

WATER PERMIT NO. 1720-1

Name of Applicant: Wayne Besler

Address: 14281 Bixby Road, Bison SD 57260

Phone: 605 224-5507

Amount of Water Claimed: 65.5 AF

Total Acres: NA

Source of Water Supply: runoff

Water to be used for: recreation, fish & wildlife propagation, livestock

County: Perkins

Type of Waste Disposal System:

Location: 8 miles southwest of Bison

PRIORITY Date Received: 4-12-2000

Fee: \$150

Corrected Application Received:: 4-26-2000

Period of Annual Use: January 1 – December 31

Remarks:

Diversion Point: SW ¼ SW ¼

Sec 20-T17N-R13E

Water Impounded: E ½ SE ¼ Sec 19; W ½ SW ¼,
S ½ NW ¼ Sec 20; all in T17N-R13E

Depth of Well: NA

Well Driller: :

Remarks:

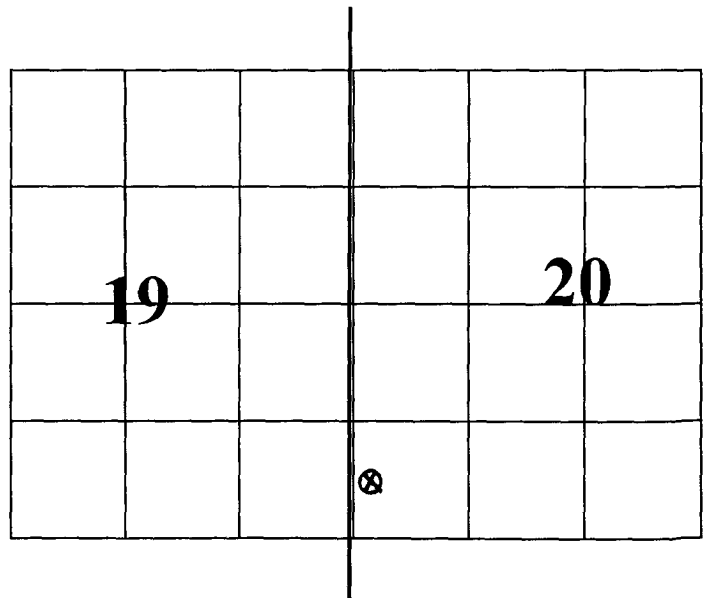
Type of Map: topo

Prepared by: Roger Smith, PE

Reviewed and the Number Assigned on: 5-1-2000

By: Karen Schlaak

Notice of Hearing - date to intervene: _____



**SOUTH DAKOTA
WATER PERMIT NO. 1720-1**

Date of first receipt of application April 12, 2000

Date of return to applicant for corrections, amendments or changes April 18, 2000

Date of receipt of corrected application April 26, 2000

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 1720-1 to Wayne Besler, 14281 Bixby Road, Bison SD 57620 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 1720-1 authorizes impoundment of 66.0 acre-feet of water from runoff by constructing a dam located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 19, and the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 20 with water impounded in portions of the E $\frac{1}{2}$ SE $\frac{1}{4}$ Section 19; W $\frac{1}{2}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$ Section 20; all in T17N-R13E. This permit authorizes impoundment of sufficient water annually to maintain water to the outlet elevation of 2618.0 feet mean sea level.
2. The water appropriated shall be used for the purpose of supplying water for recreation, fish and wildlife propagation purposes & livestock water and may not exceed the amount of water needed for beneficial use.
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. 1720-1 is July 17, 2000.
5. The date from which applicant may claim right is April 12, 2000.
6. One-fifth of the construction is to be completed on or before January 17, 2003.
7. All construction is to be completed on or before July 17, 2005.
8. Water is to be put to beneficial use on or before July 17, 2009.
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. Water Permit No. 1720-1 authorizes a dam with a storage capacity of 66 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation of 2618.0 feet mean sea level.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

WATER MANAGEMENT BOARD

By: Garland Erbele

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

AUG 02 2000

date



FORM 2: Application for uses other than irrigation
(type or print)

Mail to:
Water Rights Program
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3181
(605) 773-3352

(office use only)
No. 1720-1 Hydrologic Unit 10130305
Basin Moreau River
Newspaper The Bison Courier, Bison, SD



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

Check use(s) of water:

☐ Municipal	☐ Suburban Housing	☒ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☒ Fish & Wildlife	☐ Geothermal Heat
☐ Domestic (over 18 gpm)	☐ Industrial	☒ Other Livestock	

Type of Application: ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
(check one) ☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____
☐ Amendment/Correction to Permit No. _____

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.) _____

- Name of Applicant Wayne Besler Phone 605-224-5507
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address 14281 Bixby Road, Bison State SD 57260
(Street, RR, or Box) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 66.0 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Surface water runoff
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) SE1/4 SE1/4 section 19 and
SW1/4SW1/4 of Section 20 - T. 17 N., R. 13 E. - "Site A" Water Impounded: E1/2 SE SEC. 17;
W1/2 SW1/4, S1/2 NW1/4 SEC. 20-T17N-R13E County Perkins
- County or counties where water will be used Perkins
- Annual period during which water is to be used 12 month Jan 1 - Dec 31
- Give a description of the 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)

The dam is being constructed for recreation, fish & wildlife and livestock water. Please see attached Design Report and project plans for additional information.

STATE OF SOUTH DAKOTA)

County of Perkins)

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Attach map and any other technical information. (see instructions)

I, Wayne Besler, 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 Wayne Besler
Subscribed and sworn to before me this 11 day of April 2000
Mary Sue Zerkow
Notary Public

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 _____ 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. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System _____

3. Dugout Information

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

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to 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, Inc.
3502 Franklin Avenue
Bismarck, ND 58501

- b) Freeboard 6.5 feet
- c) Crest Width 12.0 feet
Crest Length 520 feet
- d) Height 19.5 feet
- e) Primary Outlet Capacity _____
If pipe, diameter 42 inches
- f) Secondary Spillway Capacity _____
Spillway Width 100 feet
- g) X & Y Slope _____
Upstream 3:1
Downstream 3:1
- h) Surface Area of Impoundment 13.6
- i) Storage 65.5 Acre Feet
- j) Drainage Area Above Dam 4,300 Acres

WAYNE BESLER
(PRIVATE LANDOWNER)



RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

№ 416483

Pierre, April 25, 2000

RECEIVED OF Wayne Besler, 14281 Bixby Road, Bison, SD 57260
the following amount in fees for services rendered as provided for by law:

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. 1720-1 & 1721-1 (\$50 each)

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for _____

(Any Other Work Provided by Law)

Total

100 00

By

Chief Engineer

Harold E. Ehle

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

N2 416468

Pierre, April 13, 2000

RECEIVED OF Wayne Besler, 14281 Bixby Road, Bison, SD 57260
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>1720-1</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	150 00

By Harold Erbe
Chief Engineer

Water Permit Application # 1720-1

Wayne Bestler

Site "A"

Cat. 3 - Low Hazard Dam

Top of Dam Elev. - 2624.5
 2nd Spway Elev. - 2621
 1st Spway Elev. - 2618
 D/S Toe Elev. - 2605

- Ht. = 19.5 ft.

Normal Storage Capacity = 66 Ac.-Ft.
 Int. Storage Capacity = 119 Ac.-Ft.
 Max. Storage Capacity = 162 Ac.-Ft.

Int. Capacity x Eff. Height = $119 \times 18 = 2142 < 3000 \therefore 25 \text{ yr}$
Min. Spillway Design

From USGS WRI 80-80 "Tech. for Est. Flood Peaks ... in SD
 DA = 4300 Ac. = 6.72 mi.²
 Slope = 35 ft/mi.
 S_i = 2.50

$$Q_{25} = 83.4 A^{.65} S^{.44} S_i^{-.72}$$

$$= 83.4 (6.72)^{.65} (35)^{.44} (2.50)^{-.72}$$

$$= 83.4 (3.13) (4.78) (0.517)$$

$$= \underline{645 \text{ cfs}}$$

$$Q_{100} = 132 A^{.65} S^{.46} S_i^{-.67}$$

$$= 132 (6.72)^{.65} (35)^{.46} (2.50)^{-.67}$$

$$= 132 (3.45) (5.13) (0.5412)$$

$$= \underline{1265 \text{ cfs}}$$

Secondary Spillway Flow

$$Q = CLH^{3/2} \quad C = 2.6$$

$$= (2.6)(100)(3.5)^{1.5} \quad L = 100$$

$$= \underline{1700 \text{ cfs}} \quad H = 3.5$$

Section 74:02:08:09

1. Topo Map - OK
2. Dam Axis Profile - OK
3. Dam Max X-Sec. - OK
4. Area Capacity - OK
5. Outlet Details - OK
6. Spillway Rating - OK
7. Spillway Details - OK
8. Specs - SEE D/S - OK
9. EPP - N/A Cat. 3 - OK

NRCS Annual Yield

DA = 4300 ISO = 1.5 CN = 75

80% chance = 0.09
 $0.09 \times 4300/12 = \underline{33 \text{ Ac.-Ft.}}$

50% chance = 0.25
 $0.25 \times 4300/12 = \underline{90 \text{ Ac.-Ft.}}$

10% chance = 1.40
 $1.40 \times 4300/12 = \underline{360 \text{ Ac.-Ft.}}$

DESIGN REPORT

For

BESLER RANCH WETLANDS
SITES A & C

PERKINS COUNTY, SD (SD-0283-01)



March 23, 2000



Prepared by:

Ducks Unlimited, Inc.
3502 Franklin Avenue
Bismarck, ND 58501

DESIGN REPORT

PROJECT: Besler Ranch Wetlands Site A
SD -0283-01

LOCATIONS: SW 1/4 SECTION 20 TWP. 17 N RGE. 13 E
Perkins County, South Dakota

MARSH DATA: Full Service Level (FSL) @ 2618.0 (mean sea level)
13.6 Surface Acres @ FSL
65.5 Acre-Feet Capacity @ FSL
Maximum Depth – 21.5' top of dam to pipe invert,
19.5' from top of dam to existing creek bottom.

PROJECT DATA: Top of Dam - elevation 2624.5
Primary Spillway - elevation 2618.0
Emergency Spillway - elevation 2621.0
Upstream Berm – 10' wide @ elevation 2618.0
Side Slopes - 3 (horizontal): 1 (vertical)

CLASSIFICATION: Based on the classification criteria outlined in Chapter 74:02:08 "Safety of Dams," it is recommended that the proposed dam be classified as a small, Category 3 dam. No loss of life and minimal economic loss is expected should failure occur. The product of the "maximum storage capacity" times the "effective height" is 2916. (162 x 18)

PRELIMINARY RISK ASSESSMENT: The proposed dam is on an unnamed creek approximately 2300' upstream of an existing paved road locally known as the Bixby road. The roadway presently has two 36" CMP's. The available head at the structure is approximately 8'. The roadway was designed in a manner as to not be overtopped. The roadway gradient falls to the south. The adjacent east ditch remains lower than the roadway, passing high flows to the next drainage south prior to overtopping the road, thus considerably increasing the available storage east of the road. Testimony from Mr. Besler indicates that the roadway has never been overtopped. It is conceivable that a clear weather breach of the proposed dam could overtop the roadway if the roadway ditches were filled with snow, forcing water over the road. A review of the USGS topography map shows no other structure prior to the creek's discharge into Rabbit Creek. Rabbit Creek is a tributary to the Moreau River.

PROPOSED PROJECT: The dam will be constructed having a 10' wide upstream berm at elevation 2618.0, a 12' wide top at elevation 2624.5, and all slopes at 3:1. The dam will be constructed from local material obtained from the excavated emergency spillway and below elevation 2618.0 where feasible. The intent is to contain the borrow area to required excavations and to below the reservoir elevation as much as possible.

PRIMARY SPILLWAY: The structure will have fixed level water control capabilities at elevation 2618.0. Variable level water control will be provided by a separate structure having the capability of retaining water at 6" increments between elevations 2608.0 and 2618.0. The riser, acting as a circular weir will be a 72" 12 gage corrugated metal pipe. The outlet barrel will be a 42", 12 gage corrugated metal pipe at a 0% slope at elevation 2603.0. A protected plunge pool will be located at the discharge end of the outlet pipe.

EMERGENCY SPILLWAY: The emergency spillway will be excavated having a 100' bottom width and 3:1 slopes. The top of the finished spillway grade, after replacing 4" of topsoil, will be 2621.0. The length of the level crest at the spillway centerline is 332'. Flows will outlet into an undisturbed well vegetated slope that will deliver flows back to the original creek.

HYDROLOGY / HYDRAULICS: A hydrologic analysis of surface water runoff was performed using two methods. A peak discharge was determined from regression equations developed in WATER-RESOURCE

INVESTIGATIONS REPORT 80-80 USGS. The NRCS TR-20 METHOD was used to determine the inflow hydrograph. The hydraulic curve number used in the TR-20 METHOD was manipulated to create peak discharges similar to those developed from the regression equation. Other assumptions made in developing inflow hydrographs by the TR-20 METHOD were:

Rain Duration = 1.00

Rain Table # = 1

Antecedent moisture condition = 2

Inflow hydrographs developed from the TR-20 METHOD were routed through the primary and emergency spillways. This yielded outflow hydrographs revealing peak discharges at maximum reservoir elevations corresponding to various runoff events. The following table is a summary of that printout:

PARAMETERS:

WATERSHED -- 6.72 SQ MI

TIME OF CONCENTRATION - 8 HOURS

CURVE #'s -- 72 (5 yr) 75 (10 yr) 78 (25yr) 83 (100 yr)

Event	Rainfall (in)	Runoff (ac-ft)	Peak Inflow (cfs)	Peak Discharge (cfs)	Max WSP (elevation)	Freeboard*	Flow in E.S. (cfs)
5 yr	2.6	208	175	157	2620.08	4.75	0
10 yr	3.0	345	308	264	2621.91	2.92	84
25yr	3.6	564	533	517	2622.73	2.10	328
100 yr	4.6	1009	1005	997	2623.67	1.16	800

*Calculated from a finish grade. The primary spillway capacity was calculated by comparing discharges developed by the weir flow formula and formulas for calculating head loss through corrugated metal pipe. The emergency spillway capacity was estimated from FLOWCOMP, a computer-aided hydraulic program analyzing gradually-varied flow profiles in prismatic open channels using the standard step method.

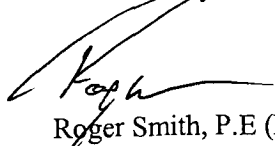
DROUGHT ANALYSIS: It is difficult to determine the frequency in which there will be adequate runoff to sustain the marsh through the brood-rearing period, criteria important to project sponsors. Using NRCS methods, the 80% and 50% annual runoff will generate 50 and 90 acre-feet respectively. The annual requirement assuming an evaporative loss of approximately 3.5 feet is 42 acre-feet. There is evidence that inflows will be supplemented, at least periodically, from subsurface contributions.

SOIL INVESTIGATION: As of this writing a soil investigation has not been completed. A preliminary investigation determined that suitable quantities of acceptable material are likely. A soil investigation report, to be completed in the near future, will be available upon request. The plans will be modified to show the approved borrow areas as well as any other modifications recommended by the geotechnical consultant.

IMPACTS TO SURROUNDING PROPERTY: The planned construction and subsequent reservoir will be contained within land owned by Wayne Besler and managed by the SD Game, Fish & Parks through a Cooperative Wildlife Agreement.

Dated: March 23, 2000

Submitted By:



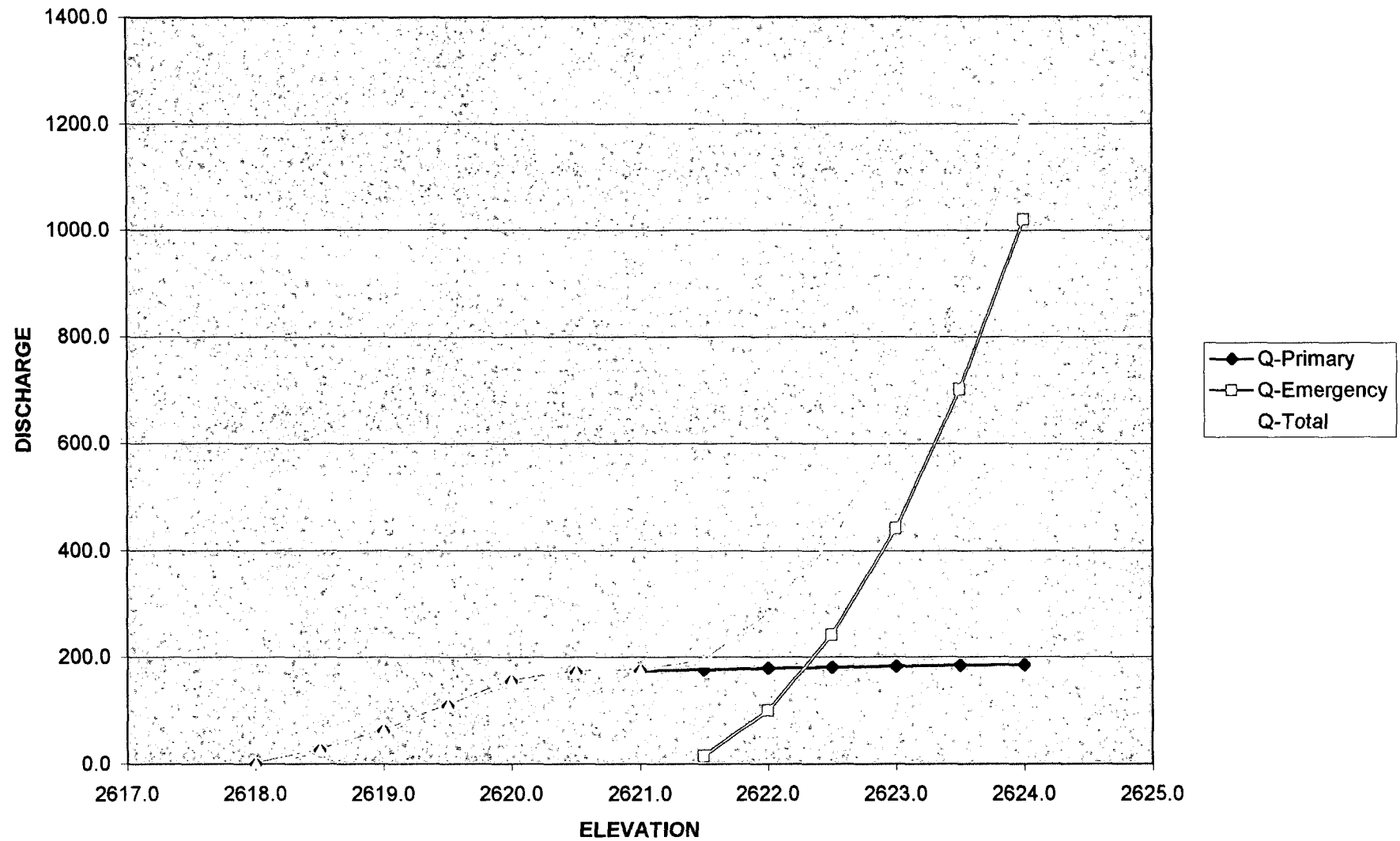
Roger Smith, P.E (PE-4325)

Regional Engineer

Ducks Unlimited

Great Plains Regional Office

RATING CURVE SITE A





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

April 18, 2000

Wayne Besler
14281 Bixby Road
Bison SD 57260

Dear Mr. Besler:

Thank you for submitting the *Application for a Permit to Appropriate Water* for the two storage dams. The application filing fee is \$150 and the licensing fee is \$50 for each application or a total of \$400. You submitted \$150 with the applications, so an additional \$250 is required to complete the applications.

If you have any questions, please contact me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
605 773-3352

*I had sent the 150⁰⁰ to
Mr. Saugheim. I had mis read
the letter and just sent 150⁰⁰ the
first time*

Wayne Besler



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

June 21, 2000

Wayne Besler
14281 Bixby Road
Bison, SD 57620

Dear Mr. Besler:

We have reviewed the plans and specifications for your Ducks Unlimited Besler Ranch Wetlands Project, in Perkins County. The project consists of two dams. Water Permit Application No. 1720-1 was filed for "Site A", with a dam located in the SE 1/4 SE 1/4 of Section 19 and the SW 1/4 SW 1/4 of Section 20-T17N-R13E. Water Permit Application No. 1721-1 was filed for "Site C", with a dam located in the SW 1/4 SW 1/4 Section 18-T16N-R13E and the SE 1/4 SE 1/4 of Section 13-T16N-R12E. The plans and specifications as submitted are approved. Approval of the plans and specifications does not authorize construction of the dams. The construction may not begin until Water Permit Application Nos. 1720-1 and 1721-1 are approved.

Our review was to determine compliance with the requirements of the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release you, as owner of the dams, from the responsibility for operating and maintaining the dams in good repair to ensure the safety of the dams.

The Besler Dam "Site A" will be classified as a small size Category 3, Low Hazard dam with a dam height of 19.5 feet and a normal storage capacity of 66 acre-feet and a maximum storage capacity of 162 acre-feet. The Besler Dam "Site C" will be classified as a small size Category 3, Low Hazard dam with a dam height of 22 feet and a normal storage capacity of 102 acre-feet and a maximum storage capacity of 260 acre-feet.

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

Sincerely,

Gale N. Selken, P.E.
Natural Resources Engineer IV
for Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

c: Roger Smith, Ducks Unlimited
Paul Coughlin, GF&P



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 1720-1, Wayne Besler**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 1720-1, Wayne Besler, 14281 Bixby Road, Bison, SD 57260.

The Chief Engineer is recommending APPROVAL of Application No. 1720-1 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) it is in the public interest with the following qualifications:

1. Water Permit No. 1720-1 authorizes a dam with a storage capacity of 66 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation of 2618.0 feet mean sea level.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

See report on application for additional information.

Garland Erbele, Chief Engineer
June 16, 2000

REPORT ON
WATER PERMIT APPLICATION NO. 1720-1
Wayne Besler
June 9, 2000

Water Permit Application No. 1720-1 has been filed by Wayne Besler to impound 66 acre-feet of water from runoff by constructing a dam located in the SE 1/4 SE 1/4 of Section 19 and the SW 1/4 SW 1/4 of Section 20-T17N-R13E, in Perkins County. The application also requests impoundment of sufficient water to maintain water at the outlet elevation of 2618 feet mean sea level. The water will be used for recreation, fish and wildlife production and livestock watering.

Discussion:

The dam will be classified as a small size, Category 3, Low Hazard dam. The dam has been designed by Ducks Unlimited, Inc. (DU). The plans and specifications have been reviewed and will be approved; however, construction of the dam can not begin until Water Permit Application No. 1720-1 is approved.

The Besler Dam "Site A" will be 19.5 feet high with a normal storage capacity of 66 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 162 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 25-year frequency event.

The dam has a drainage area of 6.72 square miles. The dam is designed to have a CMP drop inlet structure with a 72 inch riser and a 42 inch barrel and 6.5 feet of freeboard as the primary spillway, and a 100 foot wide earthcut spillway with 3.5 feet of available freeboard as the secondary spillway. Ducks Unlimited uses the NRCS TR-20 model to route the inflow through the dam. They route a 25 year event peak of 533 cfs through the structure with 2.1 feet of freeboard remaining, and a 100 year event peak of 1005 cfs through the structure with 1.16 feet of freeboard remaining.

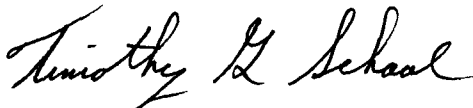
The annual yield for this drainage area with an 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 33 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 90 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 500 acre-feet.

The Besler Dam "Site A" is located in the SE 1/4 SE 1/4 of Section 19 and the SW 1/4 SW 1/4 of Section 20-T17N-R13E on an unnamed tributary of Rabbit Creek about 2.5 miles upstream of its confluence with Rabbit Creek. Brad Besler, the applicant's son, recently filed Water Permit No. 1698-1, which is for a dam with 62 acre-foot capacity and is located about 1 mile below the proposed dam. This dam has a drainage area of 8.45 square miles. There are no other Water Permits/Rights between the proposed dam and Rabbit Creek. The nearest permit below the

confluence of Rabbit Creek would be Water Right No. 782-1, held by Burdine & Sons, Inc. This permit is located three to five miles below the confluence, and appropriates 2.25 cfs from Rabbit Creek to irrigate 445 acres of lands. Approval of Water Permit Application No. 1720-1 should not have any adverse effect on Water Right No. 782-1 or Water Permit No. 1698-1.

Conclusions:

1. Water Permit Application No. 1720-1 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 1720-1.



Timothy G. Schaal, P.E.
Natural Resources Engineer III

Approved by:



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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

June 21, 2000

Wayne Besler
14281 Bixby Road
Bison, SD 57260

Dear Mr. Besler:

Water Permit Application Nos. 1720-1 and 1721-1 for recreation, fish & wildlife propagation, and livestock use have 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 Bison Courier printed at Bison, SD (Ph # (605) 244-7199). For your information, a copy of the notice, the recommendations of the Chief Engineer and reports on the applications 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 applications.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

cc: Paul Coughlin, Department of Game, Fish & Parks

NOTE: If you plan to contest any part of the Chief Engineer's recommendations, 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 applications.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

June 20, 2000

The Bison Courier
Box 429
Bison, SD 57620-0429

ATTENTION: Legal Public Notice

Enclosed is a Notice of Hearing on Application Nos. 1720-1 and 1721-1 to Appropriate Water to be published twice. Please publish the first notice on June 29, 2000, 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 Wayne Besler, 14281 Bixby Road, Bison, SD 57260 (Ph # (605) 224-5507).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CU T HERE-----

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

Nos. 1720-1 & 1721-1

Date _____

We are in receipt of your letter of June 21, 2000, enclosing Notice of Hearing to Appropriate Water by Application Nos. 1720-1 & 1721-1 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 June 29, 2000, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NOS. 1720-1 and 1721-1 to Appropriate Water

Notice is given that Wayne Besler, 14281 Bixby Road, Bison SD 57260 has filed the following applications for a water permit.

Application No. 1720-1 requests impoundment of 66.0 acre-feet of water from runoff by constructing a dam located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 19, and the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 20 with water impounded in portions of the E $\frac{1}{2}$ SE $\frac{1}{4}$ Section 19; W $\frac{1}{2}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$ Section 20; all in T17N-R13E. This application requests impoundment of sufficient water to maintain water at the outlet elevation of 2618.0 feet mean sea level. The water is to be used for recreation, fish and wildlife propagation purposes and livestock water.

Application No. 1721-1 requests impoundment of 102.0 acre-feet of water from runoff by constructing a dam located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 18-T16N-R13E and the SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 13-T16N-R12E with water impounded in portions of the SE $\frac{1}{4}$ Section 13-T16N-R12E and the W $\frac{1}{2}$ SW $\frac{1}{4}$ Section 18-T16N-R13E. This application requests impoundment of sufficient water to maintain water at the outlet elevation of 2625.0 feet mean sea level. The water is to be used for recreation, fish and wildlife propagation purposes and livestock water.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application Nos. 1720-1 and 1721-1 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 applications, as recommended, unless a petition is filed opposing the applications or the applicant files a petition contesting the Chief Engineer's recommendations. If a petition opposing the applications or contesting the recommendations is filed, then a hearing will be scheduled and the Water Management Board will consider the applications. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting these applications or recommendations must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Program, 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 July 17, 2000.

The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, 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 Program address to request copies of information pertaining to these applications. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.



PUBLISHER'S AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

SS

COUNTY OF PERKINS

Fern Besler, of said County and State, being duly sworn, on oath says: THE BISON COURIER is a weekly newspaper of general circulation, printed and published in Bison, in said County and State and has been such newspaper during the times hereinafter mentioned; that the said BISON COURIER is a legal newspaper and has been in existence for more than one year immediately preceding the first publication herein mentioned; and has more than 200 bonafide subscribers; that I, the undersigned, am Legal Advertising Manager, of said newspaper, and in charge of the advertising department thereof, and have personal knowledge of all facts stated in this affidavit; and that the advertisement headed

Notice of Application Nos. 1720-1
and 1721-1 to Appropriate Water

a printed copy of which is hereto attached, was printed and published in said newspaper for 2 successive issues, the first publication being on the 29 day of June, 20 00 and the last publication on the 6 day of July, 20 00 that \$ 50.04 being the full amount of the fee for publication of the annexed notice insures solely to the benefit of the publishers of the said newspaper; that no arrangement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.

Fern Besler

Subscribed and sworn to before me this 25 day of July, 20 00.

Marsha Neal

Notary Public, Perkins County

My commission expires:

June 27, 2006

The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, 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 Program address to request copies of information pertaining to these applications.
Steven M. Pirner, Secretary, Department of Environment and Natural Resources

NOTICE OF APPLICATION NOS. 1720-1 AND 1721-1 TO APPROPRIATE WATER

Notice is given that Wayne Besler, 14281 Bixby Road, Bison SD 57620 has filed the following applications for a water permit.

Application No. 1720-1 requests impoundment of 66.0 acre-feet of water from runoff by constructing a dam located in the SE1/4SE1/4 Section 19, and the SW1/4SW1/4 Section 20 with water impounded in portions of the E1/2SE1/4 Section 19; W1/2SW1/4, S1/2NW1/4 Section 20; all in T17N-R13E. This application requests impoundment of sufficient water to maintain water at the outlet elevation of 2,618.0 feet mean sea level. The water is to be used for recreation, fish and wildlife propagation purposes and livestock water.

Application No. 1721-1 requests impoundment of 102.0 acre-feet of water from runoff by constructing a dam located in the SW1/4SW1/4 Section 18-T16N-R13E and the SE1/4SE1/4 Section 13-T16N-R12E with water impounded in portions of the SE1/4 Section 13-T16N-R12E and the W1/2SW1/4 Section 18-T16N-R13E. This application requests impoundment of sufficient water to maintain water at the outlet elevation of 2,625.0 feet mean sea level. The water is to be used for recreation, fish and wildlife propagation purposes and livestock water.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application Nos. 1720-1 and 1721-1 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 applications as recommended, unless a petition is filed opposing the applications, or the applicant files a petition contesting the Chief Engineer's recommendations. If a petition opposing the applications, or contesting the recommendations is filed, then a hearing will be scheduled and the Water Management Board will consider the applications. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting these applications or recommendations, must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Program, 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 July 17, 2000.

The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, 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 Program address to request copies of information pertaining to these applications.

Steven M. Pirner, Secretary, Department
of Environment and Natural Resources



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

AUG 02 2000

Wayne Besler
14281 Bixby Road
Bison, SD 57620

Dear Mr. Besler:

Enclosed are Water Permit Nos. 1720-1 and 1721-1 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permits.

Form 10's, *Notice of Completion of Works and Application of Water to Beneficial Use*, are enclosed. Please return these completed forms after you have finished the systems and have put the water to beneficial use. An investigation can then be scheduled so the water licenses may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

Permit No. 1720-1
Moreau River - Water District

Report Of Examination Of Works And/Or Application of Water To Beneficial Use

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have this day, **November 18, 2003**, made a thorough examination of the water use system constructed by **Wayne Besler** of **14281 Bixby Road, Bison, SD 57260** holder of Permit No. **1720-1**, bearing the priority of **April 12, 2000** authorizing the storage of **66** acre-feet of the waters of **runoff** for **recreation, fish & wildlife propagation, and livestock water** purposes, in **Perkins** County.

I have to report on the conditions of the same as follows:

A. Works used to divert the water:

A 20 foot high earthen dam with a normal storage capacity of 66 acre-feet

B. Works used to transport water to place of use:

N/A

C. Works used to apply water to beneficial use:

A 20 foot high earthen dam with a normal storage capacity of 66 acre-feet

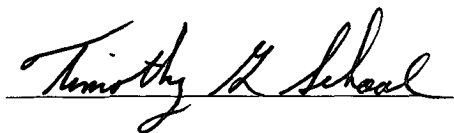
The system is in the following condition **good**. The point of diversion is located **700 feet north of the SW corner of Sec. 20-T17N-R13E (SW ¼ SW ¼) (45.416609, -102.559926)**. The works are capable of storing **66** acre-feet of water which is to be used for **recreation, fish & wildlife propagation and livestock water**. Water has been put to beneficial use to the maximum extent as follows:

A 20 foot high earthen dam with a normal storage capacity of 66 acre-feet

and the license should be issued for **66** acre-feet of storage.

Applicable permit qualifications have been complied with: Yes **X**

Exceptions to compliance are: **none** Date Report Completed: **February 11, 2004**



Timothy G. Schaal, P.E.
Natural Resources Engineer Specialist
DENR, Water Rights Program

REPORT ON INSPECTION OF PERMIT NO. 1720-1

DATE OF INSPECTION: **November 18, 2003**

NAME & ADDRESS OF INSPECTION CONTACT/ **Brad Besler**

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: **son**

NAME & ADDRESS OF PERMIT HOLDER: **Wayne Besler, 14281 Bixby Road, Bison, SD 57260**

DIVERSION POINT LEGAL LOCATION: **700 feet north of the SW corner Sec. 20-T17N-R13E**
(SW ¼ SW ¼) (45.416609, -102.559926).

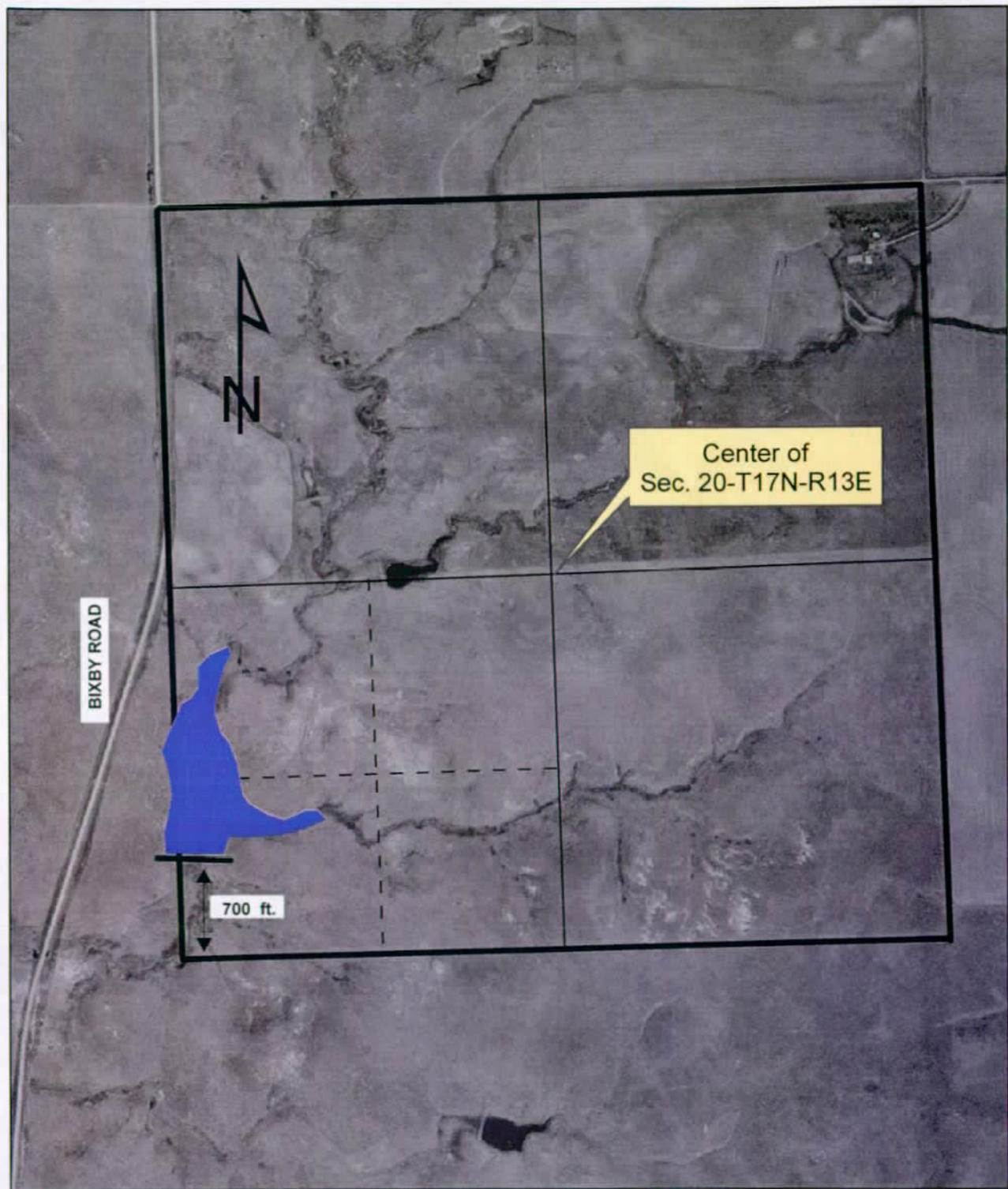
DAM INFORMATION:

- 1) Height to crest **20** feet
- 2) Height to primary spillway **13.5** feet
- 3) Height to secondary spillway **16.5** feet
- 4) Crest width **12** feet
- 5) Crest length **520** feet
- 6) Spillway length **XXX** feet
- 7) Spillway width **100** feet
- 8) Approx. storage (Normal) **66** acre-feet
- 9) Approx. storage (Maximum) **162** acre-feet
- 10) Date constructed: **Fall 2000**

PERMIT QUALIFICATIONS AND REGULATIONS:

- 1) Soil and water permit lands agree with lands being irrigated and lands listed on permit **N/A**
- 2) Special qualifications to permit being abided by **yes**
- 3) All structures, wells and lands on map **yes**
- 4) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period **N/A**

Water Permit Application No. 1720-1



0 0.25 0.5 1 Miles

South Dakota Department of
Environment and Natural Resources



Protecting South Dakota's Tomorrow ... Today



Timothy G. Schaal

Timothy G. Schaal, P.E. 2/11/04
Natural Resources Engineer Specialist
DENR, Water Rights Program

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1720-1

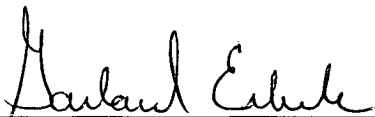
(1) Wayne Besler, 14281 Bixby Road, Bison SD 57260 made Application No. 1720-1, April 12, 2000 for a water permit to impound 66 acre feet of water from runoff, Perkins County, South Dakota for recreation, fish and wildlife propagation and livestock watering purposes. Permit No. 1720-1, with a priority date of April 12, 2000 was approved July 17, 2000 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before July 17, 2005 and for the application to beneficial use of water on or before July 17, 2009.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 1720-1 is issued a license, bearing a priority date of April 12, 2000, to impound 66 acre feet of water.

The location of the storage dam (spillway) is 700 feet north of the southwest corner of Section 20-T17N-R13E (SW ¼ SW ¼).

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 1720-1, including the following now applicable qualifications:

- Water Permit No. 1720-1 authorizes a dam with a storage capacity of 66 acre feet of water an sufficient water annually to maintain the water level to the outlet elevation of 2618.0 feet mean sea level.
- Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.



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

APR 23 2004

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

APR 23 2004

1708-1
1749-1
1720-1
1721-1

Wayne Besler
14281 Bixby Rd
Bison SD 57620

Dear Mr. Besler:

Enclosed are Water License Nos. 1708-1, 1749-1, 1720-1 & 1721-1. This is the final water right document completing your process of obtaining a Water Right.

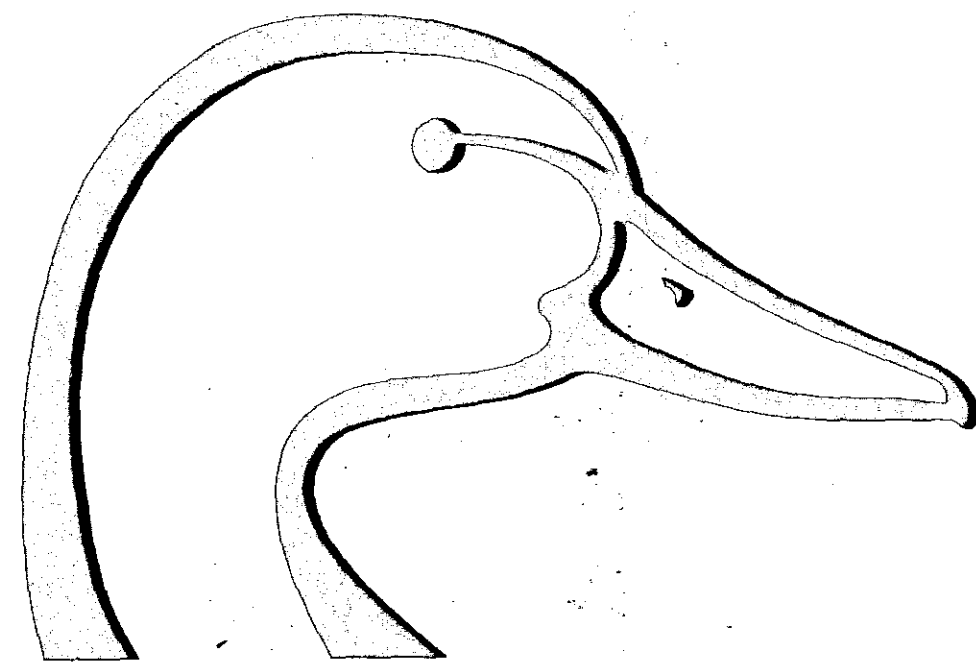
As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

1720-1



DUCKS UNLIMITED

DUCKS UNLIMITED

PROJECT

BESLER RANCH WETLANDS

SITE "A" - SECTION 20, T-17-N, R-13-E

SITE "C" - SECTION 13, T-16-N, R-12-E

PERKINS COUNTY, SOUTH DAKOTA

IN COOPERATION WITH

SOUTH DAKOTA GAME, FISH, AND PARKS DEPT.

AND

WAYNE BESLER

(PRIVATE LANDOWNER)

SPECIFICATIONS

101	GENERAL CONDITIONS
201	MOBILIZATION
202	SITE PREPARATION
203	EXCAVATION
204	EMBANKMENT CONSTRUCTION
205	WATER
206	WATER CONTROL STRUCTURE INSTALLATION
206A	WATER CONTROL STRUCTURE AND CULVERT APPURTENANCES
207	CULVERT INSTALLATION
208	CAST-IN-PLACE REINFORCED CONCRETE
209	RIPRAP PLACEMENT

QUANTITIES

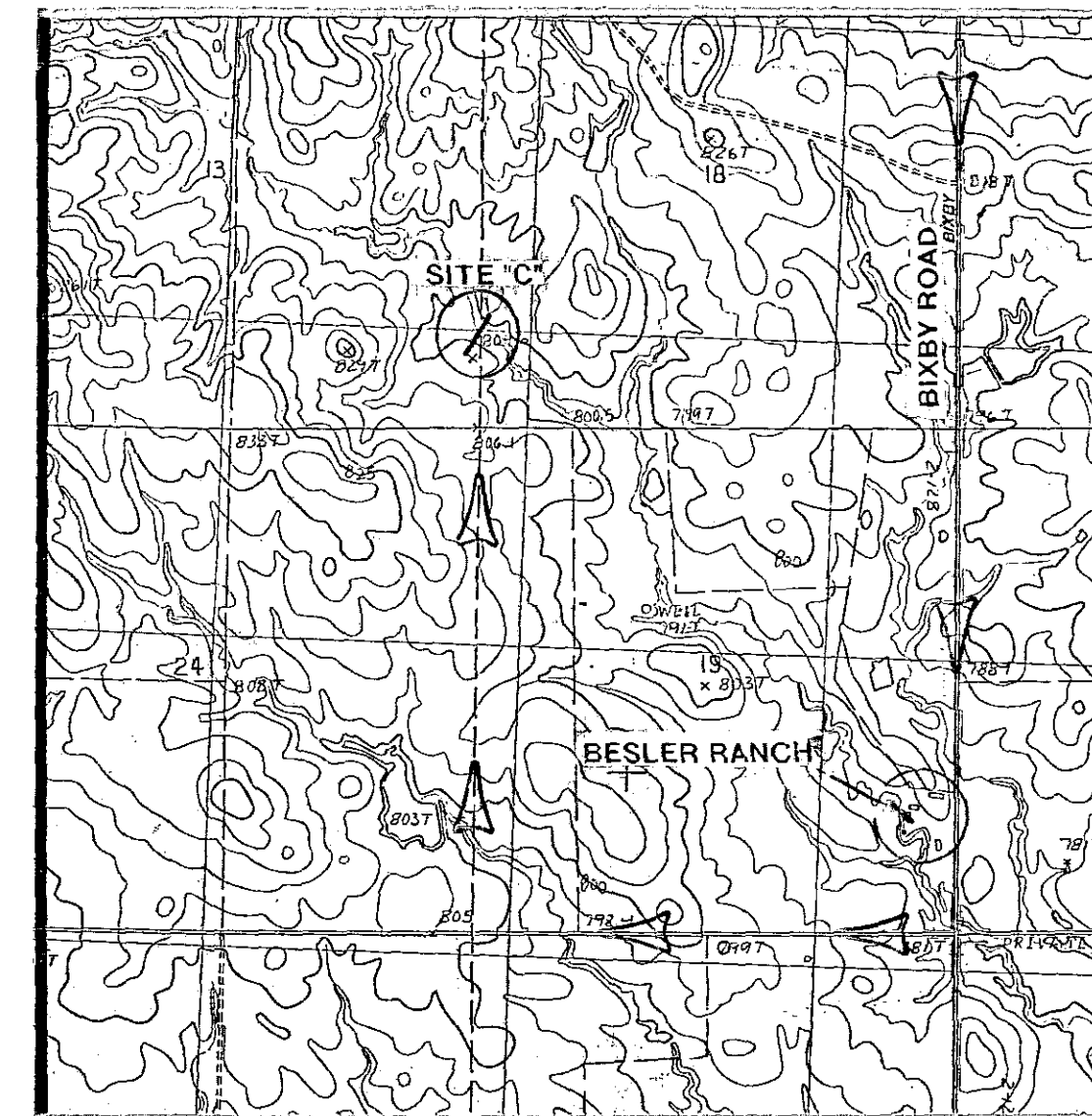
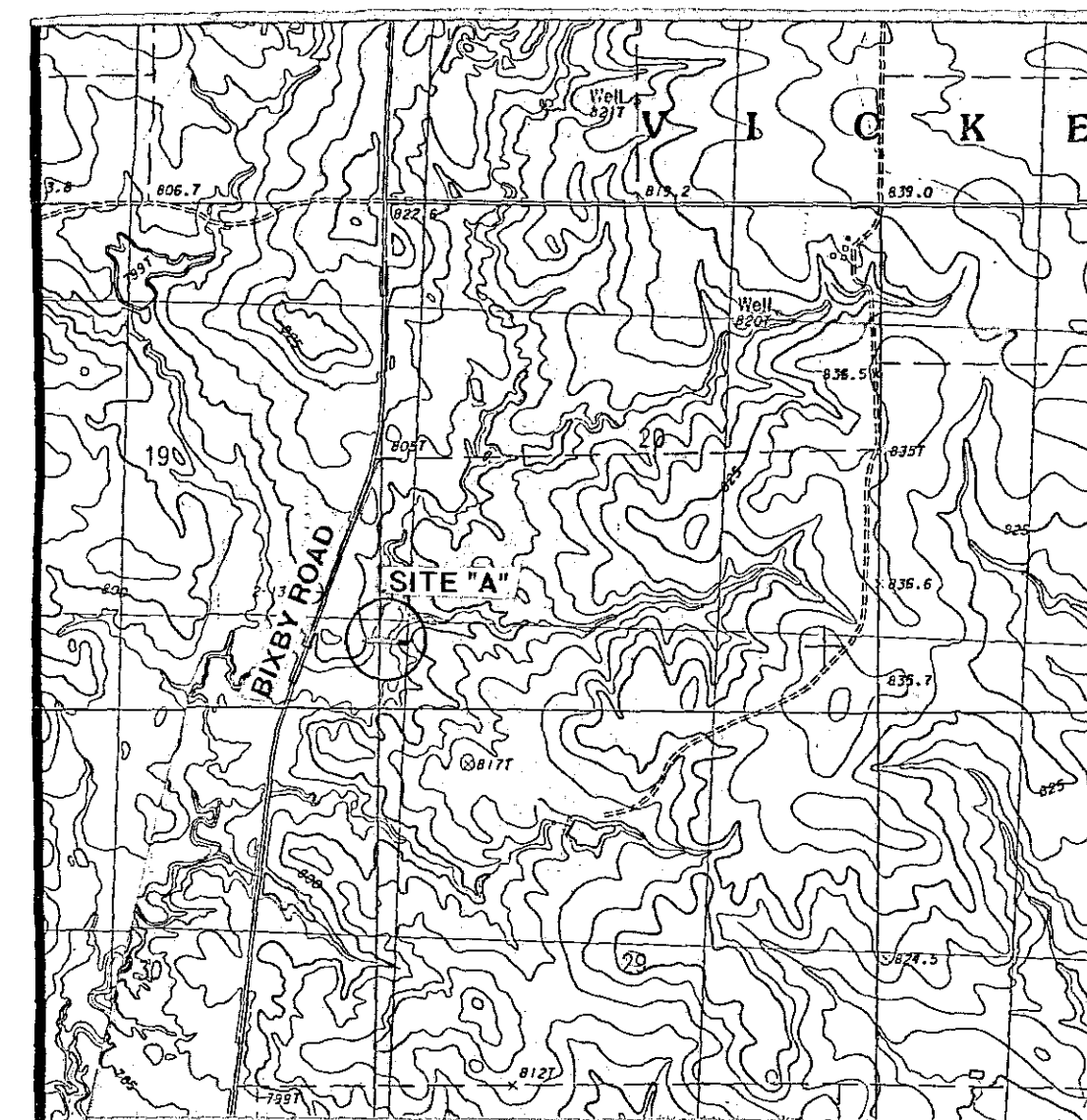
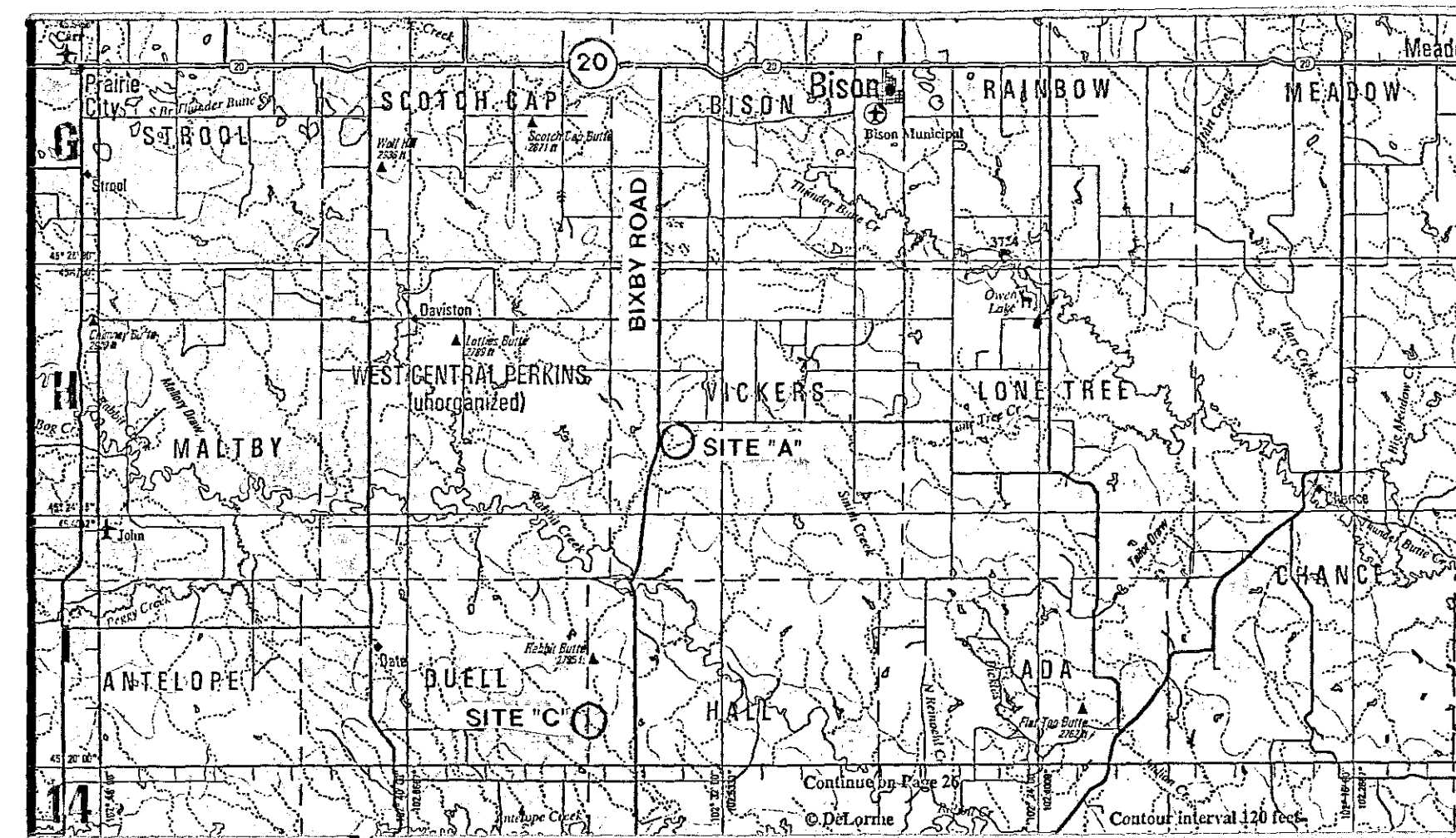
MOBILIZATION	1 L.S.
SITE PREPARATION (6")	
SITE "A"	870 CY-P
SITE "C"	603 CY-P
TOTAL	1,473 CY-P
EXCAVATION	
SITE "A" EMERGENCY SPILLWAY	15,058 CY-INC.
SITE "C" EMERGENCY SPILLWAY	5,294 CY-INC.
TOTAL	20,352 CY-INC.
EMBANKMENT CONSTRUCTION	
SITE "A"	16,770 CY-S*
SITE "C"	11,268 CY-S*
TOTAL	28,038 CY-S*
WATER (APPROX. 10 GAL./C.Y.)	280± M-GAL.**
WATER CONTROL STRUCTURE INSTALLATION	2 EA.
CULVERT INSTALLATION	
SITE "A" 42" Ø CMP	96 LF-P
SITE "C" 24" Ø CMP	96 LF-P
RIPRAP PLACEMENT (CLASS I)	
SITE "A"	15 CY-P
SITE "C"	16 CY-P
TOTAL	31 CY-P
RIPRAP PLACEMENT (CLASS II)	
SITE "A"	22 CY-P
SITE "C"	22 CY-P
TOTAL	44 CY-P
AGRI-DRAIN INLINE DRAWDOWN STRUCTURE	2 EA.
12" PVC PIPE SDR-35	
SITE "A"	39 LF
SITE "C"	36 LF
TOTAL	75 LF

*INCLUDES 15% FOR SHRINKAGE

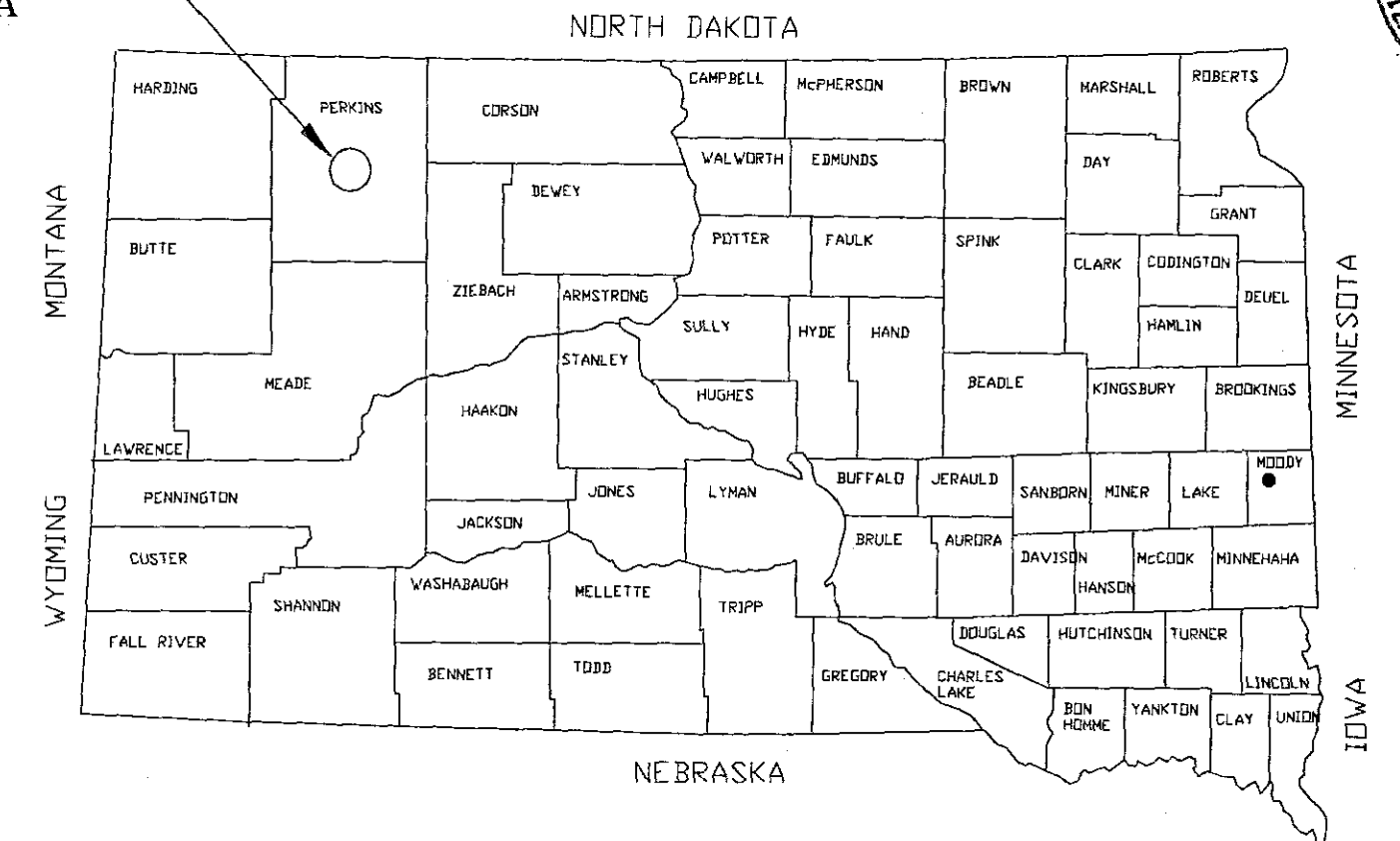
**ONLY ACTUAL QUANTITY OF WATER USED WILL BE PAID FOR.

NOTES TO CONTRACTOR:

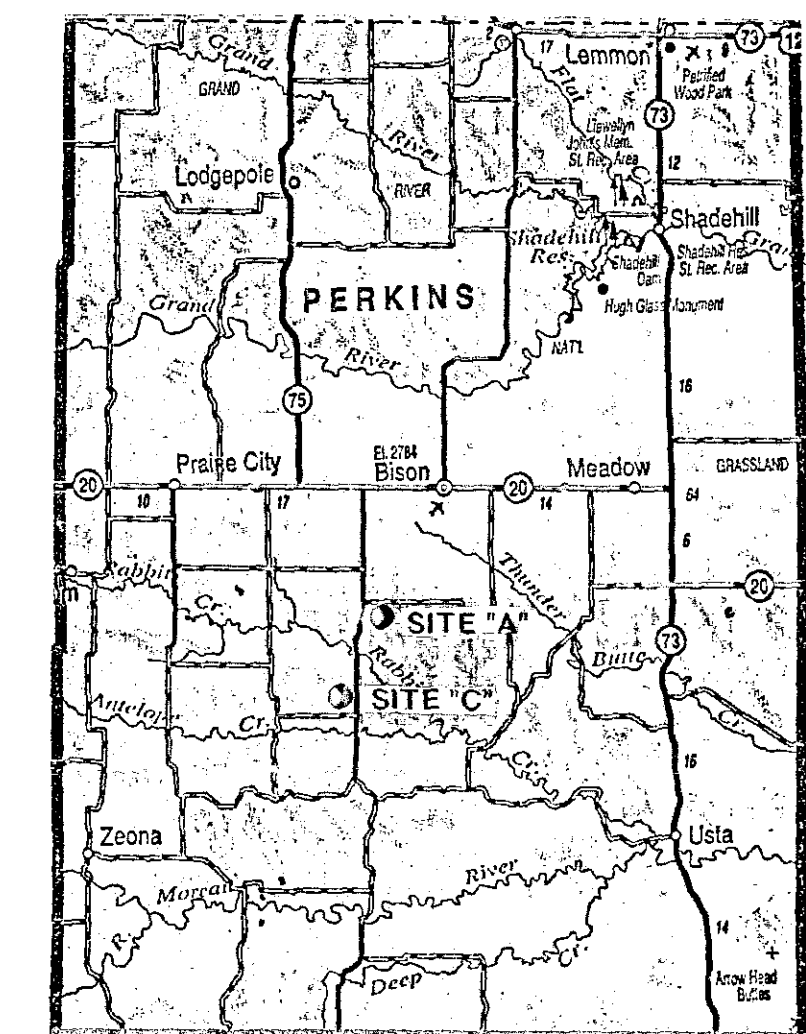
Staked quantities listed above are estimated quantities for design & bidding purposes. Final as-staked quantities derived from the construction staking data will establish quantities for final payment. Project construction staking & final as-staked quantity calculations have not been completed prior to the bid solicitation.



PROJECT AREA



SOUTH DAKOTA



PERKINS COUNTY



PLAN INDEX

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- 6 SITE "C" TOPOGRAPHY
- 7 SITE "C" EMBANKMENT AND SPILLWAY PLANS
- 8 SITE "C" STRUCTURE PLAN & PROFILE
- 9 SITE "C" STRUCTURE DETAILS
- 10 SOIL INFORMATION (WHEN AVAILABLE)

AGENCY CONTACT:
PAUL COUGHLIN
SD GF&P
605/854-9105

LANDOWNER:
WAYNE BESLER
605-244-5507

	DUCKS UNLIMITED INC.	PROJECT NO. SD-0283-002	DESIGNED BY: RCS
	GREAT PLAINS REGIONAL OFFICE	BESLER RANCH WETLANDS LOCATION MAPS	DRAWN BY: TSP
DATE: 3-17-2000	SHEET NO. 1 OF 10	APPROVED BY: [Signature]	CHECKED BY: BRK

1720-1

1720-1



DUCKS UNLIMITED

DUCKS UNLIMITED

PROJECT

BESLER RANCH WETLANDS

SITE "A" - SECTION 20, T-17-N, R-13-E

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PERKINS COUNTY, SOUTH DAKOTA

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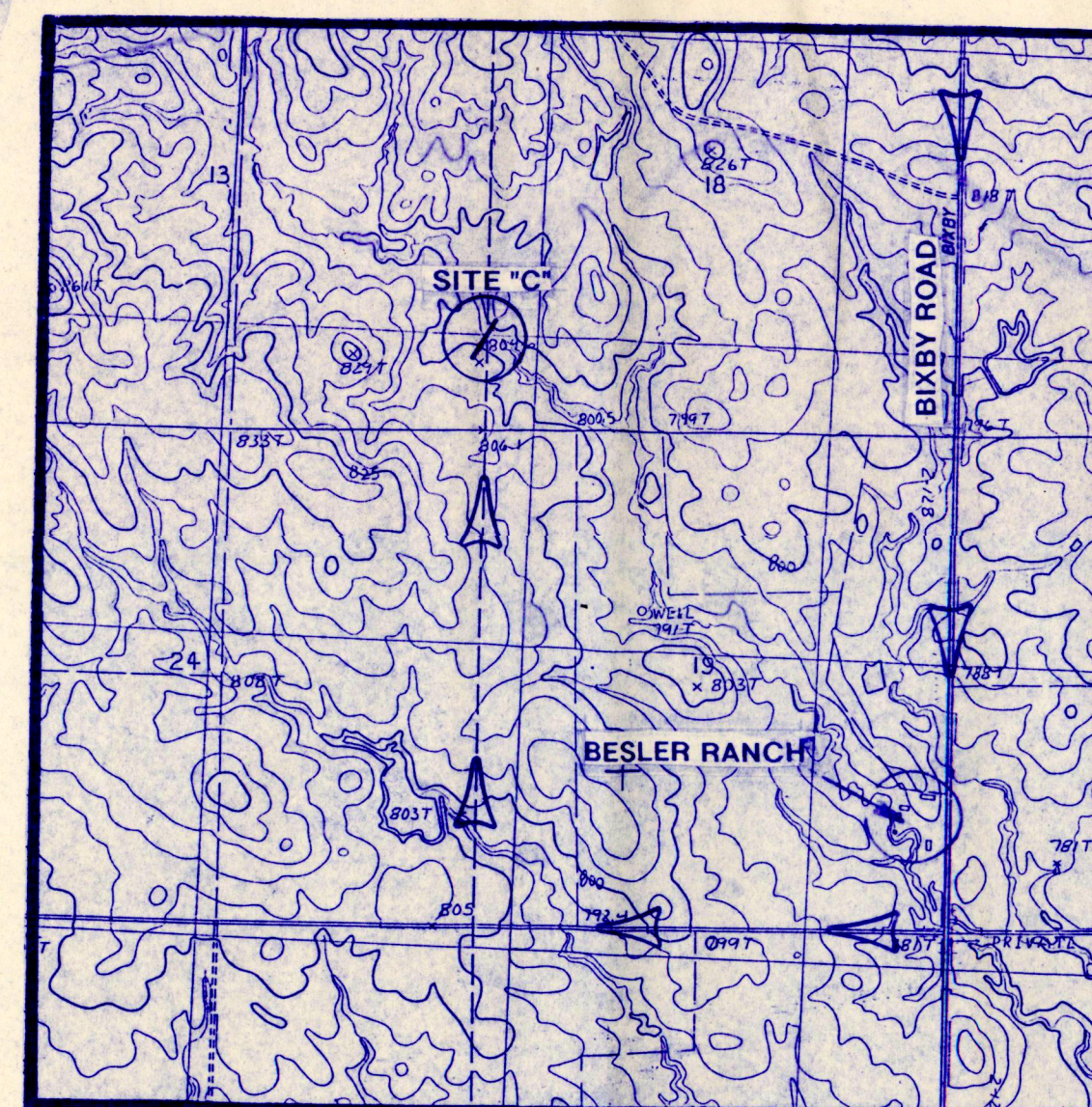
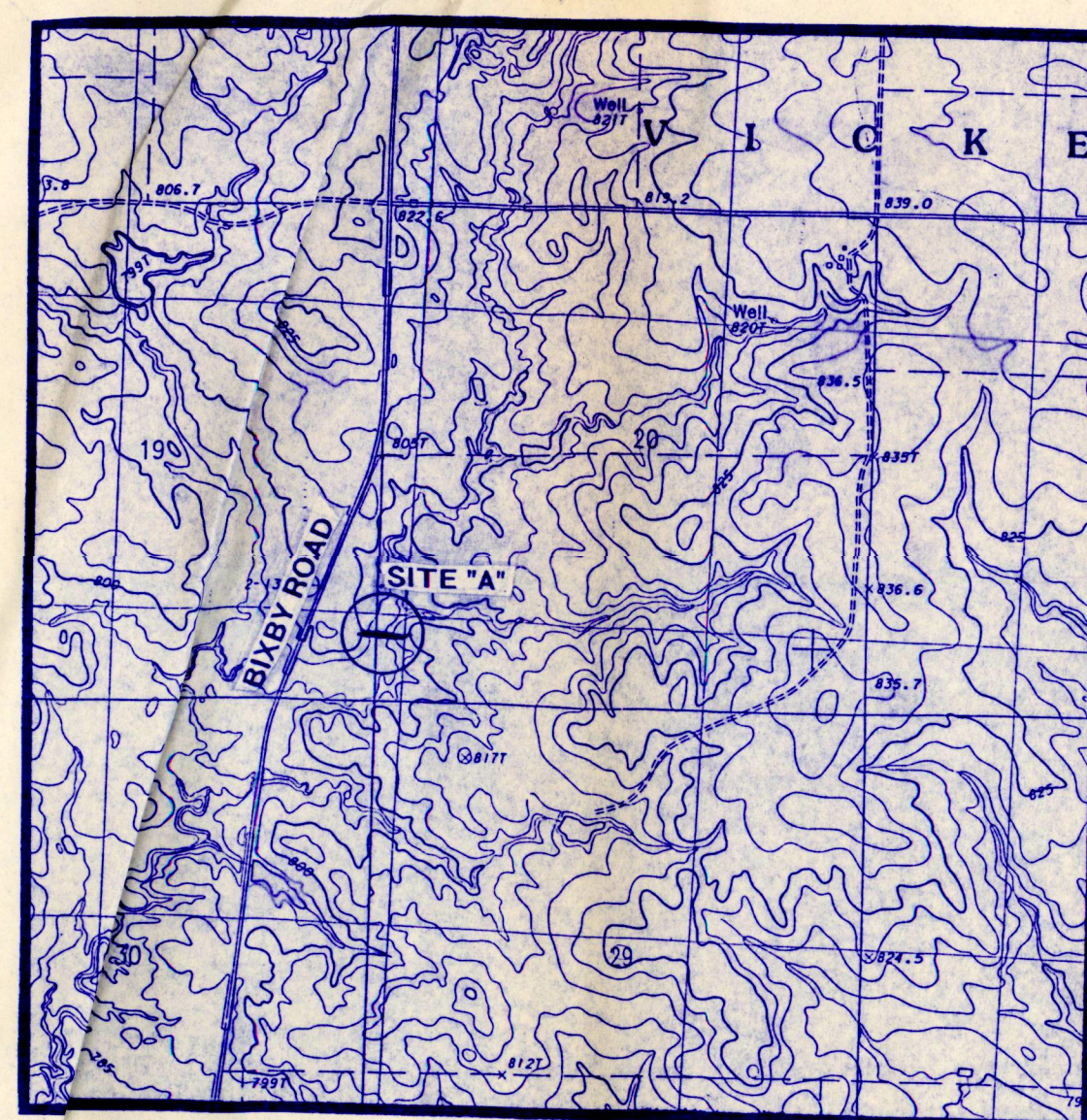
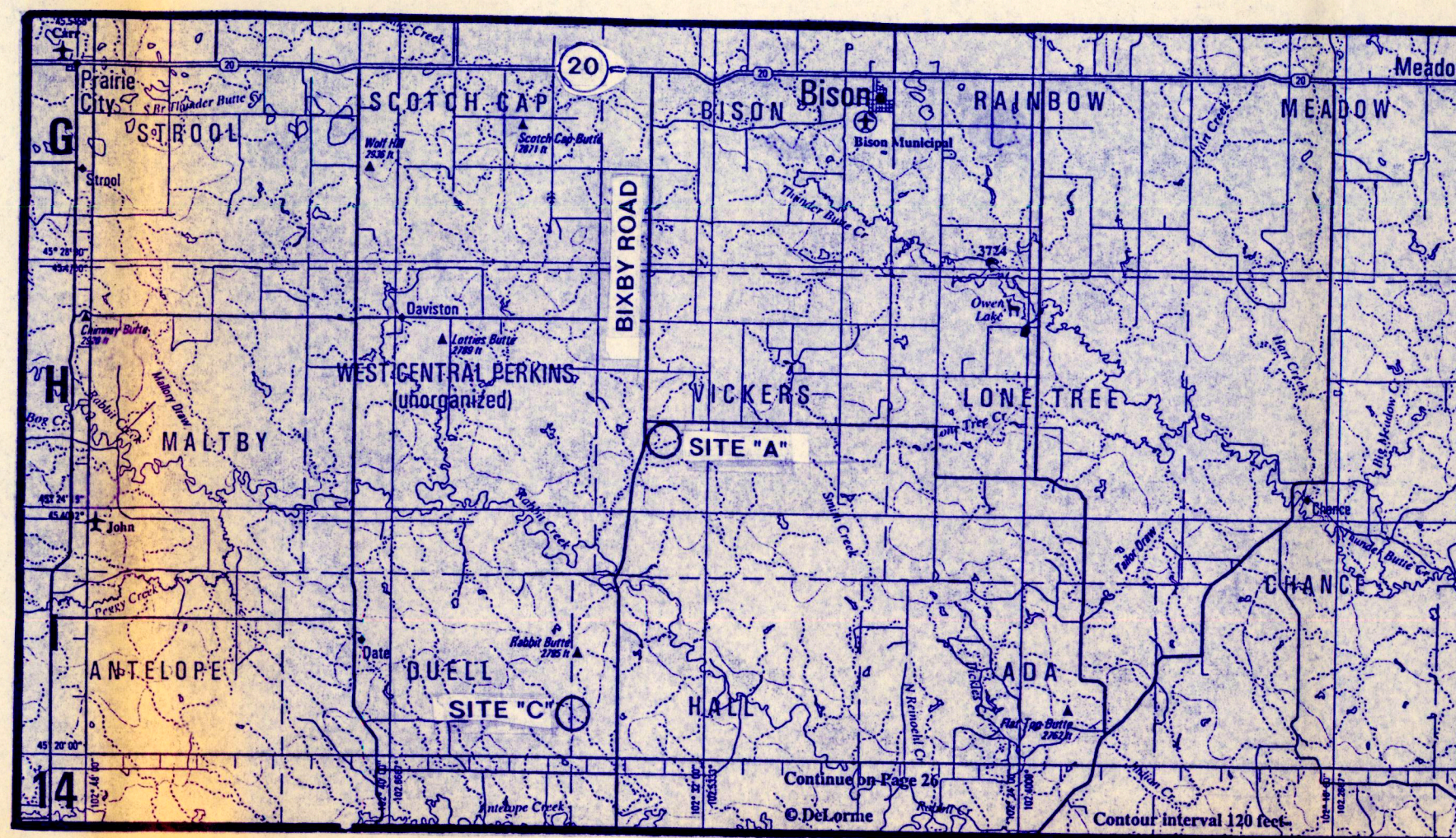
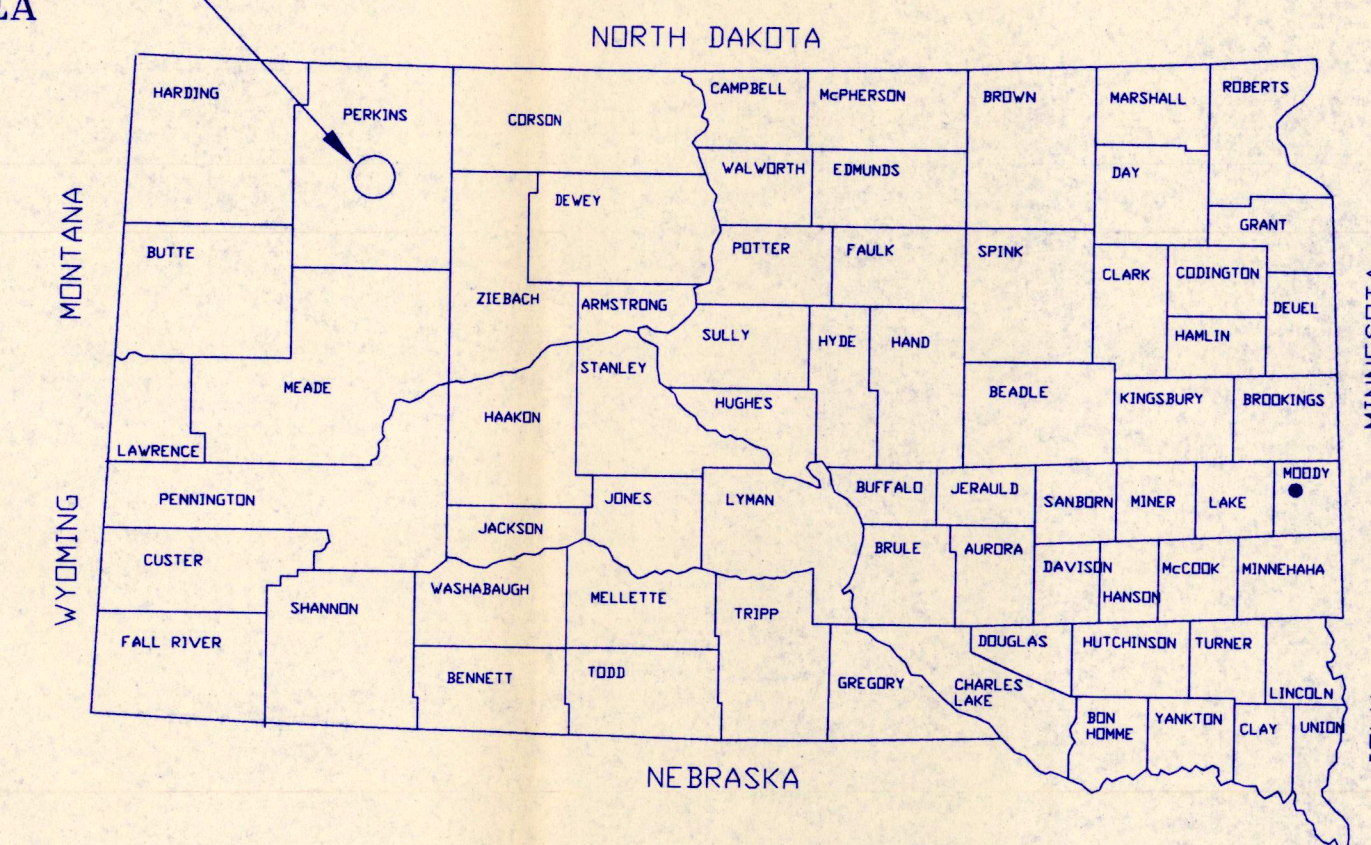
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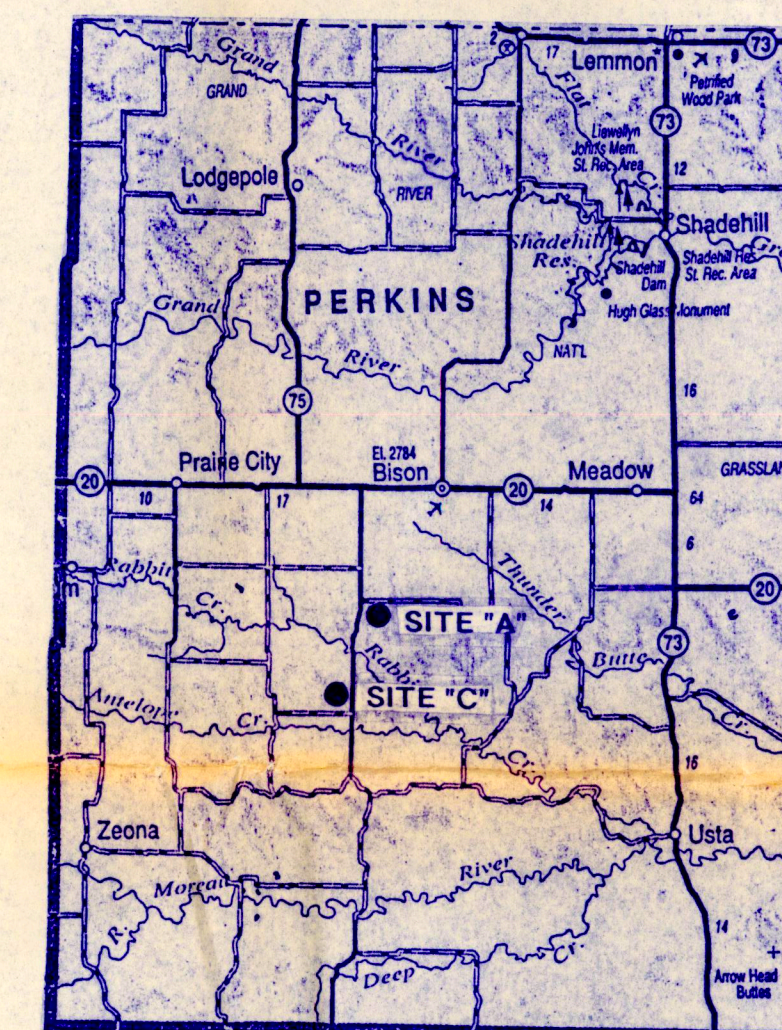
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LANDOWNER:
WAYNE BESLER
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DUCKS
UNLIMITED
INC.

GREAT PLAINS REGIONAL OFFICE

DATE: 3-17-2000

SHEET NO. 1 OF 10

PROJECT NO. SD-0283-002

BESLER RANCH WETLANDS

LOCATION MAPS

DESIGNED BY: RCS

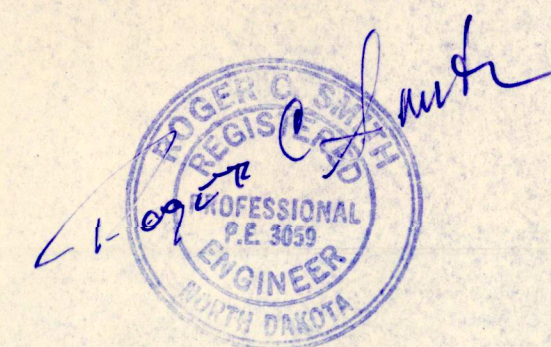
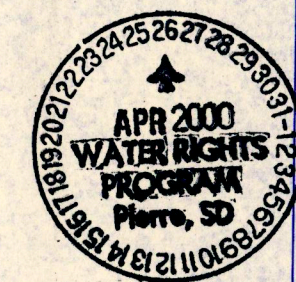
DRAWN BY: TSP

SURVEYED BY: GLJ

CHECKED BY: BRK

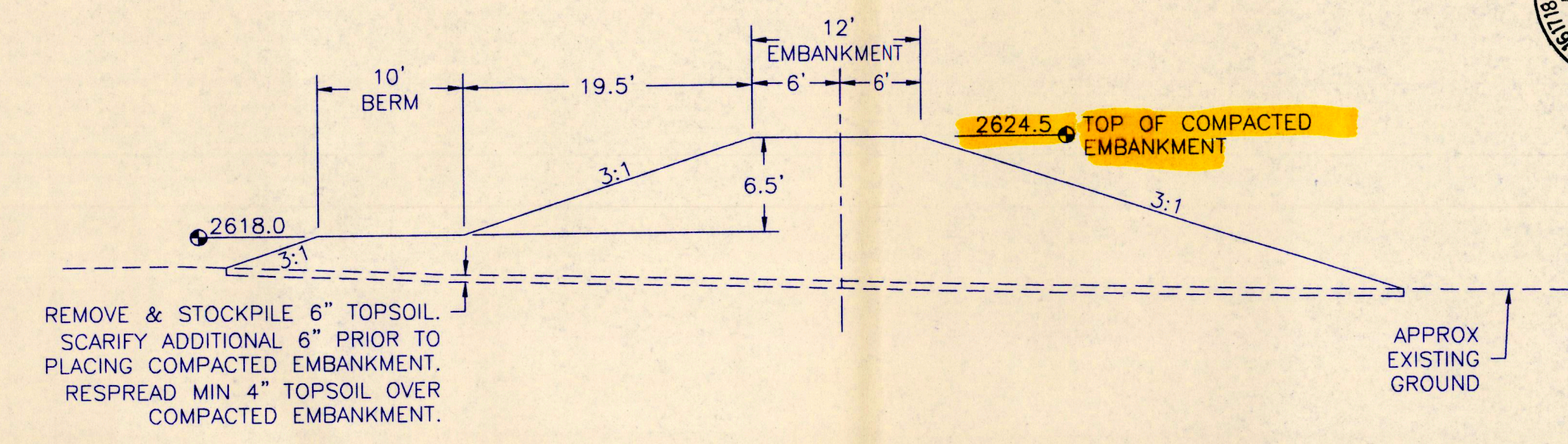
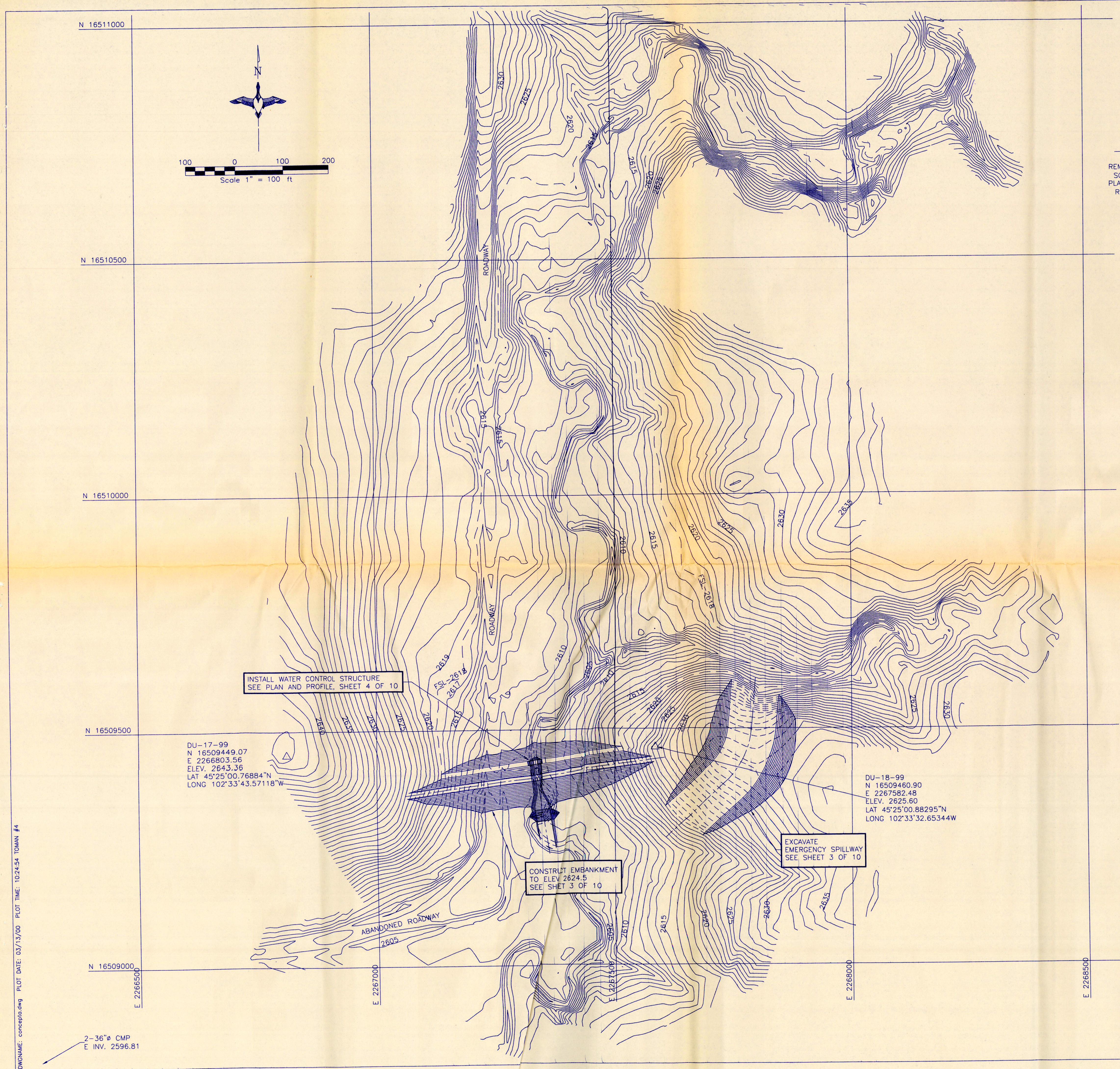
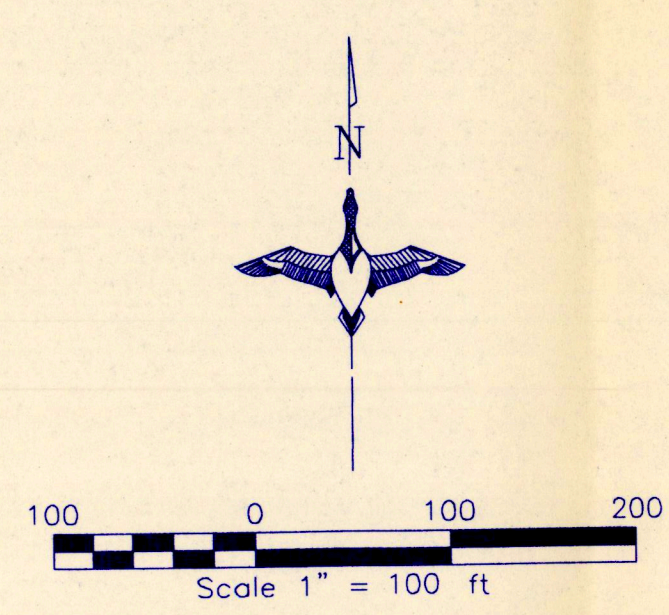
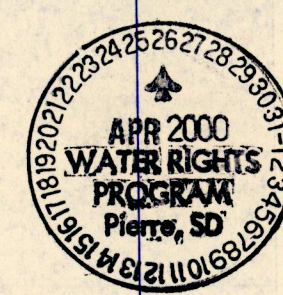
APPROVED BY:

APPROVED BY:

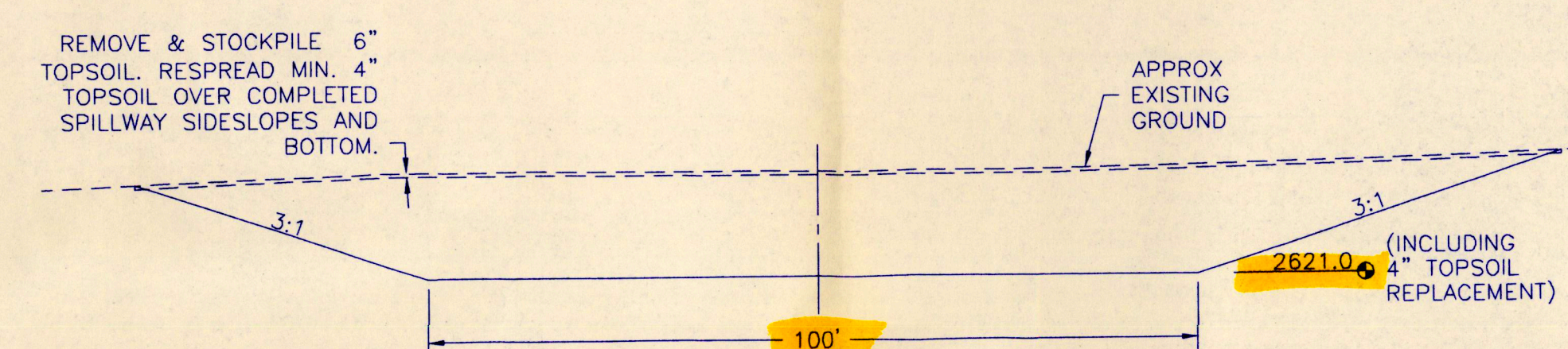


1720-1

1720-



TYPICAL EMBANKMENT X-SECTION
1" = 10' HORIZ & VERT



TYPICAL SPILLWAY X-SECTION
1" = 20' HORIZ & VERT

NOTE:
EXCAVATED MATERIAL SHALL BE USED FOR EMBANKMENT CONSTRUCTION IF SUITABLE. ANY UNSUITABLE MATERIAL SHALL BE WASTED AS DIRECTED BY ENGINEER.

ELEVATION	AREAS (ACRES)	VOLUME (ACRE-Feet)
2604	0.00	0.00
2605	0.04	0.02
2606	0.13	0.10
2607	0.29	0.31
2608	0.60	0.76
2609	1.37	1.74
2610	2.21	3.53
2611	3.25	6.26
2612	4.55	10.16
2613	5.70	15.29
2614	7.22	21.75
2615	8.73	29.73
2616	10.22	39.20
2617	11.72	50.17
FSL 2618	13.42	62.74
2619	15.03	76.96
2621		119
2624.5		154.62

HORIZONTAL CONTROL
BASED ON UTM COORDINATES FROM SOUTH DAKOTA NORTH ZONE 13. IT WAS TIED TO TRINAGULATION STATION DISK "RABBIT BUTTE" WITH THE HORIZONTAL COORDINATES ADJUSTED BY THE NGS IN JANUARY OF 1998 ON THE NAD83 (1996). THESE HORIZONTAL COORDINATES ARE IN US FEET, BUT CAN BE DIVIDED BY 3.2808336 TO PLACE THE HORIZONTAL CONTROL INTO METERS.

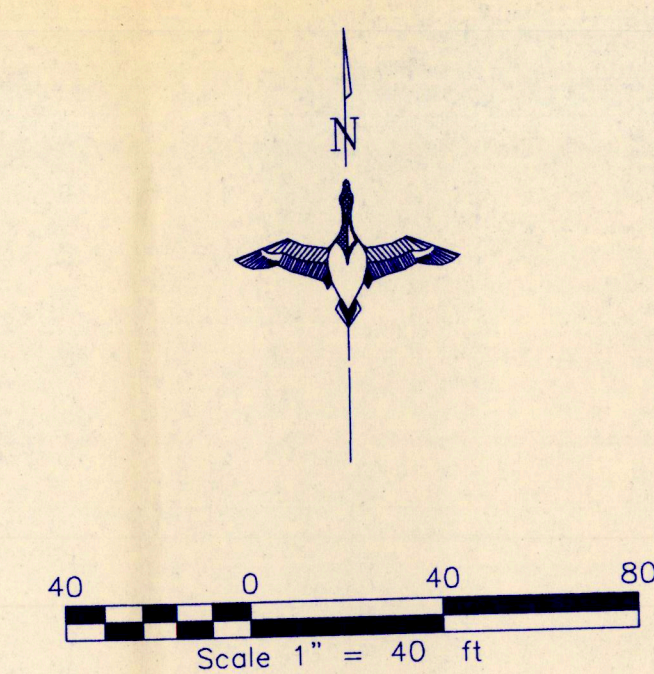
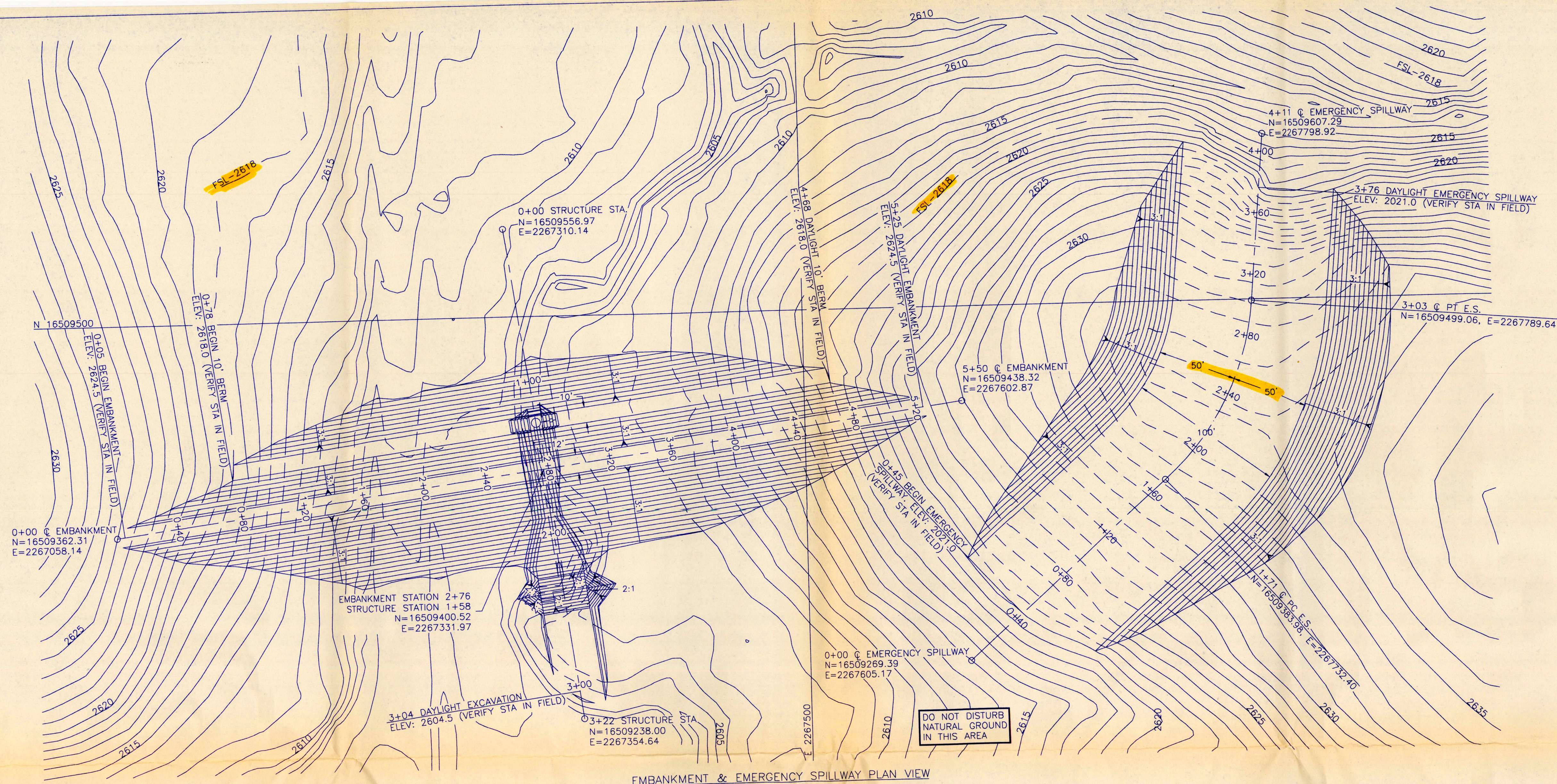
VERTICAL CONTROL
CALIBRATED TO 2 USGS TOPO MAP SPOT ELEVATIONS, ONE IS AT THE NW CORNER OF SEC. 20 AS 822.6 METERS AND THE OTHER IS THE NE CORNER OF SEC. 20 AS 839.0 METERS. THIS WOULD BE APPROXIMATE NGVD 29.

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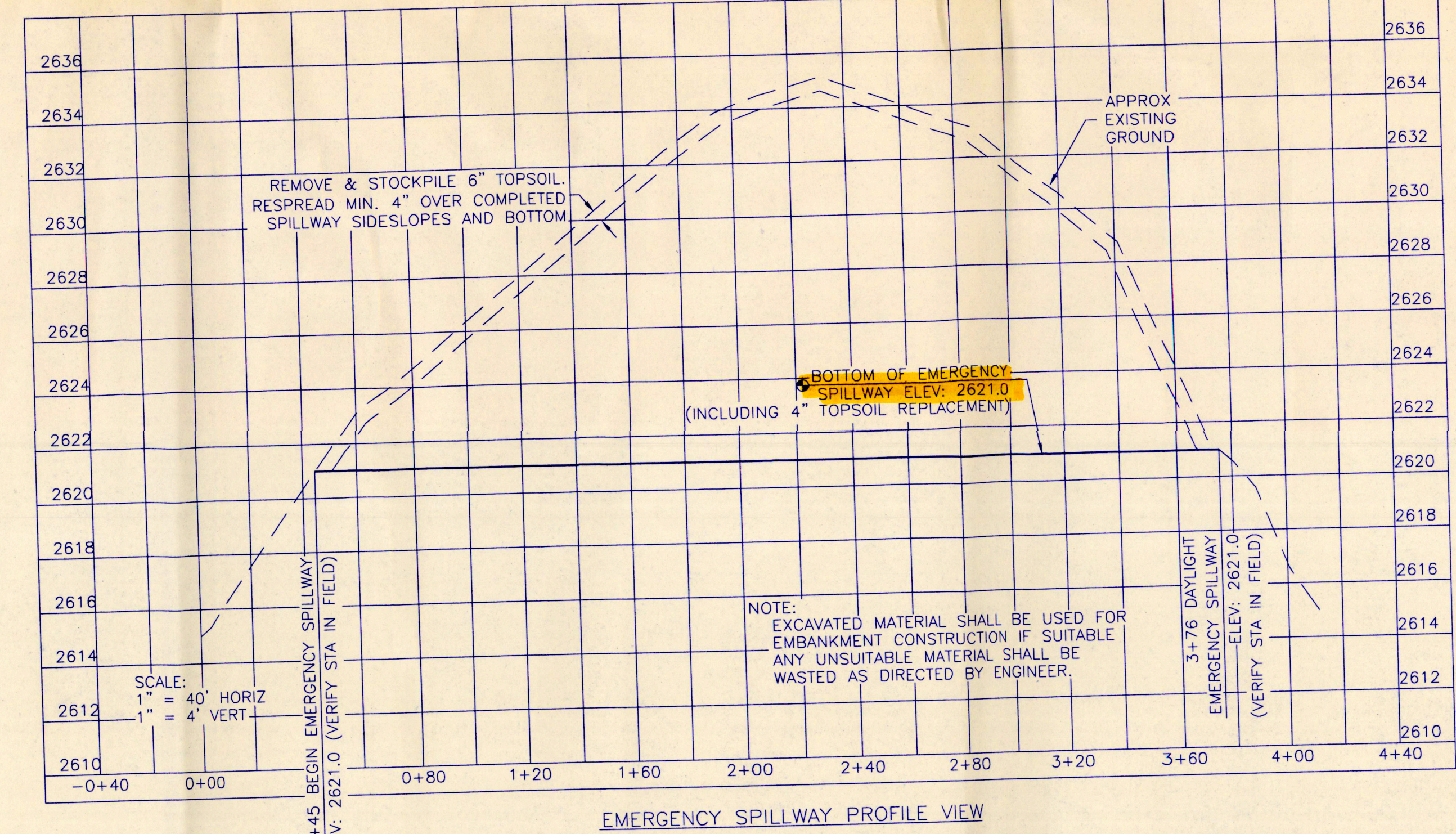
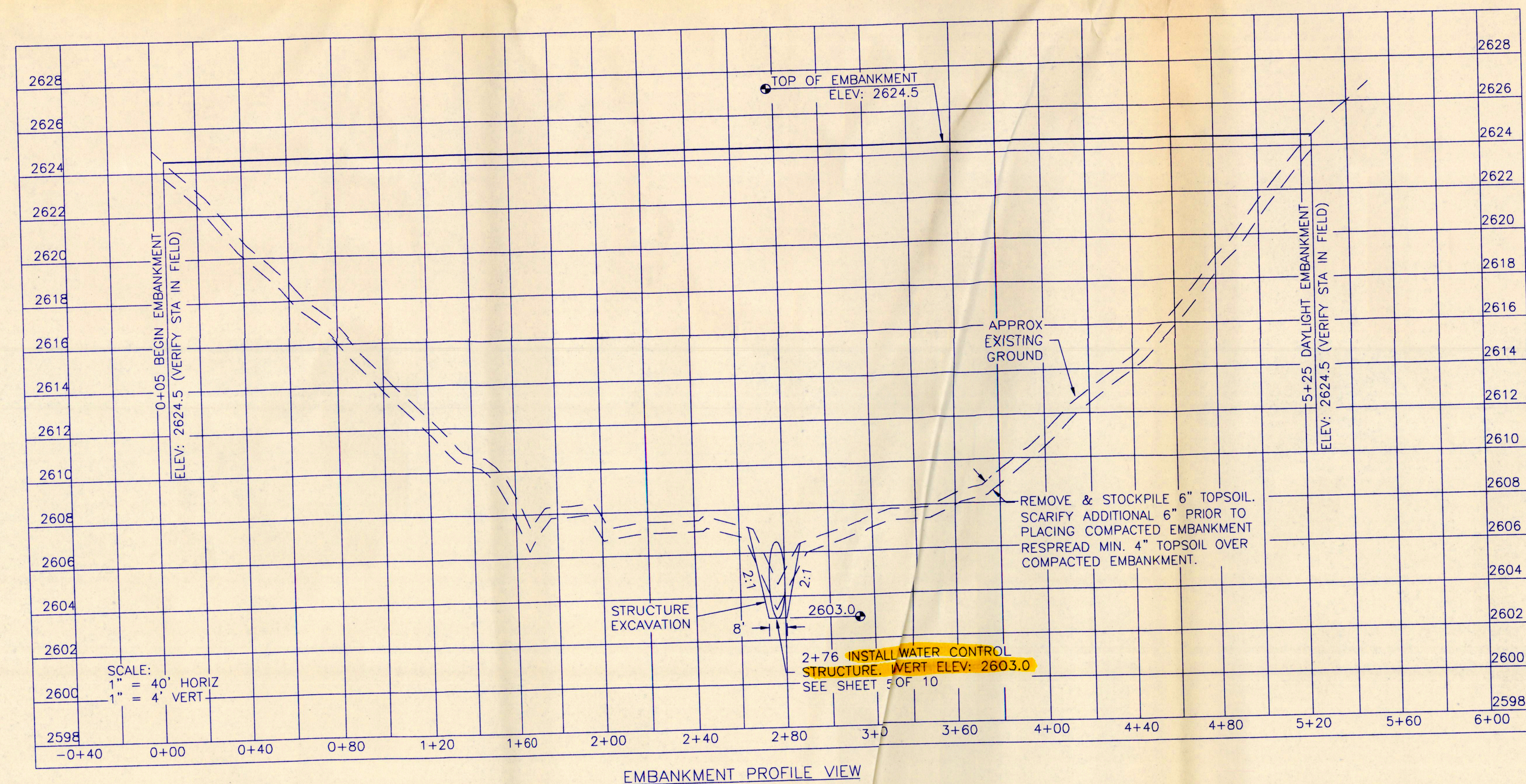
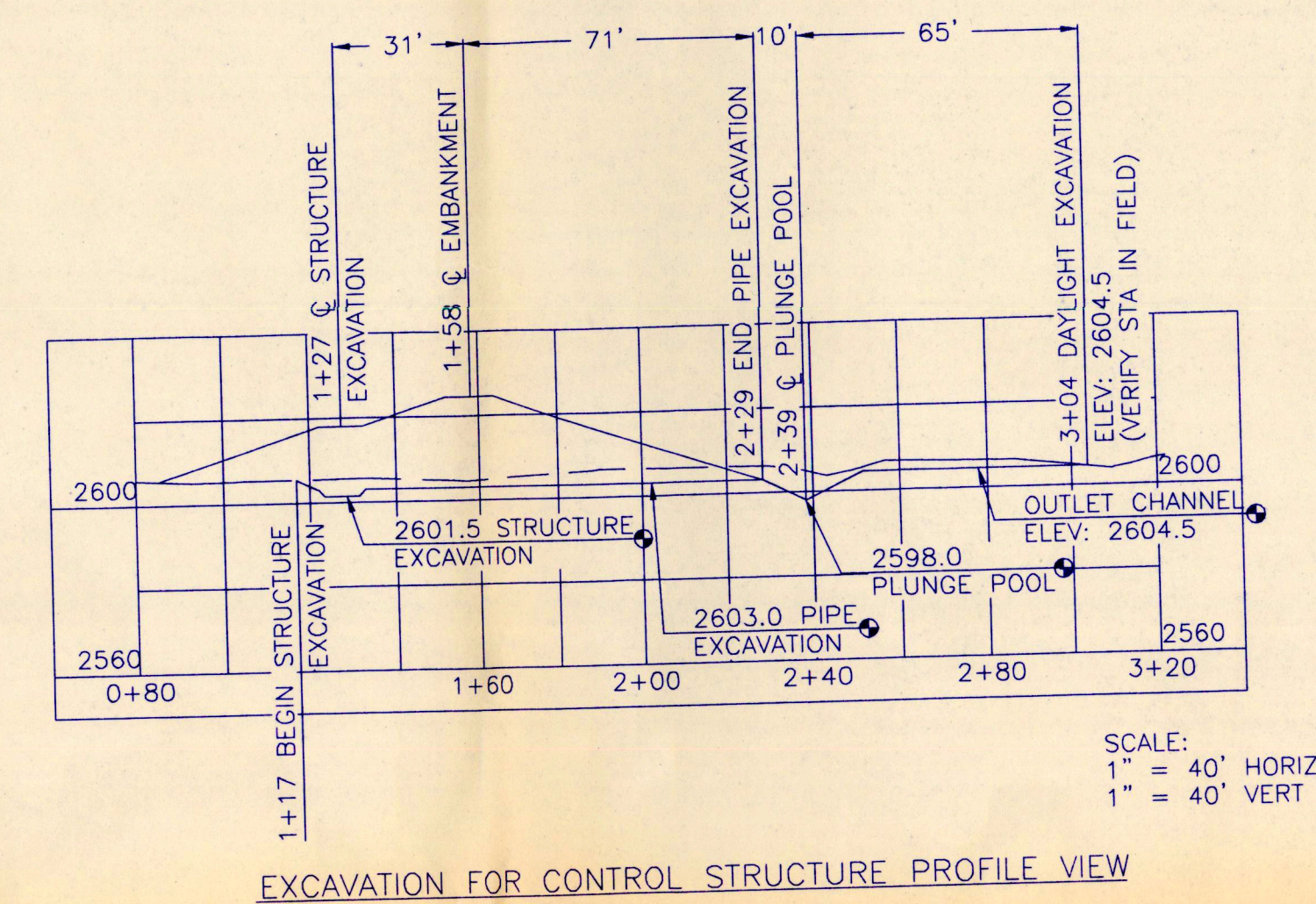
PREPARED BY: TOMAN ENGINEERING COMPANY CONSULTING CIVIL ENGINEERS 906 2ND ST. N.W. • WABASH, NORTH DAKOTA 58554 • 701-683-6483	DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE DATE: 03/13/00 SHEET NO. 2 OF 10	PROJECT NO. SD-0283-002 BESLER RANCH WETLAND SITE "A" SITE TOPOGRAPHY APPROVED BY: _____	DESIGNED BY: R.C.S. DRAWN BY: KB SURVEYED BY: GLW CHECKED BY: BRK APPROVED BY: _____
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DWGNAME: conceptual.dwg PLOT DATE: 03/13/00 PLOT TIME: 10:24:54 TOWAN #4

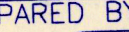
2-36" CMP
E INV. 2596.81



SPILLWAY CURVE DATA			
DELTA	43°05'30"	CHORD	128.54'
RADIUS	175.00'	TANGENT	69.10'
LENGTH	131.62'	EXTERNAL	13.15'
RADIUS POINT			
N=16509514.01			
E=2267615.28			
CURVE PI			
N=16509430.22			
E=2267783.74			



PREPARED BY:



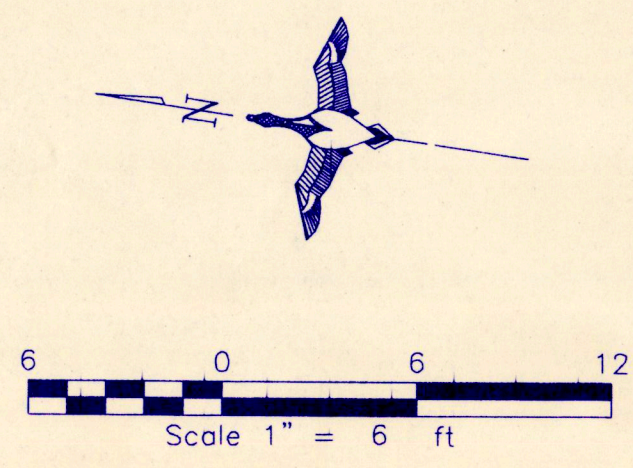
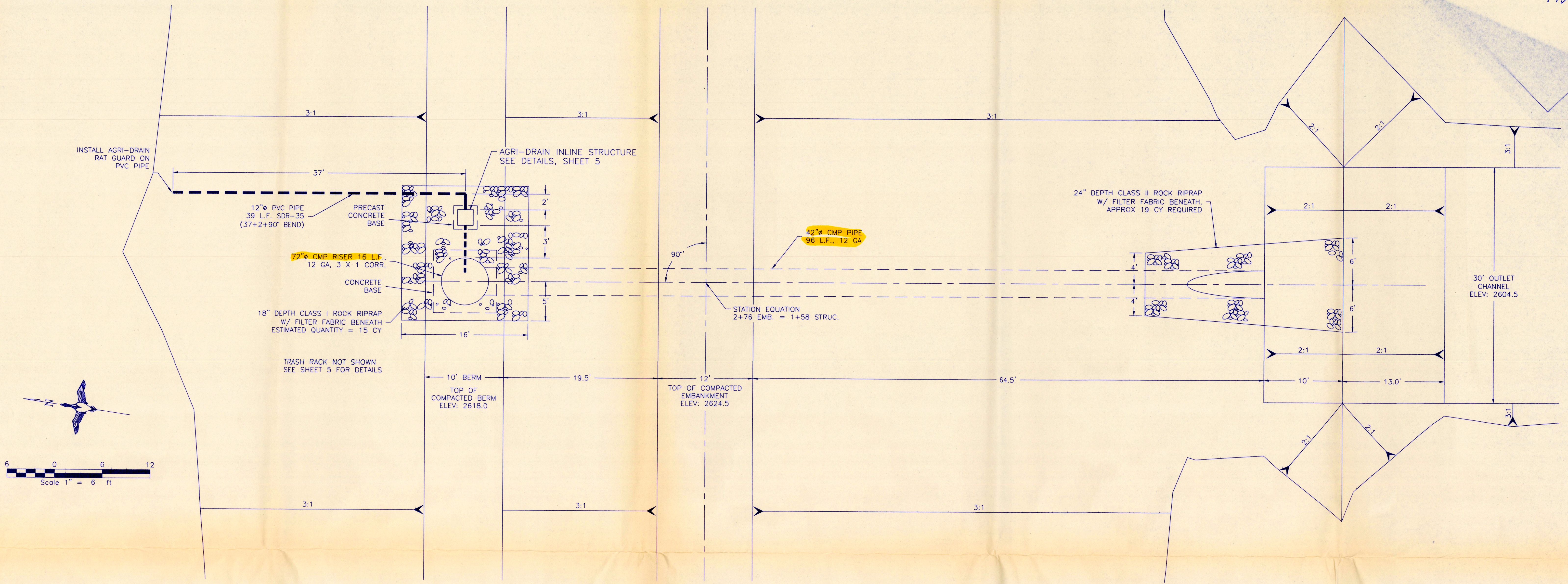
PROJ#1

TOMAN ENGINEERING COMPANY
CONSULTING CIVIL & ENVIRONMENTAL ENGINEERS
806 2ND AVE. N.W. • MANDAN, NORTH DAKOTA 58554 • 701-663-648

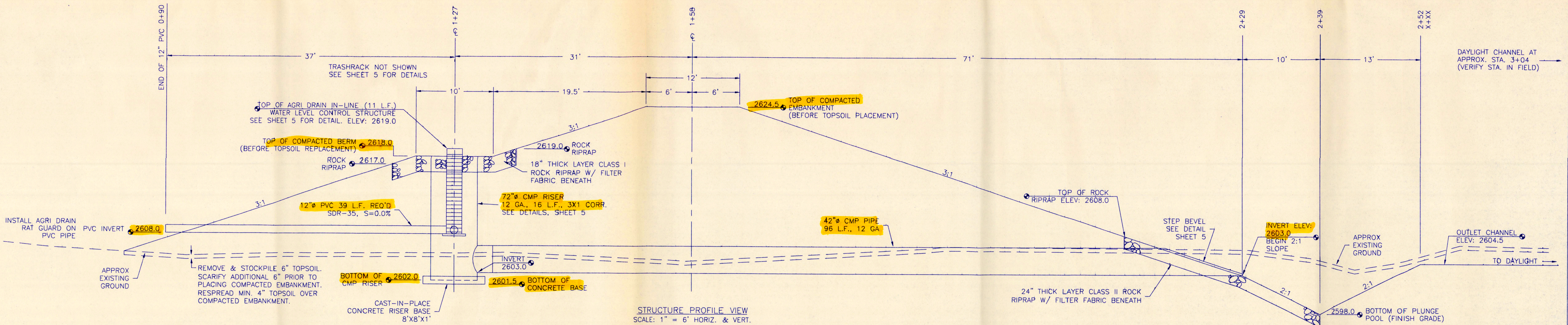
PROJECT NO.	SD-0283-002
BESLER RANCH WETLAND SITE "A" EMBANKMENT & SPILLWAY PLAN & PROFILES	
APPROVED BY:	APPR

DESIGNED BY:	R.C.S.
DRAWN BY:	AM
SURVEYED BY:	
CHECKED BY:	BRK

1720-1



STRUCTURE PLAN VIEW



STRUCTURE PROFILE VIEW
SCALE: 1" = 6' HORIZ. & VERT.

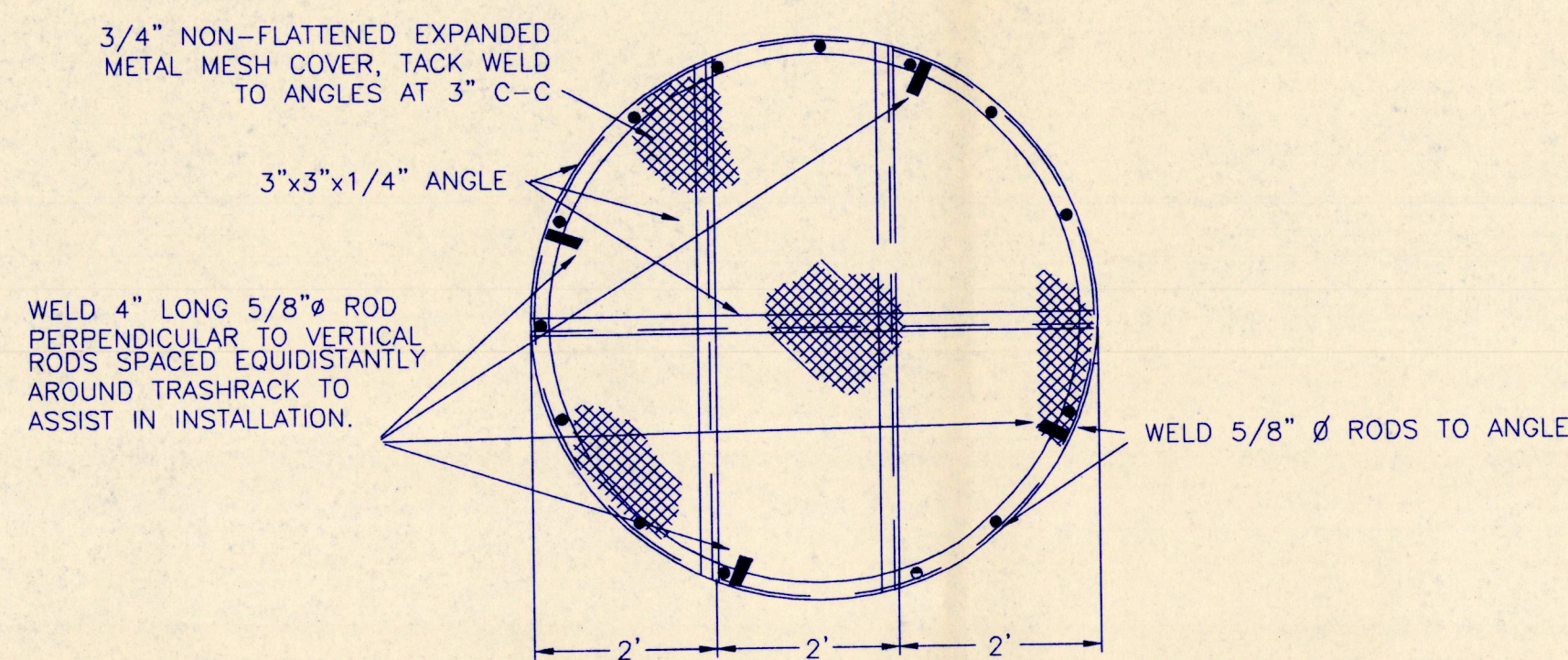
NOTE CONCERNING STRUCTURE, CULVERT & PLUNGE POOL EXCAVATION:

EXCAVATION REQUIRED FOR STRUCTURE AND PIPE INSTALLATION, AND PLUNGE POOL CONSTRUCTION IS INCIDENTAL TO "CULVERT INSTALLATION." EXCAVATED MATERIAL DEEMED SUITABLE BY THE ENGINEER MAY BE USED IN EMBANKMENT CONSTRUCTION.

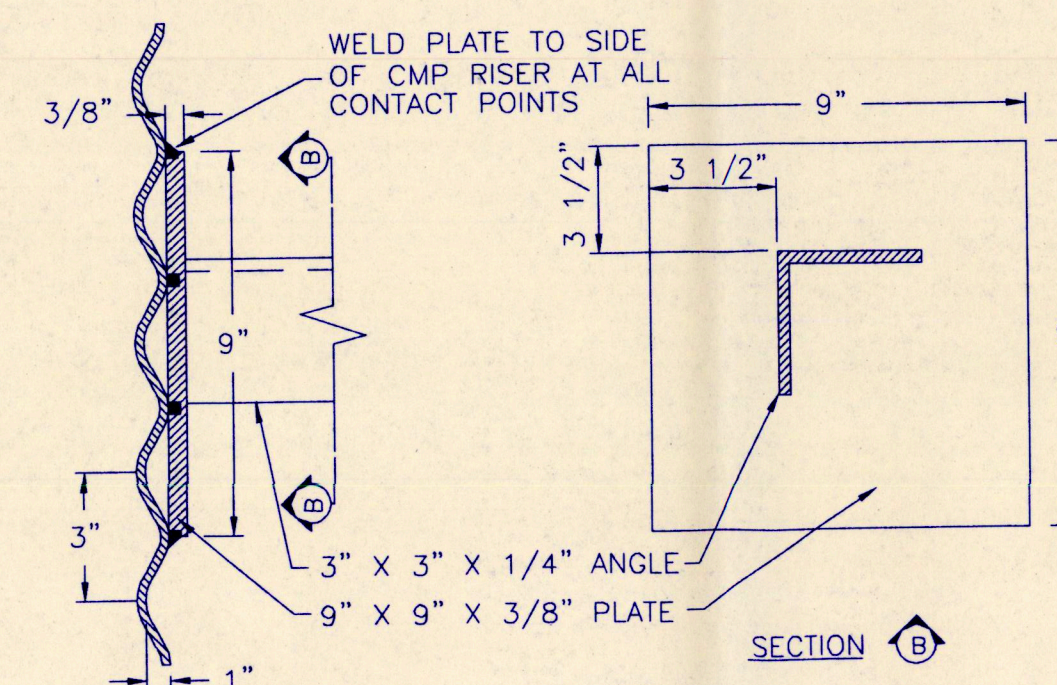
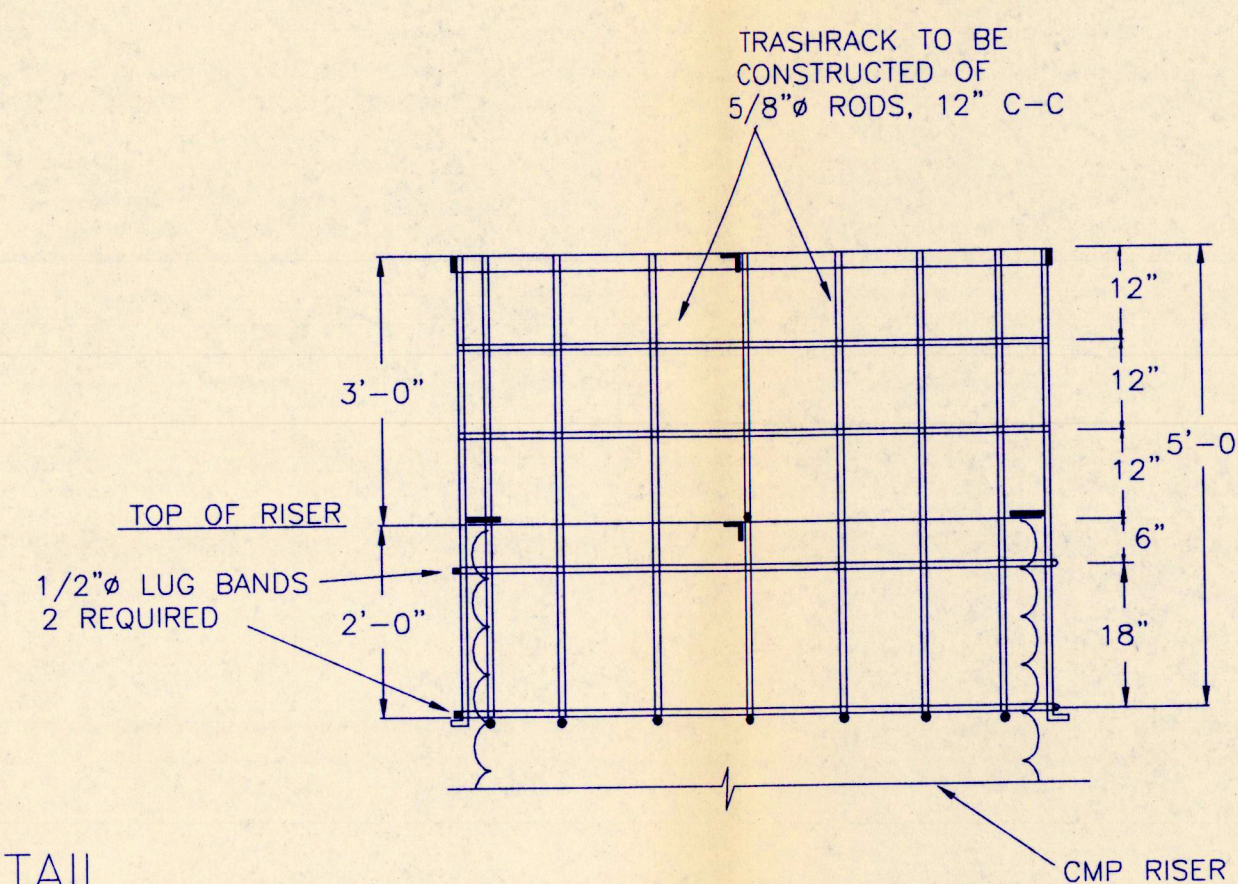
EXCAVATION BELOW THE LINES AND GRADES, REQUIRED BY THE D.U. FIELD ENGINEER WILL BE CONSIDERED AS EXTRA WORK.

PREPARED BY: TOMAN ENGINEERING COMPANY CONSULTING CIVIL ENGINEERS 906 2ND ST. N.W. • WARDEN, NORTH DAKOTA 58554 • 701-863-8483	DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE DATE: 03/13/00 SHEET NO. 4 OF 10	PROJECT NO. SD-0283-002 BESLER RANCH WETLAND SITE "A" STRUCTURE PLAN & PROFILE APPROVED BY:	DESIGNED BY: R.C.S. DRAWN BY: AM SURVEYED BY: CHECKED BY: BRK APPROVED BY:
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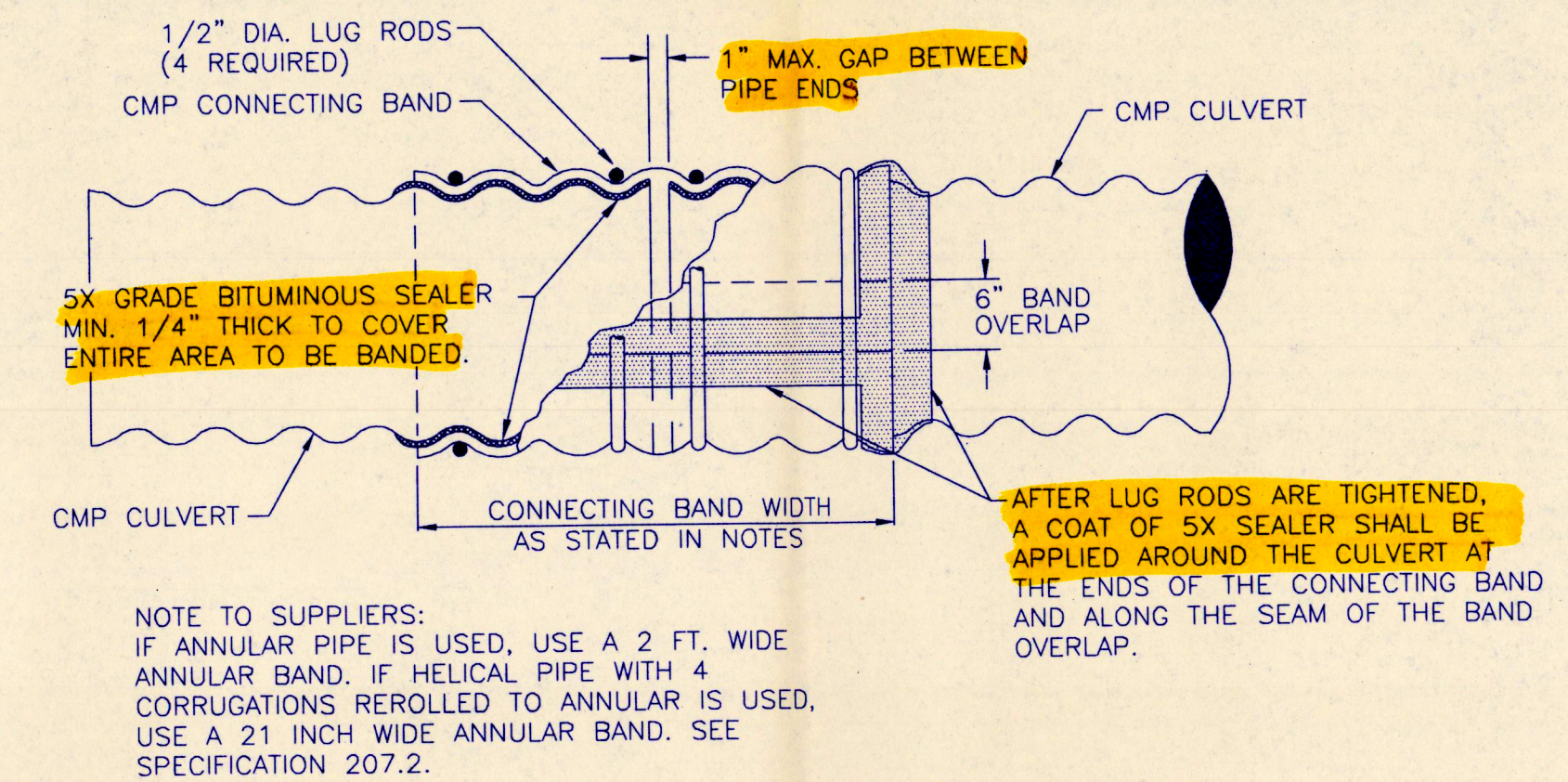
DRAWING: A-structure.dwg PLOT DATE: 03/13/00 PLOT TIME: 15:25:02 TOMAN #4



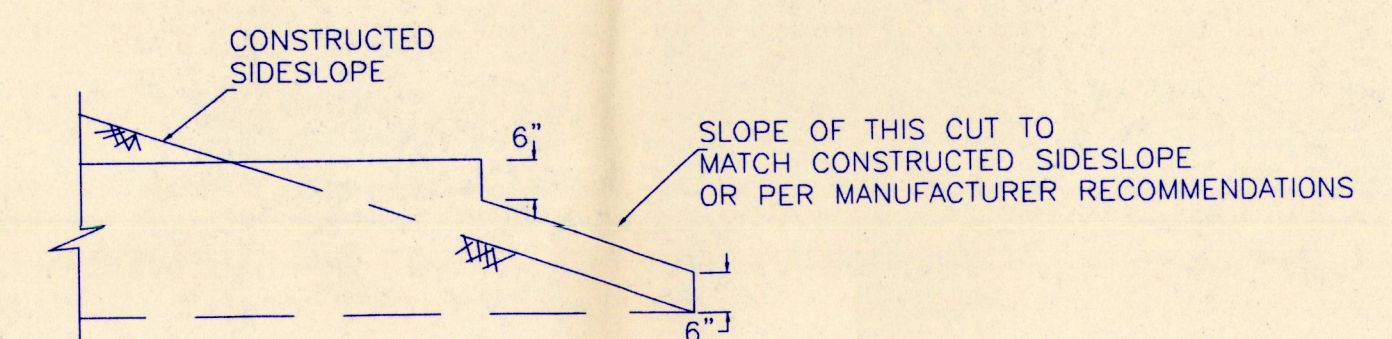
TRASHRACK DETAIL
NOT TO SCALE



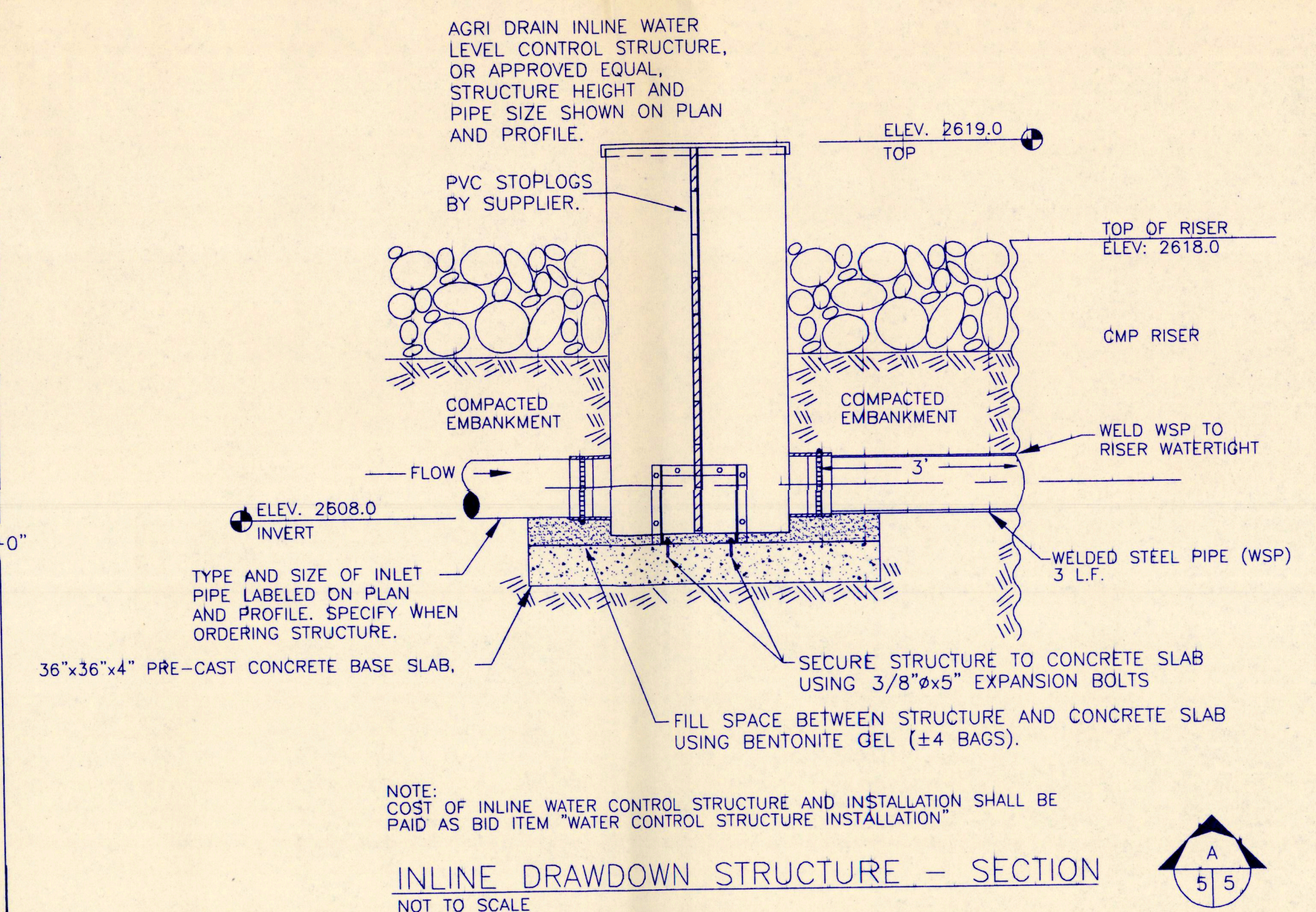
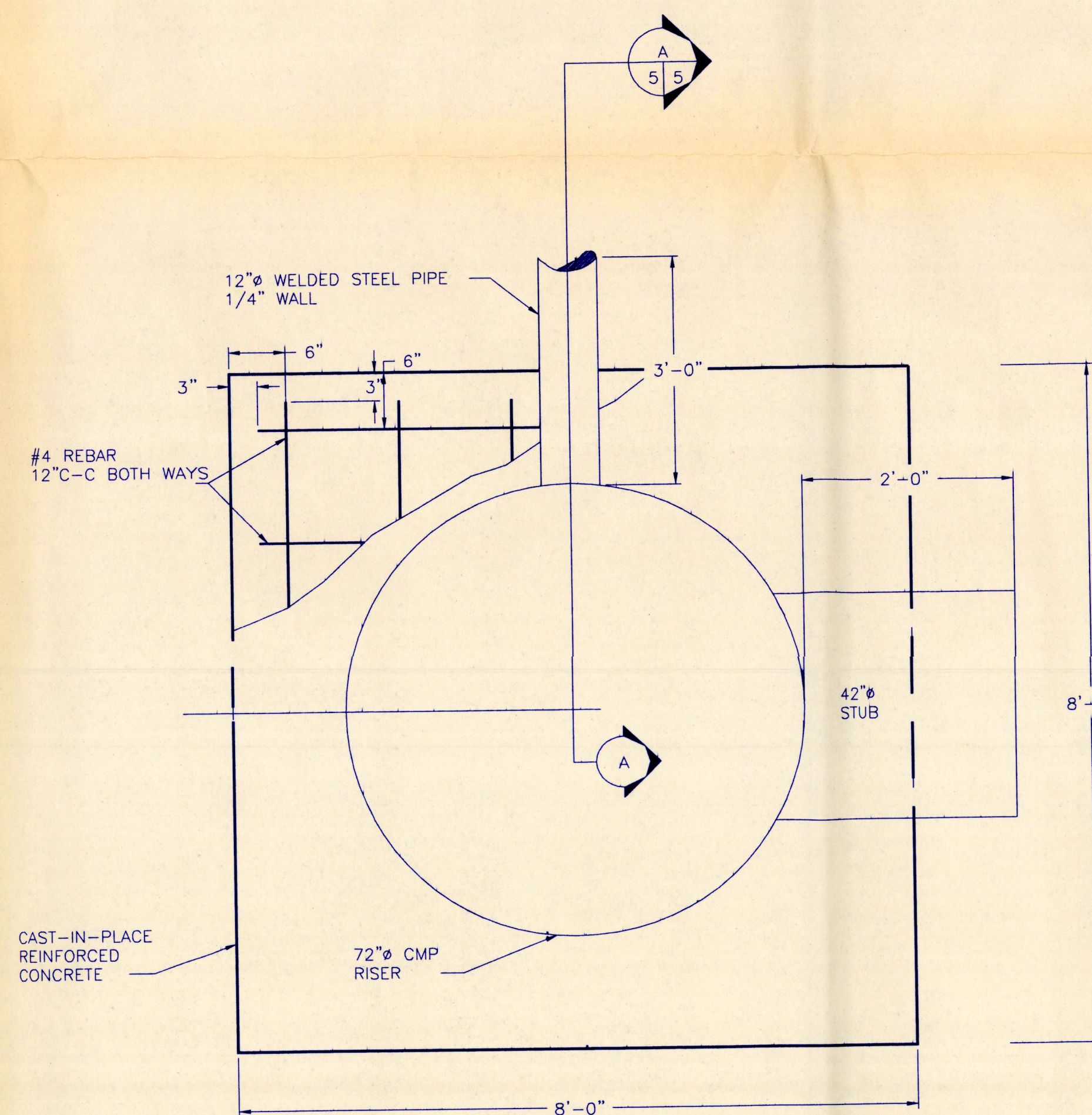
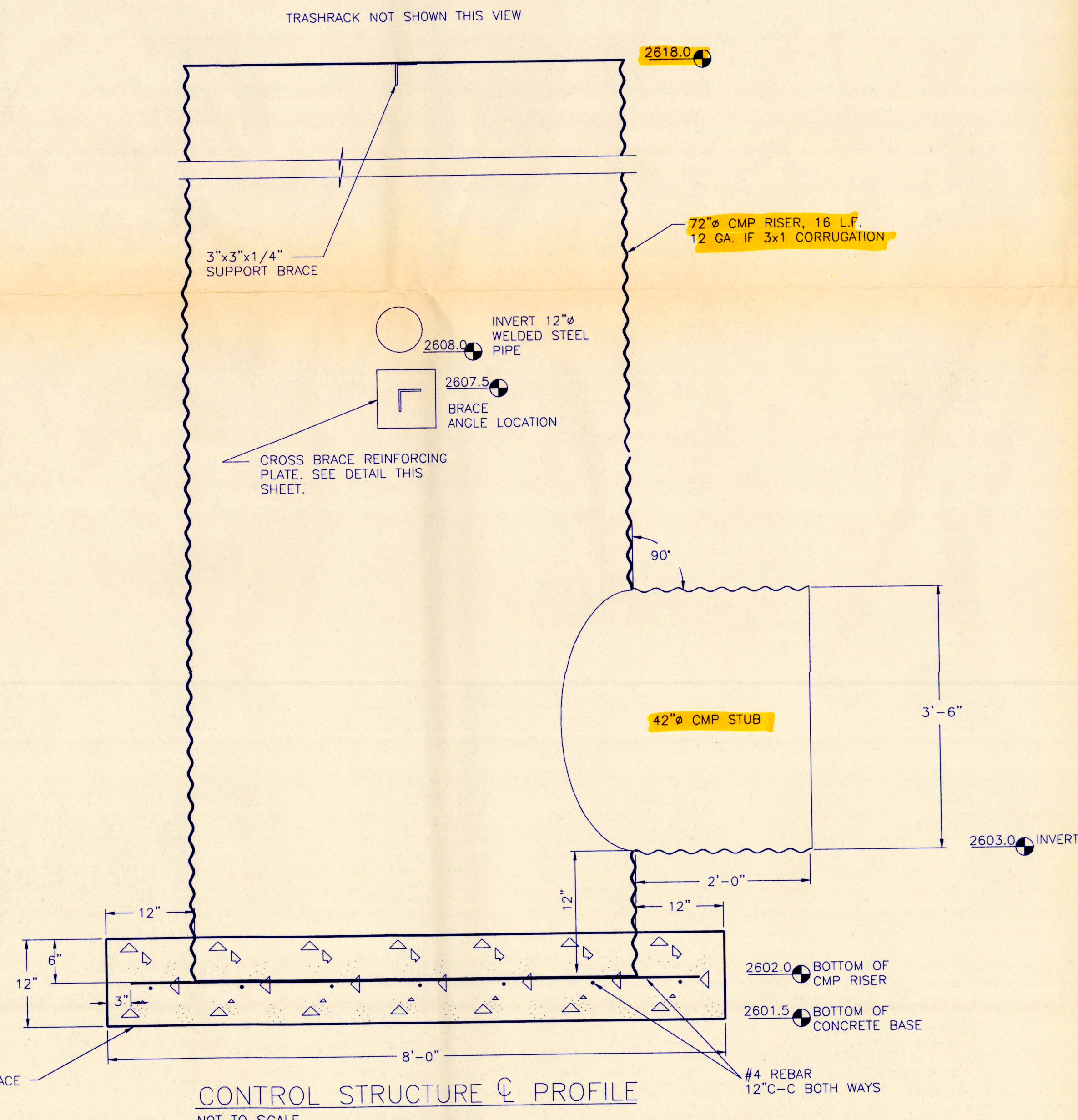
CROSS BRACE REINFORCING PLATE
NOT TO SCALE



CONNECTING BAND DETAIL
NOT TO SCALE



STEP BEVEL DETAIL
NOT TO SCALE



PREPARED BY: TOMAN ENGINEERING COMPANY CONSULTING CIVIL ENGINEERS 908 2ND ST. N.W. * WASHINGTON, NORTH DAKOTA 58504 * 701-683-6483	DESIGNED BY: R.C.S. DRAWN BY: KB SURVEYED BY: BRK CHECKED BY: BRK	PROJECT NO. SD-0283-002 BESLER RANCH WETLAND SITE "A" SITE "A" STRUCTURE DETAILS	DATE: 03/13/00 SHEET NO. 5 OF 10
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