

INFORMATION HANDOUT

PERMITS AND AGREEMENTS

U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE
NOTIFICATION NO. 81420-2011-I-0400-1

MATERIALS INFORMATION

GEOTECHNICAL DESIGN REPORT



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2011-I-0400-1

JUN 17 2011

Mr. Zachary Parker
Branch Chief, Central Region Biology
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, California 93721

Subject: Informal Consultation on the Kern 99 North 8-Lane Widening Project in Kern County, California (California Department of Transportation EA 0G8400, 06-KER-99-PM 27.0/28.39)

Dear Mr. Parker:

This is the U.S. Fish and Wildlife Service's (Service) response to the California Department of Transportation's (Caltrans) request for concurrence on the proposed Kern 99 North 8-Lane Widening Project (project) in Kern County, California. Your letter, dated March 11, 2011, was received in this office on March 14, 2011. At issue are the effects of this proposed project on the federally-endangered San Joaquin kit fox (*Vulpes macrotis mutica*). Caltrans has determined that the proposed project may affect, but is not likely to adversely affect the San Joaquin kit fox, and requests concurrence with this determination. This response was prepared in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The findings and recommendations of this letter are based on: (1) Caltrans' initial March 11, 2011, letter requesting concurrence; (2) the accompanying February 2011, *Kern 99 North 8-Lane Widening Project Natural Environment Study* (NES); (3) electronic-mail (e-mail) and telephone correspondence between the Service and Caltrans between March and May 2011; and (4) other information available to the Service.

Project Description

Caltrans proposes to improve an approximately 1.4 mile (mi) segment of State Route (SR) 99 between the SR 204 interchange north to Beardsley Canal from post mile (PM) 27.0 to 28.39, located within the northern portion of the City of Bakersfield in Kern County. SR 99 currently exists as a six-lane highway in this area; the improvements will involve widening it to an eight-lane highway with the construction, in the median, of two additional 12 foot (ft.) Continuously

TAKE PRIDE
IN AMERICA 

Reinforced Concrete Pavement (CRCP) lanes, one in each travel direction, and two 10 ft. inside-shoulders, also one in each travel direction. The current metal guardrails present in the median will be replaced with a concrete barrier bearing modified Type S wildlife passageway openings (See Proposed Avoidance and Minimization Measure #7). The project also proposes to build one auxiliary lane in each travel direction for the segment extending from SR 204 to Olive Drive.

With the exception of the north- and southbound auxiliary lane construction, which will minimally encroach into the existing Caltrans' right-of-way (ROW), all proposed work will be contained within the median. No work on overhead structures will occur; however, design exceptions have been made to allow for non-standard shoulders under these structures.

Several large eucalyptus (*Eucalyptus* sp.) trees are present in the southeast corner of the Olive Drive overcrossing within the ROW and will likely need to be removed to accommodate the northbound auxiliary lane and clear recovery zone.

Potential staging areas will likely be located within the ROW, either in the median or between the northbound SR 204 connector and SR 99 mainline. If no areas within the ROW are available for use, the contractor will have to secure its own appropriate site outside of the ROW. As the project site is flat, the use of fill material is not anticipated. There will not be any anticipated utility relocations.

Though contingent on certain factors such as weather conditions and fog presence, construction is anticipated to begin between January and March 2013, and continue through October 2013.

Caltrans seeks to improve the level of service operation (LOS) for this segment of SR 99 in order to relieve traffic congestion and improve traffic operations and circulation; notably, by maintaining a LOS "D" or better (minimal delays and an operating speed of 62 miles per hour (mph)) throughout the design period to 2025, and a LOS "E" or better to 2030 (some significant delays and an operating speed of 53 mph).

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed project, the action area consists of the 1.4 mi segment of SR 99 hardscape and the parallel median space, along with ruderal/disturbed land within the ROW in which activities attributed to auxiliary lane work will occur and in which potential equipment access routes and staging areas may be located; these areas include paved and dirt roads, open lots, roadside areas, and vehicle pullouts.

Proposed Avoidance and Minimization Measures

According to the NES and further discussion with Caltrans, Caltrans proposes to implement the following measures to minimize and avoid impacts specifically to the San Joaquin kit fox as well as to other sensitive biological resources and species.

General Construction Best Management Practices (BMPs):

1. Erosion control measures will be designed to prevent the spread of invasive plant species.
 - a. Construction equipment will be cleaned before mobilizing to the project site and before leaving the site to prevent the transport of invasive species on- or off-site.
 - b. Although no fill is anticipated, any excess excavated materials generated from construction will be properly disposed of at a suitable location that has been cleared by a Service-approved biologist to ensure that the activity will not adversely affect the San Joaquin kit fox.

Avian/Bat Species:

1. The removal of the eucalyptus trees will likely occur during the non-nesting season for migratory birds so as to avoid causing potential disturbance or injury to, or the mortality of species. This also coincides with the period in which hoary bats (*Lasiurus cinereus*) are absent due to their migration period. If tree removal is not possible during the non-nesting season (approximately between the beginning of September and mid-February), a pre-construction survey will be conducted to ensure migratory birds, bats, and nests will not be affected. If any species are located during surveys, the California Department of Fish and Game (CDFG) will be consulted and tree removal will be suspended until the bats have migrated or avian young have fledged.
2. Migratory bird special provisions will be included in the construction contract.
 - a. A preconstruction survey will be conducted no more than 30 days prior to ground disturbance for active burrowing owl (*Athene cinicularia*) burrows. If an individual is located, the CDFG will be consulted and either the construction schedule will be altered or appropriate buffer zones created to ensure the species is not disturbed.

San Joaquin kit fox:

1. Pre-construction surveys within the project limits will be conducted no more than 30 calendar days prior to the start of construction in accordance with the Service's revised 2011 *Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance Construction and Operation Requirements*.
2. An employee education program will be conducted by a Service-approved biologist for all construction personnel prior to the beginning of construction; the program will consist of a description of the San Joaquin kit fox and its habitat needs, the status of the species and its protection under the Act, the conservation measures taken to reduce and avoid impacts to the species, and the penalties for not complying with biological minimization requirements. Training will be repeated for all new personnel before they access the project site.

3. Project-related vehicles will observe a 20 mile-per-hour speed limit in all project areas. Vehicle travel will be limited to established roadways except for new lane construction within the median.
4. Since the San Joaquin kit fox is most active at night, the majority of work will be confined to taking place during the day, with the exception of k-rail placement and lane striping as limited construction activities that will require lane closure to be conducted at night for personnel and driver safety.
5. All food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the entire project site in order to reduce the potential for attracting scavengers and predator species.
6. No firearms will be allowed on-site; nor will any pets be permitted on-site in order to prevent harassment to the San Joaquin kit fox and the destruction of dens.
7. Modified S-Type semicircular wildlife passageways will be installed in the concrete median barrier at prescribed intervals of 150 ft. along its alignment in order to maintain road permeability and movement. These openings will have a radius of nine inches so as to allow the San Joaquin kit fox and other wildlife species ample space to maneuver through.
8. To prevent the inadvertent entrapment of the San Joaquin kit fox or other species during construction, all excavated, steep-walled holes or trenches more than two ft deep will be covered at the close of each work day or provided with escape ramps constructed of fill or wooden planks. Prior to any holes or trenches being filled, they will be thoroughly inspected for trapped individuals. Since the San Joaquin kit fox is also attracted to den-like structures such as pipes and may enter them becoming trapped or injured, all construction pipes, culverts, or similar structures with a diameter of four inches or greater stored on-site will also be inspected for the San Joaquin kit fox prior to the structures being buried, capped, or moved. If a San Joaquin kit fox is discovered, that section of pipe will not be moved until the Service has been consulted and the San Joaquin kit fox is allowed to leave without harassment.
9. If a San Joaquin kit fox den is discovered during construction, all work activity within a 150 ft. radius of the den will be halted and the Resident Engineer will be immediately contacted. The Service and the CDFG will be contacted for guidance as soon as possible.
10. A representative will be appointed by Caltrans who will be the contact source for any employee or contractor who inadvertently kills or injures a San Joaquin kit fox or who finds a dead, injured, or entrapped individual. If an individual is found, all construction activity within a 150 ft. radius of the San Joaquin kit fox will cease and the representative will be immediately contacted. Both the Service and the CDFG will be contacted within three working days of such incidents.

Determination

Caltrans has determined that the proposed project is unlikely to adversely affect the San Joaquin kit fox. Project activities fall within the boundaries of the inside median and within the disturbed ROW. According to the California Natural Diversity Database (CNDDDB, 2011)¹, there are 21 records of the San Joaquin kit fox within the Oildale United States Geological Survey 7.5-minute quadrangle. One observation from 2001 is located within the project limits by the SR 204/SR 99 intersection and 11 observations (all recorded since 2001) are situated within three miles of the approximate center point of the action area, encircling the location.

Despite the abundance of industrial, commercial, and residential land uses surrounding the action area, the San Joaquin kit fox is known to inhabit and utilize the adjacent lands. Considering the spread of previously recorded San Joaquin kit fox observations around the action area, it is likely that the species can utilize movement corridors and is able to cross potential barriers like highways. However, the action area itself is highly unlikely to provide suitable denning or foraging habitat for the species. According to information provided in the NES, the soil within the Caltrans ROW is not friable, but rather hard and compacted, while the limited vegetation present is routinely disturbed by disking, mowing and herbicidal spraying. Similarly, the soil within the inside median is also compacted and dense stands of oleander (*Nerium oleander*) shrubs are grouped within the boundaries of the guardrails. While the existing median barrier allows for the potential passage of the San Joaquin kit fox and other wildlife across the highway at any point that is not overly obscured both physically and visually by the oleander shrubs, the proposed concrete median barrier will present a solid obstruction. It is possible that this concrete design may create a barrier effect and lead to greater exposure to vehicular contact over longer periods of time for those species attempting to cross the highway. However, Caltrans' proposed installation of the modified semi-circular wildlife passageways, with expanded nine inch radial openings (increased from the more typical six inch radial opening design) placed at 150 ft. intervals along the median, will greatly aid in maintaining the permeability of this segment of highway.

Given the relatively small-scale scope of work, its confinement to the inside median and existing outer ROW areas, and the current habitat conditions, along with the implementation of the proposed conservation measures, potential adverse effects to the San Joaquin kit fox will be reduced to an insignificant and discountable level. Caltrans has determined that despite the minimal encroachment into the ROW between Olive Drive and the SR 204 intersection for the construction of an auxiliary lane in either direction, and the temporary disturbance to ruderal land used as staging and access areas, the project ultimately will not decrease the amount of available San Joaquin kit fox habitat or the number or range of the species. Also, other than a ditch connected to Beardsley Canal which runs under the SR 99 mainline and the on- and off-ramps just south of the Olive Drive overcrossing, no other water features are located within the action area. This ditch will not be affected since auxiliary lane construction will not extend far

¹ California Natural Diversity Database (CNDDDB). 2011. Natural Heritage Division, California Department of Fish and Game. RareFind 4. Accessed March 30, 2011. Sacramento, California.

Mr. Zachary Parker

6

enough up the ramps to warrant the widening of the culverts. Other waterways located adjacent to the action area (Beardsley Canal bordering the northern limit, and Calloway Canal bordering the southern limit, as well as the Kern River located further south of the project limits) will not be affected by project activities, so no changes to drainage infrastructure, which the San Joaquin kit fox may use, will occur.

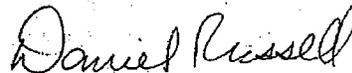
After reviewing the 2011 NES and other information sources, and discussing project aspects with Caltrans, the Service concurs with the determination that the proposed project is not likely to adversely affect the San Joaquin kit fox.

Closing Statement

This concludes the Service's review of the proposed Kern 99 8-Lane Widening Project and its consideration of the project's effects to the species. No further coordination with the Service under the Act is necessary at this time. Please note, however, that take of listed species is not exempted from the prohibitions described under section 9 of the Act. We concur that the project as proposed is not likely to result in take, but if conditions change so that the project may adversely affect listed species, initiation of formal consultation, as provided in 50 CFR § 402.14, is required.

Please contact Jen Schofield or Thomas Leeman, San Joaquin Valley Division Chief, at (916) 414-6600 if you have any questions regarding this letter.

Sincerely,



Daniel Russell
Deputy Assistant Field Supervisor

cc:

Ms. Annee Ferranti, CDFG, Fresno, California

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. MIKE LIM
Design Senior, Branch T
Office of Design IV
Project Development Division

Attention: Scott Friesen

Date: January 23, 2012

File: 06-KER-99
PM 27.0/R28.4
EA 06-0G8401
ID 0600020166
Retaining Wall

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES – MS 5

Subject: Geotechnical Design Report

Introduction

This Geotechnical Design Report (GDR) has been prepared to provide geotechnical recommendations for a proposed retaining wall on State Route (SR) 99. The project is located approximately 1000 feet south of Olive Drive in the City of Bakersfield in Kern County, California. A vicinity map is presented on **Plate No. 1**.

The purpose of this report is to document subsurface geotechnical conditions, provide analyses of anticipated site conditions as they pertain to the project described herein, and to recommend design and construction criteria for the project.

Existing Facilities and Proposed Improvements

At the proposed retaining wall location, SR 99 is a six lane highway constructed at-grade or on a small amount of fill and travels in a general northwest/southeast direction. The highway has 12 foot wide travel lanes and 4 foot wide paved shoulders. A frontage road (State Road) parallels SR 99 to the northeast.

This project proposes to construct an auxiliary lane along the northbound side of SR 99. Due to the location of the frontage road and limited right-of-way, a Standard Plan Type 1 retaining wall is proposed. The wall will extend a length of 900 feet with a maximum height of 4.5 feet.

Proposed design parameters for the retaining wall are presented in **Table 1**. A Site Plan is presented on **Plate No 2**.

Table 1. Retaining Wall Design Parameters

Begin STA (ft)	Height (ft)	Wall Type	Bottom of Footing Elevation (ft)	Loading Case	Toe Pressure (ksf)
899+75.01	2.51	1	429.4	I	1.7
900+00	2.85	1	429.4	I	1.7
900+50	3.52	1	429.4	I	1.7
901+00	4.03	1	429.4	I	1.7
901+50	4.06	1	429.8	I	1.7
902+00	4.51	1	429.8	I	1.7
902+50	4.01	1	430.7	I	1.7
903+00	4.30	1	430.7	I	1.7
903+50	4.50	1	430.7	I	1.7
904+00	4.28	1	431.1	I	1.7
904+50	4.43	1	431.1	I	1.7
905+00	4.37	1	431.1	I	1.7
905+50	4.31	1	431.1	I	1.7
906+00	4.25	1	431.1	I	1.7
906+50	4.19	1	431.1	I	1.7
907+00	4.13	1	431.1	I	1.7
907+50	4.07	1	431.1	I	1.7
908+00	4.01	1	431.1	I	1.7
908+50	3.95	1	431.1	I	1.7
908+77.11	3.92	1	431.1	I	1.7

Note: 1. Toe pressure per 2006 Standard Plan B3-1.
 2. Stationing shown is along wall layout line.

Pertinent Reports and Investigations

The following publications were reviewed to assist in the assessment of site conditions:

- Geologic Map of California, Bakersfield Sheet, CDMG, 1964.
- Bakersfield, CA 7.5-Minute Quadrangle, 1962.
- Bakersfield Monthly Climate Summary, Western Regional Climate Center.
- Standard Plans and Specifications, May 2006.
- Project Plans and Cross Sections, undated.
- Log-of-Test-Borings, Olive Drive OC, Br. No. 50-0185.
- Log-of-Test-Borings, Canal Lateral 29 Bridge, Br. No. 50-0051.
- Log-of-Test-Borings, Minkler UP, Br. No. 50-0049.

Physical Setting

Climate

According to the Western Regional Climate Center, the average annual precipitation in the Bakersfield area is about 6 in. The majority of this precipitation (over 95 percent) falls between October and May. The average annual air temperature is about 65°F with the highest average daily maximum of about 99°F in July and the lowest average daily minimum of about 39°F in January.

Topography and Drainage

The topography of the project area is generally level with elevations ranging from approximately 430 to 440 feet. Drainage of the project area appears to generally tend to the northeast. A Topographic Map is presented on **Plate No 3**.

Regional Geology

The Geologic Map of the California, Bakersfield Sheet (1964) indicates that the soil present within the project limits is Pleistocene nonmarine deposits, which consist predominately of sands and silts. A Geologic Map is presented on **Plate No 4**.

Geotechnical Conditions

Subsurface Soils

A review of borings performed for bridges in the project area indicate that the subsurface soils consist of fine to coarse sand and silty sand. The soil density ranges from very loose to very dense with a general increase in density with depth. The as-built LOTB are presented in **Appendix A**.

Ground Water

Ground water was not encountered in borings performed for bridges in the project vicinity, which were drilled to a maximum depth of 50 feet. Ground water is not anticipated to affect construction. However, ground water conditions can be expected to fluctuate in response to seasons, storm events, and other factors. Localized saturated conditions or perched groundwater conditions near the ground surface should be anticipated during and following periods of heavy precipitation.

Geotechnical Recommendations

The following recommendations are based on the project plans and cross sections, communication with the D6 Office of Design, and subsurface conditions as determined from as-built LOTB for bridge structures in the project vicinity.

A Standard Plan Type 1 Retaining Wall may be constructed along the shoulder of SR 99 as proposed. The wall is proposed to have a maximum height of 4.5 feet. For support of the wall, a spread footing foundation may be used. Due to the presence of loose near surface soils, it is recommended that the soil beneath the retaining wall footing be over-excavated to a depth of 2 feet and then the soil be replaced and recompact to 95% relative compaction up to the bottom of footing elevation. The over-excavation shall extend the entire footing width and continue for the entire length of the wall. With the over-excavation as described above, the soil strength will be adequate for support of the wall and settlement is anticipated to be minimal. There are no global stability issues for the wall. A detail showing the recommended over-excavation for the wall is presented on **Plate No. 5**.

Construction Considerations

According to the as-built LOTB for structures in the project vicinity, the near surface material consists of loose sandy soil. Temporary shoring may be needed during excavation of the retaining wall footing. Temporary cut slopes and shoring are the responsibility of the Contractor.

Project Information

Standard Special Provision S5-280, "Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressee(s) of this report via electronic mail.

Data and information attached with the project plans are:

A. *None.*

Data and Information included in the Information Handout provided to the bidders and Contractors are:

A. *Geotechnical Design Report for EA 06-0G8401, dated 1/23/2012.*

Data and Information available for inspection at the District Office:

A. *None.*

Data and Information available for inspection at the Transportation Laboratory are:

A. *None.*

The analyses, conclusions, and recommendations contained in this report are based upon site conditions that we observed at the time of our investigation, data from our subsurface exploration, and our current understanding of proposed project. We have assumed that the information obtained from our limited subsurface exploration is representative of subsurface conditions throughout the site. If the scope of the proposed project changes from that described in this report, the recommendations should be reviewed by this Office.

If there are any questions or comments in regards to this report, please contact Ben Barnes at 916-227-1039.



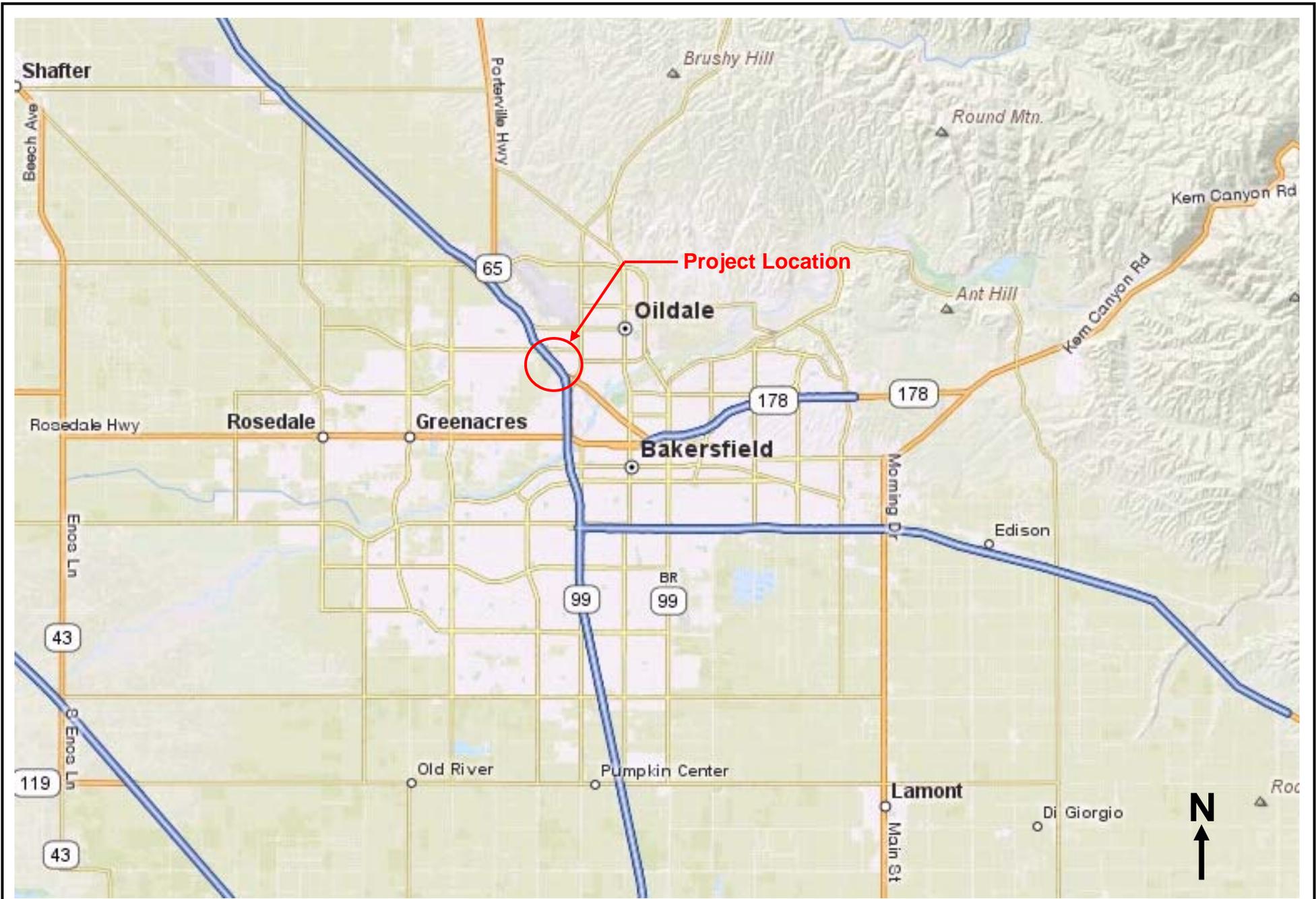
BENJAMIN M. BARNES, PE
Transportation Engineer
Office of Geotechnical Design North
Branch E



Attachments:

- Plate No. 1: Vicinity Map
- Plate No. 2: Site Plan
- Plate No. 3: Topographic Map
- Plate No. 4: Geologic Map
- Plate No. 5: Type 1 Retaining Wall Over-Excavation Detail
- Appendix A: As-Built LOTB

- c: Qiang Huang (Geotechnical Services, OGDN-E)
- Paul Pineda (D6 Project Manager)
- Shira Rajendra (Geotechnical Services, Corporate Unit)
- District Construction R.E. Pending
- Ted Mooradian (D6 District Materials Engineer)



	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	ID 0600020166	VICINITY MAP	Plate No. 1
		EA 06-0G8401	06-KER-99 PM 27.0 / R28.4	



Olive Drive OC
(Br. No. 50-0185)

Canal Lateral 29
(Br. No. 50-0051)

Proposed Retaining Wall

Highway 99

Minkler UP
(Br. No. 50-0049)

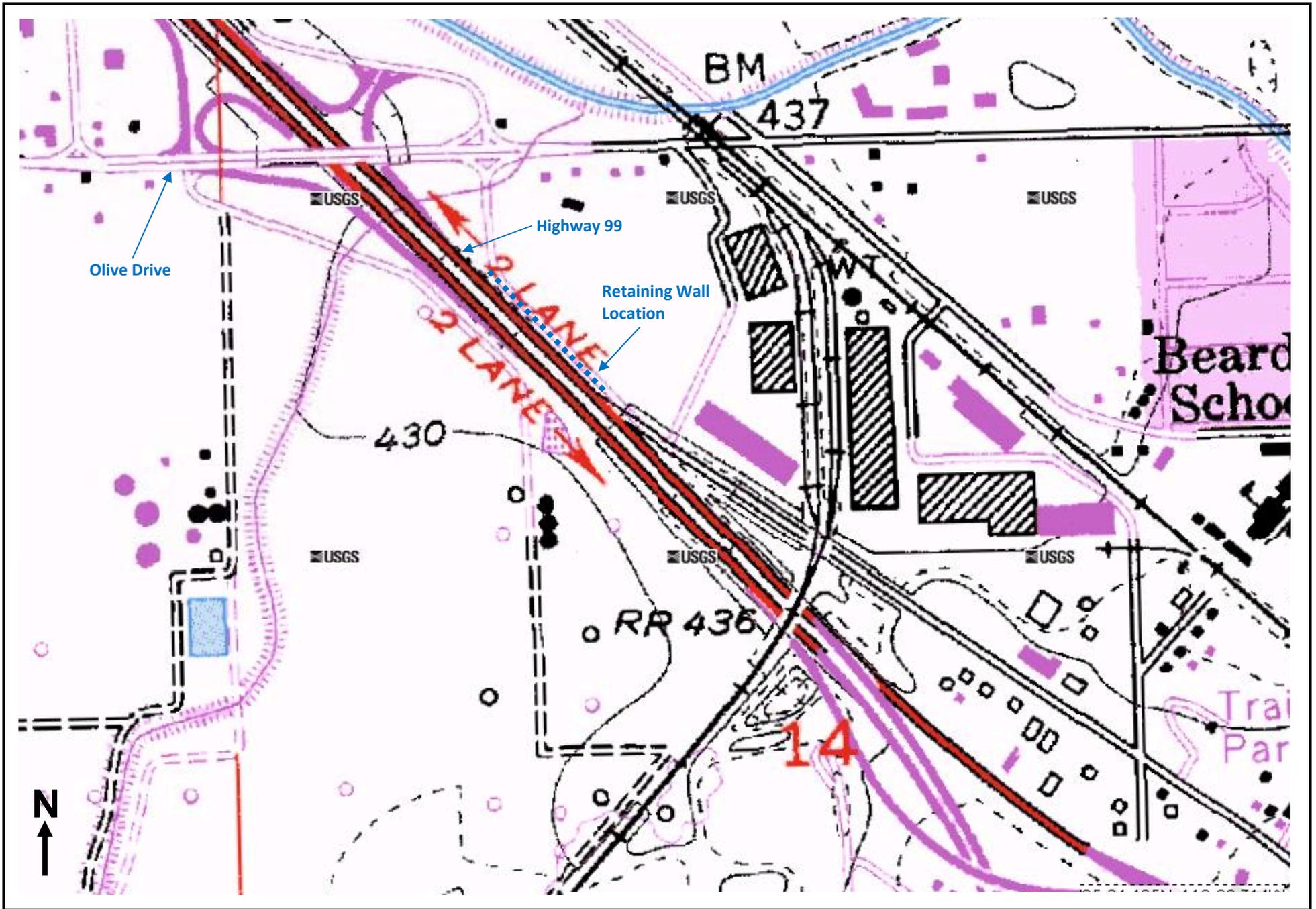


Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

ID 0600020166
EA 06-0G8401

SITE PLAN
06-KER-99 PM 27.0 / R28.4

Plate
No. 2



Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

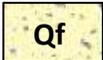
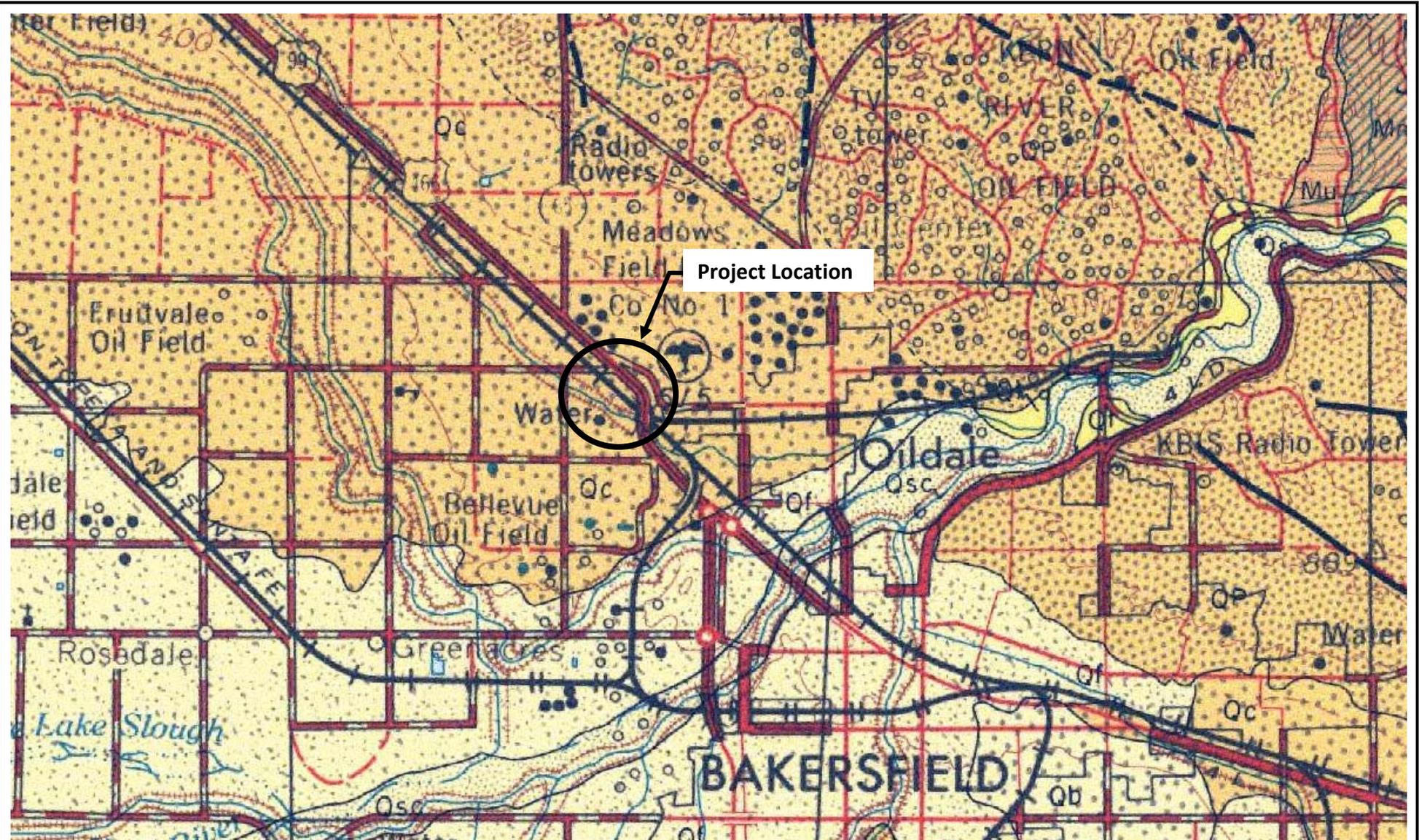
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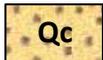
TOPOGRAPHIC MAP

06-KER-99 PM 27.0 / R28.4

Plate
 No. 3



Qf Recent Great Valley fan deposits



Qc Pleistocene nonmarine deposits

MAP SOURCE:

Geologic Map of California, Bakersfield Sheet
CDMG, Smith, A.R., 1964



Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

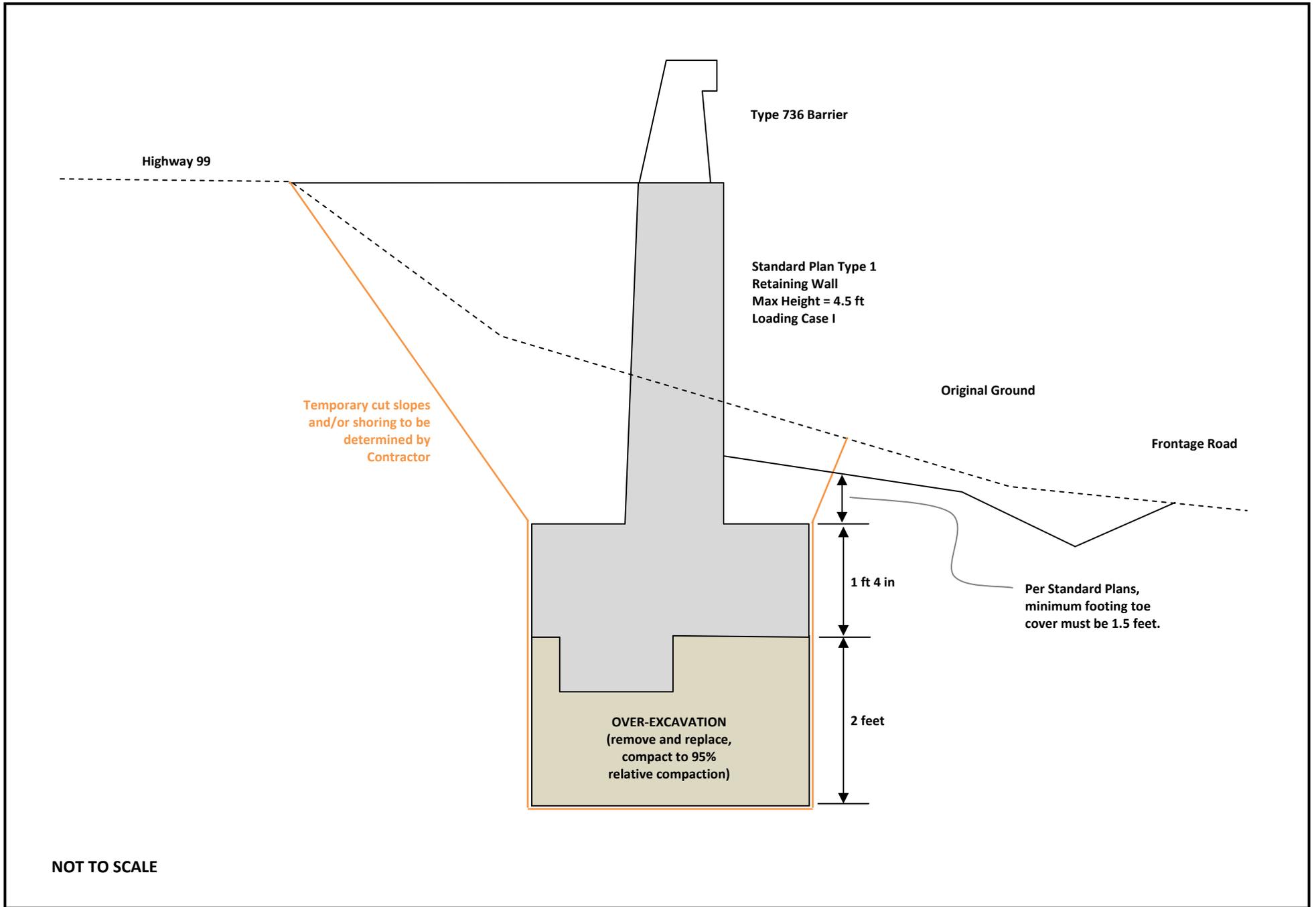
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EA 06-0G8401

GEOLOGIC MAP

06-KER-99 PM 27.0 / R28.4

Plate
No. 4

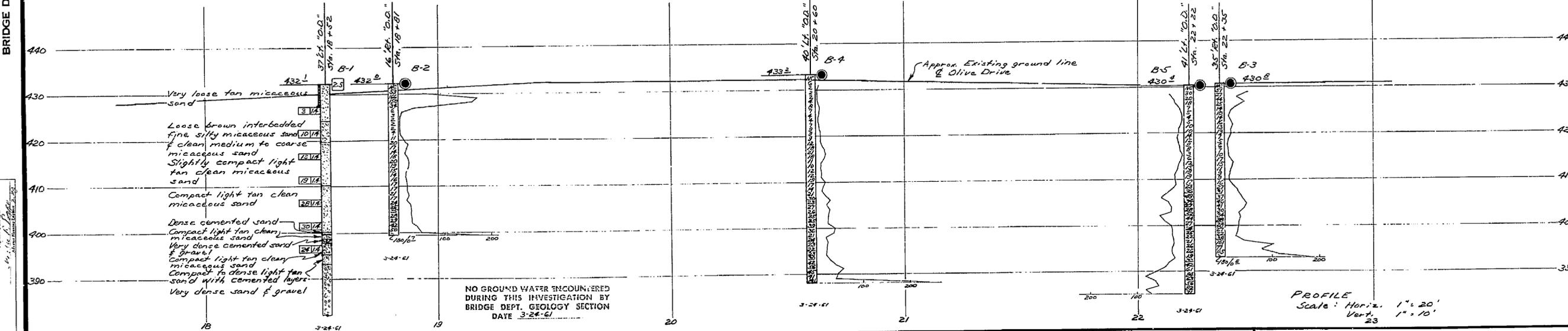
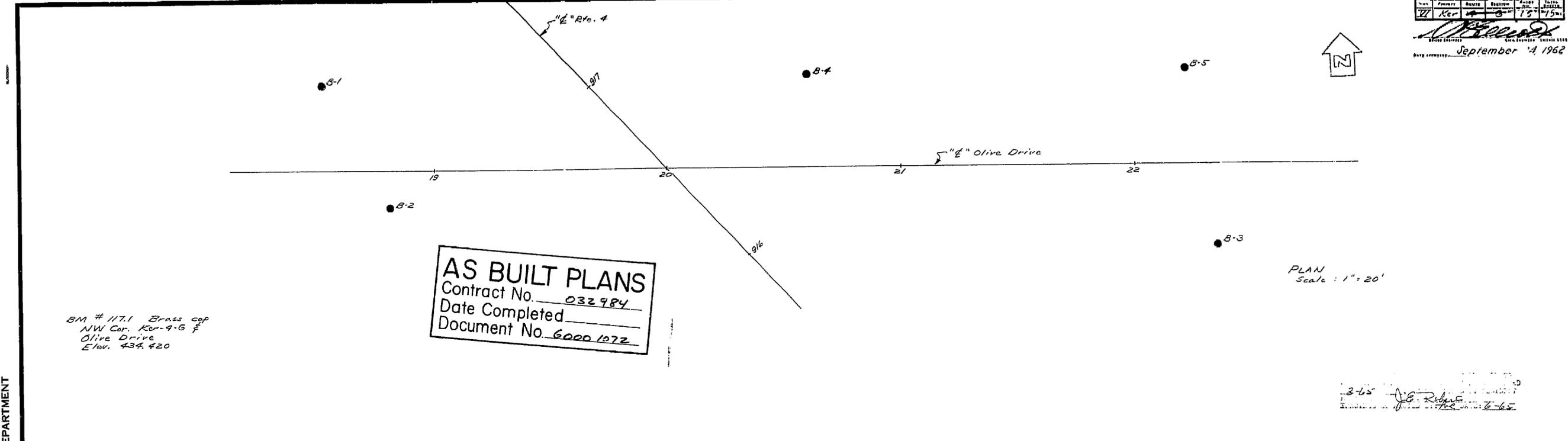


	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	ID 0600020166	TYPE 1 RETAINING WALL, OVER-EXCAVATION DETAIL 06-KER-99 PM 27.0 / R28.4	Plate No. 5
		EA 06-0G8401		

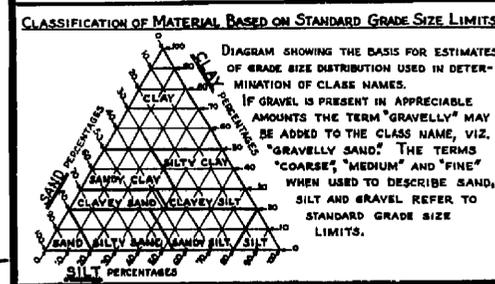
APPENDIX A

As-Built LOTB

<u>Bridge</u>	<u>Bridge No.</u>
Olive Drive OC	50-0185
Canal Lateral 29 Bridge	50-0051
Minkler UP	50-0049



FIELD STUDY
DRAWN BY M. HENNING, E. S. S. E.
CHECKED BY J. P. HILL, E. S. S. E.
Approval Recommended by: _____
Date: _____



LEGEND OF EARTH MATERIALS

GRAVEL	SILTY CLAY OR CLAYEY SILT
SAND	PEAT AND/OR ORGANIC MATTER
SILT	FILL MATERIAL
CLAY	IGNEOUS ROCK
SANDY CLAY OR CLAYEY SAND	SEDIMENTARY ROCK
SANDY SILT OR SILTY SAND	METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2 1/4" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT

1" SOIL TUBE

ROTARY BORING

PENETRATION BORING

NOTE

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

OLIVE DRIVE O.C.

LOG OF TEST BORINGS

SCALE As Noted | BRIDGE 50-185 | FILE | DRAWING 50185-15

PREL. DRAWING NO. P. 50185-4

142

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

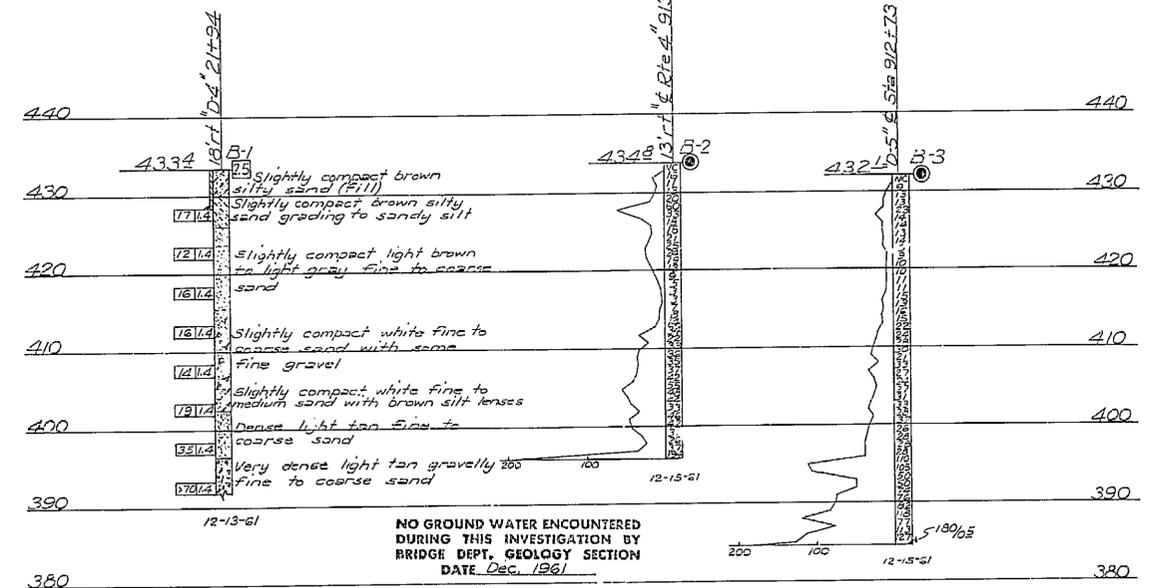
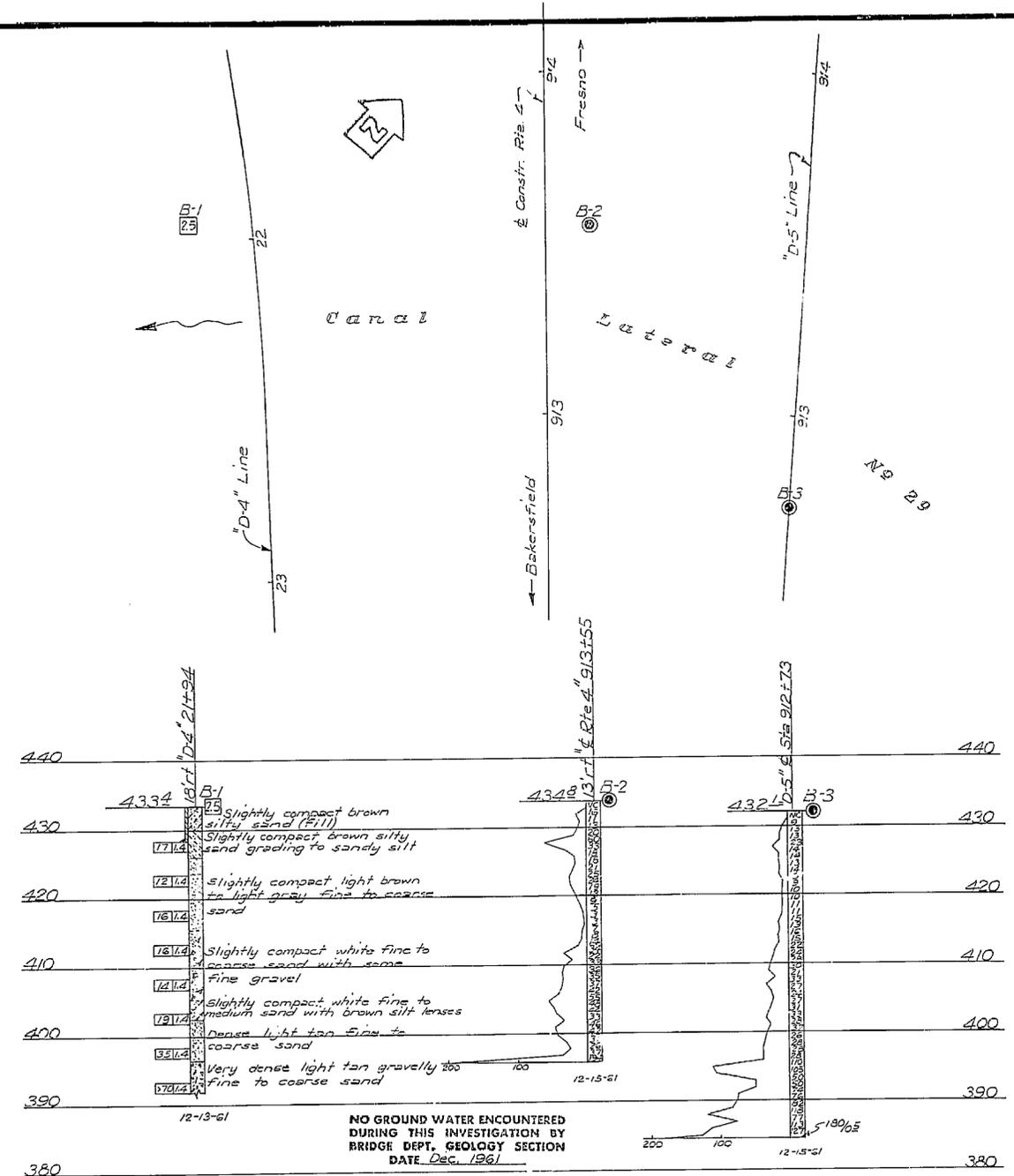
DATE: _____ SIGNATURE: _____ TITLE: _____

BRIDGE DEPARTMENT

FIELD STUDY: Miller 12-66
 DRAWN: Miller 1-62
 CHECKED: Miller 1-62
 Approved: [Signature]

BM "A"
 Chiseled "D" on end wingwall
 30.2' H "D-4" 21+96.5
 Elev 434.58

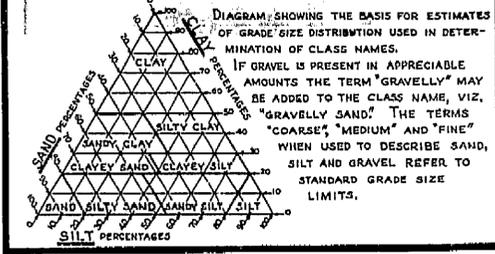
AS BUILT PLANS
 Contract No. 032984
 Date Completed
 Document No. 60001072



NO GROUND WATER ENCOUNTERED
 DURING THIS INVESTIGATION BY
 BRIDGE DEPT. GEOLOGY SECTION
 DATE Dec. 1961

THIS SET OF PLANS HAS BEEN CORRECTED TO
 CORRESPOND TO THE AS BUILT PRINTS DATED
 5-25-62 AND SHALL BE SHOWN BY RESIDENT
 ENGINEER [Signature] DATE: 6-6-62

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS



LEGEND OF EARTH MATERIALS

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SANDY SILT OR SILTY SAND
- SILTY CLAY OR CLAYEY SILT
- PEAT AND/OR ORGANIC MATTER
- FILL MATERIAL
- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2 1/2" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT

NOTE

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
 DEPARTMENT OF PUBLIC WORKS
 DIVISION OF HIGHWAYS

CANAL LATERAL 29 BRIDGE WIDENING

LOG OF TEST BORINGS

SCALE: Horizontal 1" = 20', Vertical 1" = 10'

BRIDGE 50-51 FILE DRAWING C-5051-4

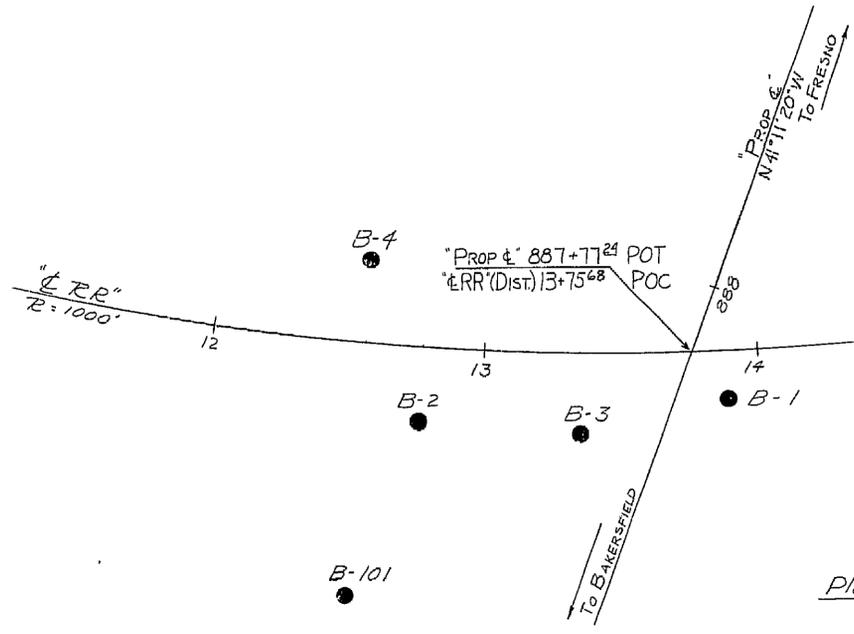
PREL. DRAWING NO. P-5051-4

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

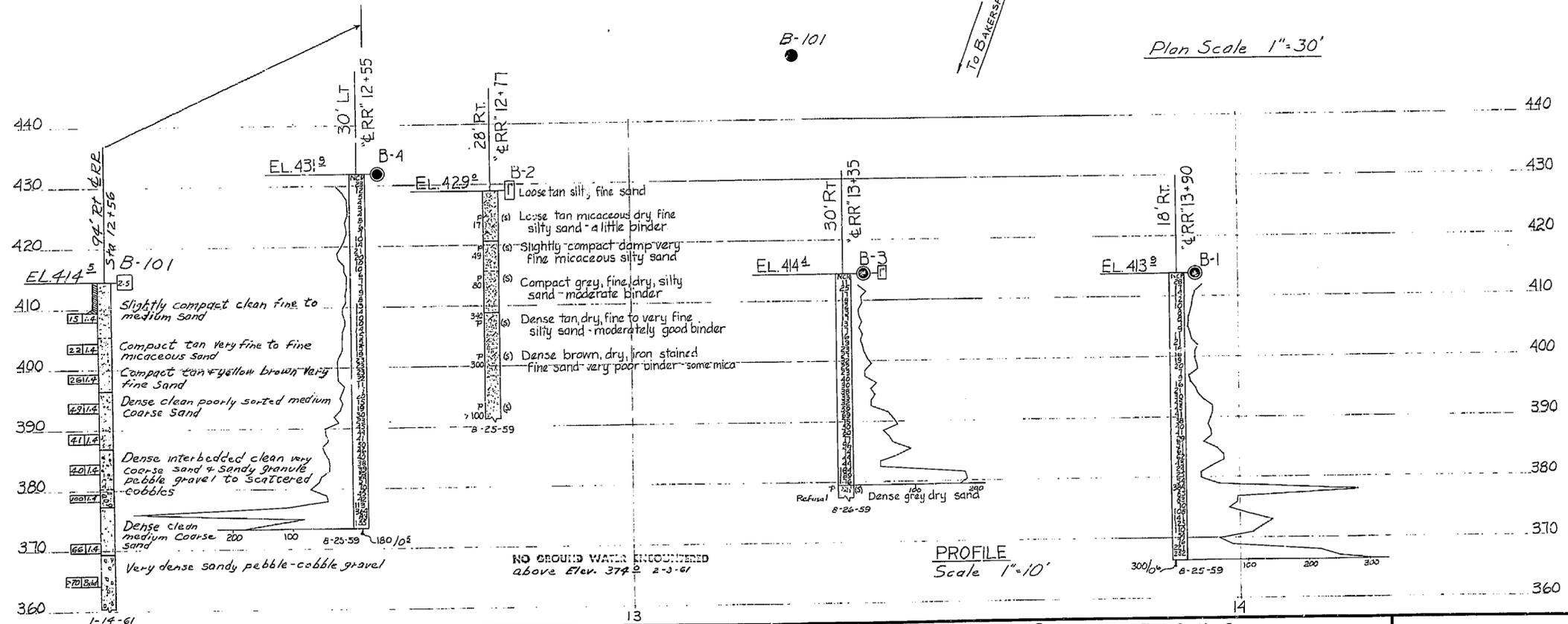
DATE: 12-15-61 SIGNATURE: [Signature] TITLE: [Title]

BM 1
FD RR SPIKE IN TP 102' RT
PROP 4. 887.95
EL. 423.2

AS BUILT PLANS
Contract No. 62-6V13C4
Date Completed
Document No. 60001061



Plan Scale 1"=30'

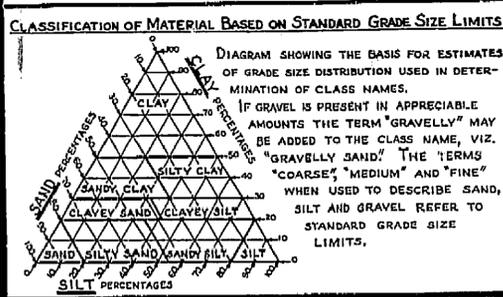


PROFILE Scale 1"=10'

THIS SET OF PLANS HAS BEEN CORRECTED TO CONFORM TO THE "AS BUILT" PRINTS DATED AS SUBMITTED BY RESIDENT ENGINEER. TRACINGS CORRECTED BY: DATE:

FIELD STUDY	R. HAGER 8-29
DRAWN	E. SHAGE 11-30
CHECKED	R. HAGER 1-30
APPROVED	V. I. S. [Signature]

BRIDGE DEPARTMENT



LEGEND OF EARTH MATERIALS

GRAVEL	SILTY CLAY OR CLAYEY SILT
SAND	PEAT AND/OR ORGANIC MATTER
SILT	FILL MATERIAL
CLAY	IGNEOUS ROCK
SANDY CLAY OR CLAYEY SAND	SEDIMENTARY ROCK
SANDY SILT OR SILTY SAND	METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2 1/4" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT

1" SOIL TUBE

ROTARY BORING

PENETRATION BORING

NOTES

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

MINKLER UNDERPASS

LOG OF TEST BORINGS

SCALE As Shown BRIDGE 50-49 FILE DRAWING C-6628-13

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE: SIGNATURE: TITLE: