





**WASTEWATER CAPACITY CALCULATIONS**

Prepared by: Kimley-Horn and Associates, Inc. (Firm No. 928)

**Design Criteria**

Project Data  
Development Size = 82.493 Acres

Population:	LUE's	People per LUE	Total Pop.
	581.00	3.5	2,033.50
<b>Total</b>	<b>581.00</b>		<b>2,033.50</b>

**Data from City of Austin Utility Criteria Manual**

Wastewater Generation = 70 gal/person/day  
Inflow and Infiltration = 750 Gal/Acre\*Day

**Calculations**  
Total Avg Dry Weather Flow (F) = 142,345 Gal/day or 98.85 gpm

Peaking Factor (Mp =) 3.58 Unitless

$$Mp = \frac{18 + (0.0206 * F)^{0.5}}{4 + (0.0206 * F)^{0.5}}$$

Min. Flow Factor (Mm =) 0.21 Unitless

$$Mm = 0.2 * (0.0144 * F)^{0.198}$$

Minimum Dry Weather Flow = 30,530.50 Gal/day or 21.20 gpm = 0.05 cfs

Peak Dry Weather Flow = 509,552 Gal/day or 353.86 gpm = 0.79 cfs

I&I Contribution = 61,870 Gals/Day or 42.97 gpm = 0.10 cfs

Total Peak Wet Weather Flow = 571,421 Gal/Day or 396.82 gpm = 0.88 cfs

8" PVC Max flow at 0.50% (Manni) 928,355 Gal/Day or 644.69 gpm = 1.44 cfs

GINSEL TRACT - LUE TABLE				
Commercial				
Parcel	Land Use	Building Area (SF)	LUE Conversion (units/LUE)	LUE Total
1	Retail	9,000	1660	5
2	Restaurant	5,000	200	25
2	Restaurant/Retail	11,500	930	12
2	Retail	102,500	1660	62
2	Urgent Care/Retail	7,000	1660	4
2	Office	28,000	3000	9
Residential				
Parcel	Land Use	Unit #	LUE Conversion (LUE/unit)	LUE Total
1	Hotel	152	0.5	76
2	Hotel	107	0.5	54
3	Multifamily	426	0.5	213
4	Townhomes	211	0.7	148
Irrigation				
1-4	Lot Irrigation	7	1	7
			<b>Total Water LUEs</b>	<b>615</b>
			<b>Total Wastewater LUEs</b>	<b>608</b>

LUE Estimation based on City of Austin LUE Conversion Chart. Irrigation LUEs not included in wastewater demand.

**WATER CAPACITY CALCULATIONS**

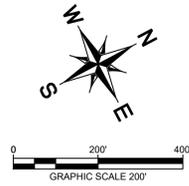
Population:	LUE's	People per LUE	Total Pop.
	588.00	3.5	2,058.00
<b>Total</b>	<b>588.00</b>		<b>2,058.00</b>

**Data from City of Austin Utility Criteria Manual**

Peak hour demand 900 Gal/Person/Day = 0.00139 cfs

**Calculations**

Total Peak Hour Demand 1,852,200 Gal/Day or 1,286.25 gpm = 2.866 cfs

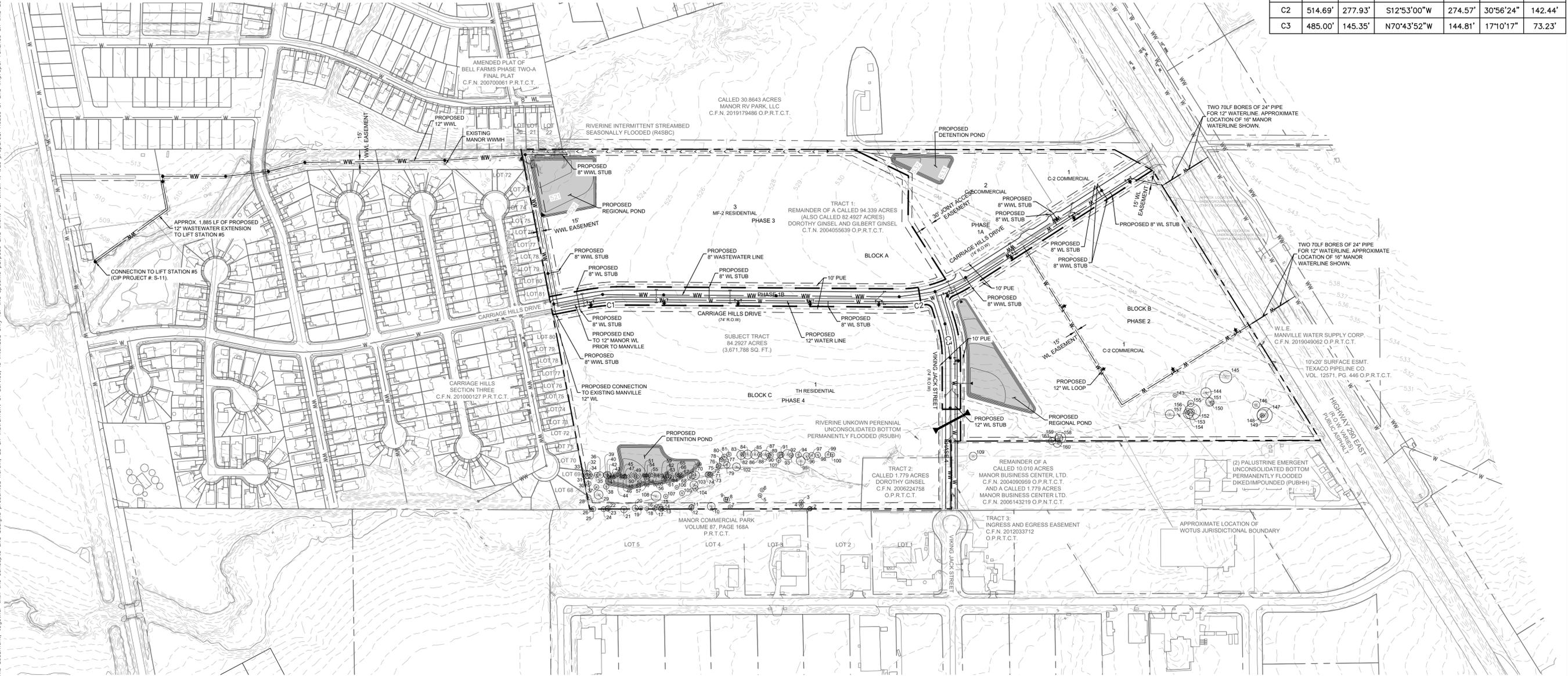


**UTILITY LEGEND**

---	PROPERTY LINE
---	PROPOSED WASTEWATER LINE
---	PROPOSED WATER LINE
⊙	PROPOSED WASTEWATER MANHOLE
○	PROPOSED WASTEWATER CLEANOUT
→	WASTEWATER FLOW DIRECTION
⊕	PROPOSED FIRE HYDRANT
⊕	PROPOSED TAPPING SLEEVE & VALVE
— —	IRRIGATION SLEEVE
— —	EXISTING OVERHEAD POWER LINE
---	EXISTING WATER LINE
---	EXISTING WASTEWATER LINE
---	EXISTING STORM SEWER LINE
⊕	EXISTING POWER POLE
⊕	EXISTING FIRE HYDRANT
⊕	EXISTING WATER METER
⊕	EXISTING WASTEWATER MANHOLE

**CURVE TABLE**

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	785.00'	154.23'	S22°42'56"W	153.98'	11°15'26"	77.36'
C2	514.69'	277.93'	S12°53'00"W	274.57'	30°56'24"	142.44'
C3	485.00'	145.35'	N70°43'52"W	144.81'	17°10'17"	73.23'



**Kimley-Horn**  
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10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759  
PHONE: 512-418-1771, FAX: 512-418-791  
WWW.KIMLEY-HORN.COM  
TEXAS REGISTERED ENGINEERING FIRM F-928



KHA PROJECT	069405303
DATE	OCTOBER 2023
SCALE	AS SHOWN
DESIGNED BY	ACS
DRAWN BY	RRJ
CHECKED BY	ACS

**UTILITY & TREE PLAN  
(1 OF 2)**

**GINSEL TRACT  
PRELIMINARY PLAT  
CITY OF MANOR  
TRAVIS COUNTY, TEXAS**

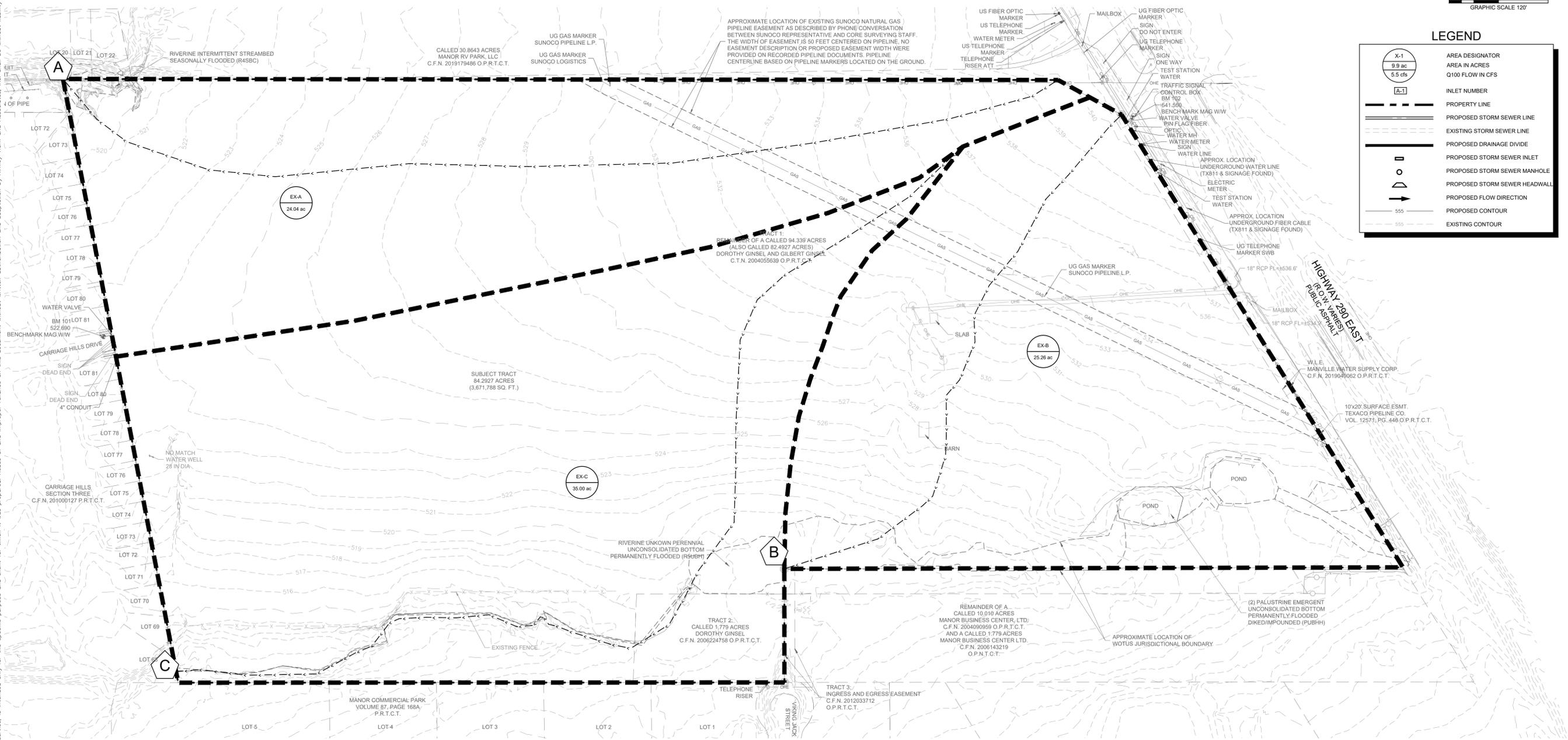
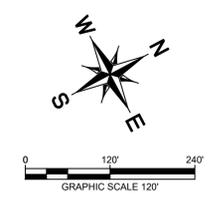
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REVISIONS: No. DATE BY



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### LEGEND

	AREA DESIGNATOR
	AREA IN ACRES
	Q100 FLOW IN CFS
	INLET NUMBER
	PROPERTY LINE
	PROPOSED STORM SEWER LINE
	EXISTING STORM SEWER LINE
	PROPOSED DRAINAGE DIVIDE
	PROPOSED STORM SEWER INLET
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER HEADWALL
	PROPOSED FLOW DIRECTION
	PROPOSED CONTOUR
	EXISTING CONTOUR

#### Ginsel Commercial Tract Existing Drainage Calculations - SCS Method

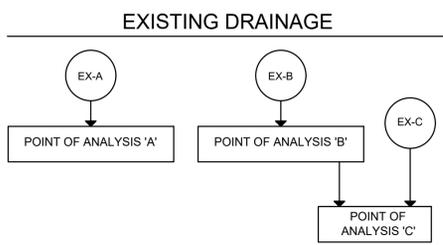
DRAINAGE AREA	AREA (sf)	AREA (Ac.)	IMPERVIOUS COVER (sf)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER %	PERVIOUS CURVE NO. Cn <sup>1</sup>	WEIGHTED CURVE NO. Cn <sup>2</sup>	SHEET FLOW			SHEET FLOW (PAVED)			SHALLOW CONCENTRATED FLOW				CHANNEL FLOW				TOTAL Tc <sup>3</sup> (min)						
								N	L (ft)	S (ft/ft)	Tc (min)	N	L (ft)	S (ft/ft)	Tc (min)	Grass Surface		Paved Surface		Channel Flow								
																L (ft)	V (fps)	S (ft/ft)	Tc (min)	L (ft)	V (fps)		n	S (ft/ft)	Tc (min)			
EX-A	1,047,329	24.04	0	0.00	0.00	84.00	84.00	0.24	100	0.013	15.14	-	-	-	-	2285	1.61	0.010	23.60	-	-	0.00	130	5.00	0.03	0.020	0.43	39.18
EX-B	1,100,109	25.26	1,356	0.03	0.12	84.00	84.02	0.24	100	0.020	12.55	-	-	-	-	1130	2.13	0.018	8.82	-	-	0.00	240	5.00	0.03	0.020	0.80	22.17
EX-C	1,524,733	35.00	0	0.00	0.00	84.00	84.00	0.24	100	0.010	16.55	-	-	-	-	1215	2.28	0.020	8.87	-	-	0.00	1440	5.00	0.03	0.020	4.80	30.23

<sup>1</sup>Cn Values based on COA Drainage Criteria Manual.  
<sup>2</sup>Acn of 84 (Open space-fair condition and Type D soil group) and 98 (Paved surfaces) were used.  
<sup>3</sup>The minimum Tc is 5 minutes per the COA Drainage Criteria Manual.

#### Ginsel Commercial Tract DRAINAGE RESULTS - SCS METHOD

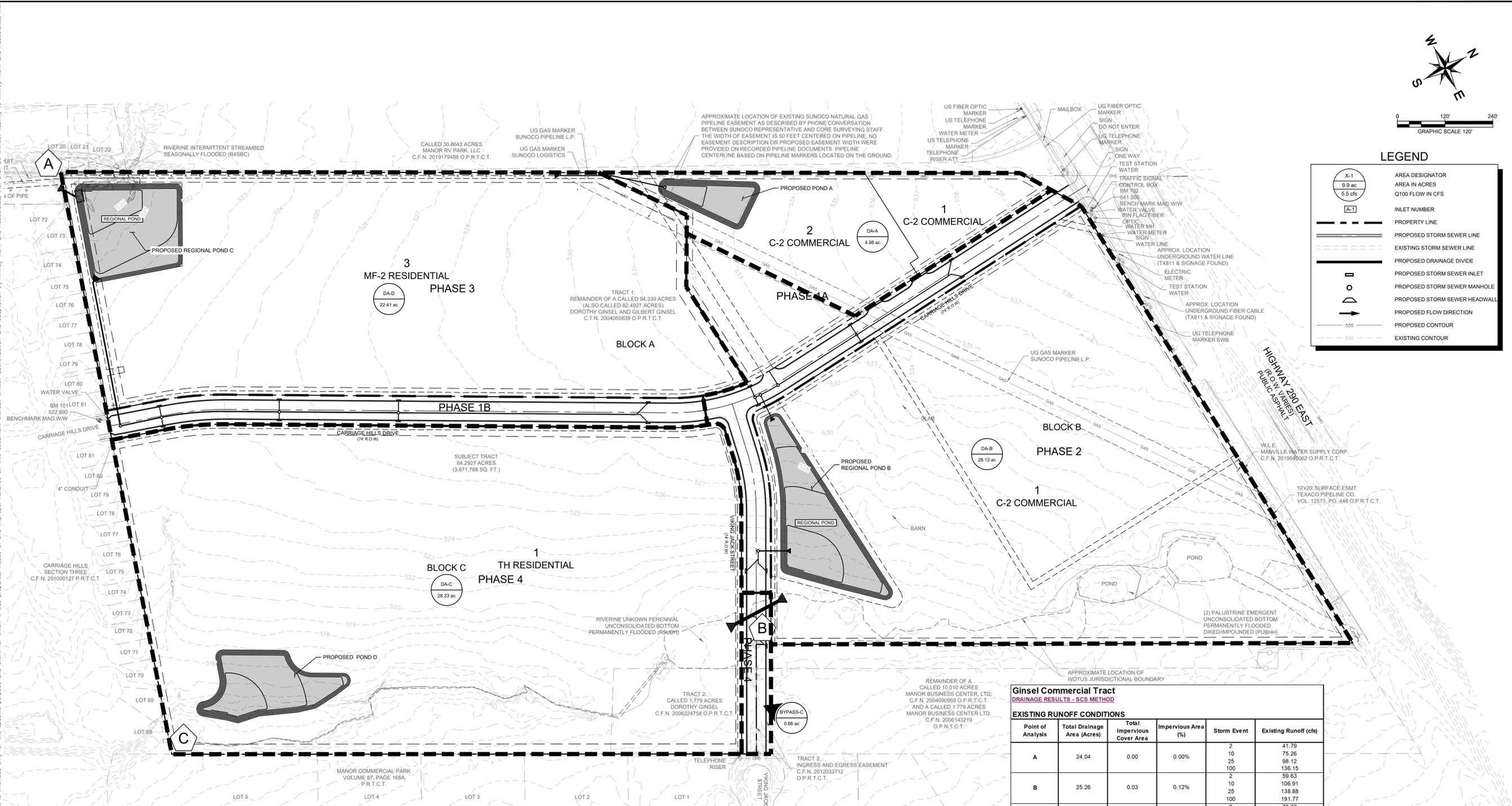
EXISTING RUNOFF CONDITIONS					
Point of Analysis	Total Drainage Area (Acres)	Total Impervious Cover Area	Impervious Area (%)	Storm Event	Existing Runoff (cfs)
A	24.04	0.00	0.00%	2	41.79
				10	75.26
				25	98.12
B	25.26	0.03	0.12%	2	59.63
				10	106.91
				25	138.88
C	35.00	0.00	0.00%	2	70.32
				10	126.23
				25	164.22
				100	227.19

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.



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KHA PROJECT 069405303 DATE OCTOBER 2023 SCALE AS SHOWN DESIGNED BY: ACS DRAWN BY: RRJ CHECKED BY: ACS	10/10/2023 EXISTING DRAINAGE LAYOUT
GINSEL TRACT PRELIMINARY PLAT CITY OF MANOR TRAVIS COUNTY, TEXAS	
SHEET NUMBER <b>5</b>	

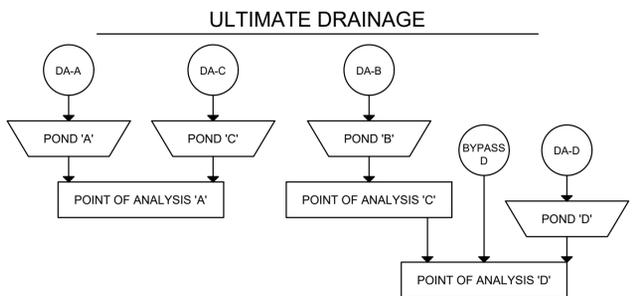
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**Ginsel Commercial Tract**  
Proposed Drainage Calculations - SCS Method

DRAINAGE AREA	AREA (sf)	AREA (Ac.)	IMPERVIOUS COVER (sf)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER %	PERVIOUS CURVE NO. Cn <sup>1</sup>	WEIGHTED CURVE NO. Cn <sup>2</sup>	SHEET FLOW				SHEET FLOW (PAVED)				SHALLOW CONCENTRATED FLOW				CHANNEL FLOW				TOTAL Tc <sup>3</sup> (min)					
								P-2yr24hr		4.14 IN		P-2yr24hr		4.06 IN		Grass Surface		Paved Surface		Channel Flow		Channel Flow							
								N	L (ft)	S (ft/ft)	Tc (min)	N	L (ft)	S (ft/ft)	Tc (min)	L (ft)	V (fps)	S	Tc (min)	L (ft)	V (fps)	n	S (ft/ft)		Tc (min)				
DA-A	216,829	4.98	108,414	2.49	50.00	84.00	91.00	0.24	50	0.010	9.51	-	-	-	-	0	1.61	0.010	0.00	100	2.03	0.010	0.82	750	4.00	0.016	0.010	3.13	13.45
DA-B	1,229,593	28.23	810,360	18.60	65.90	84.00	93.23	0.24	50	0.010	9.51	-	-	-	0	1.61	0.010	0.00	100	2.03	0.010	0.82	1000	4.00	0.016	0.010	4.17	14.49	
DA-D	976,042	22.41	651,107	14.95	66.71	84.00	93.34	0.24	100	0.015	14.08	-	-	-	50	1.98	0.015	0.42	100	2.49	0.015	0.67	1400	4.00	0.016	0.010	5.83	21.00	
DA-C	1,234,171	28.33	617,085	14.17	50.00	84.00	91.00	0.24	100	0.010	16.55	-	-	-	50	1.61	0.010	0.52	100	2.03	0.010	0.41	1400	4.00	0.016	0.010	5.83	23.31	
BYPASS C	29,808	0.68	19,375	0.44	65.00	84.00	93.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

<sup>1</sup>Cn Values based on CCA Drainage Criteria Manual.  
<sup>2</sup>Ac of 84 (Open space fair conditions and Type 3 soil group) and 98 (Paved surfaces) were used.  
<sup>3</sup>The minimum Tc is 5 minutes per the CCA Drainage Criteria Manual.



**Ginsel Commercial Tract**  
DRAINAGE RESULTS - SCS METHOD

Point of Analysis	Total Drainage Area (Acres)	Total Impervious Cover Area	Impervious Area (%)	Storm Event	
				Storm Event	Existing Runoff (cfs)
A	24.04	0.00	0.00%	2	41.79
				10	75.26
				25	98.12
B	25.26	0.03	0.12%	2	56.63
				10	106.91
				25	138.88
C	35.00	0.00	0.00%	2	70.32
				10	126.23
				25	164.22

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.

Point of Analysis	Total Drainage Area (Acres)	Total Impervious Cover Area	Impervious Area (%)	Storm Event	
				Storm Event	Developed Runoff (cfs)
A	27.38	17.44	63.67%	2	34.89
				10	65.40
				25	90.42
B	28.23	18.60	65.90%	2	51.59
				10	92.57
				25	122.88
C	29.02	14.61	50.35%	2	52.78
				10	96.55
				25	127.87

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.

Point of Analysis	Storm Event	Existing Runoff (cfs)	Developed Runoff (cfs)	Runoff Difference at Point of Analysis	Is Developed s Allowable?
PEAK FLOWS	10	308.40	254.52	53.88	YES
LEAVING PROPERTY	25	401.22	341.17	60.05	YES
PROPERTY	100	555.11	493.08	62.03	YES

Note: All detention runoff calculations were analyzed using the Soil Conservation Services Method as documented in the Technical Release 55. Pond Pack V8i was used to calculate the runoff and design the pond volume and outlet structure.

REVISIONS

No.	DATE	BY

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 WWW.KIMLEY-HORN.COM  
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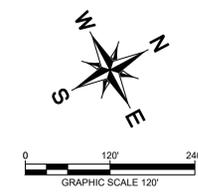
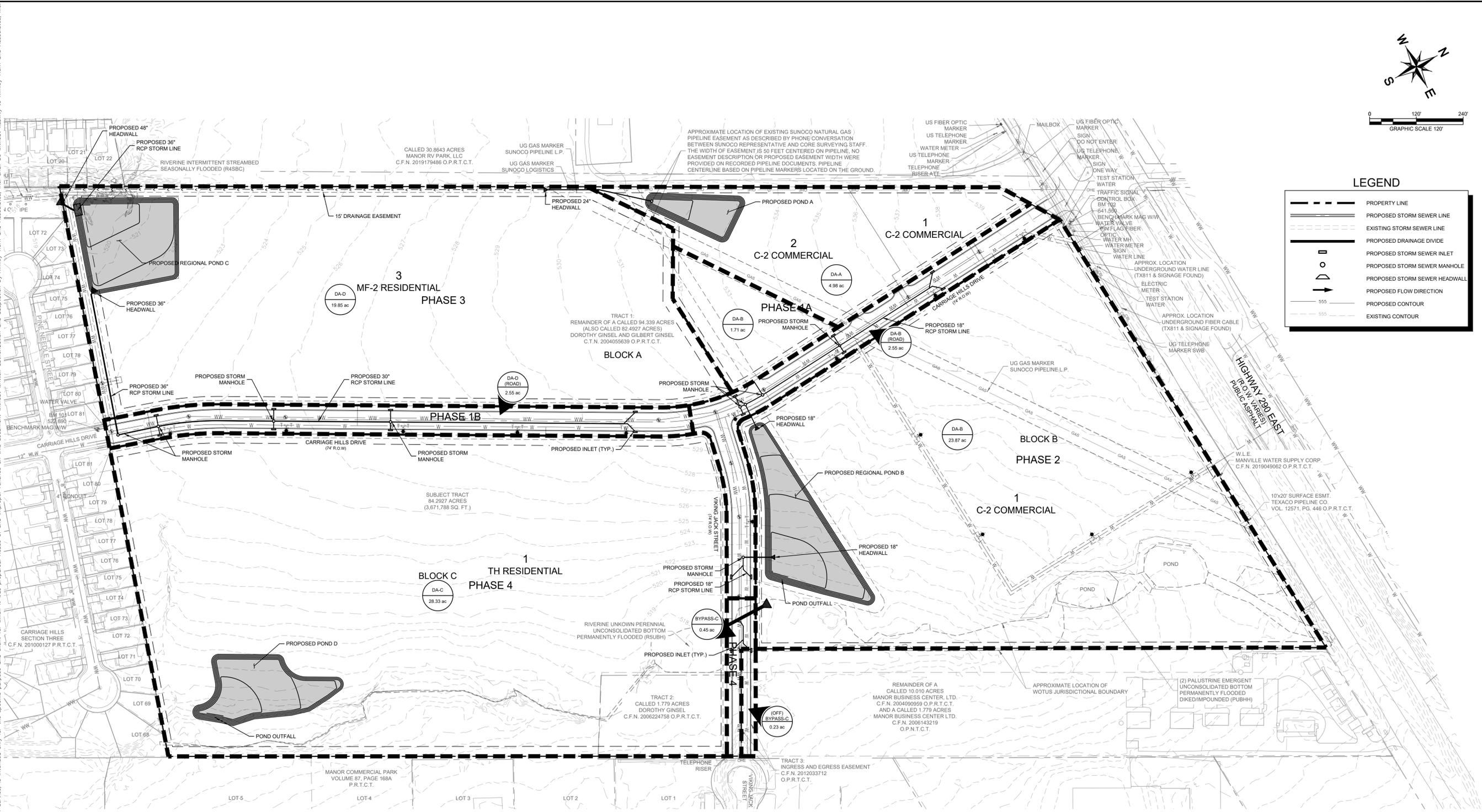
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PROPOSED DRAINAGE LAYOUT

GINSEL TRACT PRELIMINARY PLAN

CITY OF MANOR  
TRAVIS COUNTY, TEXAS

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**LEGEND**

- PROPERTY LINE
- PROPOSED STORM SEWER LINE
- EXISTING STORM SEWER LINE
- PROPOSED DRAINAGE DIVIDE
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER HEADWALL
- PROPOSED FLOW DIRECTION
- PROPOSED CONTOUR
- EXISTING CONTOUR

**Ginsel Commercial Tract**  
Proposed Inlet Calculations - SCS Method

DRAINAGE AREA	AREA (sf)	AREA (Ac.)	IMPERVIOUS COVER (%)	IMPERVIOUS COVER (Ac.)	IMPERVIOUS COVER (%)	PERVIOUS COVER (%)	WEIGHTED CURVE NO. Cn <sup>1</sup>	SHEET FLOW				SHEET FLOW (PAVED)				SHALLOW CONCENTRATED FLOW				CHANNEL FLOW				TOTAL Tc <sup>2</sup> (min)				
								P-2yr24hr 4.14 IN				P-2yr24hr 4.06 IN				Grass Surface				Channel Flow								
								N	L (ft)	S (ft/ft)	Tc (min)	N	L (ft)	S (ft/ft)	Tc (min)	L (ft)	V (fps)	S (ft/ft)	Tc (min)	L	V (fps)	n	S (ft/ft)		Tc (min)			
DA-A	216,829	4.98	108,414	2.49	65.00	84.00	91.00	0.24	50	0.010	9.51	-	-	-	0	1.61	0.010	0.00	100	2.03	0.010	0.82	750	4.00	0.016	0.010	3.13	13.45
DA-B	1,118,341	25.67	726,921	16.69	65.00	84.00	93.10	0.24	50	0.010	9.51	-	-	-	0	1.61	0.010	0.00	100	2.03	0.010	0.82	1000	4.00	0.016	0.010	4.17	14.49
DA-B (ROAD)	111,252	2.55	83,439	1.92	75.00	84.00	94.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00
DA-D	864,848	19.85	562,151	12.91	65.00	84.00	93.10	0.24	100	0.010	16.55	-	-	-	50	1.98	0.015	0.42	100	2.49	0.015	0.67	1400	4.00	0.016	0.010	5.83	23.48
DA-D (ROAD)	111,195	2.55	88,956	2.04	80.00	84.00	95.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00
DA-C	1,234,171	28.33	617,085	14.17	50.00	84.00	91.00	0.24	100	0.010	16.55	-	-	-	50	1.61	0.010	0.52	50	2.03	0.010	0.41	1400	4.00	0.016	0.010	5.83	23.31
BYPASS-C	19,721	0.45	12,818	0.29	65.00	84.00	93.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00
OFF BYPASS-C	10,088	0.23	6,557	0.15	65.00	84.00	93.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00

<sup>1</sup>Cn Values based on COA Drainage Criteria Manual.  
<sup>2</sup>Acn of 84 (Open space-fair condition and Type D soil group) and 98 (Paved surfaces) were used.  
<sup>3</sup>The minimum Tc is 5 minutes per the COA Drainage Criteria Manual.

NO.	REVISIONS	DATE

**Kimley-Horn**

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 10814 JOLLYVILLE ROAD, CAMPUS IV, SUITE 200, AUSTIN, TX 78759  
 PHONE: 512-418-1771 FAX: 512-418-791  
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10/10/2023

KHA PROJECT 069405303  
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 DRAWN BY: RJJ  
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**INLET DRAINAGE LAYOUT**

**GINSEL TRACT PRELIMINARY PLAT**  
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