



<b>DOCKET</b>	
<b>08-AFC-5</b>	
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July 2, 2009

Mr. Christopher Meyer  
Project Manager  
Attn: Docket No. 08-AFC-5  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

Subject: SES Solar Two (08-AFC-5)  
DESCP/SWPPP  
URS Project No. 27657106.00603

Dear Mr. Meyer:

On behalf of SES Solar Two, LLC, URS Corporation Americas (URS) hereby submits the Drainage Erosion and Sediment Control Plan (DESCP)/Stormwater Pollution Prevention Plan (SWPPP).

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit the transcript on behalf of SES Solar Two, LLC.

Sincerely,

Angela Leiba  
Project Manager

AL:ml

**In Response to CEC & BLM Data Requests 31 and 32  
DESCP/SWPP - Volume 1  
Application for Certification (08-AFC-5)  
SES Solar Two, LLC**

**Submitted to:**  
**Bureau of Land Management**  
1661 S. 4th Street, El Centro, CA 92243



**Submitted to:**  
**California Energy Commission**  
1516 9th Street , MS 15, Sacramento, CA 95814-5504



**Submitted by:**  
**SES Solar Two, LLC**  
2920 E. Camelback Road, Suite 150, Phoenix, AZ 85016



**With Support From:**  
**URS Corporation**

**July 2009**



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Sincerely,

A handwritten signature in black ink, appearing to read "Angela Leiba", is centered below the "Sincerely," text. The signature is written in a cursive style.

Angela Leiba  
Project Manager

AL:ml

**DRAFT DRAINAGE EROSION AND  
SEDIMENT CONTROL PLAN**

SOLAR TWO  
IMPERIAL COUNTY

PREPARED FOR:  
**STIRLING ENERGY SYSTEMS, LLC**

URS PROJECT No. 27657106

**JULY 2, 2009**

**D R A F T   R E P O R T**

# **DRAINAGE EROSION & SEDIMENT CONTROL PLAN FOR SOLAR TWO**

Prepared for

SES Solar Two, LLC  
4800 N. Scottsdale Road, Ste. 5500  
Scottsdale, AZ 85251

URS Project No. 27657106



---

Matthew C. Moore, PE, CPESC, CPSWQ  
Project Engineer

July 2, 2009

**URS**

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## List of Acronyms and Abbreviations

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af	acre-feet
AFC	Application for Certification
afy	acre-feet per year
BFE	Base Flood Elevation
bgs	below ground surface
BMP	Best Management Practices
CEC	California Energy Commission
cf	cubic feet
cfs	cubic feet per second
CWA	Clean Water Act
cy	cubic yard
DESCP	Drainage Erosion and Sediment Control Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ft	feet
GPS	Global Positioning System
in/hr	inch per hour
kV	kiloVolt
MSL	Mean Sea Level
NFF	National Flood Frequency
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OWS	Oil Water Separator
PG&E	Pacific Gas & Electric
ROW	Right-of-Way
RUSLE2	Revised Universal Soil Loss Equation 2
RWQCB	Regional Water Quality Control Board
SDG&E	San Diego Gas & Electric
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USGS	United States Geological Survey
WDID	Waste Discharge Identification
WUS	Water of the United States
yr	year

## SECTION 1 INTRODUCTION

### 1.1 OBJECTIVES

This Drainage, Erosion & Sediment Control Plan (DESCP) was prepared in response to data requests from the California Energy Commission (CEC) and has three main objectives:

- Discuss site drainage and clearing/grading operations;
- Provide specific details pertaining to: temporary soil stabilization, temporary sediment control, wind erosion control and tracking control;
- Discuss the maintenance schedule of temporary soil stabilization, temporary sediment control, wind erosion control and tracking control; and
- Identify measures that are proposed to prevent erosion and sedimentation in the completed condition of the project.

This project involves a site disturbance of one acre or greater, so it will comply with the requirements of the National Pollutant Discharge Elimination System (NPDES). The Applicant will submit a Notice of Intent (NOI) to comply with the General Permit for Construction Activity with the State Water Resources Control Board (SWRCB) and complete construction and industrial phase Stormwater Pollution Prevention Plans prior to construction and operation. The Applicant will provide the County with the Waste Discharge Identification Number (WDID No.) or with verification that an exemption has been granted by the Regional Water Quality Control Board (RWQCB).

#### 1.1.1 CEC Data Request

Following are the data requests provided by the CEC for preparation of this DESCP:

- **Vicinity Map** – A map shall be provided indicating the location of all project elements with depictions of all significant geographic features to include watercourses, washes, irrigation and drainage canals, and sensitive areas. Refer to Figure 1, Vicinity Map.
- **Site Delineation** – The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities. Refer to Figure 2, Site Delineation Map.
- **Watercourses and Critical Areas** – The DESCP shall show the location of all nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Refer to Figure 3, Watercourses and Critical Areas Map.
- **Drainage** – The DESCP shall provide a topographic site map showing all existing, interim, and proposed drainage systems, drainage area boundaries, watershed sizes in acres, and the hydraulic analysis to support the selection of best management practices (BMPs) to divert off-site drainage around or through the site and laydown areas. Spot elevations shall be required where relatively

flat conditions exist. The spot elevations and contours shall be extended off-site for a minimum distance of 100 feet in flat terrain. Refer to Figure 4, Drainage Map.

- **Clearing and Grading** – The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall include a statement of the quantities of material excavated or filled for each element of the project (for example, project site, transmission corridors, and pipeline corridors), whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there will be no clearing and/or grading conducted for each element of the project.
- **Project Schedule** – The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). Separate BMP implementation schedules shall be provided for each project element for each phase of construction. Refer to Figure 5, BMP Phase Map.
- **Best Management Practices** – The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.
- **Erosion Control Drawings** - The erosion-control drawings and narrative shall be designed and sealed by a professional engineer or erosion-control specialist. The Erosion Control Drawings are located in Appendix A.

A preliminary Storm Water Pollution Prevention Plan (SWPPP) is provided in Appendix B.

## 1.2 PROJECT DESCRIPTION

SES Solar Two, LLC (Solar Two or Applicant) is seeking approval to construct and operate the Solar Two Project and its ancillary facilities (Project). The Project will consist of approximately 30,000 solar dish Stirling systems (referred to as SunCatchers), their associated equipment and systems, and their support infrastructure, producing up to a nominal 750 megawatts net. The proposed Solar Two Project will be owned and operated by the Applicant. The solar field will operate daily from sunrise to sunset. Typical operating hours for Solar Two will be an average of 3,500 hours per year.

The total area required for the Project, including the area for the operation and administration building, the maintenance building, and the substation building, is approximately 6,500 acres. The Project will have two laydown areas. One laydown area will be located on approximately 100 acres east of Dunaway Road and north of I-8. The other laydown area will be located on approximately 11 acres adjacent to and immediately south of the Main Services Complex. The Project is located in the Imperial Valley of

California. The Project Site is approximately 100 miles east of San Diego, 14 miles west of El Centro, and approximately 4 miles east of Ocotillo Wells. A Project Vicinity Map is provided as Figure 1.

The construction laydown area includes areas for staging, equipment and material storage, component fabrication and assembly; construction offices and buildings; and a temporary fueling station. The main entry for truck traffic to the Project Site during construction will be from Interstate 8 (I-8) to the Project entrance on Dunaway Road. Traffic will exit the Project Site at the north end of the site onto the Evan Hewes Highway.

### **1.3 PROJECT SCHEDULE**

SES anticipates receipt of the CEC license to construct by Fourth Quarter 2009. Construction of the Project, from site preparation and grading to full commercial operation, is expected to take approximately 40 months. Site construction activities will commence in the First Quarter of 2010 and continue through the 40-month construction schedule. Phase I of the Project is scheduled to be online and available for dispatch into the grid on or before the Third Quarter 2011. It is currently anticipated that the entire Solar Two will be online and in commercial service by the First Quarter of 2012.

Heavy construction will be scheduled to occur between 7:00 am and 7:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

Some activities will continue 24 hours per day, 7 days per week. These activities include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

## SECTION 2 DRAINAGE

### 2.1 DRAINAGE PATTERNS AND FLOODING

#### 2.1.1 Existing Drainage Patterns

The project site is located within the Yuha Desert in Imperial County. More specifically, the Project Site lies within the Brawley Hydrologic Area, which lies within the Colorado Desert Hydrologic Region that covers approximately 1,870 square miles in Southern California (see Figure 5.5-1 in the Project Application for Certification (AFC) Document). There are no known named drainages within the project site with beneficial uses listed within the Colorado River Basin RWQCB Basin Plan for the Brawley Hydrologic Unit. Annual average rainfall in the vicinity of the project is approximately 3 inches.

The Project site currently consists primarily of undisturbed desert terrain and vegetation. The Project Site is located on a gently sloping alluvial surface with elevations ranging from approximately 300 feet to zero feet above mean sea level (MSL). The portion of on-site stormwater runoff that is not absorbed into the ground is sheet and channel flow and follows the terrain to the east into the Westside Main Cannel which is approximately 6 miles from the Project, and then is tributary to Salton Sea over 30 miles north of the Project. See Figure 3 for the watersheds in the vicinity of the Project.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Numbers 0600650775B, 0600650975B and 0600650935B (1984) show that parts of the Project area are within FEMA designated 100-year 'Zone A' floodplain areas. The site will be subject to flooding as illustrated in Figure 6-1 of the *Solar Two AFC, Appendix N, Initial Drainage Report*. Figure 6-1 is located in Appendix C of this DESCP. Base Flood Elevations (BFE) have been established in the Initial Drainage Report for these areas. BFE is the flood elevation that has a one percent chance of being equaled or exceeded each year in a given location.

#### 2.1.2 Proposed Drainage Patterns

##### 2.1.2.1 On-site Drainage

Stormwater runoff for the Solar Two Project is directed from the paved (i.e., roads and parking lots) and non-paved areas to existing washes. Minimized grading shall direct storm water runoff into the existing washes that traverse the site. Given its desert nature and the very limited rainfall that occurs on the Yuha Desert, the majority of the water from this low intensity rainfall will be absorbed into the ground.

A number of well-defined washes cross the site. Several of these convey the larger off-site flows through the culverts at Interstate 8. Others are smaller and convey on-site runoff. These eventually join with the larger washes. Several areas of the site also exhibit sheet flow conditions in areas where well-defined natural channels do not exist. Flooding conditions on the site are possible during short duration, intense thunderstorms. Given the small area of the on-site watershed in comparison with the much larger off-site watershed, on-site flow peaks may pass before the off-site flows reach the site. Since thunderstorms typically cover small aerial extents, it is possible that localized flooding could be experienced in parts of the site while other parts may remain unaffected.

Most runoff crossing the site generally flows in the northern and eastern direction, eventually reaching the railroad tracks or exiting the eastern project boundary. Flows in the westernmost basins exit the project area by continuing to flow north through existing railroad trestles. Centralized flows reaching the railroad tracks will follow existing drainage east along the railroad until exiting the eastern site boundary.

Rain falling in the power block area will be collected and directed to the existing washes. Minimal grading will allow the water to maintain the same general pattern of discharge off-site. Rainfall from vehicle parking and building rooftops in the power block will be collected and directed to storm water retention basins. Volume of retention or detention basins shall have a total volume capacity for a 3-inch minimum precipitation for the design tributary area with no reduction in runoff coefficient factors. Volume can be considered by a combination of basin size and additional volume provided within paving and/or landscaping areas. The retention basins will be designed so that the retained flows will empty within 72 hours after the storm to reduce vector control issues. This design can be accomplished by draining, evaporation, infiltration, or a combination thereof.

Stormwater discharges from construction activities are subject to BMPs designed and implemented for construction activities. From a temporary construction perspective, groundwater is not expected to be encountered during construction; however, if necessary, appropriate construction BMPs will be used to minimize impacts to surface water and groundwater quality. Although there will be minimal changes in absorption rates, drainage patterns, or the rate or amount of surface runoff due to the surface modifications and the presence of new structures, surface water runoff will be conveyed, contained, and allowed to evaporate, percolate, or drain similar to existing conditions.

### *2.1.2.2 Off-site Drainage*

In general, drainage in the area flows north to northeast. As shown, there are several significant watersheds south of Interstate 8 that generally drain northeasterly, under the Interstate and continue through the project site. As shown in the Drainage Map (Figure 4), these basins have been labeled A through H. From these basins, off-site flows collect in roadside ditches along the south side of the Interstate and are directed through culverts which pass the flow under the Interstate 8 embankment.

The Caltrans design criteria for flow crossing the interstate is the 100-year storm (Carrington, Pers Comm. 2006). It is therefore assumed that all storm flow, up to the 100-year flood, will be passed through the culverts and into the project site. Nevertheless, flow constriction at the culverts causes some of the sediment to drop out on the south side of the highway as evident from field inspection and aerial photography. However, significant amounts of sediment are still transported through the culverts.

Basins A, B, C, I, J & K transverse the western portions of the project site. For these drainages, flows enter the site from south of the Interstate and flows north across site, exiting to the north at Evan Hewes Highway. Basin D represents a relatively large area south of the Interstate which contributes flow bounded by the railroad embankment, collects and is conveyed east along the railroad tracks. Basins E, G and H represent well defined channels originating south of the Interstate and flow northeast across the project site, exiting the eastern project boundary. Generally, all off-site and on-site flows converge in the northeastern corner of the railroad embankment and Dunaway road beyond the eastern border of the site.

Ultimately, the off-site runoff and any excess on-site runoff that is not infiltrated will be conveyed into the main drainage channel(s), and a number of debris basins. The calculations for the debris basins are in Appendix D. The project site will be designed in such a way that 100-year flow will be contained in the existing floodplain as shown in Figure 6-1 of the Initial Drainage Report.

## 2.2 DRAINAGE CALCULATIONS

USGS regression equations were used to quantify the runoff generated from the off-site watersheds. The regression equations were developed from peak-discharge records of 10 years or longer, available as of 1975, at more than 700 gaging stations throughout the State. The project site is within the South Lahontan-Colorado Region. Therefore, the regression equations used were specific for that region. The following table illustrates the anticipated surface runoff tributary to the project site from off-site areas. Refer to the Drainage Map, Figure 4.

**Table 1**  
**Off-site Flowrates**

Design Point	Area		Q10 (cfs)	Q25 (cfs)	Q100 (cfs)
	(Acre)	(mi <sup>2</sup> )			
A-South	375	0.59	144	282	587
A-North	701	1.1	212	425	906
B-South	146	0.23	80	153	307
B-North	294	0.46	123	241	496
C-South	1,047	1.64	271	551	1,194
C-North	1,926	3.01	396	819	1,818
D	2,573	4.02	474	988	2,220
E-South	918	1.43	250	506	1,090
E-North	1,616	2.52	355	730	1,610
D/E Outfall	5,372	8.39	748	1,594	3,689
F	855	1.34	239	483	1,038
G-South	1,252	1.96	303	619	1,351
G-North	1,753	2.74	374	770	1,704
H-South	1,030	1.61	269	545	1,180
I-South	928	1.45	252	509	1,098
I-North	1,167	1.82	290	591	1,287
J-South	117	0.18	70	132	263
J-North	318	0.5	130	254	524
K-South	408	0.64	151	299	623
K-North	632	0.99	198	397	842

The 100-year, 24-hour storm event produces a rainfall of 0.14-inches per hour (in/hr) for a total rainfall of approximately 3.4-inches. Calculations for this storm event frequency would produce 600 acre-feet of rainwater across the solar field.

The proposed site design will maintain existing washes remain in place, and direct flows towards these washes. Due to the size of the project and the larger size of the off-site watershed, there is no anticipated change in the runoff coefficient. Furthermore, the increase in impervious area is negligible. For comparisons of pre- and post-project flow rates, see below.

Total site area (including construction laydown area)	<u>6500</u> acres
Percentage impervious area before construction	<u>0</u> %
Runoff coefficient before construction	<u>0.40</u>
Percentage impervious area after construction*	<u>3</u> %
Runoff coefficient after construction	<u>0.40</u>

\* Percentage impervious conservatively assumes entire power block, access road, and parking areas are impervious. Areas under the SunCatchers are pervious.

Based upon the current layout, portions of the project are within the FEMA delineated 100-year, Zone A floodplain limits. Based upon the 100-year flood flowrates calculated and provided in Table 2, the 100-year flood depths in this area are approximately 0.5 to 6 feet deep. The SunCatchers within the floodplain would be placed above this depth. (Solar Two AFC Appendix N, Initial Drainage Report)

**Table 2  
On-site Flowrates**

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Velocity (ft/s)	Top Width (ft)
<b>Basin A</b>					
A-1	100-YR	906	0.44	3.6	634
	10-YR	212	0.19	2.1	575
<b>Basin B</b>					
B-1	100-YR	496	1.48	6.4	93
	10-YR	123	0.88	4.2	66
<b>Basin C</b>					
C-1	100-YR	1,818	1.9	5	504
	10-YR	396	1.17	3.8	214
<b>Basin D</b>					
D-1	100-YR	2,220	2.65	7.4	311
	10-YR	474	0.98	6.9	79

**Table 2**  
**On-site Flowrates**  
**(Continued)**

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Velocity (ft/s)	Top Width (ft)
<b>Basin E</b>					
113	100-YR	1090	2.15	7	101
113	10-YR	250	1.05	4.2	71
112	100-YR	1090	1.53	5.5	206
112	10-YR	250	0.68	3.9	122
111	100-YR	1090	1.42	5	292
111	10-YR	250	0.87	3.4	148
110	100-YR	1090	1.17	5.8	179
110	10-YR	250	0.45	3.7	155
109	100-YR	1090	1.54	6.6	122
109	10-YR	250	0.63	4.1	104
108	100-YR	1090	1.21	4.9	298
108	10-YR	250	0.71	3.1	271
107	100-YR	1090	1.07	3.8	741
107	10-YR	250	0.62	2.5	438
106	100-YR	1516	1.08	4	809
106	10-YR	336	0.68	2.8	494
<b>Basin G</b>					
206	100-YR	1351	6.38	10.1	42
206	10-YR	303	3.51	7.5	23
205	100-YR	1351	1.41	5.2	321
205	10-YR	303	0.73	3.6	195
204	100-YR	1351	1.45	6.3	173
204	10-YR	303	0.59	4.1	148
203	100-YR	1351	2.27	5.2	162
203	10-YR	303	1.22	3.3	108
<b>Basin H</b>					
305	100-YR	1622	0.76	4.8	485
305	10-YR	357	0.28	3	438
<b>Basin I</b>					

**Table 2**  
**On-site Flowrates**  
**(Continued)**

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Velocity (ft/s)	Top Width (ft)
950	100-YR	1,287	1.96	5.9	222
950	10-YR	290	1.12	4.1	127
<b>Basin J</b>					
901	100-YR	524	0.99	4.2	215
901	10-YR	130	0.54	2.9	138
<b>Basin K</b>					
801	100-YR	842	0.8	4.5	330
801	10-YR	198	0.43	2.7	274
802	100-YR	842	1.38	5.1	219
802	10-YR	198	0.72	3.9	104

Source: Solar Two AFC, Appendix N, Initial Drainage Report

### SECTION 3 CLEARING AND GRADING

The anticipated quantities of permanent material excavated or filled for the site and project elements (project site, laydown area, transmission corridors, and pipeline corridors) are illustrated in Table 3. Grading for areas with slopes steeper than 10% is estimated at 355,000 cubic yards and road grading with 4:1 slopes is estimated at 95,000 cubic yards.

**Table 3**  
**Anticipated Grading Quantities**

Cut	Fill	Import	Export
450,000 cy	450,000 cy	0 cy	0 cy

Source: Grading Plan, Stantec, 2009.

#### 3.1 SITE PREPARATION

Site facilities and amenities will be established during the first 120 working days of the solar field build out. Initial construction will include the site access roadways, the construction laydown area and fencing. Site facilities and amenities will be established during the second month of solar field build out. The facilities will consist of site offices, restroom facilities, meal rooms, parking areas, vehicle marshalling areas, and construction material/equipment storage areas.

The eastern portion of the Project Site is generally flat, sloping gently to the northeast. The central and western portions of the site are characterized by low and moderate relief alluvial zones and washes. Site elevations range from approximately 0 feet to 345 feet above mean sea level. The 100-acre laydown area east of Dunaway Road is nearly level and thus requires little grading. The 11-acre laydown area adjacent to the Main Services Complex is on a gently sloping, rocky area that will require minimum grading and fill operations to create a level area. Pads will be prepared for setting the trailers housing the temporary construction facilities. No fill is anticipated, but in the event fill is required, material present on-site is expected to be adequate, subject to final geotechnical evaluation.

Site clearing and grading will occur during the first six months of construction. Preliminary numbers based on the Grading and Drainage Plan are 450,000 cubic yards of cut and 450,000 cubic yards of fill. (Grading Plan, Stantec 2009.)

The earth works process will be undertaken using standard contractor equipment. This will consist of dozers, elevating scrapers, hydraulic excavators, tired loaders, compacting rollers, and dump trucks.

#### 3.2 FOUNDATIONS

Based on preliminary geotechnical investigations, it is expected that lightly loaded equipment and structures, including some of the equipment foundations in the substation yard, small equipment such as the fire water pump and standby generator, the support structures for the water treatment plant and the

hydrogen storage area, and the transmission line lattice steel towers will be supported on shallow footings. Shallow footings will be continuous strip and isolated spread footings.

The majority of the SunCatcher units will be supported by a single metal fin-pipe foundation that is hydraulically driven into the ground. These foundations are expected to be approximately 20 feet long and 24 inches in diameter, with 12-inch wide fins extending from each side of the pipe pile. Shallow drilled pier concrete foundations of approximately 36 inches in diameter and an embedment depth with a minimum socketed depth into rock of 6 feet would be used for hard and rock-like ground conditions.

The buildings and major structures such as yard tanks will be supported on shallow spread and continuous footings or mat-type foundations. Deep foundations will be required for heavy items, such as the power transformers at the electrical substation.

### **3.3 GROUNDWATER**

Groundwater levels are a minimum of 45 feet below ground surface (bgs). The deepest Solar Two Project excavations are anticipated to be approximately 20 feet deep for the SunCatcher metal fin-pipe foundations. Accordingly, the Project does not anticipate encountering groundwater and does not expect to have to dewater. If groundwater is encountered and dewatering is required, then approved BMPs (*e.g.*, NS-2 from the State of California Department of Transportation Construction-site Best Management Practices Manual) will be employed.

### **3.4 SUNCATCHER CONSTRUCTION**

During the construction, temporary site services will be in place. Power will be provided by mobile diesel generators. Water will be available at points around the site, as well as on a series of mobile equipment.

Construction will generally progress from the northern boundary towards the south through each block. As a result of this simultaneous construction, construction within the solar field, construction of linears, and associated earth moving operations will occur throughout the majority of the 40-month construction period.

### **3.5 TRANSMISSION FACILITIES**

The Solar Two Project will be connected to the power grid through the SDG&E Imperial Valley Substation by a double-circuit, three-phase, 230-kV transmission line. It is expected that SDG&E will complete final design and construction of transmission facilities and reliability upgrades (should they be required).

The Solar Two Project transmission system will require construction of approximately 10.3 miles of double-circuit, 230-kV transmission line. As depicted on Figure 1, the Project transmission line extends from the Project Site substation to a point inside the ROW of the SDG&E Imperial Valley Substation. Each circuit of the overhead line begins at a dead-end structure in the Project substation, continues south and east through the Project Site, and transits southeast adjacent to the SDG&E 500-kV Southwest Powerlink transmission line to the Imperial Valley Substation. The transmission line starts within the

Project Site boundary, but a 7.56-mile-long segment that connects to the Imperial Valley Substation is outside the Project Site boundary. Construction of the line will include dead-end structures in the substation and 85 to 100 lattice steel towers and/or tubular steel poles with concrete foundations and new 1,590-kilo circular miles aluminum steel-reinforced conductors for each circuit.

The power poles will be spaced approximately 650 feet to 800 feet apart (the final calculation will take into account the grading and other factors to determine the final spacing).

The construction of the Solar Two Project transmission line will involve the facilities listed below.

- **Staging Areas:** These yards are staging areas for trailers, office personnel, equipment, material staging, and employee parking and will be provided in a disturbed area (within a 100-acre laydown area) along the eastern boundary of the Project Site, just east of Dunaway Road.
- **Road Work:** As needed, dirt roads will be cleared for access along the on-site transmission line route to coincide with the southern perimeter road for the Project Site. These roads will provide access to the tower locations. Where the off-site transmission line parallels the existing 500-kV Southwest Powerlink transmission line, the existing access road to the existing transmission line will be utilized. Short access roads will be constructed from the existing access road to each transmission tower along the route. Dirt roads will be cleared for access along the east-west portion of the off-site transmission line from the Southwest Powerlink ROW to the Imperial Valley Substation.
- **Foundations:** Each pole will have a foundation installed that will require curing before the tower or pole installation. These pole foundations will be installed in locations that avoid sensitive environmental resources identified in Project environmental surveys.
- **Tower Erection:** Where used, steel tower structures will be shop-fabricated to the maximum extent possible and erected at the site. The cross arms, insulators, and other hardware will be installed on the towers to the maximum extent possible before erection.
- **Pole Erection:** Where used, each pole will be made up of two sections, which will be assembled on-site and welded together. Afterward, insulators and conductor hardware will be installed.
- **Conductors:** From pulling sites, the conductors will be installed, sagged, and permanently connected to the insulators.
- **Pulling Sites:** Approximately five pulling sites are required to install the conductors along the transmission line. The pulling sites will be located on existing access roads or access roads that will be constructed as part of the transmission line installation.
- **Communication System:** The overhead ground/fiber optic communications optical ground wire cables will be installed using the same pulling sites used for the conductor installation.
- **Cleanup:** Although cleanup will be ongoing as the work proceeds, once construction is completed, a final cleanup of the entire transmission construction-site will be performed to clear the area of any remaining construction-related debris.

**SECTION 4 CONSTRUCTION BMPS**

This DESC includes erosion control measures that will be implemented on this project and will include source control, including protection of stockpiles, protection of slopes, protection of all disturbed areas, and protection of access roads. In addition, perimeter containment measures shall be placed prior to the commencement of grading and site disturbance activities unless the Imperial County Public Works Department determines temporary measures to be unnecessary based upon location, site characteristics or time of year. The intent of erosion control measures shall be to minimize sediment from entering swales, drainage ways, watercourses, or adjacent properties.

Stormwater discharges from construction activities require BMPs designed and implemented for construction activities. Approved BMPs appropriate to the site and specific conditions will be selected from the State of California Department of Transportation Construction-site Best Management Practices Manual (or equivalent source). Selected BMPs may include, but are not limited to, the following, as appropriate:

- Temporary Soil Stabilization techniques such as scheduling construction sequences to minimize land disturbance during the rainy and non-rainy seasons and employing BMPs appropriate for the season; preservation of existing vegetation by marking areas of preservation with temporary orange propylene fencing; use of geotextiles, mats, plastic covers or erosion control blankets to stabilize disturbed areas and protect soils from erosion by wind or water; use of earth dikes, drainage swales and lined ditches to intercept, divert and convey surface runoff to prevent erosion; use of outlet protection devices and velocity dissipation devices at pipe outlets to prevent scour and erosion from stormwater flows.
- Sediment Control techniques including use of silt fences, straw bales, and/or fiber rolls to intercept and slow the flow of sediment laden runoff such that sediment settles before runoff leaves the site.
- Wind Erosion control by applying water or dust palliatives as required to prevent or alleviate wind blown dust.
- Tracking Control techniques to limit track-out include stabilized points of entering and exiting the site and stabilized construction roadways on the site.

**4.1 IMPLEMENTATION SCHEDULE**

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

The final Stormwater Pollution Prevention Plan (SWPPP) shall provide a graphical project schedule. The schedule shall clearly show how the rainy season relates to soil-disturbing and re-stabilization activities. The schedule shall contain an adequate level of detail to show major activities sequenced with implementation of construction-site BMPs, including:

- Project start and finish dates.
- Rainy season dates.
- Annual certifications.
- Mobilization dates.
- Mass clearing and grubbing/roadside clearing dates.
- Major grading/excavation dates.
- Special dates named in other permits such as Fish and Game and Army Corps of Engineers Permits.
- Dates for submittal of SWPPP Amendments required by the contract documents.
- Annual submittal of rainy season implementation schedule if required by the Owner or Permittee.
- Dates for implementation of pre-rainy season temporary soil stabilization and temporary sediment control BMPs, if required by the contract documents.
- Rainy season implementation schedule.
  - Deployment of temporary soil stabilization BMPs.
  - Deployment of temporary sediment control BMPs.
  - Deployment of wind erosion control BMPs.
  - Deployment of tracking control BMPs.
  - Deployment of non-stormwater BMPs.
  - Deployment of waste management and materials pollution control BMPs.
- Non-rainy season implementation schedule.
  - Deployment of temporary soil stabilization BMPs.
  - Deployment of temporary sediment control BMPs.
  - Deployment of wind erosion control BMPs.
  - Deployment of tracking control BMPs.
  - Deployment of non-stormwater BMPs.

- Deployment of waste management and materials pollution control BMPs.
- Paving, saw-cutting, and any other pavement related operations.
- Major planned stockpiling operations.
- Dates for other significant long-term operations or activities that may plan non-stormwater discharges.
- Final stabilization activities staged over time for each area of the project.

## **4.2 TEMPORARY SOIL STABILIZATION (EROSION CONTROL)**

The following measures will be used in the project for erosion control.

### **4.2.1 Scheduling**

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purposes is to reduce the amount and duration soil is exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

### **4.2.2 Preservation of Existing Vegetation**

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing vegetation that protect soil from erosion.

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where local, state, and federal government require preservation, such as drainage features. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

### **4.2.3 Soil Binders**

Soil binders consist of applying and maintaining a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water induced erosion of exposed soils on construction sites. Soil binders also prevent wind erosion. The exact soil binder to be used is being discussed with the regulatory agencies.

#### **4.2.4 Earth Dikes/Drainage Swales & Lined Ditches**

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off-site runoff around the construction-site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

#### **4.2.5 Outlet Protection/Velocity Dissipation Devices**

Outlet protection is a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel to prevent scour of the soil caused by concentrated, high velocity flows.

Whenever discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This includes temporary diversion structures to divert run-on during construction. Velocity dissipation will be used at all culvert outlet locations.

#### **4.2.6 Erosion Control Blankets and Geotextiles**

The overall existing and proposed site is relatively flat with intermitted areas of steep terrain. Therefore, rolled erosion control materials will be used at limited areas throughout the site. Geotextiles, mats, plastic covers or erosion control blankets will be considered for use on slopes steeper than 3 to 1 (including stockpiles) to protect soils from erosion by wind or water.

#### **4.2.7 Streambank Stabilization**

Stream channels, streambanks, and associated riparian areas are dynamic and sensitive ecosystems that respond to changes in land use activity. Streambank and channel disturbance resulting from construction activities can increase the stream's sediment load, which can cause channel erosion or sedimentation and have adverse affects on the biotic system. BMPs can reduce the discharge of sediment and other pollutants to minimize the impact of construction activities on watercourses.

Specific permit requirements or mitigation measures if applicable, such as RWQCB 401 Certification, U.S. Army Corps of Engineers 404 permit and approval by California Department of Fish and Game may supercede the guidance in this BMP.

### **4.3 TEMPORARY SEDIMENT CONTROL**

The following measures will be used in the project for sediment control.

## 4.3.1 Linear Sediment Barriers (Silt Fence, Fiber Rolls, or Straw Bales)

A linear sediment control barrier is a temporary sediment barrier consisting of silt fence, fiber rolls, or straw bales used to trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the barrier.

Linear sediment barriers are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Linear sediment barriers are generally *ineffective* in locations where the flow is concentrated and are only applicable for sheet or overland flows. Linear sediment barriers are most effective when used in combination with erosion controls.

Linear sediment barriers will be used throughout the Solar Two project site as applicable. The total length will be based on final design drawings. Linear sediment barriers will also be used within the construction laydown area along the main drainage channels.

## 4.3.2 Sediment Trap

A sediment trap is a temporary basin formed by excavation or by constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is discharged.

Sediment traps may be suitable for use on larger projects with sufficient space for construction. Sediment traps should be considered for use:

- Where sediment-laden water may enter the drainage system or watercourses.
- On construction projects with disturbed areas during the rainy season.
- At the outlet of disturbed watersheds up to 5 acres.
- In association with dikes, temporary channels, and pipes used to convey runoff from disturbed areas.

Sediment traps are shown in the Erosion Control Plan. Calculations for the sizing of these BMPs are listed in Appendix D.

## 4.3.3 Street Sweeping and Vacuuming

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Street Sweeping will be applied to all surrounding roadways, especially near the construction entrance/exit areas. The surrounding roadways are SR-80, I-8 and Dunaway Road.

#### **4.3.4 Check Dams**

A check dam is a small barrier constructed of rock, gravel bags, sand bags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.

### **4.4 WIND EROSION CONTROL**

The following measures will be used in the project for wind erosion control.

Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

During dry seasons, disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment.

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures would include minimizing surface areas to be disturbed, limiting on-site vehicle traffic speed, and controlling the number and activity of vehicles on a site at any given time.

Wind Erosion control will be applied throughout the project site, especially where areas have been regraded to expose bare soils.

### **4.5 TRACKING CONTROL**

The following measures will be used in the project for tracking control.

#### **4.5.1 Stabilized Construction Entrance/Exit**

A stabilized construction access is defined by a point of entrance/exit to a construction-site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production

of airborne dust. Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Currently it is anticipated that there will be total of 3 construction entrances/exits used for the project site. Two will be located at the north, off of SR-80, Evan Hewes Highway. The other will be off of Dunaway Road, east of the project site, directing construction vehicles to the laydown area.

#### **4.5.2 Stabilized Construction Roadway**

Access roads, parking areas, and other on-site vehicle transportation routes should be stabilized immediately after grading and frequently maintained to prevent erosion and provide dust control.

Areas that are graded for construction vehicle transport and parking purposes are especially susceptible to erosion and dust. The exposed soil surface is continually disturbed, leaving no opportunity for vegetative stabilization. Such areas also tend to collect and transport runoff waters along their surfaces. During wet weather, they often become sources of sediment that may be transported off-site on the wheels of construction vehicles. Efficient construction road stabilization not only reduces on-site erosion but also can significantly speed on-site work, avoid instances of immobilized machinery and delivery vehicles, and generally improve site efficiency and working conditions during adverse weather.

Stabilized construction roadways will be employed on the construction access road along SR-80, Evan Hewes Highway and Dunaway Road will be employed on the main access road connecting the laydown area to the main solar field.

#### **4.5.3 Street Sweeping and Vacuuming**

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

**4.6 MAINTENANCE OF CONSTRUCTION BMPs**

The following table lists guidelines for the maintenance of the BMPs anticipated to be used on this project.

**Table 4  
Maintenance Program of Construction BMPs**

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
<b>TEMPORARY EROSION CONTROL BMPs</b>		
Scheduling	Daily during construction	<ul style="list-style-type: none"> <li>- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.</li> <li>- Amend the schedule when changes are warranted.</li> <li>- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.</li> </ul>
Preservation of Existing Vegetation	Daily during construction	<ul style="list-style-type: none"> <li>- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.</li> <li>- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.</li> </ul>
Earth Dikes & Drainage Swales	<ul style="list-style-type: none"> <li>- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.</li> <li>- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.</li> </ul>	<ul style="list-style-type: none"> <li>- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.</li> <li>- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.</li> <li>- Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.</li> </ul>
Velocity Dissipation Devices	<ul style="list-style-type: none"> <li>- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.</li> <li>- Inspect BMPs subjected to non-stormwater discharges daily while non-stormwater discharges occur.</li> </ul>	<ul style="list-style-type: none"> <li>- Inspect apron for displacement of the riprap and damage to the underlying fabric. Repair fabric and replace riprap that has washed away. If riprap continues to wash away, consider using larger material.</li> <li>- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.</li> <li>- Temporary devices should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.</li> </ul>

**Table 4  
Maintenance Program of Construction BMPs  
(Continued)**

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
Streambank Stabilization	<ul style="list-style-type: none"> <li>- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.</li> <li>- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.</li> </ul>	<ul style="list-style-type: none"> <li>- Reshape berms as needed and replace lost or dislodged rock, and filter fabric.</li> <li>- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.</li> </ul>
<b>TEMPORARY SEDIMENT CONTROL BMPs</b>		
Linear Sediment Barriers (Silt Fence, Fiber Rolls, and Straw Bales)	Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.	<ul style="list-style-type: none"> <li>- Repair undercut barriers.</li> <li>- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.</li> <li>- Sediment barriers that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of, and replaced with new barriers.</li> <li>- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.</li> <li>- Sediment barriers should be left in place until the upstream area is permanently stabilized. Until then, the barrier must be inspected and maintained.</li> <li>- Holes, depressions, or other ground disturbance caused by the removal of the barriers should be backfilled and repaired.</li> </ul>

**Table 4  
Maintenance Program of Construction BMPs  
(Continued)**

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
Sediment Trap	Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.	<ul style="list-style-type: none"> <li>- Examine basin banks for seepage and structural soundness.</li> <li>-Check inlet and outlet structures and spillway for any damage or obstructions. -- Repair damage and remove obstructions as needed.</li> <li>-Check inlet and outlet area for erosion and stabilize if required.</li> <li>-Check fencing for damage and repair as needed.</li> <li>-Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage volume. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed of at appropriate locations.</li> <li>- Remove standing water from basin within 72 hours after accumulation.</li> <li>-To minimize vector production: remove accumulation of live and dead floating vegetation in basins during every inspection.</li> <li>- Remove excessive emergent and perimeter vegetation as needed or as advised by local or state vector control agencies.</li> </ul>

**Table 4  
Maintenance Program of Construction BMPs  
(Continued)**

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
Check Dam	Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.	<ul style="list-style-type: none"> <li>- Replace missing rock, bags, bales, etc. Replace bags or bales that have degraded or have become damaged.</li> <li>- If the check dam is used as a sediment capture device, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. - Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.</li> <li>- Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.</li> <li>- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.</li> <li>- Remove accumulated sediment prior to permanent seeding or soil stabilization.</li> <li>- Remove check dam and accumulated sediment when check dams are no longer needed.</li> </ul>
Street Sweeping and Vacuuming	<ul style="list-style-type: none"> <li>- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.</li> <li>- When actively in use, points of ingress and egress must be inspected daily.</li> </ul>	<ul style="list-style-type: none"> <li>- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.</li> <li>- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.</li> <li>- Adjust brooms frequently; maximize efficiency of sweeping operations.</li> <li>- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.</li> </ul>

**Table 4  
Maintenance Program of Construction BMPs  
(Continued)**

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
<b>WIND EROSION CONTROL BMPs</b>		
Wind Erosion Control	<ul style="list-style-type: none"> <li>- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.</li> <li>- While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.</li> </ul>	<p>Check areas protected to ensure coverage.</p> <p>Most dust control measures require frequent, often daily, or multiple times per day attention.</p>
<b>TRACKING CONTROL BMPs</b>		
Stabilized Construction Entrance/Exit	<ul style="list-style-type: none"> <li>- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.</li> <li>- While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.</li> <li>- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.</li> </ul>	<ul style="list-style-type: none"> <li>- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.</li> <li>- Keep all temporary roadway ditches clear.</li> <li>- Check for damage and repair as needed.</li> <li>- Replace gravel material when surface voids are visible.</li> <li>- Remove all sediment deposited on paved roadways within 24 hours.</li> <li>- Remove gravel and filter fabric at completion of construction.</li> </ul>
Stabilized Construction Roadway	<ul style="list-style-type: none"> <li>- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.</li> <li>- While activities associated with the BMP are underway, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.</li> </ul>	<ul style="list-style-type: none"> <li>- Keep all temporary roadway ditches clear.</li> <li>- When no longer required, remove stabilized construction roadway and re-grade and repair slopes.</li> <li>- Periodically apply additional aggregate on gravel roads.</li> <li>- Active dirt construction roads are commonly watered three or more times per day during the dry season.</li> </ul>

**4.7 SOIL AND WIND EROSION CALCULATIONS**

The CEC requested a discussion of how much soil will be lost from wind and water erosion, and to quantify the values with and without the proposed BMPs, both during construction and operations. Wind erosion was estimated using the USDA/NRCS Wind Erosion Prediction System (WEPS) computer model. Results of the wind erosion calculation estimates are provided in Table 5, Wind Erosion Estimates. The Wind Erodibility Indices provided by the USDA/NRCS, Soil Survey Geographic Data, for Imperial Valley, California, are 85 tons per acre per year for Rositas-Carrizo-Orita soil association, and 160 tons per acre per year for the Meloland-Vint-Indio soil associations, as shown in Table 5. Soil erosion due to water was estimated for the area using the USDA/NRCS Revised Universal Soil Loss Equation 2 (RUSLE2) computer program. Results of the erosion calculation estimates are provided in Table 6, Soil Erosion Rates. The proposed condition soil erosion due to water (runoff) in the area is less than 0.25 ton/ac/yr, less than the existing condition. (Solar Two AFC, Appendix W, Soil Loss Calculations).

**Table 5  
Wind Erosion Estimates**

Soil Association	Texture	Depth of Surface Layer (inches)	Land Capability Class <sup>1</sup>	Wind Erodibility <sup>2</sup> (Group/Index)	K Factor	Erosion Hazard – Roads and Trails <sup>3</sup>	Risk of Corrosion	
							Uncoated Steel	Concrete
Rositas-Carrizo-Orita	Gravelly loam, sandy loam	11	7	3 / 86	0.15	Slight	High	Low
Meloland-Vint-Indio	Loam, silt loam, sandy loam	11	7	4L / 180	0.43	Slight	High	Moderate and Low
Badland-Beeline-Rillito	Ranges from clay to gravelly sand; fine textures predominate	12	8	8 / 0	0.15	Severe	N/A	N/A

Source for soils mapping and characteristics: U.S. Department of Agriculture, NRCS, SSURGO data, Imperial County Area, California, GIS; STATSGO, 2004.

Notes:

<sup>1</sup> Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat. Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

<sup>2</sup> Wind erodibility groups range from 1 to 8, with 1 being highly erodible and 8 having low erodibility. L denotes calcareous soil. Wind erodibility index is the estimated soil loss measured in tons per acre per year.

<sup>3</sup> Qualitative descriptors of erosion hazard: Slight = little or no erosion is anticipated, Moderate = some erosion anticipated, Severe = significant erosion potential exists.

K = erodibility factor.

N/A = not applicable.

**Table 6  
Soil Erosion Rates**

Soil Type	Existing (ton/ac/yr)	Construction - Cut Area with No BMPs (ton/ac/yr)	Construction - Fill area with No BMPs (ton/ac/yr)	Construction - Average with No BMPs (ton/ac/yr)	Construction with BMPs (ton/ac/yr)	Operations with BMPs (ton/ac/yr)
Rositas Sand and Fine Sand, 0% to 9% Slopes	0.042	0.042	0.14	0.091	<0.042	<0.042
Rositas Loamy Fine Sand, 0% to 2% Slopes	0.082	0.081	0.25	0.17	<0.082	<0.082
Rositas Silt Loam 0% to 2% Slopes	0.42	0.42	1.3	0.86	<0.42	<0.42
Meloland Fine Sand	0.017	0.017	0.054	0.036	<0.017	<0.017
Vint Fine Sandy Loam	0.13	0.13	0.41	0.27	<0.13	<0.13
Indo Loam	0.25	0.25	0.76	0.51	<0.25	<0.25

Source: URS Corporation 2008. See Appendix W, Soil Loss Calculations.

Notes:

- < = less than
- % = percent
- BMP = Best Management Practice
- ton/ac/yr = tons per acre per year

Soil erosion rates reflect sheet flow and rill erosion caused by storm water runoff and were calculated using the Revised Universal Soil Loss Equation (Version 2), RUSLE2 computer program.

BMP = Erosion and Sediment Control Best Management Practice (Erosion Blanket, Mulch, Silt Fence, Fiber Roll, or Final Stabilization, etc.).

**SECTION 5 POST-CONSTRUCTION BMPS**

Site soil stabilization will occur following construction; however, several alternatives are being considered to determine which solution best achieves the desired effect to: minimize wind erosion, prevent water erosion, minimize weed and undesired vegetation growth, as well as providing a suitable work surface. Currently it is anticipated that high traffic areas will include soil binders. Areas of limited, temporary disturbance may be covered or stabilized to achieve the desired effect.

The laydown area(s) will be returned to its “as found” condition as practical, by removing all material placed there for the construction effort and then by restoring the soil to a native condition.

The best way to mitigate stormwater impacts from new developments is to use practices to treat, store, and infiltrate runoff on-site before it can affect water bodies downstream. Innovative yet practical site designs that reduce imperviousness and smaller-scale low impact development practices dispersed throughout a site are excellent ways to achieve the goals of reducing flows and improving water quality.

Post-construction stormwater runoff from new development and redevelopments typically includes developing: strategies to implement a combination of structural and non-structural BMPs; and, a program to ensure adequate long-term operation and maintenance of BMPs.

Post-construction BMPs currently anticipated for the site include sediment traps, detention, retention, and/or infiltration basins for impervious areas, and maintaining existing drainage patterns and flow rates. Additionally the project will develop and implement an industrial phase SWPPP as required by the CEC and/or SWRCB. There are separate SWPPPs for the Water Line, Transmission Line and the Overall Site.

**SECTION 6 REFERENCES**

The following documents were used in the preparation of this DESCP:

California Department of Transportation (Caltrans) Stormwater Quality Handbooks, Construction Site Best Management Practices (BMPs) Manual, March 2003.

Caltrans Stormwater Quality Handbooks, Stormwater Pollution Prevention Plan and Water Pollution Control Program Preparation Manual, March 2007.

California Stormwater BMP Handbook – Construction, January 2003.

NOAA Atlas 14, (Latitude 32.760669 N, Longitude 115.862045 W),  
[http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html), Accessed 12/5/2008

SES Solar Two, LLC Application for Certification, June 2008.

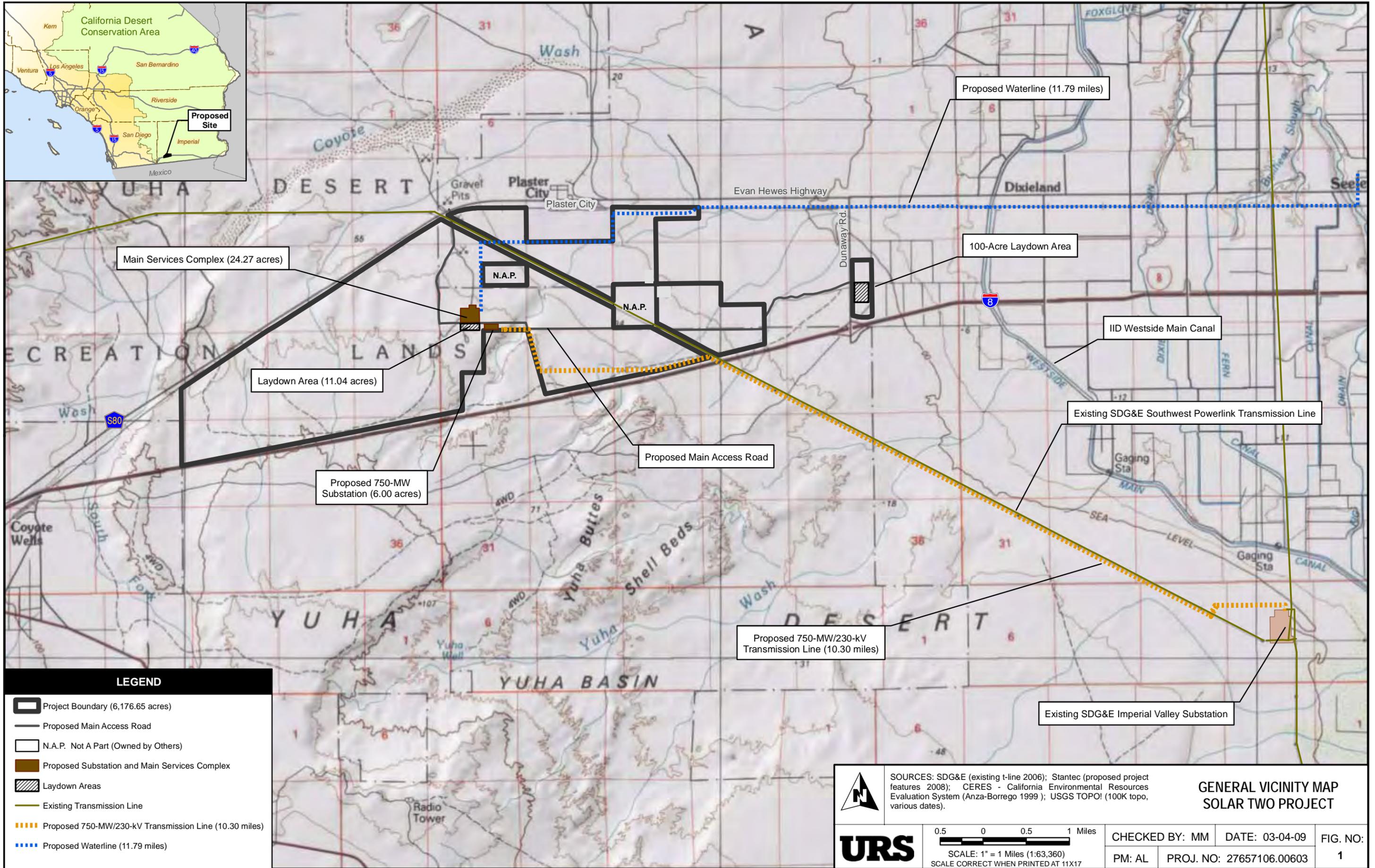
State Water Resources Control Board (SWRCB) Order No. 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES) Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit).

State Water Resources Control Board Resolution No. 2001- 046, Modification of Water Quality Order 99-08-DWQ State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activity (General Permit).

State Water Resources Control Board Resolution No. 2001-155, Modification of Water Quality Order 99-08-DWQ State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activity (General Permit) to include Small Construction Activity (One to Five Acres).

State Water Resources Control Board (State Water Board) Water Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit) Waste Discharge Requirements (WDRs) for Discharges of Stormwater Associated with Industrial Activities Excluding Construction Activities.





**LEGEND**

- Project Boundary (6,176.65 acres)
- Proposed Main Access Road
- N.A.P. Not A Part (Owned by Others)
- Proposed Substation and Main Services Complex
- Laydown Areas
- Existing Transmission Line
- Proposed 750-MW/230-kV Transmission Line (10.30 miles)
- Proposed Waterline (11.79 miles)



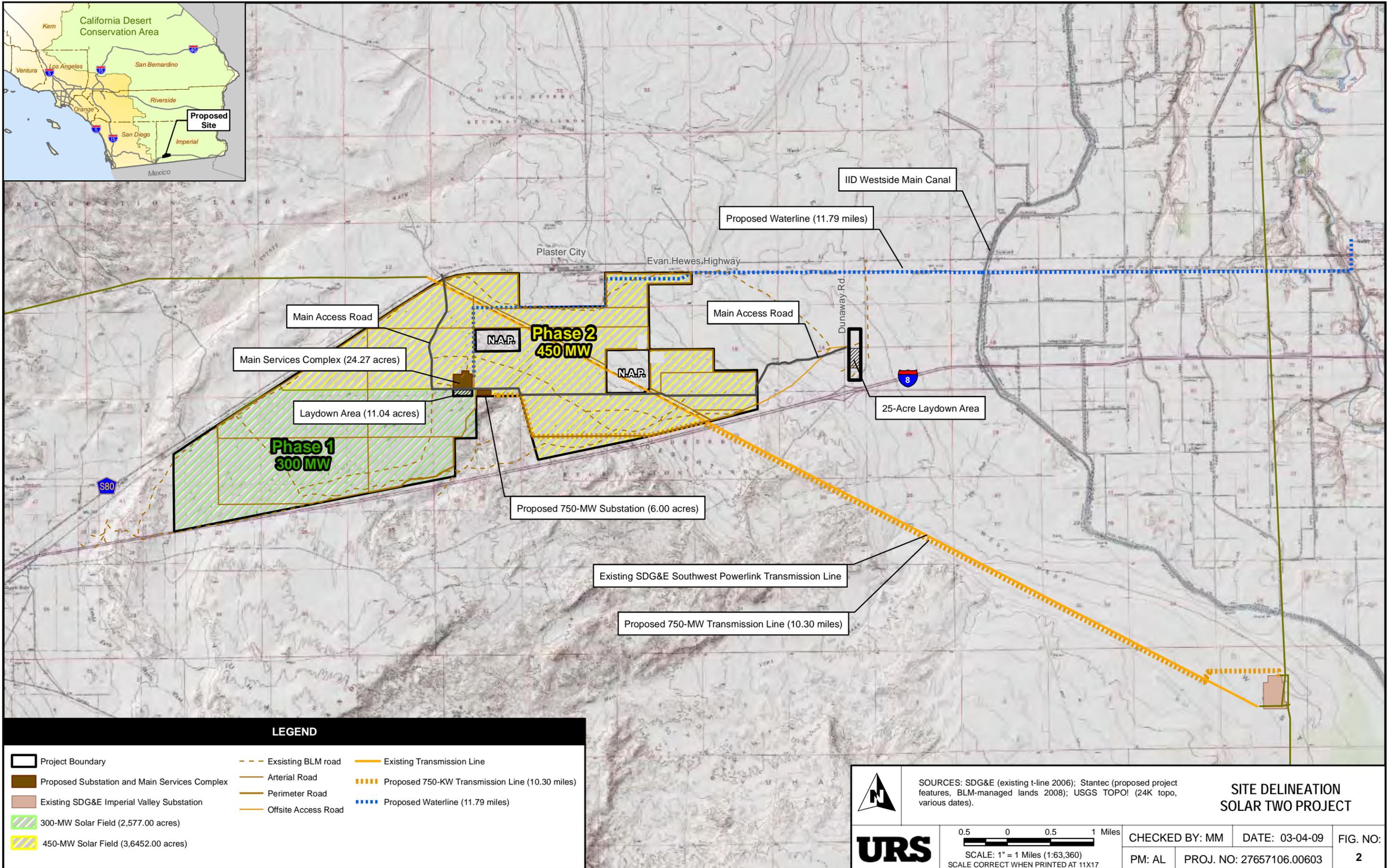
SOURCES: SDG&E (existing t-line 2006); Stantec (proposed project features 2008); CERES - California Environmental Resources Evaluation System (Anza-Borrego 1999); USGS TOPO! (100K topo, various dates).



0.5 0 0.5 1 Miles  
 SCALE: 1" = 1 Miles (1:63,360)  
 SCALE CORRECT WHEN PRINTED AT 11X17

**GENERAL VICINITY MAP  
 SOLAR TWO PROJECT**

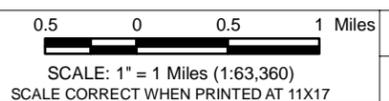
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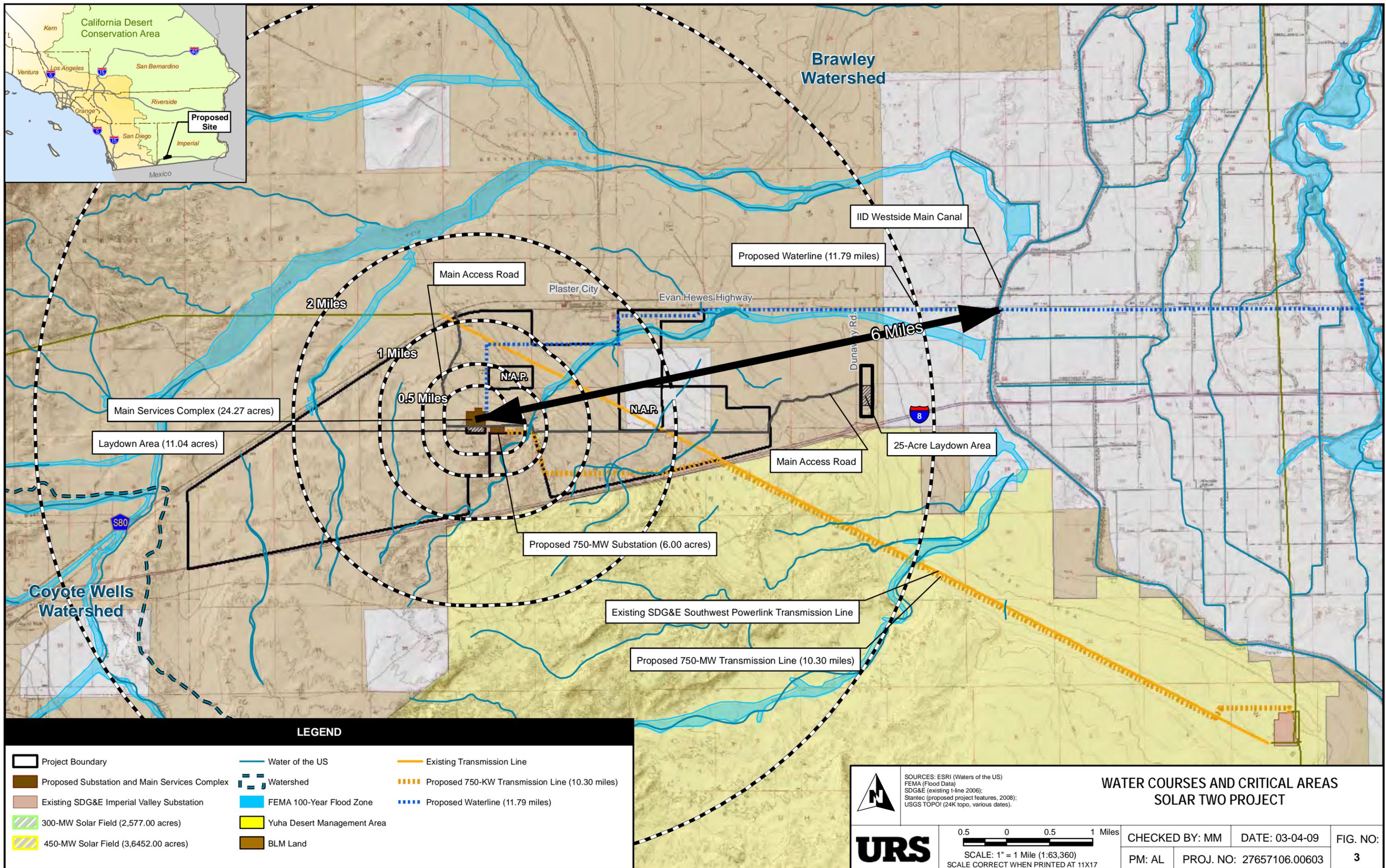


SOURCES: SDG&E (existing t-line 2006); Stantec (proposed project features, BLM-managed lands 2008); USGS TOPO! (24K topo, various dates).



**SITE DELINEATION  
SOLAR TWO PROJECT**

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**LEGEND**

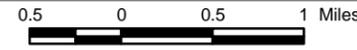
- Project Boundary
- Watershed
- Water of the US
- Existing Transmission Line
- Proposed Substation and Main Services Complex
- FEMA 100-Year Flood Zone
- Existing SDG&E Imperial Valley Substation
- Yuha Desert Management Area
- 300-MW Solar Field (2,577.00 acres)
- BLM Land
- Proposed 750-KW Transmission Line (10.30 miles)
- Proposed Waterline (11.79 miles)



SOURCES: ESRI (Waters of the US)  
FEMA (Flood Data)  
SDG&E (existing t-line 2006);  
Slantec (proposed project features, 2008);  
USGS TOPOI (24K topo, various dates).

**WATER COURSES AND CRITICAL AREAS**  
**SOLAR TWO PROJECT**

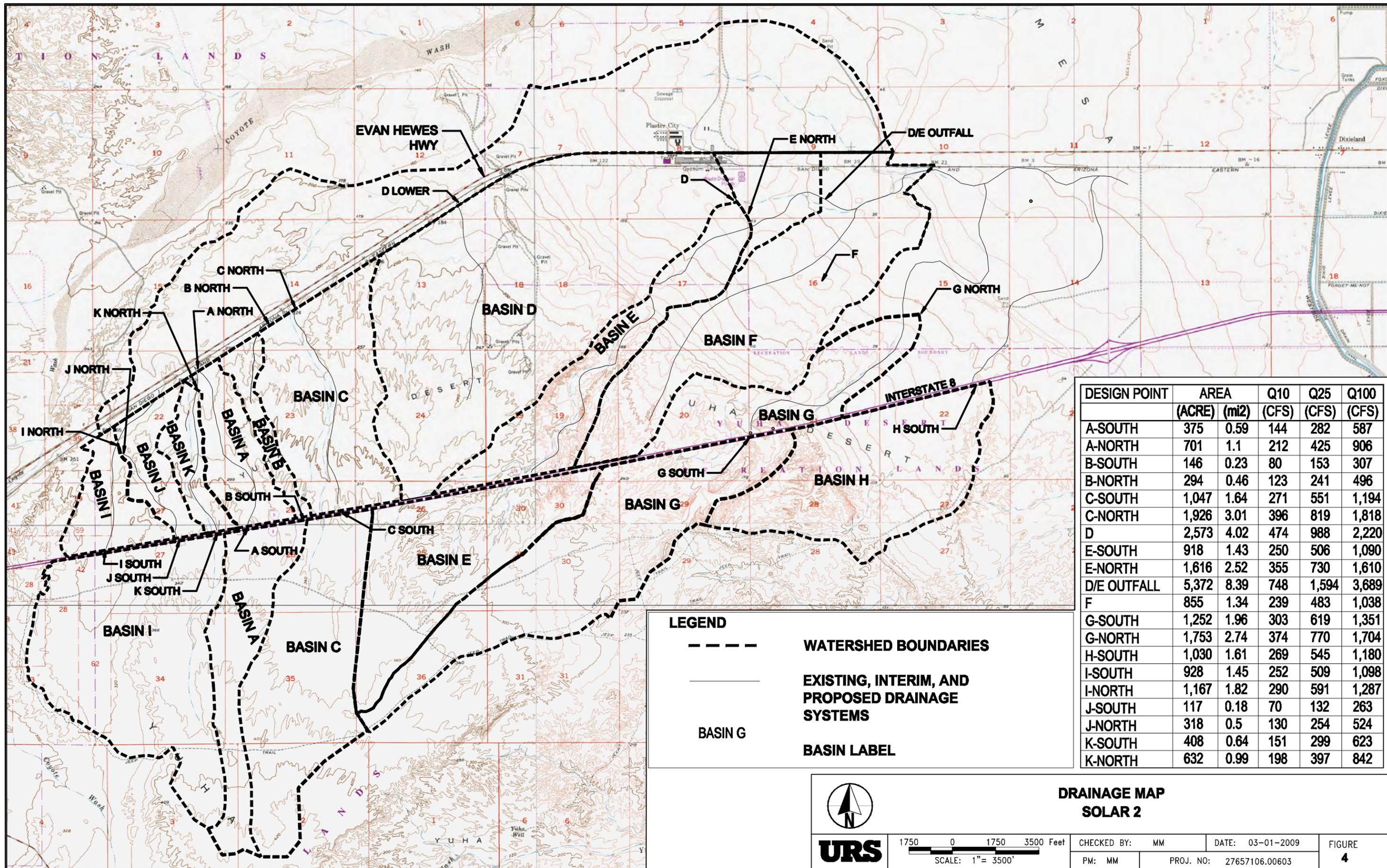
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SCALE: 1" = 1 Mile (1:63,360)  
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DESIGN POINT	AREA (ACRE)	AREA (mi <sup>2</sup> )	Q10 (CFS)	Q25 (CFS)	Q100 (CFS)
A-SOUTH	375	0.59	144	282	587
A-NORTH	701	1.1	212	425	906
B-SOUTH	146	0.23	80	153	307
B-NORTH	294	0.46	123	241	496
C-SOUTH	1,047	1.64	271	551	1,194
C-NORTH	1,926	3.01	396	819	1,818
D	2,573	4.02	474	988	2,220
E-SOUTH	918	1.43	250	506	1,090
E-NORTH	1,616	2.52	355	730	1,610
D/E OUTFALL	5,372	8.39	748	1,594	3,689
F	855	1.34	239	483	1,038
G-SOUTH	1,252	1.96	303	619	1,351
G-NORTH	1,753	2.74	374	770	1,704
H-SOUTH	1,030	1.61	269	545	1,180
I-SOUTH	928	1.45	252	509	1,098
I-NORTH	1,167	1.82	290	591	1,287
J-SOUTH	117	0.18	70	132	263
J-NORTH	318	0.5	130	254	524
K-SOUTH	408	0.64	151	299	623
K-NORTH	632	0.99	198	397	842

**LEGEND**

- WATERSHED BOUNDARIES
- EXISTING, INTERIM, AND PROPOSED DRAINAGE SYSTEMS
- BASIN G BASIN LABEL

**DRAINAGE MAP  
SOLAR 2**



**URS**

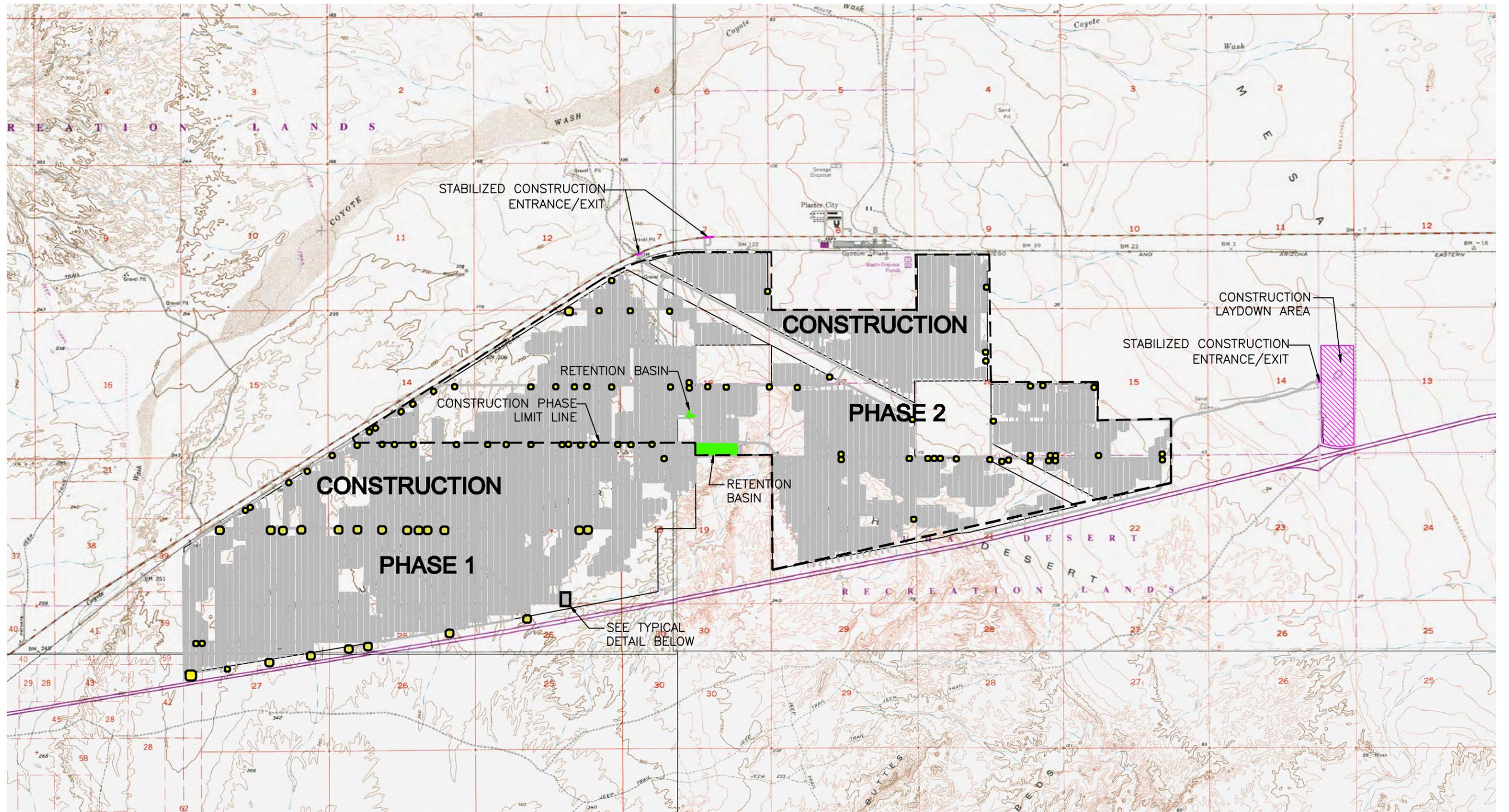
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SCALE: 1" = 3500'

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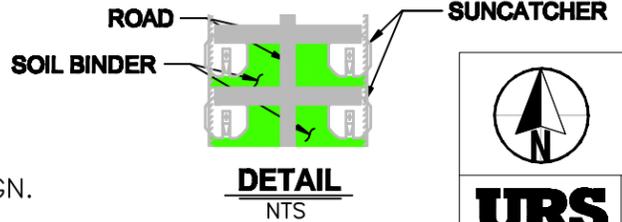
FIGURE **4**



**LEGEND**

-  Initial Grading Phase
-  Debris Basin - Construction Phase
-  Final Grading/Stabilization

**NOTE:**  
 BMPs TO BE FINALIZED UPON  
 COMPLETION OF PROJECT DESIGN.



1750 0 1750 3500 Feet  
 SCALE: 1" = 3500'

**BMP PHASE MAP  
 SOLAR 2**

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FIGURE  
**5**

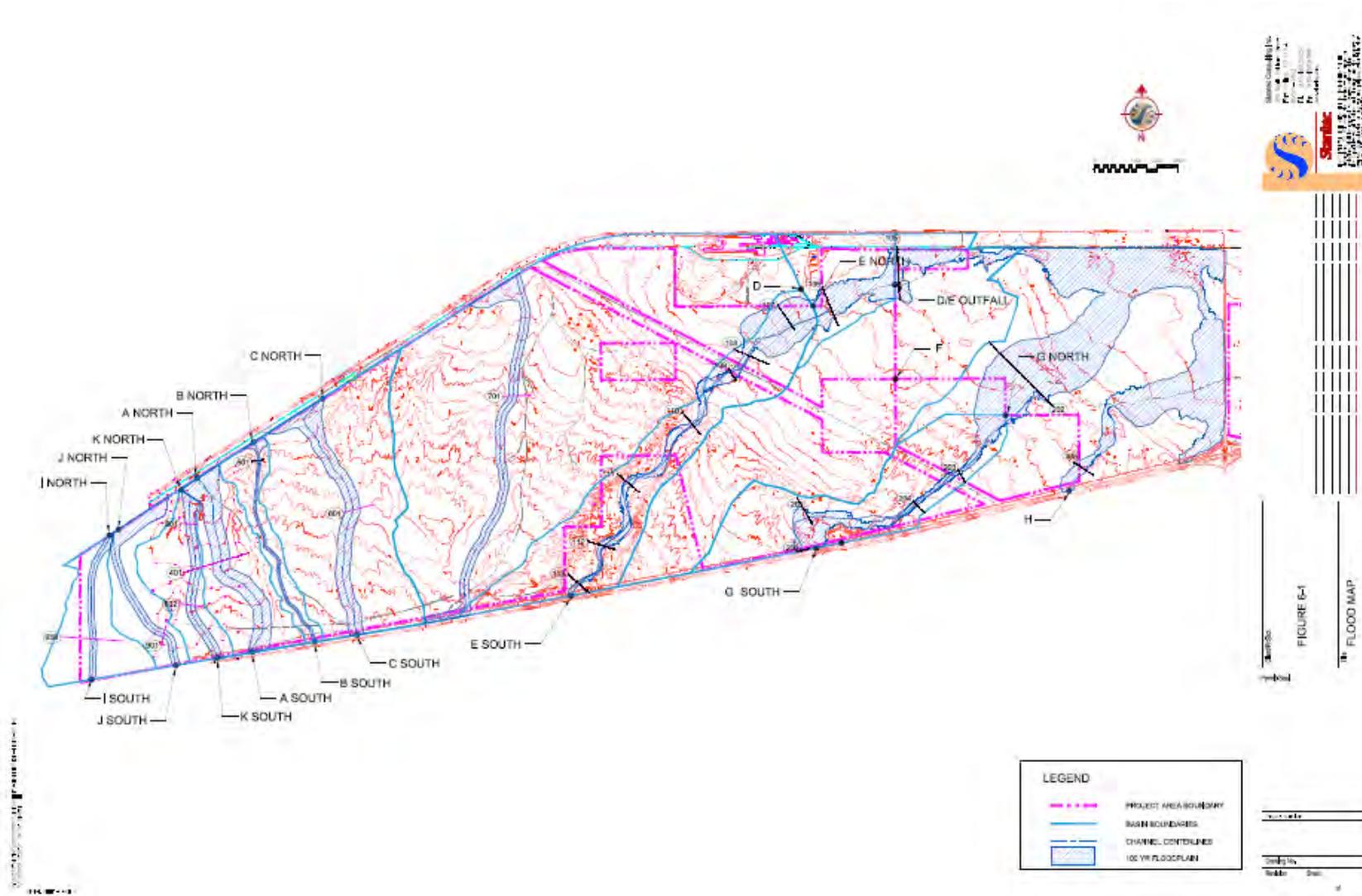


The SWPP has been filed under separate cover as Volume 2 of this report because of its large file size. It has been divided into three different documents by Project features:

Onsite, Waterline, Transmission Line.



Figure 6-1: Project Area Flood Plain Map





## Memo



Stantec

To: SES / URS – Response to DESCOP data request.

From: Ned J. Araujo, PE

File: V:\2015\active\2015026801\civil\design\analysis\drainage\_calcs\Debris Basin and Storage Study Data Sheet 10-29-2008.doc

Date: January 20, 2009

---

### Debris Basin and Storage Study Data Sheet

Prepared on 10-29-2008 by Grant Becklund, PE

Reviewed by Ned J. Araujo, PE

Table 4 was developed utilizing Sediment Yield Charts from the USGS Fact Sheet 2006-3007 titled "Sediment Yield and runoff frequency of small drainage basins in the Mojave Desert, California and Nevada.

The drainage area for each drainage sub-area was established at the project boundaries, at road crossings and at points of special study and was used to develop a volume of debris expected to be generated at each of these locations for different periods of time. The size of each of the debris basins were then determined utilizing a two year production rate.

The proposed debris capacities of the basins were limited to four different sizes as follows:

Basin "A"	200 CY of capacity
Basin "B"	400 CY of capacity
Basin "C"	600 CY of capacity
Special	Volume capacity to be determined at 100 percent engineering

The Desilting Basins Index Map for Grading Plans and Table 4 both identify the proposed Basin Design for each location as follows:

Yellow Shading:	Basin sized based on Debris Storage Chart
Purple Shading:	No basin proposed in this location on plans
Orange Shading:	Basin added on plan
Blue Shading:	Basin added at project boundary on plans.

Yellow Shaded Basins are shown on the design charts and the actual location shown on the plans may be slightly different than the location shown as a chart location. This shift will continue to occur during the final engineering process.

The Purple Shaded Basins are not shown on the plans and these locations should be reviewed to determine if the road was designed to capture debris and therefore eliminate the basin or if there is no disturbed areas up-stream that would eliminate the need for this basin.

One Team. Infinite Solutions.

**Stantec**

January 20, 2009

SES / URS

Page 2 of 2

The Orange Shaded Basins do not have drainage areas calculated and are sized by inspection.

The Blue Shaded Basins do not have drainage areas calculated and were sized by inspection.

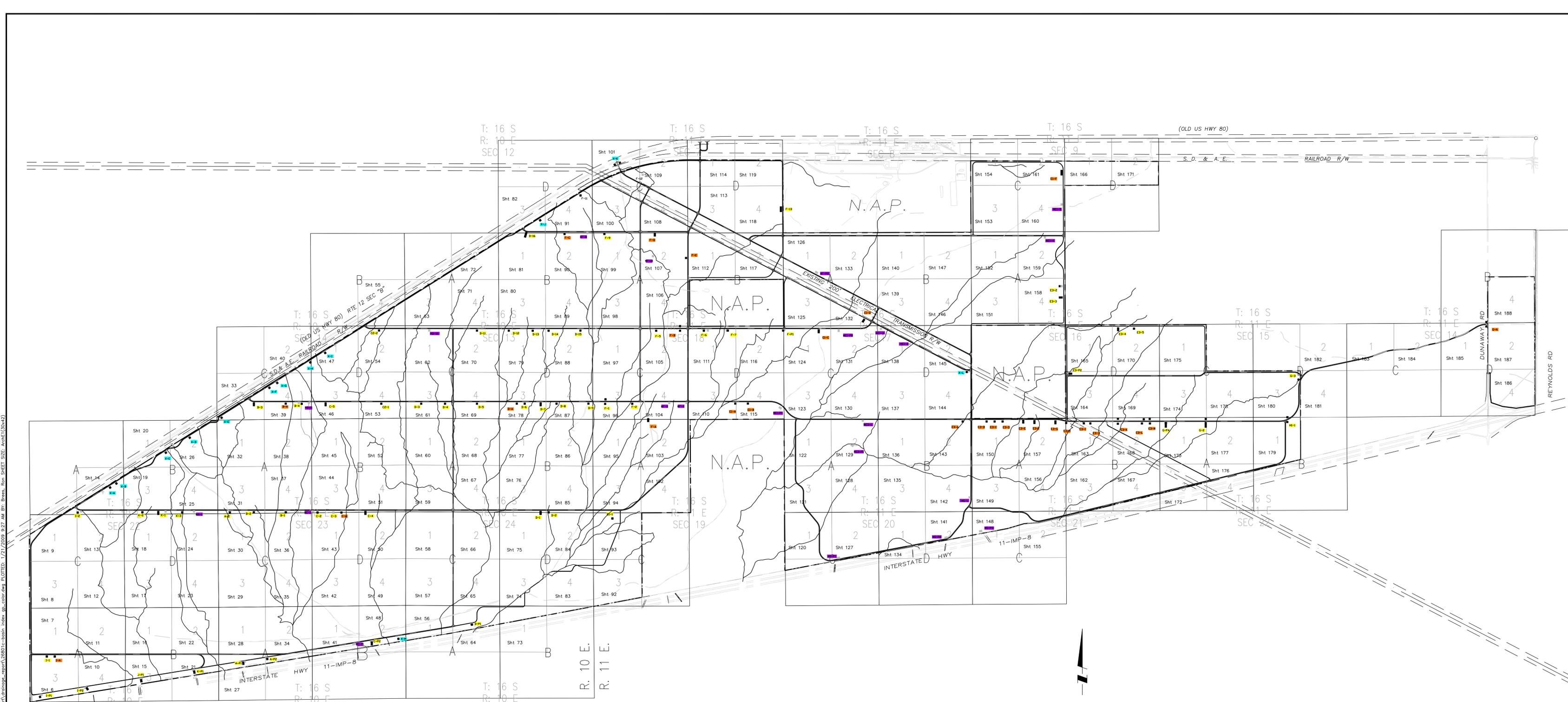
**STANTEC CONSULTING INC.**

Ned Araujo, P.E.

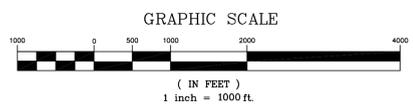
Senior Project Manager

ned.araujo@stantec.com

c. Peter Haub



- LEGEND**
- DESILTING BASIN PER CHART
  - DESILTING BASIN PER PLAN
  - D-5 DESILTING BASIN PER CHART
  - D-A ADDITIONAL BASIN PER PLANS
  - X-D-5 BASIN PER CHART BUT NOT UTILIZED ON PLANS
  - X-A DESILTING BASINS AT PROJECT BOUNDARY



NO.		DATE		BY	APP.	SCALE	1" = 1000'	DRN.	DES.	CHK.	DATE	10/24/08	PROJECT:	2000026801	DWG:	SHT.	1	OF	1	REV.
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DRAWING: \\2015\active\2015026801\civil\design\report\drainage\_report\26801-basin\_index\_gp\_color.dwg PLOTTED: 1/21/2009 9:27 AM BY: Bress, Ron SHEET SIZE: ARCH(E) (30x42)

# Debris Storage

TABLE 4

WS	BASIN	AREA	CY/acre/yr	CY/one year	CY/Two years	CY/ 5 years	CY/10 years	Basin Type	Safety Factor	Years of Storage	10 year Q	25 year Q	100 year Q
A	P1 75%	171.0	1.04	177	355	887	1,773	Special			72.3	134.8	270.7
	P2 25%	57.0	1.15	65	131	327	654	Special			44.7	82.7	167.2
	1	213.1	1.00	213	426	1,066	2,131	C	1.41	2.35	66.1	122.9	246.5
	2	7.2	1.48	11	21	53	107	A	9.38	15.63	14.4	21.6	43.2
	3	28.6	1.19	34	68	169	339	A	2.95	4.92	27.9	39.3	89.4
B	1	38.5	1.19	46	91	228	456	A	2.19	3.65	37.5	52.9	120.3
	2	20.9	1.19	25	50	124	248	A	4.04	6.73	20.4	28.7	65.3
	3	134.2	1.04	139	278	696	1,392	B	1.44	2.40	61.7	116.3	232.6
	4	41.2	1.19	49	98	244	488	A	2.05	3.41	32.3	59.7	120.9
	5	13.5	1.19	16	32	80	160	A	6.25	10.42	18.9	40.5	74.3
	B-A							A					
C	P1	550.9	0.81	449	898	2,244	4,489	Special			117.5	213.9	431.5
	P2	1023.1	0.78	796	1,591	3,979	7,957	Special			136.4	266.0	532.9
	1	22.1	1.19	26	52	131	262	A	3.82	6.36	21.5	30.4	69.1
	2	14.7	1.19	17	35	87	174	A	5.74	9.57	20.6	44.1	80.9
	3	22.0	1.19	26	52	130	261	A	3.84	6.39	21.5	30.3	68.8
	4	142.7	1.04	148	296	740	1,480	B	1.35	2.25	65.6	123.7	247.3
	5	157.6	1.04	163	327	817	1,634	B	1.22	2.04	66.6	124.3	249.5
C-A							A						
C2	1	48.7	1.19	58	115	289	577	A	1.73	2.89	38.1	70.6	142.9
	2	20.2	1.19	24	48	120	239	A	4.18	6.96	19.7	27.8	63.1
D	P1	56.0	1.15	64	129	321	643	Special			43.9	81.2	164.3
	1	127.3	1.04	132	264	660	1,320	B	1.51	2.52	58.6	110.3	220.7
	2	30.5	1.19	36	72	181	361	A	2.77	4.61	29.7	41.9	95.3
	3	60.0	1.15	69	138	344	689	A	1.45	2.42	47.0	87.0	176.0
	4	17.8	1.19	21	42	105	211	A	4.74	7.90	24.9	53.4	97.9
	5	72.7	1.15	83	167	417	835	B	2.40	3.99	47.3	90.9	181.8
	6	31.0	1.19	37	73	184	367	A	2.72	4.54	30.2	42.6	96.9
	7	135.8	1.04	141	282	704	1,408	B	1.42	2.37	62.5	117.7	235.4
	8	87.1	1.15	100	200	500	1,000	B	2.00	3.33	50.5	95.8	191.6
	9	17.8	1.19	21	42	105	211	A	4.74	7.90	24.9	53.4	97.9
	10	59.7	1.15	69	137	343	685	A	1.46	2.43	46.8	86.6	175.1
	11	62.0	1.15	71	142	356	712	A	1.40	2.34	40.3	77.5	155.0
	12	26.3	1.19	31	62	156	312	A	3.21	5.35	25.6	36.2	82.2
13	26.4	1.19	31	63	156	313	A	3.20	5.33	25.7	36.3	82.5	

# Debris Storage

TABLE 4

WS	BASIN	AREA	CY/acre/yr	CY/one year	CY/Two years	CY/ 5 years	CY/10 years	Basin Type	Safety Factor	Years of Storage	10 year Q	25 year Q	100 year Q	
	14	9.0	1.48	13	27	67	133	A	7.50	12.50	18.0	27.0	54.0	
	15	58.0	1.15	67	133	333	666	A	1.50	2.50	45.4	84.1	170.1	
	16	220.3	1.00	220	441	1,102	2,203	C	1.36	2.27	68.3	127.0	254.8	
	D-A							A						
E1	P1	1092.6	0.78	850	1,700	4,249	8,498	Special			145.7	284.1	569.1	
	P2	104.2	1.04	108	216	540	1,081	Special			52.5	100.0	200.1	
	1	10.6	1.19	13	25	63	126	A	7.96	13.27	14.8	31.8	58.3	
	2	32.4	1.19	38	77	192	384	A	2.60	4.34	31.6	44.6	101.3	
	3	15.0	1.19	18	36	89	178	A	5.63	9.38	21.0	45.0	82.5	
	4	54.1	1.15	62	124	311	621	A	1.61	2.68	42.4	78.4	158.7	
	5	302.3	1.00	302	605	1,512	3,023	C	0.99	1.65	79.4	148.1	297.0	
	E1-A							A						
	E1-B							A						
	E1-C							A						
	E1-D							A						
E1-F							A							
E3	P1	126.0	1.04	131	261	653	1,307	Special			58.0	109.2	218.4	
	P2	112.6	1.04	117	234	584	1,168	Special			56.8	108.1	216.2	
	1	64.7	1.15	74	149	371	743	A	1.35	2.24	42.1	80.9	161.8	
	2	160.7	1.04	167	333	833	1,666	B	1.20	2.00	67.9	126.7	254.3	
	3	160.7	1.04	167	333	833	1,666	B	1.20	2.00	67.9	126.7	254.3	
	4	171.6	1.04	178	356	890	1,780	C	1.69	2.81	72.6	135.3	271.6	
	5	85.4	1.15	98	196	490	981	B	2.04	3.40	49.5	93.9	187.9	
	E3-A							A						
	E3-B							A						
	E3-C							A						
	E3-D							A						
	E3-E							A						
	E3-F							A						
	E3-G							A						
	E3-H							A						
E3-I							A							
E3-J							A							
E3-K							A							
E3-L							A							
E3-M							A							

# Debris Storage

TABLE 4

WS	BASIN	AREA	CY/acre/yr	CY/one year	CY/Two years	CY/ 5 years	CY/10 years	Basin Type	Safety Factor	Years of Storage	10 year Q	25 year Q	100 year Q	
F	P1	43.0	1.19	51	102	255	510	Special			33.7	62.4	126.1	
	P2	50.0	1.19	59	119	296	593	Special			39.2	72.5	146.7	
	1	17.7	1.19	21	42	105	210	A	4.77	7.94	24.8	53.1	97.4	
	2	42.2	1.19	50	100	250	500	A	2.00	3.33	33.1	61.2	123.8	
	3	50.1	1.19	59	119	297	594	A	1.68	2.81	39.2	72.6	147.0	
	4	55.1	1.15	63	127	316	633	A	1.58	2.63	43.2	79.9	161.6	
	5	36.3	1.19	43	86	215	430	A	2.32	3.87	35.4	49.9	113.4	
	6	87.9	1.15	101	202	505	1,009	B	1.98	3.30	51.0	96.7	193.4	
	7	44.0	1.19	52	104	261	521	A	1.92	3.20	34.5	63.8	129.1	
	8	40.4	1.19	48	96	239	479	A	2.09	3.48	31.6	58.6	118.5	
	9	49.6	1.19	59	118	294	588	A	1.70	2.84	38.9	71.9	145.5	
	10	171.4	1.04	178	355	889	1,777	C	1.69	2.81	72.5	135.2	271.3	
	11	36.3	1.19	43	86	215	430	A	2.32	3.87	35.4	49.9	113.4	
	12	33.4	1.19	40	79	198	396	A	2.53	4.21	32.6	45.9	104.4	
	13	267.0	1.00	267	534	1,335	2,670	C	1.12	1.87	82.8	154.0	308.8	
		F-A							A					
		F-B							A					
		F-C							A					
	F-D							A						
	F-E							A						
G	P1	119.0	1.04	123	247	617	1,234	Special			60.0	114.2	228.5	
	P2	201.0	1.00	201	402	1,005	2,010	Special			62.3	115.9	232.5	
	P3	935.0	0.78	727	1,454	3,636	7,272	Special			124.7	243.1	487.0	
	P4	154.4	1.04	160	320	801	1,601	Special			65.3	121.8	244.4	
	1	217.9	1.00	218	436	1,090	2,179	C	1.38	2.29	67.5	125.7	252.0	
	2	31.7	1.19	38	75	188	376	A	2.66	4.44	30.9	43.6	99.1	
	3	65.6	1.15	75	151	377	753	A	1.33	2.21	42.6	82.0	164.0	
		G-A							A					
H1	P1-NONE	1132.0	0.78	880	1,761	4,402	8,804	Special			150.9	294.3	589.6	
	1	148.9	1.04	154	309	772	1,544	B	1.30	2.16	68.5	129.0	258.1	
I	P1	824.6	0.78	641	1,283	3,207	6,413	Special			109.9	214.4	429.5	
	P2	137.4	1.04	143	285	713	1,425	Special			63.2	119.1	238.2	
	1	64.7	1.15	74	149	371	743	A	1.35	2.24	42.1	80.9	161.8	
	2	221.0	1.00	221	442	1,105	2,210	C	1.36	2.26	68.5	127.4	255.6	
J	P1	108.0	1.04	112	224	560	1,120	Special			54.4	103.7	207.4	
	P1	435.0	0.81	354	709	1,772	3,544	Special			92.8	168.9	340.8	

# Debris Storage

TABLE 4

WS	BASIN	AREA	CY/acre/yr	CY/one year	CY/Two years	CY/ 5 years	CY/10 years	Basin Type	Safety Factor	Years of Storage	10 year Q	25 year Q	100 year Q
K	1	135.9	1.04	141	282	705	1,409	B	1.42	2.37	62.5	117.8	235.6
	2	58.7	1.15	67	135	337	674	A	1.48	2.47	46.0	85.1	172.2
	3	28.6	1.19	34	68	169	339	A	2.95	4.92	27.9	39.3	89.4
X	X-A							A					
	X-B							A					
	X-C							A					
	X-D							A					
	X-E							A					
	X-F							A					
	X-G							A					
	X-H							A					
	X-I							A					
	X-J							A					
	X-K							A					
	X-L							A					
X-M							A						
Disturbed Areas		4,929		5,301	10,601	26,503	53,006						
NOT Disturbed		6,414		5,360	10,721	26,802	53,604						

TABLE 5

Proposed Basin		
Basin Type	Total Volume	Less 20% F.S.
	100	83
A	200	167
	300	250
B	400	333
	500	417
C	600	500
	700	583
	800	667
Special	Per Design	Per Design

Legend	
<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> D-5	Desilting Basin per Chart
<span style="background-color: orange; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> D-A	Additional Basin per Plan
<span style="background-color: purple; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> *F-3	Basin in Chart but not utilized on Plan
<span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> X-A	Desilting Basin at Project Boundary





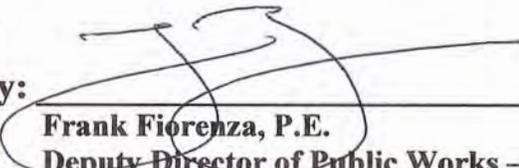
COUNTY OF IMPERIAL  
DEPARTMENT OF PUBLIC WORKS



ENGINEERING DESIGN GUIDELINES MANUAL  
FOR THE PREPARATION AND CHECKING OF  
STREET IMPROVEMENT, DRAINAGE AND  
GRADING PLANS WITHIN IMPERIAL COUNTY

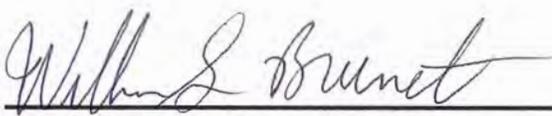
Prepared: September 9, 2004  
Revised September 15, 2008  
Adopted by Imperial County  
Board of Supervisors  
(Ordinance 1442): December 09, 2008

Recommended  
for Approval By:

  
Frank Fiorenza, P.E.  
Deputy Director of Public Works – Engineering



Approved By:

  
William S. Brunet, P.E.  
Director of Public Works



**AN ORDINANCE ADDING TO THE CODIFIED ORDINANCES OF THE COUNTY OF IMPERIAL ESTABLISHING THE REQUIRED USE OF THE ENGINEERING DESIGN GUIDELINES MANUAL FOR THE PREPARATION AND CHECKING OF STREET IMPROVEMENT, DRAINAGE, AND GRADING PLANS WITHIN IMPERIAL COUNTY.**

**Ordinance No. 1442**

The Board of Supervisors of the County of Imperial, State of California, hereby ordain as follows:

SECTION 1: For the purpose of establishing proper standards, specifications and directions for design and construction of any road, or other land division improvements, required to be constructed in the unincorporated territory of Imperial County, the document entitled 'Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage, and Grading Plans within Imperial County' revision dated September 15, 2008, is hereby adopted and made a part of this ordinance by reference, three copies of which are on file in the Office of the Clerk of this Board and for use and examination by the public. Copies of the manual can also be found at the Imperial County Department of Public Works."

SECTION 2: This Ordinance shall take effect and shall be in force 30 days after the date of its adoption and prior to the expiration of 15 days from the passage thereof shall be published at least once in the *Holtville Tribune*, a newspaper of general circulation, printed and published in the County of Imperial State of California together with the names of the Board of Supervisors members voting for and against the same.

This ordinance is hereby **PASSED AND ADOPTED** by the Board of Supervisors, County of Imperial, State of California, this 9<sup>th</sup> day of December, 2008 by the following roll call vote:

Carrillo, Grogan, Maruca Wyatt, Leimgruber

ATTEST:

  
\_\_\_\_\_  
SYLVIA BERMUDEZ, Clerk of the Board  
County of Imperial, State of California

  
\_\_\_\_\_  
GARY WYATT, Chairman  
Imperial County Board of Supervisors

# FOREWORD

## **Purpose**

The Department of Public Works (DPW) under the direction of the Imperial County Road Commissioner who is also the Director of Public Works prepared this manual. It establishes uniform engineering design guidelines for the preparation and plan checking of street improvement plans, drainage and grading plans, and includes standards and design guidelines for use within the unincorporated areas of Imperial County, excepting "Gateway of the Americas Specific Plan Area", which has its own special requirements in Attachment C.

The enclosed material is to assist the engineer, developer and/or architect in preparing these plans for private development projects within the Imperial County, to assist the DPW staff for their review of the same, and to provide standards and specifications that meet current engineering standards of practice.

The approval by the Imperial County Road Commissioner is made for the protection and maintenance of the public streets, roads, highways, and sidewalks as necessary for the protection and convenience of the public using such facilities.

This manual is neither a textbook nor a substitute for engineering knowledge, experience, or judgment.

## **DISCLAIMER**

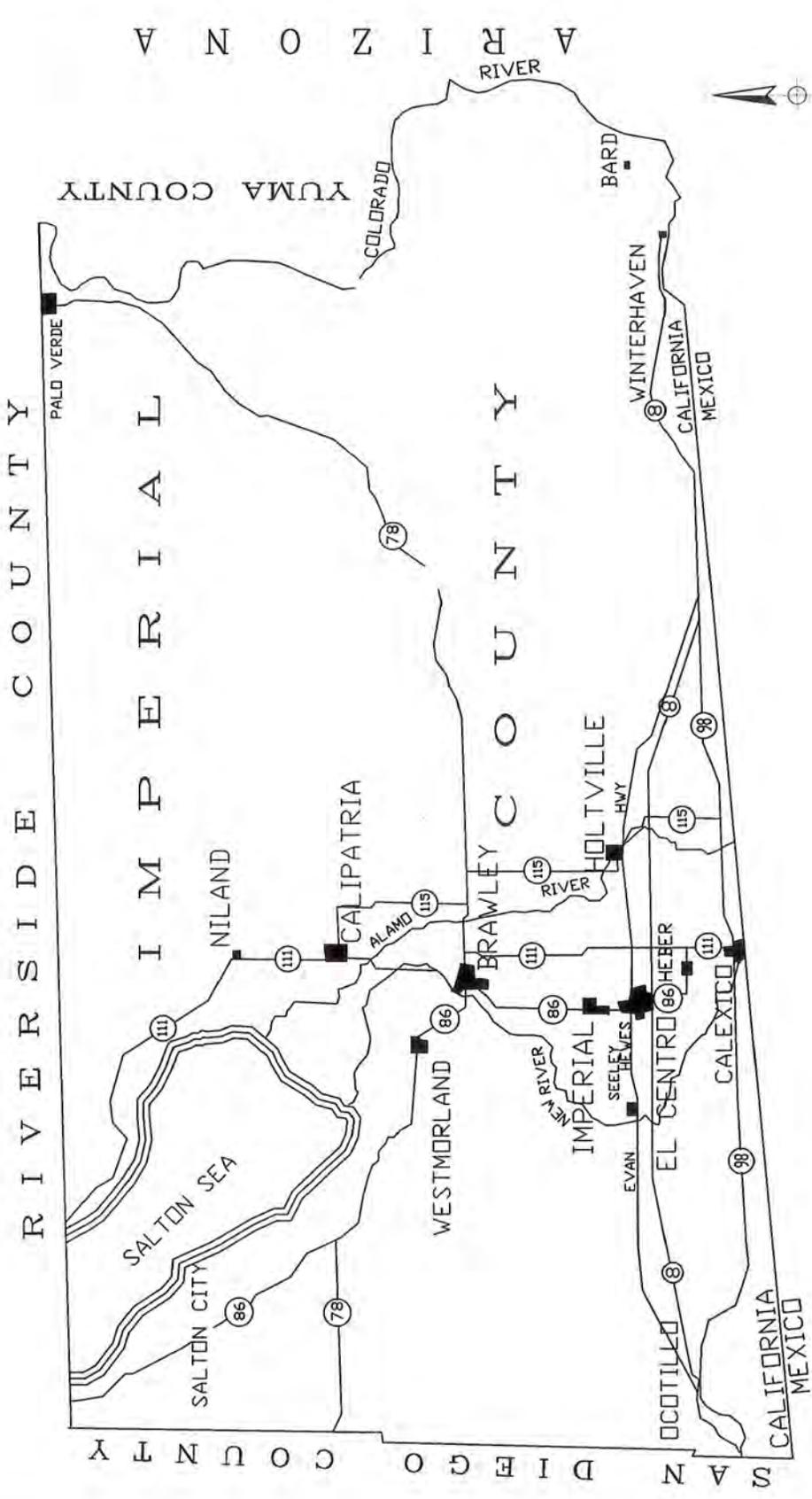
This manual is designed to provide accurate and authoritative information in regard to the subject matter covered. Because of the possible unanticipated changes in governing statutes, case law and professional requirements relating to the application of any information contained in this manual, all persons or entities involved in any way in the preparation or distribution of this manual disclaim all responsibility for the legal effects or consequences of any document prepared or action taken in reliance upon information contained herein.

No representations, express or implied, are made or given regarding the legal consequences of the use of any information contained in this manual. Persons intending to use this manual for the preparation of any documents, designs, plans or specifications are advised to check specifically on the current applicable laws, professional requirements and professional standards. This manual is not distributed with the intention that it be a sole source document or that it be used in lieu of the education, training and experience of those using this material.

All questions regarding this material and its applicability to any specific project should be directed to the Department of Public Works for the County of Imperial.

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**IMPERIAL COUNTY**

Not to Scale



## 1. Introduction

The County of Imperial, located in the most southeast corner of the State of California, encompasses approximately 4,597 square miles, about the same geographic size of San Diego County. The County is bounded by Riverside County to the north, San Diego County to the west, Arizona and the Colorado River to the east and Mexico to the south. There are seven incorporated cities within Imperial County with the following populations:

<u>City</u>	<u>Population (2000 Census)</u>
Brawley	22,052
Calexico	27,109
Calipatria	7,289
El Centro	37,835
Holtville	5,612
Imperial	7,560
Westmorland	2,131

### Unincorporated County

Each city has its own General Plan and provides facilities for water and sewer treatment and distribution. The unincorporated communities provide various local services through special districts. Some of these districts include: Bombay Beach, Heber, Niland, Ocotillo, Palo Verde, Seeley, Winterhaven and the Salton City area. Following are the larger unincorporated area communities with respective populations.

<u>Community</u>	<u>Population (2000 Census)</u>
Heber	2,988
Niland	1,143
Seeley	1,624
Ocotillo (including Nomirage & Plaster City)	296
Salton Sea Beach	392
Salton City	978
Desert Shores	792
Palo Verde	236
Winterhaven/Bard	592

The County Public Works Department has responsibility for maintaining approximately 2,555 miles of roads within the unincorporated areas of the County. There are ten County Landfills that are also administered by this Department. Related to road responsibility is our charge in issuing Encroachment Permits for work within the County road right of way and Transportation Permits for permit loads utilizing County roadways. The Engineering division within the Public Works Department is responsible for review of private development projects as well as preparing plans for road and bridge transportation projects and construction administration of public works projects.

In order to better serve the private development needs of the region, the Public Works Department has secured the services of several engineering consulting firms to provide expeditious plan checking to ensure private development projects meet current County standards. This manual also serves to ensure plan check reviews are done in a consistent manner so that all private development projects are reviewed properly.

## **IA.- Developer Responsibilities**

1. Contact County Planning & Development Services Department (760) 482-4236
  - Pre-application Meeting
  - Site Plan Review
  - Coordination with Other County Departments
  - Conditions on Project
  
2. Contact County Public Works Department (760) 482-4462
  - Conditions on Project
  - Submit plans for approval
  - Obtain Encroachment Permit (Public Works)
  
3. Construct
  - Comply with approved plans
  - Comply with encroachment permit(s)
  - Comply with Conditions of Approval project

## **IB. OTHER DOCUMENTS AND STANDARDS**

The following documents are referred to in this manual or may be applicable and are on file in the Office of the Public Works Director. References are to current editions unless specified otherwise.

1. **A Policy on Geometric Design of Highways and Streets**, American Association of State Highway and Transportation Officials (AASHTO).
2. **General Plan, County of Imperial** (Circulation Element) and Title 9 Land Use Ordinance.
3. **Guide to Utility Location**, San Diego/Imperial Counties Chapter of the American Public Works Association.
4. **Highway Capacity Manual**, Transportation Research Board, National Research Council.
5. **Highway Design Manual**, CALTRANS.
6. **Hydrology Manual**, Imperial Irrigation District
7. **Manual on Uniform Traffic Control Devices for Streets and Highways**, U.S. Department of Transportation, Federal Highway Administration.
8. **Planning and Design Criteria for Bikeways in California**, CALTRANS.
9. **Standard Specifications**, CALTRANS.
10. **Standard Plans**, CALTRANS
11. **Standard Specifications for Highway Bridges**, American Association of State Highway and Transportation Officials, (AASHTO).
12. **Traffic Manual**, CALTRANS.
13. **County of Imperial Storm Water Management Program**

## **IC. Required Checklists**

See Attachment 'A'

## **II. STREET IMPROVEMENTS**

## II A. NOTE

All Standards and Design Guidelines related to street improvements are for use by individuals who as a result of the land development process desire to have the Board of Supervisors accept Public Works improvements into the County's System of maintained public roads. The purpose of these standards and design guidelines are to provide for the regulation of improvements to be dedicated to the public and accepted by the County as a result of the Land Development process. They are intended to keep the cost of maintaining public facilities at a reasonable level and at the same time provide for the service and protection of the public. It is not possible to anticipate all situations that may arise and to prescribe standards applicable to every situation. These Standards and Design Guidelines for Street Improvements will be applicable to the vast majority of cases, but they are not inflexible rules to which there is no exception. Occasionally, the Director of Public Works, acting as Road Commissioner, may make exceptions where the application of the Standards and Design Guidelines for Street Improvements are impractical or results in unreasonable hardship. Procedures for processing a modification request are provided elsewhere in this manual.

## II B. GENERAL REQUIREMENTS

1. These requirements shall apply to all Public Works development projects in Imperial County, including the County of Imperial Gateway Specific Plan Area, which are additionally subject to special requirements in Attachment C and also subject to review and approval by the County Engineer/Road Commissioner.
2. All drawings shall be on standard size sheets (24" x 36"). All lettering shall be 1/8" or larger with hand lettering, 1/10" or larger for machine lettering.
3. All title sheets shall include a key map clearly indicating the sheet number issued. All key maps shall be drawn showing overall layout of the water, sewer, storm drain, fire hydrants, street signing and street lighting systems.
4. Each sheet for plan review must have the seal and license number of a Registered Civil Engineer. All calculations submitted to support the improvement design (structural, electrical or mechanical) that must also have the seal and license number of a Registered Civil, Electrical or Mechanical Engineer as appropriate.
5. Revisions made after original approval by the County Engineer shall be initiated by the engineer of work and submitted to the County Engineer for approval. All revisions must be signed off by the County Engineer or designee prior to construction of the revised improvement.
6. All improvements are to be designed and constructed in accordance with this manual as well as other applicable standards or specifications acceptable to the Director, including but not limited to Standard Specifications for Public Works construction, California Department of Transportation Traffic and Highway Design Manuals and AASHTO Design Policies.
7. Profiles shall be shown on the top half of each sheet. Vertical curves shall show curve length and P.I. elevation, in addition to normal stationing and elevations.
8. Normally, the scale for improvement plans shall be 1"=40' for the horizontal and 1"= 4' for the vertical. The vertical scale should be changed to 1"=8' or other appropriate scales where grades are steep. For complex plans, the horizontal scale shall be 1"=20' or larger for clarity.

9. Improvement plans shall be prepared in ink on Mylar drafting film or reproduced by photo Mylar (sepia, ammonia mylar or vellum are not accepted) unless otherwise approved by the County Engineer.
10. Hydrology and hydraulic/drainage calculations and maps shall accompany all plans submitted for checking, unless the requirement is specifically waived.
11. The following items must accompany the first plan check:

See Section IC, "Required Checklists" for detailed information.
12. A striping/signage plan shall be required as determined by the County Traffic Engineer.
13. All plans, calculations and reports are to be checked by the Engineer of Work for consistency, accuracy, clarity and conformity with the County of Imperial Standards, drawings and design criteria before submission for approval.
14. Subsequent Plan Checks shall include a transmittal letter addressing each plan review comment provided by County.
15. All plans, specifications and supporting documents shall be signed and sealed by the Engineer of Work prior to the County Engineer's approval as per the Professional Engineer's and Land Surveyors Act. Prior to County Engineer's approval of plans involving water, sewer, storm drain, lighting and fire services, approval must be obtained from the appropriate Utility Agency, the IID, and County Fire Department as applicable.
16. The original Mylar drawings shall become the property of the County of Imperial upon approval and execution by the County Engineer. The developer shall obtain the approval of said plans and obtain necessary permits prior to commencing any construction.
17. The Engineer of Work shall revise the original Mylar drawings to reflect a construction change or as-built conditions prior to final acceptance of the work by the County Engineer.
18. The original improvement plans, when approved, shall be kept on file by the Department of Public Works as a permanent public record.
  - a. The improvement plans shall not be released unless authorized by the Public Works Director.
  - b. Prior to construction or while the construction is active the improvement plans may be released to the Engineer of Work for plan changes. The Engineer of Work shall review proposed changes with the Department of Public Works before the original plans are released. No plan changes shall be constructed or the original plans changed until approved by the County.
  - c. At the completion of construction, the Engineer of Work shall prepare and submit for approval a "record plan" or "as built plan" showing the actual improvements constructed.
19. All right-of-ways are to be cleared of any surface and subsurface structures. Tile lines within right-of-ways must be removed and plugged at the right-of-way line. Tile lines should also be plugged at property lines at avoid cross parcel drainage from occurring below ground.

20. All engineered grading, drainage or improvement plans shall use a Benchmark that is a County or Imperial Irrigation District (IID) recognized Benchmark. Any assumed Benchmark used shall be tied into one of the county or IID's recognized Benchmarks.
21. The developer shall install all necessary regulatory, warning and street name signs at locations specified by the Director of Public Works. At street intersections, one street sign required, except that for four lane roads, two street name signs are required.
22. A Soils Report is required for each Tract Map or Subdivision. The report must have been prepared within two years of submittal of plans for review or an update letter from the Soils Engineer is required.
23. The latest approved copy of the County Circulation Element (Current Edition 2006) is incorporated herein by reference. However since there may be inconsistency in the road functional classifications from the previous 2003 Edition, the road functional classifications shall be the more stringent as determined by the Road Commissioner. The County Circulation Element details policies and guidelines related to street right-of-way, layout, dedications, required improvements, and other issues of importance to development. Should any conflict between the Circulation Element and this manual be found, the more stringent shall apply.
24. An Encroachment Permit issued by County Public Works Department is required for all work within County road right of way. Should Encroachment Permit conditions and provisions differ from Conditions of Approval or approved plans, the Encroachment Permit conditions and provisions shall apply. The Director of Public Works, acting as Road Commissioner shall have final authority on decisions in County right of way.

END OF SECTION II B

## II C. **TITLE SHEET**

A typical Title Sheet of a set of improvement plans includes the following:

- General Notes
- Engineer's Notes
- Key Map
- Key Map Legend
- Vicinity Map
- Plan Sheet Index
- Legend
- Legal Description
- Assessor's Parcel Number
- Declaration of Responsible Charge
- Engineer of Design
- Engineer of Work
- Title Agency Title Block
- Engineer's Name/Address Title Block
- County Approved Changes Title Block
- Typical Street Sections, Check Pavement Structural Section with Approved TI
- Typical Details
- Specific Conditions Notes
- Utility Agency title/signature block
- Utility Agency Water and Sewer Notes (if applicable)
- Special Notes (if any)
- Basis of Bearing

## II D. **IMPROVEMENT SHEETS**

A typical improvement plan sheet includes the following:

- a) Plan View
  - North Arrow and bar scale; North Arrow point up or to right, if possible
  - Engineer's name, address, telephone number, signature, wet stamp and expiration date
  - Bench Mark Information
  - All Existing Improvements (i.e. power poles/utilities/trees, etc.)
  - Centerline Information (bearing, radius, length) Stationing
  - Show length of vertical curves, BVC, EVC
  - Curb, Gutter, Sidewalk (if applicable) Edge of Pavement
  - Public Drainage Easements
  - Width of the Road (centerline to right-of-way and centerline to curb line), Width of Sidewalk
  - Sight Distance
  - Street Lights
  - Street Name Signs
  - Sewer Line Information, radius, delta or bearing, length, manholes, cleanouts, pipe classification, sewer laterals to each lot(s)
  - Water Line Information, Pipe Classification, Water Lateral to each Lot(s)
  - Fire Hydrant Location/Assembly
  - Lot Numbers (if applicable), site address and/or assessor parcel number
  - Curb Return Information and Stations
  - Show special use permit, parcel map or tract map number
  - Cul-de-sac 50' minimum paved radius, subject to OES requirements

- ❑ Barricades at street ends

**b) PROFILE**

- ❑ Scale
- ❑ Existing Grade at Centerline
- ❑ Centerline Profile (grade – vertical curves-stationing)
- ❑ Proposed Finish Grade at Centerline
- ❑ Top of Curb Profile or Equation
- ❑ Waterline Profile (minimum clearance from top of waterline to proposed finish grade)
- ❑ Waterline Classification
- ❑ Waterline Blowoff (if possible)
- ❑ Sewer Line Profile and Grade (slope)
- ❑ Sewer Manholes/Cleanouts and Stationing
- ❑ Sewer Line Invert Elevations
- ❑ Sewer Line Classification
- ❑ Storm Drain Profile (cleanouts/catch basins/curb inlets)
- ❑ Hydraulic Grade Line/Energy Grade Line
- ❑ Storm Drain Pipe Classification/Velocity/Flow (cfs) – Pipe line grade, slope, length
- ❑ Curb Return Profile
- ❑ Cul-de-sac Profile
- ❑ Details
- ❑ Utility Crossings
- ❑ Geometric Sight Distance Issues

**II E. SAMPLE LETTERS AND PLAN DECLARATIONS REQUIRED**

**(1) SAMPLE SIGHT DISTANCE LETTER – PUBLIC-TO-PUBLIC & PRIVATE TO PUBLIC**

William S. Brunet, P.E., Director  
County of Imperial  
Department of Public Works  
155 South 11<sup>th</sup> Street  
El Centro, CA 92243

SIGHT DISTANCE LETTER (Project Number)

Dear Mr. Brunet:

I, (Engineer Name), R.C.E. (Number) state that physically, there will be a minimum of \_\_\_\_\_ feet to the (north, south, east or west) unobstructed sight distance in both directions from future (road name) along (road name), per Caltrans Highway Design Manual Standards for a \_\_\_\_\_ mph design speed.

Sincerely yours,

\_\_\_\_\_  
Engineer's Name  
R.C.E Number  
Expiration Date



II F. **STREET IMPROVEMENT GENERAL NOTES**

1. COUNTY ENCROACHMENT PERMIT CONDITIONS AND PROVISIONS SHALL TAKE PRECEDENCE OVER THE APPROVED PLANS AND SPECIFICATIONS FOR ANY CONFLICTS.
2. THE STRUCTURAL SECTION SHALL BE IN ACCORDANCE WITH IMPERIAL COUNTY STANDARDS (OR CALTRANS IF IN STATE ROW) AND AS APPROVED BY THE PUBLIC WORKS DIRECTOR (OR CALTRANS).
3. APPROVAL OF THESE IMPROVEMENT PLANS AS SHOWN DOES NOT CONSTITUTE APPROVAL OF ANY CONSTRUCTION OUTSIDE THE PROJECT BOUNDARY.
4. ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED, CONNECTED AND TESTED PRIOR TO CONSTRUCTION OF BERM, CURB, CROSS GUTTER AND PAVING.
5. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO OTHER EXISTING FACILITIES EXCEPT AS SHOWN ON THESE PLANS. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING FACILITY SHOWN HEREON AND ANY OTHER THAT IS NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
6. LOCATION AND ELEVATION OF IMPROVEMENTS TO BE MET BY WORK TO BE DONE SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION OF NEW WORK. CONTRACTOR WILL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.
7. UTILITIES COORDINATION

NO LESS THAN 3 WORKING DAYS PRIOR TO ANY EXCAVATION OR TRENCHING, EACH CONTRACTOR DOING SUCH WORK SHALL CONTACT THE FOLLOWING AGENCIES SO THAT EXISTING UNDERGROUND UTILITIES MAY BE LOCATED. THE AGENCY MAY REQUIRE AN INSPECTOR TO BE PRESENT.

- |   |                               |
|---|-------------------------------|
| 1. APPROPRIATE WATER/SEWER UTILITY      | TO BE DETERMINED              |
| 2. IMPERIAL IRRIGATION DISTRICT (POWER) | (760) 339-9280                |
| 3. IMPERIAL IRRIGATION DISTRICT (WATER) | (760) 339-9263                |
| 4. PACIFIC BELL                         | (800) 422-4133                |
| 5. THE GAS CO.                          | (800) 422-4133/(800) 227-2600 |
| 6. CABLE COMPANY                        | TO BE DETERMINED              |

## EXISTING UNDERGROUND UTILITIES

BEFORE EXCAVATING FOR THIS CONTRACT, VERIFY LOCATION OF UNDERGROUND UTILITIES. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS HAS BEEN OBTAINED FROM AVAILABLE RECORDS ONLY AND MAY NOT REFLECT ALL EXISTING UTILITIES. LOCATION OF ALL EXISTING UTILITIES SHALL BE CONFIRMED BY FIELD MEASUREMENTS BY CONTRACTOR PRIOR TO CONSTRUCTION OF WORK.

CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN HEREON AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

ACCURATE VERIFICATION AS TO SIZE, LOCATION AND DEPTH OF EXISTING UNDERGROUND SERVICES SHALL BE THE CONTRACTORS RESPONSIBILITY. THE CONTRACTOR SHALL NOTIFY THE SOUTHERN CALIFORNIA GAS COMPANY, PACIFIC BELL, TELEPHONE COMPANY, IMPERIAL IRRIGATION DISTRICT AND ANY OTHER AFFECTED UTILITY AGENCIES PRIOR TO STARTING HIS WORK NEAR SUCH UTILITY FACILITIES AND SHALL COORDINATE HIS WORK WITH UTILITY REPRESENTATIVES. FOR LOCATION OF UNDERGROUND UTILITIES AND APPURTENANCES, CONTACT "UNDERGROUND SERVICE ALERT" AT 811 (formerly 1-800-422-4133).

8. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CONTACT THE UTILITY AGENCIES, ADVISE THEM OF THE PROPOSED IMPROVEMENTS AND BEAR THE COST OF RELOCATIONS, IF NEEDED.
9. CONSTRUCT A PUBLIC STREET LIGHT SYSTEM CONFORMING TO APPROPRIATE STANDARDS AND STREET LIGHT SPECIFICATIONS. POWER SOURCES AND RUNS SHALL BE SHOWN ON THE "AS-BUILT" IMPROVEMENT DRAWINGS. ALL POWER SOURCES SHALL BE LOCATED WITHIN THE DEDICATED RIGHT-OF-WAY OR EASEMENT.
10. NO PAVING SHALL BE DONE UNTIL EXISTING POWER POLES ARE RELOCATED OUTSIDE THE AREAS TO BE PAVED.
11. PRIVATE ROAD IMPROVEMENTS SHOWN HEREON ARE FOR INFORMATION ONLY. COUNTY OFFICIALS SIGNATURE HEREON DOES NOT CONSTITUTE APPROVAL OR RESPONSIBILITY OF ANY KIND FOR THE DESIGN OR CONSTRUCTION OF THESE PRIVATE IMPROVEMENTS.
12. ALL SIGNS TO BE ALUMINUM WITH 3M HIGH INTENSITY TYPE REFLECTIVE FACE OR EQUIVALENT.

13. CONTRACTOR WILL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY STRIPING, PAVEMENT MARKERS, OR LEGENDS OBLITERATED BY THE CONSTRUCTION OF THIS PROJECT.
14. THE CONTRACTOR SHALL DO ALL NEW STRIPING AND SANDBLASTING OF REDUNDANT STRIPING.
15. THE CONSTRUCTION OF ONE PCC STANDARD DRIVEWAY PER LOT, LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER OF WORK. PCC SURFACING OF DRIVEWAY TO EXTEND FROM CURB TO PROPERTY LINE UNLESS OTHERWISE SHOWN.
16. THE CONTRACTOR SHALL BE RESPONSIBLE TO SECURE AN ENCROACHMENT PERMIT FROM THE COUNTY OF IMPERIAL DEPARTMENT OF PUBLIC WORKS FOR ANY EXCAVATION OR CONSTRUCTION WITHIN COUNTY ROAD RIGHT-OF-WAY. FOR INSPECTIONS, 48 HOUR MINIMUM NOTICE IS REQUIRED, (760) 482-4462. ADDITIONALLY, UNDERGROUND SERVICE ALERT (USA) MUST BE CALLED TWO WORKING DAYS BEFORE THE CONTRACTOR MAY EXCAVATE. THEY'RE CONTACT NUMBER 811 (formerly (800) 422-4133). ALL WORK AND MATERIALS ARE SUBJECT TO THE INSPECTION AND APPROVAL FROM THE COUNTY DEPARTMENT OF PUBLIC WORKS OR THEIR REPRESENTATIVE.
17. NO REVISIONS OF ANY KIND SHALL BE MADE TO THESE PLANS WITHOUT THE PRIOR WRITTEN APPROVAL OF BOTH THE COUNTY ENGINEER (OR HIS REPRESENTATIVE) AND THE ENGINEER OF RECORD. A REPRODUCIBLE AS-BUILT PLAN SET WILL BE PROVIDED TO THE PUBLIC WORKS DEPARTMENT AS A CONDITION OF SUBSTANTIAL CONSTRUCTION COMPLETION AND PRIOR TO ACCEPTANCE.
18. ALL WORK AND MATERIALS SHALL CONFORM TO THESE PLANS AND SPECIFICATIONS, THE IMPERIAL COUNTY DEPARTMENT OF PUBLIC WORKS STANDARDS AND ENCROACHMENT PERMIT CONDITIONS, ANY REFERENCED STANDARDS AND SPECIFICATIONS AND THE SPECIFICATIONS & THE REQUIREMENTS OF THE AGENCIES REFERRED TO HEREIN. ALL WORK SHOWN OR INDICATED BY THESE PLANS SHALL BE COMPLETED IN ACCORDANCE WITH THE STANDARDS, POLICIES AND REGULATIONS OF IMPERIAL COUNTY; WHERE, OR IF, CONFLICTS OCCUR, THEN THE IMPERIAL COUNTY REQUIREMENTS SHALL GOVERN.
19. UNLESS SPECIFICALLY INDICATED OTHERWISE METHODS EMPLOYED AND MATERIAL USED IN THE CONSTRUCTION OF ALL OFFSITE IMPROVEMENTS SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE "STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED May 2006". ALL WORK IS SUBJECT TO INSPECTION AND APPROVAL AS REQUIRED.
20. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AN EXCAVATION PERMIT FROM THE STATE OF CALIFORNIA DIVISION OF SAFETY AND TO ADHERE TO ALL PROVISIONS OF THE STATE CONSTRUCTION SAFETY ORDERS AND STANDARDS.

21. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A GENERAL CONSTRUCTION ACTIVITY STORM WATER PERMIT FROM THE STATE WATER RESOURCES CONTROL BOARD DIVISION OF WATER QUALITY, CONTACT "STATE WATER RESOURCES CONTROL BOARD, DIVISION OF WATER QUALITY, ATTENTION: STORM WATER PERMIT UNIT, P.O. BOX 1977, SACRAMENTO, CALIFORNIA, 95812.
22. CONSTRUCTION PROJECTS DISTURBING MORE THAN ONE ACRE MUST OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT. OWNER/DEVELOPERS ARE REQUIRED TO FILE A NOTICE OF INTENT (NOI) WITH THE STATE WATER RESOURCES CONTROL BOARD, PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND MONITORING PLAN FOR THE SITE.
23. AS DETERMINED BY THE COUNTY PUBLIC WORKS DIRECTOR/ROAD COMMISSIONER, THE DEVELOPER IS RESPONSIBLE, AS A MINIMUM, FOR ROAD IMPROVEMENTS TO CENTERLINE, AND MAY BE REQUIRED TO RECONSTRUCT EXISTING PAVEMENT, INCLUDING BASE, AND MATCHING OVERLAY REQUIRED TO MEET THE STRUCTURAL STANDARDS FOR THE CURRENT ASSIGNED TRAFFIC INDEX.
24. EXISTING STORM DRAIN PIPES/CULVERTS WHETHER TO BE CONNECTED TO, EXTENDED, ADJUSTED, DRAINED TO, OR JUST IN PROJECT VICINITY SHALL BE REPAIRED AND/OR CLEANED TO MAKE THEM FUNCTIONAL AND ACCEPTABLE AS DIRECTED BY THE PUBLIC WORKS DIRECTOR.
25. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT WORK AREA TRAFFIC CONTROL HANDBOOK OR AS DIRECTED BY THE IMPERIAL COUNTY TRAFFIC ENGINEER.
26. ANY EXISTING SURVEY MONUMENTS OR COUNTY RECOGNIZED BENCHMARKS SHALL BE PROTECTED BY THE CONTRACTOR. SHOULD ANY SUCH MONUMENTS OR BENCHMARKS BE REMOVED, DAMAGED, OBLITERATED OR ALTERED BY THE CONTRACTORS OPERATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER RESETTING OF THE SAME AS PER THE SUBDIVISION MAP ACT, THE PROFESSIONAL LAND SURVEYORS ACT AND TO THE SATISFACTION OF THE COUNTY SURVEYOR/ DIRECTOR OF PUBLIC WORKS. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER.
27. DUST SHALL BE CONTROLLED BY THE CONTRACTOR IN ACCORDANCE WITH ALL IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT (APCD) FUGITIVE DUST CONTROL RULES AND REGULATIONS AND SHALL COMPLY WITH THEIR PERMITTING REQUIREMENTS, IF APPLICABLE.
28. THE NOTES LISTED ABOVE ARE A MINIMUM LIST. THIS DOES NOT RELIEVE THE ENGINEER FROM COMPILING ADDITIONAL NOTES THAT MAY BE REQUIRED FOR THE PROJECT.

END OF SECTION II - F

**II G. STREET CLASSIFICATIONS**

The County of Imperial has ten (10) typical street cross-sections for eight (8) typical road classifications. This is subject to change due to any future changes within the most current approved County Circulation Element. Although typical, changes in right-of-way requirements may be needed and requested by the Director of Public Works to accommodate special circumstances or conditions. This can include but not be limited to accommodate future medians, turn lanes, bicycle lanes, bus turnouts, slopes, drainage structures, on street parking and/or other required improvements.

Street classifications are shown in Section VI, “County Standard Drawings”.

**II H. STREET STRUCTURAL SECTION**

The minimum structural section within Imperial County shall conform to the County Road Structural Section Drawing No. 440 as shown in Section VI, “County Standard Drawings”. Following is a brief summary:

<u>Minimum TI</u>	<u>Road Classification</u>	<u>ROW Width</u>	<u>Minimum Section</u>
14	Expressway	210’	9’ AC over 35” AB
13	Major Industrial Coll.	96’	8.5” AC over 34” AB
11	Prime Arterial	136’/126’	5.5” AC over 28” AB
10	Minor Arterial	102’	4.5” AC over 26” AB
8.0	Major Collector/	84’	4” AC over 18” AB
8.0	Industrial Local	64’	4” AC over 18” AB
6.5	Minor Collector	70’	4” AC over 14” AB
6.0	Local Residential	60’	3” AC over 14” AB
5.0	Residential Cul-de-Sac	60’	3 “ AC over 9” AB

There are provisions for alternate sections as well as other caveats regarding the structural sections. Attention is directed to County Standard Drawing No. 440 for further information. For road classification cross sections attention is directed to the latest Circulation and Scenic Highway Element of the County General Plan.

**II I. ENCROACHMENT PERMITS**

An encroachment permit is required from the County Public Works Department for any work onto, into or within the County road or street right of way. This includes placement of curbs, gutters, and sidewalks, above and below ground storm drains, utilities and appurtenances within right-of-way. The adjacent property owner is typically responsible for ongoing maintenance of the frontage sidewalk and all driveways. The County Public Works Department is typically responsible for street maintenance, including striping, signing, curb and gutters after construction by Developer.

Details of items needed to process an encroachment permit can be obtained from the Department of Public Works. Basic requirements include:

1. Approved Plans. Plans may require approval from the County Planning and Building Department, Environmental Health Services Department (if applicable), County Fire Department and Utility Agency as applicable and approval from the County Department of Public Works.
2. Detailed Quantity Estimate of all encroachments within County road right of way. This includes surface improvements and underground utility pipelines and appurtenances.

3. Hold Harmless Agreement and proof of liability insurance with the County listed as additionally insured.

All provisions of a County Encroachment Permit shall govern and supercede any conflicting positions of the approved Plans & Specifications unless otherwise determined by the Director of Public Works/Road Commissioner.

See Section IC, "Required Checklists" elsewhere in this manual.

END OF SECTION II I.

## II J. STREET IMPROVEMENT SPECIFICATIONS

Asphalt Concrete – Type A or Type B shall conform to Section 39, “Asphalt Concrete” of the Caltrans Standard Specification, most current edition accepted by County.

Aggregate Base – Class 2 Aggregate Base shall conform to Section 26, “Aggregate Bases” of the Caltrans Standard Specifications, most current edition accepted by County and these specifications.

Aggregate for Class 2 Aggregate base shall be 1 ½” maximum or at option of the Contractor, ¾” maximum. No Class 2 Aggregate Base utilizing recycled materials shall be permitted for road classification of Minor Collector or above. Recycled Base material may be considered for use in local road with advance permission by the Road Commissioner. All Class 2 Aggregate base shall also comply with the following:

1. A Certificate of Compliance shall be provided to the Engineer prior to use ensuring the Class 2 Aggregate Base Material complies with the provisions of Section 26 of the Standard Specifications.
2. Class 2 Aggregate Base Material for use in this project shall be tested by the contractor at his expense prior to approval for use on the project site by the engineer. Stockpile locations shall also be made available to the engineer to perform his own independent testing. Testing by the contractor shall include R-value, sand equivalent and durability index tests as per the standard Specifications.

Any base material that does not comply with the provisions for testing, gradation, compaction or any other requirement in Section 26 of the Standard Specification or these special provisions shall not be used and if already in place shall be removed by the contractor at his sole expense. Under no circumstances will any material not meeting these specifications be permitted to remain in place.

Concrete Sidewalk – to be added

Concrete Driveways – to be added

Underground Pipe Materials

1. All pipes in road right-of-way shall meet or exceed standards for schedule 40 PVC wall thickness and SDR values. Thirty inches (30”) minimum cover depth is required, except for water lines. Waterlines shall have thirty-six inches (36”) minimum cover depth.
2. Storm drain in road right-of-way shall be either rubber gasket reinforced concrete pipe (RCP) Class III or PVC schedule 40 wall thickness and SDR value minimum. Class IV RCP would be required for applications with less than 30 inches of cover.
3. For all gravity flow PVC applications:
  - 4” diameter PVC – SDR 18 minimum
  - 6” diameter PVC – SDR 21 minimum
  - 8”, 10”, 12” diameter PVC – SDR 26 minimum
  - 18” and greater diameter PVC – SDR 35 minimum
4. For pressure water and pressure sewer applications:
  - \*up to and including 12” diameter PVC – Class 150 (DR18) minimum.
  - \*greater than 12” diameter PVC – Class 235 (DR 14) minimum.
  - \* unless otherwise accepted by appropriate water utility agency (CSA)
5. For other non conveyance PVC applications:
  - 4” Diameter PVC – SDR 18 minimum
  - 6” Diameter PVC – SDR 21 minimum
  - 8”, 10” and 12” Diameter PVC – SDR 26 minimum

18" and greater diameter PVC – SDR 35 minimum

6. Any applications for any underground pipe, which will result in less than 30 inches of cover will require structural assistance. This could include concrete cradle caps or slurry backfill depending upon circumstances. Approval by the County Engineer will be required prior to covering of pipes with insufficient cover.
7. Use of High Density Polyethylene Pipe (HDPE) storm drain may be considered in lieu of PVC or RCP as follows:
  - HDPE pipe shall conform to current American Association of State Highway and Transportation Officials (AASHTO). Pipes with a diameter of 12 inches through 60 inches shall conform to AASHTO designation M-294, Type S (Smooth Interior). Pipe joints to be watertight (WT) conforming to ASTM D 3212 on all publicly maintained drainage facilities.
  - The last 16 feet (typically two sections) at each exposed end of a culvert shall be constructed of reinforced concrete pipe (RCP). A concrete log connection at transition is required.
  - **HDPE is not permitted in areas with running ground water or in areas with unstable trench walls.** An accompanying letter signed by a geotechnical engineering stating HDPE use will not be located within these conditions are required for approval.
  - 30 inches of minimum cover over the top of pipe.
  - Conduit must be encased by one of the following:
    - A. 6 inches minimum thickness envelope of 6-sack concrete.
    - B. Trench restored to road sub-grade with 3 sack sand slurry and 1 foot minimum thickness encasing the pipe.
    - C. Installation of a ¾" crushed rock envelope that shall have a minimum of 8 inches of crushed rock beneath the pipe invert and between the pipe and trench walls with 12 inches of crushed rock on the top of the pipe. The crush rock shall be encapsulated in a geo-textile filter fabric envelope to prevent migration of soil fines into the void spaces in the crushed rock. The fabric shall cover the trench bottom, sidewalls, and shall be folded over the top of the crushed rock to create a double layer of material. The remaining backfill to road sub-grade shall be a 3-sack sand slurry. All materials shall be approved by the DPW.
  - Any deviation from above conditions may be considered on a case-by-case basis, subject to Director of Public Works' approval.

## II K. MISCELLANEOUS STANDARDS

1. Roadway lighting
  - a. All developments shall provide street lighting as required by the Utility Agency and/or the County Director of Public Works. Additionally all street lighting electrical appurtenances shall have Imperial Irrigation District (IID) written approvals.
2. Intersections – to be added

END OF SECTION II K

## II L. MODIFICATION PROCESSING PROCEDURES

In recognition that strict adherence to these standards in every situation might result in impractical applications and unreasonable hardships, the following procedure is provided to properly respond to unique situations. A project proponent may request a modification by completing a "Request for a Modification to a Road Standard" form (see below) which details the location of the requested modification, alternatives considered, hardship of compliance with standard, and cost estimates. In some instances, it may be necessary for the applicant to provide an engineer's sketch to properly describe the requested modification. In addition to engineering and regulatory concerns, the following factors may be considered: consistency with existing road characteristics in the project vicinity, likelihood of future public or private upgrades to the affected roads, access points to and from individual properties, established front-yard setbacks, potential environmental impacts, utility relocation, project and plan submittals made prior to the adoption of these standards and established community character guidelines in the area.

County staff will assess the appropriateness of the requested modification. The Director will then review County staff's assessment and make the final decision regarding the modification request. Prior to making his final decision, the Director may also obtain input from the Planning Director, the general public and/or other agencies. The Director's final decision will be in the form of a letter to the applicant and project engineer explaining the decision and the justifications used in making that decision. A copy of the Director's final decision, along with the completed application will be forwarded to the DPW Project Manager, the project inspector and the project file.

In cases where strict adherence to these standards will be extremely difficult to achieve, staff will prepare the draft conditions of approval so to include a modification. In these cases, the specific modification will be identified in the draft conditions. Absence of any such specific modification in the conditions will mean that, unless a modification is later granted, the Imperial County Public Road Standards apply to all affected public roads.

Modification requests, which are not associated with a discretionary permit application, will be processed separately according to applicable County guidelines. For instance, a modification request associated with a change to a condition of approval of a tentative map may require a resolution amendment or a map modification. These permits are applied and processed through the County Planning Department.

**County of Imperial  
Department of Public Works**

**Request for a  
Modification to a Road Standard**

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Date of Request \_\_\_\_\_

Project Number (Tract Map, Parcel Map, CUP No., etc) \_\_\_\_\_

Assessors Parcel Number \_\_\_\_\_

Requestor Name \_\_\_\_\_ Telephone Number \_\_\_\_\_

Address \_\_\_\_\_

Requested Modification (attach engineering sketches showing existing layout, details and notes)

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Reason for requested Modifications (provide attachment if additional space is required)

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List alternatives that could mitigate the requested Modification (attach engineering sketches showing proposed layouts, details and notes)

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Describe the hardships(s) to the property owners(s) and/or neighbor(s) if the request is not approved. (See Note 3)

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Provide Design and Cost Estimate for meeting the Condition (see Note 3)

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## **Special Notes**

The following guidelines apply to this request:

1. Incomplete and unclear requests, or requests that are not supported by appropriate documents will be returned as incomplete applications. Requests must be specific and clear.
2. This request must be completed and submitted with supporting attachments. Attachments may consist of documents from relevant County departments, regulatory agencies, utility agencies and/or districts, planning groups, etc. Photos, plan and profile sketches, diagrams, engineering studies, certifications, cost estimates, and/or other pertinent information may also be included.
3. Provide detailed cost estimates for work included in this request. Single figure summary and “bottom line” cost estimates will not be accepted. *Please note that financial hardship cannot be the sole basis of an exception request.*
4. The applicant will be contacted if additional information or clarification is required. The Public Works project team responsible for the project area will evaluate the request and make a recommendation to the Director of Public Works through the Deputy Director. The Director’s decision, which is final, will be conveyed to the applicant in writing, with copies to all parties and agencies concerned.
5. Requests take an average of fifteen (15) working days to process. They may take longer if submitted without the proper supporting documents or if there is insufficient fund balance in the project account.
6. Staff time to process this request will be charged against the project account. The applicant will be contacted for additional funds if the account balance is insufficient to cover the estimated charges for processing the request.
7. Request for modifications to conditions of approval of a recorded map, in most cases, requires a map modification process, which is a separate process.

II M. **TRAFFIC MITIGATION AND BENEFIT FEE ASSESSMENTS**

Currently, a traffic mitigation fee is only authorized for the Gateway of the Americas Specific Plan No. 97-0001 adopted September 25, 2001. As development occurs, additional fees, including benefit for assessments for transportation infrastructure, may be implemented within the County.

For Gateway Traffic Mitigation Fees within the Gateway SPA, consult the Gateway of the Americas Specific Plan area CSA Special Requirements (Attachment C).

### **III. DRAINAGE IMPROVEMENTS**

### III A. GENERAL REQUIREMENTS

1. All drainage design and requirements are recommended to be in accordance with the Imperial Irrigation District (IID) "Draft" Hydrology Manual or other recognized source with approval by the County Engineer and based on full development of upstream tributary basins. Another source is the Caltrans I-D-F curves for the Imperial Valley.
2. Public drainage facilities shall be designed to carry the ten-year six-hour storm underground, the 25-year storm between the top of curbs provided two 12' minimum width dry lanes exist and the 100-year frequency storm between the right of way lines with at least one 12' minimum dry lane open to traffic. All culverts shall be designed to accommodate the flow from a 100-year frequency storm.
3. Permanent drainage facilities and right of way, including access, shall be provided from development to point of satisfactory disposal.
4. Retention volume on retention or detention basins should have a total volume capacity for a three (3) inch minimum precipitation covering the entire site with no C reduction factors. Volume can be considered by a combination of basin size and volume considered within parking and/or landscaping areas.

There is no guarantee that a detention basin outletting to an IID facility or other storm drain system will not back up should the facility be full and unable to accept the project runoff. This provides the safety factor from flooding by ensuring each development can handle a minimum 3-inch precipitation over the project site.

5. Retention basins should empty within 72 hours and no sooner than 24 hours in order to provide mosquito abatement. Draining, evaporation or infiltration, or any combination thereof can accomplish this. If this is not possible then the owner should be made aware of a potential need to address mosquito abatement to the satisfaction of the Environmental Health Services (EHS) Department. Additionally, if it is not possible to empty the basin within 72 hours, the basin should be designed for 5 inches, not 3 inches as mentioned in Item #4 above. This would allow for a saturation condition of the soil due to a 5" storm track. EHS must review and approve all retention basin designs prior to County Public Works approval. Nuisance water must not be allowed to accumulate in retention basins. EHS may require a nuisance water abatement plan if this occurs.
6. The minimum finish floor elevation shall be 12" above top of fronting street curb unless property is below street level and/or 6" above the 100-year frequency storm event or storm track. A local engineering practice is to use a 5" precipitation event as a storm track in the absence of detailed flood information.

The 100-year frequency storm would be required for detention calculations.

7. Finish pad elevations should be indicated on the plans, which are at or above the 100-year frequency flood elevation identified by the engineer for the parcel. Finish floor elevations should be set at least 6 inches above the 100-year flood elevation.
8. The developer shall submit a drainage study and specifications for improvements of all drainage easements, culverts, drainage structures, and drainage channels to the Department of Public Works for approval. Unless specifically waived herein, required plans and specifications shall provide a drainage system capable of handling and disposing of all surface waters originating within the subdivision and all surface waters that may flow onto the subdivision from adjacent lands. Said drainage system shall include any easements and

structures required by the Department of Public Works or the affected Utility Agency to properly handle the drainage on-site and off-site. The report should detail any vegetation and trash/debris removal as well as address any standing water.

9. Hydrology and hydraulic calculations for determining the storm system design shall be provided to the satisfaction of the Director, Department of Public Works. When appropriate, water surface profiles and adequate field survey cross-section data may also be required.
10. An airtight or screened oil/water separator or equivalent is required prior to permitting onsite lot drainage from entering any street right of way or public storm drain system for all industrial/commercial or multi residential uses. A maximum 6" drain lateral can be used to tie into existing adjacent street curb inlets with some exceptions. Approval from the Director of Public Works is required.
11. The County is implementing a storm water quality program as required by the State Water Resources Control Board, which may modify or add to the requirements and guidelines presented elsewhere in this document.

This can include ongoing monitoring of water quality of storm drain runoff, implementation of Best Management Practices (BMPs) to reduce storm water quality impacts downstream or along adjacent properties. Attention is directed to the need to reduce any potential of vectors, mosquitos or standing water.

12. A Drainage Report is required for all developments in the County. It shall include a project description, project setting including discussions of existing and proposed conditions, any drainage issues related to the site, summary of the findings or conclusions, offsite hydrology, onsite hydrology, hydraulic calculations and a hydrology map.
13. Specific to small Parcel Map developments:
  - A. For individual lots, sufficient storage volume must be available on a portion of the proposed parcel to accommodate a three (3) inch precipitation minimum covering the entire area. The resulting storage volume should be accommodated in a single retention basin. However, this office will consider a combination of retention basins and on-lot storage.
  - B. Remaining portions of the parcel or agricultural parcels that are not being developed should also provide for onsite retention or assurances that the resulting storm runoff does not impact adjacent parcels.
  - C. Finish pad elevations should be indicated on the plans, which are at or above the 100-year frequency flood elevation identified by the engineer for the parcel. Finish floor elevations should be set at least 6 inches above the 100-year flood elevation.
  - D. Onsite driveways should be designed and constructed such that they are at least 3 inches above the 100-year frequency flood elevation identified for the parcel.
  - E. Septic system manhole access, water systems and other associated electrical appurtenances should also have finish elevations indicated on the plans that are at least 6" above the 100 year frequency flood elevation identified for the parcel.
  - F. Retention basins should empty within 72 hours in order to provide mosquito abatement. This can be accomplished by either draining, evaporation or infiltration, or any combination thereof. If this is not possible, then the owner should be made aware of a

potential need to address mosquito abatement to the satisfaction of the Environmental Health Services Department. Additionally, if it is not possible to empty the basin within 72 hours, the basin should be designed for 5 inches, not 3 inches as mentioned in Item #A above. This would allow for a saturation condition of the soil due to a 5" storm track.

#### Detention Basin Design and Maintenance Guideline Note:

The Imperial County Division of Environmental Health Services Vector Control Program is responsible for vector and mosquito control through a variety of means. Poorly designed and ill-maintained detention basins are capable of breeding large numbers of vectors or mosquitoes and offer excellent harborage for adult mosquitoes from other sources. Because detention basins are often situated in residential neighborhoods and other populated areas, they present a significant health risk and pose a challenging pesticide application situation. The California Health and Safety Codes provide for public nuisance abatement and prevention. EHS has guidelines available and they will review all storm retention basin systems prior to Public Works approval.

### III B. HYDROLOGY

1. Off-site, use a blue line or Xerox prints of the subdivision or tract map. Show existing culverts, cross-gutters and drainage courses based on field review. Indicate the direction of flow; clearly delineate each drainage basin showing the area and discharge and the point of concentration.
2. On-site, use the grading plan. If grading is not proposed, then use a 100-scale plan or greater enlargement. Show all proposed and existing drainage facilities and drainage courses. Indicate the direction of flow. Clearly delineate each drainage basin showing the area and discharge and the point of concentration.
3. Use the rational formula  $Q$  (flow (cfs))= $C I A$  (area/acreage) for watersheds less than 0.5 square mile unless an alternate method is approved by the County Engineer. For watersheds in excess of 0.5 square mile, the method of analysis shall be approved by the County Engineer prior to submitting calculations.

### III C. HYDRAULICS

All facilities that convey drainage must have calculations to support its use. These facilities include streets, culverts, storm drains, channels, catch basins, inlets, etc.

1. Street – provide:
  - a) Depth of gutter flow calculation.
  - b) Inlet calculations.
  - c) Show gutter flow  $Q$ , inlet  $Q$ , and bypass  $Q$  on a plan of the street.
2. Storm drain pipes and open channels – provide:
  - a) Hydraulic loss calculations for: entrance, friction, access holes, junctions, bends, angles, reduction and enlargement.
  - b) Analyze existing conditions upstream and downstream from proposed system, to be determined by the County Engineer on a case-by-case basis.

- c) Calculate critical depth and normal depth for open channel flow conditions.
- d) Design for non-silting velocity of 4 feet per second in a two-year frequency storm unless otherwise approved by the County Engineer.
- e) All pipes and outlets shall show HGL (hydraulic grade line); velocity and Q value(s) for which the storm drain is designed to discharge.
- f) Confluence angles shall be maintained between 45° and 90° from the main upstream flow. Flows shall not oppose main line flows.

### III D. **INLETS**

- 1. Curb inlets at a sump condition should be designed for two CFS (cubic feet per second) per lineal foot of opening when headwater may rise to the top of curb.
- 2. Curb inlets on a continuous grade should be designed based on the following equation:

$$Q=0.7 L (a+y) * 3/2$$

Where:      y = depth of flow in approach gutter in feet  
                   a = depth of depression of flow line at inlet in feet  
                   L = length of clear opening in feet (maximum 30 feet)  
                   Q = flow in CFS

- 3. Grated inlets should be avoided when possible. When necessary, the design should be based on the Bureau of Public Roads Nomographs (now known as the Federal Highway Administration). All grated inlets shall be bicycle proof.
- 4. All catch basins shall have an access main, a minimum of 24 inches in diameter in the top unless access through the grate section is satisfactory to the County Engineer.
- 5. Catch basins/curb inlets shall be located so as to eliminate, whenever possible, cross gutters. Catch basins/curb inlets shall not be located within 5 feet of any curb return or driveway.
- 6. Minimum connector pipes for public drainage systems shall be 18 inches.
- 7. Flow through inlets may be used when pipe size is 24 inches or less and open channel flow characteristics exist.

### III E. **STORM DRAINS**

- 1. Minimum pipe slopes shall be 0.001 (0.1%) unless otherwise approved by the County Engineer.
- 2. Minimum storm drain, within public right of way, size shall be 18-inch diameter.
- 3. Provide cleanouts at 300 feet maximum spacing and at angle points and at breaks in grade greater than 10°. For pipes 48 inches in diameter and larger, a maximum spacing of 500 feet may be used.
- 4. The material for storm drains in right-of-way shall be rubber gasket reinforced concrete pipe, poly vinyl chloride pipe or HDPE storm drainpipe designed in conformance with Imperial County design criteria.

5. Horizontal and vertical curve design shall conform to manufacturer recommended specifications.
6. The pipe invert elevations, slope, and pipe profile line shall be delineated on the Mylar of the improvement plans.

The strength classification of any pipe shall be shown on the plans. Minimum strength for RCP shall be Class III in all County streets or future right of way. Minimum strength for depths less than 2 feet, if allowed, shall be Class V or greater.

PVC pipe, if used, must meet or exceed standards for schedule 40-wall thickness and SDR values. Thirty (30) inches minimum cover depth is required. (See Section II J.)

7. For all drainage designs that are not covered in these standards, other established standard practice criteria can be used as approved by the Director of Public Works.
8. For storm drain discharging into unprotected or natural channel, proper energy dissipation measures shall be installed to prevent damage or erosion.
9. The use of detention basins to even out storm peaks and reduce piping is permitted with substantiating engineering calculations and proper maintenance agreements.
10. Desiltation measures for silt caused by development shall be provided and cleaned regularly and after major rainfall events as required by the County Engineer or his designated representative. Adequate storage capacity shall be maintained at all times.
11. Protection of downstream or adjacent properties from incremental flows (caused by change from an underdeveloped to a developed site) shall be provided. Such flows shall not be concentrated and directed across unprotected adjacent properties unless an easement and storm drains or channels to contain flows are provided.
12. Storm drainpipe under pressure flow for the design storm, i.e., HGL above the soffit of the pipe, shall meet the requirements of ASTM C76, C361, and C443 for water-light joints in the section of pipe calculated to be under pressure.

III F. **DRAINAGE SPECIFICATIONS AND DESIGN STANDARDS**

“To be Added”

## **IV. GRADING PLANS**

#### IV A. **GENERAL REQUIREMENTS**

The requirements for grading plans and permits shall be in conformance with the Imperial County grading ordinance and this manual.

1. When a grading permit is required, a grading plan must be prepared by a registered civil engineer, licensed to practice in California. A preliminary sketch may be submitted to obtain the County Engineer's acceptance of the proposed grading design after which the grading plan will be prepared.
2. All drawings shall be standard size sheets (24"x 36" or 11" x 17"). All lettering shall be 1/8" or larger with hand lettering, 1/10" or larger for machine lettering.
3. All title sheets shall have an index or key map clearly indicating the sheet numbers issued. All index maps shall be drawn showing overall layout of the water, sewer (including future extensions).
4. Each sheet is to be signed and sealed by a Registered Civil Engineer, licensed to practice in California. The Registered Engineer performing the design shall also sign all complex structural designs such as retaining walls. When a soils report is required, the Soils Engineer and/or Geologist shall sign grading plans. In addition, all calculations and reports shall be signed by and sealed by the engineer responsible for the design prior to the County approving the plans.
5. Revisions made after original approval by the County Engineer shall be initiated by the Engineer of Work and submitted to the County for approval. The County Engineer prior to construction of the revised improvements must sign off plan revisions, depending upon complexity. Construction changes and/or as built plans may be required prior to Public Works final acceptance and approval of construction.
6. All public and private road/utility and drainage easements shall be shown on the grading plan.
7. Drainage calculations and maps shall accompany all grading plans submitted for checking, unless the requirement is specifically waived.
8. Plans submitted shall be accompanied by the appropriate checklist; see Section IC, "Required Checklists" elsewhere.
9. All applicable plan check deposits/fees shall be paid with the first submittal package.
10. The original check prints (if provided) shall accompany revised plans resubmitted for checking.
11. All plans, specifications and supporting documents shall be signed and sealed by the Engineer in responsible charge of the work prior to County Engineer's approval as per the Professional Engineers and Land Surveyors Act.
12. A letter of permission shall be required for any grading that encroaches into adjacent properties.

#### IV B. **TITLE GRADING SHEET**

The typical title sheet for a set of grading plans typically includes the following:

- Specific Conditions Notes
- General Notes
- Engineer's Note
- Declaration of Responsible Charge
- Engineer's name, address, telephone number, signature, wet stamp and expiration date
- Key Map (if required)
- Vicinity Map
- Work To Be Done
- Owner/Developer Name/Address
- Owner/Permittee's Name/Address/Telephone Number
- Site Address
- Assessor's Parcel Number
- Show Special Use Permit, Parcel Maps or Tract Map
- Legal Description
- Soils Engineer's Registration Number/Address
- Bench Mark
- Details
- Typical Pad Grading (if Applicable)
- Earthwork Information
- Slope Ratios
- Name and Telephone Number of All Utility Agencies
- Basis of Bearings

#### IV C. **GRADING SHEETS**

A typical grading sheet includes the following:

1. Subdivision boundary or property lines.
2. All existing and proposed road, utility, drainage and open space easements.
3. Proposed and existing contour lines and/or elevations.
4. Contours shall extend beyond limits of grading at least 100 feet or sufficient distance to show on-site and off-site drainage.
5. Spot elevations shall be shown to clarify any land surface not readily discernible from a study of contour lines.
6. Location and graphic representation of all existing natural and proposed man-made drainage facilities.
7. Detailed plans of all surface and subsurface drainage devices, walls, cribbing and other protective devices to be constructed with or as a part of the grading plan.
8. Location and graphic representation of proposed excavations and fills, of on-site storage of soil and other earth material and of on-site disposal.
9. Location of final surface runoff, erosion and sediment control measures.

10. Location of all proposed buildings or structures on property where the work is to be performed and the location of all buildings or structures on land of adjacent owner which are within 15 feet of the property or which may be affected by proposed grading operations.
11. Appurtenant structures, retaining walls, drainage facilities or other grading appurtenances.
12. Grading details along the property line to insure no possible problems are created by the proposed development to the adjoining property owners.
13. Retaining walls with top and bottom of wall elevations shall be called out on the plan. (All retaining walls require County Building Inspection approval).
14. Proper set back from property lines per County Ordinance.
15. Location of cut and placement of fill ("Daylight" and limit lines)
16. Typical lot drainage, lot grading, grading of street section.
17. Typical berm, swale at top of fills slopes and brow ditch.
18. Percent of grade of streets and driveways, length of vertical curves, B.V.C and E.V.C.
19. Caution notes for all existing telephone and utility lines.
20. Lot numbers, lot slopes, lot dimensions and pad elevations.
21. Top and toe of slopes, grade breaks.
22. Benchmark that is a County or Imperial Irrigation District (IID) recognized Benchmark. Any assumed Benchmark used shall be tied into one of these recognized Benchmarks.

IV D. **SAMPLE LETTERS AND DECLARATIONS REQUIRED**

These are just samples of permission to grade letters. They can be put in a different format, but the information listed in them must be included.

1. PERMISSION TO GRADE

Mr. William S. Brunet, P.E.  
Director of Public Works  
County of Imperial  
Department of Public Works  
155 S. 11<sup>th</sup> Street  
El Centro, CA 92243

Dear Mr. Brunet:

PERMISSION TO GRADE IN CONJUNCTION WITH A LAND DEVELOPMENT PROJECT

(I/We) (am/are) the owner(s) of (lot no., block, subdivision name and Map no.), Assessor's Parcel Number (APN no.) which is adjacent to the (northerly/westerly/southerly/easterly) property line of the proposed project on (lot no., block, subdivision name and Map no.). (I/We) have reviewed the proposed grading on (my/our) property and do hereby grant permission to grade as shown on (grading/improvement) plan prepared by (Engineering Company).

By: \_\_\_\_\_

(Letter must be notarized)

Date: \_\_\_\_\_

2. PERMISSION TO GRADE AND CONSTRUCT

Mr. William S. Brunet, P.E.  
Director of Public Works  
County of Imperial  
Department of Public Works  
155 S. 11<sup>th</sup> Street  
El Centro, Ca 92243

Dear Mr. Brunet:

PERMISSION TO GRADE AND CONSTRUCT IN CONJUNCTION WITH A LAND DEVELOPMENT PROJECT

(I/We) (am/are) the owner(s) of (lot no., block, subdivision name and Map no.), Assessor's Parcel Number (APN no.) which is adjacent to the (northerly/westerly/southerly/easterly) property line of the proposed project on (lot no., block, subdivision name and Map no.). (I/We) have reviewed he proposed grading on (my/our) property and do hereby grant permission to grade as shown on (grading/improvement) plan prepared by (Engineering Company).

By: \_\_\_\_\_

(Letter must be notarized)

Date: \_\_\_\_\_

3. DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF IMPERIAL IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

(Engineer's Company Name  
Address and Telephone Number)

\_\_\_\_\_  
(Engineer's Name and Title)  
(Registration Number)  
Expiration Date \_\_\_\_\_

\_\_\_\_\_  
DATE

IV-E **GRADING PLAN GENERAL NOTES**

1. APPROVAL OF THIS GRADING PLAN DOES NOT CONSTITUTE APPROVAL OF VERTICAL OR HORIZONTAL ALIGNMENT OF ANY PRIVATE ROAD SHOWN HEREON FOR COUNTY ROAD PURPOSES.
2. FINAL APPROVAL OF THESE GRADING PLANS SUBJECT TO FINAL APPROVAL OF THE ASSOCIATED IMPROVEMENT PLANS WHERE APPLICABLE. FINAL CURB GRADE ELEVATIONS MAY REQUIRE CHANGES IN THESE PLANS.
3. IMPORT MATERIAL SHALL BE OBTAINED FROM A LEGAL SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO SECURE AN ENCROACHMENT PERMIT FROM THE COUNTY OF IMPERIAL DEPARTMENT OF PUBLIC WORKS FOR ANY EXCAVATION OR CONSTRUCTION WITHIN COUNTY ROAD RIGHT-OF-WAY. FOR INSPECTIONS, 48 HOUR MINIMUM NOTICE IS REQUIRED, (760) 482-4462. ADDITIONALLY, UNDERGROUND SERVICE ALERT (USA) MUST BE CALLED TWO WORKING DAYS BEFORE THE CONTRACTOR MAY EXCAVATE. THEIR CONTACT NUMBER 811 (formerly (800) 422-4133). ALL WORK AND MATERIALS ARE SUBJECT TO THE INSPECTION AND APPROVAL OF THE COUNTY DEPARTMENT OF PUBLIC WORKS.
5. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK. NOTICE OF PROPOSED WORK SHALL BE GIVEN TO THE FOLLOWING AGENCIES:

GAS TELEPHONE NO. (800) 422-4133/(800) 227-2600

IID POWER: TELEPHONE NO.: (760) 339-9280

IID WATER TELEPHONE NO. (760) 339-9263

PACIFIC TELEPHONE: TELEPHONE NO. (800) 422-4133

CATV: TELEPHONE NO. To Be Determined

SEWER AGENCY TELEPHONE NO. To Be Determined

WATER AGENCY TELEPHONE NO. To Be Determined

6. A SOILS REPORT MAY BE REQUIRED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT AND/OR GRADING PLAN APPROVAL.
7. APPROVAL OF THESE PLANS BY THE DIRECTOR OF PUBLIC WORKS DOES NOT AUTHORIZE ANY WORK OR GRADING TO BE PERFORMED UNTIL THE PROPERTY OWNER'S PERMISSION HAS BEEN OBTAINED AND VALID GRADING PERMIT HAS BEEN ISSUED BY THE COUNTY PLANNING & DEVELOPMENT SERVICES DEPARTMENT.
8. THE DIRECTOR OF PUBLIC WORKS' APPROVAL OF THESE PLANS DOES NOT CONSTITUTE COUNTY BUILDING OFFICIAL APPROVAL OF ANY FOUNDATION FOR STRUCTURES TO BE PLACED ON THE ITEMS COVERED BY THESE PLANS, INCLUDING ANY ONSITE OR PERIMETER SCREEN OR RETAINING WALLS.

9. ALL MAJOR SLOPES SHALL BE ROUNDED INTO EXISTING TERRAIN TO PRODUCE A CONTOURED TRANSITION FROM CUT OR FILL FACES TO NATURAL GROUND AND ABUTTING CUT OR FILL SURFACES.
10. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDINANCE AND NOTWITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY SUCH PROPERTY FROM SETTLING, CRACKING, EROSION SILTING, SCOUR OR OTHER DAMAGE, WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THE PLAN. THE COUNTY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICATED IMPROVEMENTS WHICH DAMAGE ADJACENT PROPERTY.
11. SPECIAL CONDITION: IF ANY ARCHEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE OF THIS GRADING OPERATION, SUCH OPERATION WILL CEASE IMMEDIATELY AND THE PERMITTEE WILL NOTIFY THE DIRECTOR OF THE PLANNING & DEVELOPMENT SERVICES DEPARTMENT AND THE DISCOVERY. GRADING OPERATION WILL NOT RECOMMENCE UNTIL THE PERMITTEE HAS RECEIVED WRITTEN AUTHORITY FROM THE DIRECTOR OF PLANNING & DEVELOPMENT SERVICES TO DO SO.
12. THE CONSTRUCTION OF ONE PCC STANDARD DRIVEWAY PER LOT, LOCATION TO BE DETERMINED IN THE FIELD BY ENGINEER OF WORK AND APPROVED BY COUNTY PUBLIC WORKS INSPECTOR. PCC SURFACING OF DRIVEWAY TO EXTEND FROM CURB TO PROPERTY LINE.
13. ALL GRADING SHALL CONFORM TO THE UNIFORM BUILDING CODE APPENDIX CHAP. 33, AS AMENDED BY TITLE 9 LAND USE ORDINANCE.
14. ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND/OR GRADING.
15. DURING ROUGH GRADING OPERATIONS AND PRIOR TO THE CONSTRUCTION OF ANY PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHALL BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO CONTIGUOUS PROPERTIES.
16. DUST SHALL BE CONTROLLED BY THE CONTRACTOR IN ACCORDANCE WITH ALL IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT (APCD) FUGITIVE DUST CONTROL RULES AND REGULATIONS AND SHALL COMPLY WITH THEIR PERMITTING REQUIREMENTS, IF APPLICABLE.
17. NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE EXISTING GROUND HAS BEEN CLEARED OF WEEDS, DEBRIS, TOPSOIL AND OTHER DELITERIOUS MATERIAL.
18. THE MAXIMUM ALLOWABLE CUT AND FILL SLOPES ARE 2:1, UNLESS A SLOPE STABILITY ANALYSIS AUTHORIZES A STEEPER SLOPE AND HAS BEEN APPROVED.
19. A 5' WIDE BY 1' HIGH BERM, OR EQUIVALENT, SHALL BE CONSTRUCTED ALONG THE TOP OF ALL FILL SLOPES OVER 5' IN VERTICAL HEIGHT. ALL

SLOPES LESS THAN OR EQUAL TO 5' SHALL HAVE A BERM TO PREVENT DRAINAGE FROM ERODING SAME.

20. A BROW DITCH DESIGNED TO HANDLE THE FLOWS (Q) FROM A 100-YR. STORM EVENT SHALL BE CONSTRUCTED ALONG THE TOP OF ALL CUT SLOPES.
21. NO OBSTRUCTION OF FLOOD PLAINS OR NATURAL WATER COURSES WILL BE PERMITTED.
22. ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE MUST CONTINUE TO FUNCTION DURING STORM CONDITIONS. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT CONTIGUOUS PROPERTIES DURING GRADING OPERATIONS.
23. THE FINISED GRADE SHALL BE SLOPED AWAY FROM ALL EXTERIOR BUILDING WALLS AT NOT LESS THAN 4% (1/2" PER FOOT) FOR A MINIMUM OF 3 FEET, UNLESS A SOIL REPORT PROVIDES ALTERNATE RECOMMENDATIONS.
24. A QUALIFIED AND REGISTERED PROFESSIONAL ENGINEER SHALL SUBMIT A WRITTEN CERTIFICATION TO THE PUBLIC WORKS DEPARTMENT THAT THE FINAL GRADING HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS FOR ALL GRADING DESIGNATED AS "ENGINEERED GRADING". AS-BUILT PLANS SHALL BE PROVIDED PRIOR TO FINAL ACCEPTANCE.
25. THE CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF REQUESTING A FINISH LOT GRADE AND DRAINAGE INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO THE BUILDING PERMIT FINAL INSPECTION BY PUBLIC WORKS FOR EACH LOT.
26. THE CONTRACTOR SHALL NOTIFY "UNDERGROUND SERVICE ALERT" AT 811 (formerly (800) 422-4133) A MINIMUM OF TWO DAYS PRIOR TO THE COMMENCEMENT OF ANY DIGGING OR EXCAVATION.

IV F **STORM WATER CONTROLS**

TO BE ADDED

IV G. **GRADING ORDINANCE:**

-TITLE 9, DIVISION 10, CHAPTER 10  
IS REFERENCED HEREIN  
-2001 UNIFORM BUILDING CODE

**NOTE THAT ALL GRADING PERMITS ARE ISSUED BY THE COUNTY BUILDING DEPARTMENT. NOTE ALSO THAT ALL GRADING AND DRAINAGE PLANS MUST BE REVIEWED AND APPROVED BY THE COUNTY PUBLIC WORKS DEPARTMENT.**

## V. UTILITIES

V A. **UTILITY GENERAL REQUIREMENTS**

The Public Works Department typically reviews plans for conformance to accepted standards for road design, encroachments in right of way and grading/drainage considerations. Adequacy of fire flows, potable water and sewer utilities, appurtenances including pressure flow analyses or capacities, street light layout or signal light plans shall be reviewed by the appropriate Utility Agency. If this is not possible an outside, independent plan checking service may be employed on behalf of the County to perform this at developer expense. For areas within Gateway of the Americas Specific Plan Area CSA see special requirements in Attachment C.

V B. **WATER GENERAL NOTES (TYPICAL)**

Check with related water utility agency for specific water notes.

V C. **POTABLE WATER SPECIFICATIONS**

Check with related water utility agency for specific potable water specifications.

V D. **SEWER GENERAL NOTES**

Check with related sewer utility agency for specific sewer notes.

V E. **SANITARY SEWER SPECIFICATIONS**

Check with related sewer utility agency for specific sanitary sewer specifications.

**VI. REQUIRED CHECKLISTS  
(Attachment 'A')**





County of Imperial

*Building Roads into the Next Century*

## **PUBLIC WORKS DEPARTMENT**

September 15, 2008

To all Surveyors, Architects, Engineers, Developers and the General Public performing work in the County of Imperial:

SUBJECT: Updated Encroachment Permit Checklist and Application Package,  
September 15, 2008

Dear Sir or Madam:

Effective immediately the enclosed updated checklists are required by this Department in order to process Encroachment Permits within County Road right-of-way. Any projects without complete submittals will be returned incomplete for processing.

Should you have any questions, please do not hesitate to contact this Department at (760) 482-4462.

Respectfully,

William S. Brunet, PE  
Director of Public Works

dm

cc: Charles Withers, Deputy County Counsel  
Jurg Heuberger, County Planning & Development Services Director

## **County of Imperial Department of Public works** **Encroachment Permit Application Package**

(Ordinance No. 1370, adopted August 12, 2003 and effective September 11, 2003)

Following items are attached for your use in obtaining an Encroachment Permit from this Department:

1. Checklist and Application for Encroachment Permit. (Required for all permits)
2. Encroachment Permit Fee Schedule
3. Hold Harmless/Indemnity Statement (required on case by case basis). Intended for projects, which may subject the public to potential liability or harm.
4. Certificate of Liability Insurance Sample (required on case by case basis as mentioned in item 4 above). County, its employees and agents in conducting of Encroachment Permit field inspection and review duties shall be listed as additional insured on certificate. Dollar amount of general liability shall be provided as recommended by the County Road Commissioner/Director of Public Works in coordination with the County Risk Manager.
5. Encroachment Permit informative brochure.

Following is a step-by-step summary of the Encroachment Permit Process:

1. Applicant submits a complete Encroachment Permit Checklist and Application with required Fee Deposit.
2. Public Works staff reviews information provided and proceeds as follows:
  - a. Review application and additional information for completeness, making recommendations/changes to meet this Department's requirements.
  - b. Check for any Conditions of Approvals or other requirements associated with the site, including, but not limited to; Conditional Use Permits, Parcel Maps, Zone Changes or Building Permits, etc.
  - c. Ensure Conditions of Approvals or other requirements such as Right-of-Way dedications, Grading and Drainage Plans/Studies or other Road Improvement Plans that have been approved.
  - d. Determine the amount of permit fees and request fees from applicant. The applicant will be required to submit quantities and "take offs" along with drawing to expedite the process. This information provides data for determination of the required fees.
  - e. When item "C" and "D" above have been addressed, staff writes up permit and contacts applicant to provide Hold Harmless Agreement and Insurance Certificates (if required).
  - f. After the above items have been addressed and are completed, the Department sends the applicant the Encroachment Permit with attached conditions/stipulations. As Built Plans will be required in most cases.
3. After construction, and if the permit was made out of the contractor (on a larger project), then the owner must obtain an Operate and Maintain Permit. This is a condition of the Construction Encroachment Permit. The fee is the "Basic Permit Deposit", which is \$85.00 at the present time unless the fee schedule is updated.
4. Encroachment Permits are typically issued for a 6-month period. Time extensions may be granted as necessary for the current extension fee in effect.

Contact information as to status of Encroachment Permits can be directed to the Construction Engineer Coordinator of the Public Works Department at (760) 482-4462.

# IMPERIAL COUNTY PUBLIC WORKS DEPARTMENT

155 South 11<sup>th</sup> Street El Centro, CA 92243  
 Tel: (760) 482-4462 Fax:(760) 352-1272

## ENCROACHMENT PERMIT CHECKLIST AND APPLICATION

(Ordinance No. 1370, adopted August 12, 2003 and effective September 11, 2003)

DATE \_\_\_\_\_

*Complete All Numbered Spaces!*

*Please Type or Print!*

*See Additional Handouts*

<b>1</b>	Property Owners Name	Phone No.
<b>2</b>	Mailing Address	Zip Code
<b>3</b>	Project Site Address	
<b>4</b>	Assessors Parcel No.	Reference No. (TM, PM, CUP, ETC.)
<b>5</b>	Legal Description	
<b>5</b>	Describe Intended Use/Scope of Work	
<b>6</b>	Describe the proposed work (Attach sheet for additional information)	
<b>7</b>	Engineer / Contractor	Phone No.
<b>8</b>	Mailing Address	Zip Code
<b>9</b>	Name and Address to which all Billings, Correspondences, and Refunds will be sent	Zip Code

### ENCROACHMENT PERMIT APPLICATION CHECKLIST

**1. Encroachment Permit**

- \_\_\_\_\_ Copy of Planning Commission Approval with Conditions (If Applicable)
- \_\_\_\_\_ 1 Copy of improvement plan quantity estimate
- \_\_\_\_\_ 1 Blue line of improvement plans if coordinated through Engineering Division
- OR
- \_\_\_\_\_ 2 Site Plans if permit is processed separately

**Quantity Estimate Note:** A quantity estimate of all items within public road right of way must be provided. The estimate shall be prepared by a licensed engineer. The only exception is if the encroachment is for a single residential driveway access, unless otherwise accepted by the Road Commissioner. The estimate shall be attached to the Encroachment Permit Application. Public Works staff shall review the estimate and compare as necessary to the approved plans. If there is any difference in interpretation from staff's calculation and the estimate resulting in staff's determination that the quantity is greater than shown in the estimate, the engineer will be contacted to provide more detail to staff. If staff cannot agree, the Road Commissioner or his designee shall have the final decision in quantity to be used for permit fee calculations.

Sufficient breakdown of both, dry, and wet utility line crossings at roadways and lines paralleling roads are primarily required, additional, lineal footage of curbs, gutters and sidewalks; driveway width and whether residential or commercial/industrial should be made. If the project includes roadwork, include square yardage of asphalt to be placed. Estimate should be broken down in a manner that is easy to compare with the approved plans. All appurtenances including, fire hydrants, valves, meters, manholes, catch basins etc. must also be itemized.

**Scope of Work Note:** A brief written scope of work of all proposed encroachments into public right-of-way must be included in the application.

### **ENCROACHMENT PERMIT FEE DEPOSIT INFORMATION**

Encroachment permits include an \$85 basic fee that is required for initial processing. Additional fees include: Inspection Fee, Plan Check Fee which is separate from the plan check fees by the Engineering division and other fees as may be required in the Encroachment Permit Fees adopted by the County Board of Supervisors, Ordinance No. 1370. A copy is included in the permit application. One of the following must be checked:

Encroachment Permit Deposit for Processing \$85 \_\_\_\_ (check if attached)  
\_\_\_\_ (check if provided with Improvement and Site  
Development Plan submittal)

During Processing and prior issuance of permit, applicant shall be notified of additional required fees to be paid.

### **PERMIT PROCESSING TIMES**

Processing time varies with complexity of project and whether approvals of engineering plans are required. If the project is reviewed through the engineering division the applicant can elect to have the encroachment permit processed concurrently with the plans. If this is done the Department can have the permit ready for issuance within seven (7) working days from the date the plans are approved for construction provided all necessary instruments of Liability/Surety and Traffic Control have been submitted and approved. Otherwise permits are normally processed AFTER plan approval. This necessitates permit application by applicant and several weeks of Department processing. If the encroachment permit does not require engineering plan approval, permit can be ready for issuance within seven (7) working days from the date of permit application acceptance provided all necessary instruments of Liability/Surety and Traffic Control have been submitted and approved. Please be advised that acceptance is determined after reviewing the application and that the application may be returned unaccepted if incomplete.

I, the undersigned Applicant, hereby apply for permission to excavate, construct and/or otherwise encroach on County right of way. I also agree to do the work in accordance with your terms, conditions, restrictions, rules, and regulations and subject to your inspection and approval. I verify that all items necessary for this project and checked above are attached. I understand that if any of the above required items, are not provided the Department reserves the right to reject the submittal without performing any plan check or permit processing. Receipt of submittal package does not guarantee acceptance for plan checking. If submittal is deemed incomplete, notification to applicant and engineer within one working day by fax and telephone will be made indicating unchecked submittal is available for pick up. Alternately the submittal may be returned by regular mail.

---

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Name Printed or Typed**

<b>For County Use Only</b>		
<b>Date Received</b>	<b>Date Accepted for Processing</b>	<b>Accepted for Processing</b>
		Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>By: Print</b>	<b>Signature</b>	<b>Date</b>

<b>Permit No.</b>
-------------------

<b>Approved By</b>
--------------------

<b>INITIAL FEE</b> \$ <input type="text"/>
--

PERMITTEE \_\_\_\_\_  
 COUNTY OF IMPERIAL  
 DEPARTMENT OF PUBLIC WORKS

ENCROACHMENT PERMIT FEES EFFECTIVE September 11, 2003  
 Per Ordinance No. 1370 Adopted August 12, 2003

**ESTIMATED FEE**

**A. BASIC PERMIT FEE (NON-REFUNDABLE)**

**\$85.00**

In addition to the basic permit fee, the following will apply:

**B. Inspection fee (non-refundable)**

Plow trench (longitudinal, shoulders)

000 - 500' →\$0.20 linear foot, minimum \$ 100.00	_____ ft.	\$ _____
501'-1000' →\$0.10 ea. Additional foot over 500'	_____ ft.	\$ _____
1001'-4000' →\$0.05 ea. Additional foot over 1000'	_____ ft.	\$ _____
over 4000' →\$0.03 ea. Additional foot over 4000'	_____ ft.	\$ _____

Open trench (longitudinal, shoulders)

000 – 500' →\$0.25 linear foot, minimum \$50.00	_____ ft.	\$ _____
over-500' →\$0.15 ea. Additional foot over 500'	_____ ft.	\$ _____

Underground road crossing (Longitudinal and Perpendicular)

Paved road

trench →\$3.00 linear foot, minimum \$200.00	_____ ft.	\$ _____
boring/jack→\$1.00 linear foot, minimum \$100.00	_____ ft.	\$ _____

Unpaved rd. →\$2.00 linear foot, minimum \$100.00	_____ ft.	\$ _____
---	-----------	----------

Driveway

→commercial, \$100.00 minimum per driveway	# _____	\$ _____
→residential \$85.00 minimum per driveway	# _____	\$ _____

inspection fee subtotal (total of all B.)		\$ _____
---	--	----------

**C. Plan check fee (non-refundable)**

50% of inspection fee or \$85.00 minimum.		\$ _____
---	--	----------

**D. Blanket permit \$7.50 per location in reporting period # location \_\_\_\_\_**

\$ \_\_\_\_\_

**E. Any unusual permit can require a deposit for estimated inspection time at the option of the Director of Public Works. A final billing will be made upon completion of all work. A refund will be made or additional charges assessed at that time. See attached breakdown of estimate.**

\$ \_\_\_\_\_

**F. Work done without a permit, except as authorized under emergency circumstances, will be charged at double the above fees.**

\$ \_\_\_\_\_

**G. Reactivating an expired permit or extending the completion time period will have an additional \$50.00 fee.**

\$ \_\_\_\_\_

**H. Public agency applicants for either a routine permit or a major or blanket permit may elect to have the routine permit billed to them for an additional charge of \$15.00 per permit.**

\$ \_\_\_\_\_

**Grand total permit fees (total of A through H)**

\$ \_\_\_\_\_

Work order # \_\_\_\_\_ date approved \_\_\_\_\_ approved by \_\_\_\_\_

Inspection by construction \_\_\_\_\_ Field \_\_\_\_\_ Trust fund permit yes \_\_\_\_\_ no \_\_\_\_\_

**LIABILITY FOR DAMAGES:** \_\_\_\_\_ hereinafter referred to as “the Permittee,” is responsible for all liability for personal injury or property damage which may arise out of work herein permitted, or which may arise out of failure on the Permittee’s part to perform his/her obligations under this permit in respect to maintenance or resulting from defects or obstructions, or from willful misconduct or negligence in performance of the obligations provided and contemplated by the permit. The Permittee shall be responsible for any liability imposed by law for injuries to or death of any person, including but not limited to the Permittee, persons employed by the Permittee, persons acting in behalf of the Permittee or damages to property arising out of work permitted and done by the Permittee under a permit.

By acceptance of receipt of this encroachment permit the Permittee agrees to indemnify and save harmless the County of Imperial and all officers, agents and employees thereof, including but not limited to the Board of Supervisors and the Director of Public Works, from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person, including but not limited to the Permittee, person employed and/or contracted by the Permittee, persons acting on behalf of the Permittee and the public or damage to property resulting from the performance of work under the permit, or arising out of the failure on the Permittee’s part to perform his/her obligations under any permit in respect to maintenance or any other obligations, or resulting from defects or obstructions, or from willful misconduct or negligence in the performance of the obligations during the progress of the work, or at any subsequent time work is being performed under the obligations provided and contemplated by the permit, except as otherwise provided by statute. The duty of the Permittee to indemnify and save harmless includes the duties to defense as set forth in California Civil Code §2778. The Permittee waives any and all rights to any type of express or implied indemnity against the County of Imperial, its officers or employees.

It is the intent of the County of Imperial and the Permittee that the Permittee will indemnify and save harmless the County of Imperial, its officers and employees from any and all claims, suits or actions as set forth above regardless of the existence or degree of fault or negligence, whether active or passive, primary or secondary, on the party of the Permittee, persons employed and/or contracted by the Permittee or persons acting on behalf of the Permittee.

**RESPONSIBILITY FOR DAMAGES:** The County of Imperial and all officers, agents and employees thereof, including but not limited to the Board of Supervisors and the Director of Public Works, shall not answer to, nor be held accountable in any manner for, the following: injury to or death of any person, including but not limited to the Permittee, persons employed by the Permittee or persons acting in behalf of the Permittee; or damage to property from any cause which might have been prevented by the Permittee, those persons employed by the Permittee or persons acting on behalf of the Permittee.

**INSURANCE:** This permit shall not be effective for any purpose unless and until the Permittee files with the County of Imperial, as the grantor, an insurance policy which shall have limits in the amount of no less than \_\_\_\_\_ dollars (\$\_\_\_\_\_) and a deductible amount of no greater than \_\_\_\_\_ dollars (\$\_\_\_\_\_). The County of Imperial, its officers, agents and employees shall be expressly listed as named insured under this insurance policy and the policy shall provide coverage for general negligence claims and for claims of errors and omissions. The Permittee shall be responsible to keep this insurance policy in full force and effect until final completion of the work contemplated in the request for an encroachment permit. The cost of any and all premiums for this insurance policy shall be borne by the Permittee. In the event of claims against the policy, the Permittee shall be responsible for payment of any deductible amounts. A Certificate of Insurance shall be provided to the Director of Public Works for the County of Imperial and shall verify that the insurance coverage may not be cancelled without thirty (30) days written notice to the Director of Public Works for the County of Imperial.

**STATEMENT OF ACCEPTANCE OF THE CONDITIONS FOR ISSUANCE OF THE ENCROACHMENT PERMIT:** I have read and understand each of the conditions set forth for issuance of this Encroachment Permit and on behalf of \_\_\_\_\_, and being duly authorized to do so I accept the encroachment permit subject to these conditions.

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Date

**On behalf of**  
\_\_\_\_\_

# ACORD<sup>TM</sup> CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

**COMPANIES AFFORDING COVERAGE**

COMPANY  
A

INSURED

COMPANY  
B

COMPANY  
C

COMPANY  
D

**COVERAGES**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS								
	<b>GENERAL LIABILITY</b> <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR <input type="checkbox"/> OWNER'S & CONTRACTOR'S PROT				GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ PERSONAL & ADV INJURY \$ EACH OCCURRENCE \$ FIRE DAMAGE (Any one fire) \$ MED EXP (Any one person) \$								
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE \$								
	<b>GARAGE LIABILITY</b> <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EACH ACCIDENT \$ AGGREGATE \$								
	<b>EXCESS LIABILITY</b> <input type="checkbox"/> UMBRELLA FORM <input type="checkbox"/> OTHER THAN UMBRELLA FORM				EACH OCCURRENCE \$ AGGREGATE \$ \$								
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input type="checkbox"/> INCL <input type="checkbox"/> EXCL				<table border="1"> <tr> <td>WC STATUTORY LIMITS</td> <td>OTHER</td> </tr> <tr> <td>EL EACH ACCIDENT</td> <td>\$</td> </tr> <tr> <td>EL DISEASE - POLICY LIMIT</td> <td>\$</td> </tr> <tr> <td>EL DISEASE - EA EMPLOYEE</td> <td>\$</td> </tr> </table>	WC STATUTORY LIMITS	OTHER	EL EACH ACCIDENT	\$	EL DISEASE - POLICY LIMIT	\$	EL DISEASE - EA EMPLOYEE	\$
WC STATUTORY LIMITS	OTHER												
EL EACH ACCIDENT	\$												
EL DISEASE - POLICY LIMIT	\$												
EL DISEASE - EA EMPLOYEE	\$												
	OTHER												

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

**CERTIFICATE HOLDER**

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL \_\_\_\_\_ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE



County of Imperial

*Building Roads into the Next Century*

## **PUBLIC WORKS DEPARTMENT**

September 15, 2008

To all Surveyors, Architects, Engineers, Developers and the General Public performing work in the County of Imperial:

SUBJECT: Updated Engineering and Survey Plan Check Checklist and Application Package, September 15, 2008

Dear Sir or Madam:

Effective immediately the enclosed updated checklists are required by this Department in order to process Engineering and/or Survey Plan Checks. Any projects without complete submittals will be returned incomplete for processing.

Should you have any questions, please do not hesitate to contact this Department at (760) 482-4462.

Respectfully,

William S. Brunet, PE  
Director of Public Works

dm

cc: Jurg Heuberger, County Planning & Development Services Director

**IMPERIAL COUNTY PUBLIC WORKS DEPARTMENT**

155 South 11th Street, El Centro, CA 92243  
Tel: (760) 482-4462 Fax: (760) 352-1272

**ENGINEERING AND SURVEY PLAN CHECK  
CHECKLIST AND APPLICATION**

Engineering Plan Check

DATE \_\_\_\_\_

Surveying Plan Check

**Complete All Numbered Spaces!**

**Please Type or Print!**

**See Additional Handouts**

<b>1</b>	Property Owners Name	Phone No.
<b>2</b>	Mailing Address	Zip Code
<b>3</b>	Project Site Address	
<b>4</b>	Assessors Parcel No.	Legal Description
<b>5</b>	Describe Intended Use/ Scope of Work	
<b>6</b>	Describe the proposed work (Attach sheet for additional information)	
<b>7</b>	Engineer / Contractor	Phone No.
<b>8</b>	Mailing Address	Zip Code
<b>9</b>	Name and Address to which all Billings, Correspondences, and Refunds will be sent	Zip Code

**ENGINEERING IMPROVEMENT AND SITE  
DEVELOPMENT PLAN CHECK**

**1. Improvement Plan Submittals**

- \_\_\_\_\_ Cover letter or transmittal
- \_\_\_\_\_ Copy of an approval Tentative Map
- \_\_\_\_\_ Copy of Resolution of Approval with Conditions
- \_\_\_\_\_ 3 Blue lines of improvement plans
- \_\_\_\_\_ 3 Copies of Hydraulic and Hydrological report & calculations
- \_\_\_\_\_ 3 Copies of other supporting calculations for water, sewer and pavement section (if applicable)
- \_\_\_\_\_ 3 Copies of Improvement plan quantity estimate
- \_\_\_\_\_ 2 Copies of Soils Report, current within one year of submittal

**2. Grading / Drainage Plan Submittals**

- \_\_\_\_\_ Cover letter or transmittal
- \_\_\_\_\_ Copy of an approved Tentative Map (if applicable)
- \_\_\_\_\_ Copy of Resolution of Approval with conditions (if applicable)
- \_\_\_\_\_ Copy of Building Permit application for grading
- \_\_\_\_\_ 2 Blue lines of grading plans
- \_\_\_\_\_ 3 copies of Hydraulic and Hydrological report & calculations
- \_\_\_\_\_ 2 Copies of Soils Report, current within one year of submittal (if applicable)

**SURVEY MAPS FOR PLAN CHECK**

**1. All Maps**

- \_\_\_\_\_ Cover letter or transmittal
- \_\_\_\_\_ Copy of an approval Tentative Map
- \_\_\_\_\_ Fees per attached list of fees
- \_\_\_\_\_ Preliminary Title Report
- \_\_\_\_\_ 1 Copy of traverse calculation closure sheet and point sheet

**2. Record of Surveys**

- \_\_\_\_\_ 3 copies of Record of Survey Map Secondary Documents
  - Survey swing tie cards
  - Copy of applicable deeds

**3. Parcel Maps**

- \_\_\_\_\_ 1 Copy of an approved Tentative Map
- \_\_\_\_\_ 1 Copy of Resolution of Approval with Conditions
- \_\_\_\_\_ 3 Copies of Parcel Map
- \_\_\_\_\_ Drainage/ Grading plan submittal or evidence of previous submittal acceptance Secondary Documents
  - 2 copies of Environmental Constraint Map, if required
  - Right of Way documents
  - Survey swing tie cards
  - Land Owners agreement, if required
  - Copy of applicable deeds

**4. Final Tract Maps**

- \_\_\_\_\_ 1 Copy of an approved Tentative Map
- \_\_\_\_\_ 1 Copy of Resolution of Approval with Conditions
- \_\_\_\_\_ 3 Copies of Tract Map
- \_\_\_\_\_ Drainage/ Grading plan submittal or evidence of previous submittal acceptance Secondary Documents
  - 2 copies of Environmental Constraint Map, if required
  - Right of Way documents
  - Survey swing tie cards
  - Land Owners agreement, if required
  - Copy of applicable deeds

**ENGINEERING PLAN CHECK INFORMATION**

Department staff will perform initial plan check and/or the Department's consultant plan checking service as determined by County. Approximate turnaround time is 10 working days from submittal acceptance date, barring unusual circumstances and depending upon complexity and number of plan sheets. All plan checking and review of grading and improvement plans for Parcel Maps, Tract Maps, Conditional Use Permits and/or grading permits will be billed directly to the private developer/owner. A plan check deposit is required specifically for this by Public Works and will be billed against during the plan approval process. Minimum deposit for plan checking for the consultant plan checking service is \$2,500 for one-sheet grading permit plans, minor subdivisions with one-sheet grading only or minor CUPs. Minimum deposit for multi-sheet grading, minor subdivisions with multi-sheet grading or improvements, major subdivisions or major CUPs shall require a minimum of \$5,000. The Public Works Director may approve lower minimum plan check deposits depending upon circumstances. Please note that the final plan check and signoff is by the County.

Plan Check Deposit enclosed for plan checking. \_\_\_\_\_

**ENCROACHMENT PERMIT INFORMATION**

An Encroachment Permit is required for all improvements and work within County road right of way. Normally permits are processed AFTER plan approval by this Department, necessitating permit application by the applicant and several weeks of Department processing. Should the applicant elect to have the encroachment permit processed concurrently with the plans please indicate so below and include an \$85 basic permit fee as an initial deposit specifically for the encroachment permit. Please also completely fill out an Encroachment Permit Initial Submittal Checklist and Application. This Department will have the encroachment permit ready for issuance within seven (7) working days after approval of the plans, provided all necessary instruments of Liability/Surety and Traffic Control have been submitted and approved.

Choose one: Process Encroachment Permit concurrently YES \_\_\_\_\_  
 NO \_\_\_\_\_

**SURVEYING PLAN CHECK INFORMATION**

Initial Map Check with Response Letter

- Record of Survey by State Statute, 20 working days
- Parcel Map, 20 working days unless noted otherwise
- Tract Map, 30 working days unless noted otherwise

I, the undersigned Applicant, so verify that all items necessary for this project and checked above are attached. I understand that if any of the above required items, are not provided the Department reserves the right to reject the submittal without performing any plan checks. Receipt of submittal package does not guarantee acceptance for plan checking. If submittal is deemed incomplete, notification to applicant and engineer within one working day by fax and telephone will be made indicating unchecked submittal is available for pick up. Alternately the submittal may be returned by regular mail.

\_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Name Printed or Typed

For County Use Only			
Date Received	Date Accepted for Processing	Accepted for Processing	
		Yes	No
By: Print	Signature	Date	
Permit No.	Approved By	<b>INITIAL FEE</b>	\$ <span style="border: 1px solid black; display: inline-block; width: 80px; height: 20px; vertical-align: middle;"></span>



# County of Imperial

*Building Roads into the Next Century*

## **PUBLIC WORKS DEPARTMENT**

September 15, 2008

**SUBJECT:** Public Works Schedule of Fees for Reproduction of Maps and Records and Fee for Review of Various Survey Related Documents; Effective August 1, 2006

To all Surveyors, Engineers, Architects, Developers and General Public performing work in the County of Imperial:

For your information and files the following fee schedule is effective January 3, 2005. Should any information be requested by attorneys or will be used for potential litigation a written request is mandatory. Research, if necessary and in excess of a reasonable time period will be charged at the fully burdened rate for appropriate staff time.

1. **Flood Zone Determination** - \$20.00 minimum charge per request. If a copy of the FIRM map is required, an additional \$5.00 charge per map will be made.
2. **Road Improvement Plans (Including County Road Maps)** - \$5.00 per "As Built" sheet for the first ten sheets and \$4.00 per sheet thereafter.
3. **USGS Topographic Maps** - \$5.00 per sheet for the first ten sheets and \$4.00 per sheet thereafter.
4. **Soils Reports** – A charge of \$0.35 per 8 ½" x 11" page.
5. **Private Development Plans** - \$5.00 per sheet for the first ten sheets and \$4.00 per sheet thereafter.
6. **Earthquake Fault Zone Maps** - \$5.00 per sheet for the first ten sheets and \$4.00 per sheet thereafter.
7. **Imperial County or Gateway of Americas Specific Plan Area, "Procedures and Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans"** – Hard Copy - \$20 each or both in Computer Disk (CD) for \$20
8. **Survey Record information.**

Microfiche Copies Full Size - \$3.50 per sheet.

Full-Size Plan Sheets (Including Aerial Photos) - \$5.00 per sheet for the first ten sheets and \$4.00 per sheet thereafter.

8 ½" x 11" Copies - \$0.35 Per page.

11" x 17" Copies – \$1.00 per page.

Field Notes - \$0.50 per page.

Set of Corner Record Cards \$75.00.

The following review fees for survey maps, legal descriptions, etc. The new fees are in effect January 3, 2005.

- |     |                                       |          |  |
|-----|---------------------------------------|----------|--|
| 1.  | Deposit for Parcel Maps               | \$500    | Deposit at time and materials  |
| 2.  | Deposit for Tract Maps                | \$1,000  | Deposit at time and material   |
| 3.  | Legal Descriptions (Review)           |          |  |
|     |                                       | •        | LLA/Lot Merger or Certificate of Compliance \$300                                      |
|     |                                       | •        | Road Right of Way Only \$400   |
| 4.  | Annexation Map Review                 | \$500    | Deposit at time and materials  |
| 5.  | Environmental Constraint Sheet        | \$350.00 |  |
| 6.  | Amending Certificate                  | \$200.00 |  |
| 7.  | Amending Map                          | \$400.00 |  |
| 8.  | Corner Record Card                    | \$       | 7.00   |
| 9.  | Record of Surveys                     | \$500    | Deposit at time and materials  |
| 10. | Subsidence Monitoring 1-39 benchmarks | \$150.00 | plus \$6.00 per benchmark and 40 or more benchmarks \$175.00 plus \$5.00 per benchmark |

Please be advised that Public Works office hours are 7:00 a.m. to 5:00 p.m. The hours for researching maps are:

- **Monday through Friday from 8 a.m. to 12 p.m., closed 12 p.m. to 1 p.m., open 1 p.m. to 4 p.m.**

Should you have any questions, please call (760) 482-4462.

Respectfully,

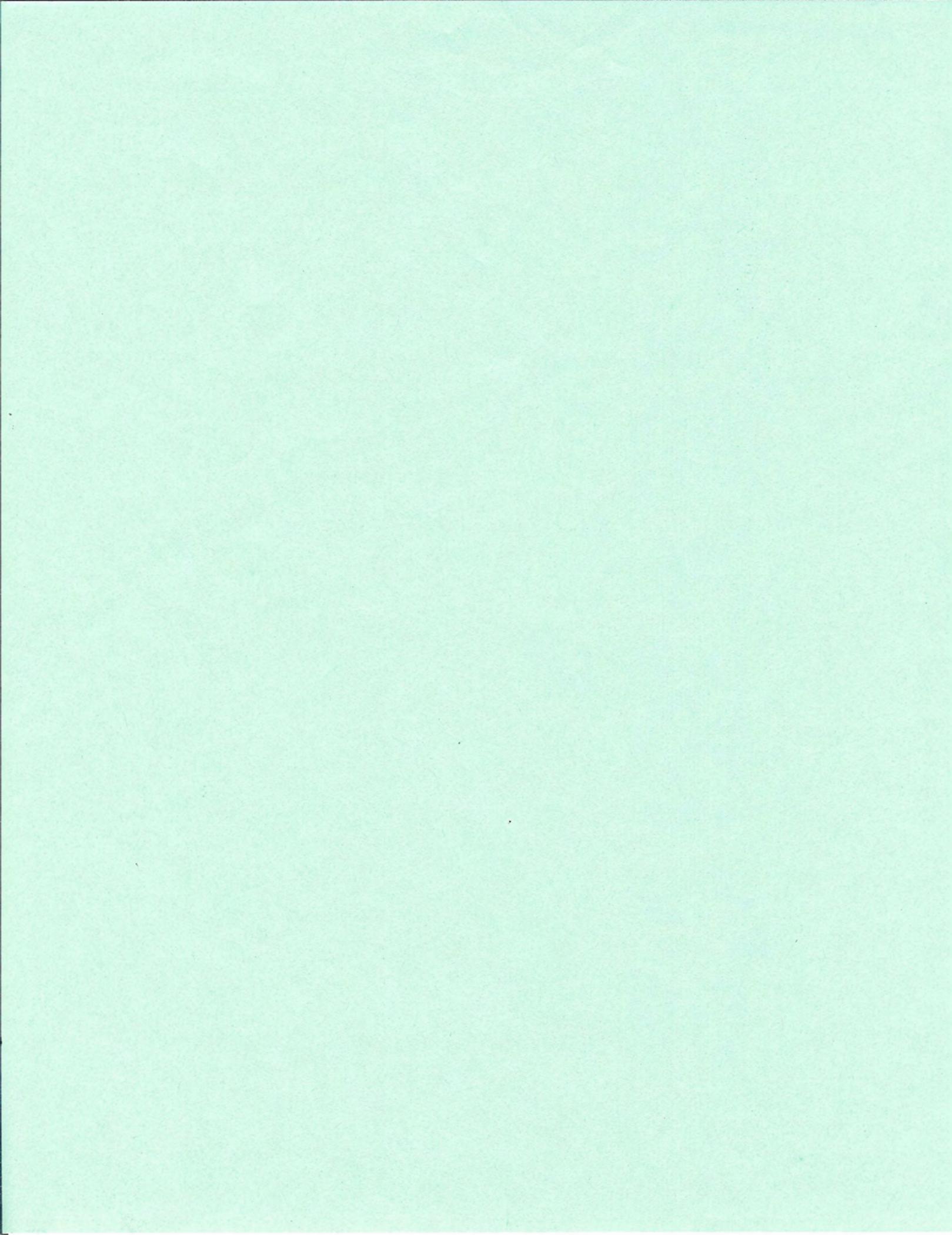


William S. Brunet, P.E.  
Director of Public Works

FF/dm

attachment

cc: Jurg Heuberger, County Planning Department  
Ralph Cordova, Jr., County Executive Officer



**VII. COUNTY  
STANDARD DRAWINGS  
AND DETAILS  
(Attachment 'B')**

# INDEX FOR COUNTY STANDARD DRAWINGS AND DETAILS

<b>100-SERIES</b> -----	<b>WATER</b>
<b>200-SERIES</b> -----	<b>SEWER</b>
<b>300-SERIES</b> -----	<b>STORM</b>
<b>400-SERIES</b> -----	<b>SURFACE IMPROVEMENTS</b>
<b>500-SERIES</b> -----	<b>MISCELLANEOUS</b>
<b>600-SERIES</b> -----	<b>ELECTRICAL</b>

## **SPECIAL NOTE:**

**All County Standard Drawings and Details shall be used in conjunction with specifications for Street Improvements, Drainage, Potable Water and Sanitary Sewer and the Engineering Design Guidelines Manual For the Preparation and Checking of Street Improvements, Drainage and Grading Plans within Imperial County.**

Water and sewer standard drawings and details in County road right of way normally fall under the appropriate utility agency standards unless otherwise addressed in County encroachment permit or County standard.

For utilities in Gateway of the Americas CSA see CSA special requirements as Attachment C.

### **100 SERIES – WATER**

Number	Item	Issue Date	Last Revised
151	Valve Operator Well Installation	8/29/08	

### **200 SERIES - SEWER**

Number	Item	Issue Date	Last Revised
221	Manhole Support Collar	08/29/08	
222	Precast Manhole Detail	08/29/08	
222A	Precast Manhole Detail	08/29/08	
223	Standard Cleanout	08/29/08	
224	Manhole Frame and Cover Type A	08/29/08	
224A	Manhole Frame and Cover Type B	08/29/08	

### **300 SERIES - STORM**

Number	Item	Issue Date	Last Revised
300 (1 thru 3)	Storm Drain Junction Box	08/29/08	
310	Temporary Plug	08/29/08	
311	Injection/Dry Well Detail	08/29/08	
312	Curb Inlet Catch Basin	08/29/08	
312A	Curb Inlet Catch Basin	08/29/08	
312B	“Only Rain in the Drain” Stamp	08/29/08	
313	Curb Inlet with Gutter Grate Catch Basin	08/29/08	
313A	Curb Inlet with Gutter Grate Catch Basin	08/29/08	
313B	Storm Drain Frame and Grate Detail	08/29/08	
315	Standard Drop Step	08/29/08	
316	Local Depression	08/29/08	
317	Catch Basin Reinforcement	08/29/08	
318	Detail of Catch Basin Opening & Inst.	08/29/08	
319	Detail of Catch Basin Opening & Inst.	08/29/08	
320	Removable Protection Bar for Catch Basins	08/29/08	
321	Precast Manhole Shaft	08/29/08	
322	Storm Drain Manhole No.1	08/29/08	
322A	Storm Drain Manhole No.1	08/29/08	
323	Storm Drain Manhole No.2	08/29/08	
324	Storm Drain Manhole No.3	08/29/08	
324A	Storm Drain Manhole No.3	08/29/08	
324B	Storm Drain Manhole No.3	08/29/08	
325	Manhole Frame & Cover- Roadway	08/29/08	
326	Manhole Frame & Cover Pressure Type	08/29/08	
327	Headwall Wing-Type	08/29/08	
328	Headwall “U”- Type	08/29/08	

### **400 SERIES – SURFACE IMPROVEMENTS**

Number	Item	Issue Date	Last Revised
400	Curb and Gutter	08/29/08	
401	Type “A” Barrier Curb	08/29/08	
402	Traversable Asphalt Concrete Dike	08/29/08	
403	Asphalt Concrete Dike	08/29/08	
410A	Driveway Access	08/29/08	
410B	Commercial Driveway	08/29/08	
411A	Rural Concrete Driveway W/Curb	08/29/08	

411B	Temp. Rural Concrete DWY/No Curb	08/29/08
414(1 thru 3)	Pedestrian Ramp/Curb Return	08/29/08
415	Mid Block Cross Gutter	08/29/08
420	Contiguous Sidewalk Detail	08/29/08
425	Meandering Sidewalk	08/29/08
426	Rural sidewalk Detail	08/29/08
427	Free Standing Curb Detail	08/29/08
430	Local Street	08/29/08
430A	Rural Local Road	08/29/08
431A	2 Lane Minor Collector/Industrial Street	08/29/08
431B	4 Lane Minor Collector/Industrial Street	08/29/08
432	4 Lane Major Collector	08/29/08
432A	Industrial Collector	08/29/08
434	Minor Arterial	08/29/08
436	Prime Arterial	08/29/08
436A	Prime Arterial with Median	08/29/08
437	Expressway	08/29/08
440	Street Structural Section	08/29/08
441	Standard Cul-De-Sac	not yet available
442	Offset Cul-De-Sac	not yet available
443	Knuckle Intersection	08/29/08
444	Concrete Scoring Details	08/29/08
445	Intersection Design Rural Local Road	08/29/08
446	Parkway Culvert S/Steel Plate Cover	08/29/08
447	Sidewalk Drain	08/29/08
448	Survey Monument	08/29/08
449	Underground Utility Location	08/29/08
449A	Utility Trench Detail	08/29/08
450	End of Street Temporary Pavement	08/29/08
451	Post with Reflector	08/29/08
452	Street Marker	08/29/08
453	New Const. Pavement Extension Joint	08/29/08

### **500 SERIES – MISCELLANEOUS**

Number	Item	Issue Date	Last Revised
500	Trench Details	08/29/08	
505	Trench Resurfacing Details	08/29/08	
510A	Subdivision Street Name Sign	08/29/08	
510B	Rural County Street Name Sign	08/29/08	
515	Barricade	08/29/08	
520	Utility Sleeve	08/29/08	
526	Street Tree Standard Planting	08/29/08	
527A	Multiple Mailbox Installation	08/29/08	
527B	Multiple Mailbox Installation	09/14/07	

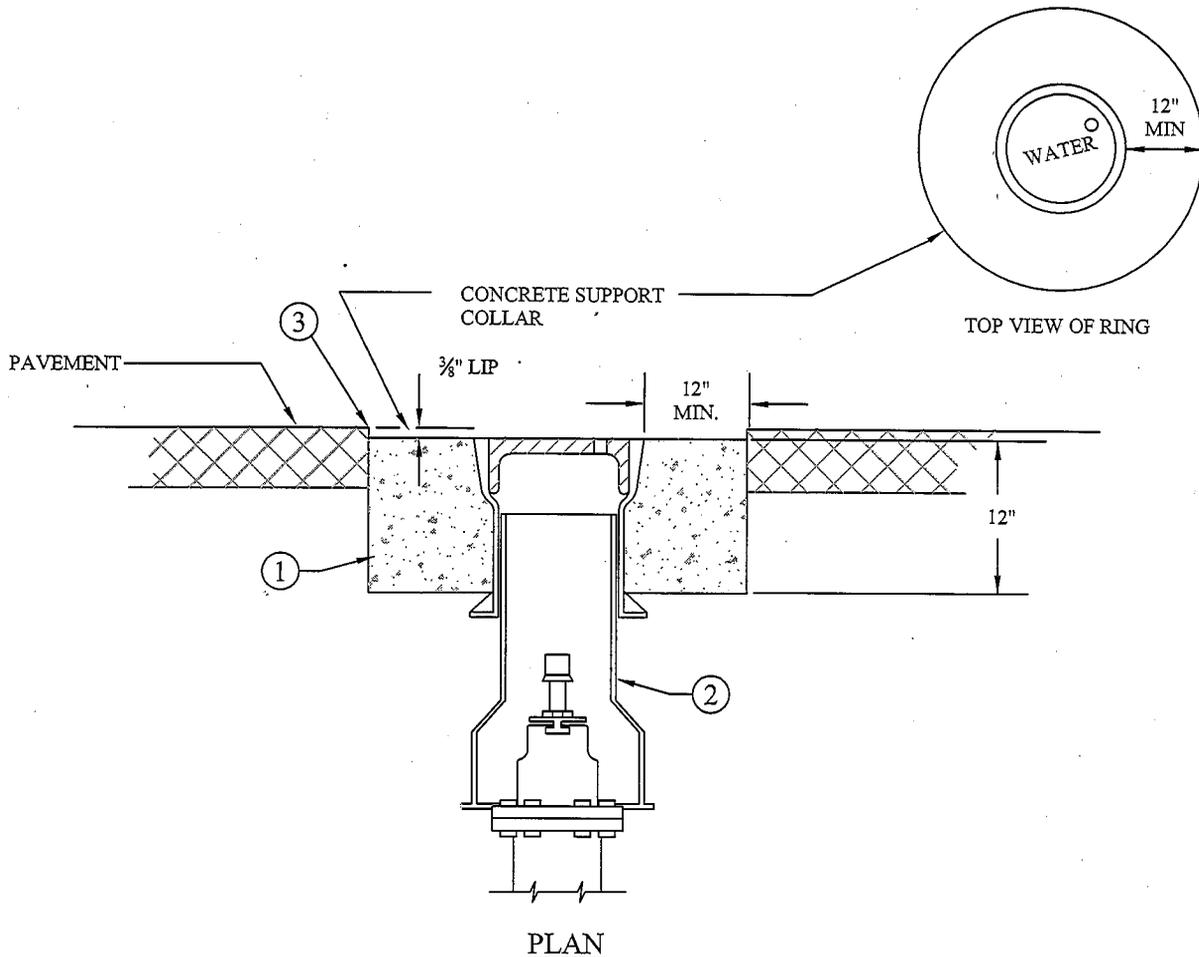
### **600 SERIES - ELECTRICAL**

Number	Item	Issue Date	Last Revised
610	Street Light	08/29/08	

### **700 SERIES – SURVEY (SEE 448 ALSO)**

Number	Item	Issue Date	Last Revised
700	Cast Bronze Bench Mark	08/29/08	
701	Deep Rod Bench Mark	08/29/08	
702	Bench Mark Set in Existing	10/21/08	





NOTES:

- ① CONCRETE FOR SUPPORT COLLAR SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER AS MANUFACTURED BY FIBERMESH CO. OR APPROVED EQUAL.
- ② VALVE COVER ASSEMBLY SHALL BE SERIES 6855 AS MANUFACTURED BY TYLER PIPE, OR APPROVED EQUAL.
- ③ SUPPORT COLLAR SHALL NOT BE INSTALLED UNTIL A.C. PAVING HAS CURED ENOUGH TO PRODUCE A CLEAN AND STABLE EDGE.
- ④ VALVE COVER INSTALLATIONS IN UNPAVED PORTIONS OF RIGHT-OF-WAY SHALL HAVE 2' WIDE X 6" THICK ASPHALT APRON AS SHOWN IN STANDARD DRAWING NO. 221

NOT TO SCALE



COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

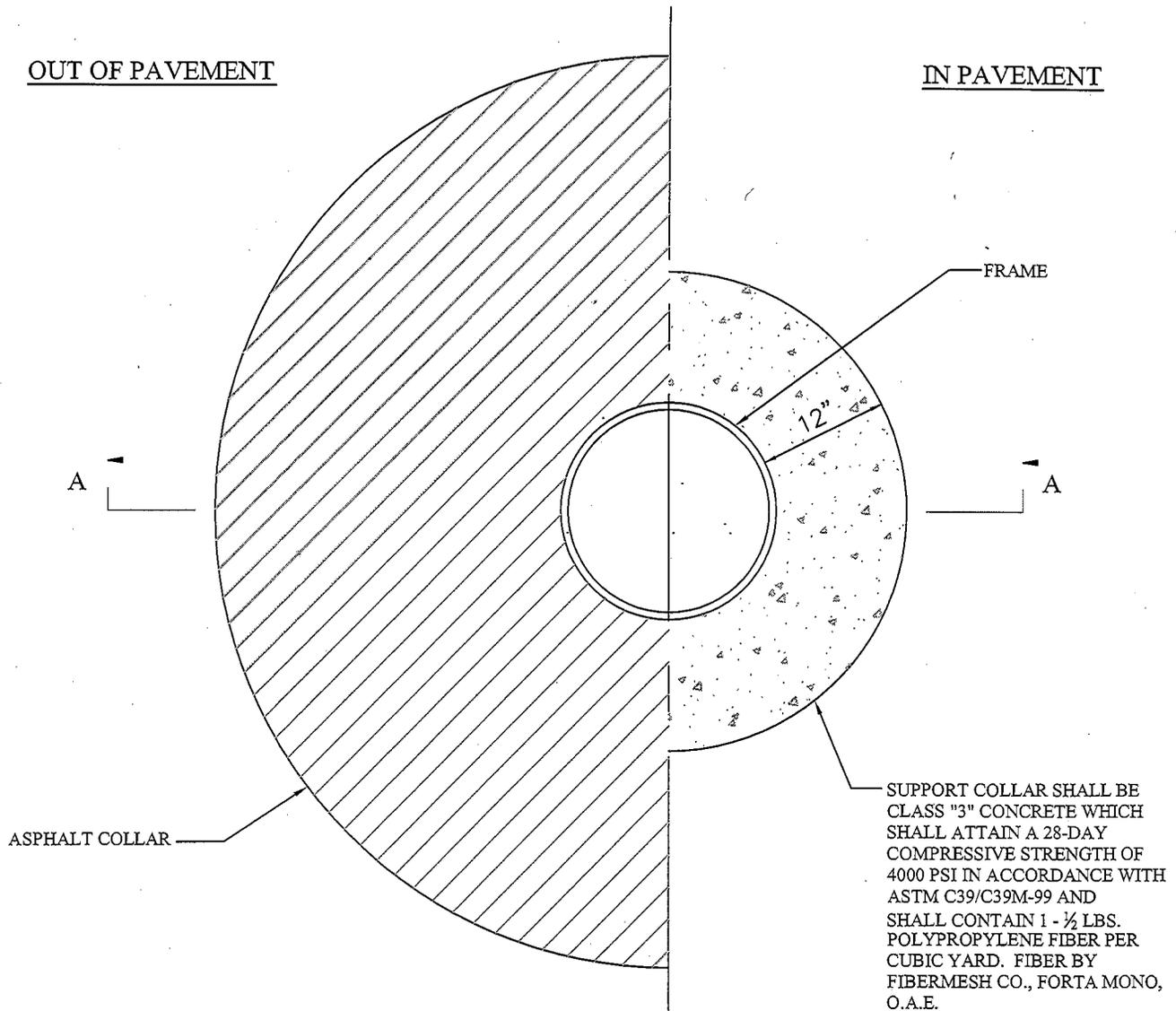
VALVE OPERATOR WELL  
INSTALLATION

APPROVED BY: *William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
			/ /	E.M.	151

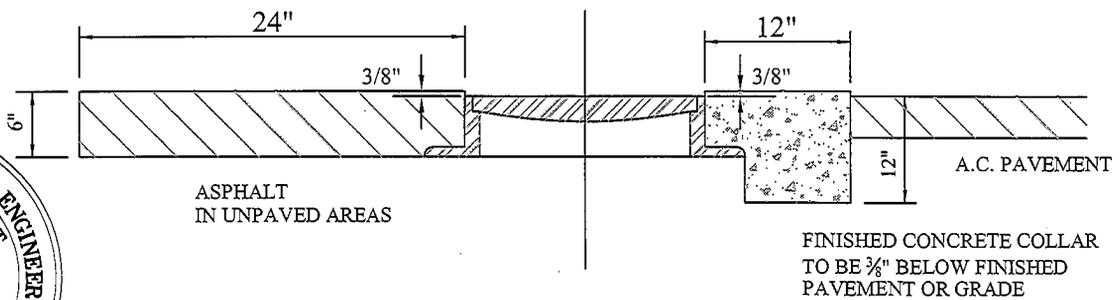
OUT OF PAVEMENT

IN PAVEMENT

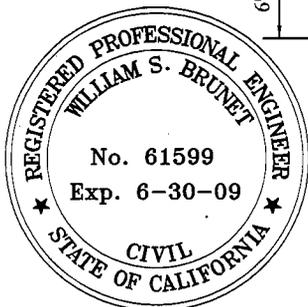


FRAME & COLLAR

**NOT TO SCALE**



SECTION A-A



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

# MANHOLE SUPPORT COLLAR

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

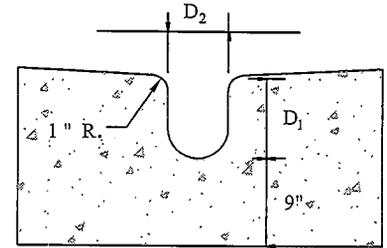
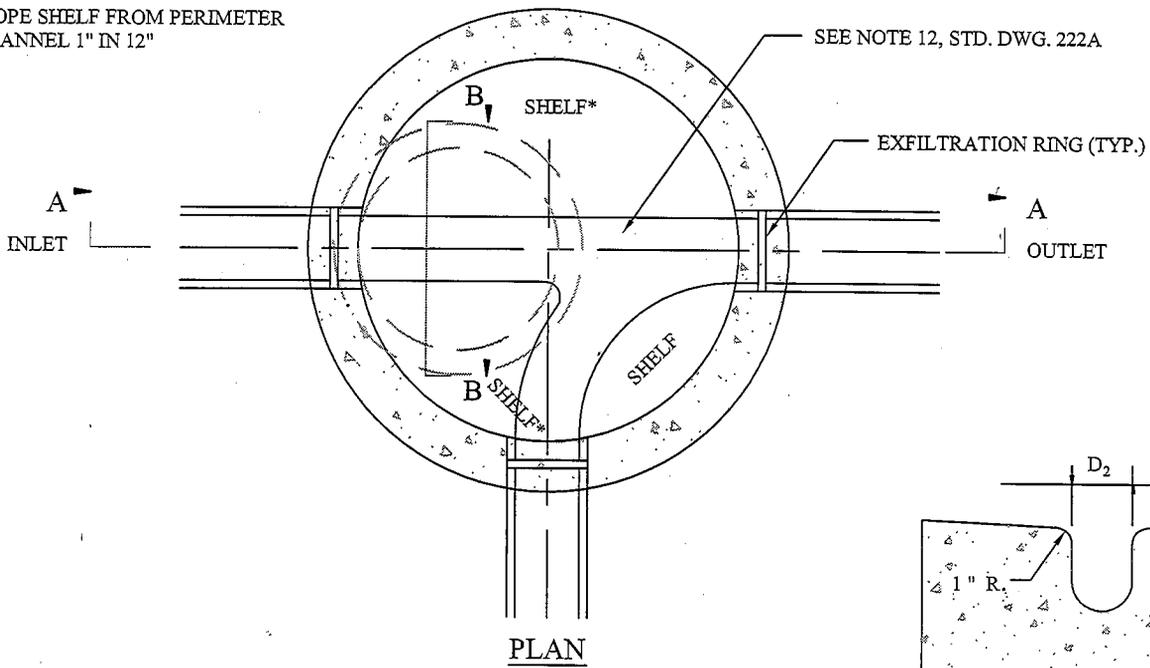
REVISIONS

BY: APR'D: DATE:

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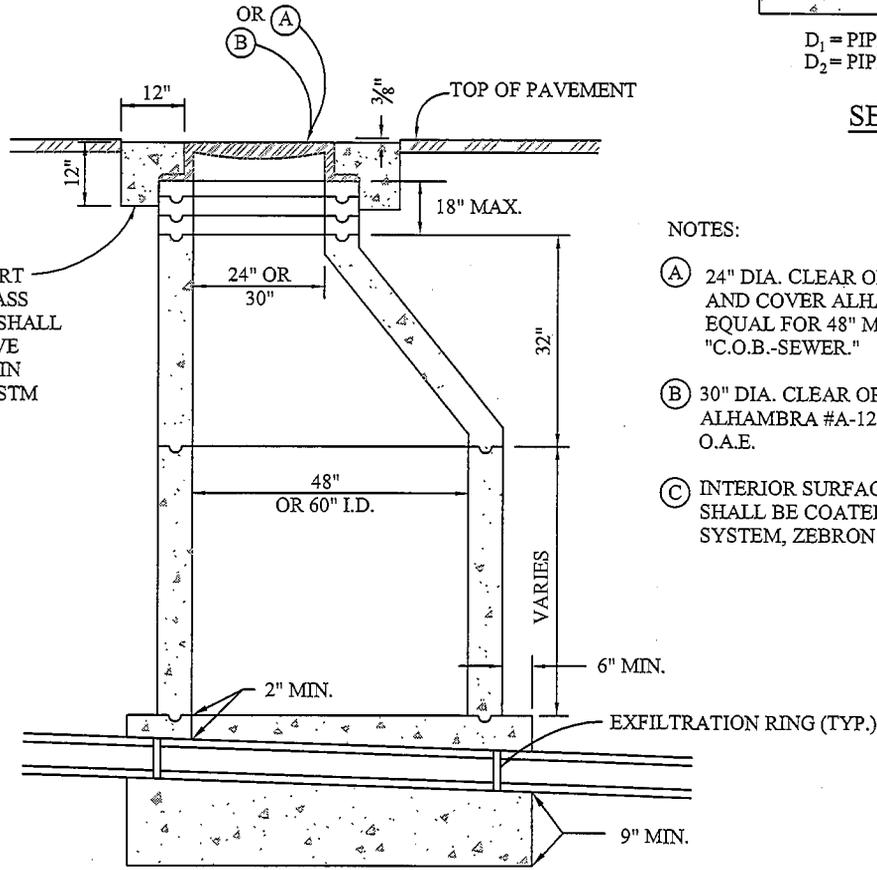
CHECKED: F.F.	DATE: 08/29/08
DRAWN: E.M.	DWG No.: 221

\* SLOPE SHELF FROM PERIMETER CHANNEL 1" IN 12"



D<sub>1</sub> = PIPE O.D., 12" MIN.  
D<sub>2</sub> = PIPE I.D.

SECTION B-B

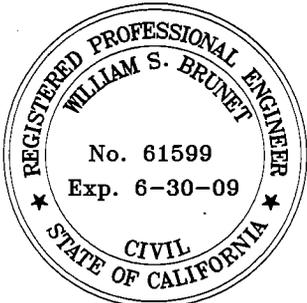


CONCRETE FOR SUPPORT COLLAR SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.

NOTES:

- (A) 24" DIA. CLEAR OPENING MANHOLE FRAME AND COVER ALHAMBRA #A-1254, OR APPROVED EQUAL FOR 48" MANHOLE LETTERED "C.O.B.-SEWER."
- (B) 30" DIA. CLEAR OPENING FRAME AND COVER ALHAMBRA #A-1252 LETTERED "C.O.B.-SEWER," O.A.E.
- (C) INTERIOR SURFACE OF THE PRECAST MANHOLE SHALL BE COATED WITH AN EPOXY LINING SYSTEM, ZEBRON OR APPROVED EQUAL

NOT TO SCALE



SECTION A-A



COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

PRECAST MANHOLE  
DETAIL

APPROVED BY:

*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
				E.M.	222

GENERAL NOTES:

1. MANHOLE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE HAVING A MINIMUM THICKNESS OF SIX INCHES AND CONFORMING TO ASTM C-478 REQUIREMENTS FOR MATERIALS AND MANUFACTURE AND ASTM REQUIREMENTS FOR REINFORCEMENT.
2. VERTICAL WALL OF CONE SHALL BE OPPOSITE OUTLET SIDE OF MANHOLE.
3. CONE SHALL BE RAISED WHEN GRADE RINGS EXCEED 18".
4. SUPPORT COLLAR SHALL CONSIST OF CLASS "3" CONCRETE.
5. JOINTS SHALL CONSIST OF 1-2 CEMENT MORTAR, NEATLY STRUCK AND POINTED, 3/8" MIN. THICKNESS, OR RAM-NECK, EXCEPT FOR GRADE ADJUSTING RINGS WHICH SHALL BE 1-2 CEMENT MORTAR ONLY.
6. CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.
7. SHELF SHALL HAVE A MEDIUM BROOM FINISH.
8. THE MAXIMUM DROP BETWEEN THE OUTLET AND INLET OF THIS STRUCTURE IS 0.60' FOR STRAIGHT THROUGH FLOW AND 1.00' FOR SIDE INLET FLOW.
9. THIS MANHOLE IS FOR DEPTHS GREATER THAN 3'-0" AND LESS THAN 20'. MAXIMUM CARRIER PIPE 24" INTERNAL DIAMETER.
10. TROUGH:
  - A. SHALL NOT HAVE A FLAT BOTTOM.
  - B. SHALL HAVE A STEEL TROWELED FINISH.
  - C. DIAMETER OF FEEDLINE SHALL NOT "FLARE OUT" WHERE IT JOINS THE MAINLINE TROUGH.
11. "JIFFY RINGS" SHALL NOT BE ALLOWED.
12. FOR STRAIGHT THROUGH FLOW THE "Y" SHALL NOT BE CONSTRUCTED UNLESS A STUB OR LATERAL IS SHOWN ON THE PLANS AS BEING REQUIRED.
13. PVC T-LOCK LINING MAY BE REQUIRED AS DIRECTED BY THE COUNTY.
14. MANHOLE RING AND COVER SHALL BE RAISED TO FINISHED GRADE AND SUPPORT COLLAR INSTALLED AFTER PAVING OR FINE GRADING.
15. EXFILTRATION RINGS SHALL BE CONSISTENT WITH PIPE MANUFACTURER'S RECOMMENDATIONS.



**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

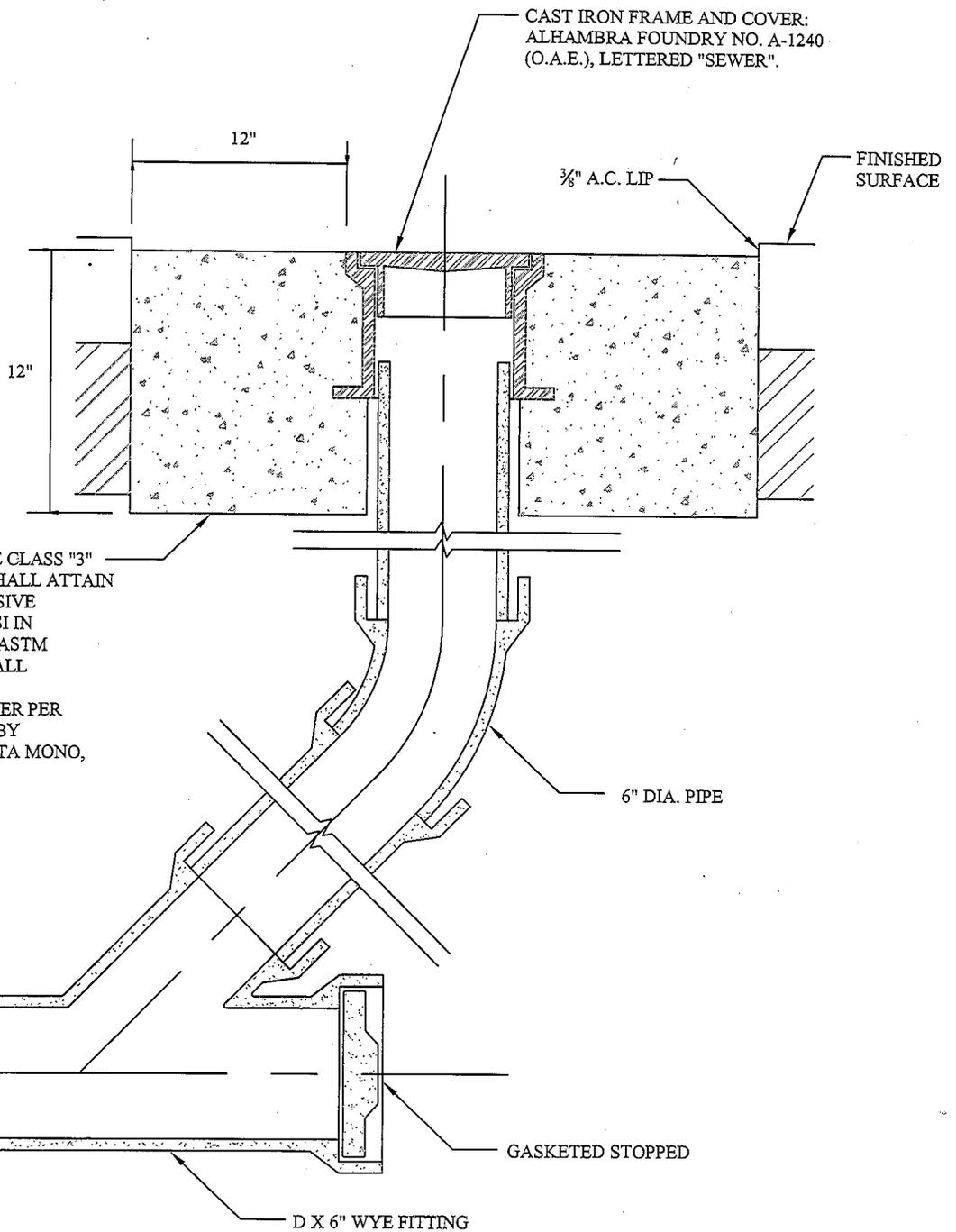
**PRECAST MANHOLE  
 DETAIL**

APPROVED BY  
  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	222A

NOT TO SCALE



NOTES:

1. CLEANOUT RING AND COVER SHALL BE RAISED TO FINISHED GRADE AND SUPPORT COLLAR INSTALLED AFTER PAVING OR FINE GRADING.
2. D= DIAMETER OF MAIN LINE PIPE.



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

STANDARD CLEANOUT

APPROVED BY:

*William S. Brunet*

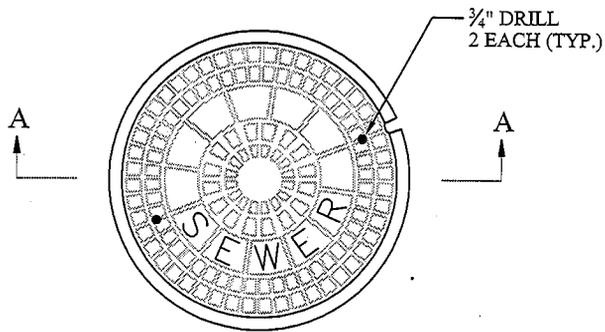
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

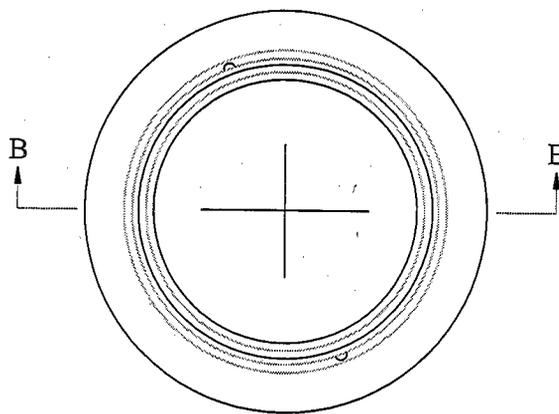
REVISIONS

BY: APR'D: DATE:

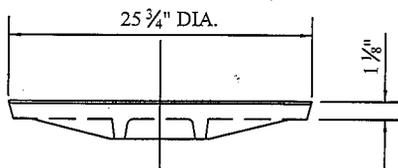
REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
			/ /	E.M.	223



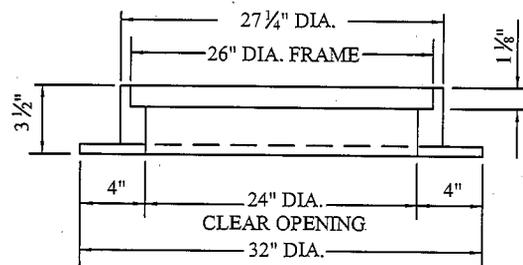
TOP PLAN OF COVER



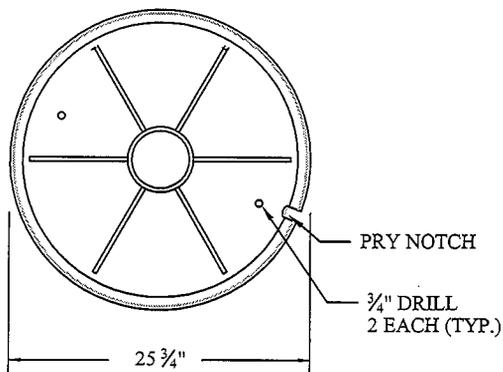
PLAN OF FRAME



SECTION A-A



SECTION B-B

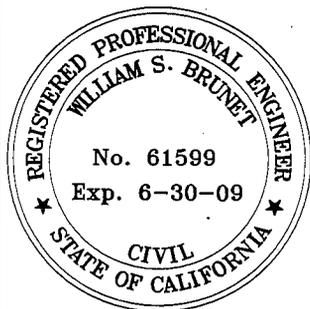


BOTTOM PLAN OF COVER

NOTES:

1. THE PRY NOTCH SHALL BE COMPLETELY COVERED BY THE FRAME SEATS TO PREVENT SURFACE WATER
2. MACHINE SEATS AND GRIND LUGS SMOOTH, PERIMETER OF COVER SHALL BE GROUND SMOOTH, DIAMETER TOLERANCE  $\pm 1/16"$ .
3. THE CAST IRON USED SHALL HAVE A TENSILE STRENGTH OF 30,000 LBS. PER SQUARE INCH.
4. "COB SEWER" SHALL BE ON THE COVER AS SHOWN ABOVE.
5. MANHOLE COVER SHALL BE NON-ROCKING ALHAMBRA A-1254, OR APPROVED EQUAL.
6. SEALED MANHOLE COVER SHALL BE ALHAMBRA A-1254B, OR APPROVED EQUAL.
7. TO BE USED ON 48" DIAMETER MANHOLE SHAFTING.

**NOT TO SCALE**

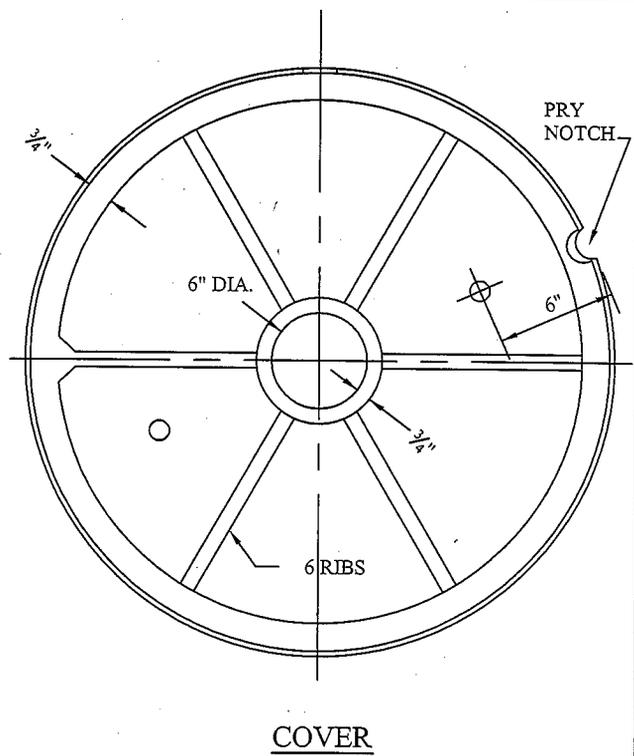
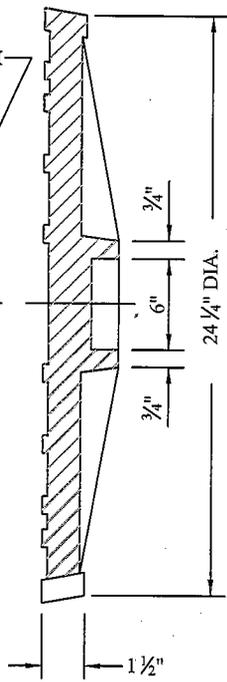
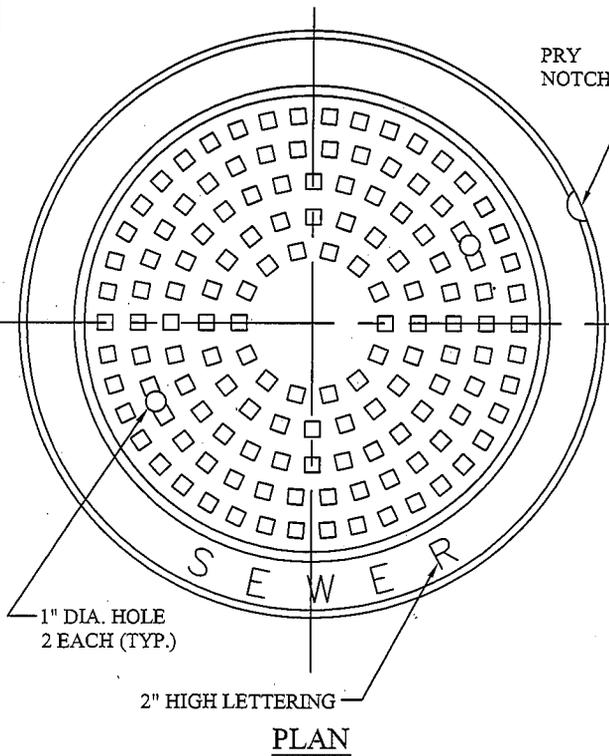


**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**MANHOLE FRAME AND COVER TYPE A**

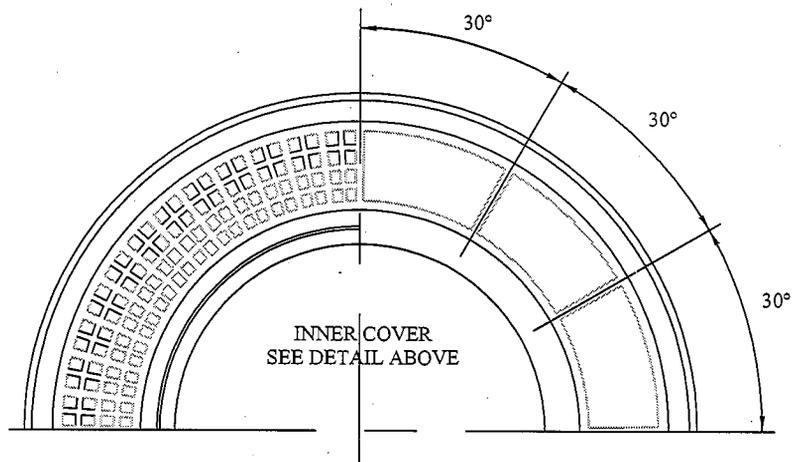
APPROVED BY: *William S. Brunet* DATE: 1/16/08  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
			/ /	E.M.	224



**NOTES:**

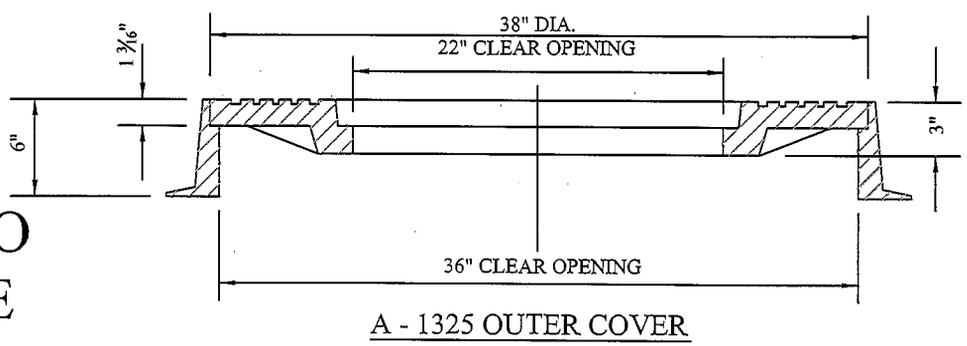
1. THE PRY NOTCH SHALL BE COMPLETELY COVERED BY THE FRAME SEATS TO PREVENT SURFACE WATER INTRUSION.
2. MACHINE SEATS AND GRIND LUGS SMOOTH, DIAMETER TOLERANCE  $\pm 1/8"$ .
3. THE CAST IRON USED SHALL HAVE A TENSILE STRENGTH OF 30,000 LBS. PER SQUARE INCH.
4. "COB SEWER" SHALL BE ON THE COVER AS SHOWN ABOVE.
5. MANHOLE COVER SHALL BE NON-ROCKING ALHAMBRA A-1325, OR APPROVED EQUAL.
6. SEALED MANHOLE COVER SHALL BE ALHAMBRA A-1251 B-6, OR APPROVED EQUAL.
7. TO BE USED ON 60" DIAMETER MANHOLE SHAFTING.



**PLAN - BOTTOM VIEW**



**NOT TO SCALE**

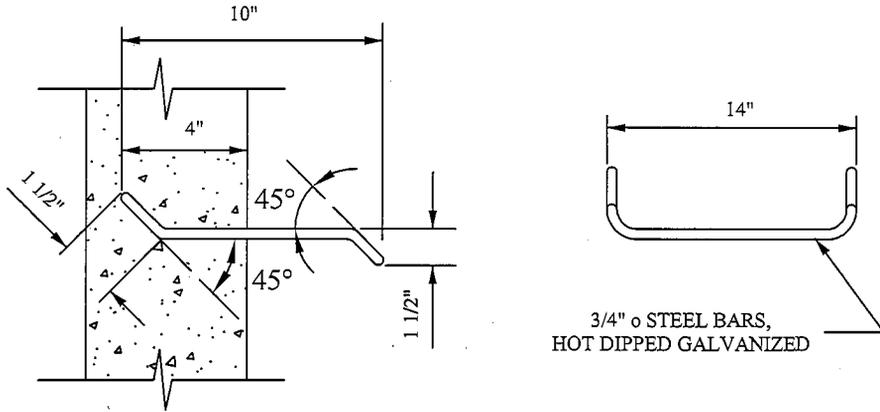
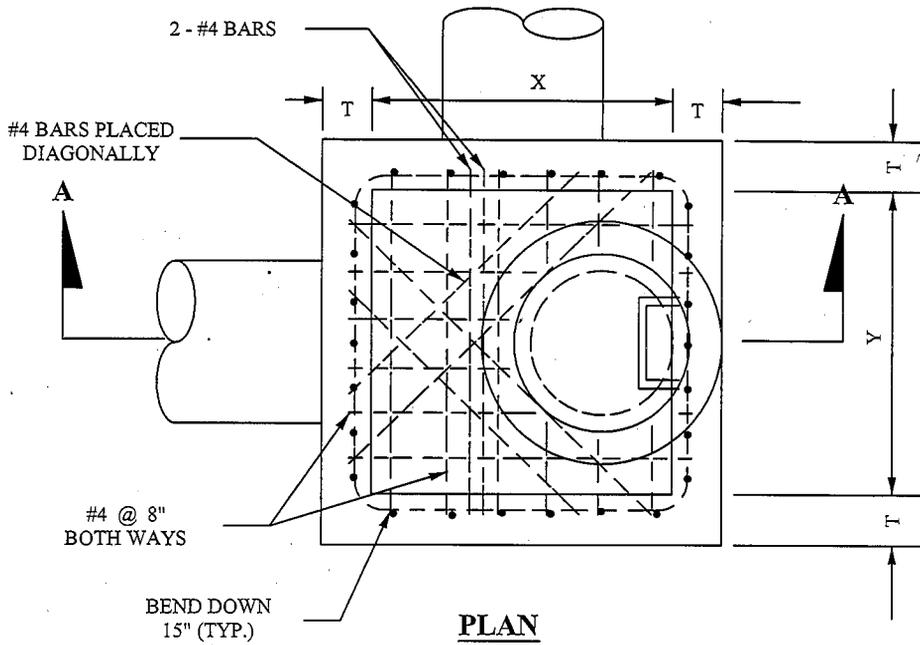


**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**MANHOLE FRAME AND COVER TYPE B**

APPROVED BY: *William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	09/14/07
			/ /	E.M.	224A



NOT TO  
SCALE

NOTES:

1. CONCRETE SHALL BE 4000 PSI
2. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH 1/4" DIAMETER STEEL, WOUND SPIRALLY ON 4" CENTERS.
3. ALL JOINTS SHALL BE SET IN CLASS C MORTAR
4. MAINTAIN 3" MIN. CLEAR SPACING BETWEEN REINFORCING AND SURFACE UNLESS OTHERWISE NOTED.
5. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".

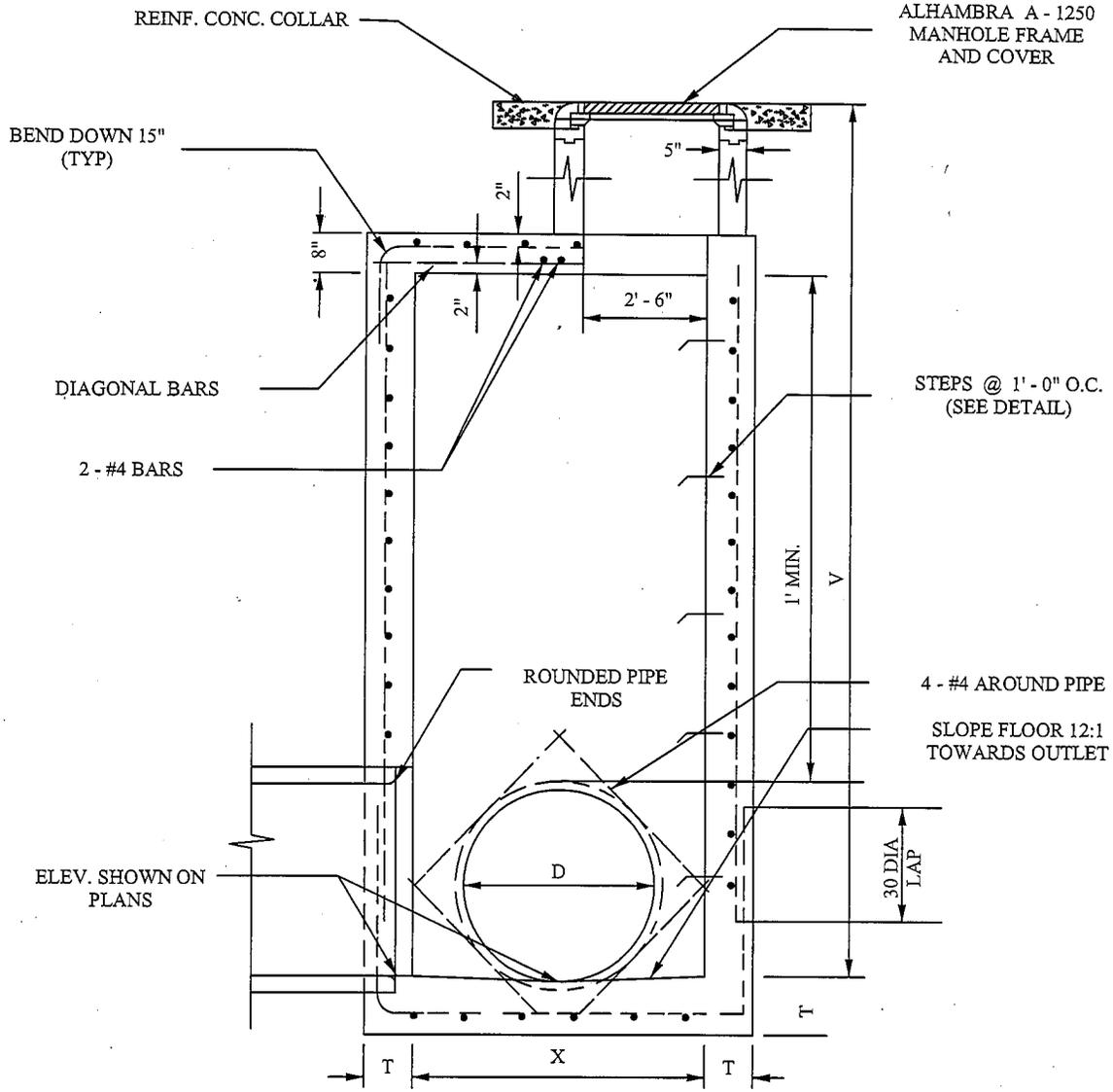


COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

STORM DRAIN  
JUNCTION BOX

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	300 (1 OF 3)

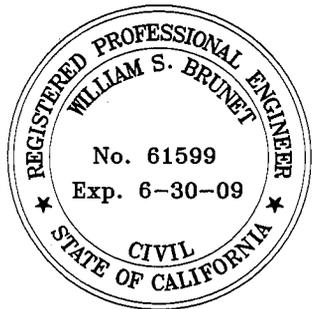


SECTION A - A

NOT TO SCALE

NOTES:

1. CONCRETE SHALL BE 4000 PSI
2. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH 1/4" DIAMETER STEEL, WOUND SPIRALLY ON 4" CENTERS.
3. ALL JOINTS SHALL BE SET IN CLASS C MORTAR
4. MAINTAIN 3" MIN. CLEAR SPACING BETWEEN REINFORCING AND SURFACE UNLESS OTHERWISE NOTED.
5. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".



COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

STORM DRAIN  
JUNCTION BOX

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

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			/ /	F.F.	08/29/08
			/ /	E.M.	300 (2 OF 3)

## SECTION A-A

MAXIMUM SPAN X OR Y	DEPTH V	THICK- NESS T	HOR. & FLR. REINF.
3' - 0" TO 4' - 0"	4' - 0"	6"	# 4 @ 18"
4' - 1" TO 7' - 0"		6"	# 4 @ 12"
7' - 1" TO 8' - 0"		6"	# 4 @ 8"
3' - 0" TO 4' - 0"	4' - 1" TO 8' - 0"	6"	# 4 @ 18"
4' - 1" TO 5' - 0"		6"	# 4 @ 12"
5' - 1" TO 6' - 0"		6"	# 4 @ 8"
6' - 1" TO 8' - 0"		6"	# 4 @ 6"
8' - 1" TO 10' - 0"		6"	# 5 @ 8"
3' - 0" TO 4' - 0"	8' - 1" TO 12' - 0"	6"	# 4 @ 15"
4' - 1" TO 5' - 0"		8"	# 4 @ 12"
5' - 1" TO 6' - 0"		8"	# 4 @ 8"
6' - 1" TO 8' - 0"		8"	# 4 @ 6"
3' - 0" TO 4' - 0"	12' - 1" TO 16' - 0"	6"	# 4 @ 12"
4' - 1" TO 5' - 0"		8"	# 4 @ 12"
5' - 1" TO 6' - 0"		8"	# 4 @ 8"
6' - 1" TO 7' - 0"		8"	# 4 @ 6"
7' - 1" TO 8' - 0"		8"	# 4 @ 8"
3' - 0" TO 4' - 0"	16' - 1" TO 20' - 0"	8"	# 4 @ 12"
4' - 1" TO 5' - 0"		10"	# 4 @ 12"
5' - 1" TO 6' - 0"		10"	# 4 @ 8"
6' - 1" TO 7' - 0"		10"	# 4 @ 6"
7' - 1" TO 8' - 0"		10"	# 4 @ 8"
3' - 0" TO 4' - 0"	20' - 1" TO 24' - 0"	8"	# 4 @ 12"
4' - 1" TO 5' - 0"		10"	# 4 @ 12"
5' - 1" TO 6' - 0"		10"	# 4 @ 8"
6' - 1" TO 7' - 0"		10"	# 4 @ 6"
7' - 1" TO 8' - 0"		12"	# 4 @ 8"

PIPE DIA.	X	Y
UP TO 39"	4'	4'
42" TO 48"	5'	4'
59" TO 60"	6'	4'
63" TO 72"	7'	4'
75" TO 84"	8'	4'



**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

# STORM DRAIN JUNCTION BOX

APPROVED BY:

*William S. Brunet*

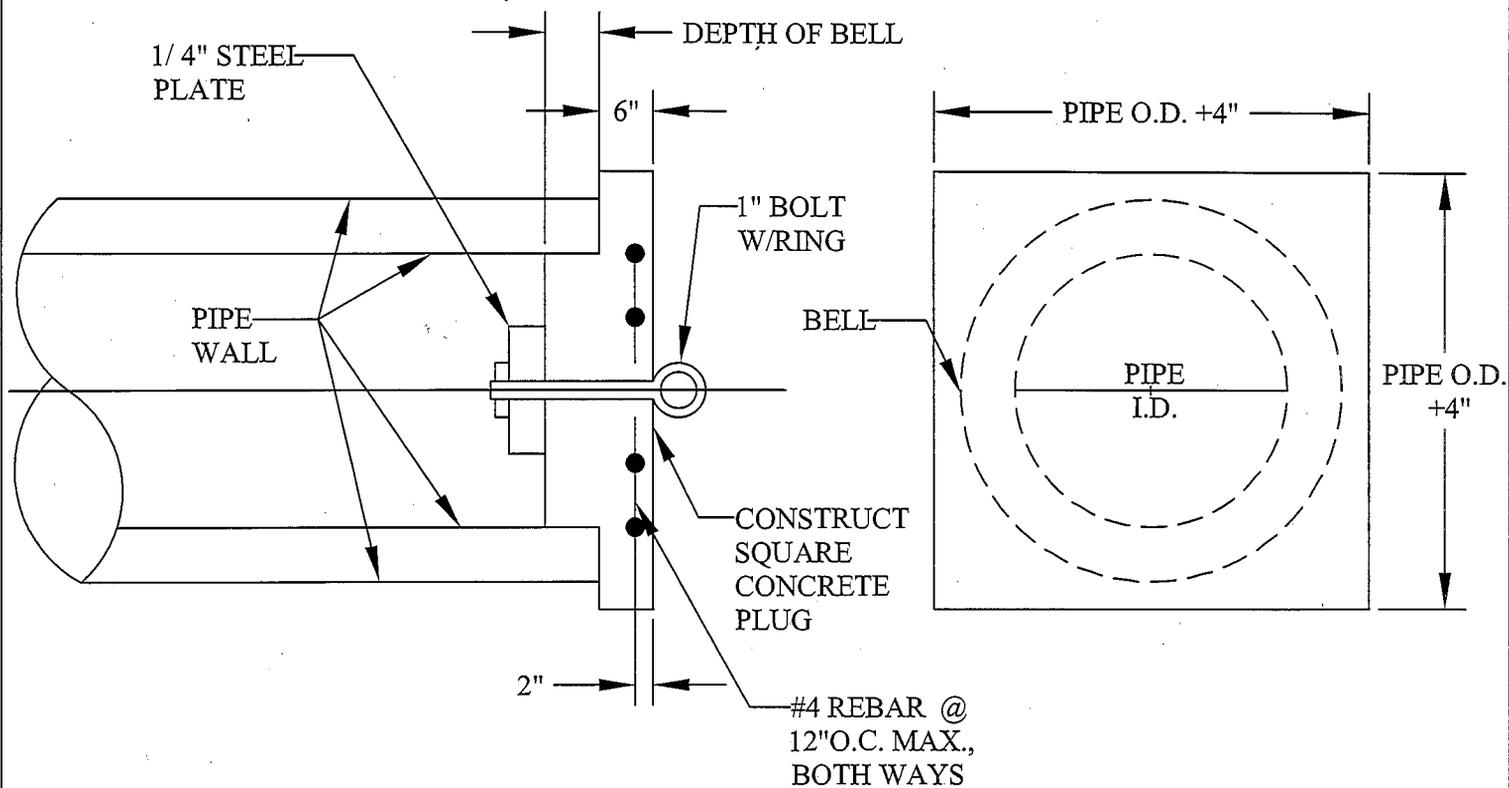
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY:    APR'D:    DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: E.M.	DWG No.: 300 (3 OF 3)



**NOT TO SCALE**

**NOTE:**  
 THE CONTRACTOR MAY USE THIS DETAIL FOR TEMPORARY PLUGS OR MAY SUBMIT AN ALTERNATE DETAIL AND RECEIVE APPROVAL OF SAME PRIOR TO CONSTRUCTION.

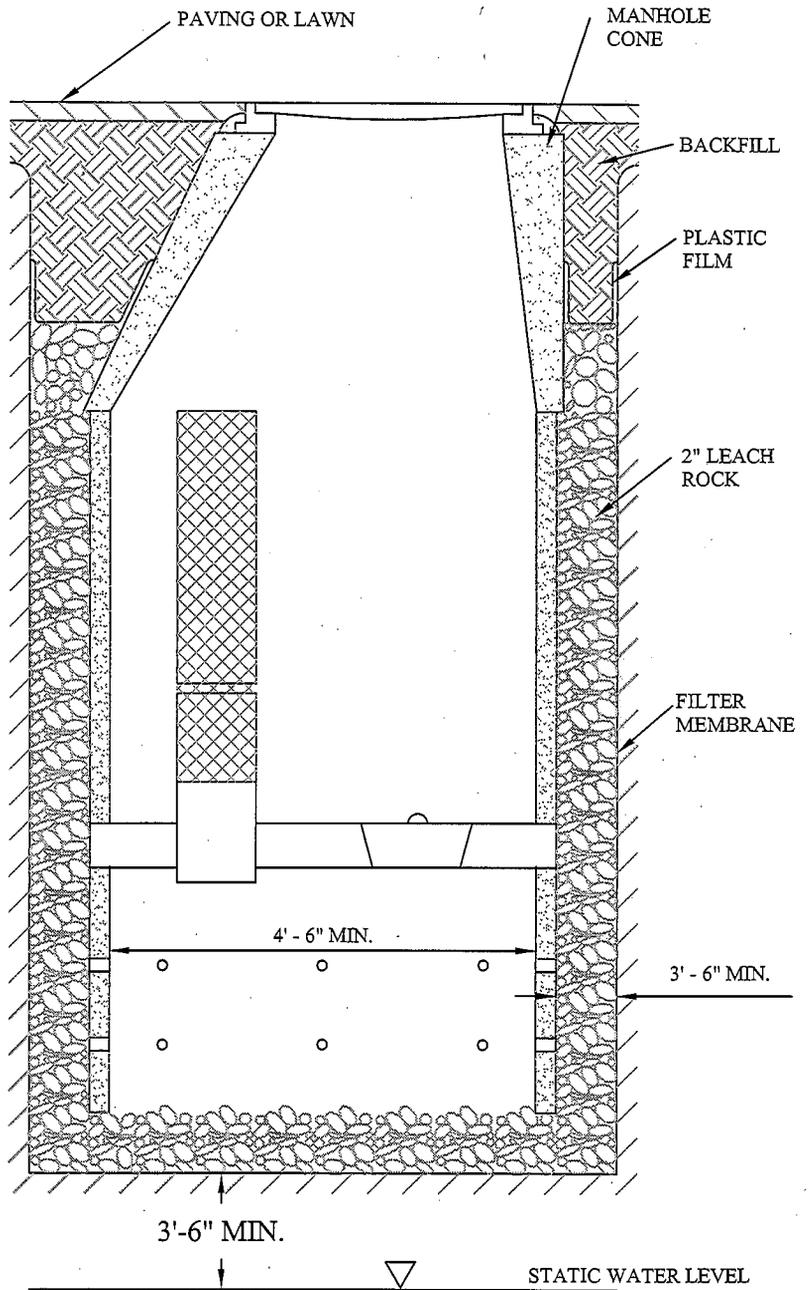


**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

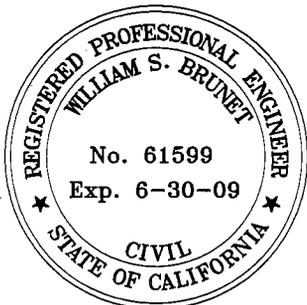
**TEMPORARY PLUG  
 DETAIL- S.D. FOR R.C.P.**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	L.L.	DWG No.: 310



**NOTE:**  
 FOR HYDROLOGY REQUIREMENTS SEE  
 SECTION III DRAINAGE IMPROVEMENTS  
 OF THIS ENGINEERING DESIGN MANUAL.



**NOT TO  
 SCALE**

**INJECTION WELL**



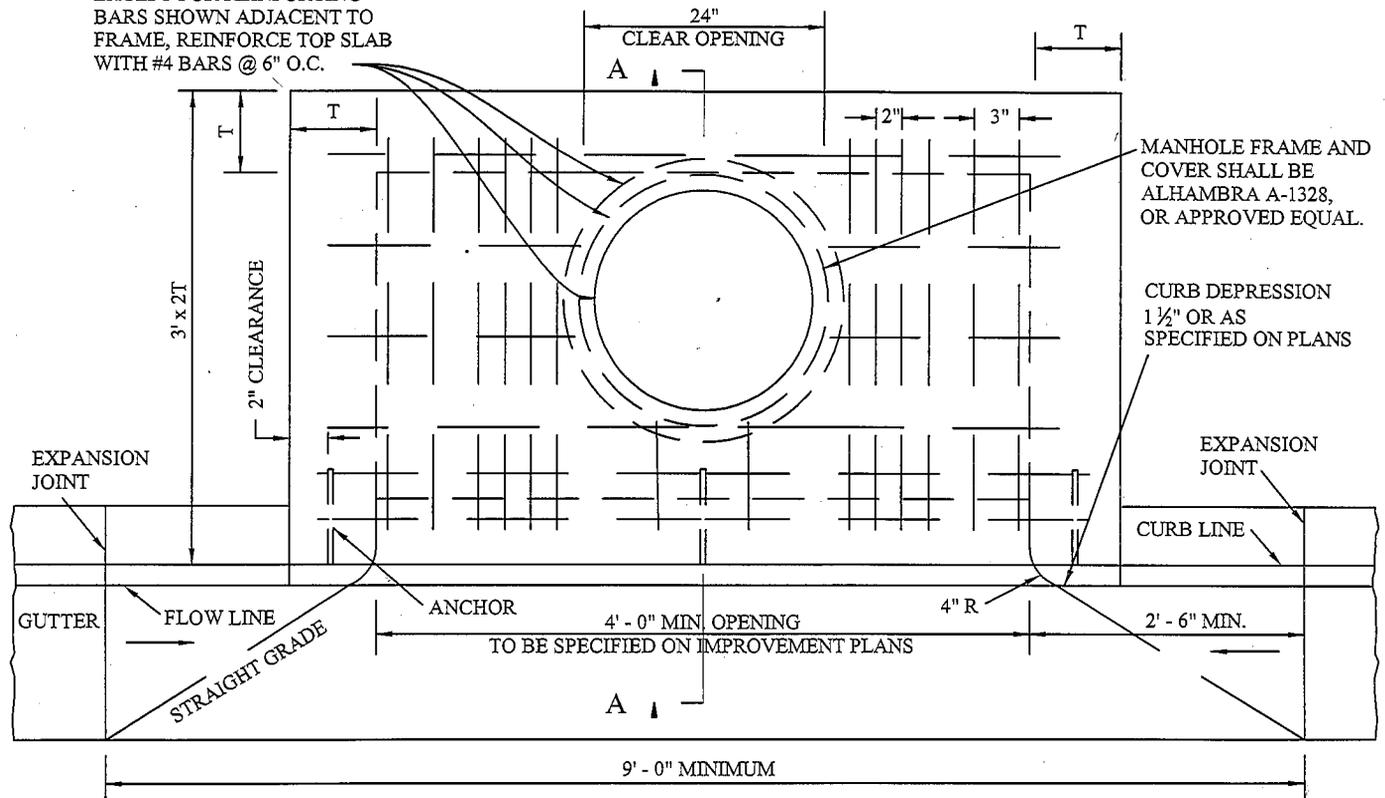
**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**INJECTION/DRY  
 WELL DETAIL**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

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			/ /	E.M.	DWG No.: 311

EXCEPT FOR REINFORCING BARS SHOWN ADJACENT TO FRAME, REINFORCE TOP SLAB WITH #4 BARS @ 6" O.C.

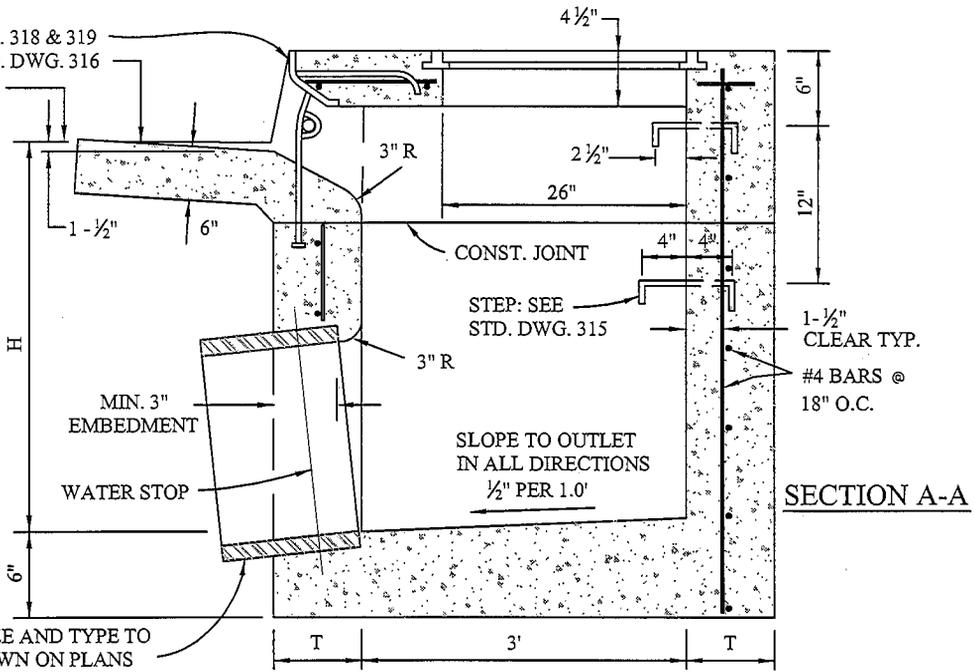


MANHOLE FRAME AND COVER SHALL BE ALHAMBRA A-1328, OR APPROVED EQUAL.

CURB DEPRESSION 1 1/2" OR AS SPECIFIED ON PLANS

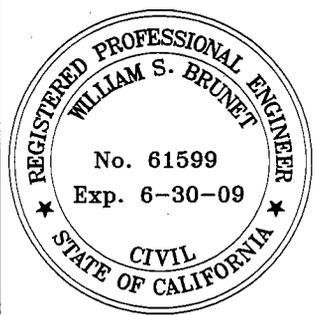
INLET DETAIL: SEE STD. DWG. 318 & 319  
 LOCAL DEPRESSION: SEE STD. DWG. 316  
 NORMAL GUTTER FLOWLINE

NOTE:  
 A DEBRIS BASIN EQUAL TO 36 CUBIC FEET OR GREATER MAY BE REQUIRED TO BE CONSTRUCTED IN THE BOTTOM OF THIS STRUCTURE, OR AN ADJACENT ONE, FOR SAND/TRASH SEPERATION



SECTION A-A

PIPE SIZE AND TYPE TO BE SHOWN ON PLANS



NOT TO SCALE

**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**CURB INLET CATCH BASIN**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	DWG No.: 312

WHEN THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF A PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH A SIDEWALK CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99. THE TOP OF THE BASIN SHALL BE POURED MONOLITHIC WITH SIDEWALK, USING CLASS "3" CONCRETE IN THE SIDEWALK. THE TOP OF THE CATCH BASIN SHALL BE FINISHED PER SIDEWALK STANDARDS.

CONNECTION PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS, PROVIDED THAT THEY POINT IN THE PROPER DIRECTION AND THE POSITION IS OTHERWISE CONSISTENT WITH THE IMPROVEMENT PLANS.

**DIMENSIONS:**

- T = 6 INCHES IF H IS 3.5 FEET OR LESS.
- T = 8 INCHES IF H IS GREATER THAN 3.5 FEET AND LESS THAN 8 FEET.
- T = 10 INCHES IF H IS 8 FEET OR GREATER.
- H = SHALL BE SHOWN ON THE PLANS.
- W = SHALL BE SHOWN ON THE PLANS (4' MIN.)

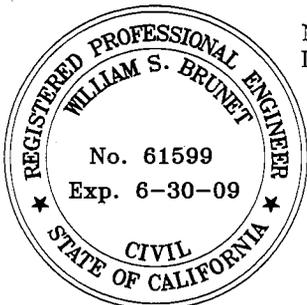
THE SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM TO SLOPE, GRADE, COLOR, FINISH, AND SCORING IN EXISTING OR PROPOSED IMPROVEMENTS ADJACENT TO THE BASIN. WHERE NO SIDEWALK EXISTS, THE TOP SHALL BE FINISHED TO CONFORM TO STANDARD SIDEWALK SLOPE AND FINISH. WHERE NO CURB EXISTS, THE BATTER OF EXPOSED END WALLS ABOVE THE STREET SURFACE SHALL CONFORM TO BATTER FOR STANDARD CURB. THE BASIN FLOOR SHALL BE GIVEN A SMOOTH TROWEL FINISH. CURVATURE OF THE LIP AND ENDWALLS AT THE GUTTER OPENING SHALL NOT BE MADE BY PLASTERING. THE OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE THE CONCRETE IS POURED.

REINFORCING STEEL SHALL BE NO. 4 BARS DEFORMED BARS. CLEARANCE SHALL BE 1 1/2 INCH FROM INSIDE OF BOX. SEE STANDARD DRAWING 317 FOR WALL AND FLOOR STEEL REINFORCING.

STEPS SHALL BE 3/4 INCH PLAIN ROUND GALVANIZED STEEL STEPS AS REQUIRED BY STANDARD DRAWING 315, AND SHALL BE INSTALLED AS FOLLOWS:

- IF H IS 3.5 FEET OR LESS, NO STEPS ARE REQUIRED.
- IF H IS MORE THAN 3.5 FEET, BUT NOT MORE THAN 5.0 FEET, INSTALL ONE STEP 16 INCHES ABOVE FLOOR OF BASIN.
- IF H IS MORE THAN 5.0 FEET, INSTALL STEPS 12" APART, WITH THE TOP STEP 6 INCHES BELOW THE TOP OF THE GRATING.
- ALL STEPS SHALL BE 4 INCHES CLEAR FROM THE WALL EXCEPT THE TOP STEP, WHICH SHALL BE 2 1/2 INCHES (CLEAR) FROM THE WALL AND ANCHORED NOT LESS THAN 4 INCHES IN WALL OF BASIN.

NOTE: ALL CURB INLET CATCH BASIN SHALL INCLUDE "ONLY RAIN IN THE DRAIN BUTTON" (SEE COUNTY DETAIL DRAWING No. 312B)

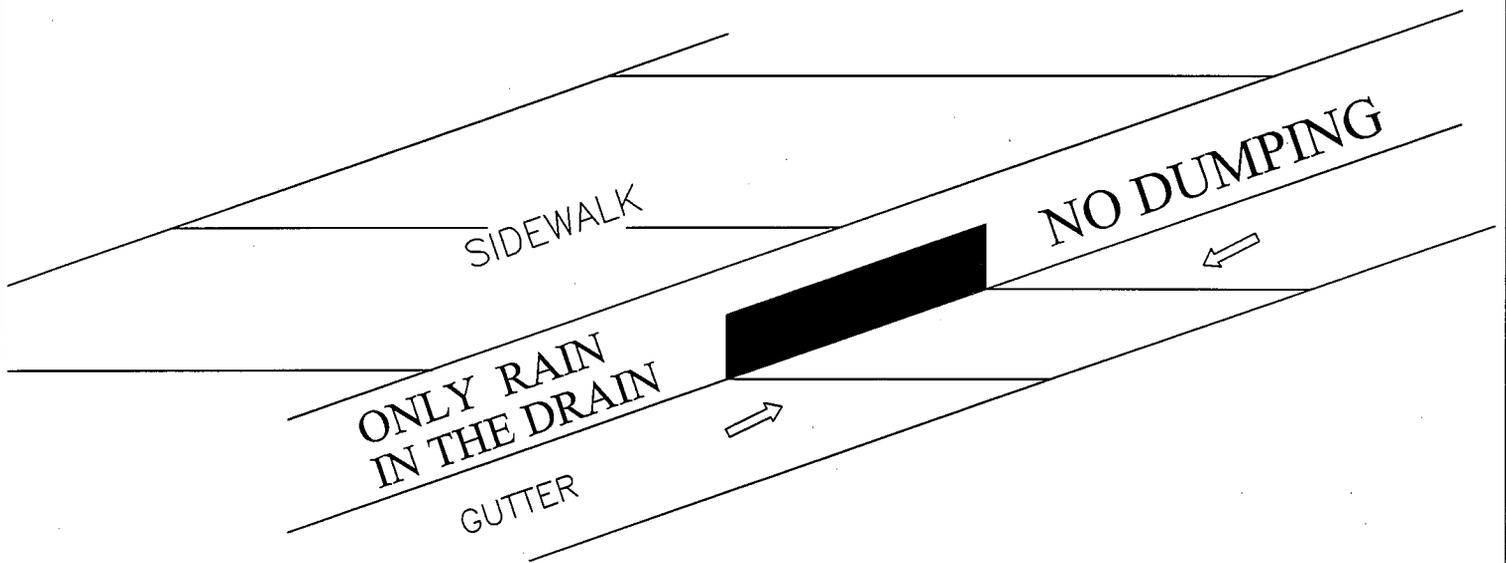


**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**CURB INLET CATCH BASIN**

APPROVED BY: *William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	312A



**NOTE:**  
 1. STAMP "ONLY RAIN IN THE DRAIN" AND "NO DUMPING" INTO CONCRETE.

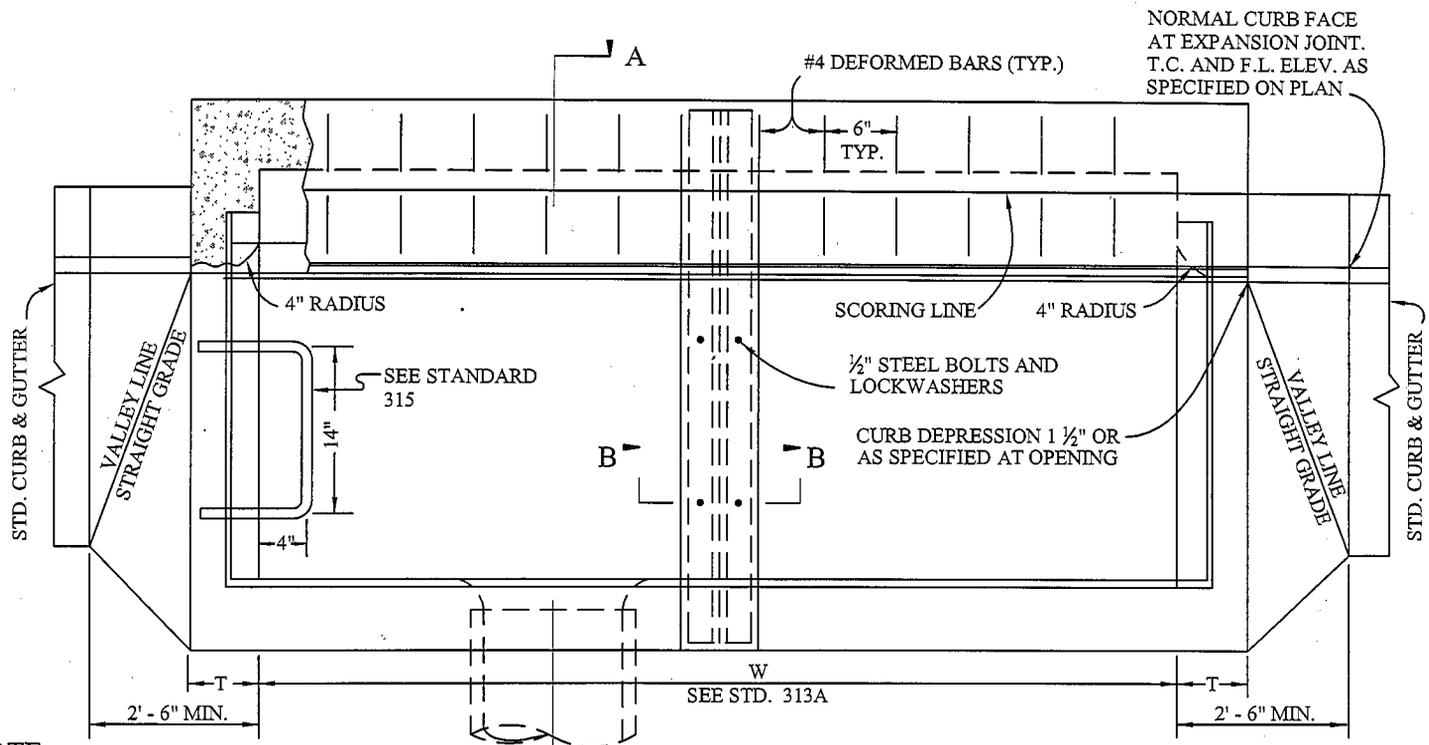


**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**ONLY RAIN IN THE DRAIN  
 STAMP**

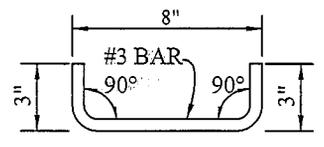
APPROVED BY:  
*William S. Brunet* DATE: 11/6/08  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	L.L.	DWG No.: 312B

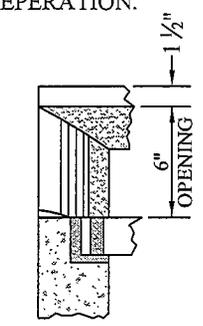


PLAN

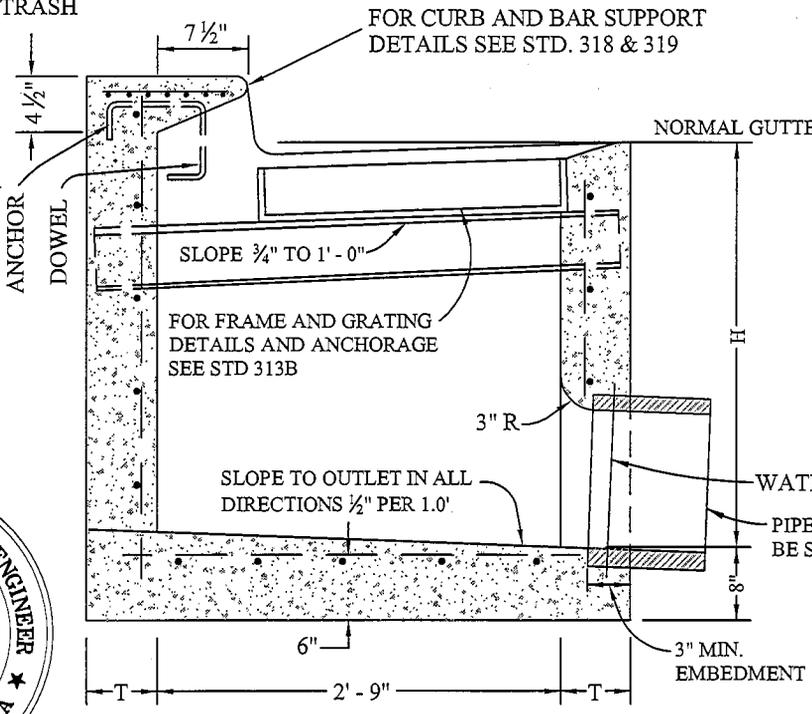
NOTE:  
 A DEBRIS BASIN EQUAL TO 36 CUBIC FEET OR GREATER MAY BE REQUIRED TO BE CONSTRUCTED IN THE BOTTOM OF THIS STRUCTURE, OR AN ADJACENT MANHOLE, FOR SAND/TRASH SEPERATION.



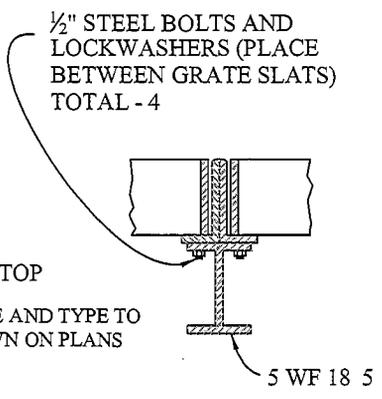
DETAIL OF DOWEL



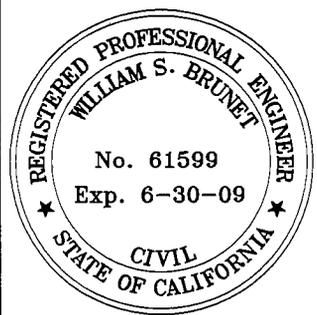
DETAIL OF END WALL



SECTION A-A



SECTION B-B  
 NOT TO SCALE



**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**CURB INLET WITH GUTTER  
 GRATE CATCH BASIN**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 313

BASIN SHALL HAVE TWO GRATES MINIMUM, UNLESS OTHERWISE SPECIFIED ON IMPROVEMENT PLANS.

WHEN THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF A PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH A SIDEWALK. CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99. THE TOP OF THE BASIN SHALL BE POURED MONOLITHIC WITH SIDEWALK, USING CLASS "3" CONCRETE IN THE SIDEWALK. THE TOP OF THE CATCH BASIN SHALL BE FINISHED PER SIDEWALK STANDARDS.

CONNECTION PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS, PROVIDED THAT THEY POINT IN THE PROPER DIRECTION AND THE POSITION IS OTHERWISE CONSISTENT WITH THE IMPROVEMENT PLANS.

**DIMENSIONS:**

GRATE SHALL BE PARALLEL TO PLANE OF GUTTER SLOPE 3/4" TO 1'-0".

T = 6 INCHES IF H IS 3.5 FEET OR LESS.

T = 8 INCHES IF H IS GREATER THAN 3.5 FEET AND LESS THAN 8 FEET.

T = 10 INCHES IF H IS 8 FEET OR GREATER.

H = SHALL BE SHOWN ON THE PLANS.

W = 6 FEET 4 3/4 INCHES MINIMUM. ADD 3 FEET 5 3/8 INCHES FOR EACH ADDITIONAL GRATING.

THE SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM TO SLOPE, GRADE, COLOR, FINISH, AND SCORING IN EXISTING OR PROPOSED IMPROVEMENTS ADJACENT TO THE BASIN. WHERE NO SIDEWALK EXISTS, THE TOP SHALL BE FINISHED TO CONFORM TO STANDARD SIDEWALK SLOPE AND FINISH. WHERE NO CURB EXISTS, THE BATTER OF EXPOSED END WALLS ABOVE THE STREET SURFACE SHALL CONFORM TO BATTER FOR STANDARD CURB. THE BASIN FLOOR SHALL BE GIVEN A SMOOTH TROWEL FINISH. CURVATURE OF THE LIP AND ENDWALLS AT THE GUTTER OPENING SHALL NOT BE MADE BY PLASTERING. THE OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE THE CONCRETE IS POURED.

REINFORCING STEEL SHALL BE NO. 4 BARS DEFORMED BARS. CLEARANCE SHALL BE 1 1/2 INCH FROM INSIDE OF BOX. SEE STANDARD DRAWING 317 FOR WALL AND FLOOR STEEL REINFORCING.

STEPS SHALL BE 3/4 INCH PLAIN ROUND GALVANIZED STEEL STEPS AS REQUIRED BY STANDARD DRAWING 315, AND SHALL BE INSTALLED AS FOLLOWS:

IF H IS 3.5 FEET OR LESS, NO STEPS ARE REQUIRED.

IF H IS MORE THAN 3.5 FEET, BUT NOT MORE THAN 5.0 FEET, INSTALL ONE STEP 16 INCHES ABOVE FLOOR OF BASIN.

IF H IS MORE THAN 5.0 FEET, INSTALL STEPS 12" APART, WITH THE TOP STEP 6 INCHES BELOW THE TOP OF THE GRATING.

ALL STEPS SHALL BE 4 INCHES CLEAR FROM THE WALL EXCEPT THE TOP STEP, WHICH SHALL BE 2 1/2 INCHES (CLEAR) FROM THE WALL AND ANCHORED NOT LESS THAN 4 INCHES IN WALL OF BASIN.

NOTE: ALL CURB INLET WITH GUTTER GRATE CATCH BASIN SHALL INCLUDE "ONLY RAIN IN THE DRAIN BUTTON" (SEE COUNTY DETAIL DRAWING No. 312B)



**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**CURB INLET WITH GUTTER  
GRATE CATCH BASIN**

APPROVED BY:

*William S. Brunet*

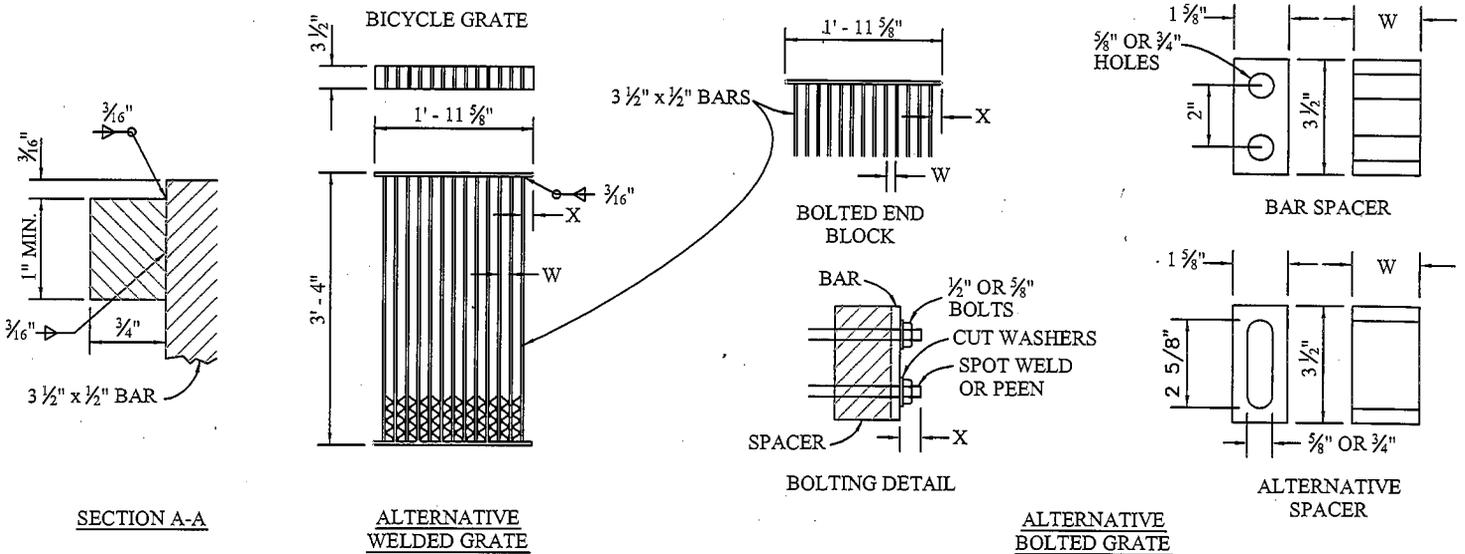
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: E.M.	DWG No.: 313A



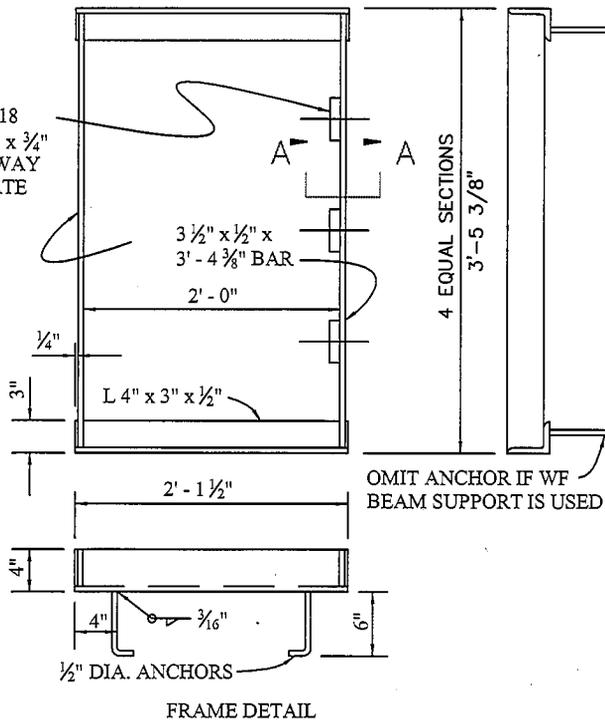
**GRATE DETAILS**  
SEE TABLE BELOW

TYPE	NO. BARS	W	X	USAGE
24 - 9	9	2"	1 1/16"	USE IN LOCATIONS OFF THE ROADBED ON ALL TYPES OF HIGHWAYS
24 - 12	12	1 5/8"	1 1/4"	USE WITHIN THE ROADBED ON HIGHWAYS WHERE BICYCLE AND PEDESTRIANS ARE EXCLUDED, OR FOR RURAL CONDITIONS
24 - 18	18	3/4"	1 5/16"	USE WITHIN THE ROADBED UNDER URBAN CONDITIONS WHERE BICYCLES AND PEDESTRIANS ARE PERMITTED

TYPE 450 - 8S (CALTRANS D77B) OR ALHAMBRA A - 1546 & 1555

ON FRAMES FOR TYPE 24 - 18 GRATES, PROVIDE 3'-3" x 1" x 3/4" BLOCKS. PLACE ON ROADWAY SIDE OR HIGH SIDE OF GRATE OPENING

**NOT TO SCALE**



TYPE	WEIGHTS	
	WELDED	BOLTED
24 - 9	200	230
24 - 12	258	286
24 - 18	372	400
24" FRAME	90	

**NOTES:**

1. GRATE TYPE NUMBERS REFER TO WIDTH OF GRATE IN INCHES AND NUMBER OF RESPECTIVELY.
2. GRATES AND FRAMES TO BE GALVANIZED.
3. ROUNDED TOP OF BARS OPTIONAL ON ALL GRATES.
4. GRATE SHALL BE PLACED SO THAT BARS ARE PARALLEL TO DIRECTION OF PRINCIPAL SURFACE FLOW.

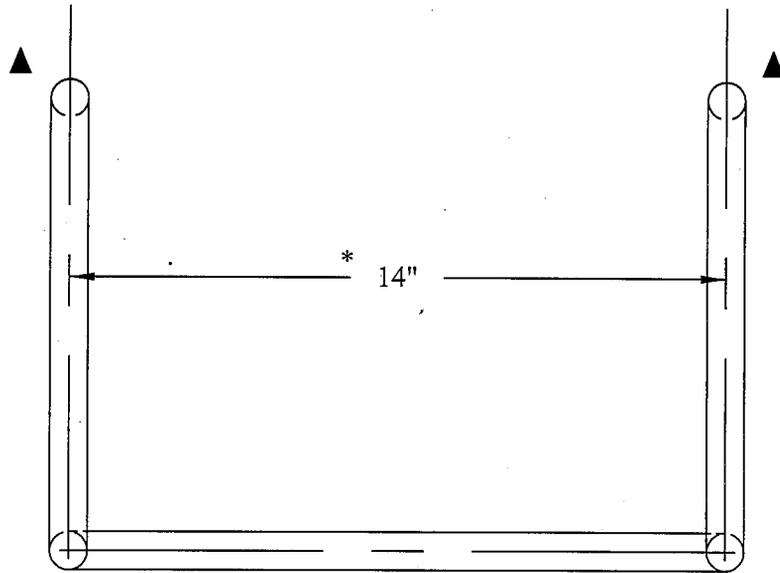


**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**STORM DRAIN FRAME AND GRATE DETAIL**

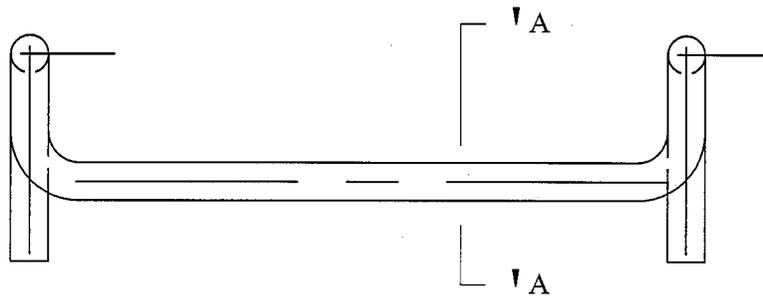
APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 313B



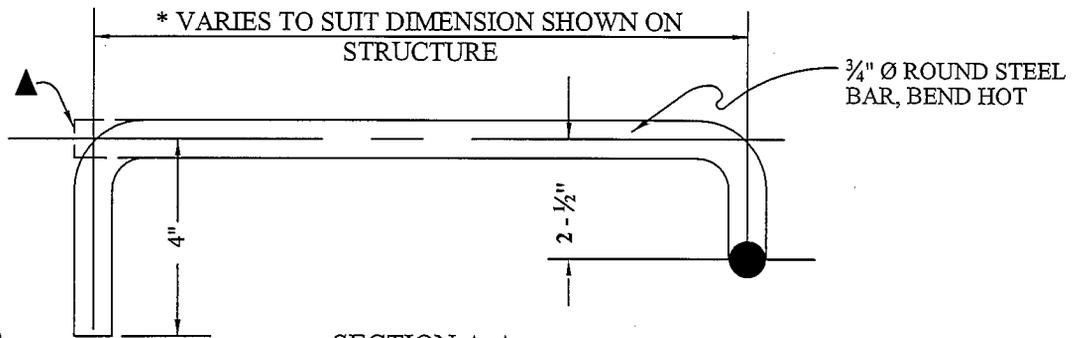
NOTE:  
 ▲ = WHEN STEEL FORMS  
 ARE USED, ELIMINATE HOOK  
 AND USE UPSET END

PLAN VIEW



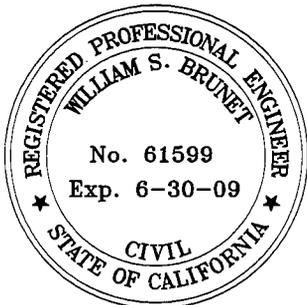
FRONT ELEVATION

NOT TO  
 SCALE



SECTION A-A  
 GALVANIZE AFTER BENDING

NOTE:  
 THIS DETAIL SHALL BE  
 USED WHEREVER STEPS  
 ARE REQUIRED



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

STANDARD DROP STEP

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

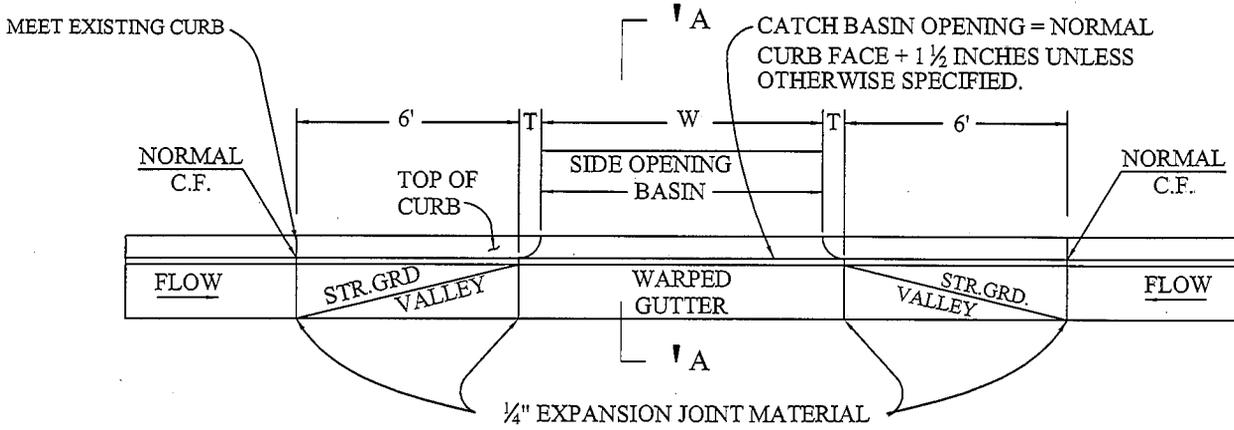
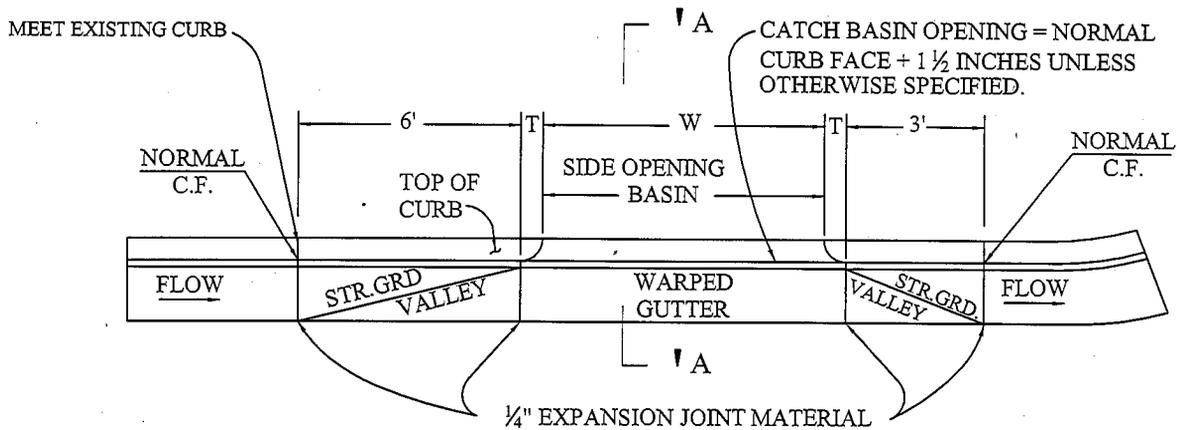
WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

REVISIONS

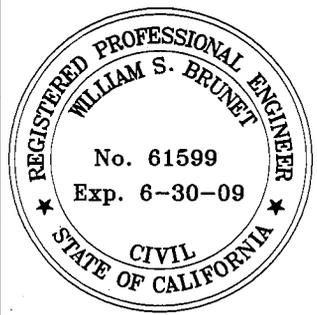
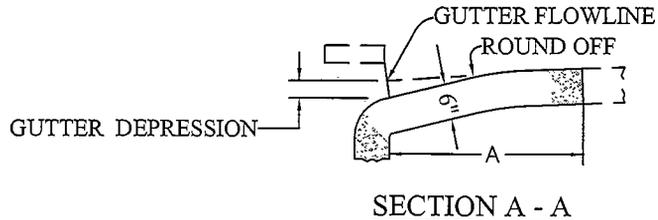
BY: APR'D: DATE:

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CHECKED: F.F.	DATE: 08/29/08
DRAWN: E.M.	DWG No.: 315



**NOT TO SCALE**



- NOTES:
1. LOCAL DEPRESSION SHALL BE CONSTRUCTED OF CLASS "3" CONCRETE 6" THICK.
  2. CURB AND GUTTER SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTING TOP OF CATCH BASIN AND CURB TRANSITIONS.
  3. FOR "T" SEE STANDARD DRAWINGS 312A AND 313A.

**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**LOCAL DEPRESSION**

APPROVED BY: *William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/16/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 316

**NOTES:**

1. WALL & FLOORING REINFORCING SHOWN HEREON SHALL BE USED WITH CATCH BASIN STANDARD DRAWINGS.
2. REINFORCING STEEL SHOWN HEREON SHALL BE USED IN ALL CATCH BASINS ON STATE HIGHWAYS REGARDLESS OF BASIN LENGTH OR DEPTH.
3. PROVIDE WALL & FLOOR STEEL REINFORCING WHEN THE FOLLOWING "H" DEPTHS ARE EQUALED OR EXCEEDED:

BASIN LENGTH=W	BASIN DEPTH=H
TO 7.0'	9.5'
7' TO 14.0'	7.5'
14' TO 21.0'	6.5'
OVER 21.0'	ALL DEPTHS

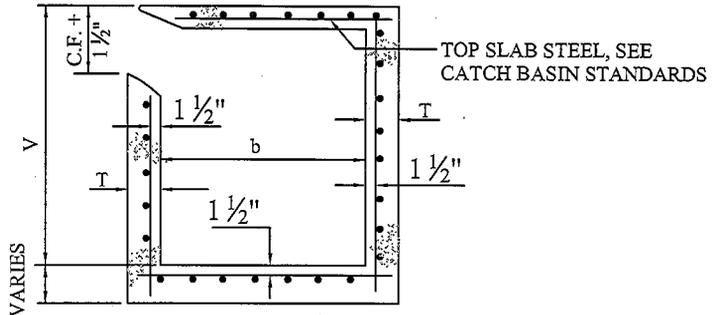
REINFORCING STEEL SHOWN HEREON SHALL BE USED IN ALL CATCH BASINS WHEN EXCAVATION OR SOIL CONDITIONS REQUIRE BOTH SIDES OF THE WALLS TO BE FORMED REGARDLESS OF BASIN LENGTH OR DEPTH.



**FLOOR REINFORCEMENT SECTION 2**

W OF C.B.	V (FT.)		T (IN)	FRONT WALL STEEL		REAR & END WALLS & FLOOR STEEL
	FROM	TO (INCL)		HOR.	VERT.	EACH WAY
TO 7'	4	6	#3 @ 6"	#3 @ 6"	#3 @ 6"	
TO 7'	4	8	#4 @ 12"	#4 @ 12"	#4 @ 12"	
TO 7'	8	12	#4 @ 10"	#4 @ 10"	#4 @ 10"	
14'	3.5'	6	#3 @ 6"	#3 @ 6"	#3 @ 6"	
14'	3.5'	8	#4 @ 12"	#4 @ 12"	#4 @ 12"	
14'	8	10	#4 @ 8"	#4 @ 12"	#4 @ 10"	
14'	10	12	#4 @ 6"	#4 @ 12"	#4 @ 10"	

**WALL AND FLOOR STEEL**



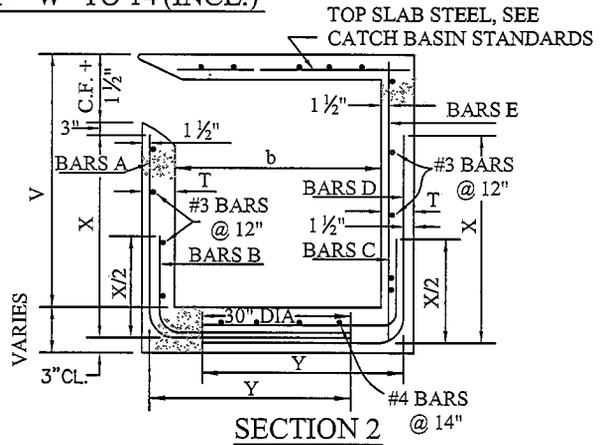
**SECTION 1**

**CATCH BASIN REINFORCEMENT- "W" TO 14'(INCL.)**

V (FT.)	TO (INCL)	T (IN)	FRONT WALL STEEL	REAR WALL STEEL			END WALL STEEL
			BAR A & B	BARS C	BARS D	BARS E	HOR. & VERT.
4	6	#3 @ 24"	#3 @ 12"	----	#4 @ 24"	#3 @ 18"	
4	8	#3 @ 20"	#3 @ 12"	----	#4 @ 24"	#3 @ 14"	
5	6	#3 @ 12"	#3 @ 10 1/2"	----	#4 @ 24"	#3 @ 14"	
6	7	#4 @ 17"	#3 @ 8 1/2"	----	#4 @ 24"	#3 @ 14"	
7	8	#4 @ 13"	#3 @ 6 1/2"	----	#4 @ 24"	#3 @ 14"	
8	9	#4 @ 15"	#3 @ 7 1/2"	----	#4 @ 20"	#3 @ 11"	
9	10	#4 @ 12"	#4 @ 12"	----	#4 @ 20"	#3 @ 11"	
10	11	#5 @ 15"	----	#4 @ 11"	#4 @ 18"	#3 @ 11"	
11	12	#6 @ 18"	----	#4 @ 9"	#4 @ 13"	#3 @ 11"	

$X = (V+T) - (C.F. + 4 \frac{1}{2} ")$        $Y = (-\frac{b}{2} + 2T) + 15 \text{ DIA.} - 1 \frac{1}{2} "$

**WALL AND FLOOR STEEL**



**SECTION 2**

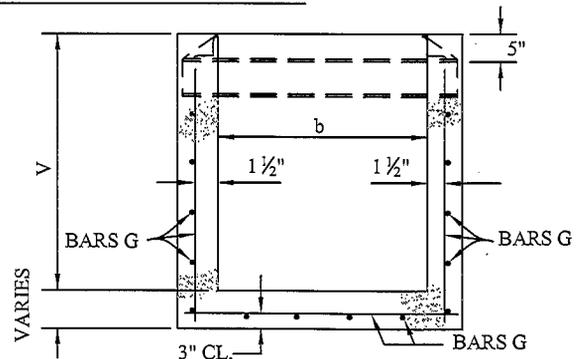
**CATCH BASIN REINFORCEMENT- "W" GREATER THAN 14'**

**NOT TO SCALE**



V (FT.)	TO (INCL)	T (IN)	SIDE & END WALL STEEL
			BARS G
4	6	#3 @ 6"	
4	8	#4 @ 6"	
8	12	#5 @ 6"	

**GRATING BASIN REINFORCEMENT**



**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**CATCH BASIN REINFORCEMENT**

APPROVED BY:

*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.

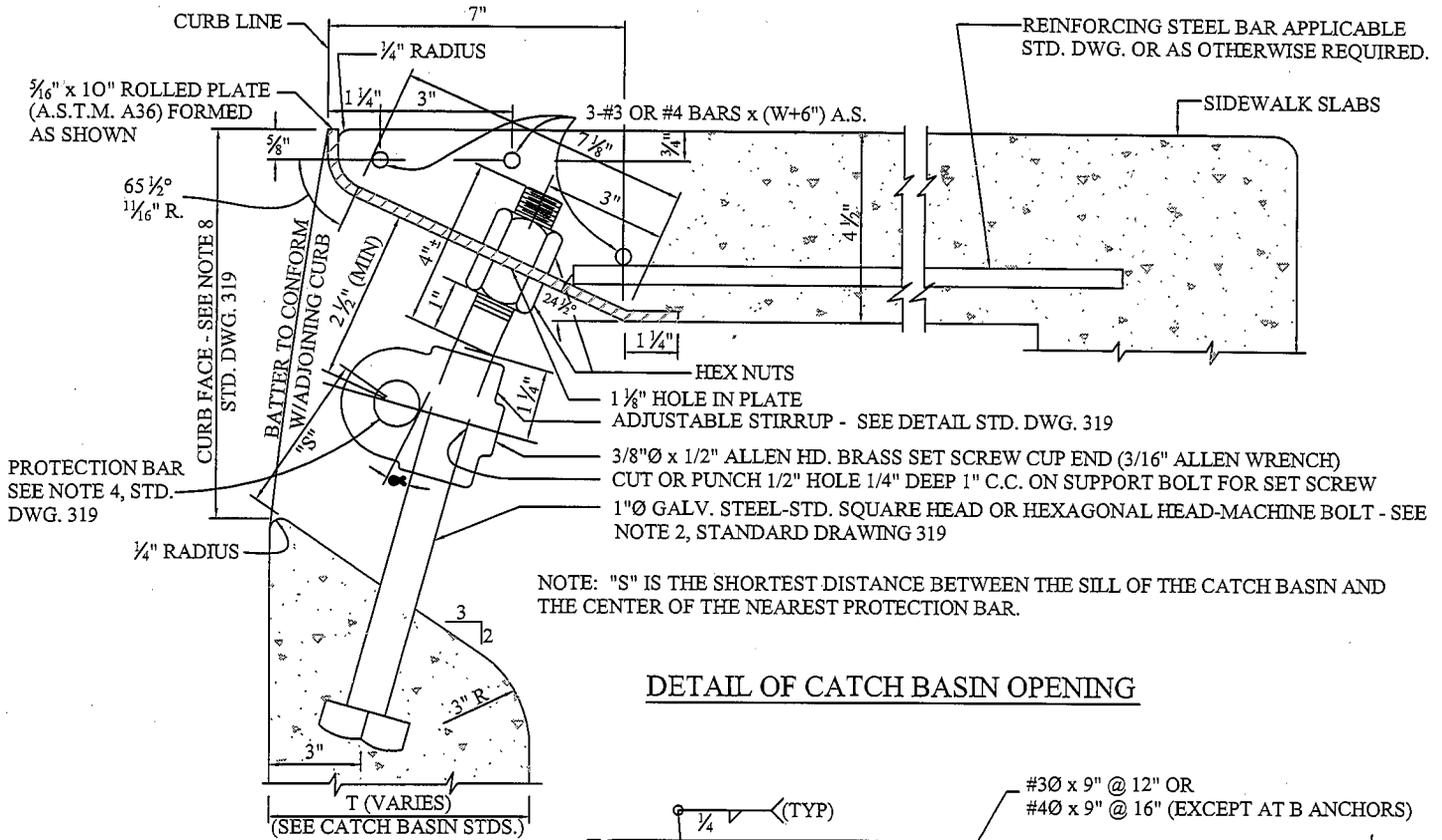
DATE: 11/6/08

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REVISIONS

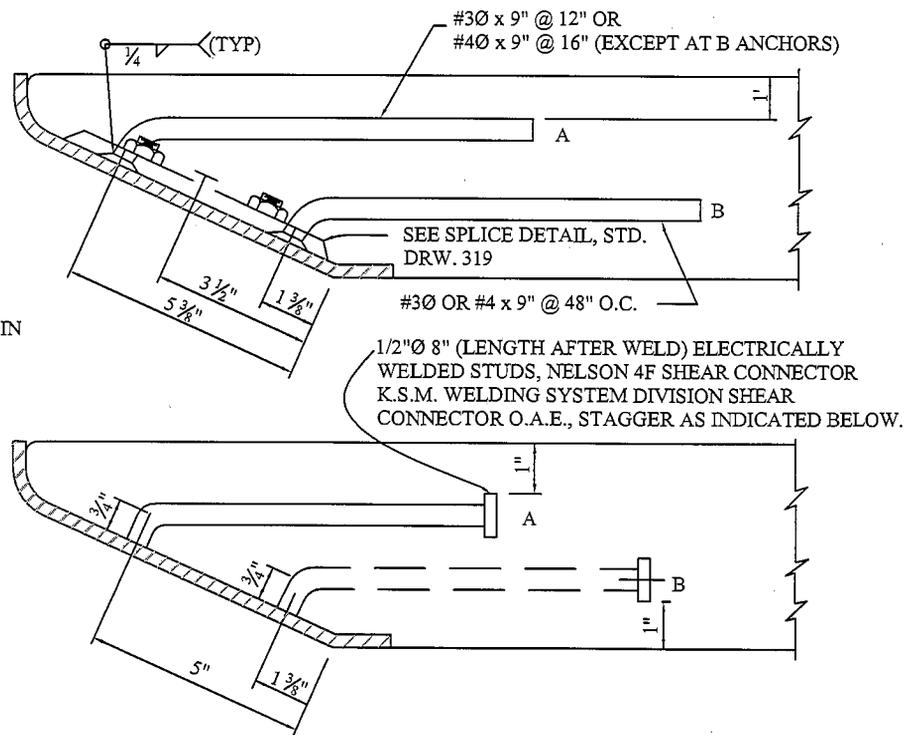
BY: APR'D: DATE:

				CHECKED: F.F.	DATE: 08/29/08
				DRAWN: E.M.	DWG No.: 317



NOTE: "S" IS THE SHORTEST DISTANCE BETWEEN THE SILL OF THE CATCH BASIN AND THE CENTER OF THE NEAREST PROTECTION BAR.

**DETAIL OF CATCH BASIN OPENING**



**ALTERNATE METHODS FOR FACE PLATE ANCHORAGE**

NOTE: REINFORCING STEEL AND SPLICE NOT SHOWN. SPACE "A" ANCHORS APPROXIMATELY EVENLY AT 15" MAX. O.C. BETWEEN END ANCHORS AND ANCHORS AT SPLICE JOINTS EXCEPT OMIT AT "B" ANCHOR LOCATION. SPACE "B" ANCHORS AT APPROXIMATELY 45" MAX. BETWEEN END ANCHORS.

NOTE:  
SEE STANDARD DRAWING 319 FOR  
ADDITIONAL DETAILS AND NOTES FOR CATCH BASIN  
OPENINGS AND INSTALLATION REQUIREMENTS.

**NOT TO  
SCALE**

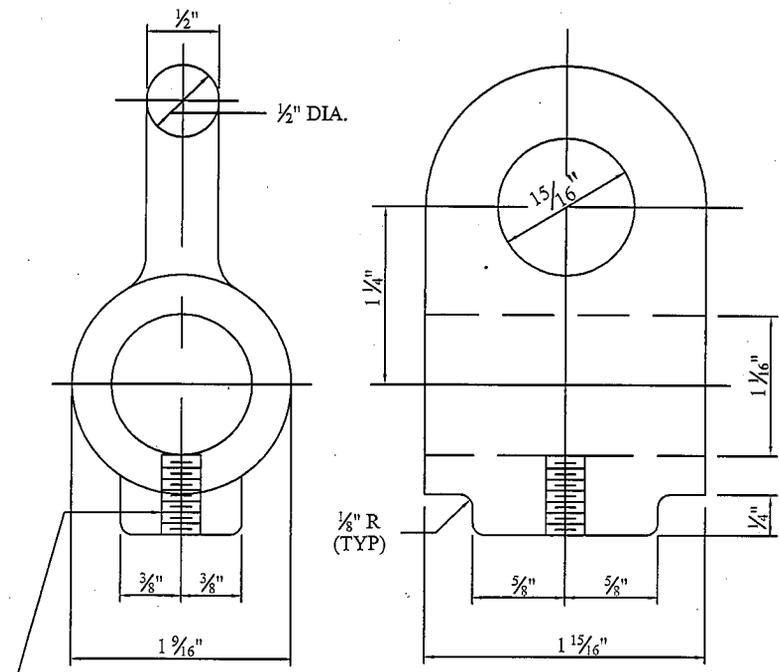


**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**DETAIL OF CATCH BASIN  
OPENING & INSTALLATION  
DETAILS**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
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			/ /	DRAWN:	DWG No.:
				E.M.	318



3/16" TAP DRILL 3/8" M.C TAP  
FOR 3/8" x 1/2" ALLEN HEAD SET SCREW

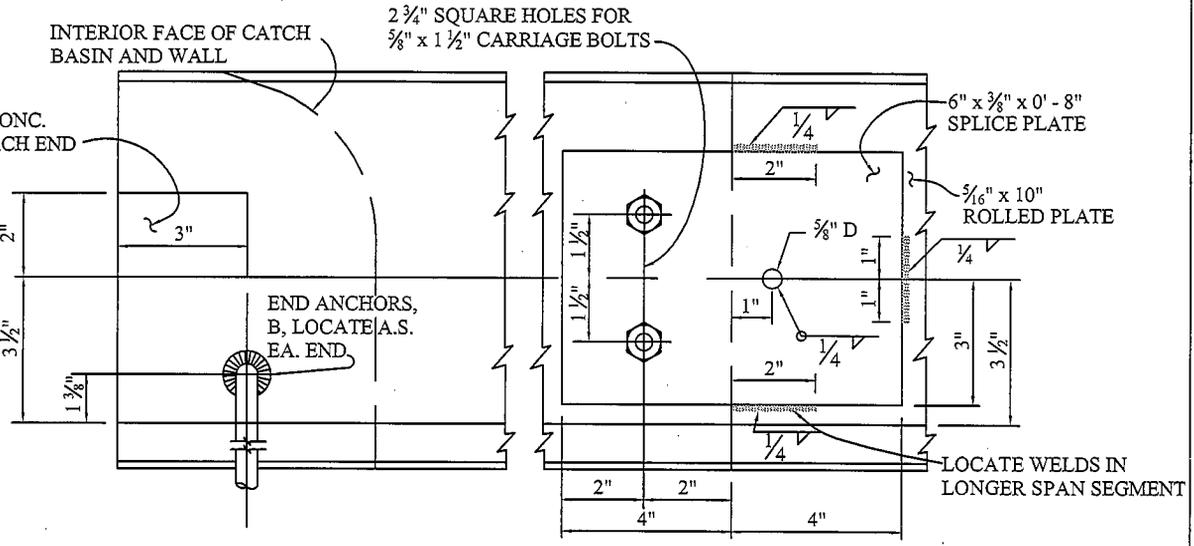
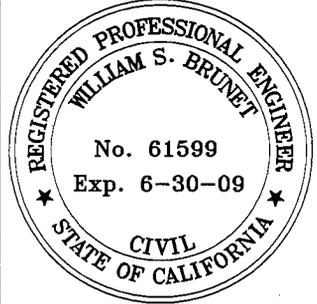
1. MATERIAL SHALL BE CAST STEEL.
2. STIRRUPS SHALL BE GALVANIZED.
3. FOR INSTALLATION DETAIL, SEE STD. DWG. 318

**ADJUSTABLE PROTECTION BAR STIRRUP**

**NOTES:**

1. SUPPORT BOLT ANGLE  $\alpha$  SHALL VARY TO CONFORM WITH BATTER OF ADJOINING CURB.
2. SUPPORT BOLTS SHALL BE EQUAL IN LENGTH TO CURB FACE + 4" ± FOR ALL CURB BATTERS.
3. ALL EXPOSED METAL PARTS SHALL BE GALVANIZED AFTER FABRICATION.
4. PROTECTION BAR SPACING: PROTECTION BAR(S) SHALL BE INSTALLED WHEN THE MINIMUM CLEAR OPENING OF THE CATCH BASIN EXCEEDS 6" BARS(S) AND SHALL BE PLACED SUCH THAT NO MINIMUM CLEAR OPENING EXCEEDS 6".
  - (A) WHEN ONE BAR IS REQUIRED, "S" SHALL BE 6 3/4", HOWEVER, THIS SHALL BE REDUCED IF NECESSARY SO THAT THE CENTER OF THE PROTECTION BAR IS NOT LESS THAN 2 1/2" FROM THE ROLLED PLATE.
  - (B) WHEN TWO OR MORE BARS ARE REQUIRED, "S" SHALL BE 6 3/4" WITH REMAINING BARS SPACED AT 6 3/4" O.C. THE SPACING OF THE TOP BAR SHALL BE REDUCED IF NECESSARY SO THAT THE CENTER OF THE BAR IS NOT LESS THAN 2 1/2" FROM THE ROLLED PLATE.
5. WHERE CATCH BASINS ARE TO BE CONSTRUCTED ON CURVES, THE MAXIMUM CHORD LENGTH FOR FACE PLATE SHALL BE SUCH THAT THE MAXIMUM DIMENSION FROM SAID CHORD (MEASURED PERPENDICULAR THERETO) TO THE TRUE CURVE WILL NOT EXCEED ONE INCH. WHERE MORE THAN ONE CHORD IS REQUIRED, CHORD LENGTH SHALL BE EQUAL.
6. WHERE LENGTH OF FACE PLATE IS BETWEEN 22' AND 43', TWO SECTIONS MAY BE USED. WHEN LENGTH EXCEEDS 43', THREE SECTIONS MAY BE USED. SECTIONS SHALL BE SPLICED ACCORDING TO THE SPLICE DETAIL. SPLICES SHALL BE PLACED ONE FOOT FROM SUPPORT BOLT.
7. LENGTH OF FACE PLATE IS W + 12" FOR ALL CATCH BASINS.
8. CATCH BASIN OPENING = NORMAL CURB FACE + 1 1/2" INCHES UNLESS OTHERWISE SPECIFIED.
9. SPACING OF ALL ANCHORAGE:
  - A. SET END ANCHORS 3" FROM ENDS OF FACE PLATE.
  - B. PLACE ONE "A" ANCHOR AT EACH SIDE OF ANY AND ALL SPLICE JOINTS AND WITHIN 6" THEREOF.

**NOT TO SCALE**



**FACE PLATE END & SPLICE DETAILS**

NOTE: SEE STD. DWG. 318 TOP ALTERNATE ANCHORAGE DETAIL FOR ADDITIONAL SPLICE DETAILS

**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**DETAIL OF CATCH BASIN OPENING & INSTALLATION DETAILS**

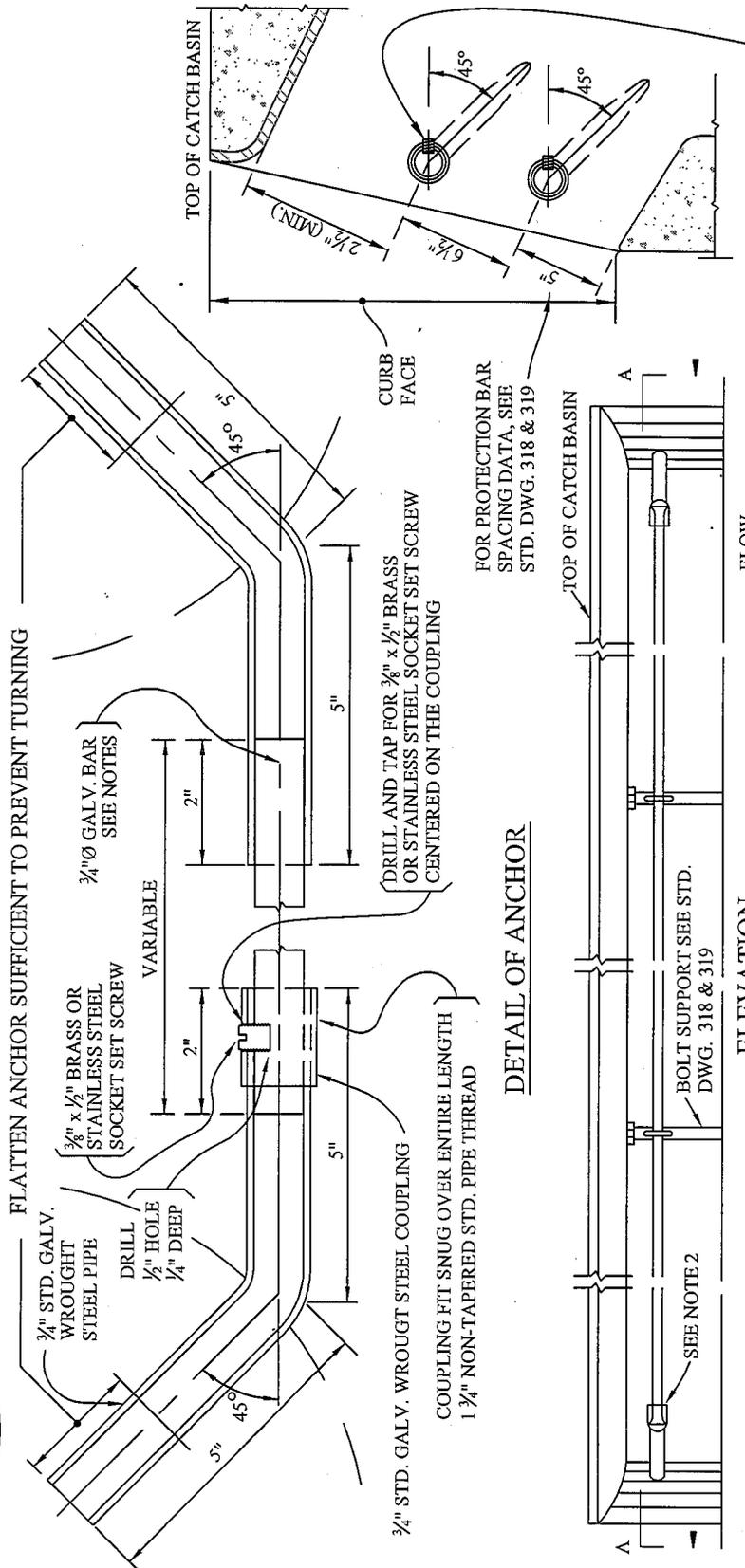
APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	DWG No.: 319

"W" (INCL)	NUMBER OF SUPPORT BOLTS	NUMBER OF "X" LENGTHS
5' to 10'	1	2
10' to 15'	2	3
15' to 20'	3	4
20' to 25'	4	5
25' to 30'	5	6

NOT TO SCALE



NOTE: BRASS OR STAINLESS STEEL SOCKET SET SCREW ON INSIDE OF CATCH BASIN

SECTION SHOWING LOCATION OF ANCHOR AT WALL OF CATCH BASIN

- NOTES:
- ALL BARS SHALL BE 3/4" GALV. HOT-ROLLED STEEL PER A.S.T.M. DESIGNATION A-36. BAR LENGTHS SHALL NOT EXCEED 21' AND SHALL BE CUT TO FIT IN THE FIELD. WHEN "W" IS OVER 21', PROTECTION BAR SHALL CONSIST OF TWO OR MORE SECTIONS DEPENDING UPON LENGTH OF BASIN. LOCATION OF SPECIAL SUPPORT BARS AND ADDITIONAL SOCKET SET SCREW TO BE DETERMINED BY THE ENGINEER IN THE FIELD.
  - INSTALL COUPLING AT DOWNSTREAM END OF CATCH BASIN OPENING.

IMPERIAL COUNTY CALIFORNIA

COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS

EL CENTRO, CALIFORNIA

REMOVABLE PROTECTION BAR FOR CATCH BASINS

APPROVED BY:

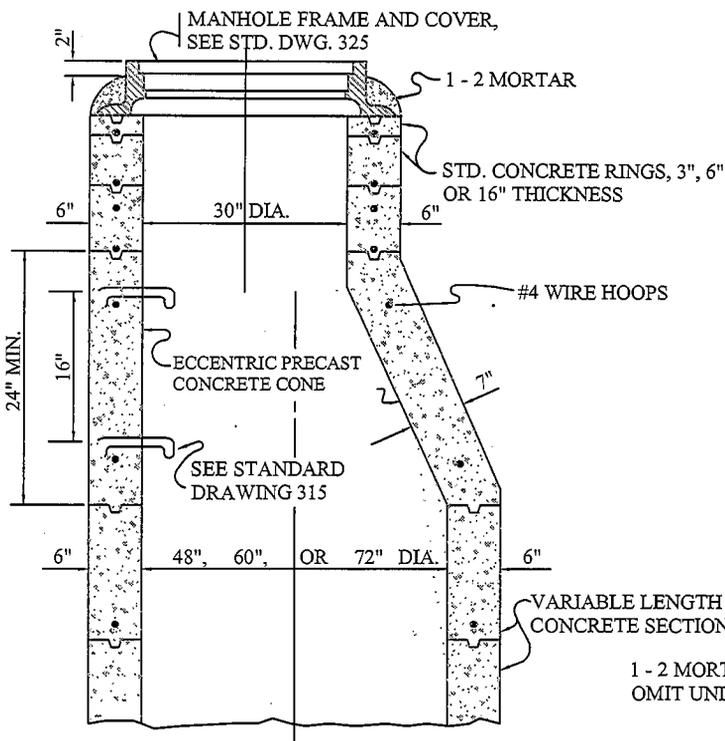
*William S. Brunet*

WILLIAM S. BRUNET, P.E.

DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

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			/ /	E.M.	DWG No.: 320

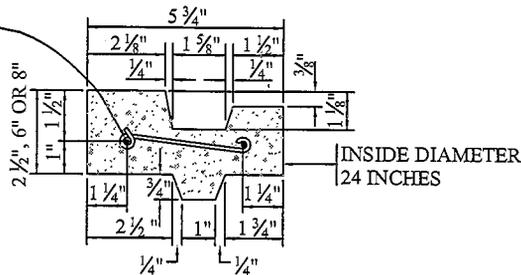


**VERTICAL SECTION  
OF PLAIN CONCRETE  
ECCENTRIC MANHOLE SHAFT**

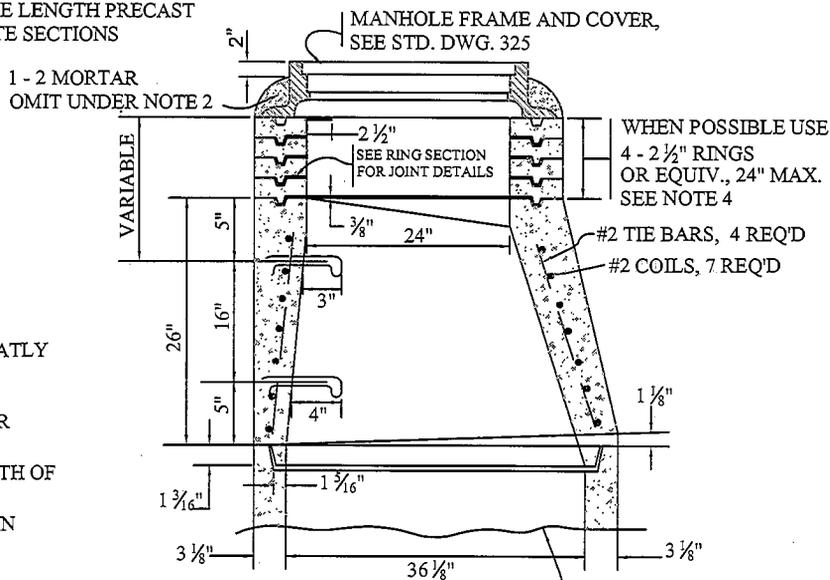
**NOTES:**

1. ALL JOINTS SHALL BE FILLED WITH 1-2 MORTAR AND NEATLY POINTED OR WIPED INSIDE OF SHAFT.
2. STEPS SHALL BE 3/4 INCH ROUND GALVANIZED STEEL PER STANDARD DRAWING 315. TOP STEP SHALL BE PLACED DIRECTLY BENEATH THE MANHOLE COVER FRAME. WIDTH OF ALL STEPS SHALL BE 14 INCHES BETWEEN LEG CENTERS. EXCEPT WHERE SHOWN OTHERWISE, SPACING OF STEPS IN SHAFT SHALL BE 16 INCHES ON CENTER.
3. ECCENTRIC MANHOLE SHAFT, REDUCER, AND RINGS MINIMUM THICKNESS SHALL BE 6 INCHES. THE CONCRETE USED SHALL BE CLASS "3".

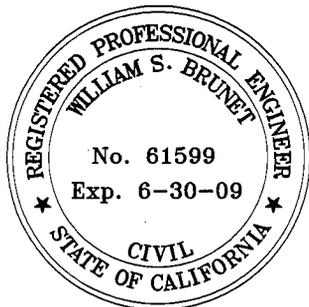
2 1/2" RINGS SHALL BE REINFORCED WITH TWO 1/4" ROUND STEEL HOOPS; 6" AND 8" RINGS SHALL BE REINFORCED WITH FOUR HOOPS, TIED WITH #14 A.S. & W. GAUGE WIRE 8" ON CENTERS



**CROSS SECTION  
OF REINFORCED  
CONCRETE RING**



**VERTICAL SECTION  
OF REINFORCED CONCRETE  
ECCENTRIC MANHOLE SHAFT**



**NOT TO  
SCALE**



**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**PRE CAST  
MANHOLE SHAFT**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

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NOTES:

1. HEIGHT H SHALL BE NOT LESS THAN 4'-0" BUT MAY BE INCREASED AT OPTION OF CONTRACTOR PROVIDED THAT THE VALUE OF M SHALL NOT BE LESS THAN THE MINIMUM SPECIFIED AND THAT THE REDUCER SHALL BE USED. FOR H (IN SEC. C-C) SEE NOTE 4.
2. LENGTH L SHALL BE 4' UNLESS OTHERWISE SHOWN ON IMPROVEMENT PLAN. L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS AT THE OPTION OF THE CONTRACTOR, EXCEPT THAT ANY CHANGE IN LOCATION OF MANHOLE MUST BE APPROVED BY THE ENGINEER.
3. SHAFT SHALL BE CONSTRUCTED AS PER SEC. C-C AND DETAIL N WHEN DEPTH M FROM STREET GRADE TO TOP OF BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS.
4. DEPTH P MAY BE REDUCED TO AN ABSOLUTE LIMIT OF 6 INCHES WHEN LARGER VALUES OF P WOULD REDUCE H (IN SEC. C-C) TO BE 3'-6" OR LESS.
5. T SHALL BE 8" FOR VALUES OF H UP TO AND INCLUDING 8 FEET. T SHALL BE 10" FOR VALUES OF H OVER 8 FEET.
6. STEPS SHALL BE 3/4" ROUND, GALVANIZED STEEL PER STANDARD DRAWING 315 AND ANCHORED NOT LESS THAN 4" IN THE WALLS OF STRUCTURES. UNLESS OTHERWISE SHOWN, STEPS SHALL BE SPACED 16" ON CENTER. THE LOWEST STEP SHALL BE NOT MORE THAN 2 FEET ABOVE THE INVERT.
7. REINFORCING STEEL SHALL BE NO. 4 AND 1-1/2" CLEAR FROM INSIDE FACE OF CONCRETE.
8. STATIONS REFER TO PLAN AND PROFILE SHEETS. ELEVATIONS AT C AND PROLONGED INVERT GRADE LINE. SEE NOTE 2 FOR SHIFTING LOCATION.
9. RINGS, REDUCER, AND PIPE FOR ACCESS SHAFT SHALL BE SEATED IN CEMENT MORTAR AND NEATLY POINTED OR WIPED INSIDE SHAFT.
10. FLOOR OF MANHOLE SHALL BE STEEL-TROWELED.
11. CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.

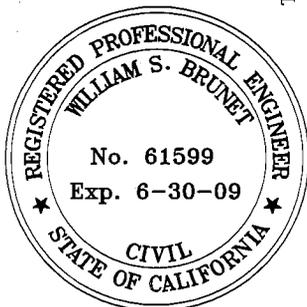


**COUNTY of IMPERIAL**  
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 EL CENTRO, CALIFORNIA

**STORM DRAIN  
 MANHOLE NO.1**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11 / 6 / 08

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				E.M.	322A



**NOT TO SCALE**



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DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

APPROVED BY:

*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

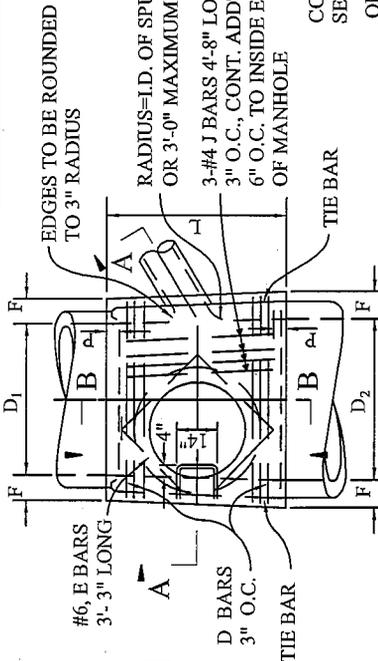
DATE: 11/6/08

**STORM DRAIN  
MANHOLE NO. 2**

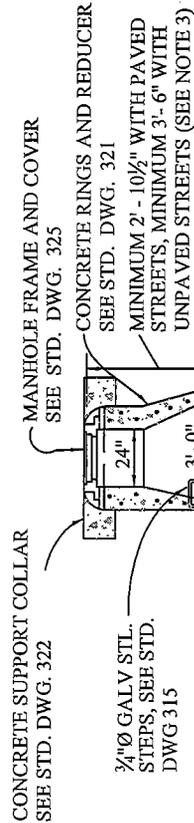
REVISIONS

BY: APR'D: DATE:

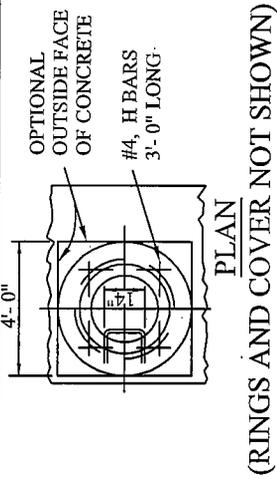
			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: E.M.	DWG No.: 323



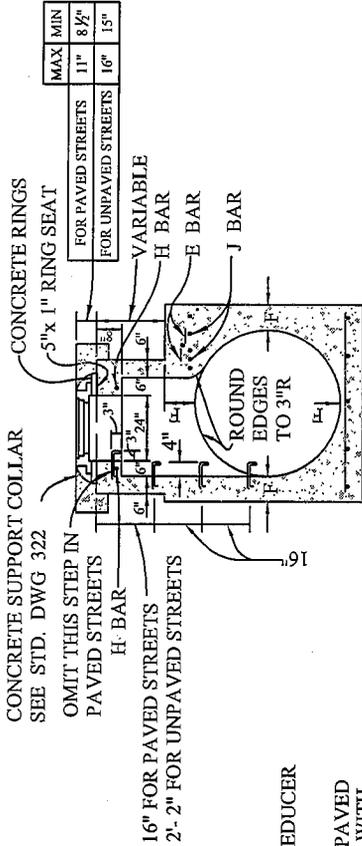
PLAN  
(SHAFT NOT SHOWN)



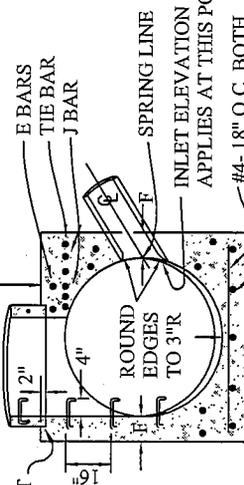
SECTION A - A



PLAN  
(RINGS AND COVER NOT SHOWN)



DETAIL M  
(SEE NOTE 3)



SECTION B - B

TABLE OF VALUES FOR "F"

* D <sub>2</sub> , D <sub>1</sub>	F	* D <sub>2</sub> , D <sub>1</sub>	F
36"	6 1/2"	78"	11 3/4"
39"	7"	84"	12 1/2"
42"	7 1/2"	90"	13 1/4"
45"	7 3/4"	96"	14"
48"	8"	102"	15 1/2"
51"	8 1/2"	108"	16"
54"	9"	114"	16 1/2"
57"	9 1/2"	120"	17"
60"	9 3/4"	126"	17 1/2"
63"	10"	132"	17 3/4"
66"	10 1/2"	138"	18"
69"	10 3/4"	144"	18 1/2"
72"	11"		

\* USE D<sub>2</sub> OR D<sub>1</sub> WHICHEVER IS GREATER

- NOTES:
- TABLE OF VALUES FOR "F" ARE ON THIS PLAN.
  - CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTERLINE OF STORM DRAIN WHEN DIAMETER D<sub>1</sub> IS 48" OR LESS, IN WHICH CASE PLACE E BARS SYMMETRICALLY AROUND SHAFT AT 45° WITH CENTERLINE AND OMIT J BARS.
  - DETAIL M: WHEN DEPTH OF MANHOLE FROM STREET GRADE TO TOP OF BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER DETAIL M. SHAFT FOR ANY DEPTH OF MANHOLE MAY BE CONSTRUCTED PER DETAIL M. WHEN DIAMETER D<sub>1</sub> IS 48" OR LESS, CENTER OF SHAFT MAY BE LOCATED PER NOTE 2.
  - THICKNESS OF DECK SHALL VARY WHEN NECESSARY TO PROVIDE LEVEL PIPE SEAT BUT SHALL NOT BE LESS THAN TABULAR VALUES FOR F SHOWN ON THIS PLAN.
  - REINFORCING STEEL TO BE ROUND, DEFORMED BARS, 1/2" CLEAR FROM INSIDE FACE OF CONCRETE UNLESS OTHERWISE SHOWN.
  - STEPS SHALL 3/4" ROUND, GALVANIZED STEEL AND ANCHORED NOT LESS THAN 4" IN THE WALL OF STRUCTURE. UNLESS OTHERWISE SHOWN, THE SPACING SHALL BE 16". THE LOWEST STEP SHALL NOT BE MORE THAN 2'-0" ABOVE THE INVERT. SEE STD. DWG. 315.
  - RINGS, REDUCER AND PIPE FOR ACCESS SHAFT SHALL BE SEATED IN MORTAR AND NEATLY POINTED OR WIPED INSIDE THE SHAFT.
  - STATIONS OF MANHOLES SHOWN ON PLAN APPLY AT CENTER OF SHAFT. ELEVATIONS SHOWN AT STATIONS REFER TO PROLONGED INVERT GRADE LINES.
  - FLOOR OF MANHOLE SHALL BE STEEL-TROWELED TO SPRING LINE.
  - BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT THE SPRING LINE.
  - LENGTH AND EMBEDMENT P SHALL HAVE THE FOLLOWING VALUES UNLESS OTHERWISE SHOWN ON PLAN:  
FOR D<sub>1</sub> = 96" OR LESS, L = 5'-6", P = 5"  
D<sub>2</sub> OVER 96", L = 6'-0", P = 8"
  - MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS. WHEN L GREATER THAN THAT SHOWN ABOVE IS SPECIFIED, D BARS SHALL BE CONTINUED 6" O.C.
  - D BARS SHALL BE #4 FOR D<sub>1</sub> - 39" OR LESS, #5 FOR D<sub>1</sub> - 42" TO 84" INCLUSIVE AND #6 FOR D<sub>1</sub> - 90" OR OVER. THE BARS SHALL BE #3 BARS.
  - STRUCTURAL CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.
  - CENTERLINE OF INLET PIPE TO INTERSECT INSIDE FACE OF CONE AT SPRING LINE UNLESS OTHERWISE SHOWN.

CONC. SUPPORT COLLAR SEE STD. DWG. 322

MANHOLE FRAME AND COVER SEE STD. DWG. 325

OMIT THIS STEP IN PAVED STREETS

3/4"Ø GALV. STEEL STEPS 16" O.C. (SEE STD. DWG. 315 AND NOTE 8)

CONCRETE RINGS AND REDUCER SEE STD. DWG. 321

CONCRETE RINGS

5"x 1" RING SEAT

	MAX	MIN
FOR PAVED STREETS	11"	8 1/2"
FOR UNPAVED STREETS	16"	15"

5"x2" PIPE SEAT

16" FOR PAVED STREETS  
26" FOR UNPAVED STREETS

H BAR

H BAR

VARIABLE

E BARS

D BARS

DETAIL M (SEE NOTE 5)

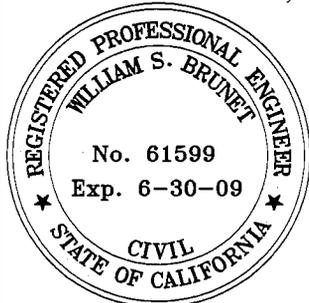
#4 BARS @ 18" O.C. BOTH WAYS TO BE USED WHEN D<sub>2</sub> IS 60" OR GREATER

SECTION N-M-P-O  
PROJECTED P-P-O

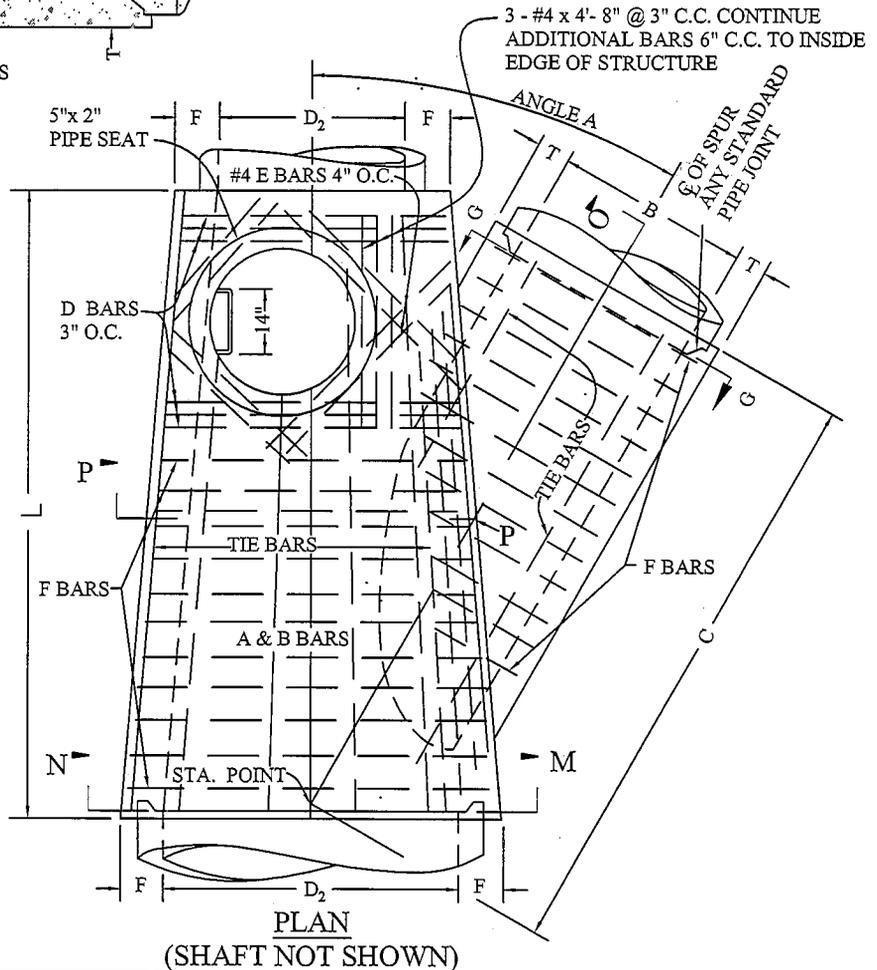
#4 BARS @ 18" O.C. BOTH WAYS TO BE USED WHEN D<sub>2</sub> IS 60" OR GREATER

* D <sub>2</sub> , D <sub>1</sub> OR B	A & B BARS	D & F BARS
12" - 39"	NO. 5 @ 3"	NO. 4 @ 6"
42" - 84"	NO. 6 @ 3"	NO. 5 @ 6"
90" - 144"	NO. 7 @ 3"	NO. 6 @ 6"

\* USE D<sub>2</sub> OR D<sub>1</sub>, WHICHEVER IS GREATER, OR B.



NOT TO SCALE



COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

STORM DRAIN  
MANHOLE NO. 3

APPROVED BY:

*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

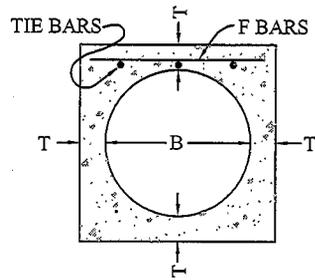
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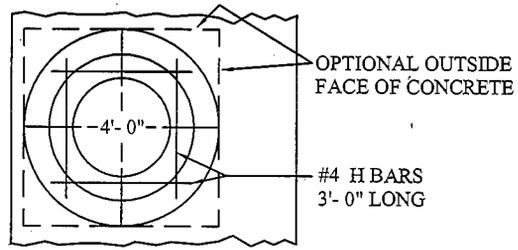
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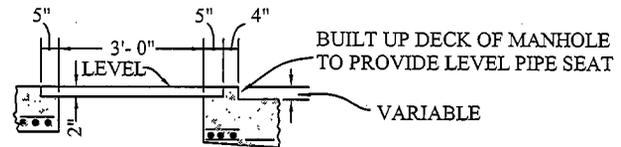
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**SECTION G-G**  
(SEE STD. DWG 324)



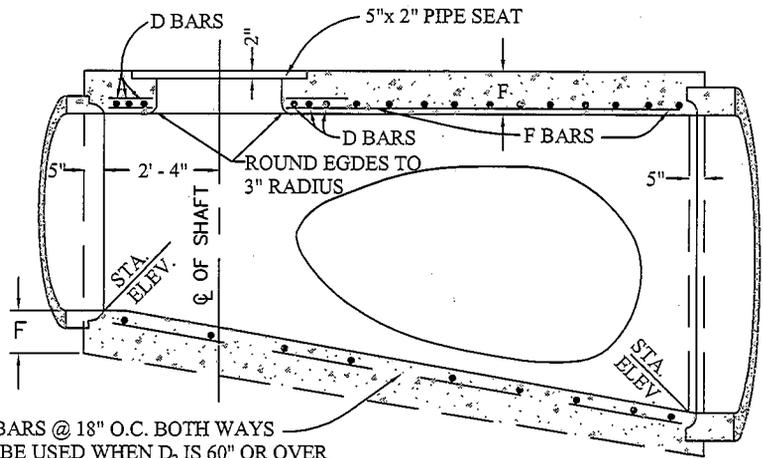
**PLAN**  
(RINGS AND COVER NOT SHOWN)



SEAT FOR SHAFT  
WHEN TOP IS NOT LEVEL

TABLE OF BAR SIZES		
* D <sub>2</sub> , D <sub>1</sub> OR B	A & B BARS	D & F BARS
12" - 39"	NO. 5 @ 3"	NO. 4 @ 6"
42" - 84"	NO. 6 @ 3"	NO. 5 @ 6"
90" - 144"	NO. 7 @ 3"	NO. 6 @ 6"

\* USE D<sub>2</sub> OR D<sub>1</sub>, WHICHEVER IS GREATER, OR B.



**LONGITUDINAL SECTION**  
(SEE STD. DWG. 324)

**NOT TO SCALE**



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**STORM DRAIN  
MANHOLE NO. 3**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

			/ /
			/ /

CHECKED: F.F.	DATE: 08/29/08
DRAWN: E.M.	DWG No.: 324A

- 1 VALUES FOR A, B, C, D<sub>1</sub>, D<sub>2</sub>, ELEV. R AND ELEV. S ARE SHOWN ON THE IMPROVEMENT PLANS. TABLE OF VALUES FOR F AND T HEREON.
- 2 LATERALS: IF LATERALS ENTER ON BOTH SIDES OF MANHOLE, ACCESS SHAFT SHALL BE LOCATED ON SIDE RECEIVING THE SMALLER LATERAL.
- 3 CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTERLINE OF MAIN STORM DRAIN WHEN D<sub>1</sub> IS 48" OR LESS, IN WHICH CASE PLACE 8 E BARS SYMMETRICALLY AROUND SHAFT AT 45° WITH CENTERLINE.
- 4 LENGTH L MAY BE INCREASED AT OPTION OF CONTRACTOR TO MEET PIPE ENDS, BUT ANY CHANGE IN LOCATION OF SPUR MUST BE APPROVED BY THE ENGINEER.
- 5 DETAIL M: WHEN DEPTH OF MANHOLE FROM STREET GRADE TO TOP OF BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER DETAIL M. THE CONTRACTOR SHALL HAVE THE OPTION OF CONSTRUCTING SHAFT AS PER DETAIL M FOR ANY DEPTH OF MANHOLE. WHEN DIAMETER D IS 48" OR LESS, CENTER OF SHAFT SHALL BE LOCATED PER NOTE 3.
- 6 REINFORCING STEEL SHALL BE ROUND, DEFORMED, STRAIGHT BARS, 1 1/2" CLEAR FROM INSIDE FACE UNLESS OTHERWISE SHOWN. TIE BARS SHALL BE NO. 4 AND SPACED 18" ON CENTERS OR CLOSER.
- 7 CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.
- 8 STEPS SHALL BE 3/4" GALVANIZED STEEL PER STD. DWG. 315, AND ANCHORED NOT LESS THAN 4" IN WALLS OF STRUCTURE. UNLESS OTHERWISE SHOWN THE SPACING SHALL BE 16" ON CENTER. THE LOWEST STEP SHALL BE NOT MORE THAN 2 FT ABOVE THE INVERT.
- 9 RINGS, REDUCERS, AND PIPE FOR ACCESS SHAFT SHALL BE SEATED IN CEMENT MORTAR AND NEATLY POINTED OR WIPED INSIDE SHAFT.
- 10 FLOOR OF MANHOLE SHALL BE STEEL-TROWELED TO SPRING LINE.
- 11 BODY OF MANHOLE, INCLUDING SPUR, SHALL BE POURED IN ONE CONTINUOUS OPERATION, EXCEPT THAT THE CONTRACTOR SHALL HAVE THE OPTION OF PLACING AT THE SPRING LINE A CONSTRUCTION JOINT WITH LONGITUDINAL KEYWAY.

\* USE D<sub>2</sub> OR D<sub>1</sub>, WHICHEVER IS GREATER, OR B.

\*\* IF D<sub>2</sub>, D<sub>1</sub>, OR B FALLS BETWEEN TABULATED VALUES THEN USE THE NEXT HIGHEST VALUE TO DETERMINE F OR T.

\*\* TABLE OF VALUES FOR F AND T

* D <sub>1</sub> , D <sub>2</sub>	F	B	T	B	T
12"	4"	12"	4"	78"	11 3/4"
15"	4 1/4"	15"	4 1/4"	84"	12 1/2"
18"	4 1/2"	18"	4 1/2"	90"	13 1/2"
21"	5"	21"	5"	96"	14"
24"	5 1/4"	24"	5 1/4"	102"	15 1/2"
27"	5 1/2"	27"	5 1/2"	108"	16"
30"	6"	30"	6"	114"	16 1/2"
33"	6 1/4"	33"	6 1/4"	120"	17"
36"	6 1/2"	36"	6 1/2"	126"	17"
39"	7"	39"	7"	132"	17 1/2"
42"	7 1/4"	42"	7 1/4"	138"	17 1/2"
45"	7 3/4"	45"	7 3/4"	144"	18"
48"	8"	48"	8"		
51"	8 1/2"	51"	8 1/2"		
54"	9"	54"	9"		
57"	9 1/4"	57"	9 1/4"		
60"	9 1/2"	60"	9 1/2"		
63"	10"	63"	10"		
66"	10 1/4"	66"	10 1/4"		
69"	10 3/4"	69"	10 3/4"		
72"	11"	72"	11"		
78"	11 3/4"				
84"	12 1/2"				
90"	13 1/4"				
96"	14"				
102"	15 1/2"				
108"	16"				
114"	16 1/2"				
120"	17"				
126"	17"				
132"	17 1/2"				
138"	17 1/2"				
144"	18"				



**COUNTY of IMPERIAL**  
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EL CENTRO, CALIFORNIA

**STORM DRAIN  
MANHOLE NO. 3**

APPROVED BY:

*William S. Brunet*

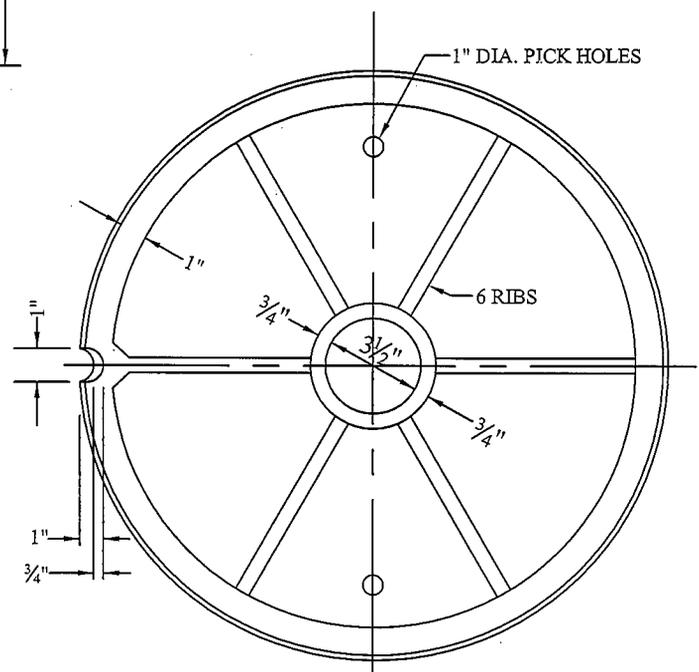
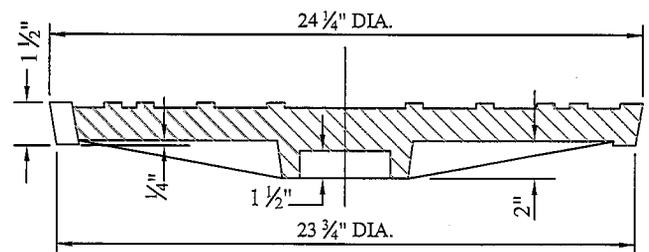
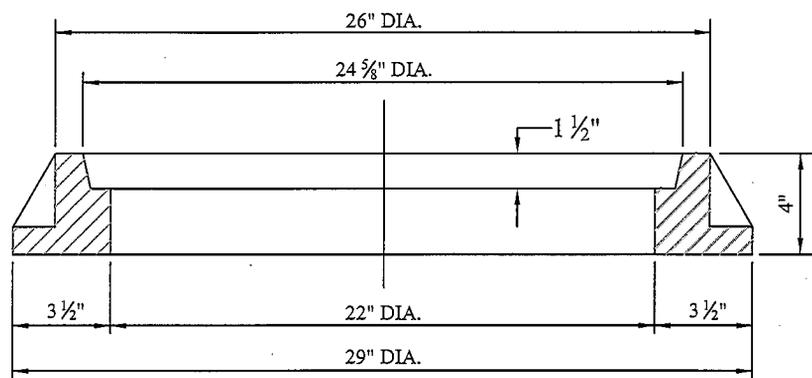
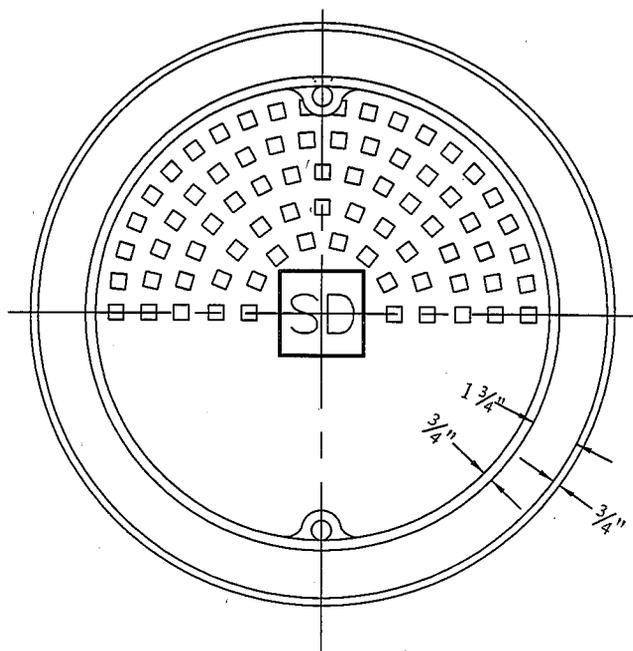
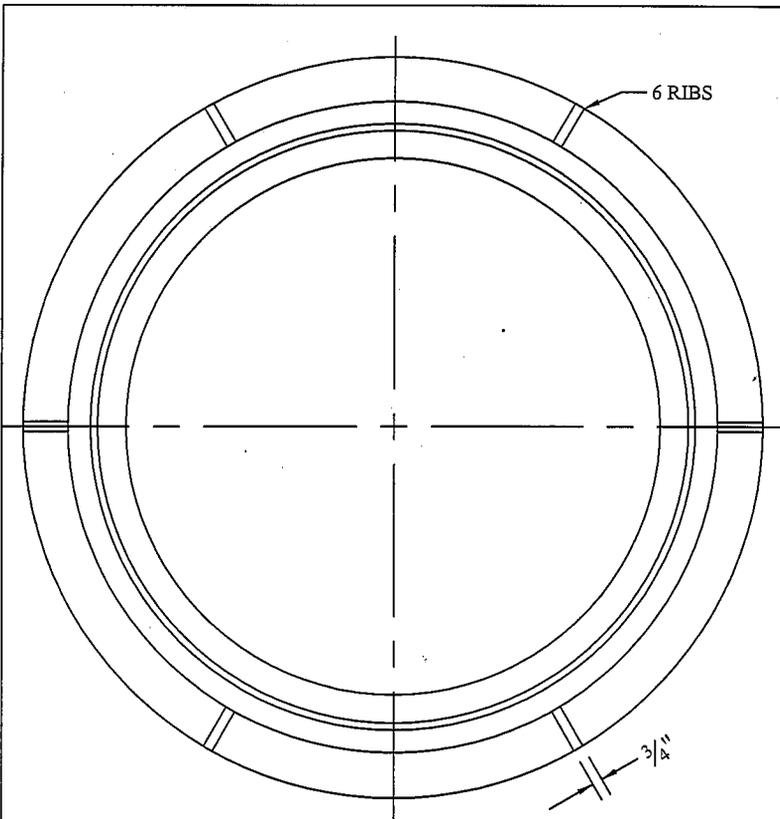
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

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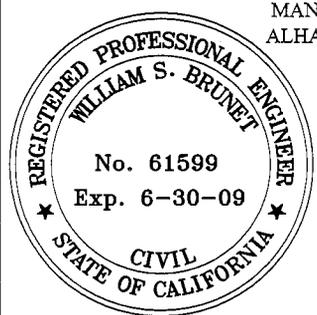


- NOTES:**
1. SEATS OF FRAME AND COVER SHALL BE MACHINED TO PREVENT NOISE.
  2. TOTAL WEIGHT OF FRAME AND COVER APPROX. 380 LBS.
  3. MINIMUM CLEAR OPENING 24" DIA. FOR 48" MANHOLES ALL OTHER DIMENSIONS ARE NOMINAL. ALHAMBRA-A-1254-LETTERED- "COB-SD."

MATERIAL: CAST IRON (ASPHALT COATED)

4. MINIMUM CLEAR OPENING 30" DIA. FOR ALL 60" & LARGER MANHOLES ALHAMBRA A- 1252 - LETTERED - "COB-SD."

**NOT TO SCALE**

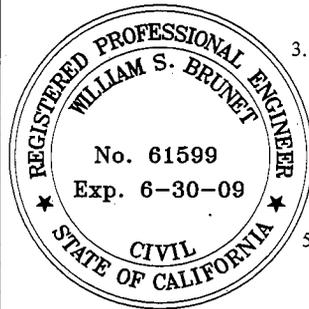


**COUNTY of IMPERIAL**  
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EL CENTRO, CALIFORNIA

**MANHOLE FRAME & COVER - ROADWAY**

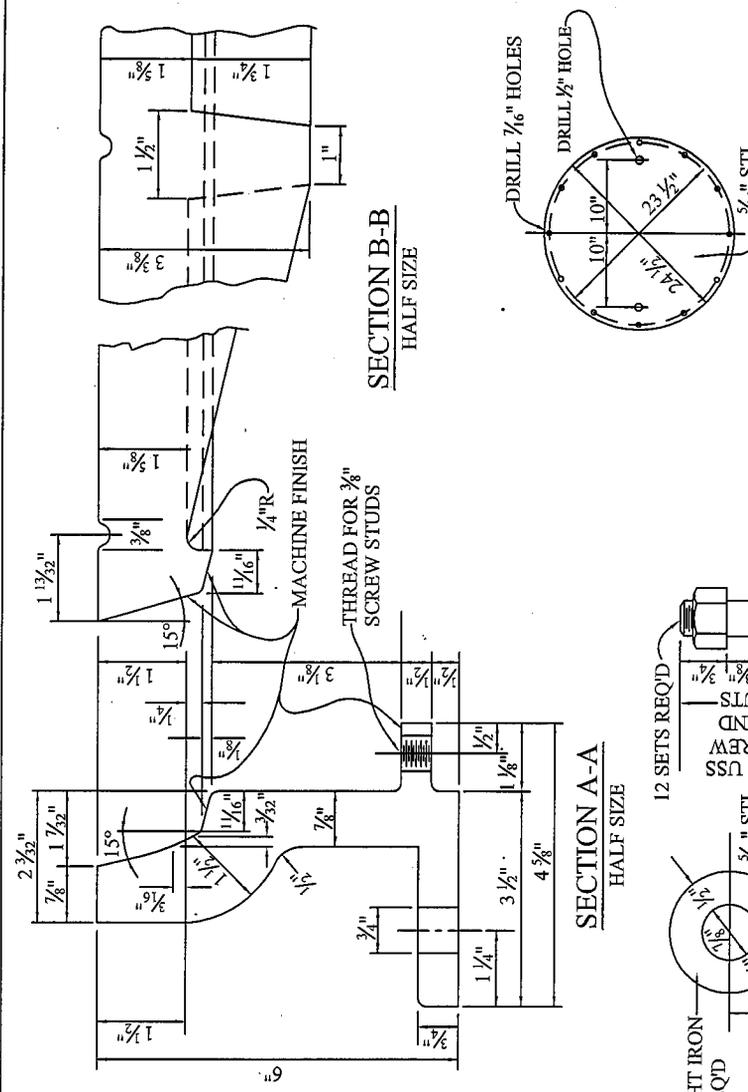
APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	325



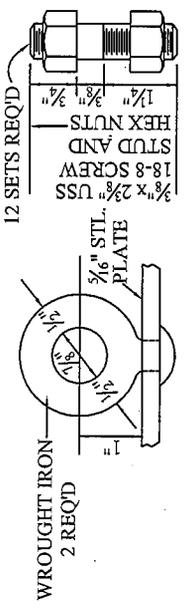
**NOTES:**

1. MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO THE LATEST A.S.T.M. STANDARD A48, CLASS 30 OR BETTER. PRESSURE PLATE SHALL BE STEEL.
2. ALL PARTS OF THE MANHOLE FRAME AND COVER EXCEPT MACHINED SURFACES SHALL BE COATED WITH ASPHALTUM PAINT.
3. MANHOLE FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS BEFORE DELIVERY. THE COVER SHALL FIT THE FRAME SNUGLY BUT NOT TIGHTLY
4. WEIGHTS OF FRAME, COVER, AND PRESSURE PLATE SHALL NOT VARY MORE THAN TWO PERCENT FROM THOSE GIVEN HEREON.
5. THIS STRUCTURE SHALL BE USED WITH STANDARD PRESSURE MANHOLE SHAFT. IT MAY BE USED FOR HYDROSTATIC HEADS UP TO 25 FEET ABOVE STEEL PLATE.

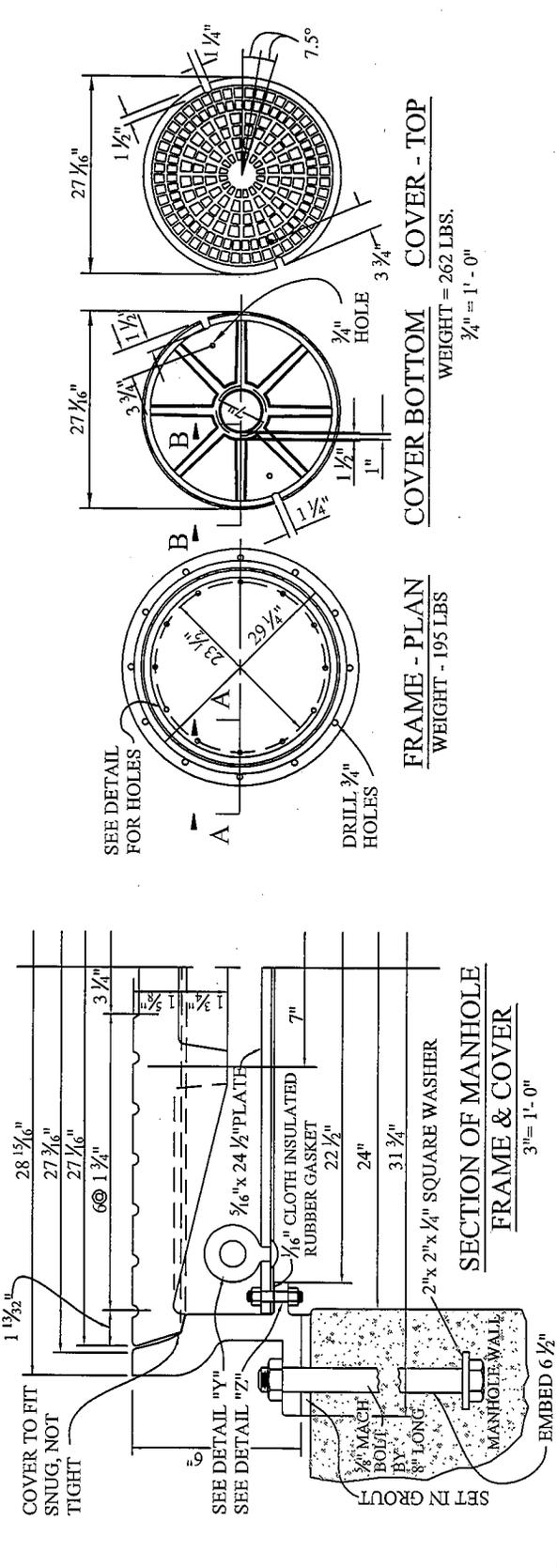
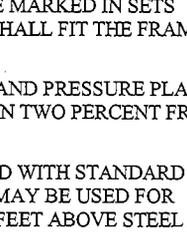


**PRESSURE - PLATE**  
WEIGHT = 42 LBS.

**DETAIL "Y"**  
HALF SIZE



**DETAIL "Z"**  
HALF SIZE



**SECTION OF MANHOLE FRAME & COVER**  
3" = 1'-0"

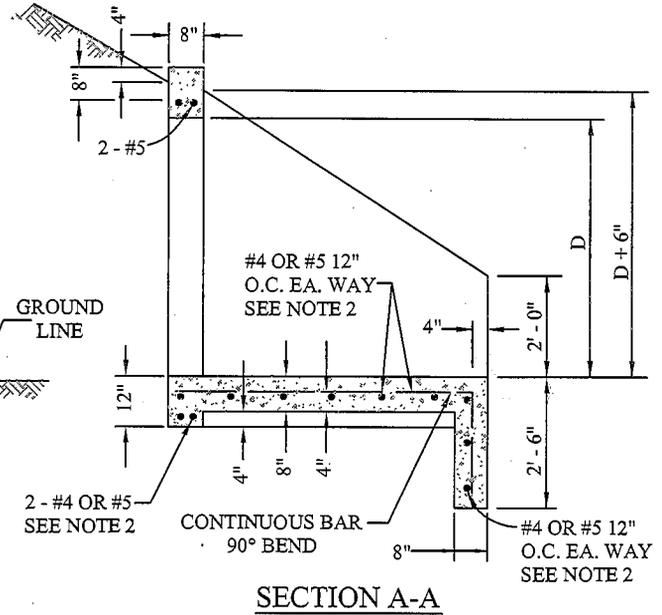
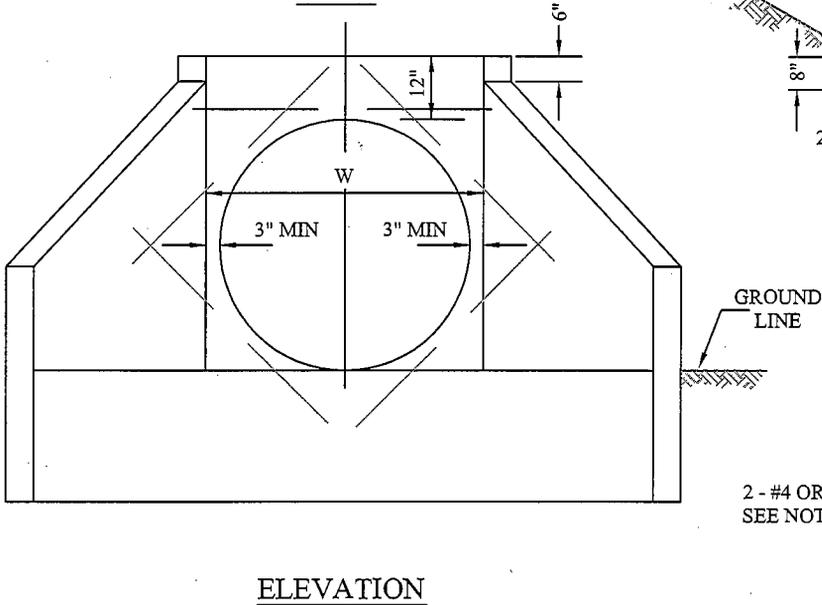
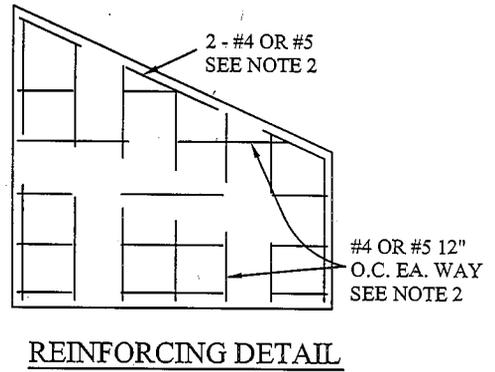
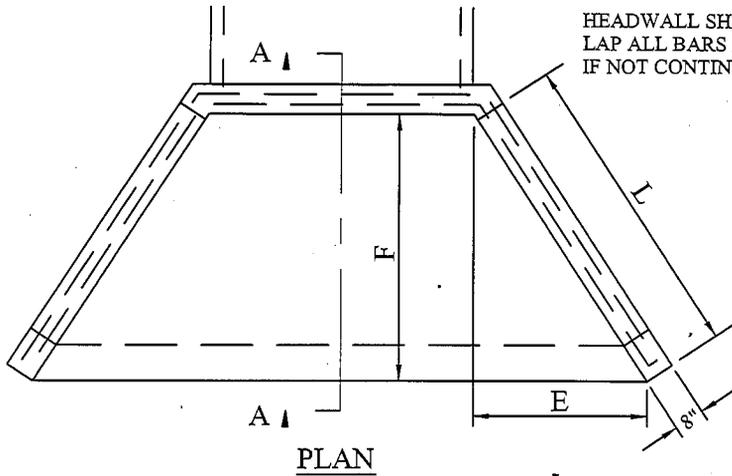
**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**MANHOLE FRAME & COVER**  
**PRESSURE TYPE**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 326

HEADWALL SHALL BE MONOLITHIC  
LAP ALL BARS AT CORNERS 30 DIAMETERS  
IF NOT CONTINUOUS.



NOTES:

DIMENSIONS				
PIPE DIA.	L	E	F	W
24"	4' - 9"	2' - 8"	4' - 0"	2' - 6"
30"	5' - 5"	3' - 0"	4' - 6"	3' - 0"
36"	6' - 0"	3' - 4"	5' - 0"	3' - 8"
42"	6' - 7"	3' - 8"	5' - 6"	4' - 2"
48"	7' - 3"	4' - 0"	6' - 0"	4' - 10"
54"	8' - 2"	4' - 6"	6' - 9"	5' - 4"

1. CONCRETE SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.
2. REINFORCING STEEL SHALL BE #4 BARS FOR "W" UP TO 60". ABOVE "W"=60" #5 BARS SHALL BE USED. 2" MINIMUM CLEARANCE, 30 DIAMETER LAP, ALL STEEL.
3. ADJACENT SLOPES SHALL BE 1-1/2 TO 1 OR FLATTER.
4. MULTIPLE PIPES TO BE SET WITH LONGITUDINAL CENTERS 1-2/3 DIAMETERS APART.
5. ALL EXPOSED CORNERS TO BE ROUNDED 3/4" RADIUS.
6. "W" SHALL BE INCREASED WHEN MULTIPLE PIPES OR PIPES ON SKEW ARE USED.

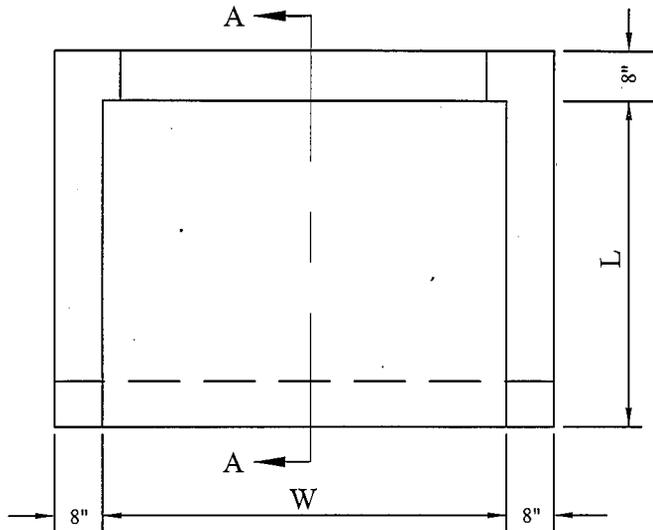


COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

HEADWALL  
WING - TYPE

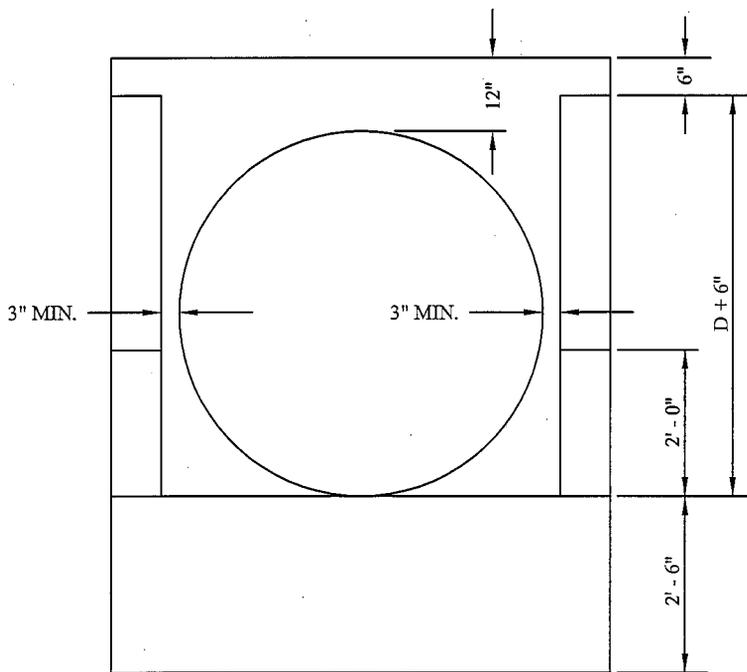
APPROVED BY:  
*William S. Brunet* DATE: 11/6/08  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/27/08
			/ /	DRAWN:	DWG No.:
			/ /	E.M.	327



DIMENSIONS		
PIPE DIA.	L	W
24"	4' - 0"	2' - 6"
30"	4' - 6"	3' - 0"
36"	5' - 0"	3' - 8"
42"	5' - 6"	4' - 2"
48"	6' - 0"	4' - 10"
54"	6' - 9"	5' - 4"

PLAN



ELEVATION



**NOTES:**

1. REINFORCING STEEL IN WALLS AND BASE SHALL BE THE SAME AS STD. DWG. 327
2. NOTES SHALL BE THE SAME AS STD. DWG. 327
3. SECTION A-A IS THE SAME AS STD. DWG. 327



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**HEADWALL  
"U" - TYPE**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

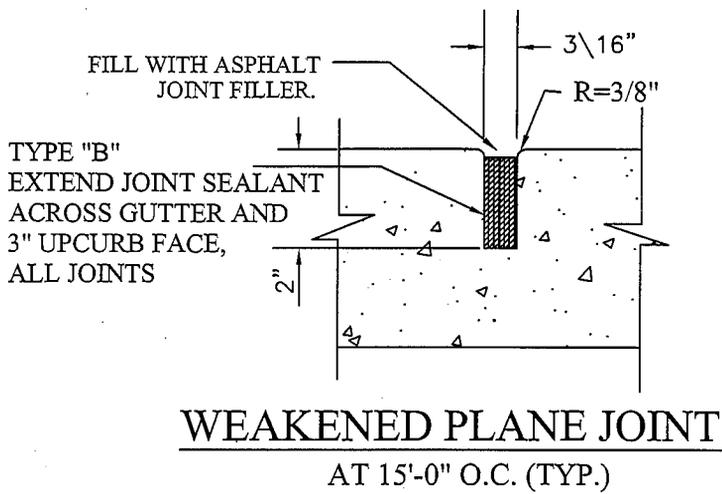
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

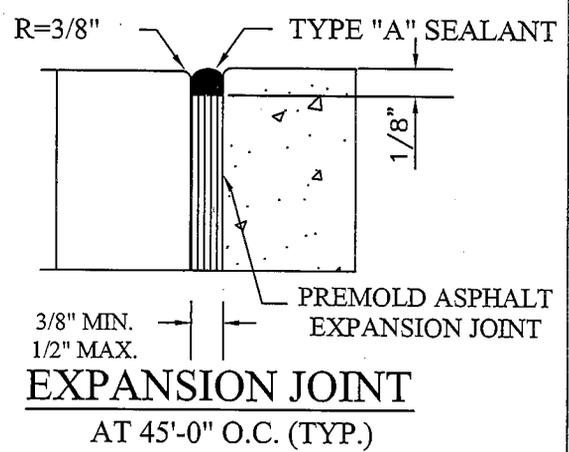
BY: APR'D: DATE:

			/ /
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CHECKED: F.F.	DATE: 08/29/08
DRAWN: E.M.	DWG No.: 328

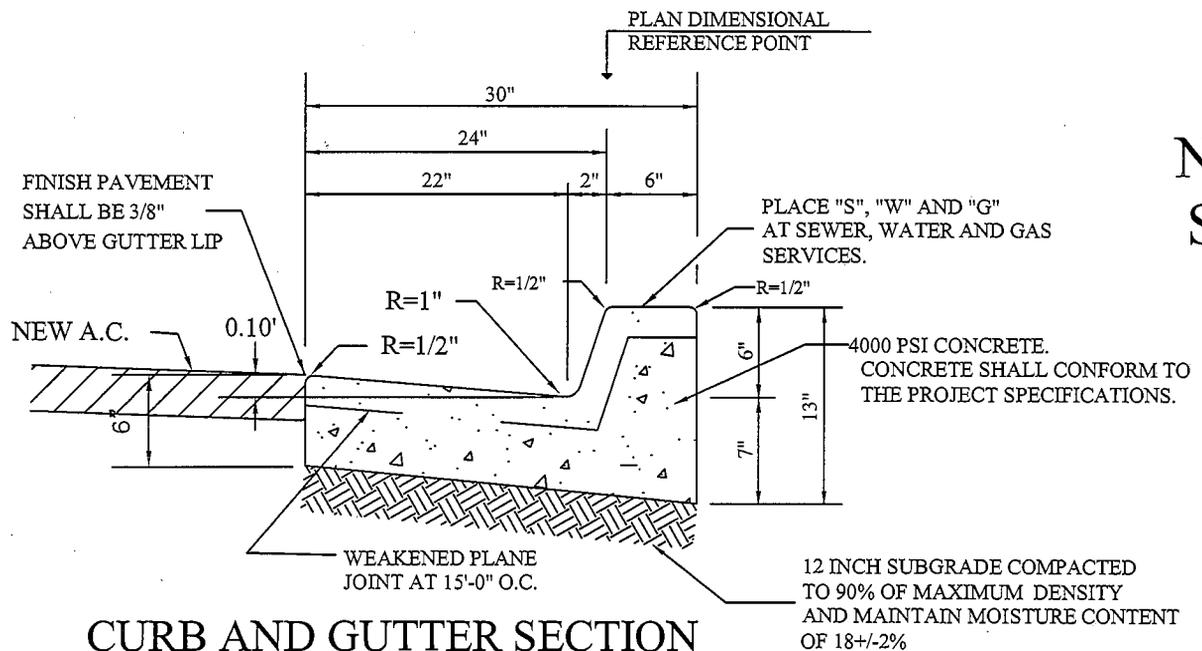


**WEAKENED PLANE JOINT**  
AT 15'-0" O.C. (TYP.)



**EXPANSION JOINT**  
AT 45'-0" O.C. (TYP.)

**NOT TO SCALE**



**CURB AND GUTTER SECTION**

**NOTES**

1. EXPANSION JOINTS TO BE INSTALLED AT ALL B.C.'S, E.C.'S CURB RETURNS AND STRUCTURES IN ADDITION TO 45' O.C.
2. CURB AND GUTTER SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E
3. WIDTH OF STANDARD STREET SECTIONS SHOWN ON PLANS ARE TO CURB LINES UNLESS OTHERWISE INDICTAED.
  4. CURING COMPOUND SHALL BE SPRAYED UNIFORMLY ON EXPOSED SURFACES. HYDRO-CURE CLEAR CC-309-1W, OR APPROVED EQUAL.
  5. WHEN CURB AND GUTTER IS PLACED BY AN EXTRUSION MACHINE MINOR FINISHING SHALL BE DONE TO PROVIDE AN ACCEPTABLE FINISH AND THE WEAKENED PLANE JOINT MAY BE SAWCUT.
  6. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE THE PUBLIC SAFETY.
  7. ALL EXPOSED SURFACES TO HAVE A SMOOTH TROWEL FINISH. DRY SACK FINISH WILL NOT BE ALLOWED.
  8. THE CURB EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ±0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FEET SECTION. THE HORIZONTAL CURB EDGES SHALL NOT VARY MORE THAN 1/4" INCH IN ANY GIVEN 100 FOOT SECTION.

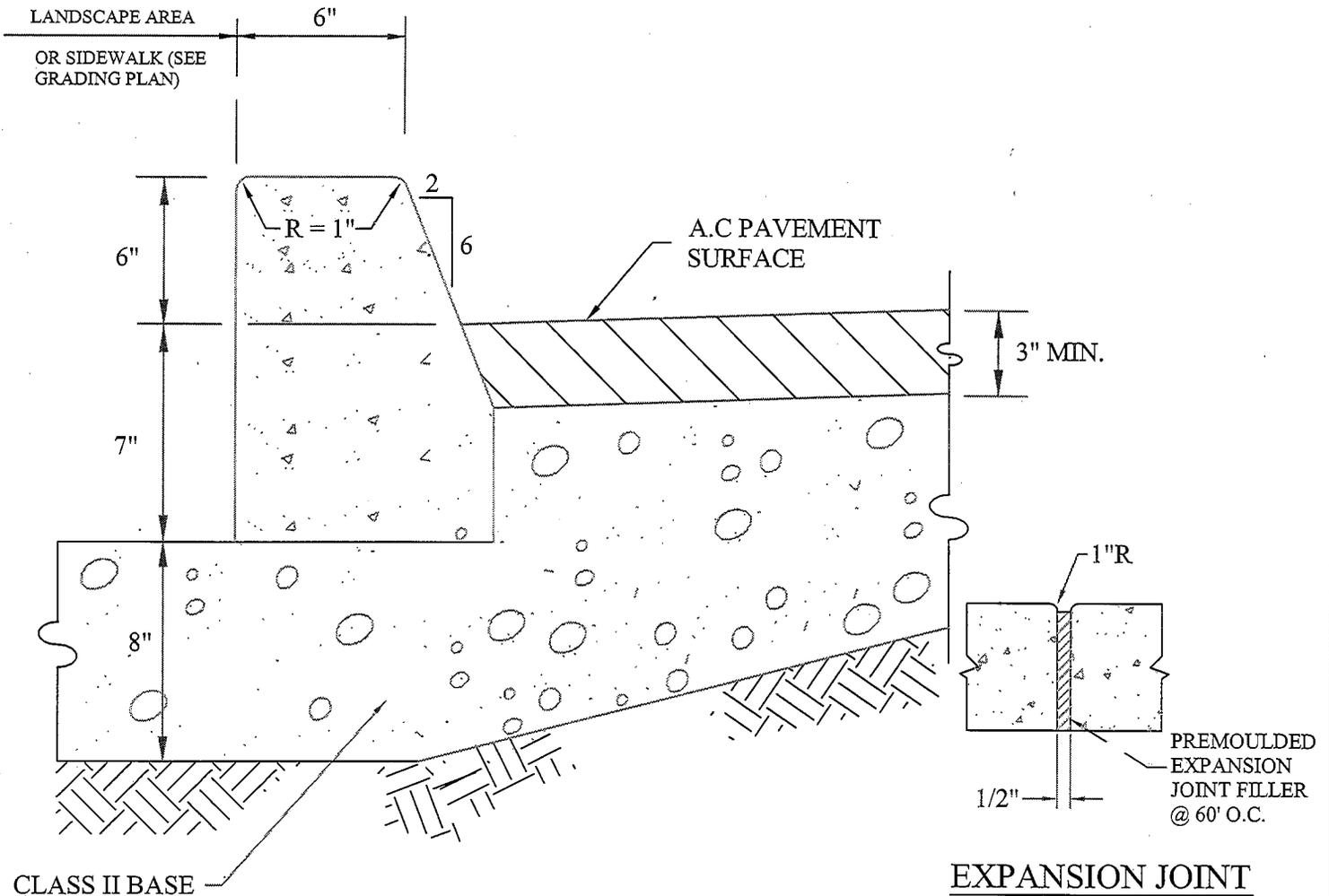


**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**CURB AND GUTTER  
DETAIL**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
				E.M.	400



**NOT TO SCALE**

**NOTES:**

1. BARRIER CURB SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.
2. WIDTH OF STANDARD STREET SECTIONS SHOWN ON PLANS ARE TO CURB LINES UNLESS OTHERWISE INDICATED.
3. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 10-FOOT INTERVALS, EXCEPT THAT THE INTERVAL SHALL BE VARIED TO ALLOW MATCHING OF JOINTS IN ADJACENT EXISTING IMPROVEMENTS.
4. CURING COMPOUND SHALL BE CURE-TREAT (CONCRETE CONDITIONER AND CURING AID) AS MANUFACTURED BY W.R. MEADOWS INC OR APPROVED EQUAL. COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMENDATION.
5. WHEN BARRIER CURB IS PLACED BY AN EXTRUSION MACHINE MINOR FINISHING SHALL BE DONE TO PROVIDE AN ACCEPTABLE FINISH AND THE WEAKENED PLANE JOINT MAY BE SAWCUT.
6. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE THE PUBLIC SAFETY.
7. ALL EXPOSED SURFACES TO HAVE A SMOOTH TROWEL FINISH. DRY SACK FINISH WILL NOT BE ALLOWED.
8. THE CURB EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN  $\pm 0.01'$  WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FEET SECTION. THE HORIZONTAL CURB EDGES SHALL NOT VARY MORE THAN 1/4" INCH IN ANY GIVEN 100 FOOT SECTION.



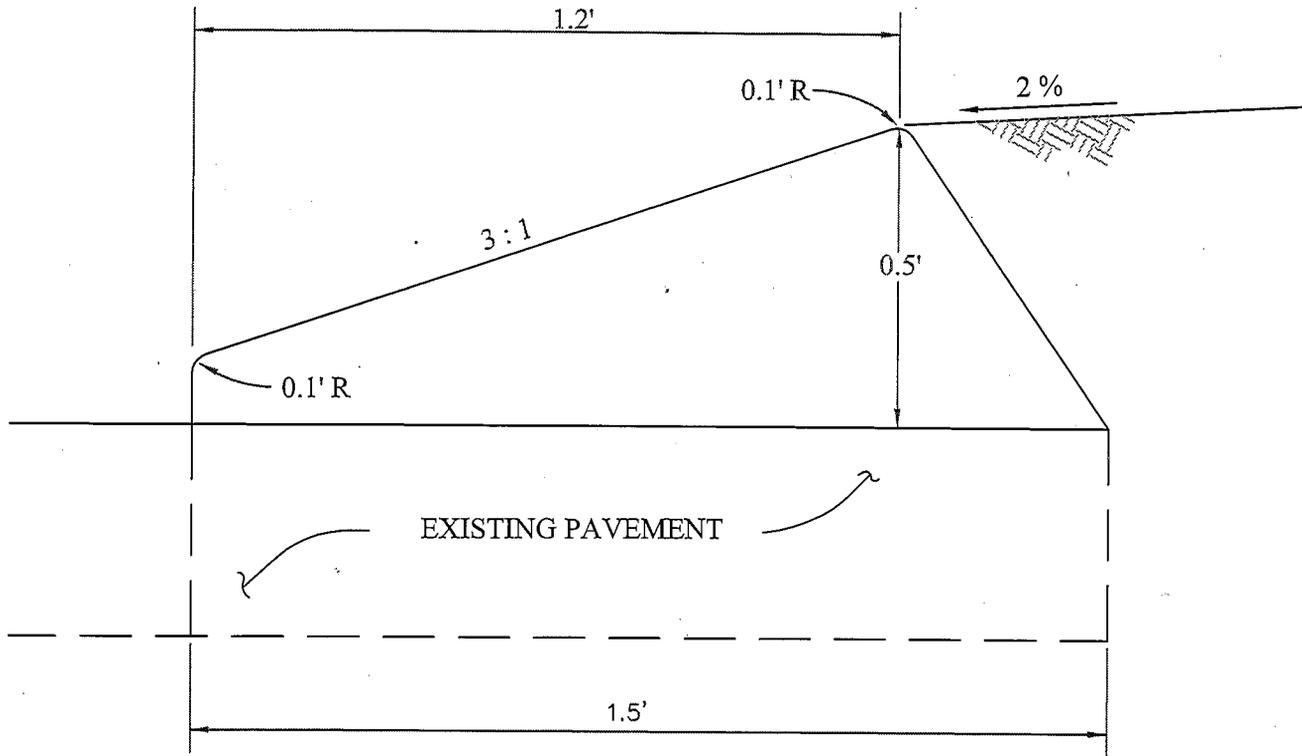
**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**TYPE "A"  
BARRIER CURB**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

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			/ /	DRAWN:	DWG No.:
				E.M.	401

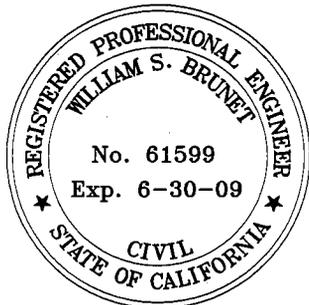


TYPICAL SECTION

NOT TO  
SCALE

NOTES:

1. DIKE SHALL BE CONSTRUCTED OF TYPE "B" ASPHALT CONCRETE AR8000.
2. PAINT BINDER SHALL BE PLACED ON EXISTING ASPHALT CONCRETE PAVEMENT PRIOR TO THE INSTALLATION OF THE DIKE.



**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**TRAVERSABLE ASPHALT  
CONCRETE DIKE**

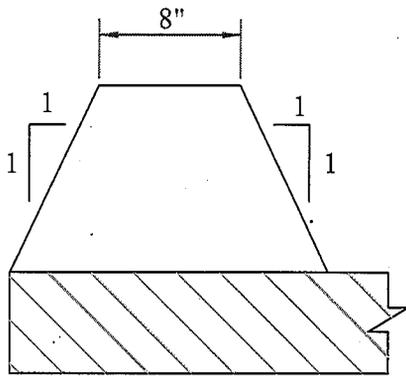
APPROVED BY:

*William S. Brunet*

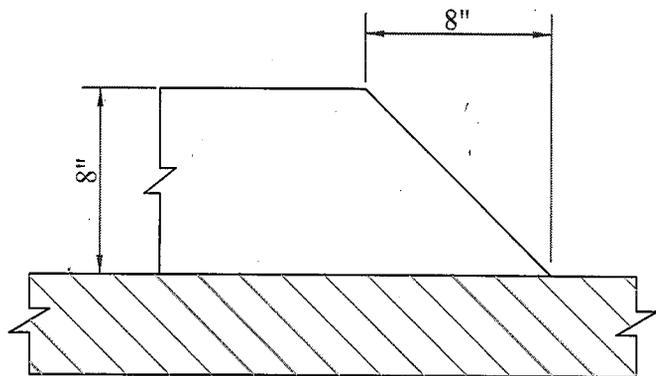
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 402

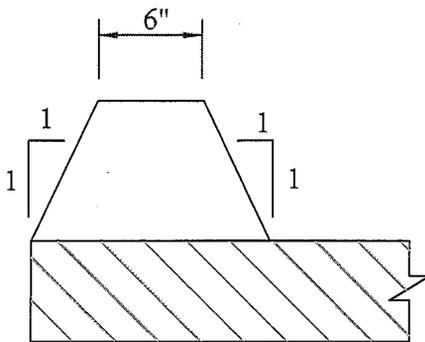


SECTION

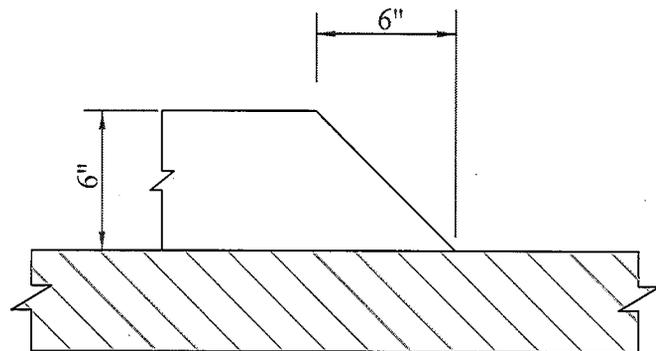


END CUTOFF

8" DIKE



SECTION



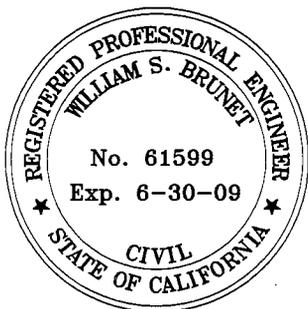
END CUTOFF

6" DIKE

**NOT TO  
SCALE**

NOTES:

1. DIKE SHALL BE CONSTRUCTED OF TYPE "B" ASPHALT CONCRETE AR8000.
2. PAINT BINDER SHALL BE PLACED ON EXISTING ASPHALT CONCRETE PAVEMENT PRIOR TO THE INSTALLATION OF THE DIKE.



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**ASPHALT CONCRETE  
DIKE**

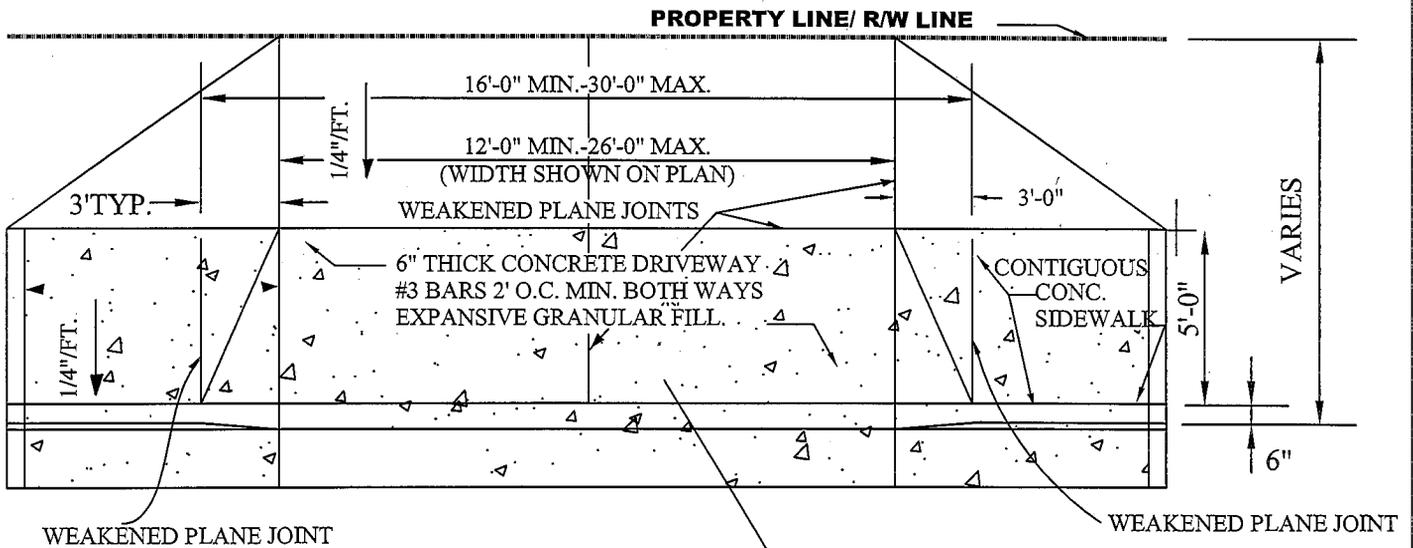
APPROVED BY:

*William S. Brunet* DATE: 11/6/06  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

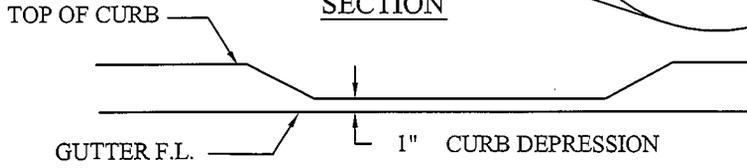
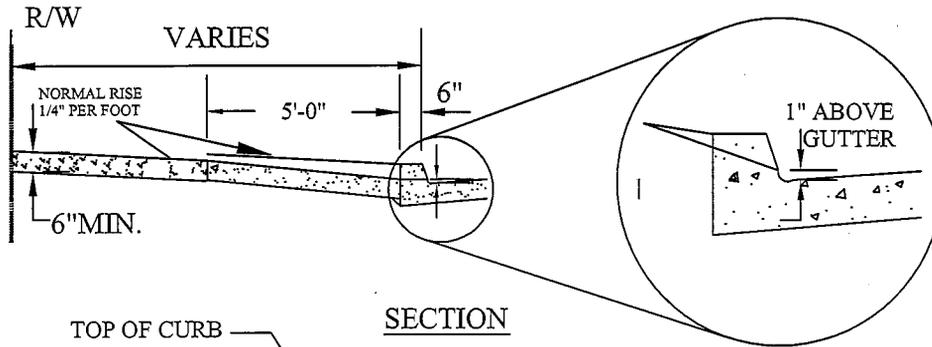
BY: APR'D: DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/09
			/ /	DRAWN: E.M.	DWG No.: 403



PLAN

CLASS "B" 4000 PSI CONCRETE.  
CONCRETE SHALL CONFORM TO  
THE PROJECT SPECIFICATIONS.



NOT TO  
SCALE

NOTE:

1. SUBGRADE TO BE 12" COMPACTED TO 90% OF MAXIMUM DENSITY AND MAINTAIN A MOISTURE CONTENT OF (18% +/-2%) FOR ALL LOCATIONS UNDERNEATH CONCRETE.
2. WEAKENED PLANE JOINTS REQUIRED ON DRIVEWAY CENTER LINE.
3. FOR JOINTS DETAILS SEE COUNTY STD. DWG. 400
4. WIDTH AND LOCATION AS DIRECTED BY OWNER AND APPROVED BY THE COUNTY ENGINEER OR HIS REPRESENTATIVE.
5. ENCROACHMENT PERMIT REQUIRED FROM COUNTY PUBLIC WORKS DEPT. FOR DRIVEWAY. FOR FUTURE MAINTENANCE OF DRIVEWAY AND SIDEWALK IS THE RESPONSIBILITY OF FRONTING LANDOWNER.
6. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS," INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY.
7. CONCRETE SHALL CONTAIN 1-1/2 LBS POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.

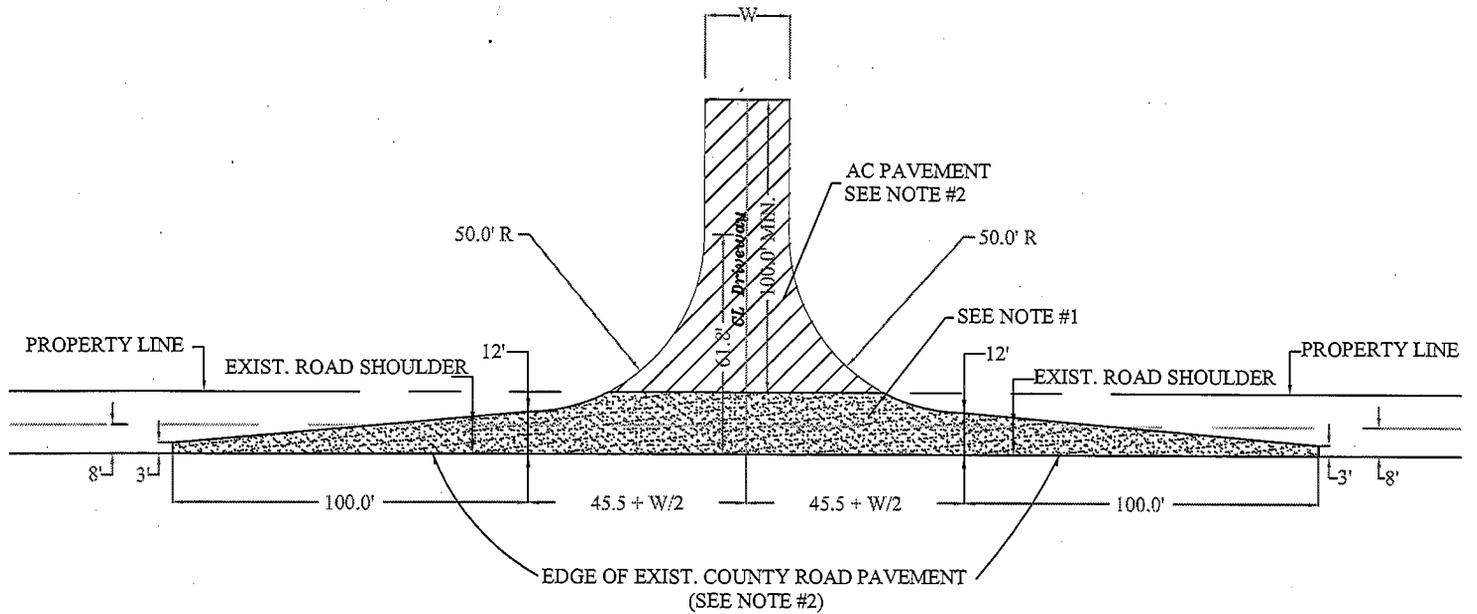


COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

DRIVEWAY ACCESS  
DETAIL

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	410A



**NOT TO  
SCALE**

**NOTE:**

1. DRIVEWAY IN COUNTY ROAD RIGHT OF WAY SHALL BE 4" ASPHALT CONCRETE OVER 12" OF CLASS 2 AGGREGATE BASE MINIMUM. SEE COUNTY STANDARD DRAWING 440.
2. DRIVEWAY ONSITE SHALL BE PAVED A MINIMUM OF 100 FEET INSIDE THE PROPERTY LINE. THE 4" ASPHALT CONCRETE OVER 12" CLASS 2 AGGREGATE BASE SECTION IS RECOMMENDED. HOWEVER A MINIMUM ASPHALT CONCRETE THICKNESS IS 2".
3. SAWCUT AND REMOVE EXISTING PAVEMENT 12" MINIMUM.
4. ROAD BORROW PIT DRAINAGE SHALL BE ACCOMMODATED VIA 12" MIN. PIPE SIPHON, DIP SECTION OR CONCRETE GUTTER AS DIRECTED BY COUNTY PUBLIC WORKS DIRECTOR.
5. THIS DETAIL IS A MINIMUM. PROJECT CONDITIONS OF APPROVAL OR ENCROACHMENT PERMIT MAY REQUIRE MORE SUBSTANTIAL IMPROVEMENTS SUCH AS TURN LANES, CURB, GUTTER AND SIDEWALK.



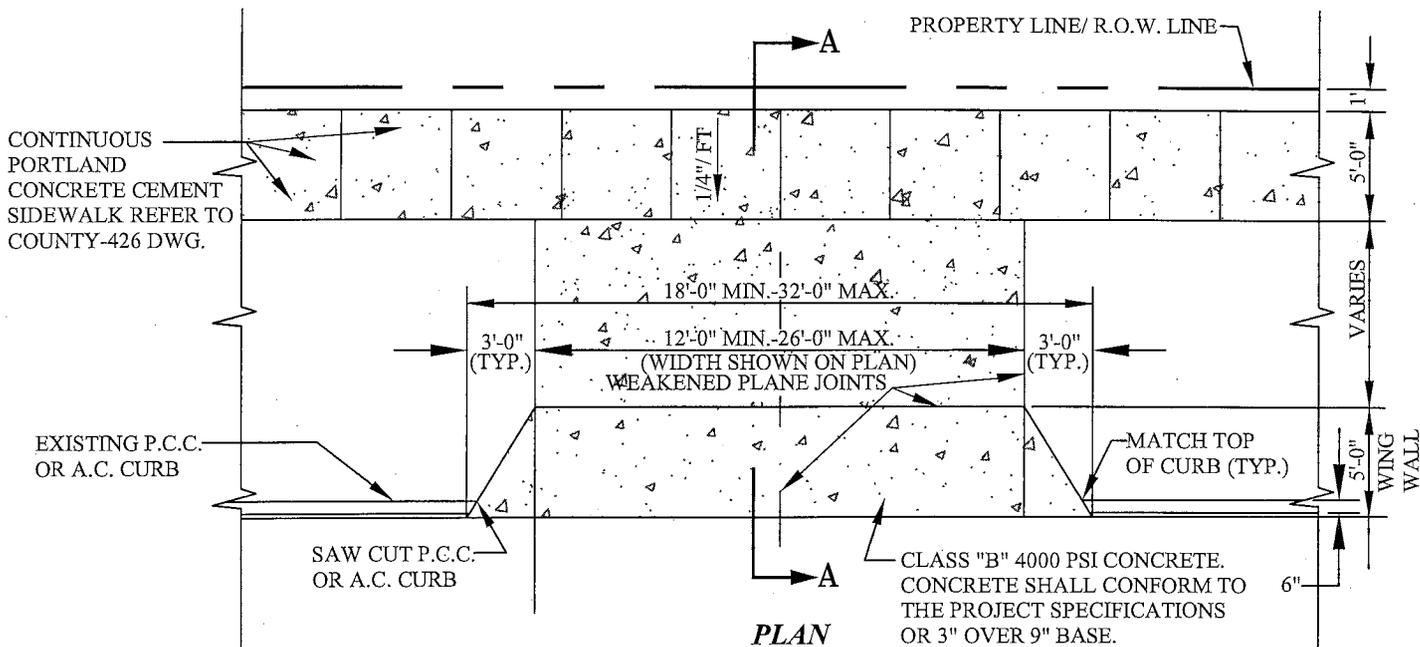
**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**DETAIL OF COMMERCIAL  
DRIVEWAY TO COUNTY RURAL  
ROAD CONNECTION**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

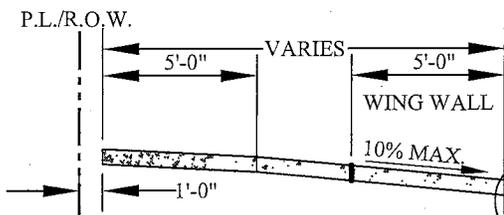
DATE: 11/6/08

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			/ /	E.M.	410B

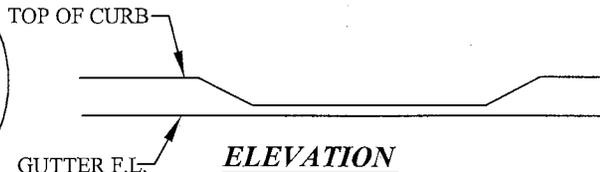
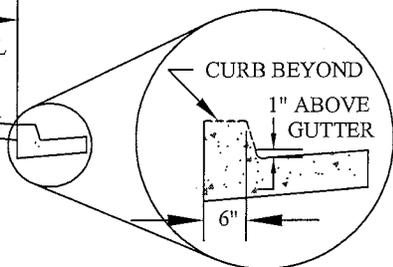


**PLAN**

CLASS "B" 4000 PSI CONCRETE. CONCRETE SHALL CONFORM TO THE PROJECT SPECIFICATIONS OR 3" OVER 9" BASE. (ALTERNATE WITH PUBLIC WORKS PRIOR APPROVAL: DRIVEWAY AND APPROACH MAY BE CONSTRUCTED USING PG70-10 NON POLYMER, MODIFIED ASPHALT MIX).



**SECTION A-A**

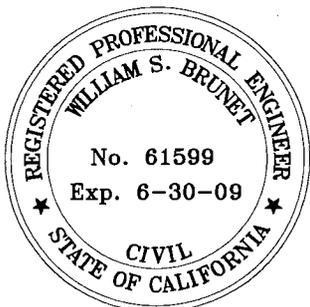


**ELEVATION**

**NOT TO SCALE**

**NOTE:**

1. SUBGRADE TO BE 12" COMPACTED TO 90% OF MAXIMUM DENSITY AND MAINTAIN A MOISTURE CONTENT OF (18% ±2%) FOR ALL LOCATIONS UNDERNEATH CONCRETE.
2. WEAKENED PLANE JOINTS REQUIRED ON DRIVEWAY CENTER LINE.
3. FOR JOINTS DETAILS SEE COUNTY STD. DWG. 400.
4. WIDTH AND LOCATION AS DIRECTED BY OWNER AND APPROVED BY THE COUNTY ENGINEER OR HIS REPRESENTATIVE.
5. ENCROACHMENT PERMIT REQUIRED FROM COUNTY PUBLIC WORKS DEPT. FOR DRIVEWAY. FOR FUTURE MAINTENANCE OF DRIVEWAY AND SIDEWALK IS THE RESPONSIBILITY OF FRONTING LANDOWNERS.
6. CONCRETE SHALL CONTAIN 1-1/2" LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.



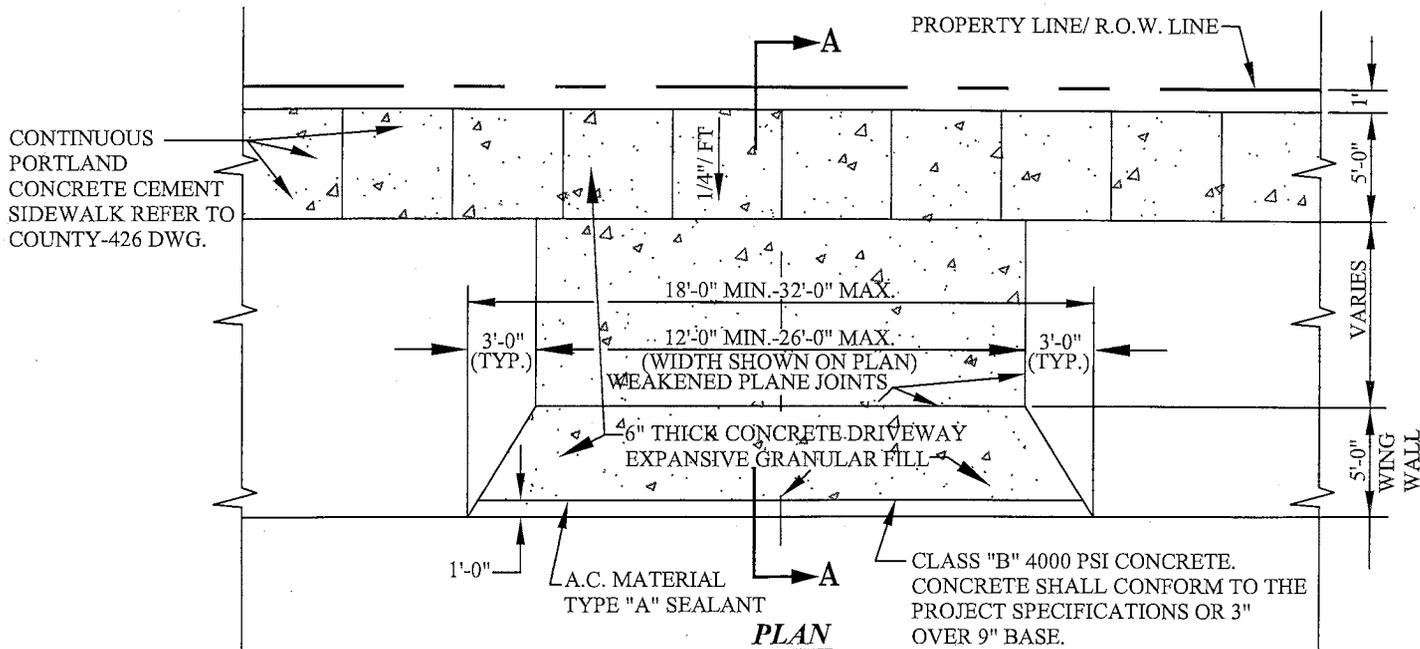
**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**RURAL CONCRETE DRIVEWAY FOR STREET WITH CURB**

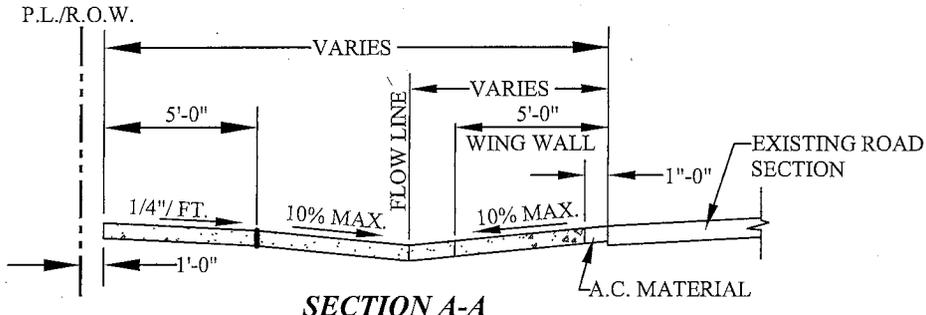
APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/06/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
				L.L.	411A



**PLAN**



**SECTION A-A**

**NOT TO SCALE**

- NOTE:**
1. SUBGRADE TO BE 12" COMPACTED TO 90% OF MAXIMUM DENSITY AND MAINTAIN A MOISTURE CONTENT OF (18% ±2%) FOR ALL LOCATIONS UNDERNEATH CONCRETE.
  2. WEAKENED PLANE JOINTS REQUIRED ON DRIVEWAY CENTER LINE.
  3. FOR JOINTS DETAILS SEE COUNTY STD. DWG. 400.
  4. WIDTH AND LOCATION AS DIRECTED BY OWNER AND APPROVED BY THE COUNTY ENGINEER OR HIS REPRESENTATIVE.
  5. ENCROACHMENT PERMIT REQUIRED FROM COUNTY PUBLIC WORKS DEPT. FOR DRIVEWAY. FUTURE MAINTENANCE OF DRIVEWAY AND SIDEWALK IS THE RESPONSIBILITY OF FRONTING LANDOWNERS.
  6. CONCRETE SHALL CONTAIN 1-1/2" LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.



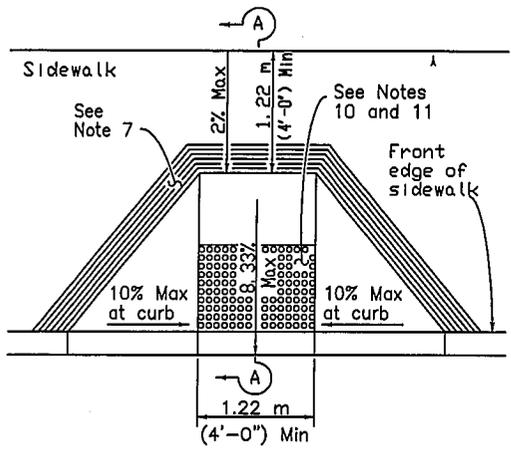
**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**RURAL CONCRETE DRIVEWAY FOR STREET WITH NO CURB**

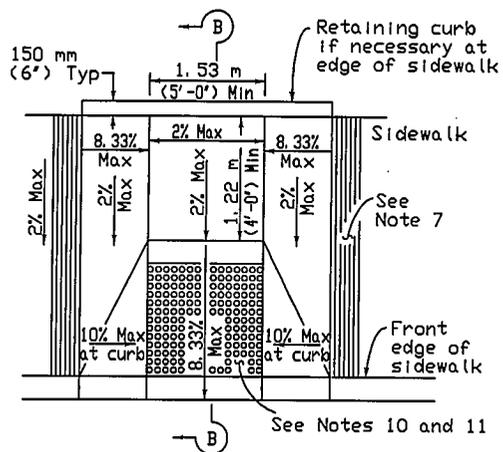
APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

DATE: 11/06/08

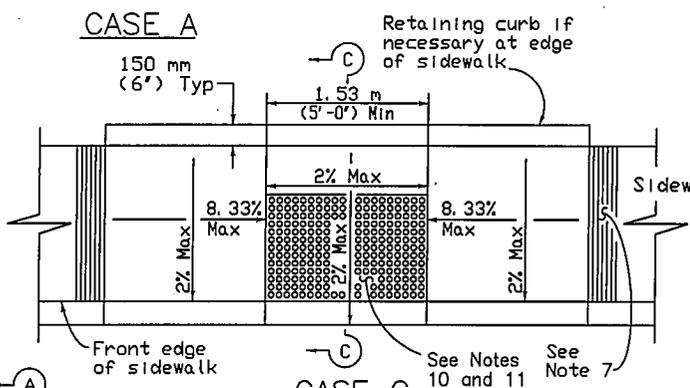
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			/ /	DRAWN:	DWG No.:
				L.L.	411B



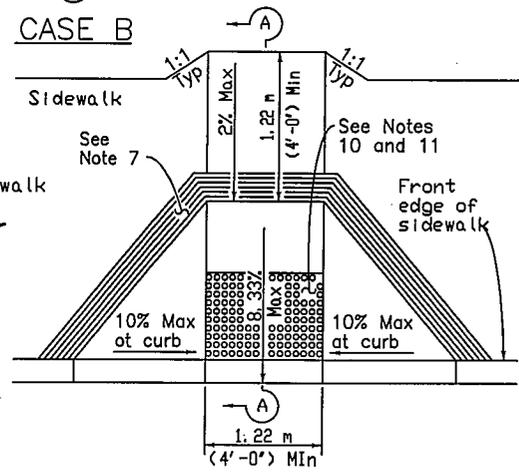
CASE A



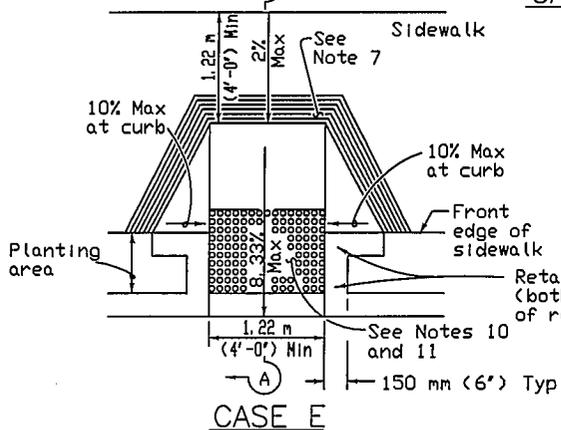
CASE B



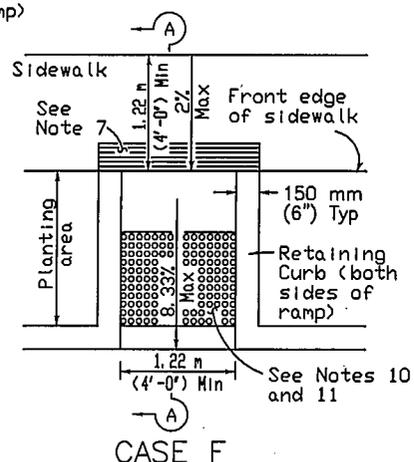
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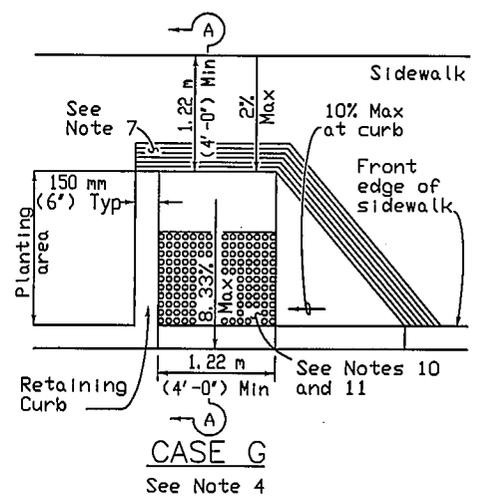
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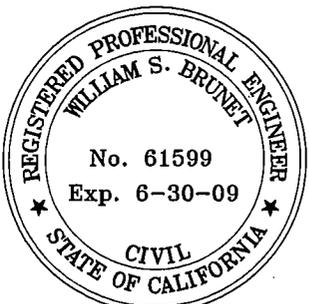
CASE E



CASE F



CASE G



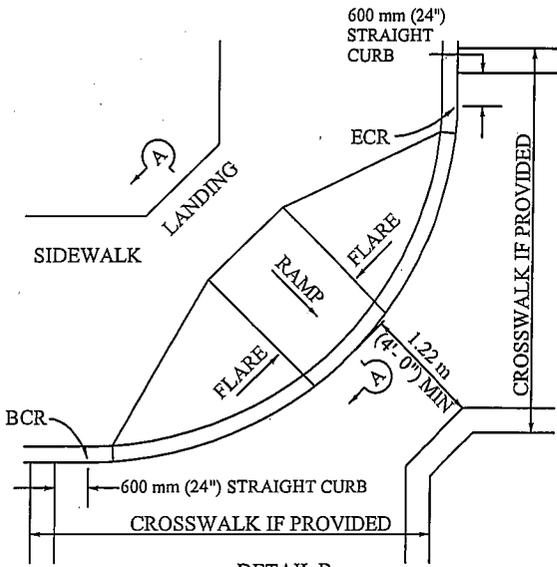
COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

PEDESTRIAN RAMP AND CURB RETURN

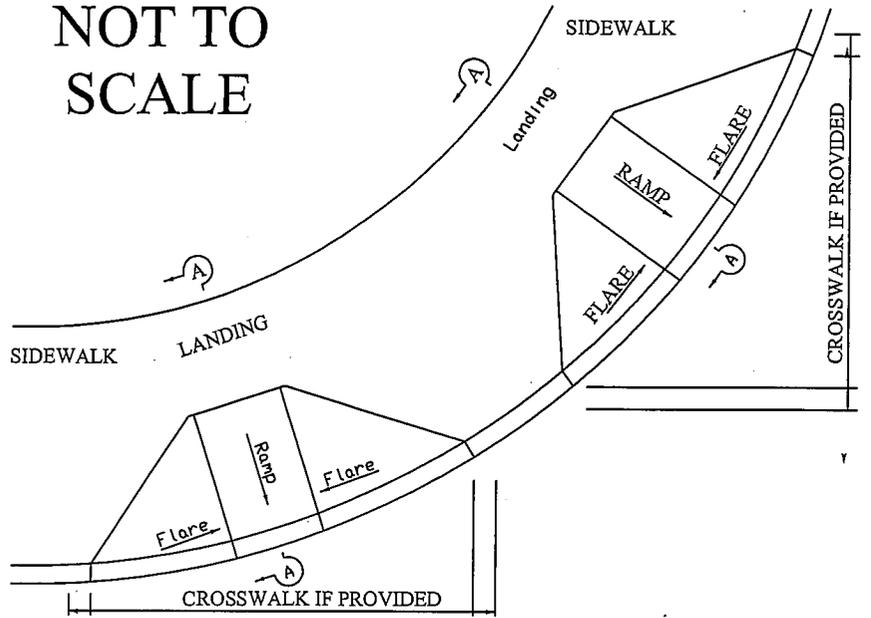
APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
				E.M.	414 (1 of 3)

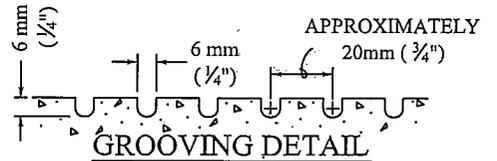
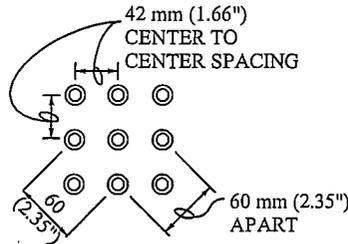
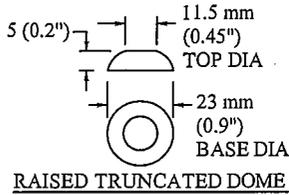
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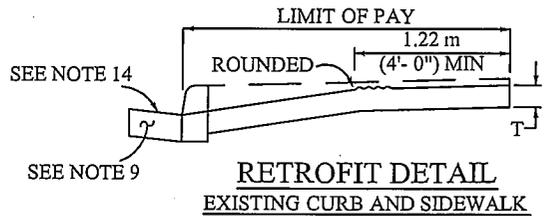
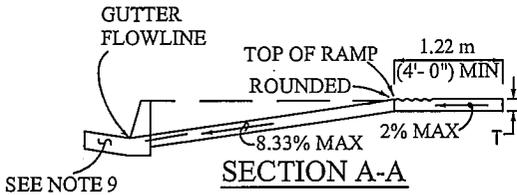
**DETAIL B**  
**TYPICAL ONE-RAMP**  
**CORNER INSTALLATION**  
 SEE NOTES 1 AND 3



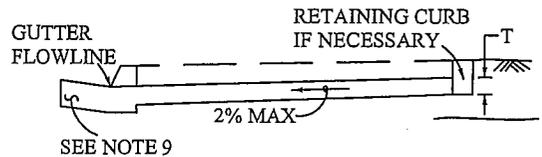
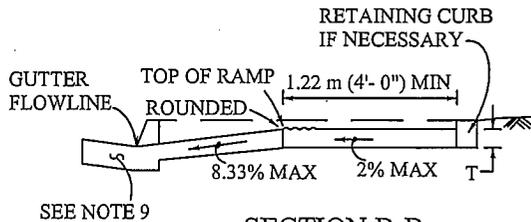
**DETAIL A**  
**TYPICAL TWO - RAMP CORNER INSTALLATION**  
 SEE NOTE 1



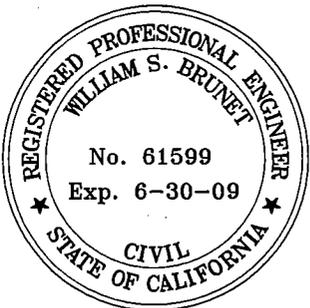
**RAISED TRUNCATED DOME**  
**PATTERN (IN - LINE)**  
**DETECTABLE**  
**WARNING SURFACE**  
 SEE NOTE 10



**SECTION B-B**  
**DEPRESS ENTIRE SIDEWALK AS REQUIRED**



**SECTION C-C**



**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**PEDESTRIAN RAMP AND CURB RETURN**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 414 (2 of 3)

**NOTES:**

1. AS SITE CONDITIONS DICTATE, CASE A THROUGH CASE G CURB RAMPS MAY BE USED FOR CORNER INSTALLATIONS SIMILAR TO THOSE SHOWN IN DETAIL A AND DETAIL B. THE CASE OF CURB RAMPS USED IN DETAIL A DO NOT HAVE TO BE THE SAME. CASE A THROUGH THE SAME CASE G CURB RAMPS ALSO MAY BE USED AT MID BLOCK LOCATIONS, ON SITE CONDITIONS DICTATE.
2. IF DISTANCE FROM CURB TO BACK OF SIDEWALK IS TOO SHORT TO ACCOMMODATE RAMP AND 1.22 M (4'-0") PLATFORM (LANDING) AS SHOWN IN CASE A, THE SIDEWALK MAY BE DEPRESSED LONGITUDINALLY AS IN CASE B, OR C OR MAY BE WIDENED AS IN CASE D.
3. WHEN RAMP IS LOCATED IN CENTER OF CURB RETURN, CROSSWALK CONFIGURATION MUST BE SIMILAR TO THAT SHOWN FOR DETAIL B.
4. AS SITE CONDITIONS DICTATE, THE RETAINING CURB SIDE AND THE FLARED SIDE OF THE CASE G RAMP SHALL BE CONSTRUCTED IN REVERSED POSITION.
5. IF LOCATED ON A CURVE, THE SIDES OF THE RAMP NEED NOT BE PARALLEL, BUT THE MINIMUM WIDTH OF THE RAMP SHALL BE 1.22 M (4'-0").
6. SIDE SLOPE OF RAMP FLARES VARY UNIFORMLY FROM A MAXIMUM OF 10% AT CURB TO CONFORM WITH LONGITUDINAL SIDEWALK SLOPE ADJACENT TO TOP OF THE RAMP, EXCEPT IN CASE C AND CASE F.
7. THE RAMP SHALL HAVE A 12" WIDE BORDER WITH 1/4" GROOVES APPROXIMATELY 3/4" ON CENTER. SEE GROOVING DETAIL.
8. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
9. MAXIMUM SLOPES OF ADJOINING GUTTERS, THE ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP AND CONTINUOUS PASSAGE TO THE CURB RAMP SHALL NOT EXCEED 5 PERCENT WITHIN 1.22 M (4'-0") OF THE TOP OR BOTTOM OF THE CURB RAMP.
10. CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND 914 MM (3'-0") DEPTH OF THE RAMP. DETECTABLE WARNING SURFACES SHALL CONFORM TO THE DETAILS ON THIS PLAN AND THE REQUIREMENTS IN THE SPECIAL PROVISIONS. INSTALLATION OF E-Z SET POLYMER CONCRETE PANEL IN LIEU OF THE RAISED TRUNCATED DOME SHALL BE DONE ACCORDING TO THE DRAWING AND SPECIFICATION OF THE MANUFACTURER. PLACEMENT MUST BE PRIOR TO SETTING OF CONCRETE.
11. THE EDGE OF THE DETECTABLE WARNING SURFACE NEAREST THE STREET SHALL BE BETWEEN 150 MM (6") AND 205 MM (8") FROM THE GUTTER FLOWLINE.
12. UTILITY PULL BOXES, MANHOLES, VAULTS AND ALL OTHER UTILITY FACILITIES WITHIN THE BOUNDARIES OF THE CURB RAMP WILL BE RELOCATED OR ADJUSTED TO GRADE BY THE OWNER PRIOR TO, OR IN CONJUNCTION WITH, CURB RAMP CONSTRUCTION.
13. ACCESS RAMP SHALL BE CONSTRUCTED WITH 5" THICK 4000 PSI PORTLAND CEMENT CONCRETE OVER CLASS 2 AGG. BASE OR PIT RUN GRAVEL SAND W/SAND EQUIVALENT >30. (FOR LEVELING PURPOSES).
14. RAMPS LOCATED OTHER THAN SHOWN SHALL BE APPROVED BY THE COUNTY ENGINEER.
15. SUBGRADE (8" MINIMUM) TO BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY (ASTM D1557) AND MAINTAIN A MOISTURE CONTENT OF 18% (+/- 2%) FOR CLAY SOILS ONLY FOR ALL LOCATIONS UNDERNEATH CONCRETE STRUCTURES.
16. PEDESTRIAN RAMP AND CURB RETURN SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.



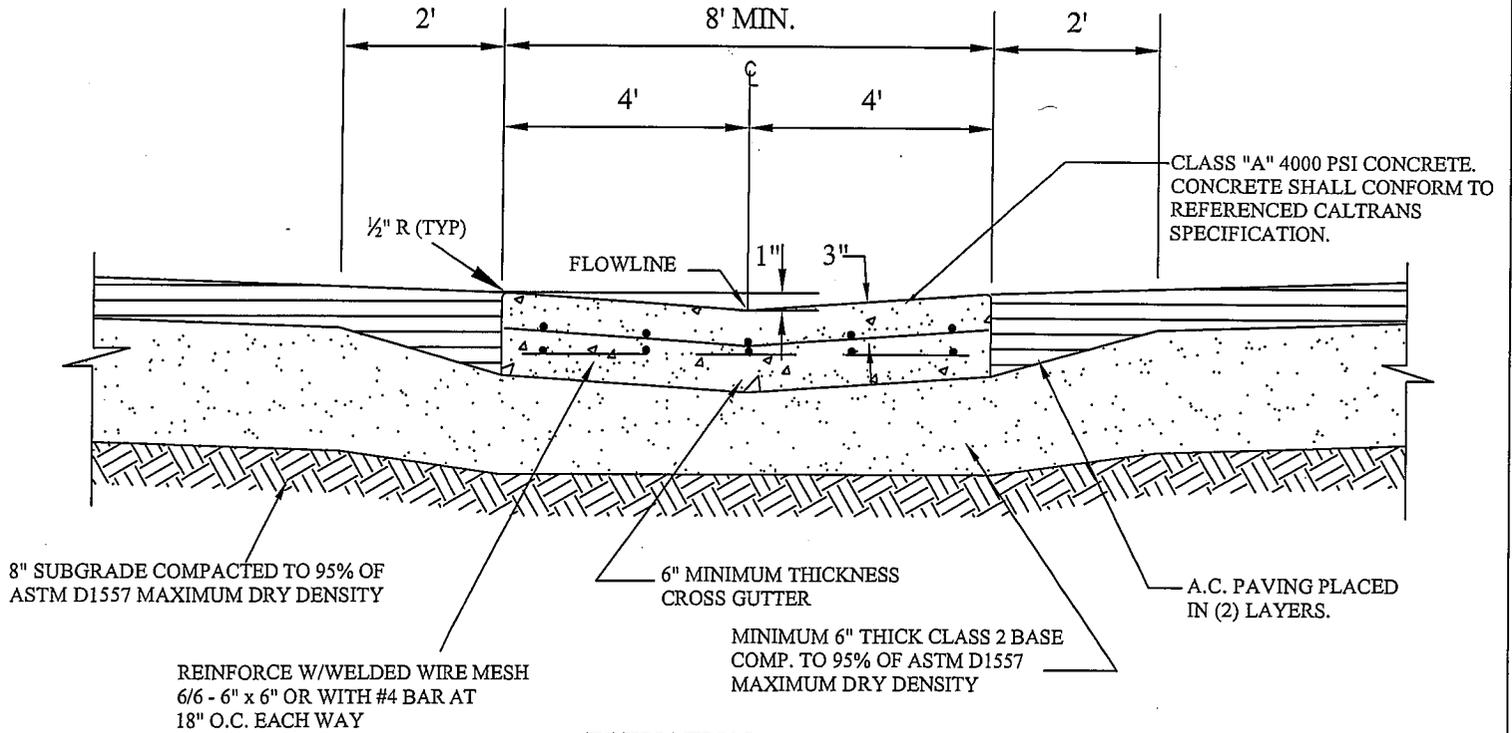
**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**PEDESTRIAN RAMP AND  
 CURB RETURN**

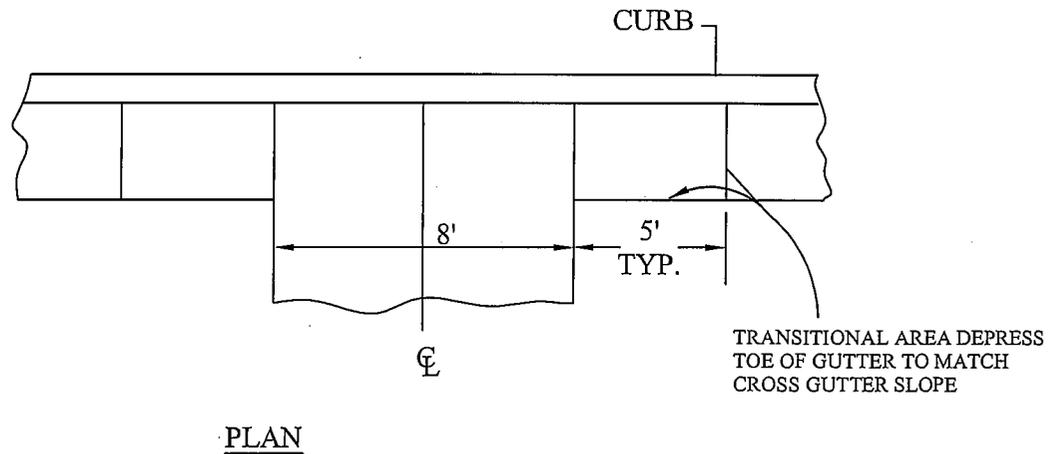
APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 414 (3 of 3)



**NOT TO SCALE**



**NOTE:**

1. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY.
2. MID-BLOCK CROSS GUTTER SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E



**COUNTY of IMPERIAL**

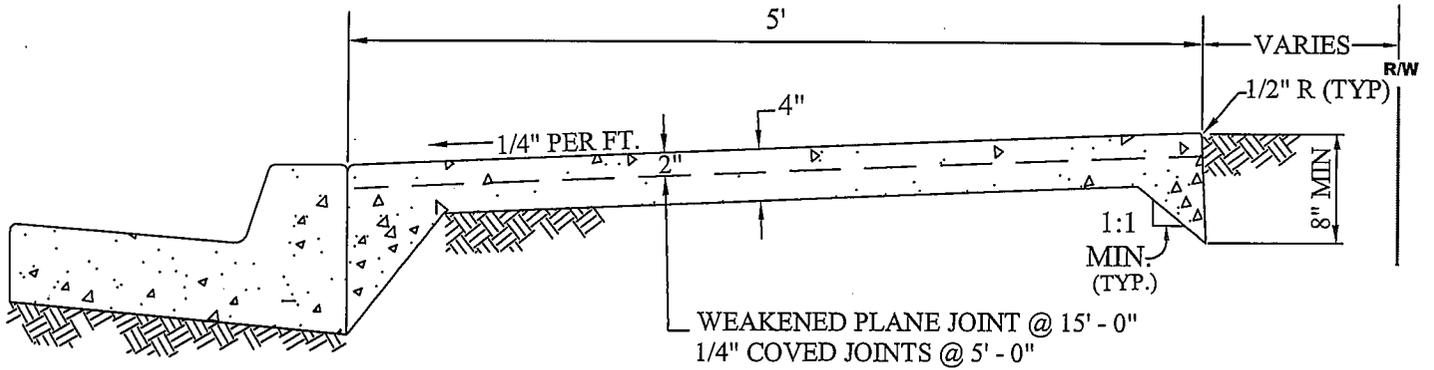
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**MID-BLOCK  
CROSS GUTTER DETAIL**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 415



NOTE:

1. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY.
2. EXPANSION JOINTS TO BE INSTALLED AT ALL B.C.'S, E.C.'S, CURB RETURNS AND STRUCTURES IN ADDITION TO 45' O.C.
3. FOR JOINTS DETAILS SEE GATEWAY STD. DWG. 400
4. SIDEWALK AND CURB SHALL NOT BE POURED MONOLITHIC.
5. SUBGRADE SHALL BE 8" INCHES MINIMUM OF 95% OF ASTM D1557 MAXIMUM DRY DENSITY
6. CONTIGUOUS SIDEWALK SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.

NOT TO  
SCALE



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

CONTIGUOUS  
SIDEWALK DETAIL

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

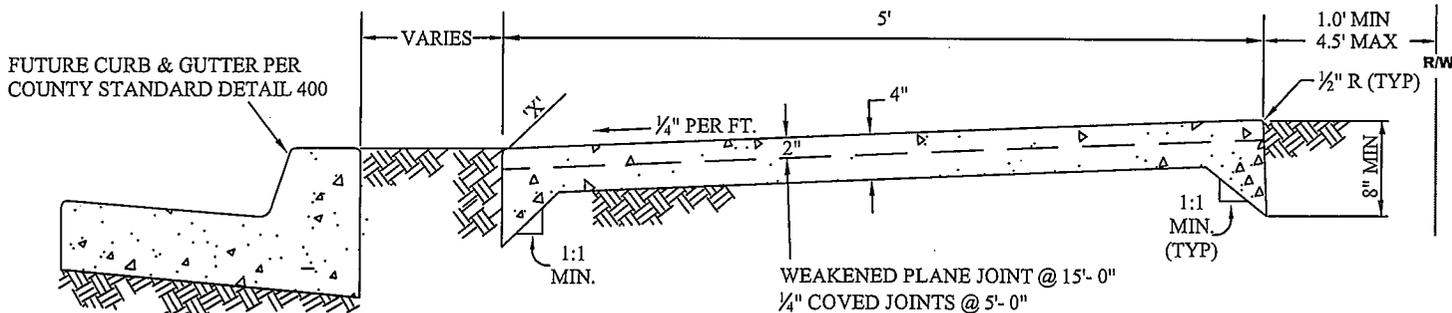
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: E.M.	DWG No.: 420





**NOTE:**

1. APPLICABILITY OF THIS SIDEWALK DETAIL SHALL BE DETERMINED BY PUBLIC WORKS DIRECTOR
2. FOR APPLICATION WHERE NO CURB AND GUTTER IS PROPOSED AT THE TIME OF SIDEWALK CONSTRUCTION
3. EXPANSION JOINTS TO BE INSTALLED AT ALL B.C.'S, E.C.'S, CURB RETURNS AND STRUCTURES IN ADDITION TO 45' O.C.
4. FOR JOINTS DETAILS SEE GATEWAY STD. DWG. 400
5. SIDEWALK AND FUTURE CURB NON-MONOLITHIC POUR
6. SUBGRADE SHALL BE 8" INCHES MINIMUM OF 95% OF ASTM D1557 MAXIMUM DRY DENSITY
7. ELEVATION 'X' EQUAL TO ROAD CENTERLINE GRADE UNLESS OTHERWISE APPROVED BY PUBLIC WORKS DIRECTOR
8. SIDEWALK SHALL BE CONSTRUCTED WITH CLASS 2 (5 SACK) P.C.C.
9. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY
10. RURAL SIDEWALK SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.

**NOT TO SCALE**



**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**RURAL SIDEWALK DETAIL**

APPROVED BY:

*William S. Brunet*

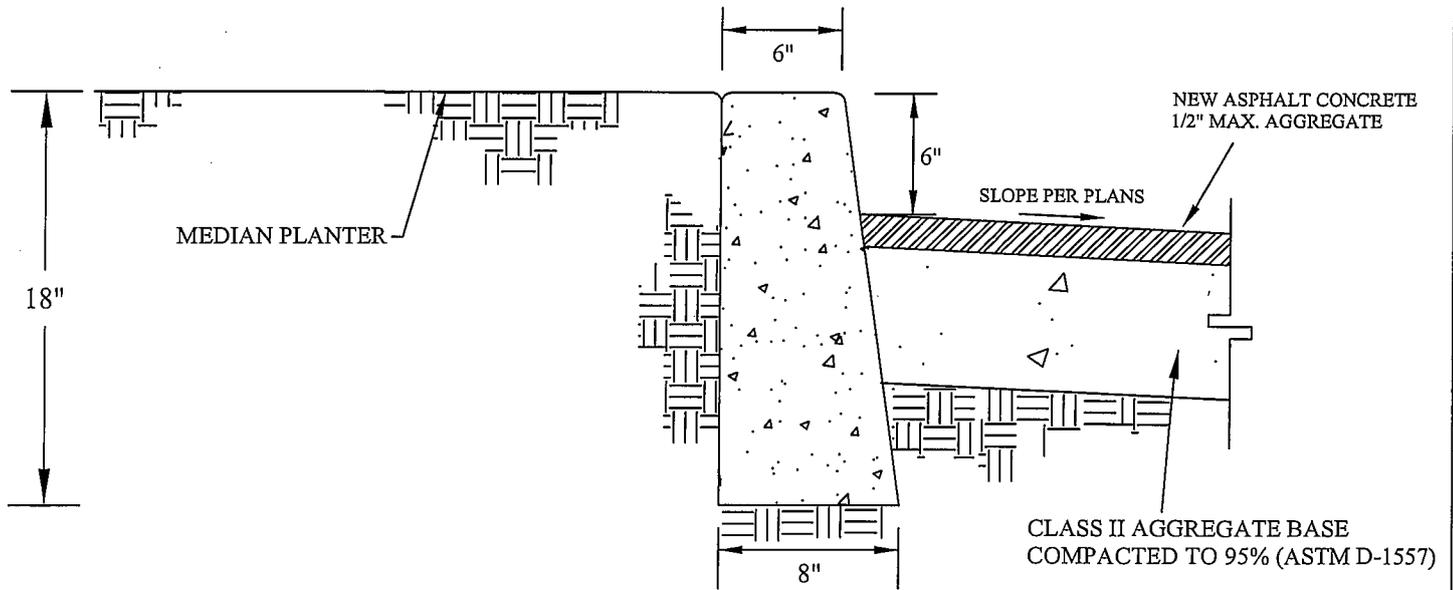
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APRD: DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: E.M.	DWG No.: 426



NOTE:

1. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY.
2. PLACE WEAKENED PLANE JOINTS EVERY 15' (LINEAR FEET) ALONG THE CURB.
3. PLACE EXPANSION JOINTS EVERY 45' (FEET) EXPANSION JOINT MATERIAL TO BE COMPOSED OF 1/4" FIBER BOARD INSTALLED ACROSS SECTION OF CURB.
4. THE CURB EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN 0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURING IN ANY GIVEN 100 FOOT SECTION. THE HORIZONTAL CURB EDGES SHALL NOT VARY MORE THAN 1/4" IN ANY GIVEN 100 FOOT SECTION.
5. THE PCC SHALL CONTAIN 6 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4000 PSI AFTER 28 DAYS CURING
6. THE STANDING CURB WILL HAVE THE SAME CONDITIONS FOR CONSTRUCTION ADJACENT TO THE PROPOSED PLANTERS.
7. FREE STANDING CURB SHALL BE CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.

NOT TO  
SCALE



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

FREE STANDING  
CURB DETAIL

APPROVED BY:

*William S. Brunet*

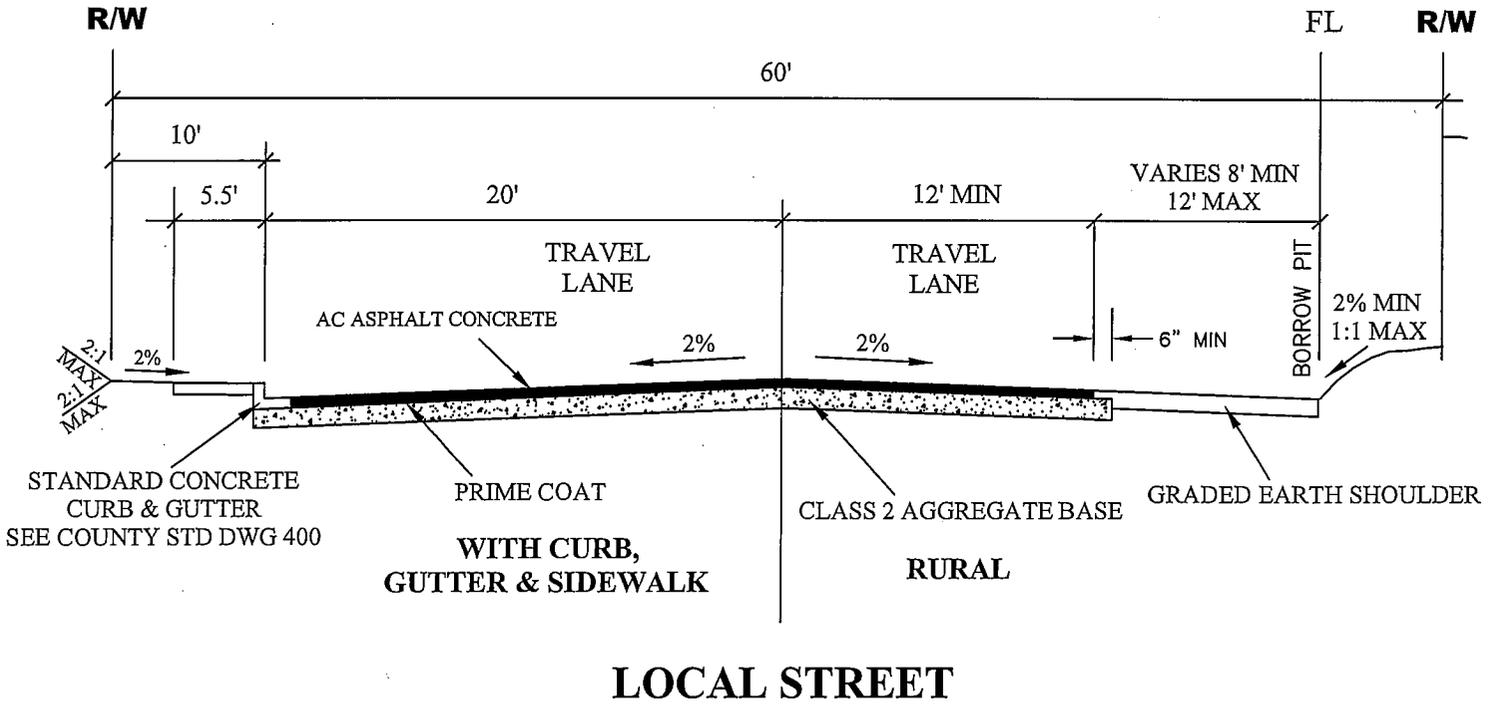
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APRD: DATE:

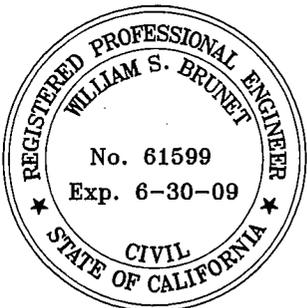
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			/ /	E.M.	DWG No.: 427



**NOT TO  
SCALE**

**NOTE:**

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. FOR RURAL SECTION, MINIMUM PAVED WIDTH IS 12' UNLESS OTHERWISE REQUIRED BY THE PUBLIC WORKS DIRECTOR
3. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**LOCAL STREET**

APPROVED BY:

*William S. Brunet*

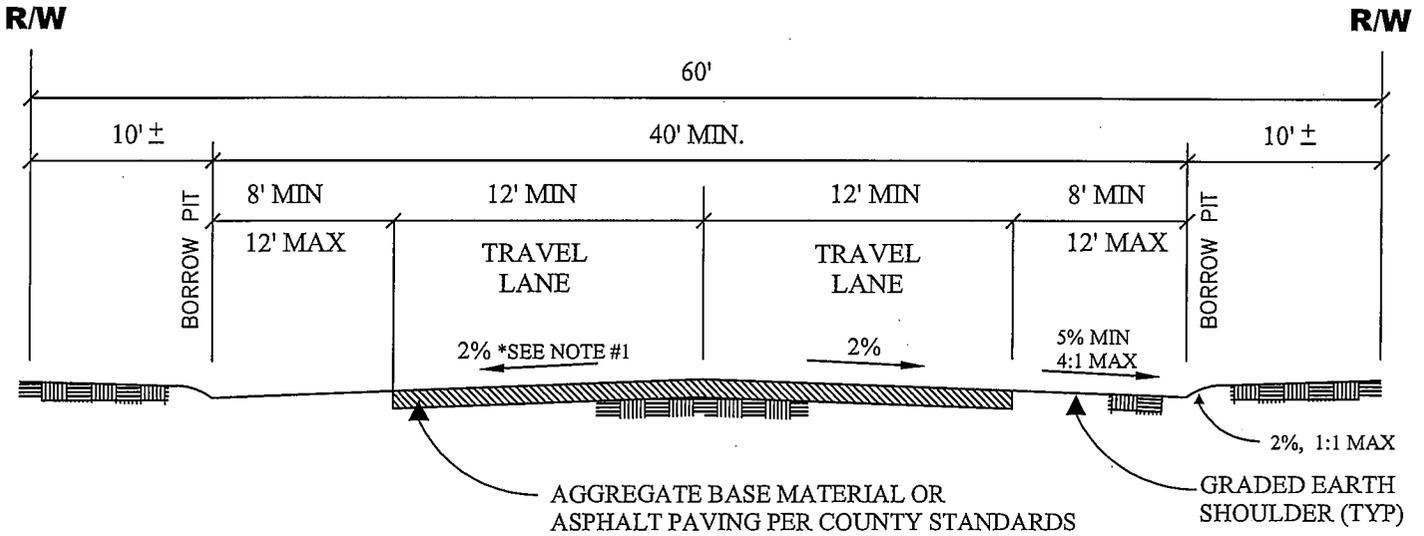
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

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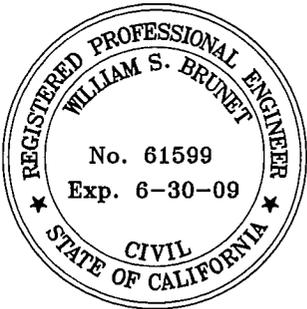


## RURAL LOCAL ROAD

NOT TO  
SCALE

NOTE:

1. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY
2. ONE WAY CROSS SLOPE MAY BE CONSIDERED BY COUNTY ROAD COMMISSIONER.



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

## TYPICAL CROSS SECTION RURAL LOCAL ROAD

APPROVED BY:

*William S. Brunet*

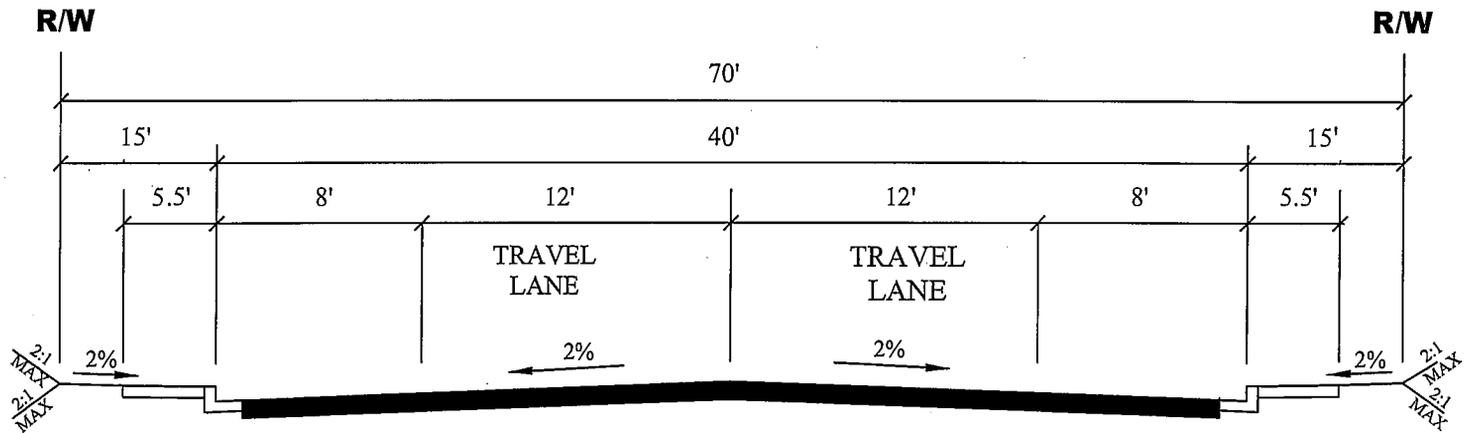
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	DWG No.: 430A



**2 LANE MINOR COLLECTOR/INDUSTRIAL STREET - PARKING**

**NOT TO SCALE**

**NOTE:**

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. FOR RURAL SECTION, MINIMUM PAVED WIDTH IS 12' UNLESS OTHERWISE REQUIRED BY THE PUBLIC WORKS DIRECTOR
3. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**TYPICAL STREET CROSS SECTIONS**

APPROVED BY:

*William S. Brunet*

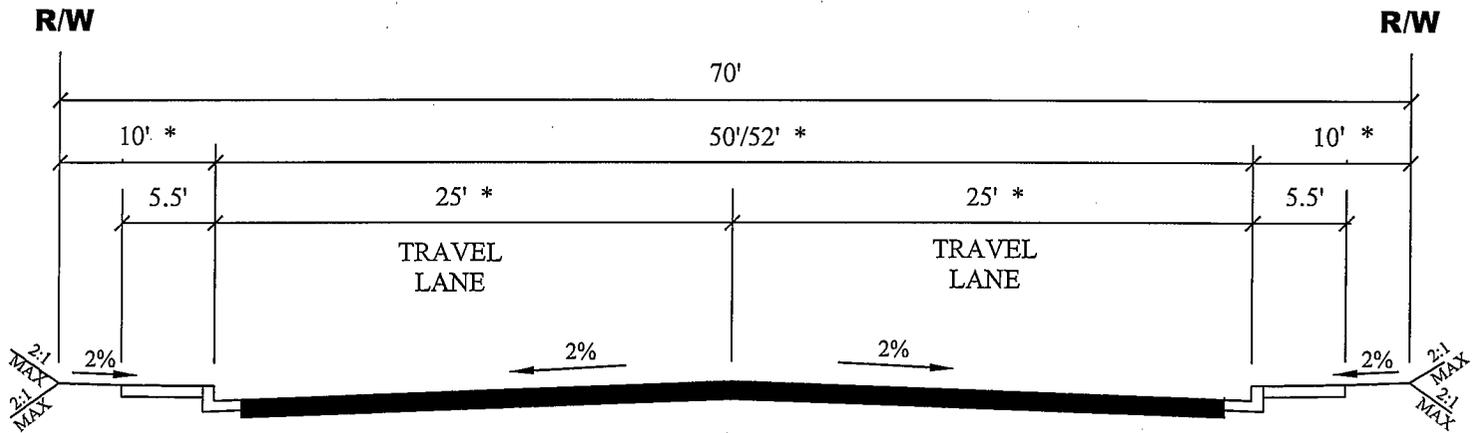
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: E.M.	DWG No.: 431A



**4 LANE MINOR COLLECTOR/INDUSTRIAL STREET - NO PARKING**

**NOT TO  
SCALE**

**NOTE:**

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY

\* THIS DIMENSION MAY BE 26'9" OR 52' AS APPROVED BY PUBLIC WORKS DIRECTOR



**COUNTY of IMPERIAL**

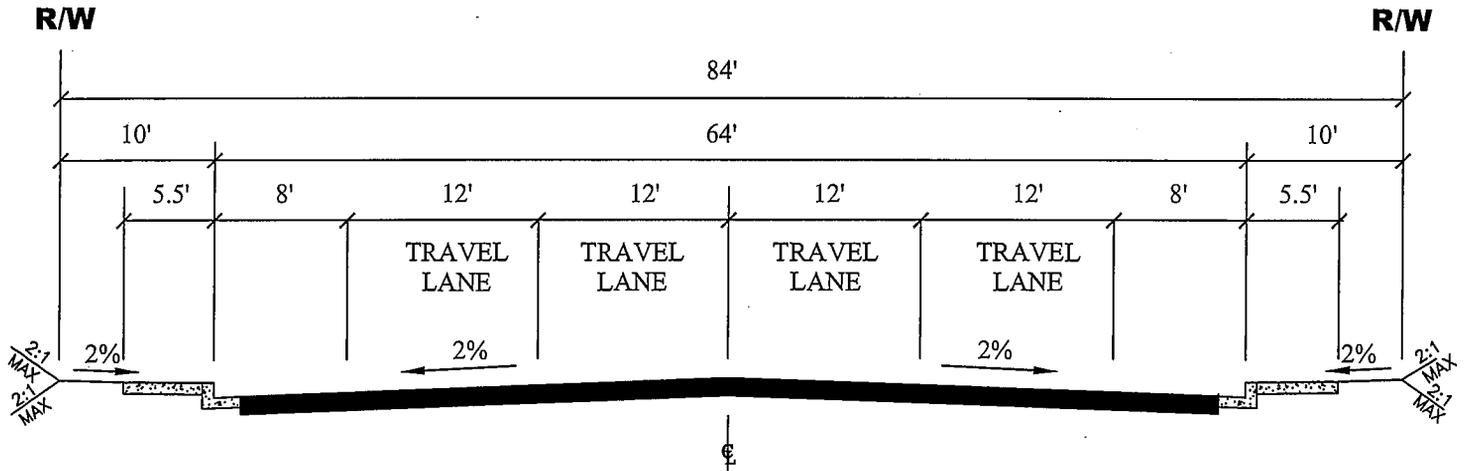
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**TYPICAL STREET  
CROSS SECTIONS**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

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			/ /	E.M.	DWG No.: 431B



### 4 LANE MAJOR COLLECTOR

**NOT TO  
SCALE**

**NOTE:**

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

## TYPICAL STREET CROSS SECTIONS

APPROVED BY:

*William S. Brunet* DATE: 11/6/08  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

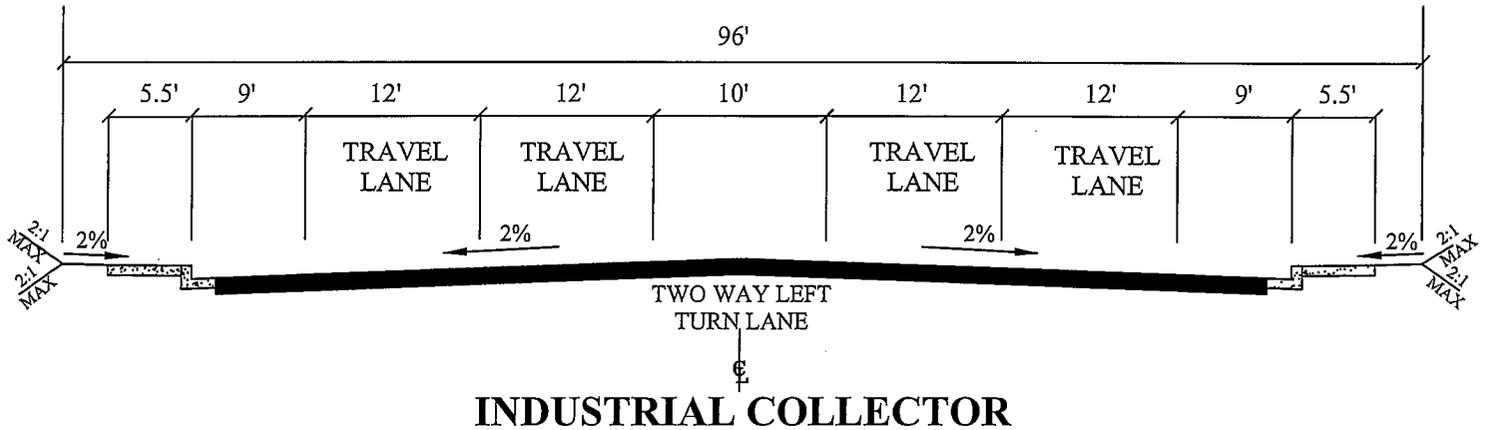
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			/ /	DRAWN: E.M.	DWG No.: 432

R/W

R/W



NOT TO SCALE

NOTE:

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**TYPICAL STREET  
CROSS SECTIONS**

APPROVED BY:

*William S. Brunet*

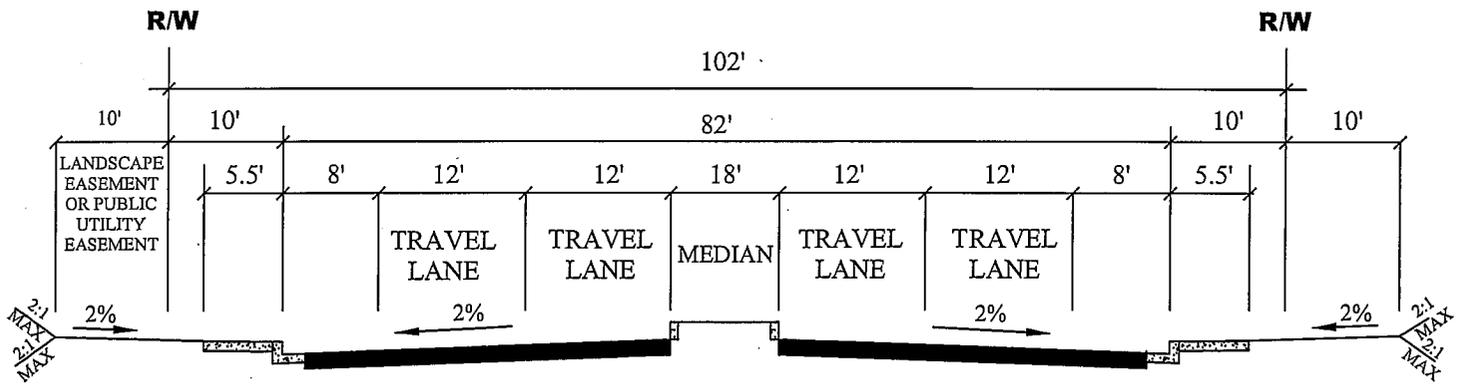
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

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BY: APRD: DATE:

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			/ /	DRAWN: E.M.	DWG No.: 432A



4 LANE MINOR ARTERIAL (MEDIAN WITH SINGLE OR DUAL LEFT TURN)

NOT TO SCALE

NOTE:

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



COUNTY of IMPERIAL

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EL CENTRO, CALIFORNIA

TYPICAL STREET CROSS SECTIONS

APPROVED BY:

*William S. Brunet*

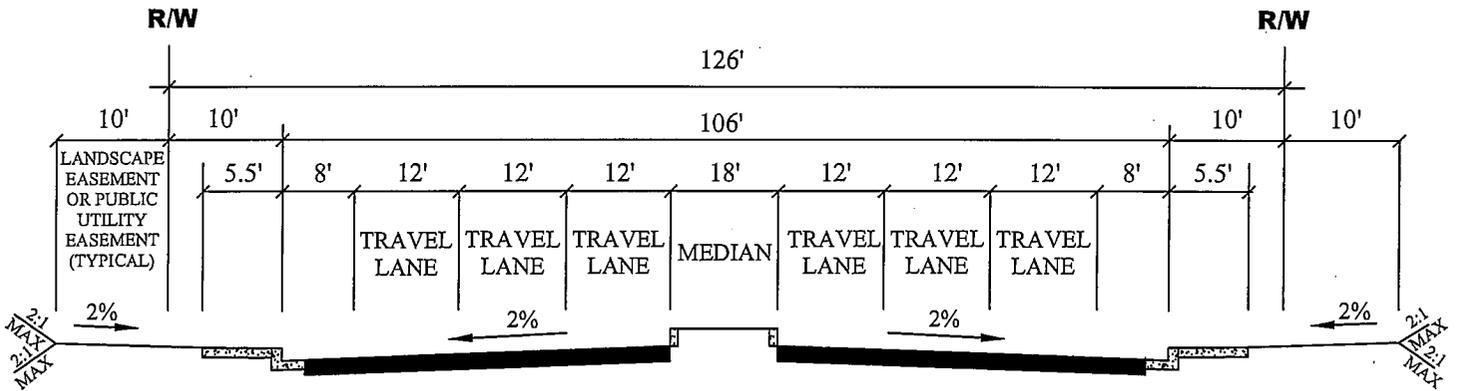
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

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BY: APR'D: DATE:

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			/ /	F.F.	08/29/08
			/ /	E.M.	DWG No.: 434



PRIME ARTERIAL (MEDIAN WITH SINGLE OR DUAL LEFT TURN)

NOT TO SCALE

NOTE:

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

TYPICAL STREET CROSS SECTIONS

APPROVED BY:

*William S. Brunet*

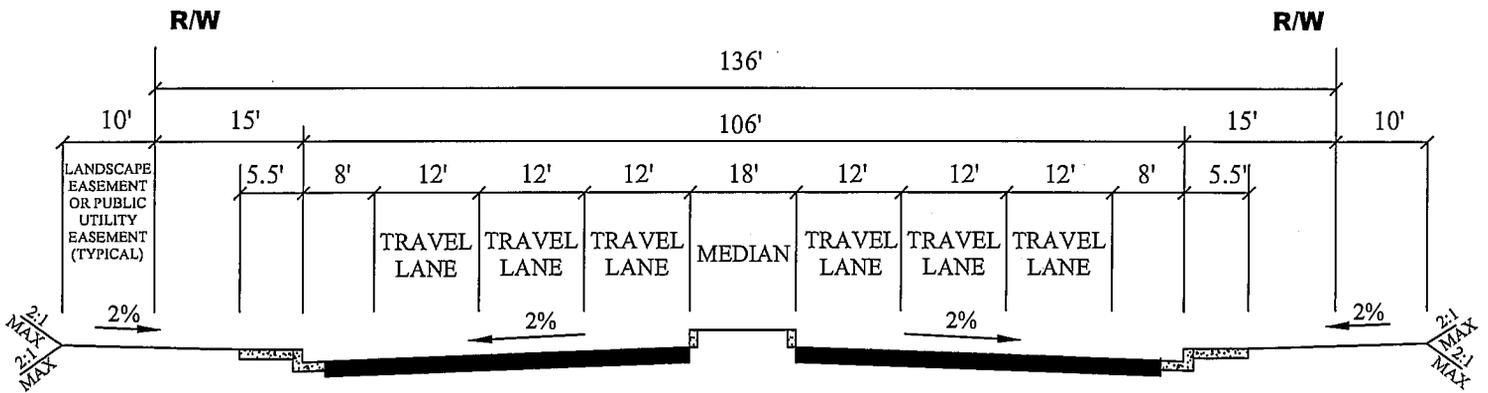
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS

BY: APR'D: DATE:

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PRIME ARTERIAL (MEDIAN WITH SINGLE OR DUAL LEFT TURN)

NOT TO SCALE

NOTE:

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY
3. THIS DETAIL HAS WIDER PARKWAY THAN DRAWING 436.



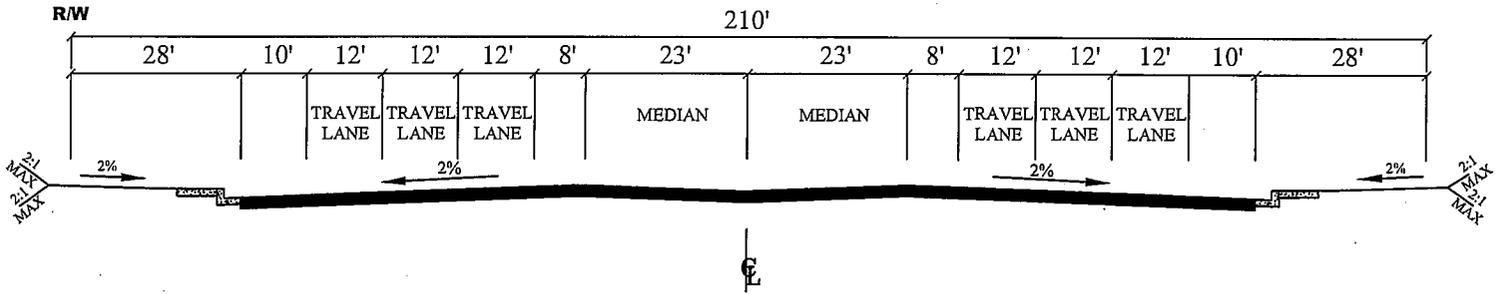
COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

TYPICAL STREET CROSS SECTIONS

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	DWG No.: 436A



**EXPRESSWAY**

**NOT TO SCALE**

- NOTE:
1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS
  2. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE PUBLIC SAFETY



**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**TYPICAL STREET CROSS SECTIONS**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

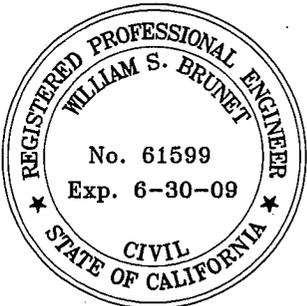
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			/ /	E.M.	DWG No.: 437

MINIMUM TRAFFIC INDEX (SEE NOTE #5)	ROAD CLASSIFICATION	RIGHT OF WAY (WIDTH)	MINIMUM SECTION (SEE NOTES)
14	EXPRESSWAY	210'	9" AC/35" AB
13	INDUSTRIAL COLLECTOR	96'	8.5" AC/34" AB
11	PRIME ARTERIAL	136'	5.5" AC/28" AB
10	MINOR ARTERIAL	102'	4.5" AC/26" AB
8.0	MAJOR COLLECTOR	84'	4" AC/18" AB
8.0	INDUSTRIAL/COMMERCIAL	64'	4" AC/18" AB
6.5	MINOR COLLECTOR	70'	4" AC/14" AB
6.0	LOCAL/RESIDENTIAL	60'	3" AC/14" AB
5.0	RESIDENTIAL CUL-DE-SAC	60'	3" AC/9" AB

NOTE:

- 1) Asphalt concrete shall be Caltrans Type A or B, 3/4 inch maximum-medium grading, compacted to a minimum of 95% of the HVEEM or 75 - blow Marshall density (ASTM D1559).
- 2) Aggregate base shall be Caltrans Class 2, 3/4 inch maximum, compacted to a minimum of 95% of ASTM D1557 maximum dry density. Base shall be placed on 12 inches of moisture conditioned (minimum of optimum) native soils compacted to a minimum of 95% of ASTM D1557 maximum dry density. For native clay soils, compaction to a minimum of 90% of ASTM D1557 maximum dry density can be used.
- 3) Recycled base may be considered in subdivision roads classified as a Local or Residential with advance approval by the Public Works Director. Material shall meet all current County Standards.
- 4) The minimum road structural sections for subgrade soils with R value of 5 or less are shown in the table. For any subgrade soils with R values greater than 5 an alternate structural section may be accepted by the Director of Public Works/Road Commissioner as requested by geotechnical engineer using County standard criteria and no less than the following: Local or Residential road classifications 3" AC over 9" Class 2 Aggregate Base; For Minor Collector, Major Collector, Minor Arterial and Industrial/Commercial designations 4" AC over 14" Class 2 Aggregate Base, Prime Arterials 5" AC over 18" Class 2 Aggregate Base, Industrial Collector 5" AC over 18" class 2 Aggregate Base, and for Expressway 5.5" AC over 28" Class 2 Aggregate Base.
- 5) The minimum Traffic Index (TI) values are shown in table. If project soils report, based on soil type and highest TI expected to occur during a 20 year period following construction indicates a thicker section is required, then thicker section shall be used.
- 6) All minimum road sections and TI values are subject to change by the Director of Public Works and/or Road Commissioner.
- 7) For developments having a significant amount of truck traffic or if road provides significant interregional mobility, the developer may be required to perform a traffic analysis to determine the appropriate TI for the road improvement subject to Director of Public Works/Road Commissioner approval.
- 8) An alternate structural section from that shown may be accepted by the Director of Public Works/Road Commissioner as requested by geotechnical engineer using County standard criteria.



**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**COUNTY ROAD  
STRUCTURAL SECTION**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

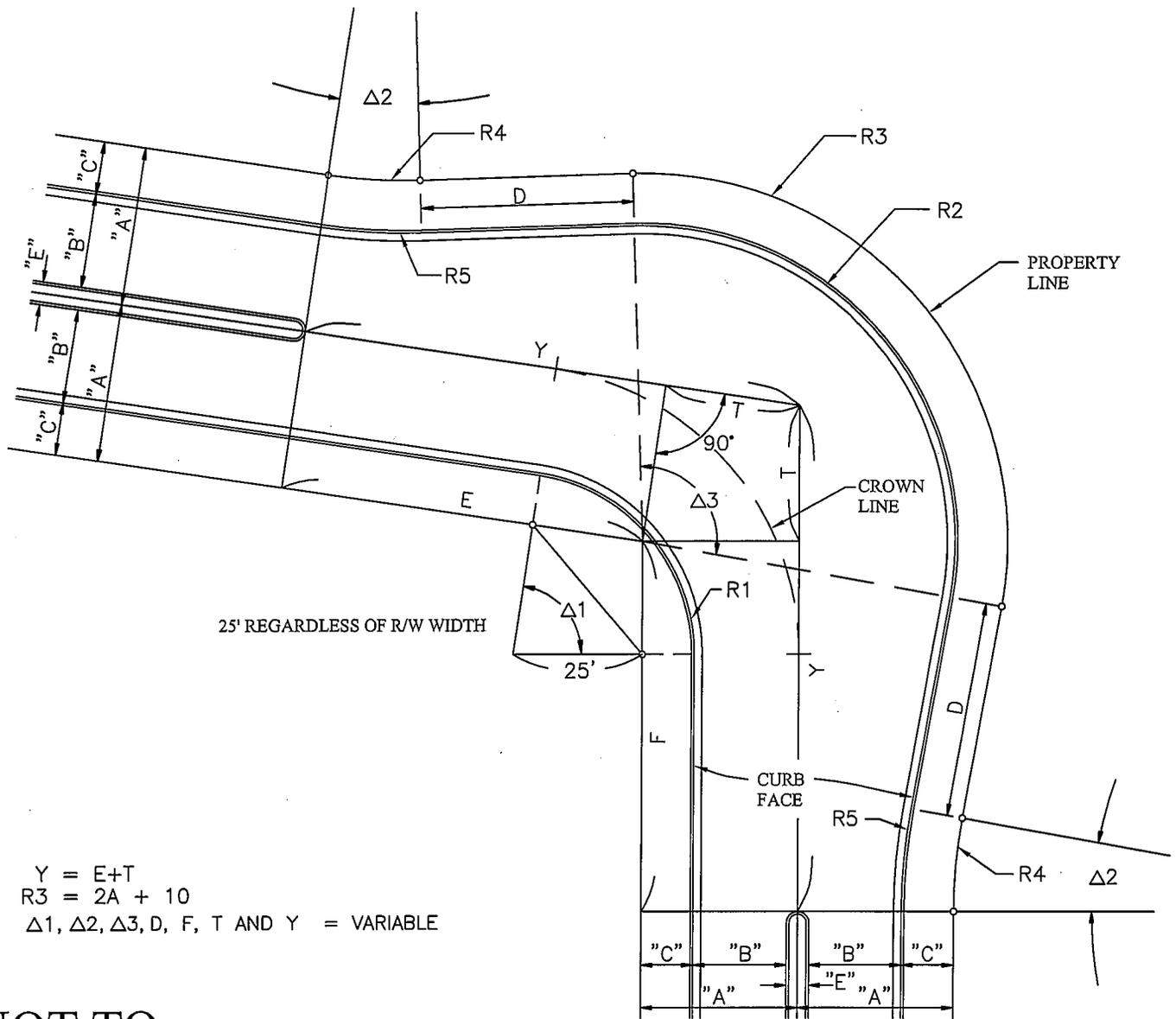
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APRD: DATE:

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			/ /	DRAWN: E.M.	DWG No.: 440

*County Standard 441 and 442 Not Available*



$Y = E + T$   
 $R3 = 2A + 10$   
 $\Delta 1, \Delta 2, \Delta 3, D, F, T$  AND  $Y = \text{VARIABLE}$

**NOT TO SCALE**



R/W	A	B	C	E	R1	R2	R3	R4	R5
50'	25'	16'	9'	-	34'	51'	60'	100'	109'
60'	30'	18'	12'	-	37'	58'	70'	100'	112'
60'	30'	20'	10'	-	35'	60'	70'	100'	110'
74'	37'	27'	10'	-	36'	74'	84'	100'	110'
80'	40'	33'	7'	-	38'	83'	90'	100'	107'
84'	42'	29'	7'	12'	40'	87'	94'	100'	107'
96'	48'	35'	7'	12'	44'	99'	106'	100'	107'

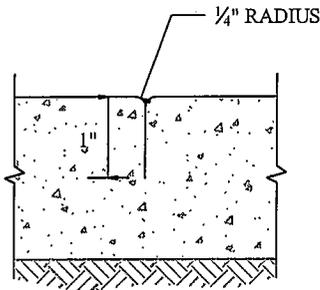
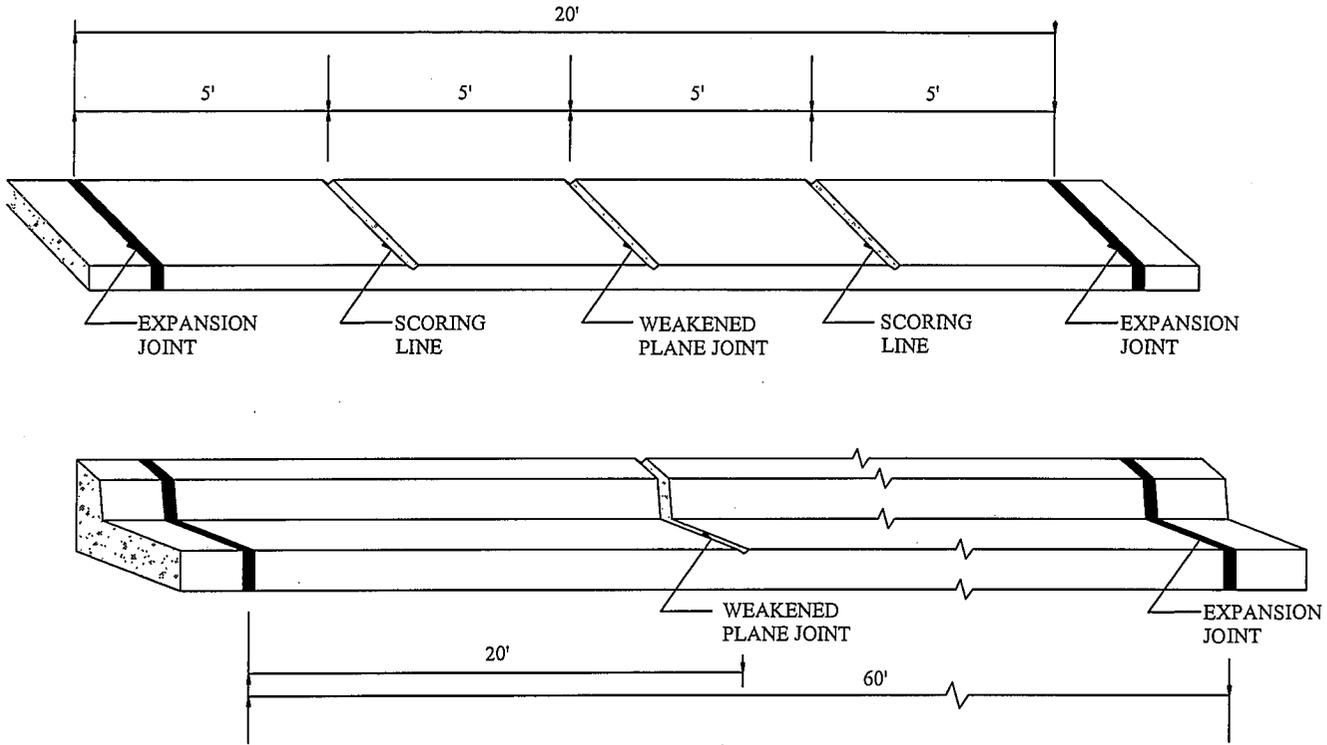


**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

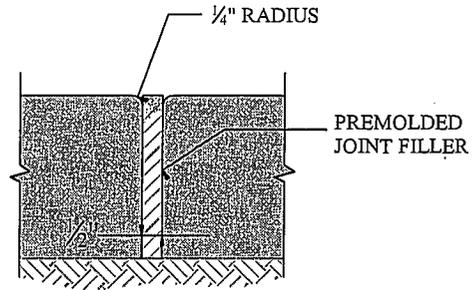
**KNUCKLE INTERSECTION**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	443



WEAKENED PLANE JOINT



EXPANSION JOINT

**NOT TO SCALE**

**NOTES:**

1. EXPANSION JOINTS, 1/2" THICK, SHALL BE PLACED AT THE B.C. AND E.C. OF ALL RETURNS, AT THE OUTER EDGES OF DRIVEWAYS INCLUDING "X" DISTANCES, AND AT UNIFORM INTERVALS.
2. SCORING LINES, 1/2" DEEP, SHALL BE CONSTRUCTED IN CURBS AT LOCATIONS OF WEAKENED PLANE JOINTS IN THE GUTTER AND IN THE WALK AS SHOWN.
3. WEAKENED PLANE JOINT, ONE INCH DEEP, SHALL BE CONSTRUCTED AT EQUAL SPACING BETWEEN JOINTS IN WALKS AND GUTTERS. JOINTS SHALL BE MADE WITH A BRASS CF-314 TOOLING DEVICE AS MANUFACTURED BY KRAFT TOOL COMPANY, KANSAS CITY, MISSOURI, OR APPROVED EQUAL
4. JOINTS IN THE CURB AND GUTTER SHALL ALIGN WITH CORRESPONDING JOINTS IN THE WALK.
5. LONGITUDINAL SCORING LINES WILL BE REQUIRED IN WALKS WIDER THAN 10 FEET.
6. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE THE PUBLIC SAFETY.



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**CONCRETE SCORING  
DETAILS**

APPROVED BY:

*William S. Brunet*

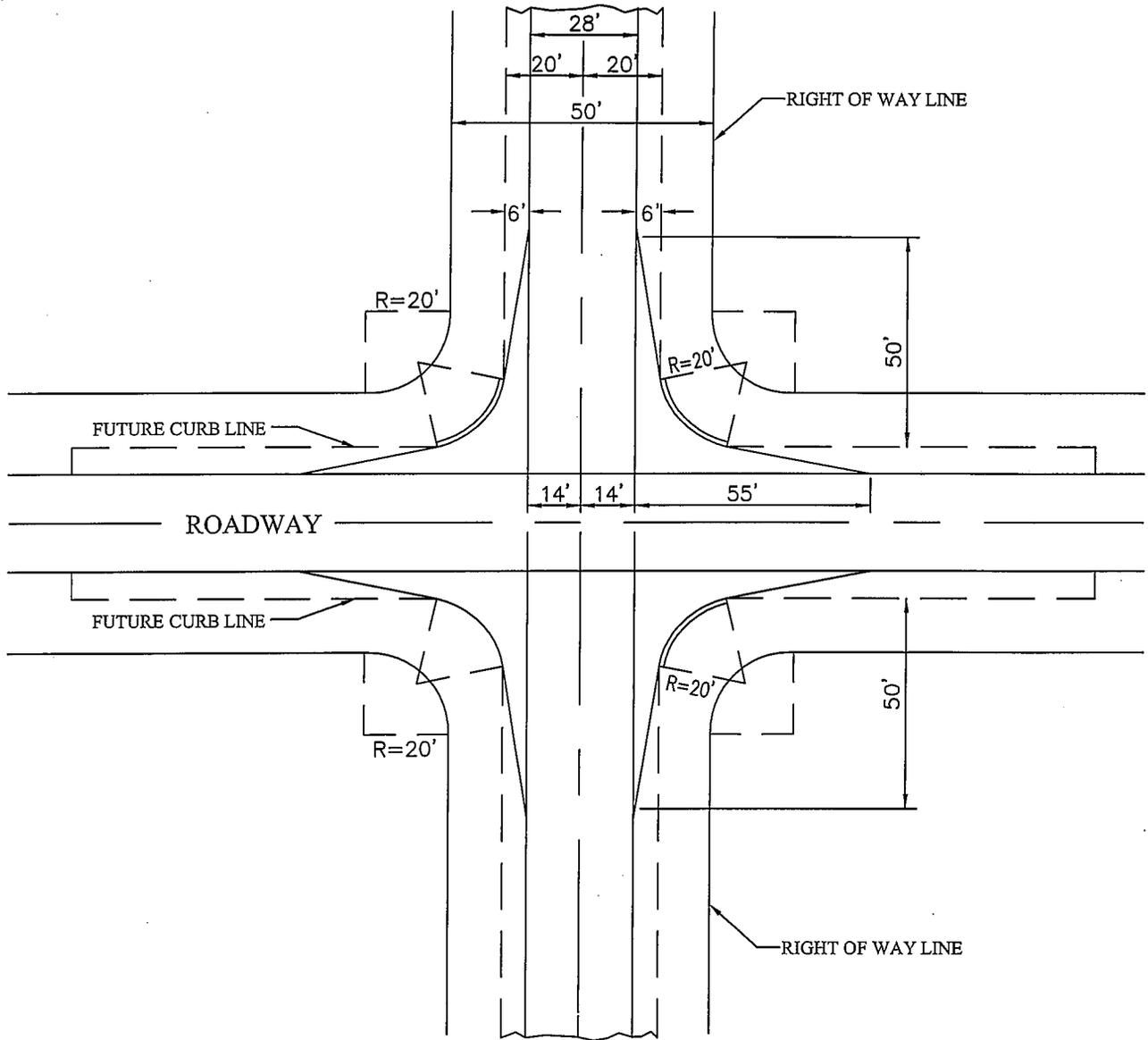
DATE: 11/6/08

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DIRECTOR of PUBLIC WORKS

REVISIONS

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			/ /	DRAWN: E.M.	DWG No.: 444



**NOT TO  
SCALE**

FULL WIDTH CONSTRUCTION



NOTE:

1. SEE APPROVED PLANS AND COUNTY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTION
2. DIMENSIONS SHOWN ARE TYPICAL FOR ALL FOUR INTERSECTION APPROACHES.



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**INTERSECTION DESIGN  
RURAL LOCAL ROAD**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

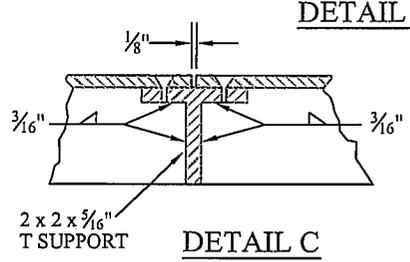
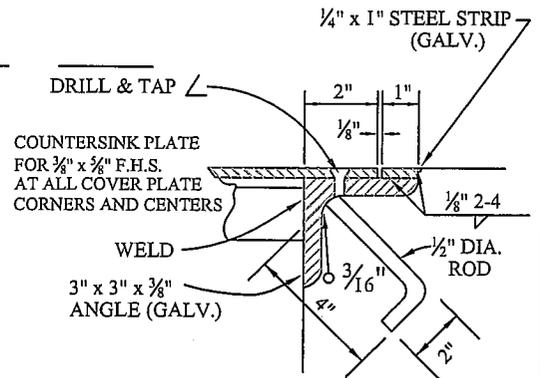
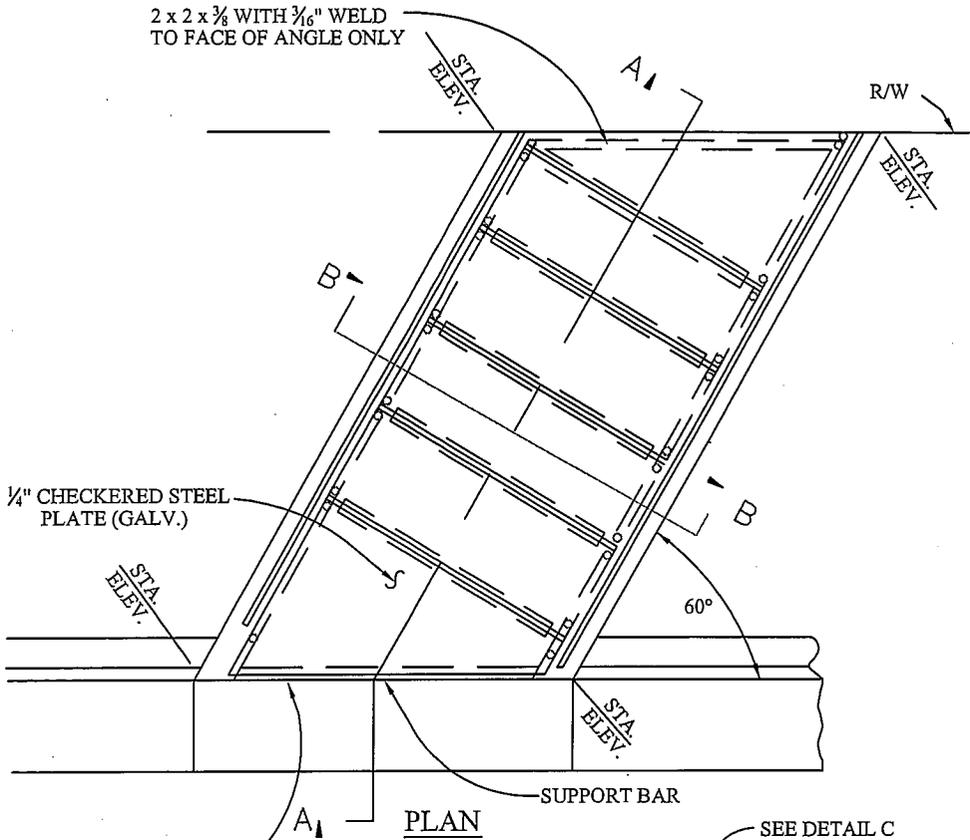
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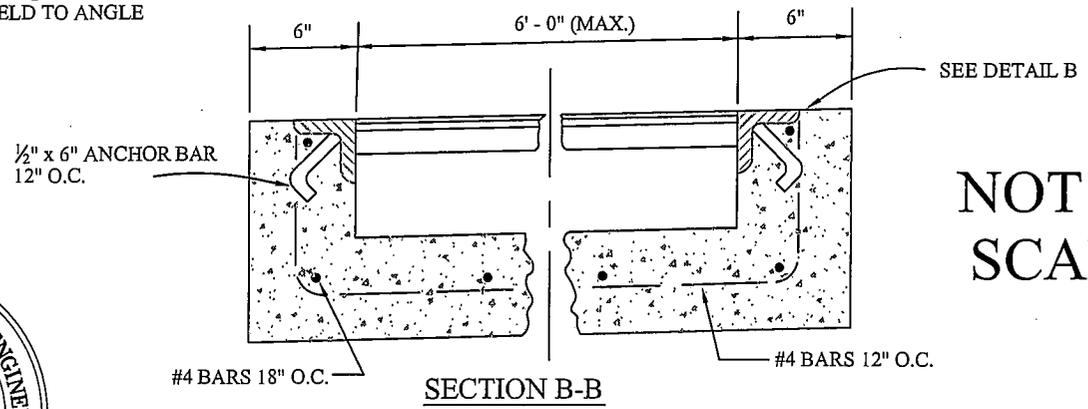
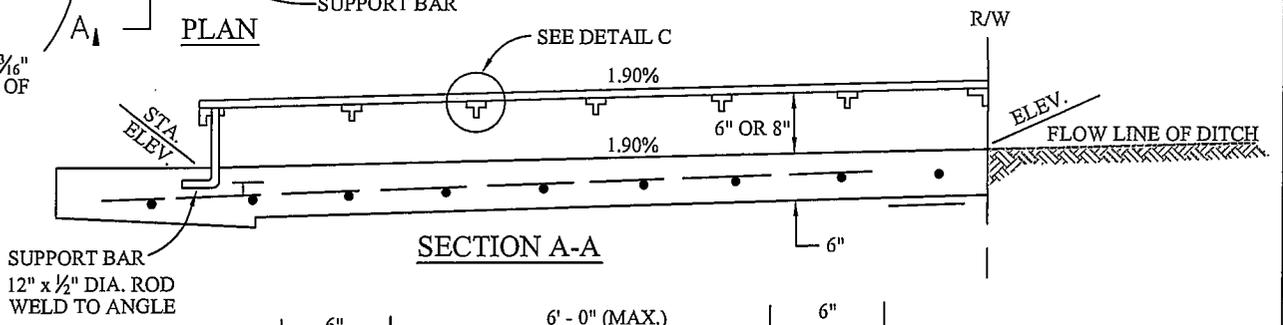
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			/ /	DRAWN: E.M.	DWG No.: 445

2 x 2 x 3/8" WITH 3/16" WELD TO FACE OF ANGLE ONLY



2 x 2 x 3/8" WITH 3/16" WELD TO FACE OF ANGLE ONLY



NOT TO SCALE

NOTES:

1. PARKWAY CULVERT SHALL BE CONSTRUCTED OF CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99.
2. ALL STEEL EXCEPT REINFORCING BARS SHALL BE GALVANIZED AFTER FABRICATION.



COUNTY of IMPERIAL  
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EL CENTRO, CALIFORNIA

PARKWAY CULVERT  
W/STEEL PLATE COVER

APPROVED BY:

*William S. Brunet*

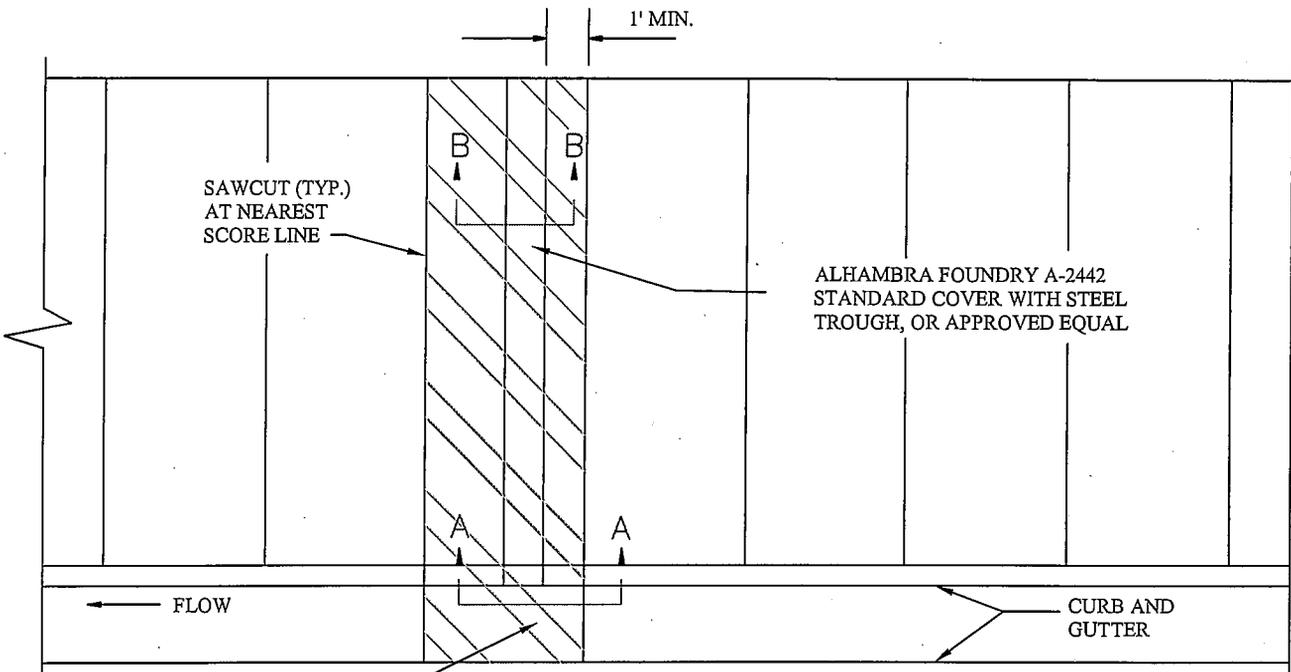
DATE: 11/6/08

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REVISIONS

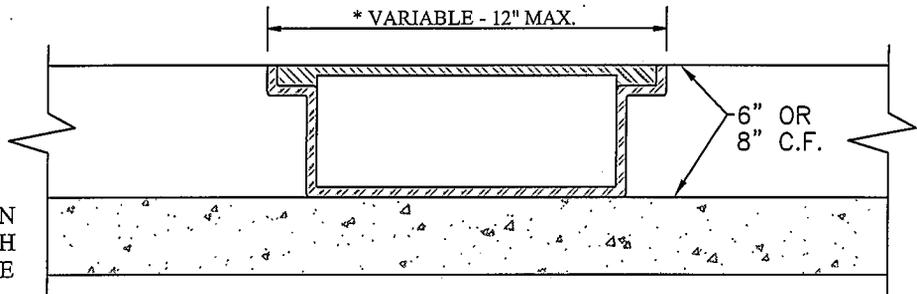
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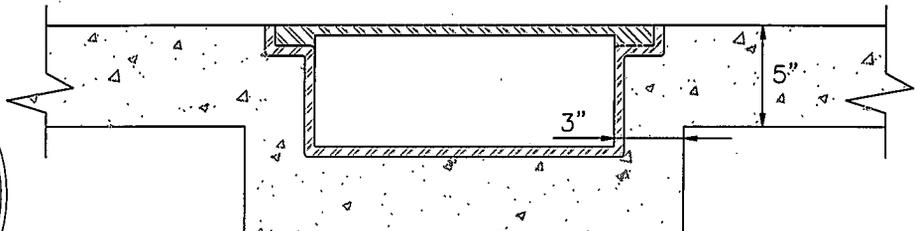
REMOVE AND REPLACE EXISTING CONCRETE WITH 5" OF CLASS 3 CONCRETE WHICH SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E. PLACE EXPANSION JOINTS BETWEEN EXISTING AND NEW CONCRETE. ANGLE SHALL BE DETERMINED BY THE INSPECTOR.

**NOT TO SCALE**

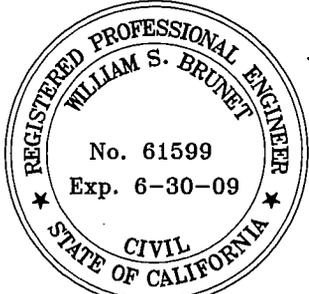


**SECTION A-A**

\* MODIFICATION FOR WIDTH GREATER THAN 12" CAN BE MADE WITH THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.



**SECTION B-B**



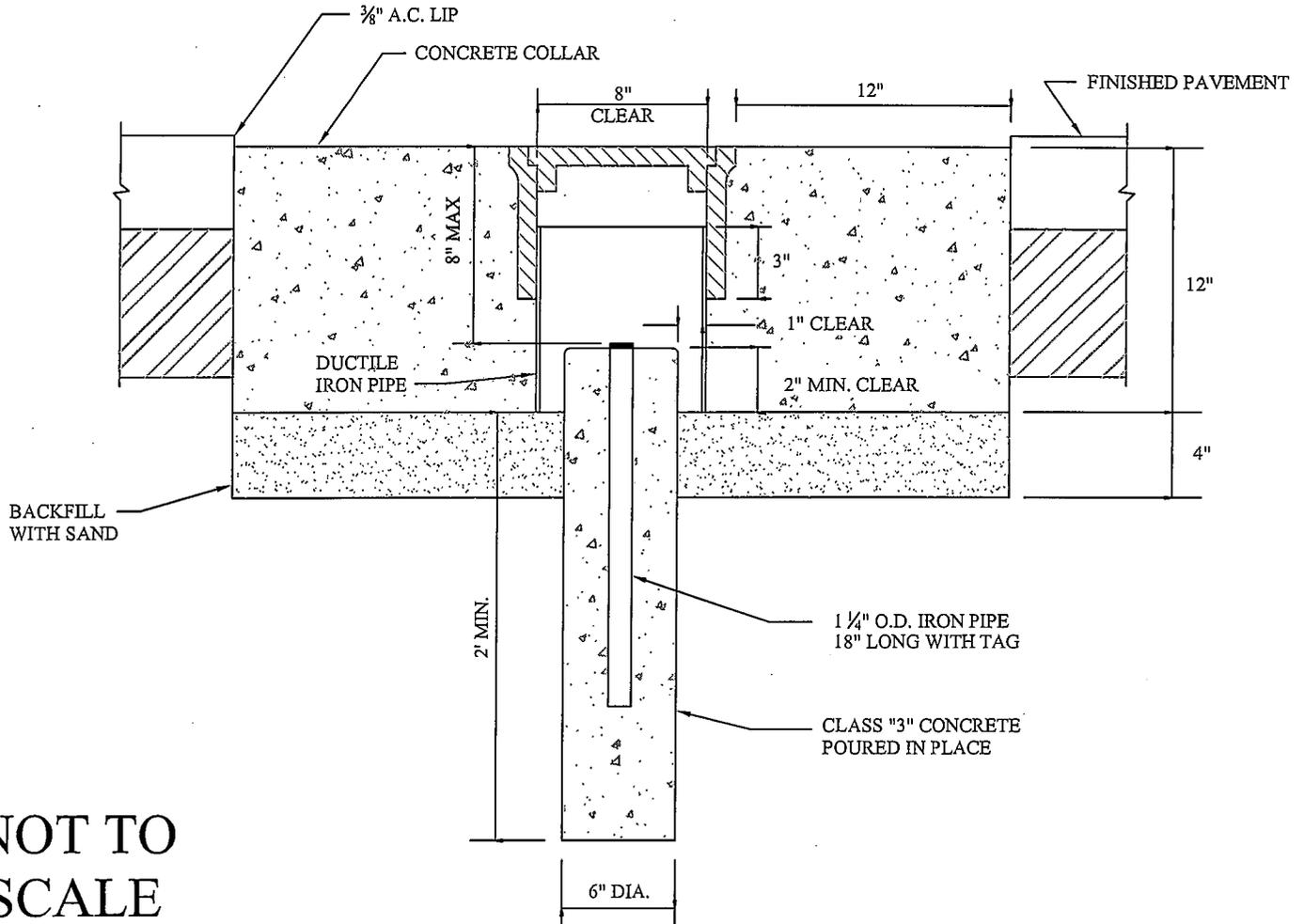
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 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**SIDEWALK DRAIN**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS  
 DATE: 11/6/08

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			/ /	E.M.	DWG No.: 447

DUCTILE IRON FRAME & COVER,  
ALHAMBRA A - 2925, OR  
APPROVED EQUAL



NOT TO  
SCALE

NOTES:

1. THE PERMANENT STREET MONUMENT SHOWN HEREON IS TO BE INSTALLED AT INTERSECTIONS OF MASTER PLANNED STREETS.
2. CROSS-GUTTER AND SPANDREL SHALL BE CONSTRUCTED OF CLASS "3" CONCRETE WHICH SHALL ATTAIN A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ASTM C39/C39M-99 AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD. POLYPROPYLENE FIBER BY FIBERMESH CO., FORTA MONO, O.A.E.



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**SURVEY MONUMENT**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

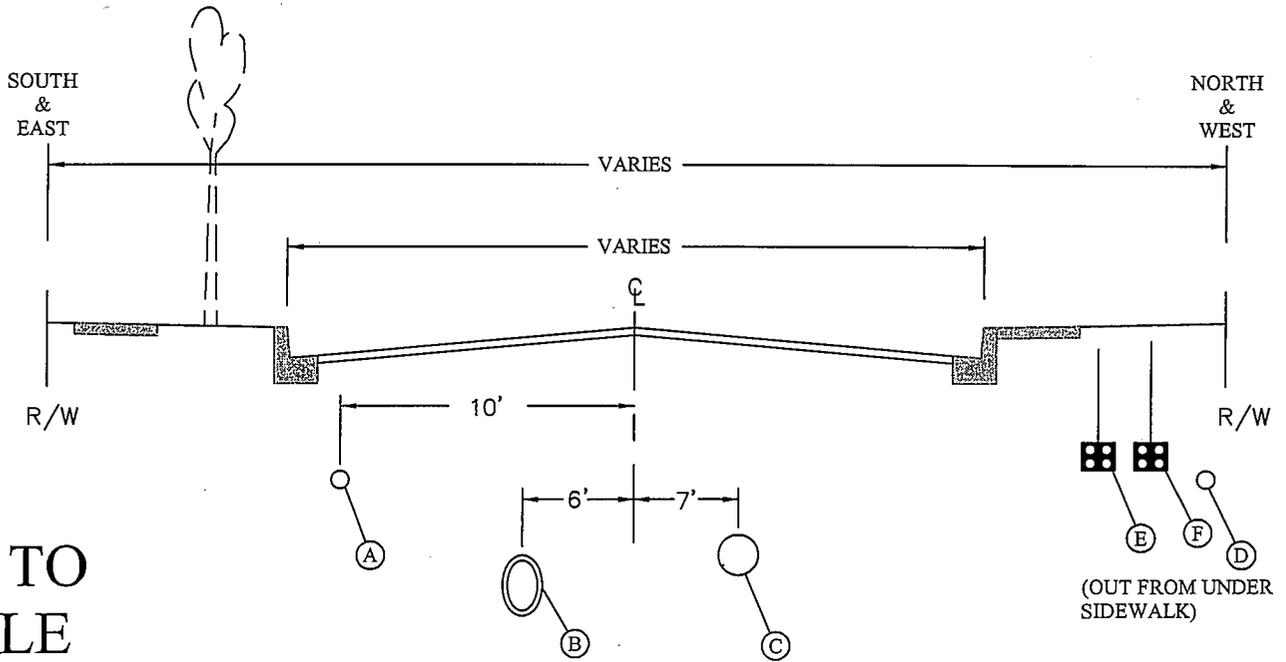
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

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			/ /	DRAWN: E.M.	DWG No.: 448

# RECOMMENDED UTILITY LOCATION



**NOT TO SCALE**

	UTILITY	MIN. COVER
(A)	WATER	30"
(B)	STORM DRAIN	VARIES
(C)	SEWER	VARIES
(D)	GAS	30"
(E)	ELECTRIC	36"
(F)	TELEPHONE - CATV	30"

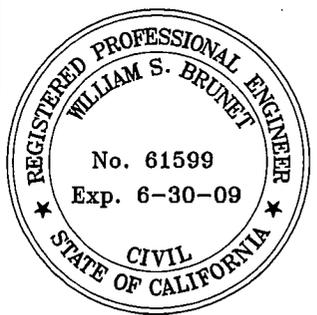
} POSSIBLE JOINT TRENCH

### UTILITY INSTALLATION SCHEDULE

1. STORM DRAIN
2. SEWER
3. CURB & GUTTER
4. WATER
5. ELEC. & TELEPHONE
6. GAS
7. PAVING

**NOTES:**

1. WHERE ULTIMATE STREET IMPROVEMENTS ARE TO BE CONSTRUCTED, MINIMUM COVER OF UTILITY LINES MAY BE VARIED TO FACILITATE INSTALLATION.
2. THE UTILITY COMPANIES SHALL MAKE EVERY EFFORT TO LOCATE THEIR FACILITIES IN THE RECOMMENDED LOCATIONS, PARTICULARLY IN NEW SUBDIVISIONS.
3. EDISON, GAS AND TELEPHONE UTILITIES MAY USE A COMMON TRENCH.
4. THE CENTER 24' OF STREET SHALL BE RESERVED FOR SEWER AND STORM DRAIN INSTALLATION.
5. SURFACE OF VAULT OR MANHOLE MUST MATCH PAVEMENT AND PARKWAY GRADES.
6. WHENEVER POSSIBLE, MANHOLE COVERS SHALL NOT BE PLACED WITHIN THE SIDEWALKS OR CROSS GUTTERS.
7. ALL UNDERGROUND UTILITIES SHALL HAVE A WARNING/LOCATOR TAPE INSTALLED ABOVE THE UTILITY AND BURIED 9" INTO THE SUBGRADE.
8. ALL UNDERGROUND UTILITY MAIN LINES SHALL HAVE 30" MINIMUM COVER TO TOP IF PIPE IS IN THE RIGHT-OF-WAY.



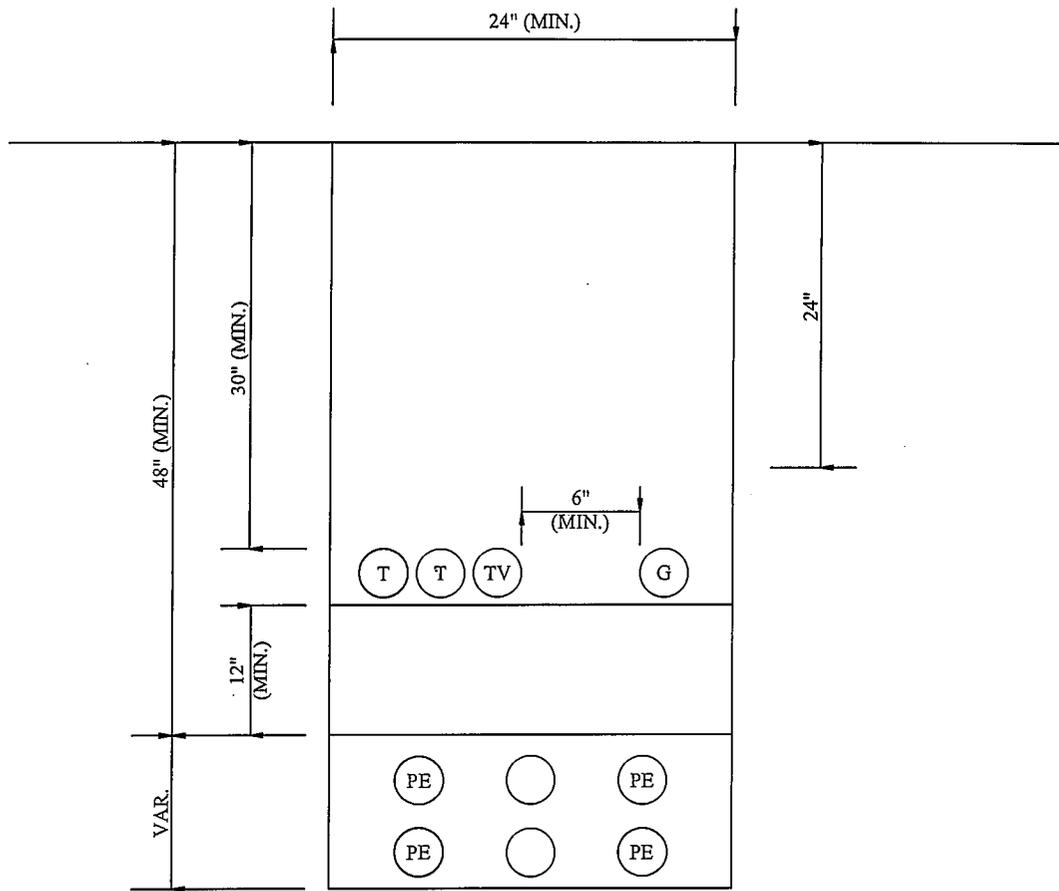
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 EL CENTRO, CALIFORNIA

## UNDERGROUND UTILITY LOCATION

APPROVED BY:  
  
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 DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

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			/ /	E.M.	449



NOTES:

1. THE ABOVE REQUIREMENTS ARE MINIMUMS. CONTACT UTILITY COMPANIES FOR THEIR REQUIREMENTS.
2. MINIMUM COMPACTION SHALL BE 85%. THE TOP 24" SHALL BE COMPACTED TO 90%.
3. ALL UNDERGROUND UTILITIES SHALL HAVE A WARNING/LOCATOR TAPE INSTALLED ABOVE THE UTILITY AND BURIED 9" INTO THE SUBGRADE.

**NOT TO SCALE**



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**UTILITY TRENCH  
DETAIL**

APPROVED BY:

*William S. Brunet*

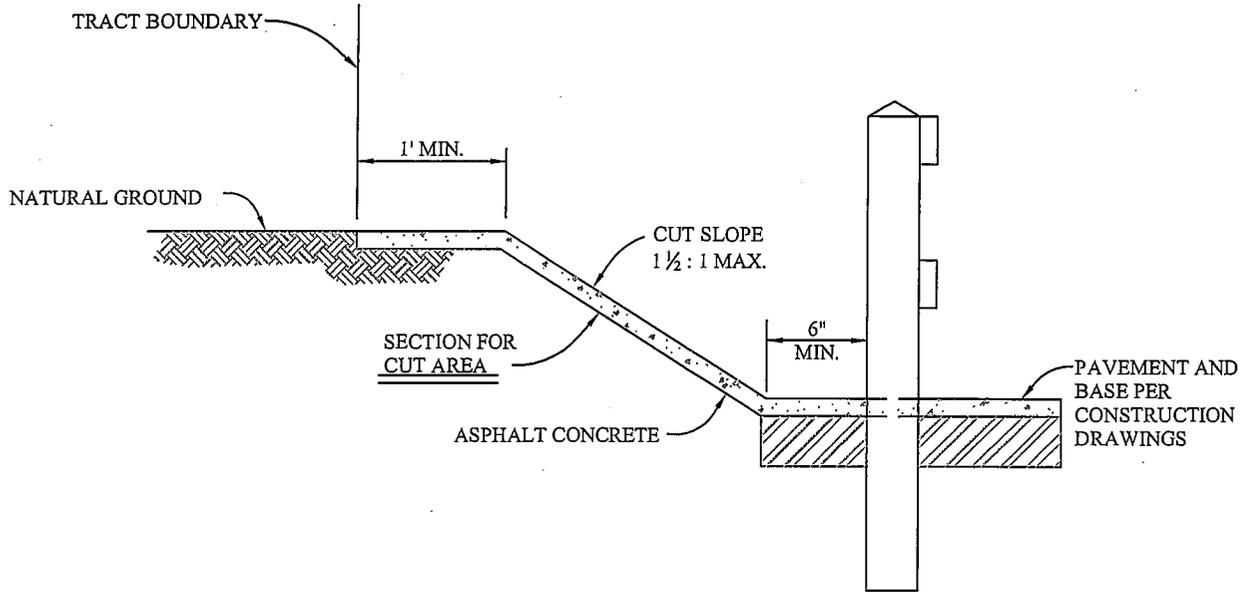
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DIRECTOR of PUBLIC WORKS

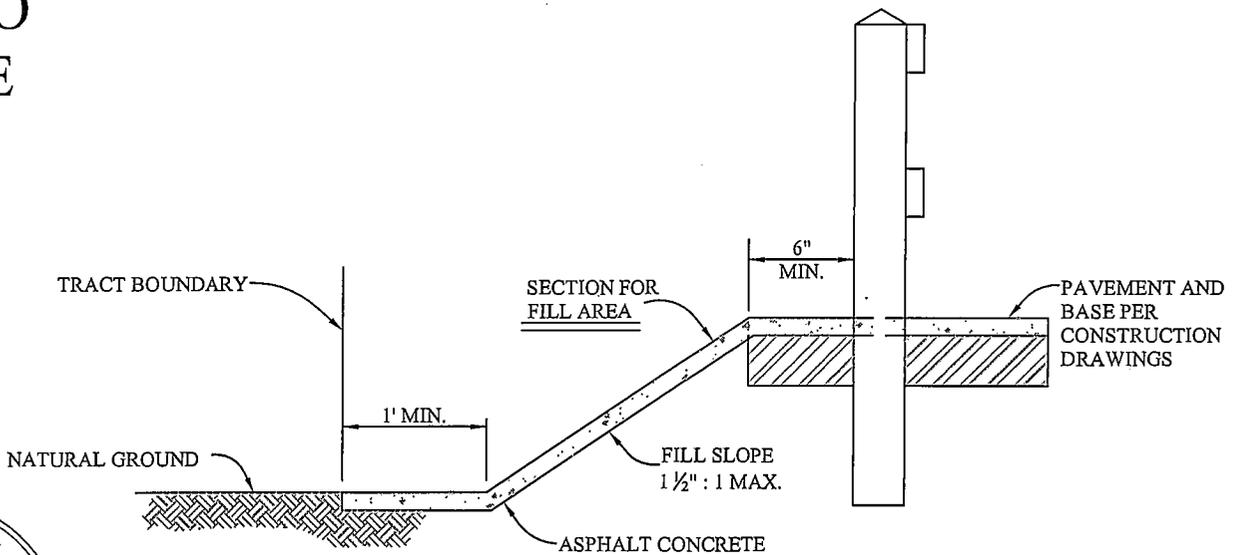
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			/ /	E.M.	449A



NOT TO  
SCALE



NOTE:

1. ASPHALT CONCRETE SHALL BE MINIMUM 3 INCH THICKNESS ON CUT OR FILL AREA.



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

END OF STREET  
TEMPORARY PAVEMENT

APPROVED BY:

*William S. Brunet*

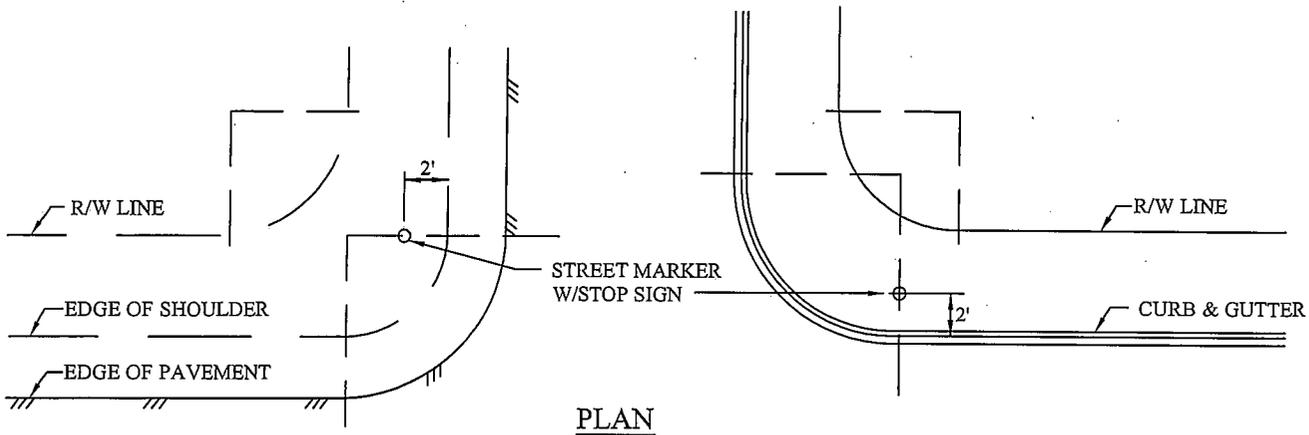
DATE: 11/6/08

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DIRECTOR of PUBLIC WORKS

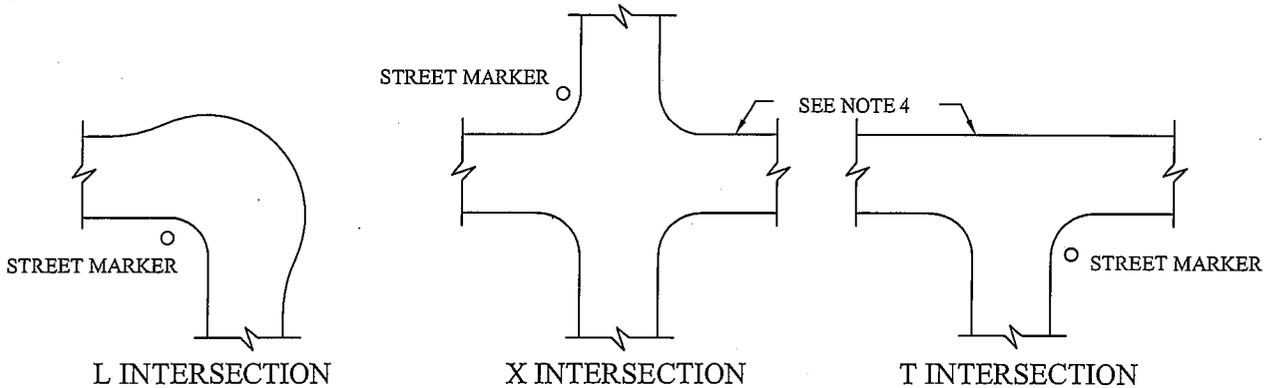
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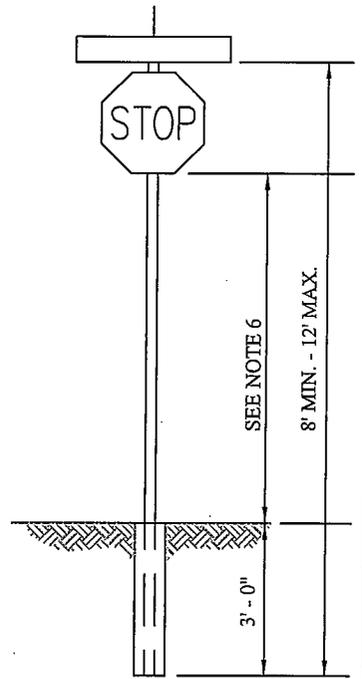
PLAN



TYPICAL LOCATION

NOTES:

1. MARKER TO BE SET WITHIN STREET RIGHT OF WAY.
2. LOCATION OF MARKER SHOWN IS APPROXIMATE.
3. MARKERS TO BE VISIBLE FOR A DISTANCE OF 150 FEET.
4. IF EITHER ROAD IS DIVIDED INTO 4 LANES OR MORE (MAJOR ROAD), ADDITIONAL MARKERS WILL BE REQUIRED.
5. STREET MARKERS LOCATED AT MAJOR INTERSECTIONS WILL BE MOUNTED ON 12 FOOT POSTS TO ACCOMMODATE A STOP SIGN.
6. IN RURAL AREAS THE BOTTOM OF THE LOWEST SIGN SHALL BE 5' ABOVE NATURAL GRADE. WHERE SIDEWALK EXISTS UNDER THE INSTALLED SIGN IT SHALL BE 7' FROM FINISH GRADE TO BOTTOM OF THE LOWEST SIGN.



ELEVATION



NOT TO SCALE



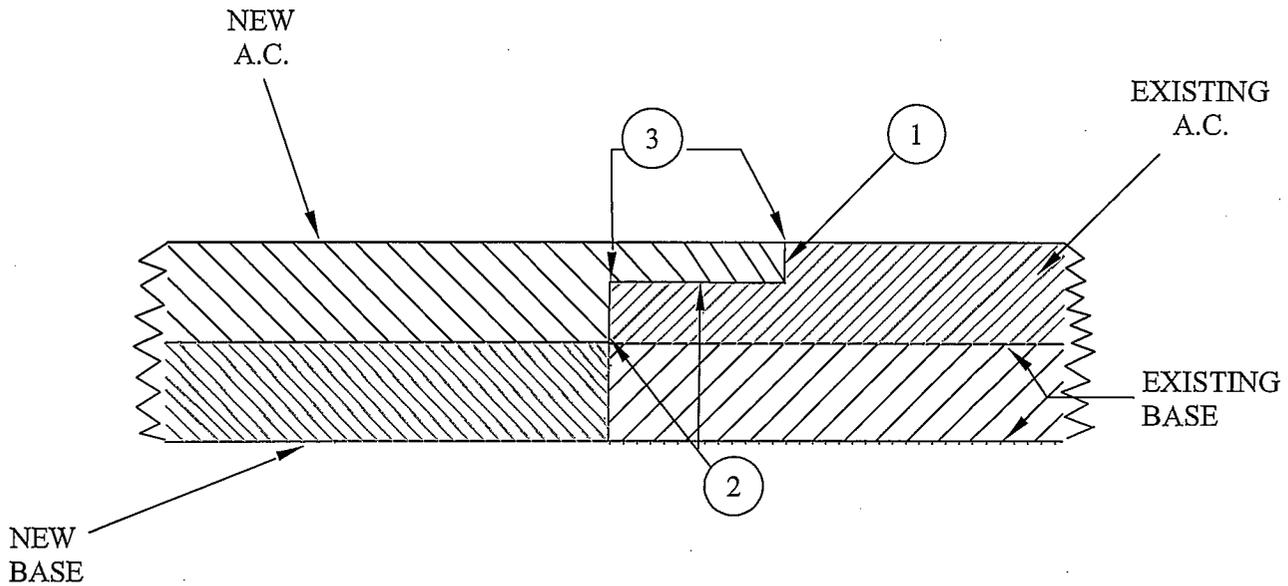
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DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

STREET MARKER

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/16/08

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			/ /	E.M.	DWG No.: 452



NOTES:

**NOT TO SCALE**

- ① GRIND 2' WIDE X 0.12' DEEP HEADER FULL LENGTH OF JOINT
- ② TACK COAT ENTIRE SURFACE WITH AR 1000 PAVING ASPHALT AT AN APPROXIMATE RATE OF 0.05 GALLON PER SQUARE YARD OR GRADE SS-1H EMULSIFIED ASPHALT AT AN APPROXIMATE RATE OF 0.05 TO 0.10 GALLON GALLON PER SQUARE YARD SHALL BE UNIFORMLY APPLIED UPON THE EXISTING PAVEMENT PRECEDING THE PLACEMENT OF THE ASPHALT CONCRETE. THE SURFACE SHALL BE FREE OF WATER, FOREIGN MATERIAL, OR DUST, WHEN THE TACKCOAT IS APPLIED.
- ③ OVERLAY HEADER AREA TO MATCH NEW & EXISTING A.C. SURFACES
- ④ WHERE PAVEMENT IS INSTALLED ON A PROJECT ON MORE THAN ONE DAY, A HEADER (AS HERE IN DESCRIBED) MUST BE PROVIDED AT THE CONSTRUCTION JOINT.



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**NEW CONSTRUCTION  
PAVEMENT EXTENSION  
JOINT**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

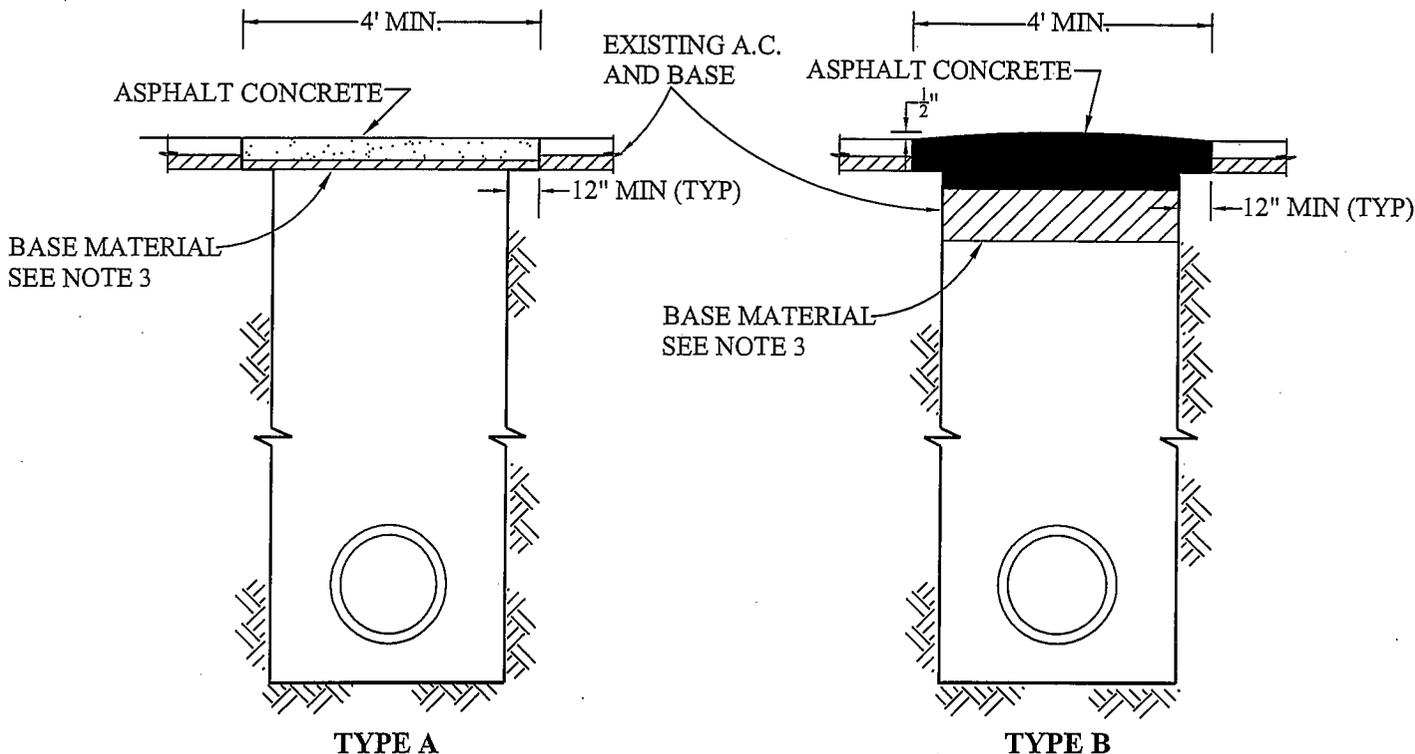
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APRD: DATE:

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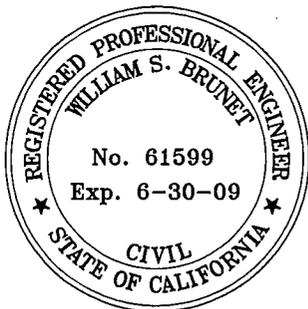


**LATERAL CROSSING ONLY**

**NOTE:**

1. THIS DETAIL APPLICABLE TO ALL TRENCHING WITHIN IMPROVED STREETS FOR ANY TYPE OF PIPE WITH COVER DEPTH GREATER OR EQUAL TO 30".
2. EXISTING A.C. SHALL BE SAWCUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL. ALTERNATIVELY GRIND 1" x 2" HEADER ON EACH SIDE OF THE TRENCH, 4' MINIMUM WIDTH.
3. BASE MATERIAL TO BE REPLACED TO DEPTH OF EXISTING BASE OR 12" MINIMUM WHICHEVER IS GREATER. A.C. MINIMUM DEPTH MAY BE SUBSTITUTED FOR BASE MATERIAL.
4. A TACK COAT OF ASPHALTIC EMULSION OR PAVING ASPHALT SHALL BE APPLIED TO EXISTING A.C. AT ALL CONTACT SURFACES, PRIOR TO RESURFACING.
5. ASPHALTIC CONCRETE RESURFACING:
  - A) MINIMUM TOTAL THICKNESS SHALL BE ONE INCH GREATER THAN EXISTING A.C. AND NO LESS THAN 4".
  - B) A.C. SHALL BE HOT PLANT MIX.
  - C) FINISH COURSE FOR TYPE B RESURFACING SHALL BE LAID DOWN USING A SPREADER BOX.
6. ALL A.C. RESURFACING SHALL BE SEAL COATED WITH AN EMULSIFIED ASPHALT AND COVERED WITH SAND. CHIP SEALING SHALL BE APPLIED AS REQUIRED BY AGENCY.
7. TYPE B NOT TO BE USED ON LATERAL CROSSINGS.
8. RESURFACING OF ROADWAY ON PORTIONS OF ROADWAYS MAY BE REQUIRED IN ENCROACHMENT PERMIT AT DISCRETION OF PUBLIC WORKS DIRECTOR.

**NOT TO SCALE**



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**TRENCH RESURFACING  
DETAILS**

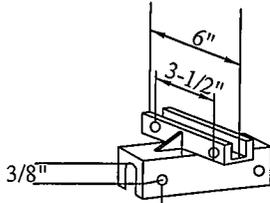
APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

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			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
			/ /	E.M.	505

**CROSSES AVAILABLE**

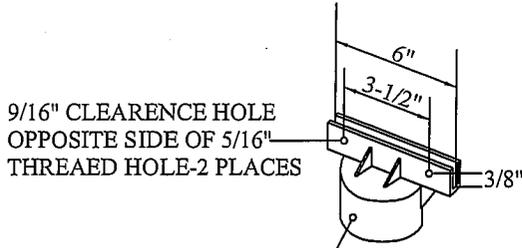
90°



9/16" CLEARANCE HOLE  
OPPOSITE SIDE OF 5/16"  
THREADED HOLE-4 PLACES

**CAPS AVAILABLE:**

- 2" (FOR 2 3/8" O.D. POST)
- U-CHANNEL CAP 180°
- U-CHANNEL CAP 90°



9/16" CLEARANCE HOLE  
OPPOSITE SIDE OF 5/16"  
THREADED HOLE-2 PLACES

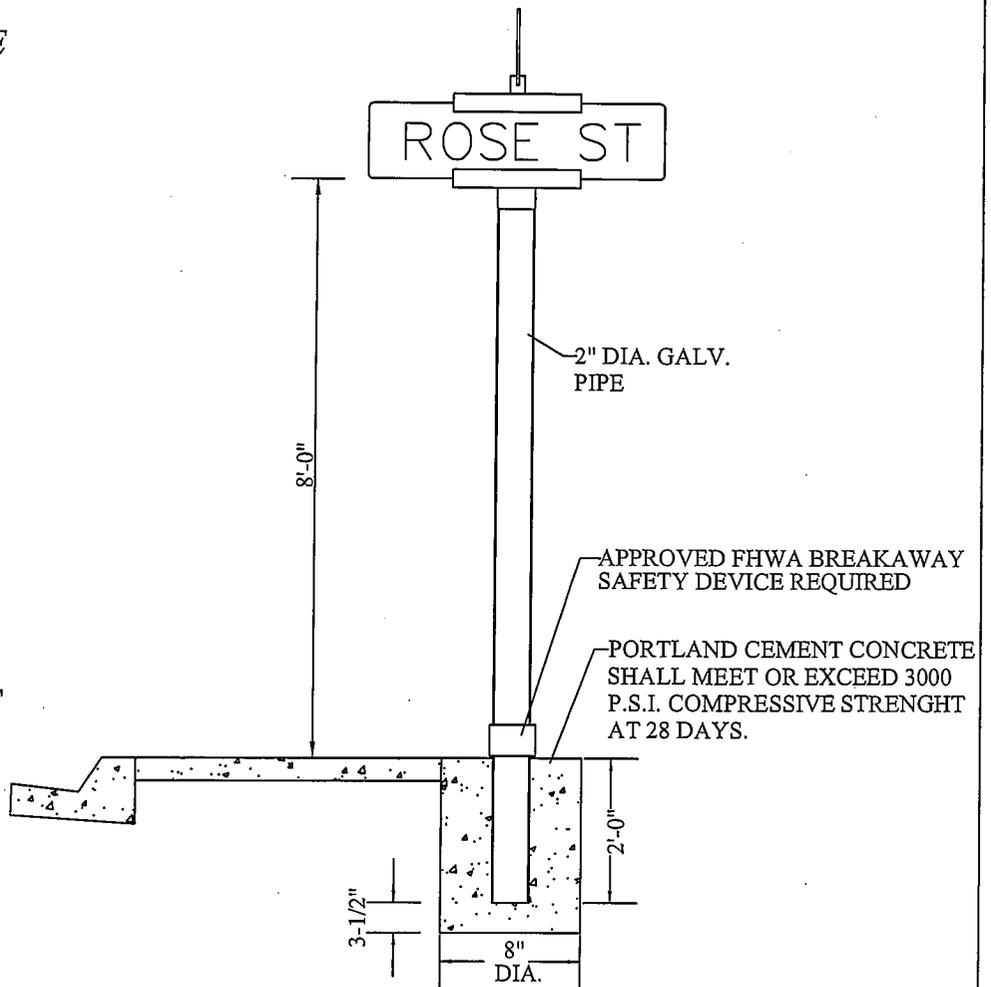
5/16" THREADED HOLE-3 PLACES

**HARDWARE AVAILABLE:**

- STANDARD SET SCREWS
- VANDAL PROOF (VP) SET SCREWS
- TS12 BOLTS AND SET SCREWS
- VANDAL PROOF BOLTS AND VP SET SCREWS

**NOTE:**

- SPECIAL MACHINING AVAILABLE
- O.D. (OUTSIDE DIAMETER OF POST)
- FOR SET SCREW APPLICATION 25-40 INCH POUNDS PRESSURE IS SUFFICIENT TO SECURE SIGN BLANK IN BRACKET.



**STREET SIGN NOTES:**

1. THE STREET NAME SHALL CONSIST OF THE SPECIFIED POST, STREET NAME SIGN AND MOUNTING COMPLETELY INSTALLED AND PAINTED PER COUNTY ENGINEER'S SPECIFICATION AND BRAND.
2. STREET NAME SIGN SHALL BE A DOUBLE FACED FLAT BLADE HIGH INTENSITY GRADE, REFLECTIVE SHEETING SIZE 9"x24".
3. WHITE LETTERS 6" HIGH, SHALL INCLUDE BLOCK NUMBER.
4. BACKGROUND MATERIAL SHALL BE PORCELAIN GREEN WITH REFLECTIVE LETTERS, AND BORDER.
5. BACKGROUND MATERIAL AND LETTERS SHALL BE APPLIED BY MECHANICAL APPLICATION.
6. POST SHALL BE 2" IRON PIPE, GALV., 10'-0" LONG WITH ONE END FINISHED TO RECEIVE MOUNTING FITTINGS.
7. SIGN SHALL BE INSTALLED AT THE APPROACHING STREET INTERSECTION'S BEGINNING OF CURB RETURN UNLESS OTHERWISE NOTED ON THE PLAN.



**NOT TO SCALE**



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**SUBDIVISION STREET NAME SIGN DETAIL**

APPROVED BY:

*William S. Brunet*

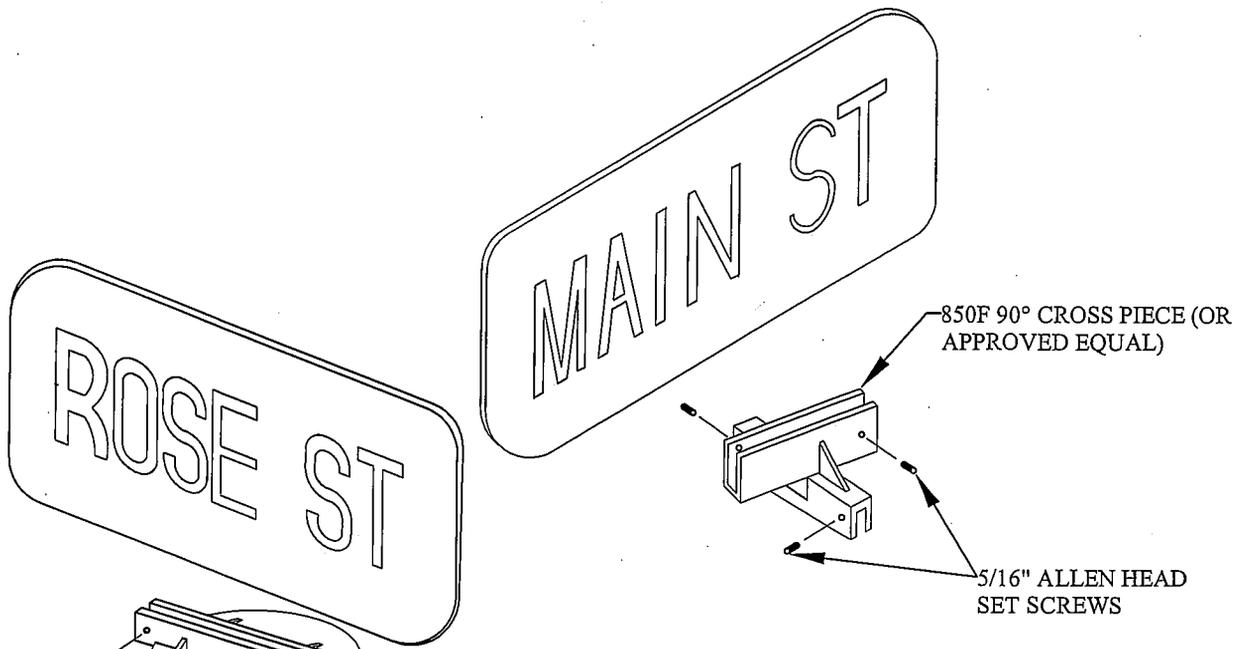
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

			/ /	CHECKED: F.F.	DATE: 08/29/08
			/ /	DRAWN: L.L.	DWG No.: 510A



606UC-F POST CAP  
(OR APPROVED EQUAL)

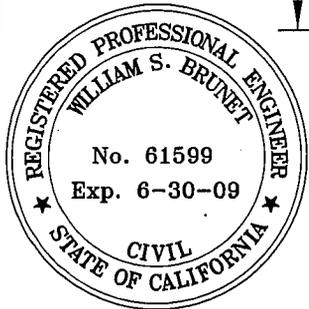
MACHINE SCREWS

GROUND

30" MIN.  
ENBEDMENT

**STREET SIGN NOTES:**

1. THE STREET NAME SHALL CONSIST OF THE SPECIFIED POST STREET NAME SIGN AND MOUNTING COMPLETELY INSTALLED AND PAINTED PER COUNTY ENGINEER'S SPECIFICATIONS AND BRAND.
2. STREET NAME SIGN SHALL BE A DOUBLE FACED FLAT BLADE, HIGH INTENSITY GRADE, REFLECTIVE SHEETING SIZE 9"x24".
3. WHITE LETTERS 6" HIGH, SHALL INCLUDE BLOCK NUMBER.
4. BACKGROUND MATERIAL SHALL BE PORCELAIN GREEN WITH REFLECTIVE LETTERS, AND BORDER.
5. BACKGROUND MATERIAL AND LETTERS SHALL BE APPLIED BY MECHANICAL APPLICATION.
6. POST SHALL BE "U" CHANNEL POST, GALVANIZED HOT ROLLED HI-CARBON STEEL 3LB/LF. THE HOLES ARE 3/8" PUNCHED 1" OC APPROXIMATE HALF THE LENGTH; 10' LENGTH.
7. SIGN SHALL BE INSTALLED AT THE APPROACHING STREET INTERSECTION'S BEGINNING OF CURB RETURN UNLESS OTHERWISE NOTED ON THE PLAN.
8. 4" "U" CHANNEL POST EXTENSIONS ARE REQUIRED; 2-1/2 LB/LF MINIMUM.
9. FHWA APPROVED BREAKAWAY SAFETY DEVICE REQUIRED.



**NOT TO  
SCALE**



**COUNTY of IMPERIAL**

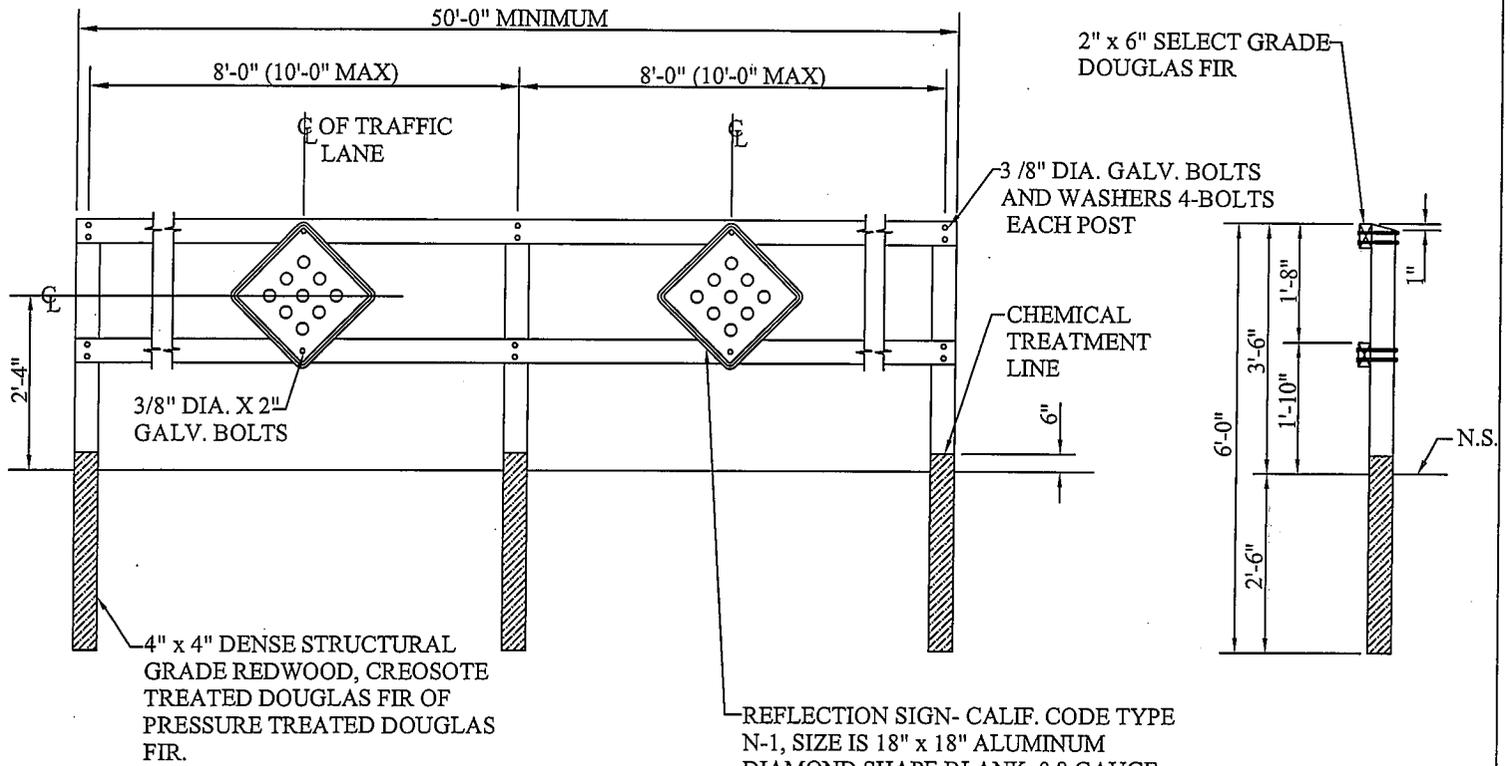
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**RURAL COUNTY STREET  
NAME SIGN DETAIL**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
			/ /	L.L.	510B



FRONT VIEW

END VIEW

NOTE: PAINT ALL EXPOSED WOOD SURFACE WITH 2 COATS OF EXTERIOR WHITE ENAMEL

REFLECTION SIGN- CALIF. CODE TYPE N-1, SIZE IS 18" x 18" ALUMINUM DIAMOND SHAPE BLANK, 0.8 GAUGE THICK W/ SCOTCH LITE OR ANY EQUIVALEND BRAND (STATE APPROVED ONLY). SIGN SURFACE SHALL BE FULLY REFLECTIVE YELLOW FACE W/ 1/2" BLACK BORDER RECESS 1/4" FROM EDGE OF METAL BLANK.



NOT TO SCALE



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**BARRICADE DETAIL**

APPROVED BY:

*William S. Brunet*

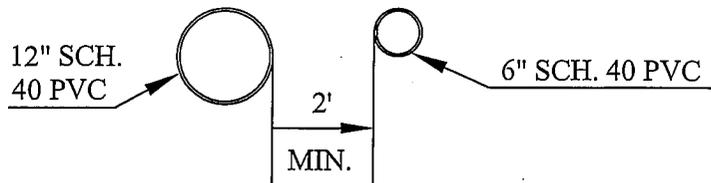
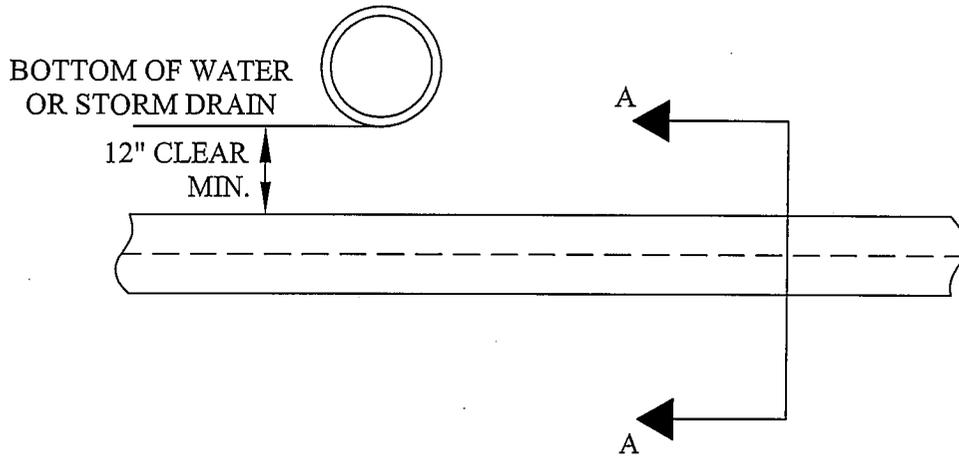
DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

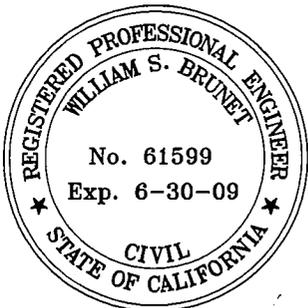
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			/ /	DRAWN: L.L.	DWG No.: 515



**SECTION A-A**

**BACKFILL PER TRENCH DETAIL**

**NOT TO SCALE**



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**UTILITY SLEEVE DETAIL**

APPROVED BY:

*William S. Brunet*

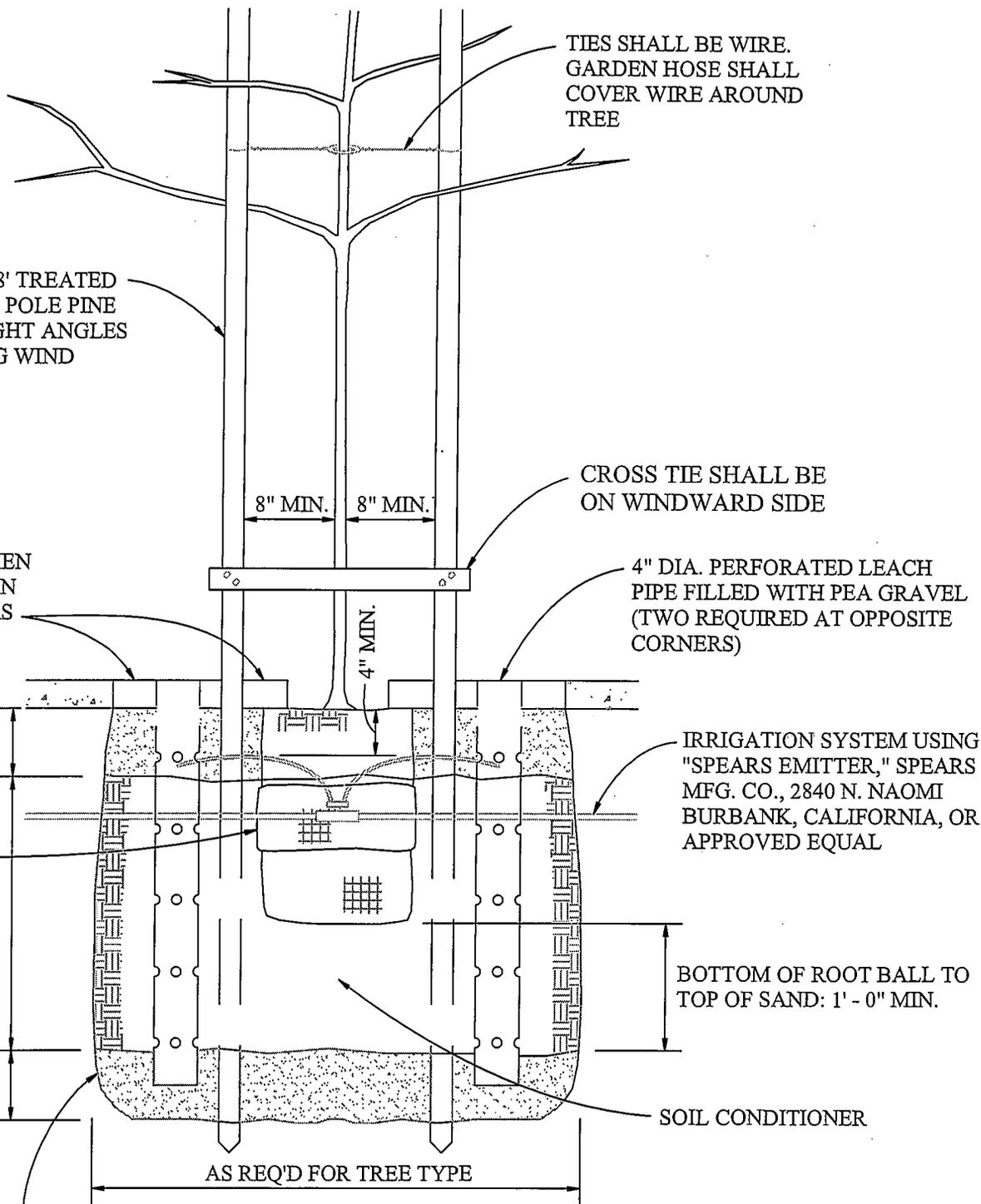
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DIRECTOR of PUBLIC WORKS

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BY: APR'D: DATE:

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	DWG No.: 520



TWO 2" DIA. x 8' TREATED ROUND LODGE POLE PINE PLACED AT RIGHT ANGLES TO PREVAILING WIND

TIES SHALL BE WIRE. GARDEN HOSE SHALL COVER WIRE AROUND TREE

8" MIN. 8" MIN.

CROSS TIE SHALL BE ON WINDWARD SIDE

BRICKS REQUIRED WHEN TREES ARE LOCATED IN HEAVY TRAFFIC AREAS

4" DIA. PERFORATED LEACH PIPE FILLED WITH PEA GRAVEL (TWO REQUIRED AT OPPOSITE CORNERS)

6" SAND LAYER

REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL

IRRIGATION SYSTEM USING "SPEARS EMITTER," SPEARS MFG. CO., 2840 N. NAOMI BURBANK, CALIFORNIA, OR APPROVED EQUAL

TOP SOIL BACKFILL

BOTTOM OF ROOT BALL TO TOP OF SAND: 1' - 0" MIN.

6" MINIMUM SAND LAYER

SOIL CONDITIONER

AS REQ'D FOR TREE TYPE

SUBSOIL TO BE BROKEN UP WITH A PICK. SAND SHALL BE PLACED TO A DEPTH NECESSARY FOR GOOD DRAINAGE

NOT TO SCALE



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS

EL CENTRO, CALIFORNIA

STREET TREE STANDARD PLANTING

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APR'D: DATE:

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			/ /

CHECKED: F.F.

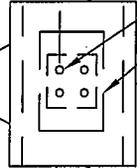
DATE: 08/29/08

DRAWN: E.M.

DWG No.: 526

NOTE: MAILBOX LOCATION, FOUNDATION, ANCHOR BOLTS, AND BOLT HOLES, SHALL CONFORM TO SPECIFICATIONS FURNISHED BY THE POST-MASTER

NEW OR EXISTING CURB & GUTTER



ANCHOR BOLTS  
FOUNDATION

MULTIPLE MAILBOX TO BE FURNISHED BY U.S. POSTAL SERVICE.

NOT TO SCALE



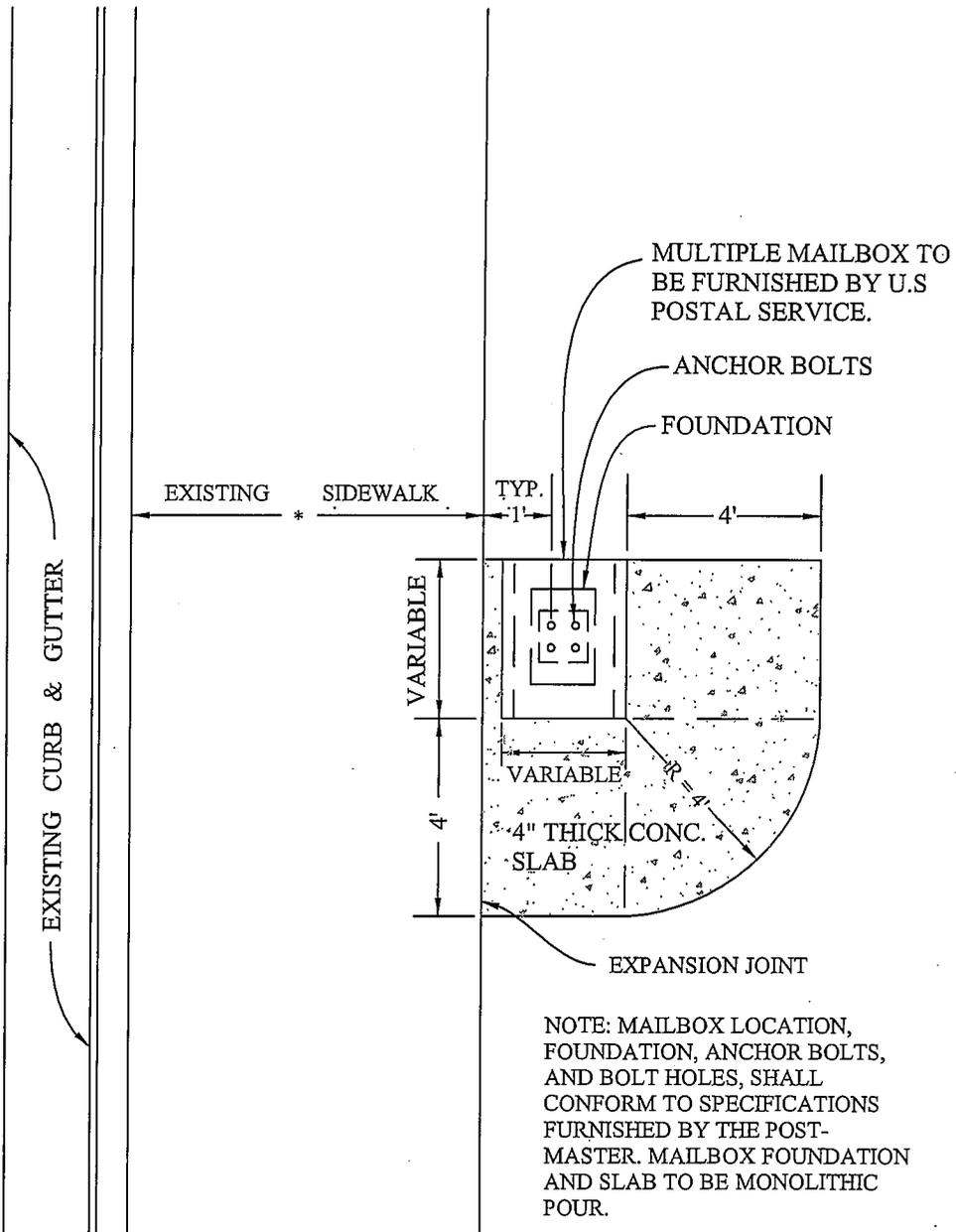
IMPERIAL COUNTY  
**COUNTY of IMPERIAL**  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**MULTIPLE MAILBOX  
 INSTALLATION FOR  
 NEW SIDEWALK**

APPROVED BY:  
*William S. Brunet*  
 WILLIAM S. BRUNET, P.E.  
 DIRECTOR of PUBLIC WORKS

DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
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			/ /	E.M.	DWG No.: 527A



NOT TO SCALE



COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

MULTIPLE MAILBOX  
INSTALLATION FOR  
EXISTING SIDEWALK

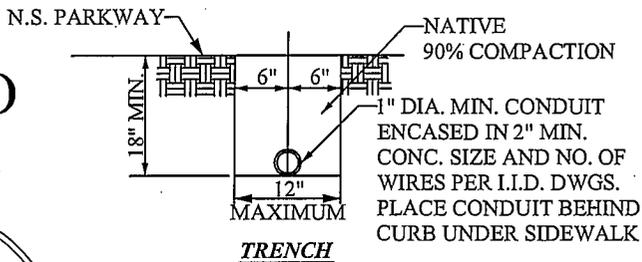
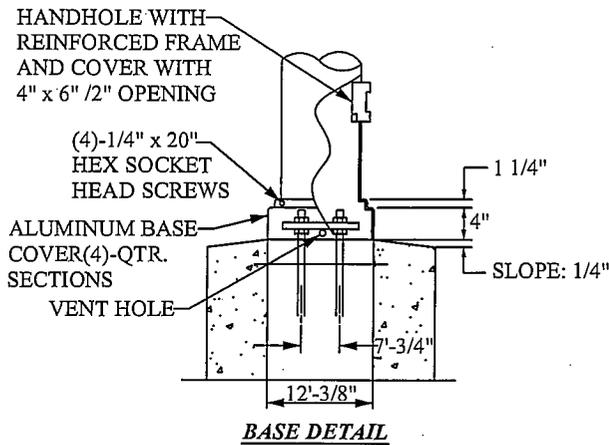
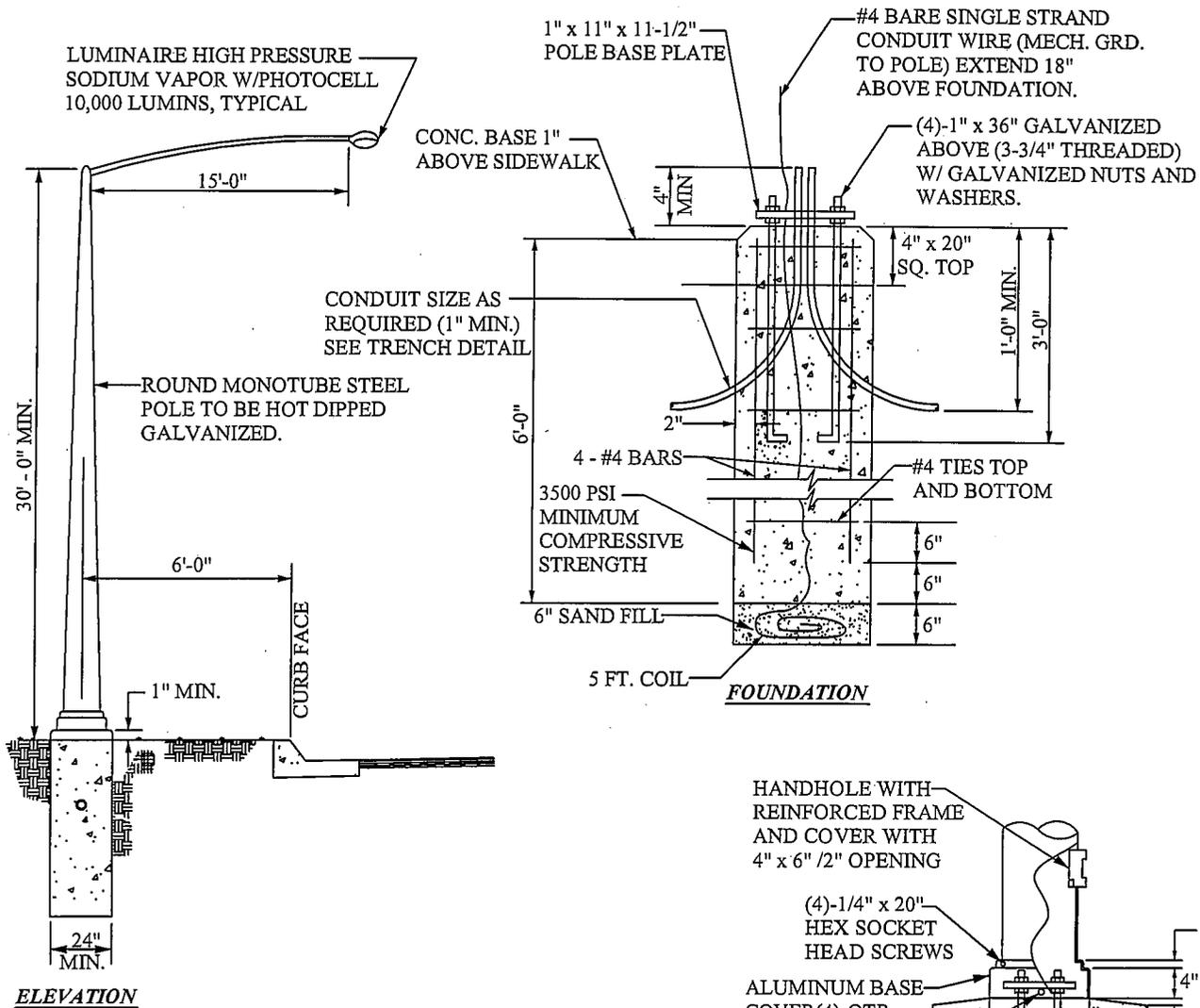
APPROVED BY:

*William S. Brunet* DATE: 11/6/08  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

BY: APRD: DATE:

REVISIONS	BY:	APRD:	DATE:	CHECKED:	DATE:
			/ /	F.F.	09/14/07
			/ /	E.M.	DWG No.: 527B



**NOT TO SCALE**



**NOTE:**

1. 250 WATTS LUMINARIE @ STREET INTERSECTIONS OR IN FRONT OF INTERSECTION & 100 WATTS @ OTHER LOCATIONS.
2. #4 TIES TO BE @12" MIN. SEPARATION FROM TP TO BOTTOM. SIDEWALL REBAR TO BE 2" OR MORE FROM EXCAVATION WALLS AND BOTTOM.

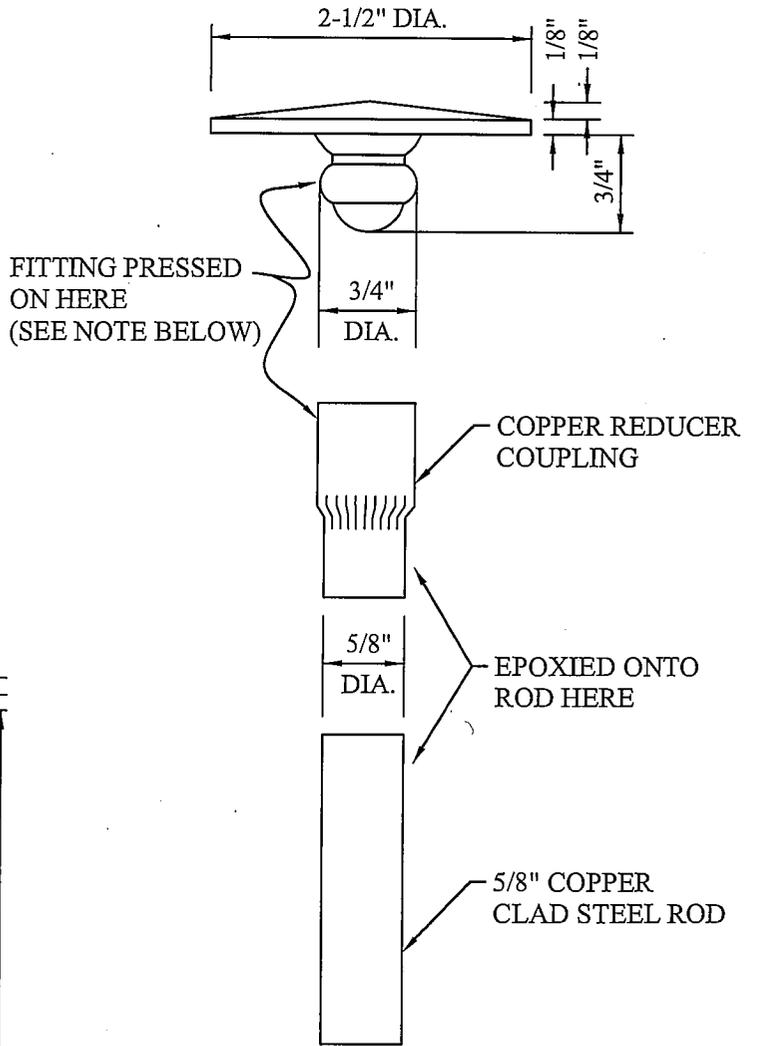
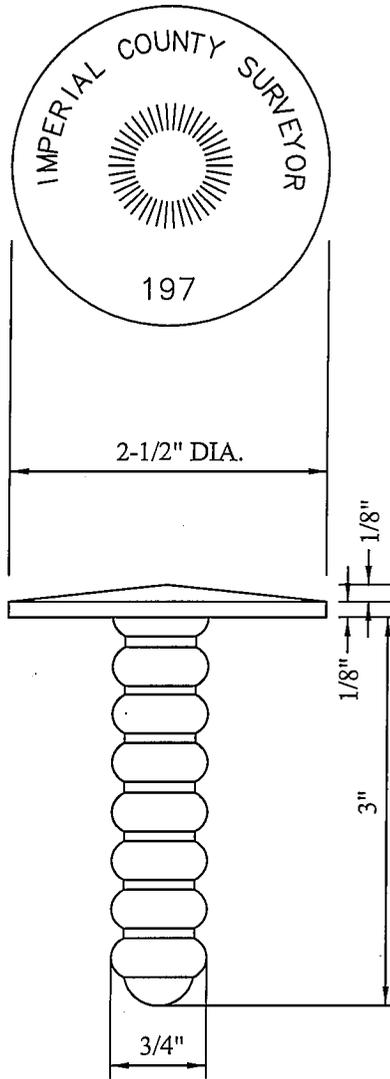


**COUNTY of IMPERIAL**  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**STREET LIGHT**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

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			/ /	F.F.	08/29/08
			/ /	L.L.	DWG No.: 610



NOT TO SCALE



NOTE:  
OTHER METHODS OF ATTACHING THE 2-1/2" DIAM. DISK TO THE 5/8" COPPER CLAD STEEL ROD MAY BE USED BY THE APPROVAL OF THE COUNTY SURVEYOR.



COUNTY of IMPERIAL

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

CAST BRONZE BENCH MARK

APPROVED BY:

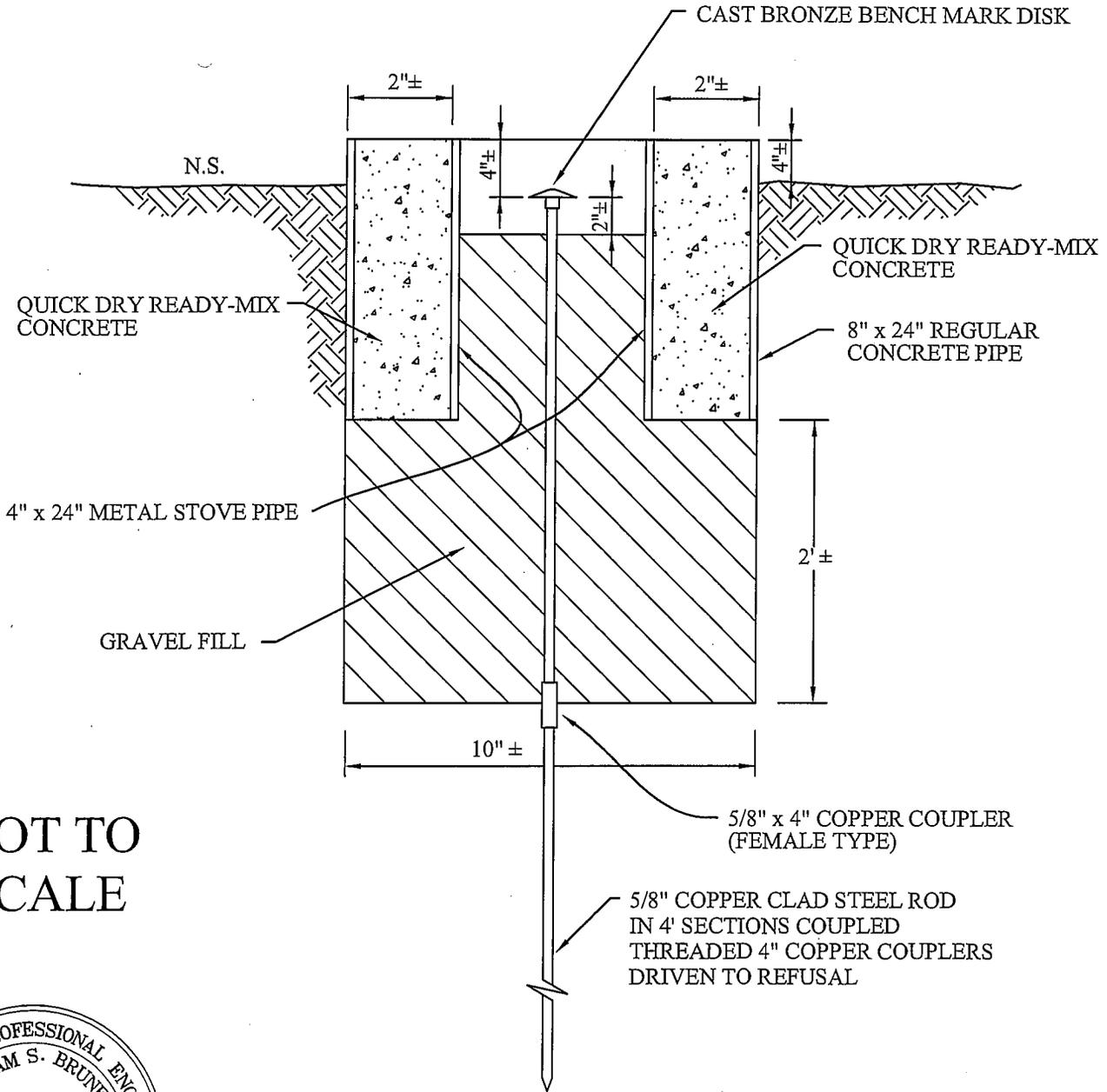
*William S. Brunet* DATE: 11/6/08

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DIRECTOR of PUBLIC WORKS

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**NOT TO  
SCALE**



**COUNTY of IMPERIAL**

DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**DEEP ROD BENCHMARK**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS

REVISIONS

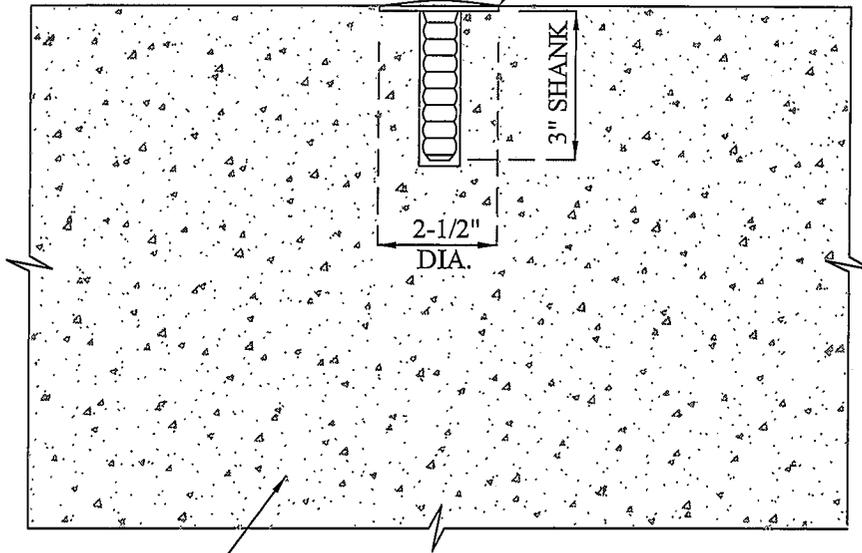
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DRAWN: J.S.	DWG No.: 701

CAST BRONZE BENCH MARK DISK  
 SET INTO DRILLED HOLE WITH  
 QUICK DRYING CEMENT SUCH  
 AS "POURSTONE" OR EQUAL.

UPPER DISK EDGE TO BE FLUSH  
 WITH EXISTING CONCRETE  
 STRUCTURE SURFACE



EXISTING CONCRETE STRUCTURE

NOT TO  
 SCALE



COUNTY of IMPERIAL  
 DEPARTMENT of PUBLIC WORKS  
 EL CENTRO, CALIFORNIA

**BENCH MARK SET IN  
 EXISTING CONCRETE  
 STRUCTURE**

APPROVED BY:

*William S. Brunet*

DATE: 11/6/08

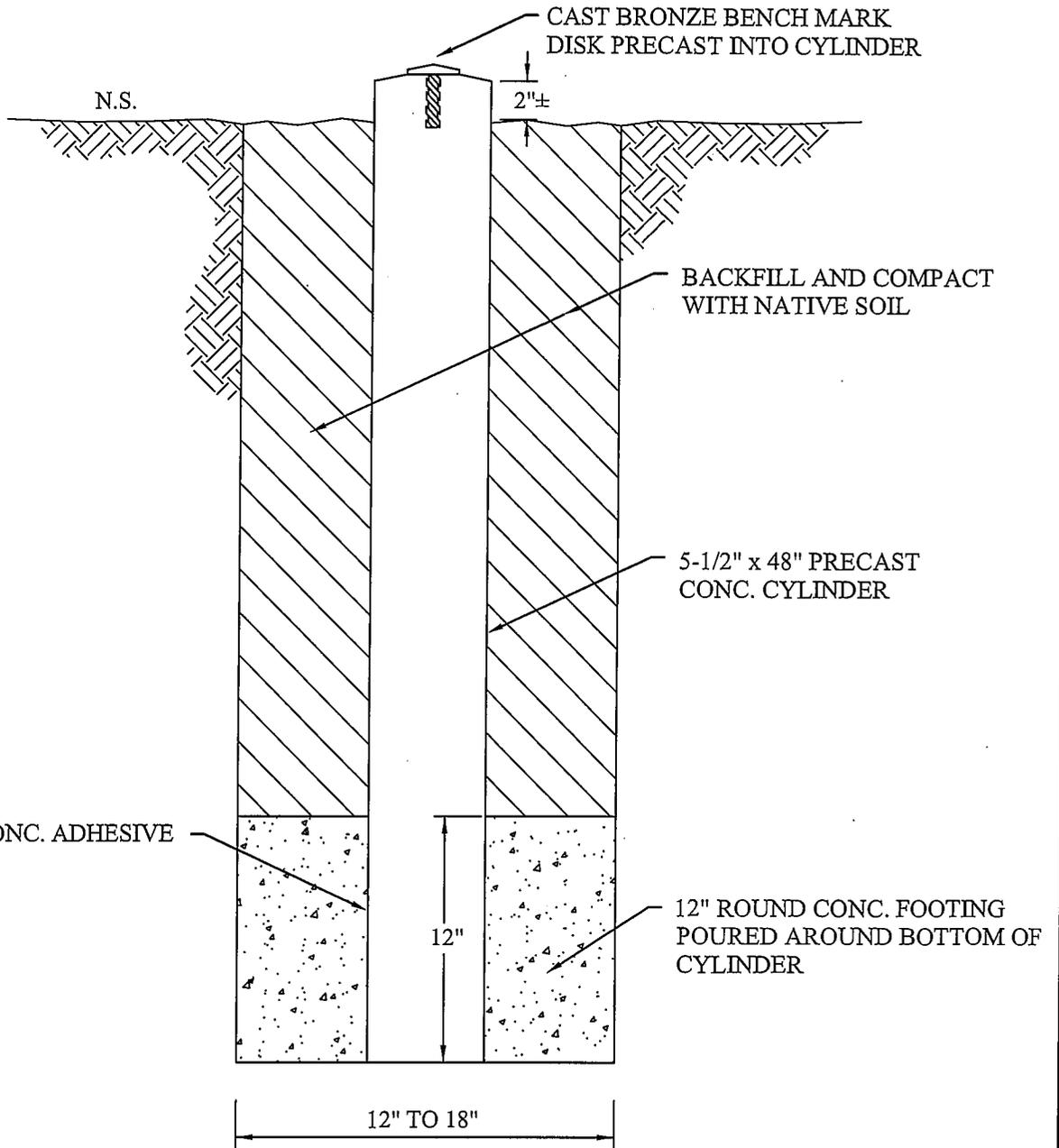
WILLIAM S. BRUNET, P.E.  
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			/ /

CHECKED: F.F.	DATE: 10/21/08
DRAWN: J.S.	DWG No.: 702



NOT TO SCALE



COUNTY of IMPERIAL  
DEPARTMENT of PUBLIC WORKS  
EL CENTRO, CALIFORNIA

**PRECAST CONCRETE  
BENCH MARK**

APPROVED BY:  
*William S. Brunet*  
WILLIAM S. BRUNET, P.E.  
DIRECTOR of PUBLIC WORKS  
DATE: 11/6/08

REVISIONS	BY:	APR'D:	DATE:	CHECKED:	DATE:
			/ /	F.F.	08/29/08
			/ /	DRAWN:	DWG No.:
			/ /	J.S.	703



**COUNTY OF IMPERIAL  
DEPARTMENT OF PUBLIC WORKS**



**“THE GATEWAY OF THE AMERICAS  
SPECIFIC PLAN AREA” CSA  
SPECIAL REQUIREMENTS – ATTACHMENT C**

**Updated August 18, 2008**

# FOREWORD

## **Purpose**

The Department of Public Works (DPW), under the direction of the Imperial County Road Commissioner, has prepared these special requirements. They establish a supplement of special requirements specifically for use within the “Gateway of the Americas Specific Plan Area” CSA.

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<b>VII. Gateway Standard Drawings</b>	



## **I. Introduction**

The Gateway of the Americas Specific Plan Area (“Gateway”) is comprised of private property ownerships as well as those controlled by Federal, State, and local agencies. The Gateway is located adjacent to the International Boundary approximately 6 miles east of the City of Calexico. The planning area includes approximately 1,775 gross acres which are bounded on the west by the Ash Canal, on the north by a line parallel to and approximately one-quarter mile north of the centerline of State Route (SR) 98, on the east by the west bank of the Alamo River and on the south by the northern right-of-way of the All American Canal.

The “Gateway” surrounds the new 87-acre International Port of Entry (POE) on the U.S. side of the border. This Federal facility will ultimately be the largest land crossing located along the 2,000-mile Republic of Mexico/United State border. The POE was completed and became fully operational on December 2, 1996.

The “Gateway” is designed to support and maximize the economic benefits associated with the POE and the international commerce that it encourages. The “Gateway” is a very unique area because of its location adjacent to the international border and the POE, its direct access to Mexico, and its abundance of large tracts of readily developable land. The “Gateway” has the potential of becoming a major industrial/commercial center for Imperial County and the southwestern United States.

Gateway of the Americas is designed as a master-planned industrial and commercial complex consisting of 1,570 gross developable acres in private ownership. It is intended to provide for a full range of industrial uses, emphasizing base-sector manufacturing and also including wholesaling and distribution, assembly operations, transportation infrastructure and related support services, including retail commercial. All or part of the Specific Plan area may be designated a Foreign Trade Zone. With potential rail access and because of its strategic location adjacent to the Port of Entry, it has an exceptional marketing presence and draw for Imperial Valley.

The site was designated a Specific Plan Area (East Border Crossing SPA) by the County’s Board of Supervisors on November 9, 1993 as part of an overall update of Imperial County’s General Plan. It is suggested that the Design Engineer review the Gateway Specific Plan for additional information that he may find useful in preparing projects for County approval.

In order to better serve the private development needs of the region, the Public Works Department has several consulting firms to provide expeditious plan checking to ensure private development projects meet current County standards. This supplement of special requirements for the “Gateway Specific Plan Area” CSA also serves to ensure plan check reviews are done in a consistent manner so that all private development projects are reviewed consistently.

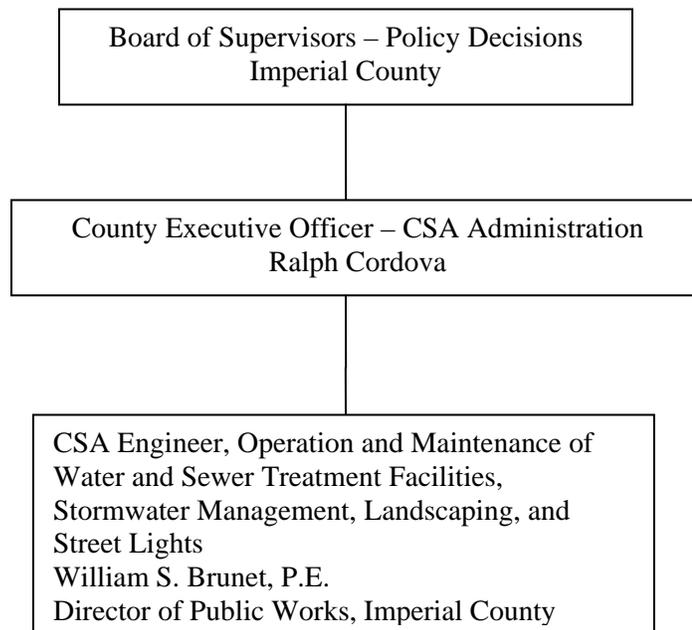
## **IA.- Gateway SPA Development Responsibilities**

1. Contact County Planning Department  
Jurg Heuberger, Director County Planning
  - Pre-application Meeting
  - Site Plan Review
  - Coordination with CSA & Other County Departments
  - Conditions on Project
  
2. Contact County Public Works Department
  - Conditions on Project
  - Submit plans for approval
  - Obtain Encroachment Permit (Public Works and CSA)
  - Traffic Mitigation and Other Gateway CSA Fees
  
3. Construct
  - Comply with approved plans
  - Comply with encroachment permit(s)
  - Comply with Conditions of Approval for project

## **IB. - Gateway County Service Area (CSA) Structure**

The Gateway of the Americas County Service Area was established by resolution of the County of Imperial Board of Supervisors on November 18, 1997. The Gateway CSA was formed to provide an entity that will be responsible for the management, construction and operation of public facilities and infrastructure in the area, and was established under the provisions of Title 3, Division 2, Part 2, of Chapter 3, of the Government Code (commencing with Section 25210.10 et. seq.)

The following organizational chart depicts the primary responsibilities of all key personnel involved with management and operation of the CSA.



1. The County of Imperial Board of Supervisors will make policy decisions regarding the management of the Gateway CSA. The County’s Executive Officer, Mr. Ralph Cordova will be responsible for carrying out the Board policies and for overseeing the administration of the Gateway CSA.
2. The County of Imperial contracts out the management of the operations of the public water and sewer system to the management firm Water Treatment Services of Seeley, CA. Specifically, Mr. Rocky Vandergriff will be the manager in charge of the day-to-day operations.
3. The CSA Engineer is the County Director of Public Works, William S. Brunet.

**IC. OTHER DOCUMENTS AND STANDARDS**

The following documents are referred to in this manual or may be applicable and are on file in the Office of the Public Works Director. References are to current editions unless specified otherwise.

1. **Gateway of the Americas Specific Plan**

## **II. STREET IMPROVEMENTS**

## II A. GENERAL REQUIREMENTS

1. These requirements shall apply to all Public Works development projects within the County of Imperial Gateway Specific Plan Area, which are subject to review and approval by the County Engineer/Road Commissioner.
2. All plans, specifications and supporting documents shall be signed and sealed by the Engineer of Work prior to the County Engineer's approval as per the Professional Engineer's and Land Surveyors Act. Prior to County Engineer's approval of plans involving water, sewer, storm drain, lighting and fire services, approval must be obtained from the CSA Engineer and the County Fire Department as applicable. Currently, CSA Engineer is the County Engineer.
3. Payments of a Traffic Mitigation Fee as well as other CSA fees are required for all Gateway SPA projects. For further details see Section II M elsewhere in this manual.

## II B. TITLE SHEET

A typical Title Sheet of a set of improvement plans include the following in addition to those in the Engineering Guidelines Manual:

- Gateway County Service Area (CSA) title/signature block
- CSA Water and Sewer Notes (if applicable)

## II C. IMPROVEMENT SHEETS

A typical improvement plan sheet includes the following:

- a) Plan View – See Engineering Guidelines Manual
- b) **PROFILE** – See Engineering Guidelines Manual

## II D. SAMPLE LETTERS AND PLAN DECLARATIONS REQUIRED – See Engineering Guidelines Manual

## II E. STREET IMPROVEMENT GENERAL NOTES

1. UTILITIES COORDINATION – Include Reference to:

GATEWAY CSA (PUBLIC WORKS) (760) 482-4462

## II F. STREET CLASSIFICATIONS

The Gateway SPA has six (6) typical street cross-sections for four (4) typical road classifications. Although typical, changes in right-of-way requirements may be needed and requested by the Director of Public Works to accommodate special circumstances or conditions. This can include but not be limited to accommodate future medians, turn lanes, bicycle lanes, bus turnouts, slopes, drainage structures on street parking and/or other required improvements.

Gateway street classifications are shown in Section VI, "Gateway Standard Drawings".

**II G. STREET STRUCTURAL SECTION**

The minimum structural section within the Gateway SPA shall conform to the following table unless a project soils report, based on soil type and the highest traffic index (TI) expected to occur during a 20 year period following construction indicates a thicker section is required. The TI value must be approved by the Director.

Street	Classification	Structural Section
102' Right of Way	(Gateway Major Arterial)	5.5" AC over 12" AB
84' Right of Way	(Gateway Collector/Secondary Arterial)	4.5" AC over 12" AB
70' Right of Way	(Gateway Local/Industrial)	4.0" AC over 11" AB

Note: AB indicates Class 2 Aggregate Base

**Interim Phase 1 Improvements:**

Portions of existing infrastructure provided an interim paving section that requires an overlay or resurfacing over the existing roadway as well as addition of lanes as needed when development occurs. These include portions of Carr Road, Rood Road, Menvielle Road, Maggio Road and Gateway (Nassif) Road. The resurfacing thickness shall conform to the following table:

Street	Required Resurfacing
102'-112' Right of Way	2 ½ inches AC
84'-96' Right of Way	1 ½ inches AC

Responsibility for the additional resurfacing lies with the fronting project owner and shall be provided when requested by the Public Works Director. For additional information, refer to "Gateway of the Americas: Phase I Infrastructure Plans", approved by the County February 10, 1999. Plans prepared by Project Design Consultants (PDC).

Gateway Street Structural Section is also shown on Section VI, "Gateway Standard Drawings".

**II H. ENCROACHMENT PERMITS**

An encroachment permit is required from the County Public Works Department for any work onto, into or within the County road or street right of way. This includes placement of curbs, gutters, and sidewalks, above and below ground storm drains, utilities and appurtenances within right-of-way. The adjacent property owner is responsible for maintenance of the frontage sidewalk and all driveways. The Gateway County Service Area (CSA) is responsible for maintenance of street lighting, traffic signals, public water, sewer and storm drain lines, associated appurtenances and retention basins. The County Public Works Department is responsible for street maintenance, including striping, signing, curb and gutters after construction by developer.

In some areas of the Gateway SPA existing infrastructure improvements may not have curb, gutter and sidewalk and may only have minimal paving. The developer will be required to provide curb, gutter, sidewalk and paving improvements for full width along the project frontage. Also, some areas of the Gateway SPA will require an overlay to bring the structural section to the original design recommendation. This is discussed in Section II G above.

Details of items needed to process an encroachment permit can be obtained from the Department of Public Works. Basic requirements include:

1. Approved Plans. Plans may require approval from the County Planning and Building Department, Environmental Health Service Department ( if applicable), County Fire Department and CSA as applicable and approval from the County Department of Public Works.
2. Detailed Quantity Estimate of all encroachments within County road right of way. This includes surface improvements and underground utility pipelines and appurtenances.
3. Hold Harmless Agreement and proof of liability insurance with the County listed as additionally insured.

All provisions of a County Encroachment Permit shall govern and supercede any conflicting positions of the approved Plans & Specifications unless otherwise determined by the Director of Public Works.

See Section IC and Attachment ‘A’, “Required Checklists” elsewhere in this manual.

## II I. **STREET IMPROVEMENT SPECIFICATIONS**

Aggregate for Class 2 Aggregate base shall be 1 ½” maximum or at option of the Contractor, ¾” maximum. No Class 2 Aggregate Base utilizing recycled materials will be permitted in the Gateway SPA. All Class 2 Aggregate base shall also comply with the following:

1. A Certificate of Compliance shall be provided to the Engineer prior to use ensuring the Class 2 Aggregate Base Material complies with the provisions of Section 26 of the Standard Specifications.
2. Class 2 Aggregate Base Material for use in this project shall be tested by the contractor at his expense prior to approval for use on the project site by the engineer. Stockpile locations shall also be made available to the engineer to perform his own independent testing. Testing by the contractor shall include R-value, sand equivalent and durability index tests as per the standard Specifications.

Any base material that does not comply with the provisions for testing, gradation, compaction or any other requirement in Section 26 of the Standard Specification or these special provisions shall not be used and if already in place shall be removed by the contractor at his sole expense. Under no circumstances will any material not meeting these specifications be permitted to remain in place.

Concrete Sidewalk – to be added

Concrete Driveways – to be added

Underground Pipe Materials –

1. No HDPE pipe is permitted within public road right-of-way within the Gateway CSA.

## II J. **MISCELLANEOUS STANDARDS**

1. Roadway lighting
  - a. All developments shall provide street lighting as required by the County CSA and/or the Director of Public Works. Additionally all street lighting electrical appurtenances shall have Imperial Irrigation District (IID) written approvals.
2. Intersections – to be added

## II K. TRAFFIC MITIGATION AND OTHER CSA FEES

A traffic mitigation fee for the Gateway of the Americas Specific Plan No. 97-0001 was adopted September 25, 2001. According to the Environmental Impact Report (EIR) for the Specific Plan, the Gateway Project will eventually affect traffic circulation in a number of locations outside the project boundary. Both documents anticipated the need for the significant number of offsite improvements to mitigate traffic issues raised during the environmental review. The traffic mitigation fee is a result and will provide a long term funding mechanism for the required transportation related improvements. At adoption in 1002, the fee was determined to be \$70 per ADT generated by each project. The County Public Works Department collects this fee prior to the Planning Department issuance of building permits.

The fee is updated on a yearly basis using the Engineering News Building Cost Index (BCI) on July 1 of each year. The Director of Public Works adjusts said fee and the developer should contact the Public Works Department to see what the actual fee is at the time of development. Current Department Policy requires use of “Guide of Vehicular Traffic Generation Rates of San Diego Region” most current edition by SANDAG for ADT calculation. This will be considered the minimal acceptable ADT to be used for the traffic mitigation fee. If another, acceptable source is used for a project, including a traffic study it will need to be compared with the SANDAG table. Whichever yield a higher ADT will be used. All ADT’s are rounded up to nearest 0.5 ADT.

The Public Works Department will not assess a probable mix or calculate the percentage of mixed uses in a building. It is the Developer’s responsibility to provide a proposed Traffic Mitigation Fee Calculation based on the building usage. If the Building Department assesses building permit fees on mixed uses or some other format, Public Works will then evaluate the request with the Director of the Planning and Building Department.

### Example Traffic Mitigation Fee Calculation

1. Warehousing usage
2. From SANDAG trip generation table, 5 ADT/1000 sq. ft.
3. Building size 50,000 S.F.
4. Fee =  $\$70^* \times 5/1000 \times 50,000 = \underline{\$17,500}$

\* - Use current unit fee in effect at time of development.

Specific to commercial/retail and/or restaurant land uses only, utilization of the “primary” trip categories percentage will be allowed for determining ADT’s using the SANDAG rates.

Also, a summary of all CSA fees can be found at the County Public works website under “Special Districts” at <http://www.co.imperial.ca.us/publicworks/index.htm> .

## **III. DRAINAGE IMPROVEMENTS**

### III A. **GENERAL REQUIREMENTS**

1. All drainage design and requirements are recommended to be in accordance with the Imperial Irrigation District (IID) “Draft” Hydrology Manual as a basis for the Gateway of the Americas project and the requirements of the County Engineer and based on full development of upstream tributary basins.

## **IV. GRADING PLANS**

IV A. **GRADING PLAN GENERAL NOTES**

1. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK. NOTICE OF PROPOSED WORK SHALL BE GIVEN TO THE FOLLOWING AGENCIES:

GAS TELEPHONE NO. (800) 422-4133/(800) 227-2600

IID POWER: TELEPHONE NO.: (760) 339-9280

IID WATER TELEPHONE NO. (760) 339-9263

PACIFIC TELEPHONE: TELEPHONE NO. (800) 422-4133

CATV: TELEPHONE NO. (800) 626-6299

SEWER: (CSA) TELEPHONE NO. (760) 482-4462

WATER: (CSA) TELEPHONE NO. (760) 482-4462

## V. UTILITIES

**V A. UTILITY GENERAL REQUIREMENTS**

The Public Works Department typically reviews plans for conformance to accepted standards for road design, encroachments in right of way and grading/drainage considerations. Adequacy of fire flows, potable water and sewer utilities, appurtenances including pressure flow analyses or capacities, street light layout or signal light plans will be reviewed by the Gateway CSA. If this is not possible an outside, independent plan checking service may be employed on behalf of the CSA to perform this at developer expense.

**V B. WATER GENERAL NOTES (TYPICAL)**

Check with related water agency (Gateway of the Americas CSA) for additional specific water notes

1. WATER WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS AND MATERIALS AS SPECIFIED IN THE MOST CURRENT EDITION OF THE STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION. CONTRACTOR SHALL HAVE A CURRENT COPY OF THE STANDARD SPECIFICATIONS ON THE JOB SITE AT ALL TIMES.
2. THE SUBMISSION AND REVIEW OF ALL SUBMITTALS AS REQUIRED BY THE STANDARD SPECIFICATIONS ARE TO BE ACCOMPLISHED PRIOR TO THE PRE CONSTRUCTION MEETING WITH THE CSA DISTRICT'S INSPECTOR.
3. NO WORK MAY BEGIN OR PROCEED WITHOUT DIRECTION OF COUNTY AND CSA INSPECTOR. INSPECTOR'S SCHEDULING MUST BE 24-48 HOURS IN ADVANCE OF WORK.
4. WHERE ELEVATIONS AND GRADES ARE NOT SHOWN ON THE WATER MAIN PROFILE, TOP OF PIPE PROFILE IS 36-INCHES MINIMUM BELOW CENTERLINE OF FINISH GRADE OF STREET.
5. INSTALL A WATER SERVICE TO EACH LOT SIZE AND TYPE PER GATEWAY CSA. METER TO BE LOCATED 5-FEET FROM A SIDE LOT LINE. THE LETTER "W" SHALL BE CHISELED IN TOP OF EXISTING CURB OR IMPRINTED IN NEW CURB AT ALL WATER SERVICE CROSSINGS. SIZES WILL NOT BE LESS THAN 1 1/2" HIGH AND 3/16" DEEP.
6. MANUAL AIR RELEASES SHALL BE INSTALLED AT ALL HIGH POINTS AND BLOW-OFFS AT ALL LOW POINTS IN THE WATER MAIN PROFILE. FIRE HYDRANTS MAY BE USED IN LIEU OF MANUAL AIR RELEASE OR BLOW-OFF WHEN LOCATED AT OR NEAR HIGH OR LOW POINTS, AS APPROVED BY THE CSA REPRESENTATIVE.
7. UNLESS OTHERWISE NOTED, CONNECTION TO EXISTING MAINS SHALL BE MADE DRY. THE TIME AND DURATION OF ANY SHUTDOWNS OF EXISTING MAINS SHALL BE SUBJECT TO APPROVAL BY THE CSA. CSA SHALL BE NOTIFIED TWO WEEKS MINIMUM IN ADVANCE OF ANY SHUTDOWN.
8. CONTRACTOR SHALL COORDINATE WITH CSA ALL ARRANGEMENTS FOR HIGH-LINING TEMPORARY SERVICES, ETC., PRIOR TO SHUTDOWNS. NO SHUTDOWNS WILL BE SCHEDULED ON A FRIDAY.
9. LINE VALVES, WHERE REQUIRED AT STREET INTERSECTIONS SHALL BE LOCATED ON THE PROLONGATION OF THE STREET RIGHT-OF-WAY WHENEVER POSSIBLE.

10. FIRE HYDRANTS, AS APPROVED BY THE APPROPRIATE FIRE MARSHALL AND MEETING THE CSA STANDARD SPECIFICATIONS, ARE TO BE INSTALLED AT LOCATIONS SPECIFIED BY THE FIRE MARSHALL.
11. CONTRACTOR SHALL REVIEW ALL PROPOSED TRENCH WORK WITH CAL/OSHA. A COPY OF EXEMPTION LETTER OR TRENCHING PERMIT, IF REQUIRED, SHALL BE SUBMITTED TO THE CSA PRIOR TO CONSTRUCTION.
12. ALL EXISTING FACILITIES, WHICH MAY AFFECT FINAL DESIGN, I.E., LINE CROSSINGS, LINE PARALLELING, OR PROPOSED CONNECTIONS SHALL BE FIELD VERIFIED. ALL EXISTING OR PROPOSED UTILITY CROSSINGS, OR UTILITIES WITHIN 10-FEET OF PROPOSED WATER MAINS, SHALL BE SHOWN ON IMPROVEMENT PLANS.
13. ALL WATER SERVICES FOR IRRIGATION, MULTIPLE RESIDENTIAL COMPLEXES (IF APPLICABLE) AND COMMERCIAL OR INDUSTRIAL DEVELOPMENTS SHALL HAVE AN APPROVED BACKFLOW PREVENTION DEVICE ON CUSTOMER'S SIDE OF WATER METER.
14. THE WATER SYSTEM SHALL BE PRESSURE TESTED IN ACCORDANCE WITH THE PROCEDURES IN THE STANDARD SPECIFICATIONS. THE CLASS OF PIPE SHALL BE USED AS THE DESIGNATED WORKING PRESSURE FOR TESTING ALL PIPES, VALVES (CLOSED) AND APPURTENANCES.
15. CONTRACTOR TO TIE OFF ALL VALVE LOCATIONS AND PROVIDE WRITTEN DIMENSIONS TO INSPECTOR IMMEDIATELY UPON INSTALLATION OF VALVES.
16. ALL DEFLECTIONS (HORIZONTAL AND VERTICAL) SHALL BE MADE BY USE OF JOINT COUPLINGS WITH 4" MAXIMUM DEFLECTION PER COUPLING (2" PER JOINT). NO BENDING (CURVING) OF PIPE SHALL BE PERMITTED.
17. THE CONTRACTOR SHALL FURNISH AND INSTALL, PER SPECIFICATION, THE APPROPRIATE BURIED UTILITY WARNING IDENTIFICATION TAPE AND METALLIC WIRE ABOVE ALL PUBLIC WATERLINES INCLUDING WATER AND FIRE LATERALS LOCATED IN PUBLIC RIGHT OF WAY OR EASEMENT. IN ALL EASEMENTS, FLEXIBLE HIGH VISIBILITY IDENTIFICATION MARKERS ARE ADDITIONALLY REQUIRED PER CSA REQUIREMENTS.
18. THE CONTRACTOR SHALL GUARANTEE ALL WORK FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF ACCEPTANCE OF THE WORK BY THE CSA AND COUNTY AND SHALL REPAIR OR REPLACE ANY OR ALL SUCH WORK, TOGETHER WITH ANY OTHER WORK WHICH MAY BE DISPLACED IN SO DOING, THAT MAY PROVE DEFECTIVE IN WORKMANSHIP AND/OR MATERIALS WITHIN THE 1 YEAR PERIOD FROM DATE OF ACCEPTANCE WITHOUT EXPENSE WHATSOEVER TO THE CSA AND THE COUNTY, ORDINARY WEAR AND TEAR, UNUSUAL ABUSE OR NEGLIGENCE EXCEPTED.

V C **POTABLE WATER SPECIFICATIONS**

1. STANDARDS – STANDARD TO BE USED SHALL MEAN THOSE STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION IN EFFECT ON JANUARY 1, 1999. SAID STANDARDS ARE AVAILABLE FROM THE BOOKSTORE OF SAID ASSOCIATION, 6666 W. QUINCY AVENUE, DENVER, CO 80235 (800) 926-7337.
2. MATERIALS OF CONSTRUCTION – ALL WATER PIPE, FITTINGS AND APPURTENANCES CALLED FOR IN THE THESE CONTRACT DOCUMENTS SHALL CONFORM TO THE FOLLOWING STANDARDS, THOSE OTHER STANDARDS THEREIN REFERENCED AND THESE SPECIAL PROVISIONS.
  - A. PIPE: AWWA C-900 AND C-905. PIPE 12 INCHES AND SMALLER SHALL BE CLASS 150, DR-18; LARGER PIPE SHALL BE 235 PSI, DR-18. ALL PIPES SHALL HAVE BELL AND SPIGOT, ELASTOMERIC GASKETED JOINTS. PIPE SHALL BE SUPPLIED WITH AN AFFIDAVIT OF COMPLIANCE.
  - B. FITTINGS: AWWA C-153 AND C-104. FITTINGS SHALL BE CEMENT-MORTAR LINED. UNLESS OTHERWISE SHOWN OR INDICATED BY THE CONTRACT DRAWINGS, BENDS SHALL BE FURNISHED WITH MECHANICAL JOINT ENDS; TEES AND CROSSES SHALL BE FURNISHED WITH FLANGED JOINT ENDS. FLANGE TO MECHANICAL JOINT ADAPTERS SHALL BE FURNISHED TO CONNECT PIPE TO TEES AND CROSSES WHERE VALVES DO NOT OCCUR. GLANDS SHALL BE OF THE SAME MANUFACTURER AS FITTINGS.
  - C. GATE VALVES: AWWA C-509. VALVES 12 INCHES AND SMALLER SHALL BE RESILIENT-SEALED GATE, FUSION-BONDED EPOXY COATED INSIDE AND OUT; AND, UNLESS OTHERWISE SHOWN OR INDICATED BY THE CONTRACT DRAWINGS, SHALL BE FURNISHED WITH A MECHANICAL JOINT ONE END AND A FLANGED JOINT THE OTHER. VALVES, WHEN CLOSED, SHALL PROVIDE A BUBBLE-TIGHT SEAL AGAINST LEAKAGE AND SHALL BE OF THE TYPE AND DESIGN THAT ALLOWS REPLACEMENT OF ALL INTERNAL PARTS WITHOUT REMOVING THE VALVE BODY FROM THE PIPELINE. ALL INTERNAL PARTS SHALL BE MATERIALS SUITABLE FOR EXPOSURE TO WATER CONTAINING CHLORINE AS A DISINFECTANT AT VARIOUS CONCENTRATIONS. VALVES SHALL BE SUPPLIED WITH AN AFFIDAVIT OF COMPLIANCE.
  - D. BUTTERFLY VALVES: AWWA C-504. VALVES LARGER THAN 12 INCHES SHALL BE RESILIENT SEATED BUTTERFLY, FUSION-BONDED EPOXY COATED INSIDE AND OUT; AND, UNLESS OTHERWISE SHOWN OR INDICATED BY THE CONTRACT DRAWINGS, SHALL BE FURNISHED WITH A MECHANICAL JOINT ONE END AND A FLANGED JOINT THE OTHER END. THE CONTRACTOR MAY, IN LIEU OF THE MECHANICAL JOINT, PROVIDE A FLANGED JOINT WITH A FLANGED BY MECHANICAL JOINT ADAPTER. ALL INTERNAL PARTS, INCLUDING THE RESILIENT SEAL, SHALL BE OF MATERIALS SUITABLE FOR EXPOSURE TO WATER CONTAINING CHLORINE AS A DISINFECTANT AT VARIOUS CONCENTRATIONS. VALVES SHALL, WHEN CLOSED, PROVIDE A BUBBLE-TIGHT SEAL AGAINST LEAKAGE AND SHALL BE SUPPLIED WITH AN AFFIDAVIT OF COMPLIANCE.

- E. DOMESTIC MANUFACTURERS: ALL PIPEFITTINGS AND VALVES SHALL BE THE PRODUCT OF A DOMESTIC (USA) MANUFACTURER.
- F. FIRE HYDRANTS: AWWA C-503. FIRE HYDRANTS SHALL BE OF THE WET-BARREL TYPE EQUIPPED WITH A BREAK-OFF CHECK VALVE, ALL EQUAL TO THAT CALLED OUT IN THE CONTRACT DRAWINGS. THE BURY-ELL, RISERS AND DOUBLE GROOVED BREAK-OFF SPOOLS SHALL BE OF EPOXY COATED INSIDE, DUCTILE IRON. ALL BOLTS USED IN THE FIRE HYDRANT ASSEMBLY SHALL BE OF APPROVED STAINLESS STEEL.  
THE BURY-ELL SHALL BE SUPPLIED WITH A MECHANICAL JOINT INLET AND FOR CONNECTION OF THE PIPE AND INSTALLATION OF JOINT RESTRAINT DEVICE. ALL HYDRANTS SHALL BE FURNISHED WITH OUTLET CAPS WITH CHAIN AND AN AFFIDAVIT OF COMPLIANCE.
- G. BOLTS: ALL BOLTS USED FOR INSTALLATION OF UNDERGROUND FITTINGS AND VALVES SHALL BE EITHER TEXLAN COATED OR OF APPROVED STAINLESS STEEL.
- H. AIR VALVES: AWWA C-512. ALL AIR-RELEASE VALVES, AIR-VACUUM VALVES AND COMBINATION AIR VALVES SHALL BE OF CAST-IRON BODY WITH INTERNAL PARTS OF STAINLESS STEEL, BUNA-M, DERLIN OR OTHER SIMILAR CORROSION RESISTANT MATERIALS, SUITABLE FOR EXPOSURE TO WATER CONTAINING CHLORINE AS A DISINFECTANT IN VARIOUS CONCENTRATIONS. AIR-VALVES SHALL BE EQUAL TO THAT CALLED OUT IN THE CONTRACT DRAWINGS.
- I. JOINT RESTRAINT DEVICES: ALL MECHANICAL JOINTS INCORPORATED INTO THE CONTRACT PROJECT SHALL BE FITTED WITH JOINT RESTRAINT DEVICES EQUAL TO THOSE MANUFACTURED BY EBA-IRON OF EASTLAND, TEXAS AND SOLD AS THE 2000 PV SERIES, INSTALLED IN FULL CONFORMANCE TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL ALSO FURNISH AND INSTALL SERIES 1600 AND 2800 PIPE JOINT HARNESSSES ON A SUFFICIENT NUMBER OF JOINTS AWAY FROM THE JOINT RESTRAINT DEVICE TO INSURE AGAINST SEPARATION OF THE PIPE. A SOIL FRICTION OF 150 PSF MAY BE USED FOR CALCULATING THE NUMBER OF PIPE JOINTS TO WHICH A HARNESS MUST BE APPLIED. FOR 12-INCH PIPE, ALL JOINTS WITHIN 45 FT. MUST BE HARNESSSED; FOR 18-INCH PIPE, ALL JOINTS WITHIN 65 FT. MUST BE HARNESSSED.
- J. EPOXY COATINGS: AWWA C-550. EPOXY COATING CALLED FOR IN THESE SPECIAL PROVISIONS SHALL BE FUSION-BONDED AT THE FACTORY.
- K. PIPE BEDDING AND BACKFILL: GRANULAR MATERIAL FOR PIPE BEDDING AND PIPE ZONE BACKFILL TO NO LESS THAN 12 INCHES ABOVE TOP OF PIPE, SHALL CONSIST OF SAND FREE FROM CLAY OR ORGANIC MATERIAL, 90 TO 100 PERCENT PASSING THE NO. 4 SIEVE BUT NO MORE THAN 5 PERCENT PASSING THE NO. 200 SIEVE, HAVING A SAND EQUIVALENT OF NO LESS THAN 35. THE MATERIAL SHALL BE SUITABLE FOR THE COMPACTION METHODS USED TO OBTAIN NO LESS THAN 90% OF MAXIMUM RELATIVE DENSITY.
- L. CONCRETE: CONCRETE REQUIRED FOR THRUST BLOCKS SHALL BE TRANSIT MIXED, PORTLAND CEMENT CONCRETE, HAVING A SLUMP AT TIME PLACEMENT NOT EXCEEDING 6 INCHES AND CONTAINING SUFFICIENT CEMENT TO PROVIDE A COMPRESSIVE STRENGTH OF NO LESS THAN 2000 PSI IN 28 DAYS.

3. PIPELINE CONSTRUCTION – ALL WATER PIPE, FITTINGS AND APPURTENANCES CALLED FOR SHALL BE INSTALLED, DISINFECTED AND TESTED IN ACCORDANCE WITH THE FOLLOWING REFERENCED STANDARDS, THOSE OTHER STANDARDS THEREIN REFERENCED, THE WRITTEN RECOMMENDATIONS OF THE MANUFACTURER AND THESE SPECIAL PROVISIONS.
- A. INSTALLATION: AWWA C-600 AND C-605. EXCESS EARTH FROM EXCAVATIONS SHALL BE REMOVED FROM THE ROADWAY SECTION AND DISPOSED OF. A TRACING WIRE AND APPROPRIATE UTILITY WARNING IDENTIFICATION TAPE SHALL BE PLACED IMMEDIATELY ABOVE THE PIPE ZONE BACKFILL. THE TEST PRESSURE FOR PIPE STRENGTH AND LEAKAGE SHALL BE NO LESS THAN 150 PSI. IN ALL EASEMENTS, FLEXIBLE HIGH VISIBILITY IDENTIFICATION MARKERS ARE ADDITIONALLY REQUIRED.
  - B. POLYETHYLENE WRAPPING: AWWA C-105. ALL FITTINGS AND APPURTENANCES INCLUDING BUT NOT LIMITED TO, VALVES, TEES, CROSSES, BENDS, TAPPED COUPLINGS, PIPE JOINT HARNESSSES, JOINT RESTRAINT DEVICES, AND JOINT ADAPTERS, SHALL BE ENCASED WITHIN A WRAPPING OF LOW-DENSITY, MINIMUM 10 MIL THICK, POLYETHYLENE SHEETING LOOSELY PLACED AND TAPED TO THE BODY OF THE CONNECTED PIPE(S).
  - C. DISINFECTION: AWWA C-651. THE CONTRACTOR MAY EMPLOY ANY ONE OF THE DISINFECTION METHODS PROVIDED FOR, SUBJECT TO THE CSA ENGINEER'S REVIEW AND APPROVAL OF THE CONTRACTOR'S PROCEDURES, EQUIPMENT AND PROPOSED MEANS OF DISPOSING OF THE CHLORINATED WATER. THE DEVELOPER OR CONTRACTOR SHALL ARRANGE AND PAY FOR BACTERIOLOGICAL TESTING OF THE DISINFECTION EFFORTS. DISINFECTING SHALL CONTINUE UNTIL TESTING RESULTS ARE FOUND ACCEPTABLE TO THE CSA ENGINEER.
  - D. COMPACTION TESTING: TESTING OF TRENCH BACKFILL FOR DENSITY SHALL BE NO LESS OFTEN THAN ONCE IN THE PIPE ZONE AND ONCE FOR EACH 24 INCHES OF DEPTH AT SPACING NOT TO EXCEED 150 FT. FAILING TEST SHALL BE RETESTED AFTER RECOMPACTION. RETESTING SHALL INCLUDE TWO ADDITIONAL TEST, ONE EACH LOCATED 50 FT. BOTH WAY FROM THE FAILING TEST LOCATION UNTIL ALL TESTS SHOW CONFORMING DENSITIES.
  - E. VALVE BOXES: ALL VALVES SHALL BE INSTALLED WITH VALVE BOXES AS SHOWN OR CALLED FOR BY THE CONTRACT DRAWINGS.

V D. **SEWER GENERAL NOTES** (TYPICAL)

Check with related sewer agency (Gateway of the Americas CSA) for specific sewer notes.

UNLESS OTHERWISE INDICATED HEREIN, ALL WORK SHALL BE DONE ACCORDANCE WITH:

- A. THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC) LATEST APPROVED EDITION.
- B. THE REGIONAL SUPPLEMENTAL AMENDMENTS TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- C. THIS PROCEDURE MANUAL.

AND THE FOLLOWING SPECIAL PROVISIONS:

1. TRENCH WIDTH SHALL BE PER GATEWAY CSA STANDARDS UNLESS COUNTY ENCROACHMENT PERMIT ADDRESSES THIS.
2. PIPE AND BEDDING CONDITIONS SHALL BE PER GATEWAY CSA STANDARDS UNLESS ENCROACHMENT PERMIT ADDRESSES THIS.
3. AFTER COMPLETION OF PIPE LAYING, ALL MAIN LINE SEWERS, SERVICE LATERAL AND STRUCTURE SHALL BE TESTED IN THE PRESENCE OF THE INSPECTOR. AIR PRESSURE TEST, PER SSPWC SECTION 306-1.4.1, AND MANDREL TEST, PER SECTION 306-1.212 SHALL BE USED UNLESS OTHERWISE DIRECTED BY THE INSPECTOR. FINAL ACCEPTANCE OF SEWER LINES MAY BE SUBJECT TO INTERNAL TELEVISION INSPECTION. IT WILL BE THE PERMITTEE'S RESPONSIBILITY TO PAY FOR THE COST OF THIS WORK.
4. THE CONSTRUCTION OF PCC SEWER MANHOLE, POURED-IN-PLACE MANHOLE BASES SHALL BE A MONOLITHIC POUR FINISHED COMPLETE AT TIME OF POUR, UNLESS OTHERWISE APPROVED.
5. THE CONSTRUCTION OF SEWER LATERAL PER GATEWAY CSA STANDARDS SHALL NOT DISCHARGE DIRECTLY INTO MANHOLE. A CLEANOUT SHALL BE INSTALLED APPROXIMATELY ONE FOOT OUTSIDE THE PROPERTY LINE.
6. ALL MAINS AND LATERALS SHALL BE CONSTRUCTED WITH 48 INCH MINIMUM COVER, PROVIDED THAT THE INVERT OF THE LATERAL AT THE PROPERTY LINE IS ABOVE THE SOFFIT LINE OF THE SEWER MAIN.

7. THE FINAL LOCATION AND ELEVATION OF SEWER AND WATER LATERALS SHALL BE SHOWN ON ORIGINAL PLANS, PRIOR TO ACCEPTANCE FOR PUBLIC USE.
8. ALL DESIGN CHANGES OF SEWER MAINS SHALL BE APPROVED BY THE CSA ENGINEER AND THE PUBLIC WORKS DIRECTOR IN WRITING PRIOR TO ACCEPTANCE FOR PUBLIC USE.
9. FILL AREAS MUST BE COMPACTED TO 90% PRIOR TO PIPE INSTALLATION.
10. THE CONTRACTOR SHALL NOTIFY THE CSA INSPECTION DEPARTMENT 48 HOURS IN ADVANCE OF BEGINNING WORK TO ARRANGE FOR INSPECTION OF PROJECT.
11. THE CONTRACTOR SHALL PURCHASE A PERMIT FROM THE COUNTY DEPARTMENT OF PUBLIC WORKS AND THE CSA FOR ANY EXCAVATION OR ANY WORK WITHIN EXISTING COUNTY RIGHT-OF-WAY OR PUBLIC EASEMENT.
12. CONTRACT RECORD DRAWINGS MUST BE SUBMITTED PRIOR TO FINAL ACCEPTANCE OF THE WORK. THEY MUST REFLECT POST CONSTRUCTION VERIFICATION OF PIPE LENGTHS AND INVERT ELEVATIONS.
13. THE CONTRACTOR SHALL GUARANTEE ALL WORK FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF ACCEPTANCE OF THE WORK BY THE CSA AND COUNTY AND SHALL REPAIR OR REPLACE ANY OR ALL SUCH WORK, TOGETHER WITH ANY OTHER WORK WHICH MAY BE DISPLACED IN SO DOING, THAT MAY PROVE DEFECTIVE IN WORKMANSHIP AND/OR MATERIALS WITHIN THE 1 YEAR PERIOD FROM DATE OF ACCEPTANCE WITHOUT EXPENSE WHATSOEVER TO THE CSA AND THE COUNTY, ORDINARY WEAR AND TEAR, UNUSUAL ABUSE OR NEGLIGENCE EXCEPTED.
14. THE CONTRACTOR SHALL FURNISH AND INSTALL, PER SPECIFICATIONS, THE APPROPRIATE BURIED UTILITY WARNING IDENTIFICATION TAPE AND METALLIC TRACING WIRE ABOVE ALL PUBLIC SEWER LINES INCLUDING SEWER LATERAL LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENT. IN ALL EASEMENTS, FLEXIBLE HIGH VISIBILITY IDENTIFICATION MARKERS ARE ADDITIONALLY REQUIRED PER CSA REQUIREMENTS.
15. AT ALL MANHOLES, THE MINIMUM FALL ACROSS MANHOLES SHALL BE 0.1 FT. RIGHT ANGLES LARGER THAN 45 DEGREES, ALLOW 0.2 FT. OF FALL.

V E. **SANITARY SEWER SPECIFICATIONS**

1. STANDARD SPECIFICATIONS SHALL MEAN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION, PUBLISHED BY BUILDING NEWS, A DIVISION OF BNI PUBLICATIONS, INC., 1612 CLEMENTINE STREET, ANAHEIM, CA 92802, (714) 517-0970.
2. MATERIALS OF CONSTRUCTION – ALL SEWER PIPE, FITTINGS AND APPURTENANCES CALLED FOR IN THESE CONTRACT DOCUMENTS SHALL CONFORM TO THE FOLLOWING SECTIONS OF THE GREENBOOK, THOSE OTHER SECTIONS THEREIN REFERENCED AND THESE SPECIAL PROVISIONS.
  - A. PIPE: 207-17.1 THROUGH 207-17.6; EXCEPT, ALL PIPE INCLUDING PIPE IN SERVICE LATERAL, SHALL HAVE GASKETED JOINTS. ALL PIPES SHALL BE THE PRODUCT OF A DOMESTIC (USA) MANUFACTURER.
  - B. MANHOLES: MANHOLES SHALL BE OF REINFORCED, PRECAST CONCRETE SECTIONS, CONES AND GRADE RINGS CONFORMING TO ASTM C-748, INSTALLED ON CAST-IN-PLACE CONCRETE FOUNDATIONS. ALL CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF NO LESS THAN 4000 PSI. ALL MANHOLE JOINTS, INCLUDING THE JOINT BETWEEN THE FIRST SECTION AND FOUNDATION, SHALL BE OF THE TONGUE AND GROOVE DESIGN. MANHOLES SHALL BE FURNISHED WITH STEEL REINFORCED POLYPROPYLENE STEPS, FACTORY INSTALLED AT 12 INCHES ON CENTERS.
  - C. MANHOLE JOINT SEALANT: ALL JOINTS IN MANHOLES SHALL BE SEALED WITH A PREFORMED JOINT SEALANT OF BUTYL RUBBER EQUAL TO CPS-210 MANUFACTURED BY THE PRESS-SEAL GASKET CORPORATION, CONCRETE PRODUCTS SUPPLY COMPANY, FORT WAYNE, IN. 46804.
  - D. MANHOLE COATING: ALL EXPOSED, INTERIOR CONCRETE SURFACES OF MANHOLES SHALL BE COATED WITH NO LESS THAN TWO – 10 MIL THICK COATS OF A COAL-TAR EPOXY EQUAL TO KOPPERS BITUMASTIC 300-M.
  - E. PIPE BEDDING: 200-1.2 AND TABLE 200-1.2 (A) AS CALLED FOR IN TABLE 306-1.2.13(B).
  - F. MANHOLE FRAME AND COVER SETS: 206-3.1 THROUGH 206-3.6. COVERS SHALL BE EQUAL TO THOSE CALLED FOR IN THE CONTRACT DRAWINGS, SHALL BE MARKED “SEWER” AND SHALL INCLUDE A ¾” PICK HOLE.
3. PIPELINE CONSTRUCTION – ALL SEWER PIPE, FITTINGS AND APPURTENANCES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE FOLLOWING REFERENCED, THE WRITTEN RECOMMENDATIONS OF THE MANUFACTURER AND THESE SPECIAL PROVISIONS.
  - A. INSTALLATION: 3.06-1.1 THROUGH 306-1.6: EXCEPT, COMPACTION OF TRENCH BACKFILL, INCLUDING PIPE ZONE BACKFILL, SHALL BE AS CALLED FOR BY THE PLANS AND OR AS SUPERCEDED BY THE COUNTY ENCROACHMENT PERMIT PROVISIONS. EACH MANHOLE SHALL BE INDEPENDENTLY TESTED FOR WATER EXFILTRATION. THERE SHALL BE NO MEASURABLE LEAKAGE FROM MANHOLE WHEN TESTED WITH A HEAD OF WATER NO LESS THAN 4 FEET ABOVE THE ADJACENT GROUNDWATER LEVEL OR 4 FEET ABOVE THE TOP OF PIPE, WHICHEVER PROVIDES THE

GREATER HEAD. THE CONTRACTOR SHALL PROVIDE ALL TESTING EQUIPMENT AND DEVICES INCLUDING ALL

MEASURING DEVICES. THE CONTRACTOR SHALL ALSO PROVIDE ALL EQUIPMENT AND PERFORM ALL OPERATIONS REQUIRED TO MANDREL ALL PIPES.

- B. COMPACTION TESTING: TESTING OF TRENCH BACKFILL FOR DENSITY SHALL BE NO LESS OFTEN THAN ONCE IN THE PIPE ZONE AND ONCE FOR EACH 24 INCHES OF DEPTH AT SPACINGS NOT TO EXCEED 150 FT. FAILING TESTS SHALL BE RETESTED AFTER RECOMPACTION. RETESTING SHALL INCLUDE TWO ADDITIONAL TESTS, ONE EACH LOCATED 50 FT. BOTH WAYS FROM THE FAILING TEST LOCATION UNTIL ALL TESTS SHOW CONFORMING DENSITIES.
- C. THE CONTRACTOR SHALL FURNISH AND INSTALL THE APPROPRIATE BURIED UTILITY WARNING IDENTIFICATION TAPE AND METALLIC TRACING WIRE ABOVE ALL PUBLIC SEWER LINES INCLUDING SEWER LATERAL LOCATED IN PUBLIC RIGHT OF WAY OR EASEMENT. WITHIN ALL EASEMENTS, FLEXIBLE HIGH VISIBILITY IDENTIFICATION MARKERS ARE ADDITIONALLY REQUIRED.

V F. **WATER PLANT**

The water treatment and distribution system has been constructed in phases determined by the rate of development within the Gateway CSA. Initially, the first phase consists of the construction of a 130,000-gallon per day (GPD) package water treatment plant, consisting of modular units that can be expanded up to the ultimate plant capacity of 1.0 million gallons per day (MGD). The design engineer has estimated water demand to be 700 GPD/acre. Based on the Gateway Spa Land Use Plan, the total area designated for commercial use is 281 acres and for industrial use is 1,140 acres for a total of 1,421 Acres. At ultimate buildout, which is predicted to occur in 30 years, the ultimate water demand will be 994,700 GPD.

The treated water is stored in two tanks; a 500,000 – gallon bolted steel tank and a 1,000,000 gallon welded tank. From these tanks the water is then pumped into the distribution system by a syncro-flow 1800-GPM four-pump station. The operating pressure for the system is 80-85 PSI. The water treatment plant provides potable water for public use for the Gateway of the Americas SPA.

The mainline leaving the plant is an 18” diameter pipe.

**Important Note:**

It is the responsibility of each developer to ensure the existing water distribution system is capable of supplying their development. Complete engineering calculations should be provided to ensure adequate supply fire flow in buildings as well as fire hydrant pressure is maintained.

**VI. REQUIRED CHECKLISTS**  
**(Attachment A)**

# County of Imperial Department of Public Works Development Tracking Checklist For Gateway of the Americas Specific Plan Area

Issue date: June 3, 2003

Special Note: Items in this checklist are provided to assist in tracking of Public Works Department (Department) approvals. They will also ensure that Department concerns are met for appropriate plan approvals, encroachment permit issuance and Department signoff for Building Permits and Certificates of Occupancies. Department staff specifically authorized to sign off these items include the Director and Deputy Director of Public Works – Engineering at this time.

Project Name \_\_\_\_\_  
 Project Address \_\_\_\_\_  
 Owner \_\_\_\_\_  
 Tract Map, Unit, Subdivision and Lot No. \_\_\_\_\_  
 \_\_\_\_\_  
 Engineering File No.: \_\_\_\_\_ Encroachment Permit No. \_\_\_\_\_  
 Gateway CSA File No. \_\_\_\_\_

**I. Development/Engineer package**

- Provide Engineer/Architect/Developer with Developers Information Package to include this checklist as well as encroachment permit package. This will also advise that project must utilize the “Procedure and Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage and Grading Plans within the Gateway of the Americas Specific Plan Area”.
 

Transmitted By	Date
Not Requested	
  
- Provide Engineer/Architect/Developer with County’s “Construction Site and Development BMP Guidelines (to be developed by Department staff as part of County’s Storm Water Management Program)
 

Transmitted By	Date
Not Requested	

**II. Required Checklist Items for Building Permit Signoff by Department**

- Site Plan Review by County Planning Department. (This may include Department comments or requested conditions for driveway or entrance improvements)
 

Approved By	Date
  
- Grading and Drainage Plan Approval by Department (should be same date as the approved plan by Director)
 

Approved By	Date
  
- Regional Water Quality Control Board NOI Submitted (include RWQCB tracking number)
 

Approved By	Date
  
- Encroachment Permit Issuance by Department
 

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(May require street improvement drawing approval, will require grading and drainage plan approval, applicant must submit complete package with fees) Approved By \_\_\_\_\_ Date \_\_\_\_\_

Gateway of the Americas SPA Traffic Mitigation and other CSA Fees Paid Approved By \_\_\_\_\_ Date \_\_\_\_\_

Building Permit signoff approved Approved By \_\_\_\_\_ Date \_\_\_\_\_

**III. Required Checklist Items for Certificate of Occupancy Signoff by Public Works**

All Grading and Drainage Plan issues constructed

Post Construction Stormwater controls acceptable Approved By \_\_\_\_\_ Date \_\_\_\_\_

Receipt of Final Approved As-Built Plans for street improvements  
This includes water, sewer, storm drains and laterals; street lights, curb and gutter, Sidewalk, driveways and any other work within road right of way. Two Mylar's are required, one for the Department and one for the Gateway CSA. Approved By \_\_\_\_\_ Date \_\_\_\_\_

Certificate of occupancy signoff approval Approved By \_\_\_\_\_ Date \_\_\_\_\_

**Notes/Comments**

\_\_\_\_\_  
\_\_\_\_\_  
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**VII. GATEWAY  
STANDARD DRAWINGS**

**INDEX FOR  
GATEWAY STANDARD DRAWINGS  
AND DETAILS**

**GATEWAY 100-SERIES-----WATER**

**GATEWAY 200-SERIES-----SEWER**

**GATEWAY 300 SERIES-----STORM**

**GATEWAY 400-SERIES-----SURFACE  
IMPROVEMENTS**

**GATEWAY 500-SERIES-----MISCELLANEOUS**

**GATEWAY 600-SERIES-----ELECTRICAL**

**SPECIAL NOTE:**

**All Gateway Standard Drawings and Details are supplemental Special Requirements for the Gateway SPA CSA and shall be used in conjunction with specifications for Street Improvements, Drainage, Potable Water and Sanitary Sewer and the Engineering Design Guidelines Manual For the Preparation and Checking of Street Improvements, Drainage and Grading Plans within Imperial County.**

### **GATEWAY 100 SERIES – WATER**

<b><u>NUMBER</u></b>	<b><u>ITEM</u></b>	<b><u>ISSUE DATE</u></b>	<b><u>LAST REVISED</u></b>
100	Thrust Blocks	8/29/02	8/6/03
105	Thrust Block at Tee	7/23/02	
110	Temporary Thrust Block	8/29/02	
115	2" Copper Service Installation	8/29/02	8/6/03
120	Water Service Pipe Xing	8/29/02	8/6/03
125	Line Valve and Valve Box install.	8/29/02	8/6/03
130	Steel Casing Details	8/29/02	
135	2" ARV Assembly	7/23/02	
140	2" BO Assembly	8/29/02	
141	Stubout BO Assembly	8/29/02	
142	Vertical Stormline Crossing	8/29/02	8/6/03
145	Hydrant Installation	8/29/02	
150	Fire Service Installation	8/29/02	

### **GATEWAY 200 SERIES – SEWER**

<b><u>NUMBER</u></b>	<b><u>ITEM</u></b>	<b><u>ISSUE DATE</u></b>	<b><u>LAST REVISED</u></b>
204	4' Diameter MH	8/29/02	7/23/03
205	5' Diameter MH	9/9/02	7/23/03
210	Sewer Lateral	8/29/02	
215	Deep Cut Sewer Lateral	8/29/02	
220	Force Main Connection	8/29/02	

### **GATEWAY 300 SERIES – STORM**

<b><u>NUMBER</u></b>	<b><u>ITEM</u></b>	<b><u>ISSUE DATE</u></b>	<b><u>LAST REVISED</u></b>
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### **GATEWAY 400 SERIES – SURFACE IMPROVEMENTS**

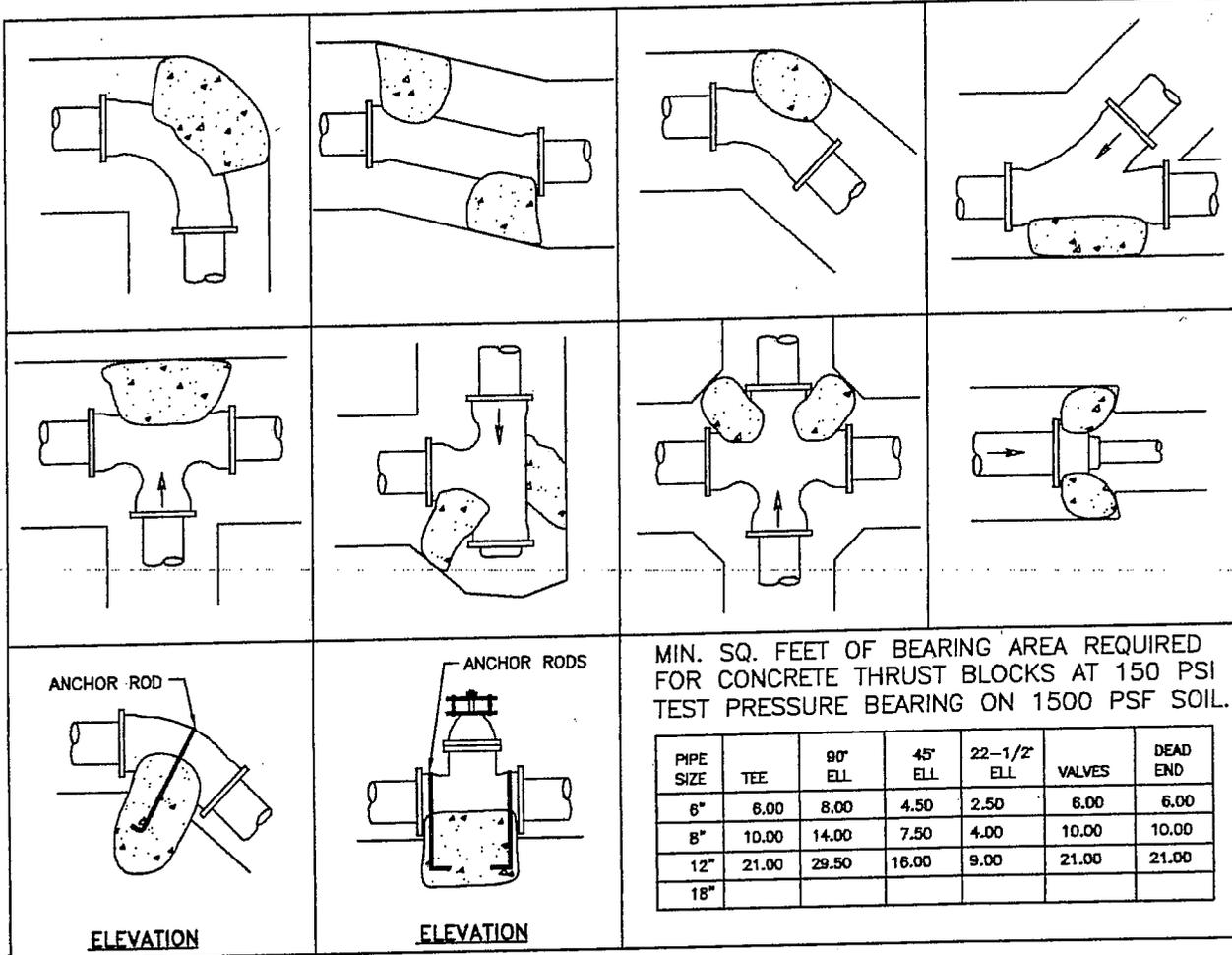
<b><u>NUMBER</u></b>	<b><u>ITEM</u></b>	<b><u>ISSUE DATE</u></b>	<b><u>LAST REVISED</u></b>
400A	36" Curb and Gutter		8/15/08
430	Street X Sections 70' ROW	11/18/02	
432	Street X Sections 84' ROW	8/29/02	
434	Street X Sections 102'/108' ROW	8/29/02	
436	Street Cross Sections 126'/132' ROW	8/29/02	
440	Street Structural Section	8/29/02	7/23/03

**GATEWAY 500 SERIES – MISCELLANEOUS**

<b><u>NUMBER</u></b>	<b><u>ITEM</u></b>	<b><u>ISSUE DATE</u></b>	<b><u>LAST REVISED</u></b>
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**GATEWAY 600 SERIES – ELECTRICAL**

<b><u>NUMBER</u></b>	<b><u>ITEM</u></b>	<b><u>ISSUE DATE</u></b>	<b><u>LAST REVISED</u></b>
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**NOTES:**

1. ALL PRESSURE PIPE TO BE INSTALLED ACCORDING TO THESE DETAILS UNLESS NOTED OR DETAILED.
2. THE PORTLAND CEMENT CONCRETE USED FOR THRUST BLOCKS SHALL BE CLASS "C" 2000 PSI CONCRETE.
3. ALL ANCHOR RODS SHALL BE GALVANIZED STEEL, 1/2" DIAMETER MINIMUM, WRAPPED AROUND PIPE. MEGA-LUGS SHALL BE USED IN ADDITION TO TIE DOWN STRAPS.
4. THRUST BLOCKS SHALL BE USED FOR PLASTIC PIPES WITH A 3" DIAMETER OR LARGER AND AT THE END OF ALL MAINS.
5. FLOW DIRECTION SHOWN BY →
6. ALL VIEWS ARE PLAN UNLESS NOTED OTHERWISE.
7. ALL CONCRETE THRUST BLOCKS TO BEAR ON UNDISTURBED SOIL IN EACH DIRECTION OF THRUST.
8. TRENCH TO BE BACKFILLED AT 90% COMPACTION TESTED RANDOMLY.
9. MEGA-LUG ADAPTERS MAY BE USED IN ADDITION TO THRUST BLOCKS OF REDUCED SIZE, UPON WRITTEN APPROVAL OF THE ENGINEER. APPROVAL MUST BE OBTAINED PRIOR TO CONSTRUCTION. THRUST BLOCKS ARE REQUIRED IN ADDITION TO JOINT RESTRAINT DEVICES.
10. DUCTILE IRON, CAST IRON AND STEEL COMPONENTS SHALL BE WRAPPED PER PROJECT SPECIFICATIONS.
11. CONTRACTOR SHALL ADJUST BEARING AREA FOR SOIL CONDITIONS AND PROJECT-TEST PRESSURE AND SHALL OBTAIN APPROVAL OF BEARING AREA CALCULATIONS PRIOR TO PLACING THRUST BLOCKS.
12. SEE ALSO GATEWAY STD. DWGS. 105 & 110



**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

**THRUST BLOCKS**

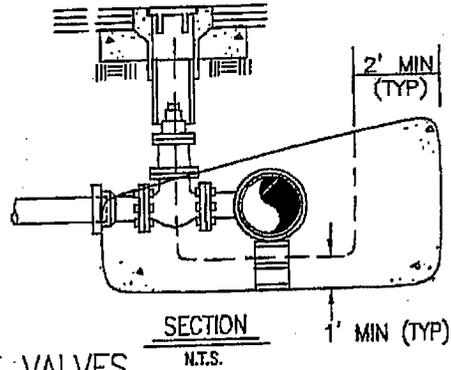
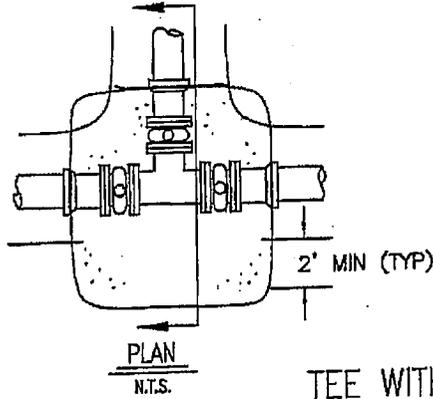
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DATE: 08/06/03

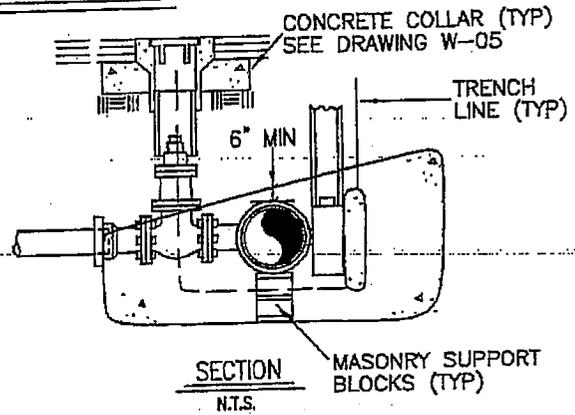
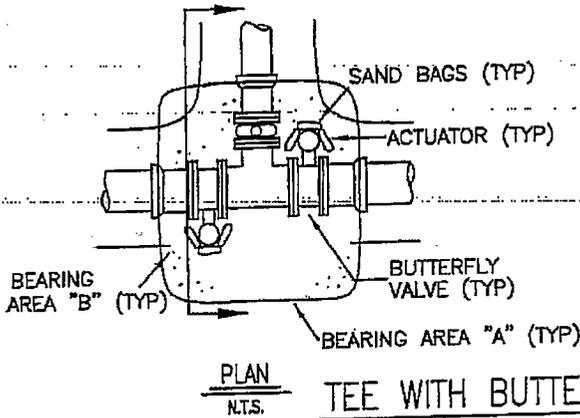
DRAWN: O. Espinoza

CHECKED: F. Fiorenza

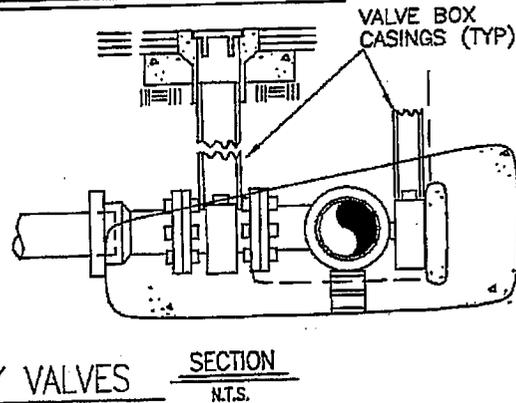
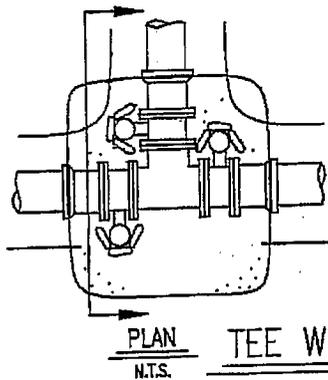
DWG No. Gateway-100



TEE WITH GATE VALVES



TEE WITH BUTTERFLY VALVES ON MAIN



TEE WITH BUTTERFLY VALVES

- NOTES: 1. THE PROJECT ENGINEER HAS THE FINAL AUTHORITY IN DETERMINING THE BEARING AREA OF ALL THRUST BLOCKS, AND THE REBAR PLACEMENT.
2. BEARING AREA A & B ARE TO BE SIZED USING THE THRUST BLOCK DETAIL.
3. INSTALL SAND BAGS AROUND BUTTERFLY VALVE ACTUATOR TO ISOLATE IT FROM CONCRETE.
4. DISTURBED TRENCH AREAS CANNOT BE USED IN BEARING CALCULATIONS.

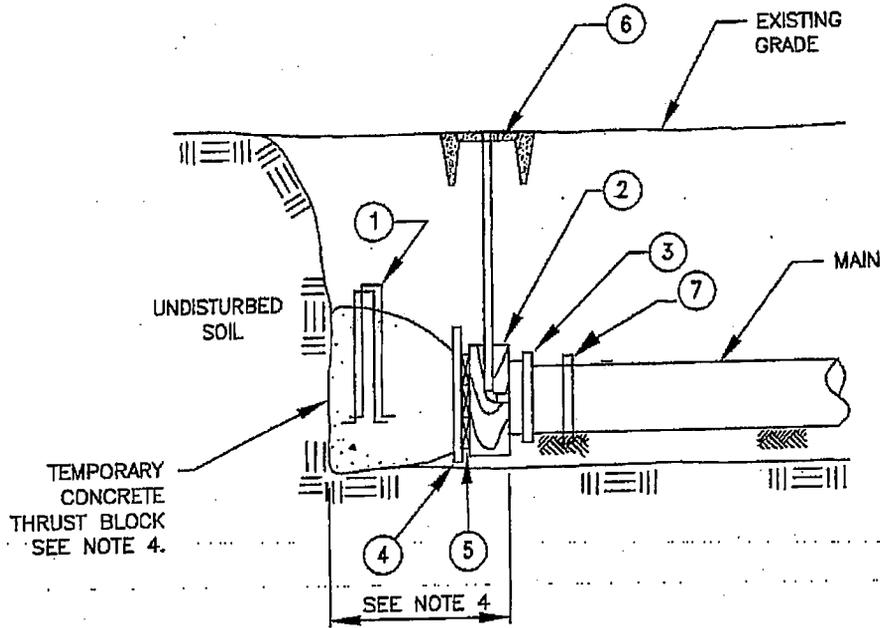


IMPERIAL COUNTY  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

**THRUST BLOCK  
AT TEE (TYP.)**

NOT TO SCALE

DATE:	07/23/02
DRAWN:	O. Espinoza
CHECKED:	M. Ortiz
DWG No.	Gateway-105



PROFILE

CONSTRUCTION NOTES

1. ALL MATERIAL TO BE NAILED OR SECURED TO MAINTAIN RIGIDITY.
2. THE LINE SHALL BE DRAINED BY THE CONTRACTOR PRIOR TO THE TIE-IN TO THE MAIN.
3. THE INTENT IS TO PROVIDE A BOND BREAK BETWEEN THE CONCRETE THRUST BLOCK & THE END CAP & BLOWOFF. THE CONTRACTOR MAY USE ALTERNATE DESIGN WITH THE APPROVAL OF THE ENGINEER.
4. THE TEMPORARY CONCRETE THRUST BLOCK SHALL BE SIZED ACCORDING TO SOIL & THRUST REQUIREMENTS. THE THRUST BLOCK SIZE SHALL NOT EXCEED 10% OF THE MAXIMUM SIZE REQUIRED.

ITEM #	SIZE & DESCRIPTION
1.	(2)-#5 REINFORCING BARS, 18" MIN EMBEDMENT (TO FACILITATE BLOCK REMOVAL)
2.	SOLID HARD WOOD TIMBERS OR STEEL BEAM SPACERS (TO STRADDLE BLOW-OFF)
3.	CAP, END-2" TAP-MECH. JOINT
4.	3/4" PLYWOOD
5.	2 x WOOD BLOCKING (TO SPAN SPACERS)
6.	2" BLOWOFF (SEE DETAIL)
7.	JOINT RESTRAINT DEVICE



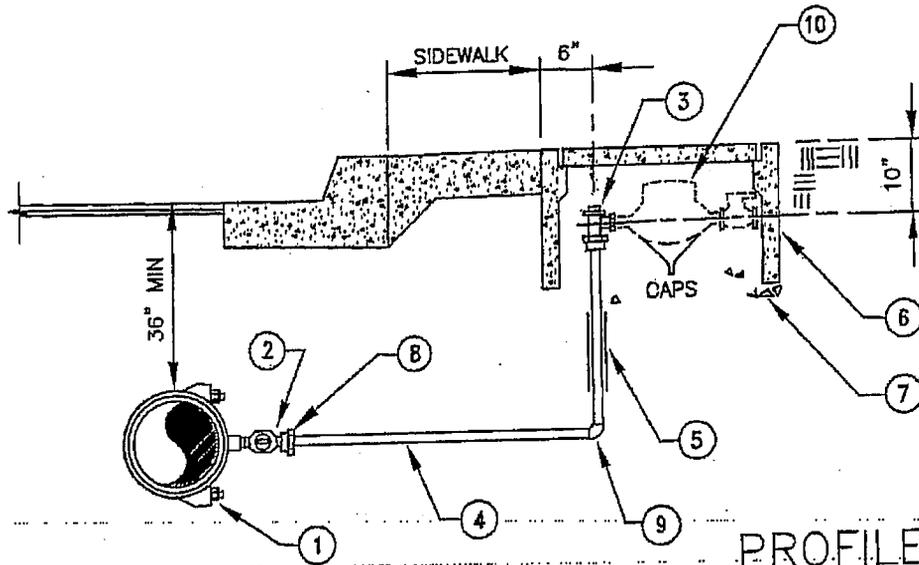
**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

**TEMPORARY THRUST BLOCK**

NOT TO SCALE

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-110

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**CONSTRUCTION NOTES**

**ITEM # SIZE & DESCRIPTION**

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, JOINT OR FITTING. USE SINGLE STRAP UP TO 12" MAIN SIZE. USE DUCTILE IRON TAPPED TEE FOR PVC SIZES 14" THRU 24".
2. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION, AT SPRING LINE OF THE MAIN.
3. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN ON DRAWING W-48
4. THE CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURER'S INSTALLATION GUIDE. ALL TAPS SHALL BE MADE WITH MACHINE GUIDE OR PILOT TAP. PVC TAPS SHALL BE MADE WITH PROPER SHELL CUTTER.
5. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP AND SHALL HAVE A MINIMUM OF 30" COVER.
6. SPLICES OF COPPER TUBING SHALL NOT BE ALLOWED, EXCEPT AS APPROVED BY THE DISTRICT ENGINEER.
7. POLY-SLEEVE COLORS REQUIRED  
BLUE = POTABLE WATER SERVICE
8. SEE APPROVED MATERIAL LIST.
9. DUCTILE IRON, CAST IRON AND STEEL COMPONENTS SHALL BE COATED OR WRAPPED PER PROJECT SPECIFICATIONS.
10. LETTER "W" SHALL BE STAMPED OR CHISLED IN TOP OF CURB OVER THE SERVICE NOT LESS THAN 1-1/2" HIGH AND 3/16" DEEP.

1. SINGLE WIDE ALL BRONZE SERVICE SADDLE W/2" I.P. OUTLET THRU 12" PVC
1. DUCTILE IRON TAPPED TEE W/2 1/2" I.P. OUTLET FOR 14" THRU 24" PVC WITH NYLON BUSHING
2. 2" CORPORATION STOP-M.I.P. x COMPRESSION
3. 2" ANGLE METER STOP-LOCKWING-FLANGED
4. 2" COPPER TUBING - K SOFT
5. 2" POLY-SLEEVE - 6 MIL
6. METER BOX 2" BROOK E PRODUCTS NO. 66 TR OR EQUAL
7. 6" BASE OF 3/8" ROCK
8. 2" COPPER ADAPTOR M.I.P. x SWEAT OR COMPRESSION
9. 2" COPPER ELL 90 SWEAT
10. FUTURE METER

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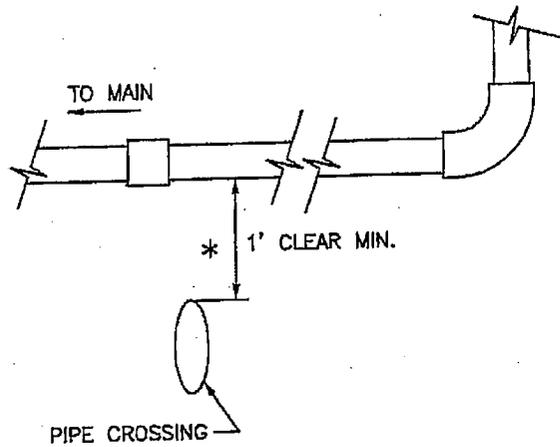


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EL CENTRO, CALIFORNIA

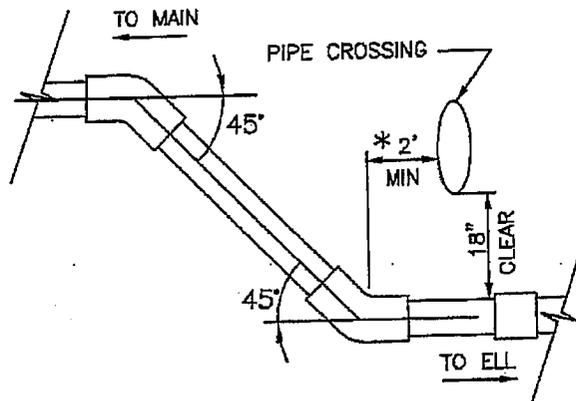
**2" COPPER SERVICE INSTALLATION**

NOT TO SCALE

DATE:	08/06/03
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-115



DETAIL 'A'



DETAIL 'B'

\* DESIGN ENGINEER OF RECORD SHALL VERIFY WITH CALIFORNIA DEPT. OF HEALTH SERVICES ADEQUACY OF WATER LINE CROSSINGS TO ENSURE COMPLIANCE WITH REGULATORY REQUIREMENTS OF TITLE 22CCRS FOR WATER MAIN INSTALLATION INCLUDING LATEST REVISION.

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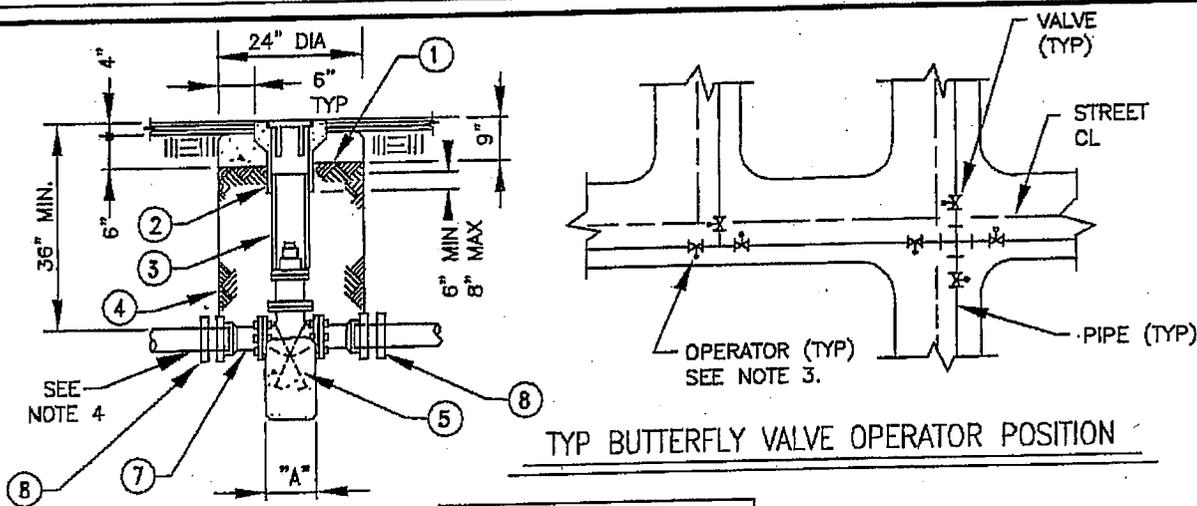


**IMPERIAL COUNTY**  
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 EL CENTRO, CALIFORNIA

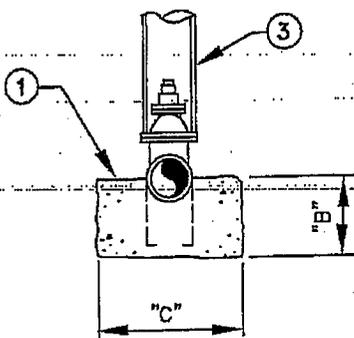
**WATER SERVICE  
 PIPE CROSSING**

NOT TO SCALE

DATE:	08/06/03
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-120

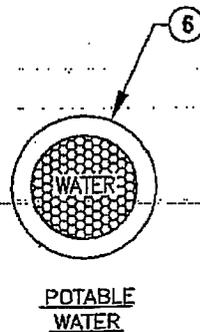


TYP BUTTERFLY VALVE OPERATOR POSITION



VALVE SIZE	DIMENSION	
	"A"	"B"
6"	12"	12"
8"	13"	14"
10"	14"	16"
12"	14"	18"
18"	16"	20"

DIMENSION "C" = TRENCH WIDTH PLUS 2x PIPE DIA.



- NOTES:
1. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 5 FEET.
  2. BUTTERFLY VALVE OPERATORS SHALL BE LOCATED ON THE RIGHT SIDE OF THE VALVE LOOKING TOWARD TEE OR CROSS.
  3. SEE APPROVED MATERIAL LIST.
  4. USE 6"-0" SHORT LENGTHS OF PVC IN & OUT OF FITTINGS & VALVES.
  5. RESTRAINT PIPE JOINTS MIN. 50 FT. EACH WAY FROM VALVE

ITEM #	SIZE & DESCRIPTION
1.	CONCRETE-450-C-2000
2.	VALVE BOX BROOKE PRODUCTS 1-RT OR EQUAL
3.	8" PVC PIPE-SEWER-SDR 35
4.	BACKFILL WITH COMPACTED BEDDING MATERIAL
5.	#5 STEEL REINFORCING BARS
6.	VALVE COVER MARKED "WATER"
7.	ADAPTOR-MECH. JOINT x FLANGED (TYP BOTH SIDES)
8.	JOINT RESTRAINT DEVICE

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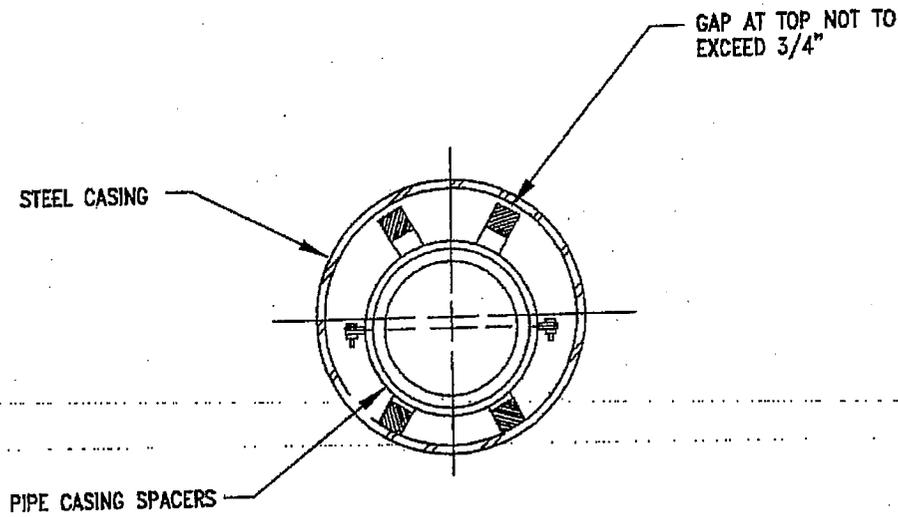


**IMPERIAL COUNTY**  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

**LINE VALVE AND VALVE BOX INSTALLATION**

NOT TO SCALE

DATE: 08/06/03  
DRAWN: O. Espinoza  
CHECKED: F. Fiorenza  
DWG No. Gateway-125



## STEEL PIPE CASING CROSS SECTION

- NOTES:**
1. CASING SPACERS SHALL BE PER THE APPROVED MATERIAL LIST.
  2. CASING SPACERS SHALL BE BOLT ON STYLE WITH A SHELL MADE IN TWO SECTIONS OF HEAVY T-304 STAINLESS STEEL. CONNECTING FLANGES SHALL BE RIBBED FOR EXTRA STRENGTH. THE SHELL SHALL BE LINED WITH A PVC LINER .090" THICK WITH 85-90 DUROMETER. ALL NUTS AND BOLTS ARE TO BE 18-8 STAINLESS STEEL. RUNNERS SHALL BE MADE OF ULTRA HIGH MOLECULAR WEIGHT POLYMER WITH INHERENT HIGH ABRASION RESISTANCE AND LOW COEFFICIENT OF FRICTION. RUNNERS SHALL BE SUPPORTED BY RISERS MADE OF HEAVY T-304 STAINLESS STEEL. THE SUPPORTS SHALL BE WELDED TO THE SHELL AND WELDS SHALL BE PASSIVATED. THE HEIGHT OF SUPPORTS AND RUNNERS COMBINED SHALL BE SUFFICIENT TO KEEP THE CARRIER PIPE AT LEAST 3/4" FROM THE CASING PIPE WALL AT ALL TIMES.
  3. CASING SPACERS SHALL BE THE RESTRAINED POSITION TYPE.
  4. SEE APPROVED MATERIALS LIST—"PIPE, CASING SPACERS"

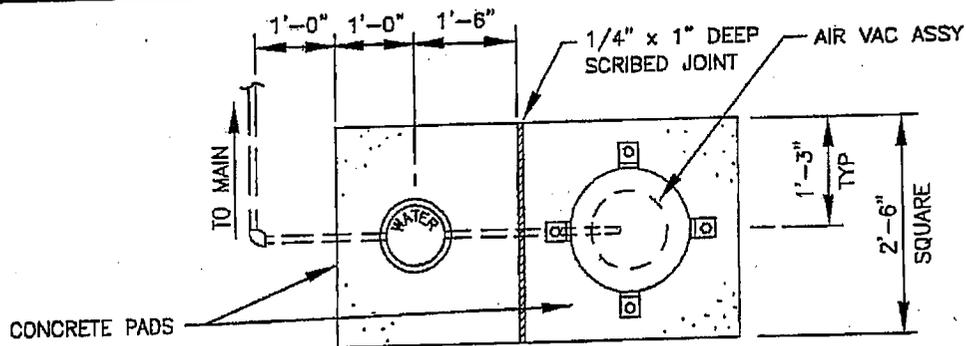


**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
 EL CENTRO, CALIFORNIA

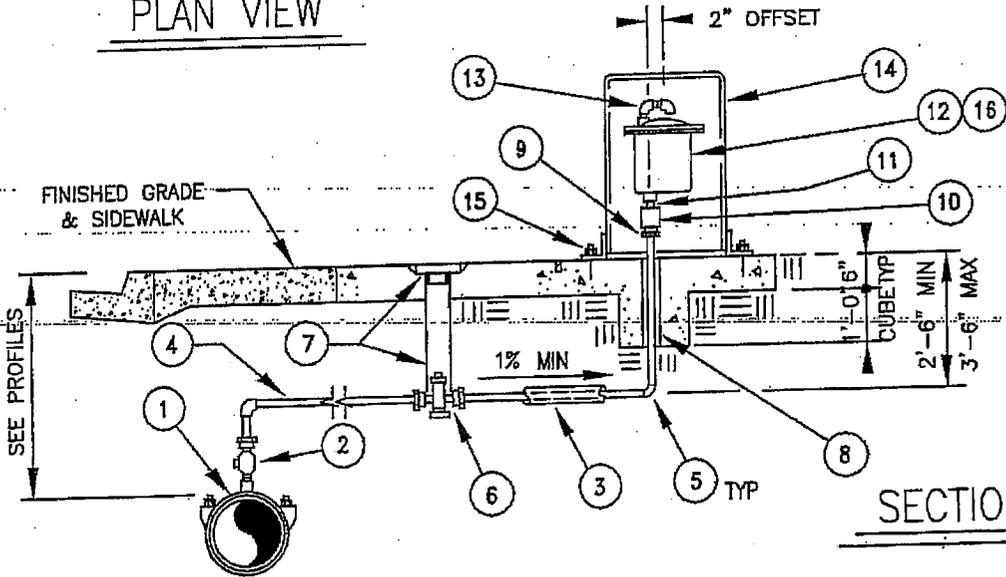
### **STEEL CASING DETAILS**

NOT TO SCALE

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-130



PLAN VIEW



SECTION

FOR APPLICABLE CONSTRUCTION NOTES SEE 2" COPPER SERVICE INSTALLATION.

ITEM #	SIZE & DESCRIPTION	ITEM #	SIZE & DESCRIPTION
1.	SINGLE WIDE S.S. STRAP BRONZE SERVICE SADDLE 2" OUTLET THRU 12" PVC	7.	4" SDR 35 PVC SEWER PIPE & 4" C.I. CAP
1.	DUCTILE IRON TAPPED TEE W/ 2 1/2" I.P. OUTLET FOR 14" THRU 24" PVC W/NYLON BUSHING.	8.	FOAM SLEEVE - 1/2" THICK
2.	1" OR 2" BRONZE CORPORATION STOP M.I.P. THREAD x COMPRESSION	9.	MALE ADAPTOR - SWEAT OR COMPRESSION
2.	1" OR 2" BRONZE CORPORATION STOP M.I.P. x FLARE NUT	10.	DI-ELECTRIC COUPLING 2"
3.	POLY SLEEVE 6 MIL - COLOR PER SPECS.	11.	BLACK IRON NIPPLE (2") x 3"
4.	2" COPPER TUBING TYPE K SOFT	12.	AIR & VACUUM RELIEF VALVE - 2" CLA-VAL MODEL 36 OR EQUAL
5.	ELL 90 COPPER SWEAT OR COMPRESSION	13.	2-PVC SCH 80 STREET ELLS W/SCREEN-2"
6.	BRONZE INLINE BALL VALVE-COMPRESSION INLETS 2"	14.	AIR-VAC VALVE COVER PIPELINE PRODUCTS OR EQUAL
		15.	1/2" x 3 1/2" 304 S.S. SLEEVE EXPANSION ANCHORS
		16.	FIELD PAINT - FIRE HYDRANT YELLOW

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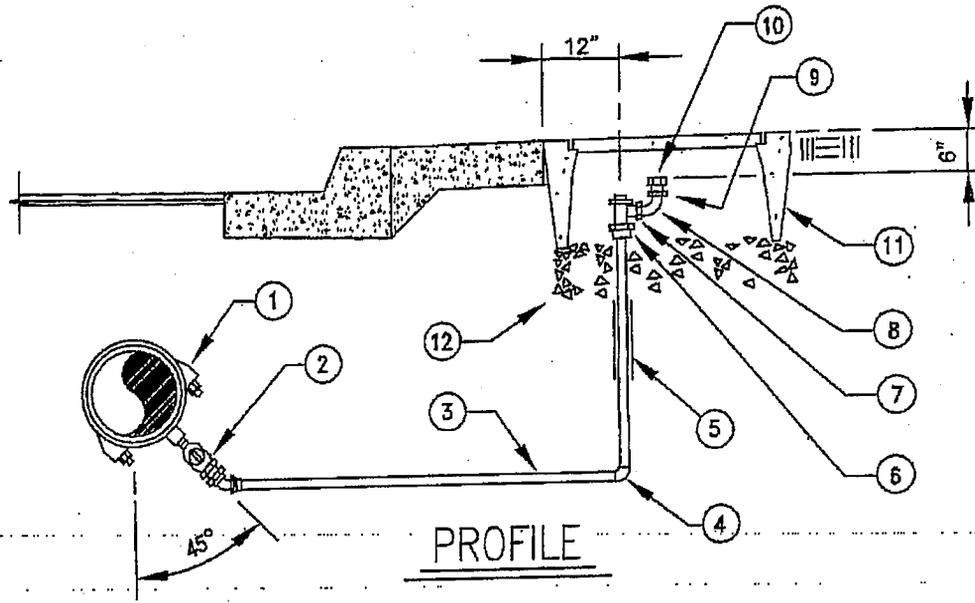


**IMPERIAL COUNTY**  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

**2" AIR VACUUM RELIEF  
VALVE ASSEMBLY**

NOT TO SCALE

DATE:	07/23/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-135



**CONSTRUCTION NOTES**

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, JOINT OR FITTING. FOR STEEL PIPE FITTING, USE SINGLE STRAP UP TO 12" SIZE MAIN. USE DUCTILE IRON TAPPED TEE FOR SIZES 14" THRU 24".
2. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.
3. SET TOP OF METER BOX FLUSH WITH SIDEWALK.
4. THE CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURER'S INSTALLATION GUIDE. PVC TAPS SHALL BE MADE WITH PROPER SHELL CUTTER.
5. SPLICES OF COPPER TUBING SHALL NOT BE ALLOWED, EXCEPT AS APPROVED BY THE ENGINEER.
6. THE TOP OF THE METER BOX SHALL BE PAINTED WITH FIRE HYDRANT YELLOW.
7. POLY-SLEEVE COLORS REQUIRED  
BLUE = POTABLE WATER SERVICE
8. SEE APPROVED MATERIALS LIST.
9. DUCTILE IRON, CAST IRON AND STEEL COMPONENTS SHALL BE COATED OR WRAPPED PER PROJECT SPECIFICATIONS.

**ITEM #**

**SIZE & DESCRIPTION**

1. SINGLE WIDE ALL BRONZE SERVICE SADDLE W/2 I.P. OUTLET THRU 12" PVC
1. DUCTILE IRON TAPPED TEE W/2 1/2" I.P. OUTLET FOR 14" THRU 24" PVC W/NYLON BUSHING.
2. 2" BRONZE CORPORATION STOP I.P. x 1/8 FLARE BEND.
3. 2" COPPER TUBING-K SOFT
4. 2" COPPER 90° ELL, SWEAT x SWEAT
4. 2" 90° ELL-COMPRESSION
5. 2" POLY-SLEEVE - 6 MIL
6. 2" ANGLE METER STOP-COMPRESSION x FLANGE
6. 2" ANGLE METER STOP M.I.P. x FLANGE W/SWEAT x M.I.P. ADAPTOR
7. 2" METER FLANGE-OVAL
8. 2" BRASS STREET ELL
9. 2" x 2 1/2" ADAPTOR-MIP x MFHT-BRASS
10. 2 1/2" HYDRANT HOSE CAP
11. METER BOX INSTALLATION BROOKE PRODUCTS 33 MB-S OR EQUAL (SEE NOTES 3 & 6).
12. 6" BASE OF 3/8" ROCK

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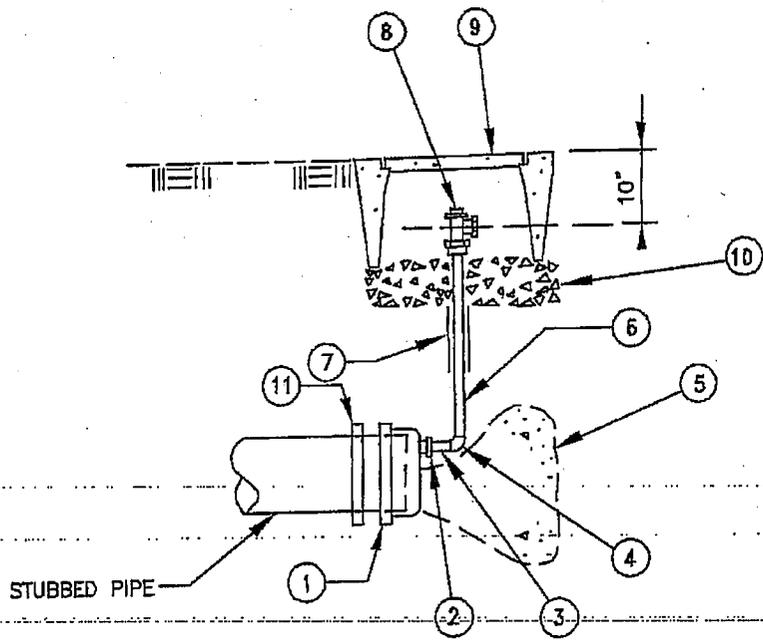


**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

**2" BLOWOFF ASSEMBLY**

NOT TO SCALE

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-140



PROFILE

CONSTRUCTION NOTES

ITEM # SIZE & DESCRIPTION

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. SET TOP OF METER BOX FLUSH WITH SIDEWALK.</li> <li>2. SPLICES OF COPPER TUBING SHALL NOT BE ALLOWED.</li> <li>3. POLY-SLEEVE COLORS REQUIRED<br/>BLUE = POTABLE WATER SERVICE</li> <li>4. METER BOX TO BE PAINTED OSHA SAFETY YELLOW - 2 COATS.</li> <li>5. INSTALL THRUST BLOCK PER TEMPORARY THRUST BLOCK DRAWING.</li> <li>6. IF BENDS ARE REQUIRED IN COPPER, USE 12" MINIMUM RADIUS.</li> <li>7. SEE APPROVED MATERIAL LIST.</li> <li>8. DO NOT PLACE CONCRETE ON COPPER OR PIPE.</li> </ol> | <ol style="list-style-type: none"> <li>1. TAPPED CAP, DUCTILE IRON WITH OFFSET 2" OPENING, MJ</li> <li>2. 2" x 1" NYLON BUSHING</li> <li>3. 1" SWEAT x M.I.P. ADAPTOR</li> <li>3. 1" COMPRESSION x M.I.P.</li> <li>4. 1" COPPER ELL 90°</li> <li>4. 1" ELL 90° COMPRESSION</li> <li>5. THRUST BLOCK</li> <li>6. 1" COPPER TUBING K SOFT</li> <li>7. 1" POLY-SLEEVE - 6 MIL-BLUE</li> <li>8. 1" METER STOP, ANGLE-COMPRESSION OR FLARE</li> <li>9. METER BOX BROOKE PRODUCTS NO.37 OR EQUAL</li> <li>10. 6" BASE OF 3/8" ROCK</li> <li>11. JOINT RESTRAINT DEVICE</li> </ol> |
|---|---|

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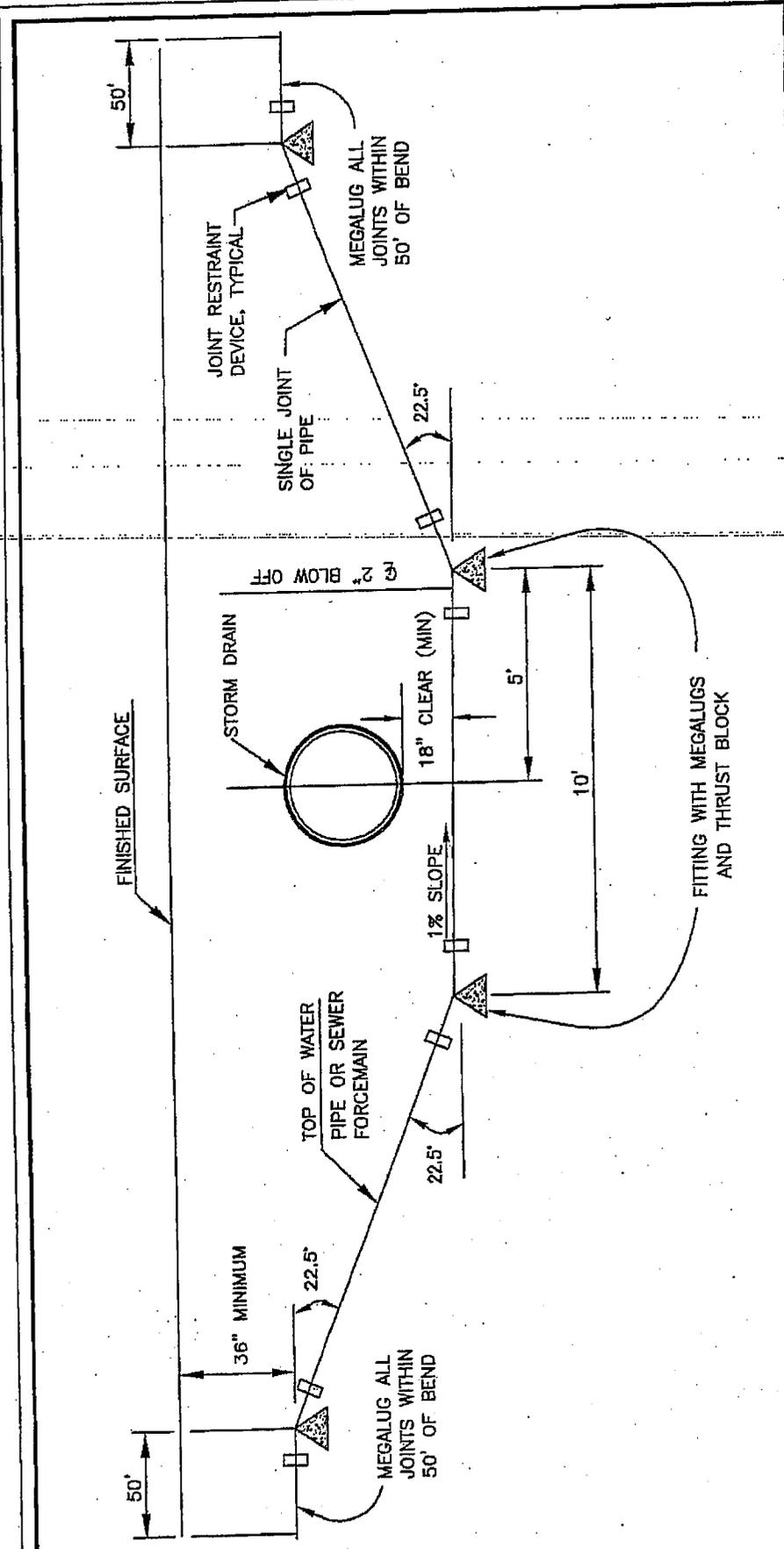


**IMPERIAL COUNTY**  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

**STUB-OUT BLOWOFF ASSEMBLY**

NOT TO SCALE

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-141




**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

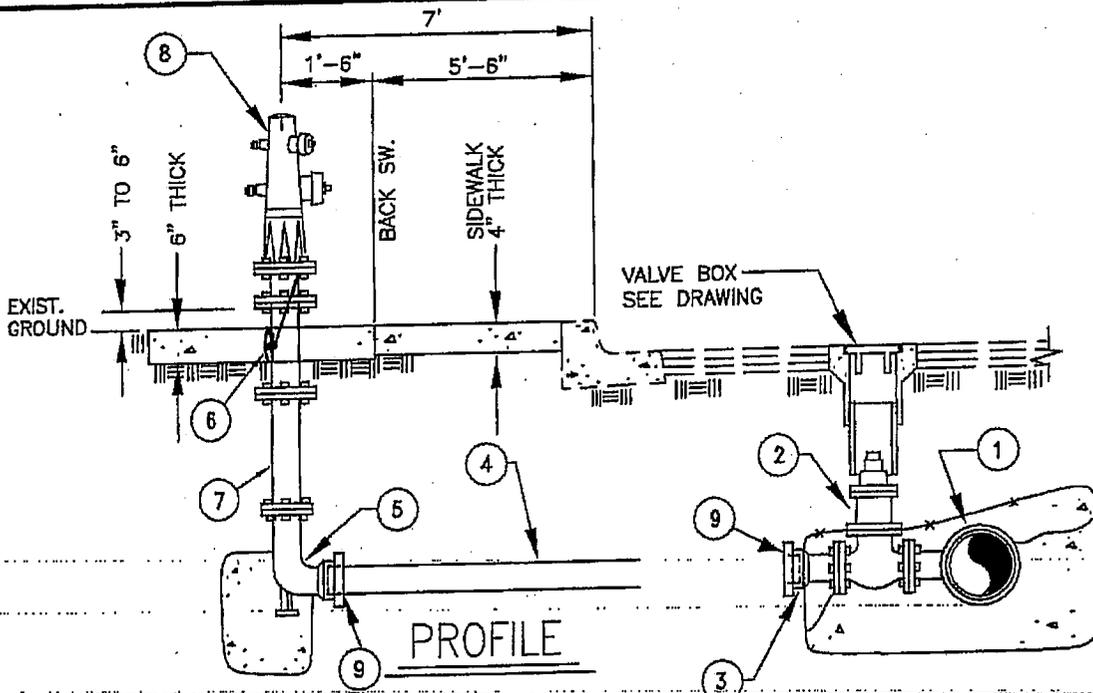
DATE:	06/06/03
DRAWN:	O. ESPINOZA
CHECKED:	F. FIORENZA
DWG No.	Gateway-142

**VERTICAL STORM  
LINE CROSSING**

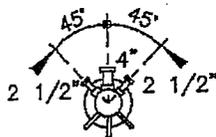
NOT TO SCALE

**NOTES:**

1. MEGALUG ALL JOINTS WITHIN VERTICAL LOOP. MEGALUGS ARE TO BE INSTALLED FOR TWO DIRECTION THRUST.
2. BLOW OFF ASSEMBLY REQUIRED AT LOW POINT.
3. AIR RELEASE VALVE REQUIRED AT HIGH POINT.



STREET OR CURB

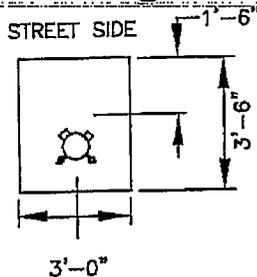


PLAN VIEW

COMMERCIAL

**CONSTRUCTION NOTES**

1. RUN FROM MAIN TO BURY ELL TO BE HORIZONTAL.
2. INSTALL BOLTS AND NUTS WITH NUTS ON BOTTOM OF LOWER FLANGE.
3. HYDRANT RUNS 5 FEET DEEP OR GREATER SHALL USE A SHORT RADIUS 6" x 30" OR 36" BURY ELL. THE MAXIMUM NUMBER OF UNSCORED SPOOLS UNDERGROUND IS TWO (2).
4. FIELD PAINT EXTERIOR OF HYDRANT PER SPECIFICATION.
5. SEE THRUST BLOCK DRAWING FOR SIZING.
6. SEE MATERIALS LIST.
7. NO VERTICAL OBJECTS WITHIN 6 FEET OF FIRE-HYDRANT
8. TRENCH TO BE BACK FILLED PER TRENCH DETAIL AND TESTED AT EACH F.H. LOCATION.
9. MEGA-LUGS SHALL BE USED IN ADDITION TO TIE DOWN STRAPS.
10. ALL DUCTILE IRON, CAST IRON, AND STEEL COMPONENTS SHALL BE POLYETHYLENE WRAPPED



**ITEM # SIZE & DESCRIPTION**

1. TEE - RINGTITE x RINGTITE x FLANGED
2. 6" GATE VALVE-R.S.-FLANGED
3. ADAPTOR-MECH. JOINT x FLANGED D.I. 6"
4. PIPE - SAME MATERIAL AS MAIN
5. HYDRANT BURY ELL-6 x VARIOUS (24-54) STANDARD RADIUS- FLANGED x MECH. JOINT
6. HYDRANT EXTENSION-ONE KNOCKOFF SCORED-6 HOLE PATTERN (6"x6") CAST IRON
7. HYDRANT EXTENSION-UNSCORED-6 HOLE PATTERN (6" x VARIOUS LENGTHS) DUCTILE IRON
8. FIRE HYDRANT - HYDRANTS TO BE LONG BEACH IRON WORKS MODEL #430 OF BRONZE CONSTRUCTION INDUSTRIAL STYLE WET BARREL PIPE OR APPROVED EQUAL. EQUIPPED WITH:
  - a. LONG BEACH IRON WORKS MODEL #LB400 BREAK-OFF CHECK VALVE.
  - b. ONE 4" AND TWO 2-1/2" DISCHARGE PORTS.
  - c. FIRE HYDRANT TO BE PAINTED NFPA CHROME YELLOW.
9. JOINT RESISTANT DEVICE

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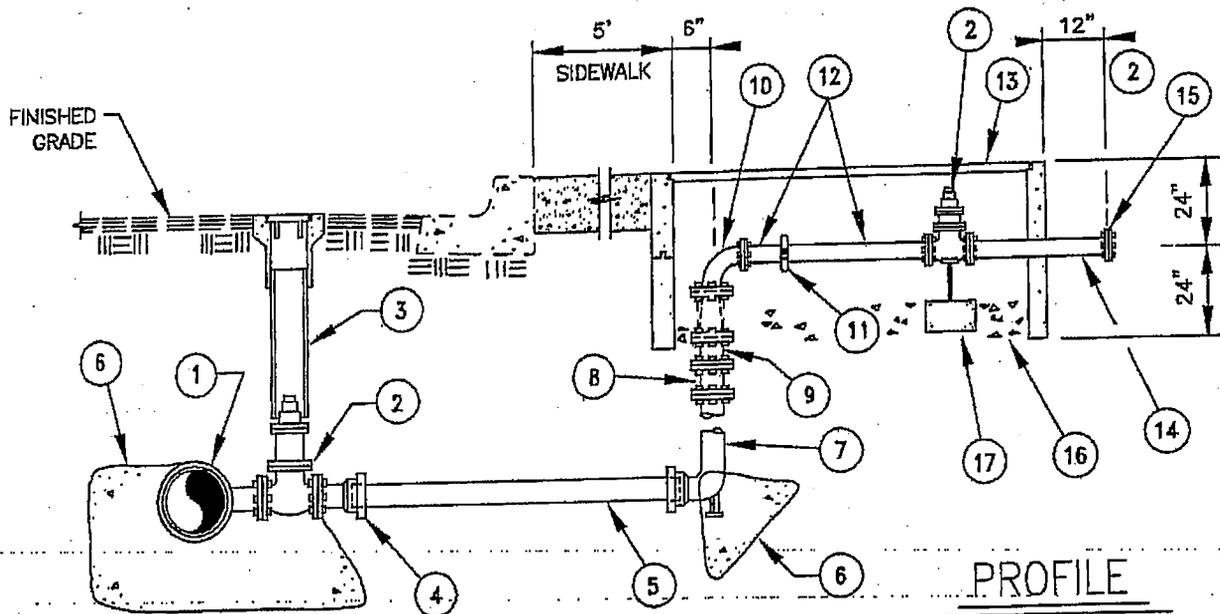


**IMPERIAL COUNTY**  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

**HYDRANT INSTALLATION**

NOT TO SCALE

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-145



**NOTES:**

1. PACK WITH NON-SHRINK GROUT WHERE PIPING PROTRUDES THROUGH VAULT WALL

ITEM #	SIZE & DESCRIPTION
1.	CAST OR DUCTILE IRON TEE
2.	GATE VALVE-RS FLANGED
3.	VALVE BOX INSTALLATION - SEE VALVE BOX DETAIL
4.	ADAPTOR-RINGTITE x FLANGED
5.	6" PIPE-CLASS 150, C900 PVC
6.	CONCRETE THRUST BLOCK
7.	6" HYDRANT BURY ELL, STANDARD RADIUS
8.	ADAPTOR-6 TO B HOLE-CAST IRON
9.	6" .250" WALL STEEL PIPE CML & C WITH WELDED FLANGES
10.	ELL-6"
11.	VICTAULIC COUPLING
12.	SPOOL: 1/4" WALL x 4" LONG (TYP 2 PLACES) (EPOXY LINED & COATED) FLG x VIC
13.	METER VAULT- BROOKE PRODUCTS NO. 724-A OR EQUAL
14.	SPOOL 1/4" x 2' CONCRETE WALL EPOXY LINED & COATED
15.	BLIND FLANGE
16.	6" BASE OF 3/8" ROCK
17.	12" x 12" x 6" THK CONC PAD w/PIPE SUPPORT
18.	DUCTILE IRON, CAST IRON AND STEEL COMPONENTS SHALL BE COATED OR WRAPPED PER PROJECT SPECIFICATIONS.

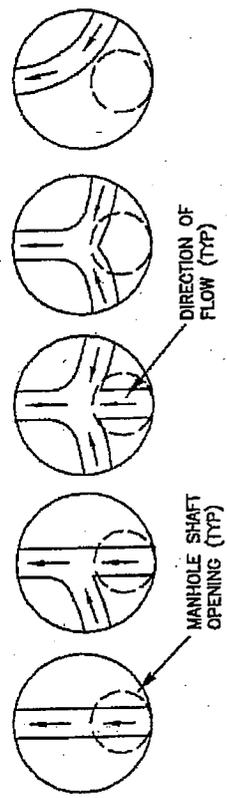
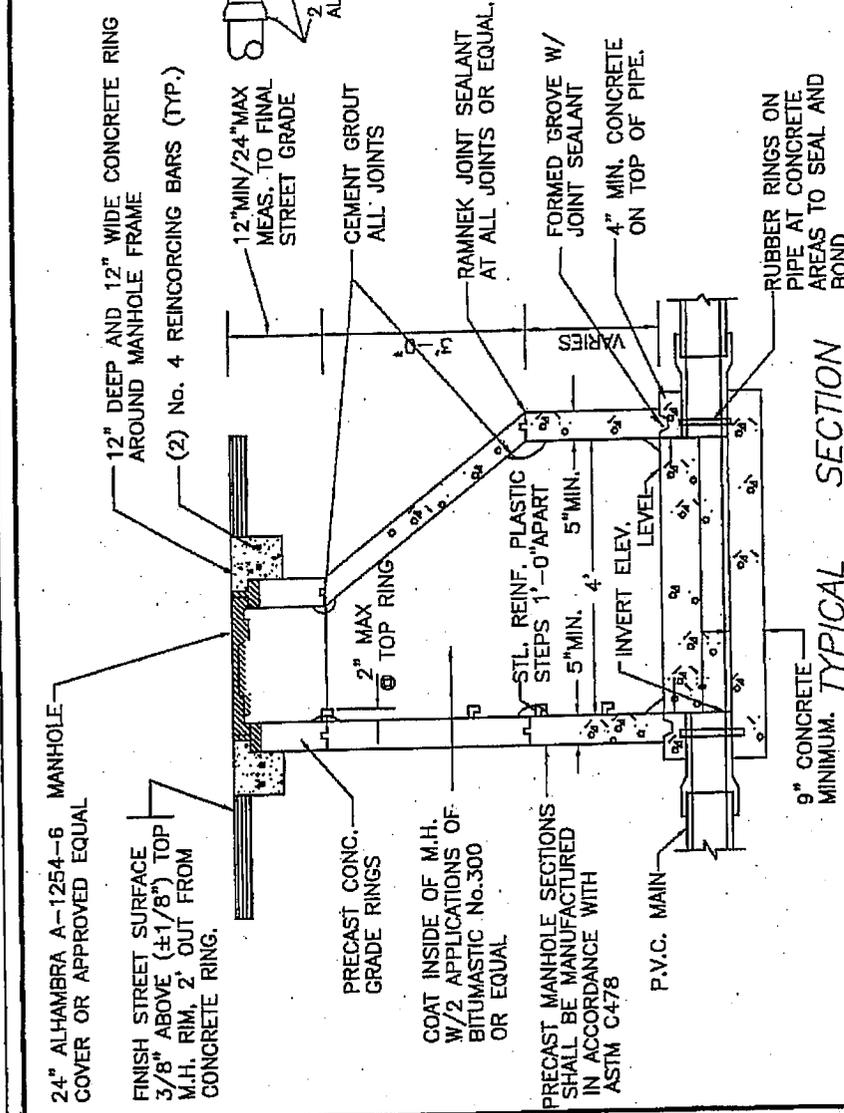
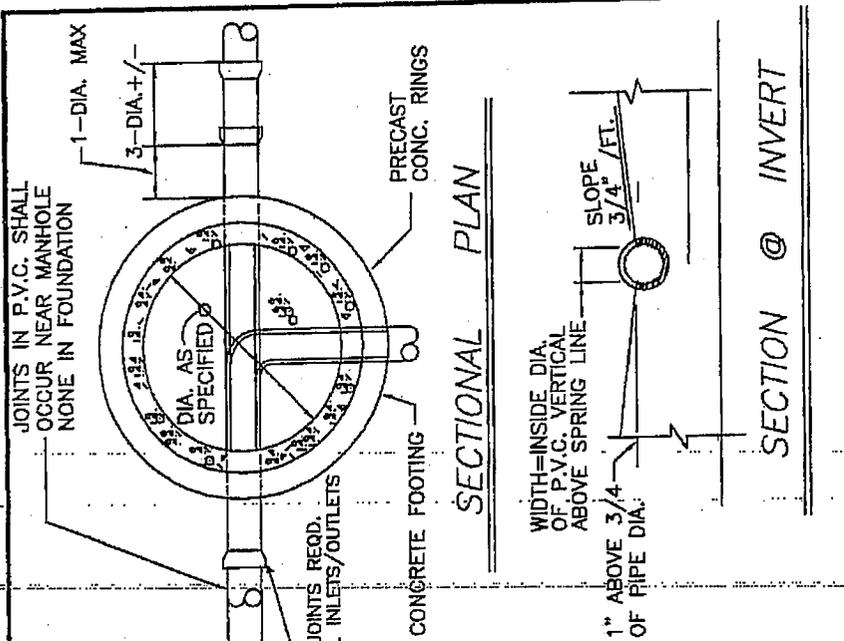


**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
 EL CENTRO, CALIFORNIA

**FIRE SERVICE INSTALLATION**

NOT TO SCALE

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-150



MANHOLE BASE SHALL BE CONSTRUCTED SUCH THAT PIPES OF DIFFERENT SIZES ENTERING THE MANHOLE MATCH CROWN ELEVATIONS

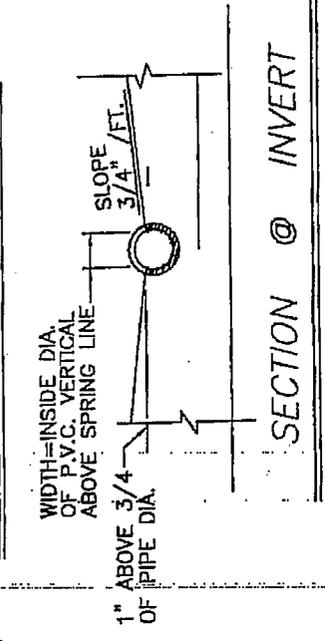
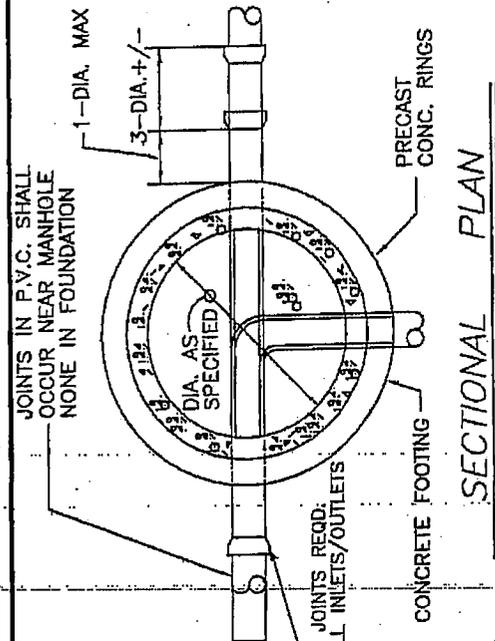
**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

DATE: 07/28/03  
 DRAWN: O. ESPINOZA  
 CHECKED: F. FIORENZA  
 DWG No. Gateway-204

**4' DIAMETER MANHOLE DETAIL**  
 NOT TO SCALE

**NOTE**

THIS DETAIL APPLICABLE FOR 21" MAX. DIAM. PIPE OR WHERE MAXIMUM HEIGHT IS 12' DEEP. IF DIAMETER IS IN EXCESS OF 21" OR HEIGHT IS GREATER THAN 12' USE 5' DIAMETER MANHOLE (205 Detail).



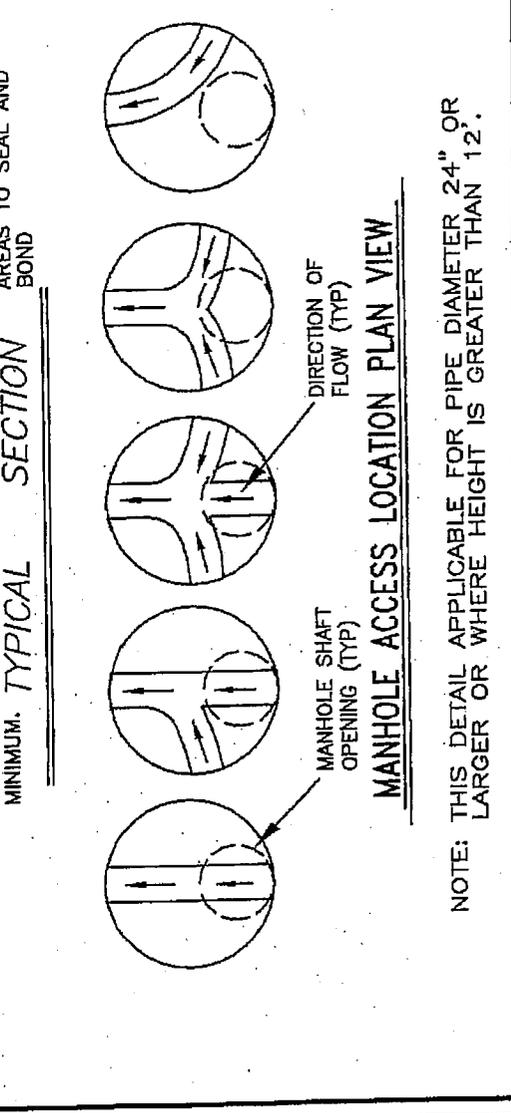
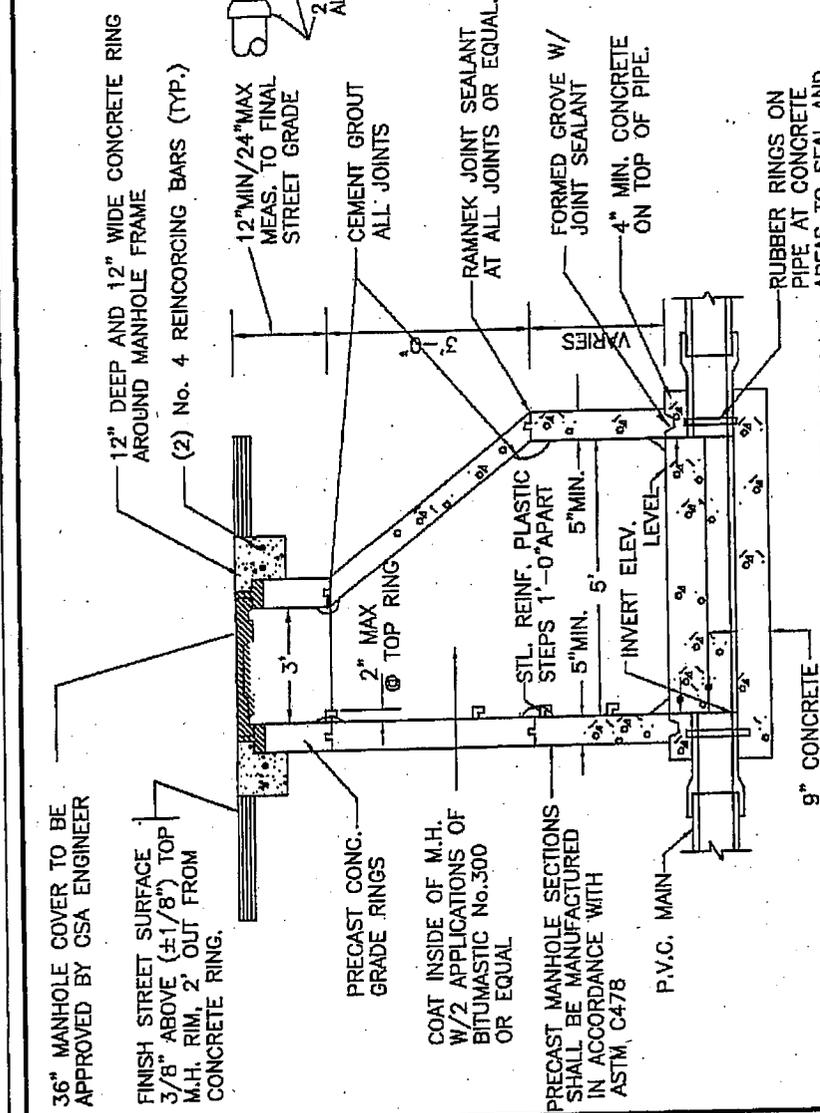
MANHOLE BASE SHALL BE CONSTRUCTED SUCH THAT PIPES OF DIFFERENT SIZES ENTERING THE MANHOLE MATCH CROWN ELEVATIONS

**IMPERIAL COUNTY**  
PUBLIC WORKS DEPARTMENT  
EIL CENTRO, CALIFORNIA

DATE: 07/29/03  
DRAWN: O. ESPINOZA  
CHECKED: F. FLORENZA  
DWG No. Gateway-205

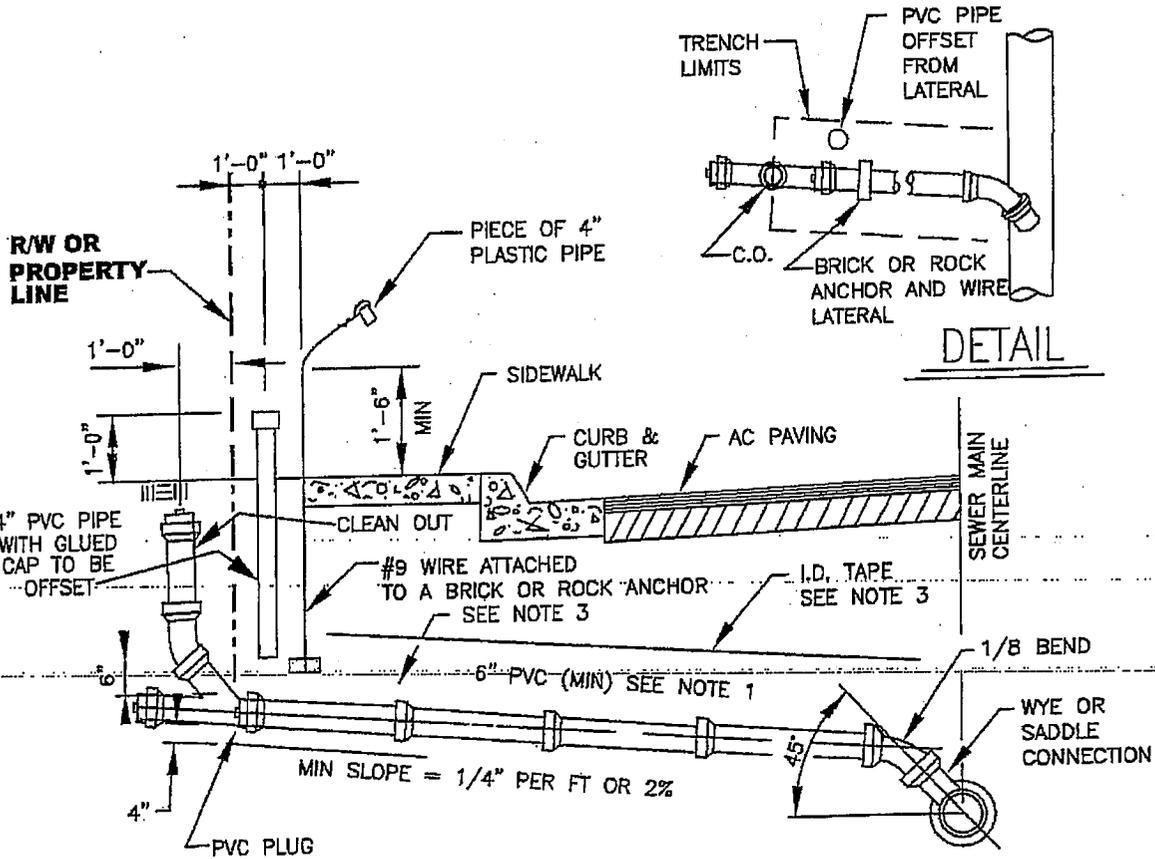
**5' DIAMETER  
MANHOLE DETAIL**

NOT TO SCALE



NOTE: THIS DETAIL APPLICABLE FOR PIPE DIAMETER 24" OR LARGER OR WHERE HEIGHT IS GREATER THAN 12'.

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### SEWER LATERAL PROFILE

- NOTES:**
1. LATERAL SIZE SHALL BE 6" MIN OR AS SHOWN ON THE APPROVED PLANS.
  2. LATERAL SHALL BE INSTALLED TO PROPERTY LINE. AS SHOWN W/C.O. ON-SITE
  3. PLACE GRANULAR BEDDING 1'-0" OVER TOP AND 4" UNDER BOTTOM OF LATERAL. INSTALL DETECTABLE I.D. TAPE 2'-0" ABOVE TOP OF THE GRAVEL FROM THE MAIN TO THE END OF THE LATERAL.
  4. SEE MATERIALS LIST FOR APPROVED MATERIALS.
  5. SEWER LATERAL SHALL HAVE A 10'-0" MINIMUM SEPARATION FROM WATER LATERAL.
  6. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE BELL & SPIGOT WITH RUBBER RING.
  7. LETTER "S" SHALL BE STAMPED OR CHISELED ON TOP OF CURB OVER THE LATERAL, NOT LESS THAN 1 1/2" HIGH AND 3/16" DEEP.

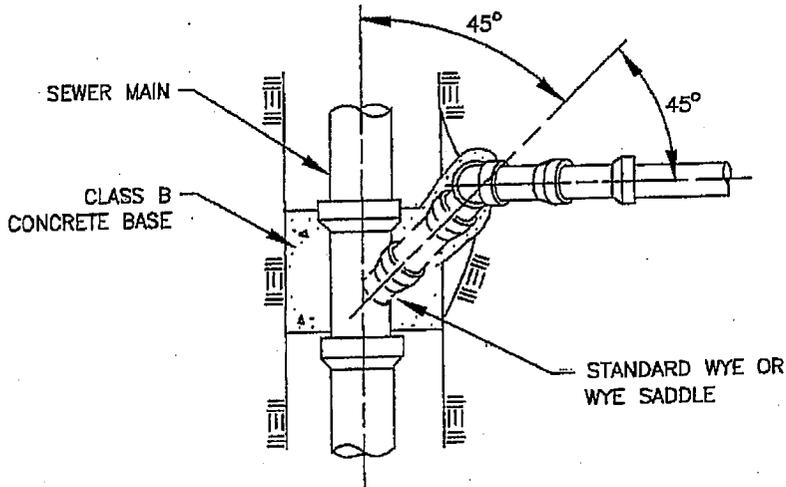


**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

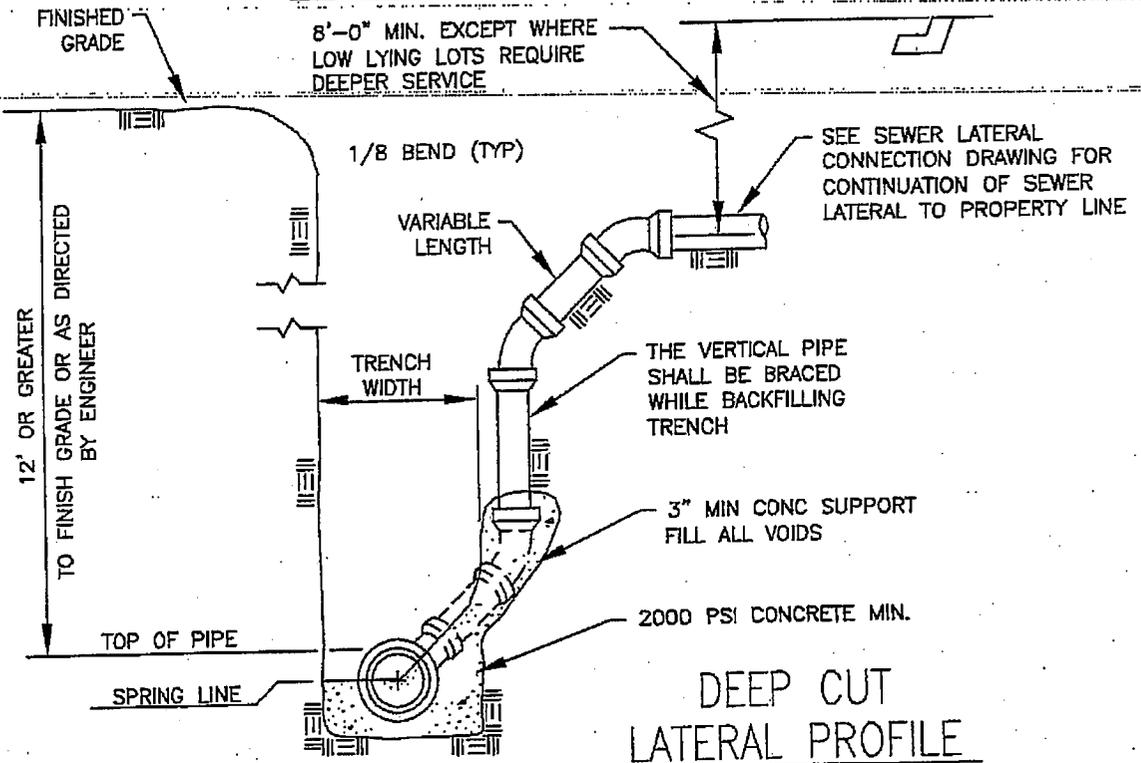
## **SEWER LATERAL DETAILS**

NOT TO SCALE

<b>DATE:</b>	08/29/02
<b>DRAWN:</b>	O. Espinoza
<b>CHECKED:</b>	F. Fiorenza
<b>DWG No.</b>	Gateway-210



**PLAN VIEW**



NOTE: 1. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE BELL & SPIGOT WITH RUBBER RING.

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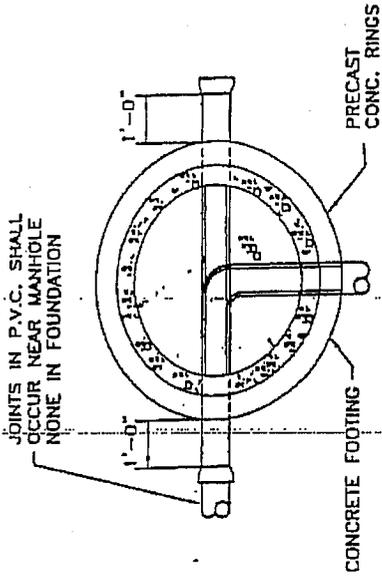


**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
 EL CENTRO, CALIFORNIA

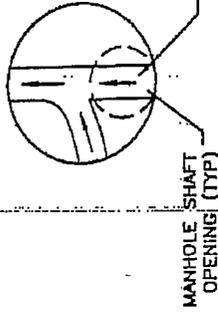
**DEEP CUT SEWER LATERAL**

NOT TO SCALE

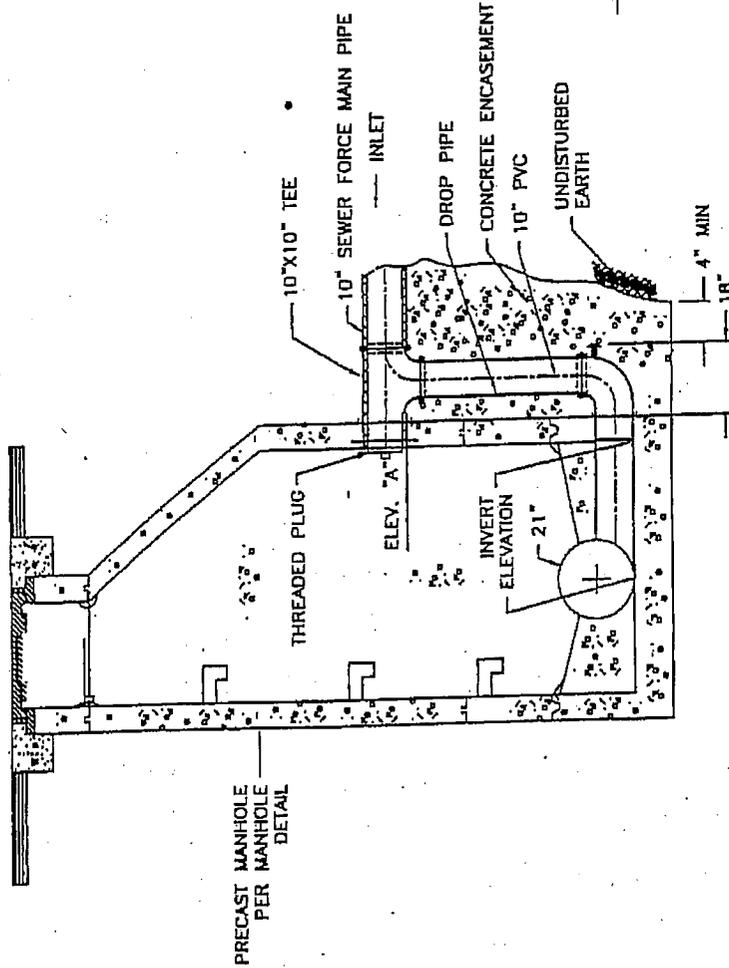
DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-215



SECTIONAL PLAN



MANHOLE ACCESS LOCATION PLAN VIEW



TYPICAL SECTION

JOINTS IN P.V.C. SHALL OCCUR NEAR MANHOLE NONE IN FOUNDATION

PRECAST MANHOLE PER MANHOLE DETAIL

NOTE: FORCE MAIN SIZE MAY VARY.

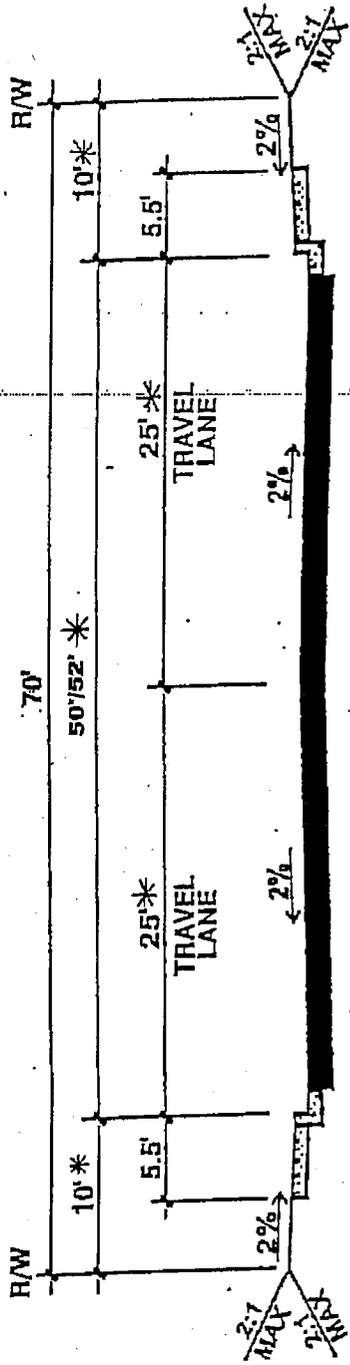


IMPERIAL COUNTY  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

DATE:	08/29/02
DRAWN:	O. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-220

**FORCE MAIN CONNECTION TO MANHOLE DETAIL**

NOT TO SCALE



## 2 LANE LOCAL STREET - NO PARKING

THIS MAY BE 26'9" OR 52' AS APPROVED BY PUBLIC WORKS DEPARTMENT

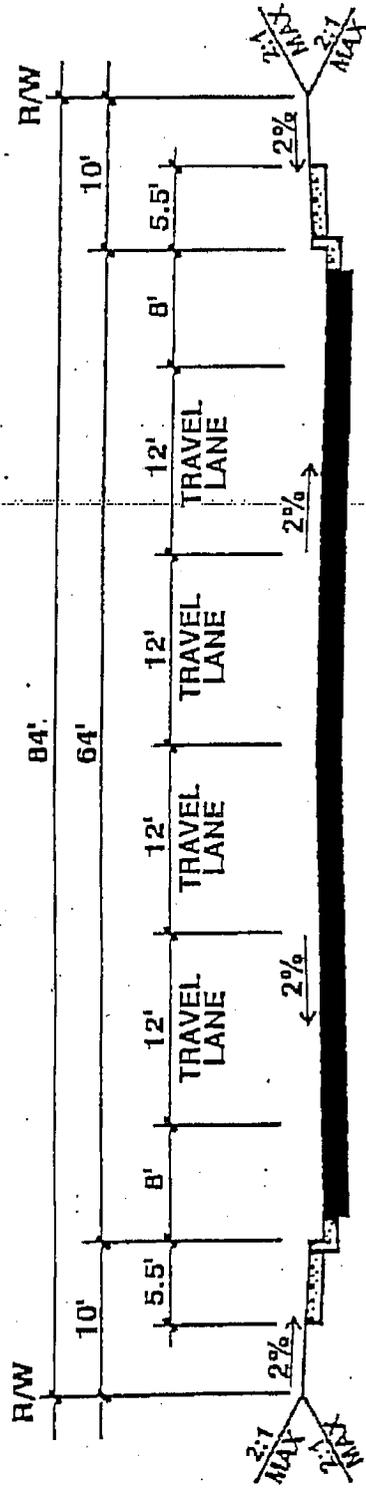
**NOTE:**

1. SEE APPROVED PLANS AND GATEWAY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS



IMPERIAL COUNTY  
PUBLIC WORKS DEPARTMENT  
EL CENTRO, CALIFORNIA

DATE: 11/18/02	
DRAWN: O. Espinoza	TYPICAL STREET CROSS SECTIONS
CHECKED: F. Fiorenza	
DWG No. Gateway-430	
NOT TO SCALE	



## 4 LANE COLLECTOR (SECONDARY ARTERIAL)

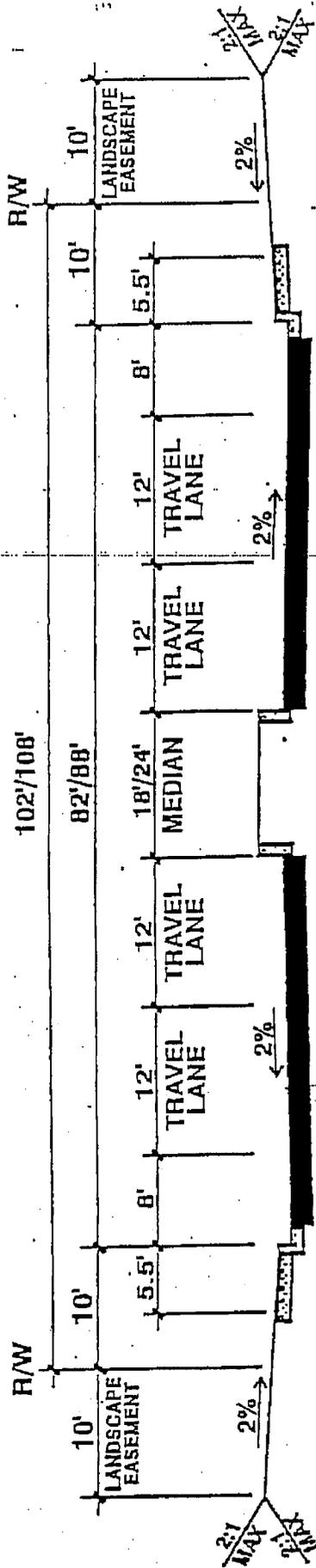
NOTE:

1. SEE APPROVED PLANS AND GATEWAY ST. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS



**IMPERIAL COUNTY**  
 PUBLIC WORKS DEPARTMENT  
 EL CENTRO, CALIFORNIA

<b>TYPICAL STREET CROSS SECTIONS</b>	DATE: 08/29/02 DRAWN: O. Espinoza CHECKED: F. Fiorenza DWG No. Gateway-432
NOT TO SCALE	



**4 LANE MAJOR ARTERIAL (MEDIAN WITH SINGLE OR DUAL LEFT TURN)**

NOTE:

1. SEE APPROVED PLANS AND GATEWAY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS



IMPERIAL COUNTY

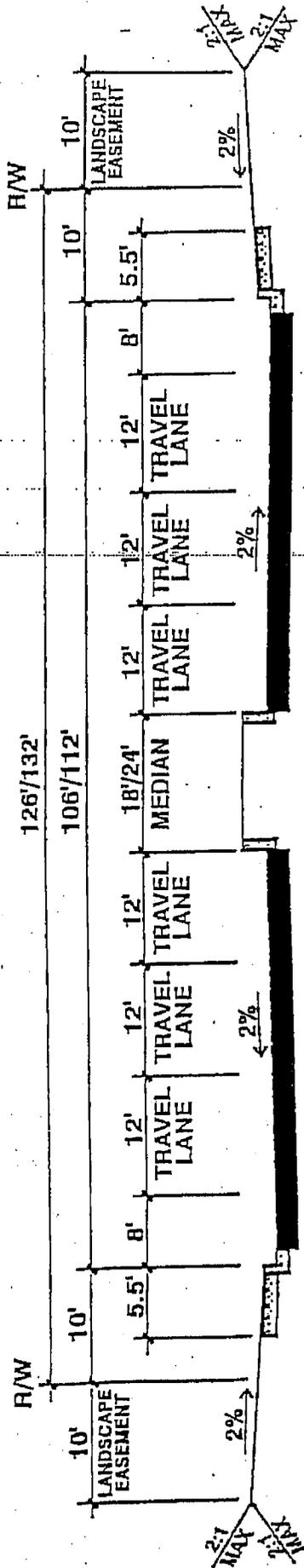
PUBLIC WORKS DEPARTMENT

EL CENTRO, CALIFORNIA

DATE:	08/29/02
DRAWN:	C. Espinoza
CHECKED:	F. Fiorenza
DWG No.	Gateway-434

**TYPICAL STREET  
CROSS SECTIONS**

NOT TO SCALE



**PRIME ARTERIAL ( MEDIAN WITH SINGLE OR DUAL LEFT TURN)**

NOTE:

- 1. SEE APPROVED PLANS AND GATEWAY STD. DETAIL 440 FOR ROAD STRUCTURAL SECTIONS



IMPERIAL COUNTY  
 PUBLIC WORKS DEPARTMENT  
 EL CENTRO, CALIFORNIA

DATE: 08/29/02	
DRAWN: O. Espinoza	TYPICAL STREET CROSS SECTIONS
CHECKED: F. Fiorenza	
NOT TO SCALE	
DWG No. Gateway-436	

MINIMUM TRAFFIC INDEX	STREET CLASSIFICATION	RIGHT OF WAY	STRUCTURAL SECTION
10.5	MAJOR ARTERIAL	102'	5.5" A.C. OVER 12" CLASS 2 AB
9.5	COLLECTOR/SECONDARY ARTERIAL	84'	4.5" A.C. OVER 12" CLASS 2 AB
8.5	LOCAL/ INDUSTRIAL	70'	4" A.C. OVER 11" CLASS 2 AB

**NOTES:**

- 1) Asphaltic concrete should be Caltrans Type A or B,  $\frac{3}{4}$  in. maximum-medium grading, compacted to a minimum of 95 % of the HVEEM or 75 - blow Marshall density (ASTM D1559).
- 2) Aggregate base should be Caltrans Class 2 (  $\frac{3}{4}$  in. maximum), compacted to a minimum of 95 % of ASTM D1557 maximum dry density. (No Recycled Base).
- 3) All pavements should be placed on 8 inches of moisture conditioned, (minimum of optimum) native soils compacted to a minimum of 95 % of ASTM D1557 maximum dry density.
- 4) For road rights of way differing for those shown above see section 11 H, " Street Structural Section" in the Procedure and Design Guidelines Manual for the SPA.

V:\C:\STD.DWG-DETAILS\100-DTILS\Gateway-440.dwg



**IMPERIAL COUNTY**  
**PUBLIC WORKS DEPARTMENT**  
**EL CENTRO, CALIFORNIA**

**GATEWAY STREET  
STRUCTURAL SECTION**

NOT TO SCALE

DATE: 08/29/02  
DRAWN: O. Espinoza  
CHECKED: F. Fiorenza  
DWG No. Gateway-440



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
1516 NINTH STREET, SACRAMENTO, CA 95814  
1-800-822-6228 – WWW.ENERGY.CA.GOV**

**APPLICATION FOR CERTIFICATION  
For the SES SOLAR TWO PROJECT**

**Docket No. 08-AFC-5**

**PROOF OF SERVICE**

**(Revised 5/26/09)**

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**DECLARATION OF SERVICE**

I, Angela Leiba, declare that on June 25, 2009, I served and filed copies of the attached DESCP / SWPPP. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

**[[www.energy.ca.gov/sitingcases/solartwo](http://www.energy.ca.gov/sitingcases/solartwo)].** The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

**(Check all that Apply)**

**FOR SERVICE TO ALL OTHER PARTIES:**

X sent electronically to all email addresses on the Proof of Service list;

X by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

**AND**

**FOR FILING WITH THE ENERGY COMMISSION:**

X sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

**OR**

\_\_\_\_\_ depositing in the mail an original and 12 paper copies, as follows:

**CALIFORNIA ENERGY COMMISSION**

Attn: Docket No. 08-AFC-5  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512

[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

I declare under penalty of perjury that the foregoing is true and correct.

Original Signed By:

Angela Leiba