CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 2

DATE: **May 29, 2019**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **Las Colonias Park – River Recreation Feature IFB-4648-19-DH**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded and supplemented as to this date as hereinafter described.

Please make note of the following clarifications:

1. Q. Where can the plans for the Irrigation and Landscape located? Are there plan sheets for these bid items?

   A. See attached irrigation and landscaping plans.

The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

Respectfully,

Duane Hoff Jr., Senior Buyer
City of Grand Junction, Colorado

GENERAL DESCRIPTION

THE IRRIGATION DESIGN INCLUDES A FULLY AUTOMATED DRIP IRRIGATION SYSTEM THAT IRRIGATES SHRUB BEDS.

THE WATER SOURCE IS A DEDICATED NON-POTABLE TAP. IT IS ASSUMED THAT PURPLE MARKINGS ARE NOT REQUIRED ON PIPE, VALVE BOX LIDS, TAGS, SPRINKLER TOPS, DRIP TUBING, ETC. PER DIRECTION OF GRAND JUNCTION NO BACKFLOW PREVENTION IS REQUIRED.

A STAND ALONE, TRADITIONALLY WIRED IRRIGATION CONTROLLER IS REQUIRED. DUE TO WIRE RUN LENGTHS, BOTH THE CONTROL AND COMMON WIRE ARE SIZED APPROPRIATELY. THE WIRE SIZING IS INDICATED ON THE PLANS.

ISOLATION GATE VALVES PERMIT THE ISOLATION OF SECTIONS OF THE SYSTEM FOR REPAIRS OR MAINTENANCE.

QUICK COUPLING VALVES HAVE BEEN PROVIDED THROUGHOUT THE SITE FOR WINTERIZATION PURPOSES.

AIR VACUUM RELIEF VALVES ARE REQUIRED TO PROTECT THE MAINLINE DURING START UP AND DRAINING.

A GRAVITY DRAIN IS PROVIDED TO ASSIST WITH WINTERIZATION.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL THE IRRIGATION SYSTEM IN ACCORDANCE WITH GRAND JUNCTION'S IRRIGATION GUIDELINES.

GENERAL NOTES

1. THE SYSTEM DESIGN ASSUMES A MINIMUM PRESSURE AND MAXIMUM FLOW DEMAND AS SHOWN ON THE PLANS FOR THE POINT-OF-CONNECTION (P.O.C.). THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING PRESSURE AND FLOW ON SITE PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
2. READ THOROUGHLY AND BECOME FAMILIAR WITH GRAND JUNCTION IRRIGATION GUIDELINES FOR THIS AND RELATED WORK PRIOR TO CONSTRUCTION.
3. COORDINATE UTILITY LOCATES ("CALL BEFORE YOU DIG") OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
4. DO NOT PROCEED WITH THE INSTALLATION OF THE IRRIGATION SYSTEM WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS OR GRADE DIFFERENCES EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING, OR IF DISCREPANCIES IN CONSTRUCTION DETAILS, LEGEND, NOTES, OR SPECIFICATIONS ARE DISCOVERED. BRING ALL SUCH OBSTRUCTIONS OR DISCREPANCIES TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE.
5. THE DRAWINGS ARE DIAGRAMMATIC. THEREFORE, THE FOLLOWING SHOULD BE NOTED:

   A. IRRIGATION COMPONENTS MAY BE SHOWN OUTSIDE PLANTING AREAS FOR CLARITY. AVOID CONFLICTS BETWEEN THE IRRIGATION SYSTEM, PLANTING MATERIALS, AND ARCHITECTURAL FEATURES. INSTALL IRRIGATION PIPE AND WIRING IN LANDSCAPED AREAS WHEREVER POSSIBLE.

   B. USE ONLY STANDARD TEES AND ELBOW FITTINGS. USE OF CROSS TYPE FITTINGS IS NOT PERMITTED.
6. PROVIDE THE FOLLOWING COMPONENTS TO THE OWNER PRIOR TO THE COMPLETION OF THE PROJECT:

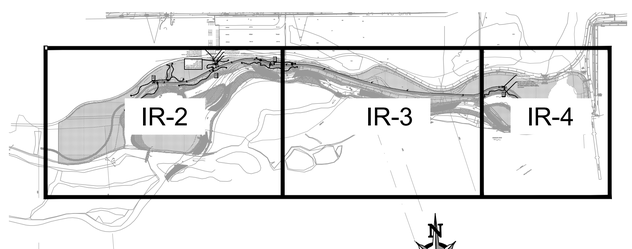
   A. TWO OPERATING KEYS FOR EACH TYPE OF MANUALLY OPERATED VALVE.

   B. TWO OF EACH SERVICING WRENCH OR TOOL NEEDED FOR COMPLETE ACCESS, ADJUSTMENT, AND REPAIR OF ALL ROTARY SPRINKLERS.
7. SELECT NOZZLES FOR SPRINKLERS WITH ARCS WHICH PROVIDE COMPLETE AND UNIFORM COVERAGE WITH MINIMUM OVERSPRAY FOR THE SITE CONDITIONS. CAREFULLY ADJUST THE RADIUS OF THROW AND ARC OF EACH SPRINKLER TO PROVIDE THE BEST PERFORMANCE.
8. THE IRRIGATION CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF IRRIGATION SLEEVING. SLEEVES ARE TO BE INSTALLED FOR BOTH PIPING AND ELECTRICAL WIRING AT EACH HARDSCAPE CROSSING. COORDINATE INSTALLATION OF SLEEVING WITH OTHER TRADES. ANY PIPE OR WIRE WHICH PASSES BENEATH EXISTING HARDSCAPE WHERE SLEEVING WAS NOT INSTALLED REQUIRES HORIZONTAL BORING BY THE IRRIGATION CONTRACTOR.
9. CONNECT ELECTRICAL POWER TO THE IRRIGATION CONTROL SYSTEM IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL APPLICABLE LOCAL ELECTRIC UTILITY CODES.
10. WITH REGARD TO PIPE SIZING, THE FOLLOWING SHOULD BE NOTED:

    A. IF A SECTION OF UNSIZED PIPE IS LOCATED BETWEEN TWO IDENTICALLY SIZED SECTIONS, THE UNSIZED PIPE IS THE SAME NOMINAL SIZE AS THE TWO SIZED SECTIONS. THE UNSIZED PIPE SHOULD NOT BE CONFUSED WITH THE DEFAULT PIPE SIZE NOTED IN THE LEGEND.
11. INSTALL VAN NOZZLES WHERE SPRAY ANGLES ARE LESS OR GREATER THAN WHAT A FIXED SPRAY NOZZLE CAN IRRIGATE WITHOUT EXCESSIVE OVERSPRAY.

LEGEND

- (A) IRRIGATION CONTROLLER – RAIN BIRD LX OR EQUAL. INSTALL WITHIN LOCKING CABINET OR PEDESTAL (STRONG BOX OR EQUAL).
- IRRIGATION WIRING – REFER TO PLAN
- SLEEVING – CLASS 200 PVC
- POINT-OF-CONNECTION (P.O.C.)
- UNCONNECTED PIPE CROSSING
- MAINLINE PIPE
  *TYPE: CLASS 200 PVC
  *REFER TO PLANS FOR SIZING CRITERIA
- DRIP LATERAL PIPE – ¾" POLYETHYLENE DRIP TUBING
  *EMITTERS: RAIN BIRD XERI-BUG OR EQUAL
  *FOR TREES, INSTALL A LOOPS OF DRIP TUBING WITH 4 EMITTERS PER TREE
- QUICK COUPLING VALVE
  *RAIN BIRD 5LRC OR EQUAL
- ISOLATION GATE VALVE
  *MODEL: NIBCO T113 K
  *NOMINAL SIZE OF GATE VALVE TO MATCH NOMINAL MAINLINE SIZE
- (D) DRAIN VALVE
  *REFER TO DETAIL
- AIR VACUUM RELIEF VALVE
  *MODEL: WATERMAN AV-150 (SIZE: 1.5-INCH) OR EQUAL
- DRIP REMOTE CONTROL VALVE KIT
  *(0.2-5 GPM): RAIN BIRD XCZ-075-PRF OR EQUAL
  *5.1-10 GPM): RAIN BIRD XCZ-100-PRF OR EQUAL
  *BALL VALVE: SPEARS PVC COMPACT
- DRIP FLUSH CAP
  *RAIN BIRD COMPRESSION STYLE OR EQUAL
- A-1 / 15 / 1" / - INDICATES CONTROLLER AND STATION NUMBER
  INDICATES LATERAL DISCHARGE IN GPM
  INDICATES REMOTE CONTROL VALVE SIZE IN INCHES
- VALVE BOXES: RAIN BIRD PVB WITH GREEN LIDS OR EQUAL



COLORADO REGISTERED JEFFREY WAYNE BECKER 23206 PROFESSIONAL ENGINEER
05-23-2019

Aqua Engineering Inc.
Innovative Water Solutions

LAS COLONIAS RIVER PARK
IRRIGATION PLANS
GRAND JUNCTION, CO

IRRIGATION COVER SHEET

DATE	April 15, 2019
DESIGNED BY	JHK
DRAWN BY	JHK
CHECKED BY	CBK

REVISIONS
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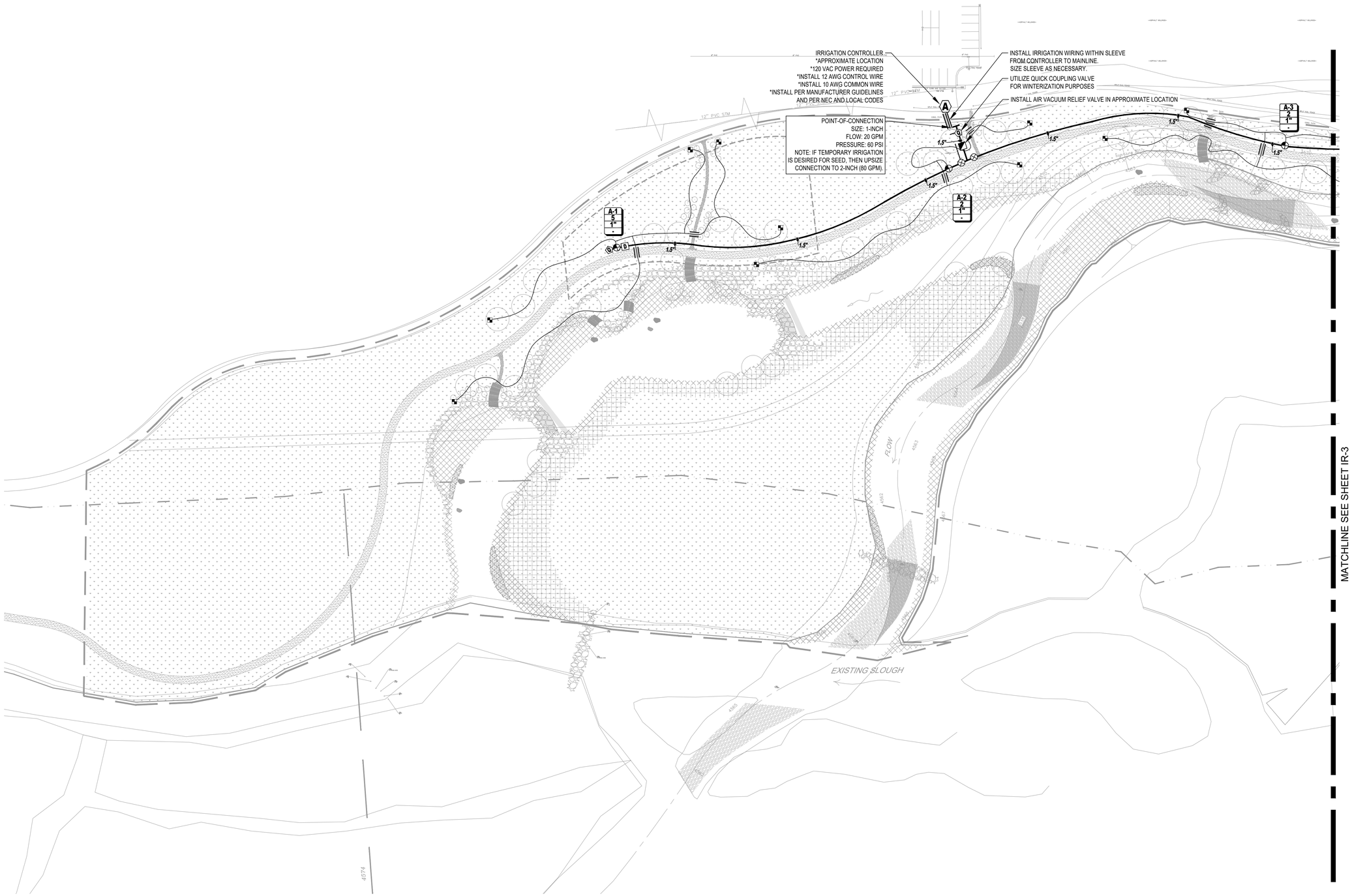
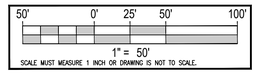
SHEET NO.
IR-1





05-23-2019

Aqua Engineering Inc.
Innovative Water Solutions

LAS COLONIAS RIVER PARK
IRRIGATION PLANS
GRAND JUNCTION, CO

IRRIGATION PLAN

DATE	April 15, 2019
DESIGNED BY	JHK
DRAWN BY	JHK
CHECKED BY	CBK

REVISIONS
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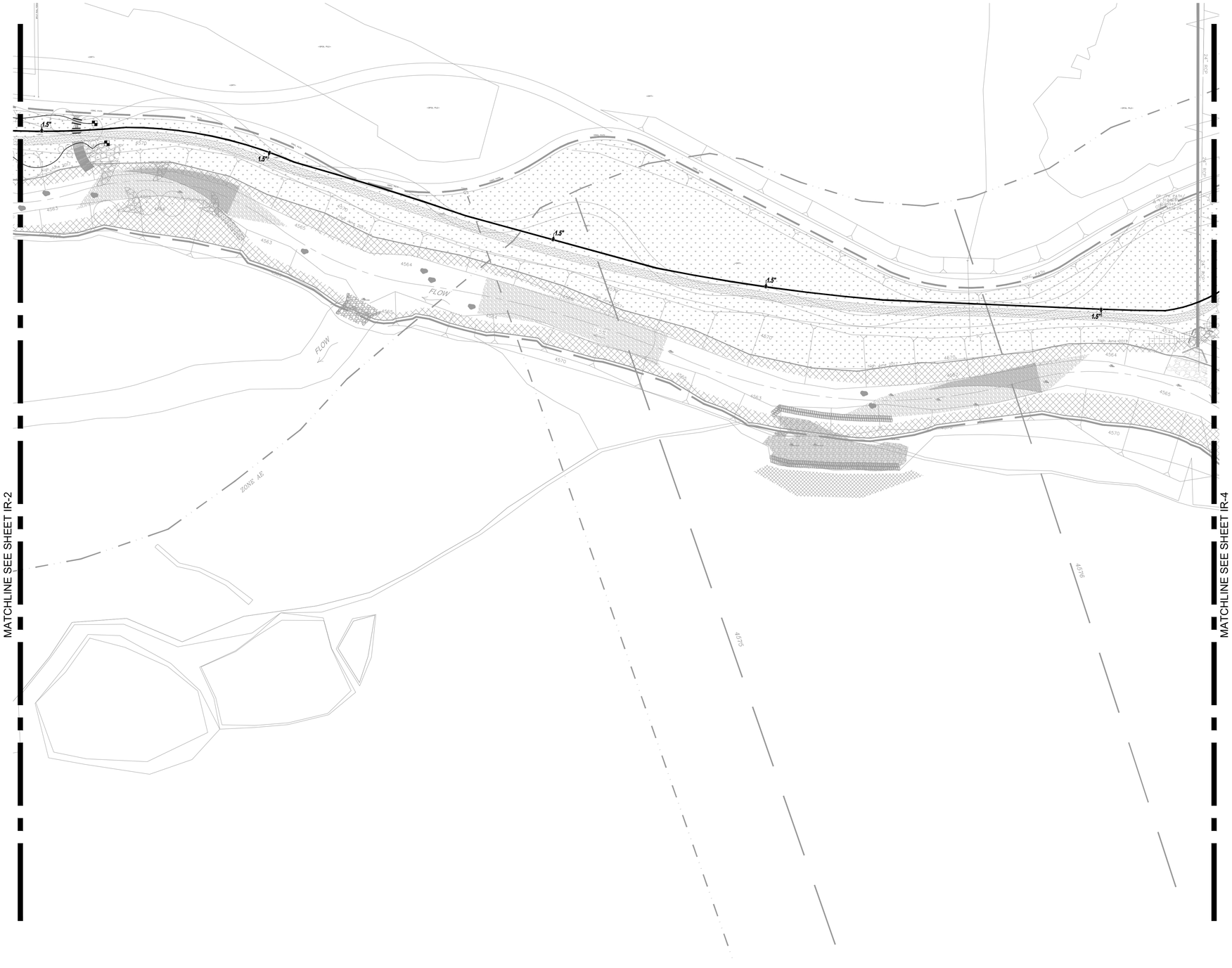
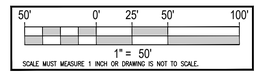
SHEET NO.
IR-2





05-23-2019

Aqua Engineering Inc.
Innovative Water Solutions

LAS COLONIAS RIVER PARK
IRRIGATION PLANS
GRAND JUNCTION, CO

IRRIGATION PLAN

DATE	April 15, 2019
DESIGNED BY	JHK
DRAWN BY	JHK
CHECKED BY	CBK

REVISIONS
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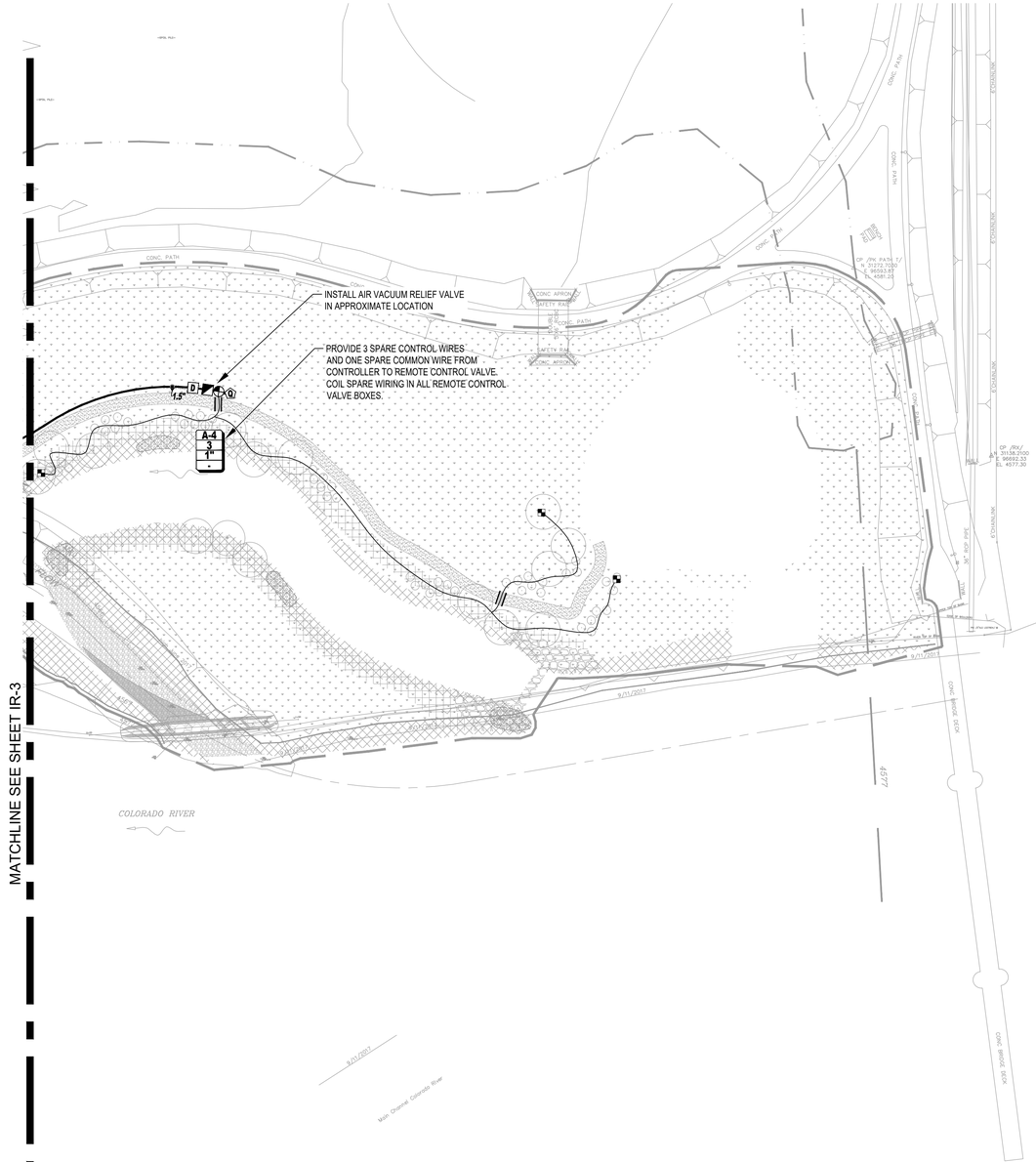
SHEET NO.
IR-3



50' 0' 25' 50' 100'

1" = 50'

SCALE MUST MEASURE 1 INCH OR DRAWING IS NOT TO SCALE.

05-23-2019

Aqua Engineering Inc.
Innovative Water Solutions

LAS COLONIAS RIVER PARK
IRRIGATION PLANS
GRAND JUNCTION, CO

IRRIGATION PLAN

DATE	April 15, 2019
DESIGNED BY	JHK
DRAWN BY	JHK
CHECKED BY	CBK

REVISIONS
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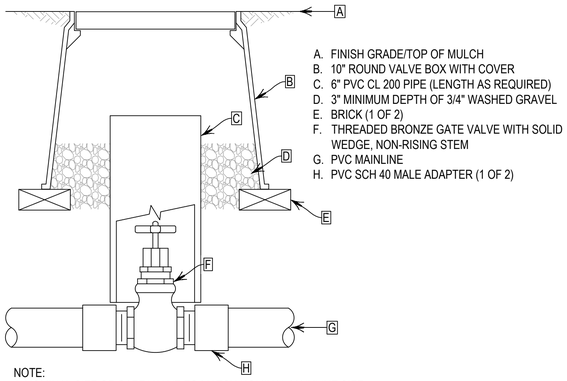
SHEET NO.
IR-4

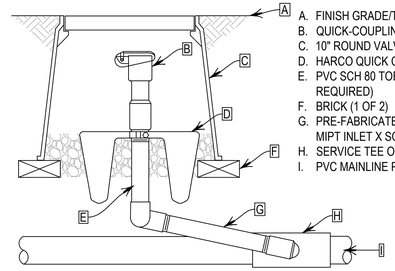


A. FINISH GRADE/TOP OF MULCH
B. 10" ROUND VALVE BOX WITH COVER
C. 6" PVC CL 200 PIPE (LENGTH AS REQUIRED)
D. 3" MINIMUM DEPTH OF 3/4" WASHED GRAVEL
E. BRICK (1 OF 2)
F. THREADED BRONZE GATE VALVE WITH SOLID WEDGE, NON-RISING STEM
G. PVC MAINLINE
H. PVC SCH 40 MALE ADAPTER (1 OF 2)

NOTE:
1. NOMINAL SIZE OF GATE VALVE TO MATCH NOMINAL MAINLINE SIZE.

1 ISOLATION GATE VALVE

N.T.S.

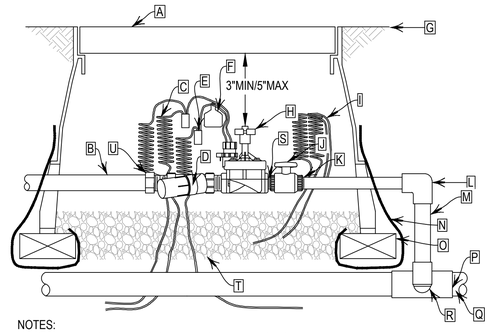


A. FINISH GRADE/TOP OF MULCH
B. QUICK-COUPLING VALVE
C. 10" ROUND VALVE BOX WITH COVER
D. HARCO QUICK COUPLER ANCHOR
E. PVC SCH 80 TOE NIPPLE (LENGTH AS REQUIRED)
F. BRICK (1 OF 2)
G. PRE-FABRICATED UNITIZED SWING JOINT 1" MIPT INLET X SOC OUTLET
H. SERVICE TEE OR SERVICE EL
I. PVC MAINLINE PIPE

NOTES:
1. FURNISH FITTINGS AND PIPING NOMINALLY SIZED IDENTICAL TO NOMINAL QUICK COUPLING VALVE INLET SIZE.
2. INSTALLATION HEIGHT OF QUICK COUPLER VALVE IN VALVE BOX MUST ALLOW PROPER OPERATION OF QUICK COUPLER KEY.
3. INSTALL SWING JOINT LAY ARM BETWEEN 30° AND 45° OF LATERAL PIPE IN ORDER TO ABSORB DOWNWARD IMPACT.

2 QUICK COUPLING VALVE

N.T.S.

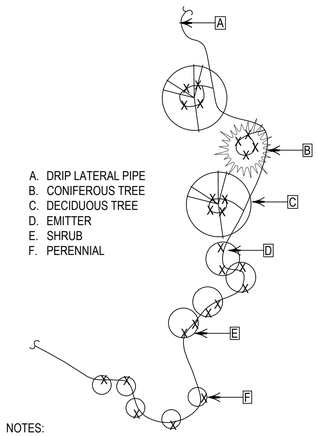


A. JUMBO VALVE BOX WITH COVER
B. PVC MANIFOLD PIPE
C. 30" LENGTH OF COILED WIRE
D. FILTRATION/PRESSURE REGULATION DEVICE
E. WATERPROOF CONNECTION (1 OF 2)
F. CHRISTY ID TAG
G. FINISH GRADE/TOP OF MULCH
H. REMOTE CONTROL VALVE
I. SPARE WIRE
J. PVC BALL VALVE
K. PVC SCH 80 TOE NIPPLE (LENGTH AS REQUIRED)
L. PVC SCH 40 EL
M. PVC SCH 40 PIPE (LENGTH AS REQUIRED)
N. FILTER FABRIC
O. BRICK (1 OF 4)
P. SERVICE TEE OR SERVICE EL
Q. PVC MAINLINE
R. PVC SCH 80 TOE NIPPLE (LENGTH AS REQUIRED, HIDDEN) AND PVC SCH 40 EL
S. PVC SCH 80 CLOSE NIPPLE
T. 3" MINIMUM DEPTH OF WASHED PEA GRAVEL
U. PVC SCH 40 FEMALE ADAPTER

NOTES:
1. USE VALVE BOX EXTENSION AS NECESSARY TO ACHIEVE MINIMUM DIMENSIONS ABOVE ASSEMBLY.
2. NOMINAL SIZE OF ALL COMPONENTS ARE TO BE THE SAME NOMINAL SIZE AS THE SOLENOID VALVE (SIZED AS SHOWN).
3. INSTALL FILTER FABRIC AROUND EXTERIOR OF VALVE BOX. USE DUCT TAPE TO SECURE FABRIC TO PIPE AND VALVE BOX.
4. TRANSITION TO PROPER LATERAL PIPE BURIAL DEPTH USING 45° ELBOW FITTINGS DOWNSTREAM OF REMOTE CONTROL VALVE ASSEMBLY.
5. DO NOT CUT OUT ENDS OF VALVE BOX UNNECESSARILY.
6. POSITION VALVE BOX OVER VALVE TO ALLOW ACCESS TO SOLENOID AND PROPER OPERATION OF BALL VALVE.

3 DRIP REMOTE CONTROL VALVE

N.T.S.

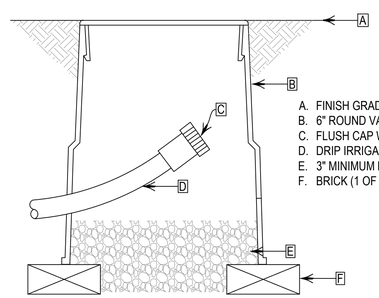


A. DRIP LATERAL PIPE
B. CONIFEROUS TREE
C. DECIDUOUS TREE
D. EMITTER
E. SHRUB
F. PERENNIAL

NOTES:
1. EMITTERS SHALL BE LOCATED IMMEDIATELY ADJACENT TO PERENNIALS AND AT THE OUTSIDE PERIMETER OF THE PLANTING PIT OF ALL SHRUBS AND TREES.
2. INSTALL FOUR 1 GPH EMITTERS PER TREE. LOOP DRIP LATERAL PIPE AROUND TREE ROOTBALL.
3. INSTALL TWO 1 GPH EMITTERS PER SHRUB.
4. INSTALL ONE 1 GPH EMITTER PER PERENNIAL.

4 DRIP PLACEMENT

N.T.S.

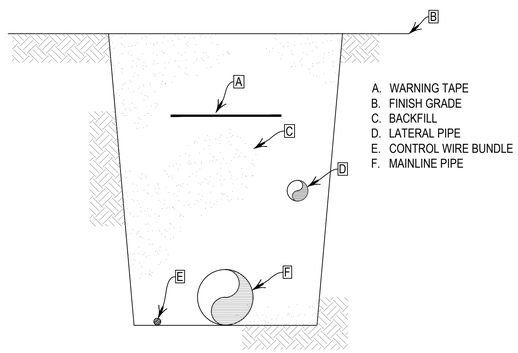


A. FINISH GRADE/TOP OF MULCH
B. 6" ROUND VALVE BOX WITH COVER
C. FLUSH CAP WITH HOSE THREAD CAP
D. DRIP IRRIGATION LATERAL
E. 3" MINIMUM DEPTH OF 3/4" WASHED GRAVEL
F. BRICK (1 OF 2)

NOTE:
1. INSTALL FLUSH CAP ASSEMBLY AT THE END OF EACH DRIP LATERAL SEGMENT.

5 DRIP FLUSH CAP

N.T.S.



A. WARNING TAPE
B. FINISH GRADE
C. BACKFILL
D. LATERAL PIPE
E. CONTROL WIRE BUNDLE
F. MAINLINE PIPE

6 TRENCH

N.T.S.

Aqua Engineering Inc.
Innovative Water Solutions

LAS COLONIAS RIVER PARK
IRRIGATION PLANS
GRAND JUNCTION, CO

IRRIGATION DETAILS

DATE	April 15, 2019
DESIGNED BY	JHK
DRAWN BY	JHK
CHECKED BY	CBK

REVISIONS
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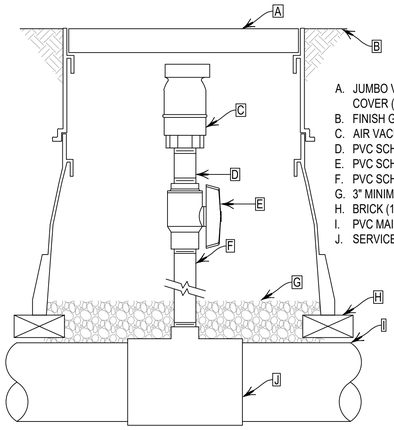
SHEET NO.
IR-5

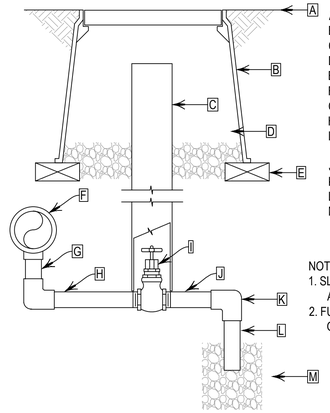
COLORADO REGISTERED PROFESSIONAL ENGINEER JEFFREY WAYNE BECKER 23206 05-23-2019



A. JUMBO VALVE BOX WITH EXTENSION AND COVER (HEIGHT AS REQUIRED)
B. FINISH GRADE/TOP OF MULCH
C. AIR VACUUM RELIEF VALVE
D. PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
E. PVC SCH 40 BALL VALVE (SIZE 1.5")
F. PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
G. 3" MINIMUM DEPTH OF 3/4" WASHED GRAVEL
H. BRICK (1 OF 4)
I. PVC MAINLINE PIPE
J. SERVICE TEE

1 AIR VACUUM RELIEF VALVE

N.T.S.



A. FINISH GRADE
B. 10" ROUND VALVE BOX WITH COVER
C. 4" PVC CL 200 PIPE (LENGTH AS REQUIRED)
D. 6" MINIMUM DEPTH OF 3/4" WASHED GRAVEL
E. BRICK (1 OF 4)
F. TEE OR EL ON PVC MAINLINE
G. PVC SCH 40 PIPE (LENGTH AS REQUIRED)
H. PVC SCH 80 TOE NIPPLE (LENGTH AS REQUIRED)
I. 1" THREADED BRONZE GATE VALVE WITH CROSS HANDLE, SOLID WEDGE
J. PVC SCH 80 TOE NIPPLE (4" LENGTH)
K. PVC SCH 80 EL (1 OF 2)
L. PVC SCH 40 PIPE (4" LENGTH)
M. SUMP OF 3 CUBIC FEET OF 3/4" WASHED GRAVEL

NOTES:
1. SLEEVE TO BE SET SQUARE OVER GATE VALVE TO ALLOW FOR OPERATION OF VALVE WITHOUT BINDING.
2. FURNISH APPROPRIATE HANDLE AND KEY TO MATCH GATE VALVE.

2 DRAIN VALVE

N.T.S.

Hydraulic Calculation Worksheet

By: JHK
Project Name: Las Colonias
Hw y Segment: Drip Only

System Parameters:

Static PSI @ POC:	60	Max. System Flow :	20
POC Elevation	4570	Max RCV Flow	10
		Concurrent RCV's:	possible

Calculation notes:

COMPONENT FEATURES:

	COMPONENT		Flow (GPM)	SIZE (ID) inch	LENGTH or HEIGHT(+/-)	H_f/unit		Calc. H_f (PSI)	
A.	Drip				1	20		20	A.
B.	Lateral				1	5.00%		1	B.
C.	Drip RCV		20	1	1	3		3	C.
D.	Mainline Segment 1	1.5"	20	1.72	1800	0.78	/100'	14.05	
		3"	0	3.23	1	0.00	/100'	0.00	
		4"	0	4.154	1	0.00	/100'	0.00	
	Mainline Segment 2	2"	0	2.193	1	0.00		0.00	
		2.5"	0	2.655	1	0.00		0.00	
		3"	0	3.23	1	0.00		0.00	
					Subtotal D. Mainline Losses =			14.05	D.
E.	Master Valve		NA	0		2.4		0.00	E.
F.	Flow Sensor		NA	0	1	0.00	/100'	0.00	F.
G.	Water Meter		NA	1	1	0.00		0.00	G.
H.	Backflow		NA	1.5	1	0.00		0	H.
I.	Elevation @ Lateral				4580	0.433	PSI/FT	4.33	I.
J.	Service Pipe		20	1	30	10.93		3.28	J.
K.	Misc Losses					5.00%		1.07	K.
						Total Pressure Required		46.73	
						Total Pressure Available		60	
						Excess/-Deficiet Pressure		13.27	

3 HYDRAULIC ESTIMATE
DRIP SYSTEM

N.T.S.

Aqua Engineering Inc.
Innovative Water Solutions

LAS COLONIAS RIVER PARK
IRRIGATION PLANS
GRAND JUNCTION, CO

IRRIGATION DETAILS

DATE	April 15, 2019
DESIGNED BY	JHK
DRAWN BY	JHK
CHECKED BY	CBK

REVISIONS
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05-23-2019

SHEET NO.
IR-6

PLANTING NOTES

1. ALL TREES DESIGNATED TO REMAIN SHALL BE PROTECTED BY THE CONTRACTOR. TREE PROTECTION PROTOCOL SHALL BE COORDINATED WITH THE PROJECT MANAGER. TREE ROOTS ENCOUNTERED DURING EXCAVATION SHALL BE CLEANLY PRUNED.

2. THE CONTRACTOR SHALL SUPPLY ALL PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE PLAN. SHOULD ANY DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN IN THE PLANT LIST AND THOSE SHOWN IN THE DRAWINGS, THE DRAWINGS SHALL TAKE PRECEDENCE.

3. ALL PLANT MATERIAL SHALL BE REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. CONTRACTOR SHALL INSURE PLANT MATERIAL MEET THE SPECIFICATIONS OF THE AMERICAN STANDARDS FOR NURSERY STOCK (LATEST EDITION) AS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

4. CONTRACTOR SHALL FURNISH PLANT MATERIALS FREE OF PESTS OR PLANT DISEASES. PRE-SELECTED OR "TAGGED" MATERIAL MUST BE INSPECTED BY THE CONTRACTOR AND CERTIFIED PEST AND DISEASE FREE. IT IS THE CONTRACTOR'S OBLIGATION TO WARRANTY ALL PLANT MATERIALS PER THE SPECIFICATIONS.

5. CONTRACTOR SHALL STAKE PLANT LOCATIONS FOR THE REVIEW BY THE OWNER'S REPRESENTATIVE, PRIOR TO DIGGING PLANTING PITS. THE CONTRACTOR SHALL RELOCATE ANY PLANT AS DIRECTED BY THE OWNER'S REPRESENTATIVE PRIOR TO PLANTING AT NO ADDITIONAL COST TO THE OWNER.

6. ALL TREES AND SHRUB PLANTINGS SHALL BE COVERED WITH A MINIMUM OF 3 INCHES OF MULCH. SUBMIT SAMPLE TO OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION.

7. ANY LANDSCAPE AREAS OUTSIDE OF CONSTRUCTION LIMITS DISTURBED BY CONSTRUCTION OPERATIONS, NOT DIRECTED BY OWNER'S REPRESENTATIVE, SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL CONFINE ALL OPERATIONS TO THE CONSTRUCTION LIMITS SHOWN.

8. REFER TO PROPOSED PLANT SCHEDULE (THIS SHEET) AND DETAILS ON SHEET L-04.

9. ALL COTTONWOOD TREES (PD-D) TO BE "DEEP PLANTED" PER DETAIL.

10. ALL TREES PLANTED WITHIN 150 LF OF WATER WILL BE PROTECTED WITH WILDLIFE FENCING AROUND TRUNK. WIRE FENCE MATERIAL SHALL SURROUND THE TRUNK AND BE ANCHORED AT A DISTANCE THAT PREVENTS WILDLIFE DAMAGE BUT DOES NOT RESTRICT TREE GROWTH.

PLANTING SCHEDULE

QTY	ABV	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
DECIDUOUS TREES					
15	PD-D	*Populus deltoides*	PLAINS COTTONWOOD DEEP	2" CAL.	SEE PLANS
6	PD	*Populus deltoides*	PLAINS COTTONWOOD	2" CAL.	SEE PLANS
11	PA	*Populus angustifolia*	NARROWLEAF COTTONWOOD	2" CAL.	SEE PLANS
8	FN	Forestiera neomexicana	NEW MEXICO PRIVET	6' CLUMP	SEE PLANS
11	AN	*Acer negundo 'Sensation'*	SENSATION BOXELDER	2" CAL.	SEE PLANS
16	CO	*Celtis occidentalis*	COMMON HACKBERRY	2" CAL.	SEE PLANS
SHRUBS					
26	EN	*Ericameria nauseosa ssp. nauseosa var. speciosa*	TALL BLUE RABBITBRUSH	#5 CONT.	SEE PLANS
16	EE	*Ephedra equisetina*	BLUESTEM JOINT FIR	#5 CONT.	SEE PLANS
36	AC	*Amorpha canescens*	LEADPLANT	#5 CONT.	SEE PLANS
53	AT	*Atriplex canescens*	FOURWING SALTBUSH	#5 CONT.	SEE PLANS
11	CS	*Cornus sericea*	REDTWIG DOGWOOD	#5 CONT.	SEE PLANS
14	SA	*Symphoricarpos albus*	WHITE SNOWBERRY	#5 CONT.	SEE PLANS
12	RT	*Rhus trilobata*	*THREE-LEAF SUMAC*	#5 CONT.	SEE PLANS
23	RA	Ribes aureum	GOLDEN CURRANT	#5 CONT.	SEE PLANS
13	PV	*Prunus virginiana melanocarpa*	NATIVE CHOKECHERRY	#5 CONT.	SEE PLANS
POLES AND STAKES					
1,850	WS		*COLLECTED WILLOWS*	STAKES	24" O.C.

SEEDING SCHEDULE

BOTANICAL NAME	COMMON NAME	PLS LBS/ACRE
UPLAND SEED MIX		
Elymus lanceolatus ssp. lanceolatus 'Critana'	THICKSPIKE WHEATGRASS	2.0
Achnatherum hymenoides 'Paloma'	INDIAN RICEGRASS	4.0
Pleuraphis jamesii 'Viva'	VIVA GALLETA	4.0
Sporobolus cryptandrus	SAND DROPSEED	0.1
Distichlis spicata	INLAND SALTGRASS	1.0
Agropyron Cristatum	CRESTED WHEATGRASS	3.0
Poa secunda ssp. sandbergii	SANDBERG BLUEGRASS	0.5
	TOTAL PLS/ACRE 14.6	
RIPARIAN SEED MIX		
Elymus lanceolatus ssp. lanceolatus 'Critana'	THICKSPIKE WHEATGRASS	2.0
Distichlis spicata	INLAND SALTGRASS	1.0
Pleuraphis jamesii 'Viva'	VIVA GALLETA	4.0
Puccinellia distans 'Fults'	ALKALIGRASS	0.4
Eleocharis palustris	CREEPING SPIKERUSH	1.0
Bolboschoenus maritimus	ALKALI BULRUSH	3.0
	TOTAL PLS/ACRE 11.4	

NOTES
1. SEED MIXES ARE DESIGNED FOR DRILL SEEDING. DOUBLE THE RATES FOR BROADCAST SEEDING.
2. AFTER FIRST FULL GROWING SEASON INTERSEED WESTERN POLLINATOR SEED MIXTURE FROM APPLEWOOD SEED COMPANY OR APPROVED EQUAL INTO ESTABLISHING UPLAND GRASSES. THE SEED MIXTURE CAN BE FOUND AND PURCHASED AT https://www.applewoodseed.com/product/western-pollinator-mixture/

REVEGETATION NOTES

POST EMERGENT WEED TREATMENT

Prior to revegetation activities a certified applicator shall apply a mixture of herbicide including 22 ounces of WideMatch, 16 ounces of 2 4-D Amine, and 4 ounces of Glyphosate per acre to kill all annual grasses and weed species currently found on site. The herbicide mixture may change based upon site conditions, weed cover and targeted species. If changes to the mixture do occur, they shall be approved by the project representative prior to application. Wait a minimum of seven days prior to starting revegetation activities. After seven days the site shall be walked with owner to evaluate the effectiveness of the herbicide application and discuss the upcoming revegetation process.

SOIL PREPARATION

Prior to soil preparation 3 representative soil samples will be taken and analyzed from upland and riparian areas on the site (6 total samples). Final soil preparation processes and amendment rates for seeded areas and planting pits will be determined from the analysis of soil sample results by a certified soil scientist.

Soil shall be ripped to a minimum 6" depth. Heavily compacted areas may require several passes with tillage equipment. The objective is to have the surface soil loose enough to allow for root growth and firm enough on the surface for good seed to soil contact. The soil surface should be relatively free of rocks, debris, and dirt clods greater than 3 inches in diameter. Too much debris, rock and clods will prohibit proper seed placement into the soil. All areas adjacent to existing sidewalks and hardscapes will be fine graded with rock less than 1" removed.

Soil preparation shall be completed by utilizing a rototiller, disk, or chisel plow.

SOIL AMENDMENT

After initial soil preparation, in a first hydraulic application, apply 60 gallons of BioLynceus Lot 125 and 1 gallon of BioLynceus Fulvex per acre. After 1-2 weeks time, in a second hydraulic application, apply 10 gallons of BioLynceus Lot 125 and 2,000 lbs of Sulfur per acre. After amendment application and prior to seed placement the site shall be walked with the owner for approval. The contractor must be able to show that all areas have been ripped to a depth of 6" and evidence of an even application of amendments.

NATIVE SEEDING

In a third hydraulic application, apply native seed mixes, 3,500 lbs. of Biotic Earth, 30 lbs. of Tacking Agent 3, 1,000 lbs. of Richlawn 5.3.2 and 200 lbs. of Humate per acre.

MULCHING

Apply 2,500 lbs per acre of wood fiber hydromulch and 200 lbs per acre of plantago tackifier with a hydroseeder over all seeded surfaces. There shall be 100% coverage with no soil exposed. Plantings, sidewalks and existing amenities must be protected from overspray. All riverbanks and slopes that exceed 2.5:1 will be covered with straw/coconut biodegradable erosion control blankets and anchored per the manufacturer's specifications.

MAINTENANCE SERVICES

All seeded areas will be maintained for a 12 month period. Progressive weed control is a critical component to establishing native grasses. Mechanical weed control consisting of mowing and/or hand pulling weeds must be used until grasses are mature and can sustain the use of herbicide applications. In general native grasses are considered mature when they reach mowing height (+/- 4 inch height).

Mechanical weed control is to occur on a monthly basis. When mowing is utilized for weed control, mowers should be set at least 4 inches above the soil surface. Closer mowing heights will result in scalding native grasses and/or removing the apical meristem (region of actively dividing cells). No more than 10% canopy cover of weed species should occur in seeded area at anytime.

Restore and re-seed eroded areas and areas lacking a satisfactory stand of grasses as necessary. Re-seed and repair during the earliest seeding season.

WESTERN STATES RECLAMATION, INC.

LAS COLONIAS RIVER PARK

GRAND JUNCTION, COLORADO

Prepared For
City of Grand Junction

Landscape Designer
Western States Reclamation

3756 Imperial Street
Frederick, CO 80516
303.833.8840

Irrigation Designer
Aqua Engineering

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Fort Collins, CO 80525

Joe Schneider 5/22/2019
Stamp:

Issue:
Reclamation Plan 5/22/19

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PLANTING SCHEDULE & NOTES

L-00

PLANTING LEGEND

- UPLAND SEED MIX
- RIPARIAN SEED MIX
- WILLOW STAKES
- PROPOSED TREE
- PROPOSED SHRUB
- PROPOSED CRUSHER FINES PATH
- HIGH FLOW LEVEL
- LOW FLOW LEVEL
- LIMIT OF WORK

0 25 50
Scale: 1" = 50'

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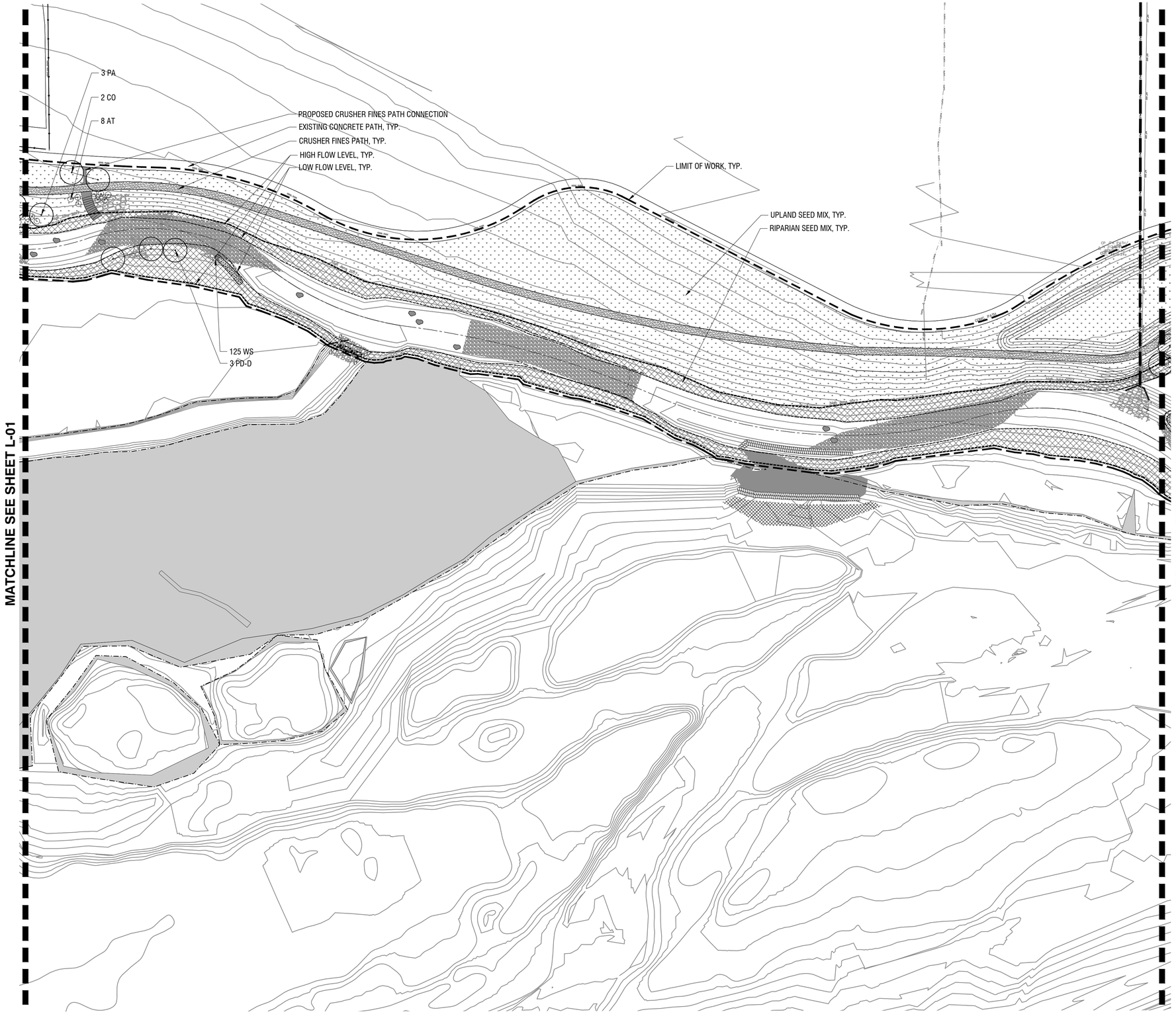
LANDSCAPE PLAN

L-01



PLANTING LEGEND

- UPLAND SEED MIX
- RIPARIAN SEED MIX
- WILLOW STAKES
- PROPOSED TREE
- PROPOSED SHRUB
- PROPOSED CRUSHER FINES PATH
- HIGH FLOW LEVEL
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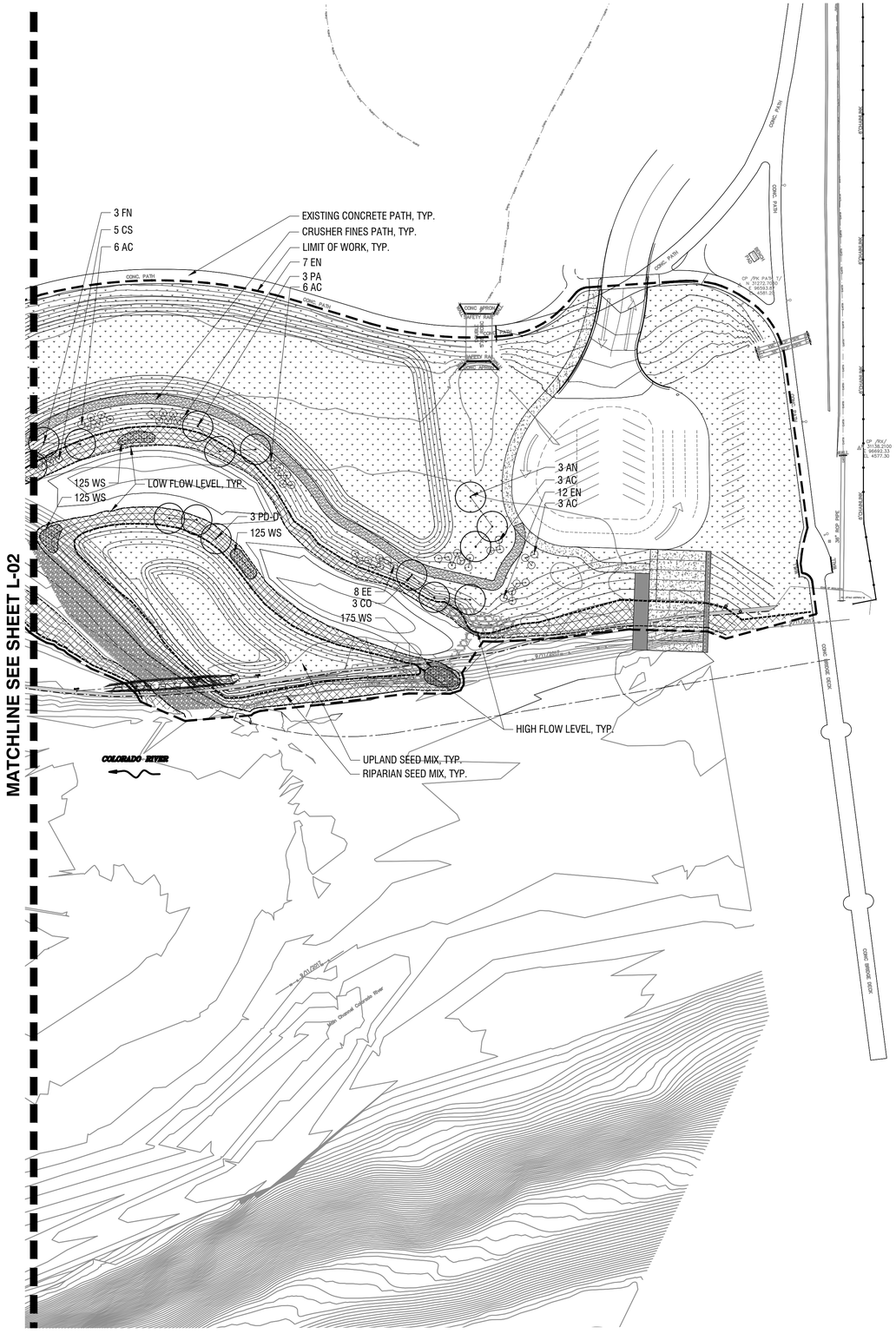
LANDSCAPE PLAN

L-02



PLANTING LEGEND

░	UPLAND SEED MIX
▨	RIPARIAN SEED MIX
⬬	WILLOW STAKES
○	PROPOSED TREE
∘	PROPOSED SHRUB
▮	PROPOSED CRUSHER FINES PATH
-------	HIGH FLOW LEVEL
- - - -	LOW FLOW LEVEL
— — —	LIMIT OF WORK

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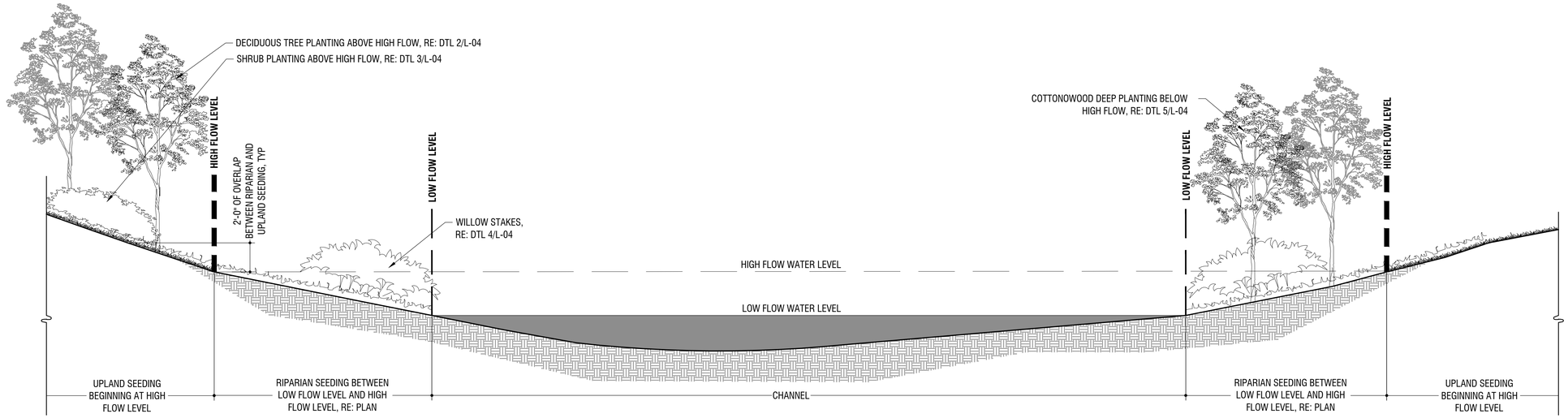
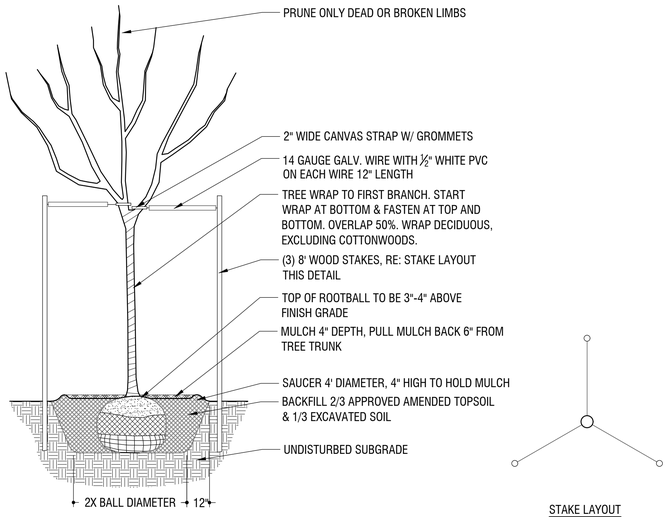
LANDSCAPE PLAN

L-03

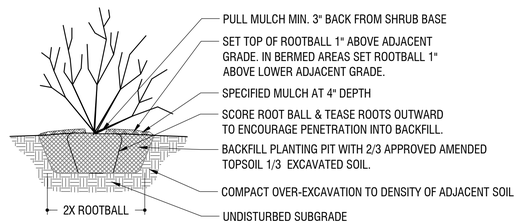


1 RIPARIAN/UPLAND SEED TRANSITION
1/4" = 1'-0"



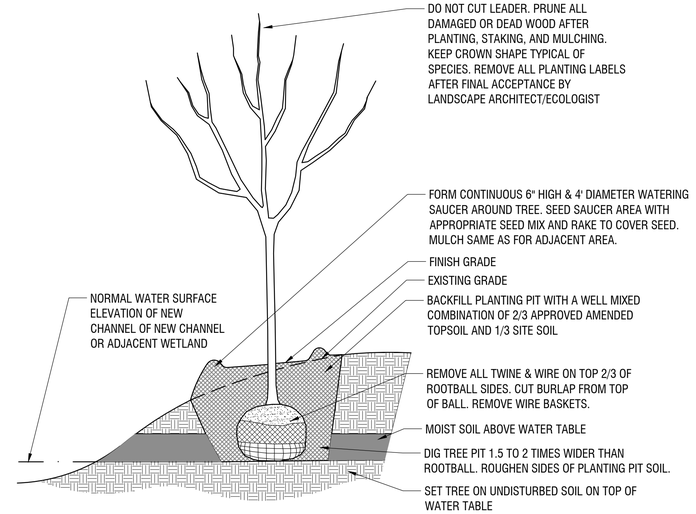
NOTES:
1. AFTER PLANT IS SET IN PLANTING HOLE, CUT AWAY & REMOVE ALL WIRE AND OTHER RESTRAINING MATERIAL. CUT AND REMOVE 2/3RDS OF BURLAP FROM ROOTBALL. SCORE ROOTBALL AND PIT WALLS.
2. STAKE TREES 2" CALIPER AND LARGER.

2 DECIDUOUS TREE PLANTING
NTS



NOTES:
1. PLUMB AND ORIENT PLANTS FOR BEST APPEARANCE.
2. REMOVE ALL TWINE FROM ROOT BALL, AND FOLD BURLAP BACK 2/3.
3. REMOVE PLASTIC BURLAP ENTIRELY. FOR CONTAINER SHRUBS, CAREFULLY REMOVE CONTAINER AND SCORE ROOT BALL.
4. SEE PLANTING PLAN FOR MORE INFORMATION.

3 SHRUB PLANTING
NTS



DEEP COTTONWOOD PLANTING NOTES:
PLANTING PIT SHALL BE DUG TO ADJACENT CHANNEL INVERT, OR GROUNDWATER DEPTH, WHICHEVER IS DEEPER. BOTTOM OF ROOT BALL SHALL REST ON EXPOSED GROUNDWATER SURFACE. UP TO ⅔ OF TRUNK MAY BE BURIED.

4 COTTONWOOD DEEP PLANTING
NTS

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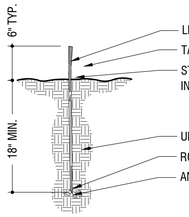
PLANTING DETAILS

L-04

BARE GROUND INSTALLATION
FOR USE IN GRANULAR SOILS WITH AVAILABLE GROUND WATER

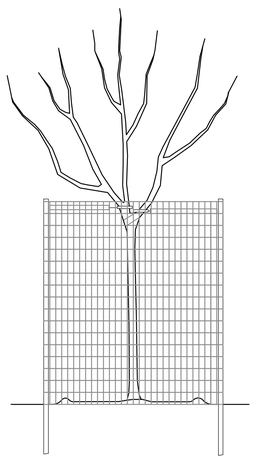


- LIVE STAKE (2" MIN.)
- TAP GENTLY INTO SOIL WITH DEAD BLOW HAMMER
- STAKE MUST BE FIRMLY HELD IN PLACE BY SOIL. HAND TAMP SOIL AROUND ANY LOOSE STAKES AFTER INSTALLATION.
- UNDISTURBED SOIL
- ROOT END
- ANGLE LOWER CUT WHEN HARVESTED. INSTALL IN SAME DIRECTION AS HARAVESTED (ANGLE CUT DOWN).

NOTES:

1. WILLOWS WILL BE HARVESTED AND PLANTED DURING DORMANT SEASON, APPROXIMATELY NOVEMBER 1 TO APRIL 1.
2. THE BASE CUT WILL BE A T A FORTY-FIVE DEGREE (45°) ANGLE CUT AND ANY TOP CUTS WILL BE BLUNT AND APPROXIMATELY ONE-INCH ABOVE AN AUXILIARY BUD.
3. WILLOWS WILL BE COLLECTED FROM ONSITE SOURCES. LIVE WOOD AT LEAST TWO (2) YEARS OLD. AVOID SUCKERS AND CURRENT YEAR'S GROWTH. CUTTINGS WILL BE ONE-HALF INCH ($\frac{1}{2}$") TO ONE-INCH (1") DIAMETER FOR WILLOWS. CUT THE APICAL BUDS PLUS SEVERAL INCHES OF THE PREVIOUS YEAR'S GROWTH OFF THE CUTTING BEFORE PLANTING IT.
4. CUTTINGS WILL NOT BE DROPPED OR OTHERWISE MISHANDLED. MINOR BROKEN AND DAMAGED CUTTINGS WILL BE PRUNED PRIOR TO PLANTING. MAJOR DAMAGE WILL BE CAUSE FOR REJECTION.
5. CUTTINGS WILL BE PROTECTED FROM FREEZING AND DRYING AT ALL TIMES. CUTTINGS SHOULD BE PLANTED IMMEDIATELY AFTER SOAKING AND STORAGE. CUTTINGS WILL BE COVERED WITH TARP OR BURLAP DURING ANY TRANSPORTATION IN VEHICLES.
6. THE BUTT END BOTTOM ($\frac{1}{3}$) OF CUTTINGS WILL BE SUBMERGED IN WATER FOR A MINIMUM OF TWENTY-FOUR (24) HOURS BUT NOT LONGER THAN THIRTY-SIX (36) HOURS.
7. CUTTINGS WILL BE STORED BETWEEN THIRTY-FIVE DEGREES (35°) AND FIFTY DEGREES (50°) FAHRENHEIT FOR NO LONGER THAN ONE (1) WEEK. CUTTINGS WILL BE STORED IN PROTECTED LOCATIONS WHERE THEY ARE SHADED AND SHELTERED FROM SUN AND WIND.
8. LIVE STAKES WILL BE SINGLE STICKS. THESE SHOULD BE MINIMUM TWENTY-FOUR INCHES (24") LONG OR LONGER AS DETERMINED BY THE WATER TABLE/GROUND SURFACE RELATIONSHIP.
9. PREPARE A PILOT HOLE TO THE GROUNDWATER DEPTH BY HAMMERING A REBAR, DIBBLE BAR, OR STINGER, OR OTHER APPROVED METHOD INTO THE SOIL. PLACE CUTTING GENTLY INTO THE HOLE. UPRIGHT, ENSURING THAT THE BASE END IS AT OR BELOW THE GROUND WATER LEVEL. CUTTINGS WILL PROTRUDE FROM THE GROUND FOUR TO SIX INCHES (4"-6").
10. HOLES WILL BE BACKFILLED AS NECESSARY SO THAT NO VOIDS REMAIN AROUND THE CUTTING. WATERING SHOULD BE DONE BETWEEN BACKFILL LIFTS TO ENSURE ALL VOIDS ARE FILLED. DO NOT BURY TOP OF CUTTING. TAMP SURFACE AROUND THE CUTTING TO SECURE IT IN PLACE.
11. IF HEAVY EQUIPMENT IS USED TO FACILITATE DIGGING OF PILOT HOLES FOR WILLOW STAKES (SUCH AS WITHIN RIP RAP), ALL DISTURBED SOIL WILL BE RIPPED AND SCARIFIED PRIOR TO FINAL SEEDING.

1 WILLOW STAKES
NTS



2 WILDLIFE PROTECTION FENCE
NTS

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PLANTING DETAILS

L-05