

WATER PERMIT NO. 5799-3

Phone: 605 426-6575

Name of Applicant: Two Bar Two Grazing Association

Post Office Address: RR 1, Box 46, Ipswich SD 57451

Amount of Water Claimed: 35.5 acre-feet Total Acres: NA

Source of Water Supply: runoff

Water to be used for: domestic County: Edmunds

About 4 miles S, 5W of Ipswich

PRIORITY Date Received: 1-24-94 Fee: \$150 Remarks: _____

Corrected Application Received: 1-27-94 Period of Annual Use: Jan 1 - Dec 31

WATER QUALITY APPROVAL RECEIVED: NA APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as Application YES ____ NO ____ REMARKS: _____

Diversion Point: NE 1/4 SE 1/4 Sec 16-T122N-R69W

Land to be Irrigated: _____

		16			
				1	

Well Log: Driller: _____ Licensed YES ____ NO ____

Depth of Well: _____ REMARKS: _____

Type of Map: topo PREPARED BY: Doug Lipetzky, PE Reviewed and the Number

Assigned on: 1-27-94 By: Karen Schlaak

Mail to: Water Rights Div.
523 E. Capitol
Pierre, SD 57501
(605) 773-3352

No. 5799-3 Hydrologic Unit 10/6000B
Map No. _____ Basin James River
Newspaper Ipswich Tribune, Box 7

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use of water: Industrial ☐ Commercial ☐ Municipal ☐ Other Common Distribution System ☐
Rural Water System ☐ Suburban Housing ☐ Geothermal Heat ☐ Institutional ☐ Recreational ☐
Domestic ☒ (above 18gpm) Other ☐

Type of Application: Check one or more of the following

New ☒ Vested Right ☐ Future Use ☐ Change Use ☐

☐ Amend Permit No. _____ with old priority date retained

Change diversion point(s) ☐ Add diversion point(s) ☐ Other ☐ _____

☐ Application to: Change diversion point(s) ☐ Add diversion point(s) ☐ on Permit No. _____

☐ Construction to use water reserved by Future Use Permit No. _____

1. Name of Applicant Two Bar Two Grazing Association Phone No. (605) 426-6575

Post Office Address RR 1 Box 46 Ipswich SD State 57451
(Street, RR or Box) (City) (Zip Code)

2. Amount of water claimed (c.f.s) 35.5 acre-feet

3. Source of water supply 9.09 square mile unnamed drainage - runoff

4. Location of point of diversion NE 1/4 SE 1/4 of sec 16, T 122 N, R 69 W

Water impounded in: N 1/2 SE 1/4 Sec 16 - T 122 N - R 69 W

County Edmunds

5. Counties where water will be used Edmunds

6. Annual period during which water is to be used Yearlong use Jan 1 - Dec 31

7. Give a brief description of proposed project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

see enclosure

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed (see instruction)

STATE OF SOUTH DAKOTA
County of Edmunds ss

Quane Perrier the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed Boyd Schif

Subscribed and sworn to before me this 20 day of January 1994

My Commission Expires
May 15th, 2000



**SOUTH DAKOTA
WATER PERMIT NO. 5799-3**

Date of first receipt of application January 24, 1994.

Date of return to applicant for corrections, amendments or changes January 24, 1994.

Date of receipt of corrected application January 27, 1994.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 5799-3 to Two Bar Two Grazing Association, RR 1, Box 46, Ipswich SD 57451 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 5799-3 impounds 35.5 acre-feet of runoff water by constructing a dam in the NE 1/4 SE 1/4 Section 16 with water being impounded in the N 1/2 SE 1/4 Section 16; all in T122N-R69W. Water is to be stored annually to a spillway elevation of 1645.0 feet mean sea level.
2. The water appropriated shall be used for the purpose of supplying water for livestock and domestic use and may not exceed the amount of water needed for beneficial use for livestock watering and domestic use purposes.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date of approval of Permit No. 5799-3 is April 4, 1994.
5. The date from which applicant may claim right is January 24, 1994.
6. One-fifth of the construction is to be completed on or before October 4, 1996.
7. All construction is to be completed on or before April 4, 1999.
8. Water is to be put to beneficial use on or before April 4, 2003.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
2. Approval of Water Permit No. 5799-3 authorizes storage of up to 35.5 acre-feet of water annually.

WATER MANAGEMENT BOARD

By: 
John Hatch, Chief Engineer
Water Rights Division
Department of Environment and Natural Resources

MAY 18 1994

date

Supplemental Information

(type or print in ink)

1. Well Information - Proposed construction

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack Thickness _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well:
- On applicants property _____ On property owned by others _____

2. Dugout Information Estimates

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

3. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam please give their name and address

Ducks Unlimited
3502 Franklin Ave
Bismark, ND 58501
(701)258-5599

b) Freeboard 6 feet

c) Crest Width 15 feet

Crest Length 600 feet

d) Height 14 feet

e) Primary Outlet Capacity 230 cfs
If Pipe, diameter 84 inch riser
54 inch barrel

f) Secondary Spillway Capacity 670 cfs
Spillway width 40 feet

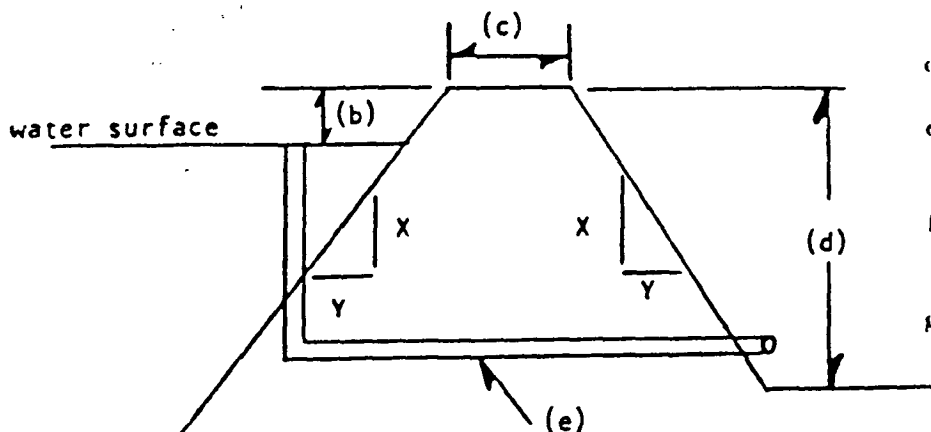
g) X & Y Slope
Upstream 3:1

Downstream 2.5:1

Surface Area of Impoundment 12.6 acres

Storage 35.5 acre feet

Drainage area above dam 5818 acres



Quane Perrier

Signature of Applicant



United States Department of the Interior

FISH AND WILDLIFE SERVICE
SAND LAKE NATIONAL WILDLIFE REFUGE
RR1, BOX 25
COLUMBIA, SOUTH DAKOTA 57433-9761
605/885-6320

IN REPLY REFER TO:

January 21, 1994

Eric Gronlund
Water Rights Division
DENR
Foss Building
Pierre, SD 57501

RE: Two Bar Two Grazing Assn. Water Permit

Dear Mr. Gronlund,

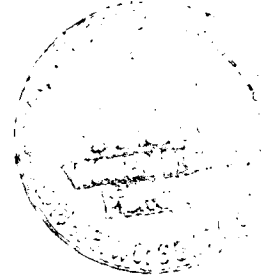
Enclosed is a water permit application along with a design report and plans for a dam reconstruction on the Two Bar Two Grazing Assn. Ducks Unlimited and the Fish and Wildlife are helping the grazing association with both the permitting processes and the financing of the reconstruction.

The Fish and Wildlife Service would appreciate be informed on the progress of the application if that would be possible. We would also like to pay for the cost of the application process if possible.

Please send any information to the address above.

Sincerely,

Boyd Schulz
Biological Technician



DESIGN REPORT

November 19, 1993



PROJECT: TWO BAR TWO GRAZING ASSOCIATION DAM
SD-153-01

LOCATION: Sections 16, T 122 N, R 69 W
5 miles south, 6 miles west of Ipswich
Edmunds County, South Dakota

MARSH DATA: Full Service Level (FSL) @ 1645.0
12.6 Surface Acres @ FSL
35.5 Acre-Feet Capacity @ FSL

PROJECT DESCRIPTION:

The project as proposed involves reconstruction of an existing dam located on land owned by the Two Bar Two Grazing Association. No other private or public land will be affected by the project. The U.S. Fish and Wildlife Service has obtained a perpetual grassland easement from the Association for the area encompassing the wetland project. The existing breached embankment is on an unnamed drainage that discharges into the North Fork Snake Creek and eventually into the James River. The contributing watershed consists of approximately 9.09 square miles.

PRELIMINARY RISK ASSESSMENT:

The project site is located in a rural area of Edmunds County. No residences or other buildings are located downstream adjacent to the outlet channel. An infrequently used section line trail with a 48" diameter corrugated metal pipe (CMP) exists approximately 800 feet downstream from the existing embankment. A second breached dam, known as Williams Dam is located about 1½ miles downstream on the same drainage. Ducks Unlimited is also planning to restore that small dam which will have approximately the same capacity as the Two Bar Two Dam. The only features directly downstream of Williams Dam are gravel section line roads with various size CMPs. No residences or other buildings are located adjacent to the drainage in the immediate area downstream from Williams Dam either.

Based on information obtained in the field, data present on the U.S.G.S. quadrangular maps, and the relative small size and capacity of the created marsh, the general public would be in no danger in the unlikely event of a dam failure. No loss of life and minimal or no economic loss would be expected. Therefore, per the classification criteria outlined in Chapter 74:02:08 "Safety of Dams," it is recommended that the proposed dam be classified as a small, low hazard, Category 3 dam.

The product of the intermediate storage capacity (69.3 acre-feet) times the effective height (8 feet) is 555 which is less than 3000. Therefore, the minimum spillway design flood is a 25-year frequency per 74:02:08:07.01 and must be passed through the spillway without overtopping the embankment.

DESIGN:

In accordance with South Dakota requirement 74:02:08:07.01, the minimum spillway design flood for the proposed dam is a 25 year frequency event. The proposed dam is designed to exceed the South Dakota requirements. The primary spillway will pass flows in excess of those produced by a 5-year 24 hour rainfall without using the emergency spillway. In addition, the primary and emergency spillways will pass flows in excess of those produced by a 100-year 24 hour rainfall event without overtopping the embankment.

An 84" diameter CMP overflow riser with a 54" diameter CMP outlet barrel is proposed as the primary spillway. The structure will have removable stoplogs to provide variable control and drawdown capability. The riser overflow crest elevation or full service level (FSL) is proposed at elevation 1645.0.

An existing 40 foot wide concrete weir at elevation 1647.1 will be used for the emergency spillway. The concrete weir is in good condition as well as the excavated spillway outlet channel. Some minor excavation will occur in an effort to make the emergency spillway more efficient. It should be noted that a natural overflow area to the east exists as well. This overflow area was not taken into account when analyzing the hydraulics of the project and predicting maximum water surface elevation, however, some flow will pass that direction during higher runoff events. There does not appear to be any reason for concern about this overflow area as it will simply act as a safety valve for the project.

Regression equations provided in *Techniques for Estimating Flood Peaks, Volumes, and Hydrographs on Small Streams in South Dakota*¹ were used to develop flood peaks for design purposes. The Soil Conservation Service (SCS) TR-20 Hydrology program was then calibrated by adjusting the curve number to produce a peak inflow for the various design events similar to those determined using the regression equations. The curve numbers were reviewed to ensure they were realistic for the runoff event. The calibrated TR-20 model was then used to determine the discharge at various reservoir stages with respect to time. The program uses accepted procedures to develop inflow and outflow hydrographs. The primary spillway capacity was calculated by comparing discharges developed by the weir flow formula and formulas for calculating head loss through

¹Becker, Lawrence D., U.S. Geological Survey, Water Resources Investigations 80-80, September 1980.

corrugated metal pipe. The emergency spillway capacity was calculated using Technical Release No. 39 *Hydraulics of Broad-Crested Spillways* developed by the SCS. A total discharge curve for the proposed dam is attached.

The following is a relationship between peak inflows, corresponding outflows, and reservoir elevations using the previously-mentioned methods of analysis:

<u>EVENT</u>	<u>PEAK INFLOWS</u>	<u>MAXIMUM WATER SURFACE ELEVATION</u>	<u>FREEBOARD AVAILABLE</u>	<u>TOTAL DISCHARGE</u>
10 YR	238 CFS	1647.44	3.56 FT	219 CFS
25 YR	424 CFS	1648.60	2.40 FT	399 CFS
50 YR	619 CFS	1649.27	1.73 FT	590 CFS
100 YR	832 CFS	1649.81	1.19 FT	810 CFS

Primary Spillway (Riser) Crest Elevation @ 1645.0
40' Concrete Weir Emergency Spillway Crest @ 1647.1
Top of Compacted Embankment Elevation @ 1651.0

A preliminary set of plans is submitted with the Design Report. A set of standard construction specifications has previously been submitted to the Division of Water Rights for the purposes of permit review.

Dated: November 19, 1993

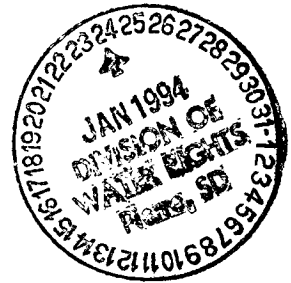
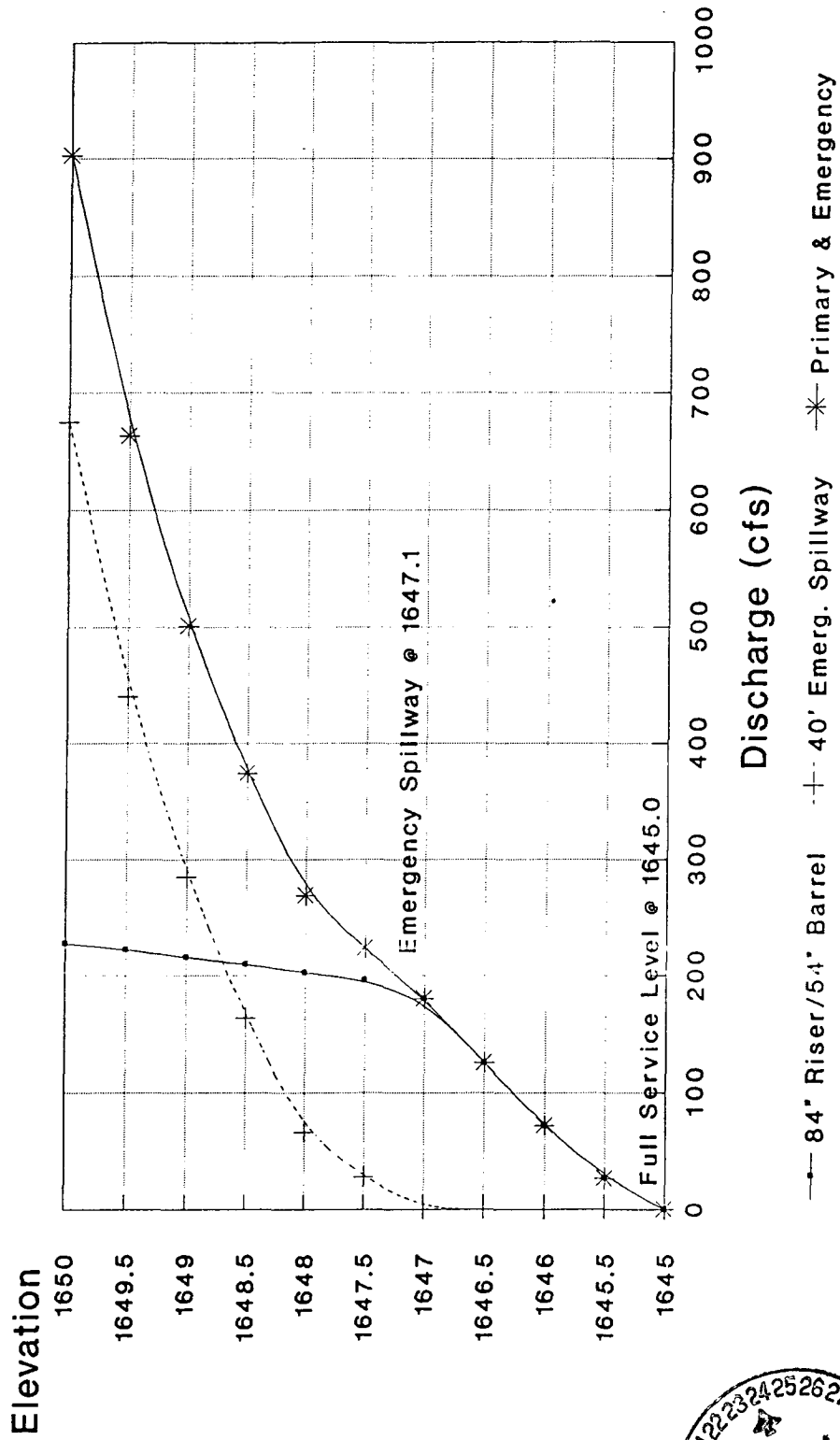
Submitted By:



Doug Lipetzky, P.E.
PE-4499

DISCHARGE CURVE

Two Bar Two Grazing Association Dam





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

January 24, 1994

Boyd Schulz, Biological Technician
Fish and Wildlife Service
RR 1, Box 25
Columbia SD 57433-9761

Dear Mr. Schulz:

We have received the water permit application for the Two Bar Two Grazing Association. The filing fee for this application will be \$150.00.

Upon receipt of the fee, further processing of the application will continue. If you have any questions, please contact this office.

Sincerely,

A handwritten signature in cursive script that reads 'Karen Schlaak'.

Karen Schlaak
Natural Resources Analyst
605 773-3352

c: Duane Perrion, Two Bar Two Grazing Association

RECEIPT

414013

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, _____ January 27, 19 94

RECEIVED OF Boyd Schulz, Sand Lake Refuge (Two Bar Two Grazing Assoc). Columbia SD
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>5799-3</u> to Appropriate Water, to construct and to put water to beneficial use _____	150	00
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	15000

By John Hatch
Chief Engineer

Two Bar Two Grazing Association Dam

Sec 16 - T122N-R69W

Storage: 35.5 ac. ft.

Intermediate Storage Capacity = 69.3

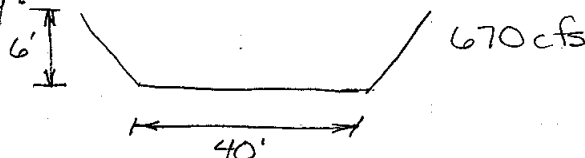
Height: 14'

Watershed Area: 5818 ac. = 9.09 mi²

Primary Outlet: 84" riser, 64" barrel, 68', S = 1.32%

230 cfs

Emergency Spillway:



Category 3, small size dam.

$$69.3 \text{ ac. ft} \times 8' = 554.4 < 3000$$

∴ Small size dam

$$\text{Spillway Capacity} = 2.64 H^{3/2} = 1528 \text{ cfs}$$

Primary Outlet Capacity
SCS Engineering Field Manual

$$Q = a \sqrt{\frac{2gH}{1 + K_m + K_p L}}$$

$$= 15.9 \sqrt{\frac{2(32.2)(8')}{1 + 1 + .0121(68)}}$$

$$= 215 \text{ cfs.}$$

$$a = \frac{\pi(\frac{54}{12})^2}{4} = 15.90 \text{ ft}^2$$

$$g = 32.2 \text{ ft/s}^2$$

$$H = 1645 - 1637 = 8'$$

$$L = 68'$$

$$K_m = 1.0$$

$$K_p = .0121$$

Runoff: $Q_{25} = 83.4 A^{0.60} S^{0.44} S_i^{-0.72}$

$$= 83.4 (9.09)^{0.60} (26.4)^{0.44} (3.16)^{-0.72}$$

$$= 578 \text{ cfs}$$

$$A = 9.09 \text{ mi}^2$$

$$S = .005' / 1' = 26.4' / \text{mi}$$

$$S_i = 3.16$$

$$Q_{50} = 106 (9.09)^{0.63} (26.4)^{0.45} (3.16)^{-0.69}$$

$$= 840 \text{ cfs}$$

$$Q_{100} = 132 (9.09)^{0.65} (26.4)^{0.46} (3.16)^{-0.67}$$

$$= 1114 \text{ cfs}$$



United States Department of the Interior

FISH AND WILDLIFE SERVICE
SAND LAKE NATIONAL WILDLIFE REFUGE
RR1, BOX 25
COLUMBIA, SOUTH DAKOTA 57433-9761
605/885-6320

IN REPLY REFER TO:



January 25, 1994

Karen Schlaak, Natural Resources Analyst
Department of Environmental and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dear Karen,

Enclosed is a \$150.00 money order for the Two Bar Two Grazing Association water permit application. I hope this has not caused you any inconvenience.

If you need anything else I can be reached at the number above.

Sincerely,

Boyd Schulz
Biological Technician

Contents of Plans & Specifications :

- 1) Topographic map ✓
- 2) Borings
- 3) Dam x-section, outlet works ✓
- 4) Area-Capacity Curves ✓
- 5) Outlet x-sections and controls ✓

**Report on Application No. 5799-3
Two Bar Two Grazing Association
February 9, 1994**

This application proposes to impound 35.5 acre-feet of runoff water by constructing a dam in the NE 1/4 SE 1/4 Section 16 with water being impounded in the N 1/2 SE 1/4 Section 16; all in T122N-R69W. Water is to be stored annually to a spillway elevation of 1645.0 feet mean sea level and is to be used for livestock watering and domestic use.

According to the Design Report submitted with the application, the dam is a category 3, small size dam. "Category 3 dam" is a low hazard dam whose failure may cause limited damage to agricultural lands or county and township roads or minimum economic loss. The dam will be 14 feet high (effective height of 8 feet) with a storage capacity of 35.5 acre-feet to the primary outlet elevation. The spillway is required to have a minimum capacity of passing a 25 year frequency event based on Safety of Dams rule 74:02:08:07:01.

The drainage area of the proposed dam is 9.09 square miles (5818 acres) and has a peak inflow from a 25 year frequency event of 424 cubic feet of water per second (cfs). The dam is designed with a 40 foot concrete weir emergency spillway with a capacity of 670 cfs and a primary outlet with a capacity of 230 cfs. The combined capacity of 900 cfs exceeds the 100 year frequency event.

The plans and specifications have been reviewed for this project and will be approved after a water permit is obtained. The proposed project involves reconstruction of an existing dam that will utilize an 84" diameter CMP overflow riser with a 54" diameter CMP outlet barrel as the primary spillway. An existing 40 foot wide concrete weir will operate as the emergency spillway. The invert of the barrel at the riser is one foot below the downstream lip of the plunge pool, as a result the pipe may be inundated with water. This was discussed with the designers. To obtain outlet control with a reduced outlet velocity, the outlet was designed with the outlet pipe submerged.

The dam will be located on an unnamed drainage, 6 miles west and 4.75 miles south of Ipswich, South Dakota. The drainage discharges into the North Fork of Snake Creek. There are no water rights on the drainage that would be effected by the proposed dam. A second breached dam known as Williams Dam is located 1 1/2 miles downstream on the same drainage. Ducks Unlimited is also planning to restore the Williams Dam which will have approximately the same capacity as the dam on this application. Because of the small size of both dams and the extensive drainage area, water availability should not be a problem.

Conclusions:

1. There is water available from the drainage.

2. Existing water rights will not be impaired.
3. The spillways will pass more than the 100 year frequency event, exceeding the 25 year frequency event required by the rules.
4. Plans and specifications for the dam are acceptable and will be approved upon approval of the water right application.



Lynn Beck
Natural Resources Engineer III

Approved by:



Gale N. Selken, P.E.
Natural Resources Engineer IV

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 5799-3, Two Bar Two Grazing Association

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Water Permit Application No. 5799-3, Two Bar Two Grazing Association, c/o Duane Perrion, RR 1 Box 46, Ipswich, SD 57451.

The Chief Engineer is recommending APPROVAL of Application No. 5799-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualifications:

1. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
2. Approval of Water Permit No. 5799-3 authorizes storage of up to 35.5 acre-feet of water annually.

See report on application for additional information.


JOHN HATCH, Chief Engineer
March 4, 1994



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

March 8, 1994

Doug Lipetzky, P.E.
Regional Engineer
Ducks Unlimited, Inc.
3502 Franklin Avenue
Bismarck, ND 58501-9329

Dear Mr. Lipetzky:

We have reviewed the plans and specifications for the Two Bar Two Grazing Association dam reconstruction project. The plans and specifications as submitted will be approved after a water permit is obtained.

Our review was to determine compliance with the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release the Two Bar Two Grazing Association and the U.S. Fish and Wildlife Service, as owners of the structure, from the responsibility for operating and maintaining the dam in good repair.

The Two Bar Two Grazing Association dam will be classified as a Category 3, Low Hazard dam with an embankment height of 14 feet, a normal storage capacity of 35.5 acre-feet and a maximum storage capacity of 250 acre-feet.

If you have any questions, please feel free to contact me.

Sincerely,

Gale N. Selken, P.E.
Natural Resources Engineer IV
Water Rights Division
(605) 773-3352

c: Two Bar Two Grazing Association
Boyd Schulz, U.S. Fish and Wildlife Service



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

March 9, 1994

Doug Lipetzky, P.E.
Regional Engineer
Ducks Unlimited, Inc.
3502 Franklin Avenue
Bismarck, ND 58501-9329

Dear Mr. Lipetzky:

We have reviewed the plans and specifications for the Two Bar Two Grazing Association dam reconstruction project. The plans and specifications as submitted are approved. Approval of the plans and specifications does not authorize construction of the project. No construction may begin until Water Permit Application No. 5799-3 is approved.

Our review was to determine compliance with the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release the Two Bar Two Grazing Association and the U.S. Fish and Wildlife Service, as owners of the structure, from the responsibility for operating and maintaining the dam in good repair.

The Two Bar Two Grazing Association dam will be classified as a Category 3, Low Hazard dam with an embankment height of 14 feet, a normal storage capacity of 35.5 acre-feet and a maximum storage capacity of 25 acre-feet.

If you have any questions, please feel free to contact me.

Sincerely,

Gale N. Selken, P.E.
Natural Resources Engineer IV
Water Rights Division
(605) 773-3352

c: Two Bar Two Grazing Association
Boyd Schulz, U.S. Fish and Wildlife Service



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.**

March 8, 1994

Duane Perrion
Two Bar Two Grazing Association
RR 1 Box 46
Ipswich, SD 57451

Dear Mr. Perrion:

Water Permit Application No. 5799-3 for domestic use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Ipswich Tribune printed at Ipswich, SD (Ph # 426-6471). For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. The publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspaper has been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

c: Boyd Schulz, US Fish and Wildlife Service, Sand Lake National Wildlife Refuge,
RR 1 Box 25, Columbia, SD 57433-9761



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

March 8, 1994

Ipswich Tribune
Box 7
Ipswich, SD 57451-0007

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 5799-3 to be published twice. Please publish the first notice on March 16, 1994, with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is Two Bar Two Grazing Association, RR 1 Box 46, Ipswich, SD 57451 (Ph # 426-6575).

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. No action may be taken on the permit application until proof of publication has been received.

Sincerely,

Eric Gronlund
Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----
FIRST TRANSMITTAL NOTICE

TO: Eric Gronlund
Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of
Hearing to Appropriate Water by Application No. _____ which was first
published in our issue of _____. ENCLOSED IS A COPY OF THIS
FIRST PUBLICATION.

Name

Newspaper

Instruction to Newspaper - Publish first Notice on March 16, 1994, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 5799-3 to Appropriate Water

Notice is given that Two Bar Two Grazing Association, RR 1 Box 46, Ipswich, SD 57451 has filed an application for a water permit to impound 35.5 acre-feet of runoff water by constructing a dam in the NE 1/4 SE 1/4 Section 16 with water being impounded in the N 1/2 SE 1/4 Section 16; all in T122N-R69W. Water is to be stored annually to a spillway elevation of 1645.0 feet mean sea level and is to be used for livestock watering and domestic use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5799-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the chief engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and chief engineer. The applicant must file a petition if contesting the chief engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by April 4, 1994.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Division address to request copies of information pertaining to this application. Russell L. Stone, Acting Secretary, Department of Environment and Natural Resources.

PUBLIC NOTICE**PROOF OF PUBLICATION**

STATE OF SOUTH DAKOTA)
) ss
 County of EDMUNDS)

I, RUTH GIBSON

certify that the attached printed Notice was

taken from the IPSWICH TRIBUNE

printed and published in IPSWICH

County of EDMUNDS and State of

South Dakota. The notice was published in
 the newspaper on the following two dates:

March 16, 1994

March 23, 1994

Cost of Printing: \$33.41

Ruth Gibson
 (Signature)

BOOKKEEPER

(Title)

3-23-94

(Date Signed)

**NOTICE OF APPLICATION NO. 5799-3
to Appropriate Water**

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(Publish B 3-16,23)



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

MAY 18 1994

Duane Perrion
Two Bar Two Grazing Association
RR 1 Box 46
Ipswich, SD 57451

Dear Mr. Perrion:

Enclosed is Water Permit No. 5799-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Also enclosed is Form 10, Notice of Completion of Works and Application of Water to Beneficial Use, which you are to complete and submit to the Chief Engineer when you have completed the system and/or have put the water to beneficial use. An inspection can then be scheduled so that the Water License may be issued, thus completing your acquisition of a Water Right.

Very truly yours,

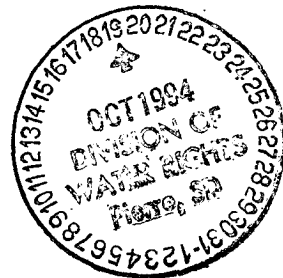
JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352

enclosures

PLEASE NOTE: Certain changes can be made in your permit within the five year construction period, usually without affecting the priority date provided an application to amend your permit is made within the five year period - i.e. changes in location or number of diversion points (wells) or location of land to be irrigated. Well locations for wells into the same aquifer can be moved up to 660 feet without application.

Applications to amend a permit after the five year construction period will be assigned a new priority date. Applications to change water sources, to add lands or increase original diversion rates, if approved will usually receive the date of the new application as a priority date regardless of the five year construction period.

c: Boyd Schulz, US Dept of the Interior, Sand Lake Nat'l Wildlife Refuge, RR 1 Box 25, Columbia, SD 57433-9761



NOTICE OF COMPLETION OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE

Date 10 - 18 - 94

TO: Water Rights Division, DENR
523 E. Capitol
Pierre, SD 57501-3181

FROM: Two Bar Two Grazing Assoc. RR-1 Box 46
(name) (address)
Epwich S.D. 57451 426-6575
(city) (state) (zip) (phone)

I have completed the construction of the water diversion system and I have put the water to beneficial use to the maximum extent it is going to be used. I have not exceeded the amounts specified in Water Permit No. 5799-3

Water Permit No. 5799-3 states that the diversion system is to be constructed by 4-4-99, and that the water is put to beneficial use by 4-4-2003.
(date) (date)

The diversion system was completed on 9-20-1994.
(date)

Applying the water to beneficial use was completed on 10-1-1994.
(date)

You may schedule an inspection so that the Water License may be issued.

Duane Perrin
(signature)

Conversation or File Documentation

NAME OF PERSON OR FILE: TWO BAR TWO GRAZING ASSOC. (DUANE PERRION)ADDRESS: R1 Box 46 IPSWICH COUNTY EDMUNDSDATE: 7/18/95 TELEPHONE 605-426-6575RE: STATUS of WATER PERMIT

COMMENTS:

I CALLED MR PERRION TO SET UP WATER PERMIT INSPECTION BECAUSE WATER RIGHTS HAD RECEIVED A COMPLETION of WORKS FORM DURING THE FALL of 1994. MR PERRION SAID THAT THE DAM WAS CONSTRUCTED BUT WASHED OUT DURING THE SPRING of 1995. ~~HE~~ HE SAID HE HAD CONTACTED US FISH ABOUT REBUILDING THE STRUCTURE. I TOLD THAT THE ORIGINAL CONSTRUCTION PERIOD RAN UNTIL 1999. I TOLD HIM TO CONTACT WATER RIGHTS WHEN THE DAM HAD BEEN RE-BUILT AND WE WOULD RESCHEDULE AN INSPECTION.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Shirley D. Smith



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 31, 2001

5799-3
5800-3

Brian Wehausen
Sand Lake Refuge
39650 Sand Lake Dr
Columbia, SD 57433

Dear Mr. Wehausen:

On June 5, 2001, the investigation of the water use systems, as developed under Water Permit No. 5799-3 (Two Bar Two Grazing Association) and Water Permit No. 5800-3 (LeRoy Williams), was completed by Stacy Johnson, a staff engineer with our program. Both of these permits are located in Edmunds County, South Dakota. The final water right document, the water license, can now be issued for each permit.

State law requires that we charge a \$50.00 fee for the investigation and issuance of each water license. It is our understanding that Sand Lake Refuge will be paying the fee for the grazing association and for Mr. Williams. Upon receipt of \$100.00 from you, we will complete processing the water licenses. The check or money order for the fee (total of \$100.00) should be made payable to the "Water Rights Program".

If you have any questions regarding the water permits, the investigation of the water use systems or payment of the fees, please contact Genny McMath with our program at (605) 773-3352.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

* INVOICE *

Invoice No. 20411-5799-3&5800-3

Brian Wehausen
Sand Lake Refuge
39650 Sand Lake Dr.
Columbia, SD 57433

Investigation & issuance of water license #5799-3 (Two Bar Two Grzing Association)	\$50.00
Investigation & issuance of water license #5800-3 (Le Roy Williams)	\$50.00

PLEASE PAY THIS AMOUNT: **\$100.00**



Glenda Marks
Secretary
Water Rights Program
(605) 773-3352

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

416941

Pierre, OCTOBER 16, 20 01

RECEIVED OF Brian Wehausen, Sand Lake Refuge, 39650 Sand Lake Dr., Columbia, SD 57433
the following amount in fees for services rendered as provided for by law: (Two Bar Two Grazing Association)

Fee for Application for Permit No. _____ to Appropriate Water, to construct
and to put water to beneficial use _____

Fee for Application for Permit No. _____ to Appropriate Water, for Future
Use _____

Fee to retain Future Use Permit No. _____ after period of seven years.

Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water
License No. 5799-3

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for _____
Payment was electronic transfer

(Any Other Work Provided by Law)

Total

50 00

By

Darlene Erbe

Chief Engineer

gm

Verhelst, Sandy

From: Tillman, Sandy
Sent: Monday, October 15, 2001 4:17 PM
To: Verhelst, Sandy
Subject: 9/6 FWS wire

This wire was receipted in by Commerce and they then realized it didn't belong to them. Does this belong to DENR?

FWS TREAS 312 MISC PAY 090601 466000364141600 RMT*IV*20411-5799-3&5800-3 **
\$100.00 09/06/2001

5220FWS TREAS 312 3121036500CCDMISC PAY
0906010109062492121036500000027
622091408598000000017012697630000010000466000364141600SOUTH DAKOTA DEPT OF
061121036504157514
705RMT*IV*20411-5799-3&5800-3 *****INVOICE DATE: 09/04/01 \00014157514

Permit No. 5799-3

James River - Water District

Other permit/license(s) associated with project: none

Contact Person & Address: **Duane Perrion, 35892 144th Street, Ipswich, SD 57451**

Report Of Examination Of Works

On, June 5, 2001, I made a thorough examination of the water use system constructed by **Two Bar Two Grazing Association of 35892 144th Street, Ipswich, SD 57451** holder of Permit No. 5799-3, bearing the priority of January 24, 1994, authorizing the storage of 35.5 acre-feet of the waters for **livestock watering and domestic use** purposes, in **Edmunds** County.

The system is in the following condition good. The point of diversion is located **from the SE corner of Section 16 T122N-R69W it is 875 feet west and 1380 feet north** with a longitude of -99.157158 and a latitude of 45.379134. The works are capable of diverting and conveying to the place of storing 35.5 acre-feet of water that is to be used for **livestock watering and domestic use purposes**.

The license should be issued for 35.5 acre-feet of storage.

Review of Permit Qualifications And Regulations:

- 1) Special qualifications to permit being abided by yes
- 2) All structures, wells and lands on map yes
- 3) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period NA
- 4) Exceptions to compliance are: none

Report On the Specifics of the System

Dam Information:

- | | |
|--|---|
| 1) Height to crest <u>14</u> feet | 2) Height to primary spillway or outlet <u>8</u> feet |
| 3) Height to secondary spillway <u>NA</u> ft | 4) Crest width <u>15</u> feet |
| 5) Crest length <u>600</u> feet | 6) Spillway length <u>400</u> feet |
| 7) Spillway width <u>40</u> feet | 8) Approx. storage <u>35.5</u> ac-ft |
| 9) Outlet tubes: | |
| a) height <u>84</u> inches | b) type <u>CMP</u> |
| c) valved <u>drop 54" diameter</u> | d) valve type <u>none</u> |

COMMENTS: Pipe is bent slightly on the downstream side of dam. There are animal burrow holes on top of dam and side.

Stacy J. Johnson

Stacy J. Johnson

Natural Resources Engineer

DENR, Water Rights Program

7-30-01

Date

Section 16 T122N-R69W



Area of impoundment water = 35.5 Acre-feet

Center of dam



0.3

0

0.3 Miles



Stacy J Johnson 7-30-01
Stacy J Johnson
Natural Resources Engineer
SD DENR Water Rights Program

STATE OF SOUTH DAKOTA

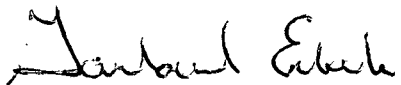
WATER LICENSE NO. 5799-3

(1) Two Bar Two Grazing Association, 35892 144th St, Ipswich SD 57451 made Application No. 5799-3, January 24, 1994 for a water permit to impound 35.5 acre-feet of water from runoff, Edmunds County, South Dakota for livestock watering and domestic use purposes. Permit No. 5799-3, with a priority date of January 24, 1994 was approved April 4, 1994 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before April 4, 1999 and for the application to beneficial use of said water on or before April 4, 2003.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the storage dam and is entitled to impound 35.5 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation of 1645.0 feet mean sea level. The location of the storage dam (spillway) is 875 feet west and 1,380 feet north from the southeast corner of Section 16-T122N-R69W (NE ¼ SE ¼).

(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use.

(4) Pursuant to South Dakota Water Law 46-5-30.1 Two Bar Two Grazing Association, 35892 144th St, Ipswich SD 57451 the holder and/or owner of Water Right No. 5799-3 is issued a license to appropriate water, the right to impound 35.5 acre-feet of water from runoff with sufficient water annually to maintain the water level to the outlet elevation of 1645.0 feet mean sea level with a priority date of January 24, 1994 from the location specified in (2) of this license for livestock watering and domestic use. This license is subject to any limitations or qualifications listed in Water Right No. 5799-3 and subject to South Dakota State Law.



Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

NOV 07 2001

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

NOV 07 2001

5799-3

Two Bar Two Grazing Association
35892 144th St.
Ipswich, SD 57451

Dear Sir:

Enclosed is Water License No. 5799-3. This is the final water right document completing your process of obtaining a Water Right.

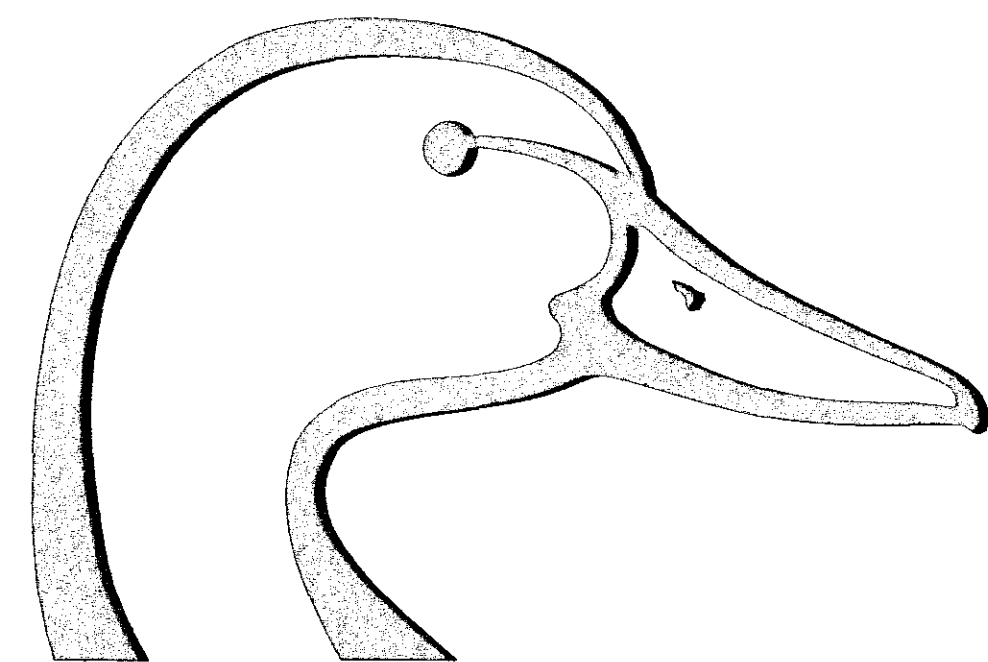
As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-335

enclosures

cc: Sand Lake Refuge, Columbia, SD



DUCKS UNLIMITED

SPECIFICATIONS

GENERAL CONDITIONS	101
MOBILIZATION	201
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EXCAVATION	203
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& CULVERT APPURTENANCES	206A
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CAST-IN-PLACE	
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EMERGENCY SPILLWAY	
PLAN & PROFILE	3
BREACH EXCAVATION DETAILS	4
EMBANKMENT DETAILS	5
STRUCTURE DETAILS	6
SOILS INFORMATION	7

ESTIMATED QUANTITIES

MOBILIZATION	1 L.S.
SITE PREPARATION	1 L.S.*
EXCAVATION	1530 C.Y.-P**
EMBANKMENT CONSTRUCTION	2014 C.Y.-P***
WATER	20 M-GAL,****
WATER CONTROL	
STRUCTURE INSTALLATION	1 L.S.
WATER CONTROL STRUCTURE	
& CULVERT APPURTENANCES	1 INC.
CULVERT INSTALLATION	
18"Ø CMP	14 L.F.
54"Ø CMP	68 L.F.
CAST-IN-PLACE	
REINFORCED CONCRETE	1 INC.
RIPRAP PLACEMENT	110 C.Y.-P

*INCLUDES 150 C.Y. STRIPPING ON EMBANKMENT; REMOVAL, SALVAGE & REPLACEMENT OF RIPRAP ON UPSTREAM SIDE OF EXISTING EMBANKMENT; & OTHER ITEMS NOTED IN SPECIFICATION 202.
**INCLUDES BREACH EXCAVATION & EXCAVATION FOR PLUNGE POOL & RIPRAP.
***INCLUDES 10% FOR SHRINKAGE
****BASED ON 10 GAL./C.Y., HOWEVER, SEE SPECIFICATION 205.

DUCKS UNLIMITED

PROJECT

TWO BAR TWO
GRAZING ASSOCIATION DAM

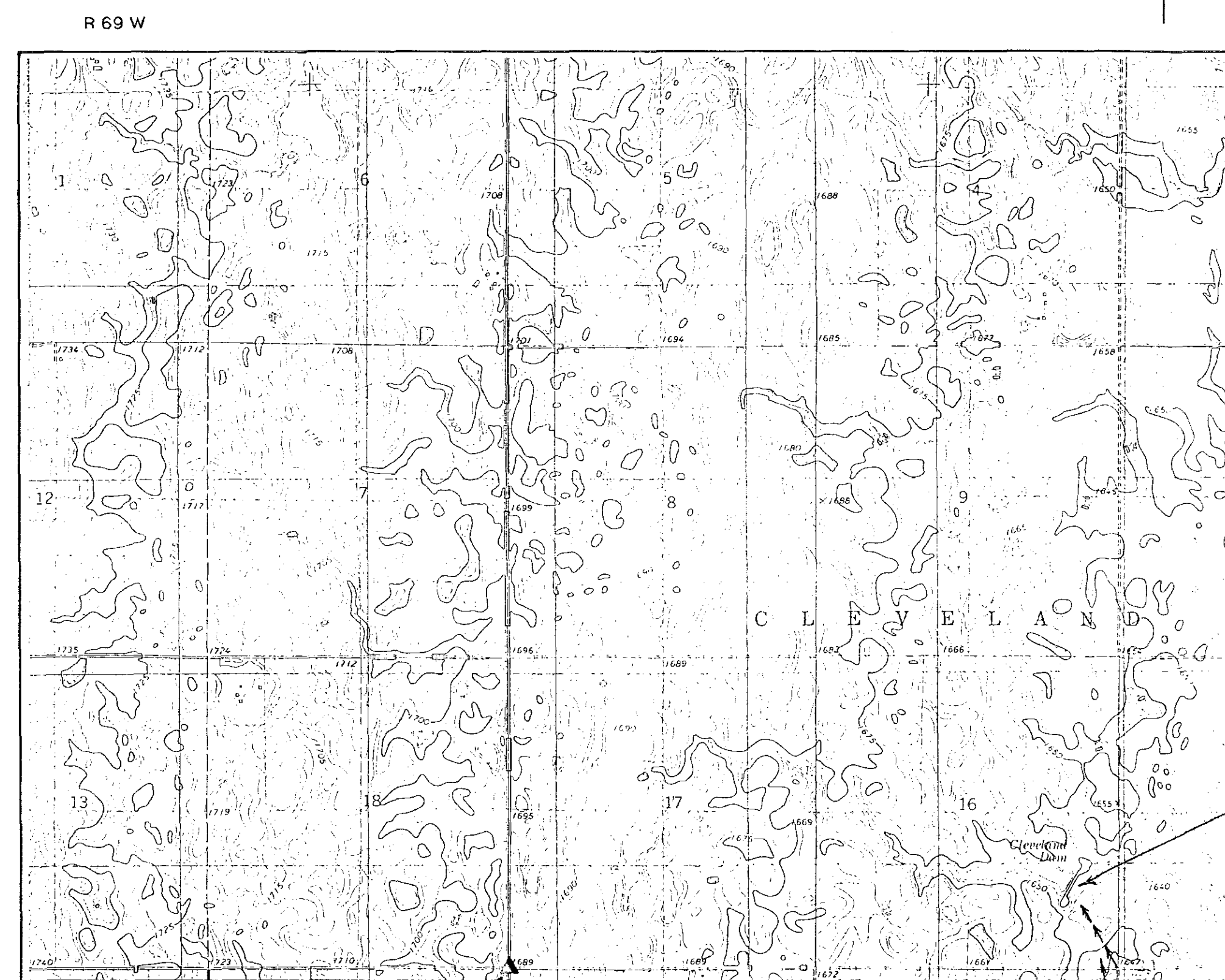
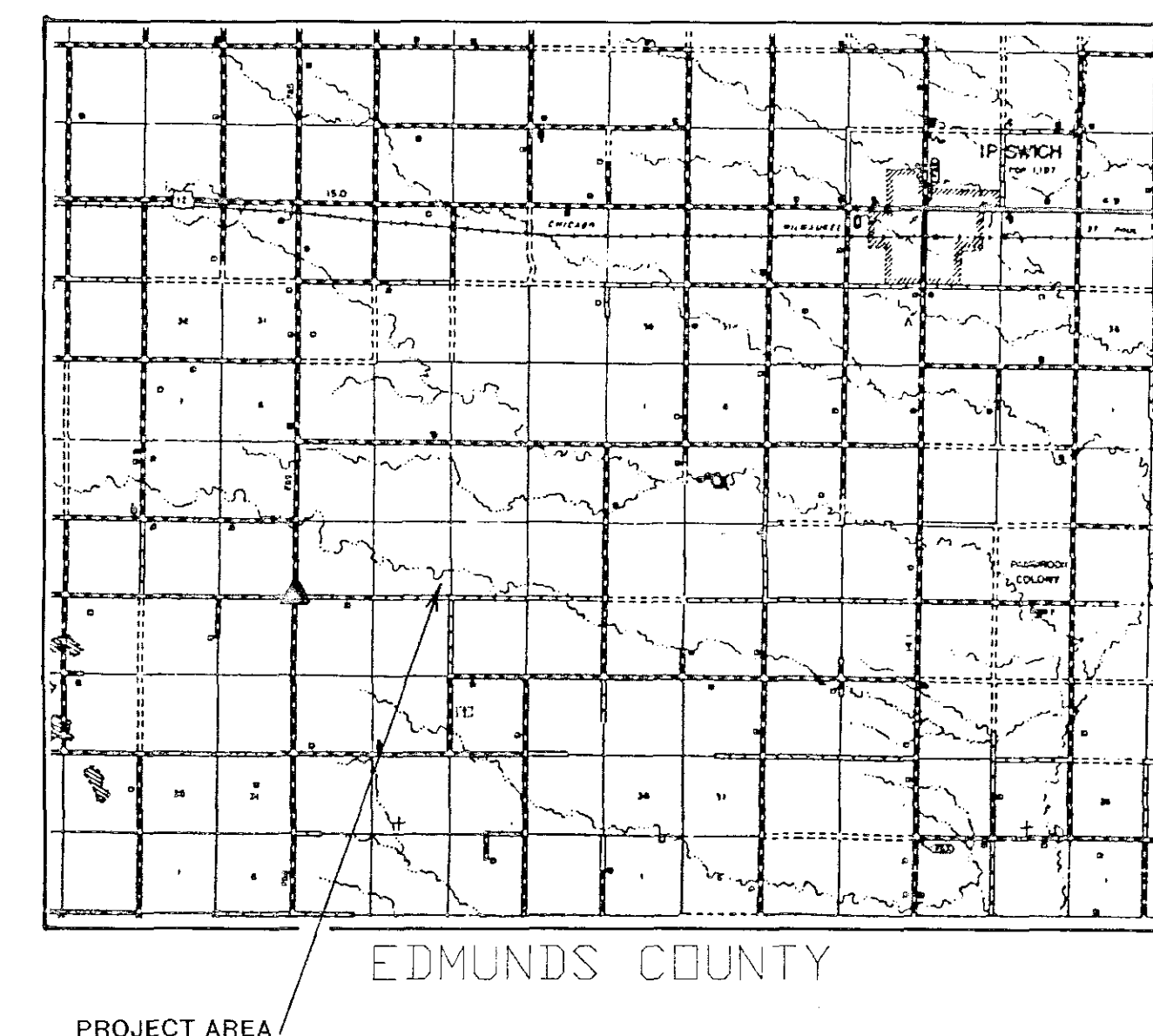
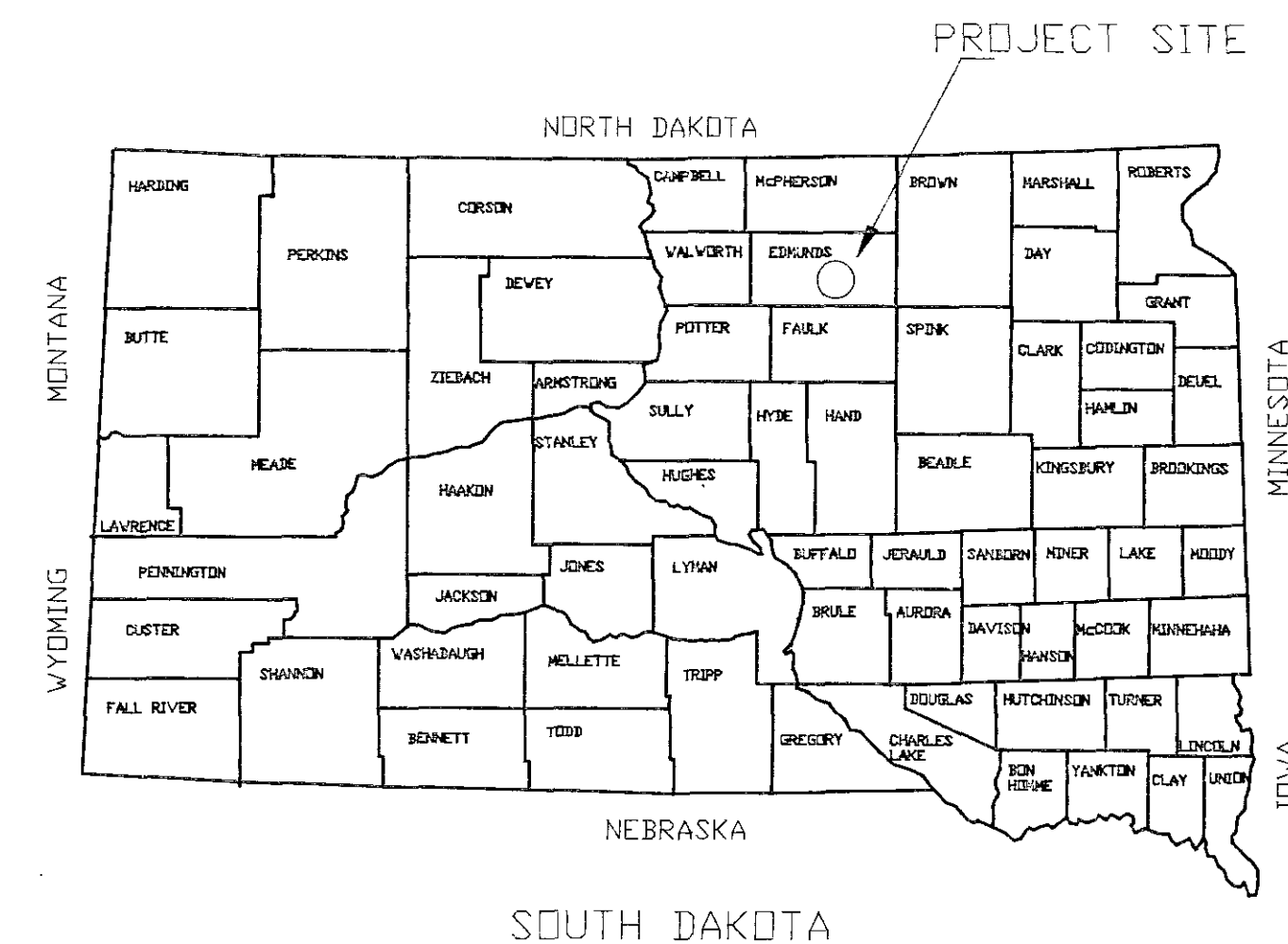
SECTION 16, T 122 N, R 69 W,
EDMUNDS CO., SOUTH DAKOTA

IN COOPERATION WITH

U.S. FISH & WILDLIFE SERVICE

&

TWO BAR TWO GRAZING ASSOCIATION



MAP POINT IS 8 MILES WEST,
5 MILES SOUTH OF IPSWICH, SD

VICINITY MAP

SCALE: 1"=2000'

ACCESS ROUTE

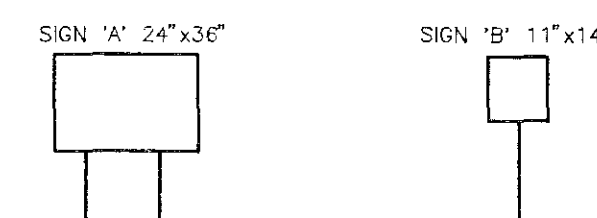
T 122 N

PROJECT AREA

EDMUNDS COUNTY

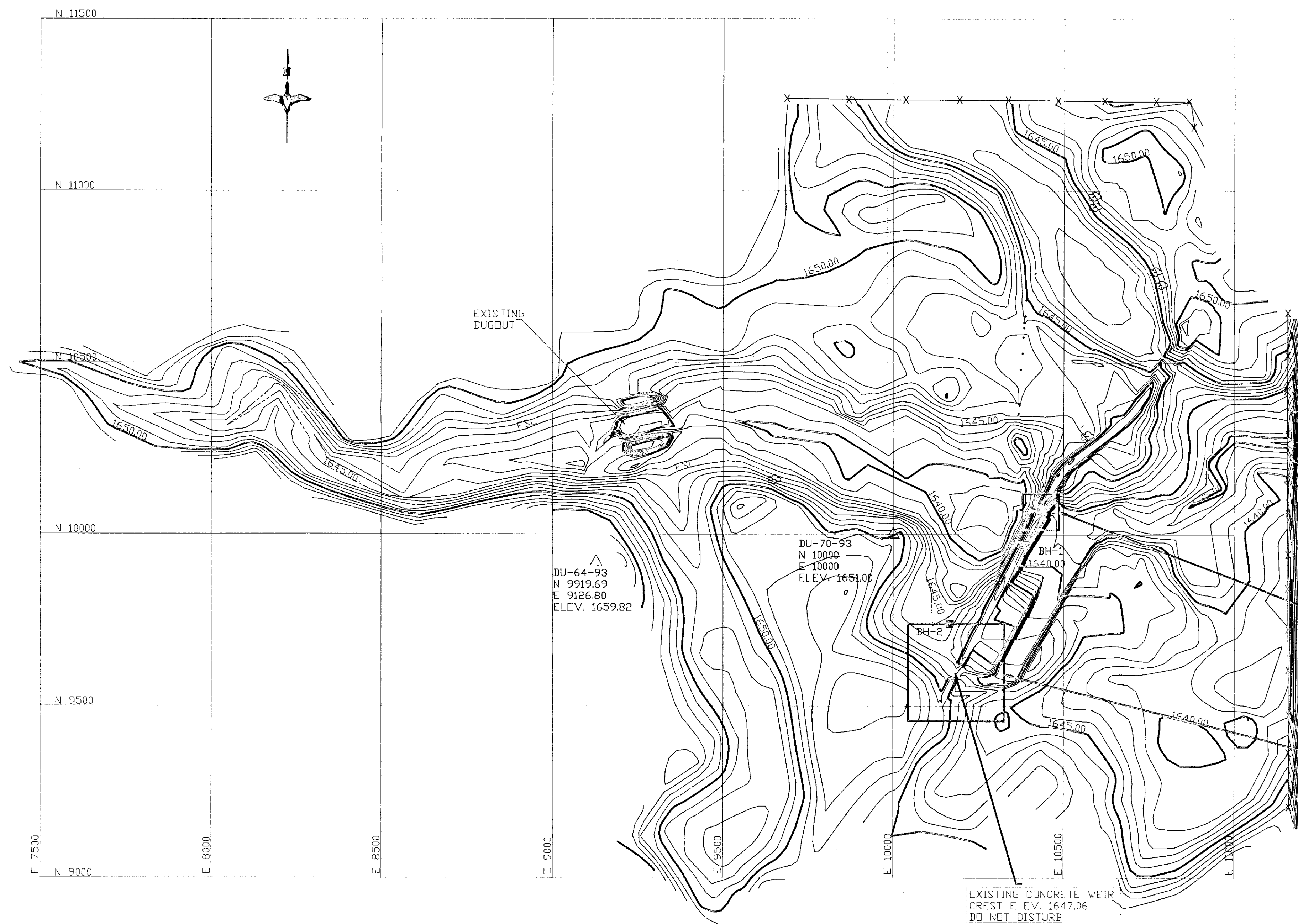
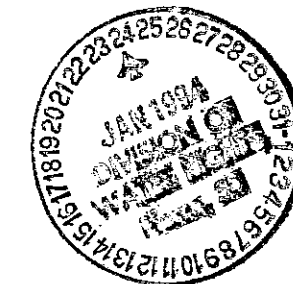
AGENCY CONTACT:
BOYD SCHULZ
SAND LAKE NWR
605/885-6320
LANDOWNER CONTACT:
TWO BAR TWO GRAZING ASSOCIATION
DON PERRIN, PRESIDENT
605/426-6339

PROJECT SIGNING



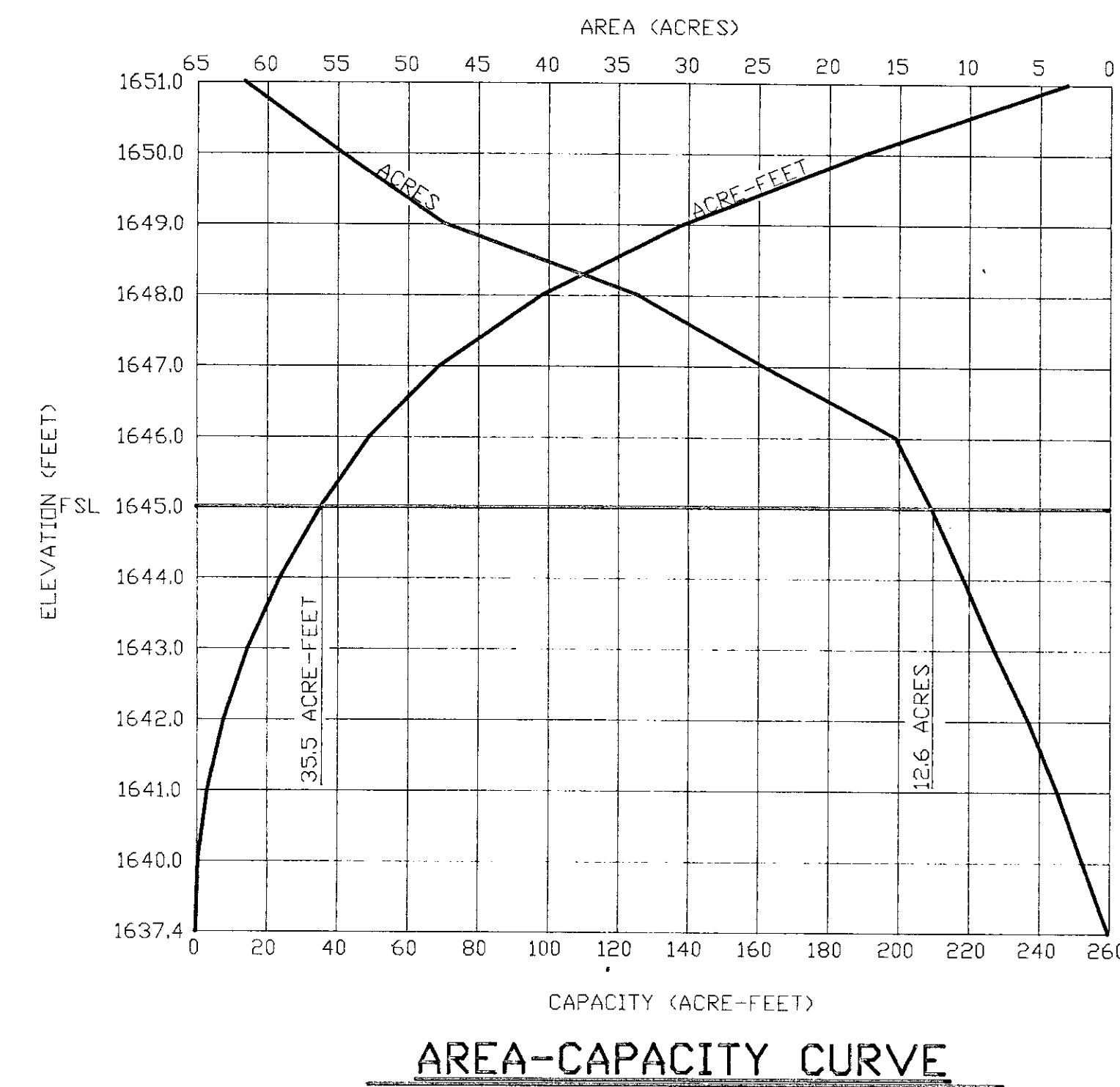
1 SIGN 'A' AND 1 SIGN 'B' WILL BE PROVIDED BY
DUCKS UNLIMITED AND DELIVERED TO THE COOPERATING
AGENCY. THE AGENCY IS RESPONSIBLE FOR INSTALLING
THE SIGN(S) AT THE LOCATION(S) DESIGNATED ON THE PLANS.

	PROJECT NO. SD-153-1	DESIGNED BY: D.J.L.
	TWO BAR TWO GRAZING ASSOC. DAM	DRAWN BY: S
GREAT PLAINS REGIONAL OFFICE	VICINITY MAP	SURVEYED BY:
DATE: 1-4-94	SHEET NO. 1 OF 7	CHECKED BY: B.R.K.
APPROVED BY:		APPROVED BY:



PROJECT TOPOGRAPHY
SCALE: 1"=200'

- LEGEND**
- △ DU CONTROL POINT
(#5 REBAR, CAPPED & STAMPED)
 - ⊗ TREES/BRUSH
 - EXISTING FENCELINE
 - ⊠ APPROX. SOIL BORING LOCATIONS
(SEE SHEET 7 FOR DETAILS)
 - FULL SERVICE LEVEL (FSL)

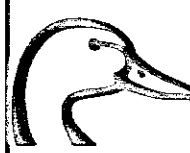


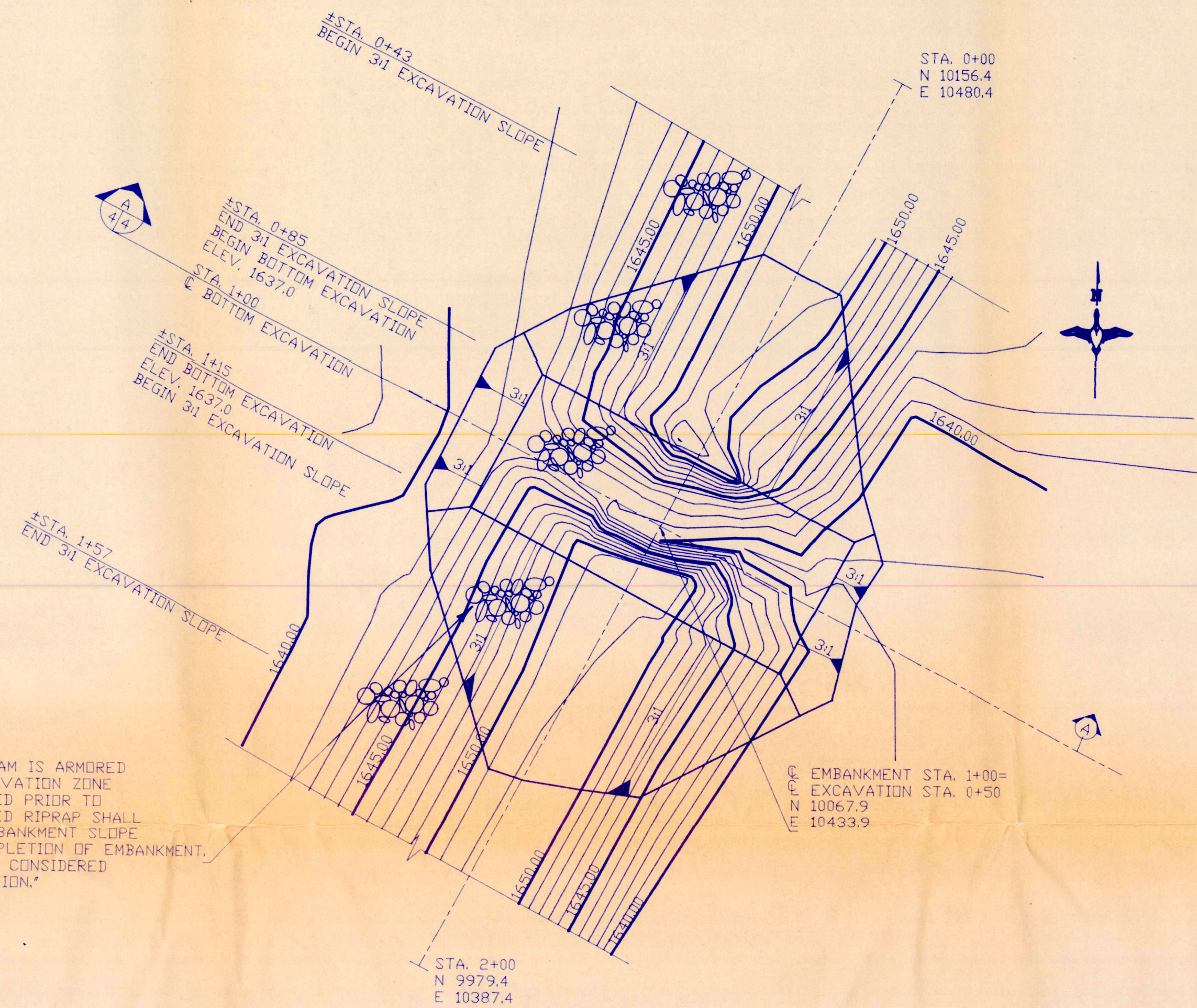
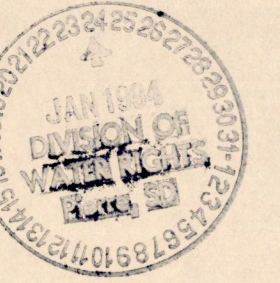
NOTE:
PROJECT INVOLVES EXCAVATING MATERIAL FROM EXISTING BREACH LOCATION & RECOMPACTING EMBANKMENT MATERIAL INTO BREACH. SITE PREPARATION SHALL BE COMPLETED AS NOTED IN THESE PLANS & SPECIFICATION 202. IN ADDITION, A NEW WATER CONTROL STRUCTURE SHALL BE INSTALLED AS SHOWN. THE EXISTING CONCRETE WEIR IN THE EMERGENCY SPILLWAY SHALL REMAIN UNDISTURBED. SOME EXCAVATION IS REQUIRED ON THE EMERGENCY SPILLWAY INLET & OUTLET CHANNELS.

EXISTING BREACH/EMBANKMENT CONSTRUCTION SITE
INSTALL WATER CONTROL STRUCTURE
SEE SHEET 4 FOR BREACH EXCAVATION DETAILS
SEE SHEET 5 FOR EMBANKMENT DETAILS
SEE SHEET 6 FOR WATER CONTROL STRUCTURE DETAILS

EMERGENCY SPILLWAY CONSTRUCTION SITE
SEE SHEET 3 FOR DETAILS

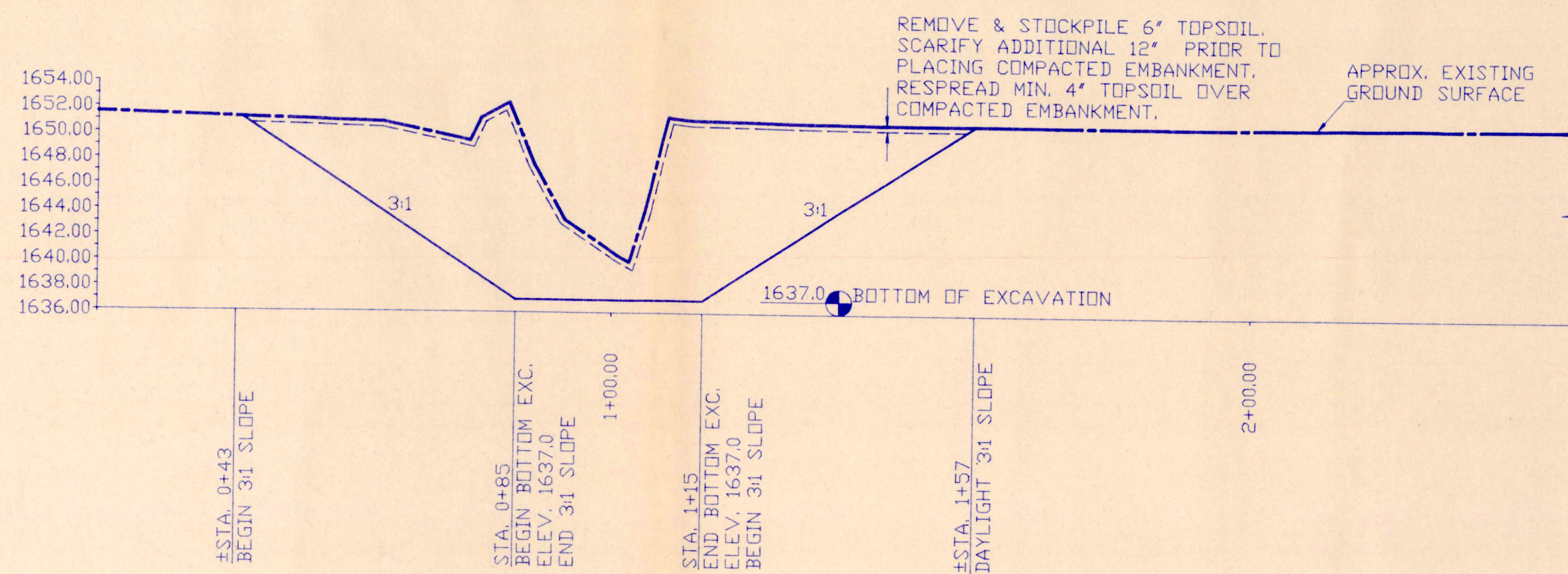
VERTICAL CONTROL:
ESTABLISHED FROM THE 7 1/2 MINUTE QUADRANGLE MAP SPOT ELEVATION AT THE ROAD INTERSECTION AT THE S.E. CORNER OF SECTION 16, T.122 N. R. 69 W. THE ELEVATION USED AT THIS INTERSECTION WAS 1651 FEET. THE NEARBY VERTICAL CONTROL FOR THIS AREA HAS BEEN DESTROYED.
HORIZONTAL CONTROL:
ESTABLISHED USING THE NORTH-SOUTH ROAD ON THE EAST LINE OF SECTION 16 AS N+00:00'E.

 DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE	PROJECT NO. SD-153-1	DESIGNED BY: D.J.L.
	TWO BAR TWO GRAZING ASSOC. DAM	DRAWN BY: JS
DATE: 1-4-94	SHEET NO. 2 OF 7	SURVEYED BY: G.J.T.E.
	APPROVED BY:	CHECKED BY:

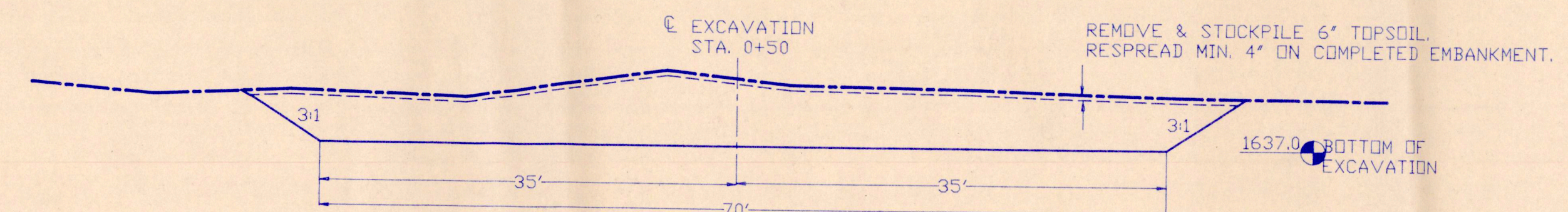


BREACH EXCAVATION NOTE:
THE BREACH EXCAVATION INVOLVES 1388 C.Y.-P WHICH IS INCLUDED IN THE TOTAL "EXCAVATION" PAY QUANTITY. SUITABLE MATERIAL SHALL BE STOCKPILED & USED AS FILL FOR EMBANKMENT CONSTRUCTION. WASTE MATERIAL SHALL BE BLENDED INTO THE DOWNSTREAM EMBANKMENT SLOPE & COVERED WITH TOPSOIL.

EXCAVATION PLAN
SCALE: 1"=20'

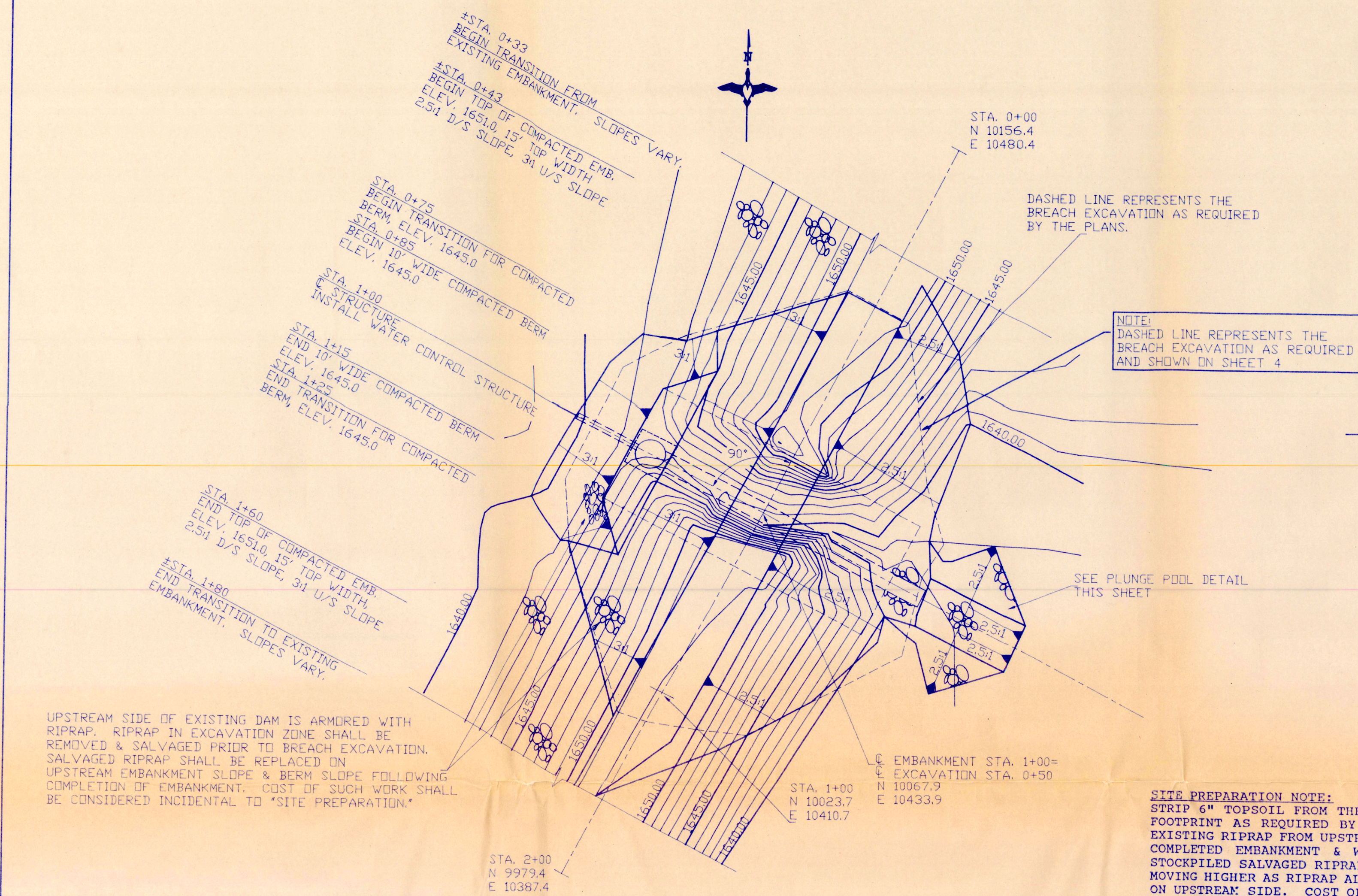
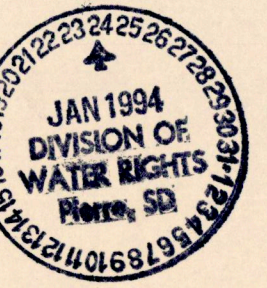


BREACH EXCAVATION/EMBANKMENT PROFILE
SCALE: 1"=3' VERT, 1"=20' HORIZ.



SECTION A-A
BREACH EXCAVATION

DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE	PROJECT NO. SD-153-1 TWO BAR TWO GRAZING ASSOC. DAM BREACH EXCAVATION PLAN	DESIGNED BY: D.J.L.
		DRAWN BY: JS
DATE: 1-4-94	SHEET NO. 4 OF 7	SURVEYED BY:
	APPROVED BY:	CHECKED BY:
		APPROVED BY:

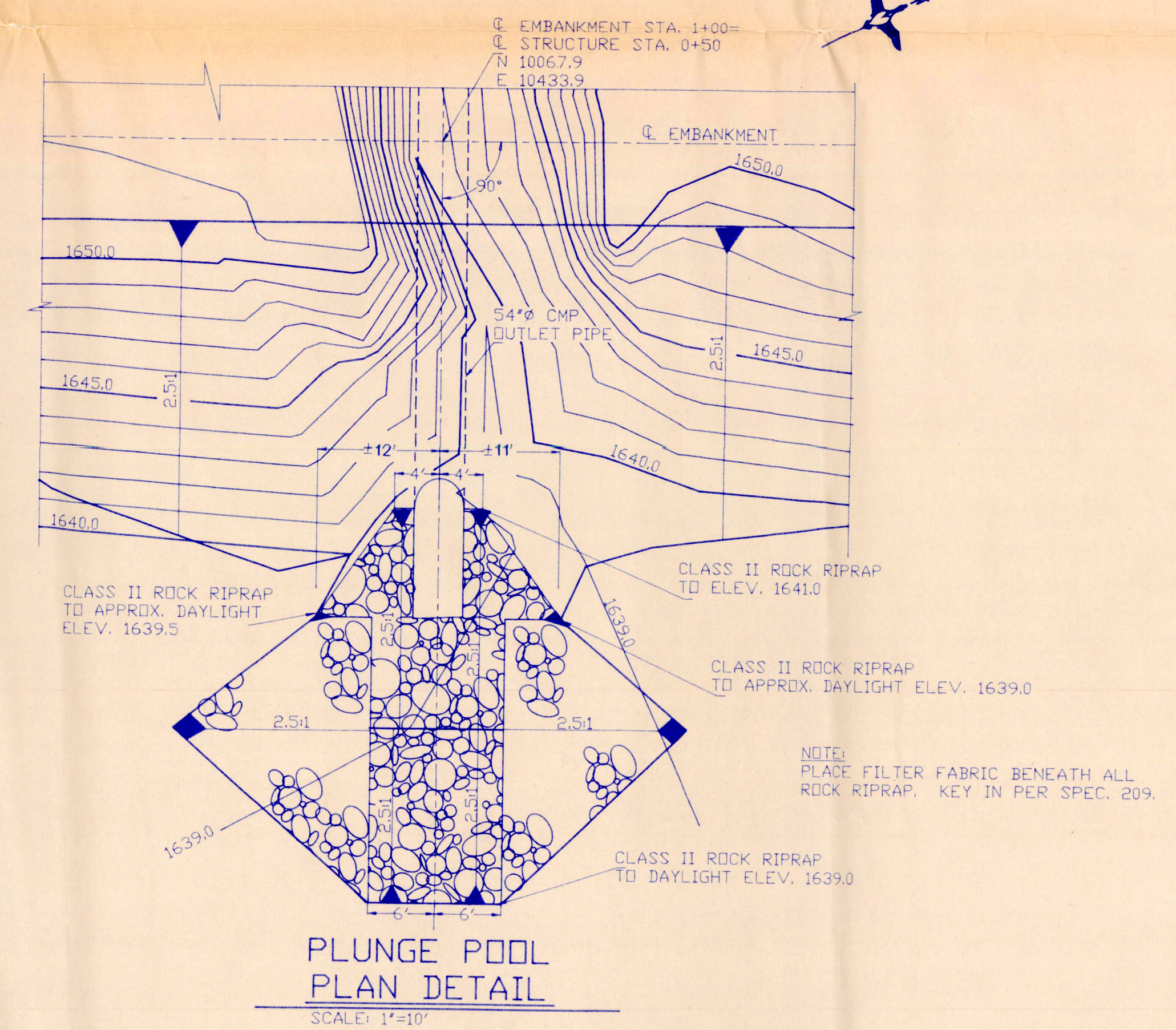
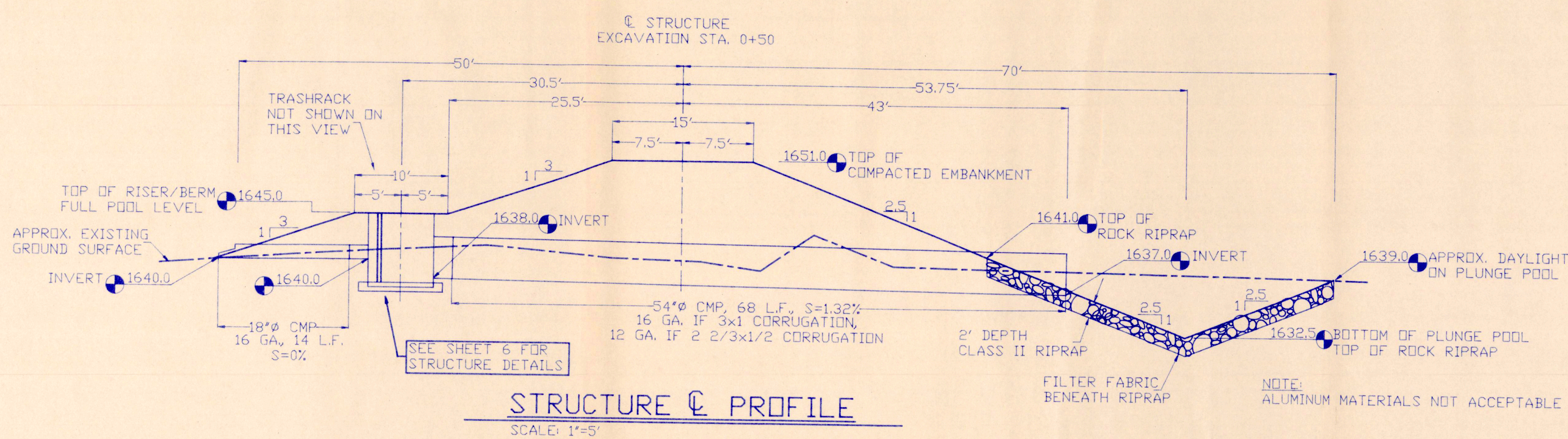
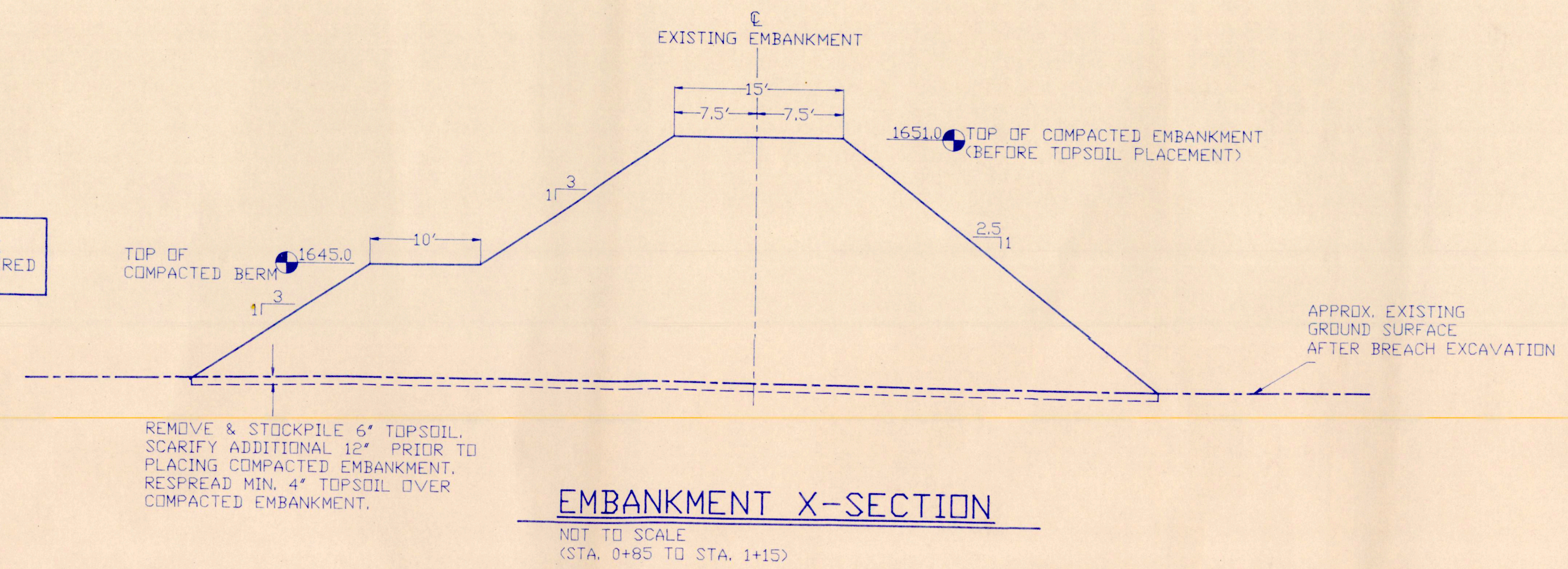


EMBANKMENT PLAN

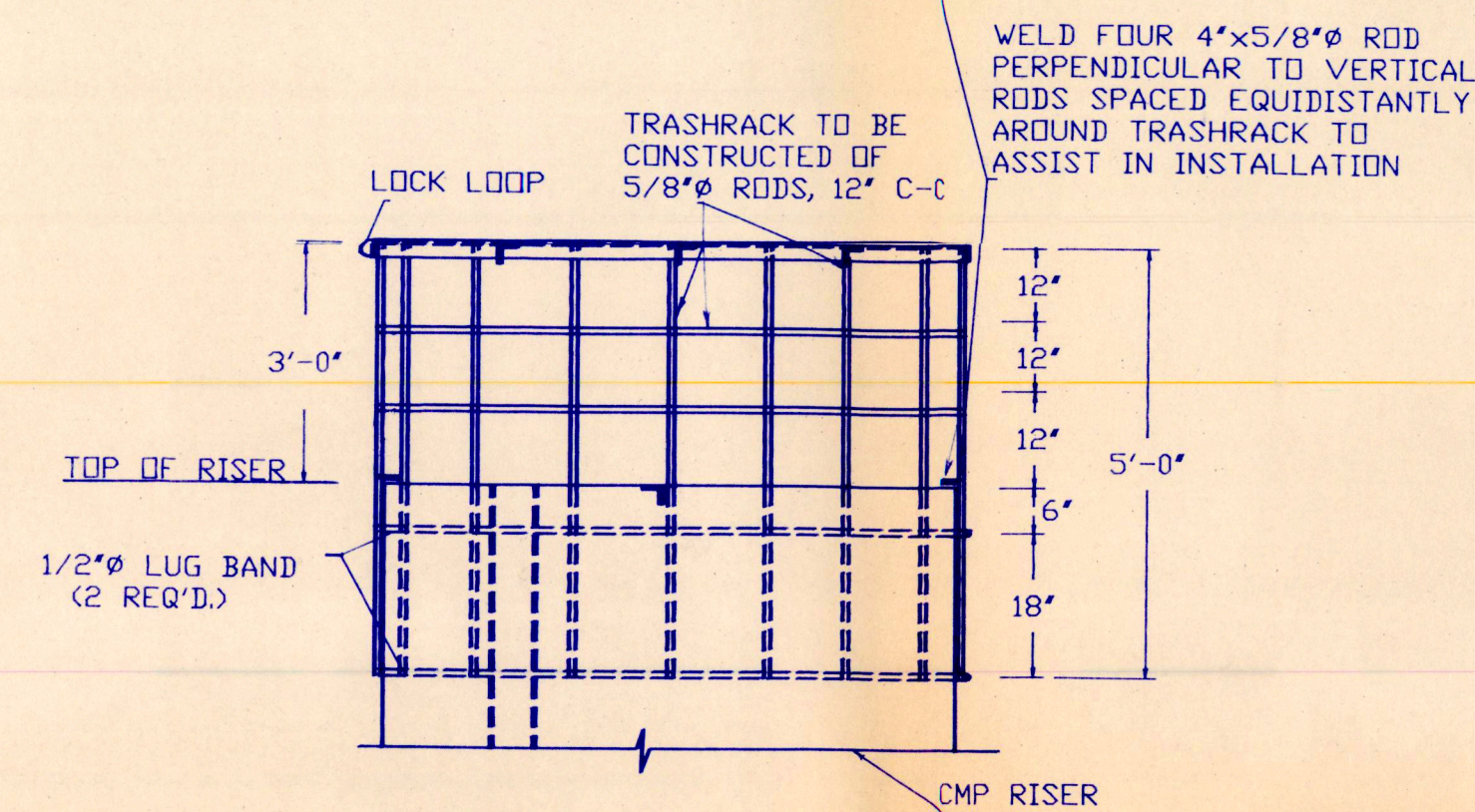
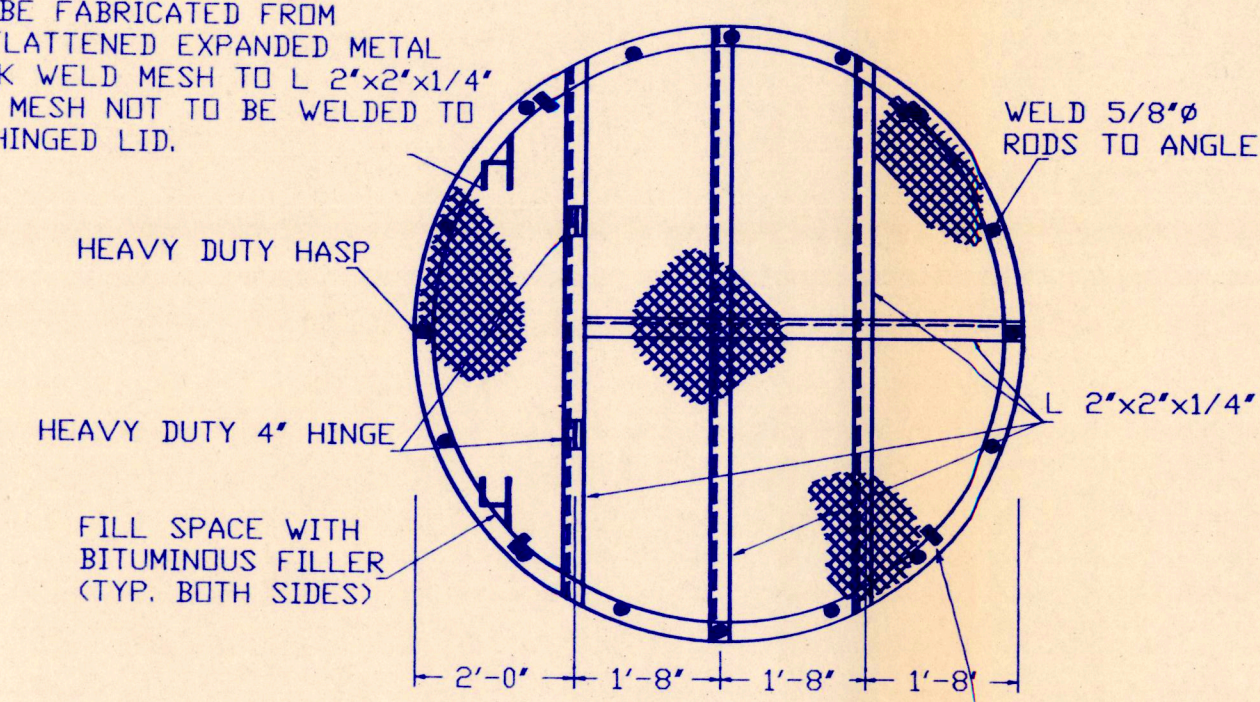
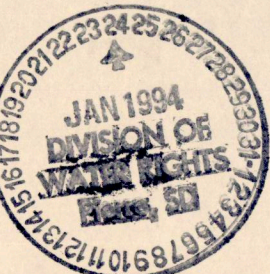
SCALE: 1"=20'

SITE PREPARATION NOTE:
STRIP 6" TOPSOIL FROM THE NEW EMBANKMENT AREA (APPROX. 150 C.Y.)
FOOTPRINT AS REQUIRED BY SPECIFICATION 202. REMOVE & STOCKPILE
EXISTING RIPRAP FROM UPSTREAM SLOPE. RESPREAD 4" MIN. TOPSOIL OVER
COMPLETED EMBANKMENT & WASTE AREA ON DOWNSTREAM SLOPE. PLACE
STOCKPILED SALVAGED RIPRAP FIRST ON SLOPES BELOW ELEV. 1646.0 THEN
MOVING HIGHER AS RIPRAP ALLOWS. NO FABRIC IS REQUIRED UNDER RIPRAP
ON UPSTREAM SIDE. COST OF THIS RIPRAP WORK IS INCIDENTAL TO "SITE
PREPARATION."

EMBANKMENT NOTE:
BORROW FOR EMBANKMENT SHALL COME FROM SUITABLE BREACH & EMERGENCY
SPILLWAY (E.S.) EXCAVATION MATERIAL. ADDITIONAL MATERIAL REQUIRED
SHALL BE TAKEN FROM ADJACENT TO E.S. INLET CHANNEL.

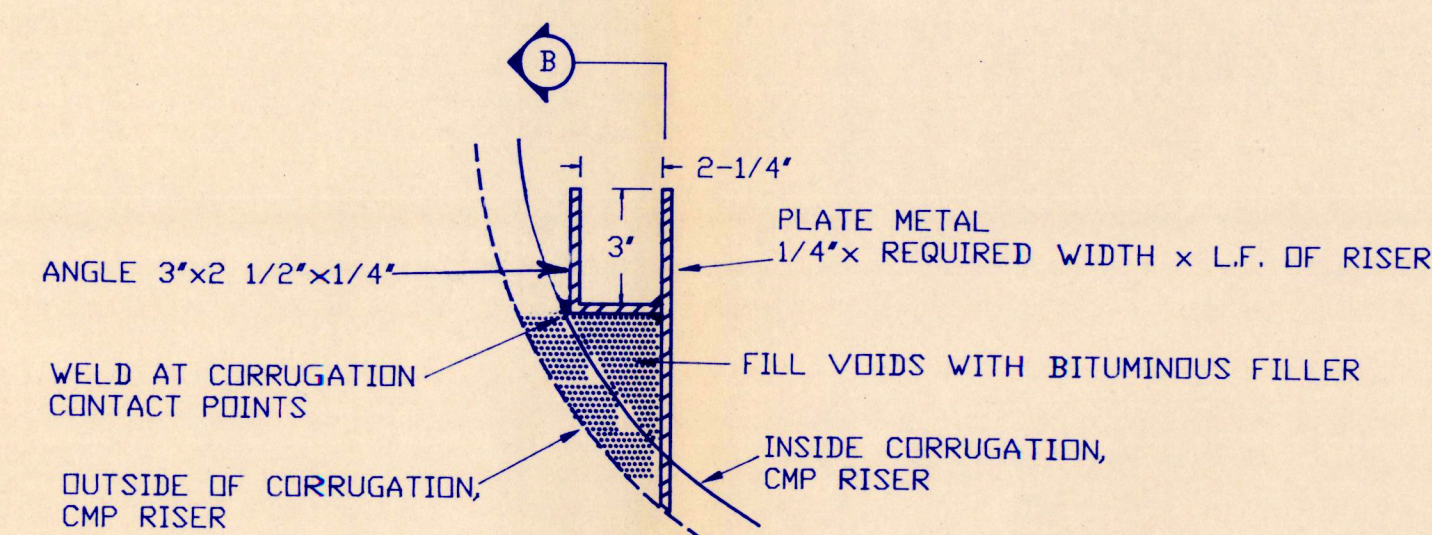


DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE	PROJECT NO. SD-153-1		DESIGNED BY: D.J.L.
	TWO BAR TWO GRAZING ASSOC. DAM EMBANKMENT DETAILS		DRAWN BY: JS
DATE: 1-4-94	SHEET NO. 5 OF 7	APPROVED BY:	CHECKED BY:
		APPROVED BY:	

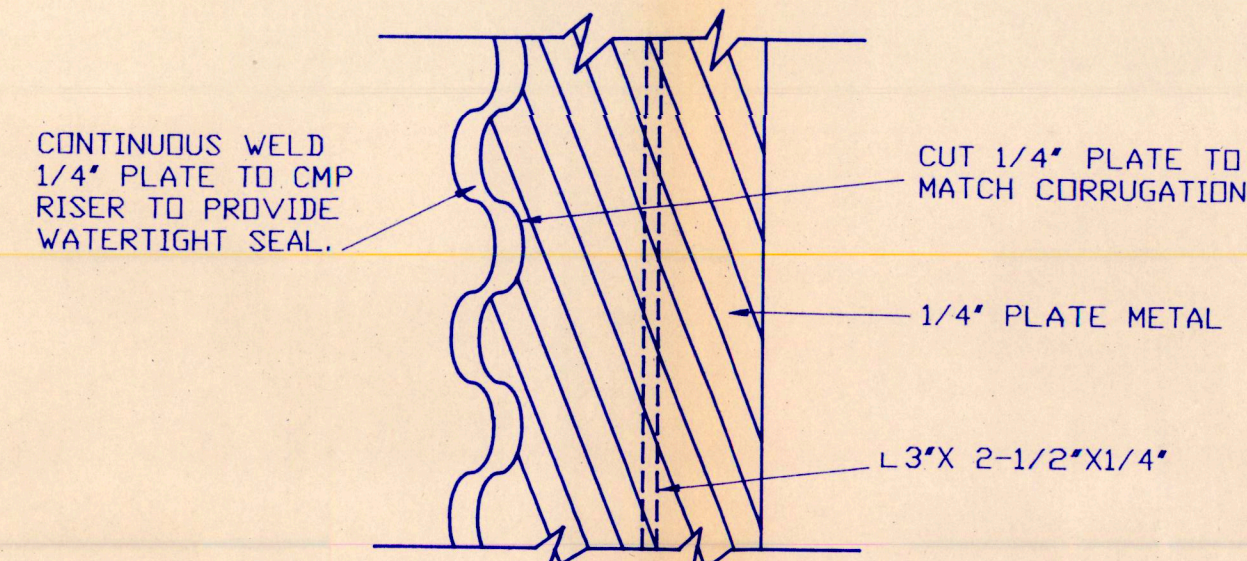


TRASHRACK DETAIL

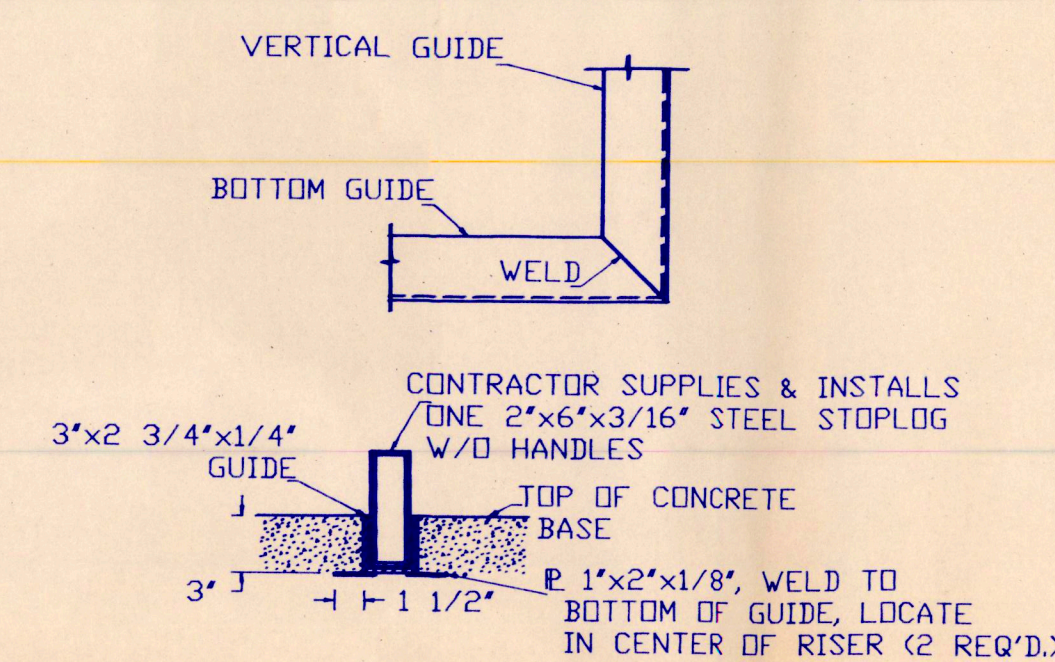
NOT TO SCALE



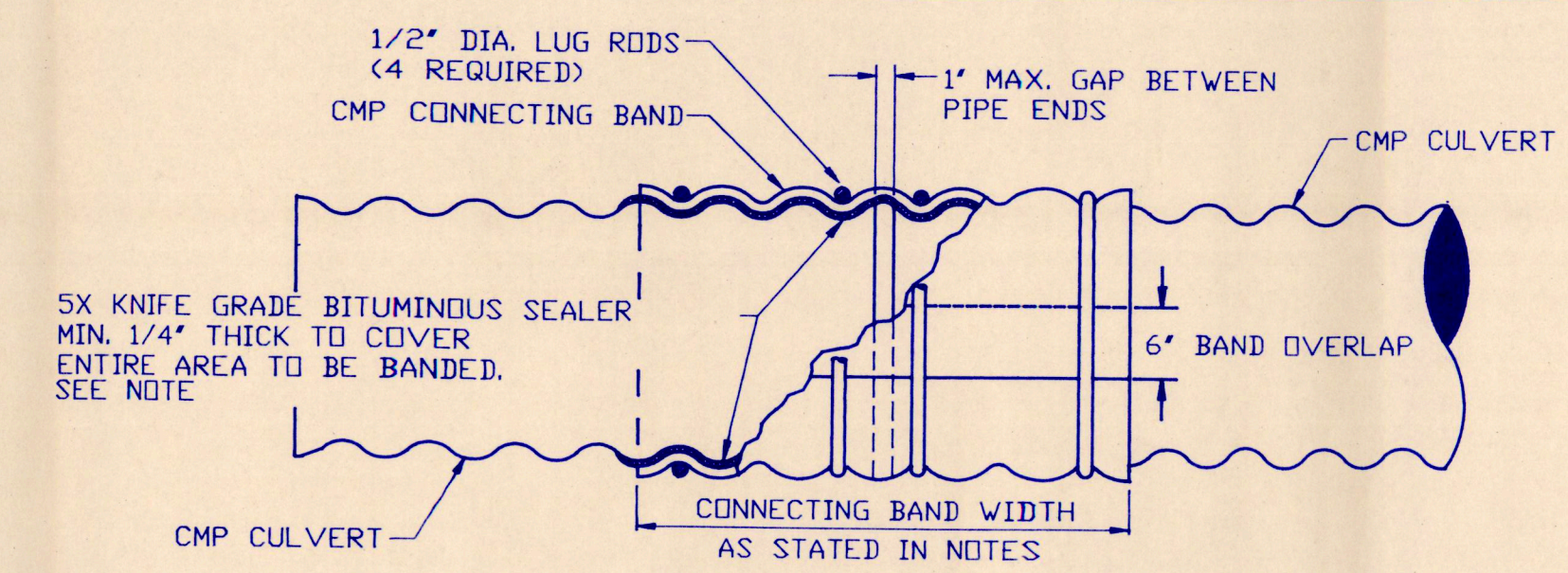
PLAN VIEW
NOT TO SCALE



SECTION 
NOT TO SCALE



HORIZONTAL STOPLOG GUIDE DETAIL
NOT TO SCALE

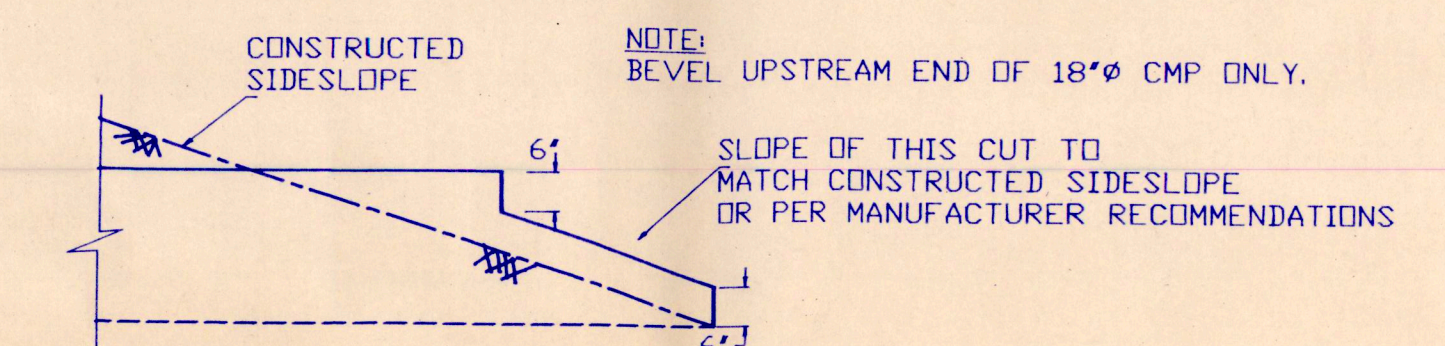


AFTER BANDS HAVE BEEN TIGHTENED, A COAT OF
5X KNIFE GRADE SEALER SHALL BE APPLIED AROUND
THE CULVERT AT THE ENDS OF THE CONNECTING BAND
AND ALONG THE SEAM OF THE BAND OVERLAP.

NOTE TO SUPPLIERS:
IF ANNULAR PIPE IS USED, USE A 2 FT. WIDE
ANNULAR BAND. IF HELICAL PIPE WITH 4
CORRUGATIONS REROLLED TO ANNULAR IS USED,
USE A 21 INCH WIDE ANNULAR BAND. SEE
SPECIFICATION 207.2.

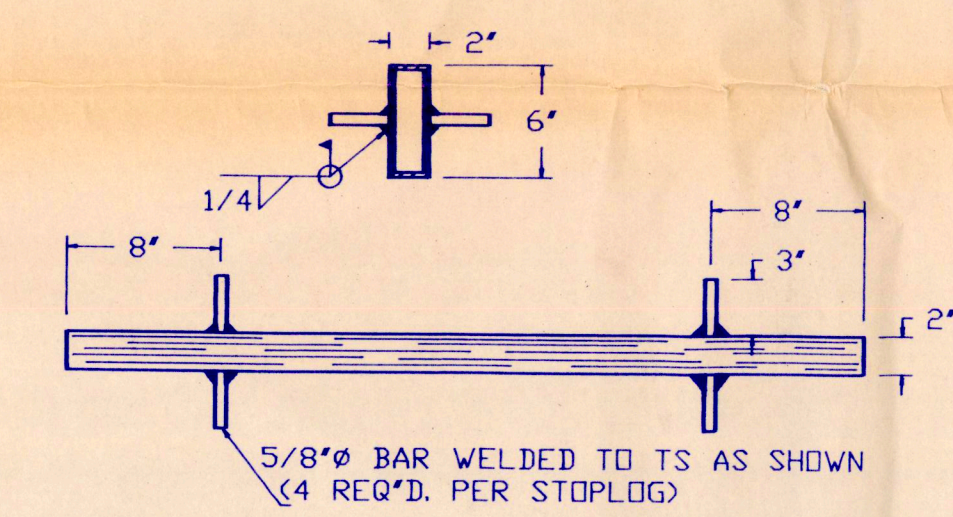
CONNECTING BAND DETAIL

NOT TO SCALE

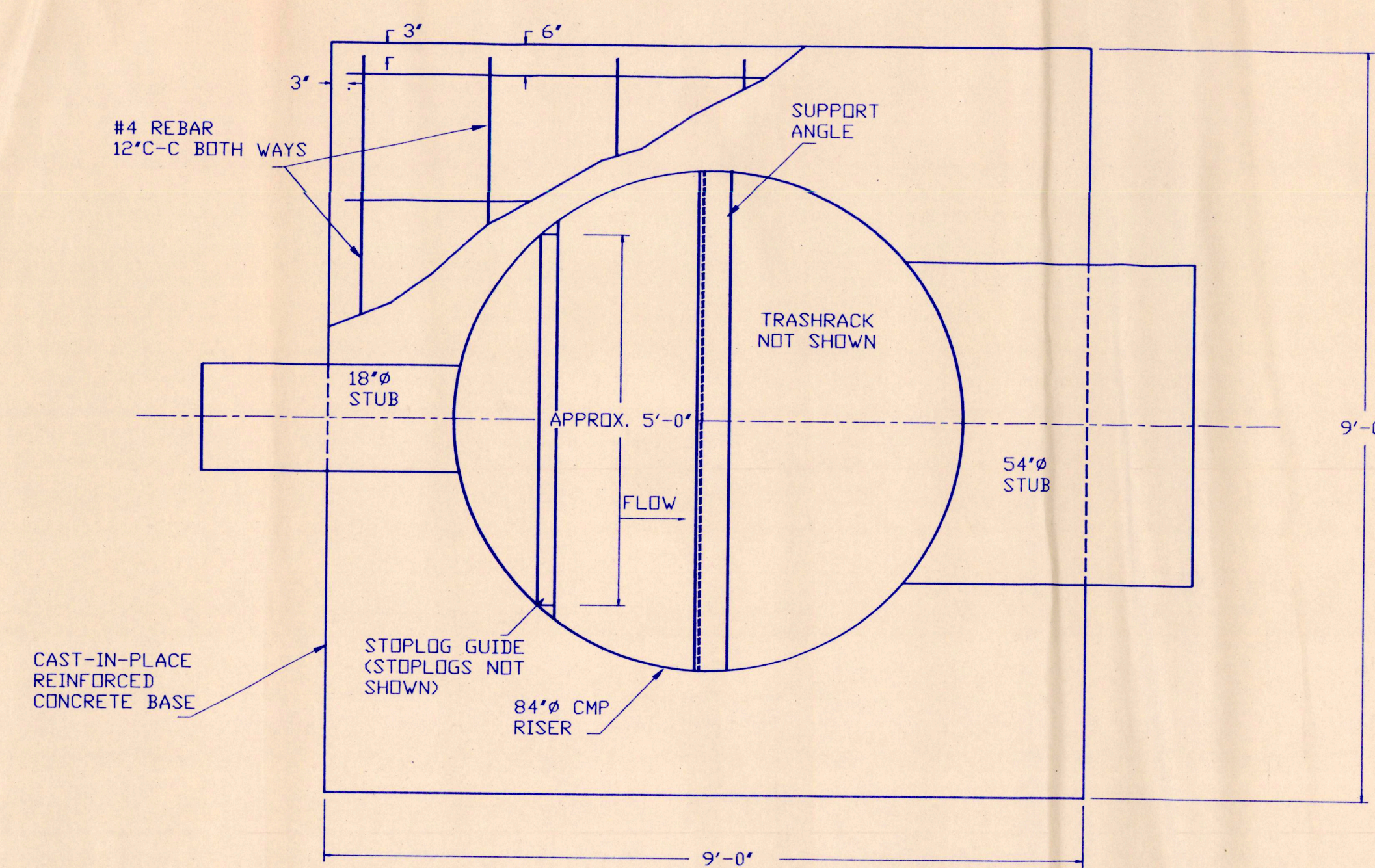
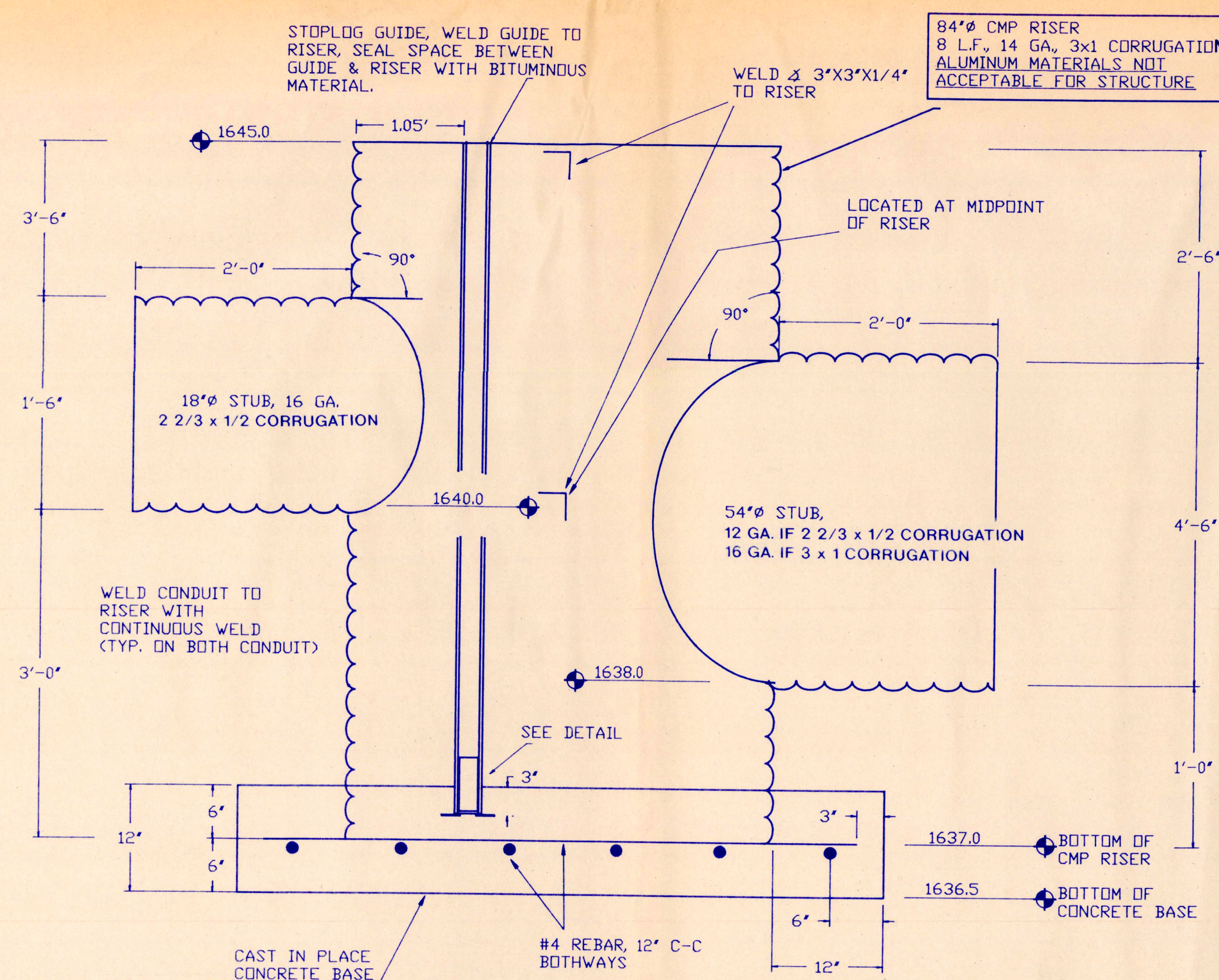


STEP BEVEL DETAIL

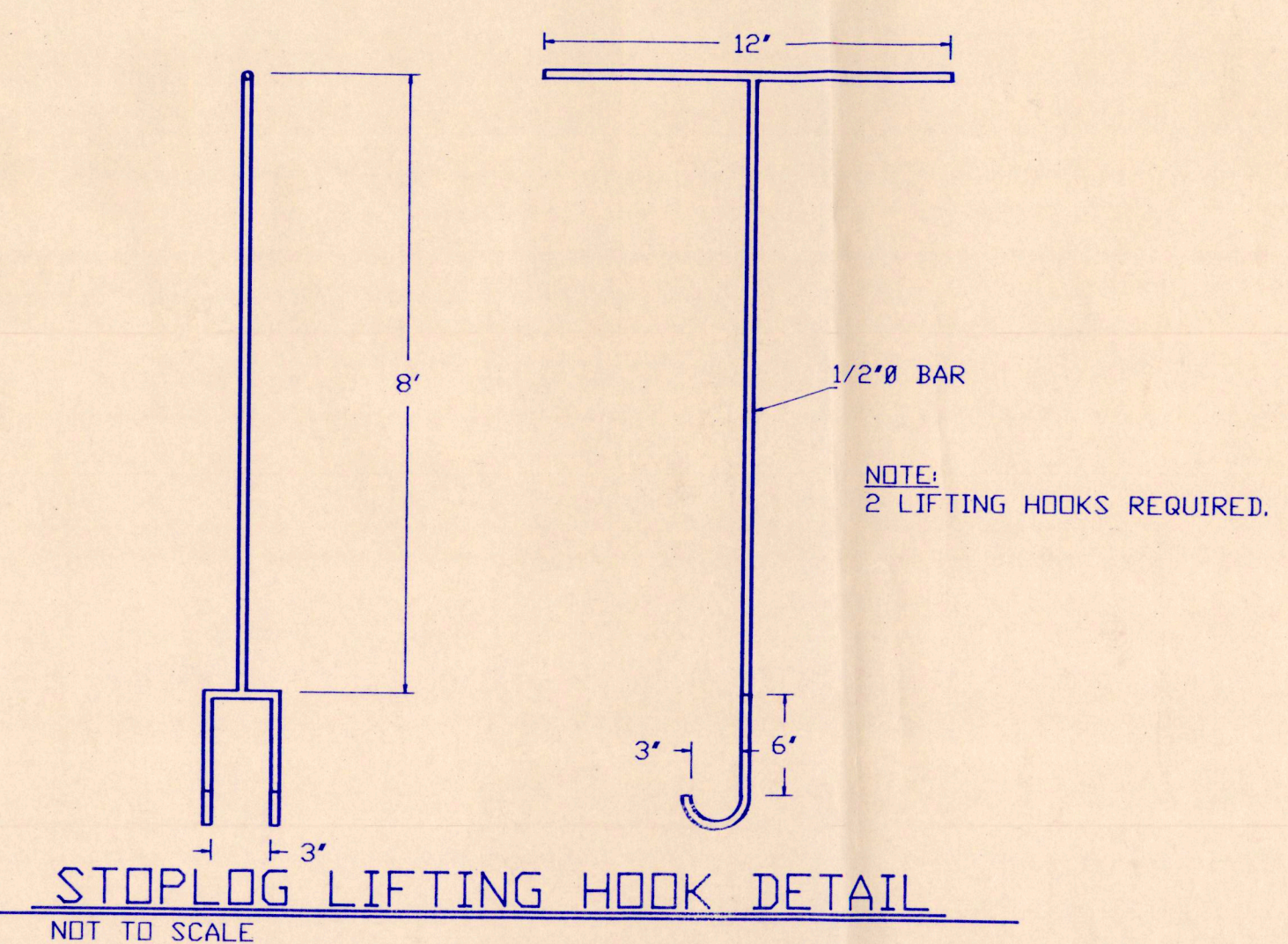
NOT TO SCALE



STEEL STOPLOG DETAIL
NOT TO SCALE



CONTROL STRUCTURE PLAN
NOT TO SCALE



	DUCKS UNLIMITED INC.	PROJECT NO. SD-153-1	DESIGNED BY: D.JUL	
		TWO BAR TWO GRAZING ASSOC. DAM STRUCTURE DETAILS		DRAWN BY: KS SURVEYED BY:
GREAT PLAINS REGIONAL OFFICE		DATE: 1-4-94	SHEET NO. 6 OF 7 APPROVED BY:	APPROVED BY:



AMERICAN
MIDWEST TESTING LABORATORY

2



JOB NO. **B3461**

PROJECT **Proposed Rehabilitation, Two Bar Two Dam, Edmunds County, South Dakota**

LOG OR TEST BORING NO. **2**

VERTICAL SCALE

DEPTH IN FEET	SOIL DESCRIPTION SURFACE ELEV.	SAMPLE		LABORATORY TESTS		LUMP.	GR.
		NO.	TYPL	MOISTURE	DENSITY		
	LEAN CLAY WITH SAND-dark rather stiff to stiff, trace of gravel, white mineral inclusions (CL)	1	SB 13				
		2	SB 24	18.6	108.2	41/16	
		3	SB 21				
6	END OF BORING						

WATER LEVEL DATA

DATE	TIME	CAVE IN DEPTH	WATER LEVEL
11-1-93	10:00	RSA 41	None
11-1-93	10:05	34	None

BORING DATA

STARTED: 11-1-93 COMPLETED: 11-1-93 @ 10:00

METHOD USED

3 1/4" RSA 0-42"

CREW CHIEF M. Roberts

DU-70-93
N 10000
E 10000
ELEV. 1651.00

BH-1

BH-2

2 BAR 2

SAMPLE NUMBER: 1
(test bearing 2, depth 8"-41")
METHOD: ASTM:D698-78, Method A. (-#4
Sieve)
SOIL TYPE: LEAN CLAY WITH SAND-grayish
brown

MAXIMUM DENSITY: 106.08/cu.ft. OPTIMUM MOISTURE: 17.06

The chart is a semi-logarithmic plot with 'WATER CONTENT (%)' on the vertical axis (ranging from 98 to 110) and 'LIQUID LIMIT (PL)' on the horizontal axis (ranging from 12 to 24). A smooth curve is drawn through two data points: (12.5, 98.5) and (17.5, 100.5). A straight line is also drawn through these two points, extending to a liquid limit of 25% where the water content is approximately 118%.

LIQUID LIMIT (PL)	WATER CONTENT (%)
12.5	98.5
17.5	100.5
25.0	118.0

[illegible]

 DESIGNATIVE TERMINOLOGY 	
RELATIVE DENSITY OF CONGLOMERATE SOLIDS	
Term	Range
Very Loose	0-4
Loose	4-8
Medium Dense	8-15
Dense	15-30
Very Dense	Over 30
CONSISTENCY OF CONGLOMERATE SOLIDS	
Term	"R" Value"
Soft	0-4
Medium	4-8
Stiff	8-15
Very Soft	15-30
Very Stiff	Over 30
RELATIVE PROPORTIONS	
Term	Range
Trace	0-5%
A Little	5-15%
With	15-50%
DRILLING & SAMPLING SYMBOLS	
Symbol	Definition
P.C.	Right Angle
S	Straight
SP	Straight Spool
SP	Spool
HSA	Half Section
N	Noted
LABORATORY TEST SYMBOLS	
Symbol	Definition
LL	Liquid Limit
PL	Plastic Limit
CI	Unconfined Compressive Strength, psi
CA	CI, column
Additional Inertions	Specific Gravity
SI	Shrinkage Limit
ph	Hydrocarbon Content
Combination Method	Organic Content, %
M.A.	Grain Analysis
Hyd.	Mathematical Method
CS	Chemical Analysis
C	Hydrometer Method
N	One-Step Combined
	Triaxial Compression
	Coefficient of Permeability
WATER LEVEL INFORMATION	
Water level shown on the boring logs are level measured on the borings at the time and under the conditions noted. In sand, the indicated levels can be considered reliable. In clay soil, it is not advisable to determine the ground water level without the normal logs of a test boring investigation, except where the nature of the soil makes water-bearing soils are present. Even then, the elapsed time from the time of the test to reach equilibrium. Therefore, the position of the water level noted on the boring logs for cohesive or mud-texture soils may not indicate the true level of the ground water table.	
SOIL STRATIFICATION BOUNDARIES	
The soil stratification lines shown on the boring logs indicate the approximate boundary between different soil types. In the field, the transition between soil types may be gradual.	

THE BORINGS DONE ON THIS PROJECT REPRESENT THE SOILS FOUND AT THE LOCATIONS OF THE BORINGS ONLY. SOILS MAY VARY BETWEEN LOCATIONS AND OTHER AREAS OF THE PROJECT SITE NOT DRILLED. A COMPLETE GEOTECHNICAL ENGINEERING REPORT IS AVAILABLE FOR REVIEW AT DUCKS UNLIMITEDS GREAT PLAINS REGIONAL OFFICE. A CONTRACTOR WARRANTS THAT SITE CONDITIONS HAVE BEEN EXAMINED AS REQUIRED BY THE CONTRACT DOCUMENTS. EXAMINATION OF THE CONTRACT DOCUMENTS IS THE RESPONSIBILITY OF THE BIDDER OR CONSTRUCTING THIS PROJECT. NO ADJUSTMENTS TO THE CONTRACT WILL BE MADE DUE TO CHANGED SITE CONDITIONS.

 DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE	PROJECT NO. SD-153-1	DESIGNED BY: DJL
	TWO BAR TWO SOILS INFORMATION	DRAWN BY: KB SURVEYED BY:
DATE	SHEET NO. 7 OF 7	APPROVED BY:
		APPROVED BY: