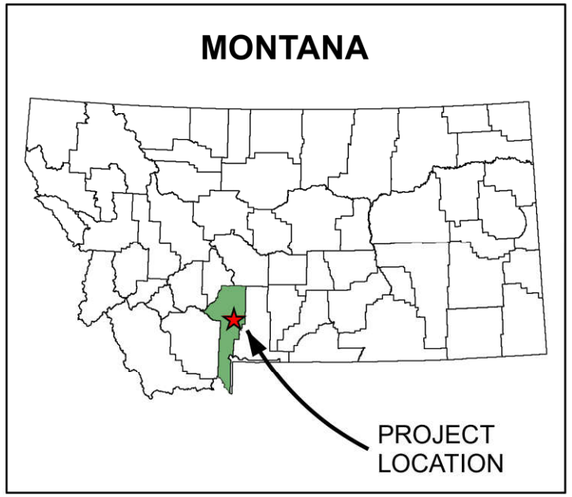
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS



SHEET INDEX

1. COVER SHEET / PROJECT LOCATION
2. QUANTITIES
3. OVERALL SITE PLAN
4. SOUTH SITE PLAN
5. NORTH SITE PLAN
6. SECTION DETAILS
7. POND #1
8. POND #2
9. POND #3
10. POND #4
11. POND #5
12. POND #6
13. POND #7
14. SITE PLAN FOR CULVERT REPLACEMENT AT HISTORIC BERM
15. PROFILE AND CROSS SECTION - CULVERT REPLACEMENT AT HISTORIC BERM
16. PROFILE AND CROSS SECTION - CULVERT REPLACEMENT AT HISTORIC BERM
17. SOUTHEAST CELL WATER CONTROL STRUCTURE PROFILES
18. SOUTHEAST CELL WATER CONTROL STRUCTURE- DETAILS
19. SOUTH SITE TYPICAL DETAILS
20. SOUTH SITE TYPICAL DETAILS
21. NORTH SITE TYPCIAL DETAILS
23. WETLAND IMPACTS
22. PLANTING PLAN

SACAJAWEA AUDUBON SOCIETY

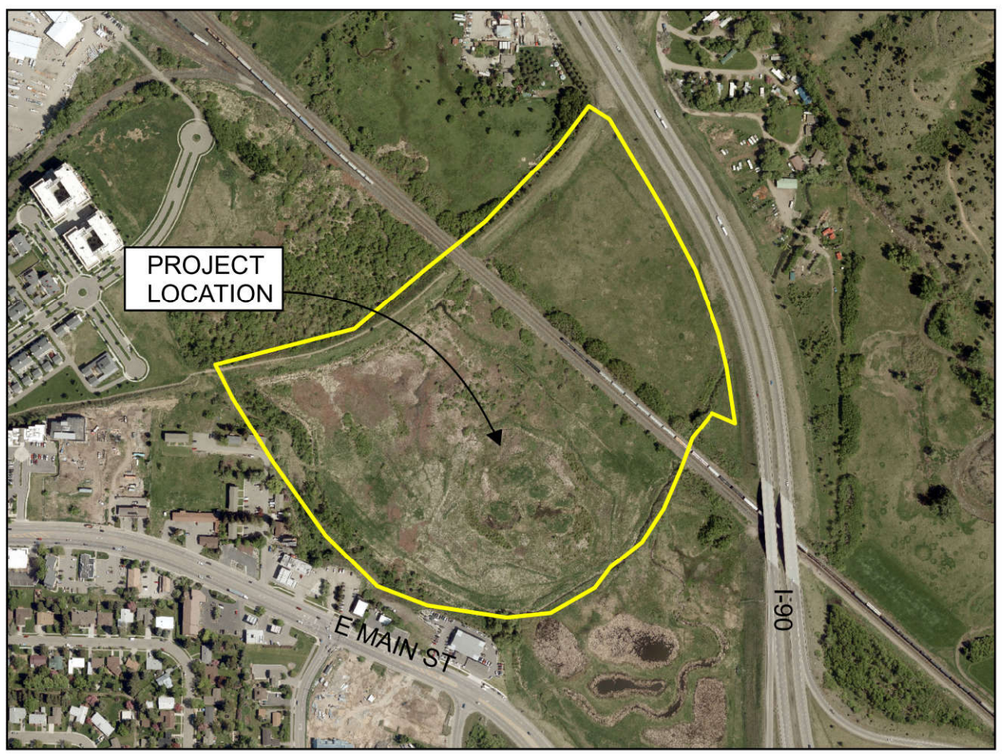
PREPARED FOR:

SACAJAWEA AUDUBON SOCIETY
CHRISTOPHER NIXON
P.O BOX 1711
BOZEMAN, MT 59771-1711

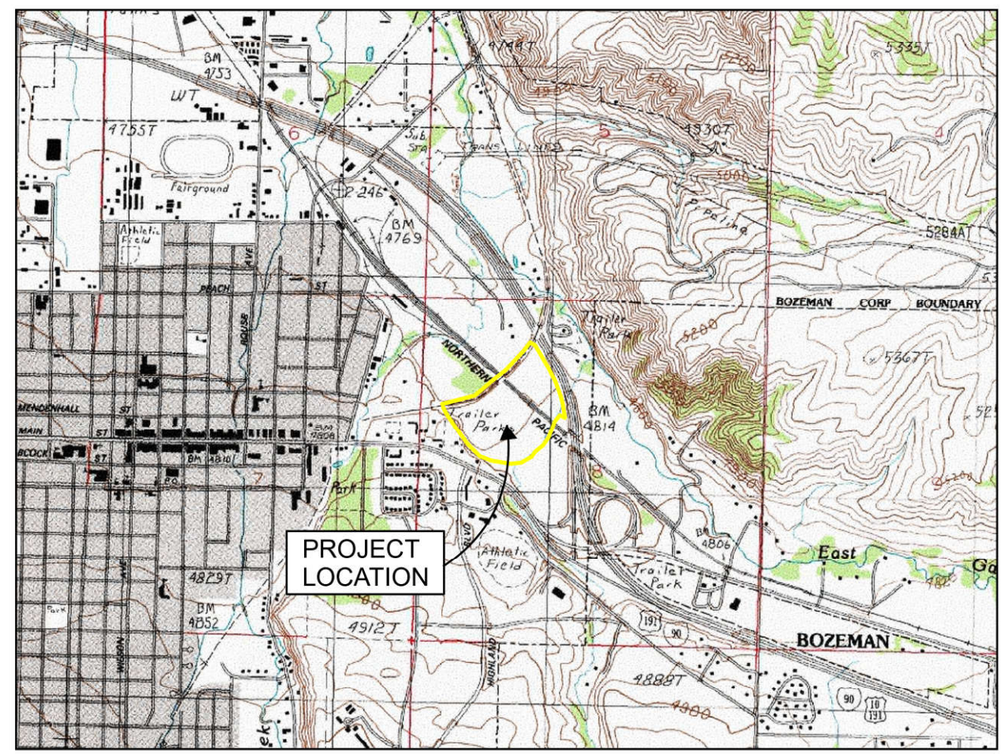
CONFLUENCE consulting incorporated

PREPARED BY:

CONFLUENCE CONSULTING, INC
PO BOX 1133
BOZEMAN, MT 59771



PROJECT VICINITY AERIAL PHOTO
INDRELAND AUDUBON WELTAND PRESERVE



PROJECT VICINITY TOPOGRAPHIC MAP
S8, T02 S, R06 E

COVER SHEET

PROJECT LOCATION

SHEET: 1

EARTHWORKS QUANTITIES

SITE	YDS³						
	TOPSOIL (YDS³)			SUBSOIL (YDS³)			NET SOILS (TOPSOIL + SUBSOIL) EXCESS = +
	STRIP TOPSOIL	PLACE TOPSOIL	NET TOPSOIL (EXCESS = +)	EXCAVATION	FILL	NET SUBSOIL (EXCESS = +)	
NORTH WETLAND AND BERM	2,214	2,214	0	15,721	15,721	0	0
SOUITH SITE							
POND 1	2,411	676	1,735	2,719	0	2,719	4,454
POND 2	2,734	738	1,996	6,053	0	6,053	8,049
POND 3	462	34	428	129	0	129	557
POND 4	479	65	415	303	0	303	718
POND 5	2,697	661	2,036	4,097	0	4,097	6,133
POND 6	956	191	765	1,478	0	1,478	2,243
POND 7	4,173	1,537	2,636	11,269	0	11,269	13,904
WATER CONTROL BERM	2,207	2,207	0	0	4,910	-4,910	-4,910
RAILROAD BERM	2,281	2,281	0	0	13,286	-13,286	-13,286
FILL SOUTH SITE DITCHES AND REMOVE DITCH SPOILS/MOUNDS	0	0	0	3,263	2,384	878	878
SHRUB AREAS	0	10,044	-10,044	0	0	0	-10,044
SWALES	0	0	0	39	0	39	39
GRAVEL BARS	455	0	455	455	455	0	455
SOUTH SITE TOTAL	*18,855*	*18,433*	*421*	*29,806*	*21,035*	*8,771*	*9,193*
TOTAL:	**21,069**	**20,648**	**421**	**45,527**	**36,755**	**8,771**	**9,193**

DRAWN BY: SW, TT
DESIGNED BY: RM, TT
CHECKED BY: RM, TT
FILE NAME: S:\Projects\AUDUBON WORKS\DESIGN\DWG\AS-BUILT\AS-BUILT.DWG
DATE: 7/17/2020
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INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

QUANTITIES

SHEET: 2

LEGEND

- EXISTING CONTOUR MAJOR (10')
- EXISTING CONTOUR MINOR (2')
- PROPERTY BOUNDARY
- EXISTING FENCE
- EXISTING SEWER
- EXISTING UNDERGROUND UTLITY
- PROPOSED CONTOUR (2')
- PROPOSED CONNECTING SWALE
- PROPOSED GRADING EXTENT
- PROPOSED TRAIL
- PROPOSED ASPEN / COTTONWOOD
- PROPOSED SHRUBS
- PROPOSED WET MEADOW
- PROPOSED MARSH
- PROPOSED GRAVEL BAR
- PROPOSED OPEN WATER
- BERM WITH UPLAND VEGETATION
- PRESERVED AREA
- MAX WATER SURFACE
- FLOW DIRECTION
- x 4780.00 PROPOSED SPOT ELEVATION
- WATER CONVEYANCE STRUCTURE
- EXISTING GAS MARKER

100 0 100 200
SCALE IN FEET

DRAWN BY: TT, SW
DESIGNED BY: BM, TT
CHECKED BY: BM, TT
DATE: 7/17/2020
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FILE NAME: S:\Projects\SAS\SAS-001\Indreland Audubon Wetland Preserve\Design\Civil\Exhibits\Indreland Audubon Wetland Preserve - 70% Plans.dwg

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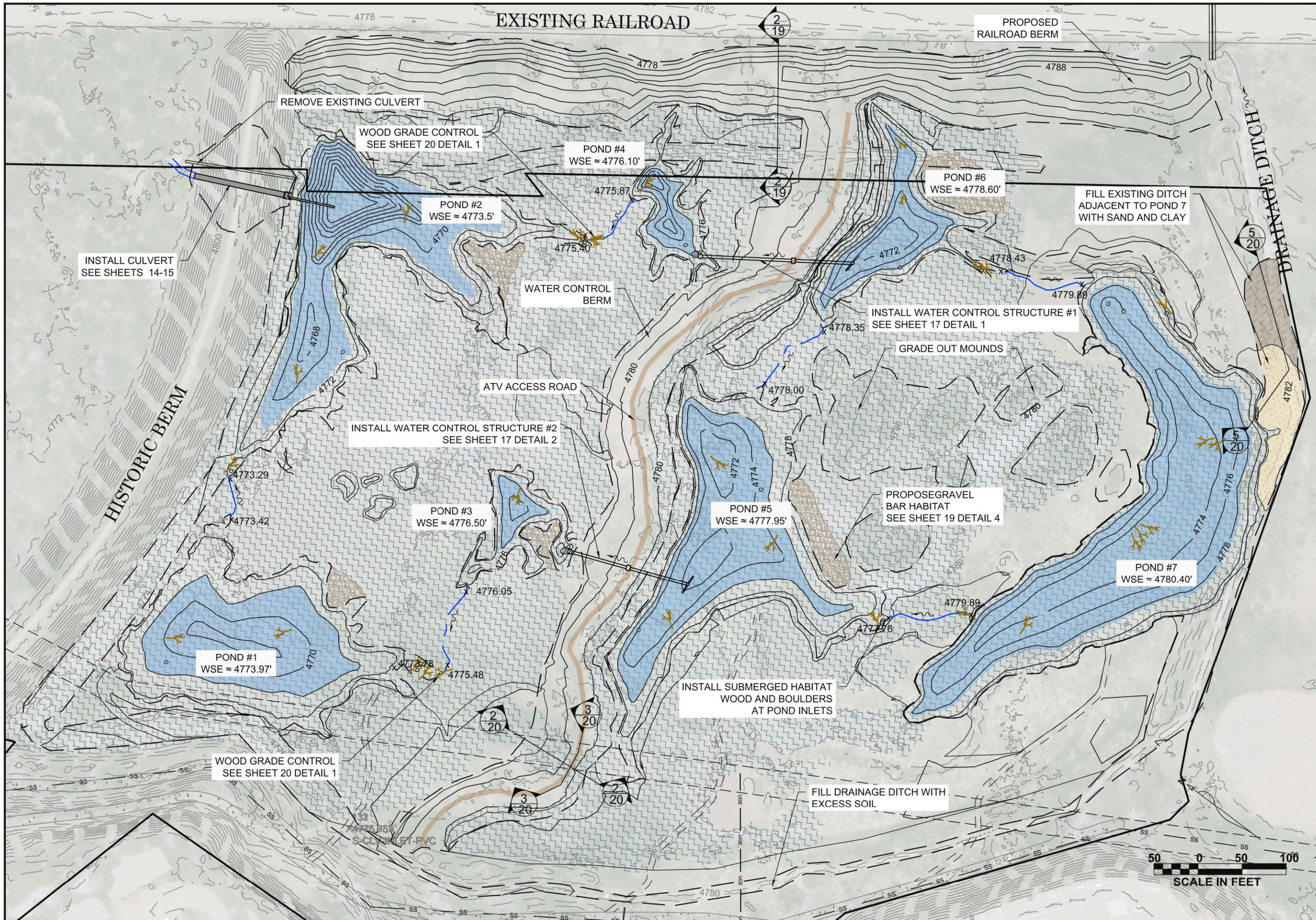
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

OVERALL SITE PLAN

SHEET: 3



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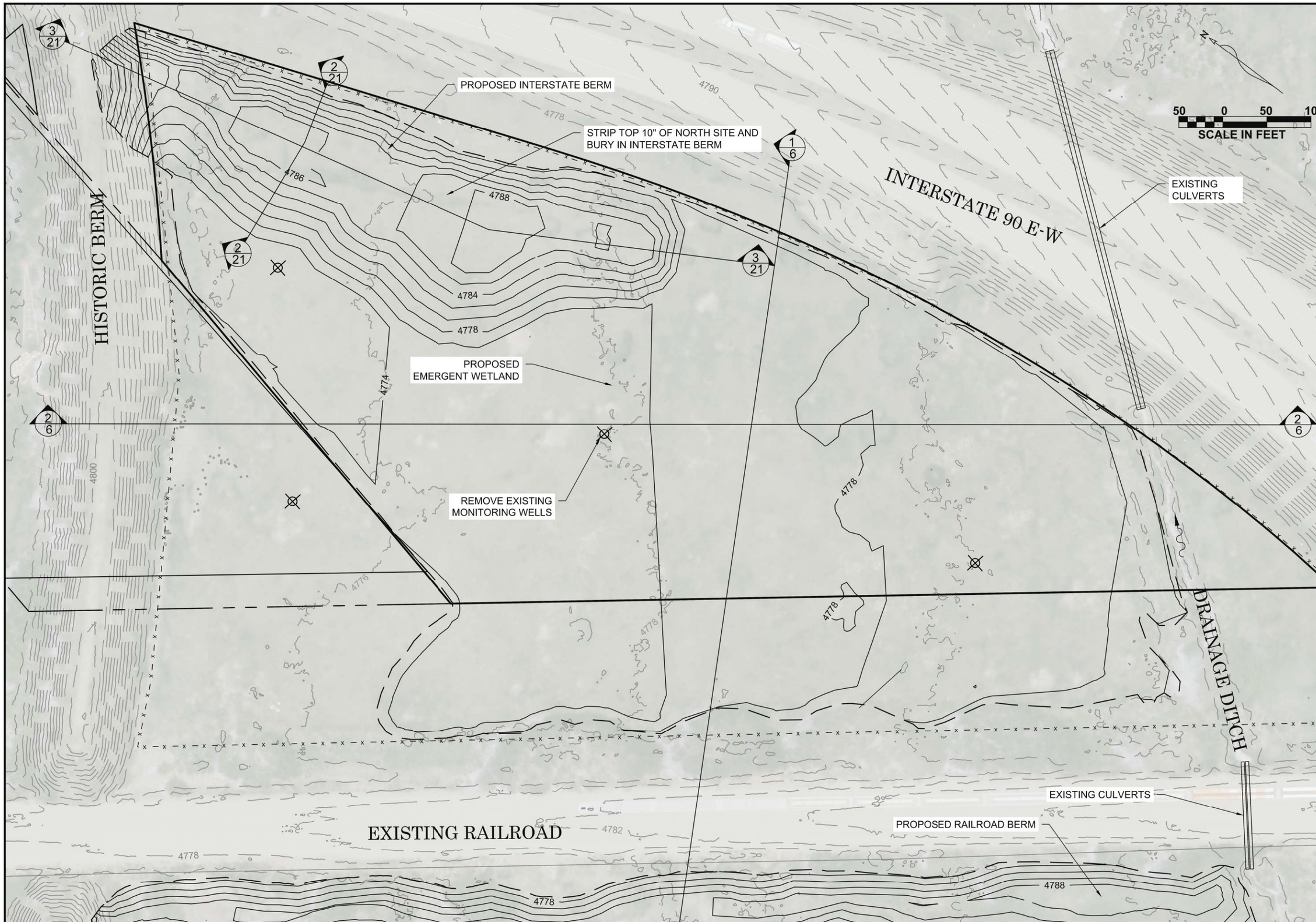
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SOUTH SITE PLAN

SHEET: 4



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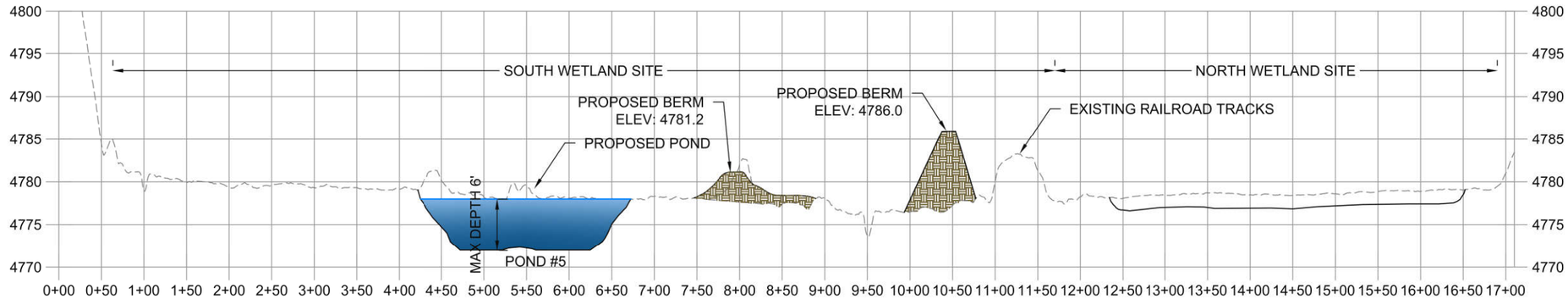
CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

NORTH SITE PLAN

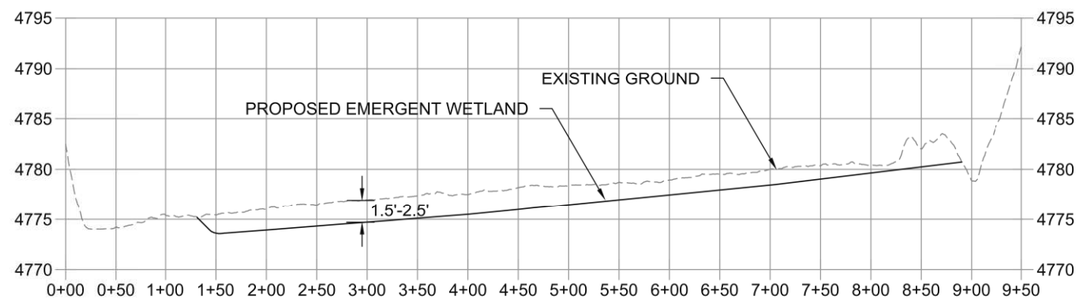
SHEET: 5



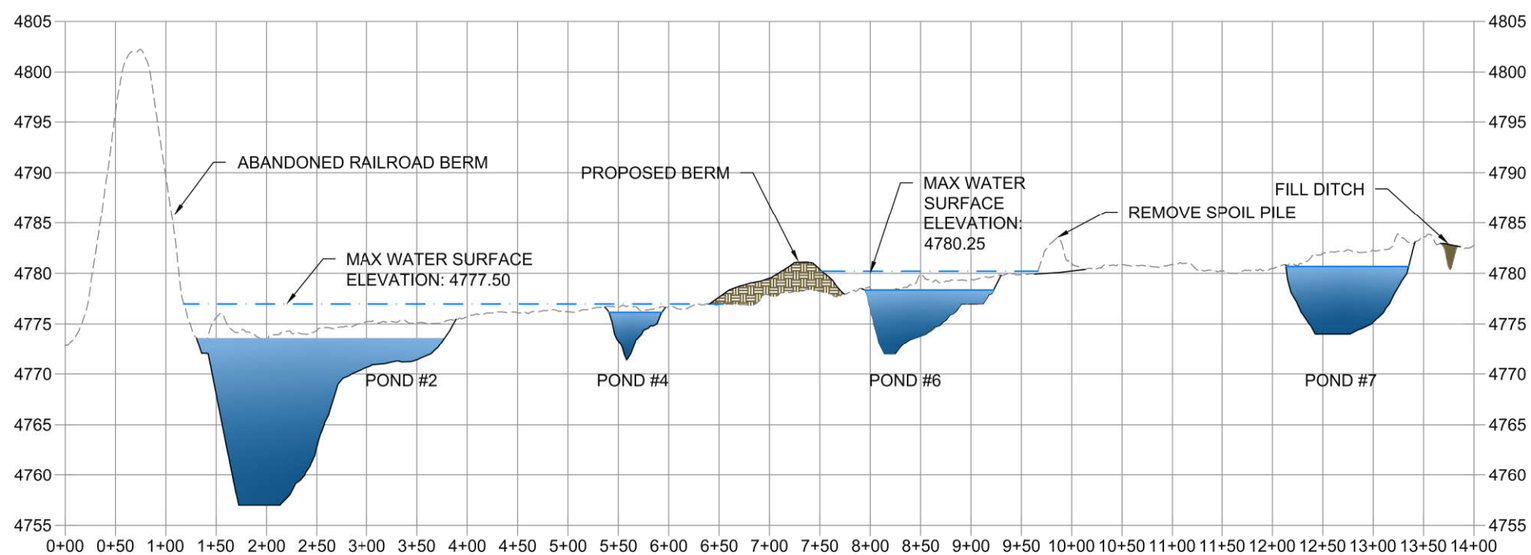
1/6 OVERALL SITE CROSS SECTION
HORIZONTAL SCALE: 1" = 150'
VERTICAL SCALE: 1" = 15'

PROFILE LEGEND

- EXISTING GROUND ELEVATION
- PROPOSED GROUND
- MAXIMUM CHECKED WATER SURFACE ELEVATION
- PROPOSED OPEN WATER
- EARTH FILL



2/6 NORTH WETLAND CROSS SECTION
HORIZONTAL SCALE: 1" = 150'
VERTICAL SCALE: 1" = 15'



3/6 SOUTH WETLAND CROSS SECTION
HORIZONTAL SCALE: 1" = 150'
VERTICAL SCALE: 1" = 15'

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DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS.001
FILE NAME: S:\Projects\SAS\CAD\Indreland Preserve\Indreland Preserve 70% Plans.dwg

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CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SECTION DETAILS

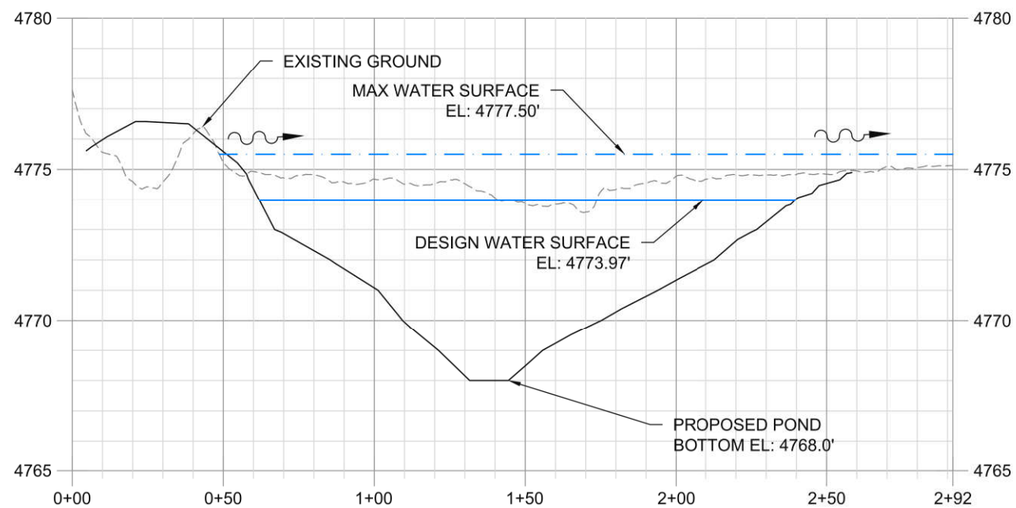
SHEET: 6

LEGEND

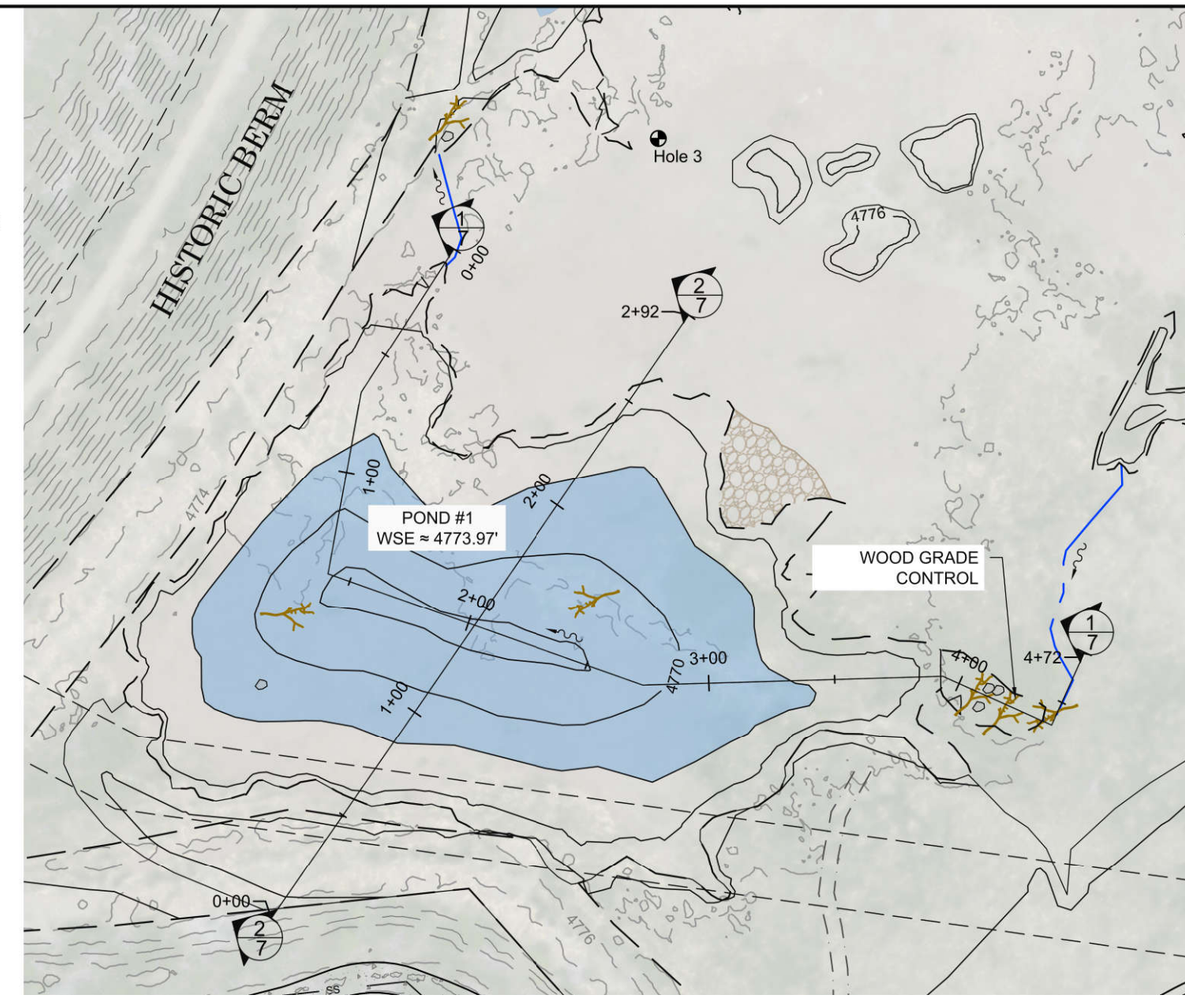
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- EXCAVATION PIT (HOLE 1-3)
- HABITAT BOULDER

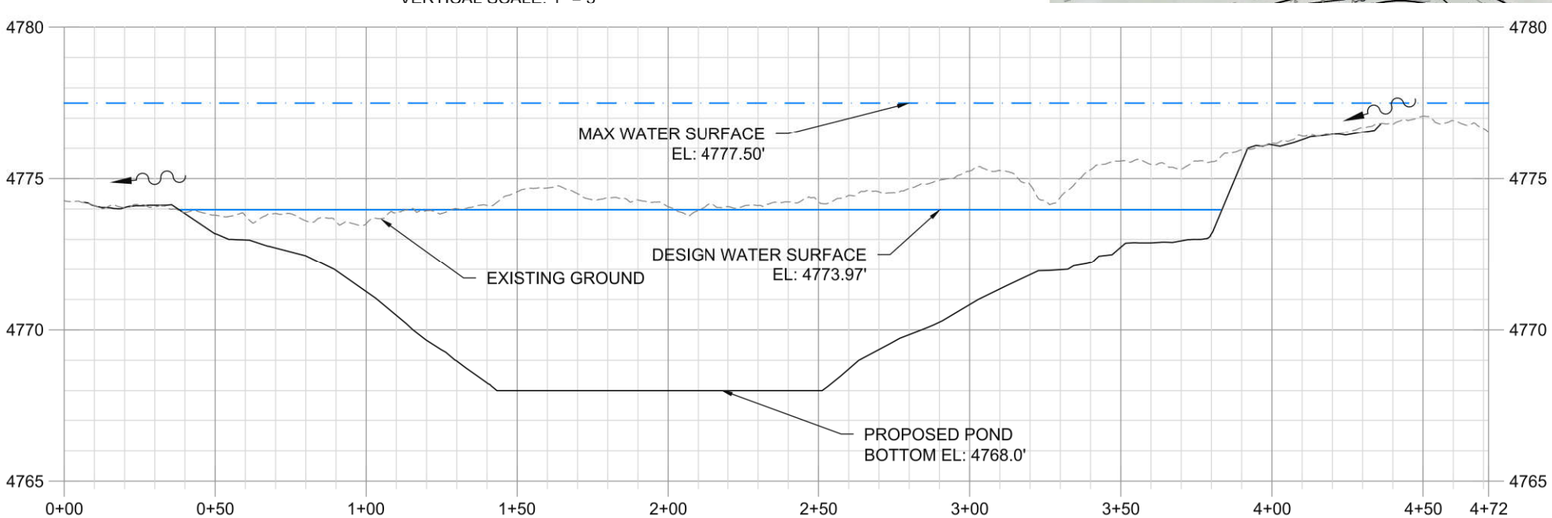
N

30 0 30 60
SCALE IN FEET



1/7 POND 1 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'





2/7 POND 1 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

HOLE 3		
DEPTH (IN)	TEXTURE	NOTES
0-16	SILTY CLAY LOAM	
16-36	SILTY CLAY	GLEYED, MOTTLES
36-90	LOAMY FINE SAND	GLEYED

NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST.

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FILE NAME: S:\Projects\AUDUBON\WORKING\DRAWINGS\AUDUBON.dwg

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CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND # 1

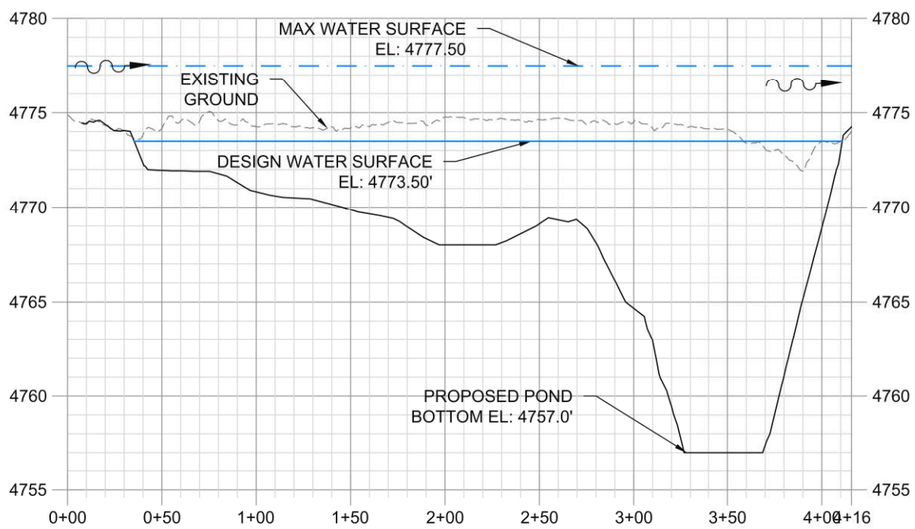
SHEET: 7

LEGEND

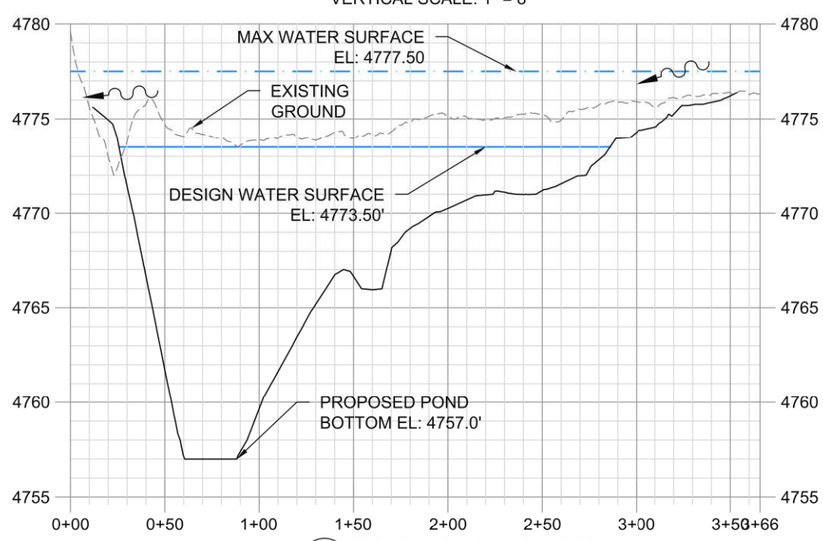
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- EXCAVATION PIT (HOLE 1-3)
- HABITAT BOULDER

N

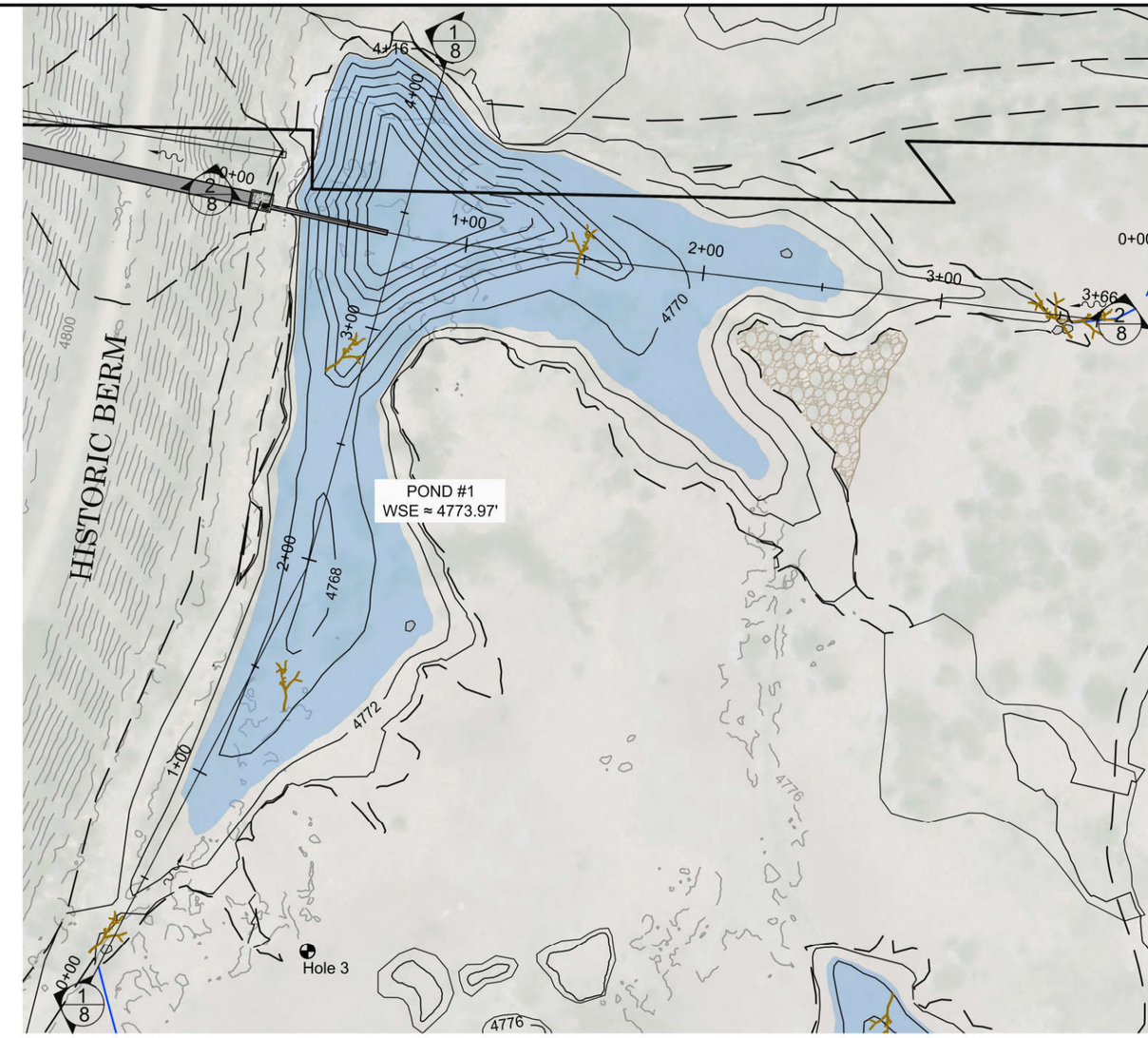
30 0 30 60
SCALE IN FEET



1/8 POND 2 CROSS SECTION
HORIZONTAL SCALE: 1" = 80'
VERTICAL SCALE: 1" = 8'



2/8 POND 2 CROSS SECTION
HORIZONTAL SCALE: 1" = 80'
VERTICAL SCALE: 1" = 8'



HOLE 3		
DEPTH (IN)	TEXTURE	NOTES
0-16	SILTY CLAY LOAM	
16-36	SILTY CLAY	GLEYED, MOTTLES
36-90	LOAMY FINE SAND	GLEYED

NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION.
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST

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FILE NAME: S:\Projects\SAS\CAD\Indreland\Indreland_Pond2.dwg

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CONFLUENCE
consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND #2

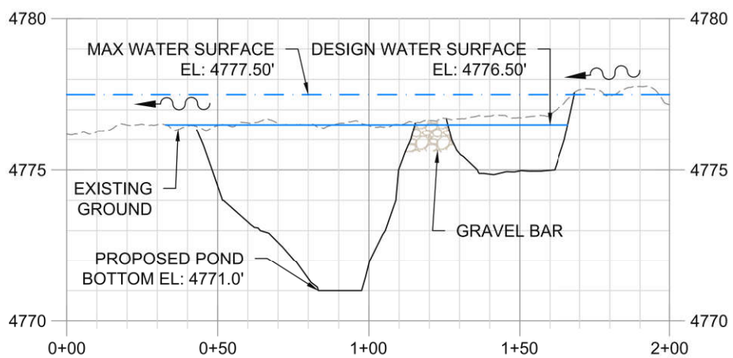
SHEET: 8

LEGEND

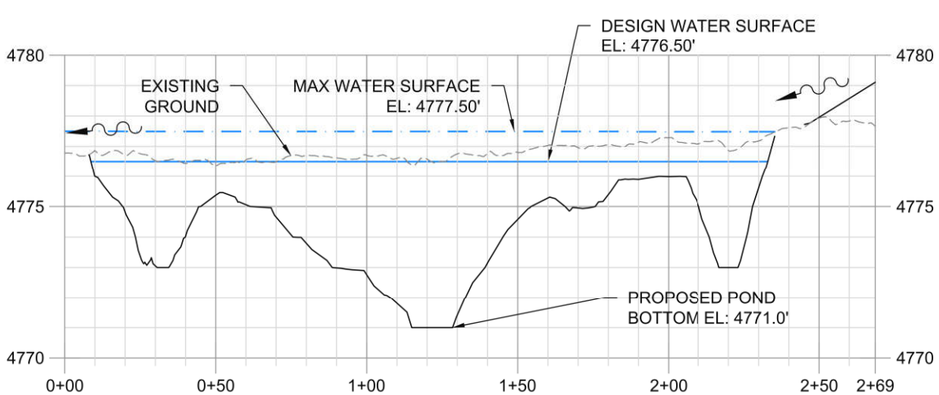
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- HABITAT BOULDER

N

15 0 15 30
SCALE IN FEET



1/9 POND 3 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



2/9 POND 3 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION.
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST

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DATE: 7/17/2020
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FILE NAME: S:\Projects\SAS\CCI JOB NO SAS.001\DWG\Indreland AUDUBON WETLAND PRESERVE.dwg

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INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND #3

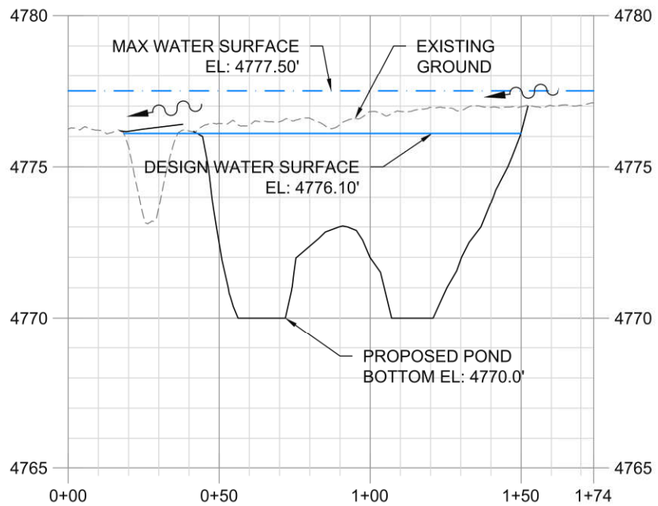
SHEET: 9

LEGEND

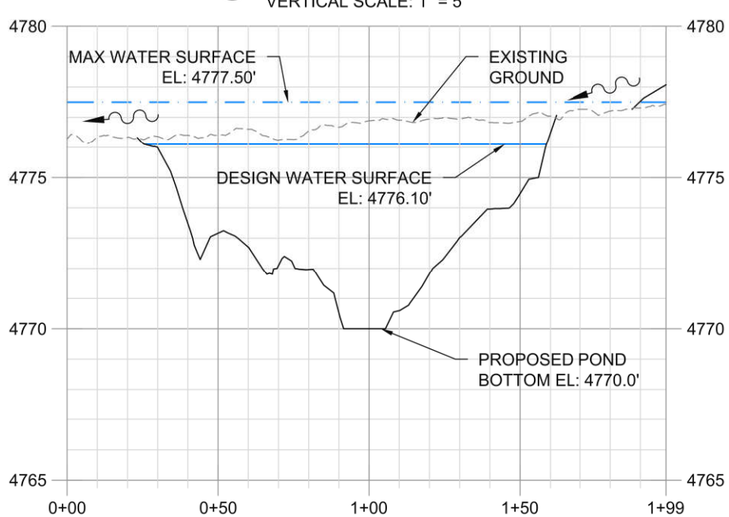
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- HABITAT BOULDER

N

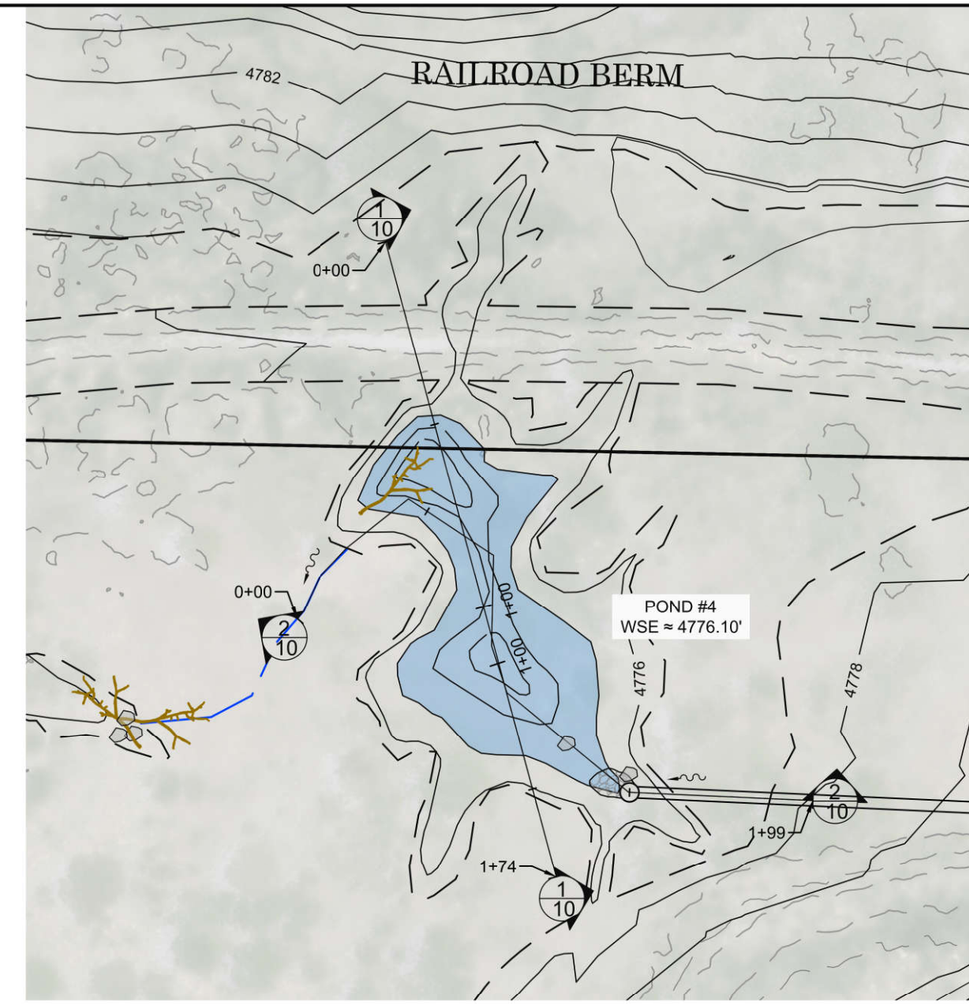
20 0 20 40
SCALE IN FEET



1/10 POND 4 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



2/10 POND 4 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION.
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST

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DESIGNED BY: RM, TT
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DATE: 7/17/2020
CCI JOB NO: SAS.001
FILE NAME: S:\Projects\AUDUBON\WORKING\INDRELA\INDRELA-70%.dwg

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INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND #4

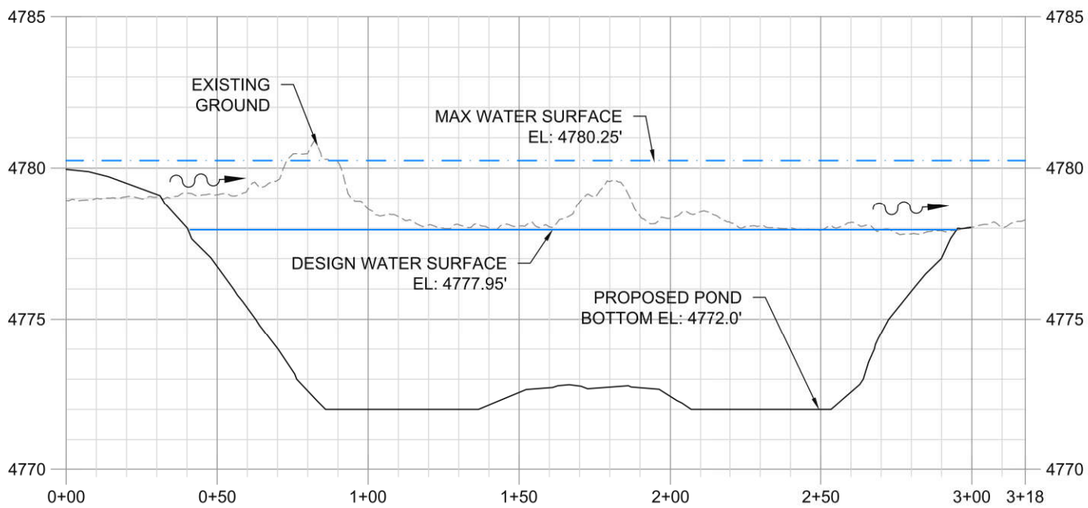
SHEET: 10

LEGEND

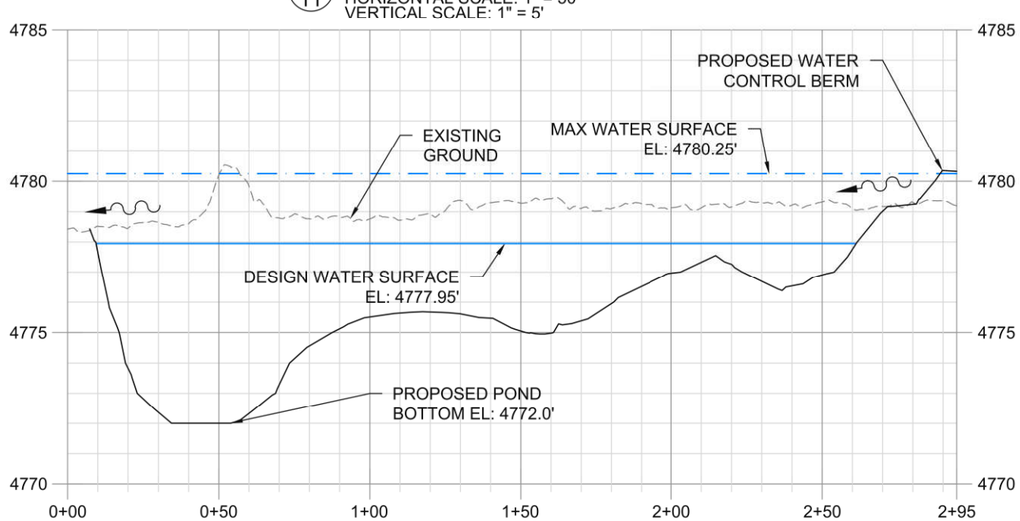
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- EXCAVATION PIT (HOLE 1-3)
- HABITAT BOULDER

N

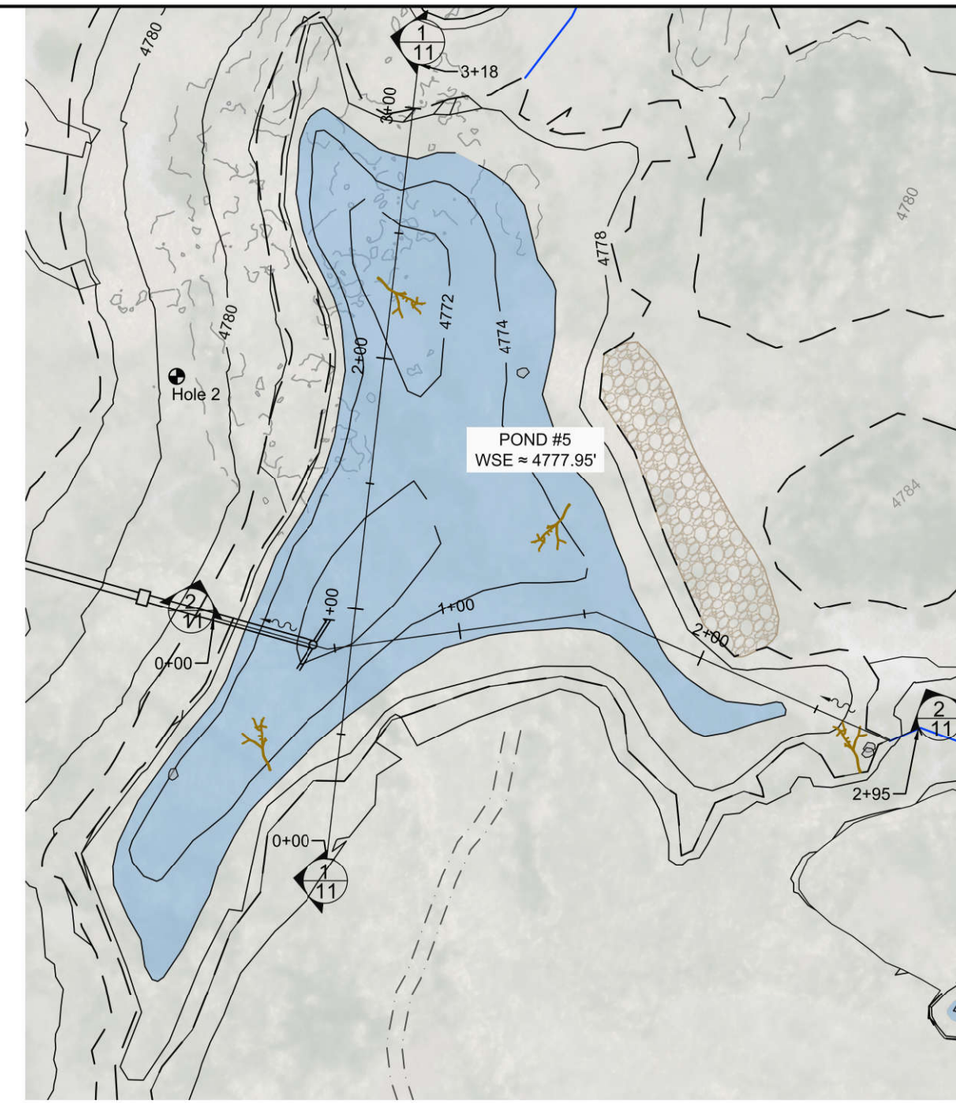
30 0 30 60
SCALE IN FEET



1/11 POND 5 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



2/11 POND 5 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



HOLE 2		
DEPTH (IN)	TEXTURE	NOTES
0-12	SAPRIC (ORGANIC)	SULFIDIC ODOR
12-36	SILTY CLAY	GLEYED, MOTTLES
36-90	LOAMY FINE SAND	GLEYED

NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION.
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST

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DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS.001
FILE NAME: S:\Projects\AUDUBON\WORKING\INDRELA\INDRELA-70%.dwg

REV.	DATE:	DESCRIPTION	BY	APP'D
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2	----	----	----	----

CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND #5

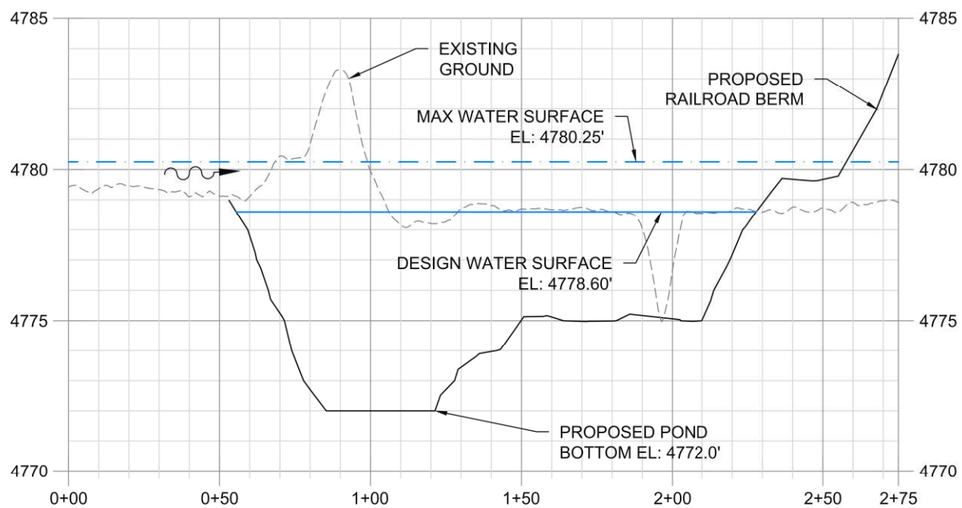
SHEET: 11

LEGEND

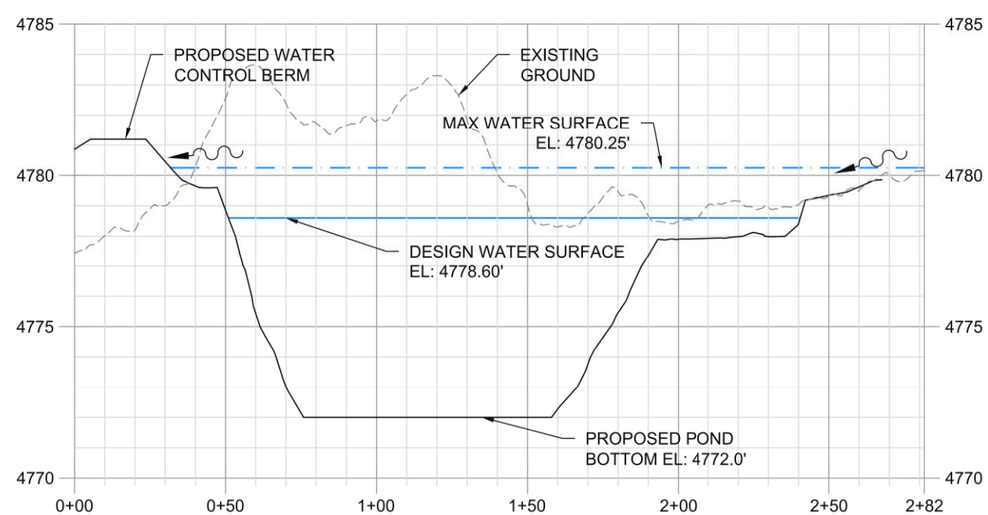
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- HABITAT BOULDER

N

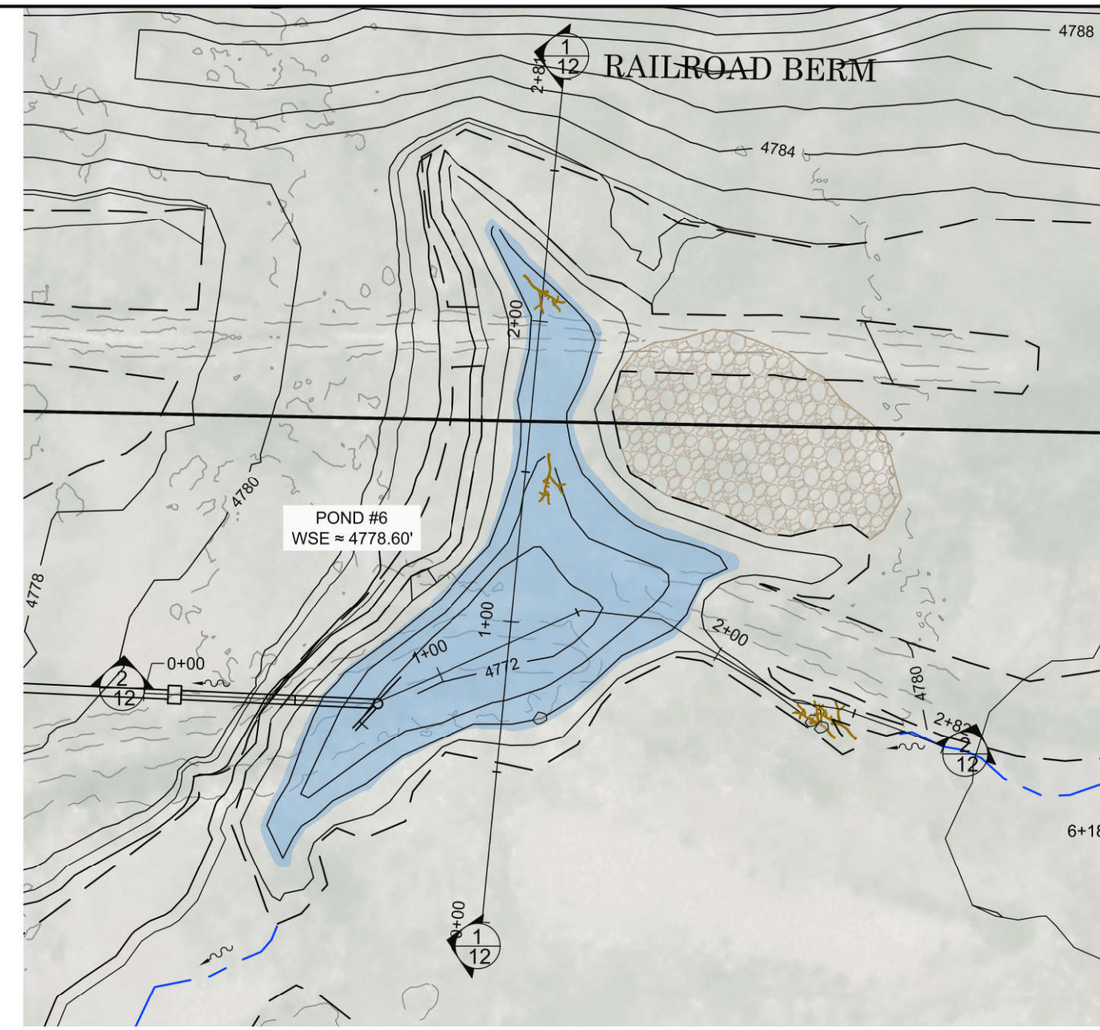
25 0 25 50
SCALE IN FEET



1/12 POND 6 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



2/12 POND 6 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION.
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST

DRAWN BY: TT, SW
DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS.001
FILE NAME: S:\Projects\SAS\Indreland\Wetland\Indreland Wetland 70% Plans.dwg

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CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND #6

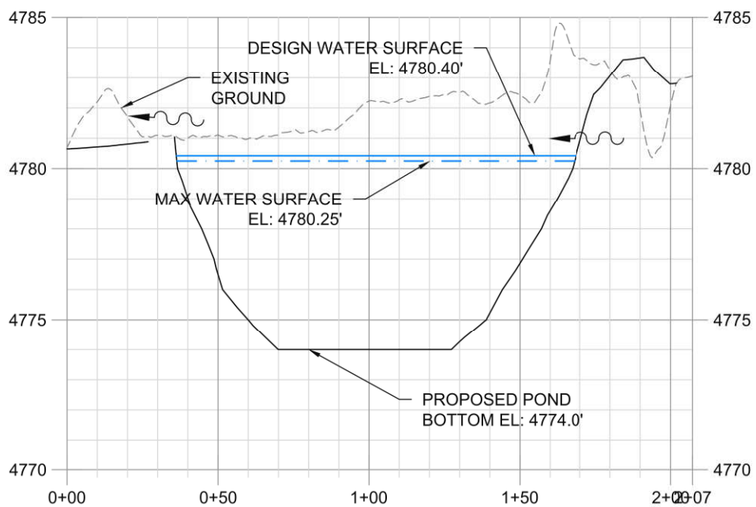
SHEET: 12

LEGEND

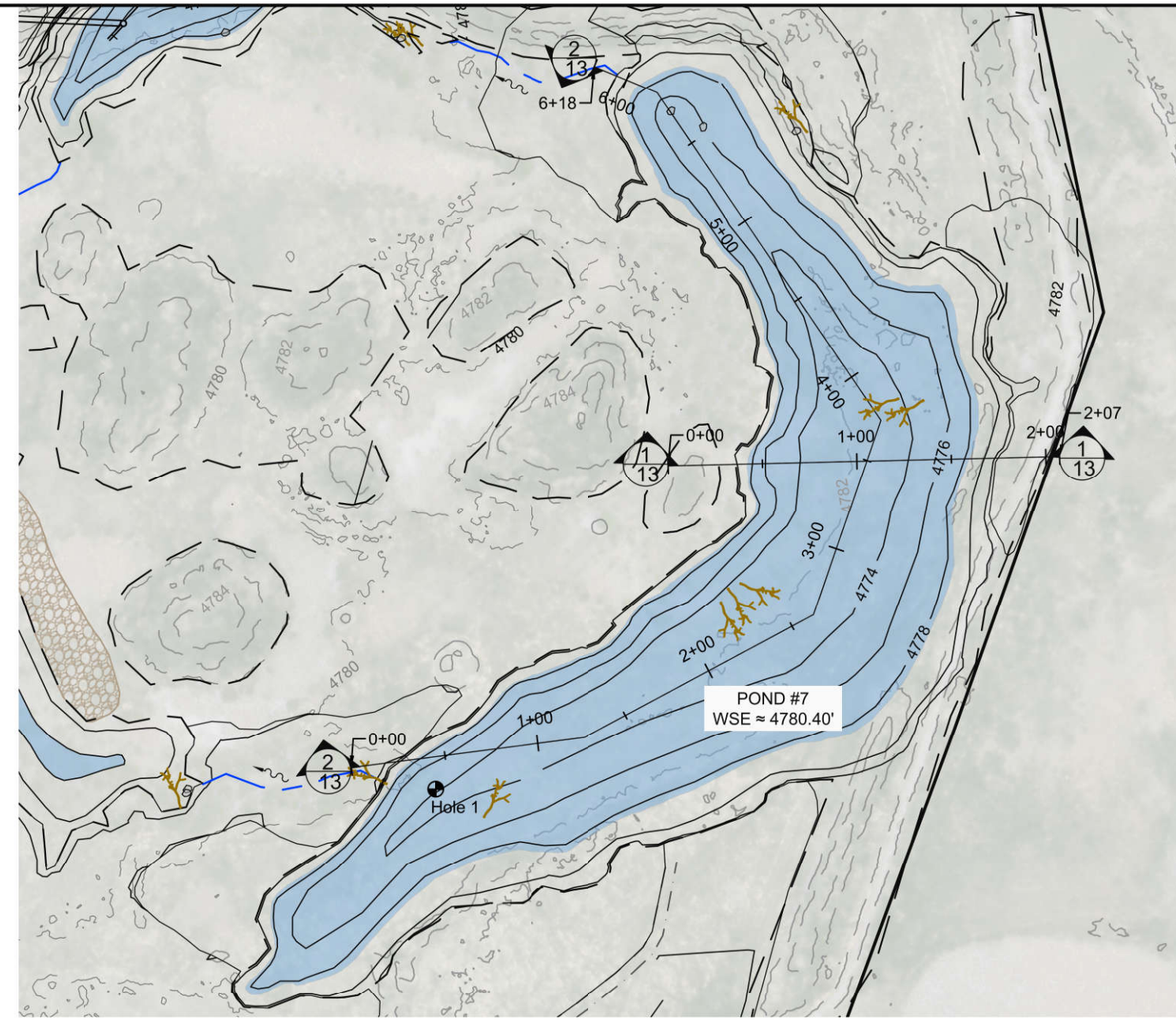
- EXISTING CONTOUR MAJOR (2')
- EXISTING CONTOUR MINOR (1')
- PROPERTY BOUNDARY
- PROPOSED CONTOUR MAJOR (2')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED GRADING EXTENT
- PROPOSED OPEN WATER
- PROPOSED GRAVEL BAR
- PROPOSED WOOD GRADE CONTROL/HABITAT
- EXCAVATION PIT (HOLE 1-3)
- HABITAT BOULDER

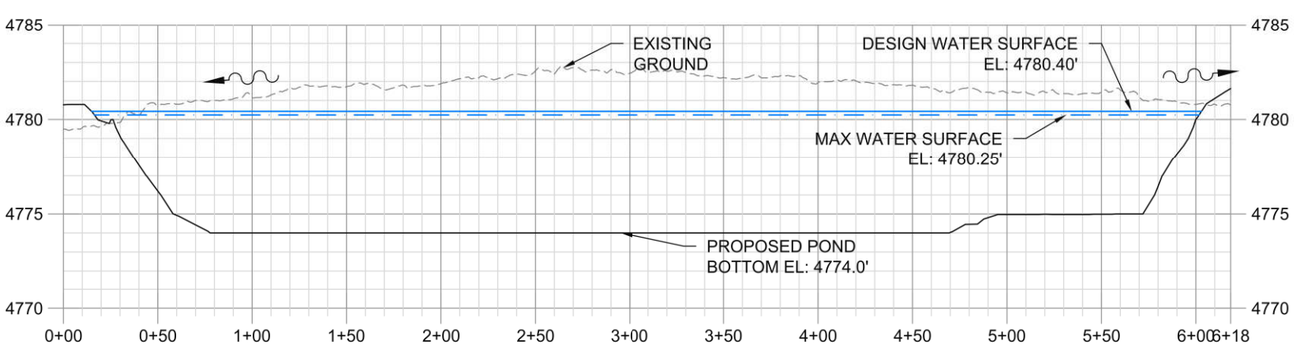
N

40 0 40 80
SCALE IN FEET



1/13 POND 13 CROSS SECTION
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'





2/13 POND 1 CROSS SECTION
HORIZONTAL SCALE: 1" = 80'
VERTICAL SCALE: 1" = 8'

HOLE 1		
DEPTH (IN)	TEXTURE	NOTES
0-18	SILTY CLAY LOAM	SULFIDIC ODER
18-54	SILTY CLAY	GLEYED, MOTTLES
54-72	LOAMY FINE SAND	GLEYED
>72	COARSE SAND, SMALL GRAVEL	

NOTES:

1. AT THE DIRECTION OF THE RESTORATION SPECIALIST WETLAND SOD EXCAVATED DURING CONSTRUCTION OF THE POND SHALL BE SALVAGED FOR PLACEMENT WITHIN SITE. CARE SHALL BE TAKEN TO MAINTAIN INTEGRITY OF SOD DURING EXCAVATION
2. EXCAVATE TO PROPOSED ELEVATIONS, HAUL TO FILL AND BERM SITES AND APPLY AS CAPPING MATERIAL, PLACE AND COMPACT AS DIRECTED
3. AVOID MIXING TOPSOIL WITH OTHER MATERIALS.
4. POND BOTTOM TO BE LEFT IN ROUGHENED CONDITION.
5. HABITAT BOULDERS AND WOOD PLACED AT THE DIRECTION OF RESTORATION SPECIALIST

DRAWN BY: TT, SW
DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS.001
FILE NAME: S:\Projects\SAS\CAD\Indreland\Pond 7.dwg

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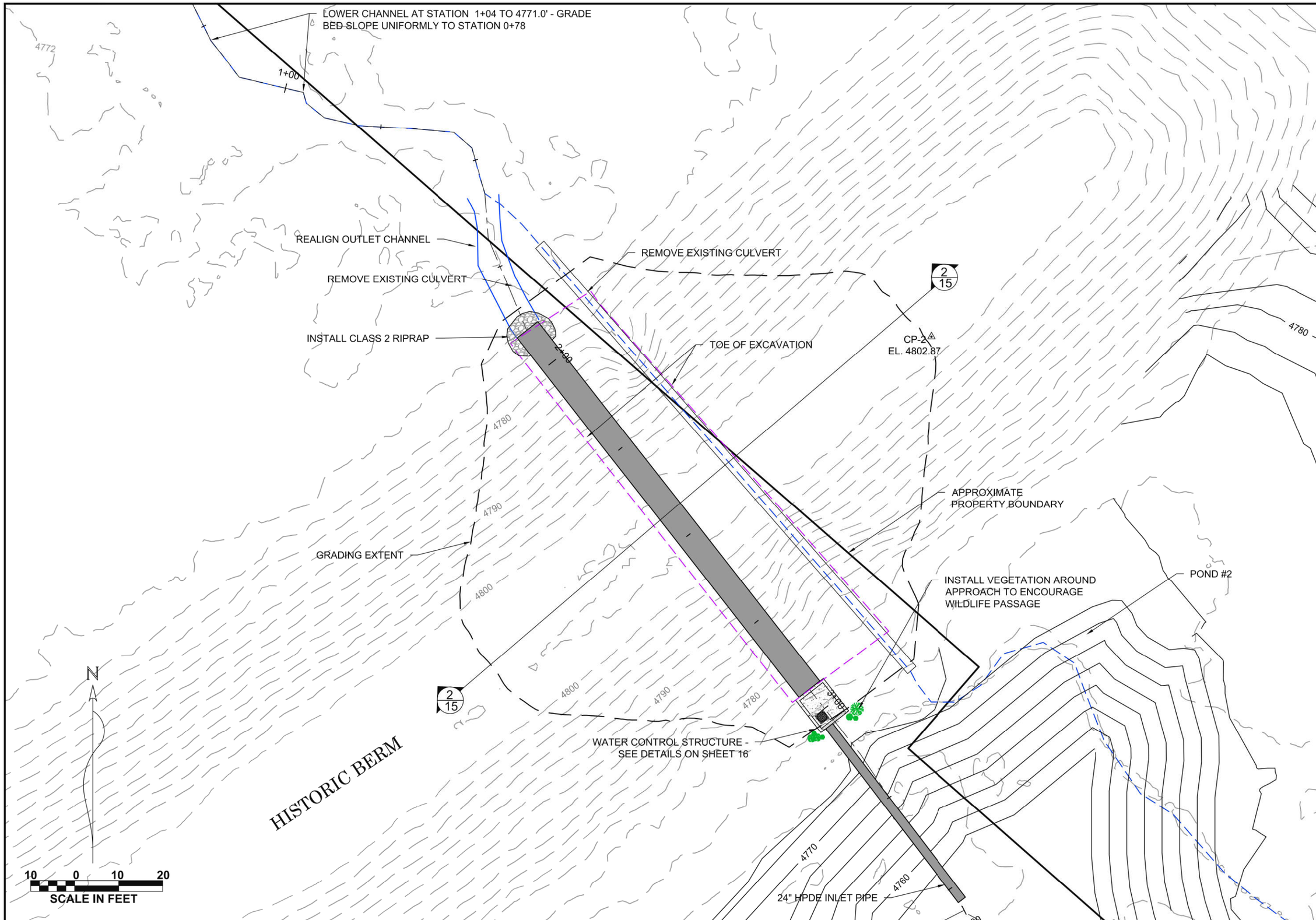
CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

POND #7

SHEET: 13



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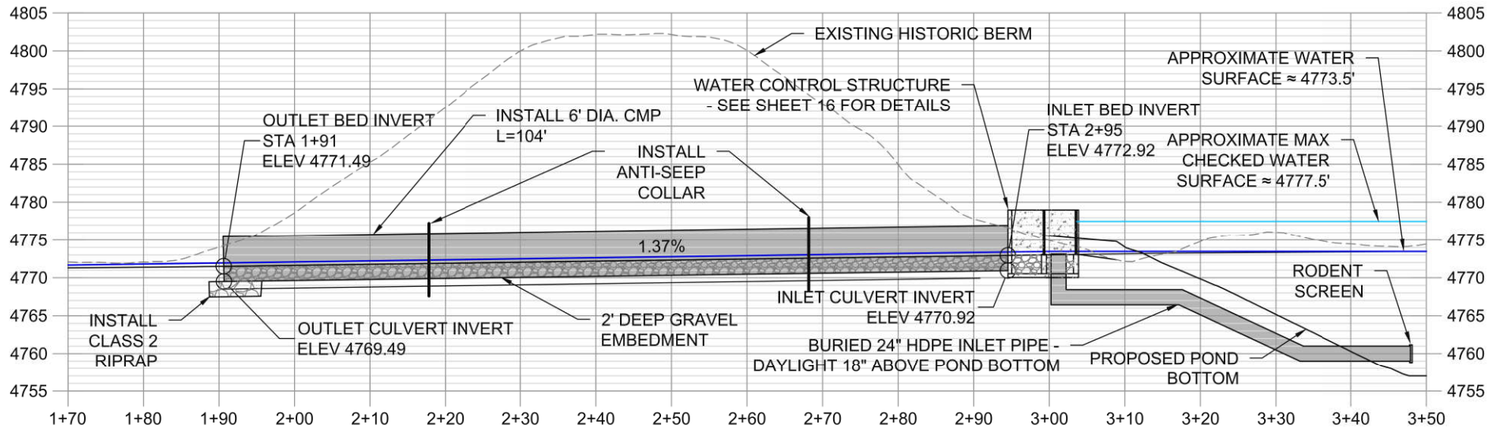
CONFLUENCE consulting incorporated

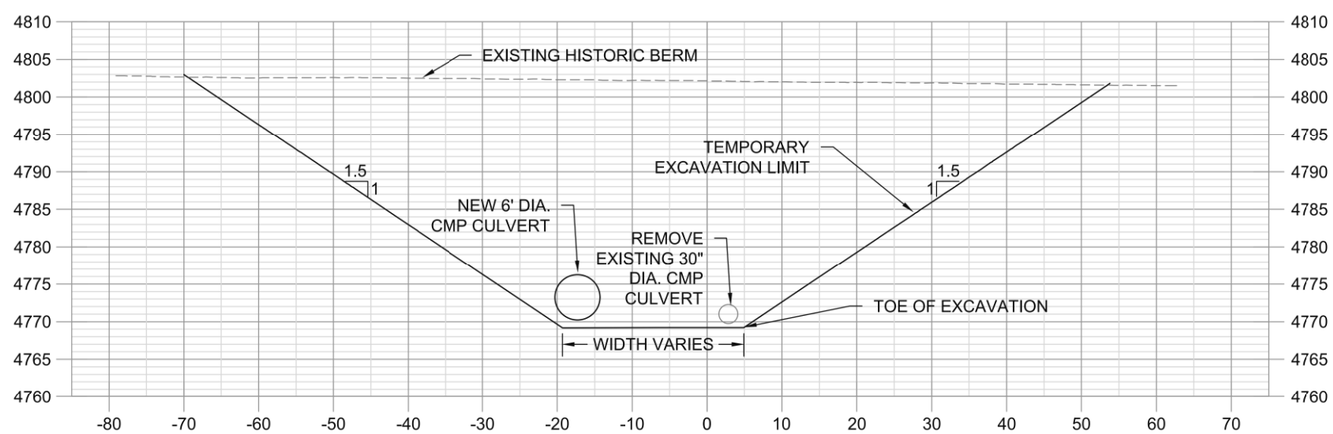
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SITE PLAN FOR CULVERT REPLACEMENT AT HISTORIC BERM

SHEET: 14



1/15 CULVERT REPLACEMENT AT HISTORIC BERM - PROFILE
SCALE: 1" = 20'



2/15 CULVERT REPLACEMENT HISTORIC BERM - CROSS SECTION
SCALE: 1" = 20'

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CHECKED BY: ---
DATE: ---
CCI JOB NO.: ---
FILE NAME: N/

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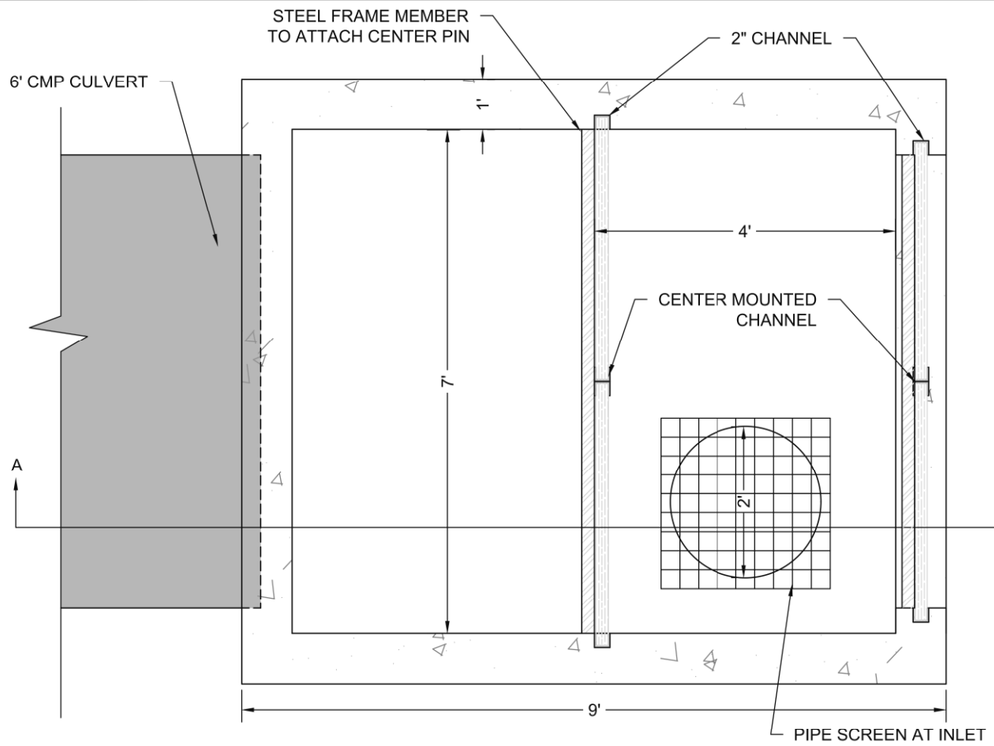
CONFLUENCE
consulting incorporated

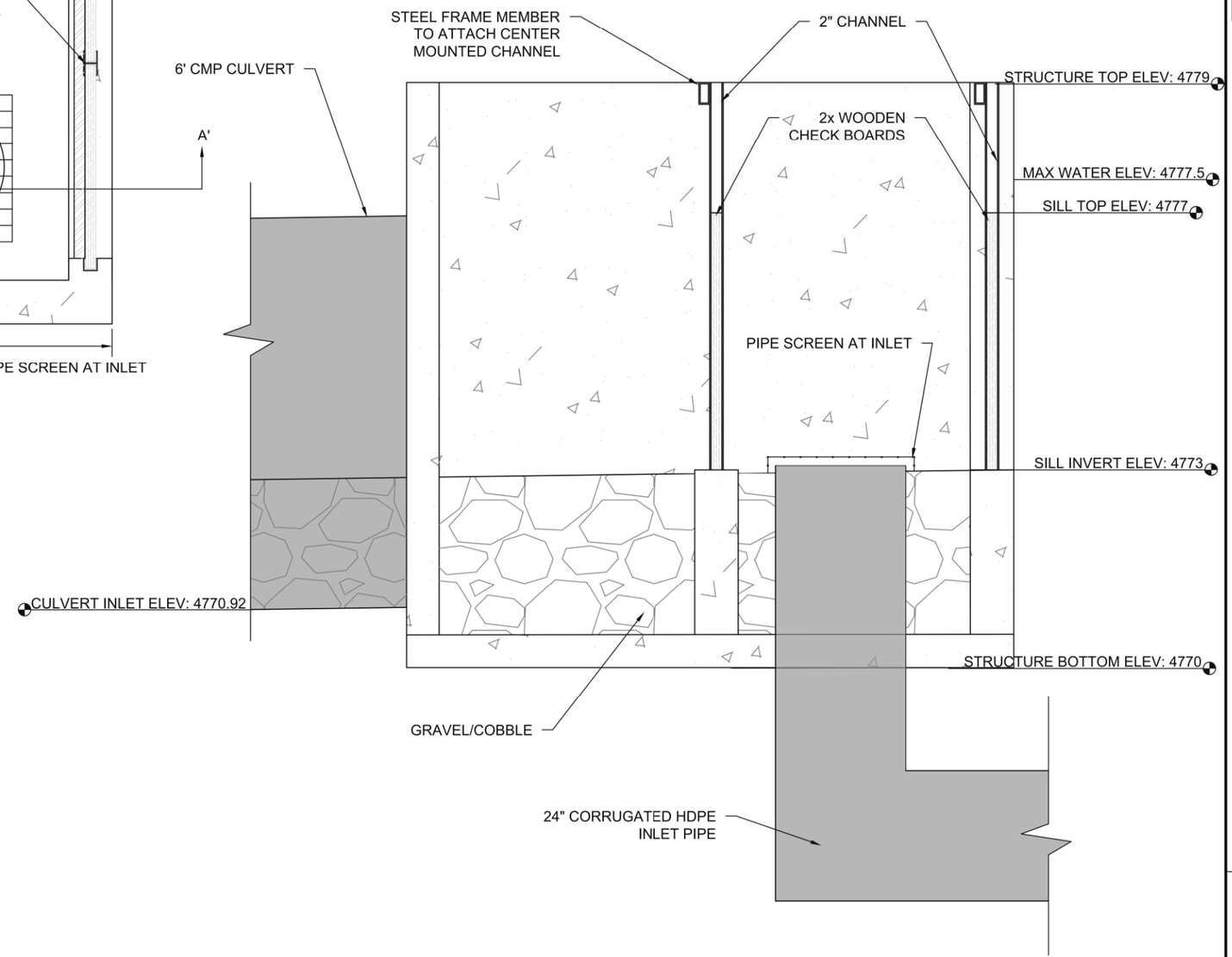
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

PROFILE AND CROSS SECTION - CULVERT REPLACEMENT AT HISTORIC BERM

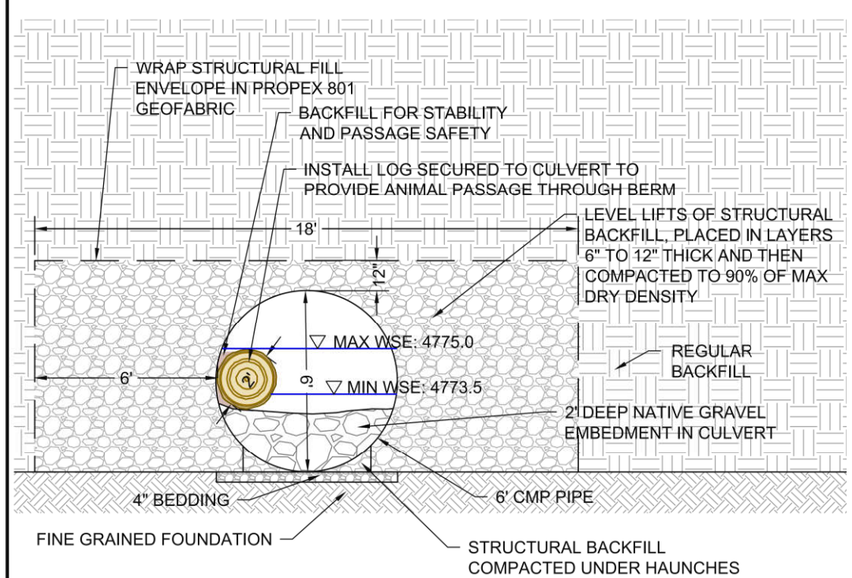
SHEET: **15**



1/16 WATER CONTROL STRUCTURE - PLAN VIEW
1/2" = 1'



2/16 WATER CONTROL STRUCTURE - SECTION A-A'
1/2" = 1'



3/16 CULVERT TYPICAL - CROSS SECTION
1" = 5'

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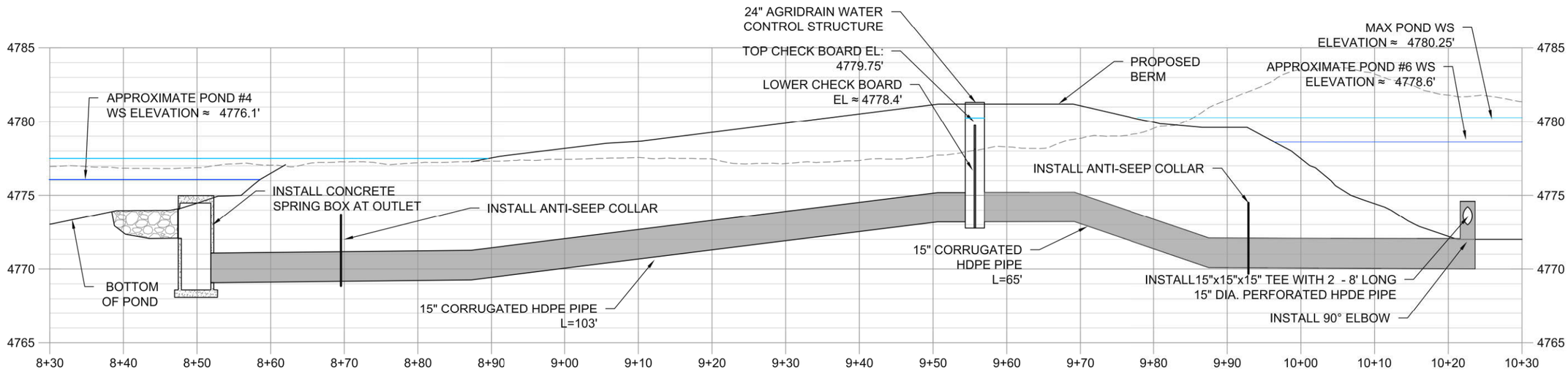
CONFLUENCE
consulting incorporated

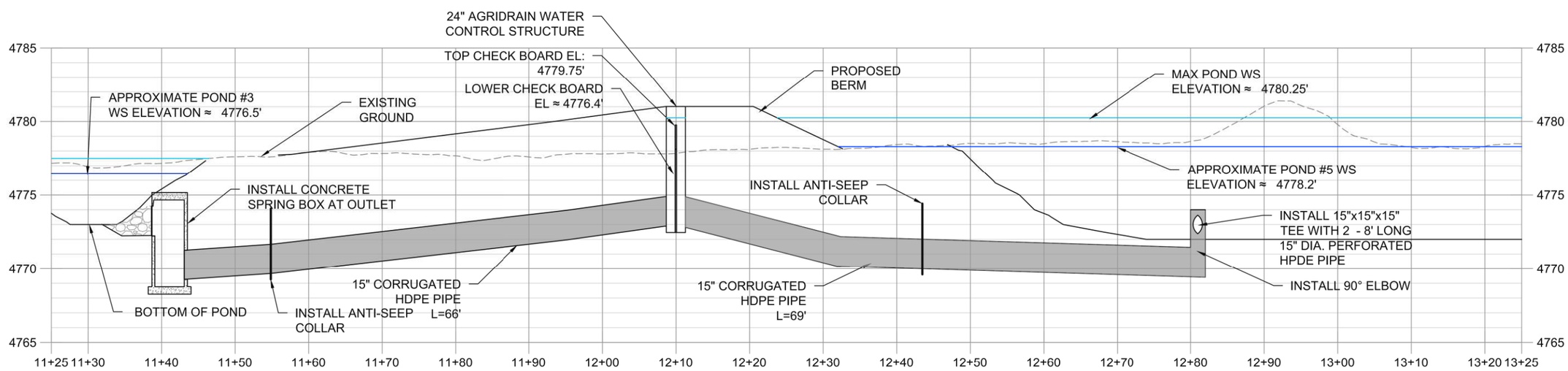
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

PROFILE AND CROSS SECTION - CULVERT REPLACEMENT AT HISTORIC BERM

SHEET: 16



1/17 SOUTHEAST CELL WATER CONTROL STRUCTURE #1 - PROFILE
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 7.5'



2/17 SOUTHEAST CELL WATER CONTROL STRUCTURE #2- PROFILE
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 7.5'

DRAWN BY: ---	DATE: ---
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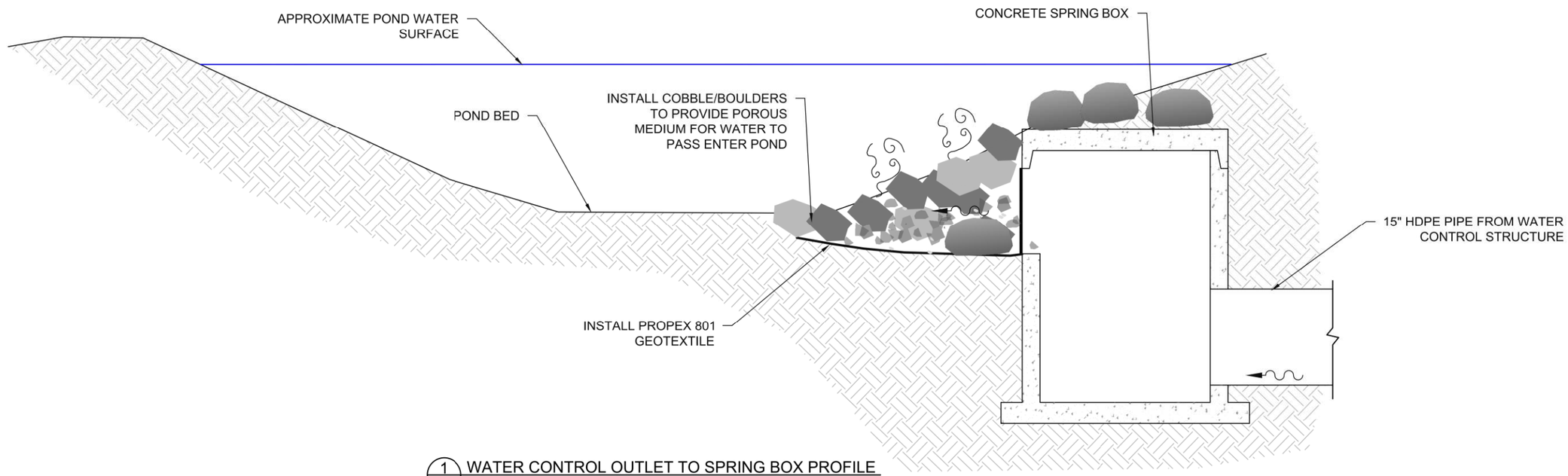
CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SOUTHEAST CELL WATER CONTROL STRUCTURE - PROFILES

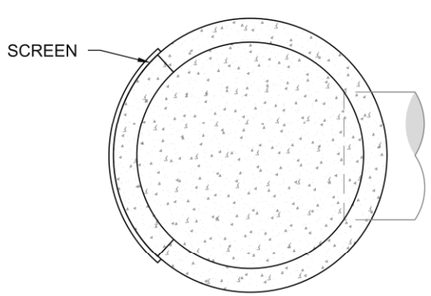
SHEET: 17



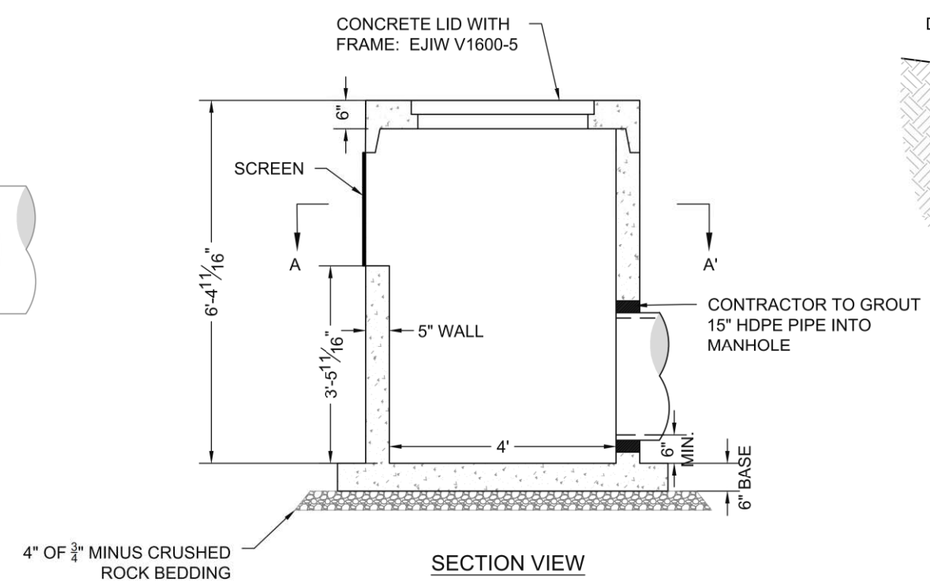
1/18 WATER CONTROL OUTLET TO SPRING BOX PROFILE
SCALE: 3/8" = 1'

NOTES:

1. CONCRETE IS 5000 PSI @ 28 DAYS. 5% +/- 1% AIR ENTRAINMENT. CEMENT IS TYPE V, WITH MAX C3A OF 8%, PER MT DEQ-4. BUILT TO ASTM C-478 SPECIFICATION.
2. BASE AND WALL ARE MONOLITHIC.
3. CONCRETE REINFORCEMENT SHALL BE INSTALLED IN ACCORDANCE WITH MDT STANDARD DETAIL DRAWING NO. 604-02.
4. SCREEN TO BE STAINLESS STEEL WITH MAX 2" OPENINGS, POWDER COATED FLAT BLACK

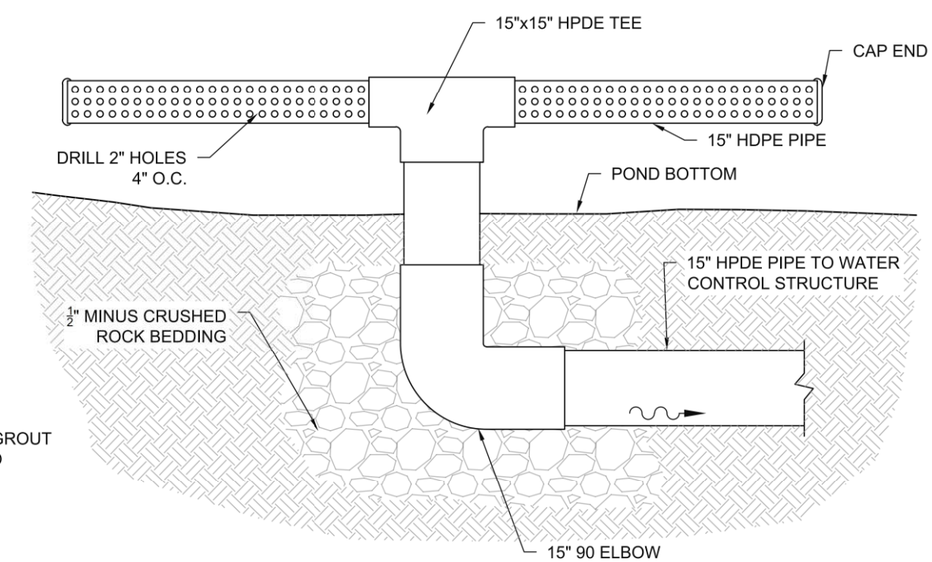


PLAN VIEW - SECTION A-A'



SECTION VIEW

2/18 WATER CONTROL SPRING BOX DETAIL
SCALE: 3/8" = 1'



3/18 WATER CONTROL STUCTURE DIFFUSE INLET DETAIL
SCALE: 1/4" = 1'

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CONFLUENCE consulting incorporated

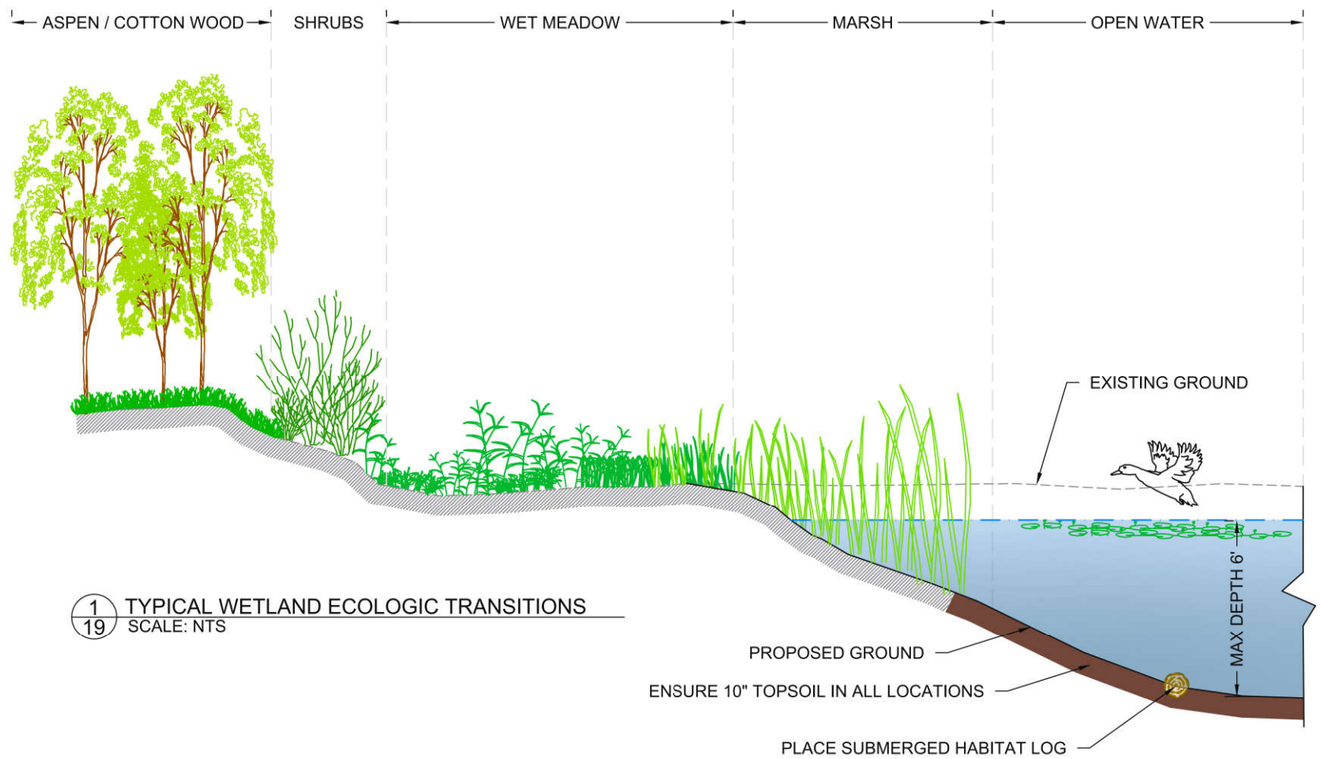
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SOUTHEAST CELL WATER CONTROL STRUCTURE - DETAILS

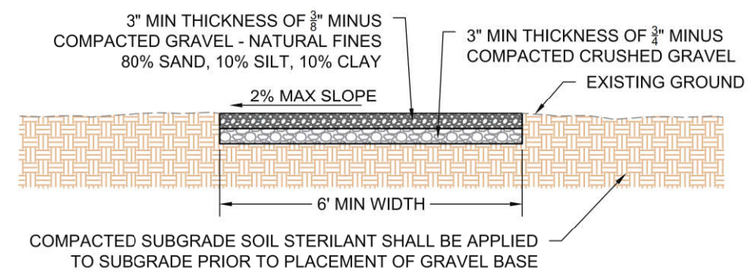
SHEET: 18

NOTES:

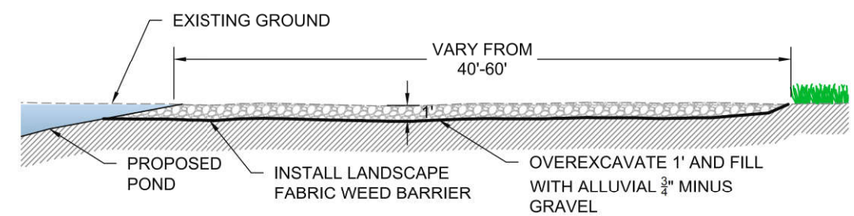
1. WHERE TOPSOIL IS NOT PRESENT AT DESIGN GRADE, OVEREXCAVATE 6" AND PLACE SALVAGED TOPSOIL TO FINISHED GRADE
2. ADD TOPSOIL TO BOTTOM OF POND AT DIRECTION OF WETLAND SPECIALIST
3. LEAVE IN ROUGHENED CONDITION AS DIRECTED BY WETLAND SPECIALIST
4. PLACE SUBMERGED HABITAT LOGS AND BOULDERS AS DIRECTED BY WETLAND SPECIALIST



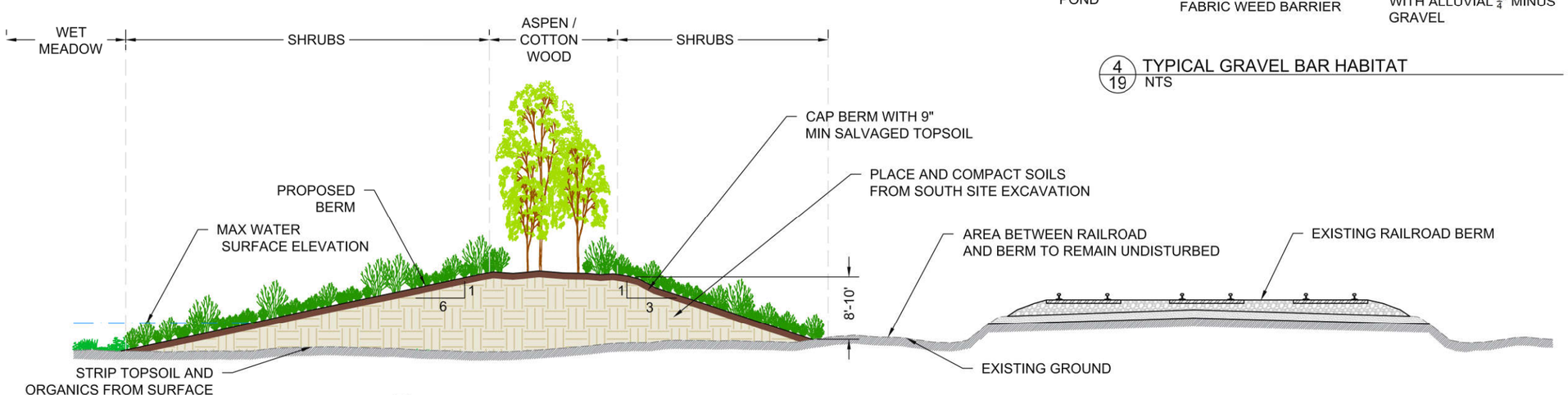
1/19 TYPICAL WETLAND ECOLOGIC TRANSITIONS
SCALE: NTS



3/19 TYPICAL GRAVEL FINES TRAIL CROSS SECTION
NTS



4/19 TYPICAL GRAVEL BAR HABITAT
NTS



2/19 TYPICAL CONSTRUCTED RAILROAD BERM
SCALE: 1" = 15'

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DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS-001
FILE NAME: S:\Projects\SAS\CAD\WORKING\DESIGN\SAS-001-PLAN.dwg

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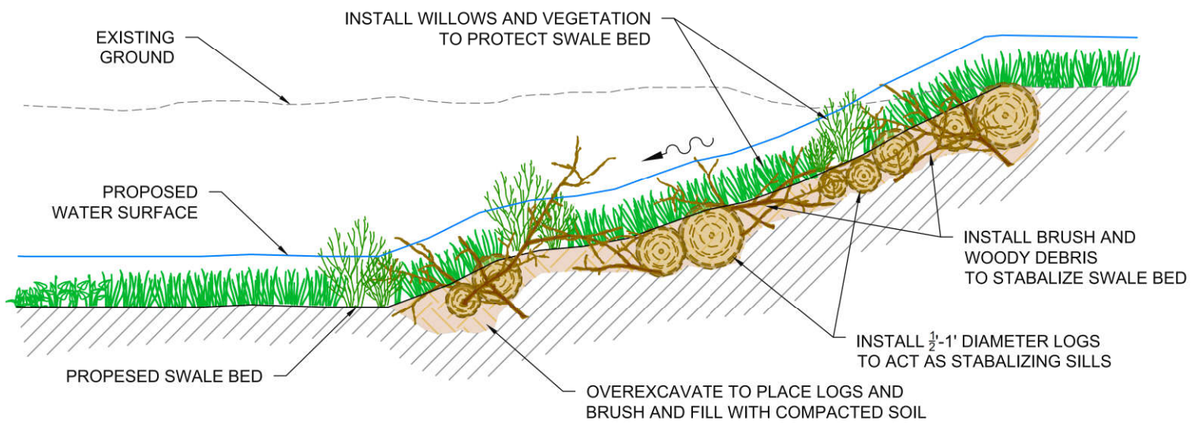
CONFLUENCE consulting incorporated

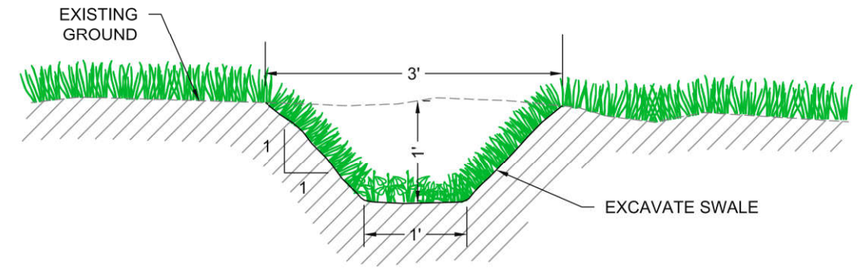
INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SOUTH SITE TYPICAL DETAILS

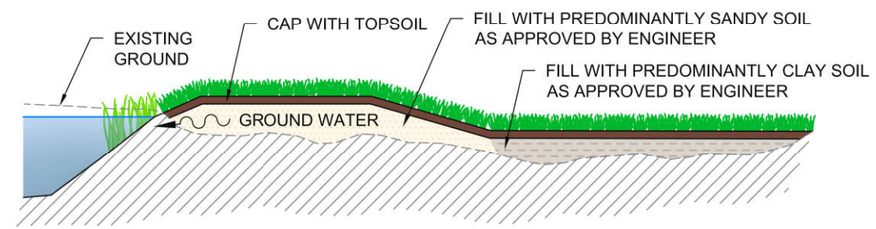
SHEET: 19



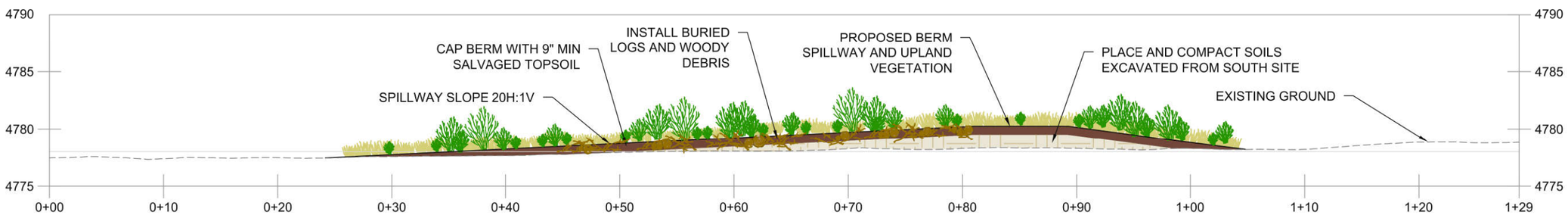
1/20 TYPICAL PROFILE OF GRADE CONTROL IN SWALE TRANSTION FROM CHANNEL TO POND
SCALE: NTS



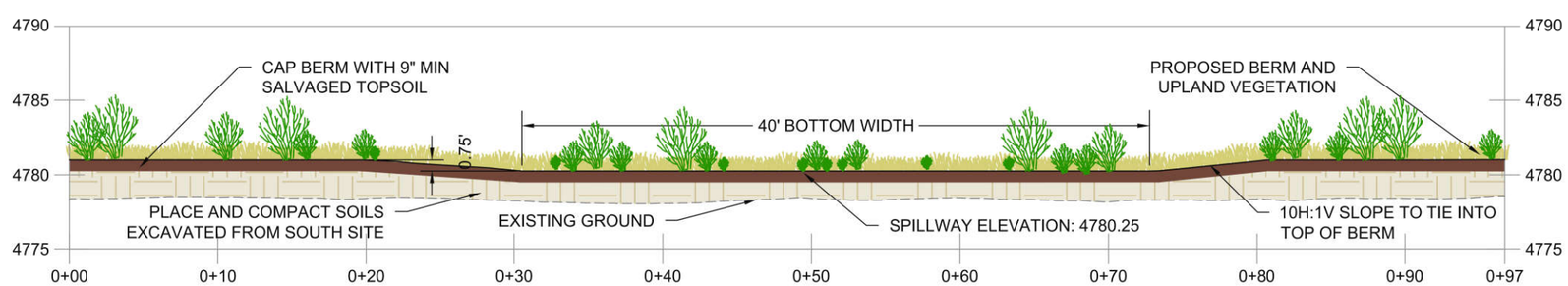
4/20 TYPICAL SWALE CONNECTING PONDS ON SOUTH SITE - CROSS SECTION
SCALE: 1'=15'



5/20 TYPICAL POND 7 DITCH PLUG
SCALE: NTS



2/20 SOUTH SITE CROSS BERM SPILLWAY LONGITUDINAL PROFILE
SCALE: 1"=10'



3/20 SOUTH SITE CROSS BERM SPILLWAY CREST CROSS SECTION
SCALE: 1"=10'

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DESIGNED BY: RM, TT
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FILE NAME: S:\Projects\SAS\CCI Work\Indreland\Indreland Plans\Indreland Plans.dwg

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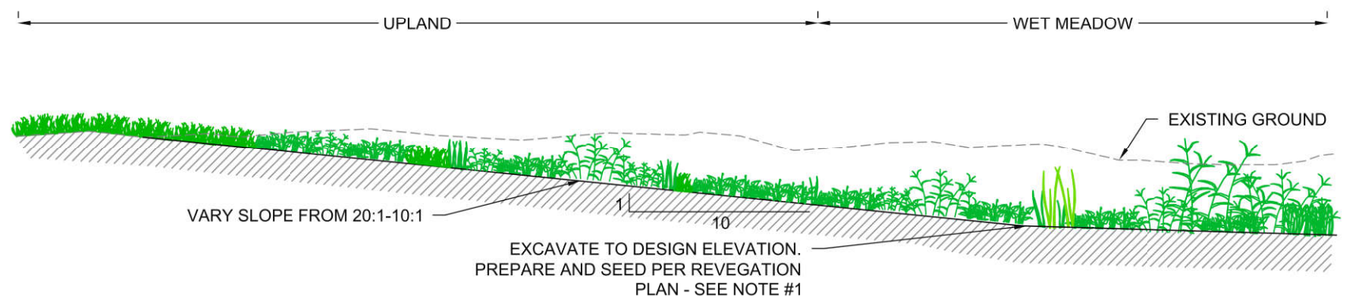
CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

SOUTH SITE TYPICAL DETAILS

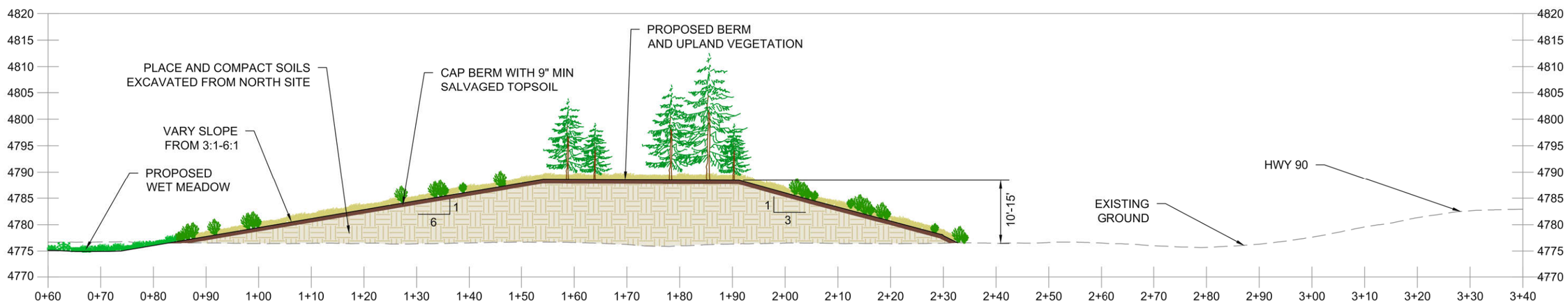
SHEET: 20



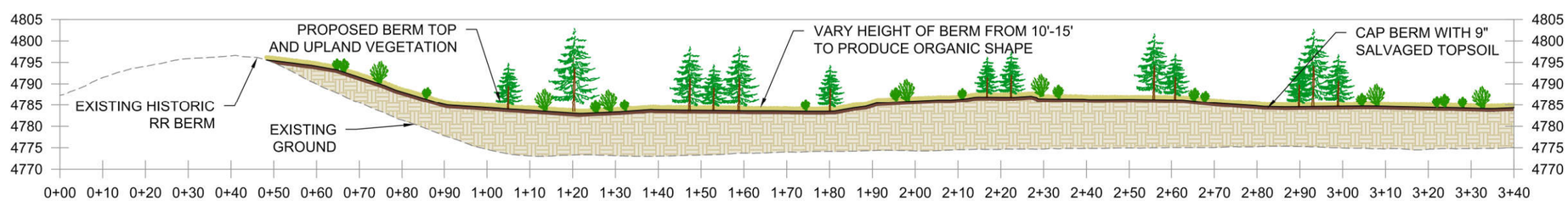
1/21 TYPICAL NORTH SITE EDGE TRANSITION
NTS

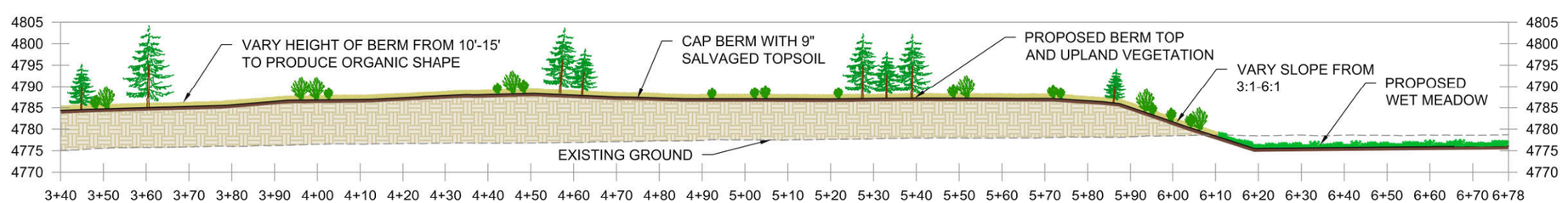
NOTES:

1. WHERE TOPSOIL IS NOT PRESENT AT DESIGN GRADE, OVEREXCAVATE 6" AND PLACE SALVAGED TOPSOIL TO FINISHED GRADE
2. LEAVE IN ROUGHENED CONDITION AS DIRECTED BY ENGINEER



2/21 NORTH BERM CROSS SECTION
SCALE: 1"=20'





3/21 NORTH BERM CROSS SECTION
SCALE: 1"=30'

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DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS.001
FILE NAME: S:\Projects\SAS\CAD\Indreland Audubon Wetland Preserve\Indreland Audubon Wetland Preserve 70% Plans.dwg

REV.	DATE	DESCRIPTION	BY	APP'D
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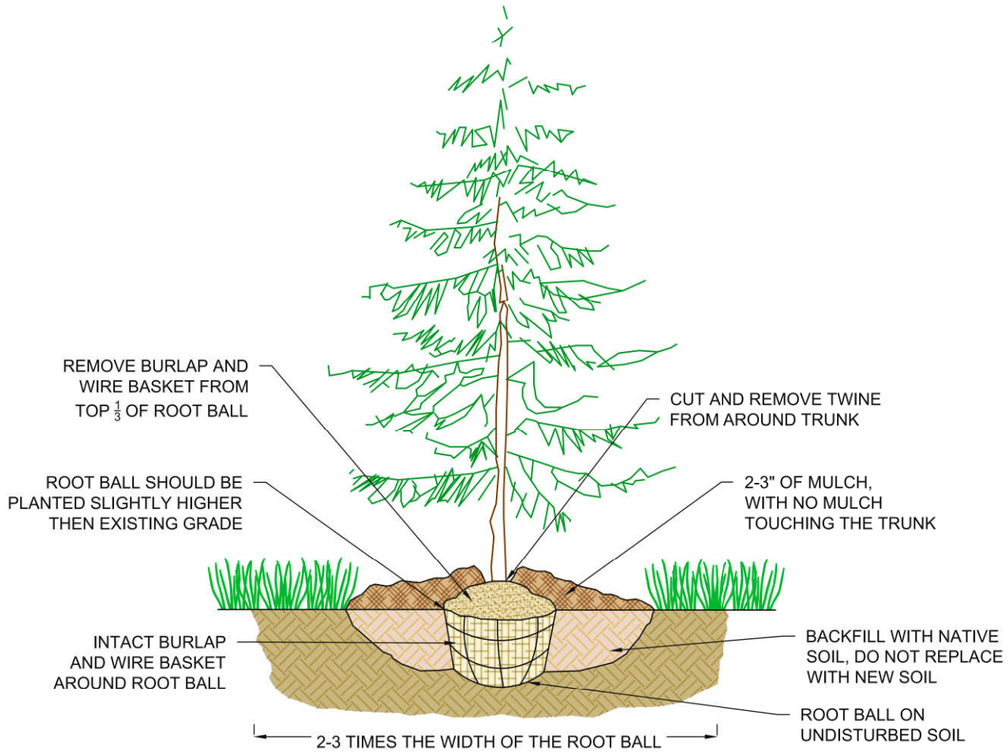
CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

NORTH SITE TYPICAL DETAILS

SHEET: 21



1/22 TREE PLANTING TYPICAL
NTS

EMERGENT WETLAND SEED MIX (*for use in Wet Meadow and Marsh Habitats*)

COMMON NAME	SCIENTIFIC NAME	GROWTH TYPE*	% OF MIX	APPROX lb/acre
Am. sloughgrass	Beckmannia syzigachne	G	10.00%	0.7740
Tufted hairgrass (Nortran)	Deschampsia cespitosa	G	15.00%	0.697
Common spikerush	Eleocharis palustris	G	15.00%	1.686
Fowl mannagrass	Glyceria striata	G	20.00%	7.744
Torrey's rush	Juncus torreyi	G	15.00%	0.085
Fowl bluegrass	Poa palustirs	G	10.00%	0.581
Small fruit bulrush	Scirpus microcarpus	G	5.00%	0.077
Arrowgrass	Triglochin maritima	F	5.00%	0.743
Blue vervain	Verbena hastata	F	5.00%	0.194
Swamp milkweed	Asclepias incarnata	F	5.00%	2.266

WOODY WETLAND SEED MIX (*for use in Low-lying Shrub and Tree Habitats*)

COMMON NAME	SCIENTIFIC NAME	GROWTH TYPE*	% OF MIX	APPROX lb/acre
Rocky Mountain Iris	Iris missouriensis	F	0.50%	1.659
Canadian milkvetch	Astragalus canadensis	F	0.50%	0.129
Golden banner	Thermopsis montana	F	0.50%	1.742
Red-osier dogwood	Cornus sericea ssp. sericea	S	5.00%	20.143
Golden currant	Ribes aureum	S	5.00%	0.978
Fowl bluegrass	Poa palustris	G	15.00%	0.871
Rough bentgrass	Agrostis scabra	G	10.00%	0.139
Canada wildrye	Elymus canadensis	G	40.00%	24.455

UPLAND SEED MIX (*for use on berms in Shrub and Tree Habitats and Disturbed Mesic Areas*)

COMMON NAME	SCIENTIFIC NAME	GROWTH TYPE*	% OF MIX	APPROX lb/acre
Yarrow	Achillea millefolium	F	0.50%	0.013
Arrowleaf Balsamroot	Balsamorhiza sagittata	F	0.50%	0.634
Harebell	Campanula rotundifolia	F	0.10%	0.006
Rocky Mtn Beeplant	Cleome serrulata	F	0.10%	0.106
Wild bergamot	Monarda fistulosa	F	0.10%	0.005
Silverleaf lupine	Lupinus argenteus	F	1.00%	3.809
Basin wildrye	Elymus cinereus	G	5.00%	2.681
Bluebunch wheatgrass	Pseudoroegneria spicata	G	25.00%	12.446
Idaho fescue	Festuca idahoensis	G	20.00%	3.098
Green needlegrass	Stipa viridula	G	15.00%	5.776
Spike trisetum	Trisetum spicatum	G	10.00%	0.279
Rubber rabittbrush	Ericameria nauseosa	S	15.00%	2.614
Broom snakeweed	Gutierrezia sarothrae	S	10.00%	0.436
Rocky Mountain Juniper	Juniperus scopulorum	S	5.00%	11.5

RIPARIAN SEED MIX (*for use on berms in Shrub and Tree Habitats and Disturbed Mesic Areas*)

COMMON NAME	SCIENTIFIC NAME	GROWTH TYPE*	% OF MIX	APPROX lb/acre
Rocky Mountain Iris	Iris missouriensis	F	0.50%	1.659
Canadian milkvetch	Astragalus canadensis	F	0.50%	0.129
Golden banner	Thermopsis montana	F	0.50%	1.742
Wild geranium	Geranium viscosissimim	F	0.50%	0.670
Canada goldenrod	Solidago canadensis	F	1.00%	0.015
Wood's Rose	Rosa woodsii	S	6.00%	9.231
Golden currant	Ribes aureum	S	5.00%	0.978
Chokecherry	Prunus virginiana	S	2.00%	29.040
Skunkbrush	Rhus trilobata	S	2.00%	6.867
Silver buffaloberry	Shepherdia argentea	S	2.00%	3.098
Fowl bluegrass	Poa palustris	G	30.00%	1.742
Rough bentgrass	Agrostis scabra	G	10.00%	0.139
Canada wildrye	Elymus canadensis	G	40.00%	24.455

NOTES:

1. PLANT LIVE MATERIAL AT THE DIRECTION OF WETLAND SPECIALIST

DRAWN BY: SW, TT
DESIGNED BY: RM, TT
CHECKED BY: RM, TT
DATE: 7/17/2020
CCI JOB NO: SAS-001
FILE NAME: S:\Projects\SAS\CCI-SAS-001\Drawings\ARCH\SAS-001-01-PLAN.dwg

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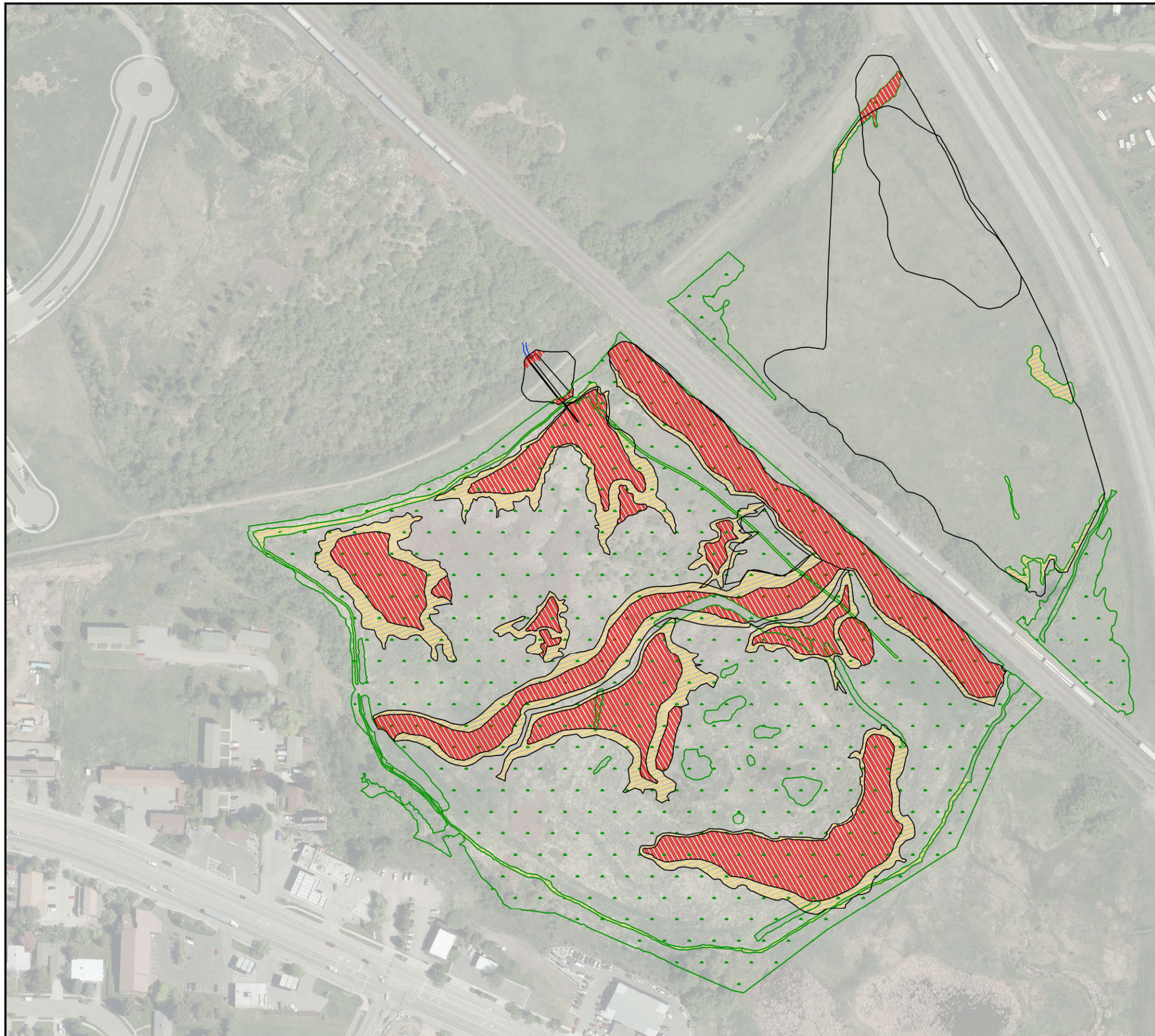
CONFLUENCE consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

PLANTING PLAN

SHEET: 22



LEGEND

- PROPOSED GRADING EXTENT
- EXISTING WETLAND
- PERMANENT IMPACT
- TEMPORARY IMPACT

N

100 0 100 200

SCALE IN FEET

WETLAND IMPACTS	
TYPE	AREA (ACRES)
PERMANENT	6.35
TEMPORARY	4.01

WETLAND CREATION	
TYPE	AREA (ACRES)
OPEN WATER	3.30
WETLAND	7.01

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CHECKED BY: ---
DATE: ---
CCI JOB NO.: ---
FILE NAME: N/

REV.	DATE	DESCRIPTION	BY	APP'D
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CONFLUENCE
consulting incorporated

INDRELAND AUDUBON WETLAND PRESERVE
70% PLANS
BOZEMAN, MONTANA

WETLAND IMPACTS

SHEET: 23