

# **The Lot - Del Mar**

## **Sewer Analysis**

**Portion of Parcel 1, PM No. 3594  
2673 Via de la Valle  
Del Mar, California 92014**

**Prepared for:**

**Adolfo Fastlicht  
Carlos Wellman  
7611 Fay Avenue  
La Jolla, CA 92037**

**Prepared by:**

**Christensen Engineering & Surveying  
7888 Silverton Avenue, Suite "J"  
San Diego, CA 92126  
(858) 271-9901**

**July 23, 2017**

**PTS No. 537664**

## ***Introduction***

This project involves the construction of a 28,000 sf theater complex on a vacant portion of the Via del la Valle Commercial Center, located southerly of Via de la Valle and westerly of San Andres Drive, in San Diego. The entire Center is comprised of commercial buildings on a 14.946 ac. site.

This study determines the adequacy of an existing sewer pump station to convey the entire site's expected effluent flow. The existing pump station has provided for the site's pumping requirements since 1974 when it was initially constructed. The pump station was inspected and tested on July 20, 2017 by McNamara Pump and Electric to determine what volume of effluent it could convey from the site to the City of San Diego sewer in Via del la Valle. The station was determined to contain a duplex system of Goulds pumps (WS1532D3). Through onsite testing it was determined each pump conveys 180 GPM (tested rate) with a TDH of 22'. The result of the following calculations, based on values obtained using the City of San Diego Sewer Design Manual it was determined the site demand is 95 gpm. The existing 6" PVC pipe from the proposed theater location is capable of conveying 2,419 gpm, well in excess of the total volume expected for the entire site.

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Antony K. Christensen  
RCE 54021  
Exp. 12-31-17

07-23-17  
Date

JN A2017-30



# ***Calculations***

## **1. *Population Determinations***

To determine the population expected to generate flow to the onsite pump station, the entire shopping center area is used (a conservative assumption). The area of the entire site is 14.946 ac. From Table 1-1 of the City of San Diego Sewer Design Guide a Commercial/Hotel Zone is utilized. The equivalent population for this type of development is 43.7 pop/net ac. Using the gross area, a population of 653 is calculated. This is the population for the entire site, including the new development.

## **2. *Peaking Factor Determination***

Using the formula shown in Figure 1-1 of the Manual to calculate Peak Factor ( $PF = 6.2945 \times (\text{population})^{-0.1342}$ ) a value of 2.63 is determined. Applying that factor to the initial population of 653 a peak population of 1,717 is to be used for volume calculations.

## **3. *Volume Calculations***

Using the peak population value of 1,717, the standard 80 gal/day/capita, daily volume of flow was determined to be 137,360 pgd. That equates to 95.4 gpm.

## **4. *Volume Calculations for Existing/Proposed Development***

The existing pump station utilizes a duplex system with two Goulds WS1532D3 pumps. Actual onsite testing of the station by McNamara Pump and Electric on July 20, 2017 determined that each pump is capable of conveying 180 gpm with a TDH of 22'. Effluent is conveyed from the pump station to the City of San Diego sewer main in Via de la Valle.

## **5.     *Test for Adequacy of Existing Private Sewer***

Since the existing system is capable of conveying 180 GPM of effluent and the demand for the peak volume expected is 95.4 gpm the system is adequate to convey the existing and proposed volume of effluent.

Flow to the basin from the proposed theater is by a 6" PVC drain, shown on City of San Diego drawing 29342-3-D, as having a slope of 1%. Such a pipe is capable of conveying 0.56 cfs which equates to 2,419 gpm which is many times the volume expected from the entire site

## ***Conclusion***

The existing system was analyzed based on a total site population determined from the gross area of the site. This is a conservative assumption. The current system has nearly twice the required capacity to convey the expected volume of effluent to the public sewer system and the 6" PVC drain from the proposed development is adequate to convey many times the expected site volume of effluent. Therefore, the sewer facilities are adequate to serve the proposed development.

# REFERENCES



**FEATURES**

**Impeller:** Cast iron, ASTM A48, Class 30, two vane semi-open, non-clog design with pump out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller is an option.

**Casing:** Heavy duty gray cast iron, ASTM A48, Class 30. Volute type casing with 3", 125#, ANSI flanged, horizontal discharge. Compatible with A10-30 cast iron or A10-30B cast iron and brass (non-sparking) guide rail assembly.

**Dual Mechanical Seals:** Silicon carbide vs. silicon carbide outer seal and ceramic vs. carbon inner seal, stainless steel metal parts, BUNA-N elastomers. Upper and lower shaft seals are positioned independently and are separated by an oil-filled chamber.

**Shaft:** 300 series stainless steel keyed design.

**Fasteners:** 300 series stainless steel.

Capable of running dry temporarily without damage to seals or motor.

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# WS\_D3 Series

## Model 3888D3

SUBMERSIBLE SEWAGE PUMPS

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## Wastewater

### APPLICATIONS

Used in a variety of residential, commercial and industrial applications such as:

- Sewage systems, Flood and Pollution Control, Dewatering/Effluent, Farms, Hospitals, Trailer Courts, Motels

### SPECIFICATIONS

#### Pump:

- Maximum solid size: 2.5"
- Discharge size: 3", 125 # ANSI flange
- Maximum capacity: 470 GPM
- Maximum total head: 65 feet
- 300 Series stainless steel fasteners
- 20' Power cord
- Standard silicon carbide/silicon carbide outer seal

#### Motor:

- Maximum ambient temperature: 104° F (40° C) continuous duty, 140° F (60° C) intermittent duty
- Rated for continuous duty when fully submerged
- Insulation: Class F
- 60 Hertz
- Single row ball bearings
- 300 Series stainless steel keyed shaft

#### Single Phase:

- 1.5 - 5 HP; 208 and 230 volts
- Built-in thermal overloads with automatic reset
- Built-in capacitors

#### Three Phase:

- 1.5 - 5 HP; 200, 230, 460 and 575 volts
- Class 10 overload protection must be provided in control panel

### MOTORS

- Fully submerged in oil-filled chamber: High grade turbine oil surrounds motor for more efficient heat dissipation, permanent lubrication of bearings and mechanical seal for complete protection against outside environment.
- Class F insulation
- Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits and can be operated continuously without damage when fully submerged.
- Bearings: Upper and lower heavy duty ball bearing construction for precision positioning of parts and to carry thrust loads.
- Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. 20 foot standard with optional lengths available.
- O-ring: Assures positive sealing against contaminants and oil leakage.

### AGENCY LISTINGS

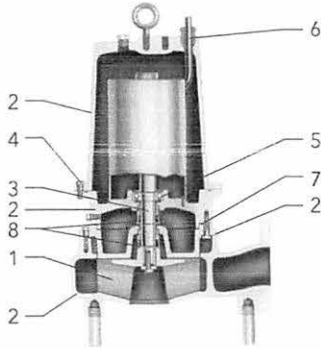


Tested to UL 778 and CSA 22.2 108 Standards  
By Canadian Standards Association  
File #LR38549

### MODEL AND MOTOR INFORMATION

Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Power Cable	Full Load Motor Efficiency %	Resistance		Weight (lbs.)
											Start	Line-Line	
WS1518D3M	1.5	1	208	1750	5.25	15.0	50.8	B	14/3	80	1.1	0.9	192
WS1512D3M			230			12.5	29.5	E		70	1.4	1.8	
WS1538D3M		3	200			11.5	40.9	H	14/4	81	NA	1.7	190
WS1532D3M			230			10.0	40.0	F		83		2.3	
WS1534D3M			460			5.0	20.0	F		83		9.3	
WS1537D3M			575			4.0	14.4	H		74		14.8	
WS1518D3		1	208		6.50	15.0	50.8	B	14/3	80	1.1	0.9	192
WS1512D3			230			12.5	29.5	E		70	1.4	1.8	
WS1538D3		3	200			11.5	40.9	H	14/4	81	NA	1.7	190
WS1532D3			230			10.0	40.0	F		83		2.3	
WS1534D3			460			5.0	20.0	F		83		9.3	
WS1537D3			575			4.0	14.4	H		74		14.8	
WS2018D3	2	1	208		7.00	19.0	50.8	B	14/3	80	1.1	0.9	196
WS2012D3			230			16.0	36.9	D		75	1.4	1.5	
WS2038D3		3	200			11.5	40.9	H	14/4	81	NA	1.7	194
WS2032D3			230			10.0	40.0	F		83		2.3	
WS2034D3			460			5.0	20.0	F		83		9.3	
WS2037D3			575			4.0	14.4	H		74		14.8	
WS3018D3		1	208		7.25	25.5	50.8	B	10/3	80	1.1	0.9	205
WS3012D3			230			21.5	46.4	C		79	1.0	1.0	
WS3038D3		3	200			15.2	53.8	G	10/4	85	NA	1.3	200
WS3032D3			230			12.0	49.5	H	14/4	83		1.9	
WS3034D3			460			6.0	24.8	H		83		7.5	
WS3037D3			575			4.8	17.3	G		78		11.6	
WS5012D3	5	1	230		8.00	26.5	57.7	A	10/3	80	1.0	0.8	210
WS5038D3			200			18.8	73.9	F		84		0.9	
WS5032D3		3	230			16.4	63.6	E	10/4	85	NA	1.2	205
WS5034D3			460			8.2	31.8	E	14/4	85		4.8	
WS5037D3			575			6.8	22.8	E		80		7.4	

### MATERIALS OF CONSTRUCTION

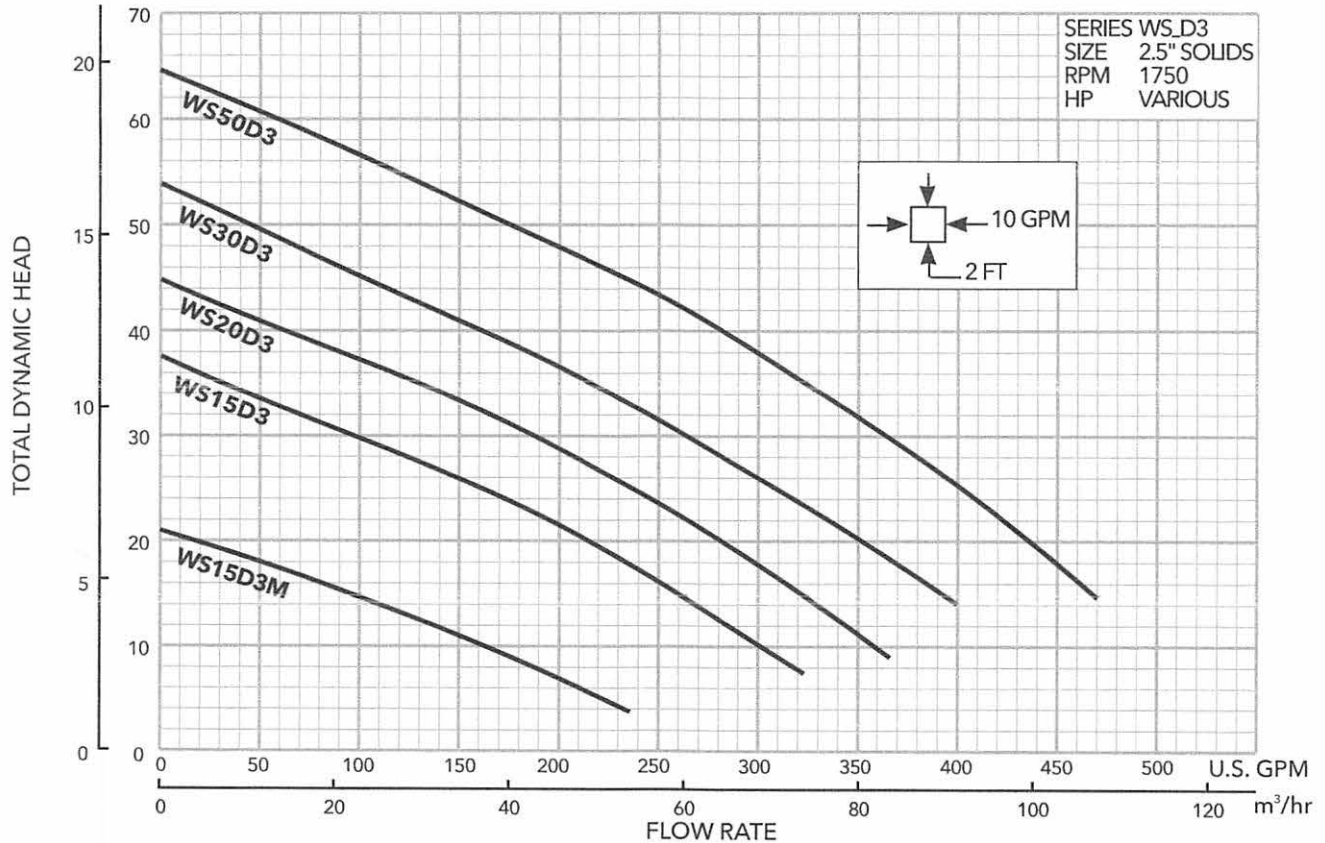


Item No.	Part Name		Material			
			Standard		Optional	
1	Impeller, non-clog		1003		1179	
2	Castings		1003			
3	Shaft-keyed		300 Series SS			
4	Fasteners		300 Series SS			
5	Ball bearings		Steel			
6	Power cable		STOW, 20 feet		Additional lengths	
7	O-ring		BUNA-N			
8	Outer Mech. Seal	Service	Rotary	Stationary	Elastomers	Metal Parts
	OPT	Heavy duty	Silicon Carbide	Tungsten Carbide	BUNA-N	300 Series SS
	STD	Mild abrasives	Silicon carbide		BUNA-N	300 Series SS
Material Code			Engineering Standard			
1003			Cast iron – ASTM A48 Class 30			
1179			Silicon bronze – ASTM C87600			

### PERFORMANCE RATINGS (gallons per minute)

Series No. ▶	WS15D3M	WS15D3	WS20D3	WS30D3	WS50D3
HP ▶	1½	1½	2	3	5
RPM ▶	1750				
Total Head Feet of Water	10	160	300		
	15	90	260	320	
	20		210	280	350
	25		160	235	310
	30		100	185	265
	35			130	210
	40			60	160
	45				100
	50				
	55				
	60				

METERS FEET

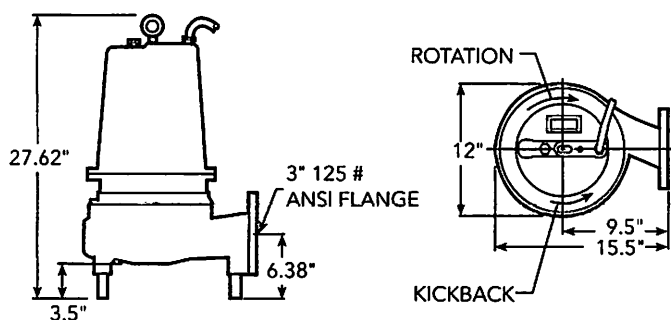


## APPLICATION DATA AND CONSTRUCTION DETAILS

Maximum Solid Size	2.5"
Minimum Casing Thickness	5/16"
Casing Corrosion Allowance	1/8"
Maximum Working Pressure	30 PSI
Maximum Submergence	50 feet
Minimum Submergence	Fully submerged for continuous operation 6" below top of motor for intermittent operation
Maximum Environmental Temperature	40° C (104° F) continuous operation, 60° C (140° F) intermittent operation
Power Cable - Type (See Motor Information for AWG data/size.)	Type SJTOW: single phase, 1½ and 2 HP Type STOW: single phase, 1½ - 3 HP and 5 HP, 460 V Type STOW: single phase, 3 and 5 HP, three phase 5 HP, 230 V
Motor Cover, Bearing Housing, Seal Housing, Casing	Gray Cast Iron - ASTM A48, Class 30
Impeller - Standard, Optional	Gray Cast Iron - ASTM A48 or Cast Bronze - ASTM B584 C87600
Motor Shaft	AISI 300 Series Stainless Steel
Motor Design	NEMA 56 Frame, oil filled with Class F Insulation
Motor Overload Protection	Single phase: on winding thermal overload protection auto reset Three phase: requires Class 10 overloads in control panel
External Hardware	300 Series Stainless Steel
Impeller Type	Semi-open with pump out vanes on back shroud
Oil Capacity - Seal Chamber	1.5 quarts
Oil Capacity - Motor Chamber	1½-5 HP single and three phase: 7 quarts
Mechanical Seals - Standard	Upper Carbon/Ceramic; Type 21 Lower Silicon Carbide/Silicon Carbide; Type 31
Mechanical Seals - Optional Lower	Silicon Carbide/Tungsten Carbide; Type 31

## DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)



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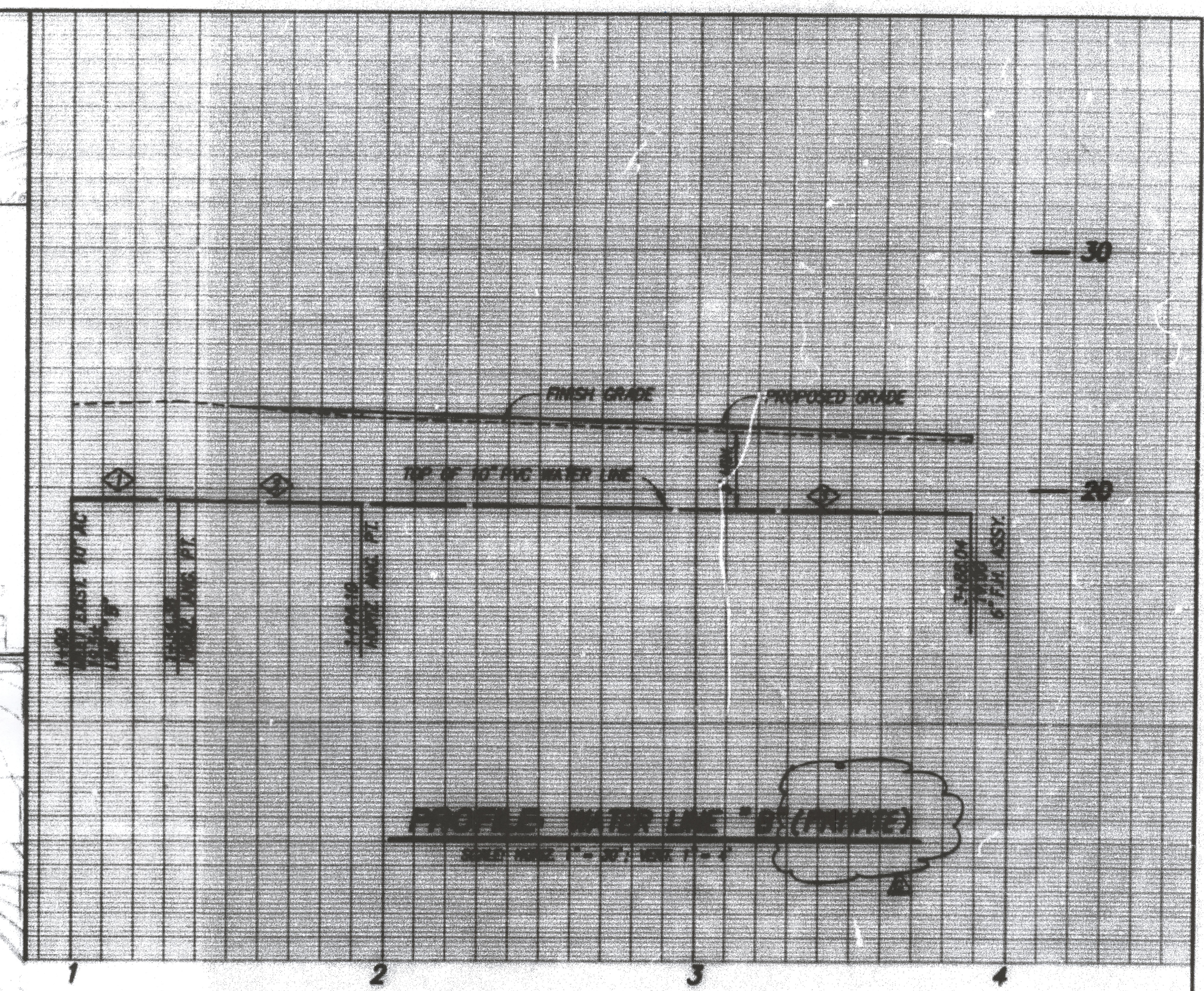
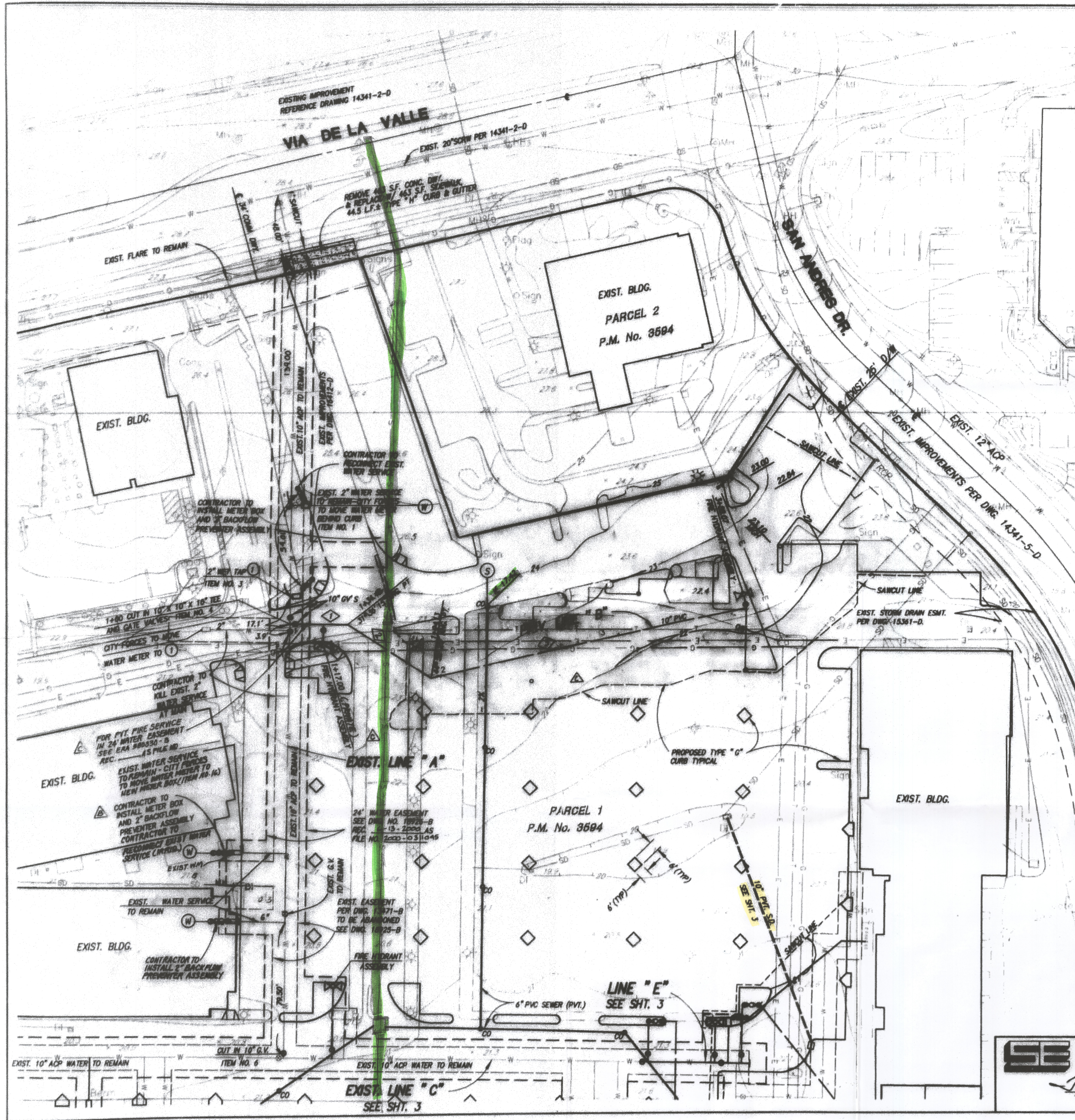
Xylem, Inc.  
2881 East Bayard Street Ext., Suite A  
Seneca Falls, NY 13148  
Phone: (866) 325-4210  
Fax: (888) 322-5877  
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- NOTES:
1. SEE REFERENCE DRAWING 16412-D, FOR IMPROVEMENTS
  2. SEE REFERENCE DRAWING NO. 13471-B FOR EASEMENTS
  3. FOR PROPOSED EASEMENTS SEE DRAWING NO. 18926-B
  4. NEW TOP OF CURB (PVT) ELEV. ON EXIST. PAVEMENT TO BE 7" ABOVE EXIST. PAVEMENT
  5. FOR PVT. CURBS, SEWER AND BACKFLOW PREVENTERS IN PUBLIC WATER EASEMENT, SEE DTA 980330-2
  6. ALL ONSITE, PRIVATE IMPROVEMENTS SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. THE CITY ENGINEER'S APPROVAL OF THESE DRAWINGS IN NO WAY CONSTITUTES AN APPROVAL OF SAID PRIVATE IMPROVEMENTS. A SEPARATE PERMIT FOR SUCH IMPROVEMENTS MAY BE REQUIRED.

**CAUTION:**

CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION.

SCALE: 1"=30'

PRIVATE WATER DATA TABLE				
NO.	DELTA/ANG.	RADIUS	LENGTH	REMARKS
1	N88°52'47"W	—	34.48'	10" PVC (CL 150)
2	N57°16'32"W	—	59.75'	10" PVC (CL 150)
3	N77°48'03"E	—	193.94'	10" PVC (CL 150)

**PRIVATE CONTRACT**

IMPROVEMENT PLANS FOR:			
VIA DE LA VALLE COMMERCIAL CENTER PARCEL 1 OF P.M. 3594			
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 2 OF 5 SHEETS			TA NO. 980330
DESIGNED BY: <i>[Signature]</i> DATE: 6/1/99			
DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	SE	<i>[Signature]</i>	07/25/99
"B" CHANGE	SE	<i>[Signature]</i>	1938-6253
"C" CHANGE	SE	<i>[Signature]</i>	HABBS
AS-BUILT	SE	<i>[Signature]</i>	298-1693
DRAWN BY: EILEEN WESTERN BLOOM STATED CHECKED BY: RADIN HATAM			29342-2-D

**STUART ENGINEERING**  
7525 METROPOLITAN DRIVE, STE. 308  
SAN DIEGO, CA 92108 (619) 298-1010

DESIGNED: T.M.H.  
DRAWN: JR.  
CHECKED: T.M.H.  
JOB NO.: 879-97-01

*T.M. Henry* 3/21/99  
T.M. HENRY R.C.E. 24760 DATE  
REGISTRATION EXPIRES: 12-31-97

FILED FROM THE ORIGINAL. BEST QUALITY OBTAINABLE. EXCESSIVE GRAY BACKGROUND MAY CAUSE A POOR QUALITY REPRODUCTION.

- DELTE CITY ITEM NO.5, ADD CITY ITEM NO.16, REVISE WATER  
CHANGE WATER LINE "B" TO PRIVATE, REMOVE PORTION OF PROPOSED WATER EASEMENT, ADD ERA NOTE

AS BUILT



