

HAWKEYE WILDLIFE MANAGEMENT AREA WATER QUALITY & WETLAND PROJECT

JOHNSON COUNTY, IOWA
IOWA DEPARTMENT OF NATURAL RESOURCES
2012



building strong communities.

705 First Avenue North
Fort Dodge, Iowa 50501
515-576-7155
fax 515-576-4235

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DATE:
BRENT W. JOHNSON, PE NO. 9939

MY LICENSE RENEWAL DATE IS
DECEMBER 31, 2013

PAGES OR SHEETS COVERED BY
THIS SEAL:

HAWKEYE WILDLIFE
MANAGEMENT AREA WATER
QUALITY & WETLAND PROJECT

JOHNSON COUNTY, IOWA

IDN 1412024

AUG. 2012

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10-29-2013

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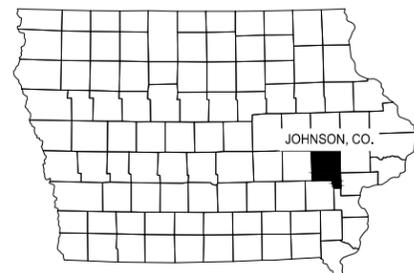
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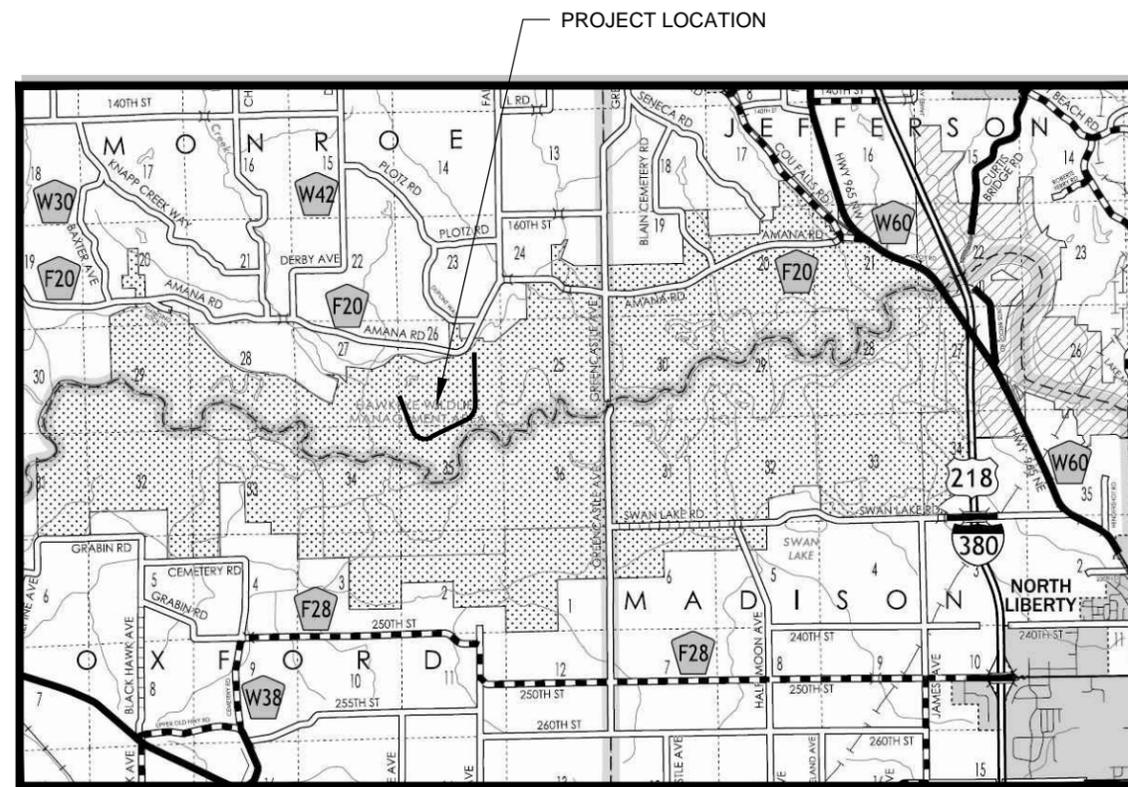
GN-01

SHEET NO.

01 / 12



STATE OF IOWA



TWP 81 N - R 8 W
JOHNSON COUNTY, IOWA

PROJECT IS BROKEN INTO TWO PHASES:
PHASE 1 INCLUDES THE WEST 3,900 FEET OF BERM.
PHASE 2 INCLUDES THE EAST 5,500 FEET OF BERM & THE WATER CONTROL STRUCTURES.

NOTE:
PHASE 1 & 2 WILL BE BID AS TWO SEPARATE PROJECTS.



THE CONTRACTOR SHALL NOTIFY IOWA ONE CALL NO LESS THAN 48 HRS. IN ADVANCE OF ANY DIGGING OR EXCAVATION.

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

INDEX OF PLAN SHEETS		
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4	SP-02	GENERAL CONTOUR SITE PLAN
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11	DE-02	WATER CONTROL STRUCTURE DETAILS
12	DE-03	WATER CONTROL SECTIONS AND DETAILS

WATER CONTROL STRUCTURE HYDROLOGIC AND HYDRAULIC DESIGN DATA

HYDROLOGIC DATA

Drainage Area: 18,117 Acres

CN: 98/60

Tc: 9.5 HRS (Knapp Creek Watershed)

% Imperious: 1

DATA FOR TECH BULLETIN NO. 16:

Emergency Spillway Elev. 693.5ft Principal Spillway Elev. 693.5ft

Channel Elev. Below Spillway Elev. 686.0ft

Low Hazard Dam not Major Structure Criteria:

(Dam Ht.) 7.5 ft. x (total storage) 564 Ac. Ft. = 4230 > 3,000

Freeboard Design Flood:

Rainfall = P100 + 0.12 (PMP-P100)

= 6.55 in. + 0.12 (32 in. - 6.55 in.)

= 9.60in in. 24 hr. duration

DESIGN CREST ELEVATION: Elev. 696.00'

Q100 = 2077 CFS 24hr. duration - HWL100yr 694.85

Spillway Peak Flow: 1025 CFS

OTHER HYDRAULIC DATA:

Time to remove 25 yr. - 24 hr. storm (5.25 inches) at spillway

Elev. 694.52 is 18hrs to Elev. 693.5

Q25 Spillway: 1187 CFS

NOTES:

The emergency spillway crest elevation (693.5) is set the same as the Principal Spillway Crest (693.5) for the following reasons:

1. The existing topography does not allow us to go much higher than 696 for the top of berm.
2. The design crest elevation rainfall (8.9-inches) produces a HWL (EL 696.69) which is too high due to the large drainage area (18,177 acres - Knapp Creek Watershed). Even with the diversion structure, the flow is too large for the proposed wetland storage, unless the emergency spillway crest is set the same as the principal spillway crest.
3. A variance is requested to allow the emergency spillway crest be the same as the principal spillway, thus keeping the HWL for the crest design rainfall below the berm crest of EL 696. This appears reasonable since the entire proposed wetland is within the Coralville Reservoir and only 1,000 feet from the Iowa River.

Hawkeye Wildlife Area Diversion Table

elevation, ft.	H, ft.	Total Weir Length=147ft. Knapp Creek		Total Weir Length=125ft. Total Stoplog Length -10ft. Flows to Proposed Wetland			total Q	Diversion, Q _D
		Q= Ca(2gH) ^{0.5}	Q=CLH ^{3/2}	a=10*H	Q= Ca(2gH) ^{0.5}	Q=CLH ^{3/2}		
		H ₂ =H/2 (all stoplogs in)	H ₃ =H-699		H ₂ =H/2			
694	0.0	0		0	0	0	0	0
695	1.0	0		10	34	0	34	0
696	2.0	0		20	96	0	96	0
697	3.0	0		30	177	0	177	0
698	4.0	0		40	272	0	272	0
699.0	5.0	0	0	50	381	0	381	0
699.5	5.5	0	156	55	439	133	728	156
700.0	6.0	0	441	60	500	375	1316	441
700.5	6.5	0	810	65	564	689	2063	810
701.0	7.0	0	1247	70	631	1061	2939	1247
701.5	7.5	0	1743	75	699	1482	3925	1743
702.0	8.0	0	2292	80	770	1949	5010	2292
702.5	8.5	0	2888	85	844	2455	6187	2888
703.0	9.0	0	3528	90	919	3000	7447	3528

ESTIMATED QUANTITIES

PHASE 1 - WEST 3900 FEET OF BERM

NO.	DESCRIPTION	QTY	UNITS
1	Mobilization	1	LS
2	Clearing & Grubbing	14	AC
3	Class 10 Excavation , Waste (2 ft. topsoil & core trench)	37,128	CY
4	Berm Construction, Class 10 Excavation (from borrow area)	76,991	CY
5	Seeding & Mulching Berm	10	AC
6	Silt Fencing	4,620	LF
7	Implement Stormwater Pollution Prevention Plan	1	LS

PHASE 2 - EAST 5500 FEET OF BERM & WATER CONTROL STRUCTURES

NO.	DESCRIPTION	QTY	UNITS
1	Mobilization	1	LS
2	Clearing & Grubbing	10	AC
3	Class 10 Excavation , Waste (core trench)	2,540	CY
4	Berm Construction, Class 10 Excavation (from borrow area)	39,126	CY
5	10' x 10' Precast RCBC W/top	24	LF
6	10' x 10' Precast RCBC no top	48	LF
7	Sheet Piling	2,240	SF
8	Curtain Walls (Precast Concrete)	6.4	CY
9	Aluminum Stoplog Guides	730	LBS
10	Aluminum Stoplogs & Aluminum Hooks	700	LBS
11	Geotextile	600	SY
12	Rip Rap	360	TN
13	P.C.C. Grout for Rip Rap	71	CY
14	Crushed Rock Surfacing	42	TN
15	Silt Fence	4,620	LF
16	Implement Stormwater Pollution Prevention Plan	1	LS

EMERGENCY SPILLWAY

NO.	DESCRIPTION	QTY	UNITS
17	8" P.C.C. Spillway Crest W/wire	652	SY
18	Geotextile	6,125	SY
19	Rip Rap	3,695	TN
20	P.C.C. Grout	342	CY

PRELIMINARY

GENERAL PURPOSE
SITE PLAN

HAWKEYE WILDLIFE
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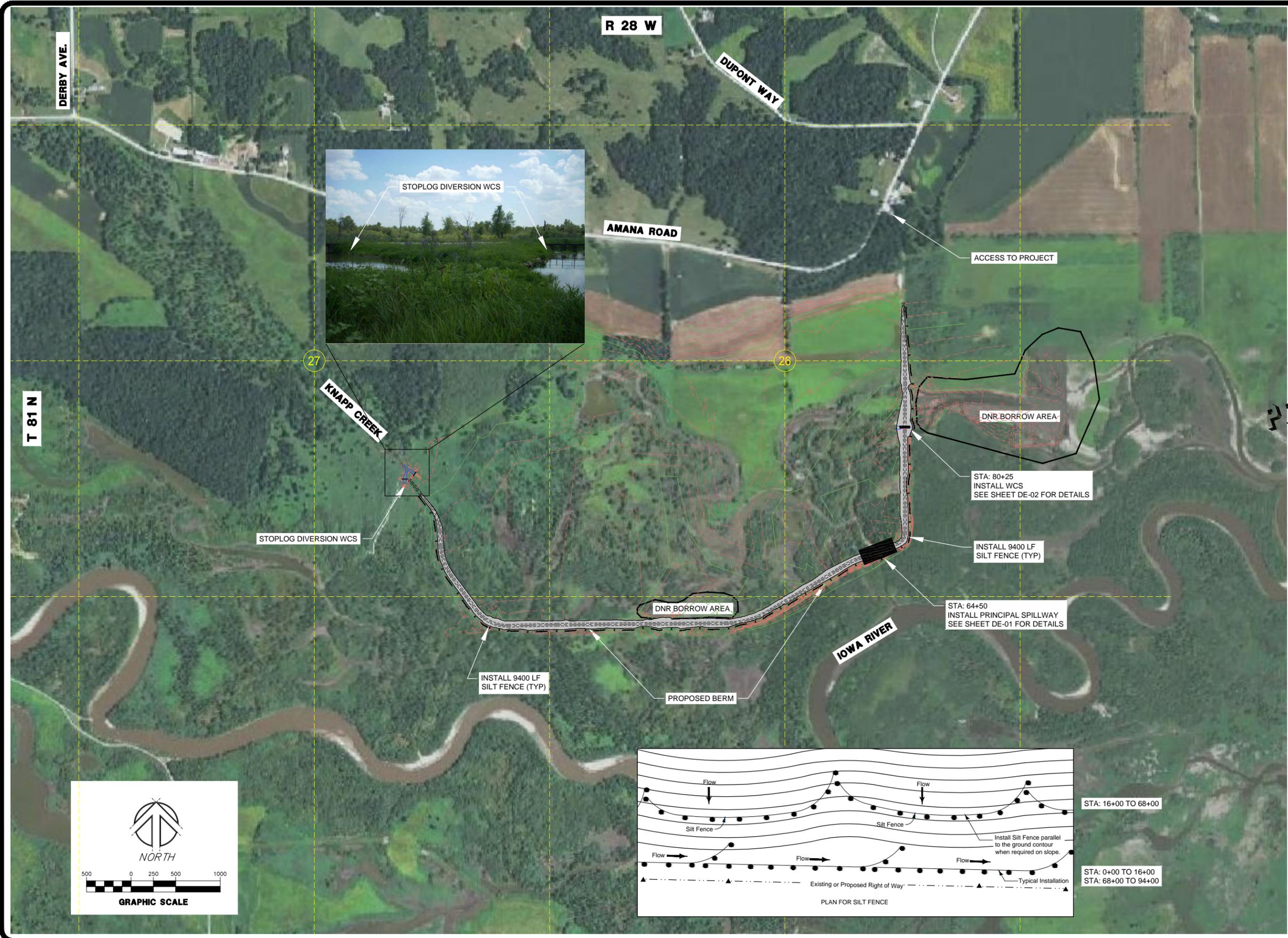
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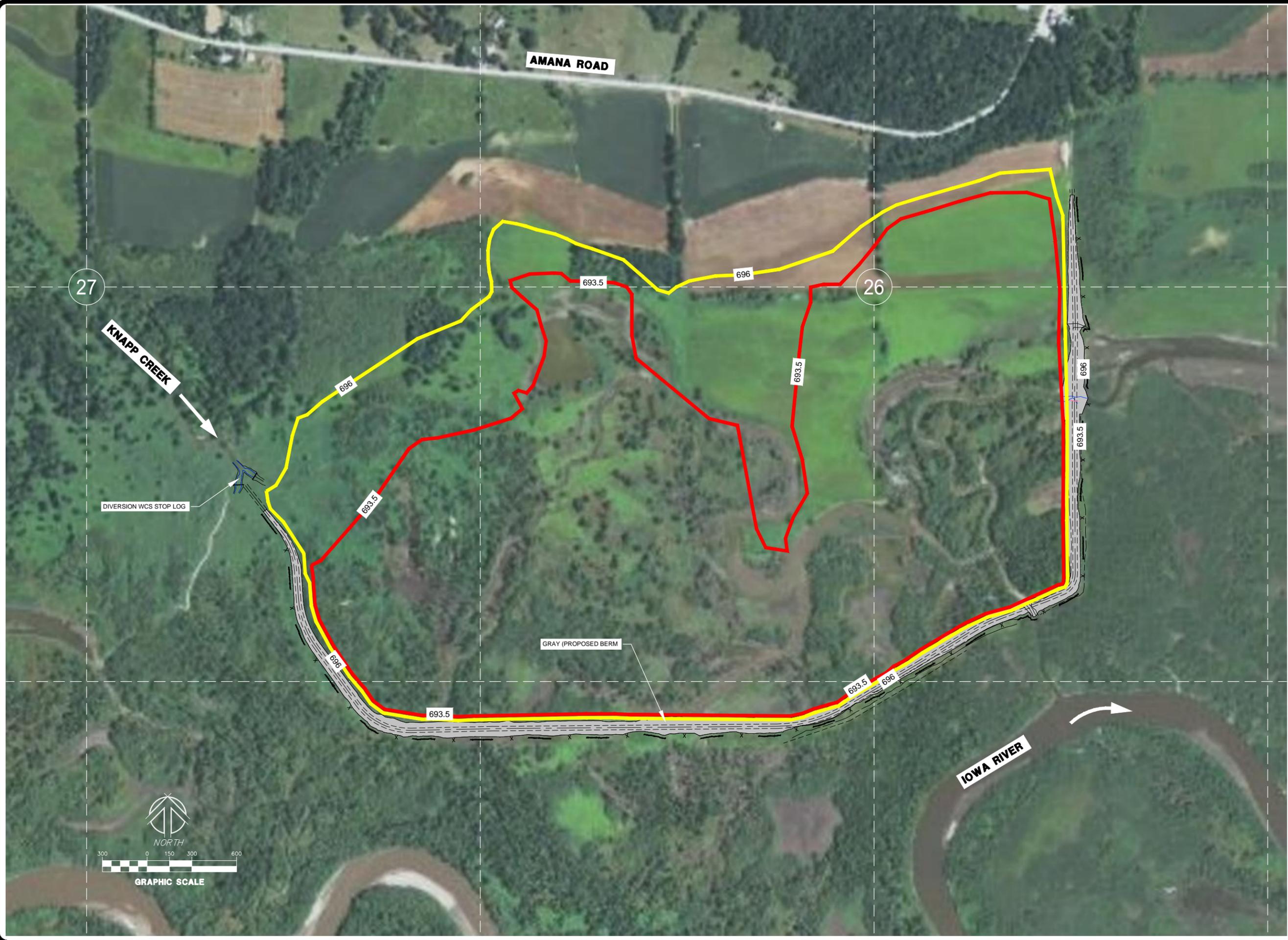
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**GENERAL CONTOUR
 SITE PLAN**

**HAWKEYE WILDLIFE
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POLLUTION PREVENTION PLAN

110-12A

All contractors/subcontractors shall conduct their operations in a manner that minimizes erosion and prevents sediments from leaving the project site. The prime contractor shall be responsible for compliance and implementation of the Pollution Prevention Plan (PPP) for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

1. SITE DESCRIPTION

This Pollution Prevention Plan (PPP) is for the construction of a Earthen berm & WCS in Coralville Reservoir, Johnston County Iowa. This PPP covers approximately 357 acres with an estimated 33 acres being disturbed. The portion of the PPP covered by this contract has 33 acres disturbed.

The PPP is located in an area of one soil association (Fluvaquents). The estimated average SCS runoff curve number for this PPP after completion will be 70.

Refer to the project plan for locations of typical slopes, ditch grades, and major structural and non- structural controls. A copy of this plan will be on file at the project engineer's office. Runoff from this work will flow into ditches and unnamed tributaries which flow into the Iowa River.

POTENTIAL SOURCES OF POLLUTION:

Site sources of pollution generated as a result of this work relate to silts and sediment which may be transported as a result of a storm event. However, this PPP provides conveyance for other (non-project related) operations. These other operations have storm water runoff, the regulation of which is beyond the control of this PPP. Potentially this runoff can contain various pollutants related to site-specific land uses. Examples are:

Rural Agricultural Activities:

Runoff from agricultural land use can potentially contain chemicals including herbicides, pesticides, fungicides and fertilizers.

Commercial and Industrial Activities:

Runoff from commercial, industrial and commerce land use may contain constituents associated with the specific operation. Such operations are subject to potential leaks and spills which could be commingled with run-off from the facility. Pollutants associated with commercial and industrial activities are not readily available since they are typically proprietary.

2. CONTROLS

At locations where run off can move offsite, silt fence shall be placed along the perimeter of the areas to be disturbed prior to beginning grading, excavation or clearing and grubbing operations.. Vegetation in areas not needed for construction shall be preserved. As areas reach their final grade, additional silt fences, silt basins, intercepting ditches, sod flumes, letdowns, bridge end drains, and earth dikes shall be installed as specified in the plans and/or as required by the project engineer. This will include using silt fence as ditch checks and to protect intakes. Temporary stabilizing seeding shall be completed as the disturbed areas are constructed. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days. Other stabilizing methods shall be used outside the seeding time period.

This work shall be done in accordance with Section 9040 of the Standard Specification.

As the work progresses, additional erosion control items may be required as determined by the contractor after field investigation. The contractor will complete the construction with the establishment of permanent perennial vegetation of all disturbed areas.

3. OTHER CONTROLS

Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste, disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.

APPROVED STATE OR LOCAL PLANS:

During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state and local regulations in effect at the time.

4. MAINTENANCE

The contractor is required to maintain all temporary erosion control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. Cleaning of silt control devices shall begin when the features have lost 50% of their capacity.

5. INSPECTIONS

Inspections shall be made jointly by the contractor and the contracting authority every seven calendar days and after each rain event that is $\frac{1}{2}$ " or greater. The contractor shall immediately begin corrective action on all deficiencies found. The findings of this inspection shall be recorded in the project diary. This PPP may be revised based on the findings of the inspection. The contractor shall implement all revisions. All corrective actions shall be completed within 3 calendar days of the inspection.

6. NON-STORM DISCHARGES

This includes subsurface drains (i.e. longitudinal and standard subdrains), slope drains and bridge end drains. The velocity of the discharge from these features may be controlled by the use of patio blocks, Class A stone or erosion stone.



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SWWPP

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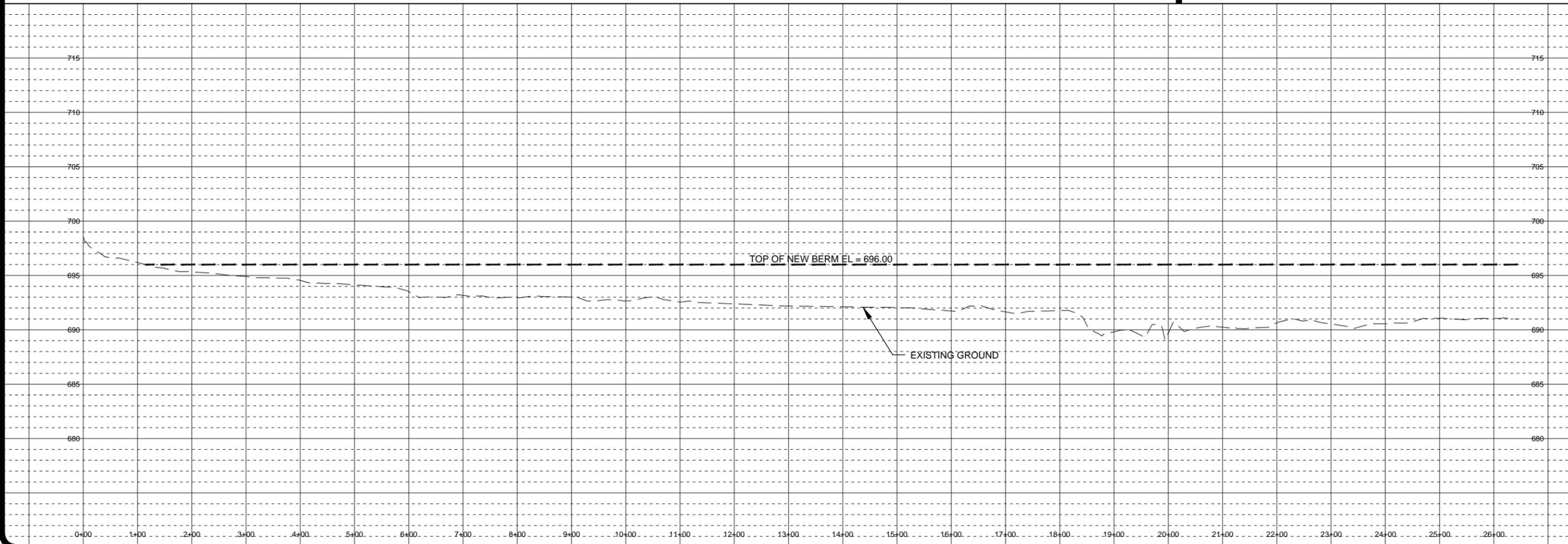
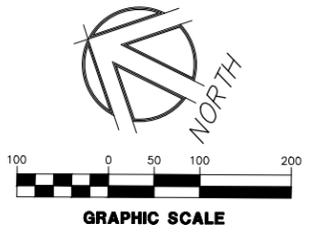
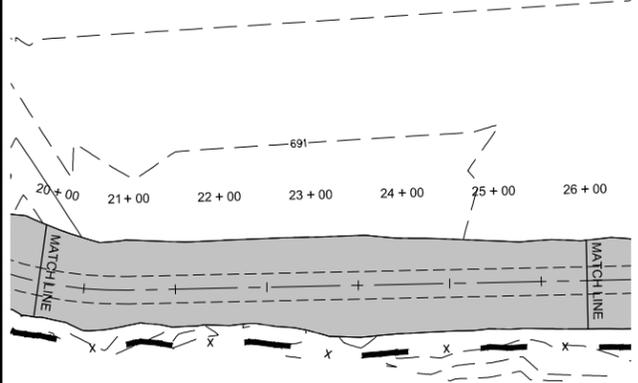
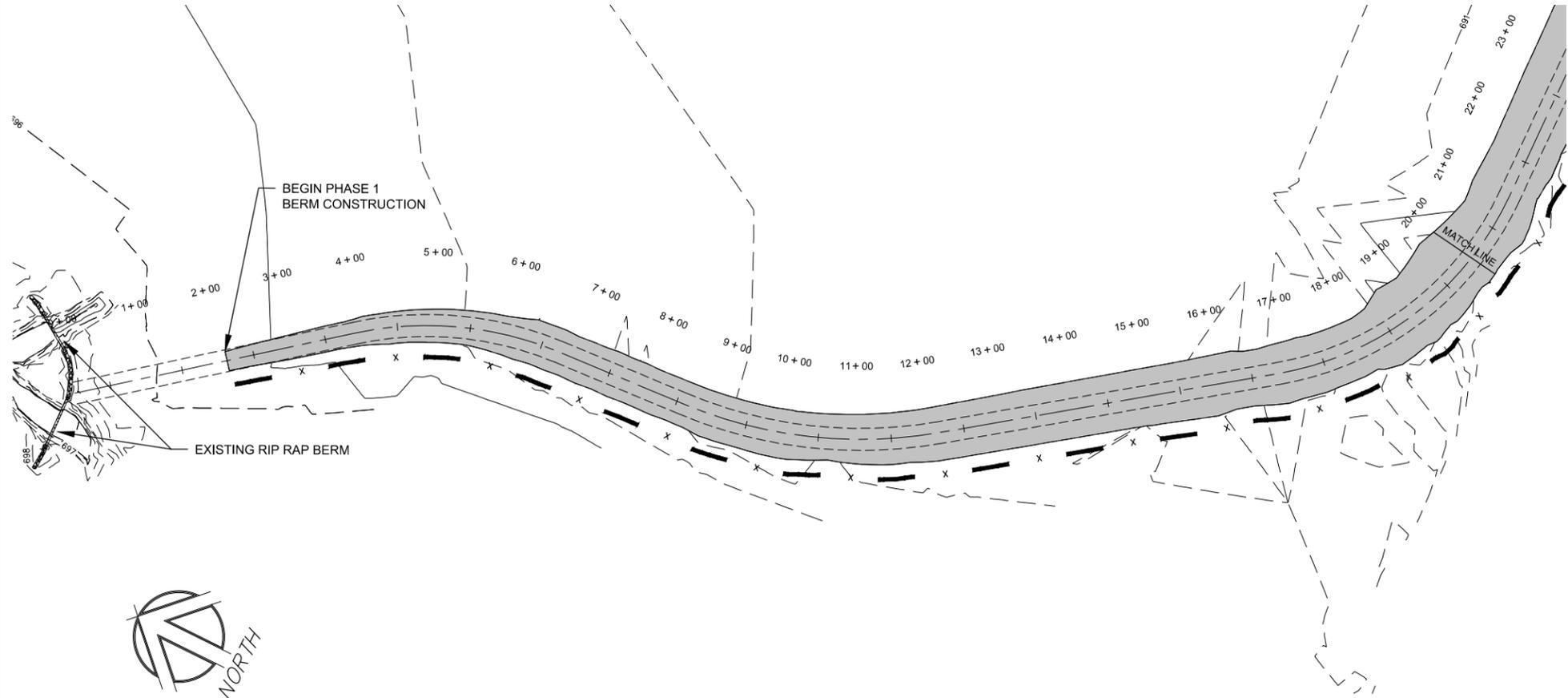
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**PROPOSED BERM
PLAN AND PROFILE**

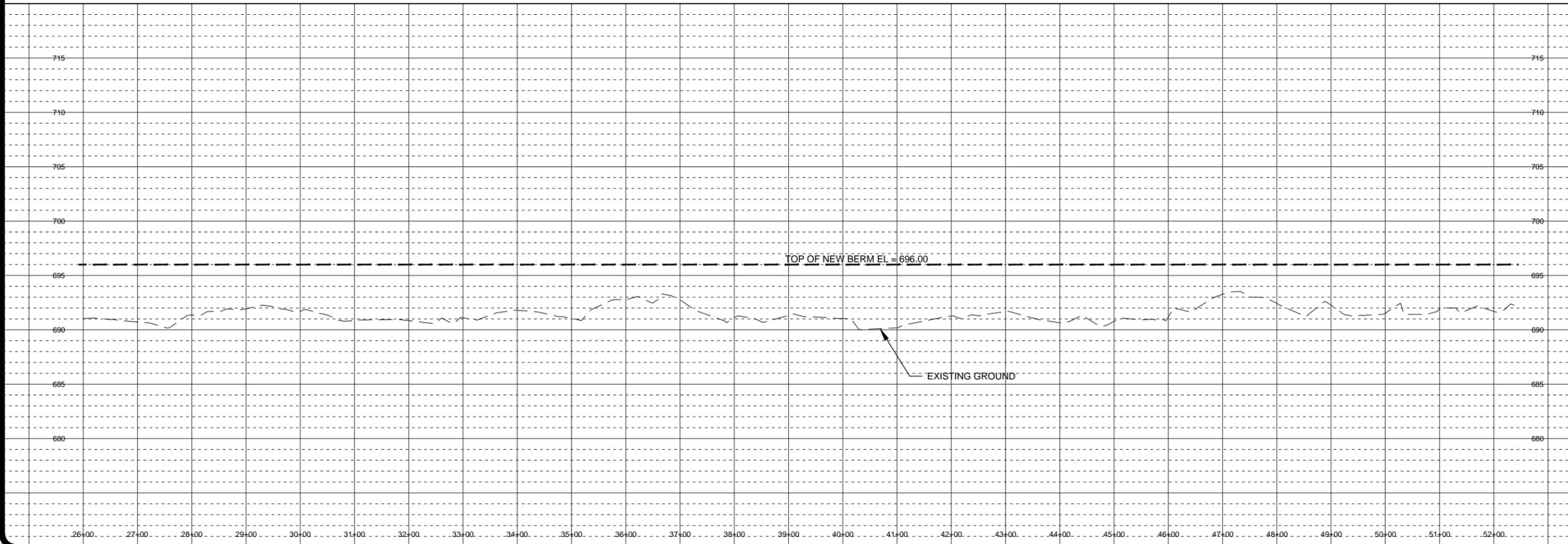
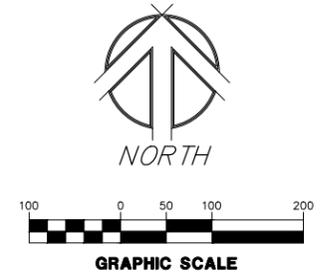
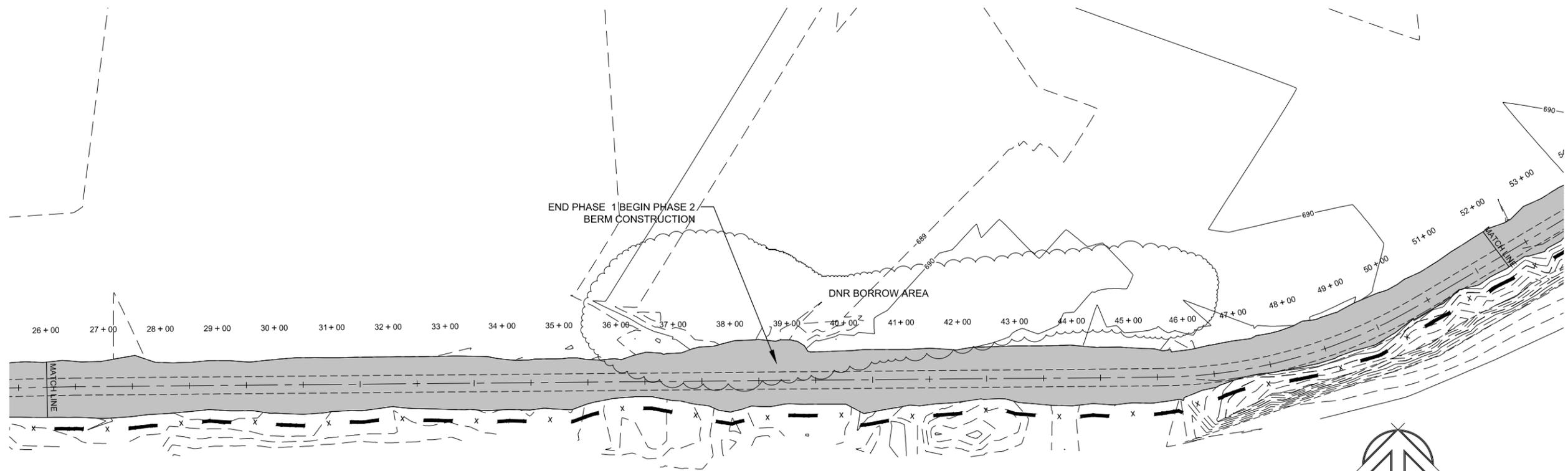
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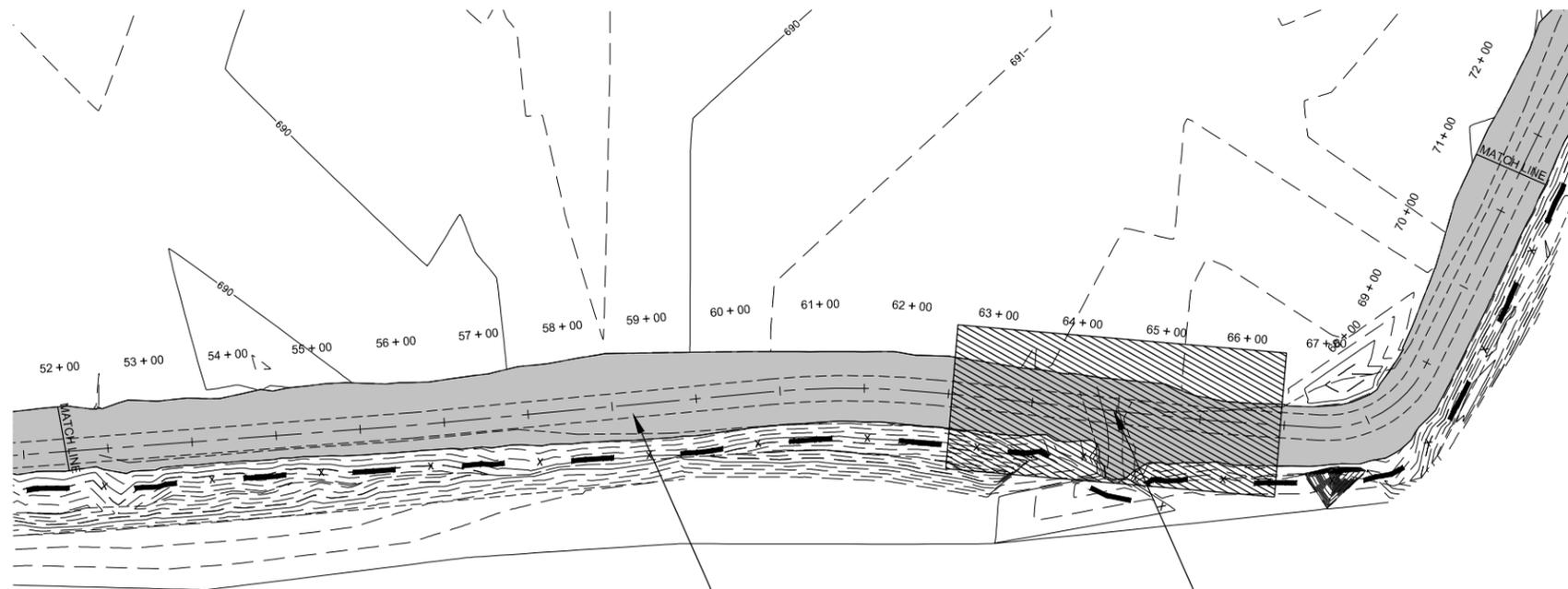


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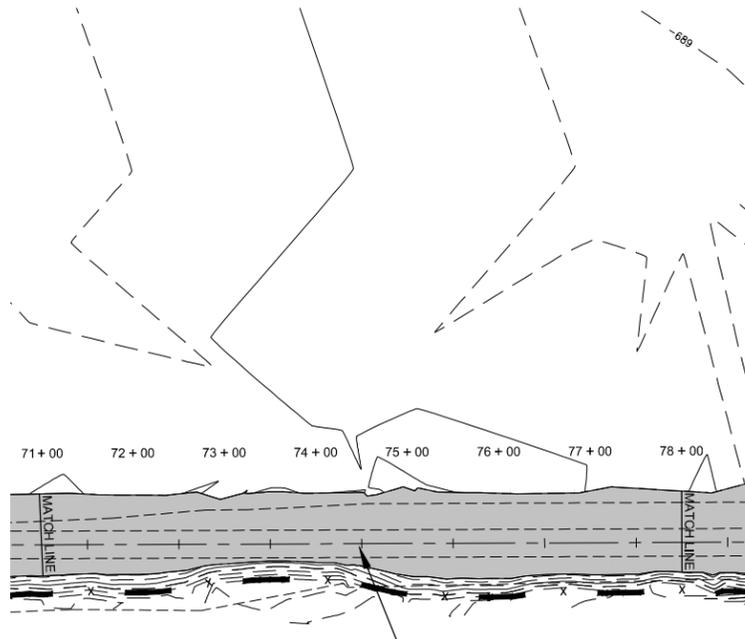
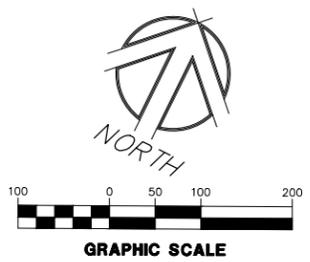
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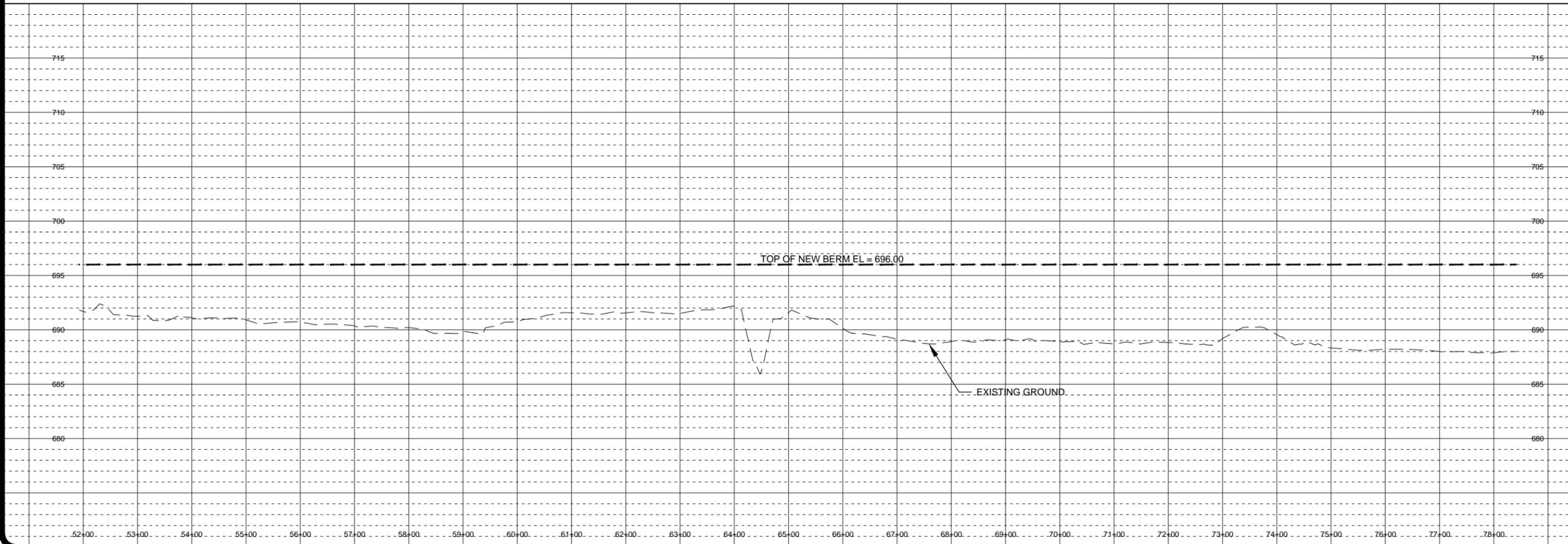


PHASE 2 BERM CONSTRUCTION

STA: 64+50
CONSTRUCT EMERGENCY SPILLWAY



PHASE 2 BERM CONSTRUCTION



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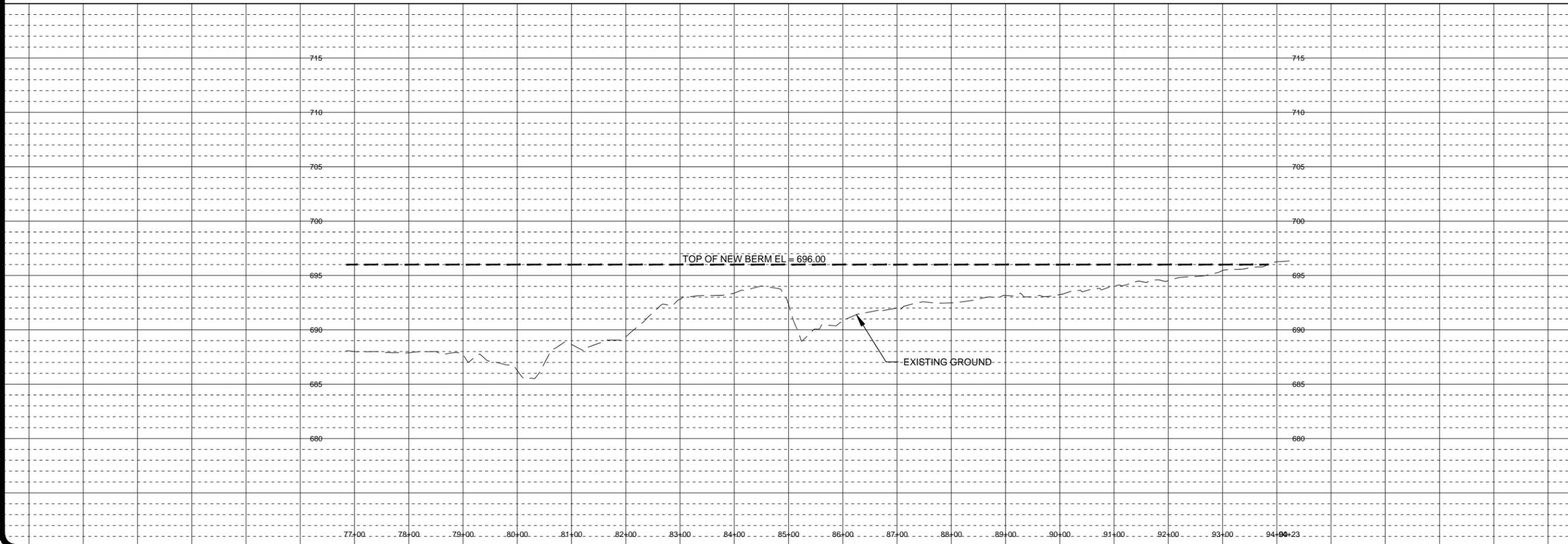
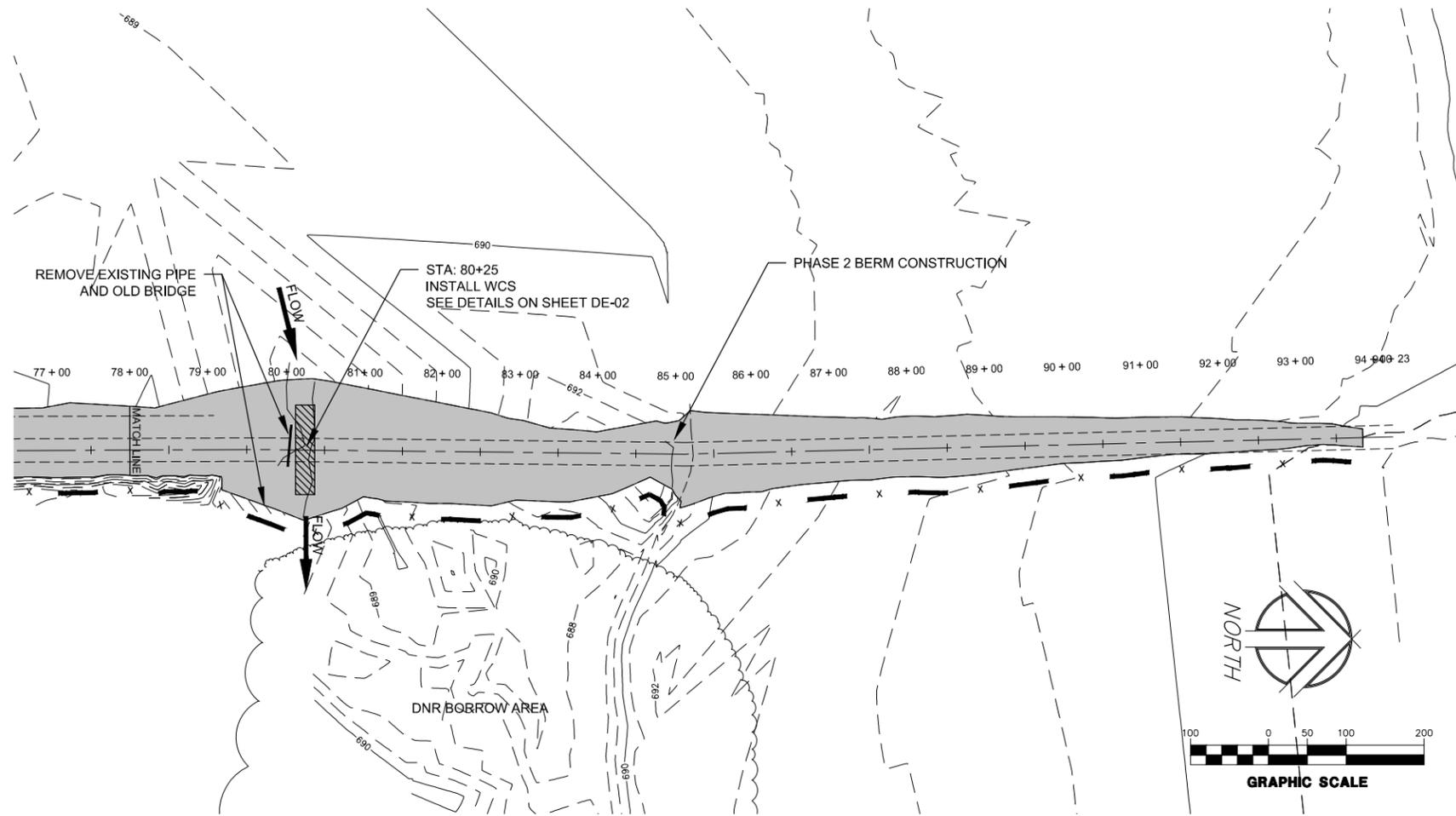
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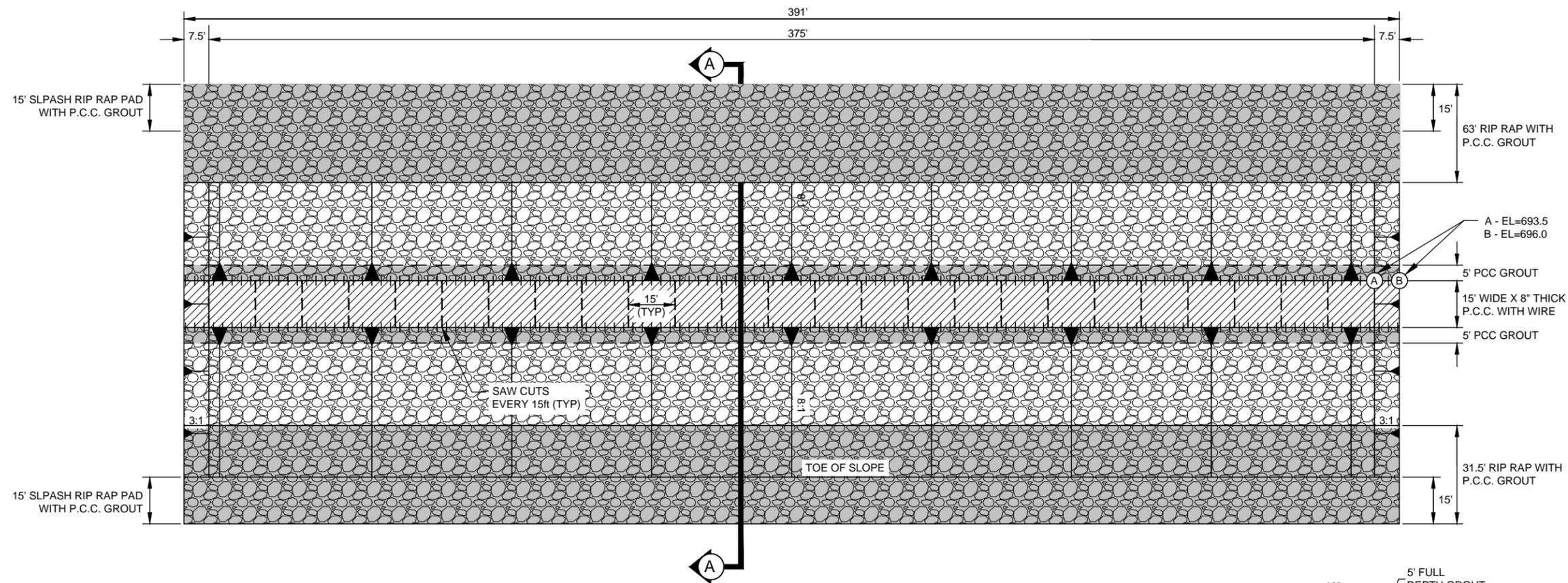


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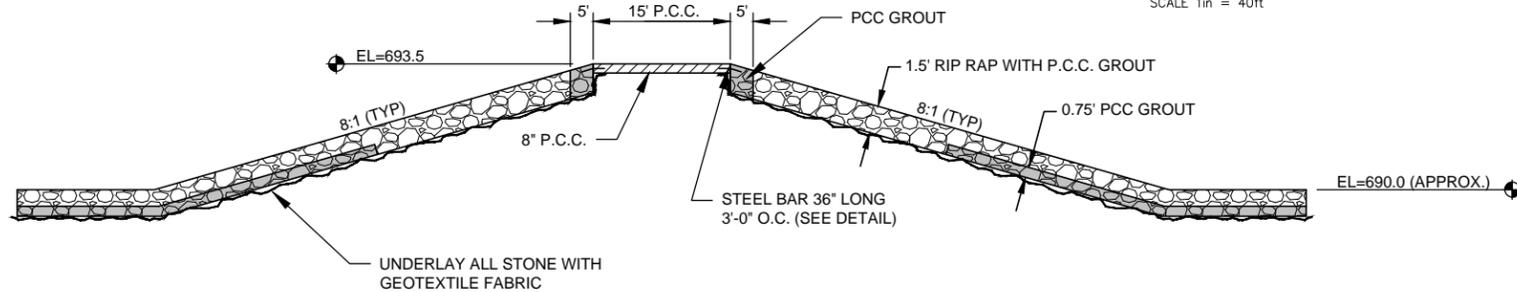
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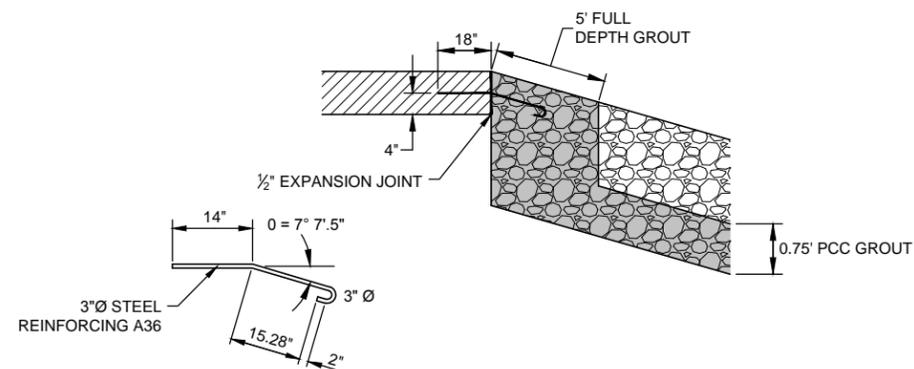
PRINCIPAL SPILLWAY PLAN VIEW (CL STA. 64+50)

SCALE 1in = 40ft



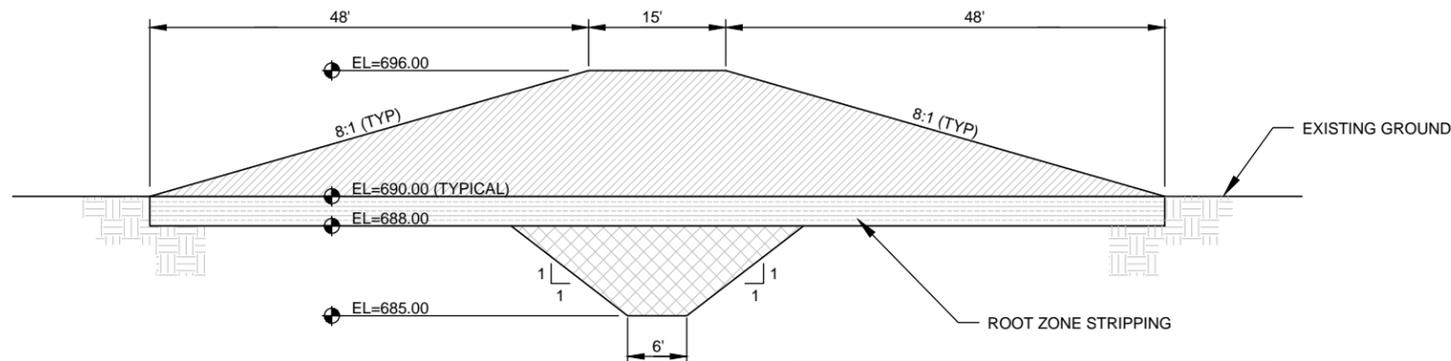
EMERGENCY SPILLWAY SECTION A-A

NTS



STEEL REINFORCING DETAIL (ON 3' CTRS)

NTS



EARTH DIKE TYPICAL SECTION

NTS

NOTE:
COMPACTED FILL WITH MOISTURE CONTROL IN 8 in. LIFTS.

EMERGENCY SPILLWAY AND EARTH DIKE DETAILS

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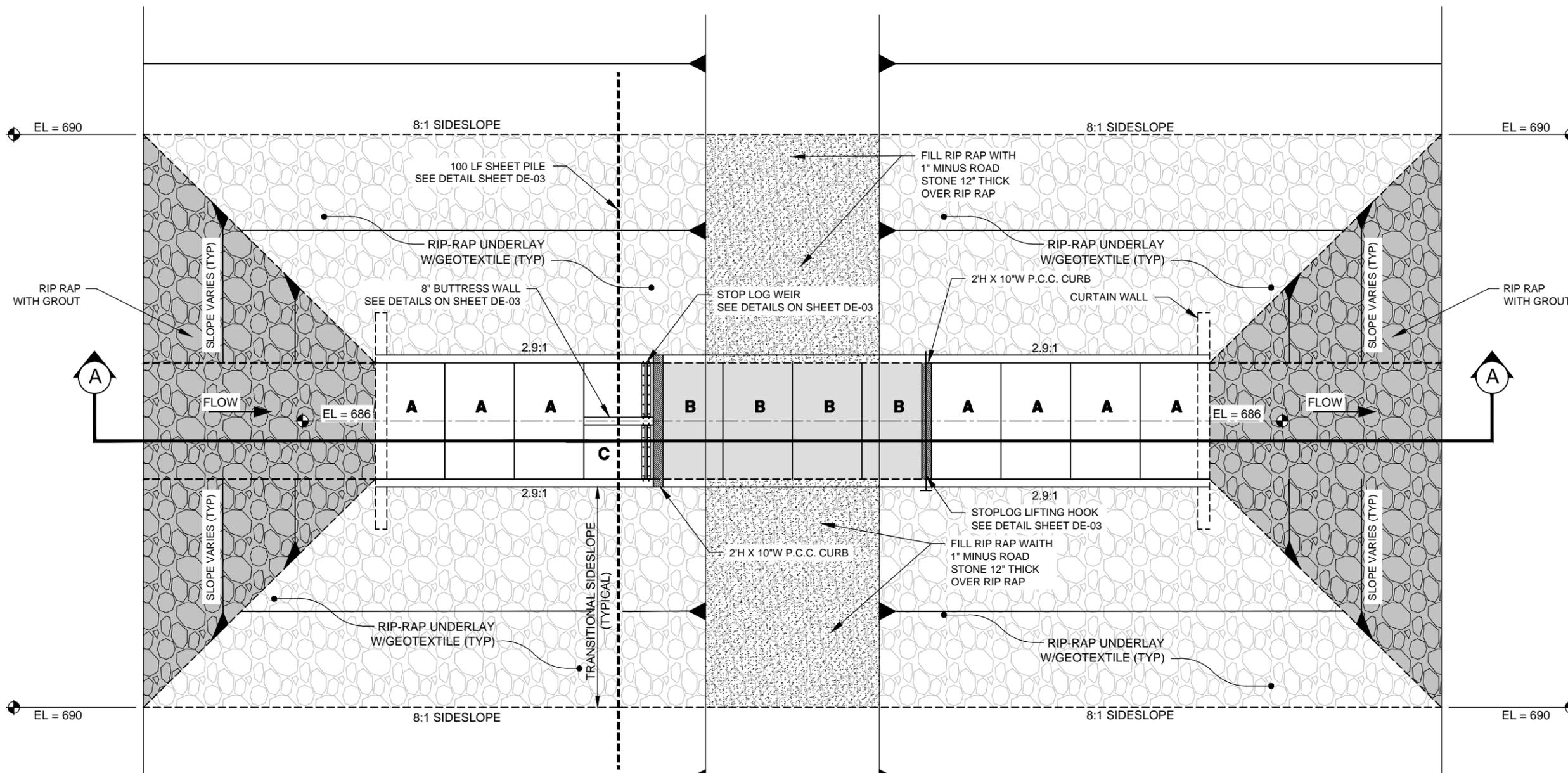
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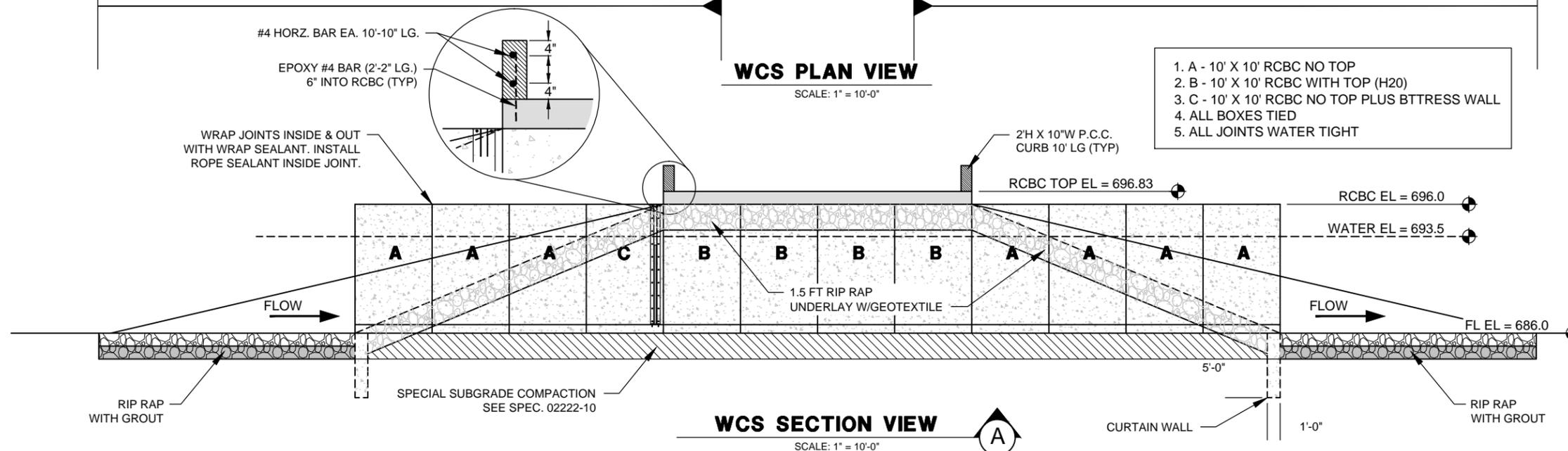
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WCS PLAN VIEW

SCALE: 1" = 10'-0"

1. A - 10' X 10' RCBC NO TOP
2. B - 10' X 10' RCBC WITH TOP (H20)
3. C - 10' X 10' RCBC NO TOP PLUS BUTTRESS WALL
4. ALL BOXES TIED
5. ALL JOINTS WATER TIGHT



WCS SECTION VIEW

SCALE: 1" = 10'-0"

**WATER CONTROL
STRUCTURE**

**HAWKEYE WILDLIFE
MANAGEMENT AREA WATER
QUALITY & WETLAND PROJECT**

JOHNSON COUNTY, IOWA

IDN 1412024

AUG. 2012

ISSUED

REVISIONS

10-29-2013

ENGINEER

BWJ

CHECKED BY

BWJ

DRAWN BY

RJS

FIELD BOOK NO.

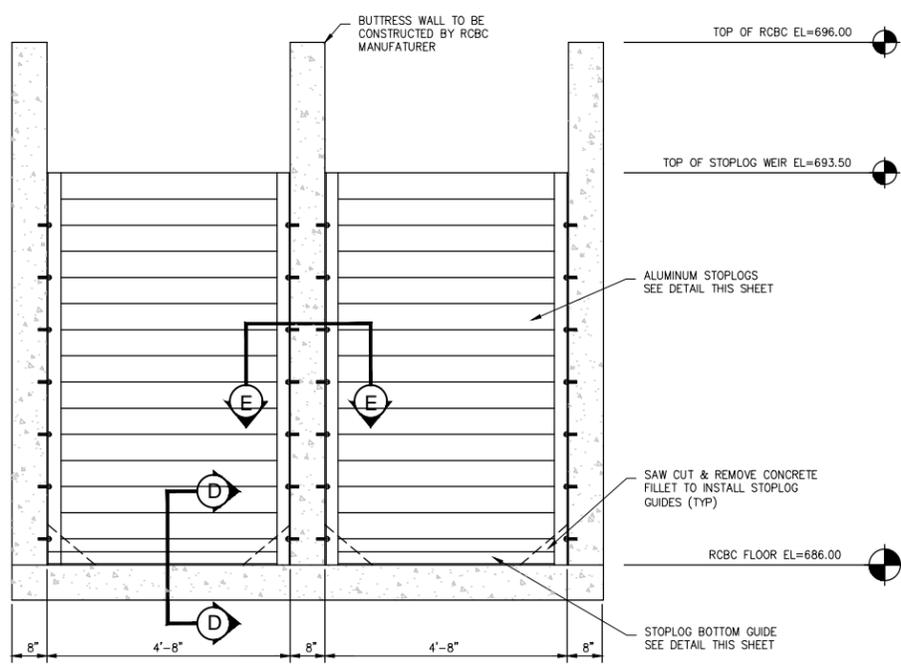
FIELDBOOK

DRAWING NO.

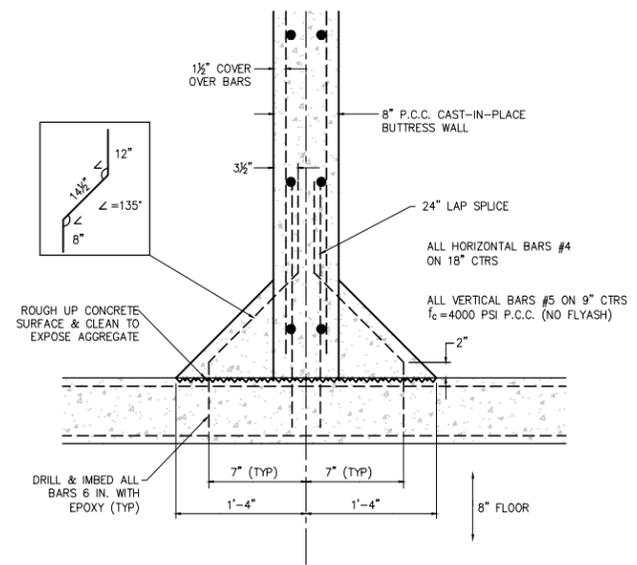
DE-02

SHEET NO.

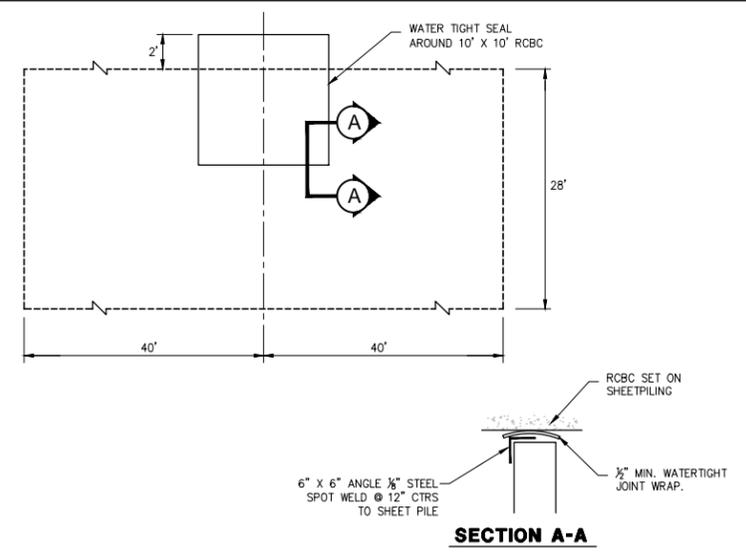
11 / 12



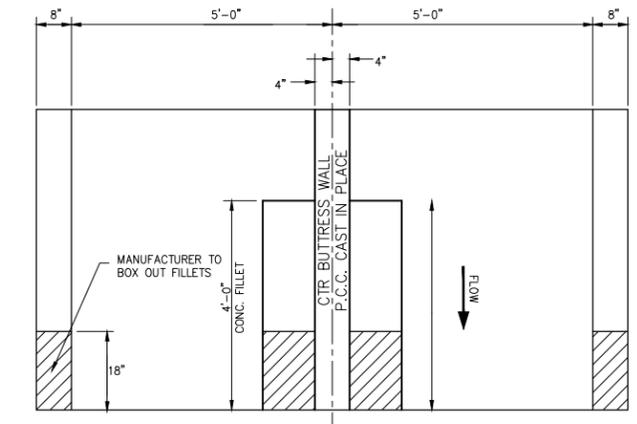
WCS SECTION B
NOT TO SCALE



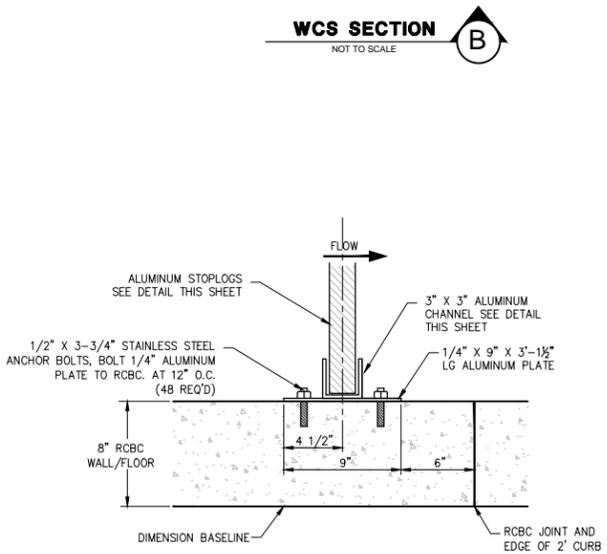
CONCRETE FILLET DETAIL
NOT TO SCALE



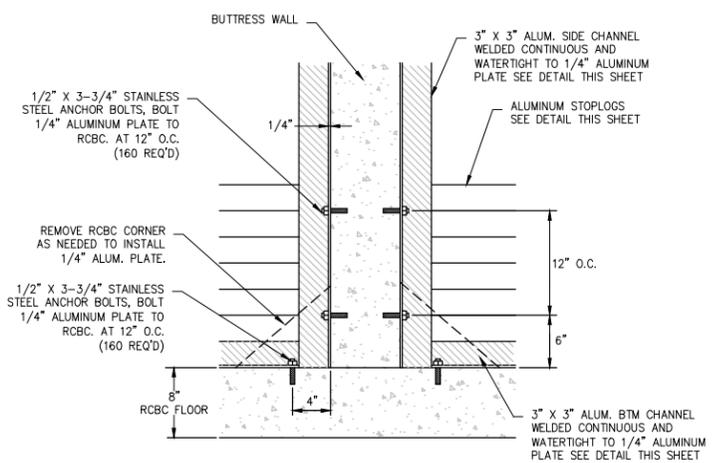
SHEET PILING DETAIL
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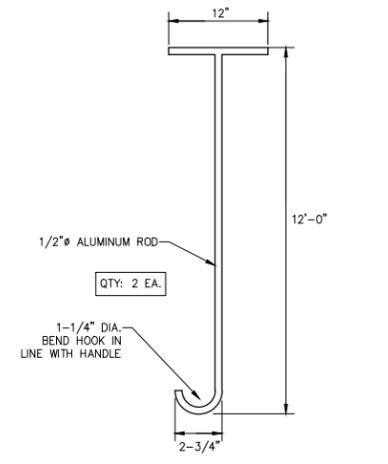
PLAN VIEW



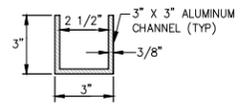
STOPLOG GUIDE DETAIL
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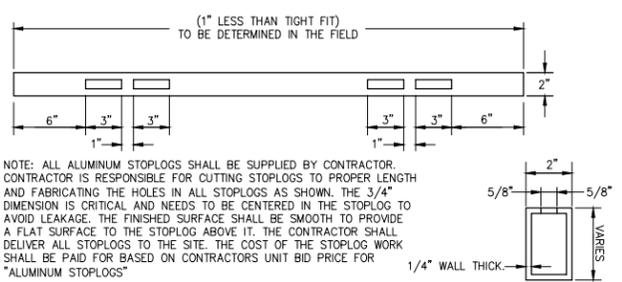
STOPLOG CHANNEL PLATE DETAIL E
NOT TO SCALE



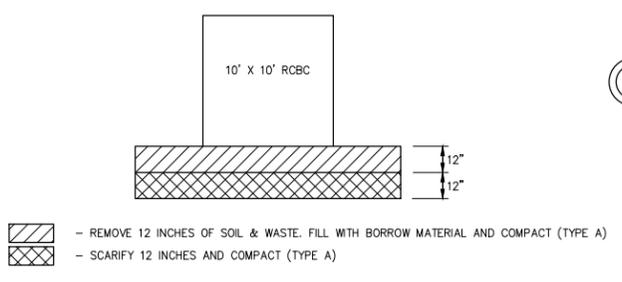
STOPLOG LIFTING HOOK DETAIL
NOT TO SCALE



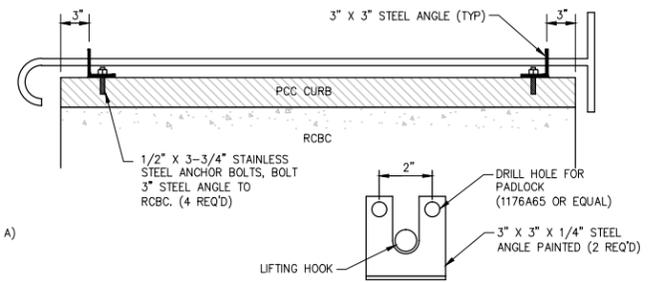
STOPLOG CHANNEL DETAIL
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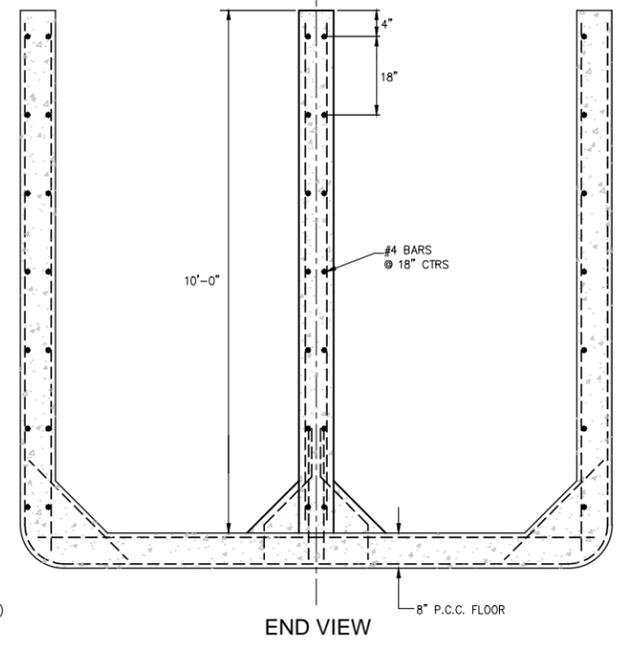
ALUMINUM STOPLOG DETAIL
NOT TO SCALE



SUBGRADE PREPARATION FOR 10' X 10' RCBC
NOT TO SCALE



STOPLOG LIFTING HOOK STORAGE DETAIL
NOT TO SCALE



END VIEW
CAST-IN-PLACE P.C.C. BUTTRESS WALL
NOT TO SCALE