

# **Darnell & ASSOCIATES, INC.**

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

June 4, 2014

Corey Young  
Kennedy/Jenks Consultants  
10920 Via Frontera, Suite 110  
San Diego, CA. 92127

D&A Ref. No.: 131007

Subject: City of San Diego Bonita Road Direct Transfer Facility Pump Station

Dear Mr. Young:

The City of San Diego proposes to construct the Bonita Road Direct Transfer Facility Pump Station on the southeasterly side of Bonita Road approximately 630' feet westerly of Willow Road. Construction of the project includes the connection of the pump station to the existing 37 inch water line located on the northwesterly side of Bonita Road. Figure 1 is a Vicinity Map showing the location of the project site and Figure 2 is the project site plan with access and water lines shown.

The project site and Bonita Road is located in the unincorporated area of San Diego County. Access to the project site is proposed via two (2) access driveways on Bonita Road with the westerly access improved to accommodate parking for maintenance vehicles.

Bonita Road has been fully improved to provide two (2) lanes in each direction, a center two-way left turn median and no parking with bike lanes. Bonita Road is classified as a 4.1 Major Road to provide two (2) lanes in each direction with a center painted median to permit intermittent turn lanes.

Available traffic volumes were assembled from SANDAG records identified Bonita Road with 23,700 Average Daily Traffic (ADT). A further check of SANDAG 2020 Traffic Forecasts shows Bonita Road to carry 28,600 ADT. The existing and the 2020 Traffic volumes operate at a Level of Service "D" (30,800 ADT Capacity) or better.

The project when completed will generate a nominal amount of traffic during normal operation and maintenance activities.

The proposed access driveways are spaced and are not expected to create any conflicts with the commercial access drives across the street. The existing center two-way left turn median will permit safe left turn access to/from each driveway.

The County of San Diego Public Works Design Standards (Section 6) classifies driveways as roads with intersection spacing of 300' feet between driveways entering a circulation element road. Due to the spacing of the driveways and surrounding driveways across the street the County of San Diego may require a Design Exception to be processed. The nominal amount of traffic entering and exiting the project will support the Design Exception for Driveway Spacing.

Section 6.1F of the Public Works Design Standards identifies Standard Corner Sight Distance for intersections based on the design speed of the road. The design speed for Bonita Road is 55 MPH and requires 550' feet of corner sight distance measured ten (10') feet from the edge of the travel lane. A preliminary check of available sight distance concluded that the available corner sight distance would exceed the 550' feet requirement.

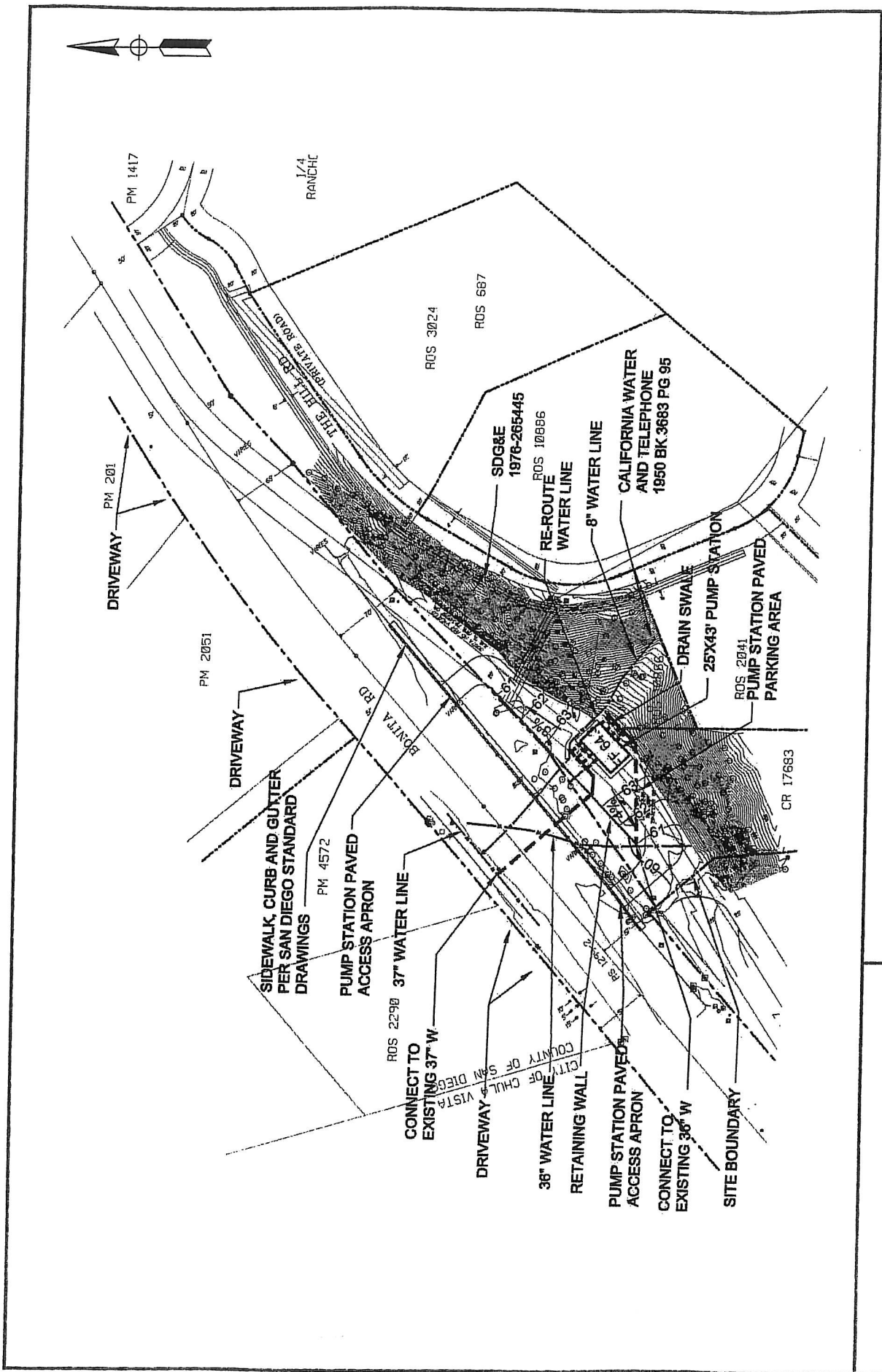


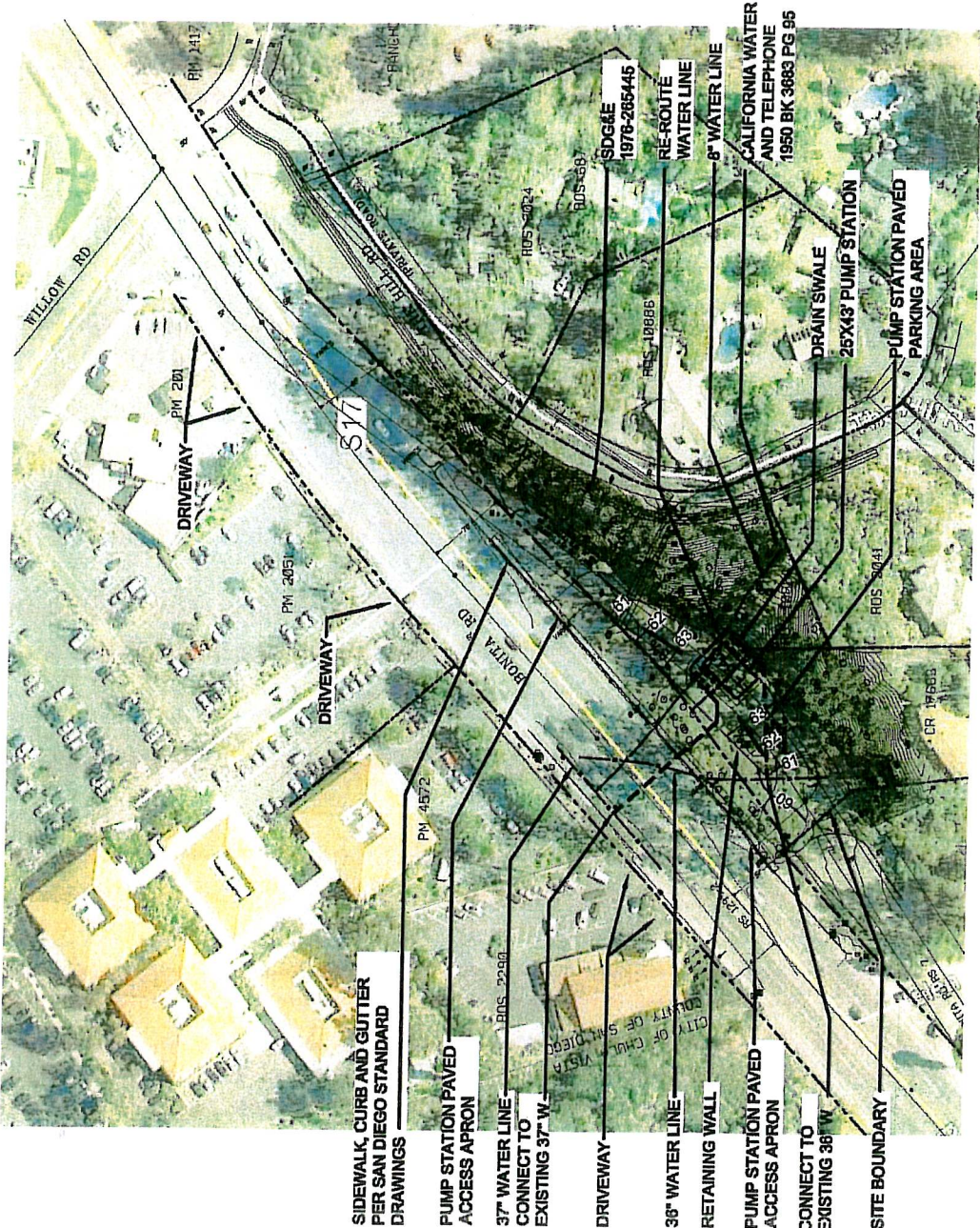
FIGURE 2  
SITE PLAN

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- SIDEWALK, CURB AND GUTTER PER SAN DIEGO STANDARD DRAWINGS
- PUMP STATION PAVED ACCESS APRON
- 37" WATER LINE CONNECT TO EXISTING 37" W
- DRIVEWAY
- 36" WATER LINE
- RETAINING WALL
- PUMP STATION PAVED ACCESS APRON
- CONNECT TO EXISTING 36" W
- SITE BOUNDARY

**FIGURE 1**  
VICINITY MAP

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In summary the construction and operation of the proposed Bonita Road Direct Transfer Pump Station Facility will not create any impacts during construction and/or after completion and operations of the proposed pump station.

The processing of construction permits from the County of San Diego to comply with the Public Works Design Standards may require the following:

- Preparation of Design Exception for driveway spacing; and
- Certification of Corner Sight Distance at project driveways.

We trust this adequately addresses the traffic conditions of the proposed Bonita Road Direct Transfer Pump Station Facility.

If you have any questions, please feel free to contact the office.

Sincerely,

DARNELL & ASSOCIATES, INC.



Bill E. Darnell, P.E.  
Firm Principal  
RCE 22338



Date Signed: 6/4/2014

## Attachment A

- County of San Diego Public Road Standards Excerpts

# **PUBLIC ROAD STANDARDS**



## **COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS**

March 3, 2010

**PUBLIC ROAD STANDARDS  
COUNTY OF SAN DIEGO**



**TABLE 2A: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS**

CLASSIC CIRCULATION ELEMENT ROAD CLASSIFICATIONS										
ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	ROAD SURFACING WIDTH	R.O.W. WIDTH	PAVED SHOULDERS (# / WIDTH)	PARKWAY WIDTH	MIN. CURVE RADIUS	MAX. DESIRABLE GRADE	MIN. DESIGN SPEED (MPH)	
Expressway (6.1)	6 / 12'	34'	126'	146'	2 / 10'	10'	1,700'	6%	65	
Prime Arterial (6.2)	6 / 12'	14'	102'	122'	2 / 8'	10'	1,700'	6%	65	
Major Road (4.1A)	4 / 12'	14'	78'	98'	2 / 8'	10'	1,200'	7%	55	
Collector	4 / 12'	-	64'	84'	2 / 8'	10'	1,200'	7%	55	
Town Collector	2 / 12'	12'	54'	74'	2 / 8'	10'	500'	9%	40	
Light Collector	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45	
Rural Collector	2 / 12'	-	40'	84'	2 / 8'	22'	500'	12%	40	
Rural Light Collector	2 / 12'	-	40'	60'	2 / 8'	10'	500'	12%	40	
Rural Mountain	2 / 12'	-	40'	100'	2 / 8'	30'	500'	12%	40	
Recreational Parkway	2 / 12'	-	40'	100'	2 / 8'	30'	400'	12%	25	
MODERN CIRCULATION ELEMENT ROAD CLASSIFICATIONS										
Major Road										
* With Intermittent Turn Lanes (4.1B)	4 / 12'	-	64' - 78'	84' - 98'	2 / 8'	10'	1,200'	7%	55	
Boulevard										
*** With Raised Median (4.2A)	4 / 12'	14'	78'	106'	2 / 8'	14'	500'	9%	40	
*** With Intermittent Turn Lanes (4.2B)	4 / 12'	-	64' - 78'	92' - 106'	2 / 8'	14'	500'	9%	40	
Community Collector										
** With Raised Median (2.1A)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45	
** With Continuous Left Turn Lane (2.1B)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45	
*** With Intermittent Turn Lanes (2.1C)	2 / 12'	-	40' - 54'	60' - 74'	2 / 8'	10'	700'	9%	45	
*** With Passing Lane (2.1D)	2 / 12'	-	40'	84'	2 / 8'	10'	700'	9%	45	
* No Median (2.1E)	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45	
Light Collector										
** With Raised Median (2.2A)	2 / 12'	14'	54'	78'	2 / 8'	10'	500'	9%	40	
** With Continuous Left Turn Lane (2.2B)	2 / 12'	14'	54'	78'	2 / 8'	10'	500'	9%	40	
*** With Intermittent Turn Lanes (2.2C)	2 / 12'	-	40' - 54'	64' - 78'	2 / 8'	10'	500'	9%	40	
*** With Passing Lane (2.2D)	2 / 12'	-	40'	88'	2 / 8'	10'	500'	9%	40	
** No Median (2.2E)	2 / 12'	-	40'	64'	2 / 8'	10'	500'	9%	40	
*** With Reduced Shoulder (2.2F)	2 / 12'	-	40'	52'	2 / 2'	10'	500'	9%	40	
Minor Collector										
*** With Raised Median (2.3A)	2 / 12'	14'	54'	82'	2 / 8'	10'	350'	12%	35	
*** With Intermittent Turn Lanes (2.3B)	2 / 12'	-	40' - 54'	68' - 82'	2 / 8'	10'	350'	12%	35	
*** No Median (2.3C)	2 / 12'	-	40'	68'	2 / 8'	10'	350'	12%	35	

**LEGEND:** \* Similar to existing Collector Road  
 \*\* Similar to existing Town Collector  
 \*\*\* Similar to existing Rural Collector  
 + Same as existing Light Collector  
 ++ Similar to existing Rural Light Collector  
 +++ New Classification Standard

**NOTES:** 1 Minimum longitudinal gradient shall be 1.0 percent for all road classifications shown above.  
 2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.  
 3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.  
 4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.  
 5 Additional pavement and ROW may be required for CE Collectors (4 feet) and Light Collectors (12 feet) in Industrial/Commercial Zones.  
 6 CE roads needing additional turn lanes will require an additional 12 to 14 feet of pavement and ROW for each lane.  
 7 The maximum superlevation allowed on CE roads is 6%. Superlevation is not normally required on Non-CE roads.  
 8 CE roads designated with Bike Lanes will require an additional 10 feet of pavement and ROW. This may be increased to 12' for Collector Roads and above based upon the provisions in Section 7.3 of these standards.  
 9 The minimum curve radii, shown in the table above, are based on the design speed with 6% superlevation.  
 10 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.

## SECTION 6

### DESIGN STANDARDS

#### Section 6.1 INTERSECTIONS

- A. Property line and curb return radii. The values below are provided for the majority of situations:
1. Commercial and Industrial General Plan Areas:
    - a. Curb return radii shall be a minimum of 40 feet.
    - b. Property line radii shall be a minimum of 30 feet.
  2. Other General Plan Areas:
    - a. Curb return radii shall be a minimum of 30 feet.
    - b. Property line radii shall be a minimum of 20 feet.
  3. Special routes identified to accommodate interstate trucks:
    - a. Curb return radii shall be a minimum of 60 feet.
    - b. Property line radii shall be a minimum of 50 feet.
- B. Where the angle of intersection is less than 90 degrees, or where a sight distance problem may be anticipated, an increased property line radius may be required.
- C. Minimum distance between roads entering into other roads shall be as follows:
1. Non-Circulation Element roads entering into other Non-Circulation Element roads shall have their centerlines separated by at least 200 feet.
  2. Non-Circulation Element roads entering into a Circulation Element road shall have their centerlines separated by at least 300 feet.
  3. Circulation Element roads entering into other Circulation Element roads shall have their centerlines separated by at least 600 feet.



E. The angle between centerlines of intersecting roads shall be as nearly a right angle as possible, but in no case less than 70 degrees or greater than 110 degrees. Where the angle between the centerlines is between 70 and 80 degrees or between 100 and 110 degrees, there shall be required on the acute angle corner of the intersection a taper to accommodate right-hand turning movements. Said taper shall be set back 5 feet at the exiting point of the curb return and extend 40 feet in such a manner as to safely allow completion of the right-hand turning movement.

F. Sight distance requirements at all intersections shall conform to the intersectional sight distance criteria as provided in Table 5:

**TABLE 5**

**STANDARD CORNER SIGHT  
DISTANCE AT INTERSECTIONS**

Design Speed, MPH	Minimum Corner Intersection Sight Distance in Feet*
60	600
50	500
40	400
30	300
20	200

\*Corner sight distance measured along the direction of travel from a point on the minor road at least 10 feet from the edge of the major road pavement and measured from a height of eye of 3.5 feet on the minor road to a height of object of 4.25 feet on the major road (see County Road Standard Drawings DS-20A and DS-20B). The design speed used to determine the minimum sight distance requirement shall be the greater of the current prevailing speed (if known) and the minimum design speed of the respective road classification shown in Tables 2A and 2B. Additional corner intersection sight distance may be required for left turns at divided highways, left turns onto two-way highways with more than two lanes, or grades which exceed 3 percent, as per "AASHTO A Policy on Design of Highways and Streets".

G. The maximum grade at any intersection of two streets shall be 6 percent within the intersection and for at least 20 feet beyond the right-of-way of the intersecting street.

H. Where two road centerlines intersect, the lower classified road is not to intersect the primary road with a curve. Instead, the alignment of the lower classified road must intersect the primary road in a straight line for a length not less than the full width of the primary road's right-of-way.

I. Prior to the installation of a new traffic signal, traffic signal warrant analysis must be performed. The Californian Manual for Uniform Traffic Control Devices (CA MUTCD) should be consulted for procedures of conducting signal warrant analysis. The design and installation of the traffic signal and pavement markings should also conform to the CA MUTCD.

