Learning Objectives

Monday, February 13, 2023 1:48 PM

Homework Assignment 6

1. You are required to develop an AutoCAD plan view drawing from a satellite photo of a roundabout (round-about-U of U, see Fig 1). **Use the campus round-about.jpg in the files folder in Canvas to make the drawing**.

Figure 1. Satellite image of round-about near Rice Eccles Stadium, University of Utah Campus. (see Canvas folder file)

The requirements for the drawing are:

- D-size drawing with title block
- The drawing scale shown in lower right corner of drawing
- The satellite image placed on separately on image layer that you create
- The roadway and parking lot limits placed and dimensioned (**black lines** and lettering) on Layer 1
- The roadway lane and traffic control markings placed and dimensioned (**red lines** and lettering) on Layer 2
- The curb and gutter placed and dimensioned (**blue lines** and lettering) on Layer 3
- The sidewalk placed and dimensioned (**orange lines** and lettering) on Layer 4
- The UTA TRAX (light-rail line) placed and dimensioned (**brown lines** and lettering) on Layer 5
- The landscaping features indicated (**green lines**) on Layer 6
- Dimension the width of all features (**purple lines**) on Layer 7. Do not dimension the length of the features.

Items to submit:

- Completed drawing with satellite image only
- Completed drawing with Layers 1 through 7 only
- Completed drawing with both satellite and Layers 1 through 7

Drawing requirements:

- All drawings must have a title block with your name and date included.
- All drawings must be submitted in Adobe Acrobat pdf format.

Scaling and Drawing on Aerial Images

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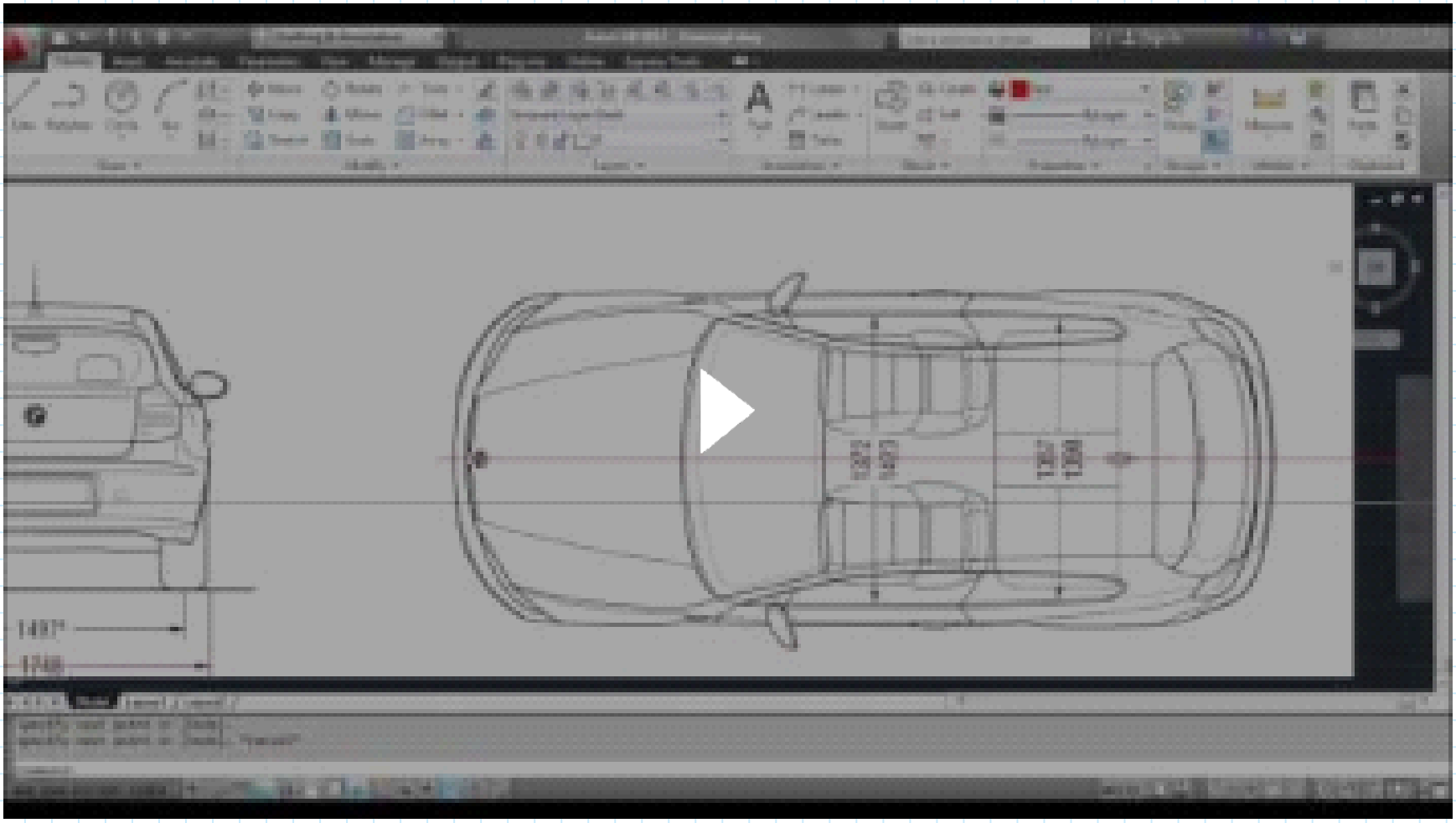
[AutoCAD Inserting / Importing Images, Scaling Images, Tracing Images]

Awesome Andrew



Inserting an Image and Scaling

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Often it is useful to make a drawing from a satellite image. Below is an image that will be brought into AutoCad and scaled to make a plan view drawing of the house and property line. Note that the image has a scale in the lower left corner (red ellipse).

Inserting and Viewing Images

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Steps

1. Find the file house.jpg from Lecture 4 folder.
2. Open the house scaled.dwg
3. Save this file as house scaled with photo.dwg
4. Import the photo image (house.jpg) using the **attach command**. Select house.jpg from the pop-up menu.
5. In the pop-up menu, specify the **insertion point** as the coordinates 0,0, uncheck the specify on screen box and push the OK button
6. Drag the cursor to upward and to the right so that it fits in the drawing box and click the mouse to attach the photo. The image will be inserted in the drawing space.

Turning the image on and off

1. Select the border of the image
2. It will turn blue with blue squares in the corner
3. Right click the mouse
4. Select image from the drop down box
5. Check and uncheck the show image box

Scaling Image

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Steps

1. Find the file house.dwg with title block from Lecture 6 folder.
2. **Open** this file.
3. Save this file as house house scaled.dwg using the file **save as option**.
4. Use the Units command to change the units in the drawing to Engineering. Note that the units are now in feet and decimal inches (0'-0.00")
5. Using the **coordinates**, check the horizontal (i.e., long) dimension of the drawing. Note that the longest dimension is about 6 feet, which will be insufficient for our drawing. Therefore we need to scale the drawing space is described in **Lecture 4 "Preparing Drawing Space for Coordinates**. Note that the drawing space needs to be about 400 feet wide to accommodate our drawing.
6. Use the **Annotation-Primary Units menu** to change the unit format to Engineering.
7. Use the **output menu - Page Setup Manager** to change the drawing to E size and scale the drawing. Use the Plot Scale to scale the drawing to 1 inch = 5 units (1:5).
8. Resize the title block to fit on the page as described in Lecture 2 using the **scale command**.
9. Reposition (i.e., center) the title block on the drawing space using the **move command**.
10. Reposition the coordinate system to the lower left-hand corner of the paper using the **UCS command**.
11. Using the coordinates, recheck the long dimension (i.e., width) of the drawing. You should have about 390 feet of drawing space available, which is sufficient for this exercise.
12. Resave this file as house scaled.dwg

Scaling the Image

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1. Zoom in on the scale found in the lower left corner of the photo.

2. In the Layer box, select layer 0
3. Use the line command to draw a line atop this scale that matches the length of the scale.
4. Use the line command to draw a line on the scale that matches the length of this scale
5. Select the line you have placed on the scale
6. Select the image (both line and image should now be selected as indicated by blue corners)

Scaling the Image (continued)

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Zoom and pan to the scale and line so they are enlarged.

1. Make sure that the End Point box in the OSNAP menu is checked.
2. Zoom in on the Google Scale.
3. Draw a line on the drawing that matches the length of the scale.
4. Select the photo. Note that a blue rectangle will indicate that it has been selected.
5. Select this line.
6. Select the right end of the line. It will turn to a hotgrip (i.e., red rectangle).
7. The STRETCH command will be issued by AUTOCAD
8. Strike your SPACE bar because we do not want to stretch it
   Strike your SPACE bar because we do not want to move it
   Strike your SPACE bar because we do not want to rotate it
9. In the command line, type R because we want reference the line to the Google scale.
10. Select the beginning of the line drawn on the scale.
11. Select the end of the scale line
12. Type in length of scale as 76.
13. Move the coordinate system to the beginning of the scaled line using the UCS command
14. Verify that the end of the line and the photo scale is 76' using the coordinates

15. Save the drawing as house scaled with photo scaled.dwg

Creating a New Layer for the Image

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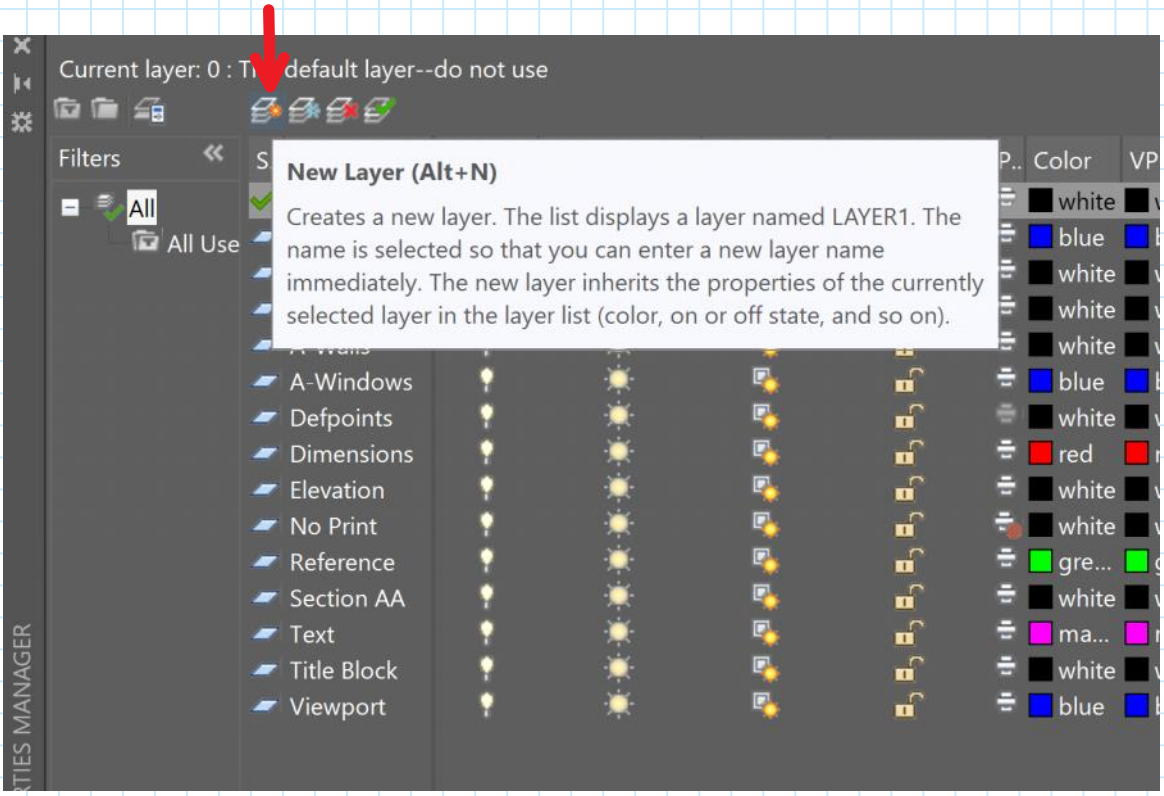
1. **Zoom extents**.
2. **Select** the image in the drawing space.
3. In the command box type **Layer**.
4. Create a new layer



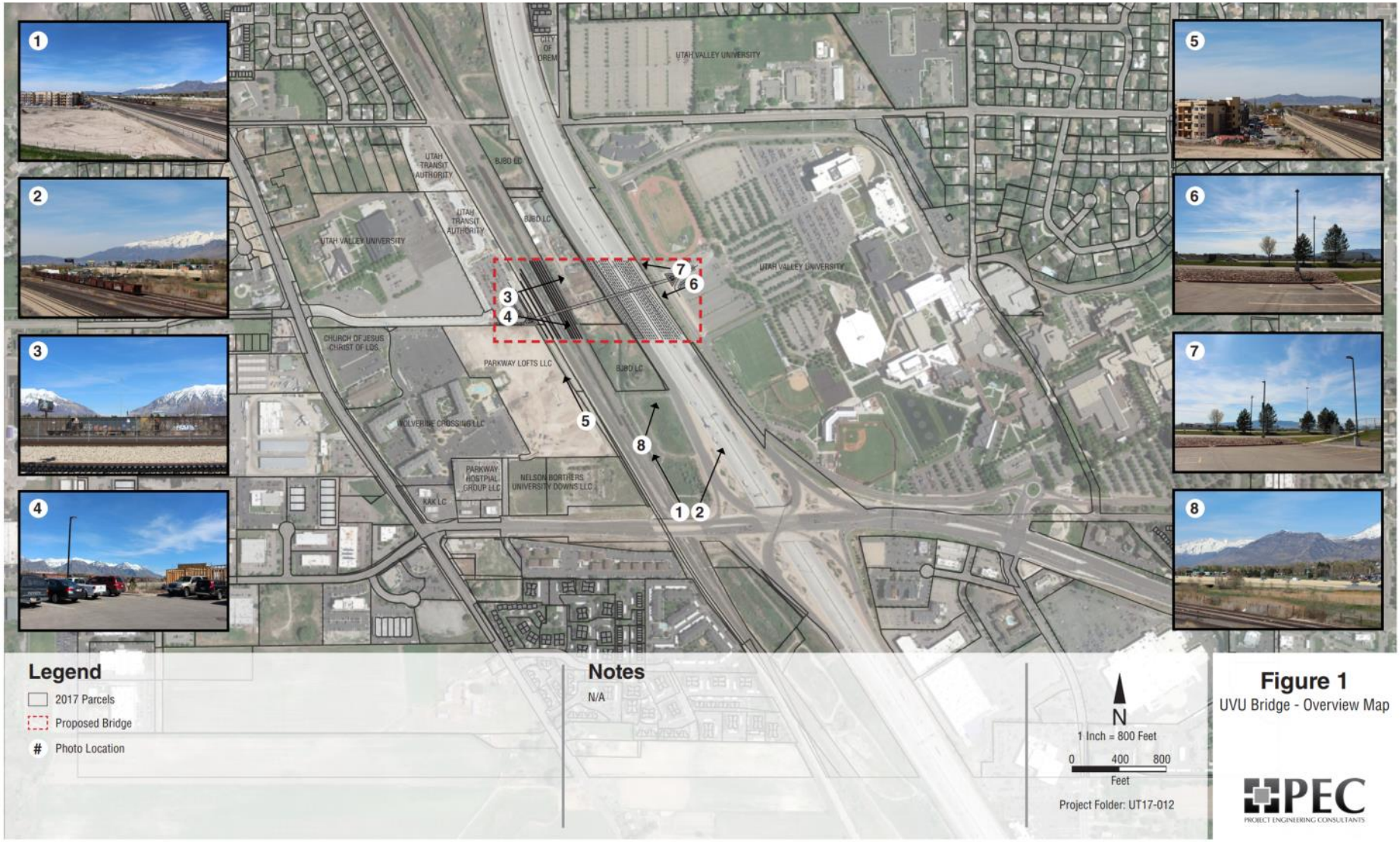
5. Name the new layer "House Photo."
6. Create another new layer and call it "Property Plot."
7. Change the color for this layer to yellow.
8. Close this menu.
9. Save the drawing

Examples - Interchange Layout

Sunday, February 17, 2019 5:48 AM

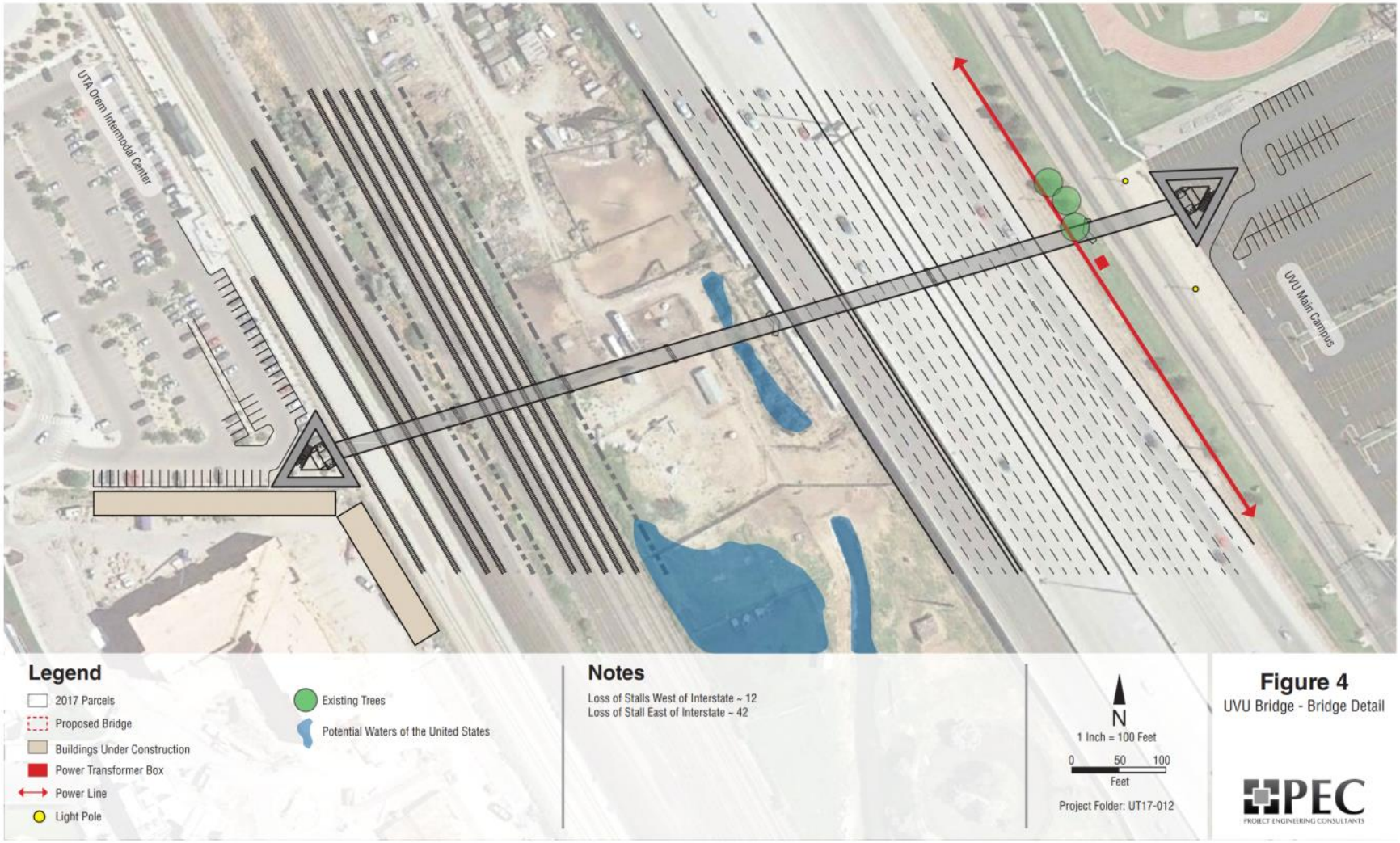
Examples (UVU Ped Bridge)

Monday, February 13, 2023 11:11 AM



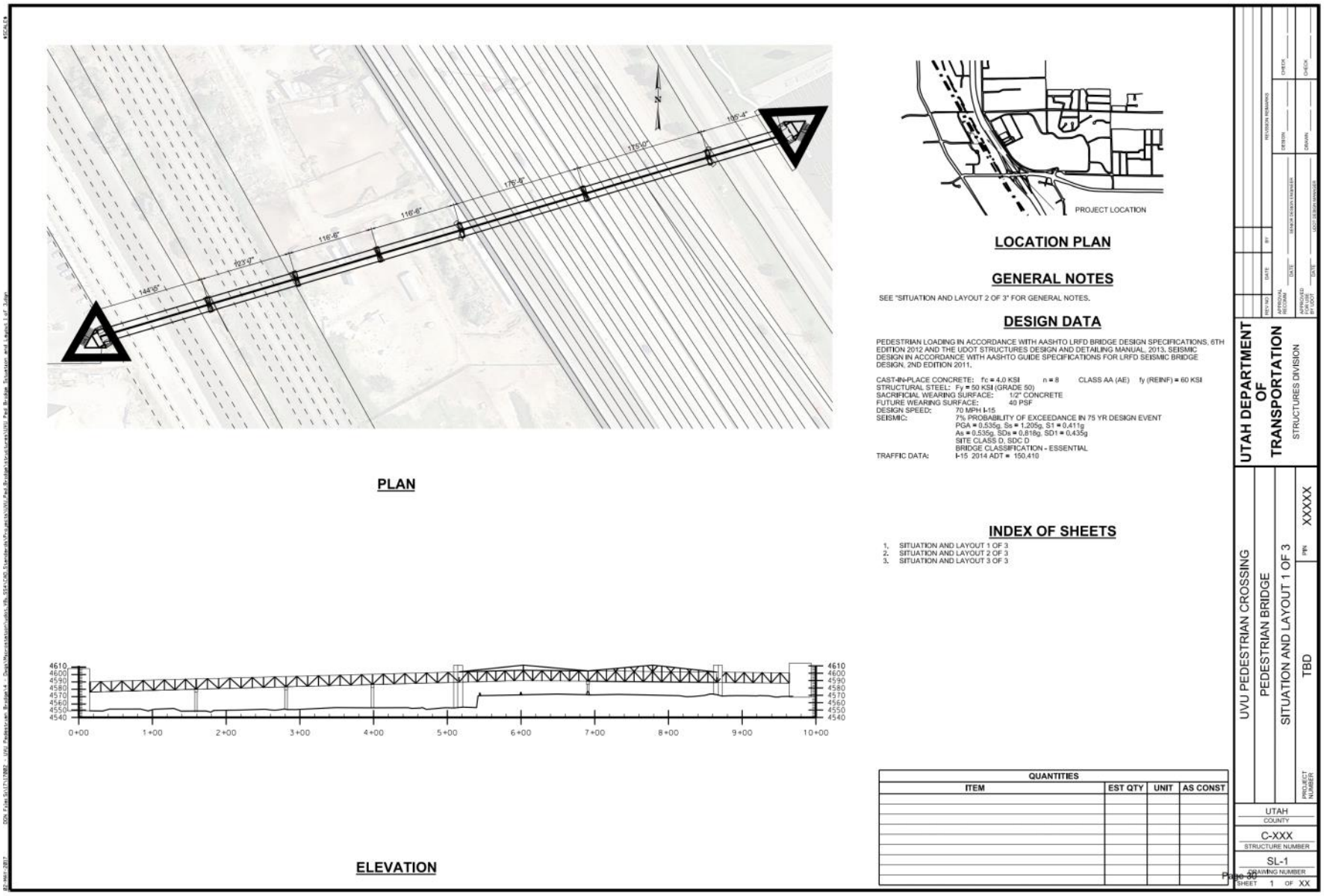
Examples (UVU Ped Bridge) (cont.)

Monday, February 13, 2023 11:14 AM



Examples (UVU Ped Bridge) (cont.)

Monday, February 13, 2023 11:14 AM



Department of Civil & Environmental Engineering
THE UNIVERSITY OF UTAH

THE STUDY DESCRIBED HEREIN IS ASSOCIATED WITH THE COURSES CVEEN 4900 AND 4910 PROFESSIONAL PRACTICE & DESIGN CONDUCTED AT THE UNIVERSITY OF UTAH, 2022-23. AS SUCH, IT IS INTENDED FOR ACADEMIC USE ONLY. ENGINEERING OPINIONS AND DESCRIPTIONS PROVIDED ARE LIKEWISE ONLY FOR ACADEMIC USE.

REVISED FINAL

RED BUTTE CROSSING

LOCATED AT THE SE CORNER OF SECTION 4 AND THE SW CORNER OF SECTION 3.
T1S. R1E. SLB&M
SALT LAKE CITY, SALT LAKE COUNTY, UTAH

GENERAL NOTES

1) ALL WORK WITHIN A PUBLIC RIGHT-OF-WAY SHALL CONFORM TO THE RIGHT-OF-WAY OWNER'S STANDARDS & SPECIFICATIONS.

2) ALL UTILITY WORK SHALL CONFORM TO THE UTILITY OWNER'S STANDARDS & SPECIFICATIONS.

3) THESE PLANS DO NOT INCLUDE DESIGN OF DRY UTILITIES. THESE PLANS MAY CALL FOR RELOCATION, AND/OR REMOVAL AND/OR CONSTRUCTION OF DRY UTILITIES, BUT ARE NOT OFFICIAL DRAWINGS FOR SUCH. DESIGN AND COORDINATION OF DRY UTILITIES IS BY OTHERS.

4) THE CONTRACTOR SHALL COORDINATE AND OBTAIN ANY PERMITS REQUIRED FOR THE WORK SHOWN HEREON.

5) THE LOCATION AND ELEVATIONS OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS IS A BEST ESTIMATE BASED ON UTILITY COMPANY RECORDS, BLUESTAKES, AND FIELD MEASUREMENTS OF READILY OBSERVABLE ABOVE-GROUND FEATURES. AS SUCH, THIS INFORMATION MAY NOT BE COMPLETE, UP-TO-DATE, OR ACCURATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STOP WORK AND NOTIFY THE ENGINEER IF CONFLICTING INFORMATION IS FOUND IN THE FIELD.

6) THE CONTRACTOR IS TO FIELD VERIFY THE LOCATION AND ELEVATIONS OF EXISTING MANHOLES AND OTHER UTILITIES PRIOR TO STAKING AND CONSTRUCTION.

7) CALL BLUESTAKES AT LEAST 48 HOURS PRIOR TO DIGGING. DO NOT PROCEED UNTIL BLUESTAKES ARE MARKED.

8) IT SHALL BE THE CONTRACTOR'S AND SUBCONTRACTOR'S RESPONSIBILITY TO MEET ALL APPLICABLE HEALTH AND SAFETY REGULATIONS, AND THEY SHALL ASSUME SOLE RESPONSIBILITY FOR JOB-SITE CONDITIONS DURING CONSTRUCTION OF THIS PROJECT, SO THAT ALL EMPLOYEES ARE PROVIDED A SAFE PLACE TO WORK, AND THE PUBLIC IS PROTECTED.

UDOT NOTES

1. ALL CONSTRUCTION WITHIN THE UDOT RIGHT-OF-WAY SHALL CONFORM TO THE MOST CURRENT UDOT STANDARD (INCLUDING SUPPLEMENTAL) DRAWINGS AND SPECIFICATIONS.
2. THE CONTRACTOR IS TO OBTAIN AN ENCROACHMENT PERMIT FROM THE APPLICABLE UDOT REGION PERMIT OFFICE PRIOR TO COMMENCING WORK WITHIN UDOT RIGHT-OF-WAY. WORKING HOUR LIMITATIONS WILL BE LISTED IN THE LIMITATIONS SECTION OF THE ENCROACHMENT PERMIT.
3. UDOT RESERVES THE RIGHT, AT ITS OPTION, TO INSTALL A RAISED MEDIAN ISLAND OR RESTRICT THE ACCESS TO A RIGHT-IN OR RIGHT-OUT AT ANY TIME.
4. OWNER, DEVELOPER, AND CONTRACTOR ARE RESPONSIBLE FOR ANY DAMAGES DIRECTLY OR INDIRECTLY WITHIN THE UDOT RIGHT-OF-WAY AS A RESULT OF DEVELOPMENT ACTIVITIES.
5. OWNER, DEVELOPER, AND/OR CONTRACTOR IS REQUIRED TO HIRE AN INDEPENDENT COMPANY FOR ALL TESTING WITHIN THE UDOT RIGHT-OF-WAY.
6. ALL SIGNS INSTALLED ON THE UDOT RIGHT-OF-WAY MUST BE HIGH INTENSITY GRADE (TYPE XI SHEETING) WITH A B3 SLIP BASE. INSTALL ALL SIGNS PER UDOT SN SERIES STANDARD DRAWINGS.
7. COMPLY WITH THE REQUIREMENTS OF UTAH CODE 17-23-14 (DISTURBED CORNERS – COUNTY SURVEYOR TO BE NOTIFIED – COORDINATION WITH CERTAIN STATE AGENCIES).

VICINITY MAP
SCALE: 1"=1000'

TABLE OF CONTENTS

4910.23.1.3
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CONTACT #: 801-535-6630

OWNER: UNIVERSITY OF UTAH

CONTACT #: 801-581-7200

REVISION 1 3/17/23 BY:CSA SUMMARY:ADDITIONAL DETAILS

Know what's below. Call 811 before you dig.
BLUE STAKES OF UTAH UTILITY NOTIFICATION CENTER, INC.
www.bluestakes.org
1-800-662-4111

CVEEN 4910 - Red Butte Creek (cont.)

Monday, February 12, 2024 1:48 PM

Department of Civil & Environmental Engineering
THE UNIVERSITY OF UTAH

GENERAL NOTES

1. ALL IMPROVEMENTS SHALL COMPLY WITH THE STANDARDS AND REGULATIONS OF THE LOCAL GOVERNING MUNICIPALITY. CONTACT THE PUBLIC WORKS OFFICE BEFORE BEGINNING.
2. CONTRACTOR TO FIELD VERIFY LOCATION, SIZE, AND AVAILABILITY OF EXISTING UTILITIES. UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT HIS/HER EXPENSE. SEE UTILITY NOTE 3.
3. ALL DIMENSIONS ARE IN FOOT UNITS AND ARE TO THE TOP BACK OF CURB UNLESS SHOWN OR NOTED OTHERWISE.
4. PROVIDE HANDICAP RAMPS AT ENDS OF WALKWAYS. END 0.1' ABOVE FLOWLINE OF CURB.
5. CURB AND GUTTER SHALL BE AS PER APWA STD DWG NO 205 TYPE A.
6. UTILITY INFORMATION INDICATED ON DRAWING IS BASED UPON VISUAL OBSERVATION OR INFORMATION FURNISHED BY MUNICIPAL AUTHORITIES WHICH MAY NOT BE VALID. LATERAL LOCATIONS AND ELEVATIONS ARE ASSUMED. SEE UTILITY NOTE 3.
7. ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A QUALIFIED SOILS ENGINEER WHO SHALL VERIFY THAT ALL FILL HAS BEEN PLACED IN ACCORDANCE WITH PROVISIONS IN CURRENT INTERNATIONAL BUILDING CODE.
8. COMPACTION TEST REPORTS SHALL BE MADE AVAILABLE TO THE ENGINEER WITHIN 24 HOURS OF A REQUEST. FINAL REPORTS AS SPECIFIED IN CURRENT INTERNATIONAL BUILDING CODE SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN DAYS AFTER COMPLETION OF GRADING.
9. ALL STORM DRAIN PIPE SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND THE LOCAL GOVERNING MUNICIPALITY'S STANDARDS AND SPECIFICATIONS.
10. STORM DRAIN PIPE WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO THE RIGHT-OF-WAY OWNER'S SPECIFICATIONS.
    PRIVATE STORM DRAIN PIPE OPTIONS SHALL CONSIST OF THE FOLLOWING MATERIALS.
    1. PVC PIPE, ASTM D3034, SDR 35, BELL & SPIGOT TYPE.
    2. RCP PIPE, CLASS 3, BELL & SPIGOT TYPE.
    3. HIGH DENSITY CORRUGATED POLYETHYLENE SMOOTH INTERIOR PIPE, ASTM F2306 WITH WATERTIGHT JOINTS.
11. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CHECK CONDITIONS AT THE SITE BEFORE STARTING WORK AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
12. TYPICAL DETAILS SHALL APPLY IN GENERAL CONSTRUCTION UNLESS SPECIFICALLY DETAILED. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION WILL BE AS FOR SIMILAR WORK. DO NOT SCALE DRAWINGS.
13. ANY MISSIGNING OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED.
14. PIPE BEDDING SHALL BE 3/8" MAXIMUM AGGREGATE, USE 3/4" MAXIMUM SIZE ROAD BASE FOR BACKFILL MATERIAL. COMPACT TO 95% STANDARD PROCTOR DENSITY. MAXIMUM LIFT 8 INCHES.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC AND I/SHA STANDARDS.
16. ALL WORK SHALL COMPLY WITH THE AMERICAN PUBLIC WORKS ASSOCIATION UTAH CHAPTER (APWA) MANUAL OF STANDARD SPECIFICATIONS 2007 EDITION WITH ALL SUBSEQUENT SUPPLEMENTS AND AMENDMENTS AND THE MANUAL OF STANDARD PLANS 2007 EDITION. SAID STANDARD SPECIFICATIONS AND PLANS SHALL BE THE REQUIREMENTS.
17. IT IS INTENDED THAT THESE PLANS AND SPECIFICATIONS REQUIRE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THE WORK TO BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES WHICH EXIST IN THE PLANS OR SPECIFICATIONS. THE ENGINEER'S INTERPRETATION THEREOF SHALL BE CONCLUSIVE. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORITY FROM THE OWNER AND/OR ENGINEER.
18. THE 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 REINSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.
19. THE CONTRACTOR SHALL MAINTAIN A NEATLY MARKED SET OF FULL-SIZE AS-BUILT RECORD DRAWINGS SHOWING THE FINAL LOCATION AND LAYOUT OF ALL MECHANICAL, ELECTRICAL AND INSTRUMENTATION EQUIPMENT, PIPING AND CONDUITS, STRUCTURES AND OTHER FACILITIES. THE AS-BUILTS OF THE ELECTRICAL SYSTEM SHALL INCLUDE THE STREET LIGHT LAYOUT PLAN SHOWING LOCATION OF LIGHTS, CONDUITS, CONDUCTORS, POINTS OF CONNECTION TO SERVICES, PULLBOXES, AND WIRE SIZES. AS-BUILT RECORD DRAWINGS SHALL REFLECT CHANGE ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ALL PARTS/ASPECTS CONSTRUCTED, WHERE NECESSARY, SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR.
20. PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO ENGINEER, ONE SET OF NEATLY MARKED AS-BUILT RECORD DRAWINGS SHOWING THE INFORMATION REQUIRED ABOVE. AS-BUILT RECORD DRAWINGS SHALL BE REVIEWED AND THE COMPLETED AS-BUILT RECORD DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS REDLINED AS A PREREQUISITE TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.

SEQUENCE OF CONSTRUCTION

1. CONSTRUCTION EXIT IS TO BE CONSTRUCTED AT TIME OF ENTRY TO SITE.
2. CLEAR AND GRUB AREAS FOR SEDIMENT MEASURES.
3. INSTALL SILT FENCES.
4. COMPLETE CLEARING OF SITE AND BEGIN ROUGH GRADING.
5. FILL AREAS SHALL BE FILLED IN 12 INCH MAXIMUM LIFTS AND COMPACTED TO AT LEAST 95% MAXIMUM DENSITY.
6. DRAINAGE WILL BE CONTROLLED AND GROUND SLOPED SO AS TO DIRECT RUNOFF TO SEDIMENT CONTROLLED INLETS.
7. INSTALL REMAINDER OF STORM DRAIN.
8. INSTALL UTILITY LINES, WATER, ETC.
9. INSTALL CURBS, WALKS, ETC., AND STABILIZE ALL DISTURBED AREAS.
10. INSTALL BASE COURSE.
11. REMOVE SEDIMENT CONTROL MEASURES. CLEAN OUT TEMPORARY SEDIMENTATION BASINS AND REGRADE. CLEAN OUT SEDIMENT TRAPS AND CONVERT THEM TO STORM WATER MANAGEMENT STRUCTURES.
12. PAVE SITE.
13. OWNER TO BE RESPONSIBLE TO CHECK CLEAN OUT INLET BOXES FOR SEDIMENT AND OIL AND CLEAN AS NECESSARY

UTILITY NOTES

1. ALL SERVICE LATERALS SHALL BE EXTENDED 2 FEET PAST THE 10 FOOT P.U.E.
2. ALL CONSTRUCTION SHALL COMPLY WITH LOCAL GOVERNING MUNICIPALITY DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS
3. LOCATIONS OF ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR IS TO FIELD VERIFY CONNECTION POINTS WITH EXISTING UTILITIES, INCLUDING LOCATIONS AND INVERT ELEVATIONS OF ALL EXISTING STRUCTURES OR PIPES, BEFORE STAKING OR CONSTRUCTING ANY NEW UTILITIES. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO EXISTING UTILITIES AND UTILITY STRUCTURE THAT ARE TO REMAIN.
4. CONTRACTOR IS RESPONSIBLE TO EXPOSE ALL UTILITY SERVICES STUBBED INTO PROJECT PROPERTY AND GIVE ENTELLUS, 48 HOURS PRIOR NOTICE TO ENTELLUS CAN VERIFY DEPTHS AND INVERT ELEVATIONS TO DETERMINE IF CONFLICTS EXIST. ALSO ANY EXISTING UTILITIES THAT RUN ACROSS PROJECT PROPERTY WHICH MAY CAUSE POTENTIAL CONFLICT NEED TO BE EXPOSED AND LOCATED BOTH HORIZONTALLY AND VERTICALLY. CONTRACTOR PROCEEDS AT OWN RISK IF ENTELLUS IS NOT NOTIFIED TO FIELD VERIFY THE ABOVE MENTIONED CONDITIONS.
5. CONTRACTOR IS TO COORDINATE ALL UTILITIES WITH MECHANICAL DRAWINGS WHERE APPLICABLE.
6. NO GROUNDWATER OR DEBRIS TO BE ALLOWED TO ENTER THE NEW PIPE DURING CONSTRUCTION. THE OPEN END OF ALL PIPES IS TO BE COVERED AND EFFECTIVELY SEALED AT THE END OF EACH DAYS WORK.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL PIPE OF ADEQUATE CLASSIFICATION WITH SUFFICIENT BEDDING TO MEET ALL REQUIREMENTS AND RECOMMENDATIONS FOR H-20 LOAD REQUIREMENTS.
8. ALL NEW SANITARY SEWER CONSTRUCTION TO BE DONE IN ACCORDANCE WITH LOCAL GOVERNING MUNICIPALITY STANDARDS & SPECIFICATIONS.
9. ALL SEWER LINES AND LATERALS ARE TO BE SDR 35 PVC PIPE.
10. SEWER LATERALS WILL BE INSTALLED AT A UNIFORM SLOPE OF NOT LESS THAN 2% GRADE AND THEY SHALL HAVE A MINIMUM OF 4 FEET OF COVER, UNLESS OTHERWISE NOTED.
11. ALL NEW CULINARY AND IRRIGATION WATER CONSTRUCTION TO BE DONE IN ACCORDANCE WITH LOCAL GOVERNING MUNICIPALITY STANDARDS & SPECIFICATIONS.
12. WATER LINES TO BE PVC C-900. WATER LINES SHALL BE A MINIMUM OF 10" HORIZONTALLY FROM SEWER MAINS. CROSSINGS SHALL MEET STATE HEALTH STANDARDS. (MECHANICAL JOINTS REQUIRED WHEN LESS THAN 10" VERTICAL OR 10' HORIZONTAL SEPARATION FROM SEWER LINES.)
13. ALL WATER LINES SHALL BE 8" MINIMUM SIZE AND SERVICE LATERALS SHALL BE 1-1/2" MINIMUM UNLESS OTHERWISE NOTED.
14. WATER SERVICE LATERALS TO INCLUDE ALL BRASS SADDLE, CORP, STOP, LATERAL, DOUBLE CHECK VALVE AND BACKFLOW PREVENTION DEVICE, AND SHUT-OFF VALVE IN BOX NEAR BUILDING EDGE.
15. ALL WATER LINES SHALL BE A MINIMUM 48" BELOW FINISH GROUND TO TOP OF PIPE. ALL VALVE BOXES AND MANHOLES SHALL BE RAISED OR LOWERED TO FINISH GRADE AND SHALL INCLUDE A CONCRETE COLLAR IN PAVED AREAS.
16. CONTRACTOR TO NOTIFY PUBLIC UTILITIES FOR CHLORINE TEST PRIOR TO FLUSHING LINES. CHLORINE LEFT IN PIPE 24 HOURS MINIMUM WITH 25 PPM RESIDUAL. ALL TURNING OF MAINLINE VALVES, CHLORINATION, FLUSHING, PRESSURE TESTING, BACTERIA TESTING, ETC. TO BE COORDINATED WITH LOCAL GOVERNING MUNICIPALITY. ALL TESTS TO BE IN ACCORDANCE WITH AWWA STANDARDS.
17. BOTTOM FLANGE OF FIRE HYDRANTS TO BE SET TO APPROXIMATELY 4" (INCHES ABOVE BACK OF CURB ELEVATION. HYDRANTS TO INCLUDE TEE, 6" LINE VALVE, AND HYDRANT COMPLETE TO MEET CITY STANDARDS.
18. ALL NEW STORM DRAIN/LAND DRAIN CONSTRUCTION TO BE DONE IN ACCORDANCE WITH LOCAL GOVERNING MUNICIPALITY STANDARDS & SPECIFICATIONS.
19. ALL STORM WATER CONVEYANCE PIPING TO BE RCP - CLASS 3 OR EQUAL, UNLESS OTHERWISE NOTED.
20. CONTRACTOR IS TO SUBMIT SITE PLAN/SUBDIVISION PLAT TO DOMINION ENERGY GAS FOR DESIGN OF GAS SERVICE TO BUILDINGS/LOTS. CONTRACTOR TO COORDINATE WITH DOMINION ENERGY GAS FOR CONSTRUCTION LIMITS OF WORK VERSUS DOMINION ENERGY GAS LIMITS.
21. ALL GAS LINE TAPS TO BE HOPE WITH DYPER TRACER WIRE AND DETECTA TAPE. TERMINATE TRACER WIRE AT APPROVED LOCATIONS.
22. ALL GAS LINE TAPS, VALVES AND CAPS TO BE FUSED USING ELECTRO-FUSION TECHNOLOGY.
23. ALL ELECTRICAL CONDUITS/LINES TO BE PVC SCH 40 OR BETTER.
24. ALL PHONE AND TV CONDUITS TO BE PVC SCH 40 OR BETTER.
25. CONTRACTOR IS TO SUBMIT SITE PLAN/SUBDIVISION PLAT TO COMCAST FOR DESIGN OF CABLE TV SERVICE TO BUILDINGS/LOTS. CONTRACTOR TO COORDINATE WITH COMCAST FOR CONTRACTOR LIMITS OF WORK VERSES COMCAST LIMITS.
26. CONTRACTOR IS TO COORDINATE LOCATIONS OF NEW TELEPHONE SERVICE TO NEW BUILDINGS OR LOTS WITH CENTURYLINK. A PVC CONDUIT, PLYWOOD BACKBOARD, AND GROUND WIRE IS REQUIRED FOR SERVICE THROUGH PROPERTY. COORDINATE SIZES AND LOCATION WITH CENTURYLINK.
27. ALL UTILITIES ARE TO BE INSTALLED IN ACCORDANCE WITH THE CORRESPONDING AGENCY/DISTRICT STANDARDS AND SPECIFICATIONS:
    WATER - SALT LAKE CITY
    SEWER - SALT LAKE CITY
    STORM DRAIN - SALT LAKE CITY
    IRRIGATION - SALT LAKE CITY
    ELECTRICAL - ROCKY MOUNTAIN POWER
    TELEPHONE - CENTURYLINK
    NATURAL GAS - DOMINION ENERGY

GRADING NOTES

1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ALL SOFT, YIELDING OR UNSUITABLE MATERIALS AND REPLACING IT WITH SUITABLE MATERIALS AS SPECIFIED IN THE SOILS REPORT. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM TEST D-1557 EXCEPT UNDER BUILDING FOUNDATION WHERE IT SHALL BE 90% MIN. OF MAXIMUM DENSITY. MOISTURE CONTENT AT TIME OF PLACEMENT SHALL NOT EXCEED 2% ABOVE NOR 3% BELOW OPTIMUM. CONTRACTOR SHALL SUBMIT A COMPACTION REPORT PREPARED BY A QUALIFIED REGISTERED SOILS ENGINEER, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED, HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT.
2. THE CONTRACTOR IS TO USE BEST MANAGEMENT PRACTICES FOR PROVIDING EROSION CONTROL FOR CONSTRUCTION OF THE PROJECT. SPECIFIC DETAILS SHOWN SHALL BE USED IN CONJUNCTION WITH OTHER ACCEPTED LOCAL PRACTICES.
3. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF PLANS. LOCATIONS MAY NOT HAVE BEEN VERIFIED IN THE FIELD AND NO GUARANTEE IS MADE AS TO ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN ON THESE PLANS OR INDICATED IN THE FIELD BY LOCATING SERVICES. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF CONTRACTOR'S FAILURE TO VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED IN THE CONTRACT.
4. IF AT ANY TIME DURING CONSTRUCTION ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, WORK IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED FROM THE ENGINEER.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING HIS/HER OWN ESTIMATE OF EARTHWORK QUANTITIES.
6. WHERE NEW CURB AND GUTTER IS BEING CONSTRUCTED ADJACENT TO EXISTING ASPHALT OR CONCRETE PAVEMENT, THE FOLLOWING SHALL APPLY:
   - PRIOR TO PLACEMENT OF ANY CONCRETE THE CONTRACTOR SHALL HAVE A LICENSED SURVEYOR VERIFY THE GRADE AND CROSS SLOPE OF THE CURB AND GUTTER FORMS.
   - THE CONTRACTOR SHALL SUBMIT THE SLOPE AND GRADES TO THE ENGINEER FOR APPROVAL PRIOR TO THE PLACEMENT OF CONCRETE.
   - THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY SECTION WHICH DOES NOT CONFORM TO THE DESIGN OR TYPICAL CROSS SECTION.
   - THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CURB AND GUTTER POURS WITHOUT THE APPROVAL OF THE ENGINEER.

EROSION CONTROL

1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE STANDARDS AND REGULATIONS OF THE LOCAL GOVERNING MUNICIPALITY.
2. ALL SEDIMENT CONTROL MEASURES TO BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND CONSTRUCTED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL OR BALANCE OF SITE.
3. DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES MUST BE PROVIDED TO ENSURE INTENDED PURPOSE IS ACCOMPLISHED. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEDIMENT LEAVING THE PROPERTY. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
4. ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD UNTO PUBLIC WAYS.
5. ALL SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAINAGE SYSTEM THROUGH THE USE OF SANDBAGS, STRAW BALES, SILT FENCES, GRAVEL, BOARDS, AND /OTHER APPLICABLE METHODS.
6. ALL DISTURBED AREAS OUTSIDE OF ROADWAYS, PARKING LOTS, SIDEWALKS AND /OR BUILDING FOOTPRINTS SHALL BE SEEDED, SODDED AND/OR MULCHED.
7. IF SITE IS READY TO RECEIVE FINAL COVER DURING THE NON-PLANTING SEASON, THEN IT SHALL BE PROTECTED BY MULCHING. THE MULCH WILL REMAIN UNTIL THE NEXT PLANTING SEASON AS DEFINED BY THE LOCAL GOVERNING MUNICIPALITY.
8. RE-VEGETATE ALL DENUDED AREAS AS PER THE STANDARDS AND REGULATIONS OF THE LOCAL GOVERNING MUNICIPALITY.
9. THE CONTRACTOR AGREES THAT:
   A. THEY SHALL BE RESPONSIBLE TO CLEAN THE JOB SITE AT THE END OF EACH PHASE OF WORK.
   B. THEY SHALL BE RESPONSIBLE TO REMOVE AND DISPOSE OF ALL TRASH, SCRAP AND UNUSED MATERIAL AT THEIR OWN EXPENSE IN A TIMELY MANNER.
   C. THEY SHALL BE RESPONSIBLE TO MAINTAIN THE SITE IN A NEAT, SAFE AND ORDERLY MANNER AT ALL TIMES.
   D. THEY SHALL BE RESPONSIBLE TO KEEP MATERIALS, EQUIPMENT, AND TRASH OUT OF THE WAY OF OTHER CONTRACTORS SO AS NOT TO DELAY THE JOB. FAILURE TO DO SO WILL RESULT IN A DEDUCTION FOR THE COST OF CLEAN UP FROM FINAL PAYMENT.
   E. THEY SHALL BE RESPONSIBLE FOR THEIR OWN SAFETY, TRAFFIC CONTROL, PERMITS, REPETITION AND REINSPECTION AT THEIR OWN EXPENSE.
   F. UNLESS OTHERWISE NOTED ALL EXCESS SOILS AND MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LAWFULLY DISPOSED OF OFF SITE AT THE CONTRACTOR'S EXPENSE.
   G. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAG-PERSON OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.

LEGEND

SECTION CORNER
MONUMENT
EXISTING SPOT ELEVATION
PROPOSED SPOT ELEVATION
DOWNWARD GRADE
EXISTING INDEX CONTOUR
EXISTING MINOR CONTOUR
PROPOSED CONTOUR
PROPOSED MINOR CONTOUR
LOT OR BOUNDARY LINE
PUBLIC UTILITY EASEMENT
BUILDABLE AREA SETBACK
CENTER LINE OF ROAD
EXISTING FENCE
PROPOSED FENCE
EXISTING BUILDING
PROPOSED BUILDING
EXISTING ASPHALT
PROPOSED ASPHALT
EXISTING CONCRETE
PROPOSED CONCRETE
EXISTING CURB & GUTTER
PROPOSED CURB & GUTTER
ADA PARKING
STREET LIGHT
POWER POLE
TELEPHONE POLE
UTILITY POLE
STREET SIGN
EXISTING RETAINING WALL
PROPOSED RETAINING WALL
EXISTING ROCK WALL
PROPOSED ROCK WALL
EXISTING FIBER OPTIC
PROPOSED FIBER OPTIC
EXISTING NATURAL GAS
PROPOSED NATURAL GAS
EXISTING POWER
PROPOSED POWER
EXISTING OVERHEAD POWER
PROPOSED OVERHEAD POWER
EXISTING UNDERGROUND POWER
PROPOSED UNDERGROUND POWER
EXISTING TELEPHONE
PROPOSED TELEPHONE
EXISTING IRRIGATION LINE
PROPOSED IRRIGATION LINE
IRRIGATION MANHOLE
IRRIGATION METER
BLOWOFF
VALVE
TEE
ELBOW
REDUCER
THRUST BLOCK

LEGEND

EXISTING WATER LINE
PROPOSED WATER LINE
WATER MANHOLE
WATER METER
FIRE HYDRANT
BLOWOFF
VALVE
TEE
ELBOW
REDUCER
THRUST BLOCK
EXISTING SEWER LINE
PROPOSED SEWER LINE
SEWER MANHOLE
EXISTING LAND DRAIN
PROPOSED LAND DRAIN
LAND DRAIN MANHOLE
EXISTING STORM DRAIN
PROPOSED STORM DRAIN
STORM DRAIN MANHOLE
CATCH BASIN / CLEAN-OUT
CURB INLET

ABBREVIATIONS

#	DIAMETER
Δ	DELTA
°	DEGREES
'	MINUTES, FEET
"	SECONDS, INCHES
ADA	AMERICAN DISABILITIES ACT
ADS	CORRUGATED BLACK PLASTIC PIPE
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
ARCH	ARCHITECT, ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
B&C	BAR & CAP
BLA	BOUNDARY LINE AGREEMENT
BLDG	BUILDING
BM	BENCHMARK
BND	BOUNDARY
BOW	BACK OF WALK
BRG	BEARING
BV	BUTTERFLY VALVE
C&G	CURB AND GUTTER
CB	CATCH BASIN
CH	CHORD
CHB	CH-RD BEARING
CI	CAST IRON
CIP	CAST IN PLACE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEAN-OUT
COMM	COMMUNICATIONS
CONC	CONCRETE
CONST	CONSTRUCTION
CUL	CULINARY
CW	CULINARY WATER
CWL	CULINARY WATERLINE
DEPRO	DEPRESSION
DI	DUCTILE IRON
DIAM	DIAMETER
DIST	DISTANCE
DWG	DRAWING
E	EAST, ELECTRICITY, ELECTRICAL
EASE	EASEMENT
EG	EXISTING GRADE
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
EOA	EDGE OF ASPHALT
EVC	END VERTICAL CURVE
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EX	EXISTING
FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOWLINE END FOUNDATION
FP	FIRE PROTECTION
FTG	FOOTING
G	GAS, NATURAL GAS
GB	GRADE BREAK
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
HPE	HIGH POINT ELEVATION
HPS	HIGH POINT STATION
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INV	INVERT
IRR	IRRIGATION
IRRMH	IRRIGATION MANHOLE
K	RADIUS OF CURVATURE
L	LENGTH
LAT	LATERAL SERVICE
LD	LAND DRAIN
LDMH	LAND DRAIN MANHOLE
LF	LINEAL FEET
LG	LIP OF GUTTER
LP	LOW POINT
LP	LIGHT POLE
LPE	LOW POINT ELEVATION
MECH	MECHANICAL
MH	MANHOLE
MON	MONUMENT
NE	NORTHEAST
NW	NORTHWEST
OD	OUTSIDE DIAMETER
OHP	OVERHEAD POWER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC	POINT OF CURVATURE
PCC	PORTLAND CONCRETE CEMENT
PI	POINT OF INFLECTION
PL	PROPERTY LINE
PPM	PARTS PER MILLION
PROP	PROPERTY
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PUE&DE	PUBLIC UTILITY EASEMENT & DRAINAGE EASEMENT
PVC	POLYVINYL CHLORIDE
PVE	POINT OF VERTICAL INFLECTION
R	RADIUS
RC	REBAR & CAP
RCL	ROADWAY CENTERLINE
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT-OF-WAY
SD	STORM DRAIN
SDCB	STORM DRAIN CATCH BASIN
SDCO	STORM DRAIN CLEAN-OUT
SDMH	STORM DRAIN MANHOLE
SDR	STANDARD DIMENSION RATIO
SE	SOUTHEAST
SEC	SECONDARY, SECTION
SL	STREET LIGHT
SL&BM	SALT LAKE BASE & MERIDIAN
SPEC	SPECIFICATION
SPP	STEEL PIPE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEAN-OUT
SSMH	SANITARY SEWER MANHOLE
STD	STANDARD
SW	SECONDARY WATER
SW	SOUTHWEST
SWL	SECONDARY WATERLINE
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
TAN	TANGENT
TB	THRUST BLOCK
TBC	TOP BACK OF CURB
TBW	TOP BACK OF WALK
TEL	TELEPHONE
TCW	TOP OF CURBWALL
TOA	TOP OF ASPHALT
TOC	TOP OF CONCRETE
TOE	TOE OF SLOPE OR WALL
TOG	TOP OF GRATE
TOW	TOP OF WALL
UTIL	UTILITY
UD	UNDERDRAIN
UDP	UNDERGROUND POWER
UP	UTILITY POLE
VC	VERTICAL CURVE
W	WEST, WATER
WG	SECONDARY WATER
WL	WATERLINE
WM	WATER METER
WP	WORK POINT

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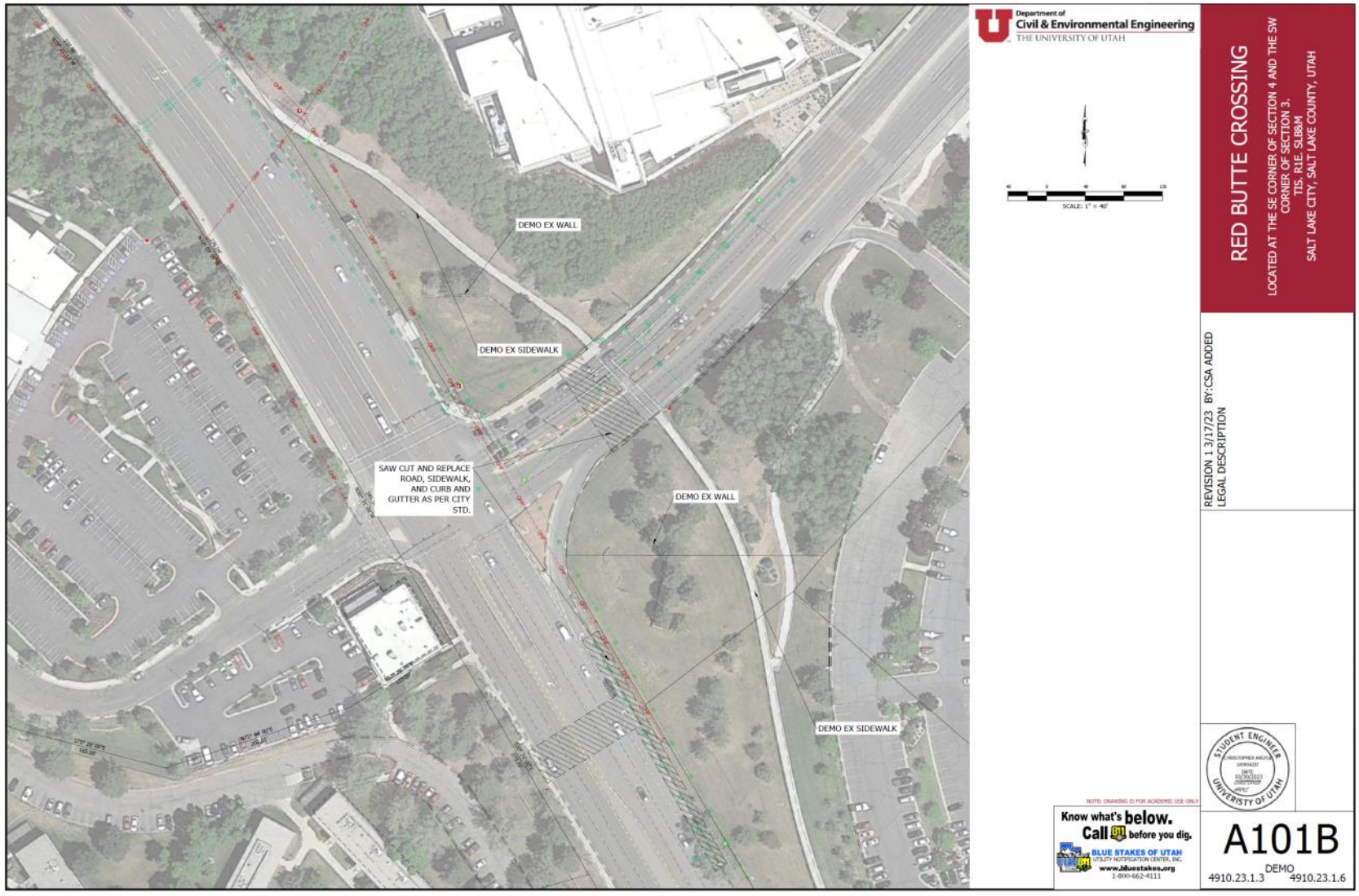
NOTE: DRAWING IS FOR ACADEMIC USE ONLY

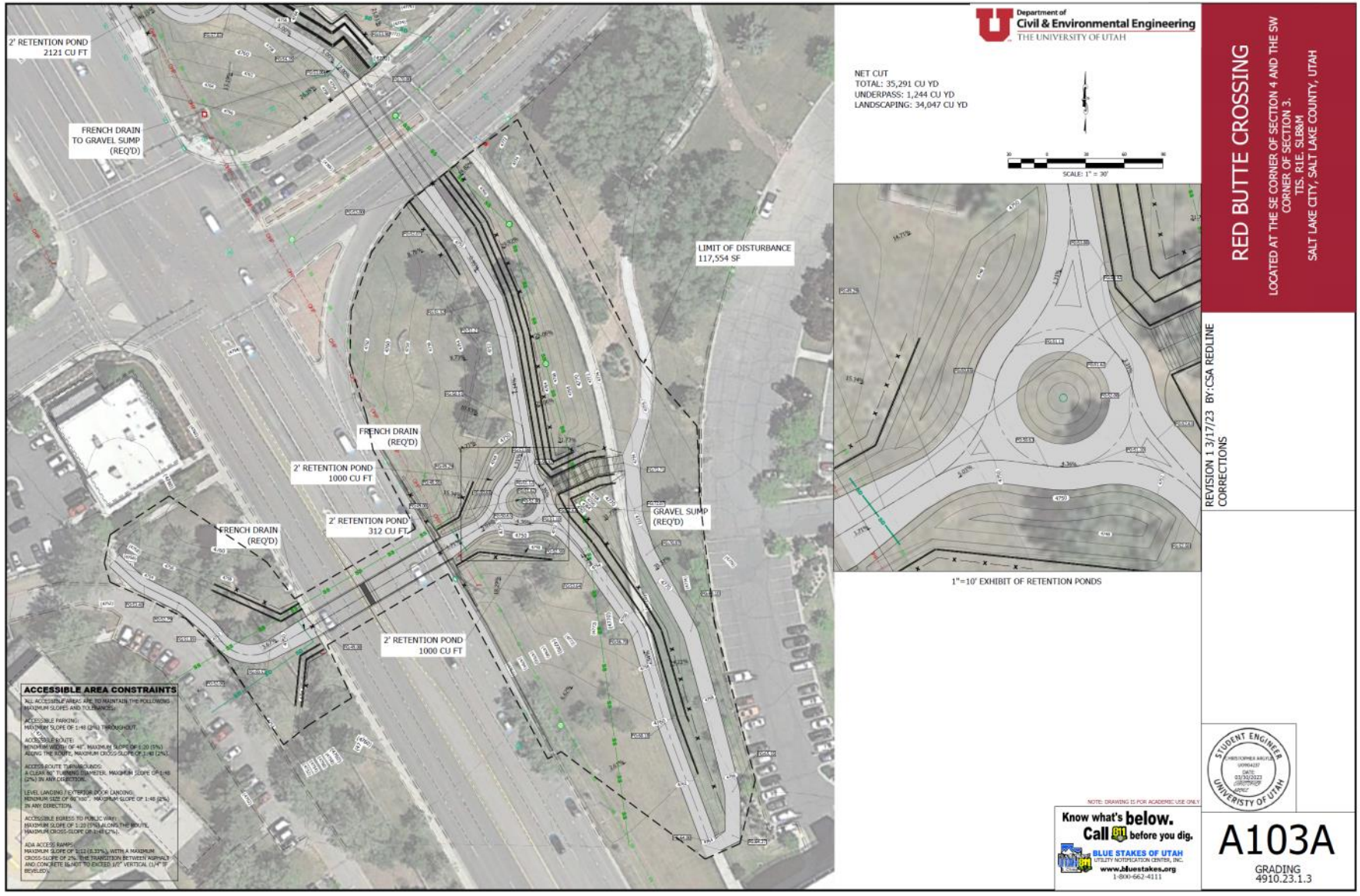
RED BUTTE CROSSING
LOCATED AT THE SE CORNER OF SECTION 4 AND THE SW CORNER OF SECTION 3.
T1S. R1E. SLB&M
SALT LAKE CITY, SALT LAKE COUNTY, UTAH

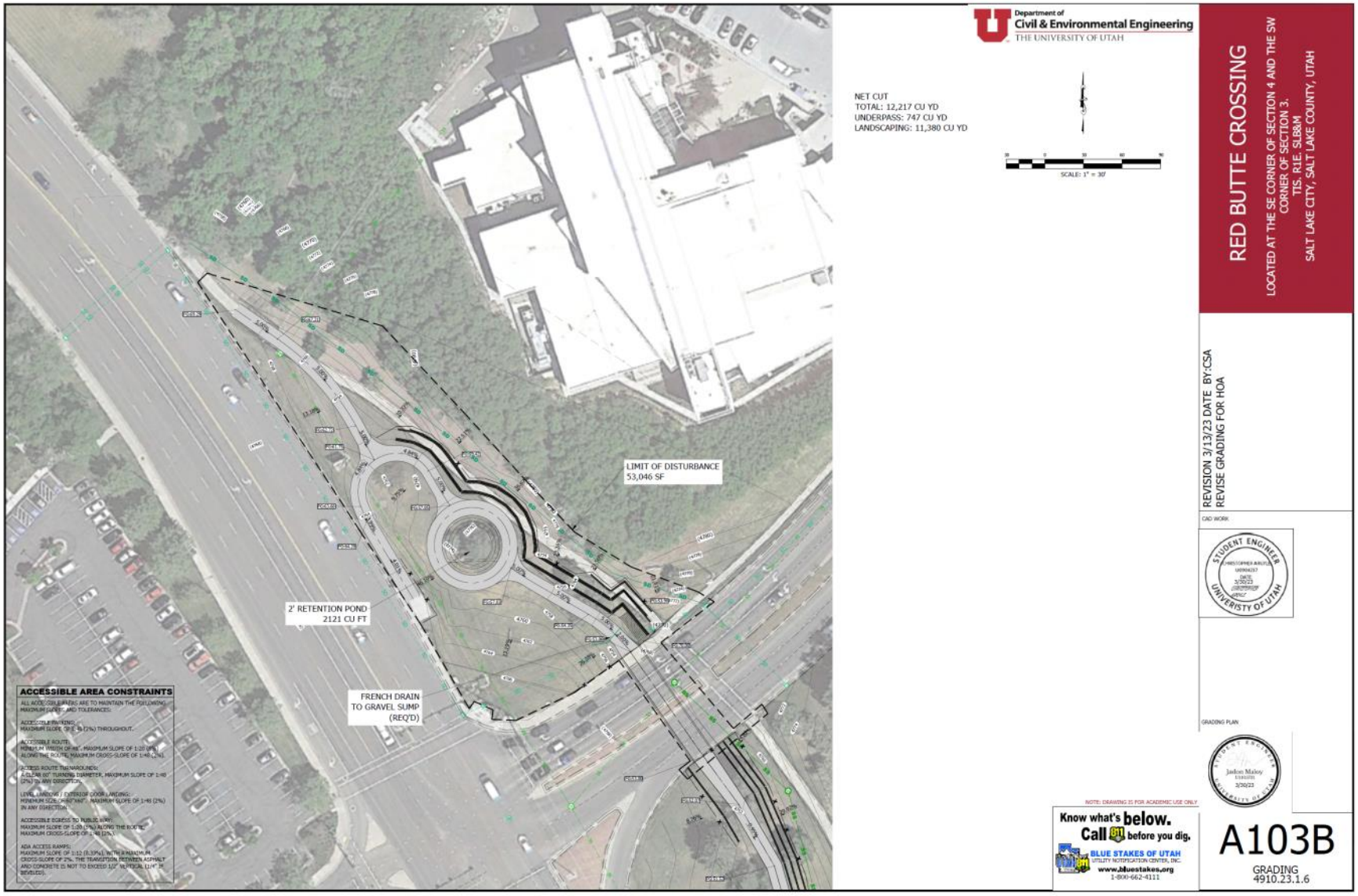
REVISION 1 3/17/23 BY:CSA ADDED
PROJECT #

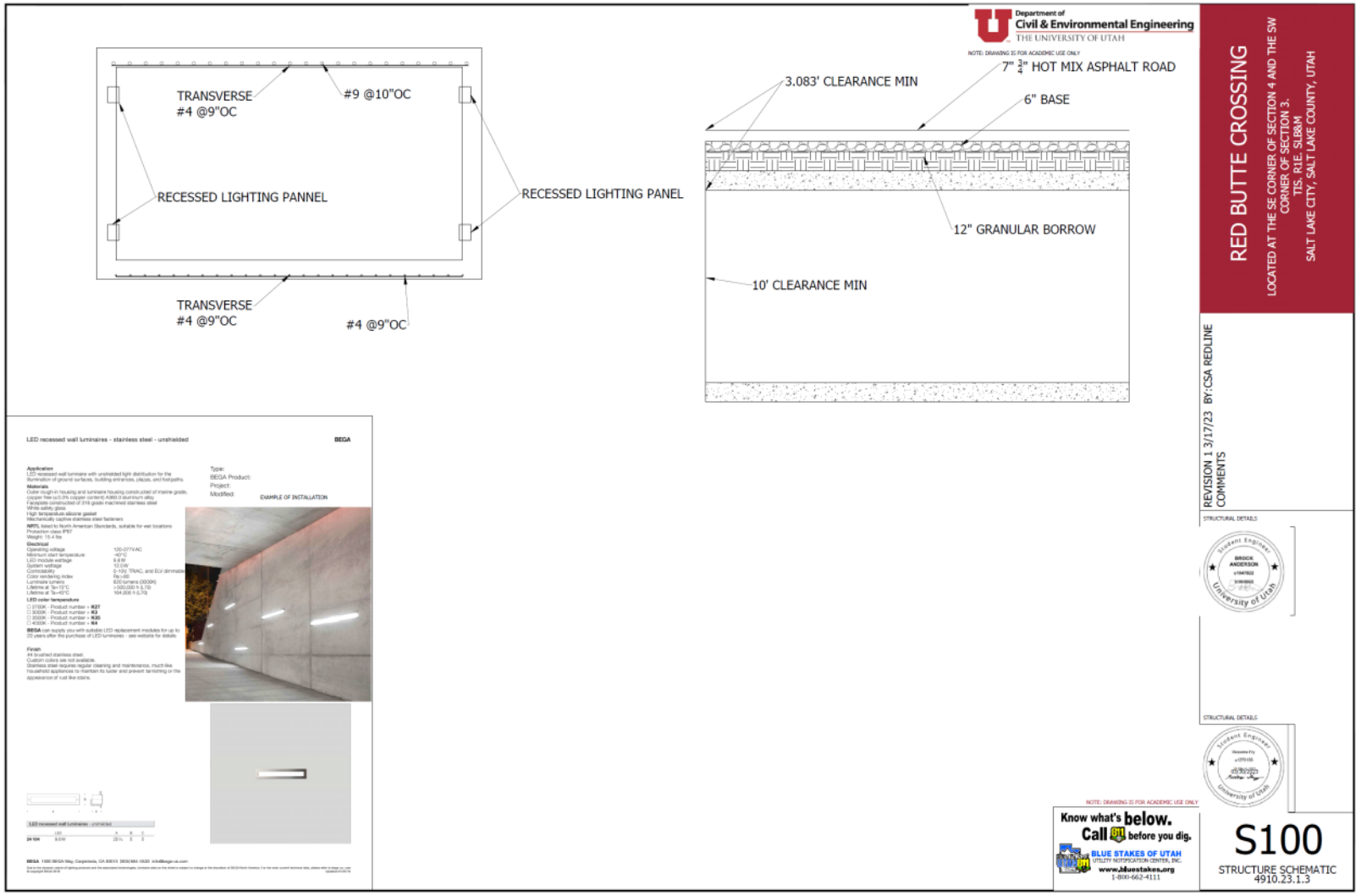
STUDENT ENGINEER
CHRISTOPHER ARGUS
10904237
DATE
03/20/2023
UNIVERSITY OF UTAH

A100
NOTES
4910.23.1.3 4910.23.1.6









CVEEN 4910 - Red Butte Creek (cont.)

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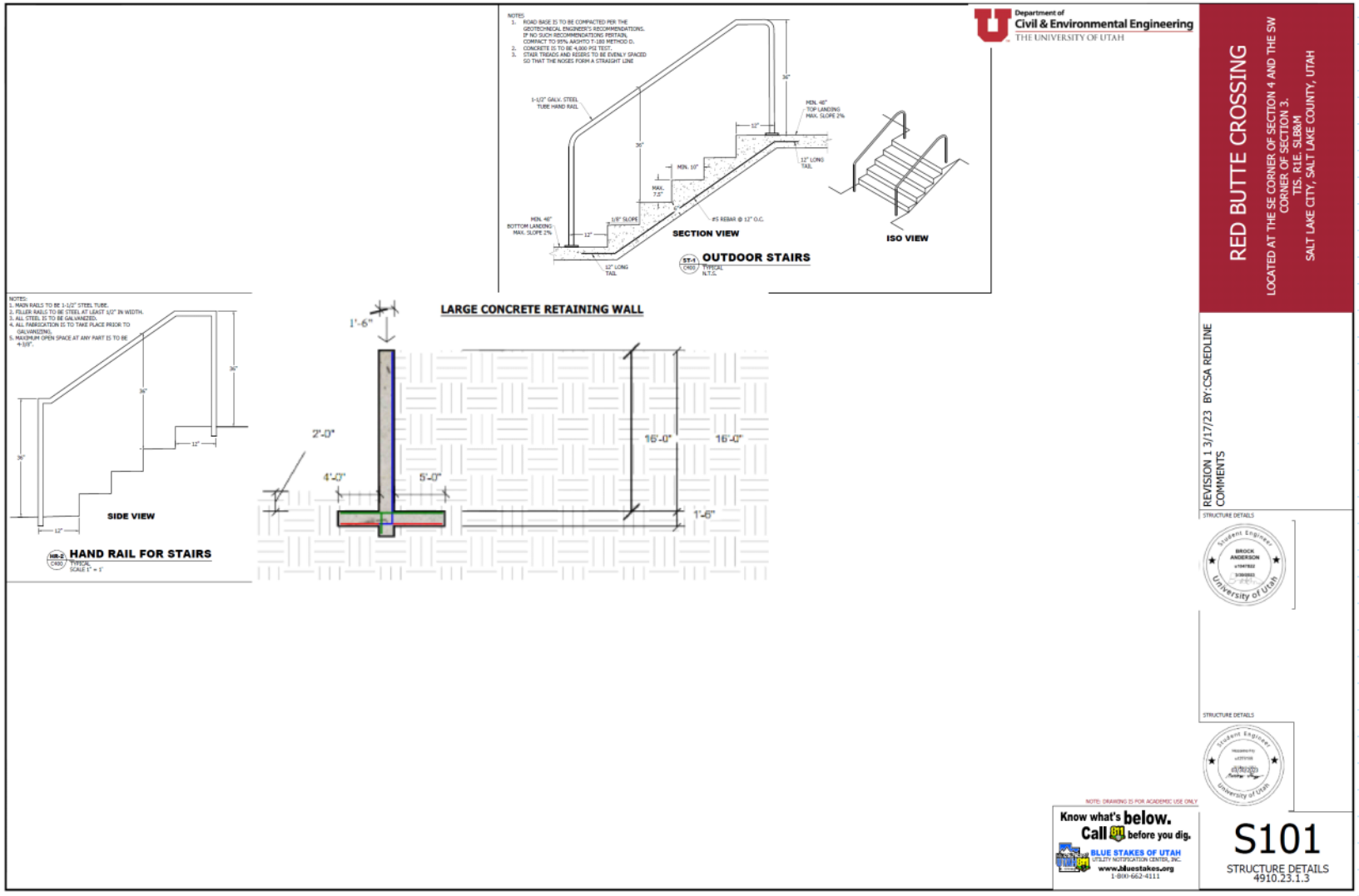

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