW of Blanco Road. Camp Bullis, a military installation, is west-adjacent to the project area.

Historical Aerial Photographs (Texas)

Target Property:

Blanco Road Phase II Improvements
From West Oak Estates Drive to Borgfeld Drive
San Antonio, Bexar, Texas

Prepared For:

CP&Y-San Antonio

Order #: 94905
Job #: 208100
Project #: BEXA1500487.00
Date: 10/24/2017

Target Property Summary

Blanco Road Phase II Improvements
From West Oak Estates Drive to Borgfeld Drive
San Antonio, Bexar, Texas

USGS Quadrangle: ***CAMP BULLIS***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-98.520334000, 29.665758000), (-98.520358000, 29.665885000), (-98.520504000, 29.666544000), (-98.520581000, 29.666770000), (-98.520723000, 29.667186000), (-98.521001000, 29.667812000), (-98.521172000, 29.668129000), (-98.521742000, 29.669140000), (-98.522093000, 29.669804000), (-98.522320000, 29.670332000), (-98.522474000, 29.670880000), (-98.522483000, 29.670924000), (-98.522527000, 29.671147000), (-98.522584000, 29.671436000), (-98.522651000, 29.672140000), (-98.522740000, 29.673060000), (-98.522763000, 29.673291000), (-98.522931000, 29.675031000), (-98.523043000, 29.676188000), (-98.523160000, 29.677034000), (-98.523220000, 29.677910000), (-98.523165000, 29.678615000), (-98.523022000, 29.679238000), (-98.522951000, 29.679503000), (-98.522893000, 29.679755000), (-98.522879000, 29.679807000), (-98.522619000, 29.680655000), (-98.522452000, 29.681306000), (-98.522352000, 29.681970000), (-98.522317000, 29.682641000), (-98.522343000, 29.683201000), (-98.522409000, 29.683997000), (-98.522584000, 29.685368000), (-98.522655000, 29.686205000), (-98.522675000, 29.686434000), (-98.522723000, 29.687010000), (-98.522778000, 29.688674000), (-98.522784000, 29.689095000), (-98.522688000, 29.689843000), (-98.522295000, 29.692247000), (-98.522273000, 29.692772000), (-98.522264000, 29.692831000), (-98.522210000, 29.693159000), (-98.522166000, 29.693432000), (-98.521947000, 29.694773000), (-98.521694000, 29.695743000), (-98.521417000, 29.697442000), (-98.521201000, 29.698769000), (-98.521173000, 29.699085000), (-98.521111000, 29.699682000), (-98.521062000, 29.700394000), (-98.521096000, 29.700918000), (-98.521186000, 29.701439000), (-98.521245000, 29.701636000), (-98.521429000, 29.702206000), (-98.521672000, 29.702941000), (-98.521801000, 29.703333000), (-98.521952000, 29.704011000), (-98.521981000, 29.704439000), (-98.521977000, 29.704537000), (-98.521936000, 29.704935000), (-98.521909000, 29.705202000), (-98.521874000, 29.705316000), (-98.521819000, 29.705492000), (-98.521692000, 29.705901000), (-98.521654000, 29.705971000), (-98.521529000, 29.706204000), (-98.521377000, 29.706486000), (-98.521340000, 29.706555000), (-98.520864000, 29.707149000), (-98.520382000, 29.707545000), (-98.520124000, 29.707734000), (-98.519839000, 29.707441000), (-98.519675000, 29.707260000), (-98.519589000, 29.707088000), (-98.519879000, 29.707020000), (-98.519981000, 29.706995000), (-98.520462000, 29.706656000), (-98.520622000, 29.706488000), (-98.520925000, 29.706169000), (-98.521228000, 29.705850000), (-98.521394000, 29.705549000), (-98.521468000, 29.705237000), (-98.521564000, 29.704825000), (-98.521545000, 29.704719000), (-98.521449000, 29.704174000), (-98.521420000, 29.704081000), (-98.521300000, 29.703681000), (-98.521236000, 29.703576000), (-98.520964000, 29.703123000), (-98.520842000, 29.702914000), (-98.520809000, 29.702838000), (-98.520642000, 29.702450000), (-98.520552000, 29.702120000), (-98.520430000, 29.701674000), (-98.520306000, 29.701219000),

Aerial Research Summary

Date	Source	Scale	Frame
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2016	USDA	1" = 1000'	N/A
2010	USDA	1" = 1000'	N/A
2010	USDA	1" = 1000'	N/A
2004	USDA	1" = 1000'	N/A
2004	USDA	1" = 1000'	N/A
1996	USGS	1" = 1000'	N/A
1996	USGS	1" = 1000'	N/A
12/05/1985	TXDOT	1" = 1000'	215
12/05/1985	TXDOT	1" = 1000'	215
01/28/1973	ASCS	1" = 1000'	273-43
01/28/1973	ASCS	1" = 1000'	273-43
02/05/1963	USGS	1" = 1000'	2-68
02/05/1963	USGS	1" = 1000'	2-70
12/12/1952	AMS	1" = 1000'	784
12/12/1952	AMS	1" = 1000'	784
11/17/1938	ASCS	1" = 1000'	18-44
11/17/1938	ASCS	1" = 1000'	18-46

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Blanco Road Phase II Improvements
USDA
2016

GeoSearch

JOB #: 208100 - 10/24/2017

N
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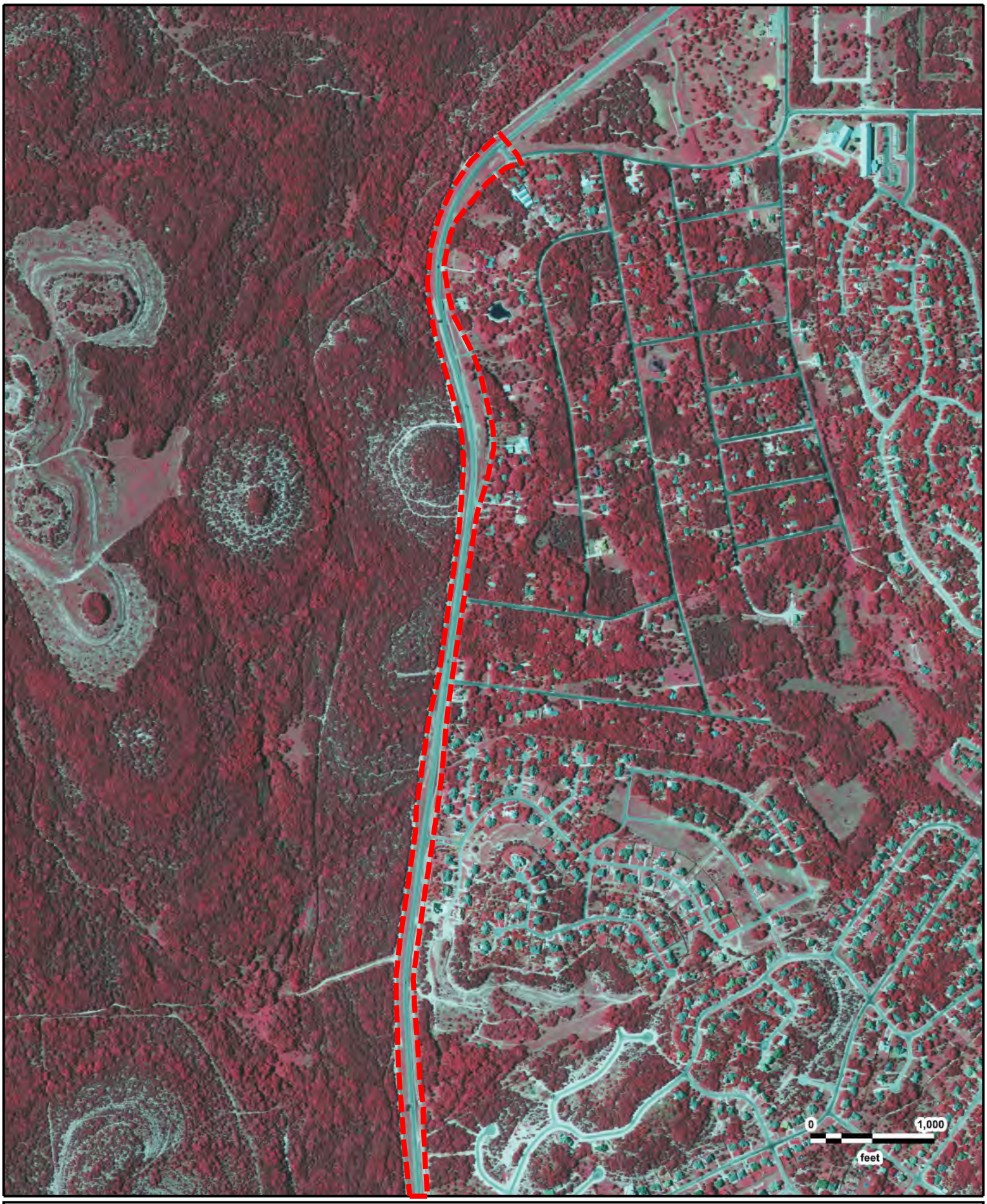
Blanco Road Phase II Improvements
USDA
2016

GeoSearch

JOB #: 208100 - 10/24/2017



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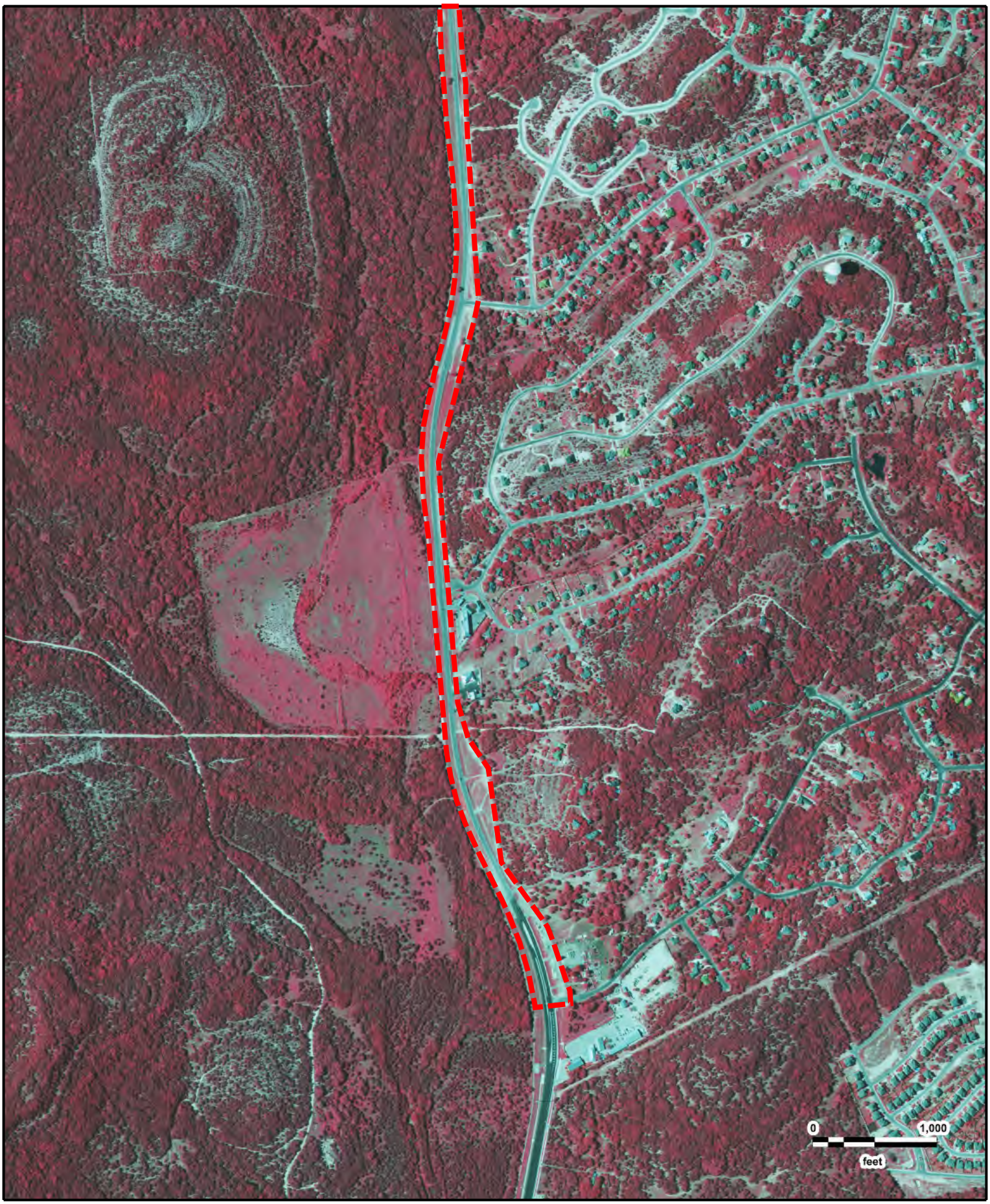
Blanco Road Phase II Improvements
USDA
2010

GeoSearch

JOB #: 208100 - 10/24/2017



N
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Blanco Road Phase II Improvements
USDA
2010

GeoSearch

JOB #: 208100 - 10/24/2017

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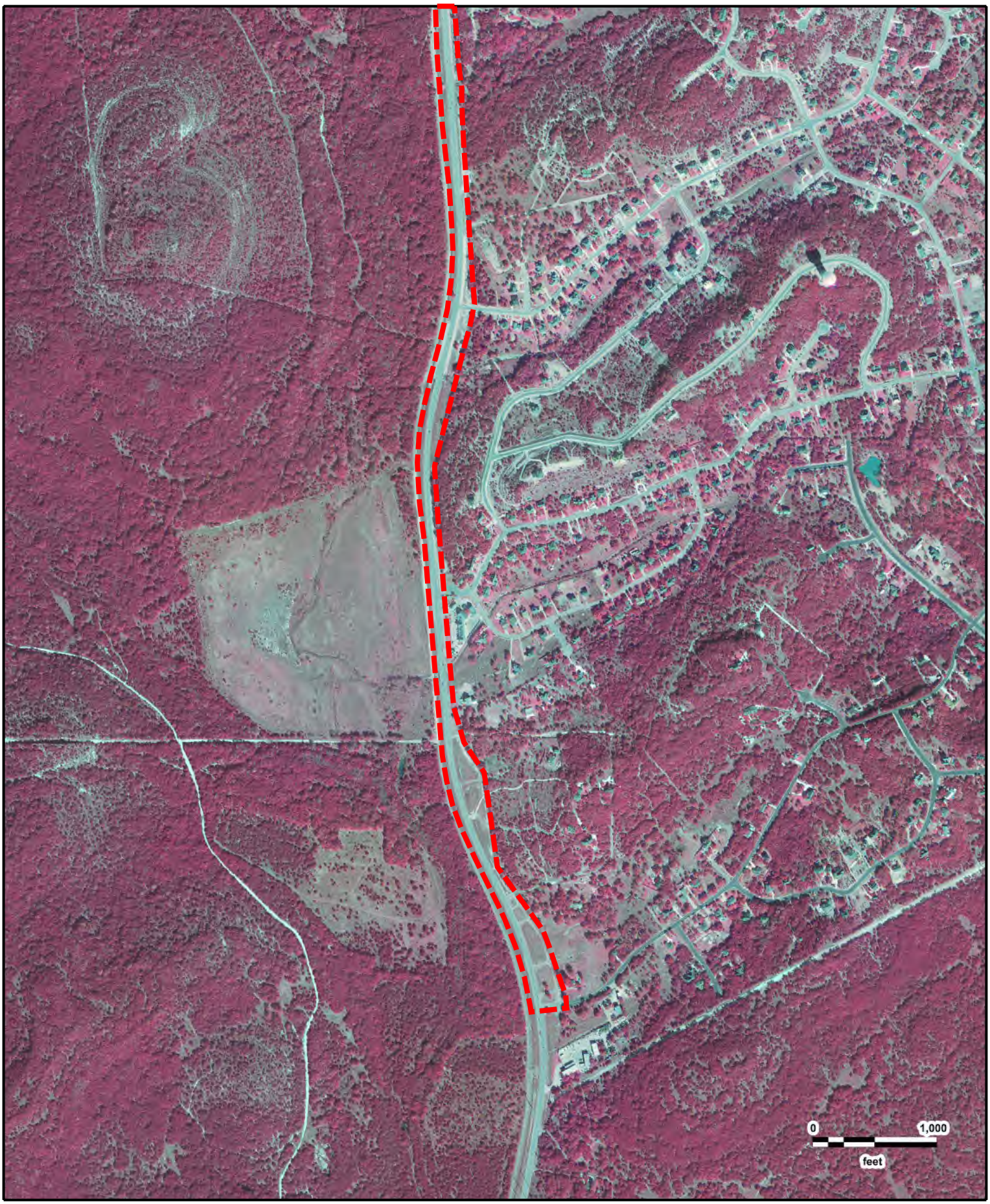
Blanco Road Phase II Improvements
USDA
2004

GeoSearch

JOB #: 208100 - 10/24/2017



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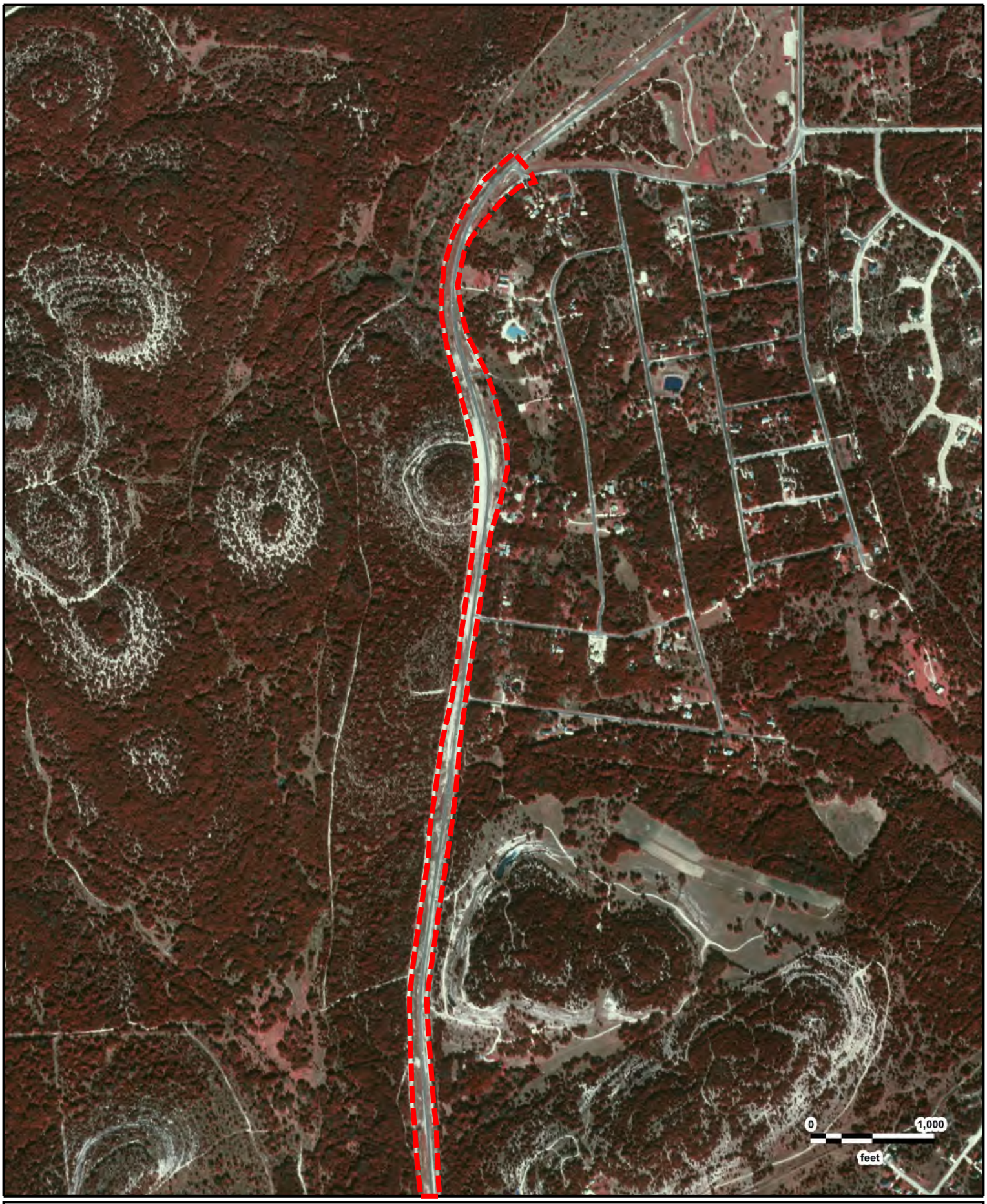
Blanco Road Phase II Improvements
USDA
2004

GeoSearch

JOB #: 208100 - 10/24/2017



N
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Blanco Road Phase II Improvements
USGS
1996

GeoSearch

JOB #: 208100 - 10/24/2017

N
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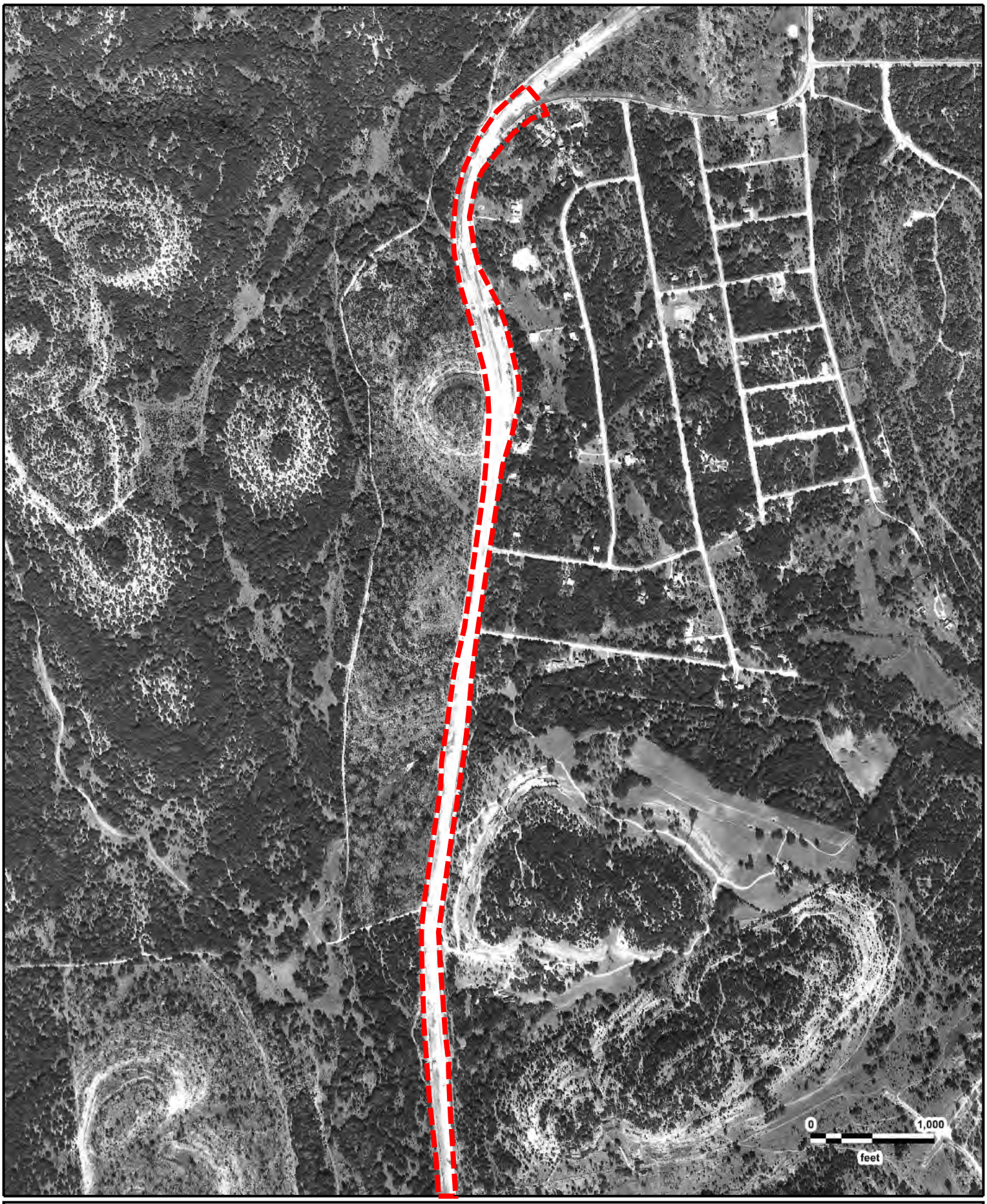
Blanco Road Phase II Improvements
USGS
1996

GeoSearch

022

JOB #: 208100 - 10/24/2017



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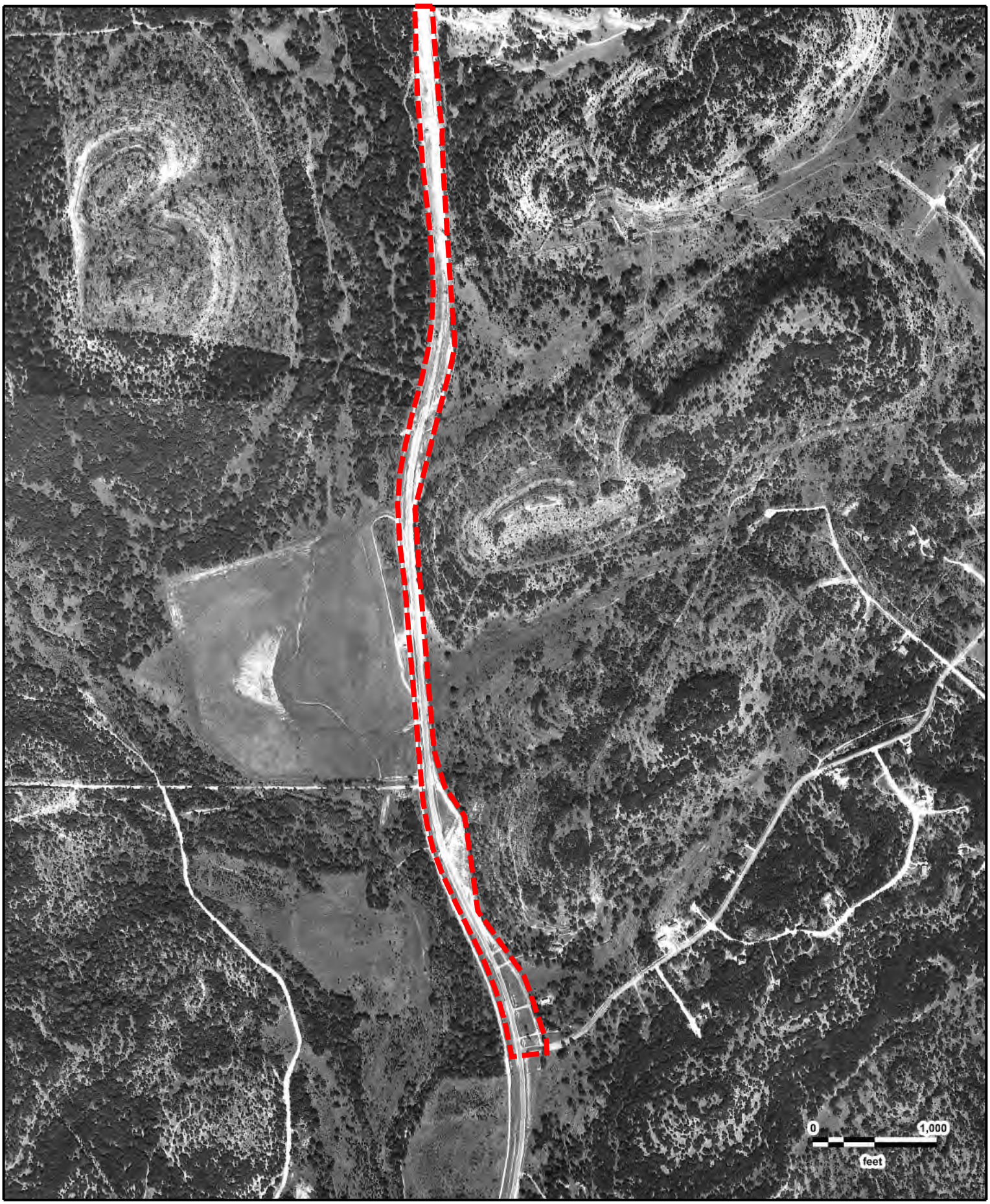
Blanco Road Phase II Improvements
TXDOT
12/05/1985

GeoSearch

JOB #: 208100 - 10/24/2017



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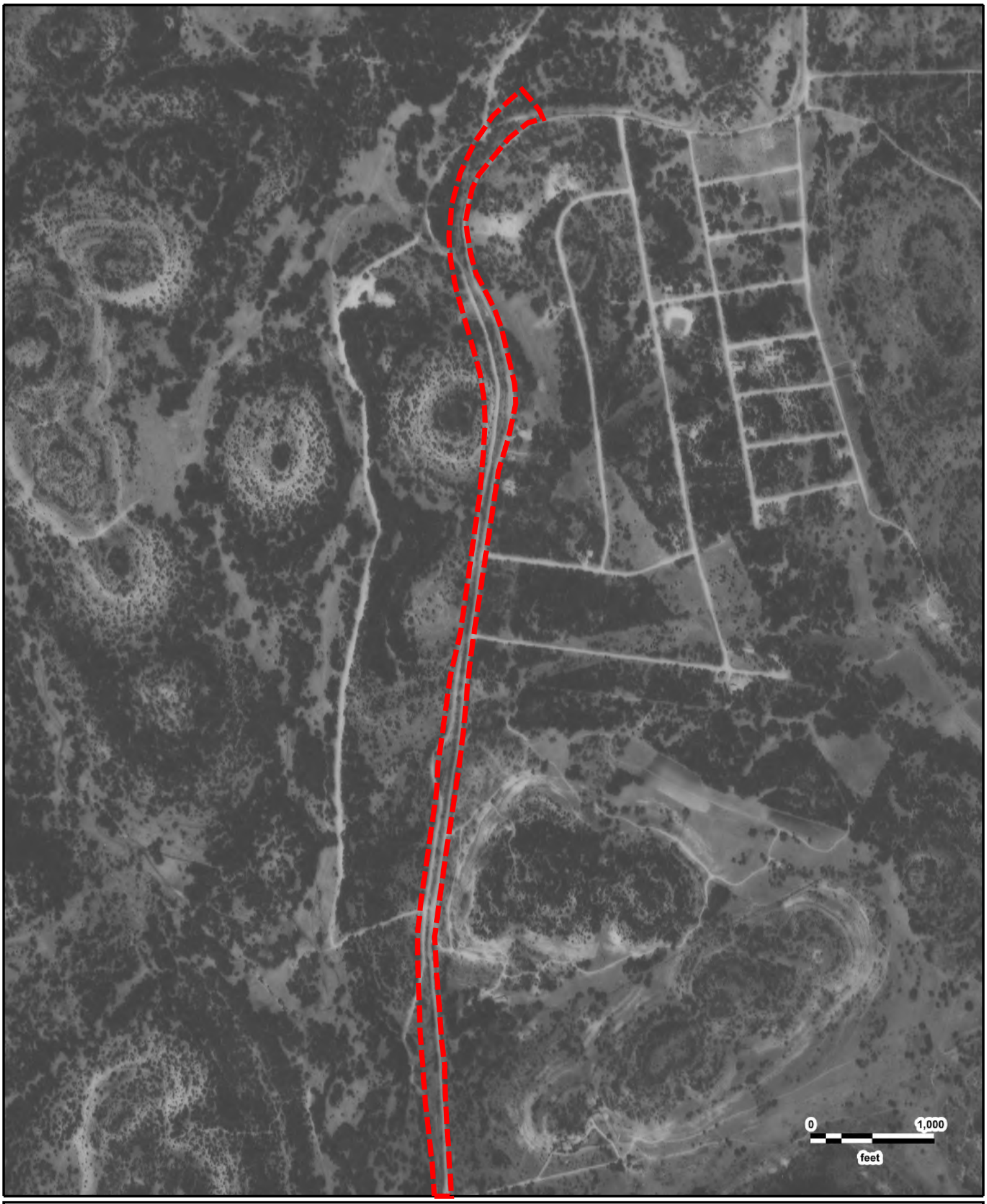
Blanco Road Phase II Improvements
TXDOT
12/05/1985

GeoSearch

JOB #: 208100 - 10/24/2017



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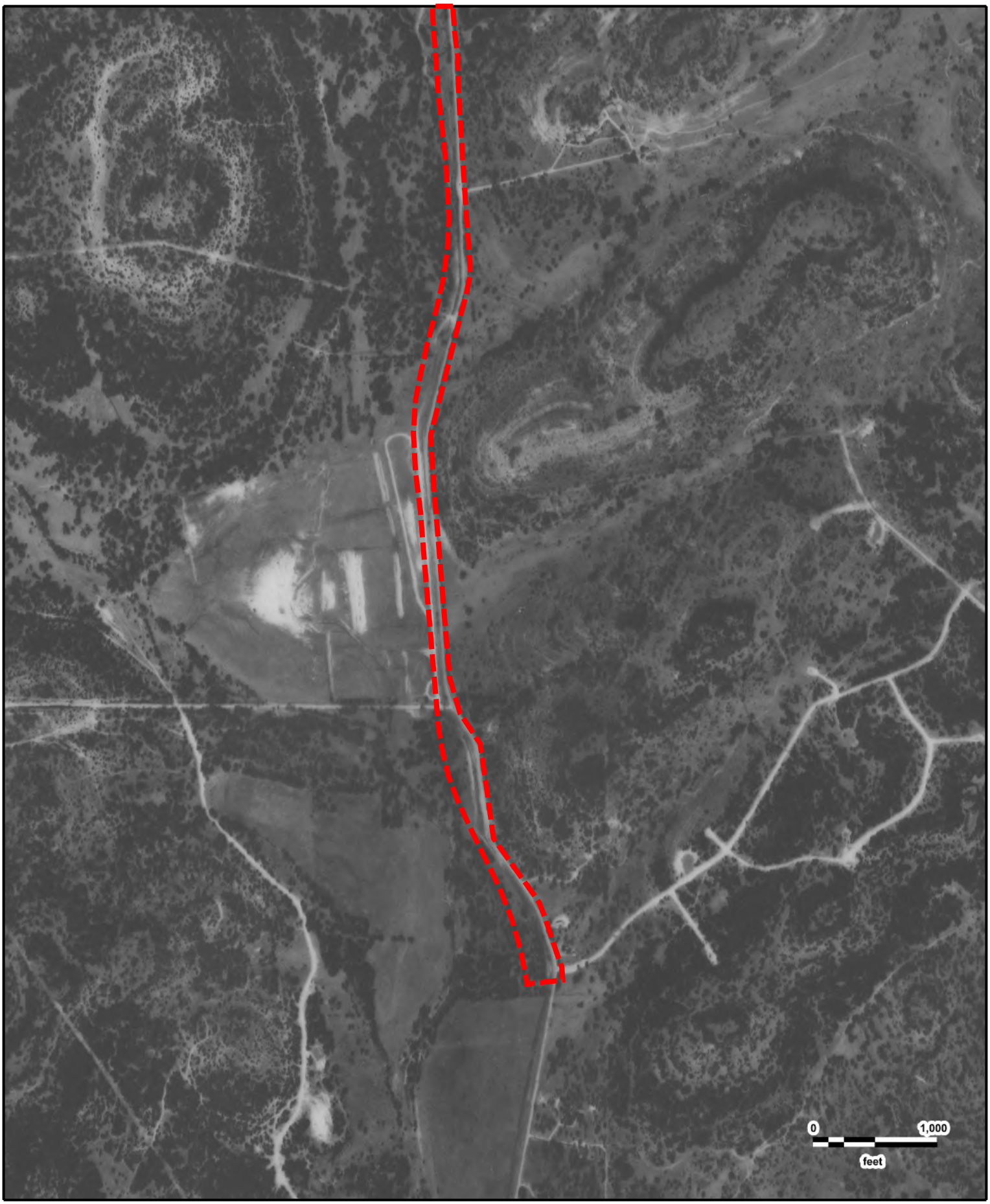
Blanco Road Phase II Improvements
ASCS
01/28/1973

GeoSearch

JOB #: 208100 - 10/24/2017



N
W E
S

Blanco Road Phase II Improvements
ASCS
01/28/1973

GeoSearch

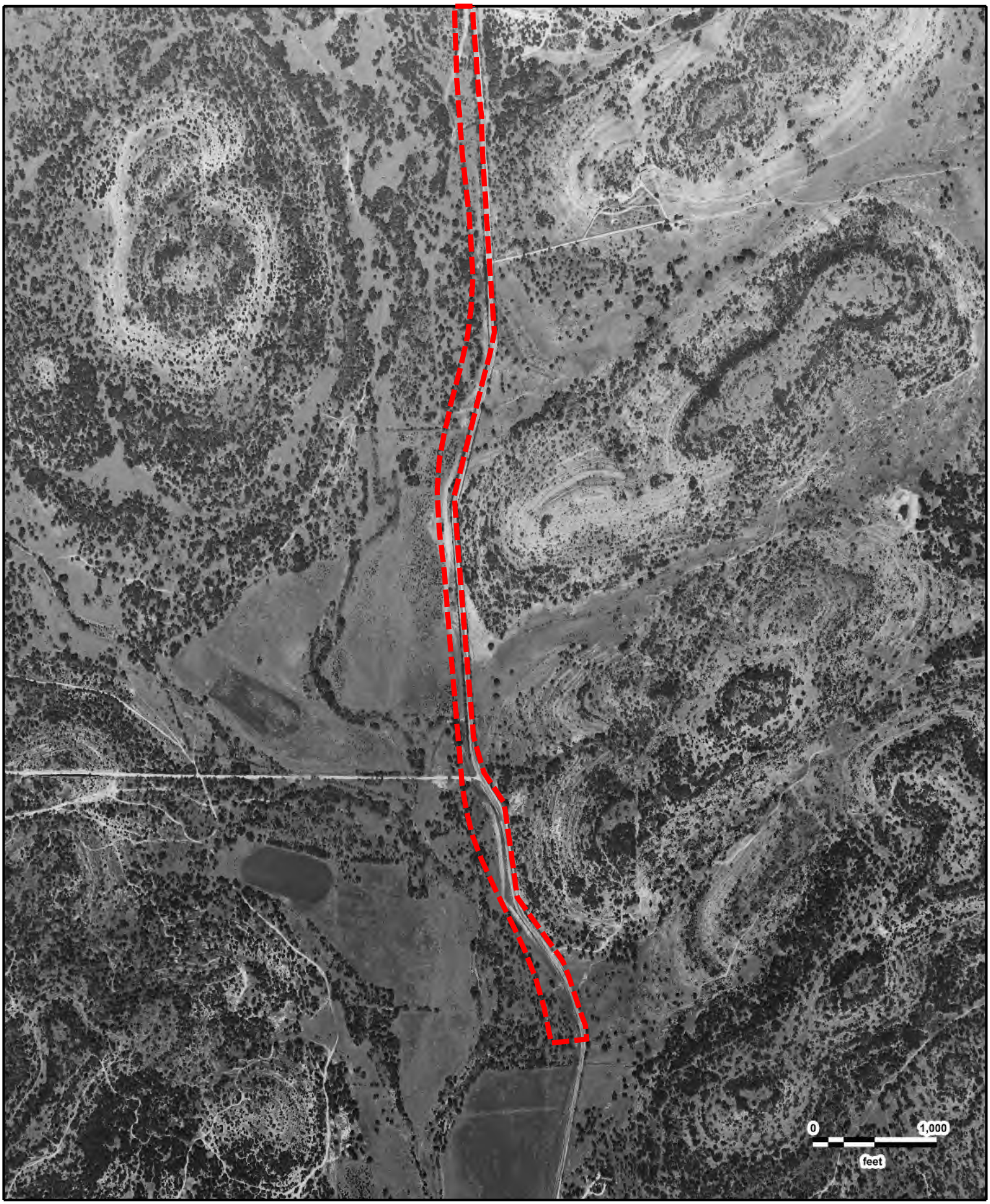
JOB #: 208100 - 10/24/2017

N
W E
S

Blanco Road Phase II Improvements
USGS
02/05/1963

GeoSearch

JOB #: 208100 - 10/24/2017



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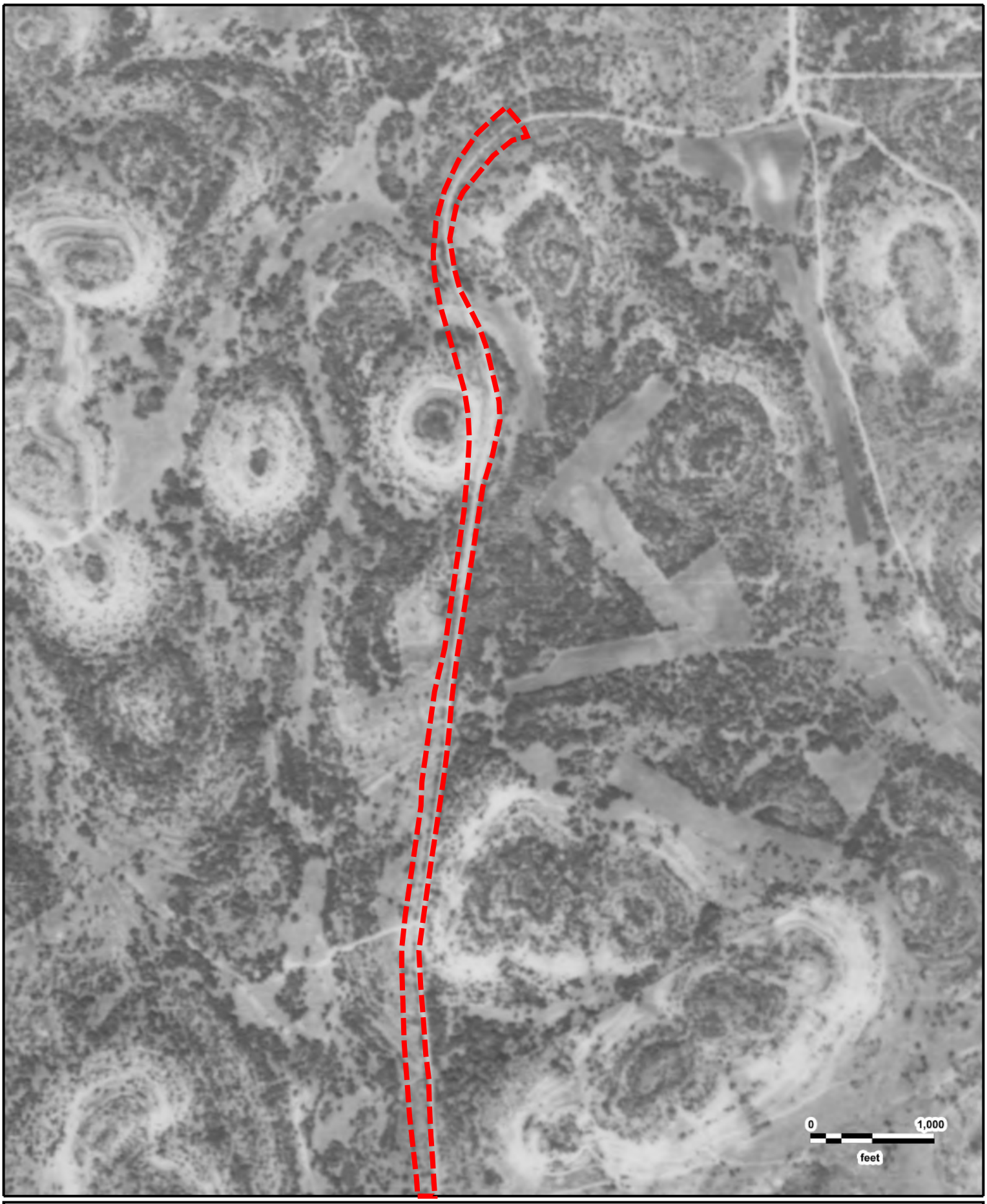
Blanco Road Phase II Improvements
USGS
02/05/1963

GeoSearch

JOB #: 208100 - 10/24/2017



N
W E
S

Blanco Road Phase II Improvements
AMS
12/12/1952

GeoSearch

JOB #: 208100 - 10/24/2017

N
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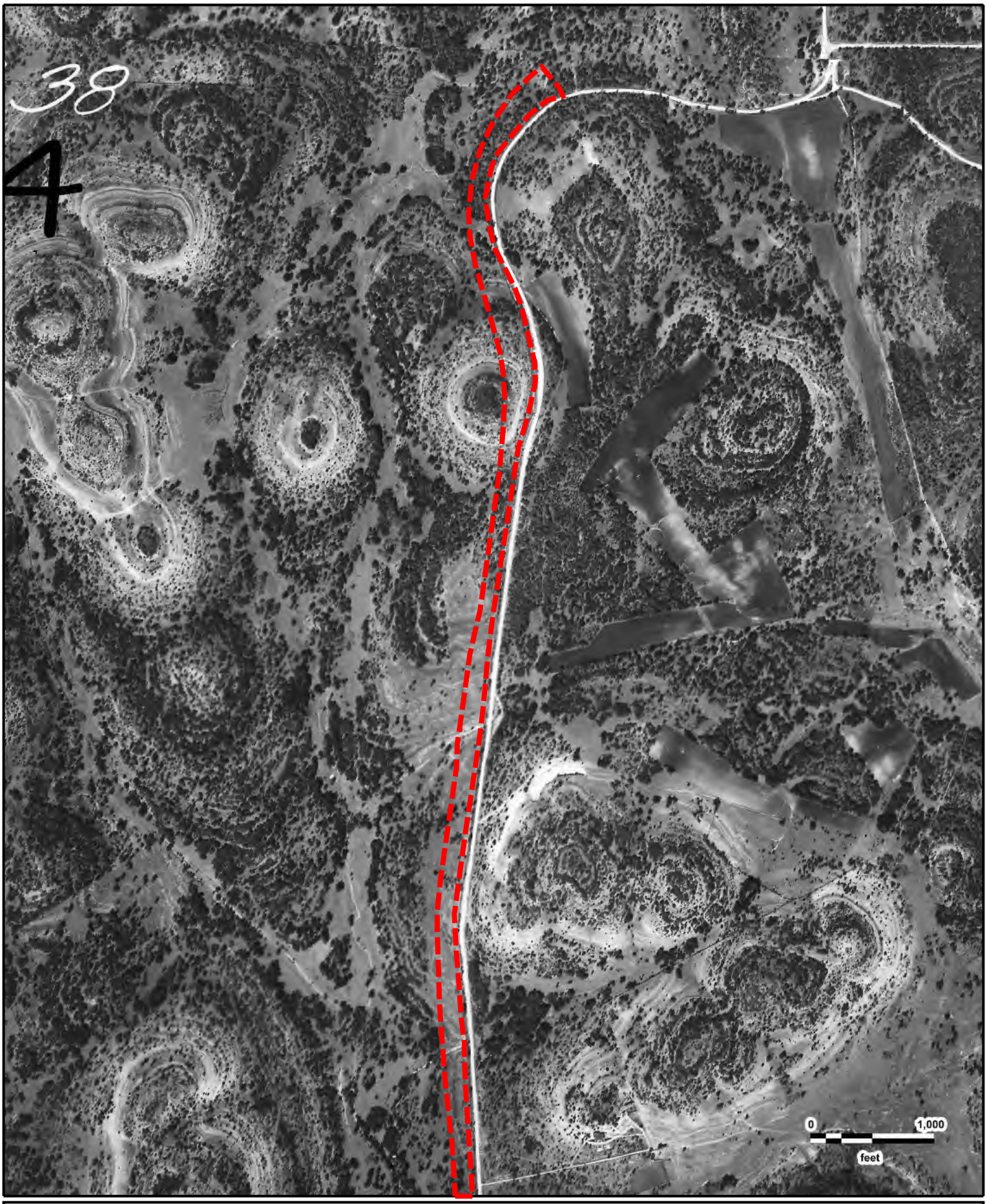
S

Blanco Road Phase II Improvements
AMS
12/12/1952

GeoSearch

JOB #: 208100 - 10/24/2017



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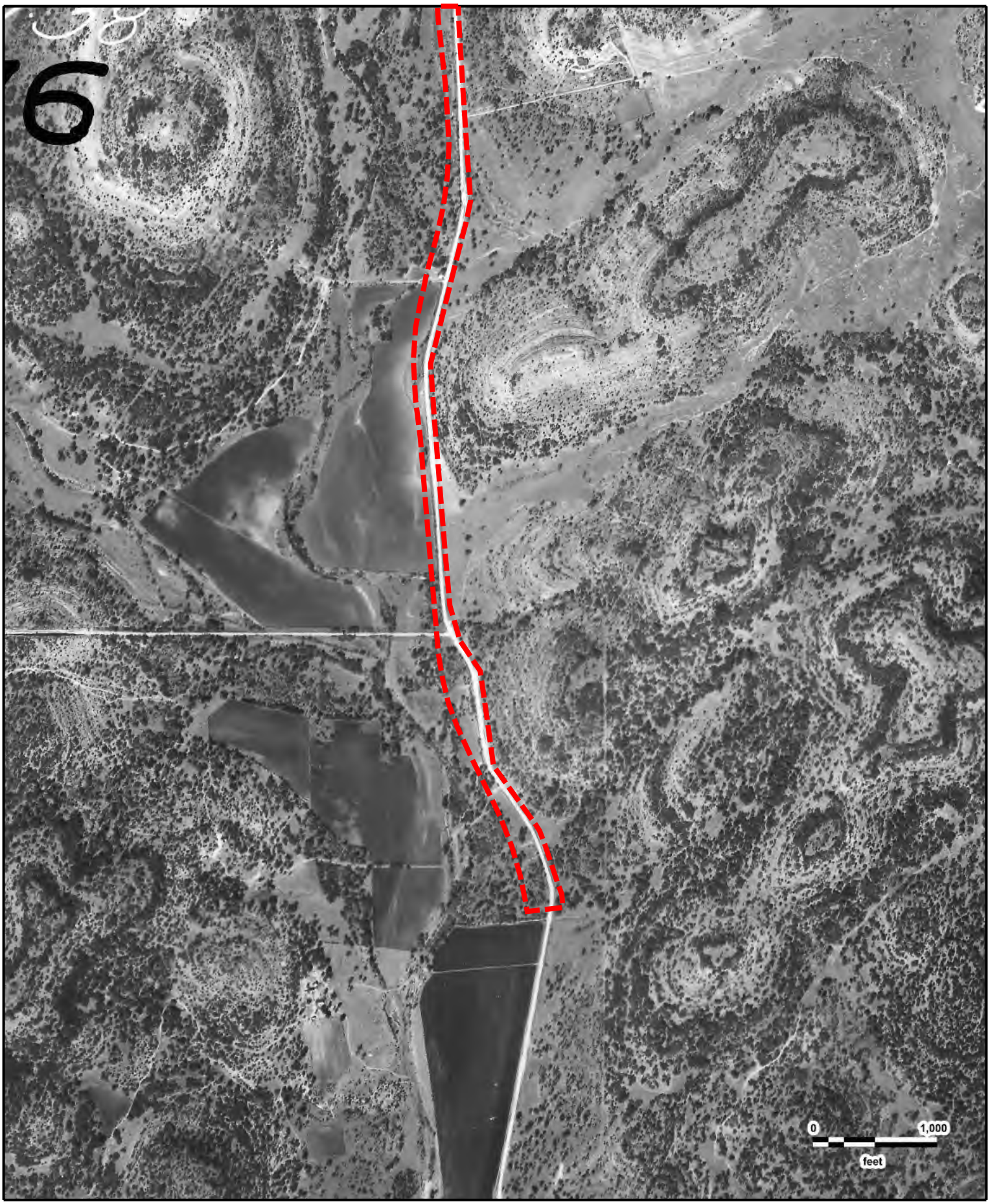
Blanco Road Phase II Improvements
ASCS
11/17/1938

GeoSearch

JOB #: 208100 - 10/24/2017



N
W E
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Blanco Road Phase II Improvements
ASCS
11/17/1938

GeoSearch

JOB #: 208100 - 10/24/2017

Radius Report

Satellite view

Target Property:

Blanco Road Phase II Improvements
From West Oak Estates Drive to Borgfeld Drive
San Antonio, Bexar County, Texas

Prepared For:

CP&Y-San Antonio

Order #: 94905
Job #: 208099
Project #: BEXA1500487.00
Date: 10/25/2017

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Unlocatable Report . . . . . See Attachment

Zip Report . . . . . See Attachment

Disclaimer

This report was designed by GeoSearch to meet or exceed the records search requirements of the All Appropriate Inquiries Rule (40 CFR §312.26) and the current version of the ASTM International E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process or, if applicable, the custom requirements requested by the entity that ordered this report. The records and databases of records used to compile this report were collected from various federal,state and local governmental entities. It is the goal of GeoSearch to meet or exceed the 40 CFR §312.26 and E1527 requirements for updating records by using the best available technology. GeoSearch contacts the appropriate governmental entities on a recurring basis. Depending on the frequency with which a record source or database of records is updated by the governmental entity, the data used to prepare this report may be updated monthly, quarterly, semi-annually, or annually.

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Target Property Summary

Target Property Information

Blanco Road Phase II Improvements
From West Oak Estates Drive to Borgfeld Drive
San Antonio, Texas

Coordinates
Area centroid (-98.521724, 29.6863515)
1,241 feet above sea level

USGS Quadrangle
Camp Bullis, TX

Geographic Coverage Information

County/Parish: Bexar (TX)
ZipCode(s):
San Antonio TX: 78257, 78258, 78260

Radon
* Target property is located in Radon Zone 3.
Zone 3 areas have a predicted average indoor radon screening level less than 2 pCi/L (picocuries per liter).

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSTX	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR06	0	0	0.1250
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR	RCRANGR06	0	0	0.1250
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - NON-CORRACTS TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000

SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	TP/AP
BIENNIAL REPORTING SYSTEM	BRS	0	0	TP/AP
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR06	0	0	TP/AP

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
FACILITY REGISTRY SYSTEM	FRSTX	7	0	TP/AP
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR06	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	0	0	TP/AP
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR06	0	0	TP/AP
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	TP/AP
PERMIT COMPLIANCE SYSTEM	PCSR06	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	1	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	0	0	0.2500
OPEN DUMP INVENTORY	ODI	0	0	0.5000
SURFACE MINING CONTROL AND RECLAMATION ACT SITES	SMCRA	0	0	0.5000
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	1	0	1.0000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000

SUB-TOTAL		9	0	

Database Summary

STATE (TX) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
STATE INSTITUTIONAL/ENGINEERING CONTROL SITES	SIEC01	0	0	TP/AP
DRY CLEANER REGISTRATION DATABASE	DCR	2	0	0.2500
PETROLEUM STORAGE TANKS	PST	4	0	0.2500
BROWNFIELDS SITE ASSESSMENTS	BSA	0	0	0.5000
CLOSED & ABANDONED LANDFILL INVENTORY	CALF	0	0	0.5000
LEAKING PETROLEUM STORAGE TANKS	LPST	0	0	0.5000
MUNICIPAL SOLID WASTE LANDFILL SITES	MSWLF	0	0	0.5000
RADIOACTIVE WASTE SITES	RWS	0	0	0.5000
RAILROAD COMMISSION VCP AND BROWNFIELD SITES	RRCVCP	0	0	0.5000
VOLUNTARY CLEANUP PROGRAM SITES	VCP	0	0	0.5000
INDUSTRIAL AND HAZARDOUS WASTE CORRECTIVE ACTION SITES	IHWCA	0	0	1.0000
STATE SUPERFUND SITES	SF	0	0	1.0000

SUB-TOTAL		6	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
GROUNDWATER CONTAMINATION CASES	GWCC	0	0	TP/AP
HISTORIC GROUNDWATER CONTAMINATION CASES	HISTGWCC	0	0	TP/AP
MUNICIPAL SETTING DESIGNATIONS	MSD	0	0	TP/AP
NOTICE OF VIOLATIONS	NOV	1	0	TP/AP
SPILLS LISTING	SPILLS	3	0	TP/AP
TCEQ LIENS	LIENS	0	0	TP/AP
TIER I I CHEMICAL REPORTING PROGRAM FACILITIES	TIERII	1	0	TP/AP
INDUSTRIAL AND HAZARDOUS WASTE SITES	IHW	0	0	0.2500
PERMITTED INDUSTRIAL HAZARDOUS WASTE SITES	PIHW	0	0	0.2500
AFFECTED PROPERTY ASSESSMENT REPORTS	APAR	0	0	0.5000
DRY CLEANER REMEDIATION PROGRAM SITES	DCRPS	0	0	0.5000
INNOCENT OWNER / OPERATOR DATABASE	IOP	0	0	0.5000
RECYCLING FACILITIES	WMRF	0	0	0.5000
SALT CAVERNS FOR PETROLEUM STORAGE	STCV	0	0	0.5000

SUB-TOTAL		5	0	

Database Summary

LOCAL LISTING

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EDWARDS AQUIFER PERMITS	EAP	2	0	TP/AP

SUB-TOTAL		2	0	

Database Summary

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR06	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR06	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	

TOTAL		22	0	

Database Radius Summary

FEDERAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRSAFS	0.0200	0	NS	NS	NS	NS	NS	0
BRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
ECHOR06	0.0200	0	NS	NS	NS	NS	NS	0
ERNSTX	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
FRSTX	0.0200	7	NS	NS	NS	NS	NS	7
HMIRSR06	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	0	NS	NS	NS	NS	NS	0
ICISNPDES	0.0200	0	NS	NS	NS	NS	NS	0
LUCIS	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
MLTS	0.0200	0	NS	NS	NS	NS	NS	0
NPDESR06	0.0200	0	NS	NS	NS	NS	NS	0
PADS	0.0200	0	NS	NS	NS	NS	NS	0
PCSR06	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SEMSLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSTS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	1	NS	NS	NS	NS	NS	1
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR06	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
RCRANGR06	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	0	0	NS	NS	NS	0
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
DNPL	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NLRRCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODI	0.5000	0	0	0	0	NS	NS	0
RCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
SEMS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SEMSARCH	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SMCRA	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
DOD	1.0000	1	0	0	0	0	NS	1
FUDS	1.0000	0	0	0	0	0	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NLRRCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
NMS	1.0000	0	0	0	0	0	NS	0
NPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
PNPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRASUBC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RODS	1.0000	0	0	0	0	0	NS	0

SUB-TOTAL		9	0	0	0	0	0	9

STATE (TX) LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
GWCC	0.0200	0	NS	NS	NS	NS	NS	0
HISTGWCC	0.0200	0	NS	NS	NS	NS	NS	0
LIENS	0.0200	0	NS	NS	NS	NS	NS	0
MSD	0.0200	0	NS	NS	NS	NS	NS	0
NOV	0.0200	1	NS	NS	NS	NS	NS	1
SIEC01	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SPILLS	0.0200	3	NS	NS	NS	NS	NS	3
TIERII	0.0200	1	NS	NS	NS	NS	NS	1
DCR	**0.2500**	**2**	**0**	**0**	**NS**	**NS**	**NS**	**2**
IHW	0.2500	0	0	0	NS	NS	NS	0
PIHW	0.2500	0	0	0	NS	NS	NS	0
PST	**0.2500**	**3**	**1**	**0**	**NS**	**NS**	**NS**	**4**
APAR	0.5000	0	0	0	0	NS	NS	0
BSA	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CALF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
DCRPS	0.5000	0	0	0	0	NS	NS	0
IOP	0.5000	0	0	0	0	NS	NS	0
LPST	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
MSWLF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
RRCVCP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
RWS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
STCV	0.5000	0	0	0	0	NS	NS	0
VCP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
WMRF	0.5000	0	0	0	0	NS	NS	0
IHWCA	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
SF	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**

SUB-TOTAL		10	1	0	0	0	0	11

Database Radius Summary

LOCAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
EAP	0.0200	2	NS	NS	NS	NS	NS	2
SUB-TOTAL		2	0	0	0	0	0	2

Database Radius Summary

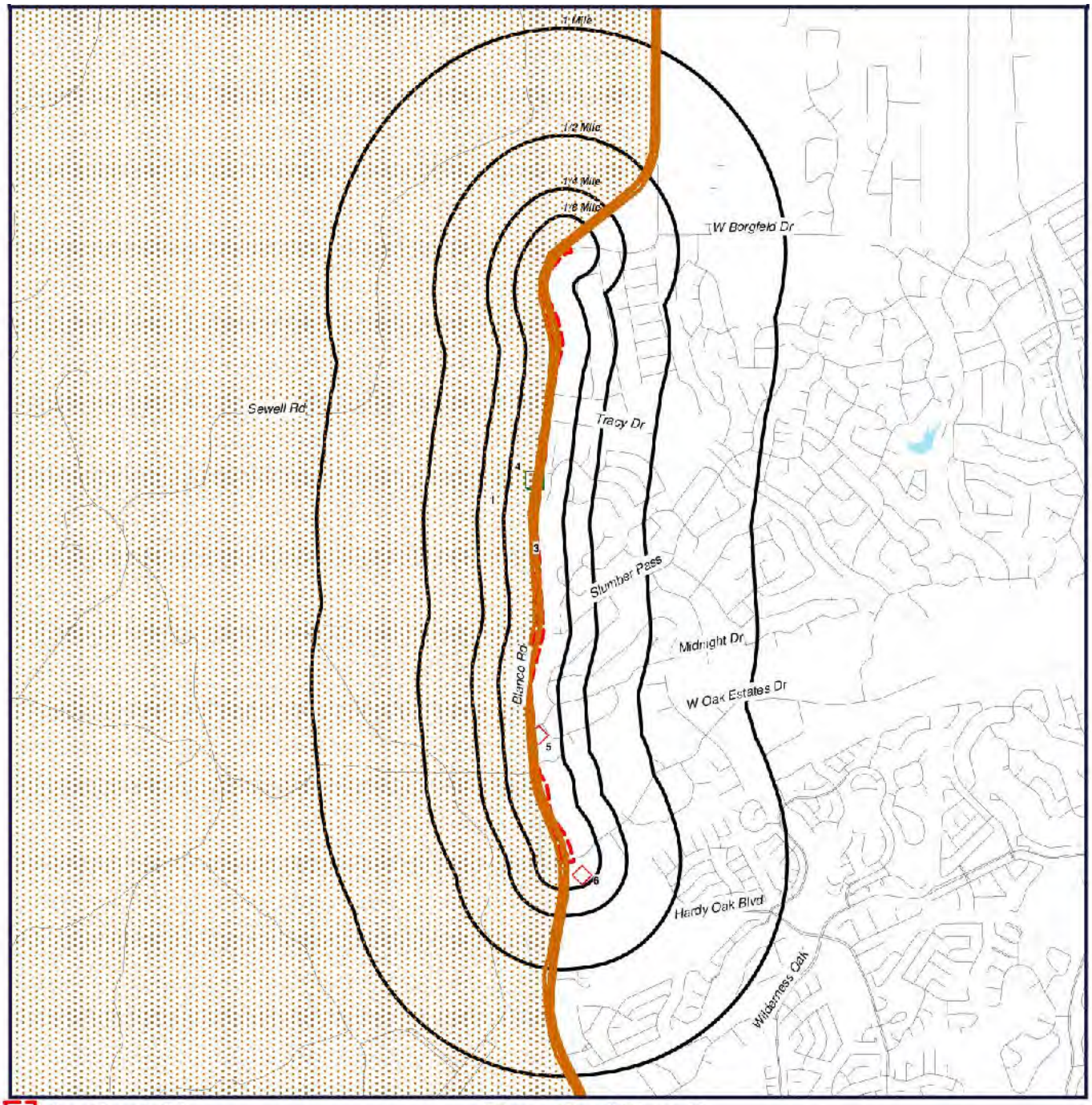
TRIBAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR06	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
LUSTR06	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODINDIAN	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
INDIANRES	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0
TOTAL		21	1	0	0	0	0	22

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1



Target Property (TP)
PST
SPILLS
NOV
TIERII
FRSTX
TRI
DOD
EAP

FRSTX
PST

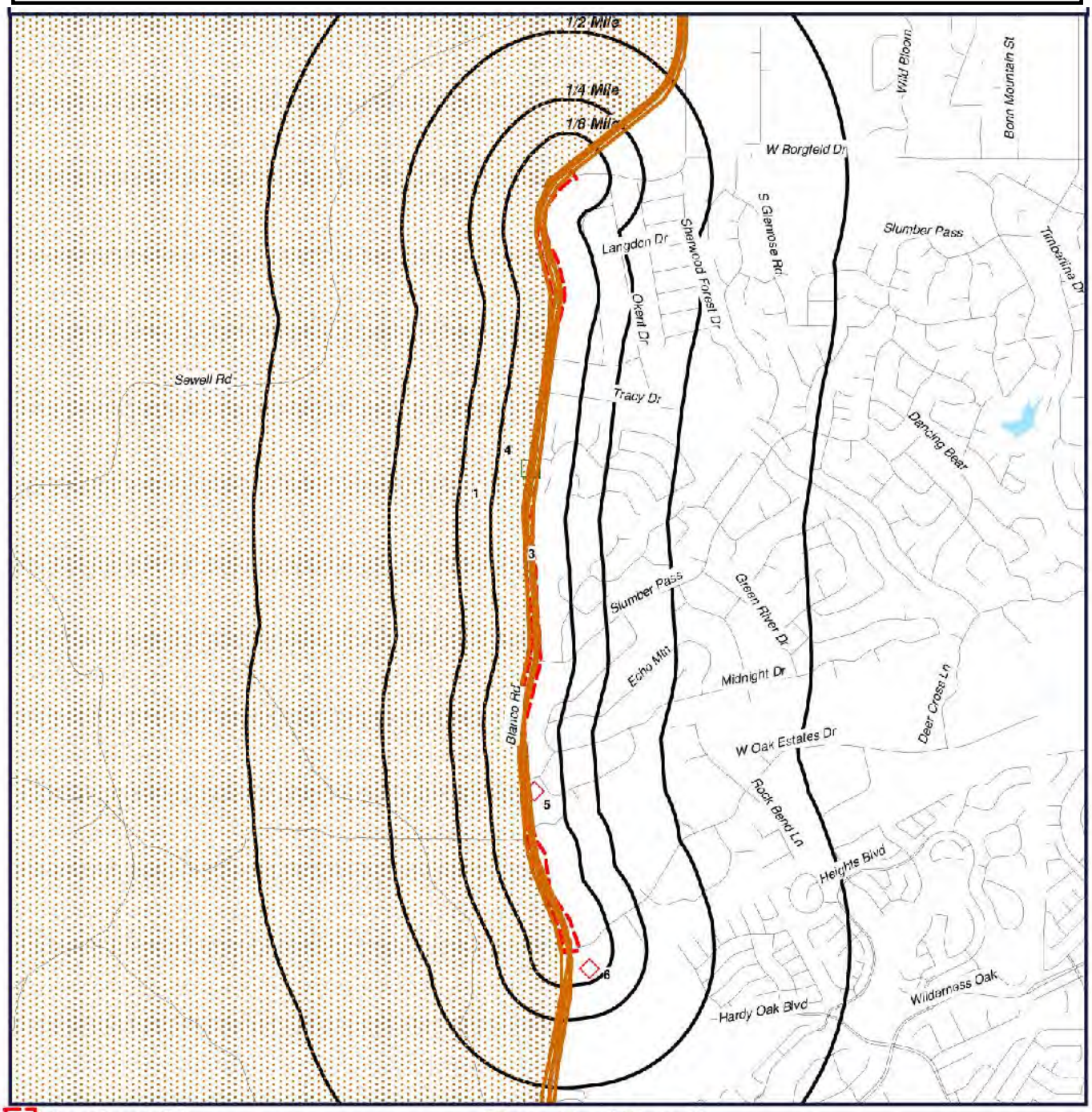
Blanco Road Phase II Improvements From West Oak Estates Drive to Borgfeld Drive San Antonio, Texas

N
W E
S

0' 1900' 3800' 5700'
SCALE: 1" = 3800'

Click here to access Satellite view

Radius Map 2



Target Property (TP)
PST
SPILLS
NOV
TIERII
FRSTX
TRI
DOD
EAP

FRSTX
PST

Blanco Road Phase II Improvements From West Oak Estates Drive to Borgfeld Drive San Antonio, Texas

N
W E
S

0' 1500' 3000' 4500'
SCALE: 1" = 3000'

Click here to access Satellite view

Ortho Map

Target Property (TP)
PST
SPILLS
NOV
TIERII
FRSTX
TRI
DOD
EAP

FRSTX
PST

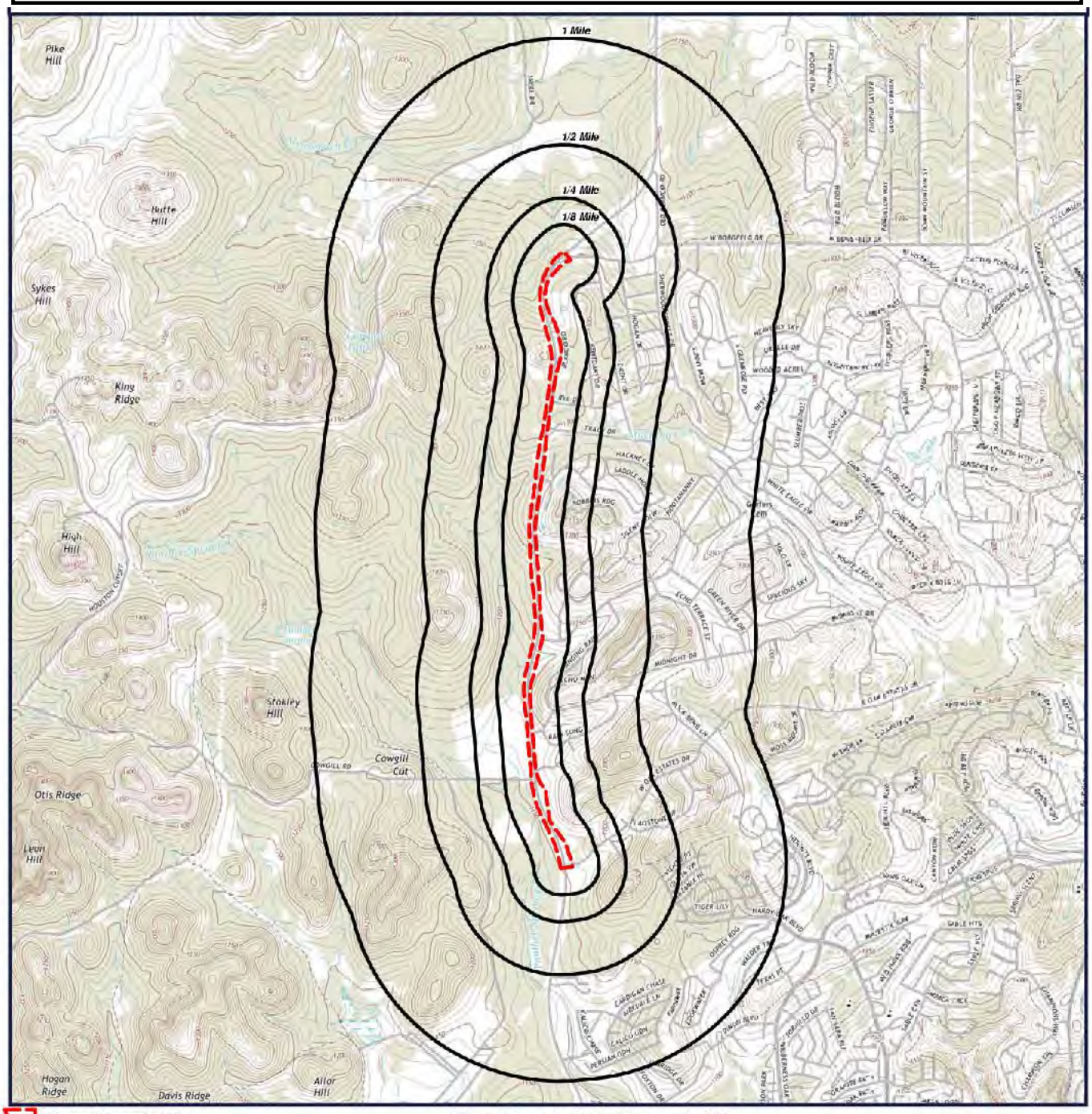
Quadrangle(s): Camp Bullis
Blanco Road Phase II Improvements
From West Oak Estates Drive to Borgfeld Drive
San Antonio, Texas

N
W E
S

0' 1500' 3000' 4500'
SCALE: 1" = 3000'

Click here to access Satellite view

Topographic Map



Target Property (TP)

Quadrangle(s): Camp Bullis
Source: USGS, 02/21/2013
Blanco Road Phase II Improvements
From West Oak Estates Drive to Borgfeld Drive
San Antonio, Texas

N
W E
S

0' 1900' 3800' 5700'
SCALE: 1" = 3800'

Click here to access Satellite view

Located Sites Summary

*NOTE: Standard environmental records are displayed in **bold**.*

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
1	FRSTX	110034353134	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)	CAMP BULLIS BC3 TRAINING SITE	N OF LOOP 1604 AND E OF IH 10, SAN ANTONIO, TX 78257	20
1	FRSTX	110041373117	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)	CAMP BULLIS	UNKNOWN, SAN ANTONIO, TX 00000	21
1	FRSTX	110041713508	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)	CAMP BULLIS RV STORAGE	OPPOSITE INTERSECTION OF LEWIS VALLEY AND MALABANG, SAN ANTONIO, TX 78257	22
1	NOV	RN101609311	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)	CAMP BULLIS PLANT	TX	23
1	***PST***	***37913***	***Lower (1,222 ft.)***	***0.001 mi. SW (5 ft.)***	***SAT A RCAG***	***HI HILL CAMP BULLIS, SAN ANTONIO, TX 78216***	***24***
1	***PST***	***37914***	***Lower (1,222 ft.)***	***0.001 mi. SW (5 ft.)***	***SAN ANTONIO TX RCAG***	***HIGH HILL CAMP BULLIS, SAN ANTONIO, TX 78216***	***26***
1	SPILLS	15458	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)		CAMP BULLIS DEPMEDS PARKING LOT, CAMP BULLIS, TX 78257	28
1	SPILLS	31288	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)		RURAL ROUTE 2, BLDG 5000 CAMP BULLIS, SAN ANTONIO, TX, SAN ANTONIO, TX 78257	29
1	SPILLS	68446	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)		RURAL ROUTE 2, BLDG 5000 CAMP BULLIS, SAN ANTONIO, TX, SAN ANTONIO, TX 78257	30
1	TIERII	47ABNK05T18F	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)	SAN ANTONIO CAMP BULLIS UTES#5/ARMORY	4800 CAMP BULLIS RD, SAN ANTONIO, TX 78257	31
1	TRI	78257SRMYC4 782W	Lower (1,222 ft.)	0.001 mi. SW (5 ft.)	US DOD USAF CAMP BULLIS RANGES	RR-2 BLDG 5000, SAN ANTONIO, TX 78257	33
2	DOD	49324	Lower (1,213 ft.)	0.001 mi. W (5 ft.)	CAMP BULLIS	TX 78257	34
3	EAP	97032502	Equal (1,241 ft.)	0.001 mi. S (5 ft.)	FM 2696 WIDENING & RESURFACING	FM 2696 FROM 2 MI N LOOP 1604 TO 9.4 MI N, TX	35
3	EAP	97032502A	Equal (1,241 ft.)	0.001 mi. S (5 ft.)	FM 2696 WIDENING & RESURFACING	FM 2696 FROM 2 MI N LOOP 1604 TO 9.4 MI N	36
4	FRSTX	110034723388	Higher (1,284 ft.)	0.001 mi. N (5 ft.)	CLEMENTSON	ON BLANCO DR & CLEMENTON DR, SAN ANTONIO, TX 78258	37
5	***DCR***	***RN103993838***	***Lower (1,174 ft.)***	***0.02 mi. N (106 ft.)***	***PLEDGE CLEANERS***	***25020 BLANCO RD STE 130, SAN ANTONIO, TX 78260***	***38***
5	***DCR***	***RN104877022***	***Lower (1,174 ft.)***	***0.02 mi. N (106 ft.)***		***25020 BLANCO RD STE 110, SAN ANTONIO, TX 78260***	***39***
5	FRSTX	110033389358	Lower (1,174 ft.)	0.02 mi. N (106 ft.)	BUBBAS 361	25020 BLANCO RD, SAN ANTONIO, TX 78260	41
5	FRSTX	110034549549	Lower (1,174 ft.)	0.02 mi. N (106 ft.)	COWBOY CLEANERS	25020 BLANCO RD STE 110, SAN ANTONIO, TX 78258	42
5	FRSTX	110034598941	Lower (1,174 ft.)	0.02 mi. N (106 ft.)	PLEDGE CLEANERS	25020 BLANCO RD STE 130, SAN ANTONIO, TX 78258	43
5	***PST***	***69358***	***Lower (1,174 ft.)***	***0.02 mi. N (106 ft.)***	***BIGS 206***	***25020 BLANCO RD STE 190, SAN ANTONIO, TX 78260***	***44***
6	***PST***	***77770***	***Lower (1,155 ft.)***	***0.08 mi. SE (422 ft.)***	***URBAN CONCRETE CONTRACTORS***	***24114 BLANCO RD, SAN ANTONIO, TX 78260***	***50***

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 1241 ft.

*NOTE: Standard environmental records are displayed in **bold**.*

EQUAL/HIGHER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
3	EAP	1,241 ft.	FM 2696 WIDENING & RESURFACING	FM 2696 FROM 2 MI N LOOP 1604 TO 9.4 MI N, TX	35
3	EAP	1,241 ft.	FM 2696 WIDENING & RESURFACING	FM 2696 FROM 2 MI N LOOP 1604 TO 9.4 MI N	36
4	FRSTX	1,284 ft.	CLEMENTSON	ON BLANCO DR & CLEMENTON DR, SAN ANTONIO, TX 78258	37

LOWER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
1	FRSTX	1,222 ft.	CAMP BULLIS BC3 TRAINING SITE	N OF LOOP 1604 AND E OF IH 10, SAN ANTONIO, TX 78257	20
1	FRSTX	1,222 ft.	CAMP BULLIS	UNKNOWN, SAN ANTONIO, TX 00000	21
1	FRSTX	1,222 ft.	CAMP BULLIS RV STORAGE	OPPOSITE INTERSECTION OF LEWIS VALLEY AND MALABANG, SAN ANTONIO, TX 78257	22
1	NOV	1,222 ft.	CAMP BULLIS PLANT	TX	23
1	***PST***	***1,222 ft.***	***SAT A RCAG***	***HI HILL CAMP BULLIS, SAN ANTONIO, TX 78216***	***24***
1	***PST***	***1,222 ft.***	***SAN ANTONIO TX RCAG***	***HIGH HILL CAMP BULLIS, SAN ANTONIO, TX 78216***	***26***
1	SPILLS	1,222 ft.		CAMP BULLIS DEPMEDS PARKING LOT, CAMP BULLIS, TX 78257	28
1	SPILLS	1,222 ft.		RURAL ROUTE 2, BLDG 5000 CAMP BULLIS, SAN ANTONIO, TX, SAN ANTONIO, TX 78257	29
1	SPILLS	1,222 ft.		RURAL ROUTE 2, BLDG 5000 CAMP BULLIS, SAN ANTONIO, TX, SAN ANTONIO, TX 78257	30
1	TIERII	1,222 ft.	SAN ANTONIO CAMP BULLIS UTES#5/ARMORY	4800 CAMP BULLIS RD, SAN ANTONIO, TX 78257	31
1	TRI	1,222 ft.	US DOD USAF CAMP BULLIS RANGES	RR-2 BLDG 5000, SAN ANTONIO, TX 78257	33
2	DOD	1,213 ft.	CAMP BULLIS	TX 78257	34
5	***DCR***	***1,174 ft.***	***PLEDGE CLEANERS***	***25020 BLANCO RD STE 130, SAN ANTONIO, TX 78260***	***38***
5	***DCR***	***1,174 ft.***		***25020 BLANCO RD STE 110, SAN ANTONIO, TX 78260***	***39***
5	FRSTX	1,174 ft.	BUBBAS 361	25020 BLANCO RD, SAN ANTONIO, TX 78260	41
5	FRSTX	1,174 ft.	COWBOY CLEANERS	25020 BLANCO RD STE 110, SAN ANTONIO, TX 78258	42
5	FRSTX	1,174 ft.	PLEDGE CLEANERS	25020 BLANCO RD STE 130, SAN ANTONIO, TX 78258	43

Elevation Summary

Map ID#	Database Name	Elevation	Site Name	Address	Page #
5	PST	1,174 ft.	BIGS 206	25020 BLANCO RD STE 190, SAN ANTONIO, TX 78260	44
6	PST	1,155 ft.	URBAN CONCRETE CONTRACTORS	24114 BLANCO RD, SAN ANTONIO, TX 78260	50

Facility Registry System (FRSTX)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110034353134**

NAME: **CAMP BULLIS BC3 TRAINING SITE**

LOCATION ADDRESS: **N OF LOOP 1604 AND E OF IH 10**
SAN ANTONIO, TX 78257

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

CAMP BULLIS BC3 TRAINING SITE

PROGRAM/S LISTED FOR THIS FACILITY

TX-TCEQ ACR - TEXAS COMMISSION ON EVIRONMENTAL QUALITY - AGENCY CENTRAL REGISTRY

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

9711 - NATIONAL SECURITY

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

928110 - NATIONAL SECURITY.

Back to Report Summary

Facility Registry System (FRSTX)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110041373117**

NAME: **CAMP BULLIS**

LOCATION ADDRESS: **UNKNOWN**
SAN ANTONIO, TX 00000

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

CAMP BULLIS

CAMP BULLIS ALS (CALS)

PROGRAM/S LISTED FOR THIS FACILITY

EIS - EIS

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

48811 - AIRPORT OPERATIONS

48811 - AIRPORT OPERATIONS

48811 - AIRPORT OPERATIONS

48811 - AIRPORT OPERATIONS

Back to Report Summary

Facility Registry System (FRSTX)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110041713508**

NAME: **CAMP BULLIS RV STORAGE**

LOCATION ADDRESS: **OPPOSITE INTERSECTION OF LEWIS VALLEY AND MALABANG**
SAN ANTONIO, TX 78257

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

CAMP BULLIS RV STORAGE

PROGRAM/S LISTED FOR THIS FACILITY

TX-TCEQ ACR - TEXAS COMMISSION ON EVIRONMENTAL QUALITY - AGENCY CENTRAL REGISTRY

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Notice of Violations (NOV)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

SITE INFORMATION

REFERENCE #: **RN101609311**
CUSTOMER #: **CN600126262**
NAME: **CAMP BULLIS PLANT**
ADDRESS: **NOT REPORTED**
CITY: **NOT REPORTED**
STATE: **TX**
ZIPCODE: **NOT REPORTED**
COUNTY: **BEXAR**
BUSINESS: **DOMESTIC N/D**
CONTACT: **NOT REPORTED**

SITE DETAILS

VIOLATION ISSUED: **08/14/06**
CATEGORY: **MINOR**
MEDIA: **WATER**
STATUS: **ACTIVE**
ALLEGATION:
FAILURE TO MAINTAIN COMPLIANCE WITH THE PERMIT LIMIT FOR DAILY AVERAGE FLOW. PERMITTEE EXCEEDED THE DAILY AVERAGE FLOW LIMIT OF 0.370 MGD IN THE MONTH OF FEBRUARY 2006.
RESOLUTION DESCRIPTION:
NOT REPORTED

Back to Report Summary

Petroleum Storage Tanks (PST)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

FACILITY INFORMATION

ID#: **37913**
NAME: **SAT A RCAG**
ADDRESS: **HI HILL CAMP BULLIS**
SAN ANTONIO, TX 78216
COUNTY: **BEXAR**
REGION: **13**
TYPE: **NOT REPORTED**
BEGIN DATE: **01/05/1987**
STATUS: **INACTIVE**
EXEMPT STATUS: **NO**
RECORDS OFF-SITE: **NO**
NUMBER OF ACTIVE UNDERGROUND TANKS: **0**
NUMBER OF ACTIVE ABOVEGROUND TANKS: **0**

APPLICATION INFORMATION:

RECEIVED DATE ON EARLIEST REGISTRATION FORM: **05/08/1986**
SIGNATURE DATE ON EARLIEST REGISTRATION FORM: **05/07/1986**
SIGNATURE NAME & TITLE: **J C NOCKER, MGR**
ENFORCEMENT ACTION DATE: **NOT REPORTED**

CONTACT INFORMATION

NAME: **B I SAMPLES**
TITLE: **MGR**
ORGANIZATION: **SAT A RCAG**
MAIL ADDRESS: **MAILING ADDRESS NOT REPORTED**
CITY NOT REPORTED
PHONE: **(512) 8247463 0**

OWNER

OWNER NUMBER: **CN600436885**
NAME: **FEDERAL AVIATION ADMINISTRATION**
CONTACT ADDRESS: **OWNER ADDRESS NOT REPORTED**
CITY NOT REPORTED
TYPE: **FEDERAL GOVERNMENT**
BEGIN DATE: **01/05/1987**
CONTACT ROLE: **NOT REPORTED**
CONTACT NAME: **NOT REPORTED**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **NOT REPORTED**
PHONE: **NOT REPORTED**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**

OPERATOR

NO OPERATOR INFORMATION REPORTED

SELF-CERTIFICATION

-NO SELF-CERTIFICATION INFORMATION REPORTED-

CONSTRUCTION NOTIFICATION

NO CONSTRUCTION NOTIFICATION DATA REPORTED FOR THIS FACILITY

UNDERGROUND STORAGE TANK

TANK ID: **1**
INSTALLATION DATE: **08/31/1987**
TANK CAPACITY (GAL): **NOT REPORTED**
NUMBER OF COMPARTMENTS: **1**
REGISTRATION DATE: **05/08/1986**
EMPTY TANK: **NOT EMPTY**

STATUS: **REMOVED FROM GROUND**
STATUS BEGIN DATE: **04/22/1997**
INTERNAL PROTECTION DATE: **NOT REPORTED**
REGULATORY STATUS: **FULLY REGULATED**
TANK DESIGN SINGLE WALL: **NO**
TANK DESIGN DOUBLE WALL: **NO**
PIPE DESIGN SINGLE WALL: **NO**
PIPE DESIGN DOUBLE WALL: **NO**

TANK DETAILS

MATERIAL:
STEEL
CORROSION PROTECTION:
NOT REPORTED
EXTERNAL CONTAINMENT:
NOT REPORTED
TANK COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **NO**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

COMPARTMENT DETAILS

UST COMPARTMENT ID: **86536**
TANK ID: **1**
COMPARTMENT LETTER: **A**
SUBSTANCES: **UNKNOWN**
OTHER SUBSTANCES: **NOT REPORTED**
CAPACITY (GAL): **0**
COMPARTMENT RELEASE DETECTION: **NOT REPORTED**
SPILL CONTAINMENT AND OVERFILL PREVENTION: **NOT REPORTED**

PIPING SYSTEMS

MATERIAL: **STEEL**
CORROSION PROTECTION: **NOT REPORTED**
EXTERNAL CONTAINMENT: **NOT REPORTED**
CONNECTORS & VALVES:
NOT REPORTED
PIPEING RELEASE DETECTION:
NOT REPORTED
PIPE COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **NO**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

ABOVEGROUND STORAGE TANK INFORMATION

NO ABOVEGROUND STORAGE TANK DATA REPORTED FOR THIS FACILITY

Back to Report Summary

Petroleum Storage Tanks (PST)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

FACILITY INFORMATION

ID#: **37914**
NAME: **SAN ANTONIO TX RCAG**
ADDRESS: **HIGH HILL CAMP BULLIS**
SAN ANTONIO, TX 78216
COUNTY: **BEXAR**
REGION: **13**
TYPE: **NOT REPORTED**
BEGIN DATE: **01/05/1987**
STATUS: **INACTIVE**
EXEMPT STATUS: **NO**
RECORDS OFF-SITE: **NO**
NUMBER OF ACTIVE UNDERGROUND TANKS: **0**
NUMBER OF ACTIVE ABOVEGROUND TANKS: **0**

APPLICATION INFORMATION:

RECEIVED DATE ON EARLIEST REGISTRATION FORM: **05/08/1986**
SIGNATURE DATE ON EARLIEST REGISTRATION FORM: **05/07/1986**
SIGNATURE NAME & TITLE: **J C NOCKER, MGR**
ENFORCEMENT ACTION DATE: **NOT REPORTED**

CONTACT INFORMATION

NAME: **B I SAMPLES**
TITLE: **MGR**
ORGANIZATION: **SAN ANTONIO TX RCAG**
MAIL ADDRESS: **MAILING ADDRESS NOT REPORTED**
CITY NOT REPORTED
PHONE: **(512) 8247463 0**

OWNER

OWNER NUMBER: **CN600436885**
NAME: **FEDERAL AVIATION ADMINISTRATION**
CONTACT ADDRESS: **OWNER ADDRESS NOT REPORTED**
CITY NOT REPORTED
TYPE: **FEDERAL GOVERNMENT**
BEGIN DATE: **01/05/1987**
CONTACT ROLE: **NOT REPORTED**
CONTACT NAME: **NOT REPORTED**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **NOT REPORTED**
PHONE: **NOT REPORTED**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**

OPERATOR

NO OPERATOR INFORMATION REPORTED

SELF-CERTIFICATION

-NO SELF-CERTIFICATION INFORMATION REPORTED-

CONSTRUCTION NOTIFICATION

NO CONSTRUCTION NOTIFICATION DATA REPORTED FOR THIS FACILITY

UNDERGROUND STORAGE TANK

TANK ID: **1**
INSTALLATION DATE: **01/01/1960**
TANK CAPACITY (GAL): **500**
NUMBER OF COMPARTMENTS: **1**
REGISTRATION DATE: **05/08/1986**
EMPTY TANK: **NOT EMPTY**

Petroleum Storage Tanks (PST)

STATUS: **REMOVED FROM GROUND**
STATUS BEGIN DATE: **03/12/1993**
INTERNAL PROTECTION DATE: **NOT REPORTED**
REGULATORY STATUS: **FULLY REGULATED**
TANK DESIGN SINGLE WALL: **YES**
TANK DESIGN DOUBLE WALL: **NO**
PIPE DESIGN SINGLE WALL: **YES**
PIPE DESIGN DOUBLE WALL: **NO**

TANK DETAILS

MATERIAL:
STEEL
CORROSION PROTECTION:
NOT REPORTED
EXTERNAL CONTAINMENT:
NOT REPORTED
TANK COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **NO**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

COMPARTMENT DETAILS

UST COMPARTMENT ID: **86537**
TANK ID: **1**
COMPARTMENT LETTER: **A**
SUBSTANCES: **GASOLINE**
OTHER SUBSTANCES: **NOT REPORTED**
CAPACITY (GAL): **500**
COMPARTMENT RELEASE DETECTION: **NOT REPORTED**
SPILL CONTAINMENT AND OVERFILL PREVENTION: **NOT REPORTED**

PIPING SYSTEMS

MATERIAL: **NOT REPORTED**
CORROSION PROTECTION: **NOT REPORTED**
EXTERNAL CONTAINMENT: **NOT REPORTED**
CONNECTORS & VALVES:
NOT REPORTED
PIPEING RELEASE DETECTION:
NOT REPORTED
PIPE COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **NO**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

ABOVEGROUND STORAGE TANK INFORMATION

NO ABOVEGROUND STORAGE TANK DATA REPORTED FOR THIS FACILITY

Back to Report Summary

Spills Listing (SPILLS)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

INCIDENT INFORMATION

GEOSEARCH ID: **15458**
SPILL DATE: **01/16/03**
SPILL LOCATION / COUNTY:
CAMP BULLIS DEPMEDS PARKING LOT / TX 78257
RESPONSIBLE PARTY: **FORT SAM HOUSTON CAMP BULLIS**
REGULATED ENTITY #: **RN102691599**
CUSTOMER: **FORT SAM HOUSTON CAMP BULLIS**
MATERIAL SPILLED / AMOUNT: **DIESEL FUEL 2-D / 45 GALLONS**
MEDIA: **WASTE**
NATURE: **WASTE**
WATER BODY: **UPPER SAN ANTONIO RIVER**
AIR SOURCE: **FIXED SITE - INLAND**
DISPUTED STATUS: **PUBLIC AUTO**
DISPUTED DATE: **02/06/03**
INCIDENT STATUS: **CLOSED**
CLASS: **CLOSED**
COMMENTS:
RAPID RESPONSE TEAM ON SITE TO REMEDIATE, MINOR IMPACT, NO ENVIRONMENTAL THREAT. MR. CARR WILL PREPARE REPORT.

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Spills Listing (SPILLS)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

INCIDENT INFORMATION

GEOSEARCH ID: **31288**
SPILL DATE: **11/18/03**
SPILL LOCATION / COUNTY:
RURAL ROUTE 2, BLDG 5000 CAMP BULLIS, SAN ANTONIO, TX / TX 78257
RESPONSIBLE PARTY: **CAMP BULLIS TRAINING SITE**
REGULATED ENTITY #: **RN101060101**
CUSTOMER: **US DEPARTMENT OF THE ARMY**
MATERIAL SPILLED / AMOUNT: **SEWAGE / 1000 GALLONS**
MEDIA: **WATER**
NATURE: **MUNICIPAL**
WATER BODY: **SALADO CREEK**
AIR SOURCE: **HIGHWAY VEHICLE**
DISPUTED STATUS: **PUBLIC AUTO**
DISPUTED DATE: **12/01/03**
INCIDENT STATUS: **CLOSED**
CLASS: **CLOSED**
COMMENTS:
THIS INCIDENT IS CLOSED AS AN ER EVENT AND IS REFERRED TO THE REGION 13 WATER PROGRAM FOR FURTHER EVALUATION.

Back to Report Summary

Spills Listing (SPILLS)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

INCIDENT INFORMATION

GEOSEARCH ID: **68446**
SPILL DATE: **11/01/05**
SPILL LOCATION / COUNTY:
RURAL ROUTE 2, BLDG 5000 CAMP BULLIS, SAN ANTONIO, TX / TX 78257
RESPONSIBLE PARTY: **CAMP BULLIS TRAINING SITE**
REGULATED ENTITY #: **RN101060101**
CUSTOMER: **US DEPARTMENT OF THE ARMY**
MATERIAL SPILLED / AMOUNT: **ASPHALT OR ROAD OIL / 300 GALLONS**
MEDIA: **WASTE**
NATURE: **BLANK**
WATER BODY: **LEWIS CREEK**
AIR SOURCE: **OTHER**
DISPUTED STATUS: **PUBLIC AUTO**
DISPUTED DATE: **11/28/05**
INCIDENT STATUS: **OPEN**
CLASS: **OPEN**
COMMENTS:
ALAMO ENVIRONMENTAL HAD BEEN CONTACTED TO ASSESS FURTHER THE INCIDENT AND REMEDIATE THE SITE.

Back to Report Summary

Tier I I Chemical Reporting Program Facilities (TIERII)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

SITE INFORMATION

UNIQUE ID: **47ABNK05T18F**
SITE ID: **FATR201247ABNK05T18F**
NAME: **SAN ANTONIO CAMP BULLIS UTES#5/ARMORY**
ADDRESS: **4800 CAMP BULLIS RD**
SAN ANTONIO, TX 78257
SIGNED DATE: **02/26/2013**
VALIDATION REPORT: **NOT REPORTED**
MAILING ADDRESS: **NOT REPORTED**

SITE DETAILS

SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
SITE TYPE: **NATIONAL SECURITY**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **6200 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **2500 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **2500 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **6200 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **2500 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **6200 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **2500 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **6200 GALLONS**
CHEMICAL LOCATION:

SEE SITE PLAN
CHEMICAL AMOUNT: **6200 GALLONS**
CHEMICAL LOCATION:
SEE SITE PLAN
CHEMICAL AMOUNT: **2500 GALLONS**
CHEMICAL NAME: **DIESEL FUEL**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **NOT REPORTED** LIQUID: **YES** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **PROPANE**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **YES** LIQUID: **NOT REPORTED** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **DIESEL FUEL**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **NOT REPORTED** LIQUID: **YES** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **PROPANE**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **YES** LIQUID: **NOT REPORTED** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **DIESEL FUEL**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **NOT REPORTED** LIQUID: **YES** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **PROPANE**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **YES** LIQUID: **NOT REPORTED** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **DIESEL FUEL**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **NOT REPORTED** LIQUID: **YES** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **PROPANE**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **YES** LIQUID: **NOT REPORTED** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **DIESEL FUEL**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **NOT REPORTED** LIQUID: **YES** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**
CHEMICAL NAME: **PROPANE**
MAXIMUM AMOUNT: **NOT REPORTED**
FIRE: **YES** GAS: **YES** LIQUID: **NOT REPORTED** SOLID: **NOT REPORTED**
PURE: **NOT REPORTED** MIXTURE: **YES**

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Toxics Release Inventory (TRI)

MAP ID# 1

Distance from Property: 0.001 mi. (5 ft.) SW
Elevation: 1,222 ft. (Lower than TP)

FACILITY INFORMATION

ID #: **78257SRMYC4782W**

OWNER NAME: **US DEPARTMENT OF DEFENSE**

FACILITY NAME: **US DOD USAF CAMP BULLIS RANGES**

ADDRESS: **RR-2 BLDG 5000**
SAN ANTONIO, TX 78257

COUNTY: **BEXAR**

(NAICS) INDUSTRIAL CLASSIFICATION

928110 - THIS INDUSTRY COMPRISES GOVERNMENT ESTABLISHMENTS OF THE ARMED FORCES, INCLUDING THE NATIONAL GUARD, PRIMARILY ENGAGED IN NATIONAL SECURITY AND RELATED ACTIVITIES.

CHEMICAL/S RELEASED

LEAD COMPOUNDS, LEAD, COPPER, LEAD COMPOUNDS, LEAD, COPPER

RELEASE INFORMATION

(Release amounts are reported in pounds)

REPORT YEAR	FUGITIVE AIR	STACK AIR	WATER RELEASE	CLASS I INJECTION WELLS	CLASS II - V INJECTION WELLS	RCRA C / OTHER LANDFILLS	LAND TREATMENT
2015	84.00	0.00	0.00	0.00	0.00	0.00	0.00
2014	877.36	0.00	0.00	0.00	0.00	0.00	0.00
2013	112.40	0.00	0.00	0.00	0.00	0.00	0.00
2012	110.60	0.00	0.00	0.00	0.00	0.00	0.00
2011	105.20	0.00	0.00	0.00	0.00	0.00	0.00
2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2007	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	273.20	0.00	0.00	0.00	0.00	0.00	0.00
2003	238.60	0.00	0.00	0.00	0.00	0.00	0.00
2002	349.00	0.00	0.00	0.00	0.00	0.00	0.00
2001	298.00	0.00	0.00	0.00	0.00	0.00	0.00

Back to Report Summary

Department of Defense Sites (DOD)

MAP ID# 2

Distance from Property: 0.001 mi. (5 ft.) W
Elevation: 1,213 ft. (Lower than TP)

GEOSEARCH ID#: **49324**
ID#: **49324**
NAME: **CAMP BULLIS**
DOD BRANCH: **ARMY DOD**

Back to Report Summary

Edwards Aquifer Permits (EAP)

MAP ID# 3

Distance from Property: 0.001 mi. (5 ft.) S
Elevation: 1,241 ft. (Equal to TP)

SITE INFORMATION

EDWARDS ID#: **97032502**
ENTITY ID#: **RN102760352**
NAME: **FM 2696 WIDENING & RESURFACING**
ADDRESS: **FM 2696 FROM 2 MI N LOOP 1604 TO 9.4 MI N**
CITY: **NOT REPORTED**
ZIPCODE: **NOT REPORTED**
COUNTY: **BEXAR**

OWNER INFORMATION

NAME: **TEXAS DEPARTMENT OF TRANSPORTATION**
ADDRESS: **125 E 11TH STREET**
CITY: **AUSTIN**
STATE: **TX**
ZIPCODE: **78701**

INVESTIGATION/S

DATE	TYPE	INVESTIGATOR	REPORT DATE
NOT REPORTED	**NOT REPORTED**	**NOT REPORTED**	**NOT REPORTED**

COMPLIANCE

NOTICE OF CONSTRUCTION: **5/6/1998**
DEED RECORDATION: **NOT REPORTED**
PRE-CONSTRUCTION: **NOT REPORTED**
30 DAY TESTING: **NOT REPORTED**
5 YEAR TESTING: **NOT REPORTED**
BEST MANAGEMENT PRACTICES: **NOT REPORTED**
EXCAVATION CERTIFICATION: **NOT REPORTED**

PLAN

PROJECT AREA (Acres): **NOT REPORTED**
FEE RECEIVED DATE: **NOT REPORTED**
FEE AMOUNT: **NOT REPORTED**

Back to Report Summary

Edwards Aquifer Permits (EAP)

MAP ID# 3

Distance from Property: 0.001 mi. (5 ft.) S
Elevation: 1,241 ft. (Equal to TP)

SITE INFORMATION

EDWARDS ID#: **97032502A**
ENTITY ID#: **RN102760352**
NAME: **FM 2696 WIDENING & RESURFACING**
ADDRESS: **FM 2696 FROM 2 MI N LOOP 1604 TO 9.4 MI N**
CITY: **NOT REPORTED**
ZIPCODE: **NOT REPORTED**
COUNTY: **BEXAR**

OWNER INFORMATION

NAME: **TEXAS DEPARTMENT OF TRANSPORTATION**
ADDRESS: **125 E 11TH STREET**
CITY: **AUSTIN**
STATE: **TX**
ZIPCODE: **78701**

INVESTIGATION/S

DATE	TYPE	INVESTIGATOR	REPORT DATE
NOT REPORTED	**NOT REPORTED**	**JEB**	**NOT REPORTED**

COMPLIANCE

NOTICE OF CONSTRUCTION: **NOT REPORTED**
DEED RECORDATION: **NOT REPORTED**
PRE-CONSTRUCTION: **NOT REPORTED**
30 DAY TESTING: **NOT REPORTED**
5 YEAR TESTING: **NOT REPORTED**
BEST MANAGEMENT PRACTICES: **NOT REPORTED**
EXCAVATION CERTIFICATION: **NOT REPORTED**

PLAN

TYPE OF BEST MANAGEMENT PRACTICE (BMP): **NONE**
PROJECT AREA (Acres): **1.00**
FEE RECEIVED DATE: **NOT REPORTED**
FEE AMOUNT: **NOT REPORTED**

Back to Report Summary

Facility Registry System (FRSTX)

MAP ID# 4

Distance from Property: 0.001 mi. (5 ft.) N
Elevation: 1,284 ft. (Higher than TP)

FACILITY INFORMATION

REGISTRY ID: **110034723388**

NAME: **CLEMENTSON**

LOCATION ADDRESS: **ON BLANCO DR & CLEMENTON DR**
SAN ANTONIO, TX 78258

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

CLEMENTSON

PROGRAM/S LISTED FOR THIS FACILITY

TX-TCEQ ACR - TEXAS COMMISSION ON EVIRONMENTAL QUALITY - AGENCY CENTRAL REGISTRY

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

1521 - GENERAL CONTRACTORS-SINGLE-FAMILY HOUSES

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Dry Cleaner Registration Database (DCR)

MAP ID# 5

Distance from Property: 0.02 mi. (106 ft.) N
Elevation: 1,174 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRATION #: **RN103993838**
CUSTOMER #: **CN602480741**
NAME: **PLEDGE CLEANERS**
ADDRESS: **25020 BLANCO RD STE 130**
SAN ANTONIO, TX 78260-6623
ACCOUNT NUMBER: **24,001,179**
PRINCIPAL NAME: **ELASHY ENTERPRISES INC**
PHONE NUMBER: **NOT REPORTED**
SITE TYPE: **DROP STATION REGISTRATION**
FISCAL YEAR: **FY2005**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2004**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

Back to Report Summary

Dry Cleaner Registration Database (DCR)

MAP ID# 5

Distance from Property: 0.02 mi. (106 ft.) N
Elevation: 1,174 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRATION #: **RN104877022**
CUSTOMER #: **CN600760292**
NAME: **NOT REPORTED**
ADDRESS: **25020 BLANCO RD STE 110**
SAN ANTONIO, TX 78260-6623
ACCOUNT NUMBER: **24,000,908.00**
PRINCIPAL NAME: **COWBOY CLEANERS LTD**
PHONE NUMBER: **210-3415555**
SITE TYPE: **DROP STATION REGISTRATION**
FISCAL YEAR: **FY2017**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2016**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2016**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2015**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2014**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2013**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2012**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2011**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2010**
SOLVENT: **NOT REPORTED**

QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2009**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2008**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2007**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

FISCAL YEAR: **FY2006**
SOLVENT: **NOT REPORTED**
QUANTITY: **NOT REPORTED**

Back to Report Summary

Facility Registry System (FRSTX)

MAP ID# 5

Distance from Property: 0.02 mi. (106 ft.) N
Elevation: 1,174 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110033389358**

NAME: **BUBBAS 361**

LOCATION ADDRESS: **25020 BLANCO RD**
SAN ANTONIO, TX 78260-6623

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

BUBBAS 361

PROGRAM/S LISTED FOR THIS FACILITY

TX-TCEQ ACR - TEXAS COMMISSION ON EVIRONMENTAL QUALITY - AGENCY CENTRAL REGISTRY

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Facility Registry System (FRSTX)

MAP ID# 5

Distance from Property: 0.02 mi. (106 ft.) N
Elevation: 1,174 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110034549549**

NAME: **COWBOY CLEANERS**

LOCATION ADDRESS: **25020 BLANCO RD STE 110**
SAN ANTONIO, TX 78258-6623

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

COWBOY CLEANERS

PROGRAM/S LISTED FOR THIS FACILITY

TX-TCEQ ACR - TEXAS COMMISSION ON EVIRONMENTAL QUALITY - AGENCY CENTRAL REGISTRY

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

812320 - DRYCLEANING AND LAUNDRY SERVICES (EXCEPT COIN-OPERATED).

Back to Report Summary

Facility Registry System (FRSTX)

MAP ID# 5

Distance from Property: 0.02 mi. (106 ft.) N
Elevation: 1,174 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110034598941**

NAME: **PLEDGE CLEANERS**

LOCATION ADDRESS: **25020 BLANCO RD STE 130**
SAN ANTONIO, TX 78258-6623

COUNTY: **BEXAR**

EPA REGION: **06**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

PLEDGE CLEANERS

PROGRAM/S LISTED FOR THIS FACILITY

TX-TCEQ ACR - TEXAS COMMISSION ON EVIRONMENTAL QUALITY - AGENCY CENTRAL REGISTRY

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Petroleum Storage Tanks (PST)

MAP ID# 5

Distance from Property: 0.02 mi. (106 ft.) N
Elevation: 1,174 ft. (Lower than TP)

FACILITY INFORMATION

ID#: **69358**
NAME: **BIGS 206**
ADDRESS: **25020 BLANCO RD STE 190**
SAN ANTONIO, TX 78260
COUNTY: **BEXAR**
REGION: **13**
TYPE: **RETAIL**
BEGIN DATE: **02/14/1997**
STATUS: **ACTIVE**
EXEMPT STATUS: **NO**
RECORDS OFF-SITE: **YES**
NUMBER OF ACTIVE UNDERGROUND TANKS: **1**
NUMBER OF ACTIVE ABOVEGROUND TANKS: **0**

APPLICATION INFORMATION:

RECEIVED DATE ON EARLIEST REGISTRATION FORM: **03/07/2017**
SIGNATURE DATE ON EARLIEST REGISTRATION FORM: **03/06/2017**
SIGNATURE NAME & TITLE: **CHARLES BROWN, MGR**
ENFORCEMENT ACTION DATE: **NOT REPORTED**

CONTACT INFORMATION

NAME: **KARIM ALI**
TITLE: **NOT REPORTED**
ORGANIZATION: **BIGS 206**
MAIL ADDRESS: **MAILING ADDRESS NOT REPORTED**
CITY NOT REPORTED
PHONE: **(210) 6513282 0**

OWNER

OWNER NUMBER: **CN602725764**
NAME: **PARTNERS INVESTORS C-STORES LTD**
CONTACT ADDRESS: **OWNER ADDRESS NOT REPORTED**
CITY NOT REPORTED
TYPE: **CORPORATION/COMPANY**
BEGIN DATE: **07/01/2014**
CONTACT ROLE: **NOT REPORTED**
CONTACT NAME: **NOT REPORTED**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **NOT REPORTED**
PHONE: **NOT REPORTED**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**
OWNER NUMBER: **CN600781678**
NAME: **WILLTEX STORES LP**
CONTACT ADDRESS: **111 SOLEDAD ST STE 200**
SAN ANTONIO TX 78205
TYPE: **PARTNERSHIP**
BEGIN DATE: **05/01/2010**
CONTACT ROLE: **OWNCON**
CONTACT NAME: **WILLIAM TEX FARMER**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **WILLTEX STORES LP**
PHONE: **(210) 4441400**

FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**

OPERATOR

OPERATOR NUMBER: **CN604538231**
NAME: **KMAN PROPERTIES LLC**
CONTACT ADDRESS: **OPERATOR ADDRESS NOT REPORTED**
CITY NOT REPORTED
TYPE: **ORGANIZATION**
BEGIN DATE: **07/01/2014**
CONTACT ROLE: **NOT REPORTED**
CONTACT NAME: **NOT REPORTED**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **NOT REPORTED**
PHONE: **NOT REPORTED**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**
OPERATOR NUMBER: **CN603926205**
NAME: **LPT RETAIL MANAGEMENT SERVICES LLC**
CONTACT ADDRESS: **OPERATOR ADDRESS NOT REPORTED**
CITY NOT REPORTED
TYPE: **CORPORATION/COMPANY**
BEGIN DATE: **12/11/12**
CONTACT ROLE: **NOT REPORTED**
CONTACT NAME: **NOT REPORTED**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **NOT REPORTED**
PHONE: **NOT REPORTED**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**
OPERATOR NUMBER: **CN600781678**
NAME: **WILLTEX STORES LP**
CONTACT ADDRESS: **OPERATOR ADDRESS NOT REPORTED**
CITY NOT REPORTED
TYPE: **PARTNERSHIP**
BEGIN DATE: **05/01/10**
CONTACT ROLE: **NOT REPORTED**
CONTACT NAME: **NOT REPORTED**
CONTACT TITLE: **NOT REPORTED**
ORGANIZATION: **NOT REPORTED**
PHONE: **NOT REPORTED**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**

SELF-CERTIFICATION

SELF-CERTIFICATION ID: **283596**
SIGNATURE DATE: **03/06/2017**
SIGNATURE NAME & TITLE: **CHARLES BROWN, MGR**
FILING STATUS: **RENEWAL**

REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **266983**
SIGNATURE DATE: **03/07/2016**
SIGNATURE NAME & TITLE: **CHARLES BROWN, MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **249895**
SIGNATURE DATE: **02/27/2015**
SIGNATURE NAME & TITLE: **CHARLES B BROWN, MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **238680**
SIGNATURE DATE: **07/07/2014**
SIGNATURE NAME & TITLE: **CHARLES B BROWN, MGR**
FILING STATUS: **INITIAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **222340**
SIGNATURE DATE: **06/18/2013**
SIGNATURE NAME & TITLE: **KEVIN N GANDY, PRES**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176297**
SIGNATURE DATE: **01/02/2013**
SIGNATURE NAME & TITLE: **KEVIN GANDY, PRES**
FILING STATUS: **AMENDMENT**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176296**
SIGNATURE DATE: **06/11/2012**
SIGNATURE NAME & TITLE: **RAYMOND MCNIECE, ENV MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176295**
SIGNATURE DATE: **07/20/2011**
SIGNATURE NAME & TITLE: **RAYMOND MCNIECE, ENV MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176294**
SIGNATURE DATE: **03/29/2011**
SIGNATURE NAME & TITLE: **RAYMOND MCNIECE, ENV MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176293**
SIGNATURE DATE: **07/02/2009**
SIGNATURE NAME & TITLE: **BRETT MAGNUSSON, OPS MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176292**

SIGNATURE DATE: **07/11/2008**
SIGNATURE NAME & TITLE: **BRETT MAGNUSSON, OPS MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176291**
SIGNATURE DATE: **08/15/2007**
SIGNATURE NAME & TITLE: **BRETT MAGNUSSON, OPS MGR**
FILING STATUS: **AMENDMENT**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176290**
SIGNATURE DATE: **07/06/2007**
SIGNATURE NAME & TITLE: **BRETT MAGNUSSON, OPS MGR**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176289**
SIGNATURE DATE: **07/20/2006**
SIGNATURE NAME & TITLE: **BRETT MAGNUSSON, MANAGER**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176288**
SIGNATURE DATE: **01/16/2006**
SIGNATURE NAME & TITLE: **BRIAN WILLIAMS, PARTNER**
FILING STATUS: **AMENDMENT**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176287**
SIGNATURE DATE: **07/06/2005**
SIGNATURE NAME & TITLE: **MONTE MCGILVRAY, COO**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176286**
SIGNATURE DATE: **06/15/2004**
SIGNATURE NAME & TITLE: **MONTE MCGIVRAY, COO**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176285**
SIGNATURE DATE: **06/25/2003**
SIGNATURE NAME & TITLE: **MICHAEL K GARROTT SR, VP/OPS**
FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176284**
SIGNATURE DATE: **10/01/2002**
SIGNATURE NAME & TITLE: **JAY T ALEXANDER, PARTNER**
FILING STATUS: **INITIAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176283**
SIGNATURE DATE: **04/04/2002**
SIGNATURE NAME & TITLE: **E W WEHMAN JR, PRES**

FILING STATUS: **RENEWAL**
REGISTRATION FLAG: **YES**
SELF-CERTIFICATION ID: **176282**
SIGNATURE DATE: **01/29/2001**
SIGNATURE NAME & TITLE: **E W WEHMAN JR, PRES**
FILING STATUS: **INITIAL**
REGISTRATION FLAG: **YES**

CONSTRUCTION NOTIFICATION

NO CONSTRUCTION NOTIFICATION DATA REPORTED FOR THIS FACILITY

UNDERGROUND STORAGE TANK

TANK ID: **1**
NUMBER OF COMPARTMENTS: **2**
INSTALLATION DATE: **02/14/1997**
REGISTRATION DATE: **02/26/1997**
TANK CAPACITY (GAL): **20000**
EMPTY TANK: **NOT EMPTY**
STATUS: **IN USE**
STATUS BEGIN DATE: **02/14/1997**
INTERNAL PROTECTION DATE: **NOT REPORTED**
REGULATORY STATUS: **FULLY REGULATED**
TANK DESIGN SINGLE WALL: **YES**
TANK DESIGN DOUBLE WALL: **NO**
PIPE DESIGN SINGLE WALL: **YES**
PIPE DESIGN DOUBLE WALL: **NO**

TANK DETAILS

MATERIAL:
COMPOSITE
CORROSION PROTECTION:
COMPOSITE TANK (STEEL W/FRP EXTERNAL LAMINATE)
EXTERNAL CONTAINMENT:
NOT REPORTED
TANK COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **YES**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

COMPARTMENT DETAILS

UST COMPARTMENT ID: **173030**
TANK ID: **1**
COMPARTMENT LETTER: **A**
SUBSTANCES: **GASOLINE**
OTHER SUBSTANCES: **NOT REPORTED**
CAPACITY (GAL): **12000**
COMPARTMENT RELEASE DETECTION: **AUTOMATIC TANK GAUGE TEST & INVENTORY CONTROL**
SPILL CONTAINMENT AND OVERFILL PREVENTION: **TIGHT-FILL FITTING CONTAINER/BUCKET/SUMP,FACTORY - BUILT SPILL CONTAINER/BUCKET/SUMP,DELIVERY SHUT-OFF VALVE**

PIPING SYSTEMS

MATERIAL: **NONMETALLIC FLEXIBLE PIPING**
CORROSION PROTECTION: **FRP TANK OR PIPING (NONCORRODIBLE),NONMETALLIC FLEXIBLE PIPING (NONCORRODIBLE)**
EXTERNAL CONTAINMENT: **NOT REPORTED**
CONNECTORS & VALVES:
NOT REPORTED
PIPEING RELEASE DETECTION:
ANNUAL PIPING TIGHTNESS TEST / ANNUAL ELECTRONIC MONITORING (@ 0.1 GPH),AUTO. LINE LEAK DETECTOR (3.0 GPH FOR PRESSURE PIPING)
PIPE COMPLIANCE FLAG

CORROSION PROTECTION COMPLIANCE FLAG: **YES**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

TANK ID: **1**
NUMBER OF COMPARTMENTS: **2**
INSTALLATION DATE: **02/14/1997**
REGISTRATION DATE: **02/26/1997**
TANK CAPACITY (GAL): **20000**
EMPTY TANK: **NOT EMPTY**
STATUS: **IN USE**
STATUS BEGIN DATE: **02/14/1997**
INTERNAL PROTECTION DATE: **NOT REPORTED**
REGULATORY STATUS: **FULLY REGULATED**
TANK DESIGN SINGLE WALL: **YES**
TANK DESIGN DOUBLE WALL: **NO**
PIPE DESIGN SINGLE WALL: **YES**
PIPE DESIGN DOUBLE WALL: **NO**

TANK DETAILS

MATERIAL:
COMPOSITE
CORROSION PROTECTION:
COMPOSITE TANK (STEEL W/FRP EXTERNAL LAMINATE)
EXTERNAL CONTAINMENT:
NOT REPORTED
TANK COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **YES**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

COMPARTMENT DETAILS

UST COMPARTMENT ID: **173031**
TANK ID: **1**
COMPARTMENT LETTER: **B**
SUBSTANCES: **GASOLINE**
OTHER SUBSTANCES: **NOT REPORTED**
CAPACITY (GAL): **8000**
COMPARTMENT RELEASE DETECTION: **AUTOMATIC TANK GAUGE TEST & INVENTORY CONTROL**
SPILL CONTAINMENT AND OVERFILL PREVENTION: **TIGHT-FILL FITTING CONTAINER/BUCKET/SUMP,FACTORY - BUILT SPILL CONTAINER/BUCKET/SUMP,DELIVERY SHUT-OFF VALVE**

PIPING SYSTEMS

MATERIAL: **NONMETALLIC FLEXIBLE PIPING**
CORROSION PROTECTION: **FRP TANK OR PIPING (NONCORRODIBLE),NONMETALLIC FLEXIBLE PIPING (NONCORRODIBLE)**
EXTERNAL CONTAINMENT: **NOT REPORTED**
CONNECTORS & VALVES:
NOT REPORTED
PIPEING RELEASE DETECTION:
ANNUAL PIPING TIGHTNESS TEST / ANNUAL ELECTRONIC MONITORING (@ 0.1 GPH),AUTO. LINE LEAK DETECTOR (3.0 GPH FOR PRESSURE PIPING)
PIPE COMPLIANCE FLAG
CORROSION PROTECTION COMPLIANCE FLAG: **YES**
CORROSION PROTECTION VARIANCE: **NO VARIANCE**

ABOVEGROUND STORAGE TANK INFORMATION

NO ABOVEGROUND STORAGE TANK DATA REPORTED FOR THIS FACILITY

Back to Report Summary

Petroleum Storage Tanks (PST)

MAP ID# 6

Distance from Property: 0.08 mi. (422 ft.) SE
Elevation: 1,155 ft. (Lower than TP)

FACILITY INFORMATION

ID#: **77770**
NAME: **URBAN CONCRETE CONTRACTORS**
ADDRESS: **24114 BLANCO RD**
SAN ANTONIO, TX 78260
COUNTY: **BEXAR**
REGION: **13**
TYPE: **FLEET REFUELING**
BEGIN DATE: **08/05/2005**
STATUS: **ACTIVE**
EXEMPT STATUS: **NO**
RECORDS OFF-SITE: **NO**
NUMBER OF ACTIVE UNDERGROUND TANKS: **0**
NUMBER OF ACTIVE ABOVEGROUND TANKS: **3**

APPLICATION INFORMATION:

RECEIVED DATE ON EARLIEST REGISTRATION FORM: **01/12/2006**
SIGNATURE DATE ON EARLIEST REGISTRATION FORM: **01/10/2006**
SIGNATURE NAME & TITLE: **JAYE MILLS, EXEC VP**
ENFORCEMENT ACTION DATE: **NOT REPORTED**

CONTACT INFORMATION

NAME: **JAYE MILLS**
TITLE: **EXEC VP**
ORGANIZATION: **URBAN CONCRETE CONTRACTORS**
MAIL ADDRESS: **MAILING ADDRESS NOT REPORTED**
CITY NOT REPORTED
PHONE: **(210) 4900090 0**

OWNER

OWNER NUMBER: **CN602582744**
NAME: **URBAN CONCRETE CONTRACTORS LTD**
CONTACT ADDRESS: **24114 BLANCO RD**
SAN ANTONIO TX 78260
TYPE: **PARTNERSHIP**
BEGIN DATE: **01/10/2006**
CONTACT ROLE: **OWNCON**
CONTACT NAME: **JAYE MILLS**
CONTACT TITLE: **EXEC VP**
ORGANIZATION: **URBAN CONCRETE CONTRACTORS LTD**
PHONE: **(210) 4900090 0**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**

OPERATOR

OPERATOR NUMBER: **CN602582744**
NAME: **URBAN CONCRETE CONTRACTORS LTD**
CONTACT ADDRESS: **24114 BLANCO RD**
SAN ANTONIO TX 78260
TYPE: **PARTNERSHIP**
BEGIN DATE: **01/10/2006**
CONTACT ROLE: **OPRCON**
CONTACT NAME: **SCOTT ANDERSON**
CONTACT TITLE: **SUPERINTENDENT**

ORGANIZATION: **URBAN CONCRETE CONTRACTORS LTD**
PHONE: **(210) 4900090 0**
FAX: **NOT REPORTED**
EMAIL: **NOT REPORTED**

SELF-CERTIFICATION

-NO SELF-CERTIFICATION INFORMATION REPORTED-

CONSTRUCTION NOTIFICATION

NO CONSTRUCTION NOTIFICATION DATA REPORTED FOR THIS FACILITY

UNDERGROUND STORAGE TANK

NO UNDERGROUND STORAGE TANK DATA REPORTED FOR THIS FACILITY

ABOVEGROUND STORAGE TANK INFORMATION

AST ID #: **206152** MULTIPLE COMPARTMENT FLAG: **NO**
TANK ID: **1** REGISTRATION DATE: **11/12/2006**
INSTALLATION DATE: **08/05/2005** STATUS BEGIN DATE: **08/05/2005**
TANK CAPACITY (GAL): **6000** REGULATORY STATUS: **FULLY REGULATED**
STATUS: **IN USE** SUBSTANCES: **DIESEL**

MATERIAL OF CONSTRUCTION

STEEL: **YES** CORRUGATED METAL: **NO**
FIBERGLASS: **NO** CONCRETE: **NO**
ALUMINIUM: **NO**

CONTAINMENT

EARTHEN DIKE: **NO** CONCRETE: **YES**
CONTAINMENT LINER: **NO** NONE: **NO**
STAGE I VAPOR RECOVERY: **NOT REPORTED**
STAGE I INSTALLATION DATE: **NOT REPORTED**

AST ID #: **206153** MULTIPLE COMPARTMENT FLAG: **NO**
TANK ID: **2** REGISTRATION DATE: **01/12/2006**
INSTALLATION DATE: **08/05/2005** STATUS BEGIN DATE: **08/05/2005**
TANK CAPACITY (GAL): **4000** REGULATORY STATUS: **FULLY REGULATED**
STATUS: **IN USE** SUBSTANCES: **DIESEL**

MATERIAL OF CONSTRUCTION

STEEL: **YES** CORRUGATED METAL: **NO**
FIBERGLASS: **NO** CONCRETE: **NO**
ALUMINIUM: **NO**

CONTAINMENT

EARTHEN DIKE: **NO** CONCRETE: **YES**
CONTAINMENT LINER: **NO** NONE: **NO**
STAGE I VAPOR RECOVERY: **NOT REPORTED**
STAGE I INSTALLATION DATE: **NOT REPORTED**

AST ID #: **206154** MULTIPLE COMPARTMENT FLAG: **NO**
TANK ID: **3** REGISTRATION DATE: **11/12/2006**
INSTALLATION DATE: **08/05/2005** STATUS BEGIN DATE: **08/05/2005**
TANK CAPACITY (GAL): **2000** REGULATORY STATUS: **FULLY REGULATED**
STATUS: **IN USE** SUBSTANCES: **GASOLINE**

MATERIAL OF CONSTRUCTION

STEEL: **YES** CORRUGATED METAL: **NO**
FIBERGLASS: **NO** CONCRETE: **NO**
ALUMINIUM: **NO**

CONTAINMENT

EARTHEN DIKE: **NO** CONCRETE: **YES**
CONTAINMENT LINER: **NO** NONE: **NO**
STAGE I VAPOR RECOVERY: **NOT REPORTED**
STAGE I INSTALLATION DATE: **NOT REPORTED**

Back to Report Summary

Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

No Records Found

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 10/20/14

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance.

BRS Biennial Reporting System

VERSION DATE: 12/31/11

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 07/01/16

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DOCKETS EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 08/03/15

This database includes site locations where Engineering and/or Institutional Controls have been identified as part

of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR06 Enforcement and Compliance History Information

VERSION DATE: 08/26/17

The EPA's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

ERNSTX Emergency Response Notification System

VERSION DATE: 10/15/17

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSTX Facility Registry System

VERSION DATE: 04/04/17

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

HMIRSR06 Hazardous Materials Incident Reporting System

VERSION DATE: 08/30/17

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 09/23/17

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 07/09/17

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 06/29/17

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements.

NPDESR06 National Pollutant Discharge Elimination System

VERSION DATE: 04/01/07

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES database was collected from December 2002 until April 2007. Refer to the PCS and/or ICIS-NPDES database as source of current data. This database includes permitted facilities located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

PADS PCB Activity Database System

VERSION DATE: 07/18/17

PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

PCSR06 Permit Compliance System

VERSION DATE: 08/01/12

The Permit Compliance System is used in tracking enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act and is maintained by the United States Environmental Protection Agency's Office of Compliance. PCS is designed to support the NPDES program at the state, regional, and national levels. This database includes permitted facilities located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. PCS has been modernized, and no longer exists. National Pollutant Discharge Elimination System (ICIS-NPDES) data can now be found in Integrated Compliance Information System (ICIS).

RCRASC RCRA Sites with Controls

VERSION DATE: 03/08/16

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

SEMSLIENS SEMS Lien on Property

VERSION DATE: 07/11/17

The U.S. Environmental Protections Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete.

SSTS Section Seven Tracking System

VERSION DATE: 12/08/14

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/31/15

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/12

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site.

RCRAGR06 Resource Conservation & Recovery Act - Generator

VERSION DATE: 06/12/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA region 6 includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

RCRANGR06 Resource Conservation & Recovery Act - Non-Generator

VERSION DATE: 06/12/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities classified as non-generators. Non-Generators do not presently generate hazardous waste. EPA Region 6 includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

ALTFUELS Alternative Fueling Stations

VERSION DATE: 05/16/17

Nationwide list of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

FEMAUST FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

HISTPST Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

ICISCLEANERS Integrated Compliance Information System Drycleaners

VERSION DATE: 09/23/17

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

MRDS Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 09/01/17

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

BF Brownfields Management System

VERSION DATE: 08/17/17

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

DNPL Delisted National Priorities List

VERSION DATE: 07/11/17

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 06/12/17

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An “open dump” is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

RCRAT Resource Conservation & Recovery Act - Non-CORRACTS Treatment, Storage & Disposal Facilities

VERSION DATE: 06/12/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities recognized as hazardous waste treatment, storage, and disposal sites (TSD).

SEMS Superfund Enterprise Management System

VERSION DATE: 07/11/17

The U.S. Environmental Protections Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 07/11/17

The Superfund Enterprise Management System Archive listing (SEMS-ARCHIVE) has replaced the CERCLIS NFRAP reporting system in 2015. This listing reflect sites that have been assessed and no further remediation is planned and is of no further interest under the Superfund program.

SMCRA Surface Mining Control and Reclamation Act Sites

VERSION DATE: 08/25/17

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

DOD Department of Defense Sites

VERSION DATE: 06/21/10

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

FUDS Formerly Used Defense Sites

VERSION DATE: 06/01/15

The Formerly Used Defense Sites (FUDS) inventory includes properties previously owned by or leased to the United States and under Secretary of Defense Jurisdiction, as well as Munitions Response Areas (MRAs). The remediation of these properties is the responsibility of the Department of Defense. This data is provided by the U.S. Army Corps of Engineers (USACE), the boundaries/polygon data are based on preliminary findings and not all properties currently have polygon data available. DISCLAIMER: This data represents the results of data collection/processing for a specific USACE activity and is in no way to be considered comprehensive or to be used in any legal or official capacity as presented on this site. While the USACE has made a reasonable effort to insure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guaranty, either expressed or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. For additional information on Formerly Used Defense Sites please contact the USACE Public Affairs Office at (202) 528-4285.

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 06/12/17

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites.
During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPL National Priorities List

VERSION DATE: 07/11/17

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 07/11/17

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 06/12/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

RCRASUBC Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 06/12/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

RODS Record of Decision System

VERSION DATE: 01/23/12

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

GWCC Groundwater Contamination Cases

VERSION DATE: 08/26/16

This report contains a listing of groundwater contamination cases which were documented for the 2013 calendar year. Texas Water Code, Section 26.406 requires the annual report to describe the current status of groundwater monitoring activities conducted or required by each agency at regulated facilities or associated with regulated activities. The agencies reporting these contamination cases include the Texas Commission on Environmental Quality, Railroad Commission of Texas, Texas Alliance of Groundwater Districts, and Department of State Health Services.

HISTGWCC Historic Groundwater Contamination Cases

VERSION DATE: 12/31/12

This historic report contains all agency groundwater contamination cases documented from 1994 to 2012. The agencies that reported these contamination cases included the Texas Commission on Environmental Quality, Railroad Commission of Texas, Texas Alliance of Groundwater Districts, and Department of State Health Services.

LIENS TCEQ Liens

VERSION DATE: 06/16/17

Liens filed upon State and/or Federal Superfund Sites by the Texas Commission on Environmental Quality.

MSD Municipal Setting Designations

VERSION DATE: 04/03/17

The Texas Commission on Environmental Quality defines an MSD as an official state designation given to property within a municipality or its extraterritorial jurisdiction that certifies that designated groundwater at the property is not used as potable water, and is prohibited from future use as potable water because that groundwater is contaminated in excess of the applicable potable-water protective concentration level. The prohibition must be in the form of a city ordinance, or a restrictive covenant that is enforceable by the city and filed in the property records. The MSD property can be a single property, multi-property, or a portion of property.

NOV Notice of Violations

VERSION DATE: 02/24/16

This database containing Notice of Violations (NOV) is maintained by the Texas Commission on Environmental Quality. An NOV is a written notification that documents and communicates violations observed during an inspection to the business or individual inspected.

SIEC01 State Institutional/Engineering Control Sites

VERSION DATE: 09/06/17

The Texas Risk Reduction Program (TRRP) requires the placement of institutional controls (e.g., deed notices or restrictive covenants) on affected property in different circumstances as part of completing a response action. In its simplest form, an institutional control (IC) is a legal document that is recorded in the county deed records. In certain circumstances, local zoning or ordinances can serve as an IC. This listing may also include locations where Engineering Controls are in effect, such as a cap, barrier, or other engineering device to prevent access, exposure, or continued migration of contamination. The sites included on this list are regulated by various programs of the Texas Commission on Environmental Quality (TCEQ).

SPILLS Spills Listing

VERSION DATE: 04/13/17

This Texas Commission on Environmental Quality database includes releases of hazardous or potentially hazardous materials into the environment.

TIERII Tier I I Chemical Reporting Program Facilities

VERSION DATE: 12/31/12

The Texas Tier II Chemical Reporting Program in the Department of State Health Services (DSHS) is the state repository for EPCRA-required Emergency Planning Letters (EPLs), which are one-time notifications to the state from facilities that have certain extremely hazardous chemicals in specified amounts. The Program is also the state repository for EPCRA/state-required hazardous chemical inventory reports called Texas Tier Two Reports. This data contains those facility reports for the 2005 through the 2012 calendar years.

DCR Dry Cleaner Registration Database

VERSION DATE: 08/31/17

The database includes dry cleaning drop stations and facilities registered with the Texas Commission on Environmental Quality.

IHW Industrial and Hazardous Waste Sites

VERSION DATE: 07/03/17

Owner and facility information is included in this database of permitted and non-permitted industrial and hazardous waste sites. Industrial waste is waste that results from or is incidental to operations of industry, manufacturing, mining, or agriculture. Hazardous waste is defined as any solid waste listed as hazardous or possesses one or more hazardous characteristics as defined in federal waste regulations. The IHW database is maintained by the Texas Commission on Environmental Quality.

PIHW Permitted Industrial Hazardous Waste Sites

VERSION DATE: 07/03/17

Owner and facility information is included in this database of all permitted industrial and hazardous waste sites. Industrial waste is waste that results from or is incidental to operations of industry, manufacturing, mining, or agriculture. Hazardous waste is defined as any solid waste listed as hazardous or possesses one or more hazardous characteristics as defined in federal waste regulations. Permitted IHW facilities are regulated under 30 Texas Administrative Code Chapter 335 in addition to federal regulations. The IHW database is maintained by the Texas Commission on Environmental Quality.

PST Petroleum Storage Tanks

VERSION DATE: 07/05/17

The Petroleum Storage Tank database is administered by the Texas Commission on Environmental Quality (TCEQ). Both Underground storage tanks (USTs) and Aboveground storage tanks (ASTs) are included in this report. Petroleum Storage Tank registration has been a requirement with the TCEQ since 1986.

APAR Affected Property Assessment Reports

VERSION DATE: 04/24/17

As regulated by the Texas Commission on Environmental Quality, an Affected Property Assessment Report is required when a person is addressing a release of chemical of concern (COC) under 30 TAC Chapter 350, the Texas Risk Reduction Program (TRRP). The purpose of the APAR is to document all relevant affected property information to identify all release sources and COCs, determine the extent of all COCs, identify all transport/exposure pathways, and to determine if any response actions are necessary. The Texas Administrative Code Title 30 §350.4(a)(1) defines affected property as the entire area (i.e. on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

BSA Brownfields Site Assessments

VERSION DATE: 09/06/17

The Brownfields Site Assessments database is maintained by the Texas Commission on Environmental Quality (TCEQ). The TCEQ, in close partnership with the U.S. Environmental Protection Agency (EPA) and other federal, state, and local redevelopment agencies, and stakeholders, is facilitating cleanup, transferability, and revitalization of brownfields through the development of regulatory, tax, and technical assistance tools.

CALF Closed & Abandoned Landfill Inventory

VERSION DATE: 11/01/05

The Texas Commission on Environmental Quality, under a contract with Texas State University, and in cooperation with the 24 regional Council of Governments (COGs) in the State, has located over 4,000 closed

and abandoned municipal solid waste landfills throughout Texas. This listing contains "unauthorized sites". Unauthorized sites have no permit and are considered abandoned. The information available for each site varies in detail and this historical information is not updated. Please refer to the specific regional COG for the most current information.

DCRPS Dry Cleaner Remediation Program Sites

VERSION DATE: 09/01/17

This list of DCRP sites is provided by the Texas Commission on Environmental Quality (TCEQ). According to the TCEQ, the Dry Cleaner Remediation Program (DCRP) establishes a prioritization list of dry cleaner sites and administers the Dry Cleaning Remediation fund to assist with remediation of contamination caused by dry cleaning solvents.

IOP Innocent Owner / Operator Database

VERSION DATE: 06/09/17

Texas Innocent Owner / Operator (IOP), created by House Bill 2776 of the 75th Legislature, provides a certificate to an innocent owner or operator if their property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination. The IOP database is maintained by the Texas Commission on Environmental Quality.

LPST Leaking Petroleum Storage Tanks

VERSION DATE: 09/06/17

The Leaking Petroleum Storage Tank listing is derived from the Petroleum Storage Tank (PST) database and is maintained by the Texas Commission on Environmental Quality. This listing includes aboveground and underground storage tank facilities with reported leaks.

MSWLF Municipal Solid Waste Landfill Sites

VERSION DATE: 09/29/17

The municipal solid waste landfill database is provided by the Texas Commission on Environmental Quality. This database includes active landfills and inactive landfills, where solid waste is treated or stored.

RRCVCP Railroad Commission VCP and Brownfield Sites

VERSION DATE: 04/11/17

According to the Railroad Commission of Texas, their Voluntary Cleanup Program (RRC-VCP) provides an incentive to remediate Oil & Gas related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

RWS Radioactive Waste Sites

VERSION DATE: 07/11/06

This Texas Commission on Environmental Quality database contains all sites in the State of Texas that have been designated as Radioactive Waste sites.

STCV Salt Caverns for Petroleum Storage

VERSION DATE: 09/01/06

The salt caverns for petroleum storage database is provided by the Railroad Commission of Texas.

VCP Voluntary Cleanup Program Sites

VERSION DATE: 09/06/17

The Texas Voluntary Cleanup Program (VCP) provides administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas. Since all non-responsible parties, including future lenders and landowners, receive protection from liability to the state of Texas for cleanup of sites under the VCP, most of the constraints for completing real estate transactions at those sites are eliminated. As a result, many unused or underused properties may be restored to economically productive or community beneficial uses. The VCP database is maintained by the Texas Commission on Environmental Quality.

WMRF Recycling Facilities

VERSION DATE: 11/01/12

This listing of recycling facilities is provided by the Texas Commission on Environmental Quality's Recycle Texas Online service. The company information provided in this database is self-reported. Since recyclers post their own information, a facility or company appearing on the list does not imply that it is in compliance with TCEQ regulations or other applicable laws. This database is no longer maintained and includes the last compilation of the program participants before the Recycle Texas Online program was closed.

IHWCA Industrial and Hazardous Waste Corrective Action Sites

VERSION DATE: 07/14/17

This database is provided by the Texas Commission on Environmental Quality (TCEQ). According to the TCEQ, the mission of the industrial and hazardous waste corrective action program is to oversee the cleanup of sites contaminated from industrial and municipal hazardous and industrial nonhazardous wastes. The goals of this program are to: Ensure that sites are assessed and remediated to levels that protect human health and the environment; Verify that waste management units or facilities are taken out of service and closed properly; and to Facilitate revitalization of contaminated properties.

SF State Superfund Sites

VERSION DATE: 09/23/16

The state Superfund program mission is to remediate abandoned or inactive sites within the state that pose an unacceptable risk to public health and safety or the environment, but which do not qualify for action under the federal Superfund program (NPL - National Priority Listing). As required by the Texas Solid Waste Disposal Act, Texas Health and Safety Code, Chapter 361, the Texas Commission on Environmental Quality identifies and evaluates these facilities for inclusion on the state Superfund registry. This registry includes any recent developments and the anticipated action for these sites.

EAP Edwards Aquifer Permits

VERSION DATE: 07/21/06

This database, maintained by the Texas Commission on Environmental Quality, contains Edward Aquifer permits.

USTR06 Underground Storage Tanks On Tribal Lands

VERSION DATE: 04/24/17

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

LUSTR06 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 04/24/17

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

INDIANRES Indian Reservations

VERSION DATE: 01/01/00

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

FED. RD. DIV. No.	FEDERAL AID PROJECT No.	SHEET No.
6		1

STATE	STATE DIST. No.	COUNTY		
TEXAS	7	BEXAR		
ROWCSJ	CONT.	SECT.	JOB	HIGHWAY No.
	2708	01	22-25	FM 2696

STATE OF TEXAS

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

SURVEY REPORT
RIGHT OF WAY RETRACEMENT

FM 2696 (BLANCO ROAD)
BEXAR COUNTY
ACCOUNT NO. XXXX-X-XX
PROJECT NO. XXXXXXXXX
PROJECT DESIGNATOR XXXX
CSJ NO. 2708-01-022
CSJ NO. 2708-01-023
CSJ NO. 2708-01-024
CSJ NO. 2708-01-025

FROM: LOOP 1604 INTERSECTION
TO: CIBOLO CREEK

NET LENGTH OF PROJECT = 51,281.45 FT = 9.712 MI
PLAN SCALE 1 IN = 50 FT

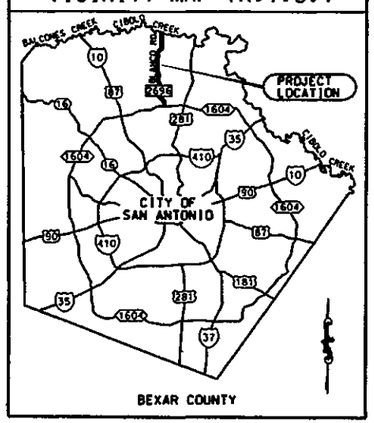
TABLE OF CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-3	SHEET INDEX
4-17	CONTROL SHEETS
18-55	PLAN SHEETS

LEGEND

- IRON BAR
- CONCRETE MARKER TYPE I
- CONCRETE MARKER TYPE II
- TYPE III MONUMENT
- NAIL
- CORPS. OF ENGINEERS BRASS CAP
- PINCH PIPE
- PIPE
- FENCE CORNER
- 1/2" IRON PIN
- RAILROAD SPIKE
- SIGN
- TREE
- EXISTING R.O.W. LINE
- OLD R.O.W. TAKING LINE
- EXISTING EASEMENT
- PROPERTY LINE
- SURVEY LINE
- EXISTING CHAINLINK FENCE
- EXISTING WIRE FENCE

VICINITY MAP (N.T.S.)



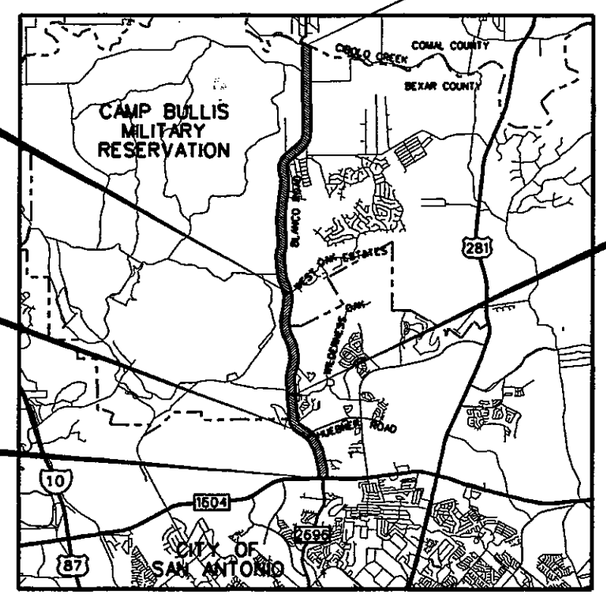
BEGIN PROJECT
CSJ NO. 2708-01-025
STA. NO. 600+68.59

END
CSJ NO. 2708-01-025
BEGIN
CSJ NO. 2708-01-024
STA. NO. 892+36.15

END
CSJ NO. 2708-01-024
BEGIN
CSJ NO. 2708-01-023
STA. NO. 1008+31.88

END
CSJ NO. 2708-01-023
BEGIN
CSJ NO. 2708-01-022
STA. NO. 1066+18.31

END PROJECT
CSJ NO. 2708-01-022
STA. NO. 1113+48.36



NO EXCEPTIONS
NO EXCEPTIONS
LAYOUT SCALE: 1 IN = 8000 FT

RECOMMENDED FOR ACQUISITION:

DISTRICT SURVEYOR OR ROW ADMINISTRATOR DATE

APPROVED FOR ACQUISITION

AREA ENGINEER OR DESIGN ENGINEER DATE

FINAL APPROVAL:
ACQUISTION COMPLETE:

DISTRICT ENGINEER DATE

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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

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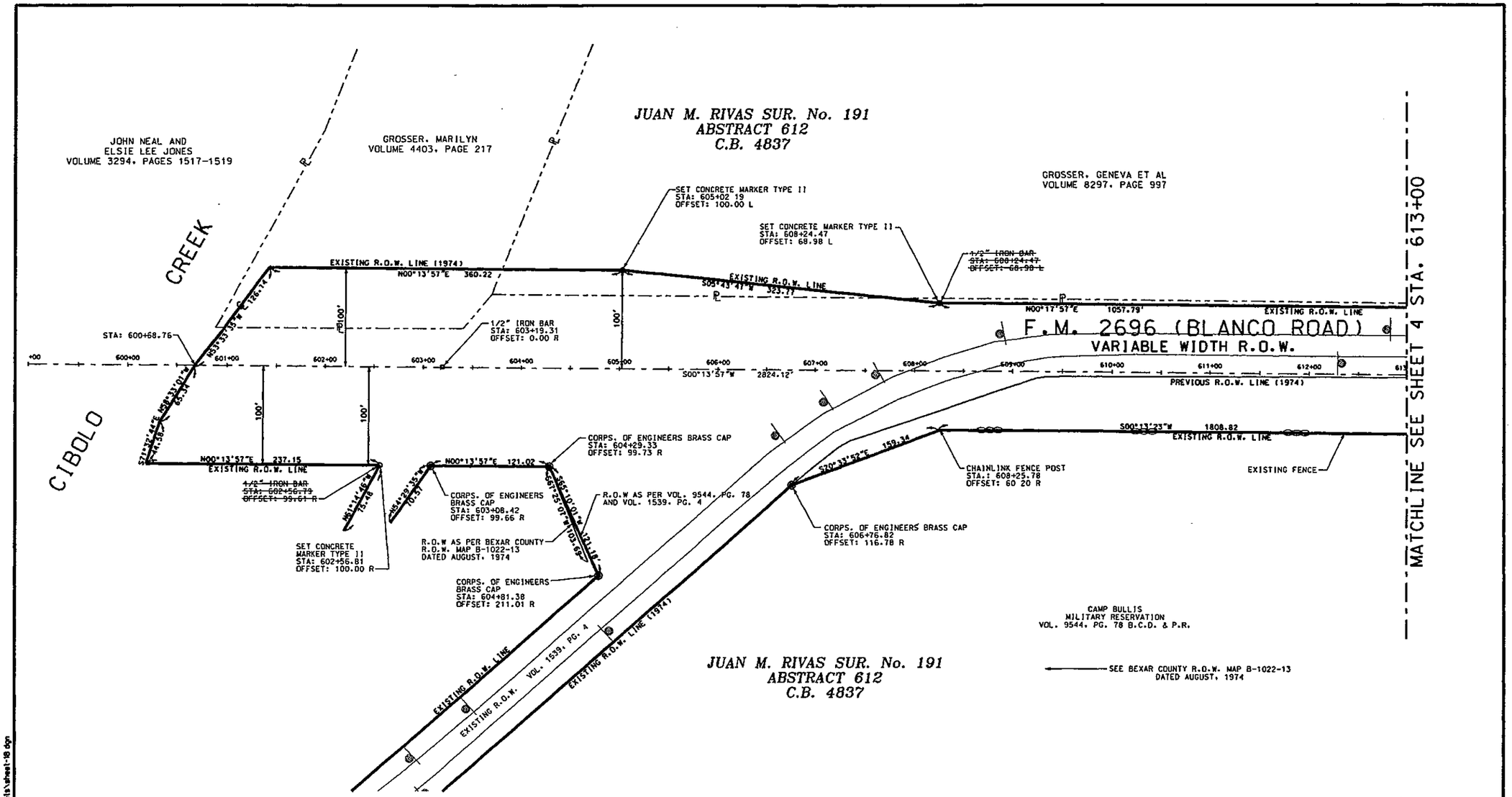

LEGEND

	SIGN		FENCE CORNER
	TREE		1/2" IRON PIN
	IRON BAR		RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

NOTES:

1. BEARINGS ARE BASED ON NAD 83/86 TEXAS STATE PLANE COORDINATE SYSTEM (SOUTH CENTRAL ZONE) AS FURNISHED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
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1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS
REGISTERED
E.F. BURKHART
1706
PROFESSIONAL
LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 18 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT.	JOB	HIGHWAY NO
	2708	01	25	F.M. 2696

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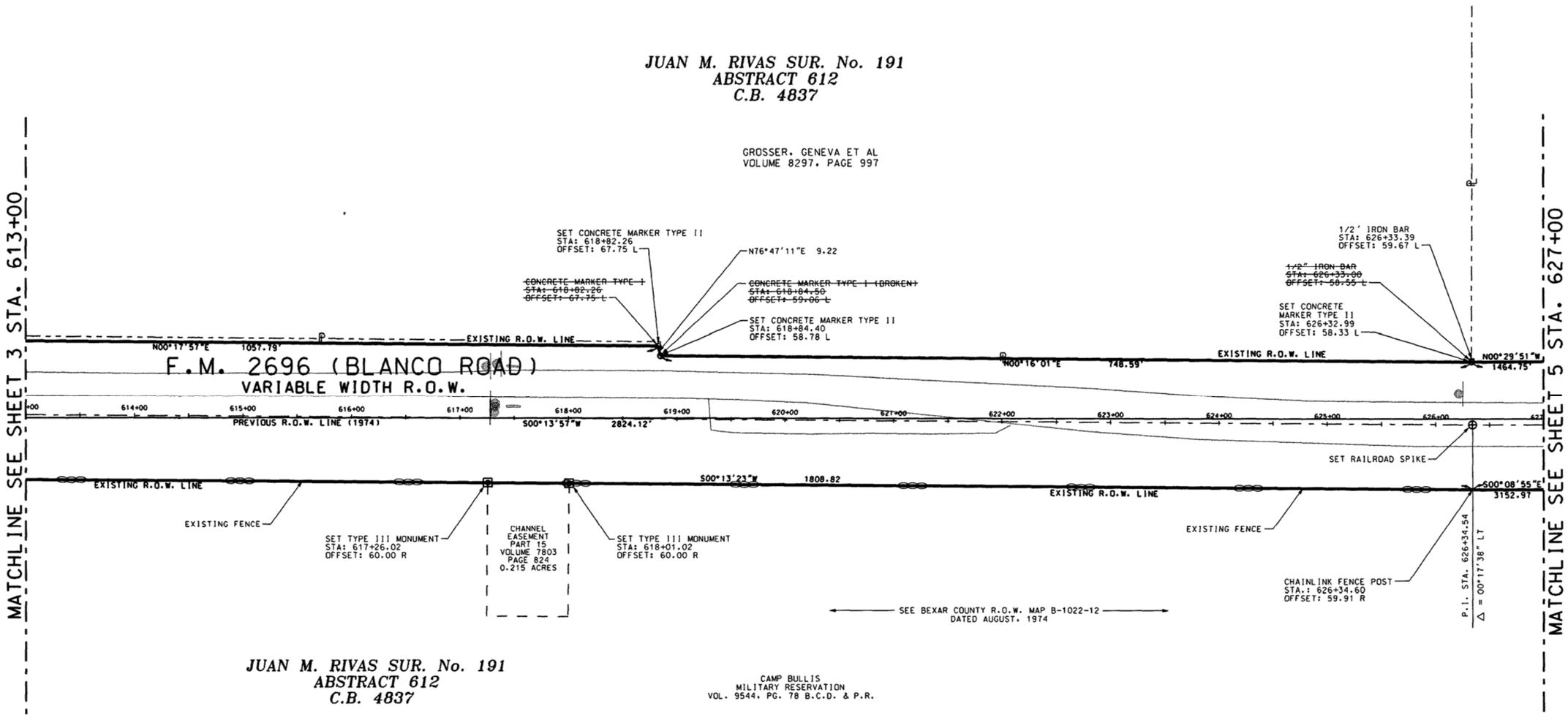

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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STATE OF TEXAS
REGISTERED
E.F. BURKHART
1706
PROFESSIONAL
LAND SURVEYOR

E F Burkhart

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 19 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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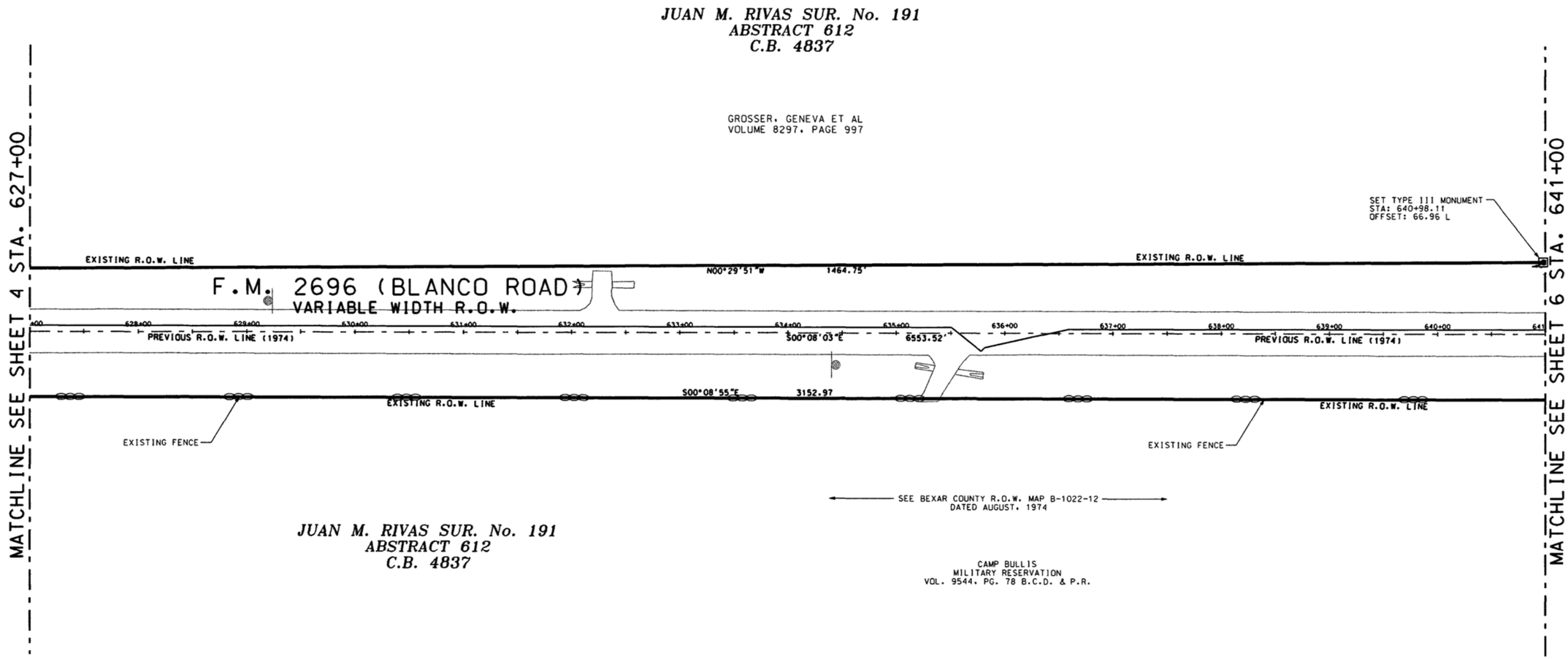

LEGEND

●	SIGN	×	FENCE CORNER
⬡	TREE	●	1/2" IRON PIN
▫	IRON BAR	⊕	RAILROAD SPIKE
⊡	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
⊙	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
▣	TYPE III MONUMENT	— — —	EXISTING EASEMENT
●	NAIL	- - —℄- - —	PROPERTY LINE
◉	CORPS. OF ENGINEERS BRASS CAP	- — — —	SURVEY LINE
○	PINCH PIPE	—▭▭—	EXISTING CHAINLINK FENCE
○	PIPE	—×—×—	EXISTING WIRE FENCE

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San Antonio, Texas 78232
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STATE OF TEXAS REGISTERED E.P. BURKHART 1706 LICENSED LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 20 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO.
	2708	01	25	F M 2696

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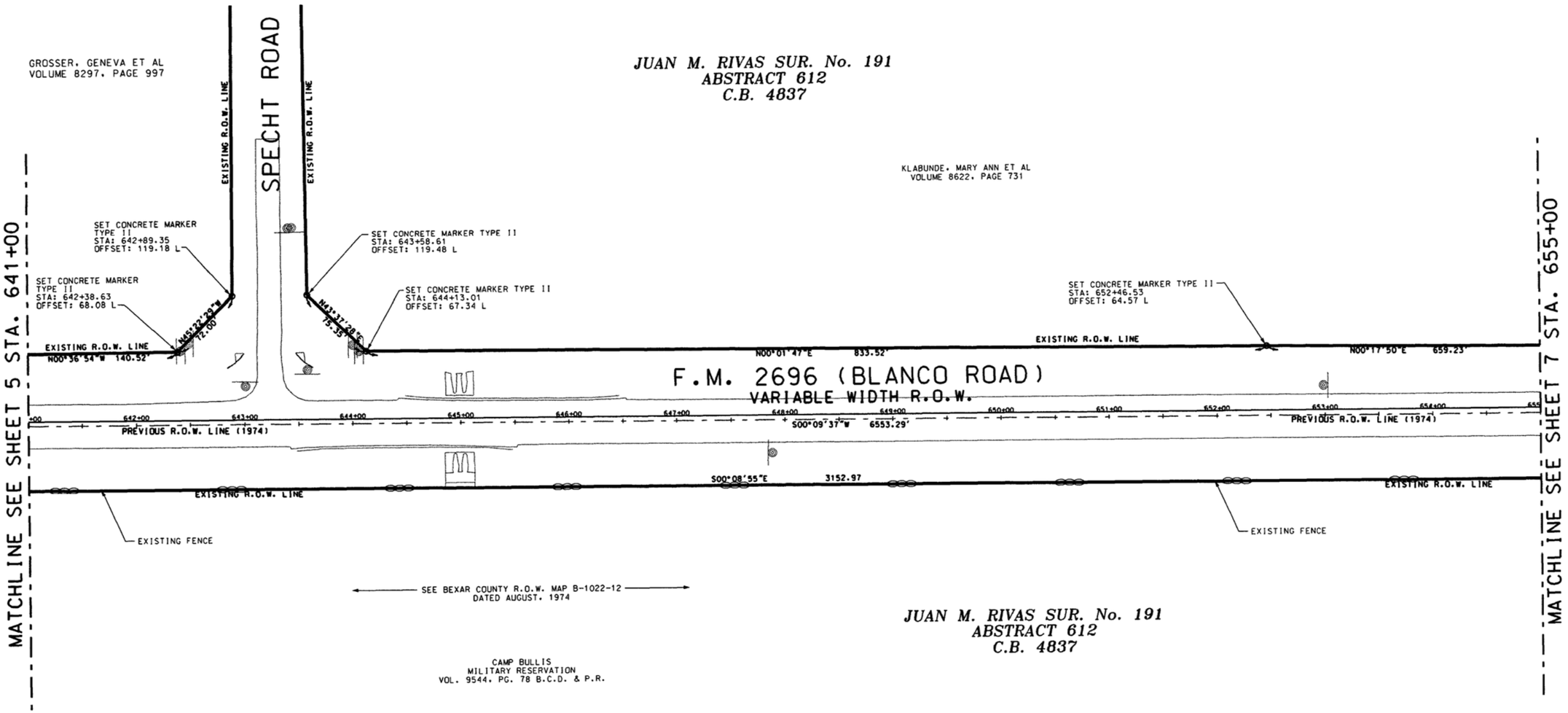

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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STATE OF TEXAS REGISTERED E.F. BURKHART 1706 PROFESSIONAL LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO		SHEET NO
			SHT 21 OF 55
STATE	DIST	COUNTY	
TEXAS	7	BEXAR	
DATE:			

R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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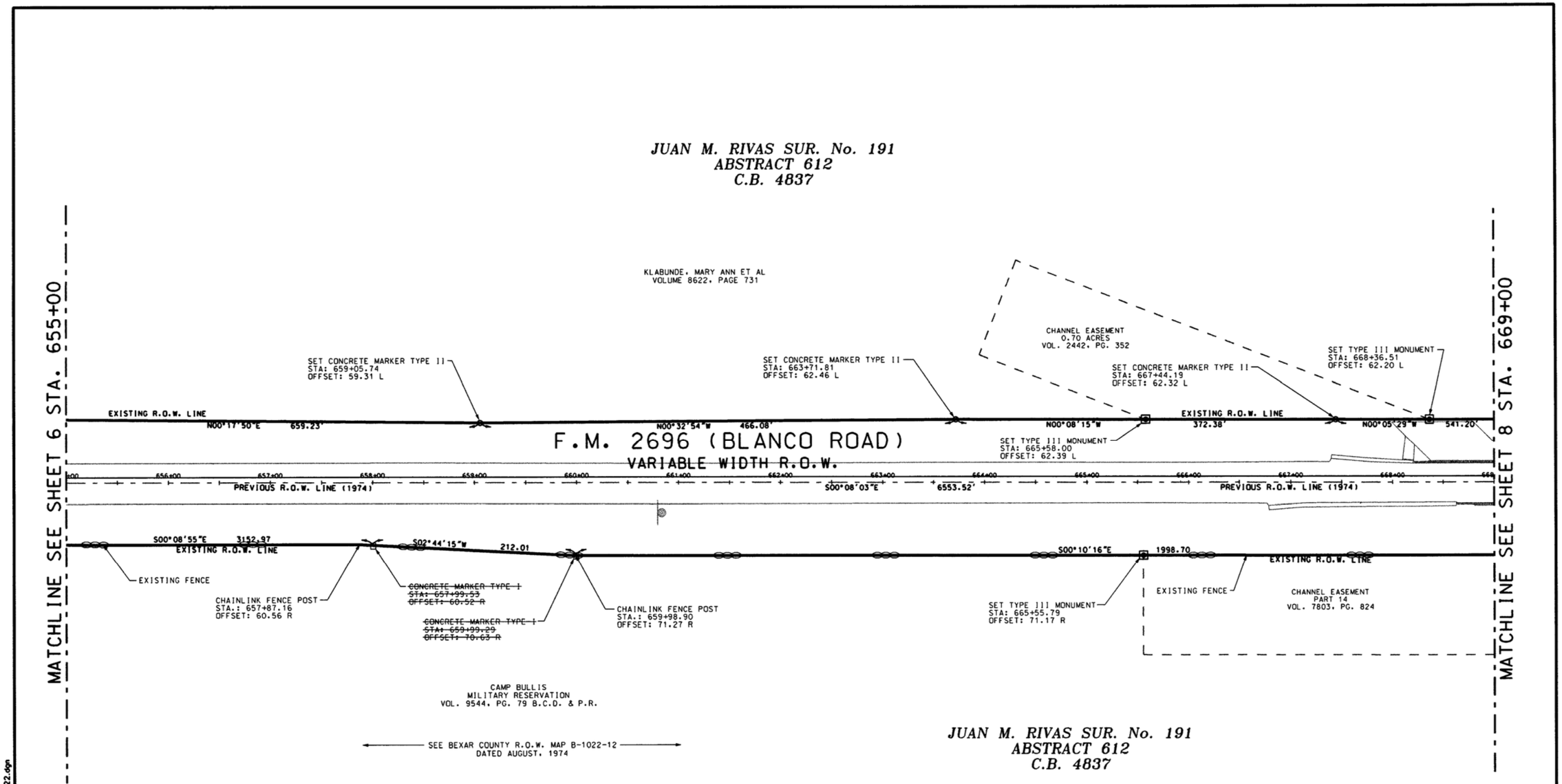

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LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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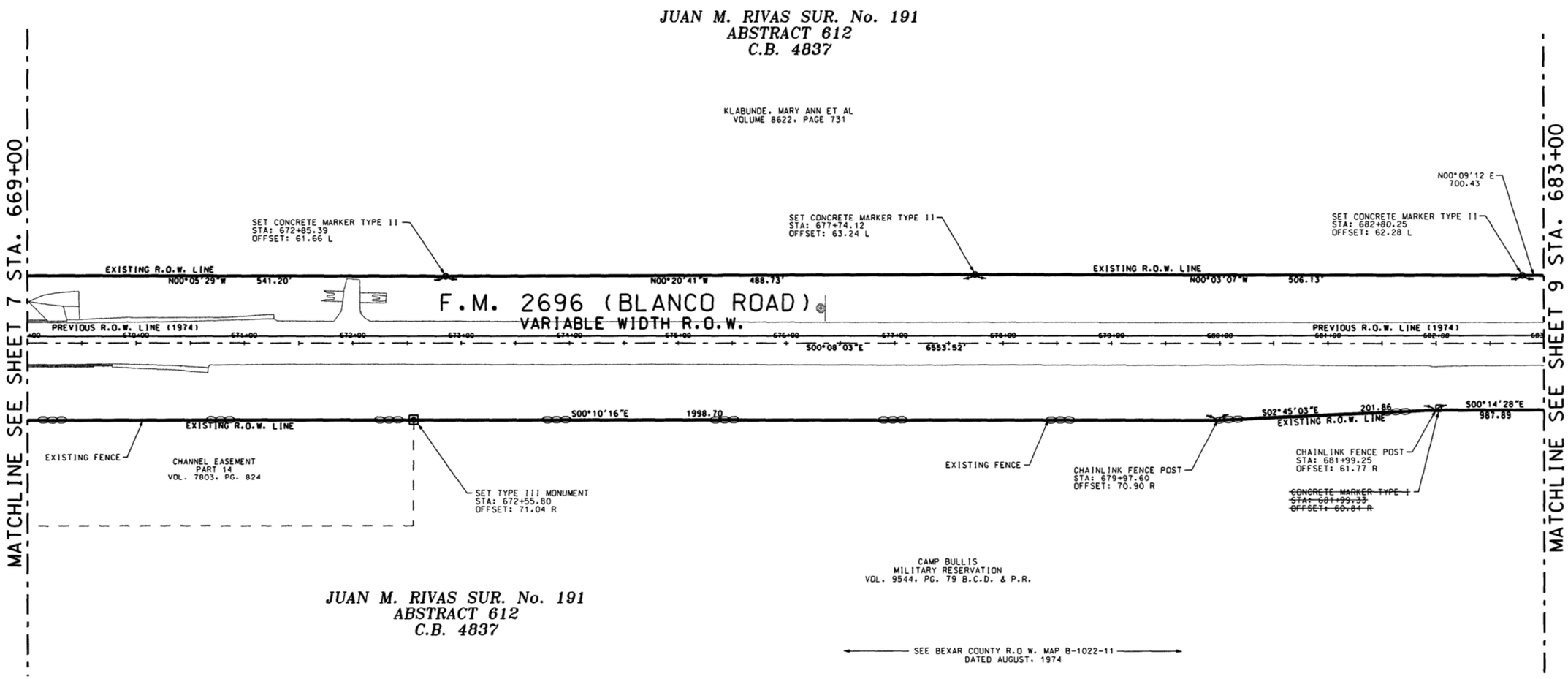
STATE OF TEXAS REGISTERED E.F. BURKHART 1708 PROFESSIONAL LAND SURVEYOR

FED RD DIV NO.	FEDERAL AID PROJECT NO			SHEET NO.
				SHT 22 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT.	JOB	HIGHWAY NO
	2708	01	25	F M 2696



LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
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	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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STATE OF TEXAS REGISTERED E.F. BURKHART 1708 PROFESSIONAL LAND SURVEYOR

FED. RD DIV NO.	FEDERAL AID PROJECT NO			SHEET NO
				SHT 23 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO.
	2708	01	25	F M 2696

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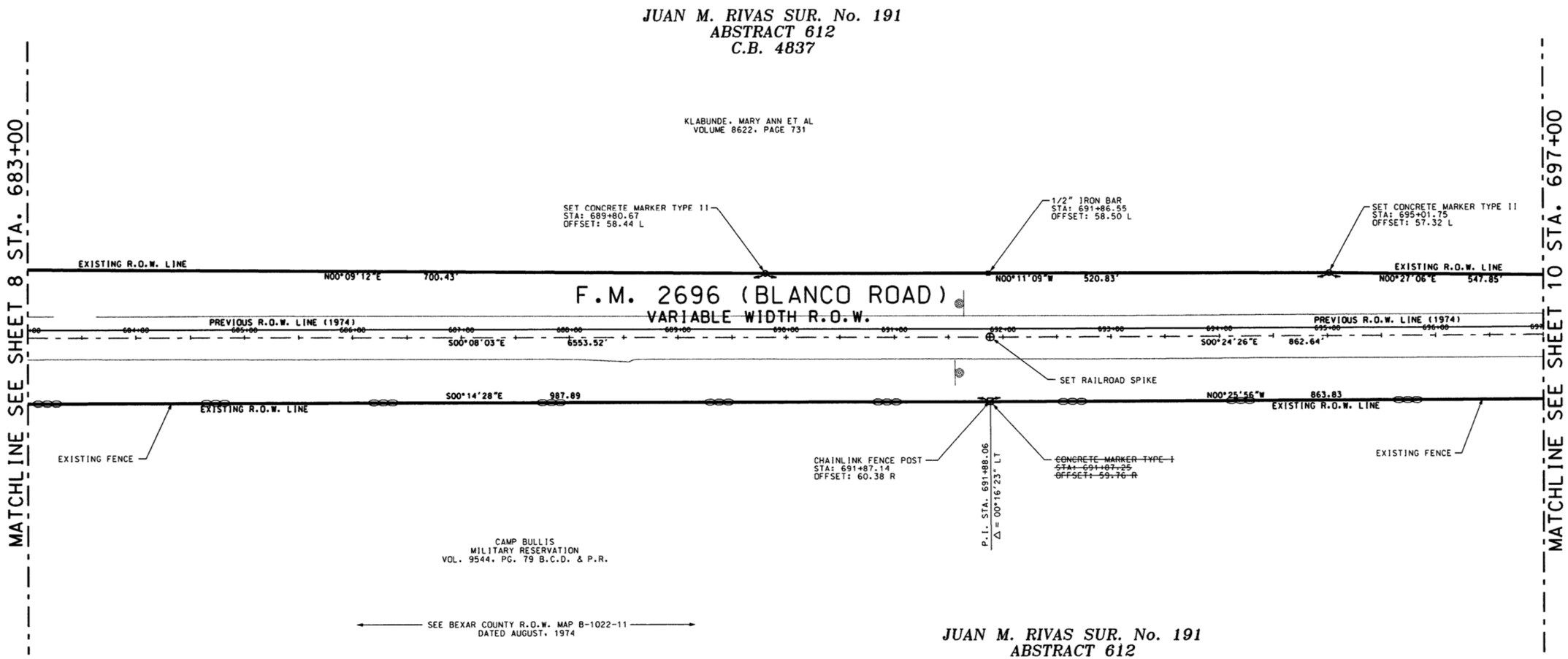

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
	TYPE III MONUMENT	— — —	EXISTING EASEMENT
	NAIL	·—℄—	PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP	— — —	SURVEY LINE
	PINCH PIPE	—ooo—	EXISTING CHAINLINK FENCE
	PIPE	—×—×—	EXISTING WIRE FENCE

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STATE OF TEXAS REGISTERED E.F. BURKHART 1708 PROFESSIONAL LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO.
				SHT 24 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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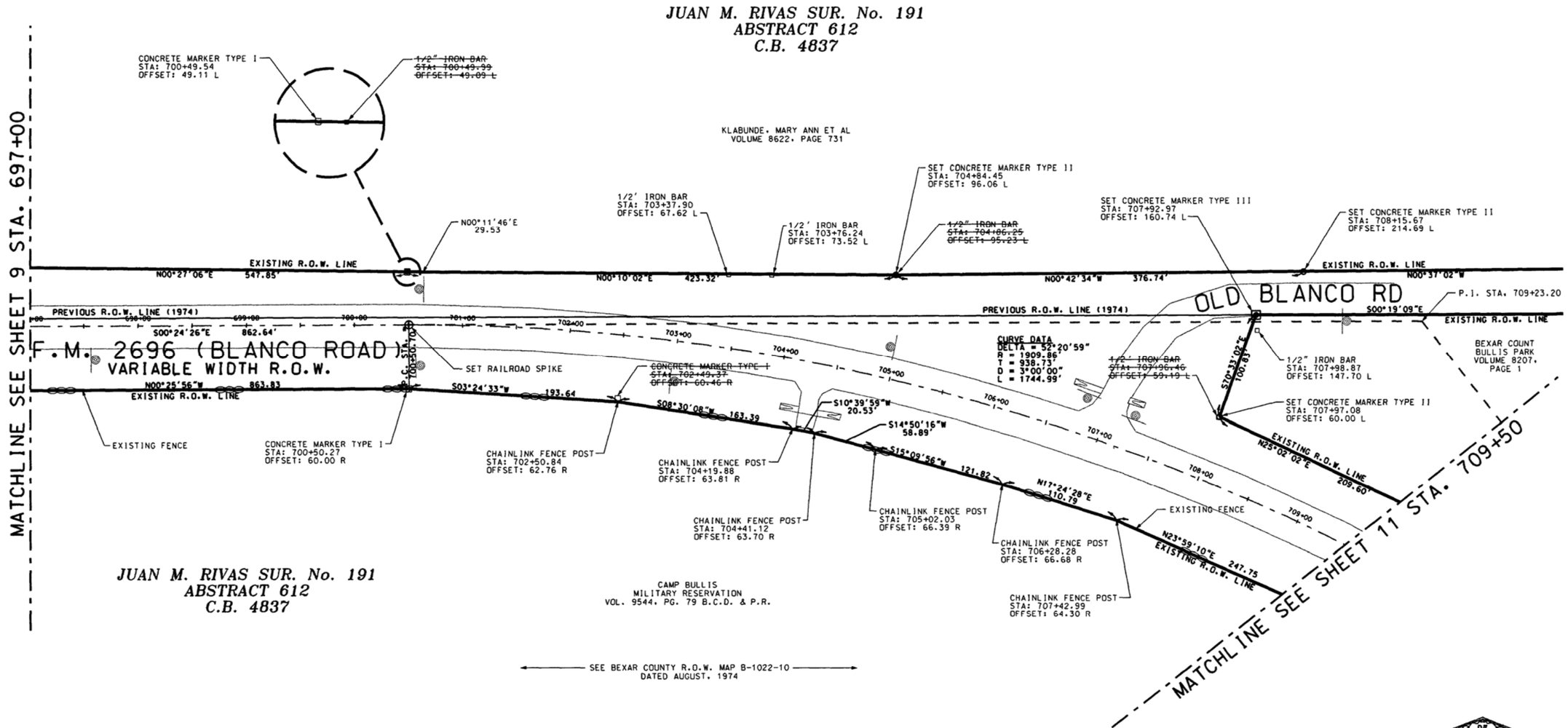

LEGEND

●	SIGN	×	FENCE CORNER
⬡	TREE	●	1/2" IRON PIN
▫	IRON BAR	⊕	RAILROAD SPIKE
⊡	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
⊙	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
◈	TYPE III MONUMENT	— — —	EXISTING EASEMENT
●	NAIL	·-·-℄-·-	PROPERTY LINE
◉	CORPS. OF ENGINEERS BRASS CAP	-—-—-	SURVEY LINE
○	PINCH PIPE	—ooo—	EXISTING CHAINLINK FENCE
○	PIPE	—×—×—	EXISTING WIRE FENCE

NOTES:

1. BEARINGS ARE BASED ON NAD 83/86 TEXAS STATE PLANE COORDINATE SYSTEM (SOUTH CENTRAL ZONE) AS FURNISHED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS
REGISTERED
E.F. BURKHART
1708
PROFESSIONAL
LAND SURVEYOR

EF Burkhart

FED RD DIV NO	FEDERAL AID PROJECT NO		SHEET NO	
			SHT. 25 OF 55	
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R O W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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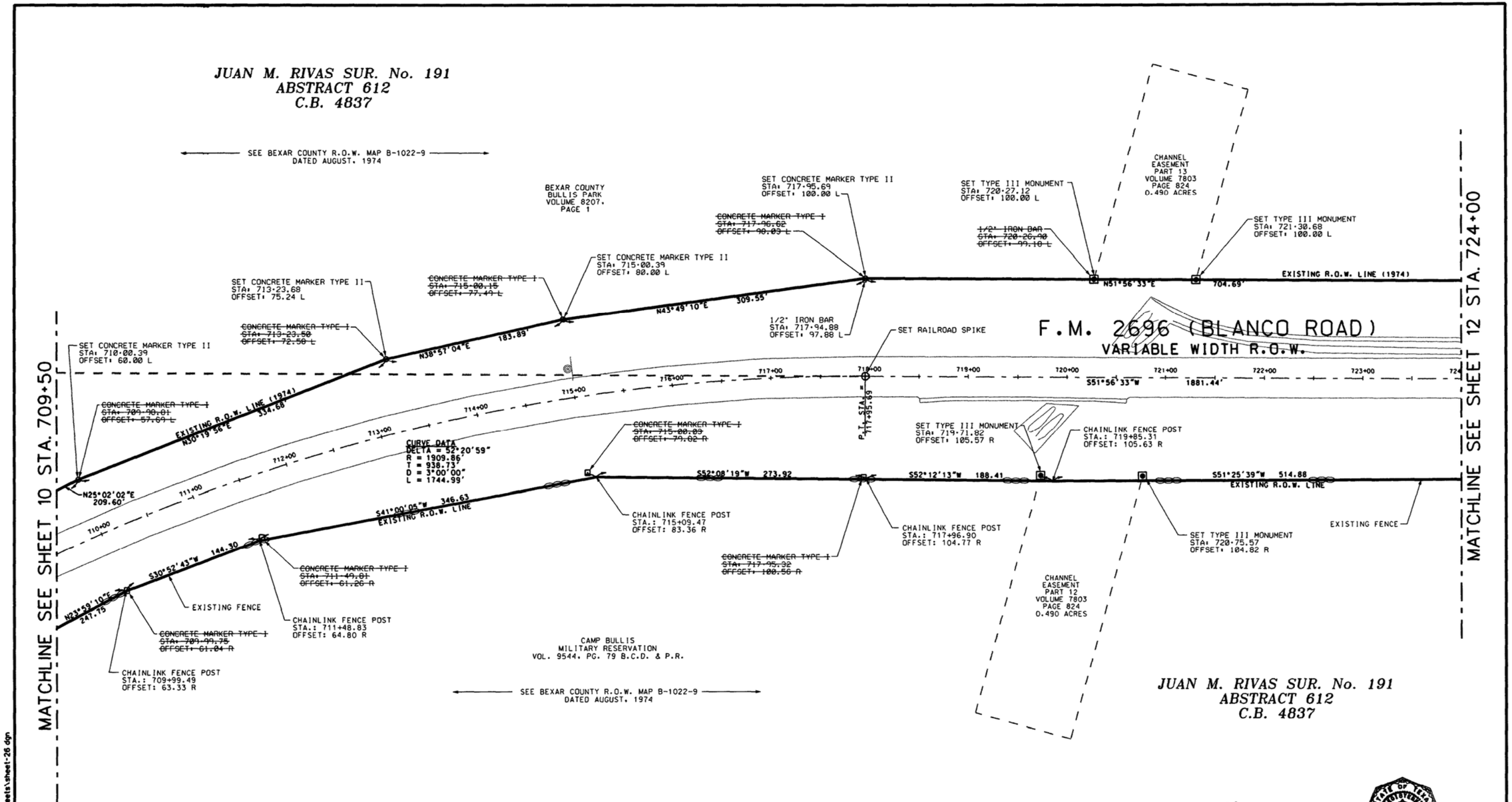

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS
REGISTERED
R.P. BURKHART
1708
PROFESSIONAL
LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 26 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R.O.W. CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F.M. 2696

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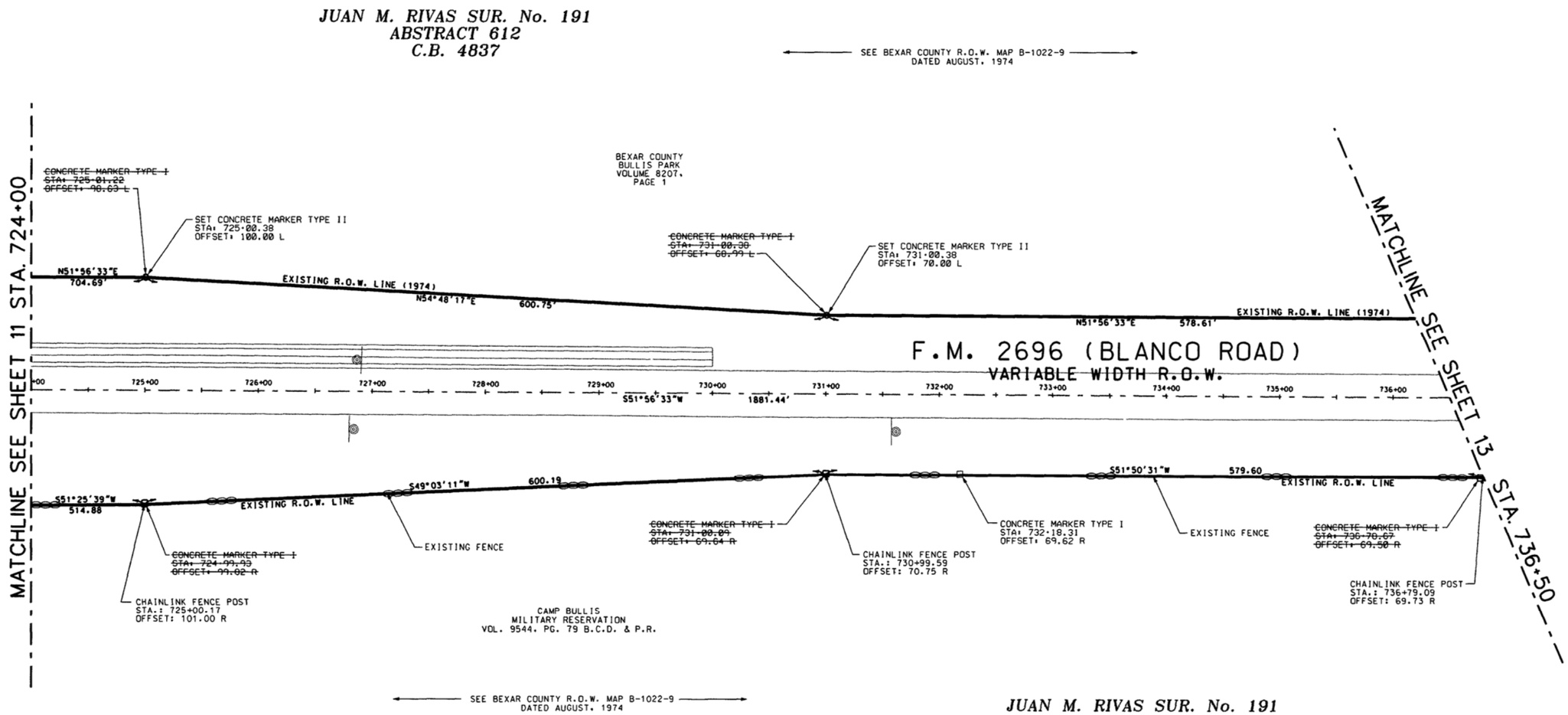

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS REGISTERED R.P. BARKHART 1708 PROFESSIONAL LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO.			SHEET NO.
				SHT 27 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO.
	2708	01	25	F.M 2696

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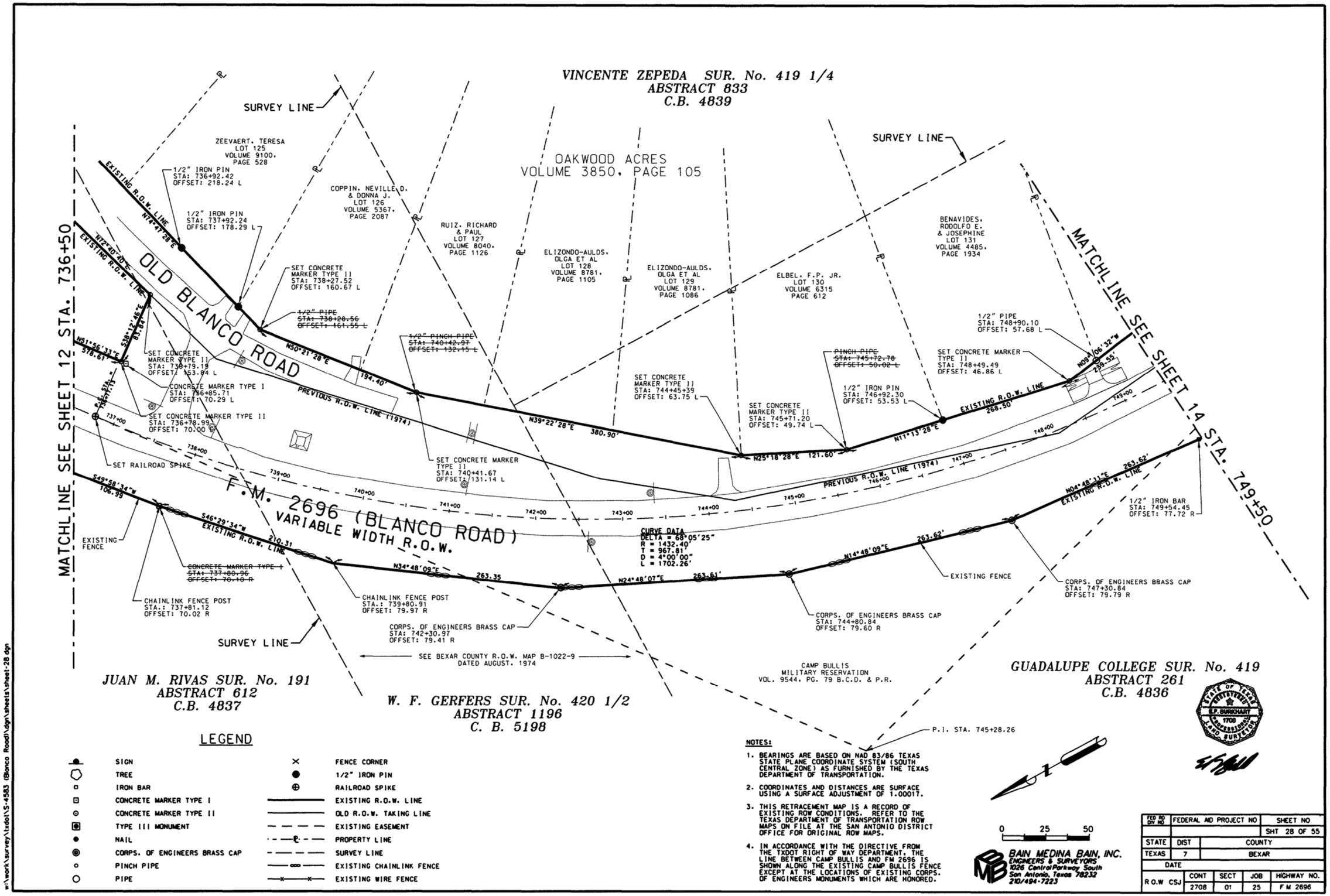
VINCENTE ZEPEDA SUR. No. 419 1/4
ABSTRACT 833
C.B. 4839
SURVEY LINE
ZEEVAERT, TERESA
LOT 125
VOLUME 9100,
PAGE 528
1/2" IRON PIN
STA: 736+92.42
OFFSET: 218.24 L
1/2" IRON PIN
STA: 737+92.24
OFFSET: 178.29 L
COPPIN, NEVILLE D.
& DONNA J.
LOT 126
VOLUME 5367,
PAGE 2087
RUIZ, RICHARD
& PAUL
LOT 127
VOLUME 8040,
PAGE 1126
OAKWOOD ACRES
VOLUME 3850, PAGE 105
ELIZONDO-AULDS,
OLGA ET AL
LOT 128
VOLUME 8781,
PAGE 1105
ELIZONDO-AULDS,
OLGA ET AL
LOT 129
VOLUME 8781,
PAGE 1086
ELBEL, F.P. JR.
LOT 130
VOLUME 6315
PAGE 612
BENAVIDES,
RODOLFO E.
& JOSEPHINE
LOT 131
VOLUME 4485,
PAGE 1934
SURVEY LINE
MATCHLINE SEE SHEET 12 STA. 736+50
MATCHLINE SEE SHEET 14 STA. 749+50
EXISTING R.O.W. LINE
N74°47'38"E
N72°40'40"E
OLD BLANCO ROAD
SET CONCRETE
MARKER TYPE II
STA: 738+27.52
OFFSET: 160.67 L
~~1/2" PIPE~~
~~STA: 738+28.56~~
~~OFFSET: 161.55 L~~
~~1/2" PINCH PIPE~~
~~STA: 740+42.97~~
~~OFFSET: 132.15 L~~
N50°21'28"E
194.40'
PREVIOUS R.O.W. LINE (1974)
N39°22'28"E
380.90'
N25°18'28"E 121.60'
N11°13'28"E
268.50'
EXISTING R.O.W. LINE
N09°06'32"W
239.55'
1/2" PIPE
STA: 748+90.10
OFFSET: 57.68 L
SET CONCRETE MARKER
TYPE II
STA: 748+49.49
OFFSET: 46.86 L
~~PINCH PIPE~~
~~STA: 745+72.78~~
~~OFFSET: 50.02 L~~
1/2" IRON PIN
STA: 746+92.30
OFFSET: 53.53 L
SET CONCRETE
MARKER TYPE II
STA: 744+45+39
OFFSET: 63.75 L
SET CONCRETE
MARKER TYPE II
STA: 745+71.20
OFFSET: 49.74 L
S38°12'46"E
83.84'
N51°56'33"E
578.61'
SET CONCRETE
MARKER TYPE II
STA: 736+79.19
OFFSET: 153.94 L
CONCRETE MARKER TYPE I
STA: 736+85.71
OFFSET: 70.29 L
SET CONCRETE MARKER TYPE II
STA: 736+78.99
OFFSET: 70.00 L
SET RAILROAD SPIKE
S49°58'34"W
108.99
EXISTING R.O.W. LINE
S46°29'34"W
210.31
F.M. 2696 (BLANCO ROAD)
VARIABLE WIDTH R.O.W.
SET CONCRETE MARKER
TYPE II
STA: 740+41.67
OFFSET: 131.14 L
CURVE DATA
DELTA = 68°05'25"
R = 1432.40'
T = 967.81'
D = 4°00'00"
L = 1702.26'
N34°48'09"E
263.35
N24°48'07"E
263.61'
N14°48'09"E
263.62'
N04°48'11"E
263.62'
PREVIOUS R.O.W. LINE (1974)
EXISTING R.O.W. LINE
1/2" IRON BAR
STA: 749+54.45
OFFSET: 77.72 R
EXISTING FENCE
~~CONCRETE MARKER TYPE I~~
~~STA: 737+80.96~~
~~OFFSET: 70.10 R~~
CHAINLINK FENCE POST
STA.: 737+81.12
OFFSET: 70.02 R
CHAINLINK FENCE POST
STA.: 739+80.91
OFFSET: 79.97 R
CORPS. OF ENGINEERS BRASS CAP
STA: 742+30.97
OFFSET: 79.41 R
CORPS. OF ENGINEERS BRASS CAP
STA: 744+80.84
OFFSET: 79.60 R
EXISTING FENCE
CORPS. OF ENGINEERS BRASS CAP
STA: 747+30.84
OFFSET: 79.79 R
SURVEY LINE
SEE BEXAR COUNTY R.O.W. MAP B-1022-9
DATED AUGUST, 1974
CAMP BULLIS
MILITARY RESERVATION
VOL. 9544, PG. 79 B.C.D. & P.R.
JUAN M. RIVAS SUR. No. 191
ABSTRACT 612
C.B. 4837
W. F. GERFERS SUR. No. 420 1/2
ABSTRACT 1196
C. B. 5198
GUADALUPE COLLEGE SUR. No. 419
ABSTRACT 261
C.B. 4836
P.I. STA. 745+28.26
LEGEND
SIGN
TREE
IRON BAR
CONCRETE MARKER TYPE I
CONCRETE MARKER TYPE II
TYPE III MONUMENT
NAIL
CORPS. OF ENGINEERS BRASS CAP
PINCH PIPE
PIPE
FENCE CORNER
1/2" IRON PIN
RAILROAD SPIKE
EXISTING R.O.W. LINE
OLD R.O.W. TAKING LINE
EXISTING EASEMENT
PROPERTY LINE
SURVEY LINE
EXISTING CHAINLINK FENCE
EXISTING WIRE FENCE
NOTES:
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0 25 50
BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223
STATE OF TEXAS
F.P. BURKHART
1708
REGISTERED PROFESSIONAL LAND SURVEYOR
FED RD DIV NO
FEDERAL AID PROJECT NO
SHEET NO
SHT 28 OF 55
STATE
DIST
COUNTY
TEXAS
7
BEXAR
DATE
R.O.W. CSJ
CONT
SECT
JOB
HIGHWAY NO.
2708
01
25
F M 2696
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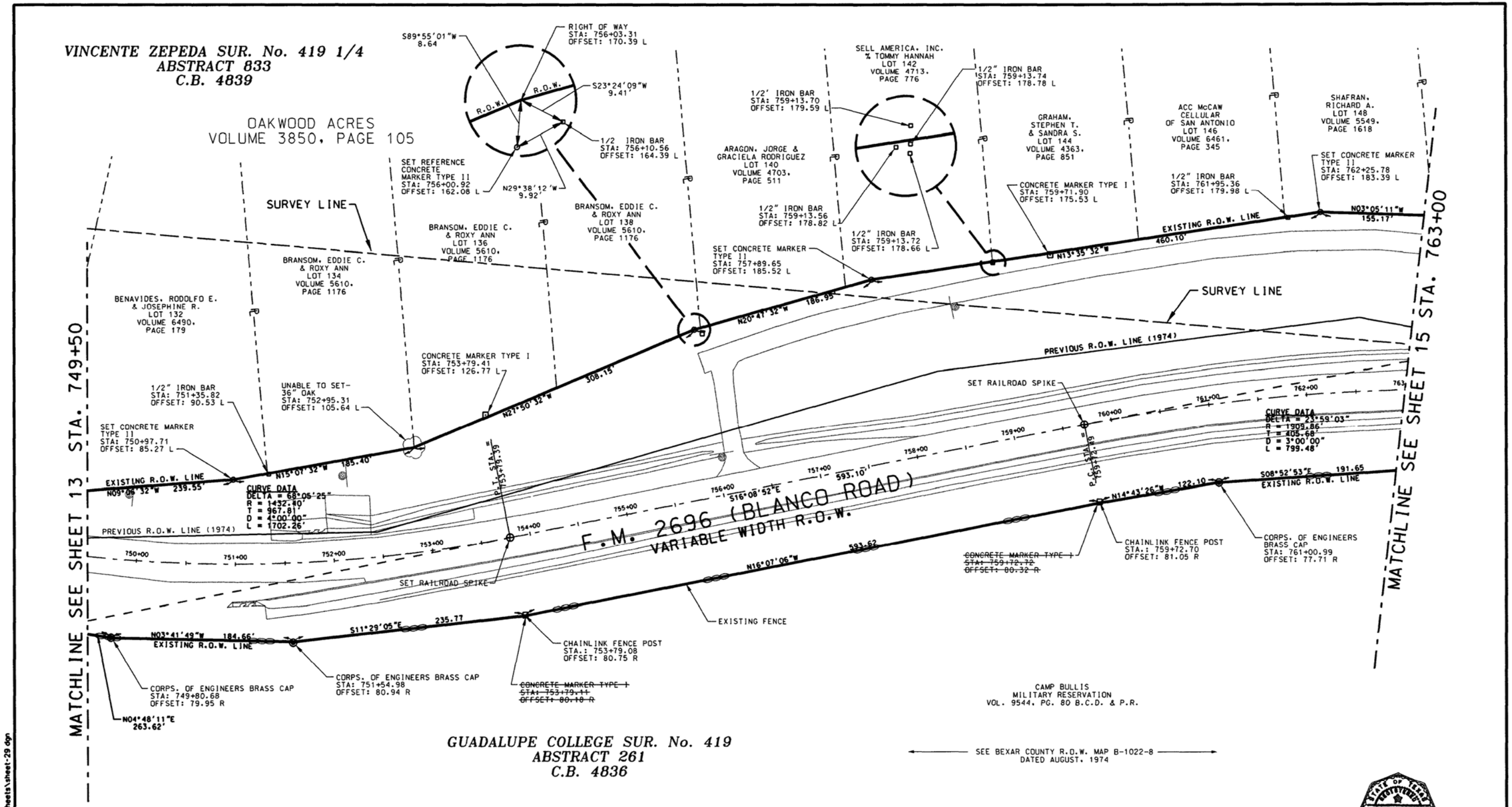

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS
REGISTERED
E.P. BURKHART
1706
PROFESSIONAL
LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT. 29 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
ROW CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F.M 2696

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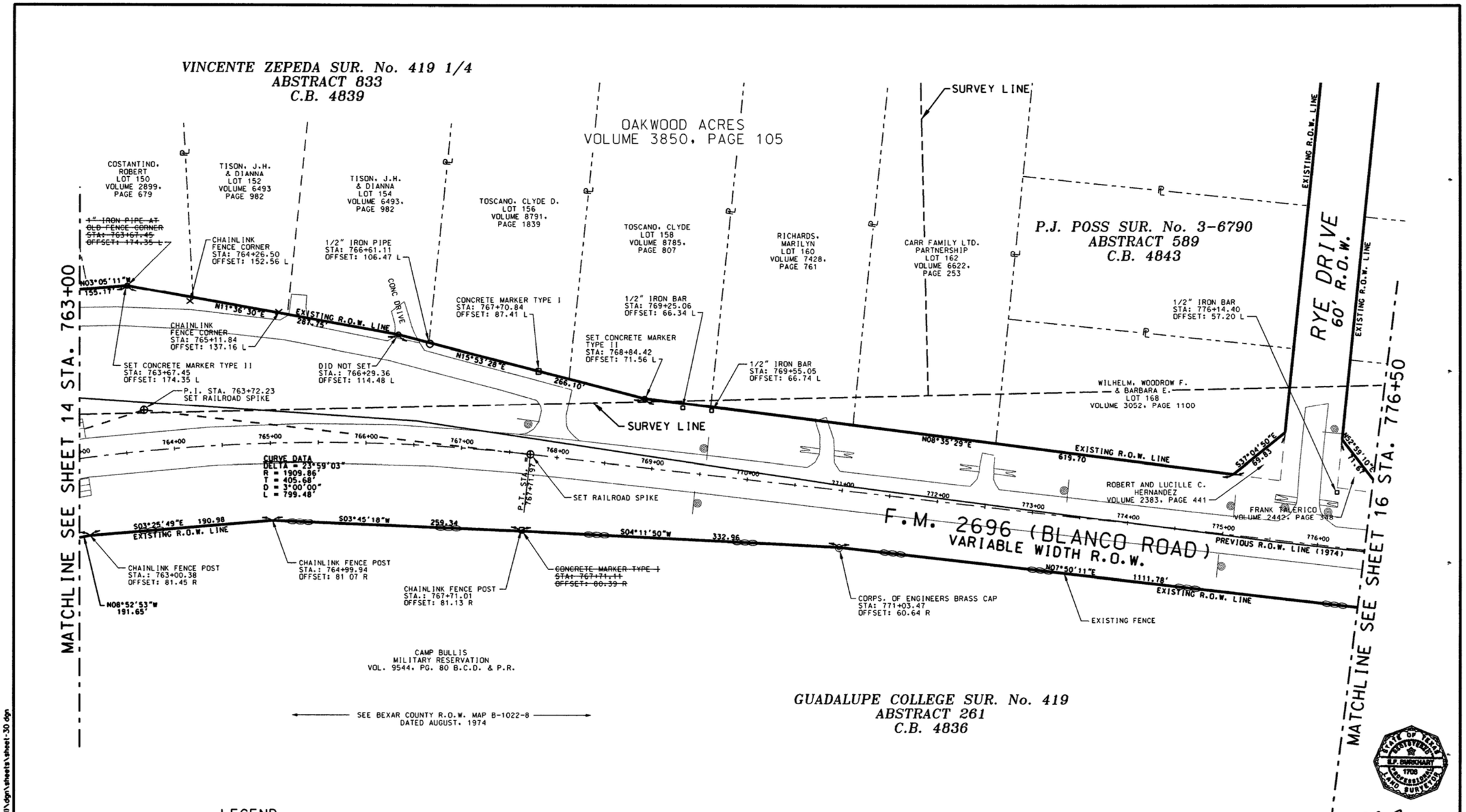

LEGEND

●	SIGN	×	FENCE CORNER
⬡	TREE	●	1/2" IRON PIN
▫	IRON BAR	⊕	RAILROAD SPIKE
⊡	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
⊙	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
⊞	TYPE III MONUMENT	— — —	EXISTING EASEMENT
●	NAIL	- - —℄- - —	PROPERTY LINE
◉	CORPS. OF ENGINEERS BRASS CAP	- — — —	SURVEY LINE
○	PINCH PIPE	—ooo—	EXISTING CHAINLINK FENCE
○	PIPE	—x—x—	EXISTING WIRE FENCE

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1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO.	FEDERAL AID PROJECT NO			SHEET NO
				SHT. 30 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F.M. 2696

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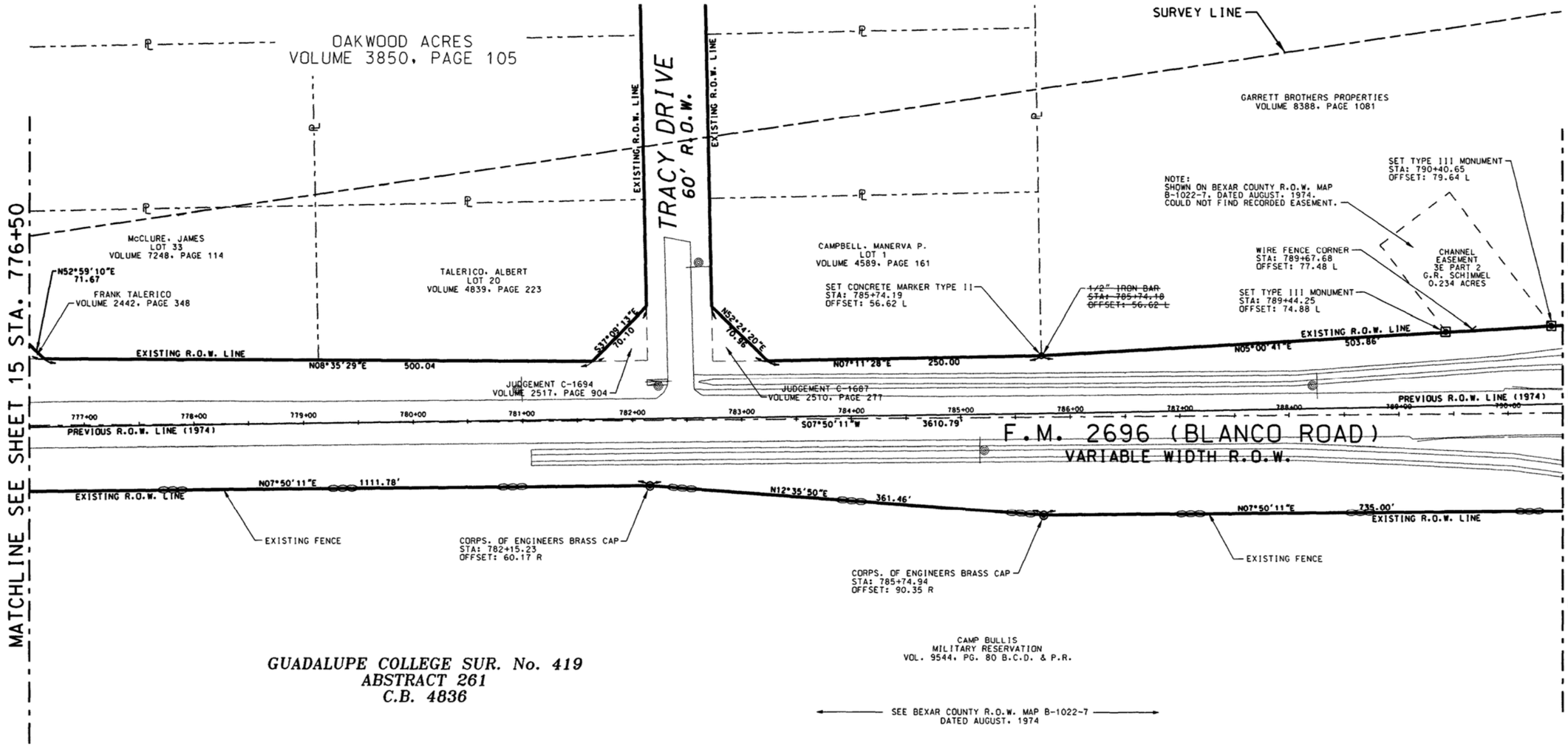

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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STATE OF TEXAS
REGISTERED
R.P. BURKHART
1708
PROFESSIONAL
LAND SURVEYOR

0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED. RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO.
				SHT. 31 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W. CSJ	CONT.	SECT.	JOB	HIGHWAY NO
	2708	01	25	F.M. 2696

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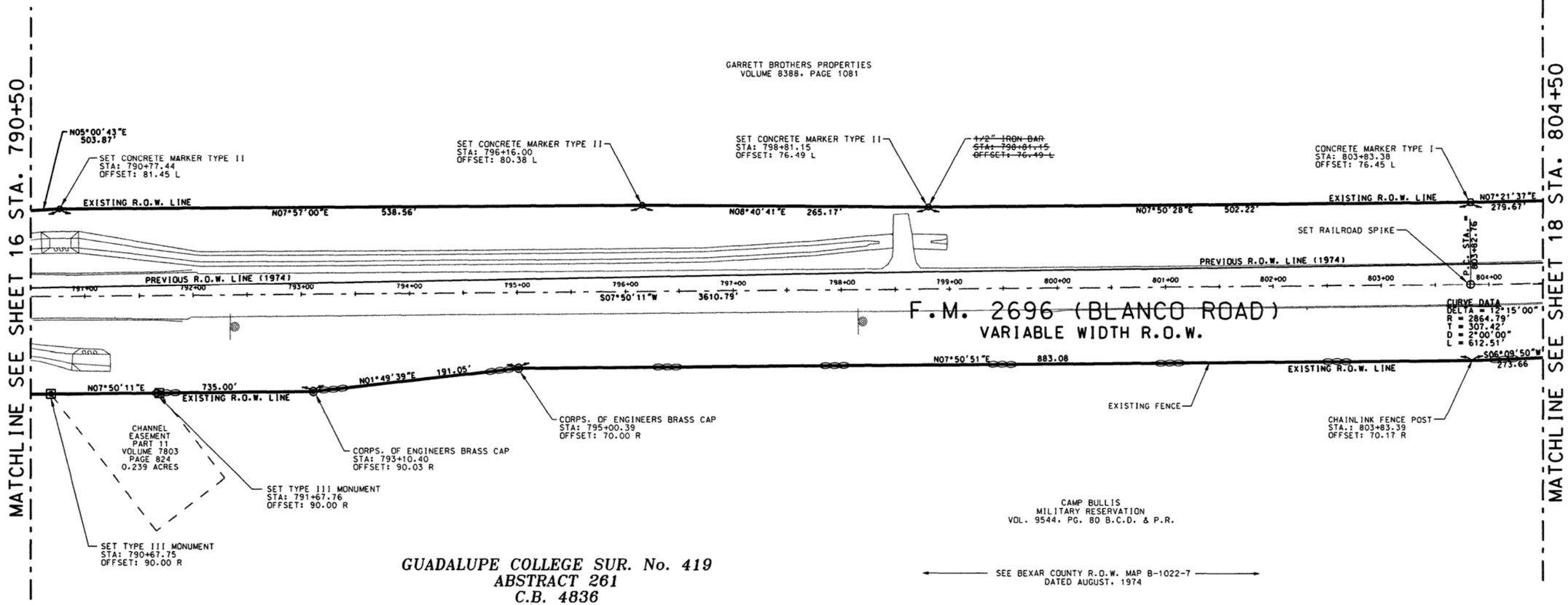
GUADALUPE COLLEGE SUR. No. 419
ABSTRACT 261
C.B. 4836



GUADALUPE COLLEGE SUR. No. 419
ABSTRACT 261
C.B. 4836

LEGEND

●	SIGN	×	FENCE CORNER
⬡	TREE	●	1/2" IRON PIN
▫	IRON BAR	⊕	RAILROAD SPIKE
⊡	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
⊙	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
▣	TYPE III MONUMENT	— — —	EXISTING EASEMENT
●	NAIL	·-·-℄-·-	PROPERTY LINE
◉	CORPS. OF ENGINEERS BRASS CAP	- — - —	SURVEY LINE
○	PINCH PIPE	—▭▭—	EXISTING CHAINLINK FENCE
○	PIPE	—×—×—	EXISTING WIRE FENCE

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1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS REGISTERED R.P. BURKHART 1708 LAND SURVEYOR

FED. RD DIV NO	FEDERAL AID PROJECT NO.			SHEET NO
				SHT. 32 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT.	SECT.	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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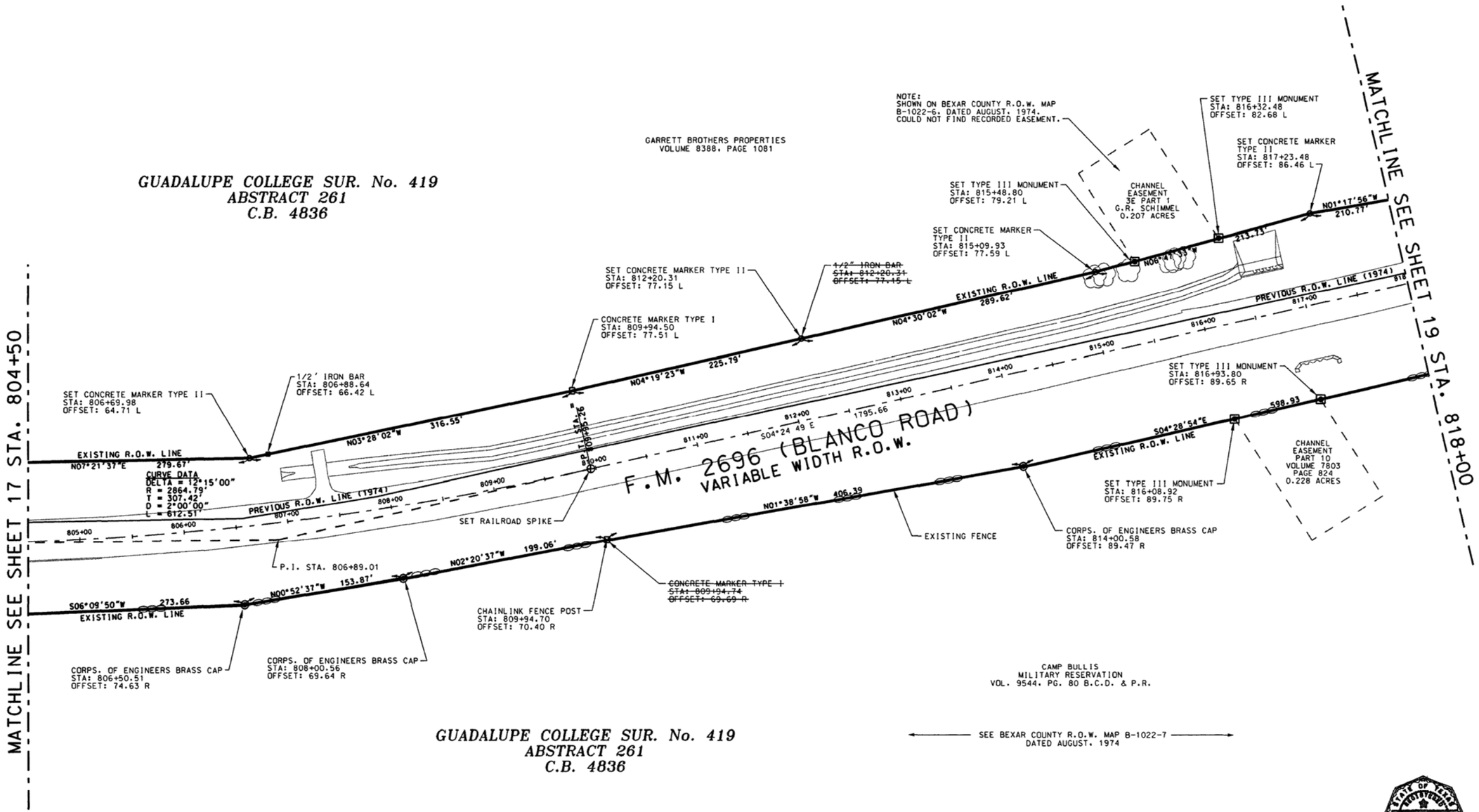

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 33 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F.M 2696

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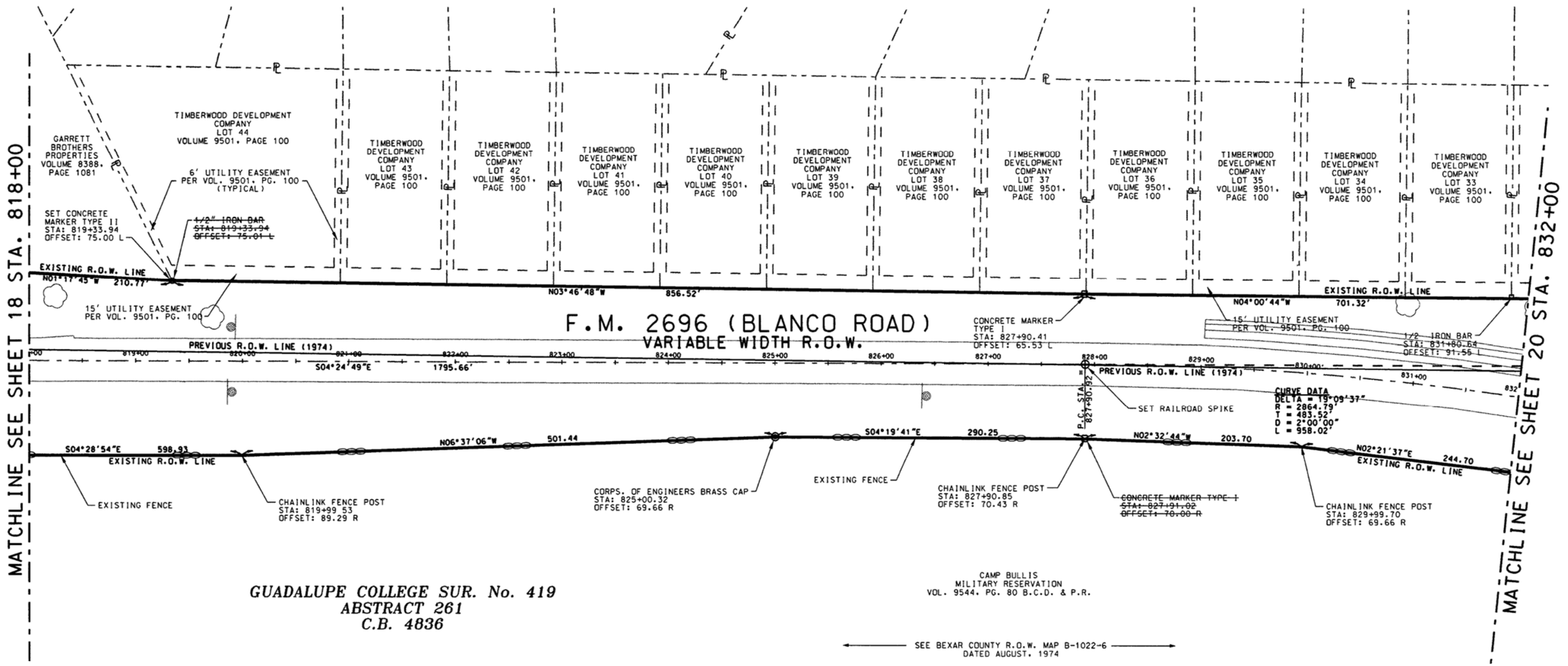
GUADALUPE COLLEGE SUR. No. 419
ABSTRACT 261
C.B. 4836

TIMBERWOOD PARK UNIT 24
VOLUME 9501, PAGES 98-100



GUADALUPE COLLEGE SUR. No. 419
ABSTRACT 261
C.B. 4836

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

NOTES:

1. BEARINGS ARE BASED ON NAD 83/86 TEXAS STATE PLANE COORDINATE SYSTEM (SOUTH CENTRAL ZONE) AS FURNISHED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS REGISTERED E.F. BURKHART 1708 PROFESSIONAL LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 34 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R O.W CSJ	CONT.	SECT	JOB	HIGHWAY NO
	2708	01	25	F.M 2696

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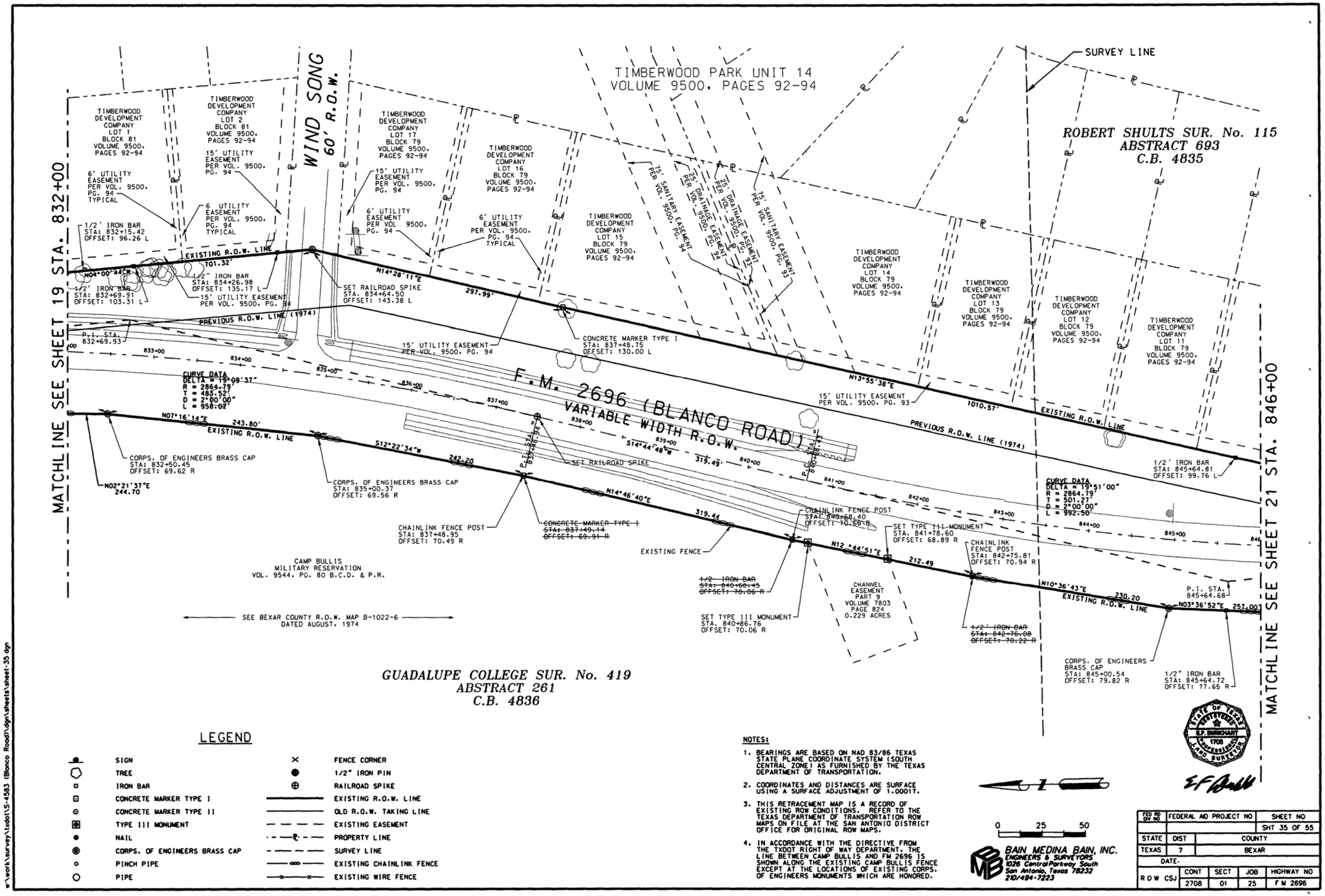

LEGEND

	SIGN		FENCE CORNER
	TREE		1/2" IRON PIN
	IRON BAR		RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 35 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE:				
ROW CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	FM 2696

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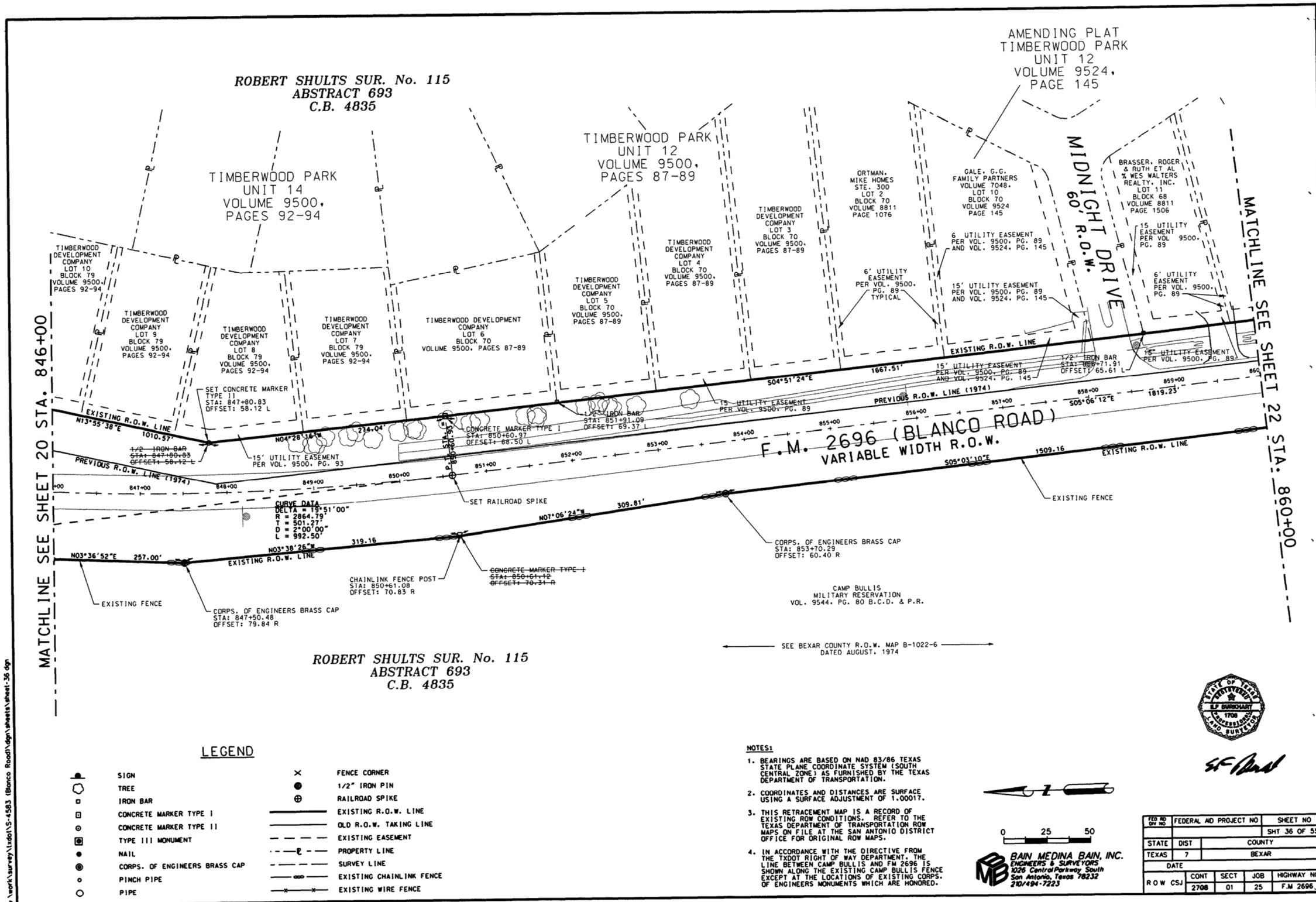

LEGEND

SIGN	FENCE CORNER
TREE	1/2" IRON PIN
IRON BAR	RAILROAD SPIKE
CONCRETE MARKER TYPE I	EXISTING R.O.W. LINE
CONCRETE MARKER TYPE II	OLD R.O.W. TAKING LINE
TYPE III MONUMENT	EXISTING EASEMENT
NAIL	PROPERTY LINE
CORPS. OF ENGINEERS BRASS CAP	SURVEY LINE
PINCH PIPE	EXISTING CHAINLINK FENCE
PIPE	EXISTING WIRE FENCE

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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS REGISTERED ILP BURKHART 1708 PROFESSIONAL LAND SURVEYOR

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 36 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
ROW CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F.M 2696.

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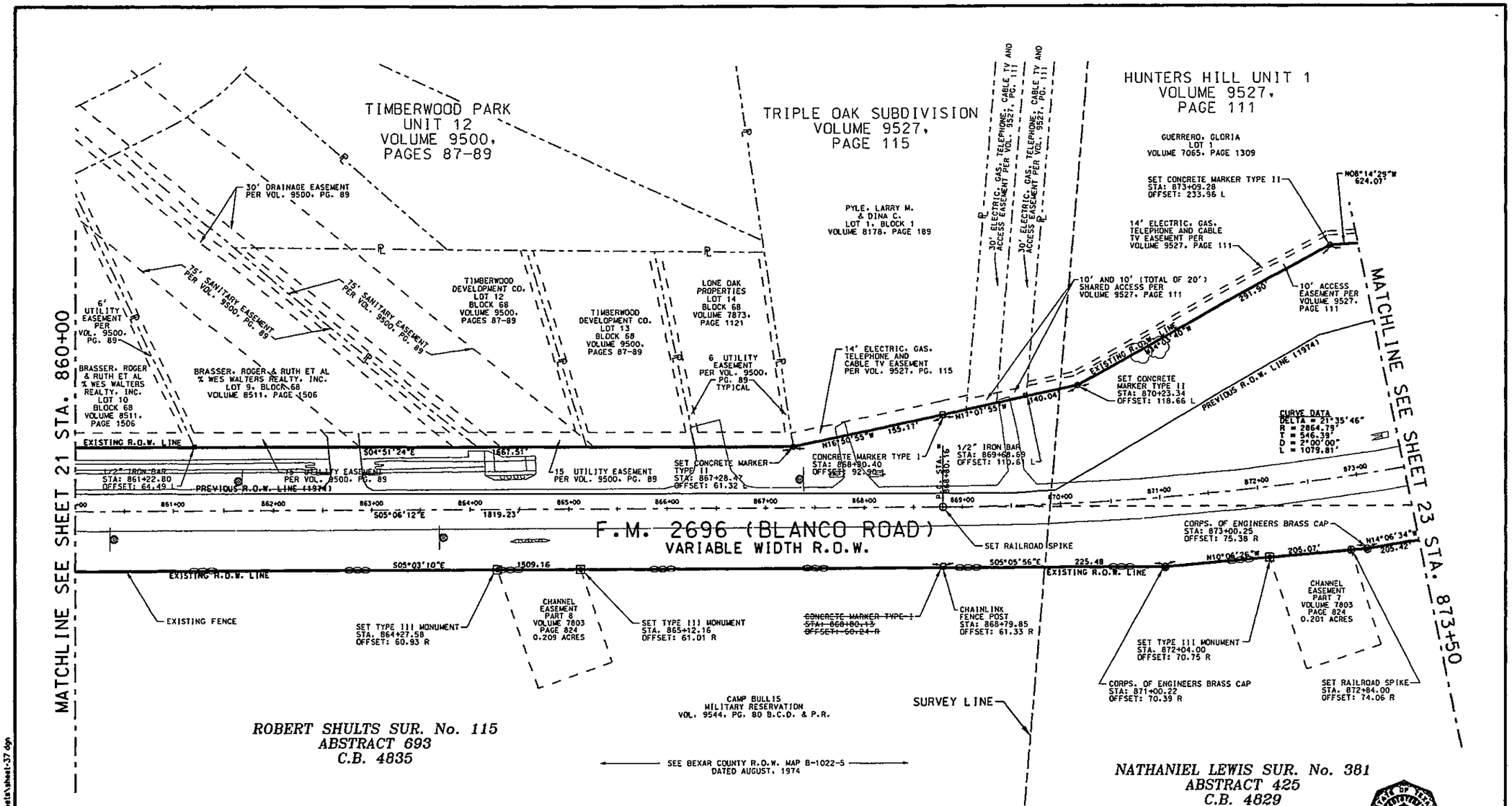

LEGEND

●	SIGN	×	FENCE CORNER
⬡	TREE	●	1/2" IRON PIN
▫	IRON BAR	⊕	RAILROAD SPIKE
⊡	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
⊙	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
⊞	TYPE III MONUMENT	— — —	EXISTING EASEMENT
●	NAIL	—·—·—	PROPERTY LINE
◉	CORPS. OF ENGINEERS BRASS CAP	— — —	SURVEY LINE
○	PINCH PIPE	——▬——	EXISTING CHAINLINK FENCE
○	PIPE	—x—x—	EXISTING WIRE FENCE

NOTES:

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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
3226 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED. RD. DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 37 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R O W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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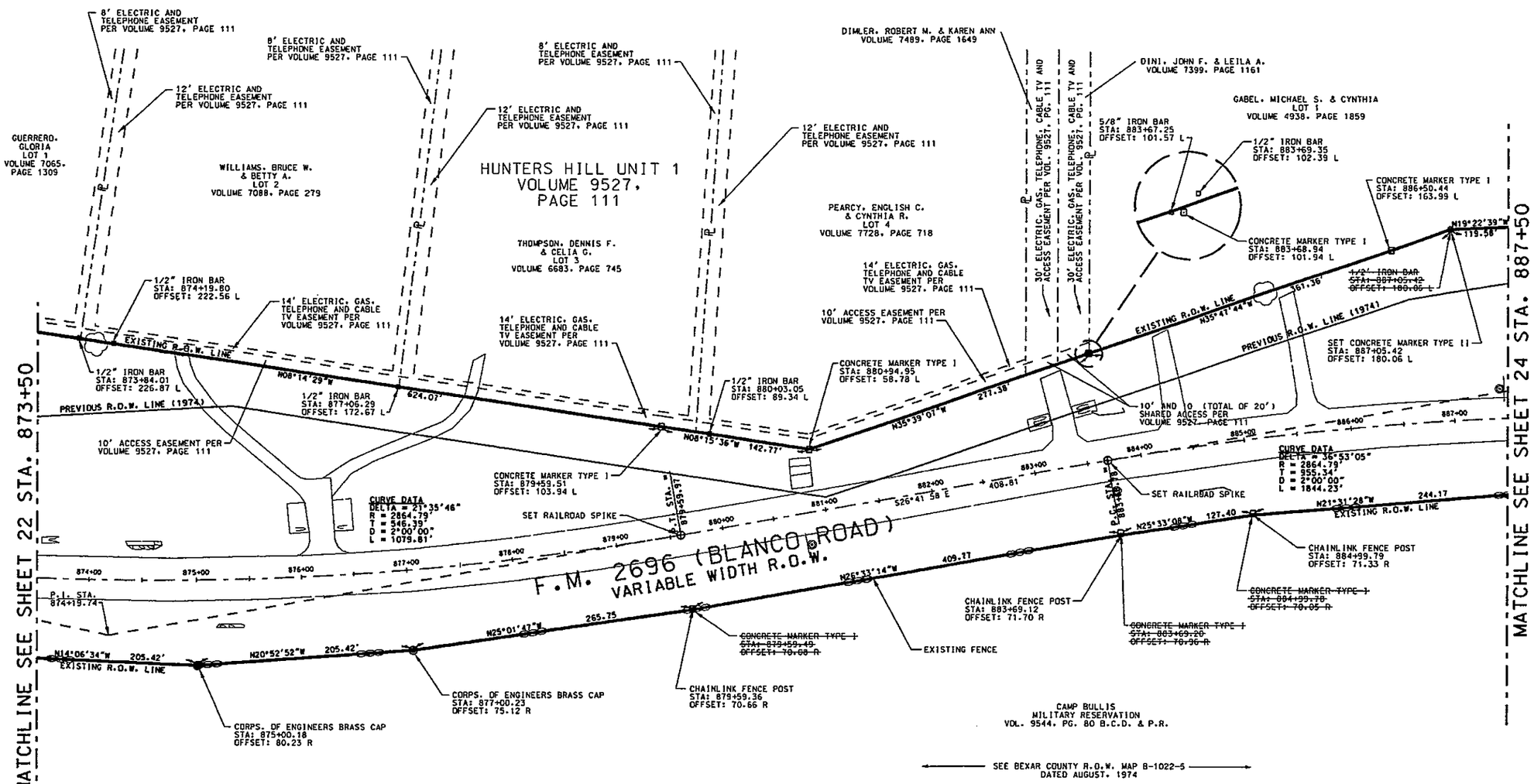

NATHANIEL LEWIS SUR. No. 381
ABSTRACT 425
C.B. 4829

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

NOTES:

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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO		SHEET NO
			SHT 38 OF 55
STATE	DIST	COUNTY	
TEXAS	7	BEXAR	
DATE:			

R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	25	F M 2696

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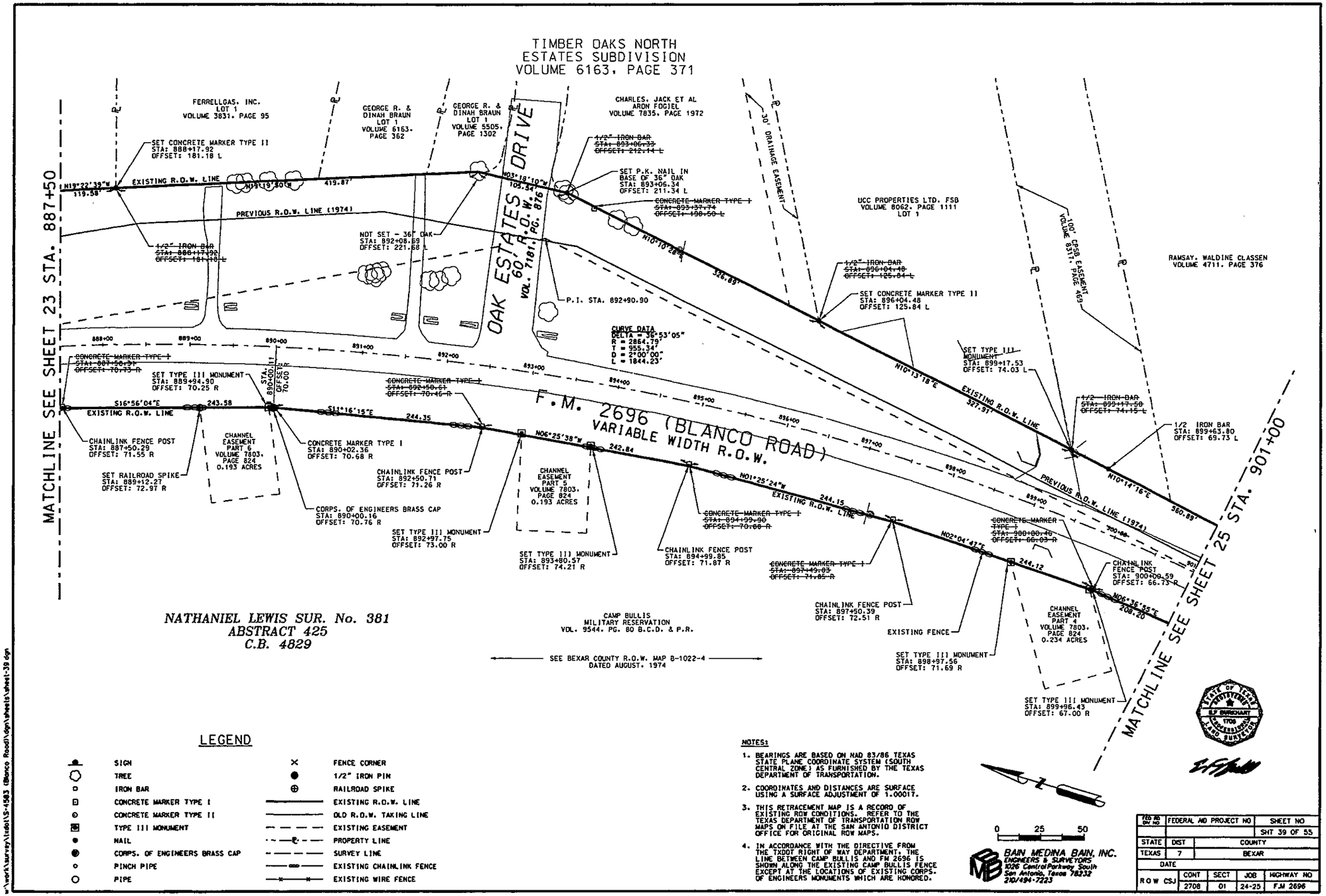

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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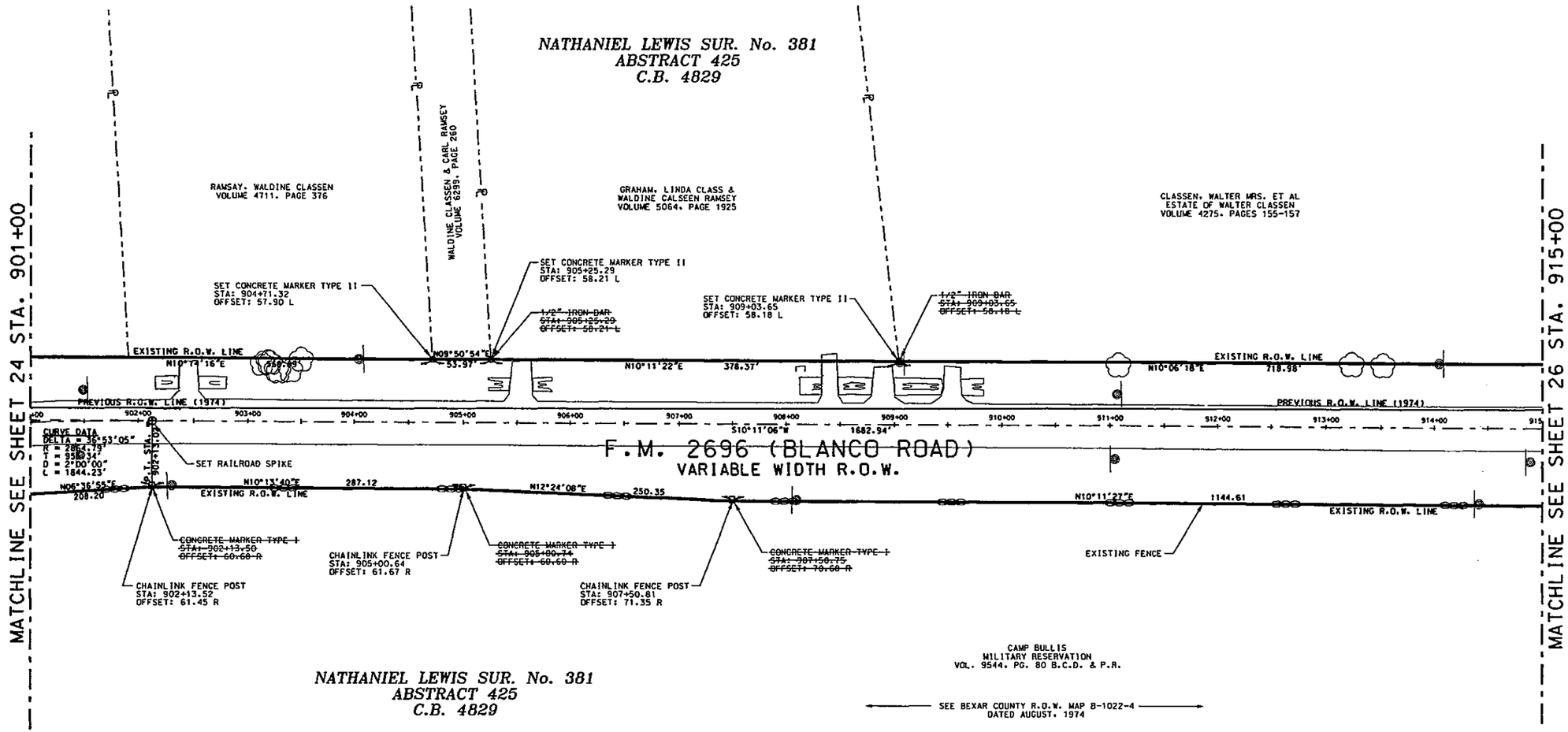
FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 39 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
ROW CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	24-25	FM 2696



LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
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	PINCH PIPE		EXISTING CHAINLINK FENCE
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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO		SHEET NO
			SHT 40 OF 55
STATE	DIST	COUNTY	
TEXAS	7	BEXAR	
DATE			

R.O.W. CSJ	CONT	SECT	JOB	HIGHWAY NO.
	2708	01	24	F M 2696

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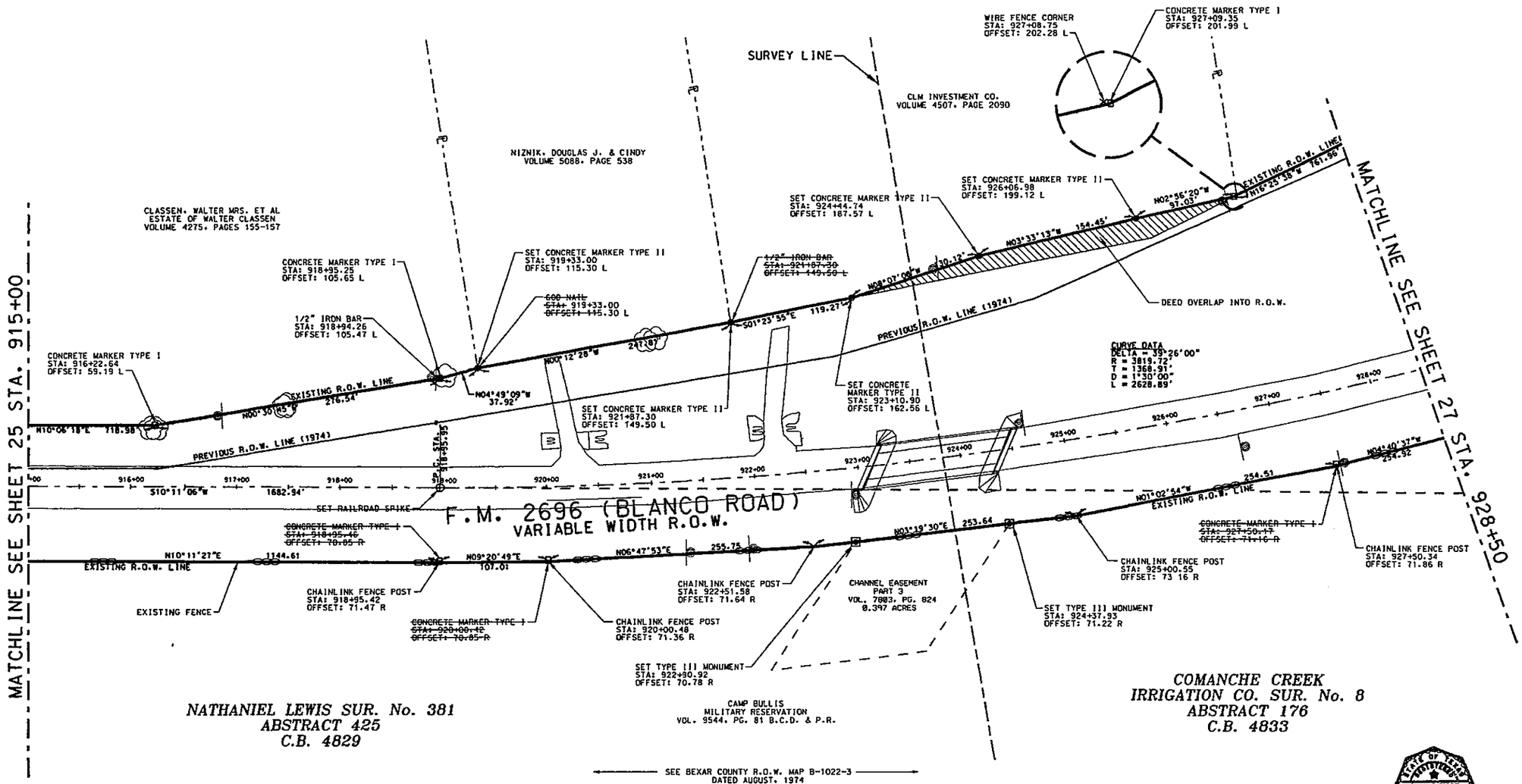

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
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ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 41 OF 55
STATE	DIST.	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	24	F.M 2696

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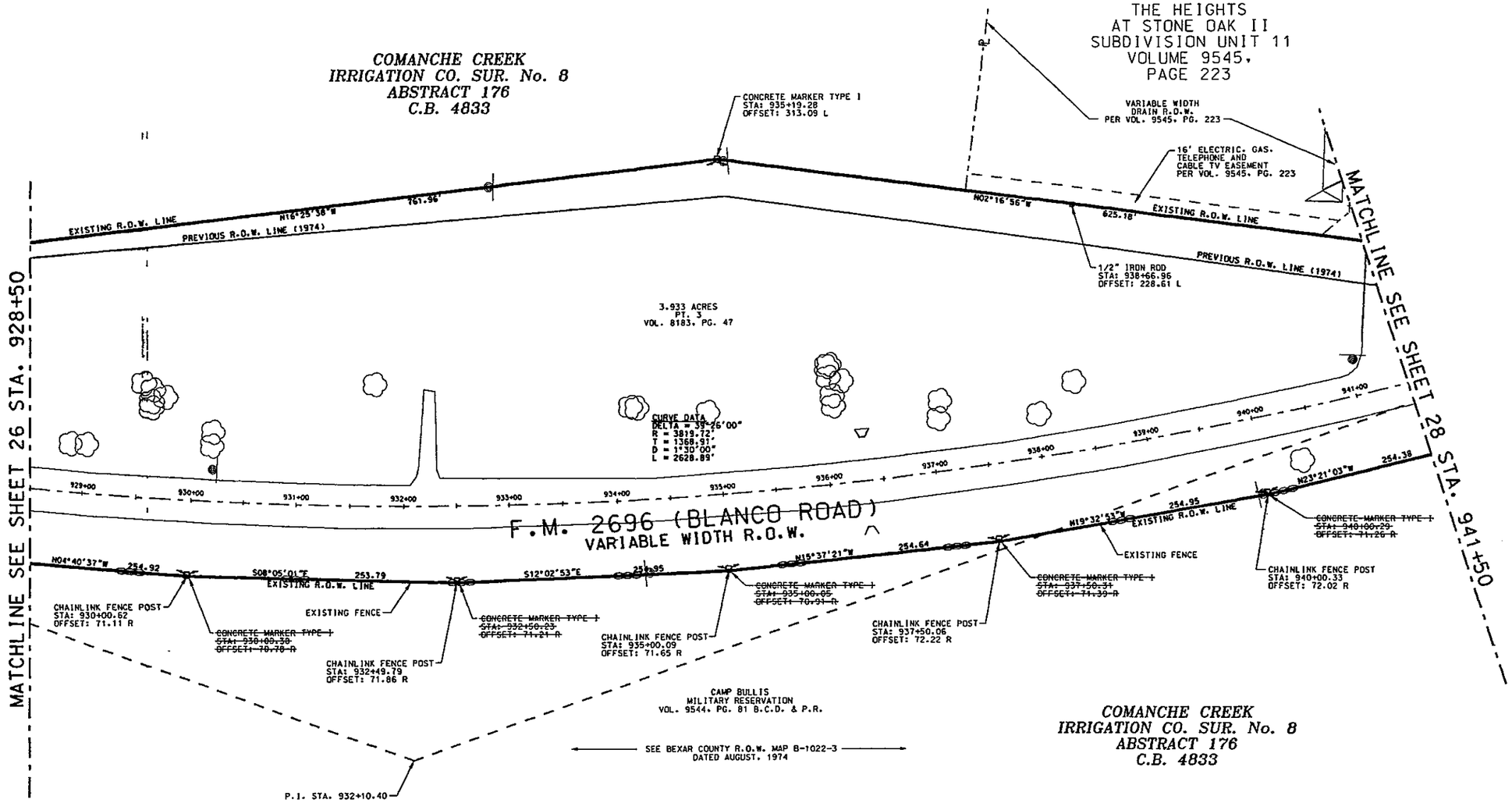

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
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	PIPE		EXISTING WIRE FENCE

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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
3026 Cent'l Parkway South
San Antonio, Texas 78233
210/494-7223

STATE OF TEXAS
E.F. BURKHART
5706
REGISTERED
LAND SURVEYOR

EF Burkhart

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO			SHEET NO
				SHT 42 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W. CSJ	CONT.	SECT	JOB	HIGHWAY NO.
	270B	01	24	F.M. 2696

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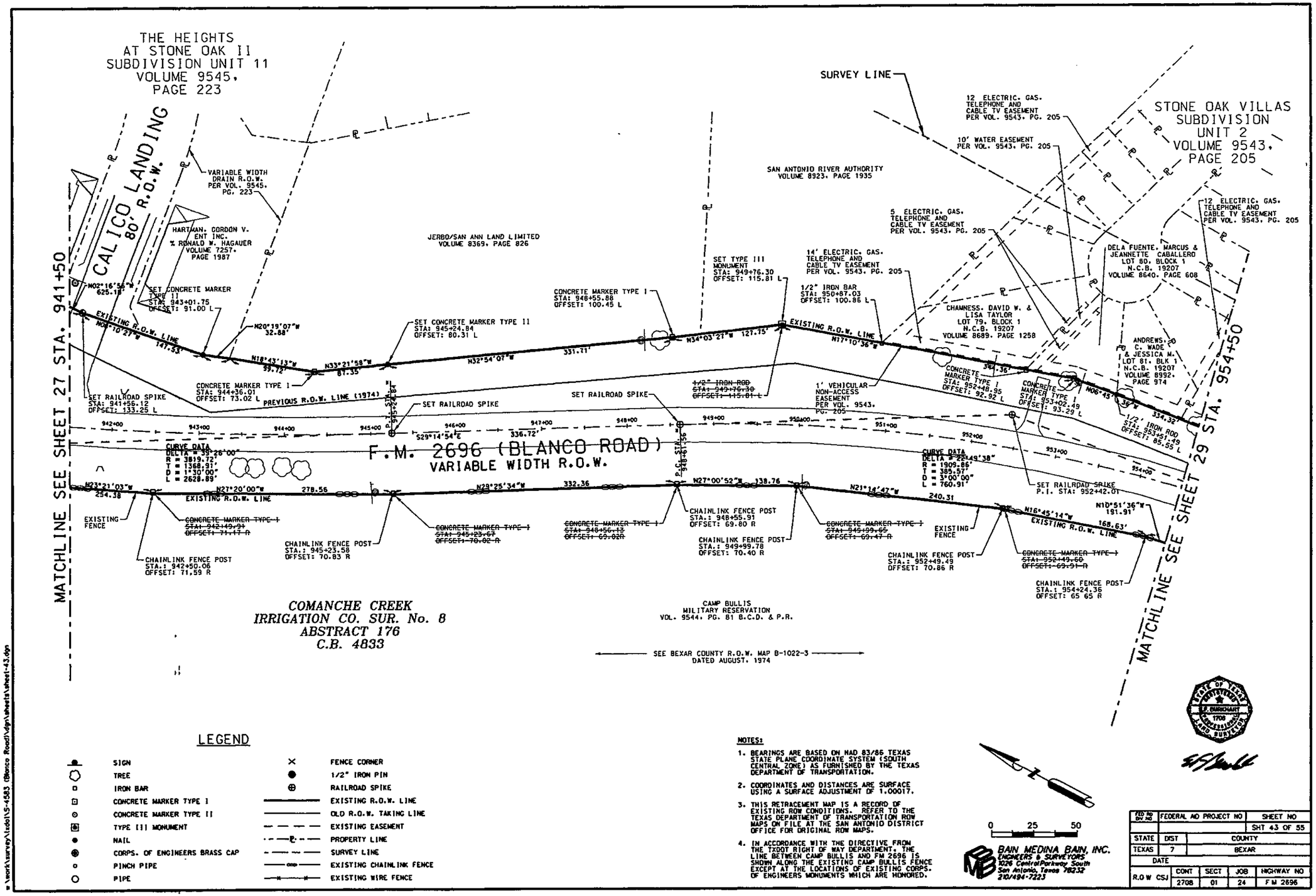

LEGEND

●	SIGN	×	FENCE CORNER
⬡	TREE	●	1/2" IRON PIN
▫	IRON BAR	⊕	RAILROAD SPIKE
⊡	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
⊙	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
▣	TYPE III MONUMENT	— — —	EXISTING EASEMENT
●	NAIL	- - -℄- - -	PROPERTY LINE
◉	CORPS. OF ENGINEERS BRASS CAP	- — — —	SURVEY LINE
▫	PINCH PIPE	—ooo—	EXISTING CHAINLINK FENCE
○	PIPE	—x—x—	EXISTING WIRE FENCE

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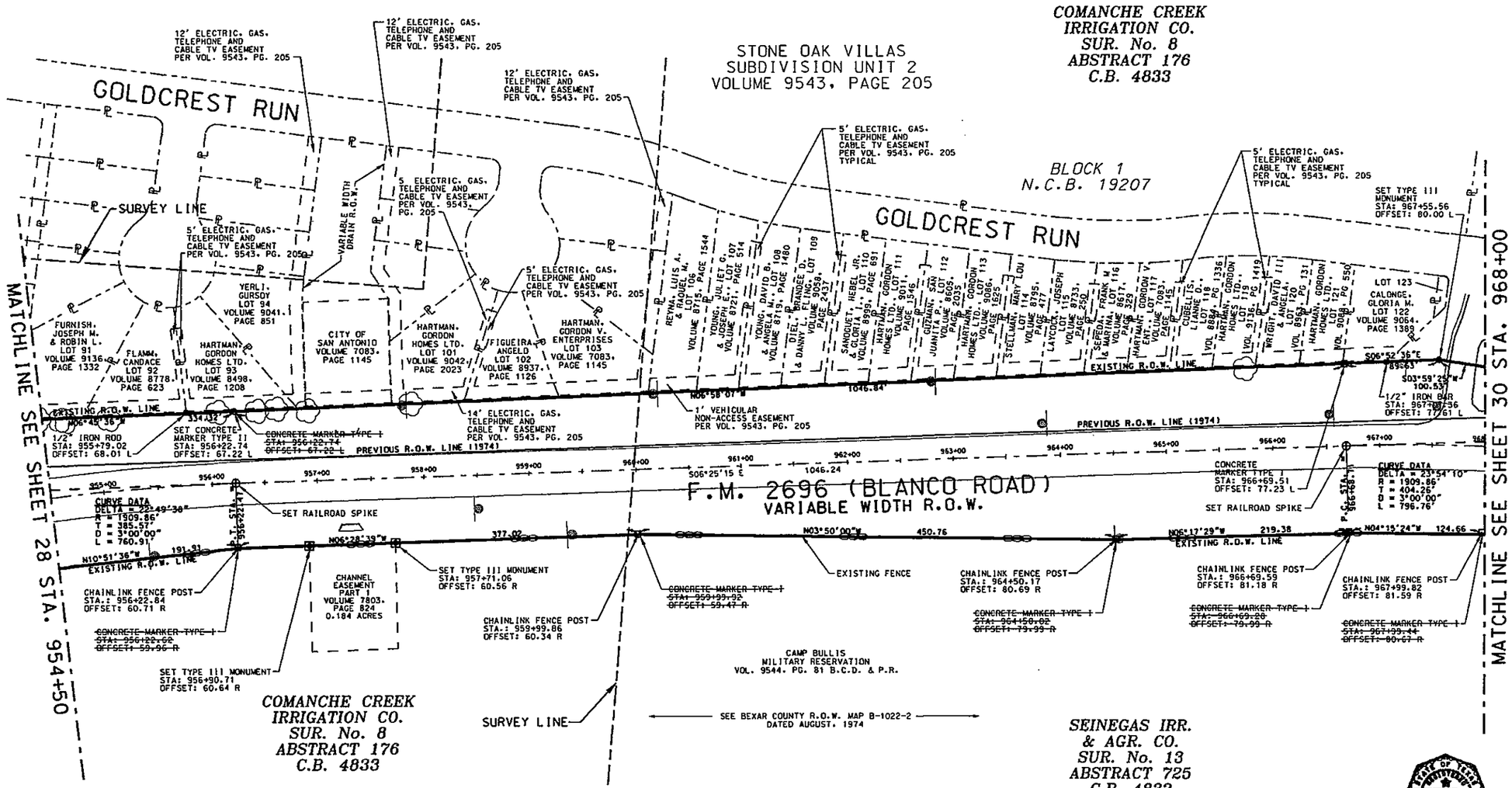
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT 43 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	24	F M 2696



LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
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BAIN MEDINA BAIN, INC.
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San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO.		SHEET NO
			SHT 44 OF 55
STATE	DIST	COUNTY	
TEXAS	7	BEXAR	
DATE:			

ROW CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	24	FM 2696

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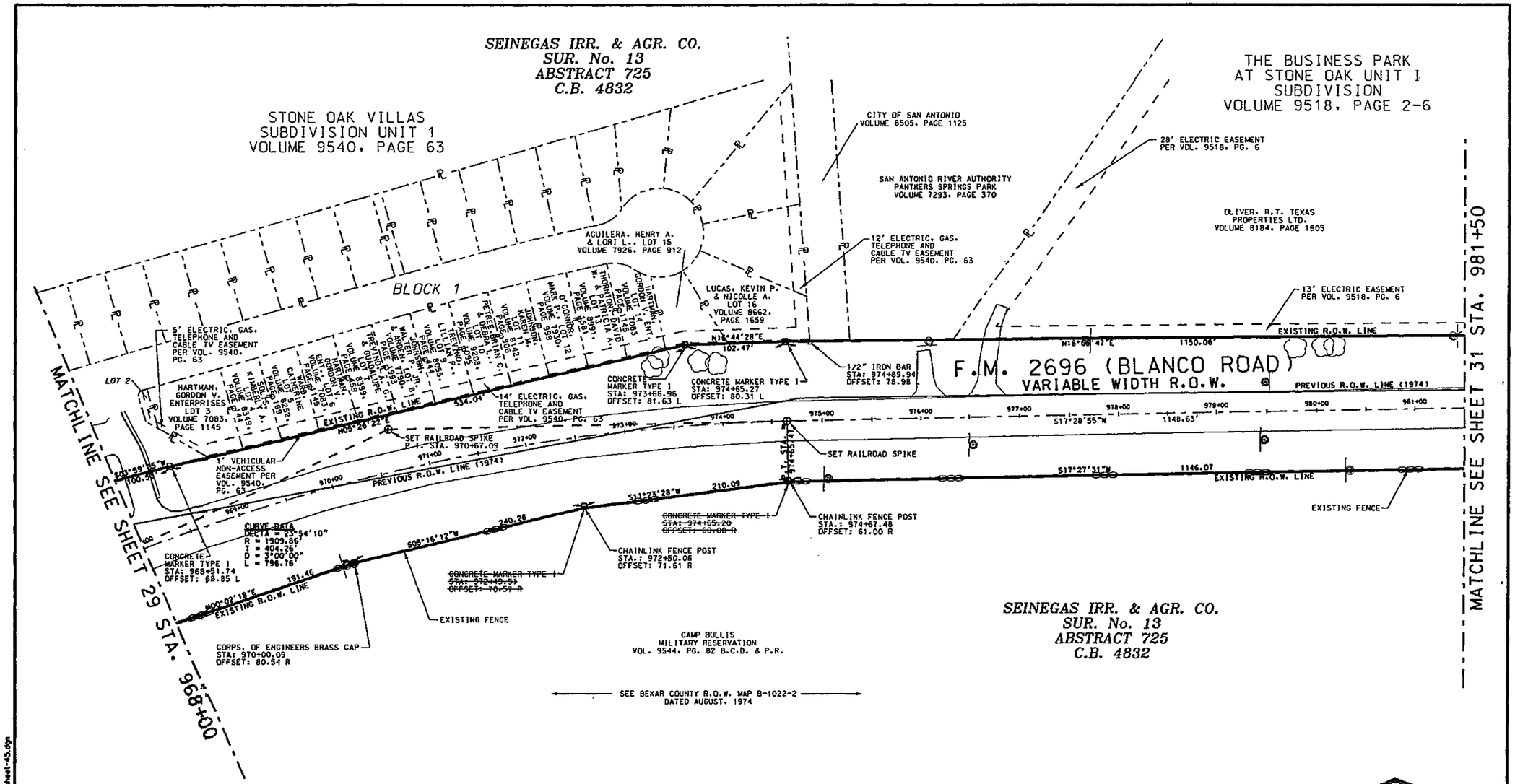

LEGEND

	SIGN		FENCE CORNER
	TREE		1/2" IRON PIN
	IRON BAR		RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

NOTES:

1. BEARINGS ARE BASED ON NAD 83/86 TEXAS STATE PLANE COORDINATE SYSTEM (SOUTH CENTRAL ZONE) AS FURNISHED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.			SHEET NO.
				SHT 45 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT.	JOB	HIGHWAY NO
	2708	01	24	F M 2696

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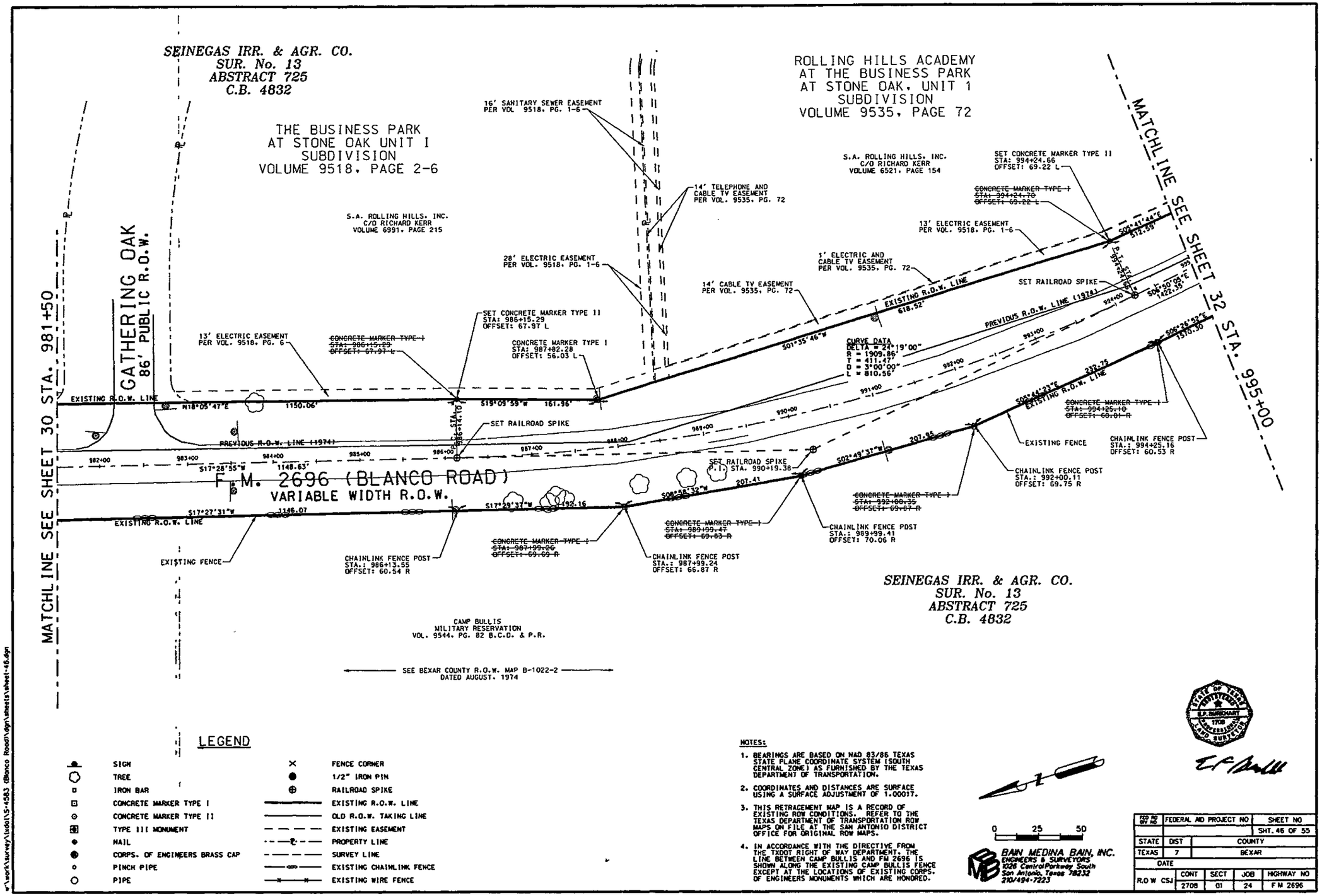

LEGEND

	SIGN		FENCE CORNER
	TREE		1/2" IRON PIN
	IRON BAR		RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

NOTES:

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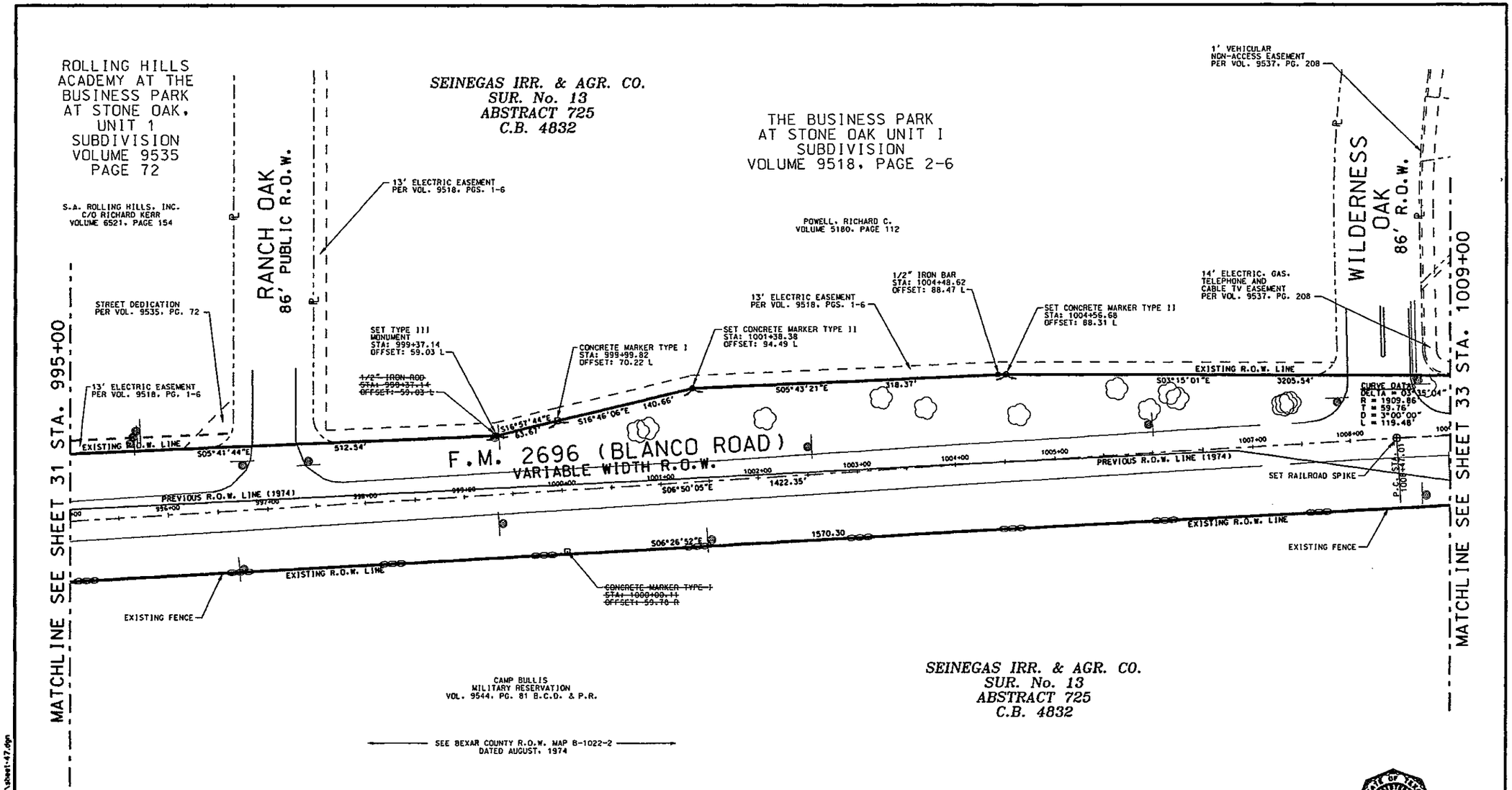
0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO			SHEET NO
				SHT. 46 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	24	F M 2696



LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS E.F. BURKHART 1708 REGISTERED LAND SURVEYOR

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO		SHEET NO
			SHT 47 OF 55
STATE	DIST	COUNTY	
TEXAS	7	BEXAR	
DATE:			

R.O.W. CSJ	CONT.	SECT	JOB	HIGHWAY NO.
	2708	01	23-24	F.M 2696

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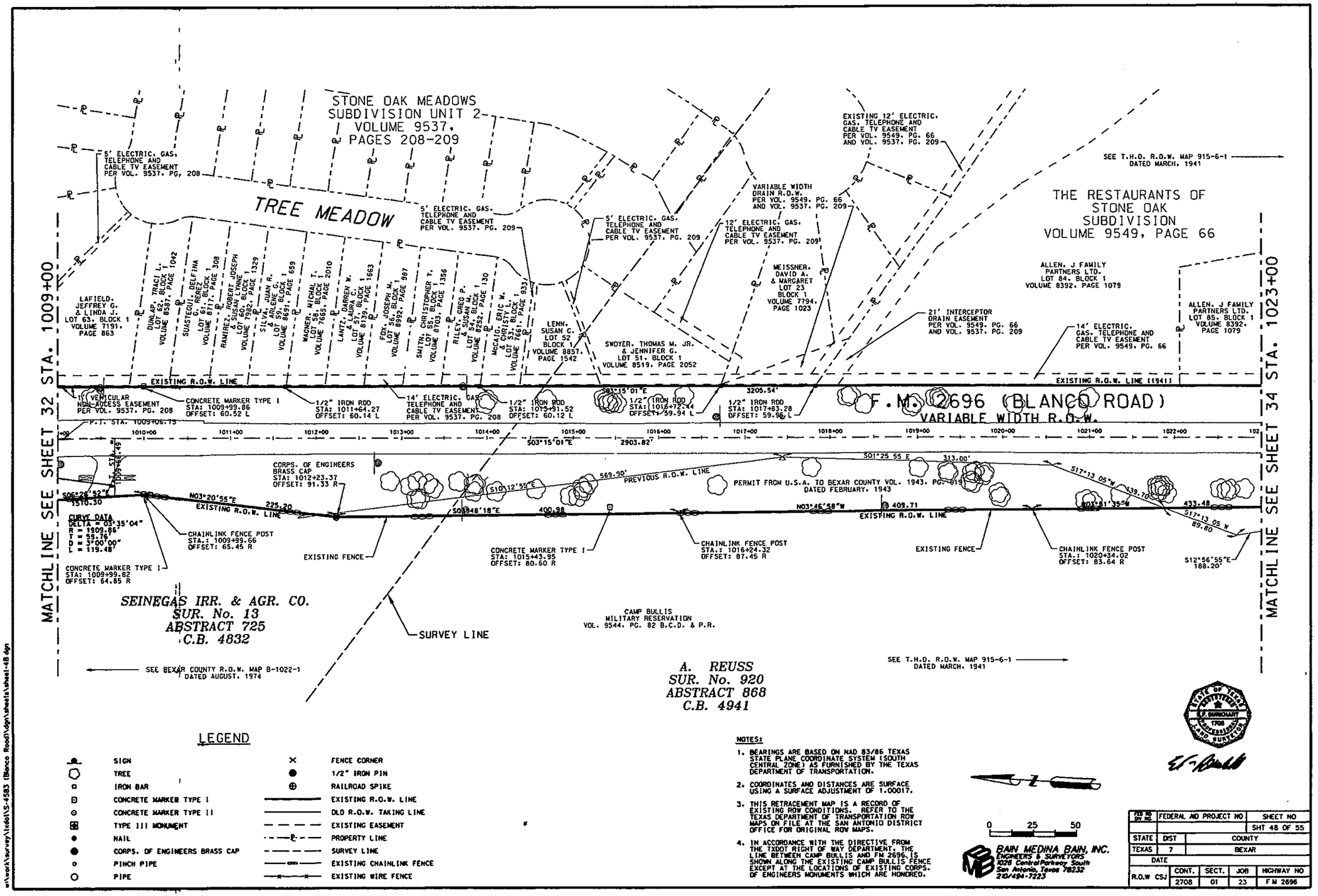
STONE OAK MEADOWS SUBDIVISION UNIT 2 VOLUME 9537, PAGES 208-209
TREE MEADOW
5' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9537, PG. 208
5' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9537, PG. 209
EXISTING 12' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9549, PG. 66 AND VOL. 9537, PG. 209
VARIABLE WIDTH DRAIN R.O.W. PER VOL. 9549, PG. 66 AND VOL. 9537, PG. 209
12' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9537, PG. 209
SEE T.H.D. R.O.W. MAP 915-6-1 DATED MARCH, 1941
THE RESTAURANTS OF STONE OAK SUBDIVISION VOLUME 9549, PAGE 66
ALLEN, J FAMILY PARTNERS LTD. LOT 84, BLOCK 1 VOLUME 8392, PAGE 1079
ALLEN, J FAMILY PARTNERS LTD. LOT 85, BLOCK 1 VOLUME 8392, PAGE 1079
21' INTERCEPTOR DRAIN EASEMENT PER VOL. 9549, PG. 66 AND VOL. 9537, PG. 209
14' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9549, PG. 66
MEISSNER, DAVID A. & MARGARET LOT 23 BLOCK 1 VOLUME 7794, PAGE 1023
LAFIELD, JEFFREY G. & LINDA J. LOT 63, BLOCK 1 VOLUME 7191, PAGE 863
DUNLAP, TRACI L. LOT 62, BLOCK 1 VOLUME 8587, PAGE 1042
SUASTEGUI, DELFINA G. & MENEZ LOT 61, BLOCK 1 VOLUME 8717, PAGE 308
RAMIREZ, ROBERT JOSEPH & SUSAN LYNNE LOT 60, BLOCK 1 VOLUME 7392, PAGE 1329
SILVA, JUAN R. & ARLENE C. LOT 59, BLOCK 1 VOLUME 8691, PAGE 659
WAGNER, MICHAL T. LOT 58, BLOCK 1 VOLUME 7665, PAGE 2010
LANTZ, DARREN W. & LAURA C. LOT 57, BLOCK 1 VOLUME 8391, PAGE 1663
FOX, JOSEPH M. LOT 56, BLOCK 1 VOLUME 8992, PAGE 987
SMITH, CHRISTOPHER T. LOT 55, BLOCK 1 VOLUME 8703, PAGE 1356
RILEY, GREG P. & SUSAN M. LOT 54, BLOCK 1 VOLUME 8252, PAGE 130
McCAIG, ERIC W. & CHRISTY L. LOT 53, BLOCK 1 VOLUME 7661, PAGE 931
LENN, SUSAN C. LOT 52 BLOCK 1, VOLUME 8857, PAGE 1542
SWOYER, THOMAS M. JR. & JENNIFER G. LOT 51, BLOCK 1 VOLUME 8519, PAGE 2052
EXISTING R.O.W. LINE
EXISTING R.O.W. LINE (1941)
F.M. 2696 (BLANCO ROAD) VARIABLE WIDTH R.O.W.
MATCHLINE SEE SHEET 32 STA. 1009+00
MATCHLINE SEE SHEET 34 STA. 1023+00
VEHICULAR NON-ACCESS EASEMENT PER VOL. 9537, PG. 208
CONCRETE MARKER TYPE I STA: 1009+99.86 OFFSET: 60.52 L
1/2" IRON ROD STA: 1011+64.27 OFFSET: 60.14 L
14' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9537, PG. 208
1/2" IRON ROD STA: 1013+91.52 OFFSET: 60.12 L
1/2" IRON ROD STA: 1016+72.44 OFFSET: 59.94 L
1/2" IRON ROD STA: 1017+83.28 OFFSET: 59.96 L
P.I. STA. 1009+06.75
S03°15'01"E 3205.54'
S03°15'01"E 2903.82'
CORPS. OF ENGINEERS BRASS CAP STA: 1012+23.37 OFFSET: 91.33 R
S10°12'55"E 569.90'
PREVIOUS R.O.W. LINE
PERMIT FROM U.S.A. TO BEXAR COUNTY VOL. 1943, PG. 619 DATED FEBRUARY, 1943
S01°25'55"E 313.00'
S17°13'05"W 139.70'
S17°13'05"W 89.80'
S12°56'55"E 188.20'
S06°28'52"E 1510.30'
N03°20'55"E 225.20'
EXISTING R.O.W. LINE
S03°48'18"E 400.98'
N03°46'58"W 409.71'
S02°51'35"W 433.48'
CURVE DATA
DELTA = 03°35'04"
R = 1909.86'
T = 59.76'
D = 3°00'00"
L = 119.48'
CHAINLINK FENCE POST STA.: 1009+99.66 OFFSET: 65.45 R
EXISTING FENCE
CONCRETE MARKER TYPE I STA: 1015+43.95 OFFSET: 80.60 R
CHAINLINK FENCE POST STA.: 1016+24.32 OFFSET: 87.45 R
EXISTING FENCE
CHAINLINK FENCE POST STA.: 1020+34.02 OFFSET: 83.64 R
CONCRETE MARKER TYPE I STA: 1009+99.82 OFFSET: 64.85 R
SEINEGAS IRR. & AGR. CO. SUR. No. 13 ABSTRACT 725 C.B. 4832
SURVEY LINE
CAMP BULLIS MILITARY RESERVATION VOL. 9544, PG. 82 B.C.D. & P.R.
SEE BEXAR COUNTY R.O.W. MAP B-1022-1 DATED AUGUST, 1974
SEE T.H.D. R.O.W. MAP 915-6-1 DATED MARCH, 1941
A. REUSS SUR. No. 920 ABSTRACT 868 C.B. 4941
LEGEND
SIGN
TREE
IRON BAR
CONCRETE MARKER TYPE I
CONCRETE MARKER TYPE II
TYPE III MONUMENT
NAIL
CORPS. OF ENGINEERS BRASS CAP
PINCH PIPE
PIPE
FENCE CORNER
1/2" IRON PIN
RAILROAD SPIKE
EXISTING R.O.W. LINE
OLD R.O.W. TAKING LINE
EXISTING EASEMENT
PROPERTY LINE
SURVEY LINE
EXISTING CHAINLINK FENCE
EXISTING WIRE FENCE
NOTES:
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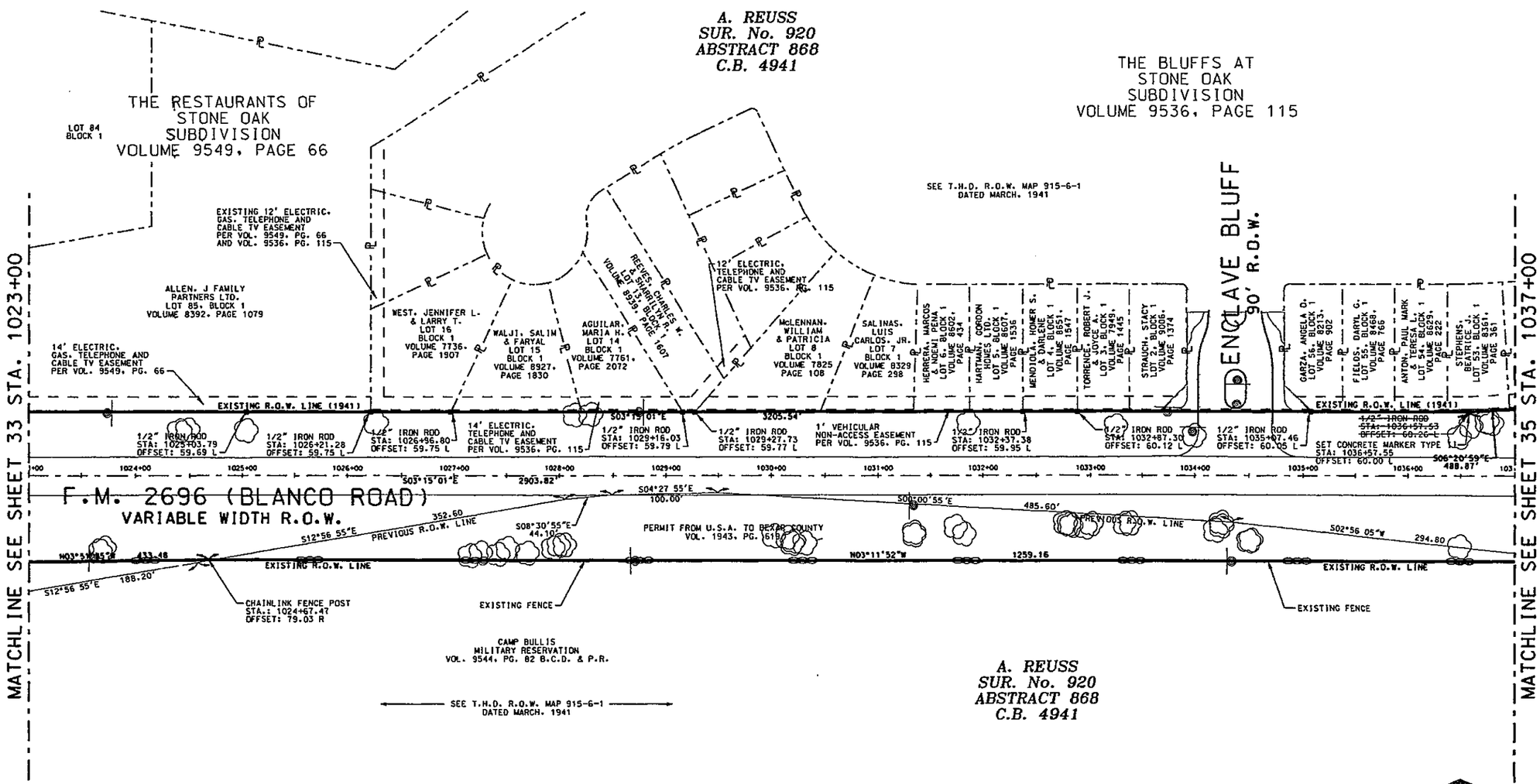
0 25 50
BAIN MEDINA BAIN, INC. ENGINEERS & SURVEYORS 1026 Central Parkway South San Antonio, Texas 78232 210/494-7223
FEDERAL AID PROJECT NO
SHEET NO
SHT 48 OF 55
STATE DIST COUNTY
TEXAS 7 BEXAR
DATE
R.O.W CSJ CONT. 2708 SECT. 01 JOB 23 HIGHWAY NO FM 2696



LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I	———	EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II	———	OLD R.O.W. TAKING LINE
	TYPE III MONUMENT	— — —	EXISTING EASEMENT
	NAIL	- - -℄- - -	PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP	— — —	SURVEY LINE
	PINCH PIPE	—⊗⊗—	EXISTING CHAINLINK FENCE
	PIPE	—×—×—	EXISTING WIRE FENCE

NOTES:

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0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS REGISTERED E.F. BARRANANT 1708 PROFESSIONAL LAND SURVEYOR

FED.RD. DIV. NO.	FEDERAL AID PROJECT NO.			SHEET NO
				SHT 49 OF 55
STATE	DIST	COUNTY		
TEXAS	7	BEXAR		
DATE				
R.O.W. CSJ	CONT.	SECT	JOB	HIGHWAY NO.
	2708	01	23	F.M. 2696

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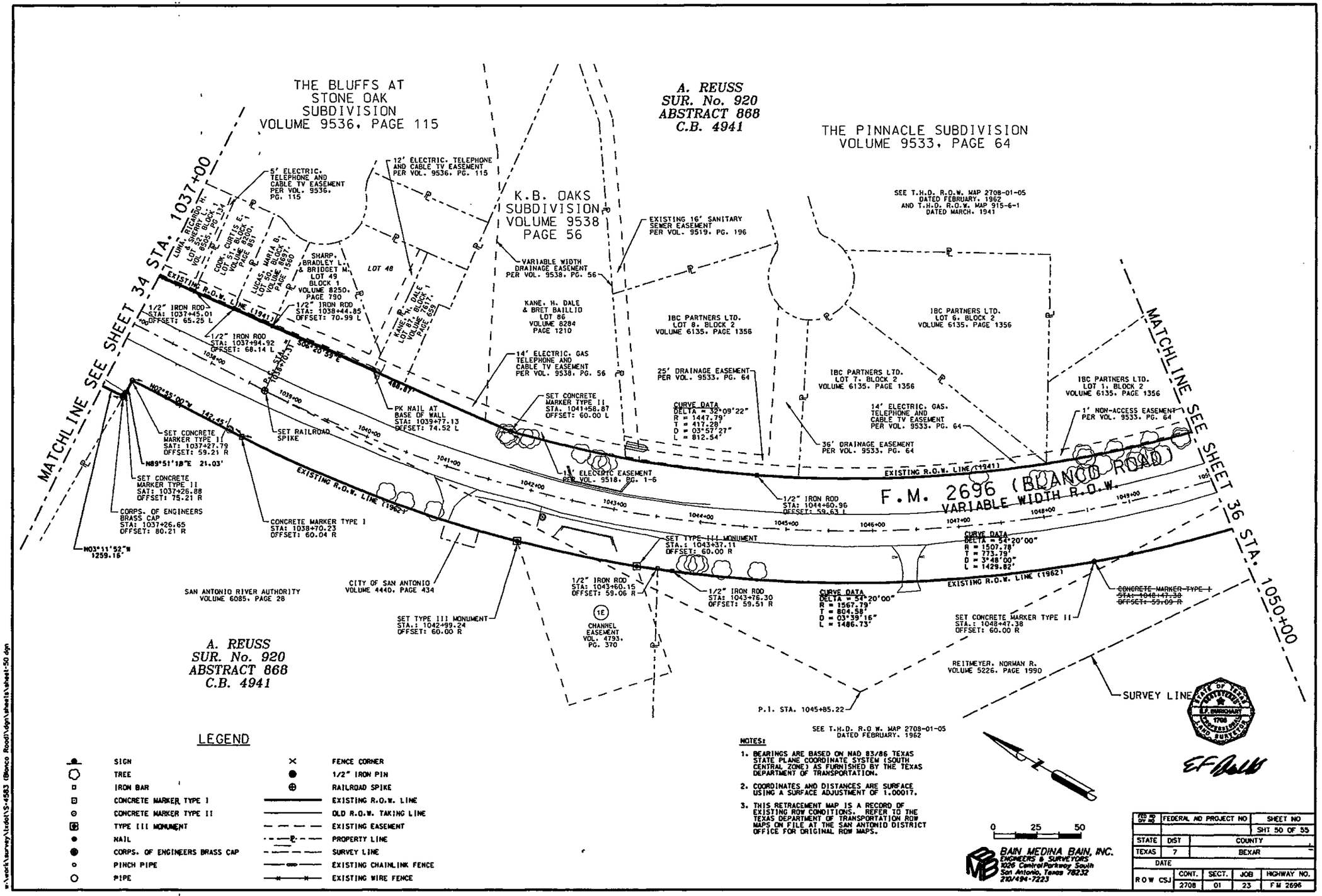
THE BLUFFS AT STONE OAK SUBDIVISION VOLUME 9536, PAGE 115
A. REUSS SUR. No. 920 ABSTRACT 868 C.B. 4941
THE PINNACLE SUBDIVISION VOLUME 9533, PAGE 64
K.B. OAKS SUBDIVISION VOLUME 9538 PAGE 56
MATCHLINE SEE SHEET 34
MATCHLINE SEE SHEET 36
STA. 1037+00
STA. 1050+00
F.M. 2696 (BLANCO ROAD) VARIABLE WIDTH R.O.W.
EXISTING R.O.W. LINE (1941)
EXISTING R.O.W. LINE (1962)
5' ELECTRIC, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9536, PG. 115
12' ELECTRIC, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9536, PG. 115
EXISTING 16' SANITARY SEWER EASEMENT PER VOL. 9519, PG. 196
VARIABLE WIDTH DRAINAGE EASEMENT PER VOL. 9538, PG. 56
KANE, H. DALE & BRET BAILLID LOT 86 VOLUME 8284 PAGE 1210
14' ELECTRIC, GAS TELEPHONE AND CABLE TV EASEMENT PER VOL. 9538, PG. 56
25' DRAINAGE EASEMENT PER VOL. 9533, PG. 64
36' DRAINAGE EASEMENT PER VOL. 9533, PG. 64
14' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT PER VOL. 9533, PG. 64
1' NON-ACCESS EASEMENT PER VOL. 9533, PG. 64
SEE T.H.D. R.O.W. MAP 2708-01-05 DATED FEBRUARY, 1962 AND T.H.D. R.O.W. MAP 915-6-1 DATED MARCH, 1941
IBC PARTNERS LTD. LOT 8, BLOCK 2 VOLUME 6135, PAGE 1356
IBC PARTNERS LTD. LOT 7, BLOCK 2 VOLUME 6135, PAGE 1356
IBC PARTNERS LTD. LOT 6, BLOCK 2 VOLUME 6135, PAGE 1356
IBC PARTNERS LTD. LOT 1, BLOCK 2 VOLUME 6135, PAGE 1356
SHARP, BRADLEY L. & BRIDGET M. LOT 49 BLOCK 1 VOLUME 8250, PAGE 790
LOT 48
1/2" IRON ROD STA: 1037+45.01 OFFSET: 65.25 L
1/2" IRON ROD STA: 1037+94.92 OFFSET: 68.14 L
1/2" IRON ROD STA: 1038+44.85 OFFSET: 70.99 L
PK NAIL AT BASE OF WALL STA: 1039+77.13 OFFSET: 74.52 L
SET CONCRETE MARKER TYPE II STA: 1041+58.87 OFFSET: 60.00 L
SET CONCRETE MARKER TYPE II SAT: 1037+27.79 OFFSET: 59.21 R
SET CONCRETE MARKER TYPE II SAT: 1037+26.88 OFFSET: 75.21 R
SET RAILROAD SPIKE
N89°51'18"E 21.03'
N02°55'00"W 142.45'
CORPS. OF ENGINEERS BRASS CAP STA: 1037+26.65 OFFSET: 80.21 R
CONCRETE MARKER TYPE I STA: 1038+70.23 OFFSET: 60.04 R
N03°11'52"W 1259.16'
S08°20'39"E 188.81'
CURVE DATA DELTA = 32°09'22" R = 1447.79' T = 417.28' D = 03°57'27" L = 812.54'
13' ELECTRIC EASEMENT PER VOL. 9518, PG. 1-6
1/2" IRON ROD STA: 1044+60.96 OFFSET: 59.63 L
SET TYPE III MONUMENT STA.: 1043+37.11 OFFSET: 60.00 R
CURVE DATA DELTA = 54°20'00" R = 1507.78' T = 773.79' D = 3°48'00" L = 1429.82'
CURVE DATA DELTA = 54°20'00" R = 1567.79' T = 804.58' D = 03°39'16" L = 1486.73'
1/2" IRON ROD STA: 1043+60.15 OFFSET: 59.06 R
1/2" IRON ROD STA: 1043+76.30 OFFSET: 59.51 R
SET TYPE III MONUMENT STA.: 1042+99.24 OFFSET: 60.00 R
CITY OF SAN ANTONIO VOLUME 4440, PAGE 434
SAN ANTONIO RIVER AUTHORITY VOLUME 6085, PAGE 28
CHANNEL EASEMENT VOL. 4793, PG. 370
SET CONCRETE MARKER TYPE II STA.: 1048+47.38 OFFSET: 60.00 R
CONCRETE MARKER TYPE I STA: 1048+47.38 OFFSET: 59.09 R
REITMEYER, NORMAN R. VOLUME 5226, PAGE 1990
P.I. STA. 1045+85.22
SURVEY LINE
SEE T.H.D. R.O.W. MAP 2708-01-05 DATED FEBRUARY, 1962
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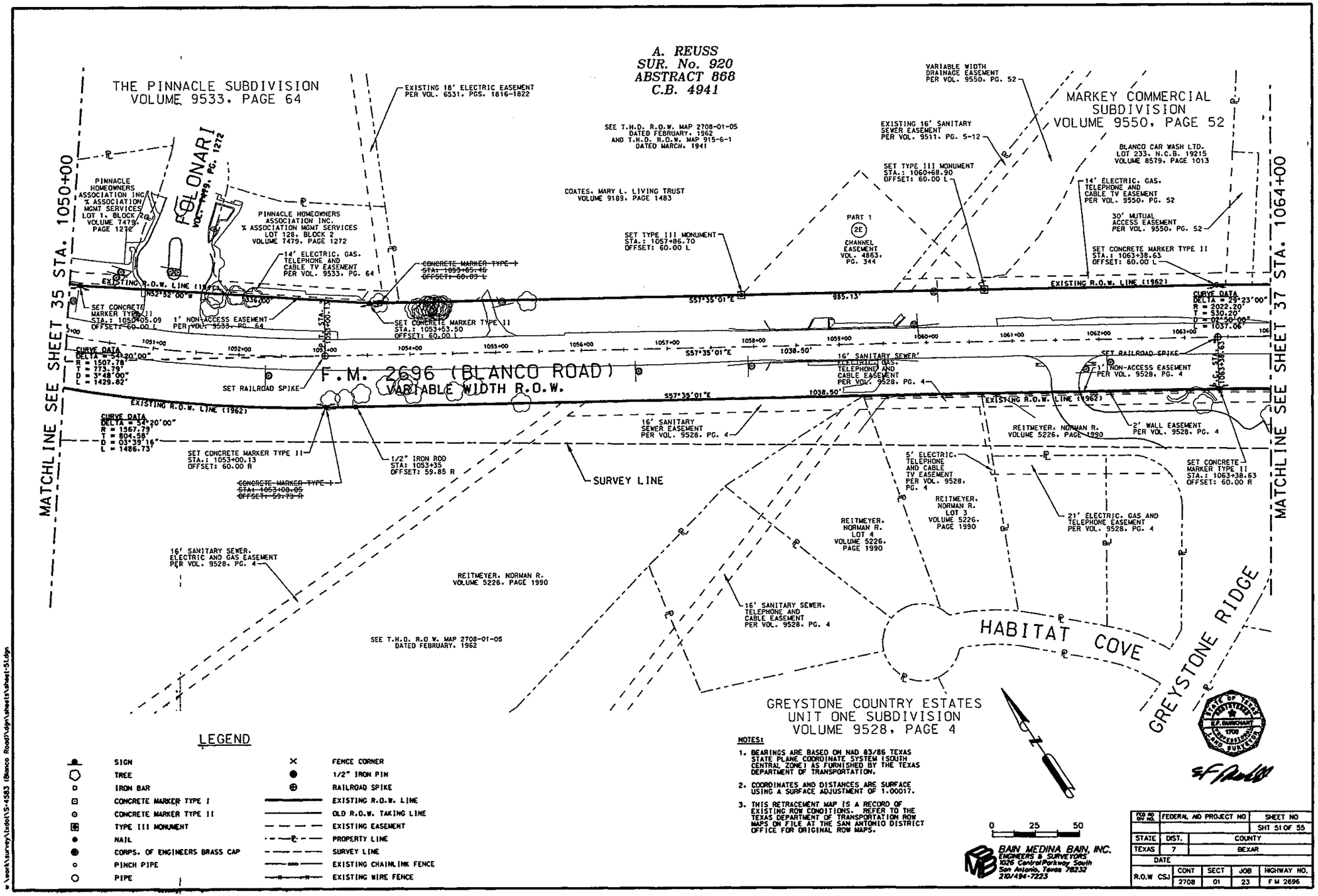
LEGEND
SIGN
TREE
IRON BAR
CONCRETE MARKER TYPE I
CONCRETE MARKER TYPE II
TYPE III MONUMENT
NAIL
CORPS. OF ENGINEERS BRASS CAP
PINCH PIPE
PIPE
FENCE CORNER
1/2" IRON PIN
RAILROAD SPIKE
EXISTING R.O.W. LINE
OLD R.O.W. TAKING LINE
EXISTING EASEMENT
PROPERTY LINE
SURVEY LINE
EXISTING CHAINLINK FENCE
EXISTING WIRE FENCE
0 25 50
BAIN MEDINA BAIN, INC. ENGINEERS & SURVEYORS 1026 Central Parkway South San Antonio, Texas 78232 210/494-7223
FEDERAL AID PROJECT NO
SHEET NO
SHT 50 OF 55
STATE DIST COUNTY
TEXAS 7 BEXAR
DATE
ROW CSJ CONT. SECT. JOB HIGHWAY NO.
2708 01 23 FM 2696



NOTES:

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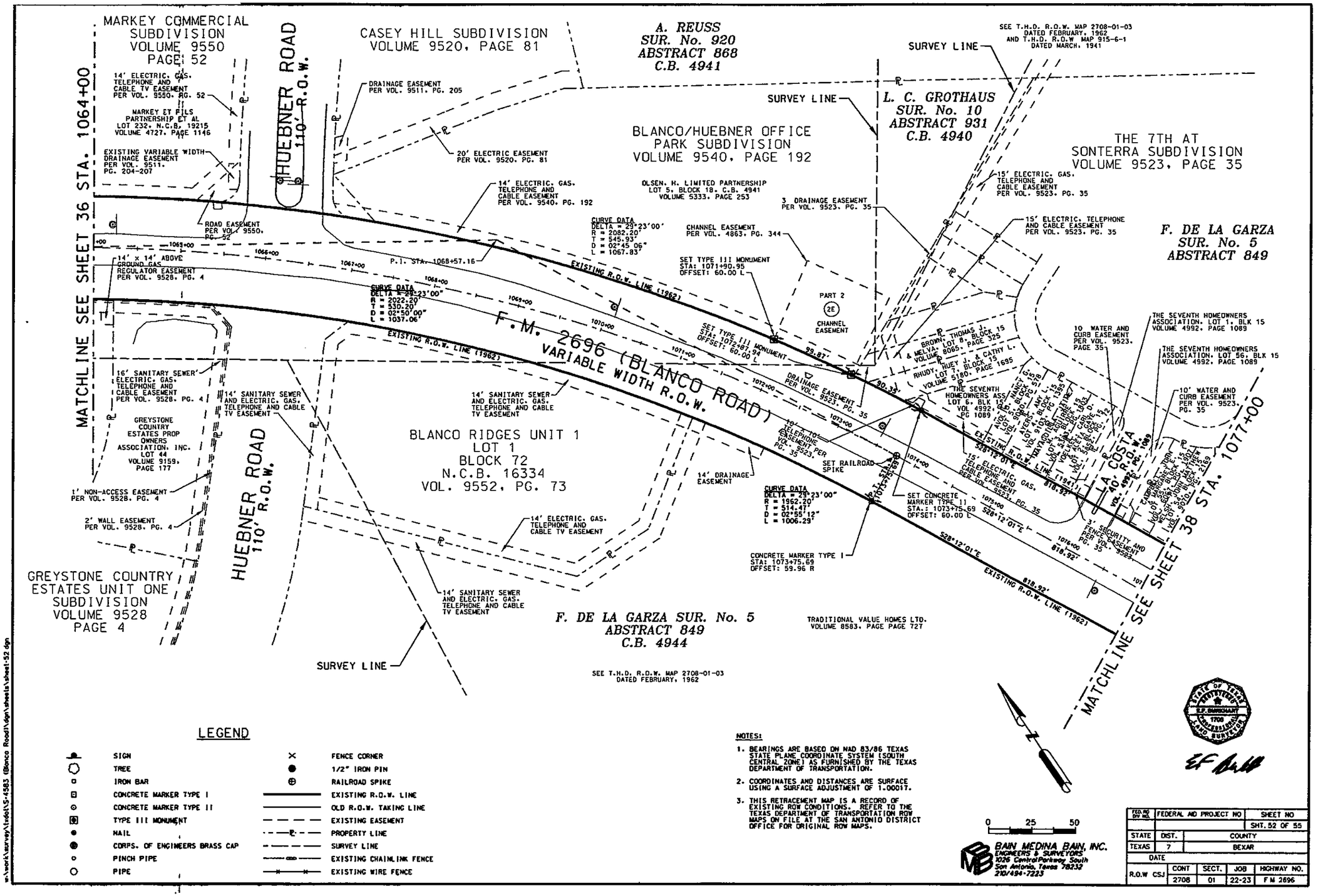

LEGEND

	SIGN		FENCE CORNER
	TREE		1/2" IRON PIN
	IRON BAR		RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

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BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

STATE OF TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR E.F. BARKHAUT 1708

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO		SHEET NO
			SHT. 52 OF 55
STATE	DIST.	COUNTY	
TEXAS	7	BEXAR	
DATE			

R.O.W	CSJ	CONT	SECT.	JOB	HIGHWAY NO.
		2708	01	22-23	F M 2696

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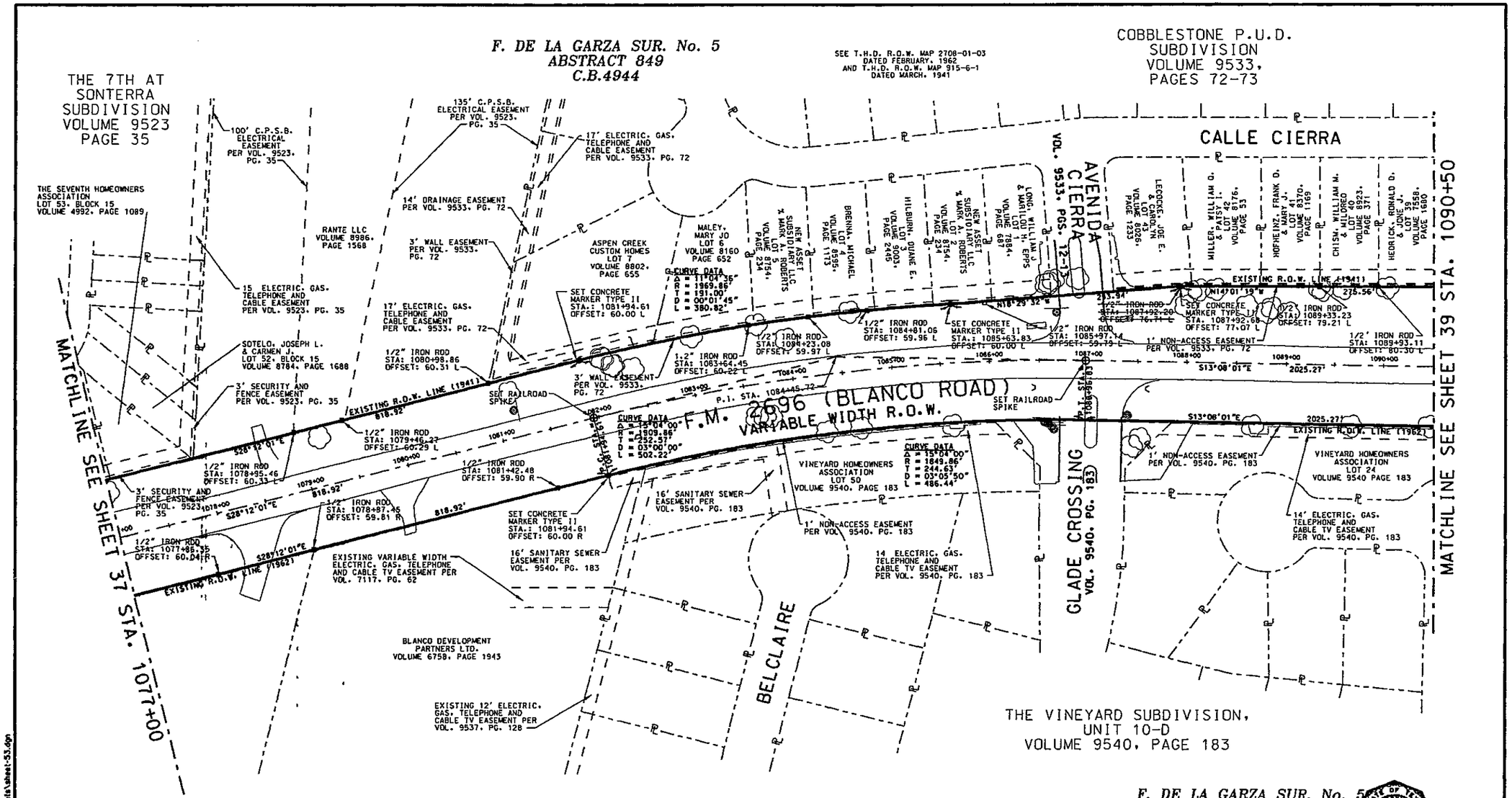

F. DE LA GARZA SUR. No. 5
ABSTRACT 849
C.B. 4944

LEGEND

	SIGN	×	FENCE CORNER
	TREE	●	1/2" IRON PIN
	IRON BAR	⊕	RAILROAD SPIKE
	CONCRETE MARKER TYPE I		EXISTING R.O.W. LINE
	CONCRETE MARKER TYPE II		OLD R.O.W. TAKING LINE
	TYPE III MONUMENT		EXISTING EASEMENT
	NAIL		PROPERTY LINE
	CORPS. OF ENGINEERS BRASS CAP		SURVEY LINE
	PINCH PIPE		EXISTING CHAINLINK FENCE
	PIPE		EXISTING WIRE FENCE

NOTES:

1. BEARINGS ARE BASED ON NAD 83/86 TEXAS STATE PLANE COORDINATE SYSTEM (SOUTH CENTRAL ZONE) AS FURNISHED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
2. COORDINATES AND DISTANCES ARE SURFACE USING A SURFACE ADJUSTMENT OF 1.00017.
3. THIS RETRACEMENT MAP IS A RECORD OF EXISTING ROW CONDITIONS. REFER TO THE TEXAS DEPARTMENT OF TRANSPORTATION ROW MAPS ON FILE AT THE SAN ANTONIO DISTRICT OFFICE FOR ORIGINAL ROW MAPS.

0 25 50

BAIN MEDINA BAIN, INC.
ENGINEERS & SURVEYORS
1026 Central Parkway South
San Antonio, Texas 78232
210/494-7223

FED RD DIV NO	FEDERAL AID PROJECT NO		SHEET NO
			SHT 53 OF 55
STATE	DIST	COUNTY	
TEXAS	7	BEXAR	
DATE			

R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	22	F.M 2696

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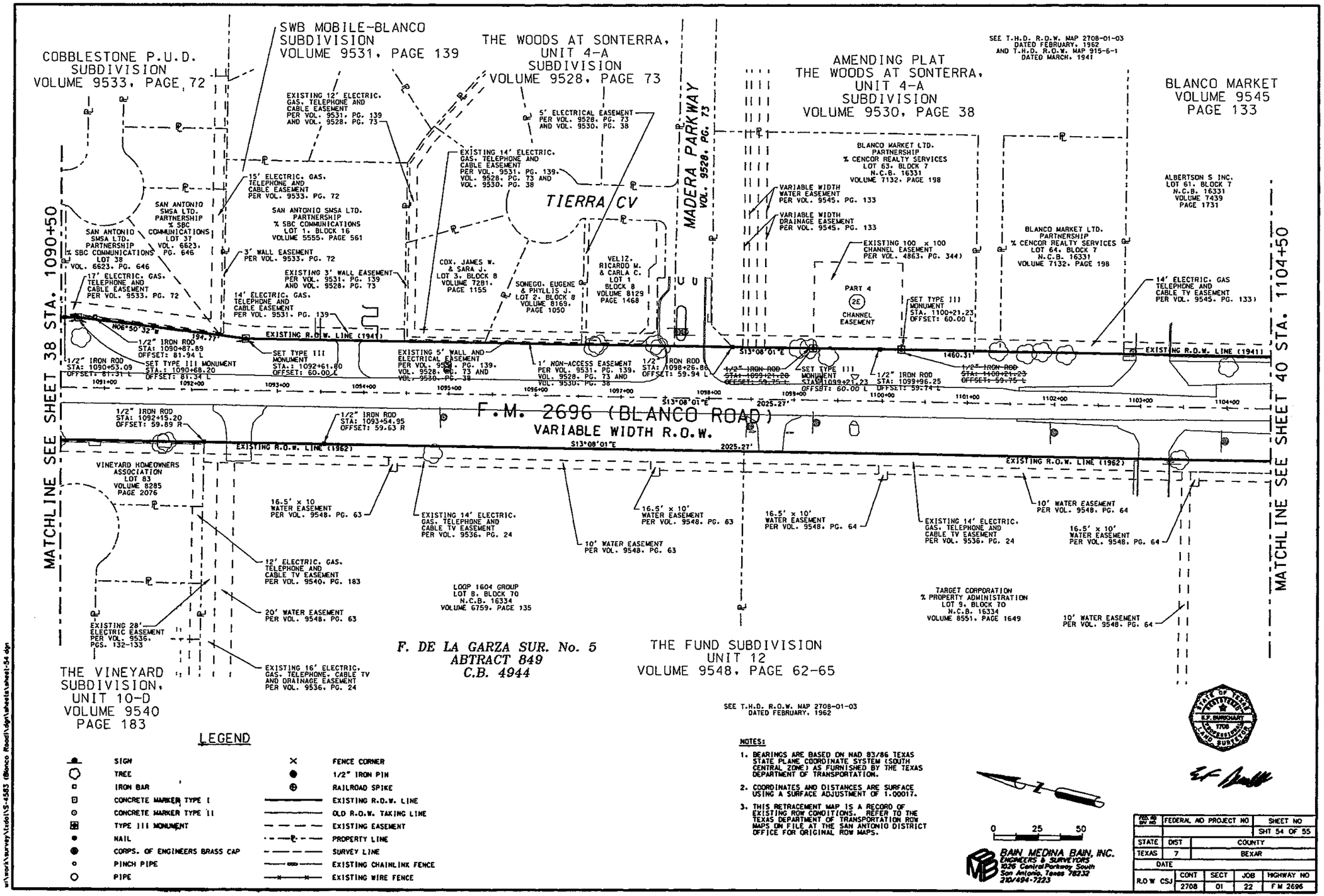
COBBLESTONE P.U.D. SUBDIVISION VOLUME 9533, PAGE 72
SWB MOBILE-BLANCO SUBDIVISION VOLUME 9531, PAGE 139
THE WOODS AT SONTERRA, UNIT 4-A SUBDIVISION VOLUME 9528, PAGE 73
MADERA PARKWAY VOL. 9528, PG. 73
AMENDING PLAT THE WOODS AT SONTERRA, UNIT 4-A SUBDIVISION VOLUME 9530, PAGE 38
SEE T.H.D. R.O.W. MAP 2708-01-03 DATED FEBRUARY, 1962 AND T.H.D. R.O.W. MAP 915-6-1 DATED MARCH, 1941
BLANCO MARKET VOLUME 9545 PAGE 133
TIERRA CV
MATCHLINE SEE SHEET 38 STA. 1090+50
MATCHLINE SEE SHEET 40 STA. 1104+50
F.M. 2696 (BLANCO ROAD)
VARIABLE WIDTH R.O.W.
EXISTING R.O.W. LINE (1941)
EXISTING R.O.W. LINE (1962)
S13°08'01"E
2025.27'
1460.31'
F. DE LA GARZA SUR. No. 5 ABTRACT 849 C.B. 4944
THE VINEYARD SUBDIVISION, UNIT 10-D VOLUME 9540 PAGE 183
THE FUND SUBDIVISION UNIT 12 VOLUME 9548, PAGE 62-65
SEE T.H.D. R.O.W. MAP 2708-01-03 DATED FEBRUARY, 1962
LEGEND
SIGN
TREE
IRON BAR
CONCRETE MARKER TYPE I
CONCRETE MARKER TYPE II
TYPE III MONUMENT
NAIL
CORPS. OF ENGINEERS BRASS CAP
PINCH PIPE
PIPE
FENCE CORNER
1/2" IRON PIN
RAILROAD SPIKE
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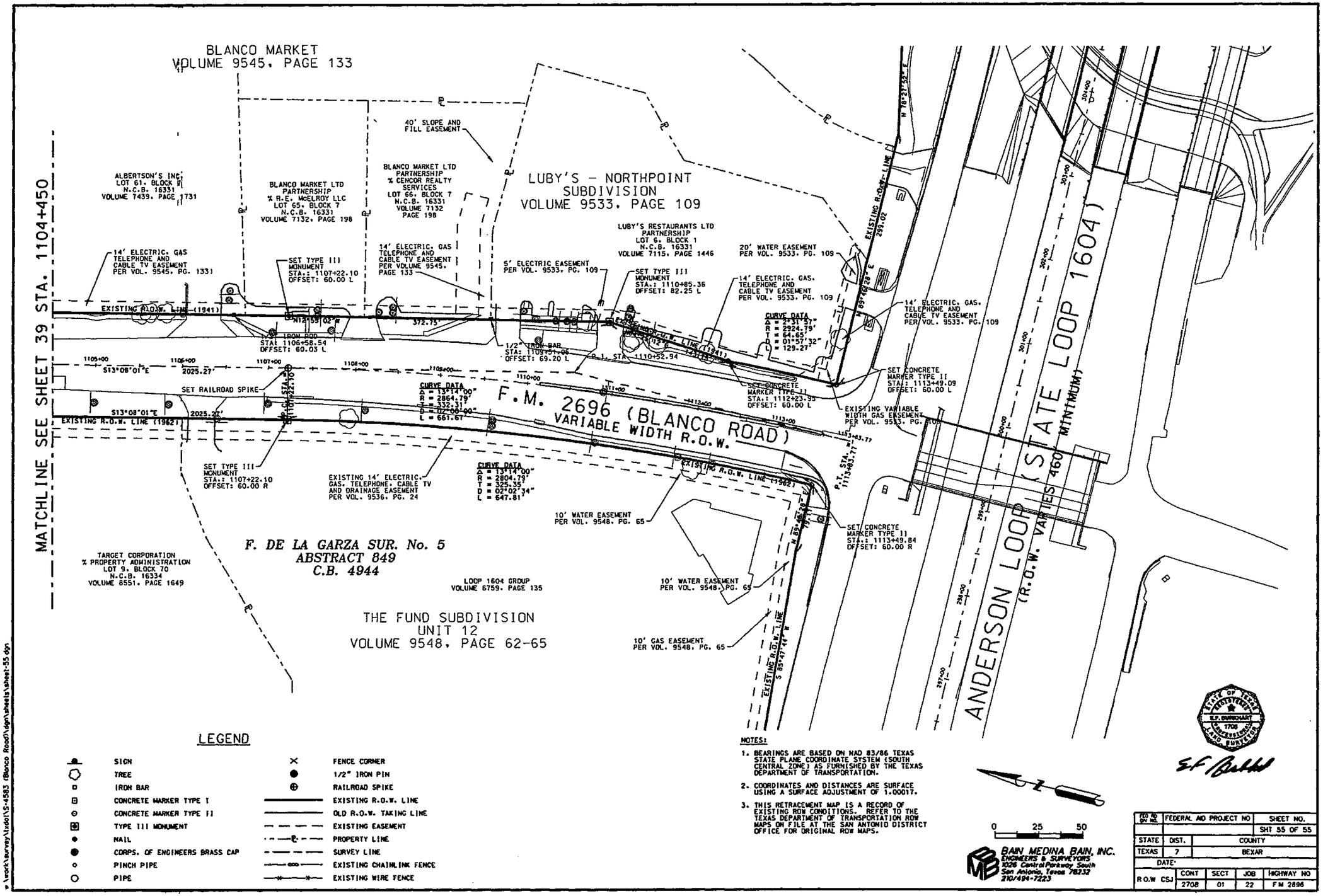
0 25 50
BAIN MEDINA BAIN, INC. ENGINEERS & SURVEYORS 1026 Central Parkway South San Antonio, Texas 78232 210/494-7223
FEDERAL AID PROJECT NO
SHEET NO
SHT 54 OF 55
STATE DIST COUNTY
TEXAS 7 BEXAR
DATE
R.O.W CSJ CONT SECT JOB HIGHWAY NO
2708 01 22 F M 2696



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FED RD DIV NO.	FEDERAL AID PROJECT NO			SHEET NO.
				SHT 55 OF 55
STATE	DIST.	COUNTY		
TEXAS	7	BEXAR		
DATE:				
R.O.W CSJ	CONT	SECT	JOB	HIGHWAY NO
	2708	01	22	FM 2696

Pavement Design Report

BLANCO ROAD
FROM WEST OAKS ESTATES
TO BORGFELD DRIVE
BEXAR COUNTY, TEXAS
CSJ: 0915-12-585
LENGTH: ~3.6 MI

Prepared For:

ALAMO REGIONAL MOBILITY AUTHORITY

PREPARED BY:

ARIAS GEOPROFESSIONALS

Firm No: F-32

Submitted:
July 31, 2017

FINAL REVIEW

THIS DOCUMENT IS RELEASED FOR
FINAL REVIEW UNDER THE AUTHORITY OF

STATE OF TEXAS
SPENCER ASHLEY HIGGS
90172
LICENSED
PROFESSIONAL ENGINEER

7-31-2017

CHRISTOPHER M. SZYMCZAK, PE 86396 **SPENCER A. HIGGS, PE 90172**

IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

PAVEMENT DESIGN REPORT

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INTRODUCTION

The results of our pavement analyses and designs are included in this Pavement Design Report (PDR) for the Blanco Road Phase II Improvements Project (Project) in Bexar County, Texas.

The Project was authorized via the Standard Agreement for Professional Services between CP&Y, Inc. (CP&Y) and Arias Geoprofessionals, Inc. (Arias), dated March 30, 2017.

SCOPE OF SERVICES

The purpose of this PDR was to prepare pavement section design options for consideration by the Alamo Regional Mobility Authority (ARMA) utilizing Texas Department of Transportation (TxDOT) pavement design procedures based on:

1. Subsurface material and groundwater conditions encountered along the Project alignment;
2. Falling Weight Deflectometer (FWD) data provided by TxDOT; and,
3. Traffic Analysis for Highway Design Memorandum, dated June 2, 2017, prepared by TxDOT's Transportation Planning and Programming (TPP) Division.

PROJECT INFORMATION

The Project will include the construction of roadway improvements for an approximate 3.6-mile segment of Blanco Road (FM 2696). The proposed improvements include reconstruction of pavements for Blanco Road from West Oaks Estates to Borgfeld Road in Bexar County, Texas.

The site is located within Bexar County. The approximate Project limits are depicted on the Vicinity Map, which is included as Figure 1 in Appendix A.

PAVEMENT DESIGN DATA, ANALYSES, AND RECOMMENDATIONS

The Project will include proposed roadway improvements to Blanco Road. We understand that flexible pavement systems are being considered for this Project. Rigid pavement was not considered primarily due to cost.

If any of the information presented herein is known to be inaccurate, we should be notified in writing to determine if modifications to our pavement analyses, designs, and recommendations are needed.

Subsurface Soil and Groundwater Conditions, and Existing Pavement Structure

The geotechnical boring and laboratory findings along the Project alignment are presented subsequently. The pavement design parameters, analyses and recommendations provided in this report are based in part on the findings from the pavement cores, geotechnical boring data and the results of our laboratory testing. The following subsections are provided as a brief presentation of our findings within the Project limits. A more comprehensive presentation of our findings is included in the boring logs provided in Appendix C.

Field Exploration

Twelve (12) pavement cores/bores were performed within the Project alignment. Coring was first performed to determine the thickness of the existing asphalt pavement section. Geotechnical borings were then performed to depths of about 10 to 11-1/2 feet below the pavement surface to sample the existing base materials and subgrade soils. Photographs of the recovered pavement cores are provided in Appendix D.

Pavement cores/bores were performed within travel lanes, generally alternating between the northbound and southbound lanes at the locations indicated subsequently in Table 1.

The approximate exploration locations are shown on the Coring Location Plan included as Figure 2 in Appendix A. The locations were identified in the field by Arias personnel using a hand-held Global Positioning System (GPS) unit so that underground utility locations could be identified and marked prior to the start of coring/drilling. The GPS coordinates presented subsequently in Table 1 were taken at the completed boring locations.

Table 1: Approximate Core/Bore Locations

Bore/Core No.	Location	GPS Coordinates		Depth Drilled (feet)
		Latitude (Degrees)	Longitude (Degrees)	
B-1	Northbound Shoulder	29.66814	-98.52083	10
B-2	Southbound Shoulder	29.67128	-98.52239	10
B-3	Northbound Shoulder	29.67514	-98.52269	10
B-4	Southbound Shoulder	29.67825	-98.52300	10
B-5	Northbound Shoulder	29.68181	-98.52211	10
B-6	Southbound Shoulder	29.68514	-98.52233	10
B-7	Northbound Shoulder	29.68875	-98.52253	10
B-8	Southbound Shoulder	29.69194	-98.52217	10
B-9	Northbound Shoulder	29.69586	-98.52147	10
B-10	Southbound Shoulder	29.69922	-98.52100	10
B-11	Northbound Shoulder	29.70297	-98.52139	11.5
B-12	Southbound Shoulder	29.70617	-98.52136	10

Notes:
1. The drilled depths reference the existing pavement surface at the time of the drilling.
2. The information provided above should be considered as approximate. The locations have not been verified by a Registered Professional Land Surveyor.

Select photographs of our field exploration operations are provided in Appendix A (Figure 4). Soil classifications and borehole logging were conducted by our Senior Engineering Technicians working under the direct supervision of the Project Geotechnical Engineer. A wet-rotary, core barrel was used to core through the existing HMA pavement. A truck-mounted drill rig equipped with continuous flight augers (ASTM D1452), coupled with the sampling procedures noted herein, was then used to secure subsurface soil samples beneath the existing pavement structure. Samples were obtained by pushing thin-walled tube samplers, driving split-barrel samplers, and/or by obtaining grab samples from the auger cuttings.

Arias' field representative visually logged each recovered sample and placed a portion of the recovered sample into a sealed container for transport to our laboratory. After completion of drilling, the boreholes were backfilled with dry concrete mix to the bottom of the pavement, and the remainder was filled with tamped cold patch asphalt.

Soil classifications and borehole logging were conducted during the exploration as previously noted. The final soil classifications presented on the WinCore boring logs provided in Appendix C, were determined by the Project Geotechnical Engineer based on laboratory and field test

results and applicable TxDOT and ASTM procedures. The material descriptions provided on the boring logs generally conform to the Unified Soils Classification System (USCS). A key to the terms and symbols used on the boring logs is provided after the boring logs in Appendix C.

Remaining samples recovered from this exploration will be discarded following submittal of this report in final form.

Laboratory Testing

As a supplement to the field exploration, laboratory testing was conducted to determine index properties including: soil water content, Atterberg Limits, and select sieve analysis. The moisture content, Atterberg Limits and sieve tests were generally performed on the soil subgrade samples. The laboratory test results are reported on the boring logs provided in Appendix C, and are graphically presented in Appendix E.

The soil laboratory testing for this Project was done in accordance with applicable TxDOT procedures with the specifications and definitions for these tests listed subsequently in Table 2.

Table 2: Laboratory Testing Program Summary

Test Name	Test Method	Number of Tests
Determining Moisture Content in Soil Materials	TEX-103-E	64
Determination of Soil Constants including: Liquid Limit, Plastic Limit and Plasticity Index of Soils	TEX-104-E, TEX-105-E, TEX-106-E	17
Determination of Percent Passing #200 Sieve	TEX-111-E	17

Existing Pavement Structure

To estimate the pavement structure along the Project alignment, Arias cored the pavement at each of the pavement locations listed subsequently in Table 3. The observed pavement thickness of each portion of the pavement section, the results of our laboratory tests on the subgrade, and depth to rock are summarized subsequently in Table 3. The pavements were cored in the existing shoulder. It is possible that the pavement sections within the travel lanes could vary from those encountered at the shoulders.

Table 3: Existing Pavement Structure

Bore/Core No.	Location	Pavement Section, inches			Subgrade Material	Subgrade PI	Subgrade -200 (%)	Subgrade Sulfate Content (ppm)	Depth to Rock (ft.)
		HMA	Base	Total					
B-1	Northbound Shoulder	11	0	11	CLAYEY GRAVEL (GC)	31	34	120	5
B-2	Southbound Shoulder	2	6	8	CLAYEY GRAVEL (GC)	27	31	--	2
B-3	Northbound Shoulder	1-1/2	5-3/4	7-1/4	CLAYEY GRAVEL (GC)	16	46	120	3-1/2
B-4	Southbound Shoulder	2-1/2	5	7-1/2	SANDY FAT CLAY (CH)	37 – 46	52 – 58	--	6-1/2
B-5	Northbound Shoulder	3	3-3/4	6-3/4	SANDY FAT CLAY (CH)	43	63	120	3-1/2
B-6	Southbound Shoulder	3-1/2	8	11-1/2	CLAYEY GRAVEL (GC)	21	24	--	3
B-7	Northbound Shoulder	1-1/2	6-1/2	8	CLAYEY GRAVEL (GC), SILTY SAND (SM)	10 – 14	23 – 39	120	5
B-8	Southbound Shoulder	1-3/4	5-1/2	7-1/4	CLAYEY GRAVEL (GC)	10	31	--	3
B-9	Northbound Shoulder	2-1/2	5-3/4	8-1/4	CLAYEY GRAVEL (GC), GRAVELLY FAT CLAY (CH)	20 – 60	32 – 64	120	4-1/2
B-10	Southbound Shoulder	1-3/4	7	8-3/4	LIMESTONE BEDROCK	--	--	--	< 1
B-11	Northbound Shoulder	1-3/4	5	7-3/4	CLAYEY SAND (SC), GRAVELLY LEAN CLAY (CL)	17 – 29	41 – 53	120	5
B-12	Southbound Shoulder	1-1/2	8-3/4	10-1/4	CLAYEY SAND (SC)	18	41	240	7

Notes:

1. "--"indicates test not performed on that sample.

Geology

The earth materials underlying the project site have been regionally mapped predominantly as the Glen Rose Formation (Kgru), with the southernmost tip of the project alignment potentially transitioning into the Edwards Limestone Formation (Ked). A Geologic Map is included as Figure 3 in Appendix A.

The Glen Rose is a Cretaceous aged limestone comprised typically of alternating hard and soft layers of limestone, dolomite, marl, and completely weathered limestone. Surface expression of the formation is readily identifiable by its stair-stepped topography which is caused by differential weathering of the interbedded layers of soft and hard rock. Lithologically, the upper part of the Glen Rose is described as relatively thin interbeds of tan and gray limestone, yellowish brown dolomitic limestone, and dolomite.

The Edwards Limestone is Cretaceous in age and typically comprised of limestone and dolomite. The limestone can be fine to coarse grained, is often cherty and contains shell fragments, fossils, and miliolids. Lithologically, the Edwards is generally characterized by medium gray to grayish brown brecciated, chert bearing hard limestone and dolomite.

Subsurface voids in the form of vugs, cavities, and caves do occur in the Glen Rose Formation, but not as commonly as in Edwards Limestone, known for its cavernous features. The voids are created through a geomorphic process requiring large quantities of flowing water through cracks and fissures in the rock over geologic time. The voids are solution features resulting from the slow dissolving of the limestone by acidic water. Rainfall and runoff in areas where live oak trees are present are typically slightly acidic. When the subsurface voids are present near the ground surface, the features may become unstable and collapse. Ancient features which have collapsed will generally fill in with surficial soils and are referred to as “closed depressions.”

Generalized Subsurface Stratigraphic Conditions

Based on the subgrade conditions encountered beneath the pavement sections along the existing alignment, the subgrade soils were somewhat variable. That is, low to moderate plasticity CLAYEY GRAVEL (GC) and CLAYEY SAND (SC) soils were encountered at the majority of the borings, while moderate to high plasticity LEAN CLAY (CL) and FAT CLAY (CH) were encountered at several of the boring locations. The moderate to high plasticity LEAN CLAY (CL) and FAT CLAY (CH) soils have a moderate to high[1] potential to shrink and swell due to fluctuations in moisture content.

[1] Peck, R., Hanson, W., Thornburn, T., *Foundation Engineering*, 2nd Edition, Wiley & Sons, New York, 1974, pg 337.

Groundwater Conditions

A dry soil sampling method was used to obtain the soil samples. Groundwater was not observed in the pavement borings to the depths drilled as part of this Project. Groundwater levels will often change significantly over time and should be verified immediately prior to construction. Water levels in open boreholes may require several hours to several days to stabilize depending on the permeability of the soils. The quantity of transient or perched groundwater seepage is dependent on antecedent rainfall, seasonal conditions, flooding, drought or temperature affects. Granular soils, such as the sandy and gravelly soils encountered in several of the borings can transmit subsurface water.

Subgrade Properties - Texas Triaxial Class and Subgrade Modulus

A Texas Triaxial Class (TTC) is assigned to the subgrade using one of the following methods: (1) determined from the Soil Conservation Services Series, Research Report 3-05-71-035, (2) determined by site specific triaxial testing of subgrade samples, (3) determined by correlation with the subgrade's Plasticity Index (PI), or (4) estimated based on soil type from the County database in the FPS-21 software.

FWD data was collected by TxDOT for the Project Limits. The FWD data was analyzed using the MODULUS 6.1 software developed by the Texas Transportation Institute (TTI). The existing pavement structures, i.e. pavement layers and thicknesses, were estimated based on the pavement core data presented previously in Table 3.

The estimated pavement structures were entered in the MODULUS 6.1 program along with the FWD data. Back-calculation of the pavement layer and subgrade moduli values were then performed. The back-calculated in-situ subgrade modulus, i.e. subgrade support, as outlined subsequently was used in our pavement designs.

The following subgrade material properties were utilized in the analysis of the pavement designs:

1. *Texas Triaxial Class (TTC)* - Recommended TTC values range from 3.0 for sandy/gravelly soils to 6.5 for extremely weak plastic soils.

   Based on our geotechnical boring and laboratory findings for this Project, the pavement subgrade consists mostly of clayey gravel and/or clayey sand soils overlying limestone bedrock. Noteworthy, however, higher plasticity clay subgrade soils were encountered in 3 of the 12 pavement borings, specifically at boring locations B-4, B-5 and B-9. The high plasticity clay "CH" soils were generally 3 to 6 feet in thickness, and underlain by limestone bedrock. The pavement subgrade conditions are presented further on Figure 2 in Appendix A.

For our pavement designs, we used a TTC value of 5.6 for high plasticity clay “CH” soils based on the Bexar County database to perform the Modified Triaxial Check.

Based on the Bexar County Soil Survey, the subgrade along the alignment consists predominantly of Tarrant (TaB) and Brackett (BrE) soils. Using the TxDOT correlated values presented in the Soil Conservation Services Series, Research Report 3-05-71-035A, an average subgrade TTC value of 4.0 was found for the Brackett -Tarrant soils. Based on our experience with past Tex-117-E tests on similar soils, we recommend a TTC=4.1 for areas along the alignment not containing “CH” soils.

2. *Subgrade Modulus (ksi)* - To evaluate the subgrade conditions beneath the existing pavement, FWD data was collected by TxDOT along the Northbound Main Lane (NBML) of Blanco Road within the Project limits.

   Back-calculation of the pavement subgrade moduli was conducted, and the subgrade moduli and depth-to-bedrock (DTB) values are summarized subsequently in Table 4. The MODULUS 6.1 output files are provided in Appendix F.

Table 4: Blanco NBML Back-calculated Moduli Values from FWD Testing

Blanco Road NBML			
Group	**No. of FWD Test Locations**	**Average (Range) in Subgrade Modulus (ksi)**	**Average Depth to Bedrock (inches)**
1	18	71.5 (27.5 to 157.5)	95.3
2	5	41.2 (18.3 to 66.7)	69.2
3	2	25 (22 to 28)	84.4

Based on the FWD testing, a design subgrade modulus value of 18.3 ksi, with a DTB of 83.2 inches, was used in our pavement designs to account for the predominate clayey gravel subgrade conditions encountered along the alignment.

Following pavement removal, stripping and grading activities, if high plasticity clay “CH” soils are exposed (such as those encountered at boring locations B-4, B-5

and B-9), we selected a design subgrade modulus value of 7.0 ksi for pavement design.

We recommend that the exposed pavement subgrade be thoroughly proof rolled as outlined in this report to identify weak areas. Weak areas evidenced during proof rolling should be corrected to result in a passing proof roll condition.

Traffic Data

Traffic Data (included in Appendix G) was provided by TxDOT in a Traffic Analysis for Highway Design Memorandum, dated June 2, 2017, prepared by TxDOT's TPP Division. A summary of the traffic data used in our pavement designs is shown subsequently in Table 5.

Table 5: Blanco Road: 20-year Traffic Data (Flexible Pavement)

Section	ADT		Percent Trucks in ADT	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications (ESALs)
	2021	2041				
Blanco Road From: West Oaks Estates To: Borgfeld Road	7,700	11,900	6.7	10,900	30	1,401,000

Flexible Pavement Design: FPS-21 Method

Flexible pavement recommendations were prepared in accordance with the *TTI Flexible Pavement Design System, FPS-21*. The flexible pavement designs were based on an analysis period of ***20 years.***

Program design inputs were based on the preferences of the TxDOT San Antonio District as outlined herein and on the guidelines provided in the TxDOT Pavement Design Guide.

We understand that it is desired to consider multiple pavement section options for this Project. The following pavement options are being presented herein:

- Pavement Option No. 1 includes using either warm mix asphalt (WMA) or hot mix asphalt (HMA) over import flexible base material. This option would be employed where high plasticity "CH" subgrade conditions are NOT present.
- Pavement Option No. 2 includes using either WMA or HMA over a 6-inch thick layer of import flexible base material. The flexible base layer will help serve as a more "all-weather" working platform for WMA/HMA placement. This option would be employed where high plasticity "CH" subgrade conditions are NOT present.

- Pavement Option No. 3 includes using full-depth WMA or HMA. This option will generally result in a shorter construction schedule. Construction delays/issues associated with wet weather could occur with this option without the presence of a more "all-weather" working platform, i.e. flexible base or lime-treated layer to facilitate WMA/HMA placement operations. This option would be employed where high plasticity "CH" subgrade conditions are NOT present.
- Pavement Option No. 4 includes using WMA or HMA over import flexible base material. This option could be considered where high plasticity "CH" subgrade conditions ARE present as encountered in 3 of the 12 pavement borings.
- Pavement Option No. 5 includes using full-depth WMA or HMA over a lime-treated subgrade. The lime-treated subgrade will help serve as a more "weather" working platform for WMA/HMA placement. This option could be considered where high plasticity "CH" subgrade conditions ARE present as encountered in 3 of the 12 pavement borings.

The pavement recommendations included in this section are based on TxDOT design procedures for flexible pavements. The recommended pavement thickness options presented subsequently in Table 6 may be considered to meet the design requirements. Other choices/alternatives are possible. The FPS-21 input and output files for Pavement Design Options 1, 2 and 3 for clayey gravel or limestone subgrade conditions, and for Pavement Design Options 4 and 5 for clay "CH" subgrade conditions, are included in Appendices H and I, respectively.

Table 6: FPS Pavement Design Options for Blanco Road

Design Criteria		Pavement Location				
Blanco Road		From: West Oaks Estates To: Borgfeld Road				
Service Life (years)		*20*				
ESALs (20 years)		1,401,000				
Material		**Material Thickness, Inches**				
Type (Oil)	**TxDOT Item**	**Gravel or Limestone Subgrade**			**Clay (CH) Subgrade**	
		Option 1	**Option 2**	**Option 3**	**Option 4**	**Option 5**
Type C HMA (or WMA) SAC-B (PG 70-22)	341	3.0	2.0	2.0	2.0	2.0
Underseal[2]	316	--	Yes	Yes	Yes	Yes
Type B HMA (or WMA) (PG 64-22)	341	--	2.5	8.0	5.0	7.0
Tack Coat	300	Yes	Yes	--	Yes	--
Prime Coat (MC-30)	300	Yes	Yes	Yes	Yes	Yes
Flexible Base, Type D, Grade 1-2 or 5	247	9.0	6.0	--	8.0	--
Lime-Treated Subgrade	260	--	--	--	--	6.0
Proof Roll Exposed Subgrade	216	Yes	Yes	Yes	Yes	Yes
FPS-21 Estimated Performance Life (years)		*31*	*40*	*40*	*40*	*40.0*
Total Pavement Section		12.0	10.5	10.0	15.0	15.0

Notes:

1. Pavement details are included in Appendix B for the above options.
2. The underseal should consist of a One Course Surface Treatment (OCST) - or as an alternate – a Membrane Underseal.
3. *The total pavement section thickness for: (a) Pavement Design Options No. 1 and 2 were controlled by the Mechanistic Check, (b) Pavement Design Options 3 and 5 were controlled by the Modified Triaxial Check, (c) Pavement Design Option 4 was controlled by both the Mechanistic and Modified Triaxial Checks.*

Mechanistic and Modified Triaxial Design Checks

The Pavement Design Options were evaluated by the FPS-21 Mechanistic Check, and with the Modified Triaxial Check (MTC) Design Procedure. The Mechanistic Check determines the fatigue life of the warm mix asphalt (WMA) or hot mix asphalt (HMA) layers and full depth rutting life of the pavement section.

The MTC was performed utilizing the ATHWLD, Percentage of Tandem Axles, Subgrade TTC, Modified Cohesionmeter Value (C_m) and Design Wheel Load. The required MTC design thicknesses are shown subsequently in Table 7 for the proposed Pavement Design Options.

Table 7: Required MTC Design Thickness for Blanco Road Travel Lanes

Pavement Design Option No.	C_m Value, Pavement Type and Subgrade Profile	Triaxial Thickness Required	Allowable Thickness Reduction	Modified Triaxial Thickness
1	C_m=300, HMA (or WMA) + Flexible Base + Proof Rolled Subgrade	12.6”	2.1”	**10.6”**
2	C_m=550, HMA (or WMA) + Flexible Base + Proof Rolled Subgrade	12.6”	2.8”	**9.9”**
3	C_m=800, HMA (or WMA) + Proof Rolled Subgrade	12.6”	2.9”	**9.8”**
4	C_m=800, HMA (or WMA) + Flexible Base + Proof Rolled Subgrade	22.2”	7.2”	**15.0”**
5	C_m=800, HMA (or WMA) + Proof Rolled Subgrade	22.2”	7.2”	**15.0”**

Potential Vertical Rise (PVR)

Low to high plasticity soils were encountered in numerous pavement borings along the Project alignment. The TxDOT Pavement Design Guide suggests that the least amount of PVR for design is 1.5 inches for main lanes (2.0 inches for frontage roads, when allowed), or as established by the District’s Standard Operating Procedure (SOP).

The PVR values were determined within the Project limits using the Tex-124-E method for a maximum 7-foot depth. The calculated PVR values are provided in the Appendix J and summarized below in Table 8.

Table 8: Range of Calculated PVR values

PVR Range (inches)
¼ to 2

The PVR values were calculated between approximately ¼ to 2 inches. The PVR only exceeded 1.5 inches for Borings B-4 and B-9. Based on our calculations, it would be anticipated that long-term repair problems due to PVR movements would likely only be needed in isolated portions within this Project segment.

It is common for moisture content values to remain fairly constant in the middle of the roadway. The moisture levels in the subgrade soils located near the edge of roadway are more

susceptible to changes in moisture that occur due to natural seasonal moisture fluctuations. The edges will dry and shrink during drought conditions, relative to the center of the roadway. During extremely wet climate periods, the edges will swell relative to the center of the roadway. The shrinking and swelling of subgrade soils near the edge of pavements will result in longitudinal, surface cracking that occurs parallel to the roadway. Based on our experience, the cracking typically occurs at a distance of 3 to 9 feet from the edge of the roadway. Edge cracking associated with soil shrinkage movements may occur at greater distances during extreme environmental conditions.

Our pavement recommendations have been developed to provide an adequate structural thickness to support the anticipated traffic volumes. The owner should recognize that over time, however, the pavements may develop undulations and/or cracking, and undergo some deterioration and loss of serviceability. Thus, we recommend that project budgets include an allowance for maintenance such as cracking seal and potential milling and overlays during the service life of the pavements.

PAVEMENT CONSTRUCTION

Site Preparation

Where applicable, existing pavements should be removed. Topsoil stripping should be performed, as needed, to remove organic materials, soft/very soft “mucky” soils, and vegetation. Furthermore, removal should include any debris, trash, undocumented fill, and landfill materials, and be properly disposed of offsite.

The resulting subgrade should be proof rolled in accordance with TxDOT Item 216. A TxDOT representative should be present to observe proof rolling operations. As per the TxDOT representative, areas of deflection should be removed, re-compacted and/or replaced with Embankment Select Fill, as applicable, meeting the material and compaction requirements given subsequently.

Embankment Select Fill

Roadway Embankment Select Fill should consist of inert (non-swelling) Type C embankment fill (TxDOT Item 132) that meets the following requirements:

- maximum liquid limit (LL) of 45;
- maximum plasticity index (PI) of 20;
- sulfate contents ≤ 500 ppm;
- placed in maximum 8 inch loose lifts;
- moisture conditioned to within ±2 percentage points of optimum moisture; and
- compacted to between 98% and 102% of the maximum dry density (TEX-114-E).

Recycled pavement can be considered for reuse as select fill provided it meets the criteria presented herein.

Embankment Select Fill should not contain organics, deleterious debris, trash or landfill materials. Conformance testing should be performed during construction to assure that the materials used for construction meet (and are placed in accordance with) the Project plans and specifications. The suitability of all fill materials should be approved by the Geotechnical Engineer.

Lime-Treated Subgrade

Lime treatment, in accordance with TxDOT Item 260, of the final subgrade is recommended for Pavement Option No. 5 as presented previously in Table 6. Material and compaction requirements are given subsequently in Table 9:

Table 9: Lime Treatment of Pavement Subgrade

Treatment depth	6 inches
Additive type	Hydrated Lime
Hydrated Lime application rate (estimated)	8% by dry weight.
Soil dry unit weight (estimated)	100 pcf but may be variable
Determination of Lime application rate	The actual stabilizer application rate should be determined by laboratory testing of soil samples taken after the pavement subgrade elevation has been achieved. The quantity of lime should be determined as outlined in Tex-121-E.
Treatment procedure	Meet requirements given in TxDOT Item 260 Lime Treatment (Road-Mixed)
Treatment layer compaction and moisture criteria	Tex-114-E ≥ 98 % compaction at -2 to +3 from optimum

Flexible Base

New flexible base material should comply with TxDOT Item 247, Type D, Grade 1-2. The flexible base should be compacted in maximum 8-inch loose lifts to at least 100 percent of the maximum dry density as evaluated by TEX-113-E within ±2 percentage points of optimum moisture content.

Warm Mix Asphalt (WMA) and Hot Mix Asphalt (HMA) Layers

Warm Mix Asphalt (WMA) and Hot Mix Asphalt (HMA) should comply with 2014 TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges referring to the respective Items listed previously in Table 6 of this report.

Compaction tests, as necessary, should be performed during construction in accordance with the project documents. The WMA/HMA materials should be tested to verify compliance with the TxDOT Item, sampling frequency, approved design and current job mix formula. The job mix formula should be submitted to the State by the supplier/manufacturer for approval.

Underseal

The underseal should consist of a OCST with Asphalt (AC-15P, AC-20-5TR, AC-20XP, or AC-10-2TR) at 0.20 GAL/SY. The OCST aggregate would consist of Type B Grade 5 at 150 SY/CY.

As an alternate to a OCST, the underseal could consist of a spray applied polymer emulsion membrane.

Site Drainage

We recommend that areas along the roadway be properly maintained to allow for positive drainage and keep water from ponding adjacent to the pavements as the construction proceeds. This consideration should be included in the Project specifications.

Positive drainage should also be maintained after construction so that ponded water does not occur near the roadway. Poor drainage can result in pavement subgrade failures, as well as in pavement distress associated with expansive soil heave.

GENERAL COMMENTS

This report was prepared as an instrument of service for this Project exclusively for the use of ARMA and the Project design team. If the development plans change relative to layout and cross sections of the pavements, anticipated traffic loads, or if different subsurface conditions are encountered during construction, we should be informed and retained to ascertain the impact of these changes on our recommendations. We cannot be responsible for the potential impact of these changes if we are not informed. Important information about this geotechnical report is provided in the ASFE publication included in Appendix L.

Geotechnical Design Review

Arias should be given the opportunity to review the design and construction documents. The purpose of this review is to check to see if our geotechnical recommendations are properly interpreted into the Project plans and specifications. Please note that design review was not included in the authorized scope and additional fees may apply.

Quality Assurance Testing

As a guideline, at least one in-place density test should be performed for every 100 linear feet of the roadway subgrade and each lift of fill material (minimum of 3 tests per lift). Any areas

not meeting the required compaction should be re-compacted and retested until compliance is met.

The long-term success of the Project will be affected by the quality of materials used for construction and the adherence of the construction to the Project plans and specifications. As Geotechnical Engineer of Record (GER), we should be engaged by the Owner to provide Quality Assurance (QA) testing. Our services will be to evaluate the degree to which constructors are achieving the specified conditions they are contractually obligated to achieve, and observe that the encountered materials during earthwork and foundation installation are consistent with those encountered during this study. In the event that Arias is not retained to provide QA testing, we should be immediately contacted if differing subsurface conditions are encountered during construction. Differing materials may require modification to the recommendations that we provided herein. A message to the Owner with regard to the Project QA is provided in the ASFE publication included in Appendix M.

Arias has an established in-house laboratory that meets the standards of the American Standard Testing Materials (ASTM) specifications of ASTM E-329 defining requirements for Inspection and Testing Agencies for soil, concrete, steel and bituminous materials as used in construction. We maintain soils, concrete, asphalt, and aggregate testing equipment to provide the testing needs required by the Project specifications. All of our equipment is calibrated by an independent testing agency in accordance with the National Bureau of Standards. In addition, Arias is accredited by the American Association of State Highway & Transportation Officials (AASHTO), the United States Army Corps of Engineers (USACE) and the Texas Department of Transportation (TxDOT), and maintains AASHTO Materials Reference Laboratory (AMRL) and Cement and Concrete Reference Laboratory (CCRL) proficiency sampling, assessments and inspections.

Furthermore, Arias employs a technical staff certified through the following agencies: the National Institute for Certification in Engineering Technologies (NICET), the American Concrete Institute (ACI), the American Welding Society (AWS), the Precast/Prestressed Concrete Institute (PCI), the Mine & Safety Health Administration (MSHA), the Texas Asphalt Pavement Association (TXAPA) and the Texas Board of Professional Engineers (TBPE). Our services are conducted under the guidance and direction of a Professional Engineer (P.E.) licensed to work in the State of Texas, as required by law.

Subsurface Variations

Soil and groundwater conditions may vary away from the sample boring locations. Transition boundaries or contacts, noted on the boring logs to separate soil types, are approximate. Actual contacts may be gradual and vary at different locations. The Contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions or highly variable subsurface conditions are encountered during construction, we

should be contacted to evaluate the significance of the changed conditions relative to our recommendations.

Standard of Care

Subject to the limitations inherent in the agreed scope of services as to the degree of care and amount of time and expenses to be incurred, and subject to any other limitations contained in the agreement for this work, Arias has performed its services consistent with that level of care and skill ordinarily exercised by other professional engineers practicing in the same locale and under similar circumstances at the time the services were performed.

APPENDIX A: FIGURES AND SITE EXPLORATION PHOTOGRAPHS

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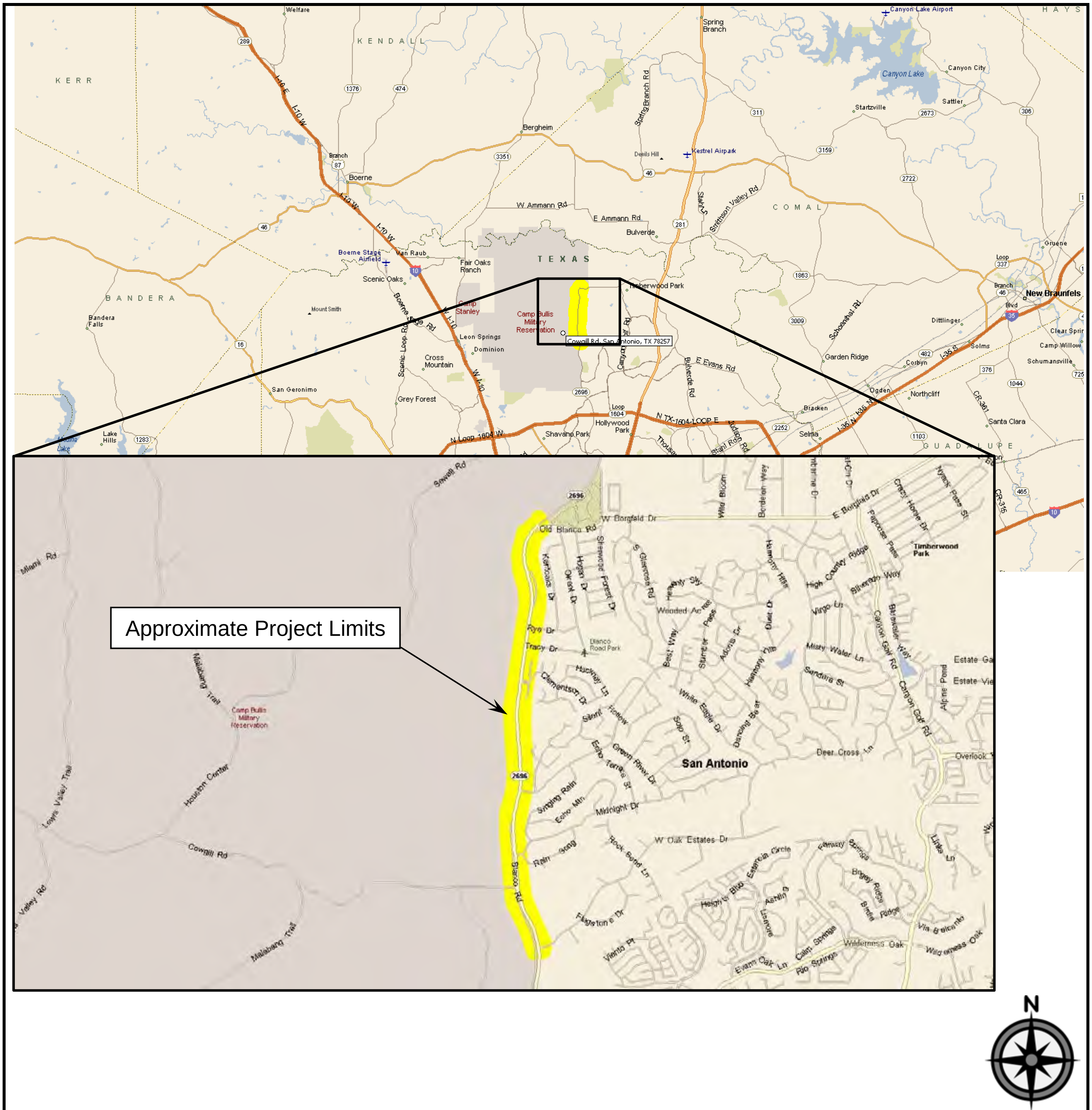

DISCLAIMER: This drawing is for illustration only and should not be used for design or construction purposes. All locations are approximate.

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VICINITY MAP

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 19, 2017	Job No.: 2017-61
Drawn By: RWL	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

Figure 1

1 of 1

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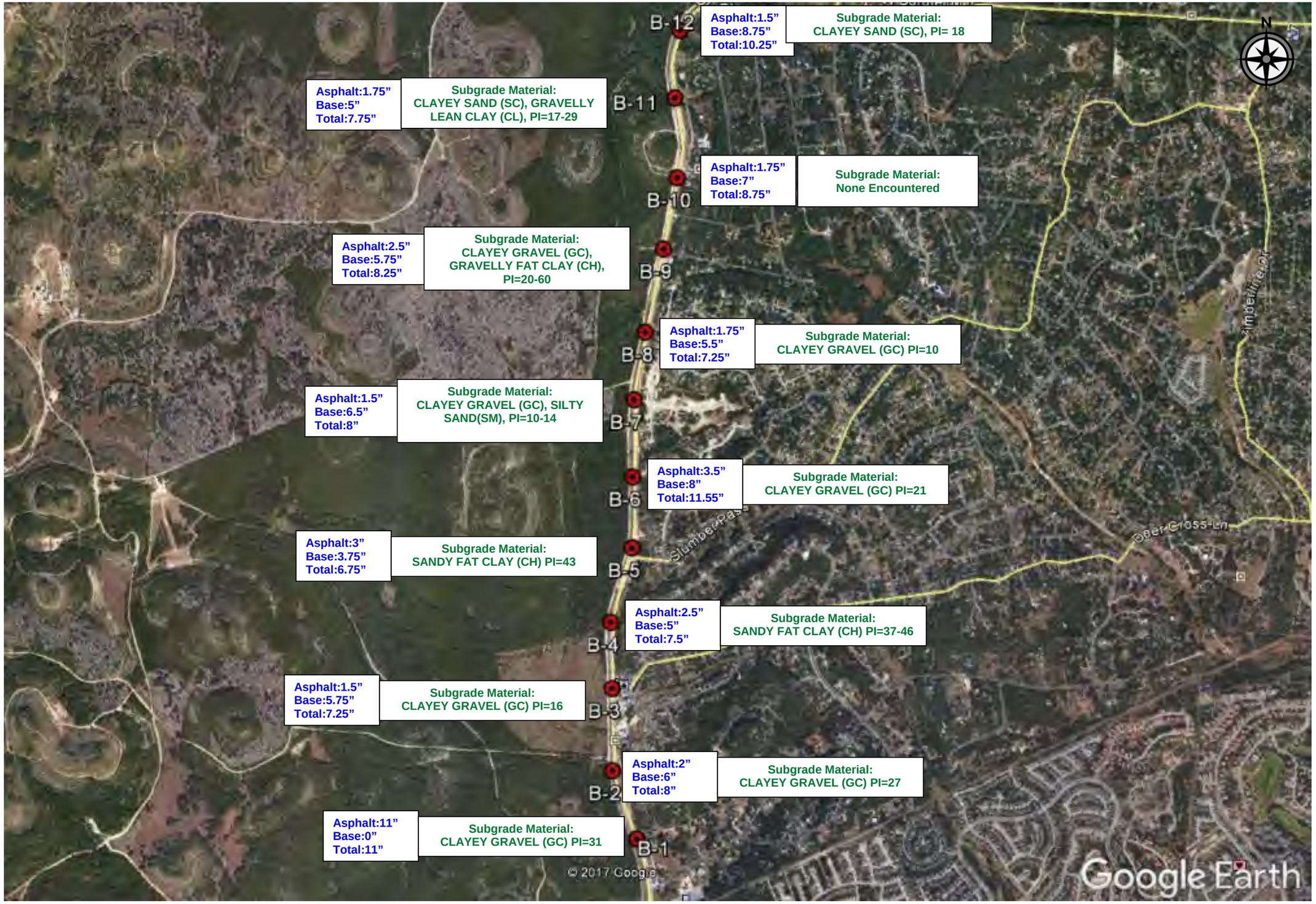

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CORING LOCATION PLAN

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

2017-61	
Scale:	N.T.S.
Date:	July 19, 2017
Drawn By:	RWL
Checked By:	CMS
Approved By:	SAH

Figure 2

1 of 1

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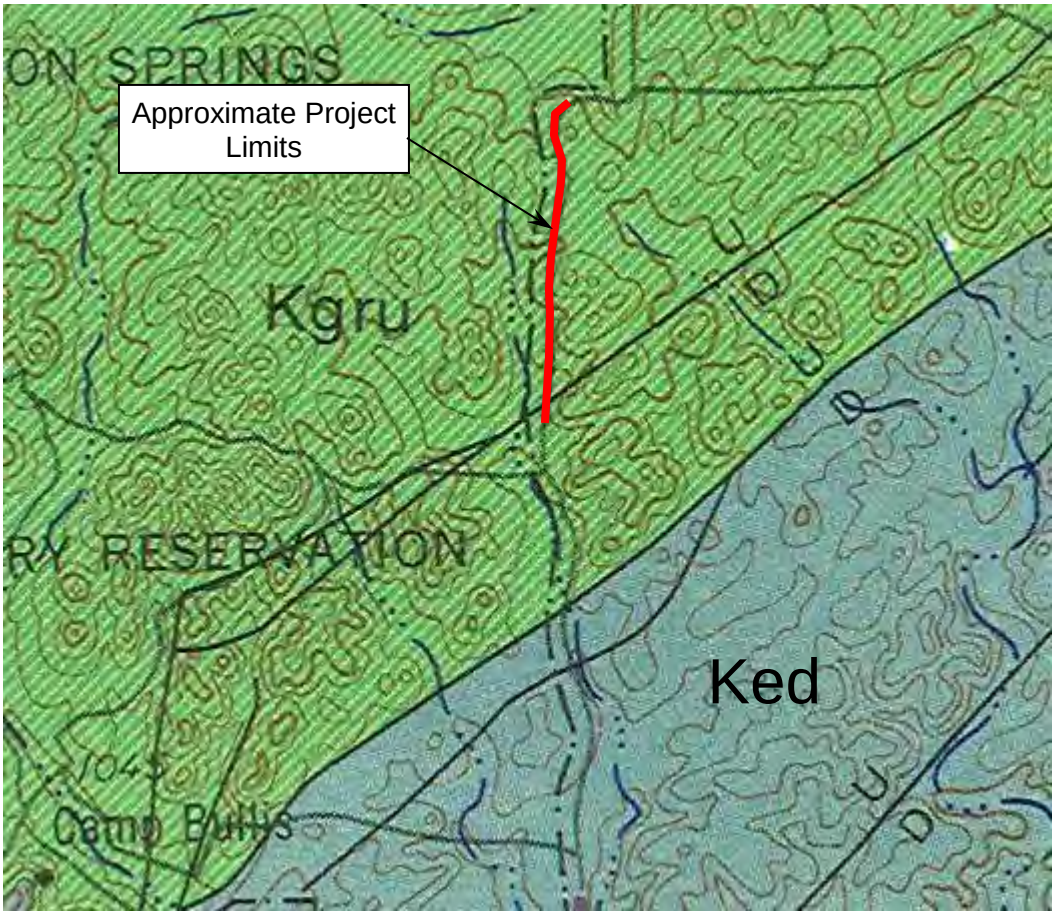

PORTION OF GEOLOGIC ATLAS OF TEXAS
(San Antonio Sheet)
LEGEND

Symbol	Name	Age
Ked	Edwards Limestone Undivided	Lower Cretaceous Period
Kgru	Glen Rose Formation (Upper)	Lower Cretaceous Period

N

U
D
Fault Segment with Indication of Relative Movement

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GEOLOGIC MAP

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 19, 2017	Job No.: 2017-61
Drawn By: RWL	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

Figure 3

1 of 1

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Photo 1 – View looking at Boring 1 drilling operations.

Photo 2 – View looking at Boring 3 drilling operations.

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SITE PHOTOS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 19, 2017	Job No.: 2017-61
Drawn By: RWL	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

Appendix A

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Photo 3 – View looking at Boring 6 drilling operations.

Photo 4 – View looking at Boring 7 drilling operations.

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SITE PHOTOS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 19, 2017	Job No.: 2017-61
Drawn By: RWL	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

Appendix A

APPENDIX B: PAVEMENT DETAILS

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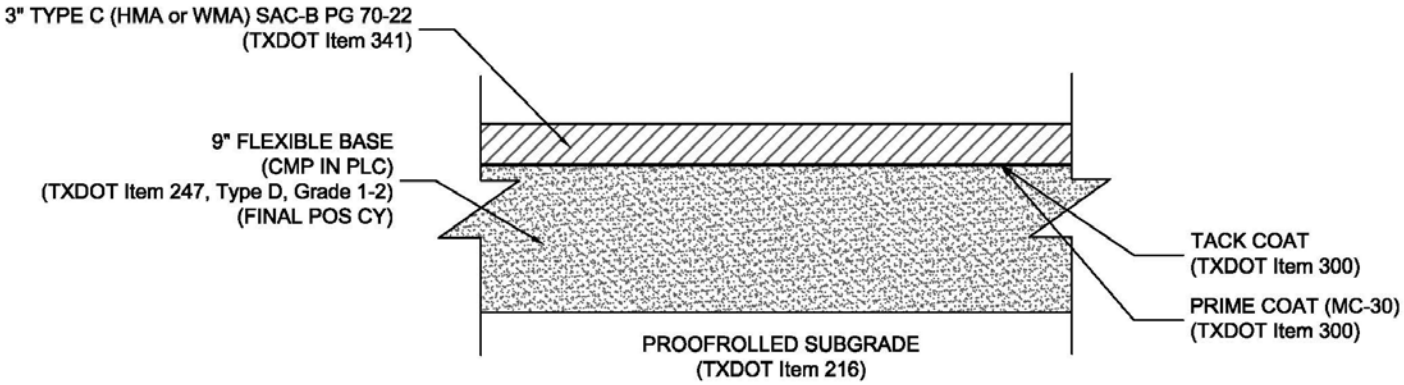
FLEXIBLE PAVEMENT DETAIL - Option No. 1

NOT TO SCALE



FLEXIBLE PAVEMENT DETAIL - Option No. 2

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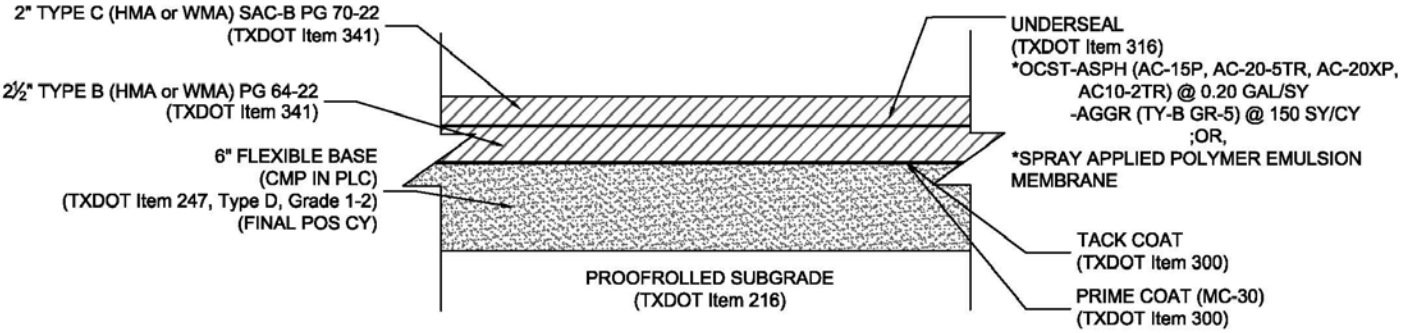

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FLEXIBLE PAVEMENT DETAILS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 31, 2017	Job No.: 2017-61
Drawn By: TAS	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

REVISIONS:

No.:	Date:	Description:

Appendix B

1 of 3

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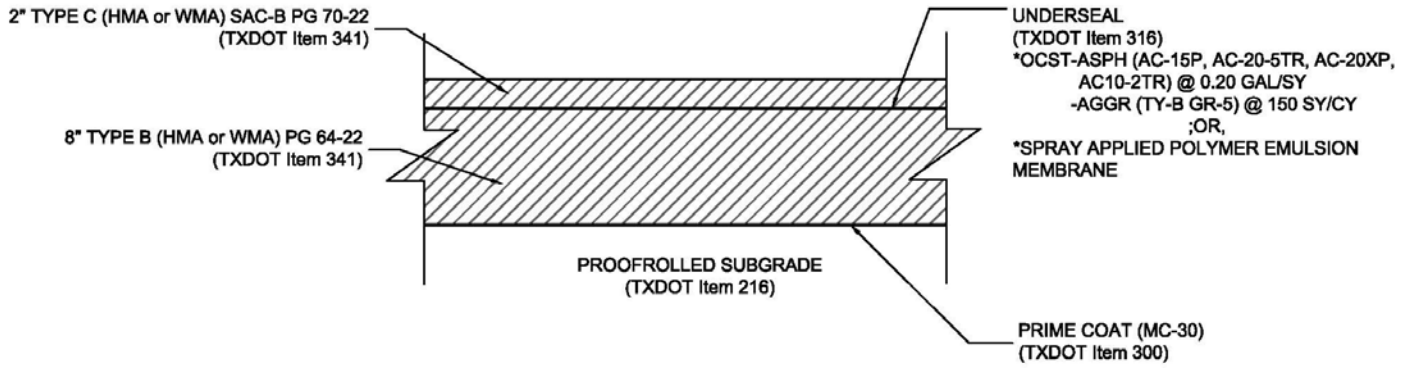
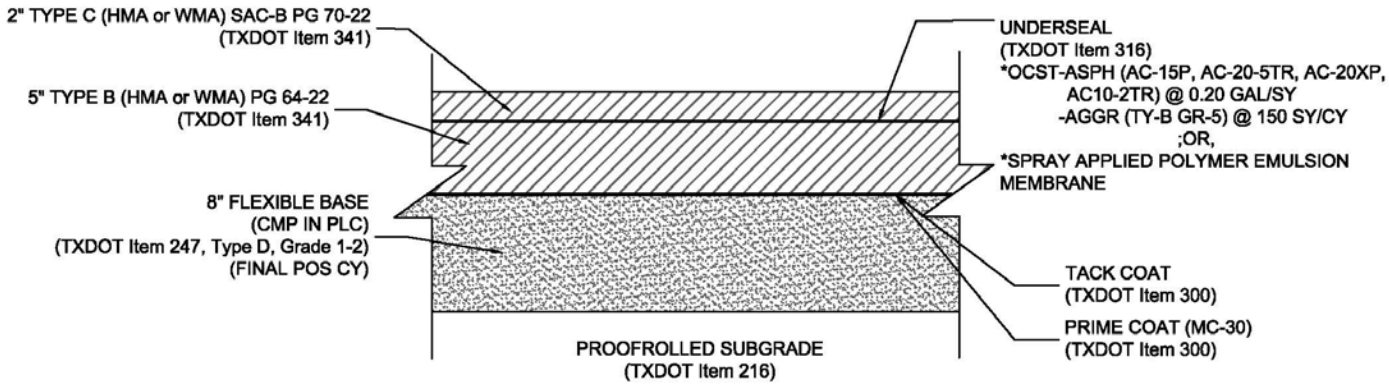
FLEXIBLE PAVEMENT DETAIL - Option No. 3

NOT TO SCALE



FLEXIBLE PAVEMENT DETAIL - Option No. 4

NOT TO SCALE



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FLEXIBLE PAVEMENT DETAILS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 31, 2017	Job No.: 2017-61
Drawn By: TAS	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

REVISIONS:

No.:	Date:	Description:

Appendix B

2 of 3

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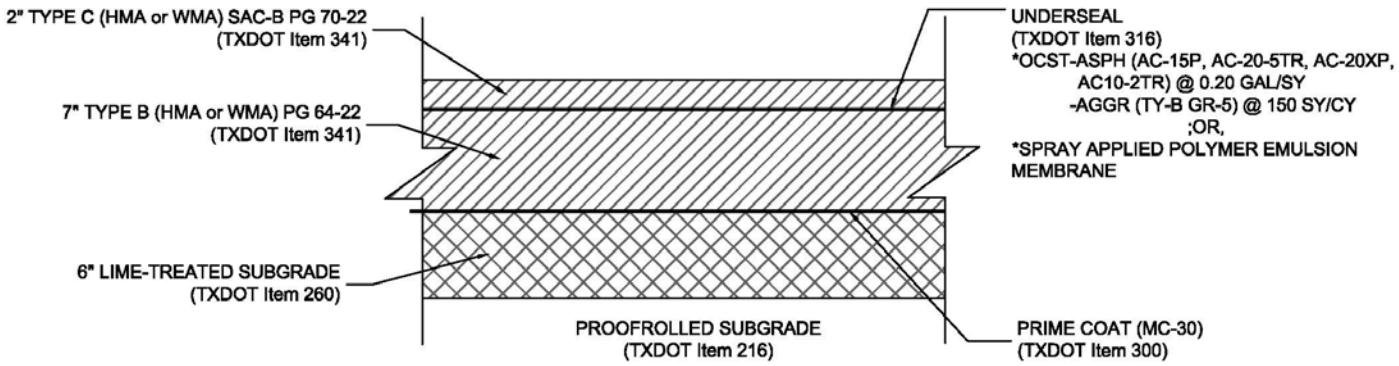
FLEXIBLE PAVEMENT DETAIL - Option No. 5

NOT TO SCALE



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FLEXIBLE PAVEMENT DETAILS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 31, 2017	Job No.: 2017-61
Drawn By: TAS	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

REVISIONS:

No.:	Date:	Description:

Appendix B

3 of 3

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APPENDIX C: BORING LOGS AND KEY TO TERMS AND SYMBOLS

DRILLING LOG

WinCore	County	Bexar	Hole	B-1	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/24/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 11" Asphalt; No Base							
99.						11	48	31		-200=34%
			GRAVEL, clayey, loose, dark brown, with sand (GC)			18				
						19				
95. 5		50 (0.75) 50 (0)				6				
			LIMESTONE, very hard, light tan							
92.5			MARLSTONE, very hard, tan			6				
90. 10		50 (1) 50 (0)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: R. Arizola** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-2	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/30/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 2" Asphalt over 6" Base			4				
99.3			GRAVEL, clayey, very dense, brown, with sand (GC)			13	45	27		-200=31%
98.			LIMESTONE, very hard, gray brown			7				
5		50 (0.25) 50 (0)				8				
						6				
90. 10		50 (0.25) 50 (0.25)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: J. Ramos** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-3	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/24/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 1.5" Asphalt over 5.75" Base			7				
99.4			SAND, clayey, brown, with gravel			11	31	16		-200=46%
						17				
						2				
96.5			LIMESTONE, very hard, tan							
5		50 (2.375) 50 (2.75)				5				
						5				
90. 10		50 (0.625) 50 (0.25)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: R. Arizola** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-4	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/30/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 2.5" Asphalt over 5" Base			13				
99.4			CLAY, sandy, very stiff, brown to dark brown (CH)			9	58	37		-200=52%
						24	66	46		-200=58%
5		5 (6) 5 (6)				8				
93.5			LIMESTONE, very hard, tan, weathered							
						4				
90. 10		50 (0.75) 50 (0.25)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: J. Ramos** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-5	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/24/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
99.4			PAVEMENT, 3" Asphalt over 3.75" Base			9				
			CLAY, Sandy, very stiff, brown to tan, with calcarseous deposits (CH)			4	64	43		-200=63%
						18				
96.5						3				
			LIMESTONE, hard, tan, weathered							
5		50 (5.25) 50 (5.5)								
94.			CLAY, sandy, very stiff, tan (CL)							
						13	38	24		-200=67%
90. 10		50 (2.375) 50 (0.5)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: R. Arizola** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-6	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/30/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 3.5" Asphalt over 8" Base			6				
99.						17	42	21		-200=24%
			GRAVEL, clayey, dense, brown, with sand (GC)							
97.						1				
			LIMESTONE, very hard, tan							
5		50 (1.75) 50 (0.25)				7				
						11				
93.			CLAY, very hard, tan, with gravel (CL)							
						9				
90. 10		50 (0.5) 50 (0)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: J. Ramos** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-7	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/24/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 1.5" Asphalt over 6.5" Base			6				
99.3			GRAVEL, clayey, medium dense, light brown, with sand (GC)			7	29	14		-200=23%
						10				
						16	35	10		-200=39%
96.5			SAND, silty, loose, light brown, with gravel (SM)							
95. 5		34 (6) 50 (1.375)				5				
			LIMESTONE, very hard, tan							
						7				
90. 10		50 (0.625) 50 (0.25)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: R. Arizola** **Organization: Arias Geoprofessionals**

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DRILLING LOG

WinCore	County	Bexar	Hole	B-8	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/30/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
99.4			PAVEMENT, 1.75" Asphalt over 5.5" Base			6				
			GRAVEL, clayey, dense, tan with FE stains and sand (GC)			15	29	10		-200=31%
97.						7				
			LIMESTONE, very hard, gray brown							
5		50 (2.5) 50 (1.5)				6				
92.5			CLAY, very stiff, tan (CL)			18				
90. 10		16 (6) 14 (6)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: J. Ramos** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-9	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/24/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 2.5" Asphalt over 5.75" Base			4				
99.3			GRAVEL, clayey, brown, with sand (GC)			10	36	20		-200=32%
98.5			CLAY, gravelly, very stiff, brown (CH)			18	87	60		-200=64%
						15				
95.5			LIMESTONE, very stiff, tan							
5		50 (0.5) 50 (0.25)				5				
90. 10		50 (0.25) 50 (0)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: R. Arizola** **Organization: Arias Geoprofessionals**

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DRILLING LOG

WinCore	County	Bexar	Hole	B-10	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/30/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 1.75" Asphalt over 7" Base			4				
99.3			LIMESTONE, very hard, tan			9	21	6		-200=36%
						9				
5		50 (0.75) 50 (0)				8				trace clay from 8 to 10 ft
						9				
90. 10		50 (0.5) 50 (0.25)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: J. Ramos** **Organization: Arias Geoprofessionals**

W:\GEO\Open\2017\2017-61 Blanco Road Phase II Improvements\2017-61 Temporary\Wincore\B-1 thru B-12.CLG

DRILLING LOG

WinCore	County	Bexar	Hole	B-11	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/24/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
99.4			PAVEMENT, 1.75" Asphalt over 5" Base			6				
			SAND, clayey, dense, brown, with gravel (SC)			11	34	17		-200=41%
						32				
						19	44	29		-200=53%
95.5			CLAY, gravelly, very stiff, tan, with sand and trace calcareous deposits (CL)							
95. 5		50 (1.125) 50 (0.25)	SAND, tan, with gravel			7				
92.						12				
			LIMESTONE, void							
10		25 (6) 0 (6)								
88.5										
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: R. Arizola** **Organization: Arias Geoprofessionals**

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DRILLING LOG

WinCore	County	Bexar	Hole	B-12	District		
Version 3.1	Highway	Blanco Road	Structure		Date	5/30/2017	
	CSJ		Station		Grnd. Elev.	100.00 ft	
			Offset		GW Elev.	N/A	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			PAVEMENT, 1.5" Asphalt over 8.75" Base			5				
99.2			SAND, clayey, medium dense, brown, with gravel (SC)			11	33	18		-200=41%
						17				
5		16 (6) 50 (5)				11				
93.			LIMESTONE, very hard, tan			7				
90. 10		50 (0) 50 (0)								
15										

Remarks:

The ground water elevation was not determined during the course of this boring.

Driller: Eagle Drilling **Logger: J. Ramos** **Organization: Arias Geoprofessionals**

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KEY TO TERMS AND SYMBOLS USED ON BORING LOGS

TABLE 1 Soil Classification Chart (ASTM D 2487-11)

Criteria of Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name[B]
COARSE-GRAINED SOILS	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines[C])	Cu ≥ 4 and 1 ≤ Cc ≤ 3[D]	GW	Well-Graded Gravel[E]
			Cu < 4 and/or [Cc < 1 or Cc > 3][D]	GP	Poorly-Graded Gravel[E]
		Gravels with Fines (More than 12% fines[C])	Fines classify as ML or MH	GM	Silty Gravel[E,F,G]
More than 50% retained on No. 200 sieve			Fines classify as CL or CH	GC	Clayey Gravel[E,F,G]
	Sands (50% or more of coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines[H])	Cu ≥ 6 and 1 ≤ Cc ≤ 3[D]	SW	Well-Graded Sand[I]
			Cu < 6 and/or [Cc < 1 or Cc > 3][D]	SP	Poorly-Graded Sand[I]
		Sands with Fines (More than 12% fines[H])	Fines classify as ML or MH	SM	Silty Sand[F,G,I]
			Fines classify as CL or CH	SC	Clayey Sand[F,G,I]
FINE-GRAINED SOILS	Silts and Clays	inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean Clay[K,L,M]
	Liquid limit less than 50		PI < 4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried <0.75	OL	Organic Clay[K,L,M,N] / Organi Silt[K,L,M,O]
50% or more passes the No. 200 sieve	Silts and Clays	inorganic	PI plots on or above "A" line	CH	Fat Clay[K,L,M]
	Liquid limit 50 or more		PI plots on or below "A" line	MH	Elastic Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried <0.75	OH	Organic Clay[K,L,M,P] / Organic Silt[K,L,M,Q]
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name
[C] Gravels with 5% to 12% fines require dual symbols:
- GW-GM well-graded gravel with silt
- GW-GC well-graded gravel with clay
- GP-GM poorly-graded gravel with silt
- GP-GC poorly-graded gravel with clay

[D] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[E] If soil contains ≥ 15% sand, add "with sand" to group name
[F] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM
[G] If fines are organic, add "with organic fines" to group name
[H] Sand with 5% to 12% fines require dual symbols:
- SW-SM well-graded sand with silt
- SW-SC well-graded sand with clay
- SP-SM poorly-graded sand with silt
- SP-SC poorly-graded sand with clay

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name
[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay
[K] If soil contains 15% to < 30% plus No. 200, add "with sand" or "with gravel," whichever is predominant
[L] If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name
[N] PI ≥ 4 and plots on or above "A" line
[O] PI < 4 or plots below "A" line
[P] PI plots on or above "A" line
[Q] PI plots below "A" line

TERMINOLOGY

Boulders	Over 12-inches (300mm)	**Parting**	Inclusion < 1/8-inch thick extending through samples
Cobbles	12-inches to 3-inches (300mm to 75mm)	**Seam**	Inclusion 1/8-inch to 3-inches thick extending through sample
Gravel	3-inches to No. 4 sieve (75mm to 4.75mm)	**Layer**	Inclusion > 3-inches thick extending through sample
Sand	No. 4 sieve to No. 200 sieve (4.75mm to 0.075mm)		
Silt or Clay	Passing No. 200 sieve (0.075mm)		
Calcareous	Containing appreciable quantities of calcium carbonate, generally nodular		

Stratified	Alternating layers of varying material or color with layers at least 6mm thick
Laminated	Alternating layers of varying material or color with the layers less than 6mm thick
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay
Homogeneous	Same color and appearance throughout

APPENDIX D: ASPHALT CORE PHOTOGRAPHS

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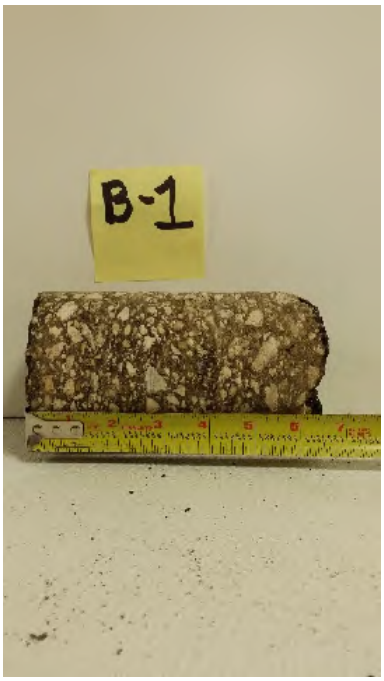

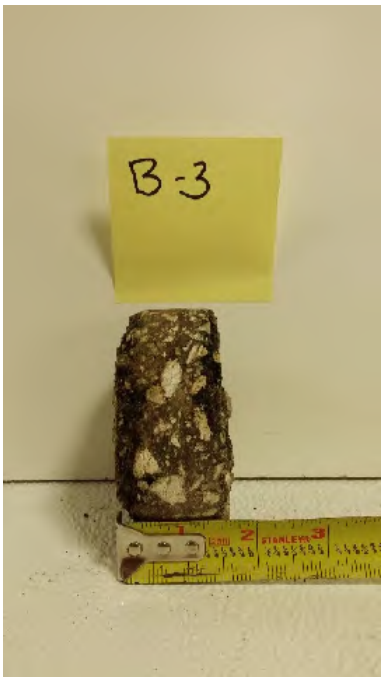

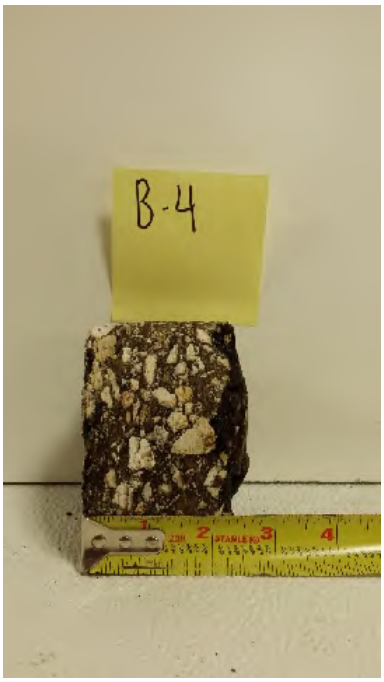

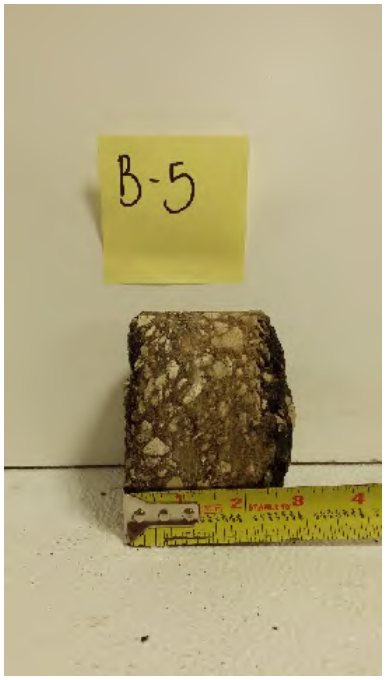

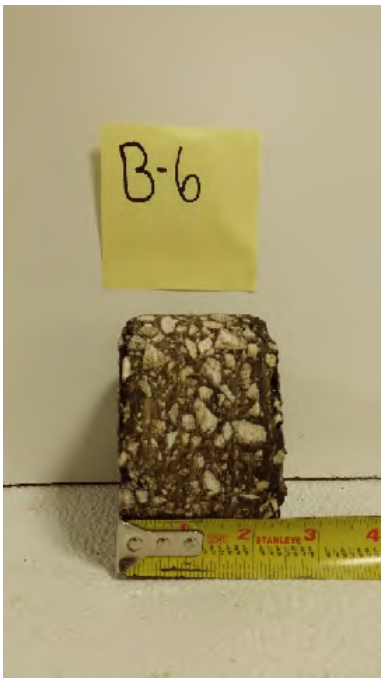

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CORE PHOTOS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

Date: July 19, 2017	Job No.: 2017-61
Drawn By: RWL	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

Appendix D

1 of 2

DISCLAIMER: This drawing is for illustration only and should not be used for design or construction purposes. All locations are approximate.

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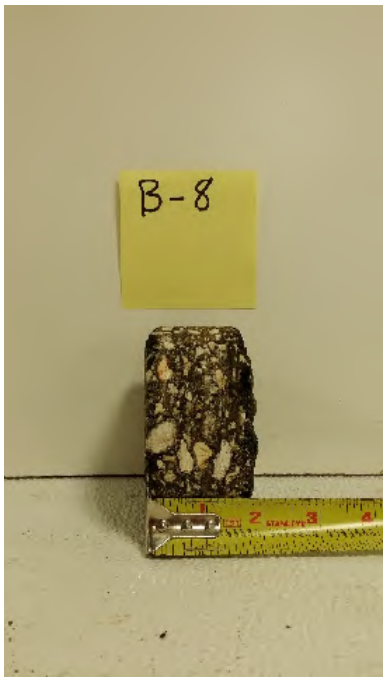

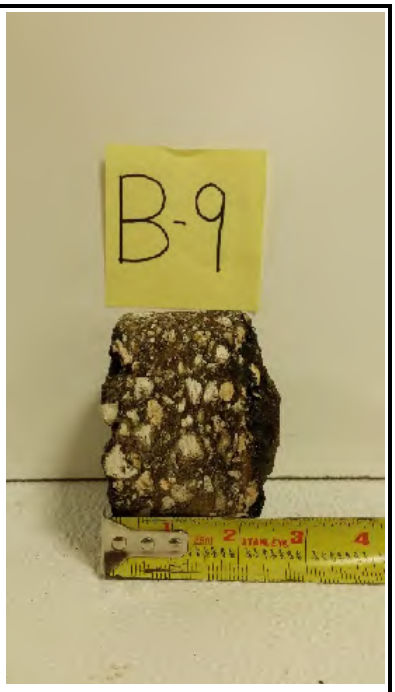

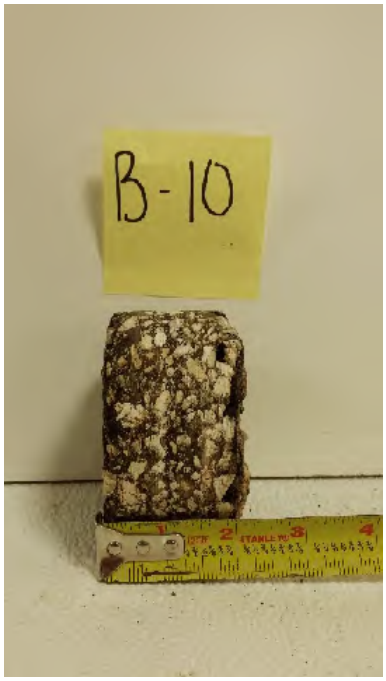

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CORE PHOTOS

Blanco Road Phase II Project
From West Oaks Estates to Borgfeld Drive
CSJ: 0915-12-585

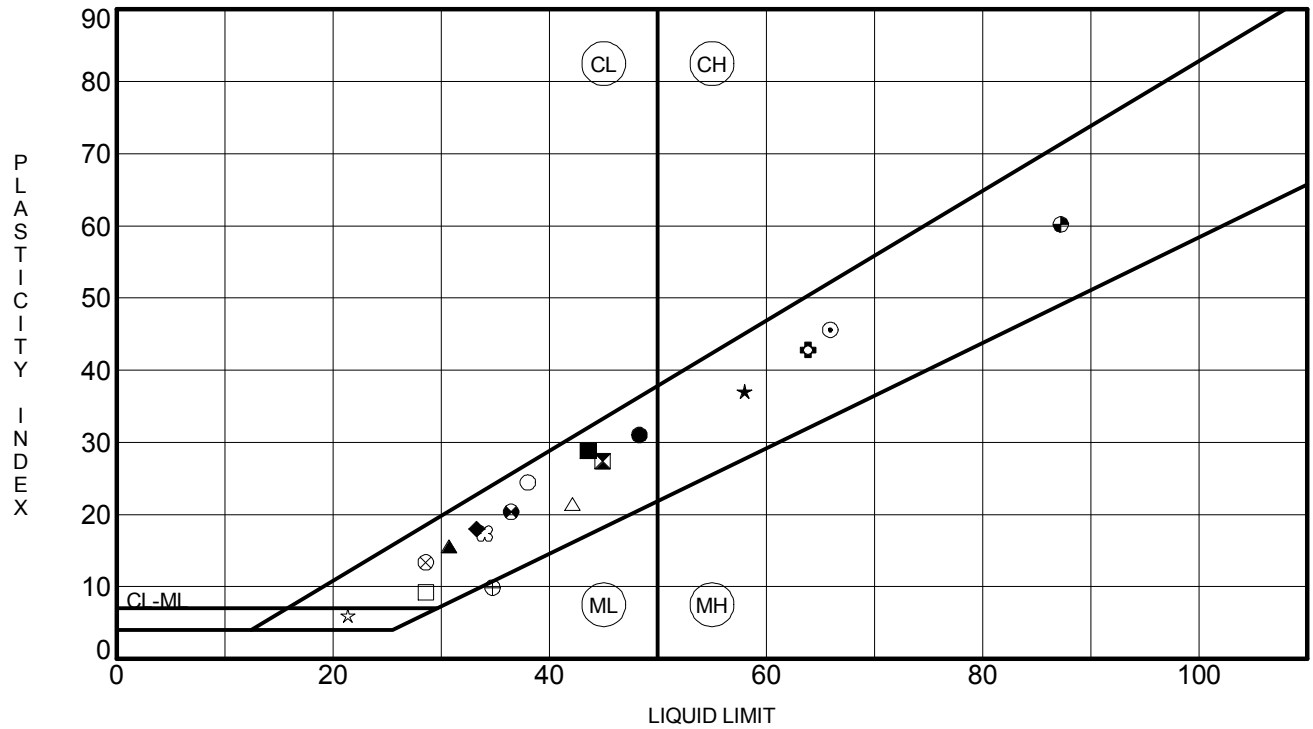
Date: July 19, 2017	Job No.: 2017-61
Drawn By: RWL	Checked By: CMS
Approved By: SAH	Scale: N.T.S.

Appendix D

2 of 2

DISCLAIMER: This drawing is for illustration only and should not be used for design or construction purposes. All locations are approximate.

APPENDIX E: LABORATORY TEST RESULTS



Boring		Depth	LL	PL	PI	Fines	Classification
●	1	1.0	48	17	31	34	CLAYEY GRAVEL with SAND (GC)
⊠	2	1.0	45	18	27	31	CLAYEY GRAVEL with SAND (GC)
▲	3	0.8	31	15	16	46	CLAYEY SAND with GRAVEL (SC)
★	4	1.0	58	21	37	52	SANDY FAT CLAY (CH)
⊙	4	3.0	66	20	46	58	SANDY FAT CLAY (CH)
✿	5	1.0	64	21	43	63	SANDY FAT CLAY (CH)
○	5	8.0	38	14	24	67	SANDY LEAN CLAY (CL)
△	6	1.0	42	21	21	24	CLAYEY GRAVEL with SAND (GC)
⊗	7	1.0	29	15	14	23	CLAYEY GRAVEL with SAND (GC)
⊕	7	3.0	35	25	10	39	SILTY SAND with GRAVEL (SM)
□	8	1.0	29	19	10	31	CLAYEY GRAVEL with SAND (GC)
⊛	9	1.0	36	16	20	32	CLAYEY GRAVEL with SAND (GC)
◕	9	1.5	87	27	60	64	GRAVELLY FAT CLAY (CH)
☆	10	1.0	21	15	6	36	SILTY, CLAYEY SAND with GRAVEL (SC-SM)
☒	11	1.0	34	17	17	41	CLAYEY SAND with GRAVEL (SC)
■	11	3.5	44	15	29	53	GRAVELLY LEAN CLAY with SAND (CL)
◆	12	1.0	33	15	18	41	CLAYEY SAND with GRAVEL (SC)

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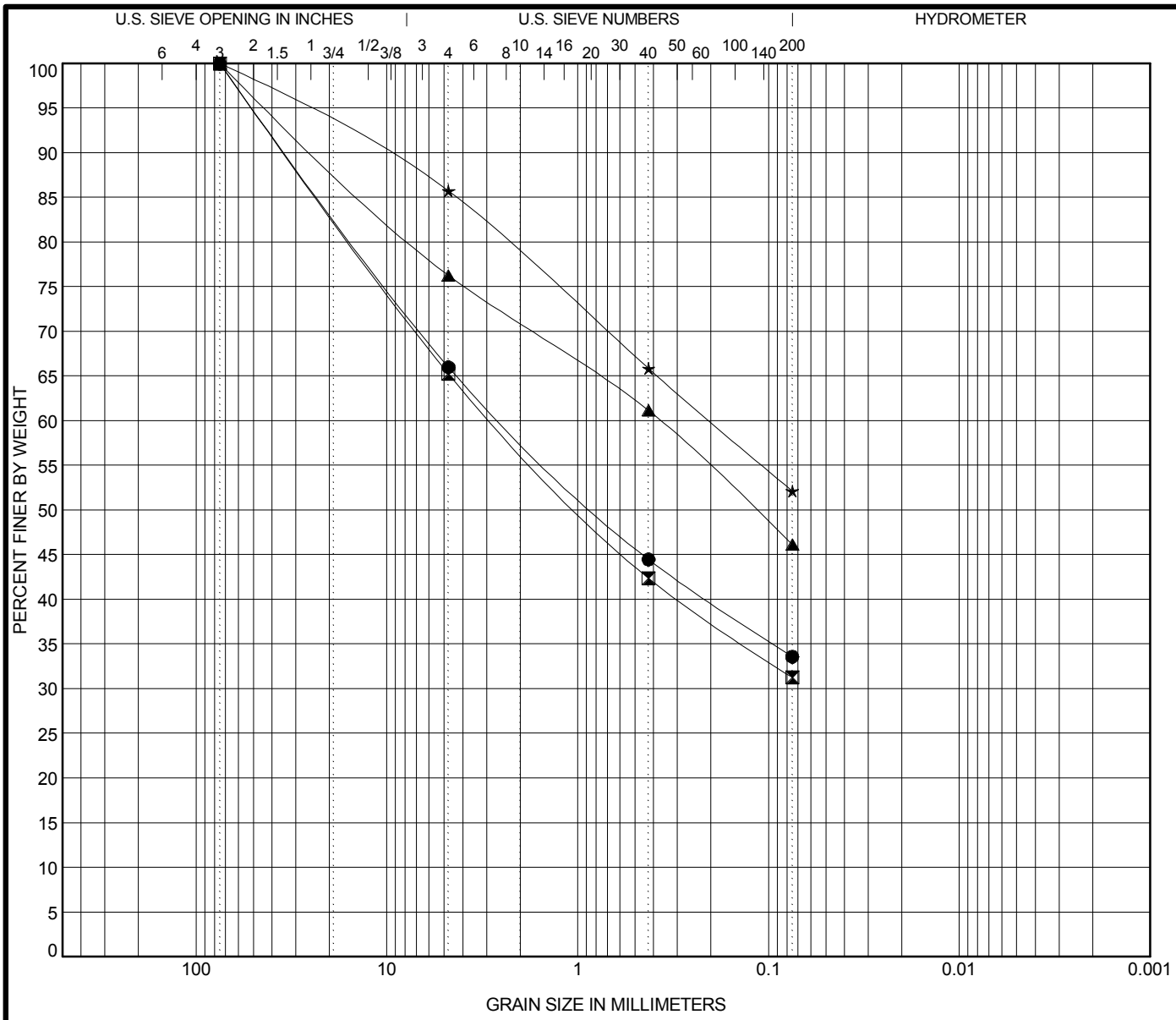
ATTERBERG LIMITS RESULTS

Project: Blanco Road Phase II Improvements

Location: See Boring Location Plan

Job No.: 2017-61

2017-61.GPJ 7/19/17 (ATTERBERG LIMITS SUMMARY GRAPH.US LAB.GDT.LIBRARY2013-01.GLB)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring	Elev	Depth	Classification	LL	PL	PI	Cc	Cu
●	1		1.0	**CLAYEY GRAVEL with SAND (GC)**	48	17	31		
⊠	2		1.0	**CLAYEY GRAVEL with SAND (GC)**	45	18	27		
▲	3		0.8	**CLAYEY SAND with GRAVEL (SC)**	31	15	16		
★	4		1.0	**SANDY FAT CLAY (CH)**	58	21	37		

	Boring	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1	1.0	75	2.424			34.0	32.4	33.6	
⊠	2	1.0	75	2.725			34.7	34.0	31.2	
▲	3	0.8	75	0.372			23.7	30.1	46.1	
★	4	1.0	75	0.203			14.3	33.6	52.1	

Silt and clay fractions were determined using 0.002 mm as the maximum particle size for clay.

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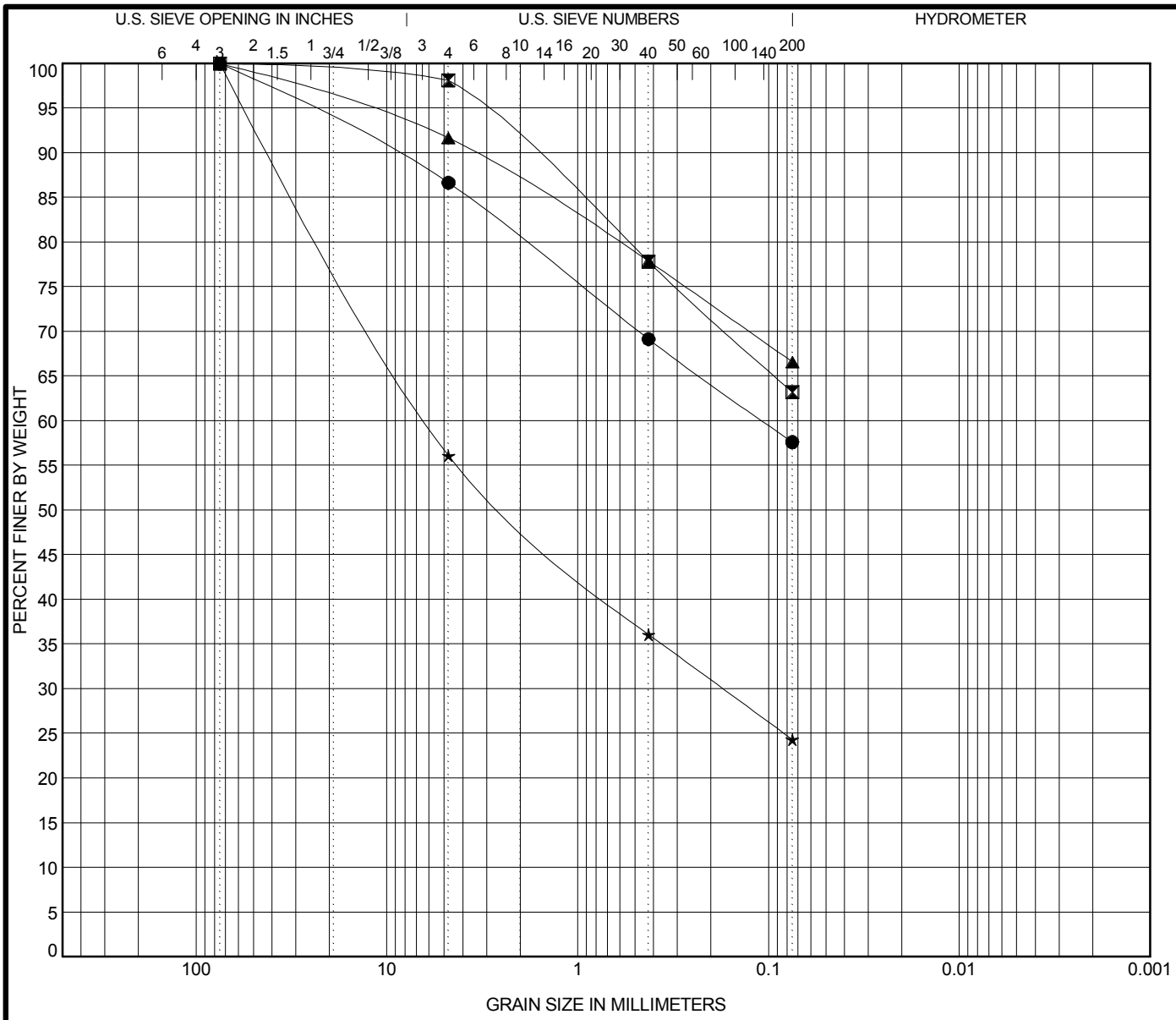
GRAIN SIZE DISTRIBUTION

Project: Blanco Road Phase II Improvements

Location: See Boring Location Plan

Job No.: 2017-61

2017-61.GPJ 7/19/17 (GRAIN SIZE ARIAS.US LAB.GDT.LIBRARY2013-01.GLB)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring	Elev	Depth	Classification	LL	PL	PI	Cc	Cu
●	4		3.0	**SANDY FAT CLAY (CH)**	66	20	46		
⊠	5		1.0	**SANDY FAT CLAY (CH)**	64	21	43		
▲	5		8.0	**SANDY LEAN CLAY (CL)**	38	14	24		
★	6		1.0	**CLAYEY GRAVEL with SAND (GC)**	42	21	21		

	Boring	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	4	3.0	75	0.107			13.3	29.0	57.6	
⊠	5	1.0	75				1.9	34.9	63.2	
▲	5	8.0	75				8.3	25.1	66.6	
★	6	1.0	75	6.071	0.174		43.9	31.8	24.3	

Silt and clay fractions were determined using 0.002 mm as the maximum particle size for clay.

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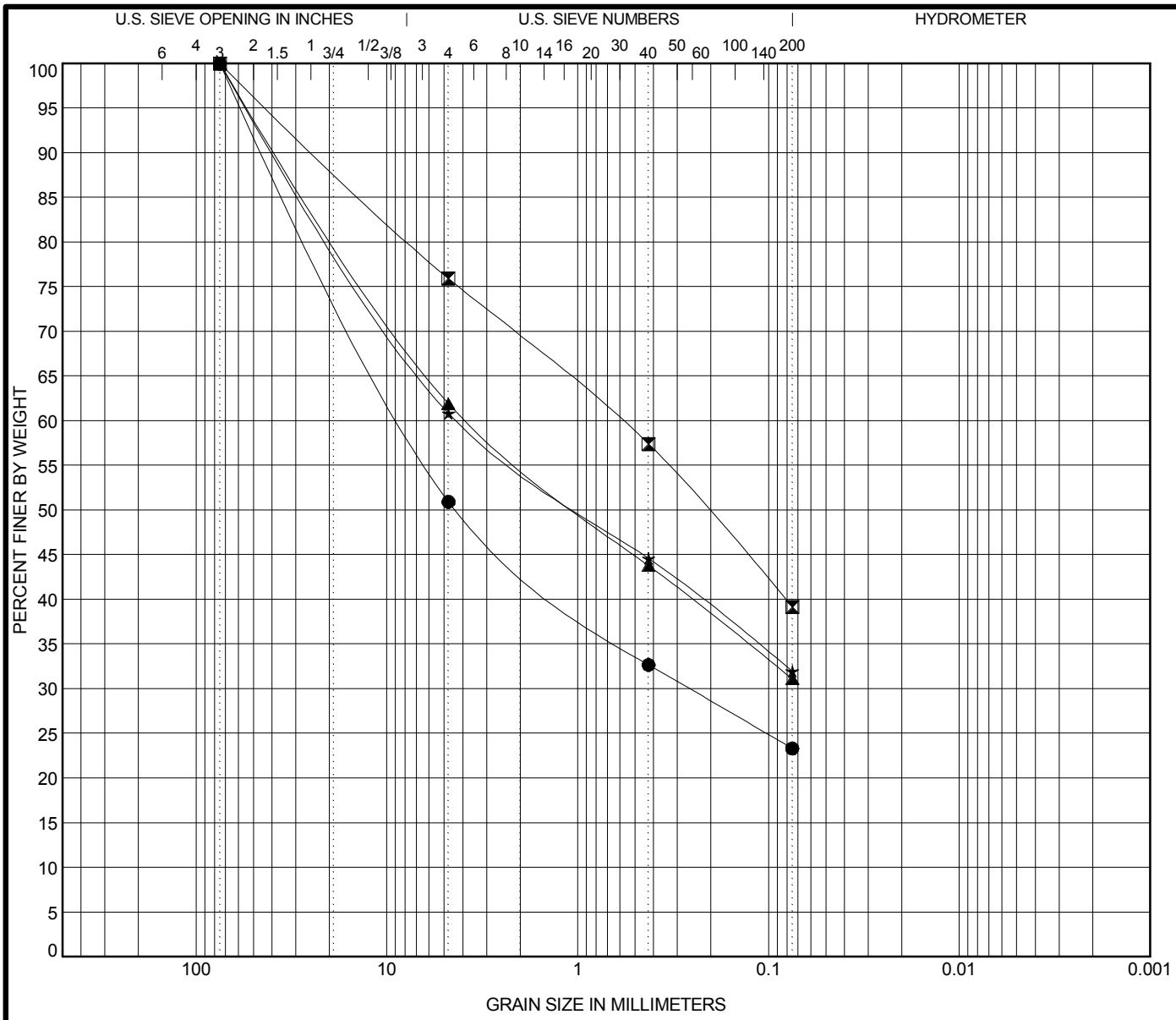
GRAIN SIZE DISTRIBUTION

Project: Blanco Road Phase II Improvements

Location: See Boring Location Plan

Job No.: 2017-61

2017-61.GPJ 7/19/17 (GRAIN SIZE ARIAS.US LAB.GDT.LIBRARY2013-01.GLB)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring	Elev	Depth	Classification	LL	PL	PI	Cc	Cu
●	7		1.0	**CLAYEY GRAVEL with SAND (GC)**	29	15	14		
⊠	7		3.0	**SILTY SAND with GRAVEL (SM)**	35	25	10		
▲	8		1.0	**CLAYEY GRAVEL with SAND (GC)**	29	19	10		
★	9		1.0	**CLAYEY GRAVEL with SAND (GC)**	36	16	20		

	Boring	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	7	1.0	75	7.912	0.259		49.1	27.6	23.3	
⊠	7	3.0	75	0.595			24.1	36.8	39.2	
▲	8	1.0	75	3.683			38.1	30.8	31.1	
★	9	1.0	75	4.195			39.2	28.9	32.0	

Silt and clay fractions were determined using 0.002 mm as the maximum particle size for clay.

142 Chula Vista
San Antonio, Texas 78232
Phone: (210) 308-5884
Fax: (210) 308-5886

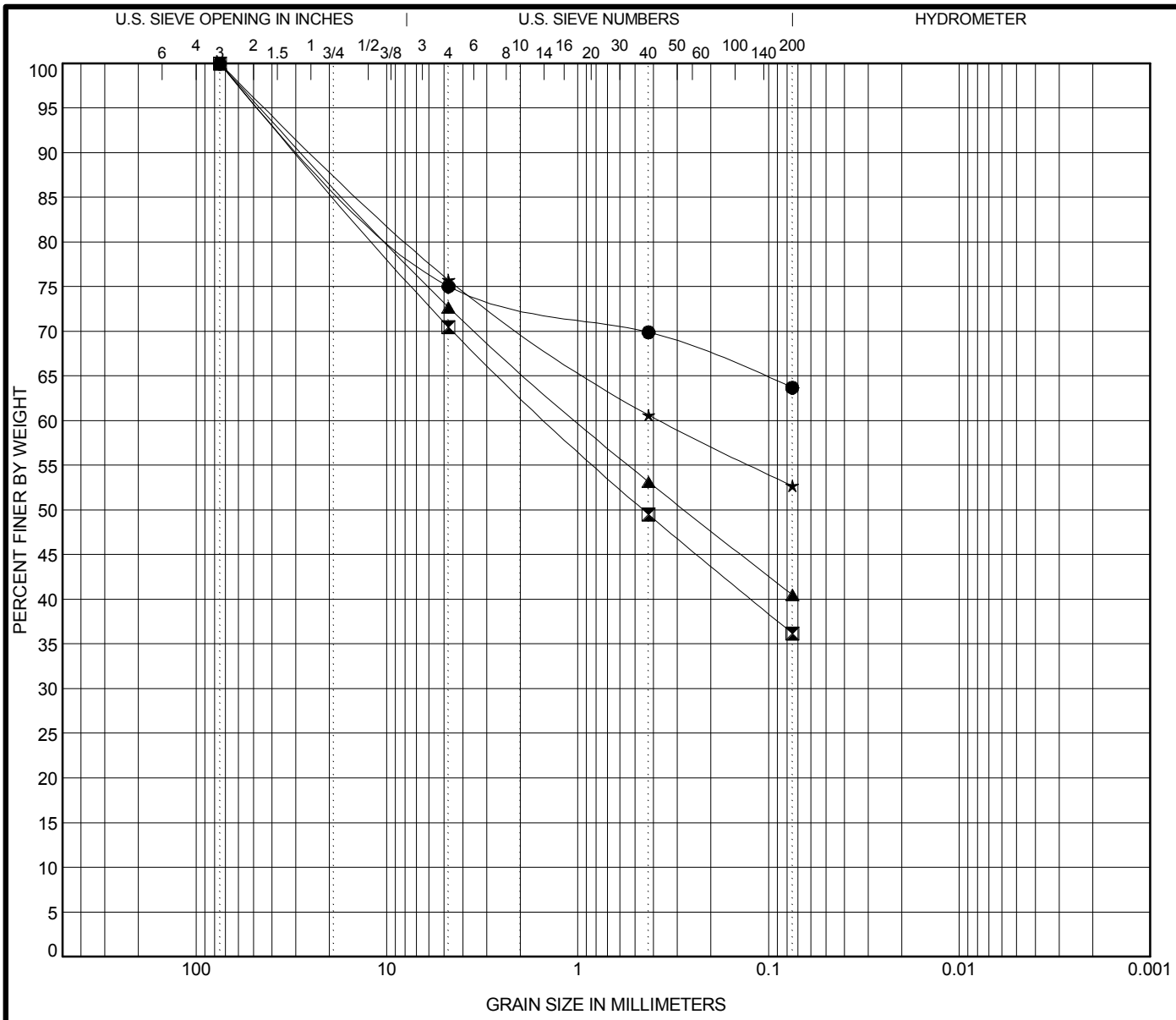
GRAIN SIZE DISTRIBUTION

Project: Blanco Road Phase II Improvements

Location: See Boring Location Plan

Job No.: 2017-61

2017-61.GPJ 7/19/17 (GRAIN SIZE ARIAS.US LAB.GDT.LIBRARY2013-01.GLB)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring	Elev	Depth	Classification	LL	PL	PI	Cc	Cu
●	9		1.5	**GRAVELLY FAT CLAY (CH)**	87	27	60		
⊠	10		1.0	**SILTY, CLAYEY SAND with GRAVEL (SC-SM)**	21	15	6		
▲	11		1.0	**CLAYEY SAND with GRAVEL (SC)**	34	17	17		
★	11		3.5	**GRAVELLY LEAN CLAY with SAND (CL)**	44	15	29		

	Boring	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	9	1.5	75				25.0	11.3	63.7	
⊠	10	1.0	75	1.42			29.5	34.3	36.2	
▲	11	1.0	75	0.989			27.3	32.2	40.5	
★	11	3.5	75	0.37			24.2	23.0	52.7	

Silt and clay fractions were determined using 0.002 mm as the maximum particle size for clay.

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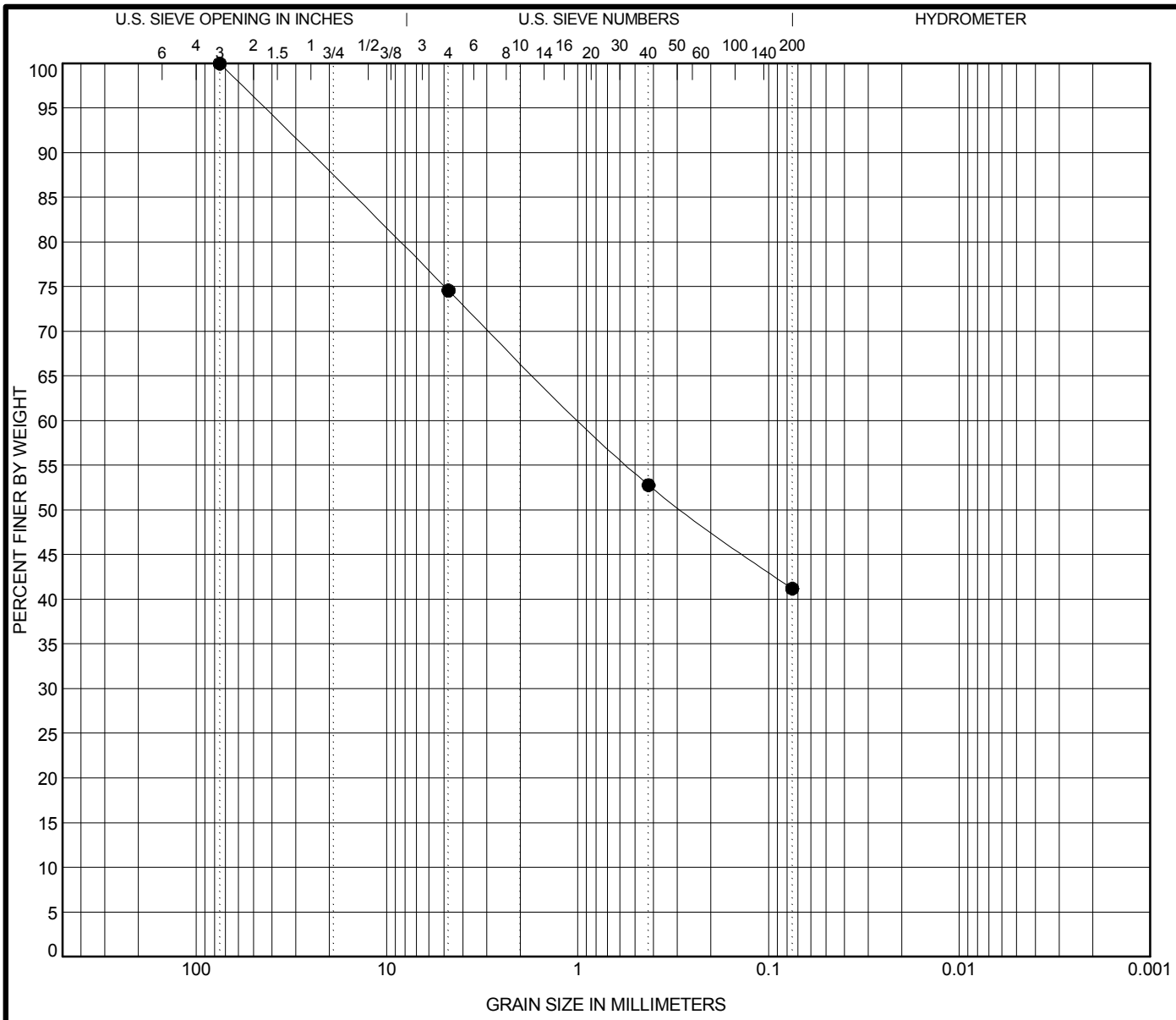
GRAIN SIZE DISTRIBUTION

Project: Blanco Road Phase II Improvements

Location: See Boring Location Plan

Job No.: 2017-61

2017-61.GPJ 7/19/17 (GRAIN SIZE ARIAS.US LAB.GDT.LIBRARY2013-01.GLB)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring	Elev	Depth	Classification	LL	PL	PI	Cc	Cu
●	**12**		**1.0**	**CLAYEY SAND with GRAVEL (SC)**	**33**	**15**	**18**		

	Boring	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**12**	**1.0**	**75**	**0.944**			**25.4**	**33.4**	**41.2**	

Silt and clay fractions were determined using 0.002 mm as the maximum particle size for clay.

142 Chula Vista
San Antonio, Texas 78232
Phone: (210) 308-5884
Fax: (210) 308-5886

GRAIN SIZE DISTRIBUTION

Project: Blanco Road Phase II Improvements

Location: See Boring Location Plan

Job No.: 2017-61

2017-61.GPJ 7/19/17 (GRAIN SIZE ARIAS.US LAB.GDT.LIBRARY2013-01.GLB)

APPENDIX F: FWD DATA AND MODULUS BACK-CALCULATION

FWD TEST FILE NAME:W:\GEO\Open\2017\2017-61 Blanco Road Phase ll Improvements\Pavement Design\BlancoRd_0915-12-585.fwd
ROADWAY ID :SAN ANTONIO
Total Drops : 3 and drop: 2 is selected

TESTED DATE : 170508 NUMBER OF SENSORS: 7 NUMBER OF STATION : 33
START TIME : 09:33 PLATE RADIUS : 5.91 FWD OPERATOR : Tabetha Gar
END TIME : 10:23

No	SENSOR SPACING : STATION LNE	LOAD	0.0 W1	12.0 W2	24.0 W3	36.0 W4	48.0 W5	60.0 W6	72.0 W7	PVMT TEMP	AIR TEMP	SURF TEMP	TEST TIME	COMMENTS
1	0	10987	5.61	4.25	3.07	2.06	1.39	0.96	0.67	0	74	93	09:33	
2	70	10626	7.14	5.60	4.11	2.70	1.68	1.00	0.57	0	74	90	09:35	
3	239	10133	20.33	5.90	2.00	0.88	0.46	0.26	0.17	0	75	91	09:36	
4	256	10275	8.52	3.37	2.01	1.51	1.15	0.89	0.72	0	75	91	09:38	
5	390	10056	9.79	4.24	1.99	1.13	0.79	0.54	0.38	0	75	91	09:40	
6	612	10045	14.67	6.51	3.59	2.35	1.65	1.15	0.83	0	75	93	09:41	
7	1071	9848	16.11	7.29	3.24	1.65	0.93	0.54	0.35	0	75	95	09:43	
8	1664	9738	15.65	8.15	3.93	2.00	1.16	0.69	0.51	0	75	92	09:44	
9	2250	10001	9.11	3.94	2.03	1.53	1.23	0.99	0.81	0	76	95	09:47	
10	2845	9585	16.63	7.80	3.23	1.73	1.21	0.90	0.69	0	75	96	09:48	
11	3445	9936	10.09	4.66	2.04	1.08	0.72	0.56	0.44	0	75	97	09:50	
12	4042	9728	7.89	3.06	1.06	0.36	0.17	0.12	0.13	0	75	97	09:51	Removed for non-decrease
13	4636	9695	23.59	11.72	5.18	2.20	0.96	0.43	0.26	0	76	96	09:53	
14	5244	9651	8.49	3.67	1.76	0.98	0.65	0.46	0.37	0	76	98	09:54	
15	5846	9552	10.31	3.50	1.68	1.22	0.87	0.67	0.51	0	76	96	09:56	
16	6554	9826	7.76	2.55	0.97	0.51	0.35	0.26	0.24	0	76	98	09:58	
17	7148	9618	9.73	3.23	1.48	0.94	0.68	0.50	0.45	0	75	98	09:59	
18	7728	9684	7.19	1.66	0.70	0.43	0.30	0.21	0.19	0	75	97	10:00	
19	8297	9508	10.34	2.80	1.20	0.57	0.28	0.14	0.11	0	75	98	10:01	
20	8895	9333	17.06	7.00	3.29	1.94	1.31	0.93	0.69	0	75	96	10:03	
21	9473	9749	8.51	2.41	1.04	0.72	0.56	0.42	0.35	0	76	96	10:05	
22	10113	9465	21.06	6.07	1.31	0.34	0.19	0.13	0.10	0	75	95	10:07	
23	10651	9465	9.05	2.73	1.09	0.50	0.25	0.15	0.10	0	75	98	10:08	
24	11235	9497	14.40	3.68	1.42	0.94	0.71	0.52	0.43	0	76	98	10:10	
25	11850	9618	12.57	4.05	1.93	1.19	0.84	0.60	0.41	0	76	103	10:11	
26	12413	9596	12.26	3.76	1.20	0.73	0.57	0.48	0.41	0	77	108	10:14	
27	12794	9717	8.39	2.65	1.01	0.66	0.49	0.33	0.26	0	77	105	10:15	
28	13392	9684	9.67	2.00	0.61	0.35	0.24	0.18	0.14	0	76	107	10:16	
29	13991	9596	9.81	2.35	0.55	0.32	0.20	0.13	0.11	0	76	107	10:17	
30	14583	9487	17.39	6.42	1.99	0.92	0.65	0.48	0.43	0	76	107	10:19	
31	15216	9859	11.06	3.65	1.06	0.37	0.17	0.09	0.08	0	76	105	10:20	
32	15696	9903	14.10	4.94	1.50	0.50	0.06	0.00	0.04	0	76	102	10:21	Removed for non-decrease
33	16287	10451	8.96	2.11	0.31	0.13	0.10	0.09	0.09	0	76	103	10:23	

COMMENTED STATION SUMMARY

No	No	STATION	LOAD	W1	W7	TIME	COMMENTS
1	12	4042.000	9728	7.89	0.13	09:51	Removed for non-decrease
2	32	15696.000	9903	14.10	0.04	10:21	Removed for non-decrease

TTI MODULUS ANALYSIS SYSTEM (SUMMARY REPORT) (Version 6.1)

District:
County :
Highway/Road:

	Thickness(in)	MODULI RANGE(psi) Minimum	Maximum	Poisson Ratio Values
Pavement:	3.00	60,000	1,500,000	H1: v = 0.35
Base:	8.00	10,000	150,000	H2: v = 0.35
Subbase:	0.00			H3: v = 0.00
Subgrade:	180.00(User Input)	20,000		H4: v = 0.35

Station	Load (lbs)	Measured Deflection (mils): R1	R2	R3	R4	R5	R6	R7	Calculated Moduli values (ksi): SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	Absolute ERR/Sens	Dpth to Bedrock
390.000	10,055	9.79	4.24	1.99	1.13	0.79	0.54	0.38	685.9	76.2	0.0	49.6	1.16	148.8
612.000	10,044	14.67	6.51	3.59	2.35	1.65	1.15	0.83	250.6	82.4	0.0	27.5	6.60	222.3 *
2845.000	9,584	16.63	7.80	3.23	1.73	1.21	0.90	0.69	812.7	27.0	0.0	29.7	2.01	104.9
3445.000	9,935	10.09	4.66	2.04	1.08	0.72	0.56	0.44	1250.2	50.7	0.0	49.6	3.16	106.4
5244.000	9,650	8.49	3.67	1.76	0.98	0.65	0.46	0.37	793.1	82.6	0.0	55.1	1.80	133.2
5846.000	9,551	10.31	3.50	1.68	1.22	0.87	0.67	0.51	74.2	150.0	0.0	53.3	9.21	300.0 *
6554.000	9,825	7.76	2.55	0.97	0.51	0.35	0.26	0.24	759.2	65.1	0.0	100.9	3.32	74.0
7148.000	9,617	9.73	3.23	1.48	0.94	0.68	0.50	0.45	168.8	93.4	0.0	61.3	3.66	254.8
7728.000	9,683	7.19	1.66	0.70	0.43	0.30	0.21	0.19	121.3	125.5	0.0	127.8	3.19	118.3
8895.000	9,332	17.06	7.00	3.29	1.94	1.31	0.93	0.69	258.9	44.6	0.0	27.5	0.67	193.4
9473.000	9,748	8.51	2.41	1.04	0.72	0.56	0.42	0.35	182.4	99.8	0.0	84.5	9.22	138.9
11235.000	9,496	14.40	3.68	1.42	0.94	0.71	0.52	0.43	143.5	45.4	0.0	61.7	5.61	77.5
11850.000	9,617	12.57	4.05	1.93	1.19	0.84	0.60	0.41	111.6	75.9	0.0	48.4	2.11	300.0
12413.000	9,595	12.26	3.76	1.20	0.73	0.57	0.48	0.41	406.0	39.6	0.0	69.7	6.62	52.6
12794.000	9,716	8.39	2.65	1.01	0.66	0.49	0.33	0.26	393.9	77.0	0.0	86.6	3.85	74.5
13392.000	9,683	9.67	2.00	0.61	0.35	0.24	0.18	0.14	328.4	47.3	0.0	147.4	3.95	50.5
13991.000	9,595	9.81	2.35	0.55	0.32	0.20	0.13	0.11	557.1	35.7	0.0	157.5	9.45	46.4
14583.000	9,486	17.39	6.42	1.99	0.92	0.65	0.48	0.43	664.9	17.0	0.0	49.9	4.79	51.0
Mean:		11.37	4.01	1.69	1.01	0.71	0.52	0.41	442.4	68.6	0.0	71.5	4.46	95.3
Std. Dev:		3.32	1.81	0.91	0.55	0.38	0.27	0.19	325.6	34.5	0.0	39.1	2.77	54.1
Var Coeff(%):		29.22	45.23	53.81	54.22	53.10	51.84	46.71	73.6	50.3	0.0	54.6	62.04	56.8

TTI MODULUS ANALYSIS SYSTEM (SUMMARY REPORT) (Version 6.1)

District:
County :
Highway/Road:

	Thickness(in)	MODULI RANGE(psi) Minimum	Maximum	Poisson Ratio Values
Pavement:	1.50	750,000	750,000	H1: v = 0.35
Base:	7.50	10,000	150,000	H2: v = 0.35
Subbase:	0.00			H3: v = 0.00
Subgrade:	75.00(User Input)	20,000		H4: v = 0.35

Station	Load (lbs)	Measured Deflection (mils): R1	R2	R3	R4	R5	R6	R7	Calculated Moduli values (ksi): SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	Absolute ERR/Sens	Dpth to Bedrock
239.000	10,132	20.33	5.90	2.00	0.88	0.46	0.26	0.17	750.0	36.4	0.0	35.5	5.33	54.3
1071.000	9,847	16.11	7.29	3.24	1.65	0.93	0.54	0.35	750.0	85.6	0.0	22.3	4.78	82.6
1664.000	9,737	15.65	8.15	3.93	2.00	1.16	0.69	0.51	750.0	111.3	0.0	18.3	5.65	83.2
8297.000	9,507	10.34	2.80	1.20	0.57	0.28	0.14	0.11	750.0	78.3	0.0	63.0	5.33	69.3
10651.000	9,464	9.05	2.73	1.09	0.50	0.25	0.15	0.10	750.0	96.0	0.0	66.7	2.96	65.5
Mean:		14.30	5.37	2.29	1.12	0.62	0.36	0.25	750.0	81.5	0.0	41.2	4.81	69.2
Std. Dev:		4.60	2.51	1.26	0.67	0.41	0.25	0.18	0.0	28.1	0.0	22.6	1.08	11.3
Var Coeff(%):		32.19	46.77	54.77	59.89	66.23	69.34	71.59	0.0	34.4	0.0	54.8	22.43	16.3

TTI MODULUS ANALYSIS SYSTEM (SUMMARY REPORT) (Version 6.1)

District:
County :
Highway/Road:

	Thickness(in)	MODULI RANGE(psi) Minimum	Maximum	Poisson Ratio Values
Pavement:	11.00	340,000	1,500,000	H1: v = 0.35
Base:	0.00			H2: v = 0.00
Subbase:	0.00			H3: v = 0.00
Subgrade:	126.91(User Input)	15,000		H4: v = 0.40

Station	Load (lbs)	Measured Deflection (mils): R1	R2	R3	R4	R5	R6	R7	Calculated Moduli values (ksi): SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	Absolute ERR/Sens	Dpth to Bedrock
0.000	10,986	5.61	4.25	3.07	2.06	1.39	0.96	0.67	1005.3	0.0	0.0	28.0	1.45	96.4
70.000	10,625	7.14	5.60	4.11	2.70	1.68	1.00	0.57	687.7	0.0	0.0	22.0	4.76	75.1
Mean:		6.38	4.93	3.59	2.38	1.54	0.98	0.62	846.5	0.0	0.0	25.0	3.10	84.4
Std. Dev:		1.08	0.95	0.74	0.45	0.21	0.03	0.07	224.6	0.0	0.0	4.3	2.33	10.5
Var Coeff(%):		16.97	19.38	20.48	19.01	13.36	2.89	11.40	26.5	0.0	0.0	17.0	75.19	12.4

APPENDIX G: TRAFFIC DATA

Texas Department of Transportation

MEMO

June 2, 2017

To: Mario Jorge, P.E., District Engineer
Attention: Jonathan Bean, P.E., Director of TPD

Through: William E. Knowles, P.E.
Traffic Analysis Section Director, TPP

From: Bruce R. Uphaus
Planner, TPP

Subject: Traffic Data
CSJ: 0915-12-585
Blanco Road:
From W. Oaks Estate
To Approx. 4.0 Miles North (North Leg of Borgfeld Rd.)

Bexar County

Attached are tabulations showing traffic analysis for highway design for the 2021 to 2041 twenty year period and 2021 to 2051 thirty year period for the described limits of the route. Included is a tabulation showing data for use in air and noise analysis.

Please refer to your original memorandum dated April 27, 2017.

If you have any questions or need additional information, please contact Bruce R. Uphaus at (512) 486-5104.

Attachment

CC: Richard De La Cruz, P.E., Transportation Engineer, San Antonio District Design Division

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

San Antonio District

June 1, 2017

Description of Location	Average Daily Traffic 2021	Average Daily Traffic 2041	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2021 to 2041) Flexible Pavement	S N	Rigid Pavement	SLAB
Blanco Road From W. Oaks Estate To Approx. 4.0 Miles North (North of Borgfeld Rd) Bexar County	7,700	11,900	64 - 36	12.8	6.7	5.0	10,900	30	1,401,000	3	1,610,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	93.3	95.0
Medium Duty	4.8	3.6
Heavy Duty	1.9	1.4

Description of Location	Average Daily Traffic 2021	Average Daily Traffic 2051	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2021 to 2051) Flexible Pavement	S N	Rigid Pavement	SLAB
Blanco Road From W. Oaks Estate To Approx. 4.0 Miles North (North of Borgfeld Rd) Bexar County	7,700	13,100	64 - 36	12.8	6.7	5.0	10,900	30	2,230,000	3	2,562,000	8"

NOT INTENDED FOR CONSTRUCTION
BIDDING OR PERMIT PURPOSES
William Erick Knowles, P.E.
Serial Number 84704

APPENDIX H: FPS OPTIONS 1 THRU 3 – LIMESTONE OR CLAYEY GRAVEL SUBGRADE CONDITIONS

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
001	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/18/2017**	**1**

COMMENTS ABOUT THIS PROBLEM

West Oaks Estate to Borgfeld Road

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	8.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	8.0
DESIGN CONFIDENCE LEVEL (90.0%)	B
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.5
FINAL SERVICEABILITY INDEX P2	2.5
SERVICEABILITY INDEX P1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS by COUNTY (ksi)	18.30
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (8 DESIGNS/PAGE)	3
MAX FUNDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	69.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	7700.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	11900.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	1.401
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION)(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	5.0
PERCENT TRUCKS IN ADT	6.7

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 FLEXIBLE PAVEMENT SYSTEM Release:6-1-2012

PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
001	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/18/2017**	**2**

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	2.0
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.98
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	200.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	50.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.00
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER	CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	A	ASPH CONC PVMT	115.00	500000.	0.35	3.00	7.50	30.00
2	B	FLEXIBLE BASE	37.00	65000.	0.35	9.00	12.00	75.00
3	C	SUBGRADE(200)	2.00	18300.	0.40	83.20	83.20	90.00

NOTE -- THE CALCULATED BASE VALUE WAS OVER-WRITTEN BY THE USER FOR PAVEMENT DESIGN TYPE #1

NOTE -- THE CALCULATED BASE VALUE WAS OVER-WRITTEN BY THE USER FOR PAVEMENT DESIGN TYPE #1

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

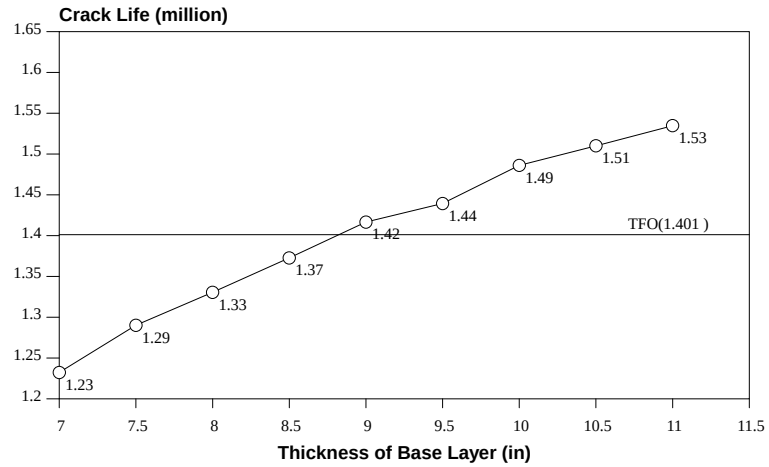
PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
001	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/18/2017**	**3**

C. LEVEL B SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST
1

MATERIAL ARRANGEMENT	AB
INIT. CONST. COST	18.83
OVERLAY CONST. COST	0.00
USER COST	0.00
ROUTINE MAINT. COST	0.91
SALVAGE VALUE	-2.54
TOTAL COST	17.21
NUMBER OF LAYERS	2
LAYER DEPTH (INCHES)	
D(1)	3.00
D(2)	9.00
NO.OF PERF.PERIODS	1
PERF. TIME (YEARS)	
T(1)	31.
OVERLAY POLICY(INCH) (INCLUDING LEVEL-UP)	

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS 70

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
AC	3.00	500.00	0.35	ASPH CONC PVMT
Base	9.00	65.00	0.35	FLEXIBLE BASE
Subgrade	83.20	18.30	0.40	SUBGRADE(200)



Fatigue Crack Model:

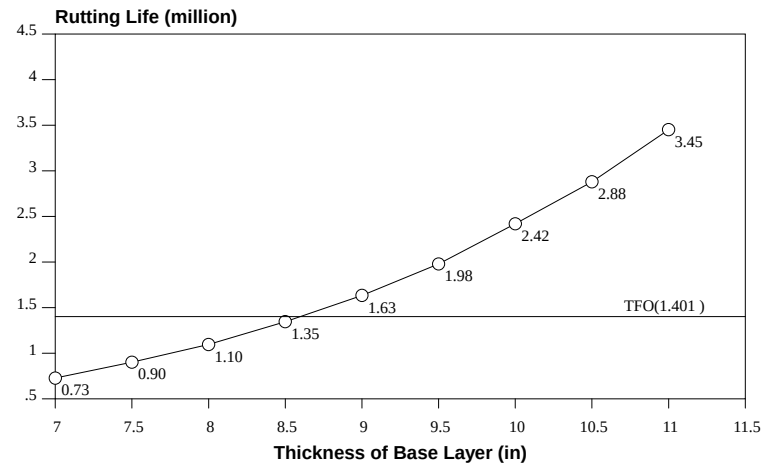
$$N_f = f_1 (\varepsilon_t)^{-f_2} (E_1)^{-f_3}$$

f_1 =7.96E-02
f_2 = 3.291
f_3 = .854

Rutting Model:

$$N_d = f_4 (\varepsilon_v)^{-f_5}$$

f_4 =1.37E-09
f_5 = 4.477



TFO(Traffic to 1st Overlay): 1.40 (million)

Crack Life: 1.42 (million) ε_τ = 208.00 ($\mu\varepsilon$)

Rut Life: 1.63 (million) ε_v = -429.00 ($\mu\varepsilon$)

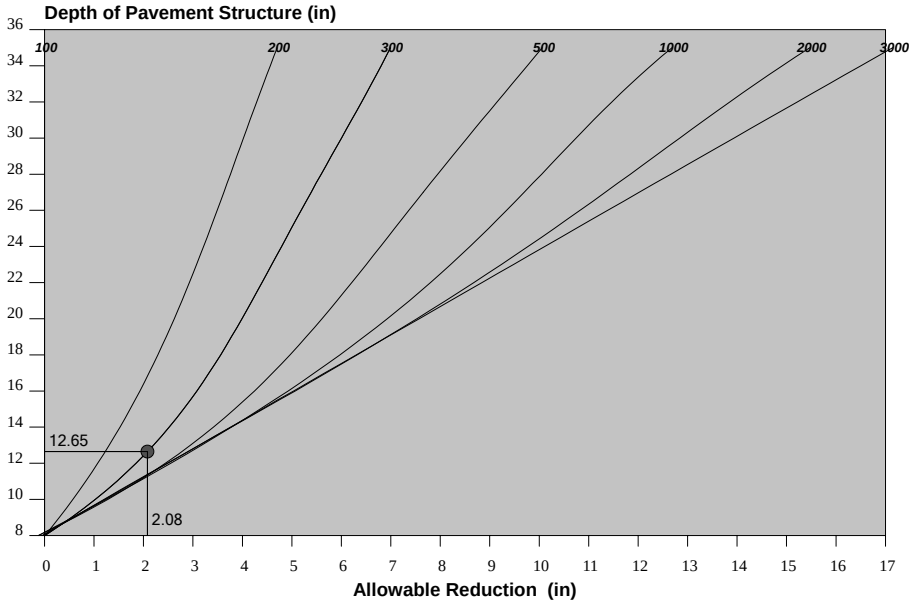
Traffic to 1st Overlay is calculated by analysis period: 20years and 18 kips:1.40millions.
Also the start ADT:7700.0 and ending ADT:11900.0

Mechanistic Check Conclusion:

The design is OK !

FPS 21 Mechanistic Design Check Output (FPS21-1.3Release:6-1-2012)			
Highway	Blanco Rd.	Problem	001
C-S-J	0915 - 12 - 585	Date	7/18/2017
District	San Antonio	County	BEXAR
Design Type:Asphalt concrete + Flexible Base over Subgrade			

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
ASPH CONC PVMT	3.00	500.00	0.35	ASPH CONC PVMT
FLEXIBLE BASE	9.00	65.00	0.35	FLEXIBLE BASE
SUBGRADE(200)	83.20	18.30	0.40	SUBGRADE(200)
Bed Rock		1830.00	0.15	Bed Rock



Thickness Reduction Chart for Stabilized Layers

INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	10900.0 (lb)
Percentage of TandemAxles	30.0 (%)
Modified Cohesionmeter Value	300.0
Design Wheel Load	10900.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	4.10

User Input TTC based on historical TEX-117-E

RESULT:

Triaxial Thickness Required	12.6 (in)
The FPS Design Thickness	12.0 (in)
Allowable Thickness Reduction	2.1 (in)
Modified Triaxial Thickness	10.6 (in)

TRIAXIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output		(FPS21-1.3Release:6-1-2012)	
Highway	Blanco Rd.	Problem	001
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR

Design Type:Asphalt concrete + Flexible Base over Subgrade

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
002	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**1**

COMMENTS ABOUT THIS PROBLEM

West Oaks Estate to Borgfeld Road

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	8.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	8.0
DESIGN CONFIDENCE LEVEL (90.0%)	B
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.8
FINAL SERVICEABILITY INDEX P2	2.5
SERVICEABILITY INDEX P1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS by COUNTY (ksi)	18.30
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (8 DESIGNS/PAGE)	3
MAX FUNDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	69.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	7700.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	11900.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	1.401
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION)(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	5.0
PERCENT TRUCKS IN ADT	6.7

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 FLEXIBLE PAVEMENT SYSTEM Release:6-1-2012

PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
002	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**2**

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	2.0
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.98
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	200.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	50.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.00
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER	CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	A	ASPH CONC PVMT	115.00	500000.	0.35	4.50	8.00	30.00
2	B	FLEXIBLE BASE	37.00	65000.	0.35	6.00	12.00	75.00
3	C	SUBGRADE(200)	2.00	18300.	0.40	83.20	83.20	90.00

NOTE -- THE CALCULATED BASE VALUE WAS OVER-WRITTEN BY THE USER FOR PAVEMENT DESIGN TYPE #1

NOTE -- THE CALCULATED BASE VALUE WAS OVER-WRITTEN BY THE USER FOR PAVEMENT DESIGN TYPE #1

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 2 -- ACP + FLEX BASE OVER SUBGRADE

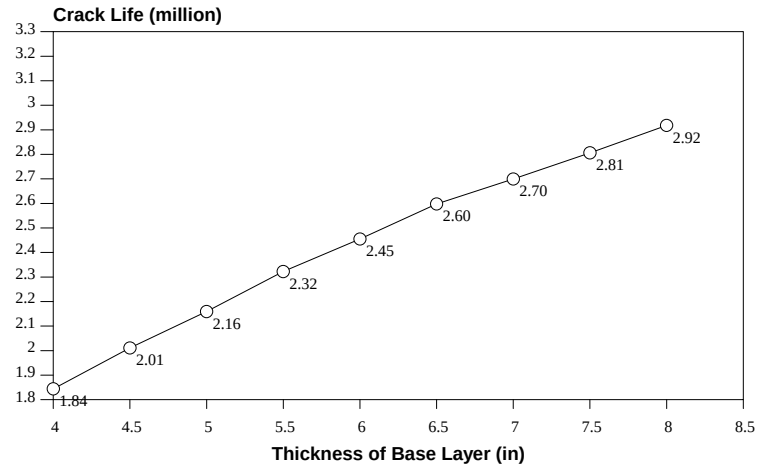
PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
002	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**3**

C. LEVEL B SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST
1

MATERIAL ARRANGEMENT	AB
INIT. CONST. COST	20.54
OVERLAY CONST. COST	0.00
USER COST	0.00
ROUTINE MAINT. COST	0.91
SALVAGE VALUE	-2.31
TOTAL COST	19.14
NUMBER OF LAYERS	2
LAYER DEPTH (INCHES)	
D(1)	4.50
D(2)	6.00
NO.OF PERF.PERIODS	1
PERF. TIME (YEARS)	
T(1)	40.
OVERLAY POLICY(INCH) (INCLUDING LEVEL-UP)	

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS 104

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
AC	4.50	500.00	0.35	ASPH CONC PVMT
Base	6.00	65.00	0.35	FLEXIBLE BASE
Subgrade	83.20	18.30	0.40	SUBGRADE(200)



Fatigue Crack Model:

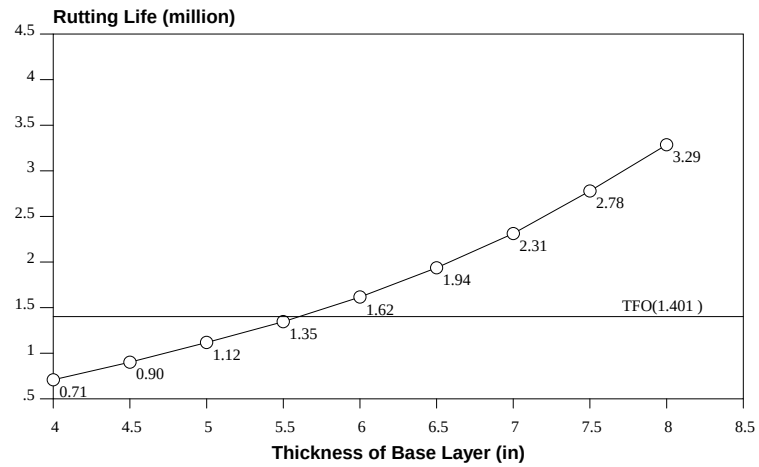
$$N_f = f_1 (\varepsilon_t)^{-f_2} (E_1)^{-f_3}$$

f_1 =7.96E-02
f_2 = 3.291
f_3 = .854

Rutting Model:

$$N_d = f_4 (\varepsilon_v)^{-f_5}$$

f_4 =1.37E-09
f_5 = 4.477



TFO(Traffic to 1st Overlay): 1.40 (million)

Crack Life: 2.45 (million) ε_τ = 176.00 (με)

Rut Life: 1.62 (million) ε_v = -430.00 (με)

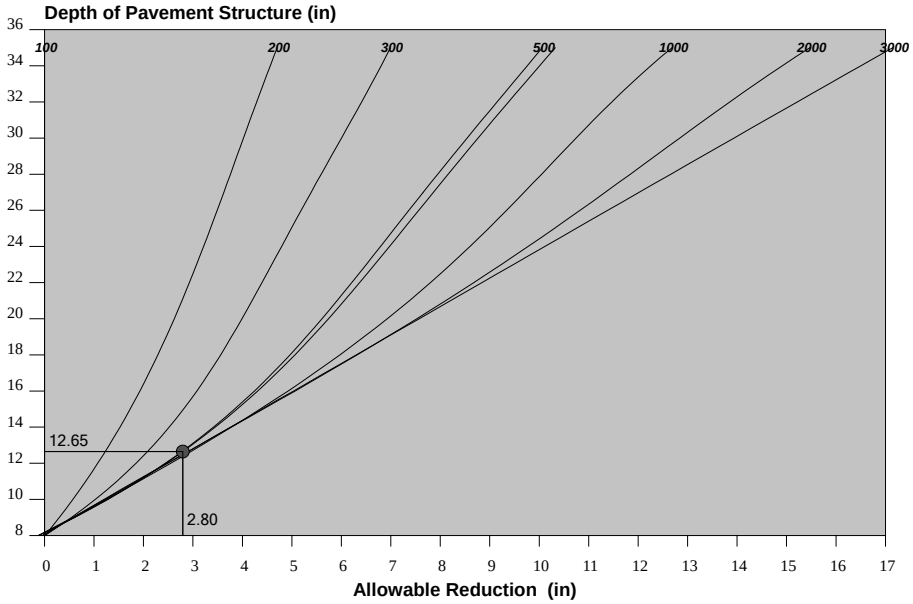
Traffic to 1st Overlay is calculated by analysis period: 20years and 18 kips:1.40millions.
Also the start ADT:7700.0 and ending ADT:11900.0

Mechanistic Check Conclusion:

The design is OK !

FPS 21 Mechanistic Design Check Output (FPS21-1.3Release:6-1-2012)			
Highway	Blanco Rd.	Problem	002
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR
Design Type:Asphalt concrete + Flexible Base over Subgrade			

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
ASPH CONC PVMT	4.50	500.00	0.35	ASPH CONC PVMT
FLEXIBLE BASE	6.00	65.00	0.35	FLEXIBLE BASE
SUBGRADE(200)	83.20	18.30	0.40	SUBGRADE(200)
Bed Rock		1830.00	0.15	Bed Rock



Thickness Reduction Chart for Stabilized Layers

INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	10900.0 (lb)
Percentage of TandemAxles	30.0 (%)
Modified Cohesionmeter Value	550.0
Design Wheel Load	10900.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	4.10

User Input TTC based on historical TEX-117-E

RESULT:

Triaxial Thickness Required	12.6 (in)
The FPS Design Thickness	10.5 (in)
Allowable Thickness Reduction	2.8 (in)
Modified Triaxial Thickness	9.9 (in)

TRIAXIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output		**(FPS21-1.3Release:6-1-2012)**	
Highway	Blanco Rd.	Problem	002
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR
Design Type:Asphalt concrete + Flexible Base over Subgrade			

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 3 -- ACP + ASPH STAB BASE OVER SUBGRADE

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
003	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**1**

COMMENTS ABOUT THIS PROBLEM

West Oaks Estate to Borgfeld Road

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	8.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	8.0
DESIGN CONFIDENCE LEVEL (90.0%)	B
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.8
FINAL SERVICEABILITY INDEX P2	2.5
SERVICEABILITY INDEX P1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS by COUNTY (ksi)	18.30
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (8 DESIGNS/PAGE)	3
MAX FUNDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	69.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	7700.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	11900.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	1.401
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION)(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	5.0
PERCENT TRUCKS IN ADT	6.7

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 FLEXIBLE PAVEMENT SYSTEM Release:6-1-2012

PAVEMENT DESIGN TYPE # 3 -- ACP + ASPH STAB BASE OVER SUBGRADE

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
003	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**2**

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	2.0
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.98
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	200.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	50.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.00
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER	CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	A	Ty C HMA	115.00	650000.	0.35	2.00	2.00	90.00
2	B	Ty B HMA	115.00	650000.	0.35	8.00	12.00	90.00
3	C	SUBGRADE(200)	2.00	18300.	0.40	83.20	83.20	90.00

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 3 -- ACP + ASPH STAB BASE OVER SUBGRADE

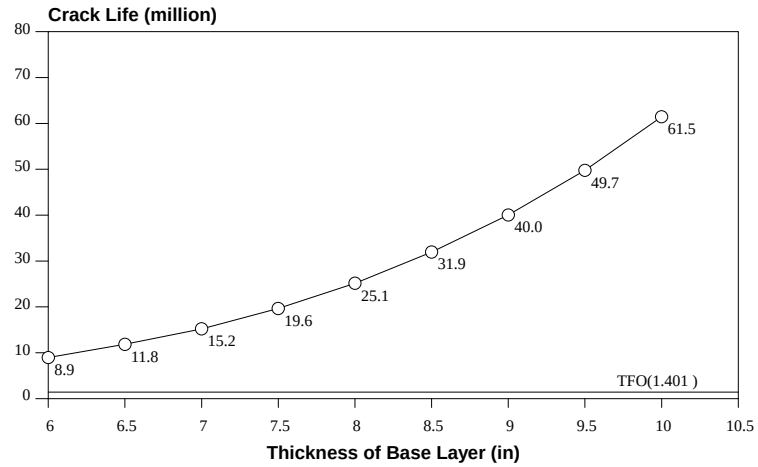
PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
003	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**3**

C. LEVEL B SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST
1

MATERIAL ARRANGEMENT	AB
INIT. CONST. COST	31.94
OVERLAY CONST. COST	0.00
USER COST	0.00
ROUTINE MAINT. COST	0.91
SALVAGE VALUE	-7.43
TOTAL COST	25.43
NUMBER OF LAYERS	2
LAYER DEPTH (INCHES)	
D(1)	2.00
D(2)	8.00
NO.OF PERF.PERIODS	1
PERF. TIME (YEARS)	
T(1)	40.
OVERLAY POLICY(INCH) (INCLUDING LEVEL-UP)	

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS 9

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
AC	2.00	650.00	0.35	Ty C HMA
Base	8.00	650.00	0.35	Ty B HMA
Subgrade	83.20	18.30	0.40	SUBGRADE(200)



Fatigue Crack Model:

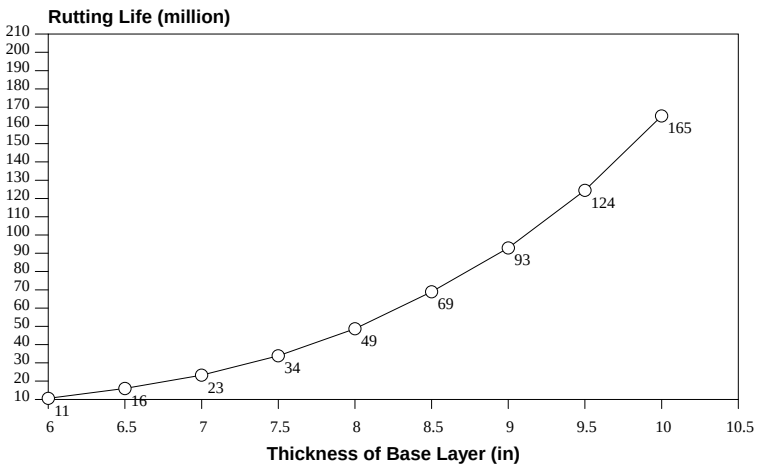
$$N_f = f_1 (\varepsilon_t)^{-f_2} (E_1)^{-f_3}$$

f_1 =7.96E-02
f_2 = 3.291
f_3 = .854

Rutting Model:

$$N_d = f_4 (\varepsilon_v)^{-f_5}$$

f_4 =1.37E-09
f_5 = 4.477



TFO(Traffic to 1st Overlay): 1.40 (million)

Crack Life: 25.12 (million) ε_τ = 81.10 ($\mu\varepsilon$)

Rut Life: 48.68 (million) ε_v = -201.00 ($\mu\varepsilon$)

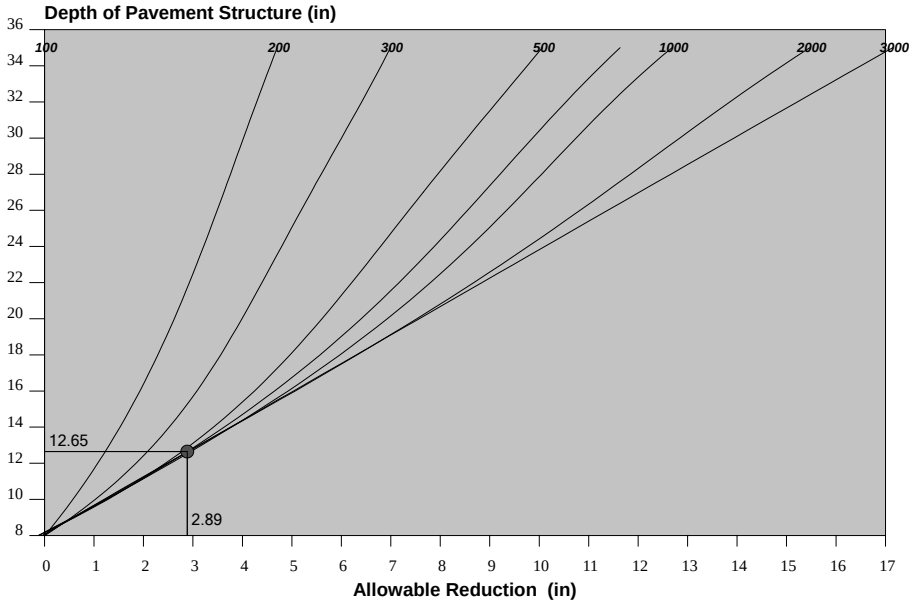
Traffic to 1st Overlay is calculated by analysis period: 20years and 18 kips:1.40millions.
Also the start ADT:7700.0 and ending ADT:11900.0

Mechanistic Check Conclusion:

The design is OK !

FPS 21 Mechanistic Design Check Output (FPS21-1.3Release:6-1-2012)			
Highway	Blanco Rd.	Problem	003
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR
Design Type:Asphalt concrete + Asphalt Stabilized Base over Subgrade			

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
Ty C HMA	2.00	650.00	0.35	Ty C HMA
Ty B HMA	8.00	650.00	0.35	Ty B HMA
SUBGRADE(200)	83.20	18.30	0.40	SUBGRADE(200)
Bed Rock		1830.00	0.15	Bed Rock



Thickness Reduction Chart for Stabilized Layers

INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	10900.0 (lb)
Percentage of TandemAxles	30.0 (%)
Modified Cohesionmeter Value	800.0
Design Wheel Load	10900.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	4.10

User Input TTC based on historical TEX-117-E

RESULT:

Triaxial Thickness Required	12.6 (in)
The FPS Design Thickness	10.0 (in)
Allowable Thickness Reduction	2.9 (in)
Modified Triaxial Thickness	9.8 (in)

TRIAXIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output		(FPS21-1.3Release:6-1-2012)	
Highway	Blanco Rd.	Problem	003
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR
Design Type:Asphalt concrete + Asphalt Stabilized Base over Subgrade			

APPENDIX I: FPS OPTIONS 4 AND 5 – CLAY “CH” SUBGRADE CONDITIONS

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
004	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**1**

COMMENTS ABOUT THIS PROBLEM

West Oaks Estate to Borgfeld Road

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	8.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	8.0
DESIGN CONFIDENCE LEVEL (90.0%)	B
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.8
FINAL SERVICEABILITY INDEX P2	2.5
SERVICEABILITY INDEX P1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS by COUNTY (ksi)	7.00
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (8 DESIGNS/PAGE)	3
MAX FUNDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	69.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	7700.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	11900.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	1.401
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION)(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	5.0
PERCENT TRUCKS IN ADT	6.7

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
004	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**2**

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	2.0
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.98
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	200.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	50.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.00
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER	CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	C	Ty C HMA	115.00	500000.	0.35	2.00	2.00	90.00
2	C	Ty B HMA	115.00	500000.	0.35	5.00	12.00	90.00
3	R	FLEXIBLE BASE	37.00	40000.	0.35	8.00	12.00	70.00
4	T	SUBGRADE	2.00	7000.	0.40	83.20	83.20	90.00

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

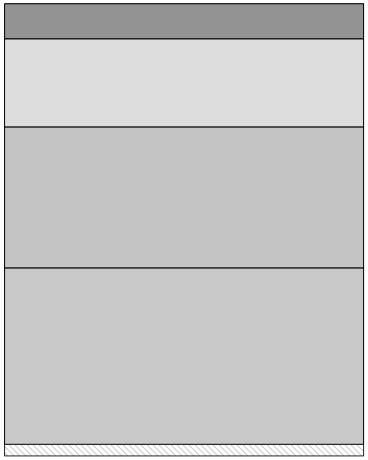
PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
004	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/19/2017**	**3**

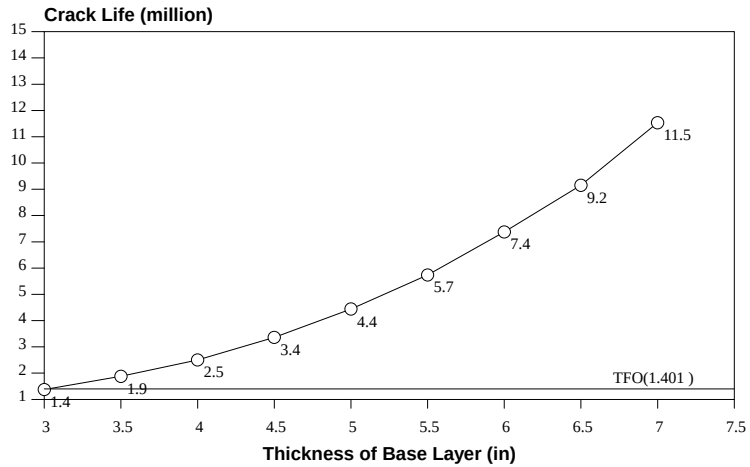
C. LEVEL B SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST
1

MATERIAL ARRANGEMENT	CCR
INIT. CONST. COST	30.58
OVERLAY CONST. COST	0.00
USER COST	0.00
ROUTINE MAINT. COST	0.91
SALVAGE VALUE	-6.69
TOTAL COST	24.81
NUMBER OF LAYERS	3
LAYER DEPTH (INCHES)	
D(1)	2.00
D(2)	5.00
D(3)	8.00
NO.OF PERF.PERIODS	1
PERF. TIME (YEARS)	
T(1)	40.
OVERLAY POLICY(INCH) (INCLUDING LEVEL-UP)	

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS 135



Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
2.00	500.00	0.35	Ty C HMA
5.00	500.00	0.35	Ty B HMA
8.00	40.00	0.35	FLEXIBLE BASE
83.20	7.00	0.40	SUBGRADE



Fatigue Crack Model:

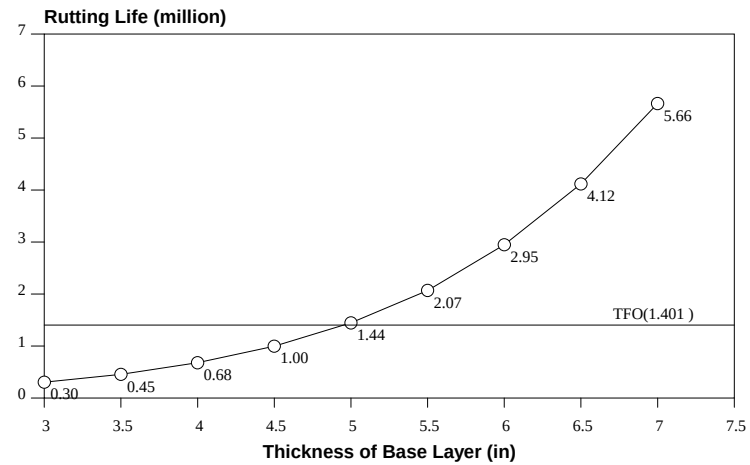
$$N_f = f_1 (\varepsilon_t)^{-f_2} (E_1)^{-f_3}$$

f_1 =7.96E-02
f_2 = 3.291
f_3 = .854

Rutting Model:

$$N_d = f_4 (\varepsilon_v)^{-f_5}$$

f_4 =1.37E-09
f_5 = 4.477



TFO(Traffic to 1st Overlay): 1.40 (million)

Crack Life: 4.44 (million) ε_τ = 147.00 (με)

Rut Life: 1.44 (million) ε_v = -441.00 (με)

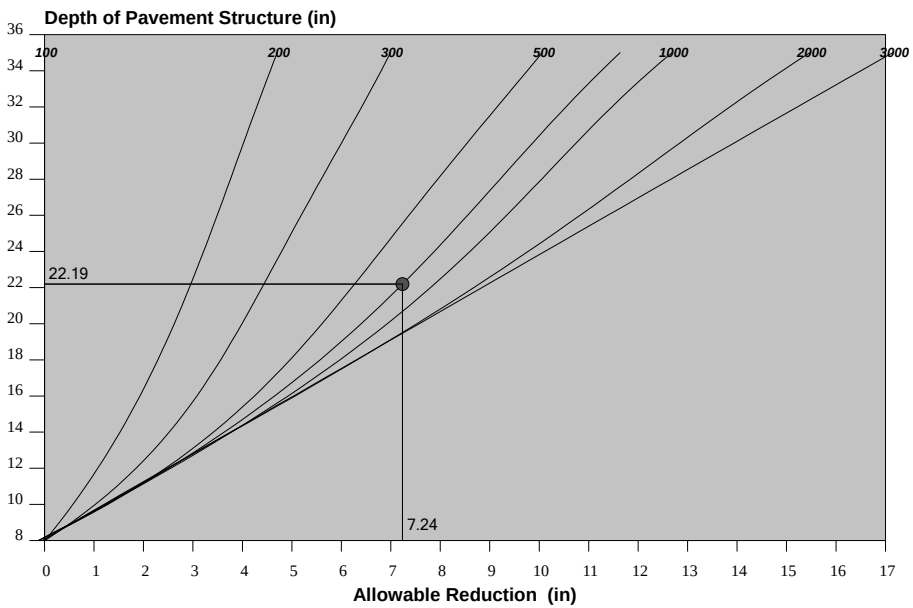
Traffic to 1st Overlay is calculated by analysis period: 20years and 18 kips:1.40millions.
Also the start ADT:7700.0 and ending ADT:11900.0

Mechanistic Check Conclusion:

The design is OK !

FPS 21 Mechanistic Design Check Output (FPS21-1.3Release:6-1-2012)			
Highway	Blanco Rd.	Problem	004
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR
Design Type:User Defined Pavement Design			

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
Ty C HMA	2.00	500.00	0.35	Ty C HMA
Ty B HMA	5.00	500.00	0.35	Ty B HMA
FLEXIBLE BASE	8.00	40.00	0.35	FLEXIBLE BASE
SUBGRADE	83.20	7.00	0.40	SUBGRADE
Bed Rock		700.00	0.15	Bed Rock



Thickness Reduction Chart for Stabilized Layers

INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	10900.0 (lb)
Percentage of TandemAxles	30.0 (%)
Modified Cohesionmeter Value	800.0
Design Wheel Load	10900.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	5.60

User Input TTC based on historical TEX-117-E

RESULT:

Triaxial Thickness Required	22.2 (in)
The FPS Design Thickness	15.0 (in)
Allowable Thickness Reduction	7.2 (in)
Modified Triaxial Thickness	15.0 (in)

TRIAXIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output		(FPS21-1.3Release:6-1-2012)	
Highway	Blanco Rd.	Problem	004
C-S-J	0915 - 12 - 585	Date	7/19/2017
District	San Antonio	County	BEXAR

Design Type:User Defined Pavement Design

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
005	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/18/2017**	**1**

COMMENTS ABOUT THIS PROBLEM

West Oaks Estate to Borgfeld Road

BASIC DESIGN CRITERIA

LENGTH OF THE ANALYSIS PERIOD (YEARS)	20.0
MINIMUM TIME TO FIRST OVERLAY (YEARS)	8.0
MINIMUM TIME BETWEEN OVERLAYS (YEARS)	8.0
DESIGN CONFIDENCE LEVEL (90.0%)	B
SERVICEABILITY INDEX OF THE INITIAL STRUCTURE	4.8
FINAL SERVICEABILITY INDEX P2	2.5
SERVICEABILITY INDEX P1 AFTER AN OVERLAY	4.2
DISTRICT TEMPERATURE CONSTANT	31.0
SUBGRADE ELASTIC MODULUS by COUNTY (ksi)	7.00
INTEREST RATE OR TIME VALUE OF MONEY (PERCENT)	7.0

PROGRAM CONTROLS AND CONSTRAINTS

NUMBER OF SUMMARY OUTPUT PAGES DESIRED (8 DESIGNS/PAGE)	3
MAX FUNDS AVAILABLE PER SQ.YD. FOR INITIAL DESIGN (DOLLARS)	99.00
MAXIMUM ALLOWED THICKNESS OF INITIAL CONSTRUCTION (INCHES)	69.0
ACCUMULATED MAX DEPTH OF ALL OVERLAYS (INCHES) (EXCLUDING LEVEL-UP)	6.0

TRAFFIC DATA

ADT AT BEGINNING OF ANALYSIS PERIOD (VEHICLES/DAY)	7700.
ADT AT END OF TWENTY YEARS (VEHICLES/DAY)	11900.
ONE-DIRECTION 20YEAR 18 kip ESAL (millions)	1.401
AVERAGE APPROACH SPEED TO THE OVERLAY ZONE(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (OVERLAY DIRECTION)(MPH)	45.0
AVERAGE SPEED THROUGH OVERLAY ZONE (NON-OVERLAY DIRECTION) (MPH)	45.0
PROPORTION OF ADT ARRIVING EACH HOUR OF CONSTRUCTION (PERCENT)	5.0
PERCENT TRUCKS IN ADT	6.7

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
005	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/18/2017**	**2**

INPUT DATA CONTINUED

CONSTRUCTION AND MAINTENANCE DATA

MINIMUM OVERLAY THICKNESS (INCHES)	2.0
OVERLAY CONSTRUCTION TIME (HOURS/DAY)	12.0
ASPHALTIC CONCRETE COMPACTED DENSITY (TONS/C.Y.)	1.98
ASPHALTIC CONCRETE PRODUCTION RATE (TONS/HOUR)	200.0
WIDTH OF EACH LANE (FEET)	12.0
FIRST YEAR COST OF ROUTINE MAINTENANCE (DOLLARS/LANE-MILE)	200.00
ANNUAL INCREMENTAL INCREASE IN MAINTENANCE COST (DOLLARS/LANE-MILE)	50.00

DETOUR DESIGN FOR OVERLAYS

TRAFFIC MODEL USED DURING OVERLAYING	2
TOTAL NUMBER OF LANES OF THE FACILITY	2
NUMBER OF OPEN LANES IN RESTRICTED ZONE (OVERLAY DIRECTION)	0
NUMBER OF OPEN LANES IN RESTRICTED ZONE (NON-OVERLAY DIRECTION)	1
DISTANCE TRAFFIC IS SLOWED (OVERLAY DIRECTION) (MILES)	0.60
DISTANCE TRAFFIC IS SLOWED (NON-OVERLAY DIRECTION) (MILES)	0.00
DETOUR DISTANCE AROUND THE OVERLAY ZONE (MILES)	0.00

PAVING MATERIALS INFORMATION

LAYER	CODE	MATERIALS NAME	COST PER CY	E MODULUS	POISSON RATIO	MIN. DEPTH	MAX. DEPTH	SALVAGE PCT.
1	C	Ty C HMA	115.00	650000.	0.35	2.00	2.00	90.00
2	C	Ty B HMA	115.00	650000.	0.35	7.00	12.00	90.00
3	R	LIME STAB SUBG	15.00	30000.	0.30	6.00	6.00	70.00
4	T	SUBGRADE	2.00	7000.	0.40	83.20	83.20	90.00

Texas Department of Transportation

TEXAS DEPARTMENT OF TRANSPORTATION

F P S21-1.3 *FLEXIBLE PAVEMENT SYSTEM* *Release:6-1-2012*

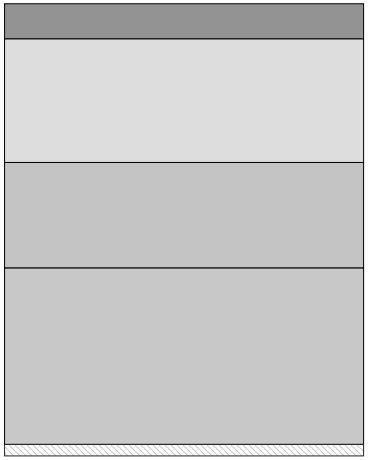
PAVEMENT DESIGN TYPE # 7 -- USER DEFINED PAVEMENT

PROB	DIST.-15	COUNTY- 15	CONT.	SECT.	JOB	HIGHWAY	DATE	PAGE
005	**San Antonio**	**BEXAR**	**0915**	**12**	**585**	**Blanco Rd.**	**7/18/2017**	**3**

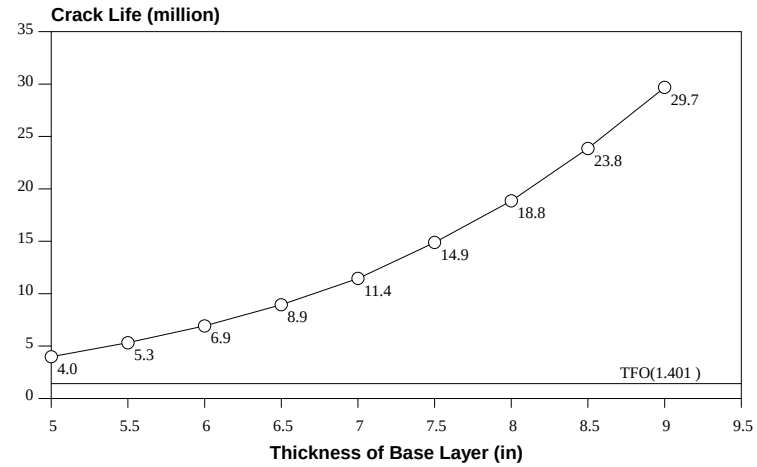
C. LEVEL B SUMMARY OF THE BEST DESIGN STRATEGIES
IN ORDER OF INCREASING TOTAL COST
1

MATERIAL ARRANGEMENT	CCR
INIT. CONST. COST	31.25
OVERLAY CONST. COST	0.00
USER COST	0.00
ROUTINE MAINT. COST	0.91
SALVAGE VALUE	-7.14
TOTAL COST	25.02
NUMBER OF LAYERS	3
LAYER DEPTH (INCHES)	
D(1)	2.00
D(2)	7.00
D(3)	6.00
NO.OF PERF.PERIODS	1
PERF. TIME (YEARS)	
T(1)	40.
OVERLAY POLICY(INCH) (INCLUDING LEVEL-UP)	

THE TOTAL NUMBER OF FEASIBLE DESIGNS CONSIDERED WAS 11



Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
2.00	650.00	0.35	Ty C HMA
7.00	650.00	0.35	Ty B HMA
6.00	30.00	0.30	LIME STAB SUBG
83.20	7.00	0.40	SUBGRADE



Fatigue Crack Model:

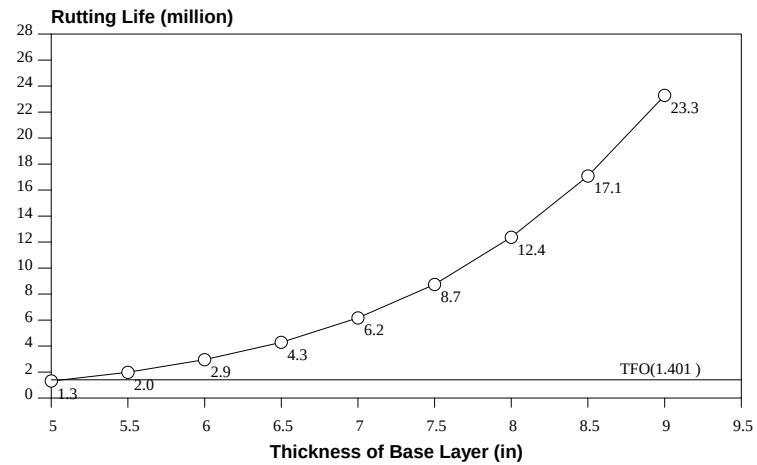
$$N_f = f_1 (\varepsilon_t)^{-f_2} (E_1)^{-f_3}$$

f_1 =7.96E-02
f_2 = 3.291
f_3 = .854

Rutting Model:

$$N_d = f_4 (\varepsilon_v)^{-f_5}$$

f_4 =1.37E-09
f_5 = 4.477



TFO(Traffic to 1st Overlay): 1.40 (million)

Crack Life: 11.44 (million) ε_τ = 103.00 ($\mu\varepsilon$)

Rut Life: 6.16 (million) ε_v = -319.00 ($\mu\varepsilon$)

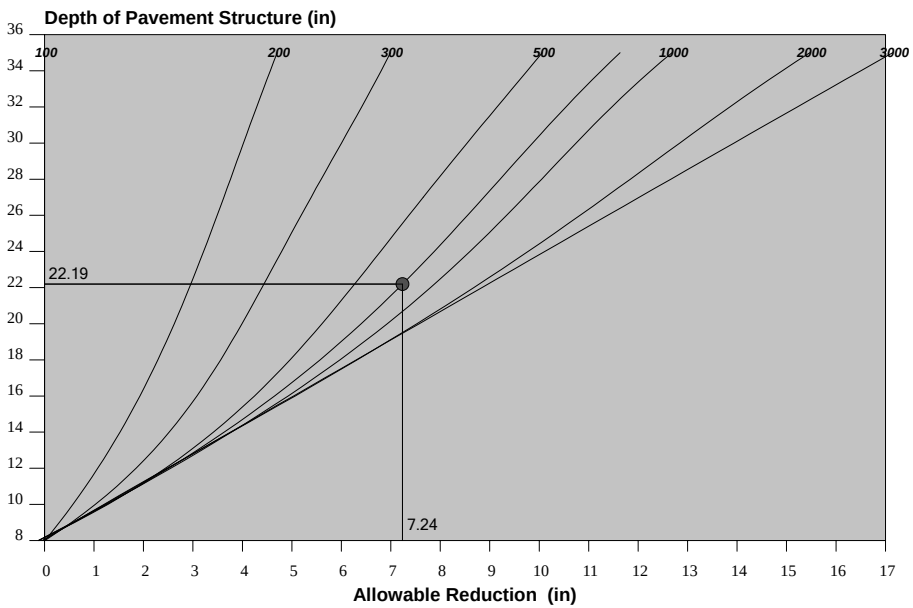
Traffic to 1st Overlay is calculated by analysis period: 20years and 18 kips:1.40millions.
Also the start ADT:7700.0 and ending ADT:11900.0

Mechanistic Check Conclusion:

The design is OK !

FPS 21 Mechanistic Design Check Output (FPS21-1.3Release:6-1-2012)			
Highway	Blanco Rd.	Problem	005
C-S-J	0915 - 12 - 585	Date	7/18/2017
District	San Antonio	County	BEXAR
Design Type:User Defined Pavement Design			

	Thickness (inches)	Modulus (ksi)	Poisson's Ratio	Material Name
Ty C HMA	2.00	650.00	0.35	Ty C HMA
Ty B HMA	7.00	650.00	0.35	Ty B HMA
LIME STAB SUBG	6.00	30.00	0.30	LIME STAB SUBG
SUBGRADE	83.20	7.00	0.40	SUBGRADE
Bed Rock		700.00	0.15	Bed Rock



Thickness Reduction Chart for Stabilized Layers

INPUT PARAMETERS:

The Heaviest Wheel Loads Daily (ATHWLD)	10900.0 (lb)
Percentage of TandemAxles	30.0 (%)
Modified Cohesionmeter Value	800.0
Design Wheel Load	10900.0 (lb)
Subgrade Texas Triaxial Class Number (TTC)	5.60

User Input TTC based on historical TEX-117-E

RESULT:

Triaxial Thickness Required	22.2 (in)
The FPS Design Thickness	15.0 (in)
Allowable Thickness Reduction	7.2 (in)
Modified Triaxial Thickness	15.0 (in)

TRIAXIAL CHECK CONCLUSION:

The Design OK !

FPS 21 Triaxial Design Check Output		(FPS21-1.3Release:6-1-2012)	
Highway	Blanco Rd.	Problem	005
C-S-J	0915 - 12 - 585	Date	7/18/2017
District	San Antonio	County	BEXAR
Design Type:User Defined Pavement Design			

APPENDIX J: PVR CALCULATIONS

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

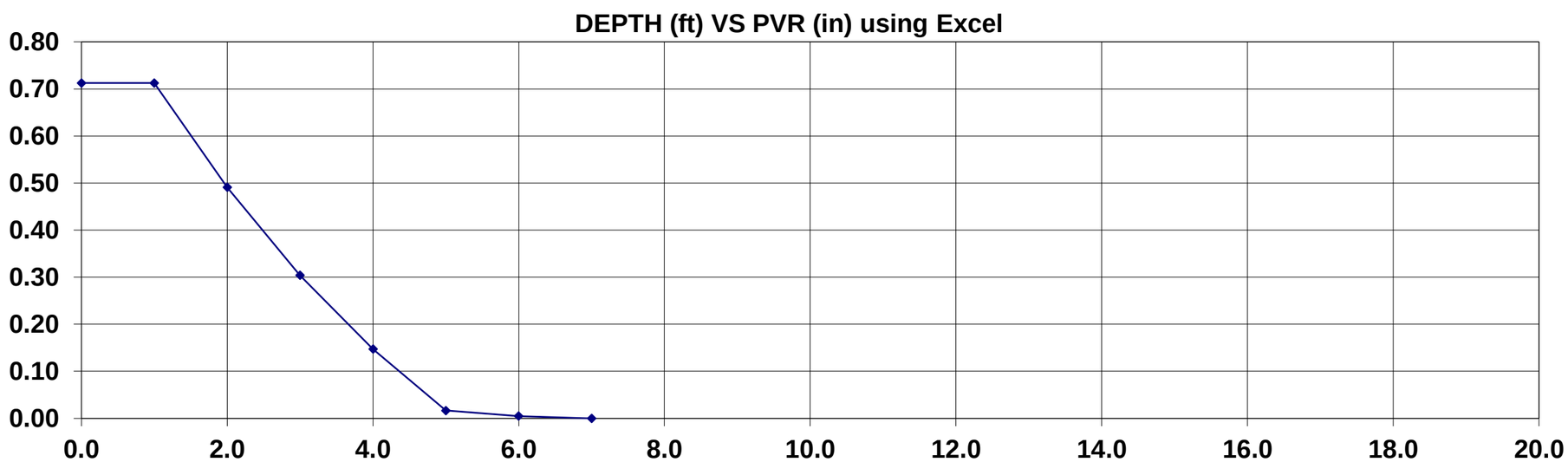
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.71**
1.0	0.5	48	18.6	24.6	11.0	Dry	45.0	31	8.3	11.5	**0.00**	**0.00**	0.00	0.45	1.00	0.00	**0.71**
2.0	1.5	48	18.6	24.6	11.0	Dry	45.0	31	8.3	11.5	**0.00**	**0.49**	0.49	0.45	1.00	0.22	**0.49**
3.0	2.5	48	18.6	24.6	18.0	Dry	45.0	31	8.3	11.5	**0.49**	**0.91**	0.42	0.45	1.00	0.19	**0.30**
4.0	3.5	48	18.6	24.6	19.0	Dry	45.0	31	8.3	11.5	**0.91**	**1.26**	0.35	0.45	1.00	0.16	**0.15**
5.0	4.5	48	18.6	24.6	19.0	Dry	45.0	31	8.3	11.5	**1.26**	**1.55**	0.29	0.45	1.00	0.13	**0.02**
6.0	5.5	20	13.0	11.4	6.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	6.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

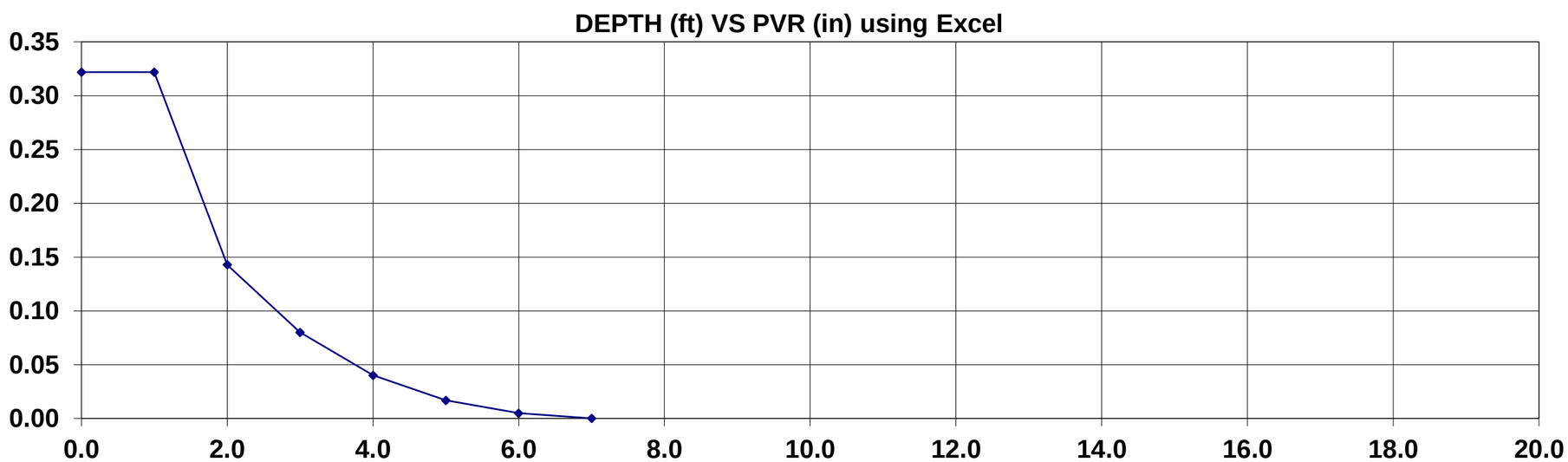
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.32**
1.0	0.5	45	18.0	23.2	13.0	Dry	42.0	27	7.0	10.1	**0.00**	**0.00**	0.00	0.42	1.00	0.00	**0.32**
2.0	1.5	45	18.0	23.2	13.0	Dry	42.0	27	7.0	10.1	**0.00**	**0.43**	0.43	0.42	1.00	0.18	**0.14**
3.0	2.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.12**	**0.21**	0.08	0.75	1.00	0.06	**0.08**
4.0	3.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.21**	**0.26**	0.05	0.75	1.00	0.04	**0.04**
5.0	4.5	20	13.0	11.4	8.0	Dry	75.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.75	1.00	0.02	**0.02**
6.0	5.5	20	13.0	11.4	8.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	8.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

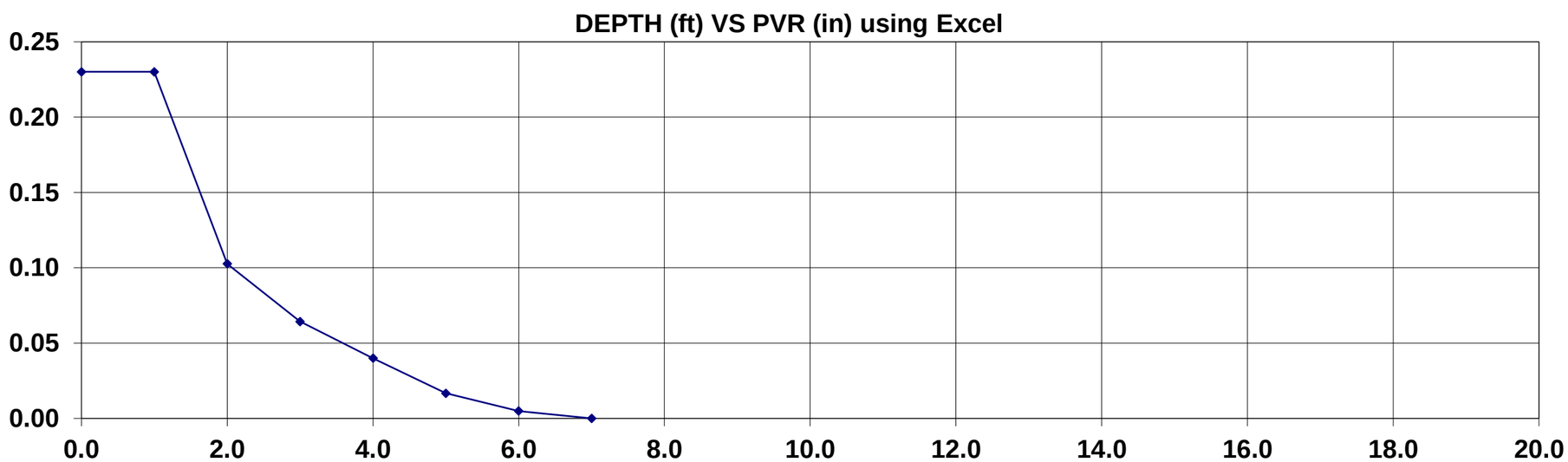
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.23**
1.0	0.5	31	15.2	16.6	11.0	Dry	61.0	16	3.5	6.3	**0.00**	**0.00**	0.00	0.61	1.00	0.00	**0.23**
2.0	1.5	31	15.2	16.6	11.0	Dry	61.0	16	3.5	6.3	**0.00**	**0.21**	0.21	0.61	1.00	0.13	**0.10**
3.0	2.5	31	15.2	16.6	17.0	Wet	61.0	16	0.6	3.2	**0.09**	**0.16**	0.06	0.61	1.00	0.04	**0.06**
4.0	3.5	31	15.2	16.6	17.0	Wet	61.0	16	0.6	3.2	**0.16**	**0.20**	0.04	0.61	1.00	0.02	**0.04**
5.0	4.5	20	13.0	11.4	2.0	Dry	75.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.75	1.00	0.02	**0.02**
6.0	5.5	20	13.0	11.4	2.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	2.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

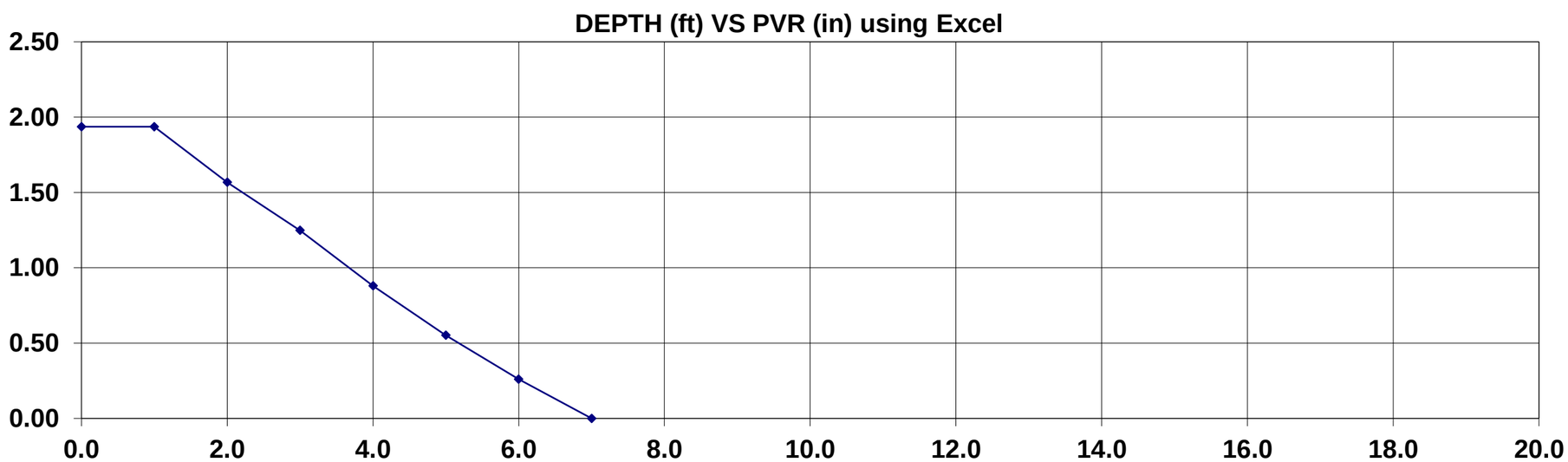
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.94**
1.0	0.5	58	20.6	29.3	13.0	Dry	66.0	37	10.3	13.6	**0.00**	**0.00**	0.00	0.66	1.00	0.00	**1.94**
2.0	1.5	58	20.6	29.3	9.0	Dry	66.0	37	10.3	13.6	**0.00**	**0.56**	0.56	0.66	1.00	0.37	**1.57**
3.0	2.5	58	20.6	29.3	9.0	Dry	66.0	37	10.3	13.6	**0.56**	**1.04**	0.48	0.66	1.00	0.32	**1.25**
4.0	3.5	66	22.2	33.0	24.0	Dry	69.0	46	13.2	16.7	**1.27**	**1.80**	0.53	0.69	1.00	0.37	**0.88**
5.0	4.5	66	22.2	33.0	24.0	Dry	69.0	46	13.2	16.7	**1.80**	**2.28**	0.48	0.69	1.00	0.33	**0.55**
6.0	5.5	66	22.2	33.0	8.0	Dry	69.0	46	13.2	16.7	**2.28**	**2.70**	0.42	0.69	1.00	0.29	**0.26**
7.0	6.5	66	22.2	33.0	8.0	Dry	69.0	46	13.2	16.7	**2.70**	**3.07**	0.38	0.69	1.00	0.26	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**3.07**	**3.07**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**3.07**	**3.07**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**3.07**	**3.07**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

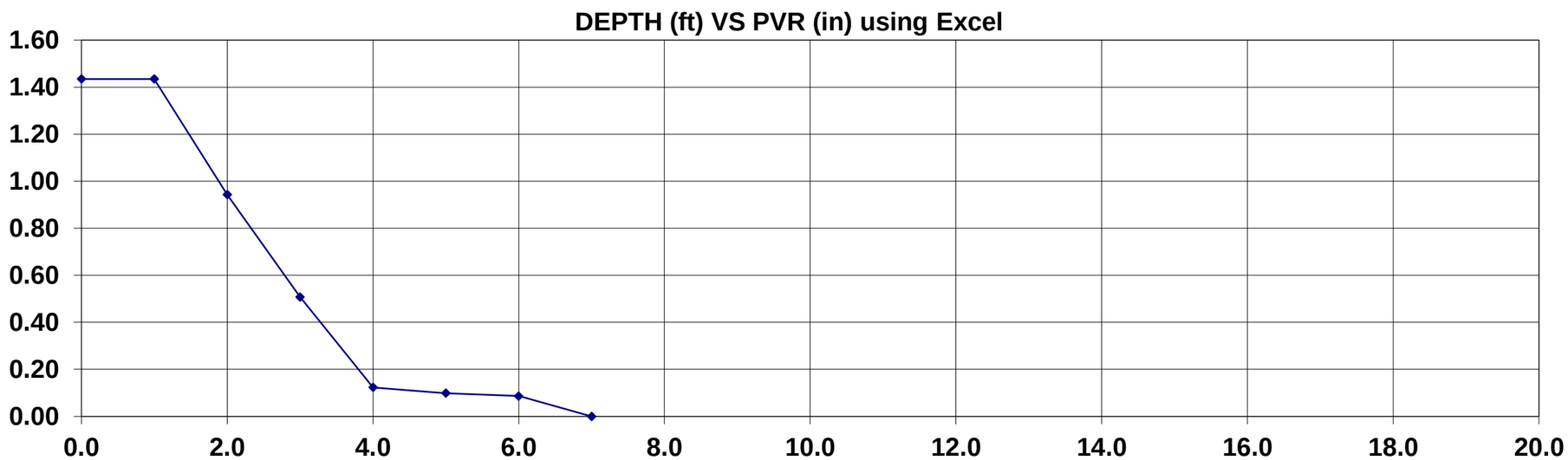
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.43**
1.0	0.5	64	21.8	32.1	9.0	Dry	78.0	43	12.2	15.7	**0.00**	**0.00**	0.00	0.78	1.00	0.00	**1.43**
2.0	1.5	64	21.8	32.1	4.0	Dry	78.0	43	12.2	15.7	**0.00**	**0.63**	0.63	0.78	1.00	0.49	**0.94**
3.0	2.5	64	21.8	32.1	18.0	Dry	78.0	43	12.2	15.7	**0.63**	**1.19**	0.56	0.78	1.00	0.44	**0.51**
4.0	3.5	64	21.8	32.1	18.0	Dry	78.0	43	12.2	15.7	**1.19**	**1.68**	0.49	0.78	1.00	0.38	**0.12**
5.0	4.5	20	13.0	11.4	3.0	Dry	78.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.78	1.00	0.02	**0.10**
6.0	5.5	20	13.0	11.4	3.0	Dry	78.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.78	1.00	0.01	**0.09**
7.0	6.5	38	16.6	19.9	13.0	Dry	78.0	24	6.1	9.1	**1.24**	**1.35**	0.11	0.78	1.00	0.09	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**1.35**	**1.35**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

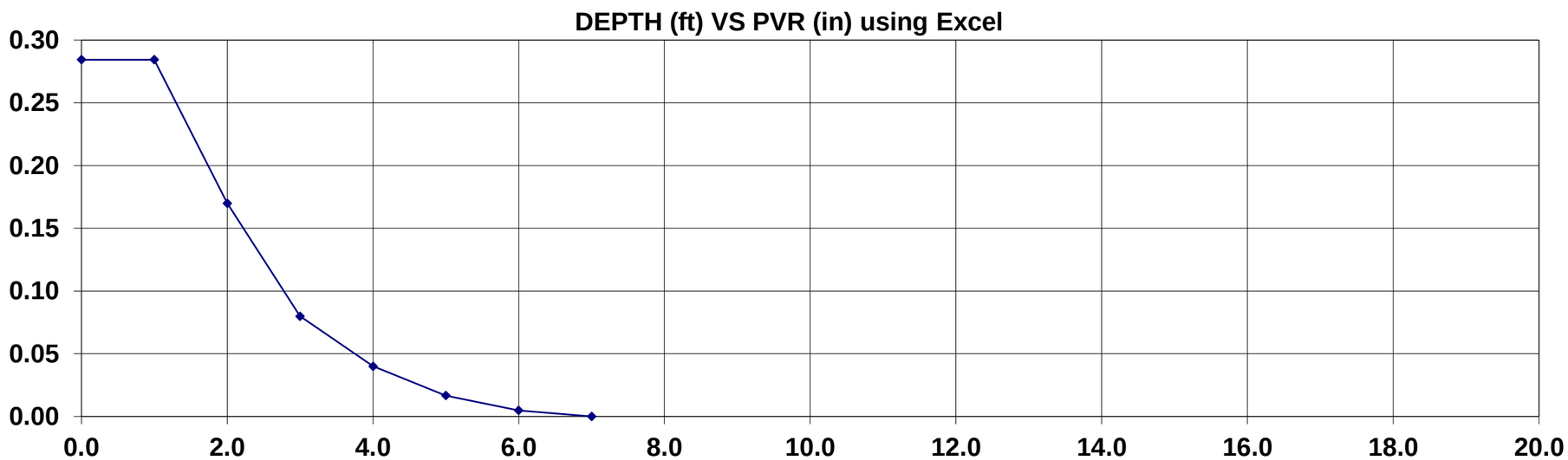
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.28**
1.0	0.5	42	17.4	21.7	17.0	Dry	36.0	21	5.1	8.0	**0.00**	**0.00**	0.00	0.36	1.00	0.00	**0.28**
2.0	1.5	42	17.4	21.7	17.0	Dry	36.0	21	5.1	8.0	**0.00**	**0.32**	0.32	0.36	1.00	0.11	**0.17**
3.0	2.5	42	17.4	21.7	17.0	Dry	36.0	21	5.1	8.0	**0.32**	**0.57**	0.25	0.36	1.00	0.09	**0.08**
4.0	3.5	20	13.0	11.4	1.0	Dry	75.0	10	1.5	4.2	**0.21**	**0.26**	0.05	0.75	1.00	0.04	**0.04**
5.0	4.5	20	13.0	11.4	1.0	Dry	75.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.75	1.00	0.02	**0.02**
6.0	5.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

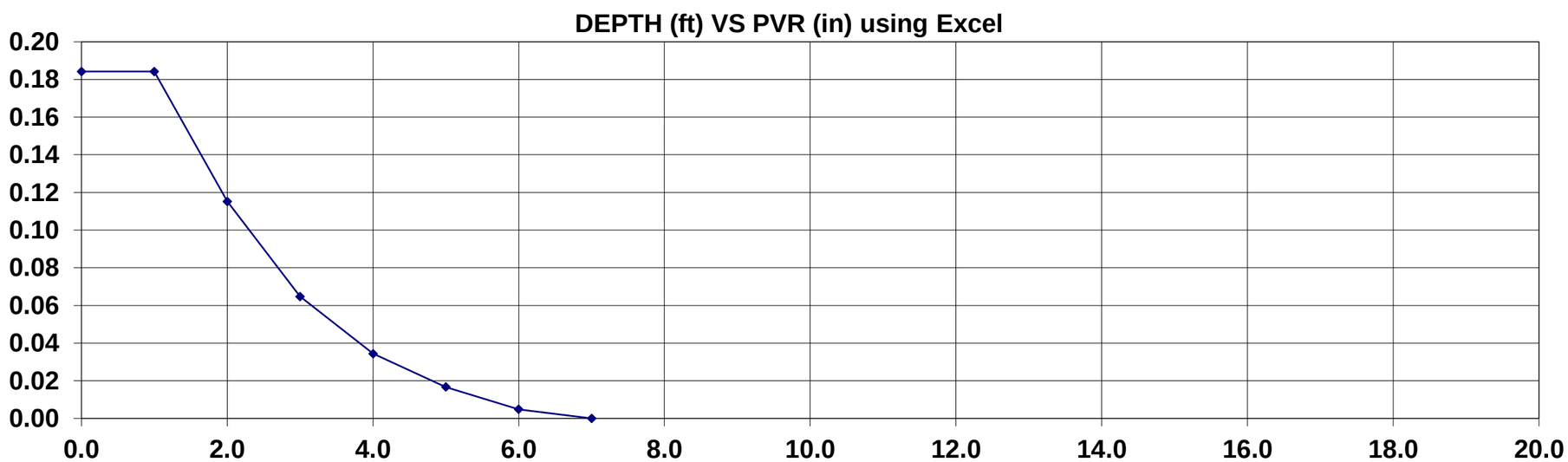
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.18**
1.0	0.5	29	14.8	15.6	7.0	Dry	33.0	14	2.8	5.6	**0.00**	**0.00**	0.00	0.33	1.00	0.00	**0.18**
2.0	1.5	29	14.8	15.6	7.0	Dry	33.0	14	2.8	5.6	**0.00**	**0.21**	0.21	0.33	1.00	0.07	**0.12**
3.0	2.5	29	14.8	15.6	10.0	Dry	33.0	14	2.8	5.6	**0.21**	**0.36**	0.15	0.33	1.00	0.05	**0.06**
4.0	3.5	35	16.0	18.5	16.0	Dry	57.0	10	1.5	4.2	**0.21**	**0.26**	0.05	0.57	1.00	0.03	**0.03**
5.0	4.5	35	16.0	18.5	16.0	Dry	57.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.57	1.00	0.02	**0.02**
6.0	5.5	20	13.0	11.4	5.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	5.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

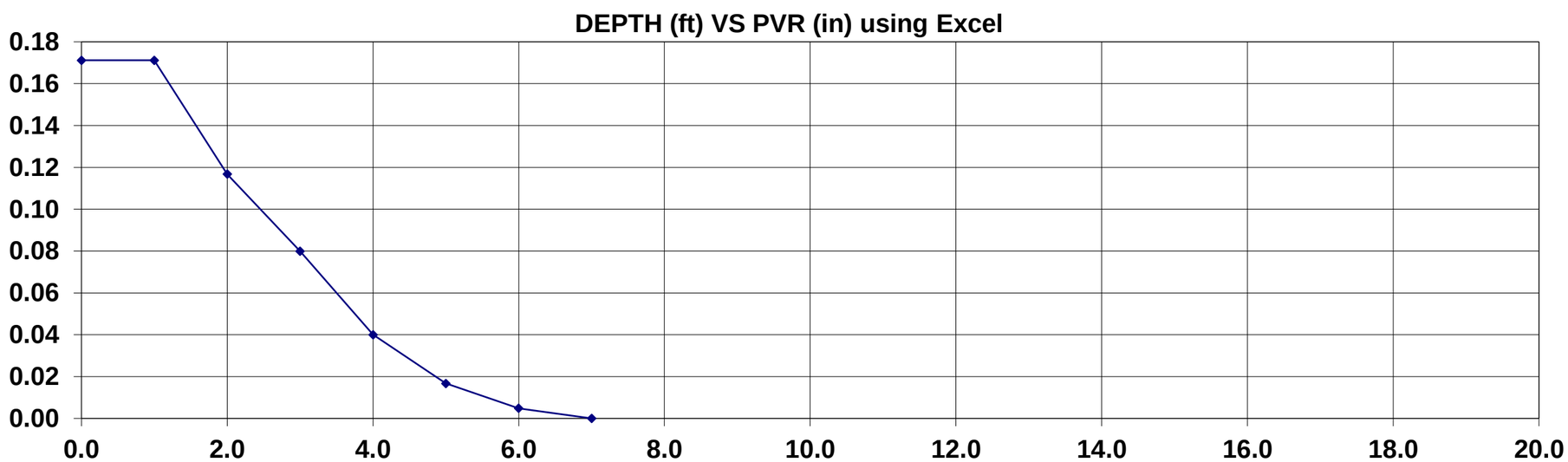
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.17**
1.0	0.5	29	14.8	15.6	15.0	Dry	44.0	10	1.5	4.2	**0.00**	**0.00**	0.00	0.44	1.00	0.00	**0.17**
2.0	1.5	29	14.8	15.6	15.0	Dry	44.0	10	1.5	4.2	**0.00**	**0.12**	0.12	0.44	1.00	0.05	**0.12**
3.0	2.5	29	14.8	15.6	15.0	Dry	44.0	10	1.5	4.2	**0.12**	**0.21**	0.08	0.44	1.00	0.04	**0.08**
4.0	3.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.21**	**0.26**	0.05	0.75	1.00	0.04	**0.04**
5.0	4.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.75	1.00	0.02	**0.02**
6.0	5.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

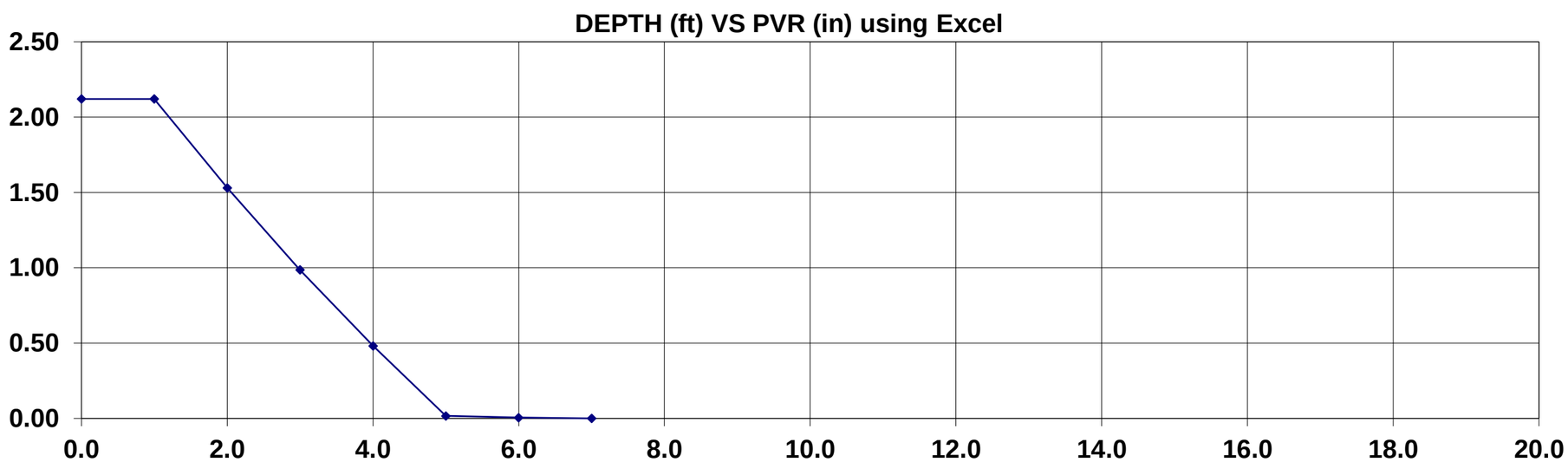
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.12**
1.0	0.5	36	16.2	18.9	4.0	Dry	28.0	20	4.8	7.7	**0.00**	**0.00**	0.00	0.28	1.00	0.00	**2.12**
2.0	1.5	87	26.4	42.9	10.0	Dry	70.0	60	17.8	21.6	**0.00**	**0.84**	0.84	0.70	1.00	0.59	**1.53**
3.0	2.5	87	26.4	42.9	18.0	Dry	70.0	60	17.8	21.6	**0.84**	**1.62**	0.78	0.70	1.00	0.55	**0.99**
4.0	3.5	87	26.4	42.9	18.0	Dry	70.0	60	17.8	21.6	**1.62**	**2.34**	0.72	0.70	1.00	0.50	**0.48**
5.0	4.5	87	26.4	42.9	15.0	Dry	70.0	60	17.8	21.6	**2.34**	**3.01**	0.66	0.70	1.00	0.46	**0.02**
6.0	5.5	20	13.0	11.4	5.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.00**
7.0	6.5	20	13.0	11.4	5.0	Dry	75.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.75	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

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TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

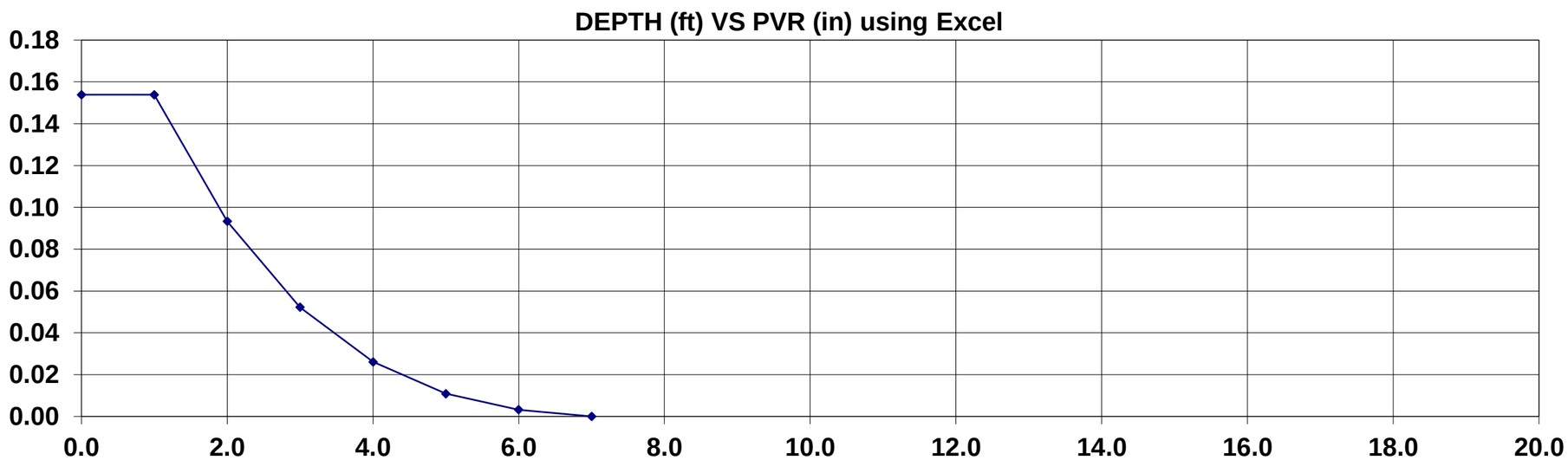
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.15**
1.0	0.5	21	13.2	11.9	9.0	Dry	49.0	10	1.5	4.2	**0.00**	**0.00**	0.00	0.49	1.00	0.00	**0.15**
2.0	1.5	21	13.2	11.9	9.0	Dry	49.0	10	1.5	4.2	**0.00**	**0.12**	0.12	0.49	1.00	0.06	**0.09**
3.0	2.5	21	13.2	11.9	9.0	Dry	49.0	10	1.5	4.2	**0.12**	**0.21**	0.08	0.49	1.00	0.04	**0.05**
4.0	3.5	21	13.2	11.9	9.0	Dry	49.0	10	1.5	4.2	**0.21**	**0.26**	0.05	0.49	1.00	0.03	**0.03**
5.0	4.5	21	13.2	11.9	8.0	Dry	49.0	10	1.5	4.2	**0.26**	**0.29**	0.03	0.49	1.00	0.02	**0.01**
6.0	5.5	21	13.2	11.9	8.0	Dry	49.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.49	1.00	0.01	**0.00**
7.0	6.5	21	13.2	11.9	9.0	Dry	49.0	10	1.5	4.2	**0.31**	**0.31**	0.01	0.49	1.00	0.00	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.31**	**0.31**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



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Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

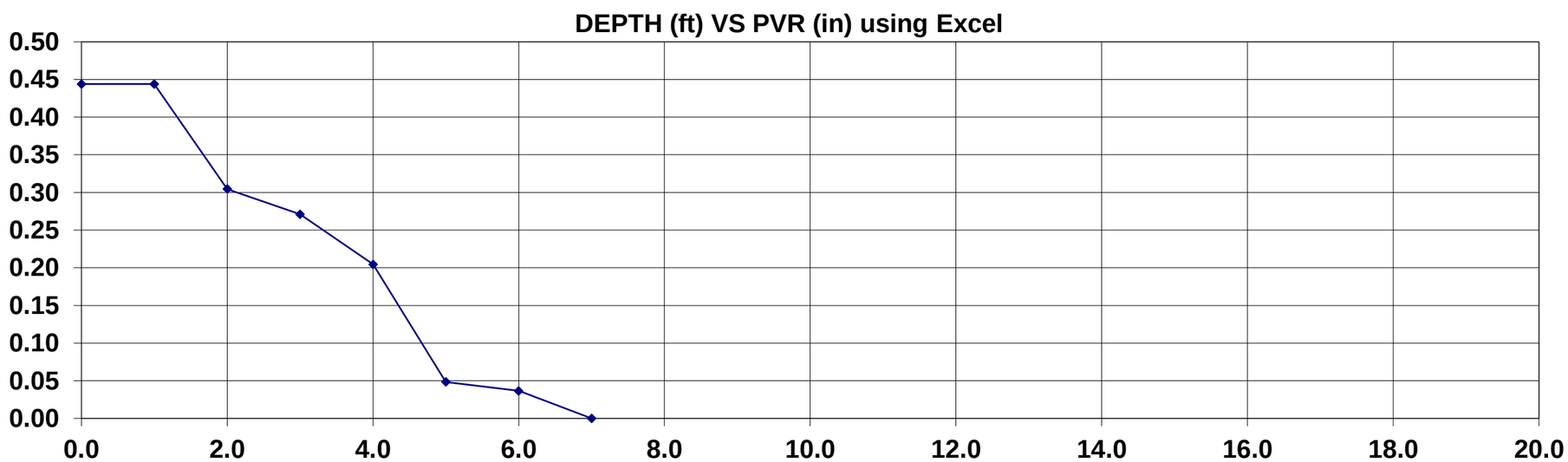
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.44**
1.0	0.5	34	15.8	18.0	6.0	Dry	53.0	17	3.8	6.6	**0.00**	**0.00**	0.00	0.53	1.00	0.00	**0.44**
2.0	1.5	34	15.8	18.0	11.0	Dry	53.0	17	3.8	6.6	**0.00**	**0.26**	0.26	0.53	1.00	0.14	**0.30**
3.0	2.5	34	15.8	18.0	32.0	Wet	53.0	17	0.8	3.4	**0.09**	**0.16**	0.06	0.53	1.00	0.03	**0.27**
4.0	3.5	44	17.8	22.7	32.0	Wet	61.0	29	3.4	6.2	**0.36**	**0.47**	0.11	0.61	1.00	0.07	**0.20**
5.0	4.5	44	17.8	22.7	19.0	Dry	61.0	29	7.7	10.8	**1.15**	**1.41**	0.26	0.61	1.00	0.16	**0.05**
6.0	5.5	20	13.0	11.4	7.0	Dry	75.0	10	1.5	4.2	**0.29**	**0.31**	0.02	0.75	1.00	0.01	**0.04**
7.0	6.5	34	15.8	18.0	12.0	Dry	61.0	17	3.8	6.6	**0.81**	**0.87**	0.06	0.61	1.00	0.04	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.87**	**0.87**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.87**	**0.87**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.87**	**0.87**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



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Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

POTENTIAL VERTICAL RISE (PVR)
TEX-124-E

Refresh Workbook

File Version: 03/09/15 10:25:48

SAMPLE ID:	B1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	0915-12-585
COUNTY:	BEXAR	SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

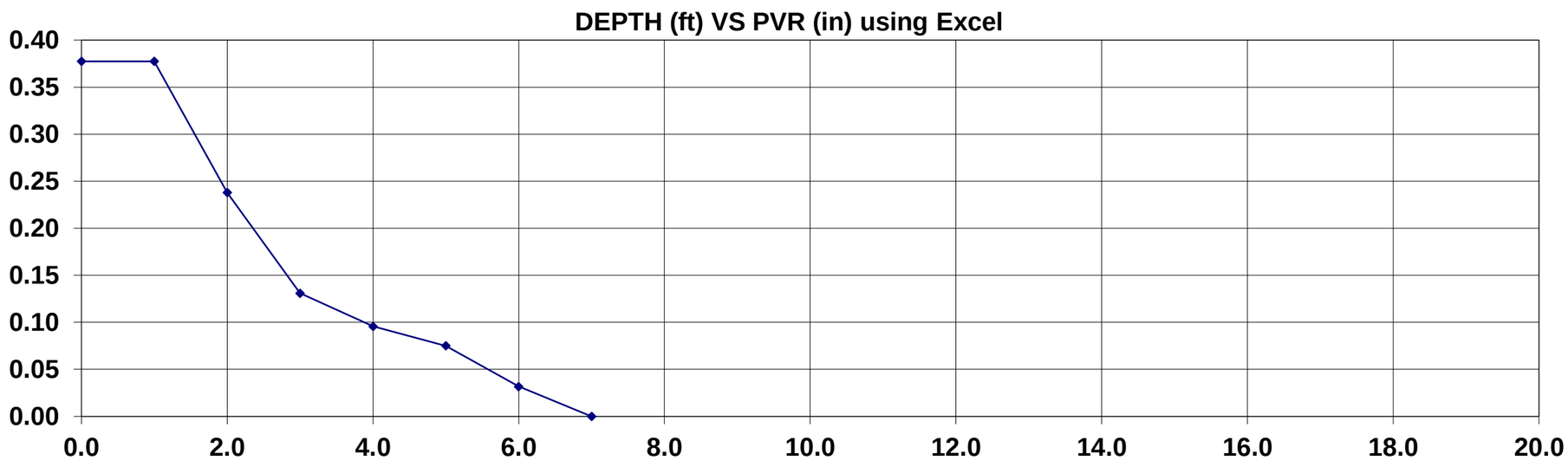
Boring Number:	A, B, C, D, E Composite	Ground Elevation (z):		Longitude (x):		Latitude (y):	

PVR Data BH

Depth to Bottom of Layer [ft]	Average Load [psi]	Liquid Limit (LL)	Dry 0.2LL+9	Wet 0.47LL+2	Percent Moisture	Dry Avg Wet	Percent -No.40	Plasticity Index (PI)	Percent Volume Swell	Percent Free Swell	PVR [in] Top of Layer	PVR [in] Bottom of Layer	Differential Swell [in]	Modified -No.40 Factor	Modified Density Factor	PVR in Layers [in]	Total PVR [in]
0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.38**
1.0	0.5	33	15.6	17.5	11.0	Dry	53.0	18	4.1	7.0	**0.00**	**0.00**	0.00	0.53	1.00	0.00	**0.38**
2.0	1.5	33	15.6	17.5	11.0	Dry	53.0	18	4.1	7.0	**0.00**	**0.26**	0.26	0.53	1.00	0.14	**0.24**
3.0	2.5	33	15.6	17.5	11.0	Dry	53.0	18	4.1	7.0	**0.26**	**0.46**	0.20	0.53	1.00	0.11	**0.13**
4.0	3.5	33	15.6	17.5	17.0	Avg	53.0	18	2.4	5.2	**0.26**	**0.33**	0.07	0.53	1.00	0.04	**0.10**
5.0	4.5	33	15.6	17.5	17.0	Avg	53.0	18	2.4	5.2	**0.33**	**0.36**	0.04	0.53	1.00	0.02	**0.08**
6.0	5.5	33	15.6	17.5	11.0	Dry	53.0	18	4.1	7.0	**0.73**	**0.81**	0.08	0.53	1.00	0.04	**0.03**
7.0	6.5	33	15.6	17.5	11.0	Dry	53.0	18	4.1	7.0	**0.81**	**0.87**	0.06	0.53	1.00	0.03	**0.00**
	3.5		9.0	2.0		Dry			0.0	0.0	**0.87**	**0.87**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.87**	**0.87**	0.00	0.00	1.00	0.00	**0.00**
	0.0		9.0	2.0		Dry			0.0	0.0	**0.87**	**0.87**	0.00	0.00	1.00	0.00	**0.00**

Fields are chart inputs | Fields are final answers per layer | Final Total PVR for the borehole

Note: PVR calculations are based on future pavement grade being the same as present grade. Bold numbers are interpolated and extrapolated values.



Remarks:

Test Method:	Tested By:	Tested Date:
TX124		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

APPENDIX K: SURFACE AGGREGATE SELECTION FORM

Surface Aggregate Selection Form

CSJ: 0915 - 12 - 585 **Date:** 07/19/17

Highway: Blanco Road

Limits: from West Oaks Estate to Borgfeld Drive

County: Bexar

District: San Antonio

Designer's Name: Spencer A. Higgs, P.E.

Selection Guidelines for Bituminous Surface Aggregate Classification (SAC)

Demand for Friction	Low (1)	Moderate (2)	High (3)	DESIGNER'S RATING 1	2	3
Rain Fall (inches/year)	≤20	>20 ≤40	>40	☐	☒	☐
Traffic (ADT)	≤5000	>5000 ≤15,000	>15,000	☐	☒	☐
Speed (mph)	≤35	>35 ≤60	>60	☐	☒	☐
Trucks (%)	≤8	>8 ≤15	>15	☒	☐	☐
Vertical Grade (%)	≤2	>2 ≤5	>5	☐	☒	☐
Horizontal Curve (º)	≤3	>3 ≤7	>7	☐	☒	☐
Driveways (per mile)	≤5	>5 ≤10	>10	☐	☐	☒
Intersecting Roadways (ADT)	≤500	>500 ≤750	>750	☐	☐	☒
Wet Surface Crashes (%)	≤5	>5 <15	≥15	☐	☒	☐
Summary of Total Frictional Demand				19		
***Available Friction**	**Low (2)**	**Moderate (5)**	**High (8)**	**2**	**5**	**8**
Cross Slope (%)	<2	2 - 3	3 - 4	☐	☒	☐
Surface Design Life (years)	>10	>5 ≤10	≤5	☐	☒	☐
Macro Texture of proposed surface	Fine (Such as: HMAC Type 'D' and 'F')	Medium (Such as: HMAC Type 'C', CMHB, SuperPave, Microsurface)	Coarse (Such as: PFC, SMA, Seal Coat, NovaChip)	☐	☒	☐
Aggregate MicroTexture	SAC C	SAC B	SAC A	☐	☒	☐
Summary of Total Friction Available				20		
Does total available friction equal or exceed total frictional demand?				☒ Yes	☐ No	

*Parameters set by the designer that affect pavement friction.
Total friction available should always exceed total frictional demand.

Comments:
Parameters Need to be Approved by TxDOT

APPENDIX L: ASFE INFORMATION – GEOTECHNICAL REPORT

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

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APPENDIX M: PROJECT QUALITY ASSURANCE

A Message to Owners

Construction materials engineering and testing (CoMET) consultants perform quality-assurance (QA) services to evaluate the degree to which constructors are achieving the specified conditions they're contractually obligated to achieve. Done right, QA can save you time and money; prevent unanticipated-conditions claims, change orders, and disputes; and reduce short-term and long-term risks, especially by detecting molehills before they grow into mountains.

Done right, QA can save you time and money; prevent claims and disputes; and reduce risks. Many owners don't do QA right because they follow bad advice.

Many owners don't do QA right because they follow bad advice; e.g., "CoMET consultants are all the same. They all have accredited facilities and certified personnel. Go with the low bidder." But there's no such thing as a standard QA scope of service, meaning that – to bid low – each interested firms *must* propose the cheapest QA service it can live with, jeopardizing service quality and aggravating risk for the entire project team. Besides, the advice is based on misinformation.

Fact: ***Most CoMET firms are not accredited***, and the quality of those that are varies significantly. Accreditation – which is important – nonetheless means that a facility met an accrediting body's minimum criteria. Some firms practice at a much higher level; others just barely scrape by. And what an accrediting body typically evaluates – management, staff, facilities, and equipment – can change substantially before the next review, two, three, or more years from now.

Most CoMET firms are not accredited. It's dangerous to assume CoMET personnel are certified.

Fact: ***It's dangerous to assume CoMET personnel are certified.*** Many have no credentials at all; some are certified by organizations of questionable merit, while others have a valid certification, but *not* for the services they're assigned.

Some CoMET firms – the "low-cost providers" – *want* you to believe that price is the only difference between QA providers. It's not, of course. Firms that sell low price typically lack the facilities, equipment, personnel, and insurance quality-oriented firms invest in to achieve the reliability concerned owners need to achieve quality in quality assurance.

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Firms that sell low price typically lack the facilities, equipment, personnel, and insurance quality-oriented firms invest in to achieve the reliability concerned owners need to achieve quality in quality assurance.

To derive maximum value from your investment in QA, require the CoMET firm's project manager to serve actively on the project team from beginning to end, a level of service that's relatively inexpensive and can pay huge dividends. During the project's planning and design stages, experienced CoMET professionals can help the design team develop uniform technical specifications and establish appropriate observation, testing, and instrumentation procedures and protocols. They can also analyze plans and specs much as constructors do, looking for the little errors, omissions, conflicts, and ambiguities that often become the basis for big extras and big claims. They can provide guidance about operations that need closer review than others, because of their criticality or potential for error or abuse. They can also relate their experience with the various constructors that have expressed interest in your project.

To derive maximum value, require the project manager to serve actively on the project team from beginning to end.

CoMET consultants' construction-phase QA services focus on two distinct issues: those that relate to geotechnical engineering and those that relate to the other elements of construction.

The geotechnical issues are critically important because they are essential to the "observational method" geotechnical engineers use to significantly reduce the amount of sampling they'd otherwise require. They apply the observational method by developing a sampling plan for a project, and then assigning field representatives to ensure samples are properly obtained, packaged, and transported. The engineers review the samples and, typically, have them tested in their own laboratories. They use the information they derive to characterize the site's subsurface and develop *preliminary* recommendations for the structure's foundations and for the specifications of various "geo" elements, like excavations, site grading, foundation-bearing grades, and roadway and parking-lot preparation and surfacing.

Geotechnical engineers cannot finalize their recommendations until they or their field representatives are on site to observe what's excavated to verify that the subsurface conditions the engineers predicted are those that actually exist.

When unanticipated conditions are observed, recommendations and/or specifications should be modified.

Responding to client requests, many geotechnical-engineering firms have expanded their field-services mix, so they're able to perform overall construction QA, encompassing – in addition to geotechnical issues – reinforced concrete, structural steel, welds, fireproofing, and so on. Unfortunately, that's caused some confusion. Believing that all CoMET consultants are alike, some owners take bids for the overall CoMET package, including the geotechnical field observation. *Entrusting geotechnical field observation to someone other than the geotechnical engineer of record (GER) creates a significant risk.*

Geotechnical engineers cannot finalize their recommendations until they are on site to verify that the subsurface conditions they predicted are those that actually exist. Entrusting geotechnical field observation to someone other than the geotechnical engineer of record (GER) creates a significant risk.

GERs have developed a variety of protocols to optimize the quality of their field-observation procedures. Quality-focused GERs meet with their field representatives before they leave for a project site, to brief them on what to look for and where, when, and how to look. (***No one can duplicate this briefing***, because no one else knows as much about a project's geotechnical issues.) And once they arrive at a project site, the field representatives know to maintain timely, effective communication with the GER, because that's what the GER has trained them to do. By contrast, it's extremely rare for a different firm's field personnel to contact the GER, even when they're concerned or confused about what they observe, because they regard the GER's firm as "the competition."

Divorcing the GER from geotechnical field operations is almost always penny-wise and pound-foolish. Still, because owners are given bad advice, it's commonly done, helping to explain why ***"geo" issues are the number-one source of construction-industry claims and disputes.***

Divorcing the GER from geotechnical field operations is almost always penny-wise and pound-foolish, helping to explain why "geo" issues are the number-one source of construction-industry claims and disputes.

To derive the biggest bang for the QA buck, identify three or even four quality-focused CoMET consultants. (If you don't know any, use the "Find a Geoprofessional" service available free at www.asfe.org.) Ask about the firms' ongoing and recent projects and the clients and client representatives involved; *insist upon receiving verification of all claimed accreditations, certifications, licenses, and insurance coverages.*

Insist upon receiving verification of all claimed accreditations, certifications, licenses, and insurance coverages.

Once you identify the two or three most qualified firms, meet with their representatives, preferably at their own facility, so you can inspect their laboratory, speak with management and technical staff, and form an opinion about the firm's capabilities and attitude.

Insist that each firm's designated project manager participate in the meeting. You will benefit when that individual is a seasoned QA professional familiar with construction's rough-and-tumble. Ask about others the firm will assign, too. There's no substitute for experienced personnel who are familiar with the codes and standards involved and know how to:

- read and interpret plans and specifications;
- perform the necessary observation, inspection, and testing;
- document their observations and findings;
- interact with constructors' personnel; and
- respond to the unexpected.

Important: Many of the services CoMET QA field representatives perform – like observing operations and outcomes – require the good judgment afforded by extensive training and experience, especially in situations where standard operating procedures do not apply. You need to know who will be exercising that judgment: a 15-year "veteran" or a rookie?

Many of the services CoMET QA field representatives perform require good judgment.

Also consider the tools CoMET personnel use. Some firms are passionate about proper calibration; others, less so. Passion is a good thing! Ask to see the firm's calibration records. If the firm doesn't have any, or if they are not current, be cautious. *You cannot trust test results derived using equipment that may be out of calibration.* Also ask a firm's representatives about their reporting practices, including report distribution, how they handle notifications of nonconformance, and how they resolve complaints.

Scope flexibility is needed to deal promptly with the unanticipated.

For financing purposes, some owners require the constructor to pay for CoMET services. ***Consider an alternative approach*** so you don't convert the constructor into the CoMET consultant's client. If it's essential for you to fund QA via the constructor, have the CoMET fee included as an allowance in the bid documents. This arrangement ensures that you remain the CoMET consultant's client, and it prevents the CoMET fee from becoming part of the constructor's bid-price competition. (Note that the International Building Code (IBC) *requires the owner to pay* for Special Inspection (SI) services commonly performed by the CoMET consultant as a service separate from QA, to help ensure the SI services' integrity. Because failure to comply could result in denial of an occupancy or use permit, having a contractual agreement that conforms to the IBC mandate is essential.)

If it's essential for you to fund QA via the constructor, have the CoMET fee included as an allowance in the bid documents. Note, too, that the International Building Code (IBC) requires the owner to pay for Special Inspection (SI) services.

CoMET consultants can usually quote their fees as unit fees, unit fees with estimated total (invoiced on a unit-fee basis), or lump-sum (invoiced on a percent-completion basis referenced to a schedule of values). No matter which method is used, estimated quantities need to be realistic. Some CoMET firms lower their total-fee estimates by using quantities they know are too low and then request change orders long before QA is complete.

Once you and the CoMET consultant settle on the scope of service and fee, enter into a written contract. Established CoMET firms have their own contracts; most owners sign them. Some owners prefer to use different contracts, but that can be a mistake when the contract was prepared for construction services. *Professional services are different.* Wholly avoidable problems occur when a contract includes provisions that don't apply to the services involved and fail to include those that do.

Some owners create wholly avoidable problems by using a contract prepared for construction services.

This final note: CoMET consultants perform QA for owners, not constructors. While constructors are commonly allowed to review QA reports as a *courtesy*, you need to make it clear that constructors do *not* have a legal right to rely on those reports; i.e., if constructors want to forgo their own observation and testing and rely on results derived from a scope created to meet *only* the needs of the owner, they *must do so at their own risk*. In all too many cases where owners have not made that clear, some constructors have alleged that they did have a legal right to rely on QA reports and, as a result, the CoMET consultant – not they – are responsible for their failure to deliver what they contractually promised to provide. The outcome can be delays and disputes that entangle you and all other principal project participants. Avoid that. Rely on a CoMET firm that possesses the resources and attitude needed to manage this and other risks as an element of a quality-focused service. Involve the firm early. Keep it engaged. And listen to what the CoMET consultant says. A good CoMET consultant can provide great value.

For more information, speak with your ASFE-Member CoMET consultant or contact ASFE directly.

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ENVIRONMENTAL DOCUMENT

FOR

FM 2696 (BLANCO ROAD)
FROM LOOP 1604 TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS

CCSJ: 2708-01-022
CSJ's: 2708-01-024 & 2708-01-025

July 2006

PREPARED FOR

THE FEDERAL HIGHWAY ADMINISTRATION

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FM 2696 (BLANCO ROAD)
FROM LOOP 1604 TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CCSJ: 2708-01-022
CSJ's: 2708-01-024 and 2708-01-025

July 2006

I. INTRODUCTION

This environmental document evaluates the nature and extent of environmental effects of the proposed roadway improvements along Farm-to-Market (FM) 2696 (Blanco Road) in San Antonio, Bexar County, Texas. The project construction begins at Glade Crossing and ends at Specht Road. The logical termini for the project are Loop 1604 and Specht Road and the study limits are from Loop 1604 to the Bexar/Comal County Line.

Prior roadway improvements were made from Loop 1604 to Glade Crossing under a previous construction project. This previous construction project included operational improvements including the addition of turn lanes and a raised median. This project did not include additional capacity, however, the pavement in this section was constructed at a width so that the proposed project could tie to it at Glade Crossing. The proposed project would include re-striping and changing of lane assignment in the section between Loop 1604 and Glade Crossing without any grading or widening of the existing roadway. These changes, however, would increase capacity beginning at Loop 1604. A location map of the project area is shown in **Figure 1**.

This project is located within the San Antonio Bexar County Metropolitan Transportation Planning Organization (MPO) area. The proposed action has been determined to be consistent with the area's metropolitan transportation plan known as "Mobility 2030" as adopted by the MPO. The proposed action is also listed in the 2006-2008 Transportation Improvement Plan (TIP).

The roadway improvements have been divided into three CSJ's as illustrated in the table below.

Table 1
Project Descriptions

CSJ	Highway	Limits From	Limits To	Letting
2708-01-022	FM 2696 (Blanco Road)	Glade Crossing	Wilderness Oak	1/2007
2708-01-024	FM 2696 (Blanco Road)	Wilderness Oak	W. Oak Estates	1/2007
2708-01-025	FM 2696 (Blanco Road)	W. Oak Estates	Specht Road	1/2010

II. DESCRIPTION OF THE EXISTING FACILITY

The study limits are on FM 2696 from Loop 1604 to the Bexar/Comal County Line. The logical termini are from Loop 1604 to Specht Road and the project construction limits are from Glade Crossing to Specht Road in northwestern San Antonio, Bexar County, Texas. Approximately 3.4 miles of the project is located within the San Antonio City Limits and the remaining approximate five miles is located in Bexar County. Photographs of the existing roadway are presented in **Exhibit A**.

a. Loop 1604 to Glade Crossing

The land use adjacent to the existing roadway consists of mostly commercial properties with two residential subdivisions. The speed limit varies from 40 to 45 miles per hour (mph).

This portion of FM 2696 was improved as part of the previous FM 2696 improvements south of Loop 1604, which included operational improvements including the addition of turn lanes and a raised median. This project did not include additional capacity, however, the pavement in this section was constructed at a width so that the proposed project could transition to the existing pavement at Glade Crossing. The roadway typically has a raised median from Loop 1604 to Glade Crossing. The northbound and southbound lanes consist of two–12 foot travel lanes with a five foot bike lane and sidewalks on both sides of the roadway. At the signalized intersection with Loop 1604, there is a right turn lane from the Loop 1604 westbound frontage road onto northbound FM 2696 and on southbound FM 2696 onto the Loop 1604 westbound frontage road. A signalized intersection was constructed approximately 1,100 feet north of Loop 1604 to allow access to commercial strip centers located on both sides of the road. At this intersection, right and left turn lanes are present and the raised median is interrupted to allow for cross traffic. At Glade Crossing, the north and southbound lanes taper from the four lane divided roadway back

to the existing two lane roadway with varying width shoulders. The current traffic volume is 16,500 vehicles per day (VPD).

b. Glade Crossing to Bexar /Comal County Line

The land use adjacent to the existing roadway consists of mostly undeveloped properties, including Camp Bullis, and residential subdivisions, but closer to the beginning of the project (Glade Crossing), there are some strip centers, an apartment complex and single facility businesses. Just north of the Glade Crossing, one apartment complex is located on the east side of FM 2696 and the remainder of the adjacent land from Glade Crossing to Wilderness Oak is comprised primarily of residential housing and strip businesses. Land use north of Wilderness Oak to Old Blanco Road is a mosaic of undeveloped lands and residential subdivisions with oversized lots. An occasional strip center or single facility business is located adjacent to the ROW. Camp Bullis, a U.S. Army training installation, borders FM 2696 to the west beginning 0.5 mile south of Wilderness Oak and ending just south of the Bexar/Comal County Line. The proposed improvements would not require ROW from the military property. Two parks are located adjacent to FM 2696. Panther Springs Park, owned and operated by the City of San Antonio, is located approximately 0.65 mile north of Wilderness Oak. Bullis Park, owned by Bexar County, is located between the two locations where Old Blanco Road intersects FM 2696. No ROW or easements would be required from either of the parks. Land use north of Old Blanco Road is primarily rural with Camp Bullis to the west and scattered single family housing to the east.

Existing FM 2696 consists of two–12 foot lanes with varying width shoulders (6 to 8 feet) for an overall pavement width varying from 36 to 40 feet with no curb or sidewalk. The existing ROW is typically 120 feet, but ranges from 109 to 384 feet. The existing typical section is shown in **Figure 2A**.

The current traffic volume from Glade Crossing to Wilderness Oak is 16,500 VPD. The current traffic volume from Wilderness Oak to W. Oak Estates is 6,600 VPD and current traffic volume from W. Oak Estates to Old Blanco Road is 3,100 VPD. The current traffic volume from Old Blanco Road to Specht Road is 2,300 VPD. The speed limit varies from 50 to 60 mph.

III. DESCRIPTION OF THE PROPOSED ACTION

1. Roadway Improvements

The proposed action would add capacity within the existing FM 2696 corridor from Loop 1604 to Specht Road with the ultimate design being four through lanes. No improvements beyond a transition back to the existing typical section would occur north of Specht Road. Overall, FM 2696 would be reconstructed and widened from two lanes to four lanes with a raised median and improvements would occur (left and right turn lanes) at the intersections. Proposed typical sections are shown in **Figures 2A and 2B**. An aerial with the schematic shown is displayed on **Figures 3A-3F**. The total length of the project is approximately 8.4 miles. The posted speed limit is 60 miles per hour. A more detailed description of the proposed action is described below.

a. Loop 1604 to Glade Crossing

For this section, previous improvements were implemented which included the construction of turn lanes and a raised median in conjunction with the FM 2696 widening south of Loop 1604. These turn lanes would be converted to through lanes to add capacity in the corridor.

b. Glade Crossing to Specht Road

For each direction, the proposed pavement section would typically consist of one–11 foot inside lane plus a one foot offset to the median and one–12 foot outside lane along with a 16 foot raised median and six foot bike lanes for an overall pavement width of 74 feet (**Figure 2A**). The proposed roadway would be curbed with continuous five foot sidewalks on each side. Stormwater runoff would typically pass through designated curb slot openings along the corridor and drain to roadside ditches between the roadway and the ROW.

The proposed vertical alignment of FM 2696 would essentially match the existing profile, but would be raised up to two feet in some areas along the corridor.

The projected (2025) traffic volume from Glade Crossing to Wilderness Oak is 27,200 VPD. The projected traffic volume from Wilderness Oak to W. Oak Estates is 10,400 VPD and projected traffic volume from W. Oak Estates to Old Blanco Road is 4,800 VPD. The projected traffic volume from Old Blanco Road to Specht Road is 3,400 VPD.

c. Turnarounds

Because FM 2696 would be upgraded to a divided facility, median openings would be constructed at four locations along the corridor to provide access for U-turn movements. To deter vehicles from stopping in the inside lane, a left turn lane with proper storage capacity would be provided to accommodate turning vehicles. The U-turning vehicle would cross the through travel lanes of the traffic from the opposing direction, navigate through the U-turn maneuver on additional pavement (a.k.a. jug handle), and then would merge with traffic. A typical detail of this turnaround is shown on **Figure 2A.**

d. Intersections

To provide access to cross streets within the project limits, a median opening treatment detail is shown on **Figure 2B, View 1**. A typical intersection would provide the following. For the southbound direction just south of the intersection, there would be an inside 16 foot acceleration lane (for the cross street traffic turning south on FM 2696), an 11 foot inside lane, a 12 foot outside lane and a 6 foot bike lane. In the northbound direction, there would be a 6 foot median with a one foot offset, an 11 foot inside lane, a 12 foot outside lane, a six foot bike lane and a 10 foot right turn lane. The overall pavement width is 90 feet. This is shown on **Figure 2B, Section A-A**. For the southbound direction just north of the intersection, there would be a 10 foot inside left turn deceleration lane (for southbound FM 2696 traffic turning onto the cross street), a 6 foot median with a one foot offset on either side of the median, an 11 foot inside lane, a 12 foot outside lane and a 6 foot bike lane. In the northbound direction, there would be a 6 foot median with a one foot offset on either side of the median, an 11 foot inside lane, a 12 foot outside lane and a 6 foot bike lane. The overall pavement width is 80 feet. This is shown on **Figure 2B, Section B-B**.

This configuration discussed above would occur at the intersections of FM 2696 and the following cross-streets: Enclave Bluff, Ranch Oak, Calico Landing, Oak Estates Drive, Midnight Drive, Slumber Pass, Falls Street, Rye Drive, both connections of Old Blanco Road and Specht Road.

Glade Crossing, Huebner Road and Wilderness Oak are signalized intersections. The lane configuration provided at the signalized intersections is described as follows. In the northbound direction, there would be a 10 foot left turn lane, 6 foot median with a one foot offset on either side of the median, an 11 foot inside lane, a 12 foot outside lane, a 6 foot bike lane and a 10 ten

foot right turn lane. In the southbound direction, there would be a 10 foot left turn lane, an 11 foot inside lane, a 12 foot outside lane, a 6 foot bike lane and 10 ten foot right turn.

2. Roadway Construction

To construct the roadway widening and rehabilitation, traffic would be routed through the construction areas where the roadway and/or bridges would be constructed in half-sections. Continuous access to residences and businesses would be provided during construction.

3. Right-of-Way

The existing ROW is typically 120 feet, but varies from 109 feet to 384 feet in some sections. It is anticipated that all of the roadway reconstruction would be performed in the FM 2696 existing ROW. Since there are no existing drainage easements along the corridor, no work would occur in any easements. It is not anticipated that any easements would be required.

Since no new ROW would be obtained, the proposed project would be exempt from the requirements of the Farmland Protection Policy Act and requires no coordination with the National Resource Conservation Service (NRCS).

4. Utility Construction

Buried underground telephone lines, gas lines and water lines occur along the ROW. Overhead electric, telephone and cable TV lines also occur along the ROW. It is unknown if any of the utilities would be joint bid. All of these utilities are anticipated to require adjustment as a result of the proposed project. The depth of the utilities are anticipated to be four to six feet deep.

5. Project Funding

This project would be constructed using state and federal funds as stated in the San Antonio Bexar County Metropolitan Transportation Plan (MTP) – "Mobility 2030". Two of the CSJ's, 2708-01-022 and 2708-01-023, are listed in the 2006-2008 Transportation Improvement Program (TIP). The cost for construction of the roadway improvements is approximately $35,484,500.

IV. PURPOSE AND NEED FOR THE PROPOSED PROJECT AND REASONABLE ALTERNATIVES

The purpose of the project is to increase the capacity of the roadway to accommodate the increase in population growth and development in the immediate area as well as to ensure the roadway meets a desirable Level of Service (LOS) "B" with a minimum of LOS "D". Also, the proposed project would add a raised median with various access points (left turn lanes) along the corridor to facilitate an uninterrupted traffic flow, and decrease travel time; subsequently increasing the capacity and safety of the roadway. The proposed project would improve mobility and safety within the FM 2696 corridor.

The FM 2696 corridor is one of only three major north-south corridors in northern San Antonio. Within the study limits, the FM 2696 corridor serves as a north-south travel route from Loop 1604 through northern Bexar County and beyond. The need for the project is indicated by the existing and projected growth in the area. This increase in traffic volume is due to rapid commercial and residential subdivision development along the corridor.

The existing level of service (LOS) of FM 2696 also makes it necessary to upgrade this roadway to provide four lanes of traffic. From Glade Crossing to Wilderness Oak, the existing LOS is F. With the proposed improvements implemented, the LOS would rise to B under current traffic volumes and evolves to a LOS C over the 20-year design life of the project. From Wilderness Oak to W. Oak Estates, the existing LOS is C. With the proposed improvements implemented, the LOS also rises to B under current traffic volumes and maintains a LOS B over the 20-year design life of the project. To provide consistency of design and to meet driver expectancy and hence, maximize safety, it is preferable to maintain the four lane section to Specht Road.

Constructing additional travel lanes, providing intersection improvements and constructing acceleration and deceleration lanes, would accommodate the increasing traffic volumes, decrease congestion, improve the LOS, enhance mobility and improve safety within the corridor. The addition of a raised median would facilitate uninterrupted traffic flow and decrease travel time, which would increase capacity and importantly, improve safety.

Growth of the area is another reason for the upgrading of this roadway. Except for the previously-improved area from Loop 1604 to Glade Crossing, FM 2696 (Blanco Road) to the Bexar/Comal County Line remains today as a two-lane roadway in an area where rapid growth and development has occurred over the last twenty years. Reviewing the 1985 and 1995 TxDOT-San Antonio District on-system traffic maps for certain segments of FM 2696 (Blanco

Road), average daily traffic counts are shown in the following table along with the current traffic volumes.

Table 2
Traffic Volumes and Percent Increases

FM 2696 (Blanco Road)	1985 Traffic Count	1995 Traffic Count	2005 Traffic Count	% increase over 10 years (from 1985 to 1995)	% increase over 10 years (from 1995 to 2005)	% increase over 20 years (from 1985 to 2005)
Glade Crossing to Wilderness Oak	2,800	7,500	16,500	168%	120%	489%
Wilderness Oak to W. Oak Estates	2,100	4,700	6,600	124%	40%	214%
W. Oak Estates to Old Blanco Road	950	2,500	3,100	163%	24%	69%
Old Blanco Road to Specht Road	750	1,100	1,700	47%	55%	127%

Source: (TxDOT On-System Traffic County Maps, San Antonio District)

As seen above in **Table 2**, there have been triple digit percent increases in average daily traffic in many segments of FM 2696 from 1985 to date. The growth trend is expected to continue to increase. The projected 2025 traffic volumes are as follows: from Glade Crossing to Wilderness Oak–27,200 VPD; Wilderness Oak to W. Oak Estates–10,400 VPD; from W. Oak Estates to Old Blanco Road–4,800 VPD; and from Old Blanco Road to Specht Road–3,400 VPD. From the current 2005 traffic volumes to the projected 2025 volumes, increases of 64%, 58%, 55% and 100%, respectively, make it necessary to rehabilitate, widen and implement current design standards to better manage congestion and accommodate continued traffic growth.

Since this roadway widening project is on existing location, only the no-build and improvements to the existing location alternative were considered. Although the no-build alternative would not result in the expansion of the existing roadway facility, routine roadway maintenance would still be required. However, the no-build alternative was not considered compatible with current and expected growth trends because it would not increase the capacity of the roadway facility to accommodate anticipated future traffic volumes. Motorists using the existing roadway facility would be expected to experience future traffic delays and traffic congestion. Therefore, the no-build alternative would not address the need for the project and ignores the plans of the local and regional transportation planning authorities and thus, was eliminated from further study.

V. POTENTIAL ENVIRONMENTAL EFFECTS

There are no airports in the vicinity of the project and therefore, an Airway-Highway clearance would not be required.

1. Social and Economic Impacts

a. Population and Demographics

The study limits begin at Loop 1604, which is located in the northwest quadrant of the City of San Antonio in Bexar County and terminates at the Comal County Line. The 1990 Census population estimate for Bexar County and the City of San Antonio was 1,185,394 and 935,933; respectively. The 2000 Census population estimate for Bexar County and the City of San Antonio was 1,392,931 and 1,144,646; respectively. Therefore, the populations of Bexar County and the City of San Antonio had an overall population increase of 17.5 and 22.2 percent; respectively.

The current population within the six affected 2000 Census block groups is 17,647; as shown in **Table 3**. Block Group 1916.00:1 is within the boundaries of Camp Bullis U.S. Army Base and Military Reservation. The 2000 Census block group data indicated that there was a population of 16. To verify the total population within block group 1916.00:1, Census 2000 group quarter population data was examined and no group quarter populations were identified.

Regional and community growth in the project vicinity is expected to continue along present trends. Current land use at the southern end of the proposed project is predominantly used for strip centers, apartments, residential subdivisions and commercial businesses. Adjacent properties to the eastern boundary of the proposed project are primarily residential subdivisions and commercial businesses with one county park, Bullis Park and one City park, Panther Springs Park. Land use adjacent to the western boundary is primarily occupied by the Camp Bullis U.S. Army Base and Military Reservation. As evidenced by the present land use trend, vacant land along FM 2696 (Blanco Road) would continue to be developed regardless of whether the proposed widening improvements to the roadway facility is implemented or not. Therefore, this land use trend is expected to remain the same after construction.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was enacted on February 11, 1994 and mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human

health or environmental effects of programs on minority and low-income populations. The potential effects of the proposed project have been evaluated in accordance with the requirements of the Executive Order. The percent minority (i.e., persons classified by the U.S. Census Bureau as Black, Asian, American Indian or Alaska Native, Hispanic, or other non-white persons) within the six 2000 Census block groups ranges from 6.3 to 25.6 percent (**Table 3**). Cumulatively, approximately 23.3 percent of the population within the six 2000 Census block groups is classified as minority, compared to 64.4 percent in Bexar County and 68.2 percent in the City of San Antonio. Approximately 1.8 percent of the population within the six 2000 Census block groups is classified as low-income (i.e., persons living below the national poverty level), compared to 15.9 percent in Bexar County and 17.3 percent in the City of San Antonio. **Table 3** shows the percent of the population classified as minority or low-income for the 2000 Census block groups within or adjacent to the study area, Bexar County and the City of San Antonio.

Table 3
Population and Demographics for Environmental Justice Analysis

Geographic Area	Total Population	Race/Ethnicity by Percent				% Minority	% Low-Income
		Hispanic	White	Black	Other		
County and City							
Bexar County	1,392,931	54.3	35.6	6.9	3.2	64.4	15.9
San Antonio	1,144,646	58.6	31.8	6.5	3.1	68.2	17.3
BLOCK GROUPS							
1916.00:1	16	6.3	93.7	0.0	0.0	6.3	0.0
1918.02:1	4,197	14.0	78.9	3.4	3.7	21.1	0.5
1918.03:3	2,119	13.6	77.8	3.4	5.2	22.2	0.8
1918.04:1	454	19.4	78.4	0.2	2.0	21.6	0.0
1918.04:2	3,032	21.7	74.4	1.3	2.6	25.6	1.3
1918.05:1	7,829	17.6	75.9	1.9	4.6	24.1	3.0
6-Block Group Total	17,647	17.0	76.7	2.3	4.0	23.3	1.8

Source: U.S. Census Bureau 2000

The proposed project would not affect, bisect or isolate any distinct neighborhoods, ethnic groups or other specific groups. There would be no disproportionately high and adverse human health or environmental effects to minority or low-income individuals or communities. No effect on neighborhood and community cohesion would occur. No businesses or residences would be displaced as a result of this project. The proposed improvements would provide a safer, more

efficient transportation route for local residents, commuters, commercial vehicles and the traveling public including minority and low-income individuals.

b. Limited English Proficiency

Executive Order 13166, *Improving Access to Services for Persons with Limited English Proficiency*, sets a framework to improve access to federally conducted and federally assisted programs and activities for persons who, as a result of national origin, are limited in their English proficiency. According to the 2000 Census, 2.9 percent of the persons within the affected six 2000 Census block groups speak English less than "very well," which is considered Limited English Proficient (LEP) and 0.9 percent are "linguistically isolated." The majority (approximately 97.1 percent) of persons living within the six 2000 Census block groups speak English "very well." Within the six 2000 Census block groups, LEP and linguistically isolated populations, 71.9 and 70.6 percent, respectively, speak Spanish.

Opportunities for community input in the National Environmental Policy Act (NEPA) process have been and would continue to be provided. Reasonable attempts to solicit public comments were made at the public meeting held on September 2, 2004. The meeting was announced in local newspapers and meeting notices were mailed to elected officials, government agencies, local organizations, civic groups, the media, businesses, and interested citizens. It was determined by TxDOT that publication of notices in Spanish would not be warranted because 97.1 percent of the persons in the project area speak English "very well."

c. Economic Impacts

The proposed project would occur within the existing ROW. No commercial businesses are expected to be adversely affected by this project. Businesses may be inconvenienced and would suffer slightly during the construction phase of the project; however, this situation would be temporary. Phased construction and maintenance of access to adjacent properties would minimize this impact. No existing streets, intersections or driveways to public and private facilities would be closed.

During construction, the local economy can be expected to experience a temporary increase in spending by construction employees at businesses and fast-food restaurants in the vicinity and would not be expected to have any adverse impact on local employment in the vicinity of the project. It is anticipated that there would be no major effect on adjacent property values nor

would there be any change to the local tax base since planned development of the adjacent properties are being executed or have been executed.

The proposed project would not alter existing travel patterns. The proposed project would improve access, mobility and safety within the project area, thereby, enhancing services provided by public transportation, area law enforcement agencies, fire department and other emergency services.

2. Air Quality

The San Antonio area (3 counties: Bexar, Comal and Guadalupe) has recently been classified as non-attainment under the federal 8-hour ozone national ambient air quality standards; however, the effective date of this designation has been deferred. Due to the pro-active efforts of the San Antonio area in implementing an Early Action Compact (EAC) measures such as transportation conformity, would not apply in the area. The proposed action is consistent with the San Antonio-Bexar County Metropolitan Planning Organization's 2030 *Metropolitan Transportation Plan* and 2006-2008 *Transportation Improvement Program*. This project would not violate any implementation plan for the county.

All projects in the San Antonio-Bexar County Metropolitan Planning Organization's 2006-2008 *Transportation Improvement Program* that are proposed for federal or state funds are consistent with federal guidelines in Title 23, Section 450 and Title 49, Section 613.200, Subpart B of the *Code of Federal Regulations*. The program considers energy, environment, air quality, cost and mobility.

The estimated traffic volume in 2010, the estimated time of construction (ETC), is 16,500 vehicles per day. In 2030, the traffic volume is estimated to be 30,000 vehicles per day. Because traffic volume projections exceed 20,000 VPD and the Blanco Road project is added capacity, a Traffic Air Quality Analysis is required. Topography and meteorology of the project area would not seriously restrict dispersion of the air pollutants.

Carbon Monoxide (CO) concentration levels were calculated using the Caline 3 line source dispersion model and Mobile 6 mobile source emissions model in accordance with the TxDOT Air Quality Guidelines. **Table 4** summarizes the results of the analysis. Local concentrations of carbon monoxide are not expected to exceed national standards at any time.

Table 4
Estimated CO Concentrations

Year	1-Hour CO Concentration (ppm)	Percent of NAAQS Standard (1-hour)	8-Hour CO Concentration (ppm)	Percent of NAAQS Standard (8-hour)
2005	2.8	8	1.5	17
2025	2.5	7	1.4	16

- One-hour CO national standard is 35 ppm.
- Eight-hour CO national standard is 9 ppm.
- Estimated one-hour ambient CO concentration is 1.7 ppm.
- Estimated eight-hour ambient CO concentration is 1.1 ppm.

These CO concentrations are below NAAQS standards; therefore, the project would not have a substantial impact on air quality.

The purpose of this project is to increase the capacity of the roadway along with improving mobility and safety within the roadway corridor by constructing additional travel lanes, providing intersection improvements and providing acceleration and deceleration lanes. This project would not result in any meaningful changes in traffic volumes, vehicle mix, location of existing roadways, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, TxDOT/FHWA has determined that this project would generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special Mobile Source Air Toxics (MSAT) concerns. Consequently, this project or transportation improvement is exempt from analysis for MSATs.

Moreover, EPA regulations for vehicle engines and fuels would cause overall MSATs to decline significantly over the next 20 years. Even after accounting for an above 60% increase in VMT, TxDOT/FHWA predicts MSATs would decline between 50 and 90 percent from a baseline year of 2000 to the future year of 2020. This decline is based on the current vehicle and fuel regulations in place today and with the significant projected growth in VMT. These reductions would both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions increases from this project.

3. Noise Analysis

This analysis was accomplished in accordance with TxDOT's *Guidelines for Analysis and Abatement of Highway Traffic Noise*, which are approved by the Federal Highway Administration.

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dBA."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq." **Table 5** shows several sounds commonly heard and their respective noise levels.

Table 5
Common Sound/Noise levels

COMMON SOUND/NOISE LEVELS		
Outdoor	**dBA**	**Indoor**
Pneumatic hammer	100	Subway Train
Gas lawn mower at 3 feet		
	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal at 3 feet
Lawn mower at 100 feet	70	Vacuum cleaner at 10 feet
		Normal speech at 3 feet
Air conditioning unit	60	Clothes dryer at 3 feet
Babbling brook		Large business office
Quiet urban (daytime)	50	Dishwasher (next room)
Quiet urban (nighttime)	40	Library

The Federal Highway Administration has established noise abatement criteria for various land use activity areas (**Table 6**) as one of two means to determine when a traffic noise impact would occur.

Table 6
FHWA Noise Abatement Criteria

FHWA NOISE ABATEMENT CRITERIA		
Activity Category	**dBA Leq**	**Description of Land Use Activity Areas**
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (exterior)	Developed lands, properties or activities not included in categories A or B above.
D	--	Undeveloped lands.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

NOTE: primary consideration is given to exterior areas (Category A, B or C) where frequent human activity occurs. However, interior areas (Category E) are used if exterior areas are physically shielded from the roadway, or if there is little or no human activity in exterior areas adjacent to the roadway.

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion: the predicted noise level at a receiver approaches, equals or exceeds the noise abatement criterion. “Approach” is defined as one dBA below the noise abatement criterion. For example, a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dBA or above.

Relative criterion: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the noise abatement criterion. “Substantially exceeds” is defined as more than 10 dBA. For example, a

noise impact would occur at a Category B residence if the existing level is 54 dBA and the predicted level is 65 dBA (11 dBA increase).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

The Federal Highway Administration traffic noise modeling software TNM was used to calculate existing and predicted traffic noise levels. The model considers the number, type and speed of vehicles, highway alignment and grade, cuts, fills and natural berms, surrounding terrain features and the locations of activity areas likely to be affected by traffic noise.

Existing and predicted traffic (**Table 7**) noise levels were modeled for representative Category B, Category C and Category E receivers (**Table 8**) that are adjacent to the highway that might be impacted by traffic noise and that may potentially benefit from feasible and reasonable noise abatement. The receiver locations are shown in **Figures 3A-3F**.

Table 7
Traffic Volumes along FM 2696

Segment of FM 2696	2005 Traffic Volume (vehicles/day)	2025 Traffic Volume (vehicles/day)
Loop 1604 to Wilderness Oak	16,500	27,200
Wilderness Oak to Oak Estates	6,600	10,400
Oak Estates to Old Blanco Rd	3,100	4,800

As indicated below in **Table 8**, predicted noise levels exceed existing levels by a maximum of three decibels, and the noise abatement criterion was not approached, equaled or exceeded. Therefore, the project would not result in a traffic noise impact.

Table 8
Predicted Peak Hour Traffic Noise Levels (L_{eq}, dBA)

Receiver	NAC Category	NAC Level	Existing 2005	Predicted 2025	Change (+/-)	Noise Impact?
R1: Residence	B	67	59	61	+2	No
R2: Park	B	67	59	61	+2	No

Receiver	NAC Category	NAC Level	Existing 2005	Predicted 2025	Change (+/-)	Noise Impact?
R3: Residence	B	67	50	52	+2	No
R4: Residence	B	67	58	60	+2	No
R5: Business Retail	C	72	57	59	+2	No
R6: Residence	B	67	57	59	+2	No
R7: Residence	B	67	57	59	+2	No
R8: Residence	B	67	63	65	+2	No
R9: Business Office	C	72	61	63	+2	No
R10: Residence	B	67	62	64	+2	No
R11: Residence	B	67	61	63	+2	No
R12: Residence	B	67	57	58	+1	No
R13: Gas Station	C	72	60	62	+2	No
R14: Shopping Center	C	72	57	59	+2	No
R15: Business Office	C	72	57	59	+2	No
R16: Residence	B	67	56	58	+2	No
R17: Business Office	C	72	65	67	+2	No
R18: Residence	B	67	59	61	+2	No
R19: Residence	B	67	63	65	+2	No
R20: Residence	B	67	60	62	+2	No
R21: Residence	B	67	61	62	+1	No
R22: Residence	B	67	64	65	+1	No
R23: Residence	B	67	62	64	+2	No
R24: Town Home	B	67	63	65	+2	No
R25: Town Home	B	67	63	65	+2	No
R26: Town Home	B	67	61	63	+2	No
R27: Town Home	B	67	58	60	+2	No
R28: Town Home	B	67	57	59	+2	No
R29: Town Home	B	67	58	61	+3	No
R30: Town Home	B	67	60	62	+2	No
R31: Town Home	B	67	60	62	+2	No
R32: Town Home	B	67	60	62	+2	No
R33: Town Home	B	67	60	62	+2	No
R34: Town Home	B	67	60	62	+2	No
R35: Town Home	B	67	60	62	+2	No
R36: Town Home	B	67	59	61	+2	No

Receiver	NAC Category	NAC Level	Existing 2005	Predicted 2025	Change (+/-)	Noise Impact?
R37: Shopping Center	C	72	64	67	+3	No
R38: Residence	B	67	62	64	+2	No
R39: Shopping Center	C	72	65	67	+2	No
R40: Apartment	E	52	47	49	+2	No
R41: Apartment	E	52	47	49	+2	No
R42: Apartment	E	52	47	49	+2	No
R43: Apartment	E	52	46	49	+3	No
R44: Apartment	E	52	46	48	+2	No
R45: Apartment	E	52	46	48	+2	No
R46: Apartment	E	52	48	50	+2	No
R47: Shopping Center	C	72	62	64	+2	No
R48: Apartment	E	52	47	49	+2	No
R49: Apartment	E	52	47	49	+2	No
R50: Apartment	E	52	40	42	+2	No

Land use activity areas on the east side of FM 2696 between Specht Road and Old Blanco Road, Rye Drive and Midnight Drive, Oak Estates Drive and Calico Landing, and Gathering Oak and Wilderness Oak are currently Category D, undeveloped land. No new development is planned in these areas. There is no noise abatement criterion for undeveloped land. However, to avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs should ensure that new residential or other Category B activities are not planned within the predicted 2025 noise impact contour (**Table 9**).

Table 9
Noise Contours for Guiding Future Development

Land Use	Impact Contour (dBA)	Distance from Right-of-Way (feet)
Residential	66	20
Commercial	71	N/A*

* The 71 dBA noise contour falls within the ROW.

A copy of this traffic noise analysis would be made available to local officials to ensure that future developments are planned, designed and programmed in a manner that would avoid traffic noise impacts. On the date of approval of this document (Date of Public Knowledge), the Federal

Highway Administration and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

4. Water Quality

Surface water runoff from the project area flows to Meusebach Creek or Panther Springs Creek, and eventually to the San Antonio River. Effects to water quality, if any, are expected to be temporary and minor. This project does not cross any public water supply reservoirs. Portions of the project are located over the Edwards Aquifer Recharge Zone and Contributing Zone and therefore, a Edwards Aquifer Protection Plan would be prepared in accordance with 30 Texas Administrative Code (TAC) Chapter 213, Edwards Aquifer Rules. Since the project is federally funded, coordination with the Environmental Protection Agency's Sole Source Aquifer Program would be required.

An Edwards Aquifer observation well is located approximately 600 feet south of Slumber Pass on the east side of FM 2696 and is shown on **Figure 3D**. This well is not in the Edwards Aquifer Recharge Zone, however, measures such as sediment control devices would be taken during construction to protect the observation well.

a. Stormwater

The Texas Commission on Environmental Quality (TCEQ) regulates the discharge of storm water from certain construction sites that disturb one or more acres of land. Since this project would disturb five or more acres of land, a TCEQ Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) would be required. In addition, the project would require a Notice of Intent (NOI) to be filed with the TCEQ.

The plans and specifications would include a Storm Water Pollution Prevention Plan (SW3P). Measures would be taken to prevent or correct erosion that may develop during construction. All temporary erosion controls, such as silt fences and rock berms, would be in compliance with TxDOT Standard Specifications and would be in place, according to the construction plans, prior to commencement of construction related activities and inspected on a regular basis.

b. Creek Crossings/Wetlands/Permits/Floodplains

The project was surveyed for waters of the U.S., including wetlands, on January 19, 2005. There were no wetland areas identified within the project limits. However, a potential wetland area is

located in the ROW approximately 0.5 mile north of Specht Road, on the west side (STA 617+60). While this potential wetland is not located within the project limits, it is located within the study limits, but would not be impacted by construction activities. No wetland delineation or determination was conducted for this potential wetland.

Within the project limits, FM 2696 crosses six drainages. Each of these exhibited ordinary high water marks (OHWM) and were determined to be U.S. Army Corps of Engineer's jurisdictional waters, which are shown on the USGS Camp Bullis, Castle Hills, Longhorn and Bulverde topographic maps (**Figure 4**). The six jurisdictional waterway crossings are three crossings of Panther Springs Creek, an unnamed tributary to Panther Springs Creek, an unnamed tributary to Meusebach Creek and Meusebach Creek. There are no existing drainage easements along the project corridor.

Since the roadway is in the schematic phase, the roadway design is not sufficiently complete to determine the exact USACE permit requirements for each of the crossings. Bexar County would be developing the construction plans and therefore, the permit requirements would be assessed during the design phase either by the County or in conjunction with TxDOT. An estimate of the required permits has been made for each of the jurisdictional crossings and is discussed below. At this time, grading is not anticipated beyond the existing ROW since there are no existing drainage easements along the corridor. The amount of grading within the ROW at the proposed bridge structures has not been finalized. The need for the USACE permits would be continually evaluated by TxDOT as the design of the roadway project progresses and the hydraulics are finalized.

At STA 1058+75 (approximately 700 feet north of Huebner Road), the project crosses Panther Springs Creek (**Exhibit A, Photo #3**). This is the first of three crossings for Panther Springs Creek. There is an existing seven barrel–6 foot by 5 foot multiple box culvert under the northbound lanes and an existing seven barrel–9 foot by 5 foot multiple box culvert under the southbound lanes. These structures would likely be extended approximately 38 feet on the upstream end and 25 feet on the downstream end. It is not anticipated that any grading would be required at this crossing. As summarized in **Table 10**, it is anticipated that work at this crossing would result in a permanent impact of approximately 0.06 acre below the plane of ordinary high water. This would also include any required utility adjustments. At this time, it is anticipated that the work would qualify for coverage under Nationwide Permit #14 (without notification) from the U.S. Army Corps of Engineers.

At STA 1042+75 (approximately 0.43 mile north of the Huebner Road), the project crosses Panther Springs Creek (**Exhibit A, Photo #4**). This is the second of three crossings for Panther Springs Creek. The existing seven barrel–8 foot by 8 foot box culvert would likely be extended approximately 22 feet on the upstream and 12 feet on the downstream end. At the time, it is not anticipated that any grading would be required at this crossing. As summarized in **Table 10**, it is anticipated that work at this crossing would result in a permanent impact of approximately 0.03 acre below the plane of ordinary high water. This would also include any required utility adjustments. At this time, it is anticipated that the work would qualify for coverage under Nationwide Permit #14 (without notification) from the U.S. Army Corps of Engineers.

At STA 923+75 (approximately 1.56 miles north of Wilderness Oak), the project crosses Panther Springs Creek (**Exhibit A, Photo #5**). This is the third of three crossings for Panther Springs Creek. The existing five span 127.5 foot bridge over Panther Springs Creek would likely be replaced with a three span 240 foot box beam bridge. However, it has not been determined how much grading would be required at the bridge and within the ROW to pass a specific flood event. If no grading is required at the bridge or within the ROW, it is anticipated that work at this crossing would likely result in a permanent impact of less than 0.001 acre below the plane of ordinary high water for placement of bridge columns and thus, would meet the requirements for coverage under Nationwide Permit #14 (without notification) from the U.S. Army Corps of Engineers. Since the total amount of jurisdictional waters within the ROW is over 0.5 acres and if any extensive grading would be required, TxDOT would attempt to design the project to permanently impact less than 0.5 acres to stay within the requirements of a Nationwide Permit #14. However, if this is not feasible, then the project may likely meet the requirements for an Individual Permit.

At STA 841+00 (approximately 1.0 mile north of W. Oaks Estates), the project crosses an unnamed tributary to Panther Springs Creek (**Exhibit A, Photo #7**). The existing seven 48-inch CMP culvert would likely be replaced with a four barrel–8 foot by 4 foot box culvert. This box culvert would be approximately 25 foot longer than the existing structure. It is anticipated that approximately 25 feet of grading would occur from the end of the proposed boxes downstream to the ROW line. No grading is expected upstream of the boxes. As summarized in **Table 10**, work at this crossing would likely result in a permanent impact of less than 0.04 acre below the plane of ordinary high water. This would also include any utility required adjustments. This crossing would likely meet the conditions for Nationwide Permit #14 (without notification) from the U.S. Army Corps of Engineers.

AT STA 720+26 (approximately 1,355 feet south of Old Blanco Road), the project crosses an unnamed tributary to Meusebach Creek (**Exhibit A, Photo #11**). The existing two 48-inch CMP culvert would likely be replaced with a four barrel–8 foot by 6 foot box culvert. The box culvert would be approximately 25 foot longer than the existing structure. It is anticipated that approximately 20 feet of grading would occur from the ROW line to the upstream boxes. As summarized in **Table 10** work at this crossing would result in a permanent impact of approximately 0.02 acre below the plane of ordinary high water. This would also include any required utility adjustments. Since the total amount of acres of jurisdictional waters in the ROW is approximately 0.065 acres, this crossing would meet the conditions for Nationwide Permit #14 (without notification) from the U.S. Army Corps of Engineers.

At STA 669+00 (approximately 0.50 mile south of Specht Road), the project crosses Meusebach Creek (**Exhibit A, Photo #10**). The existing five barrel–9 foot by 5 foot box culvert would be replaced with a three span 195 foot box beam bridge. However, it has not been determined how much grading would be required at the bridge and/or within the ROW to pass a specific flood event. If no grading is required at the bridge or within the ROW, it is anticipated that work at this crossing would likely result in a permanent impact of less than 0.001 acre below the plane of ordinary high water for placement of bridge columns and thus, would meet the requirements for coverage under Nationwide Permit #14 (without notification) from the U.S. Army Corps of Engineers. Since the total amount of jurisdictional waters within the ROW is approximately 0.3 acre and if any extensive grading would be required, then the project may likely meet the requirements for a Nationwide Permit # 14 (with notification).

Table 10
Summary of Impacts to Waters of the U.S.

No.	Station	Name	Area of Permanent Impacts (acres)	Total U.S. waters in ROW (Acres)	Wetland	Anticipated Permit
1	1058+75	1st Crossing of Panther Springs Creek	0.06	0.09	N	NWP 14 (No PCN)
2	1042+75	2nd Crossing of Panther Springs Creek	0.03	0.05	N	NWP 14 (No PCN)
3	923+75	3rd Crossing of Panther Springs Creek	Not Known at the time	0.51	N	NWP 14 (Potential IP)
4	841+00	Unnamed tributary to Panther Springs Creek	0.04	0.11	N	NWP 14 (No PCN)

5	720+26	Unnamed tributary to Meusebach Creek	0.02	0.04	N	NWP 14 (No PCN)
6	669+00	Meusebach Creek	Not Known at the time	0.30	N	NWP 14 (Potential PCN)

According to the flood insurance rate map (FIRM panels 48029C0110E, 48029C0120E, 48029C0257E) for Bexar County, Texas, portions of the proposed project are located within a 100-year flood hazard zone. The hydraulic design for the drainage structures associated with this project would be in accordance with current TxDOT and FHWA design policies and standards. The highway facility would permit the conveyance of a 100-year flood, inundation of the roadway being acceptable, without causing significant impacts to the roadway or floodplains upstream or downstream. The entirety of the project is located in Bexar County, which is a regular participant in the National Flood Insurance Program. The project would not increase the base flood elevation to a level that would violate applicable floodplain regulations. The project would be coordinated with the local floodplain administrator. The 100-year floodplain boundary is shown on **Figure 4**.

c. 401 Certification

To meet the requirements of the TCEQ's 401 Water Quality Certification conditions for nationwide permits, best management practices would be included in the project to address water quality during and after construction. During construction, measures developed and implemented as part of the SW3P would reduce adverse effects to water quality. The project would use TCEQ-approved erosion and sedimentation controls during construction to minimize temporary impacts. In addition, TCEQ-approved post-construction measures to address total suspended solids in storm water runoff would also be implemented. Post construction total suspended solids (TSS) controls would consist of vegetation-lined drainage ditches along the roadway.

d. Threatened and Impaired Waters

Based on the TCEQ's 2002 Clean Water Act Section 303 (d) list, this project does not cross an impaired water body, but is within 5 miles upstream of one listed (impaired) water segment 1910 of Salado Creek. This project crosses a tributary to Meusebach Creek, Meusebach Creek, a tributary to Panthers Springs Creek, and crosses Panthers Springs Creek in three different locations. These water ways are tributaries to Salado Creek, Stream Segment 1910. The overall category for this portion of Segment 1910 is 5a, meaning "the water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or

more pollutants", and "a Total Maximum Daily Load (TMDL) is underway, scheduled, or would be scheduled". Segment 1910 is listed as not supporting aquatic life and contact recreation uses because of elevated bacteria levels.

5. Vegetation

The project area consists of existing ROW. As described in Texas Parks and Wildlife Department's (TPWD) *The Vegetation Types of Texas Including Cropland*, the project limits are within the Edwards Plateau ecoregion and are mapped as Live Oak-Ashe Juniper Woods and Live Oak-Ashe Juniper Parks vegetation types. Live Oak-Ashe Juniper Woods are mapped as occurring from Loop 1604 north to approximately West Oaks Estates Drive, and Live Oak-Ashe Juniper Parks are mapped as occurring from West Oaks Estates Drive north to the Bexar/Comal county line. Species commonly associated with Live Oak- Ashe Juniper Parks are live oak (*Quercus virginiana*), Ashe juniper (*Juniperus ashei*), mesquite (*Prosopis glandulosa*), Texas oak (*Quercus buckleyi*), shin oak (*Q. sinuate* var. *brevilobata*), cedar elm (*Ulmus crassifolia*), netleaf hackberry (*Celtis reticulata*), flameleaf sumac (*Rhus lanceolata*), agarita (*Berberis trifoliolata*), Texas persimmon (*Diospyros texana*), Texas prickly pear (*Opuntia lindheimeri*), Texas kidneywood (*Eysenhardtia texana*), greenbrier (*Smilax bona-nox*), Texas wintergrass (*Stipa leucotricha*), little bluestem (*Schizachyrium scoparium*), curly mesquite (*Hilaria belangeri*), Texas grama (*Bouteloua rigidiseta*), Halls panicum (*Panicum hallii*), purple three-awn (*Aristida purpurea*), hairy tridens (*Tridens pilosum*), cedar sedge (*Carex planostachys*), two-leaved senna (*Cassia roemeriana*), mat euphorbia (*Euphorbia serpens*) and rabbit tobacco (*Evax prolifera*). Species commonly associated with Live Oak-Ashe Juniper Woods are Texas oak, shin oak, cedar elm, evergreen sumac (*Rhus virens*), escarpment cherry (*Prunus serotina* var. *eximia*), greenbrier, Texas mountain laurel (*Sophora secundiflora*), poison oak (*Rhus toxicodendron*), twistleaf yucca (*Yucca rupicola*), elbowbush (*Forestiera pubescens*), cedar sedge, little bluestem, Neally grama (*Bouteloua uniflora*), Texas grama, meadow dropseed (*Sporobolus asper* var. *hookeri*), Texas wintergrass, curly mesquite, pellitory (*Parietaria pensylvanica*), noseburn (*Tragia ramosa*), spreading sida (*Sida filicaulis*), woodsorrel (*Oxalis* spp.), and mat euphorbia. The distribution area and the dominant species were the primary determining factors of vegetation type, since many of the subdominant species reported for these vegetation types do not occur in the project area.

Existing ROW

Vegetation within the ROW consists mainly of regularly maintained TxDOT seeded grasses and approximately 14 acres of wooded vegetation. Woody vegetation consists of small patches of

trees with an understory of shrubs; shrubs also occur along fencelines. Bermuda (*Cynodon dactylon*), King Ranch bluestem (*Bothriochloa ischaemum*), and Johnson grass (*Sorghum halepense*) are the dominant grass species within the ROW, with lesser amounts of silver bluestem *(Bothriochloa saccharoides*) and windmill grass (*Chloris* spp.). The forbs consist of western ragweed (*Ambrosia psilostachya*), Mexican hat (*Ratibida columnaris*), and croton (*Croton* spp.). Live oak is the dominant tree species found in the ROW with lesser amounts of Ashe juniper, post oak (*Quercus stellata*), and Texas oak. Cedar elm and netleaf hackberry are found in low densities near drainages. Live oaks average approximately 20 feet tall and average 15 inches in diameter at breast height (DBH). Texas persimmon is the dominant shrub species in the ROW with lesser amounts of agarita, elbow bush, and live oak and Ashe Juniper saplings. Greenbrier and grape (*Vitis* spp.) are the dominant vine species found in the ROW.

Adjacent Properties

Vegetation of adjacent properties in undeveloped areas is live oak/Ashe juniper woodland, mixed grass fields, and residential and commercial landscaping. In wooded areas adjacent to the ROW, live oak trees occur in low to moderate densities. Live oak trees range in height from 8 to 30 feet with most being approximately 18 feet tall. Ashe juniper trees also occur in low to moderately high densities. Ashe juniper trees range in height from 6 to 20 feet with most being approximately 15 feet tall. Other tree species are present in very low densities or occur as isolated individuals including mesquite, huisache (*Acacia farnesiana*), Lacey oak (*Quercus glaucoides*), shin oak, and blackjack oak (*Quercus marilandica*). Shrub species adjacent to the ROW are present in low to moderate densities and include sapling live oak and Ashe juniper, agarita, evergreen sumac, elbow bush, netleaf hackberry, bumelia (*Sideroxylon lanuginosa*), Texas persimmon, twisted-leaf yucca (*Yucca rupicola*), and sotol (*Dasylirion texanum*).

Adjacent properties consist of moderate to dense residential and commercial development, open cropland/rangeland, and the Camp Bullis Military Reservation, which is mostly undeveloped Ashe juniper woodland. Open cropland/rangeland adjacent to the ROW begins on the east side approximately 3,200 feet south of Specht Road (near STA 675+00) and extends north to the Bexar/Comal County line. The Camp Bullis Military Reservation occurs immediately adjacent to the west ROW beginning approximately 0.5 mile south of Wilderness Oak (near STA 1037+00) and ending just south of the Bexar/Comal County Line. The military reservation regularly maintains their fenceline with a road adjacent to the ROW just outside of the ROW fence.

Unusual and Special Habitat Features

Two unusual vegetation features occur in the existing ROW as outlined in the Memorandum of Agreement (MOA) between TxDOT and the Texas Parks and Wildlife Department: fencerow vegetation and unusually large trees. Trees or shrubs along a fenceline (ROW) adjacent to a field (fencerow vegetation) occur on the east side of Blanco Road from approximately 3,200 feet south of Specht Road (near STA 675+00) north to the Bexar/Comal County line. **Table 11** describes four trees that are unusually larger than other trees in the study area and are to be preserved.

Table 11
Unusually Large Trees to be Preserved in the FM 2696 ROW

Tree Species	DBH (Diameter at Breast Height)	East/West side of FM 2696 (Blanco Road)	Station
Live Oak	24 inches	East	975+00
Live Oak	27 inches	East	837+00
Live Oak	28 inches	East	753+00
Live Oak	27 inches	East	742+00

Four special habitat features occur within the project area: 1) a cave occurs near the eastern edge of the ROW north of Calico Road near station 936+00, 2) three snags are located within the project area: one snag is located north of Huebner Road near station 1043+00 on the east side of the ROW and two snags are located south of Oak Estates Drive near station 914+00 (east side), 3) cliff swallow nest occurs under the Panther Springs Creek bridge (STA 1043+00). The nest was not active at the time of the field survey (January 2005). No other special habitat features outlined in the MOA are present within the project area. Please note that a potential wetland is located 0.5 mile north of Specht Road, occurring within the ROW and adjacent to the west side of the ROW. While this potential wetland is located within the study limits, it is not located within the project limits and would not be impacted by construction activities.

Migratory birds may feed or nest within the limits of the proposed project during construction activities. Measures would be taken to avoid the take of migratory birds, their occupied nests, their young and their eggs.

Vegetation Impacts

The majority of the area to be disturbed consists of regularly maintained TxDOT ROW consisting of grasses. Approximately 14 acres of patchy woody vegetation would be impacted in

the project area. Within woody vegetation patches, canopy cover ranges from 50 to 100 percent; however, overall canopy cover of the project area is less than 5 percent. Most of the unusually large trees within the existing ROW are expected to be removed with the exception of four live oaks trees near stations 975+00, 837+00, 753+00 and 742+00 on the east side of the ROW (**Table 11**).

Compensatory Mitigation

In accordance with the TxDOT-TPWD MOA, habitats given consideration for non-regulatory mitigation include:

1) habitat for Federal candidate species (impacted by the project) if mitigation would assist in the prevention of the listing of the species;
2) rare vegetation series (S1, S2, S3) that also locally provide habitat for a state-listed species. Refer to "Plant Communities of Texas (Series Level)" by TPWD for Series designations;
3) all vegetation communities listed as S1 or S2, regardless of whether or not the series in question provide habitat for state-listed species;
4) bottomland hardwoods, native prairies, and riparian sites; and
5) any other habitat feature considered to be locally important that the TxDOT District chooses to consider.

No habitats that are given consideration for non-regulatory mitigation occur within the project limits; therefore, no compensatory mitigation is proposed.

Plant communities found within and adjacent to the project area are listed as Series 4 in the *Plant Communities of Texas (Series Level)*. A Series 4 plant community is one that is "apparently secure in the state" and does not warrant mitigation. No rare vegetation communities occur within the project area.

No landscaping is planned for this project at this time. Disturbed areas would be revegetated according to TxDOT's standard practices, which to the extent practical are in compliance with Executive Order 13112 on Invasive Species.

6. Threatened and Endangered Species

This section assesses the potential for the proposed project to adversely affect any of the endangered or threatened species or subspecies considered by USFWS or TPWD as having

potential to occur in Bexar County. This analysis includes a review of TPWD's Biological Natural Diversity Database (NDD), including review of maps and Element Occurrence Records (EORs). **Table 12** includes the listing status of these taxa, a brief description of the species and their habitat requirements, a determination of whether the species or their habitats are expected to occur in the project area, expected project impacts, and other pertinent information.

The USFWS considers 11 federally listed threatened or endangered species as potentially occurring in Bexar County. These species include two birds: golden-cheeked warbler (*Dendroica chrysoparia*) and black-capped vireo (*Vireo atricapilla*); and nine karst invertebrates: Madla's cave meshweaver (*Cicurina madla*), Robber Baron Cave meshweaver (*Cicurina baronia*), Government Canyon Bat Cave meshweaver (*Cicurina vespera*), Braken Bat Cave meshweaver (*Cicurina venii*), Government Canyon Bat Cave spider (*Neoleptoneta microps*), Cokendolpher cave harvestman (*Texella cokendolpheri*), Helotes mold beetle (*Batrisodes venyivi*), and two unnamed species of ground beetles (*Rhadine exilis* and *Rhadine infernalis*).

Species listed as threatened or endangered by USFWS are protected by the Endangered Species Act (ESA). Section 9 of the ESA prohibits the "take" of threatened and endangered species; take is defined as "harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Generally, USFWS considers modification of regularly occupied endangered species habitat to constitute "harm" and, therefore, be a violation of the ESA.

Table 12
Threatened and Endangered Species with Potential to Occur in Bexar County and Anticipated Impacts

Species	Species Habitat Description	Habitat Present?	Effect	Pertinent Information
Black-capped vireo (*Vireo atricapilla*) **FE, SE**	Typically occur in areas with thin soil and limestone bedrock that support scrubby vegetation dominated by broad-leaved shrubs. Shin oak (*Quercus sinuata var. breviloba*) or evergreen sumac (*Rhus virens* are usually common in areas occupied by vireos in central Texas. Foliage volume generally high; relatively open upper canopy layer.	Yes	No	No diverse shrub communities with high foliage volume exist within the ROW. Potential black-capped vireo habitat occurs outside the project area on Camp Bullis Military Reservation. **No black-capped vireos detected within ROW or within 300 feet adjacent to the ROW during 3 years of surveys.**

Species	Species Habitat Description	Habitat Present?	Effect	Pertinent Information
Golden-cheeked warbler (*Dendroica crysoparia*) **FE, SE**	Live oak/ Ashe juniper woodlands; mature Ashe juniper and high canopy closure needed for nesting material; broad-leafed deciduous species such as lacey oak (*Quercus glaucoides*) and Texas Oak (*Quercus buckleyi*) necessary for insect prey.	Yes	No	No live oak/Ashe juniper woodland exists within the ROW. Potential golden-cheeked warbler habitat exists outside the project area on Camp Bullis Military Reservation. **No golden-cheeked warblers detected within ROW or within 300 feet adjacent to the ROW during 3 years of surveys.**
Nine karst invertebrate species **FE**	Small, eyeless, or essentially eyeless invertebrates; subterranean karst spaces, permanent dark zone, stable temperature, and stable high humidity, north, north central, northwestern, or western Bexar County.	Yes	May affect, not likely to adversel y effect	**One cave is located in the ROW on the east side just north of Calico Landing and contains *Rhadine exilis*. An impacts analysis has been conducted and the results have been presented in a separate report (January 2006).**
Black spotted newt (*Notophthalmus meridionalis*) **ST**	Can be found in wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods; Gulf Coastal Plain south of the San Antonio River.	No	No	The project area occurs north of the San Antonio River outside of the Gulf Coastal Plain. **Project area is outside of known geographic range of the species.**
Comal blind salamander (*Eurycea tridentifera*) **ST**	Endemic; semi-troglobitic; found in springs and waters of caves in Bexar and Comal counties.	No	No	**No springs or water-filled caves occur in or adjacent to ROW.**
American peregrine falcon (*Falco peregrinus anatum*) **SE**	Potential migrant; prefers open areas with large trees, utility poles, or cliffs to perch upon, and their diet consists mainly of shorebirds and ducks. In Texas, found primarily west of Comal County.	No	No	May fly over area during migration, but no impact expected. **No suitable vegetation or cliffs occur in the project area.**
Arctic peregrine falcon (*Falco peregrinus tundrius*) **ST**	Potential migrant; the Texas Gulf Coast is the only spring staging area for the bird's migration in the western hemisphere. Prefers cliffs and bluffs, usually near rivers or lakes in Artic tundra (nesting); coastlines and mountains (winter).	No	No	May fly over area during migration, but no impact expected. **No cliffs or bluffs occur in or adjacent to ROW.**

Species	Species Habitat Description	Habitat Present?	Effect	Pertinent Information
White-faced ibis (*Plegadis chihi*) **ST**	Prefers freshwater marshes, sloughs, and irrigated rice fields, but would attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.	No	No	**No suitable water bodies occur in or adjacent to ROW.**
Whooping crane (*Grus americana*) **FE, SE**	Potential migrant; during migration occasionally uses marshes, river bottoms, potholes, prairies, and croplands; critical habitat on Texas coast at Aransas National Wildlife Refuge.	No	No	Very rare migrant over the eastern third of the Edwards Plateau Region. May fly over area during migration, but no impacts expected. **No suitable water bodies exist within or adjacent to ROW.**
Wood stork (*Mycteria Americana*) **ST**	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes associated with other wading birds. Breeds in Mexico.	No	No	**No suitable water bodies exist within or adjacent to ROW.**
Zone-tailed hawk (*Buteo albonotatus*) **ST**	Arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions.	No	No	**No suitable vegetation communities exist within or adjacent to ROW.**
Toothless blindcat (*Trogloglanis pattersoni*) **ST**	San Antonio Pool of the Edwards Aquifer.	No	No	San Antonio Pool of the Edwards Aquifer is over 800 feet below surface, a water pollution abatement plan would be implemented to minimize water quality impacts.
Widemouth blindcat (*Satan eurystomus*) **ST**	San Antonio Pool of the Edwards Aquifer.	No	No	San Antonio Pool of the Edwards Aquifer is over 800 feet below surface, a water pollution abatement plan would be implemented to minimize water quality impacts.

Species	Species Habitat Description	Habitat Present?	Effect	Pertinent Information
Black bear (*Ursus americanus*) **FT/SA (in historic range, NL elsewhere in Texas), ST**	Within historical range of Louisiana Black Bear in eastern Texas, inhabits bottomland hardwoods and large tracts of undeveloped forested areas.	No	No	**No suitable bottomland hardwoods or large tracts of undeveloped forested areas exist within or adjacent to ROW.**
Cagle's map turtle (*Graptemys caglei*) **FC, ST**	Guadalupe River system: limestone or mud-bottomed streams with moderate current, and numerous pools of varying depths. Also in slow moving water, 1-3 m deep, behind impoundments.	No	No	**No suitable water bodies exist in or adjacent to ROW.**
Indigo snake (*Drymarchon corais*) **ST**	South of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, especially dense riparian corridors; suburban areas and irrigated croplands.	No	No	Not observed in Bexar County since the 1950s. **No suitable vegetation communities exist in or adjacent to ROW.**
Texas horned lizard (*Phrynosoma cornutum*) **ST**	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soils may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-Sept.	No	No	No harvester ant nests observed within ROW. Grassy areas within and adjacent to ROW were either mowed or contained dense grass not preferred by the horned lizard. **No suitable vegetation communities exist in or adjacent to ROW.**
Texas tortoise (*Gopherus berlandieri*) **ST**	Open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November.	No	No	**No open brush areas exist in or adjacent to ROW.**
Timber/canebrake rattlesnake (*Crotalus horridus*) **ST**	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover.	No	No	**No suitable vegetation communities exist within or adjacent to ROW.**

USFWS Status
FE Federal Endangered
FT Federal Threatened
FDL Federal De-listed
PT Proposed Threatened
FC Federal Candidate

TPWD Status
SE State Endangered
ST State Threatened

A review of TPWD's NDD dated 26 March 2004 for USGS Castle Hills and Camp Bullis 7.5-minute topographic quadrangle maps indicated that there are recorded occurrences of endangered species within the general vicinity of the project area. The endangered species found were the federally endangered golden-cheeked warbler, the federally endangered black-capped vireo, and the federally endangered ground beetle, *Rhadine exilis*. The golden-cheeked warbler, black-capped vireo and endangered ground beetle occur on Camp Bullis Military Reservation located adjacent to the western portion of the project area. Camp Bullis maintains a cleared buffer zone along the FM 2696 ROW, therefore no songbird habitat occurs within this zone. In addition, Camp Bullis manages karst invertebrate species on its property according to a Memorandum of Understanding signed by Camp Bullis and the USFWS December 20, 2002 (Federal Register Volume 68, Number 67, April 8, 2003). The nearest other mapped occurrence of threatened or endangered species was approximately 2.4 miles from the project area and therefore, there would be no effect upon these species by the proposed project.

SWCA conducted three years (2002, 2003 and 2004) of golden-cheeked warbler and black-capped vireo surveys, per USFWS protocol, along the existing FM 2696 ROW. No golden-cheeked warblers or black-capped vireos were detected during the 352 hours and 23 minutes spent surveying the ROW. The USFWS recommends three years of negative results before golden-cheeked warblers and black-capped vireos can be considered absent from a site. Although golden-cheeked warblers are present on Camp Bullis Military Reservation, per USFWS guidelines, golden-cheeked warblers and black-capped vireos can be considered absent from the FM 2696 ROW and within 300 feet adjacent to the ROW.

A cave containing the endangered ground beetle (*Rhadine exilis*) is located in the ROW near the eastern edge of the ROW north of Calico Road near station 936+00. The cave was discovered by SWCA in March of 2004 after fill material blanketing the area around the feature began to wash into the subsurface exposing a sinkhole measuring roughly four feet in diameter. On 12 July 2004, a SWCA karst biologist and two karst technicians completed excavation of the feature entrance and covered the entrance with plywood and a plastic tarp to keep the feature from drying out. On 14 July 2004, an SWCA karst biologist and an assistant biologist entered the cave to conduct the first of three required surveys to establish presence or absence of listed species. After rapelling approximately 55 feet to the bottom of the single shaft that forms the cave, eight *Rhadine exilis* ground beetles were found. TxDOT has temporarily covered the cave with a large manhole cover and boulders during the preparation of the impact analysis report. TxDOT is currently in informal consultation with the USFWS concerning possible impacts to the endangered ground beetle, and these impacts and conservation measures have been addressed in a separate report (January 2006). Conservation measures, as outlined in the January 2006 report,

would be taken during construction as agreed upon by TxDOT and USFWS to avoid adverse impacts to the cave.

7. Cultural Resources

Historical Resources

A review of the National Register of Historic Places (NRHP), the list of State Archaeological Landmarks (SAL) and the list of Recorded Texas Historic Landmarks (RTHL) indicated that no historically significant properties have been documented within the area of potential effects (APE). It has been determined through consultation with the State Historic Preservation Officer (SHPO) that the APE for the proposed project is 500 feet from the existing ROW. A cultural resource survey conducted by TxDOT personnel revealed that there are no structures 50 years of age or older (built prior to 1957) located with the project APE. Furthermore, no Official State Historical markers (OSHM) are located within the project APE.

With the exception of the pipe culvert and headwall as shown in **Exhibit A, Photo #11,** which appears to be over 50 years in age, there are no other historic-age structures in the ROW. This pipe culvert is within the study limits, but outside the project limits. While these culverts typify construction methods and design of the mid-20th century, they display no significant engineering or ornamental features. In consideration of this information and in concurrence with the State Historic Preservation Officer, these structures were determined not eligible for NRHP listing through the statewide Depression Era inventory efforts.

In accordance with the Programmatic Agreement among the Federal Highway Administration (FHWA), the Texas Historical Commission (THC), the Advisory Council on Historic Preservation and the Texas Department of Transportation (TxDOT) and the Memorandum of Understanding among TxDOT and THC, TxDOT would notify the SHPO informing them that no structures 50 years of age or older were discovered within the project APE.

Archaeological Resources

As per the requirements of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Texas Antiquities Code, an archaeological survey was conducted in the project area to identify and evaluate any archaeological sites potentially eligible for the National Register and/or for designation as State Archaeological Landmarks. The survey also targeted previously recorded sites in the area and assessed the current nature of the sites, their eligibility and significance, and potential impacts from the current project. A report of these investigations was prepared in accordance with NHPA and the Antiquities Code requirements.

The report stated that no further archaeological work was recommended. Coordination has been completed. Additionally, tribal coordination was completed on July 22, 2005.

8. Hazardous Materials/Waste

A visual survey of the project limits and the immediately surrounding area was conducted to observe obvious existing or potentially hazardous materials, substances, or conditions. Properties adjacent to the project limits and the right-of-way included undeveloped land, residential, and commercial properties.

Additionally, a regulatory environmental database, developed by Banks Information Solutions, Inc, was reviewed for the following federal, state, and local databases: the Environmental Protection Agency's (EPA) National Priorities List (NPL), the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS), the Resource Conservation and Recovery Information System (RCIS), the Emergency Response Notification System (ERNS), the Texas Commission on Environmental Quality's (TCEQ) State Superfund Registry, Petroleum Storage Tank (PST) list, Leaking Petroleum Storage Tank (LPST) list, the Solid Waste Landfills list, the Voluntary Clean-up Program (VCP) list, Dry Cleaner Remediation Program database, and the City of San Antonio "Landfill Locations Within Bexar County" Map, dated 1989. These resources were searched by facility name, county, zip code, and/or street name.

Two registered active PST facilities were located adjacent to the project limits. They include the Farmco Convenience Store (TCEQ Facility No. 69358), which is located at 25020 Blanco Road and the Blanco Switching Center (TCEQ Facility No. 67125), which is located at 18610 Blanco Road. Neither of these two PST sites was listed on the TCEQ database as known leaking underground storage tank (LPST) site.

Two dry cleaning facilities were observed adjacent project limits. The Pilgrim Cleaners is located at 18360 Blanco Road and the Pledge Cleaners located at 25020 Blanco Road. Review of the TCEQ's Dry Cleaner Remediation Program database did not indicate that either of these two sites have had a release of solvents into the environment. No further investigation is needed for these two sites.

The EPA's Emergency Response Notification System (ERNS) database reported a 200 gallon diesel spill at the Strand Services site located at 21330 Blanco Road. The original facility appears to have been demolished recently and a new building and paved area is currently under

construction at this location. Information concerning the clean up of the spill is not available; however, a spill at this site would likely flow away from the ROW in response to the surface topography. No further investigation is needed for this site.

Review of the City of San Antonio's "Landfill Locations Within Bexar County" map did not identified any permitted or un-permitted landfills within or adjacent to the project limits.

If any hazardous substances/wastes are encountered unexpectedly during construction, appropriate measures for proper management of the contamination would be initiated in accordance with all applicable federal, state and local regulations.

9. Section 4(f) Properties

Under Section 4(f) of the 1966 Transportation Act, projects, which impact or use public parks, recreation areas, wildlife or waterfowl refuges, and historic sites, must perform a 4(f) evaluation. Two parks, Panther Springs Park and Bullis Park, are situated immediately adjacent to the ROW. No ROW and no easements from either park would be required. Also, accessibility to these parks would be maintained during construction. The proposed project would not require the use of nor substantially impair the purposes of any publicly owned land from a public park, recreational area, wildlife and waterfowl refuge lands or historic sites of national, state or local significance; therefore, a Section 4(f) evaluation would not be required.

10. Indirect and Cumulative Impacts

In general, indirect and cumulative impacts include those consequences of the proposed action that are not direct and may not be readily observable. Specifically, indirect or indirect impacts are those effects that are expected to be caused by the proposed project, but are later in time or are removed in distance. Cumulative impacts are those impacts that result from the incremental consequences of an action when added to other past, present and reasonably foreseeable future actions and tend to be less defined than indirect impacts. Indirect and cumulative impacts are less defined than direct impacts; however, they can generally be described when they are foreseeable.

The proposed project, combined with other local roadway improvements, would facilitate mobility in the area and improve access in and around the FM 2696 corridor. Potential adverse cumulative effects may include those effects associated with the conversion of undeveloped and agricultural lands to developed land such as increased impervious cover and loss of wildlife

habitat. The gradual conversion of land adjacent to the proposed facility along the east side of FM 2696 from undeveloped to developed is anticipated to continue to occur over the long term as evidenced by the City of San Antonio's Metropolitan Development Plan (http://www.sanantonio.gov/planning/pdf/GIS/map_download/0512GT06.pdf). Camp Bullis constitutes a majority of the adjacent property on the west side of FM 2696. Camp Bullis is a United States Army facility that has a habitat conservation plan in place to conserve natural resources and would be required to provide environmental documentation per the National Environmental Policy Act for any proposed development. Maps of the endangered species locations on Camp Bullis have been reviewed and significant development along the border of FM 2696 is not reasonably foreseeable. Direct and indirect impacts of the proposed project have been avoided or minimized and have been discussed in detail in the respective sections of this document including, but not limited to, water resources and threatened and endangered species. The potential impacts of the currently proposed TxDOT project with the aforementioned minimization efforts would not constitute an adverse cumulative effect on the human environment when combined with the effects of other past, present, and reasonably foreseeable actions within the subject project area.

11. Public Involvement

A public meeting was held on September 2, 2004 at Hardy Oaks Elementary School to address the expansion of FM 2696 from Loop 1604 to Specht Road. The meeting consisted of a short presentation by the planning engineer where she described the purpose of the meeting, project limits, funding sources and project development process. The project engineer gave a technical presentation describing the existing and proposed typical section, proposed drainage modifications, proposed intersection improvements and construction of the project in half-sections. An open-house followed the presentation for the public to view a preliminary schematic overlay on aerial photography as well as existing and proposed typical sections. During the open house, members of the public were allowed to discuss the project with TxDOT representatives and project consultants. The public meeting attendees generally received the project in a positive manner. The primary questions and concerns voiced by public meeting attendees dealt with the change in access due to the raised median and the type of median opening being proposed. TxDOT representatives explained that the raised median and median opening type were being proposed to increase safety and mobility along the corridor.

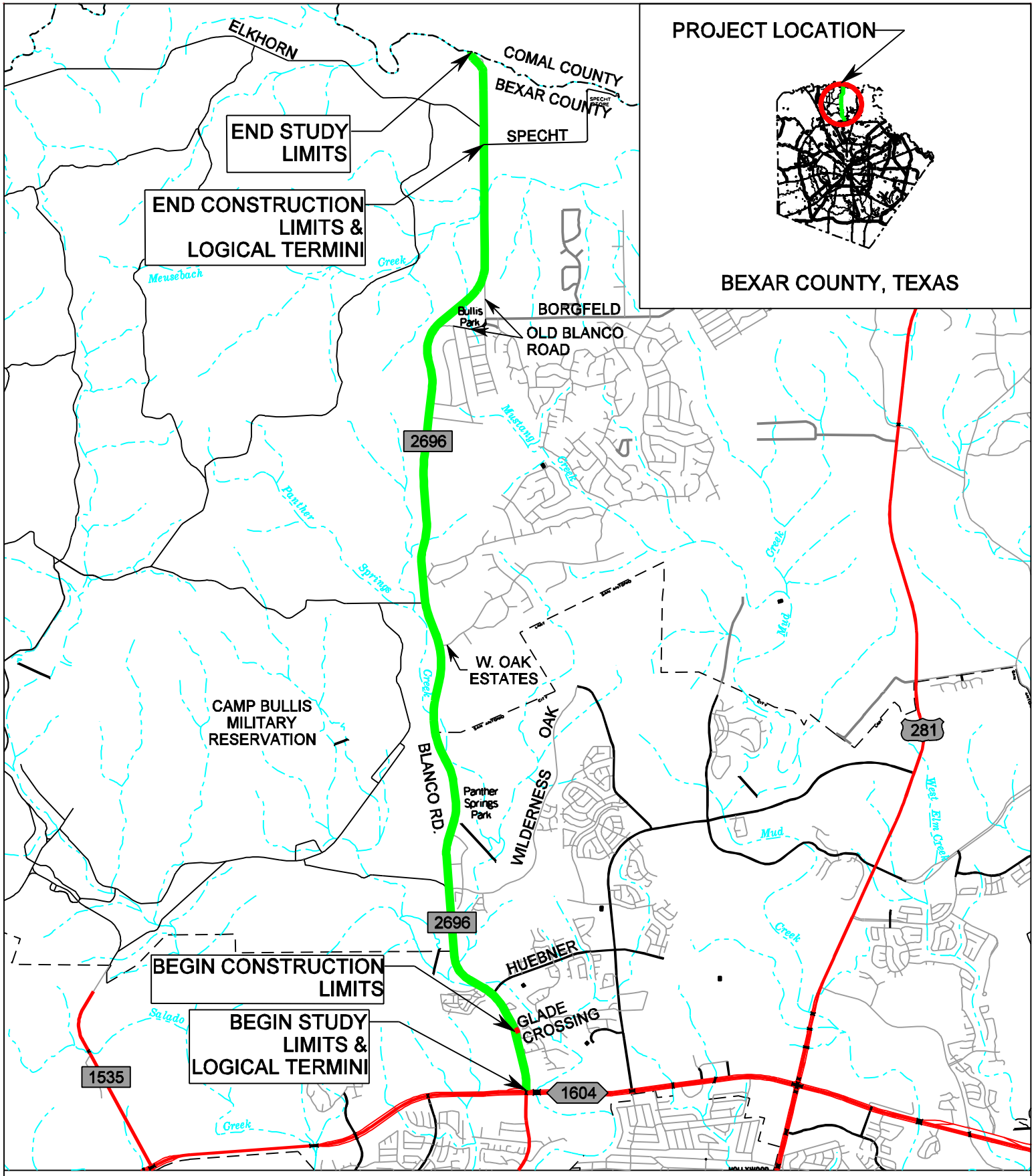
Several stakeholder meetings were held throughout the development of this project. These meetings were held with representatives from homeowners associations, commercial developers, business owners, the YMCA and individual landowners. During these meetings, TxDOT

officials answered questions and addressed concerns from the various stakeholders. Typically, the primary questions and concerns raised were related to the location and type of access that would be allowed with the implementation of this project.

Following clearance of the environmental document, an opportunity for a public hearing was afforded covering the social, economic and environmental effects of the proposed project. No requests for a public hearing were received.

VI. CONCLUSION

The engineering, social, economic and environmental investigations conducted thus far indicate that only insignificant impacts from this proposed action would occur. This project meets the requirements of a Categorical Exclusion (CE).



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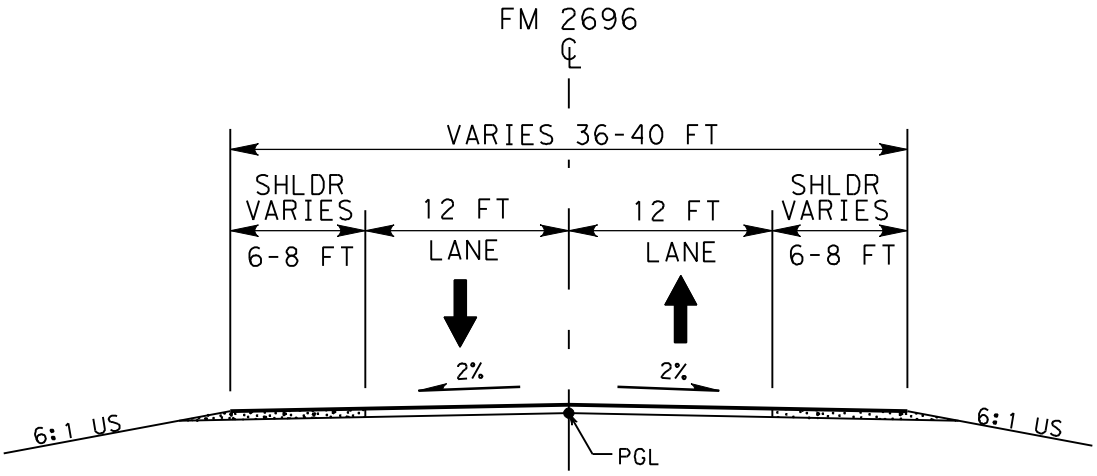
N

6,000 3,000 0 6,000 Feet

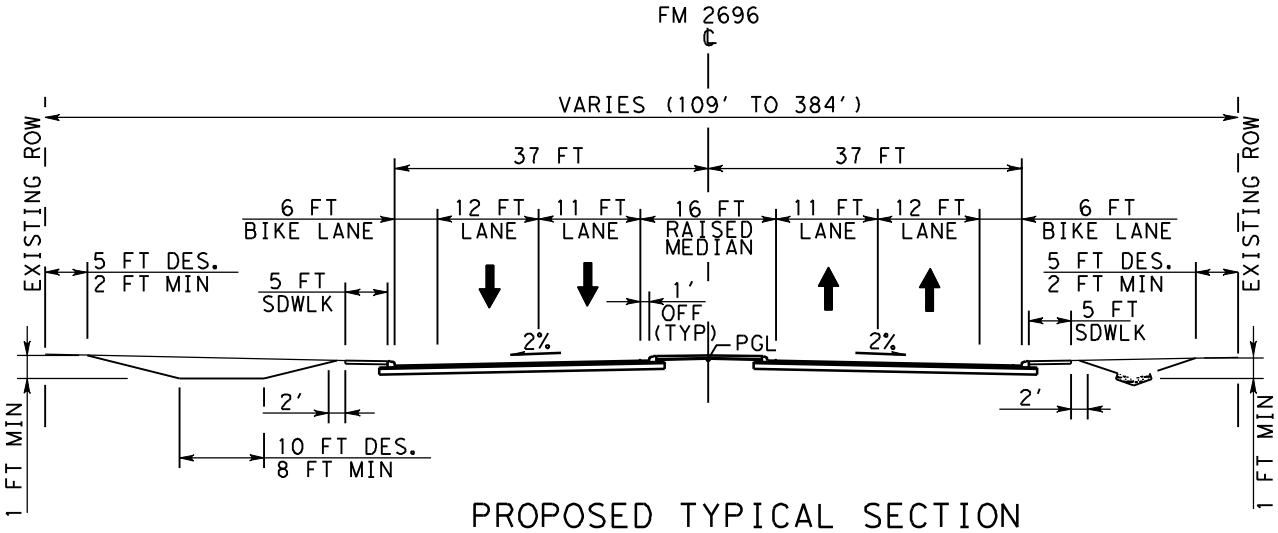
LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's: 2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 1

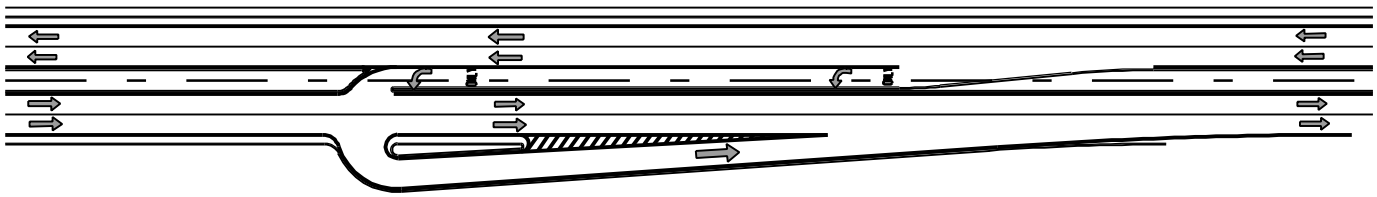


EXISTING TYPICAL SECTION

GLADE CROSSING TO SPECHT ROAD



PROPOSED TYPICAL SECTION



TYPICAL U-TURN DETAIL

"JUG HANDLE"

NOT TO SCALE

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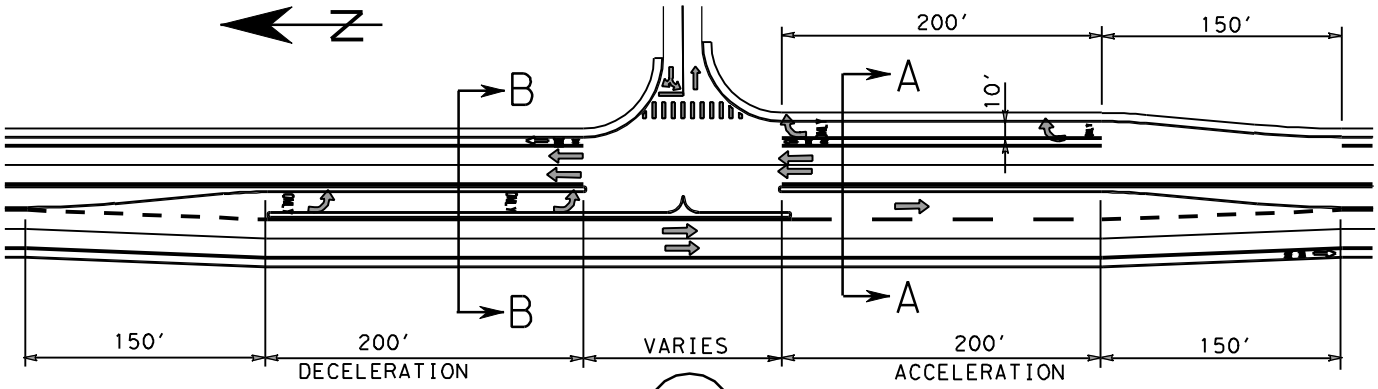
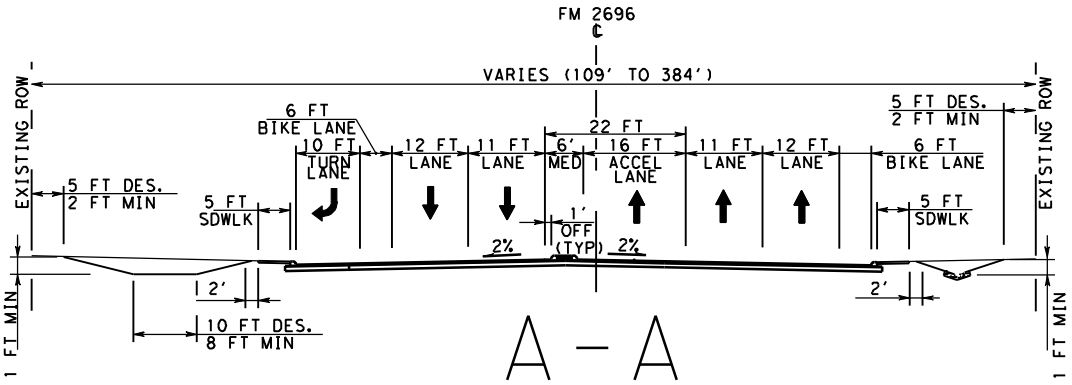
EXISTING & PROPOSED TYPICAL SECTIONS
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's: 2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 2A

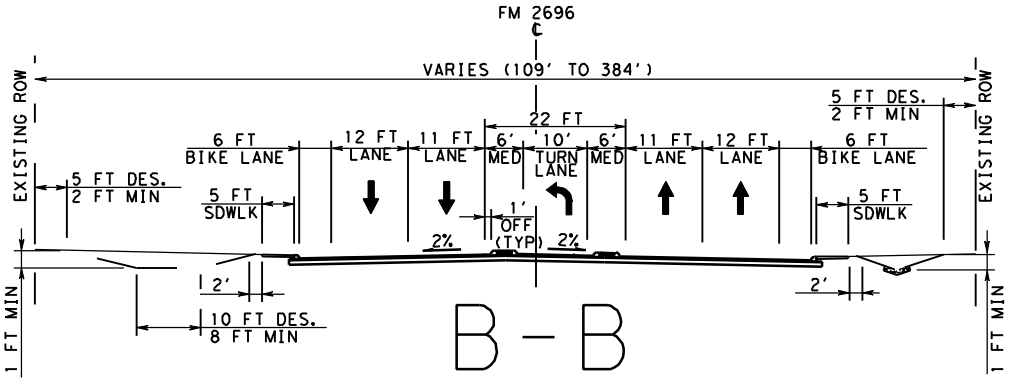


1

MEDIAN OPENING TREATMENT DETAIL
TYPICAL STREET INTERSECTION
PLAN VIEW



ACCELERATION LANE SECTION
SOUTH OF THE INTERSECTION



DECELERATION LANE SECTION
NORTH OF THE INTERSECTION

NOT TO SCALE

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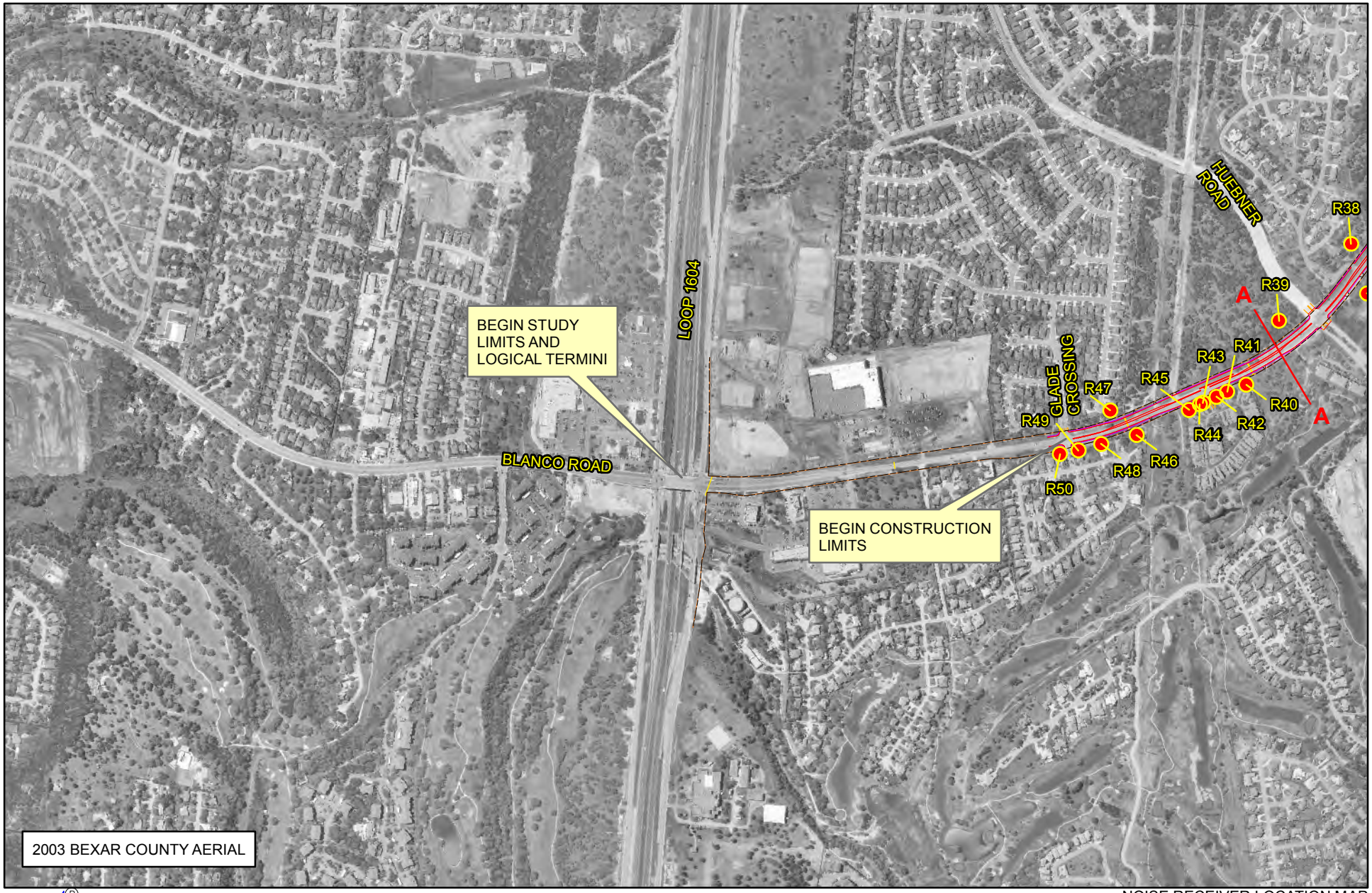
INTERSECTION TYPICAL SECTIONS
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's: 2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 2B



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1,000 500 0 1,000
Feet

NOISE RECEIVER LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's:2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 3A

Texas Department of Transportation
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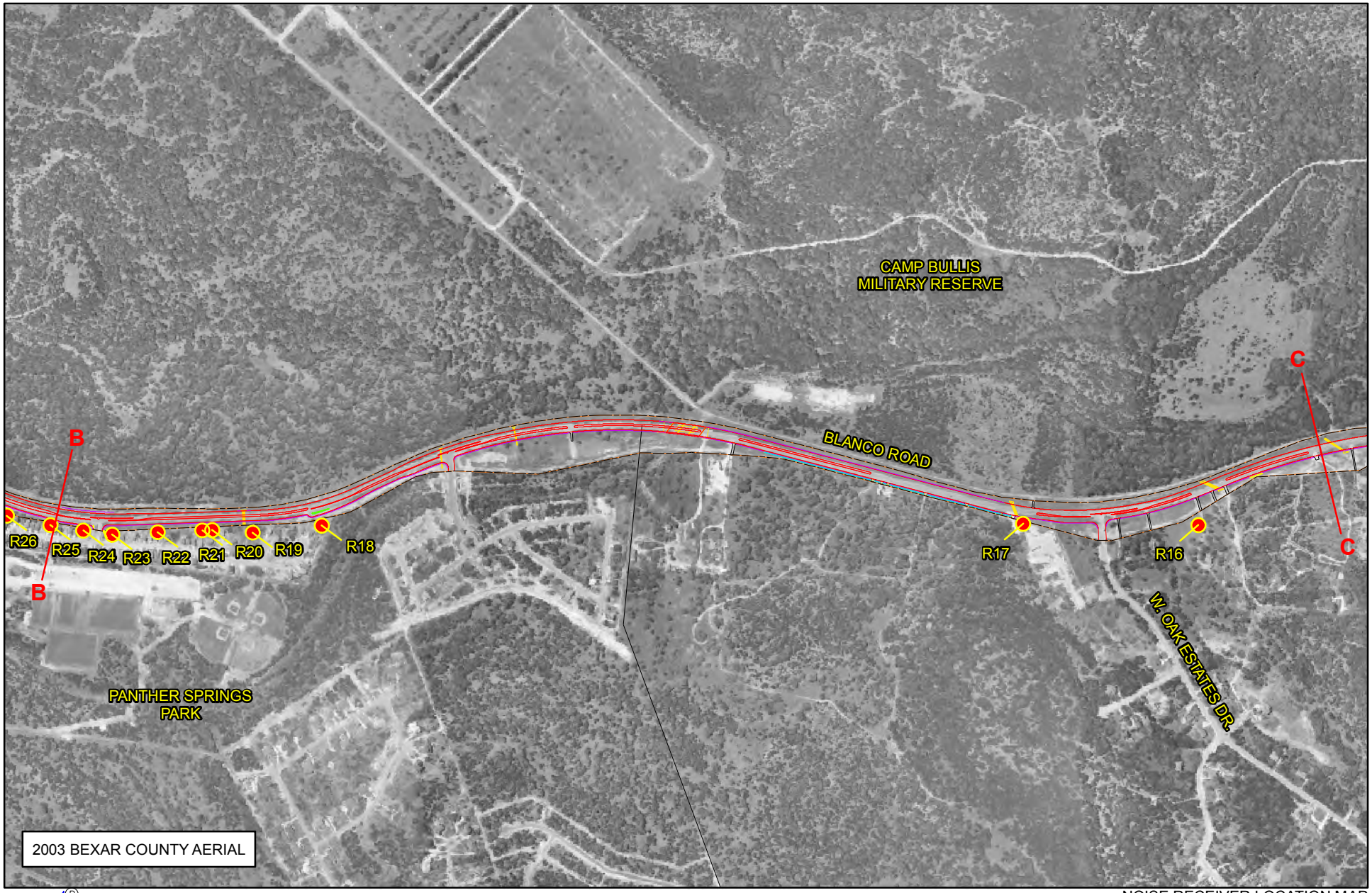
1,000 500 0 1,000
Feet

NOISE RECEIVER LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's:2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 3B



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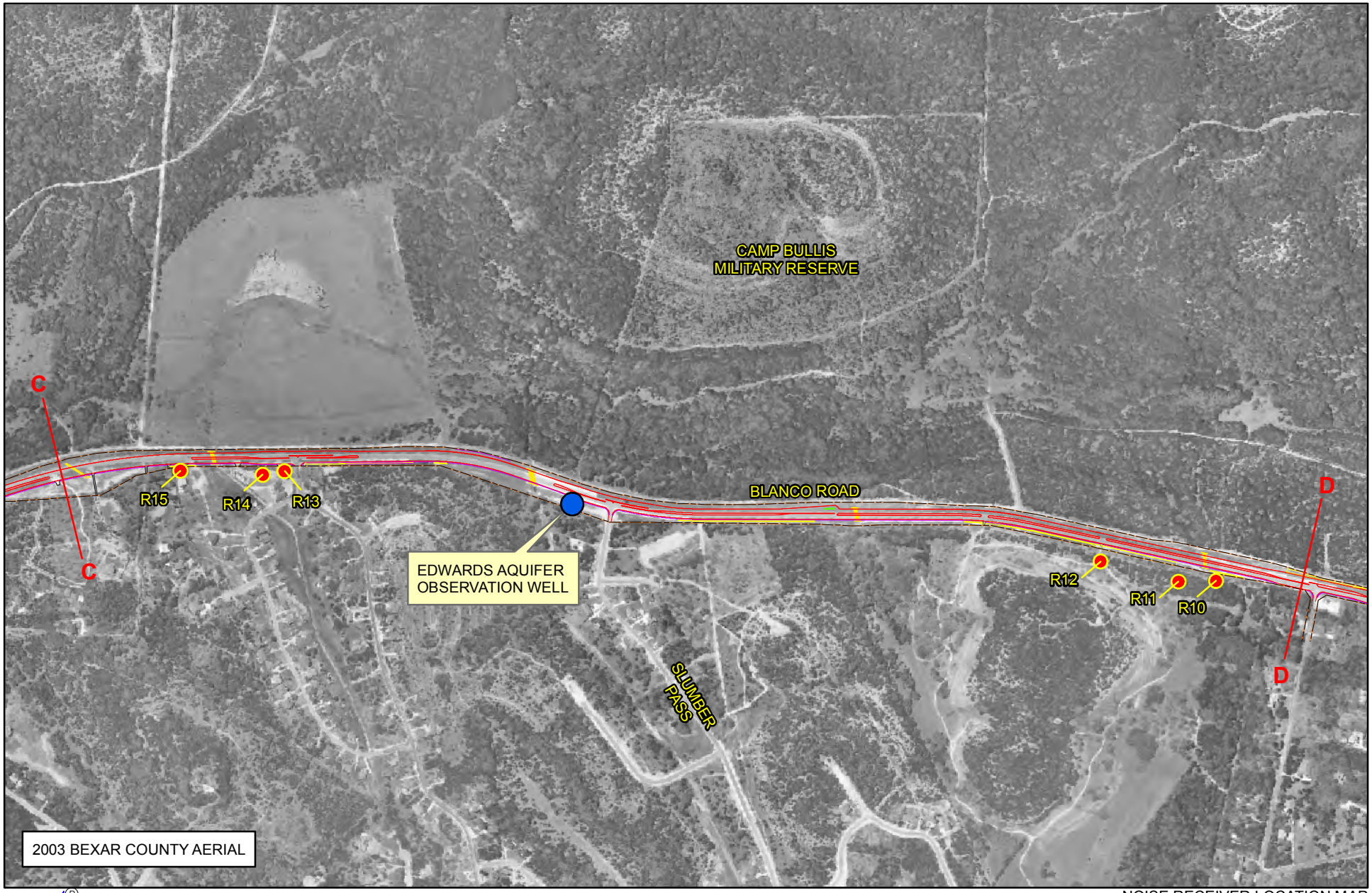
Feet

NOISE RECEIVER LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's:2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 3C



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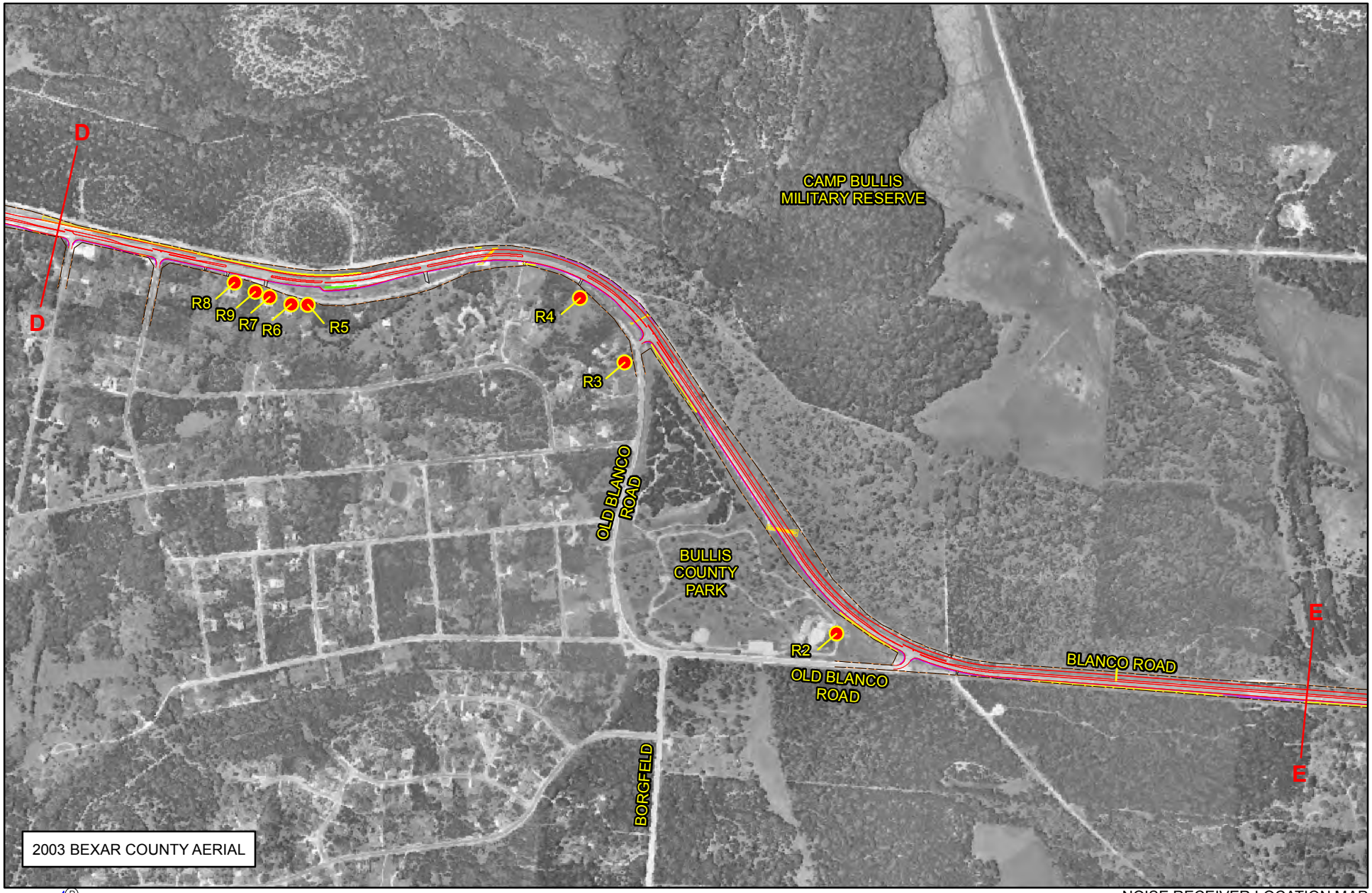
1,000 500 0 1,000
Feet

NOISE RECEIVER LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's:2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 3D



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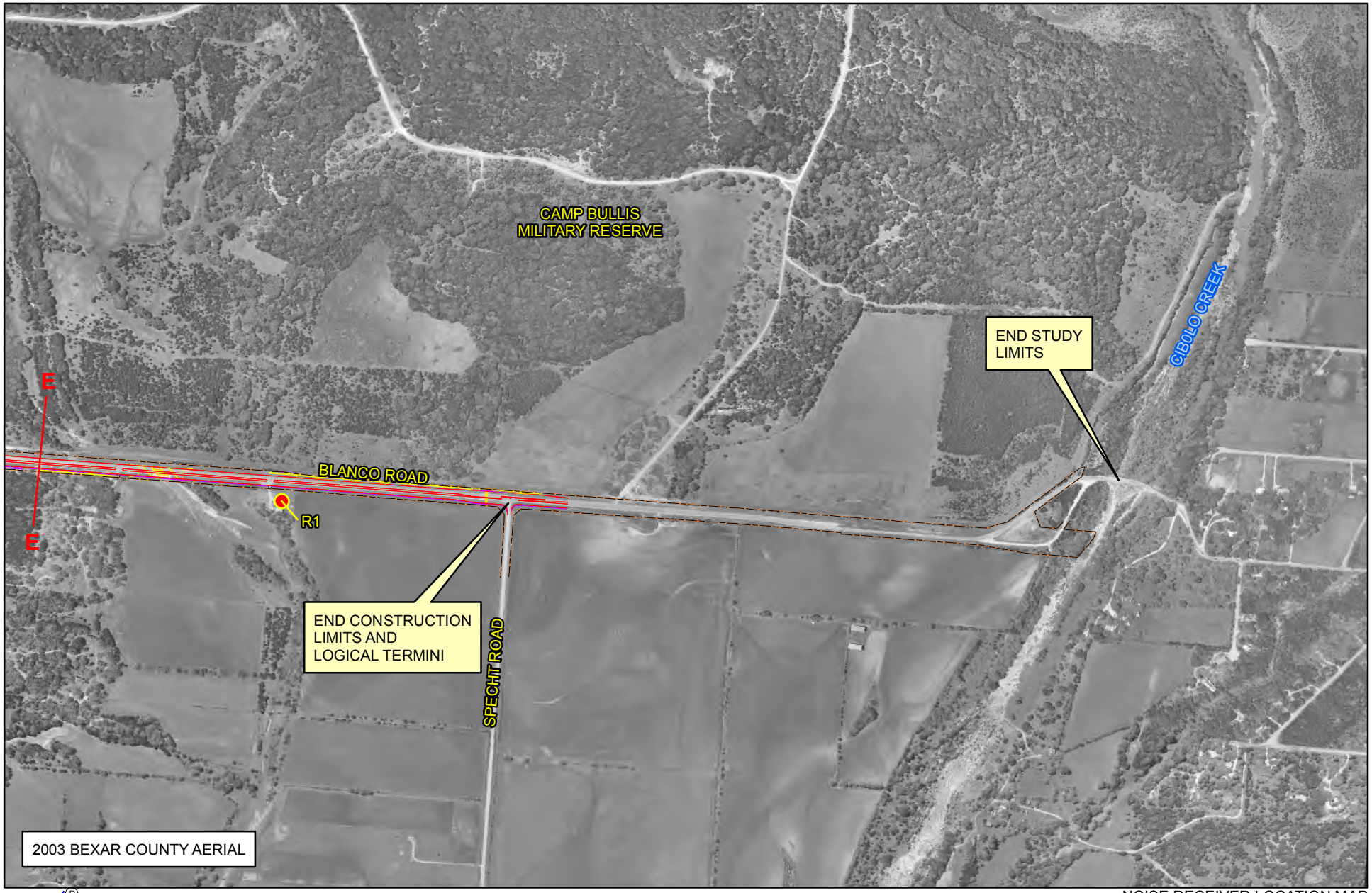
Feet

NOISE RECEIVER LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's:2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 3E



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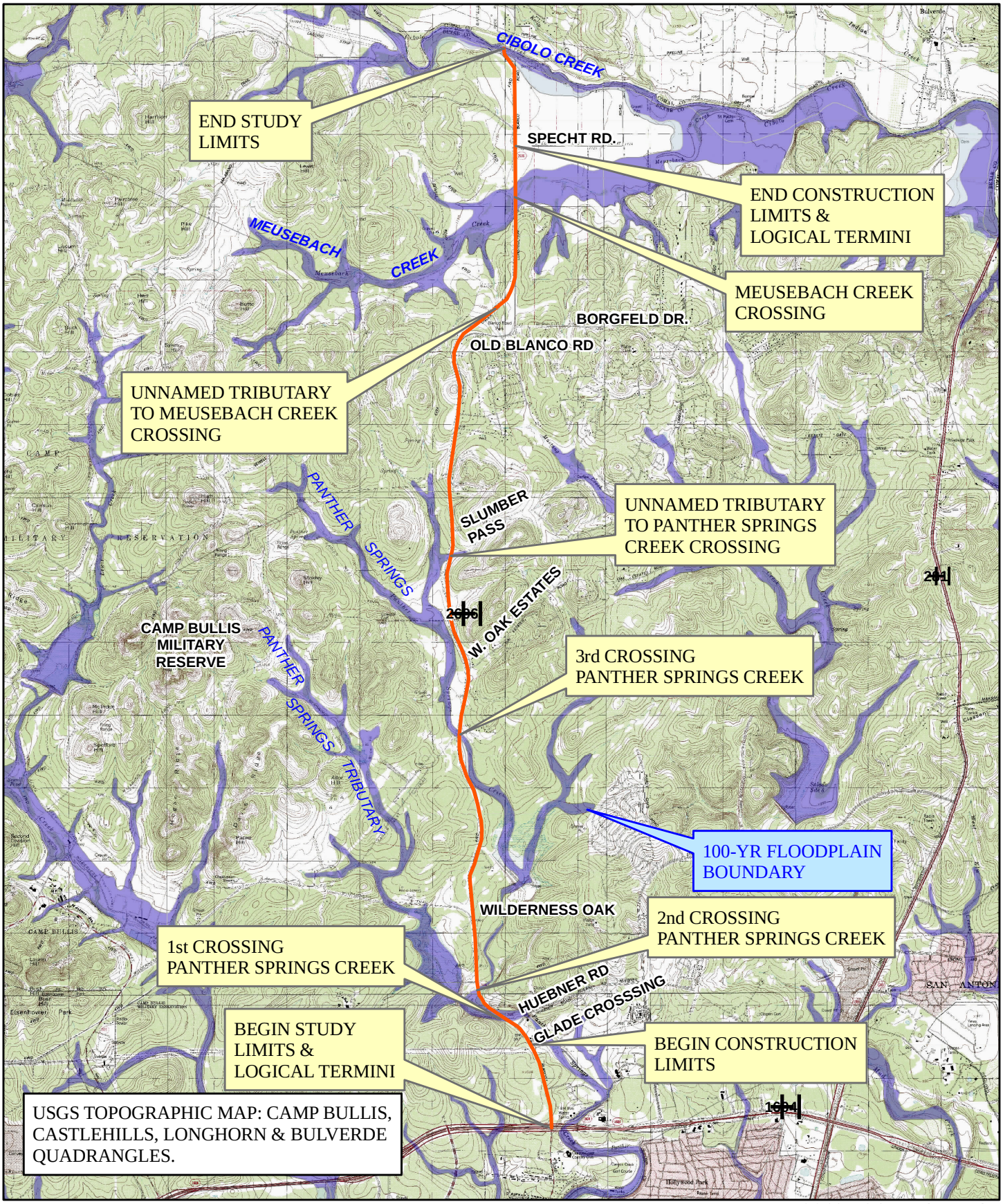
1,000 500 0 1,000
Feet

NOISE RECEIVER LOCATION MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's:2708-01-022, 2708-01-024 & 2708-01-025

FIGURE 3F



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USGS/FLOODPLAIN MAP
FM 2696 (BLANCO ROAD)
FROM GLADE CROSSING
TO SPECHT ROAD
SAN ANTONIO, BEXAR COUNTY, TEXAS
CSJ's: 2708-01-022, 2708-01-024 & 2708-01-025

6,000 3,000 0 6,000 Feet

FIGURE 4

<u>Photo 1</u>: Standing on the west side of FM 2696 and looking north from Loop 1604. This area was previously reconstructed under another project.

<u>Photo 2</u>: Standing on the west side of FM 2696 and looking south towards Loop 1604. Photo of urbanized area located along FM 2696. This area was previously reconstructed under a project south of Loop 1604.

<u>Photo 3:</u> Looking east at the first crossing of Panther Springs Creek (700 feet north of Huebner Road at STA 1058+75).

<u>Photo 4</u>: Typical view of multiple box culvert at stream crossing (Panther Springs Creek crossing 0.43 mile north of Huebner Road (STA 1042+75).

<u>Photo 5:</u> Looking east at Panther Springs Creek (third crossing) bridge (1.56 miles north of Wilderness Oak (STA 923+75).

<u>Photo 6</u>: Standing on FM 2696 and looking south. This is a typical view of the ROW in a rural setting and showing typical vegetation inside and outside the ROW.

<u>Photo 7</u>: Looking west and downstream at the metal pipe crossing located at the Unnamed tributary to Panther Springs Creek crossing 1.0 mile north of W. Oaks Estates Dr. at STA 841+00.

<u>Photo 8</u>: Standing in the northbound lane and looking north. This is a location where the ROW becomes very wide.

<u>Photo 9</u>: Standing west of the southbound travel lane and looking north. Typical scattered business in rural area.

<u>Photo 10</u>: Standing to the east of the northbound travel lane and facing south. Representative view of scattered trees in the ROW.

<u>Photo 11:</u> Standing on FM 2696 at the unnamed tributary to Meusebach Creek crossing looking downstream (STA 720+26).

<u>Photo 12:</u> Standing on FM 2696 at the Meusebach Creek crossing looking downstream (0.50 mile south of Specht Raod (STA 669+00).

<u>Photo 13</u>: Potential culvert over 50 years old located in the study limits, but outside of the project limits approximately 0.50 mile north of Specht Road.

<u>Photo 14</u>: Standing on FM 2696 at the end of the study limits looking north at the Bexar/Comal County Line, which is the Cibolo Creek.

AAGOG Closed Landfill Inventory

Blanco Road Phase II Vicinity

Tue Oct 31 2017 08:49:26 AM.