

Kippen,Ronda

From: Chris Cave [ccave@reeve-assoc.com]
Sent: Wednesday, March 08, 2017 9:05 AM
To: Camron Harry
Cc: jdbla19@gmail.com; Pfeaster,Rochelle; Kippen,Ronda
Subject: [CAUTION]FW: Vaquero DEQ Comments
Attachments: DEQ comment response.pdf; Barrow Imp 1.pdf; Vaquero water report.pdf

Importance: High

Camron,

Attached please find the updated plan set, comment letter and water report for Vaquero Village Phase 1.

Please you any questions on the plans, call Thomas Hunt in our office, he is the design engineer on the project.

Thanks,

 **Chris Cave**
Land Planner | Project Manager

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To prevent malicious software and viruses, NEVER open files
or click on links from unexpected or unknown sources.

Think Before You Click!

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February 2, 2017

Camron Harry
Division of Drinking Water
Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84114
(801) 536-0087

Re: Vaquero Village Subdivision water line – File # 10648

Below please find our response to your comments dated December 6, 2016. Please note that our comment numbering reference system corresponds to your comment numbering system.

1. The waterline is 8” throughout the site including the fire hydrant laterals. The length of the main (not including laterals) is ~1625 linear feet. The material for the line is listed under the key map for each page. The note states: Culinary Water: 8” PVC C-900 CLASS 200 WATER.
2. The resubmitted plans have been stamped, signed, and dated.
3. Distribution pressure has been verified to meet the minimum requirements through hydraulic analysis.
4. A hydraulic analysis for the propose water service has been completed. See attached.
5. Two additional fire hydrants have been added to the plans at Stations 11+04 and 16+16.
6. The dead end has a blow off and air release valve called out to be installed.
7. Notes/specifications have been added to Sheet 2.
8. Notes/specifications have been added to Sheet 2.
9. The use of used materials will be allowed and determined by the contractor. A note/specification for used material has been to Sheet 2.
10. A detail for the fire hydrants has been added to Sheet 9.
11. Notes/specifications have been added to Sheet 2. See comment #1 for the location of the water line type/material.
12. Notes/specifications have been added to Sheet 2.
13. Notes/specifications have been added to Sheet 2.
14. Notes/specifications have been added to Sheet 2.
15. The note for the required thrust blocking has been updated to be more inclusive of all the locations needed. A detail for the thrust blocking has been added to Sheet 9.
16. Notes/specifications have been added to Sheet 2.
17. Notes/specifications have been added to Sheet 2.
18. Notes/specifications have been added to Sheet 2.

Reeve & Associates, Inc.



We appreciate your review and trust we have changed and/or clarified all of your comments referenced herein. If you have any questions, or we can be of further assistance, please let us know.

Sincerely,
Reeve & Associates, Inc.

Nate Reeve, P.E.
Principle Engineer
Reeve & Associates, Inc.
nreeve@reeve-assoc.com

Kenneth Hunter, E.I.T.
Project Engineer
Reeve & Associates, Inc.
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Email: ogden@reeve-assoc.com • Website: www.reeve-assoc.com

Project Narrative/Notes/Revisions

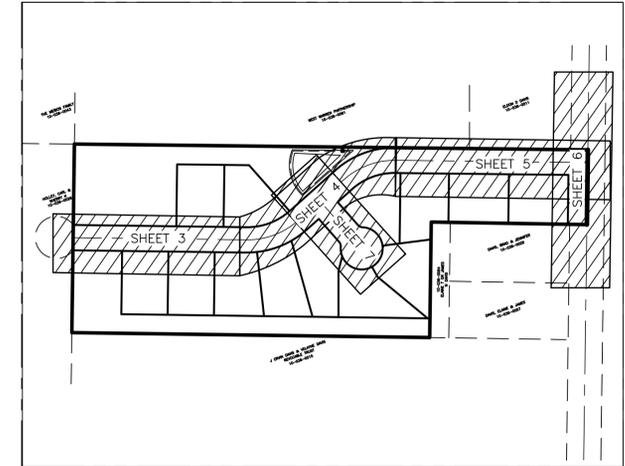
- 1) 4/8/16 CK - COMPLETED DESIGN FOR CLIENT & CITY REVIEW.
- 2) 9/20/16 CK - UPDATED PER COUNTY COMMENTS.
- 3) 12/13/16 ER - UPDATED PER COUNTY COMMENTS.
- 4) 12/22/16 CK - UPDATED PER COUNTY COMMENTS.
- 5) 1/24/17 KH - UPDATED PER COUNTY COMMENTS.
- 6) 2/2/17 KH - UPDATED PER DEQ COMMENTS.

Vaquero Village Cluster Subdivision Phase 1 Improvement Plans

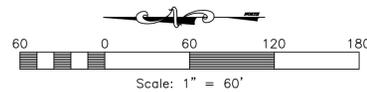
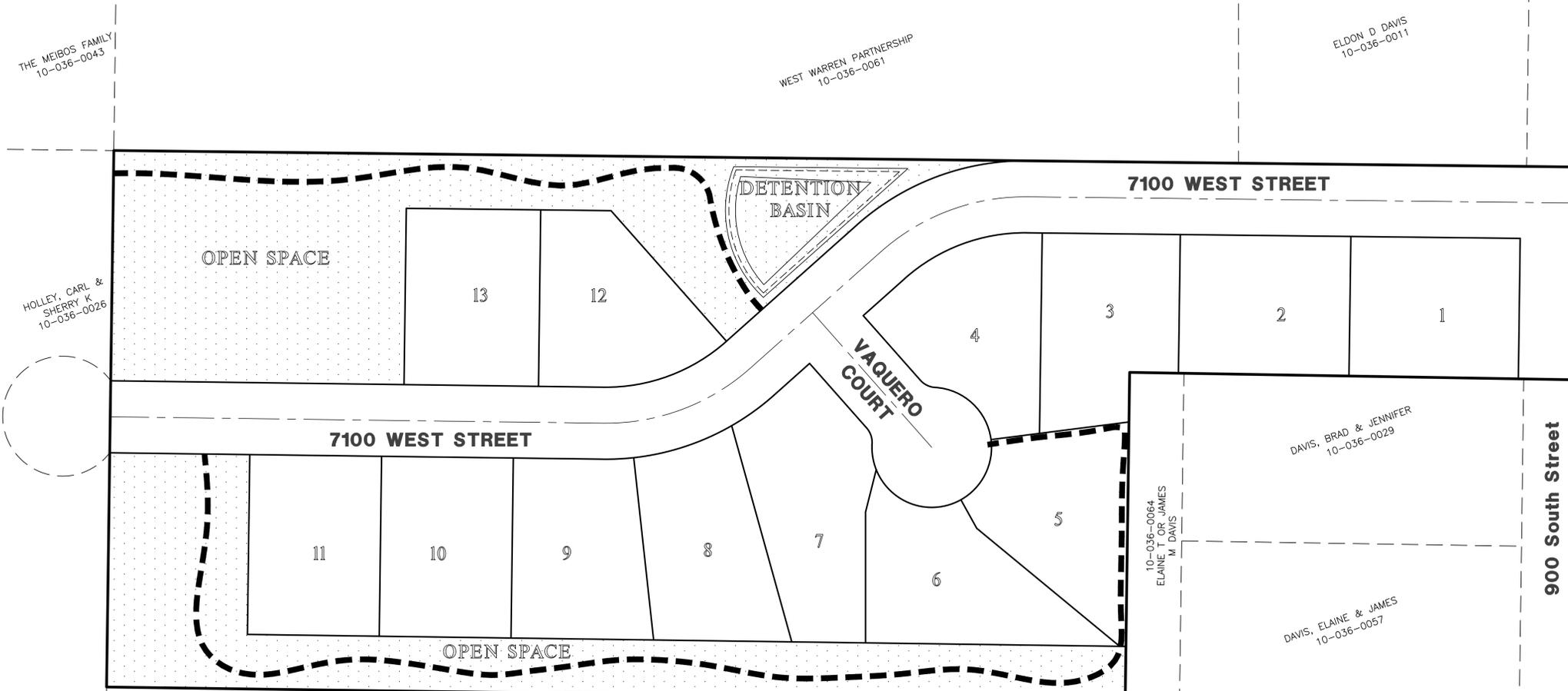
WEBER COUNTY, UTAH
APRIL, 2016



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 - 7100 West 5+00.00 - 9+53.70
- Sheet 4 - 7100 West 9+53.70 - 14+09.56
- Sheet 5 - 7100 West 14+09.56 - 19+50.00
- Sheet 6 - 900 South St. 6+00.00 - 8+50.00
- Sheet 7 - Vaquero Court 5+00.00 - 7+50.00
- Sheet 8 - Grading & Drainage Plan
- Sheet 9 - Utility & Irrigation Plan
- Sheet 10 - Irrigation Reservoir Exhibit
- Sheet B - Storm Water Pollution Prevention Plan Exhibit
- Sheet M - Storm Water Pollution Prevention Plan Details
- Sheet 11 - Landscape
- Sheet 12 - Landscape Details

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:

Barrow Land Livestock, LLC
Dean & Justin Barrow
6835 W. 900 S.
Ogden, UT. 84404
(801) 514-8194

Blue Stakes Location Center

Call: Toll Free
1-800-662-4111
Two Working Days Before You Dig



REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

**Vaquero Village Cluster Subdivision
Phase 1**
WEBER COUNTY, UTAH
Cover/Index Sheet



Project Info.
Engineer: J. NATE REEVE
Drafted: C. KINGSLEY
Begin Date: 4-4-16
Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
Number: 6352-01

Sheet **12**
1 Sheets

Revised: 1-27-17

1/4/2016 10:03:00 AM G:\6352\01 - Parcel 100360013\Improvements\Barrow Imp 1.dwg

General Notes:

- ALL CONSTRUCTION MUST STRICTLY FOLLOW THE STANDARDS AND SPECIFICATIONS SET FORTH BY: GOVERNING UTILITY MUNICIPALITY, GOVERNING CITY OR COUNTY (IF UN-INCORPORATED), INDIVIDUAL PRODUCT MANUFACTURERS, AMERICAN PUBLIC WORKS ASSOCIATION (APWA), AND THE DESIGN ENGINEER. THE ORDER LISTED ABOVE IS ARRANGED BY SENIORITY. IF A CONSTRUCTION PRACTICE IS NOT SPECIFIED BY ANY OF THE LISTED SOURCES, CONTRACTOR MUST CONTACT DESIGN ENGINEER FOR DIRECTION.
- CONTRACTOR TO STRICTLY FOLLOW GEOTECHNICAL RECOMMENDATIONS FOR THIS PROJECT. ALL GRADING INCLUDING BUT NOT LIMITED TO CUT, FILL, COMPACTION, ASPHALT SECTION, SUBBASE, TRENCH EXCAVATION/BACKFILL, SITE GRUBBING, RETAINING WALLS AND FOOTINGS MUST BE COORDINATED DIRECTLY WITH THE PROJECT GEOTECHNICAL ENGINEER.
- TRAFFIC CONTROL, STRIPING & SIGNAGE TO CONFORM TO CURRENT GOVERNING AGENCIES TRANSPORTATION ENGINEER'S MANUAL AND MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.
- CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.
- AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES.
- PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED THOROUGHLY REVIEWED PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
- CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND NOTIFYING ENGINEER OR INSPECTING AUTHORITY 48 HOURS IN ADVANCE OF COVERING UP ANY PHASE OF CONSTRUCTION REQUIRING OBSERVATION.
- ANY WORK IN THE PUBLIC RIGHT-OF-WAY WILL REQUIRE PERMITS FROM THE APPROPRIATE CITY, COUNTY OR STATE AGENCY CONTROLLING THE ROAD, INCLUDING OBTAINING REQUIRED INSPECTIONS.
- ALL DIMENSIONS, GRADES & UTILITY DESIGNS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES.
- CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING AND BRING UP ANY QUESTIONS BEFOREHAND.
- SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH BY THE GEOTECHNICAL ENGINEER.
- CATCH SLOPES SHALL BE GRADED AS SPECIFIED ON GRADING PLANS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FLAGGING, CAUTION SIGNS, LIGHTS, BARRICADES, FLAGMEN, AND ALL OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
- CONTRACTOR SHALL, AT THE TIME OF BIDDING AND THROUGHOUT THE PERIOD OF THE CONTRACT, BE LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE BONDED FOR AN AMOUNT EQUAL TO OR GREATER THAN THE AMOUNT BID AND TO DO THE TYPE OF WORK CONTEMPLATED IN THE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PLANS AND SPECIFICATIONS.
- 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 OF THE LOCATIONS OF THE PROPOSED WORK AND OF THE ACTUAL CONDITIONS OF AND AT THE SITE OF WORK. IF, DURING THE COURSE OF HIS EXAMINATION, A BIDDER FINDS FACTS OR CONDITIONS WHICH APPEAR TO HIM TO BE IN CONFLICT WITH THE LETTER OR SPIRIT OF THE PROJECT PLANS AND SPECIFICATIONS, HE SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION AND EXPLANATION BEFORE SUBMITTING HIS BID. SUBMISSION OF A BID BY THE CONTRACTOR SHALL CONSTITUTE ACKNOWLEDGMENT THAT, IF AWARDED THE CONTRACT, HE HAS RELIED AND IS RELYING ON HIS OWN EXAMINATION OF (1) THE SITE OF THE WORK, (2) ACCESS TO THE SITE, AND (3) ALL OTHER DATA AND MATTERS REQUISITE TO THE FULFILLMENT OF THE WORK AND ON HIS OWN KNOWLEDGE OF EXISTING FACILITIES ON AND IN THE VICINITY OF THE SITE OF THE WORK TO BE CONSTRUCTED UNDER THIS CONTRACT. THE INFORMATION PROVIDED BY THE ENGINEER IS NOT INTENDED TO BE A SUBSTITUTE FOR, OR A SUPPLEMENT TO, THE INDEPENDENT VERIFICATION BY THE CONTRACTOR TO THE EXTENT SUCH INDEPENDENT INVESTIGATION OF SITE CONDITIONS IS DEEMED NECESSARY OR DESIRABLE BY THE CONTRACTOR. CONTRACTOR SHALL ACKNOWLEDGE THAT HE HAS NOT RELIED SOLELY UPON OWNER- OR ENGINEER-FURNISHED INFORMATION REGARDING SITE CONDITIONS IN PREPARING AND SUBMITTING HIS BID.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION.
- CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER, ENGINEER, AND/OR GOVERNING AGENCIES.
- CONTRACTOR SHALL EXERCISE DUE CAUTION AND SHALL CAREFULLY PRESERVE BENCH MARKS, CONTROL POINTS, REFERENCE POINTS AND ALL SURVEY STAKES, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT AND/OR ERRORS CAUSED BY THEIR UNNECESSARY LOSS OR DISTURBANCE.
- CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT. ALL TESTING SHALL CONFORM TO THE REGULATORY AGENCY'S STANDARD SPECIFICATIONS. ALL TESTING AND INSPECTION SHALL BE PAID FOR BY THE OWNER; ALL RE-TESTING AND/OR RE-INSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.
- IF EXISTING IMPROVEMENTS NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE. COST OF REPLACING OR REPAIRING EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT. THERE WILL BE NO EXTRA COST DUE TO THE CONTRACTOR FOR REPLACING OR REPAIRING EXISTING IMPROVEMENTS.
- WHENEVER EXISTING FACILITIES ARE REMOVED, DAMAGED, BROKEN, OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS OR SPECIFICATIONS, SAID FACILITIES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH MATERIALS EQUAL TO OR BETTER THAN THE MATERIALS USED IN THE ORIGINAL EXISTING FACILITIES. THE FINISHED PRODUCT SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER, THE ENGINEER, AND THE RESPECTIVE REGULATORY AGENCY.
- 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. AS-BUILT RECORD DRAWINGS SHALL REFLECT CHANGE ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ALL IMPROVEMENTS CONSTRUCTED, WHERE NECESSARY, SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR. PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER ONE SET OF NEATLY MARKED AS-BUILT RECORD DRAWINGS SHOWING THE INFORMATION REQUIRED ABOVE. AS-BUILT RECORD DRAWINGS SHALL BE REVIEWED AND THE COMPLETE AS-BUILT RECORD DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS REDLINED AS A PRECONDITION TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.
- WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE HIGHEST QUALITY ARE TO BE USED.
- CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PROJECT PLANS AND SPECIFICATIONS. THEREFORE, THE OWNER IS RELYING UPON THE EXPERIENCE AND EXPERTISE OF THE CONTRACTOR. PRICES PROVIDED WITHIN THE CONTRACT DOCUMENTS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THE TRUE INTENT AND PURPOSE OF THESE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE COMPETENT, KNOWLEDGEABLE AND HAVE SPECIAL SKILLS IN THE NATURE, EXTENT AND INHERENT CONDITIONS OF THE WORK TO BE PERFORMED. CONTRACTOR SHALL ALSO ACKNOWLEDGE THAT THERE ARE CERTAIN PECULIAR AND INHERENT CONDITIONS EXISTENT IN THE CONSTRUCTION OF THE PARTICULAR FACILITIES WHICH MAY CREATE, DURING THE CONSTRUCTION PROGRAM, UNUSUAL OR UNSAFE CONDITIONS HAZARDOUS TO PERSONS, PROPERTY AND THE ENVIRONMENT. CONTRACTOR SHALL BE AWARE OF ALL SUCH CONDITIONS AND HAVE THE SKILL AND EXPERIENCE TO FORESEE AND TO ADOPT PROTECTIVE MEASURES TO ADEQUATELY AND SAFELY PERFORM THE CONSTRUCTION WORK WITH RESPECT TO SUCH HAZARDS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL STRIPING AND/OR PAVEMENT MARKINGS NECESSARY TO THE EXISTING STRIPING INTO FUTURE STRIPING. METHOD OF REMOVAL SHALL BE BY GRINDING OR SANDBLASTING.
- 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. FOR EXCAVATIONS 4 FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL COMPLY WITH LOCAL, STATE AND NATIONAL SAFETY CODES, ORDINANCES, OR REQUIREMENTS FOR EXCAVATION AND TRENCHES.
- ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL GATES AND FENCES FROM DAMAGE

Utility Notes:

- CONTRACTOR SHALL COORDINATE LOCATION OF NEW "DRY UTILITIES" WITH THE APPROPRIATE UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO: TELEPHONE SERVICE, GAS SERVICE, CABLE, POWER, INTERNET.
- EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS USING A COMBINATION OF ON-SITE SURVEYS (BY OTHERS), PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE IN THE FIELD, THEIR MAIN AND SERVICE LINES 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK. THE CONTRACTOR SHALL RECORD THE BLUE STAKES ORDER NUMBER AND FURNISH ORDER NUMBER TO OWNER AND ENGINEER PRIOR TO ANY EXCAVATION. IT WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO DIRECTLY CONTACT ANY OTHER UTILITY COMPANIES THAT ARE NOT MEMBERS OF BLUE STAKES. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF THIS CONTRACT. ANY REPAIRS NECESSARY TO DAMAGED UTILITIES SHALL BE PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES INSTALLING NEW STRUCTURES, UTILITIES AND SERVICE TO THE PROJECT.
- CONTRACTOR SHALL NOT HOLE ALL UTILITIES TO DETERMINE IF CONFLICTS EXIST PRIOR TO BEGINNING ANY EXCAVATION. NOTIFY ENGINEER OF ANY CONFLICTS. CONTRACTOR SHALL VERIFY LOCATION AND INVERTS OF EXISTING UTILITIES TO WHICH NEW UTILITIES WILL BE CONNECTED. PRIOR TO COMMENCING ANY EXCAVATION WORK THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE REQUIRED PROCEDURES.
- CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT HIS EXPENSE.
- ALL VALVES AND MANHOLE COVERS SHALL BE RAISED OR LOWERED TO MEET FINISHED GRADE.
- CONTRACTOR SHALL CUT PIPES OFF WITH THE INSIDE WALL OF THE BOX OR MANHOLE.
- CONTRACTOR SHALL GROUT AT CONNECTION OF PIPE TO BOX WITH NON-SHRINKING GROUT, INCLUDING PIPE VOIDS LEFT BY CUTTING PROCESS, TO A SMOOTH FINISH.
- CONTRACTOR SHALL GROUT WITH NON-SHRINK GROUT BETWEEN GRADE RINGS AND BETWEEN BOTTOM OF INLET LID FRAME AND TOP OF CONCRETE BOX
- SILT AND DEBRIS IS TO BE CLEANED OUT OF ALL STORM DRAIN BOXES. CATCH BASINS ARE TO BE MAINTAINED IN A CLEANED CONDITION AS NEEDED UNTIL AFTER THE FINAL BOND RELEASE INSPECTION.
- CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS
- EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED. THE TRENCH WALL SHALL BE SO BRACED THAT THE WORKMEN MAY WORK SAFELY AND EFFICIENTLY. ALL TRENCHES SHALL BE DRAINED SO THE PIPE LAYING MAY TAKE PLACE IN DE-WATERED CONDITIONS.
- 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.
- MAINTAIN A MINIMUM 18" VERTICAL SEPARATION DISTANCE BETWEEN ALL UTILITY CROSSINGS.
- CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES.
- ALL BOLTED FITTINGS MUST BE GREASED AND WRAPPED.
- UNLESS SPECIFICALLY NOTED OTHERWISE, MAINTAIN AT LEAST 2 FEET OF COVER OVER ALL STORM DRAIN LINES AT ALL TIMES (INCLUDING DURING CONSTRUCTION).
- ALL WATER LINES SHALL BE INSTALLED A MINIMUM OF 60" BELOW FINISHED GRADE.
- ALL SEWER LINES AND SEWER SERVICES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET. PIPE EDGE TO PIPE EDGE FROM ALL WATER LINES. IF A 10 FOOT SEPARATION CAN NOT BE MAINTAINED, THE SEWER LINE AND WATER LINE SHALL BE LAID IN SEPARATE TRENCHES AND THE BOTTOM OF THE WATER LINE SHALL BE AT LEAST 18" ABOVE THE TOP OF THE SEWER LINE.
- CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE TEES, BENDS, PLUGS, AND HYDRANTS.
- ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.
- CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.

Culinary Water Notes:

- ALL MATERIALS THAT MAY COME IN CONTACT WITH DRINKING WATER, INCLUDING PIPES, GASKETS, LUBRICANTS AND O-RINGS, SHALL BE ANSI-CERTIFIED AS MEETING THE REQUIREMENTS OF ANSI/NSF STANDARD 61, DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS, TO PERMIT FIELD-VERIFICATION OF THIS CERTIFICATION, ALL COMPONENTS SHALL BE APPROPRIATELY STAMPED WITH THE NSF LOGO.
- PIPE, JOINTS, FITTINGS, VALVES, AND FIRE HYDRANTS SHALL CONFORM TO ANSI/NSF STANDARD 61, AND APPLICABLE SECTIONS OF AWWA STANDARDS C104-A21.4-08 THROUGH C550-05 AND C900-07 THROUGH C950-07.
- ONLY MATERIALS THAT HAVE BEEN USED PREVIOUSLY FOR CONVEYING DRINKING WATER MAY BE REUSED. USED MATERIALS SHALL MEET THE ABOVE STANDARDS, BE THOROUGHLY CLEANED, AND BE RESTORED TO THEIR ORIGINAL CONDITION.
- FOR INSTALLATION OF PVC PIPE WATER MAINS SEE ASTM D2774. RECOMMENDED PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PRESSURE PIPING AND PVC PIPE AND AWWA MANUAL OF PRACTICE M23, 2003.
- A CONTINUOUS AND UNIFORM BEDDING SHALL BE PROVIDED IN THE TRENCH FOR ALL BURIED PIPE. STONES LARGER THAN THE BACKFILL MATERIALS DESCRIBED BELOW SHALL BE REMOVED FOR A DEPTH OF AT LEAST 6" BELOW THE BOTTOM OF THE PIPE. BACKFILL MATERIAL SHALL BE TAMPED IN LAYERS AROUND THE PIPE AND TO A SUFFICIENT HEIGHT ABOVE THE PIPE TO ADEQUATELY SUPPORT AND PROTECT THE PIPE. THE MATERIAL AND BACKFILL ZONES SHALL BE AS SPECIFIED BY THE STANDARDS REFERENCED IN #4 ABOVE.
- UNDER NO CIRCUMSTANCES SHALL THE PIPE OR ACCESSORIES BE DROPPED INTO THE TRENCH.
- PIPE SHALL BE PRESSURE TESTED AND LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARD C600-10.
- THE OPEN ENDS OF ALL WATERLINE UNDER CONSTRUCTION SHALL BE COVERED AND EFFECTIVELY SEALED AT THE END OF THE DAY'S WORK.
- ALL NEW WATER MAINS OR APPURTENANCES SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651-05 OR A METHOD APPROVED BY THE DIRECTOR. THE SPECIFICATIONS SHALL INCLUDE DETAILED PROCEDURES FOR THE ADEQUATE FLUSHING, DISINFECTION AND MICROBIOLOGICAL TESTING OF ALL WATER MAINS. ON ALL NEW AND EXTENSIVE DISTRIBUTION SYSTEM CONSTRUCTION, EVIDENCE OF SATISFACTORY DISINFECTION SHALL BE PROVIDED TO THE DIVISION. SAMPLES FOR COLIFORM ANALYSES SHALL BE COLLECTED AFTER DISINFECTION IS COMPLETE AND THE SYSTEM IS REFILLED WITH DRINKING WATER. A STANDARD HETEROTROPHIC PLATE COUNT IS ADVISABLE. THE USE OF WATER FOR PUBLIC DRINKING WATER PURPOSES SHALL NOT COMMENCE UNTIL THE BACTERIOLOGIC TESTS INDICATE THE WATER IS FREE FROM CONTAMINATION.

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.

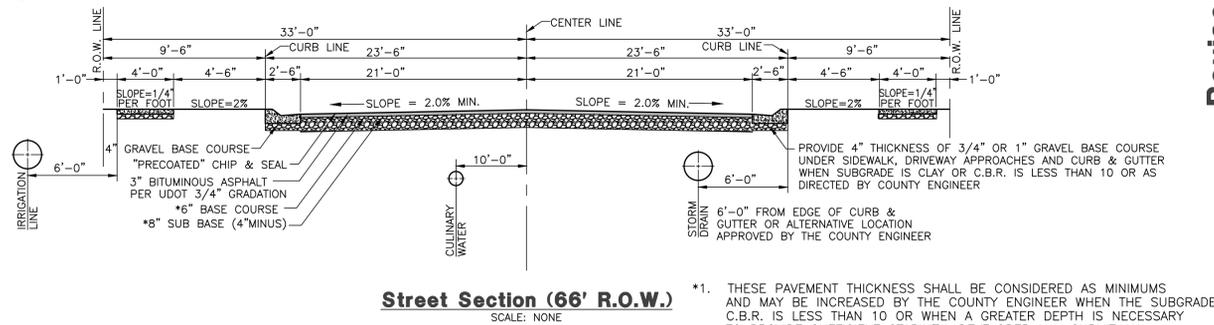
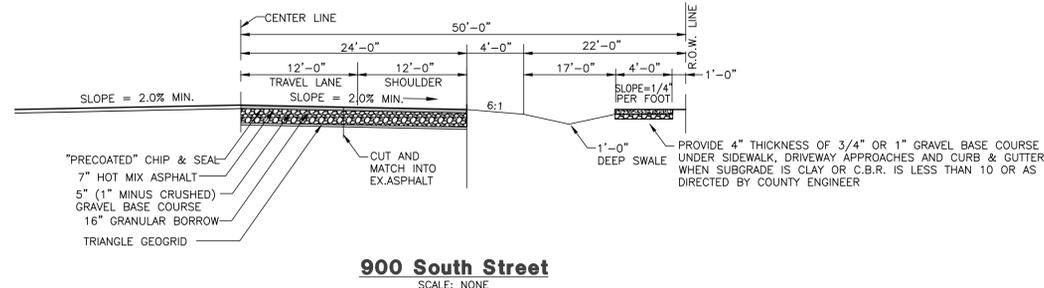
EXPOSED SLOPES:

ANY EXPOSED SLOPE THAT WILL REMAIN UNTOUCHED FOR LONGER THAN 14 DAYS MUST BE STABILIZED BY ONE OR MORE OF THE FOLLOWING METHODS:

- SPRAYING DISTURBED AREAS WITH A TACKIFIER VIA HYDROSEED
- TRACKING STRAW PERPENDICULAR TO SLOPES
- INSTALLING A LIGHT-WEIGHT, TEMPORARY EROSION CONTROL BLANKET

Legend

—W—	= PROPOSED CULINARY WATER LINE	FC	= FENCE CORNER
—EX.W—	= EXISTING CULINARY WATER LINE	FF	= FINISH FLOOR
—SS—	= PROPOSED SANITARY SEWER LINE	FFE	= FINISH FLOOR ELEVATION
—EX.SS—	= EXISTING SANITARY SEWER LINE	FG	= FINISHED GRADE
—SD—	= PROPOSED STORM DRAIN LINE	FH	= FIRE HYDRANT
—EX.SD—	= EXISTING STORM DRAIN LINE	FL	= FLOW LINE
—X—X—	= FENCE LINE	GB	= GRADE BREAK
— — — —	= TRAIL	INV	= INVERT
●	= PROPOSED FIRE HYDRANT	L.F.	= LINEAR FBET
○	= EXISTING FIRE HYDRANT	NG	= NATURAL GRADE
○	= PROPOSED MANHOLE	PP	= POWER/UTILITY POLE
○	= EXISTING MANHOLE	P.U.E.	= PUBLIC UTILITY BASEMENT
●	= PROPOSED SEWER CLEAN-OUT	RCP	= REINFORCED CONCRETE PIPE
X	= PROPOSED GATE VALVE	RIM	= RIM OF MANHOLE
X	= EXISTING GATE VALVE	R.O.W.	= RIGHT-OF-WAY
■	= PROPOSED WATER METER	SD	= STORM DRAIN
■	= EXISTING WATER METER	SS	= SANITARY SEWER
■	= PROPOSED CATCH BASIN	TBC	= TOP BACK OF CURB
■	= EXISTING CATCH BASIN	TOA	= TOP OF ASPHALT
■	= PLUG W/ 2" BLOW-OFF	TOC	= TOP OF CONCRETE
■	= PLUG & BLOCK	TOFF	= TOP OF FINISHED FLOOR
○	= STREET LIGHT	TOI	= TOP OF PUMP ISLAND
—	= SIGN	TSW	= TOP OF SIDEWALK
BLDG	= BUILDING	W	= CULINARY WATER
C&G	= CURB & GUTTER	WM	= WATER METER
CB	= CATCH BASIN		= EXISTING ASPHALT PAVEMENT
C.F.	= CUBIC FEET		= PROPOSED ASPHALT PAVEMENT
C.F.S.	= CUBIC FEET PER SECOND		= PROPOSED CONCRETE
			= PROPOSED CONCRETE PAVING OR ALTERNATE BID PAVING



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REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
1-2-22-16	CK	Storm Drain
1-2-22-17	KH	Storm Drain
2-2-17	KH	DEQ comments

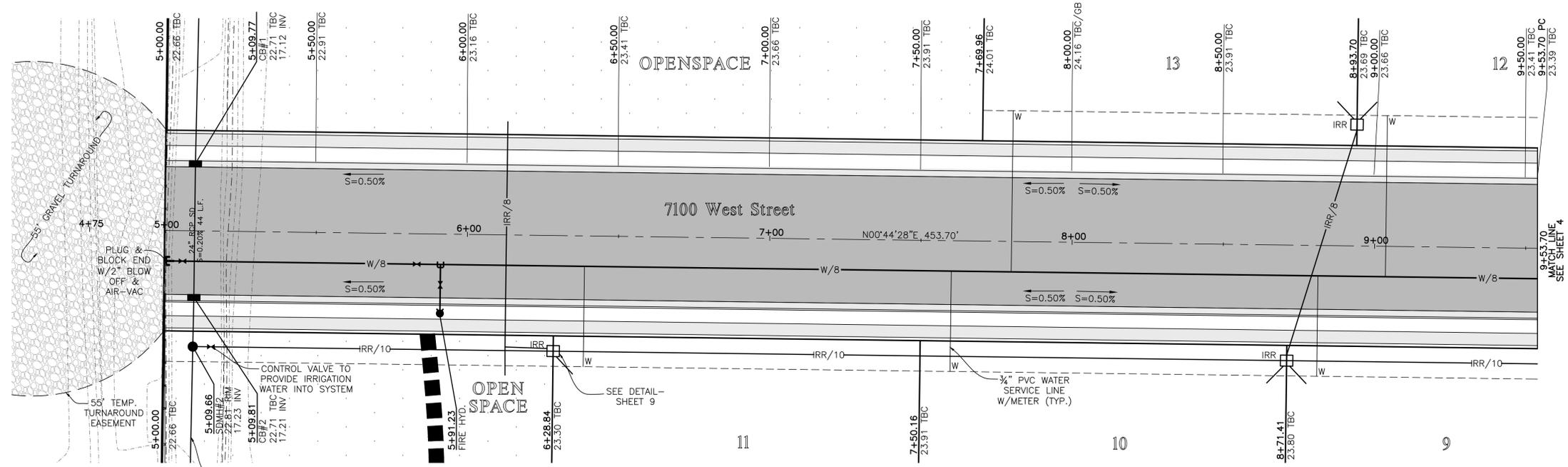
Vaquero Village Cluster Subdivision Phase 1
 WEBER COUNTY, UTAH

Notes/Legend/ Street Cross-Section

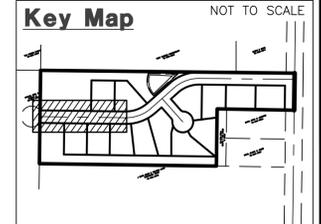
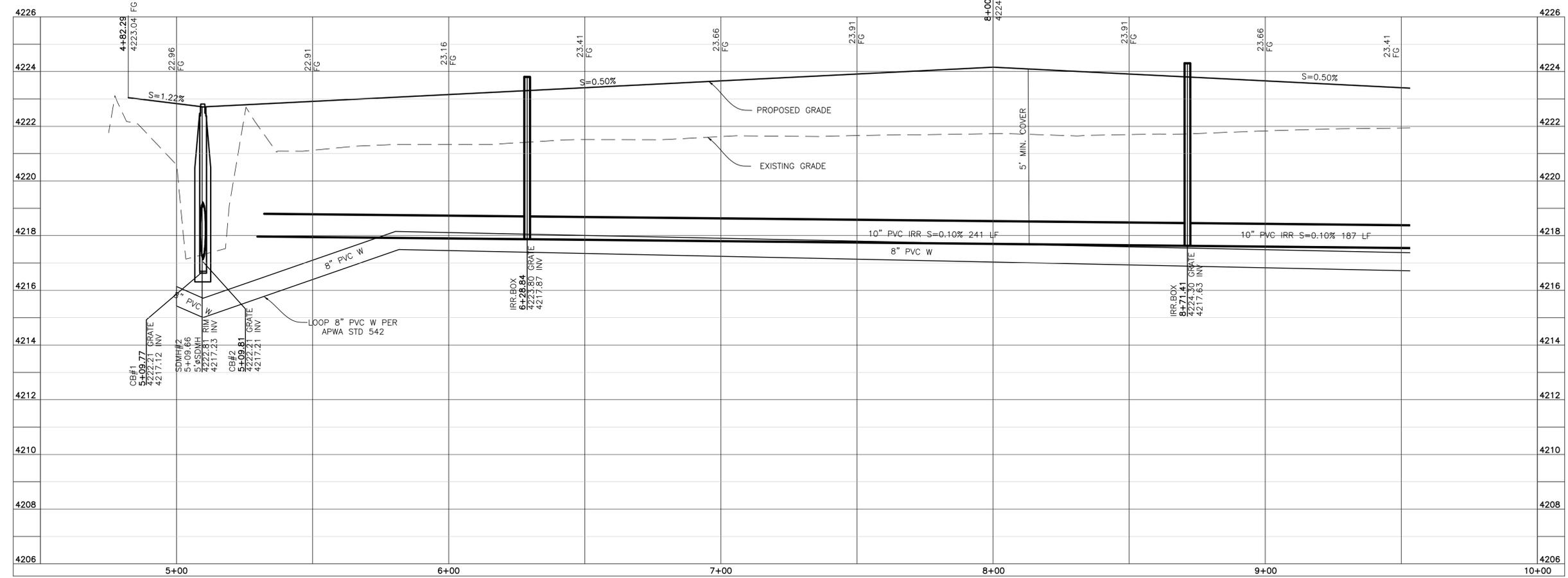
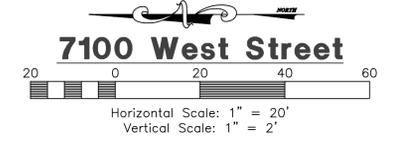
REGISTERED PROFESSIONAL ENGINEER
 375328
 J. NATE REEVE
 STATE OF UTAH

Project Info.
 Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

Sheet **2** of 12 Sheets



EX. IRRIGATION & DRAINAGE DITCH TO BE PIPED, DITCH TIES TO IRRIGATION & DRAINAGE SYSTEM WHICH CONNECTS TO LARGE IRRIGATION RESERVOIR - SEE SHEET 10



Construction Notes:

- 1) ALL CONSTRUCTION IS TO CONFORM TO THE STANDARD DRAWINGS AND SPECIFICATIONS OF WEBER COUNTY.
 - 2) CONSTRUCT HANDICAP RAMP PER ADA AND COUNTY REQUIREMENTS.
- CULINARY WATER**
W/8 - 8" PVC C-900 CLASS 200 WATER
W/10 - 10" PVC C-900 CLASS 200 WATER
- SANITARY SEWER**
SS/8 - 8" PVC SDR-35 SEWER LINE
SS/10 - 10" PVC SDR-35 SEWER LINE
- STORM DRAIN**
SD/15 - 15" RCP STORM DRAIN
SD/18 - 18" RCP STORM DRAIN
- IRRIGATION**
IRR/6 - 6" PVC C-900 IRRIGATION LINE
IRR/8 - 8" PVC C-900 IRRIGATION LINE
IRR/10 - 10" PVC C-900 IRRIGATION LINE

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REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
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12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH

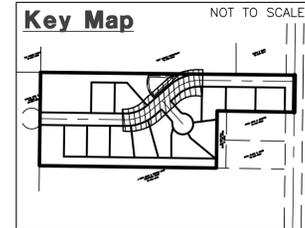
7100 West Street
5+00.00 - 9+53.70



Project Info.

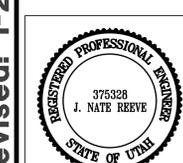
Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

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



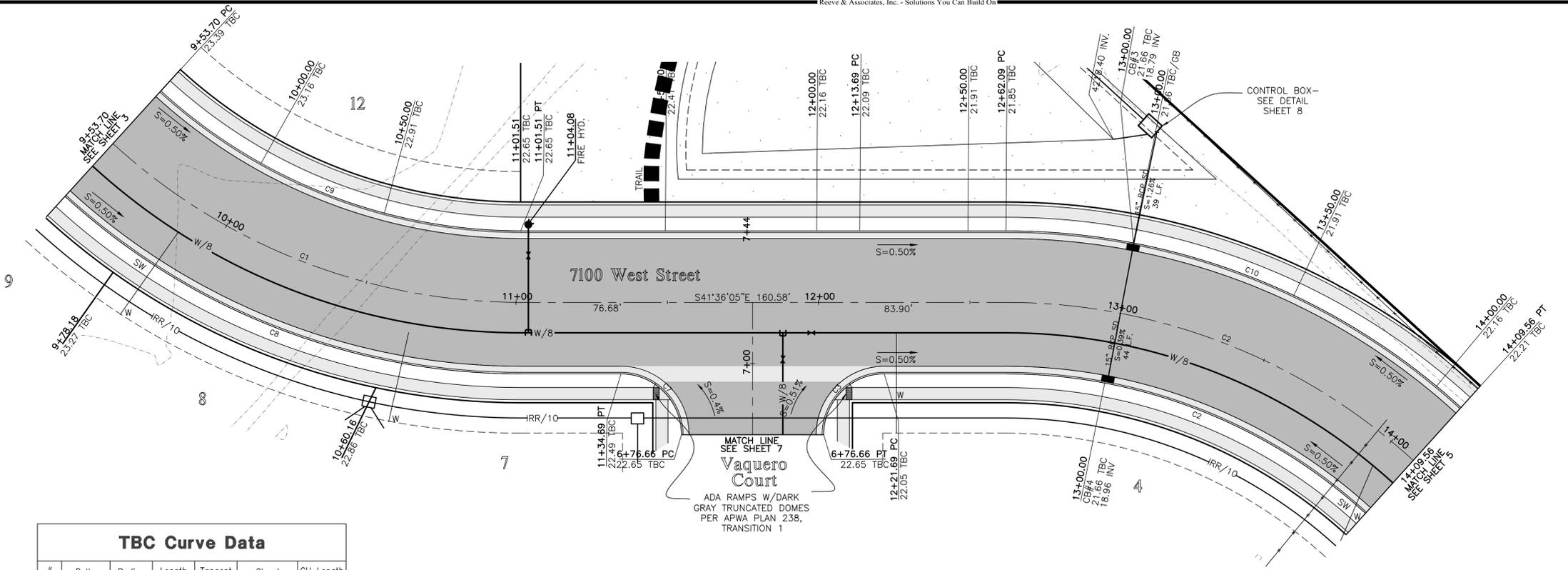
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Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH
7100 West Street
9+53.70 - 14+09.56



Project Info.
 Engineer: J. NATE REEVE
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 Begin Date: 4-4-16
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 Number: 6352-01

Sheet **4** of **12** Sheets



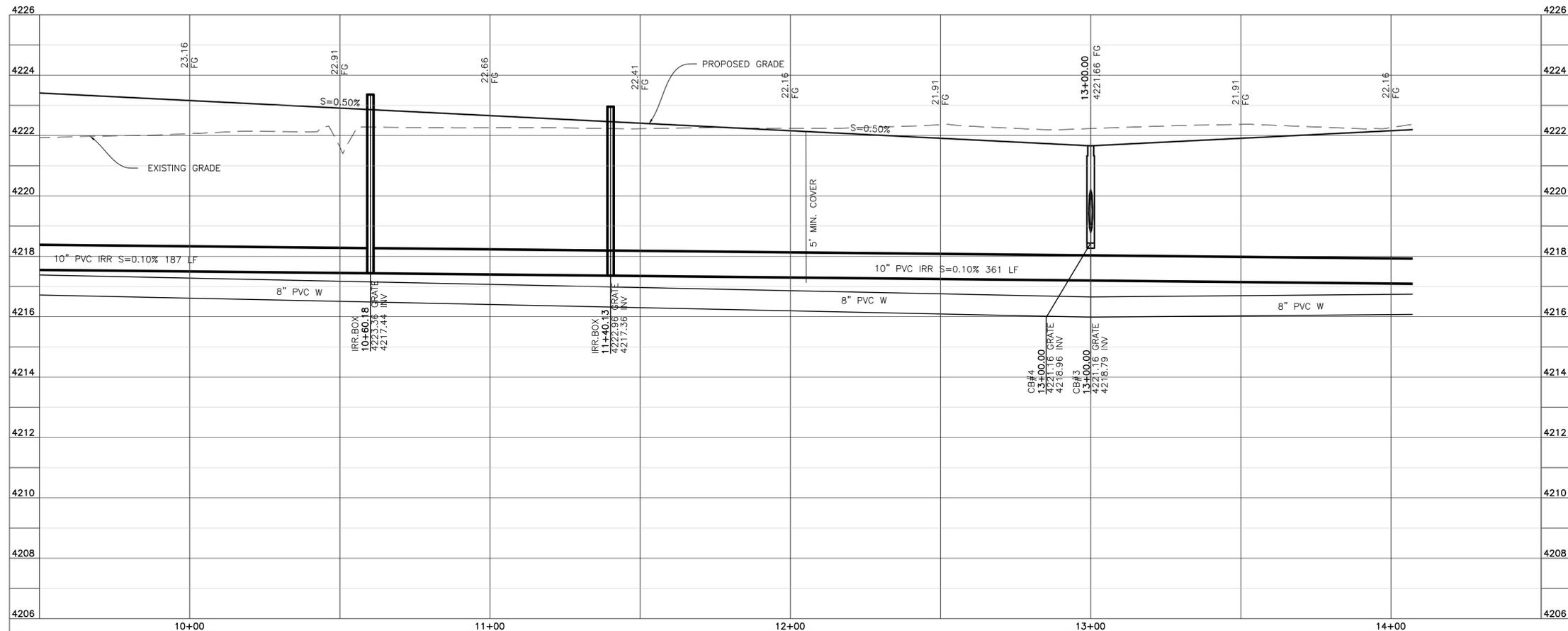
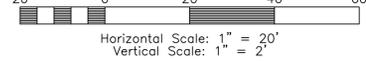
TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C2	42°14'48"	176.50'	130.14'	68.19'	S20°28'41"E	127.21'
C3	90°00'00"	20.00'	31.42'	20.00'	N86°36'05"W	28.28'
C7	90°00'00"	20.00'	31.42'	20.00'	N3°23'55"E	28.28'
C8	42°20'33"	223.50'	165.17'	86.56'	S20°25'48"E	161.44'
C9	42°20'33"	176.50'	130.44'	68.36'	N20°28'41"W	127.49'
C10	42°14'48"	223.50'	164.80'	86.35'	N20°28'41"W	161.09'

Centerline Curve Data

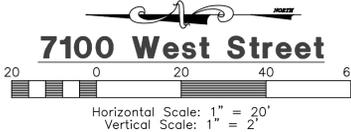
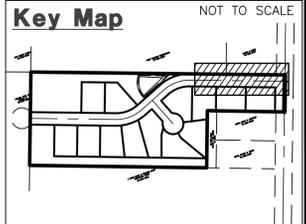
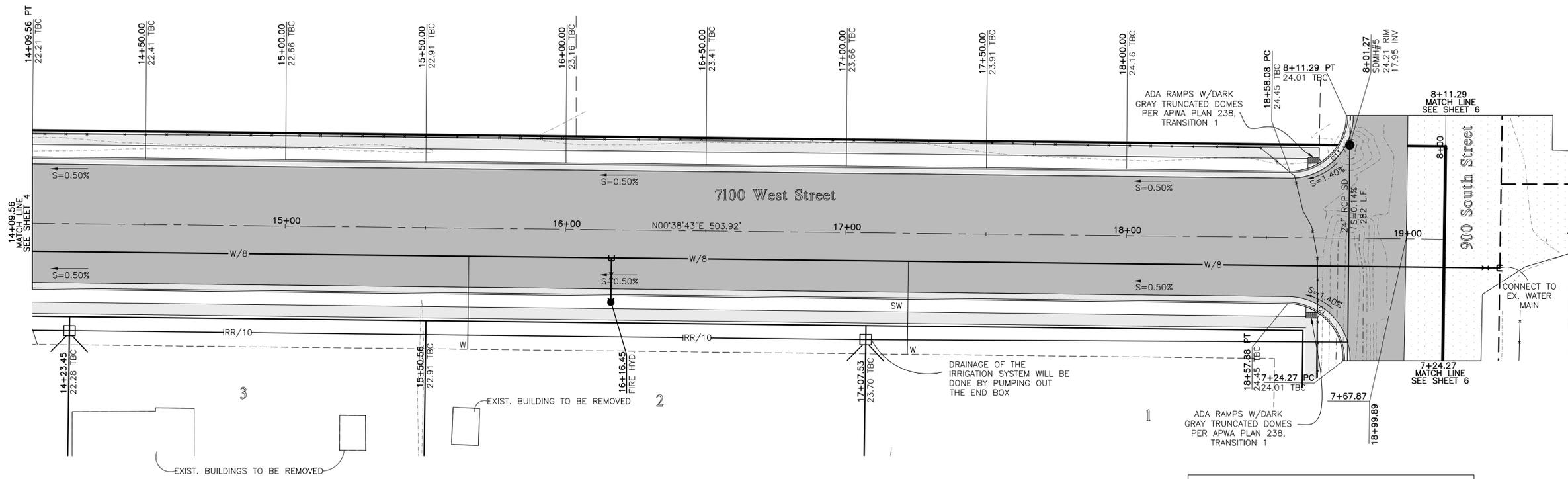
#	Delta	Radius	Length	Tangent	Chord	CH Length
C1	42°20'33"	200.00'	147.80'	77.46'	S20°25'48"E	144.46'
C2	42°14'48"	200.00'	147.47'	77.27'	S20°28'41"E	144.15'

7100 West Street



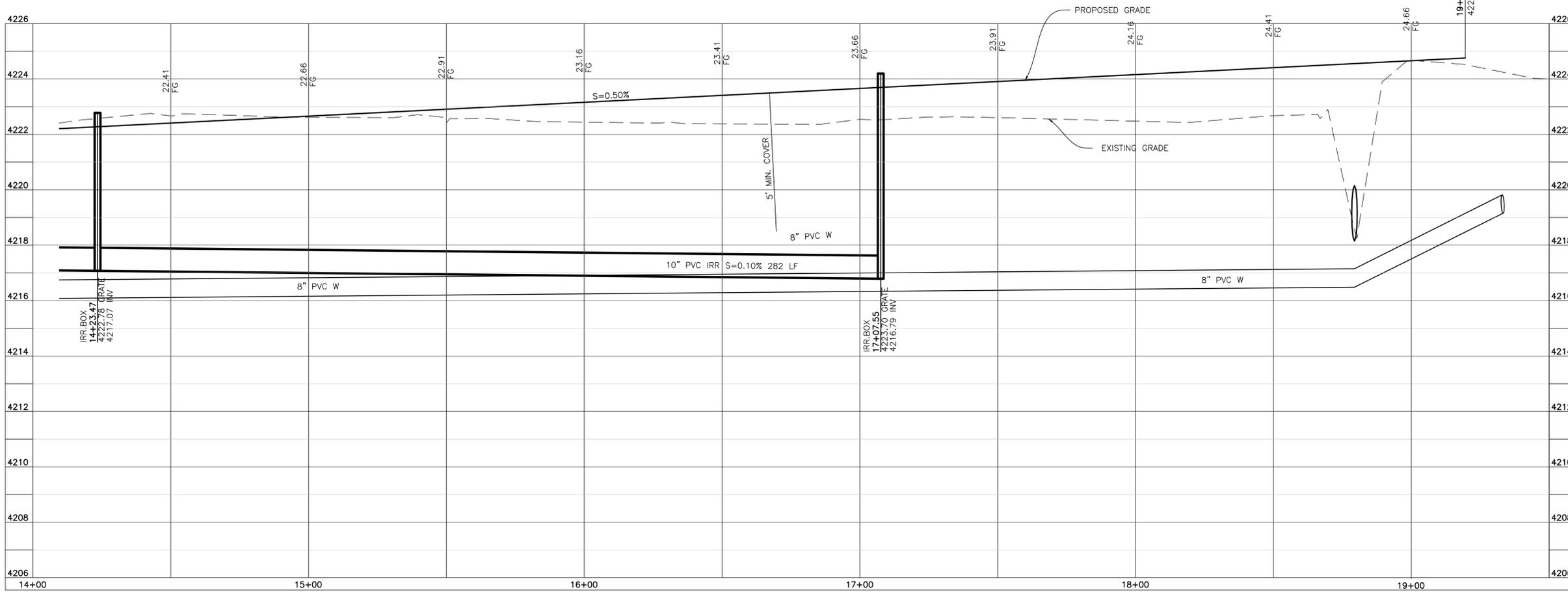
Blue Stakes Location Center
Call: Toll Free
1-800-662-4111
 Two Working Days Before You Dig

Revised: 1-27-17



TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C1	90°07'58"	20.00'	31.46'	20.05'	S45°42'42"W	28.32'
C11	89°52'55"	20.00'	31.37'	19.96'	N44°17'45"W	28.26'



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REVISIONS

DATE	DESCRIPTION
09-20-16	CK County Comments
12-13-16	ER County Comments
12-22-16	CK Storm Drain
1-24-17	KH Storm Drain
2-2-17	KH DEQ comments

Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH
7100 West Street
14+09.56 - 19+50.00

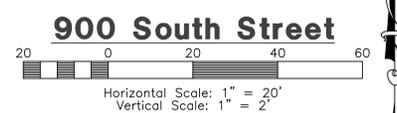
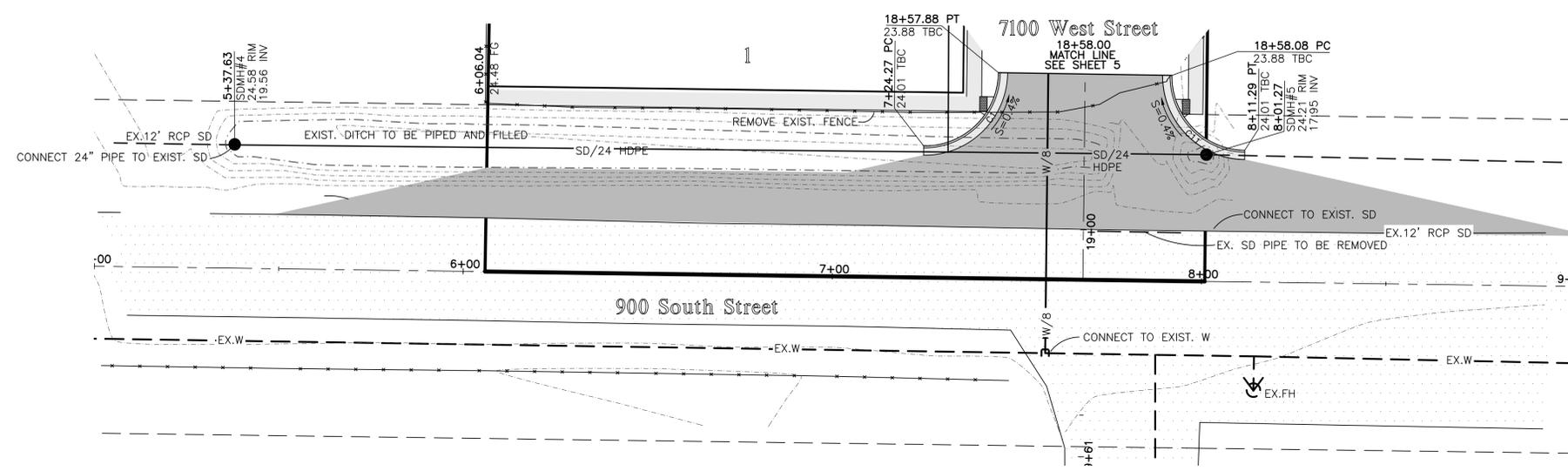


Project Info.
 Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

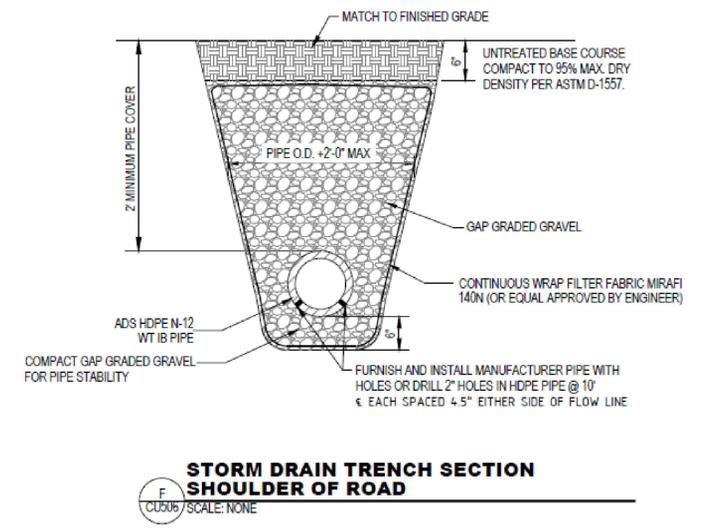
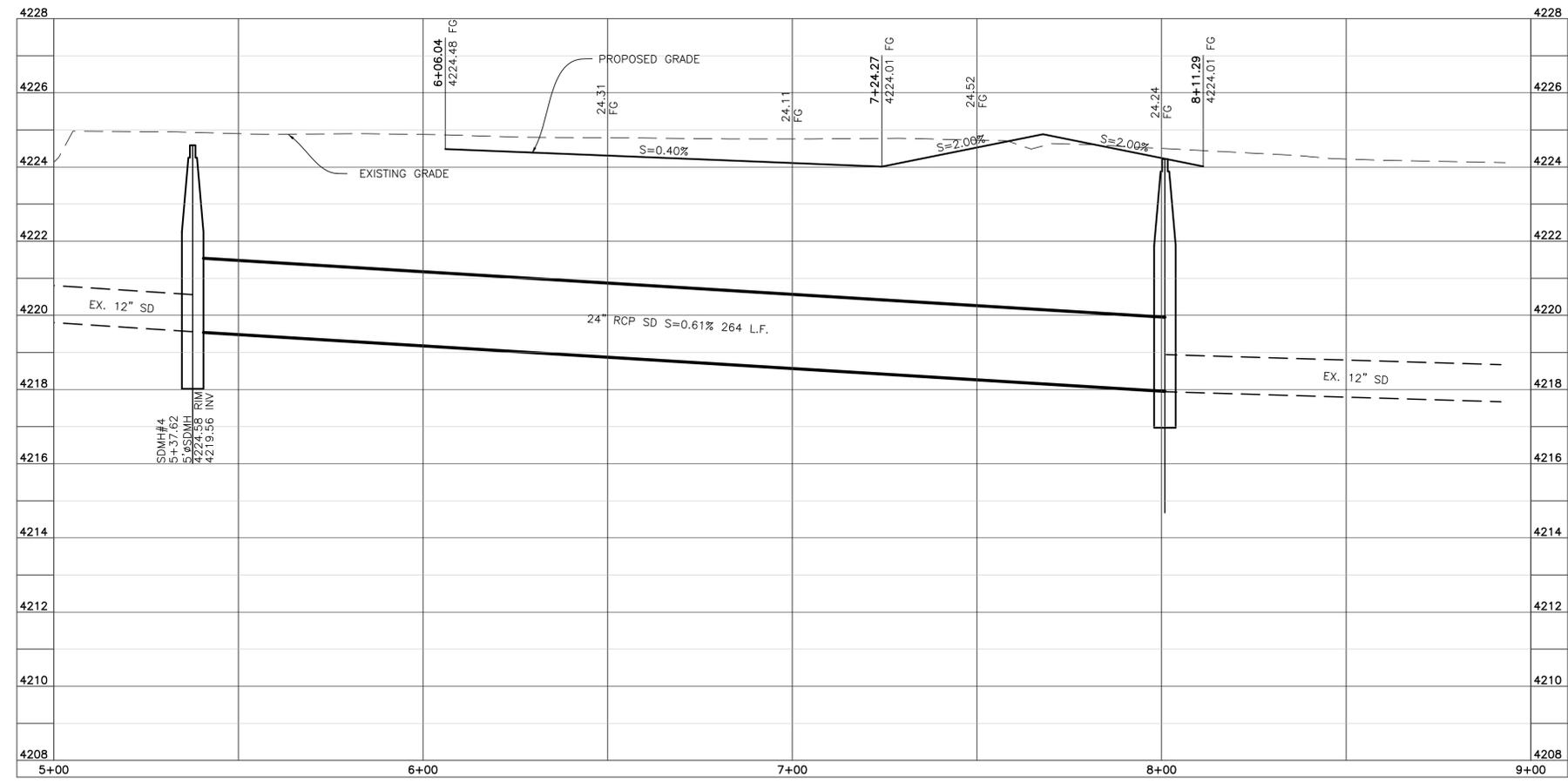
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Sheet **12**
 5 Sheets

1/4/2016 | khunter | G:\6352\01 - Parcel 100360013\Improvements\Barrow imp 1.dwg



#	Delta	Radius	Length	Tangent	Chord	CH Length
C1	90°07'58"	20.00'	31.46'	20.05'	S45°42'42"W	28.32'
C11	89°52'55"	20.00'	31.37'	19.96'	N44°17'45"W	28.26'

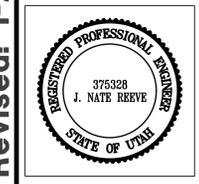


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Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH
900 South Street
6+00.00 - 8+50.00

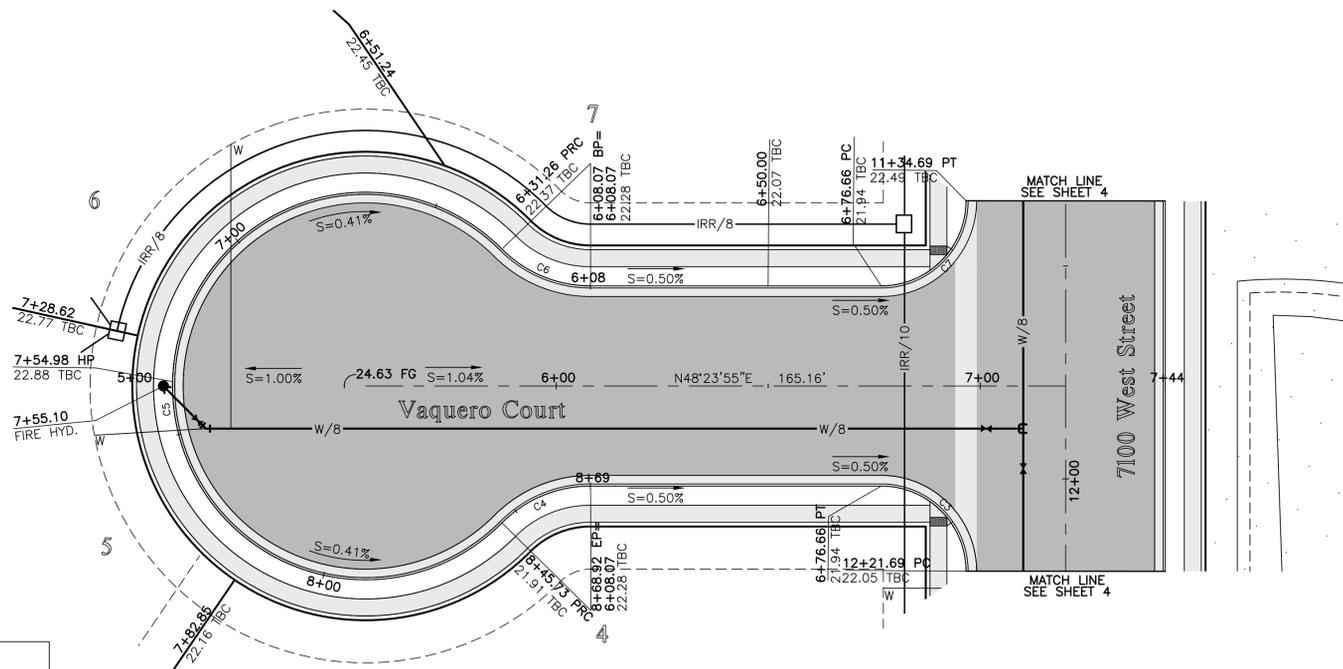
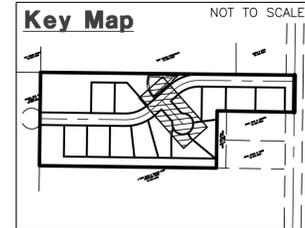


Engineer:	J. NATE REEVE
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Sheet	12
6	Sheets

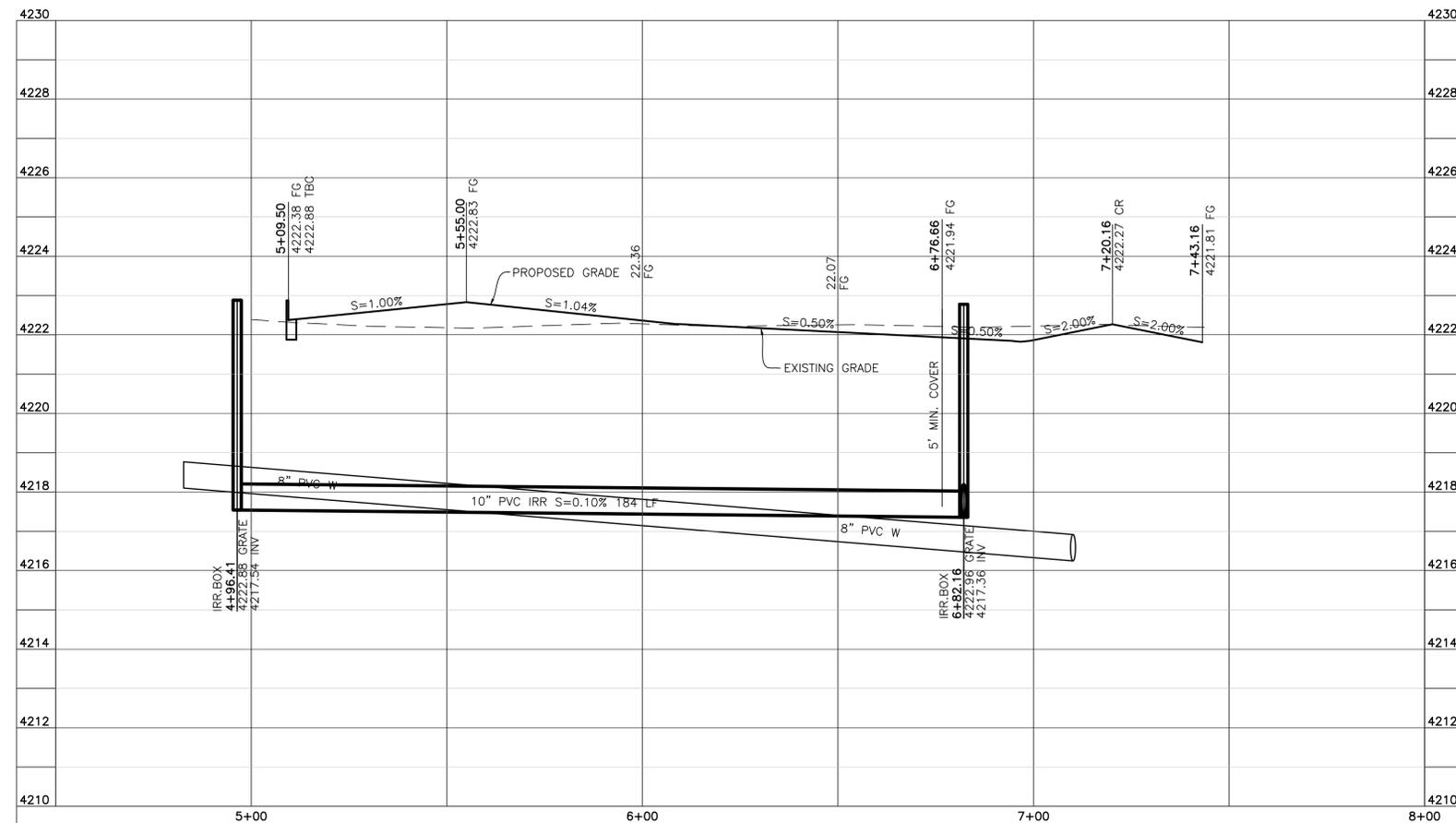
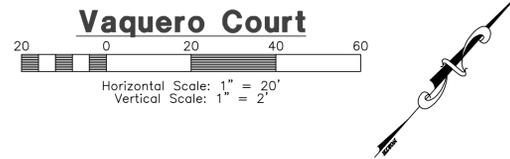
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1/4/2016 | khunter | G:\6352\01 - Parcel 100360013\Improvements\Barrow imp 1.dwg



TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C3	90°00'00"	20.00'	31.42'	20.00'	N86°36'05"W	28.28'
C4	45°02'07"	29.50'	23.19'	12.23'	S25°52'51"W	22.60'
C5	270°04'18"	45.50'	214.47'	45.44'	S41°36'05"E	64.31'
C6	45°02'07"	29.50'	23.19'	12.23'	N70°54'59"E	22.60'
C7	90°00'00"	20.00'	31.42'	20.00'	N3°23'55"E	28.28'



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Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH
Vaquero Court
5+00.00 - 7+50.00



Project Info.

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Storm Runoff Calculations

Vaquero 1/19/2017

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Weber, UT area taken from NOAA Atlas 14 using a 10 year storm for collection and a 100 year storm for storage. Storage facilities have been designed per requirements provided by the City for a regional detention pond. A majority of water run off collected from the property will be diverted into a holding pond and released at a reduced rate as part of the detention pond. Design calculations here are presented for the overall property development.

The calculations are as follows:

1. Drainage Area:

Total Area =	12.42	acres or	541,203	ft ²
Total Collected Area	6.31		268,888	

Developed Runoff Coefficient

Single Family Residence Paved Area	79,905	C = 0.9
Landscaped Area	178,983	C = 0.2
Roof	30,000	C = 0.9

Weighted Runoff Coefficient C = 0.47

2. Time of Concentration:

Use: 30 min.
Estimated from storm water runoff overland flow time

3. Rainfall Intensities:

10-yr 30-min (conveyance) 1.39 in/hr

4. Peak Run-off:

Runoff Coefficient C = 0.47
Rainfall Intensity i = 1.39 IN./HR.
Acreage A = 6.63 ACRES
Runoff Quantity Q = CIA
Q (max at pond internal) Q = 4.30 ft³/s

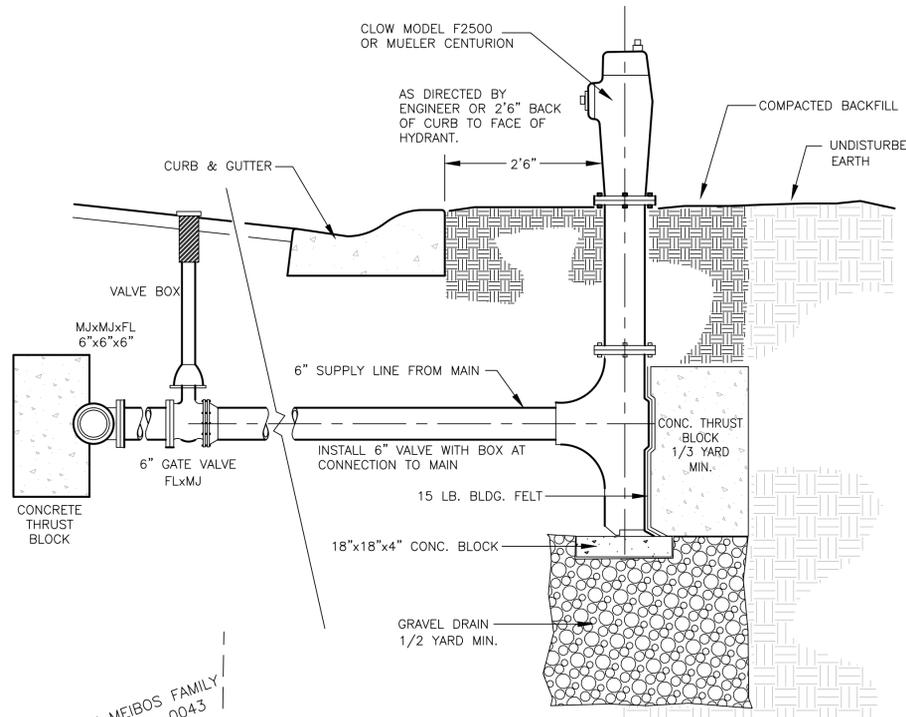
5. Allowable Discharge:

Typical allowable discharge Q = (0.1 x acres)
Allowable Discharge = 0.66 ft³/s

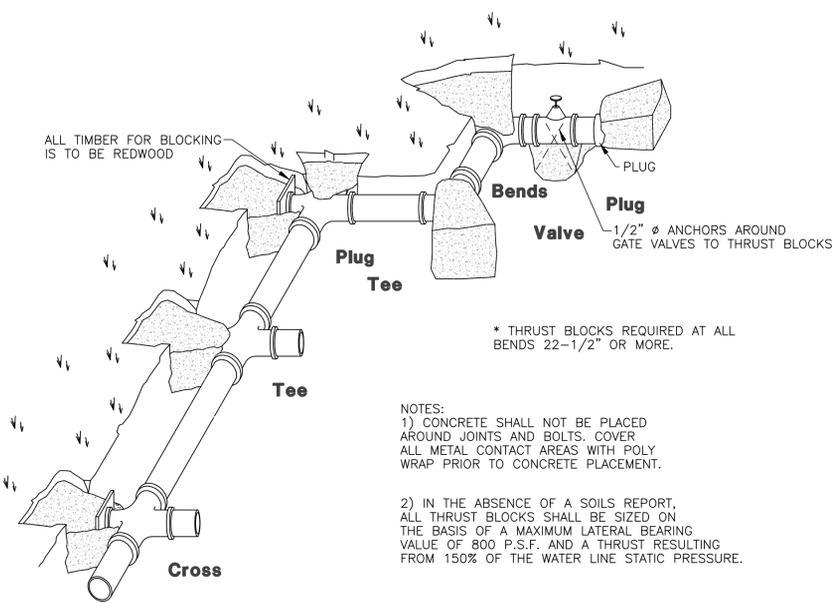
6. Volume of Run-off for 100-year 24-Hour Storm Event:

C = 0.47
A = 268,888 ft²
Q(out) = 0.66 ft³/s

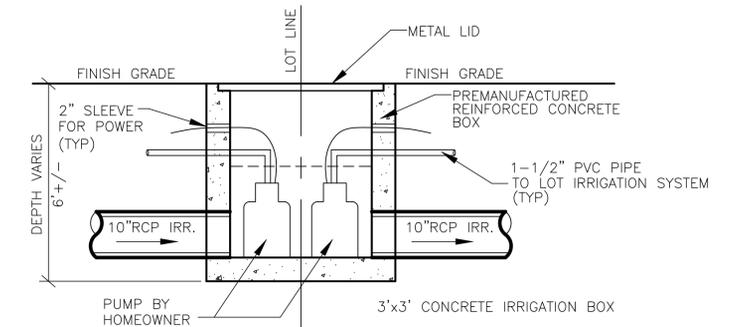
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cft)	Vol. out (cft)	Difference (cft)
0	0	0.00	0.00	0	0	0
5	300	0.59	20.55	6,165	199	5,966
10	600	1.00	36.36	10,908	398	10,510
15	900	1.41	42.91	11,619	597	11,022
20	1200	1.82	49.46	12,330	796	11,534
25	1500	2.23	56.01	13,041	995	12,046
30	1800	2.64	62.56	13,752	1,194	12,558
35	2100	3.05	69.11	14,463	1,393	13,070
40	2400	3.46	75.66	15,174	1,592	13,582
45	2700	3.87	82.21	15,885	1,791	14,094
50	3000	4.28	88.76	16,596	1,990	14,606
55	3300	4.69	95.31	17,307	2,189	15,118
60	3600	5.10	101.86	18,018	2,388	15,630
65	3900	5.51	108.41	18,729	2,587	16,142
70	4200	5.92	114.96	19,440	2,786	16,654
75	4500	6.33	121.51	20,151	2,985	17,166
80	4800	6.74	128.06	20,862	3,184	17,678
85	5100	7.15	134.61	21,573	3,383	18,190
90	5400	7.56	141.16	22,284	3,582	18,702
95	5700	7.97	147.71	22,995	3,781	19,214
100	6000	8.38	154.26	23,706	3,980	19,726
105	6300	8.79	160.81	24,417	4,179	20,238
110	6600	9.20	167.36	25,128	4,378	20,750
115	6900	9.61	173.91	25,839	4,577	21,262
120	7200	10.02	180.46	26,550	4,776	21,774
125	7500	10.43	187.01	27,261	4,975	22,286
130	7800	10.84	193.56	27,972	5,174	22,798
135	8100	11.25	200.11	28,683	5,373	23,310
140	8400	11.66	206.66	29,394	5,572	23,822
145	8700	12.07	213.21	30,105	5,771	24,334
150	9000	12.48	219.76	30,816	5,970	24,846
155	9300	12.89	226.31	31,527	6,169	25,358
160	9600	13.30	232.86	32,238	6,368	25,870
165	9900	13.71	239.41	32,949	6,567	26,382
170	10200	14.12	245.96	33,660	6,766	26,894
175	10500	14.53	252.51	34,371	6,965	27,406
180	10800	14.94	259.06	35,082	7,164	27,918
185	11100	15.35	265.61	35,793	7,363	28,430
190	11400	15.76	272.16	36,504	7,562	28,942
195	11700	16.17	278.71	37,215	7,761	29,454
200	12000	16.58	285.26	37,926	7,960	30,000
205	12300	16.99	291.81	38,637	8,159	30,471
210	12600	17.40	298.36	39,348	8,358	30,942
215	12900	17.81	304.91	40,059	8,557	31,414
220	13200	18.22	311.46	40,770	8,756	31,885
225	13500	18.63	318.01	41,481	8,955	32,357
230	13800	19.04	324.56	42,192	9,154	32,828
235	14100	19.45	331.11	42,903	9,353	33,299
240	14400	19.86	337.66	43,614	9,552	33,770
245	14700	20.27	344.21	44,325	9,751	34,241
250	15000	20.68	350.76	45,036	9,950	34,712
255	15300	21.09	357.31	45,747	10,149	35,183
260	15600	21.50	363.86	46,458	10,348	35,654
265	15900	21.91	370.41	47,169	10,547	36,125
270	16200	22.32	376.96	47,880	10,746	36,596
275	16500	22.73	383.51	48,591	10,945	37,067
280	16800	23.14	390.06	49,302	11,144	37,538
285	17100	23.55	396.61	50,013	11,343	38,009
290	17400	23.96	403.16	50,724	11,542	38,480
295	17700	24.37	409.71	51,435	11,741	38,951
300	18000	24.78	416.26	52,146	11,940	39,422
305	18300	25.19	422.81	52,857	12,139	39,893
310	18600	25.60	429.36	53,568	12,338	40,364
315	18900	26.01	435.91	54,279	12,537	40,835
320	19200	26.42	442.46	54,990	12,736	41,306
325	19500	26.83	449.01	55,701	12,935	41,777
330	19800	27.24	455.56	56,412	13,134	42,248
335	20100	27.65	462.11	57,123	13,333	42,719
340	20400	28.06	468.66	57,834	13,532	43,190
345	20700	28.47	475.21	58,545	13,731	43,661
350	21000	28.88	481.76	59,256	13,930	44,132
355	21300	29.29	488.31	59,967	14,129	44,603
360	21600	29.70	494.86	60,678	14,328	45,074
365	21900	30.11	501.41	61,389	14,527	45,545
370	22200	30.52	507.96	62,100	14,726	46,016
375	22500	30.93	514.51	62,811	14,925	46,487
380	22800	31.34	521.06	63,522	15,124	46,958
385	23100	31.75	527.61	64,233	15,323	47,429
390	23400	32.16	534.16	64,944	15,522	47,900
395	23700	32.57	540.71	65,655	15,721	48,371
400	24000	32.98	547.26	66,366	15,920	48,842
405	24300	33.39	553.81	67,077	16,119	49,313
410	24600	33.80	560.36	67,788	16,318	49,784
415	24900	34.21	566.91	68,499	16,517	50,255
420	25200	34.62	573.46	69,210	16,716	50,726
425	25500	35.03	580.01	69,921	16,915	51,197
430	25800	35.44	586.56	70,632	17,114	51,668
435	26100	35.85	593.11	71,343	17,313	52,139
440	26400	36.26	599.66	72,054	17,512	52,610
445	26700	36.67	606.21	72,765	17,711	53,081
450	27000	37.08	612.76	73,476	17,910	53,552
455	27300	37.49	619.31	74,187	18,109	54,023
460	27600	37.90	625.86	74,898	18,308	54,494
465	27900	38.31	632.41	75,609	18,507	54,965
470	28200	38.72	638.96	76,320	18,706	55,436
475	28500	39.13	645.51	77,031	18,905	55,907
480	28800	39.54	652.06	77,742	19,104	56,378
485	29100	39.95	658.61	78,453	19,303	56,849
490	29400	40.36	665.16	79,164	19,502	57,320
495	29700	40.77	671.71	79,875	19,701	57,791
500	30000	41.18	678.26	80,586	19,900	58,262
505	30300	41.59	684.81	81,297	20,099	58,733
510	30600	42.00	691.36	82,008	20,298	59,204
515	30900	42.41	697.91	82,719	20,497	59,675
520	31200	42.82	704.46	83,430	20,696	60,146
525	31500	43.23	711.01	84,141	20,895	60,617
530	31800	43.64	717.56	84,852	21,094	61,088
535	32100	44.05	724.11	85,563	21,293	61,559
540	32400	44.46	730.66	86,274	21,492	62,030
545	32700	44.87	737.21	86,985	21,691	62,501
550	33000	45.28	743.76	87,696	21,890	62,972
555	33300	45.69	750.31	88,407	22,089	63,443
560	33600	46.10	756.86	89,118	22,288	63,914
565	33900	46.51	763.41	89,829	22,487	64,385
570	34200	46.92	770.00	90,540	22,686	64,856
575	34500	47.33	776.55	91,251	22,885	65,327
580	34800	47.74	783.10	91,962	23,084	65,798
585	35100	48.15	789.65	92,673	23,283	66,269
590	35400	48.56	796.20	93,384	23,482	66,740
595	35700	48.97	802.75	94,095	23,681	67,211
600	36000	49.38	809.30	94,806	23,880	67,682
605	36300	49.79	815.85	95,517	24,079	68,153
610	36600	50.20	822.40	96,228	24,278	68,624
615	36900	50.61	828.95	96,939	24,477	69,095
620	37200	51.02	835.50	97,650	24,676	69,566
625	37500	51.43	842.05	98,361	24,875	70,037
630	37800	51.84	848.60	99,072	25,074	70,508
635	38100	52.25	855.15	99,783	25,273	70,979
640	38400	52.66	861.70	100,494	25,472	71,450
645	38700	53.07	868.25	101,205	25,671	71,921
650	39000	53.48	874.80	101,916	25,870	72,392
655	39300	53.89	881.35	102,627	26,069	72,863
660	39600	54.30	887.90	103,338	26,268	73,334
665	39900	54.71	894.45	104,049	26,467	73,805
670	40200	55.12	901.00	104,760	26,666	74,276
675	40500	55.53	907.55	105,471	26,865	74,747
680	40800	55.94	914.10	106,182	27,064	75,218
685	41100	56.35	920.65	106,893	27,263	75,689
690	41400	56.76	927.20	107,604	27,462	76,160
695	41700	57.17	933.75	108,315	27,661	76,631
700	42000	57.58	940.30	109,026	27,860	77,102
705	42300	57.99	946.85	109,737	28,059	77,573
710	42600	58.40	953.40	110,448	28,258	78,044
715	42900	58.81	960.00	111,159	28,457	78,515
720	43200	59.22	966.55	111,870	28,656	78,986
725	43500	59.63	973.10	112,581	28,855	79,457
730	43800	60.04	979.65	113,292	29,054	79,928
735	44100	60.				



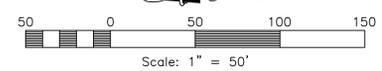
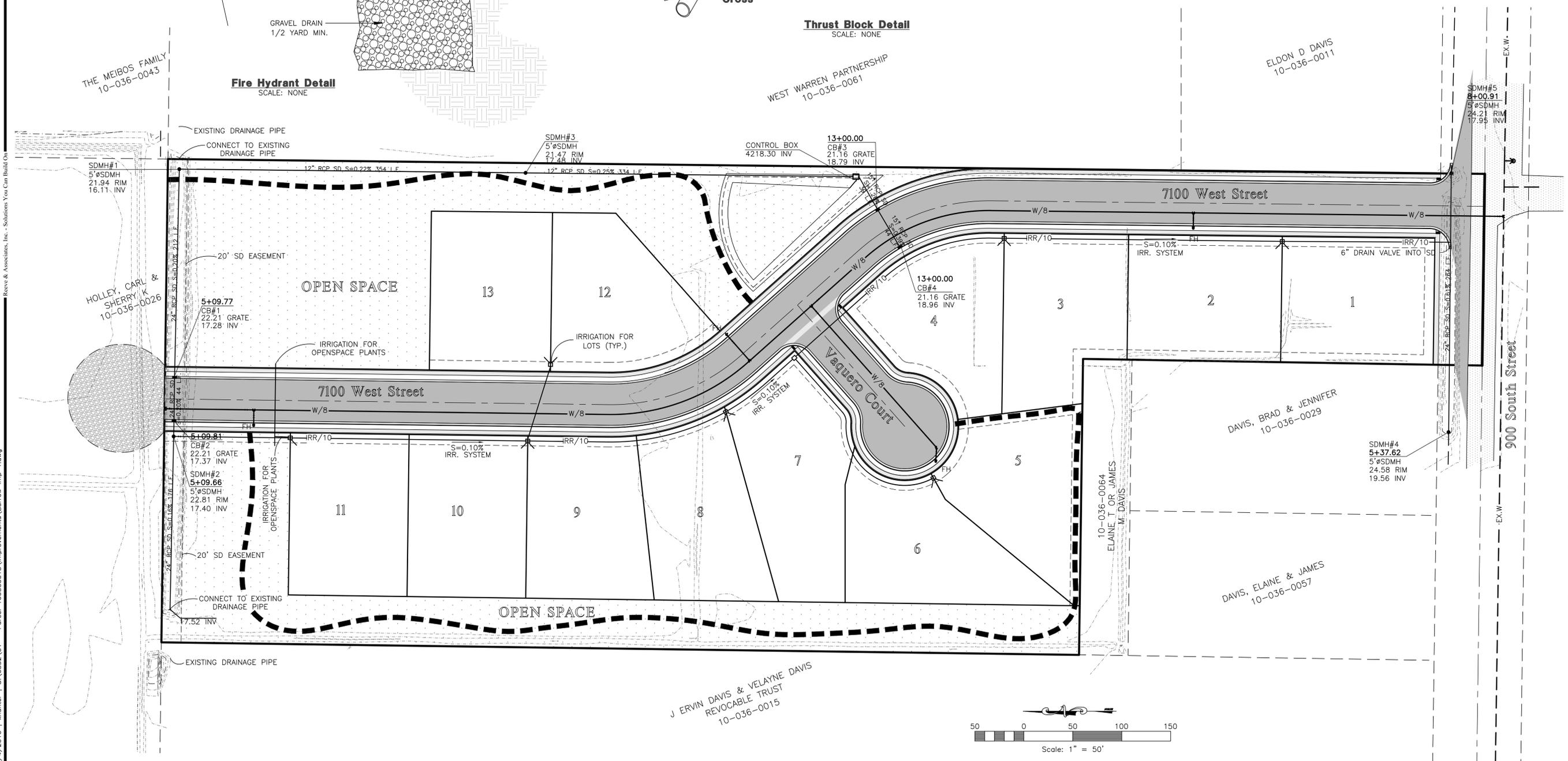
Fire Hydrant Detail
SCALE: NONE



Thrust Block Detail
SCALE: NONE



Typical Irrigation Box
SCALE: NONE



Reeve & Associates, Inc.
 920 CHAMBERS STREET SUITE 14, OGDEN, UTAH 84403
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 TRAFFIC ENGINEERS • STRUCTURAL ENGINEERS • LANDSCAPE ARCHITECTS

REVISIONS	DATE	DESCRIPTION
	09-20-16	CK County Comments
	12-13-16	ER County Comments
	1-24-17	CK Storm Drain
	2-2-17	KH Storm Drain
	2-2-17	KH DEQ comments

Vaquero Village Cluster Subdivision Phase 1
 WEBER COUNTY, UTAH

Utility & Irrigation Plan

Revised: 1-27-17

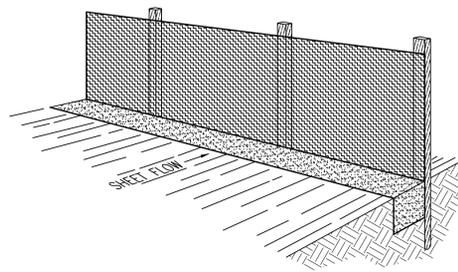
REGISTERED PROFESSIONAL ENGINEER
 375328
 J. NATE REEVE
 STATE OF UTAH

Project Info.

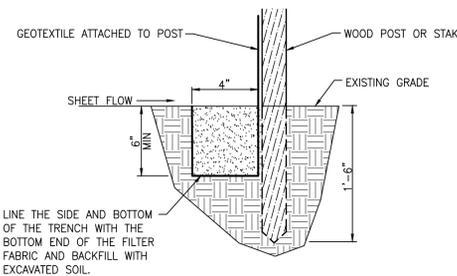
Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

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
 - 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 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 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 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.

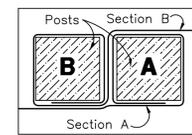
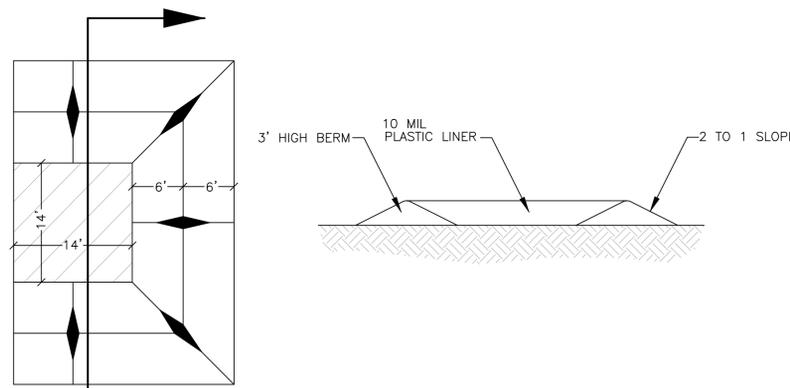


Figure 1:
Top View of
Roll-to-Roll Connection

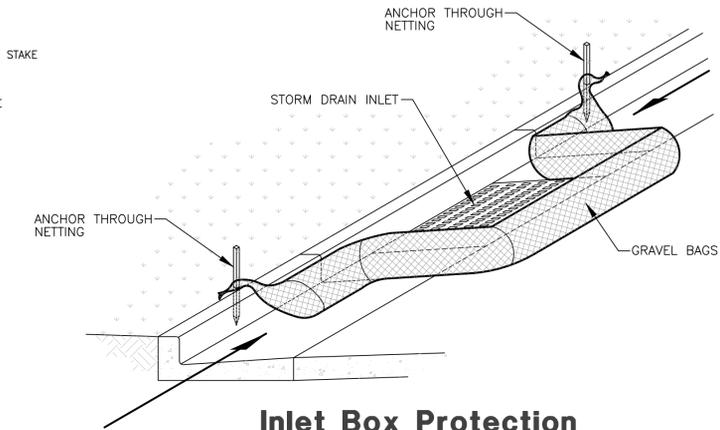
Silt Fence Detail

SCALE: NONE

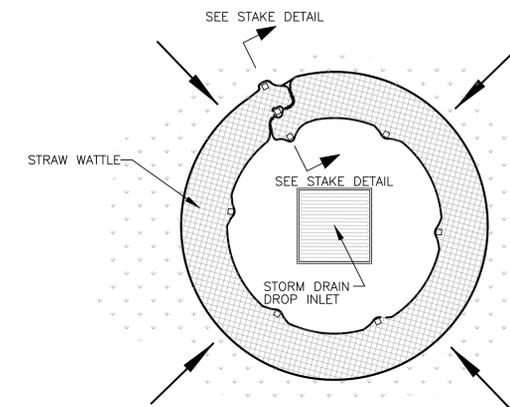


**Concrete Washout Area
w/ 10 mil Plastic Liner**

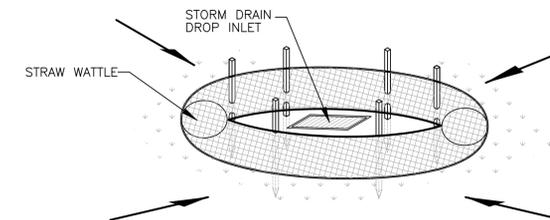
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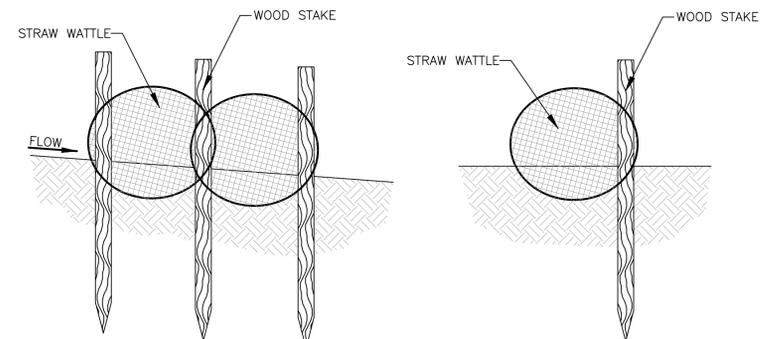
Inlet Box Protection



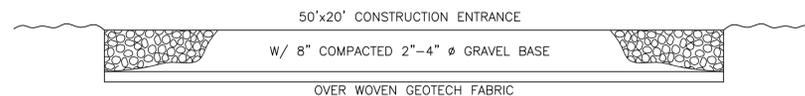
Plan View



Drop Inlet Protection



Stake Detail



Cross Section 50' x 20' Construction Entrance

Reeve & Associates, Inc.
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 920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403
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 PROFESSIONAL ENGINEERS • STRUCTURAL ENGINEERS • LANDSCAPE ARCHITECTS

REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

**Vaquero Village Cluster Subdivision
Phase 1**
 WEBER COUNTY, UTAH
**Storm Water Pollution
Prevention Plan Details**

REGISTERED PROFESSIONAL ENGINEER
 375328
J. NATE REEVE
 STATE OF UTAH

Project Info.
 Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

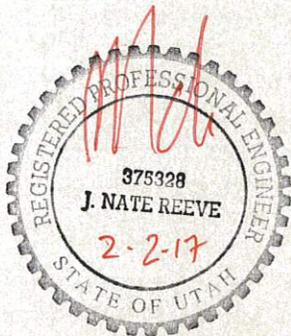
Sheet **12**
M Sheets



Vaquero Village Cluster Subdivision Hydraulic Analysis

Reeve & Associates, Inc.

Solutions You Can Build On



Reeve & Associates, Inc.

Contact: Nate Reeve, PE
5160 South 1500 West
Riverdale, Utah 84405
801-621-3100
Fax 801-621-2666
www.reeve-assoc.com

Ref: 6352-01

for

Vaquero Village

7100 W 900 S

Weber County, UT



submitted to

**Department of Environmental Quality
Division of Drinking Water
195 North 1950 West
Salt Lake City, Utah 84114
PH: (801) 536-0087**

February 2, 2017

Reeve & Associates, Inc.



February 2, 2017

Camron Harry
Division of Drinking Water
Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84114
(801) 536-0087

Re: Vaquero Village Subdivision water line – File # 10648

As per your request, we are submitting to you this water main analysis for the proposed subdivision development located at the intersection of 7100 west and 900 south. This report complies with the Utah Administrative Code R309-511-5 & -6.

This land is currently undeveloped and is bordered to the north, east and west by agricultural property, and to the south by private residences. The area of the site is 12.42 acres.

The proposed subdivision includes 13 residential lots. See attached for water demand calculations, water model and outputs. The 8-inch water line will connect to the existing water main in 900 south. Secondary water is provided in a separate system for outdoor water use.

Calculations and analysis were performed to assure that the water facilities are adequate for the proposed site and that the minimum pressures as required by R309-500-5(1) can be maintained with the additional water demand.

To perform this analysis, we modeled the proposed system demands given the pressure of the existing main line using data provided by West Warren Water District. The software used for the analysis was WaterCAD V8i. With this information we were able to analyze the proposed changes in pressure to the water system to ensure it will not overtax the system. Therefore, it is our professional opinion that after the proposed design has been completed; this project will maintain pressures above the required minimum pressures, and should be permitted per the analysis contained within this letter.

Attached is the proposed model with data output. The first model was analyzed at peak day demand using the supplied demands in Table 510-1 of R309-510-7. The second model was analyzed at peak instantaneous demand per the equation in R309-510-9(2)(b). The third model was analyzed at peak day demand plus fire flow. The requirement for fire flow is based on the International Fire Code 2009 edition as per Weber County/Utah Administrative Code requirement of 1000 gallons per minute. Table 1 below summarizes this information.

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Email: ogden@reeve-assoc.com • Website: www.reeve-assoc.com



Table 1 – Model Demand and Pressure Requirements

<i>System Model</i>	<i>Demand (gpm)</i>	<i>Minimum Modeled Pressure (psi)</i>	<i>Minimum Acceptable Pressure (psi)</i>
<i>Peak Day</i>	14	60	40
<i>Peak Instantaneous</i>	43	60	30
<i>Peak Day + Fire Flow</i>	1043	52	20

See attached layout and model outputs. As output demonstrates, pressures are within acceptable ranges in all demand scenarios.

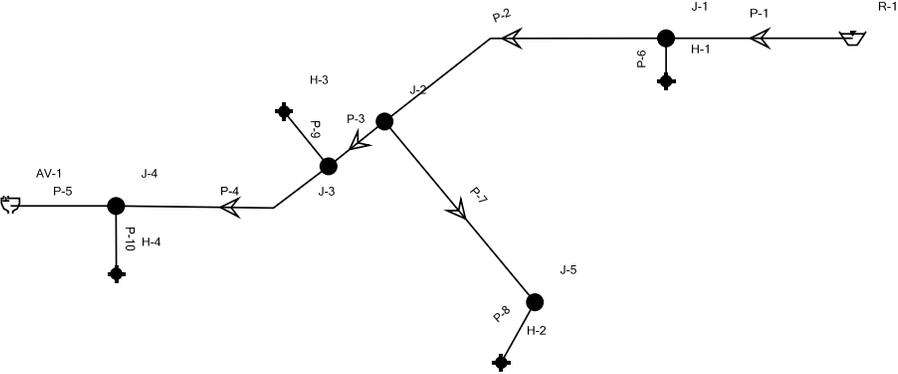
If you have any questions, or we can be of further assistance, please let us know.

Sincerely,

Nate Reeve, P.E.
Principal Engineer
Reeve & Associates, Inc.
nreeve@reeve-assoc.com

Kenneth Hunter, E.I.T.
Project Engineer
Reeve & Associates, Inc.
khunter@reeve-assoc.com

Scenario: Base



Water Demand Calculations
Vaquero Village Subdivision
7100 W 900 S

2/1/2017 KHH

	Peak Day Demand (gpd/conn)	Average Day Demand (gpd/conn)	# of Connections	Peak Day Demand (gpd)	Average Day Demand (gpd)	Peak Day Demand (gpm)	Peak Instantaneous Demand (gpm)	Fire Flow Demand (gpm)
Residential	800	400	13	10400	5200	14.4	43.1	1000

instantaneous demand

$$Q = 10.8 \times N^{0.64}$$

N=ERC/residential lots

Q=total flow

fire flow

1,000 gallons per minute for 60 minutes

Peaking Factor

Peak Day 2

Peak Day Demand	14.4 gpm
Peak Instantaneous Demand	43.1 gpm
Peak Day Demand + Fire Flow	1043.1 gpm

Design Constraints:

1. 40 psi during peak day demand
2. 30 psi during peak instantaneous demand
3. 20 psi during conditions of fire flow and fire demand experienced during peak day demand

Water Model Output
Peak Day Demand
Vaquero Village Subdivision
7100 W 900 S

2/1/2017 KHH

Table 1.A-Pipe Data

Label	Length	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	317	R-1	J-1	8	150	14	0.09	0.000
P-2	421	J-1	J-2	8	150	12	0.08	0.000
P-3	84	J-2	J-3	8	150	8	0.05	0.000
P-4	520	J-3	J-4	8	150	4	0.03	0.000
P-5	88	J-4	AV-1	8	150	0	0.00	0.000
P-6	16	J-1	H-1	8	150	0	0.00	0.000
P-7	193	J-2	J-5	8	150	2	0.01	0.000
P-8	14	H-2	J-5	8	150	0	0.00	0.000
P-9	36	H-3	J-3	8	150	0	0.00	0.000
P-10	16	H-4	J-4	8	150	0	0.00	0.000

Table 1.B-Junction Data

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	4,217	2	4358.32	61.00
J-2	4,217	2	4358.32	61.00
J-3	4,217	3	4358.32	61.00
J-4	4,218	4	4358.32	61.00
J-5	4,219	2	4358.32	60.00

Table 1.C-Reservoir Data

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R1	4,358	14.0	4,358

Water Model Output
Peak Instantaneous Demand
Vaquero Village Subdivision
7100 W 900 S

2/1/2017 KHH

Table 1.A-Pipe Data

Label	Length	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	317	R-1	J-1	8	150	43	0.28	0.000
P-2	421	J-1	J-2	8	150	37	0.23	0.000
P-3	84	J-2	J-3	8	150	23	0.15	0.000
P-4	520	J-3	J-4	8	150	13	0.08	0.000
P-5	88	J-4	AV-1	8	150	0	0.00	0.000
P-6	16	J-1	H-1	8	150	0	0.00	0.000
P-7	193	J-2	J-5	8	150	7	0.04	0.000
P-8	14	H-2	J-5	8	150	0	0.00	0.000
P-9	36	H-3	J-3	8	150	0	0.00	0.000
P-10	16	H-4	J-4	8	150	0	0.00	0.000

Table 1.B-Junction Data

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	4,217	7	4358.31	61.00
J-2	4,217	7	4358.29	61.00
J-3	4,217	10	4358.29	61.00
J-4	4,218	13	4358.29	61.00
J-5	4,219	7	4358.29	60.00

Table 1.C-Reservoir Data

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R1	4,358	43.0	4,358

Water Model Output
Peak Day Demand + Fire Flow
Vaquero Village Subdivision
7100 W 900 S

2/1/2017 KHH

Table 1.A-Pipe Data

Label	Length	Start Node	Stop Node	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	317	R-1	J-1	8	150	1,043	6.66	0.015
P-2	421	J-1	J-2	8	150	1,037	6.62	0.015
P-3	84	J-2	J-3	8	150	1,023	6.53	0.015
P-4	520	J-3	J-4	8	150	1,013	6.47	0.014
P-5	88	J-4	AV-1	8	150	0	0.00	0.000
P-6	16	J-1	H-1	8	150	0	0.00	0.000
P-7	193	J-2	J-5	8	150	7	0.04	0.000
P-8	14	H-2	J-5	8	150	0	0.00	0.000
P-9	36	H-3	J-3	8	150	0	0.00	0.000
P-10	16	H-4	J-4	8	150	-1,000	6.38	0.014

Table 1.B-Junction Data

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	4,217	7	4353.52	59.00
J-2	4,217	7	4347.21	56.00
J-3	4,217	10	4345.98	56.00
J-4	4,218	13	4338.52	52.00
J-5	4,219	7	4347.21	56.00

Table 1.C-Reservoir Data

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R1	4,358	1,043.0	4,358

Kippen,Ronda

From: Camron Harry [caharry@utah.gov]
Sent: Wednesday, March 08, 2017 9:29 AM
To: Chris Cave
Cc: jdbla19@gmail.com; Pfeaster,Rochelle; Kippen,Ronda
Subject: [CAUTION]Re: FW: Vaquero DEQ Comments

Chris,

Thank you, I will review what you sent me and contact Thomas Hunt if I have any questions or comments. I do note that the plans have not been signed or dated (date of the signature, the plans themselves are dated 4/4/16 but I know changes have been made since then). I will need J. Nate Reeve to sign and date these plan before I can complete my review. However, I will look over the plans and make sure I do not have any comments before I ask Thomas to send me stamped, signed, and dated plans.

Thank you,

Ms. Camron Harry, P.E.
Environmental Engineer
Division of Drinking Water
Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84114
(801) 536-0087

On Wed, Mar 8, 2017 at 9:05 AM, Chris Cave <ccave@reeve-assoc.com> wrote:

Camron,

Attached please find the updated plan set, comment letter and water report for Vaquero Village Phase 1.

Please you any questions on the plans, call Thomas Hunt in our office, he is the design engineer on the project.

Thanks,



Chris Cave

Land Planner | Project Manager

#####

Be the Human Firewall!

To prevent malicious software and viruses, NEVER open files
or click on links from unexpected or unknown sources.

Think Before You Click!

#####

Kippen,Ronda

From: Chris Cave [ccave@reeve-assoc.com]
Sent: Wednesday, March 08, 2017 2:24 PM
To: Camron Harry
Cc: jdbla19@gmail.com; Pfeaster,Rochelle; Kippen,Ronda
Subject: [CAUTION]RE: FW: Vaquero DEQ Comments
Attachments: Barrow Imp P1 3-8-17 signed.pdf

Importance: High

Camron,

Attached is the signed set of plans for Vaquero Village Phase 1.

Thanks,



From: Camron Harry [<mailto:caharry@utah.gov>]
Sent: Wednesday, March 08, 2017 9:29 AM
To: Chris Cave <ccave@reeve-assoc.com>
Cc: jdbla19@gmail.com; rpfeaster@co.weber.ut.us; rkippen@co.weber.ut.us
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Chris Cave

Land Planner | Project Manager

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Think Before You Click!

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Project Narrative/Notes/Revisions

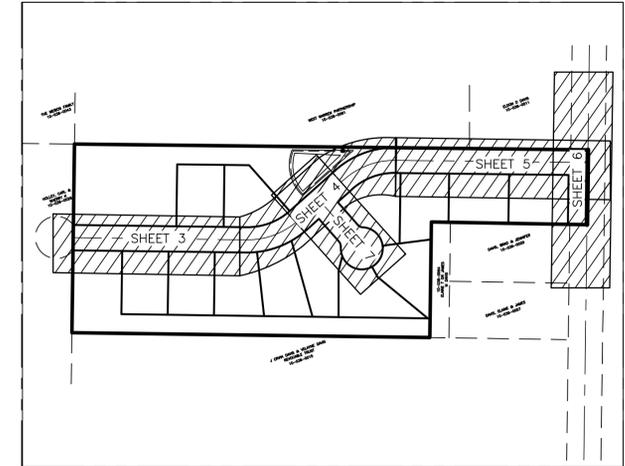
- 1) 4/8/16 CK - COMPLETED DESIGN FOR CLIENT & CITY REVIEW.
- 2) 9/20/16 CK - UPDATED PER COUNTY COMMENTS.
- 3) 12/13/16 ER - UPDATED PER COUNTY COMMENTS.
- 4) 12/22/16 CK - UPDATED PER COUNTY COMMENTS.
- 5) 1/24/17 KH - UPDATED PER COUNTY COMMENTS.
- 6) 2/2/17 KH - UPDATED PER DEQ COMMENTS.

Vaquero Village Cluster Subdivision Phase 1 Improvement Plans

WEBER COUNTY, UTAH
APRIL, 2016



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 - 7100 West 5+00.00 - 9+53.70
- Sheet 4 - 7100 West 9+53.70 - 14+09.56
- Sheet 5 - 7100 West 14+09.56 - 19+50.00
- Sheet 6 - 900 South St. 6+00.00 - 8+50.00
- Sheet 7 - Vaquero Court 5+00.00 - 7+50.00
- Sheet 8 - Grading & Drainage Plan
- Sheet 9 - Utility & Irrigation Plan
- Sheet 10 - Irrigation Reservoir Exhibit
- Sheet B - Storm Water Pollution Prevention Plan Exhibit
- Sheet M - Storm Water Pollution Prevention Plan Details
- Sheet 11 - Landscape
- Sheet 12 - Landscape Details

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:

Barrow Land Livestock, LLC
Dean & Justin Barrow
6835 W. 900 S.
Ogden, UT. 84404
(801) 514-8194

Blue Stakes Location Center

Call: Toll Free
1-800-662-4111
Two Working Days Before You Dig

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

REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

**Vaquero Village Cluster Subdivision
Phase 1**
WEBER COUNTY, UTAH

Cover/Index Sheet

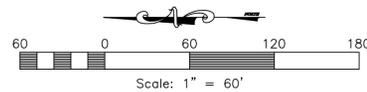
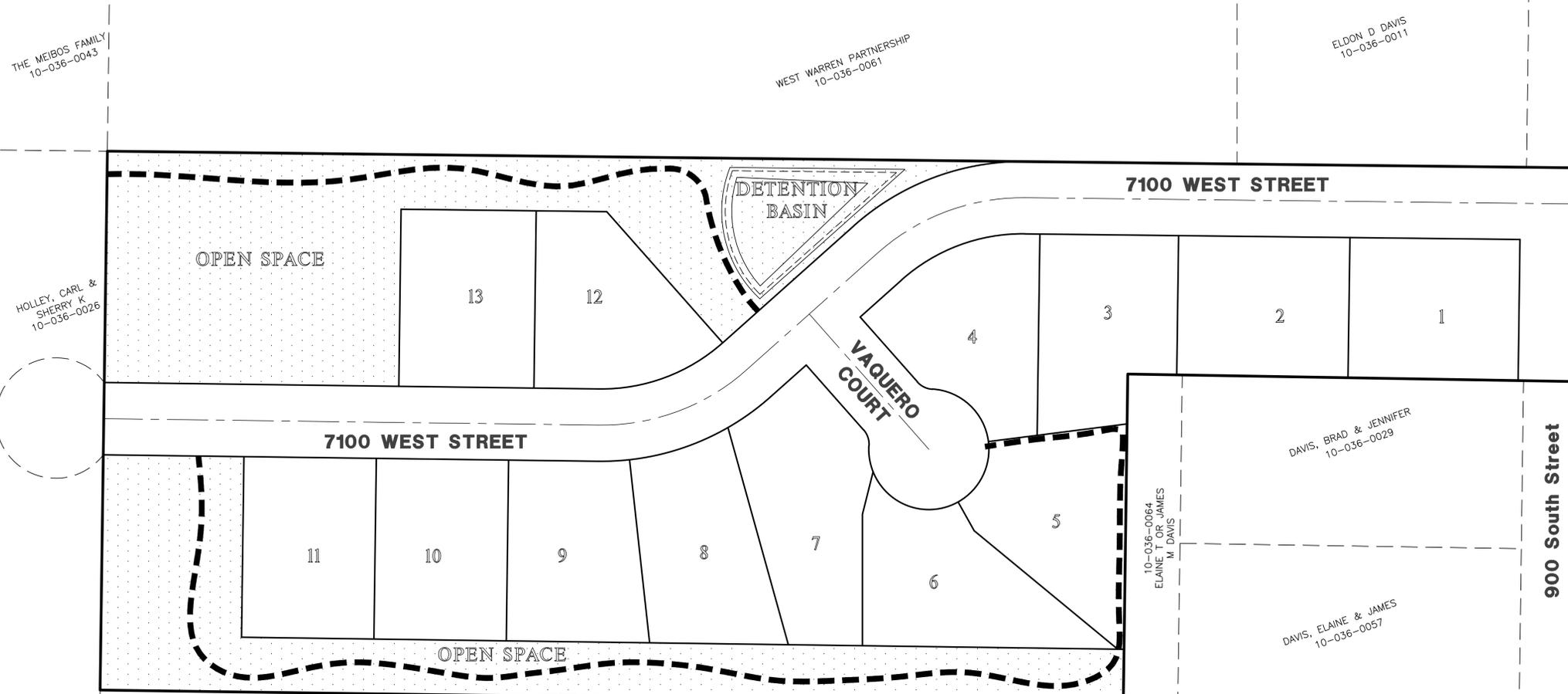


Project Info.

Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

Sheet	12
1	Sheets

Revised: 1-27-17



1/4/2016 | ckingale | G:\3352\01 - Parcel 10026001\Improvements\Barrow imp 1.dwg

General Notes:

- ALL CONSTRUCTION MUST STRICTLY FOLLOW THE STANDARDS AND SPECIFICATIONS SET FORTH BY: GOVERNING UTILITY MUNICIPALITY, GOVERNING CITY OR COUNTY (IF UN-INCORPORATED), INDIVIDUAL PRODUCT MANUFACTURERS, AMERICAN PUBLIC WORKS ASSOCIATION (APWA), AND THE DESIGN ENGINEER. THE ORDER LISTED ABOVE IS ARRANGED BY SENIORITY. IF A CONSTRUCTION PRACTICE IS NOT SPECIFIED BY ANY OF THE LISTED SOURCES, CONTRACTOR MUST CONTACT DESIGN ENGINEER FOR DIRECTION.
- CONTRACTOR TO STRICTLY FOLLOW GEOTECHNICAL RECOMMENDATIONS FOR THIS PROJECT. ALL GRADING INCLUDING BUT NOT LIMITED TO CUT, FILL, COMPACTION, ASPHALT SECTION, SUBBASE, TRENCH EXCAVATION/BACKFILL, SITE GRUBBING, RETAINING WALLS AND FOOTINGS MUST BE COORDINATED DIRECTLY WITH THE PROJECT GEOTECHNICAL ENGINEER.
- TRAFFIC CONTROL, STRIPING & SIGNAGE TO CONFORM TO CURRENT GOVERNING AGENCIES TRANSPORTATION ENGINEER'S MANUAL AND MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.
- CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.
- AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES.
- PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED THOROUGHLY REVIEWED PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
- CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND NOTIFYING ENGINEER OR INSPECTING AUTHORITY 48 HOURS IN ADVANCE OF COVERING UP ANY PHASE OF CONSTRUCTION REQUIRING OBSERVATION.
- ANY WORK IN THE PUBLIC RIGHT-OF-WAY WILL REQUIRE PERMITS FROM THE APPROPRIATE CITY, COUNTY OR STATE AGENCY CONTROLLING THE ROAD, INCLUDING OBTAINING REQUIRED INSPECTIONS.
- ALL DIMENSIONS, GRADES & UTILITY DESIGNS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES.
- CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING AND BRING UP ANY QUESTIONS BEFOREHAND.
- SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH BY THE GEOTECHNICAL ENGINEER.
- CATCH SLOPES SHALL BE GRADED AS SPECIFIED ON GRADING PLANS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FLAGGING, CAUTION SIGNS, LIGHTS, BARRICADES, FLAGMEN, AND ALL OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
- CONTRACTOR SHALL, AT THE TIME OF BIDDING AND THROUGHOUT THE PERIOD OF THE CONTRACT, BE LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE BONDBLE FOR AN AMOUNT EQUAL TO OR GREATER THAN THE AMOUNT BID AND TO DO THE TYPE OF WORK CONTEMPLATED IN THE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PLANS AND SPECIFICATIONS.
- 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 OF THE LOCATIONS OF THE PROPOSED WORK AND OF THE ACTUAL CONDITIONS OF AND AT THE SITE OF WORK. IF, DURING THE COURSE OF HIS EXAMINATION, A BIDDER FINDS FACTS OR CONDITIONS WHICH APPEAR TO HIM TO BE IN CONFLICT WITH THE LETTER OR SPIRIT OF THE PROJECT PLANS AND SPECIFICATIONS, HE SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION AND EXPLANATION BEFORE SUBMITTING HIS BID. SUBMISSION OF A BID BY THE CONTRACTOR SHALL CONSTITUTE ACKNOWLEDGMENT THAT, IF AWARDED THE CONTRACT, HE HAS RELIED AND IS RELYING ON HIS OWN EXAMINATION OF (1) THE SITE OF THE WORK, (2) ACCESS TO THE SITE, AND (3) ALL OTHER DATA AND MATTERS REQUISITE TO THE FULFILLMENT OF THE WORK AND ON HIS OWN KNOWLEDGE OF EXISTING FACILITIES ON AND IN THE VICINITY OF THE SITE OF THE WORK TO BE CONSTRUCTED UNDER THIS CONTRACT. THE INFORMATION PROVIDED BY THE ENGINEER IS NOT INTENDED TO BE A SUBSTITUTE FOR, OR A SUPPLEMENT TO, THE INDEPENDENT VERIFICATION BY THE CONTRACTOR TO THE EXTENT SUCH INDEPENDENT INVESTIGATION OF SITE CONDITIONS IS DEEMED NECESSARY OR DESIRABLE BY THE CONTRACTOR. CONTRACTOR SHALL ACKNOWLEDGE THAT HE HAS NOT RELIED SOLELY UPON OWNER- OR ENGINEER-FURNISHED INFORMATION REGARDING SITE CONDITIONS IN PREPARING AND SUBMITTING HIS BID.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION.
- CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER, ENGINEER, AND/OR GOVERNING AGENCIES.
- CONTRACTOR SHALL EXERCISE DUE CAUTION AND SHALL CAREFULLY PRESERVE BENCH MARKS, CONTROL POINTS, REFERENCE POINTS AND ALL SURVEY STAKES, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT AND/OR ERRORS CAUSED BY THEIR UNNECESSARY LOSS OR DISTURBANCE.
- CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT. ALL TESTING SHALL CONFORM TO THE REGULATORY AGENCY'S STANDARD SPECIFICATIONS. ALL TESTING AND INSPECTION SHALL BE PAID FOR BY THE OWNER; ALL RE-TESTING AND/OR RE-INSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.
- IF EXISTING IMPROVEMENTS NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE. COST OF REPLACING OR REPAIRING EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT. THERE WILL BE NO EXTRA COST DUE TO THE CONTRACTOR FOR REPLACING OR REPAIRING EXISTING IMPROVEMENTS.
- WHENEVER EXISTING FACILITIES ARE REMOVED, DAMAGED, BROKEN, OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS OR SPECIFICATIONS, SAID FACILITIES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH MATERIALS EQUAL TO OR BETTER THAN THE MATERIALS USED IN THE ORIGINAL EXISTING FACILITIES. THE FINISHED PRODUCT SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER, THE ENGINEER, AND THE RESPECTIVE REGULATORY AGENCY.
- 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. AS-BUILT RECORD DRAWINGS SHALL REFLECT CHANGE ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ALL IMPROVEMENTS CONSTRUCTED, WHERE NECESSARY, SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR. PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER ONE SET OF NEATLY MARKED AS-BUILT RECORD DRAWINGS SHOWING THE INFORMATION REQUIRED ABOVE. AS-BUILT RECORD DRAWINGS SHALL BE REVIEWED AND THE COMPLETE AS-BUILT RECORD DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS REDLINED AS A PRECONDITION TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.
- WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE HIGHEST QUALITY ARE TO BE USED.
- CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PROJECT PLANS AND SPECIFICATIONS. THEREFORE, THE OWNER IS RELYING UPON THE EXPERIENCE AND EXPERTISE OF THE CONTRACTOR. PRICES PROVIDED WITHIN THE CONTRACT DOCUMENTS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THE TRUE INTENT AND PURPOSE OF THESE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE COMPETENT, KNOWLEDGEABLE AND HAVE SPECIAL SKILLS IN THE NATURE, EXTENT AND INHERENT CONDITIONS OF THE WORK TO BE PERFORMED. CONTRACTOR SHALL ALSO ACKNOWLEDGE THAT THERE ARE CERTAIN PECULIAR AND INHERENT CONDITIONS EXISTENT IN THE CONSTRUCTION OF THE PARTICULAR FACILITIES WHICH MAY CREATE, DURING THE CONSTRUCTION PROGRAM, UNUSUAL OR UNSAFE CONDITIONS HAZARDOUS TO PERSONS, PROPERTY AND THE ENVIRONMENT. CONTRACTOR SHALL BE AWARE OF SUCH CONDITIONS AND HAVE THE SKILL AND EXPERIENCE TO FORESEE AND TO ADOPT PROTECTIVE MEASURES TO ADEQUATELY AND SAFELY PERFORM THE CONSTRUCTION WORK WITH RESPECT TO SUCH HAZARDS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL STRIPING AND/OR PAVEMENT MARKINGS NECESSARY TO THE EXISTING STRIPING INTO FUTURE STRIPING. METHOD OF REMOVAL SHALL BE BY GRINDING OR SANDBLASTING.
- 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. FOR EXCAVATIONS 4 FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL COMPLY WITH LOCAL, STATE AND NATIONAL SAFETY CODES, ORDINANCES, OR REQUIREMENTS FOR EXCAVATION AND TRENCHES.
- ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL GATES AND FENCES FROM DAMAGE

Utility Notes:

- CONTRACTOR SHALL COORDINATE LOCATION OF NEW "DRY UTILITIES" WITH THE APPROPRIATE UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO: TELEPHONE SERVICE, GAS SERVICE, CABLE, POWER, INTERNET.
- EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS USING A COMBINATION OF ON-SITE SURVEYS (BY OTHERS). PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE IN THE FIELD, THEIR MAIN AND SERVICE LINES 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK. THE CONTRACTOR SHALL RECORD THE BLUE STAKES ORDER NUMBER AND FURNISH ORDER NUMBER TO OWNER AND ENGINEER PRIOR TO ANY EXCAVATION. IT WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO DIRECTLY CONTACT ANY OTHER UTILITY COMPANIES THAT ARE NOT MEMBERS OF BLUE STAKES. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF THIS CONTRACT. ANY REPAIRS NECESSARY TO DAMAGED UTILITIES SHALL BE PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES INSTALLING NEW STRUCTURES, UTILITIES AND SERVICE TO THE PROJECT.
- CONTRACTOR SHALL NOT CUT OFF UTILITIES TO DETERMINE IF CONFLICTS EXIST PRIOR TO BEGINNING ANY EXCAVATION. NOTIFY ENGINEER OF ANY CONFLICTS. CONTRACTOR SHALL VERIFY LOCATION AND INVERTS OF EXISTING UTILITIES TO WHICH NEW UTILITIES WILL BE CONNECTED. PRIOR TO COMMENCING ANY EXCAVATION WORK THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE REQUIRED PROCEDURES.
- CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT HIS EXPENSE.
- ALL VALVES AND MANHOLE COVERS SHALL BE RAISED OR LOWERED TO MEET FINISHED GRADE.
- CONTRACTOR SHALL CUT OFF PIPES WITH THE INSIDE WALL OF THE BOX OR MANHOLE.
- CONTRACTOR SHALL GROUT AT CONNECTION OF PIPE TO BOX WITH NON-SHRINKING GROUT, INCLUDING PIPE VOIDS LEFT BY CUTTING PROCESS, TO A SMOOTH FINISH.
- CONTRACTOR SHALL GROUT WITH NON-SHRINK GROUT BETWEEN GRADE RINGS AND BETWEEN BOTTOM OF INLET LID FRAME AND TOP OF CONCRETE BOX
- SILT AND DEBRIS IS TO BE CLEANED OUT OF ALL STORM DRAIN BOXES. CATCH BASINS ARE TO BE MAINTAINED IN A CLEANED CONDITION AS NEEEDED UNTIL AFTER THE FINAL BOND RELEASE INSPECTION.
- CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS
- EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED. THE TRENCH WALL SHALL BE SO BRACED THAT THE WORKMEN MAY WORK SAFELY AND EFFICIENTLY. ALL TRENCHES SHALL BE DRAINED SO THE PIPE LAYING MAY TAKE PLACE IN DE-WATERED CONDITIONS.
- 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.
- MAINTAIN A MINIMUM 18" VERTICAL SEPARATION DISTANCE BETWEEN ALL UTILITY CROSSINGS.
- CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES.
- ALL BOLTED FITTINGS MUST BE GREASED AND WRAPPED.
- UNLESS SPECIFICALLY NOTED OTHERWISE, MAINTAIN AT LEAST 2 FEET OF COVER OVER ALL STORM DRAIN LINES AT ALL TIMES (INCLUDING DURING CONSTRUCTION).
- ALL WATER LINES SHALL BE INSTALLED A MINIMUM OF 60" BELOW FINISHED GRADE.
- ALL SEWER LINES AND SEWER SERVICES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET. PIPE EDGE TO PIPE EDGE. FROM THE BOTTOM OF WATER LINES TO A 10 FOOT SEPARATION CAN NOT BE MAINTAINED. THE SEWER LINE AND WATER LINE SHALL BE LAID IN SEPARATE TRENCHES AND THE BOTTOM OF THE WATER LINE SHALL BE AT LEAST 18" ABOVE THE TOP OF THE SEWER LINE.
- CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE TEES, BENDS, PLUGS, AND HYDRANTS.
- ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.
- CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.

Culinary Water Notes:

- ALL MATERIALS THAT MAY COME IN CONTACT WITH DRINKING WATER, INCLUDING PIPES, GASKETS, LUBRICANTS AND O-RINGS, SHALL BE ANSI-CERTIFIED AS MEETING THE REQUIREMENTS OF ANSI/NSF STANDARD 61, DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS, TO PERMIT FIELD-VERIFICATION OF THIS CERTIFICATION, ALL COMPONENTS SHALL BE APPROPRIATELY STAMPED WITH THE NSF LOGO.
- PIPE, JOINTS, FITTINGS, VALVES, AND FIRE HYDRANTS SHALL CONFORM TO ANSI/NSF STANDARD 61, AND APPLICABLE SECTIONS OF AWWA STANDARDS C104-A21.4-08 THROUGH C550-05 AND C900-07 THROUGH C950-07.
- ONLY MATERIALS THAT HAVE BEEN USED PREVIOUSLY FOR CONVEYING DRINKING WATER MAY BE REUSED. USED MATERIALS SHALL MEET THE ABOVE STANDARDS, BE THOROUGHLY CLEANED, AND BE RESTORED TO THEIR ORIGINAL CONDITION.
- FOR INSTALLATION OF PVC PIPE WATER MAINS SEE ASTM D2774. RECOMMENDED PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PRESSURE PIPING AND PVC PIPE AND AWWA MANUAL OF PRACTICE M23, 2003.
- A CONTINUOUS AND UNIFORM BEDDING SHALL BE PROVIDED IN THE TRENCH FOR ALL BURIED PIPE. STONES LARGER THAN THE BACKFILL MATERIALS DESCRIBED BELOW SHALL BE REMOVED FOR A DEPTH OF AT LEAST 6" BELOW THE BOTTOM OF THE PIPE. BACKFILL MATERIAL SHALL BE TAMPED IN LAYERS AROUND THE PIPE AND TO A SUFFICIENT HEIGHT ABOVE THE PIPE TO ADEQUATELY SUPPORT AND PROTECT THE PIPE. THE MATERIAL AND BACKFILL ZONES SHALL BE AS SPECIFIED BY THE STANDARDS REFERENCED IN #4 ABOVE.
- UNDER NO CIRCUMSTANCES SHALL THE PIPE OR ACCESSORIES BE DROPPED INTO THE TRENCH.
- PIPE SHALL BE PRESSURE TESTED AND LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARD C600-10.
- THE OPEN ENDS OF ALL WATERLINE UNDER CONSTRUCTION SHALL BE COVERED AND EFFECTIVELY SEALED AT THE END OF THE DAY'S WORK.
- ALL NEW WATER MAINS OR APPURTENANCES SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651-05 OR A METHOD APPROVED BY THE DIRECTOR. THE SPECIFICATIONS SHALL INCLUDE DETAILED PROCEDURES FOR THE ADEQUATE FLUSHING, DISINFECTION AND MICROBIOLOGICAL TESTING OF ALL WATER MAINS. ON ALL NEW AND EXTENSIVE DISTRIBUTION SYSTEM CONSTRUCTION, EVIDENCE OF SATISFACTORY DISINFECTION SHALL BE PROVIDED TO THE DIVISION. SAMPLES FOR COLIFORM ANALYSES SHALL BE COLLECTED AFTER DISINFECTION IS COMPLETE AND THE SYSTEM IS REFILLED WITH DRINKING WATER. A STANDARD HETEROTROPHIC PLATE COUNT IS ADVISABLE. THE USE OF WATER FOR PUBLIC DRINKING WATER PURPOSES SHALL NOT COMMENCE UNTIL THE BACTERIOLOGIC TESTS INDICATE THE WATER IS FREE FROM CONTAMINATION.

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.

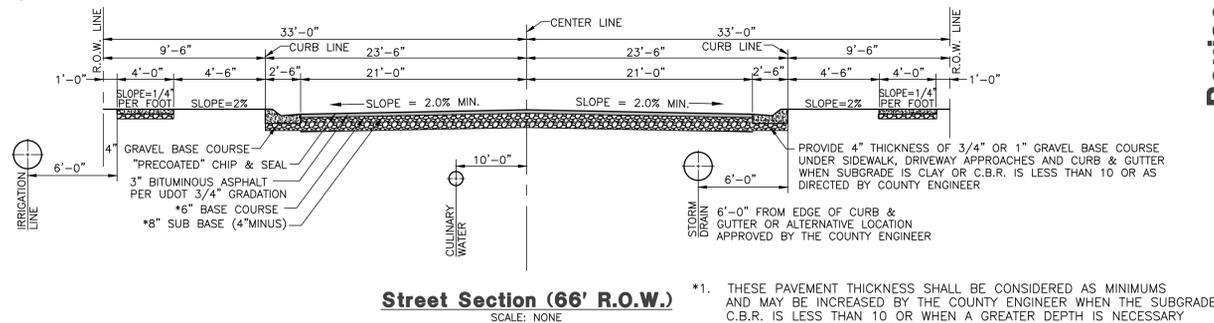
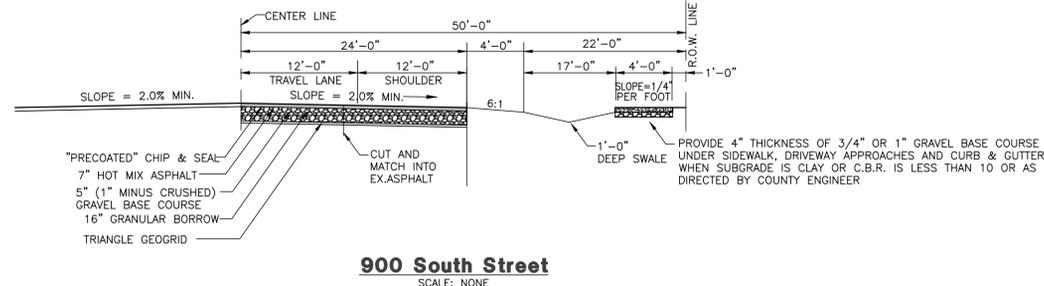
EXPOSED SLOPES:

ANY EXPOSED SLOPE THAT WILL REMAIN UNTOUCHED FOR LONGER THAN 14 DAYS MUST BE STABILIZED BY ONE OR MORE OF THE FOLLOWING METHODS:

- SPRAYING DISTURBED AREAS WITH A TACKIFIER VIA HYDROSEED
- TRACKING STRAW PERPENDICULAR TO SLOPES
- INSTALLING A LIGHT-WEIGHT, TEMPORARY EROSION CONTROL BLANKET

Legend

—W—	= PROPOSED CULINARY WATER LINE	FC	= FENCE CORNER
—EX.W—	= EXISTING CULINARY WATER LINE	FF	= FINISH FLOOR
—SS—	= PROPOSED SANITARY SEWER LINE	FFE	= FINISH FLOOR ELEVATION
—EX.SS—	= EXISTING SANITARY SEWER LINE	FG	= FINISHED GRADE
—SD—	= PROPOSED STORM DRAIN LINE	FH	= FIRE HYDRANT
—EX.SD—	= EXISTING STORM DRAIN LINE	FL	= FLOW LINE
—X—X—	= FENCE LINE	GB	= GRADE BREAK
— — — —	= TRAIL	INV	= INVERT
●	= PROPOSED FIRE HYDRANT	L.F.	= LINEAR FBET
○	= EXISTING FIRE HYDRANT	NG	= NATURAL GRADE
○	= PROPOSED MANHOLE	PP	= POWER/UTILITY POLE
○	= EXISTING MANHOLE	P.U.E.	= PUBLIC UTILITY BASEMENT
●	= PROPOSED SEWER CLEAN-OUT	RCP	= REINFORCED CONCRETE PIPE
X	= PROPOSED GATE VALVE	RIM	= RIM OF MANHOLE
X	= EXISTING GATE VALVE	R.O.W.	= RIGHT-OF-WAY
■	= PROPOSED WATER METER	SD	= STORM DRAIN
■	= EXISTING WATER METER	SS	= SANITARY SEWER
■	= PROPOSED CATCH BASIN	TBC	= TOP BACK OF CURB
■	= EXISTING CATCH BASIN	TOA	= TOP OF ASPHALT
■	= PLUG W/ 2" BLOW-OFF	TOC	= TOP OF CONCRETE
■	= PLUG & BLOCK	TOFF	= TOP OF FINISHED FLOOR
○	= STREET LIGHT	TOI	= TOP OF PUMP ISLAND
— —	= SIGN	TSW	= TOP OF SIDEWALK
BLDG	= BUILDING	W	= CULINARY WATER
C&G	= CURB & GUTTER	WM	= WATER METER
CB	= CATCH BASIN		= EXISTING ASPHALT PAVEMENT
C.F.	= CUBIC FEET		= PROPOSED ASPHALT PAVEMENT
C.F.S.	= CUBIC FEET PER SECOND		= PROPOSED CONCRETE
			= PROPOSED CONCRETE PAVING OR ALTERNATE BID PAVING



*1. THESE PAVEMENT THICKNESS SHALL BE CONSIDERED AS MINIMUMS AND MAY BE INCREASED BY THE COUNTY ENGINEER WHEN THE SUBGRADE C.B.R. IS LESS THAN 10 OR WHEN A GREATER DEPTH IS NECESSARY TO PROVIDE SUFFICIENT STABILITY. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN BASED ON A SOILS ANALYSIS FOR APPROVAL BY THE COUNTY ENGINEER. COMPACTION TESTS ON BOTH SUB-BASE AND BASE COURSES WILL BE REQUIRED.

1/4/2016 1:03:32:01 - Parcel 10236001\3\Improvements\Borrow imp 1.dwg

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REVISIONS

DATE	DESCRIPTION
09-20-16	CK County Comments
12-13-16	ER County Comments
1-24-17	CK Storm Drain
1-24-17	KH Storm Drain
2-2-17	KH DFO comments

Vaquero Village Cluster Subdivision Phase 1
WEBER COUNTY, UTAH

Notes/Legend/ Street Cross-Section

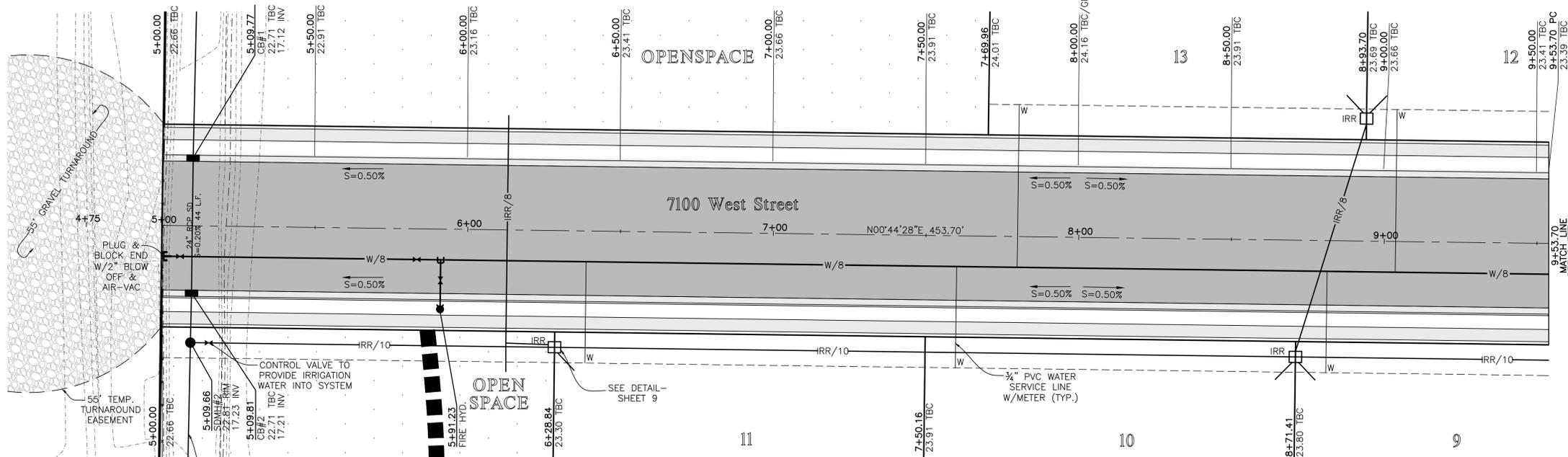
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REGISTERED PROFESSIONAL ENGINEER
375528
J. NATE REEVE
3.8.17
STATE OF UTAH

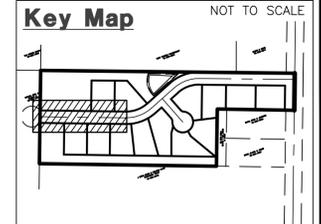
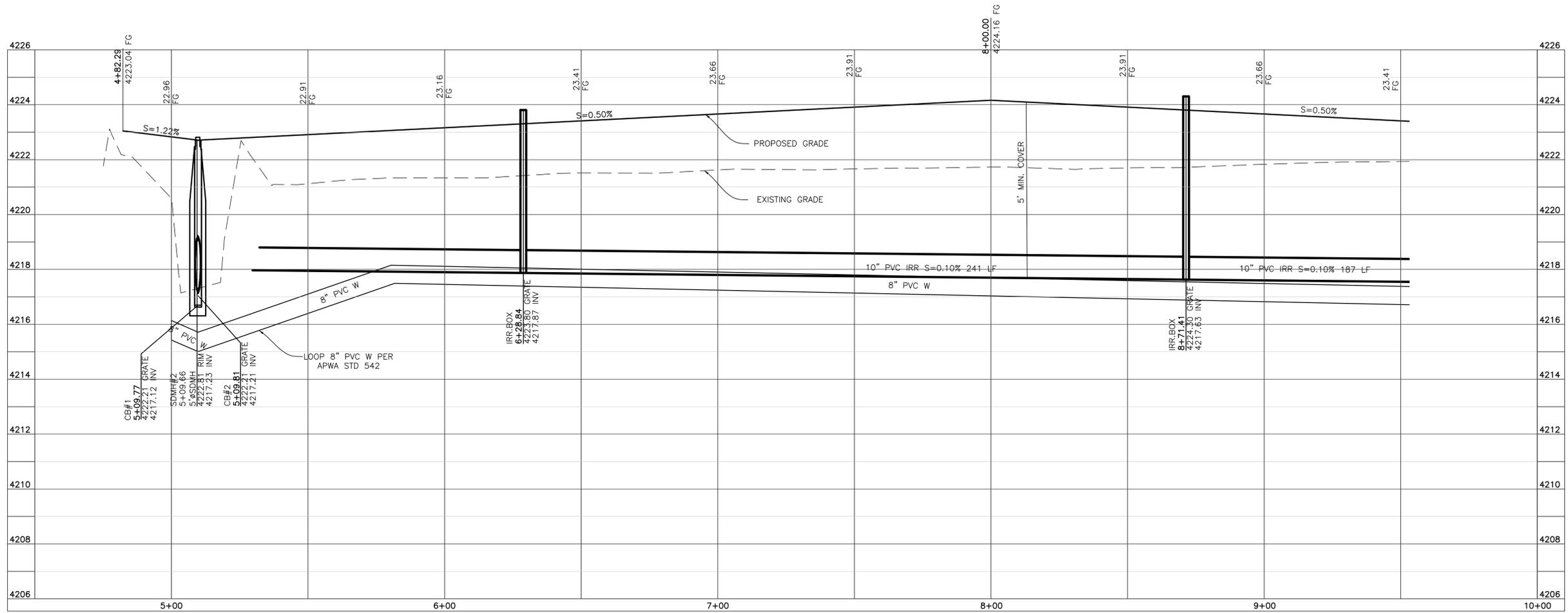
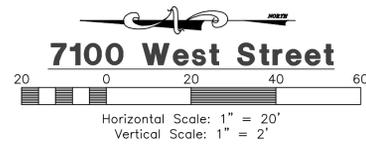
Project Info.

Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

Sheet	12
2	Sheets



EX. IRRIGATION & DRAINAGE DITCH TO BE PIPED, DITCH TIES TO IRRIGATION & DRAINAGE SYSTEM WHICH CONNECTS TO LARGE IRRIGATION RESERVOIR - SEE SHEET 10



Construction Notes:

- ALL CONSTRUCTION IS TO CONFORM TO THE STANDARD DRAWINGS AND SPECIFICATIONS OF WEBER COUNTY.
 - CONSTRUCT HANDICAP RAMP PER ADA AND COUNTY REQUIREMENTS.
- CULINARY WATER**
W/8 - 8" PVC C-900 CLASS 200 WATER
W/10 - 10" PVC C-900 CLASS 200 WATER
- SANITARY SEWER**
SS/8 - 8" PVC SDR-35 SEWER LINE
SS/10 - 10" PVC SDR-35 SEWER LINE
- STORM DRAIN**
SD/15 - 15" RCP STORM DRAIN
SD/18 - 18" RCP STORM DRAIN
- IRRIGATION**
IRR/6 - 6" PVC C-900 IRRIGATION LINE
IRR/8 - 8" PVC C-900 IRRIGATION LINE
IRR/10 - 10" PVC C-900 IRRIGATION LINE

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REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

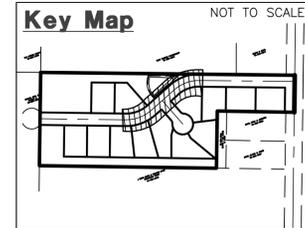
Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH
7100 West Street
5+00.00 - 9+53.70



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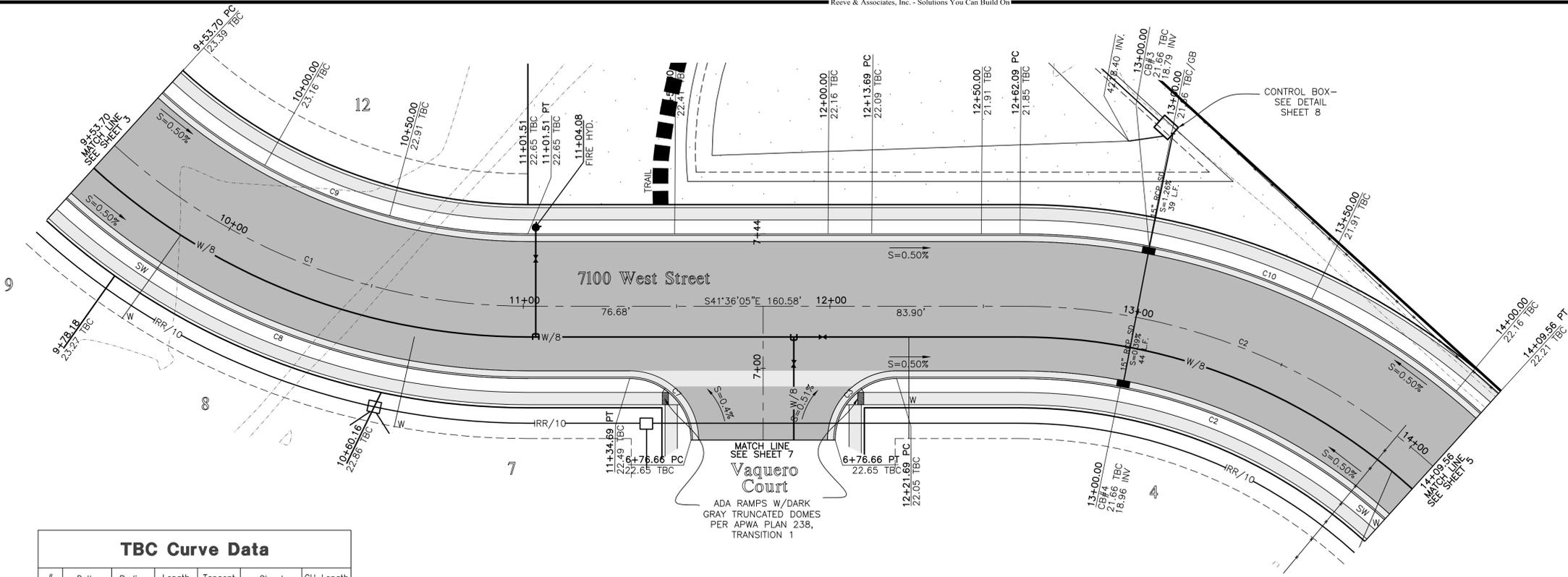


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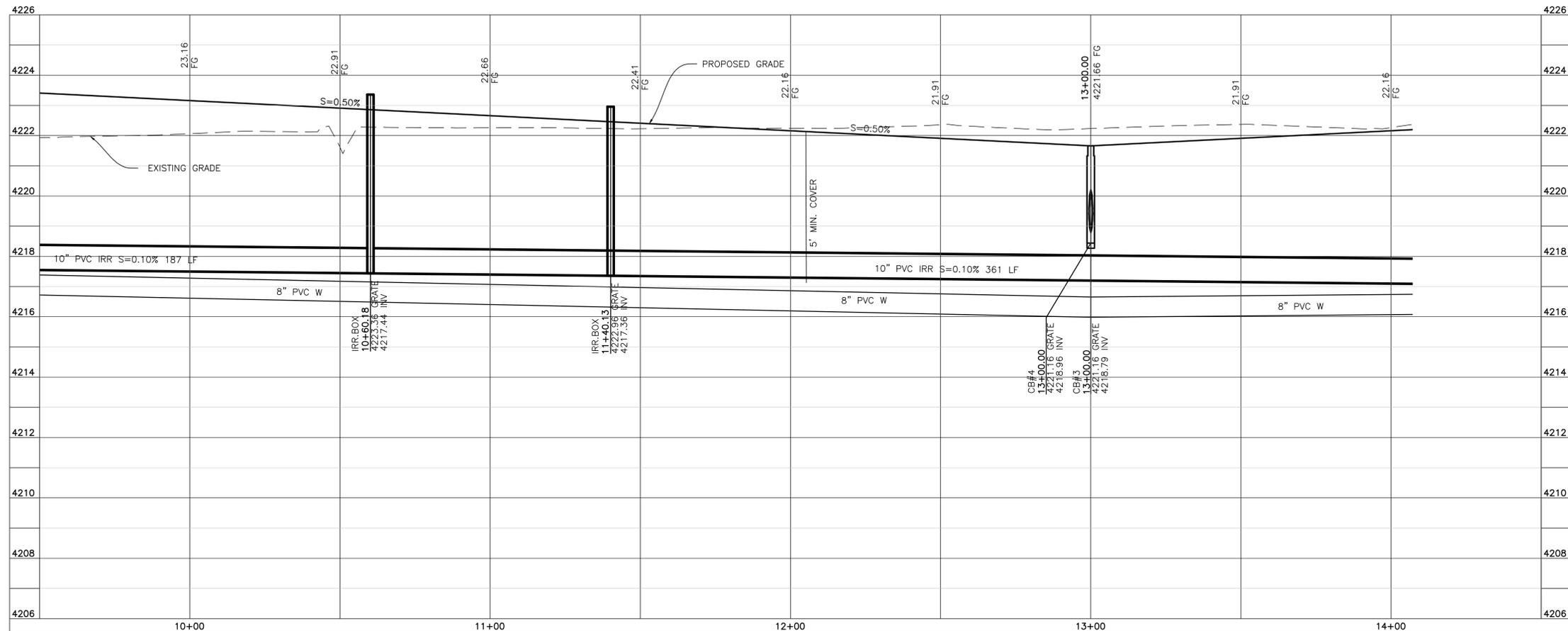
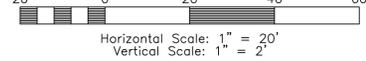
TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C2	42°14'48"	176.50'	130.14'	68.19'	S20°28'41"E	127.21'
C3	90°00'00"	20.00'	31.42'	20.00'	N86°36'05"W	28.28'
C7	90°00'00"	20.00'	31.42'	20.00'	N3°23'55"E	28.28'
C8	42°20'33"	223.50'	165.17'	86.56'	S20°25'48"E	161.44'
C9	42°20'33"	176.50'	130.44'	68.36'	N20°25'48"W	127.49'
C10	42°14'48"	223.50'	164.80'	86.35'	N20°28'41"W	161.09'

Centerline Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C1	42°20'33"	200.00'	147.80'	77.46'	S20°25'48"E	144.46'
C2	42°14'48"	200.00'	147.47'	77.27'	S20°28'41"E	144.15'

7100 West Street



Revised: 1-27-17

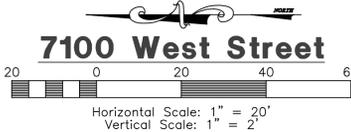
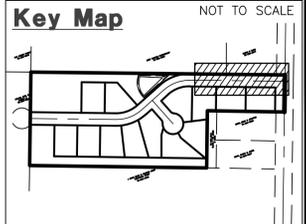
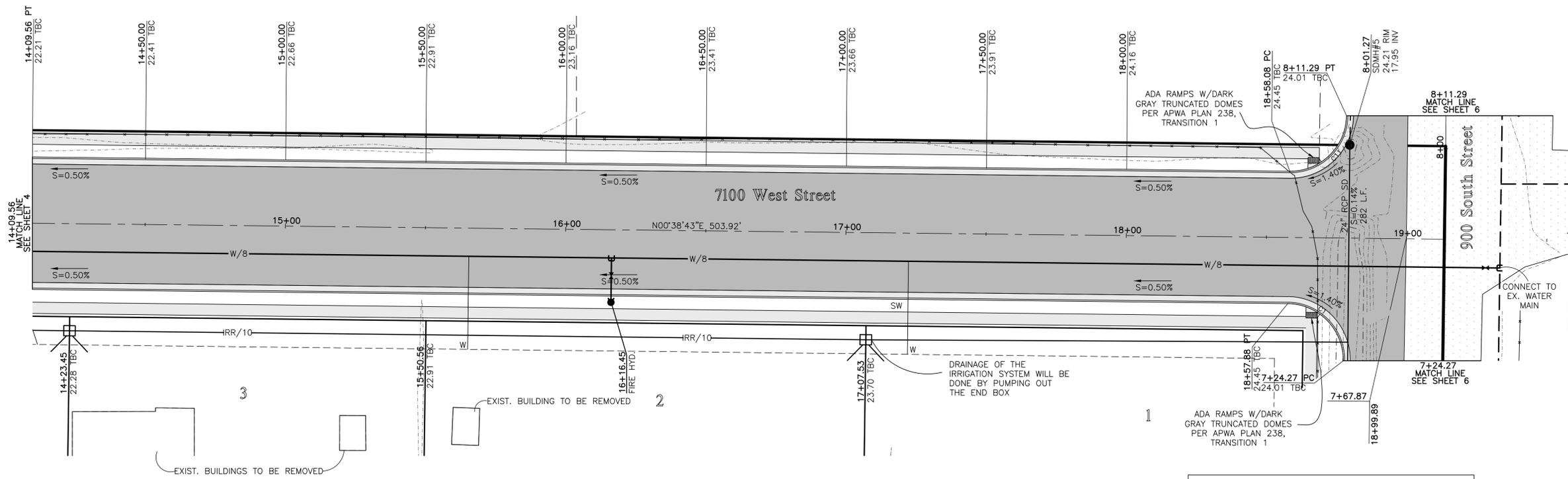
Vaquero Village Cluster Subdivision
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 WEBER COUNTY, UTAH
7100 West Street
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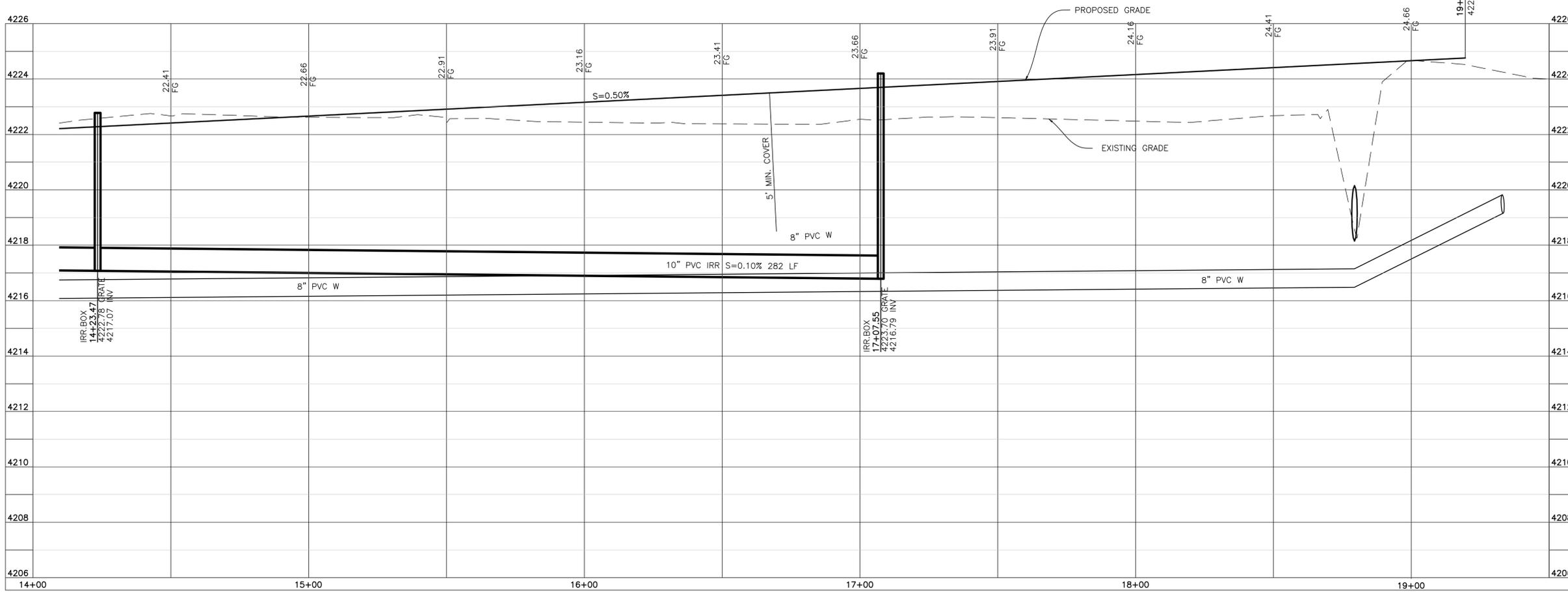
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Sheet **12**
4 Sheets



TBC Curve Data

#	Delta	Radius	Length	Tangent	Chord	CH Length
C1	90°07'58"	20.00'	31.46'	20.05'	S45°42'42"W	28.32'
C11	89°52'55"	20.00'	31.37'	19.96'	N44°17'45"W	28.26'



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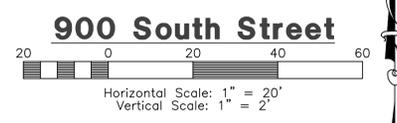
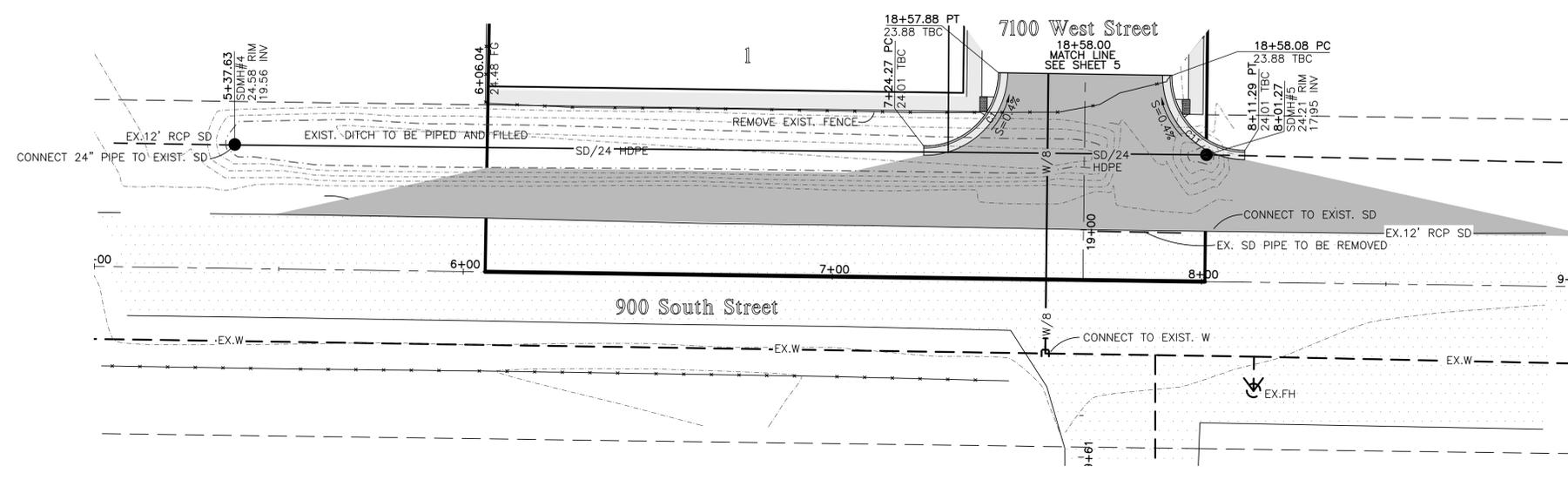
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Vaquero Village Cluster Subdivision
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7100 West Street
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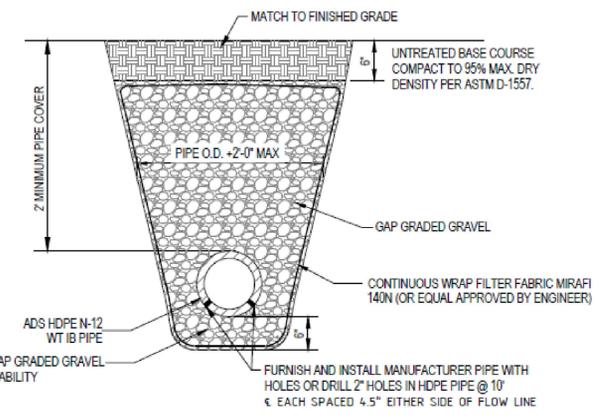
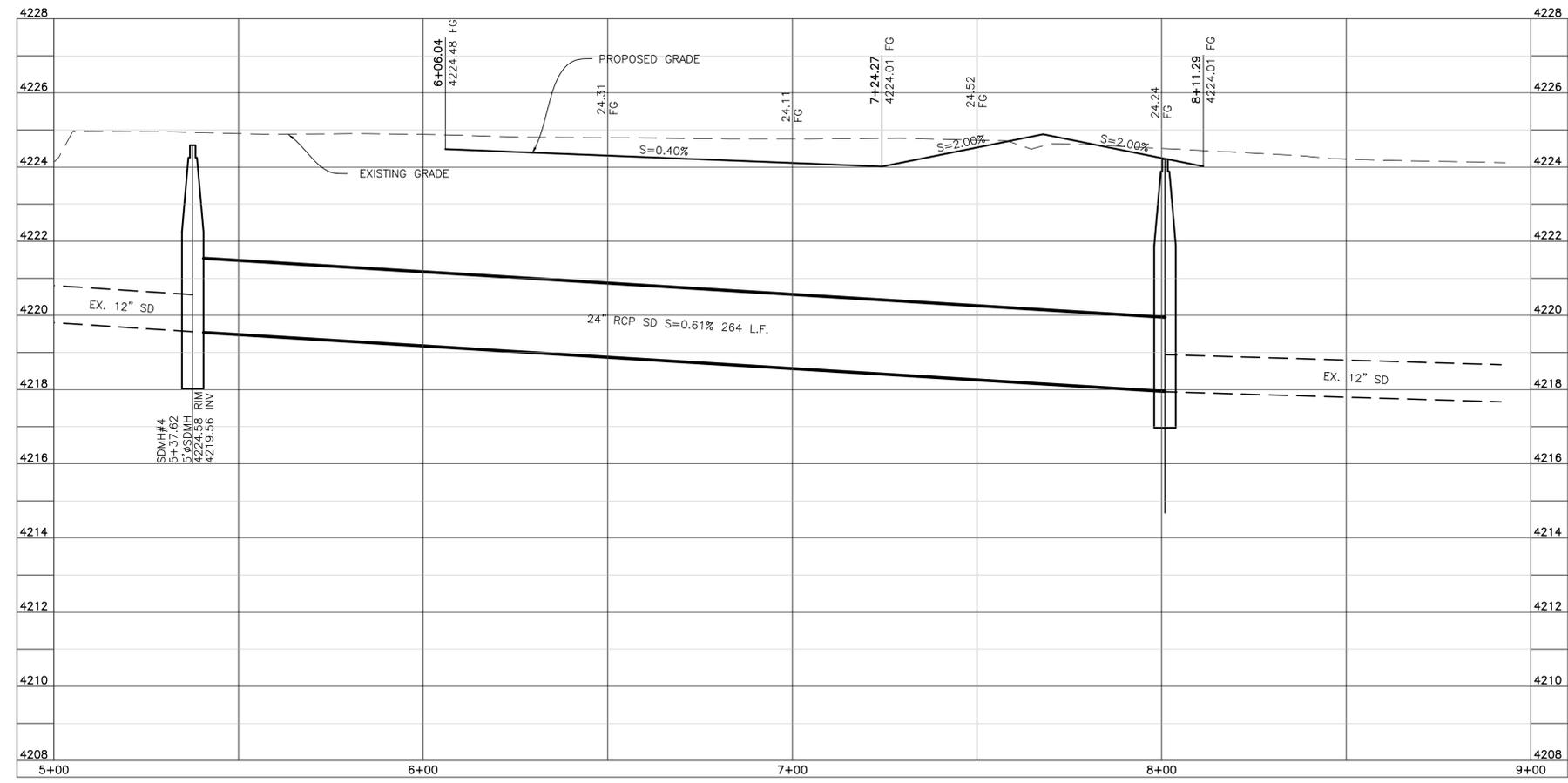


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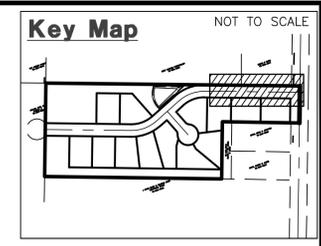


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C11	89°52'55"	20.00'	31.37'	19.96'	N44°17'45"W	28.26'



STORM DRAIN TRENCH SECTION
SHOULDER OF ROAD
F CURVE SCALE: NONE

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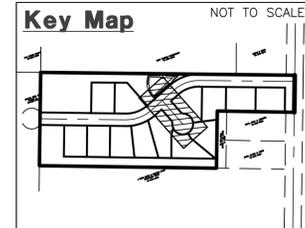
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Sheet **12**
6 Sheets

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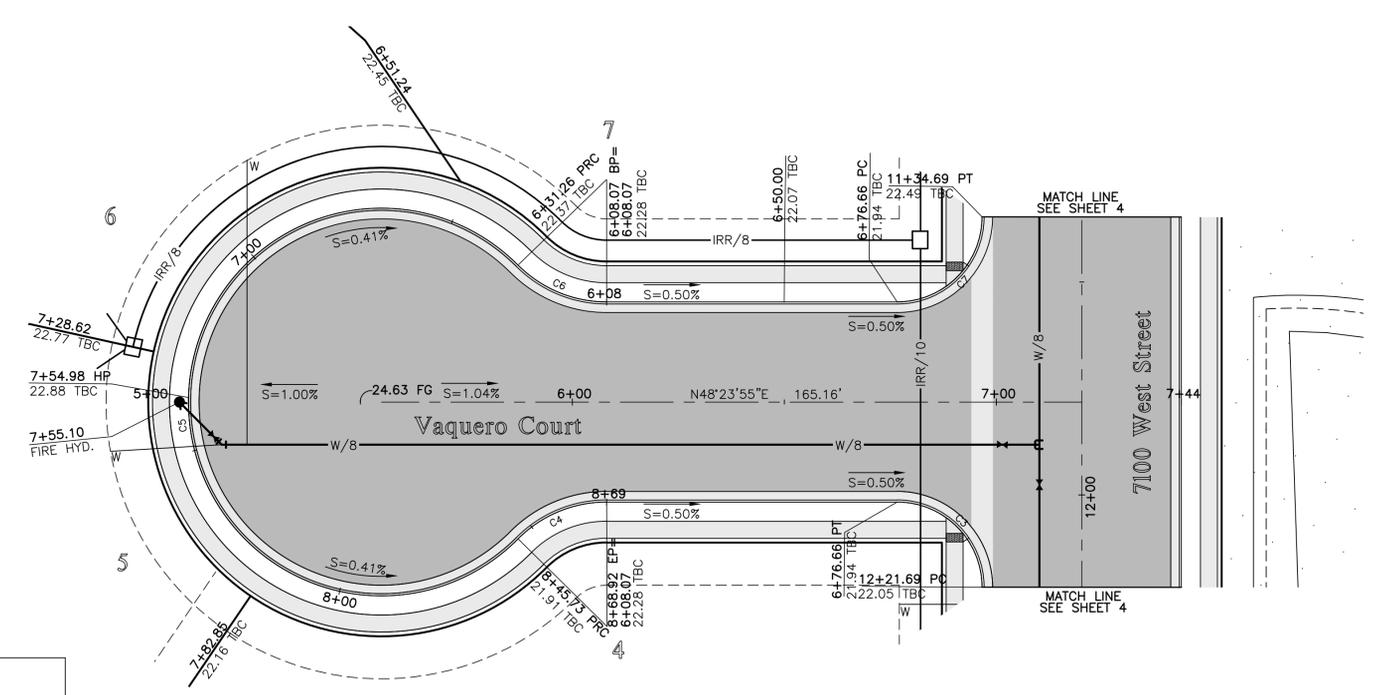
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Vaquero Village Cluster Subdivision
Phase 1
 WEBER COUNTY, UTAH
Vaquero Court
5+00.00 - 7+50.00



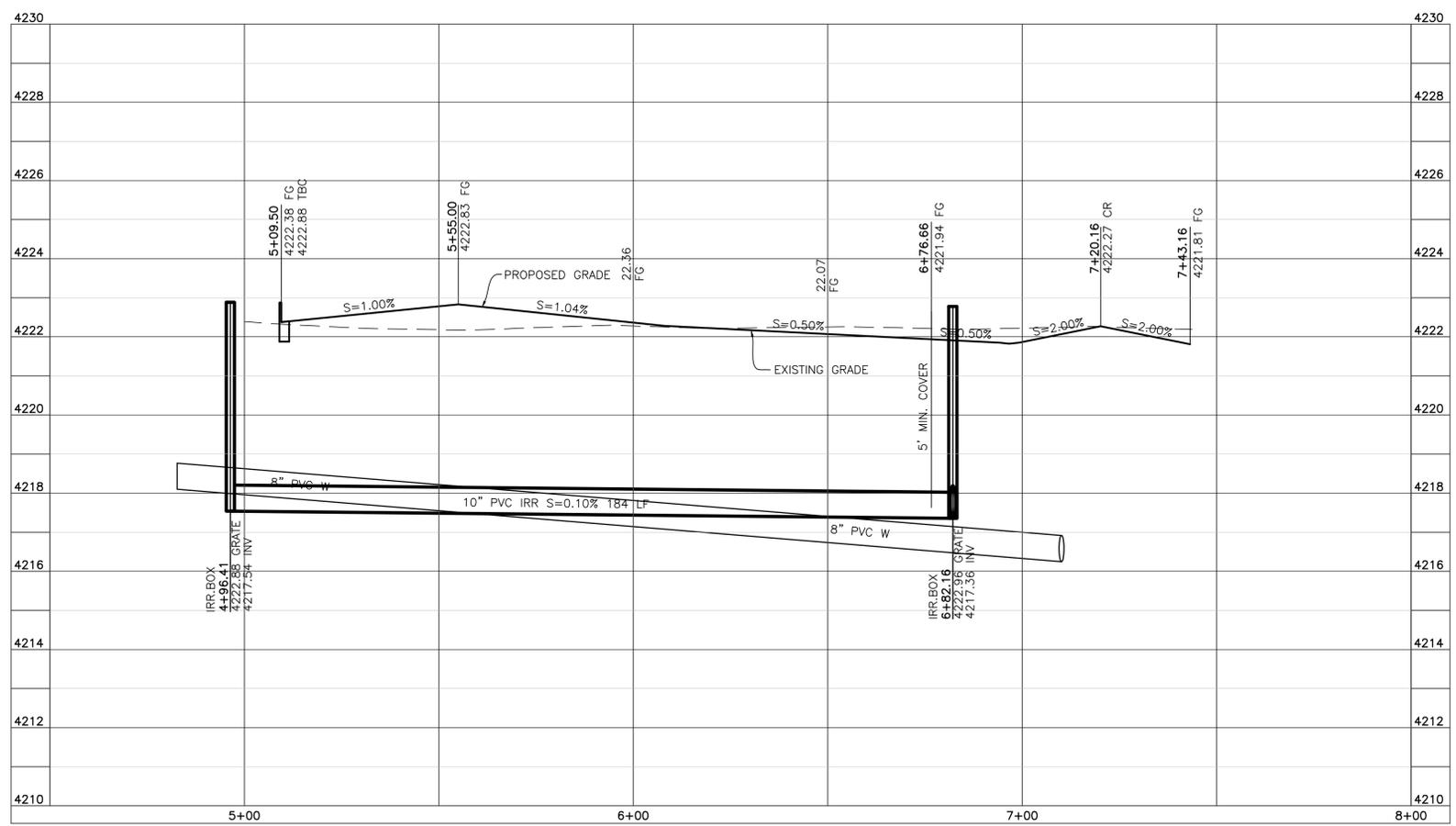
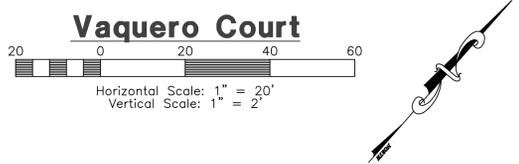
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Sheet **12**
7 Sheets



TBC Curve Data

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C4	45°02'07"	29.50'	23.19'	12.23'	S25°52'51"W	22.60'
C5	270°04'18"	45.50'	214.47'	45.44'	S41°36'05"E	64.31'
C6	45°02'07"	29.50'	23.19'	12.23'	N70°54'59"E	22.60'
C7	90°00'00"	20.00'	31.42'	20.00'	N3°23'55"E	28.28'



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Revised: 1-27-17

Storm Runoff Calculations

Vaquero 1/19/2017

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Weber, UT area taken from NOAA Atlas 14 using a 10 year storm for collection and a 100 year storm for storage. Storage facilities have been designed per requirements provided by the City for a regional detention pond. A majority of water run off collected from the property will be diverted into a holding pond and released at a reduced rate as part of the detention pond. Design calculations here are presented for the overall property development.

The calculations are as follows:

1. Drainage Area:

Total Area =	12.42 acres or	541,203 sq. ft.
Total Collected Area	0.31	288,888 sq. ft.

Developed Runoff Coefficient

Runoff Coefficients		
Single Family Residence Paved Area	79,905	C = 0.9
Landscaped Area	178,983	C = 0.2
Roof	30,000	C = 0.9
Weighted Runoff Coefficient		C = 0.47

2. Time of Concentration:

Use: 30 min.
Estimated from storm water runoff overland flow time

3. Rainfall Intensities:

10-yr 30-min (conveyance) 1.39 in/hr

4. Peak Run-off:

Runoff Coefficient	C = 0.47
Rainfall Intensity	I = 1.39 IN./HR.
Area	A = 6.63 ACRES
Runoff Quantity	Q = CIA
Q (max at pond internal)	Q = 4.30 ft ³ /s

5. Allowable Discharge:

Typical allowable discharge Q = (0.1 x acres) = 0.66 ft³/s

6. Volume of Run-off for 100-year 24-Hour Storm Event:

C = 0.47
A = 288,888 ft²
Q(ou) = 0.66 ft³/s

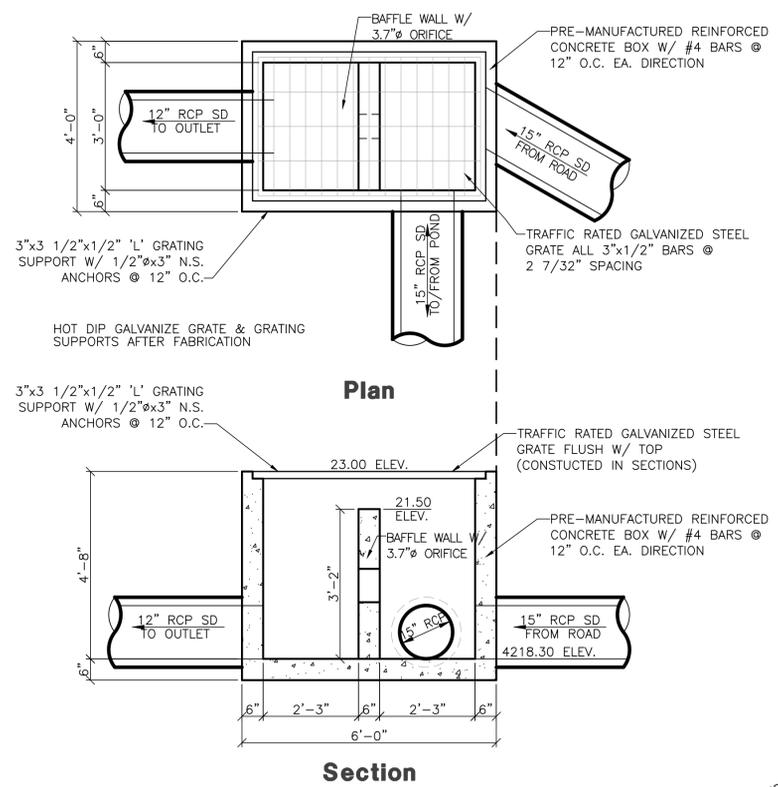
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cfs)	Vol. out (cfs)	Difference (cfs)
0	0	0.00	0.00	0	0	0
5	300	6.59	20.55	6,165	199	5,966
10	600	15.59	9.355	9,355	398	8,957
15	900	4.14	12.91	11,619	697	11,022
30	1800	2.79	8.70	15,660	1,194	14,466
60	3600	1.72	5.36	19,309	2,389	16,921
120	7200	0.94	2.94	21,195	4,775	16,420
180	10800	0.64	2.00	21,621	7,163	14,459
360	21600	0.36	1.12	24,113	14,329	9,788
720	43200	0.22	0.69	29,638	28,650	986
1440	86400	0.12	0.39	33,408	57,300	-23,892

Total Required Detention Volume 16,921 ft³

7. Orifice Sizing Area:

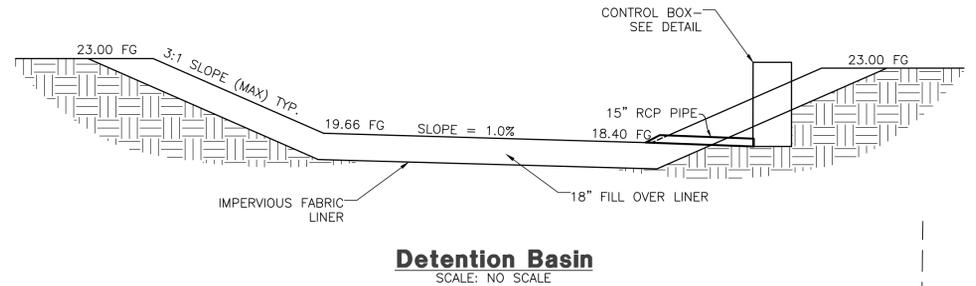
Given: Q = 0.66 cfs
Zg = 64.4 ft
H = 2.50 ft
Cd = 0.7 for circular openings
R = SQRT((Q/0.7)² / (64.4 * 0.5))
R = 0.15 feet
1.85 inches
D = 3.70 inches

THE REQUIRED VOLUME OF THE DETENTION BASIN IS 16921 CU. FT.
ORIFICE DIAMETER AT OUTLET IS 3.70"

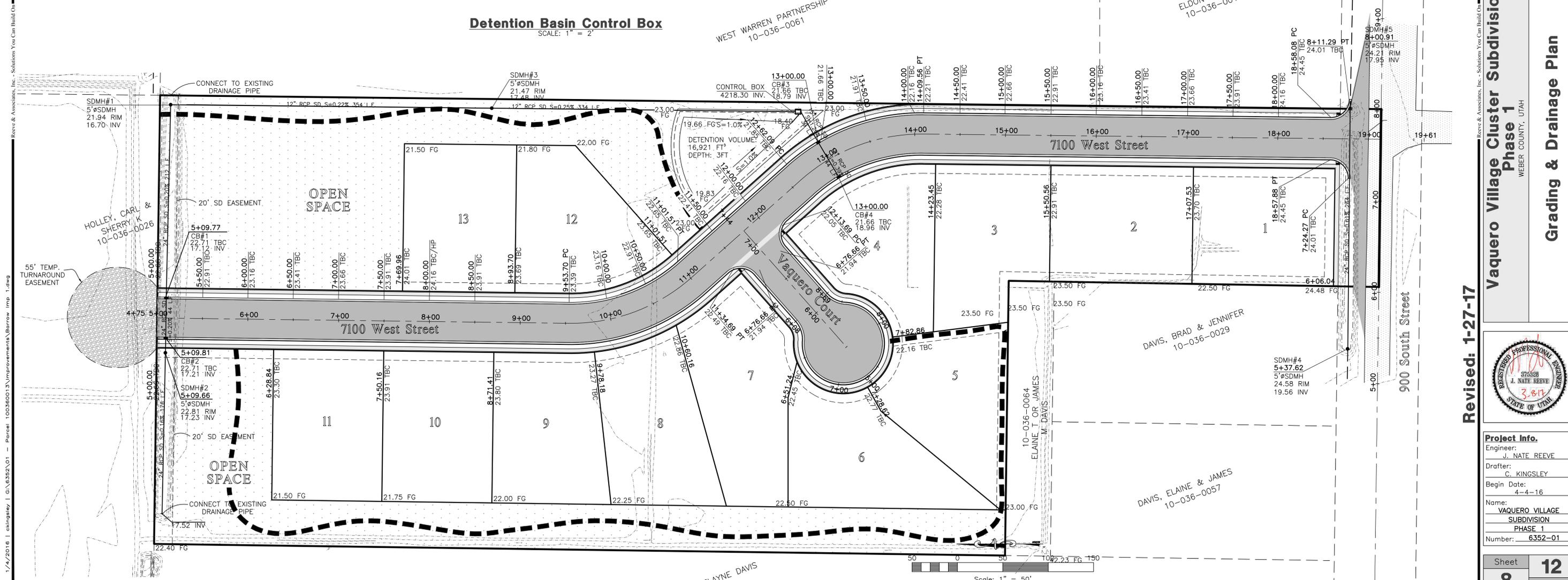


STAGE STORAGE TABLE

ELEV.	AREA (sq. ft.)	DEPTH (ft)	CONIC TOTAL VOL. (cu. ft.)
4218.40	0.00	0.000	0.00
4218.65	511.70	0.250	64.78
4219.65	6,629.51	1.250	3059.12
4220.65	8,609.00	2.250	10656.85
4221.65	10,027.57	3.250	19966.12



Detention Basin Control Box
SCALE: 1" = 2'



Reeve & Associates, Inc.
920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403
TEL: (801) 921-2100 FAX: (801) 621-2666 www.reeve-assoc.com

IRA
LAND PLANNERS • CIVIL ENGINEERS • LAND SURVEYORS
TRAFFIC ENGINEERS • STRUCTURAL ENGINEERS • LANDSCAPE ARCHITECTS

REVISIONS

DATE	DESCRIPTION
09-20-16	CK County Comments
12-13-16	ER County Comments
12-22-16	CK Storm Drain
1-24-17	KH Storm Drain
2-2-17	KH DEQ comments

Vaquero Village Cluster Subdivision Phase 1
WEBER COUNTY, UTAH

Grading & Drainage Plan

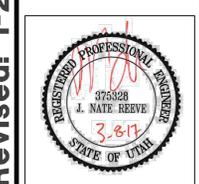


Project Info.

Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

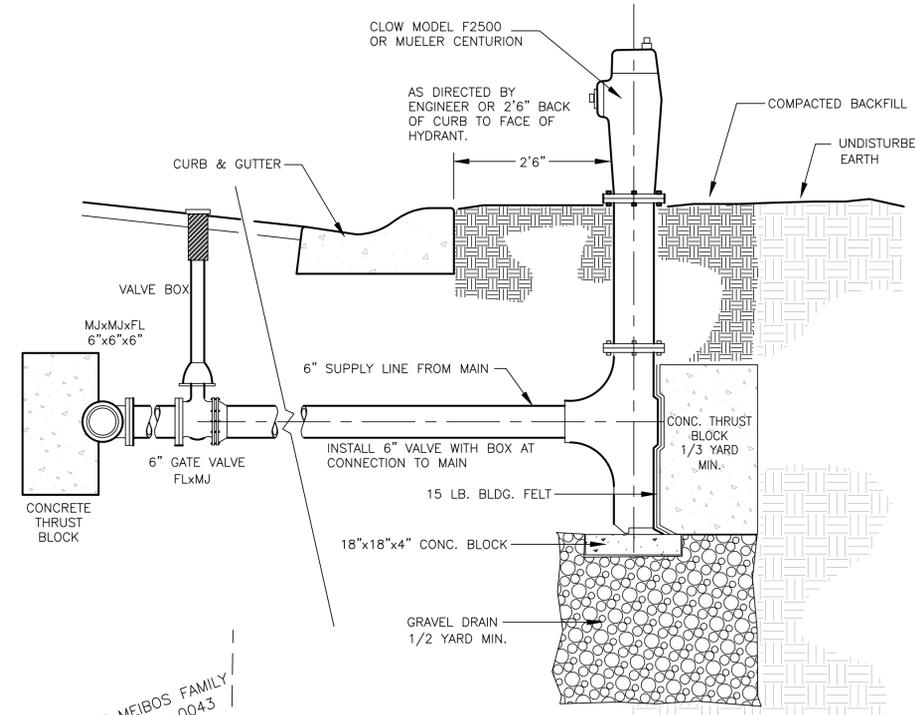
REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

Vaquero Village Cluster Subdivision Phase 1
 WEBER COUNTY, UTAH
Utility & Irrigation Plan

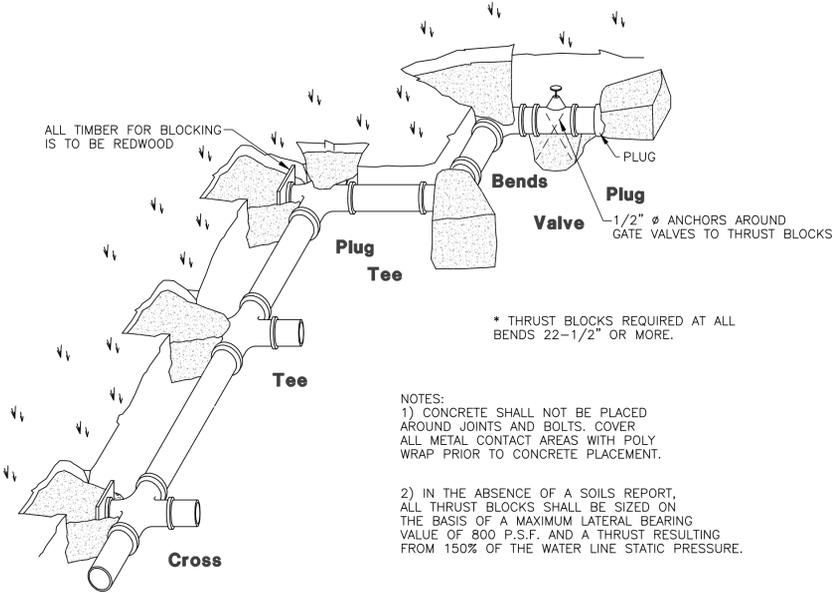


Project Info.

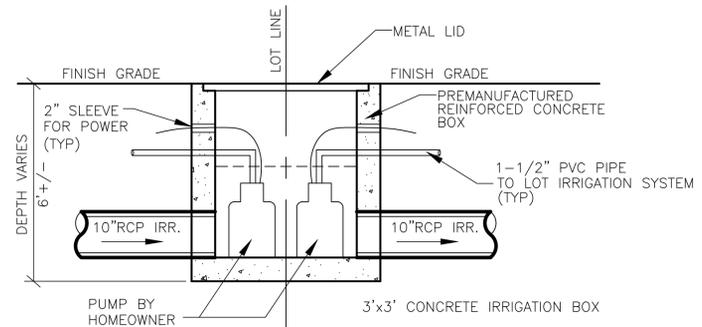
Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01



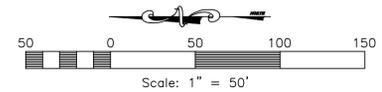
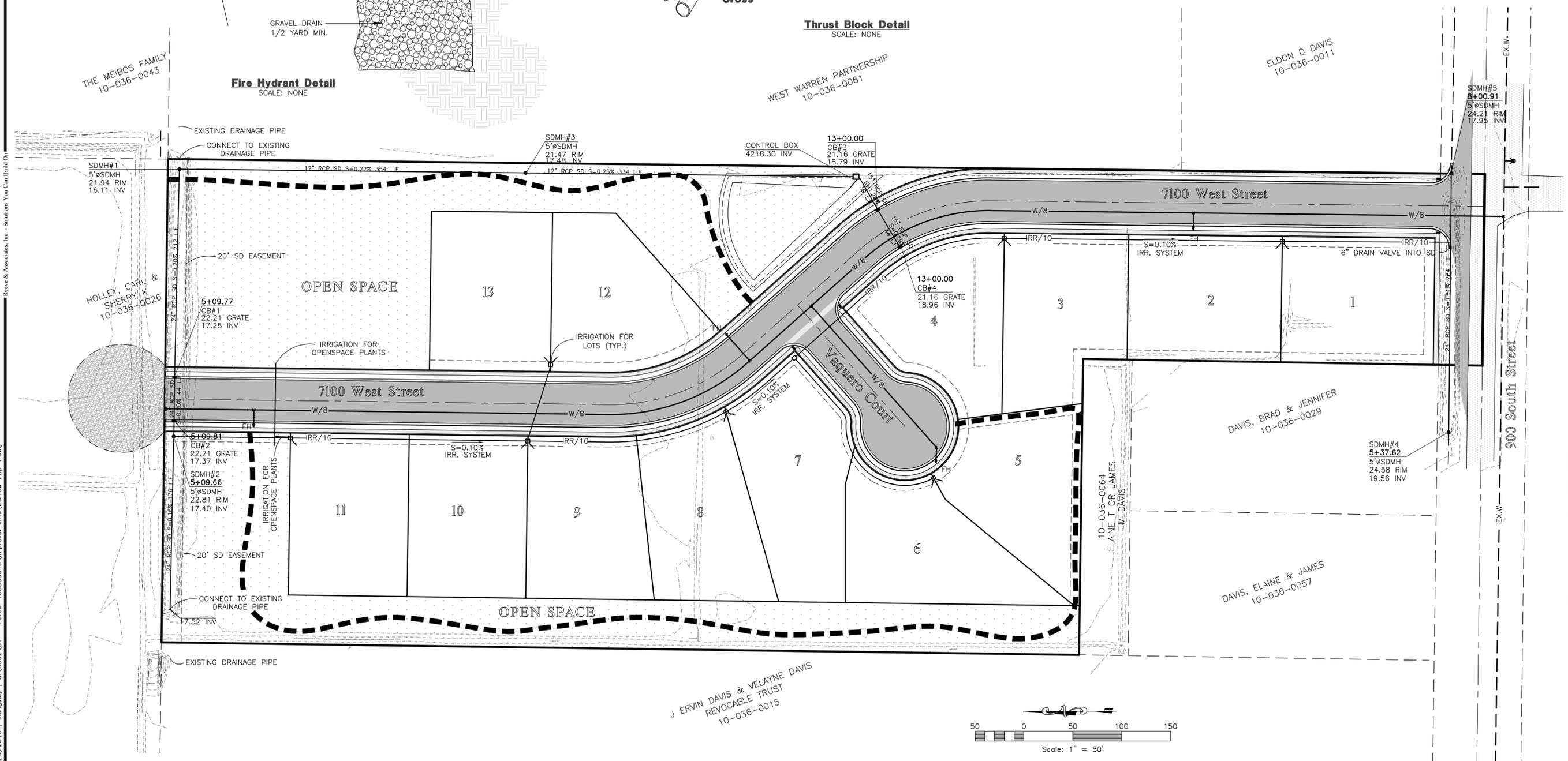
Fire Hydrant Detail
 SCALE: NONE



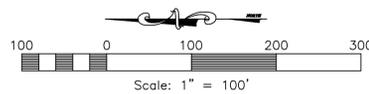
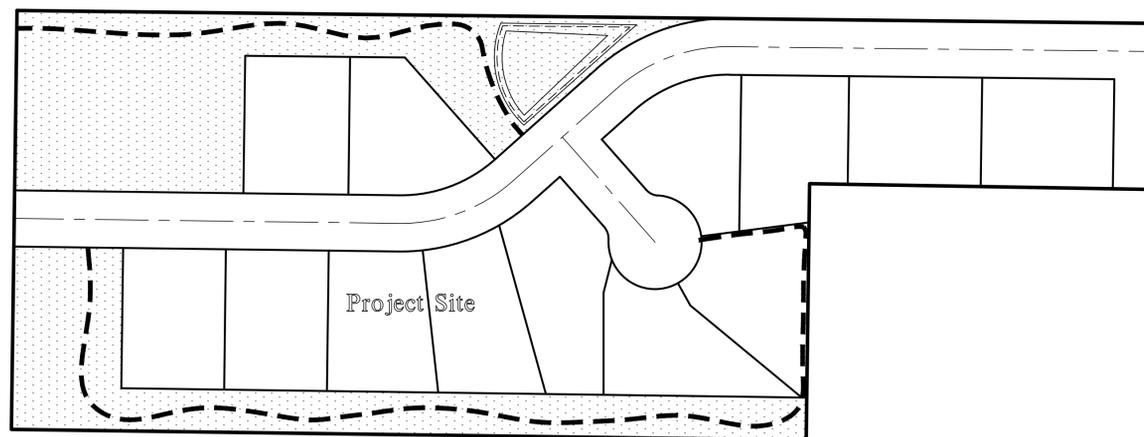
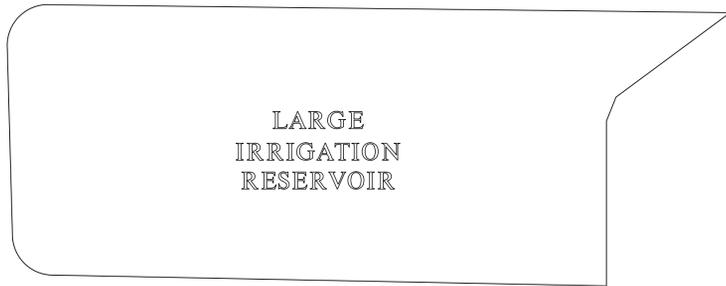
Thrust Block Detail
 SCALE: NONE



Typical Irrigation Box
 SCALE: NONE



1/4/2016 | ckingale | G:\6352\01 - Parcel 10026001\Improvements\Borrow imp 1.dwg



Vicinity Map
NOT TO SCALE



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 920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403
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DATE	DESCRIPTION
09-20-16	CK County Comments
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**Vaquero Village Cluster Subdivision
 Phase 1**
 WEBER COUNTY, UTAH

Irrigation Reservoir Exhibit

Revised: 1-27-17



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:
 Barrow Land Livestock, LLC
 Dean & Justin Barrow
 6835 W. 900 S.
 Ogden, UT. 84404
 (801) 514-8194

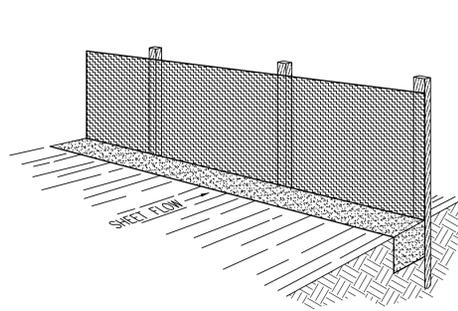
Blue Stakes Location Center
**Call: Toll Free
 1-800-662-4111**
 Two Working Days Before You Dig

Project Info.
 Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

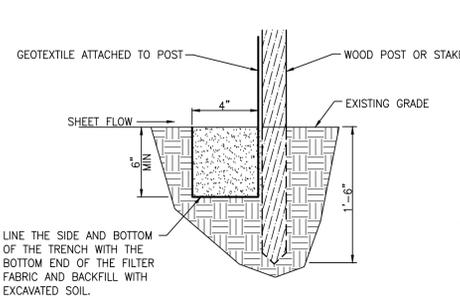
Sheet **12**
10 Sheets

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.

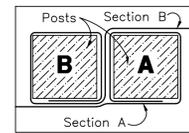
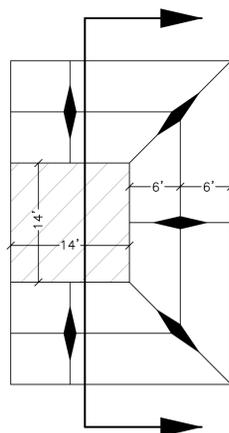


Figure 1:
Top View of
Roll-to-Roll Connection

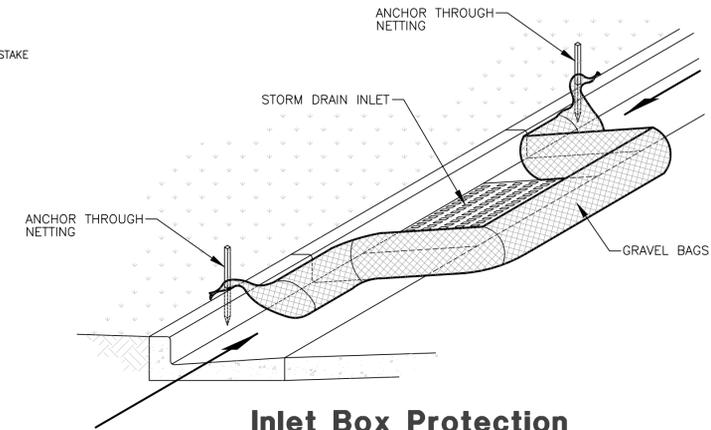
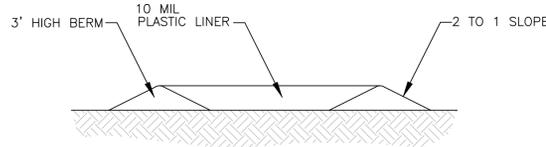
Silt Fence Detail

SCALE: NONE

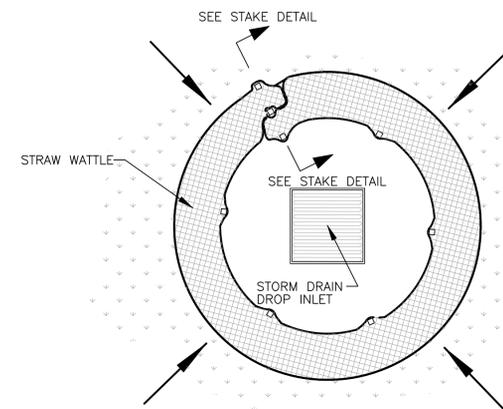


**Concrete Washout Area
w/ 10 mil Plastic Liner**

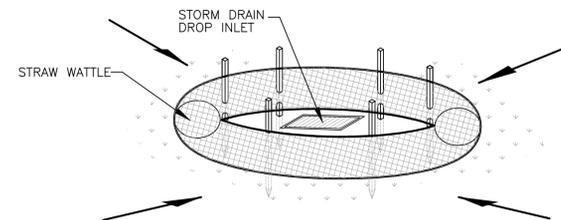
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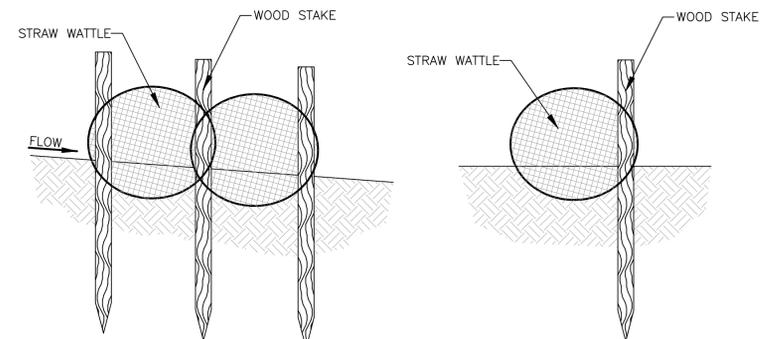
Inlet Box Protection



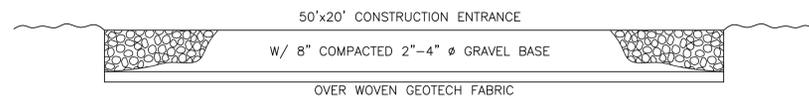
Plan View



Drop Inlet Protection



Stake Detail



Cross Section 50' x 20' Construction Entrance

Reeve & Associates, Inc.
IRA
 920 CHAMBERS STREET, SUITE 14, OGDEN, UTAH 84403
 TEL: (801) 621-2100 FAX: (801) 621-2666 www.reeve-assoc.com
 LAND PLANNERS • CIVIL ENGINEERS • LAND SURVEYORS
 PUBLIC ENGINEERS • STRUCTURAL ENGINEERS • LANDSCAPE ARCHITECTS

REVISIONS	DATE	DESCRIPTION
09-20-16	CK	County Comments
12-13-16	ER	County Comments
12-22-16	CK	Storm Drain
1-24-17	KH	Storm Drain
2-2-17	KH	DEQ comments

**Vaquero Village Cluster Subdivision
Phase 1**
 WEBER COUNTY, UTAH
**Storm Water Pollution
Prevention Plan Details**

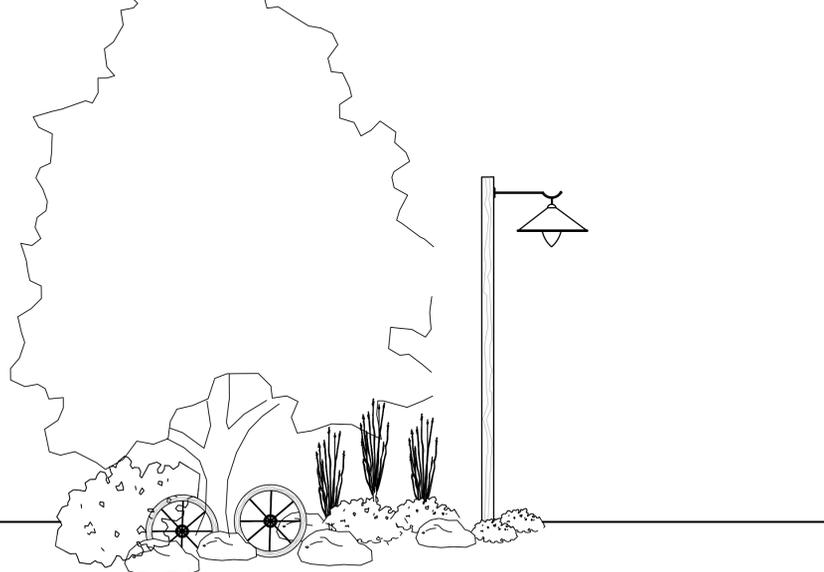
REGISTERED PROFESSIONAL ENGINEER
 375328
J. NATE REEVE
 3.8.17
 STATE OF UTAH

Project Info.
 Engineer: J. NATE REEVE
 Drafter: C. KINGSLEY
 Begin Date: 4-4-16
 Name: VAQUERO VILLAGE SUBDIVISION PHASE 1
 Number: 6352-01

Sheet **12**
M Sheets

1/4/2016 | ckingale | G:\6352\01 - Parcel 10036001\3\Improvements\Borrow Imp 1.dwg

Vaquero Village



Plant Table

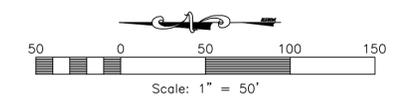
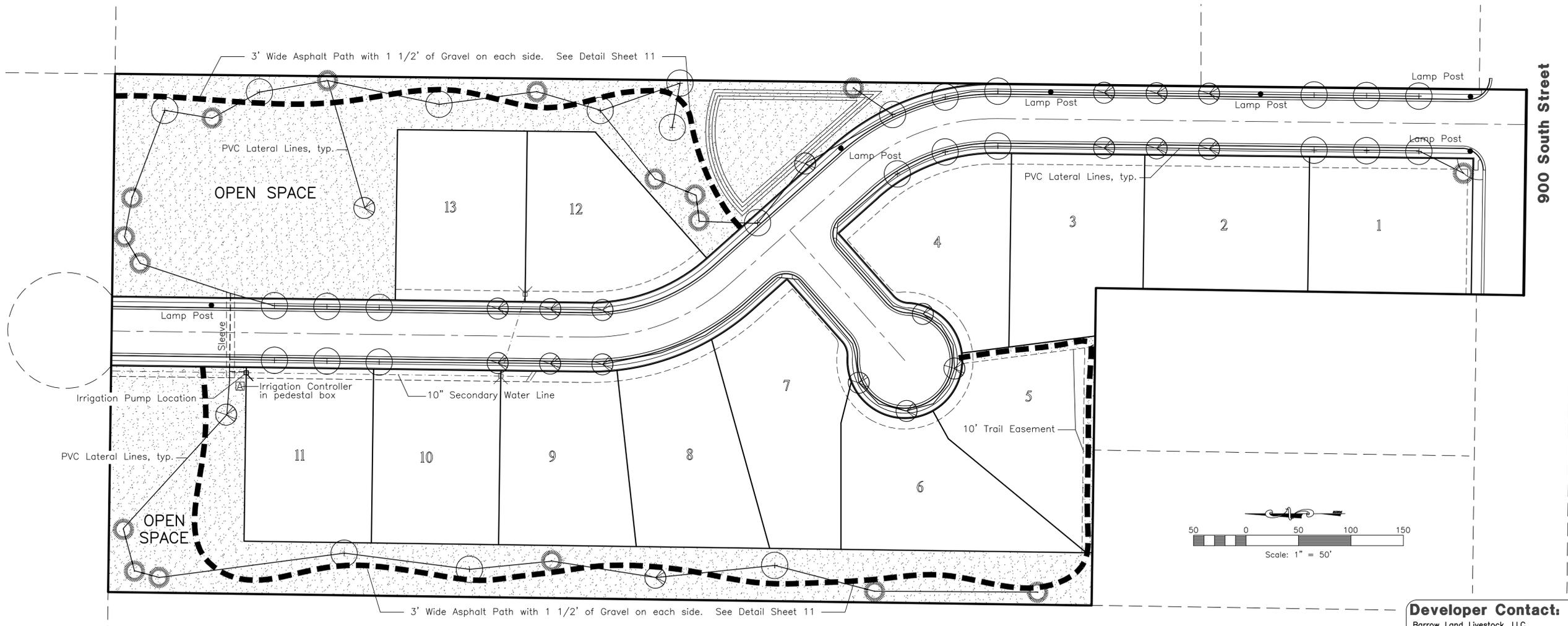
Quantity	Symbol	Scientific Name	Common Name	Planting Size
30	+	Acer freemanii 'Jeffersred'	Autumn Blaze Maple	2" cal.
20	⊗	Malus 'Prairie Fire'	Prairie Fire Crabapple	2" cal.
17	⊙	Pinus nigra	Austrian Pine	8'-12' B&B

Seed with native grasses.

IRRIGATION NOTES: All irrigation shall be provided by a private secondary water system. Use PVC lateral lines between trees. Connect to lateral lines with Netafim techline tubing, as shown in detail on Sheet L2.

Irrigation Schedule

→	LATERAL LINE - CLASS 200 PVC, SIZED AS FOLLOWS 3/4" (0-10 gpm), 1" (10-16 gpm), 1 1/4" (16-26 gpm), 1 1/2" (26-35 gpm), 2" (35-55 gpm)
⊠	RAINBIRD ESP 12 LXME:120 VAC INDOOR/OUTDOOR MOUNT BASE CONTROLLER.
----	SLEEVING - SCHEDULE 40 PVC, 2 SIZES GREATER THAN INTERIOR PIPE SLEEVING USED WHENEVER IRRIGATION IS PLACED UNDER PAVED AREAS.
----	1-1/2" MAINLINE - SCHEDULE 40 PVC



Developer Contact:

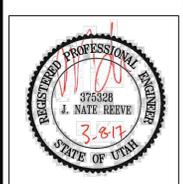
Barrow Land Livestock, LLC
Dean & Justin Barrow
6835 W. 900 S
Ogden, UT, 84404
(801) 514-8194



REVISIONS	DESCRIPTION
DATE	

Vaquero Village
RESESE CITY, WEBER COUNTY, UTAH

Landscape & Irrigation Plan



Project Info.

Engineer:	J. NATE REEVE
Drafter:	C. KINGSLEY
Begin Date:	4-4-16
Name:	RESESE STATION SUBDIVISION PHASE 1
Number:	6352-01

Sheet	12
11	Sheets

1/4/2016 | khunter | G:\6.352\01 - Parcel 100360013\Landscape\Barrow Landscape.dwg

