Appendix J

Utility Capacity Studies, Dry Utility Due Diligence and Confidence Report, and Drainage Report

IMT RESIDENTIAL CAPITAL

"325 HAMPSHIRE"

THOUSAND OAKS | LOS ANGELES

Dry Utility Due Diligence and Conflict Report

Prepared By:

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Job No. 3421-2101U

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Vicinity Map

325 HAMPSHIRE RD., THOUSAND OAKS, CA

CROSS STREETS: HAMPSHIRE RD. AND FOOTHILL DR.

DRY UTILITY PROJECT SUMMARY

Site Summary

IMT Capital, LLC plans to develop a mixed-use community in the city of Thousand Oaks. The nearest cross streets are Hampshire Road and Foothill Drive. The project is comprised of two mixed-use buildings with commercial and residential spaces on the ground floor and thirteen townhome buildings ranging from five to six units each. The site is currently vacant with a KMART and neighboring restaurant that are no longer in business.

Murow Development Consultants (Murow|DC) has been contracted to provide a Dry Utility Feasibility and Conflict Report of the site to identify any possible dry utility conflicts and gauge the feasibility of the project. This report was created based on a field study and information received from the utility companies.

Site Conflicts

Based on a site investigation and information received, there are multiple pieces of utility equipment that were feeding the existing buildings to be demolished that will need to be removed beforehand. Southern California Edison (SCE) will need to remove at least (3) transformers and (1) vault and quitclaim the easements associated with each. There is also an existing vault (502492) off Hampshire Road that will conflict with a proposed driveway and will need to be relocated. Frontier has two existing underground services feeding both buildings that will need to be pulled back to the manhole located off Hampshire Road. Southern California Gas Company (SCG) has a two-inch service used to serve the KMART and half-inch service used to feeding the neighboring restaurant building “391 Hampshire Rd” and both will need to be cut back to the mainline in the street and meters removed.

Southern California Edison (Electric)

Southern California Edison (SCE) is the primary electric provider for this site. Murow|DC has identified an underground 16kV circuit that feeds the area and potential tie-in points to be confirmed once the project has been discussed further with the Edison Project Manager.

It is assumed that the vault (502492) located at the proposed driveway will be the proposed tie-in point. Currently, Murow|DC is unable to verify the vault’s capacity and whether it can be used to feed the project. An alternative tie-in would be the pole (1879272E) on Foothill Drive that is being used to feed the current site.

The project will be fed primary electric via the PME 6-10 structure, which will be a part of the new underground system. Due to the project consisting of multiple buildings, there will be separate points of service to feed each. Conservatively, it is assumed that two 8’x10’ slab boxes will be required for each mixed-use building and four 72”x94” transformer pads to feed the townhomes in groups of 3-4 buildings.

Frontier (Communications)

Frontier is the primary telephone provider for this site. Based on Murow|DC's site investigation, Frontier's map records, and discussions with Frontier, there is an existing vault located roughly 128' North of the intersection of Hampshire Road & Foothill Drive which has been confirmed as the nearest potential point of connection. Murow|DC conservatively assumes 1-4" conduits from the said vault to a new proposed pullbox on the north side of Hampshire Road which in turn will be the assumed source point to serve our project. Based on Murow|DC's findings, there do not appear to be any conflicts associated with any existing Frontier facilities and the proposed development once the services feeding the existing buildings have been removed.

Charter (Communications)

Charter is the primary Cable TV provider for this site. Based on Murow|DC's site investigation, Charter's map records, and discussions with Charter, there is an existing vault located roughly 20' north of the intersection of Hampshire Road & Foothill Drive which has been confirmed as the nearest potential point of connection. Murow|DC conservatively assumes the need to extend 1-3" conduits from said vault to a new proposed pullbox on the north side of Hampshire Road which in turn will be the assumed source point to serve our project. Based on Murow|DC's findings, there no conflicts associated with any existing Charter facilities and the proposed development.

Southern California Gas Company (Gas)

The Southern California Gas Company (SCG) is the primary gas provider for this project. SCG has a 6" gas mainline in Hampshire Road and 2" in Foothill Road. Murow|DC assumes that the gas main on Foothill Road could be used as the point of connection. The gas main would need to be extended offsite approximately 73' to be used to serve the site. An additional gas main would need to be installed through the site with services branching off to feed the mixed-use buildings. For the mixed-use buildings, each commercial tenant will require its own meter and the residential portion can either be master metered (dependent on appliances required) or individually metered. The location of these meters is dependent on the number of meters required and required clearances being met.

PHOTO LEGEND

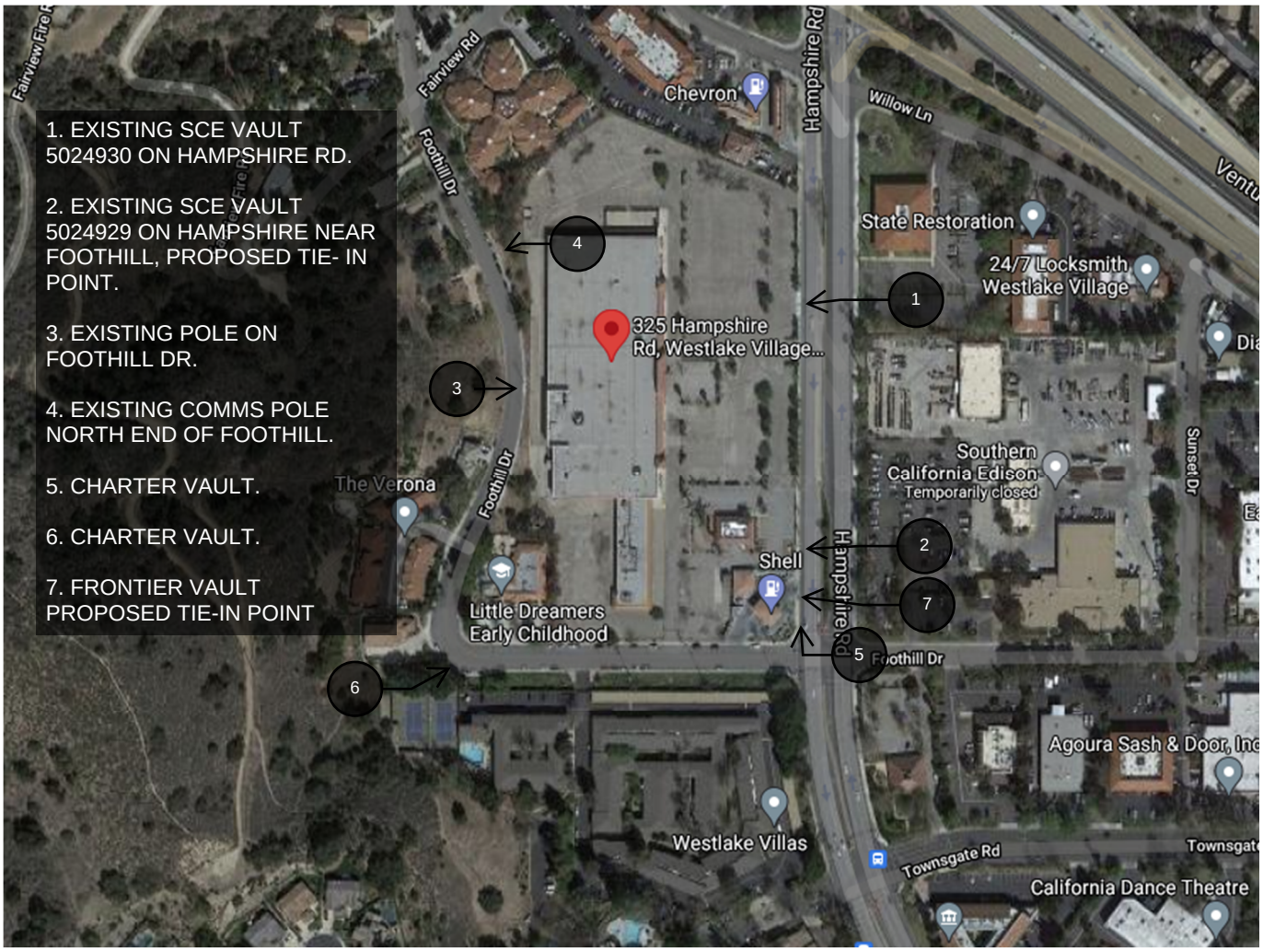

PHOTO EXHIBIT I

EXISTING SCE VAULT (5024939) ON HAMPSHIRE RD.

PHOTO EXHIBIT II

EXISTING SCE VAULT (5024929) ON HAMPSHIRE RD. NEAR CORNER OF FOOTHILL

PROPOSED TIE-IN POINT.

PHOTO EXHIBIT III

EXISTING POLE ON FOOTHILL DR.

PHOTO EXHIBIT IV

EXISTING COMMS POLE ON THE NORTH END OF FOOTHILL

PHOTO EXHIBIT V

EXISTING COMMS VAULT ON CORNER OF FOOTHILL AND HAMPSHIRE

PHOTO EXHIBIT VI

EXISTING CHARTER VAULT ON FOOTHILL

PHOTO EXHIBIT VII

EXISTING FRONTIER VAULT ON HAMPSHIRE PROPOSED TIE-IN POINT

DRY UTILITIES CONCEPTUAL EXHIBIT

Legend

- Edison Slab Box (8'x10')
- Edison Switch (5' x 10.5')
- Existing Edison Vault
- Edison Transformer Pad (72"x94")
- Edison Pull Box (3'x5')
- SoCalGas Meter(s)
- SoCalGas Main Line
- SoCalGas Service Line
- Frontier Conduit
- Frontier Pull Box (2'x3')
- Charter Conduit
- Charter Pull Box (2'x3')

(Legend Not to Scale)

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OPINION OF PROBABLE COSTS

The Opinion of Probable Costs contained within this document has been prepared by Murow|DC. The Opinion of Probable Costs contained herein represents a good-faith effort by Murow|DC and is supported by the most current information (as available on the most current date of this document) that has been provided to Murow|DC and listed above. The Opinion of Probable Costs is based on Murow|DC's extensive qualifications and experience in the industry. This Opinion of Probable Costs is limited only to the conditions and factors expressly enumerated herein. All other conditions and factors that have not been expressly enumerated herein are excluded from this Opinion of Probable Costs. All Opinions of Probable Costs are expressed in U.S dollars as of the date of this document and do not account for future inflation and/or cost escalations.

This Opinion of Probable Costs is recognized and acknowledged to be a non-binding document. Murow|DC offers no guarantee or warranty, expressed or implied, for the information contained herein. Any individual or entity using the Opinion of Probable Costs for any purpose agrees to save and hold harmless Murow|DC from all costs or damages that may arise subsequent from said use of this Opinion of Probable Costs.

This data, as provided by Murow|DC, may not be modified or amended without the expressed permission of Murow|DC. If approval by Murow|DC is not requested and modifications are made, Murow|DC may take legal action to collect any damages and associated costs caused in the potential harming of the reputation of Murow|DC.

	ONSITE	OFFSITE
	AMOUNT	AMOUNT
A. CHARGES: CONTRACTOR	286,166	73,601
B. STREET LIGHTS (SCE)	-	-
C. CHARGES: CONTRACTOR (TAX COMPONENT)	25,900	7,832
D. DEPOSITS: ELECTRIC (SCE)	300,130	-
E. CHARGES: ELECTRIC (SCE)	-	-
F. DEPOSITS: GAS	61,132	2,883
G. CHARGES: TELECO	-	-
H. CHARGES: CATV	-	-
REFUNDS: UTILITY (ESTIMATED)	(325,135)	-
Total: Utilities *(with Street Lights)*	348,192	84,316
Total: Utilities *(without Street Lights)*	348,192	84,316

ITEM NO.	DRY UTILITIES	U/M	PRICE	TOTAL QUANTITY	TOTAL COST	ONSITE QUANTITY	ONSITE COST	OFFSITE QUANTITY	OFFSITE COST
	A. CONTRACTOR CHARGES								
	Trench								
1.	Joint Trench (5-Party)	LF	12.00	-	-		-		-
2.	Joint Trench (4-Party)	LF	11.00	-	-		-		-
3.	Joint Trench (3-Party)	LF	10.00	1,607	16,070	1,607	16,070		-
4.	Joint Trench (2-Party)	LF	9.00	667	6,003	364	3,276	303	2,727
5.	Electric (only)	LF	7.50	1,286	9,645	1,203	9,023	83	623
6.	Comm(s) (only)	LF	7.50	737	5,528	490	3,675	247	1,853
7.	Gas (only)	LF	7.50	631	4,733	539	4,043	92	690
8.	Street Light (only)	LF	7.50	-	-		-		-
	Trench Sand, Bedding, Shade, and Backfill								
9.	Sand Bedding: 3"	LF	2.00	4,928	9,856	4,203	8,406	725	1,450
10.	Sand Shade: 12"	LF	3.00	3,881	11,643	3,578	10,734	303	909
11.	Sand Backfill: 12"	LF	3.00	4,928	14,784	4,203	12,609	725	2,175
	Trench (Shoring)								
12.	Shoring (5'-19' deep)	EA	19.00	-	-		-		-
13.	Shoring (20' deep +)	LF	57.00	-	-		-		-
	Trench (Other)								
14.	Saw Cut (Both Sides)	LF	2.75	761	2,093		-	761	2,093
15.	Remove and Replace: Asphalt (Base)	SF	16.00	1,072	17,152		-	1,072	17,152
16.	Remove and Replace: Concrete	SF	14.00	436	6,104		-	436	6,104
17.	Grind & Cap (per City Standard)	SF	11.00	-	-		-		-
18.	Trench: Spoils	EA	250.00	-	-		-		-
19.	Traffic Plates	EA	5.00	-	-		-		-
20.	Other - Striping	LS	1,400.00	-	-		-		-
21.	Other - Traffic Loop (Up to 3)	LS	1,700.00	-	-		-		-
22.	Other - Tunneling (Under Shallow Obstacle)	LF	200.00	-	-		-		-
23.	Services (Dwelling Units SFDU or MDU)	EA	900.00	-	-		-		-
	Conduit								
24.	Electrical: 1 - 1-1/2"	LF	4.50	-	-		-		-
25.	Electrical: 1 - 2"	LF	5.00	-	-		-		-
26.	Electrical: 1 - 3"	LF	6.00	-	-		-		-
27.	Electrical: 1 - 4"	LF	7.00	3,888	27,216	3,888	27,216		-
28.	Electrical: 1 - 5"	LF	12.00	3,133	37,596	2,817	33,804	316	3,792
29.	Electrical: 1 - 6"	LF	13.00	-	-		-		-
30.	Telco: 1-2"	LF	5.00	1,028	5,140	1,028	5,140		-
31.	Telco: 1-3"	LF	6.00	-	-		-		-
32.	Telco: 1-4"	LF	7.00	2,463	17,241	2,045	14,315	418	2,926
33.	Telco: 1-5"	LF	12.00	-	-		-		-
34.	CATV: 1-2"	LF	5.00	1,040	5,200	1,040	5,200		-
35.	CATV: 1-3"	LF	6.00	2,569	15,414	1,856	11,136	713	4,278
36.	CATV: 1-4"	LF	7.00	-	-		-		-
37.	CATV: 1-5"	LF	12.00	-	-		-		-
38.	Gas: 1-4" (Street Crossing)	LF	10.00	266	2,660	173	1,730	93	930
39.	Gas: 1-2" (Street Crossing)	LF	7.00	100	700	100	700		-
	Electric Structures								
40.	Electric: Vault (7' x 24' x 8')		48,000.00	-	-		-		-
41.	Electric: Vault (7' x 20' x 8')	EA	44,000.00	-	-		-		-
42.	Electric: Vault (7' x 18' x 8')	EA	40,000.00	-	-		-		-
43.	Electric: Vault (7' x 14' x 8')	EA	30,000.00	-	-		-		-

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44.	Electric: Vault (6' x 12' x 7')	EA	20,000.00	-	-		-		-
45.	Electric: Vault (5' x 10.6' x 7')	EA	13,500.00	-	-		-		-
46.	Electric: Manhole (6' x 12' x 7')	EA	13,000.00	-	-		-		-
47.	Electric: Manhole (5' x 10'-6" x 7')	EA	12,500.00	-	-		-		-
48.	Electric: Manhole (4' x 6'-6" x 7')	EA	12,000.00	-	-		-		-
49.	Electric: Manhole (4' x 6'-6" x 5'-6"')	EA	11,500.00	-	-		-		-
50.	Electric: PME 6 through 12 (5'x 10'-6" x 7')	EA	13,500.00	1	13,500		-	1	13,500
51.	Electric: PME 4 (4' x 6') w/ Pull Box (2'-6" x 4')	EA	3,000.00	-	-		-		-
52.	Electric: PMH 4 (4' x 4'-6") w/ Pull Box (2' x 3')	EA	9,000.00	-	-		-		-
53.	Electric: LBFC (4' x 4'-6")	EA	6,000.00	-	-		-		-
54.	Electric: Capacitor Pad (94" x 72")	EA	4,000.00	-	-		-		-
55.	Electric: Transformer Pad (72" x 94")	EA	3,500.00	4	14,000	4	14,000		-
56.	Electric: Transformer Pad (7'-8" x 8'-2")	EA	5,000.00	-	-		-		-
57.	Electric: Transformer Pad (6'-3" x 6'-6")	EA	6,000.00	-	-		-		-
58.	Electric: Transformer Pad (4'-11" x 6')	EA	7,000.00	-	-		-		-
59.	Electric: Transformer Pad (9' x 12') - LADWP	EA	7,500.00	-	-		-		-
60.	Electric: Switch Pad (7' x 11') - LADWP	EA	15,000.00	-	-		-		-
61.	Electric: Slab Box (6' x 8'-6")	EA	10,000.00	-	-		-		-
62.	Electric: Slab Box (8' x 10')	EA	12,000.00	4	48,000	4	48,000		-
63.	Electric: Slab Box (10' x 12')	EA	13,000.00	-	-		-		-
64.	Electric: Handhole (13" x 24") - Concrete	EA	600.00	-	-		-		-
65.	Electric: Handhole (17" x 30") - Concrete	EA	800.00	-	-		-		-
66.	Electric: Pullbox (2' x 3' x 3') - Parkway	EA	3,500.00	-	-		-		-
67.	Electric: Pullbox (2' x 3' x 3'-6") - Parkway	EA	4,000.00	-	-		-		-
68.	Electric: Pullbox (2'-6" x 4' x 3'-6") - Parkway	EA	4,500.00	-	-		-		-
69.	Electric: Pullbox (3' x 5' x 4') - Parkway	EA	4,500.00	-	-		-		-
70.	Electric: Pullbox (2' x 3' x 3') - Traffic Rated	EA	4,000.00	-	-		-		-
71.	Electric: Pullbox (2' x 3' x 3'-6") - Traffic Rated	EA	4,500.00	-	-		-		-
72.	Electric: Pullbox (2'-6" x 4' x 3'-6") - Traffic Rated	EA	5,000.00	-	-		-		-
73.	Electric: Pullbox (3' x 5' x 4') - Traffic Rated	EA	6,000.00	-	-		-		-
74.	Electric: SOE (5' x 8'-6")	EA	4,500.00	-	-		-		-
75.	Electric: Meter Pedestal (Single Meter)	EA	6,500.00	-	-		-		-
76.	Electric: Meter Pedestal (Dual Meter)	EA	8,500.00	-	-		-		-
77.	Electric: Notch for Street Light	EA	500.00	-	-		-		-
78.	Electric: Pullbox (2.5'x3.5x4')	EA	4,500.00	-	-		-		-
79.	Electric: Pullbox (3' x 5' x 4')	EA	4,500.00	2	9,000	2	9,000		-
	Telco Structures								
80.	Telco: Man Hole (8.6' x 4.6' x 6.6')	EA	8,000.00	-	-		-		-
81.	Telco: Pullbox (2' x 3' x 3')	EA	1,000.00	9	9,000	9	9,000		-
82.	Telco: Pullbox (3' x 5' x 4')	EA	3,000.00	1	3,000		-	1	3,000
83.	Telco: Notch for Utility Box - Flush Mt. (Below Grade)	EA	500.00	-	-		-		-
84.	Telco: Notch for Utility Box - Pedestal (Grade Level)	EA	500.00	-	-		-		-
85.	Telco: Pullbox - Excavation	EA	800.00	10	8,000	9	7,200	1	800
	CATV Structures								
86.	CATV: Man Hole (8.6' x 4.6' x 6.6')	EA	8,000.00	-	-		-		-
87.	CATV: Pullbox (2' x 3' x 3")	EA	1,000.00	11	11,000	9	9,000	2	2,000
88.	CATV: Pullbox - Excavation	EA	800.00	11	8,800	9	7,200	2	1,600
89.	CATV: Vault (18' x 36" x 23")	EA	1,000.00	-	-		-		-
90.	CATV: Vault (14" x 32" x 15.5")	EA	750.00	-	-		-		-
91.	CATV: Vault (13" x 24" x 24")	EA	400.00	-	-		-		-
92.	CATV: Notch for Utility Box - Pedestal (Grade Level)	EA	1,250.00	-	-		-		-
93.	Notch: Telco Utility Box - Flush Mt. (undergrnd)	EA	500.00	-	-		-		-
94.	Notch: Telco Utility Box - Pedestal - (abovegrnd)	EA	500.00	-	-		-		-
95.	Notch: Pedestals (CATV)	EA	500.00	-	-		-		-
96.	Notch: Street Lights	EA	500.00	-	-		-		-
97.	Pedestal: Street Lights	EA	4,000.00	-	-		-		-
	Electric Encasements								
98.	Full Encasement (Concrete)	LF	30.00	23	690	23	690		-
99.	Semi Encasement (Concrete)	LF	25.00	500	12,500	500	12,500		-
	Other								
100.	Other: Slurry 36"	YD	95.00	-	-		-		-
101.	Other: Spoils	EA	10.00	-	-		-		-
102.	Other: Traffic Control (Above Watch Manual)	LS	2,500.00	1	2,500		-	1	2,500
103.	Other: Bollards (Permanent)	EA	1,100.00	-	-		-		-
104.	Other: Mobilization	LS	2,500.00	2	5,000	1	2,500	1	2,500
	Sub-Total Charges: Contractor				359,767		286,166		73,601

Notes:

(1) This is taking a tax on the material pricing only (labor and equipment are not included)

B. STREET LIGHTS (SCE)

	Onsite								
1.	Street Light	EA	5,000.00	-	-		-		-
2.	Cabling Charge	EA	10.00	-	-		-		-
3.	Advanced Energy Fee (24 Mo. @ $16.60 per)	EA	398.40	-	-		-	-	-
4.	ITCC TAX Component [(2)]	%	24%	-	-	-	-	-	-
	Sub-Total: Street Lights (by SCE)				-		-		-

Notes:

(2) The ITCC (Income Tax Component of Contribution) is subject to change (each January)

C. CONTRACTOR CHARGES TAX COMPONENT

1.	Contractor Charges Tax Component	%	24%	140,549	33,732	107,915	25,900	32,634	7,832
	Sub-Total Charges: Contractor (Tax Component)				33,732		25,900		7,832

D. ELECTRIC DEPOSITS

	Onsite								
1.	Electric Distribution Trench Footage	LF	40.00	2,201	88,040	2,201	88,040		-
2.	Transformer (Three Phase)	EA	18,000.00	8	144,000	8	144,000		-
3.	Transformer (Single Phase)	EA	2,500.00	-	-		-		-
4.	Switches: 2 or 3 way	EA	7,500.00	-	-		-		-
5.	Switches: 4 Way	EA	10,000.00	1	10,000	1	10,000		-

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6.	Switches: 5 Way	EA	20,000.00	-	-		-		-
7.	Meter	EA	200.00	-	-		-		-
8.	ITCC TAX Component	%	24%	242,040	58,090	242,040	58,090	-	-
	Sub-Total Deposits: Electric (SCE)				300,130		300,130		-
	E. ELECTRIC CHARGES								
1.	Underground: 12 / 16 KV	LF	200.00	-	-		-		-
2.	Meter Pedestal Relocation	LS	5,000.00	-	-		-		-
3.	Underground: SCE Comm	LF	75.00	-	-		-		-
4.	Relocate: 33 KV	LF	225.00	-	-		-		-
5.	Relocate: Wood Transmission Pole	LS	70,000.00	-	-		-		-
6.	Capacitor Bank	EA	25,000.00	-	-		-		-
7.	Tubular Steel Pole (TSP)	EA	150,000.00	-	-		-		-
8.	New: Eng. SP	EA	250,000.00	-	-		-		-
9.	New: Riser	EA	8,000.00	-	-		-		-
10.	New: Down Guy and Anchor	EA	21.00	-	-		-		-
11.	ITCC TAX Component	%	24%	-	-	-	-	-	-
	Sub-Total Charges: Electric (SCE)				-		-		-
	F. SOUTHERN CALIFORNIA GAS | GAS DEPOSITS								
1.	Gas Distribution (4")	LF	50.00	-	-		-		-
2.	Gas Distribution (2")	LF	25.00	2,065	51,625	1,972	49,300	93	2,325
3.	Gas Meter: SFD [3]	EA	50.00	-	-		-		-
4.	10" Steel Relocation (Including Fittings)	LF	80.00	-	-		-		-
5.	30" Steel Relocation (Including Fittings)	LF	90.00	-	-		-		-
6.	ITCC TAX Component	%	24%	51,625	12,390	49,300	11,832	2,325	558
	Sub-Total Deposits: Gas (SoCal Gas)				64,015		61,132		2,883

Notes:

(3) This line items is going to be an "either / or" cost item. If SFD Gas Meter, then delete "Gas Meter (Stacked) and vice versa.

	G. TELCO CHARGES								
1.	Underground Telco	LF	75.00	-	-		-		-
2.	Telco Cabinet Relocation	EA	7,500.00	-	-		-		-
3.	New: Riser	EA	7,500.00	-	-		-		-
4.	New: Down Guy and Anchor	EA	7,500.00	-	-		-		-
5.	Transfers	LS	10,000.00	-	-		-		-
6.	ITCC TAX Component	%	24%	-	-	-	-	-	-
	Sub-Total: TELCO CHARGES				-		-		-
	H. CATV CHARGES								
1.	Underground CATV	LF	75.00	-	-		-		-
2.	New: Pole (Wood)	EA	15,000.00	-	-		-		-
3.	New: Riser	EA	7,500.00	-	-		-		-
4.	New: Down Guy and Anchor	EA	7,500.00	-	-		-		-
5.	Transfers	LS	10,000.00	-	-		-		-
6.	ITCC TAX Component	%	24%	-	-	-	-	-	-
	Sub-Total: CATV CHARGES				-		-		-
	Total (Items A - H):				757,643		673,327		84,316

Item No.	ESTIMATED UTILITY REFUNDS	U/M	PRICE	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST
1.	Refund: Electric (SCE)	%	90%	300,130	(270,117)	300,130	(270,117)		-
1.	Refund: Electric (SCE)	%	50%	-	-		-		-
2.	Refund: Gas (SoCal)	%	90%	61,132	(55,019)	61,132	(55,019)		-
2.	Refund: Gas (SoCal)	%	50%	-	-		-		-
	Sub-Total: Utility Refunds [4]				(325,135)		(325,135)		-

Notes:

(4) Estimated utility refunds. For "Reference" purposes only

UTILITY WILL SERVE LETTERS AND RECORDS

- Southern California Edison
- Frontier
- Charter
- Southern California Gas Company

SOUTHERN CALIFORNIA EDISON
An *EDISON INTERNATIONAL* Company

DATE: 08/18/2021

COMPANY: IMT Capital - RE: 325 Hampshire

SUBJECT: 339 Hampshire Rd, Thousand Oaks, CA

Your project is located in Southern California Edison (SCE) service territory. SCE will serve the above subject project's electrical requirements per the California Public Utilities Commission and Federal Energy Regulatory Commission tariffs.

SCE may need to conduct utility studies, where applicable, to assess whether additions or modifications to the existing electric infrastructure are required to serve this project as indicated in Appendix (B) attached hereto. This Will-Serve letter does not imply that either: (i) these studies have been completed, or (ii) that any required California Environmental Quality Act (CEQA) analysis of project-related electric utility impacts has been conducted.

I am the SCE Representative currently assigned to this project. SCE or Applicant will design and construct all required electrical infrastructure to serve this project provided you enter into the applicable contractual agreements with SCE identify scope of electrical utility work required, and supply the following information:

- Site plans as required
- Required contracts and agreements (fully executed)
- Applicable fees
- Local permits
- Required easement documents

Your project will be scheduled for construction once SCE has all the necessary information for your project and you have submitted or agreed to the applicable requirements as stated above, and paid any necessary fees.

If your project will not require SCE services, please notify us so that we can update our records.

SCE appreciates your business. If you have any questions, please feel free to call me at (805) 477-9579

Sincerely,

Paul D Reyes

SCE Design Service Representative

Enclosure: Appendix B

Upper Left: 118°50'40"W 34°9'55"N

Page to the North: LT-3082-G

Upper Right: 118°50'20"W 34°9'55"N

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Page to the East: LT-3081-B

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Fairview Rd

Fairview Rd

Fairview Rd

Hill Dr

Foothill Dr

1730527E

1730526E

1730525E

1730524E

4537332E

4297469E

3 inches

1585420E

4295473E

1585422E

1 1/2 inches

4 inches

5458710

1905428E

1585421E

1879275E

1905427E

1879272E

1905426E

5638303

5025482

1879271E

5399049

1905425E

5025551

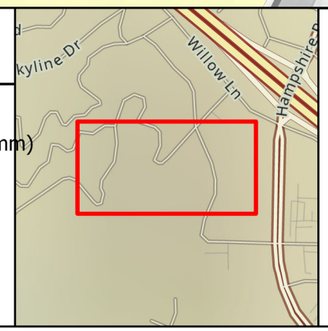
4 inches

Facility Map

UNDERGROUND SERVICE ALERT DIAL 811
CALL USA FOR UNDERGROUND LOCATING

Grid Name: LT-3081-A (US National Grid)

- SUBSTATION_BOUNDARY
- DIST HANDHOLE
- DIST PAD
- DIST POLE
- DIST SPLICEBOX
- DIST STREET LIGHTS
- TRNS POLE
- OH Conductor 0 - 750 volts
- OH Conductor 750 - 22,500 volts
- OH Conductor 22.5 - 300 kV
- OH Conductor 66 - 300 kV
- OH Conductor 300 - 500 kV (mm)
- UG Conductor 0-750 volts
- UG Conductor 750-22,500 volts
- UG Conductor 22.5 - 300 kV
- UG Conductor 66 - 300 kV
- UG Conductor 300 - 500 kV (mm)
- DUCT DIA in inches
- Parcels



Date: 10/6/2021

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0 35 70 140 Feet

1 inch equals 107 feet

SOUTHERN CALIFORNIA EDISON

An EDISON INTERNATIONAL Company

Page to the South: LT-3081-C

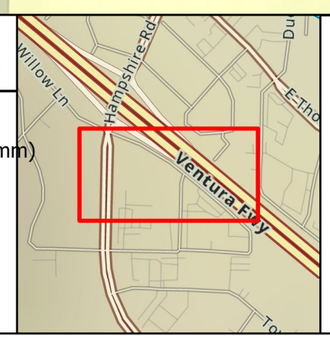
5314308
Hampsh
Willow Ln
5 inches
5574028
5023846
UG-5024931
4 inches
UG-5167935
1905415E
Hampshire Rd
2082117E
5026542
4 inches
3004839E
1 1/2 inches
5313891
3005352E
Willow Ln
Ventura Fwy
41
2 inches
UG-5028711
UG-5028712
1905416E
UG-5024930
5 inches
4378432E
5314249
1905417E
2279788E
1905418E
NO #
Hollygrove St
5437624
4 inches
5437623
4197934E
UG-5189960
1879487E
1879488E
5437622
5 inches
5190323
5190324
1879489E
3005355E
1 1/2 inches
UG-5314300
UG-5314299
Willow Ln
3005353E
5 inches
Ventura Fwy
Ventura Fwy
UG-5314298
UG-5314297
UG-5314296
4 inches
4 inches
3005354E
Sunset Dr
3005464E
UG-5314295
5336386

Facility Map

UNDERGROUND SERVICE ALERT DIAL 811
CALL USA FOR UNDERGROUND LOCATING

Grid Name: LT-3081-B (US National Grid)

- SUBSTATION_BOUNDARY
- DIST BURD
- DIST HANDHOLE
- DIST PAD
- DIST PEDESTAL
- DIST PULLBOX
- DIST SPLICEBOX
- DIST STREET LIGHTS
- DIST SUB SURFACE
- DIST VAULT
- OH Conductor 0 - 750 volts
- OH Conductor 750 - 22,500 volts
- OH Conductor 22.5 - 300 kV
- OH Conductor 66 - 300 kV
- OH Conductor 300 - 500 kV (mm)
- UG Conductor 0-750 volts
- UG Conductor 750-22,500 volts
- UG Conductor 22.5 - 300 kV
- UG Conductor 66 - 300 kV
- UG Conductor 300 - 500 kV (mm)
- DUCT DIA in inches
- Parcels



Date: 10/6/2021
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0 35 70 140 Feet
1 inch equals 107 feet

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Upper Left: 118°50'40"W 34°9'47"N

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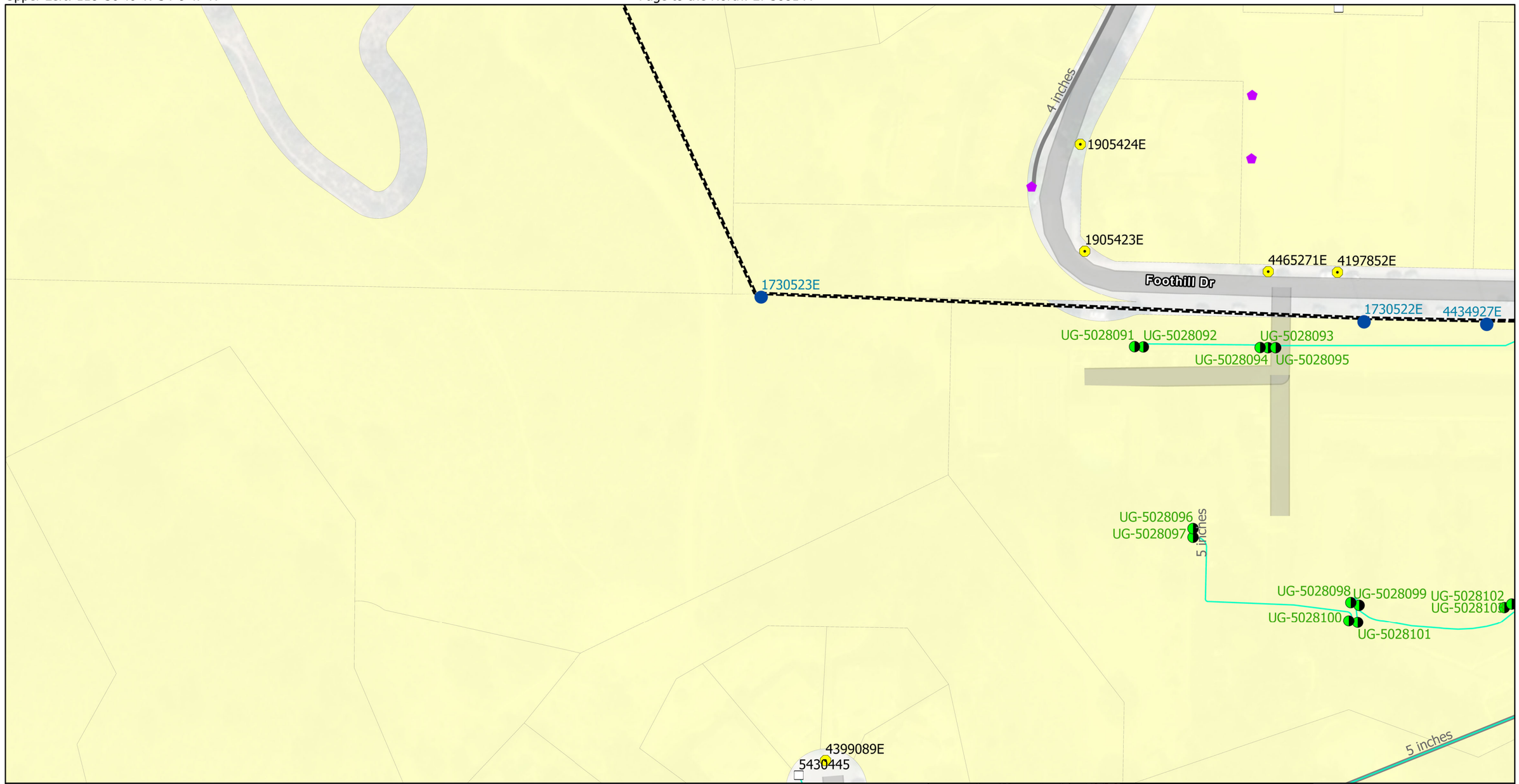
Page to the East: LT-3081-D

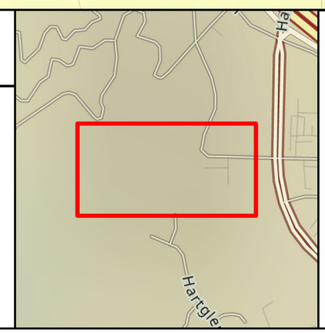


Facility Map

UNDERGROUND SERVICE ALERT DIAL 811
CALL USA FOR UNDERGROUND LOCATING

Grid Name: LT-3081-C (US National Grid)

- SUBSTATION_BOUNDARY
- DIST BURD
- DIST HANDHOLE
- DIST PAD
- DIST STREET LIGHTS
- TRNS POLE
- OH Conductor 0 - 750 volts
- OH Conductor 750 - 22,500 volts
- OH Conductor 22.5 - 300 kV
- OH Conductor 66 - 300 kV
- OH Conductor 300 - 500 kV (mm)
- UG Conductor 0-750 volts
- UG Conductor 750-22,500 volts
- UG Conductor 22.5 - 300 kV
- UG Conductor 66 - 300 kV
- UG Conductor 300 - 500 kV (mm)
- DUCT DIA in inches
- Parcels



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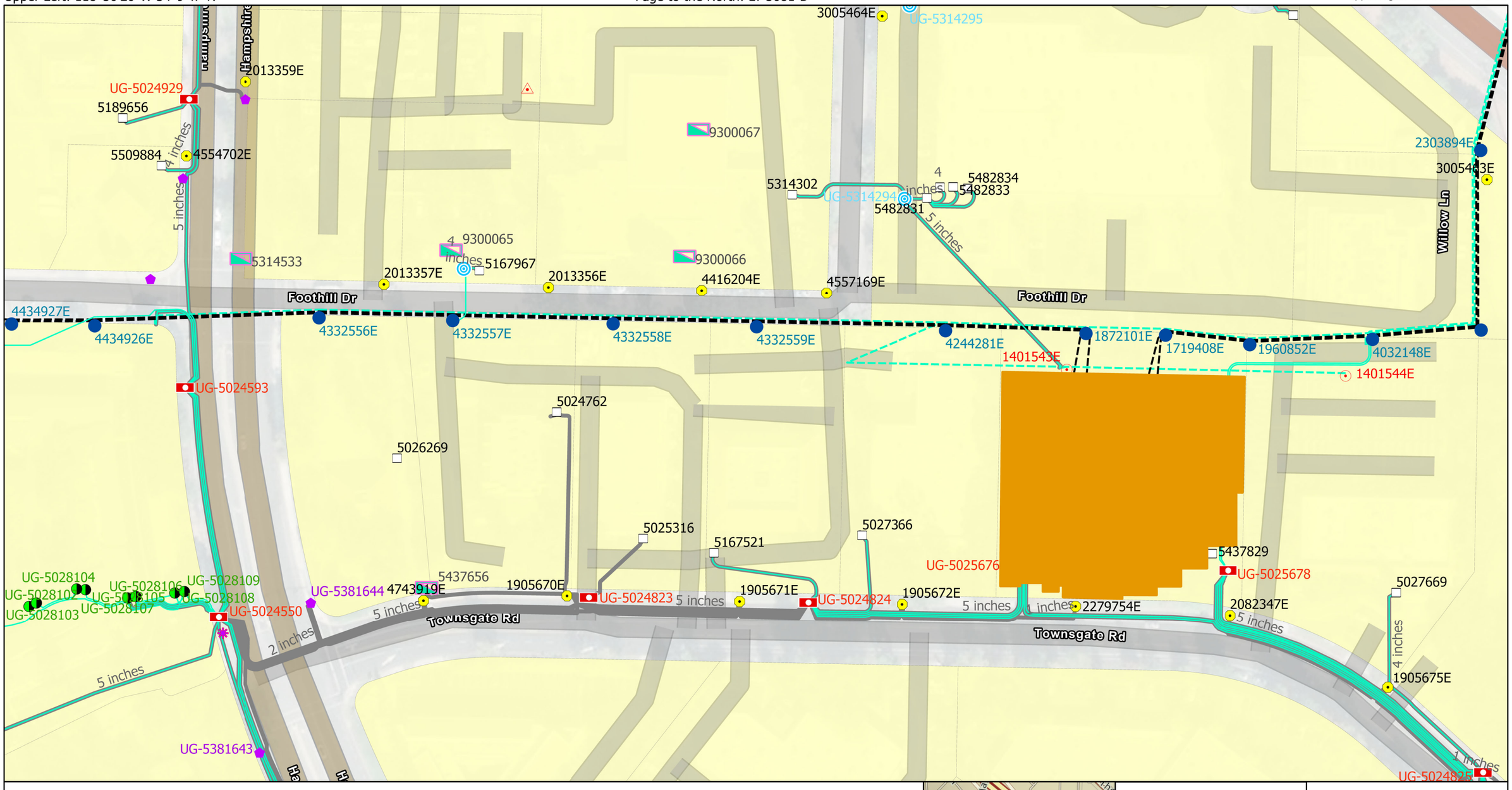

Facility Map

UNDERGROUND SERVICE ALERT DIAL 811
CALL USA FOR UNDERGROUND LOCATING

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- DIST HANDHOLE
- DIST MANHOLE
- DIST PAD
- DIST PEDESTAL
- DIST POLE
- DIST PULLBOX
- DIST STREET LIGHTS
- DIST SUB SURFACE
- DIST VAULT
- TRNS POLE
- OH Conductor 0 - 750 volts
- OH Conductor 750 - 22,500 volts
- OH Conductor 22.5 - 300 kV
- OH Conductor 66 - 300 kV
- OH Conductor 300 - 500 kV (mm)
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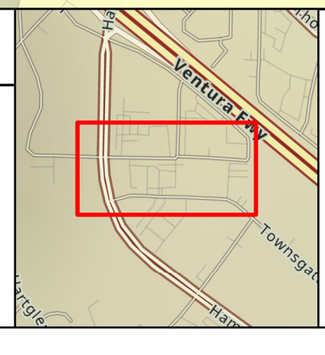
- UG Conductor 750-22,500 volts
- UG Conductor 22.5 - 300 kV
- UG Conductor 66 - 300 kV
- UG Conductor 300 - 500 kV (mm)
- DUCT DIA in inches
- Parcels



Date: 10/6/2021
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0 35 70 140 Feet

1 inch equals 107 feet

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

201 FLYNN RD
CAMARILLO, CA
93012

8/16/2021

T.O. Ranch – 325 Hampshire Rd, Thousand Oaks CA
Nick Kadletz
949.336.4732 / 562.936.8563
nkadletz@murowdc.com

Dear Nick,

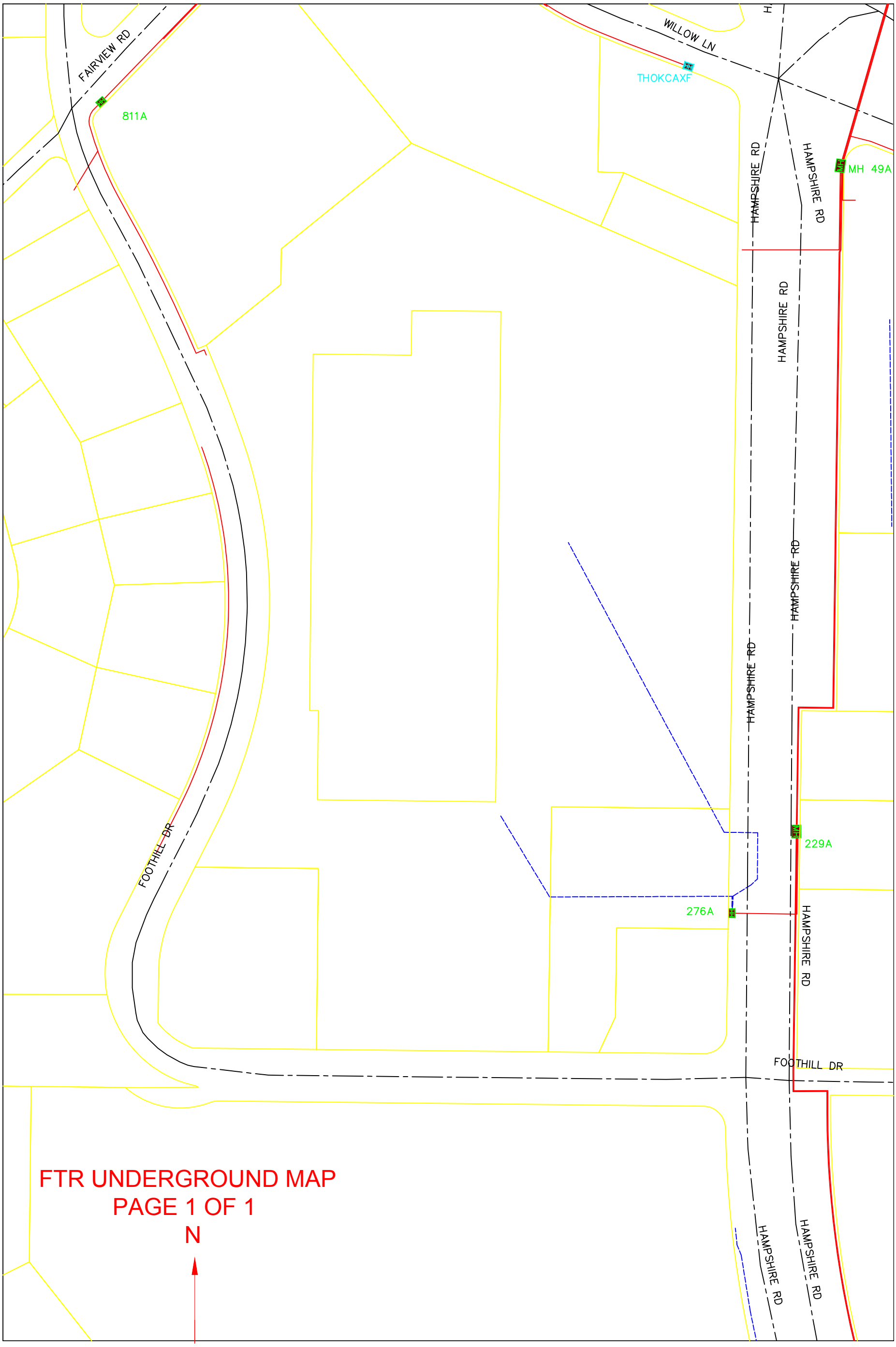
The land for the above referenced development/address is within the Frontier CA Inc. serving area. It is Frontier's responsibility to make available service to those requesting end user basic telephone service in accordance with our tariff. As a developer, Frontier can provide to you, upon your request, your cost in accordance with Rule Number 28, on file with the State of California Public Utilities Commission.

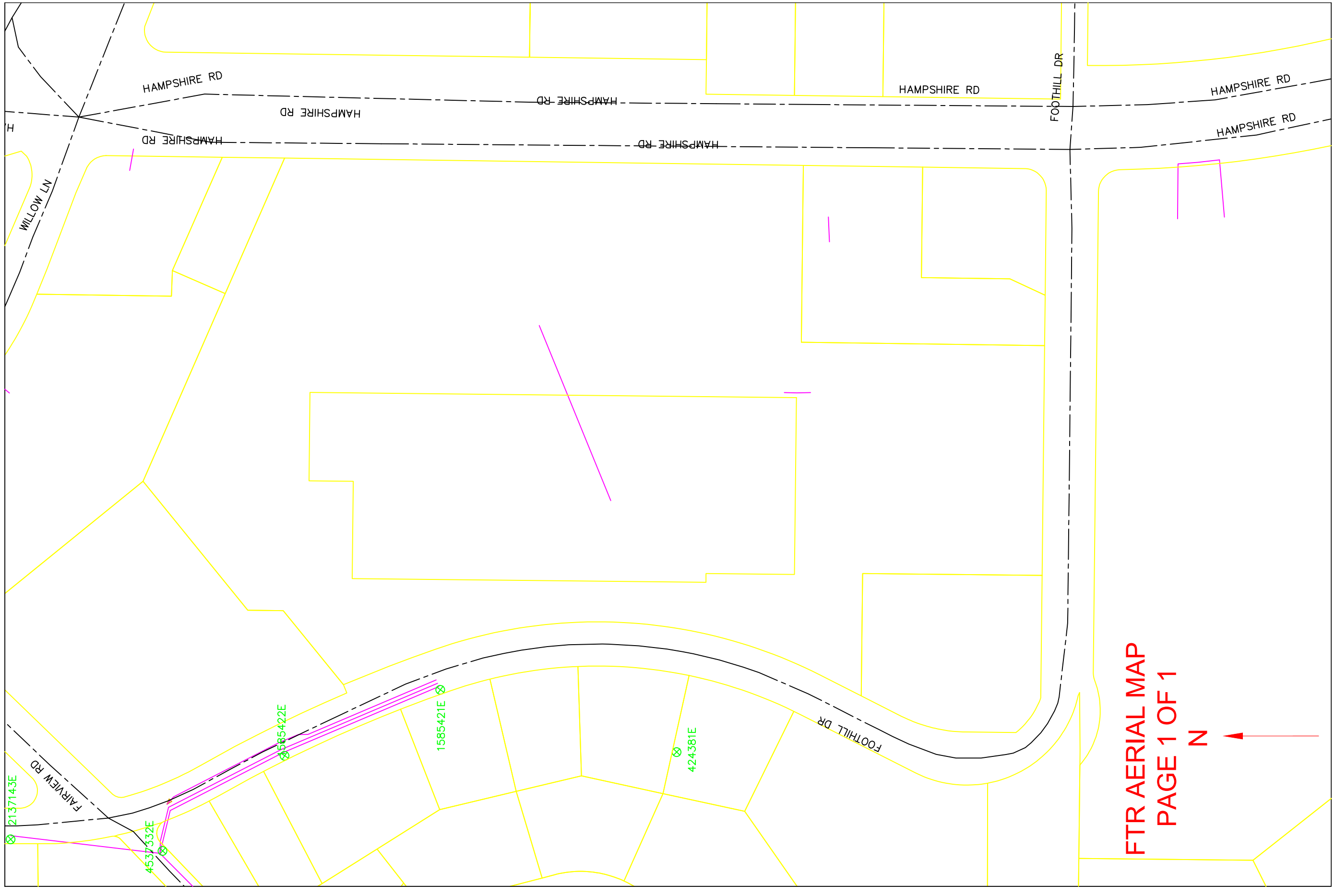
Please accept this letter as "Frontier's Intention to Serve" your project.

If you have any questions or if I may assist you in any manner, please do not hesitate to contact me.

Thank you,

Jason Eisel
Senior Network Engineer
201 Flynn Rd
Camarillo, CA 93012
jason.a.eisel@ftr.com
C: 805.233.1472
O: 805.445.7088


FAIRVIEW RD
811A
WILLOW LN
THOKCAXF
HAMPSHIRE RD
HAMPSHIRE RD
MH 49A
HAMPSHIRE RD
HAMPSHIRE RD
229A
276A
HAMPSHIRE RD
FOOTHILL DR
FOOTHILL DR
HAMPSHIRE RD
HAMPSHIRE RD
FTR UNDERGROUND MAP
PAGE 1 OF 1
N


HAMPSHIRE RD
HAMPSHIRE RD
HAMPSHIRE RD
HAMPSHIRE RD
HAMPSHIRE RD
HAMPSHIRE RD
HAMPSHIRE RD
FOOTHILL DR
WILLOW LN
FOOTHILL DR
FAIRVIEW RD
2137143E
4537332E
1585422E
1585421E
4243811E
FTR AERIAL MAP
PAGE 1 OF 1
N

8/16/2021

Noah Hernandez
Dry Utilities
1151 Duryea Avenue
Irvine, CA 92614

Requester Project:	Map Request
Project Name	325 Hampshire Road
DOCK/PRISM Project Name:	Hampshire Road
Conflict:	YES

Thank you for your recent Utility Request to Charter Communications for: 325 Hampshire Road

Please review the attached maps for any possible conflicts with Charter facilities.
There ***ARE*** existing Charter aerial/or underground facilities within the project limits.

We have provided maps showing where our services are located but cannot make any comment on how to deal with possible conflicts during construction. This type of information should come from the Construction Manager, Supervisor or Construction Coordinator for the area in question.

If you should require any field meet or any further coordination of the project with Charter please contact the Construction Manager listed below.

Construction Manager Contact:
Riggs, Shawn
Construction Manager - Zones 2 and 3
2525 Knoll Drive
Ventura, CA 93003
805-626-3225
shawn.riggs@charter.com

If you have any questions about the maps provided, please contact DL-socal-charter-engineering@charter.com. This communication is for a project being handled by Charter Communications or Spectrum, a Charter Communications brand name, or Legacy Time Warner Cable.

Sincerely,

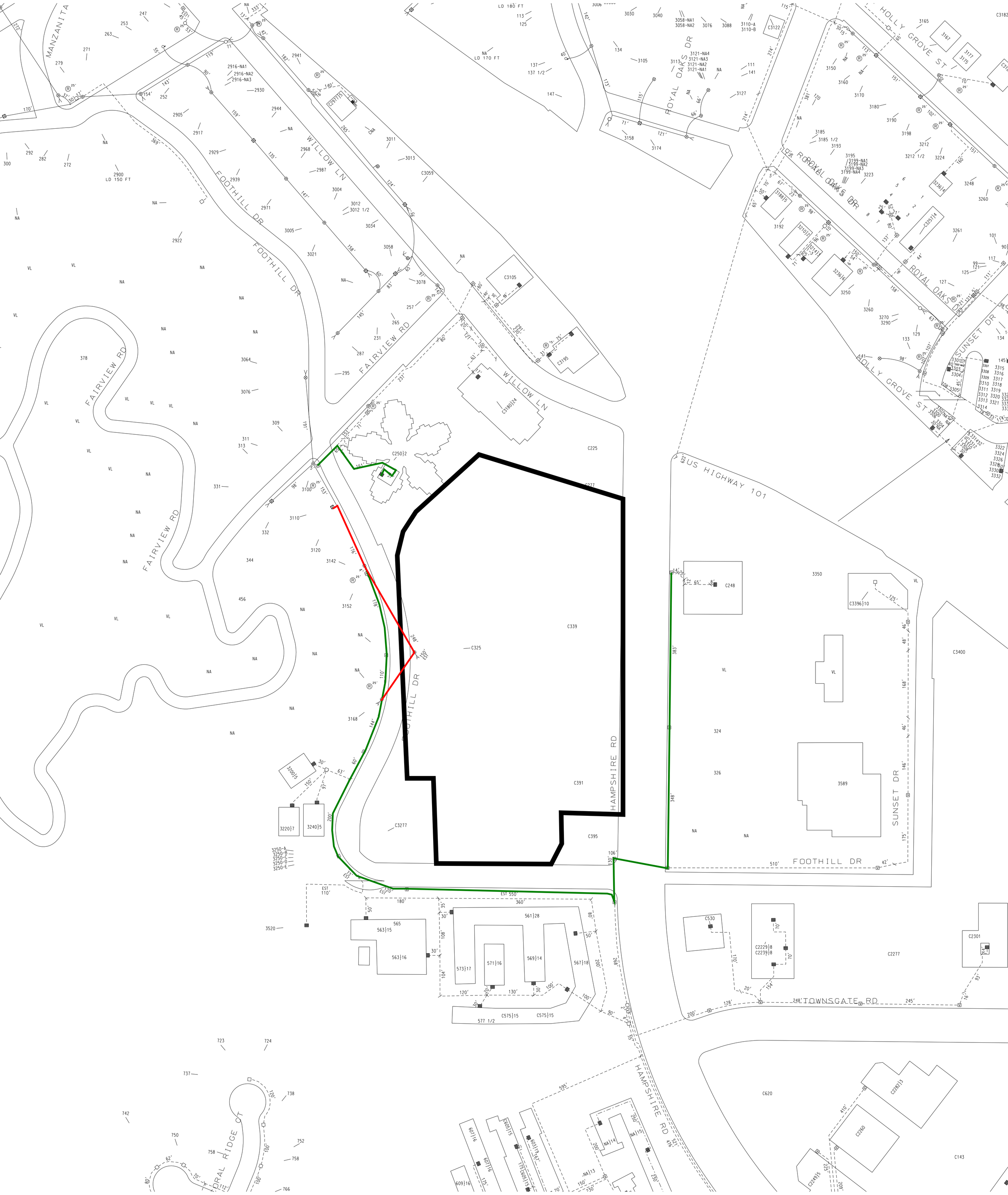
Dave Dolney

Dave Dolney
Sr. Manager, PACWEST Construction
Charter Communications
12051 Industry Street
Garden Grove, CA 92841

Hampshire Road
Map
Thousand Oaks, CA 91361

Red-existing Charter aerial facilities within project limits.

Green-existing Charter underground facilities within project limits.



701 N. Bullis Rd.
Compton, CA 90224-9099

August 25, 2021

Murow Development Consultants
1151 Duryea Ave
Irvine, CA 92614
Attn: Nick Kadletz

Subject: Maps & Will Serve - 339 Hampshire Road Thousand Oaks, CA

`

Thank you for inquiring about the availability of natural gas service for your project. We are pleased to inform you that Southern California Gas Company (SoCalGas) has facilities in the area where the above named project is being proposed. The service would be in accordance with SoCalGas' policies and extension rules on file with the California Public Utilities Commission (CPUC) at the time contractual arrangements are made.

This letter should not be considered a contractual commitment to serve the proposed project, and is only provided for informational purposes only. The availability of natural gas service is based upon natural gas supply conditions and is subject to changes in law or regulation. As a public utility, SoCalGas is under the jurisdiction of the Commission and certain federal regulatory agencies, and gas service will be provided in accordance with the rules and regulations in effect at the time service is provided. Natural gas service is also subject to environmental regulations, which could affect the construction of a main or service line extension (for example, if hazardous wastes were encountered in the process of installing the line). Applicable regulations will be determined once a contract with SoCalGas is executed.

If you need assistance choosing the appropriate gas equipment for your project, or would like to discuss the most effective applications of energy efficiency techniques, please contact our area Service Center at 800-427-2200.

Thank you again for choosing clean, reliable, and safe natural gas, your best energy value.

Sincerely,

Jason Sum

Jason Sum
Pipeline Planning Assistant
SoCalGas-Compton HQ

100
Feet

10830-124060

Map Number:
Gas Asset Map
Map Type:
Sum, Jason
Printed By:
8/25/2021
Printed Date:

LIABILITY STATEMENT
The facilities and their depiction on these maps are believed to be reasonably accurate, but the maps are not to be used in lieu of field verification or calling USA at 800-422-4133. NO WARRANTY expressed or implied (including of merchantability or of fitness for particular purpose) is made as to any matter, including but not imited to, the design, size, type or location of the facilities, their presence of absence, the accuracy of the maps, the means used to transmit the data, absence of viruses (if transmitted electronically, by disk or diskette), data translation or transmission errors or omissions, compatibility with the user's system or its ability to interpret the data correctly or at all, or any other matter. The Gas Company has no liability for damages (direct, indirect, consequential, incidental or punitive) arising from the transmission, receipt or use by others of the maps or information contained in the maps.

SoCalGas
A Sempra Energy utility

Stantec

325 HAMPSHIRE RD.
CITY OF THOUSAND OAKS,
COUNTY OF VENTURA, CA

PRELIMINARY DRAINAGE REPORT AND STORMWATER QUALITY ANALYSIS

Prepared For:
IMT Capital, LLC
15303 Ventura Blvd, Suite 200
Sherman Oaks
California, USA 91403

Prepared By:
Pierre Augustin, EIT
Reviewed By:
Kevin Donlon, PE

Stantec Consulting Services, Inc.
300 North Lake Avenue, Suite 400
Pasadena, CA 91101-4169

Date: December 10, 2021

TABLE OF CONTENTS

APPENDICES

INTRODUCTION

The purpose of the following report is to provide hydrology analysis and storm water quality analysis for the planned mixed-use development at 325 Hampshire Rd. The proposed development will include construction of 16 buildings with 420 dwelling units consisting of apartments and townhomes, approximately 15,000 square feet of commercial/retail space, parking areas, 2.91 acres of public exterior spaces, recreation amenities, and associated site improvements including grading and drainage.

This report will outline the runoff calculations using the City of Thousand Oaks Master Hydrology Study (October 2006) prepared by Kasraie Consulting for the City of Thousand Oaks.

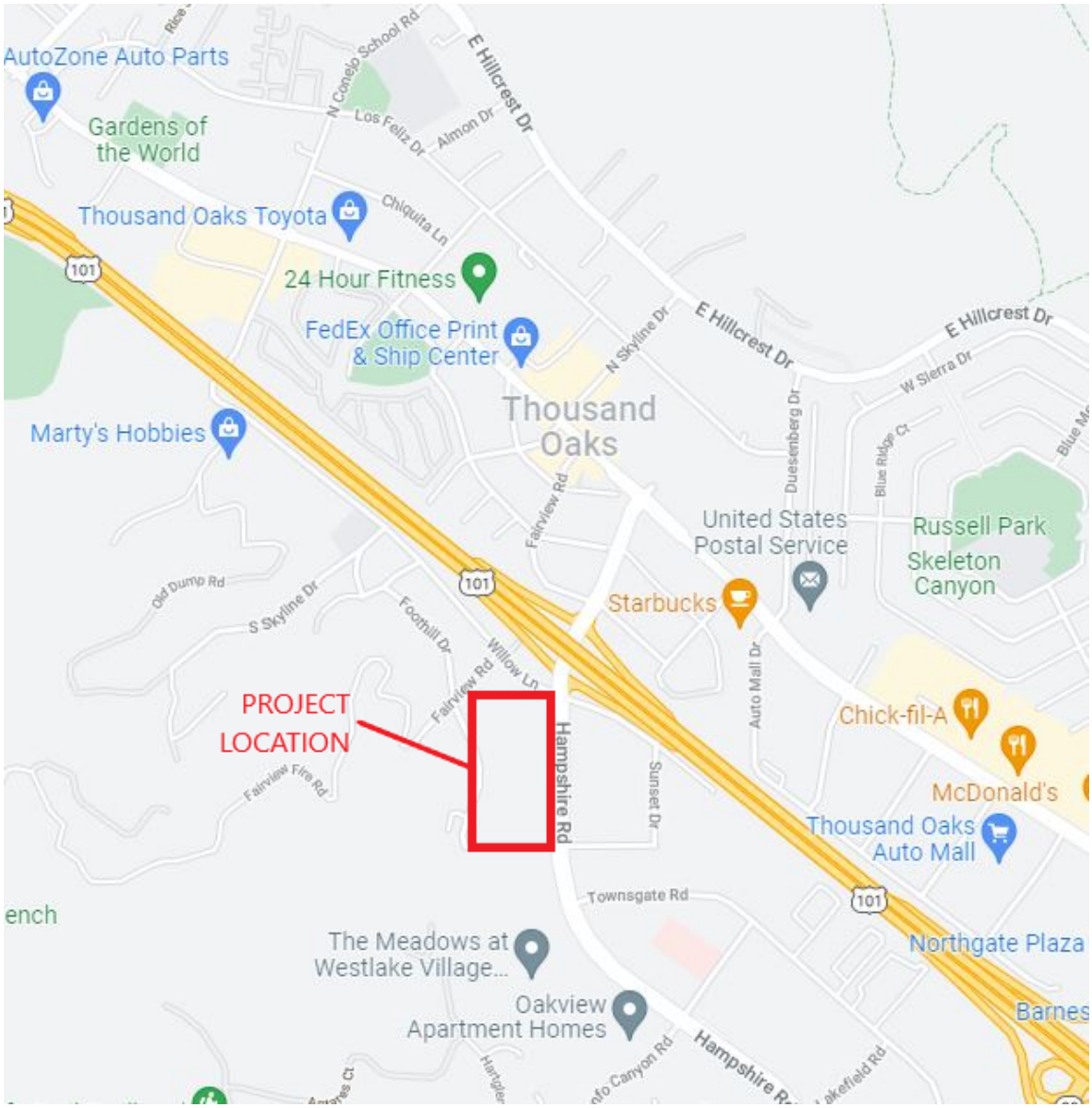


Figure 1.1 – *Project Location*

DRAINAGE DESIGN CONCEPT

The pre-development project site is represented by two watersheds, Catchments 1A and 1B. The developed project site is represented by three watersheds, Catchments 1A, 1B, and 1C. The drainage maps showing the existing and proposed conditions can be found in Appendix II.

The total project site is approximately 10.96 acres. In the existing condition, the entire site drains to the east of the property and onto Hampshire Road where it is picked up by existing catch basins. In the proposed condition, existing drainage patterns will be maintained to the extent possible. Runoff from Watershed 1A and Watershed 1Bwill follow the existing condition, draining toward Hampshire Rd. The runoff from Watershed 1C located on the south westerly of the site will drain to the south towards Foothill Blvd, also maintaining the existing condition. Each watershed will route runoff through stormwater treatment devices before discharging to the public storm drain system.

Stormwater detention will be provided on-site through underground detention galleries. The post development flow rate at the outlet will have a restriction to limit the maximum allowable discharge equivalent to Q10-developed flow rate based on the City of Thousand Oaks Master Hydrology Study requirements.

Proposed water quality mitigations will be per the Technical Guidance Manual for Stormwater Quality Control Measures (Manual Update 2011, Errata Update 2018), Stormwater treatment will be provided through the use of treatment devices. See Appendix IV for stormwater treatment analysis.

METHODOLOGY

HYDROLOGIC METHODOLGY

The post development flow rates were calculated using the City of Thousand Oaks Master Hydrology Study, October 2006, prepared by Kasraie Consulting for the City of Thousand Oaks. The project site is located in the 172C watershed boundary, the flow rates were calculated using the factors provided in the Hydrology Plate #6. See Figure 1.2 and Appendix I for further details.

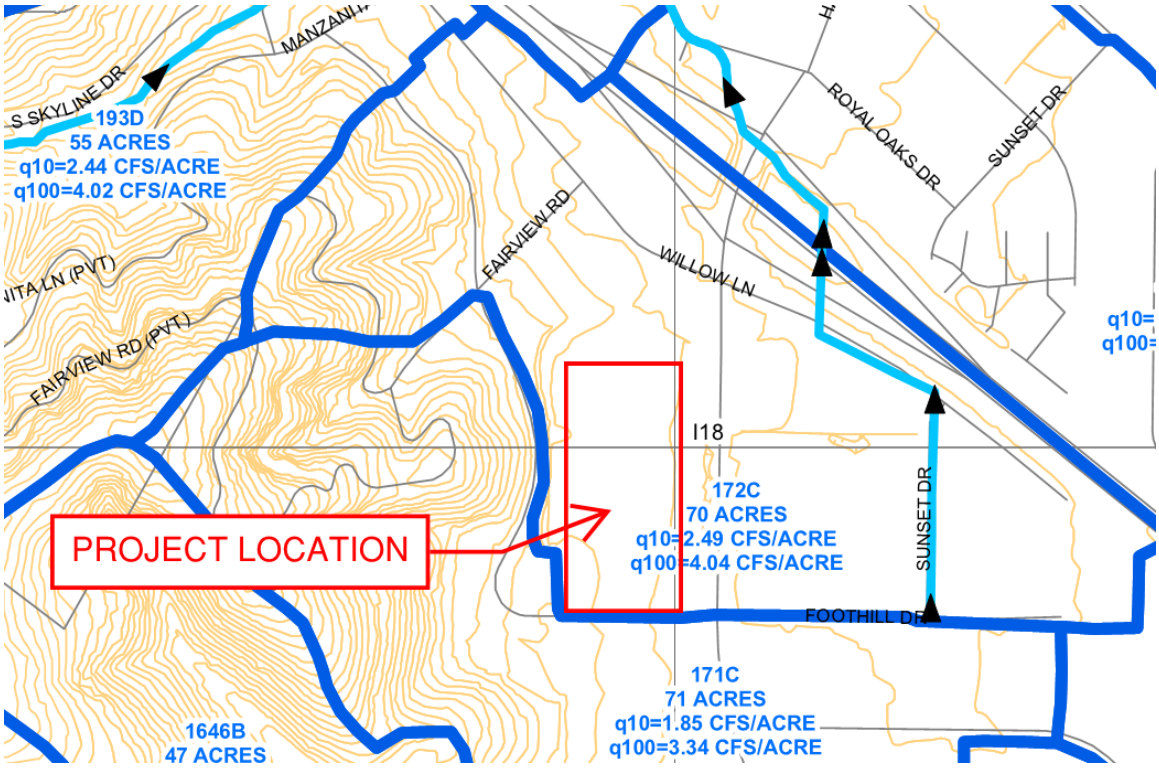


Figure 1.2 – *Project Location, Segment of Hydrology Plate #6*

LID CONCEPT

Compliance with MS4 water quality requirements for the proposed project is provided by means of onsite stormwater biofiltration BMPs at various collection points throughout the site. The treatment facilities will be designed to treat the Stormwater Quality Design Volume (SQDV) based on the methodology in the Ventura County Technical Guidance Manual (TGM).

To meet stormwater quality compliance, the Effective Impervious Area (EIA) must be reduced to 5% or less. Site-specific geotechnical investigations determined that the site has little to no potential for infiltration. As such, infiltration based BMPs are not feasible for this project. The project will instead achieve stormwater quality compliance using volume-based biofiltration BMPs sized to treat 1.5 times the calculated SQDV. The specific BMPs proposed are a combination of Planter Boxes (BIO-2 per the TGM) & Bioretention with Underdrain (BIO-1 per the TGM). Calculation methodology used to determine the site SQDV is outlined below. See Appendix III for an LID Exhibit and Appendix IV for detailed calculations.

Calculate Allowable EIA

The allowable EIA for a project is calculated as:

$EIA_{allowable} = (A_{project})*(5\%)$

Where: $EIA_{allowable}$ = The maximum impervious area from which runoff can be treated and discharged offsite (and not retained onsite), acres
$A_{project}$ = The total project area, acres

Calculate Impervious Area to be Retained (A_{retain})

The impervious area from which runoff must be retained onsite.

$A_{retain} = (imp*A_{project})-EIAallowable$

Where: A_{retain} = Drainage area from which runoff must be retained, acres

imp = Impervious fraction of the site

$A_{porject}$ = Total Project area, acres

$EIA_{allowable}$ = The maximum impervious area from which runoff can be treated and discharged offsite (and not retained onsite), acres

Calculate Stormwater Quality Design Volume (SQDV)

$SQDV = C*(0.75/12)*A_{retain}$

Where: SQDV = Stormwater Quality Design Volume that must be retained onsite, ac-ft

C = Runoff coefficient, 0.95 for impervious areas

0.75 = the design rainfall depth, in, based on sizing method 3

A_{retain} = Drainage area from which runoff must be retained, acres

*SQDV *1.5 time was applied to the mitigation Volumes.*

ALTERNATIVE LID CONCEPT

Because the current site plan is preliminary and subject to change as the architecture, landscaping and site planning are further developed, areas available for volume based biofiltration BMPs are likely to change. As such, Rainwater Harvesting (RWH-1 per the TGM) may also be considered for compliance with MS4 water quality requirements. Rainwater harvesting may be used to meet the 5% EIA requirement if reliable demand is available to meet the volume required for 80% capture using a 72-hour drawdown time. The Rainwater Harvesting BMP calculation methodology differs somewhat from the infiltration and biofiltration methodology and is presented below. See Appendix III for an LID Exhibit and Appendix IV for detailed calculations.

Calculate Rainwater Harvesting Design Volume (RWHDV)

$RWHDV = C*(d_{design}/12)*A_{retain}$

Where:	RWHDV =	rainwater harvesting design volume(acre-ft)
	C =	runoff coefficient, calculated using Appendix E and the site imperviousness
	d_{design} =	design storm required for 80% capture with a 72 hour drawdown time(inches) per Figure 1.3 below
	A_{retain} =	the drainage area from which runoff must be retained

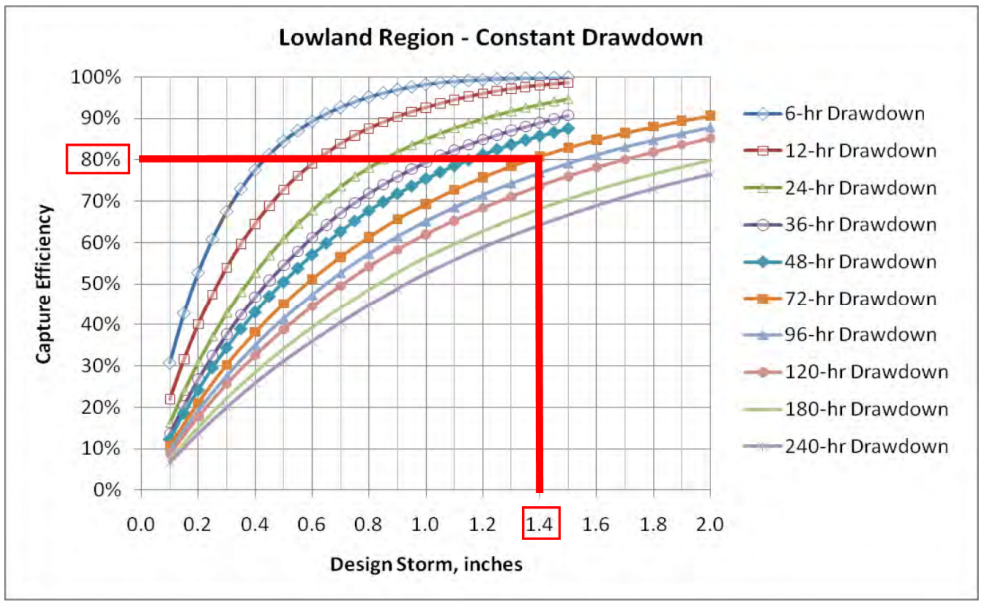


Figure 1.3 – *Design Storm selected by determining where the 72-hour drawdown curve intersects the 80% capture line.*

Determine the Required Daily Demand

Demand = [RWHDV/(72/24)] * (325,851)

Where: Demand = required project daily demand to draw down rainwater harvesting system sized for 80% capture in 72 hours (gallons)

Calculated required project daily demands are then compared to available project daily demands as calculated in a separate technical study.

DETENTION DESIGN

Detention facilities are sized to attenuate the developed 100-yr peak back to the 10-yr developed peak runoff per City of Thousand Oaks Standards and the Truncated Sump Volume Figure in Section 6.13 of the Ventura County Watershed Protection District Design Hydrology Manual. The volume factors for the project's developed watersheds were calculated as follows:

Watershed 1A = 1,060 cubic-feet-per-acre
Watershed 1B = 980 cubic-feet-per-acre
Watershed 1C = 1,060 cubic-feet-per-acre

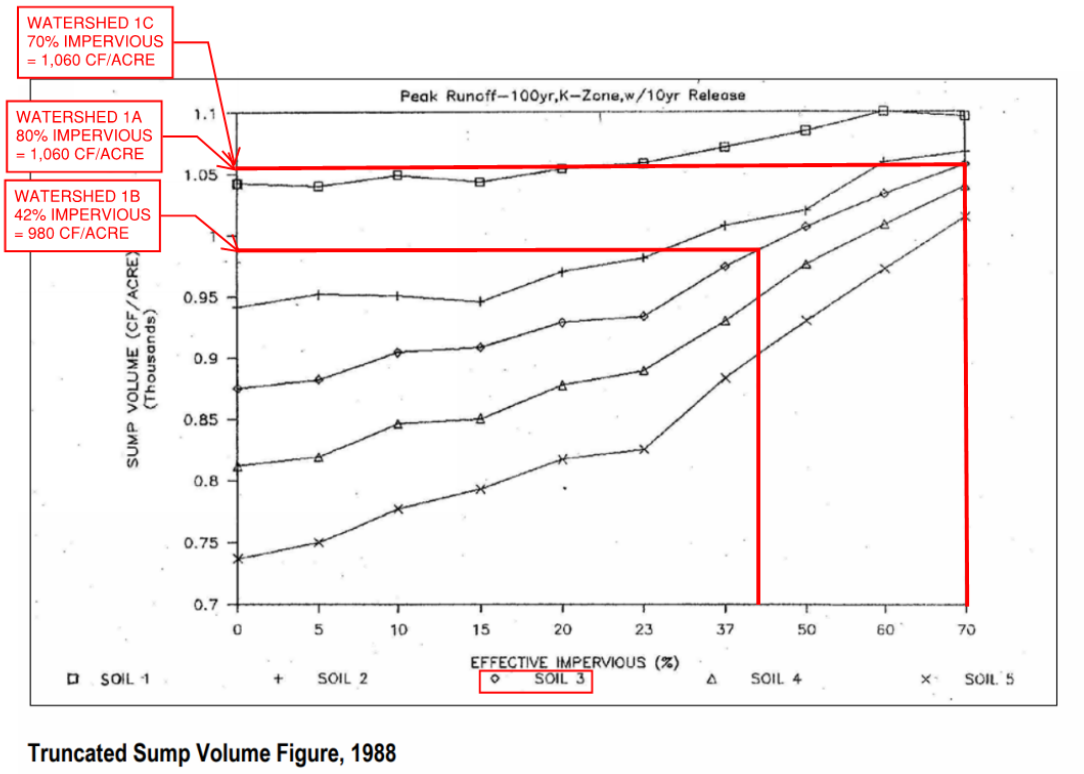


Figure 1.4 – *Truncated Sump Volume Figure from Section 6.13 of the Ventura County Watershed Protection District Design Hydrology Manual.*

RESULTS SUMMARY

HYDROLOGY

Existing Condition:

The existing site consists of two drainage watershed areas (Watershed 1A & 1 B). Runoff quantities were calculated using the City of Thousand Oaks Master Hydrology Study. Existing Flow rates were produced by multiplying the given flow rates/acres by the areas of the existing watershed.

Table 2.1 illustrates the results from the existing conditions hydrology study. Please refer to Appendix II for Existing Hydrology Map.

Table 2.1 –Existing Condition *Hydrology Results*

CATCHMENT AREA	AREA (AC)	Q10 (cfs/acre)	Q10 (cfs)	Q100 (cfs/acre)	Q100 (cfs)
1A	6.21	2.49	15.46	4.04	25.09
1B	4.75	2.49	11.83	4.04	19.19
1C	-	-	-	-	-
TOTAL	10.96	-	27.29	-	44.28

Proposed Condition:

The proposed condition layout, grading and storm drain system will modify the existing drainage areas but will keep the overall pre-project drainage patterns. (See proposed Hydrology Map on Appendix II). The proposed system will add new inlets, storm drain system, biofiltration BMPs, and peak detention facilities. The site will add a new watershed area (Watershed 1C), which is located south easterly of the site and will mostly catch runoff from the landscape. Watershed 1A will catch most of the runoff northerly of the site by inlet and continue discharging towards Hampshire Road. Lastly, Watershed 1B will catch runoff in the south westerly of the site which drains towards Foothill Road but will be intercepted and routed toward Hampshire Road prior to leaving the site. The methodology of calculating the flow rates is the same as existing, by multiplying the proposed areas of the watershed with the flowrates per acres given on the Master Hydrology Map (Figure 1.2). Flows in each watershed will flow through biofiltration BMPs and detention facilities before discharging to existing public storm drain facilities. Runoff from the site in the developed condition would not increase compared to the undeveloped condition.

Table 2.2 illustrates the results from the proposed conditions hydrology study. Please refer to Appendix II for Proposed Hydrology Map.

Table 2.2 – *Proposed Condition Hydrology Results*

CATCHMENT AREA	AREA (AC)	Q10 (cfs/acre)	Q10 (cfs)	Q100 (cfs/acre)	Q100 (cfs)
1A	7.56	2.49	18.82	4.04	30.54
1B	0.59	2.49	1.47	4.04	2.38
1C	2.81	2.49	6.99	4.04	11.35
TOTAL	10.96	-	27.28	-	44.27

LOW IMPACT DEVELOPMENT (LID)

Two possible options for meeting stormwater quality requirements have been proposed:

1. Biofiltration BMP's such as planter boxes and bioretention with underdrains
2. Rainwater Harvesting based on the available indoor non-potable water demand. Because the project will likely not have enough demand to treat the entire required volume, the remaining volume would be addressed with biofiltration BMPs.

Option 1: Biofiltration

Each watershed will treat stormwater runoff using biofiltration BMPs sized per the Ventura County Technical Guidance Manual for Stormwater Quality Measures. A summary of calculation results is presented in Table 2.3 below. Refer to Appendix IV for detailed biofiltration calculations.

Table 2.3 – *LID Calculation Results – Biofiltration BMPs*

Area Name	Area (AC)	Required SQVD x 1.5 (cu-ft)	Proposed BMP	Area Required (ft^2)	Area Provided (ft^2)
1A	7.56	18,061	Planter Box & Bioretention with Underdrain	12,041	13,134
2A	0.59	412	Planter Box & Bioretention with Underdrain	275	425
3A	2.80	5,203	Planter Box & Bioretention with Underdrain	3,649	3,666
Total	**10.96**	**23,676**	**-**	**15,695**	**17,225**

Option 2: Rainwater Harvesting

Additionally, the site was evalulated for potential use of rainwater harvesting as a stormwater quality measure. A summary of calculation results is presented in Table 2.4 below. The results indicate that approximately 50% of the project's stormwater quality requirements could be met using rainwater harvesting. Refer to Appendix IV for detailed rainwater harvesting calculations.

Table 2.4 – *LID Calculation Results – Rainwater Harvesting BMP (alternative BMP)*

Watershed	Area (Ac)	Percent of Site	Portion of Available Demand (gallons-per-day)	Required Daily Demand (gallons-per-day)
1A	7.56	69.0%	26,427	56,046
1B	0.59	5.4%	2,068	1,277
1C	2.80	25.6%	9,805	16,144
TOTAL SITE	10.96	100%	38,300	73,467

The rainwater harvesting calculations indicate that roughly 50% of the required rainwater harvesting demand (38,300 of the required 73,467 gallons-per-day) can be met. If rainwater harvesting is used to this extent, approximately 50% of the previously calculated biofiltration BMPs would be required to meet total stormwater quality requirements for the project.

DETENTION DESIGN

Detention facilities are sized to attenuate the developed 100-yr peak back to the 10-yr developed peak runoff per City of Thousand Oaks Standards and the Truncated Sump Volume Figure in Section 6.13 of the Ventura County Watershed Protection District Design Hydrology Manual. Table 2.5 summarizes the calculated detention volume required in each watershed to attenuate the peak

runoff. Detention will be provided on-site using below grade corrugated metal pipe detention galleries with restrictor plates sized to limit runoff to the 10-yr developed maximum. See Appendix V for detailed detention design.

Table 2.5 – *Proposed Condition Estimated Detention Volumes*

CATCHMENT AREA	AREA (Acre)	Truncated Sump Vol. Factor (CF/Acre)	Detention Vol. Required (CF)
1A	7.56	1,060	8,014
1B	0.59	980	578
1C	2.81	1,060	2,979
TOTAL	10.96	-	11,571

CONCLUSION

The conceptual drainage and treatment systems for this project have been designed in accordance with the requirements of the City of Thousand Oaks, using the methods prescribed in the County of Ventura Hydrology Manual. On-site catch basin filters and biofiltration BMP's will provide the necessary stormwater treatment. This report also demonstrates that rainwater harvesting BMPs may potentially be used to meet a maximum of approximately 50% of the project's stormwater treatment requirements. Additional measures such as green roofs and rainwater harvesting would be utilized if stormwater requirements can't be met using biofiltration BMP's resulting from future design changes. Finally, peak detention requirements will be satisfied using underground detention pipes and will further prevent runoff from exceeding the 10-year developed site runoff amounts.

APPENDIX I

CITY OF THOUSAND OAKS HYDROLOGY MAP PLATE #6

See Plate #2

See Plate #5

See Plate #7

See Plate #8

PROJECT SITE

Hidden Valley Wash (Lake Sherwood) Watershed

City of Thousand Oaks
Storm Drain System Master Plan

Hydrology Plate #6

0 1,000 2,000 3,000 Feet

Legend

- Hydrology Links
- Subarea Boundaries
- Street Centerline
- City of Thousand Oaks Map Grid
- Thousand Oaks City Boundary
- 2001 - LIDAR 10 ft. Contours

October 2006

KASRAIE CONSULTING
201 BURNETT AVENUE
VENTURA CA 93003
(805) 340-4744

APPENDIX II

EXISTING CONDITION HYDROLOGY MAP
PROPOSED CONDITION HYDROLOGY MAP

HYDROLOGY MAP
EXISTING CONDITION

HAMPSHIRE RD.

FOOTHILL DR.

FOOTHILL DRIVE

1A
6.21 AC
Q_{10} = 15.46 CFS
Q_{100} = 25.09 CFS

1B
4.75 AC
Q_{10} = 11.83 CFS
Q_{100} = 19.19 CFS

LEGEND:

DRAINAGE AREA (COLOR VARIES)

EXISTING CONTOURS

DRAINAGE AREA
A
8.42 Ac.
Q_{10}= 1.17 cfs
Q_{100}= 1.17 cfs
AREA (AC.)
CALCULATED 10 YEAR FLOW RATE
CALCULATED 100 YEAR FLOW RATE

Stantec
300 N LAKE AVENUE SUITE 400
PASADENA, CA 91101
626.796.9141

CLIENT
IMT CAPITAL, LLC

PROJECT
339 HAMPSHIRE ROAD MIXED USE
CITY OF THOUSAND OAKS

SHEET TITLE
325 HAMPSHIRE RD.
THOUSAND OAKS
HYDROLOGY MAP
EXISTING CONDITION

REVISIONS

BY:	DATE	DESCRIPTION

DESIGNED BY: PA
DRAFTED BY: PA
CHECKED BY:
REVISED BY:
APPROVED BY:
DATE: 09-22-202
SCALE: 1" = 30'

SHEET 1 OF 2 SHEETS

JOB NUMBER
2042570900

HYDROLOGY MAP
PROPOSED CONDITION

HAMPSHIRE RD.

BLDG A

BLDG B

CO-WORKING

DN

PLAZA

RETAIL

RETAIL

AMENITY/
CO-WORKING

DN

UTILITY

PROPOSED PEAK DETENTION
VOL = 578 CF

PROPOSED PEAK DETENTION
VOL = 8,014 CF

RETAIL

LOBBY/
LEASING

LOBBY/
LEASING

LIVE / WORK

1B
0.59 AC
Q_{10} = 1.47 CFS
Q_{100} = 2.38 CFS

1A
7.56 AC
Q_{10} = 18.82 CFS
Q_{100} = 30.54 CFS

POCKET
PARK .25
AC

AMENITY

PROPOSED PEAK DETENTION
VOL = 2,979 CF

BLDG C

BLDG C

BLDG C

BLDG C

1C
2.81 AC
Q_{10} = 6.99 CFS
Q_{100} = 11.35 CFS

BLDG D

BLDG D

BLDG D

BLDG D

BLDG D

BLDG D

BLDG D

BLDG C

BLDG C

FOOTHILL DR.

FOOTHILL DRIVE

FOOTHILL DR.

LEGEND:

DRAINAGE AREA (COLOR VARIES)

SD PROPOSED SD SCHEMATIC

DRAINAGE AREA
A
8.42 Ac.
Q_{10}= 1.17 cfs
Q_{100}= 1.17 cfs
AREA (AC.)
CALCULATED 10 YEAR FLOW RATE
CALCULATED 100 YEAR FLOW RATE

Stantec
300 N LAKE AVENUE SUITE 400
PASADENA, CA 91101
626.796.9141

CLIENT
IMT CAPITAL, LLC

PROJECT
339 HAMPSHIRE ROAD MIXED USE
CITY OF THOUSAND OAKS

SHEET TITLE
325 HAMPSHIRE RD.
THOUSAND OAKS
HYDROLOGY MAP
PROPOSED CONDITION

REVISIONS

NO.	DESCRIPTION	DATE	BY

DESIGNED BY: PA
DRAFTED BY: PA
APPROVED BY:
CHECKED BY:
REVIEWED BY:
DATE: 09-22-202
SCALE: 1" = 30'

SHEET 2 OF 2 SHEETS

JOB NUMBER
2042570900

APPENDIX III

LOW IMPACT DEVELOPMENT (LID) EXHIBIT

HAMPSHIRE RD.

HAMPSHIRE LANE

BLDG A

BLDG B

CO-WORKING

DN

RETAIL

PLAZA

PASEO

TRASH RM 2

MECH RM

RETAIL

LOBBY/ LEASING

1A

7.56 AC
SQDV (x1.5) = 18,061 CF
RWHDV = 0.516 AF

RETAIL

AMENITY/ CO-WORKING

DN

UTILITY

BIKE ROOM

TRASH RM

ELEC RM

RAINWATER HARVESTING (ALTERNATE BMP)

LOBBY/ LEASING

LIVE / WORK

BIOFILTRATION BMP (TYP)

1B

0.59 AC
SQDV (x1.5) = 412 CF
RWHDV = 0.012 AF

RAINWATER HARVESTING (ALTERNATE BMP)

FOOTHILL DR.

POCKET PARK 25

AC

BIOFILTRATION BMP (TYP)

BIKE ROOM

ELEC RM

ELEC RM

AMENITY

BLDG C

BLDG C

BIOFILTRATION BMP (TYP)

BLDG D

BLDG D

BLDG C

BLDG D

BLDG C

1C

2.81 AC
SQDV (x1.5) = 5,203 CF
RWHDV = 0.149 AF

BLDG D

BLDG C

BLDG C

BLDG D

BLDG C

FOOTHILL DR.

FOOTHILL DRIVE

LEGEND:

- SUB-AREA
- SD PROPOSED SD SCHEMATIC
- HARDSCAPE/IMPERVIOUS
- PLANTING AREA/PERVIOUS
- BIOFILTRATION BMP

Stantec
300 N LAKE AVENUE SUITE 400
PASADENA, CA 91101
626.796.9141

CLIENT
IMT CAPITAL, LLC

PROJECT
339 HAMPSHIRE ROAD MIXED USE
CITY OF THOUSAND OAKS

SHEET TITLE
325 HAMPSHIRE RD.
THOUSAND OAKS
LID EXHIBIT

REVISIONS

BY	DATE	DESCRIPTION

DESIGNED BY:	DRAFTED BY:	REVISED BY:	SCALE:
PA	PA		1"=30'

APPROVED BY:	CHECKED BY:	DATE:
		09-22-202

SHEET 1 OF 1 SHEETS

JOB NUMBER
2042570900

APPENDIX IV

LOW IMPACT DEVELOPMENT (LID) CALCULATIONS

Sizing Worksheet

Designer: **Stantec Consulting** Project Proponent: Date: **12/6/2021** Project: **IMT Thousand Oaks** Location: **Watershed 1A**	
Type of Vegetation:	
Outflow Collection: **Storm Drain**	
Step 1: Determine water quality design volume	
1-1. Enter Project area (acres), $A_{project}$	$A_{project}$ = **7.56** acres
1-2. Enter the maximum allowable percent of the Project area that may be effective impervious area (refer to permit), ranges from 5-30%, $\%_{allowable}$	$\%_{allowable}$ **5** %
1-3. Determine the maximum allowed effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%_{allowable})$	$EIA_{allowable}$= **0.378** acres
1-4. Enter Project impervious fraction, *Imp* (e.g. 60% = 0.60)	Imp= **0.80**
1-5. Determine the Project Total Impervious area (acres), $TIA=A_{project}*Imp$	TIA= **6.05** acres
1-6. Determine the total area from which runoff must be retained (acres), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} = **5.67** acres
1-7. Determine pervious runoff coefficient using Table E-1, C_p	C_p = **0.10**
1-8. Calculate runoff coefficient, $C = 0.95*imp + C_p\ (1-imp)$	C = **0.78**
1-9. Enter design rainfall depth of the storm (in), P_i	P_i = **0.75** in
1-10. Calculate rainfall depth (ft), $P = P_i/12$	P =**0.0625**ft
1-11. Calculate water quality design volume (ft^3),	SQDV= ft^3

$SQDV=43560 \bullet C^{*}P^{*}A_{retain}$	**12,041 ft^3**
	1.5xSQDV for non-infiltration = 18,061 ft^3

Step 2: Determine the design percolation rate			
2-1. Enter the design saturated hydraulic conductivity of the amended filter media (2.5 in/hr recommended rate), K_{design}	K_{design} =	**2.5**	in/hr
Step 3: Calculate Bioretention/Planter Box surface area			
3-1. Enter water quality design volume (ft^3), *SQDV*	SQDV =	**18,061**	ft^3
3-2. Enter design saturated hydraulic conductivity (in/hr), K_{design}	K_{design} =	**2.5**	in/hr
3-3. Enter ponding depth (max 1.5 ft for Bioretention, 1 ft for Planter Box) above area, d_p	d_p =	**1**	ft
3-4. Calculate the drawdown time for the ponded water to filter through media (hours), $t_{ponding} = (d_p/K_{design}) \times 12$	$t_{ponding}$=	**4.8**	hrs
3-5. Enter the storm duration for routing calculations (use 3 hours unless there is rationale for an alternative), $T_{routing}$	$T_{routing}$ =	**3**	hrs
3-6. Calculate depth of water (ft) filtered by using the following two equations: $d_{filtered,1} = (K_{design} \times T_{routing})/12$ $d_{filteret,2} = d_p /2$	$d_{filtered,1}$ = $d_{filtered,2}$ =	**0.625** **0.5**	ft ft
3.7 Enter the resultant depth (ft) (the lesser of the two calculated above), $d_{filtered}$	$d_{filtered}$ =	**0.5**	ft
3-8. Calculate the infiltrating surface area as follows (ft^2): $A_{req} = SQDV/(d_p + d_{filtered})$	A_{req} =	**12,041 ft^2**	

Sizing Worksheet

Designer: **Stantec Consulting** Project Proponent: Date: **12/6/2021** Project: **IMT Thousand Oaks** Location: **Watershed 1B**	
Type of Vegetation:	
Outflow Collection: **Storm Drain**	
Step 1: Determine water quality design volume	
1-1. Enter Project area (acres), $A_{project}$	$A_{project}$ = **0.59** acres
1-2. Enter the maximum allowable percent of the Project area that may be effective impervious area (refer to permit), ranges from 5-30%, $\%_{allowable}$	$\%_{allowable}$ **5** %
1-3. Determine the maximum allowed effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%_{allowable})$	$EIA_{allowable}$= **0.029** acres
1-4. Enter Project impervious fraction, *Imp* (e.g. 60% = 0.60)	Imp= **0.42**
1-5. Determine the Project Total Impervious area (acres), $TIA=A_{project}*Imp$	TIA= **0.248** acres
1-6. Determine the total area from which runoff must be retained (acres), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} = **0.219** acres
1-7. Determine pervious runoff coefficient using Table E-1, C_p	C_p = **0.10**
1-8. Calculate runoff coefficient, $C = 0.95*imp + C_p\ (1-imp)$	C = **0.46**
1-9. Enter design rainfall depth of the storm (in), P_i	P_i = **0.75** in
1-10. Calculate rainfall depth (ft), $P = P_i/12$	P =**0.0625**ft
1-11. Calculate water quality design volume (ft^3),	SQDV= ft^3

$SQDV=43560 \bullet C^{*}P^{*}A_{retain}$	**275 ft^3**
	1.5xSQDV for non-infiltration = 412 ft^3

Step 2: Determine the design percolation rate	
2-1. Enter the design saturated hydraulic conductivity of the amended filter media (2.5 in/hr recommended rate), K_{design}	K_{design} = **2.5** in/hr

Step 3: Calculate Bioretention/Planter Box surface area			
3-1. Enter water quality design volume (ft^3), *SQDV*	SQDV =	**412**	ft^3
3-2. Enter design saturated hydraulic conductivity (in/hr), K_{design}	K_{design} =	**2.5**	in/hr
3-3. Enter ponding depth (max 1.5 ft for Bioretention, 1 ft for Planter Box) above area, d_p	d_p =	**1**	ft
3-4. Calculate the drawdown time for the ponded water to filter through media (hours), $t_{ponding} = (d_p/K_{design}) \times 12$	$t_{ponding}$=	**4.8**	hrs
3-5. Enter the storm duration for routing calculations (use 3 hours unless there is rationale for an alternative), $T_{routing}$	$T_{routing}$ =	**3**	hrs
3-6. Calculate depth of water (ft) filtered by using the following two equations: $d_{filtered,1} = (K_{design} \times T_{routing})/12$ $d_{filteret,2} = d_p /2$	$d_{filtered,1}$ = $d_{filtered,2}$ =	**0.625** **0.5**	ft ft
3.7 Enter the resultant depth (ft) (the lesser of the two calculated above), $d_{filtered}$	$d_{filtered}$ =	**0.5**	ft
3-8. Calculate the infiltrating surface area as follows (ft^2): $A_{req} = SQDV/(d_p + d_{filtered})$	A_{req} =	**275**	ft^2

Sizing Worksheet

Designer: **Stantec Consulting** Project Proponent: Date: **12/6/2021** Project: **IMT Thousand Oaks** Location: **Watershed 1C**	
Type of Vegetation:	
Outflow Collection: **Storm Drain**	
Step 1: Determine water quality design volume	
1-1. Enter Project area (acres), $A_{project}$	$A_{project}$ = **2.80** acres
1-2. Enter the maximum allowable percent of the Project area that may be effective impervious area (refer to permit), ranges from 5-30%, $\%_{allowable}$	$\%_{allowable}$ **5** %
1-3. Determine the maximum allowed effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%_{allowable})$	$EIA_{allowable}$= **0.14** acres
1-4. Enter Project impervious fraction, *Imp* (e.g. 60% = 0.60)	Imp= **0.70**
1-5. Determine the Project Total Impervious area (acres), $TIA=A_{project}*Imp$	TIA= **1.96** acres
1-6. Determine the total area from which runoff must be retained (acres), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} = **1.82** acres
1-7. Determine pervious runoff coefficient using Table E-1, C_p	C_p = **0.10**
1-8. Calculate runoff coefficient, $C = 0.95*imp + C_p\ (1-imp)$	C = **0.70**
1-9. Enter design rainfall depth of the storm (in), P_i	P_i = **0.75** in
1-10. Calculate rainfall depth (ft), $P = P_i/12$	P =**0.0625**ft
1-11. Calculate water quality design volume (ft^3),	SQDV= ft^3

$SQDV=43560 \bullet C^{*}P^{*}A_{retain}$	**3,469 ft^3**
	1.5xSQDV for non-infiltration = 5,203 ft^3

Step 2: Determine the design percolation rate			
2-1. Enter the design saturated hydraulic conductivity of the amended filter media (2.5 in/hr recommended rate), K_{design}	K_{design} =	**2.5**	in/hr
Step 3: Calculate Bioretention/Planter Box surface area			
3-1. Enter water quality design volume (ft^3), *SQDV*	SQDV =	**5,203**	ft^3
3-2. Enter design saturated hydraulic conductivity (in/hr), K_{design}	K_{design} =	**2.5**	in/hr
3-3. Enter ponding depth (max 1.5 ft for Bioretention, 1 ft for Planter Box) above area, d_p	d_p =	**1**	ft
3-4. Calculate the drawdown time for the ponded water to filter through media (hours), $t_{ponding} = (d_p/K_{design}) \times 12$	$t_{ponding}$=	**4.8**	hrs
3-5. Enter the storm duration for routing calculations (use 3 hours unless there is rationale for an alternative), $T_{routing}$	$T_{routing}$ =	**3**	hrs
3-6. Calculate depth of water (ft) filtered by using the following two equations: $d_{filtered,1} = (K_{design} \times T_{routing})/12$ $d_{filteret,2} = d_p /2$	$d_{filtered,1}$ = $d_{filtered,2}$ =	**0.625** **0.5**	ft ft
3.7 Enter the resultant depth (ft) (the lesser of the two calculated above), $d_{filtered}$	$d_{filtered}$ =	**0.5**	ft
3-8. Calculate the infiltrating surface area as follows (ft^2): $A_{req} = SQDV/(d_p + d_{filtered})$	A_{req} =	**3,469**	ft^2

RWH-1: Rainwater Harvesting Calculations for <u>Watershed 1A</u>

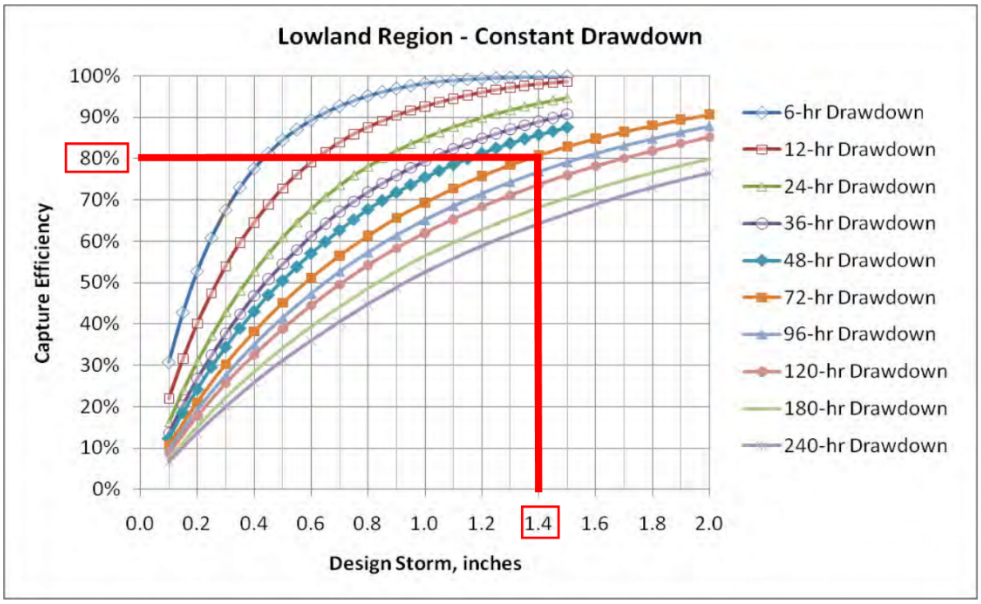
Calculate Rainwater Harvesting Design Volume (RWHDV)

$RWHDV = C*(d_{design}/12)*A_{retain}$

Where:	RWHDV =	rainwater harvesting design volume(acre-ft)
	C =	runoff coefficient, calculated using Appendix E and the site imperviousness
	d_{design} =	design storm required for 80% capture with a 72-hour drawdown time(inches)
	A_{retain} =	the drainage area from which runoff must be retained

C = 0.78 (per BIO-1/BIO-2 Sizing Worksheet)

d_{design} = 1.4 inches (per figure below)



A_{retain} = 5.67 acres (per BIO-1/BIO-2 Sizing Worksheet)

RWHDV = 0.516 acre-ft

Determine the Required Daily Demand

Demand = [RWHDV/(72/24)] * (325,851)

Where: Demand = required project daily demand to draw down rainwater harvesting system sized for 80% capture in 72 hours (gallons)

Required Daily Demand (Watershed 1A) = 56,046 gallons-per-day

RWH-1: Rainwater Harvesting Calculations for <u>Watershed 1B</u>

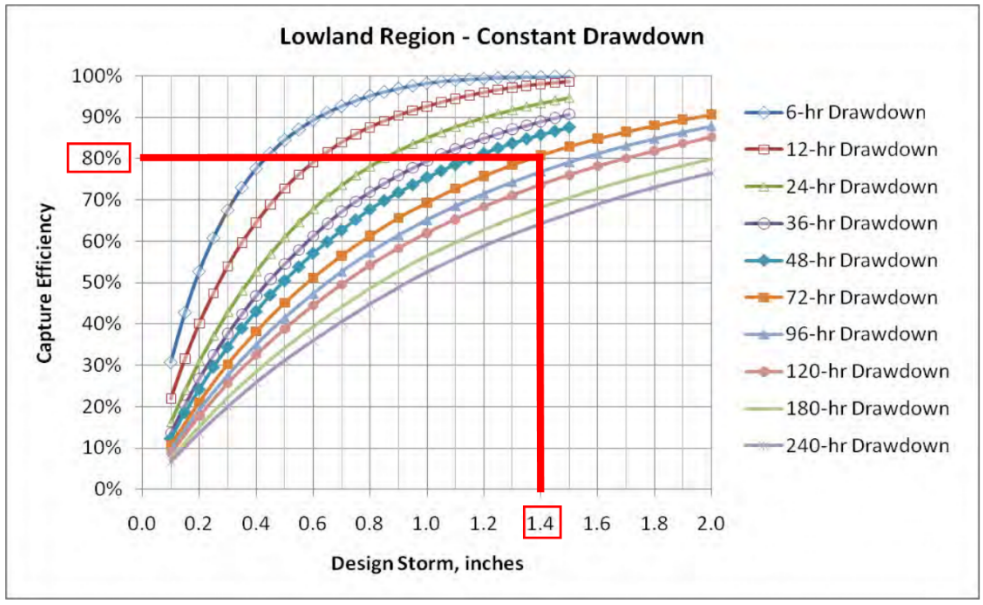
Calculate Rainwater Harvesting Design Volume (RWHDV)

$RWHDV = C*(d_{design}/12)*A_{retain}$

Where:	RWHDV =	rainwater harvesting design volume(acre-ft)
	C =	runoff coefficient, calculated using Appendix E and the site imperviousness
	d_{design} =	design storm required for 80% capture with a 72-hour drawdown time(inches)
	A_{retain} =	the drainage area from which runoff must be retained

C = 0.46 (per BIO-1/BIO-2 Sizing Worksheet)

d_{design} = 1.4 inches (per figure below)



A_{retain} = 0.219 acres (per BIO-1/BIO-2 Sizing Worksheet)

RWHDV = 0.012 acre-ft

Determine the Required Daily Demand

Demand = [RWHDV/(72/24)] * (325,851)

Where: Demand = required project daily demand to draw down rainwater harvesting system sized for 80% capture in 72 hours (gallons)

Required Daily Demand (Watershed 1B) = 1,277 gallons-per-day

RWH-1: Rainwater Harvesting Calculations for <u>Watershed 1C</u>

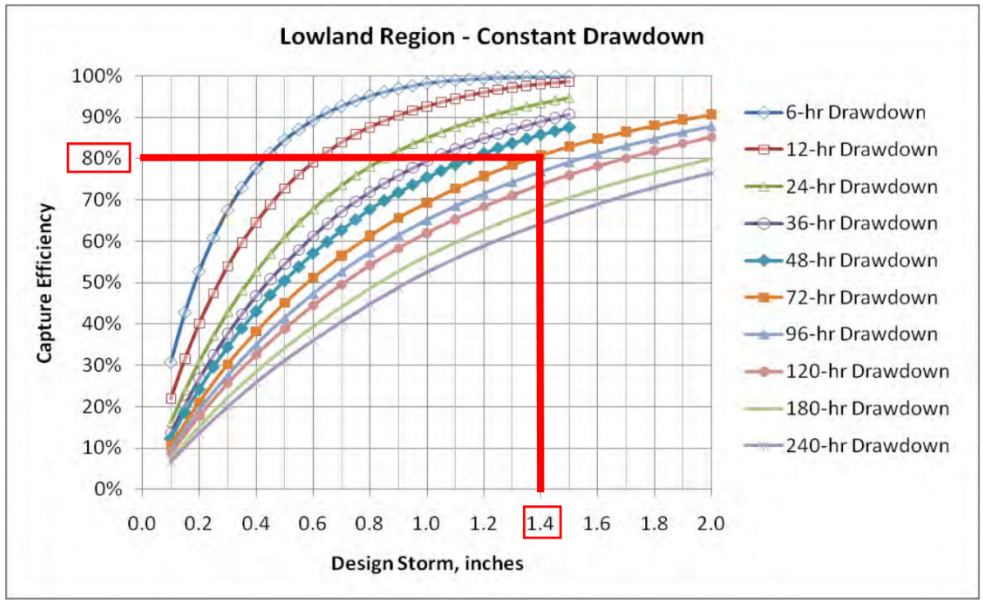
Calculate Rainwater Harvesting Design Volume (RWHDV)

$RWHDV = C*(d_{design}/12)*A_{retain}$

Where:	RWHDV =	rainwater harvesting design volume(acre-ft)
	C =	runoff coefficient, calculated using Appendix E and the site imperviousness
	d_{design} =	design storm required for 80% capture with a 72-hour drawdown time(inches)
	A_{retain} =	the drainage area from which runoff must be retained

C = 0.70 (per BIO-1/BIO-2 Sizing Worksheet)

d_{design} = 1.4 inches (per figure below)



A_{retain} = 1.82 acres (per BIO-1/BIO-2 Sizing Worksheet)

RWHDV = 0.149 acre-ft

Determine the Required Daily Demand

Demand = [RWHDV/(72/24)] * (325,851)

Where: Demand = required project daily demand to draw down rainwater harvesting system sized for 80% capture in 72 hours (gallons)

Required Daily Demand (Watershed 1C) = 16,144 gallons-per-day

Total Required Daily Demand (All Watersheds) = 73,467 gallons-per-day

Determine Available Project Daily Demand

Site total water demand with peaking factor = 153,197 gallons-per-day
(per 325 Hampshire Rd. Preliminary Water System Capacity Study, Stantec, 2021)

Assume 25% of total water demand is indoor non-potable demand

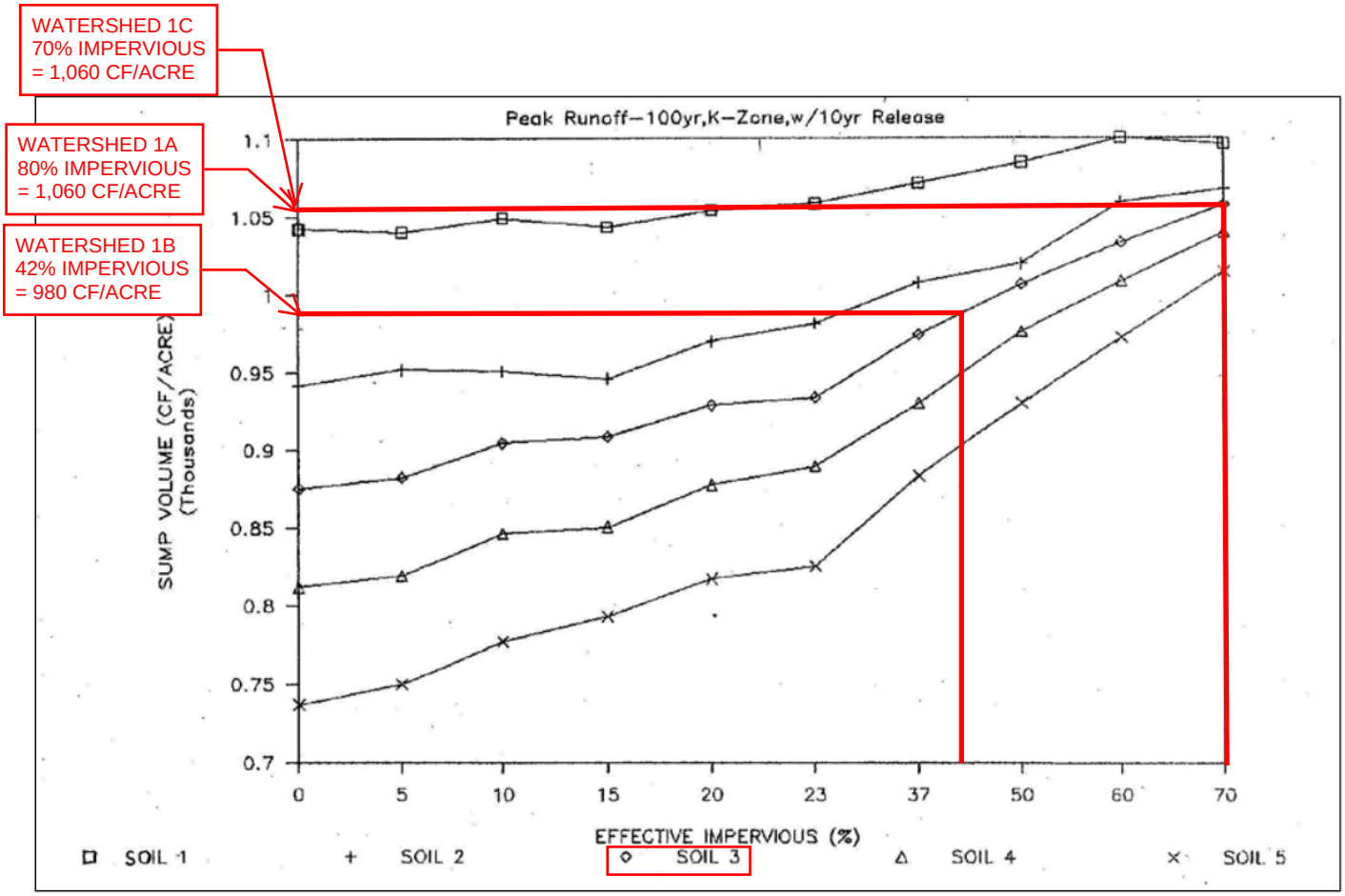
Total Available Project Daily Demand = 38,300 gallons-per-day

Prorate Available Project Daily Demand by Watershed

Watershed	Area (Ac)	Percent of Site	Portion of Available Demand (gallons-per-day)	Required Daily Demand (gallons-per-day)
1A	7.56	69.0%	26,427	56,046
1B	0.59	5.4%	2,068	1,277
1C	2.80	25.6%	9,805	16,144
TOTAL SITE	10.96	100%	38,300	73,467

APPENDIX V

DETENTION SYSTEM SIZING DETAILS



Truncated Sump Volume Figure, 1988

CATCHMENT AREA	AREA (Acre)	Truncated Sump Vol. Factor (CF/Acre)	Detention Vol. Required (CF)
1A	7.56	1,060	8,014
1B	0.59	980	578
1C	2.81	1,060	2,979
TOTAL	10.96	-	11,571

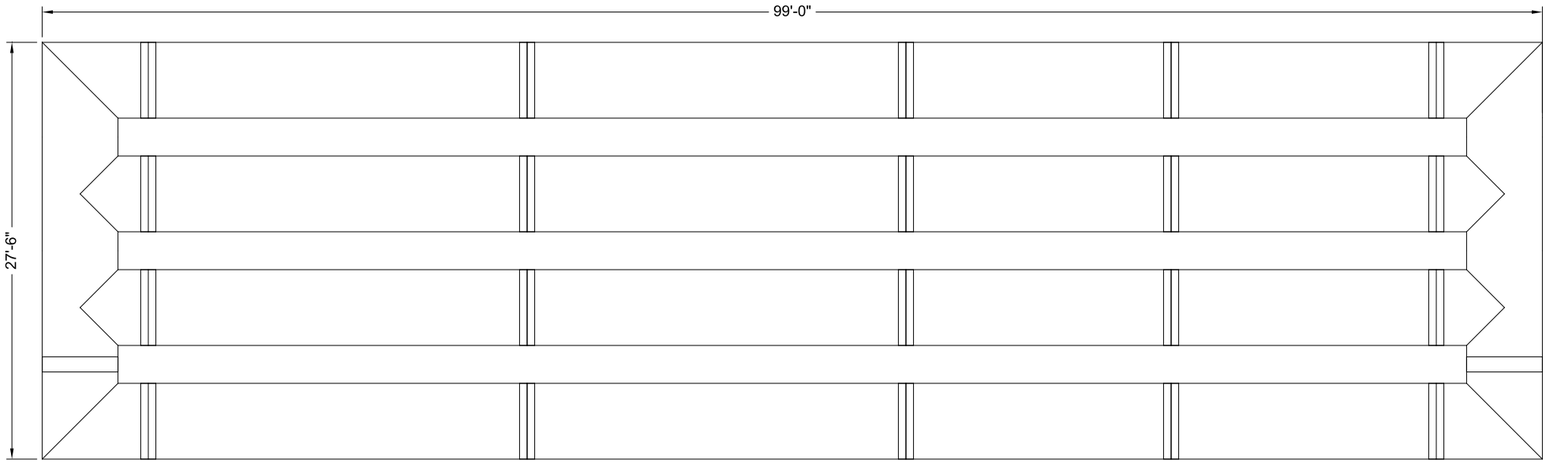
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20 & HS25
- APPROX. LINEAR FOOTAGE = 411 lf.

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 8,014 cf.
- PIPE STORAGE VOLUME = 8,070 cf.
- BACKFILL STORAGE VOLUME = 0 cf.
- TOTAL STORAGE PROVIDED = 8,070 cf.

PIPE DETAILS
- DIAMETER = 60 IN.
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = Solid
- BARRELL SPACING = 30 IN.

BACKFILL DETAILS
- WIDTH AT ENDS = 12 IN.
- ABOVE PIPE = 0 IN.
- WIDTH AT SIDES = 12 IN.
- BELOW PIPE = 0 IN.



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY

SCALE: 1" = 10'

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DATE	REVISION DESCRIPTION	BY

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12036 IMT 1A
Watershed 1A Peak Detention
Thousand Oaks, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
7527	12036	12/8/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1		

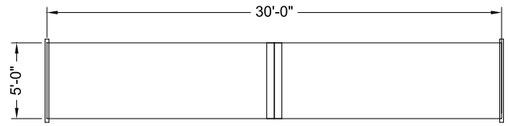
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20 & HS25
- APPROX. LINEAR FOOTAGE = 30 lf.

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 578 cf.
- PIPE STORAGE VOLUME = 589 cf.
- BACKFILL STORAGE VOLUME = 0 cf.
- TOTAL STORAGE PROVIDED = 589 cf.

PIPE DETAILS
- DIAMETER = 60 IN.
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = Solid
- BARRELL SPACING = 30 IN.

BACKFILL DETAILS
- WIDTH AT ENDS = 12 IN.
- ABOVE PIPE = 0 IN.
- WIDTH AT SIDES = 12 IN.
- BELOW PIPE = 0 IN.



NOTES

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- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
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ASSEMBLY
SCALE: 1" = 10'

DATE	REVISION DESCRIPTION	BY

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www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO12042 IMT 1B
Watershed 1B Peak Detention
Thousand Oaks, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
7531	12042	12/8/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1		

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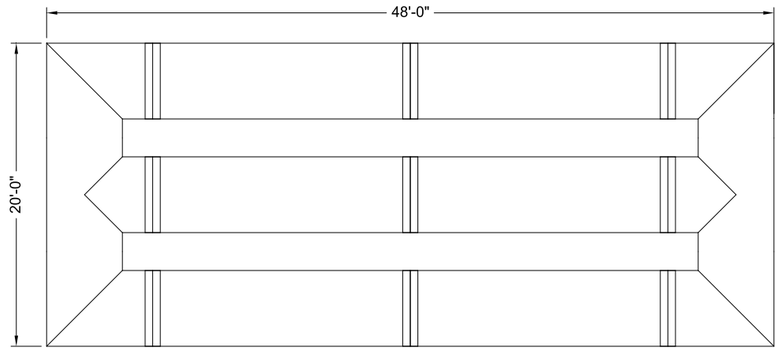
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20 & HS25
- APPROX. LINEAR FOOTAGE = 154 lf.

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 2,979 cf.
- PIPE STORAGE VOLUME = 3,024 cf.
- BACKFILL STORAGE VOLUME = 0 cf.
- TOTAL STORAGE PROVIDED = 3,024 cf.

PIPE DETAILS
- DIAMETER = 60 IN.
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = Solid
- BARRELL SPACING = 30 IN.

BACKFILL DETAILS
- WIDTH AT ENDS = 12 IN.
- ABOVE PIPE = 0 IN.
- WIDTH AT SIDES = 12 IN.
- BELOW PIPE = 0 IN.



NOTES

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- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
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ASSEMBLY
SCALE: 1" = 10'

DATE	REVISION DESCRIPTION	BY

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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO12043 IMT 1C
Watershed 1C Peak Detention
Thousand Oaks, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
7532	12043	12/8/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D1		

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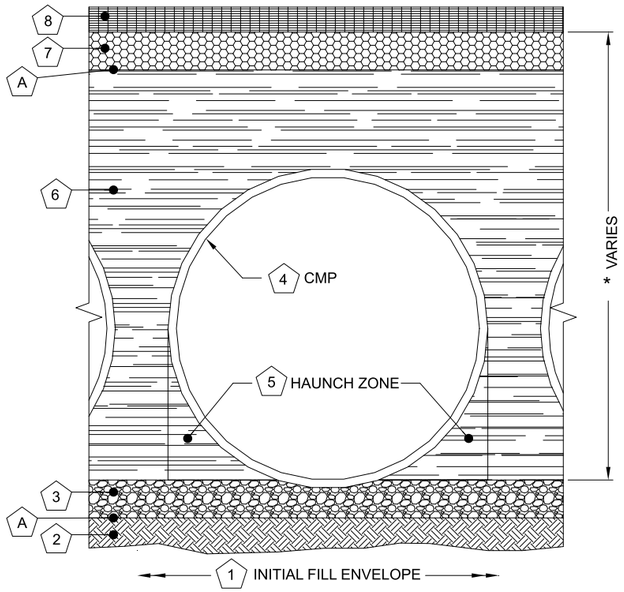


DETENTION SYSTEMS - CMP DETENTION / CMP DRAINAGE			
Material Location	Description	Material Designation	Designation
8 Rigid or Flexible Pavement (if applicable)			
7 Road Base (if applicable)			
A Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types
6 Backfill	Well graded granular material which may contain small amounts of silt or clay.	AASHTO M 145- A-1, A-2, A-3	Placed in 8" +/- loose lifts and compacted to 90% Standard Proctor Per AASHTO T 99
3 Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	Engineer to determine if bedding is required. Pipe may be placed on the trench bottom of a relatively loose, native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation. See AASHTO 26.3.8.1 / 26.5.3 Bedding info.
A Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types
* *Note: Backfill using controlled low-strength material (CLSM, "flash fill" or "flowable fill") when the spacing between the pipes will not allow for placement and adequate compaction of the backfill.*			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

FOUNDATION/BEDDING PREPARATION

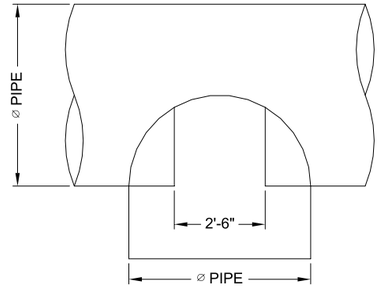
2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMALLY COMPACTED WITHOUT SOFT SPOTS.

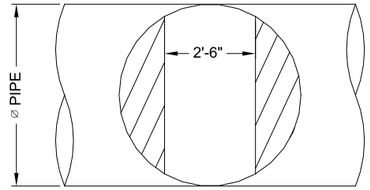
BACKFILL

WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.



PLAN

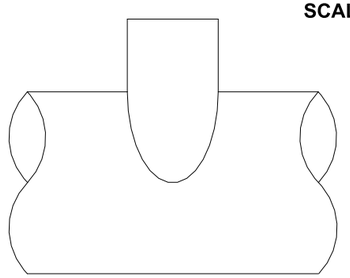


FRONT

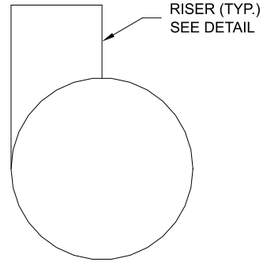
NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

TYPICAL MANWAY DETAIL

SCALE: N.T.S.



ELEVATION

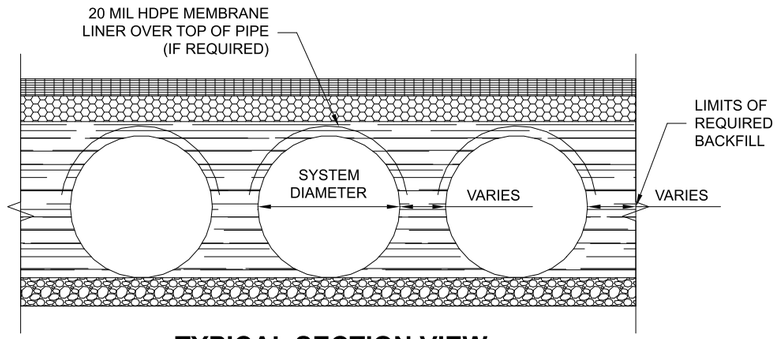


END

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

TYPICAL RISER DETAIL

SCALE: N.T.S.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

DATE	REVISION DESCRIPTION	BY

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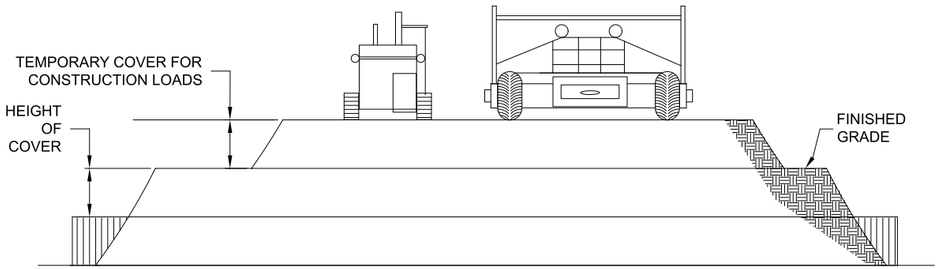
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12043 IMT 1C
Watershed 1C Peak Detention
Thousand Oaks, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
7532	12043	12/8/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D2		



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

NOTE:
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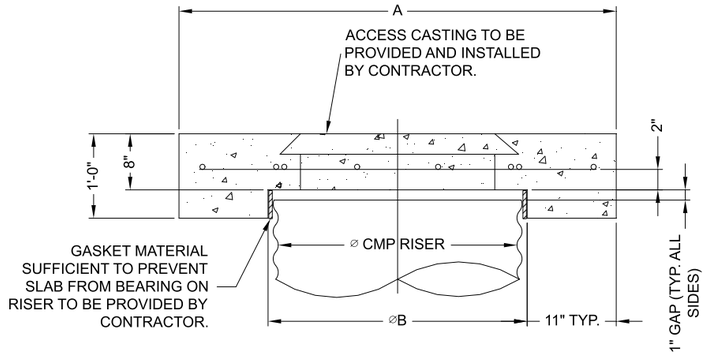
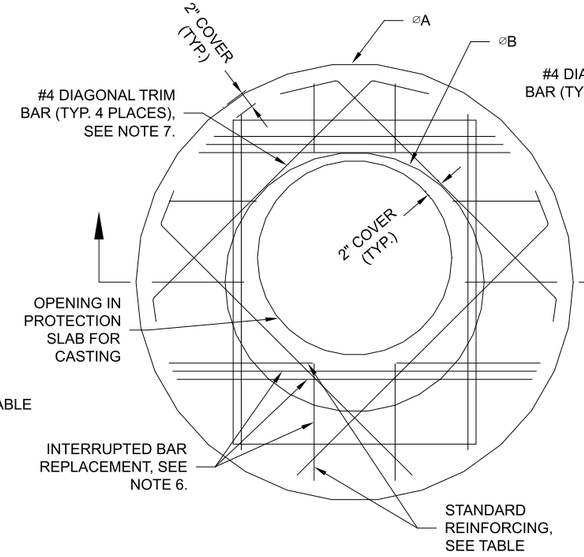


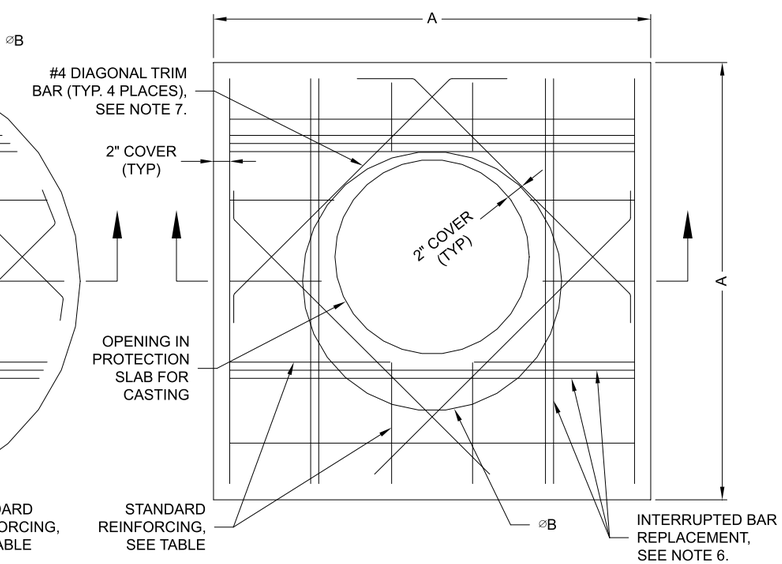
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO12043 IMT 1C
Watershed 1C Peak Detention
Thousand Oaks, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
7532	12043	12/8/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D3		

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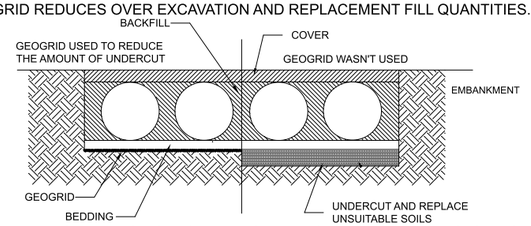
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

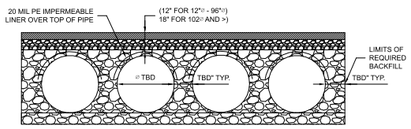


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

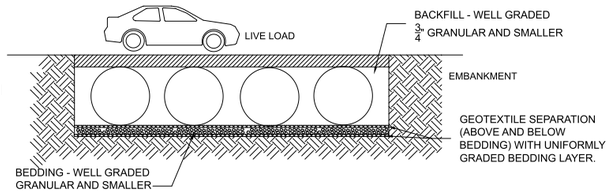
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

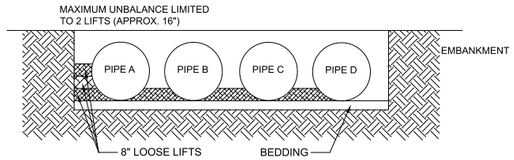
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



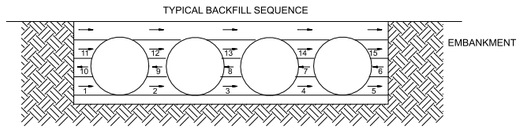
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

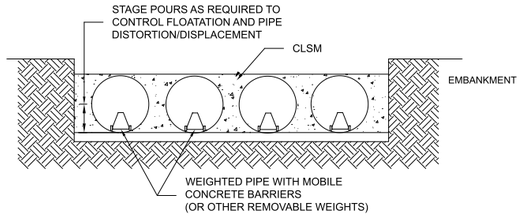


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

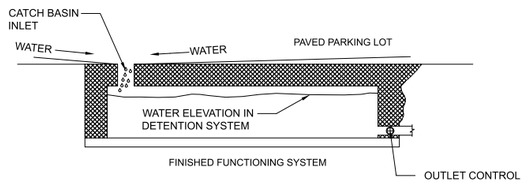


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
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800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS

CONTECH **DYODS** DRAWING

DYO12043 IMT 1C
Watershed 1C Peak Detention
Thousand Oaks, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
7532	12043	12/8/2021
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: D4		

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Stantec

325 HAMPSHIRE RD.
CITY OF THOUSAND OAKS,
COUNTY OF VENTURA, CA

PRELIMINARY SANITARY SEWER CAPACITY STUDY

Prepared For:
IMT Capital, LLC
15303 Ventura Blvd, Suite 200
Sherman Oaks
California, USA 91403

Prepared By:
Kevin Donlon, PE
Reviewed By: Lusine Nidelian

Stantec Consulting Services, Inc.
300 North Lake Avenue, Suite 400
Pasadena, CA 91101-4169

Date: November 30, 2021

TABLE OF CONTENTS

MAPS

INTRODUCTION

The purpose of the following report is to evaluate sewer pipe capacity for the planned mixed-use development at 325 Hampshire Rd. The proposed development will include construction of 16 buildings with 420 dwelling units of apartments and townhomes, approximately 15,000 square feet of commercial/retail space, parking areas, a 2,400 square foot community building, 2.91 acres of public exterior spaces, recreation amenities, and associated site improvements including grading, drainage, and site utilities.

This report will assess the available capacity of the existing downstream public 8-inch sewer lines along Hampshire Road using record drawings sourced from the City of Thousand Oaks.

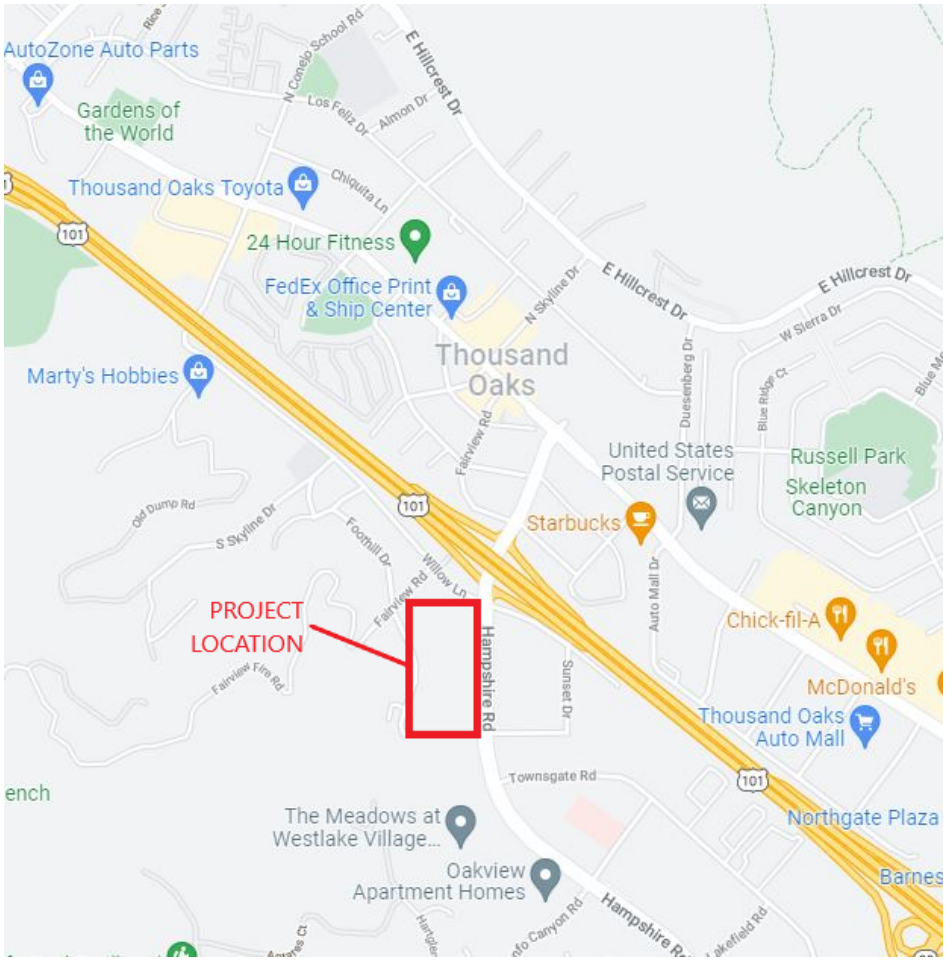


Figure 1.1 – *Project Location*

EXISTING CONDITIONS

The subject property has access to adjacent public sewers on all sides of the property. To the west is an 8-inch PVC sewer line with the slope of 0.90% in the north-south section of Foothill Drive. To the south is an 8-inch VCP sewer with the slope of 4.0% in the east-west section of Foothill Drive. To the east is an 8-inch VCP sewer with the slope of 0.40% in the north-south section of Hampshire Road. To the north is an 8-inch VCP sewer with the slope of 3.75% along the edge of the property within an existing 15-foot wide sanitary sewer easement.

These existing sewers are at the southerly edge of the City of Thousand Oaks Wastewater Service Area. The 8-inch line in Foothill Drive is the most upstream segment of sewer in this area of the City's system. As such, the sewer lines in the area have limited existing flow and are largely unused except by a few residential units, a gas station, a senior care facility, and the subject property.

The 8-inch sewer in Hampshire Road continues north from the property to the north side of the 101 Freeway at a minimum slope of 0.40%. Beyond the Freeway, the sewer increases to a 10-inch VCP at a minimum slope of 0.28% where it joins the existing 15-inch trunk sewer in Thousand Oaks Boulevard.

PROPOSED CONDITIONS

The proposed sanitary sewer flows will be collected by service laterals from the project's various buildings. These flows will be split into two onsite private lines. The northerly portion of the project will be routed in an onsite private sewer line located in a central driveway to a point of connection with an existing 8-inch public sewer main in Hampshire Road.

The southerly portion of the project will be routed in an onsite private sewer line located in a second driveway to a point of connection with an existing 8-inch public sewer main in Foothill Road.

METHODOLOGY

Wastewater generation quantities were calculated using two different methodologies. The first method calculated wastewater generation rates as defined in Section 2.1 of the 1979 City of Thousand Oaks Wastewater Design and Construction Standards. This method uses a wastewater generation rate of 215 gallons-per-day-per-equivalent-dwelling-unit for multi-family developments and a rate of 3,870 gallons-per-acre-per-day for commercial developments.

The second method calculated wastewater generation rates based on an assumed value of 80% of the projects water demand as calculated per the 2018 City of Thousand Oaks Water Master Plan, which is accepted industry practice. The Water Master Plan uses rates of 200 gallons-per-day-per-equivalent-dwelling-unit for apartments and condominiums, and 130 gallons-per-day-per-thousand-square-feet for commercial developments. The total average water demand for the project was calculated to be 87,541 gallons-per-day, which results in a sewer discharge of 70,033 gallons-per-day. For a more conservative result from the Water Master Plan method, a Peaking Factor was incorporated based Wastewater Design and Construction Standards Plate No. 2. The Wastewater Design and Construction Standards method resulted in slightly larger values than the method using 80% of the water demand.

RESULTS SUMMARY

As stated previously, the 8-inch line in Foothill Drive is the most upstream segment of sewer in this area of the City's system and is assumed to have very limited flow in the existing condition. As such, the existing infrastructure was analyzed assuming full capacity is currently available.

The existing 8-inch sewer mainline in Hampshire Road along the project frontage has a slope of 0.40% and governs capacity in the area adjoining the site. Further upstream, the Hampshire Road line has a slope of 1.0%, and the segments in Foothill Drive range from 4% to 6%, providing a higher capacity than the 0.40% segment. Refer to Appendix III.

Using methodology found in the 1979 City of Thousand Oaks Wastewater Design and Construction Standards, the project is expected to generate a peak sewage flow rate of 0.43 cfs. This results in the existing Hampshire Road 8-inch mainline flowing 54% full, slightly over the 50% maximum defined in the Wastewater Design and Construction Standards for sewers under 12-inch diameter.

Analyzing the flow rate calculated by using 80% of the projects water demand, the expected peak sewage flow rate is 0.33 cfs. This results in the existing Hampshire Road 8-inch mainline flowing 46% full, below the 50% maximum defined in the Wastewater Design and Construction Standards for sewers under 12-inch diameter.

Additionally, capacity of the existing 10-inch mainline sewer in Hampshire north of Highway 101 was analyzed in relation to this project only. The existing mainline has a slope of 0.28% and provides a capacity of 0.58 cfs when flowing half full, which is 0.15-0.25 cfs below the project's tributary flows. The 10-inch mainline also receives sewage flows from single-family residential and commercial developments along Willow Lane, Royal Oaks Drive and Los Robles Road. Analysis of these flows is beyond the scope of this study.

See Appendix IV for detailed calculations and Table 1 below for a summary of the results of the two methods for analyzing capacity.

Table 1 - Results of Pipe Hydraulics for Existing 8-inch Line at 0.4%

Method	Peak Flow Rate (cfs)	Existing 8-inch Line Percent Full
Wastewater Design and Construction Standards	0.43	54%
80% of Project's Water Demand	0.33	46%

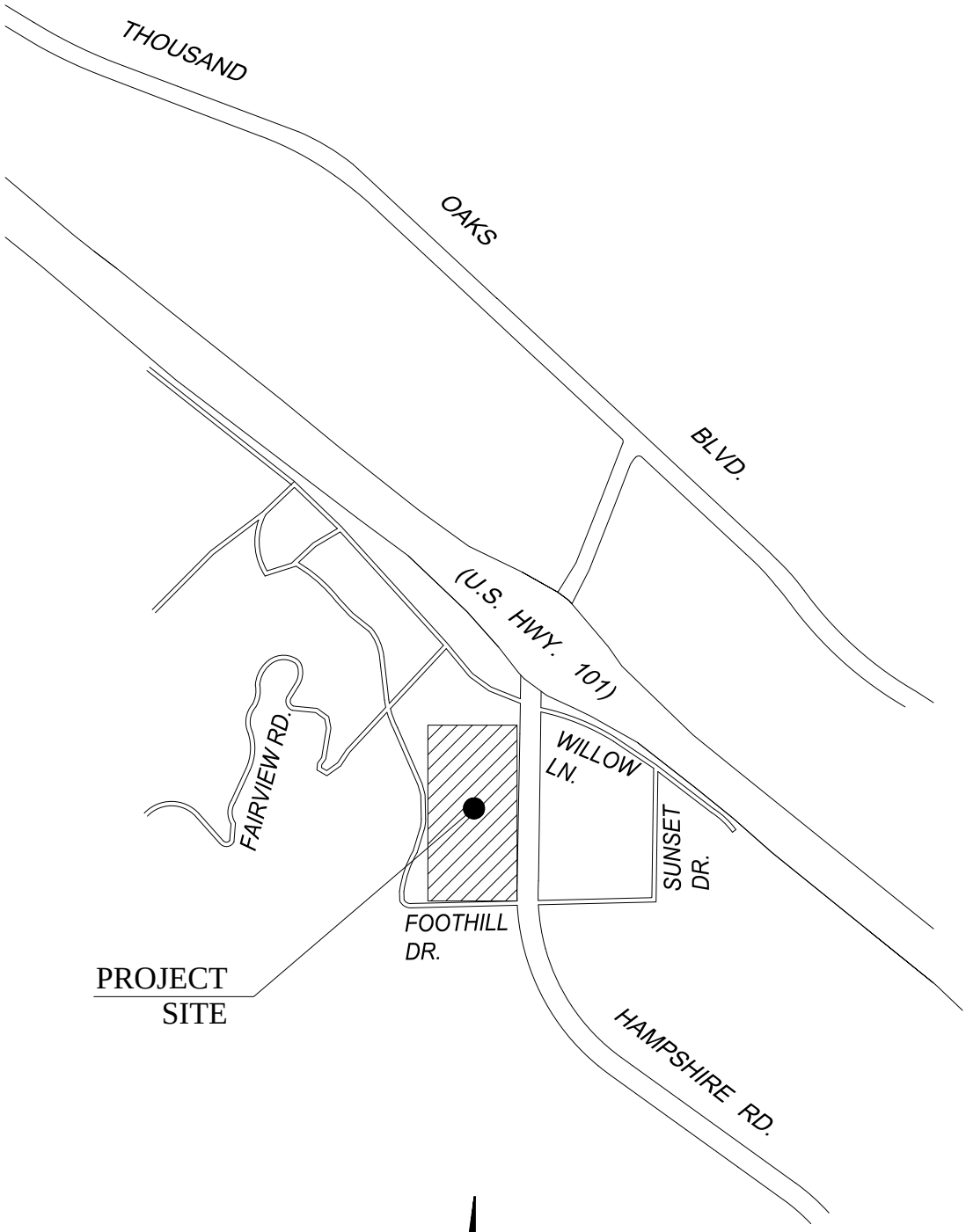
The on-site sewer system will be designed using 8-inch PVC pipes sloped at 1.0% minimum where achievable. The system will be designed to flow half full during peak flow rates, and to provide a mean velocity of 2 feet-per-second as defined in the Wastewater Design and Construction Standards.

CONCLUSION

The analysis presented in this report confirms the existing sanitary sewer infrastructure surrounding the subject property will be adequate to serve the proposed project. The existing 8-inch sewer mainline in Hampshire Road will be approximately 50% full using either calculation method described above, satisfying the requirements found in the 1979 Wastewater Design and Construction Standards.

APPENDIX I

VICINTY MAP



VICINITY MAP

N.T.S.

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Stantec Consulting Services Inc.
300 North Lake Avenue Suite 400
Pasadena CA 91101-4169
Tel: (626) 796-9141
www.stantec.com

Client/Project
IMT CAPITAL, LLC

325 HAMPSHIRE RD.

Project No.
2042570900

Title
VICINITY MAP

Revision
#

Date
????.??.??

Reference Sheet
X-XXX

Figure No.
1

APPENDIX II

LAND USE SITE PLAN

PROJECT SUMMARY

PROJECT ADDRESS:	325 HAMPSHIRE ROAD, THOUSAND OAKS, CALIFORNIA 91361
APN:	676-0-150-375, 676-0-150-285, 676-0-150-365
SITE AREA:	11.77 AC - 512,689 SF
NET AREA:	10.97 AC - 477,853 SF
ALLOWED DENSITY:	30 DU / AC = 329 UNITS
DENSITY BONUS:	91 UNITS = 27.5% OF 329 UNITS
AFFORDABLE UNITS:	50 LOW INCOME = 15% OF 329 UNITS
PROPOSED DENSITY:	38.29 DU / AC = 420 UNITS
PROPOSED HEIGHT:	50'-3"
PROPOSED AVERAGE HT:	36'-7"

MIXED-USE BUILDINGS - UNIT BREAKDOWN

	BUILDING A	BUILDING B
STUDIOS	16	12
1 BEDROOMS	108	76
2 BEDROOMS	80	57
TOTAL	204	145

TOWNHOMES BUILDINGS - UNIT BREAKDOWN

	BUILDING C	BUILDING D
2 BEDROOMS	6	14
3 BEDROOMS	24	14
4 BEDROOMS	6	7
TOTAL	36	35

GRAPHIC SCALE

100 0 100 300

SCALE 1"=100'

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Pasadena CA 91101-4169
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www.stantec.com

Notes

Client/Project
IMT CAPITAL, LLC

325 HAMPSHIRE RD.

Project No.
2042570900

Title
LAND USE/SITE PLAN

Revision
#

Date
01/15/2021

Reference Sheet
X-XXX

Figure No.
2

APPENDIX III

SANITARY SEWER STUDY EXHIBIT

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ORIGINAL SHEET - ARCH D

Windsor Terrace Nursing Home Zone: P-L

Physical Therapy Zone: C-1

Chevron Gas Zone: C-1

Optometry Zone: C-1

POCKET PARK .25 AC

SFD Zone: R-E

SFD Zone: R-E

PreSchool Zone: C-1

Shell Gas Zone: C-1

HAMPSHIRE ROAD

FOOTHILL ROAD

BLDG A

BLDG B

BLDG C

BLDG D

AMENITY

AMENITY/ CO-WORKING

LOBBY/ LEASING

RETAIL

PASEO

PLAZA

LIVE / WORK

UTILITY

BIKE ROOM

TRASH RM

TRASH RM 2

ELEC RM

MECH RM

DN

UP

6"SS

8"SS

8" SS
179 LF S = 0.02

8" SS
165 LF S = 0.02

8" SS
226 LF S=0.02

8" SS
226 LF S=0.02

8" SS
117 LF S=0.01

8" SS
142 LF S = 0.01

8" SS
57 LF S = 0.01

8" SS
138 LF S = 0.01

8" SS
236 LF S = 0.01

8" SS
109 LF S = 0.01

8" SS
64 LF S = 0.01

8" SS
100 LF S = 0.01

8" SS
110 LF S = 0.01

8" VCP @ 0.4% PER DP 68-55 (69-107A)

8" VCP @ 0.4% PER DP 68-55 (69-107A)

8" VCP @ 1% PER DP 68-55 (69-107A)

8" VCP @ 6.18% PER DP 68-55 (69-107A)

8" VCP @ 4% PER DP 68-55 (69-107A)

POINT OF CONNECTION

POINT OF CONNECTION

LEGEND:

BUILDING A/B SEWER

TOWNHOUSE SEWER

GRAPHIC SCALE
40 0 40 120
SCALE 1"=40'

Stantec

Stantec Consulting Services Inc.
300 North Lake Avenue Suite 400
Pasadena CA 91101-4169
Tel: (626) 796-9141
www.stantec.com

Permit/Seal

PRELIMINARY NOT FOR CONSTRUCTION

Not for permits, pricing or other official purposes. This document has not been completed or checked and is for general information or comment only.

Issued	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

Client/Project
IMT CAPITAL, LLC

325 HAMPSHIRE RD.

Project No.: 2042570900
File Name: 570900C-PX7008
Scale:

Dwn.	Dsgn.	Chkd.	SET_DATE YYYY.MM.DD

SANITARY SEWER STUDY EXHIBIT

Revision: Sheet: of
Drawing No.

APPENDIX IV

SEWER DEMAND CALCULATIONS

Project Name	T.O RANCH - HAMPSHIRE RD
Project Number	2042570900
Subject	Sewer Demand 1st Methodology
Engineer	Kevin Donlon
Date	11/29/2021

Stantec

Sewer Flow Rates per Section 2.1 of City of Thousand Oaks Wastewater Design and Construction Standards; 1979

Multi-Family 215 gpd/EDU (2.15 persons/multi-family dwelling x 100 gallons/capita/day)
Commercial: 3870 gallons/acre/day

Unit counts and square footages below are per KTGY Formal Submittal; April 20, 2021

Building A

Residential		**Commercial**	
Studio	16 units		
1 bedroom	108 units	Amenity / Lobby	4451 SF
2 bedroom	80 units	Commercial / Retail	7500 SF
TOTAL	204 EDU	TOTAL	11951 SF
DEMAND:	43,860 gpd	DEMAND:	1,062 gpd

Building A Total: 44,922 gpd

Building B

Residential		**Commercial**	
Studio	12 units		
1 bedroom	76 units	Amenity / Lobby	5387 SF
2 bedroom	57 units	Commercial / Retail	7500 SF
TOTAL	145 EDU	TOTAL	12887 SF
DEMAND:	31,175 gpd	DEMAND:	1,145 gpd

Building B Total: 32,320 gpd

Building C
(includes 6 buildings)

Residential		**Commercial**	
2 Bedroom	6 units		
3 bedroom	24 units	Amenity / Lobby	0 SF
4 bedroom	6 units	Commercial / Retail	0 SF
TOTAL	36 EDU	TOTAL	0 SF
DEMAND:	7,740 gpd	DEMAND:	0 gpd

Building C Total: 7,740 gpd

Building D (includes 7 buildings)				
Residential			**Commercial**	
2 Bedroom	14 units			
3 bedroom	14 units		Amenity / Lobby	0 SF
4 bedroom	7 units		Commercial / Retail	0 SF
TOTAL	35 EDU		TOTAL	0 SF
DEMAND:	7,525 gpd		DEMAND:	0 gpd
Building D Total:	**7,525 gpd**			

Amenity Building				
Residential			**Commercial**	
2 Bedroom	0 units			
3 bedroom	0 units		Amenity / Lobby	2400 SF
4 bedroom	0 units		Commercial / Retail	0 SF
TOTAL	0 EDU		TOTAL	2400 SF
DEMAND:	0 gpd		DEMAND:	213 gpd
Building D Total:	**213 gpd**			

Site Total: **92,720 gpd**

Calculate Flows Tributary to Foothill Drive Sewer		
Building D		
4 of 7 buildings = 4/7 x Building D Total	4300 gpd	
Building C		
4 of 6 buildings = 4/6 x Building C Total	5160 gpd	
Building B	32,320 gpd	
Total	41,780 gpd	0.06 cfs
Peaking Factor*	3.1	
Total with Peaking Factor		**0.19 cfs**

Calculate Flows Tributary to Hampshire Road Sewer		
Building D		
3 of 7 buildings = 3/7 x Building D Total	3225 gpd	
Building C		
2 of 6 buildings = 2/6 x Building C Total	2580 gpd	
Building A	44,922 gpd	
Amenity Building	213 gpd	
Foothill Drive Sewer	41,780 gpd	
Total	92,720 gpd	0.14 cfs
Peaking Factor*	3.1	
Total with Peaking Factor		**0.43 cfs**

*Peaking Factor per City of Thousand Oaks Wastewater Design and Construction Standards Standard Plate No. 2, Ratio of Peak to Average Flow

Project Name	T.O RANCH - HAMPSHIRE RD
Project Number	2042570900
Subject	Sewer Demand 2nd Methodology
Engineer	Kevin Donlon
Date	11/29/2021

Sewer demand is 80% of Water Demand.
Water Demand Factor per 2018 City of Thousand Oaks Water Master Plan, Table 3-5:

Apartments & Condominiums:	160 gpd/EDU
Commercial:	104 gpd/ksf

Unit counts and square footages below are per KTGY Formal Submittal; April 20, 2021

Building A

Residential		**Commercial**	
Studio	16 units		
1 bedroom	108 units	Amenity / Lobby	4451 SF
2 bedroom	80 units	Commercial / Retail	7500 SF
TOTAL	204 EDU	TOTAL	11951 SF
DEMAND:	32,640 gpd	DEMAND:	1,243 gpd

Building A Total: 33,883 gpd

Building B

Residential		**Commercial**	
Studio	12 units		
1 bedroom	76 units	Amenity / Lobby	5387 SF
2 bedroom	57 units	Commercial / Retail	7500 SF
TOTAL	145 EDU	TOTAL	12887 SF
DEMAND:	23,200 gpd	DEMAND:	1,340 gpd

Building B Total: 24,540 gpd

Building C
(includes 6 buildings)

Residential		**Commercial**	
2 Bedroom	6 units		
3 bedroom	24 units	Amenity / Lobby	0 SF
4 bedroom	6 units	Commercial / Retail	0 SF
TOTAL	36 EDU	TOTAL	0 SF
DEMAND:	5,760 gpd	DEMAND:	0 gpd

Building C Total: 5,760 gpd

Building D
(includes 7 buildings)

Residential		**Commercial**	
2 Bedroom	14 units		
3 bedroom	14 units	Amenity / Lobby	0 SF
4 bedroom	7 units	Commercial / Retail	0 SF
TOTAL	35 EDU	TOTAL	0 SF
DEMAND:	5,600 gpd	DEMAND:	0 gpd

Building D Total: 5,600 gpd

Amenity Building				
Residential			**Commercial**	
2 Bedroom	0 units			
3 bedroom	0 units		Amenity / Lobby	2400 SF
4 bedroom	0 units		Commercial / Retail	0 SF
TOTAL	0 EDU		TOTAL	2400 SF
DEMAND:	0 gpd		DEMAND:	250 gpd
Building D Total:		**250 gpd**		

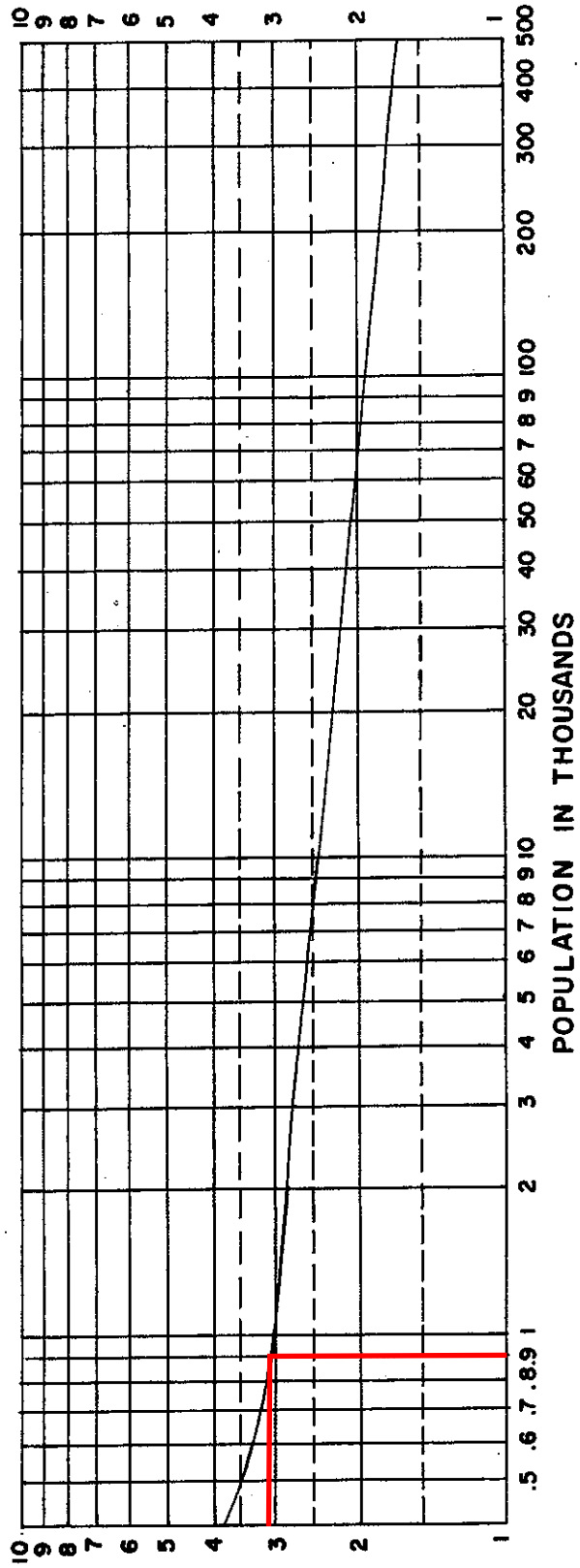
Site Total: **70,033 gpd**

Calculate Flows Tributary to Foothill Drive Sewer		
Building D		
4 of 7 buildings = 4/7 x Building D Total	3200 gpd	
Building C		
4 of 6 buildings = 4/6 x Building C Total	3840 gpd	
Building B	24,540 gpd	
Total	31,580 gpd	0.05 cfs
Peaking Factor*	3.1	
Total with Peaking Factor		**0.15 cfs**

Calculate Flows Tributary to Hampshire Road Sewer		
Building D		
3 of 7 buildings = 3/7 x Building D Total	2400 gpd	
Building C		
2 of 6 buildings = 2/6 x Building C Total	1920 gpd	
Building A	33,883 gpd	
Amenity Building	250 gpd	
Foothill Drive Sewer	31,580 gpd	
Total	70,033 gpd	0.11 cfs
Peaking Factor*	3.1	
Total with Peaking Factor		**0.33 cfs**

*Peaking Factor per City of Thousand Oaks Wastewater Design and Construction Standards Standard Plate No. 2, Ratio of Peak to Average Flow

PLATE NO. 2



RATIO OF PEAK SEWAGE FLOWS TO AVERAGE DAILY FLOW
BASED ON 100 GALLONS PER CAPITA PER DAY

Per Section 2.1 of City of Thousand Oaks Wastewater Design and Construction Standards:

2.15 persons x 420 units = 903 population

Peaking Factor = 3.1

CITY OF THOUSAND OAKS - UTILITIES DEPARTMENT

SUBMITTED Richard Bardin

APPROVED

ADOPTED BY THE CITY COUNCIL OF THE CITY OF THOUSAND OAKS 5/8/79

DRAWN BY: R.L.

CHECKED BY:

SCALE: NONE

REVISED:

CONSTRUCTION STANDARDS

RATIO OF PEAK TO AVERAGE FLOW

APPENDIX V

SEWER HYDRAULIC CALCULATIONS

Worksheet for 8" PVC Capacity - Standard Method

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Diameter	0.67	ft
Discharge	0.43	cfs

Results

Normal Depth	0.36	ft
Flow Area	0.19	ft²
Wetted Perimeter	1.10	ft
Hydraulic Radius	0.17	ft
Top Width	0.67	ft
Critical Depth	0.31	ft
Percent Full	53.2	%
Critical Slope	0.00678	ft/ft
Velocity	2.25	ft/s
Velocity Head	0.08	ft
Specific Energy	0.44	ft
Froude Number	0.74	
Maximum Discharge	0.83	ft³/s
Discharge Full	0.77	ft³/s
Slope Full	0.00123	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.22	%
Downstream Velocity	Infinity	ft/s

Worksheet for 8" PVC Capacity - Standard Method

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.31	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00678	ft/ft

Cross Section for 8" PVC Capacity - Standard Method

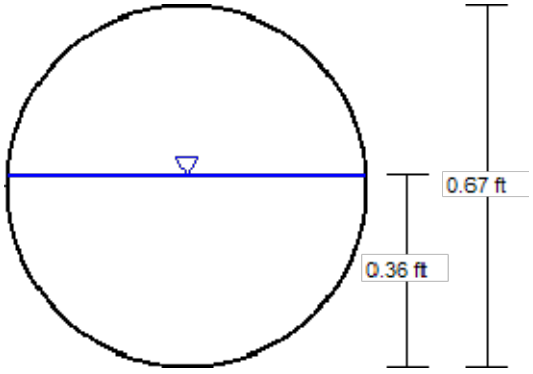
Project Description

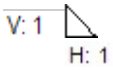
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Normal Depth	0.36	ft
Diameter	0.67	ft
Discharge	0.43	cfs

Cross Section Image





Worksheet for 8" PVC Capacity - 80% Method

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Diameter	0.67	ft
Discharge	0.33	cfs

Results

Normal Depth	0.31	ft
Flow Area	0.16	ft²
Wetted Perimeter	0.99	ft
Hydraulic Radius	0.16	ft
Top Width	0.67	ft
Critical Depth	0.27	ft
Percent Full	45.6	%
Critical Slope	0.00657	ft/ft
Velocity	2.11	ft/s
Velocity Head	0.07	ft
Specific Energy	0.37	ft
Froude Number	0.77	
Maximum Discharge	0.83	ft³/s
Discharge Full	0.77	ft³/s
Slope Full	0.00073	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.56	%
Downstream Velocity	Infinity	ft/s

Worksheet for 8" PVC Capacity - 80% Method

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.27	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00657	ft/ft

Cross Section for 8" PVC Capacity - 80% Method

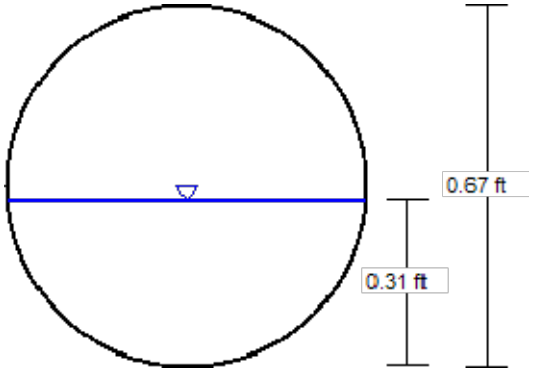
Project Description

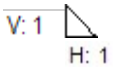
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Normal Depth	0.31	ft
Diameter	0.67	ft
Discharge	0.33	cfs

Cross Section Image





Rate Table for 8" Sewer Flowing Half Full

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Normal Depth	0.33	ft
Diameter	0.67	ft

Channel Slope (ft/ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
0.00400	0.38	2.18	0.17	1.04	0.67
0.00600	0.46	2.67	0.17	1.04	0.67
0.00800	0.53	3.09	0.17	1.04	0.67
0.01000	0.60	3.45	0.17	1.04	0.67
0.01200	0.65	3.78	0.17	1.04	0.67
0.01400	0.71	4.08	0.17	1.04	0.67
0.01600	0.75	4.37	0.17	1.04	0.67
0.01800	0.80	4.63	0.17	1.04	0.67
0.02000	0.84	4.88	0.17	1.04	0.67
0.02200	0.89	5.12	0.17	1.04	0.67
0.02400	0.92	5.35	0.17	1.04	0.67
0.02600	0.96	5.56	0.17	1.04	0.67
0.02800	1.00	5.77	0.17	1.04	0.67
0.03000	1.03	5.98	0.17	1.04	0.67
0.03200	1.07	6.17	0.17	1.04	0.67
0.03400	1.10	6.36	0.17	1.04	0.67
0.03600	1.13	6.55	0.17	1.04	0.67
0.03800	1.16	6.73	0.17	1.04	0.67
0.04000	1.19	6.90	0.17	1.04	0.67
0.04200	1.22	7.07	0.17	1.04	0.67
0.04400	1.25	7.24	0.17	1.04	0.67
0.04600	1.28	7.40	0.17	1.04	0.67
0.04800	1.31	7.56	0.17	1.04	0.67
0.05000	1.33	7.72	0.17	1.04	0.67
0.05200	1.36	7.87	0.17	1.04	0.67

Rate Table for 8" Sewer Flowing Half Full

Input Data

Channel Slope (ft/ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
0.05400	1.39	8.02	0.17	1.04	0.67
0.05600	1.41	8.17	0.17	1.04	0.67
0.05800	1.44	8.31	0.17	1.04	0.67
0.06000	1.46	8.45	0.17	1.04	0.67

Worksheet for 10" PVC Capacity

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Normal Depth	0.42	ft
Diameter	0.83	ft

Results

Discharge	0.58	cfs
Flow Area	0.27	ft²
Wetted Perimeter	1.31	ft
Hydraulic Radius	0.21	ft
Top Width	0.83	ft
Critical Depth	0.33	ft
Percent Full	50.1	%
Critical Slope	0.00613	ft/ft
Velocity	2.12	ft/s
Velocity Head	0.07	ft
Specific Energy	0.49	ft
Froude Number	0.65	
Maximum Discharge	1.23	ft³/s
Discharge Full	1.15	ft³/s
Slope Full	0.00071	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.12	%
Downstream Velocity	Infinity	ft/s

Worksheet for 10" PVC Capacity

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.42	ft
Critical Depth	0.33	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00613	ft/ft

Cross Section for 10" PVC Capacity

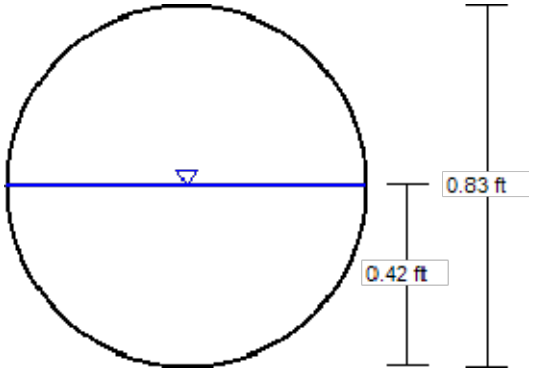
Project Description

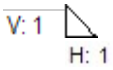
Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Normal Depth	0.42	ft
Diameter	0.83	ft
Discharge	0.58	cfs

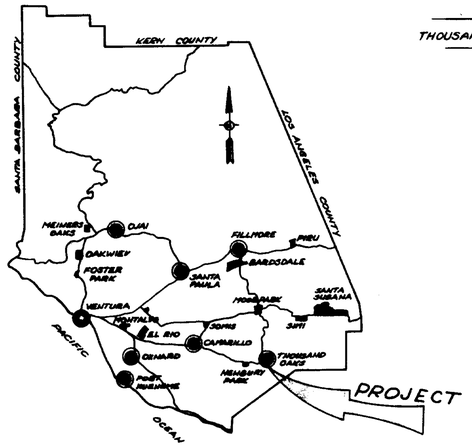
Cross Section Image



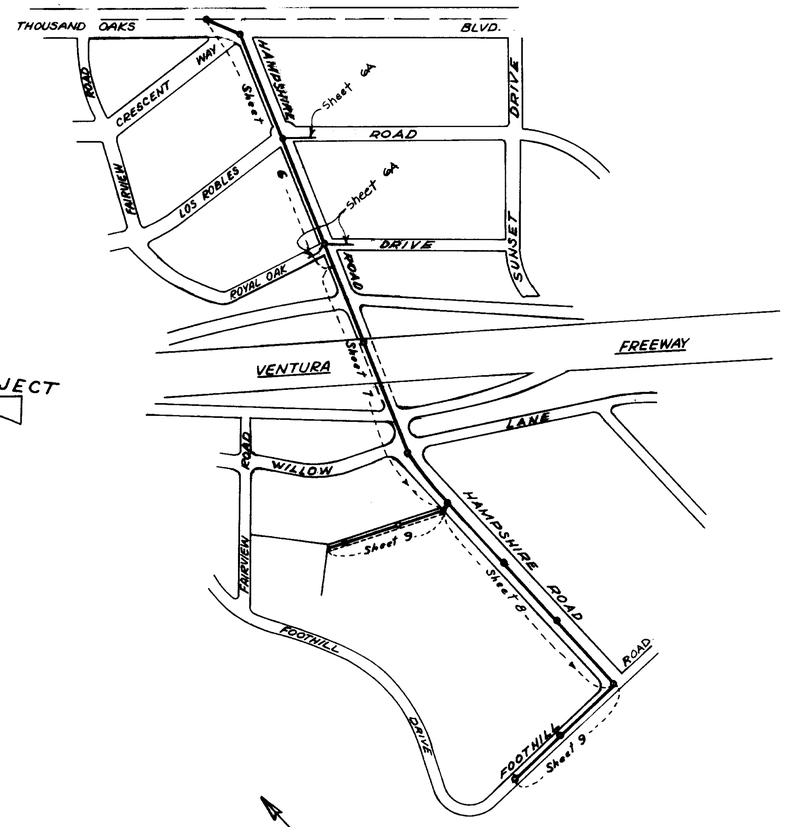


APPENDIX VI

RECORD DRAWINGS

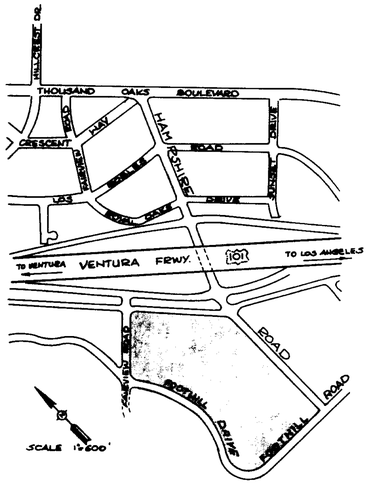


LOCATION MAP



INDEX MAP

SCALE : 1"=300'



VICINITY MAP

SEWER : GENERAL NOTES

1. ALL SANITARY SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATION OF THE CITY OF THOUSAND OAKS SANITARY DEPARTMENT CONSTRUCTION STANDARDS.
2. SEE PLATE NO. 13 OF THE VENTURA COUNTY WATER WORKS DISTRICT NO. 6 FOR VERTICAL AND HORIZONTAL CLEARANCE BETWEEN WATER AND SEWER LINES.
3. LIST OF STANDARD PLATES OF THE CITY OF THOUSAND OAKS SANITARY DEPT., STD. SPECIFICATIONS.

STD. SERVICE LATERAL	PLATE NO. 6
MANHOLE 7.5' AND DEEPER	PLATE NO. 1
MANHOLE UNDER 7.5' DEPTH	PLATE NO. 3
CLEANOUT	PLATE NO. 5
PIPE BEDDING	PLATE NO. 4

4. CONTRACTOR SHALL NOTIFY THE CITY OF THOUSAND OAKS SANITARY DEPARTMENT FIVE DAYS PRIOR TO STARTING WORK ON SEWERS.
5. THE LOCATION OF AND EXISTENCE OR NON-EXISTENCE OF UNDERGROUND UTILITIES HAS BEEN DETERMINED TO THE BEST OF THE ENGINEER'S ABILITY, BUT IT SHALL BE THE SOLE DUTY OF THE CONTRACTOR TO VERIFY THE LOCATION OF THE EXISTING UTILITIES AND TO TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO THESE UTILITIES. THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR ANY DAMAGE DONE TO EXISTING UTILITIES DURING CONSTRUCTION.

BENCH MARK

TBM=SPK AT CENTERLINE
INTERSECTION OF THOUSAND OAKS BLVD.
AND HAMPSHIRE ROAD
ELEVATION = 896.36

BM 4-57 BRASS CAP AT INTERSECTION THOUSAND OAKS BLVD. AND SUNSET DRIVE AT EASTERLY CORNER OF INTERSECTION 50' NORTHEASTERLY FROM CENTERLINE, 93' SOUTHEASTERLY OF PROLONGATION OF SUNSET DRIVE. BRASS CAP SET IN CONCRETE ELEVATION = 911.735 ADJUSTED AUGUST 1961

⚠ SEE SHEET 9 MR 7-23-97

"AS BUILT"

LOCATION MAP AND SEWER GENERAL NOTES FOR HAMPSHIRE ROAD AND FOOTHILL ROAD
DP 68-55 LD 57

PREPARED BY:
VALCON INC.
1429 THOUSAND OAKS BLVD.
THOUSAND OAKS, CALIFORNIA
Robert S. Haviland
Registered Civil Engineer No. 15231

APPROVED:
CITY OF THOUSAND OAKS
SANITARY DEPARTMENT
1311 LAWRENCE DRIVE
NEWBURY PARK, CALIFORNIA
BY [signature] 8-20-69
ASST. DIRECTOR OF UTILITIES DATE

DATE	WO	FB	SCALE:	SHEET
6-26-69	68-1923	35	AS SHOWN	5 SHEET 9

C10231S 69-107A

10231 SEW

HAMPSHIRE FOOTHILL

1-4-203

DRAWING NU

PLAN FILED FOR RECORD AT REQUEST OF RECORDED BY REQUEST OF

DRAWING NUMBER 10231 6 of 9

HAMPSHIRE ROAD

PROFILE SCALE
HORIZ. 1"=40'
VERT. 1"=4'

900
890
880

10+50.69 E.C.
9+63.53 MH#4
ROYAL OAK DRIVE
EXIST. GROUND OVER & SEWER
EXIST. GAS LINE
EXIST. WATER LINE
8" STUB ON EAST
0.28%
884.65
884.41
INVERT OF SEWER
87.16'-10" V.C.P. SEWER
5+45.53 MH#3
LOS ROBLES ROAD
18" C.M.P.
EXIST. WATER LINE
EXIST. GAS LINE
8" STUB ON EAST AND WEST
883.24
418.00'-10" V.C.P. SEWER
ALLEY
1+73.17 MH#2
CRESCENT WAY
THOUSAND OAKS BLVD.
0+00.00 MH#1
WATER MAIN
TEL. CABLE
8" STUB ON WEST
892.20
889.17
372.36'-10" V.C.P. SEWER
173.17'-10" V.C.P. SEWER

10 9 8 7 6 5 4 3 2 1 0

SEWER CURVE DATA
Δ=12°29'10"
R=400.00'
L=87.16'

0+00.00 M.H. #1
PROPOSED 10" V.C.P. SEWER
42+51.56 EXIST. S.S. STA.
2'-6"
42+64.06 EXIST. S.S. STA.
EXIST. 15" R.C.P. SEWER
Conn 131 & 161 ANG CONNECTING TO TIME 6" LAT.
No. No. 161
No. No. 131
MANHOLE DETAIL
SCALE 1"=3'
23' ENCASEMENT (WATER MAIN CROSSING)
No. No. 157
ENCASEMENTS
SEE SHEET 7
E.C. 10+50.69
9+63.53 MH#4
39.54'
8" STUB
ROYAL OAK DRIVE
7+98.53 TO HAMPSHIRE
HAMPSHIRE ROAD
10" V.C.P. SEWER
17.52'
20'
25'
STOP SIGN
ABANDONED W.V. (STACK PULLED)
8" STUB
17.00'
SEE DWG 10372 SHEET 12 OF 22 REVISED JULY 11, 2008 MLM
5+45.53 MH#3
LOS ROBLES ROAD
EX. 18" CMP
4+38.53
4+35.53
SEE SHEET 6A
ALLEY
8" STUB
SPEED LIMIT SIGN
CRESENT WAY
1+73.17 MH#2
62.30'
24.45'
THOUSAND OAKS BLVD.
0+00.00 MH#1
SEE MH DETAIL TO LEFT HEREON
140.00' L=16%
44+16.01 EXIST. S.S. STA.
EXIST. 15" SEWER
SCALE 1"=40'

"AS BUILT"

PLAN AND PROFILE OF SANITARY SEWER IN HAMPSHIRE ROAD
DP 68-55 LD 57

PREPARED BY:
VALCON, INC.
1429 THOUSAND OAKS BLVD.
THOUSAND OAKS, CALIF.
Robert L. Woodard
Registered Civil Engineer No. 15231

DATE 6-26-69 | W.O. 68-1923 | F.B. 35

APPROVED:
CITY OF THOUSAND OAKS
SANITARY DEPARTMENT
1311 LAWRENCE DRIVE
NEWBURY PARK, CALIFORNIA
BY _____ 8-20-69
ASST. DIRECTOR OF UTILITIES Date

SCALE AS SHOWN | SHEET 6 OF 9

C102318 69-107A

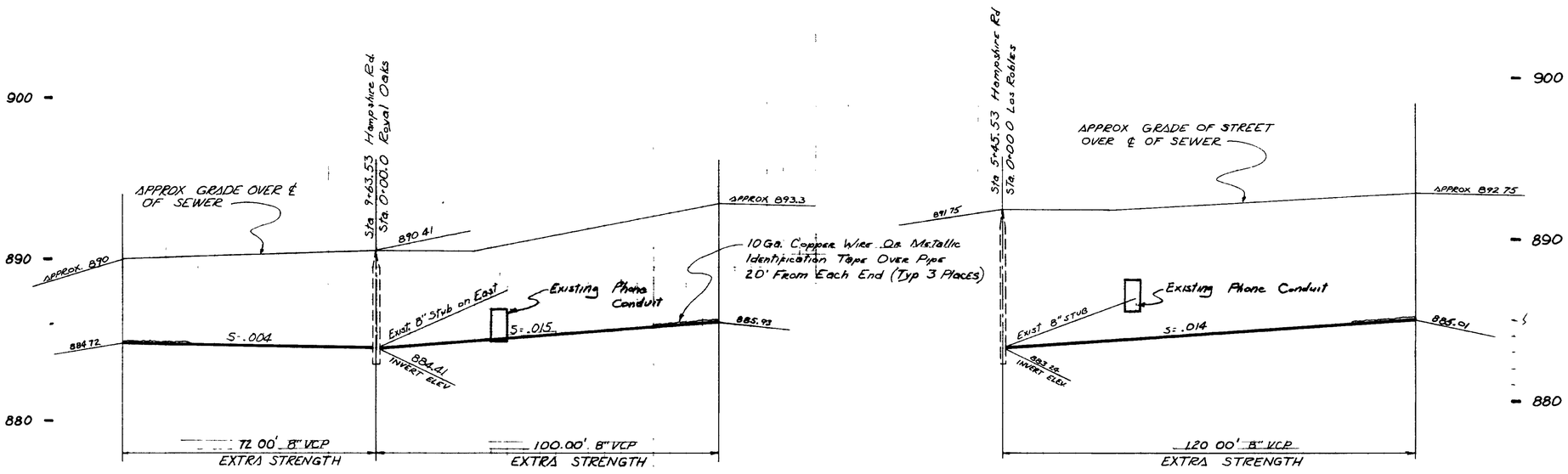
P-11-203

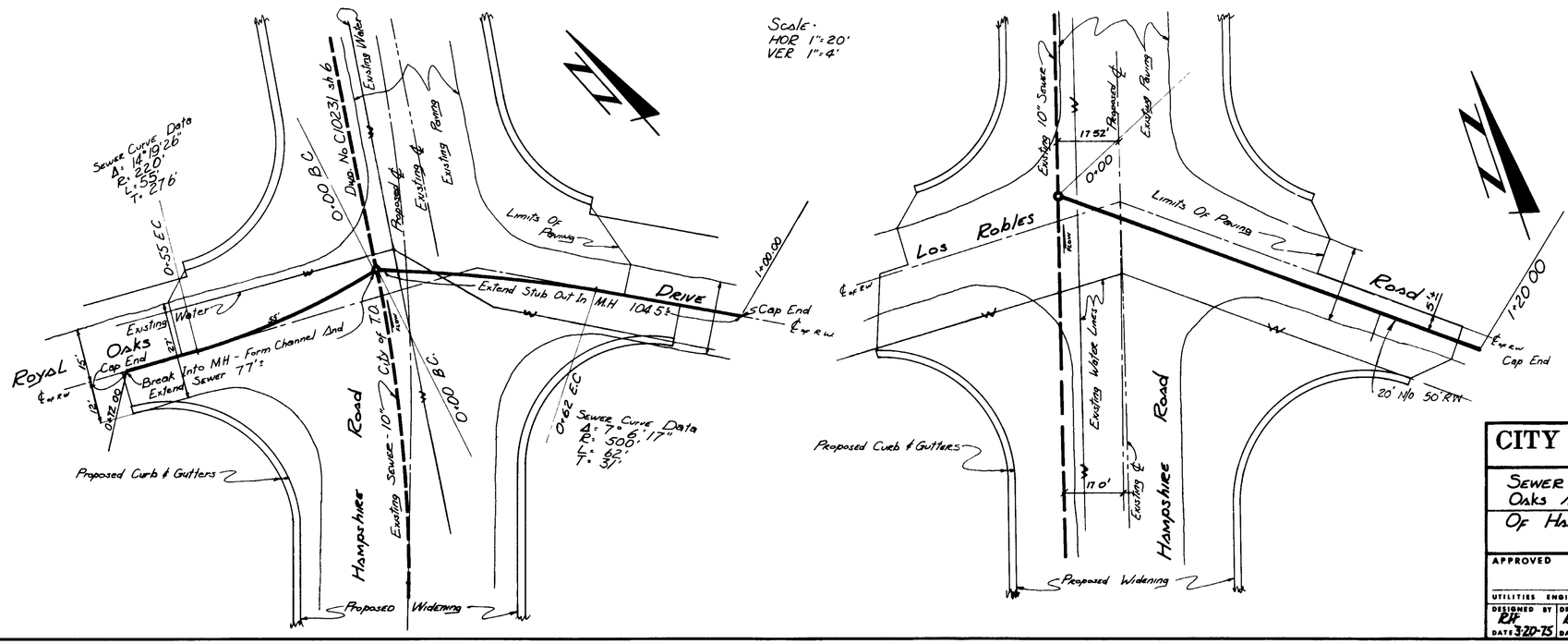
DRAWING NUMBER HAMPSHIRE

DRAWING NUMBER

10231
6 of 9

Royal Oak
Los Robles

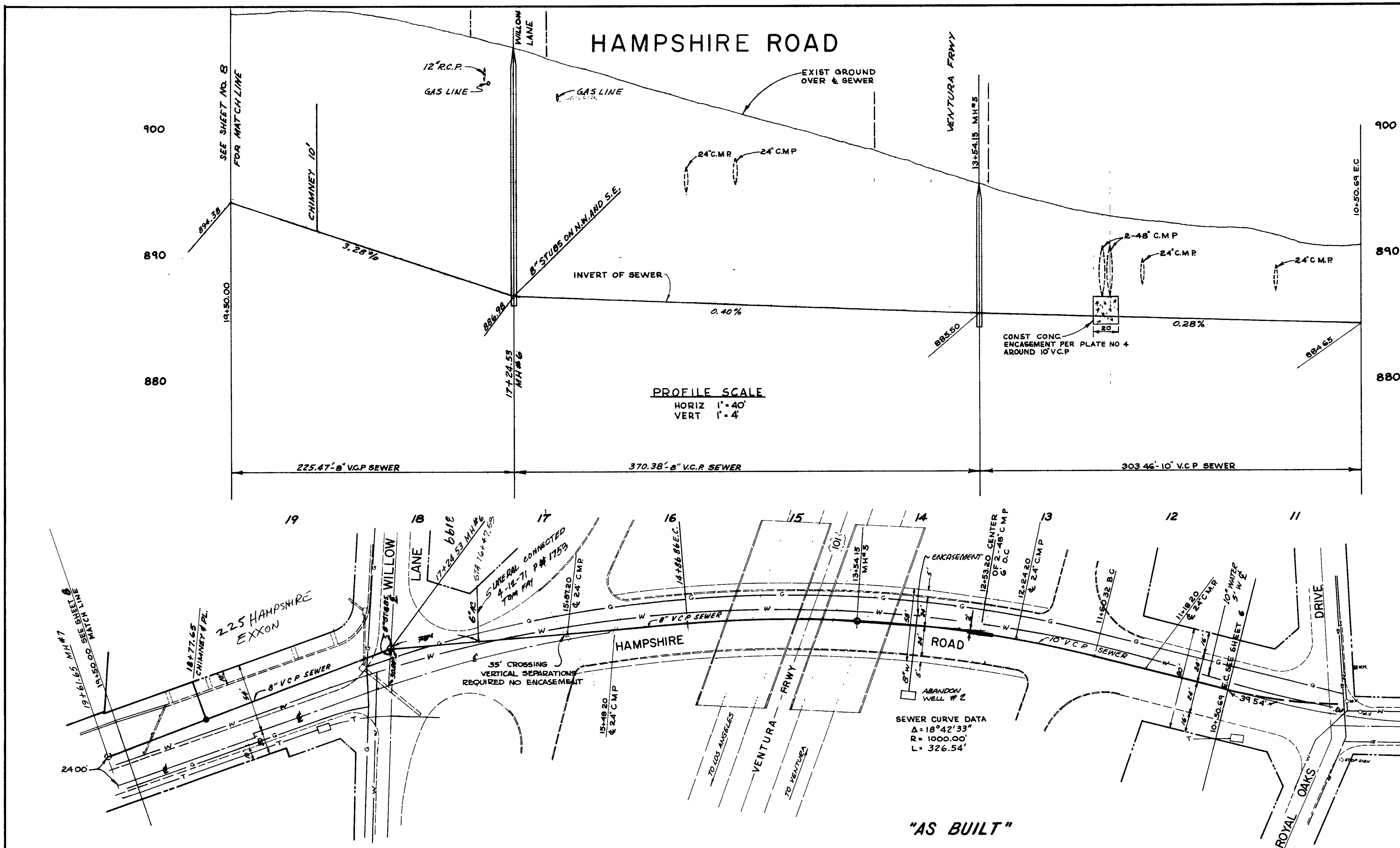




CITY OF THOUSAND OAKS
UTILITIES DEPARTMENT

Sewer Main Extension In Royal Oaks And Los Robles As A Result Of Hampshire Road Widening

APPROVED	APPROVED
UTILITIES ENGINEER DATE	DIRECTOR OF UTILITIES DATE
DESIGNED BY RJF DATE 3-20-75	DRAWN BY RH DATE 3-20-75
CHECKED BY JRH DATE 3-21-75	DRAWING NUMBER C10231S
	SHEET 6A OF 9



"AS BUILT"

PLAN AND PROFILE OF **SANITARY SEWERS** IN **HAMPSHIRE ROAD** DP 68-55 LD 57	PREPARED BY VALCON, INC 1429 THOUSAND OAKS BLVD THOUSAND OAKS, CALIF Robert S. [signature] Registered Civil Engineer No. 15231	APPROVED CITY OF THOUSAND OAKS SANITARY DEPARTMENT 1311 LAWRENCE DRIVE NEWBURY PARK, CALIFORNIA BY [signature] 8-20-69 ASST. DIRECTOR OF UTILITIES Date
	DATE 6-26-69 · W O 68-1923 · F.B 35	SCALE AS SHOWN · SHEET 7 OF 9

10231 7 of 9

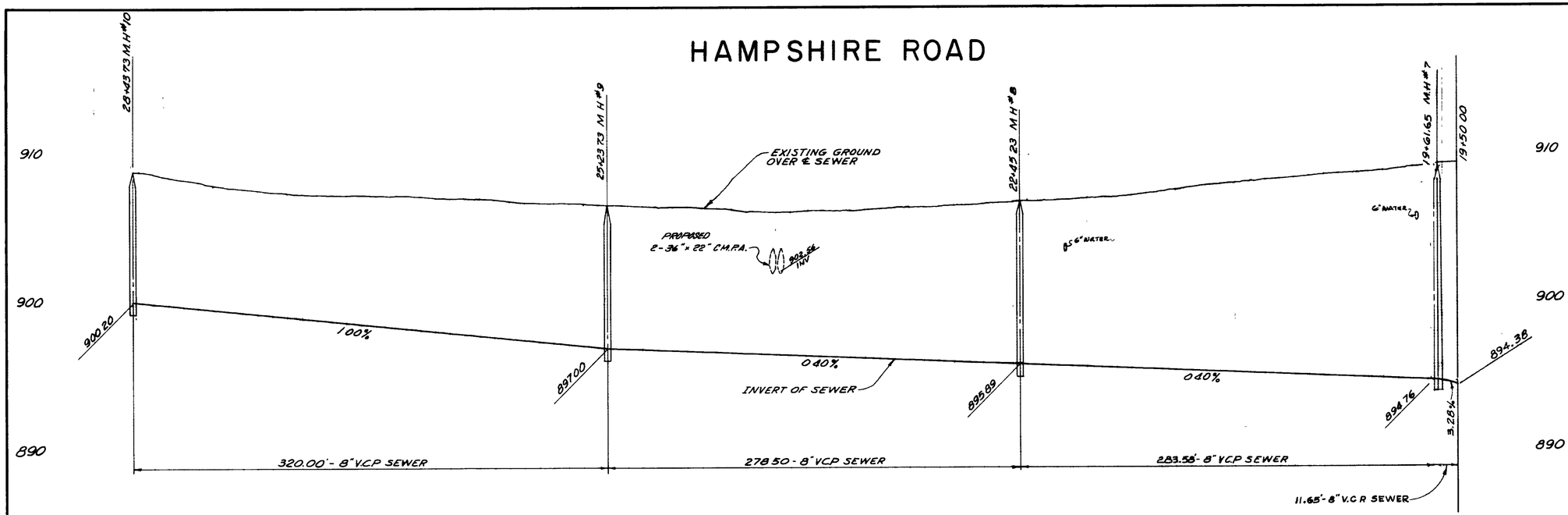
HAMPSHIRE ROAD

P-4-203

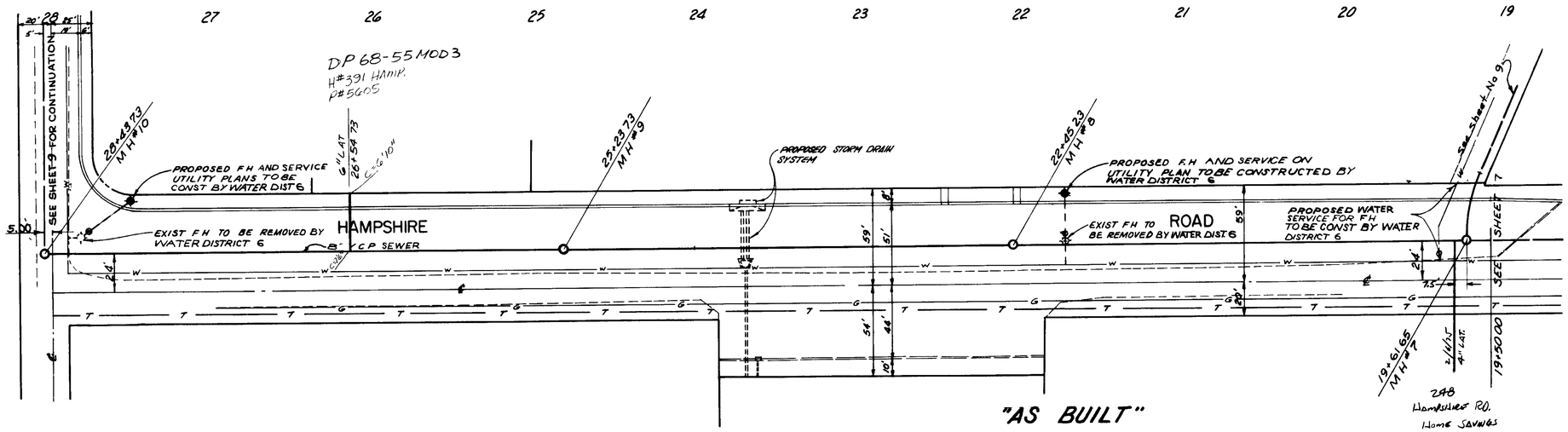
C10231S 69-107A

10231
8 of 9

HAMPSHIRE ROAD



PROFILE SCALE
HORIZ 1"=40'
VERT 1"=8'



"AS BUILT"

SCALE 1"=40'

PLAN AND PROFILE OF **SANITARY SEWER** IN **HAMPSHIRE ROAD** DP 68-55 LD57	PREPARED BY VALCON, INC 1429 THOUSAND OAKS BLVD. THOUSAND OAKS, CALIF. Robert R Vaadland Registered Civil Engineer No 15231	APPROVED CITY OF THOUSAND OAKS SANITARY DEPARTMENT 1311 LAWRENCE DRIVE NEWBURY PARK, CALIFORNIA BY Sam Burke 8-20-69 ASST. DIRECTOR OF UTILITIES Date
	DATE 6-26-69 / W.O 68-1923 / E.B. 35	SCALE AS SHOWN / SHEET 8 OF 9

HAMPSHIRE ROAD

DP 4-203

C 102318 69-107A

10231
9 of 9

FOOTHILL DRIVE

FOOTHILL DRIVE

0+00.00: 1946.65 MH #7
0+02.47 B.C.
0+42.47 E.C.
0+45.47 E.C.
0+50.00 B.V.C.
0+70.00
0+90.00
1+10.00
1+30.00 E.V.C.
2+35.00 MANHOLE
4+36.78 CLEANOUT REMOVE & CONSTRUCT MANHOLE PER PLATE NO. 17 AND INSTALL 8" STUB TO BLDG. @ 2% MIN GRADE
Prop. Ground over ℄ Sewer
Plug
930
920
910
900
940
894.76
901.95
903.13
906.49
909.00
910.65
911.50
915.44
923.00
16.33%
3.75 %
80' Vertical Curve
P.I. = 910.00
SCALE: HORIZ. 1"=40'
VERT. 1"=8'
DOUBLE SCALE VERTICAL
436.78'-8" VCP SEWER
0 1 2 3 4

33+60.00 M.H. #12 End Const.
926.00
6.18 %
31+23.73 M.H. #11
PROP. GROUND OVER ℄ SEWER
911.40
INVERT OF SEWER
4.0 %
28+43.73 M.H. #10
900.20
SCALE: HORIZ. 1"=40'
VERT. 1"=8'
DOUBLE SCALE VERTICAL
236.27 V.C.P. SEWER
280'-8" V.C.P. SEWER
33 32 31 30 29

0+00.00: 1946.65 MH #7 (V48-9)
0+02.47 B.C.
0+42.47 E.C.
HAMPSHIRE ROAD
See Sheet No. 8
Curve Data
Δ = 22°-55'-15"
R = 100'
L = 40.00'
T = 20.27'
DP 80-486
6" VCP
17.96
P# 5005
277 HAMM.
2+35.00 MANHOLE (V48-8.1)
SCALE 1"=40'
36+11.73 ℄ M.H. (V48-11.2)
35+19.06 ℄ M.H. (V48-11.1)
8" PVC
DP 77-458
H# 33756
P# 33770
33+60.00 M.H. #12 End Const. (V48-11)
33+40.64 P.I.
Prop. on-Site S.S and water on Sht. No. SD-4
SEE DWG. 10671, SHT. 2 FOR PLAN VIEW & PROFILE
15' SANITARY SEWER EASEMENT
PROPOSED F.H. ℄ SERVICE ON UTILITY PLAN TO BE CONST. BY WATER DIST. 6
(#18-58)
8" Stub
915.80 INV.
FOOTHILL DRIVE
PARCEL "A"
PARCEL "E"
8" VCP TO BLDG. 2% MIN.
REMOVE Plug
31+23.73 M.H. #11 (V48-10)
28+43.73 M.H. #10 (V48-9)
SEE SHEET 8 FOR CONT.
HAMPSHIRE ROAD
(V48-8.2) 4+36.78
REMOVE EXIST. CLEAN OUT & CONSTRUCT MANHOLE PER PLATE NO. 17 AND INSTALL 8" STUB P.V.C. TO BLDG. AT 2% MIN. SLOPE
SCALE 1"=40'

"AS BUILT"

1 REMOVE EXIST. CLEANOUT AND CONSTRUCT MANHOLE PER PLATE NO. 17, INSTALL 8" P.V.C. STUB TO BUILDING AT 2% MIN. SLOPE KOR 7-23-97

PLAN AND PROFILE OF SANITARY SEWER THROUGH EASEMENTS IN PARCEL A AND FOOTHILL ROAD
DP 68-55 LD 57

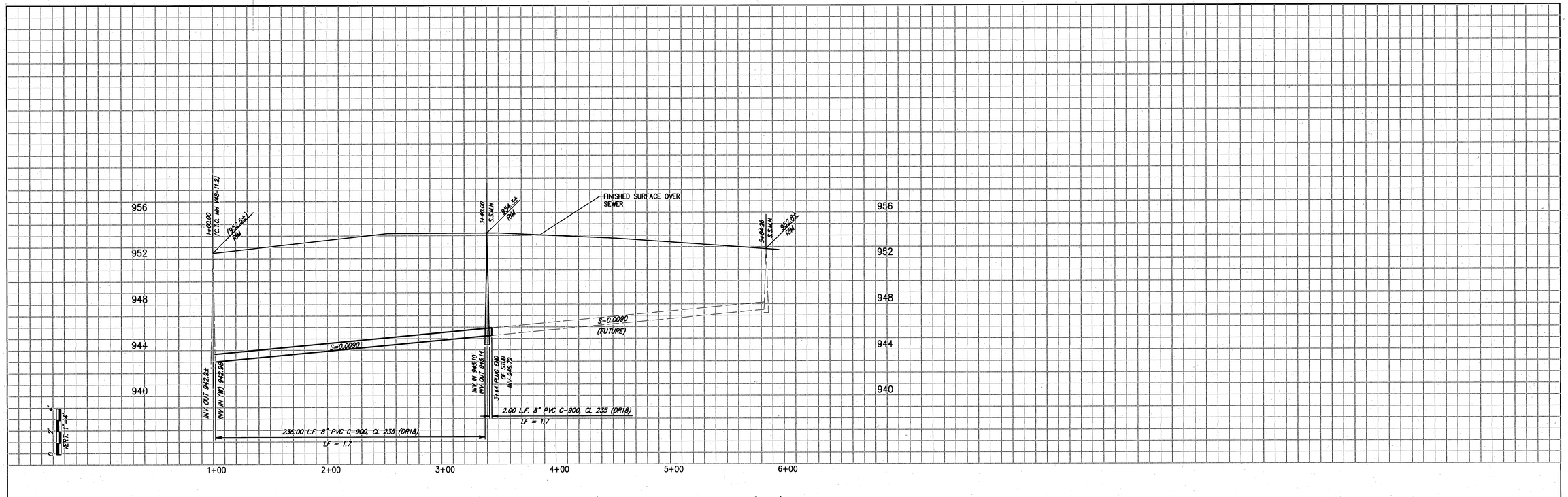
PREPARED BY:
VALCON, INC.
1429 THOUSAND OAKS BLVD.
THOUSAND OAKS, CALIF.
Robert L Vanderlaan
Registered Civil Engineer No. 15231

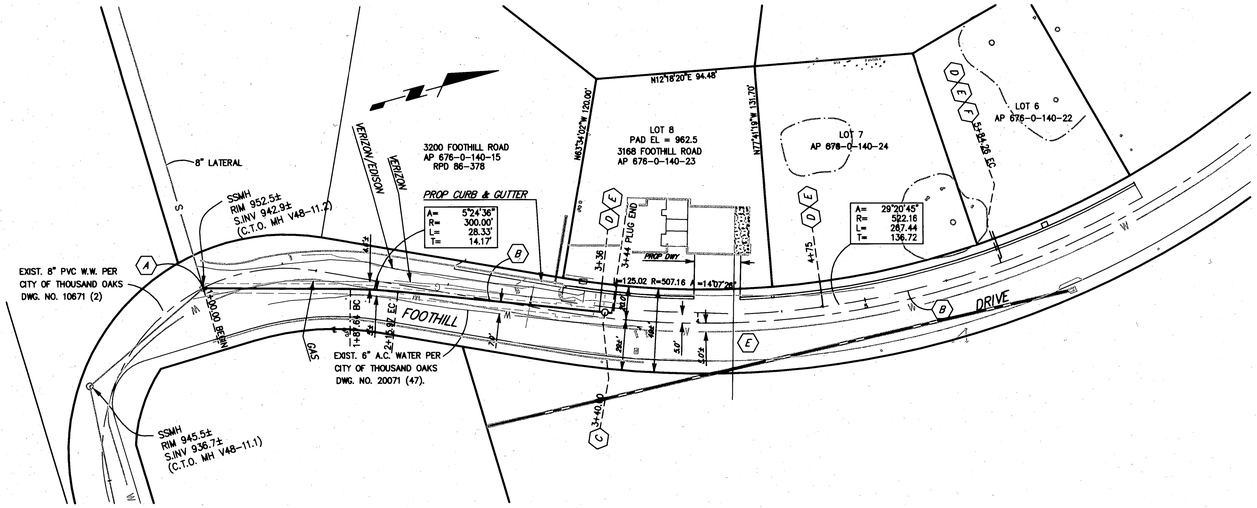
APPROVED:
CITY OF THOUSAND OAKS
SANITARY DEPARTMENT
1311 LAWRENCE DRIVE
NEWBURY PARK, CALIFORNIA
BY Tom Brick 8-20-69
ASST. DIRECTOR OF UTILITIES Date

DATE	W.O.	FB	SCALE	SHEET
6-26-69	68-1928	35	AS SHOWN	9 OF 9

C102315 69-107A

12-4-203





CONSTRUCTION NOTES

- (A) CONNECT TO EXISTING MANHOLE. RE-CONSTRUCT BASE PER DETAIL ON COVER SHEET, CITY OF THOUSAND OAKS PLATE NO. 17, AND PER SPPWC STD. PLAN 208-1. CONTRACTOR SHALL VERIFY INVERT PRIOR TO INSTALLING ANY PIPE.
- (B) INSTALL 8" PVC SEWER. (C-900, CL 235, DR18)
- (C) INSTALL SANITARY SEWER MANHOLE PER CITY OF THOUSAND OAKS PLATE 17.
- (D) INSTALL 4" HOUSE SERVICE PER CITY OF THOUSAND OAKS PLATE 23.
- (E) TRENCH REMOVAL AND REPAIR PER CITY OF THOUSAND OAKS PLATE NO. 8-14 (ROAD DESIGN & CONSTRUCTION STANDARDS)
- (F) INSTALL SANITARY SEWER MANHOLE PER CITY OF THOUSAND OAKS PLATE 19.

40' 20' 0' 40' 80'
GRAPHIC SCALE: 1"=40'

DIGALERT
DIAL TOLL FREE 1-800-422-4133 AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT(USA) OF SOUTHERN CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER FREDERICK T. GIROUX No. C 057289 Exp. 12-31-13 CIVIL STATE OF CALIFORNIA

PREPARED BY:
FREDERICK T. GIROUX, PE
3408 ROCKHAMPTON DR
CAMARILLO, CA 93012
805-633-2222
6/10/15
FREDERICK T. GIROUX, PE RCE 057289 EXP 12-31-13 DATE

NO.	SYM.	DESCRIPTION OF CHANGE	R.C.E.	DATE	P.D.E.	DATE
	1	RAISED MH @ 3+16.82, REVISED FUTURE LINE TO 6"				

REVISIONS

REVIEWED FOR PERMIT ISSUANCE BY: CITY OF THOUSAND OAKS

DEVELOPMENT ENGINEER DATE

6/10/15
'ASBUILT'

CITY OF THOUSAND OAKS
PUBLIC WORKS DEPARTMENT

WASTEWATER AND WATER
PLAN AND PROFILE

3168 FOOTHILL DRIVE
PPD 99-124
LOT 8, BLOCK 21 THOUSAND OAKS TRACT

DESIGNED BY	DRAWN BY	CHECKED BY	DRAWING NUMBER 03-30A
DATE	DATE	DATE	SHEET 2 OF 2

Revised Date: 8-1-03

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
RECORDER BY PART NUMBER 60002
POSITIVE SIDE OF PAINT ON THIS LINE

PPD 99 - 124
Waste Water
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
RECORDER BY PART NUMBER 60002
POSITIVE SIDE OF PAINT ON THIS LINE

03 - 30 A
Sheet 2 of 2
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
RECORDER BY PART NUMBER 60002
POSITIVE SIDE OF PAINT ON THIS LINE

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
RECORDER BY PART NUMBER 60002
POSITIVE SIDE OF PAINT ON THIS LINE

Stantec

325 HAMPSHIRE RD.
CITY OF THOUSAND OAKS,
COUNTY OF VENTURA, CA

PRELIMINARY WATER SYSTEM CAPACITY STUDY

Prepared For:
IMT Capital, LLC
15303 Ventura Blvd, Suite 200
Sherman Oaks
California, USA 91403

Prepared By:
Lusine Nidelian
Reviewed By:
Kevin Donlon, PE

Stantec Consulting Services, Inc.
300 North Lake Avenue, Suite 400
Pasadena, CA 91101-4169

Date: November 29, 2021

TABLE OF CONTENTS

APPENDICES

INTRODUCTION

The purpose of the following report is to provide preliminary water system capacity analysis for the planned mixed-use development at 325 Hampshire Rd. The proposed development will include construction of 16 buildings with 420 dwelling units consisting of apartments and townhomes, approximately 15,000 square feet of commercial/retail space, parking areas, a 2,400 square foot community building, 2.91 acres of public exterior spaces, recreation amenities, and associated site improvements including grading and drainage.

This report will outline the estimated water demands for the project using water demand factors per the City of Thousand Oaks Water Master Plan (February 2018) prepared by Kennedy/Jenks Consulting and available reservoir capacity as analyzed by City of Thousand Oaks staff.

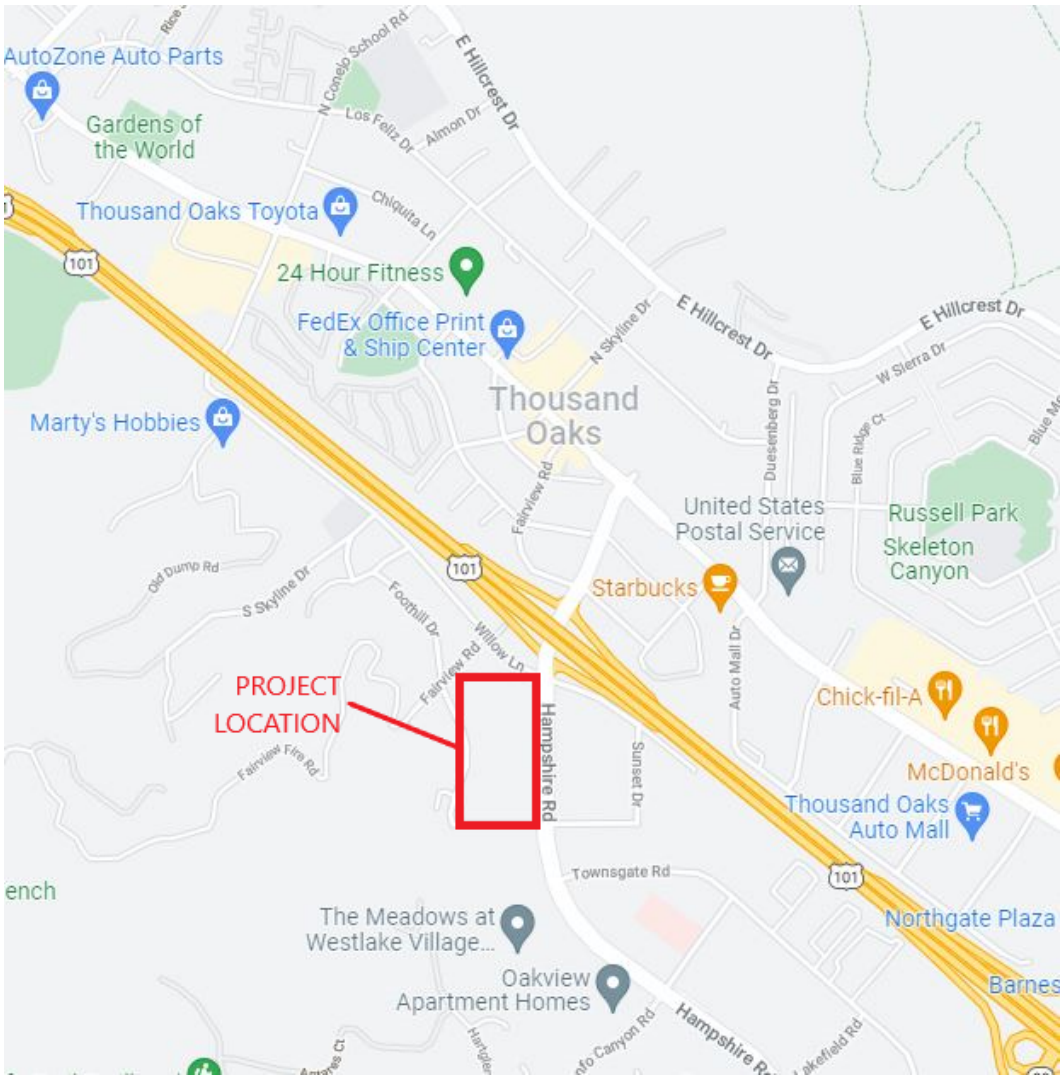


Figure 1 – *Project Location*

Existing Condition

Domestic water for the subject property is currently provided by an existing 8-inch asbestos-clay water main in Hampshire Road on the east side of the project. An existing 6-inch asbestos-clay water main in Foothill drive to the south and west of the property currently provides fire service to the site. Refer to Appendix III and Appendix V.

Proposed Condition

Domestic and fire service for the project will be provided by an on-site 8-inch water line. The line will connect to the existing public water main at 3 points to create a looped system. Connections will be made to the existing 8-inch asbestos-clay water main in Hampshire Road at the main project entrance, to the existing 6-inch asbestos-clay water main in Foothill drive at the southerly project entrance, and to the existing 6-inch asbestos-clay water main in Foothill drive on the west side of the property. Refer to Appendix III.

Methodology

Unit counts and building square footages were taken from the project's entitlement submittal prepared by KTGY Architecture, dated April 20, 2021. Water demand factors were taken from the 2018 City of Thousand Oaks Water Master Plan Table 3-5 and used to calculate the projects demands, see Figure 2 below.

Additionally, a Peak Hour Demand Factor of 4.50 was used to determine the required flow rate to be delivered to the project in gallons per minute. A Maximum Day Demand Peaking Factor of 1.75 was used to evaluate reservoir capacity required to serve the project.

Refer to Appendix IV for detailed calculations.

Development Type	Land Use	Water Demand Factor[1]		Quantity		Projected Annual Demand Increase through Buildout	
		Value	Unit	Value	Unit	GPD	AFY
Planned Redevelopment[2]	Commercial/Residential	200	gpd/EDU	214	EDU	42,800	47
	Commercial	130	gpd/ksf	611.50	ksf	80,909	89
Planned Development	Apartments	200	gpd/EDU	45	EDU	9,000	10
	Assisted Living[3]	1.36	gpm/acre	14.53	acre	28,456	31
	Condominiums	200	gpd/EDU	49	EDU	9,800	11
	Industrial[3]	1.82	gpm/acre	5.72	acre	14,991	16
	Museum[3]	1.36	gpm/acre	1.87	acre	3,662	4
	Office[3]	3.93	gpm/acre	2.7	acre	15,450	17
	Place of Worship[3]	1.36	gpm/acre	1.28	acre	2,507	3
	Retail	200	gpd/EDU	132	EDU	26,400	29
	Single Family Residents	440	gpd/EDU	158	EDU	69,520	76
Developable Vacant Lands	Commercial/Residential[3]	3.93	gpm/acre	2.93	acre	16,596	18
	Industrial[3]	1.82	gpm/acre	1.16	acre	3,052	3
	Low Density[3]	1.27	gpm/acre	23.58	acre	43,118	47
	Medium Density[3]	3.23	gpm/acre	0.84	acre	3,924	4
	Very Low Density[3]	0.61	gpm/acre	6.55	acre	5,751	6
TOTAL						**375,936**	**414**

Figure 2 – *Table 3.5 from 2018 City of Thousand Oaks Water Master Plan.*

RESULTS & CONCLUSION

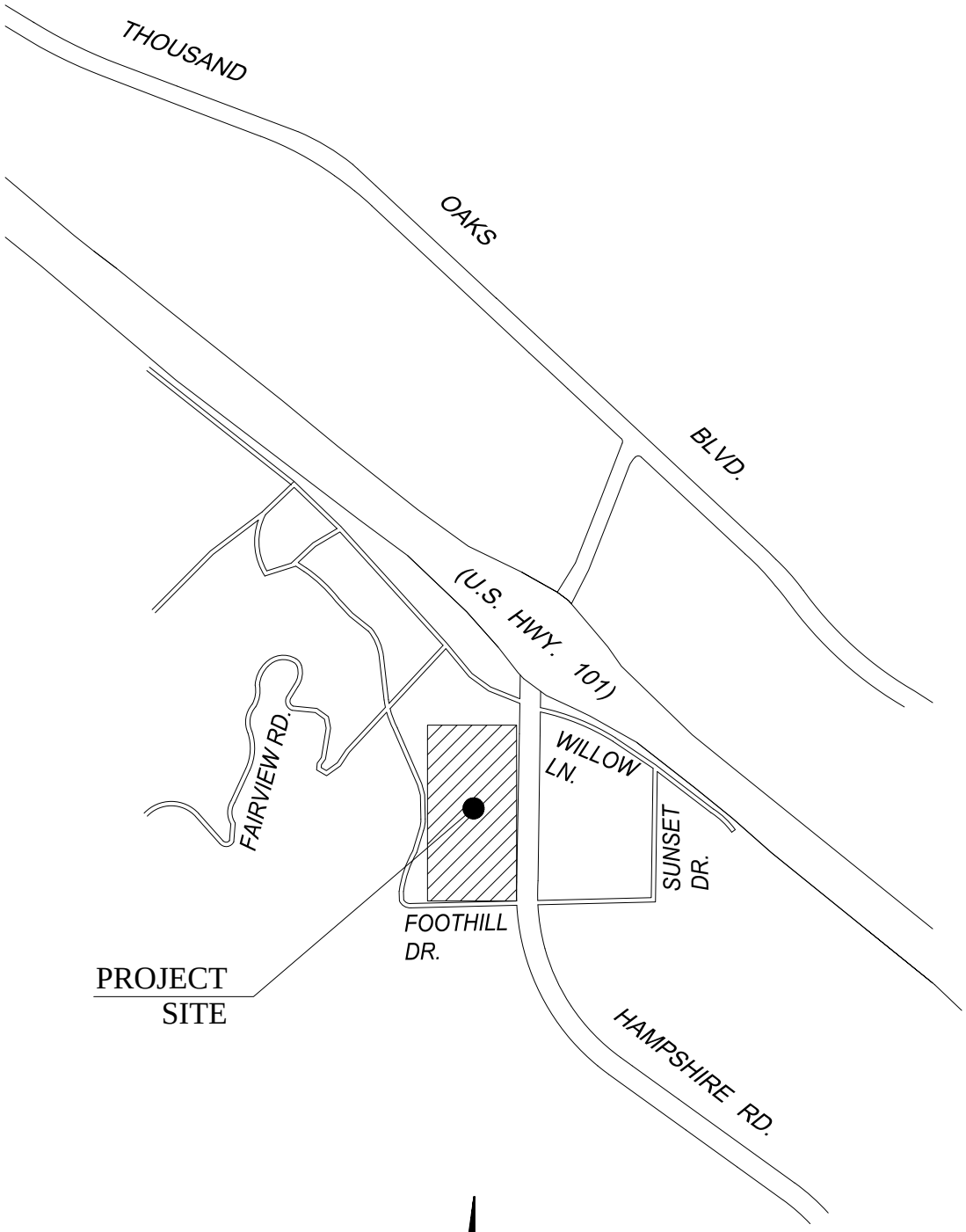
City of Thousand Oaks staff evaluated the project demands as presented in Appendix IV and provided the following feedback via email on October 14, 2021:

> Using a peaking factor of 4.50 for Peak Hour Demand, the water system must be capable of delivering 274 gpm to the project. There is an existing 6" main in Foothill and an 8" main in Hampshire. The project will construct on-site water mains creating an on-site looped water network, therefore providing the required peak hour demand is achievable.
>
> Using a peaking factor of 1.75 for Max. Day Demand, The reservoir capacity needs to provide 153,000 gallons of storage. Storage for the project is provided by Freeway Reservoir (1.0 MG) and La Granada Reservoir (3.97 MG). Freeway Reservoir will be the primary source of water for the project due to the proximity to the project. Adequate capacity exists in the Freeway Reservoir and the increased demand on Freeway will increase turnover and improve water quality in the reservoir.

Per City of Thousand Oaks staff, the city's public water system has available capacity to deliver the required flow rates to the project. The city's reservoir system also has adequate capacity to provide the maximum day demand.

APPENDIX I

VICINTY MAP



VICINITY MAP

N.T.S.

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Stantec Consulting Services Inc.
300 North Lake Avenue Suite 400
Pasadena CA 91101-4169
Tel: (626) 796-9141
www.stantec.com

Client/Project
IMT CAPITAL, LLC

325 HAMPSHIRE RD.

Project No.
2042570900

Title
VICINITY MAP

Revision
#

Date
11/23/2021

Reference Sheet
X-XXX

APPENDIX II

LAND USE SITE PLAN

PROJECT SUMMARY

PROJECT ADDRESS:	325 HAMPSHIRE ROAD, THOUSAND OAKS, CALIFORNIA 91361
APN:	676-0-150-375, 676-0-150-285, 676-0-150-365
SITE AREA:	11.77 AC - 512,689 SF
NET AREA:	10.97 AC - 477,853 SF
ALLOWED DENSITY:	30 DU / AC = 329 UNITS
DENSITY BONUS:	91 UNITS = 27.5% OF 329 UNITS
AFFORDABLE UNITS:	50 LOW INCOME = 15% OF 329 UNITS
PROPOSED DENSITY:	38.29 DU / AC = 420 UNITS
PROPOSED HEIGHT:	50'-3"
PROPOSED AVERAGE HT:	36'-7"

MIXED-USE BUILDINGS - UNIT BREAKDOWN

	BUILDING A	BUILDING B
STUDIOS	16	12
1 BEDROOMS	108	76
2 BEDROOMS	80	57
TOTAL	204	145

TOWNHOMES BUILDINGS - UNIT BREAKDOWN

	BUILDING C	BUILDING D
2 BEDROOMS	6	14
3 BEDROOMS	24	14
4 BEDROOMS	6	7
TOTAL	36	35

GRAPHIC SCALE

100 0 100 300

SCALE 1"=100'

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Pasadena CA 91101-4169
Tel: (626) 796-9141
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Notes

Client/Project
IMT CAPITAL, LLC

325 HAMPSHIRE RD.

Project No.
2042570900

Title
LAND USE/SITE PLAN

Revision
#

Date
11/23/2021

Reference Sheet
X-XXX

APPENDIX III

WATER STUDY EXHIBIT

v:\2042\active\2042570900\drawing\exhibit_files\570900c-px7009
2021.11.29 10:24:47 AM

ORIGINAL SHEET - ARCH D

Windsor Terrace Nursing Home Zone: P-L

Physical Therapy Zone: C-1

Chevron Gas Zone: C-1

Optometry Zone: C-1

SFD Zone: R-E

PreSchool Zone: C-1

Shell Gas Zone: C-1

POCKET PARK .25 AC

BLDG A

BLDG B

BLDG C

BLDG D

HAMPSHIRE ROAD

FOOTHILL ROAD

BIKE ROOM

TRASH RM 2

ELEC RM

MECH RM

DN

LOBBY/ LEASING

RETAIL

PASEO

PLAZA

AMENITY

AMENITY/ CO-WORKING

LIVE / WORK

UTILITY

TRASH RM

8" W

6" W

POINT OF CONNECTION

6" AC WATER MAIN PER DP C20071W

8" AC WATER MAIN PER DP C20068W

6" AC WATER MAIN PER DP C20068W

LEGEND:

PROPSED 8" WATER LINE

EXISTING 6" ASBESTOS CLAY WATER MAIN

EXISTING 8" ASBESTOS CLAY WATER MAIN

GRAPHIC SCALE

40 0 40 120

SCALE 1"=40'

Stantec

Stantec Consulting Services Inc.
300 North Lake Avenue Suite 400
Pasadena CA 91101-4169
Tel: (626) 796-9141
www.stantec.com

Permit/Seal

PRELIMINARY NOT FOR CONSTRUCTION

Not for permits, pricing or other official purposes. This document has not been completed or checked and is for general information or comment only.

Issued	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

Client/Project
IMT CAPITAL, LLC

325 HAMPSHIRE RD.

Project No.: 2042570900
File Name: 570900C-PX7009
Scale:

Dwn.	Dsgn.	Chkd.	SET_DATE YYYY.MM.DD

WATER STUDY EXHIBIT

Revision: Sheet: of
Drawing No.

APPENDIX IV

WATER DEMAND CALCULATIONS

Project Name	T.O RANCH - HAMPSHIRE RD
Project Number	2042570900
Subject	Water Demand
Engineer	Kevin Donlon
Date	10/11/2021

Water Demand Factor per 2018 City of Thousand Oaks Water Master Plan, Table 3-5:

Apartments & Condominiums:	200 gpd/EDU
Commercial:	130 gpd/ksf

Unit counts and square footages below are per KTGY Formal Submittal; April 20, 2021

Building A

Residential			**Commercial**	
Studio	16 units			
1 bedroom	108 units		Amenity / Lobby	4451 SF
2 bedroom	80 units		Commercial / Retail	7500 SF
TOTAL	204 EDU		TOTAL	11951 SF
DEMAND:	40,800 gpd		DEMAND:	1,554 gpd
Building A Total:		**42,354 gpd**		

Building B

Residential			**Commercial**	
Studio	12 units			
1 bedroom	76 units		Amenity / Lobby	5387 SF
2 bedroom	57 units		Commercial / Retail	7500 SF
TOTAL	145 EDU		TOTAL	12887 SF
DEMAND:	29,000 gpd		DEMAND:	1,675 gpd
Building B Total:		**30,675 gpd**		

Building C
(includes 6 buildings)

Residential			**Commercial**	
2 Bedroom	6 units			
3 bedroom	24 units		Amenity / Lobby	0 SF
4 bedroom	6 units		Commercial / Retail	0 SF
TOTAL	36 EDU		TOTAL	0 SF
DEMAND:	7,200 gpd		DEMAND:	0 gpd
Building C Total:		**7,200 gpd**		

Building D

(includes 7 buildings)

Residential		**Commercial**	
2 Bedroom	14 units		
3 bedroom	14 units	Amenity / Lobby	0 SF
4 bedroom	7 units	Commercial / Retail	0 SF
TOTAL	35 EDU	TOTAL	0 SF
DEMAND:	7,000 gpd	DEMAND:	0 gpd

Building D Total: **7,000 gpd**

Amenity Building

Residential		**Commercial**	
2 Bedroom	0 units		
3 bedroom	0 units	Amenity / Lobby	2400 SF
4 bedroom	0 units	Commercial / Retail	0 SF
TOTAL	0 EDU	TOTAL	2400 SF
DEMAND:	0 gpd	DEMAND:	312 gpd

Building D Total: **312 gpd**

Calculate Maximum Required Flow Rate

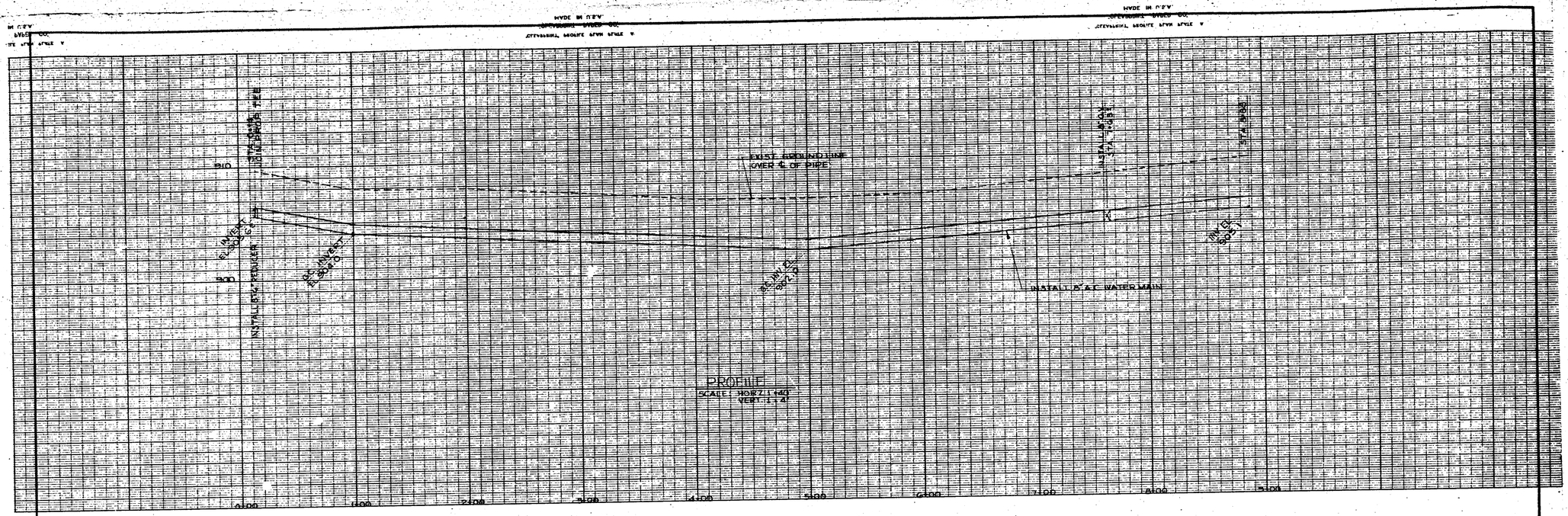
Site Total:	87,541 gpd
	60.8 gpm
Peak Hour Demand Factor:	4.5
Site Total with Peaking Factor:	**274 gpm**

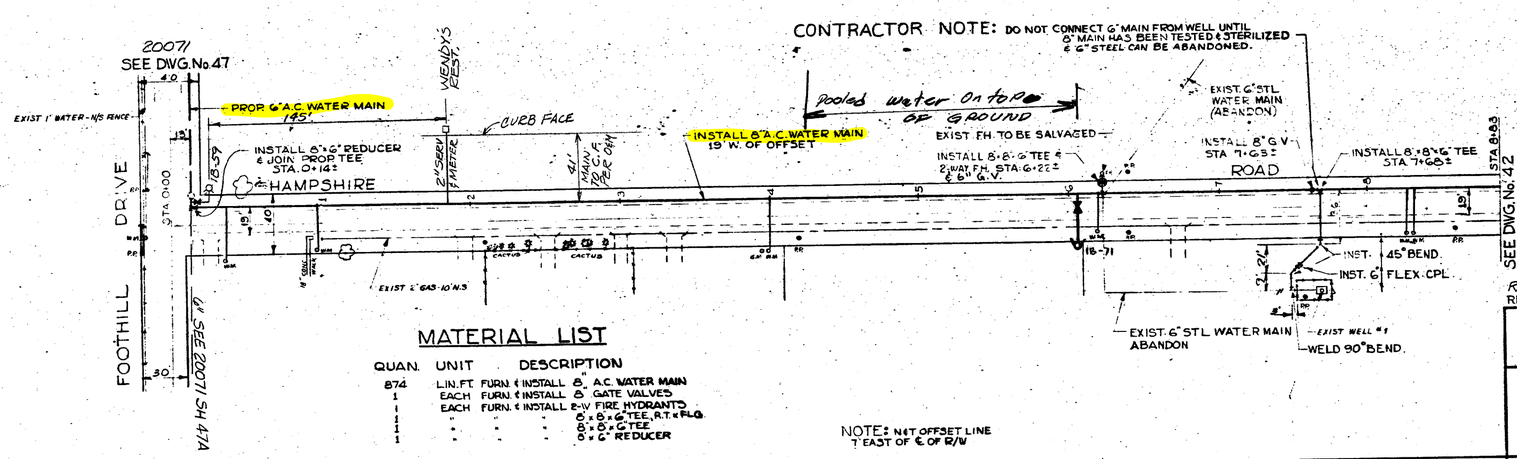
Calculate Maximum Day Demand

Site Total:	87,541 gpd
Max Day Demand Peaking Factor:	1.75
Site Total with Peaking Factor:	**153,197 gpd**

APPENDIX V

RECORD DRAWINGS





MATERIAL LIST

QUAN.	UNIT	DESCRIPTION
874	LIN. FT	FURN. & INSTALL 8" A.C. WATER MAIN
1	EACH	FURN. & INSTALL 8" GATE VALVES
1	EACH	FURN. & INSTALL 2-W FIRE HYDRANTS
1	"	" " " 6"x8"x6" TEE, R.T. & FLG.
1	"	" " " 8"x8"x6" TEE
1	"	" " " 8"x6" REDUCER

NOTE: NET OFFSET LINE 7' EAST OF ℄ OF R/W

REVISED AS BUILT 9-20-83 PER O&M
REVISED AS BUILT - 6-23-82 PER O&M
REVISED AS BUILT - AUG. 1961

VENTURA COUNTY WATERWORKS DISTRICT No. 6
THOUSAND OAKS CALIFORNIA

HAMPSHIRE ROAD
8" WATER MAIN
STA. 0+14 TO STA. 8+88

APPROVED BY BOARD OF DIRECTORS
VENTURA COUNTY WATERWORKS DISTRICT No. 6
Elsie Berry SEC'Y
DATE 23 JAN 1961

ALDERMAN & SWIFT
CONSULTING ENGINEERS
SOUTH PASADENA CALIFORNIA
R. E. 10891

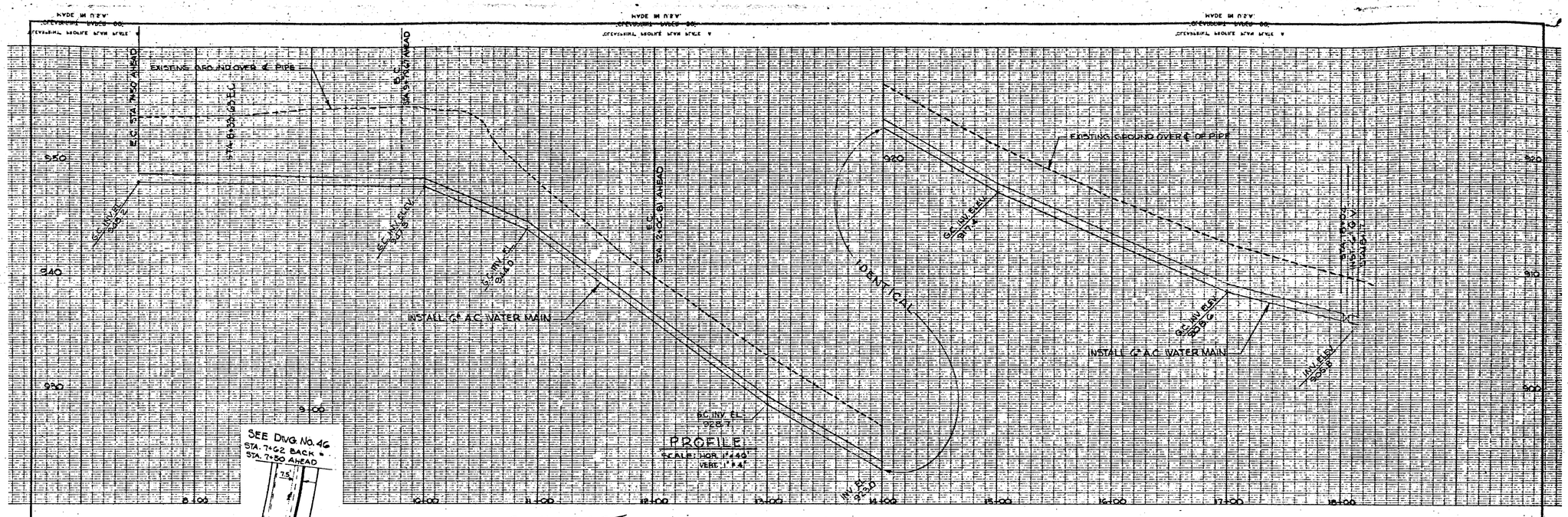
DESIGNED BY R.S. | CHECKED BY H.B.G. | DWG. NO. 41 of 52
DRAWN BY R.S. | DATE 16 JAN. 1961

#305 #305

A 40' SCALE OF THIS PRINT IS IN THE VAULT

C 20068W

DRAWING NUMBER
20071,
SHT. 47
PLAN HOLD CORPORATION • IRVINE, CALIFORNIA



SEE K-MART FILE FOR ONSITE WTR POINTS

MATERIAL LIST

QUAN	UNIT	DESCRIPTION
1050	LIN. FT	FURN. & INSTALL 6" A.C. WATER MAIN
1	EACH	FURN. & INSTALL 6" GATE VALVES
2	EACH	FURN. & INSTALL 2-W FIRE HYDRANTS
2	"	" " 6" TEES P.T. & FLG.
1	"	" " 6" TEE
1	"	" " 6" PLUG

SCALE 1" = 40' = 64'

1 REVISED AS BUILT BY UTIL PER O&M FIELD NOTES. 8-29-07
REVISED AS BUILT - 6-23-82 PER O&M
REVISED AS BUILT - AUG. 1961.

2 REVISED AS BUILT PER O&M FIELD NOTES. 1-12-09

VENTURA COUNTY WATERWORKS DISTRICT No. 6
THOUSAND OAKS CALIFORNIA

FOOTHILL DRIVE
6" WATER MAIN
STA. 7+50 TO STA. 18+15

APPROVED BY BOARD OF DIRECTORS
VENTURA COUNTY WATERWORKS DISTRICT NO. 6
Edna Bracy SEC'Y
DATE 23 JAN. 1961

ALDERMAN & SWIFT
CONSULTING ENGINEERS
SOUTH PASADENA CALIFORNIA
Frank M. Swift R.E. 11601

DESIGNED BY R.S. | CHECKED BY R.R.G. | DWG. NO. 47 OF 52
DRAWN BY B.T. | DATE 16 JAN. 1961

#305

A 40' SCALE OF THIS PRINT IS IN THE VAULT

DRAWING NUMBER
FOOTHILL DRIVE AT HAMPSHIRE
PLAN HOLD CORPORATION • IRVINE, CALIFORNIA

C 20071W

APPENDIX VI

CITY CORRESPONDENCE

Building D (includes 7 buildings)				
Residential			**Commercial**	
2 Bedroom	14 units			
3 bedroom	14 units		Amenity / Lobby	0 SF
4 bedroom	7 units		Commercial / Retail	0 SF
TOTAL	35 EDU		TOTAL	0 SF
DEMAND:	7,000 gpd		DEMAND:	0 gpd
Building D Total:	**7,000 gpd**			

Amenity Building				
Residential			**Commercial**	
2 Bedroom	0 units			
3 bedroom	0 units		Amenity / Lobby	2400 SF
4 bedroom	0 units		Commercial / Retail	0 SF
TOTAL	0 EDU		TOTAL	2400 SF
DEMAND:	0 gpd		DEMAND:	312 gpd
Building D Total:	**312 gpd**			

Site Total: **87,541 gpd**
98.06 afy

Comments by Brad Bussell, October 14, 2021

Using a peaking factor of 4.50 for Peak Hour Demand, the water system must be capable of delivering 274 gpm to the project. There is an existing 6" main in Foothill and an 8" main in Hampshire. The project will construct on-site water mains creating an on-site looped water network, therefore providing the required peak hour demand is achievable.

Using a peaking factor of 1.75 for Max. Day Demand. The reservoir capacity needs to provide 153,000 gallons of storage. Storage for the project is provided by Freeway Reservoir (1.0 MG) and La Granada Reservoir (3.97 MG). Freeway Reservoir will be the primary source of water for the project due to the proximity to the project. Adequate capacity exists in the Freeway Reservoir and the increased demand on Freeway will increase turnover and improve water quality in the reservoir.