

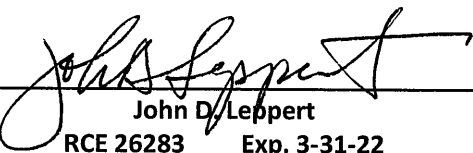
APPENDIX N
Sewer Study
(March 31, 2021,
as Revised June 23, 2021)

**SEWER STUDY
FOR
EL CAMINO REAL ASSISTED LIVING FACILITY**

PTS No. 675732

**Prepared By:
LEPPERT ENGINEERING CORPORATION
5190 Governor Drive, Suite 205
San Diego, CA 92122
Job No. SDR 05.01-09.16**

**Prepared: March 31, 2021
Revised: June 23, 2021**



**John D. Leppert
RCE 26283 Exp. 3-31-22**



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Introduction

The purpose of this sewer study is to evaluate the sewer demands generated by the proposed development for the purposes of validating the design criteria assumed for the subject property in the construction of the private onsite sewer. The existing private sewer was constructed in conjunction with the approved Church project to the north of the subject site.

Project Location

The subject property is a rectangular parcel of land with a gross area of approximately 4 acres. It is located south and east of El Camino Real and west of San Dieguito Rd (see Exhibit "A" - Location Map).

Project Description

The project proposes one building to provide assisted living and memory care, as well as the associated support services. The project to the north is also being evaluated with this study and proposes four buildings for religious gatherings and their supporting services.

-Building 1:

Proposed 1-level church sanctuary building.

-Building 2:

Proposed 2-level events 'hall' for hosting religious events and functions.

-Building 3:

Proposed 2-level cultural center and history archive.

-Building 4:

Proposed 1-level gym facility for sports and youth events.

-ECR Assisted Living Facility:

Proposed 3-level assisted and memory care facility providing onsite care and support for residents.

Onsite sewer flows are collected by a private PVC sewer which discharges to the existing public 8" PVC sewer main within El Camino Real. This public sewer was installed by 28175-D, and the private 6" PVC lateral connection to that line was completed by 41200-D.

Project Sewer Demand

The sewer flow generated by the proposed development site was estimated by determining the total number of fixture units for each building within the development, based on the designs by the building MEPs (See Appendix II). A total fixture unit count of 1,286 was estimated for the combined flows from both project sites. A conversion factor of 20 fixture units per EDU was then applied to the estimated total, resulting in approximately 64.3 EDUs for the proposed project.

Design Summary

The existing and proposed onsite sewer has been designed with a minimum 1% slope and a 2.0 Ft/s cleansing velocity. The following calculation shows the proposed sewer flow anticipating **840 DFU** or **42 EDU** for the proposed development:

Equivalent Dwelling Units = 42 EDU
Sewer Generation Rate = 280 gal/EDU, (See Appendix III)
Peak Factor = 4.0, (See Appendix III)
Peak Flow = 47,040 GPD = **0.07 cfs**, (See Appendix III)

The combined sewer flow from the northerly church property and the proposed project totals **0.11 cfs**. The Sewer Summary Tables included as Exhibit "B" illustrates the individual flow rates from node to node, all of which which meet the City's Sewer Design criteria.

Conclusion

The proposed development of the 4 acres site does not exceed the expected sewer flows estimated during the construction of the sewer for the Church parcel on the North, and will not have an adverse impact on those facilities. At full project completion the private on site sewer will be operating at less than half of its maximum, and therefor it is not anticipated that there

EXHIBIT “A”
Location Map

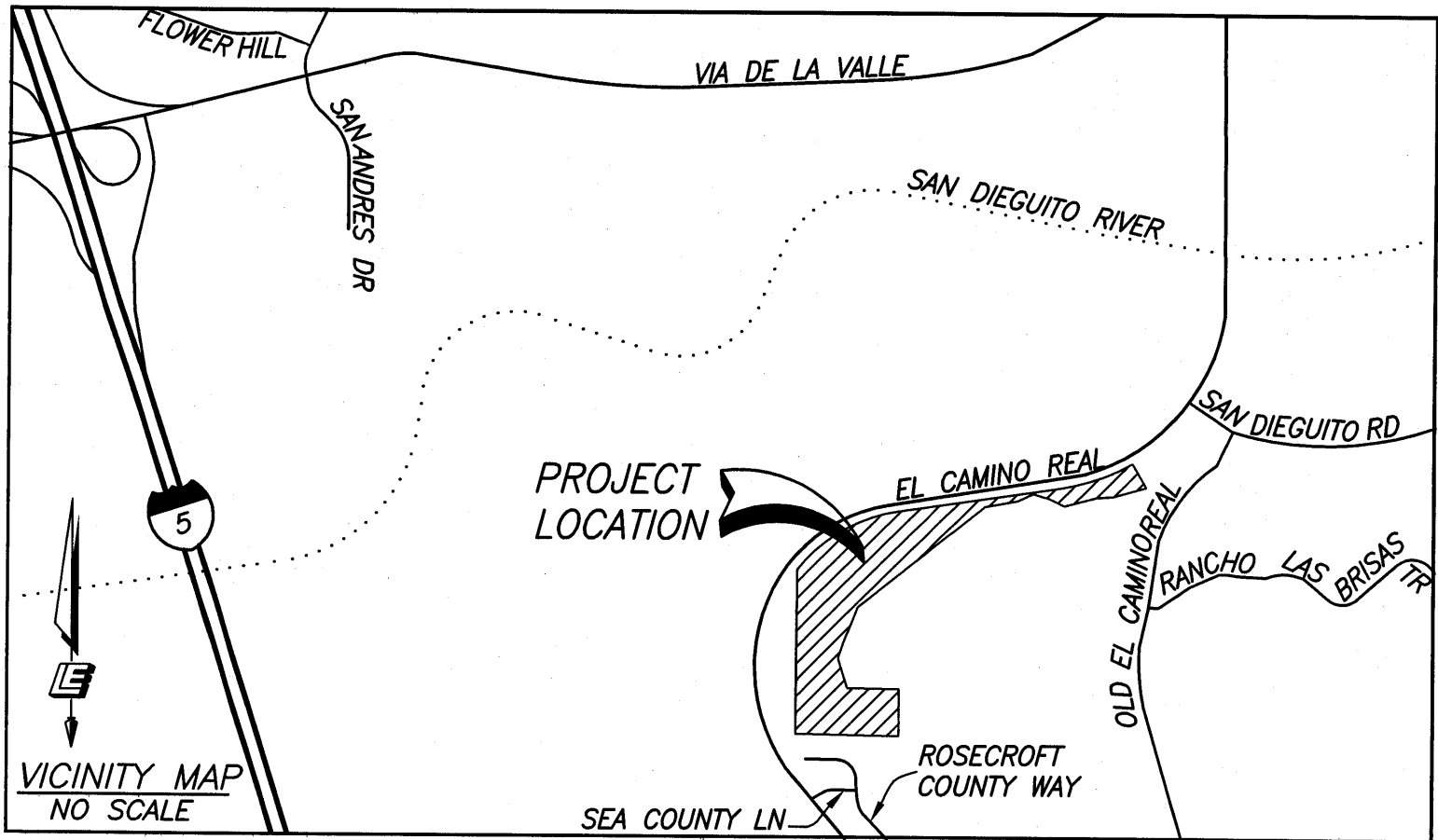
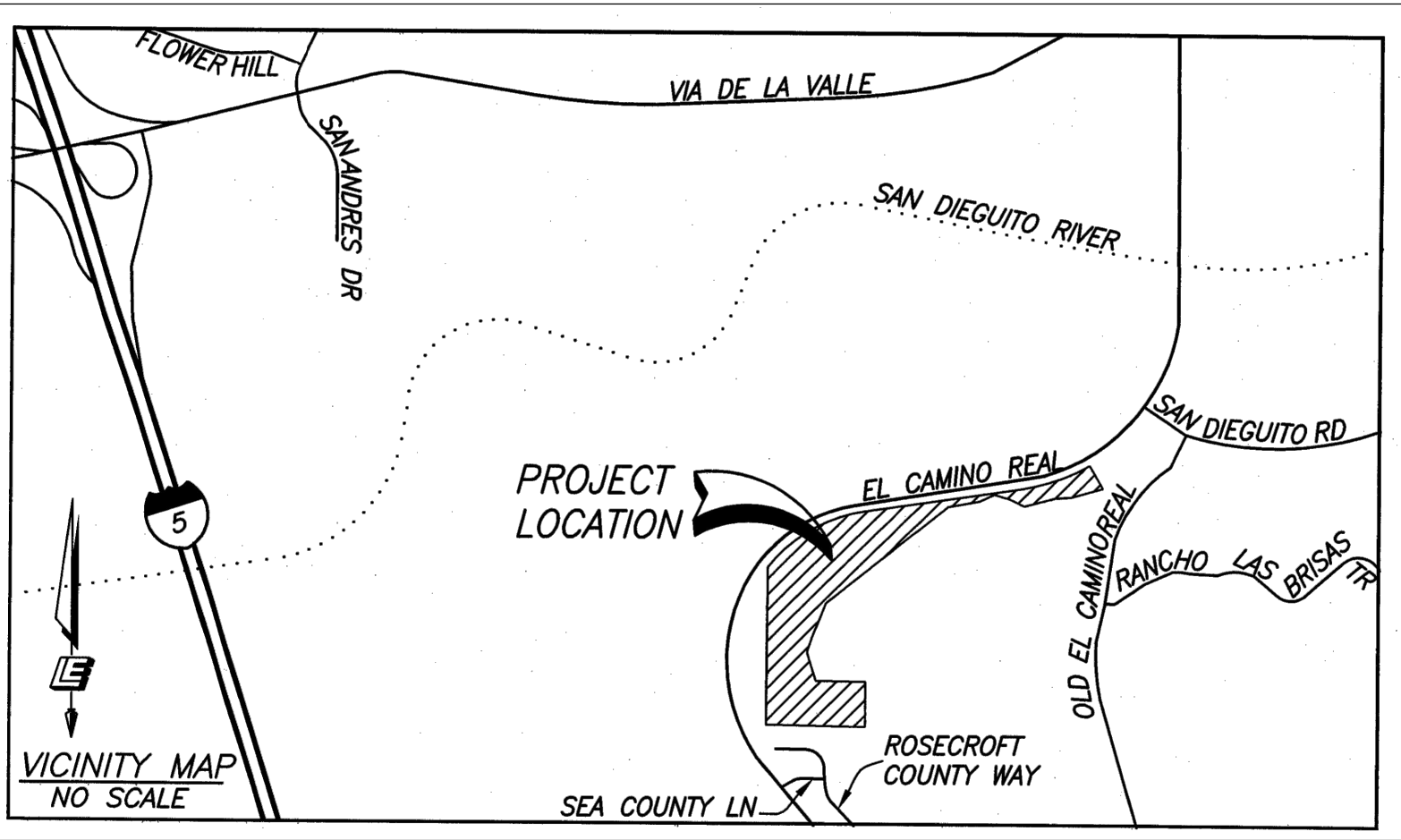
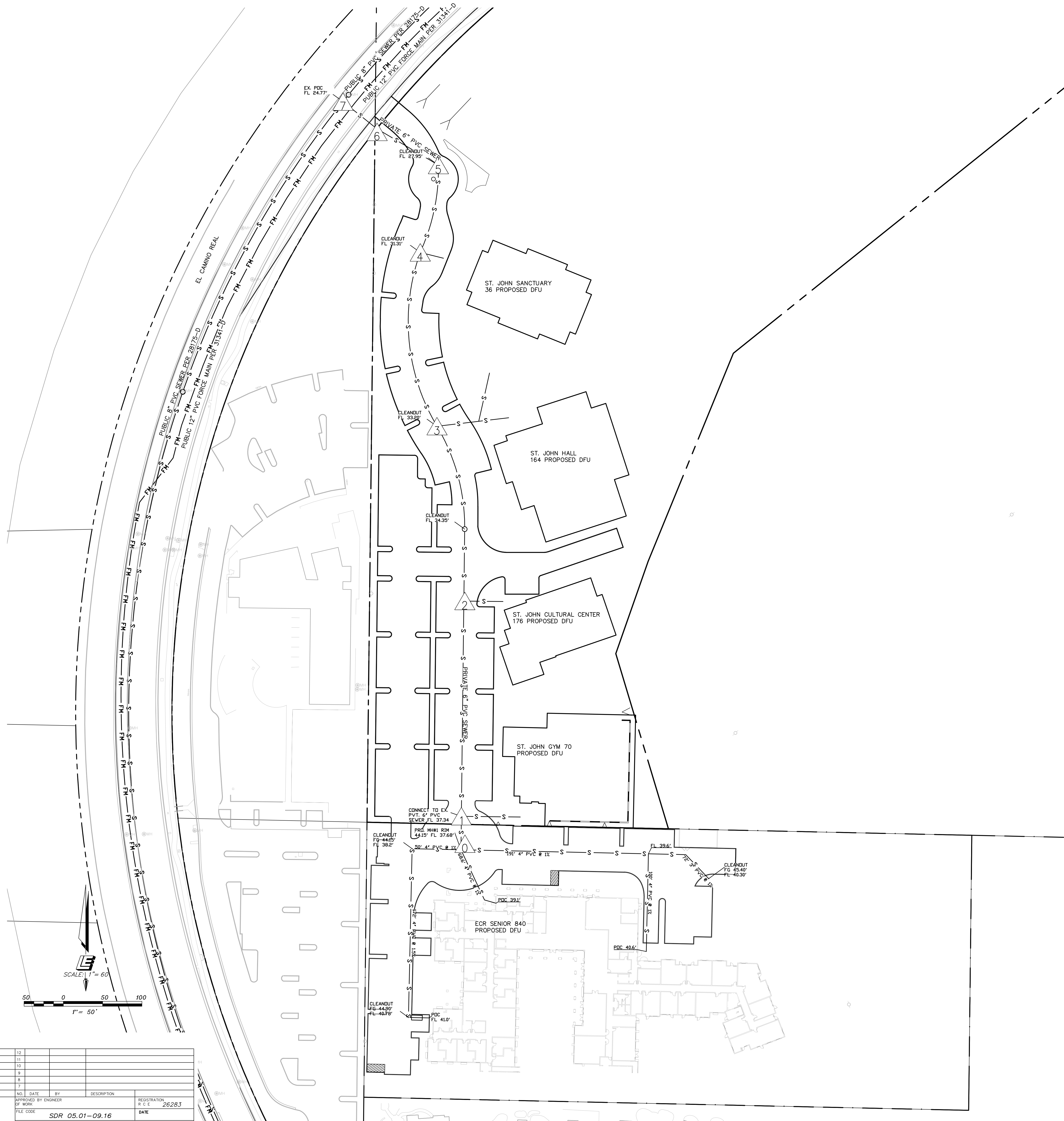


EXHIBIT “B”
Sewer Summary Tables

ADDITIONAL FLOW FROM	FROM NODE	TO NODE	IN-LINE UNITS DFU	IN-LINE POP. EDU	CUMLATIVE TOTAL POP	SEWAGE PER DAY (GAL)	DRY PEAK FACTOR	PEAK DRY WEATHER FLOW (GPD)	PEAK DRY WEATHER FLOW (CFS)	LINE DIAM (IN)	DESIGN SLOPE %	DEPTH (d) (FT)	d/D	VELOCITY (FPS)
ECR Senior	0	1	840	42.0	42.0	11,760	4.00	47,040	0.07	6	1.00	0.12	0.24	2.0
Gym	1	2	70	3.5	45.5	12,740	4.00	50,960	0.08	6	1.00	0.13	0.26	2.0
Cultural	2	3	176	8.8	54.3	15,204	4.00	60,816	0.09	6	1.00	0.14	0.27	2.1
Hall	3	4	164	8.2	62.5	17,500	4.00	70,000	0.11	6	1.00	0.15	0.30	2.2
Sanctuary	4	5	36	1.8	64.3	18,004	4.00	72,016	0.11	6	3.60	0.11	0.22	3.5
	5	6	0	0.0	64.3	18,004	4.00	72,016	0.11	6	1.70	0.13	0.26	2.7
	6	7	0	0.0	64.3	18,004	4.00	72,016	0.11	6	2.00	0.13	0.25	2.8

EXHIBIT “C”
Sewer Site Plan



PREPARED BY:
NAME: LEPPERT ENGINEERING CORPORATION
ADDRESS: 5190 GOVERNOR DRIVE, SUITE 205
SAN DIEGO, CALIFORNIA 92122-2848
PHONE #: (858) 597-2001

PROJECT ADDRESS:
13860 EL CAMINO REAL
SAN DIEGO, CALIFORNIA 92130

PROJECT NAME:
EL CAMINO REAL SENIOR


SHEET TITLE:
SEWER STUDY EXHIBIT

REVISION 14: _____
REVISION 13: _____
REVISION 12: _____
REVISION 11: _____
REVISION 10: _____
REVISION 9: _____
REVISION 8: _____
REVISION 7: _____
REVISION 6: _____
REVISION 5: _____
REVISION 4: _____
REVISION 3: _____
REVISION 2: _____
REVISION 1: _____

ORIGINAL DATE: 03/31/2021

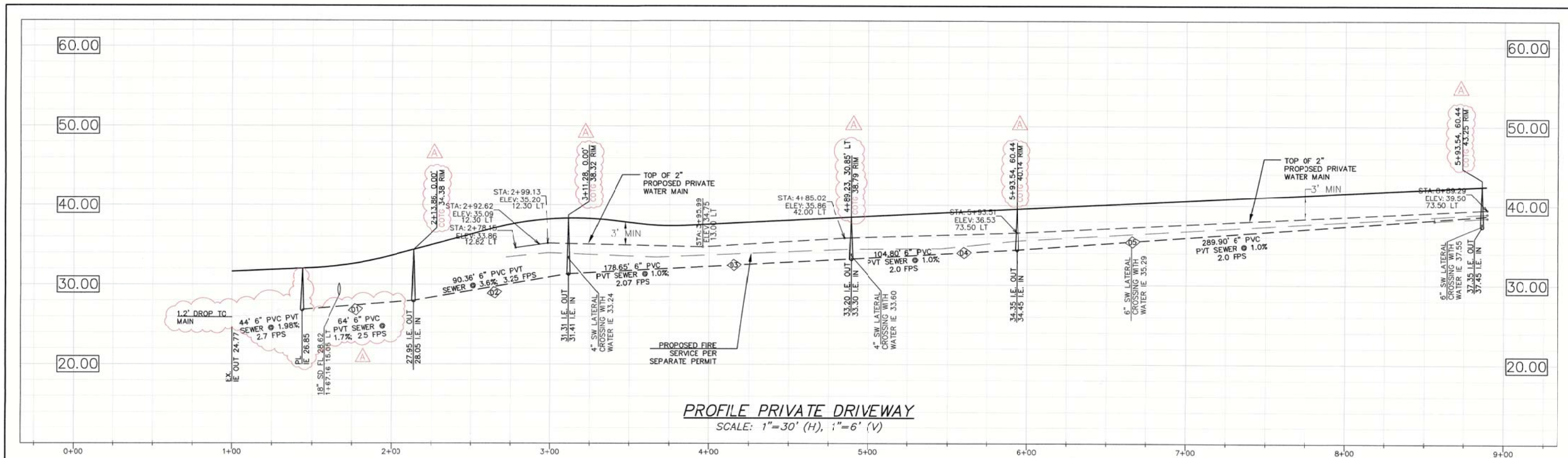
SHEET 1 OF 1

DEP# _____

6				12			
5				11			
4				10			
3				9			
2	06/25/21	MPD	AGENCY REVISIONS	8			
1	03/31/21	MPD	ORIGINAL	7			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
 5190 Governor Drive, Suite 205 San Diego, CA 92122-2846 Phone: (619) 581-2000 Fax: (619) 581-2000				APPROVED BY ENGINEER OF WORK		REGISTRATION NO. 26263	
				FILE CODE SDR 05.01-09.16		DATE	
PREPARATION AND REVISION LOG							

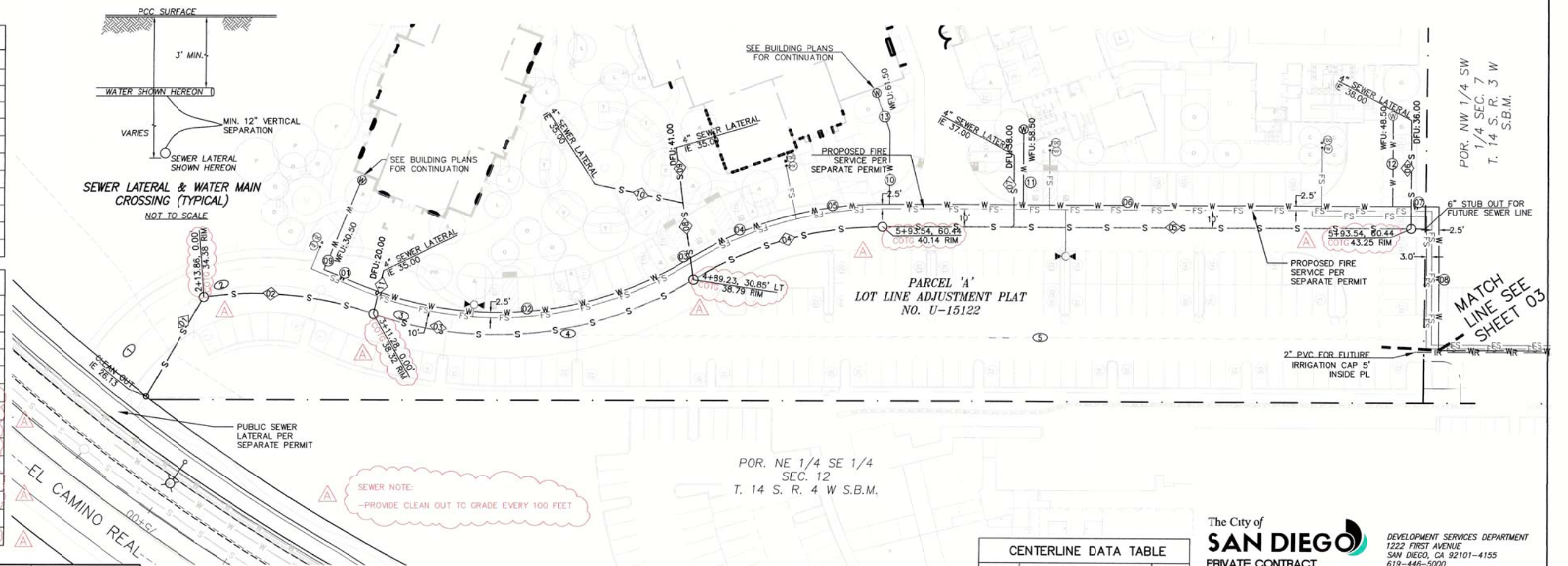
Leppert Engineering Corporation
5190 Governor Drive, Suite 205
San Diego, Ca. 92122-2848
Phone: (858) 597-2001 Fax: (858) 597-2009

APPENDIX I
Approved plumbing plan for site sewer



PRIVATE SEWER DATA TABLE				
COURSE	DELTA/BEARING	RADIUS	LENGTH	DESCRIPTION
01	N53° 58' 06.06"W		64.00	PVT 6" PVC
02		25.89	200.00	PVT 6" PVC
03		49.20	200.00	PVT 6" PVC
04		30.02	200.00	PVT 6" PVC
05	S0° 39' 43.15"W		289.90	PVT 6" PVC
06	S89° 20' 16.85"E		60.00	PVT 4" PVC
07	N89° 20' 16.84"W		38.89	PVT 4" PVC
08	N83° 13' 29.55"E		42.79	PVT 4" PVC
09	N83° 13' 29.55"E		30.74	PVT 4" PVC
10	N12° 37' 05.75"E		50.35	PVT 4" PVC
11	S76° 07' 56.94"E		24.34	PVT 4" PVC

PRIVATE WATER DATA TABLE				
COURSE	DELTA/BEARING	RADIUS	LENGTH	DESCRIPTION
01	S22° 55' 31"W		22.45	PVT 2" PVC
02		53.37	200.00	PVT 2" PVC
03	S30° 26' 30"E		5.27	PVT 2" PVC
04		15.97	200.00	PVT 2" PVC
05		15.13	200.00	PVT 3" PVC
06	S0° 39' 43"W		283.21	PVT 3" PVC
07	S0° 39' 43"W		25.51	PVT 3" PVC
08	N89° 20' 17"W		79.49	PVT 3" PVC
09	N66° 51' 11"W		51.64	PVT 2" PVC
10	S89° 20' 17"E		40.25	PVT 2.5" PVC
11	N89° 20' 17"W		39.28	PVT 2.5" PVC
12	S89° 20' 17"E		47.50	PVT 2" PVC
13	N71° 04' 02"E		19.82	PVT 2.5" PVC

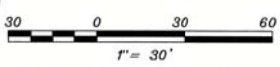


NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
1				6			
2				7			
3				8			
4				9			
5				10			

Leppert Engineering
CORPORATION
5190 Governor Drive, Suite 202, San Diego, CA 92123-2848
Phone: (619) 597-2001 Fax: (619) 597-2009

PREPARATION AND REVISION LOG

APPROVED BY: [Signature]
DATE: 11/10/19
FILE CODE: SDR 4-01-14.09
REGISTRATION NO. 26283
DATE: 11/10/19



CENTERLINE DATA TABLE			
COURSE	DELTA/BEARING	RADIUS	LENGTH
01	S49° 54' 15"E		62.25
02	S12° 29' 36"E	100.00	130.59
03	S12° 50' 38"W	208.00	87.56
04	S1° 20' 50"W		79.94
05	S0° 39' 43"W		428.10

The City of
SAN DIEGO
PRIVATE CONTRACT

DEVELOPMENT SERVICES DEPARTMENT
1222 FIRST AVENUE
SAN DIEGO, CA 92101-4155
619-446-5000

**PRIVATE SEWER AND WATER PLAN FOR:
ST. JOHN GARABED ARMENIAN CHURCH**

CITY OF SAN DIEGO, CALIFORNIA
DEVELOPMENT SERVICES DEPARTMENT
SHEET 2 OF 4 SHEETS

I.O. NO. - N/A
PROJECT NO. - 619391
APPROVAL NO. -

REPLACE MANHOLE WITH CLEAN OUT TO GRADE, CHANGE WATER MAIN SIZE EXTEND PIPE LATERALS TO BUILDINGS

APPENDIX II

Fixture Unit Calculations

Matthew DeVincenzo

From: James Christie <JPChristie@cox.net>
Sent: Monday, March 18, 2019 4:35 PM
To: Matthew DeVincenzo
Subject: RE: Garabad

I have come up with;
Hall 163.75 F.U., 85 gpm
Church 35.5 F.U., 22 GPM
Cultural 176 F.U., 86 GPM
Youth 70 F.U., 58 GPM

Total F.U. 445.25 or 133 GPM

A main line size according to the 2016 appendix A Tables is 3" on a 2" meter.

Call me if you'd like to discuss this.

Jim Christie
(760) 525-6701
JpChristie@cox.net

From: Alex Moore [mailto:AMoore@kdsarch.com]
Sent: Monday, March 18, 2019 2:26 PM
To: James Christie
Subject: FW: Garabad Hall

From: Ken Smith
Sent: Monday, March 18, 2019 2:26 PM
To: Alex Moore
Subject: RE: Garabad Hall

Flush valves



From: Alex Moore
Sent: Monday, March 18, 2019 12:51 PM
To: Ken Smith
Subject: FW: Garabad Hall

Any ideas?

Matthew DeVincenzo

To: Rosales, Roberto
Cc: Berg, Jennifer
Subject: RE: El Camino Real - Water Quality

From: Rosales, Roberto <RRosales@glumac.com>
Sent: Monday, March 29, 2021 6:12 PM
To: Matthew DeVincenzo <matt@leppertengineering.com>
Cc: Berg, Jennifer <jberg@glumac.com>
Subject: RE: El Camino Real - Water Quality

Hi Matt,

A quick calc on my end shows 840 DFU for the units (estimated about 8 DFU per unit at 105 total unit count. Please let me know if you'd like an in depth calculation.

Sorry I didn't have an easy answer for you, but I am happy to help and lend ideas for possible solutions.

Roberto Rosales

APPENDIX III
Sewer Design Reference Documents

TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE
DENSITY CONVERSIONS (Continued)

Zone	Maximum Density (DU / Net Ac)	Population Per DU	Equivalent Population (Pop/Net Ac)
Schools/Public	8.9	3.5	31.2
Offices	10.9	3.5	38.2*
Commercial/Hotels	12.5	3.5	43.7*
Industrial	17.9	3.5	62.5*
Hospital	42.9	3.5	150.0*

Figures with asterisk (*) represent equivalent population per floor of the building.

Definitions:

DU = Dwelling Units

Ac = Acreage

Pop = Population

Net Acreage is the developable lot area excluding areas that are dedicated as public streets in acres. Gross Area is the entire area in acres of the drainage basin, including lots, streets, etc.

For undeveloped areas, assume Net Acreage = 0.8 x Gross Area in Acres

For developed areas, calculate actual Net Acreage.

Tabulated figures are for general case. The tabulated figures shall not be used if more accurate figures are available.

Population is based on actual equivalent dwelling units (EDU) or the maximum estimate obtained from zoning.

Conversion of Fixture Units to Equivalent Dwelling Units (EDU): The Water Meter Data Card, maintained by the Development Services Department, contains a table of plumbing fixtures that should be used for determining the equivalent dwelling units (EDU's) for the purpose of estimating the rate of wastewater generation in residential, commercial, or industrial areas. Currently, the basis for conversion is: **20 fixtures = 1 EDU and 1 EDU = 280 gallons of wastewater per day.**

In high rise building areas, flow rates shall be based on the most current, adopted edition of the applicable Plumbing Code, assuming one lateral per area. The most conservative flow rate shall govern.

PUBLIC UTILITIES DEPARTMENT

PEAKING FACTOR FOR SEWER FLOWS
(Dry Weather)

Ratio of Peak to Average Flow*
Versus Tributary Population

<u>Population</u>	<u>Ratio of Peak to Average Flow</u>	<u>Population</u>	<u>Ratio of Peak to Average Flow</u>
200	4.00	4,800	2.01
500	3.00	5,000	2.00
800	2.75	5,200	1.99
900	2.60	5,500	1.97
1,000	2.50	6,000	1.95
1,100	2.47	6,200	1.94
1,200	2.45	6,400	1.93
1,300	2.43	6,900	1.91
1,400	2.40	7,300	1.90
1,500	2.38	7,500	1.89
1,600	2.36	8,100	1.87
1,700	2.34	8,400	1.86
1,750	2.33	9,100	1.84
1,800	2.32	9,600	1.83
1,850	2.31	10,000	1.82
1,900	2.30	11,500	1.80
2,000	2.29	13,000	1.78
2,150	2.27	14,500	1.76
2,225	2.25	15,000	1.75
2,300	2.24	16,000	1.74
2,375	2.23	16,700	1.73
2,425	2.22	17,400	1.72
2,500	2.21	18,000	1.71
2,600	2.20	18,900	1.70
2,625	2.19	19,800	1.69
2,675	2.18	21,500	1.68
2,775	2.17	22,600	1.67
2,850	2.16	25,000	1.65
3,000	2.14	26,500	1.64
3,100	2.13	28,000	1.63
3,200	2.12	32,000	1.61
3,500	2.10	36,000	1.59
3,600	2.09	38,000	1.58
3,700	2.08	42,000	1.57
3,800	2.07	49,000	1.55
3,900	2.06	54,000	1.54
4,000	2.05	60,000	1.53
4,200	2.04	70,000	1.52
4,400	2.03	90,000	1.51
4,600	2.02	100,000+	1.50

*Based on formula: $\text{Peak Factor} = 6.2945 \times (\text{pop})^{-0.1342}$
(Holmes & Narver, 1960)

FIGURE 1-1