

Information for File #2013-01627-WAB

Applicant: U.S. Department of Agriculture Forest Service (USFS)
Corps Contact: William Baer
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Phone: (651) 290-5338
Primary County: Beltrami
Location S/T/R: Section 21, T146N, R30W
Information Complete On: April 6, 2015
Posting Expires On: June 9, 2015
Authorization Type: LOP-10-R (CWA 404, RHA Section 10)

This application is being reviewed in accordance with the practices for documenting Corps jurisdiction under Sections 9 & 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act identified in Regulatory Guidance Letter 07-01. We have made a preliminary determination that the aquatic resources that would be impacted by the proposed project are regulated by the Corps of Engineers under Section 404 of the Clean Water Act. Our jurisdictional review and final jurisdictional determination could result in modifications to the scope of the project's regulated waterbody/wetland impacts and compensatory mitigation requirements identified above. An approved jurisdictional determination will be made prior to reaching a permit decision, and will be posted on the St. Paul District web page at <http://www.mvp.usace.army.mil/>.

Project Purpose: The project involves the replacement of Knutson Dam. According to the USFS Environmental Assessment document, the purpose of the project is to eliminate the threat of structural failure of the existing dam; to improve the outlet structures ability to achieve target lake levels listed in the Reservoir Operating Plan Evaluation (ROPE); to allow for passage of aquatic organisms from the Mississippi River into the Cass Lake chain; to improve public safety at the site by eliminating the concentrated high velocity flow conditions that exist at the gate openings of the existing structure; to maintain or enhance traditional Tribal resources and community uses; and, to address the watershed impacts of Knutson Dam on flow characteristics, aquatic habitat fragmentation, channel shape and function, and soil erosion. The existing structure was inspected in 2000 and 2011, found to be deficient in both condition and design, and is in need of a complete overhaul or replacement. Currently, the dam fails to match flow intensity of the basin and management of desired lake levels, fails to allow movement of aquatic organisms during most flow levels, and has significant public safety issues related to flow concentration at its spillway.

Project Description: The project involves construction of a new water control structure at the existing dam location. The new structure would consist of rock-arch rapids with multi-level fixed crest rock weirs with an appearance of natural rock rapids. The new structure would be built upstream of the existing dam and four arching rock weirs would establish the rapids. The plans include a 250-foot long arching crest that would extend 125 feet upstream to downstream, and 200 feet wide. The aboveground portions of the existing dam would be removed following the construction of the rock arch rapids. Other improvements include stabilizing the south side of the river channel immediately downstream of the existing dam by replacing the failing steel sheet-pile wall with a rock riprap revetment and the partial filling approximately 0.11 acres of the lateral scour hole downstream of the dam. Also included is the placement of large boulders intended to provide access for fishing and wildlife viewing and the construction of a new accessible fishing pier downstream of the existing dam. Water management, during and after construction, would be accomplished by directing water through a reconstructed bypass channel to the south. Reconstruction of the bypass channel includes the placement of two 32-foot long, 12' by 4' box culverts with outfall shields. The channel would be excavated and the banks armored with rock riprap for a length of approximately 325 feet at the culvert location. The work area will be temporarily and partially dewatered by the installation of portable coffer dams upstream and downstream of the work area.

Name, Area and Types of waters (including wetlands) subject to loss: Construction of the rapids would involve partially filling 0.63 acres of the lake upstream of the current dam. This fill will not result in a loss of waters, but will change the depth and flow. Reconstruction of the bypass channel would impact, but not eliminate, 3,595 square feet of wetland present in the bypass channel. The fill area along the south bank of the river will eliminate approximately 0.21 acres of stream channel, but the work involves the repair of an eroded bank damaged by lateral scour.

Alternatives considered: Three alternatives were considered. The USFS considered the construction of a new dam. This alternative was rejected because it would not allow aquatic organism passage, was considered too costly with future management and repair/inspection costs, and would have no partner cost sharing. Repairing the existing dam was considered. This alternative would be effective for 30-40 years before further repair work would be needed. This alternative would not meet all aspects of the purpose and need, presenting continued aquatic organism passage and public safety concerns. The third alternative would involve removal of the dam structure with no further improvements to the outflow site. This alternative would also fail to meet the purpose and need of the project.

Compensatory Mitigation: The applicant has not proposed compensatory mitigation for the proposed aquatic resource impacts. The project involves the partial restoration of previously impacted and degraded aquatic habitat as a result of the existing dam structure.

Drawings: 2013-01627-WAB 1 of 22 through 22 of 22. See attached.



US Department of Agriculture
Forest Service



Region Nine
FOREST DEVELOPMENT PROJECT
**KNUTSON DAM
REPLACEMENT**

Chippewa National Forest
Beltrami County
Minnesota

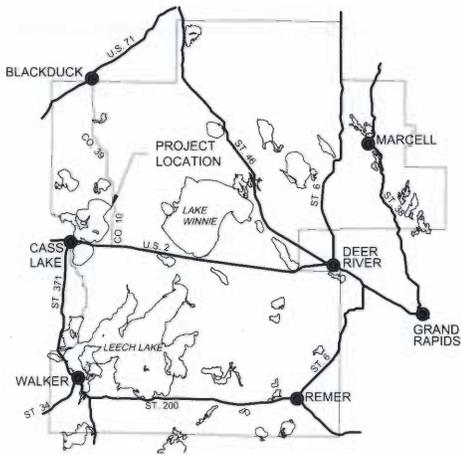
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04	OVERALL SITE PLAN
05	EXISTING DAM PLAN
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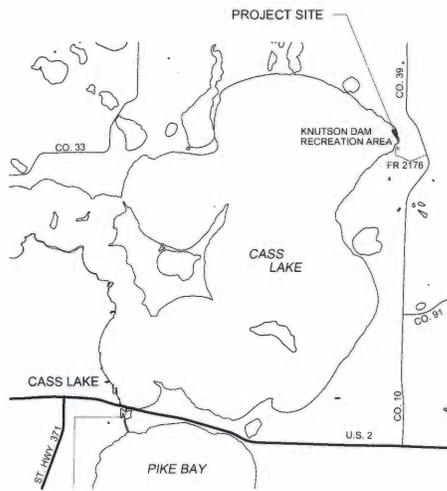


BLACKDUCK DISTRICT RANGER	DATE
FOREST HYDROLOGIST	DATE
FOREST ENGINEER	DATE
FOREST SUPERVISOR	DATE
REGIONAL ENGINEER	DATE

CH 10478



GENERAL LOCATION MAP
CHIPPEWA NATIONAL FOREST



PROJECT SITE
T146N - R30W - SEC21

NOTES:

1. CONSTRUCTION VEHICLES AND EQUIPMENT ARE NOT ALLOWED ON THE PRIVATE PROPERTY ON THE NORTH SIDE OF THE DAM UNLESS APPROVED IN WRITING BY THE C.O. CONSTRUCTION ACCESS SHALL BE FROM THE FOREST SERVICE OWNED PROPERTY ON THE SOUTH SIDE OF THE DAM.
2. ORIGINAL DAM CONSTRUCTION PLANS AND PHOTOS ARE AVAILABLE FOR REVIEW AT THE FOREST SERVICE SUPERVISOR'S OFFICE IN CASS LAKE, MN (PHONE: 218-335-8600).
3. TREES TO BE REMOVED SHALL BE MARKED BY THE GOVERNMENT. CONTRACTOR SHALL PROTECT ALL OTHER TREES FROM DAMAGE.
4. THE EXISTING OPEN SPACE ON THE SOUTH SIDE OF THE DAM MAY BE USED FOR MATERIAL STOCKPILING AND EQUIPMENT STORAGE. ANY DAMAGE TO THE PAVED TRAIL AND PARKING LOT SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR.
5. THE FOREST SERVICE WILL OPEN ALL SIX GATES OF THE EXISTING DAM IN EARLY AUGUST TO DRAW THE CASS LAKE WATER LEVEL DOWN TO THE EXTENT POSSIBLE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OTHER WATER HANDLING AND DEWATERING DURING CONSTRUCTION.
6. THE POOL ELEVATION OF CASS LAKE SHALL REMAIN AT 1300.25 OR ABOVE DURING CONSTRUCTION.
7. A MINIMUM DISCHARGE OF 40 CUBIC FEET PER SECOND FROM CASS LAKE TO THE MISSISSIPPI RIVER BELOW SHALL BE MAINTAINED DURING CONSTRUCTION.
8. SALVAGE AND RE-USE ON SITE ROCK RIPRAP AND BOULDERS TO THE GREATEST EXTENT POSSIBLE.
9. REMOVE THE EXISTING STEEL SHEET PILING, ANY TRASH AND DEBRIS FROM THE SOUTH RIVER BANK PRIOR TO FILL PLACEMENT.
10. ALL EXCAVATION AND DISPOSAL OF EXCAVATED MATERIAL SHALL BE PERFORMED IN ACCORDANCE WITH MN POLLUTION CONTROL AGENCY PUBLICATION WQ-GEN2-02, "BEST MANAGEMENT PRACTICES FOR THE MANAGEMENT OF DREDGED MATERIALS."
11. LEGALLY DISPOSE OF ALL EXCESS SOIL MATERIAL AND CONSTRUCTION DEBRIS OFFSITE.
12. THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION.
13. FISHING PIER SHALL BE A "T" SHAPED FLOATING MODEL SUPPLIED BY MINNCOR INDUSTRIES (651-361-7500) OR AN EQUIVALENT PRODUCT APPROVED BY THE C.O. IT SHALL MEET ALL APPLICABLE MN DEPARTMENT OF NATURAL RESOURCES SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

QUANTITIES

RIPRAP AT BYPASS BOX CULVERT	35 CY	RIPRAP AT BYPASS CHANNEL	490 CY
CUT AT RAPIDS *	2605 CY	EXCAVATION AT BYPASS CHANNEL	1375 CY
ROCK FILL AT RAPIDS	3100 CY	BOX CULVERT BEDDING MATERIAL	71 CY
WEIR BOULDERS AT RAPIDS	±300 EA	STEEL SHEET PILING REMOVAL	440 LIN. FT.
FILL NEAR FISHING PIER	1600 CY		
RIPRAP NEAR FISHING PIER	208 CY		
ROCK AVAILABLE IN STOCKPILE	870 CY		

* MATERIAL EXCAVATED AT RAPIDS AREA MAY BE USED AS FILL NEAR THE FISHING PIER IF MATERIAL IS SUITABLE



NOTES

Verify all dimensions and locations on the job. Report all discrepancies to management resources.
DO NOT SCALE DRAWINGS

IMPORTANT NOTE
All necessary easements, permits and rights of way for the project shall be secured by the owner or sponsor before construction work is commenced unless otherwise specified.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
1-800-252-1166



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No.	Revision/Issue	Date

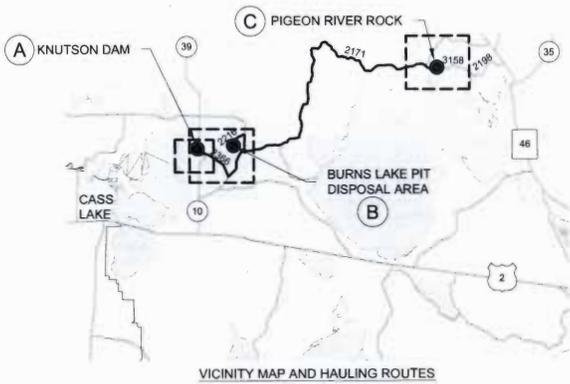


Project Name
Knutson Dam Replacement
CHIPPewa NATIONAL FOREST
Blackduck Ranger District

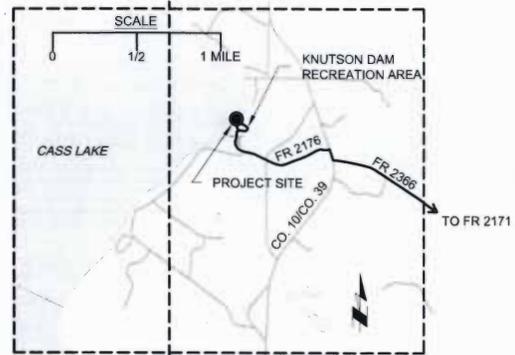
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Drawing Title
Notes

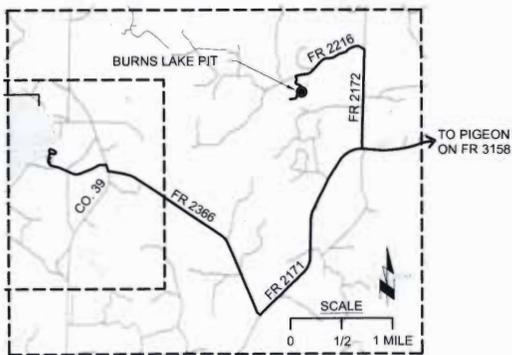
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Date			02 of 20
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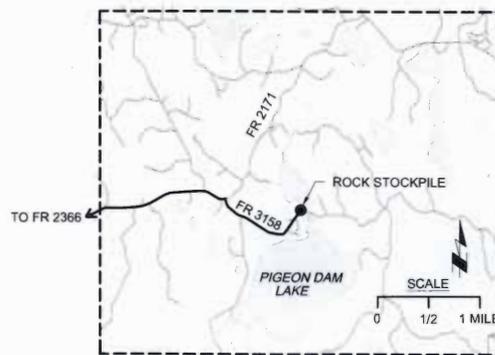
VICINITY MAP AND HAULING ROUTES



A KNUTSON DAM PROJECT AREA



B BURNS LAKE PIT DISPOSAL AREA



C PIGEON RIVER ROCK STOCKPILE

NOTES

No.	Revision/Issue	Date



Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

CDM Building Name

Sheeting Title
Rock Hauling Route and Disposal Area Maps

Drawn C. JENSEN	Project
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CAD FILE NO. 10478	03 of 20
Date	
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- KEYNOTES**
1. DISTURBANCE LIMITS. PROVIDE EROSION CONTROL
 2. EXCAVATION AREA
 3. FILL AREA
 4. CONSTRUCT BYPASS CHANNEL WITH BOX CULVERT - SEE SHT 08
 5. PROPOSED DEWATERING COFFERDAM LOCATION - SEE SPEC SECTION 648.05
 6. REMOVE EXISTING DAM - SEE SHT 05
 7. REMOVE EXISTING SHEET PILING
 8. CONSTRUCT ROCK RAPIDS - SEE SHT 13
 9. CONSTRUCT PORTAGE ROUTE - SEE SHT 19
 10. CONSTRUCT PATH TO FISHING PIER - SEE SHT 19
 11. CONSTRUCT FISHING PIER - SEE SHT 20
 12. CONSTRUCT ROCK CUTOFF TRENCH - SEE SHT 20
 13. EX. LAKE BOAT ACCESS TO REMAIN
 14. EX. RIVER BOAT ACCESS TO REMAIN
 15. PROTECT POWER POLE TYP.

NOTES

1) PROTECT ALL EXISTING IMPROVEMENTS NOT DESIGNATED FOR REMOVAL

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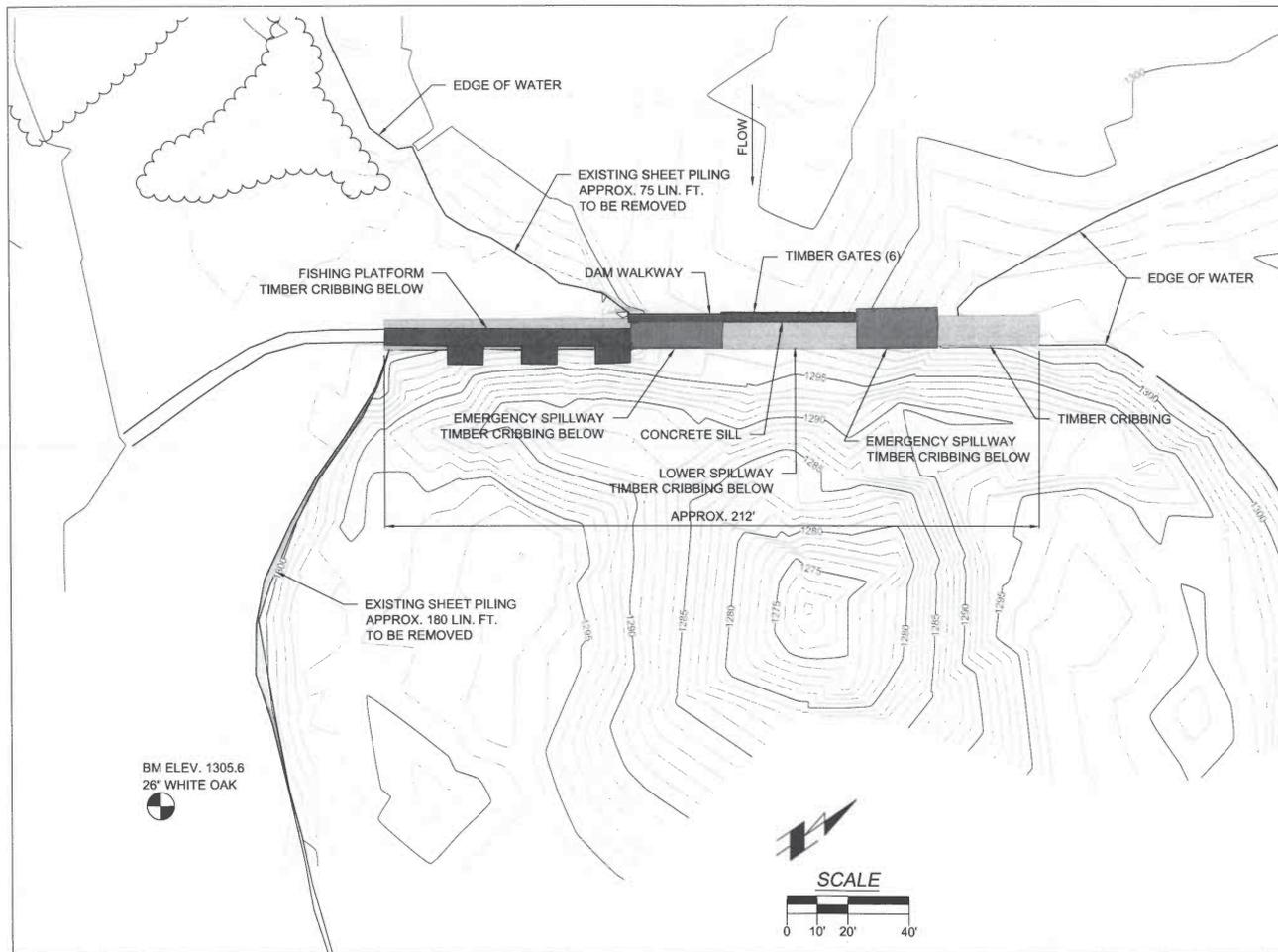
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Project Name
Knutson Dam Replacement
CHIPPENAW NATIONAL FOREST
Blackduck Ranger District

Drawing Title
Overall Site Plan

Sheet No. **10478**
Page No. **04 of 20**



- NOTES**
- 1) Timber cribbing extends under full length of existing dam.
 - 2) All timber cribbing is filled with rock.
 - 3) Timber cribbing near abutments may be covered with earthen material.
 - 4) In general, remove existing dam components to an elevation at least 1 ft. below the subgrade of the new work. See spec. sect. 203 for requirements.

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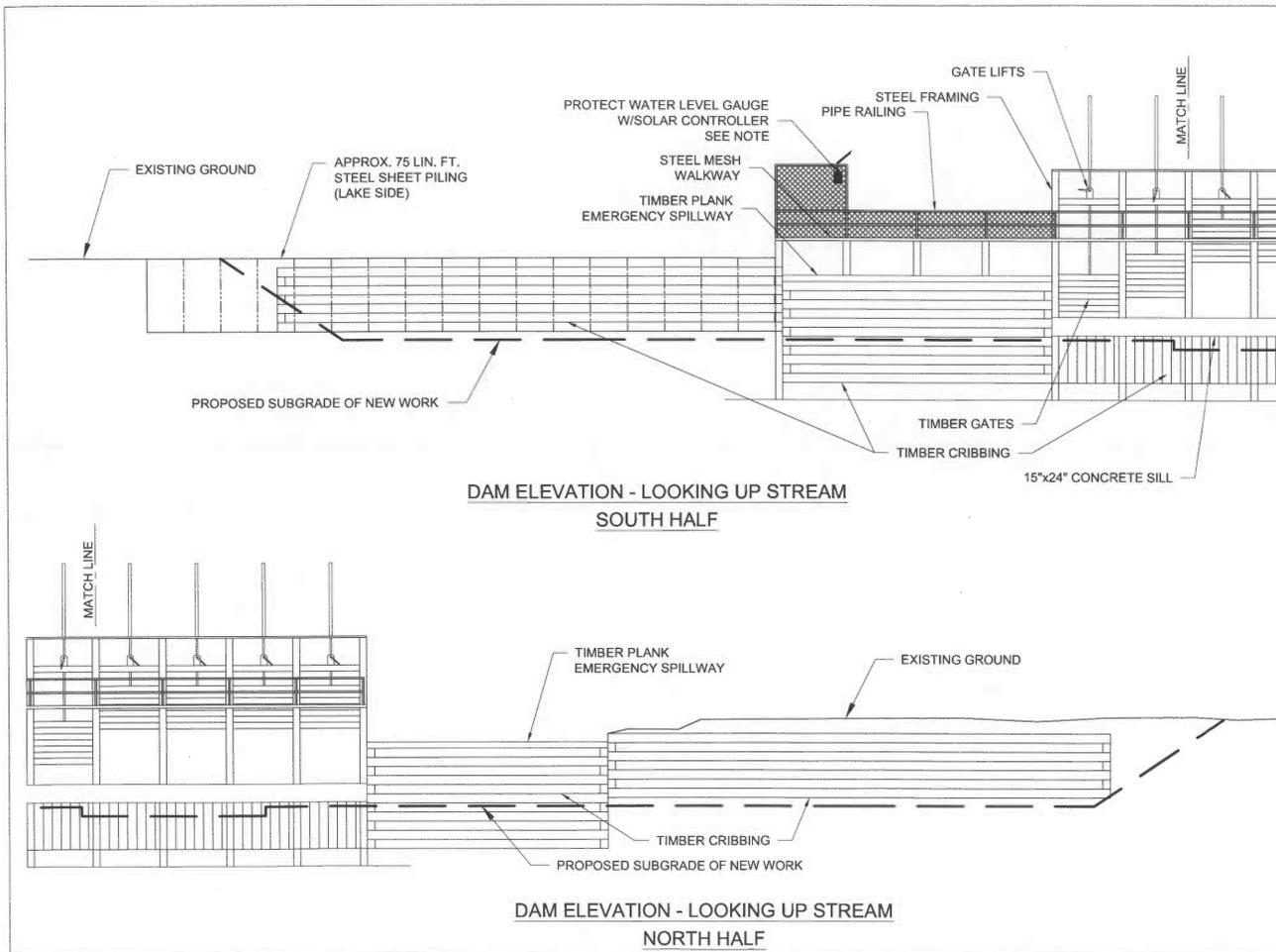
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
EASTERN REGION

Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

Code

Drawing Title
Existing Dam Plan

Drawn J. DEMB	Project
Checked	Drawing No.
CAD File No. 10478	05 of 20
Date	
Scale	



- NOTES**
- 1) In general, remove existing dam components to an elevation at least 1 ft. below the subgrade of the new work. See spec sect 203 for requirements.
 - 2) Timber cribbing is filled with rock - reuse rock on the project to the full extent practical.
 - 3) Coordinate work involving the water level gauge with the C.O. before starting. Do not demo without written notice.

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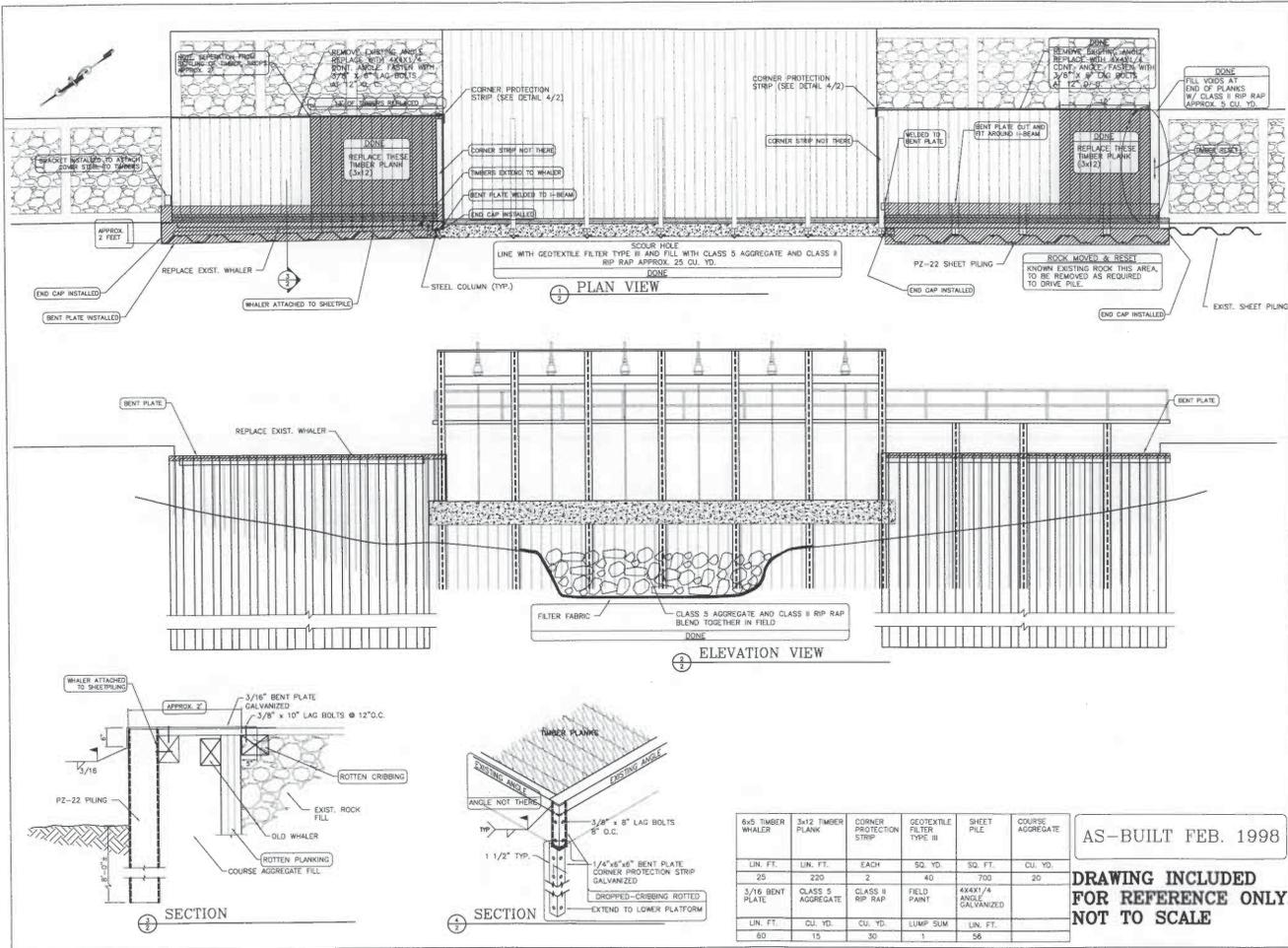


Project Name:
KNUTSON DAM MODIFICATION
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

CDR Building Name: _____

Drawing Title:
EXISTING DAM ELEVATION AND DEMO NOTES

Drawn: D. DENNIS	Sheet No. 06 of 20
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Date:	Scale: 1"=10'



NOTES

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Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

CDR

Drawing Title
EXISTING DAM AS-BUILT

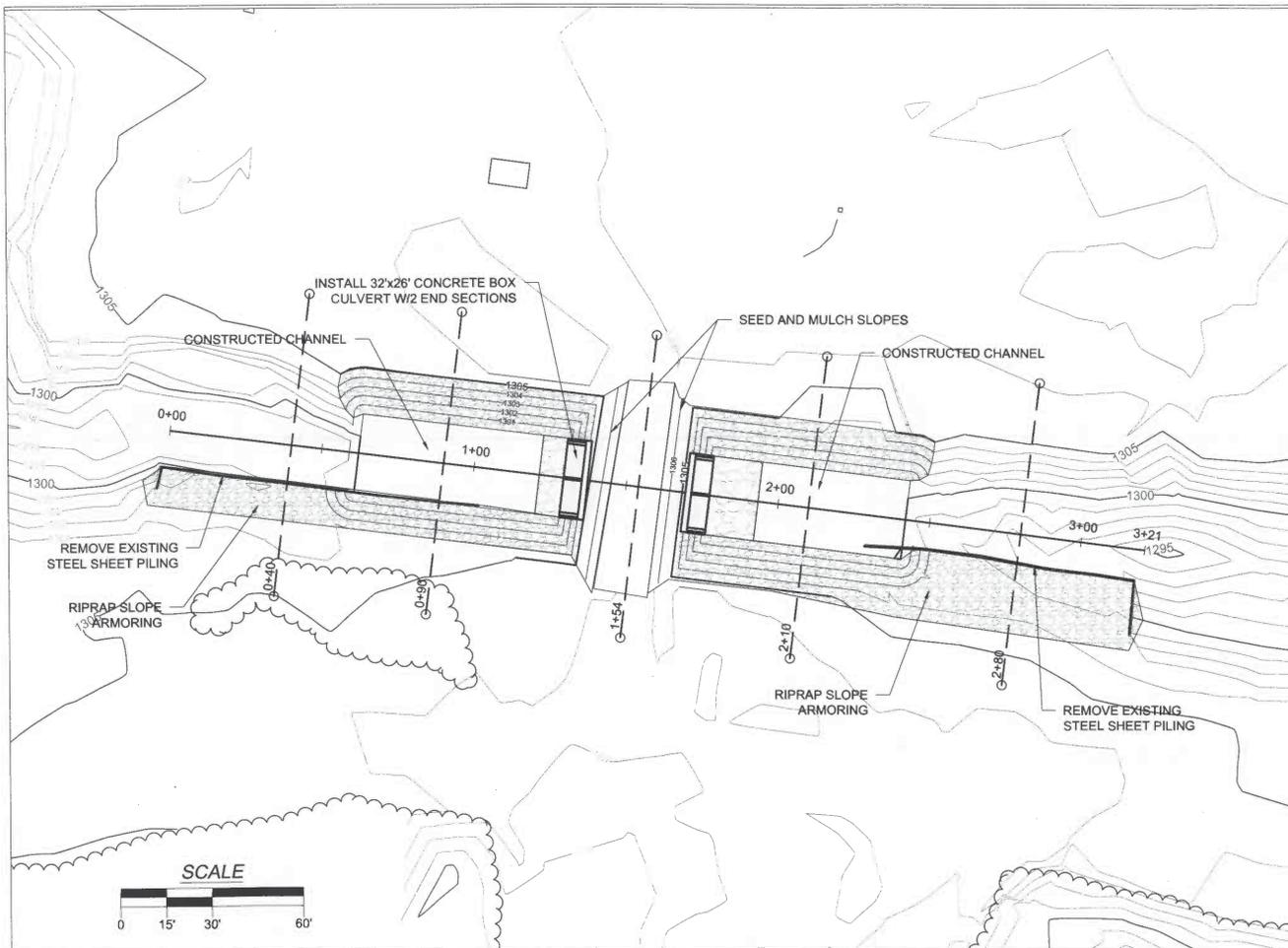
AS-BUILT FEB. 1998

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DRAWING INCLUDED FOR REFERENCE ONLY. NOT TO SCALE

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Date
07 of 20
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6x5 TIMBER WHALER	3x12 TIMBER PLANK	CORNER PROTECTION STRIP	GEOTEXTILE FILTER TYPE III	SHEET PILE	COURSE AGGREGATE
LN. FT.	LN. FT.	EACH	SQ. YD.	SQ. FT.	CU. YD.
23	240	2	40	700	20
3/8" BENT PLATE	CLASS 5 AGGREGATE	CLASS 8 RIP RAP	FIELD PAINT	4X4X1/4 ANGLE GALVANIZED	
LN. FT.	CU. YD.	CU. YD.	LUMP SUM	LN. FT.	
50	15	30	1	50	



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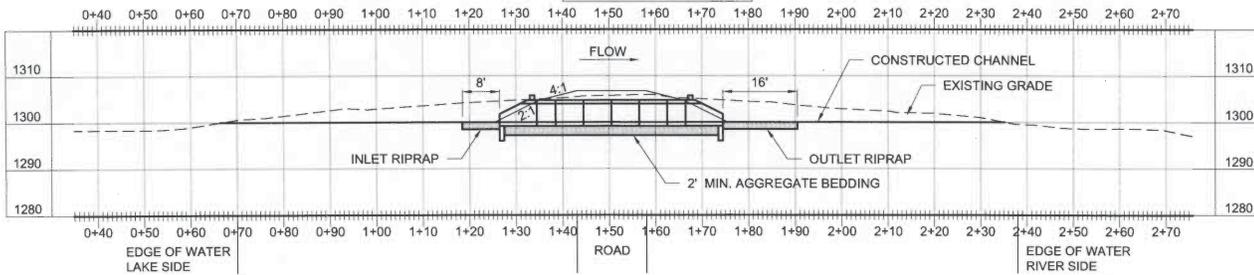
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
EASTERN REGION

Project Name:
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

Drawing Title:
Bypass Channel Plan

Drawn: D. JOHNSON	Project:
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CHANNEL PROFILE



NOTES

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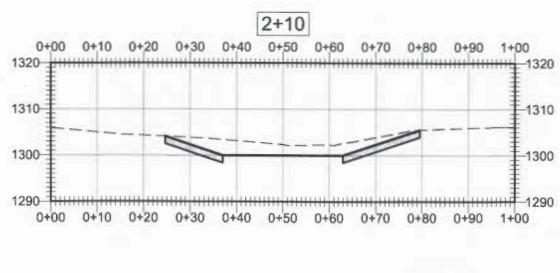
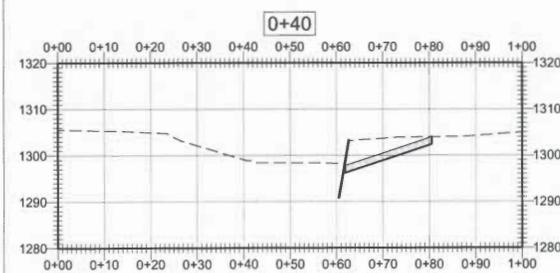
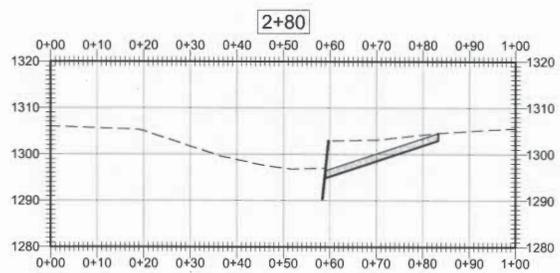
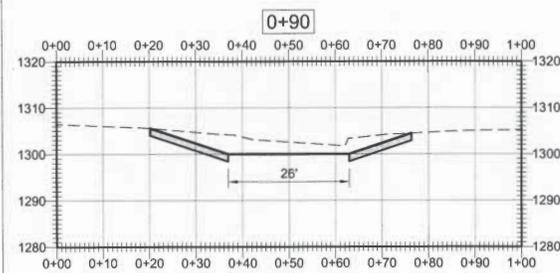
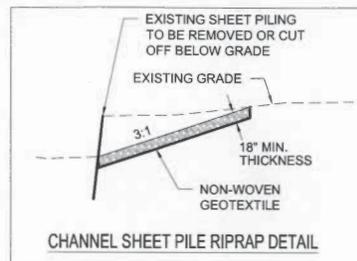
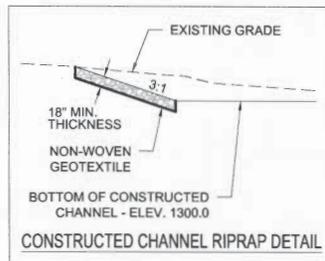
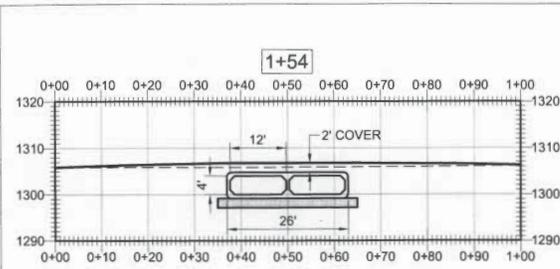
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EASTERN REGION

Project Name:
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

Drawing Title:
Bypass Channel Profile

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Date:	Scale:



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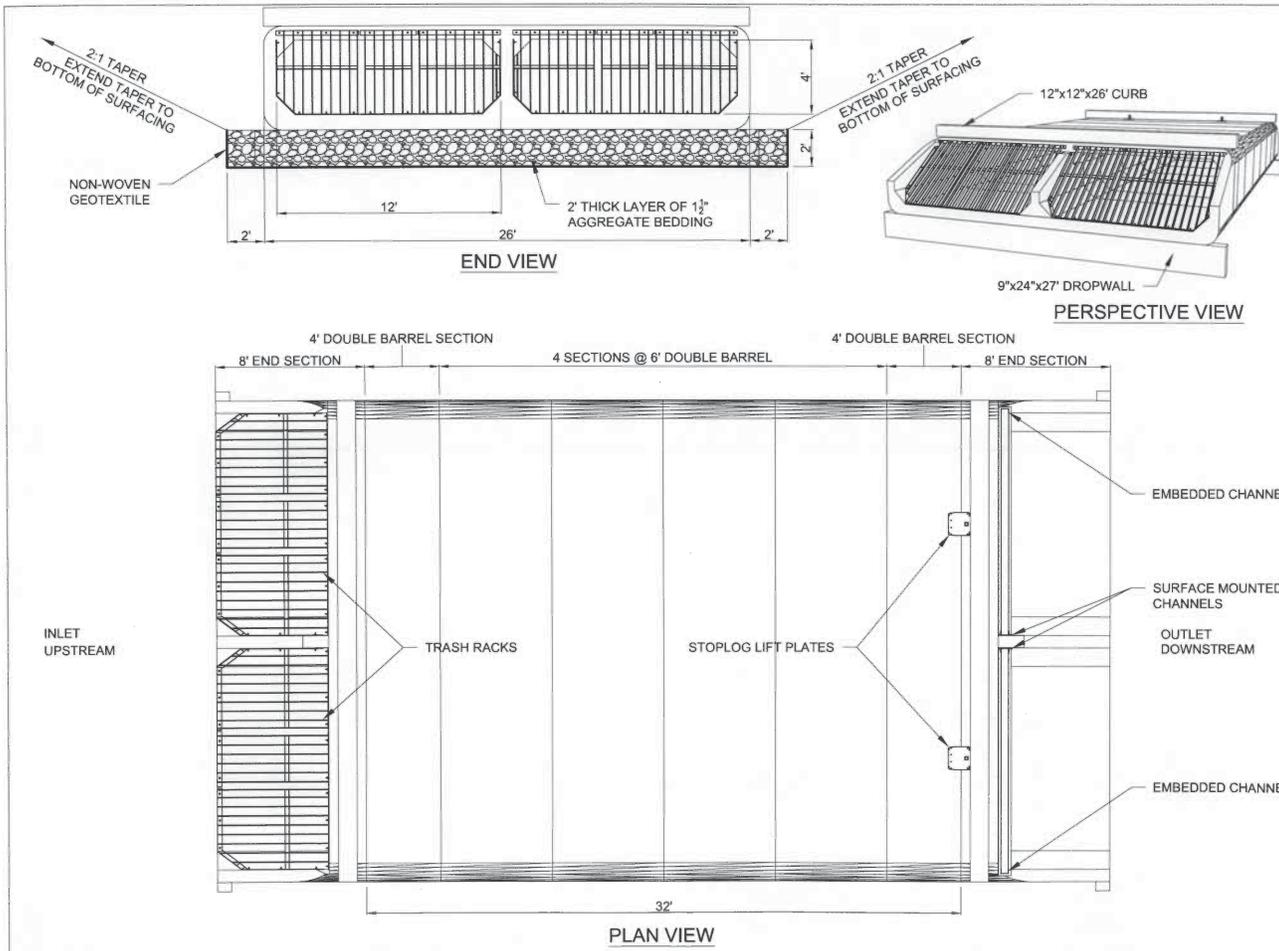
No.	Revisions/Issues	Date

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EASTERN REGION

Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

Drawing Title
Bypass Channel Sections

Drawn D. DEWANE	Project
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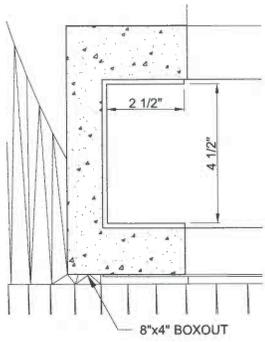
Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

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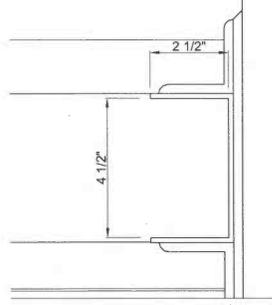
Drawing Title
Concrete Box Culvert

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D. DENNE		10478	

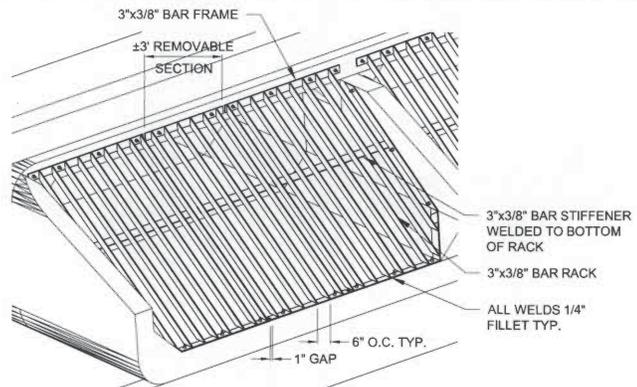
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Drawing No.
11 of 20



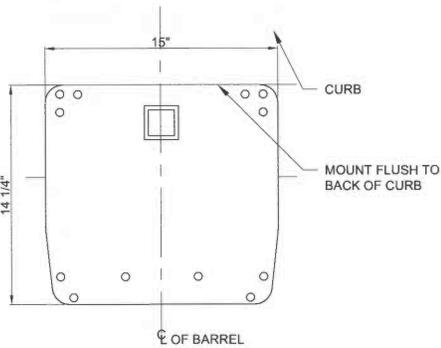
STOP LOG CHANNEL
EMBEDDED



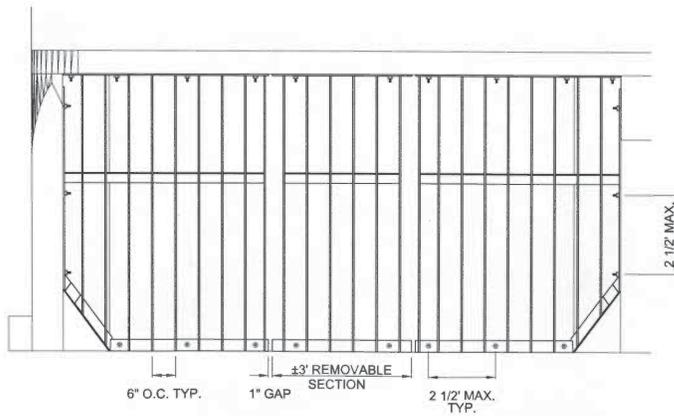
STOP LOG CHANNEL
SURFACE MOUNTED



TRASH RACK ISOMETRIC



STOP LOG LIFTING ARM MOUNTING PLATE
CENTER ONE EACH OVER BOTH BARRELS DOWNSTREAM END



TRASH RACK PLAN VIEW

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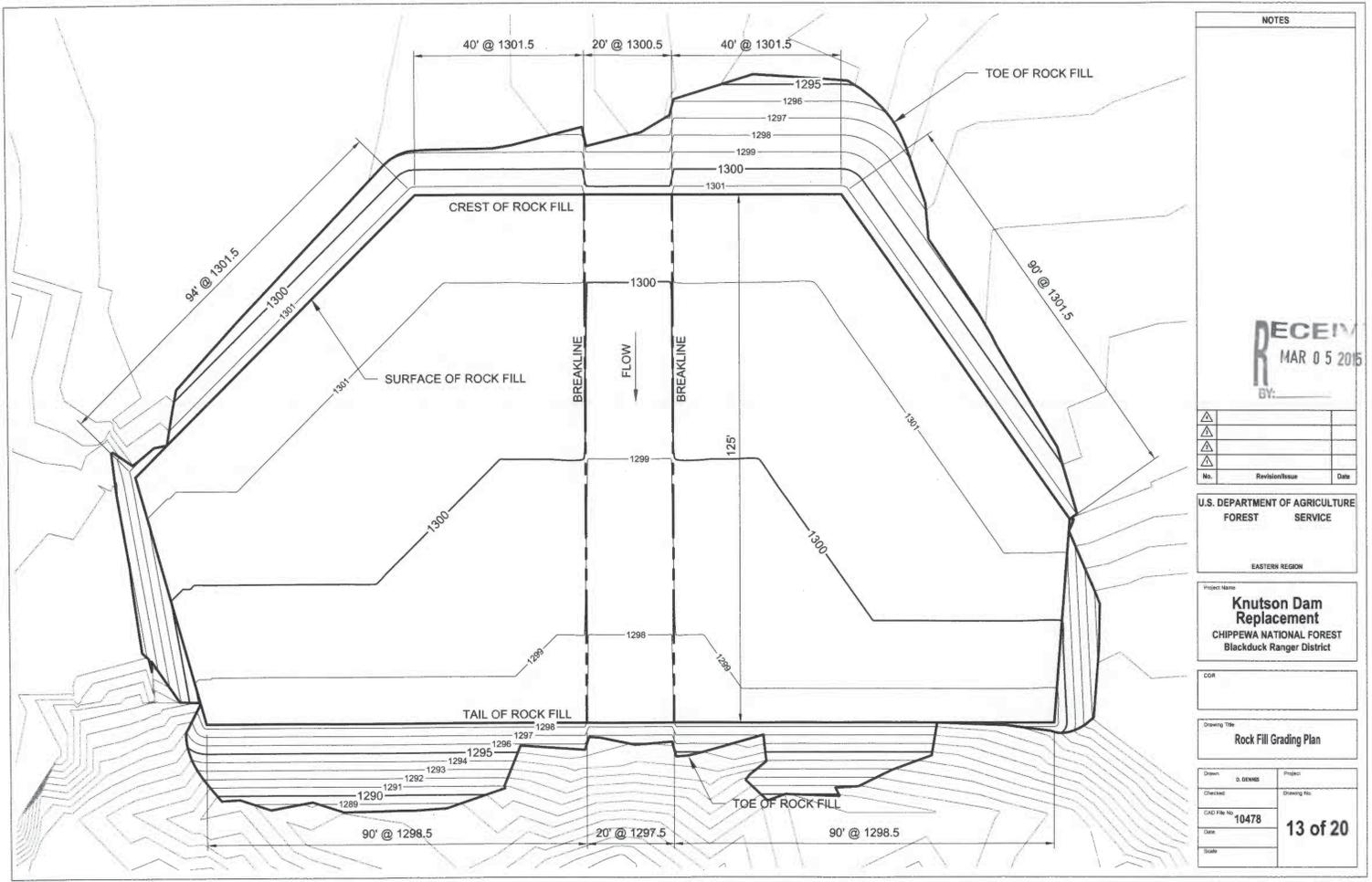
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Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

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Drawing Title
Concrete Box Culvert Details

Drawn D. DOWNS	Project
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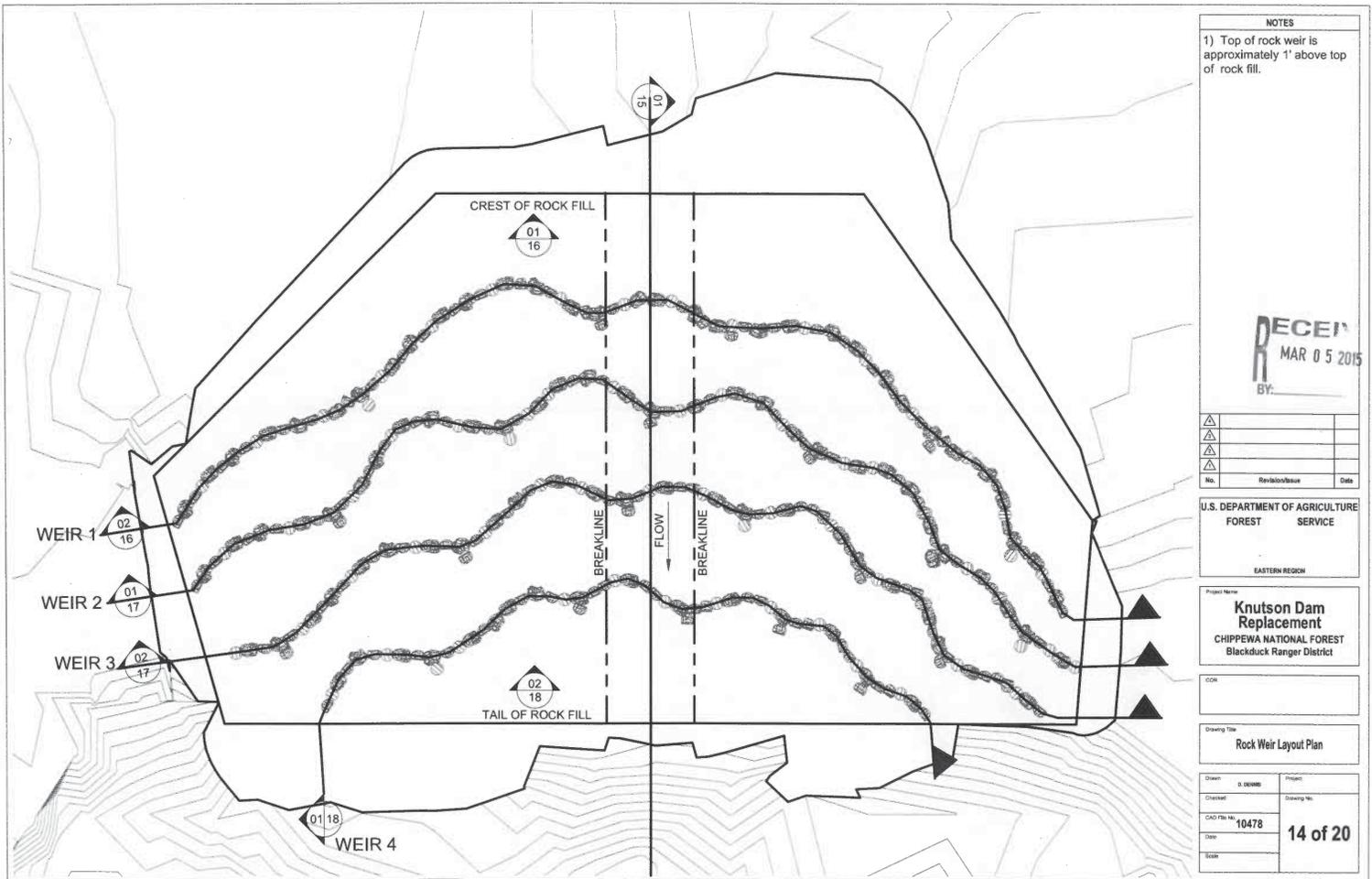
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Project Name
Knutson Dam Replacement
CHIPPENAW NATIONAL FOREST
Blackduck Ranger District

CDR

Drawing Title
Rock Fill Grading Plan

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NOTES

1) Top of rock weir is approximately 1' above top of rock fill.

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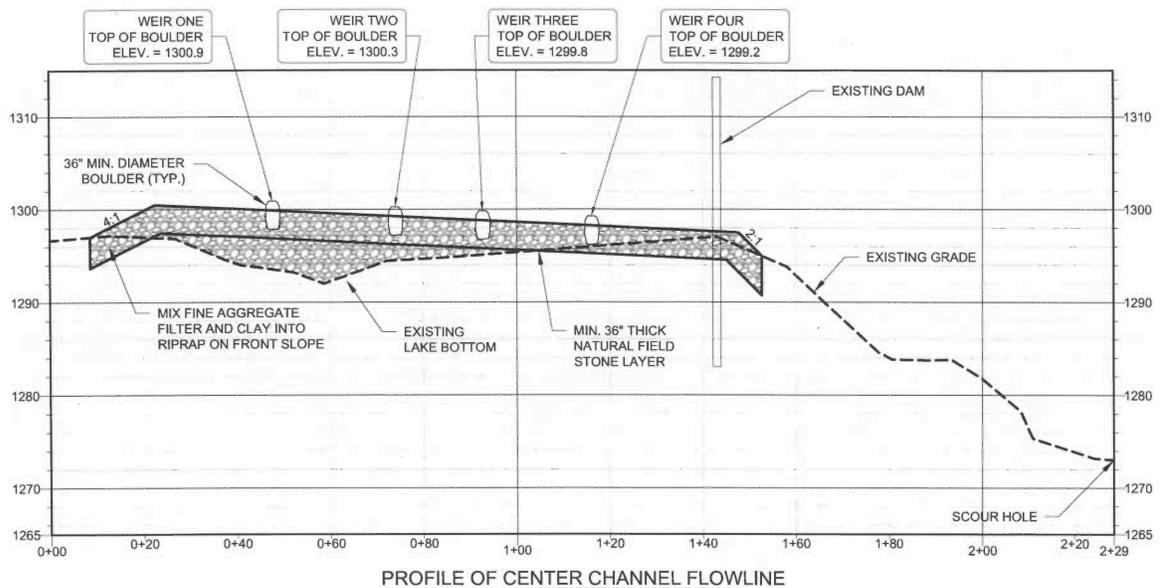
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EASTERN REGION

Project Name: **Knutson Dam Replacement**
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

CDR: _____

Drawing Title: **Rock Weir Layout Plan**

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PROFILE OF CENTER CHANNEL FLOWLINE

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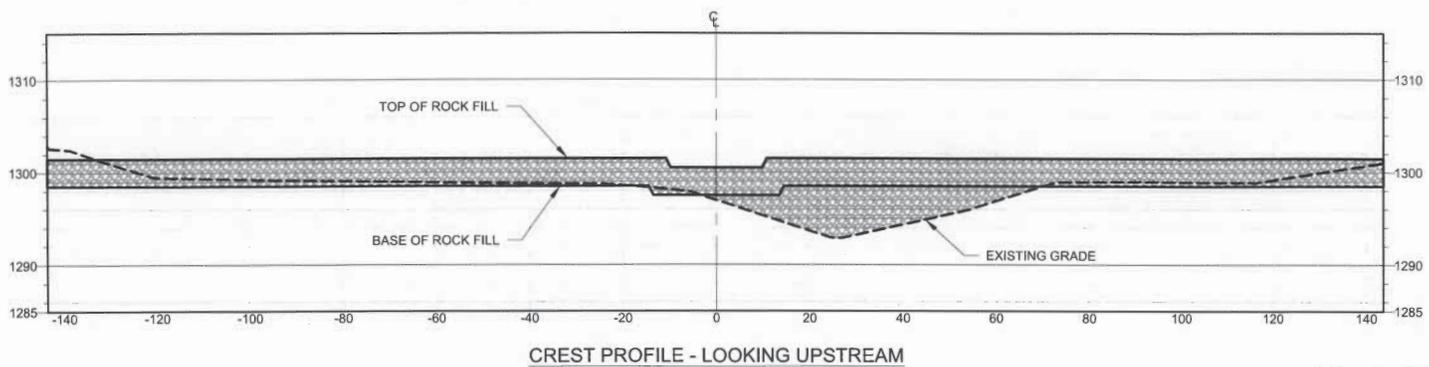
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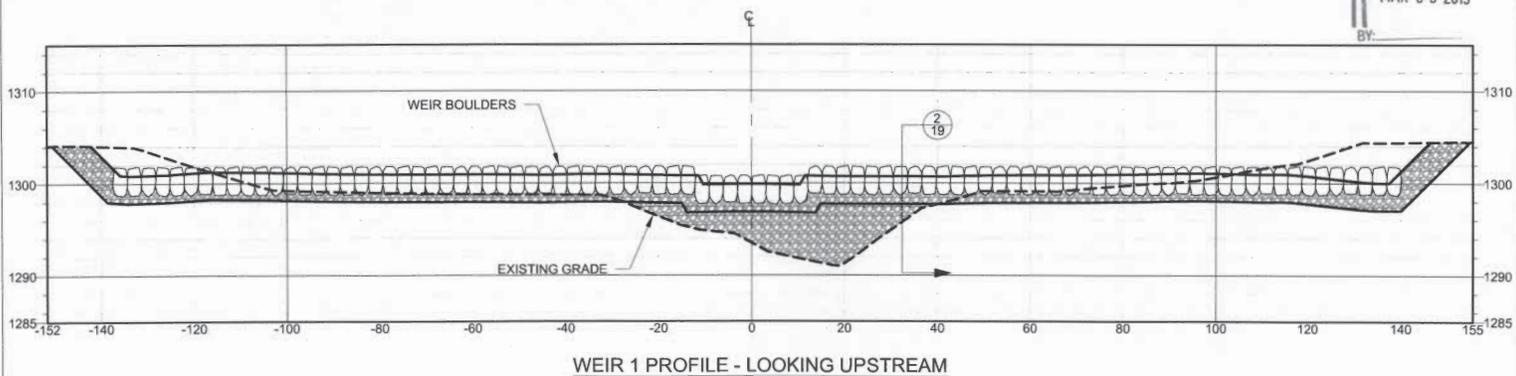
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

CENTERLINE PROFILE

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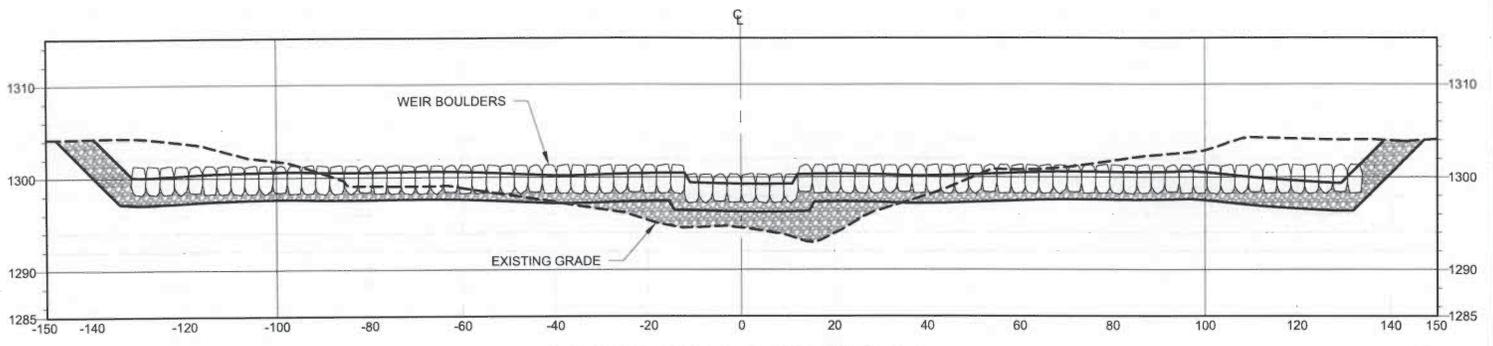
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REVISION2	00/00/00
REVISION1	00/00/00
No.	Revision/Issue Date



Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
Blackduck Ranger District

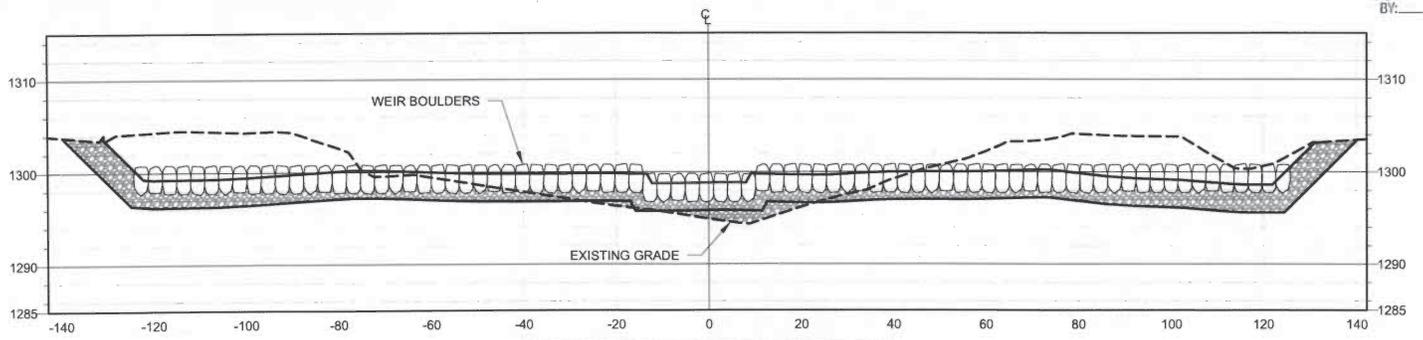
PROFILES

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Date:	



WEIR 2 PROFILE - LOOKING UPSTREAM

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WEIR 3 PROFILE - LOOKING UPSTREAM

NOTES:

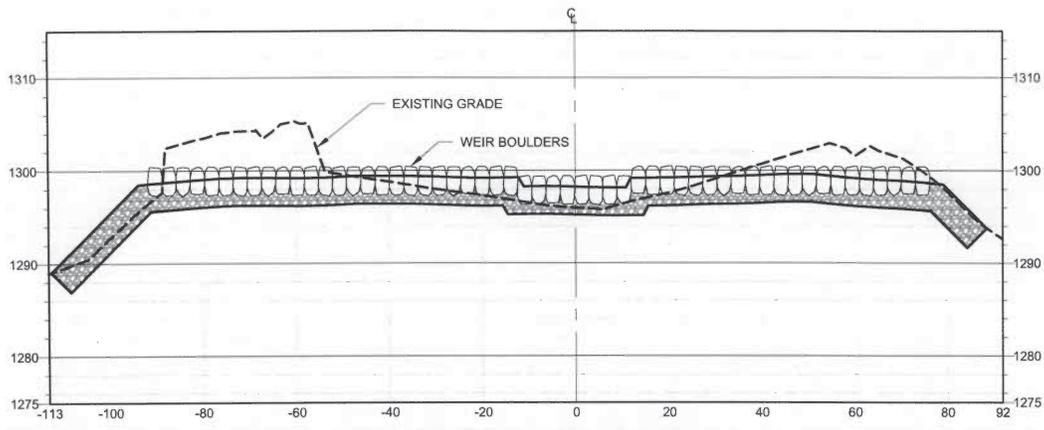
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△	REVISION	00/00/00



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Blackduck Ranger District

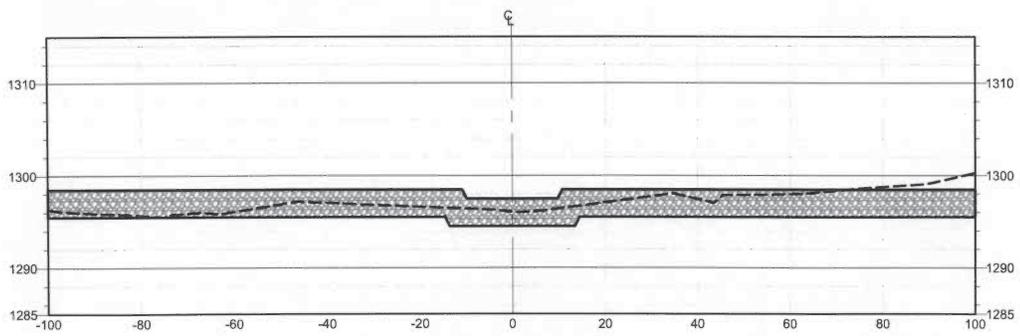
PROFILES

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CAD File No. CH 1047E	Date
17 of 20	



WEIR 4 PROFILE - LOOKING UPSTREAM

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TAIL PROFILE - LOOKING UPSTREAM

NOTES:

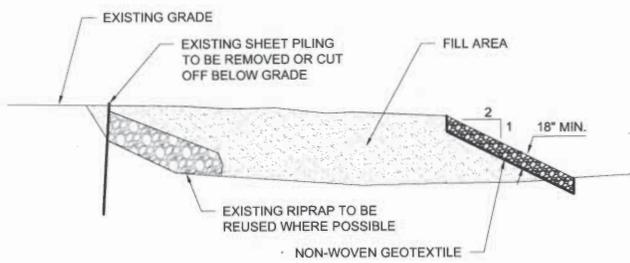
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No.	Revision/Issue Date



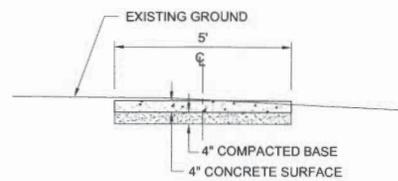
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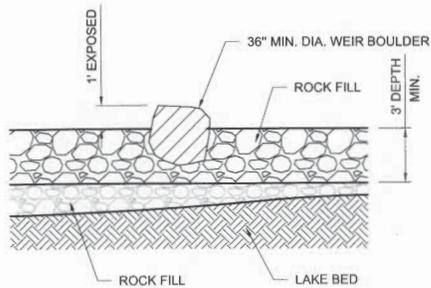
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CAD File No.: CH 10478	18 of 20
Date:	



1
19 TYPICAL SHEET PILING SECTION AT DAM



3
19 FISHING PIER ACCESS TRAIL



2
19 WEIR SECTION DETAIL

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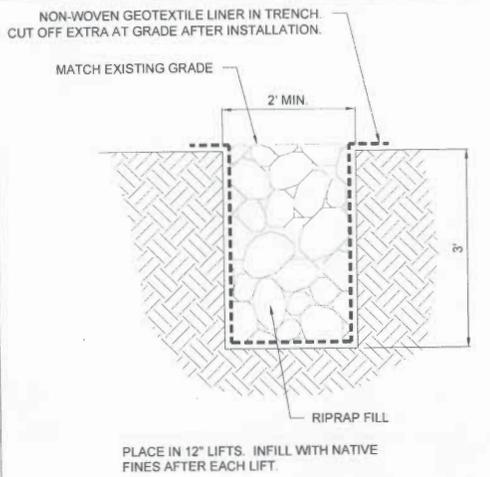
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FOREST SERVICE
EASTERN REGION

Project Name
Knutson Dam Replacement
CHIPPEWA NATIONAL FOREST
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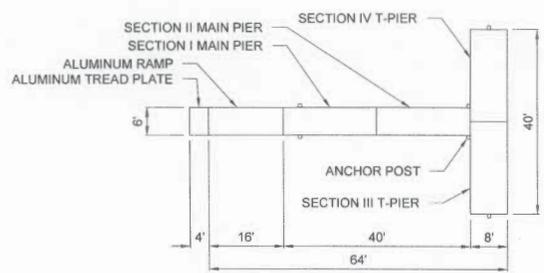
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Details

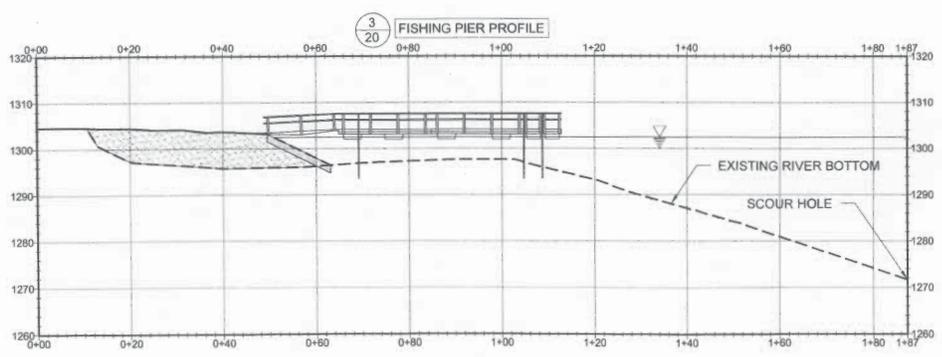
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Date	Scale



1
20
ROCK FILLED CUT-OFF TRENCH DETAIL



2
20
64-FT FISHING PIER LAYOUT



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