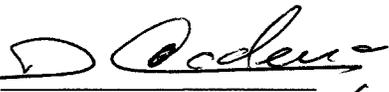


**Appendix 3-G: Pacoima Spreading Grounds Improvements Supporting
Documents**

(Please see Appendix CD for additional documents)

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April 6, 2011

Approved 
Diego Cadena 4/8/11

TO: Diego Cadena

FROM: Christopher Stone 
Water Resources Division

PACOIMA SPREADING GROUNDS PROJECT CONCEPT REPORT

Recommendations

1. Approve the attached project concept report for the Pacoima Spreading Grounds Improvements Project.
2. Authorize Water Resources Division (WRD) to pursue project funding opportunities with interested stakeholders.
3. Authorize Design Division to complete final design plans and specifications in Fiscal Year (FY) 2011-12.
4. Authorize Watershed Management Division (WMD) (Flood Programs) to allocate:
 - a. \$200,000 for the project's environmental contract.
 - b. ~~\$28,000,000 in the FY 2012-13 Flood Construction Program.~~
PROGRAM IN FUTURE YEARS
5. Authorize WRD to pursue the environmental document required for the project.

Discussion

Pacoima Spreading Grounds has insufficient storage capacity, low percolation rates, and intake restrictions during high flow conditions. The proposed spreading grounds improvements will reconfigure the basins to provide increased storage capacity, while removing clay to increase percolation rates.

The project consists of improving the existing intake structure by replacing the intake canal with four 54-inch diameter reinforced concrete pipes. The area will be backfilled to create an area for future recreational or habitat enhancement opportunities. The radial gate will be replaced with a rubber dam. The improved intake will convey an intake flow rate of 600 cubic feet per second (cfs) even under high flow conditions and eliminate flooding problems at Arleta Avenue.

The recharge basins will be reconfigured and deepened. The shallow clay layer in the upper 12 to 24 feet of the subsurface will be removed to improve percolation and

Diego Cadena
April 6, 2011
Page 2

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The proposed improvements will increase the storage capacity of the grounds from 530 to 1,197 acre-feet (AF) by deepening and combining basins. Operational efficiency will be enhanced with the proposed interbasin structures and facility layout. The percolation is expected to increase from 65 to 142 cfs as a result of the clay removal. The improvements are estimated to conserve an additional 10,500 AF of water per wet year.

Department of Water and Power (DWP) has expressed an interest in improvements to Pacoima Spreading Grounds. Upon approval of this concept we will meet with DWP to discuss the approved concept and to explore cost sharing opportunities.

WMD and Flood Maintenance Division have reviewed the concept and we have incorporated their comments.

If you have any questions, please contact Ken Zimmer at Extension 6188.

KZ
KZ:vt

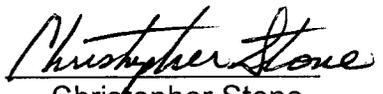
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Attach.

cc: Design
Flood Maintenance (Vander Vis)
Watershed Management

March 28, 2011

Approved 
Christopher Stone

TO: Christopher Stone

FROM: Ken Zimmer 
Water Conservation Planning Section

PACOIMA SPREADING GROUNDS PROJECT CONCEPT REPORT

Background

Pacoima Spreading Grounds is located in the City of Los Angeles near the intersection of Paxton and Arleta Streets on the west side of Pacoima Diversion Channel. The facility consists of 12 large shallow basins and has a storage capacity of 530 acre-feet (AF). The facility is one of the major water conservation facilities that recharge the San Fernando Basin.

The water conserved at Pacoima Spreading Grounds is supplied by storm flows and controlled releases from Pacoima Dam, partially controlled flow from Lopez Basin, and uncontrolled flows from East Canyon and Pacoima Wash. Water is diverted from Pacoima Wash into the spreading grounds utilizing a radial gate, and then the water flows through the intake canal to the spreading basins.

The facility's percolation is limited due to clay-rich lenses with low permeability that underlie the recharge area. The intake to the spreading grounds is limited to 600 cubic feet per second (cfs) since higher flows cause the intake canal to overflow, which causes flooding on Arleta Street. Channel flows in Pacoima Wash frequently exceed the radial gate's limited operating capacity of 1,700 cfs. When this occurs, diversion to the spreading grounds is suspended since the radial gate must be removed from the channel invert, allowing water to be wasted to the ocean.

Additional maintenance and operational difficulties exist at the facility. A Department of Water and Power (DWP) 72-inch diameter water main, runs across the lower basins and has been previously damaged during spreading grounds maintenance activities. Also, flow is limited to the western basins south of Devonshire Street because the culverts cannot convey the design intake flow.

Proposed Spreading Grounds Improvements

The proposed improvements will increase the storage capacity and simplify operations by combining basins and constructing new interbasin structures. The radial gate will be replaced with a rubber dam that can operate during higher flows. Different options to

upgrade the intake structure have resulted in the following three alternatives for this project:

Alternative A - Modify Existing Intake and Remove Clay

Alternative B - Build New Intake at Different Location and Remove Clay

Alternative C – No Change to Existing Intake, Remove Clay

Intake Upgrade

Modify Existing Intake – Alternative A

Alternative A consists of improving the existing intake structure by replacing the intake canal with four 54-inch diameter reinforced concrete pipes (RCP). The area will be backfilled to create an area for future recreational or habitat enhancement opportunities. The radial gate will be replaced with a rubber dam. The improved intake will convey an intake flow rate of 600 cfs and eliminate flooding at Arleta Avenue. The recharge basins will be reconfigured and deepened.

Build New Intake at Different Location – Alternative B

Alternative B consists of constructing a new intake structure located at the southeast corner of Arleta Avenue and Paxton Street. An air-inflatable rubber dam will be installed in Pacoima Diversion Channel at the new location, the radial gate and old Headworks Structure will be removed, the settling basin will be reconstructed, and recharge basins will be reconfigured and deepened. The parcel that is proposed for the new Headworks location is privately owned and an easement will need to be acquired, or the parcel will need to be purchased outright.

No Change to Existing Intake – Alternative C

Alternative C consists of leaving the existing intake operational. This option would save \$1,400,000 of the capital costs but would reduce the water conservation benefit.

Percolation Improvement

Clay Removal

For both alternatives the shallow clay layer in the upper 12 to 24 feet of the subsurface

will be removed to improve percolation and increase storage capacity. Estimated removal depths for each basin are based on recommendations reported in the January 2009 Geological Investigation Report completed by Geotechnical and Materials Engineering Division, but field conditions will determine the final removal depths. Approximately 1,370,000 cubic yards (CY) of excavated material will be removed from the site. The material will be sent to the nearby Vulcan Materials Co. processing site or trucked to an alternative location.

Storage Improvement

Alternative A – Storage capacity will increase by approximately 667 AF.

Alternative B – Storage capacity will increase by approximately 692 AF.

Alternative C – Storage capacity will increase by approximately 667 AF.

Alternatives

The alternatives along with their respective estimated costs and benefits during a high rainfall year are listed in the following table.

Alternative	Description	Estimated Cost	Wet Year Benefit
A	Modify existing intake, remove clay layers.	\$28,068,000	\$5,160,300
B	Build new intake, remove clay layers.	\$28,282,600*	\$5,124,700
C	No change to existing intake, remove clay layers.	\$26,600,000	\$5,039,000

* plus cost to acquire land.

Recommendation

The proposed alternative A will increase the storage capacity of the grounds from 530 to 1,197 AF by deepening and combining basins. Operational efficiency will be enhanced

Christopher Stone
March 28, 2011
Page 4

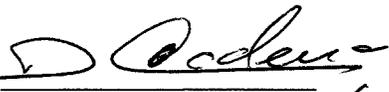
with the new interbasin structures and facility layout. The percolation is expected to increase from 65 to 142 cfs as a result of the clay removal. The improvements are estimated to conserve an additional 10,500 AF of water per wet year.

DWP has expressed an interest in improvements to Pacoima Spreading Grounds. We will meet with DWP to discuss the approved concept and to explore cost sharing opportunities.

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Attach.

April 6, 2011

Approved 
Diego Cadena 4/8/11

TO: Diego Cadena

FROM: Christopher Stone 
Water Resources Division

PACOIMA SPREADING GROUNDS PROJECT CONCEPT REPORT

Recommendations

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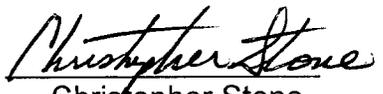
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Attach.

cc: Design
Flood Maintenance (Vander Vis)
Watershed Management

March 28, 2011

Approved 
Christopher Stone

TO: Christopher Stone

FROM: Ken Zimmer 
Water Conservation Planning Section

PACOIMA SPREADING GROUNDS PROJECT CONCEPT REPORT

Background

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upgrade the intake structure have resulted in the following three alternatives for this project:

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Alternative B - Build New Intake at Different Location and Remove Clay

Alternative C – No Change to Existing Intake, Remove Clay

Intake Upgrade

Modify Existing Intake – Alternative A

Alternative A consists of improving the existing intake structure by replacing the intake canal with four 54-inch diameter reinforced concrete pipes (RCP). The area will be backfilled to create an area for future recreational or habitat enhancement opportunities. The radial gate will be replaced with a rubber dam. The improved intake will convey an intake flow rate of 600 cfs and eliminate flooding at Arleta Avenue. The recharge basins will be reconfigured and deepened.

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Recommendation

The proposed alternative A will increase the storage capacity of the grounds from 530 to 1,197 AF by deepening and combining basins. Operational efficiency will be enhanced

Christopher Stone
March 28, 2011
Page 4

with the new interbasin structures and facility layout. The percolation is expected to increase from 65 to 142 cfs as a result of the clay removal. The improvements are estimated to conserve an additional 10,500 AF of water per wet year.

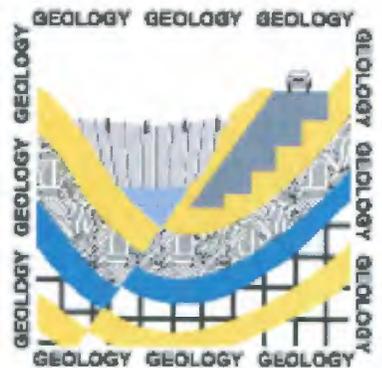
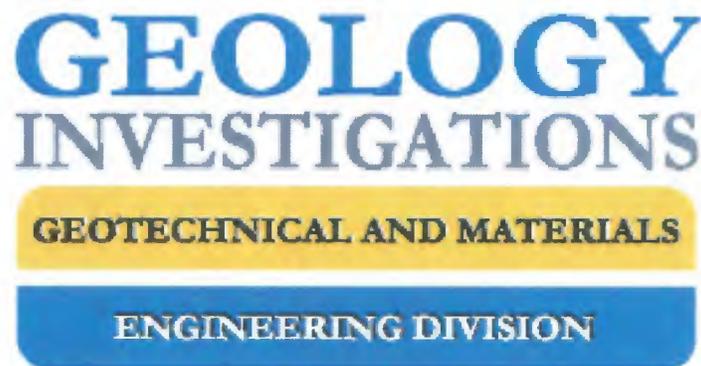
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Attach.

**SUBSURFACE INVESTIGATION
PACOIMA SPREADING GROUNDS
ARLETA AND MISSION HILLS
CITY OF LOS ANGELES, CALIFORNIA**

September 2007



SUBSURFACE INVESTIGATION
PACOIMA SPREADING GROUNDS
ARLETA AND MISSION HILLS
CITY OF LOS ANGELES, CALIFORNIA

Prepared for

County of Los Angeles
Department of Public Works
Water Resources Division

Prepared by

County of Los Angeles
Department of Public Works
Geotechnical and Materials Engineering Division
Geology Investigations Section

September 12, 2007



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FIGURES

FIGURE 1 – SITE LOCATION MAP
FIGURE 2 – SITE PLAN
FIGURE 3 – CROSS SECTION A-A'
FIGURE 4 – CROSS SECTION B-B'
FIGURE 5 – CROSS SECTION C-C'

APPENDIX A – PACOIMA SPREADING GROUNDS IMPROVEMENTS REQUEST
FOR SUBSURFACE INVESTIGATION REPORT, MARCH 5, 2007
APPENDIX B - SUMMARY OF LOG OF BORINGS



1.0 INTRODUCTION

A subsurface investigation for determining the lateral and vertical limits of a large clay-rich bed was performed for the Pacoima Spreading Grounds as requested in your March 5, 2007, memo (Appendix A). The site consists of 12 basins and associated levees located on approximately 150 acres southwest and northwest of the intersection of Devonshire Street and Arleta Avenue in the communities of Arleta and Mission Hills in the City of Los Angeles (Figure 1).

1.1 PURPOSE

The main objective of this subsurface investigation was to locate and identify the limits of a near-surface clay-rich soil layer by drilling ten boreholes within the subject site. The results of this investigation and our conclusions are provided in this report.

1.2 SCOPE OF SERVICES

To achieve the project objectives, the following scope of services was provided:

- Performing site reconnaissance.
- Reviewing selected geologic reports and maps.
- Drilling and logging ten boreholes.
- Preparing this report which presents our findings and conclusions.

1.3 SITE PLAN

The site map supplied by your Division consists of a scanned composite plan at the approximate scale of 1 inch equals 120 feet. This plan was utilized during fieldwork and the geotechnical cross-sections were prepared using this map as the base. However, the format of this map was not conducive to computer drafting systems and is not included in this report.

The Site Plan (Figure 2) was prepared utilizing a schematic of the Pacoima Spreading Grounds and is presented at the approximate scale of 1 inch equals 480 feet. Owing to the scale of the site plan, the geologic contact separating artificial fill from Quaternary alluvium cannot be shown in the detail provided on the geologic cross sections.



In general, the levees and streets are underlain by 2 to 16 feet of artificial fill and the basins bottoms are underlain by Quaternary alluvium.

2.0 SITE DESCRIPTION

The site is an irregularly shaped parcel that consists of approximately 150 acres located adjacent to and southwest and northwest of the intersection of Arleta Avenue and Devonshire Street in the Arleta and Mission Hills communities of the City of Los Angeles in the north-central San Fernando Valley. The site is located within a portion of Sections 15 and 16, Township 2 North, Range 15 West of the U.S. Geological Survey San Fernando Quadrangle (7.5-Minute Series).

The site is operated by your Division as an infiltration/groundwater recharge facility. The facility consists of 12 basins separated by a series of levees. The facility is bounded by Arleta Avenue, Filmore Street, Woodman Avenue, residential properties, and Devonwood Park. Devonshire Street bisects the site into northerly and southerly sections. Service roadways within the facility are located on the levees; ramps from the roads provide access to the basins. Other improvements onsite include aboveground and belowground utilities that cross the central portion of the site.

The surrounding area consists of residential structures and the accompanying streets located adjacent to the site on the north, west, southwest, and southeast. A park is located adjacent to the west-central portion of the site and spreading ground facilities are located offsite on the north side of Arleta Avenue. The Pacoima Diversion Canal is located to the northeast of the site and the Pacoima Wash Channel is located to the south of the site.

3.0 PHYSICAL SETTING

3.1 SITE CONDITIONS

The site is located in the north-central San Fernando Valley south of the San Gabriel Mountains at elevations ranging from 948 feet to 901 feet above mean sea level. Overall, the site slopes gently to the south; however, as the site consists of basins and levees, the natural grades and gradients have been modified to impound water and to move water in a controlled manner from one end of the site to the other. The basins have been excavated below native grade and the levees have been constructed above natural adjacent grade along the perimeter of the site. Vegetation consists of grasses and brush in the basins and on the levees. Various trees are located on the levees along the perimeter of the site.



3.2 GEOLOGIC SETTINGS

The site is located within the San Fernando Valley, which is an east-west trending basin within the Transverse Ranges geologic/geomorphic province. Overtime, the basin has subsided and been infilled with alluvial material as the mountains bounding the valley/basin have uplifted along underlying thrust-fault systems. This portion of the basin has infilled with sediments derived from the crystalline bedrock of the San Gabriel Mountains and received from the Pacoima Wash and Tujunga Wash drainage systems. The sediments include sand, silt, and gravel of granitic origin, and clays that have formed during the weathering process.

The onsite geologic units include artificial fill (af) and Quaternary alluvium (Qal). The artificial fill consists of sand, silt, gravel, and clay that apparently was excavated from the basin areas and used to construct the levees. The levees vary in height from approximately 8 feet to 16 feet above the bottoms of the adjacent basins. The Quaternary alluvium consists of sand, silt, gravel, and clay deposited in stream channel and/or floodplain environments.

3.3 HYDROGEOLOGIC SETTING

The site is located in the San Fernando hydrologic subarea of the upper Los Angeles River groundwater basin. Fresh water is typically found at a depth of several hundred feet in loose to partially consolidated, coarse to very coarse, alluvial deposits in the eastern portion of the San Fernando hydrologic subarea.

Data for nearby wells (within two miles) provided by the State of California and the County of Los Angeles indicate that the historic high groundwater levels in the subject area are greater than 200 feet below the ground surface.

4.0 FIELDWORK

4.1 RECONNAISSANCE

On April 10, 2007, Geotechnical and Materials Engineering Division (GMED) performed a site reconnaissance with contract driller, Boart Longyear, and Flood Maintenance Division. No concerns were observed that would significantly limit the field investigation.



SUBSURFACE EXPLORATION

Subsurface exploration was performed from May 21 through 23, 2007. Ten borings (B1 through B10) were drilled, utilizing a sonic drill rig provided by Boart Longyear, to depths ranging from 27 feet to 57 feet (Summary Log of Borings are provided in Appendix B). The approximate locations of the borings are shown on Figure 2. The sonic drill rig drilled approximately 8-inch-diameter borings and allowed for the collection of nearly continuous, disturbed core samples. The core samples were then inspected and logged by GMED personnel. At the completion of drilling, each boring was backfilled with clean, bagged Monterey Sand. Soil cuttings from each boring were manually spread within the basin in the vicinity of each boring.

The clay-rich bed was initially observed during the 2006 Fugro West, Inc., investigation. (References). During the 2006 study, the clay-rich bed was observed only in the northern-most borings along the margins of the Pacoima Spreading Grounds. Figure 2 shows the location of the Fugro West Borings. For the current investigation, the boring locations were chosen to determine if the clay-rich bed was continuous and extended beneath the basins. As the clay-rich bed was encountered during this study, additional boring locations were chosen to delineate the southerly and westerly limits of the bed.

5.0 FINDINGS

- The alluvium observed underlying the Pacoima Spreading Grounds is predominantly a combination of sand, silt, and gravel. Additionally, a relatively continuous clay-rich bed was encountered in Borings B-1 through B-5, B-7, B-9, and B-10.
- The clay-rich bed varied in thickness from 3 feet in Boring B-10 to 10 feet in Boring B-5. The bed appears to dip to the south-southwest and is approximately located on the Site Plan (Figure 2) and the geologic cross sections (Figures 3, 4, and 5). This bed appears to underlie all of Basins 1, 6 through 11, and portions of Basins 2 through 5, and 12. The depth to the top of the clay-rich bed, below the bottoms of the affected basins, varies from 5 to 15 feet. The maximum anticipated depth to the bottom of the continuous clay-rich bed is 19 feet below the bottom of Basin 11.
- Additional clay-rich beds were observed in several borings. However, these beds appear to be significantly thinner, generally less than 3 feet thick. These clay-rich beds were observed at widely varying depths and are anticipated to be less continuous than the above-described clay bed.



- Static groundwater was not observed in the 10 borings drilled for this investigation (to a maximum depth of 51 feet below the bottom of Basin 2). However, zones of perched groundwater were observed in Borings B-2, B-6, B-7, and B-8 at depths ranging from 16 feet to 44.5 feet below the top of the boring. These perched conditions generally occurred above less permeable clay-rich zones. Groundwater levels onsite are anticipated to vary widely as a result of recharge, precipitation, and irrigation.

6.0 CONCLUSIONS

The shallow subsurface investigation has shown that a continuous clay-rich bed underlies much of the Pacoima Spreading Grounds. This bed is anticipated to limit the vertical infiltration of recharge water placed in the affected basins.

Based on the perched groundwater observed in Borings B-2 and B-6 through B-8, the thinner clay-rich beds also appear to limit the vertical infiltration of recharge water. However, as these clay-rich beds appear to be laterally discontinuous, it is anticipated that recharge water moves along the clay bed until a path for downward infiltration is found. Additional clay-rich beds may exist below the depths explored during this investigation which may yet impede infiltration rates.

Removal of the continuous clay-rich bed underlying all of Basins 1, 6 through 11, and portions of Basins 2 through 5, and 12 and replacement with a more permeable (and better sorted) coarse-grained material as planned by your Division, is expected to improve the infiltration characteristics of the Pacoima Spreading Grounds.

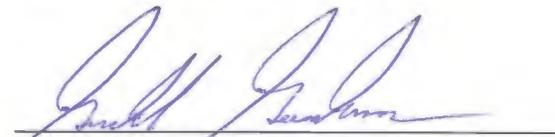
This subsurface investigation report was prepared, reviewed, and/or submitted by the undersigned geologists. If you have any questions regarding this matter, please contact Clayton Masters at (626) 458-4923.

Prepared by:



Clayton R. Masters
Engineering Geologist
P.G. 4943, C.E.G. 1636

Reviewed and submitted by:



Gerald Goodman
Engineering Geologist
P.G. 7094, C.E.G. 2227, C.HG. 777

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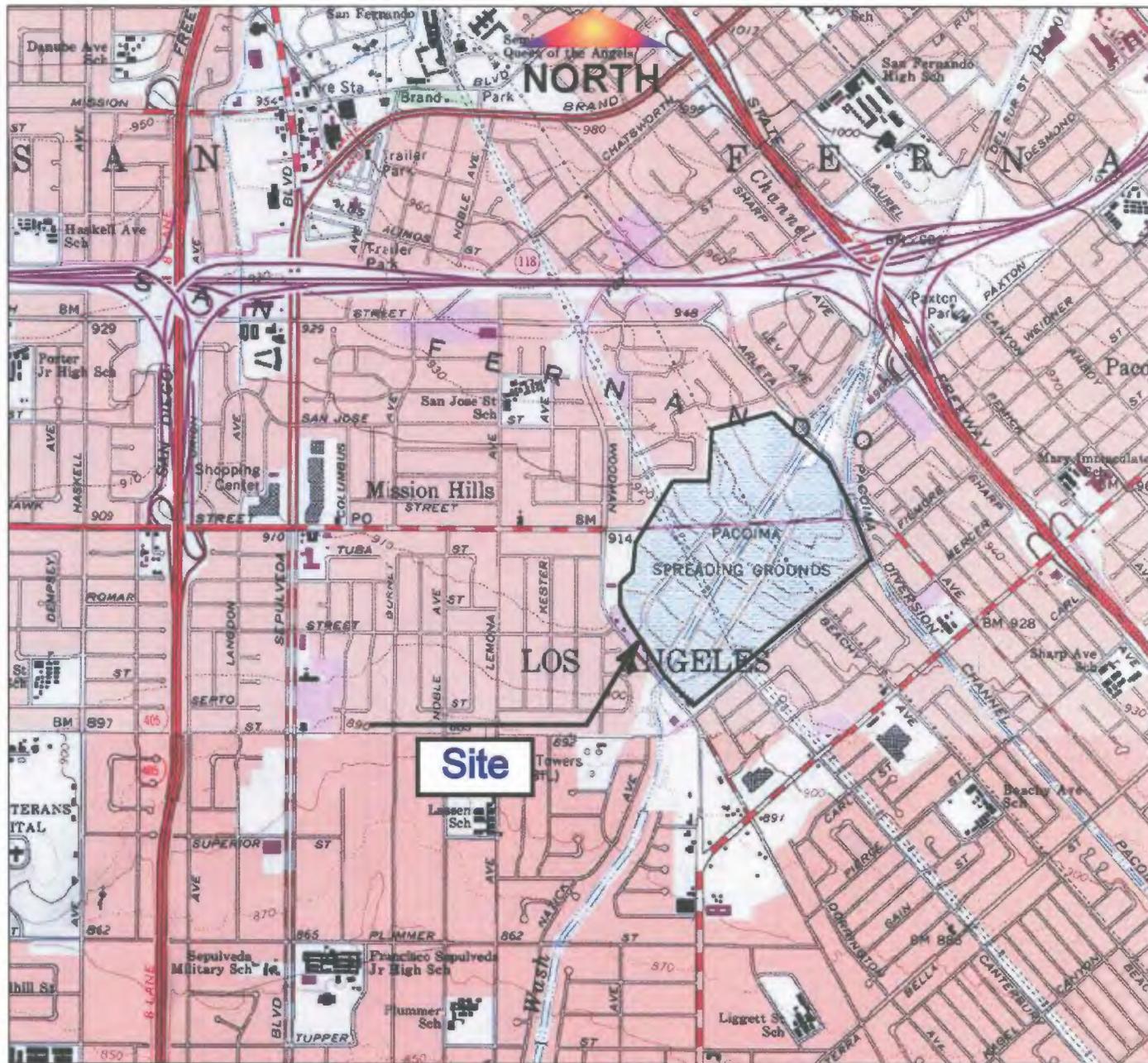


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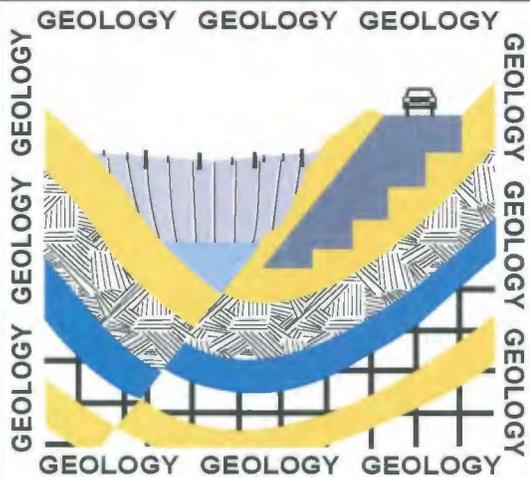
- California Department of Conservation, Division of Mines and Geology, 1969; Geologic Map of California Los Angeles Sheet, Scale 1:250,000.
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- California Department of Conservation, Division of Mines and Geology, 1997; Seismic Hazard Zone Report for the Van Nuys 7.5-minute Quadrangle; Los Angeles County, California; Seismic Hazard Zone Report 008, revised 2001.
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- U.S. Geological Survey, 1927, Pacoima Quadrangle 6-minute series, reprinted 1939.
- U.S. Geological Survey, 1966, San Fernando Quadrangle 7.5-minute series, photo-revised 1972.



FIGURES



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)



LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geology Investigations Unit

SITE LOCATION MAP

PACOIMA SPREADING GROUNDS

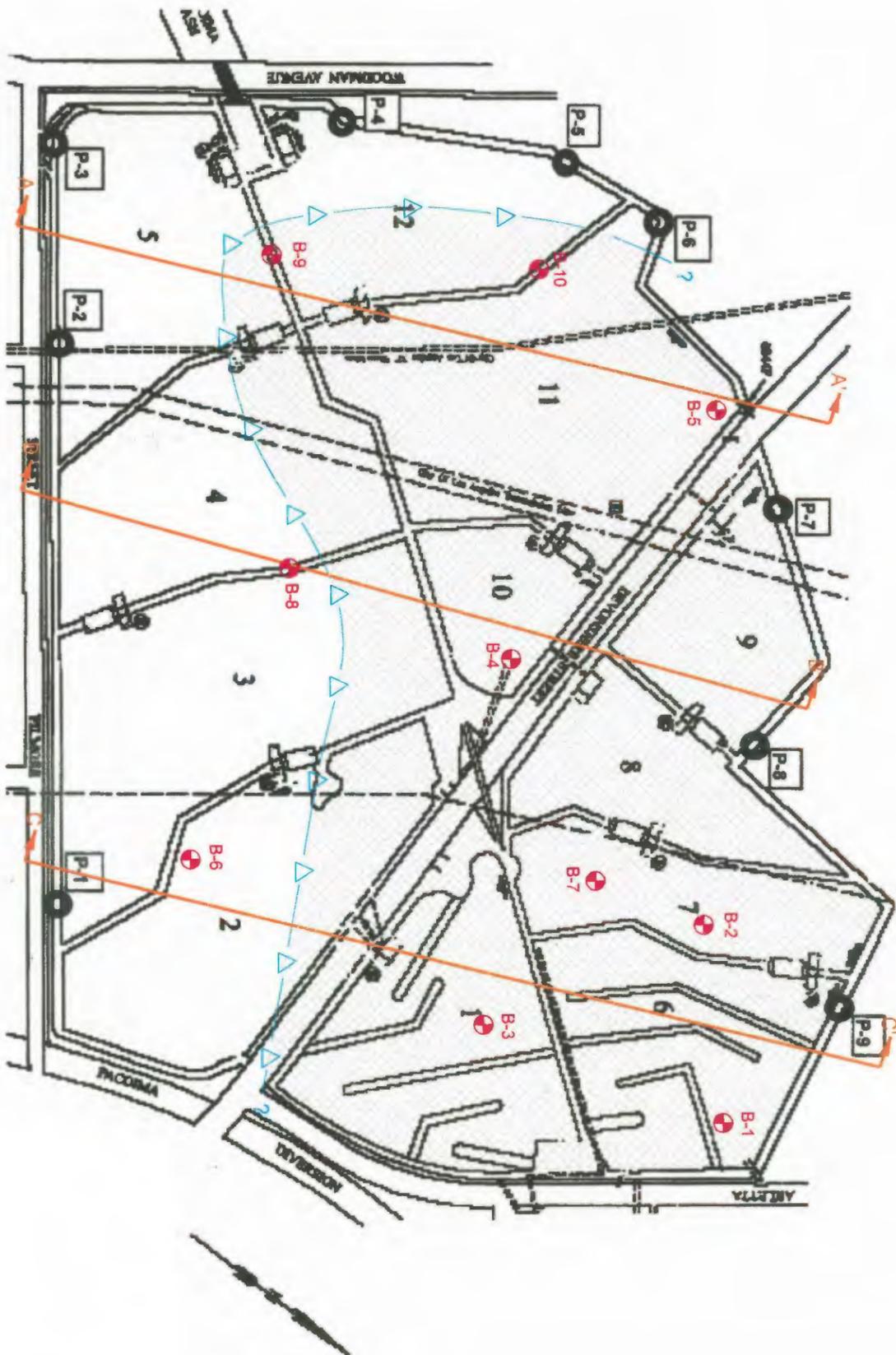
ARLETA AND MISSION HILLS, CITY OF LOS ANGELES, CALIFORNIA

PREPARED BY:
Eddie Ly

DATE:
August 2007

SCALE:
1" = 2000'

FIGURE 1



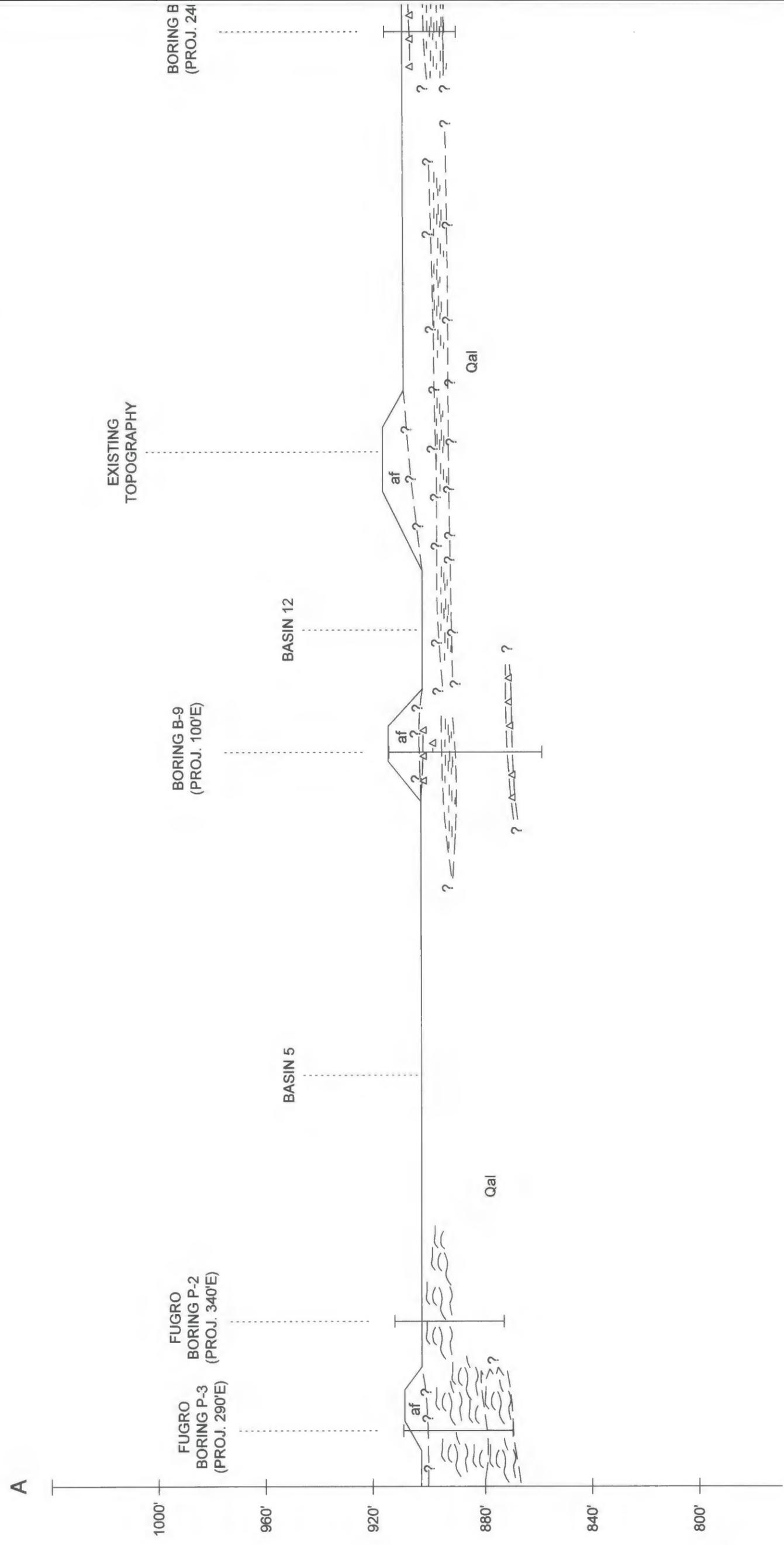
LEGEND	
	B-10 EXPLORATORY BORING - PUBLIC WORKS MAY 2007
	P-9 EXPLORATORY BORING - FUGRO WEST, INC., INVESTIGATION DATED OCTOBER 12, 2006
	C C LOCATION OF GEOLOGIC CROSS-SECTION
	APPROXIMATE LIMITS OF THICK (>3') CLAY-RICH BED, QUERIED WHERE UNCERTAIN.

SCALE APPROXIMATELY:
1 INCH = 480 FEET



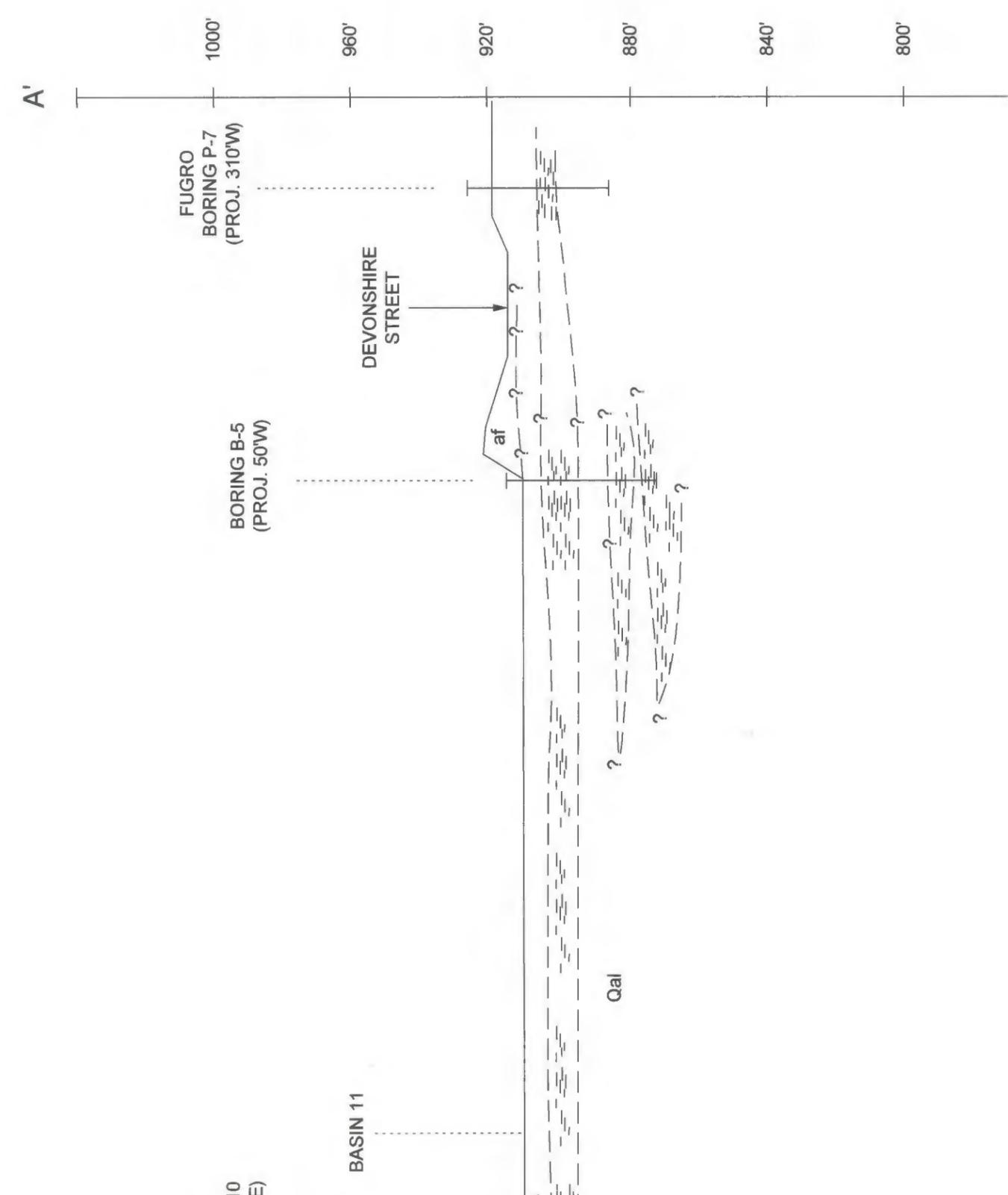
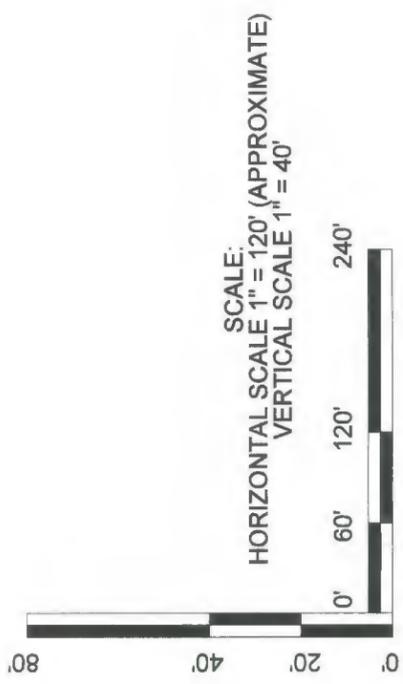
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION GEOLOGY INVESTIGATIONS UNIT			
SITE PLAN PACOIMA SPREADING GROUNDS ARLETA AND MISSION HILLS, CITY OF LOS ANGELES, CALIFORNIA			
PREPARED BY: EDDIE LY	DATE: AUGUST 2007	SCALE AS SHOWN	FIGURE 2

N 25°W



NOTE: THE GEOLOGIC CROSS-SECTIONS WERE PREPARED UTILIZING A NON-REPRODUCIBLE FIELD MAP (SCALE 1" = 120') SUPPLIED BY WATER RESOURCES DIVISION. MINOR LOCATION DISCREPANCIES MAY BE NOTED BETWEEN THE GEOLOGIC CROSS-SECTION AND FIGURE 2 THE SITE PLAN SUPPLIED IN THIS REPORT.

EXPLANATION	
af	ARTIFICIAL FILL
Qal	QUATERNARY ALLUVIUM
	GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN
	SILT BED
	CLAY BED
	THIN (<3' THICK) CLAY-RICH BED



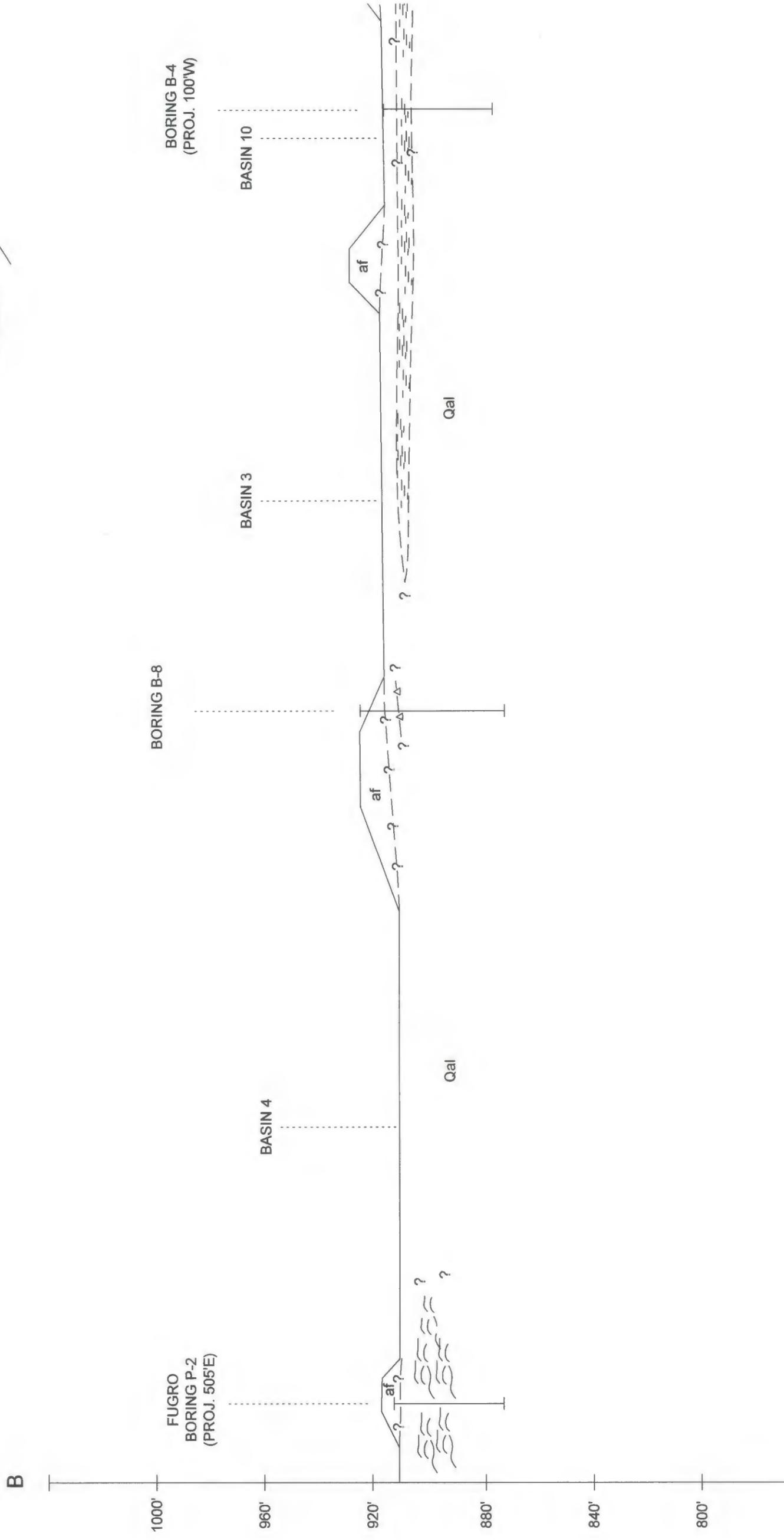
LOS ANGELES COUNTY
 DEPARTMENT OF PUBLIC WORKS
 GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

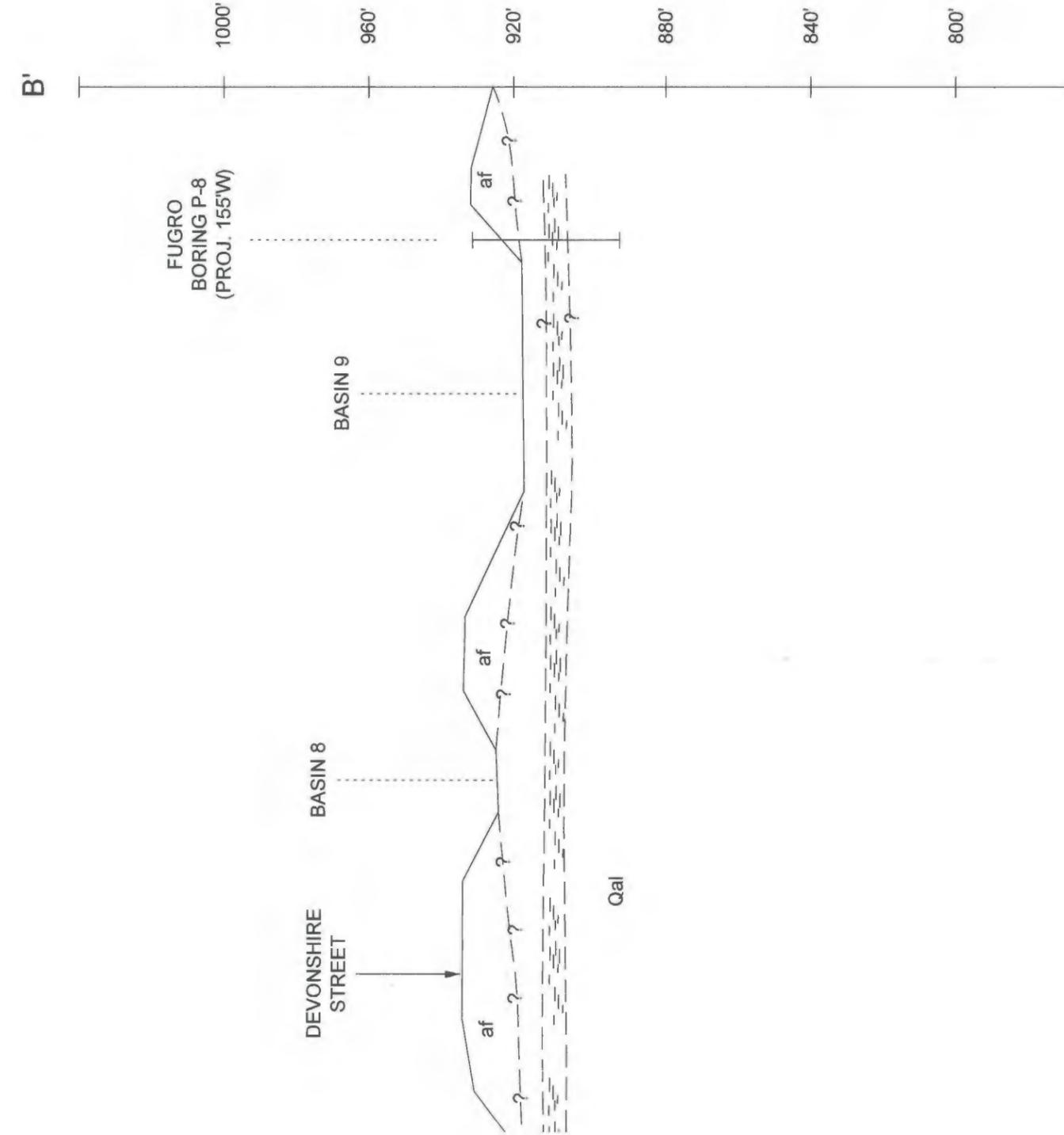
GEOLOGY INVESTIGATIONS UNIT

CROSS SECTION A-A'
 PACOIMA SPREADING GROUNDS
 ARLETA AND MISSION HILLS, CITY OF LOS ANGELES, CALIFORNIA

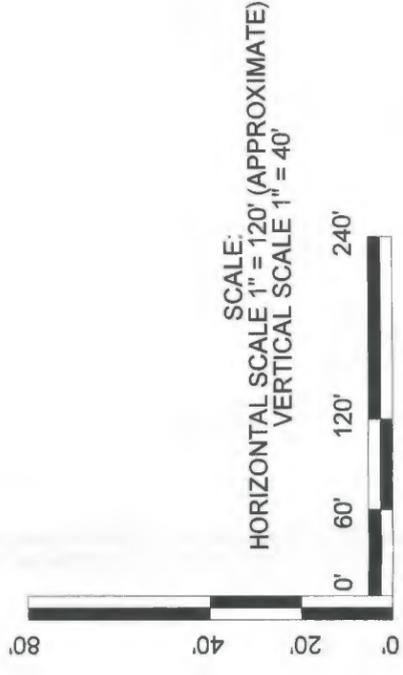
PREPARED BY: EDDIE LY	DATE: AUGUST 2007	SCALE: AS SHOWN	FIGURE 3
--------------------------	----------------------	--------------------	----------

N 24°W





EXPLANATION	
af	ARTIFICIAL FILL
Qal	QUATERNARY ALLUVIUM
— ? — ? — ?	GEOLOGIC CONTACT, QUERRIED WHERE UNCERTAIN
— — —	SILT BED
— — —	CLAY BED
— — —	THIN (<3' THICK) CLAY-RICH BED



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION		
GEOLOGY INVESTIGATIONS UNIT		
CROSS SECTION B-B' PACOIMA SPREADING GROUNDS ARLETA AND MISSION HILLS, CITY OF LOS ANGELES, CALIFORNIA		
PREPARED BY: EDDIE LY	DATE: AUGUST 2007	SCALE AS SHOWN
		FIGURE 4

N 26°W

C

BORING B-3
(PROJ. 160°W)

BORING B-6
(PROJ. 130°E)

BORING P-1
(PROJ. 105°W)

EXISTING
TOPOGRAPHY

DEVONSHIRE
STREET

BASIN 2

BASIN 1

BASIN 3

af

af

af

af

Qal

Qal

1000'

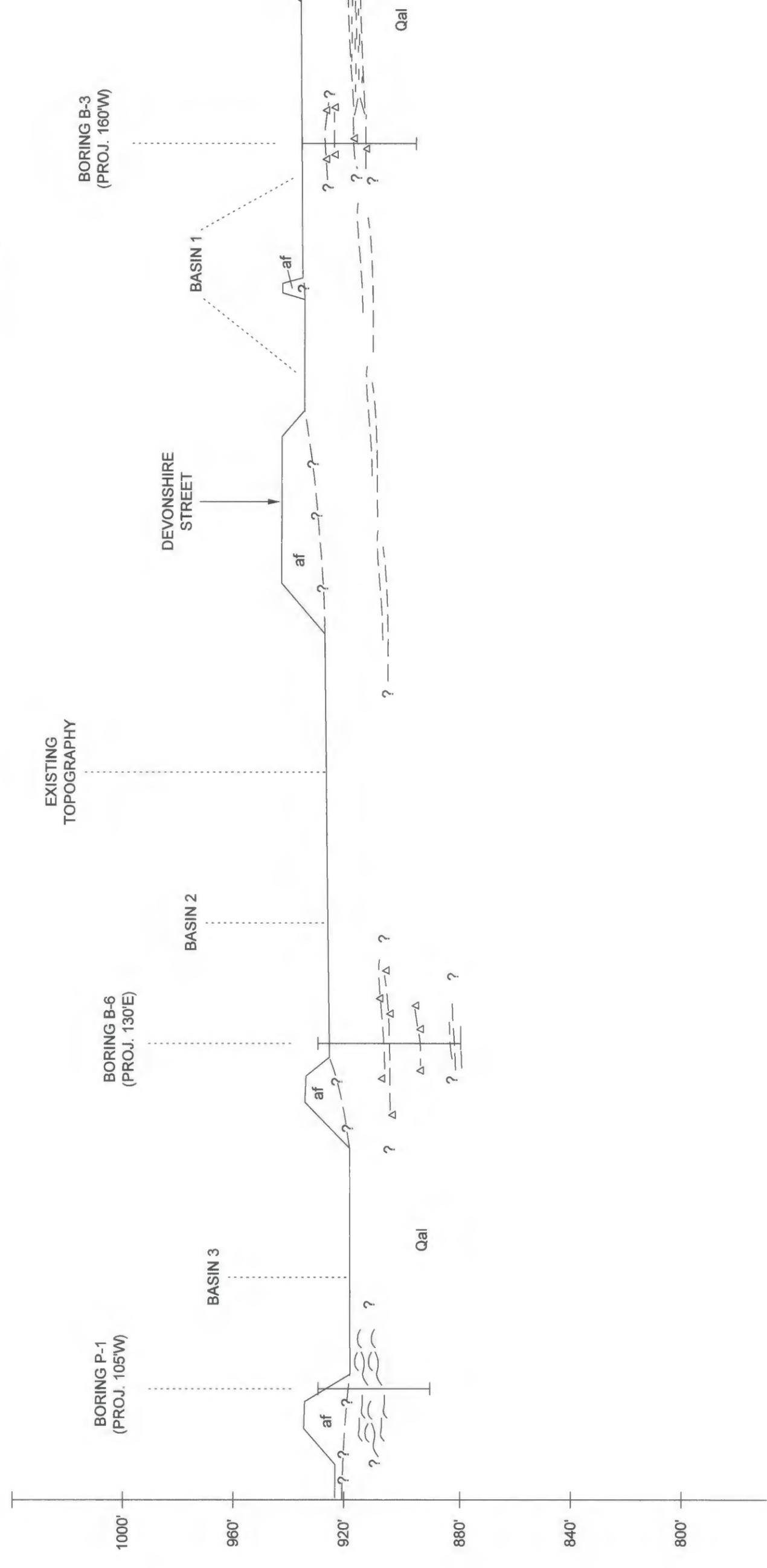
960'

920'

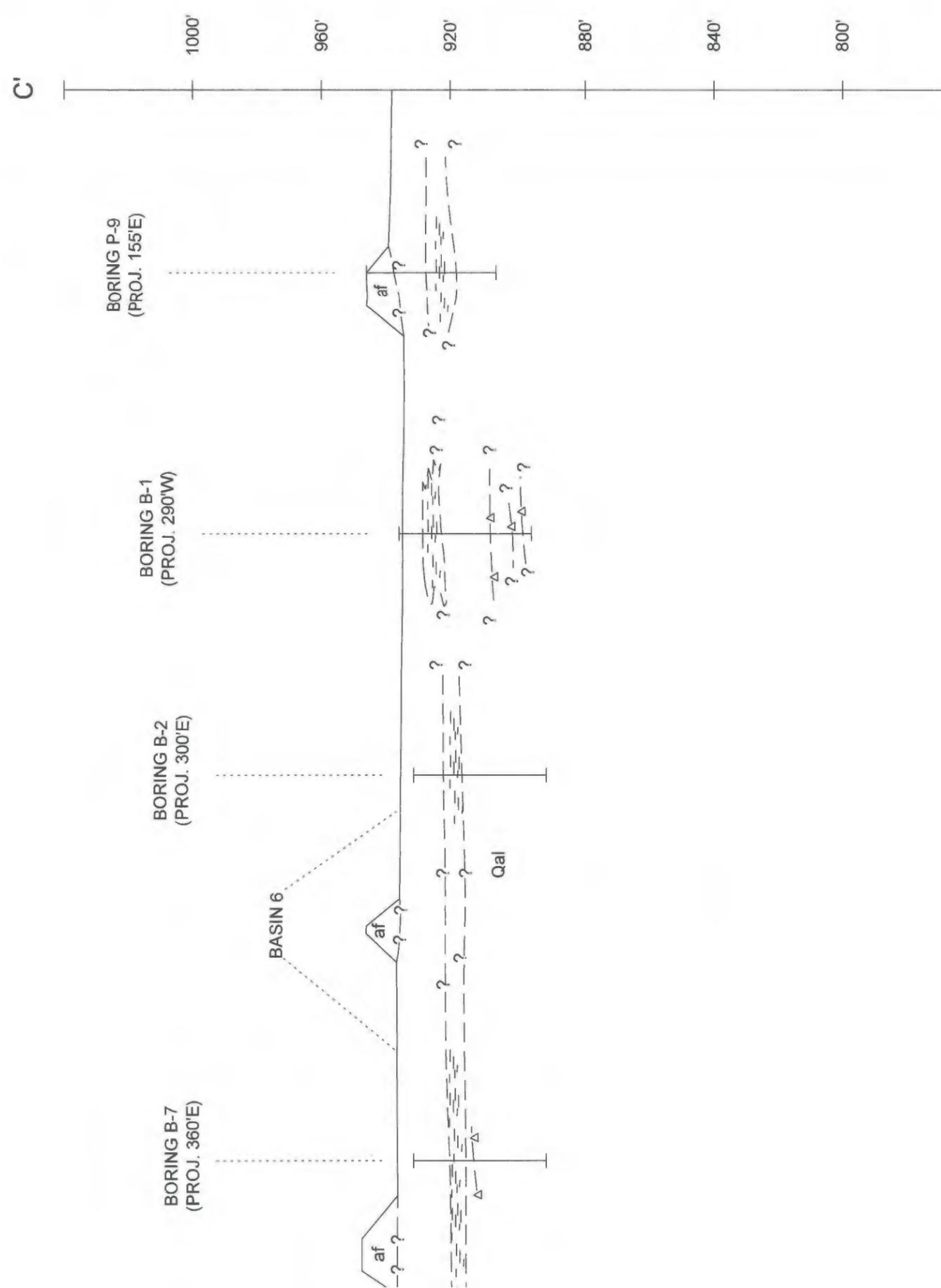
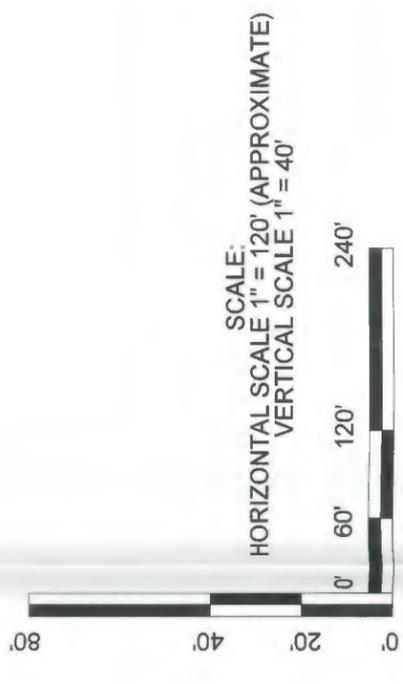
880'

840'

800'



	EXPLANATION
af	ARTIFICIAL FILL
Qal	QUATERNARY ALLUVIUM
~?~?	GEOLOGIC CONTACT, QUERRIED WHERE UNCERTAIN
~?~?	SILT BED
~?~?	CLAY BED
~?~?	THIN (<3' THICK) CLAY-RICH BED



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION		
GEOLOGY INVESTIGATIONS UNIT		
CROSS SECTION C-C' PACOIMA SPREADING GROUNDS ARLETA AND MISSION HILLS, CITY OF LOS ANGELES, CALIFORNIA		
PREPARED BY: EDDIE LY	DATE: AUGUST 2007	SCALE: AS SHOWN
		FIGURE 5

APPENDIX A

March 5, 2007

TO: Amir Alam
Geotechnical and Materials Engineering Division

FROM: Ken Zimmer
Water Conservation Planning Section

WAB

PKK

**PACOIMA SPREADING GROUNDS IMPROVEMENTS
REQUEST FOR SUBSURFACE INVESTIGATION REPORT
PCA NO. H0321129**

It is requested that your division make the necessary subsurface explorations for concept planning purposes and prepare logs and a report, which will describe the earth materials beneath Pacoima Spreading Grounds. The logs and report should also show sampling method used, location, identification designation, date of start and completion, name of the logger, and drilling subcontractor.

Previously, nine drill holes were excavated as part of a geotechnical study for levee evaluation by Fugro West, Inc. Locations of drill holes are not representative of the entire spreading basin. Therefore, exploration of additional drill holes is necessary to identify the limits of a large clay layer. The plan of Pacoima Spreading Grounds with existing drill hole locations is attached for your use.

This information is required no later than April 2, 2007, to enable us to meet the established project schedule. If you have any questions, please contact Marine' Gaplandzhyan at 458-6170.

WJ MG:yg

P:\wrd\GENERAL\Pacoima\Memo

Attach.

cc: Water Resources (Zimmer, Gaplandzhyan)

APPENDIX B

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-1 PAGE 1 OF 2
 CLIENT Water Resources Division ELEVATION 935 Ft. LOGGED BY C. Masters
 DRILLER/TYPE/DIAMETER OF BORING Boart Longyear, Sonic Drilling, 8" hole DRILLER Alex TOTAL DEPTH 40 Ft.
 DATE(S) 05/21/2007 LOCATION North-central portion of Basin 6

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		0	0'-1': Light brown, silty sand, fine- to medium-grained, dry, loose.
		1	1'-4': Gray-brown, silty sand, medium- to coarse-grained, with gravel to 3" diameter, dry, loose.
		2	
		3	
		4	4'-6': Brown, silty sand, fine-grained, moist, loose to slightly dense.
		5	6'-12': Brown to red-brown, silty clay with fine sand, moist, slightly firm.
		6	
		7	
		8	@ 8': 2"-4" thick sand/gravel bed.
		9	12'-18': Green-brown to brown, silty sand with gravel, fine- to coarse-grained, moist, loose to slightly dense.
		10	
		11	
		12	@ 13.5'-14.5': Less gravelly.
		13	
		14	18'-20': Orange-brown, silty sand, fine- to coarse-grained, moist, slightly dense.
		15	
16			
17			
18			
19			
20			

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-1 PAGE 2 OF 2
 CLIENT Water Resources Division ELEVATION 935 Ft. LOGGED BY C. Masters
 DRILLER/TYPE/DIAMETER OF BORING Boart Longyear, Sonic Drilling, 8" hole DRILLER Alex TOTAL DEPTH 40 Ft.
 DATE(S) 05/21/2007 LOCATION North-central portion of Basin 6

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		20	20'-22': Green-brown to brown, silty sand with gravel, fine- to coarse-grained, moist, loose to slightly dense.
		21	
		22	22'-26': Gray-brown, silty sand, fine- to coarse-grained, with gravel (2"-3" diameter), slightly moist, slightly dense to dense.
		23	
		24	
		25	
		26	@ 26'-27': Gravel to 4" diameter.
		27	27'-28': Red-brown to green-brown, clayey sand, fine- to coarse-grained, moist, firm.
		28	28'-33': Gray-brown, silty sand, fine- to coarse-grained, slightly moist, slightly dense.
		29	
		30	
		31	
		32	
		33	33'-34': Green-brown, clayey sand, medium- to coarse-grained with gravel.
		34	34'-35': Red-brown, clayey silt, moist, firm.
		35	35'-37': Brown silty sand, fine-grained, moist, slightly dense.
		36	
37	37'-38': Brown, clayey sand, fine- to medium-grained, with gravel to 2" diameter.		
38	38'-40': Brown silty sand, fine- grained, moist, slightly dense.		
39			
40		T. D.: 40 Feet. No Groundwater Encountered	
Backfilled with Monterey sand.			

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-2 PAGE 1 OF 2

CLIENT Water Resources Division ELEVATION 930 Ft. LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/8-inch diameter boring TOTAL DEPTH 40 Ft.

DATE 5-21-07 LOCATION North-Central portion of Basin 7 DRILLER Alex

Note: vThis log contains observations and interpretations that are valid only for the specific date and location of the boringSubsurface conditions vary between borings and with time.
Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		0	0'-2': Brown, silty sand, fine- to coarse-grained, slightly moist, slightly dense.
		1	
		2	2'-6': Gray-brown sand, fine- to medium-grained, slightly moist, slightly dense.
		3	@ 3': Becomes gravelly (1" diameter)
		4	
		5	
		6	6'-9': Dark gray sand, medium- to coarse-grained, with minor gravel, slightly moist to moist.
		7	
		8	
		9	@ 9' sharp contact.
		10	
		11	@ 11'-15': Slightly more sand, with coarse white sand grains.
		12	
		13	
		14	
Groundwater @ 16' (Perched).	15	15'-16': Brown, clayey sand, medium- to coarse-grained, with gravel, moist, slightly dense to dense.	
	16	16'-17': Orange brown sand, fine- to medium-grained, with gravel (2" diameter).	
	17		
	18	17'-18.5': As above @ 6'-9', except clayey	
	19	18.5'-20.5': As above @ 16'-17'.	
	20		

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-3 PAGE 1 OF 2

CLIENT Water Resources Division ELEVATION 935 Ft. LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/8" diameter boring TOTAL DEPTH 40 Ft.

DATE(S) 5-21-2007 LOCATION Central portion of Basin 1 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)	0	0	0'-1' Light brown, silty sand, fine-grained, with some clay, slightly moist, loose, roots throughout.
	1	1	1'-2': Dark brown, clayey sand, fine- to medium-grained, slightly moist, slightly dense.
	2	2	2'-8': Gray-brown sand, fine- to medium-grained, slightly moist, loose to slightly dense.
	3	3	@ 3': A 4" thick gravel lens, 0.5" diameter, rounded gravel.
	4	4	
	5	5	
	6	6	
	7	7	
@ 8': sharp contact.	8	8	8'-11': Orange-brown to red-brown, clayey silt/silty clay with fine-grained sand, slightly moist, firm.
	9	9	
	10	10	
	11	11	11'-15': Brown to orange-brown, silty sand, fine-grained, with a trace of gravel and clay, slightly moist, slightly dense. Becomes coarser with depth.
	12	12	
	13	13	
	14	14	
	15	15	15'-18': Light brown sand, fine- to coarse-grained, with gravel, slightly moist, slightly dense. Becomes coarser with depth.
	16	16	
	17	17	
	18	18	18'-19': Brown, clayey sand, fine-grained, slightly moist.
	19	19	19'-22': Brown, silty sand, fine-grained, slightly clayey, slightly moist, slightly dense. Becomes more clayey with depth.
	20	20	

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-3 PAGE 2 OF 2

CLIENT Water Resources Division ELEVATION 935 Ft. LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/8" diameter boring TOTAL DEPTH 40 Ft.

DATE(S) 5-21-2007 LOCATION Central portion of Basin 1 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
		20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	<p>22'-23': Red-brown to orange-brown, silty sand, fine-grained, moist to very moist.</p> <p>23'-27': As above at 19'-22'.</p> <p>27'-28.5': Light green-gray sand, medium- to coarse-grained, with gravel, slightly moist, slightly dense.</p> <p>28.5'-30': Brown silty sand, fine-grained, with clay, moist, slightly dense</p> <p>30'-31': Orange-brown sand, fine- to coarse-grained, with gravel, slightly moist, slightly dense.</p> <p>31'-32.5': Gray-brown, silty sand, fine- to medium-grained, with gravel, slightly moist, fragmented cuttings are dense.</p> <p>32.5'-37': Same as from 30'-31'.</p> <p>@ 37': Becomes less gravelly.</p> <p>39'-40': Orange-brown, slightly silty sand, fine- to medium-grained, slightly moist, slightly dense.</p>
<p>@ 31'-32.5': possibly cemented, cuttings are fragmented.</p> <p>@ 39' gradational contact. Backfilled boring with Monterey Sand</p>			<p>T. D.: 40 feet. No Groundwater Encountered.</p>

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
 GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-4 PAGE 1 OF 2

CLIENT WATER RESOURCES DIVISION ELEVATION 917 Ft. LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 40 Ft.

DATE(S) 5-22-2007 LOCATION Northeast portion of Basin 10 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	0'-3.5': Light gray-brown, silty sand, fine- to coarse-grained, with gravel, dry, loose. 3.5'-9.5': Dark brown to dark red-brown, clayey silt with fine sand, slightly moist to moist, slightly dense. 9.5'-10': Orange-brown, silty sand, fine- to coarse-grained, with gravel, slightly moist, slightly dense. @ 14': 1.0' thick silty sand, fine-grained. 18'-24': Orange-brown to gray-brown sand, fine- to coarse-grained, with gravel, slightly moist, slightly dense.
@ 9.5': sharp contact.			

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-4 PAGE 2 OF 2

CLIENT WATER RESOURCES DIVISION ELEVATION 917 Ft. LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 40 Ft.

DATE(S) 5-22-2007 LOCATION Northeast portion of Basin 10 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
		20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	24'-36': Brown to dark orange-brown, silty sand, fine- to medium-grained, slightly moist, loose to slightly dense.
@ 36'-37.5' broken into fragments that are smaller than 1/2".		36 37	36'-37.5': Light gray, silty clay to clayey silt with sand, dry, dense.
		37.5 38 39	37.5'-40': As above @ 24'-36'.
Backfilled with Monterey sand		40	T. D.: 40 Feet. No Groundwater Encountered

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

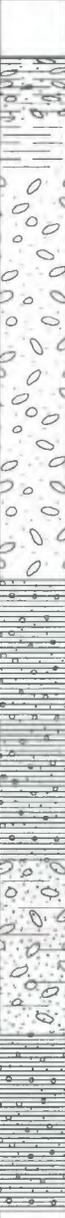
PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-5 PAGE 2 OF 3

CLIENT WATER RESOURCES DIVISION ELEVATION 913 Ft. LOGGED BY B. Thomas

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 43 Ft.

DATE(S) 5-22-2007 LOCATION Northwest portion of Basin 11 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal) @ 21'-22': ash-like.		20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	21'-22': Gray to black silt, dry. 22'-29': Medium brown to medium gray, gravelly sand with cobbles to 3" diameter, dry. 29'-34': Dark gray to dark brown, silty clay with some gravel, moist. 34'-37': Brown, sandy silt with gravel, slightly moist. 37'-40': Brown to gray, gravelly clay with silt, moist.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
 GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-5 PAGE 3 OF 3
 CLIENT WATER RESOURCES DIVISION ELEVATION 913 Ft. LOGGED BY B. Thomas
 DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 43 Ft.
 DATE(S) 5-22-2007 LOCATION Northwest portion of Basin 11 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		40 41 42 43	40'-43': Brown silty clay with some gravel, moist.
Backfilled with Monterey sand.		44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	T. D.: 43 feet. No Groundwater Encountered.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-6 PAGE 1 OF 3

CLIENT WATER RESOURCES DIVISION ELEVATION 931 Ft LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 51 Ft.

DATE(S) 5-22-2007 LOCATION South - Central portion of Basin 2 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		0	0'-1': Light brown, silty sand, fine- to medium-grained, dry, slightly dense, roots throughout.
		1	1'-8': Brown, silty sand, fine- to medium-grained, with clay, slightly moist slightly dense.
		2	
		3	
		4	
		5	
		6	
		7	
		8	8'-9': Dark brown, silty sand, fine-grained, slightly moist, slightly dense.
		9	9'-14': Dark brown, silty sand, fine-grained, with clay and some gravel, slightly moist, slightly dense.
		10	
		11	
		12	
		13	
		14	14'-23': Orange-brown sand, fine- to coarse grained, with gravel (to 2" diameter), slightly moist, slightly dense.
		15	
		16	
		17	
		18	
		19	
20			

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
 GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-6 PAGE 2 OF 3

CLIENT WATER RESOURCES DIVISION ELEVATION 931 Ft LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 51 Ft.

DATE(S) 5-22-2007 LOCATION South - Central portion of Basin 2 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
@ 23'-26': water on fracture surfaces.		20 21 22 23 24 25 26	23'-26': Brown, clayey silt-silty clay with fine-grained sand, moist to wet, dense.
@ 28'-34': Moderately cemented.		26 27 28 29 30 31 32 33 34	26'-28': As above @ 14'-23'. 28'-34': Light gray-brown, silty sand, fine- to coarse-grained, with gravel to 2" diameter, slightly moist, dense.
@ 40': 6" diameter cobble		34 35 36 37 38 39 40	34'-36': As above @ 23'-26'. 36'-47': Orange-brown, silty sand, fine- to coarse-grained, with gravel to 3" diameter, slightly moist, slightly dense.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
 GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-6 PAGE 3 OF 3

CLIENT WATER RESOURCES DIVISION ELEVATION 931 Ft LOGGED BY C. Masters

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/ Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 51 Ft.

DATE(S) 5-22-2007 LOCATION South - Central portion of Basin 2 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Backfilled with Monterey sand.		40	
		41	
		42	
		43	
		44	
		45	
		46	
		47	47'-50': Brown, clayey silt, moist, slightly dense to dense.
		48	
		49	
50	50'-51': Brown clayey silt with fine-grained sand, moist, slightly dense to dense.		
51			
52			
53	T. D.: 51 feet. Seepage encountered from 23' to 26'.		
54			
55			
56			
57			
58			
59			
60			

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-7 PAGE 1 OF 2

CLIENT WATER RESOURCES DIVISION ELEVATION 930 Ft. LOGGED BY B. Thomas/L. Bell

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 40 Ft.

DATE(S) 5-22 to 23-2007 LOCATION Southern portion of Basin 7 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	0'-3': Dark brown to dark gray, gravelly sand, moist. 3'-9': Moderate brown to gray, sandy silty, dry. 9'-17': Dark brown, sandy clay with silt, very moist. @ 12'-15': more clayey. @ 15'-19': more silty.
Perched water@ 17'.		17 18 19 20	17'-21': Dark brown, clayey fine- to coarse-grained sand with gravel and cobbles, moist, loose. Gravel and cobbles to 2" diameter, sub-angular to sub-rounded, granitic.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-7 PAGE 2 OF 2

CLIENT WATER RESOURCES DIVISION ELEVATION 930 Ft. LOGGED BY B. Thomas/L. Bell

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 40 Ft.

DATE(S) 5-22 to 23-2007 LOCATION Southern portion of Basin 7 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Alluvium (Qal)		20	
		21	21'-24': Gray, coarse-grained sand with traces of clay and silt, wet, dense.
		22	
		23	
		24	24'-27': Light brown, coarse-grained sand with gravel, slightly moist, slightly dense. Gravel to 1" diameter.
		25	
		26	
		27	27'-33': Gray-brown, coarse-grained sand with gravel, wet, cobbles to 5" diameter, subangular.
		28	
		29	
		30	@ 30'-33': Less gravel and traces of clay.
		31	
		32	
		33	33'-39': Gray, sandy gravel with silt, moist, gravel to 3/4" diameter and subrounded to rounded. Scattered cobbles to 8" diameter.
		34	
		35	
		36	
		37	
		38	
		39	39'-40': Dark brown, sandy silt with clay, moist.
Backfilled with Monterey sand.		40	
			Total Depth: 40 Feet. Groundwater encountered at 17'.

SUMMARY LOG OF BORING

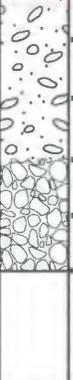
PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-8 PAGE 1 OF 3

CLIENT WATER RESOURCES DIVISION ELEVATION 926 Ft. LOGGED BY L. Bell

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 53 Ft.

DATE(S) 5-23-2007 LOCATION Levee between Basin 3 and Basin 4 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Artificial Fill (af): 0'-9'		0 1 2 3 4 5 6 7 8 9	0'-1/4': Asphalt. 1/4' - 7': Dark Brown, silty sand, slightly moist to moist, dense; coarser with depth.
Alluvium (Qal): 9'-53' @ 9': sharp contact.		9 10 11 12 13 14 15 16 17 18 19 20	9'-12': Gray, coarse-grained sand, slightly moist. 12'-12.5': Dark brown, sandy clay with cobbles, slightly moist. 12.5'-15': Light gray, gravelly coarse-grained sand, dry. Fine-grained gravels are subangular to rounded. 15'-18': Light gray, cobbly, medium- to coarse-grained sand, slightly moist; cobbles to 4" diameter.
		18 19 20	18'-20': Light gray, cobble layer, little to no fines. @ 20': Slightly silty and clayey.

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-8 PAGE 2 OF 3
 CLIENT WATER RESOURCES DIVISION ELEVATION 926 Ft. LOGGED BY L. Bell
 DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 53 Ft.
 DATE(S) 5-23-2007 LOCATION Levee between Basin 3 and Basin 4 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
		20	
		21	21'-23': Light gray, silty sand with gravel and some small cobbles.
		22	
		23	23'-27': Light brown, coarse-grained sand with gravel and cobbles, moist.
		24	
		25	
		26	
		27	27'-35': Light brown to gray, sand with cobbles/boulders, dry.
		28	
		29	
		30	
		31	
		32	
		33	
		34	
		35	35'-37': Clayey gravel with cobbles, moist.
		36	
@ 37'-47': Difficult sample recovery. Some sample is lost.		37	37'-47': Light brown to gray, coarse sand, with gravel, cobbles and possible boulders, moist, no fines.
		38	
		39	
		40	

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-8 PAGE 3 OF 3

CLIENT WATER RESOURCES DIVISION ELEVATION 926 Ft. LOGGED BY L. Bell

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 53 Ft.

DATE(S) 5-23-2007 LOCATION Levee between Basin 3 and Basin 4 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

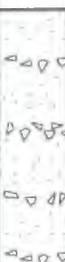
COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
@ 44.5'-46.5': Oxidized zone.		40 41 42 43 44 45 46 47 48 49 50 51 52 53	44.5'-46.5': Cobbly sand with clay coatings, wet. 47'-50': Medium-grained sand with gravels and cobbles. Decreasing gravels and cobbles with depth. 50'-52': Orange-brown to dark brown, medium-grained sand with a trace of gravel to 1.5" diameter. 52'-53': Light brown, medium-grained sand with coarser gravel.
Backfilled with Monterey sand.		54 55	T. D: 53 Feet. Seepage encountered at 44.5'.
		56 57 58 59 60	

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-9 PAGE 1 OF 3
 CLIENT WATER RESOURCES DIVISION ELEVATION 918 Ft. LOGGED BY Linda Bell
 TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/8-inch diameter boring TOTAL DEPTH 57 Ft.
 DATE(S) 5-23-2007 LOCATION Levee between Basin 5 and Basin 12 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Artificial Fill (af): 0'-8'		0	0'-1/4': Asphalt.
		1	1/4'-5': Dark Brown to gray, silty sand to sandy silt with clay.
Alluvium (Qal:): 8'-57'		2	
		3	
		4	
		5	5'-7': Dark brown, sandy silt with clay, slightly moist.
		6	
		7	7'-8': Dark brown, clayey sand with cobbles, slighty moist.
		8	8'-10': Gray, sand with gravel and cobbles.
		9	
		10	10'-11': Dark brown, sandy silt with a trace of clay.
		11	11'-20': Light gray, coarse-grained sand with coarse gravel.
		12	
		13	13'-13.5': Dark red-brown, silty clay layer.
14			
15			
16	16.5'-17': As above @ 13'-13.5'.		
17			
18			
19			
20			

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-9 PAGE 2 OF 3
 CLIENT WATER RESOURCES DIVISION ELEVATION 918 Ft. LOGGED BY Linda Bell
 TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/8-inch diameter boring TOTAL DEPTH 57 Ft.
 DATE(S) 5-23-2007 LOCATION Levee between Basin 5 and Basin 12 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
		20	20'-21': Dark red-brown, silty clay; more clay-rich with depth.
		21	21'-24': Dark red-brown, clay with minor amount of gravel and silt.
		22	
		23	
		24	24'-27': Dark brown, silty gravel with clay, coarser with depth. Granitic gravel is highly weathered.
		25	
		26	
		27	27'-29': Gravelly sand, no fines.
		28	
		29	29'-37': Gravelly sand, slightly clayey.
		30	
		31	
		32	
		33	
		34	
		35	
		36	
		37	37'-44': Light brown to gray, sandy gravel with cobbles up to 6" in diameter.
		38	
		39	
		40	

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-9 PAGE 3 OF 3
 CLIENT WATER RESOURCES DIVISION ELEVATION 918 Ft. LOGGED BY Linda Bell
 TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/8-inch diameter boring TOTAL DEPTH 57 Ft.
 DATE(S) 5-23-2007 LOCATION Levee between Basin 5 and Basin 12 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
		40	
		41	
		42	
		43	
		44	44'-45': Clayey sand with silt.
		45	45'-46.5': Dark brown, silty clay, slightly moist to moist, micaceous.
		46	
		47	46.5'-57': Red-brown, silty sand with gravel, fine-grained, moist; coarser with depth.
		48	
		49	
		50	
		51	
		52	
		53	
		54	
		55	
		56	
Backfilled with Monterey sand.		57	
		58	
		59	T. D.: 57 Feet. No Groundwater Encountered.
		60	

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
 GEOLOGY SECTION - GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-10 PAGE 1 OF 2
 CLIENT WATER RESOURCES DIVISION ELEVATION 918 Ft LOGGED BY L. Bell
 DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 27 Ft.
 DATE(S) 5-23-2007 LOCATION Levee between Basin 11 and Basin 12 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
Artificial fill (af): 0'-9'		0 1 2 3 4 5 6 7 8	0'-1/4': Asphalt. 1/4'-8': Brown, silty sand.
Alluvium (Qal) 9'-27'		9 10 11 12 13 14 15 16 17 18 19 20	8'-9': Dark brown, organic-rich clay, moist. 9'-15': Brown, fine- to medium-grained sand with trace of gravel. 15'-17': Dark brown, clay with silt.
		17 18 19	17'-18.5': As above @ 9'-15'. 18.5'-21': Red brown, clay, firm.

SUMMARY LOG OF BORING

PROJECT Pacoima Spreading Grounds JOB NUMBER H0321129 BORING NO. B-10 PAGE 2 OF 2

CLIENT WATER RESOURCES DIVISION ELEVATION 918 Ft LOGGED BY L. Bell

DRILLER/TYPE/DIAMETER OF BORING Boart Longyear/Sonic Drilling/ 8-inch diameter boring TOTAL DEPTH 27 Ft.

DATE(S) 5-23-2007 LOCATION Levee between Basin 11 and Basin 12 DRILLER Alex

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Lithologic descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

COMMENTS INTERPRETATIONS ATTITUDES	GRAPHIC	DEPTH (FT.)	DESCRIPTION
<p>@ 21.5', sharp contact.</p>		<p>20 21 22 23 24 25 26 27</p>	<p>21'-21.5': Clayey gravel with sand 21.5'-27': Gravelly sand with cobbles.</p>
<p>Backfilled with Monterey sand.</p>		<p>28 29 30 31 32 33 34 35 36 37 38 39 40</p>	<p>T. D.: 27 Feet No Groundwater Encountered.</p>

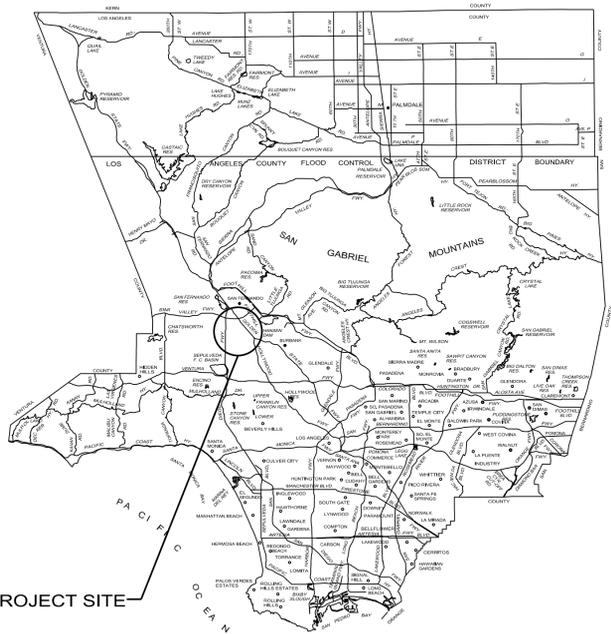
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COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT

INDEX TO PROJECT PLANS

SH NO	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES, INDEX TO STANDARD PLANS, CONCRETE REMOVAL NOTES
3	SITE PLAN - EXISTING FACILITIES
4	SITE PLAN - IMPROVEMENT FACILITIES
5	PROFILE - INTERBASIN CONDUITS 72" RCP
6	DISCHARGE CONDUIT 60 IN. RCP AND DOWN DRAIN DETAIL
7	EXCAVATION AND GRADING PLAN - BASIN 6
8	EXCAVATION AND GRADING PLAN - BASIN 1 & 2
9	EXCAVATION AND GRADING PLAN - BASIN 4 AND 5
10	EXCAVATION AND GRADING PLAN - BASIN 3, EAST & WEST SETTLING BASINS
11	EXCAVATION AND GRADING PLAN - DIVERSION CHANNEL INTAKE
12	PROPOSE ACCESS RAMP PLAN AND PROFILE
13	RUBBER DAM AND INTAKE PLAN VIEW
14	RUBBER DAM AND CHANNEL WALL DETAILS
15	RUBBER DAM AND CHANNEL WALL DETAILS
16	INTAKE STRUCTURE
17	WEIR STRUCTURE
18	WEIR STRUCTURE DETAILS
19	WEIR STRUCTURE DETAILS
20	OUTLET STRUCTURE DETAILS
21	LOW FLOW INTERBASIN STRUCTURE "I" DETAILS
22	OUTFALL STRUCTURE DETAILS
23	CONTROL HOUSE - BUILDING REINFORCEMENT
24	CONTROL HOUSE - BUILDING ELEVATIONS
25	CONTROL HOUSE - DOOR LOUVER AND FAN DETAILS
26	CONTROL HOUSE - ELECTRICAL LIGHTING INSTALLATION
27	CONTROL HOUSE - PLAN AND SECTIONS
28	MECHANICAL - TYPICAL EQUIPMENT LAYOUT FOR INTERBASIN STRUCTURES
29	MECHANICAL - TYPICAL FLOW METER STATION AND INSTRUMENTATION DETAILS

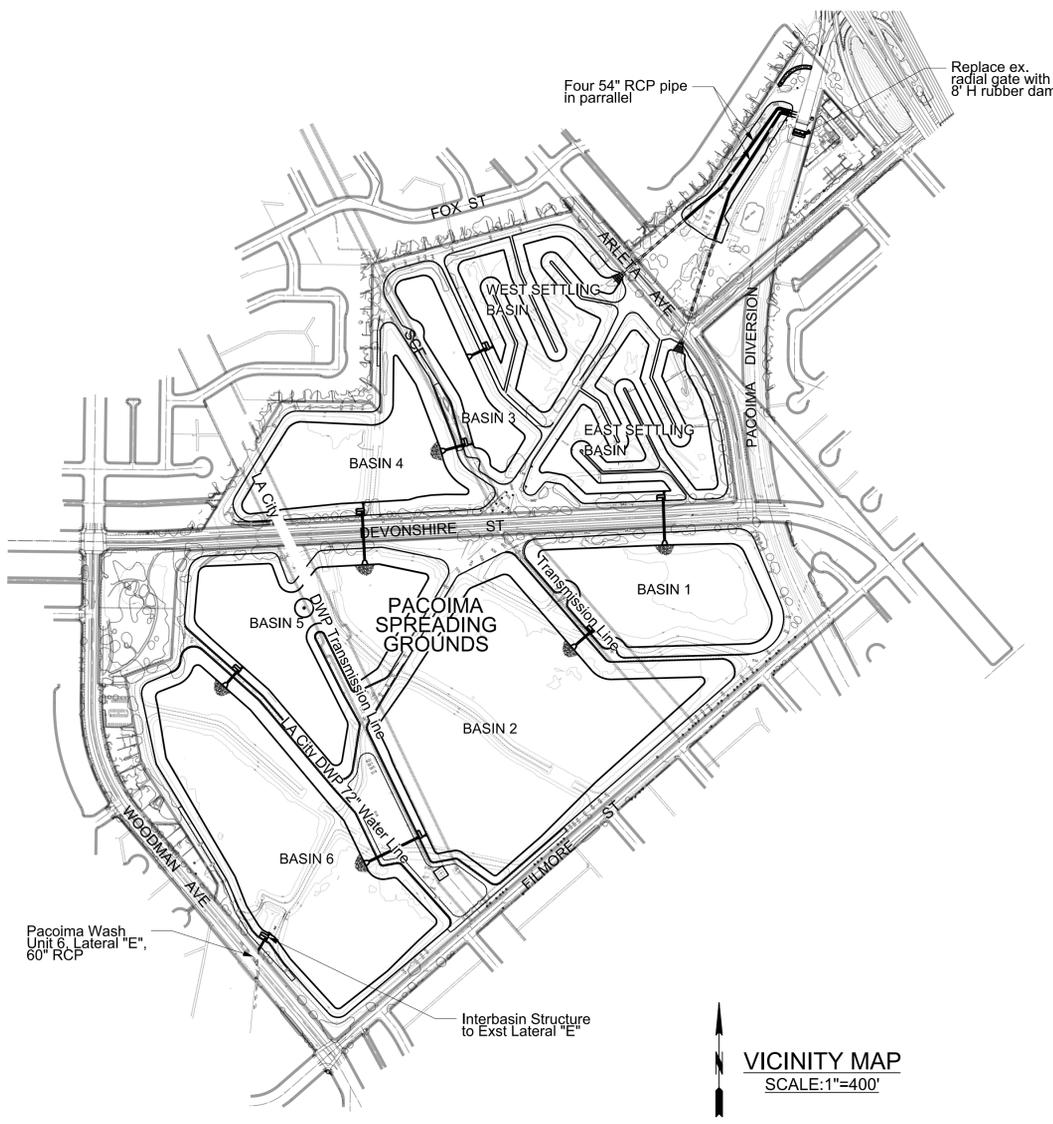


PROJECT SITE
Thomas Bros. Pgs. 502- A3, A5, A6
501- J3, J4, J5
LOCATION MAP

- UTILITIES**
 DEPARTMENT OF WATER AND POWER (WATER)
 DEPARTMENT OF WATER AND POWER (POWER)
 OWENS VALLEY (WATER)
 SOUTHERN CALIFORNIA EDISON (POWER)
 THE GAS COMPANY (GAS) ?

- REFERENCES**
 PACOIMA SPREADING GROUNDS - DWG NO 21-D101
 PACOIMA WASH CHANNEL FILE NO. 144, PAGES 21, 26, 46-49, 60
 TOPOGRAPHIC MAP NO. 21-T101 (OCT. 2007)
 PIPE LOCATION REPORT NO. 86477
 RFS/FB 194-162
 PWFB 1916 PG 207-214

- ABBREVIATIONS**
- | | |
|-------------|--------------------------|
| Bot | BOTTOM |
| Const Jt | CONSTRUCTION JOINT |
| El or Elev | ELEVATION |
| ES | END STRUCTURE |
| Ex or Exist | EXISTING |
| Inv | INVERT |
| JS | JUNCTION STRUCTURE |
| OS | OUTLET STRUCTURE |
| RCB | REINFORCED CONCRETE BOX |
| RCP | REINFORCED CONCRETE PIPE |
| STL | STEEL PIPE |
| TS | TRANSITION STRUCTURE |
| TW | TOP OF WALL |
| WS | WEIR STRUCTURE |
| WSE | WATER SURFACE ELEVATION |



VICINITY MAP
SCALE: 1"=400'

Los Angeles County
Department of Public Works
The Information Shown Hereon is
PRELIMINARY
Unofficial and Subject to Change

60% PLANS

CADD PROJECT FILE NAME
 FCC0001207-PACOIMASGE.DGN
 CHECKER
 J. LI
 DESIGNER
 C. CHEN
 DRAFTER
 V. TE

TWO DAYS BEFORE YOU DIG CALL USA TOLL FREE 1-800-227-2600	APPROVED GAIL FARBEN DIRECTOR OF PUBLIC WORKS BY _____ DEPUTY DIRECTOR DATE _____	<table border="1"> <thead> <tr> <th>DATE</th> <th>MK</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	DATE	MK	DESCRIPTION									
	DATE		MK	DESCRIPTION										
RECOMMENDED BY _____ ASSISTANT DEPUTY DIRECTOR DATE _____														
SUBMITTED BY _____ DATE _____														



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
TITLE SHEET			
FCC0001207	JOB EF11610123	DWG 21-D114.1	SHEET 1 OF 29

GENERAL NOTES

- ELEVATIONS SHOWN ARE IN FEET BASED ON LOS ANGELES CITY, 2000 ADJUSTMENT, NAVD 1988 DATUM.
- ALL PIPE IN OPEN TRENCH SHALL BE BEDDED ACCORDING TO LACDPW STANDARD PLAN 3080, CASE III, EXCEPT BELL AND SPIGOT PIPE WHICH SHALL BE CASE II BEDDING, UNLESS OTHERWISE SHOWN. "W" VALUES SHALL BE AS SPECIFIED ON STANDARD PLAN 3080 FOR CASE III BEDDING, NOTES (a), (b), AND (c). IF THE "W" VALUE AT THE TOP OF THE PIPE IS EXCEEDED, THE BEDDING SHALL BE MODIFIED, AND/OR PIPE OF ADDITIONAL STRENGTH SHALL BE PROVIDED. THE PROPOSED MODIFICATION SHALL BE APPROVED BY THE DEPARTMENT.
- ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE THE PROPERTY OF (APPLICABLE AGENCY), UNLESS OTHERWISE NOTED.
- EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED, AND ALL UTILITIES CROSSING THE TRENCH SHALL BE TEMPORARILY SUPPORTED TO THE SATISFACTION OF THE OWNER.
- THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS TO DETERMINE THE DEPTH AND LOCATION OF EXISTING UTILITIES WHERE SO INDICATED BY THE SYMBOL ∇ .
- WHERE THE UTILITIES ARE INDICATED ON THE PLANS TO BE SUPPORTED, SAID SUPPORTS SHALL BE IN ACCORDANCE WITH SPPWC STANDARD PLAN 224-1, UNLESS OTHERWISE INDICATED.
- ALL RESURFACING, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED SHALL BE CONSTRUCTED AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
- EXISTING TREES SHALL BE REMOVED ONLY IF SO DESIGNATED. THOSE TREES NOT INTERFERING WITH CONSTRUCTION SHALL BE PROTECTED IN PLACE.
- RIGHT OF WAY FENCING SHALL BE PLACED 6" INSIDE THE RIGHT OF WAY LINE.
- ALL FIELD BOOK REFERENCES ARE TO LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS FIELD BOOKS, UNLESS OTHERWISE NOTED.
- THE WORK SHOWN ON THESE DRAWINGS REQUIRES THE PRIME CONTRACTOR TO HAVE A VALID CLASS A LICENSE ISSUED BY THE STATE OF CALIFORNIA.
- BENCHING OF THE LEVEES SHALL BE AS SPECIFIED IN SECTION 300-4.4 OF THE GREENBOOK.

WORK PROCEDURES UNDER TRANSMISSION LINES

*LADWP SHALL PROVIDE SET PROCEDURES DURING REVIEW PROCESS

INDEX TO STANDARD PLANS

STD. PLAN	LACDPW TITLE
3080-3	PIPE BEDDING IN TRENCHES
3090-1	CRITERIA FOR THE DESIGN OF SHORING FOR EXCAVATIONS
3091-1	SAMPLE SHEET FOR USE AS A GUIDE IN PREPARING CALCULATIONS FOR SHORING OF EXCAVATIONS
3093-1	UNIFIED SOIL CLASSIFICATION SYSTEM
6002-1	PORTABLE SECURITY FENCE FOR OPEN TRENCHES
6008-1	MINIMUM PUBLIC SAFETY REQUIREMENT FOR OPEN EXCAVATIONS

STD. PLAN	SPPWC TITLE
323-1	MANHOLE - CONCRETE BOX STORM DRAIN
327-2	MANHOLE FOR EXISTING RCB
333-3	JUNCTION STRUCTURE - PIPE TO RCB
351-2	CSP FLARED INLET
600-3	CHAIN LINK FENCE AND GATES
606-3	METAL HAND RAILINGS, TYPE C
610-3	REINFORCED CONCRETE RETAINING WALL TYPE 1
617-3	REINFORCED CONCRETE RETAINING WALL DETAILS
635-3	STEEL STEP
640-3	REINFORCED CONCRETE STAIRWAY

CONCRETE REMOVAL NOTES

- WHERE REINFORCEMENT SHALL BE RETAINED THROUGH THE NEW JOINT, MAKE A 3/4" INCH DEEP SAW CUT ON ALL EXPOSED CONCRETE SURFACES ALONG THE REMOVAL LIMITS. DO NOT CUT OR DAMAGE EXISTING REINFORCEMENT.
- USING HAND-HELD EQUIPMENT, CAREFULLY REMOVE THE CONCRETE FOR THE FULL DEPTH OF THE WALL OR SLAB AND FOR A MINIMUM DISTANCE FROM THE SAW CUT EQUAL TO THE LONGEST EXTENSION OF THE BARS TO BE EXTENDED INTO THE NEW CONSTRUCTION. THIS EXTENSION SHALL BE 30 BAR DIAMETERS, UNLESS OTHERWISE NOTED.
- CUT EXISTING REINFORCEMENT TO THE REQUIRED BAR EXTENSION.
- IF IT WILL NOT DAMAGE THE CONCRETE TO BE LEFT IN PLACE, THE REMAINING CONCRETE MAY BE REMOVED BY ANY SUITABLE METHOD UPON APPROVAL OF THE ENGINEER WHO SHALL BE THE SOLE JUDGE OF THE USE OF ANY CONCRETE REMOVAL EQUIPMENT. HOWEVER, EXPLOSIVES OR A WRECKING BALL (OR OTHER SIMILAR DEVICE) WILL NOT BE PERMITTED.

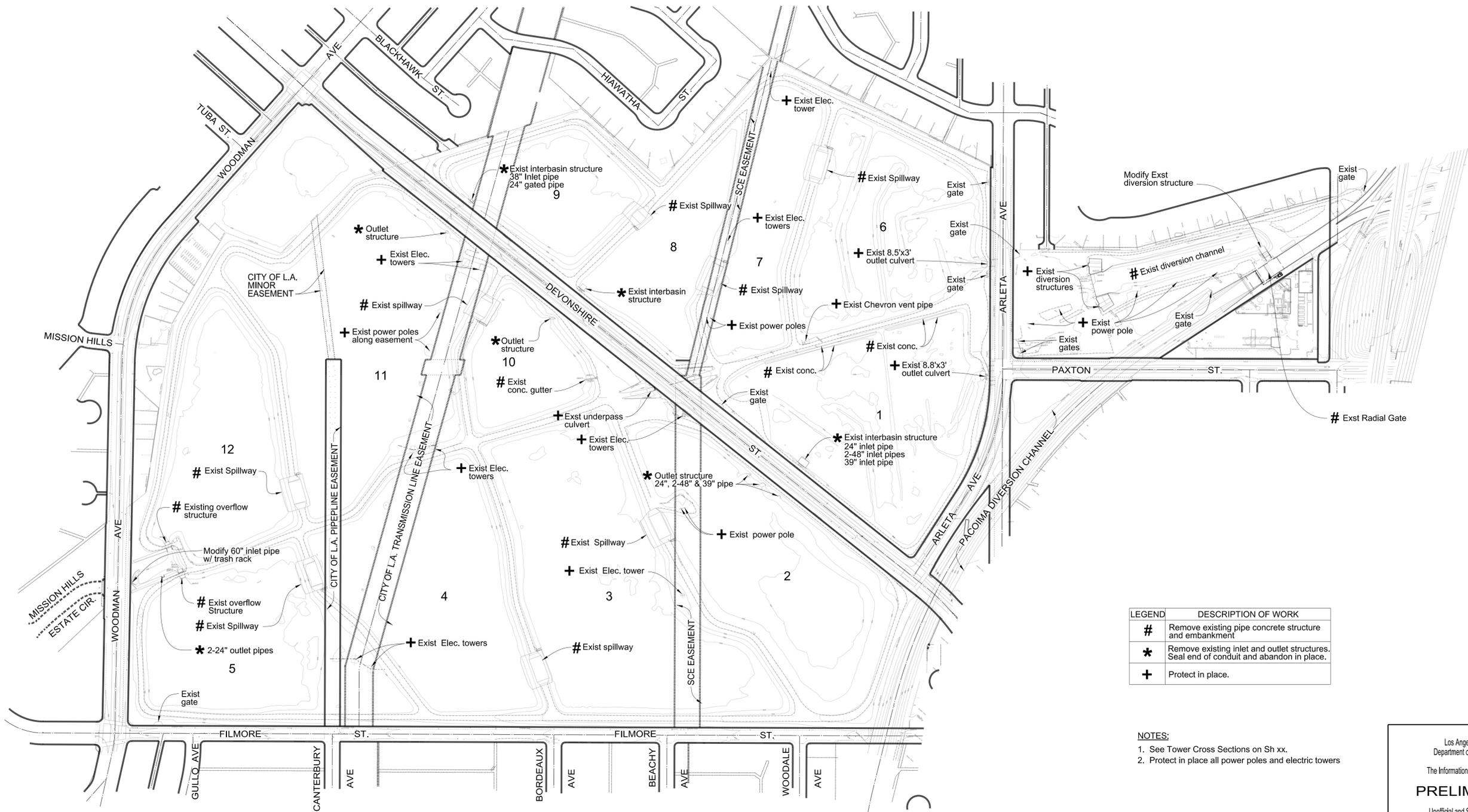
DATE _____ REVIEWED BY _____
 CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
 CHECKER: J. LI
 DESIGNER: CHARLES C. CHEN
 DRAFTER: VISAL TE

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		COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
GENERAL NOTES, INDEX TO STANDARD PLANS, PROJECT ENGINEER _____ DATE _____		FCC0001207	JOB EF11610123	DWG 21-D114.2	SHEET 2 OF 29

DATE	MK	DESCRIPTION
REVISIONS		



LEGEND	DESCRIPTION OF WORK
#	Remove existing pipe concrete structure and embankment
*	Remove existing inlet and outlet structures. Seal end of conduit and abandon in place.
+	Protect in place.

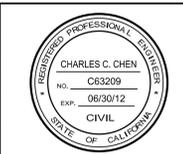
NOTES:
 1. See Tower Cross Sections on Sh xx.
 2. Protect in place all power poles and electric towers

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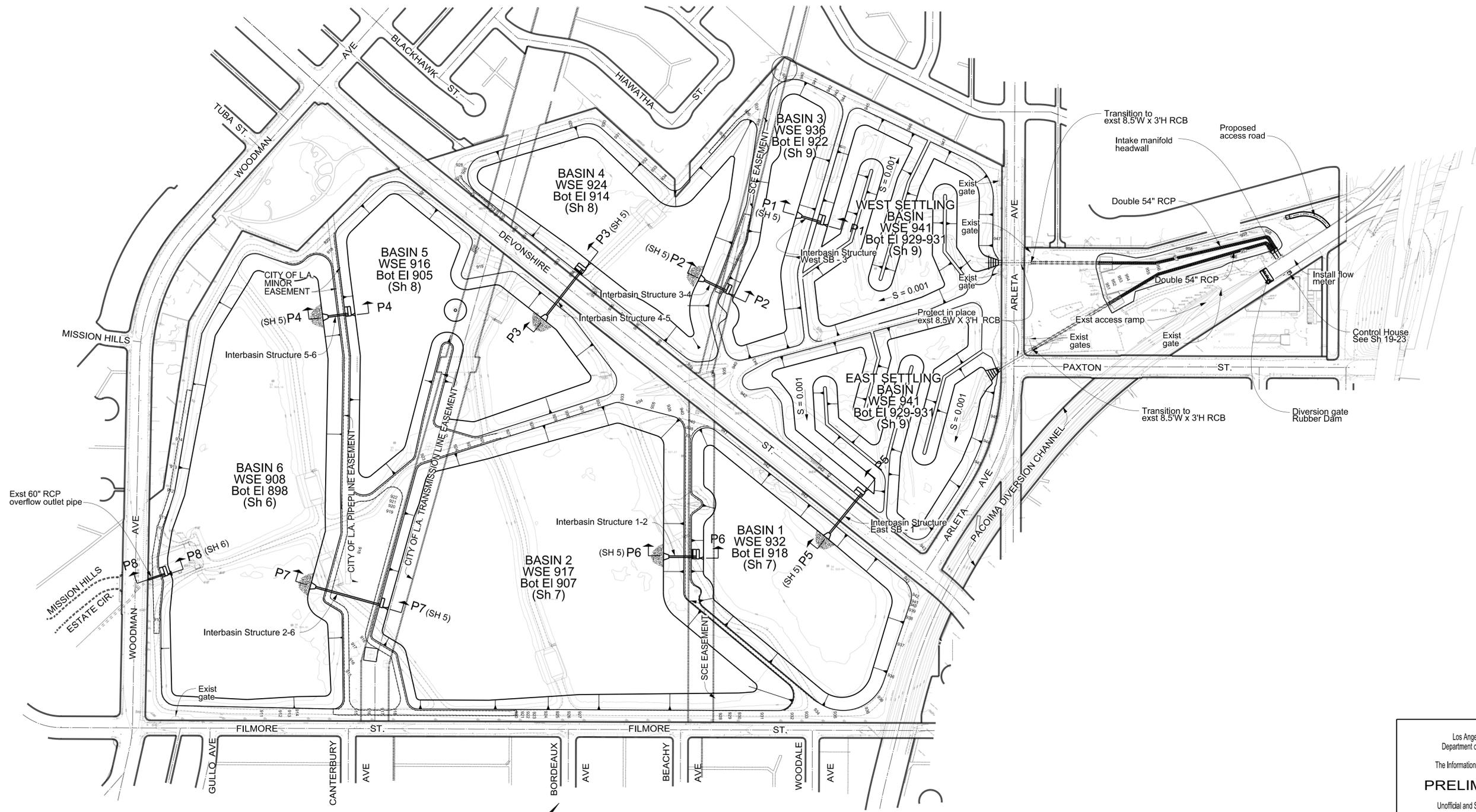
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DATE	REVIEWED BY
CADD PROJECT FILE NAME	PacoimaSGEnhancement.dgn
CHECKER	J. LI
DESIGNER	CHARLES C. CHEN
DRAFTER	VISAL TE

DATE	MK	DESCRIPTION
REVISIONS		



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
SITE PLAN EXISTING FACILITIES			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
DWG 21-D114.3		SHEET 3 OF 29	



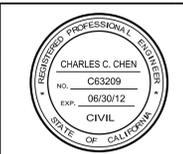
SITE PLAN
SCALE: 1"=200'

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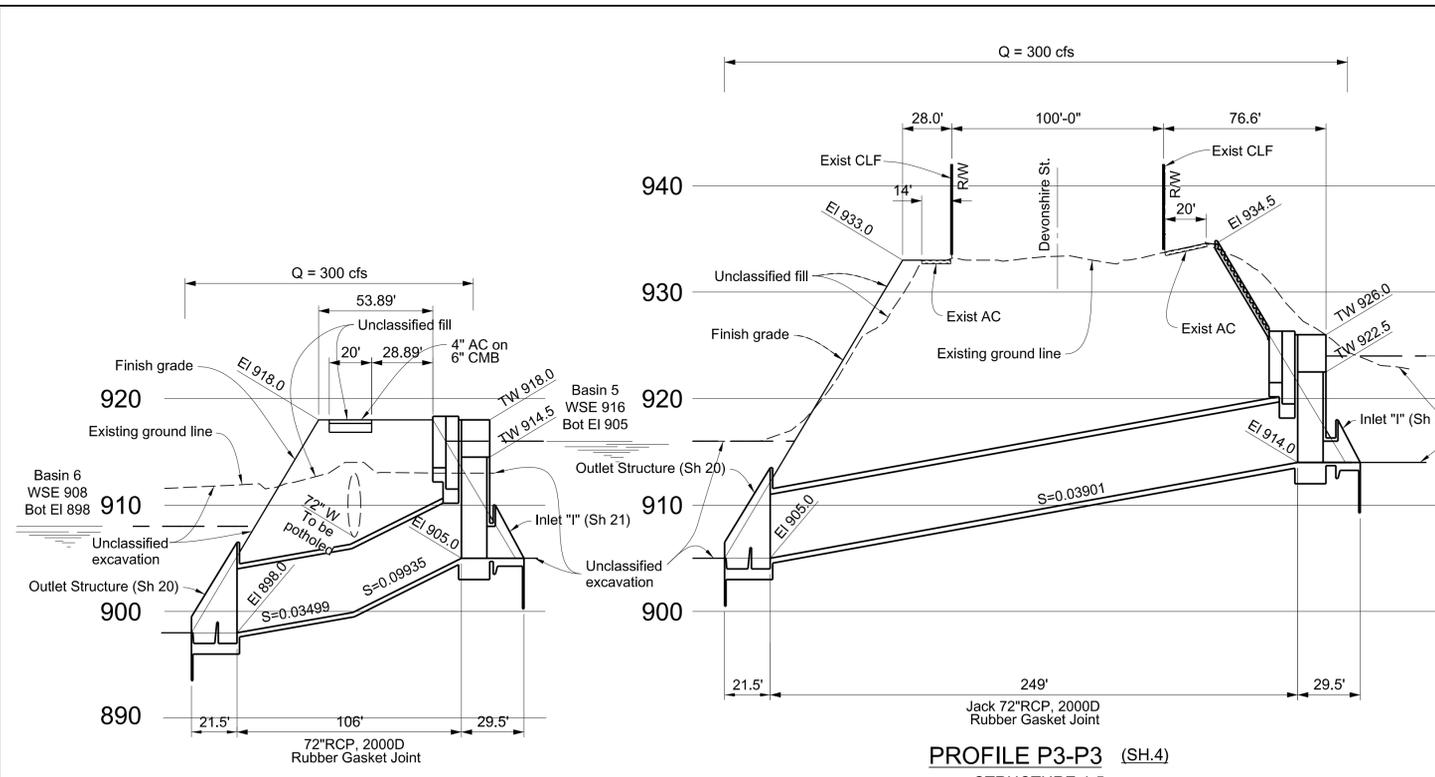
DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

DATE	MK	DESCRIPTION
REVISIONS		



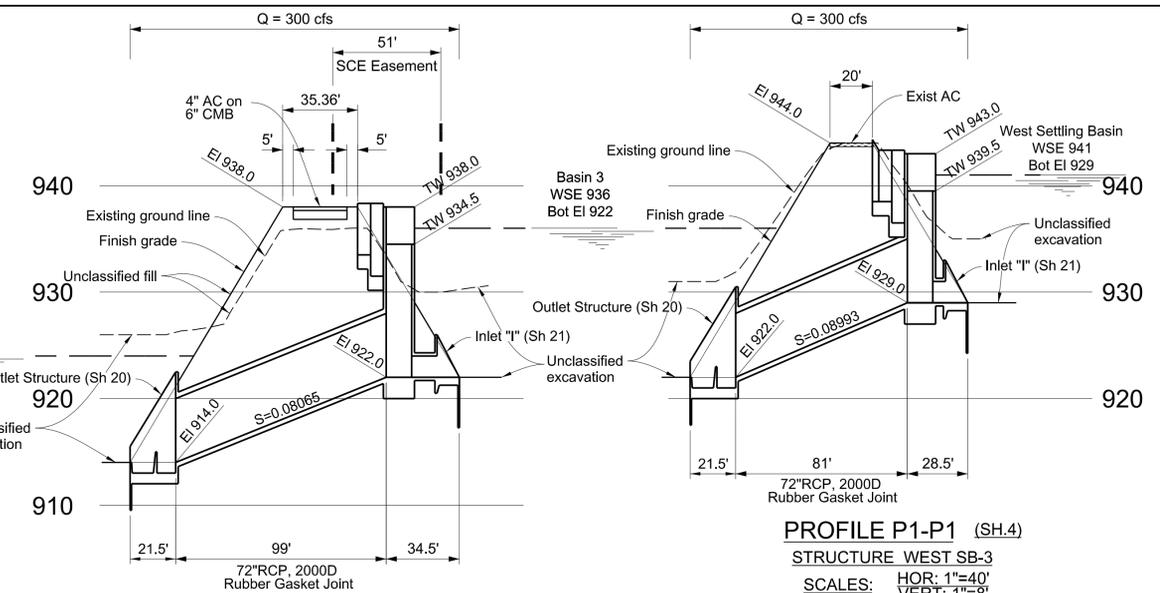
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
SITE PLAN IMPROVEMENT FACILITIES			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.4	SHEET 4 OF 29

DATE
REVIEWED BY
CADD PROJECT FILE NAME
PacoimaSGEnhancement.dgn
CHECKER
J. LI
DESIGNER
CHARLES C. CHEN
DRAFTER
VISAL TE



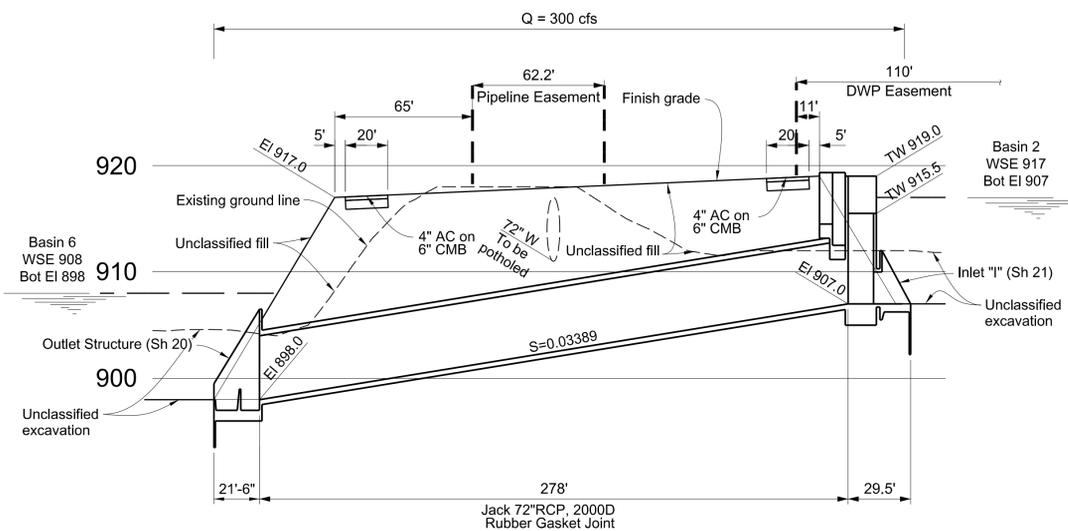
PROFILE P4-P4 (SH.4)
STRUCTURE 5-6
SCALES: HOR: 1"=40'
VERT: 1"=8'

PROFILE P3-P3 (SH.4)
STRUCTURE 4-5
SCALES: HOR: 1"=40'
VERT: 1"=8'

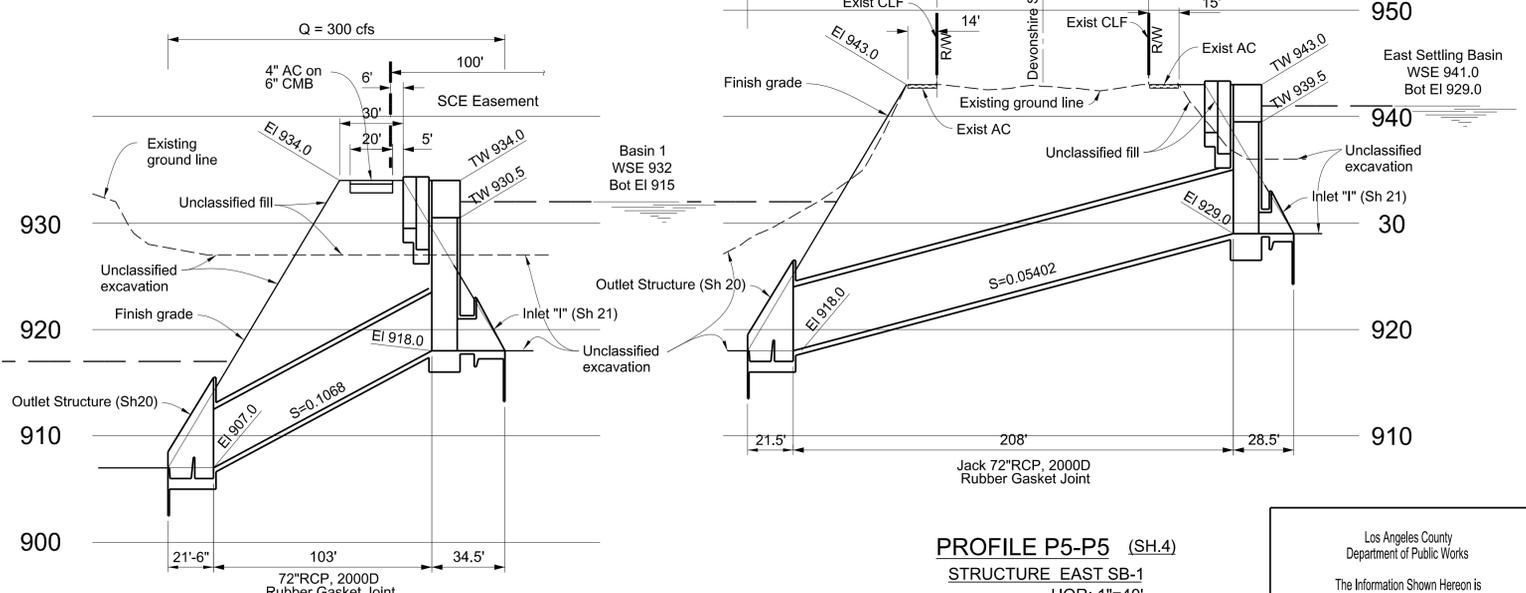


PROFILE P2-P2 (SH.4)
STRUCTURE 3-4
SCALES: HOR: 1"=40'
VERT: 1"=8'

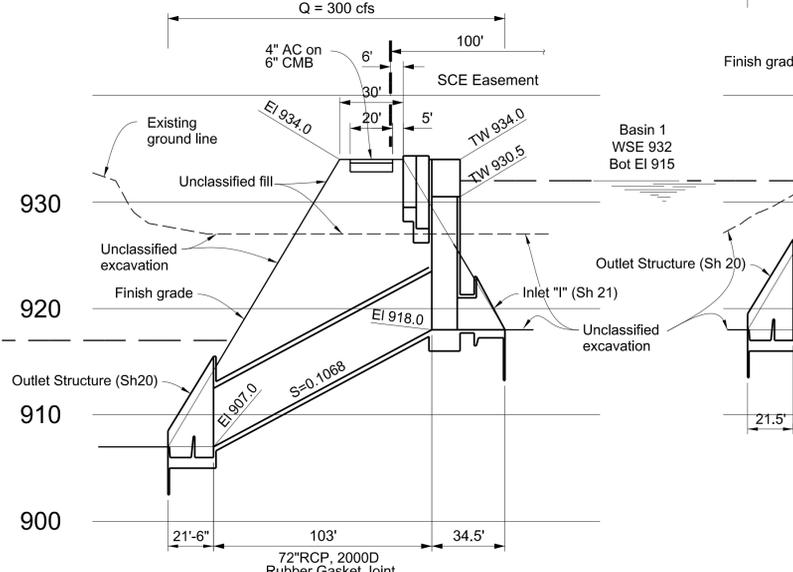
PROFILE P1-P1 (SH.4)
STRUCTURE WEST SB-3
SCALES: HOR: 1"=40'
VERT: 1"=8'



PROFILE P7-P7 (SH.4)
STRUCTURE 2-6
SCALES: HOR: 1"=40'
VERT: 1"=8'



PROFILE P5-P5 (SH.4)
STRUCTURE EAST SB-1
SCALES: HOR: 1"=40'
VERT: 1"=8'

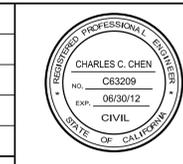


PROFILE P6-P6 (SH.4)
STRUCTURE 1-2
SCALES: HOR: 1"=40'
VERT: 1"=8'

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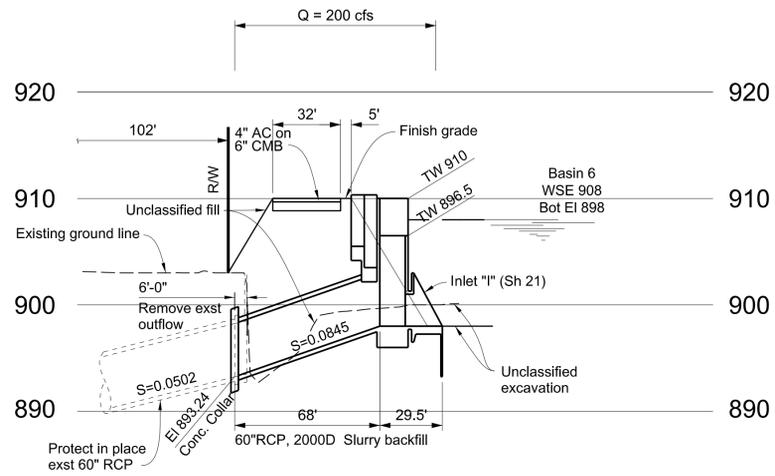
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REVISIONS		

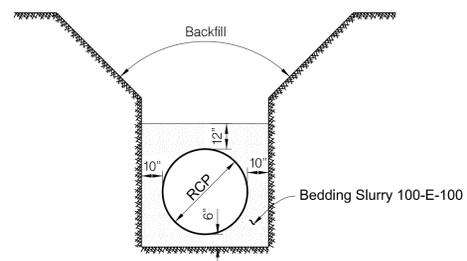


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
ENHANCEMENT PROJECT**
INTERBASIN CONDUITS 72 IN. RCP

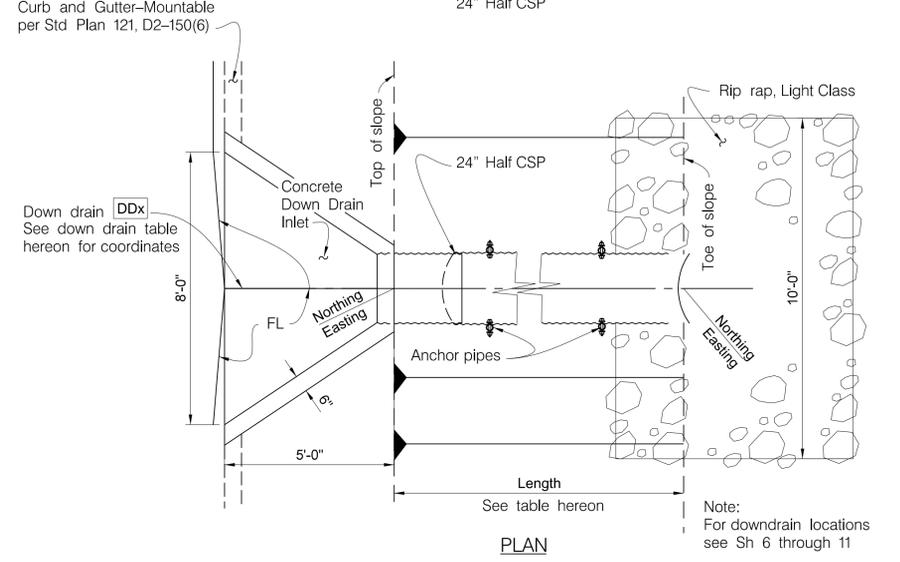
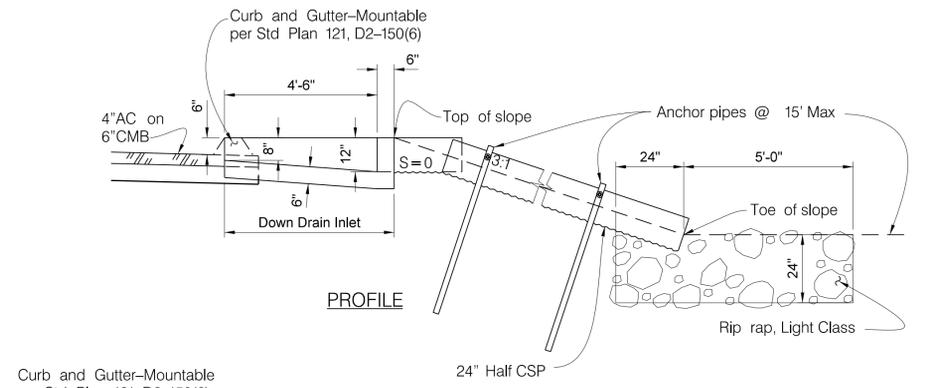
FCC0001207 JOB EF11610123 DWG 21-D114.5 SHEET 5 OF 29



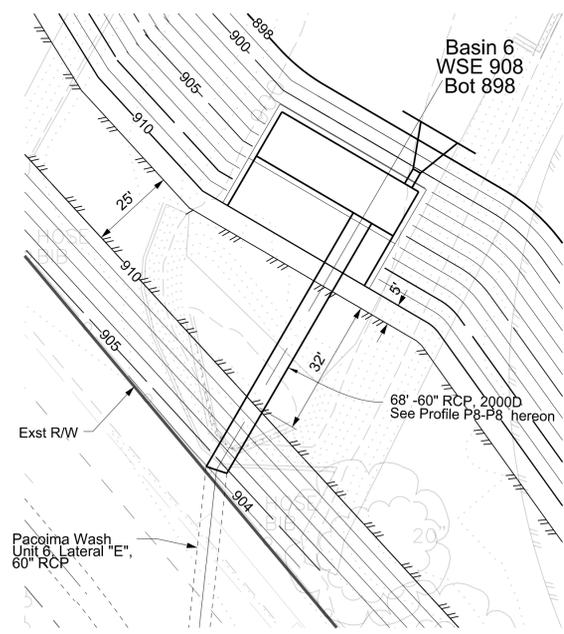
PROFILE P8-P8 (SH.4)
STRUCTURE 6-DRAIN
SCALES: HOR: 1"=40'
VERT: 1"=8'



TYPICAL PIPE BEDDING (SH.5)
NOT TO SCALE



TYPICAL DOWN DRAIN DETAIL
NOT TO SCALE



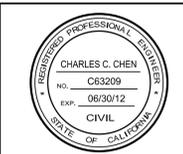
PLAN
STRUCTURE 6-DRAIN
SCALES: 1"=20'

DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

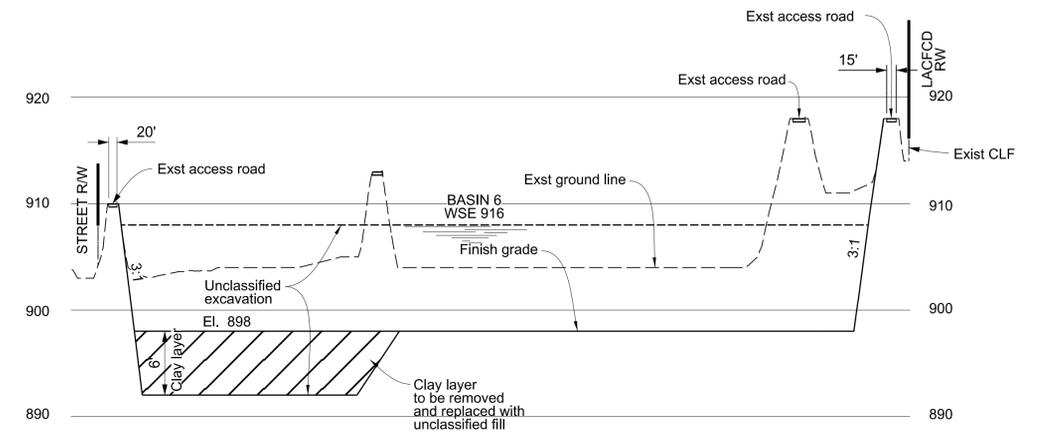
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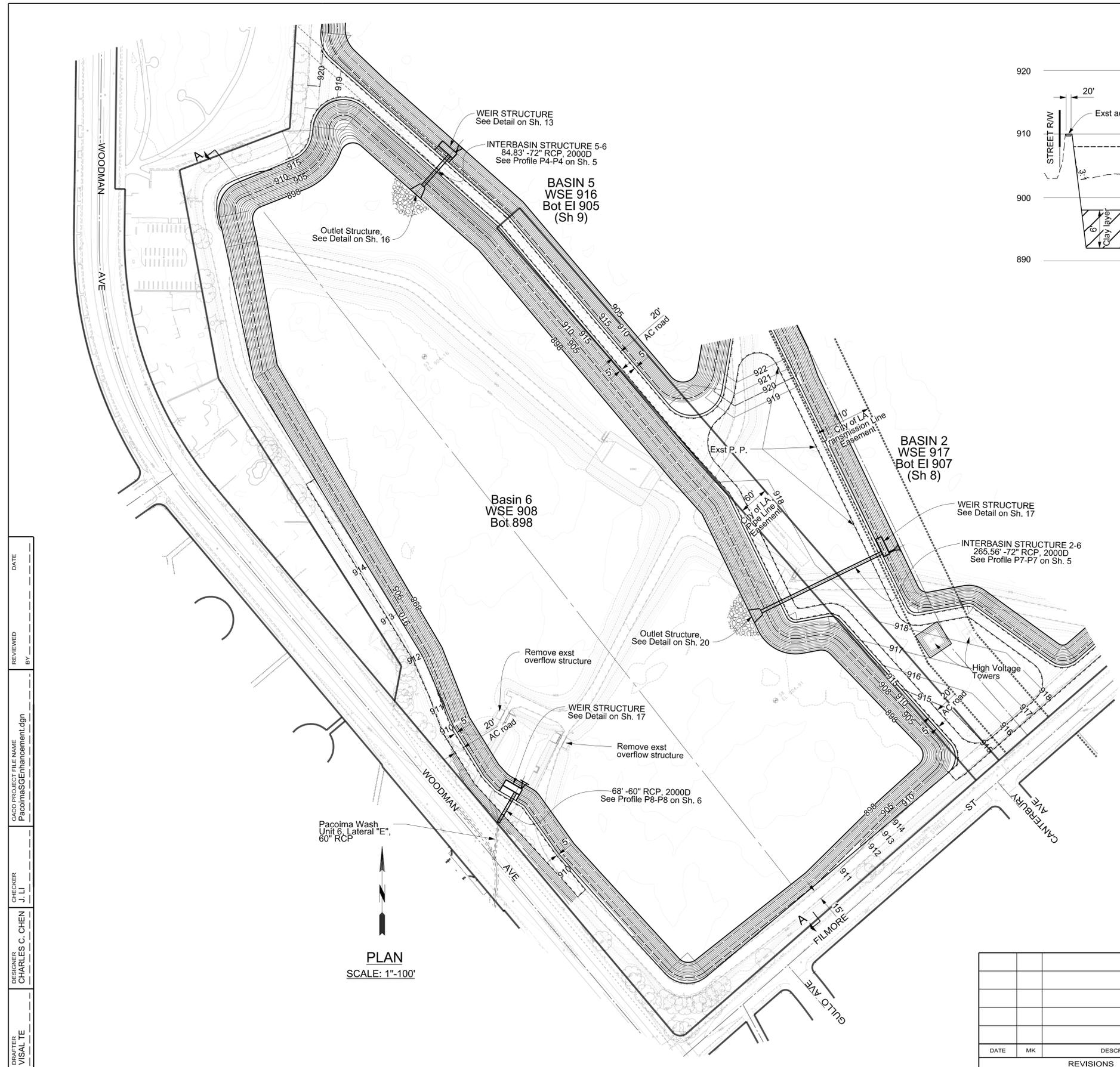
DATE	MK	DESCRIPTION
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COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
DISCHARGE CONDUIT 60 IN. RCP			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.6	SHEET 6 OF 29

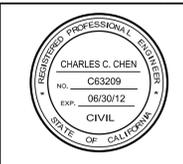


SECTION A-A
 SCALES: HOR: 1"=200'
 VERT: 1"=8'



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		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

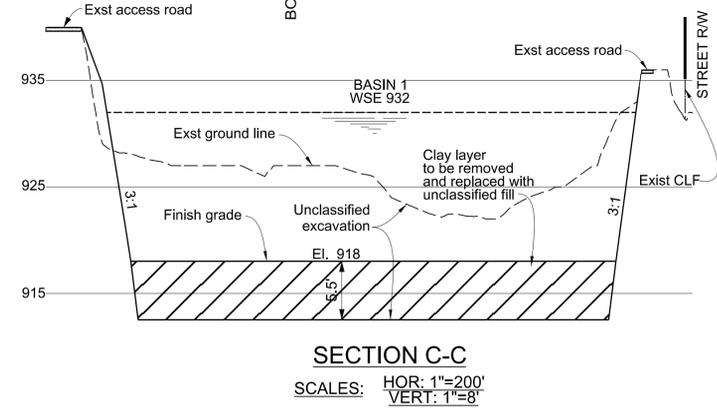
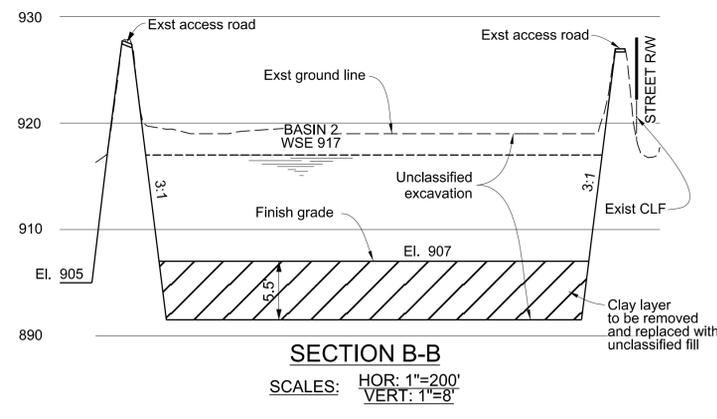
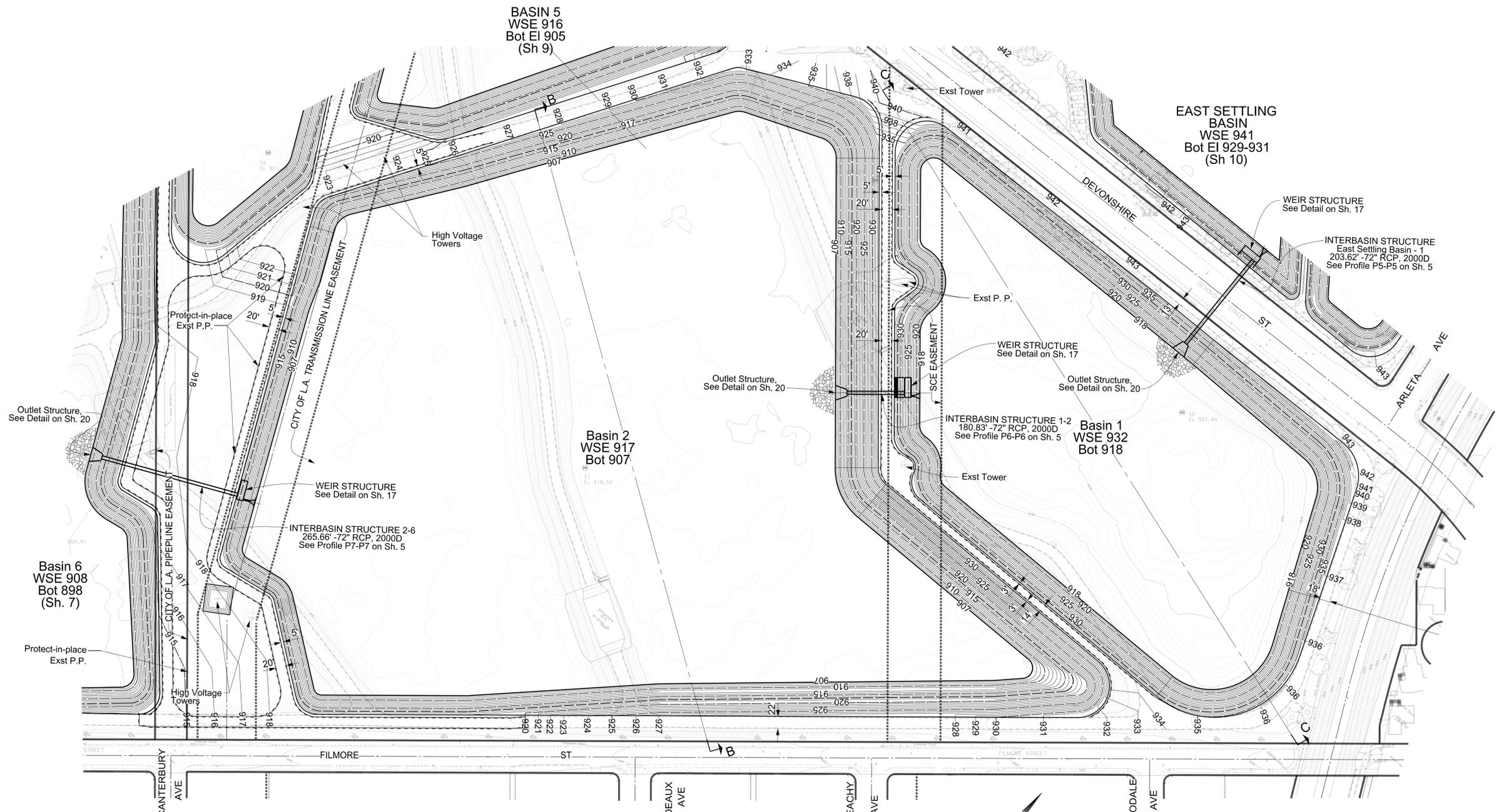
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PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
EXCAVATION AND GRADING PLAN - BASIN 6			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.6	SHEET 7 OF 29

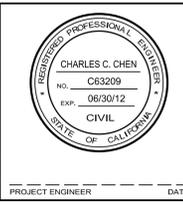
DATE	MK	DESCRIPTION
REVISIONS		

DATE _____
 REVIEWED BY _____
 CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
 CHECKER: J. LI
 DESIGNER: CHARLES C. CHEN
 DRAFTER: VISAL TE



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DATE	MK	DESCRIPTION

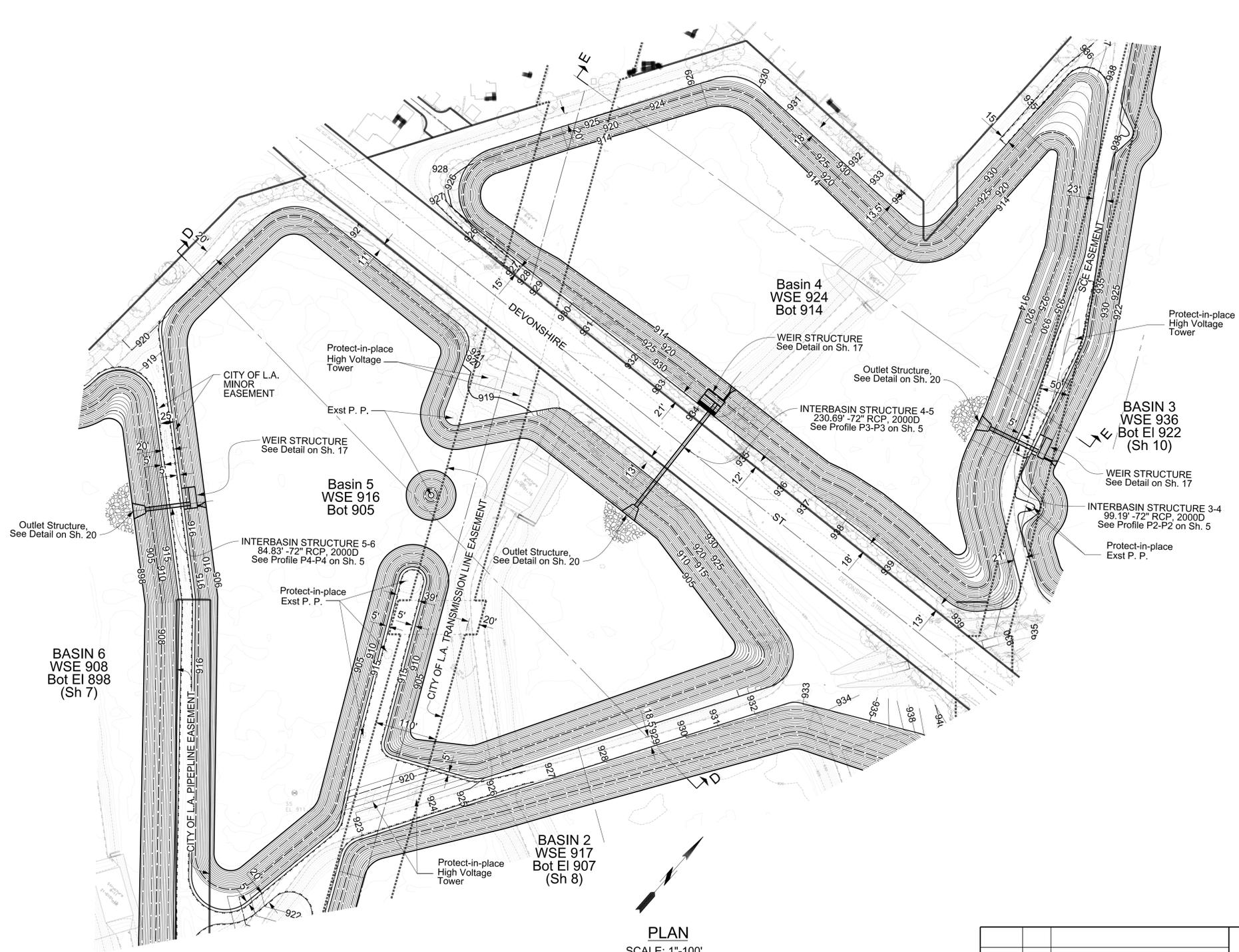


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
 ENHANCEMENT PROJECT**
EXCAVATION AND GRADING PLAN - BASIN 1 & 2

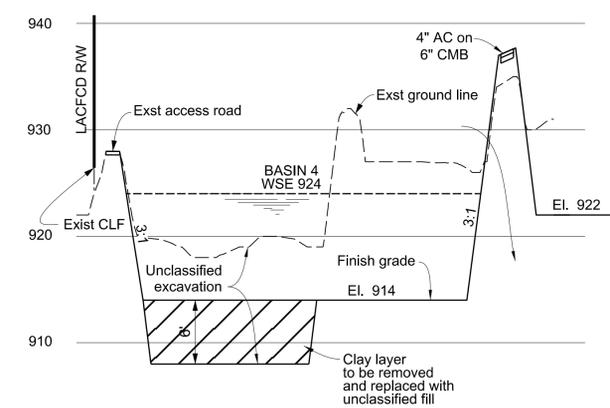
PROJECT ENGINEER: CHARLES C. CHEN
 DATE: _____

FCC0001207 JOB: EF11610123 DWG: 21-D114.8 SHEET: 8 OF 29

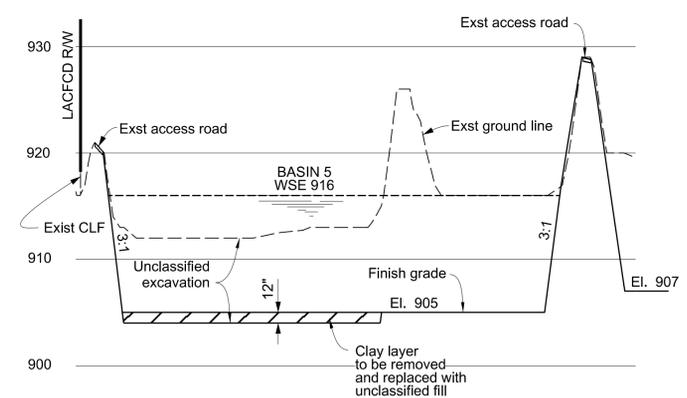
DATE _____
 REVIEWED BY _____
 CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
 CHECKER: J. LI
 DESIGNER: CHARLES C. CHEN
 DRAFTER: VISAL TE



PLAN
 SCALE: 1"=100'



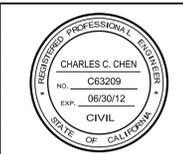
SECTION E-E
 SCALES: HOR: 1"=200'
 VERT: 1"=8'



SECTION D-D
 SCALES: HOR: 1"=200'
 VERT: 1"=8'

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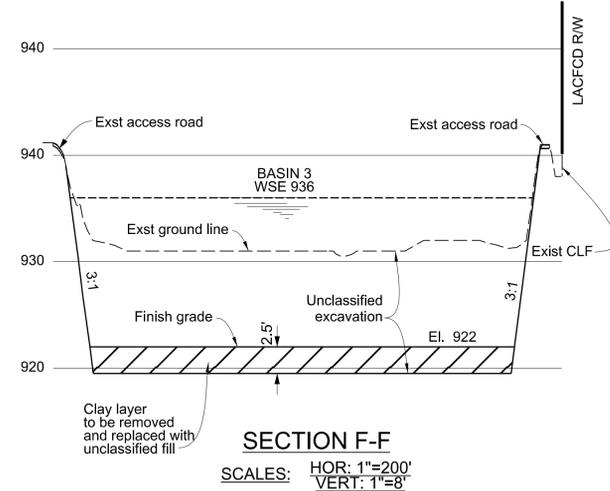
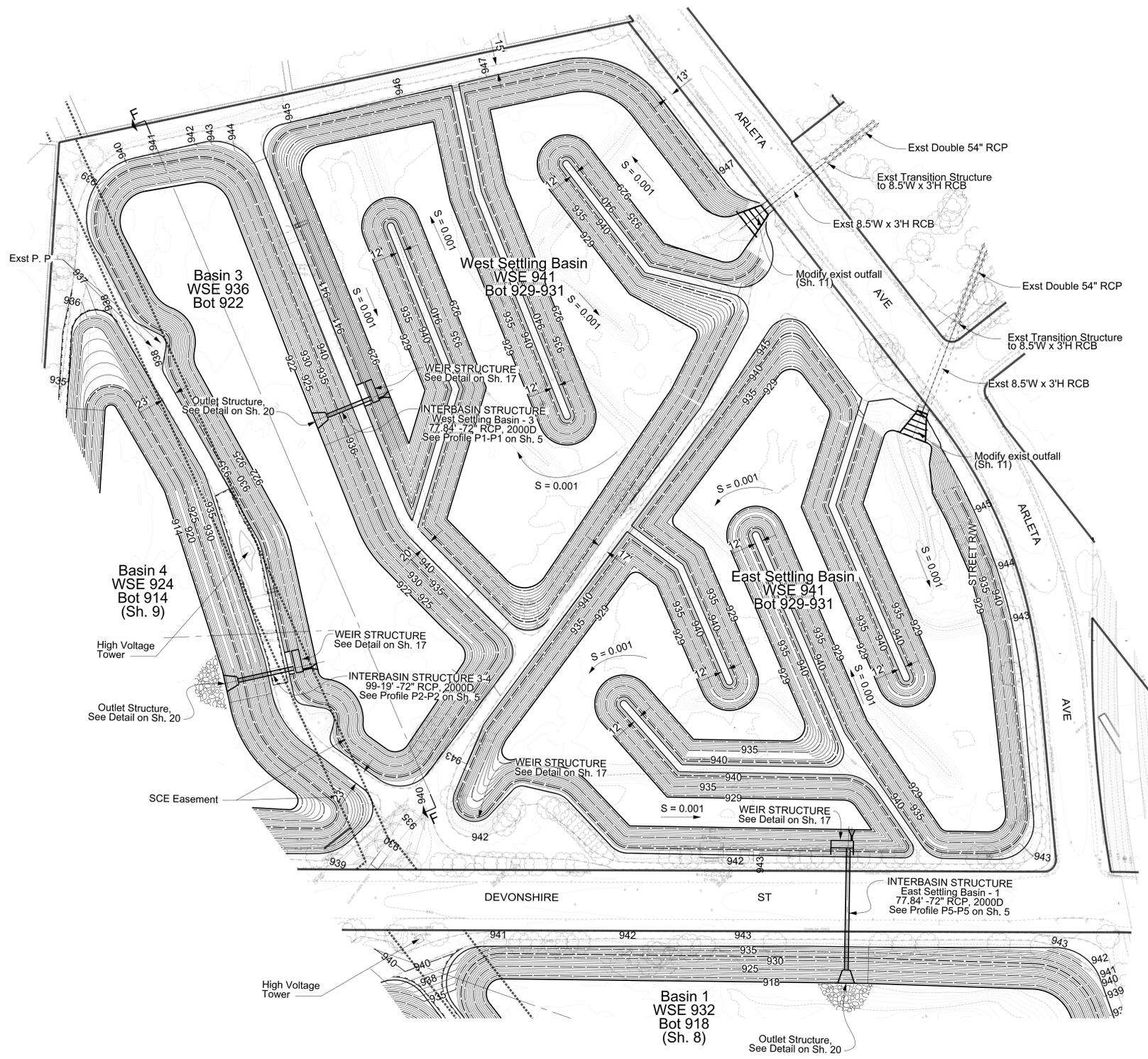
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COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
 ENHANCEMENT PROJECT**
 EXCAVATION AND GRADING PLAN - BASIN 4 & 5

DATE	MK	DESCRIPTION

FCC0001207 JOB EF11610123 DWG 21-D114.9 SHEET 9 OF 29



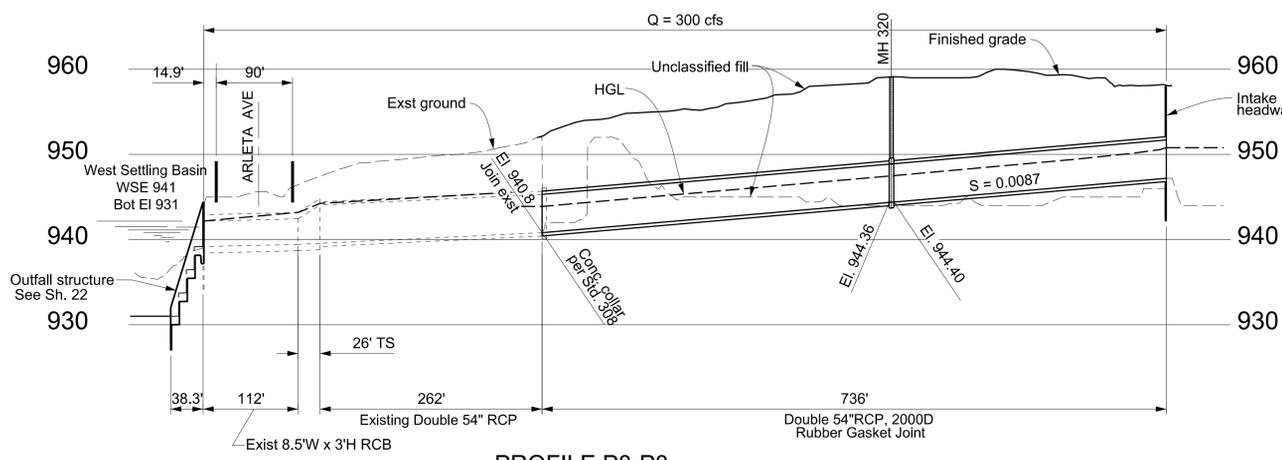
DATE	
REVIEWED BY	
CADD PROJECT FILE NAME	PacoimaSGEnhancement.dgn
CHECKER	J. LI
DESIGNER	CHARLES C. CHEN
DRAFTER	VISAL TE

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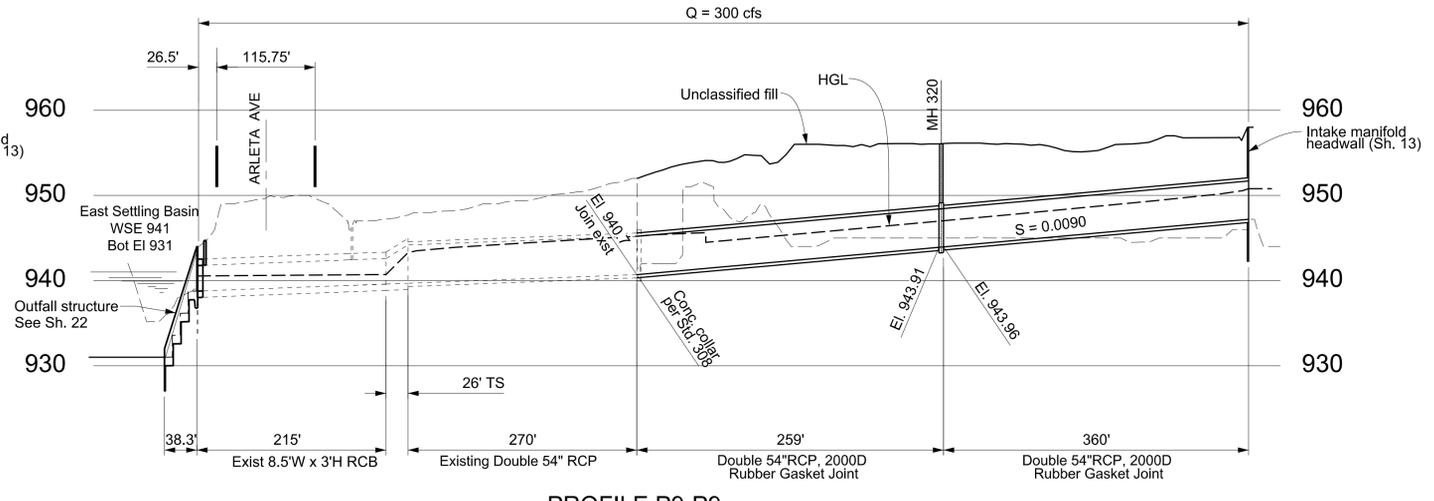
DATE	MK	DESCRIPTION
REVISIONS		



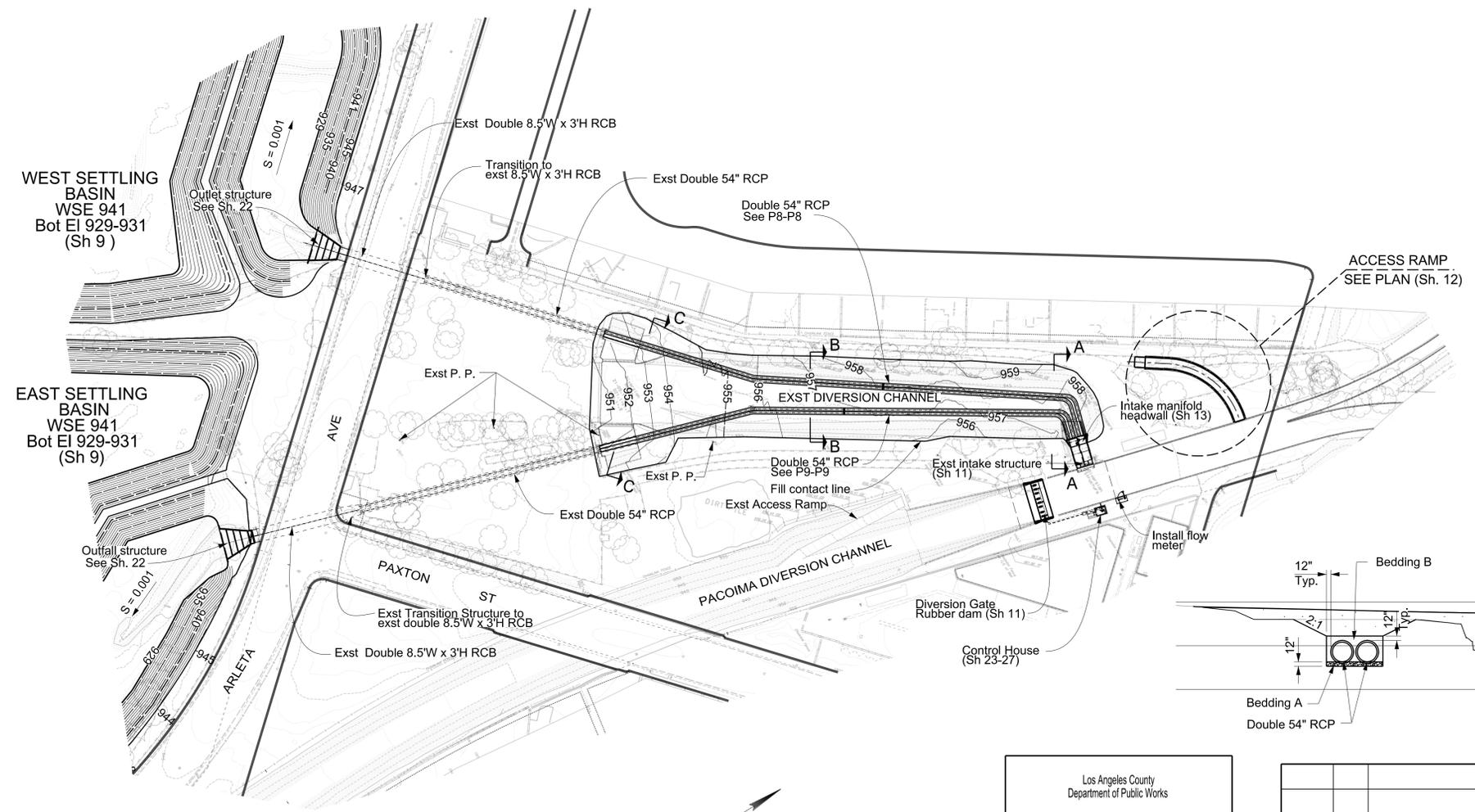
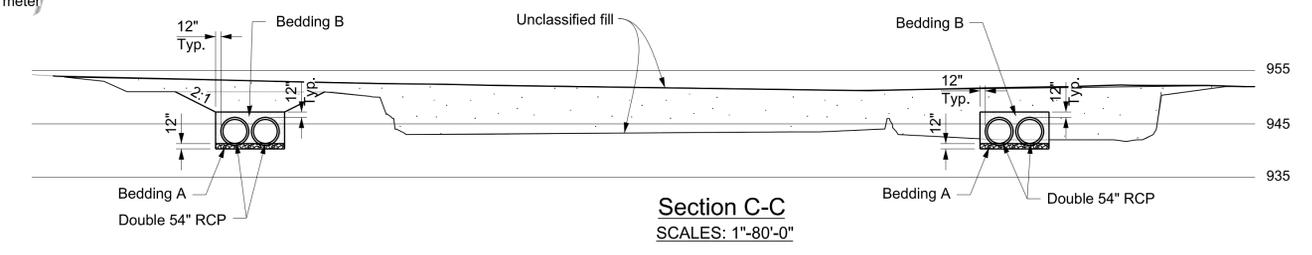
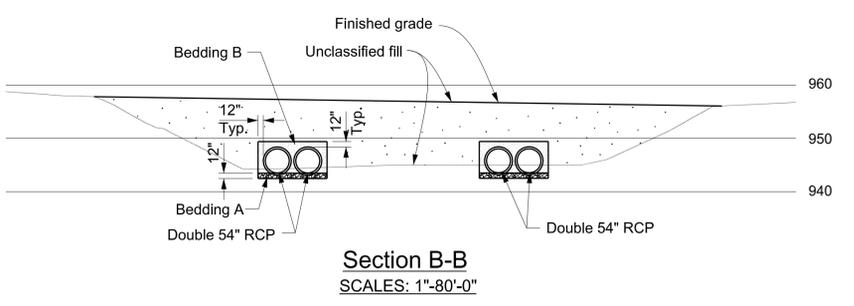
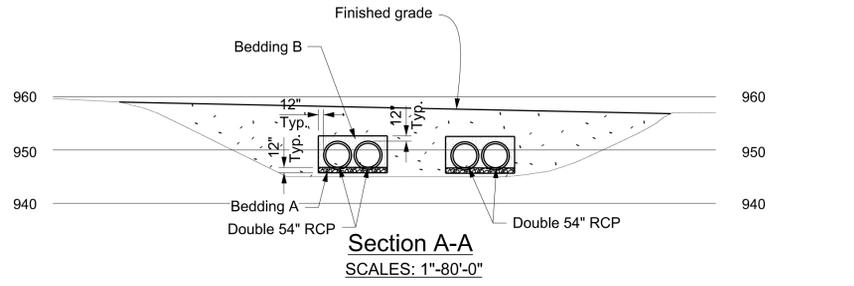
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
EXCAVATION AND GRADING PLAN - Basin 3, East & West Settling Basins			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.10	SHEET 10 OF 29



**PROFILE P8-P8
WESTERNLY CONDUIT PROFILE**
 SCALES: HOR: 1"=100'
 VERT: 1"=10'



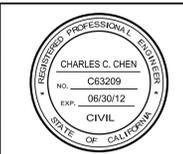
**PROFILE P9-P9
EASTERNLY CONDUIT PROFILE**
 SCALES: HOR: 1"=100'
 VERT: 1"=10'



**PLAN
SCALE: 1"=100'**

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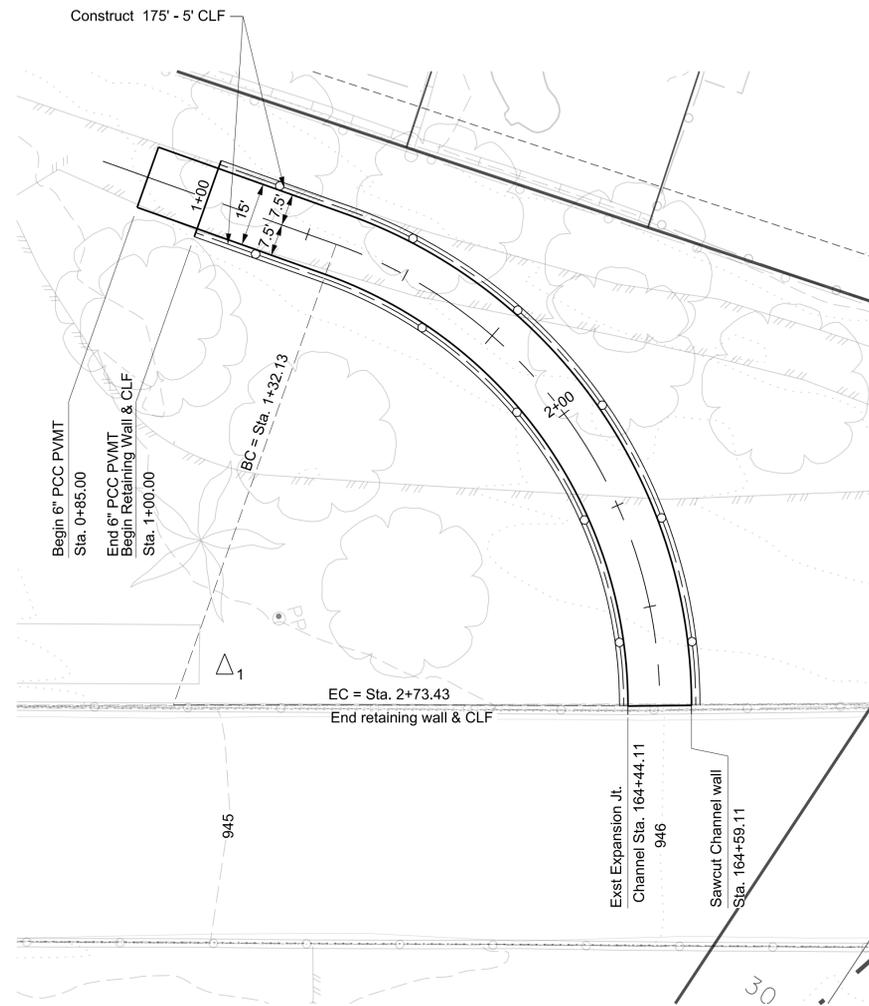


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
 ENHANCEMENT PROJECT**
 EXCAVATION AND GRADING PLAN -
 Diversion Channel Intake

PROJECT ENGINEER: CHARLES C. CHEN
 DATE: 06/30/12

FCC0001207 | JOB: EF11610123 | DWG: 21-D114.11 | SHEET: 11 OF 29

DATE: _____
 REVIEWED BY: _____
 CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
 CHECKER: J. LI
 DESIGNER: CHARLES C. CHEN
 DRAFTER: VISAL TE

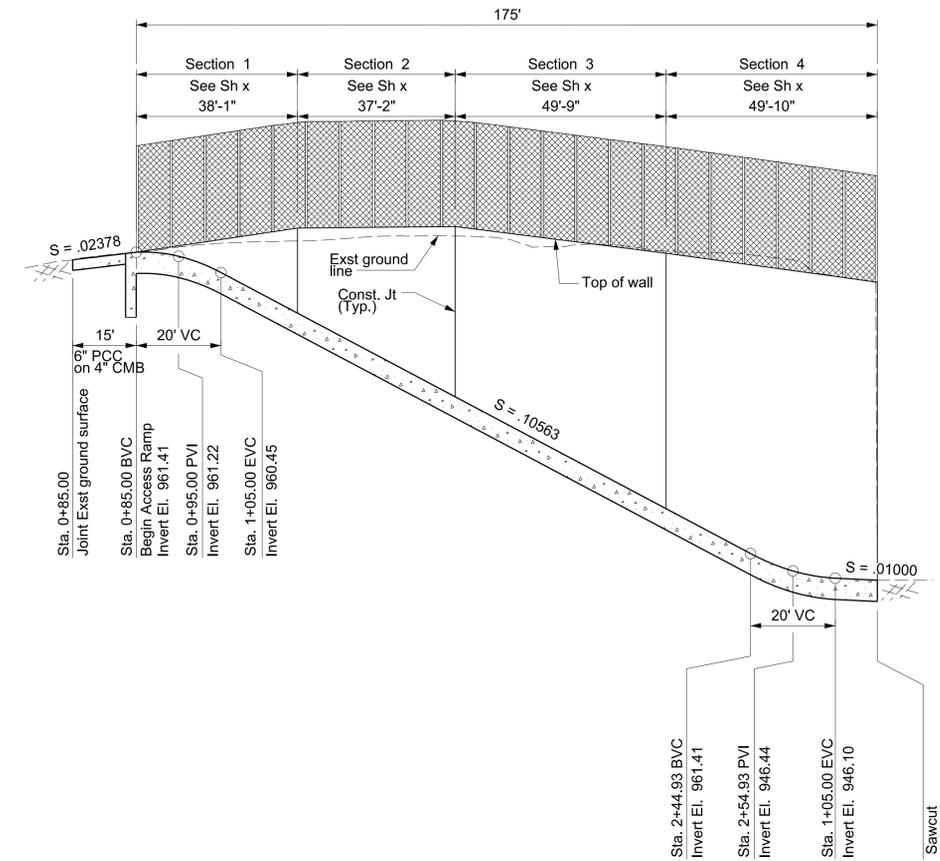


Construction Curve Data

$\Delta_1 = 70^\circ 35' 26''$
 $R = 114.69'$
 $L = 141.30'$
 $PI = N 1918539.5465$
 $E 6427693.9355$
 $BC = Sta. 1+32.13$
 $EC = Sta. 2+73.43$

Notes:

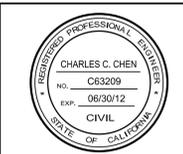
1. Reinforcement not shown, see Structural Schedule.
2. Full length of access ramp invert shall be heavy brown finish.



DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

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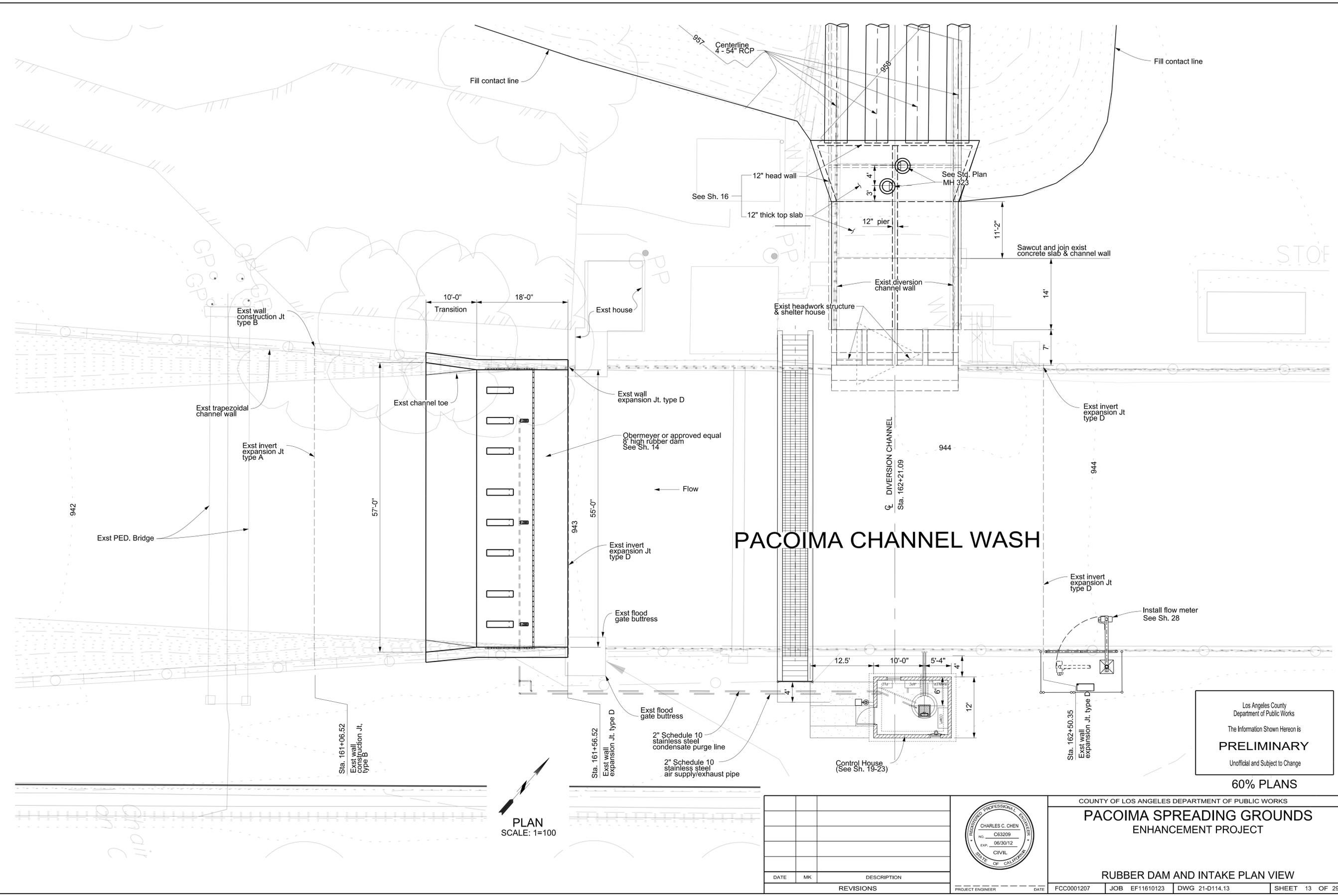
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COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
PROPOSE ACCESS RAMP PLAN AND PROFILE			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.12	SHEET 12 OF 29

DATE	MK	DESCRIPTION
REVISIONS		

DATE
 REVIEWED BY
 CADD PROJECT FILE NAME
 PacoimaSGEnhancement.dgn
 CHECKER
 J. LI
 DESIGNER
 CHARLES C. CHEN
 DRAFTER
 VISAL TE



PACOIMA CHANNEL WASH

PLAN
 SCALE: 1=100

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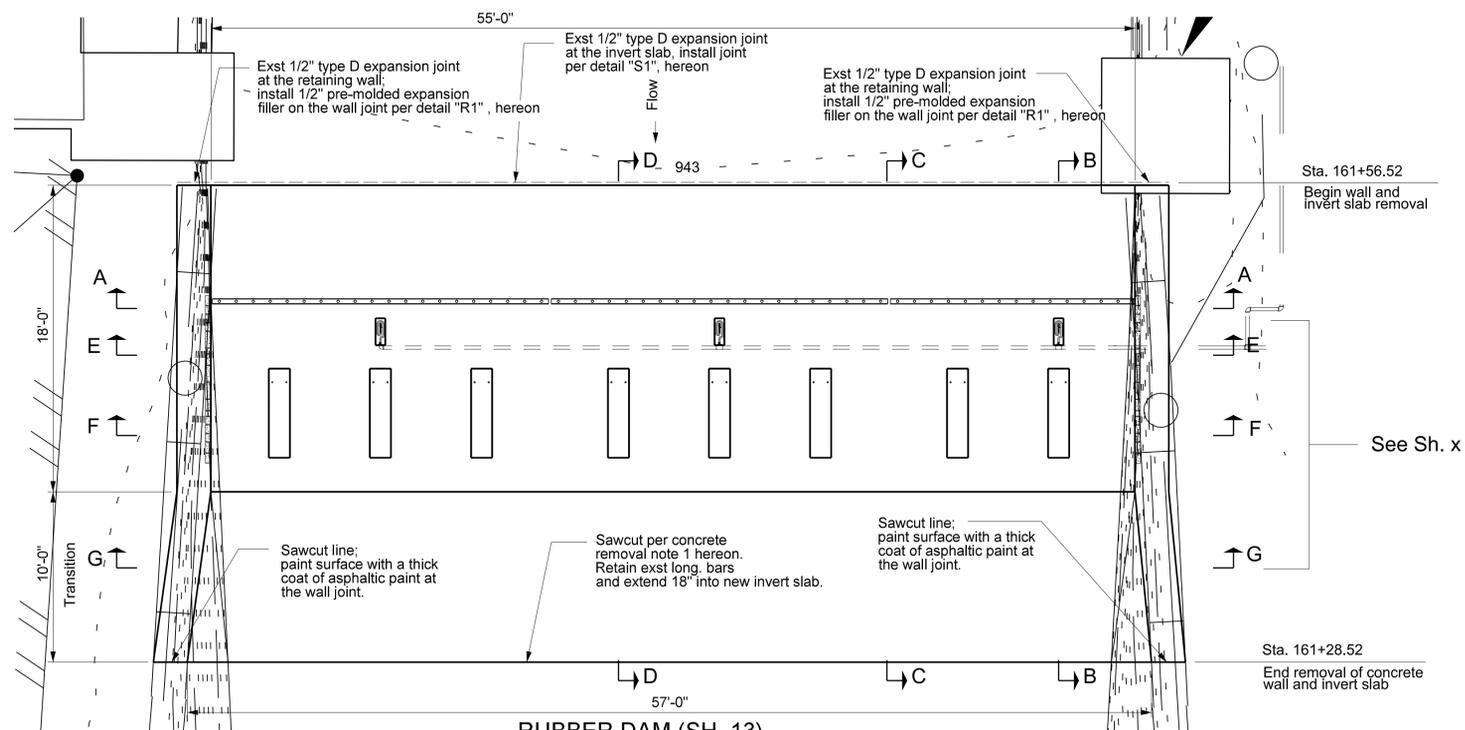
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**PACOIMA SPREADING GROUNDS
 ENHANCEMENT PROJECT**

RUBBER DAM AND INTAKE PLAN VIEW

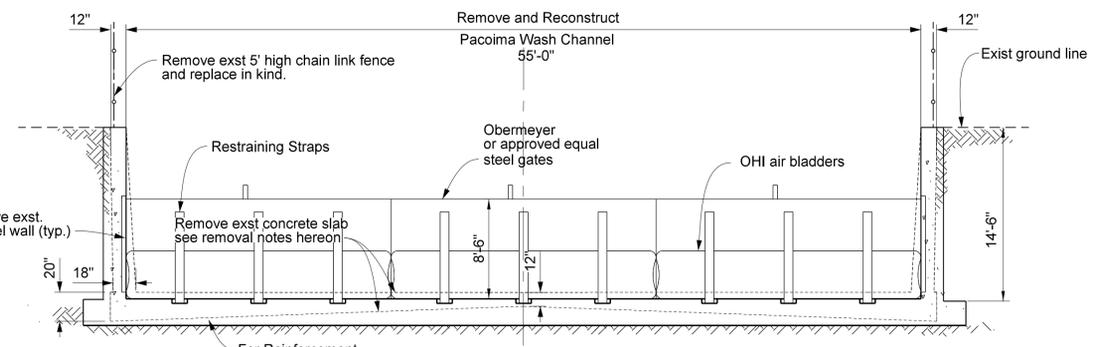


DATE	MK	DESCRIPTION
REVISIONS		



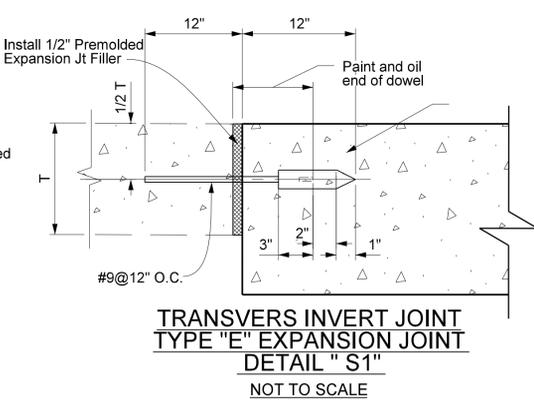
**RUBBER DAM (SH. 13)
FOUNDATION PLAN**
SCALE: 1"=5'-0"

- Construction Notes:**
1. Footing excavation, fill subgrade shall be inspected by agency (ladpw) geotechnical personnel before placement of concrete or fill.
 2. All fill shall be inspected and tested during placement.

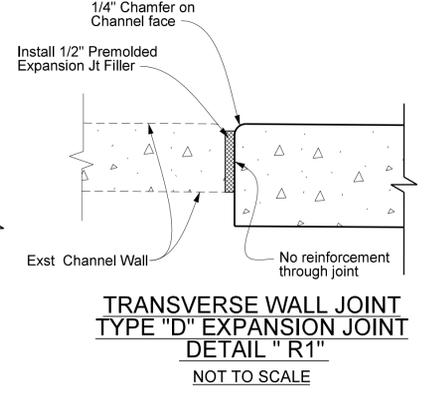


SECTION A-A
NOT TO SCALE

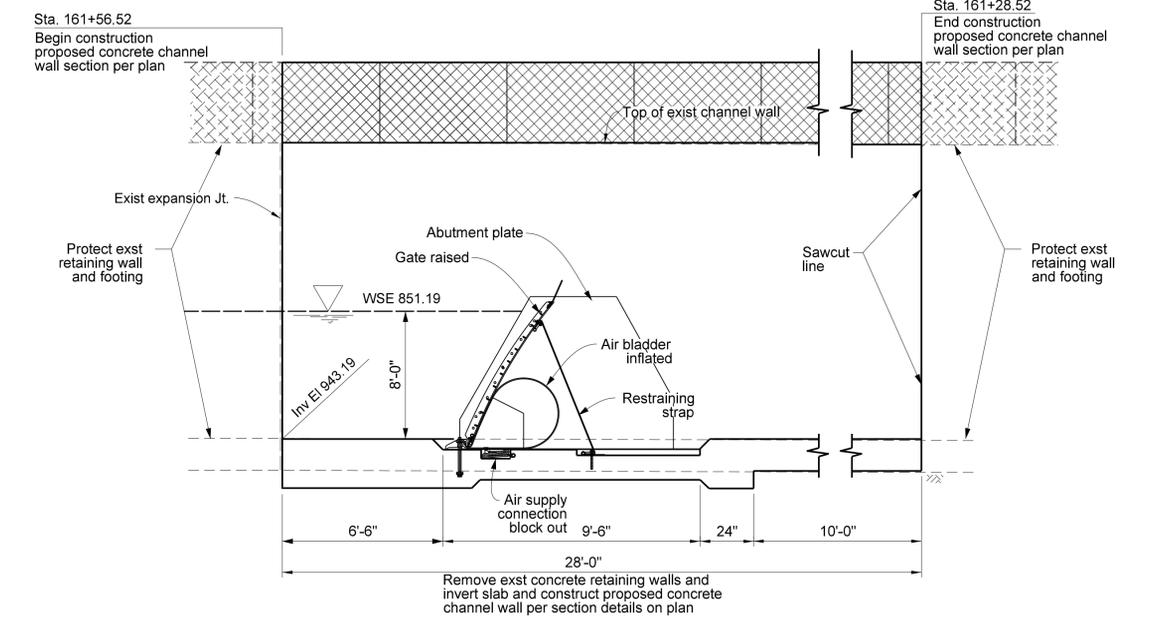
- Concrete Removal Notes:**
1. A saw cut shall be made one and one-half inches deep at the removal limits. care shall be exercised in the sawing at the removal limits so as not to cut the reinforcing steel in the remaining slab. the existing reinforcing steel shall be retained and extended into the new construction as indicated in the plans.
 2. Cut a groove in the concrete adjacent to the sawcut on the side to be removed to the depth of the sawcut with a chipping hammer. remove the remaining concrete in a careful manner with a hand-operated equipment leaving a clean plane surface for bonding new concrete. the horizontal reinforcing steel at intersection of the existing and new construction shall be lapped into the new construction. this extension shall be per ACI 318-08.
 3. Retain existing reinforcement bars unless otherwise indicated.
 4. The remaining concrete may be removed by any suitable method upon approval of the engineer, who shall be the sole judge of the use of any concrete removal equipment, explosives, wrecking ball, or other similar devices, which are likely to damage the concrete to be left on place, shall not be used.



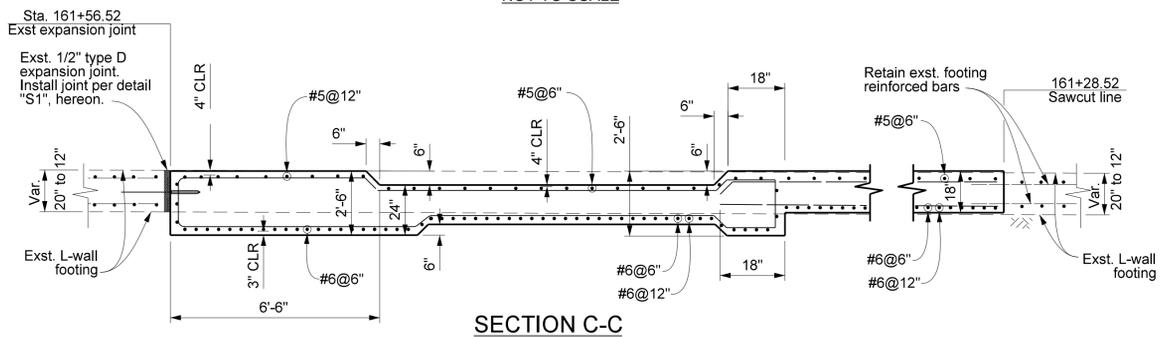
**TRANSVERSERS INVERT JOINT
TYPE "E" EXPANSION JOINT
DETAIL "S1"**
NOT TO SCALE



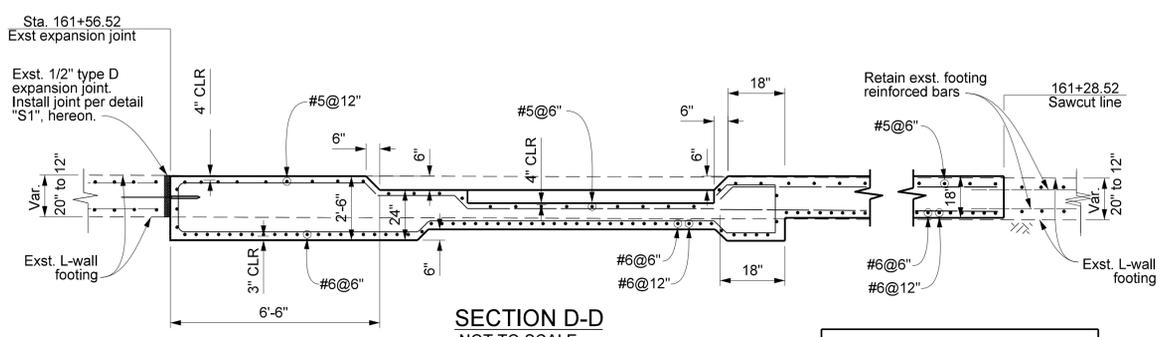
**TRANSVERSE WALL JOINT
TYPE "D" EXPANSION JOINT
DETAIL "R1"**
NOT TO SCALE



SECTION B-B
NOT TO SCALE



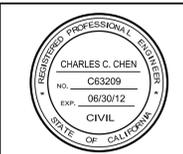
SECTION C-C
NOT TO SCALE



SECTION D-D
NOT TO SCALE

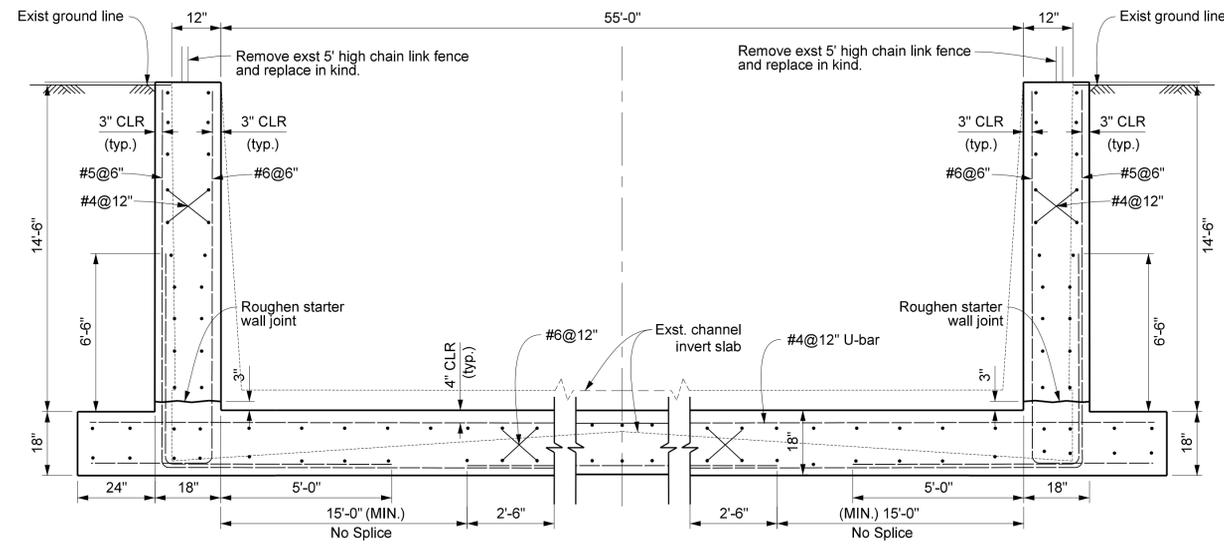
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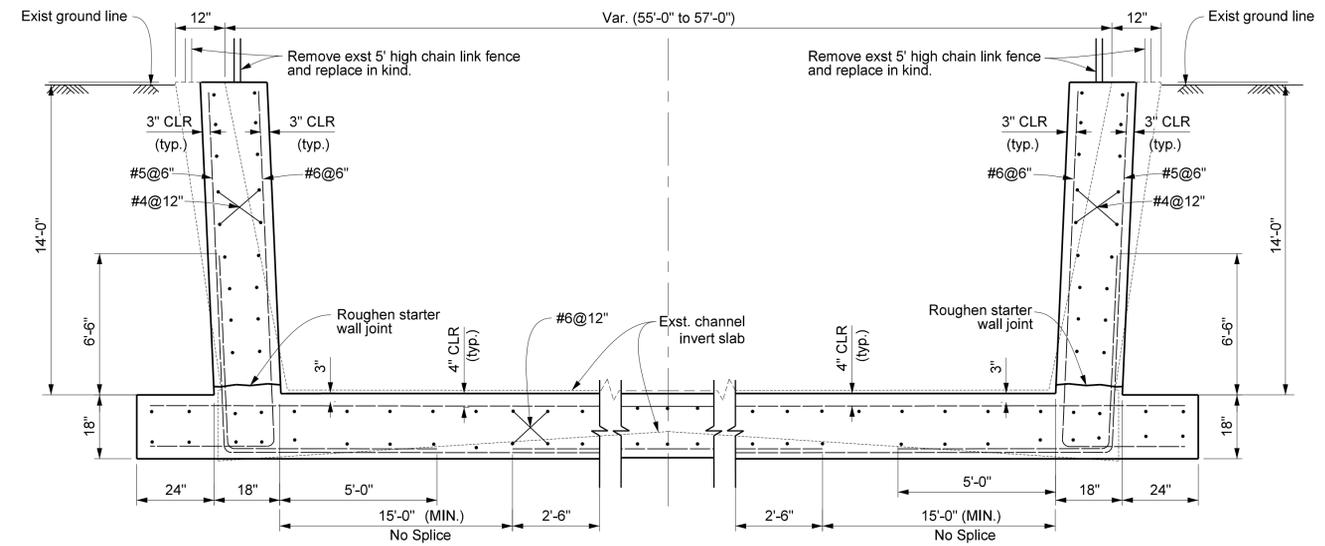


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
RUBBER DAM AND CHANNEL WALL DETAILS			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.14	SHEET 14 OF 29

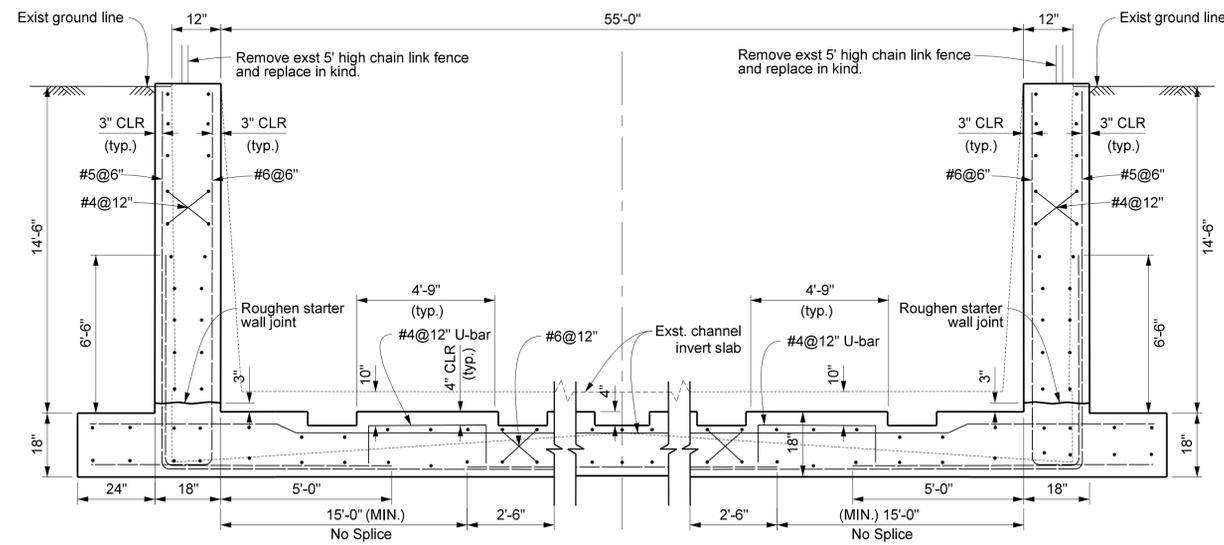
DATE: _____
REVIEWED BY: _____
CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
CHECKER: J. LI
DESIGNER: CHARLES C. CHEN
DRAFTER: VISAL TE



SECTION E-E, (SH. 14)
NOT TO SCALE



SECTION G-G, (SH. 14)
NOT TO SCALE



SECTION F-F, (SH. 14)
NOT TO SCALE

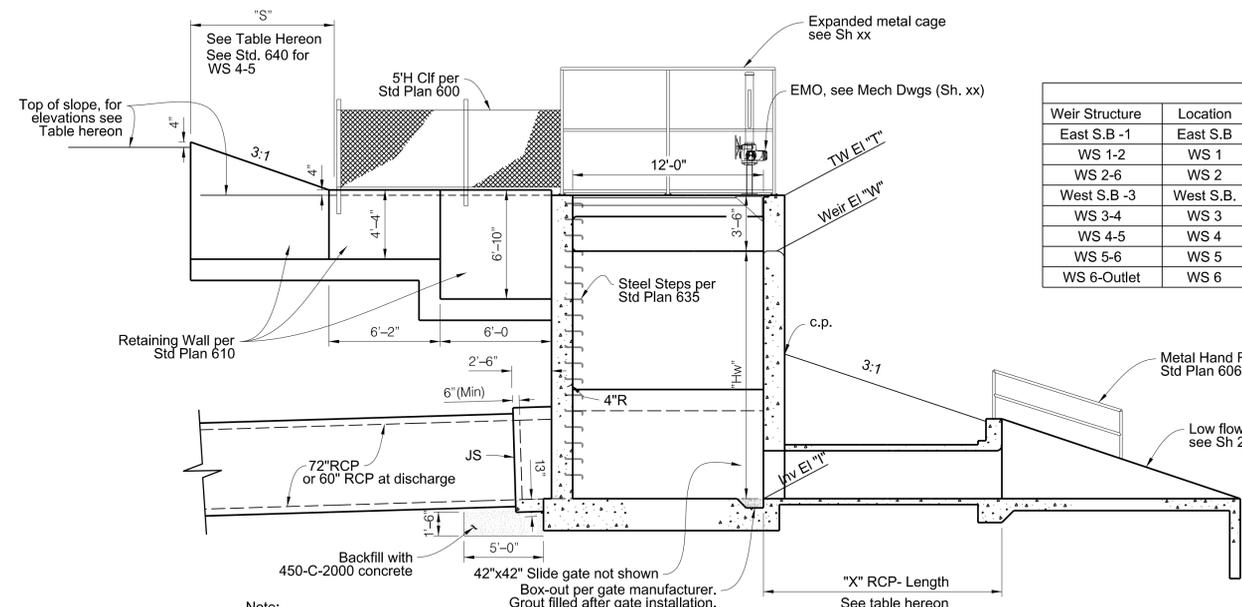
DATE	REVIEWED BY
CADD PROJECT FILE NAME PacoimaSGEnhancement.dgn	CHECKER J. LI
DESIGNER CHARLES C. CHEN	DRAFTER VISAL TE

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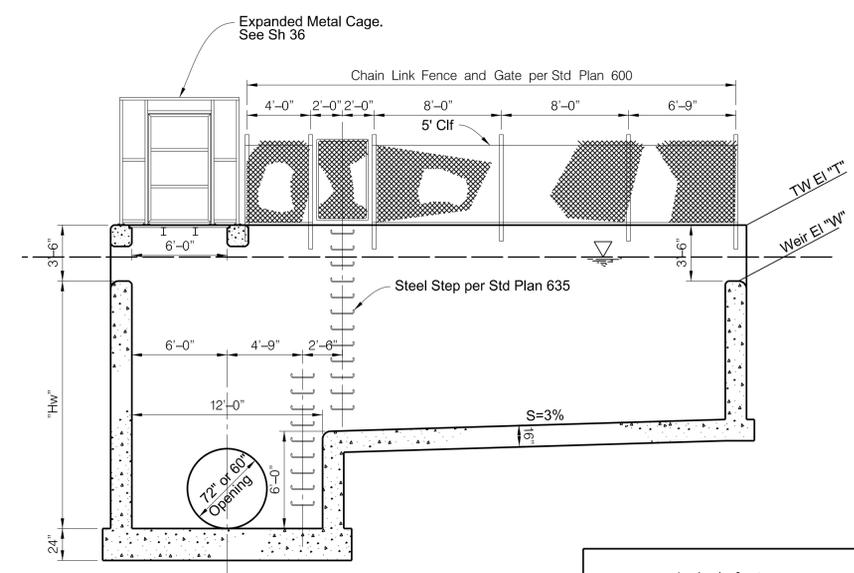
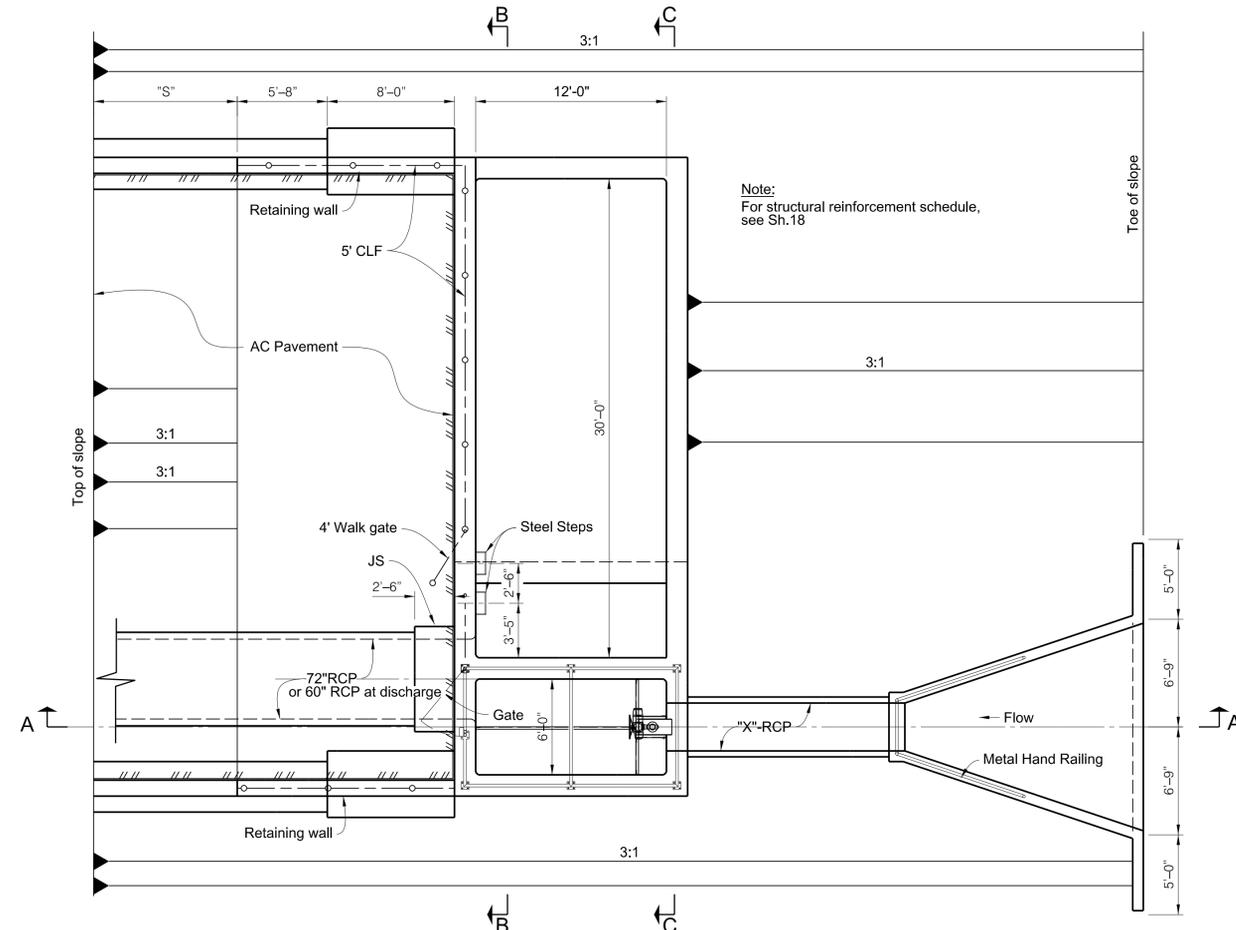
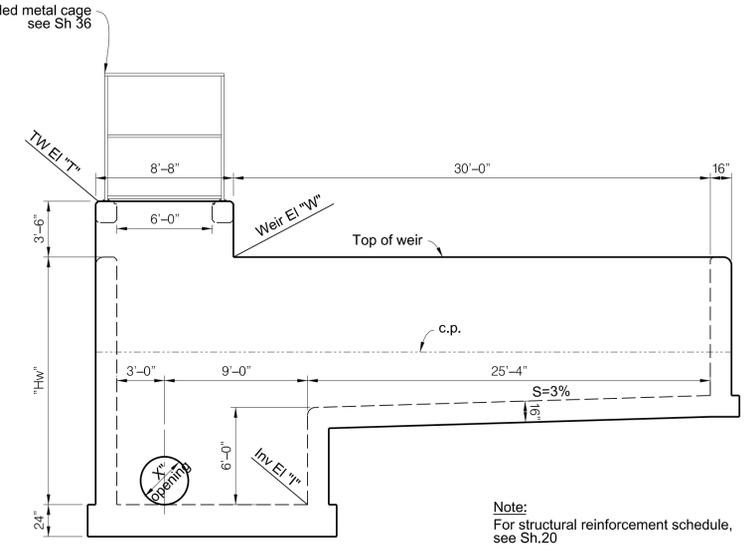
DATE	MK	DESCRIPTION
REVISIONS		



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
RUBBER DAM AND CHANNEL WALL DETAILS			
PROJECT ENGINEER CHARLES C. CHEN	DATE 06/30/12	FCC0001207	JOB EF11610123 DWG 21-D114.15 SHEET 15 OF 29



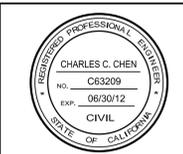
WEIR STRUCTURES										
Weir Structure	Location	WSE	Weir Ht "Hw"	TW El "T"	Weir El "W"	Inv El "I"	Top of slope	"S"	"X" RCP - Length	
East S.B -1	East S.B	941	10'-6"	943	939.5	929	943	0'	24" RCP - 7'-6"	
WS 1-2	WS 1	932	12'-6"	934	930.5	918	934	0'	36" RCP - 12'-0"	
WS 2-6	WS 2	917	8'-6"	919	915.5	907	919	0'	24" RCP - 4'-0"	
West S.B -3	West S.B.	941	10'-6"	943	939.5	929	944	3'	24" RCP - 9'-0"	
WS 3-4	WS 3	936	12'-6"	938	934.5	922	938	0'	24" RCP - 15'-0"	
WS 4-5	WS 4	924	8'-6"	926	922.5	914	934.5	Std. 640	36" RCP - 4'-0"	
WS 5-6	WS 5	916	9'-6"	918	914.5	905	918	0'	36" RCP - 4'-0"	
WS 6-Outlet	WS 6	908	8'-6"	910	906.5	898	910	0'	36" RCP - 4'-0"	



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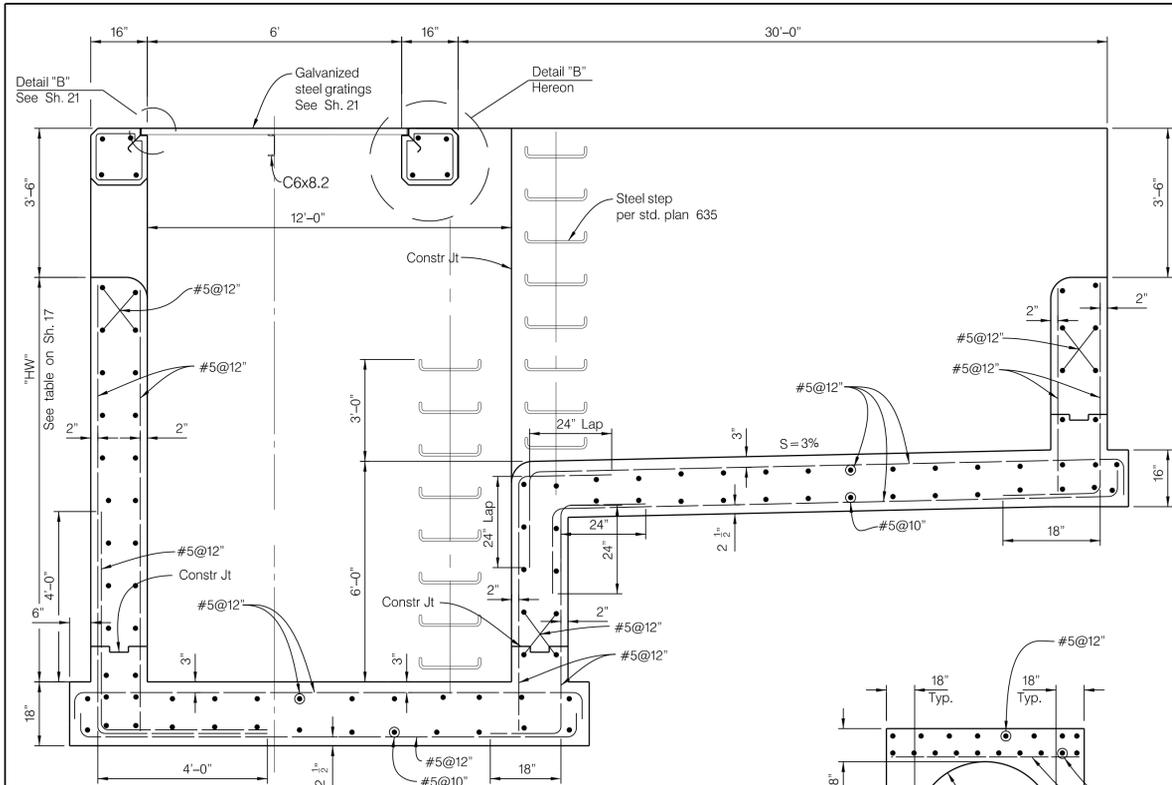


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
ENHANCEMENT PROJECT**

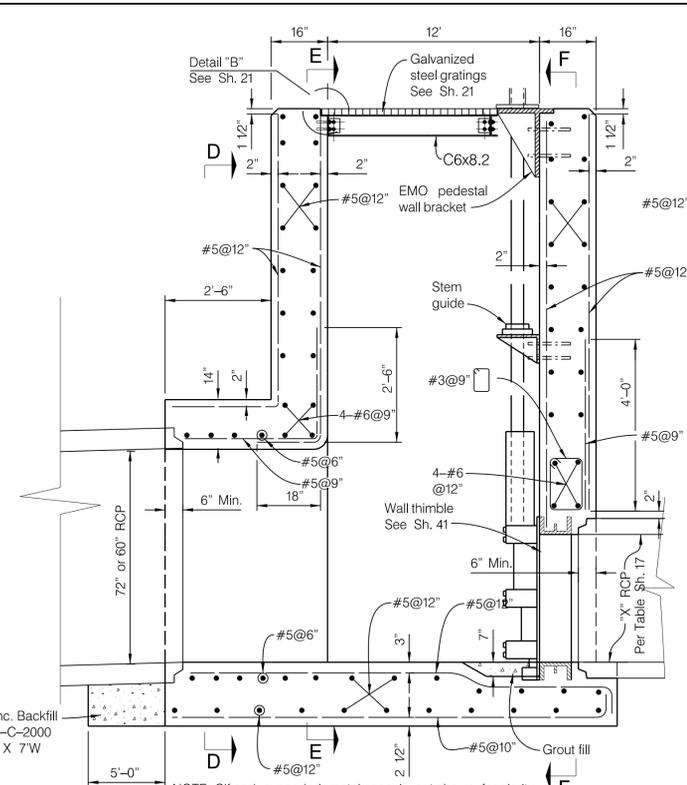
WEIR STRUCTURE

PROJECT ENGINEER: _____ DATE: _____
FCC0001207 JOB EF11610123 DWG 21-D114.17 SHEET 17 OF 29

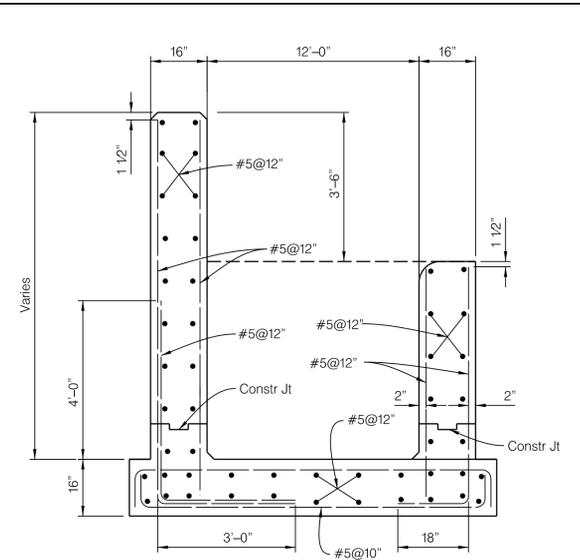
DATE: _____
REVIEWED BY: _____
CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
CHECKER: J. LI
DESIGNER: CHARLES C. CHEN
DRAFTER: VISAL TE



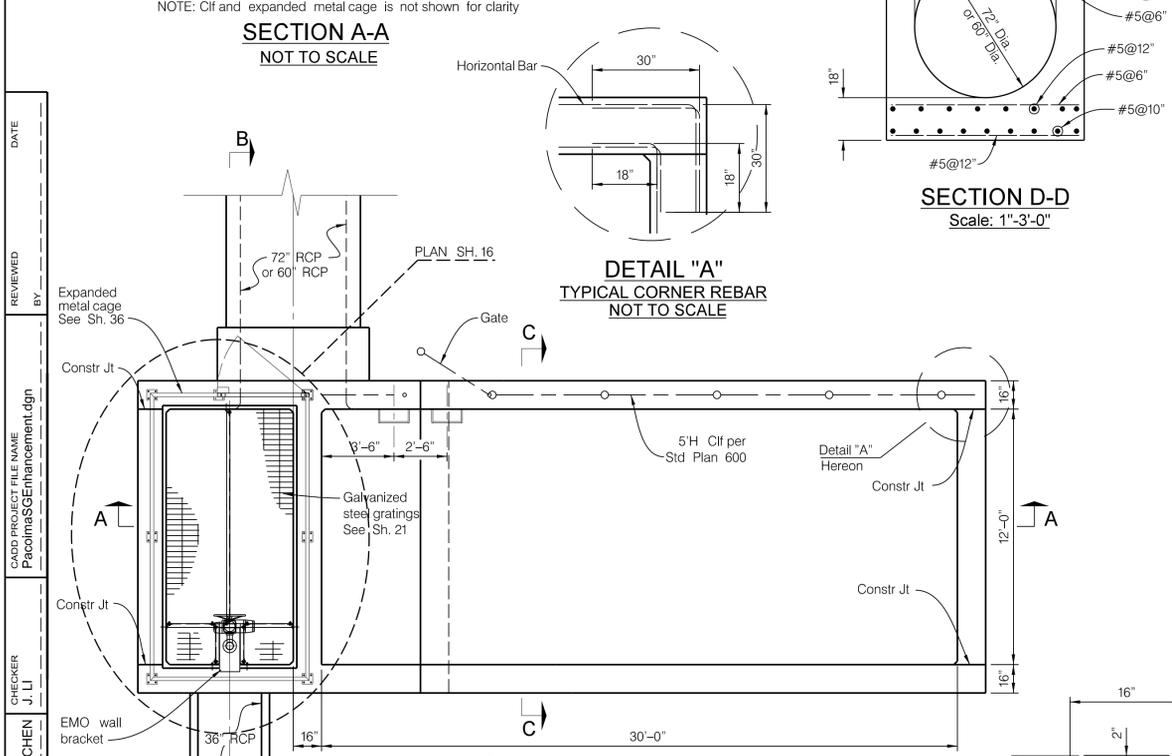
SECTION A-A
NOT TO SCALE



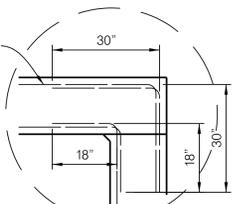
SECTION B-B
NOT TO SCALE



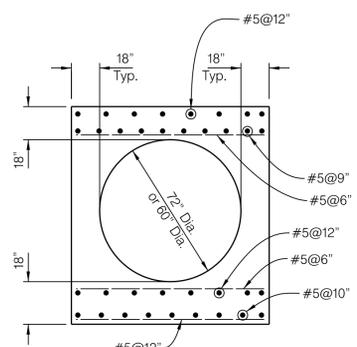
SECTION C-C
NOT TO SCALE



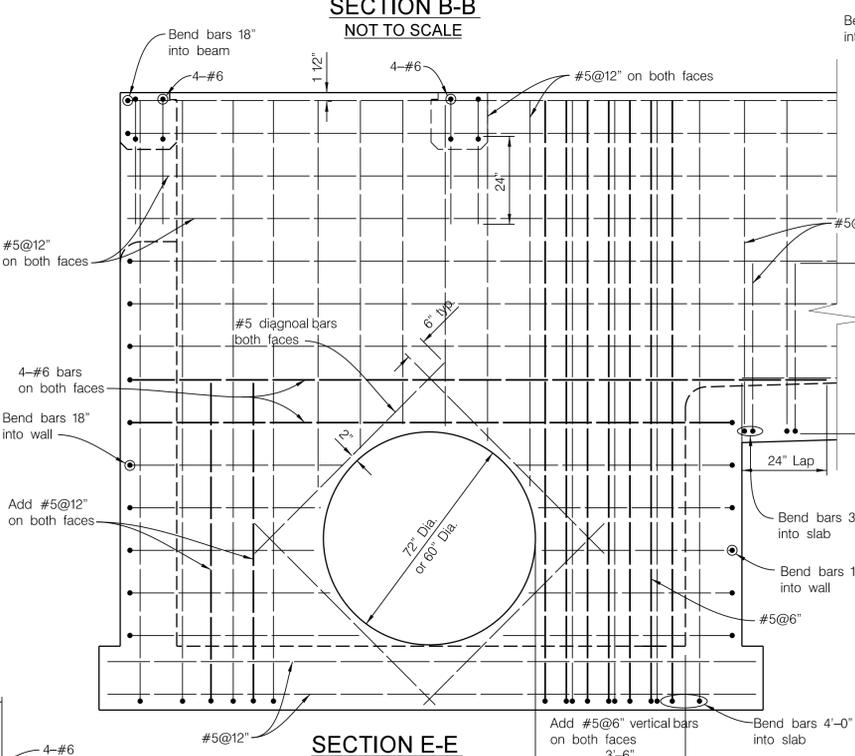
PLAN WEIR STRUCTURE
SCALE: 1"=2'-0"



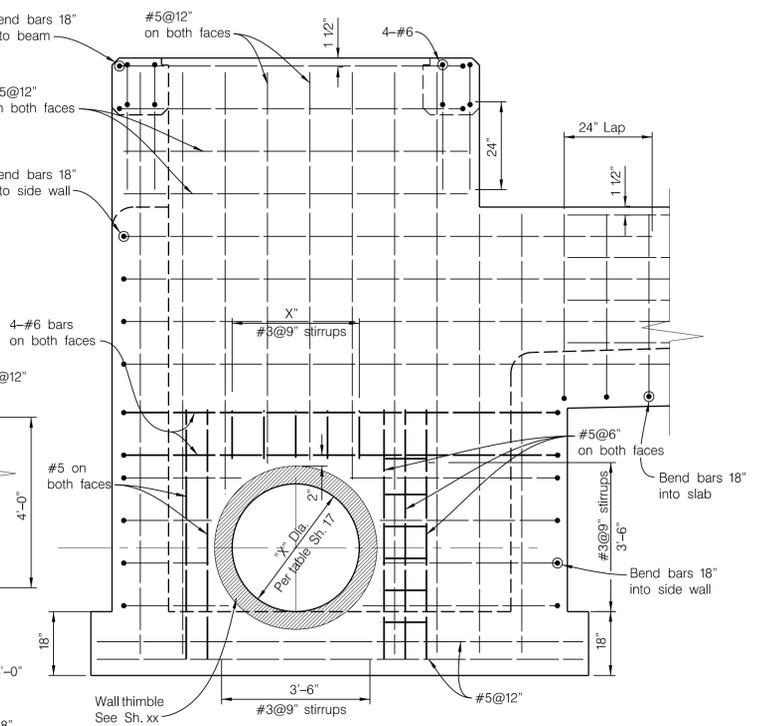
DETAIL "A"
TYPICAL CORNER REBAR
NOT TO SCALE



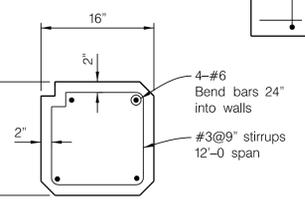
SECTION D-D
SCALE: 1'-3'-0"



SECTION E-E
NOT TO SCALE



SECTION F-F
NOT TO SCALE



DETAIL "B"
TYPICAL BEAM REBAR
NOT TO SCALE

DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

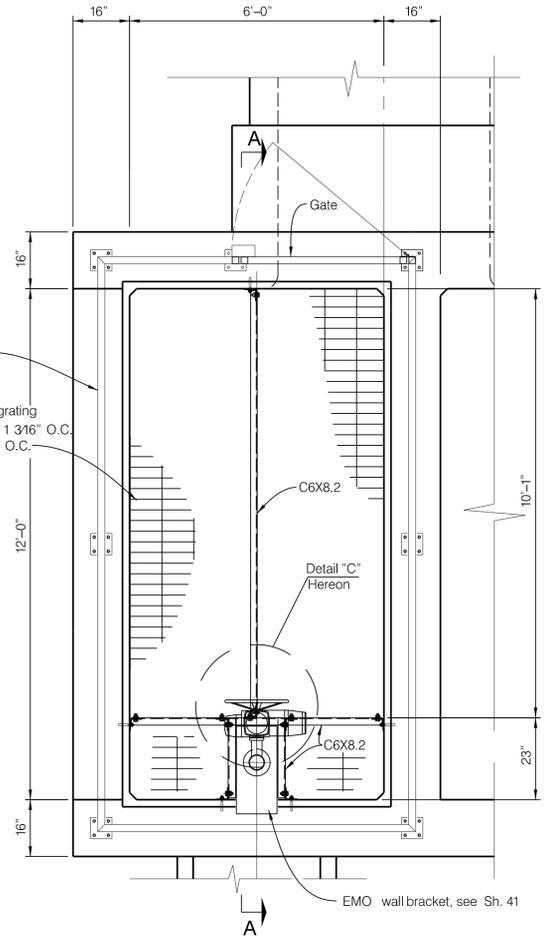
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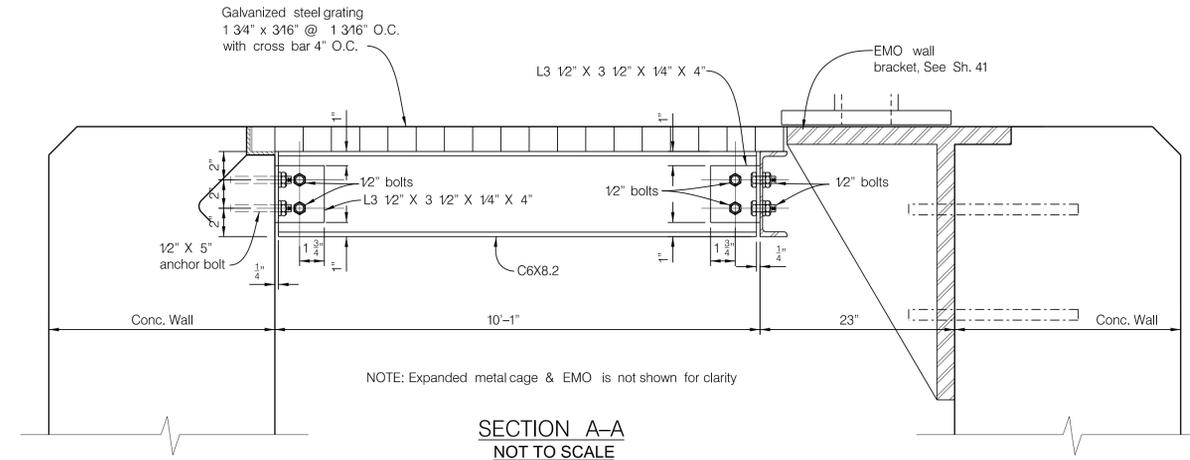
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
WEIR STRUCTURE DETAILS			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 11-D	SHEET 18 OF 29

DATE	MK	DESCRIPTION

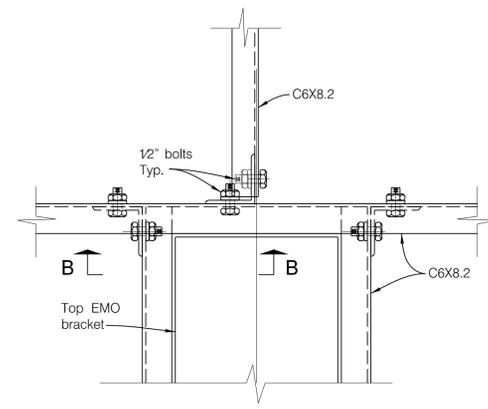
DATE _____
 REVIEWED BY _____
 CADD PROJECT FILE NAME
 PacoimaSGEnhancement.dgn
 CHECKER
 J. LI
 DESIGNER
 CHARLES C. CHEN
 DRAFTER
 VISAL TE



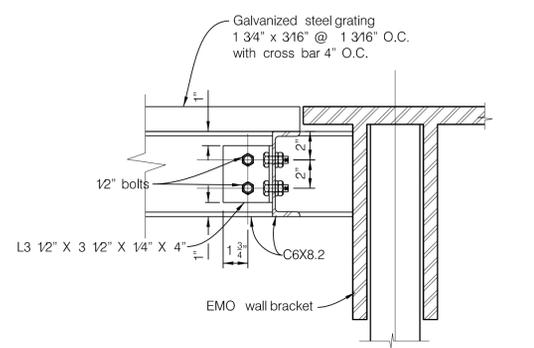
PLAN
GALVANIZED STEEL GRATING
 SCALE: 1/2" = 1'-0"



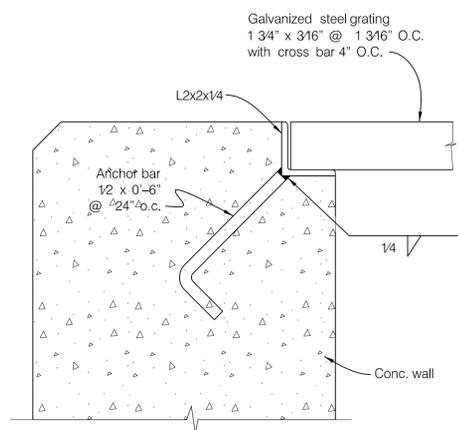
SECTION A-A
 NOT TO SCALE



NOTE: EMO is not shown for clarity
DETAIL "C"
GRATING ANCHOR DETAIL
 NOT TO SCALE



SECTION B-B
TYPICAL CHANNEL TO CHANNEL CONN.
 NOT TO SCALE

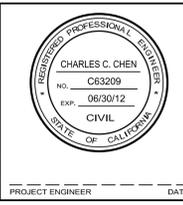


DETAIL "B" (SH. 18)
GRATING ANCHOR DETAIL
 NOT TO SCALE

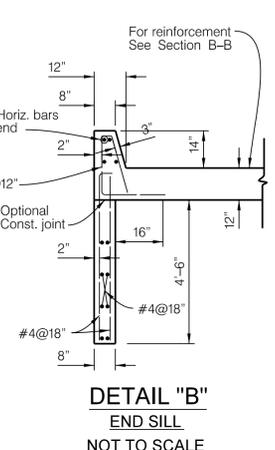
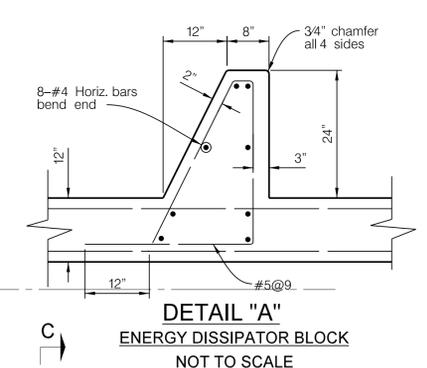
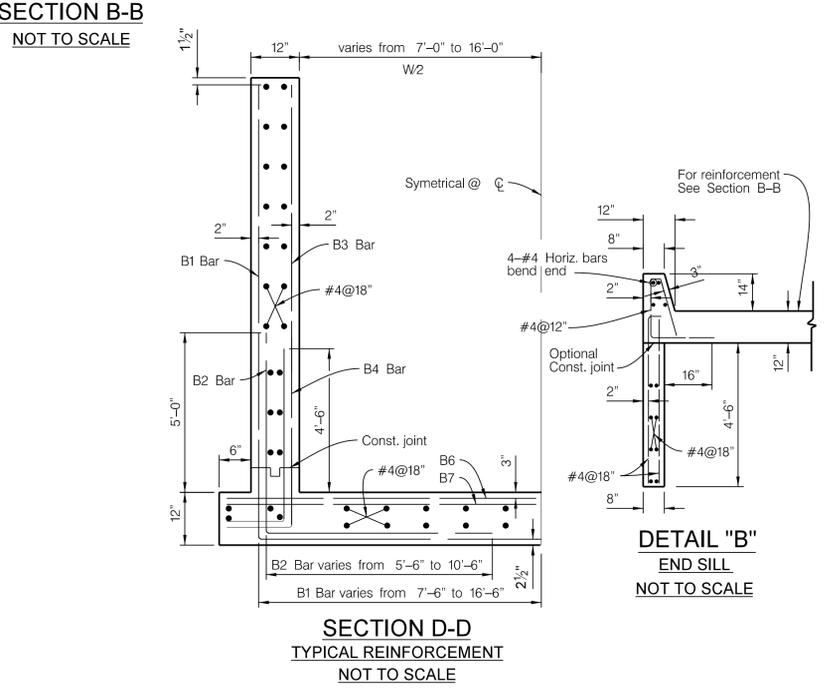
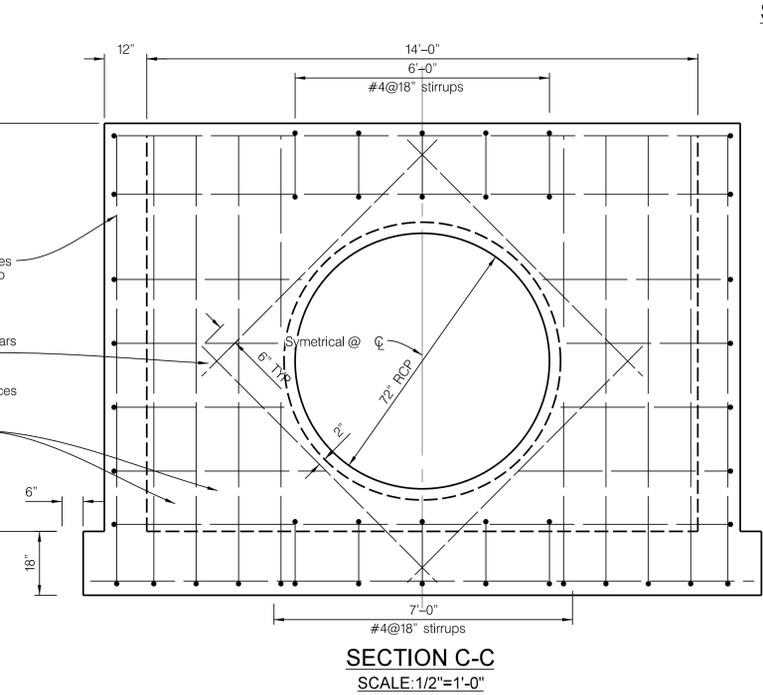
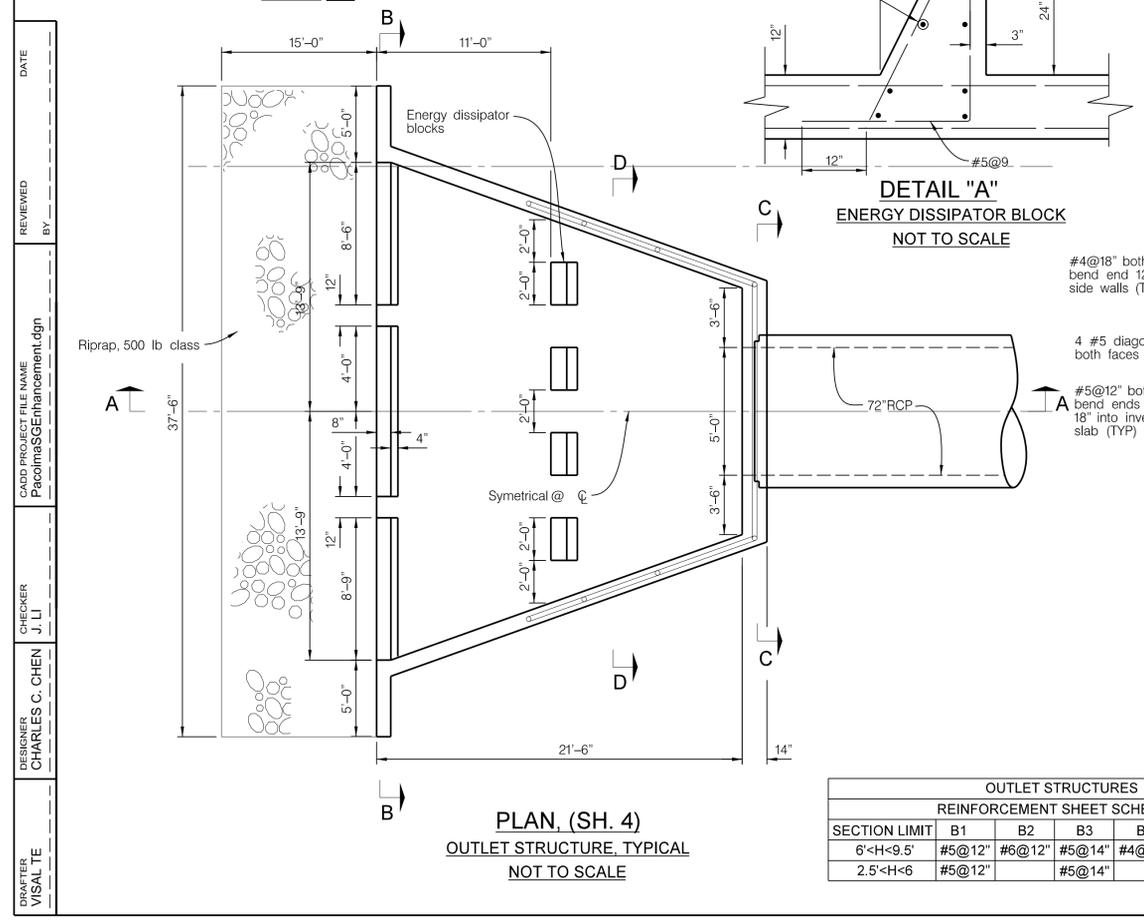
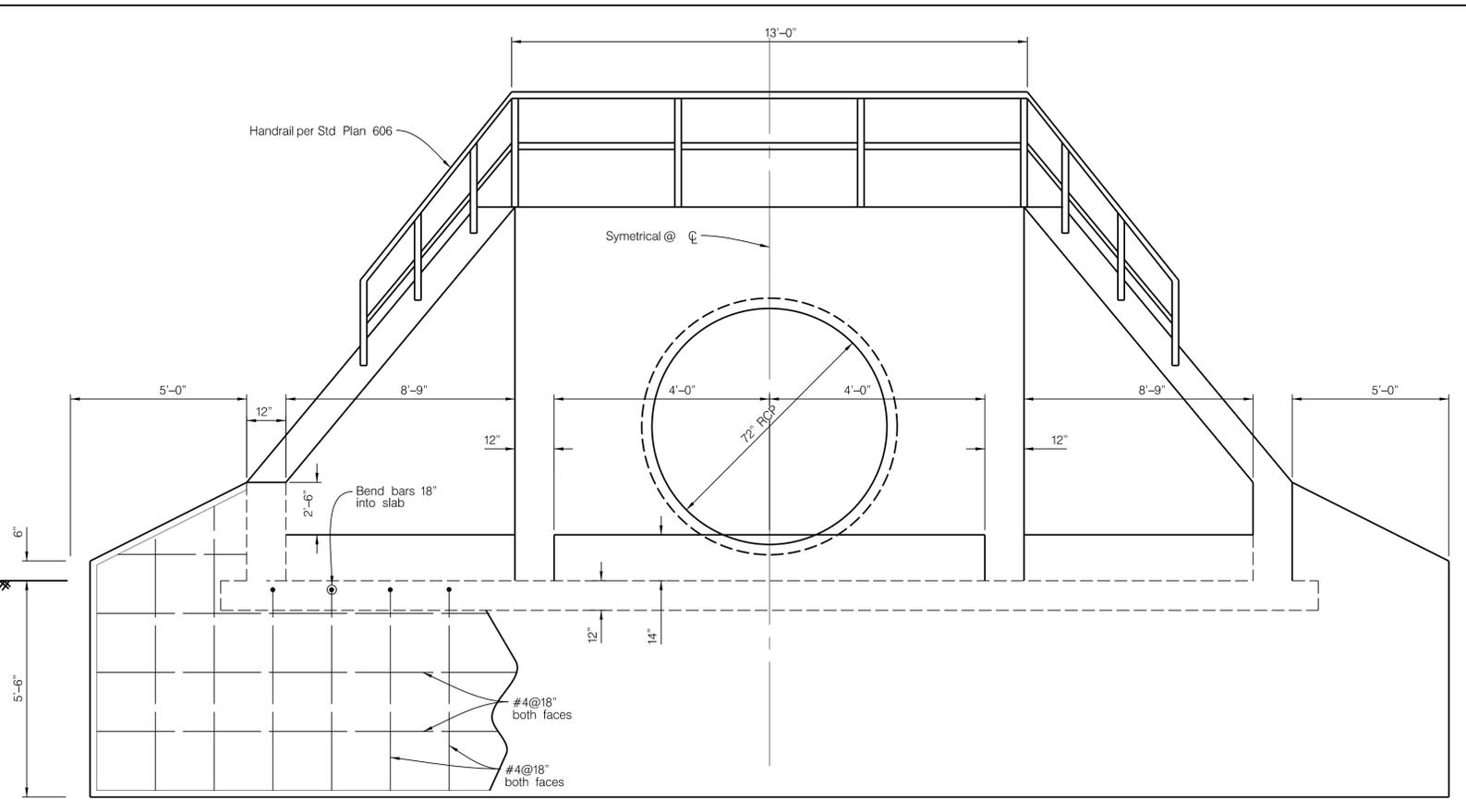
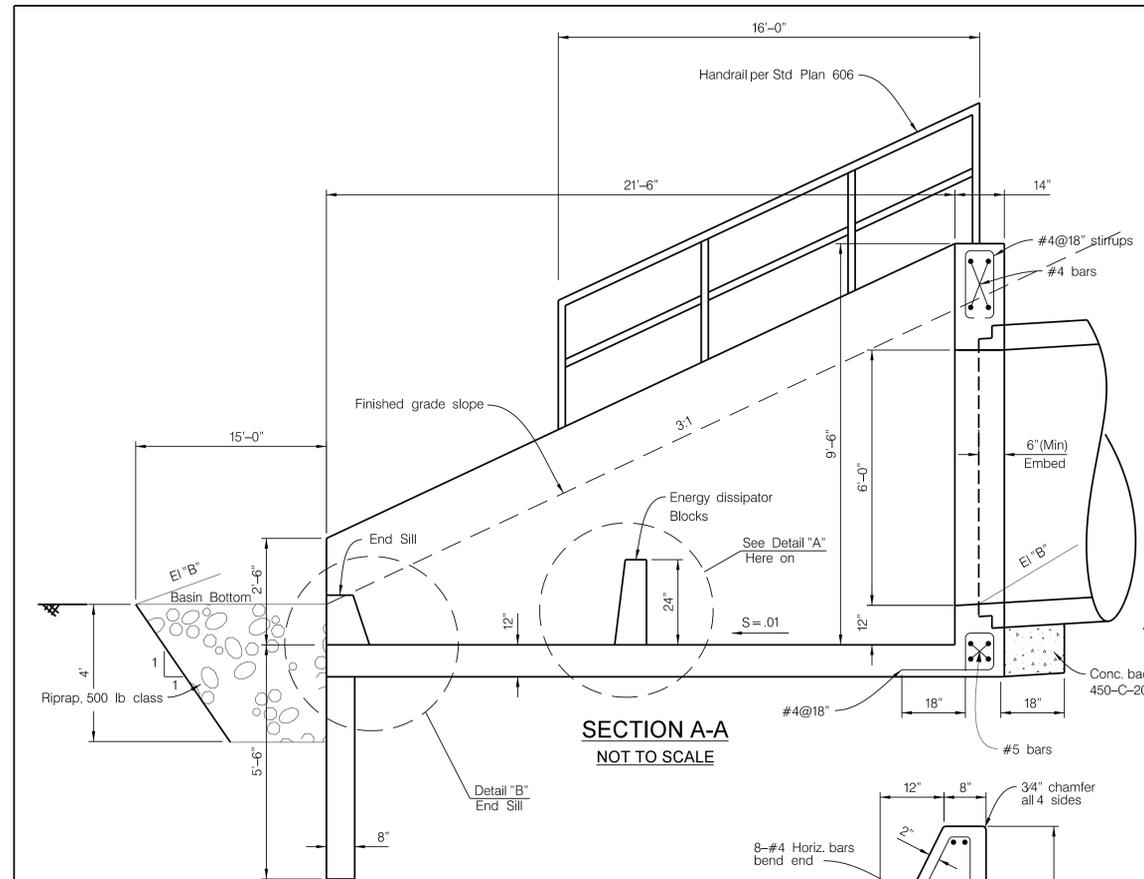
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DATE	MK	DESCRIPTION
REVISIONS		



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
WEIR STRUCTURE DETAILS			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.19	SHEET 19 OF 29



OUTLET STRUCTURES							
REINFORCEMENT SHEET SCHEDULE							
SECTION LIMIT	B1	B2	B3	B4	B6	B7	
6'<H<9.5'	#5@12"	#6@12"	#5@14"	#4@12"	#4@12"	#4@12"	#4@12"
2.5'<H<6'	#5@12"		#5@14"		#5@18"		

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DATE	MK	DESCRIPTION

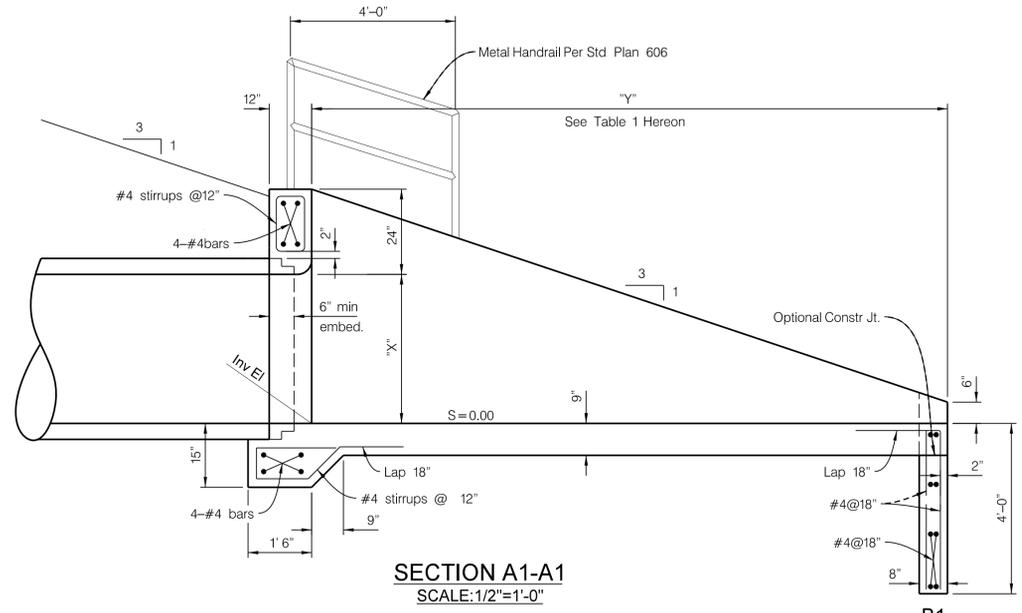


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

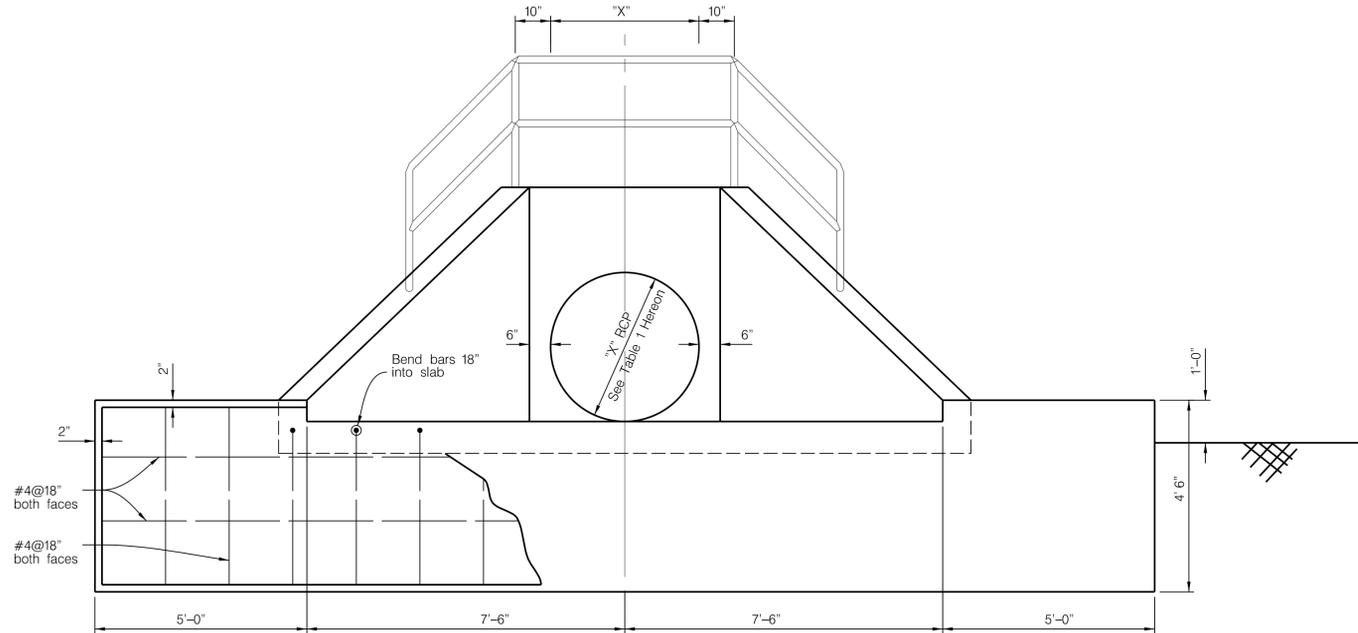
**PACOIMA SPREADING GROUNDS
ENHANCEMENT PROJECT**

OUTLET STRUCTURE DETAILS

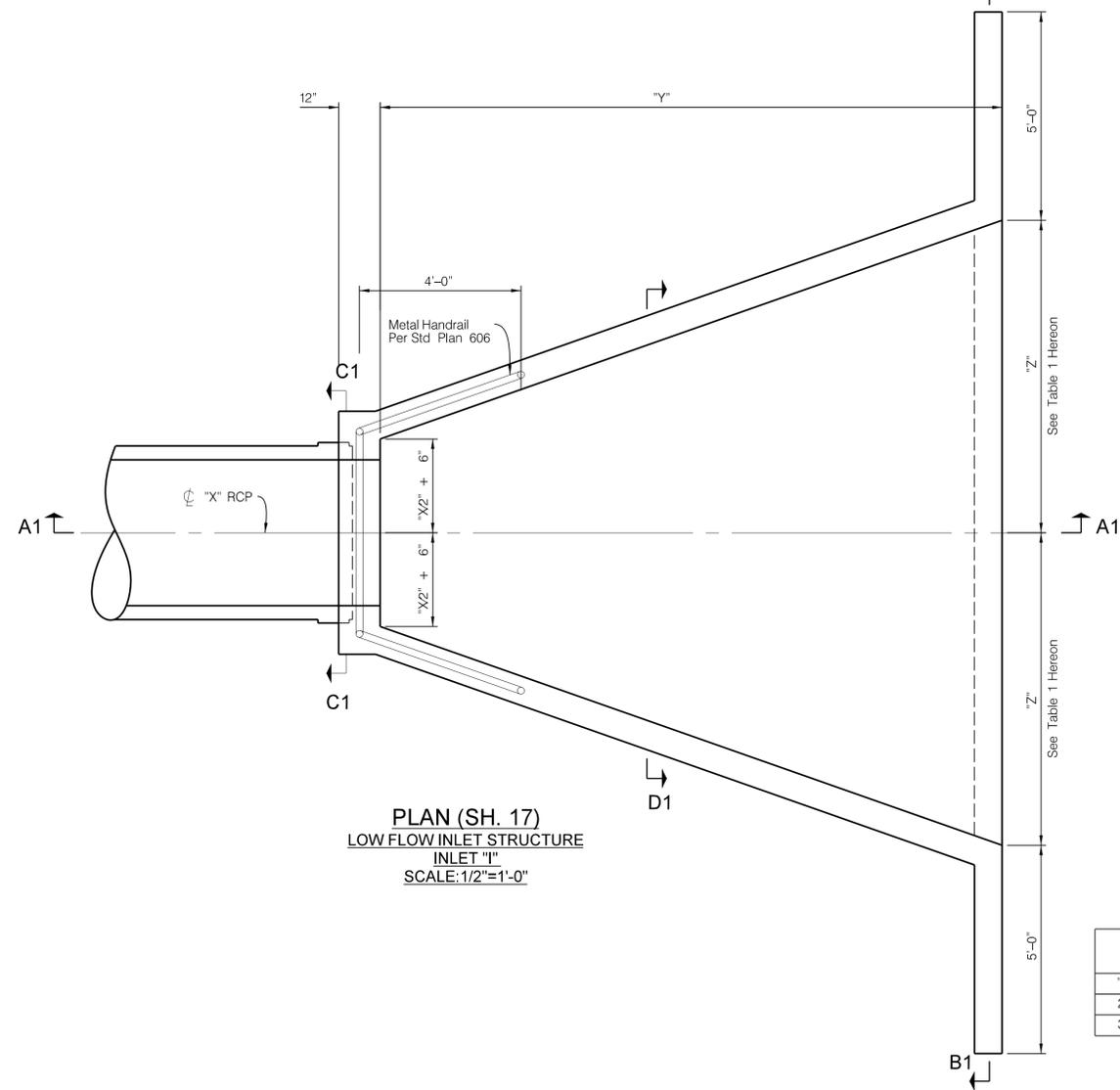
FCC0001207 JOB EF11610123 DWG 21-D114.20 SHEET 20 OF 29



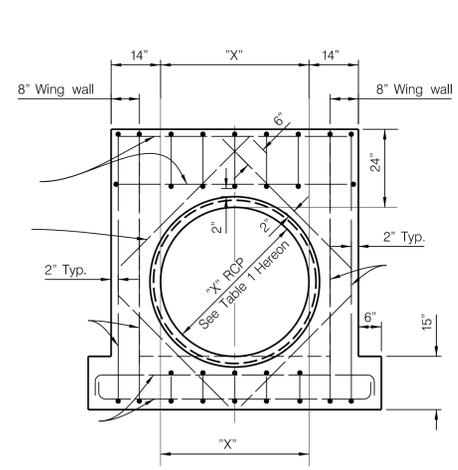
SECTION A1-A1
SCALE: 1/2"=1'-0"



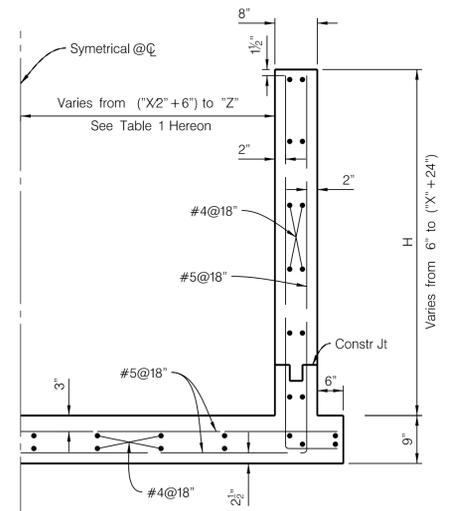
SECTION B1-B1
SCALE: 1/2"=1'-0"



PLAN (SH. 17)
LOW FLOW INLET STRUCTURE
INLET "I"
SCALE: 1/2"=1'-0"



SECTION C1-C1
HEADWALL
SCALE: 1/2"=1'-0"

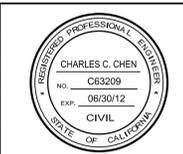


SECTION D1-D1
TYPICAL REINFORCEMENT
NOT TO SCALE

TABLE 1
INLET/OUTLET DIMENSIONS AND DATA

"X"	"Y"	"Z"
24"	10'-6"	5'-0"
36"	13'-6"	6'-6"

DATE	MK	DESCRIPTION
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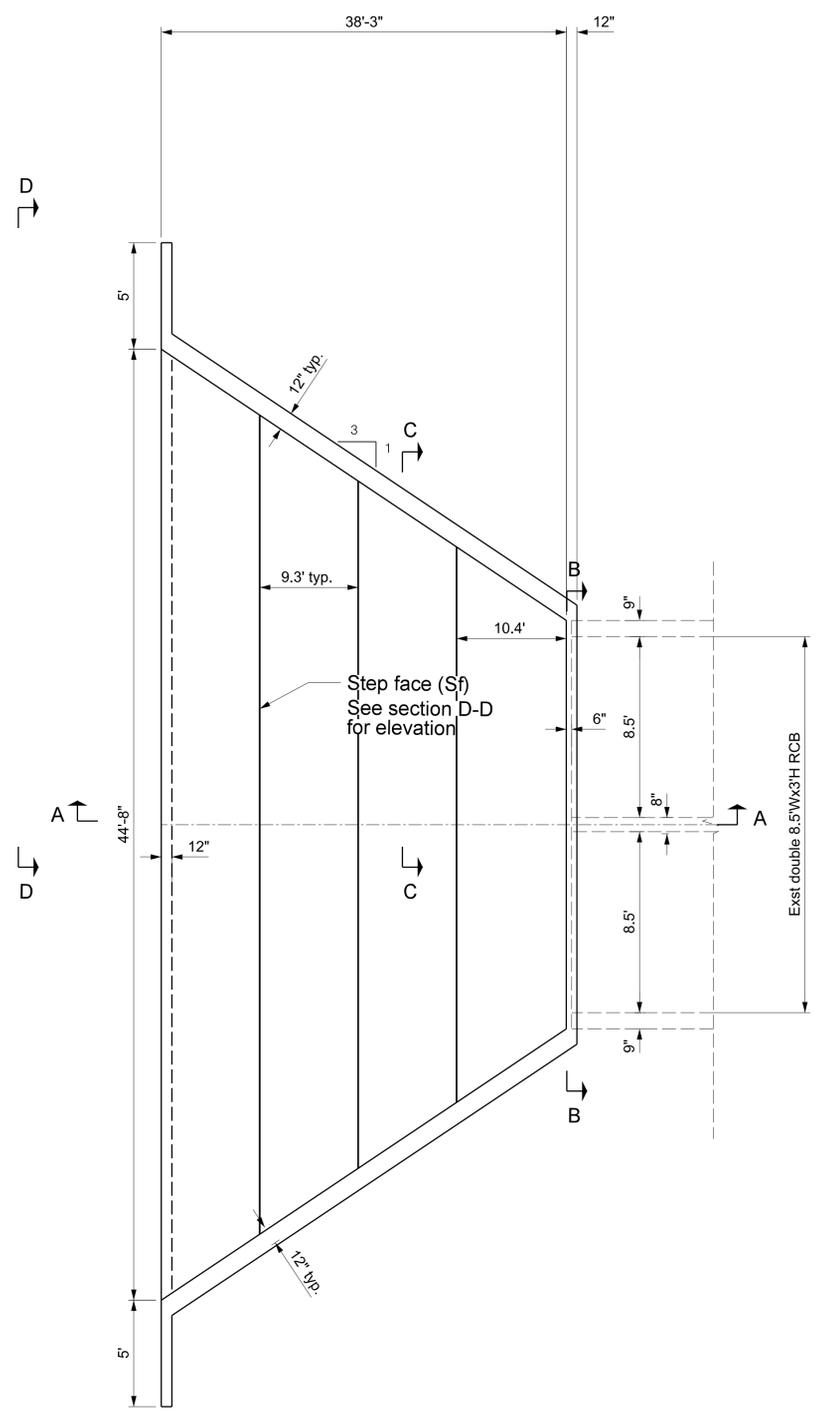
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
ENHANCEMENT PROJECT**

LOW FLOW INLET STRUCTURE "I" DETAILS

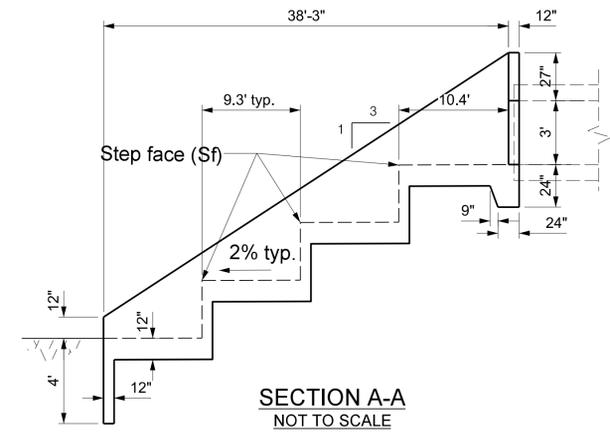
PROJECT ENGINEER	DATE	FCC0001207	JOB	EF11610123	DWG	21-D114.21	SHEET	21	OF	29
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DATE: 05/23/12
REVIEWED BY: VISAL TE
CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
CHECKER: J. LI
DESIGNER: CHARLES C. CHEN
DRAFTER: VISAL TE

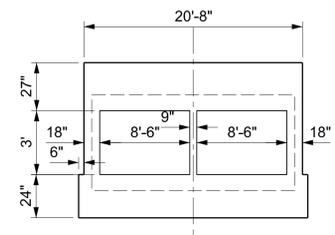
DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE



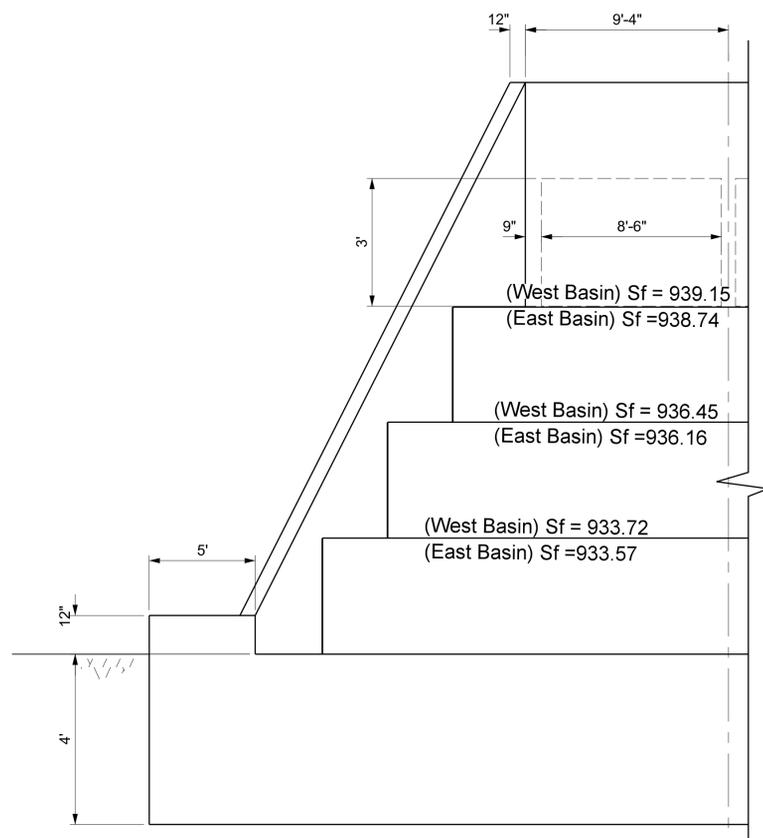
PLAN (SH. 11)
OUTFALL STRUCTURE
NOT TO SCALE



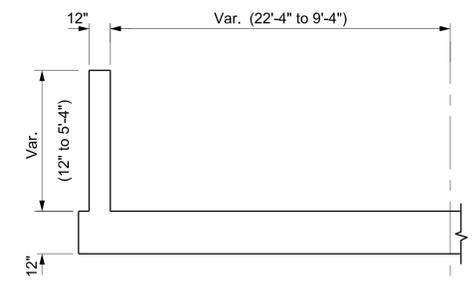
SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE



SECTION D-D
FRONT VIEW
NOT TO SCALE

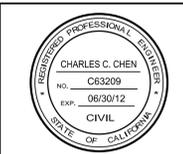


SECTION C-C
NOT TO SCALE

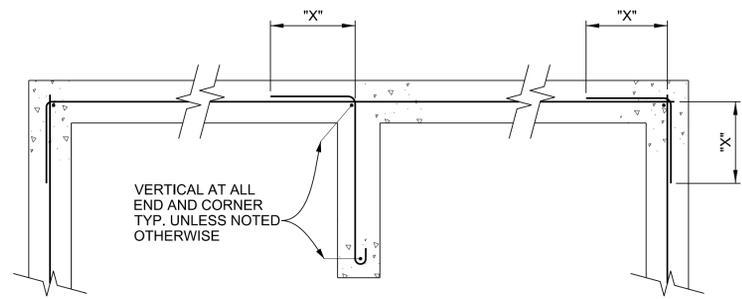
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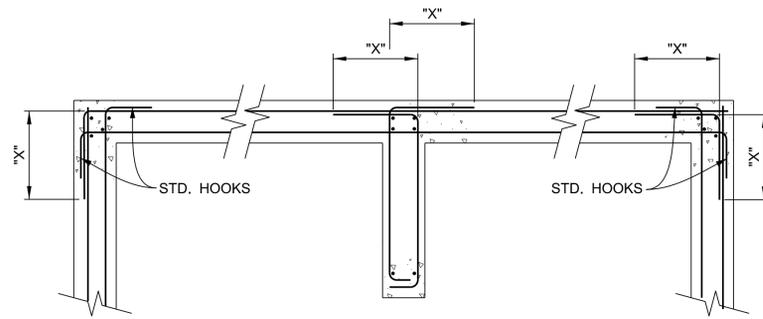


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
OUTFALL STRUCTURE			
PROJECT ENGINEER	DATE	FCC0001207	JOB EF11610123
		DWG 21-D114.22	SHEET 22 OF 29



CORNER INTERSECTION AND ENDS ALTERNATE CORNER

SINGLE CURTAIN REINFORCING



CORNER INTERSECTION AND ENDS ALTERNATE CORNER

DOUBLE CURTAIN REINFORCING

NOTE:
"X" - LAP SPLICE PER DETAIL 2
REINFORCING LAP SPLICE SCHEDULE

REINFORCING DETAILS AT CORNERS AND INTERSECTIONS

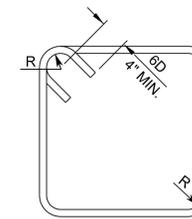
NOT TO SCALE

REINF.	CONCRETE		MASONRY
	TOP BAR	OTHER	
#3	24"	19"	18"
#4	32"	25"	24"
#5	40"	31"	30"
#6	48"	37"	36"
#7	70"	54"	42"
#8	80"	62"	48"
#9	90"	70"	54"

NOTES:

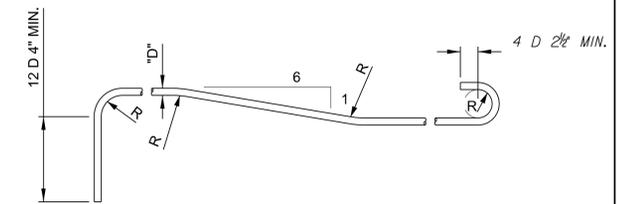
1. CONCRETE LAP LENGTH IS BASED ON CLASS B TENSION SPLICE, $F_c = 4,000$ PSI AND GRADE 60 REBARS.
2. TOP BAR IS THE HORIZONTAL REINFORCEMENTS SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.

REINFORCING LAP SPLICE SCHEDULE



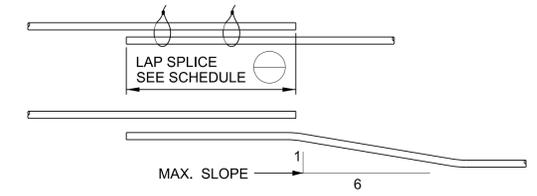
135° BEND

COLUMN TIE OR BEAM STIRRUP



90° HOOK OFFSET 180° HOOK

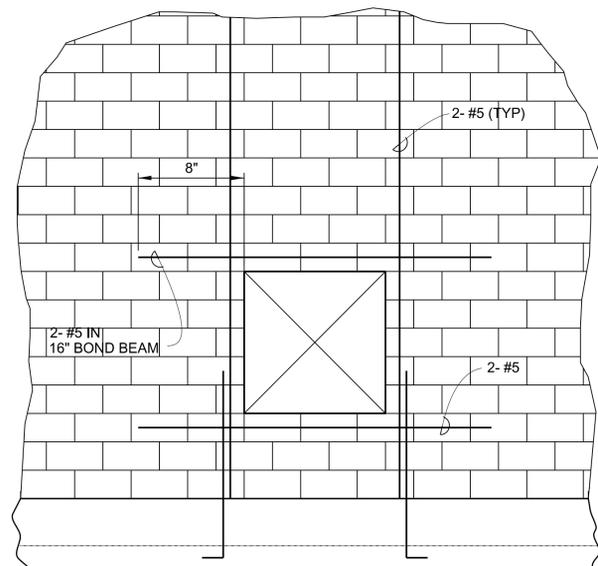
R= 3D FOR #2 THRU #8 BAR
4D FOR #9 THRU #11 BAR
5D FOR #14 OR #18 BAR



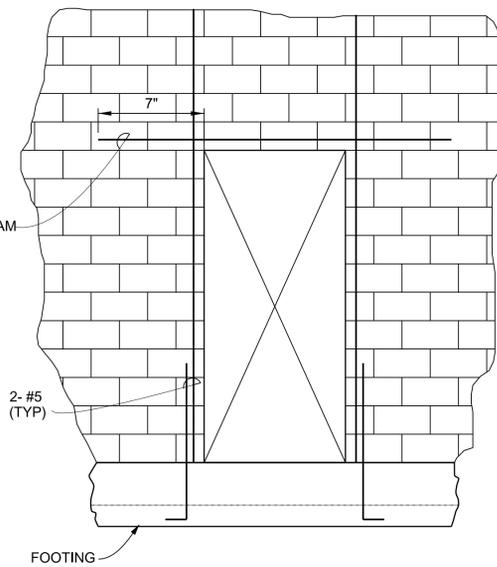
LAP SPLICE

REINFORCING STEEL DETAILS

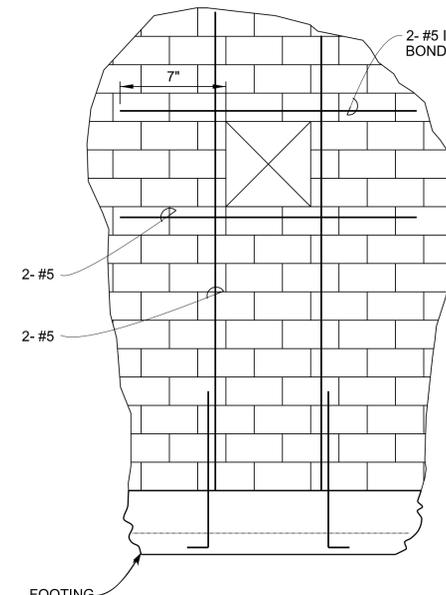
NOT TO SCALE



2'-8" x 2'-8" LOUVER OPENING



DOOR OPENING



2' x 2' LOUVER OPENING

MASONRY WALL OPENING REINFORCEMENT DETAIL

NOT TO SCALE

STRUCTURAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE 1997 UNIFORM BUILDING CODE.
2. CONCRETE SHALL BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS.
3. MASONRY SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH, f_m OF 1500 PSI.
4. REINFORCING STEEL SHALL BE GRADE 60.

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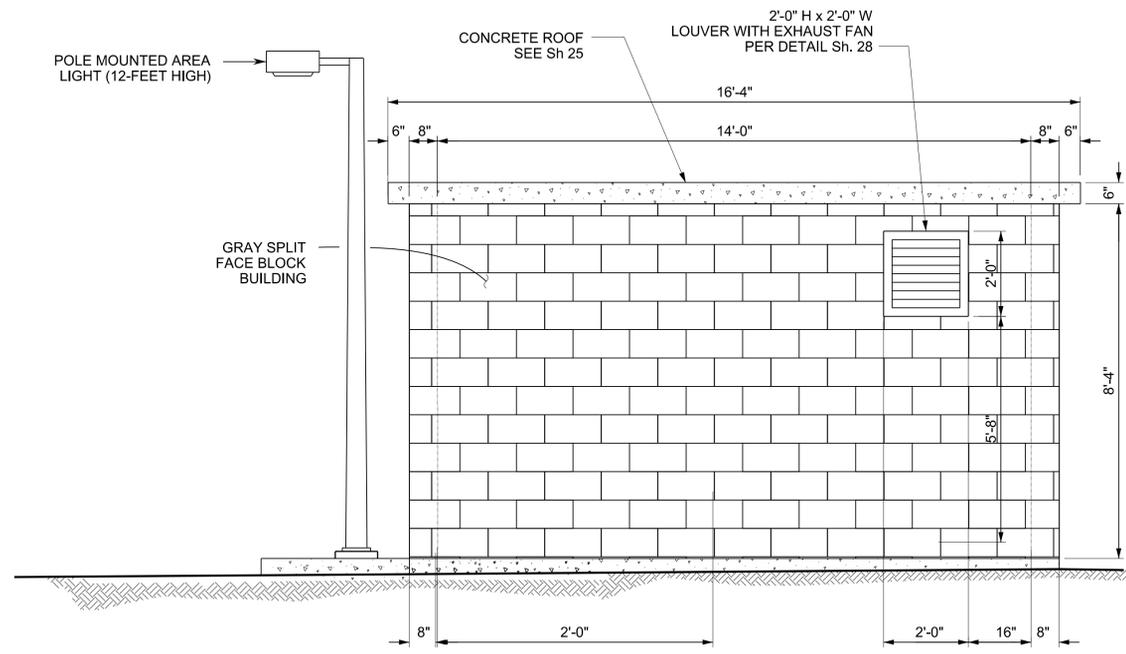
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DATE _____ REVIEWED BY _____
CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
CHECKER: J. LI
DESIGNER: CHARLES C. CHEN
DRAFTER: VISAL TE

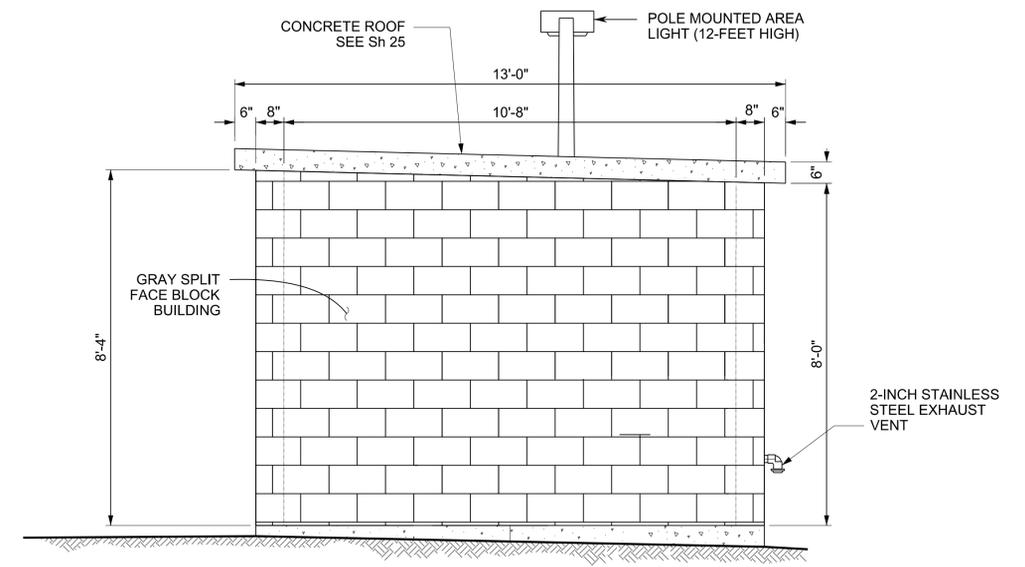
DATE	MK	DESCRIPTION
REVISIONS		



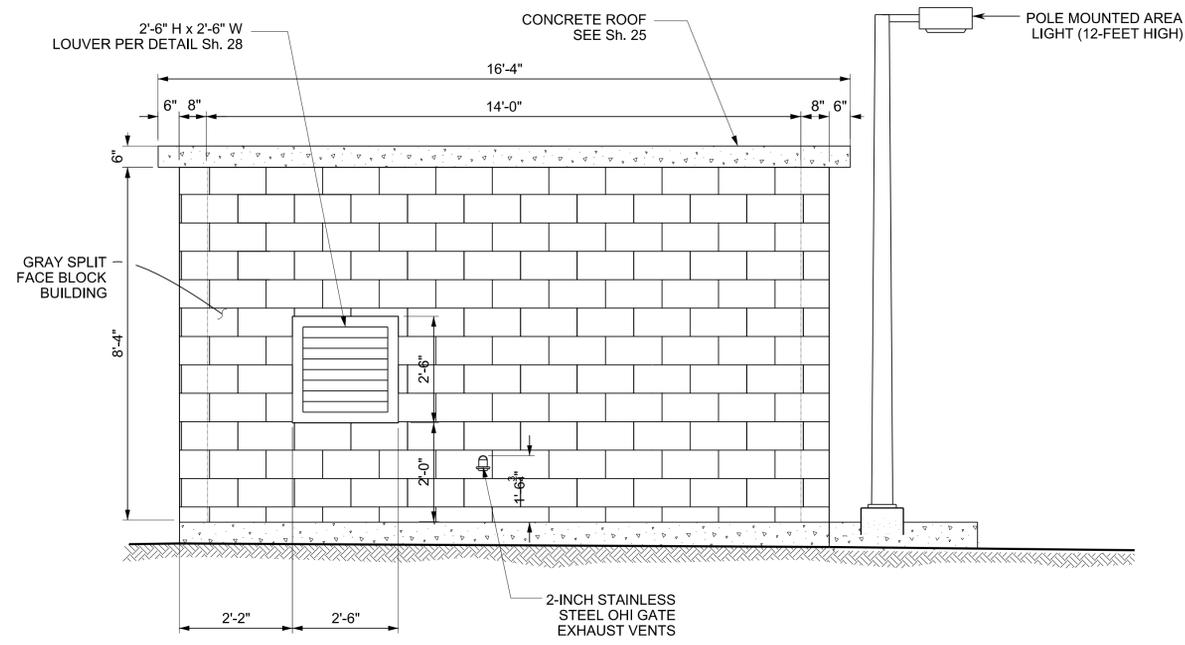
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
CONTROL HOUSE - BUILDING REINFORCEMENT			
FCC0001207	JOB EF11610123	DWG 21-D114.23	SHEET 23 OF 29



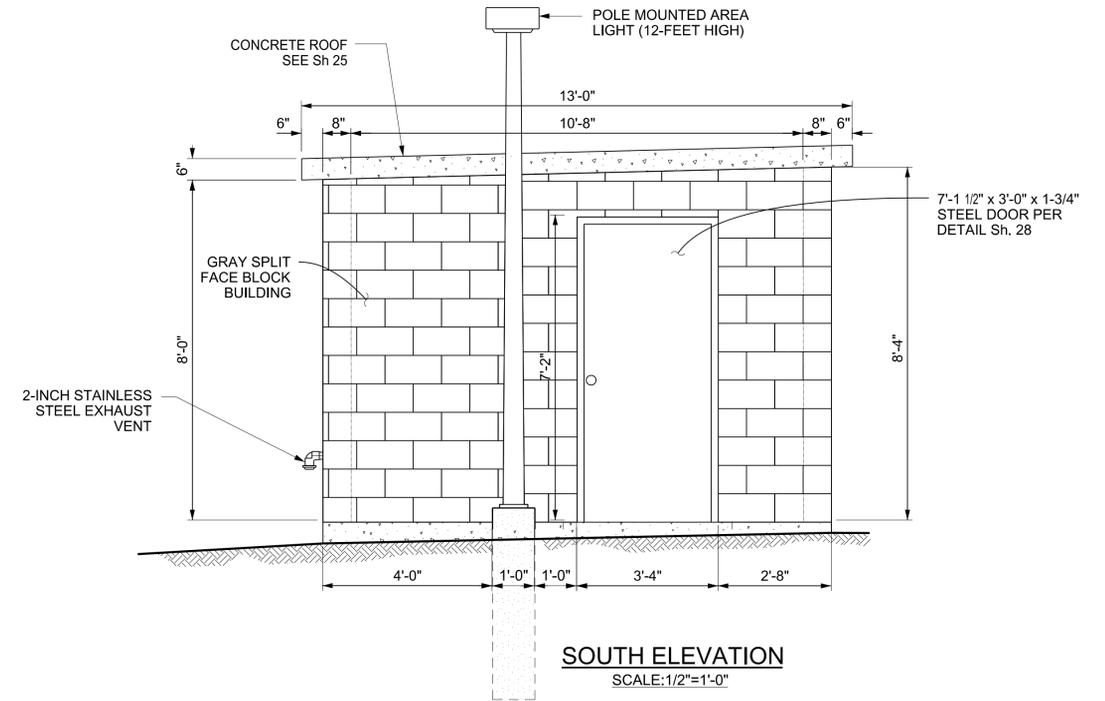
EAST ELEVATION
SCALE: 1/2"=1'-0"



NORTH ELEVATION
SCALE: 1/2"=1'-0"



WEST ELEVATION
SCALE: 1/2"=1'-0"

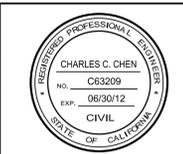


SOUTH ELEVATION
SCALE: 1/2"=1'-0"

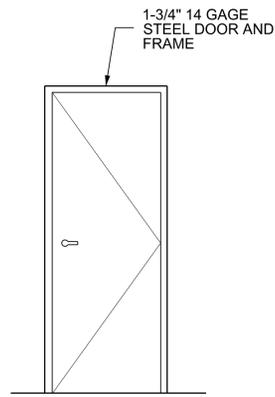
DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

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DATE	MK	DESCRIPTION
REVISIONS		

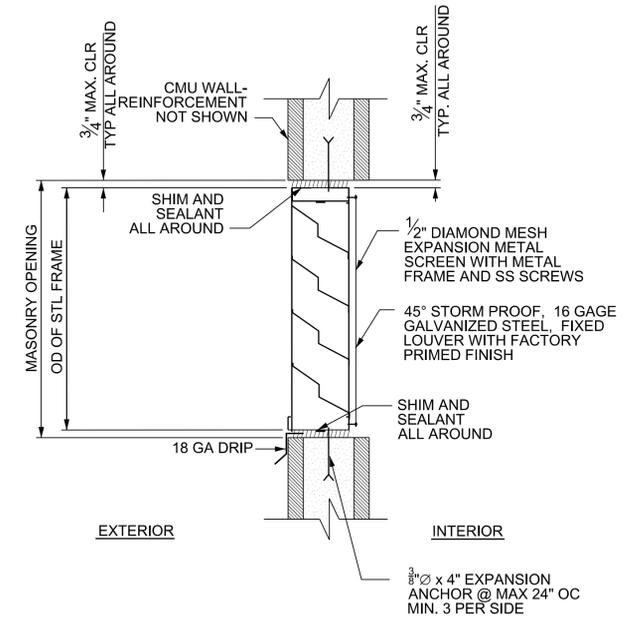


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
CONTROL HOUSE - BUILDING ELEVATIONS			
FCC0001207	JOB EF11610123	DWG 21-D114.24	SHEET 24 OF 29

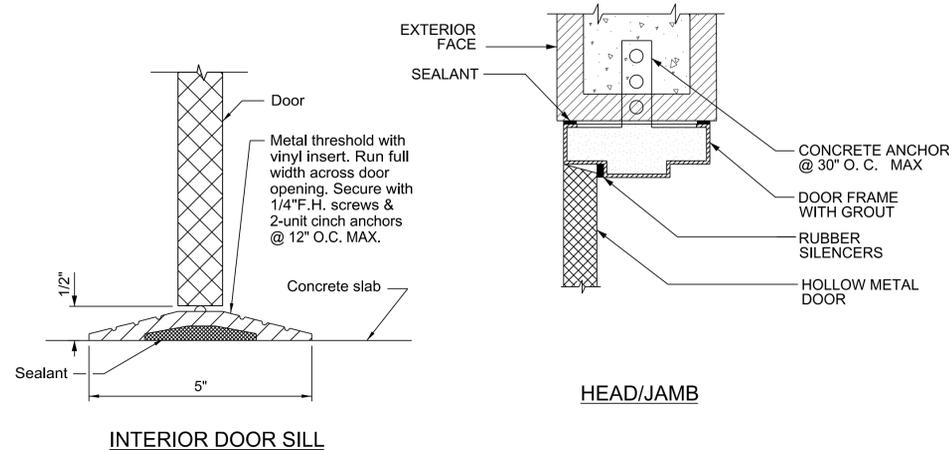
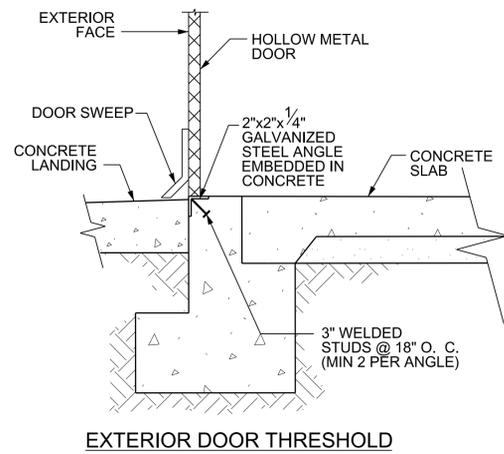


- DOOR NOTES:**
- (1) DOOR SHALL BE OPENABLE FROM THE INSIDE W/O USE OF KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
 - (2) DEAD BOLT SHALL HAVE A HARDENED INSERT AND A 1" MINIMUM THROW WITH 3/4" MINIMUM EMBEDMENT INTO JAMB.
 - (3) CYLINDER GUARDS SHALL BE INSTALLED ON DEAD BOLTS WHENEVER THE CYLINDER PROJECTS BEYOND THE OUTSIDE FACE OF THE DOOR OR IS ACCESSIBLE TO ATTACK TOOLS.
 - (4) ALL HINGES TO HAVE NON-REMOVABLE PINS.
 - (5) LOCKS AND KEYS TO BE COMPATIBLE WITH AGENCY'S EXISTING SYSTEM.

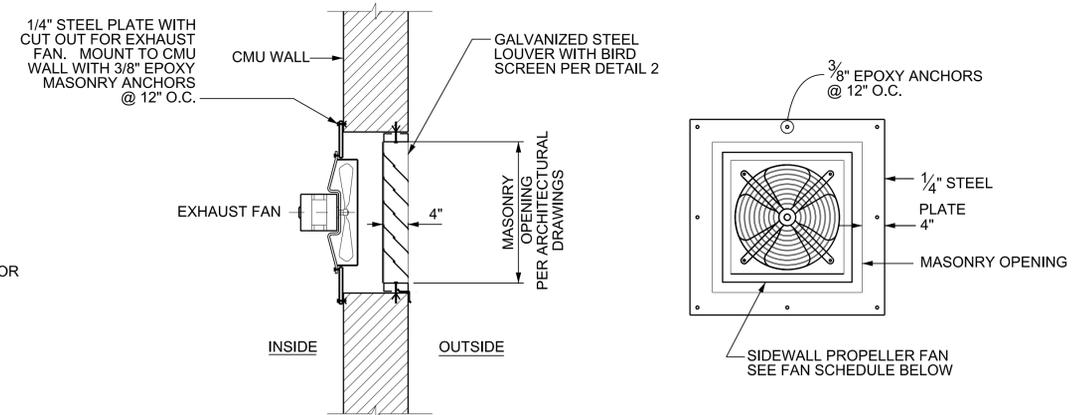
- HARDWARE SCHEDULE:**
- 3 - SETS OF HINGES
 - 1 - CLOSER
 - 1 - MORTISE DEADBOLT WITH LEVER TRIM AND STRIKE
 - 1 - HOLDER (FLOOR)
 - 1 - SET WEATHERSTRIPPING
 - 1 - RAINDRIP
 - 1 - WALL STOP
 - 1 - SWEEP



TYPE



DOOR DETAILS
NOT TO SCALE



FAN SCHEDULE							
FAN NUMBER	MAKE/ MODEL NUMBER	AIRFLOW (CFM)	STATIC PRESSURE (IN W. G.)	VOLT	HP	RPM	PHASE
EF-1	GREENHECK/ S1-12-432-D	1042	0.25	120	1/8	1550	1

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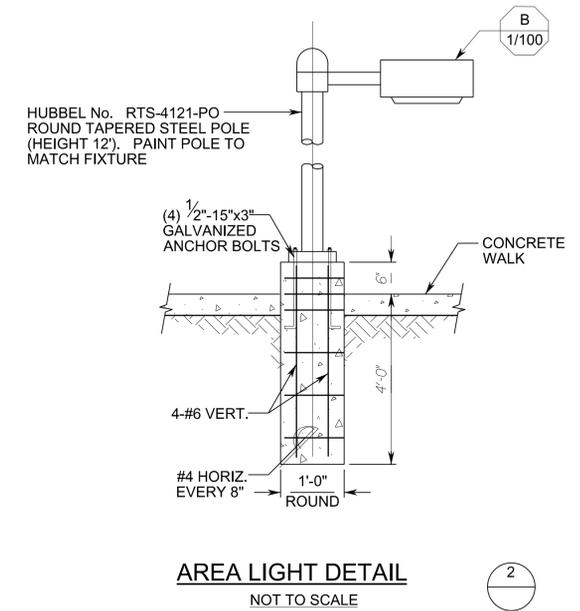
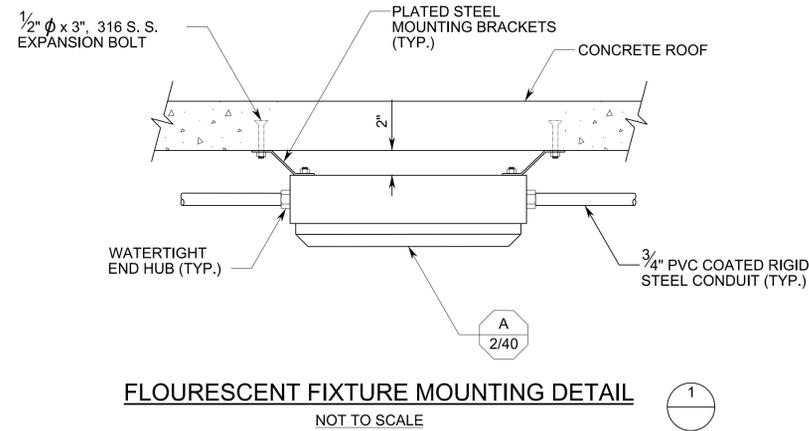
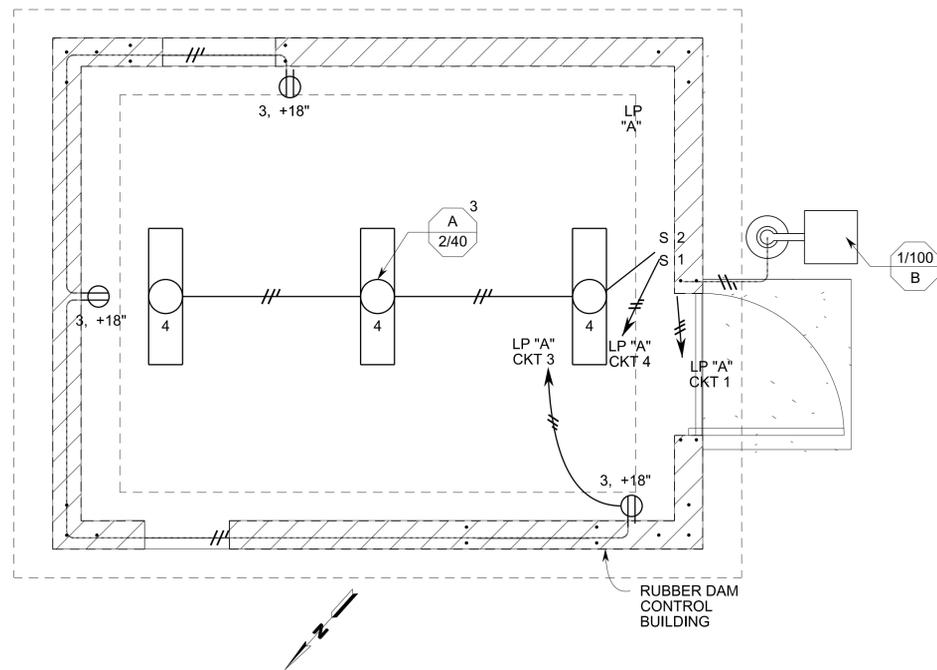
DATE
REVIEWED BY
CADD PROJECT FILE NAME: PacoimaSGEnhancement.dgn
CHECKER: J. LI
DESIGNER: CHARLES C. CHEN
DRAFTER: VISAL TE

DATE	MK	DESCRIPTION
REVISIONS		



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT
CONTROL HOUSE - DOOR LOUVER AND FAN DETAILS

FCC0001207	JOB EF11610123	DWG 21-D114.25	SHEET 25 OF 29
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MOUNTING: WALL		LIGHTING PANEL "A"										MAIN: 30 AMP			
240/120 VOLTS		1 PHASE		3 WIRE								BUS: 100 AMP			
WATTAGE	DESCRIPTION	R	L	P	B	C	A	B	C	P	L	R	DESCRIPTION	WATTAGE	
Ø A	Ø B	REC	LTG	OLE	BKR	CIR	A	B	CIR	BKR	LTG	REC		Ø A	Ø B
110			1	1	15	1			2	15	1		WALL FAN	600	
540		3		1	20	3			4	15	1	3	INTERIOR LIGHTS	100	
300				1	15	5			6	15	1		DRYER	1000	
				1	15	7			8	15	1		SPARE		
				1	20	9			10	15	1		SPARE		
				1	20	11			12	15	1		SPARE		
410	540	WATTS/LINE										600	1100		
TOTAL WATTS = 2630														AMPS = 10.8	

LIGHTING PANEL "A" SCHEDULE

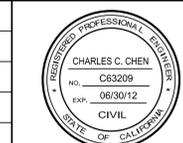
MARK	VOLTAGE	WATTS/LAMP	DESCRIPTION	REMARKS	DETAIL
A 2/40	120 VAC	40	FLUORESCENT FIXTURE INDUSTRIAL TYPE WITH WHITE ENAMELED REFLECTORS. DUST AND MOISTURE RESISTANT. 2-4' LAMP CONFIGURATION	HUBBELL DMR SERIES EWL042R-SPDR-E1 OR EQUAL	1
B 1/100	120 VAC	100	POLE-MOUNTED, 100 WATT HPS LAMP WITH PHOTOCCELL CONTROL ALUMINUM HOUSING, INTEGRAL BALLAST, HIGH IMPACT POLYCARBONATE LENS, AND POWDERCOAT FINISH	HUBBELL NO. RTS-4121-PO STEEL POLE. LUMINARIE: HUBBELL MAGNUSQUARE 1 SERIES SQS-0100S-2W8-A1-L	2

LIGHT SCHEDULE



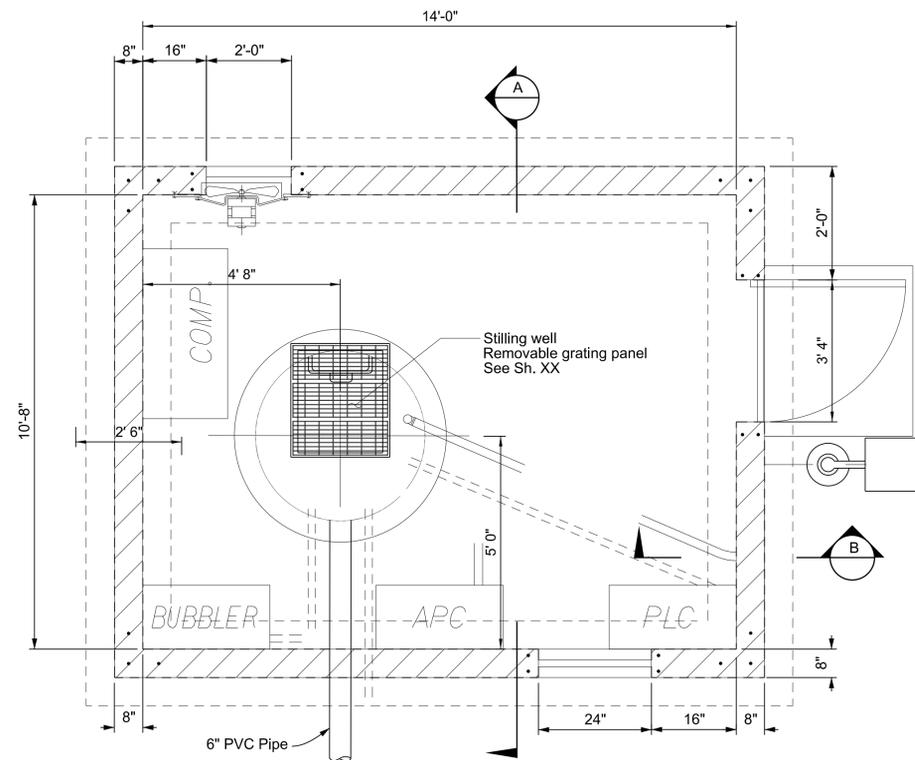
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REVISIONS		

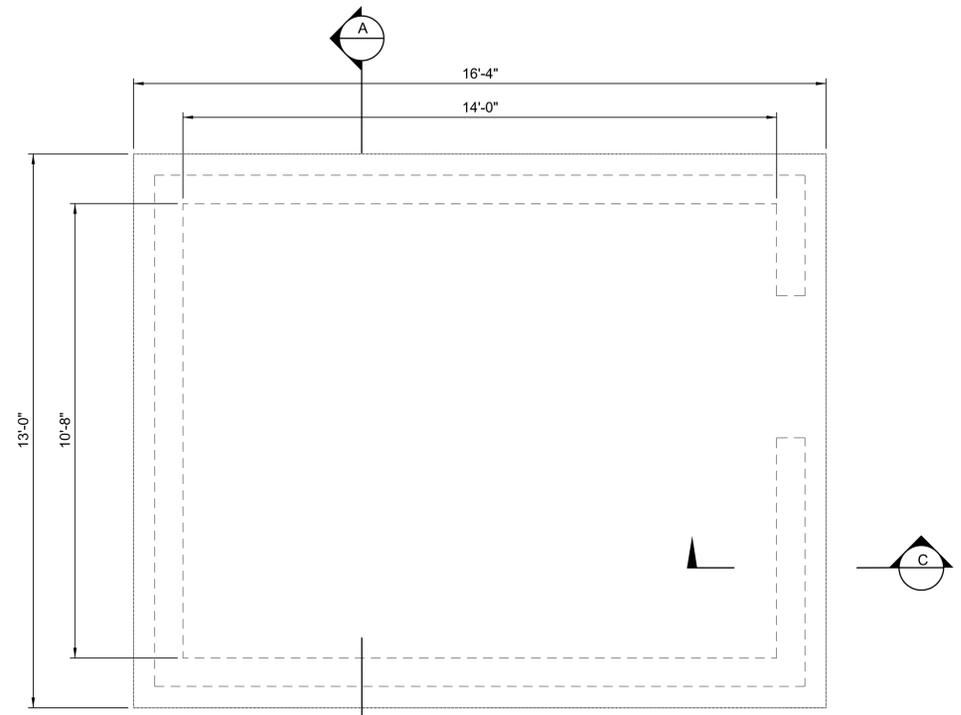


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
CONTROL HOUSE ELECTRICAL LIGHTING INSTALLATION			
FCC0001207	JOB EF11610123	DWG 21-D114.26	SHEET 26 OF 29

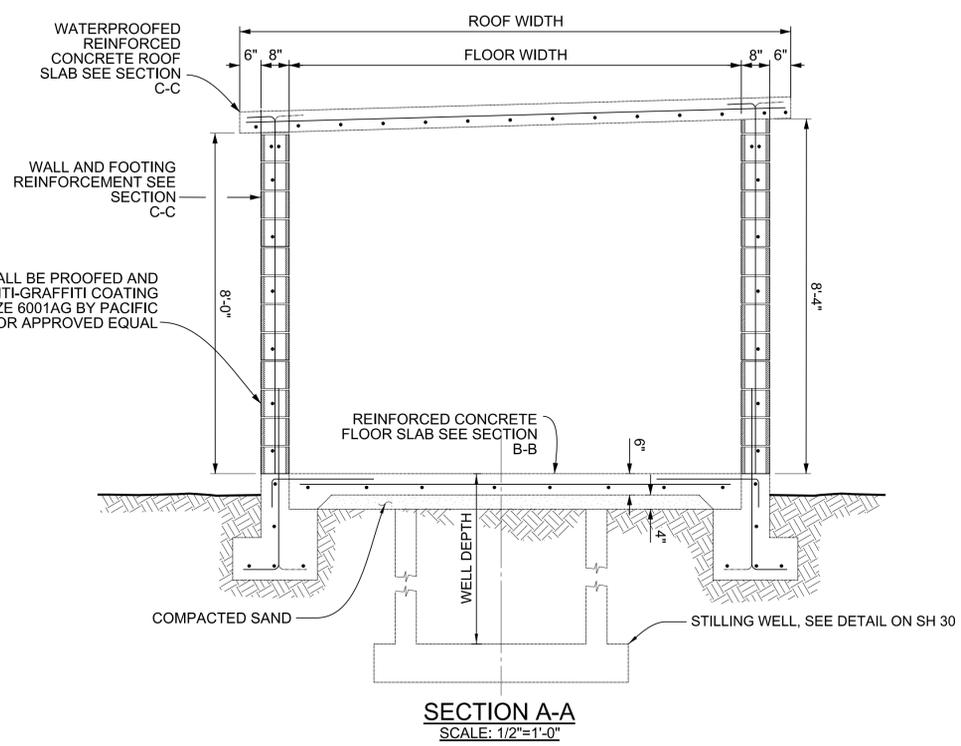
DATE _____
REVIEWED BY _____
CADD PROJECT FILE NAME PacoimaSGEnhancement.dgn
CHECKER J. LI
DESIGNER CHARLES C. CHEN
DRAFTER VISAL TE



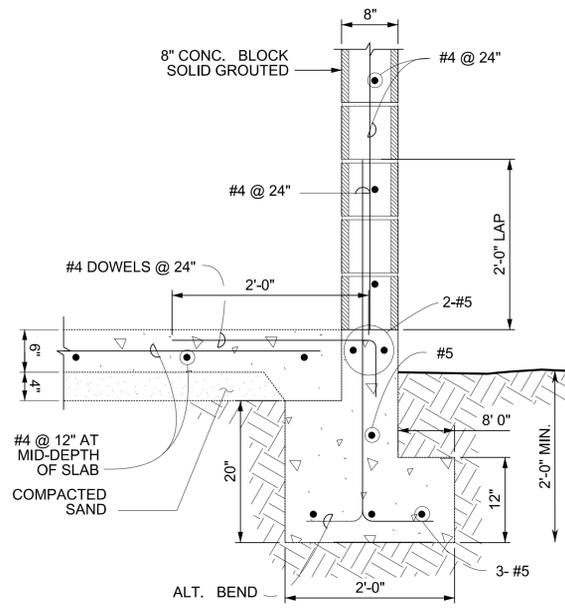
FLOOR AND FOUNDATION PLAN (SH. 14)
NOT TO SCALE



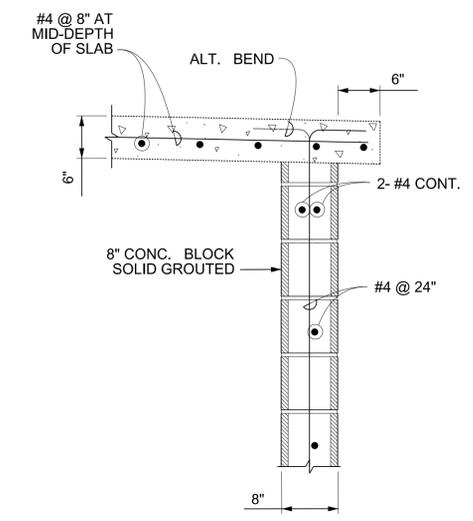
ROOF PLAN
SCALE: 1/2"=1'-0"



SECTION A-A
SCALE: 1/2"=1'-0"



SECTION B-B
TYP. EXTERIOR WALL FOOTING
SCALE: 1"=1'-0"



SECTION C-C
TYP. ROOF TO WALL DETAIL
SCALE: 1"=1'-0"

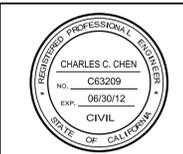
DATE	REVIEWED BY	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
		PacoimaSGEnhancement.dgn	J. LI	CHARLES C. CHEN	VISAL TE

EXTERIOR SHALL BE PROOFED AND PAINTED WITH ANTI-GRAFFITI COATING WITH ELASTO-GLAZE 6001AG BY PACIFIC POLYMERS OR APPROVED EQUAL

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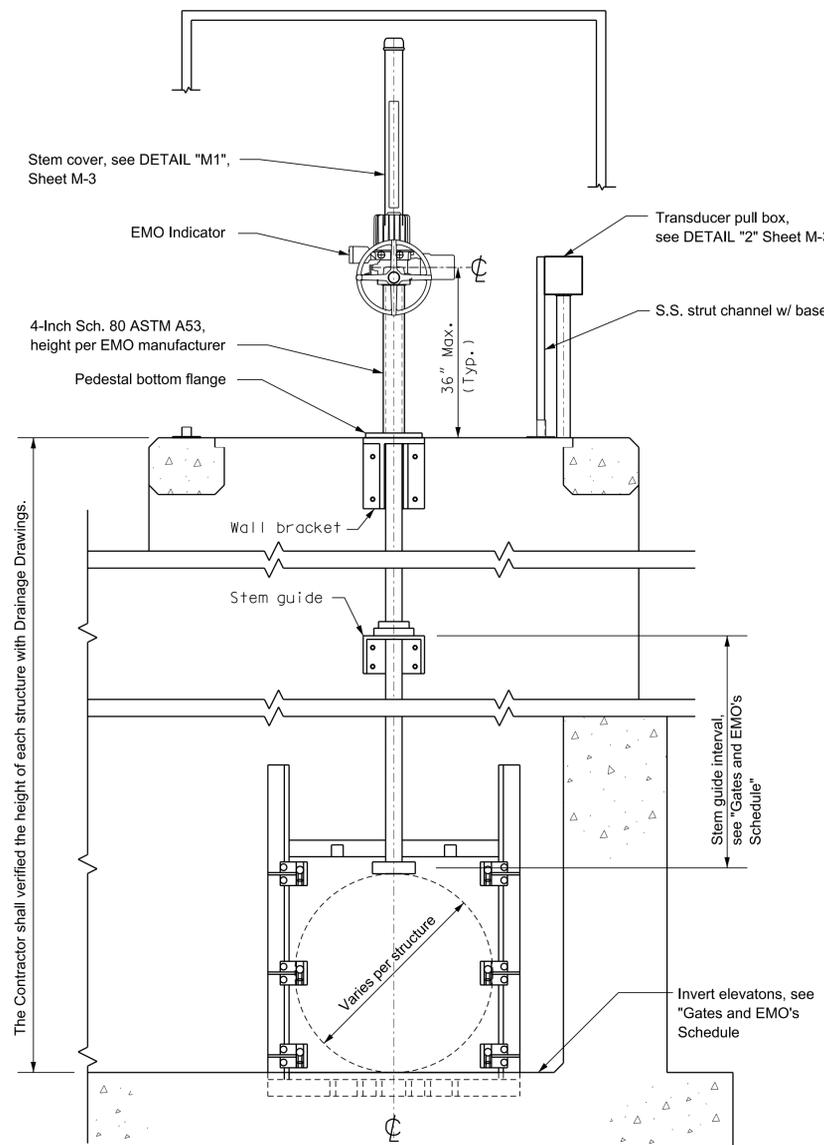
DATE	MK	DESCRIPTION
REVISIONS		



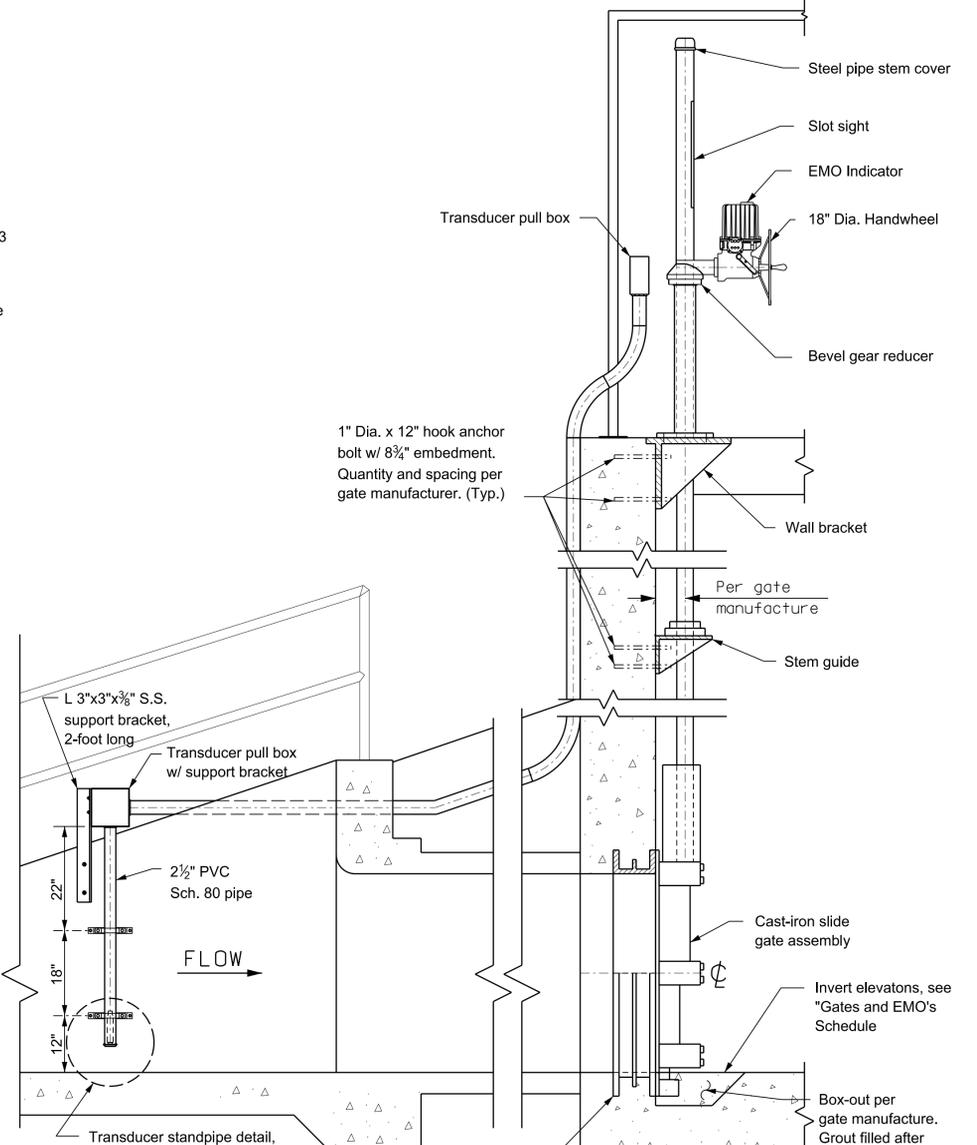
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
CONTROL HOUSE - PLAN AND SECTIONS			
FCC0001207	JOB EF11610123	DWG 21-D114.27	SHEET 27 OF 29

GATES AND EMO'S SCHEDULE

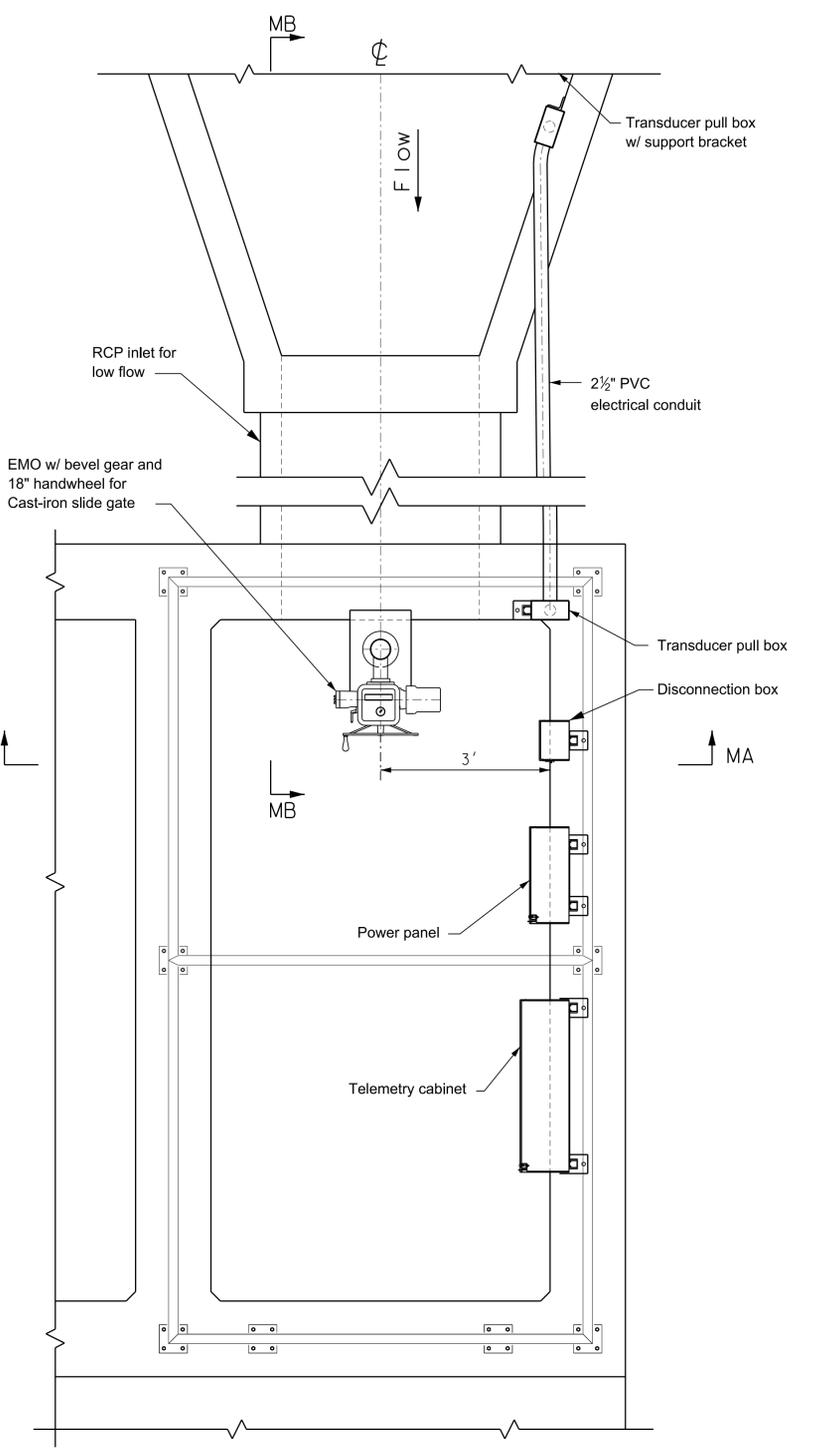
	Gate Type	Gate Size	Qty.	Inv. El. (Ft)	Max. WSE (Ft)	Max. Head (Ft)	Stem Dia. (Inches)	Min. Stem Guides	Stem Guide Interval (Ft)	Bevel Gear Reducer	EMO with Bevel Gear Drive		
											Motor Power Output (HP)	Output Torque (FT-lb)	Thrust Rating (Lb.)
W. Settling Basin to 3	Cast-iron slide gate	24"x24"	1	929.0	941.0	13.0	3.25	1	6.0	6:1	0.5	540	54,000
Basin 3 to 4	Cast-iron slide gate	24"x24"	1	922.0	936.0	15.0	3.25	1	6.0	6:1	0.5	540	54,000
Basin 4 to 5	Cast-iron slide gate	24"x24"	1	914.0	924.0	11.0	3.25	1	6.0	6:1	0.5	540	54,000
Basin 5 to 6	Cast-iron slide gate	36"x36"	1	905.0	916.0	12.5	3.25	1	6.0	6:1	0.5	540	54,000
Basin 6 to 60" Lateral	Cast-iron slide gate	36"x36"	1	898.0	908.0	11.5	3.25	1	6.0	6:1	0.5	540	54,000
E. Settling Basin to 1	Cast-iron slide gate	24"x24"	1	929.0	941.0	13.5	3.25	1	6.0	6:1	0.5	540	54,000
Basin 1 to 2	Cast-iron slide gate	36"x36"	1	918.0	930.0	13.5	3.25	1	6.0	6:1	0.5	540	54,000
Basin 2 to 6	Cast-iron slide gate	36"x36"	1	907.0	917.0	11.5	3.25	1	6.0	6:1	0.5	540	54,000



SECTION MA-MA,
TYPICAL CAST-IRON SLIDE GATE
AND EMO ELEVATIONS
SCALE: 1/2" = 1'-0"



SECTION MB-MB,
TYPICAL WALL THIMBLE, STEM GUIDE,
AND WALL BRACKET DETAILS
SCALE: 1/2" = 1'-0"



TYPICAL EQUIPMENT LAYOUT
FOR INTERBASIN STRUCTURES
SCALE: 1/2" = 1'-0"

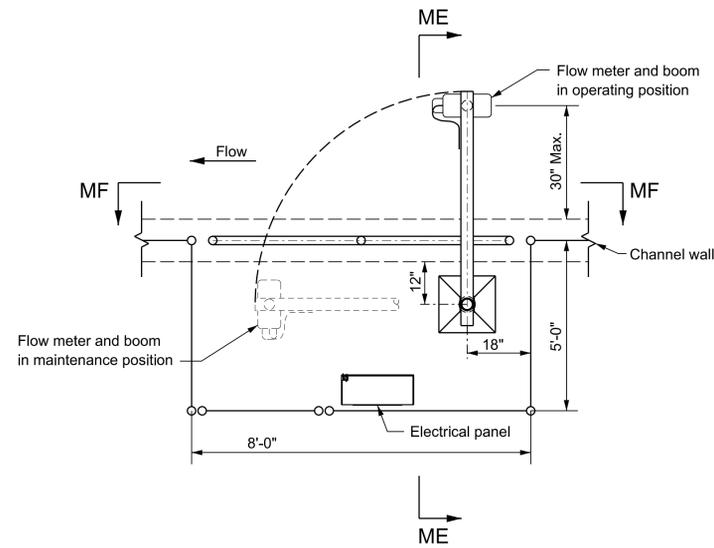
DATE: _____
REVIEWED BY: M. J. JAN
CADD PROJECT FILE NAME: _____
CHECKER: P. CHANG
DESIGNER: D. PONGPUN
DRAFTER: D. P. Z. M.

DATE	MR	DESCRIPTION

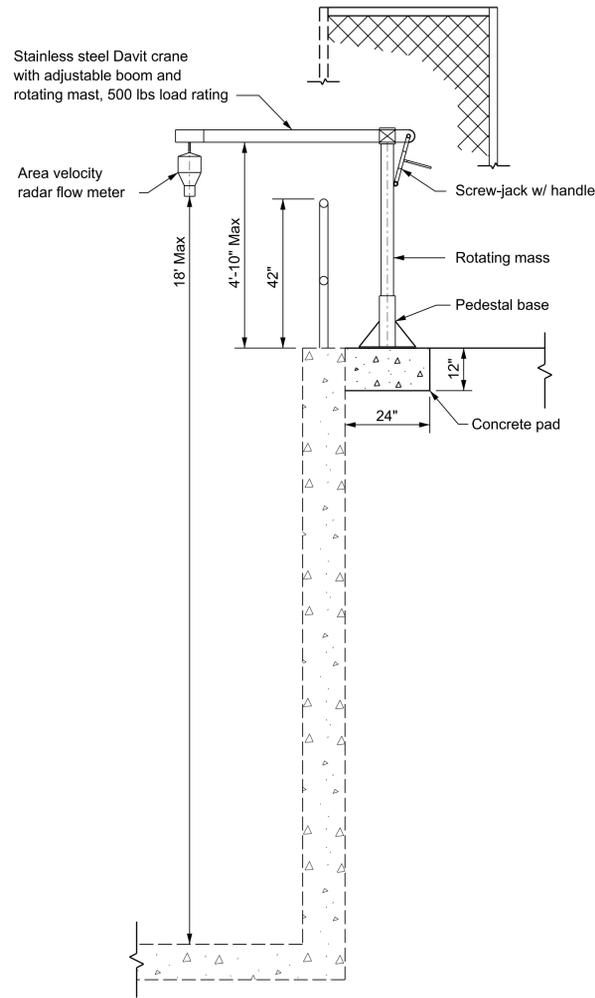
REGISTERED PROFESSIONAL ENGINEER
PETER CHANG
NO. M-029732
EXP. 6/30/2012
MECHANICAL
STATE OF CALIFORNIA

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
**PACOIMA SPREADING GROUNDS
ENHANCEMENT PROJECT**
TYPICAL EQUIPMENT LAYOUT
FOR INTERBASIN STRUCTURES

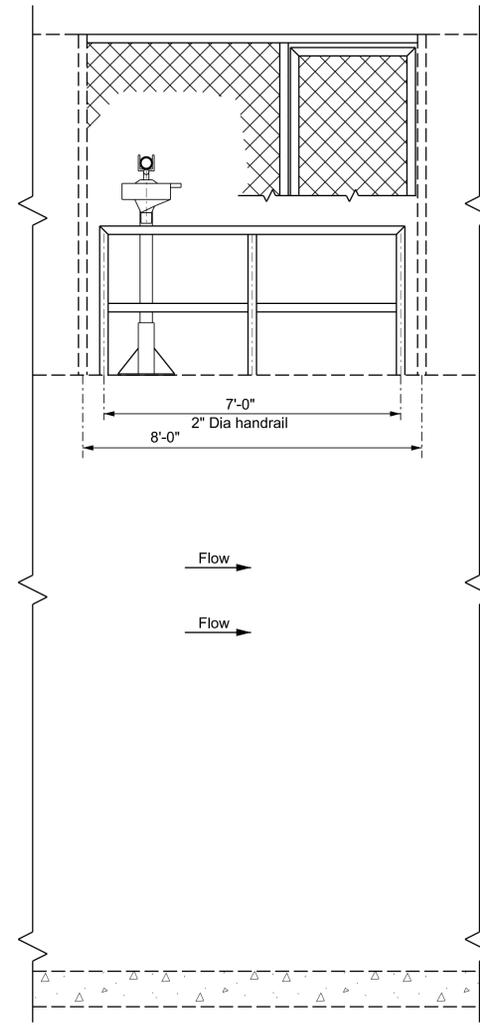
PROJECT ENGINEER: _____ DATE: _____
FCCXXXXX JOB XXXXX DWG XXXX SHEET 28 OF 29



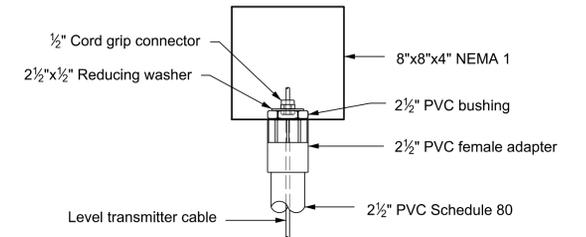
TYPICAL FLOW METER STATION LAYOUT
SCALE: 1/2" = 1'-0"



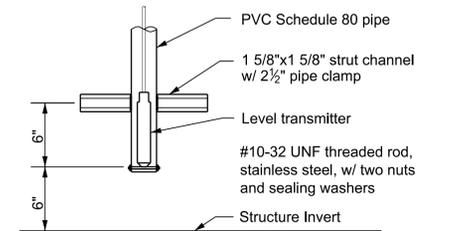
SECTION ME-ME
SCALE: 1/2" = 1'-0"



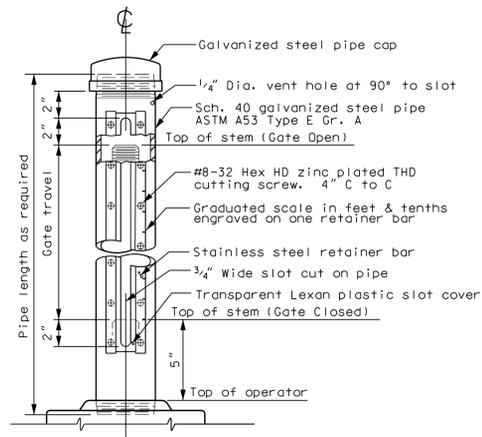
SECTION MF-MF
SCALE: 1/2" = 1'-0"



DETAIL "2" PRESSURE TRANSDUCER J-BOX
NOT TO SCALE



DETAIL "3" TRANSDUCER STANDPIPE END, (TYP.)
SCALE: 1/8" = 1'-0"



DETAIL "M1" STEM COVER
NOT TO SCALE

DATE	REVIEWED	CADD PROJECT FILE NAME	CHECKER	DESIGNER	DRAFTER
	By: M. J. JAN		P. CHANG	D. FONGPUN	D. P. Z. M.

DATE	MK	DESCRIPTION
REVISIONS		



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
PACOIMA SPREADING GROUNDS ENHANCEMENT PROJECT			
TYPICAL FLOW METER STATION AND INSTRUMENTATION DETAILS			
PROJECT ENGINEER	DATE	FCCXXXXXX	JOB XXXXX
DWG XXXX	SHEET 29 OF 29		

M-2

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