

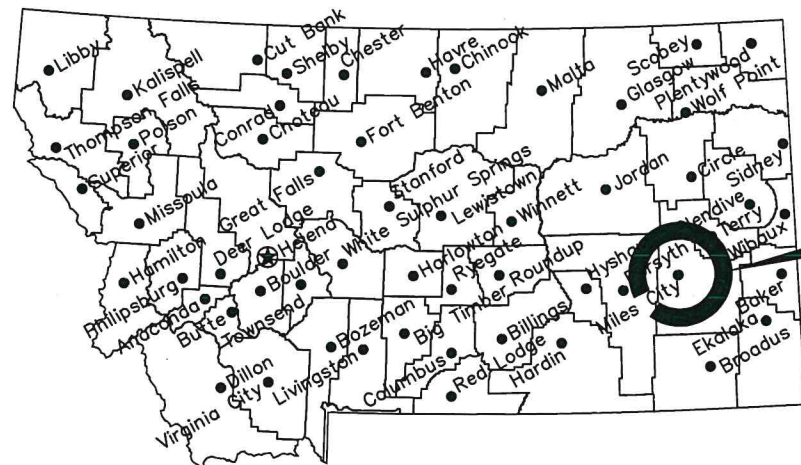
MONTANA FISH, WILDLIFE & PARKS

Miles City Fish Hatchery

Pond Kettle Replacement & Repair

near Miles City, MT

#7213101

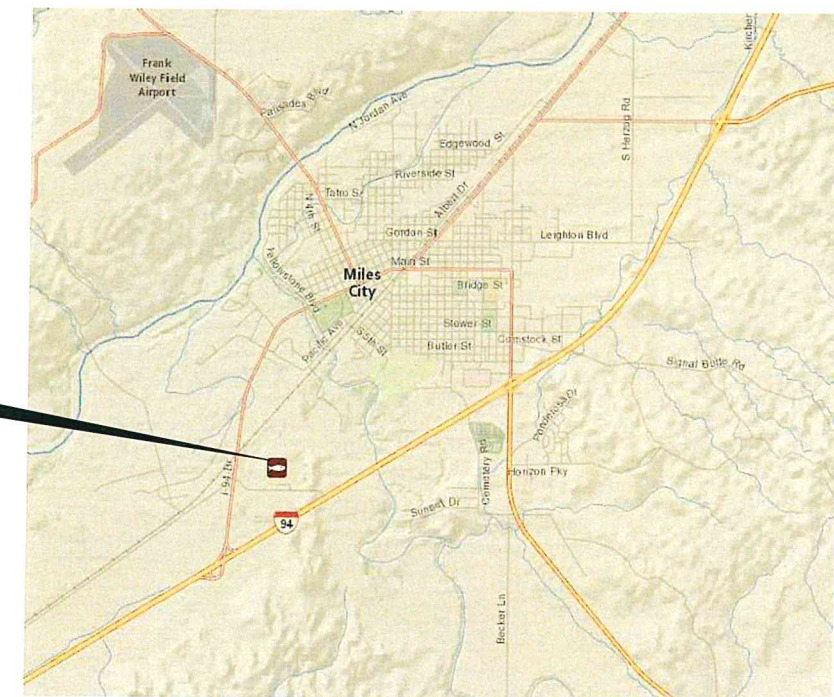


Location Map

No Scale

Project Location

North



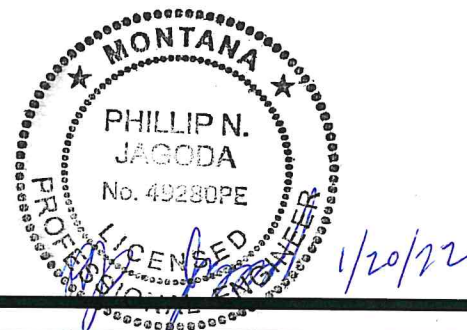
Vicinity Map

No Scale

MONTANA FISH, WILDLIFE AND PARKS
DESIGN AND CONSTRUCTION

MAILING ADDRESS: PO BOX 200701
HELENA, MT 59620-0701
TEL 406.841.4000
FAX 406.841.4004
fwp.mt.gov/Doing Business/Design&Construction

PHYSICAL ADDRESS: 1522 9th AVENUE
HELENA, MT 59601



DRAWING INDEX

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2	OVERALL SITE PLAN	7	EX. KETTLE DEMO PLAN	12	KETTLE SCREEN & RAILING
3	SITE PLAN - NW PONDS	8	KETTLE WALL & SLAB	13	ALUMIN. SLIDE GATE DETAILS
4	SITE PLAN - NE PONDS	9	KETTLE SECTIONS	14	KETTLE CENTER WALL EXTENSION
5	SITE PLAN - SW PONDS	10	KETTLE STRUCTURAL DETAILS		

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DATE: 12/17/21

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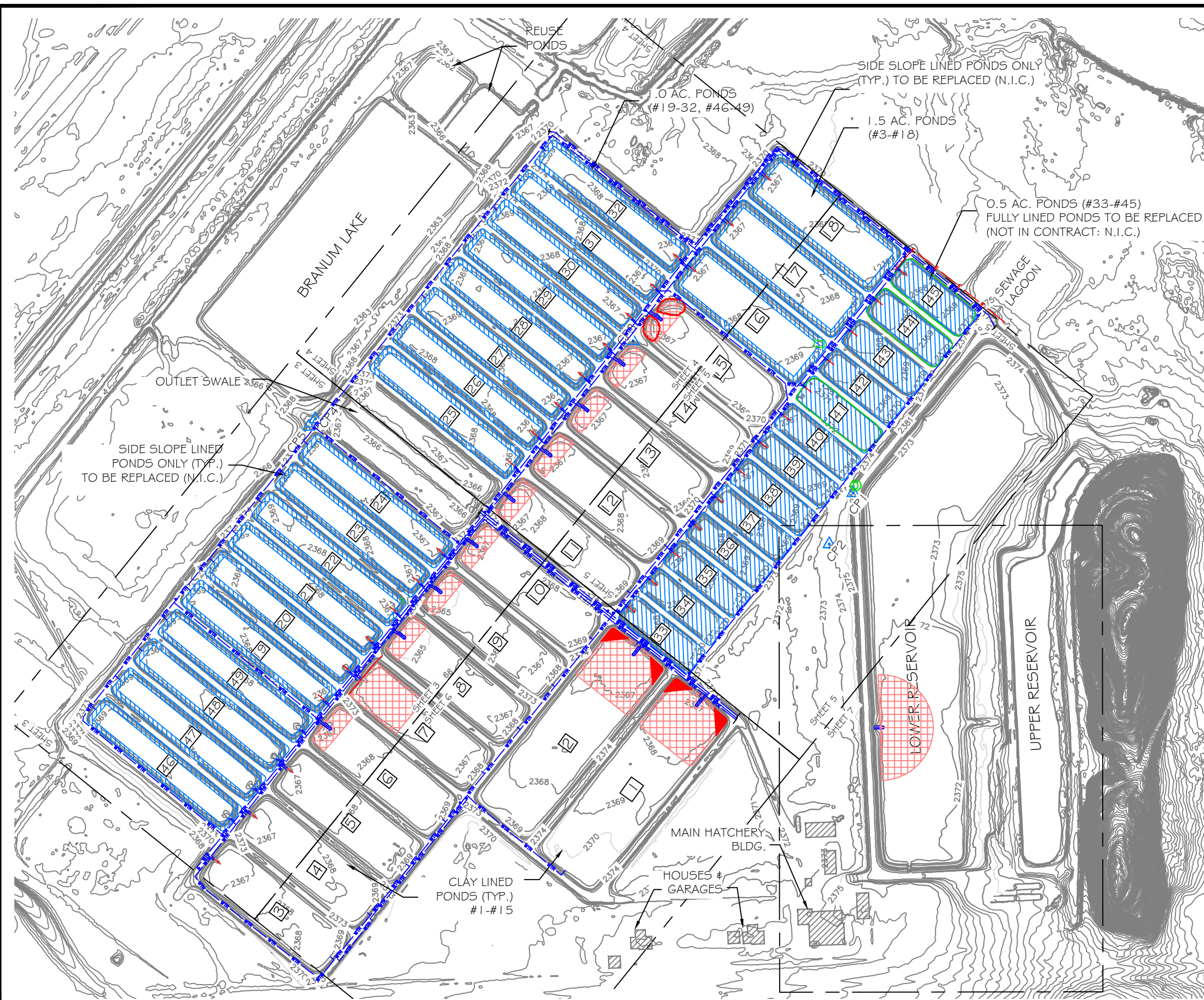
MONTANA FISH,
WILDLIFE & PARKS

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Cover Sheet

Miles City Fish Hatchery - Pond Kettle Replacement & Repair

SHEET: 1 of 14



- NOTES:
1. TOPOGRAPHIC SURVEY DATA WAS PROVIDED DIGITALLY BY THE MONTANA STATE LIBRARY - LIDAR FOR MONTANA. PROJECT COORDINATE SYSTEM IS BASED ON MONTANA STATE PLANE, VERTICAL DATUM IS NAVD88 (U.S. SURVEY FOOT), AND HORIZONTAL DATUM IS NAD83 (INTERNATIONAL FOOT).
 2. SUPPLEMENTAL SITE SURVEY DATA WAS OBTAINED BY MONTANA FISH, WILDLIFE & PARKS ON 9/21/21 FOR PONDS 41-45 AND OTHER MISCELLANEOUS FEATURES ON THE PROPERTY.
 3. LOCATION OF HOUSES, GARAGES AND OTHER STRUCTURES ARE APPROXIMATE ONLY AND BASED ON AERIAL PHOTOGRAPHY.
 4. LOCATIONS OF UNDERGROUND WATER LINES ARE APPROXIMATE ONLY & BASED ON BEST AVAILABLE INFORMATION. UNDERGROUND ELECTRIC AND COMMUNICATIONS ARE ALSO PRESENT, CONTRACTOR RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES AND ANY LOCATION SERVICES.
 5. MULTIPLE CONTRACTORS WILL BE PRESENT AT THE PROJECT SITE DURING CONSTRUCTION WHICH WILL REQUIRE COORDINATION BETWEEN ALL INVOLVED PARTIES. THE POND LINER REPLACEMENT WORK IS SHOWN ON THESE DRAWINGS FOR COORDINATION EFFORTS ONLY, THE LINER WORK WILL BE ON A SEPARATE CONTRACT.
 6. CONTRACTOR SHOULD ANTICIPATE THAT PONDS WILL REQUIRE TIME TO FULLY DRAIN AND DRY OUT, AND THAT OTHER MEANS OF DEWATERING MAY BE NECESSARY AROUND KETTLES. CONTRACTOR RESPONSIBLE FOR DEWATERING EQUIPMENT & LABOR WHICH WILL BE CONSIDERED INCIDENTAL TO PROJECT.

SUMMARY OF WORK	POND LOCATIONS	QUANTITY
KETTLE REPLACEMENT	#1,2,6, #8-15, & LOWER RES.	12
KETTLE CENTER WALL VERT. EXTENSION	#3-5, #16-45	33
CLAY LINED PONDS MAINTENANCE GRADING	#1,2, #6-15	12

BASE BID: CONSISTS OF KETTLE DEMOLITION AND CONSTRUCTION IN PONDS 1, 2, 8, 9, 10 & 11 AND MAINTENANCE GRADING IN PONDS 6 - 15.

ADDITIVE ALTERNATE 1: CONSISTS OF KETTLE DEMOLITION AND CONSTRUCTION IN PONDS 6 & 12-15 & THE LOWER RESERVOIR & MAINTENANCE GRADING IN LOWER RES. AS REQ'D.

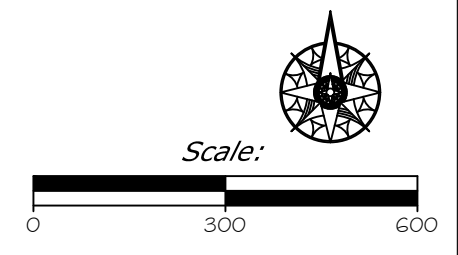
ADDITIVE ALTERNATE 2: CONSISTS OF RAISING THE KETTLE CONCRETE CENTER WALL IN 33 PONDS.

NOTE: N.I.C. = NOT IN CONTRACT

LEGEND

- EXISTING FEATURES
- CONTROL POINT
- EDGE OF ROAD
- BARBED WIRE FENCE
- EX. CONTOUR
- TREE
- GEOMEMBRANE LINER (N.I.C.)
- POND GRADING
- NEW KETTLE
- KETTLE CENTER WALL VERT. EXTENSION
- U.G. WATERLINE

Desc.	Northing	Easting	Elev.
CP1	799922.7854	2886351.3550	2381.4780
CP2	799777.6616	2886283.6537	2373.7539
CP3	800354.4732	2885726.5366	2374.3247
CP4	800132.7427	2884824.3810	2374.1591
CP5	800111.1682	2884805.1218	2374.0133



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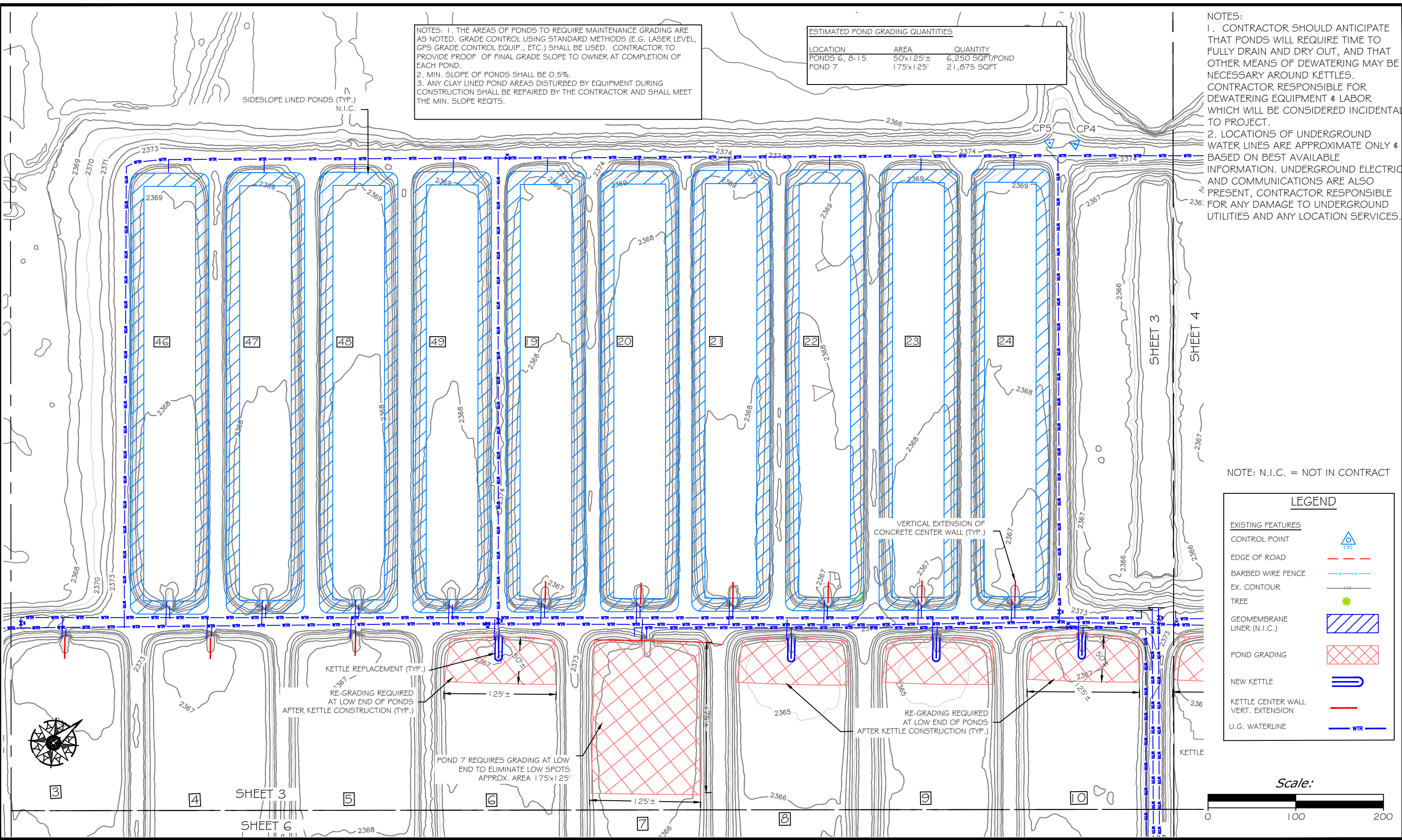
Overall Site Plan

Miles City Fish Hatchery - Pond Kettle Replacement & Repair

NOTES: 1. THE AREAS OF PONDS TO REQUIRE MAINTENANCE GRADING ARE AS NOTED. GRADE CONTROL USING STANDARD METHODS (E.G. LASER LEVEL, GPS GRADE CONTROL EQUIP., ETC.) SHALL BE USED. CONTRACTOR TO PROVIDE PROOF OF FINAL GRADE SLOPE TO OWNER AT COMPLETION OF EACH POND.
 2. MIN. SLOPE OF PONDS SHALL BE 0.5%.
 3. ANY CLAY LINED POND AREAS DISTURBED BY EQUIPMENT DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AND SHALL MEET THE MIN. SLOPE REQTS.

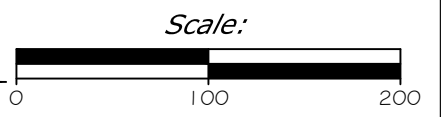
ESTIMATED POND GRADING QUANTITIES		
LOCATION	AREA	QUANTITY
PONDS 6, 8-15	50x125±	6,250 SQFT/POND
POND 7	175x125'	21,875 SQFT

NOTES:
 1. CONTRACTOR SHOULD ANTICIPATE THAT PONDS WILL REQUIRE TIME TO FULLY DRAIN AND DRY OUT, AND THAT OTHER MEANS OF DEWATERING MAY BE NECESSARY AROUND KETTLES. CONTRACTOR RESPONSIBLE FOR DEWATERING EQUIPMENT & LABOR WHICH WILL BE CONSIDERED INCIDENTAL TO PROJECT.
 2. LOCATIONS OF UNDERGROUND WATER LINES ARE APPROXIMATE ONLY & BASED ON BEST AVAILABLE INFORMATION. UNDERGROUND ELECTRIC AND COMMUNICATIONS ARE ALSO PRESENT, CONTRACTOR RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES AND ANY LOCATION SERVICES.



NOTE: N.I.C. = NOT IN CONTRACT

LEGEND	
<u>EXISTING FEATURES</u>	
CONTROL POINT	
EDGE OF ROAD	
BARBED WIRE FENCE	
EX. CONTOUR	
TREE	
GEOMEMBRANE LINER (N.I.C.)	
POND GRADING	
NEW KETTLE	
KETTLE CENTER WALL VERT. EXTENSION	
U.G. WATERLINE	



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Ponds 3 - 10, 19 - 24, & 46 - 49
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair

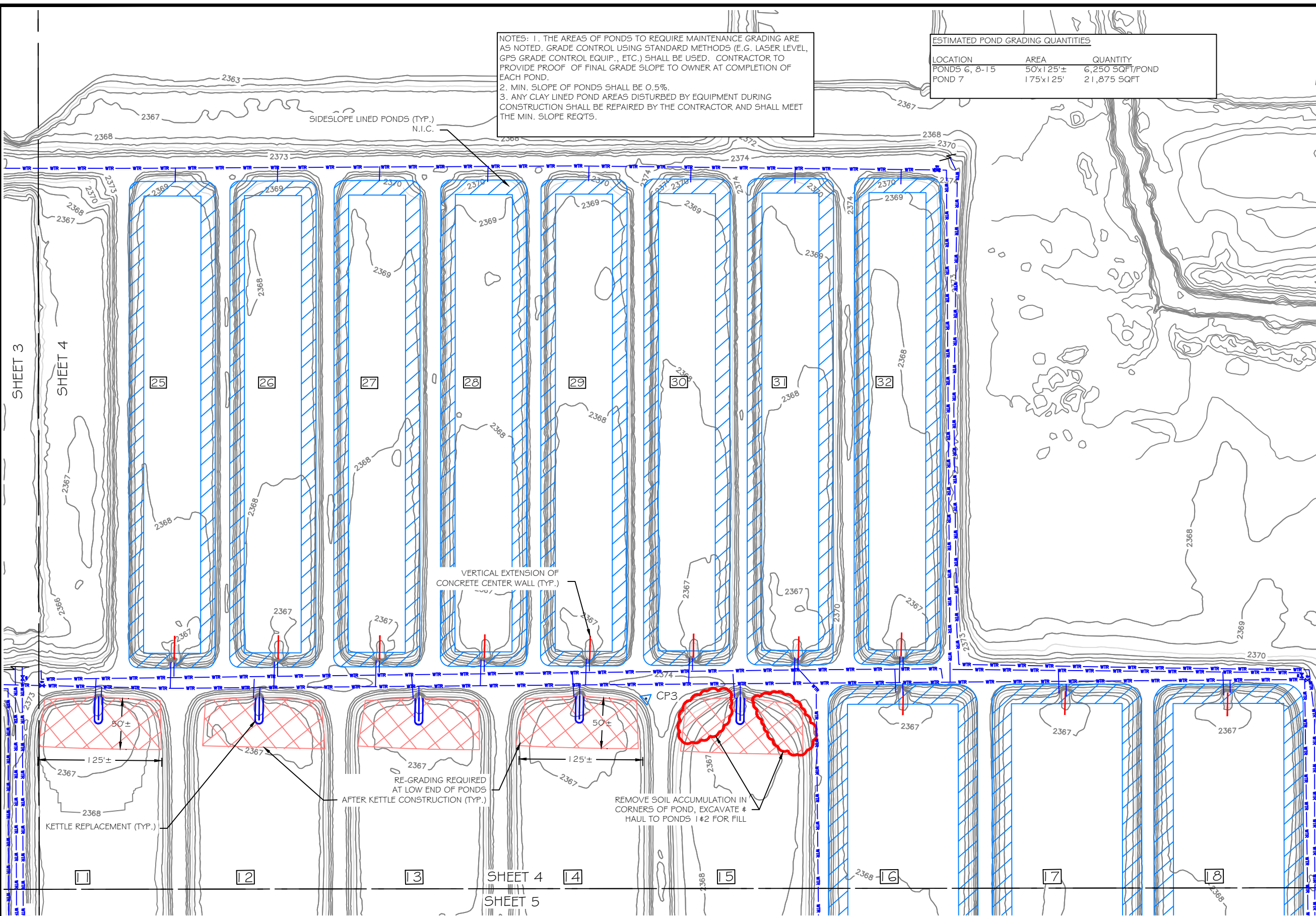
NOTES: 1. THE AREAS OF PONDS TO REQUIRE MAINTENANCE GRADING ARE AS NOTED. GRADE CONTROL USING STANDARD METHODS (E.G. LASER LEVEL, GPS GRADE CONTROL EQUIP., ETC.) SHALL BE USED. CONTRACTOR TO PROVIDE PROOF OF FINAL GRADE SLOPE TO OWNER AT COMPLETION OF EACH POND.
 2. MIN. SLOPE OF PONDS SHALL BE 0.5%.
 3. ANY CLAY LINED POND AREAS DISTURBED BY EQUIPMENT DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AND SHALL MEET THE MIN. SLOPE REQTS.

ESTIMATED POND GRADING QUANTITIES		
LOCATION	AREA	QUANTITY
PONDS 6, 8-15	50'x125'±	6,250 SQFT/POND
POND 7	175'x125'	21,875 SQFT

NOTES:
 1. CONTRACTOR SHOULD ANTICIPATE THAT PONDS WILL REQUIRE TIME TO FULLY DRAIN AND DRY OUT, AND THAT OTHER MEANS OF DEWATERING MAY BE NECESSARY AROUND KETTLES.
 2. LOCATIONS OF UNDERGROUND WATER LINES ARE APPROXIMATE ONLY & BASED ON BEST AVAILABLE INFORMATION. UNDERGROUND ELECTRIC AND COMMUNICATIONS ARE ALSO PRESENT, CONTRACTOR RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES AND ANY LOCATION SERVICES.

NOTE: N.I.C. = NOT IN CONTRACT

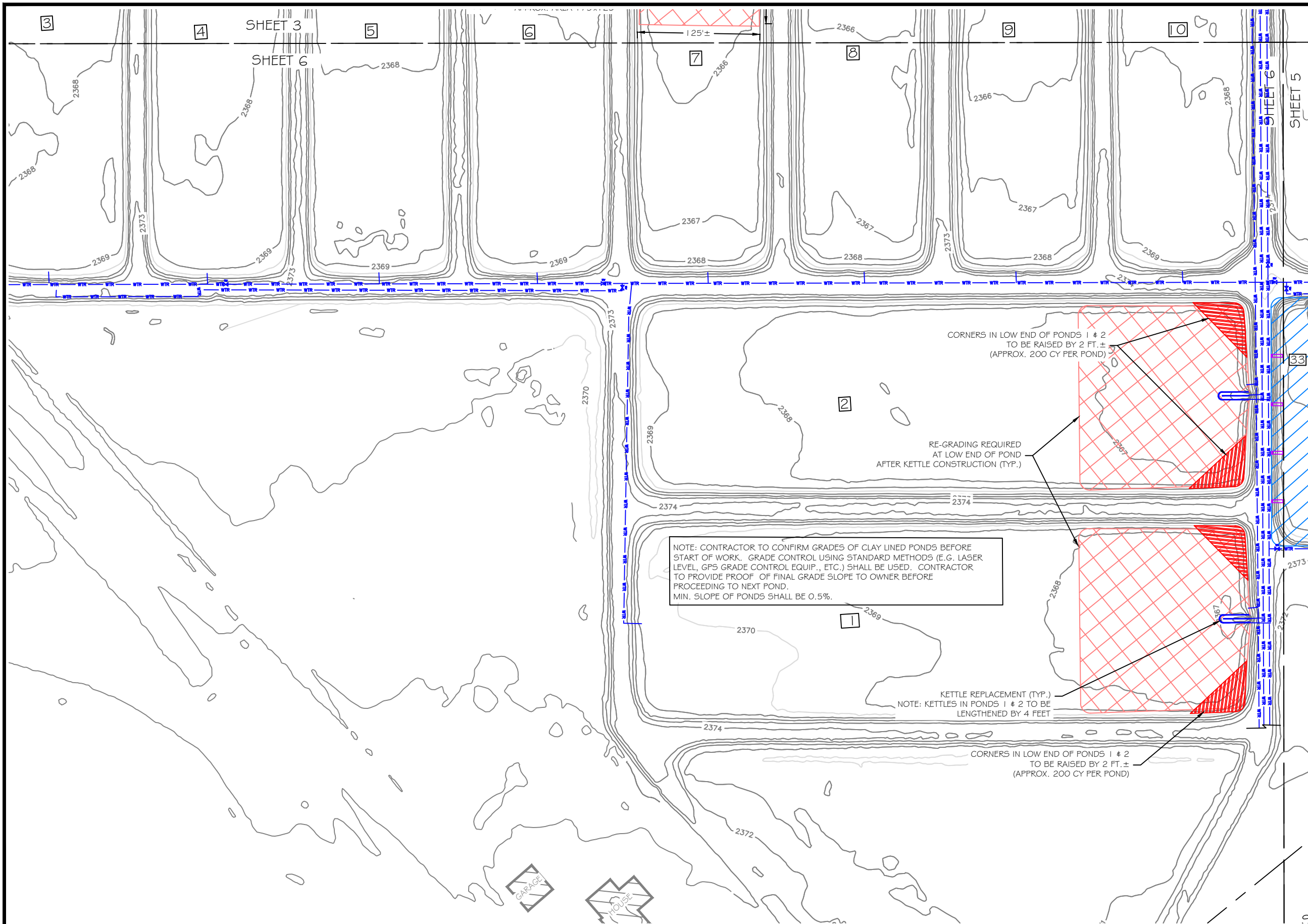
LEGEND	
EXISTING FEATURES	
CONTROL POINT	
EDGE OF ROAD	
BARBED WIRE FENCE	
EX. CONTOUR	
TREE	
GEOMEMBRANE LINER (N.I.C.)	
POND GRADING	
NEW KETTLE	
KETTLE CENTER WALL VERT. EXTENSION	
U.G. WATERLINE	



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Ponds 25 - 32 and 11 - 18
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair



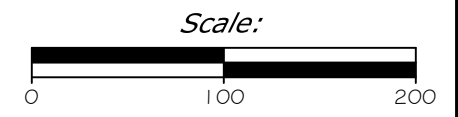
- NOTES:
1. KETTLES REPLACED IN PONDS 1 & 2 WILL BE INCREASED IN LENGTH BY 4 FEET.
 2. CONTRACTOR SHALL RAISE THE LOW END CORNERS OF PONDS 1 & 2 BY A MIN. OF 2 FT. ± USING ON SITE SOILS.
 3. CONTRACTOR SHOULD ANTICIPATE THAT PONDS WILL REQUIRE TIME TO FULLY DRAIN AND DRY OUT, AND THAT OTHER MEANS OF DEWATERING MAY BE NECESSARY AROUND KETTLES DURING KETTLE WORK. CONTRACTOR RESPONSIBLE FOR DEWATERING EQUIPMENT & LABOR WHICH WILL BE CONSIDERED INCIDENTAL TO PROJECT.
 4. LOCATIONS OF UNDERGROUND WATER LINES ARE APPROXIMATE ONLY & BASED ON BEST AVAILABLE INFORMATION. UNDERGROUND ELECTRIC AND COMMUNICATIONS ARE ALSO PRESENT, CONTRACTOR RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES AND ANY LOCATION SERVICES.

ESTIMATED POND GRADING QUANTITIES

LOCATION	AMOUNT	DESC.
POND 1	200 CY±	CORNERS
POND 2	200 CY±	CORNERS

LEGEND

EXISTING FEATURES	
CONTROL POINT	
EDGE OF ROAD	
BARBED WIRE FENCE	
EX. CONTOUR	
TREE	
GEOMEMBRANE LINER (N.I.C.)	
POND GRADING	
NEW KETTLE	
KETTLE CENTER WALL VERT. EXTENSION	
U.G. WATERLINE	



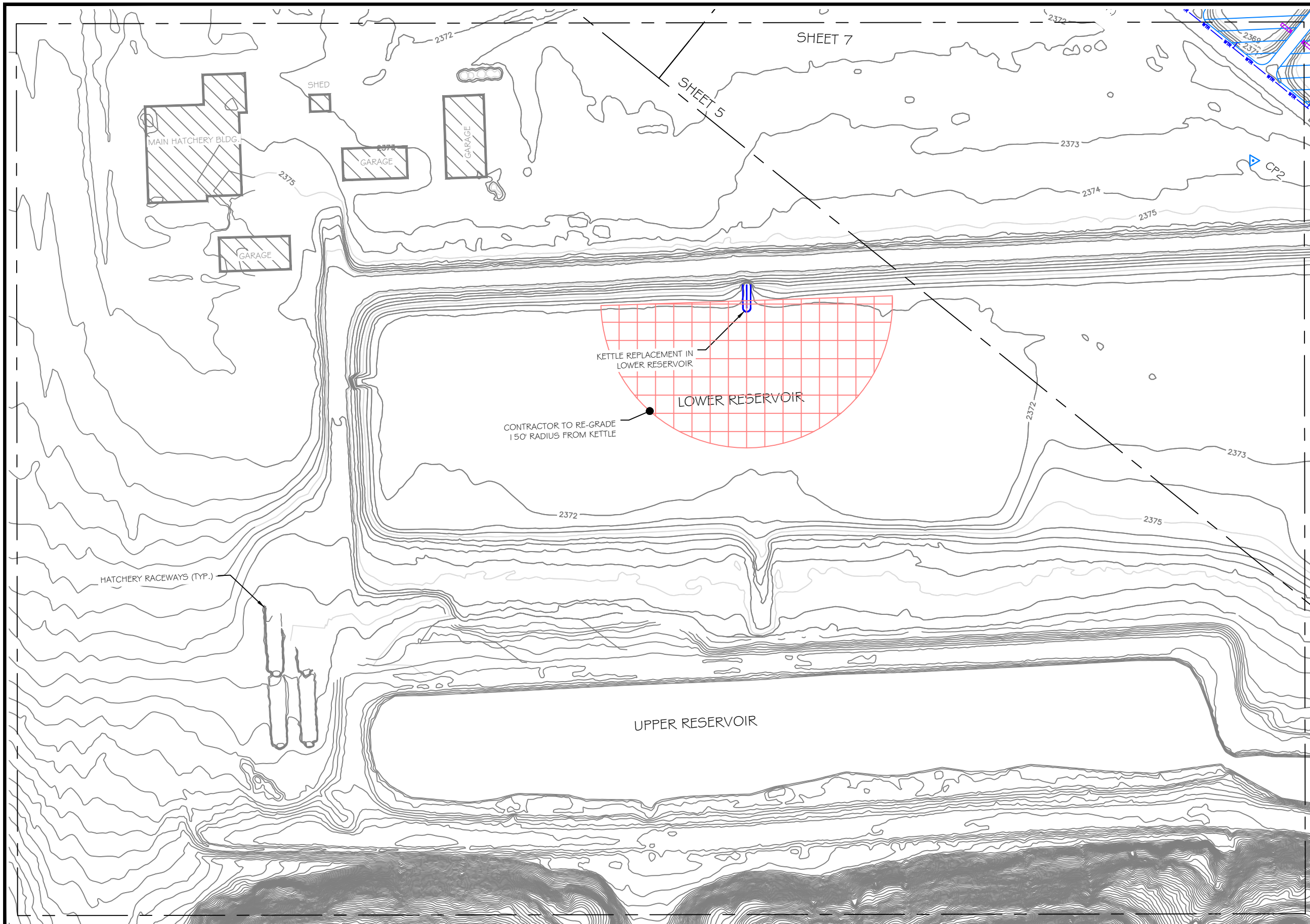
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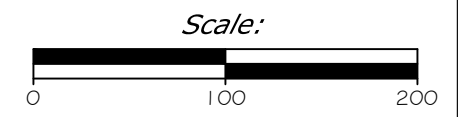
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Ponds 1 & 2 and 3 - 10
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair



- NOTES:
1. THE LOWER RESERVOIR KETTLE DEMOLITION AND CONSTRUCTION AND MAINTENANCE GRADING IS PART OF ADDITIVE ALTERNATE 1.
 2. LOCATIONS OF UNDERGROUND WATER LINES ARE APPROXIMATE ONLY & BASED ON BEST AVAILABLE INFORMATION. UNDERGROUND ELECTRIC AND COMMUNICATIONS ARE ALSO PRESENT, CONTRACTOR RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES AND ANY LOCATION SERVICES.



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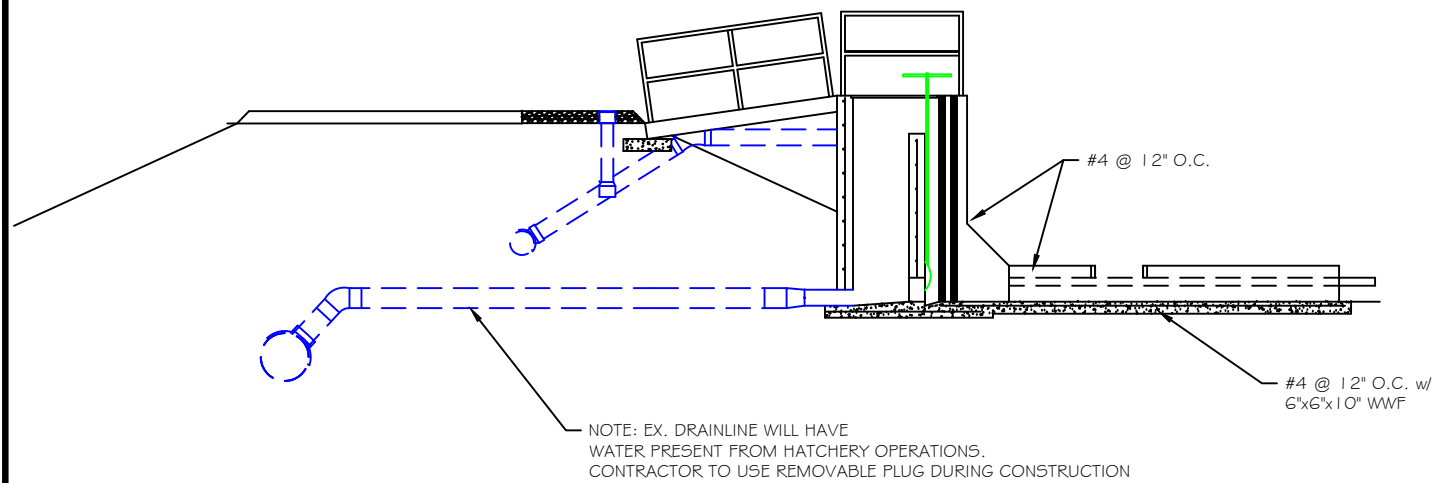
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**MONTANA FISH,
 WILDLIFE & PARKS**
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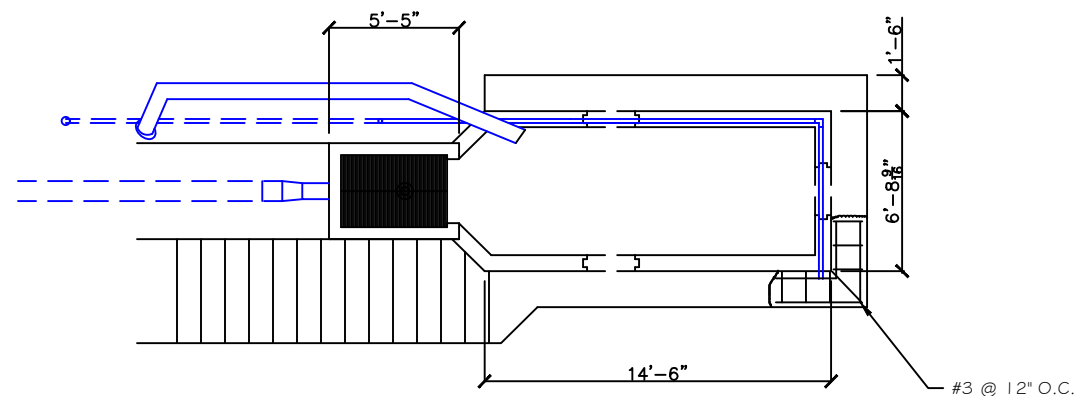
Lower & Upper Reservoirs
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair

SHEET: 6 of 14



NOTE: EX. DRAINLINE WILL HAVE WATER PRESENT FROM HATCHERY OPERATIONS. CONTRACTOR TO USE REMOVABLE PLUG DURING CONSTRUCTION

EXISTING OLD KETTLE SECTION VIEW

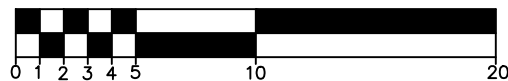


EXISTING OLD KETTLE PLAN VIEW

DEMOLITION NOTES:

1. SCOPE OF WORK TO INCLUDE THE REMOVAL OF EXISTING OLD STYLE KETTLE; COMPLETE WITH BASIN, TOWER, CONCRETE STEPS, WALK WAY, GRATING, RAILING AND SLUICE GATE ASSEMBLY. ALL ALUMINUM WALKWAYS AND RAILINGS AS WELL AS GATES, VALVES, AND GRATING TO OWNER FOR SALVAGE.
2. 2" PVC LINE TO BE REMOVED BACK TO STREET VALVE.
3. 8" SUPPLY LINE REMOVED BACK TO ACCOMMODATE NEW CONNECTION.
4. 10" DRAIN TO BE REMOVED JUST PAST TRANSITION.

APPROX. SCALE: 1/8" = 1'



SIDE VIEW OF OLD KETTLE



FRONT VIEW OF OLD KETTLE

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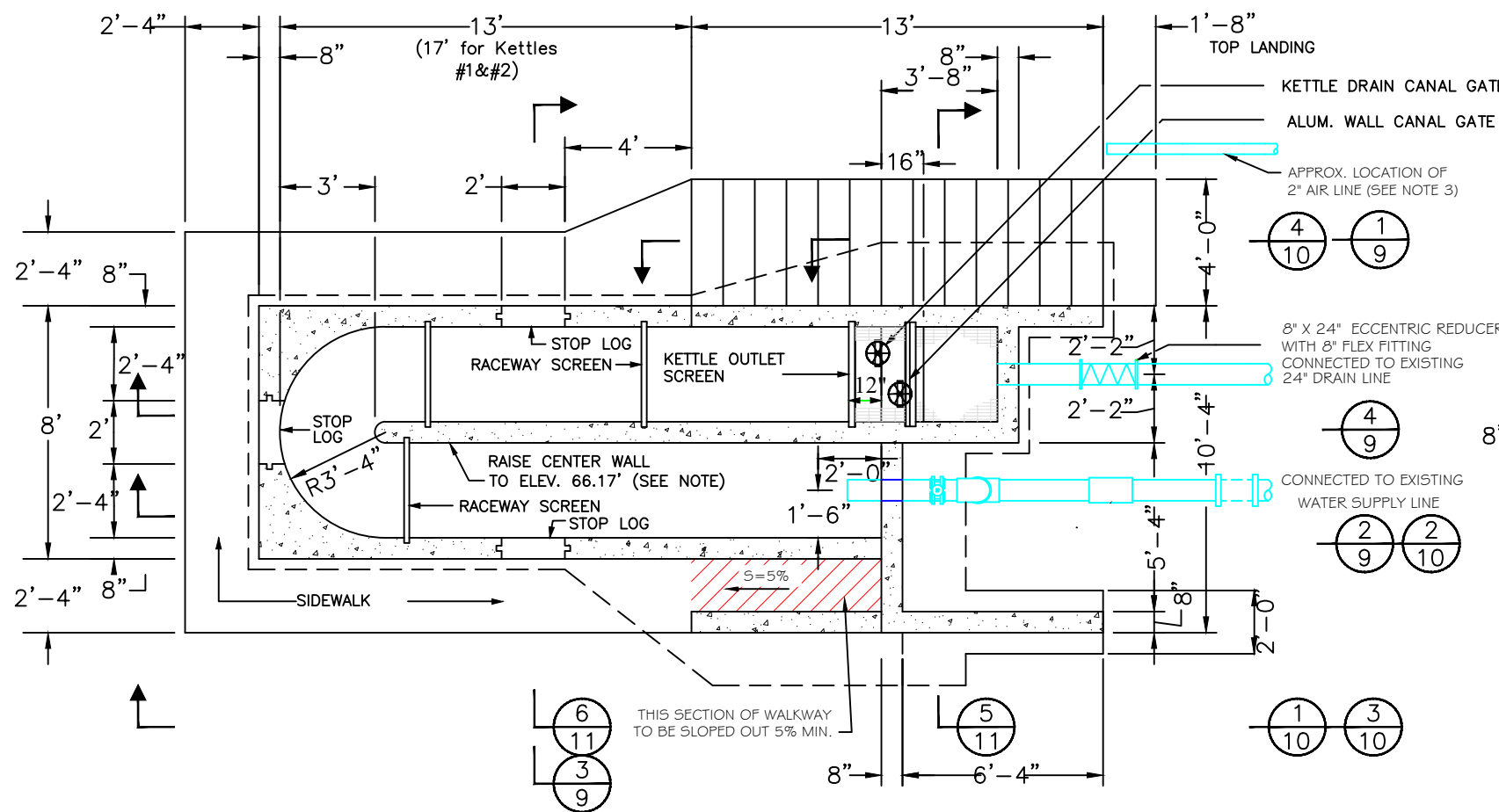


**MONTANA FISH,
 WILDLIFE & PARKS**

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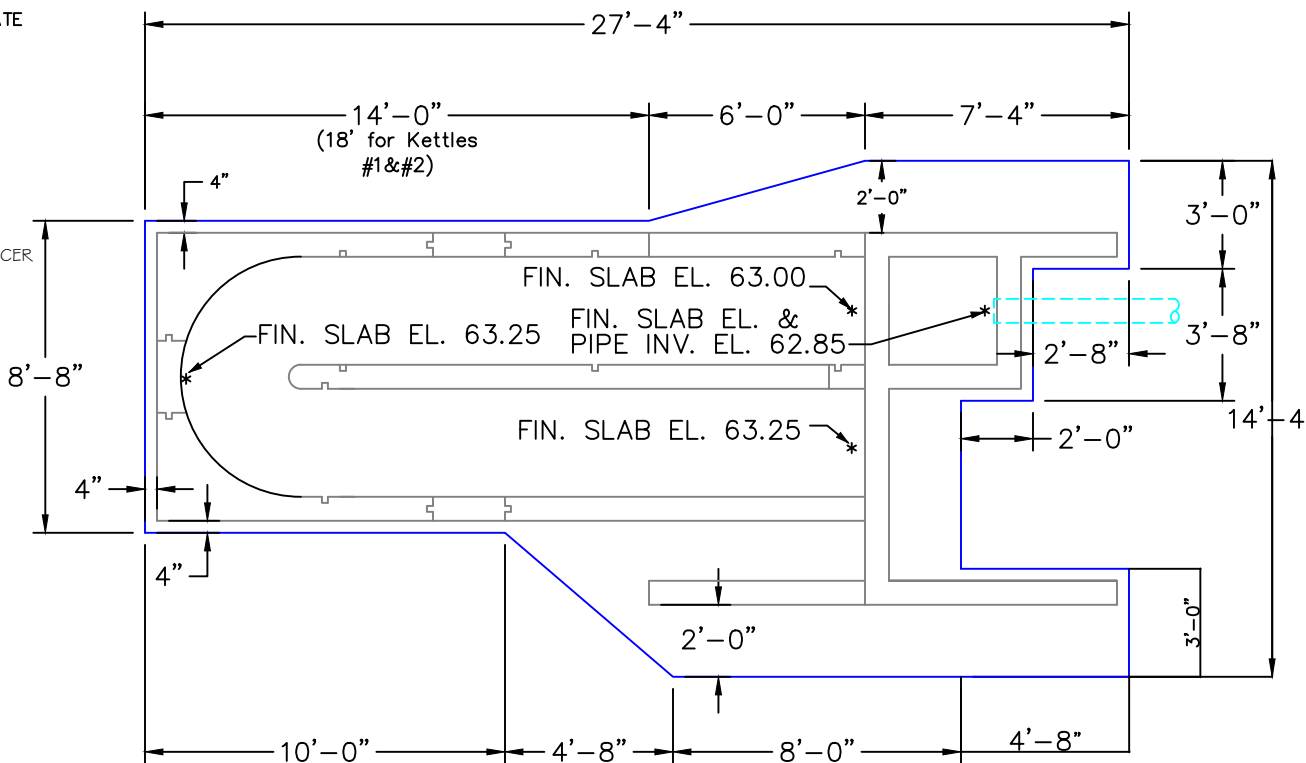
Existing Old Kettle Demolition Plan
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair

SHEET: 7 of 14



- NOTE: 1. THE CONCRETE CENTER WALL SHALL BE RAISED ON KETTLES 3-5, AND 16-45 (33 TOTAL). SEE DETAIL SHEET 14 FOR REINFORCING REQ'TS.
2. THE CORNER OF SIDEWALK LOCATED NEAR THE WINGWALL SHALL BE SLOPED OUTWARDS AT MIN. 5%, ONLY IN THIS LOCATION OF "DEAD-SPACE".
3. SOME KETTLES HAVE A 2-INCH SCH40 PVC AIRLINE PRESENT ADJACENT TO THE KETTLE w/A 2-FT± BURIAL DEPTH. CONTRACTOR TO PROTECT AIRLINE DURING CONSTRUCTION, AND MAY TEMPORARILY CUT & CAP, THEN RE-COUPLE PIPE & EXTEND AFTER KETTLE CONSTRUCTION. A PRE-MANUFACTURED LINER PIPE BOOT SHALL BE INSTALLED.
4. THE LENGTH OF KETTLES IN PONDS 1 & 2 SHALL BE INCREASED BY 4 FEET LONGER THAN THIS DETAIL.

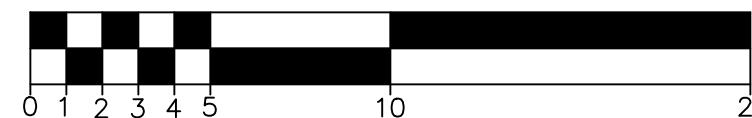
KETTLE WALL PLAN



NOTE: 1. THE LENGTH OF KETTLES IN PONDS 1 & 2 WILL BE 4 FEET LONGER THAN THIS DETAIL, CONTRACTOR WILL BE REQUIRED TO ADJUST DETAIL AS NECESSARY.

KETTLE SLAB PLAN

APPROX. SCALE: $\frac{3}{16}'' = 1'$



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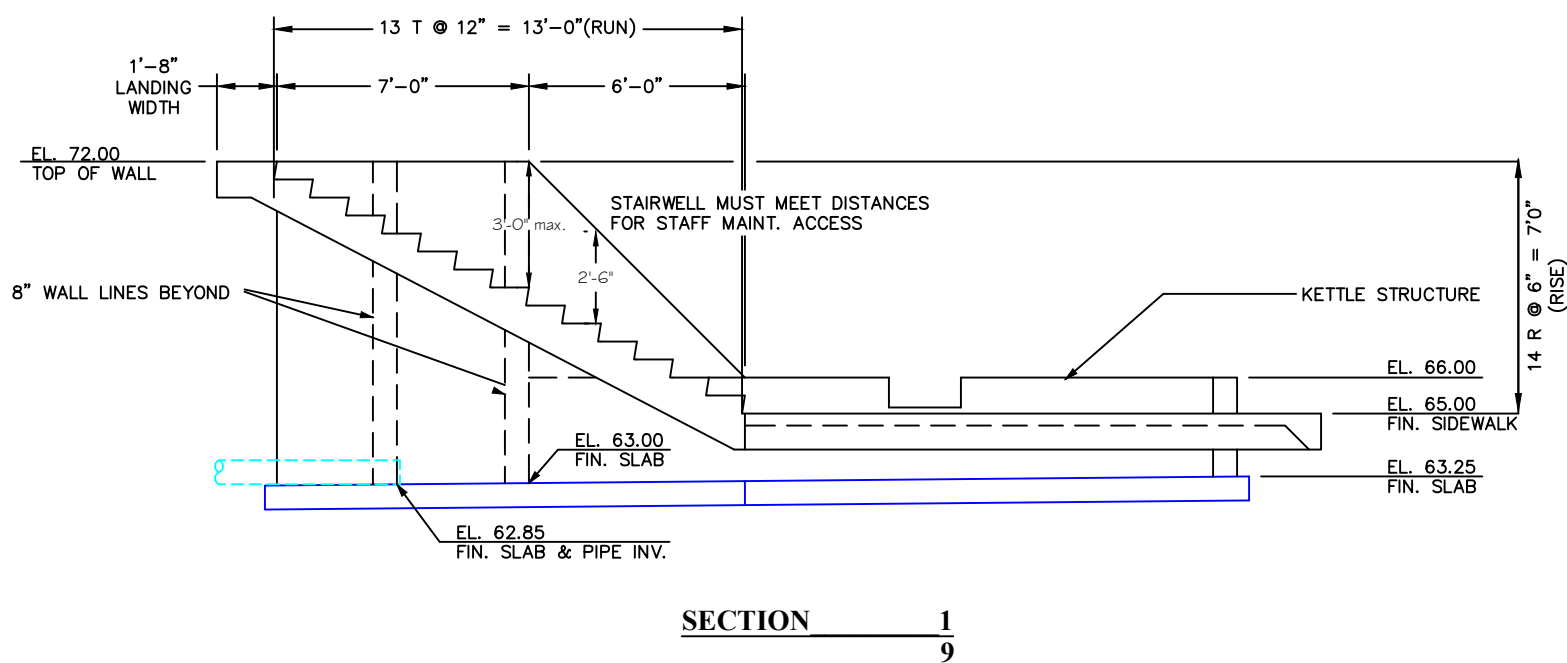


**MONTANA FISH,
 WILDLIFE & PARKS**

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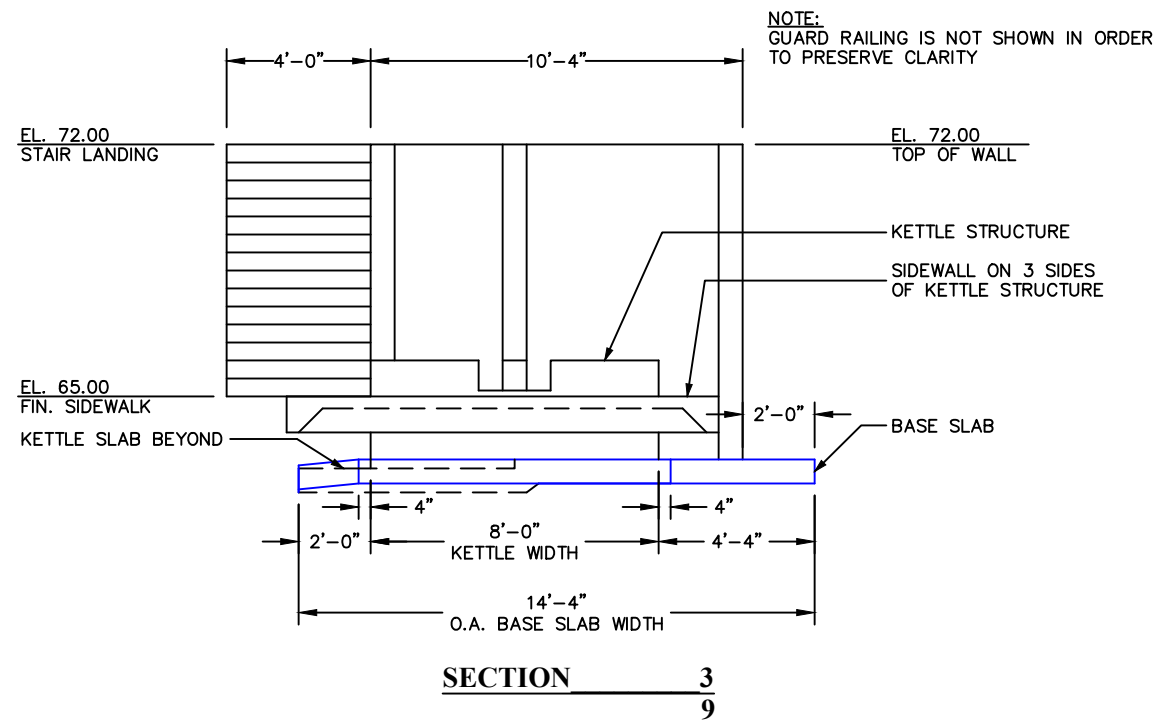
Kettle Wall & Slab Plan
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair

SHEET: 8 of 14

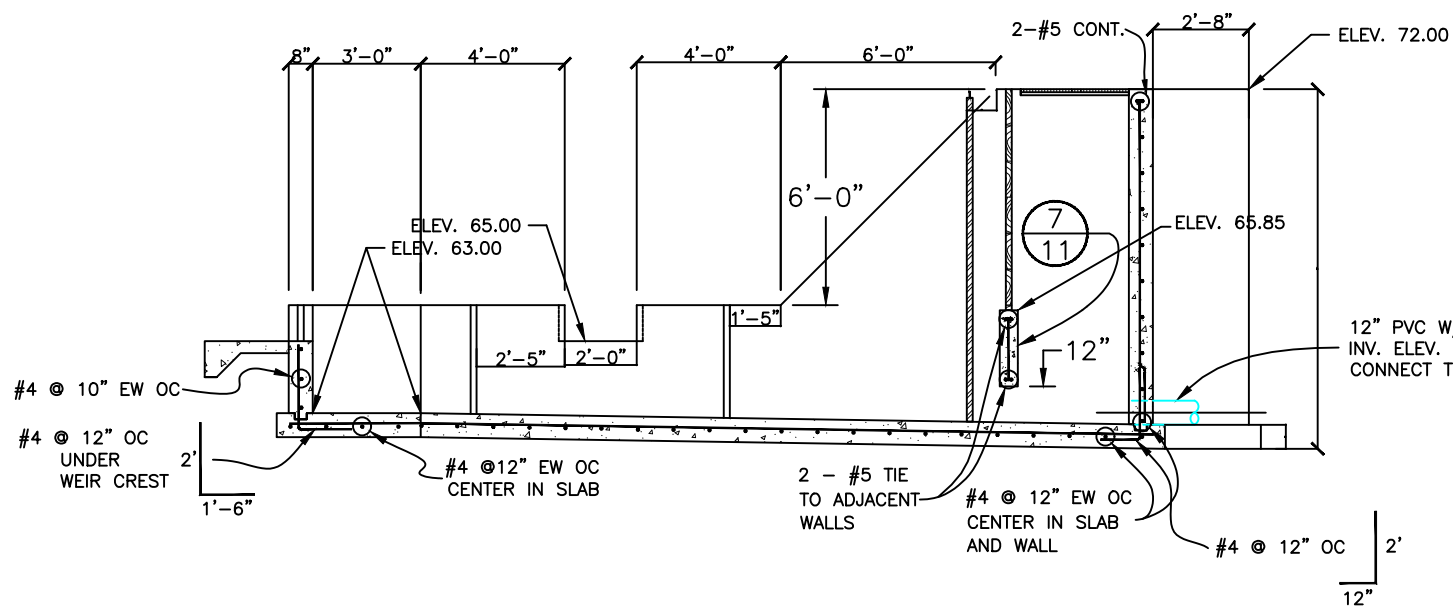


SECTION 1
9

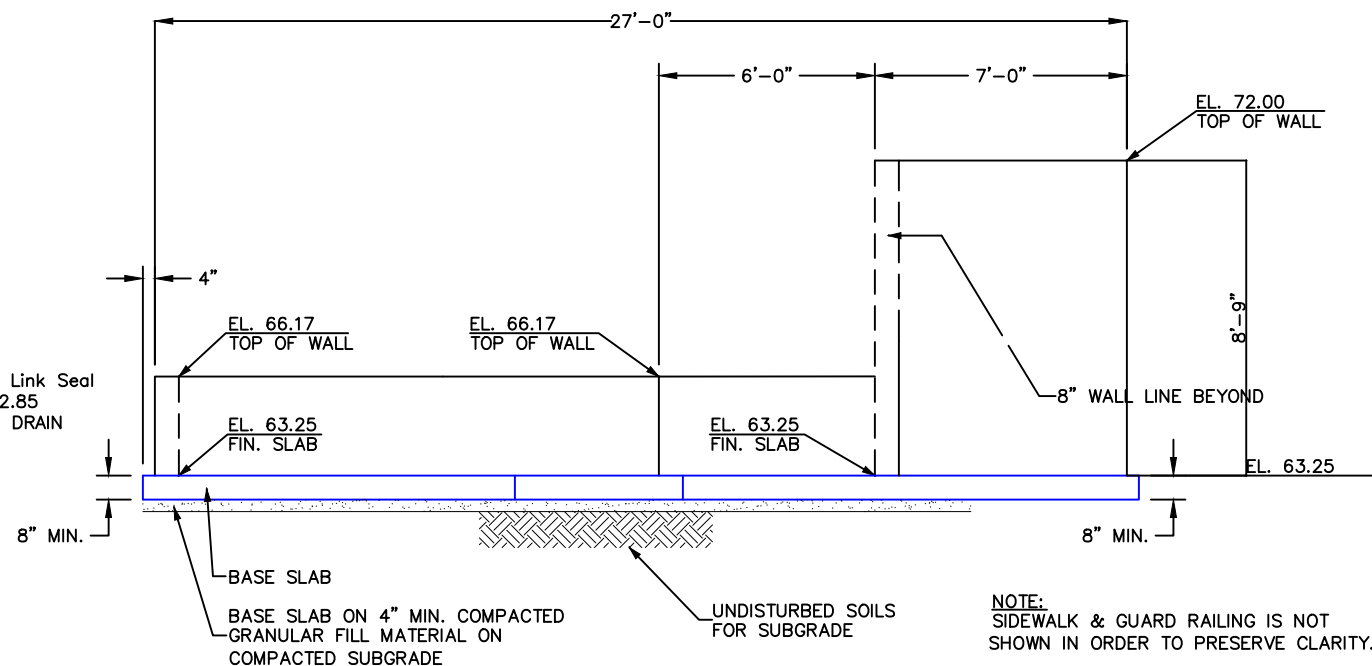
NOTE: 1. THE LENGTH OF KETTLES IN PONDS 1 & 2 WILL BE 4 FEET LONGER THAN THIS DETAIL, CONTRACTOR WILL BE REQUIRED TO ADJUST DETAIL AS NECESSARY.



SECTION 3
9

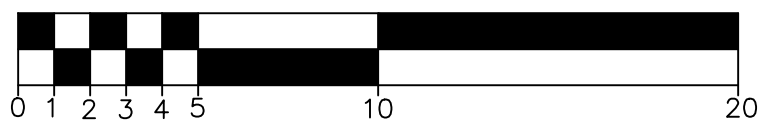


SECTION 2
9



SECTION 4
(CENTER WALL) 9

SCALE: 3/16" = 1'



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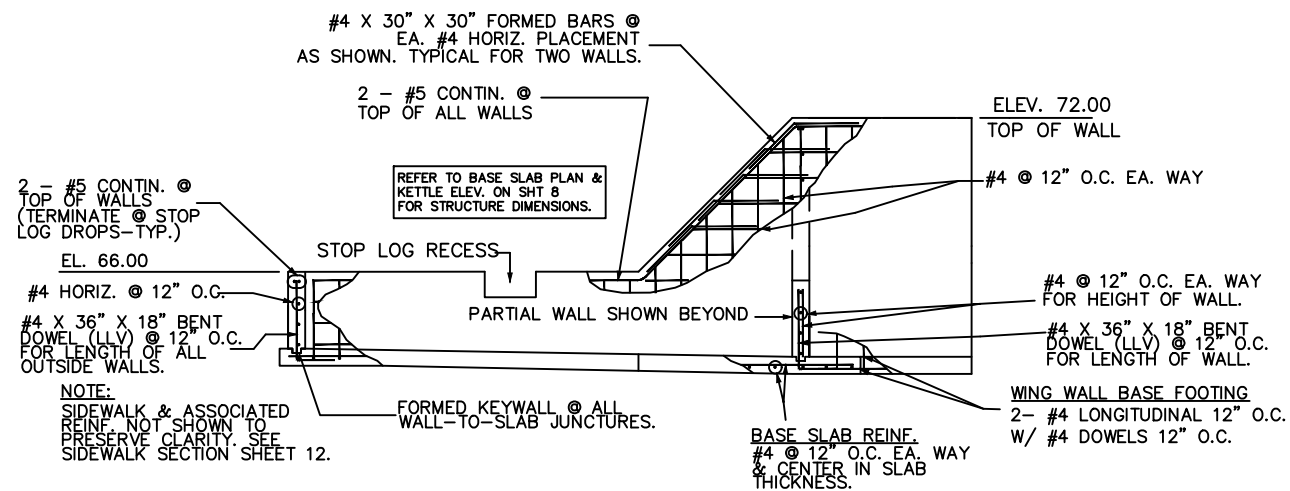
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**MONTANA FISH,
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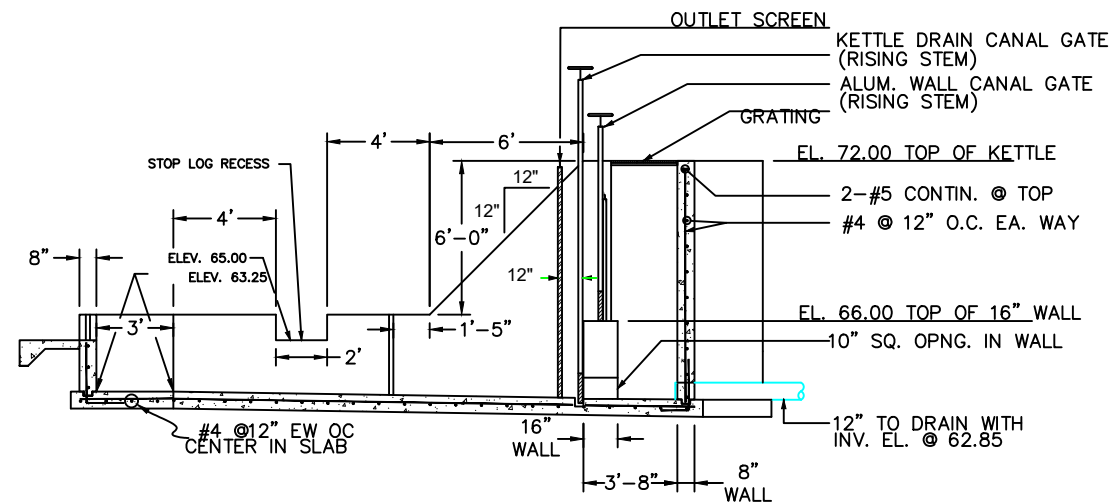
Kettle Sections
Miles City Fish Hatchery - Pond Kettle Replacement & Repair

SHEET: 9 of 14



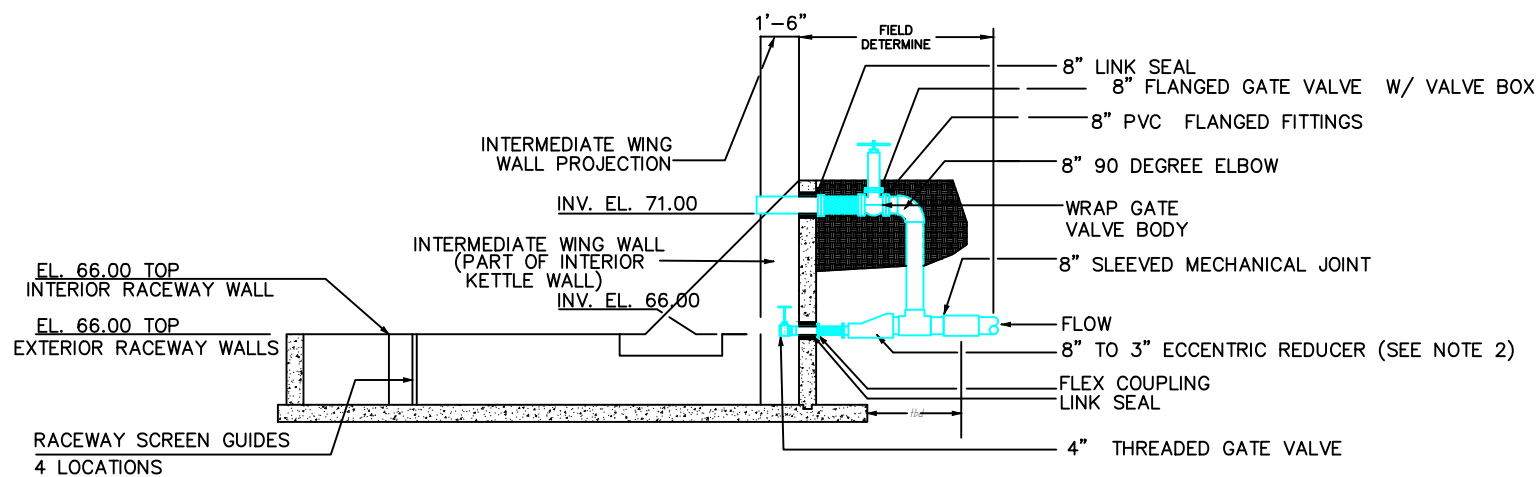
SECTION 1
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NOTE: 1. THE LENGTH OF KETTLES IN PONDS 1 & 2 WILL BE 4 FEET LONGER THAN THIS DETAIL, CONTRACTOR WILL BE REQUIRED TO ADJUST DETAIL AS NECESSARY.



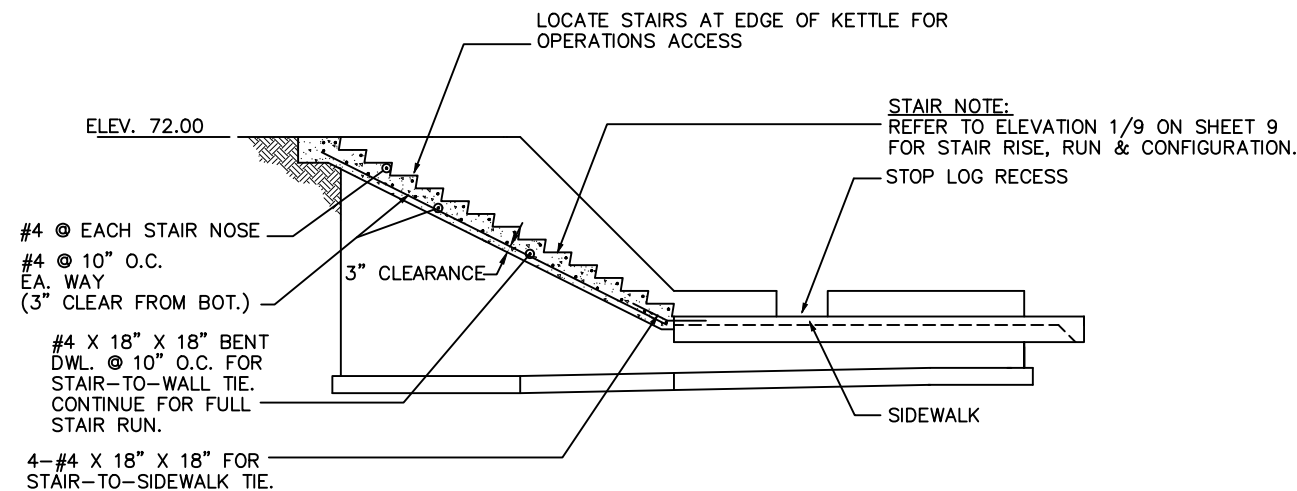
SECTION 3
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NOTE: 1. THE LENGTH OF KETTLES IN PONDS 1 & 2 WILL BE 4 FEET LONGER THAN THIS DETAIL, CONTRACTOR WILL BE REQUIRED TO ADJUST DETAIL AS NECESSARY.



SECTION 2
10

NOTE: 1. THE LENGTH OF KETTLES IN PONDS 1 & 2 WILL BE 4 FEET LONGER THAN THIS DETAIL, CONTRACTOR WILL BE REQUIRED TO ADJUST DETAIL AS NECESSARY.
2. PONDS 1 & 2 TO BE AN 8"x4" REDUCER.



SECTION 4
10

NOTE: 1. THE LENGTH OF KETTLES IN PONDS 1 & 2 WILL BE 4 FEET LONGER THAN THIS DETAIL, CONTRACTOR WILL BE REQUIRED TO ADJUST DETAIL AS NECESSARY.



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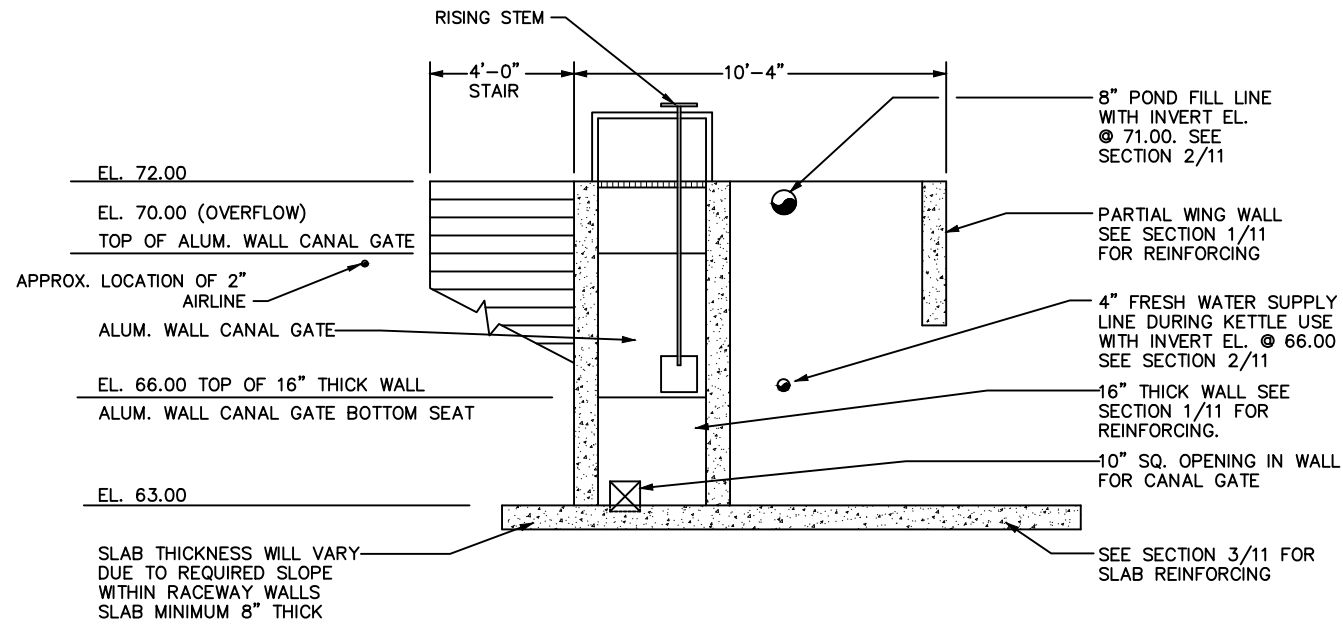


**MONTANA FISH,
WILDLIFE & PARKS**

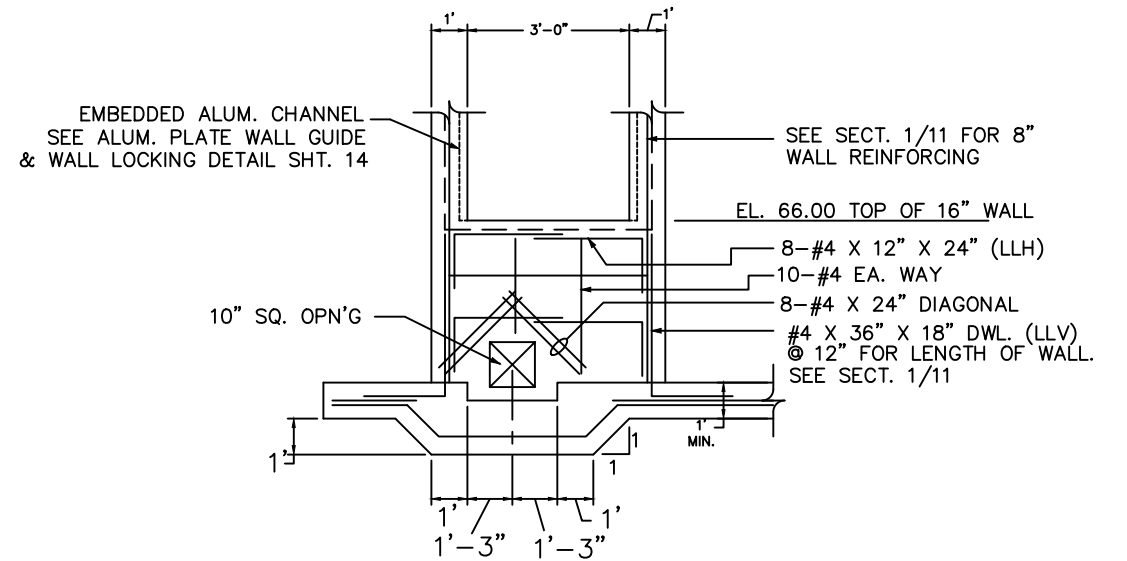
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Kettle Structural Details
Miles City Fish Hatchery - Pond Kettle Replacement & Repair

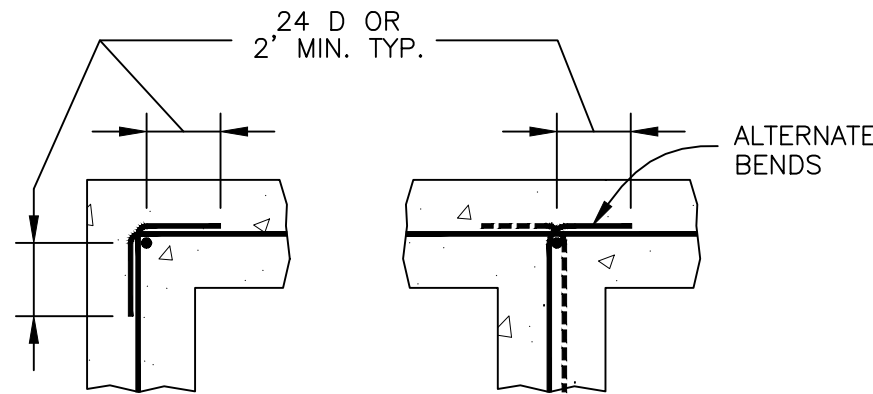
SHEET: 10
of 14



SECTION 5/11

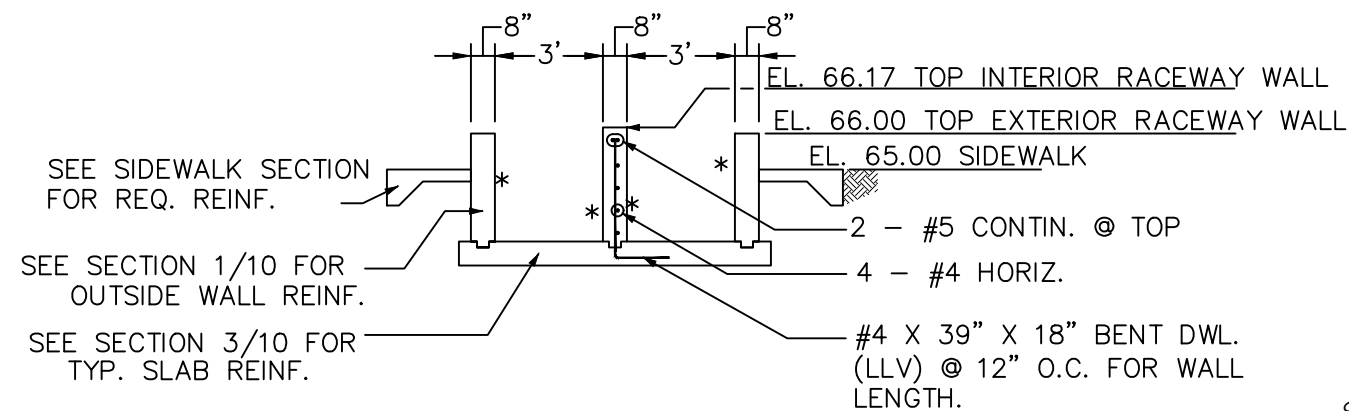


SECTION 7/11

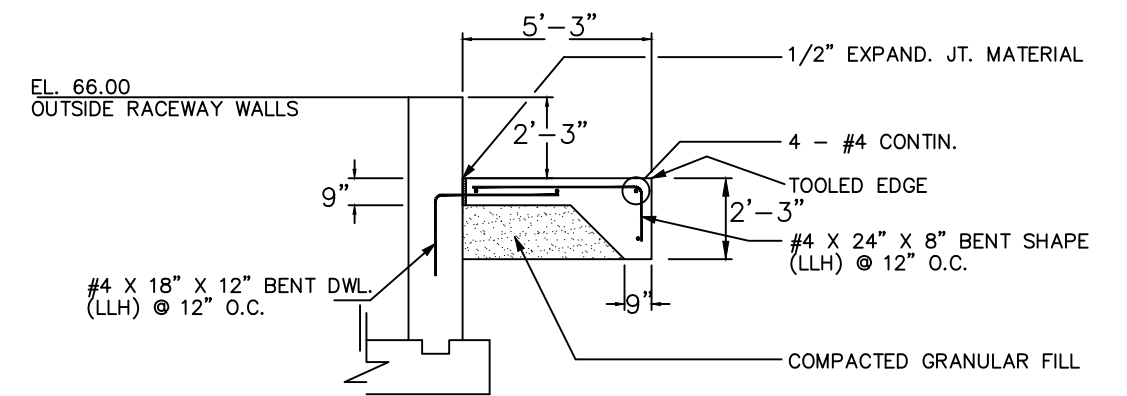


**WALL CORNER DETAILS
N.T.S.**

* **INTERIOR RACEWAY FINISH NOTE:**
HAND RUB USING CARBORANDUM STONE TO BREAK AND REMOVE ALL SHARP EDGES AND PROJECTIONS. RUBBER FLOAT ALL SURFACES FOR FINAL FINISH

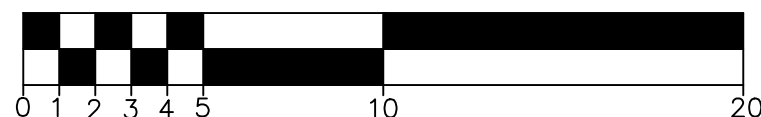


SECTION 6/11



**SIDEWALK SECTION
N.T.S.**

SCALE: $\frac{3}{16}'' = 1'$



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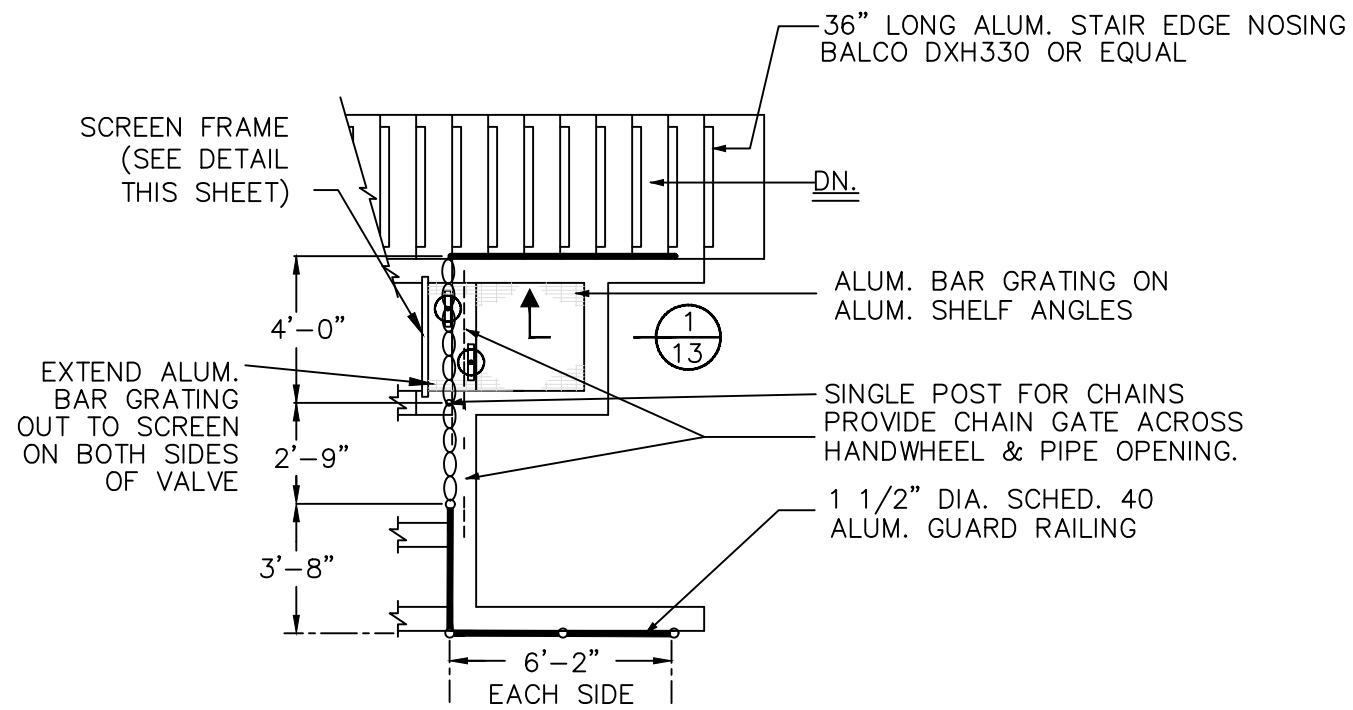


**MONTANA FISH,
WILDLIFE & PARKS**

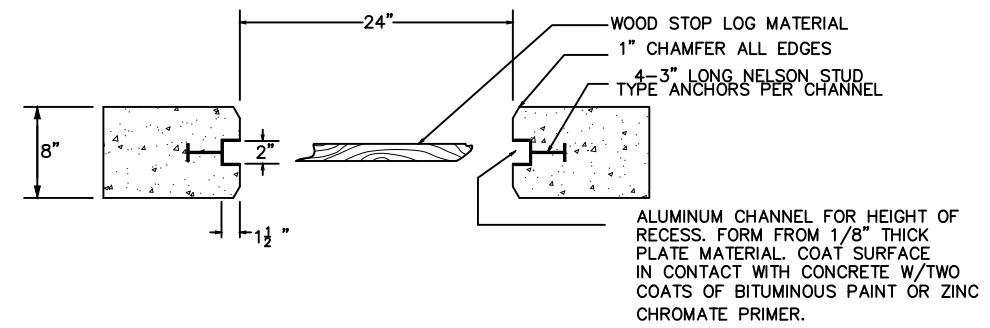
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Kettle Structural Details II
Miles City Fish Hatchery - Pond Kettle Replacement & Repair

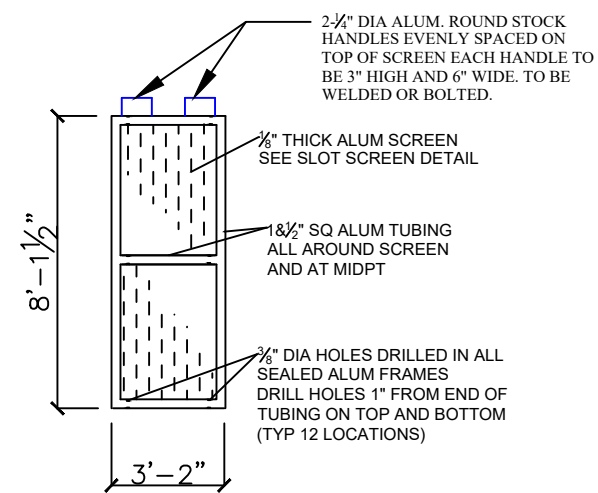
SHEET: 11 of 14



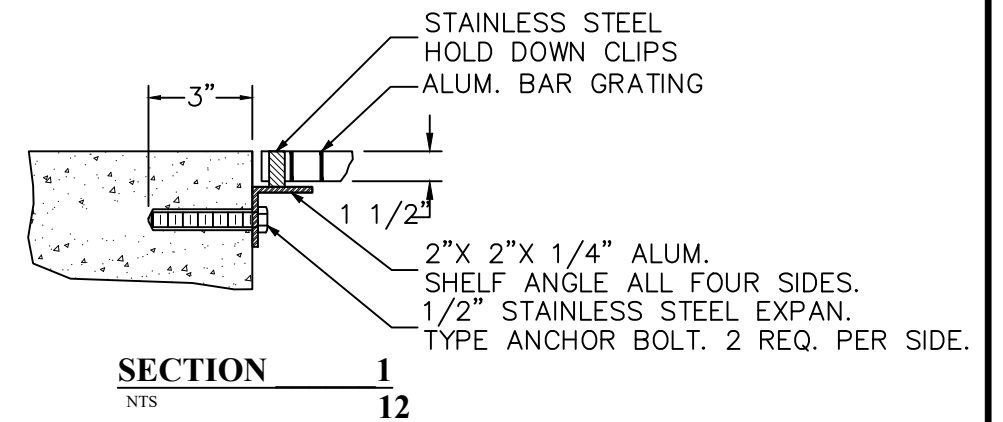
GUARD RAILING PLAN



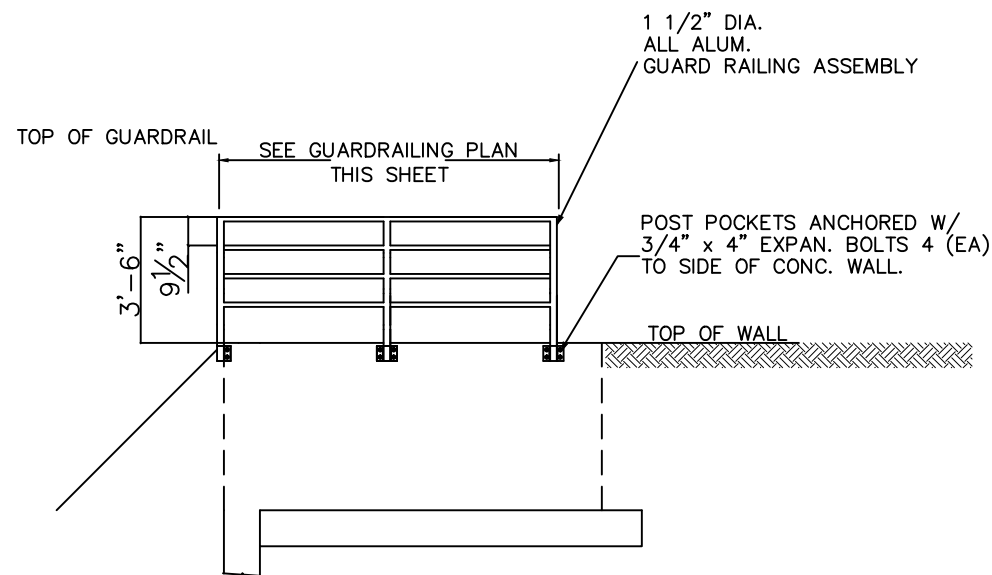
DAM BOARD DETAILS
NTS



SCREEN FRAME DETAIL

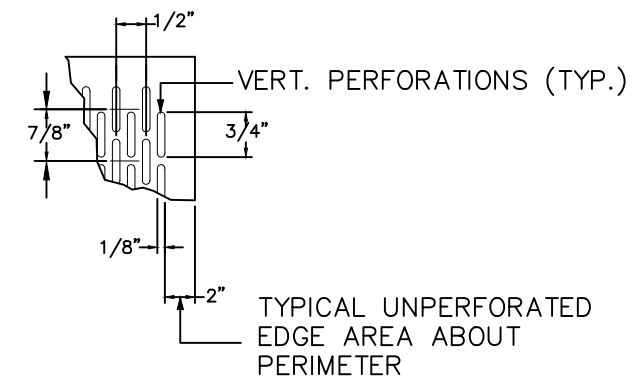


SECTION 1/12
NTS



RAILING DETAIL

NOTE: SCREENS SHALL HAVE 41% MIN. OPEN AREA.

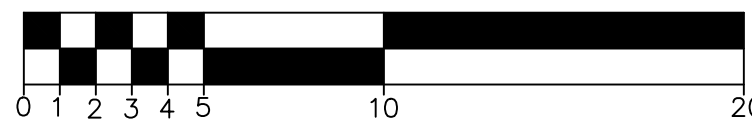


NOTES: 1. PERFORATIONS MUST BE ORIENTED VERTICALLY.
2. BOTH A COARSE AND FINE MESH SCREEN SHALL BE PROVIDED FOR THE 12 KETTLE REPLACEMENTS, CONSULT WITH OWNER PRIOR TO ORDERING.

SCREEN SLOT DETAIL
NTS

NOTE: CONTRACTOR ONLY RESPONSIBLE FOR PROVIDING THE FULL SIZE SCREEN AND THE ALUMINUM WALL, NOT THE SMALL RACEWAY SCREENS.

SCALE: $\frac{3}{16}'' = 1'$



P. Jagoda 12/17/21
DRAWN BY: DATE:
P. Jagoda 12/17/21
CHECKED BY: DATE:

REVISED BY: DATE:
APPROVED BY: DATE:

APPROVED BY: DATE:
APPROVED BY: DATE:

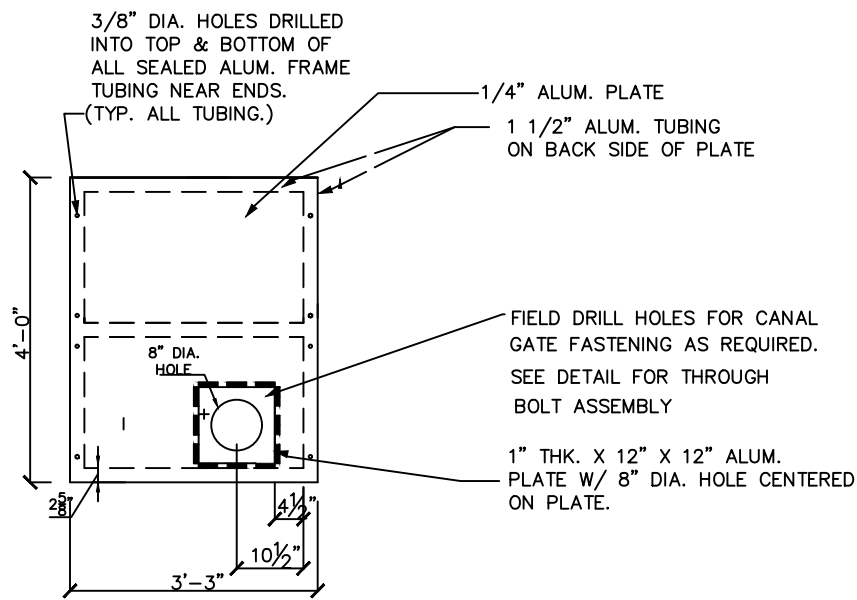


**MONTANA FISH,
WILDLIFE & PARKS**

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Kettle Screen & Railing Details
Miles City Fish Hatchery - Pond Kettle Replacement & Repair

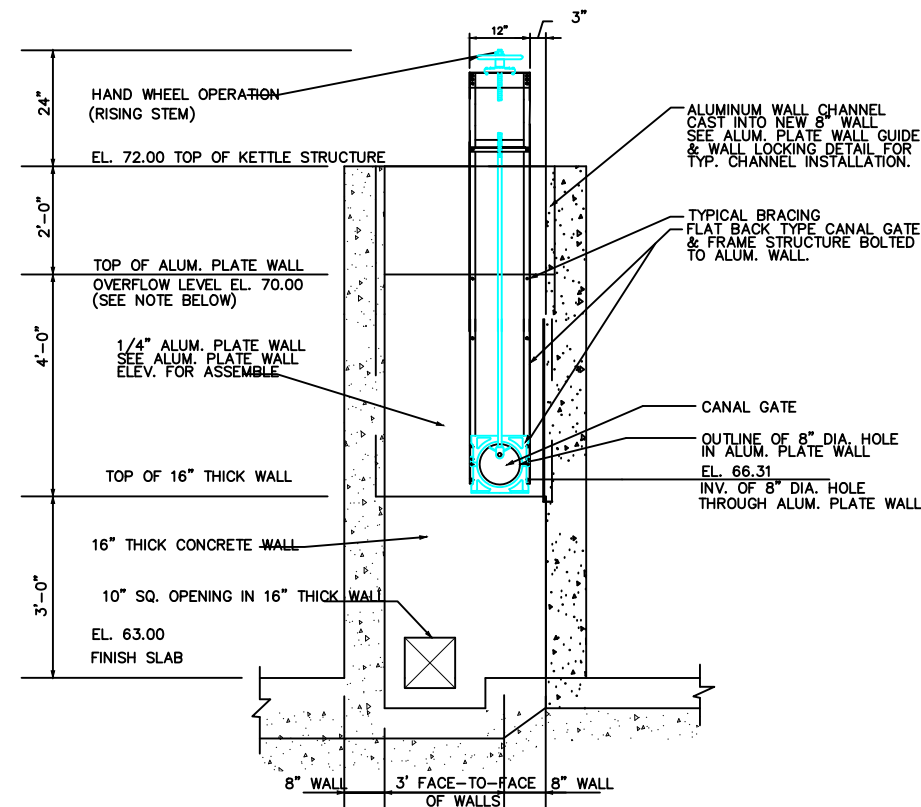
SHEET: 12
of 14



ALUMINUM WALL PLATE

N.T.S.

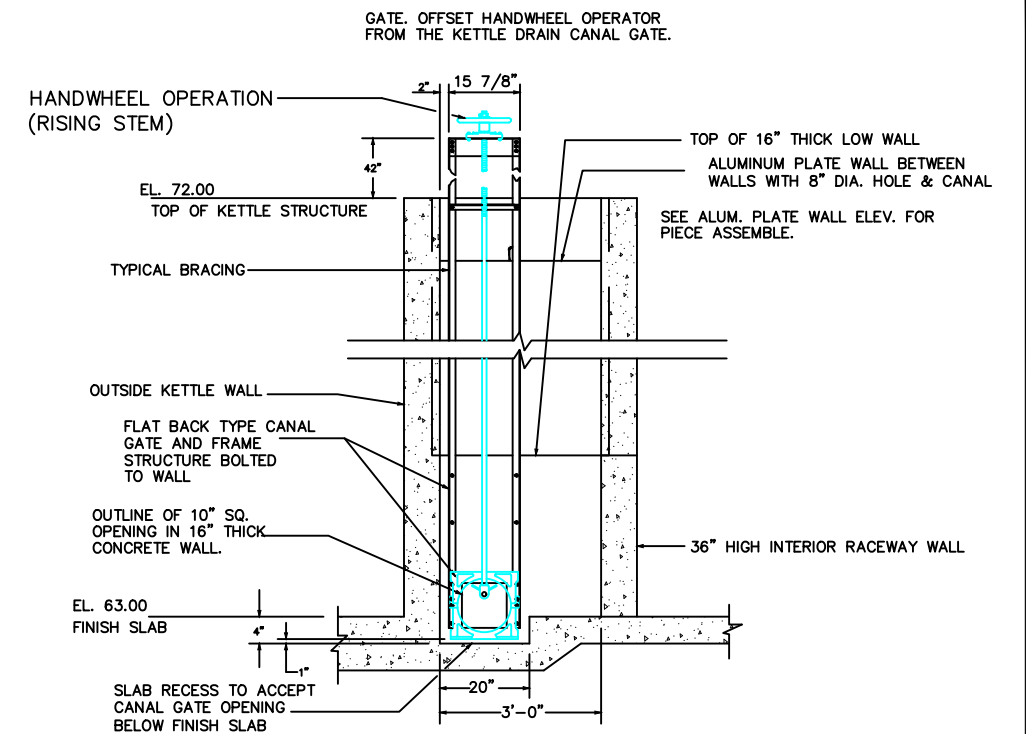
NOTE: THE ALUMINUM WALL PLATE SHALL BE SEALED WATERTIGHT AFTER INSTALLATION WITH SIKAFLEX OR APPROVED EQUAL.



ALUMINUM WALL PLATE GATE ELEVATION

N.T.S.

NOTE: CONTRACTOR TO CONFIRM HEIGHT OF ALUMINUM WALL PLATE WITH OWNER BEFORE ORDERING. ONLY ONE FOOT OF FREEBOARD IS REQ'D. DEPENDING ON POND LOCATION.



LOWER DRAIN GATE ELEVATION

N.T.S.

NOTE: ALL PLATE PENETRATIONS SHALL BE CAULK SEALED TO PROVIDE WATER TIGHT CONNECTIONS.

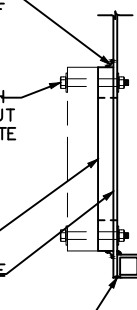
3/8" THK. ALUM. GUSSET WELDED TO 1" THK. PLATE & 1/4" THK. PLATE. WELD ENTIRE PERIMETER OF 1" THK. ALUM. PLATE TO 1/4" THK. PLATE BETWEEN GUSSETS.

STAINLESS STEEL THROUGH BOLT, LOCK WASHER & NUT ASSEMBLY FOR CANAL GATE FASTENING.

1" THK. ALUM. PLATE

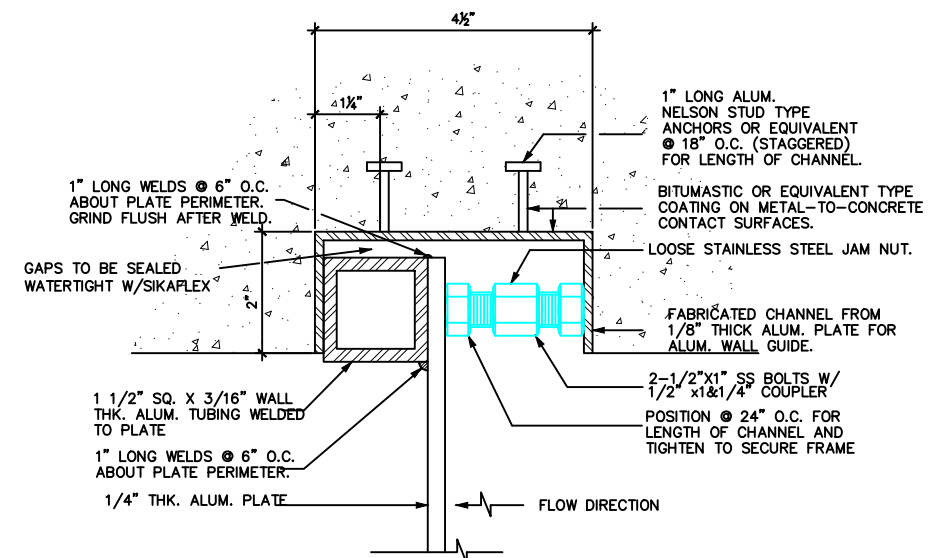
1/4" THK. ALUM. PLATE

1 1/2" ALUM. TUBING WELDED TO 1/4" THK. PLATE @ 6" O.C. FOR ENTIRE PERIMETER OF PLATE. (BOTH SIDES) GRIND EXTERIOR WELDS FLUSH.



SLUICE GATE BACKING DETAIL

N.T.S.



ALUMINUM PLATE WALL GUIDE

N.T.S.

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REVISED BY: DATE:
APPROVED BY: DATE:

APPROVED BY: DATE:
APPROVED BY: DATE:



MONTANA FISH, WILDLIFE & PARKS

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Aluminum Slide Gate Details
Miles City Fish Hatchery - Pond Kettle Replacement & Repair

SHEET: 13 of 14



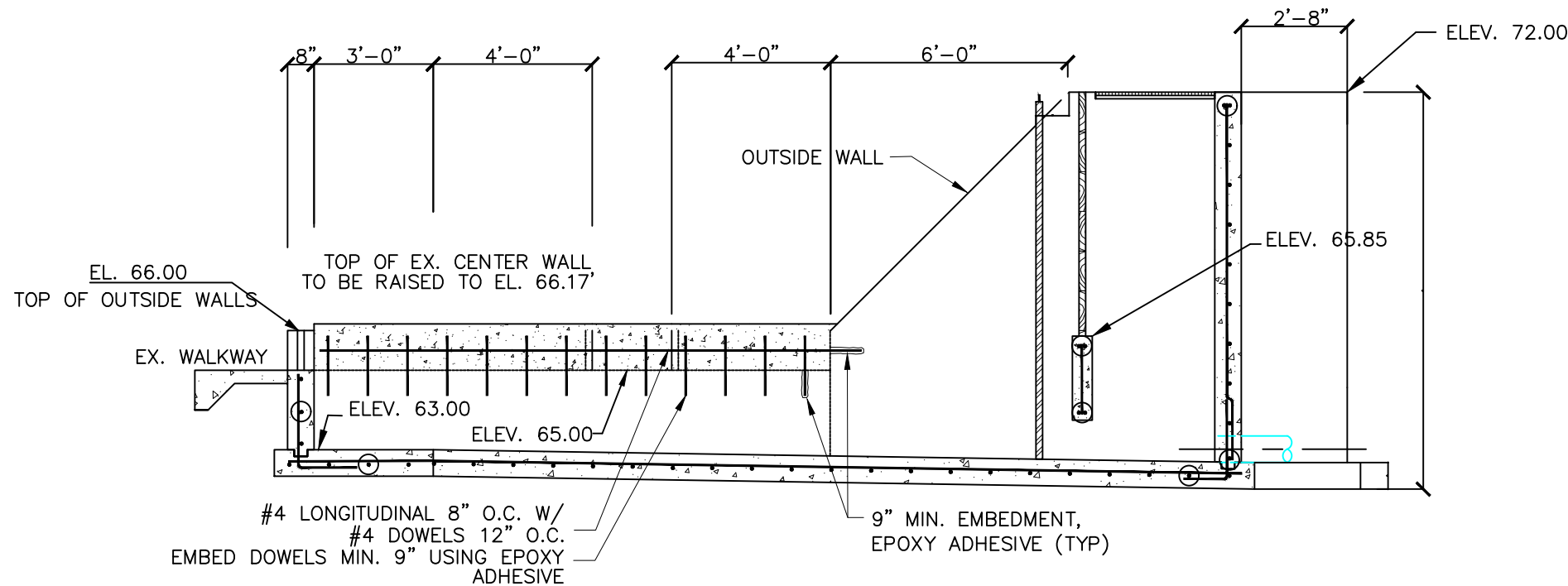
Ex. Kettle Center Wall (to be raised)



Ex. Kettle Center Wall (to be raised)



Ex. Kettle Center Wall at Proposed Height



NOTE: THIS SHEET ILLUSTRATES THE WORK FOR BID ADDITIVE ALTERNATE #2 "RAISE CONCRETE CENTER WALL IN EXISTING KETTLES".

- NOTE: 1. CENTER WALL HEIGHT SHALL BE EXTENDED 2-INCHES ABOVE THE OUTSIDE WALL ELEVATION.
- 2. GROOVES FOR STOP LOGS SHALL BE CONTINUOUS UP THROUGH NEW CONCRETE IN CENTER WALL.
- 3. PROVIDE MIN. 2" CLEAR COVER ON ALL REBAR.
- 4. ALL REBAR TO BE ASTM A615 GRADE 60.
- 5. CONCRETE JOINTS TO BE SEALED WATERTIGHT WITH WATERPROOF SEALANT SIKADUR COMBIFLEX SG SYSTEM AND SIKA GROUT EPOXY MORTAR (OR APPROVED EQUAL).

CENTER WALL EXTENSION DETAIL

N.T.S.

P. Jagoda 12/17/21
 DRAWN BY: DATE:
 P. Jagoda 12/17/21
 CHECKED BY: DATE:

REVISED BY: DATE:
 APPROVED BY: DATE:

APPROVED BY: DATE:
 APPROVED BY: DATE:



**MONTANA FISH,
 WILDLIFE & PARKS**

Kettle Center Wall Extension Details
 Miles City Fish Hatchery - Pond Kettle Replacement & Repair

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