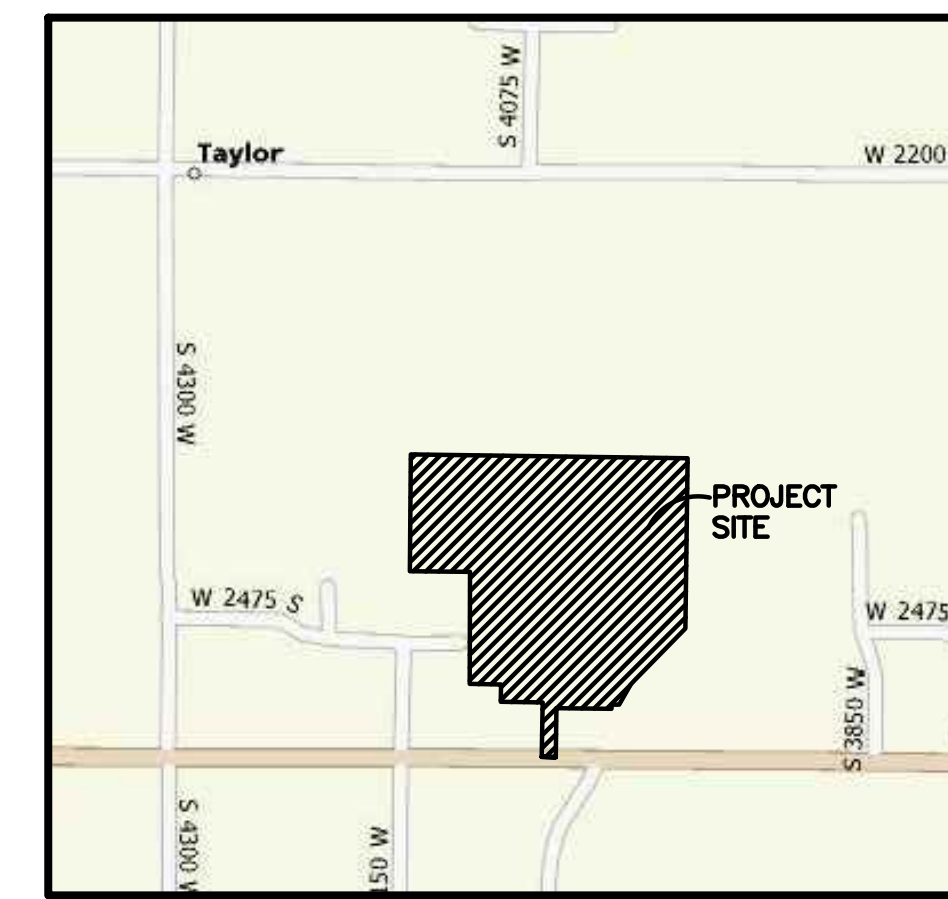


Project Narrative/Notes/Revisions

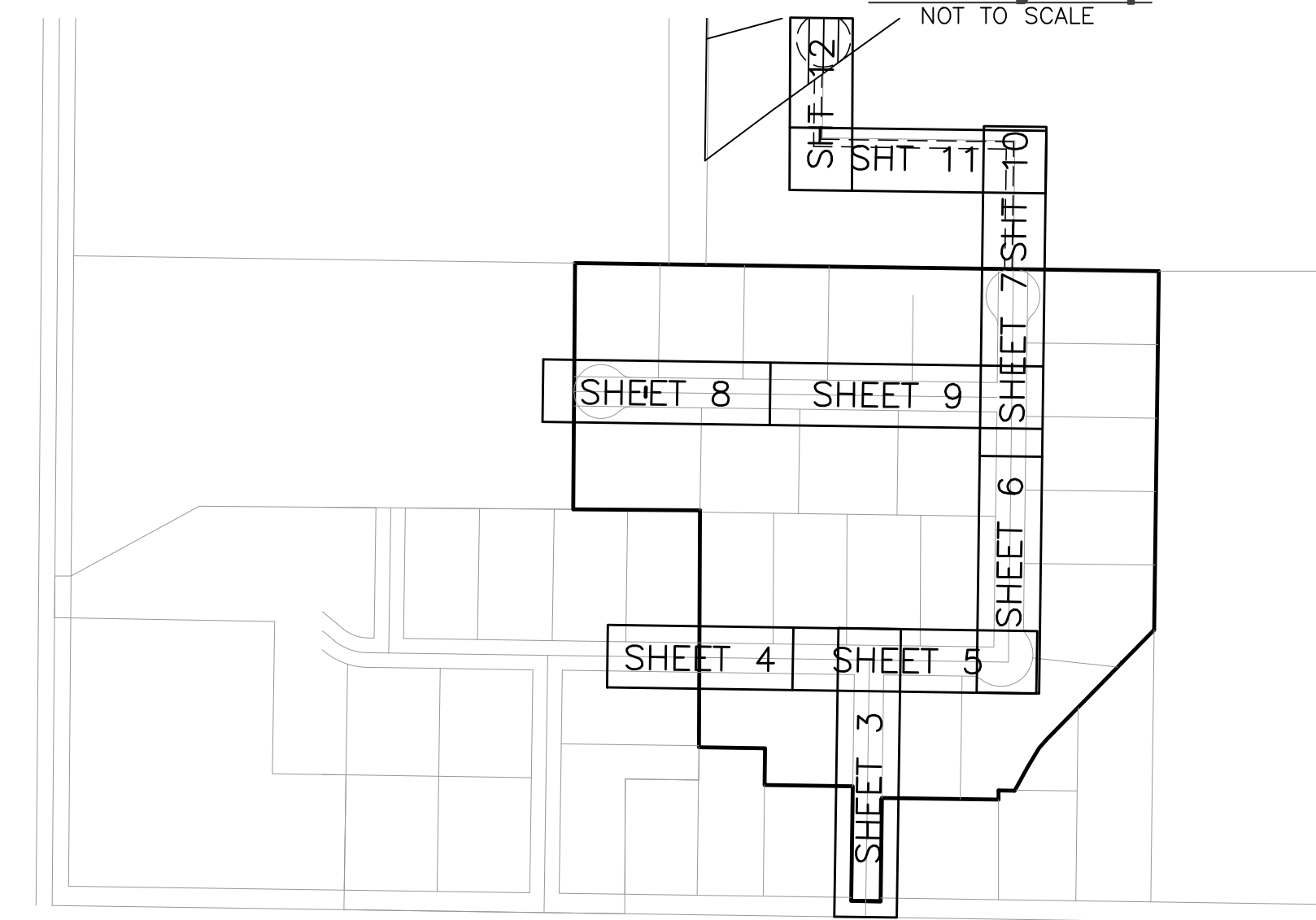
- 1) 11/8/13 RH - COMPLETED DESIGN FOR CLIENT & CITY REVIEW.
- 2) 1/14/14 ST - PROVIDED RETENTION PONDS/CURBS & GUTTER.
- 3) 3/10/14 ST - UPDATED PER COUNTY COMMENTS
- 4) 5/2/14 ST - UPDATED PER COUNTY COMMENTS
- 5) 9/4/14 ST - UPDATED PER COUNTY COMMENTS
- 6) 10/9/14 ST - UPDATED PER COUNTY COMMENTS
- 7) 11/03/14 RH - REVISED SEWER OUTLET.
- 8) 11/25/14 ST - REVISED PER HOOPER IRRIGATION COMPANY COMMENTS
- 9) 2/18/15 ST - UPDATED PER COUNTY COMMENTS
- 10) 3/10/15 ST - UPDATED PER COUNTY COMMENTS
- 11) 5/19/15 ST - UPDATED SW AND DETENTION BASIN

MALLARD SPRINGS SUBDIVISION Improvement Plans

WEBER COUNTY, UTAH
SEPTEMBER 2014



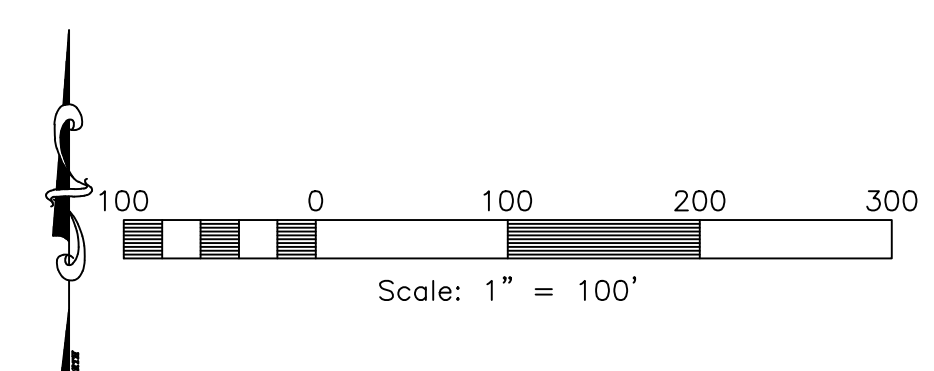
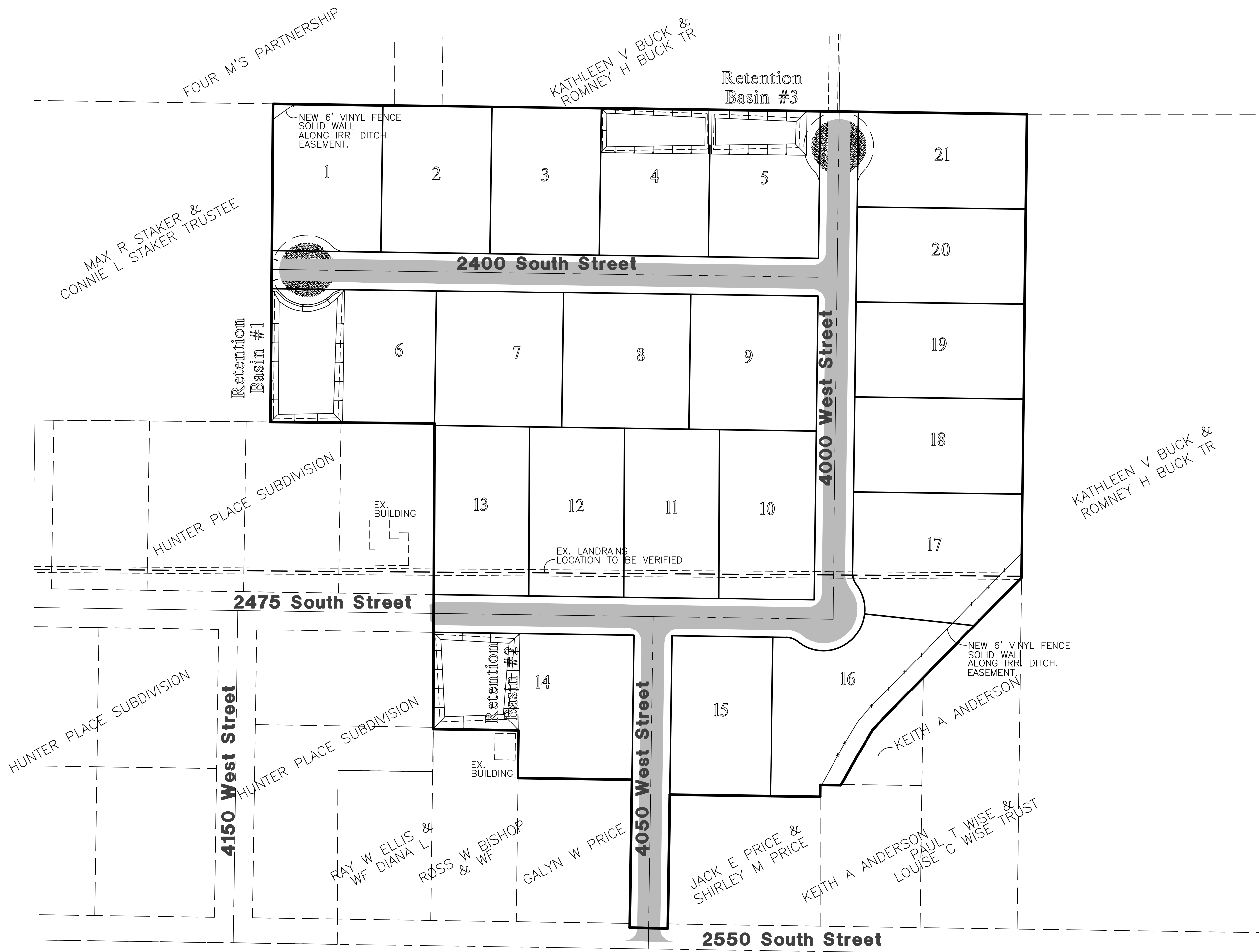
Vicinity Map
NOT TO SCALE



Sheet Index Key Map
NOT TO SCALE

Sheet Index

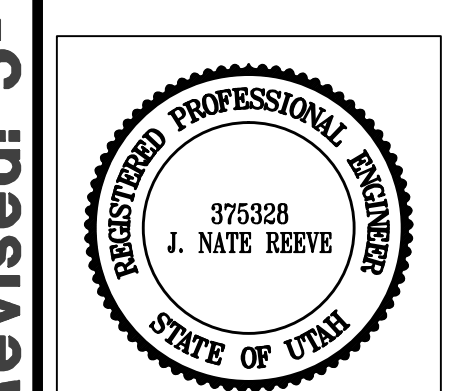
- Sheet 1 - Cover/Index Sheet
- Sheet 2 - Notes/Legend/Street Cross-Section
- Sheet 3 - 4050 West Street 5+50.00 - 11+00.00
- Sheet 4 - 2475 South Street 16+00.00 - 20+00.00
- Sheet 5 - 2475 South Street 20+00.00 - 25+00.00
- Sheet 6 - 4000 West Street 10+00.00 - 14+50.00
- Sheet 7 - 4000 West Street 14+50.00 - 18+32.19
- Sheet 8 - 2400 South Street 20+00.00 - 24+50.00
- Sheet 9 - 2400 South Street 24+50.00 - 30+00.00
- Sheet 10 - 4000 West Street 18+32.19 - 21+00.00
- Sheet 11 - 2325 South Street 21+00.00 - 25+00.00
- Sheet 12 - 4075 West Street 24+77.13 - 26+55.00
- Sheet 13 - 4075 West Street 26+55.00 - 32+50.00
- Sheet 14 - Storm Water Pollution Prevention Plan Exhibit
- Sheet 15 - Storm Water Pollution Prevention Plan Details
- Sheet 16 - Overall Grading Plan



Reeve & Associates, Inc.
IRA
 920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403
 TEL: (801) 621-2100 FAX: (801) 621-2666 WWW.REEVE-ASSOC.COM
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DATE	DESCRIPTION
9-4-14	ST County Comments
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11-24-14	ST HIC Comments
2-18-15	ST County Comments
6-9-15	ST County Comments

Mallard Springs Subdivision
 WEBER COUNTY, UTAH
Cover/Index Sheet



Project Info.

Engineer:	J. NATE REEVE, P.E.
Drafter:	R. HANSEN
Begin Date:	NOVEMBER 4, 2013
Name:	MALLARD SPRINGS SUBDIVISION
Number:	3442-A30

Sheet	16
1	Sheets

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.

Developer Contact:
 Doug Hamblin
 Hamblin Investments
 1613 North 2000 West
 Clinton, Utah, 84015
 PH: (801) 731-7703

Blue Stakes Location Center
Call: Toll Free
1-800-662-4111
 Two Working Days Before You Dig

General Notes

- 1. ALL CONSTRUCTION MUST STRICTLY FOLLOW THE STANDARDS AND SPECIFICATIONS SET FORTH BY THE DESIGN ENGINEER... 2. CONTRACTOR TO STRICTLY FOLLOW COUNTY STANDARDS FOR THIS PROJECT... 3. TRAFFIC CONTROL, STRIPING & SIGNAGE TO CONFORM TO CURRENT GOVERNING AGENCIES... 4. AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION... 5. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES... 6. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED... 7. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND NOTIFYING ENGINEER OR INSPECTING AUTHORITY 48 HOURS IN ADVANCE... 8. ANY WORK IN THE PUBLIC RIGHT-OF-WAY WILL REQUIRE PERMITS FROM THE APPROPRIATE CITY, COUNTY OR STATE AGENCY... 9. ALL DIMENSIONS, GRADES & UTILITY DESIGNS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION... 10. CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING AND BRING UP ANY QUESTIONS BEFOREHAND... 11. GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND STANDARDS SET FORTH BY THE WEBER COUNTY ENGINEERING DEPARTMENT... 12. CATCH SLOPES SHALL BE GRADED AS SPECIFIED ON GRADING PLANS... 13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FLAGGING, CAUTION SIGNS, LIGHTS, BARRICADES, FLAGMEN, AND ALL OTHER DEVICES NECESSARY FOR PUBLIC SAFETY... 14. CONTRACTOR SHALL, AT THE TIME OF BIDDING AND THROUGHOUT THE PERIOD OF THE CONTRACT, BE LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED... 15. CONTRACTOR SHALL INSPECT THE SITE OF THE WORK PRIOR TO BIDDING TO SATISFY HIMSELF BY PERSONAL EXAMINATION OR BY SUCH OTHER MEANS AS HE MAY PREFER... 16. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION... 17. CONTRACTOR SHALL MAINTAIN A NEATLY MARKED SET OF FULL-SIZE AS-BUILT RECORD DRAWINGS SHOWING THE FINAL LOCATION AND LAYOUT OF ALL STRUCTURES AND OTHER FACILITIES... 18. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL STRIPING AND/OR PAVEMENT MARKINGS NECESSARY TO THE EXISTING STRIPING INTO FUTURE STRIPING... 19. CONTRACTOR SHALL PROVIDE ALL SHORING, BRACING, SLOPING OR OTHER PROVISIONS NECESSARY TO PROTECT WORKMEN FOR ALL AREAS TO BE EXCAVATED TO A DEPTH OF 4 FEET OR MORE... 20. ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS... 21. CONTRACTOR SHALL KEEP THE SITE WATERED TO CONTROL DUST... 22. WHEN GRADING OPERATIONS ARE COMPLETED AND THE DISTURBED GROUND IS LEFT "OPEN" FOR 14 DAYS OR MORE, THE AREA SHALL BE FURROWED PARALLEL TO THE CONTOURS... 23. THE CONTRACTOR SHALL MODIFY EROSION CONTROL MEASURES TO ACCOMMODATE PROJECT PLANNING... 24. ALL ACCESS TO PROPERTY WILL BE FROM PUBLIC RIGHT-OF-WAYS... 25. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL... 26. ANY EXPOSED SLOPE THAT WILL REMAIN UNTOUCHED FOR LONGER THAN 14 DAYS MUST BE STABILIZED BY ONE OR MORE OF THE FOLLOWING METHODS... 27. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL STRIPING AND/OR PAVEMENT MARKINGS NECESSARY TO THE EXISTING STRIPING INTO FUTURE STRIPING... 28. CONTRACTOR SHALL PROVIDE ALL SHORING, BRACING, SLOPING OR OTHER PROVISIONS NECESSARY TO PROTECT WORKMEN FOR ALL AREAS TO BE EXCAVATED TO A DEPTH OF 4 FEET OR MORE... 29. ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS...

Utility Notes

- 1. CONTRACTOR SHALL COORDINATE LOCATION OF NEW "DRY UTILITIES" WITH THE APPROPRIATE UTILITY COMPANY... 2. EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS USING A COMBINATION OF ON-SITE SURVEYS (BY OTHERS)... 3. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY CONFLICTS, CONTRACTOR SHALL VERIFY LOCATION AND INVERTS OF EXISTING UTILITIES TO WHICH NEW UTILITIES WILL BE CONNECTED... 4. CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES... 5. ALL VALVES AND MANHOLE COVERS SHALL BE RAISED OR LOWERED TO MEET FINISHED GRADE... 6. CONTRACTOR SHALL GROUT AT CONNECTION OF PIPE TO BOX WITH NON-SHRINKING GROUT... 7. PIPE VOIDS LEFT BY CUTTING PROCESS, TO A SMOOTH FINISH... 8. CONTRACTOR SHALL GROUT WITH NON-SHRINKING GROUT BETWEEN GRADE RINGS AND BETWEEN BOTTOM OF INLET LID FRAME AND TOP OF CONCRETE BOX... 9. SILT AND DEBRIS IS TO BE CLEANED OUT OF ALL STORM DRAIN BOXES... 10. CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS... 11. EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED... 12. CONTRACTOR SHALL PROVIDE AND MAINTAIN AT ALL TIMES AMPLE MEANS AND DEVICES WITH WHICH TO REMOVE PROMPTLY AND TO PROPERLY DISPOSE OF ALL WATER ENTERING THE TRENCH EXCAVATION... 13. MAINTAIN A MINIMUM 18" VERTICAL SEPARATION DISTANCE BETWEEN ALL UTILITY CROSSINGS... 14. CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES... 15. ALL BOLTED FITTINGS MUST BE DIRT WRAPPED... 16. UNLESS SPECIFICALLY NOTED OTHERWISE, MAINTAIN AT LEAST 2 FEET OF COVER OVER ALL STORM DRAIN LINES AT ALL TIMES... 17. ALL WATER LINES SHALL BE INSTALLED A MINIMUM OF 60" BELOW FINISHED GRADE... 18. ALL SEWER LINES AND SEWER SERVICES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET... 19. CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE ANGLE POINTS AND TEES... 20. ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING... 21. CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE...

Erosion Control General Notes

THE CONTRACTOR TO USE BEST MANAGEMENT PRACTICES FOR PROVIDING EROSION CONTROL FOR CONSTRUCTION OF THIS PROJECT. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO GOVERNING AGENCIES ORDINANCES AND ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE COUNTIES. ALSO, INSPECTORS WILL HAVE THE RIGHT TO CHANGE THE FACILITIES AS NEEDED.

CONTRACTOR SHALL KEEP THE SITE WATERED TO CONTROL DUST. CONTRACTOR TO LOCATE A NEARBY HYDRANT FOR USE AND TO INSTALL TEMPORARY METER. CONSTRUCTION WATER COST TO BE INCLUDED IN BID.

WHEN GRADING OPERATIONS ARE COMPLETED AND THE DISTURBED GROUND IS LEFT "OPEN" FOR 14 DAYS OR MORE, THE AREA SHALL BE FURROWED PARALLEL TO THE CONTOURS.

THE CONTRACTOR SHALL MODIFY EROSION CONTROL MEASURES TO ACCOMMODATE PROJECT PLANNING.

ALL ACCESS TO PROPERTY WILL BE FROM PUBLIC RIGHT-OF-WAYS. THE CONTRACTOR IS REQUIRED BY STATE AND FEDERAL REGULATIONS TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN AND FILE A "NOTICE OF INTENT" WITH THE GOVERNING AGENCIES.

Maintenance

ALL BEST MANAGEMENT PRACTICES (BMP'S) SHOWN ON THIS PLAN MUST BE MAINTAINED AT ALL TIMES UNTIL PROJECT CLOSE-OUT.

THE CONTRACTOR'S RESPONSIBILITY SHALL INCLUDE MAKING BI-WEEKLY CHECKS ON ALL EROSION CONTROL MEASURES TO DETERMINE IF REPAIR OR SEDIMENT REMOVAL IS NECESSARY. CHECKS SHALL BE DOCUMENTED AND COPIES OF THE INSPECTIONS KEPT ON SITE.

SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. THEY MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF BARRIER.

SEDIMENT TRACKED ONTO PAVED ROADS MUST BE CLEANED UP AS SOON AS PRACTICAL, BUT IN NO CASE LATER THAN THE END OF THE NORMAL WORK DAY. THE CLEAN UP WILL INCLUDE SWEEPING OF THE TRACKED MATERIAL, PICKING IT UP, AND DEPOSITING IT TO A CONTAINED AREA.

EXPOSED SLOPES:

- ANY EXPOSED SLOPE THAT WILL REMAIN UNTOUCHED FOR LONGER THAN 14 DAYS MUST BE STABILIZED BY ONE OR MORE OF THE FOLLOWING METHODS: A) Spraying DISTURBED AREAS WITH A TACKIFIER VIA HYDROSEED B) TRACKING STRAW PERPENDICULAR TO SLOPES C) INSTALLING A LIGHT-WEIGHT, TEMPORARY EROSION CONTROL BLANKET

Master Legend

Table with 3 columns: Symbol, Description, and Description. Symbols include lines for various utility types (Culinary, Sanitary, Storm, Land Drain, Secondary), catch basins, sprinklers, blow-offs, assemblies, reducers, blocks, street lights, signs, buildings, curves, gutters, basins, feet, cubic feet per second, centerline, ductile iron, edge of pavement, vertical curves, corners, finish floors, elevations, grades, manholes, fire hydrants, sewer cleanouts, gate valves, water meters, invert, irrigation, and land drains.

General Notes

- 1. ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE DEVELOPMENT STANDARDS OF WEBER COUNTY AND THE STANDARD DRAWINGS CONTAINED THEREIN... 2. THE LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS... 3. THE STREET STRUCTURAL CROSS SECTION IS PER WEBER COUNTY DETAILS CONTAINED WITHIN THESE PLANS... 4. WATER LINE PIPE SHALL BE PVC C-900 CLASS 200... 5. SECONDARY WATER LINE SHALL BE PVC C-900 CLASS 200... 6. NO DRAINAGE FROM THE DEVELOPMENT SHALL BE ALLOWED INTO THE CANAL SYSTEM AND THAT ALL CONSTRUCTION BE DONE IN ACCORDANCE WITH HOOPER IRRIGATION COMPANY STANDARDS.

Reeve & Associates, Inc. logo and contact information: 920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403. TEL: (801) 621-2100. FAX: (801) 621-2666. WWW: REEVE-ASSOC.COM. SERVICES: LAND PLANNERS • CIVIL ENGINEERS • LAND SURVEYORS • TRAFFIC ENGINEERS • STRUCTURAL ENGINEERS • LANDSCAPE ARCHITECTS.

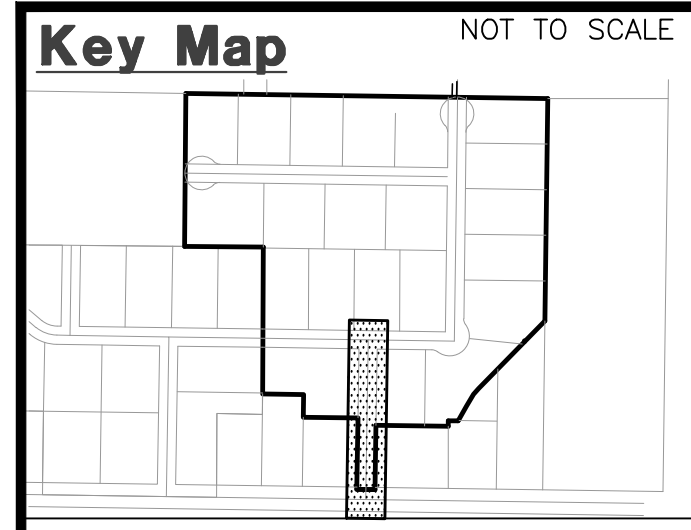
REVISIONS table with columns: DATE, DESCRIPTION, COUNTY COMMENTS. Includes revisions 9-4-14, 9-30-14, 10-9-14, 11-3-14, 11-24-14, 2-18-15, and 6-9-15.

Mallard Springs Subdivision, WEBER COUNTY, UTAH. Notes/Legend/Street Cross-Section.

Revised: 5-18-15. REGISTERED PROFESSIONAL ENGINEER, STATE OF UTAH, 375328, J. NATE REEVE.

Project Info. Engineer: J. NATE REEVE, P.E. Drafter: R. HANSEN. Begin Date: NOVEMBER 4, 2013. Name: MALLARD SPRINGS SUBDIVISION. Number: 3442-A30.

Sheet 2 of 16 Sheets.



Construction Notes:

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- 2) CONSTRUCT HANDICAP RAMP PER ADA AND CITY REQUIREMENTS.

CULINARY WATER

W/8 - 8" PVC C-900 CLASS 200 WATER

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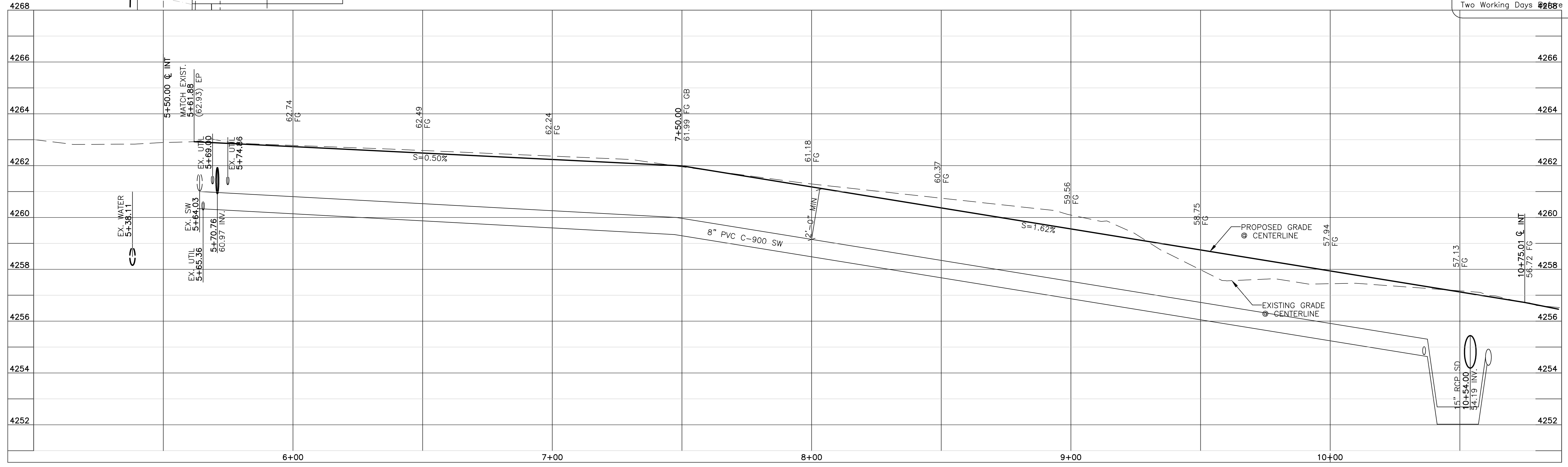
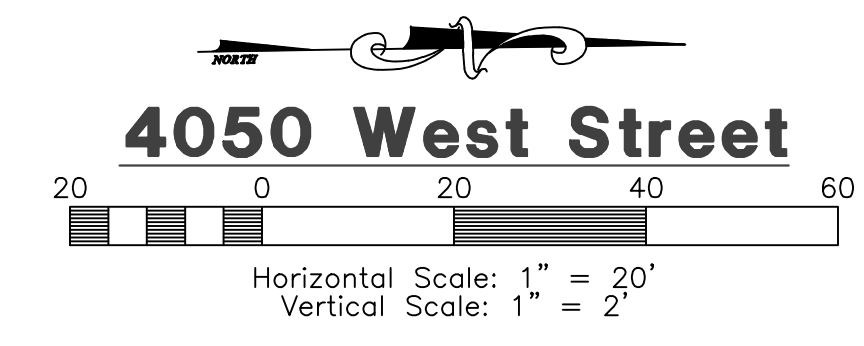
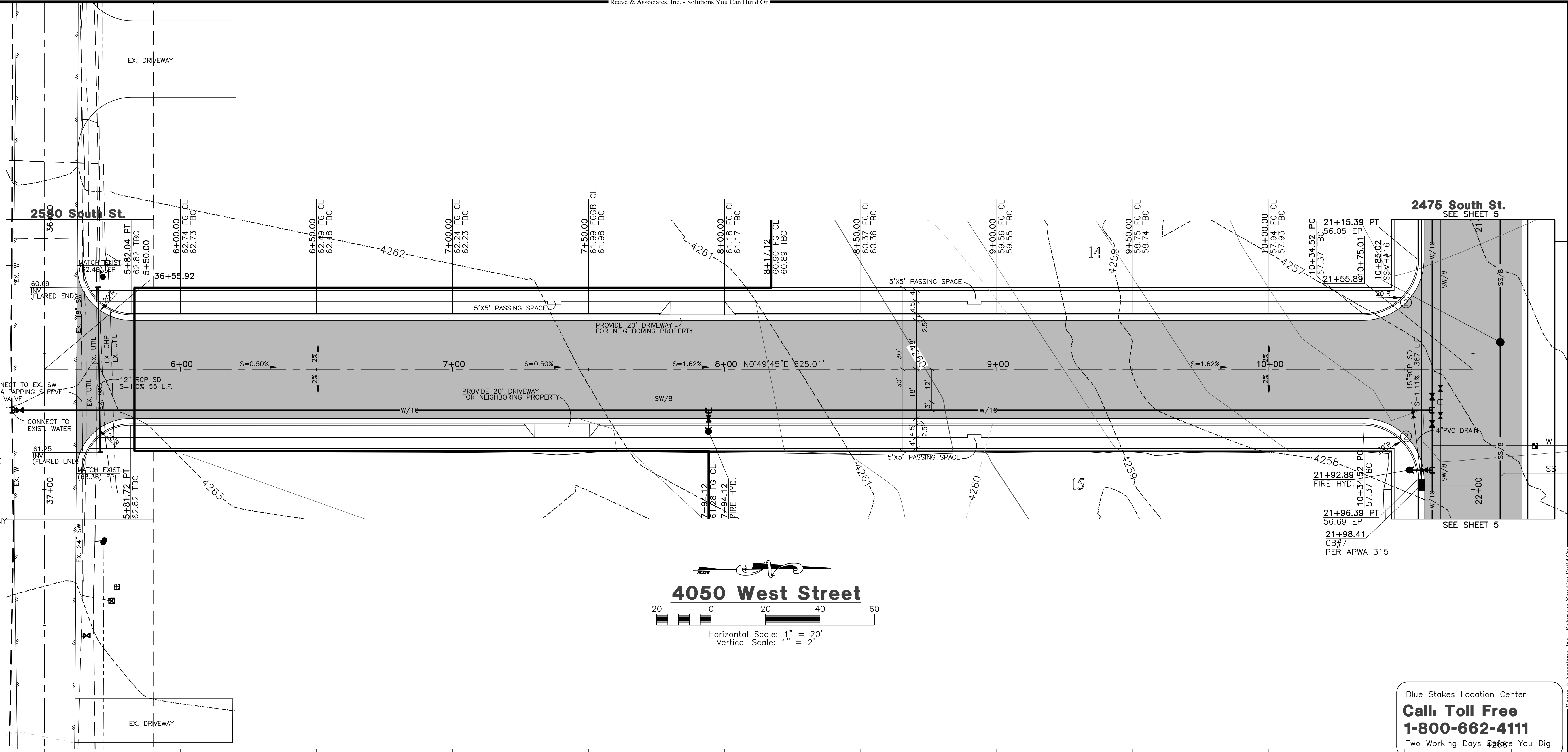
SD/15 - 15" RCP STORM DRAIN

SECONDARY WATER

SW/8 - 8" PVC C-900 SECONDARY WATER LINE

Canal Crossing Notes:

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- 2) THE SEWER LINE MUST BE INSTALLED IN AN 18" STEEL CASING EXTENDING 4'-0" BEYOND HIGH BANK BOTH SIDES OF THE CANAL ACCORDING TO HOOPER IRR. COMPANY STANDARD DETAILS.
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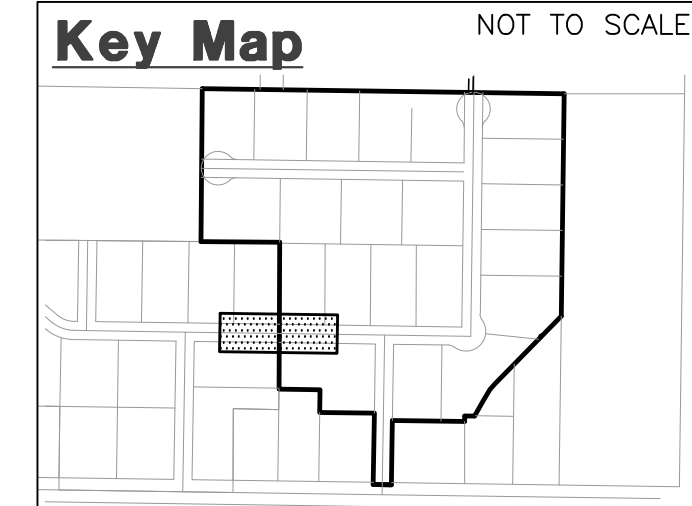
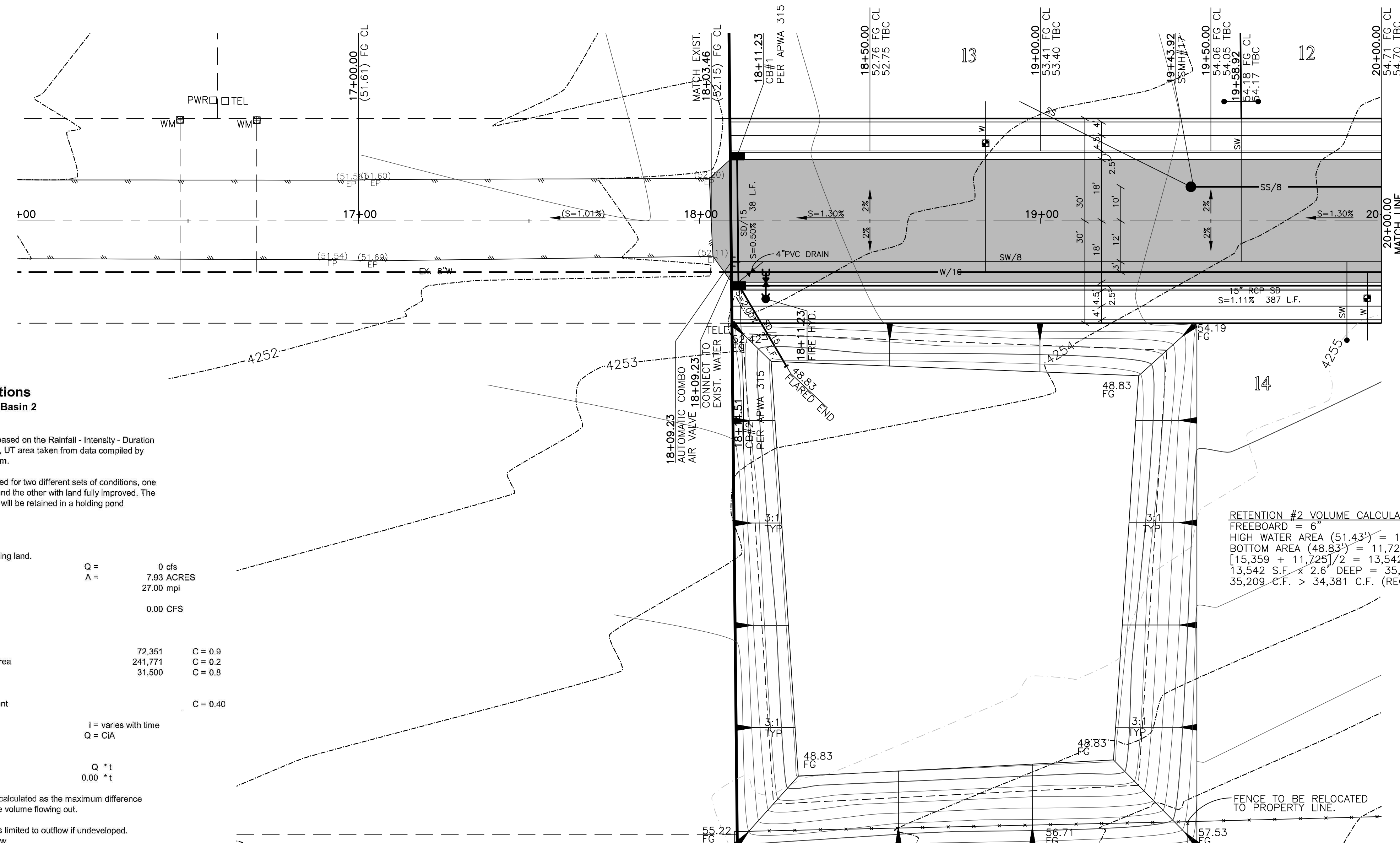
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6-9-15	ST County Comments

Mallard Springs Subdivision
WEBER COUNTY, UTAH
4050 West Street
5+50.00 - 11+00.00

Revised: 5-18-15

REGISTERED PROFESSIONAL ENGINEER
375328
J. NATE REEVE
STATE OF UTAH

Project Info.
Engineer: J. NATE REEVE, P.E.
Drafted: R. HANSEN
Begin Date: NOVEMBER 4, 2013
Name: MALLARD SPRINGS SUBDIVISION
Number: 3442-A30



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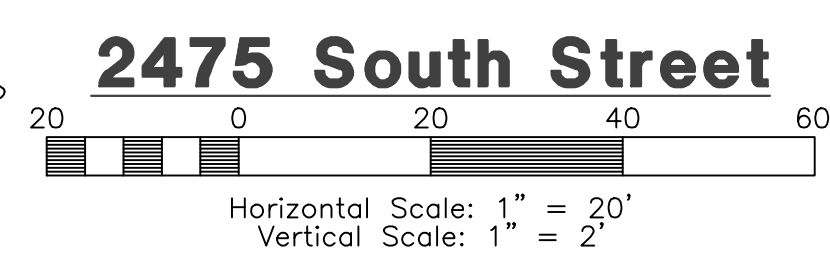
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Storm Runoff Calculations
Mallard Springs Subdivision-Basin 2
9/22/2014

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the West Haven, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be retained in a holding pond.

The calculations are as follows:

1. Runoff from the undeveloped existing land.

Runoff Quantity	Q =	0 cfs
Acreage	A =	7.93 ACRES
Perc Rate		27.00 mpi

Q(out) = 0.00 CFS
2. Runoff from developed land

Runoff Coefficients		
Paved Area	72,351	C = 0.9
Landscape Area	241,771	C = 0.2
Roof	31,500	C = 0.8

Weighted Runoff Coefficient C = 0.40

Rainfall Intensity i = varies with time
Runoff Quantity Q = CIA
3. Detention Basin

Volume in	Q * t
Volume out	0.00 * t

The capacity of the retention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the retention basin is limited to outflow if undeveloped. Use 0.00 cfs for Q outflow

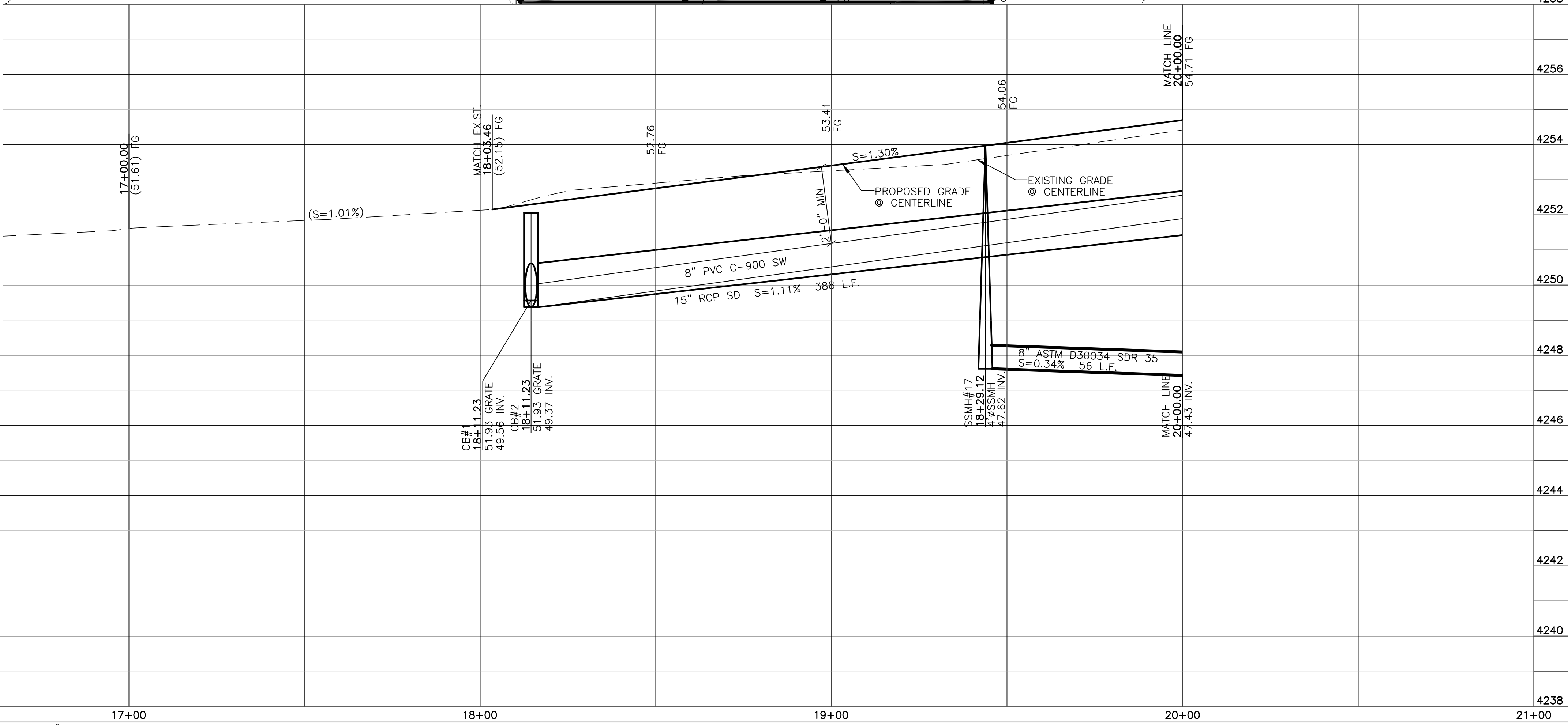
The required volume of the retention basin is **34,381 cubic feet**

RETENTION BASIN
Cumulative Volume For Detention Pond
Mallard Springs Subdivision-Basin 2

C =	0.40
A =	7.93
Q(out) =	0.00

time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (ct)	Vol. out (ct)	Difference (ct)
0	0	0.00	0.00	0.00	0.00	0.00
5	300	6.64	21.14	6341.39	0.00	6341.39
10	600	5.05	16.08	9645.79	0.00	9645.79
15	900	4.17	13.27	11947.40	0.00	11947.40
30	1800	2.81	8.95	16101.78	0.00	16101.78
60	3600	1.74	5.54	19940.99	0.00	19940.99
180	10800	0.65	2.07	22382.04	0.00	22382.04
360	21600	0.36	1.16	24960.62	0.00	24960.62
720	43200	0.22	0.70	30255.29	0.00	30255.29
1440	86400	0.13	0.40	34381.02	0.00	34381.02

West Haven UT
NOAA Atlas 14



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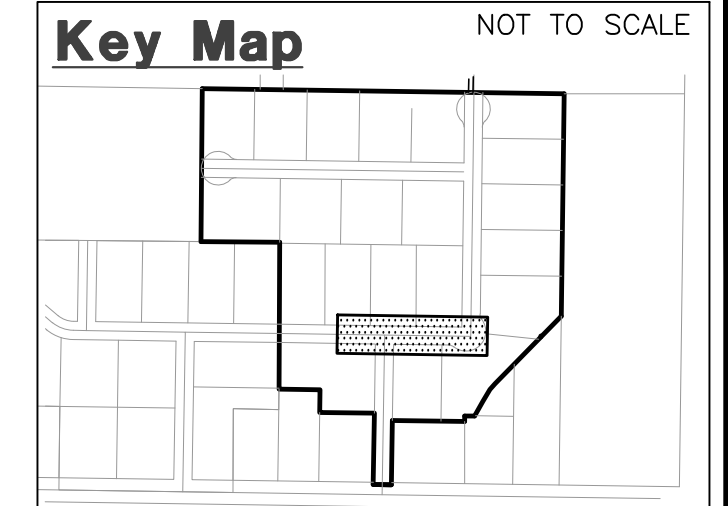
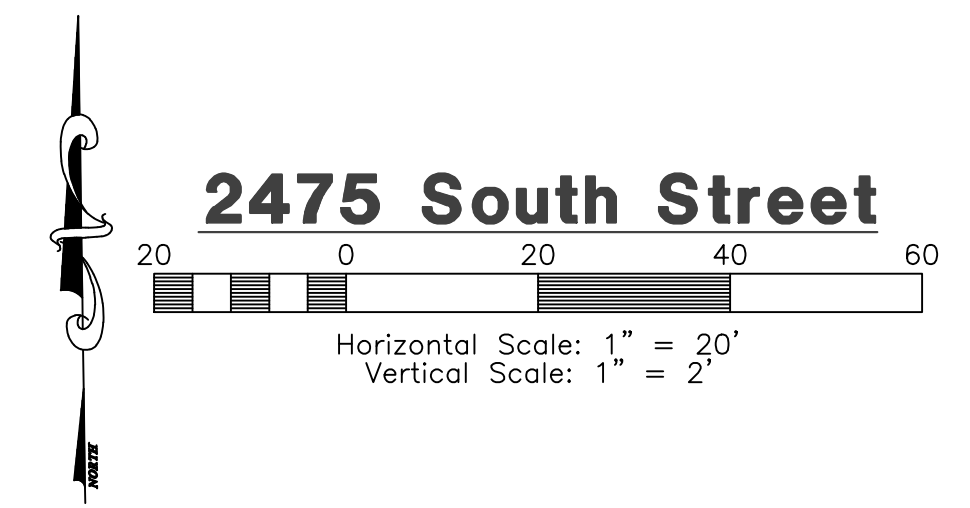
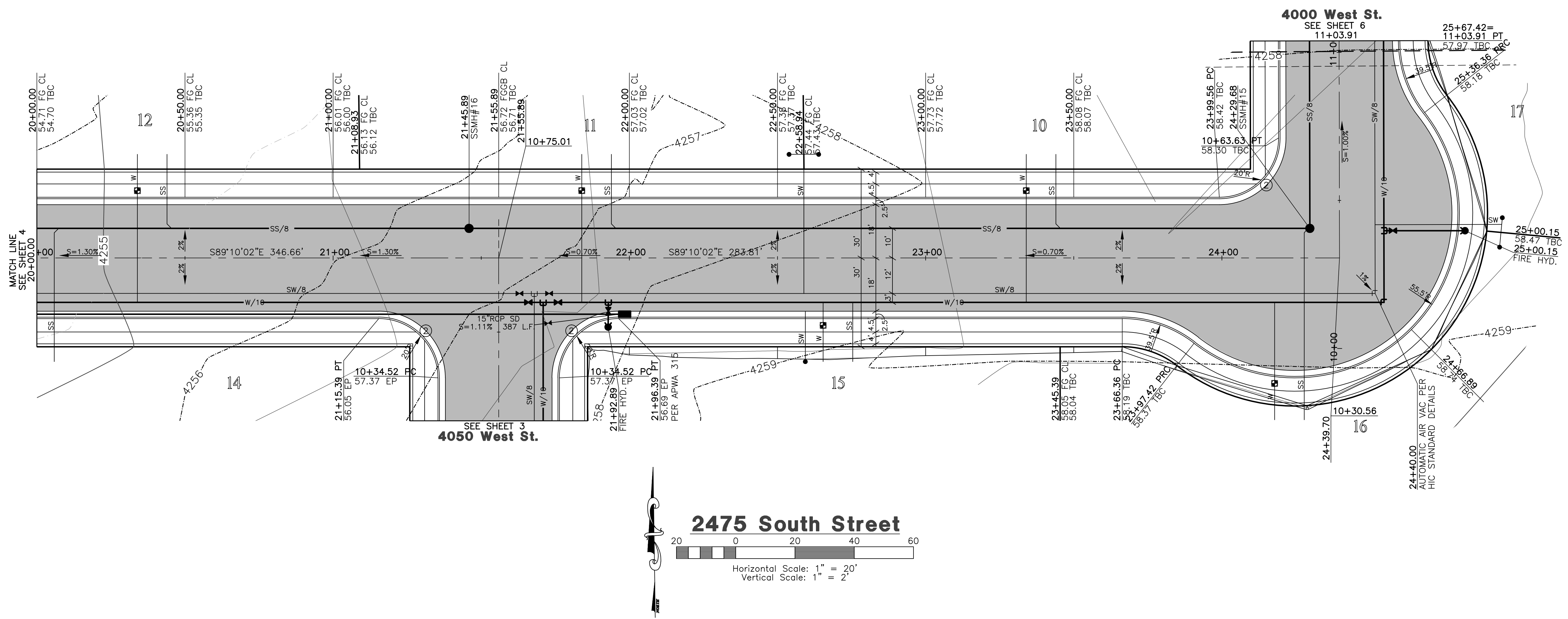
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Mallard Springs Subdivision
WEBER COUNTY, UTAH
2475 South Street
16+00.00 - 20+00.00

Revised: 5-18-15

Project Info.
Engineer: J. NATE REEVE, P.E.
Drafted: R. HANSEN
Begin Date: NOVEMBER 4, 2013
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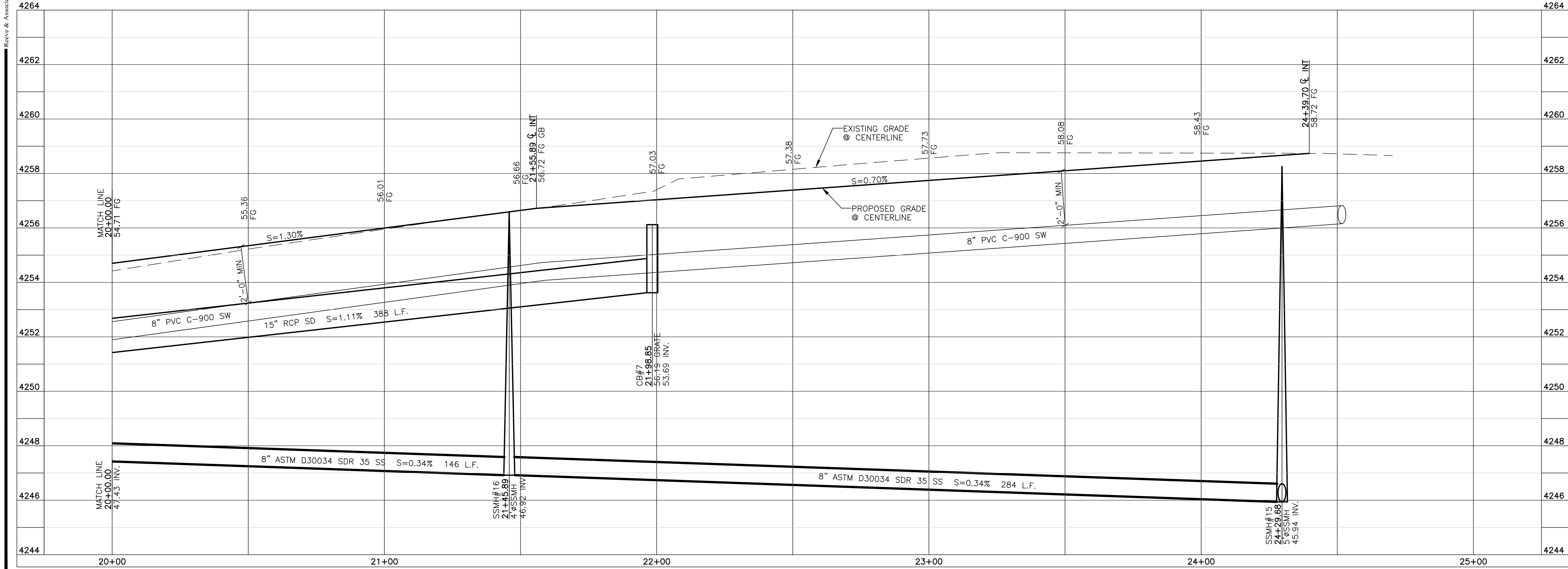
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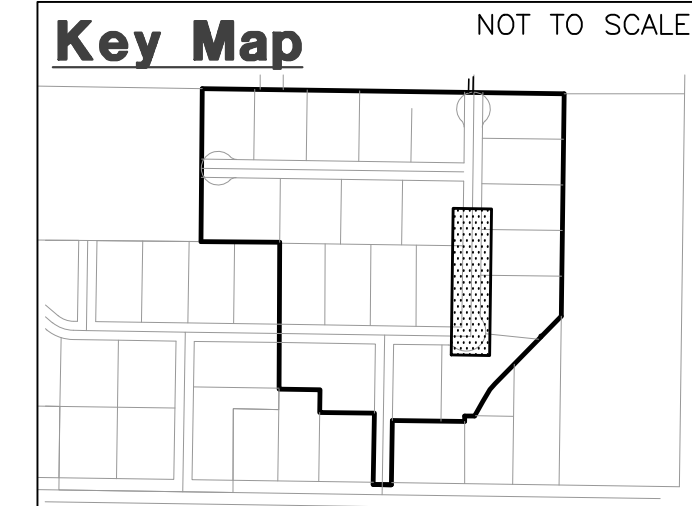
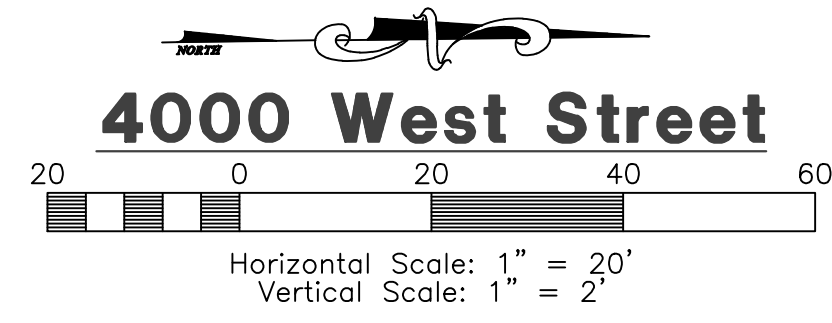
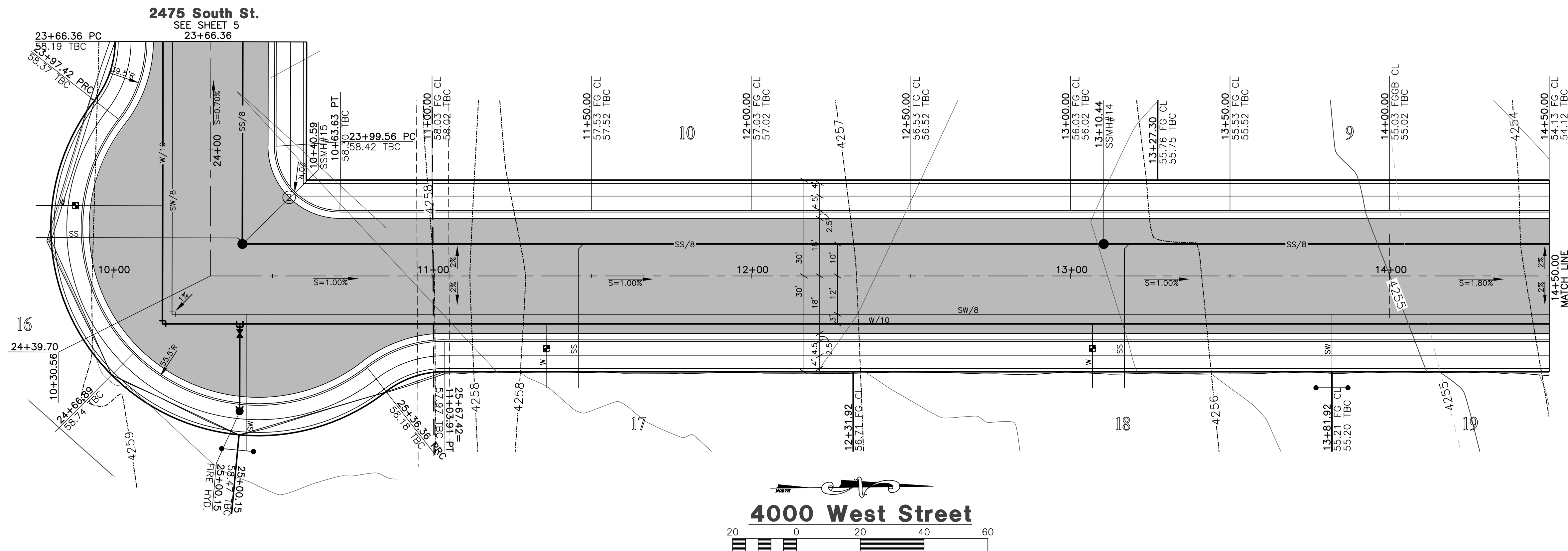
Mallard Springs Subdivision
WEBER COUNTY, UTAH
2475 South Street
20+00.00 - 25+00.00

Revised: 5-18-15



Project Info.
Engineer: J. NATE REEVE, P.E.
Drafted: R. HANSEN
Begin Date: NOVEMBER 4, 2013
Name: MALLARD SPRINGS SUBDIVISION
Number: 3442-A30

Sheet **16**
5 Sheets



Construction Notes:

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CULINARY WATER

W/8 - 8" PVC C-900 CLASS 200 WATER

SANITARY SEWER

SS/8 - 8" ASTM D3034 SDR 35 SEWER
SS/12 - 12" ASTM D3034 SDR 35 SEWER

STORM DRAIN

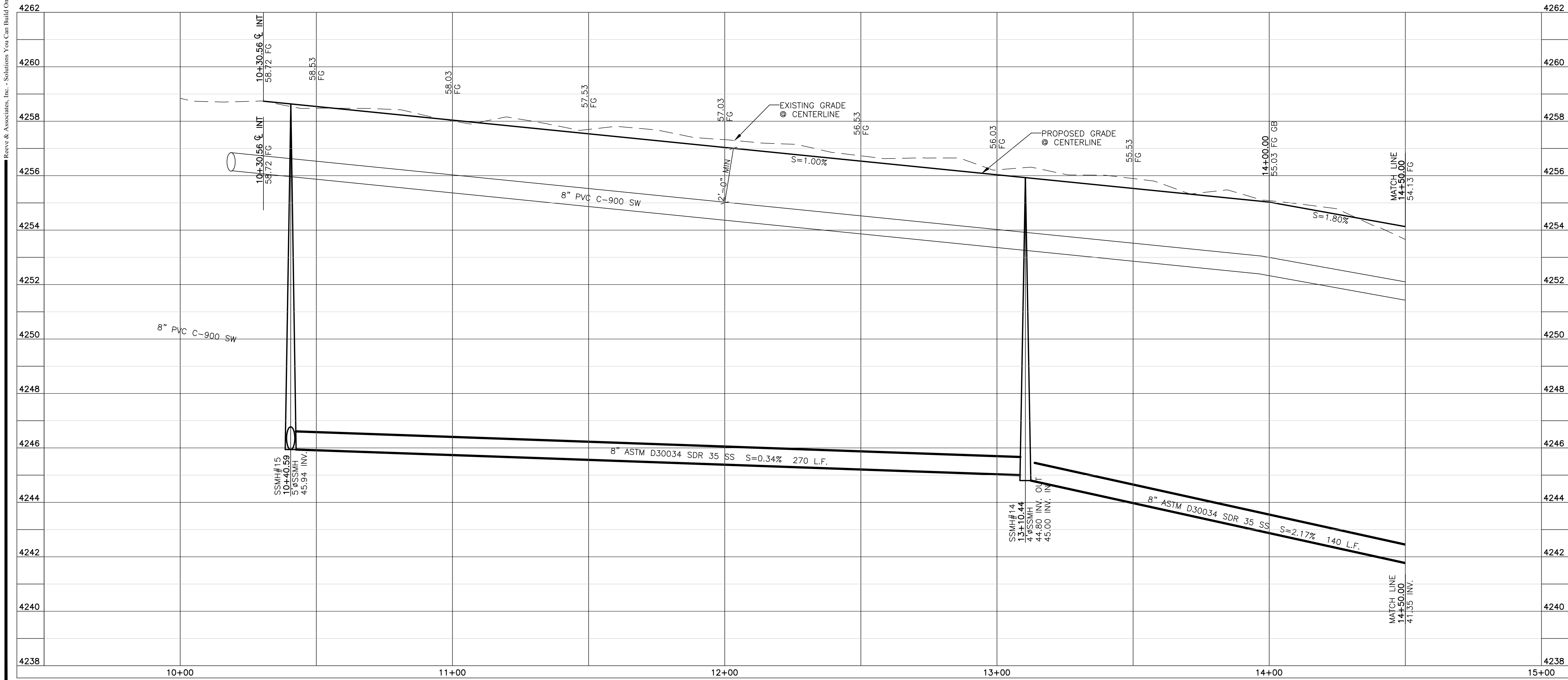
SD/15 - 15" RCP STORM DRAIN

SECONDARY WATER

SW/8 - 8" PVC C-900 SECONDARY WATER LINE

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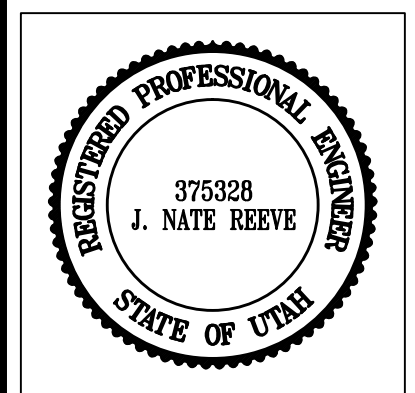


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Mallard Springs Subdivision
WEBER COUNTY, UTAH
4000 West Street
10+00.00 - 14+50.00



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Sheet **16**
6 Sheets

Storm Runoff Calculations
Mallard Springs Subdivision-Basin 3
6/2/2014

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the West Haven, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be retained in a holding pond.

The calculations are as follows:
1. Runoff from the undeveloped existing land.

Q = 0 cfs
A = 7.71 ACRES
Acreage
Perc Rate
Q(out) = 0.00 CFS

2. Runoff from developed land

Paved Area 50,588 C = 0.9
Landscaped Area 262,612 C = 0.2
Roof 22,500 C = 0.8

Weighted Runoff Coefficient C = 0.35

Rainfall Intensity i = varies with time
Runoff Quantity Q = CIA

3. Detention Basin
Volume in
Volume out Q * t
0.00 * t

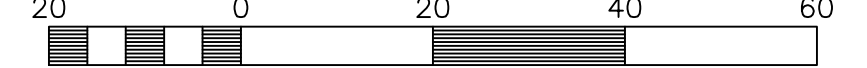
The capacity of the retention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the retention basin is limited to outflow if undeveloped. Use 0.00 cfs for Q outflow

The required volume of the retention basin is 28,773 cubic feet

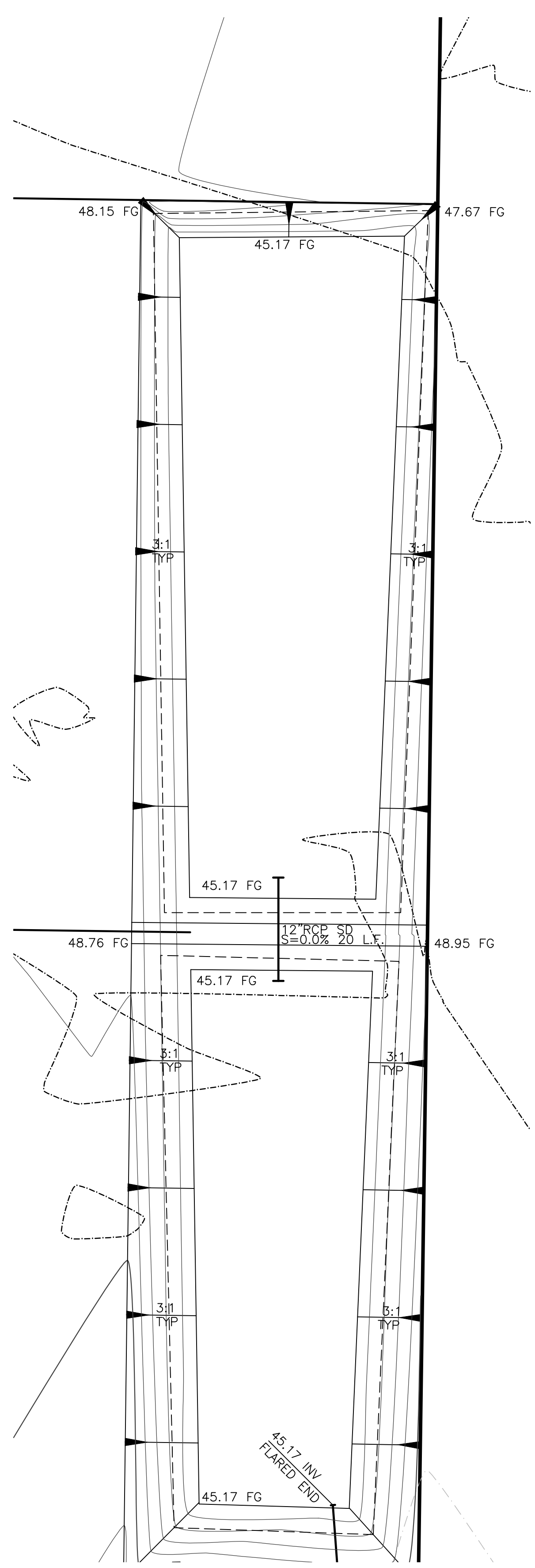
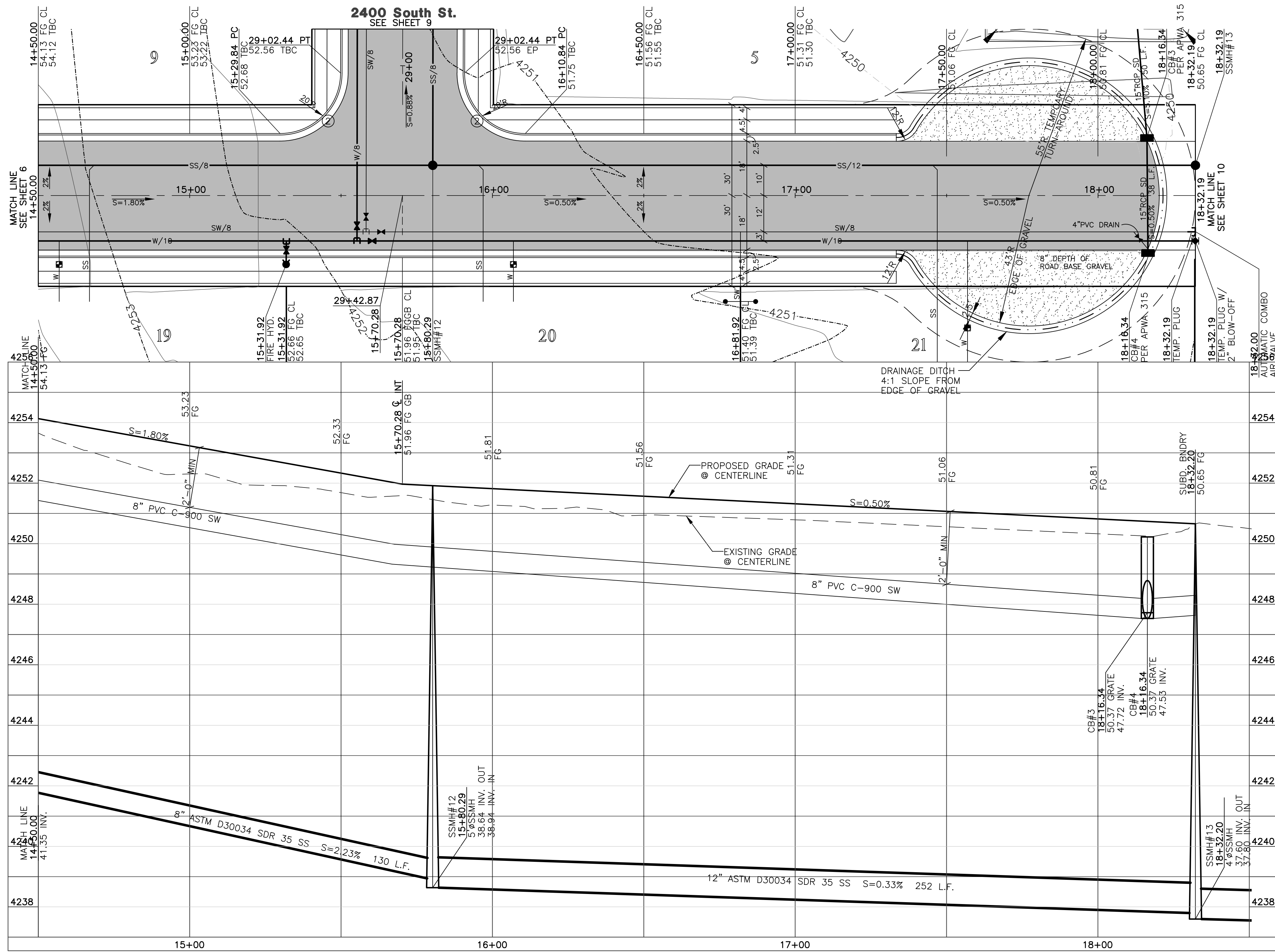
RETENTION BASIN						
Cumulative Volume For Detention Pond						
Mallard Springs Subdivision-Basin 3						
C =	0.35					
A =	7.71					
Q(out) =	0.00					
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference (cf)
0	0	0.00	0.00	0.00	0.00	0.00
5	300	6.64	17.69	5307.04	0.00	5307.04
10	600	5.05	13.45	8072.46	0.00	8072.46
15	900	4.17	11.11	9998.66	0.00	9998.66
30	1800	2.81	7.49	13475.41	0.00	13475.41
60	3600	1.74	4.64	16688.41	0.00	16688.41
180	10800	0.65	1.73	18731.30	0.00	18731.30
360	21600	0.36	0.97	20889.29	0.00	20889.29
720	43200	0.22	0.59	25320.35	0.00	25320.35
1440	86400	0.13	0.33	28773.12	0.00	28773.12

4000 West Street

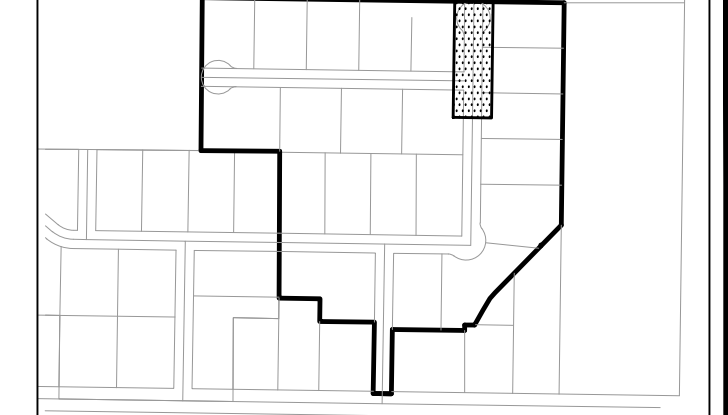


Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 2'

TEMPORARY TURNAROUND TO BE CONSTRUCTED PER WEBER COUNTY PUBLIC WORKS STANDARDS AND SPECIFICATIONS.



Key Map NOT TO SCALE



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SS/12 - 12" ASTM D3034 SDR 35 SEWER

STORM DRAIN
SD/15 - 15" RCP STORM DRAIN

SECONDARY WATER
SW/8 - 8" PVC C-900 SECONDARY WATER LINE

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RETENTION #3 VOLUME CALCULATIONS
FREEBOARD = 6"
HIGH WATER AREA (47.17') = 17,505 S.F.
BOTTOM AREA (45.17') = 13,239 S.F.
[17,505 + 13,239] / 2 = 15,372 S.F. AVG.
15,372 S.F. x 2.0' DEEP = 30,744 C.F.
30,744 C.F. > 28,773 C.F. (REQ'D.) = OK

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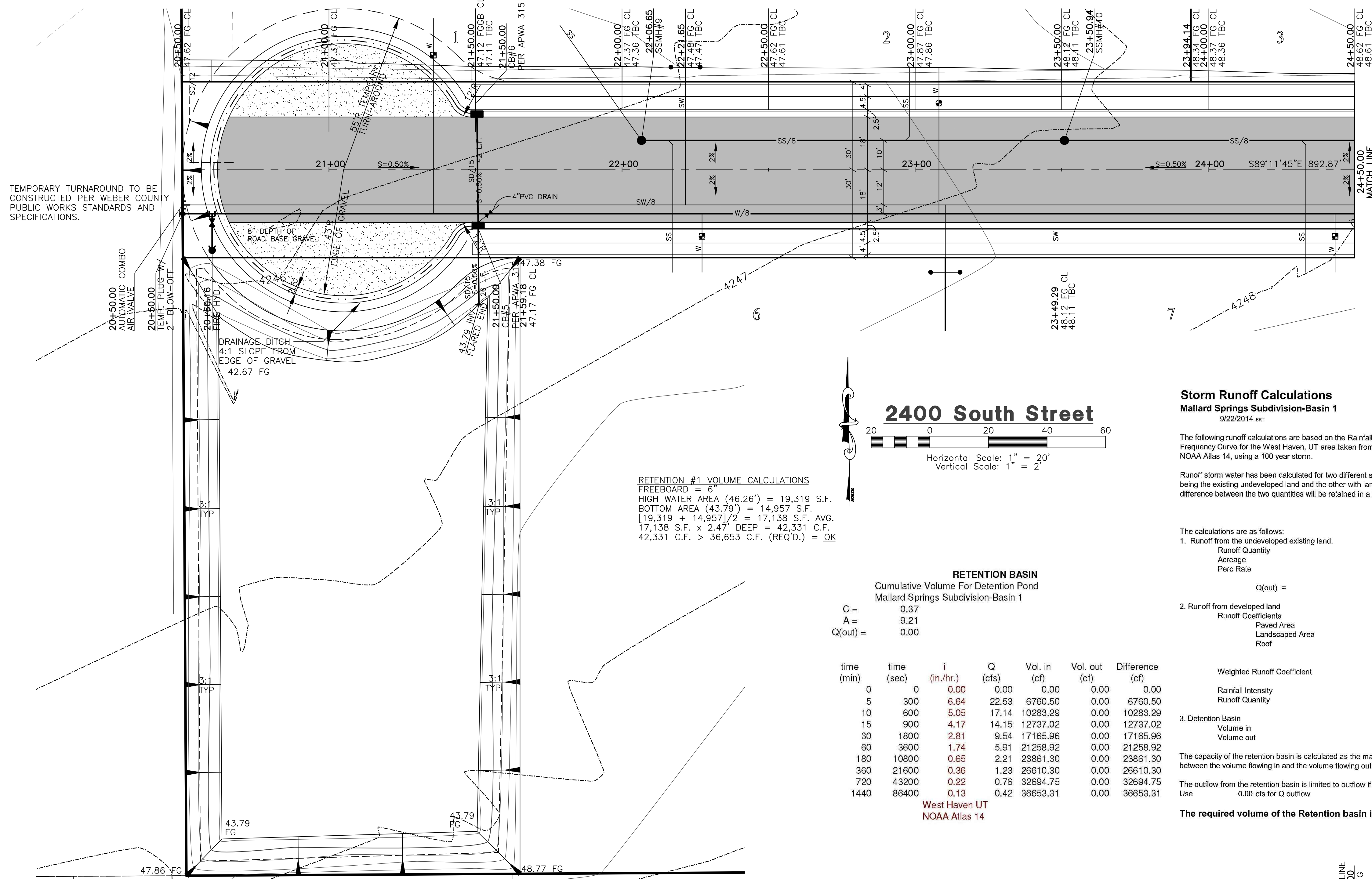
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Mallard Springs Subdivision
WEBER COUNTY, UTAH
4000 West Street
14+50.00 - 18+32.19

REGISTERED PROFESSIONAL ENGINEER
375328
J. NATE REEVE
STATE OF UTAH

Project Info.
Engineer: J. NATE REEVE, P.E.
Draftsman: R. HANSEN
Begin Date: NOVEMBER 4, 2013
Name: MALLARD SPRINGS SUBDIVISION
Number: 3442-A30

Sheet **16**
7 Sheets



RETENTION #1 VOLUME CALCULATIONS
 FREEBOARD = 6"
 HIGH WATER AREA (46.26') = 19,319 S.F.
 BOTTOM AREA (43.79') = 14,957 S.F.
 [19,319 + 14,957] / 2 = 17,138 S.F. AVG.
 17,138 S.F. x 2.47' DEEP = 42,331 C.F.
 42,331 C.F. > 36,653 C.F. (REQ'D.) = OK

RETENTION BASIN
 Cumulative Volume For Detention Pond
 Mallard Springs Subdivision-Basin 1

C =	0.37
A =	9.21
Q(out) =	0.00

time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference (cf)
0	0	0.00	0.00	0.00	0.00	0.00
5	300	6.64	22.53	6760.50	0.00	6760.50
10	600	5.05	17.14	10283.29	0.00	10283.29
15	900	4.17	14.15	12737.02	0.00	12737.02
30	1800	2.81	9.54	17165.96	0.00	17165.96
60	3600	1.74	5.91	21258.92	0.00	21258.92
180	10800	0.65	2.21	23861.30	0.00	23861.30
360	21600	0.36	1.23	26610.30	0.00	26610.30
720	43200	0.22	0.76	32694.75	0.00	32694.75
1440	86400	0.13	0.42	36653.31	0.00	36653.31

West Haven UT
 NOAA Atlas 14

Storm Runoff Calculations

Mallard Springs Subdivision-Basin 1
 9/22/2014 set

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the West Haven, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

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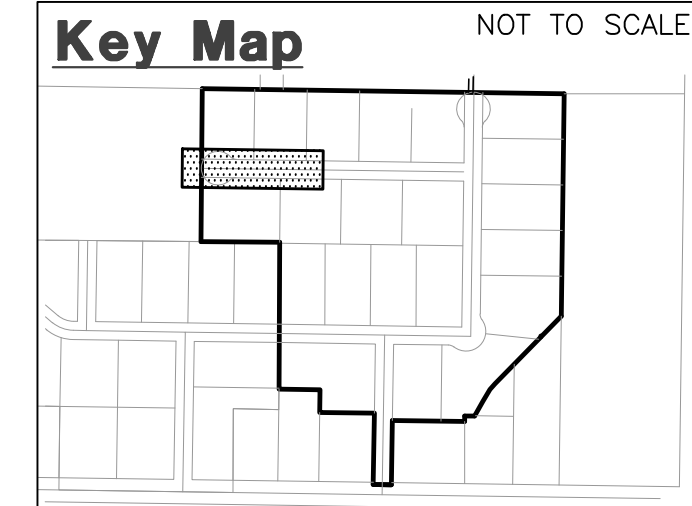
The calculations are as follows:

1. Runoff from the undeveloped existing land.	Q =	0 cfs
Runoff Quantity	A =	9.21 ACRES
Acreage		27.00 mpi
Perc Rate		
Q(out) =		0.00 CFS
2. Runoff from developed land		
Runoff Coefficients		
Paved Area	61,900	C = 0.8
Landscaped Area	298,625	C = 0.2
Roof	40,500	C = 0.8
Weighted Runoff Coefficient		C = 0.37
Rainfall Intensity	i = varies with time	
Runoff Quantity	Q = CIA	
3. Detention Basin		
Volume in	Q * t	
Volume out	0.00 * t	

The capacity of the retention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the retention basin is limited to outflow if undeveloped. Use 0.00 cfs for Q outflow

The required volume of the Retention basin is **36,653 cubic feet**



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 SD/15 - 15" RCP STORM DRAIN
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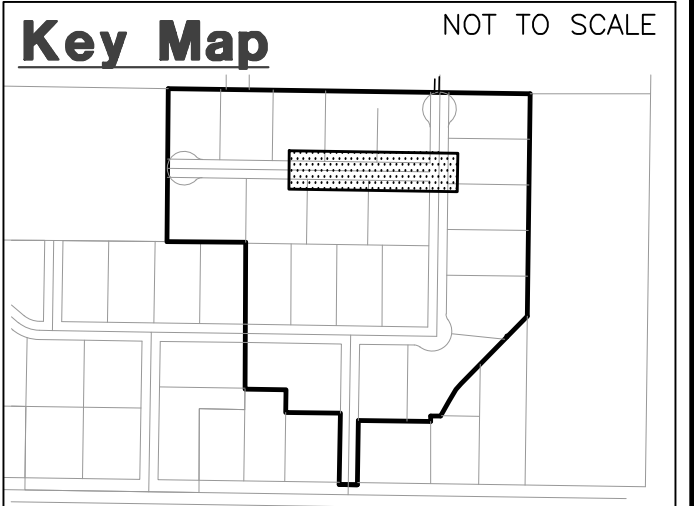
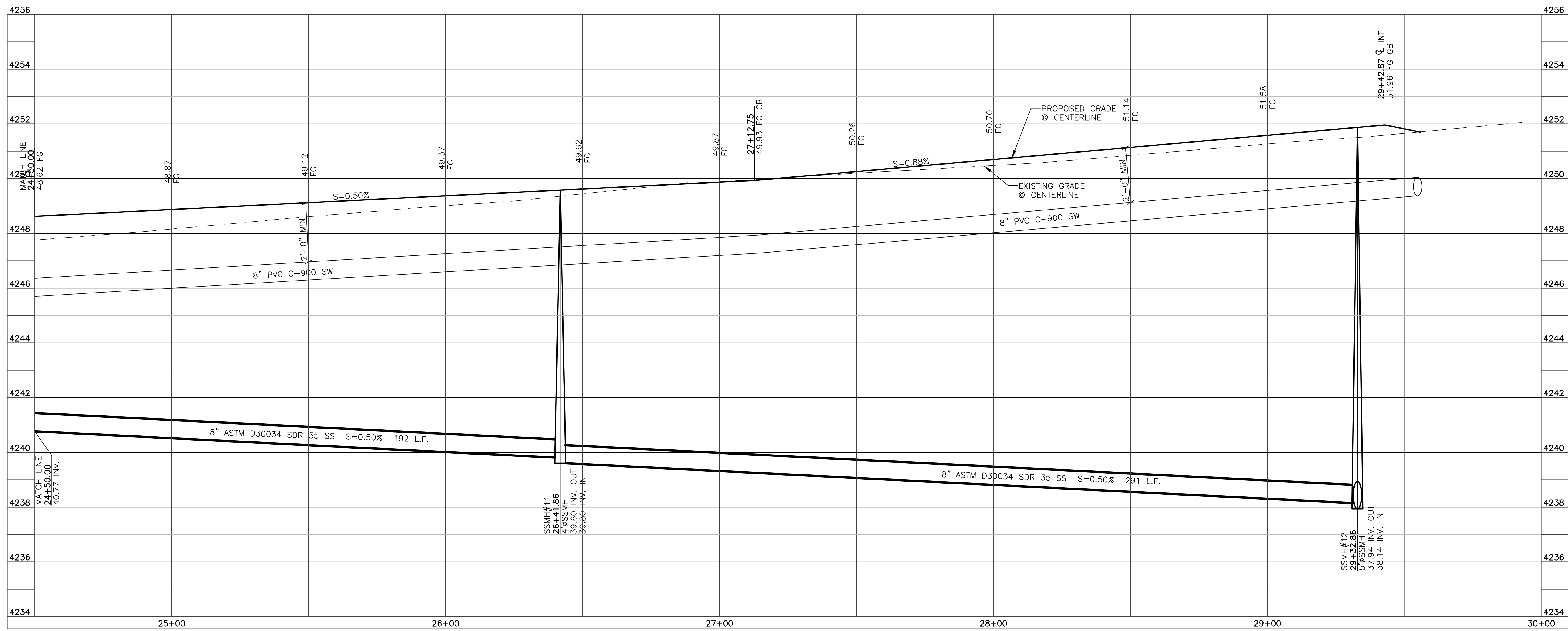
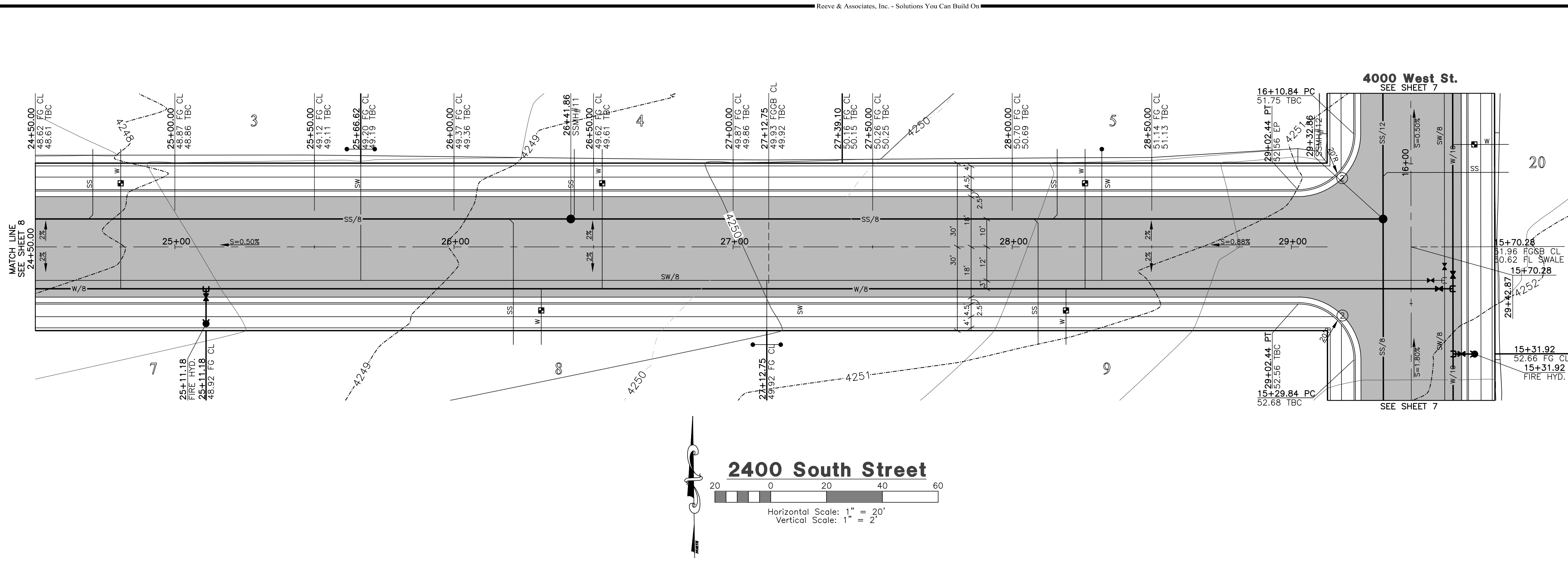
Mallard Springs Subdivision
 WEBER COUNTY, UTAH

2400 South Street
 20+00.00 - 24+50.00

Revised: 5-18-15

Project Info.
 Engineer: J. NATE REEVE, P.E.
 Drafter: R. HANSEN
 Begin Date: NOVEMBER 4, 2013
 Name: MALLARD SPRINGS SUBDIVISION
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Sheet **16**
 8 Sheets



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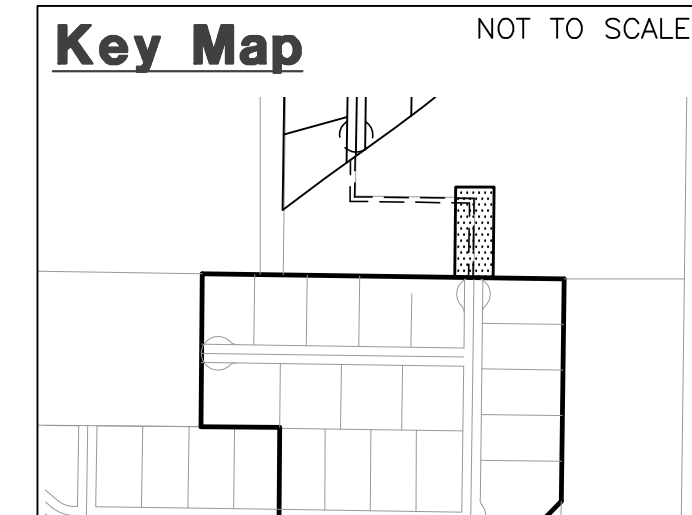
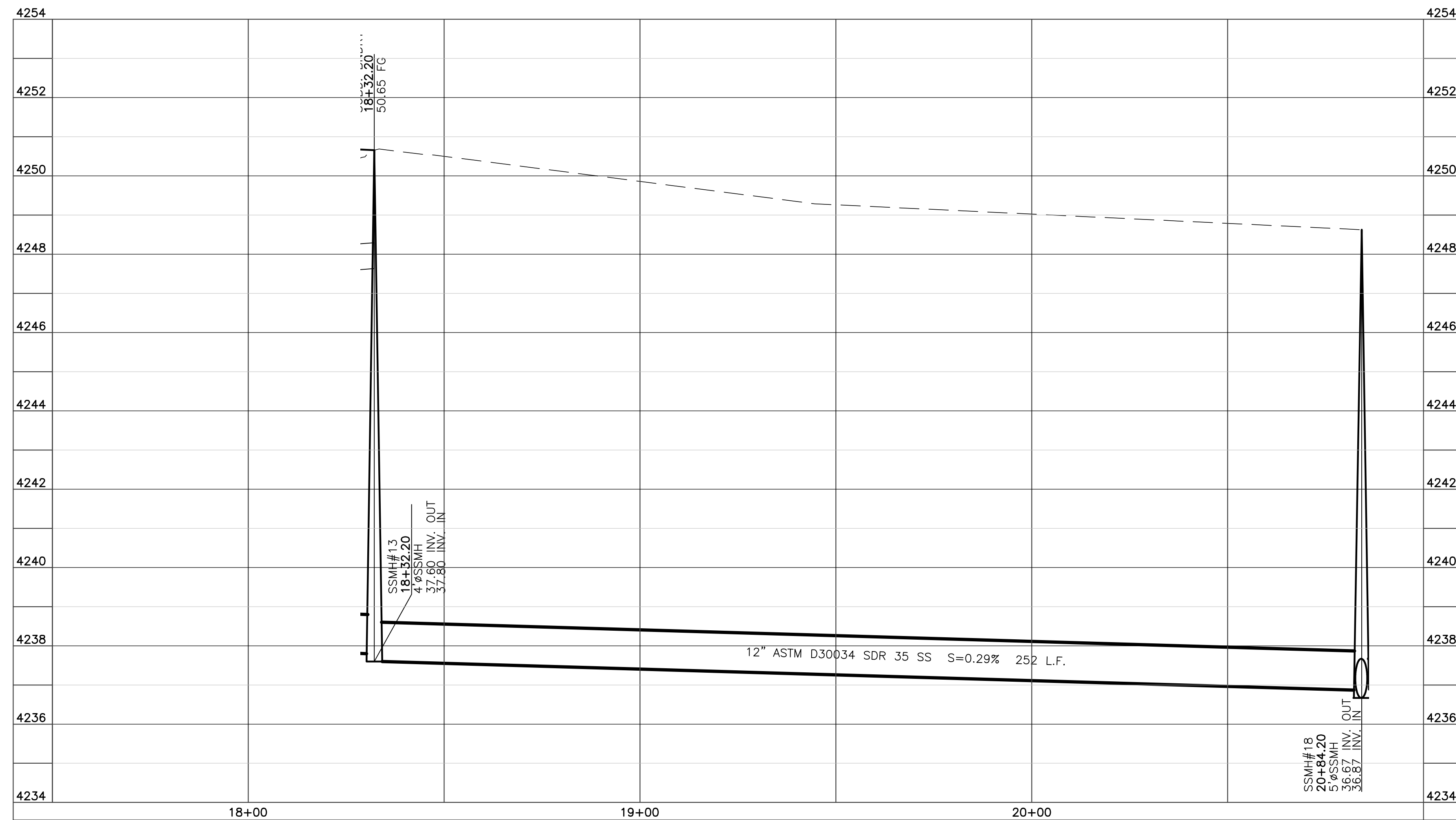
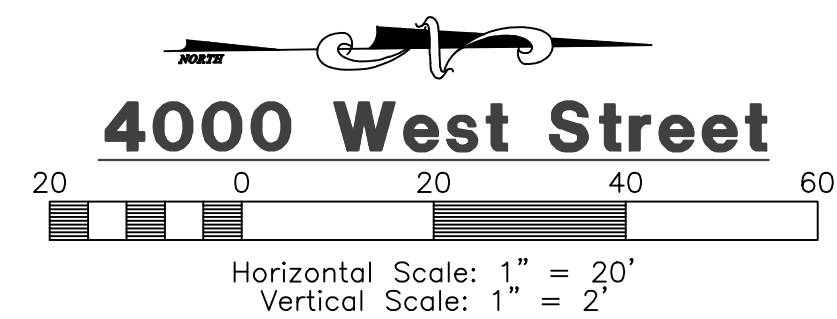
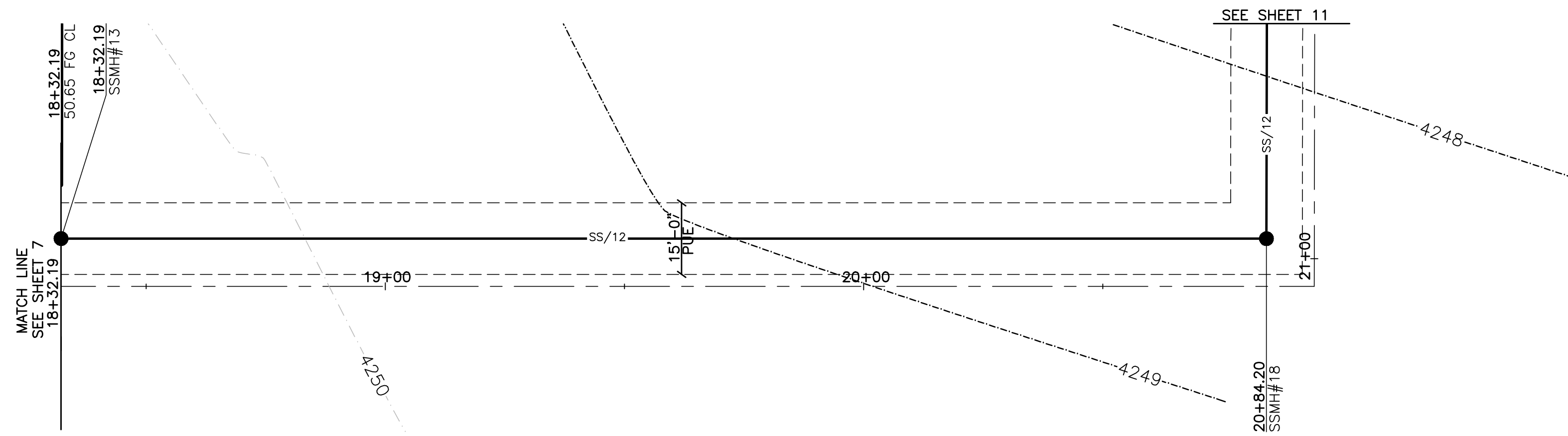
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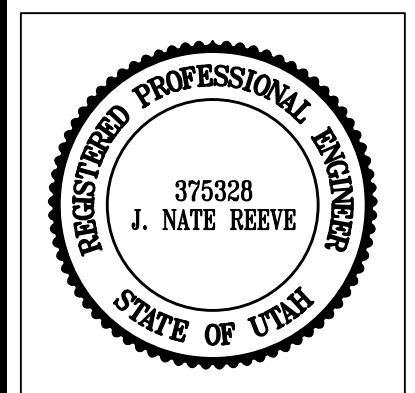
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Revised: 5-18-15

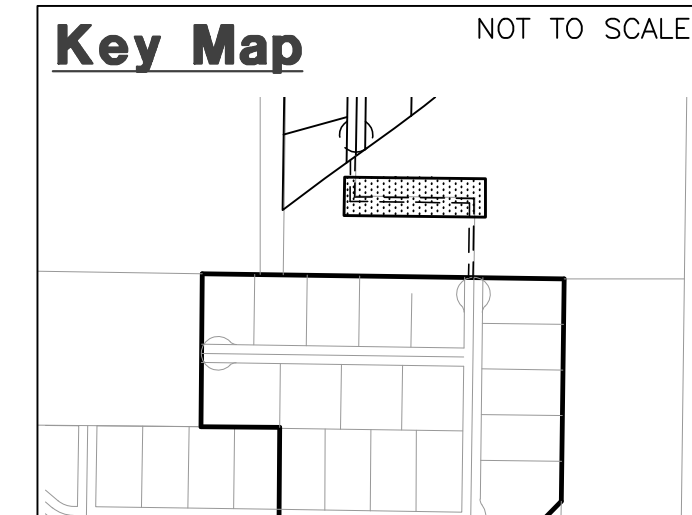
Mallard Springs Subdivision
 WEBER COUNTY, UTAH

4000 West Street
18+32.19 - 21+00.00



Project Info.
 Engineer: J. NATE REEVE, P.E.
 Drafter: R. HANSEN
 Begin Date: NOVEMBER 4, 2013
 Name: MALLARD SPRINGS SUBDIVISION
 Number: 3442-A30

Blue Stakes Location Center
Call: Toll Free
1-800-662-4111
 Two Working Days Before You Dig

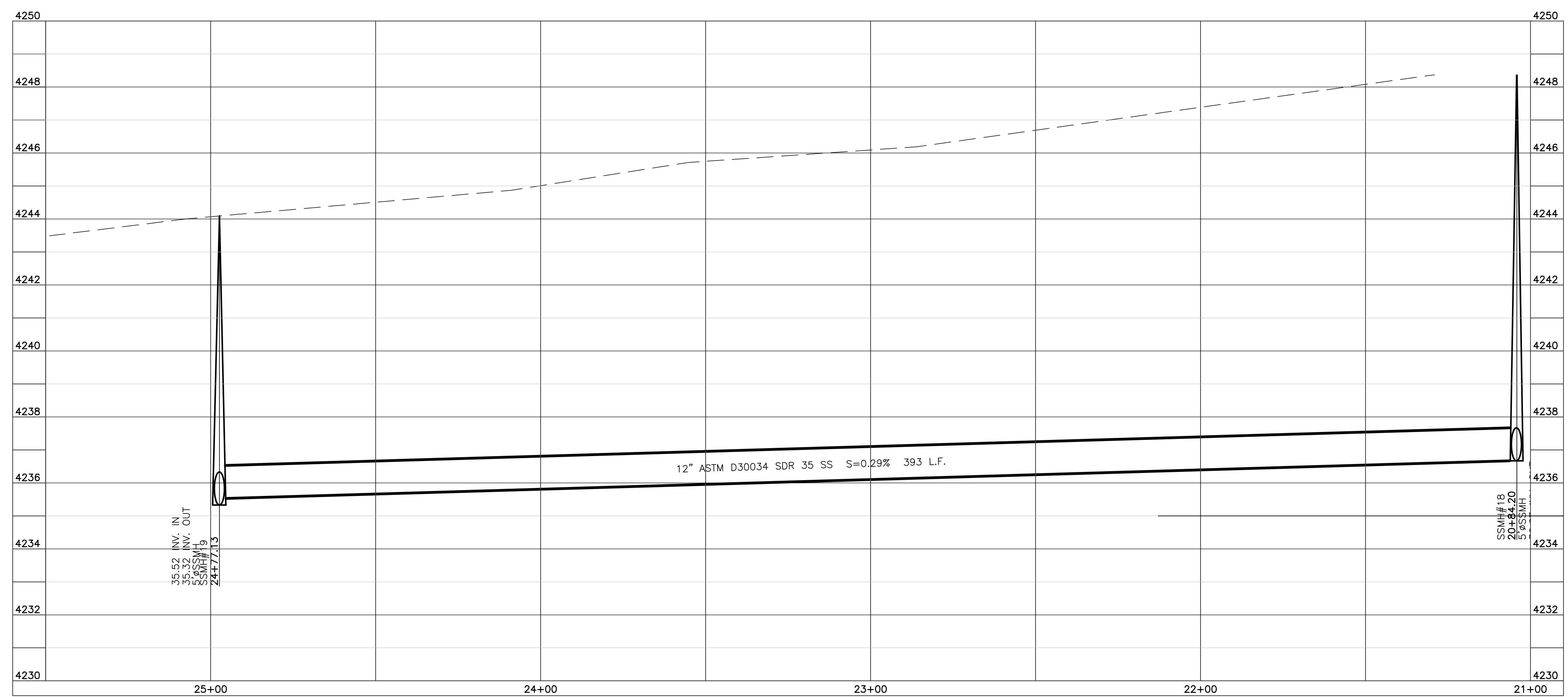
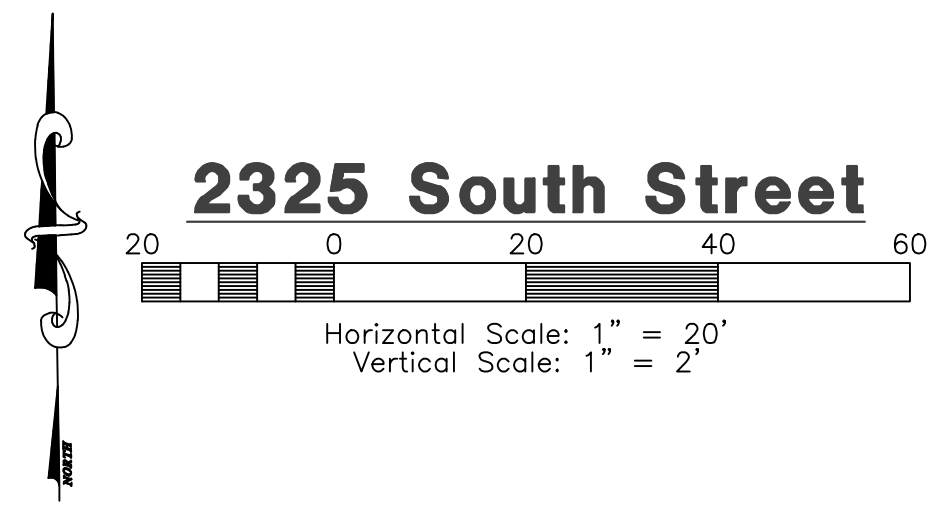
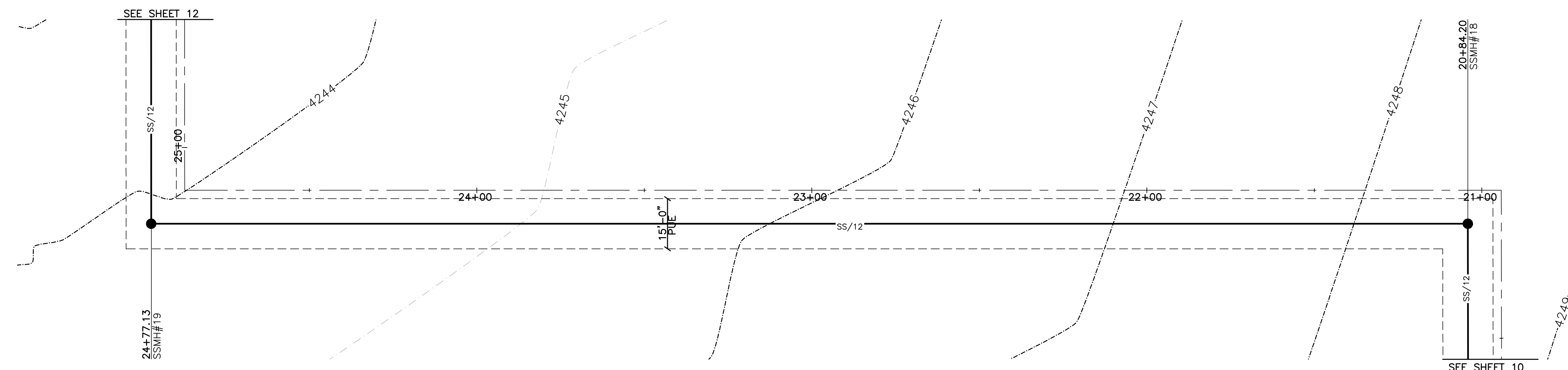


Construction Notes:

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 - 2) CONSTRUCT HANDICAP RAMP PER ADA AND CITY REQUIREMENTS.
- CULINARY WATER**
W/8 - 8" PVC C-900 CLASS 200 WATER
- SANITARY SEWER**
SS/8 - 8" ASTM D3034 SDR 35 SEWER
SS/12 - 12" ASTM D3034 SDR 35 SEWER
- STORM DRAIN**
SD/15 - 15" RCP STORM DRAIN
- SECONDARY WATER**
SW/8 - 8" PVC C-900 SECONDARY WATER LINE

Canal Crossing Notes

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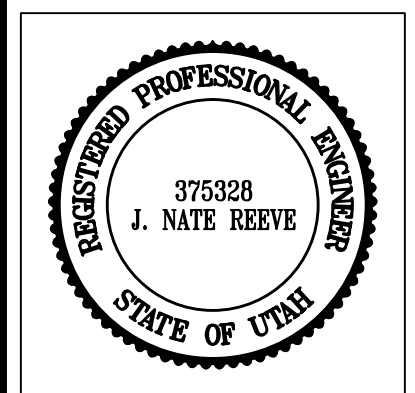
Reeve & Associates, Inc.
920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403
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DATE	DESCRIPTION
9-4-14	ST County Comments
9-30-14	ST County Comments
10-9-14	ST County Comments
11-3-14	RH Sewer Revisions
11-24-14	ST HIC Comments
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6-9-15	ST County Comments

Mallard Springs Subdivision
WEBER COUNTY, UTAH

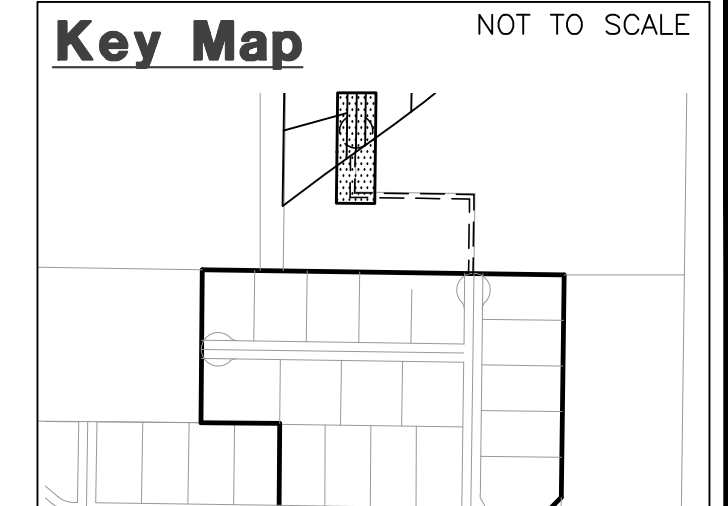
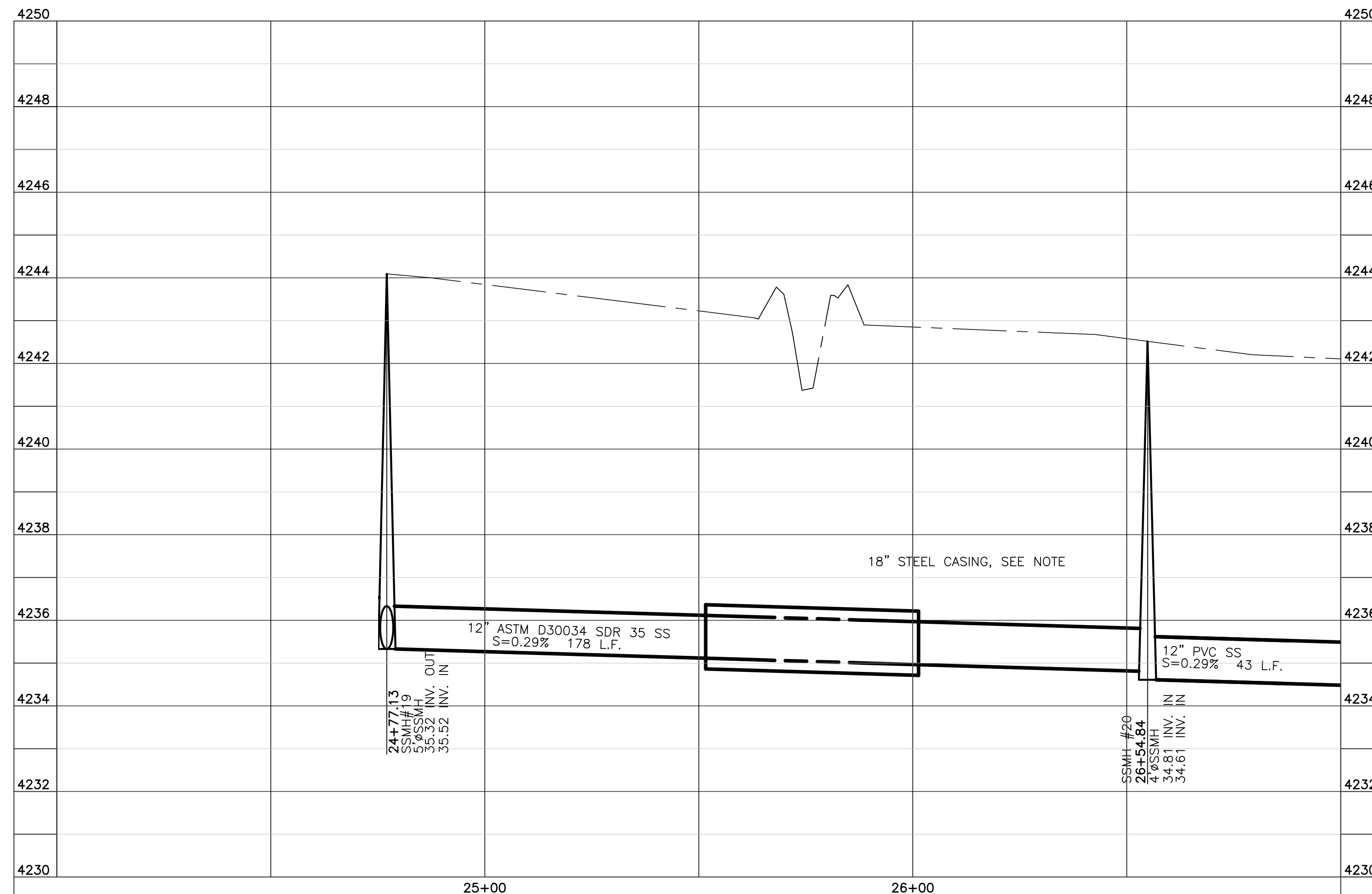
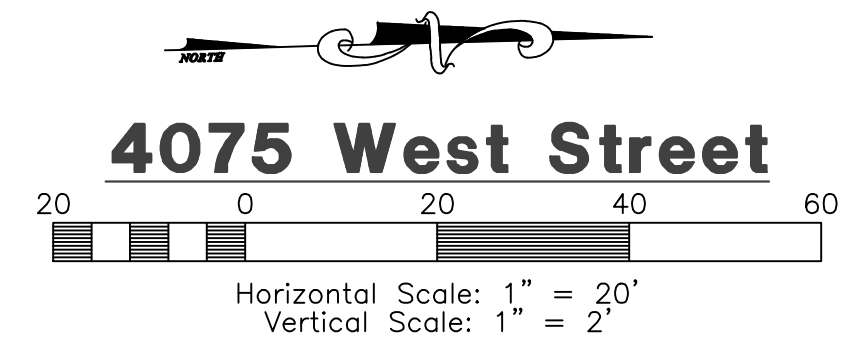
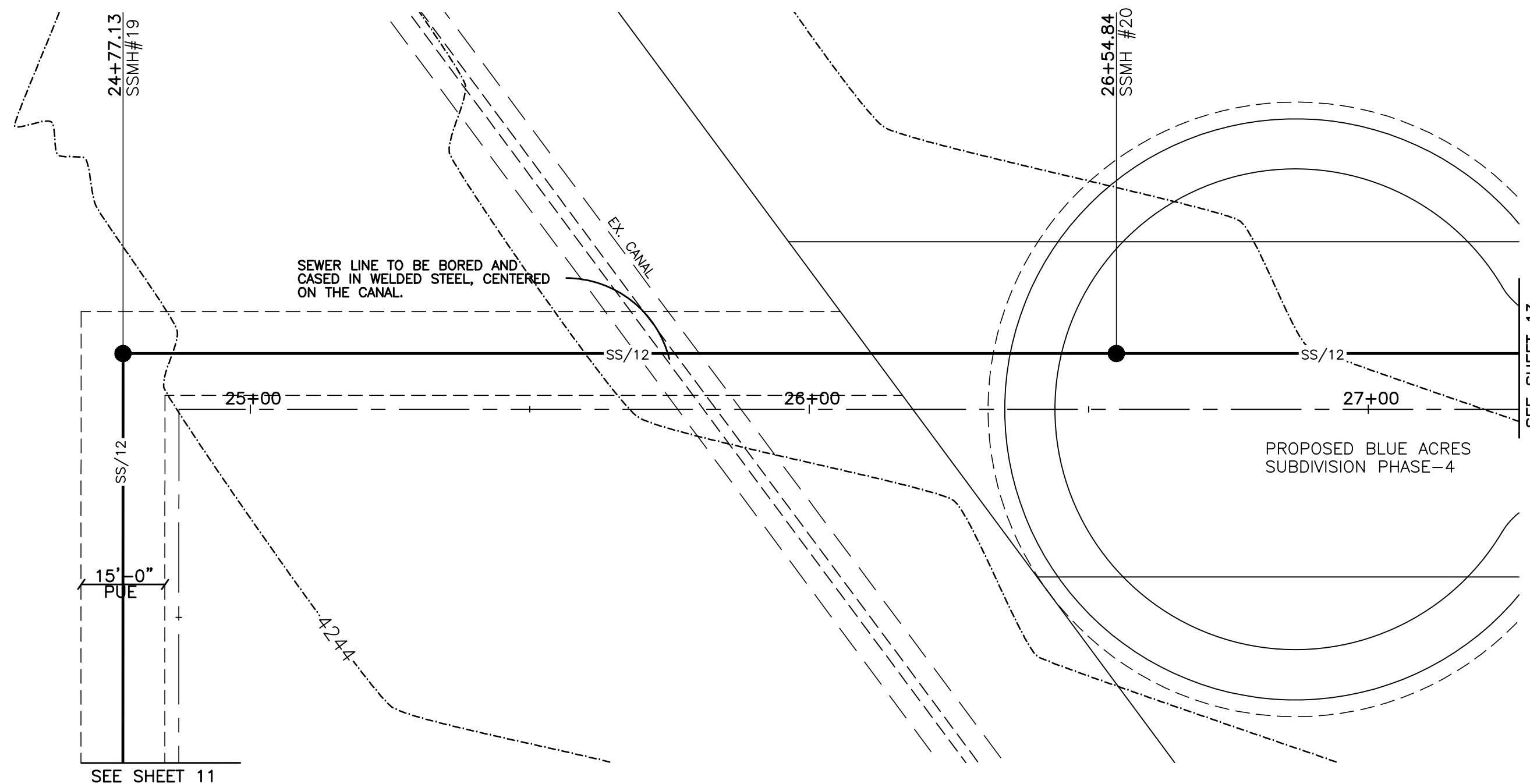
2325 South Street
21+00.00 - 25+00.00



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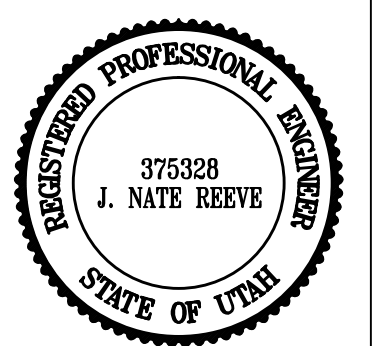
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Mallard Springs Subdivision
WEBER COUNTY, UTAH
4075 West Street
24.77.13 - 26+55.00

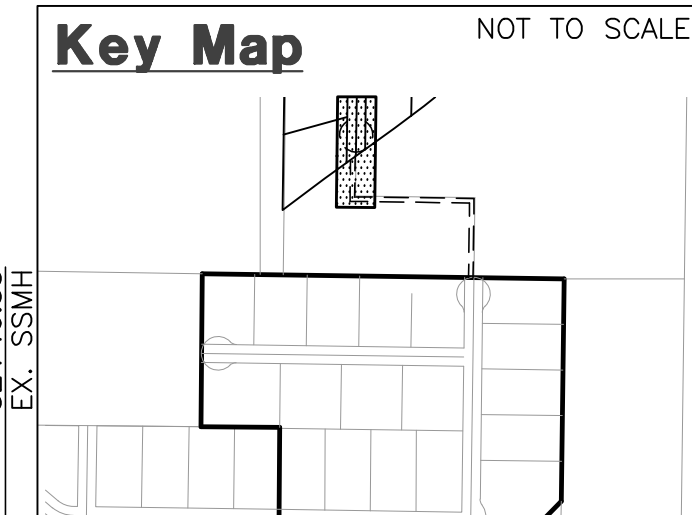
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Sheet **12** of **16** Sheets



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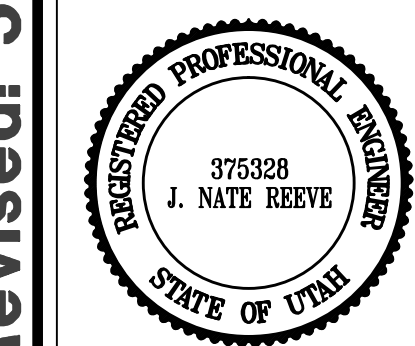
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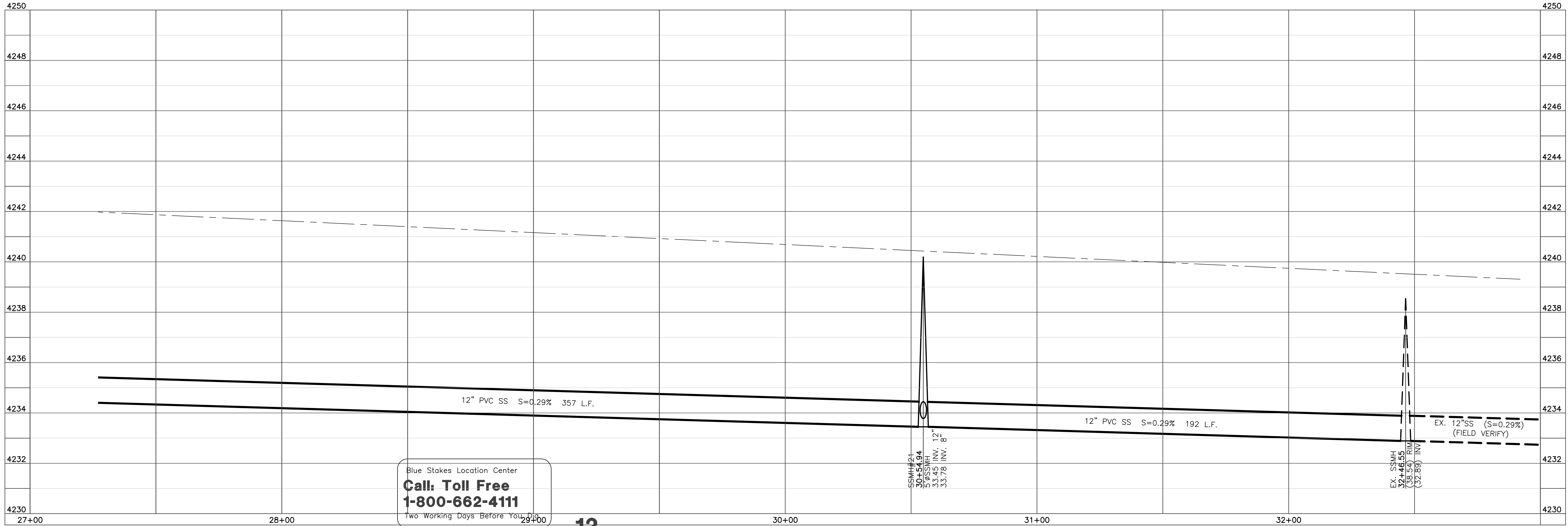
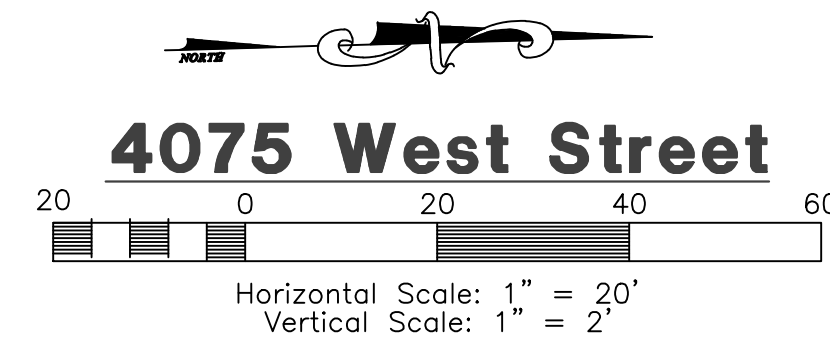
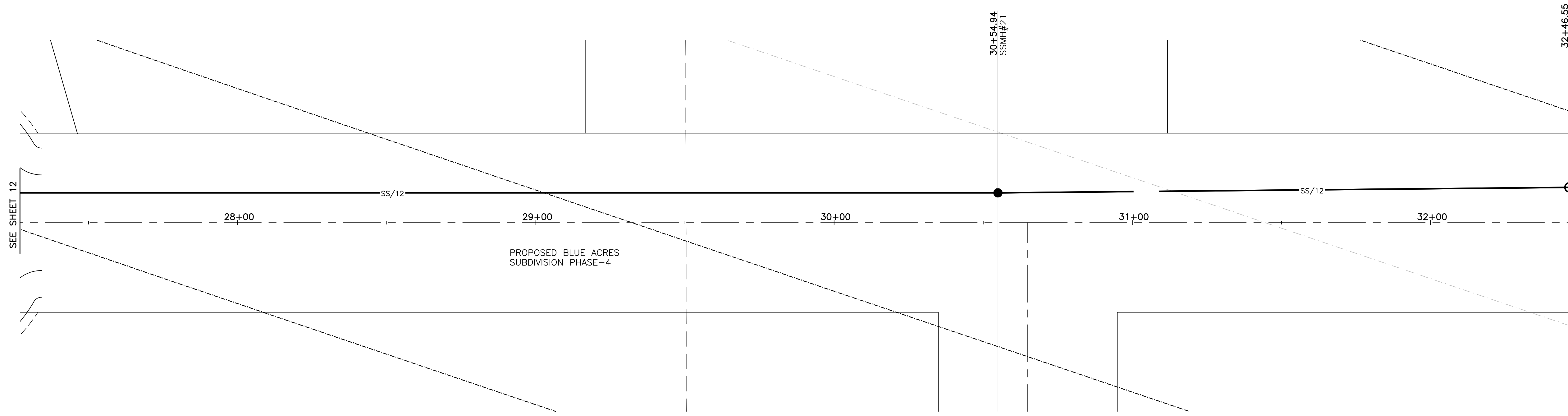
Revised: 5-18-15

Mallard Springs Subdivision
WEBER COUNTY, UTAH



Project Info.
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Drafted: R. HANSEN
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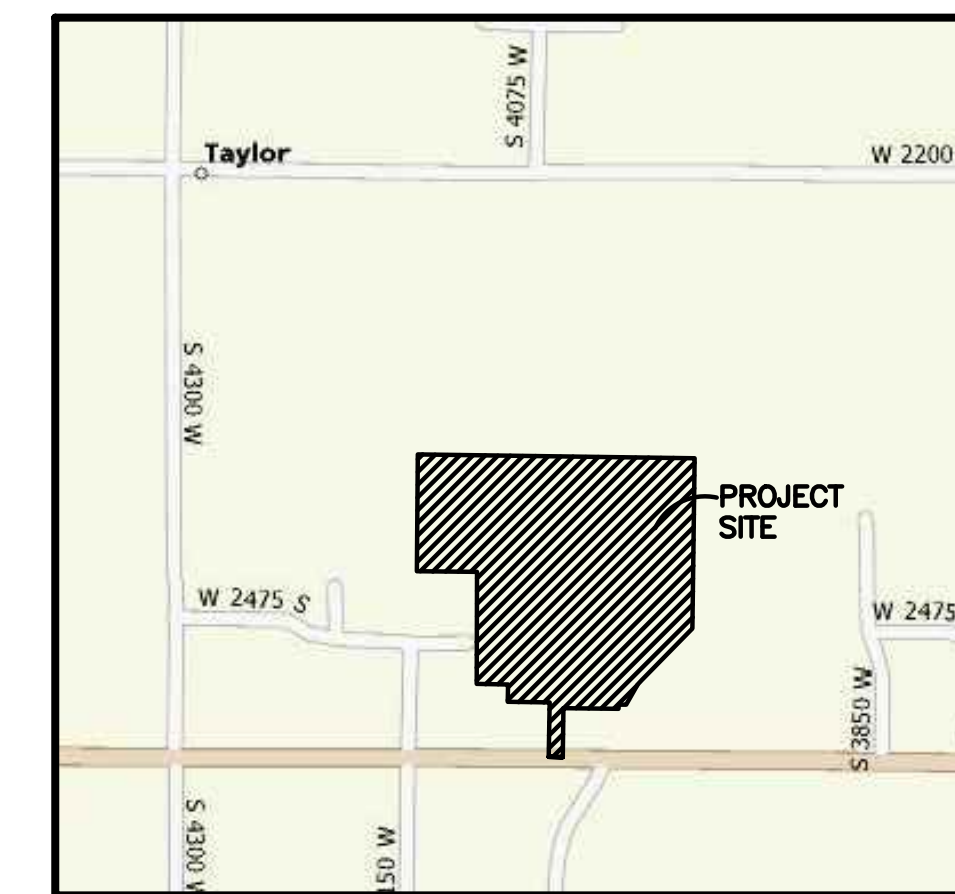
Sheet 13 of 16 Sheets



MALLARD SPRINGS SUBDIVISION

Storm Water Pollution Prevention Plan Exhibit

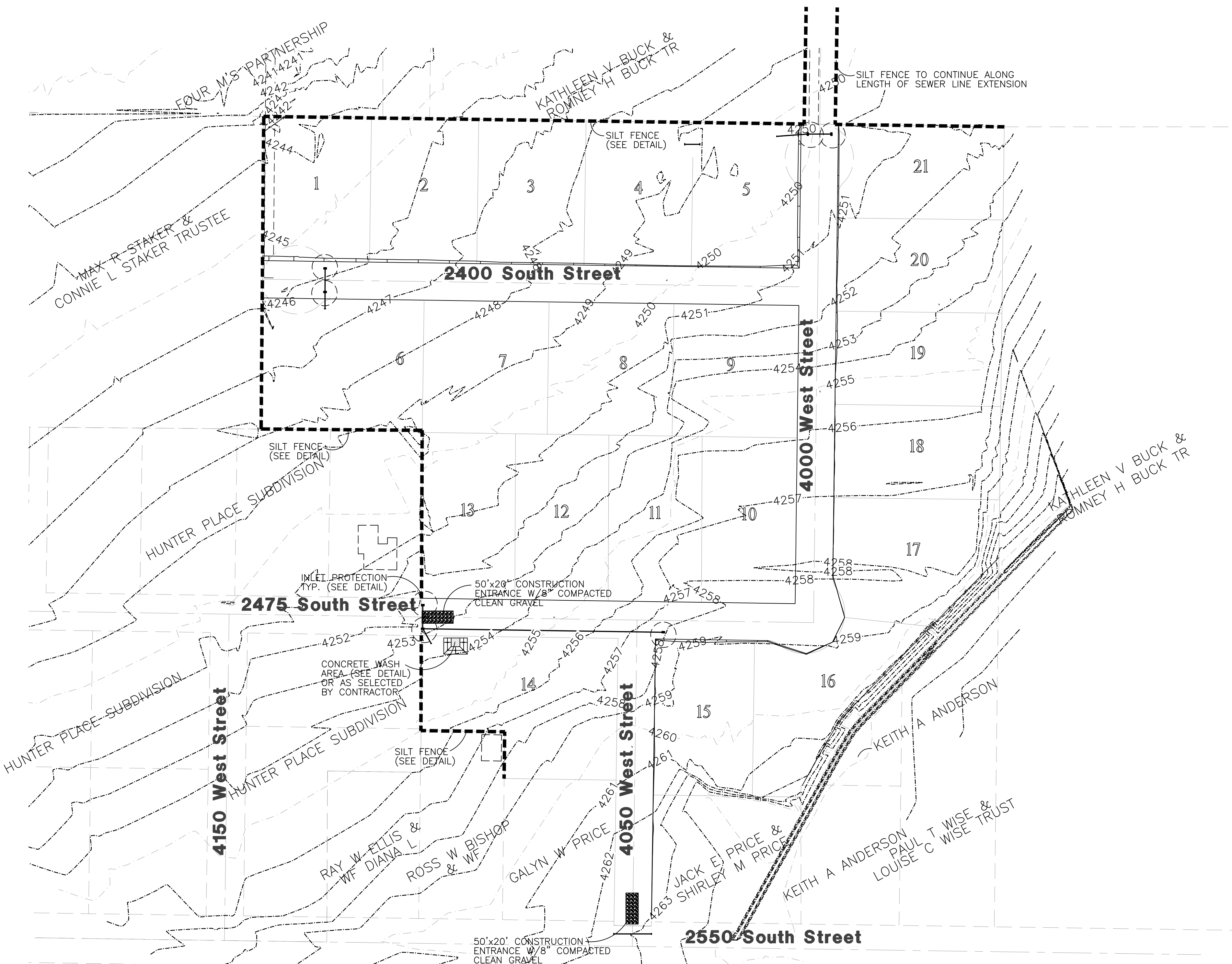
WEBER COUNTY, UTAH
NOVEMBER 2013



Vicinity Map
NOT TO SCALE

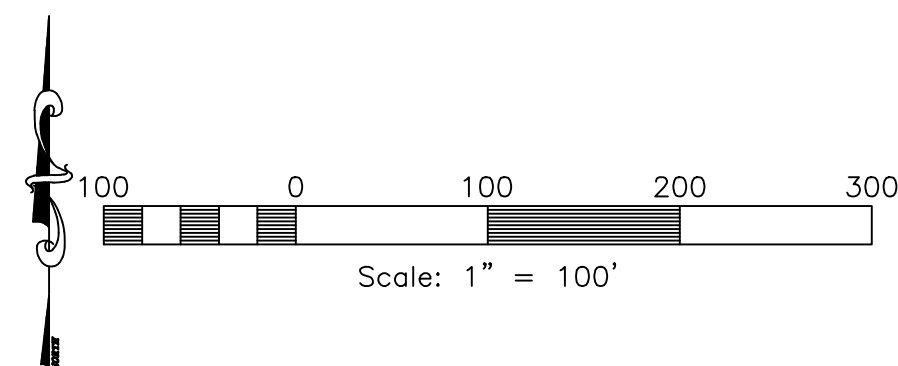
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REVISIONS	DATE	DESCRIPTION
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	6-9-15	ST. County Comments



STREETS TO BE SWEEP WITHIN 1000 FEET OF CONSTRUCTION ENTRANCE DAILY IF NECESSARY

ALL VEHICLES EXITING SITE TO PROCEED THROUGH CONSTRUCTION ENTRANCE TO REDUCE AMOUNTS OF SEDIMENT TRACKED ONTO ROADWAYS.



Revised: 5-18-15

Mallard Springs Subdivision
 WEBER COUNTY, UTAH
 Storm Water Pollution Prevention Plan Exhibit



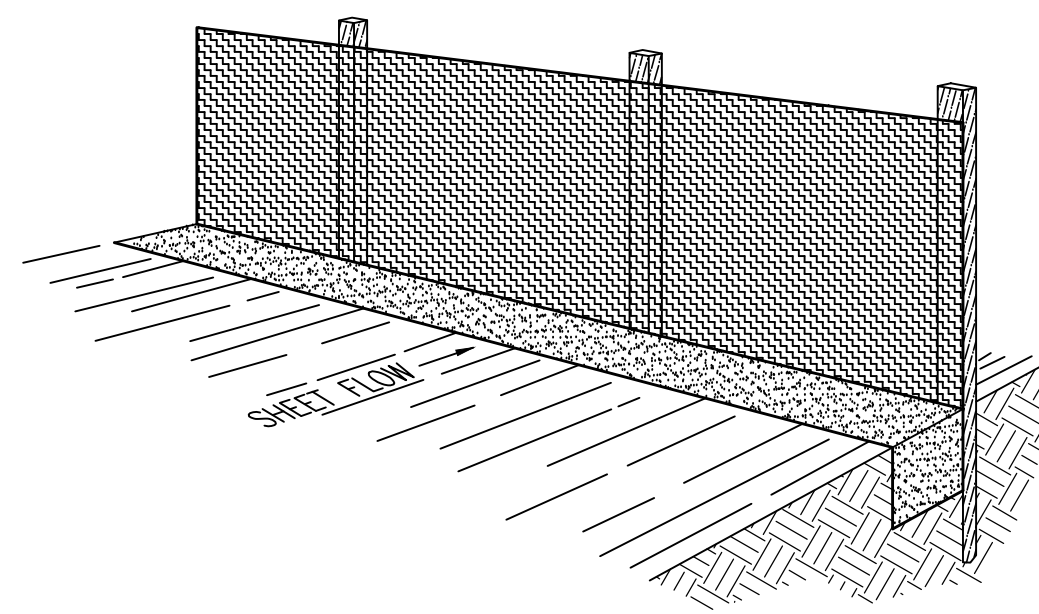
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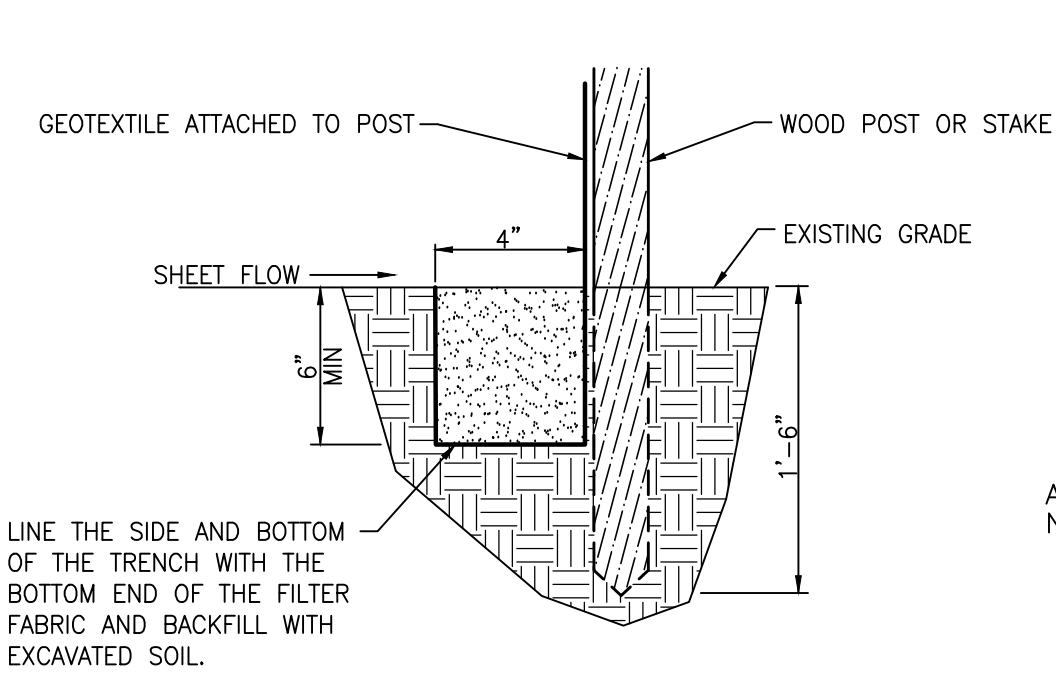
PROJECT LOCATION	WEBER COUNTY, UTAH
PROJECT BEGINNING DATE	NOVEMBER 2013
BMP'S DEPLOYMENT DATE	NOVEMBER 2013
STORM WATER MANAGEMENT CONTACT / INSPECTOR	DOUG HAMBLIN (801) 731-7703
SPECIFIC CONSTRUCTION SCHEDULE INCLUDING BMP CONSTRUCTION SCHEDULE TO BE INCLUDED WITH SWPPP BY OWNER/DEVELOPER	

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
 - Maintain 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 property 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 UTR300000 identifies the minimum inspection requirements.
 - Part II.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



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.

TABLE 1: Recommended Maximum Slope Lengths for Silt Fence (Richardson & Middlebrooks, 1991)	
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 tight seal as shown in Figure 1.
- *Drive posts into the ground until the required fence height and/or anchorage depth is obtained.
- *Bury 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.

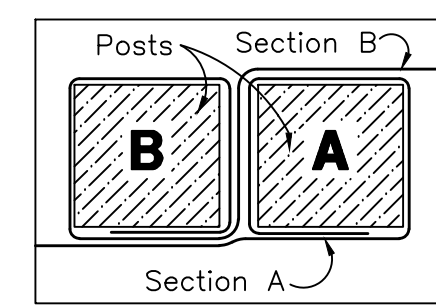
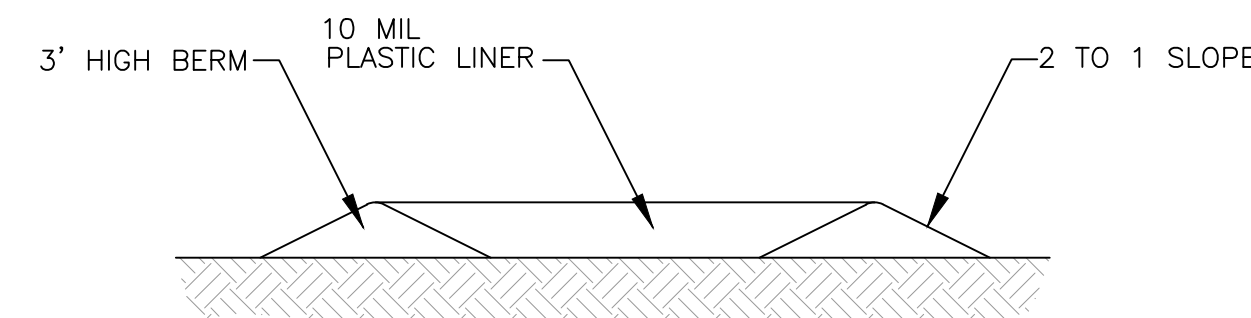
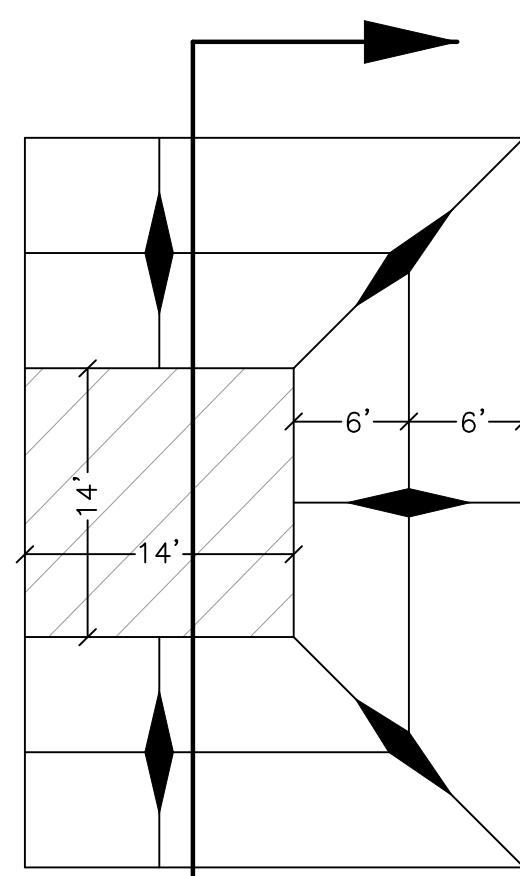


Figure 1:
Top View of
Roll-to-Roll Connection

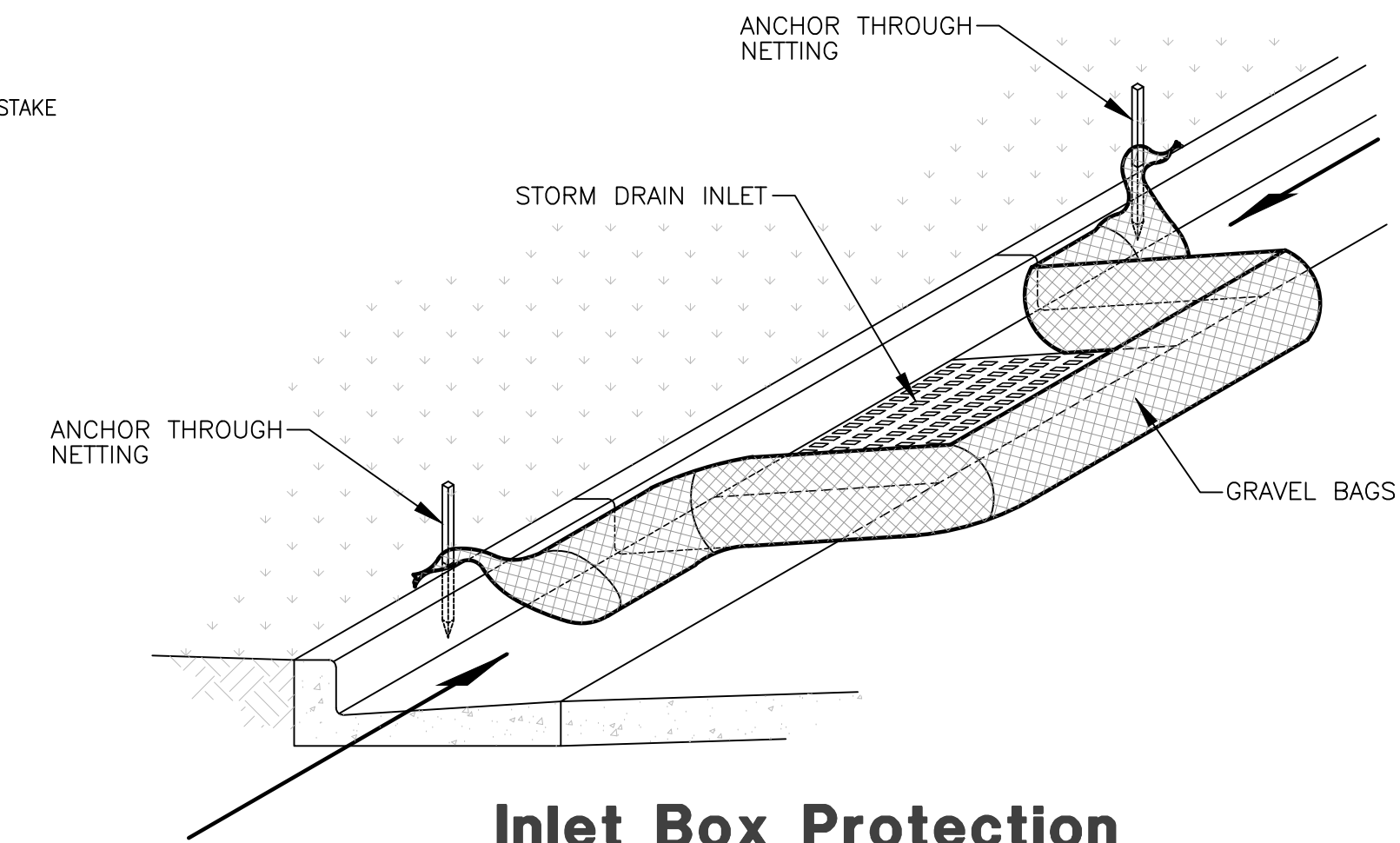
Silt Fence Detail

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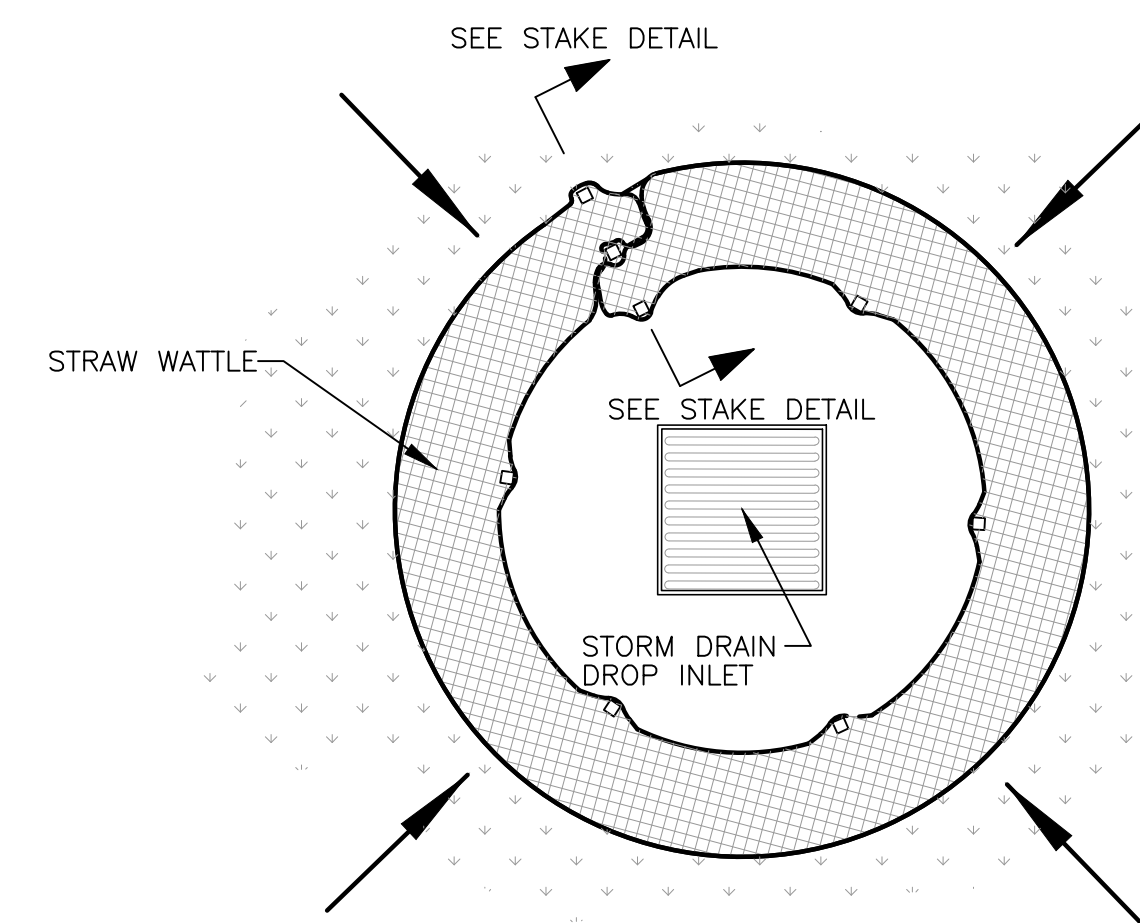


**Concrete Washout Area
w/ 10 mil Plastic Liner**

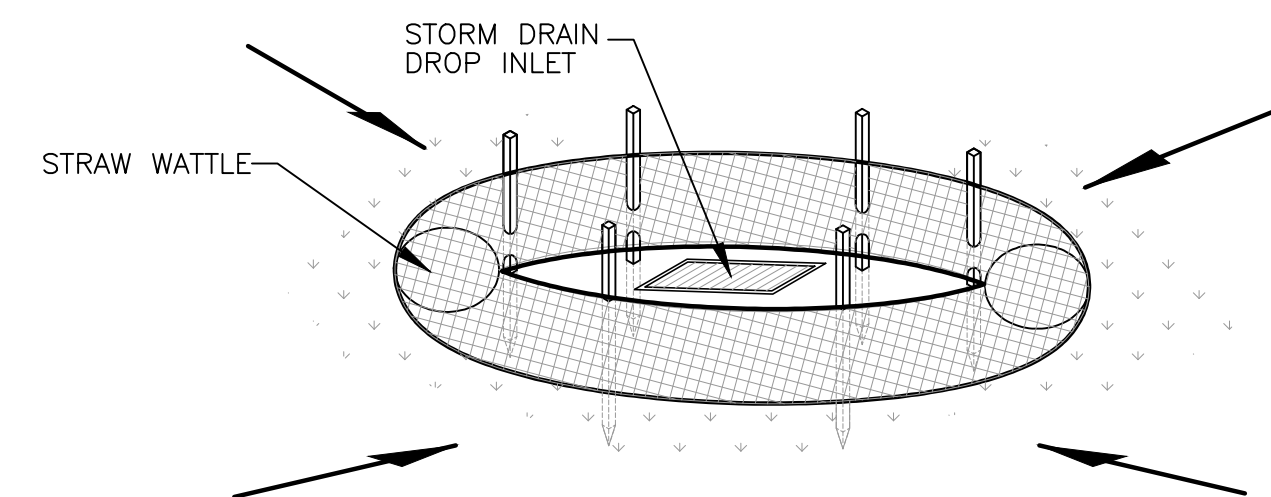
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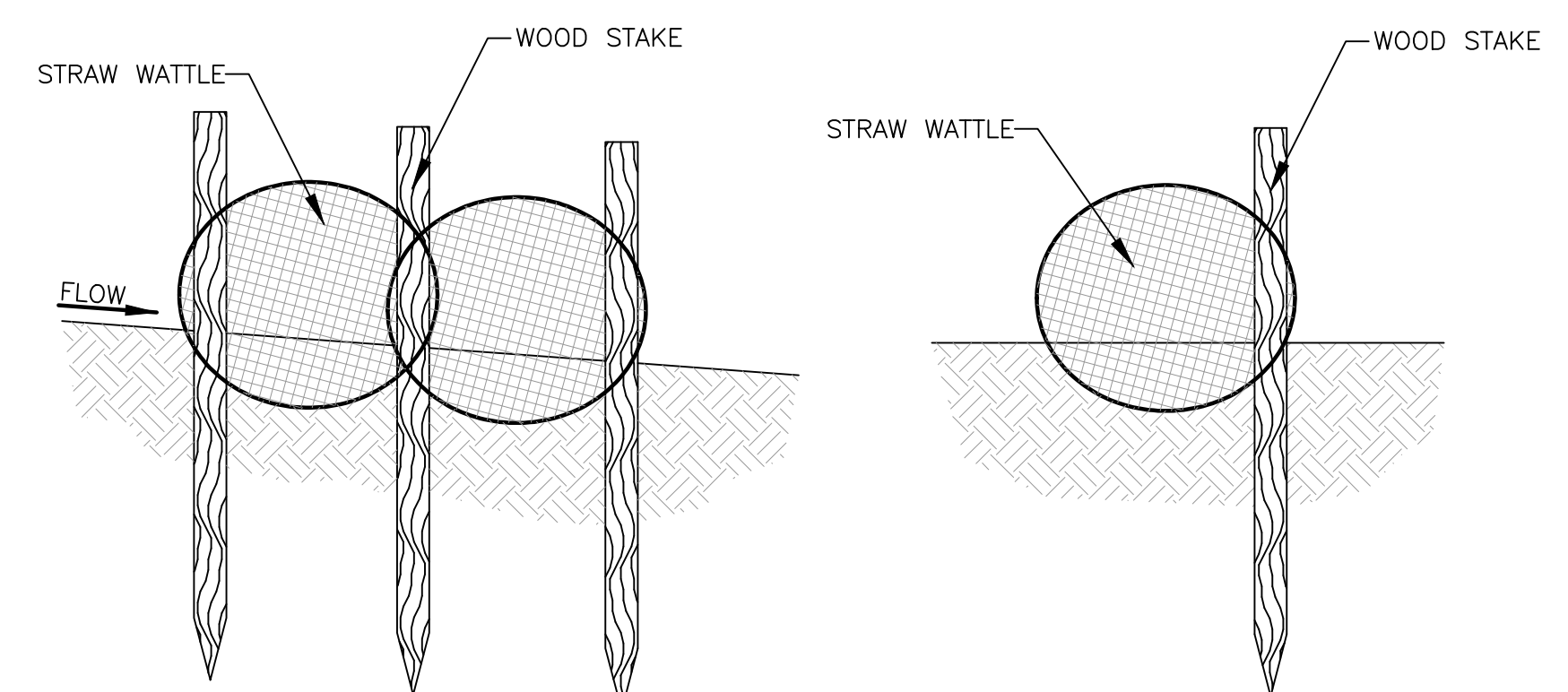
Inlet Box Protection



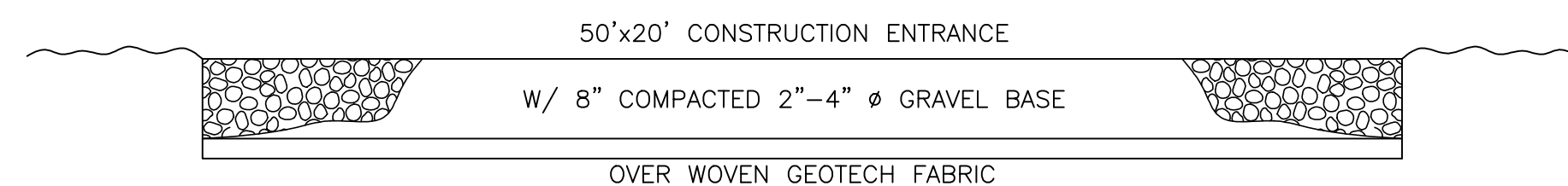
Plan View



Drop Inlet Protection



Stake Detail



Cross Section 50' x 20' Construction Entrance

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Mallard Springs Subdivision
 WEBER COUNTY, UTAH
Storm Water Pollution Prevention Plan Details

Revised: 5-18-15

REGISTERED PROFESSIONAL ENGINEER
 375328
 J. NATE REEVE
 STATE OF UTAH

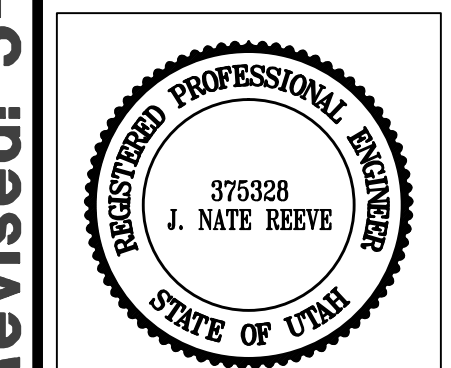
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Sheet **16**
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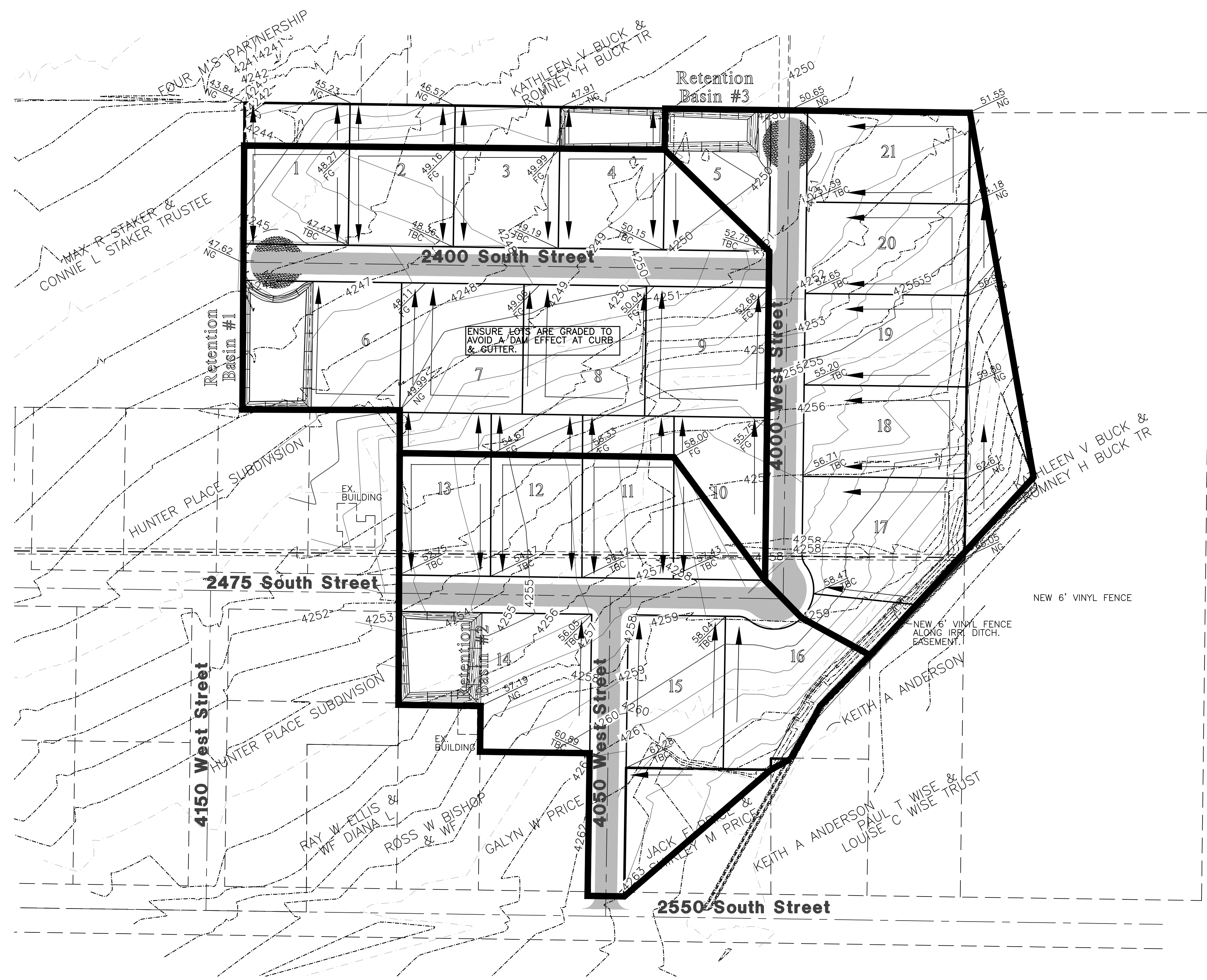
Overall Grading Plan



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Sheet **16** of 16
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Revised: 5-18-15



LEGEND
 - - - - - PROPOSED 1' CONTOURS
 _____ EXISTING 1' CONTOURS