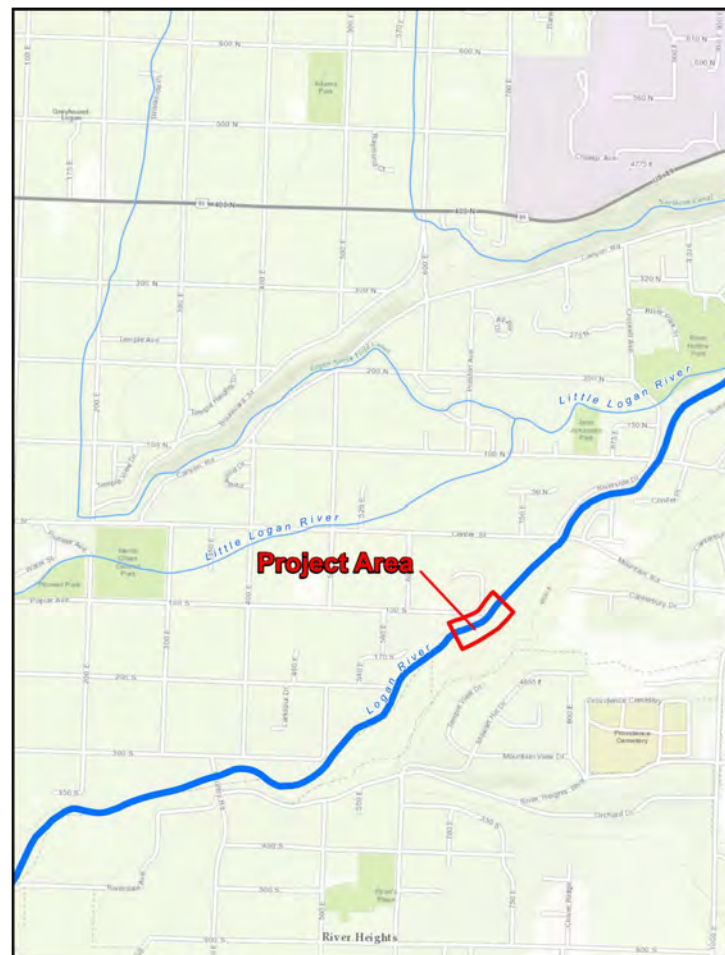
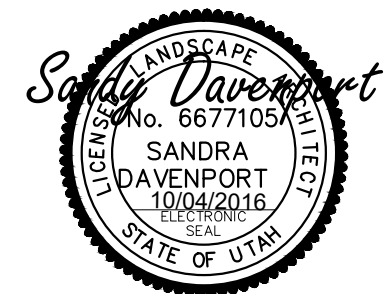


Denzil Stewart Nature Park Riverbank Restoration Demonstration Project

LOGAN RIVER CONSERVATION ACTION PLAN Logan, Utah



PROJECT LOCATION MAP



SHEET LISTING

- | | |
|---|--|
| 1 | COVER SHEET |
| 2 | GENERAL NOTES AND QUANTITIES |
| 3 | BANK, CHANNEL, AND RIPARIAN IMPROVEMENTS SITE PLAN |
| 4 | PLANTING PLAN |
| 5 | IRRIGATION PLAN |
| 6 | DETAILS |
| 7 | DETAILS |
| 8 | DETAILS |

GENERAL NOTES

Project Limits

All construction activity shall be confined to the project limits (footprint) including any staging/stockpile areas. Do not disturb, excavate or work beyond project limits without permission from the Project Manager.

Existing Conditions

Verify all conditions and dimensions on site.

Survey Staking

Survey staking is the responsibility of the Contractor.

Permits

The Contractor is required to comply with all construction related requirements in each permit issued for the project.

Logan City Standards and Specifications

All construction shall be in accordance with the latest City of Logan Standards and Specifications for the design and construction of public improvements.

Utilities

Utility locations have not been surveyed. It is the responsibility of the Contractor to perform all utility locations at least 48 hours prior to excavation, call 1(800)662-4111. It is the responsibility of the Contractor to protect all existing sewer, water, gas and electric utilities encountered in the work. Any relocation or improvements of utilities shall be accurately noted on as-built drawings and issued to the Project Manager at the completion of the project.

Temporary Construction Facilities

All temporary utilities and facilities will be the responsibility of the Contractor. A construction trailer is not required. Potable water is not available on site and shall be provided by the Contractor. A chemical toilet of suitable type shall be provided and maintained by the Contractor at all times. The Contractor is responsible for job site conditions and the safety for human life during the course of construction. This requirement shall apply continuously during the period of construction and is not limited to normal working hours.

The Contractor shall keep job site area clean, hazard free and dispose of all debris, rubbish and construction waste, and remove all abandoned materials from the site. All disturbed staging and access areas are to be restored to pre-construction condition. The Contractor is responsible to reclaim (regrade, seed and mulch) construction features not specified as remaining on the site and clean up all areas at the completion of the project.

Storm Water Pollution Prevention Plan Items

1. No earth shall be disturbed until erosion control measures are in place.
2. Erosion control measures will be maintained and remain in place until re-vegetation success measures have been achieved.
3. Preparation of a Storm Water Pollution Prevention Plan; design, layout, installation, and maintenance of erosion/sediment control BMPs; submittal of NOI; and acquisition of UPDES Storm Water General Permit for Construction Activities (UTR300000) is the responsibility of the Contractor.

4. The Contractor is responsible for implementing and utilizing Best Management Practices (BMPs) to prevent storm water runoff and water pollution during construction activities. The Contractor is responsible for supplying equipment and plans that provide both dust and fire control during project construction. Use caution when working in and around wet areas. If potential hazardous materials are encountered, contact the Project Manager immediately.

Construction Spoils and Waste Handling

Items encountered below grade and not shown on the drawings shall be brought to the attention of the Project Manager. All construction spoils and waste are the responsibility of the Contractor and shall be disposed of at an approved landfill facility.

Clearing and Grubbing

Existing on-site materials shall be carefully removed and stored for re-use, or disposed of at an approved landfill facility. All existing vegetation not in designated excavation areas and not designated for removal is to be protected in place. Completely remove stumps, roots, shrubs, weeds, and other debris protruding from the ground in areas to be excavated.

Site Earthwork and Grading

The Contractor is responsible for all site earthwork and grading activities to meet designs identified in plans and details, which are intended to show final result of design. Modifications may be required to suit job site conditions encountered during construction and shall be included in as-built drawings provided to the Project Manager at the completion of project.

All river channel banks affected by construction activities shall be stabilized and protected throughout construction.

Backfill material shall utilize suitable excavated soils or suitable imported material.

Existing cobble / gravel material shall be retained to use as a 6 inch thick minimum layer of armor underneath the placed and spreaded topsoil.

Existing Topsoil shall be excavated and salvaged by Contractor for use in landscaping and backfill activities. Topsoils used in landscaping shall have acidity range (pH) from 5.5 to 7.5 and a minimum organic content of 2%. Topsoil shall be placed at 80% to 90% maximum dry density and subsoil at 85% minimum compaction as determined by the Standard Proctor Method (ASTM D0698-66T or AASHTO T99). All existing topsoils shall be salvaged to the extent possible.

Site Construction Notes

1. All seeding activities shall occur during the designated seeding and planting window from September 15 to December 1 or as otherwise authorized by the Project Manager.
2. Where ground conditions are damp and equipment traffic would result in excessive ground compaction and rutting, use construction mats to access active work areas.
3. Inspect paved roads and walkways adjacent to the project site regularly for mud tracking; sweep roadways as needed and ensure roads are left clean at the end of each shift.
4. Clean site and dispose of construction waste as permitted.

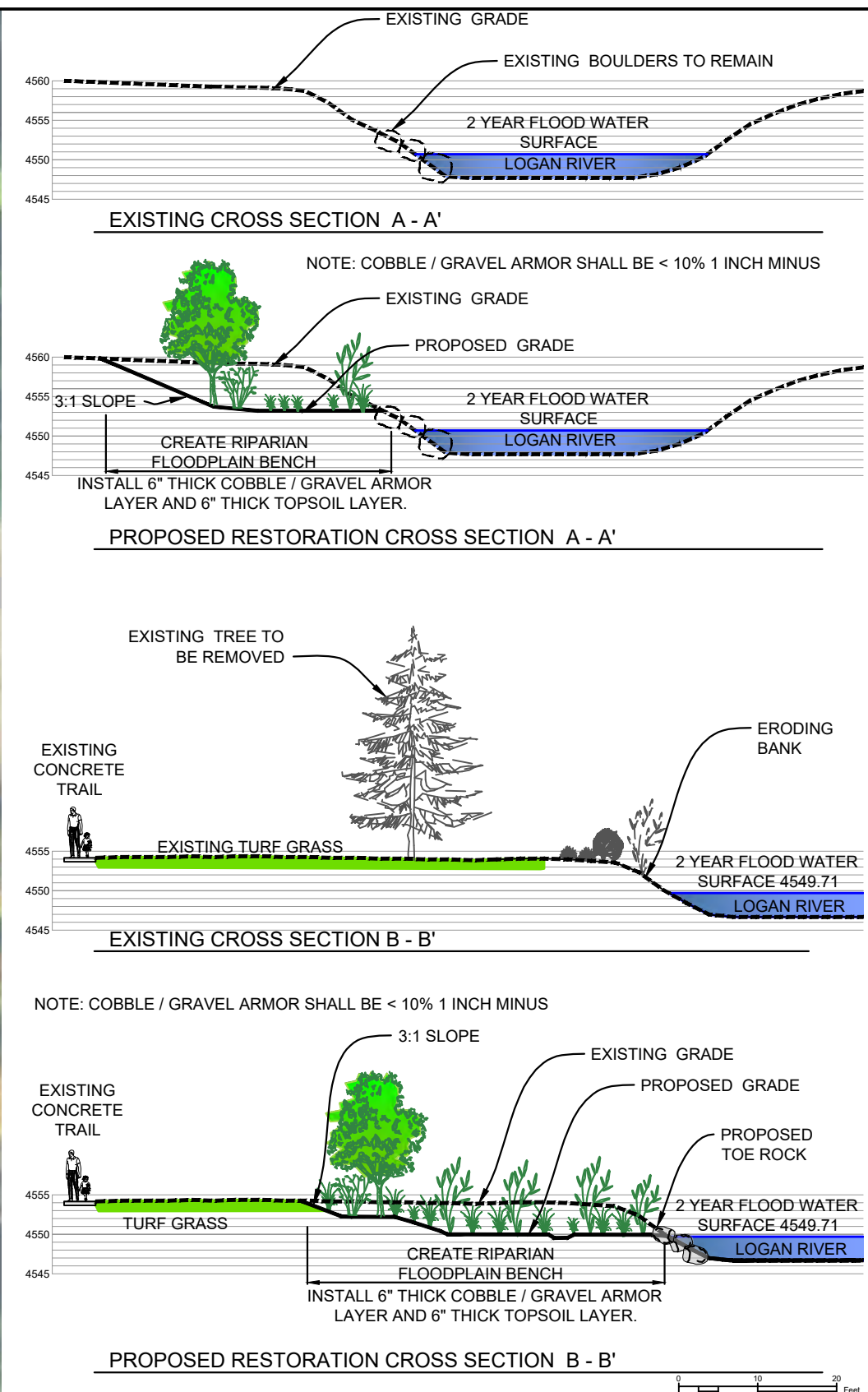
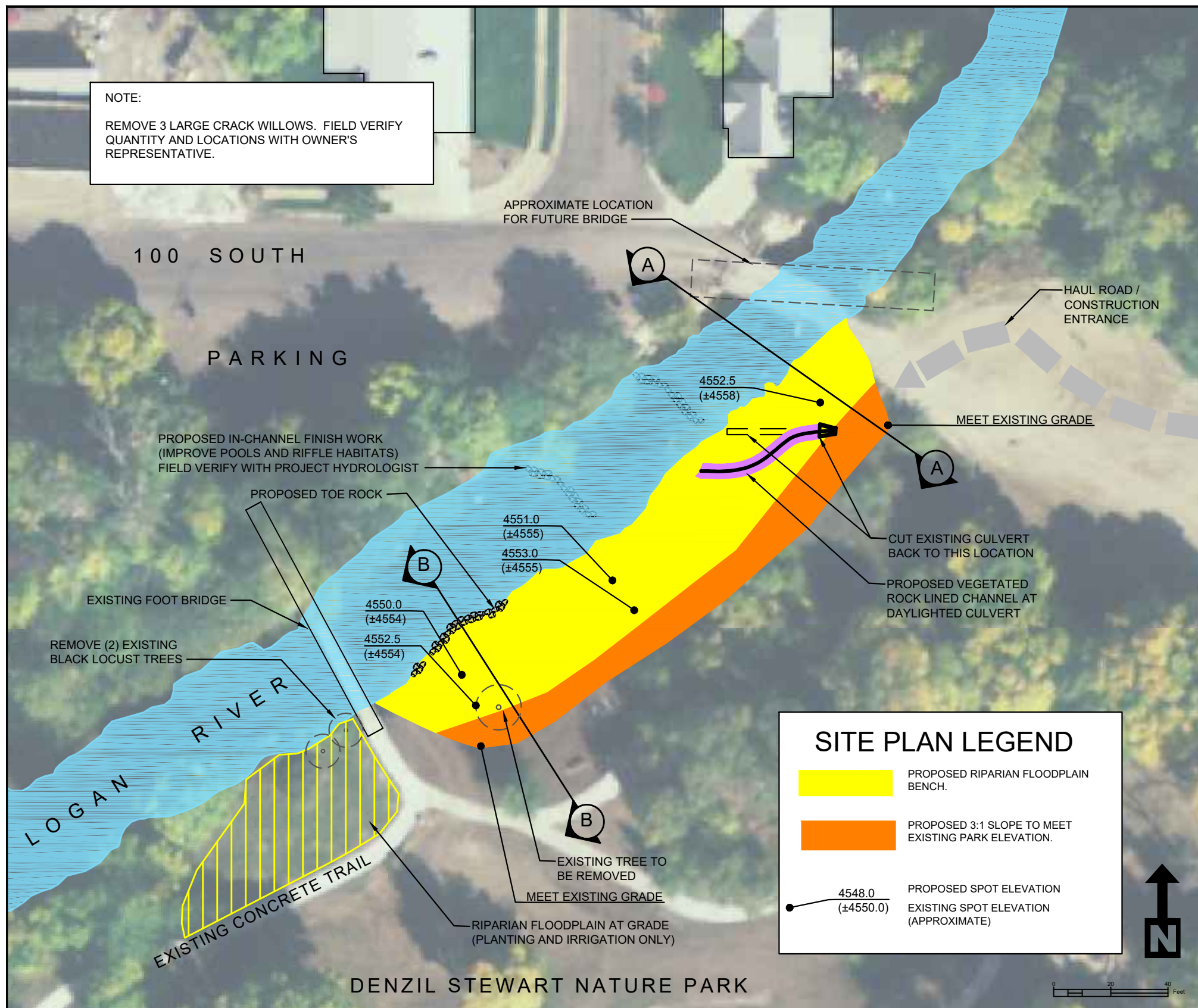
Quantities			
ITEM	DESCRIPTION	QUANTITY	UNIT
1	Survey (Stake Elevations and Layout)	1	Lump Sum
2	Site Clearing	1,300	Square Yard
3	Strip, Stockpile and Spread Topsoil	1,300	Square Yard
4	Excavation (Cut)	1,000	Cubic Yard
5	Retain 6 Inch Thick Minimum Cobble / Gravel Armor (Material from on site)	160	Cubic Yard
6	Place Imported Topsoil - 6 inches thick	160	Cubic Yard
7	Cut and Remove Existing PVC Culvert	20	Linear Feet
8	Install Vegetated Rock Lined Channel (Rock material from on site)	50	Linear Feet
9	Install Irrigation System (heads, pipe, valves, fittings)	1	Lump Sum
10	Broadcast Riparian / Upland Seed Mix	0.25	Acre
11	Install Hydromulch and Tackifier	0.25	Acre
12	Install Shrubs (By Others)	90	Each
13	Install Trees (By Others)	85	Each
14	Perform In-Channel Finish Work (Improve pools and riffle habitats)	40	Hours
15	Install Toe Rock Boulders at Channel Bank	50	Linear Feet
16	Remove Existing Trees	1	Lump Sum

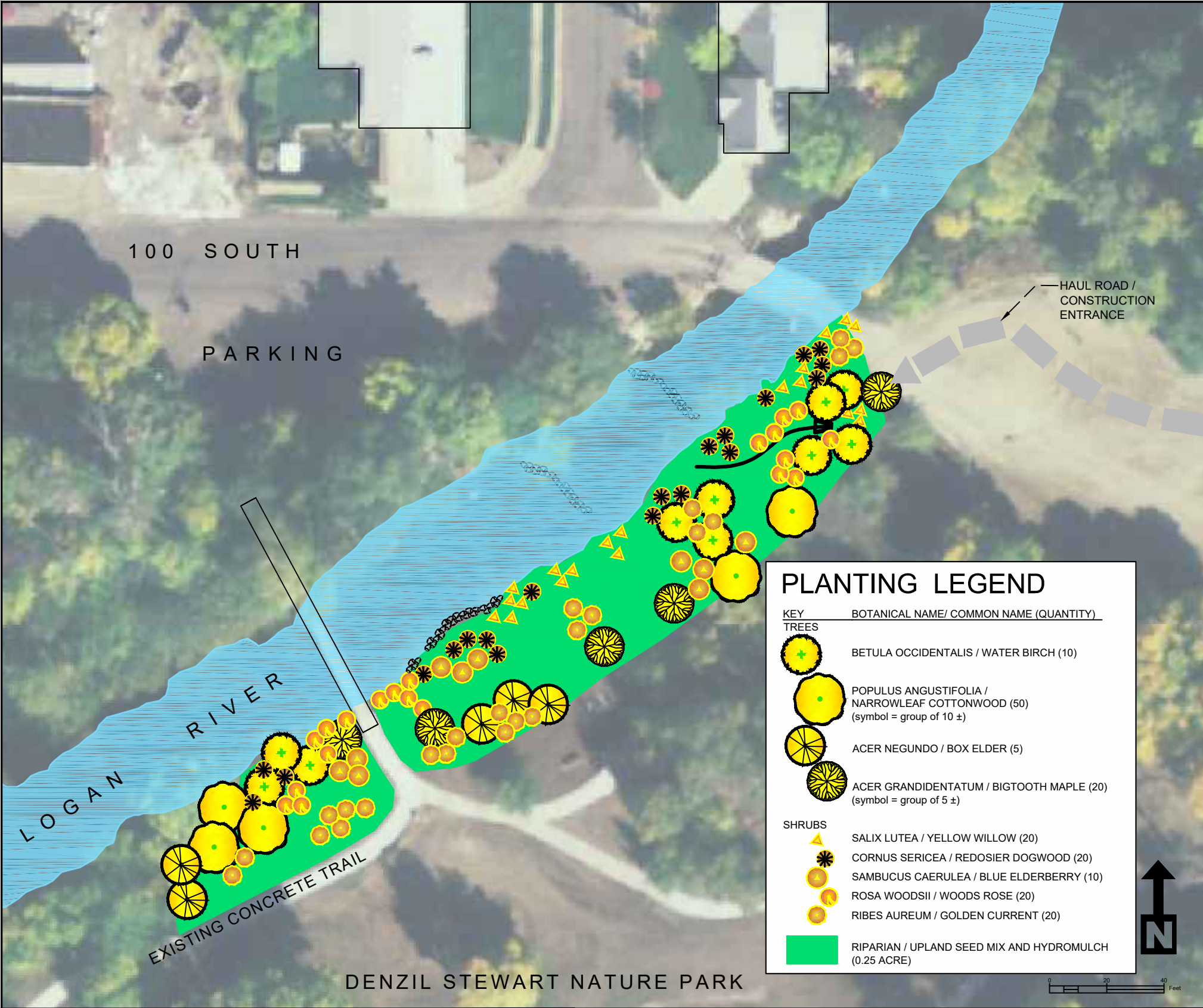


Denzil Stewart Nature Park
Riverbank Restoration
Demonstration Project
LOGAN RIVER CONSERVATION ACTION PLAN
Logan, Utah

Sheet Title:
GENERAL NOTES AND QUANTITIES

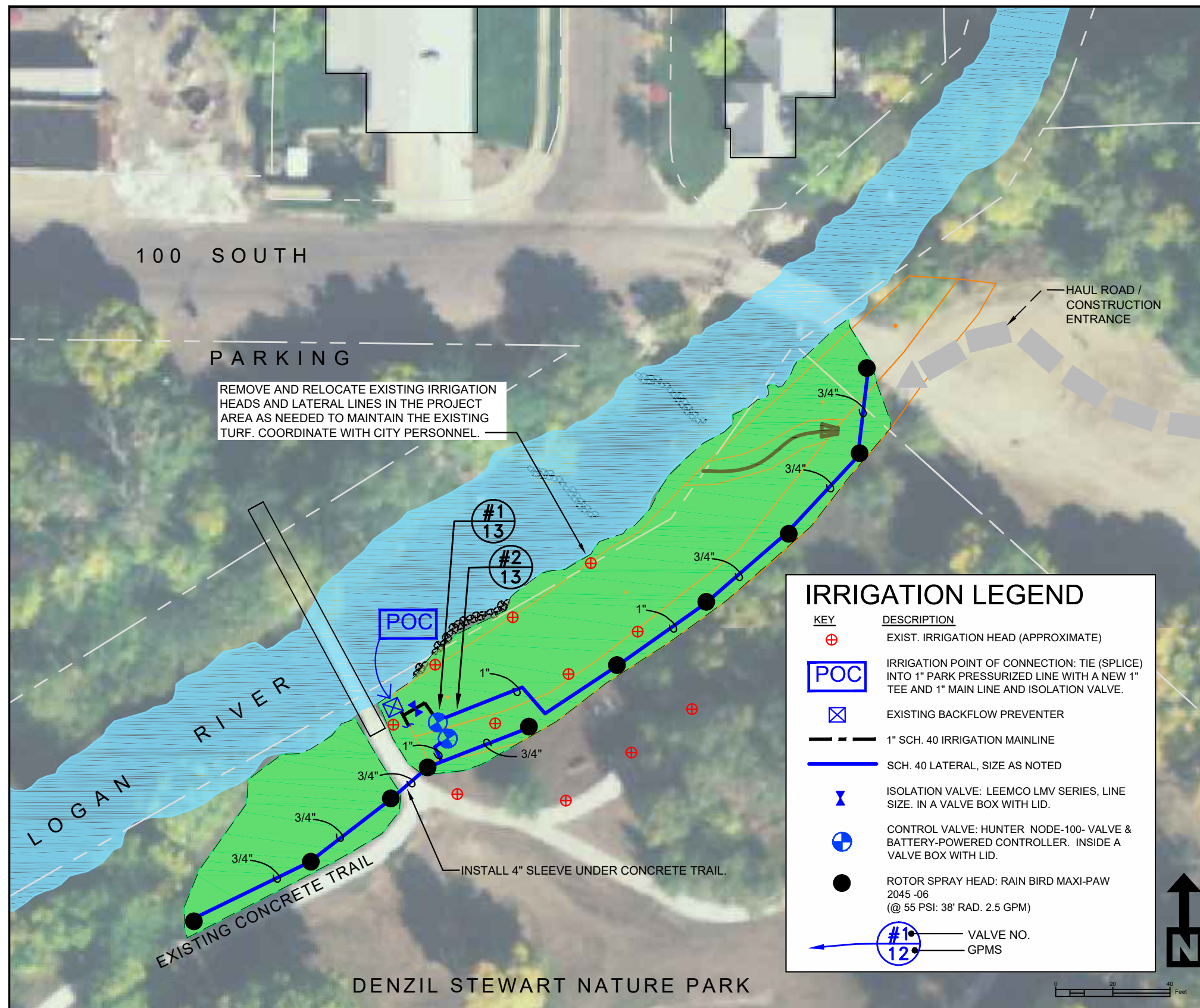
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10/04/2016
Designed By: T.A. / D.O.
Drawn By: S.D.
BIOWEST PN:
#1945.5
Sheet No.





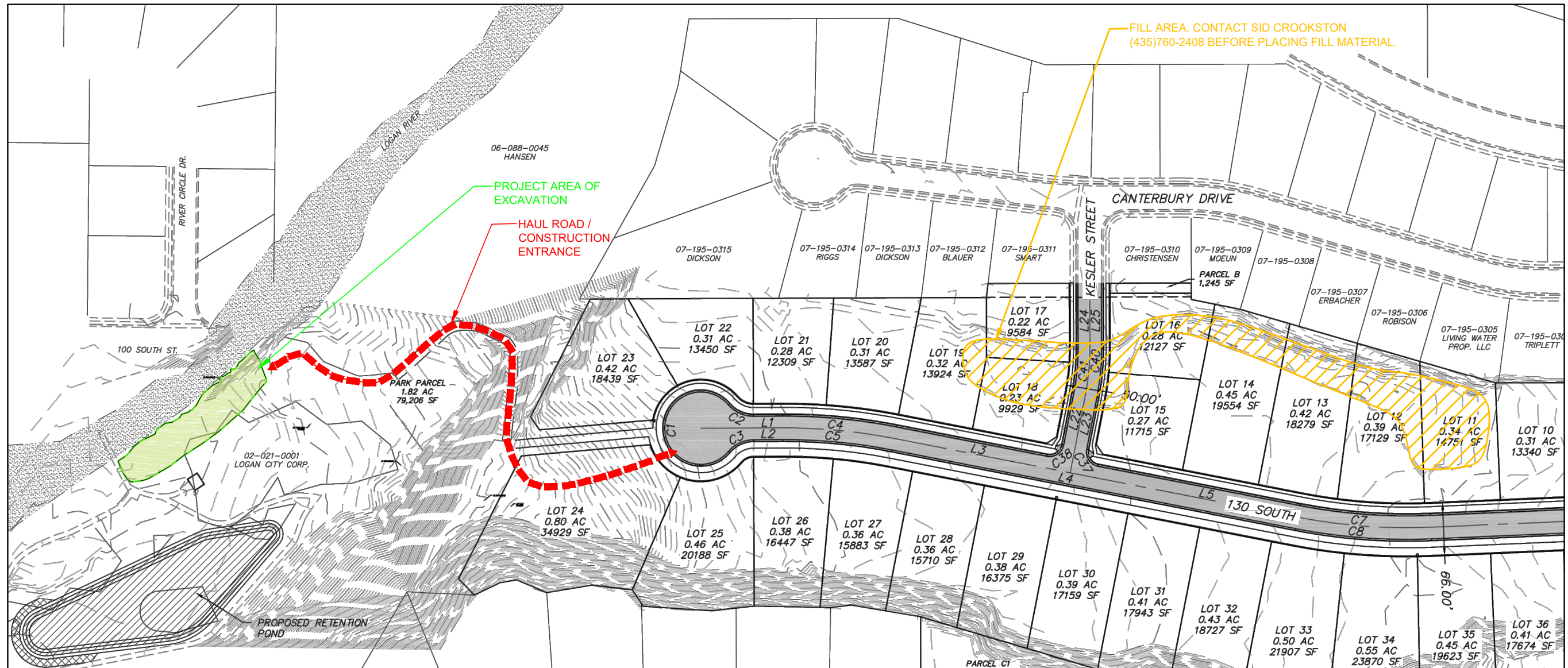
PLANTING LEGEND	
KEY	BOTANICAL NAME / COMMON NAME (QUANTITY)
TREES	
	BETULA OCCIDENTALIS / WATER BIRCH (10)
	POPULUS ANGUSTIFOLIA / NARROWLEAF COTTONWOOD (50) (symbol = group of 10 ±)
	ACER NEGUNDO / BOX ELDER (5)
	ACER GRANDIDENTATUM / BIGTOOTH MAPLE (20) (symbol = group of 5 ±)
SHRUBS	
	SALIX LUTEA / YELLOW WILLOW (20)
	CORNUS SERICEA / REDOSIER DOGWOOD (20)
	SAMBUCUS CAERULEA / BLUE ELDERBERRY (10)
	ROSA WOODSII / WOODS ROSE (20)
	RIBES AUREUM / GOLDEN CURRENT (20)
	RIPARIAN / UPLAND SEED MIX AND HYDROMULCH (0.25 ACRE)

RIPARIAN / UPLAND SEED MIX						
SEED NO.	SPECIES NAME		Number of seeds per pound	BROADCAST SEED		
	BOTANICAL NAME	COMMON NAME		Pounds of pure live seed per acre	Percent of mix	Seeds per square foot
1	<i>Carex rostrata</i>	Beaked sedge	444,000	1.5	7.20%	15
2	<i>Carex praegracilis</i>	Clustered field sedge	664,900	1.0	7.19%	15
3	<i>Elymus lanceolatus</i>	Thickspike wheatgrass	154,000	4.0	6.66%	14
4	<i>Elymus trachycaulus</i>	Slender wheatgrass	159,000	4.0	6.88%	15
5	<i>Elymus canadensis</i>	Canada wildrye	115,000	4.0	4.97%	11
6	<i>Juncus arcticus</i>	Mountain rush	10,900,000	0.10	11.79%	25
7	<i>Linum lewisii</i>	Lewis flax	170,000	3.0	5.51%	12
8	<i>Geranium viscosissimum</i>	Sticky purple geranium	52,000	2.0	1.12%	2
9	<i>Iris missouriensis</i>	Rocky Mountain Iris	21,000	2.0	0.45%	1
10	<i>Verbena hastata</i>	Swamp verberna	1,792,800	0.5	9.69%	21
11	<i>Asclepias tuberosa</i>	Butterfly milkweed	102,400	2.0	2.21%	5
12	<i>Lupinus argenteus</i>	Silvery lupine	18,300	3.0	0.59%	1
13	<i>Gaillardia aristata</i>	Blanket flower	132,000	2.0	2.85%	6
14	<i>Penstemon eatonii</i>	Firecracker penstemon	400,000	2.0	8.65%	18
15	<i>Penstemon cyananthus</i>	Wasatch penstemon	290,000	2.0	6.27%	13
16	<i>Cleome serrulata</i>	Rocky Mountain beeplant	65,900	2.0	1.43%	3
17	<i>Erigeron speciosus</i>	Aspen daisy	1,600,000	0.5	8.65%	18
18	<i>Heliomeris multiflora</i>	Showy goldeneye	1,055,000	0.5	5.70%	12
19	<i>Ericameria nauseosa</i>	Rubber rabbitbrush	400,000	0.5	2.16%	5
TOTAL				36.60	100.00%	212



IRRIGATION NOTES

1. THIS PORTION OF THE IRRIGATION SYSTEM IS DESIGNED FOR MAXIMUM OF 13 GALLONS PER MINUTE AT 65 PSI STATIC MIN. VERIFY THE AVAILABLE WATER PRESSURE AT THE P.O.C. PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE SHOWN ON THE PLANS AND THE ACTUAL PRESSURE READING AT THE P.O.C. TO THE OWNER'S REPRESENTATIVE IN WRITING.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO BE KNOWLEDGEABLE OF ALL UTILITIES, STRUCTURES AND GRADE DIFFERENCES ON THE SITE AND TO REPAIR OR REPLACE ALL ITEMS DAMAGED BY HIS WORK AT NO ADDITIONAL COST TO THE OWNER.
3. DO NOT DELIBERATELY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THESE PLANS IF THERE ARE ANY OBVIOUS OBSTRUCTIONS OR INCONSISTENCIES IN THE FIELD THAT MIGHT NOT HAVE BEEN ANTICIPATED IN THE IRRIGATION DESIGN. NOTIFY THE OWNER'S REPRESENTATIVE OF ANY SUCH DIFFERENCES IN WRITING.
4. ADJUST ALL SPRINKLER HEADS, VALVES AND EQUIPMENT FOR OPTIMUM COVERAGE, AND ADJUST ARC RADIUS AND NOZZLE OF EACH SPRINKLER TO AVOID SPRAYING ONTO WALKS, STREETS, BUILDING, ETC.
5. COORDINATE IRRIGATION HEAD LOCATIONS WITH PLANT MATERIAL PLACEMENT.
6. THIS IRRIGATION DESIGN IS DIAGRAMMATIC. WHERE VALVES, PIPING AND ETC. ARE SHOWN OUTSIDE OF PLANTING AREAS, THE INTENT IS FOR THIS EQUIPMENT TO BE INSTALLED WITHIN THE PLANTING AREAS.
7. INSTALL ALL IRRIGATION EQUIPMENT NOT DETAILED OR SPECIFIED BUT REQUIRED FOR A FULLY OPERATING SYSTEM PER MANUFACTURERS SPECIFICATIONS.
8. COORDINATE WITH CITY PERSONEL TO REVISE ALL EXISTING IRRIGATION EQUIPMENT AS NEEDED.
9. IRRIGATION SYSTEM IS INTENDED SOLELY FOR USE DURING PLANT ESTABLISHMENT PERIOD AND DROUGHT CONDITIONS.



HAUL ROAD / CONSTRUCTION ENTRANCE
NOT TO SCALE

A



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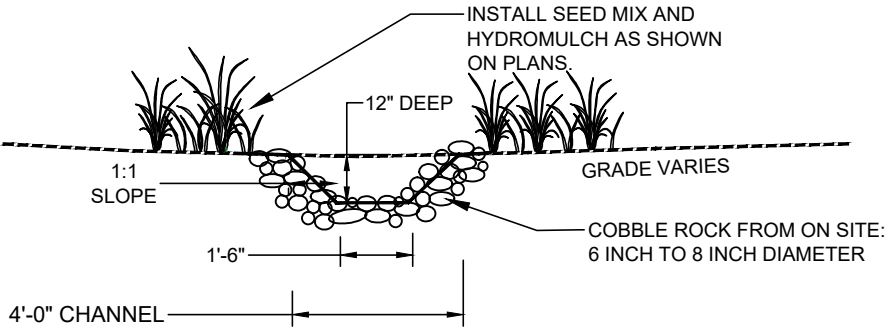
6

INSTALL BOULDER (36" DIA. TO 48" DIA.).
BURY 1/3 TO 1/2 MASS. BURY LARGEST BOULDERS AT
THE TOE. FILL VOIDS WITH SMALLER ROCKS.

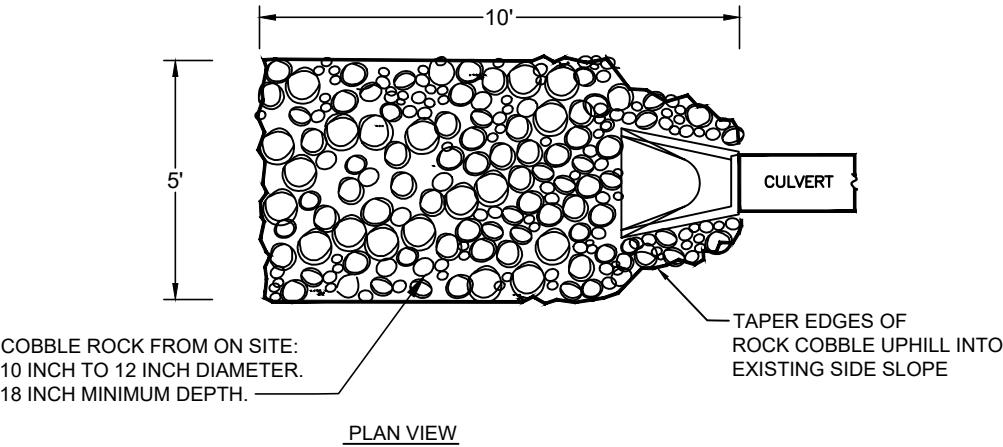
NOTES:

1. SET ROCKS SO THEY SIT SECURELY AND ARE FITTED TOGETHER.
2. COORDINATE BOULDER PLACEMENT WITH PROJECT HYDROLOGIST.

TOE ROCK
1" = 4'-0"



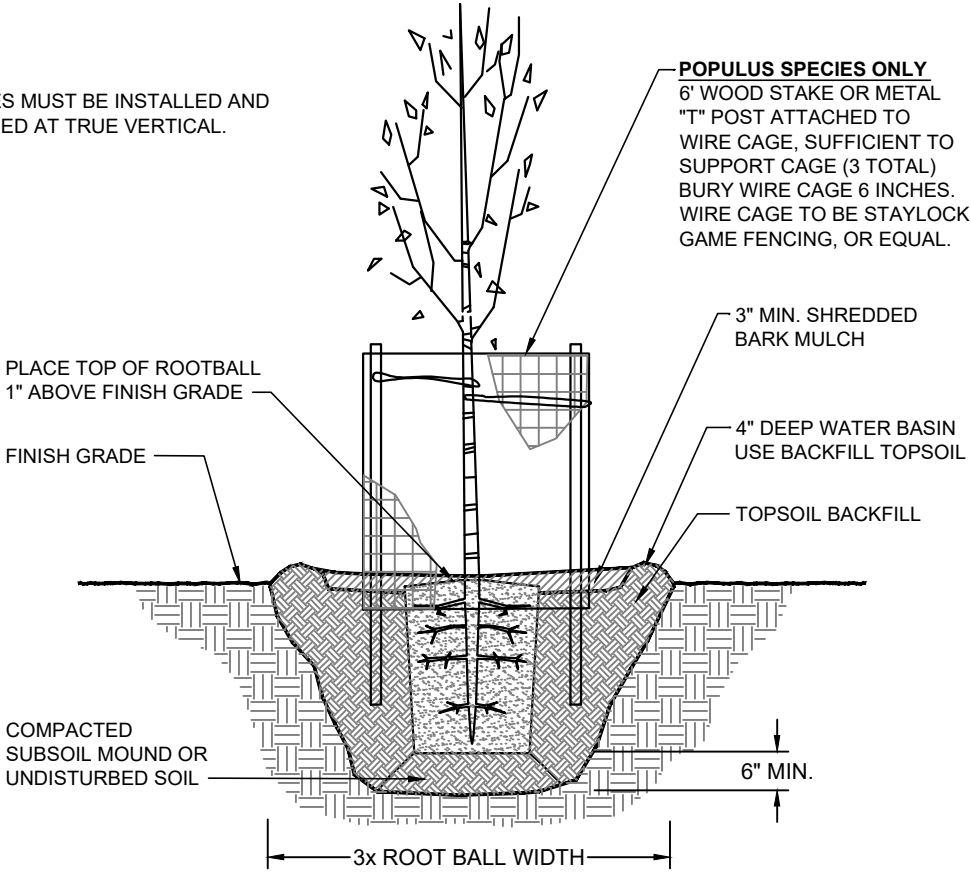
VEGETATED ROCK LINED CHANNEL AT DAYLIGHTED CULVERT
1" = 4'-0"



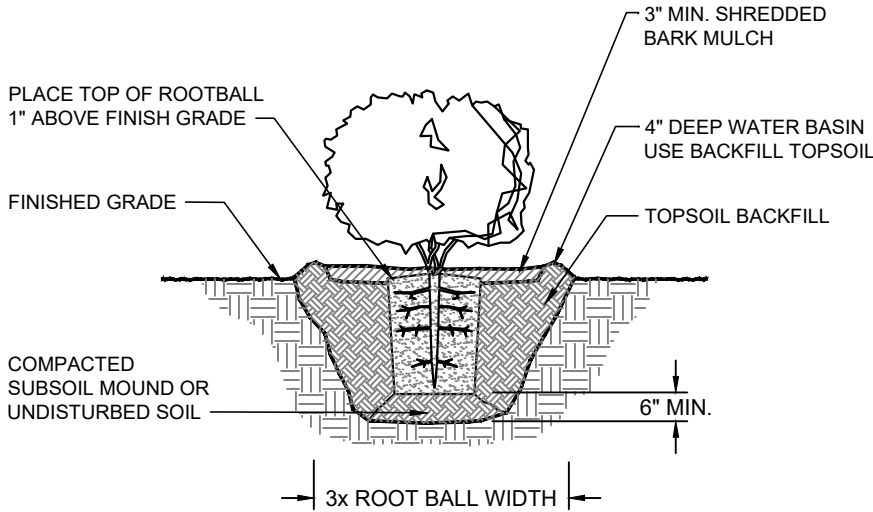
ROCK COBBLE AT DAYLIGHTED CULVERT
1" = 4'-0"

NOTES:

1. ALL TREES MUST BE INSTALLED AND MAINTAINED AT TRUE VERTICAL.



TREE PLANTING
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE



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