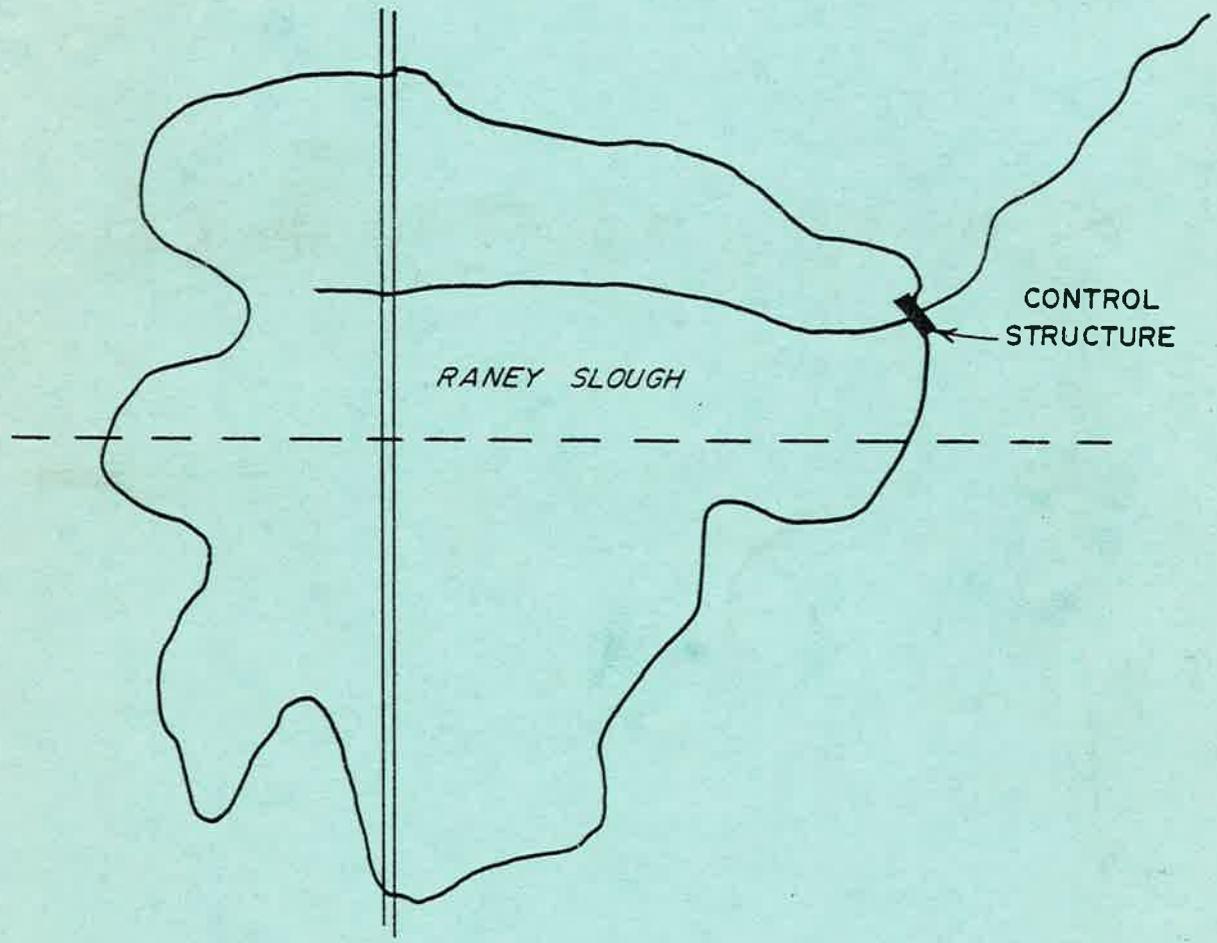


PROPOSAL, SPECIFICATIONS, AND PLANS
FOR THE
CONTROL STRUCTURE OF
RANEY SLOUGH OUTLET

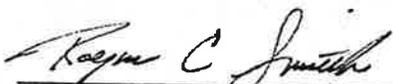


LAMOURE COUNTY
WATER MANAGEMENT BOARD
JUNE 1980

RANEY SLOUGH OUTLET CONTROL STRUCTURE
PROPOSAL, SPECIFICATIONS, AND PLANS

June 20, 1980

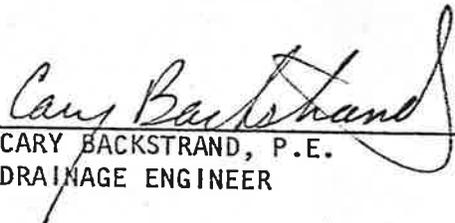
PREPARED BY:



ROGER C. SMITH
ASSISTANT DRAINAGE ENGINEER



REVIEWED BY:

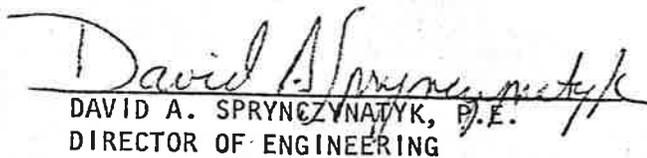


CARY BACKSTRAND, P.E.
DRAINAGE ENGINEER

PREPARED BY:

NORTH DAKOTA STATE WATER COMMISSION
STATE OFFICE BUILDING
900 EAST BOULEVARD
BISMARCK, NORTH DAKOTA 58505

SUBMITTED BY:



DAVID A. SPRYNCZYNATYK, P.E.
DIRECTOR OF ENGINEERING

PREPARED FOR:

LAMOURE COUNTY WATER MANAGEMENT BOARD

APPROVED BY:



VERNON FAHY, P.E.
STATE ENGINEER

TABLE OF CONTENTS

	<u>Page</u>
I Project Location	i, ii
II Proposal	1
III Construction Specifications	
Section 1 - Construction General	5
Section 2 - Earthfill	6
Section 3 - Rock Riprap and Filter Material	9
Section 4 - Seeding	11
Section 5 - Slide Gate	12
Section 6 - Pipe Conduit	13
IV Construction Plans	
Plan and Profile	14
Channel Cross Section	15
Top View of Dam	16
Dam Cross Section	17
V Location of Construction and Access Easements	Pocket

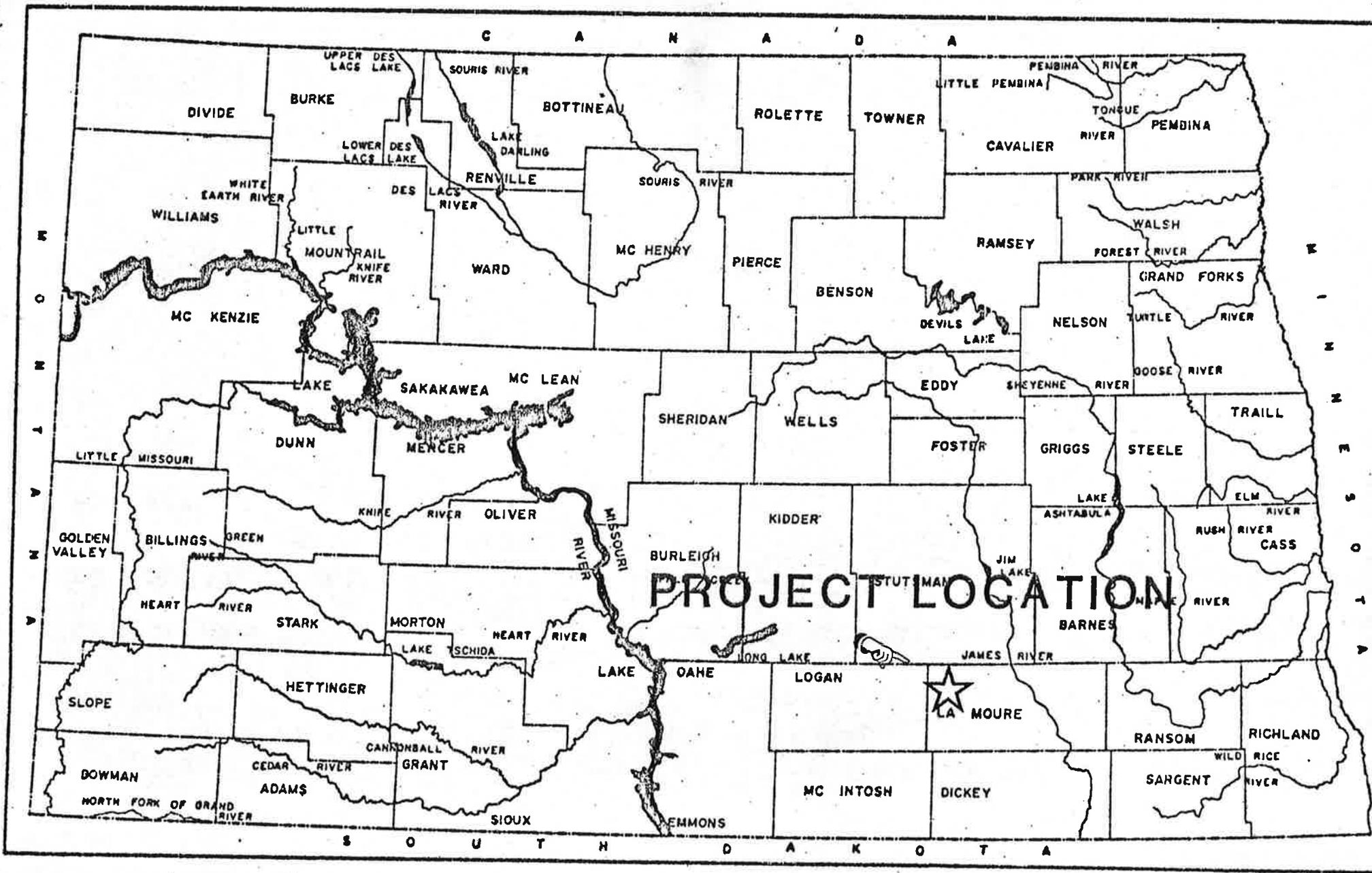


FIGURE 1

TOWNSHIP: 135 N.

RANGE: 66 W.

CODE: RA



TOWNSHIP N.P.R.Y.

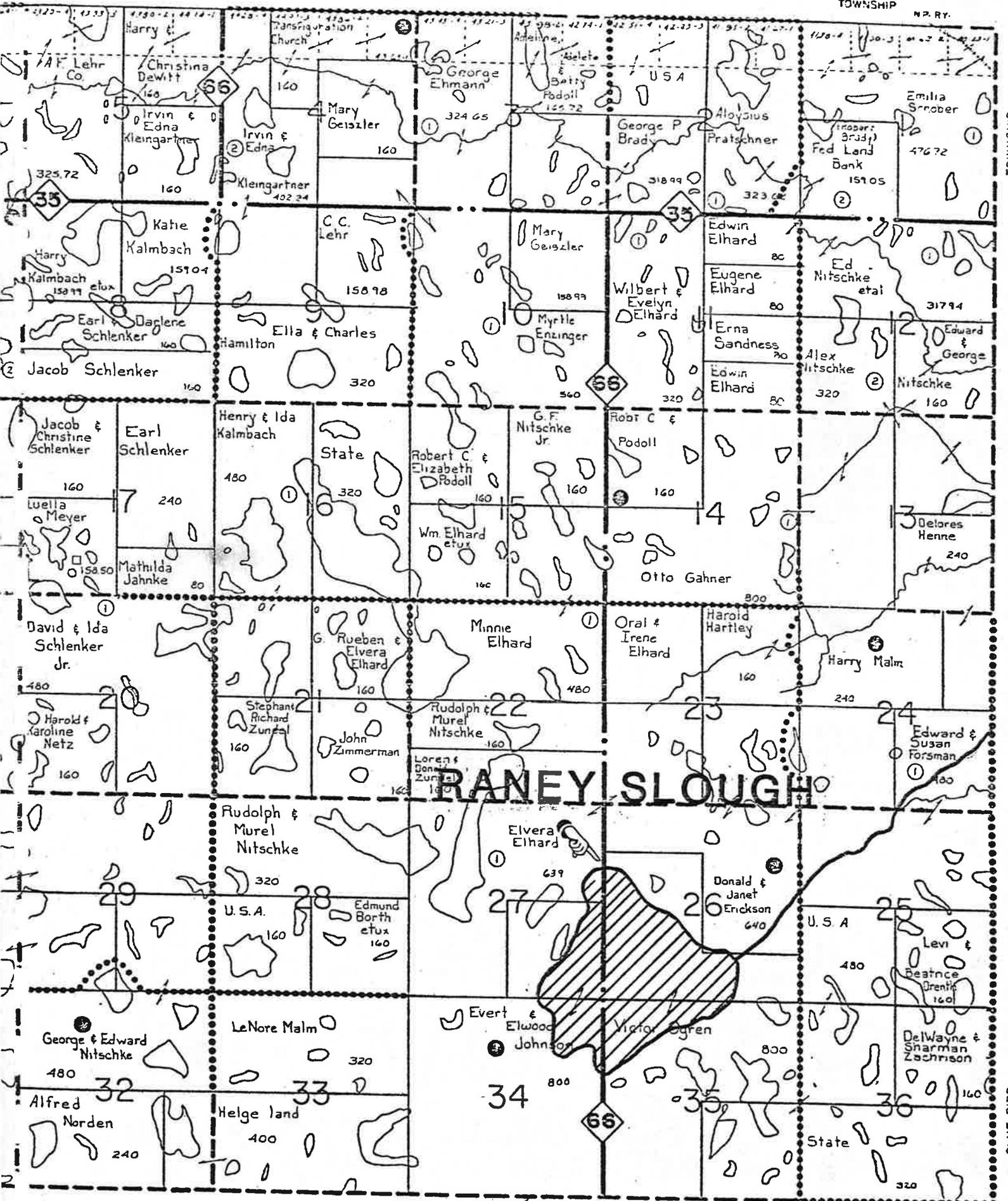


FIGURE - III ii

TOWNSHIP

LLU

TOWNSHIP
BLUE BIRD

PROPOSAL

LaMoure County Water Management District

County of LaMoure

State of North Dakota

To the Honorable Board of LaMoure County Water Management
County of LaMoure
State of North Dakota

1. The undersigned, after having personally examined the plans, specifications, forms of contract and bond on file in the office of the Secretary and carefully investigated the proposed work, propose to do all said work of furnishing materials and construction of the Raney Slough outlet structure, SE $\frac{1}{4}$ Section 26-315-66, LaMoure County, North Dakota and to fully complete all such work, ready for use, including the furnishing of all materials, tools, labor and all and everything necessary to finish and maintain the entire work in a proper and workmanlike manner until finally approved and accepted by the engineer according to the conditions of the contract and guarantee, and under penalty of the indemnity bond, and to the full satisfaction and acceptance of the Water Management Board and the engineer, as set forth in the specifications and contract, on a basis of accepting cash payment on the above mentioned improvement fund.

2. This proposal is made without connection or consultation with any other person, persons or corporation making any other bid for the same purpose, and it is in all respects fair and without collusion or fraud.

3. The _____ Company of _____ is hereby offered as surety for the execution of the proposed contract and the guarantee therein imposed. Said surety as subject to the approval of the County Water Management Board. If not approved, another and satisfactory surety company will be furnished.

4. It is hereby agreed that the Water Management Board has the right to reject this proposal or to award the work to the undersigned at the prices stipulated. If this proposal be rejected, then the bidder's bond which is made payable to the LaMoure County Water Management Board of LaMoure County, North Dakota, shall be returned to the undersigned within thirty (30) days after the date thereof. If this proposal be accepted and the work awarded and the undersigned shall fail to enter into contract of the form and terms thereto attached within ten (10) days after the award of the contract shall have been made, then the said check shall be cashed and paid into the treasury of the County as liquidated damages for the failure of the undersigned to comply with the terms of this proposal.

RANEY SLOUGH OUTLET STRUCTURE

5. Bid Schedule

Item No.	Item	Spec. No.	Quantity	Unit	Unit Cost	Amount
1	Earthfill	2	700	C.Y.	\$ _____	\$ _____
2	60" CMP (16 GA) (3"x1" Corrugations)	6	50	L.F.	\$ _____	\$ _____
3	Slide Gate (Waterman C-10, Armco 101-c or equivalent)	5	1	Lump Sum	\$ _____	\$ _____
4	Rock Riprap	3	40	C.Y.	\$ _____	\$ _____
5	Rock Riprap Filter Material	3	10	C.Y.	\$ _____	\$ _____
6	Seeding	4	1.5	Lump Sum	\$ _____	\$ _____
TOTAL						\$ _____

(Here sign full name and give place of business or place of residence)

Bidder's Name in Full _____

Business or Residence Address _____

(Here give the name and place of business or place of residence of all persons or corporations interested with the bidder).

Name _____

Business or Residence Address _____

(If there are no such person, persons or corporations so interested, distinctly write out the fact on the following lines).

(Here give the name and location of the last work of the kind herein contemplated engaged in).

6. The undersigned further proposes and agrees to fully complete the contract on or before the date specified in the advertisement for bids.

7. The various items in the preliminary estimate may be increased, decreased or may not occur in the final estimate upon which payment to the contractor will be made. Such variances will be based upon actual quantities constructed and such variations from the estimated quantities shall occur only for the betterment of the project.

8. The undersigned is duly and regularly licensed as required by the laws of North Dakota, and holds a Class _____ Contractors License No. _____.

9. Dated at _____ this _____ day of

_____.

10. Post office address of bidder, firm or corporation for the next thirty (30) days is as follows, to-wit:

CONSTRUCTION SPECIFICATIONS

SECTION 1 - CONSTRUCTION GENERAL

- 1-01. Scope
The work covered in this section is outlined as a statement of construction requirements common to all the work. Specific requirements for materials and installations are provided under the technical sections herewith. No claims for extras shall be made on account of items presumed to have been omitted from this section.
- 1-02. Construction Right-of-Way
The Contractor will be assigned construction areas or construction right-of-way limits as shown on the drawings for use in the prosecution of work under this contract. In the event that the Contractor finds it necessary to utilize for any purpose whatsoever, additional right-of-way, plant or construction area for the performance of this contract, he shall make all necessary arrangements for the utilization of the required area at no additional cost to the District. Copies of agreements for use of such rights-of-way shall be furnished the District before entering thereon. Such agreements shall clearly relieve the District of any responsibility for damages resulting from the use of the grounds.
- 1-03. Care of Water
Full responsibility for the diversion and care of water shall be borne by the Contractor until completion of work under this contract. The Contractor shall provide the materials and equipment and perform all work necessary to facilitate construction and to protect the work from damage by water. The Contractor shall make his own investigations and determinations of conditions, both existing and anticipated concerning care of water. No separate payment will be made for care of water.
- 1-04. Roads, Utilities and Health Facilities
a. Public Utilities will be as found available. The Contractor shall make his own arrangements for use of public and private utilities.
b. Health Facilities The Contractor shall observe all State and local laws with regard to establishing sanitary facilities and for disposal of waste and refuse.
c. Utility Property and Services The Contractor shall, during construction operations, use special care to prevent damage to all telegraph, telephone and power lines. This shall also apply to all pipes, cables and other underground utility facilities. Where the Contractor's operations are adjacent to any of the above, or are adjacent to other property, work shall not commence until all arrangements necessary for the protection thereof have been made.

d. Haul Roads The Contractor shall construct haul roads as may be necessary for the conduct of the work, without additional cost to the District. Preference shall be given to one-way haul roads when these are feasible. Upon completion of work under this contract, haul roads shall be disposed of as directed by the Engineer.

e. Disposition of Construction Facilities All buildings and facilities constructed by the Contractor shall be maintained in a satisfactory condition with strict observance of the rules of sanitation, safety and order as may be established by the Engineer. Prior to final payment under the contract, all buildings and facilities constructed by the Contractor for his own use shall be removed from the site by the Contractor.

1-05. Payment

No separate payment will be made for work referred to in this section and all costs and operations therefor shall be considered a subsidiary obligation of the Contractor to be included in the applicable contract price or prices.

SECTION 2 - EARTHFILL

2-01. Scope

This work shall consist of constructing required embankments, including preparation of the area upon which they are to be placed and the placing and compacting of approved materials.

2-02. Foundation Preparation

Prior to placing any earthfill, the area upon which it is placed shall have been cleared and grubbed, including the stripping of topsoil. The foundation surface shall be scarified parallel to the axis of the fill or otherwise acceptably scored and loosened to a minimum depth of six (6) inches. The moisture content of the loosened material shall be controlled as specified by the engineer. After removal of organic matter and other debris turned up in the process of scarifying, the surface materials of the foundation shall be compacted to the same density as specified for subsequent layers of earthfill placed above the foundation.

No separate payment will be made for preparing the foundation area, the entire cost thereof to be included in the respective contract prices for earthfill.

2-03.

Placement

a. General Fill shall not be placed on any part of the embankment foundation until such areas have been inspected and approved. No snow, ice or frozen earth shall be incorporated in any portion of the embankment. No compacted fill shall be placed on a frozen surface. The entire surface of any section of the embankment under construction shall be maintained in such conditions that construction equipment can travel thereon. When required, compacted material with ruts in the surface shall be excavated and disposed of as directed and new material placed and compacted.

b. Distribution of Materials Material throughout the compacted fill sections of the embankment shall be such that the embankment will be free from lenses, pockets, streaks, and layers of material differing substantially in texture or gradation from the surrounding material of the specified type. Fill shall be placed in approximately horizontal layers not exceeding a depth which can be uniformly compacted to the specified density, but not to exceed eight (8) inches loose measurement and shall be compacted as specified before the next layer is placed. The maximum size rock or rock fragments incorporated in the rolled earthfill shall not exceed six (6) inches in diameter and kept at a minimum in number. Dumping and rolling areas shall be kept separate. The distribution of materials throughout the fill area shall be essentially uniform. Effective spreading equipment shall be used on each lift to obtain uniform thickness prior to compacting. In the event that placement and spreading of material does not conform to the requirements and/or to the satisfaction of the Engineer, the Engineer shall direct the Contractor to furnish a spread man in addition to the grade foreman to assure proper dumping and spreading. If the surface of any layer becomes too hard and smooth for proper bond with the succeeding layer, it shall be scarified parallel to the axis of the fill to a depth of not less than two (2) inches before the next layer is placed. During placement of earthfill, the Contractor shall have on the job and in serviceable condition, adequate compaction equipment, water equipment and spreading or mixing equipment.

2-04.

Compaction and Moisture Content

a. Compaction The Contractor shall furnish all equipment necessary for compaction of the embankment. The embankment shall consist of an include all fill deposited in layers and compacted by one or a combination of the following methods:

- 1) Controlled movement of the hauling and spreading equipment over the area so that the entire surface area of each lift will be traversed by not less than one tread track of the loaded earthmoving equipment traveling in a direction parallel to the axis of the fill.

- 2) Each lift shall be compacted not less than two (2) complete passes of sheepsfoot tamping roller exerting a minimum pressure of one hundred (100) pounds per square inch.

b. Moisture Content The fill material shall have a moisture content such that when kneaded in the hand it will form a ball which does not readily separate when struck sharply with a pencil or which refuses to separate when pressed between the hands. The Contractor may be required to wet or dry the material to obtain the above specified moisture content.

2-05. General

a. Lines and Grades The embankment shall be constructed to the lines, grades, and typical sections indicated on the drawings. The District reserves the right to increase or decrease the foundation widths or the embankment slopes as necessary to produce a safe structure and to modify the height of the embankment or internal zoning as necessary.

b. Conduct of the Work The Contractor shall maintain and protect the embankment in a satisfactory condition at all times until final completion and acceptance of all work under this contract. Any material approved for the embankment which is lost in transit or rendered unsuitable after being placed in the embankment shall be replaced in a satisfactory manner. The Contractor shall excavate and remove from the embankment any material which is considered objectionable, and shall also dispose of such material and refill the excavated area as directed. The Contractor may be required to remove at his own expense any embankment material placed outside the prescribed slope lines.

2-06. Material for Embankment shall be secured from required excavations and borrow areas indicated on the drawings. The intention is to use all suitable materials obtainable from required excavation. The suitability of materials and their disposition within the embankment shall be as determined by the Engineer. The character of the material rather than its origin will determine its placement in the embankment. Materials containing brush, roots, sod or other organic materials will be considered suitable only as waste fill. In fill areas to be seeded, the top six inches of the fill shall be composed of topsoil.

2-07. Tests

Prior to and during the course of work, the Engineer will perform such tests as are required to identify materials, to determine compaction characteristics, to determine moisture content and to determine density of fill in place. These tests performed by the Engineer or his designated representative will be used to verify that the fills conform to the requirements of the specifications.

2-08. Measurement and Payment

Unless otherwise specified, embankment material shall be measured in its original position by cross-sectioning the required excavations and borrow areas. Volumes will be computed from the cross-section measurements by the average end area method, except in small isolated areas where other measurements will be permitted. Payments will be made at the contract unit price for embankment.

SECTION 3 - ROCK RIPRAP AND ROCK RIPRAP FILTER MATERIAL

3-01. Scope

This section covers rock riprap which shall be placed on those areas of the project as shown on the drawings and as directed by the Engineer.

3-02. Placement

The rock riprap shall be placed in accordance with the plans, conforming to lines, elevations, dimensions, and gradation as given on the plans or as directed by the Engineer. The rock riprap thickness shall be maintained within a tolerance of minus 10% and plus 25%. The placement and leveling of rock riprap may be accomplished by an approved mechanical means. Care shall be taken by the Contractor not to disturb the filter blanket during placement. All rock shall be placed and leveled to the satisfaction of the Engineer.

3-03. Gradation

The rock shall be sound stone and free of trash, dirt and deleterious material. Rock composed of erosive materials, such as sandstone, will be rejected at the loading site if a pre-inspection is requested by the Contractor; otherwise such rejection will be made at the dump site. Loading site inspections will not be made when hauling and placing of rock is in progress. The Engineer in charge shall have the right at any time to reject inferior, deleterious, or unsuitable material and order its removal from the site.

The rock riprap shall be reasonably well graded from the maximum size of eighteen (18) inches to a minimum size of three (3) inches. Rock fragments or spalls may be used to fill voids between larger rock. The inclusion of greater than 5% dirt, sand, clay, erosive or deleterious materials will not be permitted. All rock greater than the maximum size specified shall be broken or crushed prior to placement on the slope.

- 3-04. Rock Riprap Filter Blanket
Prior to placing rock riprap on those areas shown on the plans or as directed by the Engineer, the areas shall be covered with a sand-gravel filter blanket to the thickness shown on the plans. The filter material shall be a well-graded aggregate. It shall be the responsibility of the Contractor to make his own investigations for sources of suitable materials and to make his own arrangements with the owners of the pits and land for procuring the required quantities of suitable materials.
- 3-05. Site Restoration
The Contractor shall restore all slopes and the embankment top to their original condition and reseed any areas damaged by the placement of the rock riprap as determined by the Engineer. This work shall be considered incidental to the cost of the riprap.
- 3-06. Relationship Between Landowners and Contractor
The Contractor is responsible for ascertaining location of rock suitable for use as riprap. All arrangements for obtaining and purchasing rock from the landowners shall be the responsibility of the Contractor. The District will have no responsibility regarding this relationship between landowners and Contractor.
- 3-07. Measurement and Payment
Payment shall be at the contract unit price per cubic yard of filter material and/or rock riprap placed. The quantity of filter material and/or rock riprap will be determined from the specified thickness and dimensions shown on the drawings. The total quantities will be computed to the nearest cubic yard. No payment will be made for material which exceeds the neat line planned quantity unless it is authorized in writing by the Engineer. Such payment shall be full compensation for slope preparation, furnishing, transportation and placing the filter material and/or rock riprap.

SECTION 4 - SEEDING

4-01.

Scope

The work covered by this section consists of furnishing all plant, labor and materials and performing all work required for grading to eliminate erosion damage, fertilizing and seeding all exposed areas disturbed by grading, including embankment and excavation required under this contract with the exception of slopes requiring other protection. Areas disturbed by the Contractor's operations outside of areas indicated on the drawings shall be seeded by and at the expense of the Contractor.

4-02.

Materials

Listed below is the seed specification:

<u>Species</u>	<u>Lbs. pure live seed per acre</u>
Western Wheatgrass	5
Green Needlegrass	5
Sideoats Gramma	2
Pubescent Wheatgrass (or intermediate wheatgrass)	2
Switchgrass	4
Slender Wheatgrass	2

4-03.

Construction Requirements

Seeding shall be done at such time of the year when the climate conditions of temperature and moisture are most adaptable for growth and work of this nature. It is preferred that seeding shall be accomplished before July 1st and after September 1st of each year. The area to be seeded shall be as shown on the plans or as designated by the Engineer.

4-04.

Measurement and Payment

The unit of measurement will be a lump sum for seeding. Payment will be made at the contract wpm sum price for seeding. Such payment shall constitute full payment for all materials, labor, equipment, and any other incidentals required to complete the work.

SECTION 5- SLIDE GATE

- 5-01. Scope
This work shall consist of the furnishing and installation of the slide gate, including hoister rods, seals and other appurtenant apparatus necessary to their installation and operation.
- 5-02. General
The slide gate shall be equal to the manufacturer's model or models designated on the drawings and shall comply with the style, size, strength and shape shown. They shall be an approved standard product from a reputable manufacturer and shall be manufactured to the standards of commercial equipment to facilitate assembly installation, repair and replacement. The gates and hoists shall be completely assembled in the factory and shall be dismantled only as required for shipment. Where necessary to facilitate assembly in the field, they shall be marked and matched-marked, and erected diagrams and templates for anchor bolts shall be furnished. All gates shall be supplied complete with all necessary lifting devices for the operation of the gates.
- 5-03. Installation
The slide gate and appurtenance shall be carefully installed in conformance with the manufacturer's recommendations to insure satisfactory operation and life. The gate shall be installed in a manner which will prevent leakage.
- 5-04. Measurement and Payment
The unit of measurement will be a lump sum for the gate and appurtenances shown on the drawings. Payment will be made at the contract lump sum price for slide gate. Such payment shall be considered full compensation for all labor, materials, equipment and any incidentals required to install the gate and appurtenances as shown on the drawings.

SECTION 6 - PIPE CONDUIT

6-01. Scope

This work shall consist of the furnishing and installation of pipe conduits, and sections, and fittings, hereinafter referred to as "conduit" in accordance with these specifications and in accordance with the lines and grades shown in the drawings.

6-02. Materials

Materials for conduit shall meet the requirements specified on the drawings and shall be an approved standard product from a reputable manufacturer.

6-03. Installation

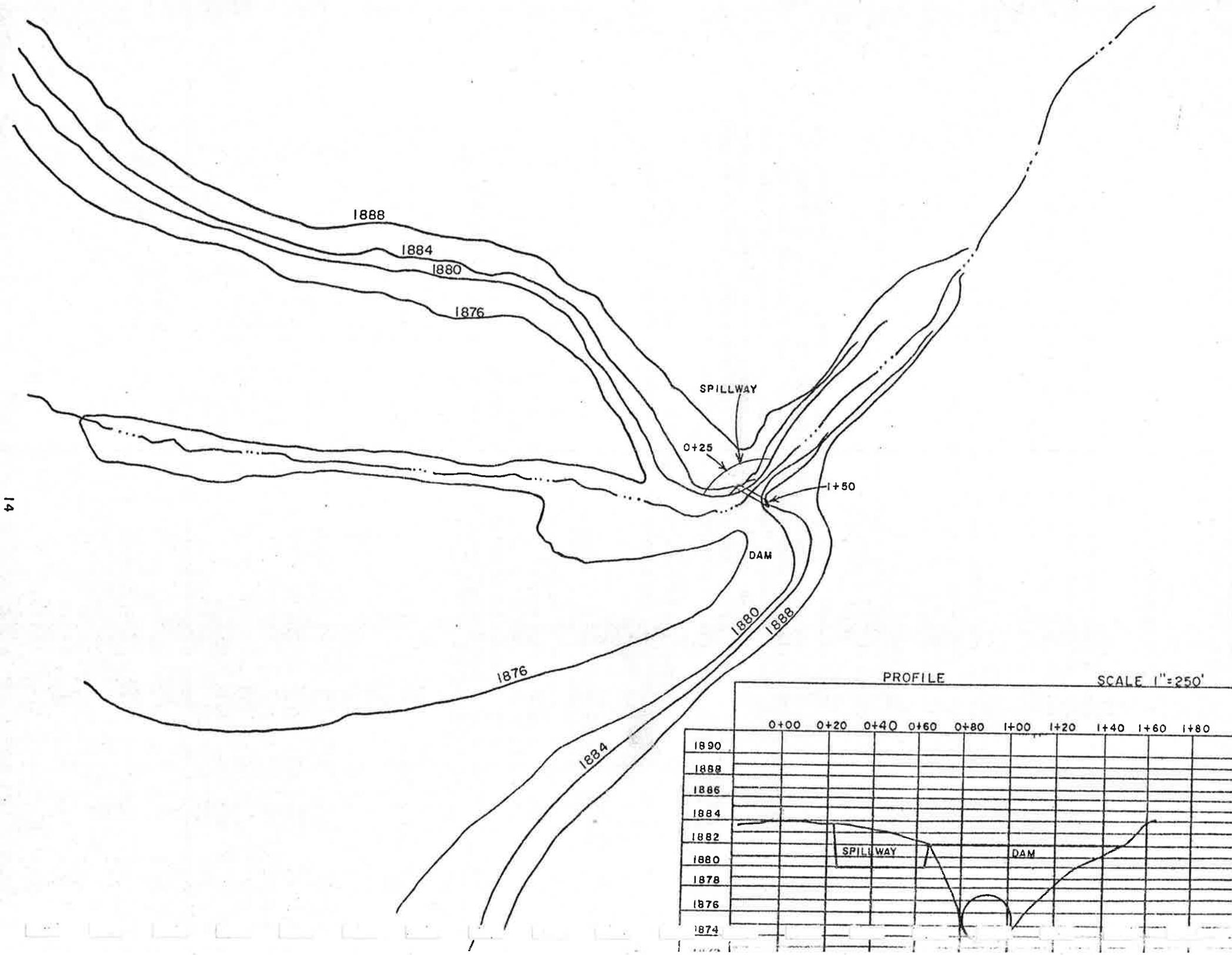
a. The conduit shall be placed to the line and grade shown on the drawings or specified by the Engineer.

b. The conduit bedding shall be earth formed. The bottom of the trench or excavation shall be molded to fit the outer circumference of the conduit in such a manner that the depth of the molded bed shall be a minimum of ten (10) percent of the outside diameter of the conduit below the level of the bottom of the trench or excavation before molding and the conduit shall bear against solid undisturbed ground or compacted earth for its entire length.

c. After the conduit has been installed, suitable backfill material shall be placed as shown on the drawings or specified by the Engineer.

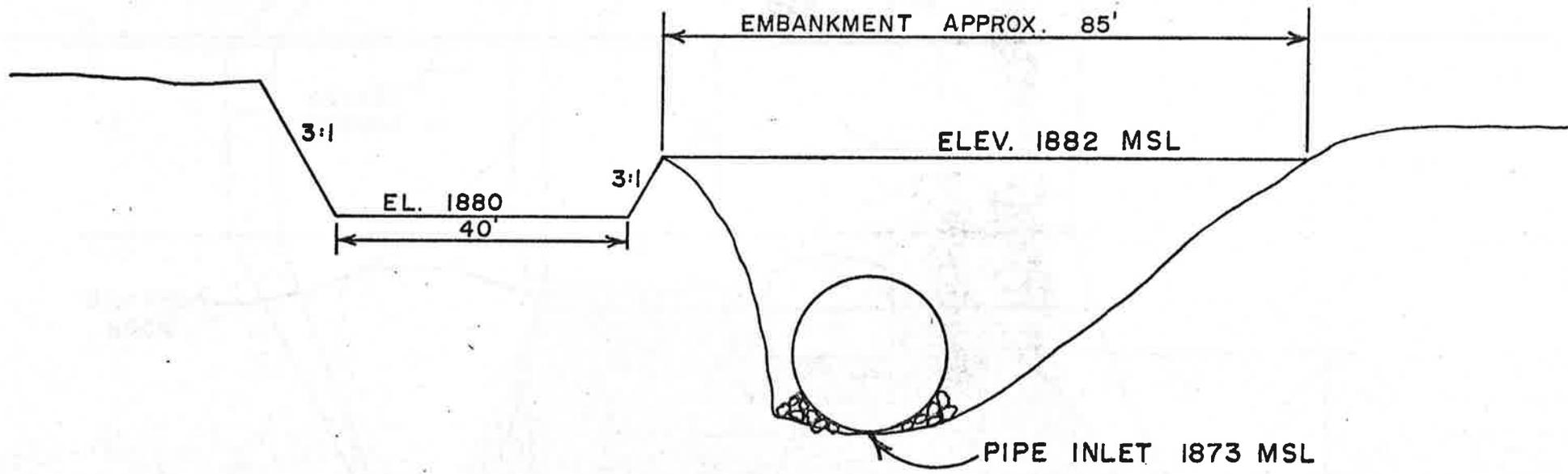
6-04. Measurement and Payment

Measurement and payment shall be by the linear foot in place. Fittings will be included in the length measurement for the conduit. Payment will be made at the contract unit price bid for conduit measured to the nearest foot. Such payment will be full compensation for furnishing, transporting, and installing the conduit complete with all necessary fittings, bedding and backfilling.

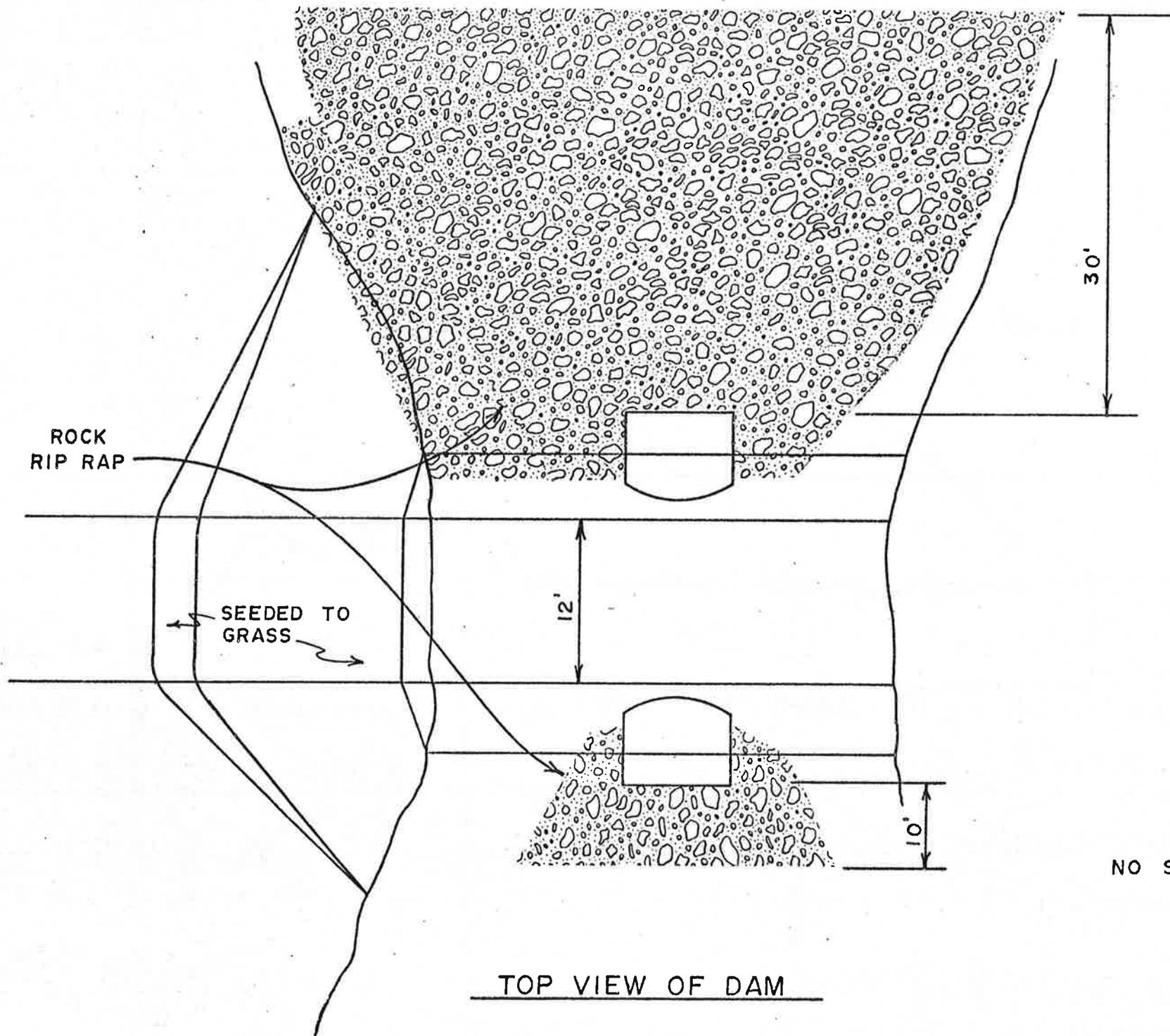


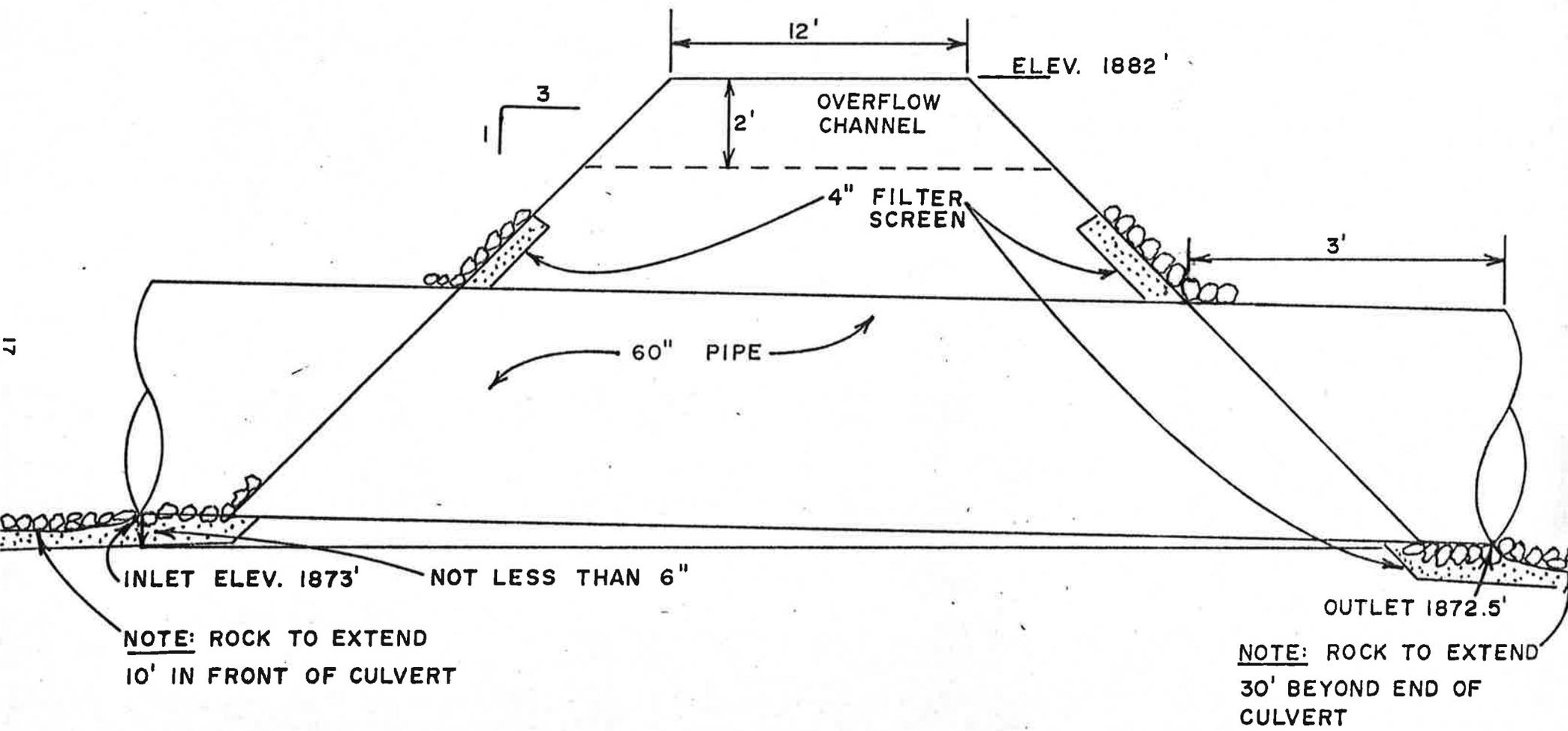
14

15



CHANNEL CROSS SECTION





DAM CROSS SECTION

