

ITEM 7 – DECISION MAKING MATRIX

DECISION MAKING MATRIX

Category	Subcategory	Needed for Capital calcs /		Needed for O&M calcs /		Risk					
		info	Responsible	info	Responsible						
Collection	Gravity Fed			yes	Savage	Spill					
	Effluent			yes	Savage						
		Ownership									
		If District ownership		Parcel owner's cost							
				Pros/cons of ownership							
				Impacts of improper installation and/or use							
				Breakdown of responsibilities depending on ownership							
				Easements							
		Middle miles (LOCSD to Sunny Field)	yes	Stantec	yes		Savage				
		Middle miles (LOCSD to Dunn)	yes	Use Stantec report to calc	yes		Savage				
Treatment						Spill					
	Solvang		Buy-in cost (line upgrades?)	Savage	yes		Savage				
		Contract with City of Solvang									
		Solvang - Shared infrastructure		Pay line upgrades?	Savage		yes	Savage			
		Local - Location (siting)									
		Local - If phased downtown only	yes	Savage / Clocina	yes		Savage / Clocina				
		Local - Dunn	yes	Savage							
		Local - Available sites for treatment facility									
		Local - Availability of qualified operators (certifications)									
		Local - What happens to Mattei's existing system									
Status Quo											
		Risks, impacts, etc.					Letter re:consequences	CCRWQCB			
Advanced Onsite											
		Can it be a Plan B approach if Prop 218 fails									
		Is it viable from a CCRWQCB perspective									
Grants		Is it truly an option for "all" parcels									
		Which system(s) have a higher likelihood of obtaining grants (or more grants)									
Disposal		Phased in district									
		Connect to Solvang									
Permits											
		Solvang included in Treatment discussion									
Others		Available sites for Disposal									
		Discharge permit			yes	Savage	Spill risk collection and transmission				
						Acquisition of property					
						Transfer of risk (for example from LOCSD to City of Solvang)					
		Need to poll community on desired approach									
		Assessment Engineer Report									
		Rate Study									

	Costs				Approval by EHS / RWQCB	Grant Potential	Risks	Disruption				Notes
	Capital	Operations & Maintenance (O&M) - annual						Construction		On-Going		
		Individual Parcel	Community	Total				Community	Individual Parcel	Community	Individual Parcel	
Collection												
Gravity Fed	\$ 27,938,000		\$ -	\$ 80,352	\$ 80,352	Yes	Yes	Medium	Lower	Low	Very Low	Additional O&M costs assuming District owns and maintains tanks and pumps on individual parcels, does not include on-site electrical costs
Effluent - option b (inc. \$6,685,000 in tanks)	\$ 21,637,095		\$ 133	\$ 60,264	\$ 109,740	Yes	Less likely if owned by property owner (except lower income)	Low	Higher	Low	High	
Hybrid (Gravity-downtown&small, effluent) - option a	\$ 25,530,016		\$ 133	\$ 69,304	\$ 111,666	Yes	Less likely if owned by property owner (except lower income)	Medium	Medium	Low	Medium	
Data Points (30 year, 5% loan, annual prop tax payment)	Total Capital Cost / Parcel	Annual										
Gravity Fed (all parcels same)	\$ 75,102	\$ 4,886										
Effluent - option b (all parcels same)	\$ 58,164	\$ 3,784										
Hybrid (Gravity-downtown&small, effluent) - option a (all parcs	\$ 68,629	\$ 4,464										
Treatment												
Local - MBR	\$ 19,900,000		\$ 1,075	\$300,000-400,000		Yes	Yes	Medium	None	Low	None	\$125,000 estimate from Cloacina partner for equipment consumables, spare parts, replacement, power, labor, chemicals; O&M number includes all costs including disposal, waste hauling
City of Solvang connection (includes Disposal)	\$ 18,680,000		\$ 826			Yes	Yes	Medium	None	Low	None	
Data Points (30 year, 5% loan, annual prop tax payment)	Total Capital Cost	Annual	Monthly									
Local - MBR (all parcels same)	\$ 53,495	\$ 3,480	\$ 89.61									
City of Solvang connection (all parcels same)	\$ 50,215	\$ 3,267	\$ 68.87									
SY CSD Totals	Connect charge		Monthly									
Single Family	\$75,000-100,000		\$ 86.87									
Single Family add unit			\$ 64.65									
Hotel per room no kitchen			\$ 40.41									
Restaurant			\$ 426.67									
Wine taste no food			\$ 109.10									
Elementary school per student			\$ 2.61									
Advanced On-site	\$30,000-70,000		\$1,500-\$1,900			Yes*	Less likely if owned by property owner (except lower income)	Very Low	High	Very Low	High	
Effluent Disposal												
Percolation Ponds	\$ 2,200,000		minimal			Yes		Low	Low	Low	Low	1.5 acres, with 100% redundancy
Percolation Chambers	\$ 5,200,000		minimal			Yes		Low	Low	Low	Low	4 acres, including 100% redundancy
Shallow Aquifer Injection Wells	\$ 1,400,000		\$3,000,000-4,000,000			Yes		Low	Low	Low	Low	Assumes 3 injection wells, \$300k/well
<< reuse >> as additive to one of the above	Site specific		unknown			Yes	Yes					

	Existing Flows		20-Year Buildout Design Flows		ADUs		20-Year Buildout w/ADUs	
	Daily	Max Monthly (Peak)	Daily	Max Monthly (Peak)	Daily	Max Monthly (Peak)	Daily	Max Monthly (Peak)
	*ADF	*MDF	*ADF	*MDF	*ADF	*MDF	*ADF	*MDF
Zone 1 - Commercial	24,789	52,057	40,635	85,334	-	-	40,635	85,334
Zone 1 - Residential	3,010	6,321	3,118	6,548	-	-	3,118	6,548
Zone 2 - Residential lots near downtown ("small lots")	10,535	22,124	10,750	22,575	-	-	10,750	22,575
Zone 3 - Remaining Lots	58,074	121,955	63,252	132,829	2,580	8,256	65,832	138,247
Total	96,408	202,457	117,755	247,286	2,580	8,256	120,335	252,704
Peaking Factor	2.1							
	Existing Flows		20-Year Buildout w/ADUs					
	Daily (GPD)	Max Monthly (Peak GDP)	Daily (GPD)	Max Monthly (Peak GDP)				
Zone 1 - Commercial	24,789	52,057	40,635	85,334				
Zone 1 - Residential	3,010	6,321	3,118	6,548				
Zone 2 - Residential lots near downtown ("small lots")	10,535	22,124	10,750	22,575				
Zone 3 - Remaining Lots	58,074	121,955	65,832	138,247				
Total	96,408	202,457	120,335	252,704				

Cost Component (per parcel, annual)		Gravity, MBR, Perc	Effluent, MBR, Perc	Gravity, Solvang	Effluent, Solvang
Gravity Capital	\$ 4,885.50	\$ 4,885.50		\$ 4,885.50	
Gravity O&M	\$ 216.00	\$ 216.00		\$ 216.00	
Effluent Capital	\$ 3,783.67		\$ 3,783.67		\$ 3,783.67
Effluent O&M	\$ 295.00		\$ 295.00		\$ 295.00
MBR Capital	\$ 3,479.90	\$ 3,479.90	\$ 3,479.90		
MBR O&M	\$ 1,075.27	\$ 1,075.27	\$ 1,075.27		
Solvang Capital	\$ 3,266.56			\$ 3,266.56	\$ 3,266.56
Solvang O&M	\$ 826.44			\$ 826.44	\$ 826.44
Perc Capital	\$ 909.32	\$ 909.32	\$ 909.32		
Perc O&M	\$ -	\$ -	\$ -		
TOTAL		\$ 10,565.99	\$ 9,543.16	\$ 9,194.50	\$ 8,171.67
Notes: All parcels treated the same					
All capital assume 5% loan, 30 year					

ITEM 8 – BUDGET AND STRATEGIC PLANNING

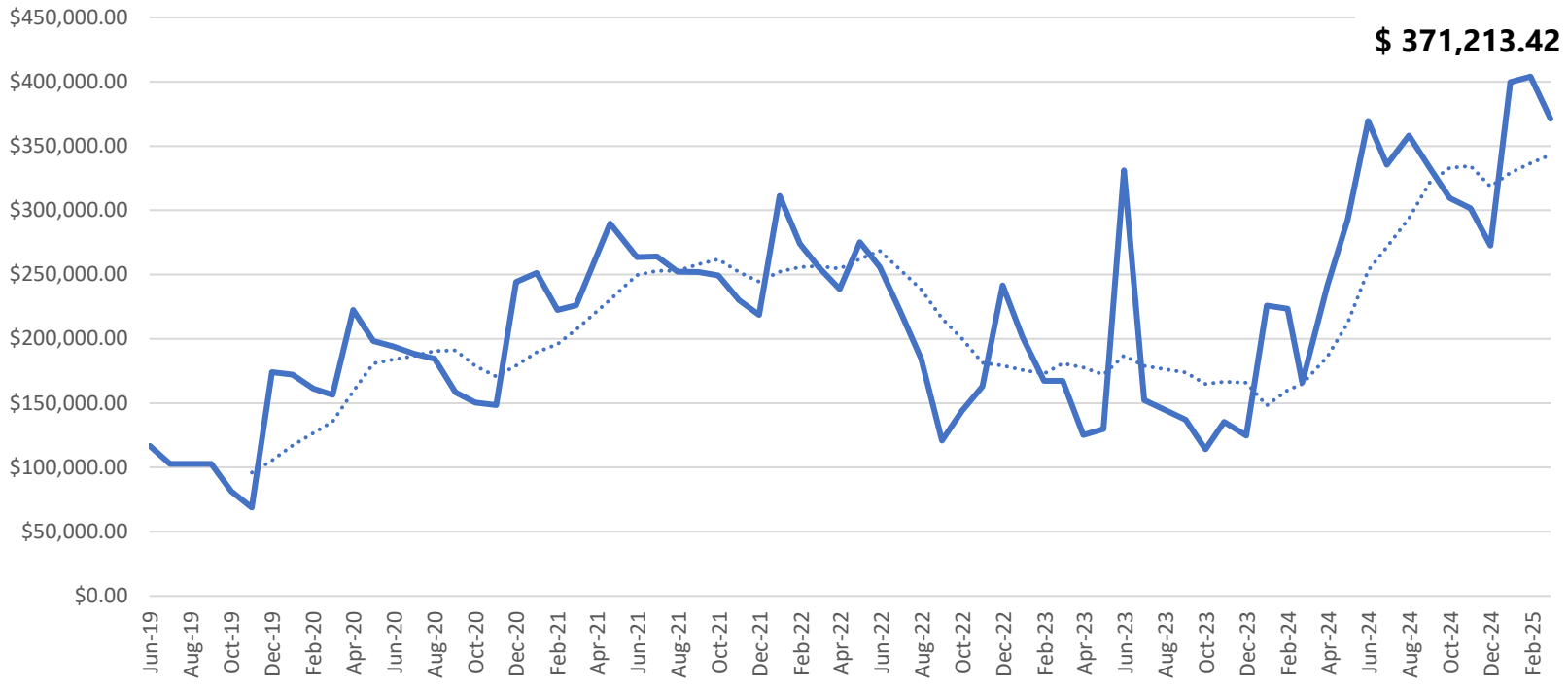
BUDGET AND STRATEGIC PLANNING

Los Olivos Community Services District												
FY 2023-24 Budget (DRAFT)												
Line Item Account	FY 2020-21 Budget	FY 2020-21 (as of 6/30/2021)	FY 2021-22 Budget	FY 2021-22 (as of 6/30/2022)	FY 2022-23 Budget	FY 2022-23 YTD Actuals (as of 6/30/23)	FY 2023-24 Budget	FY 2023-24 Budget (as of 4/1/24)	FY 2024-25 Budget	FY 2024-25 Budget (as of 3/11/25)	FY 2025-26 DRAFT Budget	Notes
Beginning Balance	\$ 193,885	\$ 193,885	\$ 213,370	\$ 213,370	\$ 136,475	\$ 136,475	\$ 48,678	\$ 87,567	\$ 315,526	\$ 315,526	\$ 193,888	
Revenues												
Taxes												
3066 -- Special Tax Assessment	\$ 188,887	\$ 197,023	\$ 196,253	\$ 200,931	\$ 203,121	\$ 227,650	\$ 227,650	\$ 140,740	\$ 236,756	\$ 143,841	\$ 287,682	2x amount recv'd by 3/11 (one payment * 2)
Taxes	\$ 188,887	\$ 197,023	\$ 196,253	\$ 200,931	\$ 203,121	\$ 227,650	\$ 227,650	\$ 140,740	\$ 236,756	\$ 143,841	\$ 287,682	
Use of Money and Property												
3380 -- Interest Income		\$ 839	\$ -	\$ 764	\$ 724	\$ 1,191	\$ 744	\$ 877	\$ 3,485	\$ 4,903	\$ 4,903	YTD
3381 -- Unrealized Gain/Loss Invstmnts		\$ (1,157)	\$ (80)	\$ (6,602)		\$ -		\$ -	\$ -	\$ -	\$ -	
Use of Money and Property		\$ (319)	\$ (80)	\$ (5,838)	\$ 724	\$ 1,191	\$ 744	\$ 877	\$ 3,485	\$ 4,903	\$ 4,903	
Intergovernmental Revenue	\$ -											
4339 -- State - Other	\$ 180,000	\$ 44,986	\$ 274,000	\$ 43,386	\$ 169,804	\$ 30,131	\$ -	\$ 75,000	\$ -	\$ -	\$ -	
4840 -- Other Governmental Agencies								\$ 30,000	\$ -	\$ -	\$ -	
Intergovernmental Revenue-Other								\$ 105,000	\$ -	\$ -	\$ -	
Miscellaneous Revenue												
5895 and 5909 -- Donations								\$ 75,020		\$ -	\$ -	
Miscellaneous Revenue	\$ 180,000	\$ 44,986	\$ 274,000	\$ 43,386	\$ 169,804	\$ 30,131	\$ -	\$ 75,020	\$ -	\$ -	\$ -	
Total Cash & Revenues	\$ 562,772	\$ 435,575	\$ 683,543	\$ 451,849	\$ 510,124	\$ 395,447	\$ 277,072	\$ 409,204	\$ 555,767	\$ 464,271	\$ 486,473	
Expenditures												
Services and Supplies												
7090 -- Insurance	\$ 2,320	\$ -	\$ 2,500	\$ 162	\$ 2,500	\$ 2,800	\$ 2,934	\$ 2,933	\$ 2,787	\$ 2,770	\$ 2,770	SALY
7324 -- Audit and Accounting Fees	\$ 4,000	\$ 2,000	\$ 4,000	\$ 178	\$ 4,000	\$ 7,775	\$ 2,500	\$ 426	\$ 2,900	\$ -	\$ 3,500	Actual 2023-24
7325 -- Other Professional Services (Well Testing)		\$ -	\$ 10,000	\$ -		\$ -			\$ 12,300	\$ 7,414	\$ 14,300	Per contract, twice a year, all 5 wells, nitrates only
7430 -- Memberships	\$ 1,200	\$ 3,533	\$ 1,200	\$ 1,102	\$ 1,200	\$ 1,287	\$ 1,300	\$ 1,244	\$ 1,300	\$ -	\$ 1,300	SALY
7450 -- Office Expense	\$ 2,000		\$ 2,000	\$ 600	\$ 2,000	\$ -			\$ -	\$ -	\$ -	Included in Prof & Special Services
7460 -- Professional & Special Service (Project, Planning & Studies)	\$ 193,500	\$ 54,191	\$ 439,000	\$ 156,283	\$ 189,908	\$ 219,384	\$ 78,886	\$ 79,143	\$ 160,000		\$ 450,000	\$300K 80% Design, \$150k Environmental
7508 -- Legal Fees	\$ 27,000	\$ 17,921	\$ 27,000	\$ 27,165	\$ 30,000	\$ 36,481	\$ 45,529	\$ 20,236	\$ 28,061	\$ 12,335	\$ 28,061	SALY
7510 -- Contractual Services (IGM Contract, Engineer)	\$ 80,400	\$ 95,023	\$ 67,000	\$ 103,038	\$ 49,000	\$ 79,041	\$ 98,643	\$ 76,032	\$ 105,431	\$ 50,847	\$ 105,431	SALY
7530 -- Publications & Legal Notices	\$ 1,000	\$ -	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ 1,750		\$ 1,750	\$ -	\$ 1,500	Budget notices + 3 workshops mailers, etc. at \$300 per workshop
7671 -- Special Projects	\$ 8,000	\$ -	\$ 15,000	\$ -	\$ 175,000	\$ -		\$ 574	\$ -	\$ -	\$ -	
7732 -- Training	\$ 1,500	\$ -	\$ 1,500	\$ -	\$ 1,500	\$ -			\$ -	\$ -	\$ -	
Services and Supplies	\$ 320,920	\$ 172,668	\$ 574,200	\$ 288,527	\$ 460,108	\$ 346,769	\$ 231,542	\$ 180,587	\$ 314,529	\$ 73,366	\$ 606,861	
Other Charges		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
7894 - Communication Services	\$ 930	\$ 600	\$ 930	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	
Other Charges	\$ 930	\$ 600	\$ 930	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Operational Reserve												
Reserve						\$ -	\$ 45,530	\$ -	\$ 47,351	\$ -	\$ 57,536	20% of Special Tax Revenues
Total Expenditures	\$ 321,850	\$ 173,268	\$ 575,130	\$ 288,527	\$ 460,108	\$ 346,769	\$ 277,072	\$ 180,587	\$ 361,880	\$ 73,366	\$ 664,398	
Ending Balance	\$240,922	\$262,307	\$108,413	\$163,321	\$ 49,293	\$ 48,678	\$ 0	\$228,617	\$193,888	\$193,888	\$ (177,925)	
									\$ 371,813			

ITEM 9B – GM AND DE REPORTS

GM AND DE REPORTS

Los Olivos CSD Cash Balance History - w/6 month Trendline



General Ledger Trial Balance

As of: 2/28/2025
Accounting Period: OPEN

Selection Criteria: Fund = 3490

Layout Options: Summarized By = Fund; Page Break At = Fund

Fund 3490 -- Los Olivos CSD

	Beginning Balance 7/1/2024	Year-To-Date Debits	Year-To-Date Credits	Ending Balance 2/28/2025
Assets & Other Debits				
Assets				
0110 -- Cash in Treasury	324,224.67	331,451.32	284,462.57	371,213.42
0240 -- Interest Receivable	2,259.32	4,903.21	7,162.53	0.00
Total Assets	326,483.99	336,354.53	291,625.10	371,213.42
Total Assets & Other Debits	326,483.99	336,354.53	291,625.10	371,213.42
Liabilities, Equity & Other Credits				
Liabilities				
1010 -- Warrants Payable	0.00	2,900.00	2,900.00	0.00
1015 -- EFT Payable	0.00	133,723.13	133,723.13	0.00
1210 -- Accounts Payable	0.00	136,623.13	136,623.13	0.00
Total Liabilities	0.00	273,246.26	273,246.26	0.00
Equity				
2200 -- Fund Balance-Residual	-326,483.99	0.00	0.00	-326,483.99
2710 -- Revenues/Other Fin Sources	0.00	147,839.44	329,192.00	-181,352.56
2810 -- Expenditures/Other Fin Uses	0.00	136,623.13	0.00	136,623.13
Total Equity	-326,483.99	284,462.57	329,192.00	-371,213.42
Total Liabilities, Equity & Other Credits	-326,483.99	557,708.83	602,438.26	-371,213.42
Total Los Olivos CSD	0.00	894,063.36	894,063.36	0.00

Financial Status

As of: 2/28/2025 (66% Elapsed)
Accounting Period: OPEN

Selection Criteria: Fund = 3490

Layout Options: Summarized By = Fund, LineItemAccount; Page Break At = Fund

Fund 3490 -- Los Olivos CSD

Line Item Account	6/30/2025 Fiscal Year Adjusted Budget	2/28/2025 Year-To-Date Actual	6/30/2025 Fiscal Year Variance	6/30/2025 Fiscal Year Pct of Budget
Revenues				
Taxes				
3066 -- Special Tax Assessment	0.00	143,840.93	143,840.93	--
Taxes	0.00	143,840.93	143,840.93	--
Use of Money and Property				
3380 -- Interest Income	0.00	4,903.21	4,903.21	--
Use of Money and Property	0.00	4,903.21	4,903.21	--
Intergovernmental Revenue-Other				
4840 -- Other Governmental Agencies	0.00	32,608.42	32,608.42	--
Intergovernmental Revenue-Other	0.00	32,608.42	32,608.42	--
Revenues	0.00	181,352.56	181,352.56	--
Expenditures				
Services and Supplies				
7090 -- Insurance	0.00	2,769.86	-2,769.86	--
7324 -- Audit and Accounting Fees	0.00	2,900.00	-2,900.00	--
7460 -- Professional & Special Service	0.00	67,771.52	-67,771.52	--
7508 -- Legal Fees	0.00	12,334.80	-12,334.80	--
7510 -- Contractual Services	0.00	50,846.95	-50,846.95	--
Services and Supplies	0.00	136,623.13	-136,623.13	--
Expenditures	0.00	136,623.13	-136,623.13	--
Los Olivos CSD	0.00	44,729.43	44,729.43	--
Net Financial Impact	0.00	44,729.43	44,729.43	--

Cash Balances

As of: 2/28/2025
Accounting Period: OPEN

Selection Criteria: Fund = 3490

Layout Options: Summarized By = Fund; Page Break At = Fund

Fund	2/1/2025 Beginning Balance	Month-To-Date Cash Receipts (+)	Month-To-Date Treasury Credits (+)	Month-To-Date Warrants and Wire Transfers (-)	Month-To-Date Treasury Debits (-)	2/28/2025 Ending Balance
3490 -- Los Olivos CSD	403,971.88	0.00	0.00	0.00	32,758.46	371,213.42
Total Report	403,971.88	0.00	0.00	0.00	32,758.46	371,213.42



LOCSD Wastewater Connection to City of Solvang
Basis of Design Report- FINAL

February 21, 2025

Prepared for:
Los Olivos Community Services District

Prepared by:
Stantec Consulting Services Inc.

Project/File:
184032474

Revision Schedule

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
0	Draft	GK	1/31/25	JTZ	1/31/25	CEP	1/31/25
1	Final	GK	2/21/25	JTZ	2/21/25	CEP	2/21/25

Disclaimer

The conclusions in the Report titled g are Stantec’s professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient’s own risk.

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This Report is intended solely for use by the Client in accordance with Stantec’s contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared by: 
 Gabrielle Kasman, EIT

Reviewed by: 
 Jonny Zukowski, PE

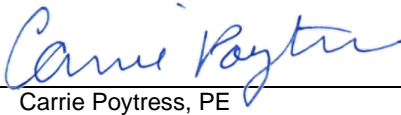
Approved by: 
 Carrie Poytress, PE



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LOCSD Wastewater Connection to City of Solvang

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Executive Summary

This report provides design recommendations to the Los Olivos Community Services District (LOCSD) for LOCSD lift stations, storage, and the sewer force main that will connect LOCSD’s wastewater collection system to the City of Solvang’s. This will require approximately 18,000 linear feet (3.4 miles) of pipeline and bridge crossings over Alamo Pintado Creek. The proposed point of connection (POC) to Solvang will be at existing sewer maintenance hole (SMH) MD-114, located near the intersection of Ladan Drive and Alamo Pintado Road across from Sunny Fields Park. It is assumed that all Solvang’s capital improvement projects described in both the 2021 Solvang Sewer Master Plan (SMP) and Water System Consulting’s evaluation to upsize the pipe segments in Solvang’s collection system will be completed prior to accepting the wastewater from LOCSD.

Two lift stations are recommended for LOCSD, one on either side of Alamo Pintado Creek. The Grand Ave (eastside) lift station should be located near the intersection of Grand Ave, Alamo Pintado Rd, and Roblar Ave within the road right-of-way (ROW) ideally located on the northwest corner of the intersection outside of the pavement. The Grand Ave lift station helps to avoid a very deep wet well at the Santa Barbara Ave lift station. The Santa Barbara Ave (westside) should be located near the intersection of Santa Barbara Ave and Alamo Pintado Road on the northeast corner outside of the pavement. Due to the existing utilities in the area, the footprint requirements, and access requirements, the Santa Barbara Ave lift station may need to be constructed further back from the road outside of the ROW, which may require an easement from the property owner.

Below is a summary of the design recommendations for the two lift stations and associated force mains.

Table ES-1: Summary of Design Recommendations

	Grand Ave (eastside) Lift Station	Santa Barbara Ave (westside) Lift Station
Wet Well Capacity (gallons)	1,250	10,000
Pump Duty Point (gpm)	246.6	334.4
Min. Head Required (ft)	20	15
Odor Control	No	Yes
Generator	Hookups for portable generator	Trailer mounted generator located at site
Site	Designated parking	Driveway access
Force Main Diameter (in)	4	6
Fore Main Material	PVC	HDPE



Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
ACI	American Concrete Institute
ADF	Average Daily Flow
ADMMF	Average Daily Maximum Month Flow
ADU	Accessory Dwelling Unit
Ave.	Avenue
ASTM	American Society for Testing and Materials
BOD ₅	Biochemical Oxygen Demand
BODR	Basis of Design Report
Cal OSHA	California Division of Occupational Safety and Health
d/D	Depth over Diameter
FT	Feet
GIS	Geographical Information Systems
GPD	Gallons per day
gpm	Gallons per minute
H ₂ S	Hydrogen Sulfide
HDPE	High Density Polyethylene
LF	Linear Feet
LOCSD	Los Olivos Community Services District
max	Maximum
MDF	Maximum Daily Flow
Mg/L	Milligrams per Liter
min	Minimum
MSL	Mean Sea Level
NACE	National Association of Corrosion Engineers
No.	Number
POC	Point of connection
PVC	Polyvinyl Chloride
PWWF	Peak Wet Weather Flow
ppd	Pounds per Day
psi	Pounds per square inch
Rd.	Road
ROW	Right-of-Way
SMH	Sewer maintenance hole
SSPC	Society for Protective
SMP	Sewer Master Plan
TKN	Total Kjeldahl Nitrogen
TN	Total Nitrogen
TSS	Total Suspended Solids
WWTP	Wastewater Treatment Plant



1 Introduction and Background

The unincorporated township of Los Olivos is in the Santa Ynez Valley in Santa Barbara County, California. Los Olivos is known for wine tasting, fine and casual dining, and fine art and experiences heavy tourism in the downtown commercial area on weekends and holidays throughout the year. Per County of Santa Barbara Los Olivos Wastewater Management Plan 2010 (WMP), the daily tourist population is estimated to be two to three times the population of Los Olivos during summer weekends and holidays. Los Olivos has a total of 418 parcels with approximately 350 septic systems per the WMP. There are 391 parcels within the District boundary and the remaining 27 parcels are outside the District boundary located north of Highway 154. The area is a mix of residential and commercial properties with large rural residential, viticulture, and agriculture lots surrounding the downtown commercial area.

In 1974, Santa Barbara County designated Los Olivos a Special Problems Area due to nitrate contamination of the groundwater. Los Olivos is in the Santa Ynez Uplands Groundwater Basin and groundwater monitoring has shown significant impact with the use of septic systems in the Los Olivos area. Properties in Los Olivos currently rely on individual septic systems for wastewater disposal using septic tanks and leach files. There is no sanitary sewer collection system or wastewater treatment facility in the community. The nearest wastewater treatment plant is located approximately 5 miles south in the City of Solvang.

In 2018, to mitigate further groundwater contamination, Los Olivos voters established the Los Olivos Community Service District (LOCSD) to provide a funding mechanism for the building and operation of facilities needed to collect, treat, and dispose of sewage, wastewater, recycled water, and storm water in Los Olivos and adopted resolution 2019-04, the Los Olivos Wastewater Reclamation Program Project (LOWRPP). The LOWRPP is comprised of four components. As part of component no. 4, the District's goal is to implement a three-phased plan for converting Los Olivos from septic systems to centralized wastewater conveyance, treatment, and disposal facilities:

- Phase I includes the 20-year build-out of the downtown commercial zone which consists of existing commercial properties and neighboring residential properties.
- Phase II includes the residential area to the east and south of Phase I.
- Phase III includes the rest of the community within the Service Area.

It is expected that properties in Phase I and Phase II are expected to be connected immediately after construction of the collection system. Phase III properties are generally expected to be connected when their septic systems fail and may take several years to be connected after the construction of the collection system

1.1 Purpose

The purpose of this report is to document the results of a hydraulic analysis that was conducted to size sewer lift stations and force mains and provide recommendations to the Los Olivos Community Services



LOCSD Wastewater Connection to City of Solvang

Introduction and Background

District (LOCSD) to connect LOCSD's future wastewater collection system to the City of Solvang's existing collection system for treatment at the Solvang Wastewater Treatment Plant (WWTP).

This report presents 30% conceptual design recommendations for LOCSD lift stations, flow equalization storage, and the sewer force main that will connect LOCSD's wastewater collection system to the City of Solvang's.

1.2 Previous Reports

This report utilizes technical findings from prior reports and summarizes the anticipated impacts of the connection to the City of Solvang's wastewater infrastructure. Key references include the following reports:

1. Wastewater Loading Study (Loading Study) by Stantec dated November 19, 2021
2. Wastewater Collection and Treatment Basis of Design Report (BODR) by Stantec dated January 7, 2022
3. Septic to Sewer Project 30% Submittal (Community Gravity Collection System) by Stantec dated June 28, 2022
4. Basis of Design Report Los Olivos Collection Analysis (Hybrid Collection System) by Regen AEC, PLLC dated May 30, 2024.
5. City of Solvang 2021 Sewer Master Plan (SMP) by Water Systems Consulting (WSC) dated November 8, 2021
6. Draft Technical Memorandum for Los Olivos CSD Flow Impacts on Solvang Wastewater Treatment Plant by WSC dated October 7, 2024
7. Final Technical Memorandum titled Evaluation of Los Olivos Flows on Solvang WWTP by Carollo Engineers (Carollo) dated November 2024

1.2.1 Los Olivos Previous Analysis

In 2021, Stantec developed the Wastewater Loading Study (Loading Study). The Loading Study provided estimated average day (ADF), max day (MDF), and peak hour wet weather (PWWF) flows among others, as well as wastewater quality projections for each phase of the Los Olivos conversion. PWWFs can be assumed to account for infiltration of ground water in the conveyance system, inflow of stormwater through storm water connections and openings in manholes etc. Although, it is anticipated that dry weather and wet weather flows should remain constant in a new collection system. To account for infiltration over the life of the conveyance system and to the affect that tourism in the downtown commercial zone will have, the Loading Study established peaking factors to estimate PWWFs. These peaking factors were established on the basis from previous reports and comparing the existing peaking factors used for the Township of Santa Ynez (SYCSD) and the City of Solvang. Though the community of Los Olivos is like Santa Ynez in that it has a small commercial zone with rural residential, viticulture, and agriculture in the surrounding area and like Solvang with the influx of tourism throughout the year it differs from these nearby towns in population. See Table 1-1 for a summary and comparison of peaking factors used to calculate the PWWF in the Loading Study.



LOCSD Wastewater Connection to City of Solvang
Introduction and Background

Table 1-1: PWWF Factor Comparison

Design Standard	PWWF Factor
SYCSD Design and Construction Standards	3
City of Solvang Sewer System Management Plan 2015	5
Phase III (Remaining Areas)	4

Table 1-2 and Table 1-3 below summarize the projected flows and wastewater quality for the three build-out phases of the Los Olivos conversion, as estimated by the Loading Study, respectively.

Table 1-2: Los Olivos 20-Year Buildout Flow Projections

Phase	Average Daily Flow (ADF) (gpd)	Average Daily Flow (ADF) (gpm)	Maximum Daily Flow (MDF) gpd	Peak Wet Weather Flow (PWWF) (gpm)
Phase I (Commercial Zone)	43,800	30.4	140,000	121.7
Phase II (Residential Zone)	54,500	37.9	174,000	151.4
Phase III (Remaining Areas)	117,752	81.8	376,400	327.1
Phase III + ADU (Full Build-Out + Inflow)	120,400	83.6	385,000	334.4

Table 1-3: Los Olivos 20-Year Buildout Wastewater Quality Projections

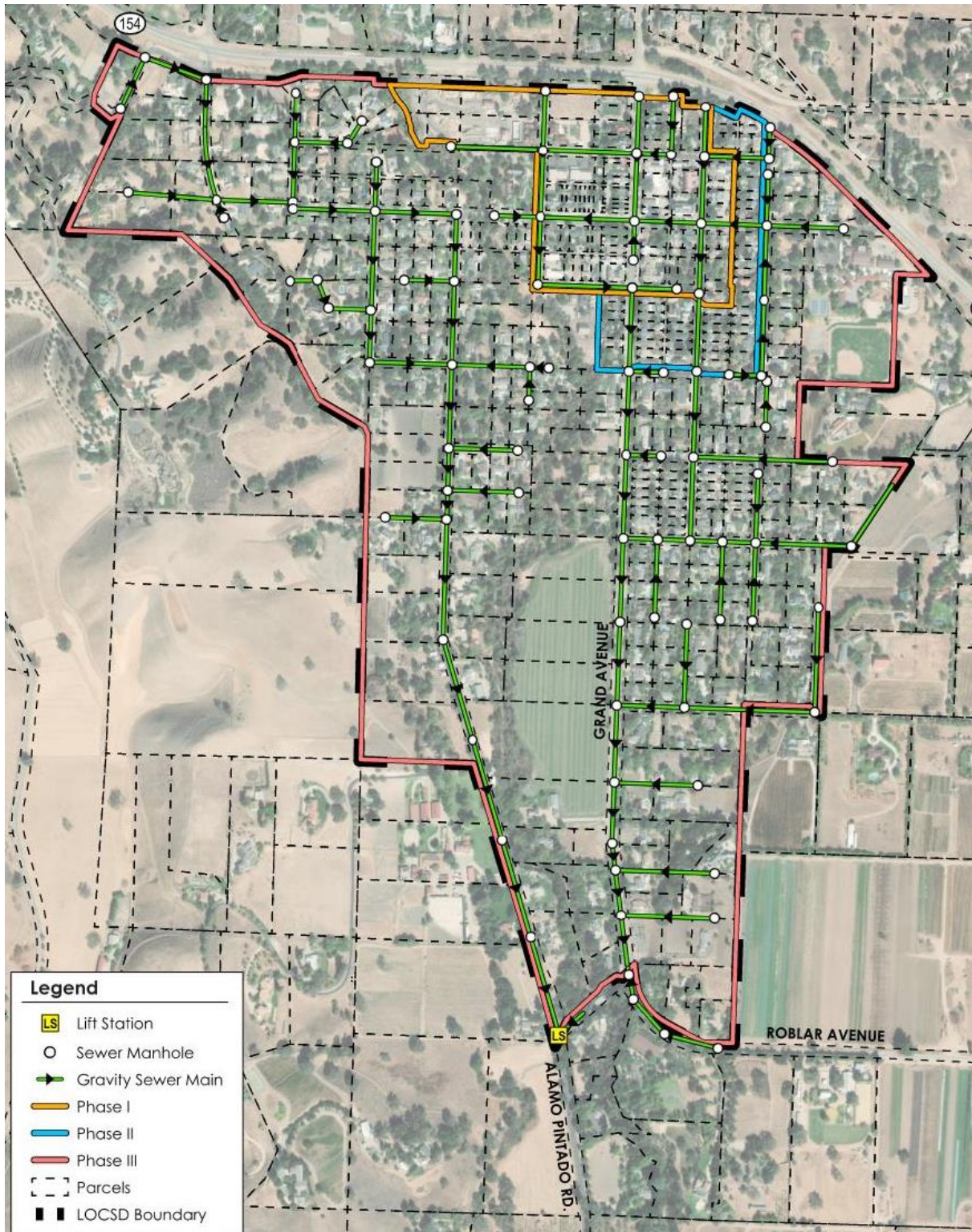
Phase	Constituent	Average Daily Maximum Monthly Flow (ADMMF) (gpd)	Concentration (mg/L)	Loading (ppd)
Phase I (Commercial Zone)	BOD ₅	49,600	769	318
	TSS		493	204
	TKN		99	41
Phase II (Residential Zone)	BOD ₅	61,400	658	337
	TSS		437	224
	TKN		88	45
Phase III (Remaining Areas)	BOD ₅	133,800	416	464
	TSS		320	357
	TKN		63	70

In 2022, Stantec developed a Wastewater Collection and Treatment Basis of Design Report (BODR) to provide design criteria for a wastewater collection system, sewer lift station, and centralized wastewater treatment facility to serve LOCSD. Figure 1 illustrates the BODR’s preliminary design for the layout of LOCSD’S gravity collection system, assuming the treatment plant’s location is in the southern part of the community, and sewage lift station, located at the intersection of Alamo Pintado Road and Santa Barbara Avenue. This LOCSD Lift Station was determined to be necessary regardless of the treatment plant’s location.



LOCSD Wastewater Connection to City of Solvang
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Figure 1: Los Olivos Preliminary Gravity Sewer Collection Layout



LOCSD Wastewater Connection to City of Solvang

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Building upon the BODR, in 2022 Stantec prepared the 30% submittal that included conceptual plans and profiles for the gravity collection system sewer and a conceptual layout of the centralized wastewater treatment facility for LOCSD. The plans included a sewer lift station at the most downstream portion of the collection system to convey wastewater to the centralized treatment facility.

This sewer lift station, referred to as the Santa Barbara Ave. (westside) Lift Station (Santa Barbara LS) in this report, will be located at the north-east corner of Alamo Pintado Road and Santa Barbara Avenue, west of Alamo Pintado Creek.

1.2.2 Solvang 2021 Sewer Master Plan

According to the 2021 SMP, the City of Solvang's wastewater collection system consists of 31 miles of gravity sewer mains and two sewer lift stations (the Fjord and Alisal Lift Stations) that provide wastewater services for 10,230 customers. Wastewater is conveyed to Solvang's WWTP via the Fjord sewer lift station and sewer force main below the Santa Ynez River.

The SMP identified several capacity-related challenges within Solvang's existing wastewater infrastructure. While no pipe segments were found to exceed capacity under annual average flow (AAF) scenarios, 20 pipe segments (0.75 miles) exceeded capacity under peak wet weather flow (PWWF) conditions. See Figure 2 for a summary of the pipeline evaluation criteria used in the SMP.

Of the 20 segments identified, 9 segments (0.33 miles) would convey additional wastewater from LOCSD. These sewer mains are located along Fjord Drive and exceed capacity when the Alisal Lift Station operates during existing PWWF conditions (see Figure 2). The model assumed the peak flow from the lift station coincides with those in the gravity mains, a conservative approach that does not account for pump cycling. No capital improvement projects (CIPs) were recommended to address the capacity constraints as these capacity deficiencies are only present at peak flows and the risk was anticipated to be minimal. The SMP recommended these mains be surveyed to determine if the slopes are as low as Solvang's GIS indicates and that flow be monitored to determine if peak flows are triggering these conditions.

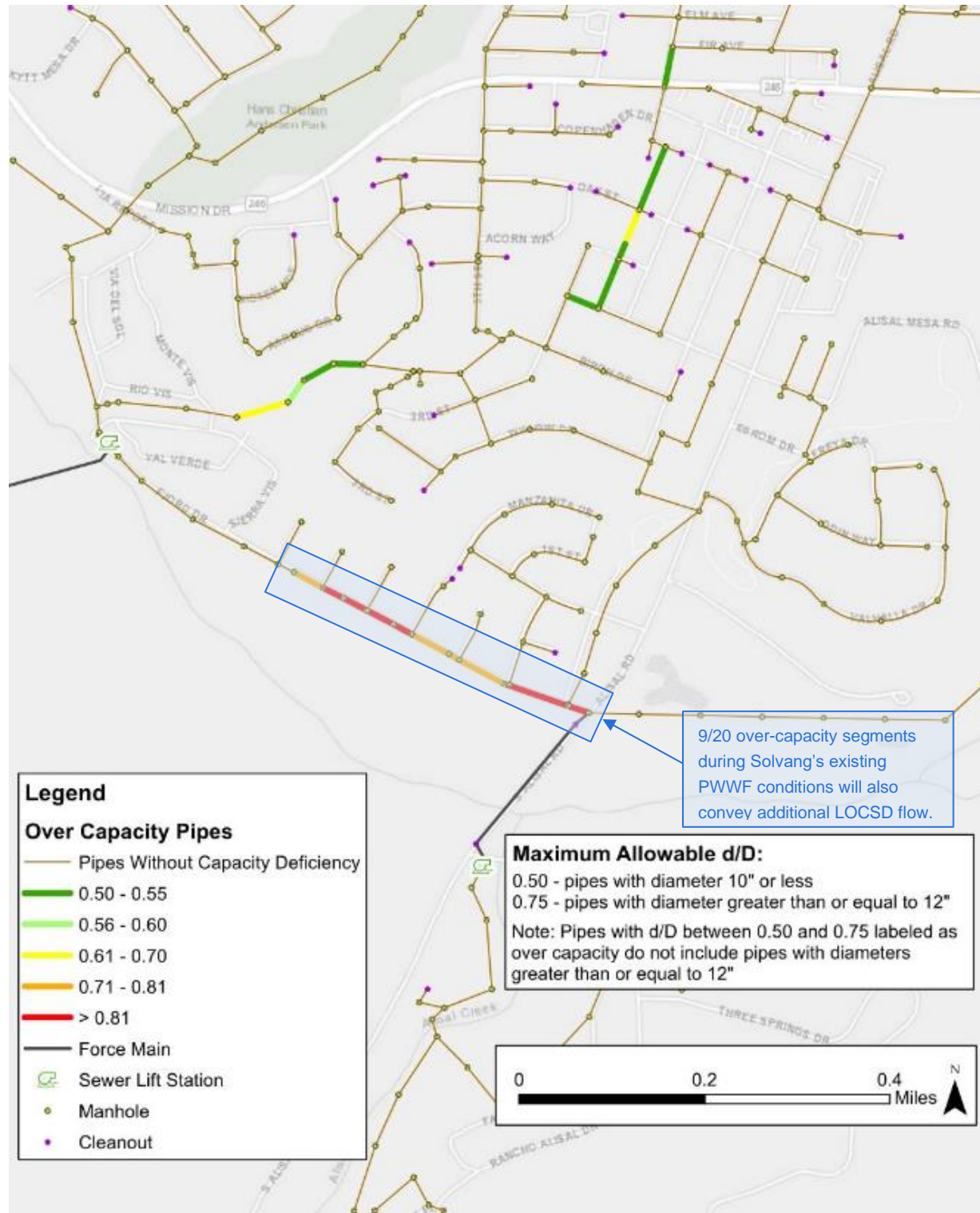
The SMP also evaluated the capacity of the Fjord lift station under various PWWF scenarios. The evaluation concluded that the Fjord lift station has sufficient capacity to handle both existing and future flows under these conditions. As a result, no capacity upgrades were required at either lift station.

Diurnal curves were developed in the SMP using flow monitoring conducted by Utility Systems Science & Software (US³) at multiple sewer maintenance holes (SMH) through the system. To establish and understand peak flow times within Solvang's wastewater collection system, this report will utilize the diurnal curve and flow monitoring for SMH MD-018, which is along the conveyance route impacted by the addition of LOCSD flow, to establish and discuss peak flow times.



LOCSD Wastewater Connection to City of Solvang
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Figure 2: City of Solvang Pipes Evaluation under Existing PWWF Conditions (No LOCSD Addition)



1.2.3 Basis of Design Report for a Hybrid Collection System

In 2024, Regen AEC, PLLC (Regen) prepared a basis of design report for LOCSD to analyze a hybrid collection system that utilized both a pressurized effluent sewer system (PFE) and a gravity collection system to collect wastewater from LOCSD. The report concluded that PEFs tend to have lower infiltration and inflow than gravity sewers which can reduce the estimated PWWF. PEF systems also tend to contain less solids due to conveying the effluent from the existing septic systems where the solids have settled.

These two factors could reduce the size of the wastewater lift stations and is further discussed in this report. The collection system chosen should be considered during final design of the wastewater lift station.

1.2.4 Solvang Wastewater Infrastructure Capacity

In June 2024, LOCSD contracted with WSC to evaluate the impacts of adding the Los Olivos' wastewater to Solvang's collection system. Using the same hydraulic model that was developed for the 2021 SMP, WSC simulated the additional flow by adding a point load to a Solvang maintenance hole located near Sunny Fields Park (see Figure 3). Unlike the SMP, this model only assessed sewer mains that would be impacted by the addition of Los Olivos's flow. Pipe segments that exceeded capacity were taken to mean that the normal depth of flow within the pipeline was greater than the allowable d/D criteria set forth by the City of Solvang sewer design standards. See Table 1-4 for number of pipe segments that exceed capacity with the addition of LOCSD's flow under various flow conditions.

Table 1-4: Pipe Segments Exceeding Capacity under Various Flows and With LOCSD Flow Addition

	Solvang Only		Solvang + LOCSD		Change Due to LOCSD Addition	
	Number of Segments	Length (miles)	Number of Segments	Length (miles)	Number of Segments	Length (miles)
Existing ADF	0	0.00	0	0.00	0	0.00
Existing PWWF	9	0.32	11	0.43	2	0.11
Buildout PWWF	9	0.32	19	0.87	10	0.55

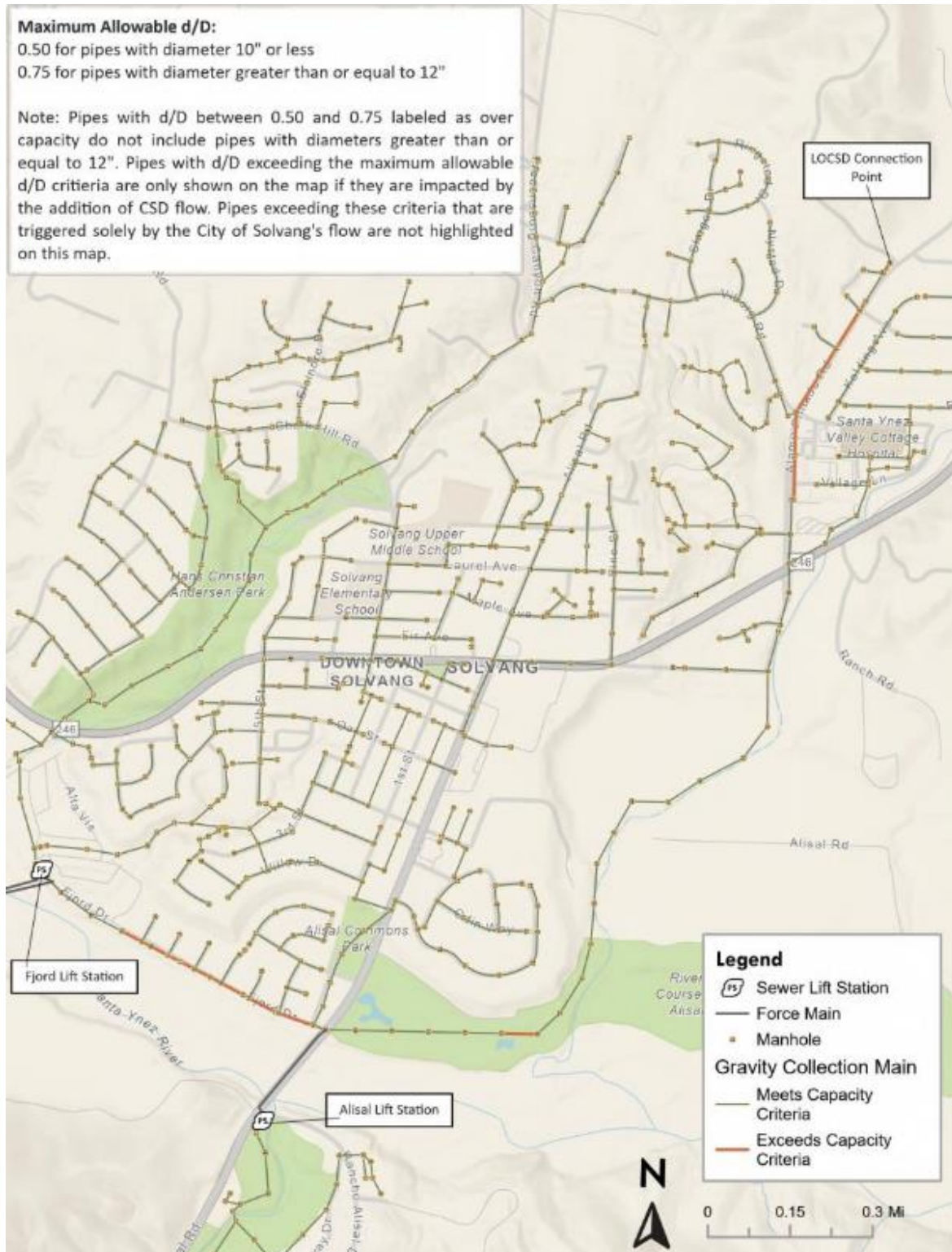
As previously discussed in Section 0, 9 segments already exceed capacity under Solvang's existing PWWF condition for two primary reasons: (1) they have low (flat) slopes and (2) they only exceed the capacity criteria when the Alisal Force Main is operating. The SMP recommended surveying these mains to confirm slopes and monitoring flows to verify peak flow impacts. Using the SMP's evaluation criteria, WSC determined that while no pipe segments were over capacity-under ADF conditions, the addition of LOCSD's projected PWWF to Solvang's existing PWWF results in 11 segments (two additional segments) exceeding capacity. One of the pipes is another low slope main along the Fjord Drive, while the other is near the proposed connection point where small end-of-line mains constrain capacity.

When comparing the combined flow during buildout PWWF versus existing PWWF conditions, 8 more segments exceed capacity (see Table 1-4). This increase is mainly due to additional demands on end-of-line mains near the proposed connection point (see Figure 3).



LOCSW Wastewater Connection to City of Solvang
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Figure 3: City of Solvang Pipes Evaluation under Buildout PWWF Conditions (With LOCSW Addition)



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Additionally, there is a section of the trunk main that was identified in the SMP as potentially capacity constrained. To address these deficiencies, WSC proposed four potential capital improvement projects (CIPs). These include increasing the diameter of low-slope gravity mains along Fjord Drive, sections of the trunk main, and end-of-line mains near the connection point. See Figure 3 for a map from WSC’s report showing the deficient pipelines that are included in the CIPs.

The capacity of the Fjord Lift Station was also assessed based on the various PWWF scenarios. Results of the lift station capacity evaluation determined the Fjord Lift Station is sufficient to meet the pumping needs of Solvang with the addition of Los Olivos under existing and future buildout scenarios.

1.2.5 Solvang Wastewater Treatment Plant Water Quality

In August 2024, the LOCSD contracted with Carollo to evaluate the impact of connecting Los Olivos’ flows to Solvang’s WWTP to the water quality of drinking water and wastewater within both service areas. Using a biological process model, Carollo evaluated the scenario where the full Phase III flow and loads would be connected to the Solvang WWTP (see Table 1-3). Even when the simulation was run under the worst-case condition (average daily maximum monthly flow and average wastewater concentrations to simulate the typical highest wastewater loads on the WWTP), the model determined Solvang’s future WWTP will be able to effectively meet effluent permit limits (see Table 1-5). However, Carollo’s report states that this will only be possible after the WWTP Phase 2 Upgrades project is constructed. The Phase 2 Upgrades project, which is expected to be completed in April 2028, will include reconfiguring the existing sequencing batch reactors and adding secondary clarifiers.

Table 1-5: Solvang WWTP Projected Effluent Concentrations after Los Olivos Connection

Constituent	Constituent Description	WWTP Effluent Permit Limit (mg/L)	Modeled Effluent Concentration (mg/L)
BOD ₅ (1)	Biochemical Oxygen Demand, 5 days	30	2.4
TSS(1)	Total Suspended Solids	20	4.2
TN(2)	Total Nitrogen	10	8.8
Notes: (1) 30-day average effluent permit limit provided. (2) 25-month rolling median effluent permit limit provided.			

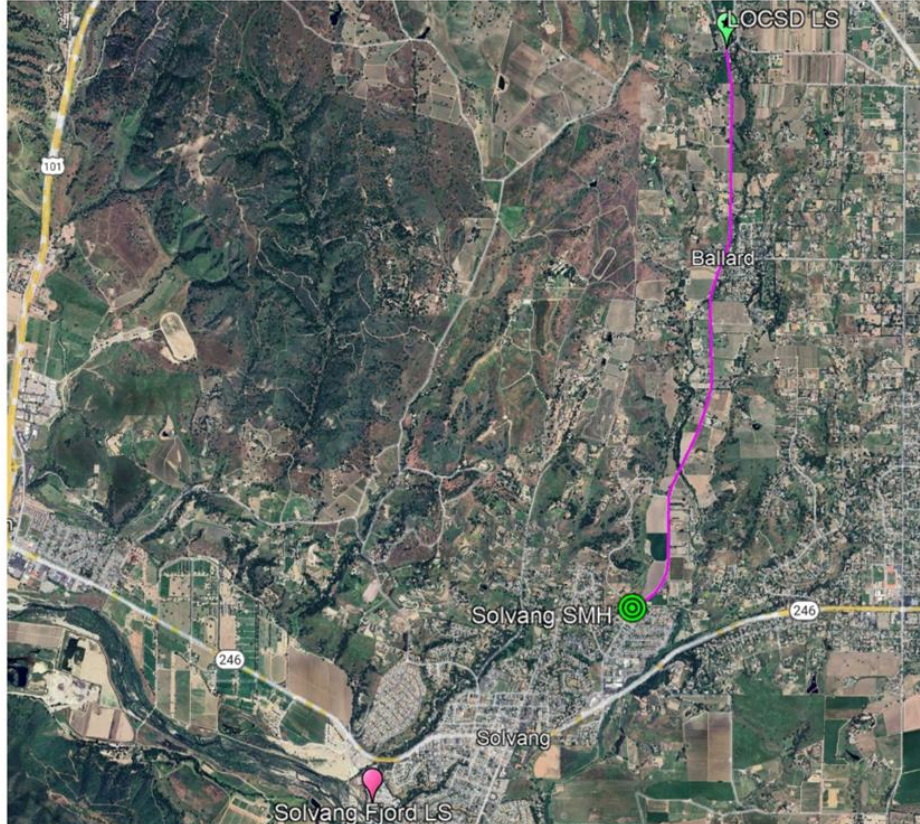


2 Proposed Preliminary Project

The proposed Project includes a connection from LOCSD LS to the City of Solvang's wastewater infrastructure. This will require approximately 18,000 linear feet (3.4 miles) of pipeline and bridge crossings over Alamo Pintado Creek. As shown in Figure 4 below, the proposed point of connection (POC) to Solvang will be at existing SMH MD-114, located near the intersection of Ladan Drive and Alamo Pintado Road across from Sunny Fields Park. While the ground elevation of the proposed location of the LOCSD LS is approximately 751 ft, the Solvang POC has an approximate ground elevation of 510 ft. This decrease in elevation must be considered in the development of the system curve and the design of conveyance system. Gravity flow to the POC, aside from the bridge crossings, is possible with an estimated average downhill slope from LOCSD LS to Solvang's SMH MD-114 being 1.3%.

As noted in the WSC's draft technical memo, the addition of LOCSD's Buildout PWWF to Solvang's Buildout PWWF causes 10 existing sewer mains to exceed conveyance capacity and further inundates 9 sewer mains along Fjord Drive already exceeding capacity at Baseline Existing PWWF. **It is assumed that all CIPs in both the SMP and WSC's evaluation to upsize the pipe segments in Solvang's collection system will be completed prior to accepting the wastewater from LOCSD.**

Figure 4: Los Olivos Lift Station to Solvang Collection System Sewer Force Main Connection



Key components of the Preliminary Project are discussed in the sections below.

2.1 Sewer Lift Stations

As previously mentioned in Section 1.2.1, the BODR determined a sewage lift station will be required to convey wastewater from the Los Olivos gravity sewer collection system to a wastewater treatment plant regardless of the plant location due to the required depth of the gravity sewer main crossing Alamo Pintado Creek. The 30% conceptual plans showed the gravity sewer main discharging into the LOCSD LS, referred to as the Santa Barbara Ave (westside) lift station (Santa Barbara LS) in this report, to be approximately 25 feet deep at elevation 720.5 ft above MSL. This would require a wet well greater than 25 feet deep to accommodate the incoming gravity sewer main depth. To avoid such a deep wet well, this report recommends adding an additional lift station on the east side of Alamo Pintado Creek to capture the flow from the eastside of the collection system. This additional lift station in this report is referred to as the Grand Ave (eastside) Lift Station (Grand LS). The sewer force main from this lift station would need to attach to the downstream side of the existing Santa Barbara County bridge # 51C-80 crossing Alamo Pintado Creek to discharge into the Santa Barbara LS on the west side of the creek. The Santa Barbara LS would pump the wastewater to the Solvang sewer collection system.

Figure 5: Proposed Sewer Lift Stations



The inclusion of a wet well at each lift station is critical for regulating inflow and ensuring consistent and efficient operation. Additionally, the pressurized sewer system enabled by the lift stations provides several advantages, such as minimizing the size and depth of pipelines, reducing construction costs, and limiting further development along the Alamo Pintado Road. As a concept, it is assumed that the lift stations will consist of a round maintenance hole style wet well with duplex submersible pumps. One pump shall be for duty service and the other for redundancy, with alternating duty service.

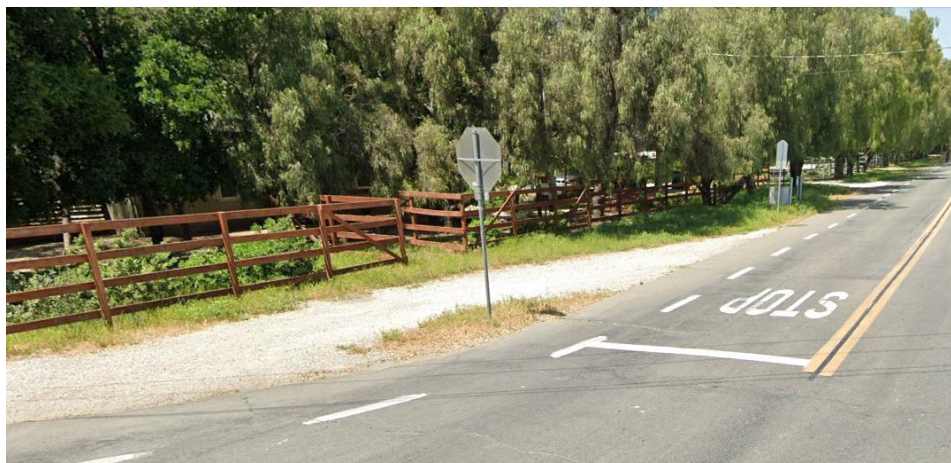
It should be noted that the inclusion of PFEs, as described in Regens BODR for the LOCSD collection system, could negate the need for the Grand LS. If the east side of the collection system is pressurized, the collection system may be able convey wastewater to the Santa Barbara LS without the need for an additional lift station on the east side of Alamon Pintado Creek. This should be analyzed during final design based on the collection system chosen for LOCSD.

2.1.1 Sewer Lift Stations Site Layouts

The lift station sites generally consist of a 'level' graded area that is large enough to accommodate the power system, standby generator building or hookups, control panels, wet well structure, and valve vaults with setbacks around these items to provide adequate space between items and for access and maintenance, and to meet federal, state, and local code requirements. Based on the location of the lift station sites there will need to be adequate space for vehicle parking due to the proximity to the public road. The sites will need to be graded to allow adequate storm water drainage away from the sites as well. It is recommended to provide fencing around the perimeter that will restrict access and block view from the public ROW. The site layouts will be included in the 30% design plans.

The Grand Ave (eastside) lift station should be located near the intersection of Grand Ave, Alamo Pintado Rd, and Roblar Ave within the road right-of-way (ROW). The ideal location is on the northwest corner of the intersection outside of the pavement as shown in *Figure 6*. A parking space adjacent to the lift station is needed for maintenance personnel. The lift station needs to accommodate the existing fire hydrant, 8-inch water main, communications maintenance hole, and electrical box within the ROW.

Figure 6: Proposed Grand Ave LS Location



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The Santa Barbara Ave (westside) should be located near the intersection of Santa Barbara Ave and Alamo Pintado Road on the northeast corner outside of the pavement. Due to the existing utilities in the area, the footprint requirements, and access requirements, the lift station may need to be constructed further back from the road outside of the ROW, which may require an easement from the property owner. The existing 8-inch water main that crosses behind the existing power poles, may need to be relocated to fit the wet well and maintain adequate clearances between the water and sewer.

Figure 7: Proposed Santa Barbara Ave LS Location



2.1.2 Lift Station Structure

The lift station structures will consist of a cylindrical concrete wet well to collect the incoming wastewater from the gravity collection system. The wet wells will house a pumping system to discharge the wastewater to a desired endpoint. The wet well will be supported by a monolithic thickened concrete foundation and have a top slab with locking access hatch prevent sewage gases from escaping and prevent unauthorized access.

2.1.2.1 Materials

Sewer lift stations are typically constructed from reinforced concrete which is lined with products that meet the Society for Protective Coatings (SSPC), National Association of Corrosion Engineers (NACE), American Concrete Institute (ACI), and American Society for Testing and Materials (ASTM) codes and standards. These coatings protect the interior of the wet well from the corrosive environment caused by the wastewater and are typically made from epoxy or acrylic. The concrete is designed specifically for water-retaining with a compressive strength of 4,000 psi or greater. The lift station structure, concrete mix,



lining and coatings should be specified during final design. The concrete cylindrical barrels of the lift station can be precast concrete or cast-in-place, but the precast concrete is typically cheaper and faster to construct than cast-in-place.

The other option is for the wet well to be constructed from fiberglass. Fiberglass tanks can be manufactured with a double-wall, leak detection, and to resist most chemicals and gasses so a lining is not required. However, fiberglass is not as widely available, and there can be restrictions on the full size and shape of the fiberglass structural components. The maximum inside diameter is 12 feet. The fiberglass tanks typically arrive as a single, easy to install unit.

2.1.2.2 Shoring, Bedding, and Backfill

Per Cal OSHA and California Code of Regulations, all excavations greater than 5-feet in depth will require adequate shoring which must be designed by a registered California Structural or Civil Engineer. The excavation for the wet wells will require an excavation approximately 15 feet deep. Adequate shoring to protect the workers, the structures, and the surrounding soil during construction of the sewer lift station will be required.

The construction of the lift station structure will also require proper compaction of the underlying soil to achieve an unyielding foundation for the sub-base and concrete base foundation. During final design, a Registered California Geotechnical Engineer should be retained to conduct a field investigation and analysis of the surrounding soils and provide recommendations for horizontal and vertical loading of the soil, seismic parameters, required soil compaction, shoring, depth to groundwater, drainage, and backfill among others. These recommendations should be used during the final design of the sewer lift station structure, trenching, excavation, compaction, and backfill.

2.1.2.3 Groundwater and Buoyancy Forces

The preferred lift station sites are located approximately 180 to 220 feet from Alama Pintado Creek indicating there may be groundwater present. Recent ground water monitoring at the Grand LS site conducted by LOCSD indicated that groundwater is present from 8 to 10 below the ground surface. During final design, a Registered California Geotechnical Engineer should be retained to conduct a field investigation and analyze the proximity to groundwater at both lift station locations and provide recommendations for the buoyancy forces and soil pressure due to ground water that can be used when designing the lift station structures.

2.1.2.4 Minimum Sizing and Dimensions

Typically, the dimensions for sewer wet wells are designed based on pump sizes, maintenance, incoming peak flow, retention time, pumping system flow rate, and desired on and off pump cycling. For this project, the following equations were used to size the wet wells for each lift station.

$$V_{min} = [T_{min} * Q_{out}]/4$$

V_{min} = minimum volume of fluid between pump cycles



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T_{min} = minimum time between pump cycles

Q_{out} = pump discharge rate

The pump discharge flow rates were assumed to meet the PWWF (Q_{out}) of the collection systems discharging to the respective wet well. See Table 2-1 for minimum wet well volume (V_{min}) summary for each lift station.

Table 2-1: Minimum Wet Well Volume

	Qout (gpm)	Tmin (minutes)	Vmin (gallons)
Grand LS	246.6	20	1,250
Santa Barbara LS	334.4	60	5,000

Based on the calculated minimum required volume, the initial dimensions of the wet well can be established. Using an iterative process, the nominal diameter of the wet well is chosen, and the corresponding depth and incoming sewer depth is analyzed while keeping in mind excavation depths, constructability, and site constraints. For this project, structure depths were approximated down to the minimum submergence. The minimum submergence is the depth of fluid required above the pump impeller which is typically designated by the pump manufacturer and is not included in this report. The maximum level of the wastewater in the wet well was kept 1-ft below the incoming sewer invert to avoid surcharging the incoming sewer. The incoming sewer invert into the wet well was based on sloping 0.5% from the upstream gravity collection system maintenance hole to the lift station. See Table 2-2 for a wet well dimension summary.

Table 2-2: Wet Well Dimensions

	Wet Well Diameter (ft)	Incoming Sewer invert depth (ft)	Liquid Depth (ft) based on V_{min}	Approx. Wet Well Depth (ft)
Grand LS	8	7.65	3.28	11.95
Santa Barbara LS	12	5.30	5.93	12.25

2.1.2.4.1 Flow Equalization Storage

Flow equalization storage involves holding a specified volume of liquid and using a pumping system to discharge at a desired flow rate. This is helpful to minimize pump cycling and discharge wastewater at desired times throughout the day. Each wet well has a specified storage volume and a pumping system to allow for flow equalization. Additional flow equalization storage beyond the volume of the wet well is not necessary for the Grand LS as this will be discharging to the Santa Barbara LS. Additional flow equalization storage volumes, flow rates, and feasibility for the Santa Barbara LS is further discussed below.

It would be ideal to send wastewater during the low flow periods in Solvang’s collection system. This would help avoid overloading Solvang’s collection system but is not entirely necessary if the proposed

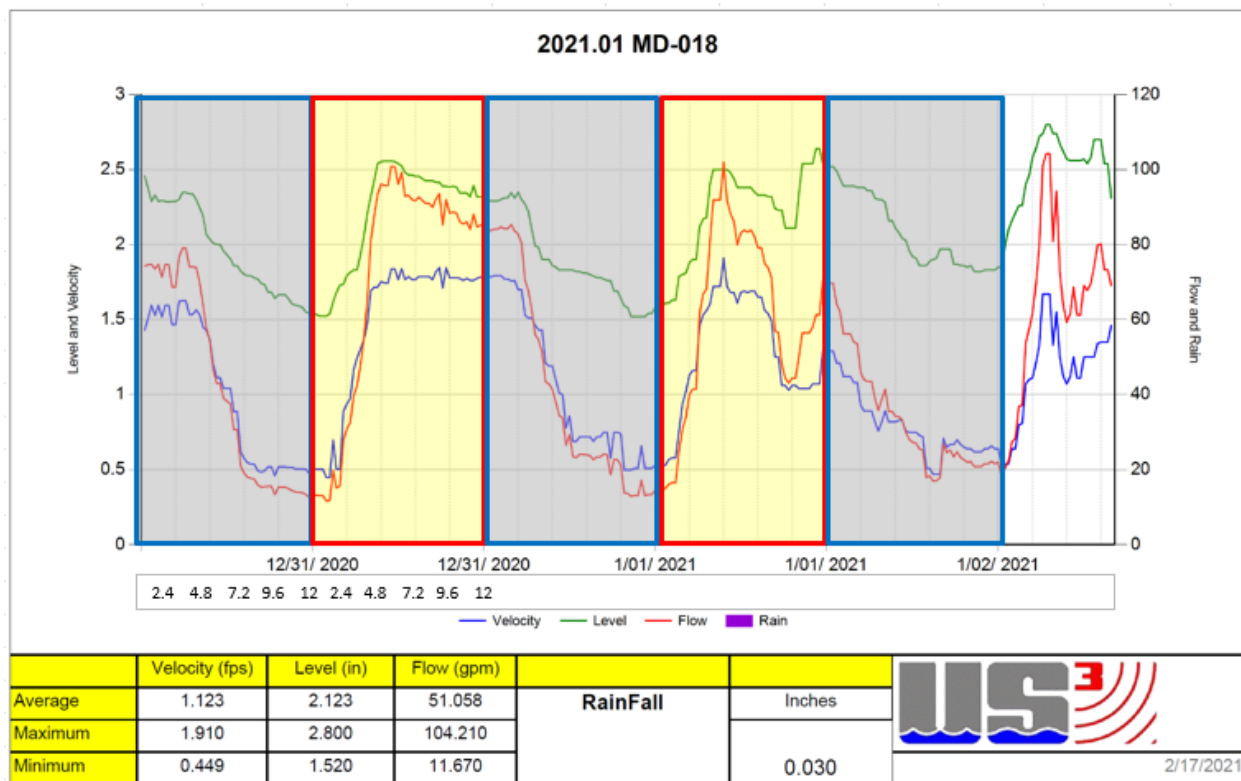


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CIP's for Solvang's system are constructed. The proposed CIP's in WSCs report concluded that upsizing the deficient pipeline segments will handle both buildout PWWF's from Solvang and LOCSD simultaneously, therefore, PWWF from LOCSD can theoretically be sent at any time of the day.

Diurnal curves were developed for Solvang's existing SHM MD-018 via flow monitoring and documented in the SMP. This existing sewer manhole is along the conveyance path that would accept flow from LOCSD. Based on these curves, it is estimated that there is, on average, a 7-hour window of low flow from 7:30 pm to 2:30 am. The other 17 hours in this report are referred to as the 'high flow' window. Figure 8 shows the diurnal curves for SMH MD-018.

Figure 8: Solvang SMH MD-018 Diurnal Curve from SMP



It is assumed that the diurnal flow pattern for LOCSD collection system will mimic the developed diurnal curves for Solvang's collection system based on the similarities for the wastewater types (e.g. residential, commercial) at buildout. It is estimated that 90% of the daily flow within LOCSD's collection system will be generated during the 17-hour high flow window. It is likely that flows during the weekend days will be higher than flows during the week due to the influx of tourism in the downtown commercial area of Los Olivos on the weekends.

To send wastewater from the Santa Barbara LS to Solvang during the low flow window only, a majority of the daily wastewater collected from LOCSD would need to be stored at the Santa Barbara LS. The travel time from the Santa Barbara LS to Solvang's collection system would take approximately 90 minutes (1.5



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hrs). Therefore, it would be possible for the wastewater pump to turn on 1.5 hours prior to the low flow window (i.e. 6:00 pm). The minimum storage required for the buildout ADF of 124,000 gallons and considering the travel time, would be approximately 94,000 gallons (124,000 gallons – 334 gpm*90 mins).

Based on the site constraints, there is limited space for additional storage within the ROW at the Santa Barbara LS. The 94,000 gallons does not provide enough storage for flows higher than the ADF. As an example, during the estimated MDF, it would take a single pump running continuously for 19.2 hours to discharge 385,000 gallons of wastewater indicating that wastewater would need to be sent during high flow periods as well. Storing 94,000 gallons is only 25% of the MDF. If we are to assume that 90% (346,500 gpd) of the MDF would be generated during the 17-hour high flow window this would equate to an average of 20,380 gph. The wastewater stored at the lift station would reach 94,000 gallons within 5 hours of the high flow window and the pumping system would need to turn on and would most likely require both pumps running at the same time discharging higher flow than the PWWF into Solvang’s collection system. Though the MDF is seldom expected, it should be noted that flow above the PWWF of 334.4 gpm was not modeled in WSC’s report and it is unknown what effect this will have on Solvang’s existing and proposed (with CIPs) collection system capacity. See Table 2-3 for a discharge summary during the low flow window.

Table 2-3: Low Flow Window Storage Volume Discharge Summary

LOCSD Buildout Scenario	GPD	Single Pump Flow (gpd)	Pump ON Duration Required based on 334.4 gpm (hrs)	Can be sent during Low Flow Window Only (Y/N)
ADF	124,000	334.4	6.2	Y
MDF	385,000	334.4	19.2	N

In contrast, if there is no additional storage, during an average day at buildout, it is estimated that the pump will turn on every hour for 20 minutes and be off for 40 minutes during the 17-hour high flow period. Pump cycling every hour satisfies minimum general recommendations, but any flows higher than the buildout ADF would require a single pump to run longer, cycle more often, or both pumps running simultaneously.

Another factor in analyzing the storage volume is residence time, or the amount of time the wastewater is sitting stagnant. Storing wastewater for 17 hours as described is not recommended and comes with many challenges, including settlement of sludge, formation of H₂S gas, and odor control issues due to the wastewater becoming septic. Per LOCSD request for storage, Stantec recommends holding wastewater for no more than 6 hours. This includes holding flow generated during low flow periods where it is expected that only 10% (12,400 gallons during buildout ADF) of the flow would accumulate. As previously established, it is impractical and not necessary to store a large volume of wastewater at the Santa Barbara LS and send during the low flow window to Solvang, but some additional storage is useful. An additional wet well of the same size, hydraulically linked to the primary wet well would allow for roughly 10,000 gallons of storage, while maintaining pump cycling of less than 6 hours during buildout ADF. A single pump would turn on 6 to 7 times during the high flow window and run for an average of 45 minutes.



Per LOCSD request, additional downstream storage near Sunny Fields park was considered. This would provide additional holdover storage which could allow flow to be sent within desired time but there would still be no way to avoid sending flow during the high flow window for flows greater than MDF. This additional storage would also require an additional lift station at this location to discharge the stored wastewater to Solvang. There would also need to be an odor control system in place due to the nature of storing the wastewater. This option is not recommended.

This report assumes that all CIPs in both the SMP and WSC's evaluation to upsize the pipe segments in Solvang's collection system will be completed prior to accepting the wastewater from LOCSD. However, if the CIPs are not constructed, storing a wastewater volume greater than the buildout ADF and sending it only during the low flow window is not feasible.

2.1.2.5 Access/ Hatches

The length and width of the access hatch for a duplex wet well structure should be large enough to accommodate removal of both pumps on their rail systems. The pumps are horizontally separated a specified distance from one another to avoid a vortex and from competing with one another while both are operating. This separation distance is typically specified by the pump manufacturer. The access hatch should be rated for H-20 traffic loading and be constructed of aluminum or coated steel.

2.1.2.6 Odor Control

The proposed Santa Barbara Ave (westside) sewage lift station should include an odor control system due to the proximity to residential areas and potential of longer storage times during periods of low flow. The odor control solution can be assessed during final design. A biofilter or carbon scrubber along with aeration are likely the preferred odor control solution.

The proposed Grand Ave (eastside) lift station does not need to include an odor control system since the wastewater can be pumped out of the wet well without time restrictions and the lift station does not need additional storage.

2.2 Wastewater Pumps

2.2.1 Pump and Impeller

Typically, wastewater pumping systems are designed as a duplex system, with a lead pump and a lag pump. Both pumps should be sized to handle the PWWF alone and should be rated the same so they can be cycled and work together efficiently during periods of high flow. For this project, a duplex system will be utilized for both the Grand LS and Santa Barbara LS.

Wastewater pumps within wet well structures are submersible and placed at a specified dimension above the wet well bottom with no inlet piping before the impeller. There are various designs for impellers based on the necessary application of the pumping system, fluid being pumped, maintenance, and reliability. It is typical in residential and commercial wastewater pumping systems to specify a non-clog impeller to



allow the passage of solids of 2" – 3" in diameter. See Table 2-4 for a summary of the minimum pump requirements.

Table 2-4: Minimum Pump Requirements

	Flow (gpm)	Head (ft)
Grand LS	246.6	20
Santa Barbara LS	334.4	15

The head shown in Table 2-4, is the minimum head required for these pumping systems to overcome at the given flow rate. The head includes the static lift from pump impeller to point of connection and the headloss generated from friction in the sewer force main piping, which is further discussed in section 2.3. The head required is not necessarily the output of the pumping system. The output of the pumping system is depending on the pump curve provided by a pump manufacturer specific to the selected pump. This should be specified during final design.

2.2.2 Minimum Submergence

Minimum submergence is the depth of fluid above the impeller that the pump must have for proper operation and to avoid a vortex from forming in the fluid which could cause cavitation at the impeller. This fluid level in the wet well is specified by the pump manufacture and can be maintained by the set points of the control system.

2.2.3 Power Requirements

For submersible pumps, the pump motor should be submersible as well. The motor is typically manufactured with the pump itself as a single unit. The motor should be sized to drive the pump impeller at speed required to produce the operating flow and pressure. Based on the pump requirements described previously, motors of this size require 3 phase power at 208 to 480 volts alternating current, 480 Volts being more desirable.

As discussed further below in section 2.3.3, a variable frequency drive (VFD) will be necessary to drive the pump motors at the Santa Barbara LS at the desired flow rate while operating within the limits of the pumping system. The VFD may require air conditioning and/or adequate exhaust and venting and should be analyzed during final design.

To provide power to the pumping system, the power feed source should be located and analyzed. It is typical to have a local transformer installed onsite that can transform the power from the power source up or down to the desired voltage for the pumping system. The power is delivered via a service panel, to the breaker panel, control systems and components, and other auxiliary uses such as site lights and alarms. During final design, the power to the site and pumping system should be designed by a Registered Electrical Engineer.



2.2.4 Backup power

The Santa Barbara LS will include a standby generator, either diesel or natural gas to allow continued operation through power outages. The power distribution panel will be fitted with an automatic transfer switch to avoid manual switching of power sources. Per the request of LOCSD, the generator will be mounted on a trailer and regularly located at this lift station. A trailer mounted generator has a less stringent permitting process through the County of Santa Barbara Air Pollution Control District (APCD). It is recommended to construct a building to house the trailer mounted generator to protect it from the elements, screen it from the public, and security purposes.

The Grand LS needs to include a hookup for the portable standby generator in case of a power outage. The hookup should be located so that it is accessible to the standby generator without the use of long conductors.

For discussion purposes, during a power outage where both lift stations are without power, each lift station could have its own dedicated generator. It is also possible to run both the Santa Barbara LS and Grand LS from a single generator. This would require conductors to be ran along the same alignment as the sewer force main from the Grand LS to the Santa Barbara LS which includes mounting on the downstream side of the bridge over Alamo Pintado Creek. The conductors would need to be sized to adequately deliver the required power from the generator to the Grand LS. The standby generator itself would also need to be sized to handle the required locked rotor start up loads and all other loads at both lift stations simultaneously.

The generator set should be designed by a licensed Electrical Engineer during final design.

2.2.5 Instrumentation and Controls

2.2.5.1 Control System

The control system is vital to the operation of the pumping system and is typically located at the lift station. It receives and provides signals to automatically operate and protect the pumping and other systems as well as provide alarms. The control system is typically equipped with a local control panel with interface and Programmable Logic Controller that is used to turn on and off the pumps at specified set points and control other systems. These systems normally have Hand-Off-Automatic settings based on the desired operation. The control system uses the output signals from various instruments for automatic operation of the pumping system and other systems such as an aeration or odor control system. It is typical for control systems to come packaged with the pumping system designed and integrated by the pump manufacture. The control system, if specified, can be integrated with HMI devices and/or SCADA devices and software for remote operation and data collection.

As discussed further in section 2.3, the wastewater pumps in the Santa Barbara LS may need to be controlled by an integrated frequency convert or variable frequency drive (VFD) due to the downhill nature from lift station to point of connection. The VFD will be part of the controls system and can drive the pump to discharge at a specified flow rate regardless of the head required by the system. By reducing or



increasing the power frequency using control programming, the VFD can reduce or increase the rotational speed of the pump impeller to discharge at the desired rate. The control system including the VFD should be specified during final design.

2.2.5.2 Level Measurement

It is typical to have multiple systems for liquid level measurement in the wet well for redundancy. Typically pressure transducers and level float systems are used to measure the liquid level in the wet well and provide a feedback signal to the control system for level control. There are various types of pressure transducers that are used in wet wells to provide fluid level data back to the control system. Some common types include hydrostatic and ultrasonic level transducers. Hydrostatic types can be submerged and mounted to the side or the bottom of the wet well. They use pressure on an internal sensor diaphragm to relay an analog signal back to the control system. Ultrasonic level transducers can be mounted above the fluid, non-contact, and use ultrasonic pulses to measure down to the fluid and relay a signal back to control system. Level floats can either be used as the primary or secondary level measurement system. The level float systems use floats on top of the liquid connected to a cable to measure the high level and low level within the wet well and turn the pump on or off or trigger alarms. Each system has its advantages and disadvantages depending on the fluid in the wet well.

For this project, it is recommended to have an ultrasonic level transducer mounted above the fluid as the primary level measuring system and float system as the secondary system. Ultrasonic level transducers provide high accuracy measuring, are easy to install, are easy to access, and reduce maintenance because they are not submerged. It is anticipated that the incoming wastewater will have a low percentage of fats, oils, and greases due to the predominantly residential flows. Fats, oils, and greases become a concern when they accumulate and form a layer at the top of the wastewater which can provide false reading when using an ultrasonic level transducer.

2.2.5.3 Set Points

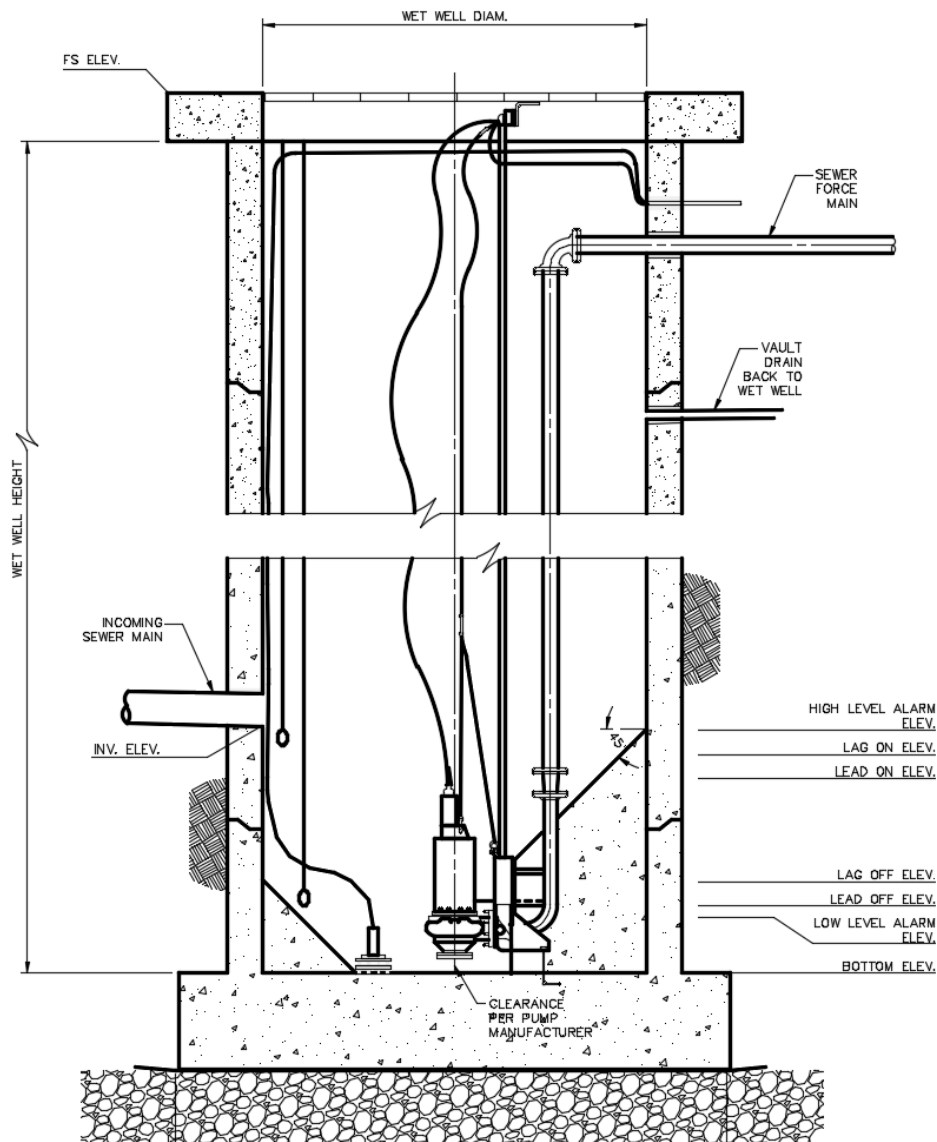
Set points are the liquid levels within the wet well that trigger various functions with the control system. These liquid levels are programmed into the control system and are triggered when the continuous signal from the level measuring system in the wet well measures these levels. Common set points for wet well operation are:

- Minimum Submergence (discussed previously) at low level alarm
- Low level 1 (lead pump OFF)
- Low level 2 (lag pump OFF)
- Lead Pump ON
- Lag Pump ON
- High Level Alarm

See Figure 9 for typical set points within the wet well.



Figure 9: Set Points Example



2.2.6 Discharge Header

The discharge header from the pumping systems consists of vertical piping up through the wet well that typically penetrates the wet well side wall at a desired elevation. This elevation is dependent on various factors, but typically is at the depth of the sewer force main below the ground surface. For this project the force main will be a minimum of 4 feet below the ground surface. The discharge piping will be separate from each pump, will continue to a buried valve vault where they will converge to a single force main. Prior to convergence, the discharge mains will have combination air release and vacuum valves to exhaust air at pump start up, allow accumulated air to leave the pipeline during operation, and intake air



to avoid vacuum conditions when the pump(s) turn off. Inside the valve each discharge main will be equipped with check valves for back flow prevention and plug valves for isolation.

2.2.7 Valve Vault

The valve vault structure is typically a pre-cast rectangular reinforced concrete structure buried in the ground to accommodate the depth of the discharge piping. Inside the valve vault, each discharge main will be equipped with check valves for back flow prevention and plug valves for isolation. It is also recommended to install a magnetic flow meter after the discharge mains converge for measuring the flow of the wastewater inside the force main. The valve vault should be large enough to accommodate the piping, valves, meters, and appurtenances and allow for proper operation and maintenance of these items. As discussed further below, force main size for this Project is recommended to be 6" and 4" for the Santa Barbara LS and Grand LS, respectively. This will require an approximate 6-foot x 8-foot vault structure with 3-foot x 4-foot double leaf lockable access hatch for both lift stations. The valve vault should also have a floor drain with a pipe that slopes back to the wet well in case there is any leakage or incidental storm water inside the vault.

2.3 Sewer Force Main

Sewer force mains are pipelines that convey pressurized wastewater to a discharge point by the use of a pumping system. Typically, sewer force mains are constructed using pipeline materials such as ductile iron pipe (DIP), high density polyethylene (HDPE), or polyvinyl chloride (PVC). These materials have advantages such as long useful life, high flow capacity, constructability, and corrosion resistance. Using these materials allows for traditional pipeline construction with restrained joints and prefabricated fittings. Table 2-5 shows the general advantages and disadvantages for each pipeline material.

Table 2-5: Pipeline Material Advantages and Disadvantages

Pipeline Material	Advantages	Disadvantages
DIP	<ul style="list-style-type: none"> • Rigid (for shallow depth and above ground applications) • Simple construction 	<ul style="list-style-type: none"> • Lots of joints • Requires restraining at key locations
HDPE	<ul style="list-style-type: none"> • Fully restrained with virtually no joints • Very flexible with a small bending radius for horizontal and vertical bending (25"OD) • Can be install via trenchless methods 	<ul style="list-style-type: none"> • Requires special fusing equipment during construction and repairs • Not recommended for above ground applications
PVC	<ul style="list-style-type: none"> • Simple construction • Somewhat flexible; can incorporation horizontal and vertical bending (250"OD) 	<ul style="list-style-type: none"> • Lots of joints • Requires restraining at key locations • Not recommended for above ground applications

Sewer force mains typically reduce the size and depth of sewer mains and, in general, decrease the cost of construction compared to a gravity system. Sewer force mains are primarily used when a discharge



point in the wastewater system is at a higher elevation than the collection point of the system. This includes crossings along bridges. The Project includes two bridge crossings that require the use of a sewer force main. It is also understood that utilizing a pressurized pipeline for the entire alignment may discourage any future development in the surrounding area.

2.3.1 Alignment

The proposed alignments for the sewer force mains from Grand LS and Santa Barbara LS will follow public rights-of-way to minimize disruptions and streamline construction. As previously mentioned, the sewer force main conveying wastewater to the City of Solvang, referred to as SFM-1, will begin at the Santa Barbara LS located at the intersection of Alamo Pintado Road and Santa Barbara Avenue and extend to the proposed POC (MD-114) at Solvang's wastewater infrastructure. Along the alignment, the pipeline will cross Alamo Pintado Creek via two bridge crossings. For the SFM-1 alignment There are options to use trenchless construction for runs up to 1000-ft and below the creek crossings. Utilizing trenchless construction such as Horizontal Directional Drilling (HDD) can reduce the construction duration, minimize construction costs, and is less invasive than traditional open cut trenching. This would require the use of seamless flexible pipe such as HDPE. Trenchless construction does require specialized equipment and specialized construction crew to perform the work. The excavations for the sending and receiving pits may require shoring designed by a Registered Civil or Structural Engineer.

Trenchless construction below the creek crossings would require jurisdictional permits and may require a scour analysis of Alamo Pintado Creek to determine an adequate depth for the boring. It is recommended that the pipelines be hung along the downstream side of the bridges to avoid drilling below the creek crossings. This would require approval from Santa Barbara County. Hanging the pipeline along the bridges would require structural design of supports and brackets and it is recommended to use fully restrained rigid pipe such as ductile iron.

The sewer force main from the Grand LS to Santa Barbara LS, referred to as SFM-2, will be routed across Alamo Pintado Road and mounted to the downstream side of Bridge 51C-80 over Alamo Pintado Creek and terminate at Santa Barbara LS wet well. Because of the relatively short length of SFM-2, trenchless construction doesn't provide significant advantages over open-cut trench construction so it is recommended to utilize open-cut trenching.

2.3.2 Pipeline Sizing

Sewer force mains are typically sized by analyzing the hydraulics, maintaining desired velocities, and anticipating maintenance requirements. To properly analyze the hydraulics, a system curve must be established. The system curve is dependent on the frictional characteristics of the pipeline material and appurtenances, the length of piping, and elevation information. For this Project, this report will assume that the discharge flow rate through the force main is equal to the PWWF which equates to 334.5 gpm and 246.6 gpm for the Santa Barbara LS and Grand LS, respectively. For two pumps in operation, the maximum flow rate is assumed to be doubled, but this is highly dependent on the actual pump curve and the system curve. Typical design velocities within sewer force mains range from 2 to 8 feet per second



LOCSD Wastewater Connection to City of Solvang
Proposed Preliminary Project

(fps) during normal operation to convey solids while also minimizing the risk of scouring of the pipeline. For this Project, velocities will be held below 6 fps while a single pump is on, and below 12 fps when two pumps are discharging. To estimate the force main sizes required to maintain these velocities during operation, we will use the following equation:

$$A (\text{area}) = \frac{Q(\text{flow})}{V (\text{velocity})}$$

$$A (\text{area}) = \frac{334.4 \text{ gpm}}{4 \text{ fps}} * \frac{1 \text{ ft}^3}{7.48 \text{ gallons}} * \frac{1 \text{ minute}}{60 \text{ second}} = 0.1864 \text{ ft}^2$$

$$D, (\text{diameter}) = \sqrt{\text{Area}} * \frac{4}{\pi} = 0.4872 \text{ ft} = 5.9 \text{ inches}$$

Table 2-6 shows the pipeline material, friction coefficient, and pertinent hydraulic information used in to analyze the sewer force main for the Santa Barbara LS. The cost per linear foot (LF) is the construction costs for the pipe that includes the pipe material, installation, and construction method.

Table 2-6: Santa Barbara LS Force Main Material Comparison

Pipeline Material	Nominal Size (inches)	Inside Diameter, I.D. (inches)	Hazen-Williams Friction Coefficient, C	Velocity (fps)	Design Flow (gpm)	Cost / LF
DIP Class 50 (40 mils ceramic epoxy lined)	6	6.32	130	3.34	334.4	\$300/ LF
HDPE DR 21	6	5.96	140	3.85	334.4	\$300/ LF
PVC CL165	6	6.31	145	3.43	334.4	\$250/LF

Table 2-7 shows pipeline material, friction coefficient, and pertinent hydraulic information used in to analyze the sewer force main for the Grand LS.

Table 2-7: Grand LS Force Main Material Comparison

Pipeline Material	Nominal Size (inches)	Inside Diameter, I.D. (inches)	Hazen-Williams Friction Coefficient, C	Velocity (fps)	Design Flow (gpm)	Cost / LF
DI Class 50 (40 mils ceramic epoxy lined)	4	4.30	130	5.45	246.6	\$280/LF
HDPE DR 21	4	4.05	140	6.15	246.6	\$280/LF
PVC CL165	4	4.39	145	5.22	246.6	\$230/LF

This report recommends using PVC for the Grand LS sewer force main due to the material availability, open-cut trenching recommendation, future maintenance and repair considerations, and cost per linear foot. For the Santa Barbara LS force main it is recommended to use HDPE due to the long pipeline length, minimal joints required, the construction could utilize directional drilling as necessary, and HPDE



has a short bending radius that is optimal for the bridge transitions and meeting necessary clearances from crossing utilities

2.3.3 Hydraulic Analysis

A hydraulic analysis was conducted to initially size the wastewater pumps within the sewer lift stations and the sewer force mains. Based on the friction losses caused by the velocity through the pipelines, bends, and appurtenances as well as the elevation data along the alignment of the pipeline, a system curve was developed. Specifically for the Santa Barbara LS, the system curve developed through the 6-inch pipeline shows that approximately 116 ft of headloss is generated and the elevation difference from the LS to SMH MD-114 is -219.75 ft. See Table 2-8 below for a hydraulic summary of each pumping system.

Table 2-8: Hydraulic summary

	Flow (gpm)	Pipe Size (in)	Length (ft)	Start Elev. (ft)	End Elev. (ft)	Friction Loss (ft)	Min. Head Required (ft)
Grand LS	246.6	4	475	738.11	742.50	13	20
Santa Barbara LS	334.4	6	18,000	733.75	514.00**	116	15*

*Since the friction loss gradient is less than the elevation gain gradient from Santa Barbara LS to Solvang's SMH MD-114, the required head shown is the head required to lift wastewater from wet well to discharge piping.

**Assumed elevation of SMH MD-114, point of connection to Solvang's collection system.

The grade change from the Santa Barbara LS to Solvang's SMH MD-114 has an average downhill slope of 1.2%. The elevation difference from the Santa Barbara lift station to any point along the pipeline is greater than the friction loss within the pipeline at the specified flow rate. This means that gravity can convey the fluid from the Santa Barbara LS to the point of connection without additional pressure from the pumping system. There are multiple localized high points along the alignment due to the natural terrain, two bridge crossings, and the static lift required to get the wastewater from the wet well to the discharge piping, that warrant a pressurized sewer.

In general, pumps will operate where their pump curve meets the system curve. Because of the downhill nature of the system, the pump(s) within the Santa Barbara LS may operate off of their curves as system doesn't require additional head to convey the fluid. A pump operating off its respective curve can lead to overcurrent which could damage the motor. To avoid pumping beyond the limits of the pumping system, sufficient head needs to be applied against the pump so it operates on its curve, or the pump should be equipped with speed control, such as a variable frequency drive (VFD), to meet the desired flow rate regardless of the system head required. Utilizing a VFD can be adjusted to accommodate lower flows that may be expected during the weekdays and while phases of collection system are constructed.

Possible solutions to apply head against the pump include reducing the pipeline size and/or providing standpipes along the alignment. It is impractical to reduce the pipe sizing for portions of the pipeline due to any high-capacity needs for flows beyond the PWWF. Also, applying sufficient head through a series of



standpipes would lead to multiple portions of stagnant wastewater and would require multiple air release and odor control stations along the pipeline which may require significant maintenance. The most desired option is to equip the pumping system at Santa Barbara LS with a VFD.

2.3.4 Isolation Valves

An important aspect of sewer force main conveyance systems is to provide regularly spaced and strategically located gate or plug valves for isolation of pipeline segments in order to do maintenance or repairs without having to drain large portions of the force main. It is common practice to place Isolation valves every 1,250 to 1,500 linear feet (LF) for long straight runs and at the upstream and downstream segments at bridge crossings.

The sewer force main from Santa Barbara LS will be approximately 18,000 LF and will require a minimum of 14 isolation valves along the pipeline and 4 isolation valves at the two bridge crossings for a total of 16 isolation valves.

The sewer force main from Grand LS to Santa Barbara LS will be approximately 475 ft and require a minimum of 4 isolation valves, one of either side of the bridge and one for each pump discharge force main in the valve vault.

2.3.5 Wastewater Combination Air Release and Vacuum Valves

Another important aspect to pressurized conveyance systems is to minimize that amount of accumulated air within the pipeline during operation. Large pockets of air caused by pumping and / or dissolved air in the fluid can accumulate at high points along the pipeline alignment and cause a reduction in flow. To purge the pipeline of accumulated air, air release valves are strategically placed at localized high points along the alignment and at the discharge headworks of the pumping system. In addition to purging accumulated air, there may be a need to intake air to allow gravity flow and/or break a syphon and to exhaust a large amount of air during start up. To achieve this, combination air release and vacuum valves specifically made for wastewater applications will be used. These valves are equipped with a combination of large orifice and float valve to intake/exhaust large volumes of air as well as a smaller air release valve to continually release accumulated air during operation. In addition to localized high points, these valves are typically placed along the pipeline at long horizontal runs and changes in slope. These valves will be incorporated along the established pipeline alignments during the preliminary design phase.



3 Design Recommendations Summary

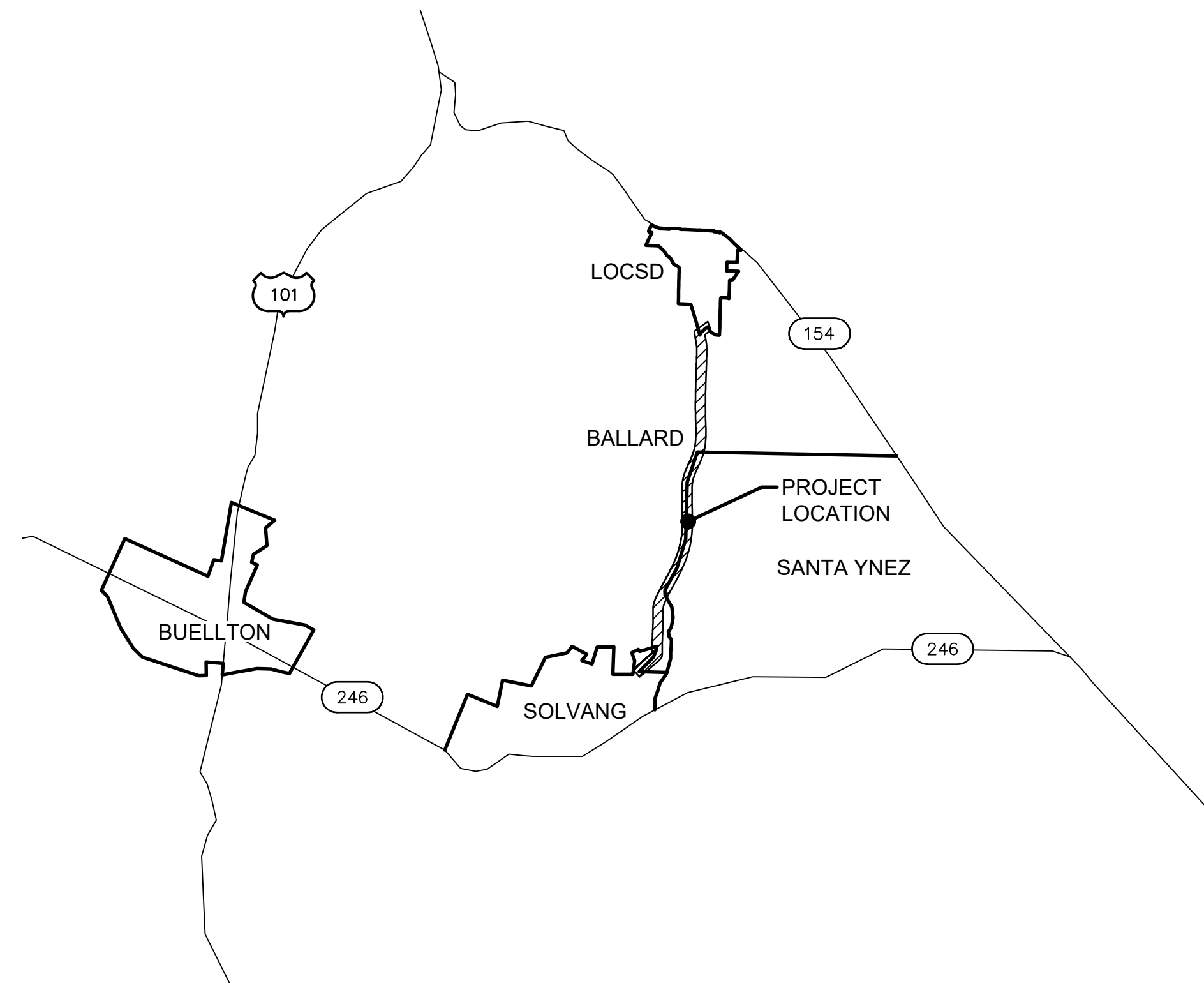
Below is a summary of the design recommendations for the Project.

Table 3-1: Summary of Design Recommendations

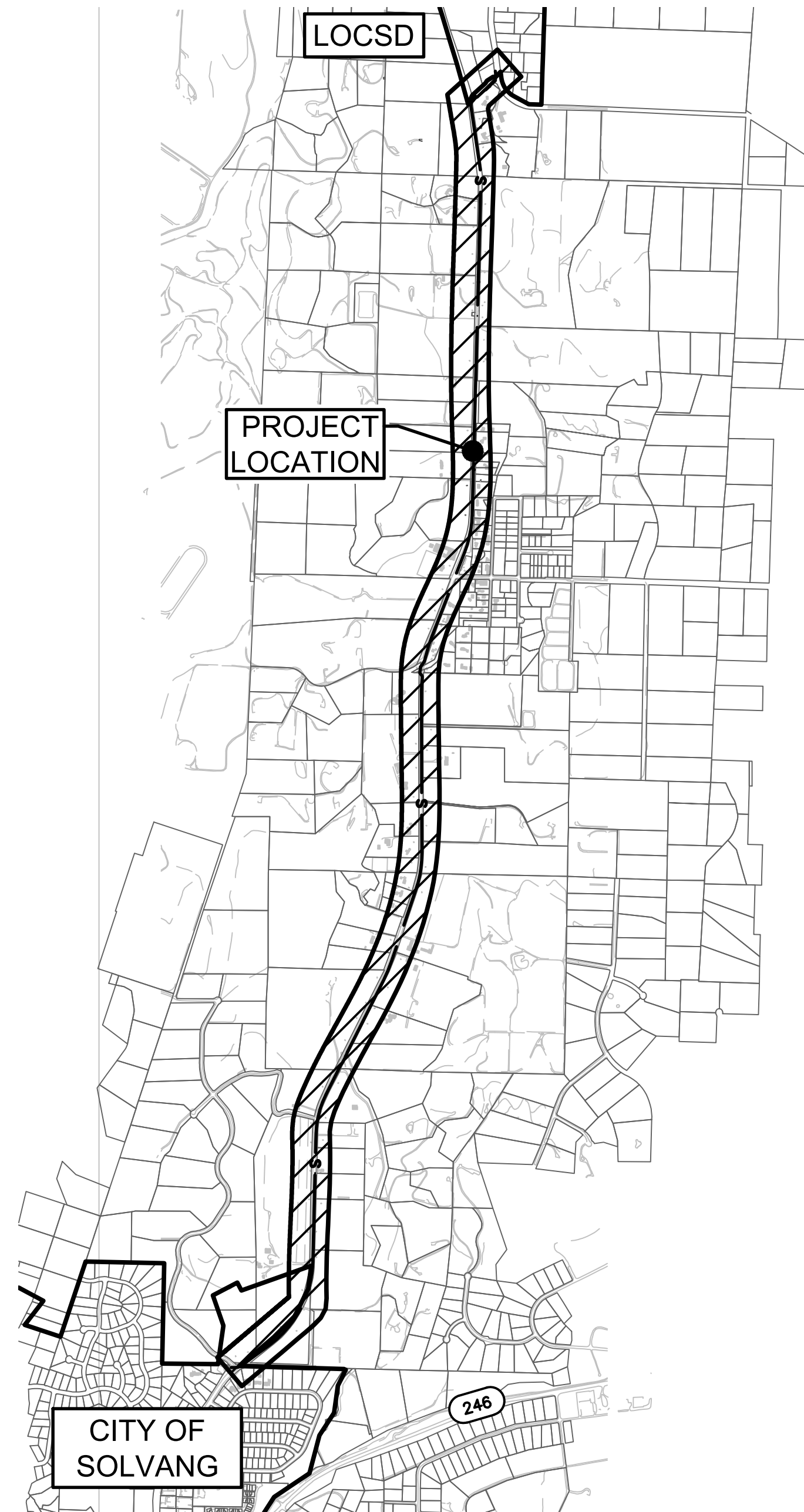
	Grand Ave (eastside) Lift Station	Santa Barbara Ave (westside) Lift Station
Wet Well Capacity (gallons)	1,250	10,000
Pump Duty Point (gpm)	246.6	334.4
Min. Head Required (ft)	20	15
Odor Control	No	yes
Generator	Served from Santa Barbara Ave Lift Station	Trailer mounted generator located at site
Site	Designated parking	Driveway access
Force Main Diameter (in)	4"	6"
Fore Main Material	PVC	HDPE



LOS OLIVOS COMMUNITY SERVICES DISTRICT WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT 30% SUBMITTAL



LOCATION MAP
NTS



VICINITY MAP
SCALE: 1" = 1,500'

30% SUBMITTAL

TOPOGRAPHICAL DATA SHOWN ON PLANS IS A COMBINATION OF TWO AERIAL SURVEYS. SEE SHEET G-2 FOR DESCRIPTION.
HORIZONTAL DATUM: CALIFORNIA COORDINATE SYSTEM STATE PLANE ZONE V, NORTH AMERICAN DATUM 1983
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988

NO.	DATE	REVISIONS

DESIGNED BY: JTZ
DRAFTED BY: GMK
CHECKED BY: CEP
DATE: 03/07/2025

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE



LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

PRELIMINARY - NOT FOR CONSTRUCTION
TITLE SHEET
ALAMO PINTADO ROAD

PROJECT NO. 184032474
DWG NO. G1
SHT. 1 OF 16

SURVEY NOTES

TOPOGRAPHICAL DATA SHOWN ON PLANS IS A COMBINATION OF TWO AERIAL SURVEYS:

- 1) AERIAL SURVEY FOR LOS OLIVOS COMMUNITY SERVICES DISTRICT CONDUCTED BY VERTICAL MAPPING RESOURCES (OCTOBER 27, 2021)
- 2) AERIAL SURVEY OF THE SANTA YNEZ VALLEY FOR THE FIVE PARTNER AGENCIES (SANTA BARBARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, CITY OF BUELLTON, SANTA BARBARA COUNTY DEPARTMENT OF PUBLIC WORKS, CITY OF SOLVANG, SANTA YNEZ RIVER WATER CONSERVATION DISTRICT) CONDUCTED BY KELLOGG AERIAL SURVEYS (OCTOBER 22, 1993)

LINETYPE AND SYMBOL LEGEND

---	COMM	---	COMM	---	EX COMMUNICATION
---	E	---	E	---	EX ELECTRICAL
---	G	---	G	---	EX GAS
---	OIL	---	OIL	---	EX OIL
---	SD	---	SD	---	EX STORM DRAIN
---	T	---	T	---	EX TELEPHONE
---	W	---	W	---	EX WATER
---	E(OH)	---	E(OH)	---	EX OVERHEAD
---		---		---	EX EDGE OF PAVEMENT
---		---		---	PROPERTY LINE
---		---		---	ROW
---	025	---		---	MAJOR CONTOUR
---	040	---		---	MINOR CONTOUR
---	S	---		---	PROP GRAVITY SEWER (LOCSJ SEPTIC TO SEWER PROJECT)
---	FM	---		---	PROP SEWER FORCE MAIN
---		---		---	PROP ELECTRICAL
---		---		---	PROP SEWER MANHOLE (LOCSJ SEPTIC TO SEWER PROJECT)

SHEET INDEX

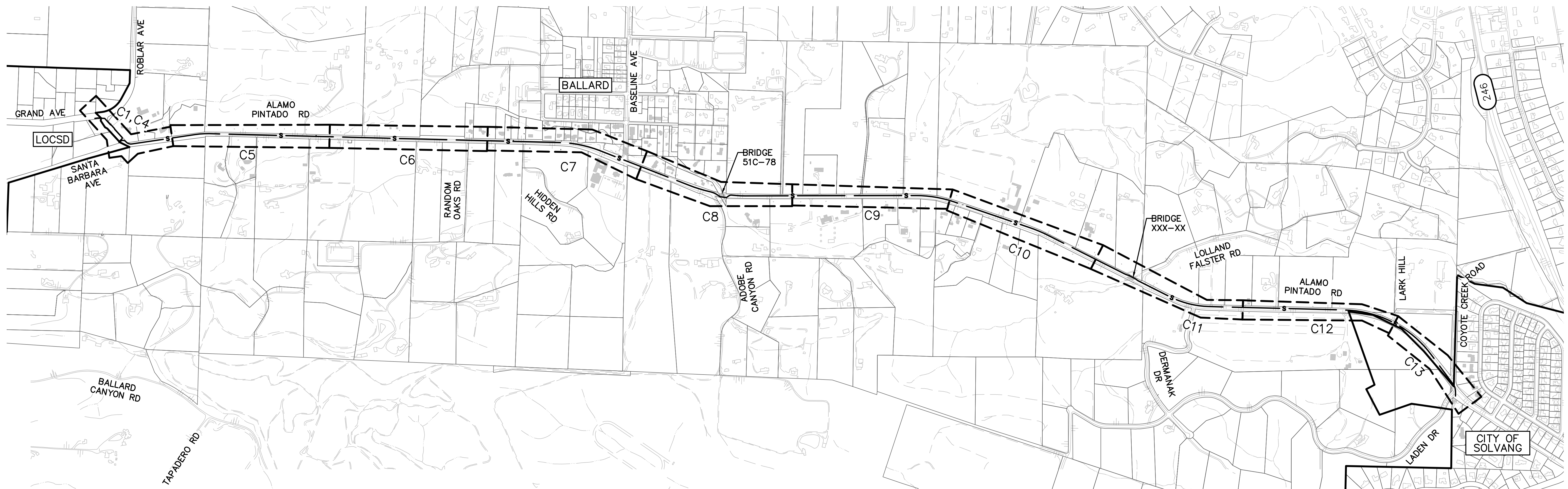
SHEET NO.	DWG. NO.	SHEET TITLE
1	G1	TITLE SHEET
2	G2	SHEET INDEX, LINETYPE, AND SYMBOL LEGEND
3	C1	SANTA BARBARA AND GRAND SEWER LIFT STATIONS OVERALL SITE PLAN
4	C2	SANTA BARBARA SEWER LIFT STATION SITE AND PIPING PLAN SITE
5	C3	GRAND SEWER LIFT STATION SITE AND PIPING PLAN SITE
6	C4	SEWER FORCE MAIN PLAN SFM-1 STA 10+00 TO 17+00, SMF-2 STA 1+00 TO 6+32
7	C5	SEWER FORCE MAIN PLAN SFM-1 STA 17+00 TO 37+00
8	C6	SEWER FORCE MAIN PLAN SFM-1 STA 37+00 TO 57+00
9	C7	SEWER FORCE MAIN PLAN SFM-1 STA 57+00 TO 77+00
10	C8	SEWER FORCE MAIN PLAN SFM-1 STA 77+00 TO 97+00
11	C9	SEWER FORCE MAIN PLAN SFM-1 STA 97+00 TO 117+00
12	C10	SEWER FORCE MAIN PLAN SFM-1 STA 117+00 TO 137+00
13	C11	SEWER FORCE MAIN PLAN SFM-1 STA 137+00 TO 157+00
14	C12	SEWER FORCE MAIN PLAN SFM-1 STA 157+00 TO 177+00
15	C13	SEWER FORCE MAIN PLAN SFM-1 STA 177+00 TO 188+88
16	GC-1	DETAILS

ABBREVIATIONS

APPROX	APPROXIMATE	PL	PROPERTY LINE
AVE	AVENUE	POC	POINT OF CONNECTION
BEG	BEGIN	PROP	PROPOSED
COMM	COMMUNICATION	RD	ROAD
DEG	DEGREE	ROW	RIGHT OF WAY
DWY	DRIVEWAY	S	SEWER
E	ELECTRICAL	SD	STORM DRAIN
EX/EXIST	EXISTING	SDMH	STORM DRAIN
G	GAS	SMF	SEWER FORCE MAIN
LOCSJ	LOS OLIVOS COMMUNITY SERVICE DISTRICT	ST	STREET
MH	MANHOLE	TEMP	TEMPORARY
N.T.S.	NOT TO SCALE	TELE	TELEPHONE
N.O.	NUMBER	TYP	TYPICAL
PERM	PERMANENT	W	WATER

GENERAL SHEET NOTES

- SUBSURFACE UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND BASED ON THE BEST DATA AVAILABLE DURING THE DEVELOPMENT OF THESE PLANS. DURING FINAL DESIGN AND PRIOR TO CONSTRUCTION, ALL SUBSURFACE UTILITIES SHALL BE LOCATED USING AVAILABLE UTILITY RECORDS AND POTHOLING.
- THIS PLAN IS PRELIMINARY AND SHALL NOT BE USED FOR CONSTRUCTION. ALIGNMENTS AND ELEVATIONS SHOWN ON THIS PLAN ARE FOR PLANNING PURPOSES ONLY AND ARE SUBJECT TO CHANGE DURING FINAL DESIGN.
- RIGHT-OF-WAY AND PROPERTY LINES ARE APPROXIMATE AND WERE NOT SURVEYED. EXISTING UTILITY EASEMENTS WERE NOT RESEARCHED AND MAY EXIST, WHETHER OR NOT SHOWN ON THESE PLANS.



SHEET INDEX
SCALE: 1" = 600'

30% SUBMITTAL

TOPOGRAPHICAL DATA SHOWN ON PLANS IS A COMBINATION OF TWO AERIAL SURVEYS. SEE SHEET G-2 FOR DESCRIPTION.
HORIZONTAL DATUM: CALIFORNIA COORDINATE SYSTEM STATE PLANE ZONE V, NORTH AMERICAN DATUM 1983
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988

NO.	DATE	REVISIONS

DESIGNED BY: JTZ
DRAFTED BY: GMK
CHECKED BY: CEP
DATE: 03/07/2025

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

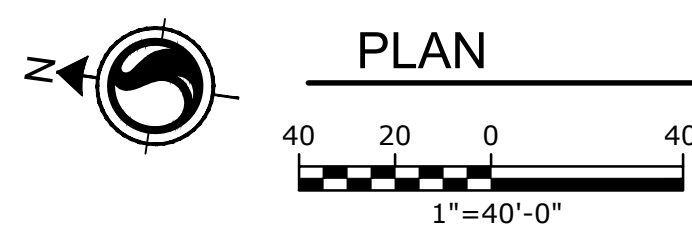
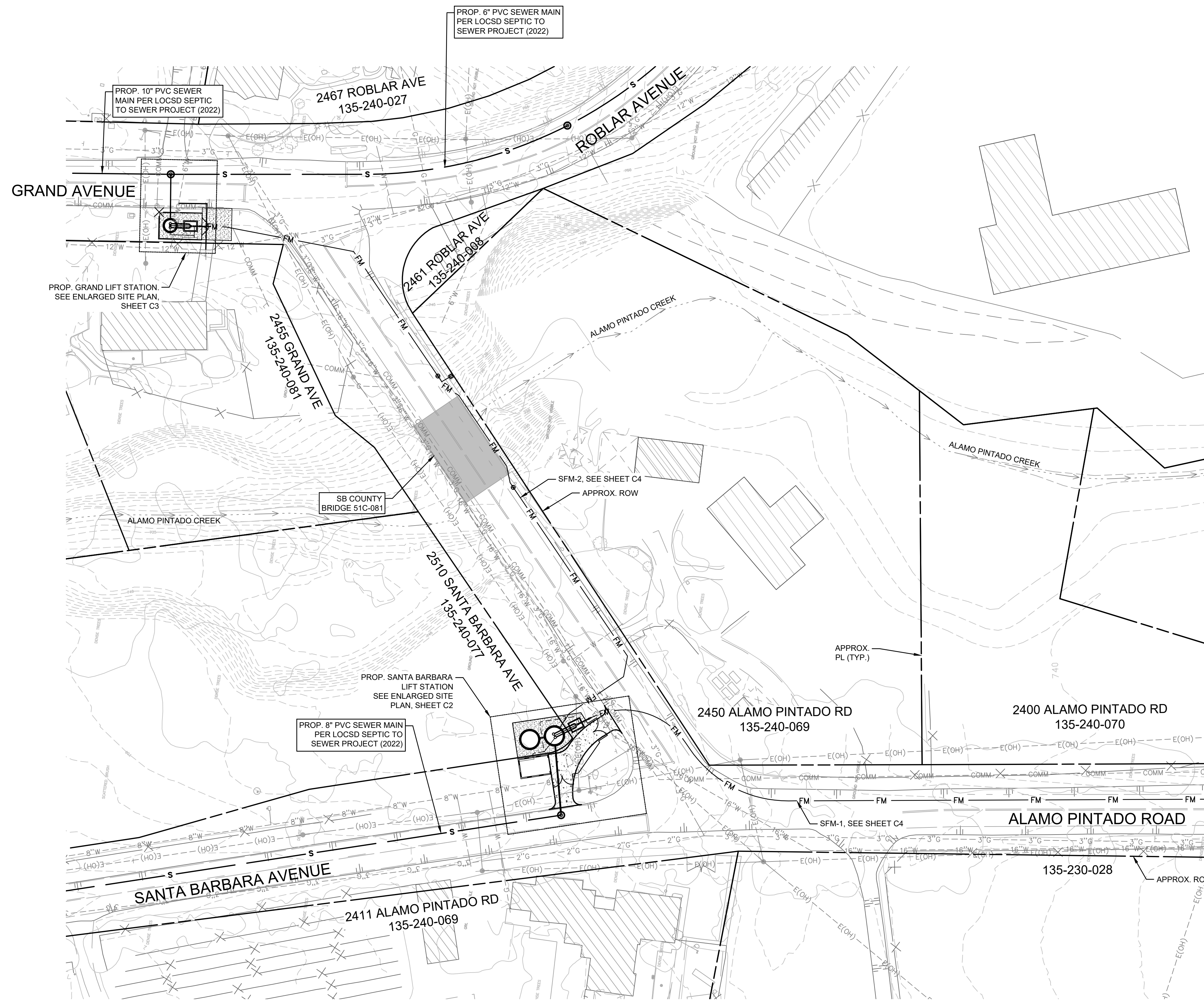


LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCSJ WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SHEET INDEX
LINETYPE AND SYMBOL LEGEND
ALAMO PINTADO ROAD

PROJECT NO. 184032474
DWG NO. G2
SHT. 2 OF 16

DRAWING: \\us0377-prj001\shared_projects\184032474\engineering\drawing\final\eng\184032474_title.dwg PLOTTED: 3/7/2025 3:19 PM BY: Kosman, Gohrdie



30% SUBMITTAL

TOPOGRAPHICAL DATA SHOWN ON PLANS IS A COMBINATION OF TWO AERIAL SURVEYS. SEE SHEET G-2 FOR DESCRIPTION.
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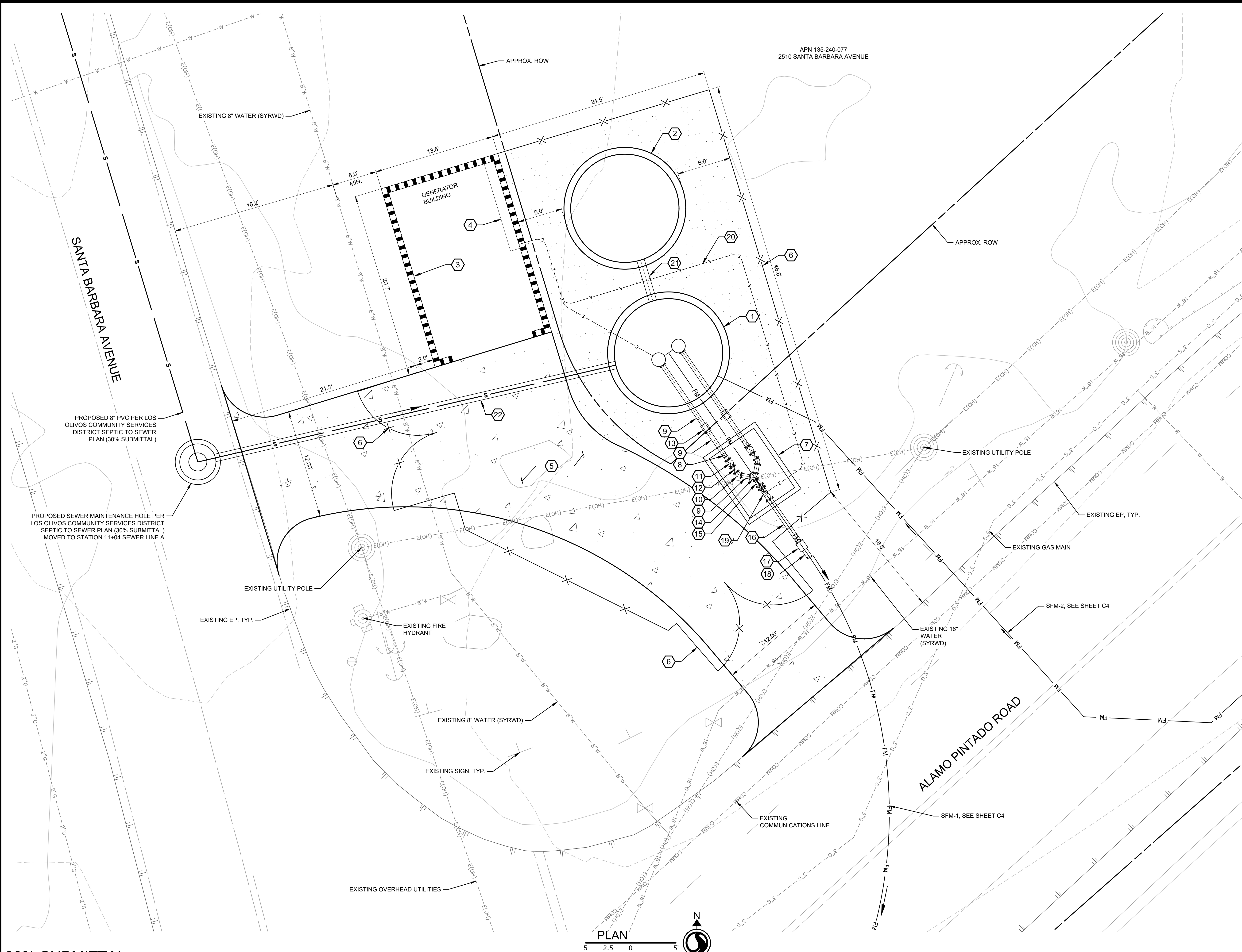
LOS OLIVOS COMMUNITY SERVICES DISTRICT
 PO Box 345, Los Olivos CA 93441
 LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SANTA BARBARA AND GRAND
 SEWER LIFT STATIONS
 OVERALL SITE PLAN
 ALAMO PINTADO ROAD

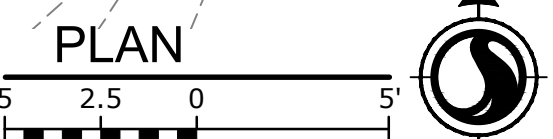
PROJECT NO. 184032474
 DWG NO. C1
 SHT. 3 OF 16

SANTA BARBARA LS SHEET KEY NOTES

- 1 PROPOSED 12-FT DIAMETER WET WELL WITH DUPLEX PUMPS.
- 2 PROPOSED 12-FT DIAMETER CONCRETE STORAGE BASIN.
- 3 PROPOSED BUILDING FOR STANDBY GENERATOR, ELECTRICAL AND CONTROL PANELS
- 4 PROPOSED ELECTRICAL AND CONTROL PANELS WITH AUTOMATIC TRANSFER SWITCH.
- 5 PROPOSED CONCRETE PAVING.
- 6 PROPOSED 6-FT HIGH FENCING AND GATES.
- 7 PROPOSED 8-FT X 6-FT CONCRETE VALVE VAULT WITH LIFT-ASSIST ACCESS HATCH.
- 8 PROPOSED 1" WASTEWATER COMBINATION AIR/VACUUM VALVE
- 9 PROPOSED 4" DI PIPING
- 10 PROPOSED 4" DI 45° BEND, (FL X FL)
- 11 PROPOSED 4" CHECK VALVE, (FL X FL)
- 12 PROPOSED 4" PLUG VALVE, (FL X FL)
- 13 PROPOSED 4" COUPLING
- 14 PROPOSED 4" DI WYE FITTING, (FL X FL)
- 15 PROPOSED 6" X 4" REDUCER, (FL X FL)
- 16 PROPOSED 6" DI PIPING
- 17 PROPOSED 6" COUPLING
- 18 PROPOSED 6" HDPE DR21 PIPING
- 19 PROPOSED 6" WASTEWATER FLOW METER
- 20 PROPOSED ELECTRICAL AND COMMUNICATIONS CONDUIT
- 21 PROPOSED 10" PIPE TO HYDRAULICALLY LINK WET-WELL AND ADDITIONAL STORAGE BASIN
- 22 PROPOSED 10" GRAVITY SEWER MAIN, MIN. 0.5% SLOPE



30% SUBMITTAL



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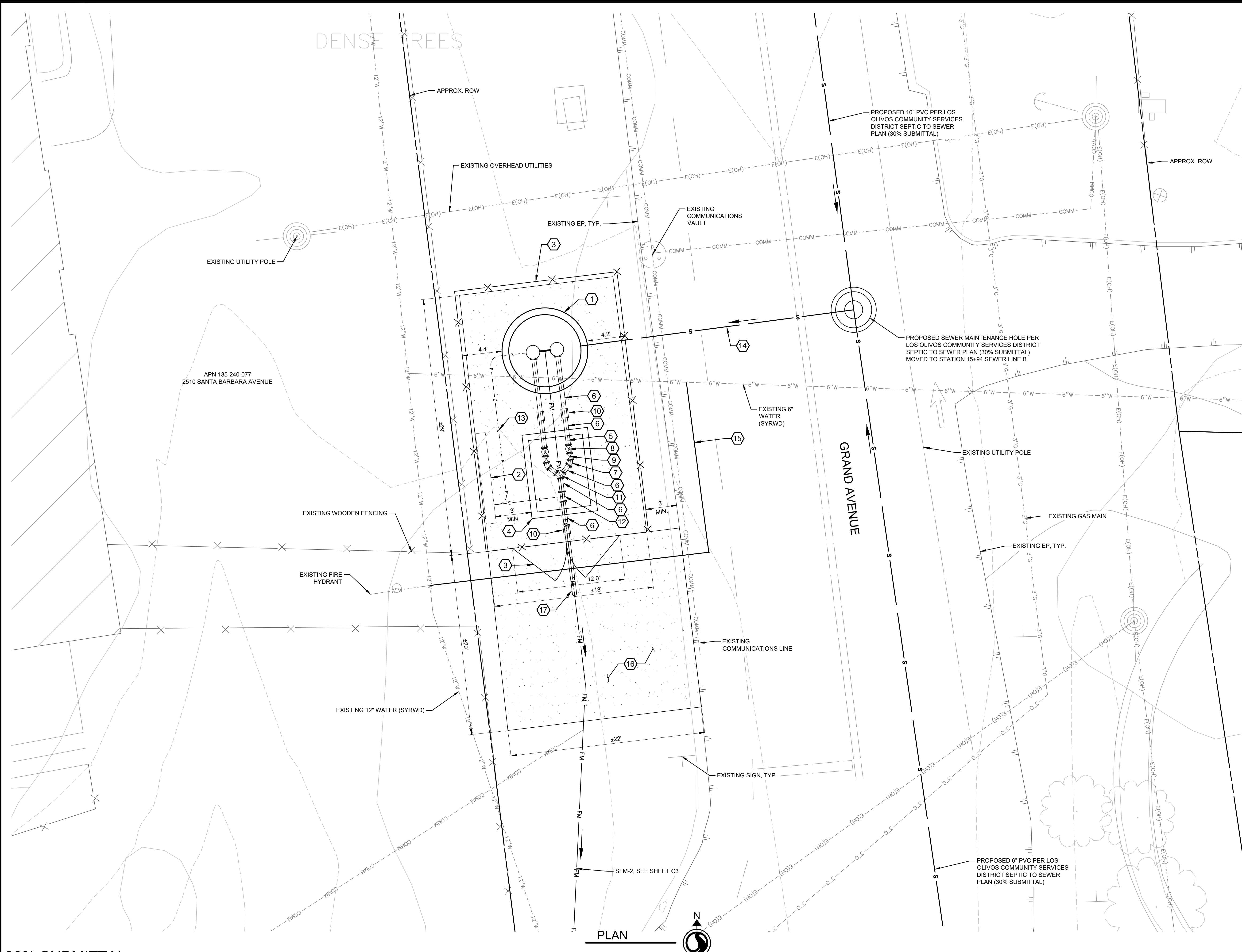
SANTA BARBARA SEWER LIFT STATION
 SITE AND PIPING PLAN
 SANTA BARBARA AVE. & ALAMO PINTADO ROAD

PROJECT NO. 184032474
 DWG NO. C2
 SHT. 4 OF 16

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GRAND LS SHEET KEY NOTES

- 1 PROPOSED 8-FT DIAMETER WET WELL WITH DUPLEX PUMPS.
- 2 PROPOSED ELECTRICAL AND CONTROL PANELS WITH AUTOMATIC TRANSFER SWITCH.
- 3 PROPOSED 6-FT HIGH FENCING AND GATES.
- 4 PROPOSED 8-FT X 6-FT CONCRETE VALVE VAULT WITH LIFT-ASSIST ACCESS HATCH.
- 5 PROPOSED 1" WASTEWATER COMBINATION AIR/VACUUM VALVE
- 6 PROPOSED 4" AWWA C150 DI PIPING WITH INDURON PROTECTO 401 LINING
- 7 PROPOSED 4" DI 45° BEND, (FL X FL)
- 8 PROPOSED 4" CHECK VALVE, (FL X FL)
- 9 PROPOSED 4" PLUG VALVE, (FL X FL)
- 10 PROPOSED 4" COUPLING
- 11 PROPOSED 4" DI WYE FITTING, (FL X FL)
- 12 PROPOSED 4" WASTEWATER FLOW METER
- 13 PROPOSED ELECTRICAL AND COMMUNICATIONS CONDUIT
- 14 PROPOSED 10" GRAVITY SEWER MAIN, MIN. 0.5% SLOPE
- 15 RELOCATE EXISTING WATER MAIN
- 16 PROPOSED GRADED PARKING PAD
- 17 PROPOSED 4" AWWA C900 PVC CL 165 PIPING



30% SUBMITTAL

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 HORIZONTAL DATUM: CALIFORNIA COORDINATE SYSTEM STATE PLANE ZONE V, NORTH AMERICAN DATUM 1983
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NO.	DATE	REVISIONS

DESIGNED BY: JTZ
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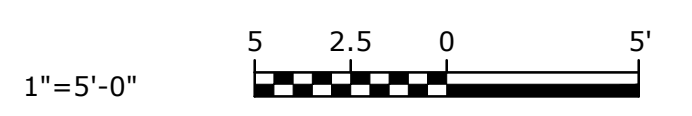
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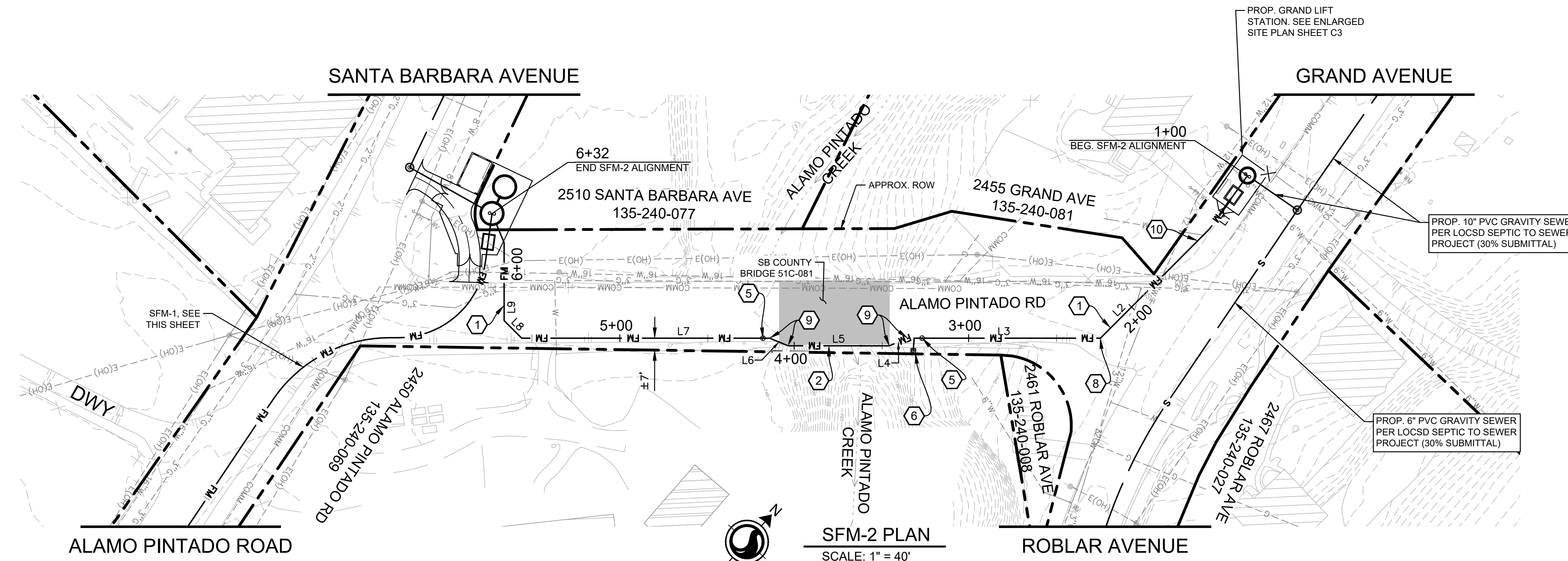
LOS OLIVOS COMMUNITY SERVICES DISTRICT
 PO Box 345, Los Olivos CA 93441
 LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

GRAND SEWER LIFT STATION
 SITE AND PIPING PLAN
 GRAND AVE. & ALAMO PINTADO ROAD

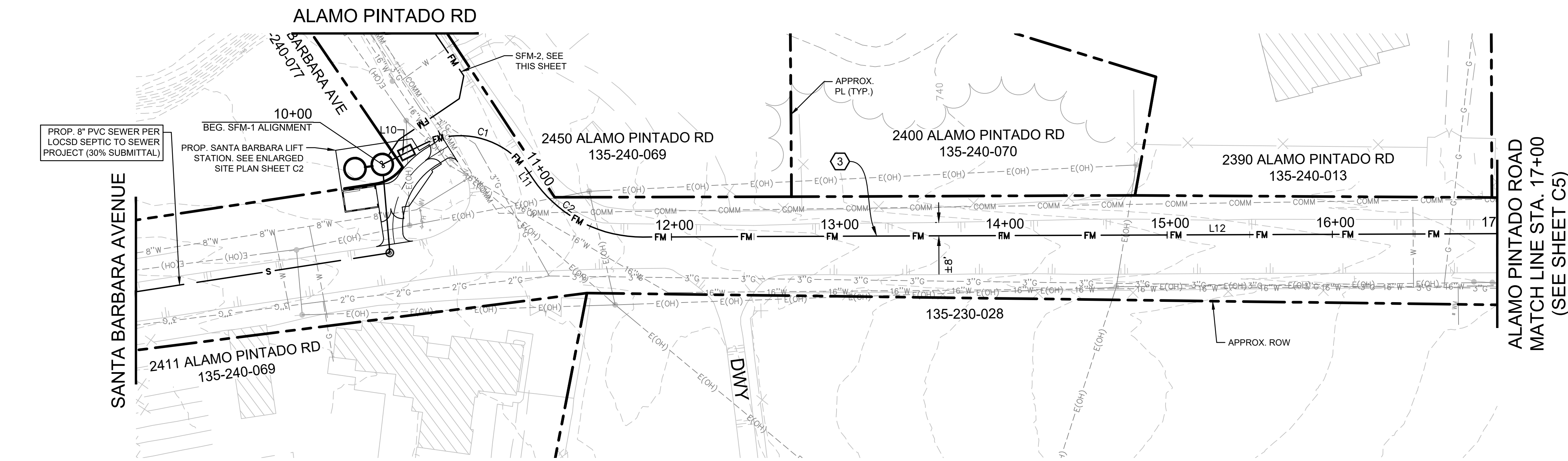
PROJECT NO. 184032474
 DWG NO. C2
 SHT. 3 OF 16



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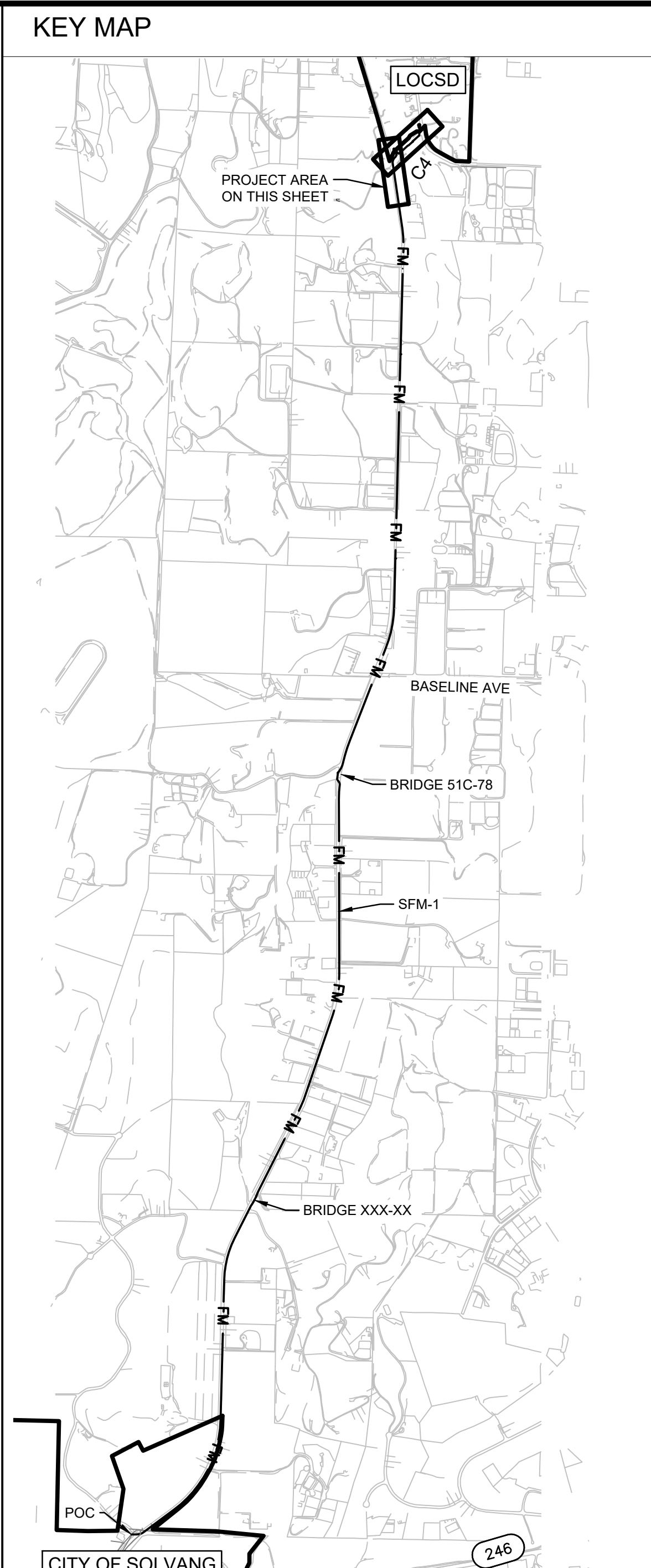
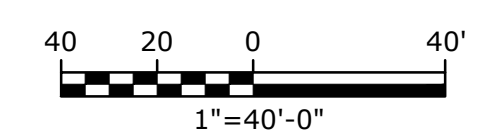
SFM-2 PLAN
SCALE: 1" = 40'



SFM-1 PLAN
SCALE: 1" = 40'

LINE	DISTANCE	BEARING
L1	37.24	S6°54'49"E
L2	87.83	S2°41'13"W
L3	109.53	S47°41'13"W
L4	11.30	S25°07'41"W
L5	57.53	S47°41'13"W
L6	11.30	S70°14'46"W
L7	141.04	S47°41'13"W
L8	14.14	N87°18'47"W
L9	44.27	N42°18'47"W
L10	27.53	S34°36'25"E
L11	5.16	S47°37'05"W
L12	817.69	S8°26'16"E

CURVE	DELTA	RADIUS	LENGTH
C1	82°13'30"	50.00	71.75
C2	56°03'20"	80.00	78.27



SHEET CONSTRUCTION NOTES

- 1 PROPOSED 4-INCH AWWA C900 PVC CL165 FORCE MAIN VIA OPEN CUT TRENCH METHOD PER DETAIL A, SHEET C14.
- 2 PROPOSED 4-INCH AWWA C150 DI CLASS 50 FORCE MAIN LINED WITH INDURON PROTECTO 401 AND EPOXY COATED HANGING ON BRIDGE.
- 3 PROPOSED 6-INCH AWWA C906 HDPE DR 21 FORCE MAIN BUTT-FUSED PER ASTM F2620 VIA OPEN CUT TRENCH OR HORIZONTAL DIRECTIONAL DRILLING METHOD PER DETAIL A, SHEET C14.
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- 5 PROPOSED GATE VALVE PER DETAIL D, SHEET C14.
- 6 PROPOSED 1-INCH WASTEWATER COMBINATION AIR RELEASE / VACUUM VALVE PER DETAIL B, SHEET C14.
- 7 CONNECT TO EXISTING SMH-MD-014 PER DETAIL C, SHEET C14.
- 8 PROPOSED 4" DI 45° BEND (FL X FL).
- 9 PROPOSED 4" DI 22.5° BEND (FL X FL).
- 10 PROPOSED 4" DI 11.25° BEND (FL X FL).

30% SUBMITTAL

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NO.	DATE	REVISIONS

DESIGNED BY: JTZ
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 CHECKED BY: CEP
 DATE: 03/07/2025

WARNING
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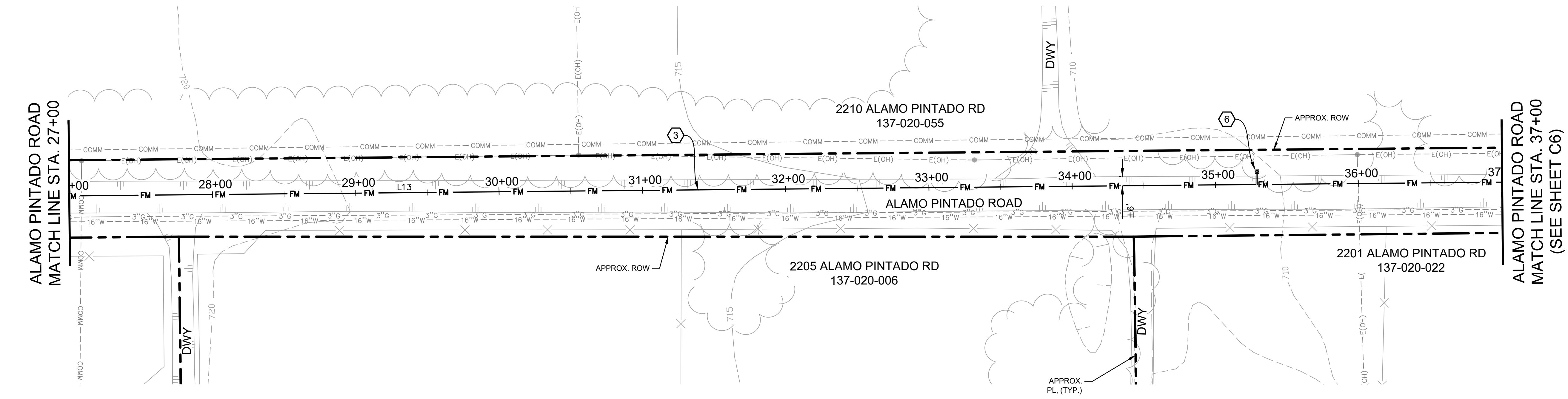
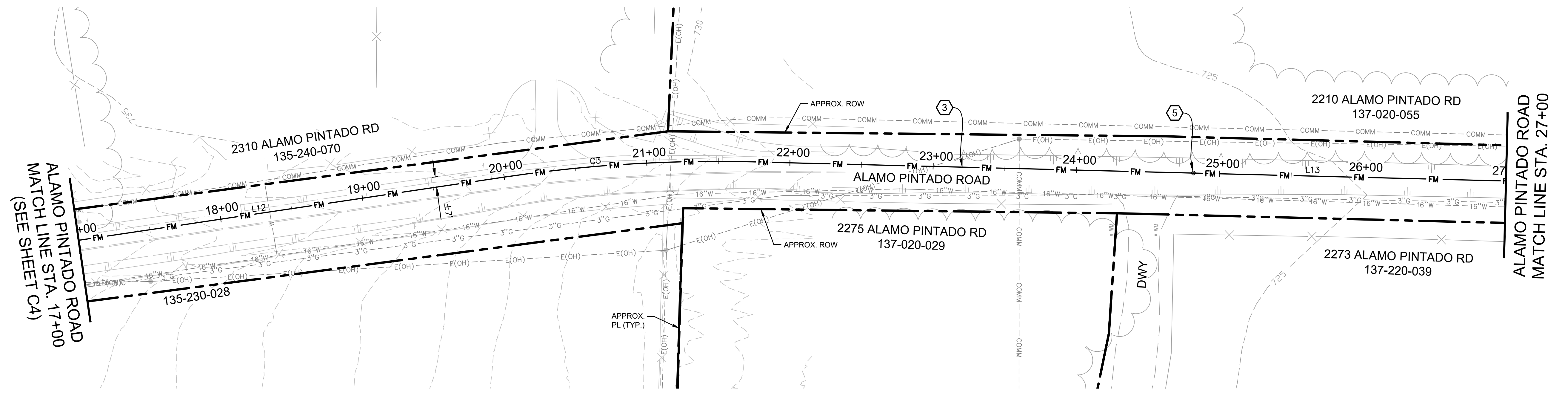
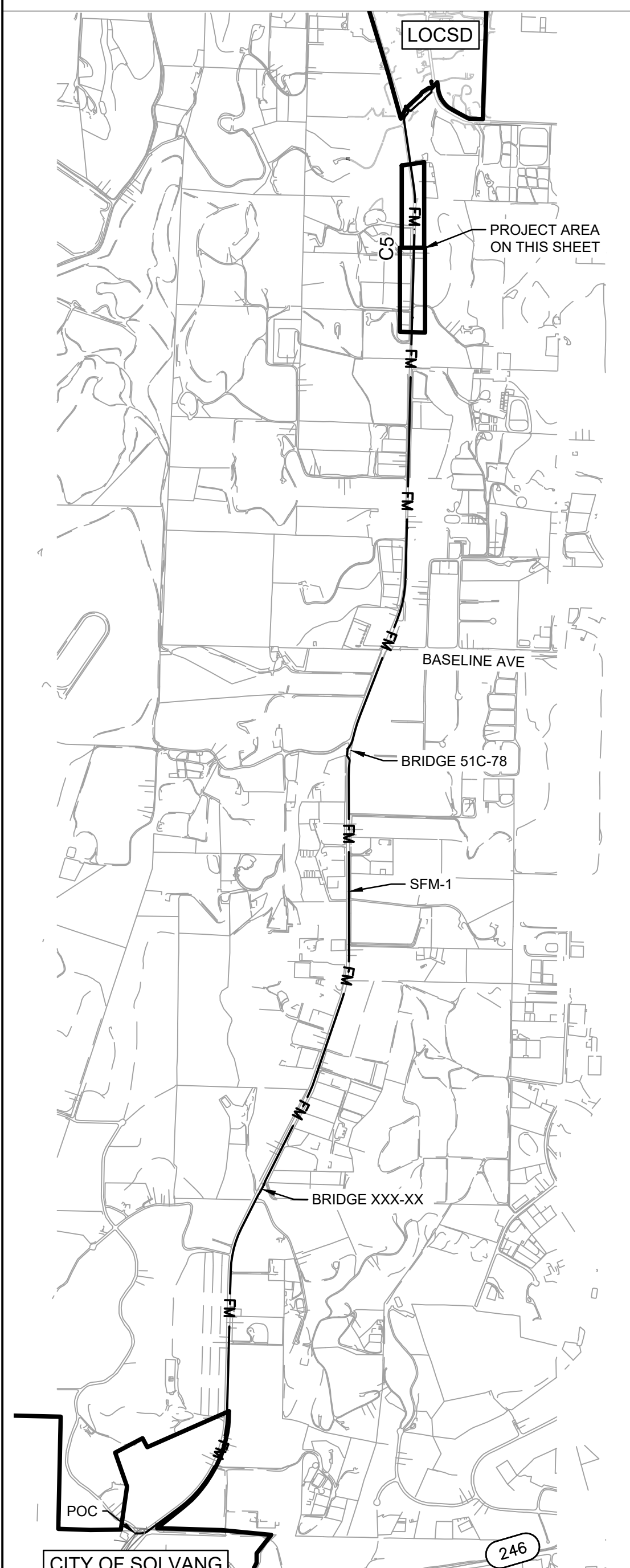


LOS OLIVOS COMMUNITY SERVICES DISTRICT
 PO Box 345, Los Olivos CA 93441
 LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SEWER FORCE MAIN PLAN
 SFM-1 PLAN STA. 10+00 TO 17+00
 SFM-2 PLAN STA 1+00 TO 6+32
 ALAMO PINTADO ROAD

PROJECT NO.
184032474
 DWG NO. C4
 SHT. 6 OF 16

KEY MAP

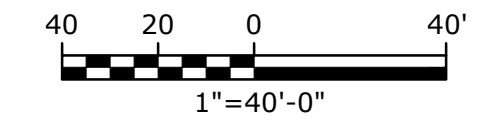


LINE TABLE		
LINE	DISTANCE	BEARING
L12	817.69	S8°26'16"E
L13	4445.03	S1°27'24"W

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C3	9°52'29"	1006.00	173.38

SHEET CONSTRUCTION NOTES

- 1 PROPOSED 4-INCH AWWA C900 PVC CL165 FORCE MAIN VIA OPEN CUT TRENCH METHOD PER DETAIL A, SHEET C14.
- 2 PROPOSED 4-INCH AWWA C150 DI CLASS 50 FORCE MAIN LINED WITH INDURON PROTECTO 401 AND EPOXY COATED HANGING ON BRIDGE.
- 3 PROPOSED 6-INCH AWWA C906 HDPE DR 21 FORCE MAIN BUTT-FUSED PER ASTM F2620 VIA OPEN CUT TRENCH OR HORIZONTAL DIRECTIONAL DRILLING METHOD PER DETAIL A, SHEET C14.
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30% SUBMITTAL

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WARNING
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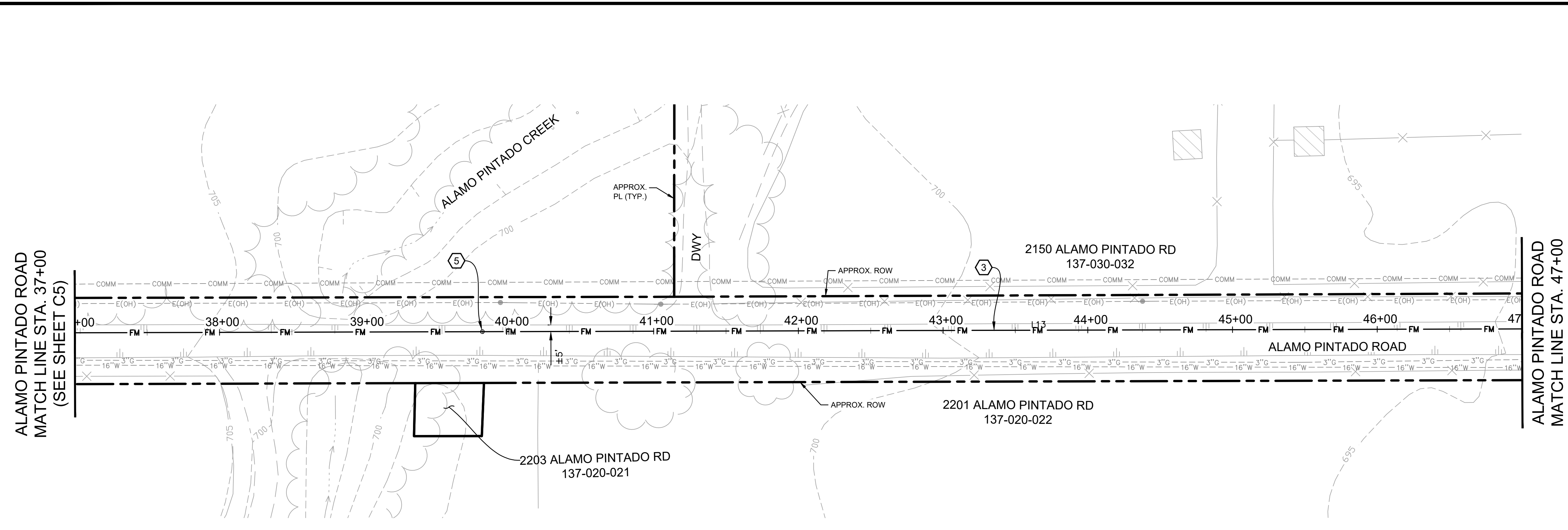


LOS OLIVOS COMMUNITY SERVICES DISTRICT
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 LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

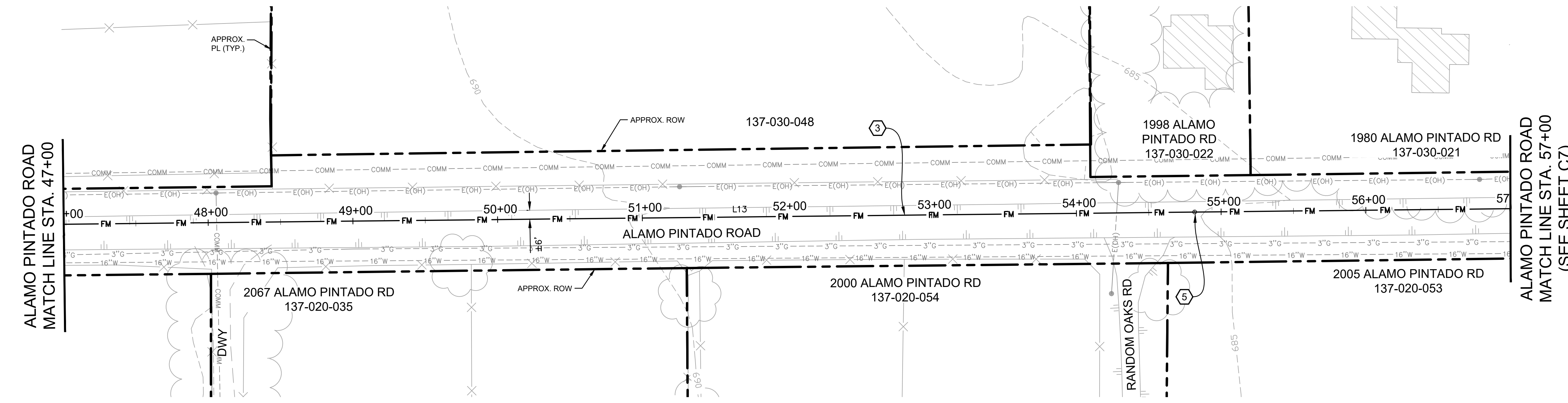
SEWER FORCE MAIN PLAN
 SFM-1 STA 17+00 TO STA 37+00
 ALAMO PINTADO ROAD

PROJECT NO.
 184032474
 DWG NO. C5
 SHT. 7 OF 16

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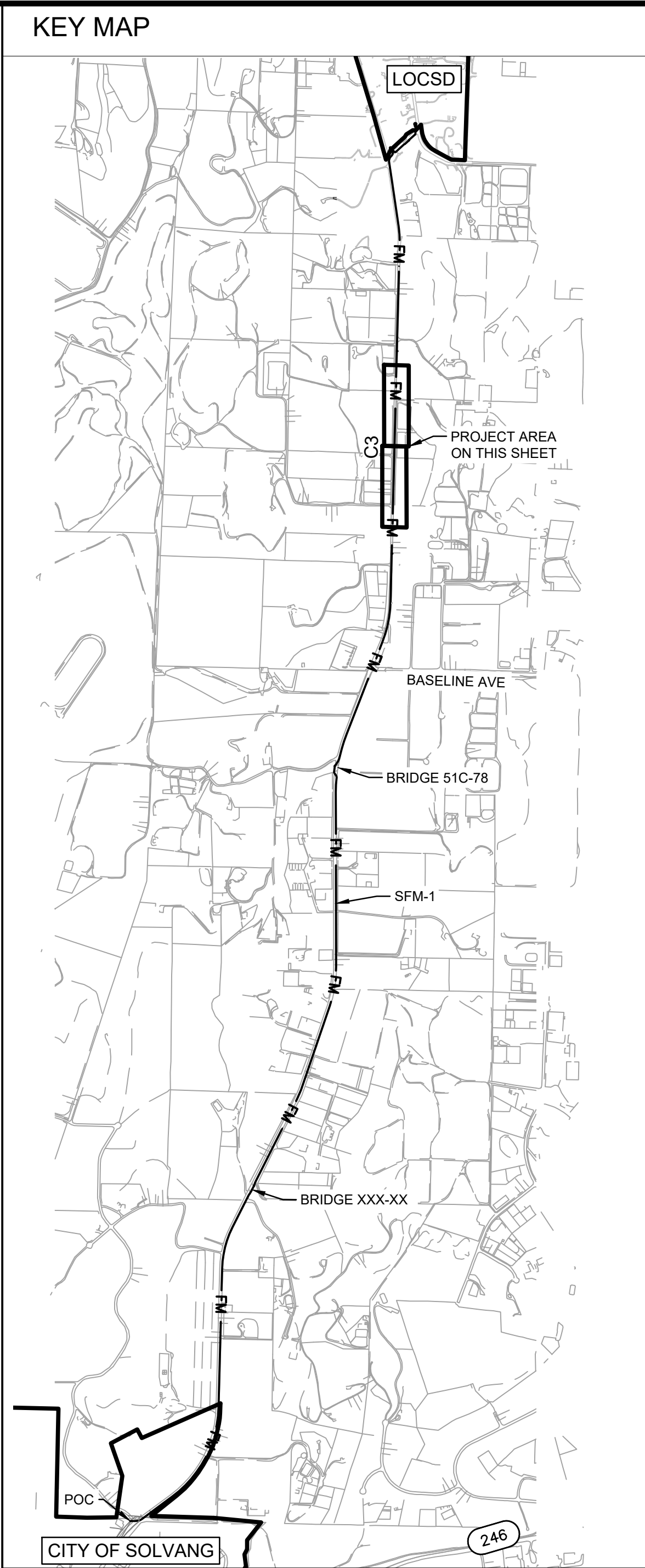
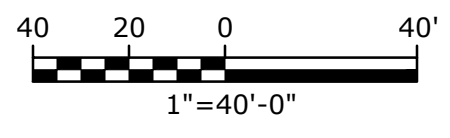


SFM-1 PLAN
SCALE: 1" = 40'



SFM-1 PLAN
SCALE: 1" = 40'

LINE TABLE		
LINE	DISTANCE	BEARING
L13	4445.03	S1°27'24"W



SHEET CONSTRUCTION NOTES

- 1 PROPOSED 4-INCH AWWA C900 PVC CL165 FORCE MAIN VIA OPEN CUT TRENCH METHOD PER DETAIL A, SHEET C14.
- 2 PROPOSED 4-INCH AWWA C150 DI CLASS 50 FORCE MAIN LINED WITH INDURON PROTECTO 401 AND EPOXY COATED HANGING ON BRIDGE.
- 3 PROPOSED 6-INCH AWWA C906 HDPE DR 21 FORCE MAIN BUTT-FUSED PER ASTM F2820 VIA OPEN CUT TRENCH OR HORIZONTAL DIRECTIONAL DRILLING METHOD PER DETAIL A, SHEET C14.
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- 5 PROPOSED GATE VALVE PER DETAIL D, SHEET C14.
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- 7 CONNECT TO EXISTING SMH-MD-014 PER DETAIL C, SHEET C14.
- 8 PROPOSED 4" DI 45° BEND (FL X FL).
- 9 PROPOSED 4" DI 22.5° BEND (FL X FL).
- 10 PROPOSED 4" DI 11.25° BEND (FL X FL).

30% SUBMITTAL

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LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SEWER FORCE MAIN PLAN
SFM-1 STA 37+00 TO STA 55+00
ALAMO PINTADO ROAD

PROJECT NO. 184032474
DWG NO. C6
SHT. 8 OF 16

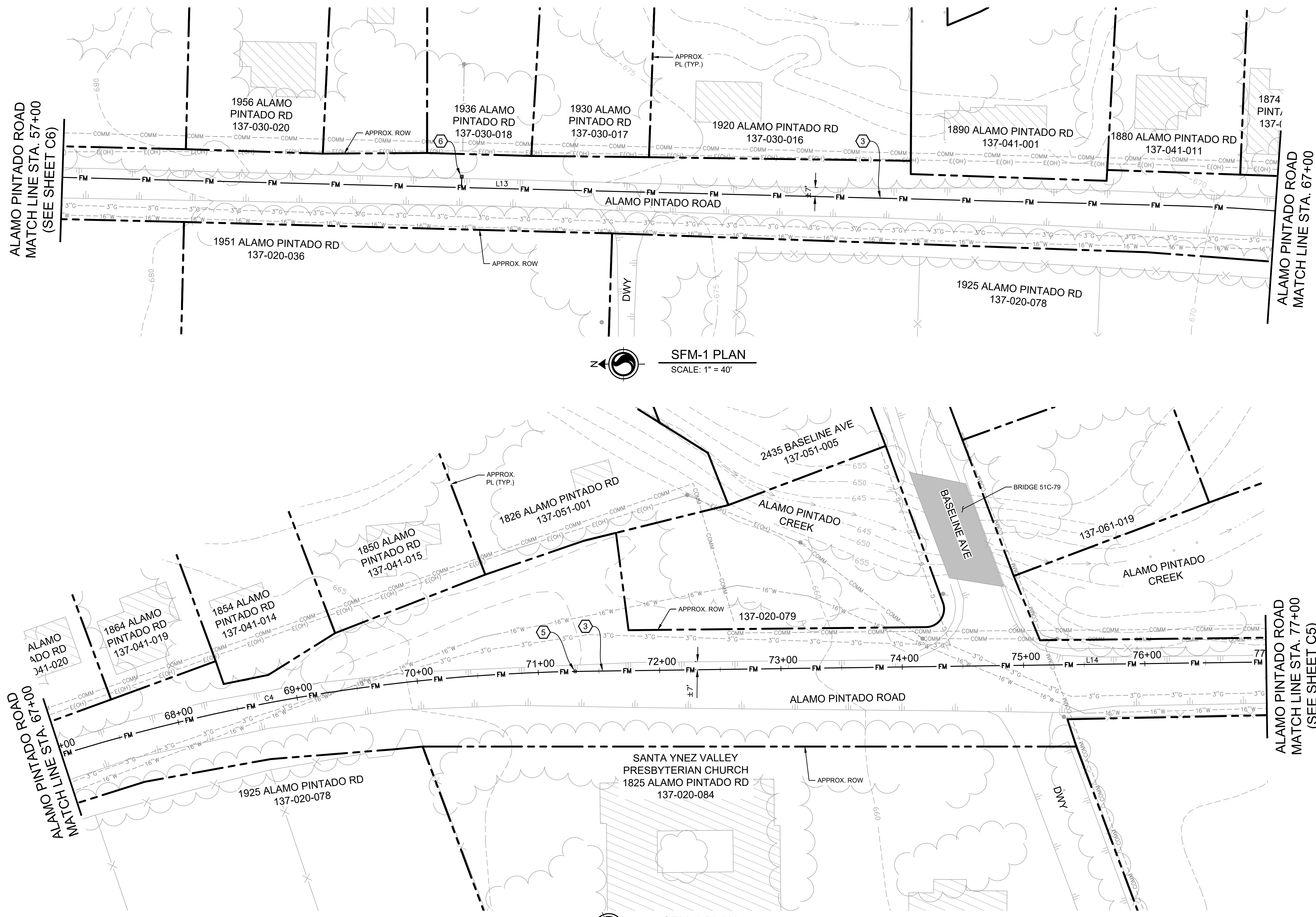
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ALAMO PINTADO ROAD
MATCH LINE STA. 57+00
(SEE SHEET C6)

ALAMO PINTADO ROAD
MATCH LINE STA. 67+00

ALAMO PINTADO ROAD
MATCH LINE STA. 67+00
(SEE SHEET C5)

ALAMO PINTADO ROAD
MATCH LINE STA. 77+00
(SEE SHEET C5)

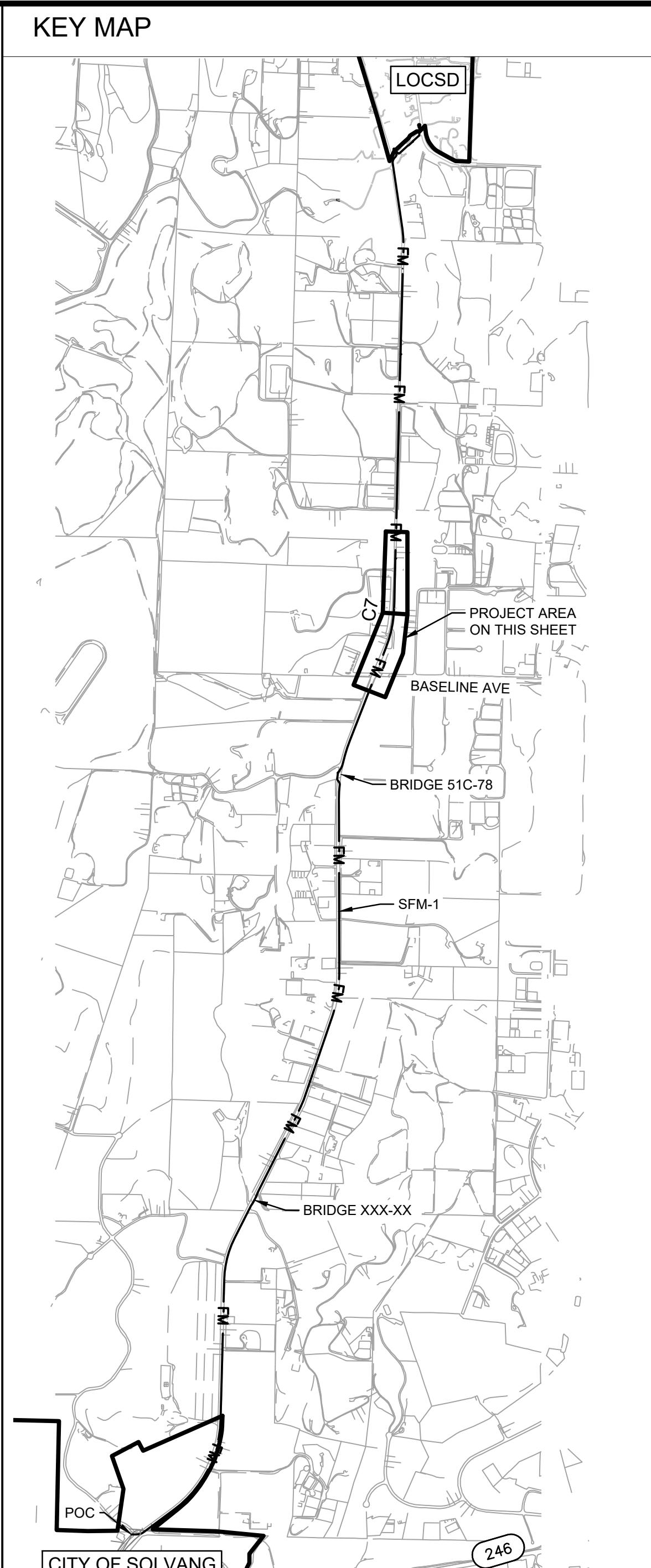
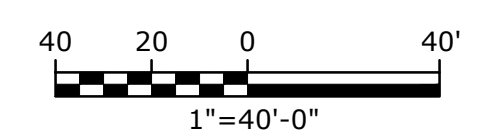


SFM-1 PLAN
SCALE: 1" = 40"

SFM-1 PLAN
SCALE: 1" = 40"

LINE	DISTANCE	BEARING
L13	4445.03	S1°27'24"W
L14	1215.45	S21°12'23"W

CURVE	DELTA	RADIUS	LENGTH
C4	19°44'59"	1500.00	517.05



SHEET CONSTRUCTION NOTES

- 1 PROPOSED 4-INCH AWWA C900 PVC CL165 FORCE MAIN VIA OPEN CUT TRENCH METHOD PER DETAIL A, SHEET C14.
- 2 PROPOSED 4-INCH AWWA C150 DI CLASS 50 FORCE MAIN LINED WITH INDURON PROTECTO 401 AND EPOXY COATED HANGING ON BRIDGE.
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- 8 PROPOSED 4" DI 45° BEND (FL X FL).
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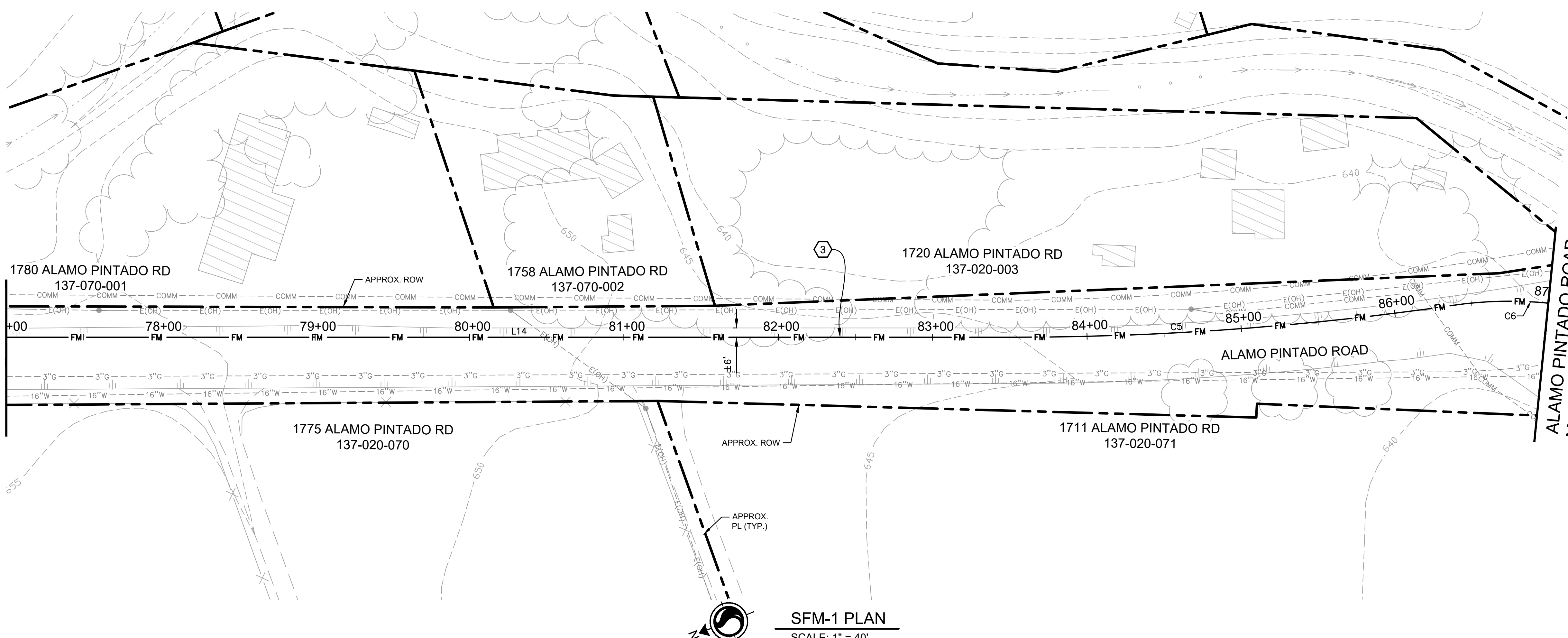
LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCSO WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SEWER FORCE MAIN PLAN
SFM-1 STA 57+00 TO STA 77+00
ALAMO PINTADO ROAD

PROJECT NO.
184032474
DWG NO. C7
SHT. 9 OF 16

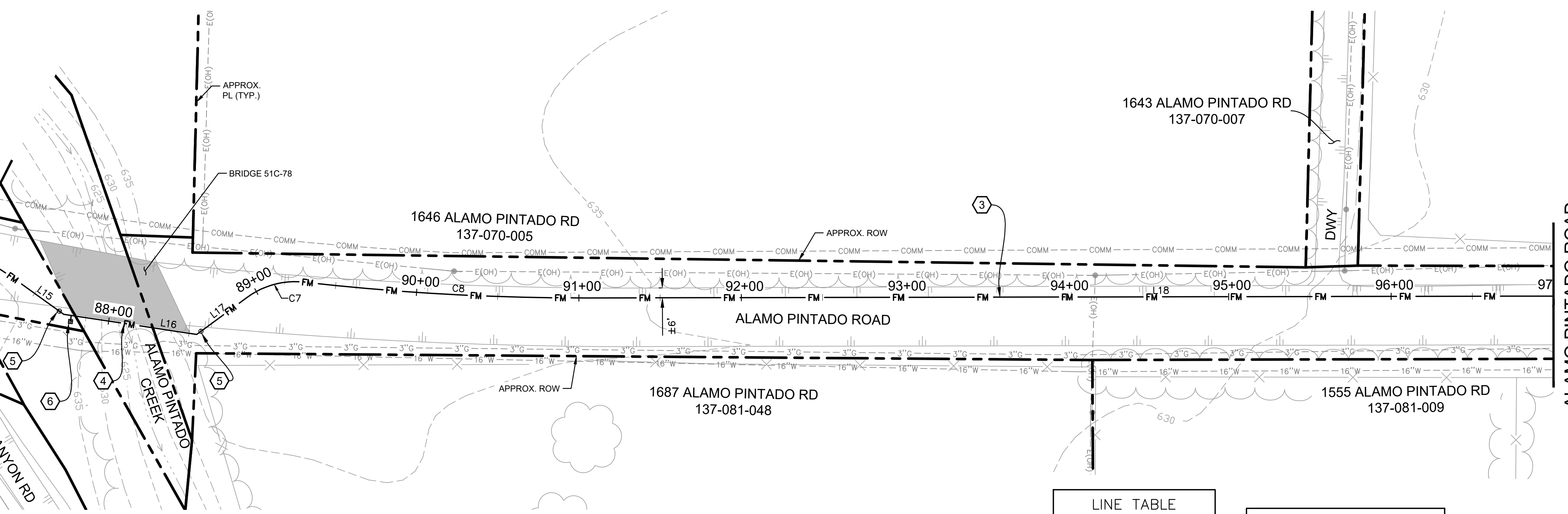
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ALAMO PINTADO ROAD
MATCH LINE STA. 77+00
(SEE SHEET C7)



SFM-1 PLAN
SCALE: 1" = 40'

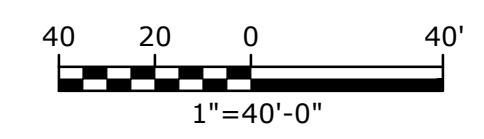
ALAMO PINTADO ROAD
MATCH LINE STA. 87+00



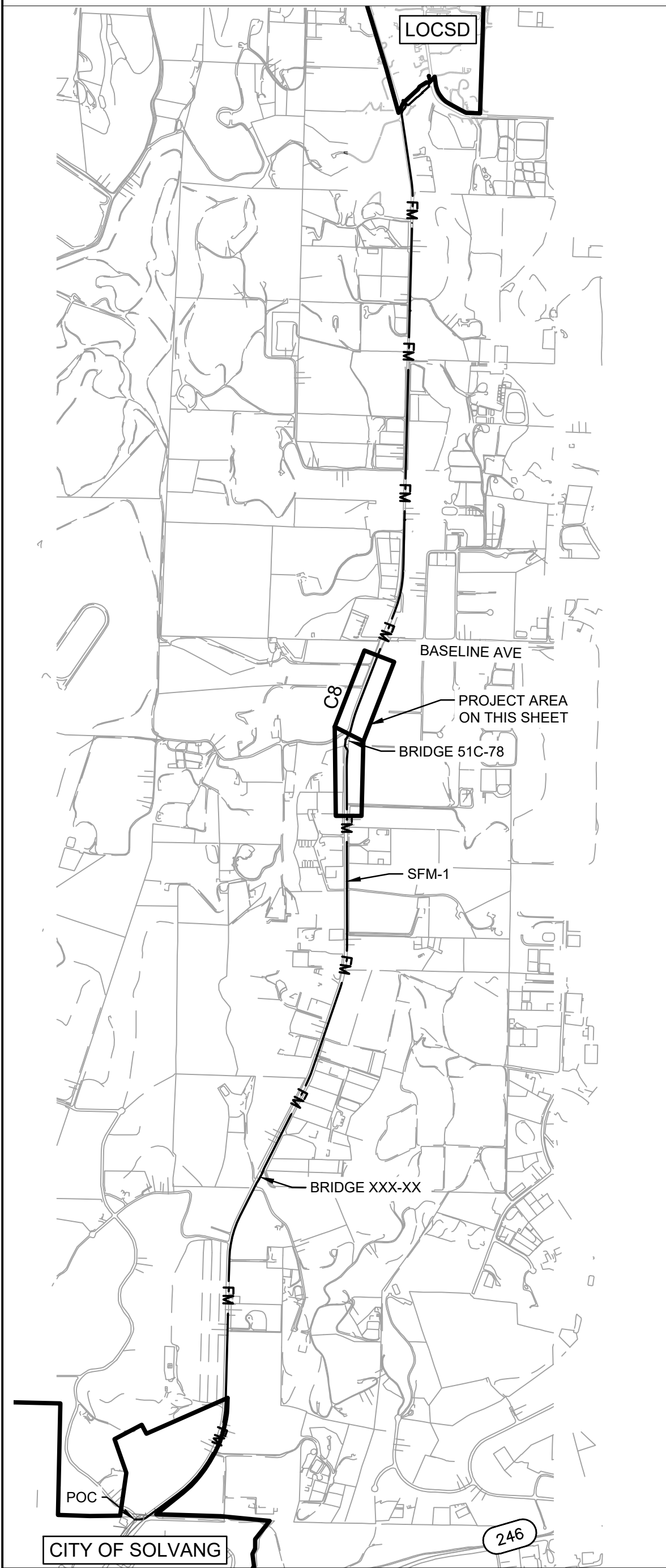
SFM-1 PLAN
SCALE: 1" = 40'

LINE	DISTANCE	BEARING
L14	1215.45	S21°12'23"W
L15	33.69	S35°44'37"W
L16	82.80	S8°38'08"W
L17	38.47	S36°21'52"E
L18	2158.43	S0°06'34"E

CURVE	DELTA	RADIUS	LENGTH
C5	8°17'00"	1988.00	287.41
C6	22°49'15"	250.00	99.57
C7	42°53'30"	50.00	37.43
C8	6°38'11"	1500.00	173.74



KEY MAP



SHEET CONSTRUCTION NOTES

- 1 PROPOSED 4-INCH AWWA C900 PVC CL165 FORCE MAIN VIA OPEN CUT TRENCH METHOD PER DETAIL A, SHEET C14.
- 2 PROPOSED 4-INCH AWWA C150 DI CLASS 50 FORCE MAIN LINED WITH INDURON PROTECTO 401 AND EPOXY COATED HANGING ON BRIDGE.
- 3 PROPOSED 6-INCH AWWA C906 HDPE DR 21 FORCE MAIN BUTT-FUSED PER ASTM F2620 VIA OPEN CUT TRENCH OR HORIZONTAL DIRECTIONAL DRILLING METHOD PER DETAIL A, SHEET C14.
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- 5 PROPOSED GATE VALVE PER DETAIL D, SHEET C14.
- 6 PROPOSED 1-INCH WASTEWATER COMBINATION AIR RELEASE / VACUUM VALVE PER DETAIL B, SHEET C14.
- 7 CONNECT TO EXISTING SMH-MD-014 PER DETAIL C, SHEET C14.
- 8 PROPOSED 4" DI 45° BEND (FL X FL).
- 9 PROPOSED 4" DI 22.5° BEND (FL X FL).
- 10 PROPOSED 4" DI 11.25° BEND (FL X FL).

30% SUBMITTAL

TOPOGRAPHICAL DATA SHOWN ON PLANS IS A COMBINATION OF TWO AERIAL SURVEYS. SEE SHEET G-2 FOR DESCRIPTION.
HORIZONTAL DATUM: CALIFORNIA COORDINATE SYSTEM STATE PLANE ZONE V, NORTH AMERICAN DATUM 1983
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988

NO.	DATE	REVISIONS

DESIGNED BY: JTZ
DRAFTED BY: GMK
CHECKED BY: CEP
DATE: 03/07/2025

WARNING
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE



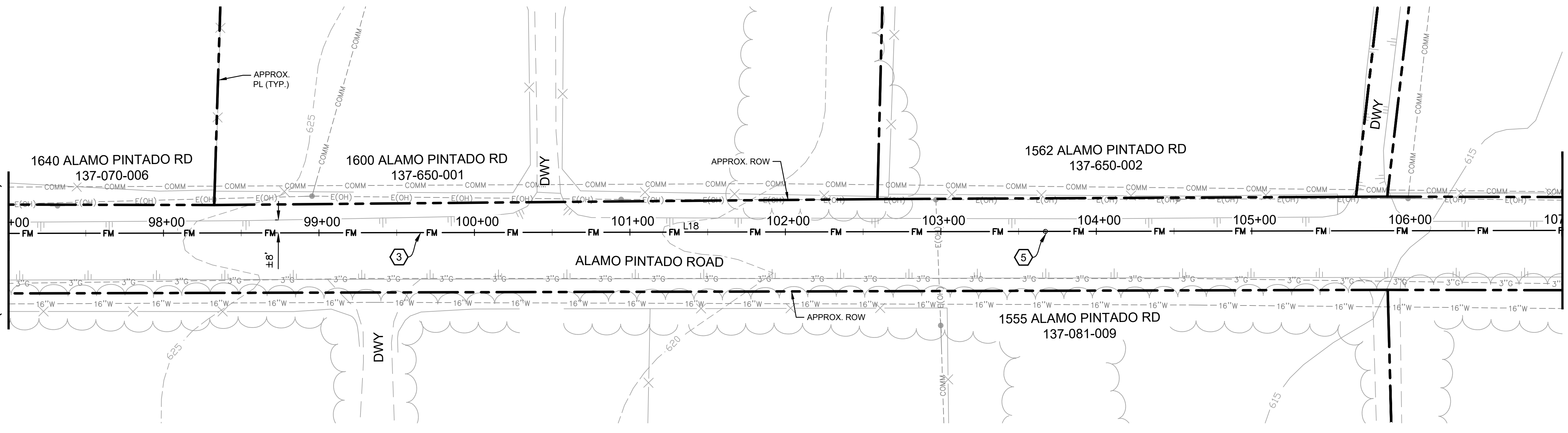
LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCS D WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SEWER FORCE MAIN PLAN
SFM-1 STA 77+00 TO STA 97+00
ALAMO PINTADO ROAD

PROJECT NO.
184032474
DWG NO. C8
SHT. 10 OF 16

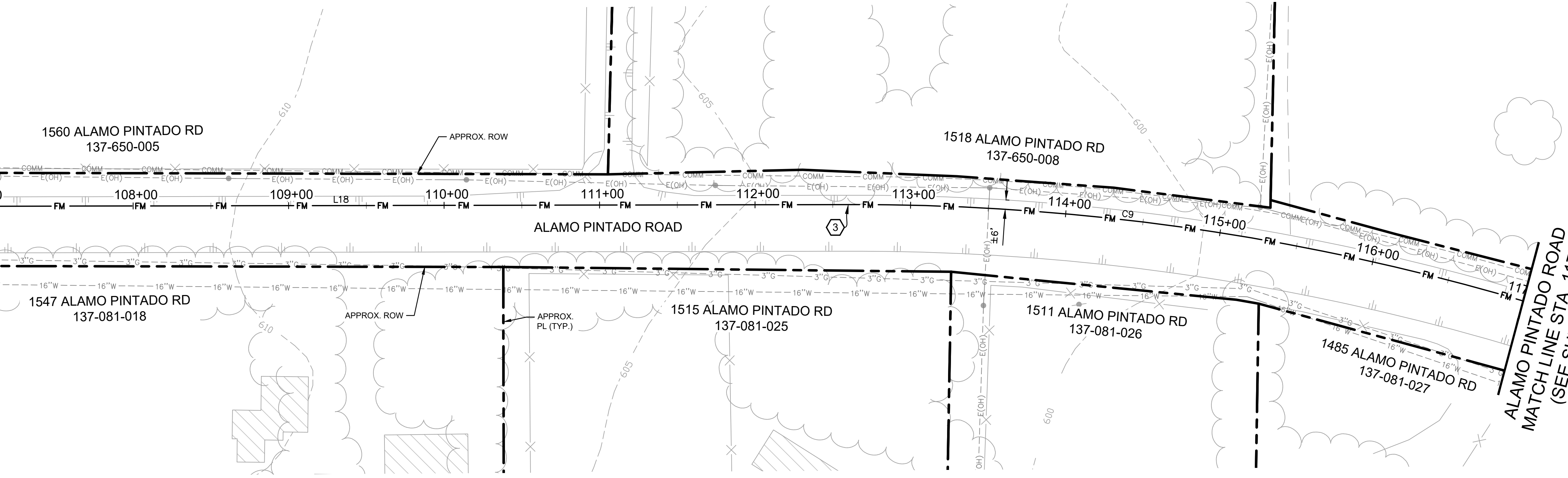
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ALAMO PINTADO ROAD
MATCH LINE STA. 97+00
(SEE SHEET C8)



SFM-1 PLAN
SCALE: 1" = 40'

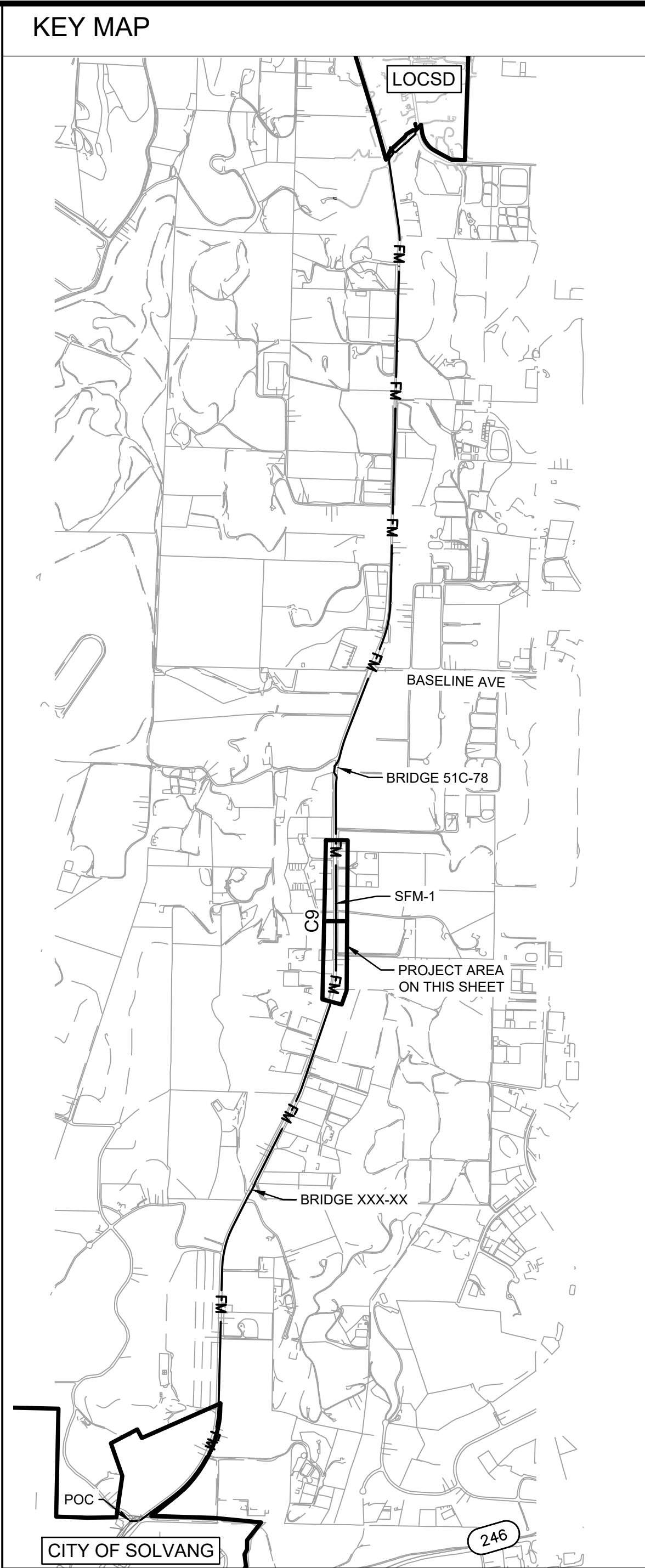
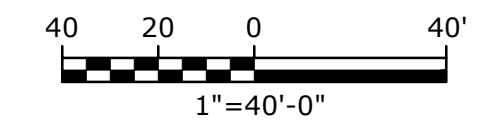
ALAMO PINTADO ROAD
MATCH LINE STA. 107+00



SFM-1 PLAN
SCALE: 1" = 40'

LINE	DISTANCE	BEARING
L18	2158.43	S0°06'34"E

CURVE	DELTA	RADIUS	LENGTH
C9	18°38'36"	1512.00	491.98



SHEET CONSTRUCTION NOTES

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30% SUBMITTAL

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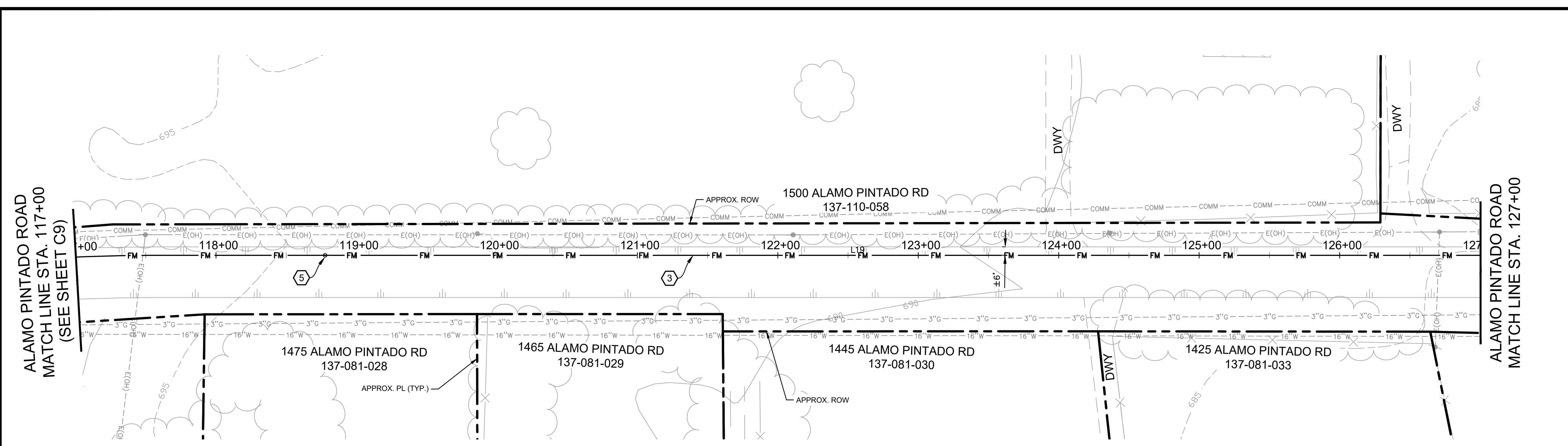


LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCS D WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

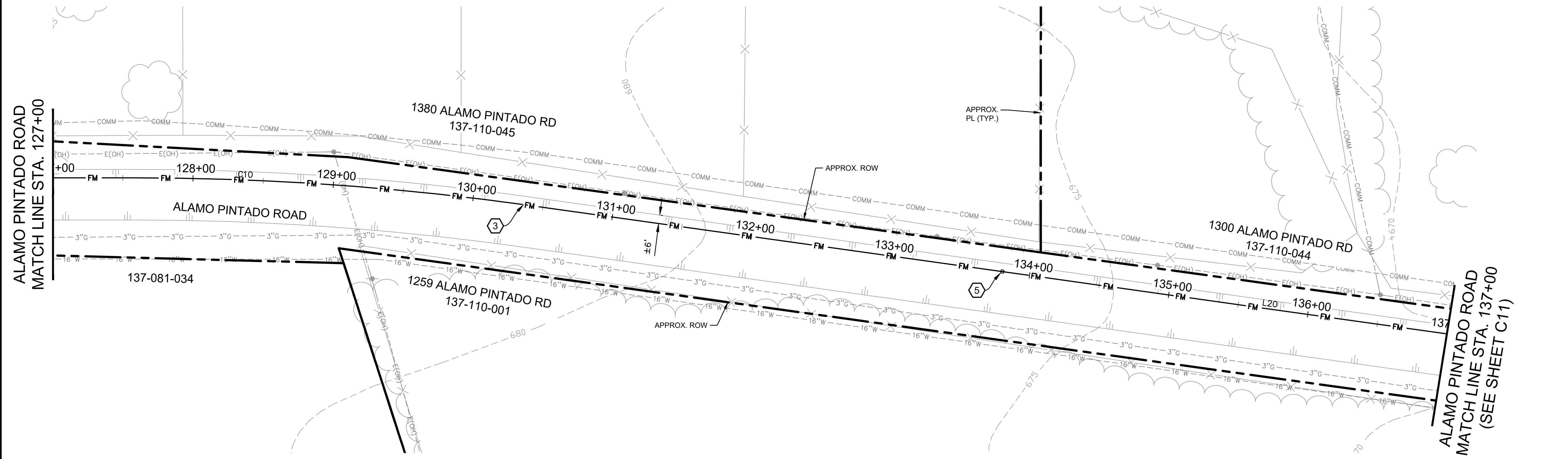
SEWER FORCE MAIN PLAN
SFM-1 STA 97+00 TO STA 117+00
ALAMO PINTADO ROAD

PROJECT NO.
184032474
DWG NO. C9
SHT. 11 OF 16

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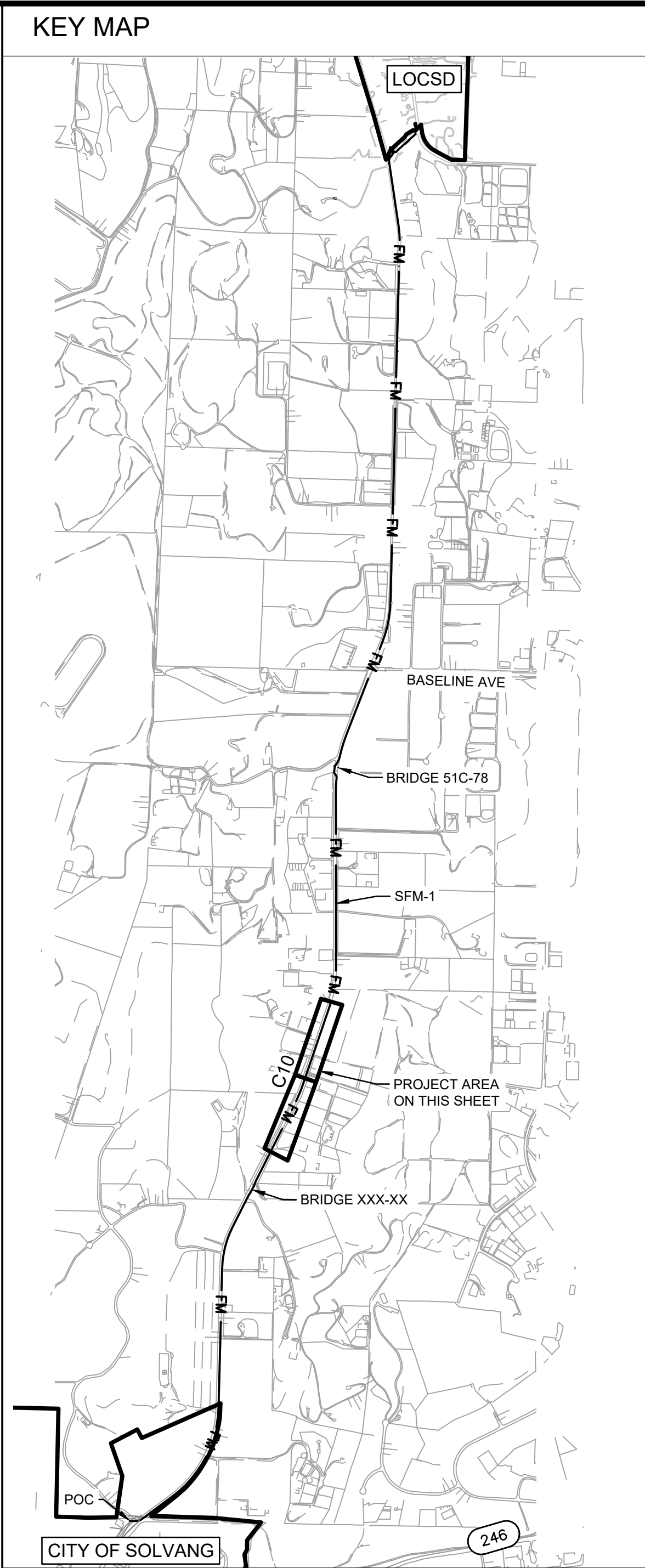
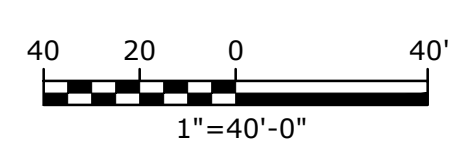
SFM-1 PLAN
SCALE: 1" = 40'



SFM-1 PLAN
SCALE: 1" = 40'

LINE TABLE		
LINE	DISTANCE	BEARING
L19	1004.27	S18°47'30"W
L20	1067.41	S26°45'14"W

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C10	7°57'44"	2012.00	279.60



SHEET CONSTRUCTION NOTES

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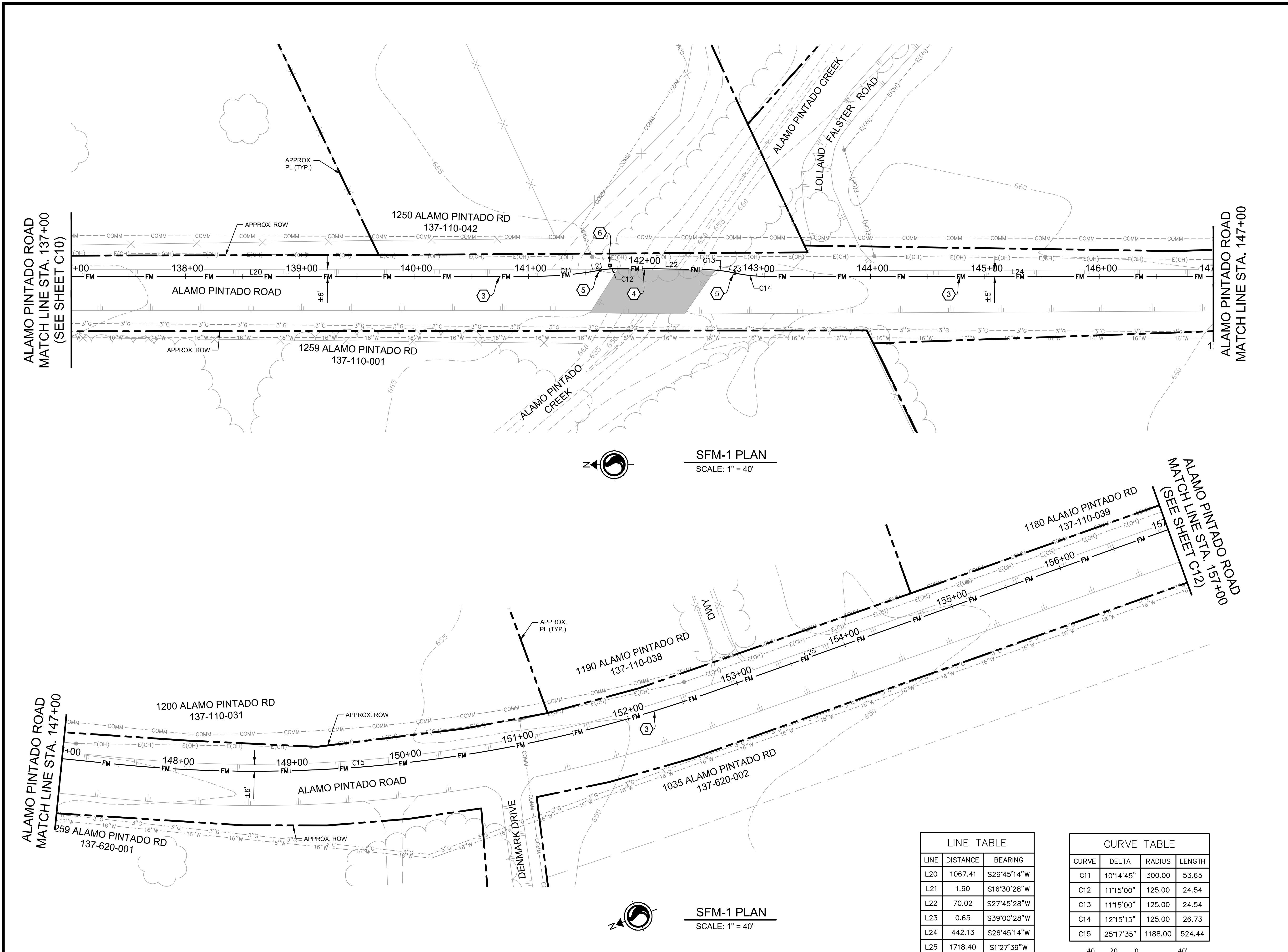
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LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCSO WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

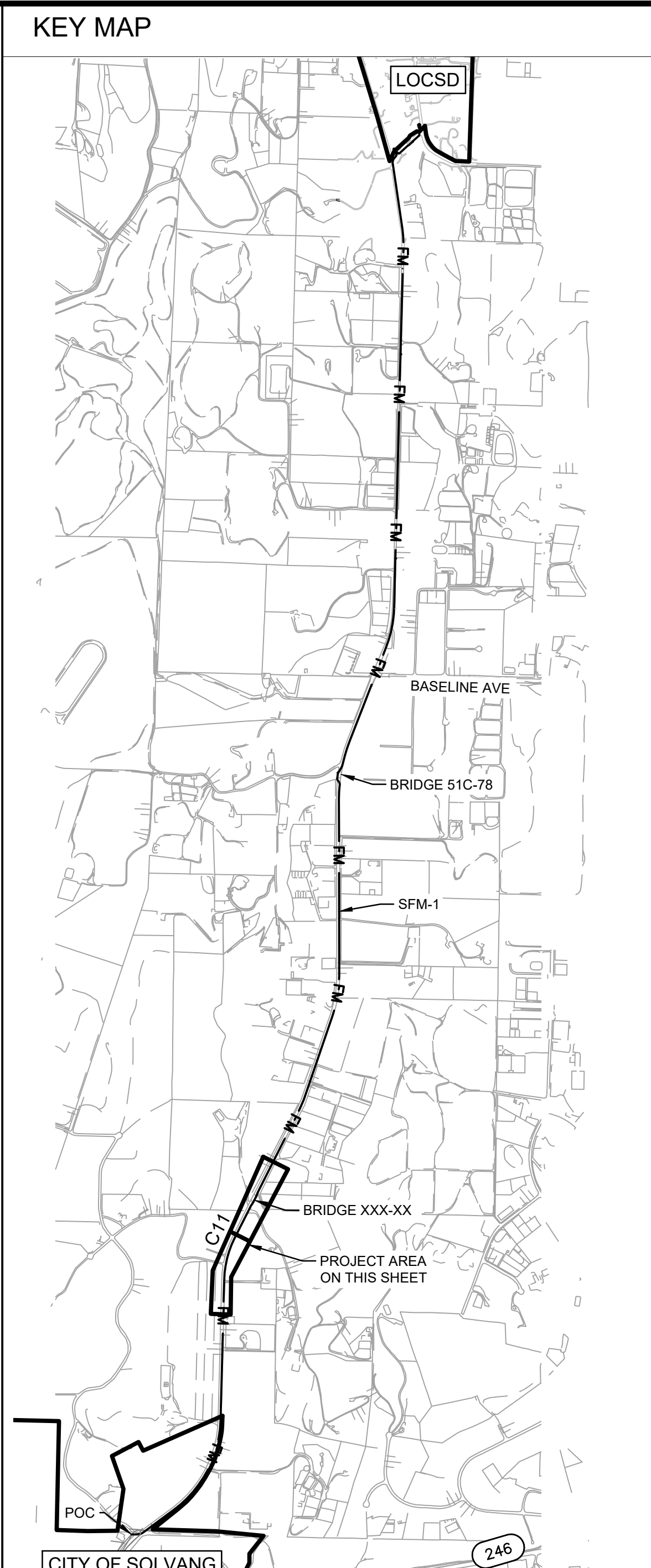
SEWER FORCE MAIN PLAN
SFM-1 STA 117+00 TO STA 137+00
ALAMO PINTADO ROAD

PROJECT NO. 184032474
DWG NO. C10
SHT. 12 OF 16



SFM-1 PLAN
SCALE: 1" = 40'

SFM-1 PLAN
SCALE: 1" = 40'

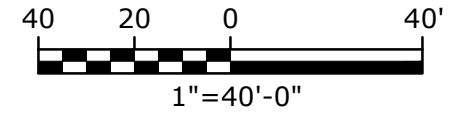


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LINE TABLE		
LINE	DISTANCE	BEARING
L20	1067.41	S26°45'14"W
L21	1.60	S16°30'28"W
L22	70.02	S27°45'28"W
L23	0.65	S39°00'28"W
L24	442.13	S26°45'14"W
L25	1718.40	S1°27'39"W

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C11	10°14'45"	300.00	53.65
C12	11°15'00"	125.00	24.54
C13	11°15'00"	125.00	24.54
C14	12°15'15"	125.00	26.73
C15	25°17'35"	1188.00	524.44



30% SUBMITTAL

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 CHECKED BY: CEP
 DATE: 03/07/2025

WARNING
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LOS OLIVOS COMMUNITY SERVICES DISTRICT
 PO Box 345, Los Olivos CA 93441
 LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

SEWER FORCE MAIN PLAN
 SFM-1 STA 137+00 TO STA 157+00
 ALAMO PINTADO ROAD

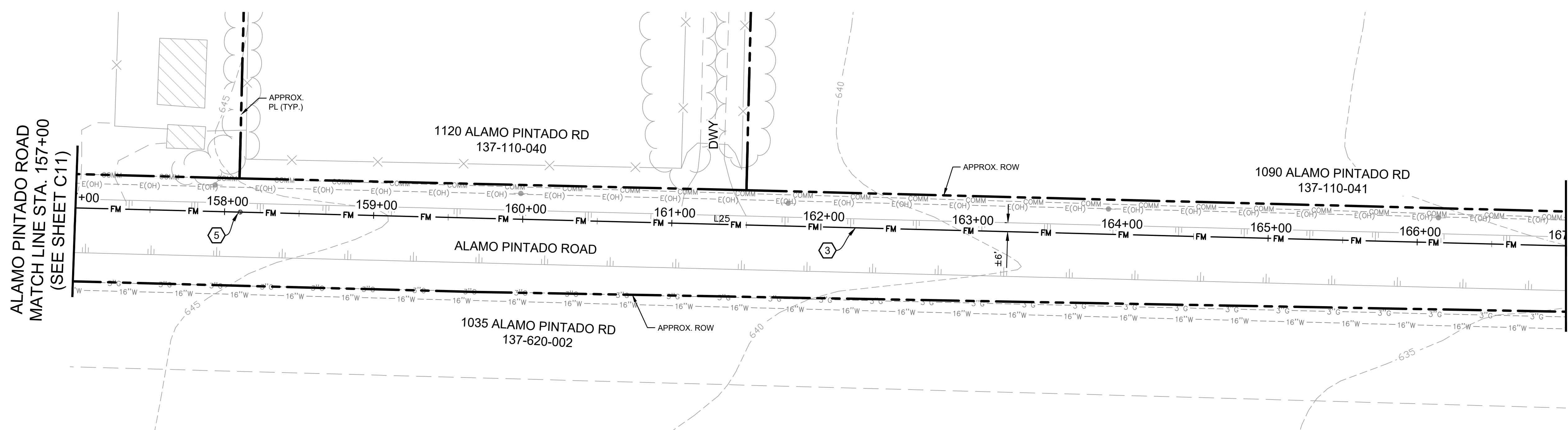
PROJECT NO.
184032474
 DWG NO. C11
 SHT. 13 OF 16

ALAMO PINTADO ROAD
MATCH LINE STA. 157+00
(SEE SHEET C11)

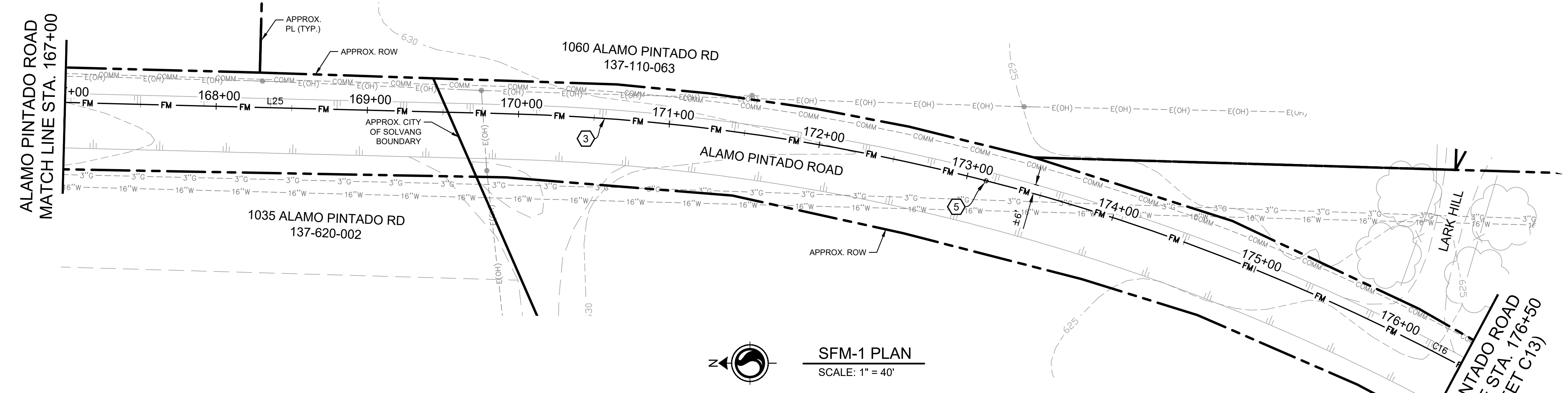
ALAMO PINTADO ROAD
MATCH LINE STA. 167+00

ALAMO PINTADO ROAD
MATCH LINE STA. 167+00

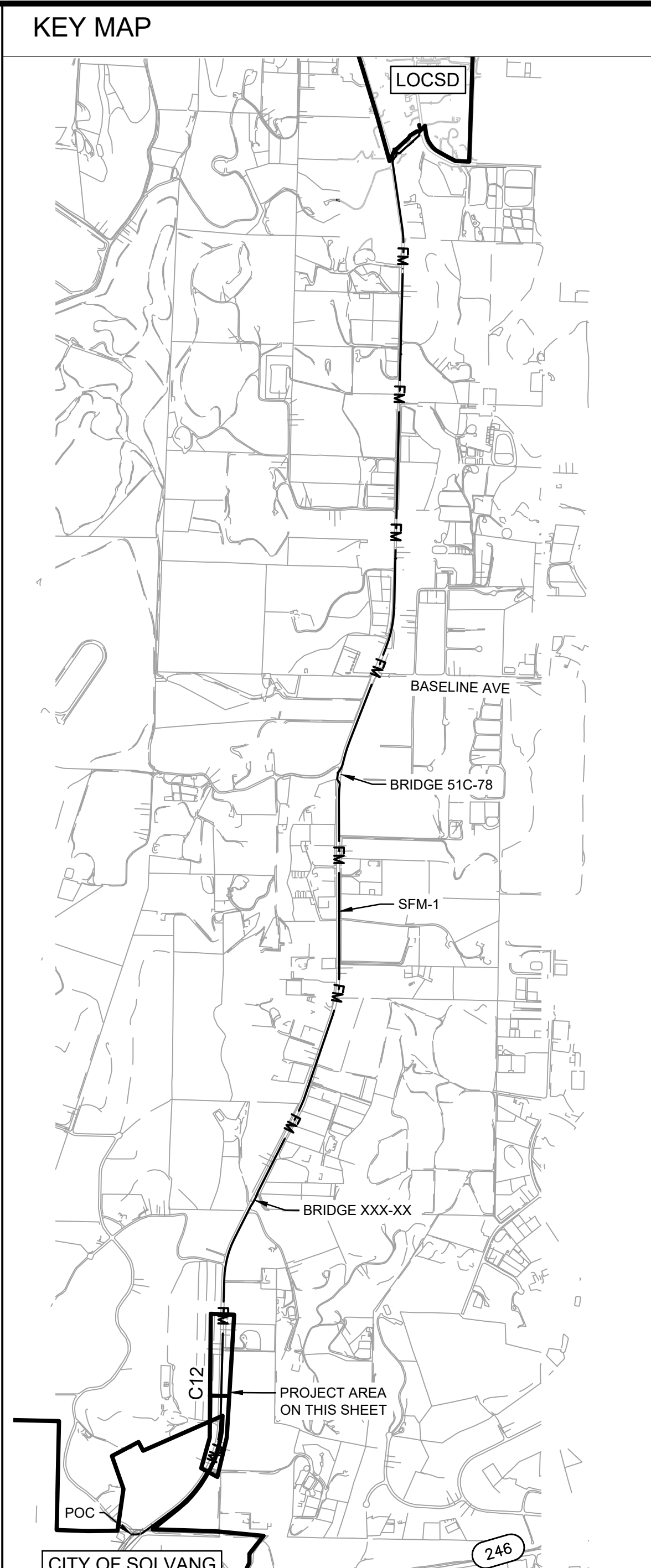
ALAMO PINTADO ROAD
MATCH LINE STA. 176+50
(SEE SHEET C13)



SFM-1 PLAN
SCALE: 1" = 40'



SFM-1 PLAN
SCALE: 1" = 40'

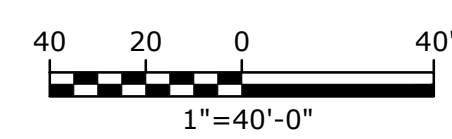


SHEET CONSTRUCTION NOTES

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LINE TABLE		
LINE	DISTANCE	BEARING
L25	1718.40	S1°27'39"W

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C16	51°57'08"	1412.00	1280.31



30% SUBMITTAL

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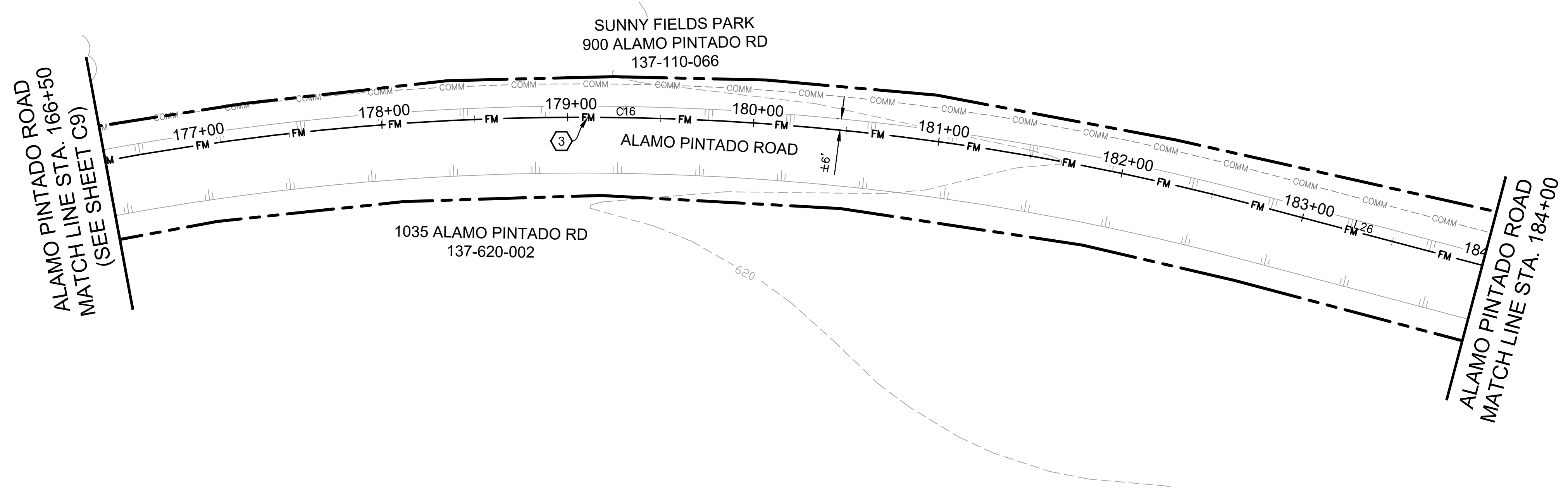


LOS OLIVOS COMMUNITY SERVICES DISTRICT
PO Box 345, Los Olivos CA 93441
LOCSO WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

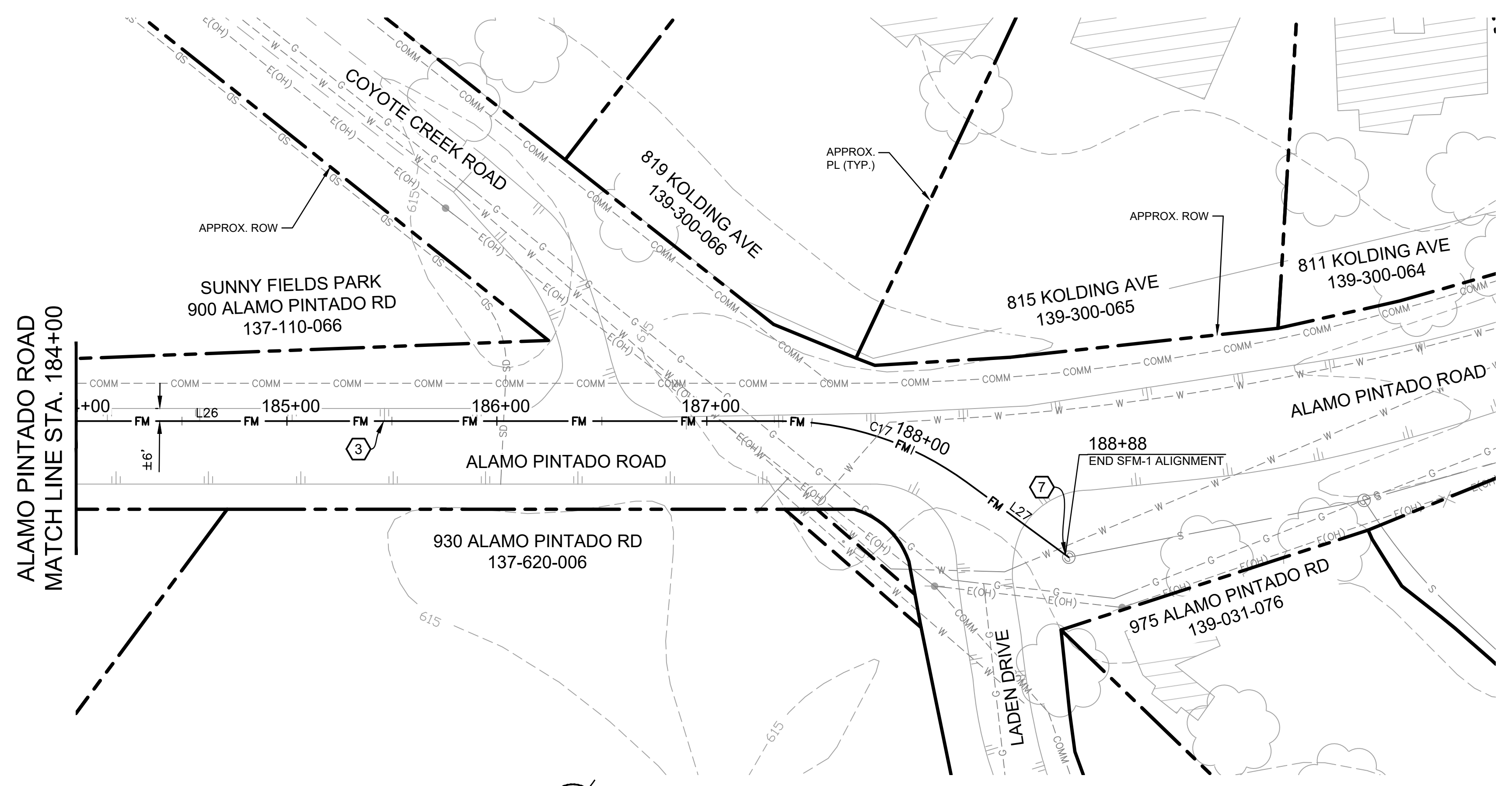
SEWER FORCE MAIN PLAN
SFM-1 STA. 157+00 TO STA 177+00
ALAMO PINTADO ROAD

PROJECT NO.
184032474
DWG NO. C12
SHT. 14 OF 16

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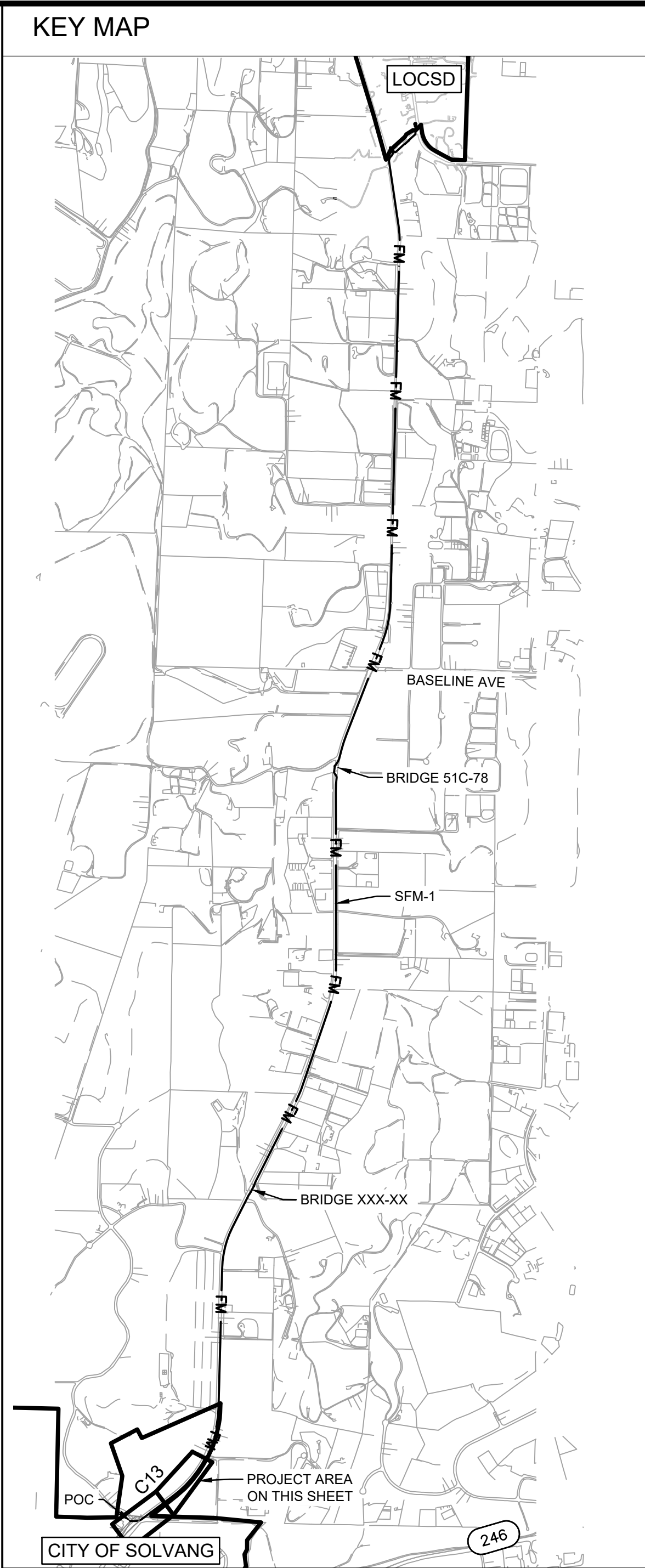
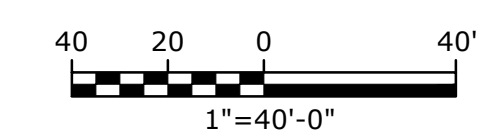
SFM-1 PLAN
SCALE: 1" = 40'



SFM-1 PLAN
SCALE: 1" = 40'

LINE TABLE		
LINE	DISTANCE	BEARING
L26	461.79	S53°24'47"W
L27	58.41	S89°41'39"W

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C16	51°57'08"	1412.00	1280.31
C17	36°16'52"	150.00	94.98



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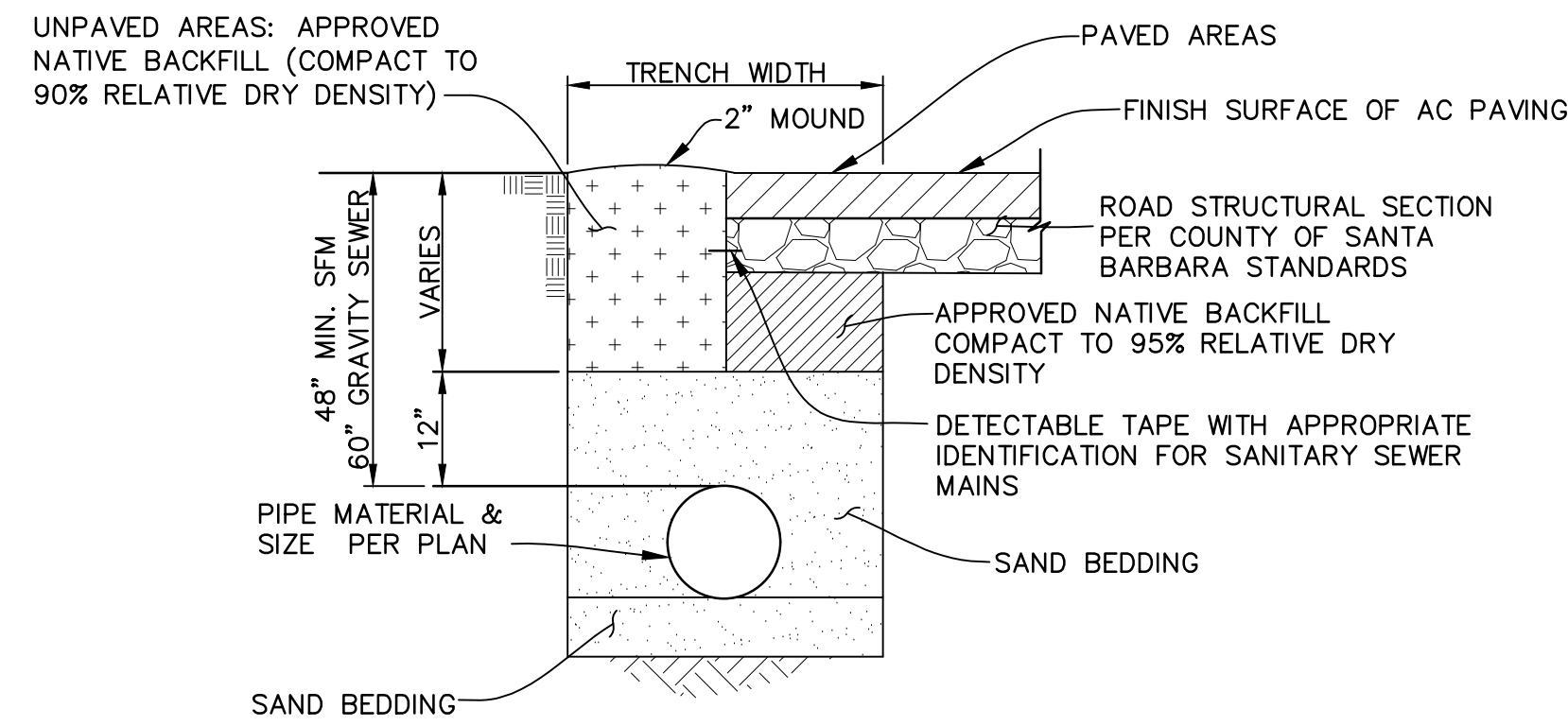


LOS OLIVOS COMMUNITY SERVICES DISTRICT
 PO Box 345, Los Olivos CA 93441
 LOCSD WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

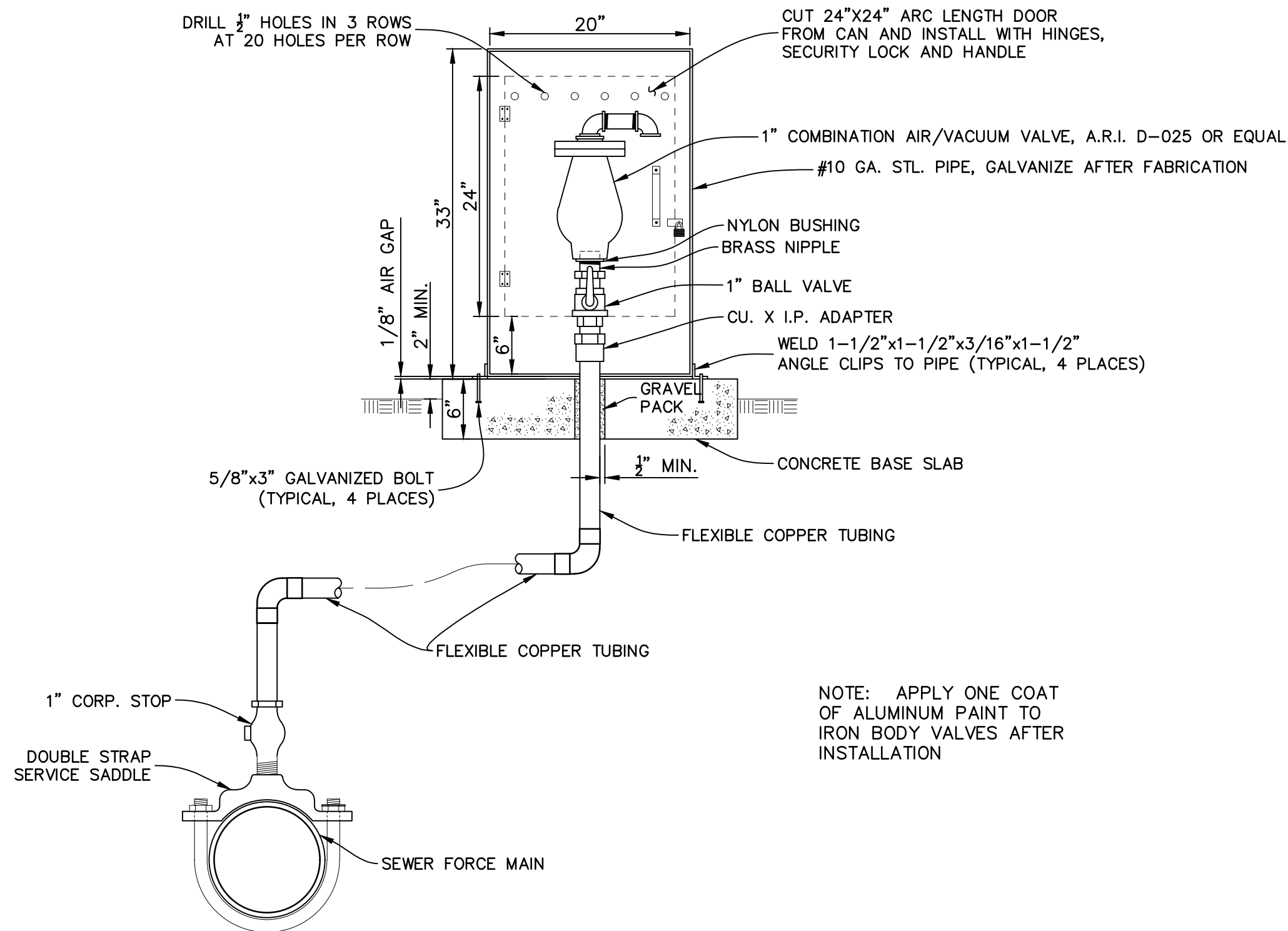
SEWER FORCE MAIN PLAN
 SFM-1 PLAN STA 166+50 TO STA 188+88
 ALAMO PINTADO ROAD

PROJECT NO. 184032474
 DWG NO. C13
 SHT. 15 OF 16

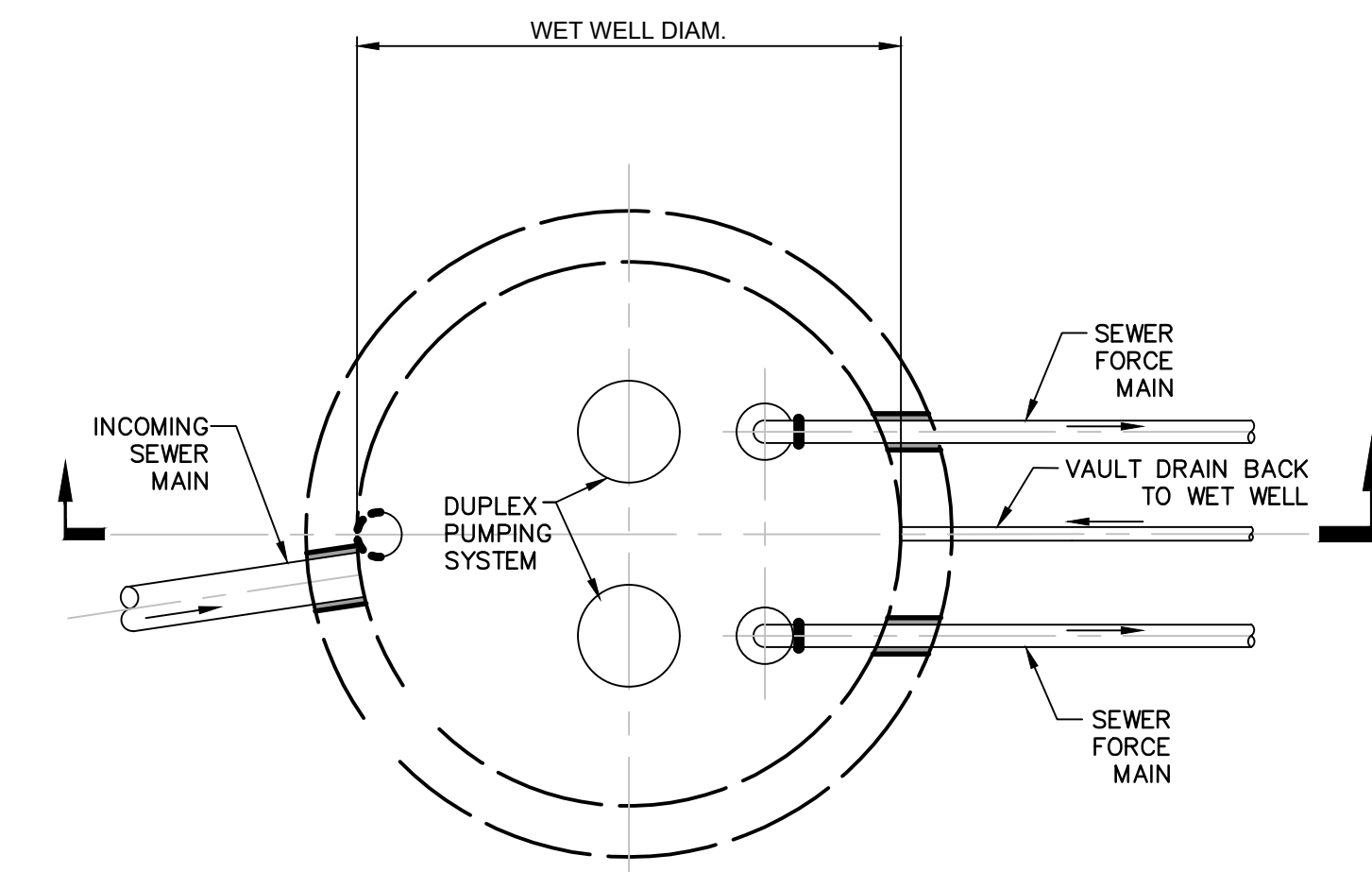
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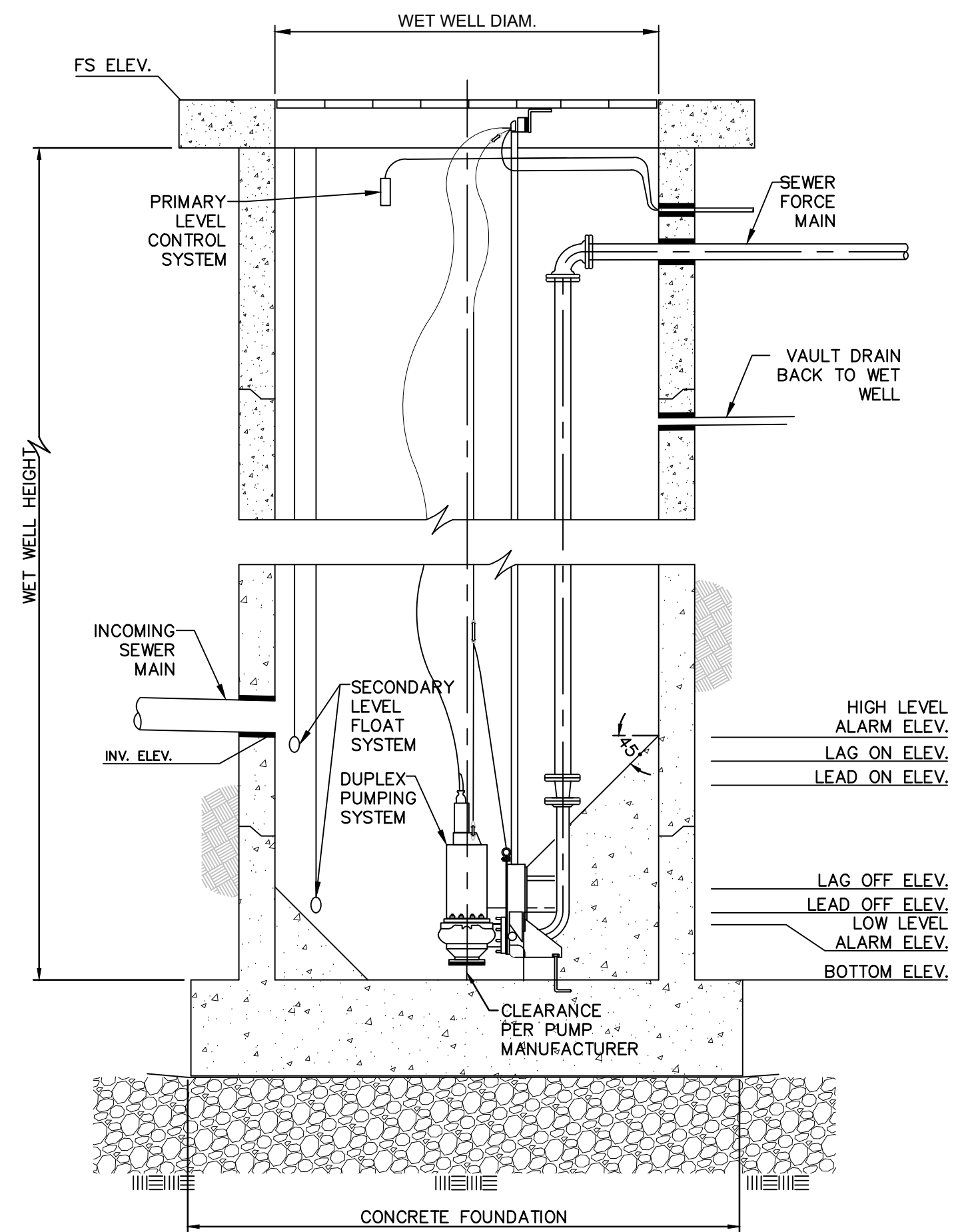
- NOTES**
- TRENCH BEDDING AND BACKFILL AND ROAD PAVING WITH THE COUNTY OF SANTA BARBARA SHALL MEET THE REQUIREMENTS OF THE COUNTY OF SANTA BARBARA DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS AND STANDARD DETAILS 1-010, 2-010, 2-020, AND 2-030.
 - TRENCH BEDDING AND BACKFILL AND ROAD PAVING WITH THE CITY OF SOLVANG SHALL MEET THE CITY OF SOLVANG STANDARDS AND SPECIFICATIONS.



NOTE: APPLY ONE COAT OF ALUMINUM PAINT TO IRON BODY VALVES AFTER INSTALLATION

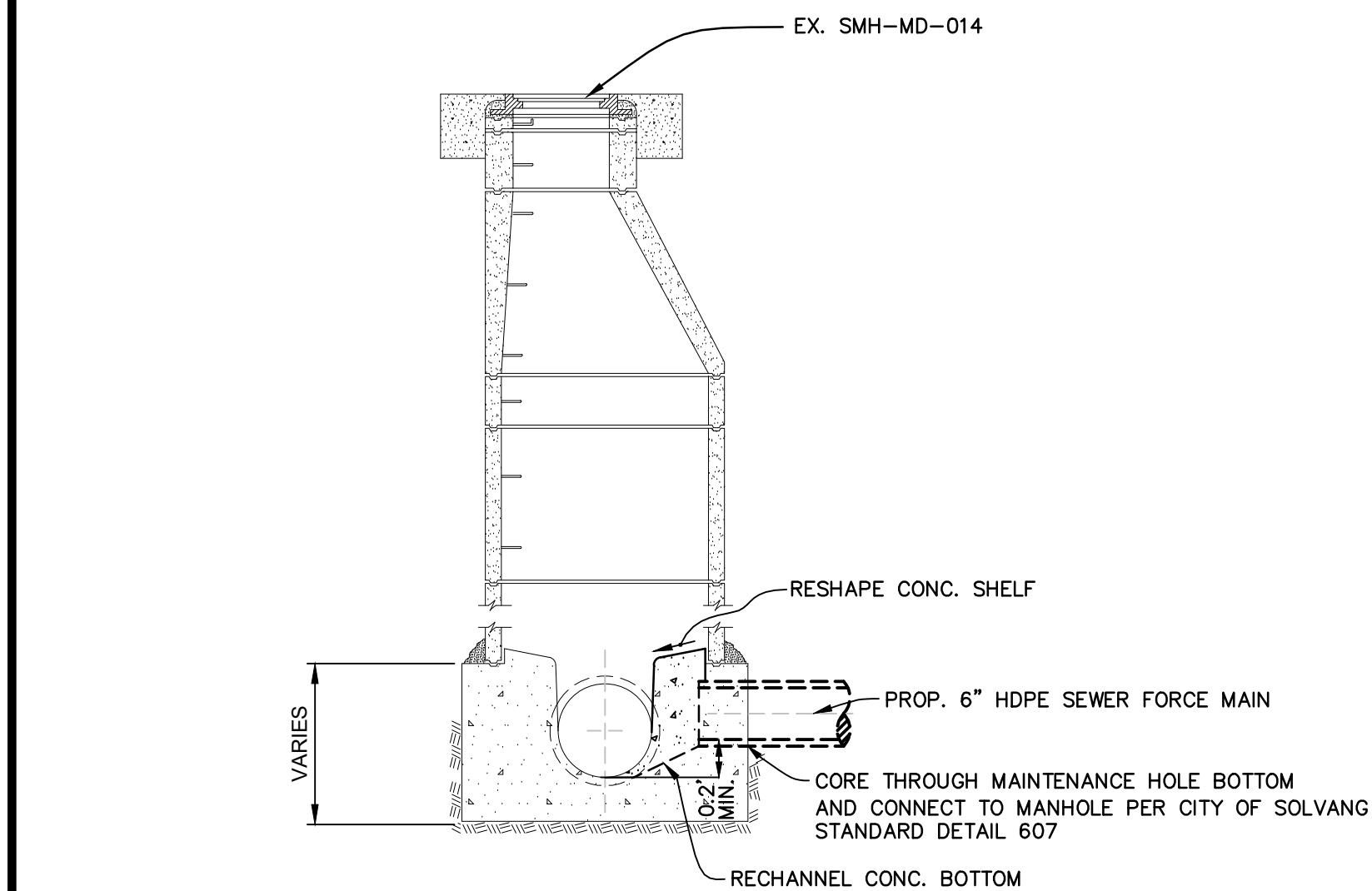


PLAN

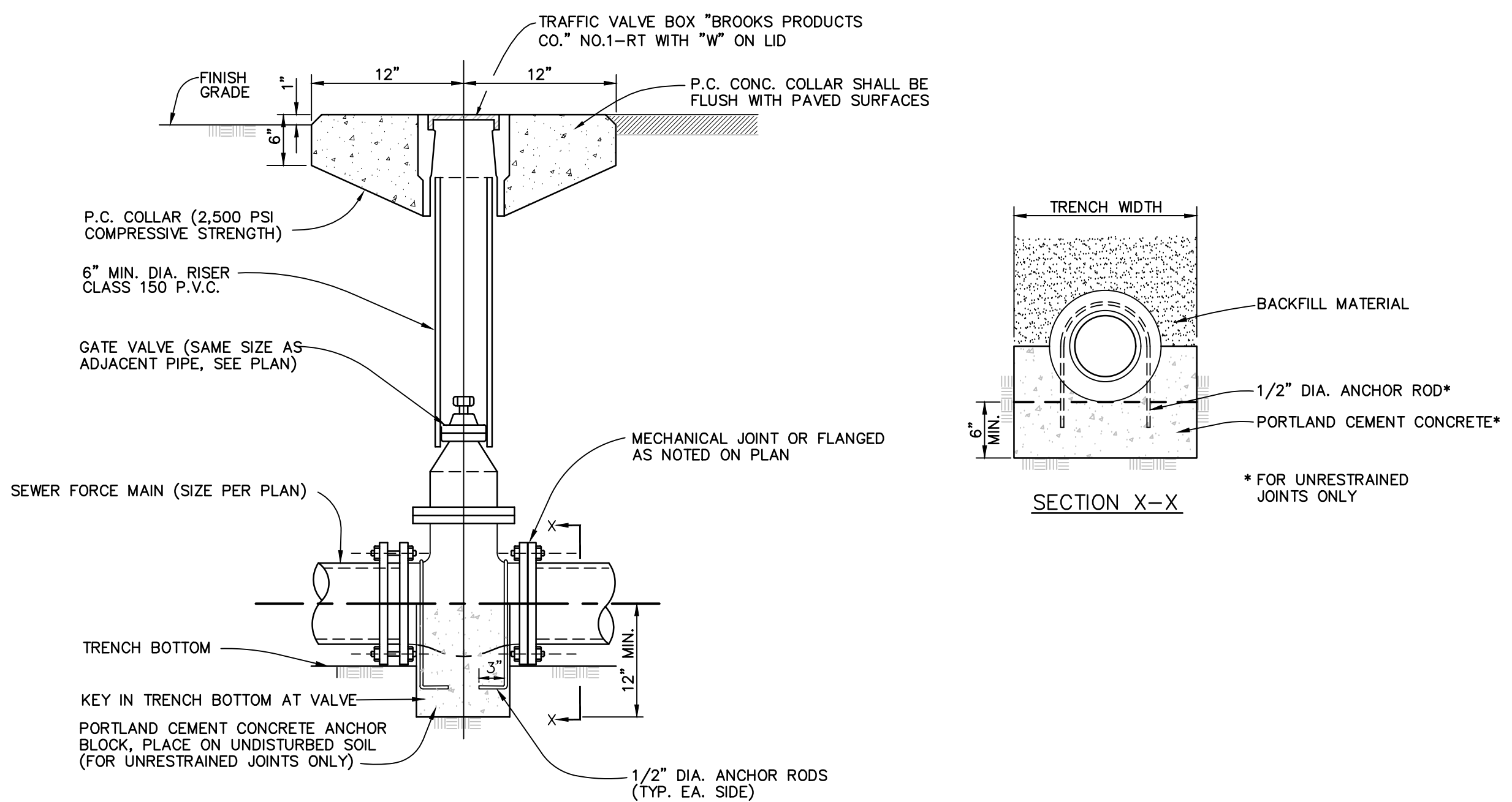


N.T.S. SS TYPICAL WASTEWATER OPEN CUT TRENCH SECTION A

N.T.S. SS 1" WASTEWATER COMBINATION AIR RELEASE AND VACUUM VALVE B



- NOTES**
- PROPOSED 6" HDPE SEWER FORCE MAIN TO HAVE AN INVERT AT LEAST 0.20 FEET HIGHER THAN THE INVERT OF THE HIGHEST EXISTING GRAVITY SEWER MAIN IN THE MANHOLE.
 - RESHAPE EXISTING MANHOLE CONC. SHELF AND BOTTOM TO PROVIDE SMOOTH CONTOUR BETWEEN INCOMING AND OUTGOING PIPES PER THE CITY OF SOLVANG STANDARDS.



N.T.S. SS CONNECTION TO EXIST SEWER MANHOLE C

N.T.S. SS GATE VALVE AND VALVE CAN D

N.T.S. SS TYPICAL WET WELL E

30% SUBMITTAL

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 CHECKED BY: CEP
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LOS OLIVOS COMMUNITY SERVICES DISTRICT
 PO Box 345, Los Olivos CA 93441
 LOCSO WASTEWATER CONNECTION TO CITY OF SOLVANG PROJECT

PRELIMINARY - NOT FOR CONSTRUCTION
 DETAILS
 ALAMO PINTADO ROAD

PROJECT NO. 184032474
 DWG NO. GC-1
 SHT. 16 OF 16

DRAWING: \\usd377-prisid\shared_projects\184032474\engineering\drawing\final\eng_184032474_sewer.dwg PLOTTED: 3/7/2025 3:13 PM BY: kasimon_cabrillo

LOCSD Pipeline to Solvang Cost Estimate

Stantec

Project: LOCSD PIPELINE TO SOLVANG

200 E. Carrillo Street, Suite 101

Location: Los Olivos, Santa Barbara County

Santa Barbara, CA 93101

Client: Los Olivos Community Services District

(805) 963-9532

W.O. No.: 184032474

Date: 3/7/2025

Calc'd By: JTZ/CEP

Path Name: U:\184032474\engineering\cost\

File Name: 184032474_LOCSDtoSolvang_OPCC.xlsx

30% Design

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	Mobilization and Demobilization	LS	1	\$ 200,000	\$ 200,000
2	Traffic Control	LS	1	\$ 150,000	\$ 150,000
3	Proposed 4" DI Class 50 Pipe Bridge Crossing	LF	80	\$ 350	\$ 28,000
4	Proposed 4" PVC CL 165 Pipe	LF	450	\$ 230	\$ 103,500
5	Proposed 6" DI Class 50 Pipe Bridge Crossing	LF	205	\$ 375	\$ 76,875
6	Proposed 6" HDPE DR 21 Pipe	LF	17,690	\$ 300	\$ 5,307,000
7	Proposed Sewer Force Main Isolation Valves	EA	15	\$ 2,500	\$ 37,500
8	Proposed Wastewater Combination Air/Vacuum Valve	EA	5	\$ 7,000	\$ 35,000
9	Proposed Grand Lift Station	LS	1	\$ 506,550	\$ 506,550
	8-ft Diam Wet Well	EA	1	\$ 20,000	\$ 20,000
	Duplex Pumps, Piping, Instrumentation, and Controls	LS	1	\$ 150,000	\$ 150,000
	Automatic Transfer Switch	EA	1	\$ 25,000	\$ 25,000
	Valve Vault and Hatch	EA	1	\$ 10,000	\$ 10,000
	Wastewater Combo Air/Vac Valve	EA	2	\$ 5,000	\$ 10,000
	4-inch Valve (plug, check)	EA	4	\$ 2,500	\$ 10,000
	4-inch DI Piping, Buried	LF	25	\$ 300	\$ 7,500
	4-inch Fittings	EA	6	\$ 1,250	\$ 7,500
	4-inch Meter	EA	1	\$ 8,000	\$ 8,000
	Shoring, Grading, Excavation for Site	LS	1	\$ 30,000	\$ 30,000
	Site Electrical	LS	1	\$ 100,000	\$ 100,000
	New Electrical Service	LS	1	\$ 100,000	\$ 100,000
	Aggregate Paving	SF	1000	\$ 1	\$ 1,050
	Fencing and Gates	LS	1	\$ 20,000	\$ 20,000
	10-inch PVC SDR35 Gravity Sewer	LF	30	\$ 250	\$ 7,500
10	Proposed Santa Barbara Lift Station	LS	1	\$ 1,009,050	\$ 1,009,050
	12-ft Dia. Wet Well	EA	1	\$ 40,000	\$ 40,000
	Duplex Pumps, Piping, Instrumentation, and Controls	LS	1	\$ 200,000	\$ 200,000
	Variable Frequency Drive	EA	1	\$ 50,000	\$ 50,000
	Automatic Transfer Switch	EA	1	\$ 40,000	\$ 40,000
	Valve Vault and Hatch	EA	1	\$ 10,000	\$ 10,000
	Wastewater Combo Air/Vac Valve	EA	2	\$ 5,000	\$ 10,000
	4-inch Valve (plug, check)	EA	4	\$ 2,500	\$ 10,000
	4-inch DI piping, Buried	LF	15	\$ 300	\$ 4,500
	4-inch Fittings	EA	5	\$ 1,250	\$ 6,250
	6-inch DI piping	LF	5	\$ 350	\$ 1,750

	6-inch fittings	EA	2	\$ 1,500	\$ 3,000
	6-inch meter	EA	1	\$ 10,000	\$ 10,000
	Shoring, Grading, Excavation for Site	LS	1	\$ 75,000	\$ 75,000
	12-ft Dia. Addition Storage	EA	1	\$ 40,000	\$ 40,000
	Generator Building	EA	1	\$ 100,000	\$ 100,000
	Generator Set	EA	1	\$ 125,000	\$ 125,000
	Site Electrical	LS	1	\$ 100,000	\$ 100,000
	New Electrical Service	LS	1	\$ 100,000	\$ 100,000
	Aggregate Paving	SF	1000	\$ 1	\$ 1,050
	Concrete Paving	SF	1000	\$ 10	\$ 10,000
	Fencing and Gates	LS	1	\$ 30,000	\$ 30,000
	10-inch PVC SDR35 Gravity Sewer	LF	50	\$ 250	\$ 12,500
	Odor Control	EA	1	\$ 30,000	\$ 30,000
				Sub Total	\$ 7,453,475
				30% Contingency	\$ 2,236,043
				Total	\$ 9,689,518