

Project Narrative/Notes/Revisions

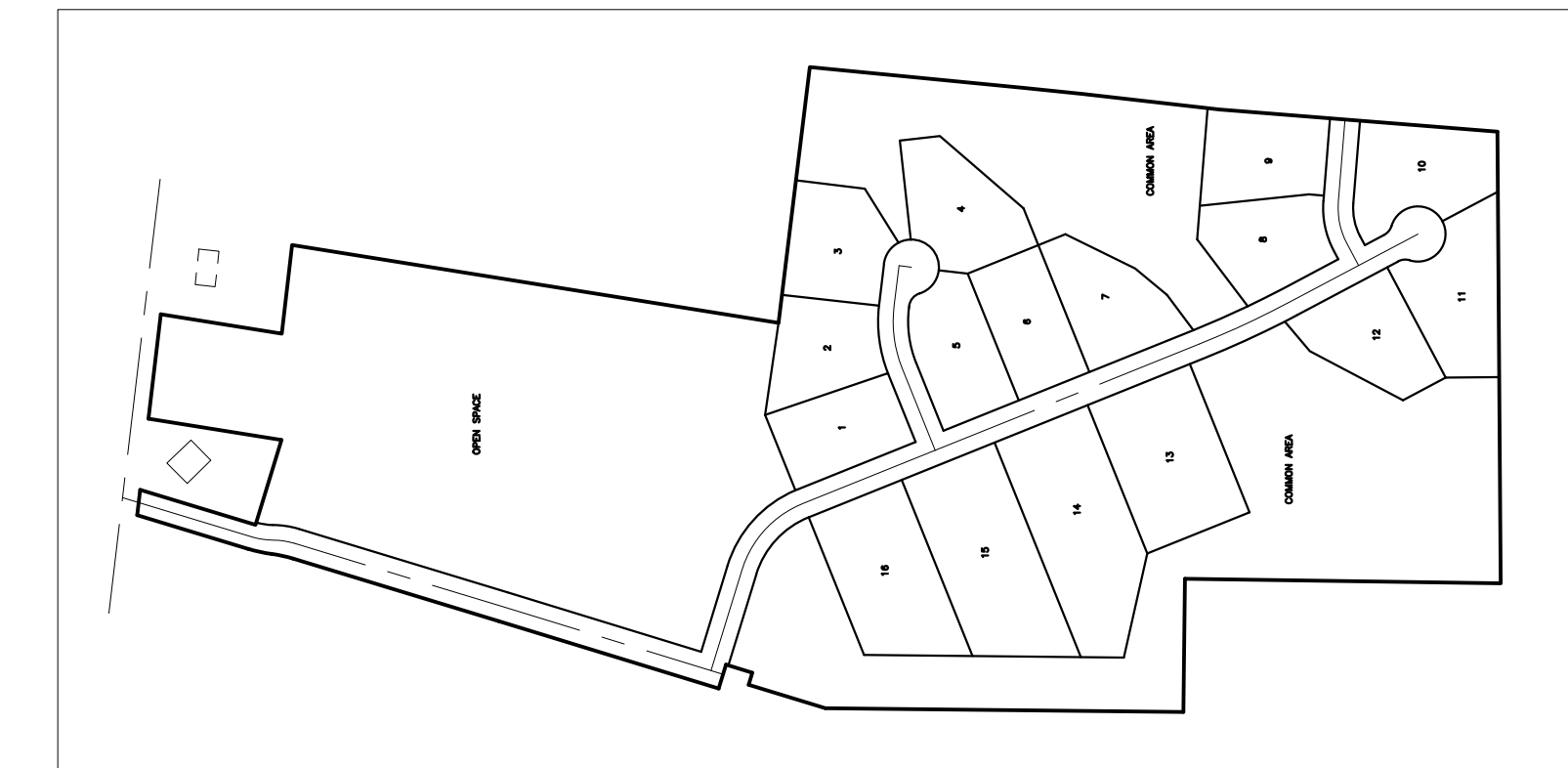
- 2021/04/30 CK - COMPLETED DESIGN FOR CLIENT & CITY REVIEW.
- 2021/12/06 TB - BASIN DESIGN, BASIN CALCS

Harmony Ranch Subdivision Improvement Plans

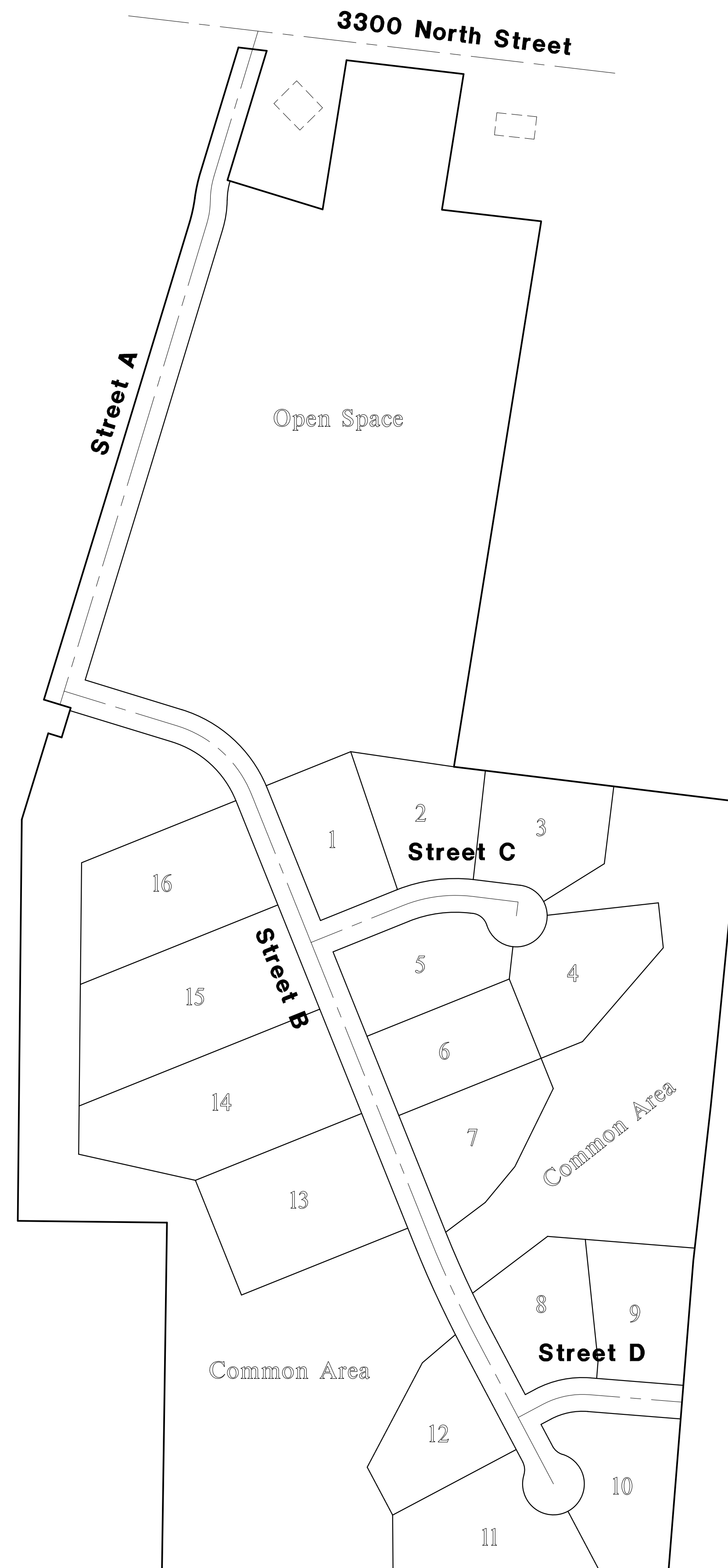
WEBER COUNTY, UTAH
APRIL 2021



Vicinity Map
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Sheet Index Key Map
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Engineer's Notice To Contractors

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED FROM AVAILABLE INFORMATION PROVIDED BY OTHERS. THE LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO CONTACT THE UTILITY COMPANIES AND TAKE DUE PRECAUTIONARY MEASURE TO PROTECT ANY UTILITY LINES SHOWN, AND ANY OTHER LINES OBTAINED BY THE CONTRACTOR'S RESEARCH, AND OTHERS NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

Surveyor:

Trevor Hatch
Reeve & Associates, Inc.
5160 South 1500 West
Riverdale, Utah, 84405
PH: (801) 621-3100

Landscape Architect:

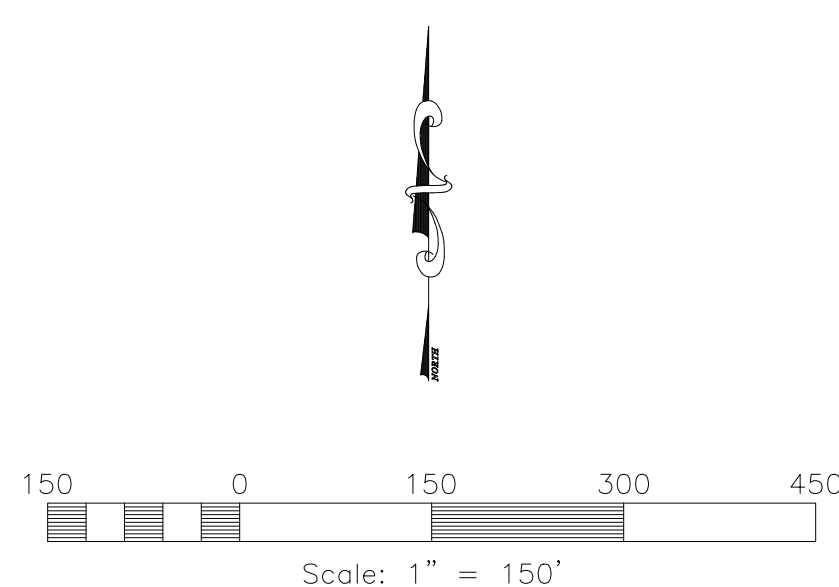
Nathan Peterson
Reeve & Associates, Inc.
5160 South 1500 West
Riverdale, Utah, 84405
PH: (801) 621-3100

Developer Contact:

Ian Silverberg
P.O. Box 521
Eden, Utah 84310
PH: (805) 570-9560

Project Contact:

Jeremy Draper
Reeve & Associates, Inc.
5160 South 1500 West
Riverdale, Utah, 84405
PH: (801) 621-3100



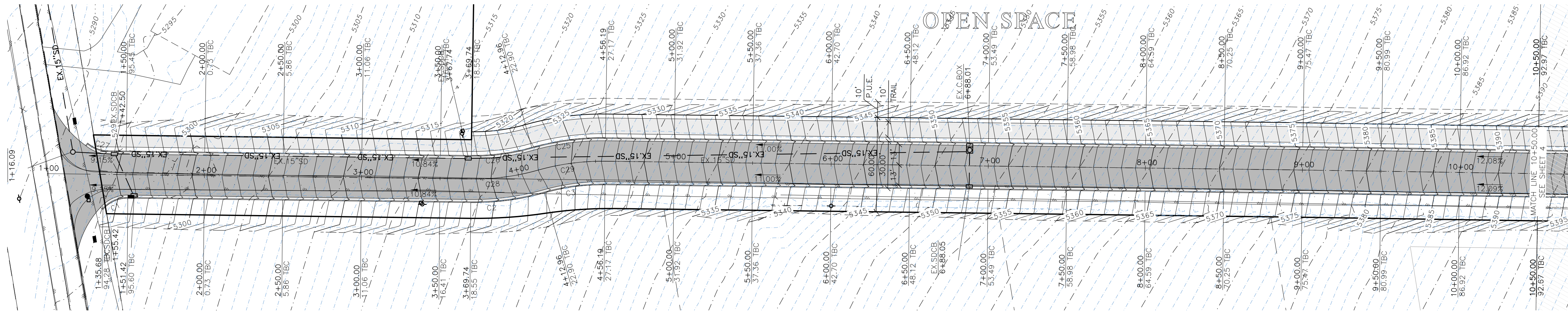
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REVISIONS	DATE	DESCRIPTION
	12-06-2021	TB Basin Updates

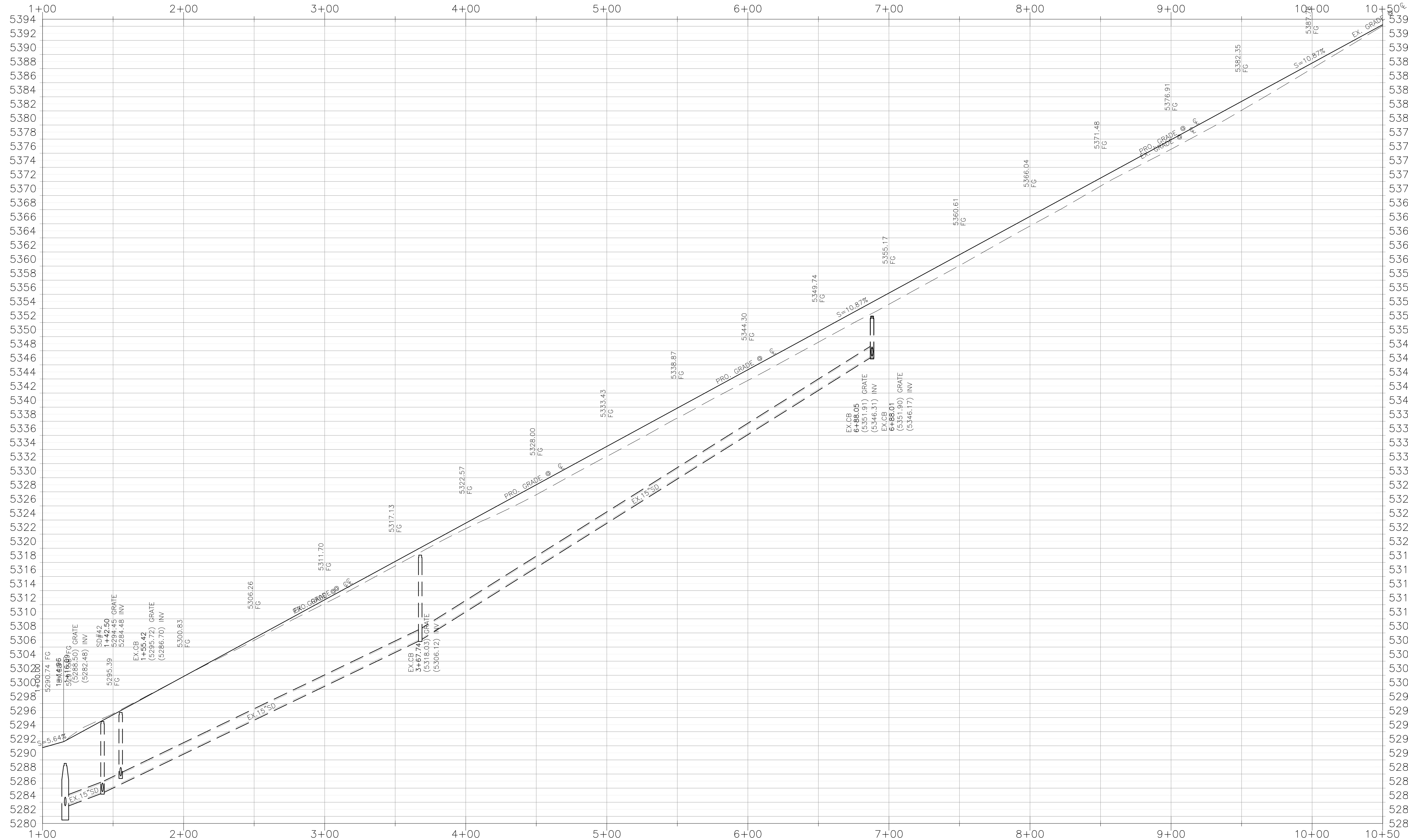
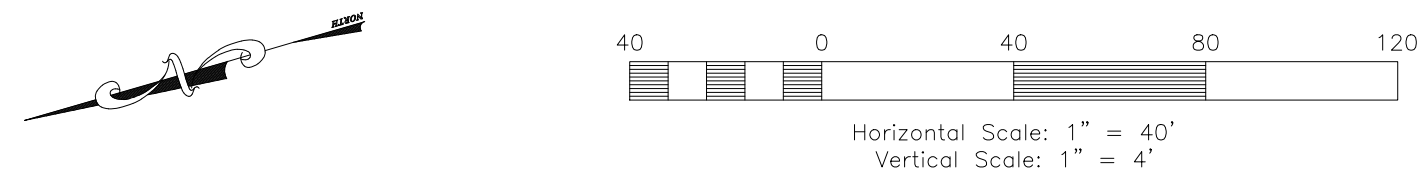
Harmony Ranch Subdivision
WEBER COUNTY, UTAH
Cover/Index Sheet



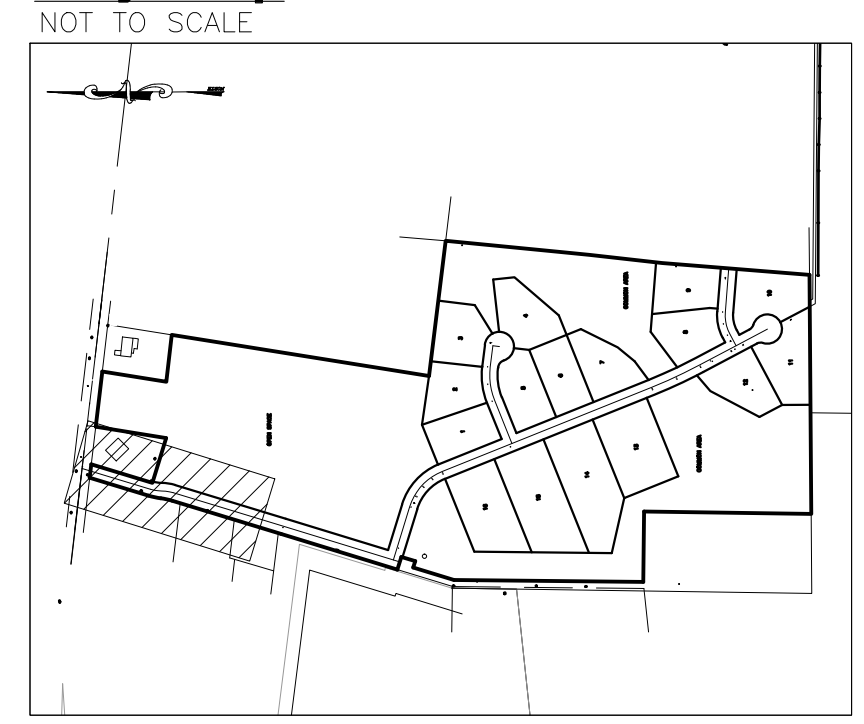
Project Info.
Engineer: JEREMY A. DRAPER, P.E.
Drafted: C. KINGSLEY
Begin Date: APRIL 2021
Name: HARMONY RANCH SUBDIVISION
Number: 7569-01



STREET A 1+00.00 - 10+50.00



Key Map



Construction Notes:

- 1) ALL CONSTRUCTION IS TO CONFORM TO THE STANDARD DRAWINGS AND SPECIFICATIONS OF WEBER COUNTY, AND NORDIC VALLEY WATER DISTRICT.
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W/10 - 10" PVC C-900 WATER LINE
- STORM DRAIN**
SD/15 - 15" RCP STORM DRAIN
SD/18 - 18" RCP STORM DRAIN

TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C1	50°09'30"	20.50'	17.95'	9.59'	N8°10'26"W	17.38'
C2	16°30'39"	165.00'	47.55'	23.94'	S8°39'00"W	47.38'
C3	16°30'39"	135.00'	38.90'	19.59'	N8°39'00"E	38.77'
C25	16°30'39"	165.00'	47.55'	23.94'	N8°39'00"E	47.38'
C26	16°30'39"	135.00'	38.90'	19.59'	S8°39'00"W	38.77'
C27	39°51'02"	20.50'	14.26'	7.43'	S36°49'50"W	13.97'

Centerline Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C28	16°30'39"	150.00'	43.22'	21.76'	S8°39'00"W	43.08'
C29	16°30'39"	150.00'	43.22'	21.76'	S8°39'00"W	43.08'

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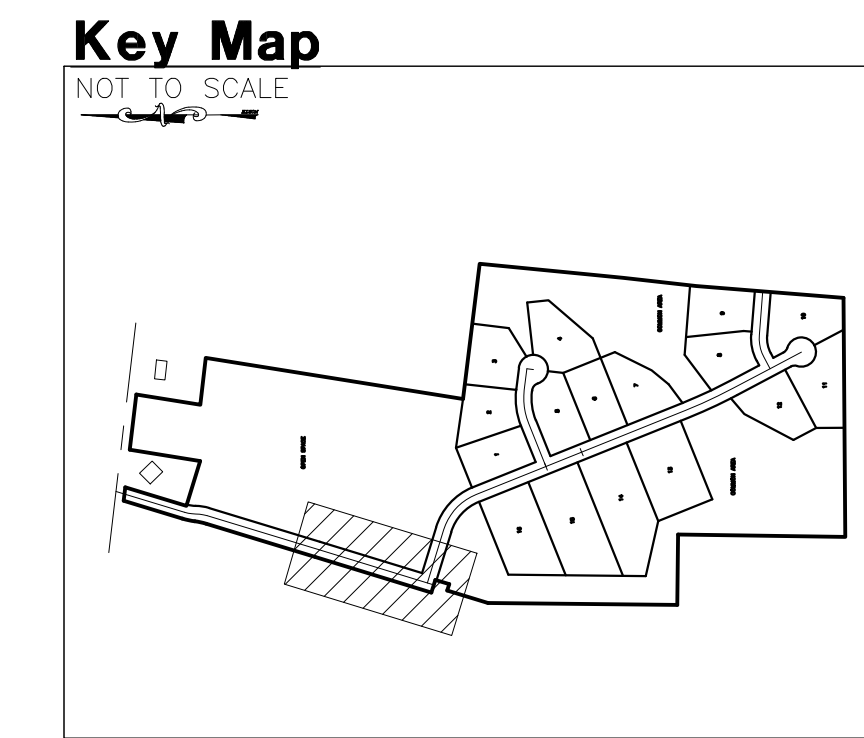
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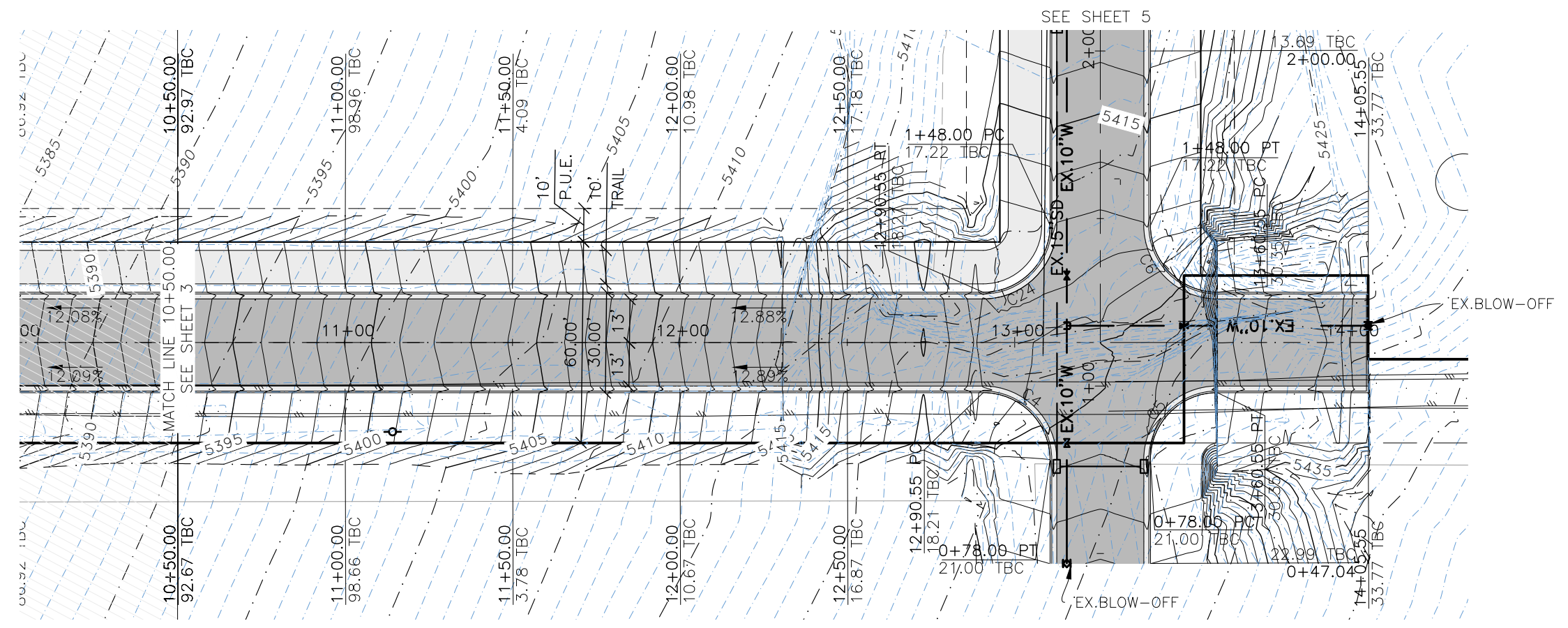




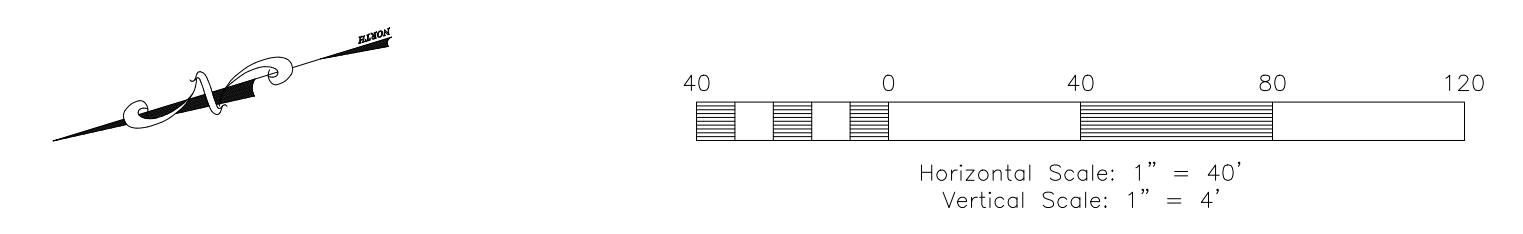
Key Map
NOT TO SCALE

OPEN SPACE

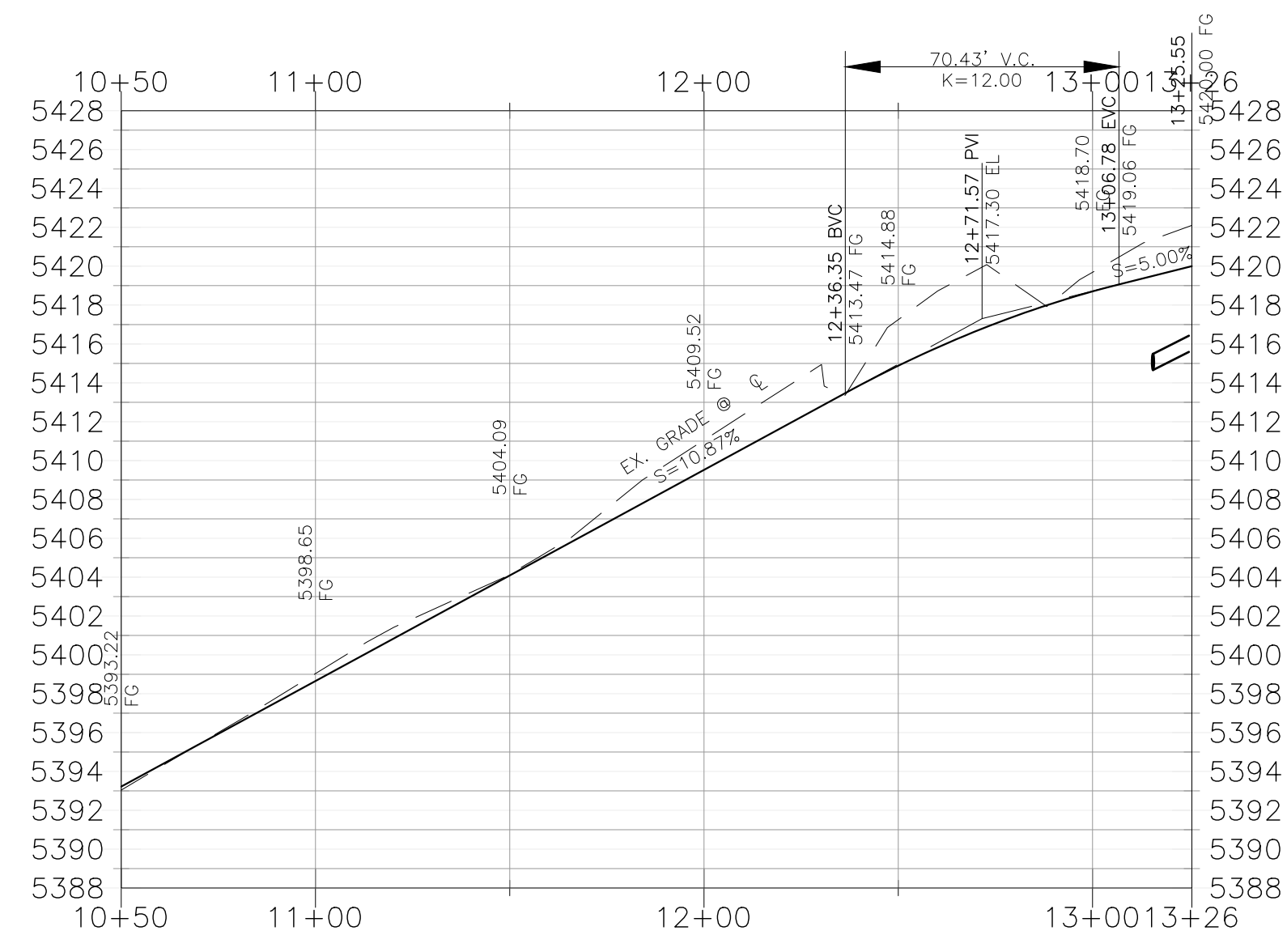
OPEN SPACE



STREET A 10+50.00 - 13+25.55

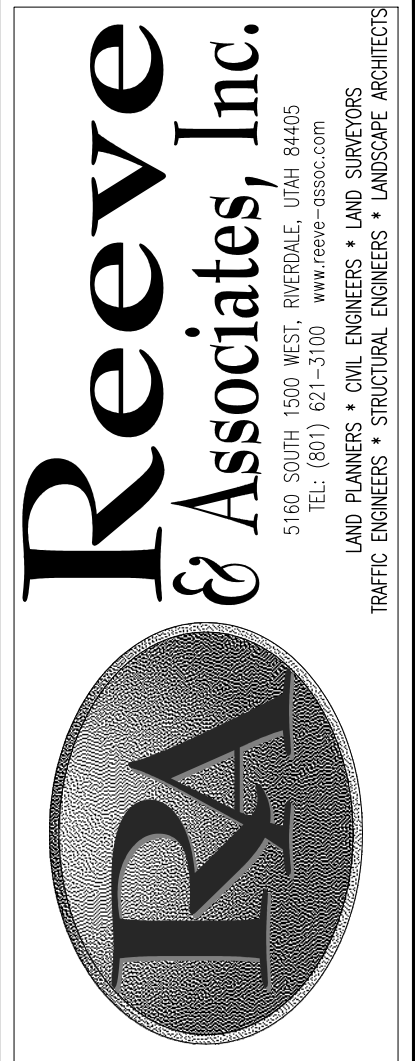


TBC Curve Data						
#	Delta	Radius	Length	Tangent	Chord	CH Length
C4	90°00'00"	20.00'	31.42'	20.00'	N62°03'24"E	28.28'
C5	90°00'00"	20.00'	31.42'	20.00'	N27°56'36"W	28.28'
C6	90°00'00"	20.00'	31.42'	20.00'	S62°03'24"W	28.28'
C24	90°00'00"	20.00'	31.42'	20.00'	S27°56'36"E	28.28'



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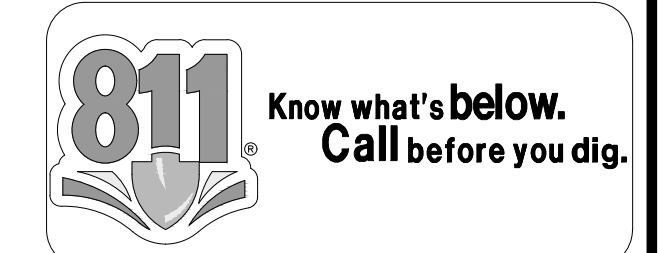


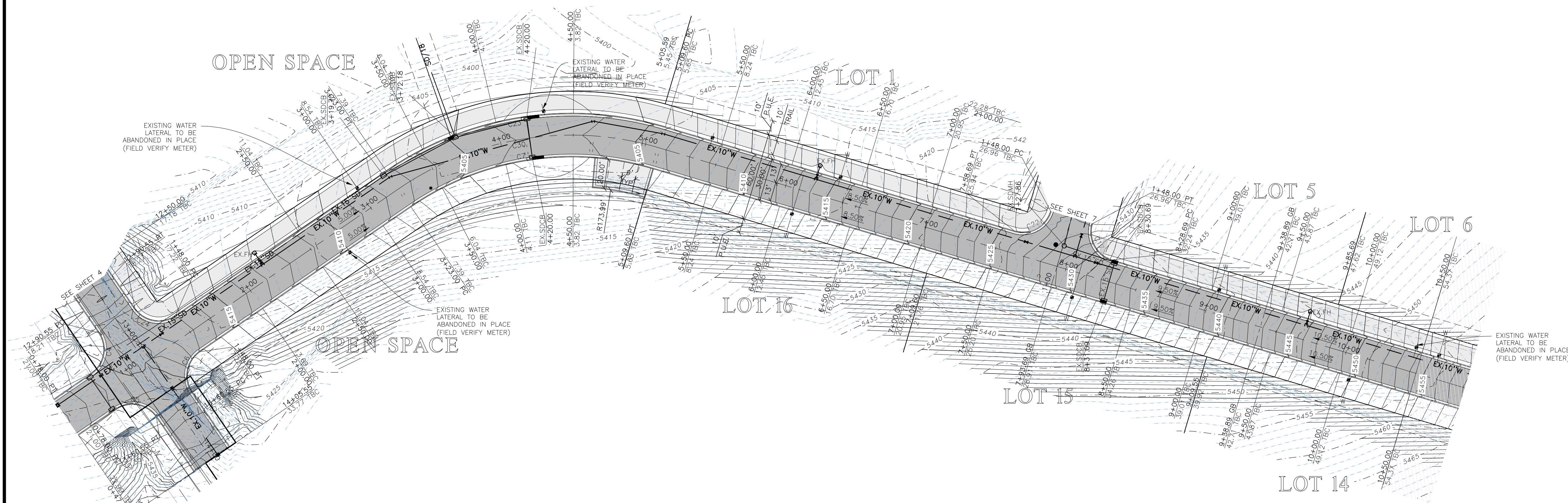
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Harmony Ranch Subdivision
WEBER COUNTY, UTAH
STREET A 10+50.00 - 13+25.55



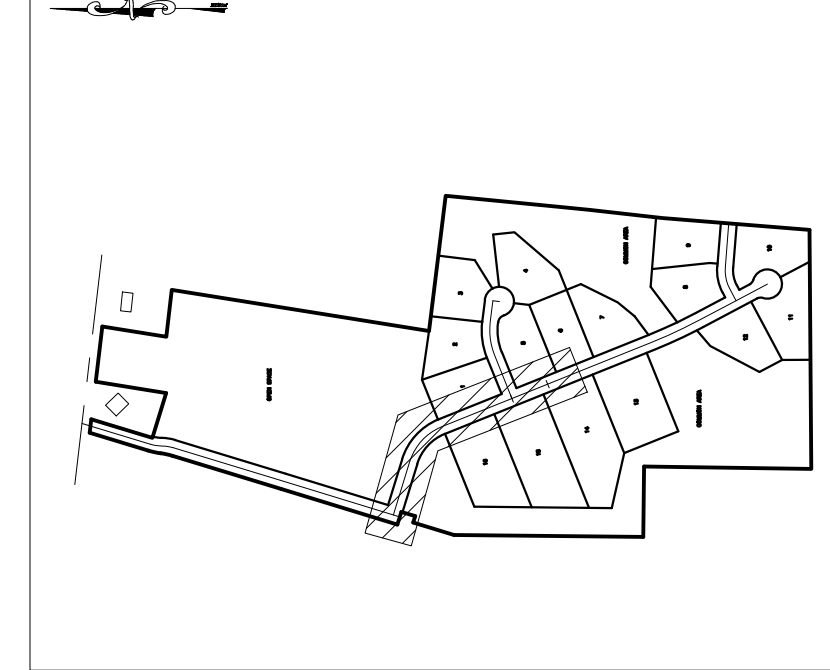
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Key Map

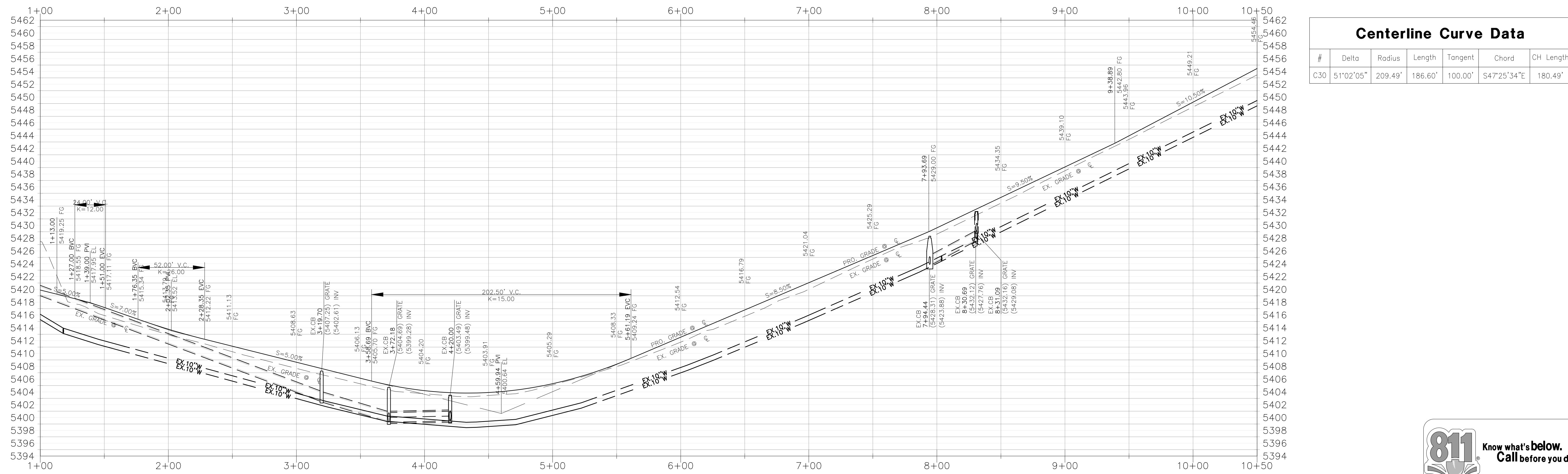
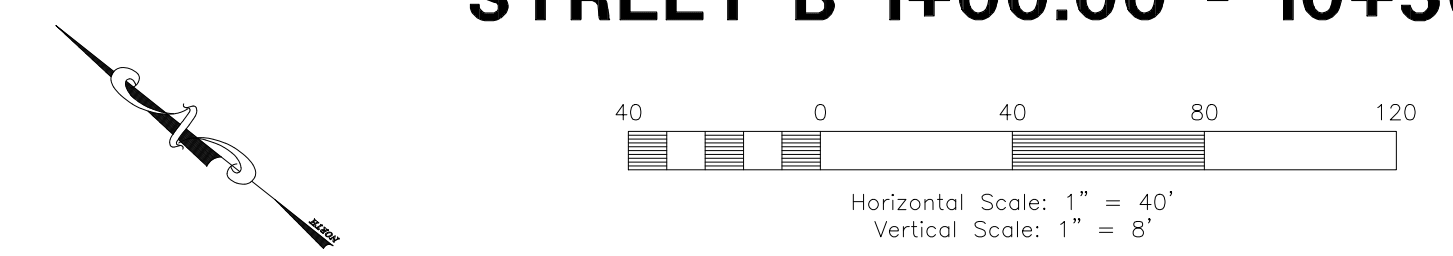
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STREET B 1+00.00 - 10+50.00



TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C4	90°00'00"	20.00'	31.42'	20.00'	N62°03'24"E	28.28'
C5	90°00'00"	20.00'	31.42'	20.00'	N27°56'36"W	28.28'
C6	90°00'00"	20.00'	31.42'	20.00'	S62°03'24"W	28.28'
C7	51°02'05"	194.49'	173.24'	92.84'	N47°25'34"W	167.57'
C17	90°00'00"	20.00'	31.42'	20.00'	S23°05'29"W	28.28'
C22	90°00'00"	20.00'	31.42'	20.00'	S66°54'31"E	28.28'
C23	51°02'05"	224.49'	199.96'	107.16'	N47°25'34"W	193.41'
C24	90°00'00"	20.00'	31.42'	20.00'	S27°56'36"E	28.28'

Centerline Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C30	51°02'05"	209.49'	186.60'	100.00'	S47°25'34"E	180.49'

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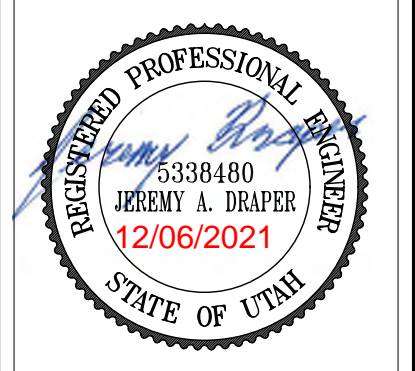
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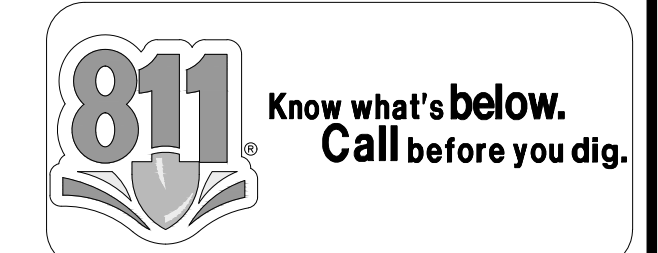
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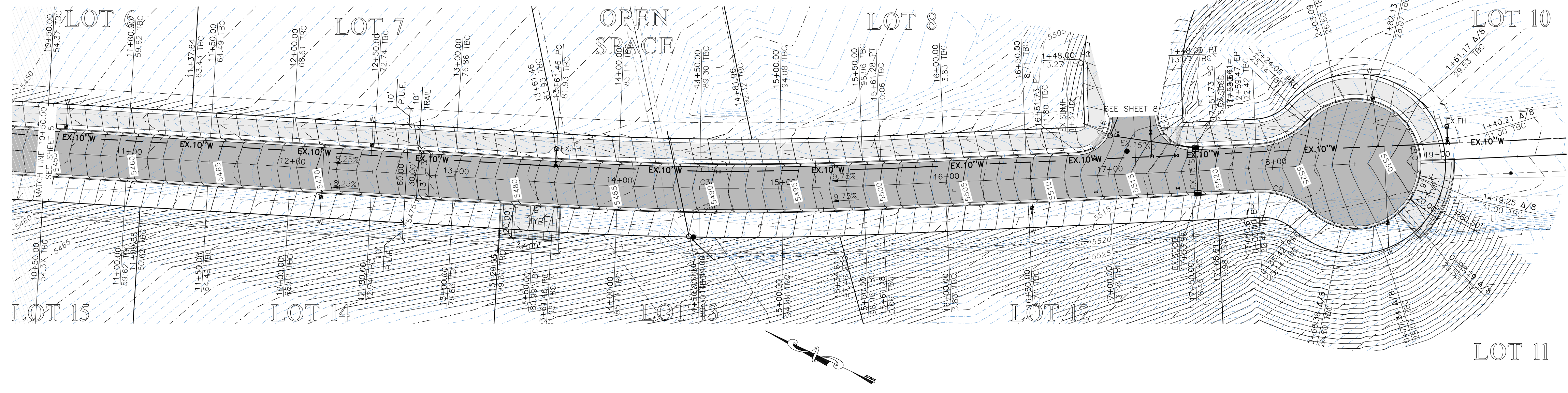
Harmony Ranch Subdivision
 WEBER COUNTY, UTAH

STREET B 1+00.00 - 10+50.00

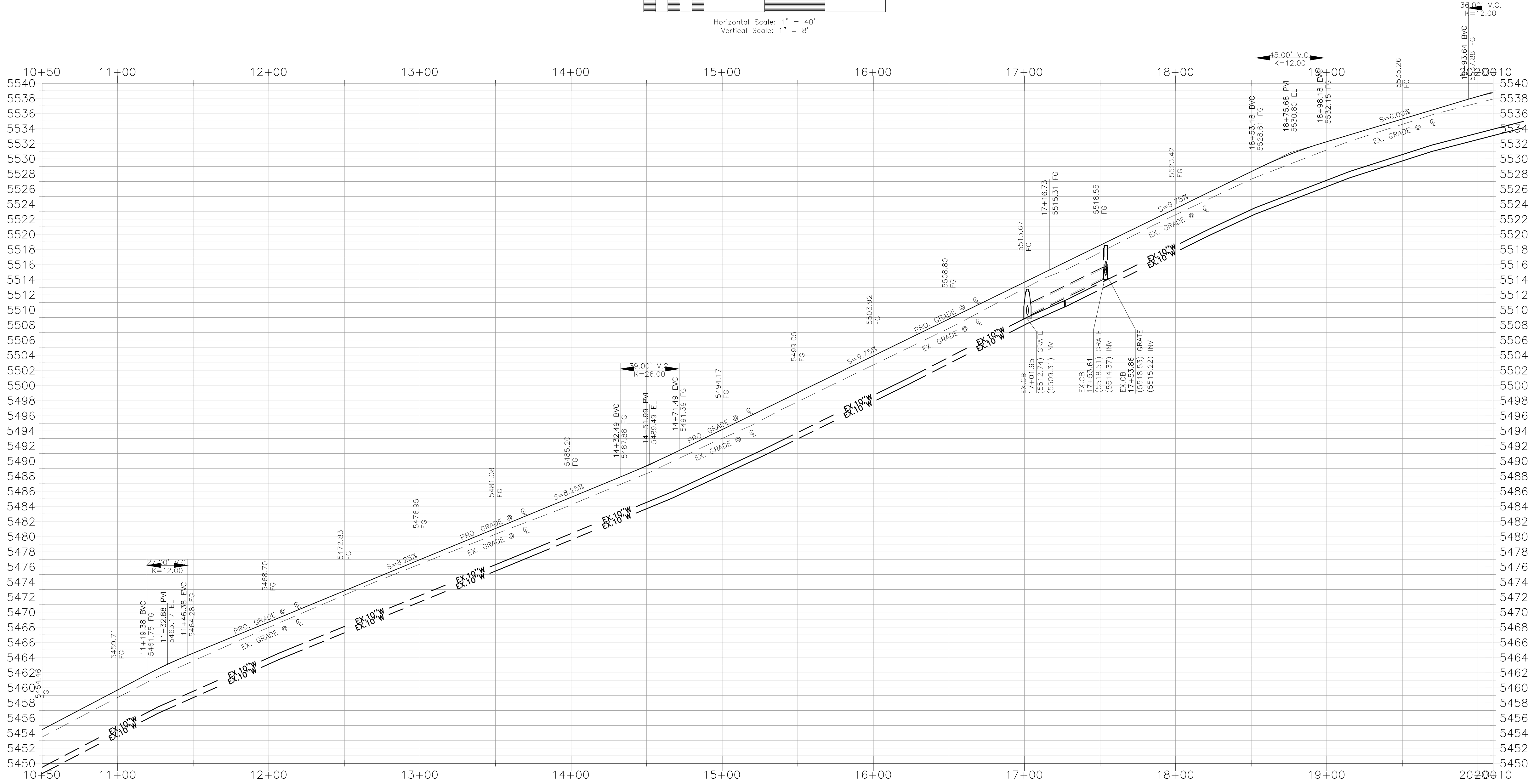
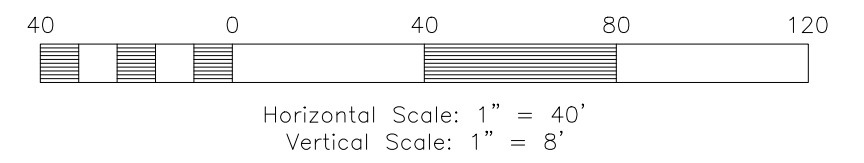


Project Info.
 Engineer: JEREMY A. DRAPER, P.E.
 Drafter: C. KINGSLEY
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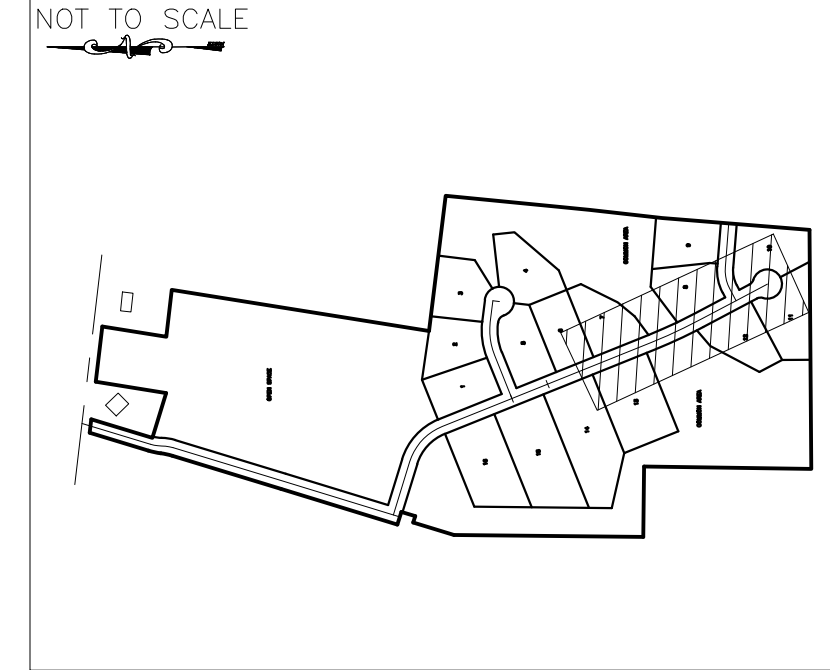




STREET B 10+50.00 - 20+10.00



Key Map



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TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C8	6'00"36"	1919.94'	201.39'	100.79'	S24°54'49"E	201.30'
C9	45°05'38"	45.00'	35.42'	18.68'	N5°21'59"W	34.51'
C10	27°11'54"	40.00'	188.63'	39.86'	N62°04'53"E	56.47'
C11	45°05'57"	45.00'	35.42'	18.69'	S50°28'05"E	34.51'
C12	90°00'16"	20.00'	31.42'	20.00'	S17°04'45"W	28.29'
C15	90°00'00"	20.00'	31.42'	20.00'	S72°55'07"E	28.28'
C16	6'00"36"	1889.94'	198.24'	99.21'	S24°54'49"E	198.15'

Centerline Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C31	6'00"36"	1904.94'	199.82'	100.00'	S24°54'49"E	199.72'

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Harmony Ranch Subdivision
WEBER COUNTY, UTAH

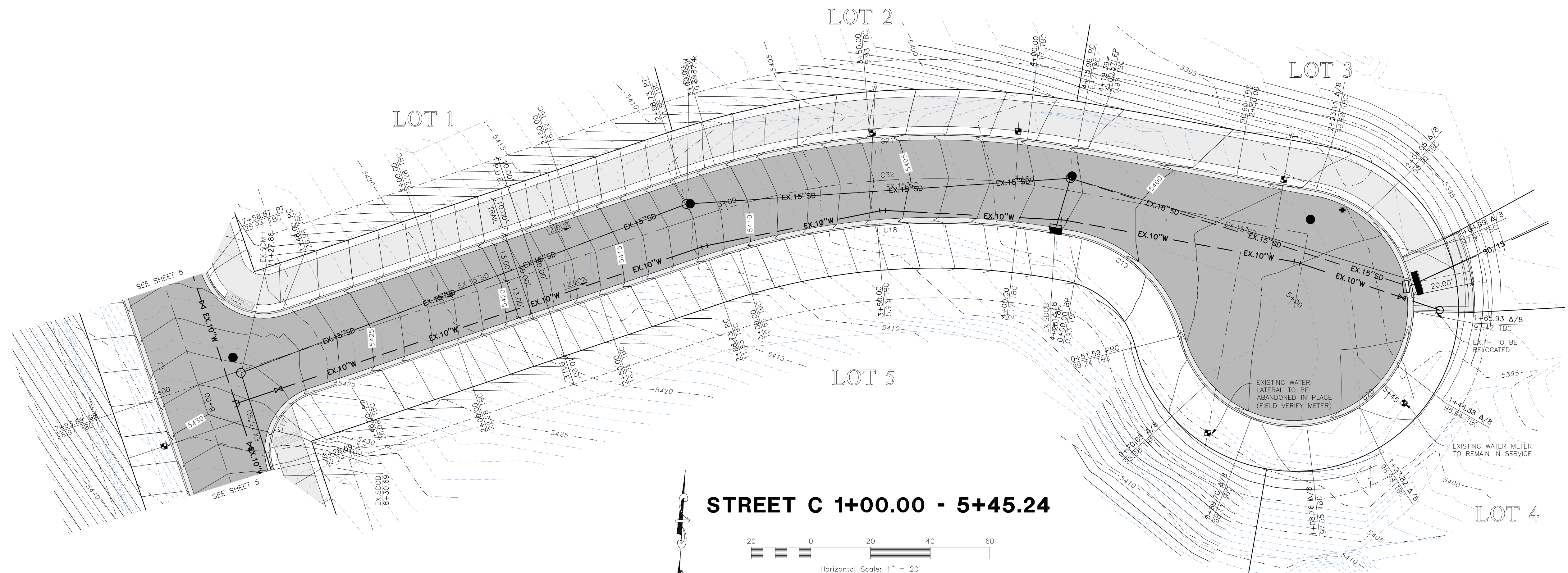
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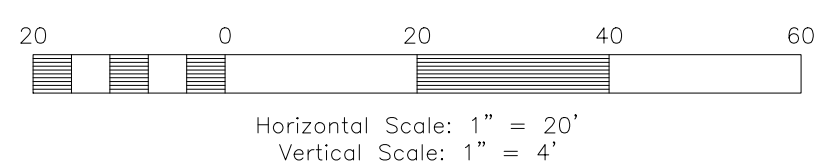
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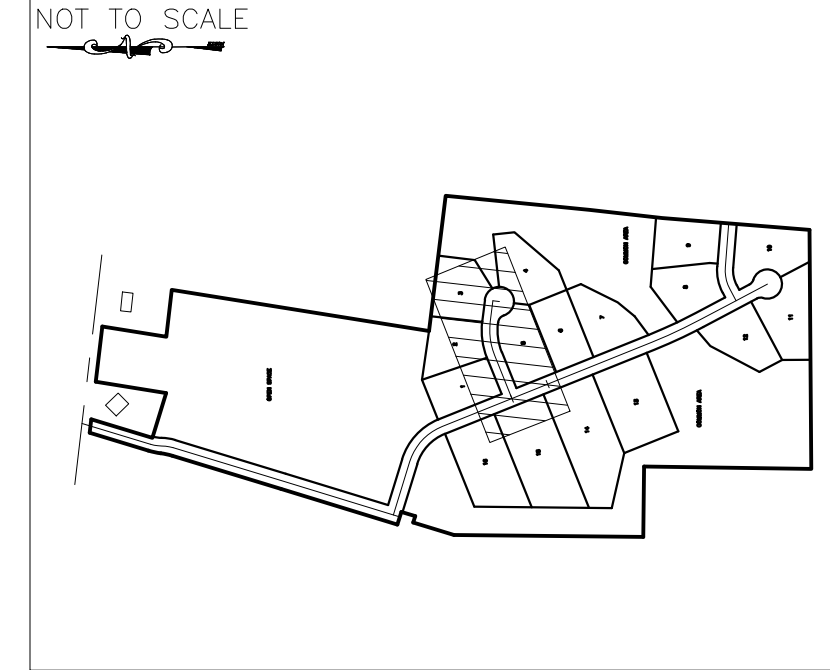




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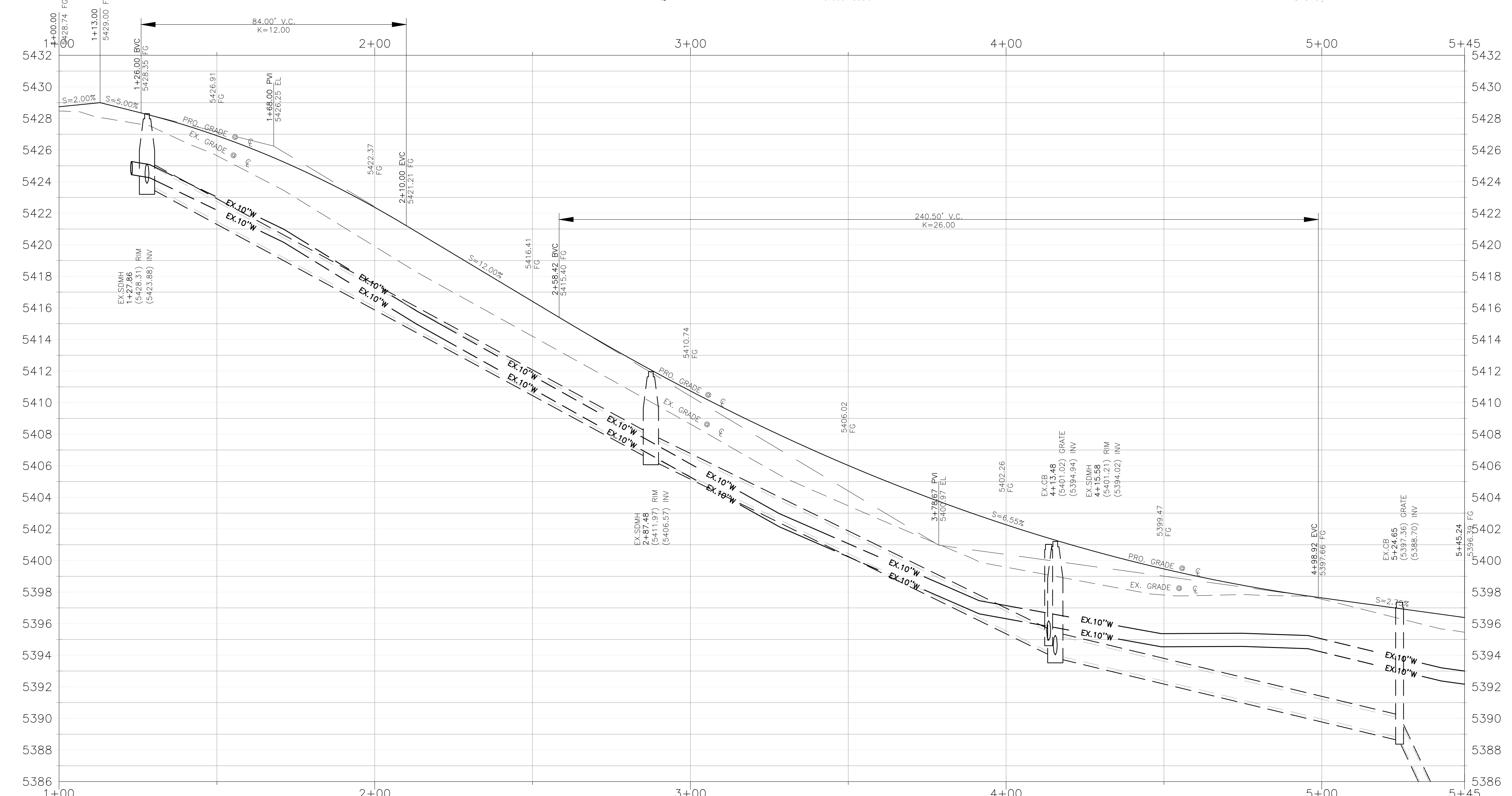


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#	Delta	Radius	Length	Tangent	Chord	CH Length
C17	90°00'00"	20.00'	31.42'	20.00'	S23°05'29"W	28.28'
C18	28°53'15"	237.36'	119.67'	61.14'	S82°32'07"W	118.41'
C19	65°41'03"	45.00'	51.59'	29.05'	N5°10'44"W	48.81'
C20	245°41'03"	40.00'	171.52'	61.97'	N39°49'16"E	67.21'
C21	28°53'15"	267.36'	134.80'	68.86'	S82°32'07"W	133.37'
C22	90°00'00"	20.00'	31.42'	20.00'	S66°54'31"E	28.28'

Centerline Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C32	28°53'15"	252.36'	127.23'	65.00'	N82°32'07"E	125.89'

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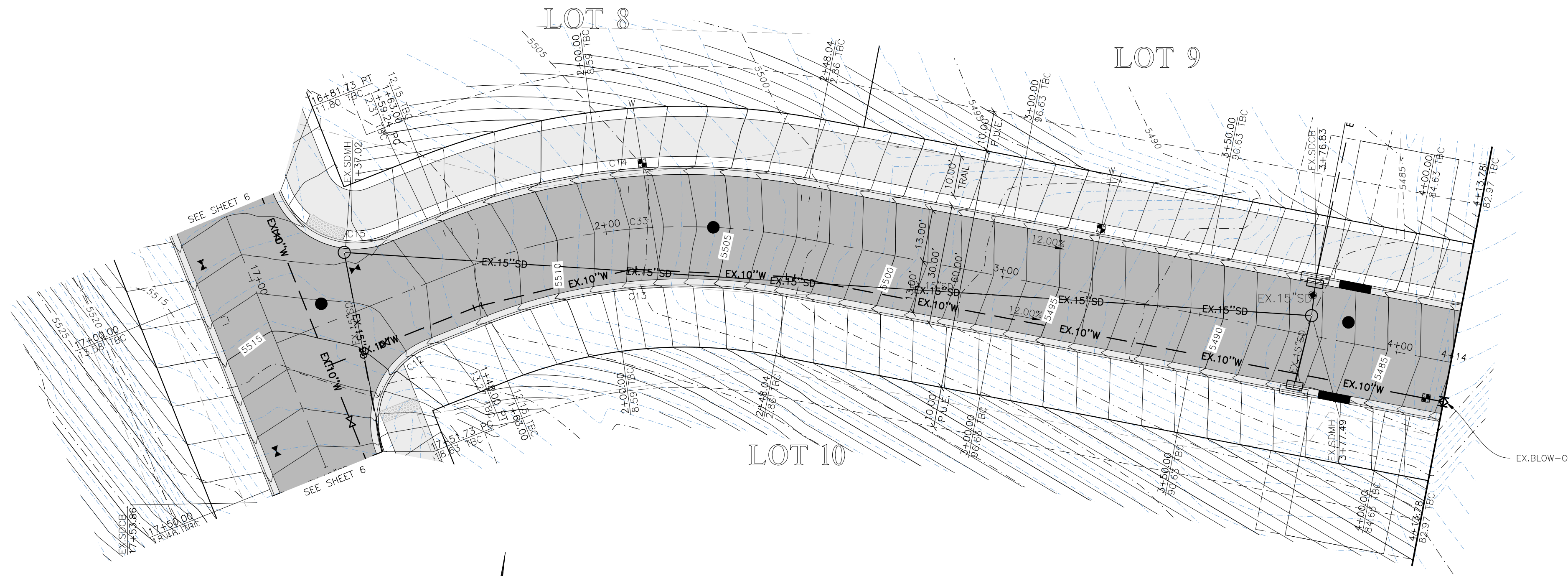
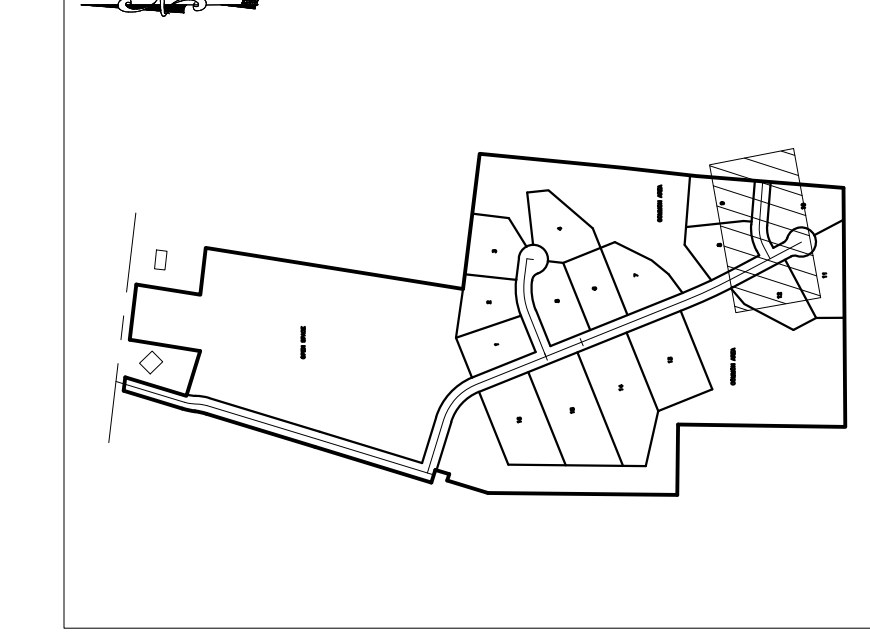
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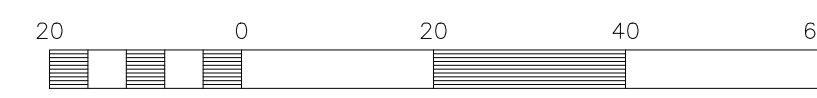


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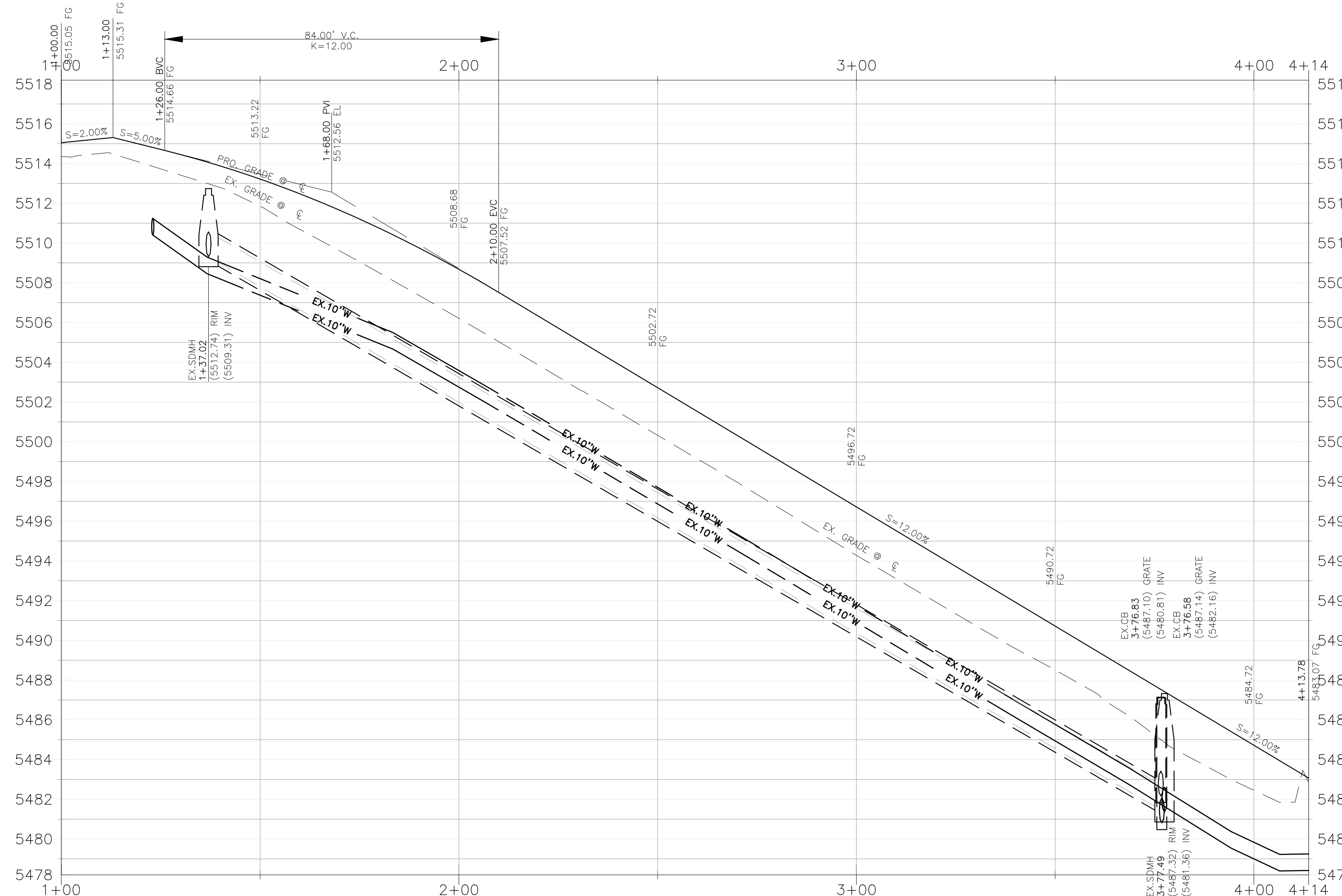
NOT TO SCALE



STREET D 1+00.00 - 4+13.78



Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

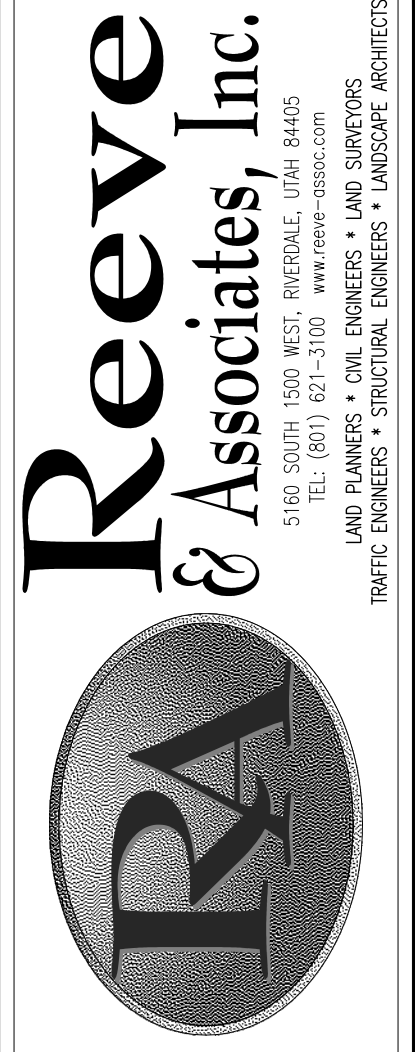


TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C12	90°00'16"	20.00'	31.42'	20.00'	S17°04'45"W	28.29'
C13	32°28'57"	135.00'	76.54'	39.33'	S78°19'21"W	75.51'
C14	32°28'57"	165.00'	93.54'	48.07'	S78°19'21"W	92.30'
C15	90°00'00"	20.00'	31.42'	20.00'	S72°55'07"E	28.28'

Centerline Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C33	32°28'57"	150.00'	85.04'	43.70'	N78°19'21"E	83.90'



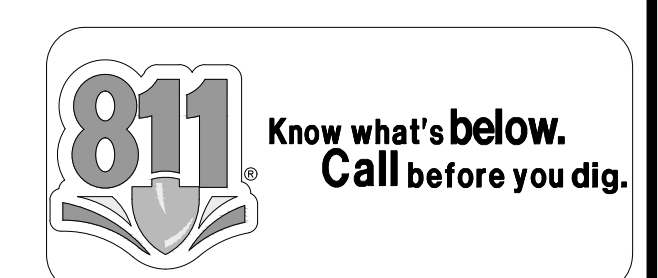
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STREET D 1+00.00 - 4+13.78



Project Info.
Engineer: JEREMY A. DRAPER, P.E.
Drafter: C. KINGSLEY
Begin Date: APRIL 2021
Name: HARMONY RANCH SUBDIVISION
Number: 7569-01



DUE TO THE TOPOGRAPHY AND THE LOCATION OF THIS SUBDIVISION, ALL OWNERS WILL ACCEPT RESPONSIBILITY FOR ANY STORM WATER RUNOFF FROM THE ROAD ADJACENT TO THE PROPERTY UNTIL CURB AND GUTTER IS INSTALLED.



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REVISIONS	DATE	DESCRIPTION
12-06-2021	TB	Basin Updates

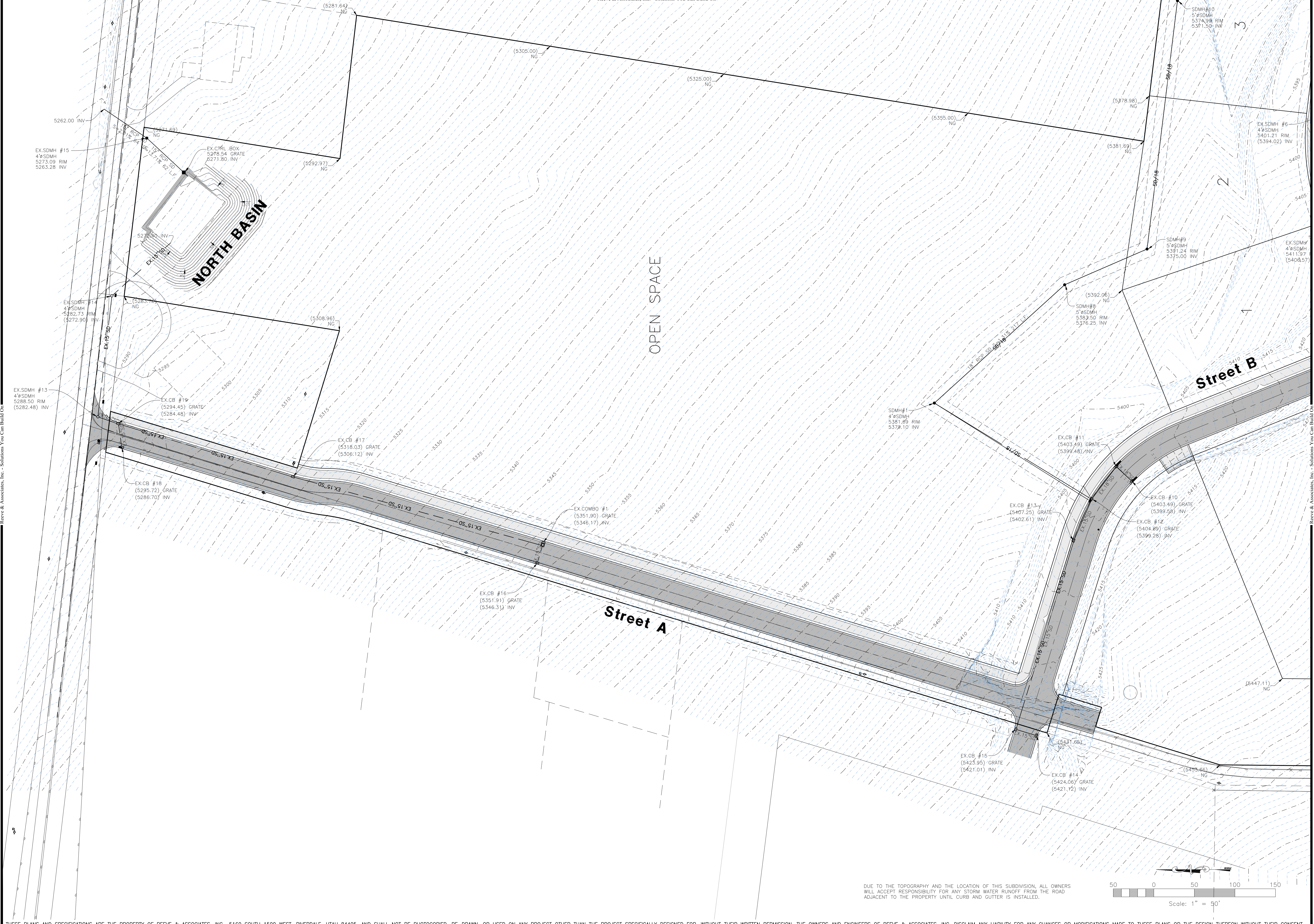
Harmony Ranch Subdivision
 WEBER COUNTY, UTAH

Grading & Drainage Plan

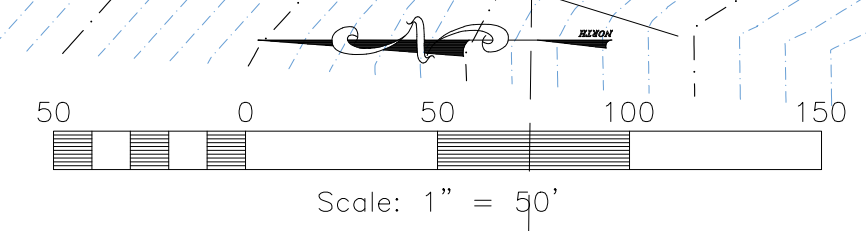


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REVISIONS	DATE	DESCRIPTION
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Harmony Ranch Subdivision
 WEBER COUNTY, UTAH

Grading & Drainage Plan



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North Basin Calculations:



Storm Runoff Calculations
Harmony Ranch
 7569-01 10/26/2021 PER

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Eden, UT area taken from the NOAA Atlas 14 database. Calculations have been completed for the 100-yr 24-hr storm event. Storm water runoff has been calculated for a fully developed site and limited to a release rate of 0.1-cfs.

North Basin:
 The calculations are as follows:

Drainage Area:

Total Area =	3.00 acre or	130,594 ft ²
Runoff Coefficients		
Paved Area	48,814	C = 0.9
Driveway	0	C = 0.9
Roof	0	C = 0.9
Landscaped Area	81,780	C = 0.2
Weighted Runoff Coefficient		C = 0.46

LID Retention

80 th Percentile Rainfall Event	0.48	in
Is the site Feasible for LID?	Yes	
Site Imperviousness	0.37	
NRCS Soil Group	B	(USDA)
Rv Equation	0.84*(1.169	
R _v	0.27	
V _{goal}	1402	c.f.

Volume of Run-off for 100-year Storm Event:

C =	0.46					
I =	See Below in/hr					
A =	130594.00 ft ²					
Q(out) =	0.30 ft ³ /s (0.1-cfs per ac)					
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference (cf)
0	0	0.00	0.00	0	0	0
5	300	7.96	11.11	3333	90	3243
10	600	6.05	8.44	5066	180	4886
15	900	5	6.98	6290	270	6010
30	1800	3.37	4.70	8466	540	7926
60	3600	2.08	2.90	10450	1079	9371
120	7200	1.23	1.72	12359	2159	10201
180	10800	0.85	1.19	12811	3238	9573
360	21600	0.488	0.68	14710	6476	8235
720	43200	0.315	0.44	18991	12951	6039
1440	86400	0.201	0.28	24236	25903	-1667

Orifice Sizing

Given: Q = 0.30 cfs
 2g = 64.4 ft/s²
 H = 3.00 ft
 Cd = 0.62 for circular openings
 R = SQRT(Q/pi/(0.7*(64.4*H)^{0.5}))
 R = 0.11 feet
 D = 1.26 inches
 D = 2.53 inches
 A = 5.01 inches *2 0.0348 ft *2

SUMMARY:

The required 100-yr storage volume is	10,201	cubic feet
The required LID Retention volume is	1,402	cubic feet
The required orifice size is	3	in
Total Required Basin Storage Volume is	11,603	cubic feet
Designed Basin Storage Volume (3 ft Depth) is	11,681	cubic feet

East Basin Calculations:



Storm Runoff Calculations
Harmony Ranch
 7569-01 10/26/2021 PER

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Eden, UT area taken from the NOAA Atlas 14 database. Calculations have been completed for the 100-yr 24-hr storm event. Storm water runoff has been calculated for a fully developed site and limited to a release rate of 0.1-cfs.

East Basin:
 The calculations are as follows:

Drainage Area:

Total Area =	33.07 acre or	1,440,677 ft ²
Runoff Coefficients		
Paved Area	112,760	C = 0.9
Driveway	11,700	C = 0.9
Roof	39,000	C = 0.9
Landscaped Area	1,277,218	C = 0.2
Weighted Runoff Coefficient		C = 0.28

LID Retention

80 th Percentile Rainfall Event	0.48	in
Is the site Feasible for LID?	Yes	
Site Imperviousness	0.11	
NRCS Soil Group	B	(USDA)
Rv Equation	0.84*(1.169	
R _v	0.07	
V _{goal}	3838	c.f.

Volume of Run-off for 100-year Storm Event:

C =	0.28					
I =	See Below in/hr					
A =	1440677.00 ft ²					
Q(out) =	3.31 ft ³ /s (0.1-cfs per ac)					
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference (cf)
0	0	0.00	0.00	0	0	0
5	300	7.96	74.17	22252	992	21260
10	600	6.05	56.38	33826	1994	31842
15	900	5	46.59	41933	2977	38956
30	1800	3.37	31.40	56526	5953	50573
60	3600	2.08	19.38	69777	11906	57870
120	7200	1.23	11.46	82524	23813	58711
180	10800	0.85	7.92	85543	35719	49824
360	21600	0.488	4.55	98224	71439	26785
720	43200	0.315	2.94	126805	142877	-16072
1440	86400	0.201	1.87	161828	285754	-123926

Orifice Sizing

Given: Q = 3.31 cfs
 2g = 64.4 ft/s²
 H = 3.00 ft
 Cd = 0.62 for circular openings
 R = SQRT(Q/pi/(0.7*(64.4*H)^{0.5}))
 R = 0.35 feet
 D = 4.20 inches
 D = 8.39 inches
 A = 55.29 inches *2 0.3840 ft *2

SUMMARY:

The required 100-yr storage volume is	58,711	cubic feet
The required LID Retention volume is	3,838	cubic feet
The required orifice size is	8	in
Total Required Basin Storage Volume is	62,550	cubic feet
Designed Basin Storage Volume (1' Freeboard) is	62,682	cubic feet

South Basin Calculations:



Storm Runoff Calculations
Harmony Ranch
 7569-01 10/26/2021 PER

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Eden, UT area taken from the NOAA Atlas 14 database. Calculations have been completed for the 100-yr 24-hr storm event. Storm water runoff has been calculated for a fully developed site and limited to a release rate of 0.1-cfs.

South Basin:
 The calculations are as follows:

Drainage Area:

Total Area =	3.42 acre or	148,852 ft ²
Runoff Coefficients		
Paved Area	23,295	C = 0.9
Driveway	2,250	C = 0.9
Roof	7,500	C = 0.9
Landscaped Area	115,807	C = 0.2
Weighted Runoff Coefficient		C = 0.36

LID Retention

80 th Percentile Rainfall Event	0.48	in
Is the site Feasible for LID?	Yes	
Site Imperviousness	0.22	
NRCS Soil Group	B	(USDA)
Rv Equation	0.84*(1.169	
R _v	0.15	
V _{goal}	869	c.f.

Volume of Run-off for 100-year Storm Event:

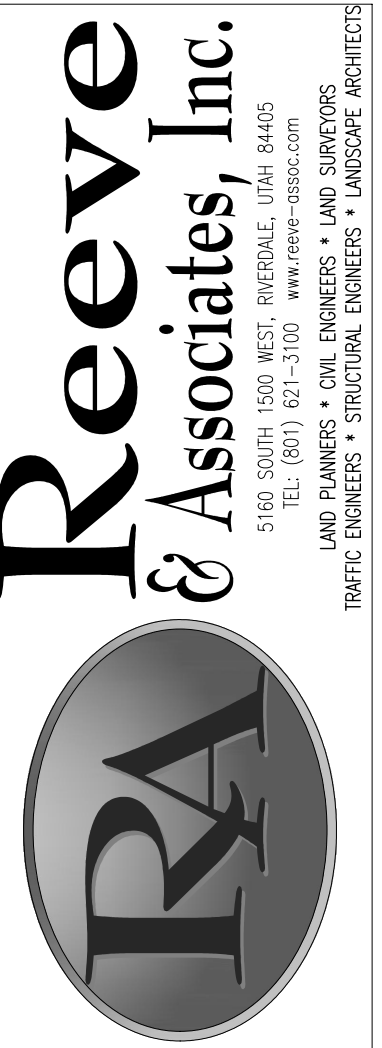
C =	0.36					
I =	See Below in/hr					
A =	148852.00 ft ²					
Q(out) =	0.34 ft ³ /s (0.1-cfs per ac)					
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference (cf)
0	0	0.00	0.00	0	0	0
5	300	7.96	9.75	2924	103	2822
10	600	6.05	7.41	4445	205	4240
15	900	5	6.12	5511	308	5203
30	1800	3.37	4.13	7428	615	6813
60	3600	2.08	2.55	9170	1230	7939
120	7200	1.23	1.51	10845	2460	8385
180	10800	0.85	1.04	11242	3691	7551
360	21600	0.488	0.60	12908	7381	5527
720	43200	0.315	0.39	16664	14762	1902
1440	86400	0.201	0.25	21267	29524	-8258

Orifice Sizing

Given: Q = 0.34 cfs
 2g = 64.4 ft/s²
 H = 3.00 ft
 Cd = 0.62 for circular openings
 R = SQRT(Q/pi/(0.7*(64.4*H)^{0.5}))
 R = 0.11 feet
 D = 1.35 inches
 D = 2.70 inches
 A = 5.71 inches *2 0.0397 ft *2

SUMMARY:

The required 100-yr storage volume is	8,385	cubic feet
The required LID Retention volume is	869	cubic feet
The required orifice size is	3	in
Total Required Basin Storage Volume is	9,254	cubic feet
Designed Basin Storage Volume (1' Freeboard) is	9,630	cubic feet



REVISIONS	DATE	DESCRIPTION
12-06-2021	TB	Basin Updates

Harmony Ranch Subdivision

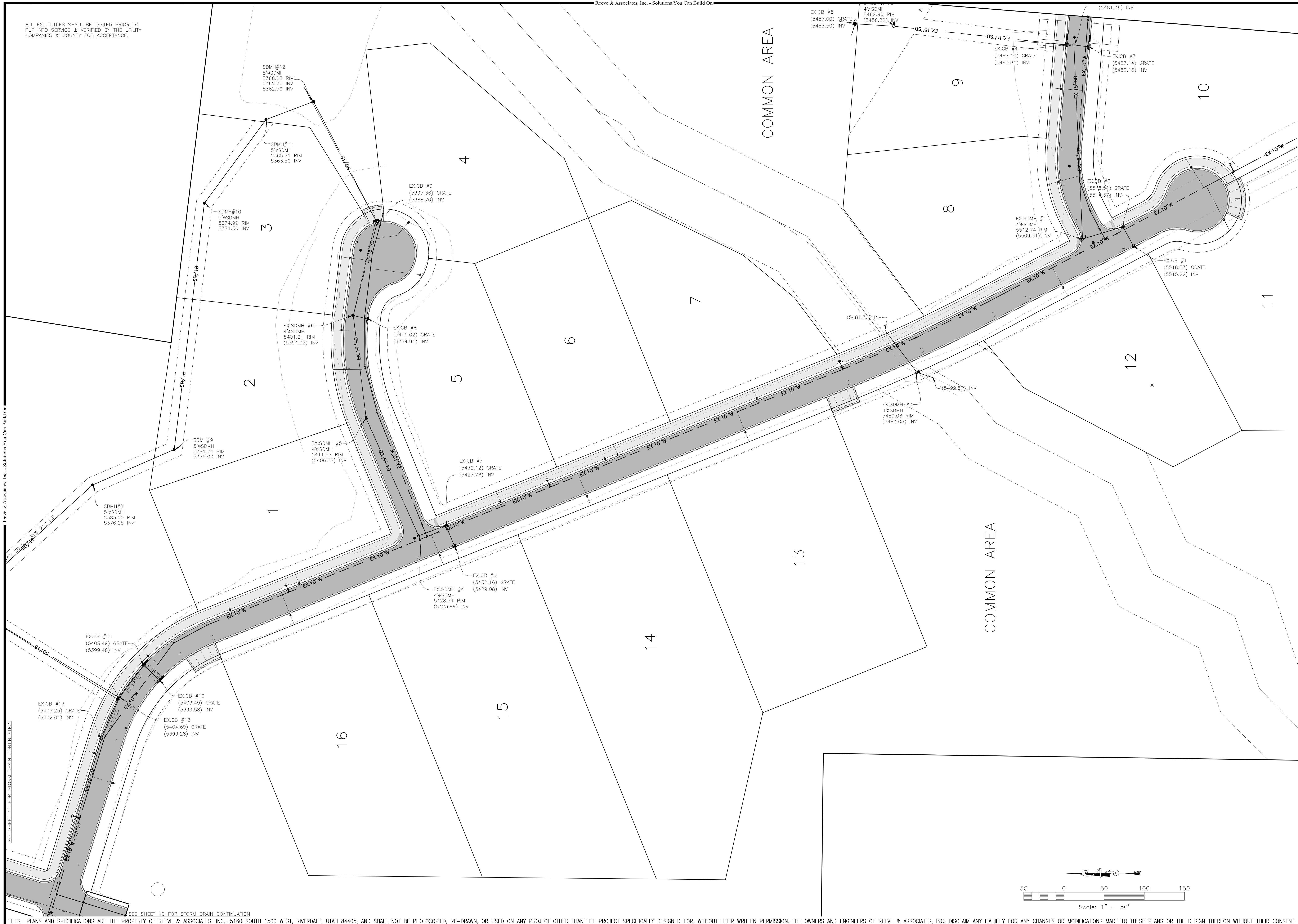
WEBER COUNTY, UTAH

Detention Basin Calculation Details



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ALL UTILITIES SHALL BE TESTED PRIOR TO PUT INTO SERVICE & VERIFIED BY THE UTILITY COMPANIES & COUNTY FOR ACCEPTANCE.



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SEE SHEET 10 FOR STORM DRAIN CONTINUATION

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Harmony Ranch Subdivision
 WEBER COUNTY, UTAH

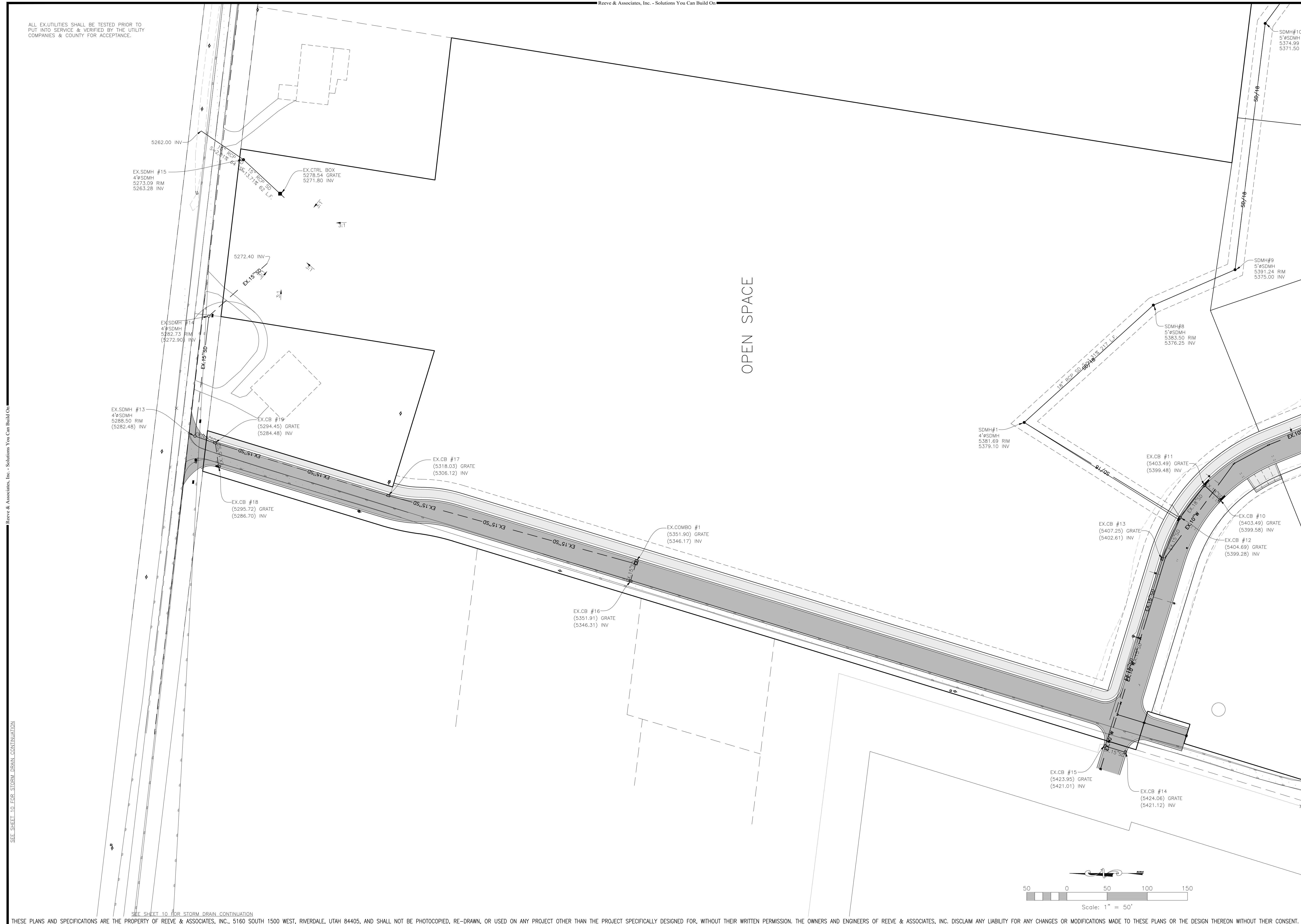
Utility Plan



Project Info.

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Drafter:	C. KINGSLEY
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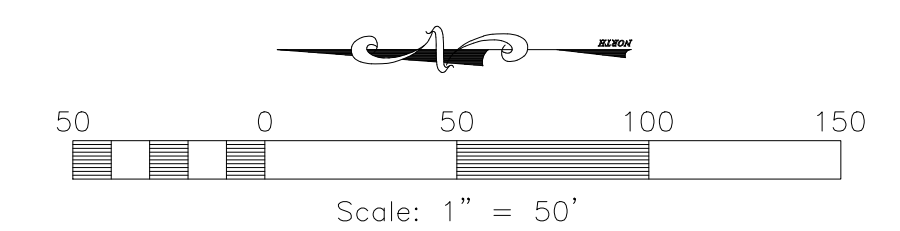
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Harmony Ranch Subdivision
 WEBER COUNTY, UTAH
Utility Plan



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Inlets:

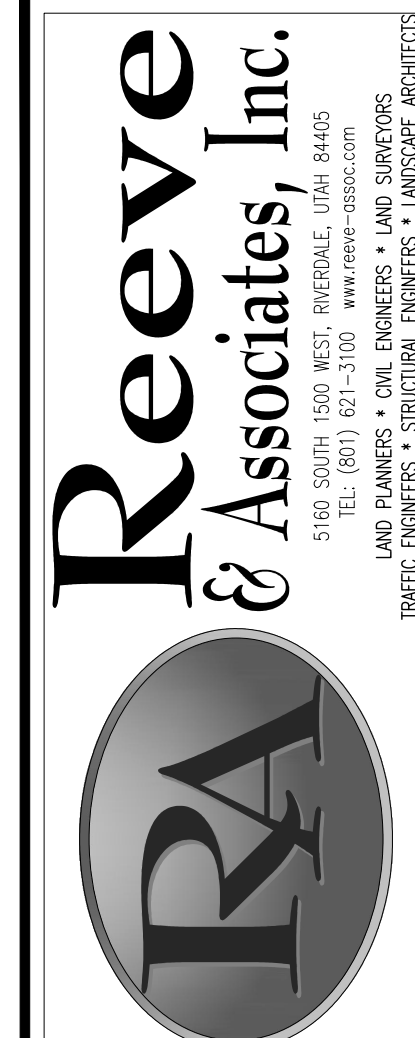
Inlets:									
Element ID	Inlet Location	Catchbasin Invert Elevation	Max (Rim) Elevation	Roadway Manning's Roughness	Peak Flow	Peak Flow Intercepted by Inlet	Peak Flow Bypassing	Peak Flow Inlet	Inlet Efficiency during Peak Flow (%)
		(ft)	(ft)		(cfs)	(cfs)	(cfs)	(cfs)	(%)
EX.CB#1	On Grade	5515.22	5518.53	0.013	1.12	1.08	0.04	96.13	
EX.CB#2	On Grade	5514.37	5518.51	0.013	0.28	0.28	0.00	100.00	
EX.CB#3	On Sag	5482.17	5487.14	0.013	0.96	N/A	N/A	N/A	
EX.CB#4	On Sag	5480.81	5487.10	0.013	0.35	N/A	N/A	N/A	
EX.CB#5	On Sag	5453.60	5484.11	0.013	3.37	N/A	N/A	N/A	
EX.CB#6	On Grade	5429.08	5432.16	0.013	5.43	4.11	1.32	75.69	
EX.CB#7	On Grade	5427.76	5432.12	0.013	0.62	0.61	0.00	99.41	
EX.CB#8	On Grade	5394.94	5401.02	0.013	1.31	1.24	0.07	94.80	
EX.CB#9	On Sag	5388.70	5397.36	0.013	2.30	N/A	N/A	N/A	
EX.CB#10	On Sag	5400.04	5403.49	0.013	4.82	N/A	N/A	N/A	
EX.CB#11	On Sag	5399.69	5403.49	0.013	0.52	N/A	N/A	N/A	
EX.CB#12	On Sag	5399.48	5404.69	0.013	0.15	N/A	N/A	N/A	
EX.CB#13	On Grade	5402.61	5407.25	0.013	0.27	0.27	0.00	100.00	
EX.CB#14	On Grade	5421.12	5424.06	0.013	0.00	N/A	N/A	N/A	
EX.CB#15	On Grade	5421.01	5423.95	0.013	0.00	N/A	N/A	N/A	
EX.CB#16	On Grade	5346.31	5351.91	0.013	0.72	0.72	0.01	98.82	
EX.CB#17	On Grade	5306.12	5318.03	0.013	0.48	0.19	0.29	40.55	
EX.CB#18	On Sag	5286.70	5295.72	0.013	0.61	N/A	N/A	N/A	
EX.CB#19	On Sag	5284.48	5294.45	0.013	0.28	N/A	N/A	N/A	
EX.CB#20	On Grade	5271.80	5278.61	0.013	5.61	1.81	3.80	32.34	
EX.COMBO#1	On Grade	5346.17	5351.90	0.013	0.67	0.50	0.17	75.13	

Junctions:

Junctions:			
Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Peak Inflow
	(ft)	(ft)	(cfs)
EX.SDMH #1	5509.31	5512.74	1.07
EX.SDMH #2	5458.82	5465.01	2.02
EX.SDMH #3	5483.03	5490.51	17.71
EX.SDMH #4	5423.88	5428.31	4.11
EX.SDMH #5	5406.57	5411.97	4.11
EX.SDMH #6	5394.02	5401.21	4.10
SDMH #7	5377.65	5382.60	9.62
SDMH #8	5374.61	5382.70	9.62
SDMH #9	5373.06	5390.51	9.62
SDMH #10	5368.74	5375.00	9.61
SDMH #11	5362.68	5367.49	9.61
EX.SDMH #12	5362.36	5368.83	13.82
EX.SDMH #13	5282.48	5288.50	1.93
EX.SDMH #14	5272.90	5282.73	1.93
EX.SDMH #15	5263.28	5273.09	5.61
EX.SDMH #16	5481.36	5487.32	2.02
EX.SDMH #17	5492.57	5495.57	17.71

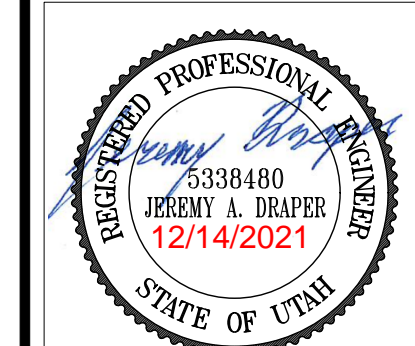
Pipes

Pipes:													
Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Max Flow Depth		
			(ft)	(ft)	(ft)	(%)	(Inches)		(cfs)	(cfs)	(ft)		
EX.1	EX.CB#1	EX.CB#2	28.01	5515.22	5514.37	3.05	15.000	0.013	1.07	11.27	0.26		
EX.2	EX.SDMH #3	Out-1Pipe - (24)	78.57	5483.03	5481.30	2.21	36.000	0.013	17.70	99.09	0.86		
EX.3	EX.CB#6	EX.CB#7	28.00	5429.08	5427.88	4.31	15.000	0.013	4.11	13.41	0.47		
EX.4	EX.CB#7	EX.SDMH #4	36.25	5427.76	5423.88	10.69	15.000	0.013	4.11	21.12	0.37		
EX.5	EX.SDMH #4	EX.SDMH #5	159.73	5423.88	5406.57	10.84	15.000	0.013	4.11	21.27	0.37		
EX.6	EX.SDMH #5	EX.SDMH #6	129.08	5406.57	5394.02	9.72	15.000	0.013	4.10	20.14	0.38		
EX.7	EX.CB#8	EX.SDMH #6	18.29	5394.94	5394.02	5.03	15.000	0.013	1.24	14.49	0.25		
EX.8	EX.SDMH #6	EX.CB#9	119.11	5394.02	5388.70	4.40	15.000	0.013	4.10	13.55	0.47		
EX.9	EX.CB#9	EX.SDMH #12	170.20	5388.70	5361.97	15.71	18.000	0.013	5.25	41.33	0.36		
EX.10	EX.CB#13	EX.CB#12	55.45	5402.61	5399.48	5.65	15.000	0.013	0.26	15.35	0.11		
EX.11	EX.CB#15	EX.CB#13	243.88	5421.01	5402.66	7.52	15.000	0.013	0.00	17.72	0.00		
EX.12	EX.CB#2	EX.SDMH #1	52.62	5514.37	5509.31	9.62	15.000	0.013	1.07	20.03	0.20		
EX.13	EX.CB#14	EX.CB#15	26.92	5421.12	5421.01	0.42	15.000	0.013	0.00	4.17	0.00		
EX.14	EX.CB#16	EX.COMBO#1	22.14	5346.31	5346.17	0.63	15.000	0.013	0.71	5.14	0.31		
EX.15	EX.COMBO#1	EX.CB#17	318.01	5346.17	5306.12	12.60	15.000	0.013	1.19	22.93	0.19		
EX.16	EX.CB#17	EX.CB#19	225.14	5306.12	5284.48	9.61	15.000	0.013	1.35	20.03	0.22		
EX.17	EX.CB#18	EX.CB#19	29.84	5286.70	5284.48	7.44	15.000	0.013	0.61	17.62	0.16		
EX.18	EX.CB#19	EX.SDMH #13	26.39	5284.48	5282.48	7.58	15.000	0.013	1.93	17.78	0.28		
EX.19	EX.SDMH #13	EX.SDMH #14	150.24	5282.48	5272.90	6.38	15.000	0.013	1.93	16.31	0.29		
EX.20	EX.SDMH #14	Out-1Pipe - (35)	97.61	5272.90	5271.80	1.13	15.000	0.013	1.93	6.86	0.45		
EX.21	SD#46	EX.SDMH #15	66.52	5271.80	5263.28	12.81	15.000	0.013	1.82	23.12	0.24		
EX.22	EX.SDMH #15	Out-1Pipe - (37)	63.54	5263.28	5262.00	2.01	15.000	0.013	5.60	9.17	0.71		
EX.23	EX.SDMH #1	EX.SDMH#16	241.71	5509.31	5481.36	11.56	15.000	0.013	1.07	21.97	0.19		
EX.24	EX.CB#3	EX.SDMH#16	18.91	5482.17	5481.36	4.26	15.000	0.013	0.96	13.34	0.23		
EX.25	EX.SDMH#16	EX.CB#4	9.11	5481.36	5480.81	6.07	15.000	0.013	2.02	15.92	0.30		
EX.26	EX.CB#4	EX.SDMH #2	216.17	5480.81	5458.82	10.17	15.000	0.013	2.02	20.60	0.26		
EX.27	EX.SDMH #2	EX.CB#5	47.92	5458.82	5453.60	10.89	15.000	0.013	2.02	21.32	0.26		
EX.28	EX.CB#5	Out-1Pipe - (27)	13.00	5453.60	5453.50	0.77	15.000	0.013	3.34	5.67	0.69		
EX.29	EX.SDMH #17	EX.SDMH #3	44.81	5492.57	5483.03	21.29	18.000	0.013	17.71	48.47	0.63		
EX.30	EX.CB#10	EX.CB#11	26.20	5400.04	5399.69	1.34	18.000	0.013	4.82	12.14	0.66		
EX.31	EX.CB#11	EX.CB#12	50.56	5399.69	5399.55	0.28	18.000	0.013	4.82	5.57	1.08		
P32	EX.CB#12	SDMH #7	226.37	5399.71	5377.65	9.75	18.000	0.013					
P33	SDMH #7	SDMH #8	217.25	5377.65	5374.61	1.40	18.000	0.013	9.62	12.43	0.99		
P34	SDMH #8	SDMH #9	110.66	5374.61	5373.06	1.40	18.000	0.013	9.62	12.43	0.99		
P35	SDMH #9	SDMH #10	308.62	5373.06	5368.74	1.40	18.000	0.013	9.61	12.43	0.99		
P36	SDMH #10	SDMH #11	129.27	5368.74	5362.68	4.69	18.000	0.013	9.61	22.74	0.68		
P37	SDMH #11	EX.SDMH #12	63.51	5362.68	5362.36	0.50	21.000	0.013	9.61	11.25	1.25		
P38	EX.SDMH #12	Out-1Pipe - (1) (1)	21.55	5362.36	5362.25	0.53	24.000	0.013	13.82	16.45	1.40		



REVISIONS	DATE	DESCRIPTION
12-06-2021	TB	Basin Updates

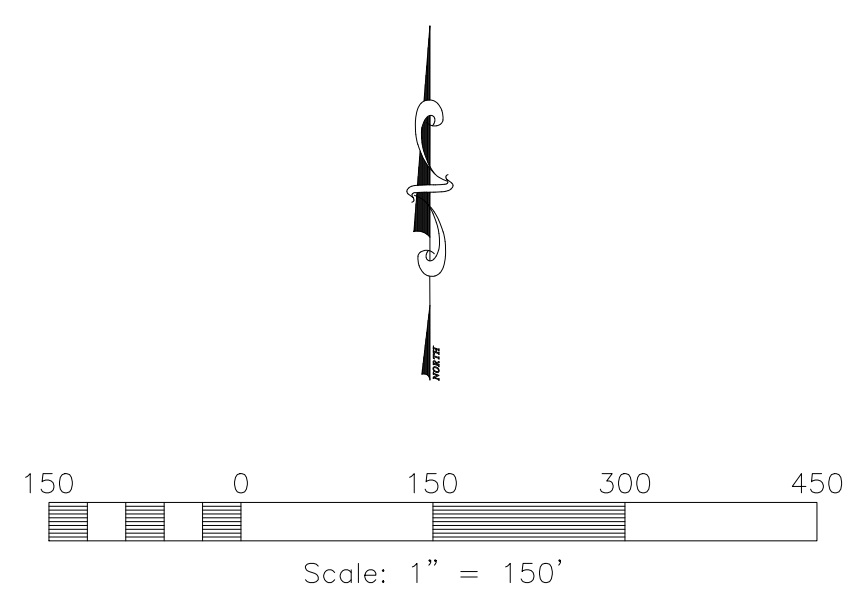
Harmony Ranch Subdivision Storm Drain Design Details



Project Info.
Engineer: JEREMY A. DRAPER, P.E.
Drafter: C. KINGSLEY
Begin Date: APRIL 2021
Name: HARMONY RANCH SUBDIVISION
Number: 7569-01

Harmony Ranch Subdivision Storm Water Pollution Prevention Plan Exhibit

WEBER COUNTY, UTAH
APRIL 2021



INLET PROTECTION TYP. (SEE DETAIL)

Construction Activity Schedule	
- PROJECT LOCATION.....	WEBER COUNTY, UTAH
- PROJECT BEGINNING DATE.....	APRIL 2021
- BMP'S DEPLOYMENT DATE.....	APRIL 2021
- STORM WATER MANAGEMENT CONTACT / INSPECTOR.....	JAN SILVERBERG (805) 570-9560
- SPECIFIC CONSTRUCTION SCHEDULE INCLUDING BMP CONSTRUCTION SCHEDULE TO BE INCLUDED WITH SWPPP BY OWNER/DEVELOPER	

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 TEL: (801) 671-3100 www.reeve-assoc.com
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REVISIONS	DATE	DESCRIPTION
	12-06-2021	TB Basin Updates

Harmony Ranch Subdivision
 WEBER COUNTY, UTAH

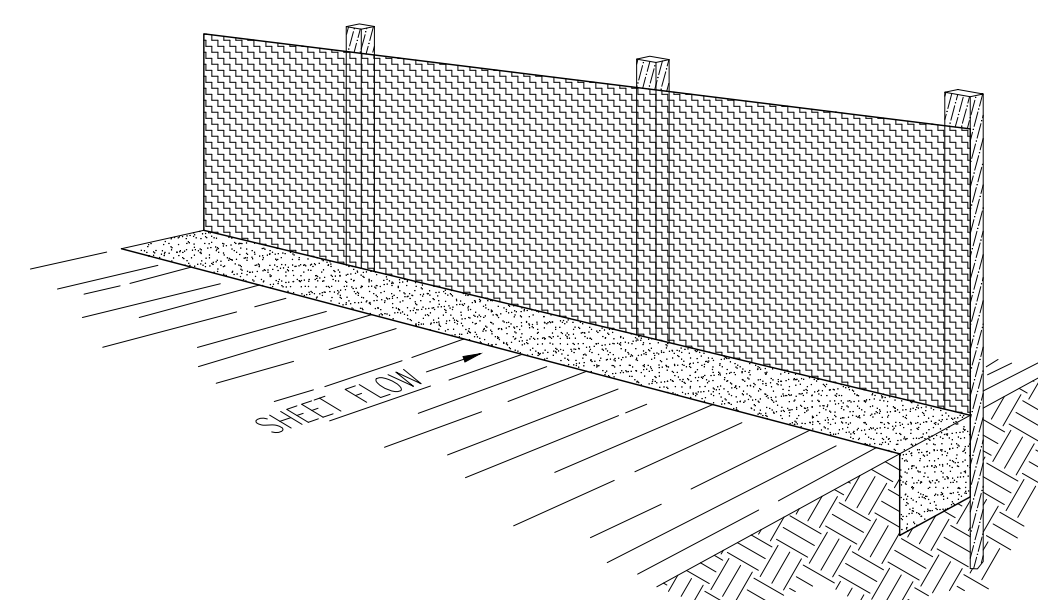
Storm Water Pollution Prevention Plan Exhibit



Project Info.	
Engineer:	JEREMY A. DRAPER, P.E.
Drafter:	C. KINGSLEY
Begin Date:	APRIL 2021
Name:	HARMONY RANCH SUBDIVISION
Number:	7569-01

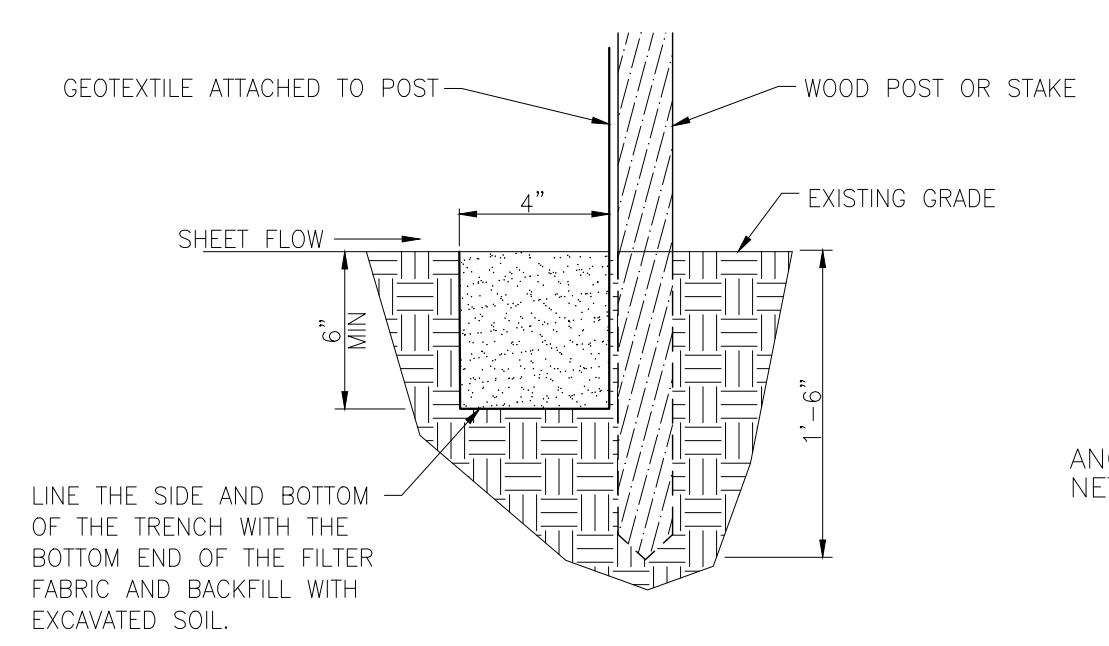
Notes:

- Describe all BMP's to protect storm water inlets:
All storm water inlets to be protected by straw wattle barriers, or gravel bags (see detail).
- Describe BMP's to eliminate/reduce contamination of storm water from:
 - Equipment / building / concrete wash areas:
To be performed in designated areas only and surrounded with silt fence barriers.
 - Soil contaminated by soil amendments:
If any contaminants are found or generated, contact environmental engineer and contacts listed.
 - Areas of contaminated soil:
If any contaminants are found or generated, contact environmental engineer and contacts listed.
 - Fueling area:
To be performed in designated areas only and surrounded with silt fence.
 - Vehicle maintenance areas:
To be performed in designated areas only and surrounded with silt fence.
 - Vehicle parking areas:
To be performed in designated areas only and surrounded with silt fence.
 - Equipment storage areas:
To be performed in designated areas only and surrounded with silt fence.
 - Materials storage areas:
To be performed in designated areas only and surrounded with silt fence.
 - Waste containment areas:
To be performed in designated areas only and surrounded with silt fence.
 - Service areas:
To be performed in designated areas only and surrounded with silt fence.
- BMP's for wind erosion:
Stockpiles and site as needed to be watered regularly to eliminate / control wind erosion
- Construction Vehicles and Equipment:
 - Maintenance
 - Keep all construction equipment to prevent oil or other fluid leaks.
 - Keep vehicles and equipment clean, prevent excessive build-up of oil and grease.
 - Regularly inspect on-site vehicles and equipment for leaks, and repair immediately.
 - Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment on-site.
 - Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic, and transmission fluids.
 - Fueling
 - If fueling must occur on-site, use designated areas away from drainage.
 - Locate on-site fuel storage tanks within a bermed area designed to hold the tank volume.
 - Cover retention area with an impervious material and install in a manner to ensure that any spills will be contained in the retention area. To catch spills or leaks when removing or changing fluids.
 - Use drip pans for any oil or fluid changes.
 - Washing
 - Use as little water as possible to avoid installing erosion and sediment controls for the wash area.
 - If washing must occur on-site, use designated, bermed wash areas to prevent waste water discharge into storm water, creeks, rivers, and other water bodies.
 - Use phosphate-free, biodegradable soaps.
 - Do not permit steam cleaning on-site.
- Spill Prevention and Control
 - Minor Spills:
Minor spills are those which are likely to be controlled by on-site personnel. After contacting local emergency response agencies, the following actions should occur upon discovery of a minor spill:
 - Contain the spread of the spill.
 - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (i.e. absorbent materials, cat litter, and / or rags).
 - If the spill occurs in dirt areas, immediately contain the spill by constructing an earth dike. Dig up and properly dispose of contaminated soil.
 - If the spill occurs during rain, cover the impacted area to avoid runoff.
 - Record all steps taken to report and contain spill.
 - Major Spills:
On-site personnel should not attempt to control major spills until the appropriate and qualified emergency response staff have arrived at the site. For spills of federal reportable quantities, also notify the National Response Center at (800) 424-8802. A written report should be sent to all notified authorities. Failure to report major spills can result in significant fines and penalties.
- Post Roadway / Utility Construction
 - Maintain good housekeeping practices.
 - Enclose or cover building material storage areas.
 - Properly store materials such as paints and solvents.
 - Store dry and wet materials under cover, away from drainage areas.
 - Avoid mixing excess amounts of fresh concrete or cement on-site.
 - Perform washout of concrete trucks offsite or in designated areas only.
 - Do not wash out concrete trucks into storm drains, open ditches, streets or streams.
 - Do not place material or debris into streams, gutters or catch basins that stop or reduce the flow of runoff water.
 - All public streets and storm drain facilities shall be maintained free of building materials, mud and debris caused by grading or construction operations. Roads will be swept within 1000' of construction entrance daily, if necessary.
 - Install straw wattle around all inlets contained within the development and all others that receive runoff from the development.
- Erosion Control Plan Notes
 - The contractor will designate an emergency contact that can be reached 24 hours a day 7 days a week. A stand-by crew for emergency work shall be available at all times during potential rain or snow runoff events. Necessary materials shall be available on site and stockpiled at convenient locations to facilitate rapid construction of emergency devices when rain or runoff is eminent.
 - Erosion control devices shown on the plans and approved for the project may not be removed without approval of the engineer of record. If devices are removed, no work may continue that have the potential of erosion without consulting the engineer of record. If deemed necessary erosion control should be reestablished before this work begins.
 - Graded areas adjacent to fill slopes located at the site perimeter must drain away from the top of the slope at the conclusion of each working day. This should be confirmed by survey or other means acceptable to the engineer of record.
 - All silt and debris shall be removed from all devices within 24 hours after each rain or runoff event.
 - Except as otherwise approved by the inspector, all removable protective devices shown shall be in place at the end of each working day and through weekends until removal of the system is approved.
 - All loose soil and debris, which may create a potential hazard to offsite property, shall be removed from the site as directed by the engineer of record of the governing agency.
 - The placement of additional devices to reduce erosion damage within the site is left to the discretion of the engineer of record.
 - Desilting basins may not be removed or made inoperable without the approval of the engineer of record and the governing agency.
 - Erosion control devices will be modified as need as the project progresses and plans of these changes submitted for approval by the engineer of record and the governing agency.
- Conduct a minimum of one inspection of the erosion and sediment controls every two weeks. Maintain documentation on site.
 - Part III.D.4 of general permit UTRC00000 identifies the minimum inspection requirements.
 - Part III.D.4.C identifies the minimum inspection report requirements.
 - Failure to complete and/or document storm water inspections is a violation of part III.D.4 of Utah General Permit UTR 300000.



Perspective View

Figure 2



Section

INSTALLATION

The silt fence should be installed prior to major soil disturbances in the drainage area. The fence should be placed across the slope along a line of uniform elevation wherever flow of sediment is anticipated. Table 1 shows generally-recommended maximum slope lengths (slope spacing between fences) at various site grades for most silt fence applications.

Slope Steepness (%)	Max. Slope Length m (ft)
<2%	30.5m (100ft)
2-5%	22.9m (75ft)
5-10%	15.2m (50ft)
10-20%	7.6m (25ft)
>20%	4.5m (15ft)

PREFABRICATED SILT FENCE ROLLS
 *Excavate a minimum 15.2cm x 15.2cm (6"x6") trench at the desired location.
 *Unroll the silt fence, positioning the post against the downstream wall of the trench.
 *Adjacent rolls of silt fence should be joined by nesting the end post of one fence into the other. Before nesting the end posts, rotate each post until the geotextile is wrapped completely around the post, then abut the end posts to create a light seal as shown in Figure 1.
 *Drive posts into the ground until the required fence height and/or anchorage depth is obtained.
 *Buy the loose geotextile at the bottom of the fence in the upstream trench and backfill with natural soil, tamping the backfill to provide good compaction and anchorage. Figure 2 illustrates a typical silt fence installation and anchor trench placement.

should generally be less than three (3) times the height of the fence.
 *If a steel or plastic mesh is required to reinforce the geotextile, it shall have a minimum mesh opening of 15.2cm (6").
 *Fasten the mesh to the upslope side of the posts using heavy duty wire staples, tie wires or hog strings. Extend the mesh into the bottom of the trench.
 *The geotextile shall then be stapled or wired to the posts. An extra 20-50cm (8-20") of geotextile shall extend into the trench.

INSPECTION

*Inspect the silt fence daily during periods of rainfall, immediately after significant rainfall event and weekly during periods of no rainfall. Make any repairs immediately.
 *When sediment deposits behind the silt fence are one-third of the fence height, remove and properly dispose of the silt accumulations. Avoid damage to the fabric during cleanout.

REMOVAL

*Silt fence should not be removed until construction ceases and the upslope area has been properly stabilized and/or revegetated.

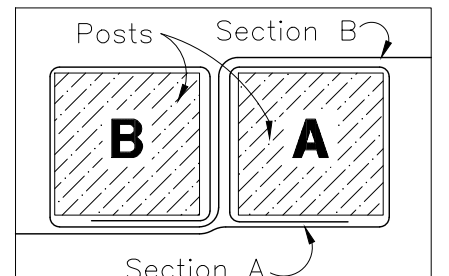
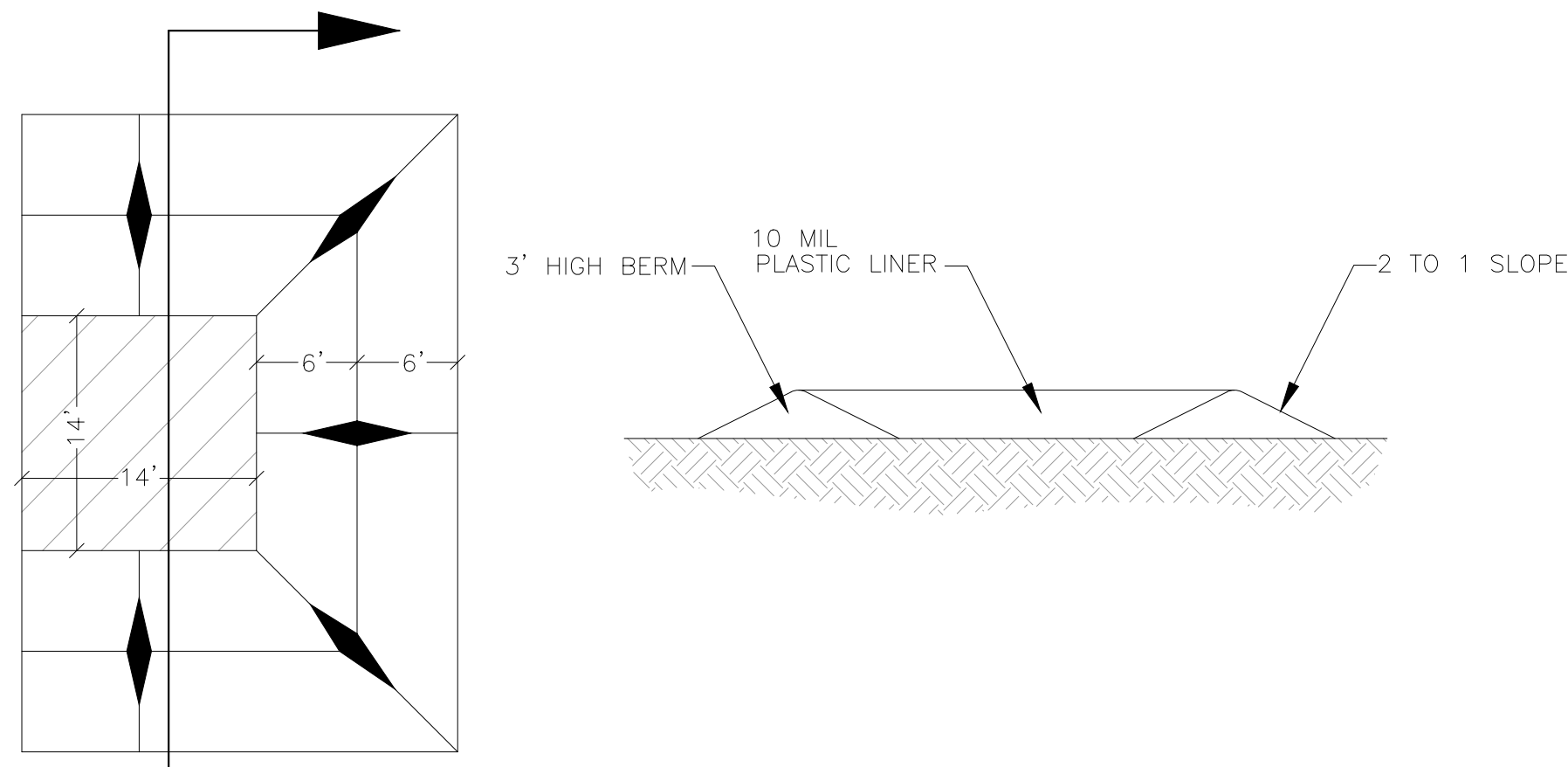


Figure 1: Top View of Roll-to-Roll Connection

FIELD ASSEMBLY:
 *Excavate a minimum 15.2cm x 15.2cm (6"x6") trench at the desired location.
 *Drive wooden posts, or steel posts with fastening projections, against the downstream wall of the trench. Maximum post spacing should be 2.4-3.0m (8-10ft). Post spacing

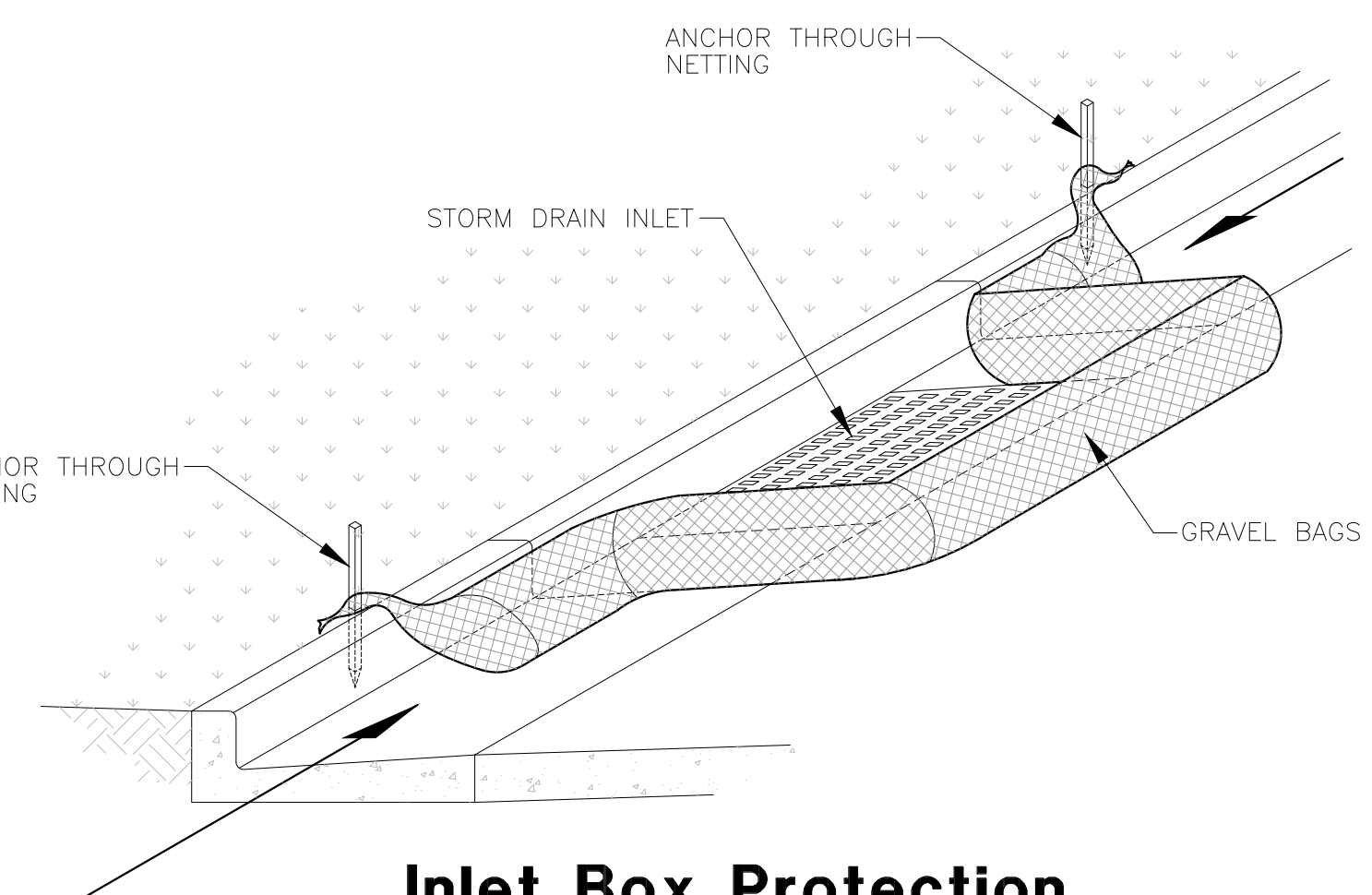
Silt Fence Detail

SCALE: NONE

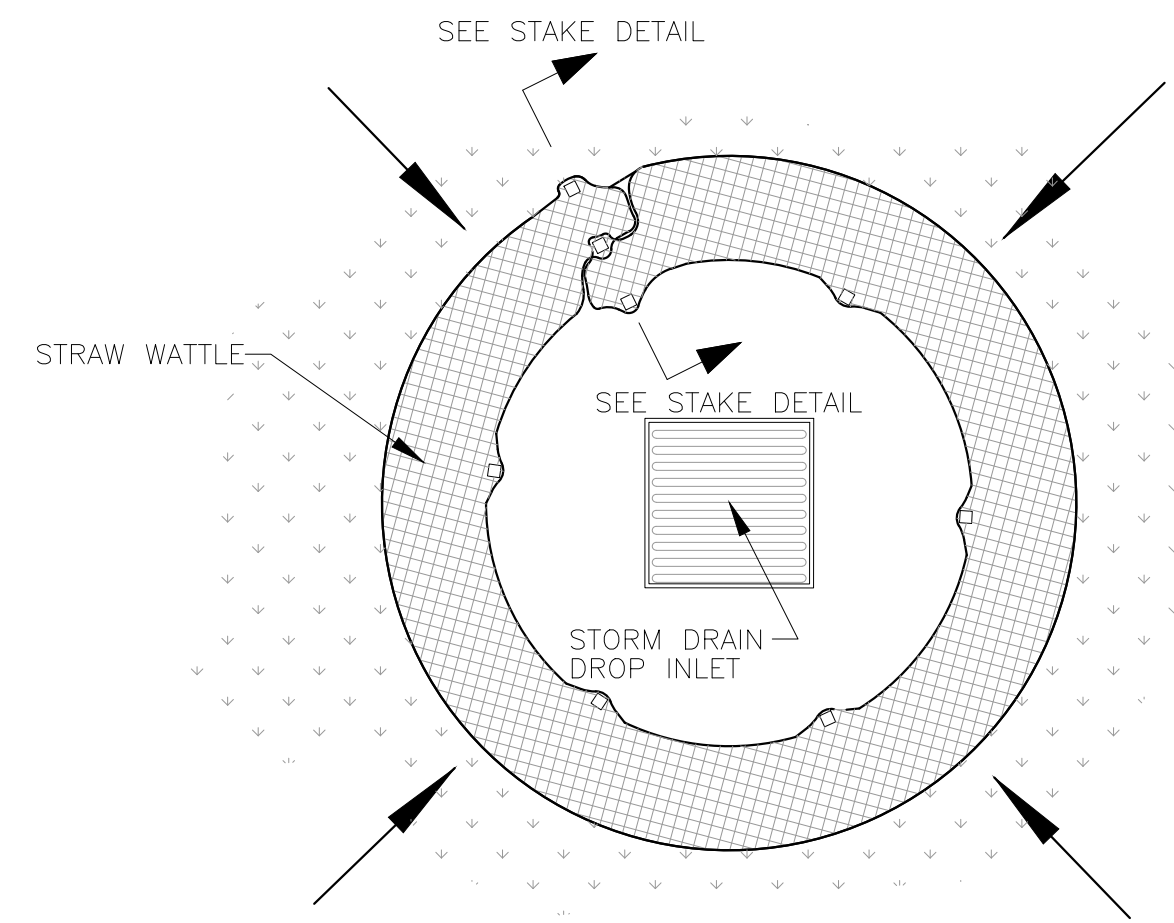


Concrete Washout Area w/ 10 mil Plastic Liner

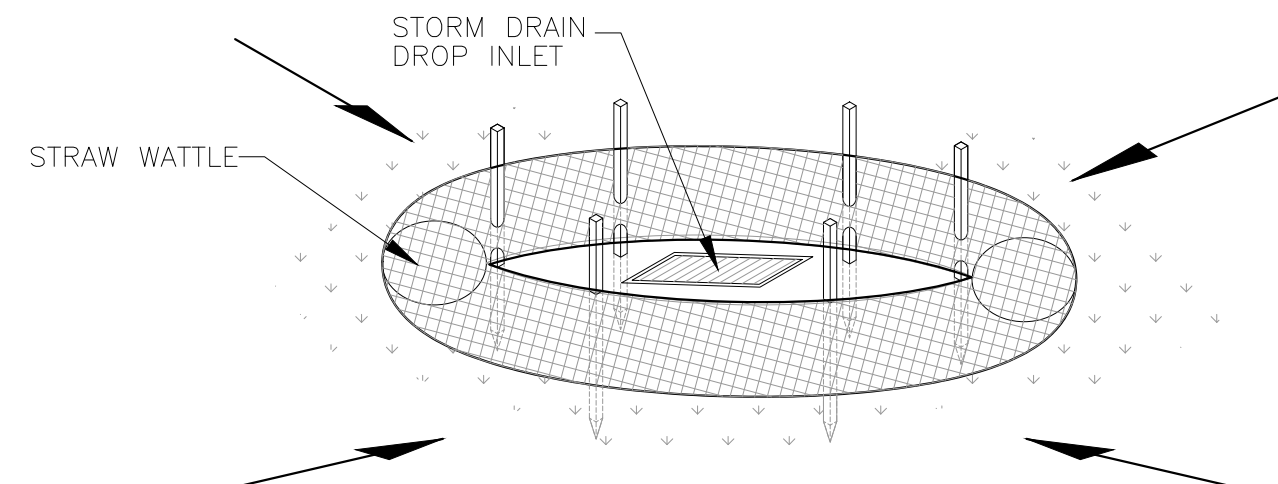
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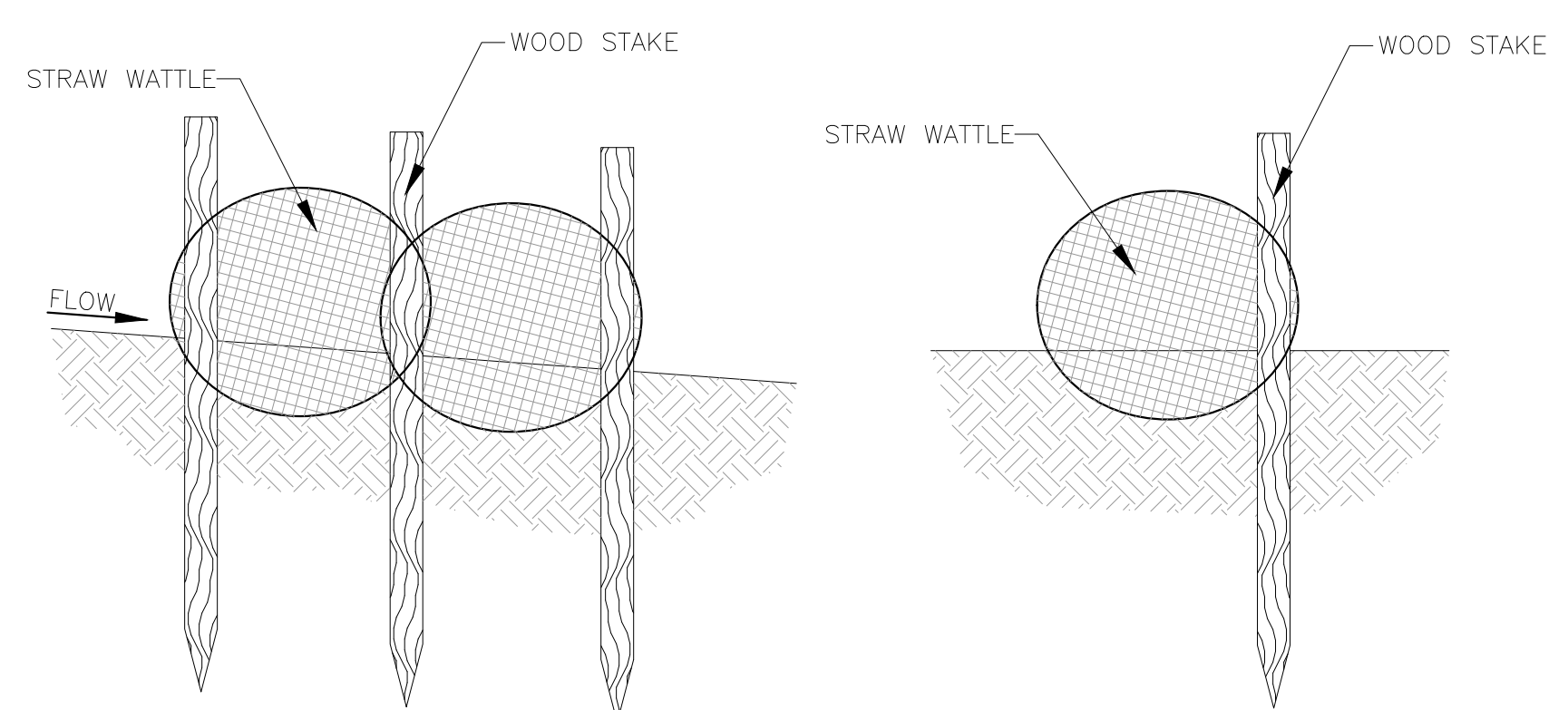
Inlet Box Protection



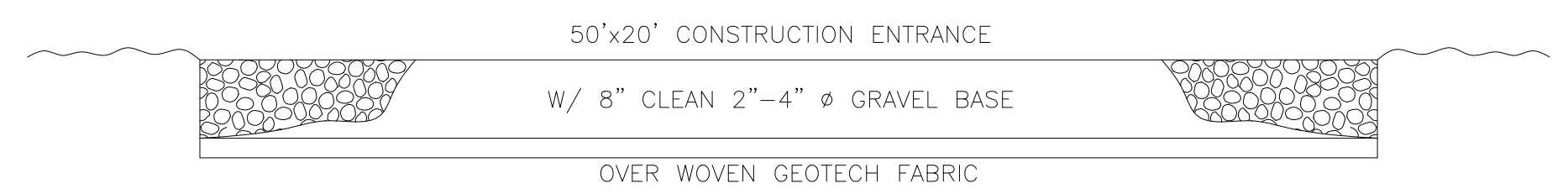
Plan View



Drop Inlet Protection



Stake Detail



Cross Section 50' x 20' Construction Entrance

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