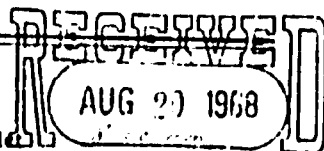


1610-3

1. Considered 9.24, 1968
2. Name of Applicant PLATTE CREEK IRRIG ASSC. INC.
3. Post Office Address PLATTE
4. Amount of water claimed 8.85
5. Source of water supply MISSOURI RIVER
6. Water to be used for IRRIGATION
Acres to be irrigated 620
7. Water to be diverted and used in CHARLES MIX county
about 35 9W miles of PLATTE
8. Proof of Publication
Received ✓
Not Received _____
Approved _____
Subject to _____
Not Approved _____
Action deferred _____
10. Remarks:

No. 1610-3Water Division No. 3 MISSOURI RIVER District

(Blanks to be filled by the Engineer for the W. R. C.)

STATE WATER RESOURCES COMM.
PIERRE, SOUTH DAKOTA

APPLICATION FOR PERMIT

To Appropriate Water within the State of South Dakota

(NOTE—Draw a line through items not applicable.)

1. Name of applicant Platte Creek Irrigation Association, Inc.Postoffice address Platte, County Charles Mix, State S. Dak.

I. If a corporation

(a) Name of same Platte Creek Irrigation Association(b) Date and place of incorporation June 6, 1968, Pierre, South Dakota(c) Amount of capital stock None(d) Amount paid in XXX None(e) Names and addresses of directors Lloyd J. Bakken, Platte, South DakotaC. E. Wynia, Platte, South Dakota; Bruce D. Wynia, Platte,South Dakota

(NOTE—A certified copy of articles of incorporation must accompany the application.)

II. Method of accomplishing the work and financial resources of the applicant:

(a) Method of accomplishing work (Whether by contract, employment of others, or direct labor)
combination

(b) Cash on hand, \$

(c) Treasury stock, \$

(d) Bonds to be issued, \$

(e) Other resources, \$

2. Name of diversion work Platte Creek Irrigation Project Number 13. Amount of water claimed 5.86 MAXIMUM ALLOWABLE cubic feet per second4. Source of water supply Fwt. Randall Reservoir5. Location of point of diversion 3300 ft. South and 850 ft. East of the N.W. Corner
of Sect. 9, T.98 N., R.69 W., 5th P.M. east bank Randall Reservoir County.6. Annual period or periods during which water is to be used APRIL THRU OCT.

7. To be used for:

I. Irrigation or domestic use: Gravity, overhead sprinkling or combination system? combination(a) Number of acres to be irrigated 520 acres.(b) Legal subdivisions to be irrigated see back sheet

(NOTE—A list of lands to be irrigated, giving each subdivision and fraction with acreage thereof, should be written here, or may be appended as a part of this application. Same must also be shown on accompanying map.)

(c) Statement as to domestic use (giving location, etc.)

II. Stockwatering, mining, milling, power, fish culture, fire protection and public recreation:

(a) Nature of use
Name any of the above uses claimed

(b) Amount of power to be generated horse power.

Amount claimed for engine cooling

(c) Location of plant

(d) Method of developing power

(e) Point where water will be returned to stream

MAP NO 1161-3

8. Estimated cost of work:

(a) Head Gates, \$.....

(b) Pumping plant, \$ 35,000.00

(c) Fluming, \$.....

(d) Canal-earth, \$.....

Rock, \$.....

(e) Other structures closed pipe line \$ 60,000.00

Total, \$.....

9. Description of diversion works:

I. Nature of works: (Reservoir, dam, ditch, flume, pumping plant, etc.)

Pumping plant and pipeline to provide water for irrigation system.

II. Dimensions of works.

(a) Dam: Height.....feet; length at bottom.....feet; length at top.....feet; thickness at bottom.....feet; thickness at top.....feet; slope at front water face.....; slope at back face.....material used in construction.....

(b) Reservoir: Capacity when filled.....acre feet. Surface area at highwater mark.....acres.

DEPTH AT OUTLET- FEET	SURFACE AREA AT EACH DEPTH AT OUTLET -ACRES	FEET	ACRE- FEET CAPACITY

(c)* Head gate: Width.....feet; height.....feet;

Material.....

(d) pipeline
Canal: Total length 2.....miles.

LOCATION BELOW HEADGATE	DEPTH	BOTTOM WIDTH	WIDTH AT WATER-LINE	GRADE PER MILE
At.....Mile	feet	feet	feet	feet
At.....Mile	feet	feet	feet	feet
At.....Mile	feet	feet	feet	feet
At.....Mile	feet	feet	feet	feet
At.....Mile	feet	feet	feet	feet
At.....Mile	feet	feet	feet	feet

(Give dimensions where reductions in size are made.)

10. Time required for completion of work 5.....years.

11. Time required for complete application of water to the proposed beneficial use 1.....years.

12. Choice of newspaper for publication of notice of intention to appropriate Platte Enterprise,
Platte, South Dakota.

STATE OF SOUTH DAKOTA

County of Charles Mix } ss.

I, C. F. Wania, President, Platte Creek Irrigation Association, Inc. being first duly sworn on my oath depose and say: that my relation to the above described undertaking is that of owner, that I have read the above foregoing statement, examined the map accompanying the same, and that I know of my own personal knowledge that the matters therein stated and shown are true.

Signed C. F. Wania

President

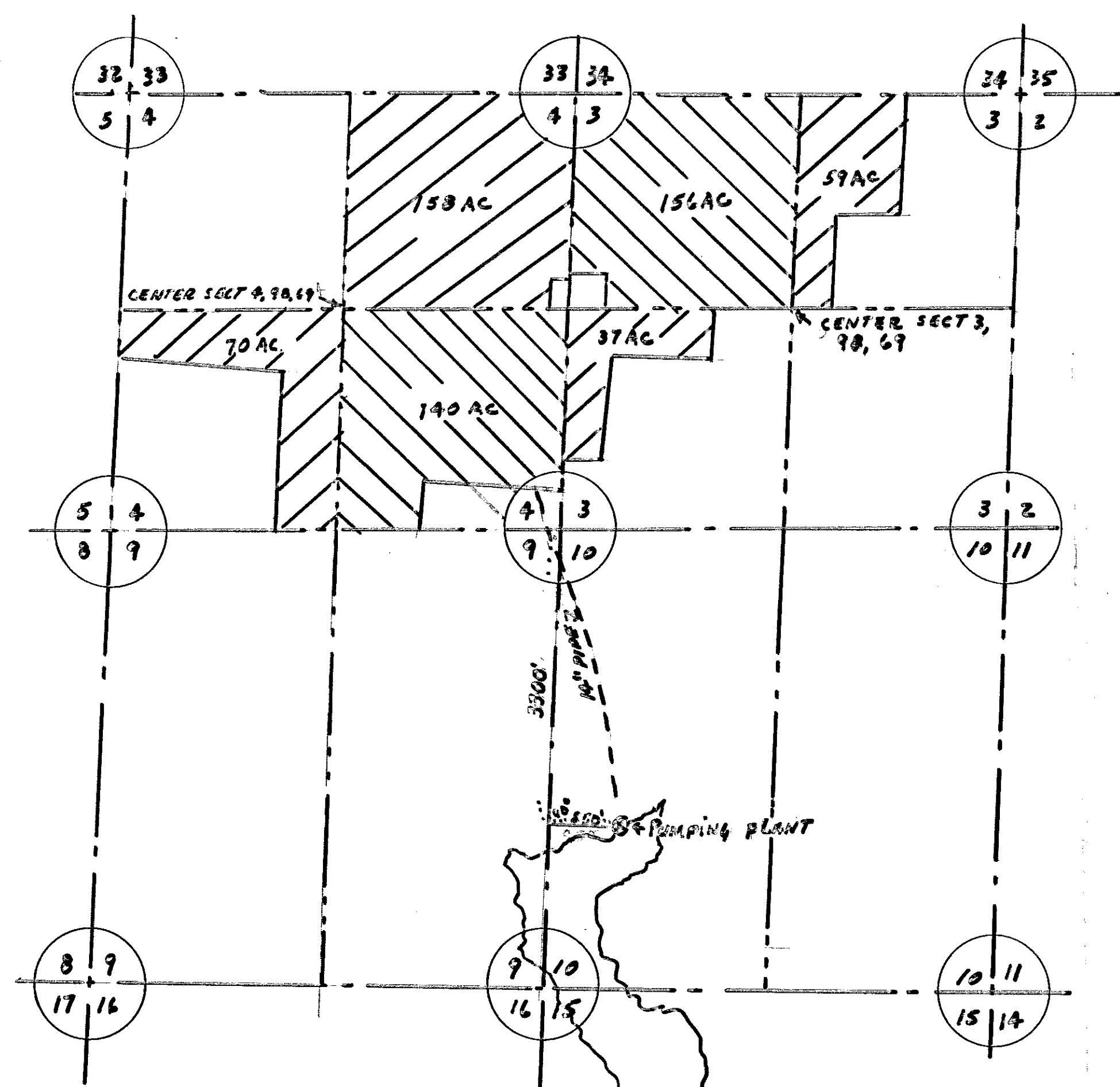
Subscribed and sworn to before me this 5.....day of July 1965

Notary Public (or other qualified officer.)

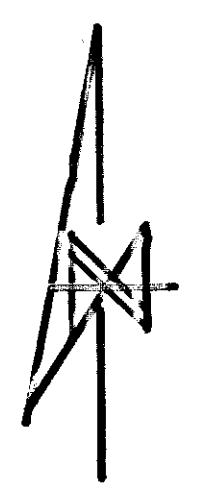
E-0191 #1004

AREA BY LEGAL SUBDIVISION

AREA (ACRES)	SECTION	TOWNSHIP	RANGE
70	SW 1/4-4	78W	67N
158	NE 1/4-4	78W	67N
140	SE 1/4-4	78W	67N
156	NW 1/4-3	78W	67N
57	NE 1/4-3	78W	67N
37	SW 1/4-3	78W	67N
620 TOTAL			



RANDALL RESERVOIR



SCALE 4" = 1 MILE

SURVEYOR'S CERTIFICATE

STATE OF SOUTH DAKOTA) SS
COUNTY OF BEADLE)
I, HARLAN W. MEYER, A REGISTERED LAND SURVEYOR
IN AND FOR THE STATE OF SOUTH DAKOTA, DO HEREBY
CERTIFY THAT AT THE REQUEST OF PLATTE CREEK IRRIGATION
ASSOCIATION, I HAVE SHOWN THE LANDS PREPARED TO BE IRRIGATED
WITHIN HIS OWNERSHIP BOUNDARIES ON JUNE 3, 1968 FOR WHICH APPLICATION
FOR APPROPRIATE WATER RIGHTS IS MADE AND THAT THIS MAP
IS A TRUE REPRESENTATION THERE OF.
WITNESS MY HAND AND SEAL THIS 3RD DAY OF JUNE 1968

Harlan W. Meyer
REGISTERED LAND SURVEYOR #495
STATE OF SOUTH DAKOTA) SS
COUNTY OF BEADLE)
SUBSCRIBED AND SWORN TO BEFORE ME THIS 3RD DAY
OF JUNE 1968
Carrine Johnson
NOTARY PUBLIC
MY COMMISSION EXPIRES MARCH 10, 1972

PLATTE CREEK IRRIGATION ASSOCIATION PROJECT #1
SHOWS AREA TO BE IRRIGATED & PUMPING PLANT DIVERSION
POINT: FOR PERMIT TO APPROPRIATE WATER

OWNER PLATTE CREEK IRRIGATION ASSOCIATION, INC.
SURVEYOR HARLAN W. MEYER
JUNE 1968

Remarks by State Water Resources Commission:

STATE OF SOUTH DAKOTA
County of HUGHES ss.

Pierre, South Dakota, SEPTEMBER 26, 1968

This is to certify that the foregoing application was received by the Commission at 8:00 o'clock
9 a.m. upon the 20TH day of AUGUST, 1968.

State Water Resources Commission

By:

[Signature]
for Chief Engineer, Executive Officer

Number of permit 1610-3

Date of first receipt of application AUGUST 20, 1968

Date of return to applicant for correction, amendments or changes required as follows: _____, 19____

Date of receipt of corrected application _____, 19____

Date from which applicant may claim right AUGUST 20, 1968

Approved SEPTEMBER 24, 1968, Recorded in Book 10 Page 256

This is to certify that we have examined the foregoing application for a permit to appropriate water of the State of South Dakota, and we hereby grant the same as stated herein, subject, however, to the following limitations and conditions:

1st. The equivalent of at least one-fifth of the work above specified is to be completed on or before MARCH 24, 1971.

2nd. The whole of said work is to be completed on or before SEPTEMBER 24, 1973.

3rd. The limit of time for proof of beneficial use of water appropriated in accordance herewith is SEPTEMBER 24, 1977.

4th. The water appropriated shall be used for the purpose of IRRIGATION.

5th. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.

6th. The amount of the appropriation herein granted shall not exceed 8.85 cubic feet per second; neither shall it exceed the capacity of the above described system of diversion works, nor the least amount of water that experience may hereafter indicate as necessary for the production of crops in the exercise of the best husbandry; and further, said appropriation must be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is actually

and beneficially applied for irrigation on or before SEPTEMBER 24, 1977; said water to be used during the following described annual period:

APRIL THRU OCTOBER

Witness my hand this 26TH day of SEPTEMBER, 1968.

State Water Resources Commission

By:

[Signature]
Chief Engineer, Executive Officer

Certificate of Construction Issued APRIL 30, 1974

Water License Issued APRIL 30, 1974

1161-3

Remarks by the Applicant:

Areas by Legal Subdivision

Area (acres)	Section.	Township	Range
70	SW $\frac{1}{4}$ -4	98W	69N
158	NE $\frac{1}{4}$ -4	"	"
140	SE $\frac{1}{4}$ -4	"	"
156	NW $\frac{1}{4}$ -3	"	"
59	NE $\frac{1}{4}$ -3	"	"
37	SW $\frac{1}{4}$ -#3	98W	69N
620	Total		

WATER LICENSE NO. 1610-3

(1) WHEREAS, On the 20th day of August A. D. 19 68
the Platte Creek Irrigation Association, Inc.

made Water Right Application No. 1610-3 for a permit to use 8.85 cubic feet per second of the waters
of the Missouri River

County of Charles Mix, State of South Dakota, for irrigation

purposes; and

(2) WHEREAS, On the 26th day of September A. D. 19 68

Permit No. 1610-3, with a date of priority of August 20, 1968

was issued to said applicant for the diversion of said water, and provided for the completion of construction of the water
supply system therein described on or before the 24th day of September A. D. 19 73 and for the
application to beneficial use of said water on or before the 24th day of September A. D. 19 77

and:

(3) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota
relating to completion of the construction of the water supply system and is entitled to divert 7.45 cubic feet
per second of water for beneficial use; and,

(4) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota
relating to the application of water to beneficial use of the following extent:

for irrigating the following land in T98N, R69W

		<u>Acres</u>
Section 3	NW $\frac{1}{4}$	156
	NE $\frac{1}{4}$	59
	SW $\frac{1}{4}$	37
Section 4	SW $\frac{1}{4}$	70
	NE $\frac{1}{4}$	158
	SE $\frac{1}{4}$	140
Total		620 Acres

(5) NOW, THEREFORE, By the virtue of the authority vested in us by the laws of the State of South Dakota, We hereby grant and confirm to Platte Creek Irrigation Association, Inc.

Platte, South Dakota

the holder _____ and owner _____ of said permit No. 1610-3 a water right, dating from August 20, 1968

to use of 7.45 cubic feet per second of the waters of the Missouri River

in the County of Charles Mix and State of South Dakota, or so much thereof as may be necessary for the purposes hereinafter mentioned, to be diverted at a point 3300 feet South and 250 feet East of the NW Corner, Section 9, T98N, T69W

and conduct to and upon Portions of Sections 3 and 4, T98N, R69W, more fully described on the face of this License

for the purpose of irrigation

Subject to any limitations listed in Water Right Permit No. 1610-3 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 30th day of April A. D.
Nineteen Hundred and Seventy-four

WATER RIGHTS COMMISSION

By:

Chief Engineer, Executive Officer **DONALD BRISCOLL**

Permit No. 1610-3

Water Diversion No. 3 MISSOURI RIVER Water District

CERTIFICATE OF CONSTRUCTION

This is to Certify, That Platte Creek Irrigation Association, Inc.

_____ the holder _____ of
Permit No. 1610-3, issued upon Application No. 1610-3, bearing date of priority of August 20, 1968
_____ authorizing the diversion of 8.85 cu. ft. per second of the waters of _____
the Missouri River County of Charles Mix, State of South Dakota at _____
a point 5300 feet South and 850 feet East of the NW Corner,
Section 9, T98N, R69W
_____, for irrigation

_____ purposes, has ⁸_____ complied with the provisions of the laws of the State of South Dakota relating to proof of
completion of the works of diversion set out and described in said Permit; that said works are found in satisfactory
condition for diverting and conveying to the place of intended use 7.45 cu. ft. per second of water.

Date April 30, 1974

~~_____~~
By: WATER RIGHTS COMMISSION

DONALD DRISCOLL, Chief Engineer

No. 1610-3

on or before
(First Publication August 29, 1968.)

APPROPRIATION OF WATER

Office of State Water Resources Commission.

Pierre, S. Dak., August 20, 1968.

Notice is hereby given that the Platte Creek Irrigation Association, Inc., whose postoffice address is Platte, S. Dak., has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use 8.85 cubic feet of water per second of time from the Missouri River through the Platte Creek Irrigation Project #1, the point of diversion of which is to be located on the left bank of said stream in the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 10 Twp. 98N Range 69W. Said water to be used for the purpose of providing irrigation on the following described land:
NW $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 3, NE $\frac{1}{4}$, SE $\frac{1}{4}$ and SW $\frac{1}{4}$, Section 4, T98N, R69W

~~under~~
This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 24th day of Sept., 1968, at 2:00 P.M. All interested persons may appear and be heard.

Appropriate action will be taken by the Water Resources Commission after suitable time has elapsed for the consideration of any or all information presented.

State Water Resources Commission

By:

~~Chief Engineer, Executive Office~~

Button P. Jones
Water Rights Specialist

cc: **C.F. Wynia, Platte, S.D.**

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA }
County Charles Mix } ss.Ralph Nachtigal being duly sworn, deposes and says the annexed printed copy of Notice

of Intention to Appropriate Water was taken from the _____

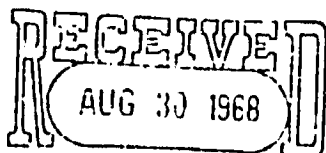
Platte Enterprise a newspaper which during the whole time of publication of said notice herein after stated, has been and is printed and published in theCity of Platte County ofCharles Mix and State of South Dakota; that the said notice was published in said newspaper on the following dates:Aug. 24Sept. 5Sept. 12Sept. 19

in each and every issue of the full number thereof, the first

publication being made on the 24th day of August1968 and the last publication on the 19th day ofSeptember 1968, upon which days or times

of publication aforesaid the newspaper was regularly published, and that during the whole time of said publication he

was _____ the printer and publisher of the said newspaper.

Ralph NachtigalSubscribed and sworn to before me this 24th day of August A. D. 1968STATE WATER RESOURCES COMMISSION
PIERRE, SOUTH DAKOTAAPPROPRIATION OF WATER
No. 1610-3Office of State Water
Resources Commission
Pierre, S. Dak.
August 20, 1968Notice is hereby given that the Platte Creek Irrigation Association, Inc., whose postoffice address is Platte, S. Dak., has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use 8.85 cubic feet of water per second of time from the Missouri River through the Platte Irrigation Project No. 1, the point of diversion of which is to be located on the left bank of said stream in the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 10 Twp 98N Range 59W. Said water to be used for the purpose of providing irrigation on land:portions of the following described NW $\frac{1}{4}$, W $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$, Section 2; NE $\frac{1}{4}$, SE $\frac{1}{4}$, and SW $\frac{1}{4}$, Section 4, T98N, R69W.

This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 24th day of Sept., 1968, at 2:00 p.m. All interested persons may appear and be heard.

Appropriate action will be taken by the Water Resources Commission after suitable time has elapsed for the consideration of any or all information presented.

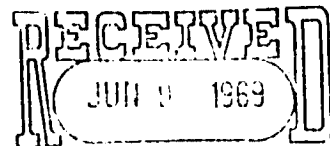
State Water Resources Commission
By: Burton F. Jones,
Water Rights Specialist.
(Aug. 29, Sept. 5, 12, 19)Notary Public Charles Mix County, S. D.

District Engineer
Omaha District, Corps of Engineers
7410 U. S. Post Office & Court House
Omaha, Nebraska 68102

FROM

3 June 1969

Mr. M. E. Miller
Attorney at Law
Lake Andes, South Dakota 57357



STATE WATER RESOURCES COMM.
PIERRE, SOUTH DAKOTA

Dear Mr. Miller:

Inclosed is a fully executed copy of Easement No. DACN45-2-69-6023 granting the Platte Creek Irrigation Association a right of way for the installation, operation and maintenance of an underground irrigation water pipeline and permanent pumping station, in and upon Government-owned lands of the Fort Randall Dam, Lake Francis Case Project, South Dakota.

It is requested that remittance in the amount of \$285.00, as shown on Bill for Collection, be forwarded to this office and that the easement be delivered to Mr. C. F. Wynia, Chairman of Platte Creek Irrigation Association.

A copy of this letter is also being forwarded to Mr. C. F. Wynia for his information.

Your prompt attention to this matter is appreciated.

Sincerely yours,

- 2 Incls
1. Easmt #6023
2. Bill for Collection

DALE KENT
Chief, Real Estate Division

Copy furnished:
C. F. Wynia
AE, Ft Randall
RE Proj Mgr, Pierre
So Dak State Wtr Rec Comm
Bur Rec, Billings

DEPARTMENT OF THE ARMY
EASEMENT FOR RIGHT OF WAY
(PIPELINE)

DACW45-2-49-6023

ON Fort Randall Dam, Lake Francis Case Project, South Dakota

THE SECRETARY OF THE ARMY, under and by virtue of the authority vested in him by Title 10, United States Code, Section 2685, ~~hereby grants to~~ and Section 2688, hereby grants to Platte Creek Irrigation Association, a corporation duly organized and existing under and by virtue of the laws of the State of South Dakota, with its principal office in Platte, South Dakota

hereinafter designated as the grantee, for a period ~~not exceeding~~ ^{coextensive with State Water} ~~() years from the date hereof~~, an easement for a right of way for ^{Permit No. 1610-3,} the installation, operation and maintenance of an underground irrigation water pipeline and permanent pumping station

over, across, in, and upon land under the control of the Secretary of the Army at the location shown in red on Exhibit A, entitled Fort Randall Reservoir, Segment E attached hereto and made a part hereof, and described as follows:

A parcel of land variable in width in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 10, Township 78 North, Range 69 West of the Fifth PM, Charles Mix County, South Dakota, lying on each side of the following described line: Commencing at the NE corner of said NW $\frac{1}{4}$ SW $\frac{1}{4}$, thence west along the North line of said NW $\frac{1}{4}$ SW $\frac{1}{4}$ a distance of 740 feet to the point of beginning; thence S 37°00' E, 740 feet, with said parcel being 100 feet on each side of the last described course; thence S 7°00' E to the shoreline of Lake Francis Case with said parcel being 150 feet on each side of the last described course, containing 5.67 acres, more or less.

The exterior boundaries of the parcel may be lengthened or shortened whichever the case may be to coincide with (1) the north line of said NW $\frac{1}{4}$ SW $\frac{1}{4}$ on the north and (2) the shoreline of Lake Francis Case on the south.

THIS EASEMENT is granted subject to the following conditions:

1. The grantee shall pay to the United States compensation in the amount of Two Hundred Eighty Five and no/100 (\$ 285.00), payable in advance. Compensation shall be made payable to the Treasurer of the United States and forwarded by the grantee to the District Engineer, Omaha District, Corps of Engineers, 7410 U.S. Post Office and Courthouse, Omaha, Nebraska 68102

2. The installation and/or operation and maintenance of said line shall be accomplished without cost or expense to the United States under the general supervision and subject to the approval of the officer having immediate jurisdiction over the property, hereinafter designated as "said officer", and in such manner as not to endanger personnel or property of the United States on the said United States land or obstruct travel on any road thereon. The grantee shall have the right of ingress and egress for such purposes.
3. The use and occupation of said land incident to the exercise of the privileges hereby granted shall be subject to such rules and regulations as the said officer may from time to time prescribe.
4. The grantee shall supervise the said line and cause it to be inspected at reasonable intervals, and shall immediately repair any leaks found therein as a result of such inspection, or when requested by said officer to repair any defects. Upon completion of the installation of said line and the making of any repairs thereto, the premises shall be restored immediately by the grantee, at the grantee's own expense, to the same condition as that in which they existed prior to the commencement of such work, to the satisfaction of the said officer.
5. Any property of the United States damaged or destroyed by the grantee incident to the use and occupation of the said premises, shall be promptly repaired or replaced by the grantee to the satisfaction of the said officer or in lieu of such repair or replacement the grantee shall, if so required by the said officer, pay to the United States money in an amount sufficient to compensate for the loss sustained by the United States by reason of damages to or destruction of Government property.
6. The United States reserves to itself the right to construct, use, and maintain across, over, and/or under the right of way hereby granted, electric transmission, telephone, telegraph, water, gas, gasoline, oil and sewer lines, and other facilities, in such manner as not to create any unreasonable interference with the use of the right of way herein granted.
7. The United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the said premises, nor for damages to the property of the grantee, ~~or for injuries to the person of the grantee (if an individual)~~, nor for damages to the property or injuries to the person of the grantee's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any one of them, arising from or incident to government activities, and the grantee shall hold the United States harmless from any and all such claims.
8. The United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the construction, maintenance, and use of said line.
9. That the grantee shall furnish through said line such service as may be required from time to time for governmental purposes on said land, provided that payment for such service will be made by the United States at rates which shall be mutually agreeable but which shall never exceed the most favorable rates granted by the grantee for similar service.
10. In the event all or any portion of said land occupied by said line shall be needed by the United States, or in the event the existence of said line shall be considered detrimental to governmental activities, the grantee shall, from time to time, upon notice so to do, and as often as so notified, remove said line and related facilities to such other location or locations on said land as may be designated by said officer, and, in the event said line shall not be removed or relocated within ninety (90) days after any aforesaid notice, the United States may cause the same to be done at the expense of the grantee.

11. This easement may be terminated by the Secretary of the Army upon a reasonable notice to the grantee if the Secretary of the Army shall determine that the right of way hereby granted interferes with the use or disposal of said land or any part thereof by the United States, or it may be terminated by the Secretary of the Army for failure, neglect, or refusal by the grantee fully and promptly to comply with any and all of the conditions of this grant, or for nonuse, or for abandonment.

12. Upon the expiration or termination of this grant, the grantee shall, without expense to the United States, and within such time as the Secretary of the Army may indicate, remove the said line from said land and restore the premises hereby authorized to be used and occupied to a condition satisfactory to the said officer. In the event the grantee shall fail, neglect, or refuse to remove the said line and so restore the premises, the United States shall have the option either to take over the said line as the property of the United States, without compensation therefor, or to remove the said line and perform the restoration work as aforesaid at the expense of the grantee, and in no event shall the grantee have any claim for damages against the United States or its officers or agents, on account of the taking over of said line or on account of its removal.

13. The conditions of this instrument shall extend to and be binding upon and shall inure to the benefit of the ~~grant~~ representatives, successors, and assigns of the grantee.

14. That it is understood that this instrument is effective only insofar as the rights of the United States in the said property are concerned; and that the grantee shall obtain such permission as may be necessary on account of any other existing rights.

15. That the construction of said pipeline and pumping station shall be in accordance with Soil Conservation Service report dated 12 November 1968 (Exhibit "B") attached hereto and made a part hereof.

16. It is understood and agreed that the irrigation equipment to be installed in the right of way hereby granted shall be considered as personal property.

17. That the grantee shall not discharge waste or effluent from the granted property in such manner that such discharge will contaminate streams or other bodies of water or otherwise become a public nuisance.

18. That this easement and right of way for a water pipeline and pumping plant is granted for the exercise of water rights granted by the State of South Dakota. It is understood and agreed that no right to use water from the reservoir is created by this grant. It is further understood by the grantee that the granting of this easement does not preclude the Secretary of the Interior from requiring the grantee to enter into an appropriate water service contract in consideration of such irrigation benefits as may, in the opinion of the Secretary of the Interior, be derived from the withdrawal of irrigation water from the reservoir.

Prior to the execution of this easement Conditions Nos. 7 and 13 were altered and Conditions Nos. 15, 16, 17 and 18 were added.

This easement is not subject to Title 10, United States Code, Section 2662.

IN WITNESS WHEREOF I have hereunto set my hand this 9th day of May 1969, by direction of the Assistant Secretary of the Army.

Sherry B. Myers
SHERRY B. MYERS
Chief, Real Property
Division, OASA (I&L)

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Huron, South Dakota 57350

November 12, 1963

Description of Irrigation Project

Platte Creek Irrigation Association
Charles Mix County, South Dakota

The pumping plant for this irrigation project will consist of two turbine pumps, each of which will be driven by diesel engines. One pump will have sufficient capacity to supply from 60 - 70% of the peak requirements. The other pump will supply the remaining 30 - 40% of the required capacity. Total capacity will be 2500 to 3000 gpm.

The total power requirements are approximately 550 horsepower. One engine will be about 350 horsepower while the other will be about 200 horsepower. The engines will be coupled directly to the gear head of the pumps. Automatic safety devices will be installed to prevent damage to the equipment should a malfunction occur.

The pump inlet consists of two vertical asbestos treated-asphalt coated C.M. Pipe risers, one for each pump. These are connected to the reservoir by one horizontal C. M. Pipe barrel, asbestos treated, asphalt coated.

An earth dike or levee will extend from the abutment area out toward the lake. The pumping plant will sit on this fill section. No fill is anticipated to be placed below approximately El. 1356.

It is planned that the pumping plant will be housed in a metal pre-fabricated building. The fuel tank will be buried near the site.

The pipeline leading from the pumping plant will have automatic check valves, pressure release valves, air vents, etc. to insure safe operating conditions.

The coal-tar enamel coated welded steel pipeline will be buried.

All disturbed areas including borrow area will be graded, finished and seeded to prevent erosion.

Access to this pumping plant site will be by an existing public use road.

EXHIBIT "B" ATTACHED TO AND MADE A
PART OF EASEMENT NO. DACW45-2-69-6023

SPECIFICATIONS
FOR
RANDALL RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

South Dakota
PROPOSAL No. 88

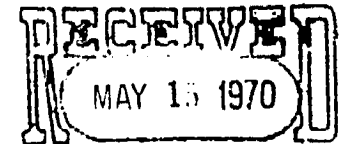
GENERAL DESCRIPTION OF WORK:

The work to be performed under this project consists of the following:

1. Constructing intake works for pumping plant.
2. Installing buried irrigation pipeline.
3. Installing turbine pumps and diesel engines.
4. Constructing pumping plant building.

LOCATION:

The proposed work is located 8 miles west and 4 miles south of Platte, South Dakota in Sections 3, 4, 9, 10, T98N, R69W.



STATE WATER RESOURCES COMM.
PIERRE, SOUTH DAKOTA

RANDALL RC&D PROPOSAL NO. 88
South Dakota

LIST OF MATERIAL SPECIFICATIONS

<u>Spec. No.</u>	<u>Title</u>
522	Aggregate for Portland Cement Concrete
531	Portland Cement
532	Air-Entraining Admixtures
533	Water-Reducing and Set-Retarding Admixtures For Portland Cement Concrete
534	Curing Compound (for Concrete)
535	Preformed Expansion Joint Filler
539	Steel Reinforcement (for Concrete)
545	Asbestos-Cement Pipe
551	Zinc-Coated Iron or Steel Corrugated Pipe
553	Steel Pipe and Fittings
581	Metal
582	Galvanizing
583	Coal tar-Epoxy Paint (Formula C-200)
584	Structural Timber and Lumber
585	Wood Preservatives and Treatment
602	Heavy Duty Diesel Industrial Engine
603	Vertical Turbine Pumps
604	Valves, Meters, Gages
605	Plastic Pipe (IPS-PVC)
606	Zinc Anode

RANDALL RC&D PROPOSAL NO. 88
South Dakota

LIST OF CONSTRUCTION SPECIFICATIONS

<u>Spec. No.</u>	<u>Title</u>
2	Clearing and Grubbing
3	Structure Removal
11	Removal of Water
21	Excavation
23	Earth fill
26	Salvaging and spreading topsoil
31	Concrete
34	Steel Reinforcement
51	Corrugated metal pipe conduits
52	Steel pipe conduits
81	Metal fabrication and installation
82	Cleaning and painting metalwork
83	Timber Fabrication and Installation
403	Vertical Turbine Pumps, Diesel Engines
404	Valves, Meters, Gages
405	Small diameter plastic pipe
406	Zinc anode
407	Asbestos Cement Pipe Conduits and Drains

CONSTRUCTION SPECIFICATION

2. CLEARING AND GRUBBING

1. SCOPE

The work shall consist of the clearing and grubbing of designated areas by removal and disposal of trees, snags, logs, stumps, shrubs and rubbish.

2. MARKING

The limit of the areas to be cleared and grubbed will be marked by means of stakes, flags, tree markings or other suitable methods. Trees to be left standing and uninjured will be designated by special markings placed on the trunks at a height of about six feet above the ground surface.

3. REMOVAL

All trees not marked for preservation and all snags, logs, brush, stumps, shrubs and rubbish shall be removed from within the limits of the marked areas. Unless otherwise specified, all stumps, roots and root clusters having a diameter of one inch or larger shall be grubbed out to a depth of at least two feet below subgrade elevation for concrete structures and one foot below the ground surface at embankment sites and other designated areas.

4. DISPOSAL

All materials removed from the cleared and grubbed areas shall be burned or buried at locations approved by the Engineer, or otherwise disposed of as approved by the Engineer.

5. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the cleared and grubbed areas will be measured to the nearest 0.1 acre. Payment for clearing and grubbing will be made at the contract unit price and shall constitute full compensation for all labor, equipment, tools and all other items necessary and incidental to the completion of the work.

For items of work for which specific lump sum prices are established in the contract, payment for clearing and grubbing will be made at the contract lump sum price. Such payment shall constitute full compensation for all labor, equipment, tools and all other items necessary and incidental to completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 6 of this specification.

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6. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Subsidiary Item, Clearing and Grubbing

- (1) This item shall consist of clearing and grubbing as required by the engineer within the work limits.
- (2) If waste materials are buried, they shall be buried at least two feet below the surrounding groundline.
- (3) For deep excavations over five feet deep the cover soil shall be mounded to allow for settlement, as directed by the engineer.
- (4) No separate payment will be made for this item. Compensation for this item shall be included in the payment for pipe, Bid Items 13, 14, 15, 17, 18, 19 as appropriate.

CONSTRUCTION SPECIFICATION

3. STRUCTURE REMOVAL

1. SCOPE

The work shall consist of the removal, salvage and disposal of structures (including fences) from the designated areas.

2. MARKING

Each structure unit to be removed will be marked by means of stakes, flags, painted markers or other suitable methods.

3. REMOVAL

All structures designated in the contract for removal shall be removed to the specified extent and depth.

4. SALVAGE

Structures that are designated to be salvaged shall be carefully removed and neatly placed in the specified storage areas. Salvaged structures that are capable of being disassembled shall be dismantled into individual members or sections. Such structures shall be neatly matchmarked with paint prior to disassembly. All pins, nuts, bolts, washers, plates and other loose parts shall be marked or tagged to indicate their proper locations in the structure and shall be fastened to the appropriate structural member or packed in suitable containers. Materials from fences designated to be salvaged shall be placed outside the work area on the property from which they were removed. Wire shall be rolled into uniform rolls of convenient size. Posts and rails shall be neatly piled.

5. DISPOSAL OF REFUSE MATERIALS

Refuse materials resulting from structure removal shall be burned or buried at locations approved by the Engineer or otherwise disposed of as specified or as approved by the Engineer.

6. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, payment for the removal of each structure unit, except fences, will be made at the contract unit price. Fences

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removed or removed and salvaged will be measured to the nearest linear foot. Payment for fence removal or removal and salvage will be made at the contract unit prices appropriate to each type and size of fence.

For items of work for which specific lump sum prices are established in the contract, payment for structure removal will be made at the contract lump sum price.

Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 7 of this specification.

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7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Subsidiary Item, Fence Removal

1. This item shall consist of removing fence as necessary within the work limits to perform the work.
2. No separate payment will be made for this item. Compensation for this item shall be included in the payment for pipe, Bid Items 13, 14, 15, 17, 18, 19 as appropriate.

CONSTRUCTION SPECIFICATION

11. REMOVAL OF WATER

1. SCOPE

The work shall consist of the removal of surface water and ground water as needed to perform the required construction in accordance with the specifications. It shall include (1) building and maintaining all necessary temporary impounding works, channels, and diversions, (2) furnishing, installing and operating all necessary pumps, piping and other facilities and equipment, and (3) removing all such temporary works and equipment after they have served their purposes.

2. DIVERTING SURFACE WATER

The Contractor shall build, maintain, and operate all cofferdams, channels, flumes, sumps, and other temporary diversion and protective works needed to divert streamflow and other surface water through or around the construction site and away from the construction work while construction is in progress. Unless otherwise specified, a diversion must discharge into the same natural drainageway in which its head works are located.

Unless otherwise specified, the Contractor shall furnish to the Engineer, in writing, his plan for diverting surface water before beginning the construction work for which the diversion is required. Acceptance of this plan will not relieve the Contractor of responsibility for completing the work as specified.

3. DEWATERING THE CONSTRUCTION SITE

Foundations, cutoff trenches and other parts of the construction site shall be dewatered and kept free of standing water or excessively muddy conditions as needed for proper execution of the construction work. The Contractor shall furnish, install, operate and maintain all drains, sumps, pumps, and other equipment needed to perform the dewatering as specified. Dewatering methods that cause a loss of fines from foundation areas will not be permitted.

Unless otherwise specified, the Contractor shall furnish to the Engineer, in writing, his plan for dewatering before beginning the construction work for which the dewatering is required. Acceptance of this plan will not relieve the Contractor of responsibility for completing the work as specified.

4. DEWATERING BORROW AREAS

Unless otherwise specified in Section 7, the Contractor shall maintain the borrow areas in drainable condition or otherwise provide for timely and effective removal of surface waters that accumulate, for any reason, within the borrow areas.

5. REMOVAL OF TEMPORARY WORKS

After the temporary works have served their purposes, the Contractor shall remove them or level and grade them to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

6. MEASUREMENT AND PAYMENT

For items of work for which specific lump sum prices are established in the contract, payment for diverting surface water, dewatering construction sites, and dewatering borrow areas will be made at the contract lump sum prices. Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 7 of this specification.

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7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Subsidiary Item, Removal of Water

- (1) This item shall consist of controlling runoff and removing water as necessary to perform the construction as specified.
- (2) Written plans for diversion or dewatering will not be required.
- (3) No separate payment will be made for this item. Compensation for this item shall be included in the payment for pipe, Bid Items 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 25 as appropriate.

CONSTRUCTION SPECIFICATION

21. EXCAVATION

1. SCOPE

The work shall consist of the excavation required by the drawings and specifications and disposal of the excavated materials.

2. CLASSIFICATION

Excavation will be classified as common excavation or rock excavation in accordance with the following definitions or will be designated as unclassified.

Common excavation shall be defined as the excavation of all materials that can be excavated, transported, and unloaded by the use of heavy ripping equipment and wheel tractor-scrappers with pusher tractors or that can be excavated and dumped into place or loaded onto hauling equipment by means of excavators having a rated capacity of one cubic yard and equipped with attachments (such as shovel, bucket, backhoe, dragline or clam shell) appropriate to the character of the materials and the site conditions.

Rock excavation shall be defined as the excavation of all hard, compacted or cemented materials the accomplishment of which requires blasting or the use of excavators larger than defined for common excavation. The excavation and removal of isolated boulders or rock fragments larger than one cubic yard in volume encountered in materials otherwise conforming to the definition of common excavation shall be classified as rock excavation.

Excavation will be classified according to the above definitions by the Engineer, based on his judgment of the character of the materials and the site conditions.

The presence of isolated boulders or rock fragments larger than one cubic yard in size will not in itself be sufficient cause to change the classification of the surrounding material.

For the purpose of this classification, the following definitions shall apply:

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Heavy ripping equipment shall be defined as a rear-mounted, heavy duty, single-tooth, ripping attachment mounted on a tractor having a power rating of at least 200 net horsepower (at the flywheel).

Wheel tractor-scraper shall be defined as a self-loading (not elevating) and unloading scraper having a struck bowl capacity of at least 12 yards.

Pusher tractor shall be defined as a track type tractor having a power rating of at least 200 net horsepower (at the flywheel) equipped with appropriate attachments.

3. UNCLASSIFIED EXCAVATION

Items designated as "Unclassified Excavation" shall include all materials encountered regardless of their nature or the manner in which they are removed. When excavation is unclassified, none of the definitions or classifications stated in Section 2 of this specification shall apply.

4. BLASTING

The transportation, handling, storage, and use of dynamite and other explosives shall be directed and supervised by a person of proven experience and ability in blasting operations.

Blasting shall be done in such a way as to prevent damage to the work or unnecessary fracturing of the foundation and shall conform to any special requirements in Section 12 of this specification.

5. USE OF EXCAVATED MATERIALS

To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of required permanent earth fill or rock fill. The suitability of materials for specific purposes will be determined by the Engineer. The Contractor shall not waste or otherwise dispose of suitable excavated materials.

6. DISPOSAL OF WASTE MATERIALS

All surplus or unsuitable excavated materials will be designated as waste and shall be disposed of at the locations shown on the drawings.

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7. BRACING AND SHORING

Excavated surfaces too steep to be safe and stable if unsupported shall be supported as necessary to safeguard the work and workmen, to prevent sliding or settling of the adjacent ground, and to avoid damaging existing improvements. The width of the excavation shall be increased if necessary to provide space for sheeting, bracing, shoring, and other supporting installations. The Contractor shall furnish, place and subsequently remove such supporting installations.

8. STRUCTURE AND TRENCH EXCAVATION

Structure or trench excavation shall be completed to the specified elevations and to sufficient length and width to include allowance for forms, bracing and supports, as necessary, before any concrete or earth fill is placed or any piles are driven within the limits of the excavation.

9. BORROW EXCAVATION

When the quantities of suitable materials obtained from specified excavations are insufficient to construct the specified fills, additional materials shall be obtained from the designated borrow areas. The extent and depth of borrow pits within the limits of the designated borrow areas shall be as directed by the Engineer.

Borrow pits shall be excavated and finally dressed in a manner to eliminate steep or unstable side slopes or other hazardous or unsightly conditions.

10. OVEREXCAVATION

Excavation in rock beyond the specified lines and grades shall be corrected by filling the resulting voids with portland cement concrete made of materials and mix proportions approved by the Engineer. Concrete that will be exposed to the atmosphere when construction is completed shall contain not less than 6 sacks of cement per cubic yard of concrete. Concrete that will be permanently covered shall contain not less than $4\frac{1}{2}$ sacks of cement per cubic yard. The concrete shall be placed and cured as specified by the Engineer.

Excavation in earth beyond the specified lines and grades shall be corrected by filling the resulting voids with approved compacted earth fill, except that, if the earth is to become

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the subgrade for riprap, rock fill, sand or gravel bedding, or drain fill, the voids may be filled with material conforming to the specifications for the riprap, rock fill, bedding or drain fill.

11. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the volume of each type and class of excavation within the specified pay limits will be measured and computed to the nearest cubic yard by the method of average cross-sectional end areas. Regardless of quantities excavated, the measurement for payment will be made to the specified pay limits, except that excavation outside the specified lines and grades directed by the Engineer to remove unsuitable material will be included, but only to the extent that the unsuitable condition is not a result of the Contractor's operations.

Method 1. The pay limits shall be as designated on the drawings.

Method 2. The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed prior to the start of construction operations except that where excavation is performed within areas designated for previous excavation or fill the upper limit shall be the modified ground surface resulting from the specified previous excavation or fill.
- b. The lower and lateral limits shall be the neat lines and grades shown on the drawings.

Method 3. The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed prior to the start of construction operations except that where excavation is performed within areas designated for previous excavation or fill the upper limit shall be the modified ground surface resulting from the specified previous excavation or fill.
- b. The lower and lateral limits shall be the true surface of the completed excavation as authorized by the Engineer.

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Payment for each type and class of excavation will be made at the contract unit price for that type and class of excavation. Such payment will constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to the performance of the work, except that extra payment for backfilling required overexcavation will be made in accordance with the following provisions:

- a. Payment for backfilling overexcavation, as specified in Section 10 of this specification, will be made only if the excavation outside specified lines and grades is directed by the Engineer to remove unsuitable material and if the unsuitable condition is not a result of the Contractor's operations.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 12 of this specification.

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12. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 3, Excavation, Common, Intake Pipe Trench

- (1) This item shall consist of all common excavation which is required to be excavated from within the limits of the intake pipe trench as shown on the drawings.
- (2) Measurement and payment shall be by Method 2.

b. Randall RC&D 88, Subsidiary Item, Excavation, Incidental Structure, Common

- (1) This item shall consist of all common excavation required to install inlet riser footing, building floor, building, pipe supports, impact blocks, fuel tank, trash rack, and to provide pipe bedding as shown on the drawings.
- (2) No separate payment will be made for this item. Compensation for this item will be included in the payment for Earth Fill, Class A, Intake Works, Bid Item 4.

c. Randall RC&D 88, Subsidiary Item, Excavation Borrow, Common

- (1) This item shall consist of all common excavation required from the borrow areas for obtaining fill materials needed for construction of the permanent works.
- (2) All borrow pits shall be graded to prevent the ponding of water and finished in a workmanlike manner.
- (3) Excavation from the borrow area will be from the location shown on the plans or as selected by the engineer.
- (4) No separate payment will be made for borrow excavation. Compensation for this item will be included in the payment for Earth Fill, Class A, Intake Works, Bid Item 4.

d. Randall RC&D 88, Subsidiary Item, Excavation, Common, Pipeline

- (1) This item shall consist of all excavation required to install all of the pipelines including fittings and thrust blocks except the corrugated metal intake pipe as shown on the plans.
- (2) No separate payment will be made for this item. Compensation for this item will be included in the payment for pipes, Bid Items 13, 14, 15, 16, 17, 18, 19, 25 as appropriate.

CONSTRUCTION SPECIFICATION

25. EARTH FILL

1. SCOPE

The work shall consist of the construction of earth embankments and other earth fills required by the drawings and specifications.

2. MATERIALS

All fill materials shall be obtained from required excavations and designated borrow areas. The selection, blending, routing and disposition of materials in the various fills shall be subject to approval by the Engineer.

Fill materials shall contain no sod, brush, roots or other perishable materials. Rock particles larger than the maximum size specified for each type of fill shall be removed prior to compaction of the fill.

The types of materials used in the various fills shall be as listed and described in the specifications and drawings.

3. FOUNDATION PREPARATION

Foundations for earth fill shall be stripped to remove vegetation and other unsuitable materials or shall be excavated as specified.

Except as otherwise specified, earth foundation surfaces shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill or otherwise acceptably scored and loosened to a minimum depth of 2 inches. The moisture content of the loosened material shall be controlled as specified for the earth fill, and the surface materials of the foundation shall be compacted and bonded with the first layer of earth fill as specified for subsequent layers of earth fill.

Earth abutment surfaces shall be free of loose, uncompacted earth in excess of two inches in depth normal to the slope and shall be at such a moisture content that the earth fill can be compacted against them to effect a good bond between the fill and the abutments.

Rock foundation and abutment surfaces shall be cleared of all loose materials by hand or other effective means and shall be

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free of standing water when fill is placed upon them. Occasional rock outcrops in earth foundations for earth fill, except in dams and other structures designed to restrain the movement of water, shall not require special treatment if they do not interfere with compaction of the foundation and initial layers of the fill or the bond between the foundation and the fill.

Foundation and abutment surfaces shall be not steeper than 1 horizontal to 1 vertical unless otherwise specified. Test pits or other cavities shall be filled with compacted earth fill conforming to the specifications for the earth fill to be placed upon the foundation.

4. PLACEMENT

Fill shall not be placed until the required excavation and foundation preparation have been completed and the foundation has been inspected and approved by the Engineer. Fill shall not be placed upon a frozen surface, nor shall snow, ice, or frozen material be incorporated in the fill.

Fill shall be placed in approximately horizontal layers. The thickness of each layer before compaction shall not exceed the maximum thickness specified. Materials placed by dumping in piles or windrows shall be spread uniformly to not more than the specified thickness before being compacted. Hand compacted fill, including fill compacted by manually directed power tampers, shall be placed in layers not more than 4 inches thick before compaction.

Adjacent to structures, fill shall be placed in a manner which will prevent damage to the structures and will allow the structures to assume the loads from the fill gradually and uniformly. The height of the fill adjacent to a structure shall be increased at approximately the same rate on all sides of the structure.

Earth fill in dams, levees and other structures designed to restrain the movement of water shall be placed so as to meet the following additional requirements:

- a. The distribution of materials throughout each zone shall be essentially uniform, and the fill shall be free from lenses, pockets, streaks or layers of material differing substantially in texture or gradation from the surrounding material.

(23-2)

- b. 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 2 inches before the next layer is placed.
- c. The top surfaces of embankments shall be maintained approximately level during construction, except that a crown or cross-slope of not less than 2 percent shall be maintained to insure effective drainage, and except as otherwise specified for drain fill zones. If the drawings or specifications require or the Engineer directs that fill be placed at a higher level in one part of an embankment than another, the top surface of each part shall be maintained as specified above.
- d. Dam embankments shall be constructed in continuous layers from abutment to abutment except where openings to facilitate construction or to allow the passage of stream flow during construction are specifically authorized in the contract.
- e. Embankments built at different levels as described under c or d above shall be constructed so that the slope of the bonding surfaces between embankment in place and embankment to be placed is not steeper than 3 feet horizontal to 1 foot vertical. The bonding surface of the embankment in place shall be stripped of all loose material, and shall be scarified, moistened and recompacted when the new fill is placed against it as needed to insure a good bond with the new fill and to obtain the specified moisture content and density in the junction of the in place and new fill.

5. CONTROL OF MOISTURE CONTENT

During placement and compaction of fill, the moisture content of the materials being placed shall be maintained within the specified range.

The application of water to the fill materials shall be accomplished at the borrow areas insofar as practicable. Water may be applied by sprinkling the materials after placement on the fill, if necessary. Uniform moisture distribution shall be obtained by discing, blading or other approved methods prior to compaction of the layer.

Material that is too wet when deposited on the fill shall either be removed or be dried to the specified moisture content prior to compaction.

If the top surface of a preceding layer of compacted fill or a foundation or abutment surface in the zone of contact with the fill becomes too dry to permit suitable bond it shall be scarified and moistened by sprinkling to an acceptable moisture content prior to placement of the next layer of fill.

6. COMPACTION

Earth fill shall be compacted according to the following requirements for the class of compaction specified:

Class A compaction. Each layer of fill shall be compacted as necessary to make the density of the fill matrix not less than the minimum density specified. The fill matrix is defined as the portion of the fill material finer than the maximum particle size used in the compaction test method specified.

Class B compaction. Each layer of fill shall be compacted to a mass density not less than the minimum density specified.

Class C compaction. Each layer of fill shall be compacted by the specified number of passes of the type and weight of roller specified, or by an approved equivalent method. Each pass shall consist of at least one passage of the roller wheel or drum over the entire surface of the layer.

Adjacent to structures, compaction of fill shall be accomplished by means of hand tamping or manually directed power tampers or plate vibrators. Heavy equipment shall not be operated within 2 feet of any structure. Vibrating rollers shall not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane or hoist will not be permitted.

The passage of heavy equipment will not be allowed: (1) over cast-in-place conduits prior to 14 days after placement of the concrete; (2) over cradled precast conduits prior to 7 days after placement of the concrete cradle; or (3) over any type of conduit until the backfill has been placed above the top surface of the structure to a height equal to one-half the clear span width of the structure or pipe or 2 feet, whichever is greater.

Compacting of fill adjacent to structures shall not be started until the concrete has attained the strength specified in Section 10 for this purpose. The strength will be determined by compression testing of test cylinders cast by the Engineer for this purpose and cured at the work site in the manner specified in ASTM Method C 31 for determining when a structure may be put into service.

When the required strength of the concrete is not specified as described above, compaction of fill adjacent to structures shall not be started until the following time intervals have elapsed after placement of the concrete.

<u>Structure</u>	<u>Time Interval</u>
Walls and counterforts	10 days
Conduits and spillway risers, cast-in-place (with inside forms in place)	7 days
Conduits, precast, cradled	2 days
Conduits, precast, bedded	1 day
Antiseep collars and cantilever outler bents	3 days

7. REMOVAL AND PLACEMENT OF DEFECTIVE FILL

Fill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements or removed and replaced by acceptable fill. The replacement fill and the foundation, abutment and fill surfaces upon which it is placed shall conform to all requirements of this specification for foundation preparation, approval, placement, moisture control and compaction.

8. TESTING

During the course of the 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 will be used to verify that the fills conform to the requirements of the specifications. Such tests are not intended to provide the Contractor with the information required by him for the proper execution of the work and their performance shall not relieve the Contractor of the necessity to perform tests for that purpose.

Densities of fill requiring Class A compaction will be determined by the Engineer in accordance with ASTM Method D 1556 (or by equivalent methods), except that the volume and moist weight of included rock particles larger than those used in the compaction test method specified for the type of fill will be determined and deducted from the volume and moist weight of the total sample prior to computation of density. The density so computed will be used to determine the percent compaction of the fill matrix.

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9. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the volume of each type and compaction class of earth fill within the specified zone boundaries and pay limits will be measured and computed to the nearest cubic yard by the method of average cross-sectional end areas. Unless otherwise specified, no deduction in volume will be made for embedded conduits and appurtenances.

The pay limits shall be as defined below, with the further provision that earth fill required to fill voids resulting from overexcavation of the foundation, outside the specified lines and grades, will be included in the measurement for payment only where such overexcavation is directed by the Engineer to remove unsuitable material and where the unsuitable condition is not a result of the Contractor's operations.

Method 1. The pay limits shall be the measured surface of the foundation when approved for placement of the fill and the specified neat lines of the fill surface.

Method 2. The pay limits shall be the specified pay limits for excavation and the specified neat lines of the fill surface.

Payment for each type and compaction class of earth fill will be made at the contract unit price for that type and compaction class of fill. Such payment will constitute full compensation for all labor, materials, equipment and all other items necessary and incidental to the performance of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 10 of this specification.

10. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D-88, Bid Item 4, Earth Fill, Class A, Intake Works

- (1) This item shall consist of construction of the earth fill required for backfilling the intake pipe trench and for the dike embankment as shown on the drawings.
- (2) The foundation area of the dike shall be scarified or plowed to a minimum depth of 6 inches. Moisture shall be added as necessary to facilitate compaction. The surface shall be firmly compacted.
- (3) Topsoil shall be placed on exposed earth fill slopes within the neat lines in accordance with Construction Specification 26.
- (4) Compaction of fill adjacent to the riser may begin only after the expiration of 3 days after placement of concrete.
- (5) Tamping (sheepfoot) rollers shall be used to obtain the required compaction of all fill located more than 2 feet from any structure.
- (6) Items of work subsidiary to this item include:
 - (a) Excavation, Incidental Structure - Construction Specification 21
 - (b) Excavation, Borrow - Construction Specification 21
 - (c) Earth Fill, Structure Backfill - Construction Specification 23
- (7) Measurement and payment will be by Method 2.

b. Randall RC&D 88, Subsidiary Item, Earth Fill, Structure Backfill

- (1) This item shall consist of placing Class A, Earth Fill as necessary to complete the installation of the trash guard, riser footing, building floor, building, pipe supports, fuel tank, impact block, and to provide pipe bedding as shown on the drawings.
- (2) No separate payment will be made for this item. Compensation for this item will be included in the payment for Earth Fill, Class A, Intake Works, Bid Item 4.

c. Randall RC&D 88, Subsidiary Item, Earth Fill, Pipeline Backfill

- (1) This item shall consist of backfilling and overfilling the main distribution pipe, drain pipes, pressure relief pipe, outlet pipe, thrust blocks and fuel line pipe trenches to a depth of one foot above ground elevation.
- (2) The fill shall be compacted by driving construction equipment over the fill after the excavation is full of loose fill material. After this compaction is completed the excavation shall be over-filled to a depth of one foot above the existing ground elevation and the compaction process repeated until the compacted fill elevation is one foot above natural ground.
- (3) Use materials excavated from trench to refill the trench unless otherwise approved by the engineer
- (4) Shape the final ground surface by diking so that surface water does not flow more than 25 feet along the centerline of pipe trench.
- (5) No separate payment will be made for this item. Compensation for this item will be included in the payment for pipes, Bid Items 13, 14, 15, 16, 17, 18, 19, 25 as appropriate.

CONSTRUCTION SPECIFICATION

26. SALVAGING AND SPREADING TOPSOIL

1. SCOPE

The work shall consist of salvaging topsoil from borrow pits or required excavations and spreading it on the areas shown on the drawings to the specified depths.

2. QUALITY OF TOPSOIL

Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones or other foreign materials.

3. EXCAVATION

After the site has been cleared and grubbed the topsoil shall be removed from the designated areas and shall be stockpiled at locations approved by the Engineer. Objectionable materials encountered during excavation shall be removed and buried at locations approved by the Engineer or otherwise removed from the construction site.

4. SPREADING

Spreading shall not be done when the ground or topsoil is frozen, excessively wet or otherwise in a condition detrimental to the work. Surfaces designated to be covered shall be lightly scarified just prior to the spreading operation. Where compacted fills are designated to be covered by topsoil, the topsoil shall be placed concurrently with the fill and shall be bonded to the compacted fill with the compacting equipment.

After placement is completed the surface of the topsoil shall be finished to a reasonably smooth surface.

5. MEASUREMENT AND PAYMENT

The total area of the surfaces covered by topsoil will be computed to the nearest square yard except that the areas of the surfaces of embankments, levees, dikes and other earth fills will not be included for payment. Payment for salvaging and placing topsoil will be made at the contract unit price. Such payment will constitute full payment for all materials, labor and equipment and all other items necessary and incidental to the completion of the work, including excavating, stockpiling, hauling, and spreading.

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Payment for topsoil spread on the surfaces of embankments, levees, dikes and other earth fills will be considered as included in the payment for the item of earth fill under which the embankment, levee, dike or other earth fill is constructed.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 6 of this specification.

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6. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor shall consist of salvaging of selected topsoil from the intake pipe trench and borrow excavations and placing and spreading it on all exposed intake pipe trench earth fill, to a depth of approximately 6 to 18 inches measured normal to the surface.

CONSTRUCTION SPECIFICATION

31. CONCRETE

1. SCOPE

The work shall consist of furnishing, forming, placing, finishing and curing portland cement concrete as required to build the structures named in Section 26 of this specification.

2. MATERIALS

Portland cement shall conform to the requirements of Material Specification 531 for the specified type. One brand only of any type of cement shall be used in any single structure as defined in Section 26.

Aggregates shall conform to the requirements of Material Specification 522 unless otherwise specified. The grading of coarse aggregates shall be as specified in Section 26.

Water used in mixing or curing concrete shall be clean and free from injurious amounts of oil, salt, acid, alkali, organic matter or other deleterious substances.

Air-entraining admixtures shall conform to the requirements of Material Specification 532. If air-entraining cement is used, any additional air-entraining admixture shall be of the same type as that in the cement.

Water-reducing, set-retarding admixtures shall conform to the requirements of Material Specification 533.

Shear plates shall conform to the requirements of Material Specification 581 for structural quality or commercial or merchant quality steel. Structural quality shall be used if specifically designated in the drawings or specifications.

Preformed expansion joint filler shall conform to the requirements of Material Specification 535.

Waterstops shall conform to the requirements of Material Specifications 537 and 538 for the specified kinds.

Curing compound shall conform to the requirements of Material Specification 534.

3. CLASSES OF CONCRETE

Concrete shall be classified according to the required compressive strength as tabulated below. The strength of the concrete at 28 days shall equal or exceed the tabulated Minimum Compressive Strength at 28 days for the class of concrete specified.

<u>Class of Concrete</u>	<u>Minimum Compressive Strength at 28 days (psi)</u>
5000	5000
4000	4000
3000	3000
2500	2500

4. AIR CONTENT AND CONSISTENCY

Unless otherwise specified, the air content (by volume) of the concrete at the time of placement shall be:

<u>Maximum Size Aggregate</u>	<u>Air Content (%)</u>
3/8 inch to 1/2 inch	6 to 9
Over 1/2 inch to 1 inch	5 to 8
Over 1 inch to 2 1/2 inches	4 to 7

The consistency of the concrete shall be such as to allow it to be worked into place without segregation or excessive laitance. Unless otherwise specified, the slump shall be:

<u>Type of Structure</u>	<u>Slump (inches)</u>
Massive sections, pavements, footings	2 ± 1/2
Heavy beams, thick slabs, thick walls (over 12 in.)	3 ± 1/2
Columns, light beams, thin slabs, thin walls (12 in. or less)	4 ± 1

5. DESIGN OF THE CONCRETE MIX

The Contractor will be responsible for the design of the concrete mixtures. At least 5 days prior to any placement of concrete he shall furnish the Contracting Officer a statement of the materials and mix proportions (including admixtures, if any) he intends to

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use for each specified class of concrete. The statement shall include evidence satisfactory to the Engineer that the materials and proportions selected will produce concrete of the quality, consistency and strength specified. The materials and proportions so stated shall constitute the "job mix." After a job mix has been designated, neither the source, character or grading of the aggregates nor the type or brand of cement or admixture shall be changed without prior notice to the Engineer.

When specified, a water-reducing, set-retarding admixture shall be used. When conditions are such that the temperature of the concrete at the time of placement is consistently above 75°F, a water-reducing, set-retarding admixture may be used, at the option of the Contractor. The cement content shall be same as that required in the mix without the admixture.

6. INSPECTING AND TESTING

The following tests will be performed by the methods indicated:

<u>Test</u>	<u>Method</u> <u>(ASTM Designation)</u>
Sampling	C 172 ¹
Slump Test	C 143 ¹
Air Content	C 231 ¹ or C 173 ¹
Compression Test Specimens	C 31 ¹ or C 42
Compressive Strength	C 39 ² or C 42
Unit Weight	C 138

¹Tests of a portion of a batch may be made on samples representative of that portion for any of the following purposes:

- (1) Determining uniformity of the batch.
- (2) Checking compliance with requirements for slump and air content when the batch is discharged over an extended period of time.
- (3) Checking compliance of the concrete with the specifications when the whole amount being placed in a small structure, or a distinct portion of a larger structure, is less than a full batch.

²For each strength test of specimens made according to ASTM Designation C 31, 3 standard test specimens shall be made. The test result shall be the average of the strengths of the 3 specimens, except that if one specimen in the test shows manifest

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evidence of improper sampling, molding or testing, it shall be discarded and the strengths of the remaining 2 specimens shall be averaged. Should more than one specimen representing a test show such defects, the entire test shall be discarded.

The Engineer shall have free entry to the plant and equipment furnishing concrete under the contract. Proper facilities shall be provided for the Engineer to inspect materials, equipment and processes and to obtain samples of the concrete. All tests and inspections will be conducted so as not to interfere unnecessarily with the manufacture and delivery of the concrete.

7. HANDLING AND MEASUREMENT OF MATERIALS

Aggregates shall be stored or stockpiled in such a manner that separation of coarse and fine particles of each size will be avoided and that various sizes will not become intermixed before proportioning. Methods of handling and transporting aggregates shall be such as to avoid contamination, excessive breakage, segregation or degradation, or intermingling of various sizes.

Scales for weighing aggregates and cement shall be beam type or springless dial type. They shall be accurate within 1 percent under operating conditions. All exposed fulcrums, clevises and similar working parts of scales shall be kept clean.

The quantities of cement and aggregates in each batch of concrete, as indicated by the scales shall be within the following percentages of the required batch weights:

Cement - plus or minus 1.0 percent

Aggregates - plus or minus 2.0 percent

Measuring tanks for mixing water shall be of adequate capacity to furnish the maximum amount of mixing water required per batch and shall be equipped with outside taps and valves to provide for checking their calibration unless other means are provided for readily and accurately determining the amount of water in the tank.

Cement shall be measured by weight or in bags of 94 lbs. each. When cement is measured by weight, it shall be weighed on a scale separate from that used for other materials, and in a hopper entirely free and independent of the hopper used for weighing the aggregates. When cement is measured in bags, no fraction of a bag shall be used unless weighed.

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Aggregates shall be measured by weight. Batch weights shall be based on dry materials and shall be the required weights of dry materials plus the total weight of moisture (both absorbed and surface) contained in the aggregate.

Mixing water shall consist of water added to the batch, ice added to the batch, water occurring as surface moisture on the aggregates and water introduced in the form of admixtures. The added water shall be measured by weight or volume to an accuracy of 1 percent of the required total mixing water. Added ice shall be measured by weight. Wash water shall not be used as a portion of the mixing water for succeeding batches.

Dry admixtures shall be measured by weight, and paste or liquid admixtures by weight or volume, within a limit of accuracy of 3 percent.

8. MIXERS AND MIXING

Concrete may be furnished by batch mixing at the site of the work or by ready-mix methods.

Mixers shall be capable of thoroughly mixing the concrete ingredients into a uniform mass within the specified mixing time and of discharging the mix without segregation. Each mixer or agitator shall bear a manufacturer's rating plate indicating the rated capacity and recommended speeds of rotation, and shall be operated in accordance with these recommendations.

Concrete shall be uniform and thoroughly mixed when delivered to the work. Variations in slump of more than 1 inch within a batch will be considered evidence of inadequate mixing and shall be corrected by changing batching procedures, increasing mixing time, changing mixers or other means. Mixing time shall be within the limits specified below unless the Contractor demonstrates by mixer performance tests that adequate uniformity is obtained by different times of mixing. For this purpose the testing program and uniformity requirements shall be as set forth in ASTM Designation C 94.

No mixing water in excess of the amount called for by the job mix shall be added to the concrete during mixing or hauling or after arrival at the delivery point.

Batch mixing at the site. For concrete mixed at the site of the work with paving mixers or stationary construction mixers, the time of mixing after all cement and aggregates are in the mixer drum shall be not less than $1\frac{1}{2}$ minutes.

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The batch shall be so charged into the mixer that some water will enter in advance of the cement and aggregates and all mixing water shall be introduced into the drum before one-fourth of the mixing time has elapsed.

Controls shall be provided to insure that the batch cannot be discharged until the required mixing time has elapsed.

If truck mixers are used, the requirements below for truck mixers and truck-mixed concrete shall apply.

Ready-mixed concrete. Ready-mixed concrete shall be mixed and delivered to the site of the work by one of the following methods:

- a. Truck-mixed concrete--Mixed completely in a truck mixer.
- b. Shrink-mixed concrete--Mixed partially in a stationary mixer, and the mixing completed in a truck mixer.
- c. Central-mixed concrete--Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in a truck agitator or in a truck mixer operating at agitating speed or in nonagitating equipment.

Truck mixers and agitators shall be equipped with revolution counters by which the number of revolutions of the drum or blades may be readily verified.

When ready-mixed concrete is furnished, the Contractor shall furnish the Engineer a statement-of-delivery ticket showing the time of loading, the revolution counter reading at the time of loading and the quantities of materials used for each load of concrete.

Truck-mixed concrete. When concrete is mixed in a truck mixer loaded to its maximum capacity, the number of revolutions of the drum or blades at mixing speed shall be not less than 70 nor more than 100. If the batch is at least 1/2 cubic yard less than maximum capacity, the number of revolutions at mixing speed may be reduced to not less than 50. Mixing in excess of 100 revolutions shall be at the speed designated by the manufacturer of the equipment as agitating speed. The mixing operation shall begin within 30 minutes after the cement has been added to the aggregates and the water shall be added during mixing. When

mixing is begun during or immediately after charging, a portion of the mixing water shall be added ahead of, or with, the other ingredients.

Shrink-mixed concrete. When concrete is partially mixed at a central plant and the mixing is completed in a truck mixer, the mixing time in the central plant mixer shall be the minimum required to intermingle the ingredients and shall be not less than 30 seconds. The mixing shall be completed in a truck mixer and the number of revolutions of the drum or blades at mixing speed shall be not less than 50 nor more than 100. Mixing in excess of 100 revolutions shall be at the speed designated by the manufacturer of the equipment as agitating speed.

Central-mixed concrete. For central-mixed concrete, mixing in the stationary mixer shall meet the same requirements as batch mixing at the site.

When an agitator, or truck mixer used as an agitator, transports concrete that has been completely mixed in a stationary mixer, mixing during transportation shall be at the speed designated by the manufacturer of the equipment as agitating speed.

The use of nonagitating equipment to transport concrete to the site of the work will be permitted only if the consistency and uniformity of the concrete as discharged at the point of delivery meet the requirements of this specification. Bodies of nonagitating hauling equipment shall be so constructed that leakage of the concrete mix, or any part thereof, will not occur. Concrete hauled in open-top vehicles shall be protected against access of rain, and against exposure to the sun of more than 20 minutes when the air temperature is above 75°F.

9. FORMS

Forms shall be of wood, plywood, steel or other approved material and shall be mortar tight. The forms and associated falsework shall be substantial and unyielding and shall be constructed so that the finished concrete will conform to the specified dimensions and contours. Form surfaces shall be smooth and free from holes, dents, sags or other irregularities. Forms shall be coated with a nonstaining form oil before being set into place.

(31-7)

Metal ties or anchorages within the forms shall be equipped with cones, she-bolts or other devices that permit their removal to a depth of at least one inch without injury to the concrete.

10. PREPARATION OF FORMS AND SUBGRADE

Prior to placement of concrete the forms and subgrade shall be free of chips, sawdust, debris, water, ice, snow, extraneous oil, mortar, or other harmful substances or coatings. Any oil on the reinforcing steel or other surfaces required to be bonded to the concrete shall be removed. Rock surfaces shall be cleaned by air-water cutting, wet sandblasting or wire brush scrubbing, as necessary, and shall be wetted immediately prior to placement of concrete. Earth surfaces shall be firm and damp. Placement of concrete on mud, dried earth, uncompacted fill or frozen subgrade will not be permitted.

Unless otherwise specified, when concrete is to be placed over drain fill, the contact surface of the drain fill shall be covered with a layer of asphalt-impregnated building paper or polyvinyl sheeting prior to placement of the concrete. Forms for weepholes shall extend through this layer into the drain fill.

Items to be embedded in the concrete shall be positioned accurately and anchored firmly.

Weepholes in walls or slabs shall be formed with nonferrous materials.

11. CONVEYING

Concrete shall be delivered to the site and discharged into the forms within $1\frac{1}{2}$ hours after the introduction of the cement to the aggregates. In hot weather or under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85°F or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed 45 minutes. The Engineer may allow a longer time, provided the setting time of the concrete is increased a corresponding amount by the addition of an approved set-retarding admixture. In any case, concrete shall be conveyed from the mixer to the forms as rapidly as practicable, by methods that will prevent segregation of the aggregates or loss of mortar. Concrete shall not be dropped more than 5 feet vertically unless suitable equipment is used to prevent segregation.

12. PLACING

Concrete shall not be placed until the subgrade, forms and steel reinforcement have been inspected and approved.

The Contractor shall have all equipment and materials required for curing available at the site ready for use before placement of concrete begins.

No concrete shall be placed except in the presence of the Engineer. The Contractor shall give reasonable notice to the Engineer each time he intends to place concrete. Such notice shall be far enough in advance to give the Engineer adequate time to inspect the subgrade, forms, steel reinforcement and other preparations for compliance with the specifications before concrete is delivered for placing.

The concrete shall be deposited as closely as possible to its final position in the forms and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. The depositing of concrete shall be regulated so that the concrete may be consolidated with a minimum of lateral movement.

Internal stays and braces, serving temporarily to hold the forms in correct shape and alignment prior to placement of concrete at their locations, shall be removed when the concrete has been placed to an elevation such as to render their service unnecessary.

13. LAYERS

Unless otherwise specified, slab concrete shall be placed to design thickness in one continuous layer. Formed concrete shall be placed in horizontal layers not more than 20 inches thick. Hoppers and chutes, pipes or "elephant trunks" shall be used as necessary to prevent splashing of mortar on the forms and reinforcing steel above the layer being placed.

Successive layers shall be placed at a fast enough rate to prevent the formation of "cold joints." If the surface of a layer of concrete in place sets to the degree that it will not flow and merge with the succeeding layer when vibrated, the Contractor shall discontinue placing concrete and shall make a construction joint according to the procedure specified in Section 15.

If placing is discontinued when an incomplete layer is in place, the unfinished end of the layer shall be formed by a vertical bulkhead.

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14. CONSOLIDATING

Unless otherwise specified, concrete shall be consolidated with internal type mechanical vibrators capable of transmitting vibration to the concrete at frequencies not less than 6000 impulses per minute.

The location, manner and duration of the application of the vibrators shall be such as to secure maximum consolidation of the concrete without causing segregation of the mortar and coarse aggregate, and without causing water or cement paste to flush to the surface.

The Contractor shall provide a sufficient number of vibrators to properly consolidate the concrete immediately after it is placed in the work. Vibration shall be applied in the freshly deposited concrete by slowly inserting and removing the vibrator at points uniformly spaced and not farther apart than twice the radius over which the vibration is visibly effective. The vibrator shall extend into the previously placed layer of fresh concrete, at all points, to insure effective bond between layers.

Vibration shall not be applied directly to the reinforcement steel or the forms nor to concrete that has hardened to the degree that it does not become plastic when vibrated.

The use of vibrators to transport concrete in the forms or conveying equipment will not be permitted.

Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners and around embedded items.

15. CONSTRUCTION JOINTS

Construction joints shall be made at the locations shown on the drawings. If construction joints are needed which are not shown on the drawings, they shall be placed in locations approved by the Engineer.

Where a feather edge would be produced at a construction joint, as in the top surface of a sloping wall, an insert form shall be used so that the resulting edge thickness on either side of the joint is not less than 6 inches.

(31-10)

In walls and columns as each lift is completed, the top surfaces shall be immediately and carefully protected from any condition that might adversely affect the hardening of the concrete.

Steel tying and form construction adjacent to concrete in place shall not be started until the concrete has cured at least 12 hours. Before new concrete is deposited on or against concrete that has hardened, the forms shall be retightened. New concrete shall not be placed until the hardened concrete has cured at least 12 hours.

Surfaces of construction joints shall be cleansed of all unsatisfactory concrete, laitance, coatings, stains, or debris by washing and scrubbing with a wire brush or wire broom or by other means approved by the Engineer.

The surfaces shall be kept moist for at least one hour prior to placement of new concrete. The new concrete shall be placed directly on the cleaned and washed surface.

16. EXPANSION AND CONTRACTION JOINTS

Expansion and contraction joints shall be made only at locations shown on the drawings.

Exposed concrete edges at expansion and contraction joints shall be carefully tooled or chamfered, and the joints shall be free of mortar and concrete. Joint filler shall be left exposed for its full length with clean and true edges.

When open joints or weakened plane "dummy" joints are specified, the joints shall be constructed by the insertion and subsequent removal of a wood strip, metal plate or other suitable template in such a manner that the corners of the concrete will not be chipped or broken. The edges of the concrete at the joints shall be finished with an edging tool prior to removal of the joint strips.

Preformed expansion joint filler shall be held firmly in the correct position as the concrete is placed.

17. WATERSTOPS

Waterstops shall be held firmly in the correct position as the concrete is placed. Joints in metal waterstops shall be brazed or welded. Joints in rubber or plastic waterstops shall be cemented, welded or vulcanized as recommended by the manufacturer.

(31-11)

18. REMOVAL OF FORMS

Forms shall be removed only when the Engineer is present and shall not be removed without his approval. Forms shall be removed in such a way as to prevent damage to the concrete. Supports shall be removed in a manner that will permit the concrete to take the stresses due to its own weight uniformly and gradually.

Forms shall not be removed before the expiration of the following minimum time intervals after placement of the concrete, exclusive of days when the minimum temperature of air adjacent to the concrete is below 40°F:

<u>Element</u>	<u>Time</u>
Arch or beam bottom forms and temporary supports	11 days
Deck slabs; conduits and spillway risers (inside forms)	14 days
Conduits and spillway risers (outside forms); small structures	3 days
Columns, bearing walls	7 days
Nonbearing walls with no side load; sides of beams	24 hours

19. FINISHING FORMED SURFACES

All concrete surfaces shall be true and even, and shall be free from open or rough spaces, depressions or projections.

Immediately after the removal of forms:

All bulges, fins, form marks or other irregularities which in the judgment of the Engineer will adversely affect the appearance or function of the structure shall be removed. All form bolts and ties shall be removed to a depth at least 1 inch below the surface of the concrete. The cavities produced by form ties and all other holes of similar size and depth shall be thoroughly cleaned and, after the interior surfaces have been kept continuously wet for at least 3 hours, shall be carefully packed with a dry patching mortar (preshrunk) mixed not richer than 1 part cement to 3 parts sand.

Holes left by form bolts or straps which pass through the wall shall be filled solid with mortar.

(31-12)

Patching mortar shall be thoroughly compacted into place to form a dense, well-bonded unit, and the in-place mortar shall be sound and free from shrinkage cracks.

All patched areas shall be cured as specified in Section 21.

20. FINISHING UNFORMED SURFACES

All exposed surfaces of the concrete shall be accurately screeded to grade and then wood float finished, unless specified otherwise.

Excessive floating or troweling while the concrete is soft will not be permitted.

The addition of dry cement or water to the surface of the screeded concrete to expedite finishing will not be allowed.

Joints and edges on unformed surfaces that will be exposed to view shall be chamfered or finished with molding tools.

21. CURING

Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period or until curing compound is applied as specified below. Moisture shall be maintained by sprinkling, flooding or fog spraying, or by covering with continuously moistened canvas, cloth mats, straw, sand or other approved material. Wood forms (except plywood) left in place during the curing period shall be kept wet. Formed surfaces shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged.

Water for curing shall be clean and free from any substances that will cause discoloration of the concrete.

Except as otherwise specified in Section 24, and except for construction joint surfaces, concrete may be coated with curing compound in lieu of the continued application of moisture.

The compound shall be sprayed on the moist concrete structure as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs and finishing of that surface are completed.

The curing compound shall be thoroughly mixed immediately before applying, and shall be applied at a uniform rate of not less than one gallon per 150 square feet of surface. It shall form a uniform, continuous, adherent film that shall not check, crack or peel, and shall be free from pin holes or other imperfections.

Curing compound shall not be applied to surfaces requiring bond with subsequently placed concrete, such as construction joints, shear plates, reinforcing steel and other embedded items.

Surfaces subjected to heavy rainfall or running water within 3 hours after the compound has been applied, or surfaces damaged by subsequent construction operations during the curing period shall be resprayed in the same manner as for the original application.

22. REMOVAL OR REPAIR

When concrete is honeycombed, damaged or otherwise defective, the Contractor shall remove and replace the structure or structural member containing the defective concrete, or correct or repair the defective parts. The Engineer will determine the required extent of removal, replacement or repair.

Prior to starting repair work the Contractor shall obtain the Engineer's approval of his plan for making the repair. Such approval shall not be considered a waiver of the Contracting Officer's right to require complete removal of defective work if the completed repair does not produce concrete of the required quality and appearance.

Repair work shall be performed only when the Engineer is present.

Repair of formed surfaces shall be started within 24 hours after removal of the forms.

Except as otherwise approved by the Engineer, the appropriate methods described in Chapter VII of the Concrete Manual, Bureau of Reclamation, U. S. Department of the Interior, shall be used. If approved in writing by the Contracting Officer, proprietary compounds for adhesion or as patching ingredients may be used. Such compounds shall be used in accordance with the manufacturer's recommendations.

Curing as specified in Section 21 shall be applied to repaired areas immediately after the repairs are completed.

(31-14)

23. CONCRETING IN COLD WEATHER

When the atmospheric temperature may be expected to drop below 40°F at the time concrete is delivered to the work site, during placement, or at any time during the curing period, the following provisions also shall apply:

- a. The temperature of the concrete at time of placing shall not be less than 50°F nor more than 90°F. The temperature of neither aggregates nor mixing water shall be more than 100°F just prior to mixing with the cement.
- b. When the daily minimum temperature is less than 40°F, concrete structures shall be insulated or housed and heated after placement. The temperature of the concrete and air adjacent to the concrete shall be maintained at not less than 50°F nor more than 90°F for the duration of the curing period.
- c. Methods of insulating, housing and heating the structure shall conform to "Recommended Practice for Cold Weather Concreting," ACI Standard 305.
- d. The use of accelerators or antifreeze compounds will not be allowed.
- e. When dry heat is used to protect concrete, means of maintaining an ambient humidity of at least 40 percent shall be provided unless the concrete has been coated with curing compound as specified in Section 21 or is covered tightly with an approved impervious material.

24. CONCRETING IN HOT WEATHER

When climatic or other conditions are such that the temperature of the concrete may reasonably be expected to exceed 90°F at the time of delivery at the work site, during placement, or during the first 24 hours after placement, the following provisions also shall apply:

- a. The Contractor shall maintain the temperature of the concrete below 90°F during mixing, conveying, and placing. Methods used shall conform to "Recommended Practice for Hot Weather Concreting," ACI Standard 605.
- b. The concrete shall be placed in the work immediately after mixing. Truck mixing shall be delayed until only time enough remains to accomplish it before the concrete is placed.

(31-15)

- c. Exposed concrete surfaces which tend to dry or set too rapidly shall be continuously moistened by means of fog sprays or otherwise protected from drying during the time between placement and finishing, and after finishing.
- d. Finishing of slabs and other exposed surfaces shall be started as soon as the condition of the concrete allows and shall be completed without delay.
- e. Concrete surfaces exposed to the air shall be covered as soon as the concrete has hardened sufficiently and shall be kept continuously wet for at least the first 24 hours of the curing period, and for the entire curing period unless curing compound is applied as specified in subsection g, below.
- f. Formed surfaces shall be kept completely and continuously wet for the duration of curing period (prior to, during and after form removal) or until curing compound is applied as specified in subsection g, below.
- g. If moist curing is discontinued before the end of the curing period, white pigmented curing compound shall be applied immediately, following the procedures specified in Section 21.

25. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, concrete will be measured to the neat lines or pay limits shown on the drawings, and the volume of concrete will be computed to the nearest 0.1 cubic yard. No deduction in volume will be made for chamfers, rounded or beveled edges, or for any void or embedded item that is less than five cubic feet in volume. Where concrete is placed against the sides or bottom of an excavation without intervening forms, drain fill, or bedding, the volume of concrete required to fill voids resulting from overexcavation outside the neat lines or pay limits will be included in the measurement for payment where such overexcavation is directed by the Engineer to remove unsuitable foundation material, but only to the extent that the unsuitable condition is not a result of the Contractor's operations.

Payment for each item of concrete will be made at the contract unit price for that item. The payment for concrete will constitute full compensation for all labor, materials, equipment, transportation, tools, forms, falsework, bracing and all other

items necessary and incidental to completion of the concrete work, such as joint fillers, waterstops, dowels and dowel assemblies and shear plates, but not including reinforcing steel.

Measurement and payment for furnishing and placing reinforcing steel will be made as specified in Construction Specification 34.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 26 of this specification.

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26. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 9, Concrete, Class 400?

- (1) This item shall consist of furnishing and placing concrete for all concrete structure parts except thrust blocks for asbestos cement pipe, engine support blocks and pole footings for building. This item includes the trash guard, riser footing, building floor, impact blocks for steel pipe.
- (2) Cement shall be type II and shall contain not more than 0.60 percent alkalies calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O .
- (3) Air-entraining compound shall be batched in solution in a portion of the mixing water.
- (4) Preformed expansion joint filler shall be the sponge rubber type.
- (5) The aggregate shall conform to the requirements of Material Specification 522, and the size grading of the coarse aggregate shall be size no. 57.
- (6) Unless approved aggregate sources are used, or satisfactory laboratory evidence is submitted to the engineer showing the aggregate proposed for use in concrete is not potentially reactive, the coarse aggregate used in the concrete mix shall consist of a minimum of 30% coarse limestone by weight.

A list of approved aggregate sources:

- (a) L. G. Everist Company, Hawarden, Iowa
(pit located in $\text{W}\frac{1}{2}$, $\text{NE}\frac{1}{4}$ Sec. 27, T95N, R48W)
- (b) Concrete Materials Company, Sioux Falls, South Dakota
(pit located in $\text{NE}\frac{1}{4}$, $\text{NE}\frac{1}{4}$ Sec. 11, T101N, R49W)
- (c) Eagle Sand and Gravel Company, Sioux Falls, S. Dak.
(pit located in $\text{SE}\frac{1}{4}$, $\text{SW}\frac{1}{4}$ Sec. 11, T101N, R49W)
- (d) The Sioux Quartzite precambrian geologic formation anywhere in southeastern South Dakota, northwestern Iowa, southwestern Minnesota, northeastern Nebraska. (coarse aggregate only)
- (e) American Sand and Gravel Company, Watertown, South Dakota
(pit located in Sec. 9 and 10, T117N, R53W)
- (f) Hallett Construction Company, Watertown, South Dakota
(Sec. 15, T116N, R52W)
- (g) Hallett Construction Company, Watertown, South Dakota
(Sec. 25, T117N, R53W)

- (7) Cones shall be used with all ties designed to break off below the surface of the concrete.
- (8) Chamfer all exposed concrete edges 3/4 inch.
- (9) The surface of the building floor shall be finished by troweling.

b. Randall RC&D-88, Subsidiary Item, Pole Footings for Building

- (1) This item shall consist of furnishing and placing concrete for the pole footings for the building as shown on the plans.
- (2) This concrete shall be identical to that furnished under Bid Item 9, Concrete, Class 4000.
- (3) No separate payment will be made for this item. Payment for this item shall be included in the payment for the Building, Bid Item 30.

c. Randall RC&D 88, Subsidiary Item, Thrust Block Concrete for Asbestos Cement Pipes

- (1) This item shall consist of furnishing and installing concrete in the thrust blocks for the asbestos cement pipeline as shown on the plans.
- (2) This concrete shall be identical to that furnished under Bid Item 9, Concrete, Class 4000.
- (3) No separate payment will be made for this item. Payment for this item shall be included in the payment for Asbestos Cement Pipes, Bid Items 17, 18, 19.

CONSTRUCTION SPECIFICATION

34. STEEL REINFORCEMENT

1. SCOPE

The work shall consist of furnishing and placing steel reinforcement for reinforced concrete or pneumatically applied mortar.

2. MATERIALS

Steel reinforcement shall conform to the requirements of Material Specification 539. Before reinforcement is placed the surfaces of the bars and fabric and any metal supports shall be cleaned to remove any loose, flaky rust, mill scale, oil, grease or other coatings or foreign substances. After placement the reinforcement shall be maintained in a clean condition until it is completely embedded in the concrete.

3. BAR SCHEDULE, LISTS AND DIAGRAMS

Any supplemental bar schedules, bar lists or bar-bending diagrams required to accomplish the fabrication and placement of reinforcement shall be provided by the Contractor. Prior to placement of reinforcement, the Contractor shall furnish three prints or copies of any such lists or diagrams to the Contracting Officer. Acceptance of the reinforcement will not be based on approval of these lists or diagrams but will be based on inspection of the reinforcement after it has been placed.

4. BENDING

Reinforcement shall be cut and bent in compliance with the requirements of the American Concrete Institute Standard 315. Bars shall not be bent or straightened in a manner that will injure the material. Bars with kinks, cracks or improper bends will be rejected.

5. SPLICING BAR REINFORCEMENT

Unless otherwise specified on the drawings, splices of reinforcing bars shall provide an overlap equal to at least 30 times the diameter of the smaller bar in the splice but not less than 12 inches.

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6. SPLICING WELDED WIRE FABRIC

Welded wire fabric shall be spliced in the following manner:

a. Adjacent sections shall be spliced end to end by either:

- (1) Overlapping the two pieces of fabric one full mesh (measured from the ends of the longitudinal wires in one piece to the ends of the longitudinal wires in the other piece) and securing the two pieces together with wire ties placed at intervals of 18 inches; or,
- (2) Overlapping the two pieces of fabric so that the end crosswire of each piece comes in contact with the next-to-end crosswire of the other piece and securing the two pieces together only as required to keep the fabric in place and to prevent it from curling.

b. Adjacent sections of fabric shall be spliced side to side by either:

- (1) Placing the two selvage wires (the longitudinal wires at the edges of the fabric) one along side and overlapping the other and securing the two pieces together with wire ties placed at intervals of 3 feet; or,
- (2) Placing each selvage wire in the middle of the first mesh of the other section of fabric and securing it to the other section at intervals of 10 feet by means of wire ties placed on the selvage wires alternately at intervals of 5 feet.
- (3) Placing each selvage wire in contact with the next-to-edge longitudinal wire and securing them together only as required to keep the fabric in place or to prevent it from curling.

7. PLACING

Reinforcement shall be accurately placed and secured in position in a manner that will prevent its displacement during the placement of concrete. Tack welding of bars will not be permitted. Metal chairs, metal hangers, metal spacers and concrete chairs

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may be used to support the reinforcement. Metal hangers, spacers and ties shall be placed in such a manner that they will not be exposed in the finished concrete surface. The legs of metal chairs that may be exposed at the lower face of slabs or beams shall be galvanized as specified for iron and steel hardware in Material Specification 582. Precast concrete chairs shall be manufactured of the same class of concrete as that specified for the structure and shall have tie wires securely anchored in the chair or a V-shaped groove at least 3/4 inch in depth molded into the upper surface to receive the steel bar at the point of support. Precast concrete chairs shall be moist at the time concrete is placed.

Reinforcement shall not be placed until the prepared site has been inspected and approved by the Engineer. After placement of the reinforcement, concrete shall not be placed until the reinforcement has been inspected and approved by the Engineer.

8. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the weight of reinforcement placed in the concrete in accordance with the drawings will be determined to the nearest pound by computation from the placing drawings. Measurement of ^{3/5} hooks and bends will be based on the requirements of ACI Standard ~~135~~. Computation of weights of reinforcement will be based on the unit weights established in Tables 34-1, 34-2, and 34-3. The area of welded wire fabric reinforcement placed in the concrete in accordance with the drawings will be determined to the nearest square foot by computation from the placing drawings with no allowance for laps. The weight of steel reinforcing in extra splices or extra-length splices approved for the convenience of the Contractor or the weight of supports and ties will not be included in the measurement for payment.

Payment for furnishing and placing reinforcing steel will be made at the contract unit price. Such payment will constitute full compensation for all labor, materials, equipment and all other items necessary and incidental to the completion of the work including preparing and furnishing bar schedules, lists or diagrams; furnishing and attaching ties and supports; and furnishing transporting, cutting, bending, cleaning and securing all reinforcement.

(34-3)

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and items to which they are made subsidiary are identified in Section 9 of this specification.

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TABLE 34-1. STANDARD REINFORCING BARS

Bar Size No.	2	3	4	5	6	7	8	9	10	11
Wt. (lb./ft.)	0.167	0.376	0.668	1.043	1.502	2.044	2.670	3.400	4.303	5.313

TABLE 34-2. RECTANGULAR WELDED WIRE FABRIC¹

Style Designation	Wt. in Lb. Per 100 Sq. Ft.	Style Designation	Wt. in Lb. Per 100 Sq. Ft.	Style Designation	Wt. in Lb. Per 100 Sq. Ft.
24-1414	16	312- 711	39	48- 912	23
212- 04	169	312- 812	32	48-1012	20
212- 15	144	412- 26	69	48-1112	17
212- 26	124	412- 37	59	48-1212	14
212- 37	107	412- 48	51	48-1214	12
212- 48	91	412- 59	43	612-3/04	91
212- 59	77	412- 610	36	612-2/04	78
212- 610	66	412- 711	31	612- 00	81
212- 711	56	412- 810	27	612- 03	72
312- 04	119	412- 812	25	612- 11	69
312- 15	102	412- 912	22	612- 14	61
312- 26	87	412-1012	19	612- 22	59
312- 37	75	412-1112	16	612- 25	52
312- 48	64	412-1212	13	612- 33	51
312- 59	54	48- 711	33	612- 44	44
312- 610	46	48- 812	27	612- 66	32
				612- 77	27

¹Style designation is defined in ACI Standard 315 of the American Concrete Institute.

TABLE 34-3. SQUARE WELDED WIRE FABRIC¹

Style Designation	Wt. in Lb. Per 100 Sq. Ft.	Style Designation	Wt. in Lb. Per 100 Sq. Ft.
2 x 2 - 10/10	60	4 x 4 - 14/14	11
2 x 2 - 12/12	37	6 x 6 - 0/0	107
2 x 2 - 14/14	21	6 x 6 - 1/1	91
2 x 2 - 16/16	13	6 x 6 - 2/2	78
3 x 3 - 8/8	58	6 x 6 - 3/3	68
3 x 3 - 10/10	41	6 x 6 - 4/4	58
3 x 3 - 12/12	25	6 x 6 - 4/6	50
3 x 3 - 14/14	14	6 x 6 - 5/5	49
4 x 4 - 4/4	85	6 x 6 - 6/6	42
4 x 4 - 6/6	62	6 x 6 - 7/7	36
4 x 4 - 8/8	44	6 x 6 - 8/8	30
4 x 4 - 10/10	31	6 x 6 - 9/9	25
4 x 4 - 12/12	19	6 x 6 - 10/10	21
4 x 4 - 13/13	14		

¹Style designation is defined in ACI Standard 315 of the American Concrete Institute.

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9. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 10, Steel Reinforcement for Concrete

- (1) This item shall consist of furnishing and placing steel reinforcement in the trash guard, riser footing, pipe supports and impact blocks for steel pipe as shown on the drawings.

b. Randall RC&D 88, Bid Item 11, Welded Wire Fabric

- (1) This item shall consist of furnishing and placing welded wire fabric in the building floor as shown on the drawings.

c. Randall RC&D 88, Subsidary Item, Thrust Block Reinforcing for Asbestos Cement Pipeline:

- (1) This item shall consist of furnishing and placing steel reinforcement in the thrust blocks for the asbestos cement pipelines as shown on the plans.
- (2) No separate payment will be made for this item. Payment for this item will be included in the payment for asbestos cement pipes, Bid Items 17, 18, 19.

CONSTRUCTION SPECIFICATION

51. CORRUGATED METAL PIPE CONDUITS

1. SCOPE

The work shall consist of furnishing and placing circular, arched or elliptical corrugated metal pipe and the necessary fittings.

2. MATERIALS

Pipe and fittings shall conform to the requirements of Material Specification 551 or Material Specification 512, whichever is specified.

3. LAYING AND BEDDING THE PIPE

Unless otherwise specified, the pipe shall be installed in accordance with the manufacturer's recommendations. The pipe shall be laid with the outside laps of circumferential joints pointing upstream and with longitudinal laps at the sides at about the vertical midheight of the pipe. Field welding of corrugated galvanized iron or steel pipe will not be permitted. Unless otherwise specified, the pipe sections shall be jointed with standard coupling bands. The pipe shall be firmly and uniformly bedded throughout its entire length to the depth and in the manner specified on the drawings.

Perforated pipe shall be laid with the perforations down and oriented symmetrically about a vertical center line. Perforations shall be clear of any obstructions at the time the pipe is laid.

The pipe shall be loaded sufficiently during backfilling around the sides to prevent its being lifted from the bedding.

4. STRUTTING

When required, struts or horizontal ties shall be installed in the manner specified on the drawings. Struts and ties shall remain in place until the backfill has been placed to a height of 5 feet above the top of the pipe, or has been completed if the finished height is less than 5 feet above the top of the pipe, at which time they shall be removed by the Contractor.

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5. HANDLING THE PIPE

The Contractor shall furnish such equipment as is necessary to place the pipe without damaging the pipe or coatings. The pipe shall be transported and handled in such a manner as to prevent bruising, scaling or breaking of the spelter coating or bituminous coating.

6. REPAIR OF DAMAGED COATINGS

Breaks or scuffs in bituminous coatings that are less than 36 square inches in area shall be repaired by the application of two coats of hot asphaltic paint or a coating of cold-applied bituminous mastic. The repair coating shall be at least 0.05 inches thick after hardening and shall bond securely and permanently to the pipe. The material shall meet the physical requirements for bituminous coatings contained in the references cited in Material Specifications 551 and 552. Whenever individual breaks exceed 36 square inches in area or when the total area of breaks exceeds 0.5 percent of the total surface area of the pipe, the pipe will be rejected.

7. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the quantity of each type, class, size and gage of pipe will be determined as the sum of the nominal laying lengths of the pipe sections used. Payment for each type, class, size and gage of pipe will be made at the contract price for that type, class, size and gage of pipe. Such payment will constitute full compensation for furnishing, transporting and installing the pipe, including the necessary fittings and all other items necessary and incidental to the completion of the work except the special fittings and appurtenances listed separately in the bid schedule. Payment for each special fitting and appurtenance will be made at the contract unit price for that type and size of fitting or appurtenance.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 8 of this specification.

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9. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

- a. Randall RC&D 88, Bid Item 5, 30" dia., 0.168" thick, C. M. Manifold
Randall RC&D 88, Bid Item 6, Riser, 36" dia., 0.168" thick, C.M.
Pipe with 30" dia., 0.168" thick C. M. Pipe Tee
Randall RC&D 88, Bid Item 7, C. M. Pipe, 36" dia., 0.109" thick
Randall RC&D 88, Bid Item 8, C. M. Pipe, 30" dia., 0.109" thick

- (1) This item shall consist of furnishing and installing the corrugated iron or steel pipe conduit including fittings for the intake pipe as shown on the drawings.
- (2) Pipe shall be fabricated by riveting. The riser tees and manifold shall be fabricated by continuous welding of separate lengths of riveted pipe.
- (3) Joints between lengths of corrugated metal pipe are to be electrically bridged as shown on the plans.
- (4) Items of work subsidiary to this item include:
 - (a) Removal of Water (Construction Specification 11)

CONSTRUCTION SPECIFICATION

52. STEEL PIPE CONDUITS

1. SCOPE

The work shall consist of furnishing and installing steel pipe complete with the fittings and appurtenances specified on the drawings.

2. MATERIALS

Steel pipe and fittings shall conform to the requirements of Material Specification 553.

Unless otherwise specified, special fittings and appurtenances shall be of the same materials as the pipe.

Welding electrodes shall conform to the requirements of Material Specification 581.

3. LAYING AND BEDDING THE PIPE

Pipe shall be laid to the line and grade shown on the drawings. Unless otherwise specified, the pipe shall be installed in accordance with the manufacturer's recommendations. The pipe shall be firmly and uniformly bedded throughout its entire length to the depth and in the manner specified on the drawings.

The pipe shall be loaded sufficiently during backfilling around the sides to prevent its being lifted from the bedding.

4. JOINTS

Pipe joints shall conform to the details shown on the drawings and shall be sound and watertight at the pressures specified.

Welding and welded joints shall conform to the welding procedure details and the requirements for repair of welds of AWWA Standard C206 for Field Welding of Steel Water Pipe Joints (AWS D7.0). Field welding shall be done in such a way as to avoid burning the protective coating on the pipe except in the immediate vicinity of the weld.

The ends of pipe to be connected with mechanical couplings shall be machined so as to allow coupling the pipe sections without

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damaging or displacing the gaskets and to insure uniform end separation of the pipes. Machined ends of the pipe that receive the coupling sleeves shall be free from dents, gouges, rust, scale, or protective coating (except coal tar-epoxy paint). The pipe and couplings shall be assembled with continuous rubber ring gaskets of circular cross section conforming to the pipe manufacturer's dimensions and tolerances. Coupling followers shall be drawn up evenly to insure uniform pressure on the gaskets.

5. FIELD COATING AND WRAPPING

When coal tar enamel coated pipe is specified, joints and couplings shall be primed and coated in the manner specified in AWWA Standard C203, Section 4. Joints and couplings shall be primed, coated, and wrapped where wrapped pipe is used. The use of coal tar tapes, applied in compliance with the manufacturer's instructions, is acceptable for coating joints and couplings if the resulting coating is equivalent in durability and watertightness to the coating on the pipe.

When it is specified that the pipe be coated with coal tar-epoxy paint, couplings shall be coated with coal tar-epoxy paint prior to assembly. Field application of coal tar-epoxy paint will be limited to touchup required to repair damage that occurs during assembly.

6. HANDLING THE PIPE

The Contractor shall furnish such equipment as is necessary to place the pipe without damaging the pipe or coating. Coated pipe shall be handled in the manner specified in AWWA Standard C203, Section 4.

7. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the quantity of each type and size of pipe will be determined to the nearest 0.1 foot by measurement of the laid length of pipe along the centerline of the pipe. Payment for each type and size of pipe will be made at the contract unit price for that type and size of pipe. Such payment will constitute full compensation for furnishing, transporting and installing the pipe, including the necessary fittings and all other items necessary and incidental to the completion of the work.

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Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 8 of this specification.

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8. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

- a. Randall RC&D 88, Bid Item 13, Steel Pipe, 14" dia., 0.179" thick
Randall RC&D 88, Bid Item 14, Steel Pipe, 14" dia., 0.134" thick
Randall RC&D 88, Bid Item 15, Steel Pipe, 14" dia., 0.104" thick
Randall RC&D 88, Bid Item 16, Steel Pipe, 8" dia., 0.104" thick

- (1) This item shall consist of furnishing and installing the welded steel mainline pipe and pressure relief pipeline. This includes all fillings, such as tees, elbows, outlet riser pipes, welded steel manifold, expansion joints, adapters, flanges, and other similar items as shown on the plans.
- (2) Pipe joints to be field welded may have either square or lap-welded slip (balled) joints.
- (3) All expansion couplings shall be Dresser style 38 or equal couplings with 7" long middle ring with pipe stop center ridge and with ring thickness at least equal to the pipe thickness.
- (4) The pipelines shall be tested before backfill is placed over the field joints. The pipeline shall be filled with water, taking care to bleed air and prevent water hammer. When the line is full, all valves shall be closed and the line brought up to full design static pressure of 265 psi at pump discharge elevation. All joints shall then be carefully inspected for leakage and any visible leaks shall be repaired. Before testing, the pipeline shall be carefully anchored by backfilling at locations other than field welds. This backfill is for the purpose of preventing damage to elbows, tees, expansion joints, and field outlets.
- (5) Steel pipe shall conform to the requirements of ANMA standard C 201 or C 202. The interior surface shall be bare steel. The exterior of the pipe shall be cleaned, primed, and coated with coal tar enamel and wrapped with bonded double asbestos felt wrappers or wrapped with fibrous glass mat and bonded asbestos felt wrap. The final exterior covering shall be a wrap of kraft paper. Except for absence of interior coating, all materials and application shall be in accordance with American Water Works Association Specification C 203 together with Section A1.3 or A1.4 of the appendix of those specifications.
- (6) Dresser or equal bolted couplings or standard flanged couplings may be substituted for other joints or small elbows at the contractor's option and cost provided the life or function of the works of improvement is not adversely affected thereby. Small changes in piping layout may be made for construction convenience upon approval of the engineer.

- (7) All non-welded joints shall be electrically bridged with a welded, brazed or soldered insulated copper wire or cable not smaller than 0000 gauge in size.
- (8) Flanges, attachments, fittings, and the welding of pipe joints shall conform to the requirements of applicable ASA or ASME or ASTM or AWWA standards, and shall be designed to withstand the pressures expected in the pipe.
- (9) Items of work subsidiary to this item include:
 - (a) Clearing and Grubbing - Construction Specification 2
 - (b) Fence Removal - Construction Specification 3
 - (c) Removal of Water - Construction Specification 11
 - (d) Pipeline Excavation - Construction Specification 21
 - (e) Pipeline Backfill - Construction Specification 23

CONSTRUCTION SPECIFICATION

81. METAL FABRICATION AND INSTALLATION

1. SCOPE

The work shall consist of furnishing, fabricating and erecting metalwork, including the metal parts of composite structures.

2. MATERIALS

Unless otherwise specified, materials shall conform to the requirements of Material Specification 581. Steel shall be structural quality unless otherwise specified. Castings shall be thoroughly cleaned and subjected to careful inspection before installation. Finished surfaces shall be smooth and true to assure proper fit. Galvanizing shall conform to the requirements of Material Specification 582.

3. FABRICATION

Fabrication of structural steel shall conform to the requirements of Section 1.23 of the "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings (Riveted, Bolted and Arc-Welded Construction)," American Institute of Steel Construction.

Fabrication of structural aluminum shall conform to the requirements in the Aluminum Construction Manual, "Specifications for Aluminum Structures," Section 6 and Section 7, The Aluminum Association, November 1967.

4. ERECTION

The frame of metal structures shall be carried up true and plumb. Temporary bracing shall be placed wherever necessary to resist all loads to which the structure may be subjected, including those applied by the installation and operation of equipment. Such bracing shall be left in place as long as may be necessary for safety.

As erection progresses the work shall be securely bolted up, or welded, to resist all dead load, wind and erection stresses. The Contractor shall furnish such fitting up bolts, nuts and washers as may be required.

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No riveting or welding shall be done until as much of the structure as will be stiffened thereby has been properly aligned.

Rivets driven in the field shall be heated and driven with the same care as those driven in the shop.

All field welding shall be done in conformance to the requirements for shop fabrication, except those that expressly apply to shop conditions only.

Galvanized items shall not be cut, welded or drilled after the zinc coating is applied.

5. PROTECTIVE COATINGS

Items specified to be galvanized shall be completely fabricated for field assembly before the application of the zinc coatings.

Items specified to be painted shall be painted in conformance to the requirements of Construction Specification 82 for the specified paint systems.

6. MEASUREMENT AND PAYMENT

Method 1. The work will not be measured. Payment for metal fabrication and installation will be made at the contract lump sum price. Such payment will constitute full compensation for all labor, materials, equipment and all other items necessary and incidental to the completion of the work, including connectors and appurtenances such as rivets, bolts, nuts, pins, studs, washers, hangers and weld metal.

Method 2. The work will not be measured. Payment for furnishing, fabricating and installing each item of metalwork will be made at the contract price for that item. Such payment will constitute full compensation for all labor, materials, equipment and all other items necessary and incidental to the completion of the work, including connectors and appurtenances such as rivets, bolts, nuts, pins, studs, washers, hangers and weld metal.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 7 of this specification.

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7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 12, Trash Guard Grating

- (1) This item shall consist of furnishing and installing the trash guard as shown on the drawings.
- (2) The bolts and nuts shall be galvanized. Other parts of the trash rack shall be protected from corrosion by galvanizing or be painted as described in Construction Specification 82.
- (3) Material certifications and material test reports will not be required for this item.
- (4) Measurement and payment shall be by Method 1.

b. Randall RC&D 88, Bid Item 26, Steel Fuel Tank

- (1) This item shall consist of furnishing and installing the diesel fuel tank and accessories including sand backfill, manholes, filler pipe and air vent as shown on the drawings.
- (2) Items of work subsidiary to this item include:
 - (a) Painting Fuel Tank - Construction Specification 2
- (3) Measurement and payment shall be by Method 1.

CONSTRUCTION SPECIFICATION

82. CLEANING AND PAINTING METALWORK

1. SCOPE

The work shall consist of cleaning metal surfaces and applying paints and protective coatings.

2. PAINTS

For the purposes of this specification paints shall be designated by types as defined below:

Type 1 paint shall conform to the requirements of Federal Specification TT-P-86, Type IV, Red Lead Base Paint.

Type 2 paint shall conform to the requirements of Federal Specification TT-P-86, Type II or Type III, Red Lead Base Paint.

Type 3 paint shall conform to the requirements of Federal Specification TT-P-86, Type I, Red Lead Base Paint.

Type 4 paint shall conform to the requirements of Federal Specification TT-P-636, Synthetic Primer.

Type 5 paint shall be prepared by mixing aluminum paste conforming to the requirements of Federal Specification TT-P-320, Type II, Class B with phenolic resin spar varnish conforming to the requirements of Federal Specification TT-V-119 at the rate of two pounds of aluminum paste per gallon of varnish. The paint shall be mixed at the time of use.

Type 6 paint shall be prepared by mixing aluminum paste conforming to Federal Specification TT-P-320, Type II, Class B with mixing varnish conforming to the requirements of Federal Specification TT-V-81, Type II, Class B at the rate of two pounds of aluminum paste per gallon of varnish. The paint shall be mixed at the time of use.

Type 7 paint shall conform to the requirements of Federal Specification TT-E-489, Class A, Alkyd Gloss Enamel.

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Type 8 paint shall conform to the requirements of Federal Specification TT-E-529, Alkyd Semi-Gloss Enamel.

Type 9 paint shall conform to the requirements of Federal Specification TT-P-641, Type I or Type II, Zinc Dust-Zinc Oxide Primer.

Type 10 paint shall conform to the requirements of Federal Specification TT-P-641, Type III, Zinc Dust-Zinc Oxide Primer.

Type 11 paint shall conform to the requirements of Material Specification 583. The paint shall be mixed at the time of use.

Paints of Types 1, 2, 3, 5 and 6 may be thinned with mineral spirits as necessary for proper application but the amount of thinner used shall not exceed one pint per gallon of paint. Other paints may be thinned in accordance with the manufacturer's instructions only if such thinning is approved by the Engineer.

When tinting is required, it shall be accomplished by the addition of pigment-in-oil tinting colors conforming to the requirements of Federal Specification TT-P-381.

Mineral spirits shall conform to the requirements of Federal Specification TT-T-291, Grade 1, Light Thinner.

3. SURFACE PREPARATION

Surfaces to be painted shall be thoroughly cleaned prior to the application of the paint. For the purposes of this specification methods of surface preparation shall be designated as defined below:

Method 1 surface preparation shall consist of the removal of all grease and oil by means of steam cleaning or solvent cleaning methods and removal of all dirt, rust, mill scale and other coatings by means of sandblasting, grit blasting or pickling. The finished surface shall uniformly expose the base metal and shall present an etched, but not polished or peened, appearance. Not more than 5 percent of the surface may exhibit very light shadows, light streaks, or slight discolorations caused by rust stain, mill scale oxides, or slight, tight residues of paint or coating.

(82-2)

Method 2 surface preparation shall consist of the removal of all grease and oil by means of steam cleaning or solvent cleaning and the removal of all dirt, surface rust and loose scale by means of wire brushing, flame cleaning, use of rotary abrading tools or light sandblasting.

Method 3 surface preparation shall consist of the treatment of the surface with a dilute acid solution. The surface shall be thoroughly wetted with a dilute (about 5 percent strength) phosphoric acid solution. After the acid has dried, the surface shall thoroughly rinsed with clear water and allowed to dry. Dirt, grease and oil shall be removed from the surface by solvent cleaning prior to the acid treatment.

Cleaning solvent shall be mineral spirits. Cleaning cloths and solvents shall be discarded before they become contaminated to the extent that a greasy film would remain on the surface being cleaned. The final cleaning and wiping shall be done with clean solvent and clean cloths. Grit blasting shall be accomplished using compressed air blast nozzles and grit made of steel, malleable iron or cast iron crushed shot. Abrasives used shall have a maximum particle size that will pass the No. 16 sieve (U. S. Standard) and the minimum size that will be retained on the No. 50 sieve (U. S. Standard). The equipment used for sandblasting shall be equipped with adequate separators and traps to insure that the compressed air shall be free of detrimental amounts of water and oil. Blast cleaned surfaces shall be brushed, blown or vacuum cleaned to remove any trace of blast products or abrasives prior to painting.

Surfaces that are not to be painted immediately after cleaning shall be treated with one brush coat of metal conditioner conforming to the requirements of Military Specification MIL-M-10578, except that surfaces cleaned by pickling in phosphoric acid solution shall not require such treatment.

Surfaces shall be thoroughly dry when paint is applied.

No field coats of paint shall be applied until the prepared surfaces have been inspected and approved by the Engineer.

4. PAINT SYSTEMS

For the purposes of this specification, systems of preparing and painting metalwork will be designated as defined below:

(82-3)

Paint System A shall consist of the preparation of the surfaces to be painted by Method 1 and the application of two priming coats of Type 1 paint and two or more top coats of Type 5 paint as necessary to provide a total dry paint film thickness of 6 mils.

Paint System B shall consist of the preparation of the surfaces to be painted by Method 1 and the application of one priming coat of Type 1 paint and two top coats of Type 5 paint.

Paint System C shall consist of the preparation of the surfaces to be painted by Method 2 and the application of one priming coat of Type 2, Type 3 or Type 4 paint and two top coats of Type 6 paint.

Paint System D shall consist of the preparation of the surfaces to be painted by Method 2 and the application of one priming coat of Type 2 paint and two top coats of Type 7 paint.

Paint System E shall consist of the preparation of the surfaces to be painted by Method 2 and the application of one priming coat of Type 2 paint and two top coats of Type 8 paint.

Paint System F shall consist of the preparation of the surfaces to be painted by Method 3 and the application of two coats of Type 9 paint.

Paint System G shall consist of the preparation of the surfaces to be painted by Method 3 and the application of two coats of Type 10 paint.

Paint System H shall consist of the preparation of the surfaces to be painted by Method 1 and the application of four or more coats of Type 1 paint as necessary to provide a total dry paint film thickness of 6 mils.

Paint System I shall consist of the preparation of the surfaces to be painted by Method 1 and the application of two or more coats of Type 11 paint as necessary to provide a total dry paint film thickness of at least 16 mils.

5. APPLICATION OF PAINT

Surfaces shall be painted immediately after preparation (or within two days after preparation and treatment with metal conditioner) with at least one coat of the type of priming paint required by the specified paint system. Surfaces not required to be painted shall be protected against contamination and damage during the cleaning and painting operation.

Paints shall be thoroughly mixed at the time of application.

After erection or installation of the metalwork, all damage to shop applied coats shall be repaired and all bolts, nuts, welds and field rivet heads shall be cleaned and painted with one coat of the specified priming paint.

Except on surfaces accessible only to spray equipment, initial priming coats shall be applied by brush. All other coats may be applied by brush or spray. Each coat shall be applied in such a manner as to produce a paint film of uniform thickness with a rate of coverage within the limits recommended by the paint manufacturer.

The drying time between coats shall be as prescribed by the manufacturer of the paint but not less than that required for the paint film to dry through. The elapsed time between the application of the first and second prime coats of Paint System A shall not exceed 60 hours. In the application of Paint System I, if, for any reason, the first coat dries hard before the second coat is applied or the elapsed time between coats exceeds 48 hours, the method of application must be modified in any of the following ways: (1) the first coat must be wiped down with MIBK with the application of the second coat following the wipedown by not more than 6 feet; or (2) the first coat must be lightly brush blasted or given a fog coat of the paint before application of the full second coat; or (3) a special bonding additive supplied by the paint manufacturer must be mixed with the paint applied in the second coat.

The finished surface of each coat shall be free from runs, drops, ridges, laps or excessive brushmarks and shall present no variation in color, texture and finish.

The surface of each dried coat shall be cleaned as necessary before application of the next coat.

Except for Paint System I, the first coat of each two-coat system shall be tinted for contrast. The first coat of red-lead paint shall be tinted by the addition of 3 ounces per gallon of 1B

(82-5)

black pigment. The first coat of machinery paint shall be tinted off color with 3 ounces per gallon of a pigment suitable to the color of the paint.

6. ATMOSPHERIC CONDITIONS

Paint shall not be applied when the temperature of the item to be painted or of the surrounding air is less than 50°F. For Paint System I, the temperature of the coated surface must be maintained at not less than 50°F for 6 hours after the application of each coat. Painting shall be done only when the humidity and temperature of the surrounding air and the temperature of the metal surfaces are such that evaporation rather than condensation will result during the period of time required for application and drying. Surfaces protected from adverse atmospheric conditions by special cover, heating or ventilation shall remain so protected until the paint is dry.

7. TESTS

Acceptance of dry paint film thickness for Paint Systems A, H, and I will be based on the measurement of paint film thickness by means of an Elcometer or other suitable dry film thickness gage.

8. PAYMENT

For items of work for which specific lump sum prices are established in the contract, payment for painting metalwork will be at the contract lump sum price. Such payment will constitute full compensation for furnishing, preparing and applying all materials and for the cleaning, painting and coating of metalwork including labor, tools, equipment and all other items necessary and incidental to the completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 9 of this specification.

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9. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Subsidiary Item, Painting Fuel Tank

- (1) This item shall consist of painting the fuel tank.
- (2) Paint system I shall be used.
- (3) No separate payment will be made for this item. Payment for this item shall be included in the payment for steel fuel tank, Bid Item 26.

CONSTRUCTION SPECIFICATION

83. TIMBER FABRICATION AND INSTALLATION

1. SCOPE

The work shall consist of the construction of timber structures and timber portions of composite structures.

2. MATERIALS

Structural timber and lumber shall conform to the requirements of Material Specification 584. Treated timber and lumber shall be impregnated with the specified type and quantity of preservative and in the manner specified in Material Specification 585.

Hardware, except cast iron, shall be galvanized as specified for iron and steel hardware in Material Specification 582. Unless otherwise specified, structural steel shapes, plates and rods shall not be galvanized. Nuts, driftbolts, dowels and screws shall be either wrought iron or medium steel.

Steel bolts shall conform to the requirements of ASTM Specification A 307. When galvanized or zinc-coated bolts are specified, the zinc coating shall conform to the requirements of ASTM Specification A 153; except that bolts 1/2 inch or less in diameter may be coated with electrodeposited zinc or cadmium coating conforming to the requirements of ASTM Specification A 164, Type RS, or ASTM Specification A 165, Type TS, unless otherwise specified.

Washers shall be ogee gray iron castings or malleable iron castings unless washers cut from medium steel or wrought iron plate are specified on the drawings. Cast washers shall have a thickness equal to the diameter of the bolt and a diameter equal to four times the thickness. For plate washers the thickness shall be equal to one-half the diameter of the bolt, and the sides of the square shall be equal to four times the diameter of the bolt.

Holes in washers shall be not more than one-eighth inch greater in diameter than the bolt. Split ring connectors, tooth ring connectors and pressed steel shear plate connectors shall be manufactured from hot-rolled, low carbon steel conforming to the requirements of ASTM Designation A 273, Grade 1015. Malleable iron shear plate connectors and spike grid connectors shall be manufactured in conformance with the requirements of ASTM Designation A 47, Grade No. 35018. All connectors shall be of approved design and the type and size specified.

(83-1)

Structural shapes, rods and plates shall be structural steel conforming to the requirements of Material Specification 581. No welds will be permitted in truss rods or other main members of trusses or girders.

3. WORKMANSHIP

All framing shall be true and exact. Timber and lumber shall be accurately cut and assembled to a close fit and shall have even bearing over the entire contact surfaces. No open or shinned joints will be accepted. Nails and spikes shall be driven with just sufficient force to set the heads flush with the surface of the wood. Deep hammer marks in wood surfaces shall be considered evidence of poor workmanship and sufficient cause for rejection of the work.

Holes for round driftpins and dowels shall be bored with a bit one-sixteenth inch smaller in diameter than that of the driftpin or dowel to be used. The diameter of holes for square driftpins or dowels shall be equal to one side of the driftpin or dowel. Holes for machine bolts and rods shall be bored with a bit of the same diameter as that of the bolt. Holes for lag screws shall be bored with a bit not larger than the body of the screw at the base of the thread.

Washers shall be used in contact with all bolt heads and nuts that would otherwise be in contact with wood. Cast iron washers shall be used when the bolt will be in contact with earth. All nuts shall be checked or burred effectively with a pointed tool after being finally tightened.

Unless otherwise specified, surfacing, cutting and boring of timber and lumber shall be done before treatment. If cutting of treated timber and lumber is authorized, all cuts and abrasions shall be carefully trimmed and coated with not less than three brush coats of the same preservative used in the original treatment.

All recesses and holes cut or bored in treated timber and lumber shall be swabbed with not less than three coats of the same preservative used in the original treatment. After field treatment any unfilled holes shall be plugged with tightly fitting wooden plugs treated with the same preservative used in the original treatment.

4. HANDLING AND STORING MATERIALS

All timber and lumber stored at the site of the work shall be neatly stacked on supports at least twelve inches above the ground surface and protected from the weather by suitable covering. Untreated material shall be so stacked and stripped as to permit free circulation of air between the tiers and courses. Treated timber shall be close-stacked. The ground underneath and in the vicinity of all stacks shall be cleared of weeds and rubbish. The use of cant hooks, peavies, or other pointed tools, except end hooks will not be permitted in the handling of structural timber or lumber. Treated timber shall be handled with rope slings or other methods that will prevent the breaking or bruising of outer fibers, or penetration of the surface in any manner.

5. PAINTING

Except as otherwise specified, surfaces designated for painting shall be painted in accordance with Construction Specification 84.

6. MEASUREMENT AND PAYMENT

No measurement of material quantities will be made. Payment for each structure, complete in place, will be made at the contract lump sum price for that structure. Such payment will be considered full compensation for all labor, transportation, equipment and materials and all other items necessary and incidental to the completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 7 of this specification.

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor include:

A. Randall RC&D 88, Bid Item 30, Building

- (1) This item shall consist of furnishing and installing the complete building excluding concrete floor as shown on the drawings.
- (2) Where pressure treatment is required, the timber may be surfaced, cut, or bored after treatment. See Section 3 for details of coating after cutting.
- (3) Wood poles shall be straight and true, and shall be treated according to material specification 585. Poles and lumber shall be of uniform good quality and shall be construction or better grade Douglas Fir, Larch, Western Hemlock, or No. 1 or better grade Southern Yellow Pine.

Lumber shall be clean and smooth and kiln dried to 15% moisture content. Where members of different thickness (variation in manufacture) come together at a glued joint, sand or plane the thick member so the gusset can make full contact. Do not use cupped or twisted lumber.

- (4) Plywood shall be Exterior-type, C-C or better grade Douglas Fir or Southern Pine.
- (5) Glue for trusses shall be Resorcinol Resin waterproof glue. The glue shall be applied according to the manufacturer's recommendations.

Glue shall be applied at air and material temperatures of 50°F or higher. If the air temperature is above 85°F, the glue shall be kept in the shade in a bucket of ice, and joints shall be nailed immediately after applying glue. Allow the trusses to cure in a dry location for a period of 1 week before erection. Remove all oil, dust, sand, or other deleterious material from the lumber and plywood prior to application of the glue.

- (6) Nail gussets using 6d or 7d box nails spaced 4" apart in rows spaced 2" apart. Drive the center nails first and then work toward the edges of the lumber.

Nail 2" thick lumber using 10d or larger ring shank nails, at a minimum rate of 2 nails per joint. Extra nails shall be driven when so directed by the engineer.

- (7) Roofing and siding shall be 28 gauge minimum galvanized iron or steel with continuous, full corrugations. The metal shall be lapped and placed with corrugations vertical. Galvanized steel nails 1 3/4 inch long with tight-gripping barbed shanks and self-sealing lead heads shall be used to nail the corrugated metal at the rate of 1 nail per square foot of area covered. Extend the sheet metal at least 6 inches below the top of the pressure treated lumber along the lower edge of the walls.

Matching ridge cap and end wall flashing shall be provided. Seal open edges of siding using a matching rubber filler strip.

Exterior quality translucent fiber glass panels 12' long shall be provided on each side of the roof, 12 feet from each end of the building. These panels shall be between 24 and 52 inches wide, and shall have corrugations matching the corrugated metal. The fiberglass panels shall weigh at least 5 ounces per square foot, and shall be 0.037 inch minimum thickness. The color of all of the fiberglass panels shall be identical. Nailing shall be equal to that for corrugated metal.

- (8) Near the center of the roof, install a 12" diameter round, bird proof, wind powered, turbine ventilator. If the ventilator is constructed from a metal other than galvanized iron or steel, separate the metals to prevent electrolosis using asphalt-asbestos roof patching cement.
- (9) Provide minimum 3 foot by 3 foot weather proof, primed and painted or galvanized, 16 gauge or heavier steel doors in the roof directly over the pumps.
- (10) Thirty or 32 inch wide by 6' 8" tall man doors shall be 1 3/4" thick exterior grade solid core primed and painted wood, or shall be hollow core primed and painted steel or galvanized steel, or any other exterior quality construction approved by the engineer, including on-site construction of the doors from pressure treated lumber.
- (11) Provide means for latching and locking all doors.
- (12) Items of work subsidiary to this item include:
- (a) Pole Footings for Building (Construction Specification 31)

CONSTRUCTION SPECIFICATION

403. VERTICAL TURBINE PUMPS, DIESEL ENGINES

1. SCOPE

The work shall consist of furnishing and installing vertical turbine pumps, and heavy duty diesel industrial engines and accessories necessary to provide a complete installation.

2. MATERIALS

Diesel engines shall conform to the requirements of Material Specification 602.

Vertical turbine pumps shall conform to the requirements of Material Specification 603.

3. INSTALLATION

The pumps and engines shall be installed as recommended by the manufacturer.

4. TESTS

After installation and prior to acceptance, all installed equipment shall be tested by operating several times throughout its full range of operation. Such tests shall be conducted on the pumping units individually and in combination. Any defects which become evident during this testing shall be corrected before acceptance.

5. WORKMANSHIP

It shall be the contractors responsibility to furnish high quality equipment and materials which will provide a durable and complete installation capable of continuously and economically performing as described.

The contractor will be responsible for matching and aligning the equipment for optimum performance, and will be responsible for protection of the equipment from damage prior to completion of the contract.

6. MEASUREMENT AND PAYMENT

No measurement of material quantities will be made. Payment for each pump or engine complete in place, will be made at the lump sum price for that component as shown in the bid schedule. Such payment will be considered full compensation for all labor, transportation, equipment, and materials and all other items necessary and incidental to the completion of the work.

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 1, 1100 RPM, 634 Ft. TDN Vertical Turbine Pump

- (1) This item shall consist of furnishing and installing the vertical turbine pumps and all related accessories (such as right angle gear drive, oil cooler, base support, flanges, and drive shaft) necessary for a complete functioning installation.
- (2) Sole plate bases for the pumps shall be provided with dowels as recommended by the manufacturer.
- (3) The pumps shall be designed to operate efficiently producing the design pressure and flow at a speed not exceeding approximately 2200 revolutions per minute.
- (4) The head assembly discharge shall be above ground.
- (5) The discharge pipe column of the pump shall have flanged connections, bolted together with rust and corrosion protected bolts and nuts.
- (6) The following laboratory performance tests are required on one of the pumps supplied. Test data shall be supplied to the contracting officer prior to pump installation. The pump tested shall be identified and marked.
 - a. Standard running test (performance test). This test shall be witnessed.
 - b. Hydrostatic test of discharge head.
 - c. Hydrostatic test of bowl assembly.
- (7) The following information shall be furnished by the contractor to the contracting officer for his approval at the time bids are submitted.
 - a. Drawings of the pump and its foundation requirements.
 - b. Literature describing the pump.
 - c. Drawings and/or literature describing the auxiliary equipment to be furnished.
 - d. List of one or more installations using major components of the same or similar type to be furnished for this application.

- e. Estimated calendar days required to ship unit after receipt of firm order.
 - f. Current list prices for the following pump parts:
 - (1) Impeller
 - (2) One set of bowl bearings
 - g. Make and model of pump.
 - h. Number of impellers.
 - i. Direction of rotation of power source required.
 - j. Nearest location of permanent parts and service center from which parts and services are promptly available.
 - k. Head, efficiency, power curves for the model of pump to be supplied.
 - l. Operating and maintenance instructions covering the pump and such auxiliary equipment as may require published operating instruction for periodic maintenance.
 - m. A copy of the warranty covering the equipment.
- b. Randall RC&D 88, Bid Item 2, 275 continuous hp. diesel engine
- (1) This item shall consist of furnishing and installing the diesel engine and all related accessories including heat exchanger necessary for a complete, functioning installation.
 - (2) The engine bases shall be constructed from steel and concrete at elevations to match the pump. Concrete shall be fully reinforced and shall be equal to concrete used in Bid Item 9. The engines shall be bolted down.
 - (3) The engines shall be designed to operate efficiently producing the design continuous horsepower at a crankshaft speed not exceeding approximately 2400 revolutions per minute.
 - (4) Return fuel lines shall be installed as recommended by the manufacturer using materials similar to those in other parts of the contract except as approved by the engineer.
 - (5) The exhaust shall be vented through the lower western edge of the roof and pointed west to decrease the noise level at the nearest residence.
 - (6) Design of the concrete and steel base will be subject to the approval of the engineer.

(7) The following information shall be furnished by the contractor to the contracting officer for his approval at the time bids are submitted.

- (a) Drawings of the engine and its foundation requirements.
- (b) Literature describing the engine.
- (c) Drawings and/or literature describing auxiliary equipment to be furnished.
- (d) Specifications for a suitable fuel.
- (e) List of one or more installations using major components of the same or similar type to be furnished for this application.
- (f) Estimated calendar days required to ship unit after receipt of firm order.
- (g) Current list prices for the following engine parts:
 - (1) Fuel injection unit (capsule valve, injection valve, combination pump and valve, etc. as applicable.)
 - (2) Fuel injection pump plunger and body
 - (3) One set of Cylinder Liners
 - (4) One set of Pistons and Pins and Rings
 - (5) One set of Intake and Exhaust Valves
 - (6) One set of Replaceable Rod and Main Bearings
 - (7) One set of Connecting Rods
 - (8) Crankshaft
 - (9) One set of Fuel Filter Elements
 - (10) One set of Lubricating Oil Filter Elements
- (h) Make and Model of Engine
- (i) Number of Cylinders
- (j) Bore Indicated in Inches
- (k) Stroke Indicated in Inches
- (l) Displacement

- (m) Piston Speed at Rated RPM, in Feet per Minute
 - (n) Power Take-Off: Manufacturer and Description
 - (o) Rotation When Viewed from flywheel end
 - (p) Nearest location of permanent parts and service center from which parts and service may be obtained promptly.
 - (q) Manufacturer's specification sheet or certification of engine power output capacity at specified elevation.
 - (r) Fuel consumption verses brake horsepower curves for various speeds of the engine.
 - (s) Operating and maintenance instruction covering the engine and such auxiliary equipment as may require published operating instructions for periodic maintenance.
 - (t) A copy of the warranty covering the equipment.
- (8) The heat exchanger shall not present an undue restriction to flow in the pump discharge pipe. The pressure drop shall not exceed three feet of head.

CONSTRUCTION SPECIFICATION

404. VALVES, METERS, GAGES

1. SCOPE

This work shall consist of furnishing and installing valves, meters and gages (other than engine and pump controls) and accessories for use in irrigation distribution systems.

2. MATERIALS

Water control valves, meters, and gages shall conform to the requirements of Material Specification 604.

3. INSTALLATION

The items shall be installed as recommended by the manufacturer.

4. WORKMANSHIP

The contractor will be responsible for providing high quality installations which will perform as required. This will include matching and aligning the equipment for optimum performance, and protecting the equipment from damage.

Fittings and accessories shall be designed for use at the pressures listed for valves, meters, and gages.

5. TESTING

All items shall be tested at design pressure and flow after installation.

6. MEASUREMENT AND PAYMENT

No measurement of material quantities will be made. Payment for each group of valves, meters, or gages complete in place will be made at the lump sum price for that component as shown in the bid schedule. Such payment will be considered full compensation for all labor, transportation, equipment, and materials, and all other items necessary and incidental to the completion of the work.

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 20, Combination Air Relief Valves
(6 required)

- (1) This item shall consist of furnishing and installing the combination air release valves including related pipe, valves, fittings and other accessories as shown on the drawings or described in the specifications.
- (2) Plastic piping shown attached to the combination air valves on the plans shall conform to the requirements of material specification 605.
- (3) The three combination air release valves to be installed on the pump side of the 8" diameter check valves shall be equal to Apco model 145C (2" diameter). Throttling devices shall be provided and the outlet ports shall be protected by covers or pipe tees. These combination air release valves and accessories shall be capable of withstanding 300 pounds per square inch gage pressure.
- (4) The three combination air release valves to be installed at field outlets shall be equal to Apco model 145C (2" diameter) and shall be capable of withstanding 150 pounds per square inch gage pressure and shall be provided with a plastic outlet pipe with reverse bend as shown on the plans. Throttling devices shall be provided.
- (5) The following information shall be furnished by the contractor to the contracting officer prior to installation.
 - (a) Literature describing the item to be furnished, including performance and pressure limitations, and including a description of any accessories recommended.
 - (b) Manufacturers installation instructions.
 - (c) Warranty covering the item to be supplied.
 - (d) Parts list

b. Randall RC&D 88, Bid Item 21, Silent Check Valve (3 required)

- (1) This item shall consist of furnishing and installing 8" diameter silent check valves, fittings and accessories including blind flange, as shown on the plans or listed below.

- (2) Two blind flange plates shall be provided to cap the main line when a check valve is removed for repairs, thus allowing the other pumps to be operated.
- (3) Check valves supplied shall be equal to Apco silent check valve model 658 for 8" diameter pipe. The valves shall have stainless steel trim. Check valves and accessories shall be capable of withstanding 300 pounds per square inch gage pressure.
- (4) The following information shall be furnished by the contractor to the contracting officer prior to installation.
 - (a) Literature describing the item to be furnished, including performance and pressure limitations, and including a description of any accessories recommended.
 - (b) Manufacturers installation instructions.
 - (c) Warranty covering the item to be supplied.
 - (d) Parts list

c. Randall RC&D 88, Bid Item 22, Pressure Relief Valves and Pressure Gage (3 valves, 1 gage required)

- (1) This item shall consist of furnishing and installing the pressure relief valve, pressure gage and related fittings and accessories as shown on the plans.
- (2) The one pressure relief valve at the pumping plant shall be equal to Clayton automatic valve No. 50 and shall be 6" in diameter and capable of withstanding 300 pounds per square inch gage pressure. This valve shall be set to open at a gage pressure of approximately 265 pounds per square inch, and close at a gage pressure of 260 pounds per square inch.
- (3) The two pressure relief valves located near the ends of the two lines shall be equal to Clayton Automatic Valve No. 50 and shall be 2½" diameter and capable of withstanding 150 pounds per square inch gage pressure. This valve shall be set to open at a gage pressure of approximately 130 pounds per square inch, and close at a gage pressure of 125 pounds per square inch.
- (4) The main distribution line pressure gage located at the pumping plant shall have a dial reading in pounds per square inch pressure or head in feet of water. The gage shall accurately measure pressure up to 300 psi.

d. Randall RC&D 88, Bid Item 23, Field Outlet Valves (5 required)

- (1) This item shall consist of furnishing and installing field outlet valves and fittings as shown on the plans.

- (2) Field outlet valves shall be McDowell Model ITB87, or ETB66 or equal. These valves shall be capable of being easily attached to standard irrigation fittings and shall be capable of withstanding 150 pounds per square inch gage pressure.
- (3) The following information shall be furnished by the contractor to the contracting officer prior to installation.
 - (a) Literature describing the item to be furnished, including performance and pressure limitations, and including a description of any accessories recommended.
 - (b) Manufacturers installation instructions
 - (c) Warranty covering the item to be supplied.
 - (d) Parts list

e. Randall RC&D 88, Bid Item 24, Water Meters (5 required)

- (1) This item shall consist of furnishing and installing water meters, fittings, including steel connecting pipes, and accessories as shown on the plans.
- (2) One cover plate for each size of meter shall be provided to replace a meter in the line opening so that a meter may be repaired while the line is in use.
- (3) Field outlet water meters shall be Sparling or equal design for the diameter of pipe used. This meter shall be capable of withstanding 150 pounds per square inch gage pressure.
- (4) The following information shall be furnished by the contractor to the contracting officer prior to installation.
 - (a) Literature describing the item to be furnished, including performance and pressure limitations, and including a description of any accessories recommended.
 - (b) Manufacturers installation instructions.
 - (c) Warranty covering the item to be supplied.
 - (d) Parts list

f. Randall RC&D 88, Bid Item 27, Fuel Tank Valve, Well (1 required)

- (1) This item shall consist of furnishing and installing the fuel tank valve and related manhole and fittings and accessories as shown on the drawings.
- (2) The valve at the fuel tank shall be a 2 inch diameter bronze or brass valve capable of withstanding 25 pounds per square inch gage pressure and designed for operation with diesel fuel.

g. Randall RC&D 88, Bid Item 28, Drain Valves (4 required)

- (1) This item shall consist of furnishing and installing the drain valves, related fittings and accessories including manholes as shown on the plans.
- (2) The drain valves shall be rust protected. The drain valve located near the pumps shall withstand 300 pounds per square inch gage pressure. The three drain valves located on the field lines shall withstand 150 pounds per square inch gage pressure.
- (3) The following information shall be furnished by the contractor to the contracting officer prior to installation.
 - (a) Literature describing the item to be furnished, including performance and pressure limitations, and including a description of any accessories recommended.
 - (b) Manufacturers installation instructions
 - (c) Warranty covering the item to be supplied.
 - (d) Parts list

CONSTRUCTION SPECIFICATION

405. SMALL DIAMETER PLASTIC PIPE

1. SCOPE

The work shall consist of furnishing and installing plastic pipe complete with the fittings and appurtenances specified on the drawings.

2. MATERIALS

Plastic pipe and fittings shall conform to the requirements of Material Specification 605.

Unless otherwise specified, non-metal fittings and appurtenances shall be of the same material as the pipe.

3. JOINTS AND CONNECTIONS

All joints and connections shall be constructed to withstand the design maximum working pressure of 5 psi for the pipeline without leakage and shall leave the inside of the line free of any obstruction that may tend to reduce its capacity below design requirements.

All fittings, such as couplings, reducers, bends, tees and crossings shall be made of material that is recommended for use with pipe and shall be installed in accordance with the recommendations of the pipe manufacturer.

Where fittings made of steel or other metals subject to corrosion are used in the line, they shall be adequately protected by wrapping with tape coat or equal coating. Where plastic tape is used, all surfaces to be wrapped shall be thoroughly cleaned and then coated with a primer compatible with the tape prior to wrapping.

4. INSTALLATION REQUIREMENTS

The pipe shall be allowed to come to within 20 degrees of the temperature that it will have after complete covering prior to any backfilling.

Where rock, hardpan, boulders or any other material which might damage the pipe are encountered, the trench shall be undercut a minimum of 4 inches below final grade. The material used to establish final grade shall be sand or fine graded stable soil.

5. TESTING

The pipeline shall be thoroughly and completely tested for pressure strength and leakage before backfill operations are undertaken. The pressure shall be slowly built up to the maximum design working pressure.

The line shall be inspected in its entirety while the maximum working pressure is maintained. Where leaks are discovered they shall be promptly repaired and the line shall be retested. In some cases, it may be necessary to partially backfill the line before testing in order to hold the line in place. Where such is the case, the partial backfill shall be undertaken in accordance with the provisions specified under Backfilling, covering only the body of the pipe sections and leaving all joints and connections uncovered for inspection purposes.

It shall be demonstrated by testing that the pipeline will function properly at design pressure. At or below design pressure, there shall be no objectionable pressure surge. To be objectionable, there shall be continuing unsteady flow damage to the pipeline, or detrimental overflow from control valves.

6. BACKFILLING

The pipe shall be uniformly and continuously supported. Blocking or mounding shall not be used to bring the pipe to final grade.

The initial backfill shall be of selected material free from rocks, stones, or clods greater than approximately 1/2 inch in diameter. The initial fill shall be compacted firmly around and above the pipe to achieve a soil density equal to or exceeding the natural density of the undisturbed sidewalls of the trench. Care shall be taken to avoid deformation or displacement of the pipe during this phase of the operations.

The remainder of the backfill shall be placed and spread in approximately uniform layers in such a manner as to completely fill the trench so that there will be no unfilled spaces in the backfill. Final backfill material shall be free of rocks or boulders greater than 3 inches in diameter and shall be added and compacted in a manner that will leave the fill at ground level after settlement has taken place. Rolling equipment shall not be used until a minimum of 18 inches of backfill material has been placed over the top of the pipe.

All special requirements of the manufacturer shall be strictly observed.

7. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the quantity of each type and size of pipe will be determined to the nearest foot by measurement of the laid length of pipe along the centerline of the pipe. The payment for each type and size of pipe will be made at the contract unit price for that type and size of pipe. Such payment will constitute full compensation for furnishing, transporting and installing the pipe, including the necessary fittings and all other items necessary and incidental to the completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 8 of this specification.

8. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

a. Randall RC&D 88, Bid Item 25, Plastic Pipe, 2" dia.

- (1) This item shall consist of furnishing and installing the plastic drain pipe and fuel line pipe including all fittings for the pipe.
- (2) Small changes in piping layout may be made for construction convenience upon approval of the engineer. The contractor shall locate the fuel line within the building as directed by the engineer.
- (3) The fuel line shall be tested at a pressure of 5 psi. The drain pipe shall be tested by opening the drain valve after the line is full of water.
- (4) Items of work subsidiary to this item include:
 - (a) Removal of Water - Construction Specification 11
 - (b) Pipeline Excavation - Construction Specification 21
 - (c) Pipeline Backfill - Construction Specification 23

CONSTRUCTION SPECIFICATION

406. ZINC ANODE

1. SCOPE

This work shall consist of furnishing and completely installing zinc anodes and accessories and fittings for corrosion protection of steel structures such as pipelines and fuel tanks.

2. MATERIALS

Anodes shall conform to the requirements of Material Specification 606.

3. INSTALLATION PROCEDURE

Install anodes according to the following steps.

- (a) Excavate trench for anode package.
- (b) Prepare bedding for the anode package in the bottom of the trench with well tamped, moist, low plastic clay - silt (CL) soil.
- (c) Place anode package in the prepared bed making sure that the anode is centered in the package. Use extreme caution not to get the anode package wet before it is placed and backfilled. Do not lift the anode by the connecting wire. The installation shall be inspected before backfilling.
- (d) Complete backfilling around anode with well tamped low plastic clay - silt (CL) soil.
- (e) Attach anode connecting wire to the pipeline or tank by catwelding or thermowelding. Mechanical connection of the connecting wire will not be allowed at any point. Before joining the connecting wire to the pipe, carefully clean the pipe or tank to bare, uncorroded steel.
- (f) Recoat the damaged pipe or tank coating equal to the original coating. Insulate all portions of the connecting wire exposed. Insulation shall be suitable for permanent underground use.
- (g) Irrigate the anode by pouring several barrels of water in the hole or trench and let soak in to insure moistening of the anode packaged backfill.
- (h) Complete backfill with sand (see step (i)) leaving a 1' deep surface depression.

- (1) Excavate an anode irrigation pit at one end of the anode and refill pit to one foot below ground level with a durable sand-gravel mixture of mostly approximately 1/4" size material, maximum size of 3 inches and not more than 5% passing a No. 200 sieve. Required pit size shall be 4 feet deep, 2 feet wide and 10 foot length. Excavate pit so that the length dimension is directly away from either end of the anode. Shape the ground surface to direct runoff water into the pit.

4. MEASUREMENT AND PAYMENT

No measurement of material quantities will be made. Payment for each installation, complete in place, will be made at the contract lump sum price for that installation. Such payment will be considered full compensation for all labor, transportation, equipment and materials and all other items necessary and incidental to the completion of the work.

5. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

- (a) Randall RC&D ES, Bid Item 29, Anode, Zinc (3 required)

This item shall consist of furnishing and installing anodes including all fittings, excavation, fill, and all other items necessary to complete the installation.

CONSTRUCTION SPECIFICATION
407. ASBESTOS-CEMENT PIPE CONDUITS AND DRAINS

1. SCOPE

The work shall consist of furnishing and installing asbestos-cement pipe and the necessary fittings as shown on the drawings.

2. MATERIALS

Pipe, fittings, and gaskets shall conform to the requirements of Material Specification 545 for the kind of pipe specified.

3. LAYING AND BEDDING

Pipe shall be laid to the line and grade shown on the drawings.

(a) Concrete Cradle or Bedding. Pipe to be cradled or bedded on concrete shall be set to the specified line and grade and temporarily supported on concrete blocks or wedges until the cradle or bedding concrete is placed.

(b) Earth, Sand, or Gravel Bedding. The pipe shall be firmly and uniformly bedded throughout its entire length to the depth and in the manner specified on the drawings. The pipe shall be loaded sufficiently during backfilling around the sides to prevent its being lifted from the bedding.

Perforated pipe shall be laid with the perforations down and oriented symmetrically about the vertical centerline. Perforations shall be clear of any obstructions when the pipe is laid.

4. JOINTS

Pipe joints shall conform to the details shown on the drawings and, except where unsealed joints are indicated, shall be sound and watertight at the pressures specified.

Pipe shall be installed and joined in accordance with the manufacturer's recommendations except as otherwise specified.

5. PRESSURE TESTING

Prior to the placement of concrete or earth fill around the conduit, the conduit shall be tested at the specified test pressure for a period of at least 2 hours. Any leaks shall be repaired and the conduit shall be retested. The procedure shall be repeated until the conduit is watertight.

The pipe joints shall show no leakage. Damp spots developing on the surface of the pipe will not be considered as leaks.

6. MEASUREMENT AND PAYMENT

For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe will be determined as the sum of the nominal laying lengths of the pipe sections used. Payment for each kind, size, and class of pipe will be made at the contract unit price for that kind, size and class of pipe. Such payment will constitute full compensation for furnishing, transporting and installing the pipe complete in place.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 7 of this specification.

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefor are:

- a. Randall RC&D 88, Bid Item 17, Asbestos-Cement Pipe, 12" dia.,
Class 100 Pressure Pipe
Randall RC&D 88, Bid Item 18, Asbestos-Cement Pipe, 10" dia.,
Class 100 Pressure Pipe
Randall RC&D 88, Bid Item 19, Asbestos-Cement Pipe, 8" dia.,
Class 100 Pressure Pipe

- (1) This item shall consist of furnishing and installing the Asbestos-Cement Pipe including all necessary fittings, including elbows, tees, reducers, riser pipes, couplings, adapters and thrust blocks and similar items.
- (2) The pipe shall be laid on a smooth rock-free bed shaped to fit the lower 1/4 of the pipe circumference.
- (3) The maximum deflection at any one coupling shall not exceed 5 degrees.
- (4) This pipe shall be tested with a pressure of 265 psi at the pump discharge and with field outlet valves closed. This will produce a pressure of approximately 130 psi in the asbestos cement pipe.
- (5) Items of work subsidiary to this item include:
 - (a) Clearing and Grubbing (Construction Specification 2)
 - (b) Fence Removal (Construction Specification 3)
 - (c) Removal of Water (Construction Specification 11)
 - (d) Excavation, Common, Pipeline (Construction Specification 21)
 - (e) Earthfill, Pipeline Backfill (Construction Specification 23)
 - (f) Thrust Block Concrete (Construction Specification 31)
 - (g) Thrust Block Reinforcing (Construction Specification 34)
- (6) Section 5 above (Pressure testing) shall be interpreted to allow temporary placement of earth fill or concrete to anchor pipe to prevent damage during testing. Such temporary concrete or earth fill may later be accepted as permanent concrete or earth fill if leakage or other problems do not become apparent and if accepted by the engineer.

MATERIAL SPECIFICATION

522. AGGREGATE FOR PORTLAND CEMENT CONCRETE

1. SCOPE

This specification covers the quality of fine aggregate and coarse aggregate for use in the manufacture of portland cement concrete.

2. QUALITY

Aggregate shall conform to the requirements of ASTM Specification C-33 for the specified sizes. Aggregates that fail to meet any requirement may be accepted only when: (1) the specified alternate conditions of acceptance can be proved prior to the use of the aggregates on the job and within a period of time such that no work under the contract will be delayed by the requirements of such proof; or, (2) the Specification for concrete expressly contains a provision of special mix requirements to compensate for the effects of the deficiencies.

3. REACTIVITY WITH ALKALIES

The potential reactivity of aggregates with the alkalis in cement shall be evaluated by petrographic examination and, where applicable, the chemical method of test, ASTM Designation C 289, or by the results of previous tests or service records of concrete made from similar aggregates from the same source. The standards for evaluating potential reactivity shall be as described in ASTM Specification C 33, Appendix A1.

Aggregates indicated by any of the above to be potentially reactive shall not be used, except under one of the following conditions:

- a. Applicable test results of mortar bar tests, made according to ASTM Method C 227, are available which indicate an expansion of less than 0.10 percent at six months in mortar bars made with cement containing not less than 0.8 percent alkalis expressed as sodium oxide; or
- b. Concrete made from similar aggregates from the same source has been demonstrated to be sound after 3 years or more of service under conditions of exposure to moisture and weather similar to those anticipated for the concrete under these specifications.

(522-1)

Aggregates indicated to be potentially reactive, but within acceptable limits as determined by mortar bar test results or service records, shall be used only with "low alkali" cement, containing less than 0.60 percent alkalies expressed as sodium oxide.

4. STORING AND HANDLING

Aggregate of each class and size shall be stored and handled by methods that prevent segregation of particle sizes or contamination by intermixing with other materials.

(522-2)

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MATERIAL SPECIFICATION

531. PORTLAND CEMENT

1. SCOPE

This specification covers the quality of portland cements.

2. QUALITY

Portland cement shall conform to the requirements of ASTM Specification C 150 or ASTM Specification C 175 for the specified types of cement, except that, whenever Type I portland cement is specified, portland blast furnace slag cement conforming to the requirements of ASTM Specification C 595 may be used in lieu thereof.

If air-entraining cement is to be used, the Contractor shall furnish the manufacturer's written statement giving the source, amount and brand name of the air-entraining addition.

3. STORAGE AT THE CONSTRUCTION SITE

Cement shall be stored in such a manner as to be protected from weather, dampness or other destructive agencies. Cement that is partially hydrated or otherwise damaged will be rejected.

(531-1)

MATERIAL SPECIFICATION

532. AIR-ENTRAINING ADMIXTURES (FOR CONCRETE)

1. SCOPE

This specification covers the quality of air-entraining admixtures for concrete.

2. QUALITY

Air-entraining admixtures shall conform to the requirements of ASTM Specification C 260, except that the relative durability factor in the freezing and thawing test shall be not less than 95.

3. PERFORMANCE IN THE JOB MIX

Air-entraining admixtures shall meet the requirements of ASTM Specification C 260 with respect to bleeding, time of setting and compressive strength at 3, 7 and 28 days when tested with the concrete ingredients and mix proportions proposed for the work in which they are to be used.

(532-1)

SCS-Midwest

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MATERIAL SPECIFICATION

533. WATER-REDUCING AND SET-RETARDING ADMIXTURES FOR PORTLAND CEMENT CONCRETE

1. SCOPE

This specification covers the quality of water-retarding and set-retarding admixtures for portland cement concrete.

2. QUALITY

Water-reducing and set-retarding admixtures shall conform to the requirements of ASTM Specification C 494, except that resistance to freezing and thawing shall be determined in all cases, and the minimum relative durability factor shall be 95.

3. TYPES

Admixtures shall be Type A, Water-Reducing or Type D, Water-Reducing and Retarding, as defined in ASTM Specification C 494.

4. PERFORMANCE IN THE JOB MIX

When added in the manner and amount recommended by the manufacturer to the concrete used on the job, with no change in the cement content or proportions of the aggregates, admixtures shall have the following effects:

Type A or Type D: The water content at the required slump shall be at least 5 percent less with the admixture than without. The air content shall remain within the range specified, but shall not exceed 8 percent in any case.

Type D: The time of initial setting, determined as prescribed in ASTM C 494, shall be from 1 to 3 hours longer with the admixture than without.

(533-1)

SCS-Midwest

1-1-69

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MATERIAL SPECIFICATION

534. CURING COMPOUND (FOR CONCRETE)

1. SCOPE

This specification covers the quality of liquid membrane-forming compounds suitable for spraying on concrete surfaces to retard the loss of water during the curing process.

2. QUALITY

The curing compound shall meet the requirements of ASTM Specification C 309.

Unless otherwise specified the compound shall be Type 2.

3. DELIVERY AND STORAGE

All curing compound shall be delivered to the site of the work in the original container bearing the name of the manufacturer and the brand name. The compound shall be stored in a manner to prevent damage to the containers and to protect water-emulsion types from freezing.

(534-1)

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1-1-69

REVISIONS TO SPECIFICATIONS

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MATERIAL SPECIFICATION

535. PREFORMED EXPANSION JOINT FILLER

1. SCOPE

This specification covers the quality of preformed expansion joint fillers for concrete.

2. QUALITY

Preformed expansion joint filler shall conform to the requirements of ASTM Specification D 1752, Type I, Type II or Type III, unless bituminous type is specified. Bituminous type preformed expansion joint filler shall conform to the requirements of ASTM Specification D 994.

(535-1)

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MATERIAL SPECIFICATION

539. STEEL REINFORCEMENT (FOR CONCRETE)

1. SCOPE

The specification covers the quality of steel reinforcement for reinforced concrete.

2. QUALITY

All reinforcement shall be free from rust, oil, grease, paint or other deleterious matter.

Steel bars for concrete reinforcement requiring bends shall be deformed billet-steel bars conforming to ASTM Specification A 615, Grade 40.

Straight steel bars shall be deformed bars conforming to one of the following specifications:

Deformed Billet-Steel Bars for Concrete Reinforcement
(Grade 40 or Grade 60) - ASTM Designation A 615.

Rail-Steel Deformed Bars for Concrete Reinforcement
(Grade 50 or Grade 60) - ASTM Designation A 616.

Axle-Steel Deformed Bars for Concrete Reinforcement
(Grade 40 or Grade 60) - ASTM Designation A 617.

Fabricated steel bar mats shall conform to the requirements of ASTM Specification A 184.

Welded steel wire fabric reinforcement shall conform to the requirements of ASTM Specification A 185.

Welded deformed steel wire fabric for concrete reinforcement shall conform to the requirements of ASTM Specification A 497.

Cold-drawn steel wire reinforcement shall conform to the requirements of ASTM Specification A 82.

Deformed steel wire for concrete reinforcement shall conform to the requirements of ASTM Specification A 496.

(539-1)

3. DIMENSIONS OF WELDED WIRE FABRIC

Gages, spacing and arrangement of wires in welded steel wire fabric shall be as defined in ACI Standard 315 of the American Concrete Institute for the specified style designations.

4. STORAGE

Steel reinforcement stored at the site of the work shall be stored above the ground surface on platforms, skids or other supports and shall be protected from mechanical injury and corrosion.

(539-2)

MATERIAL SPECIFICATION

545. ASBESTOS-CEMENT PIPE

1. SCOPE

This specification covers the quality of asbestos-cement pipe and fittings.

2. PRESSURE PIPE

Pressure pipe and couplings shall conform to the requirements of ASTM Specification C 296 for the specified class and type of pipe. Type I or Type II pipe shall be furnished unless otherwise specified.

Fittings other than couplings shall: (1) be cast iron or ductile iron pressure fittings compatible with the type of pipe furnished, (2) be of the all-bell, rubber-ring-connecting type with gasket retainer grooves cast or machined in the inner surfaces of the bells, and (3) otherwise conform to the requirements of AWWA Specification C110 and ASA Specification A21.10. Gaskets shall conform to the requirements of ASTM Specification D 1869.

When perforated pressure pipe is specified, the number, size, location and spacing of perforations shall conform to the requirements of ASTM Specification C 508.

3. IRRIGATION PIPE

Irrigation pipe and couplings shall conform to the requirements of ASTM Specification C 296, except that lower strength will be allowed, as follows: The rated working pressure shall be not less than 75 pounds per square inch, the hydrostatic proof pressure shall be not less than 225 pounds per square inch, and the flexural proof loads and minimum crushing strengths shall be as tabulated below. Pipe and asbestos-cement fittings shall meet the chemical requirements for Type I or Type II pipe unless otherwise specified.

<u>Applied Flexural Proof Loads</u>		<u>Minimum Crushing Loads</u>	
<u>Nominal Size inches</u>	<u>Total Applied Load, lb.</u>	<u>Nominal Size inches</u>	<u>Crushing Strength per Lin. Ft., lb.</u>
4	1000	4	1900
6	2000	6	1400
8	3700	8	1650
		10	1900
		12	2200
		14	2600
		16	2750
		18	2900
		20	3100
		24	3500
		30	4100
		36	5000

4. NONPRESSURE PIPE

Nonpressure pipe and couplings shall conform to the requirements of ASTM Specification C 428 for the specified class and type of pipe. Type I or Type II pipe shall be furnished unless otherwise specified.

Fittings other than couplings shall meet the same physical and chemical requirements as the pipe and couplings.

When perforated nonpressure pipe is specified, the number, size, location and spacing of perforations shall conform to the requirements of ASTM Specification C 503.

5. PERFORATED UNDERDRAIN PIPE

Perforated underdrain pipe, couplings and fittings shall conform to the requirements of ASTM Specification C 503, except that flexible couplings recommended by the pipe manufacturer will be allowed unless otherwise specified.

(545-2)

MATERIAL SPECIFICATION

551. ZINC-COATED IRON OR STEEL CORRUGATED PIPE

1. SCOPE

This specification covers the quality of zinc-coated iron or steel corrugated pipe and fittings.

2. PIPE

Zinc-coated or steel corrugated pipe and fittings shall conform to the requirements of Federal Specification WW-P-405 for the specified classes and shapes of pipe, and to the following additional requirements:

- a. Unless otherwise specified, circumferential shop riveted seams shall have a maximum rivet spacing of 6 inches, except that 6 rivets will be sufficient for 12-inch diameter pipe;
- b. When close riveted pipe is specified: (1) the pipe shall be fabricated so that the rivet spacing in the circumferential seams shall not exceed 3 inches, except that 12 rivets will be sufficient to secure the circumferential seams in 12-inch pipe, and (2) in those portions of the longitudinal seams that will be covered by the coupling bands the rivets shall have finished flat heads or the rivets and holes shall be omitted and the seams shall be connected by welding to provide a minimum of obstruction to the seating of the coupling bands.
- c. Double riveting or double spot welding of pipe less than 42 inches in diameter may be required. When double riveting or double spot welding is specified, the riveting or welding shall be done in the manner specified for pipe 42 inches or greater in diameter.

3. COATINGS

Coatings shall conform to the requirements of Federal Specification WW-P-405 for the specified types of coatings.

(551 1)

MATERIAL SPECIFICATION

553. STEEL PIPE AND FITTINGS

1. SCOPE

This specification covers the quality of steel pipe and fittings.

2. PIPE

Steel pipe shall conform to the requirements of the applicable specifications listed below for the kind of pipe and the type, weight, grade, and finish specified:

<u>Kinds of Pipe</u>	<u>ASTM Specifications</u>
Welded and seamless steel pipe (Standard Pipe)	A 53 or A 120
Electric-resistance-welded pipe (30-inch and under)	A 135
Arc-welded pipe (4-inch and over)	A 139
Arc-welded steel plate pipe (16-inch and over)	A 134
	<u>AWWA Standard</u>
Fabricated electrically welded steel water pipe	C201
Mill-type steel water pipe	C202

3. FITTINGS

Fittings shall conform to the requirements of Federal Specification WW-P-521 for the types and kinds specified.

(553-1)

MATERIAL SPECIFICATION

21. METAL

1. SCOPE

This specification covers the quality of steel and aluminum alloys.

2. STRUCTURAL STEEL

Structural steel shall conform to the requirements of ASTM Specification A 36.

Carbon steel plates of structural quality to be bent or formed cold shall conform to ASTM Specification A 283, Grade C.

Carbon steel sheets of structural quality shall conform to ASTM Specification A 245, Grade D.

Carbon steel strip of structural quality shall conform to ASTM Specification A 305, Grade C.

3. COMMERCIAL OR MERCHANT QUALITY STEEL

Commercial or merchant quality steel shall conform to the requirements of the applicable ASTM specifications listed below:

<u>Product</u>	<u>ASTM Specification</u>
Carbon steel bars	A 575, Grade M 1015 to Grade M 1031
Carbon steel sheets	A 415
Carbon steel strip	A 425
Zinc-coated carbon steel sheets	A 526

4. ALUMINUM ALLOY

Aluminum alloy products shall conform to the requirements of the applicable ASTM specifications listed below. Unless otherwise specified, Alloy 6061-T6 shall be used.

(581-1)

<u>Product</u>	<u>ASTM Specification</u>
Standard structural shapes	B 308
Extruded structural pipe and tube	B 429
Extruded bars, rods, shapes and tubes	B 221
Drawn seamless tubes	B 210
Rolled or cold-finished bars, rods and wire	B 211
Sheet and plate	B 209

5. BOLTS

Steel bolts shall conform to the requirements of ASTM Specification A 307. If high-strength bolts are specified they shall conform to the requirements of ASTM Specification A 325.

When galvanized or zinc-coated bolts are specified, the zinc coating shall conform to the requirements of ASTM Specification A 153; except that bolts 1/2 inch or less in diameter may be coated with electrodeposited zinc or cadmium coating conforming to the requirements of ASTM Specification A 164, Type RS, or ASTM Specification A 165, Type TS, unless otherwise specified.

6. RIVETS

Unless otherwise specified, steel rivets shall conform to the requirements of ASTM Specification A 502, Grade 1.

Unless otherwise specified, aluminum alloy rivets shall be Alloy 6061-T6 conforming to the requirements of ASTM Specification B 316.

7. WELDING ELECTRODES

Steel welding electrodes shall conform to the requirements of ASTM Specification A 233 except that they shall be uniformly and heavily coated (not washed) and shall be of such a nature that the coating will not chip or peel while being used with the maximum amperage specified by the manufacturer.

Aluminum welding electrodes shall conform to the requirements of ASTM Specification B 285, ER 5556, ER 5356 or ER 4043.

(581-2)

MATERIAL SPECIFICATION

582. GALVANIZING

1. SCOPE

This specification covers the quality of zinc coatings applied to iron and steel products.

2. QUALITY

Zinc coatings shall conform to the requirements of the following specifications.

Zinc coatings on fabricated or assembled steel products shall conform to the requirements of ASTM Specification A 386 and shall be applied in conformance with the Recommended Practice for Providing High Quality Zinc Coatings (Hot-Dip) on Assembled Products (ASTM Designation A 385).

Zinc coatings on iron and steel hardware shall conform to the requirements of ASTM Specification A 153 except that bolts, screws and other fasteners 1/2 inch or less in diameter may be coated with electrodeposited zinc or cadmium coating conforming to the requirements of ASTM Specification A 164, Type RS, or ASTM Specification A 165, Type TS, unless otherwise specified.

(582-1)

MATERIAL SPECIFICATION

583. COAL TAR-EPOXY PAINT (FORMULA C-200)

1. SCOPE

This specification covers the quality of a coal tar polyamide epoxy paint suitable for use on structural steel or concrete. (Note: Coatings compounded from coal tar and epoxy resins are the subject of U.S. Patent No. 2,765,288 held by the U.S.S. Chemicals, a Division of United States Steel Corporation, Pittsburgh, Pennsylvania, 15230.)

2. COMPOSITION AND PROCESSING

- a. Composition. The paint shall be a two-component system containing the pitch, filler and catalyst in one component and the resin in another. The components shall contain the following types and proportions of ingredients:

(1) COMPONENT A

<u>Ingredient</u>	<u>% by Wt.</u>	<u>Gallons (absolute) in 38.5 lb. batch</u>
Coal Tar Pitch	35.0	1.28
Polyamide Resin	11.5	0.55
Magnesium Silicate	31.0	0.51
Xylene	18.7	1.00
Ethyl Alcohol (95%-denatured)	1.0	0.06
Gelling Agent	1.5	0.04
Catalyst	1.3	0.06
	<u>100.0</u>	<u>3.50 gallons</u>

(2) COMPONENT B

Epoxy Resin (100% nonvolatile)	9.7 pounds	1.0 gallon
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- b. Processing. Magnesium silicate and gelling agent shall be thoroughly dispersed in Component A by means of grinding equipment capable of developing substantial shear values. Gellant shall be mixed with an equal weight of magnesium silicate and then dampened by stirring-in all of the alcohol;

(583-1)

the resultant mixture shall be added to and thoroughly dispersed into Component A. (The viscosity of Component A will be markedly influenced by the degree of dispersion of gellant and magnesium silicate.)

- c. Quality of Ingredients. Ingredient materials shall exhibit the following properties:

- (1) Coal Tar Pitch. Coal tar pitch shall have the following characteristics:

	<u>Minimum</u>	<u>Maximum</u>
B & R softening point, degree C (Method ASTM D 36)	70	75.0
Ash, percent by weight (Method ASTM D 271)		0.5
Benzene insolubles, percent by weight (Method ASTM D 367)		18.0
Volatiles, percent by weight		
Under 250 degrees C		0.0
Under 300 degrees C		5.0

- (2) The Gellant. The gellant or thixotrophy-producing additive for coal tar-epoxy paint shall be an organic derivative of magnesium montmorillonite for use in low polarity hydrocarbons. It shall be a creamy white powder having a bulking value of 15 ± 0.2 lbs. per gallon and water content of 3.0% maximum (Bentone 38, National Lead Company has these properties.)

- (3) The Catalyst. The catalyst shall be 3, 4, 6 Tri-(Dimethylamino methyl) phenol. (DMP-30 Rohm and Haas Company is such a chemical.)

- (4) Epoxy Resin. Epoxy resin shall be a diepoxide condensation product of bisphenol A and epichlorohydrin with terminal epoxide group with the following properties:

	<u>Minimum</u>	<u>Maximum</u>
Nonvolatile content	99	
Epoxide equivalent	100	200

	<u>Minimum</u>	<u>Maximum</u>
Color, Gardner		5
Viscosity, 25°C, Brookfield, Poises	100	160
Specific Gravity 25°C/25°C	1.15	1.18
(5) <u>Polyamide Resin.</u> Polyamide resin shall be a condensation product of dimerized fatty acid and polyamines with the following characteristics:		
Amine Value	330-360	
Color, Gardner	12 maximum	
Specific Gravity 25°C/25°C	0.96-0.98	
Viscosity, Poises, 75°C, Brookfield	7-9	
Nonvolatile content, percent	97	
(6) <u>Xylene.</u> Xylene shall conform to Federal Specification TT-X-916b, "Xylene (for use in organic coatings)."		
(7) <u>Ethyl Alcohol.</u> Ethyl alcohol (95% denatured) shall conform to Federal Specification O-E-760b, and Amendment 2, "Ethyl Alcohol (Ethanol); Denatured Alcohol; and Proprietary Solvent," Grade III or IV.		
(8) <u>Magnesium Silicate.</u> Magnesium silicate shall conform to Federal Specification TT-P-403, "Pigment, Magnesium Silicate, Dry," Medium Oil Absorption.		

3. PHYSICAL REQUIREMENTS

When tested by the methods described in Section 4:

a. Component A shall exhibit the following properties:

- | | |
|------------------------------------|-------------|
| (1) Viscosity, poises (Brookfield) | 160 maximum |
| (2) Nonvolatile residue, percent | 78 minimum |

(583-3)

b. The mixed paint shall exhibit the following properties:

- | | |
|----------------------------------|-----------|
| (1) Sag, 12 mil wet film | None |
| (2) Pot life at 77° ± 3°F, hours | 4 minimum |

c. The cured film shall exhibit the following properties:

- | | |
|--|-----------------|
| (1) Penetration, 200 grams, 5 seconds,
77°F, hundredth centimeter units | 3 maximum |
| (2) Odor after 48 hours curing | Pass test |
| (3) Flexibility on $\frac{1}{2}$ -inch mandrel | Pass test |
| (4) Adhesion | No delamination |

4. TEST METHODS

- a. Viscosity of Component A. Fill a container having a diameter and a height of not less than 3 and 3-3/4 inches respectively to a depth of not less than 3 inches with a representative sample of Component A. Set up a Model RVT or RVF-100 Brookfield Synchro-Electric Viscometer with a No. 7 spindle and with guard removed. Bring the sample to a temperature of 25°C and stir vigorously for 2 minutes with a stiff spatula. Immediately after stirring, lower the viscometer until the spindle is immersed until $\frac{1}{2}$ of the "neck" mark is covered. Run the viscometer at 100 r.p.m. for 1 minute and take a reading of the position of the pointer on the dial. If the dial reading is 40 or less, the viscosity shall be considered to be 160 Poises or less. If the reading is over 40, immediately start the motor and take additional readings at 1-minute intervals. If no readings of 40 or less are obtained out of 10 readings, taken at 1-minute intervals, the viscosity of the material shall be considered to be over 160 Poises.
- b. Nonvolatile Content of Component A. Place a short length of stiff wire such as a partially-straightened paper clip into a small disposable aluminum dish of about 2 inches diameter and weigh to the nearest 0.1 milligram. As rapidly as possible, place between 2 and 3 grams of Component A into the dish and weigh immediately to the nearest 0.1 milligram. After weighing, spread the material over the bottom of the dish. Heat the dish, wire and contents in a well-ventilated

(583-4)

convection-type oven maintained at $105^{\circ} \pm 2^{\circ}\text{C}$, for 3 hours. After the material has been in the oven for a few minutes, and periodically thereafter, stir the material. Cool in a desiccator, weigh to the nearest 0.1 milligram and calculate the percentage nonvolatile.

- c. Sag Test of Coal Tar-Epoxy Paint. Prepare approximately one pint of the material by thoroughly mixing 100 ml. of Component B into 350 ml. of Component A. Determine its viscosity immediately after mixing, using the same procedure as for Component A above but employing a No. 6 spindle. If the material produces a scale reading of more than 80, at 100 r.p.m. after 5 readings taken at 1-minute intervals, reduce the viscosity by adding xylene in small increments until a reading not greater than 80 is obtained. Press a strip of 1-inch masking tape across the full width of a solvent cleaned 3" x 6" cold-rolled steel panel. The tape should be parallel to and centered on the shorter axis of the panel. Within 30 minutes after mixing, apply the material to the panel to a wet film thickness of at least 12 mils as determined by an Interchemical wet film thickness gage. The application may be made with a doctor blade having a gap of approximately 25 mils or by brush. Immediately after applying the material, carefully remove the masking tape and stand the panel in a vertical position with the bare strip horizontal. Examine the panel after four hours. Sagging or running of the coating into the bare area shall constitute failure of the material to pass the sag test.
- d. Penetration Test on Coal Tar-Epoxy Film. Select and solvent spray-clean two 3" x 6" steel panels in accordance with Method 2011 of Federal Test Method Standard 141. Draw down, in accordance with Method 2161, a coat of the paint mixed (including any thinning) for the sag test. Allow the film to dry 18 to 24 hours in a horizontal position at $77^{\circ} \pm 3^{\circ}\text{F}$ and at a relative humidity of not over 60%. Apply a second coat over and at right angles to the first, using freshly mixed paint prepared identically to that used for the first coat. The draw-down applicator(s) shall be such as to provide a total dry-film thickness for the two coats of 23 ± 3 mils and the coats shall be of approximately equal thickness. Allow the second coat to dry in a horizontal position for 120 hours at $77^{\circ} \pm 3^{\circ}\text{F}$. After 72 hours of curing, and daily thereafter, clamp the panel onto the table of a penetrometer (ASTM D5) so that the needle is over an area which is within the prescribed thickness range (as measured by Method 6181) and determine

(583-5)

the penetration, using a total load of 200 grams applied for 5 seconds at 77°F. The average of the 3 lowest out of 5 penetration readings, all taken within a 1 centimeter square, shall not exceed 3/100 of a centimeter after 120 hours of curing.

- e. Flexibility of Coal Tar-Epoxy Film. Sandblast 3 steel panels (similar to those used in the penetration test) at low pressure with clean, 30 to 50 mesh, non-metallic abrasive until a uniform, gray-white surface, with well developed anchor pattern, is achieved. (Note: It may be necessary to blast both sides of panel, in stages, to avoid warping.) Blow off dust with a clean air blast. Immediately after recoating of the penetration test panel, apply 10 to 12 mils (wet thickness as determined with an Interchemical gage) of the same material to the flexibility test panels in accordance with Method 2161, Federal Test Method Standard No. 141. Allow the film to cure in the horizontal position for 120 hours at 77° ± 3°F or for a period equal to that required to reach a penetration of 3/100 centimeter on the penetration test panel, whichever occurs first. With film side up, and in a time interval of approximately 1 second, bend each of the flexibility panels double over a 1/2-inch diameter mandrel. Cracks in any of the panels visible to the naked eye shall constitute failure except that edge cracks extending no further than 1/2 inch or small local fissures emanating from air bubbles, craters and similar imperfections shall be disregarded.
- f. Adhesion of Coal Tar-Epoxy Film. Test the adhesion of the coating on an unbroken area of the flexibility panel with a sharp knife after the panel has cured 120 hours. It shall strongly resist being removed from the metal. Also, test the intercoat adhesion of the film on a penetration panel after 120 hours curing, with a knife. Any delamination of the two coats shall constitute failure.
- g. Pot Life Test of Coal Tar-Epoxy Paint. Mix 100 ml. of Compound "B" into 350 ml. of Component "A" both of which have been brought to a temperature of 77° ± 3°F before mixing. Pour the material into a pint tin can, seal tightly and maintain at 77° ± 3°F. Examine the material in four hours from the time it was mixed. For its pot life to be considered satisfactory, the mixed material must still be in a fluid condition and when thinned with no more than 100 ml. of xylene shall be lump-free and brushable.

(583-6)

- h. Odor of Dried Coal Tar-Epoxy Film. Examine the paint film or one of the flexibility panels for odor after it has been cured for 48 hours. The film shall be free of any odor except for a faint odor of xylene.

5. PACKAGING

Three and one-half gallons of Component A shall be packaged in a standard 5-gallon container with a lug-type, removable lid. Component B shall be packaged to the full mark in a one-gallon, friction-lid container. In addition to other labeling requirements, each of the 5-gallon containers shall bear instructions for properly mixing the two components immediately prior to use.

(583-7)

SCS-Midwest

USDA SCS LINCOLN NEBR 1160

1-1-69

5, L-26,703

MATERIAL SPECIFICATION

584. STRUCTURAL TIMBER AND LUMBER

1. SCOPE

This specification covers the quality of structural timber, lumber and plywood.

2. GRADING

Structural timber and lumber shall be graded in accordance with the grading rules, applicable to the specified species, adopted by a lumber grading or inspection bureau or agency recognized as being competent and that conform to the basic principles of ASTM Methods D 245. The material supplied according to the commercial grading rules shall be of equal or greater stress value than the specified stress-grade.

Plywood shall conform to the requirements of Product Standard PS 1-66 for the grade, species or group, and type specified.

3. QUALITY

All materials shall be sound wood free from decay. No boxed heart pieces of Douglas fir or redwood shall be used in stringers, floor beams, caps, posts, sills or other principal structural members. Boxed heart pieces are defined as timber so sawed that at any section in the length of a sawed piece the pith lies entirely inside the four faces.

4. HEARTWOOD REQUIREMENTS

All timber and lumber specified for use without preservative treatment shall contain not less than 75 percent heartwood on any diameter or on any side or edge, measured at the point where the greatest amount of sapwood occurs. This requirement shall not apply to timber and lumber for which pressure treatment with wood preservative is specified.

5. SIZES

The sizes specified are nominal sizes. Unless otherwise specified the material shall be furnished in American Standard dressed sizes.

(584-1)

6. MARKING

Each piece of timber and lumber shall be legibly stamped or branded with an official grade mark. Plywood shall be legibly stamped with an official mark designating the grade, type and surface finish as described in the cited Product Standard.

(584-2)

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1-1-69

S.L.-26,703

MATERIAL SPECIFICATION

585. WOOD PRESERVATIVES AND TREATMENT

1. SCOPE

This specification covers the quality of wood preservatives and methods of treatment of wood products.

2. TREATING PRACTICES

Treating practices and sampling, inspection and test procedures shall conform to the requirements of Interim Federal Specification TT-W-00571h, "Wood Preservation: Treating Practices."

3. PRESERVATIVES

The wood shall be treated with the specified type of preservative. Wood preservatives shall conform to the requirements of the applicable specifications listed in Federal Specification TT-W-00571h.

4. QUALITY OF TREATED MATERIALS

Treated lumber, timber, piles, poles, or posts shall be free from heat checks, water bursts, excessive checking, results of chafing or from any other damage or defects that would impair their usefulness or durability for the purpose intended. The use of "c" irons will not be permitted. Holes bored for tests shall be filled with tight fitting treated plugs.

5. MARKING

Each treated wood item delivered to the job site shall be marked as specified in Interim Federal Specification TT-W-00571h unless otherwise specified.

(585-1)

SCS-Midwest

U.S. SCS LINCOLN NEBR 1968

1-1-69

U. L. - 26, 701

MATERIAL SPECIFICATION

602. HEAVY DUTY DIESEL INDUSTRIAL ENGINE

1. SCOPE

This specification covers the quality of heavy duty diesel industrial engines for driving large irrigation and drainage pumps.

2. MATERIALS, DESIGN AND WORKMANSHIP

The engine supplied shall be of the latest type and design, and shall include the necessary accessories to comprise a power unit rated for continuous duty as specified.

All materials and parts comprising the units herein specified shall be new and unused, and shall be free from all defects or imperfections affecting performance. The power unit shall be a standard model in current production at the manufacturer's place of business. If more than one engine is required of a given size, the engines shall be identical.

3. WARRANTY

The unit supplied shall be covered by the manufacturer's standard warranty or guarantee on new machines.

4. EXPERIENCE

The unit shall be the product of a firm regularly engaged in the manufacture of engines, and shall be supplied and serviced by a dealer franchised by the manufacturer, and located within 500 miles of the pump site.

5. PARTS AND SERVICE

The power unit shall be a model which may be properly maintained and serviced at reasonable cost without the necessity of the purchaser carrying expensive parts stocks, or being subjected to the inconvenience of long periods of interrupted service due to lack of available parts or service personnel.

Power Units for which parts and service are not constantly and promptly available at reasonable costs, will not be allowed.

6. RATING

Specified horsepower ratings shall be the continuously available brake horsepower when the engine is equipped with all necessary operating accessories such as air cleaners, lubricating oil pump, jacket water pump, generator, heat exchanger pump, governor, fuel pump, clutch, and muffler. If a blower is used it shall also be included as a necessary operating accessory. The specified horsepower

shall be measured at the specified revolutions per minute for operation at 1500 feet elevation above sea level in an ambient air temperature of 100°F. maximum, and 50°F. minimum. Ratings shall be based on American brake horsepower.

Continuous brake horsepower shall be the horsepower and speed capability of the engine which can be utilized without interruption or load cycling. This can extend for months of operation except for stops for lubrication.

7. ENGINE DESIGN

The engine shall be a full compression ignition, diesel, solid-injection unit. It shall be either vertical or V-type, with not less than two cylinders.

Piston Speed shall not exceed 2000 feet per minute at the rated RPM.

8. GOVERNOR

The governor shall be fully enclosed, self-lubricating and capable of providing accurate speed control within 10% of the rated speed.

9. FUEL

The engine shall be capable of the specified performance using a commercial grade of distilled petroleum fuel oil such as No. 2 domestic burner oil. Engines requiring a premium fuel will not be considered.

The engine shall be capable of operating at idle or light loads for extended periods of time and shall provide for precombustion of the fuel or a similar means to prevent carbonization.

10. FUEL SYSTEM

Fuel injection pumps shall be positive action pumps.

Fuel system shall have a fuel filter with replaceable elements which may be easily removed without breaking any fuel line connections or disturbing fuel pumps or any other engine part. It shall be located in an accessible housing ahead of injection pumps so fuel will have been thoroughly filtered before it reaches the pumps.

An engine-driven, fuel transfer pump capable of lifting fuel against a ten foot head to supply fuel through filters to injection pumps at constant pressure shall be provided.

11. CYLINDER LINERS, PISTONS AND VALVES

The engine shall be provided with removable cylinder liners.

The valve train shall employ replaceable valve seat inserts.

12. LUBRICATION

A lubricating oil pump will supply oil under pressure to the main bearings, crank pin bearings, pistons, timing gears, camshaft bearings and valve rocker mechanism.

Filters are to be so located that lubricating oil is continuously filtered except during periods when oil is by-passed to protect vital parts.

The filter system shall be equipped with a spring-loaded bypass valve as an insurance against stoppage of lubricating oil circulation in the event filters become clogged.

A water-cooled, engine-mounted lubricating oil cooler shall be furnished.

13. AIR CLEANERS

One or more engine-mounted, dry-type air cleaners for protection of the engine working parts from dust and grit shall be provided.

14. STARTING

The engine shall be equipped with an electric starting system of sufficient capacity to crank at a speed which will easily start the engine.

A storage battery with sufficient capacity to crank the engine for at least 30 seconds at firing speed in the ambient temperatures specified, and with capacity for starting the engine a minimum of three times using appropriate starting aids as recommended by the engine manufacturer shall be furnished.

A battery charging device shall be provided on each engine, with sufficient capacity for normal starting requirements of 3 starts per 12 hours of engine operation.

15. COOLING

The engine shall be furnished with a cooling system having sufficient capacity for cooling the engine when delivering full rated horsepower.

A heat exchanger of a type and capacity recommended by the engine manufacturer shall be included.

The engine shall have an engine-driven water circulating pump for circulating water through the cooling system.

16. EXHAUST SYSTEM

A silencer or silencers to provide industrial type silencing shall be furnished with the engine and shall be vented to the outside of the building. Automatic protection from rain and snow entering the exhaust shall be provided.

17. SAFETY

The engine shall be equipped with automatic safety controls which shutdown the engine in the event of low lubricating oil pressure, high jacket water temperature or engine overspeed.

The engine shall also be equipped with an automatic safety control which will shut down the engine in event of low irrigation pump output pressure. The gage for this control shall be able to withstand up to 300 lbs per square inch pressure and shall be equipped with adjustable starting lockout features.

All moving parts including power take off shall be provided with safety covers. An oil pressure gage, jacket water temperature gage, ammeter, tachometer, and hour meter shall be provided.

18. MOUNTINGS

The engine shall be equipped with support legs or steel base for mounting on a concrete block.

19. CLUTCH

A clutch shall be provided to disengage the engine pump during starting operations.

MATERIAL SPECIFICATION

603. VERTICAL TURBINE PUMP

1. SCOPE

This specification covers the quality of oil lubricated line shaft vertical turbine pumps for use in irrigation pumping plants.

2. MATERIALS, DESIGN, AND WORKMANSHIP

The pump supplied shall be of the latest type and design, and shall include the necessary accessories to comprise a complete pumping installation capable of providing the specified discharge and pressure continuously.

All materials and parts comprising the units herein specified shall be new and unused, and shall be free from all defects or imperfections affecting performance. The pump shall be a standard model in current production at the manufacturer's place of business.

The pump shall conform to the requirements of the American Standard for Vertical Turbine Pumps (ASA No. B58.1 or ASMA No. E101) except that the discharge column pipe shall have flanged connections.

3. WARRANTY

The unit supplied shall be covered by the manufacturer's standard warranty or guarantee on new machines.

4. EXPERIENCE

The unit shall be the product of a firm regularly engaged in the manufacture of pumps, and shall be supplied and serviced by a dealer franchised by the manufacturer.

5. PARTS AND SERVICE

The pump unit shall be a model which may be properly maintained and serviced at reasonable cost without the necessity of the purchaser carrying expensive parts stocks, or being subjected to the inconvenience of long periods of interrupted service due to lack of available parts or service personnel.

Pump units for which parts and service are not constantly and promptly available at reasonable costs will not be allowed.

6. RIGHT ANGLE PUMP DRIVE

The right angle drive shall be a heavy duty drive with spiral-beveled, and mated gears, ground for smooth, quiet performance and long life. A positive pressure oil distribution system shall be provided to the bearings and gears. Oil cooling shall be provided. Bearing and gear design shall meet American Gear Manufacturers Association Guidelines. A heavy-duty non-reverse clutch shall be provided. The gear ratio of the drive shall match the speed required for the pump with the required speed of the engine.

7. PUMP ASSEMBLY

The impeller shall be a closed type and shall be constructed of bronze accurately machined and finished, and mechanically balanced.

8. WATER LEVEL INDICATOR

A suitable air line of galvanized iron pipe or copper tubing of sufficient length to extend from the surface to the bottom of the bowl assembly, with altitude gage reading in feet, and connections for air pump, shall be furnished.

9. RATING

The pump shall be capable of producing the specified gallons per minute (gpm) at or below the maximum speed and at the specified total dynamic head (TDH). The total dynamic head specified will be the head produced by the pump exclusive of losses in the pump.

Specified pump ratings shall be the continuously available gallons per minute at the specified head and a pump efficiency of not less than 78 percent with all necessary operating accessories such as discharge pipe and right angle gear drive attached.

MATERIAL SPECIFICATION
604. VALVES, METERS, GAGES

1. SCOPE

This specification covers the quality of valves, meters and gages (other than engine and pump controls) for use in irrigation distribution systems.

2. MATERIALS, DESIGN, AND WORKMANSHIP

Valves, meters, and gages shall be of the latest model and design, and shall include accessories as necessary to perform their design function.

All materials and parts comprising the units herein specified shall be new and unused, and shall be free from all defects or imperfections affecting performance. Each unit shall be a standard model in current production at the manufacturer's place of business. Installation shall be as recommended by the manufacturer.

3. WARRANTY

The units supplied shall be covered by the manufacturer's standard warranty or guarantee on new units.

4. EXPERIENCE

The items supplied shall be the product of a firm regularly engaged in the manufacture of the items supplied.

5. PARTS

The items supplied shall be a model for which parts are readily available.

MATERIAL SPECIFICATION

605. PLASTIC PIPE (IPS PVC)

1. SCOPE

This specification covers the quality of Iron Pipe Size, Polyvinyl Chloride Pipe and fittings.

2. QUALITY

The compound used in manufacturing the pipe shall meet the requirements for polyvinyl-chloride (PVC) as specified in ASTM Designation D1784. Type I, Grade 1; Type I, Grade 2; Type II, Grade 1.

The completed pipe shall conform to the requirements of ASTM Designation D 2241, and shall have an "Iron Pipe Size" outside diameter.

Plastic fittings shall meet the requirements of the following applicable ASTM specifications: ASTM D 2464 PVC Fittings Threaded, Schedule 80; ASTM D 2466 PVC Fittings Socket, Schedule 40; ASTM D 2467 PVC Fittings Socket, Schedule 80.

3. CERTIFICATION AND TESTING

The pipe shall be certified by a qualified testing laboratory for compliance with this specification except that testing laboratory certification will not be required for pipe bearing the seal of approval of the National Sanitation Foundation.

MATERIAL SPECIFICATION

606. Zinc Anode

1. SCOPE

This specification covers the quality of zinc anodes to be used for corrosion protection of steel structures such as pipelines and fuel tanks.

2. MATERIALS AND WORKMANSHIP

Anodes shall be commercially made zinc rods conforming to the requirements of ASTM B418.

Each anode shall have a full length core with a single strand of insulated copper wire solidly attached to it. The wire shall be No. 12 or larger and shall be insulated for underground use. If a header wire is used, the gage must be sufficient to carry 100 milliamp current with no more than a 20 millivolt I-R drop.

All anodes shall be commercially packaged and the packaged backfill mix shall be 20-30% bentonite, and 70 to 80% gypsum.

INVITATION FOR BIDS (CONSTRUCTION CONTRACT)

REFERENCE

INVITATION NO.
SCS-15-SD-70

DATE

May 1, 1970

NAME AND LOCATION OF PROJECT

Randall Resource Conservation and
Development Project
Charles Mix County, South Dakota

DEPARTMENT OR AGENCY

U. S. Department of Agriculture
Soil Conservation Service

BY (Issuing Office)

Soil Conservation Service
239 Wisconsin, S.W.
Huron, South Dakota 57350

Scaled bids in single copy

for the work described herein will be received until

2:00 P.M., C.D.T., June 4, 1970

at 239 Wisconsin, S.W., P. O. Box 1357, Huron, South Dakota 57350

and at that time publicly opened.

Information regarding bidding material, bid guarantee, and bonds

A bid guarantee in an amount not less than 20% of the total bid price must be submitted with each bid, in a form described in Clause 4 of the attached Instructions to Bidders, Standard Form 22 (6/64).

After a contract is awarded a Performance Bond and a Payment Bond on forms provided by the Government. in penal sums 100% and 50% respectively, of the original amount of the contract, shall be furnished as provided in Clause 11 of the attached Instruction to Bidders, Standard Form 22 (6/64).

The following attachments hereto form a part of this invitation for bids and any resultant contract: Bid Schedule, Special Provisions Clauses 1 through 27, General Provisions - Standard Form 23-A (6/64), Standard Form 19-A (4/65), Form AD-370 (5/66), Form AD-573 (9/67), Form AD-560 (8/68), and Specifications and Drawings described under "Contents."

Description of work: Constructing intake works for pumping plant, installing buried irrigation pipeline, installing turbine pumps and diesel engines, constructing pumping plant building.

The work shall be commenced within seventy (70) calendar days and be completed within one hundred sixty-one (161) calendar days after the date of receipt of the Notice to Proceed.

INSPECTION OF WORK SITE: Prospective bidders may assemble in the Soil Conservation Service Office at Lake Andes, South Dakota, on Friday, May 15, 1970, for a group showing of the work site. The group will leave Lake Andes at 9:30 A.M. If you are unable to attend the group showing, arrangements to inspect the site may be made with Julian L. Meuer, Government Representative, Soil Conservation Service, Lake Andes, South Dakota. (Phone 487-7501)

C O N T E N T S

Invitation No. SCS-15-SD-70

INVITATION FOR BIDS - Standard Form 20

INSTRUCTIONS TO BIDDERS - Standard Form 22

SPECIAL INSTRUCTIONS TO BIDDERS

NOTICE OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES -
Form AD-559

BID FORM - Standard Form 21

REPRESENTATIONS AND CERTIFICATIONS - Standard Form 19-B

BID SCHEDULE

GENERAL PROVISIONS - Standard Form 23-A

SPECIAL PROVISIONS - Clauses 1 thru 27

INSTRUCTIONS TO CONTRACTORS - Form AD-384

CONTRACTOR'S AFFIRMATIVE ACTION PLAN FOR EQUAL EMPLOYMENT OPPORTUNITY
UNDER EXECUTIVE ORDER 11246 AND EXECUTIVE ORDER 11375 - Form AD-425

TERMINATION FOR CONVENIENCE OF THE GOVERNMENT - Form AD-573

FEDERAL, STATE, AND LOCAL TAXES - Form AD-370

LABOR STANDARDS PROVISIONS - Standard Form 19-A

BID BOND - Standard Form 24

SPECIFICATIONS

<u>Number</u>	<u>Title</u>
CONSTRUCTION	
2	Clearing and Grubbing
3	Structure Removal
11	Removal of Water
21	Excavation
23	Earth Fill
26	Salvaging and spreading topsoil
31	Concrete
34	Steel Reinforcement
51	Corrugated Metal pipe conduits
52	Steel pipe conduits
81	Metal fabrication and installation
82	Cleaning and painting metalwork
83	Timber Fabrication and Installation

NumberTitle

CONSTRUCTION

403	Vertical Turbine Pumps, Diesel Engines
404	Valves, Meters, Gages
405	Small diameter plastic pipe
406	Zinc anode
407	Asbestos Cement Pipe Conduits and Drains

MATERIAL

522	Aggregate for Portland Cement Concrete
531	Portland Cement
532	Air-Entraining Admixtures
533	Water-Reducing and Set-Retarding Admixtures
	For Portland Cement Concrete
534	Curing Compound (for Concrete)
535	Preformed Expansion Joint Filler
539	Steel Reinforcement (for Concrete)
545	Asbestos-Cement Pipe
551	Zinc-Coated Iron or Steel Corrugated Pipe
553	Steel Pipe and Fittings
581	Metal
582	Galvanizing
583	Coal tar-Epoxy Paint (Formula C-200)
585	Wood Preservatives and Treatment
602	Heavy Duty Diesel Industrial Engine
603	Vertical Turbine Pumps
604	Valves, Meters, Gages
605	Plastic Pipe (IPS-PVC)
606	Zinc Anode

DRAWINGS

NumberTitle

5,E-27,660-1	Cover
5,E-27,660-2	Quantities and Plan View of Pipeline
5,E-27,660-3	Plan View of Intake Works
5,E-27,660-4	Profiles & Cross Sections of Intake Works
5,E-27,660-5	Riser Details for Intake Works
5,E-27,660-6	Details of Trash Guard & Intake Works
5,E-27,660-7	Corrugated Metal Pipe Joint Bonding Strap
5,E-27,660-8	Plan View of Pumping Plant & Fuel Tank Details
5,E-27,660-9	Pumping Plant Pipe & Valve Details
5,E-27,660-10-14	Building Details
5,E-27,660-15	Details of Anodes & Building Floor
5,E-27,660-16	Profile - C/L Pipeline Sta. 6+60 - 16+00
5,E-27,660-17	Profile - C/L Pipeline Sta. 16+00 - 38+00
5,E-27,660-18	Profile - C/L Pipeline Sta. 38+00 - 58+00
5,E-27,660-19	Profile - C/L Pipeline Sta. 58+00 - 94+00
5,E-27,660-20	Profile - C/L Pipeline Sta. 94+00 - 111+80
	& Profile - C/L Lateral Sta. 0+00 - 13+33
5,L-23,000.40-5	Watertight Annular C.M. Pipe Joint Details
5,R-10,000.47	Identification Symbols for Soil & Rock Materials

INSTRUCTIONS TO BIDDERS

(CONSTRUCTION CONTRACT)

1. *Explanations to Bidders.* Any explanation desired by a bidder regarding the meaning or interpretation of the invitation for bids, drawings, specifications, etc., must be requested in writing and with sufficient time allowed for a reply to reach bidders before the submission of their bids. Any interpretation made will be in the form of an amendment of the invitation for bids, drawings, specifications, etc., and will be furnished to all prospective bidders. Its receipt by the Bidder must be acknowledged in the space provided on the Bid Form (Standard Form 21) or by letter or telegram received before the time set for opening of bids. Oral explanations or instructions given before the award of the contract will not be binding.

2. *Conditions Affecting the Work.* Bidders should visit the site and take such other steps as may be reasonably necessary to ascertain the nature and location of the work, and the general and local conditions which can affect the work or the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Government will assume no responsibility for any understanding or representations concerning conditions made by any of its officers or agents prior to the execution of the contract, unless included in the invitation for bids, the specifications, or related documents.

3. *Bidder's Qualifications.* Before a bid is considered for award, the bidder may be requested by the Government to submit a statement regarding his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the work.

4. *Bid Guarantee.* Where a bid guarantee is required by the invitation for bids, failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

A bid guarantee shall be in the form of a firm commitment, such as a bid bond, postal money order, certified check, cashier's check, irrevocable letter of credit or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Bid guarantees, other than bid bonds, will be returned (a) to unsuccessful

ful bidders as soon as practicable after the opening of bids, and (b) to the successful bidder upon execution of such further contractual documents and bonds as may be required by the bid as accepted.

If the successful bidder, upon acceptance of his bid by the Government within the period specified therein for acceptance (sixty days if no period is specified) fails to execute such further contractual documents, if any, and give such bond(s) as may be required by the terms of the bid as accepted within the time specified (ten days if no period is specified) after receipt of the forms by him, his contract may be terminated for default. In such event he shall be liable for any cost of procuring the work which exceeds the amount of his bid, and the bid guarantee shall be available toward offsetting such difference.

5. *Preparation of Bids.* (a) Bids shall be submitted on the forms furnished, or copies thereof, and must be manually signed. If erasures or other changes appear on the forms, each erasure or change must be initiated by the person signing the bid. Unless specifically authorized in the invitation for bids, telegraphic bids will not be considered.

(b) The bid form may provide for submission of a price or prices for one or more items, which may be lump sum bids, alternate prices, scheduled items resulting in a bid on a unit of construction or a combination thereof, etc. Where the bid form explicitly requires that the bidder bid on all items, failure to do so will disqualify the bid. When submission of a price on all items is not required, bidders should insert the words "no bid" in the space provided for any item on which no price is submitted.

(c) Unless called for, alternate bids will not be considered.

(d) Modifications of bids already submitted will be considered if received at the office designated in the invitation for bids by the time set for opening of bids. Telegraphic modifications will be considered, but should not reveal the amount of the original or revised bid.

6. *Submission of Bids.* Bids must be sealed, marked, and addressed as directed in the invitation for bids. Failure to do so may result in a premature opening of, or a failure to open, such bid.

7. Late Bids and Modifications or Withdrawals.

(a) Bids and modifications or withdrawals thereof received at the office designated in the invitation for bids after the exact time set for opening of bids will not be considered unless: (1) They are received before award is made; and either (2) they are sent by registered mail or by certified mail for which an official dated post office stamp (postmark) on the original Receipt for Certified Mail has been obtained, or by telegraph if authorized, and it is determined by the Government that the late receipt was due solely to delay in the mails, or delay by the telegraph company, for which the bidder was not responsible; or (3) if submitted by mail (or by telegram if authorized), it is determined by the Government that the late receipt was due solely to mishandling by the Government after receipt at the Government installation: *provided*, That timely receipt at such installation is established upon examination of an appropriate date or time stamp (if any) of such installation, or of other documentary evidence of receipt (if readily available) within the control of such installation or of the post office serving it. However, a modification which makes the terms of the otherwise successful bid more favorable to the Government will be considered at any time it is received and may thereafter be accepted.

(b) Bidders using certified mail are cautioned to obtain a Receipt for Certified Mail showing a legible, dated postmark and to retain such receipt against the chance that it will be required as evidence that a late bid was timely mailed.

(c) The time of mailing of late bids submitted by registered or certified mail shall be deemed to be the last minute of the date shown in the postmark on the registered mail receipt or registered mail wrapper or on the Receipt for Certified Mail unless the bidder furnishes evidence from the post office station of mailing which establishes an earlier time. In the case of certified mail, the only acceptable evidence is as follows: (1) where the Receipt for Certified Mail identifies the post office

station of mailing, evidence furnished by the bidder which establishes that the business day of that station ended at an earlier time, in which case the time of mailing shall be deemed to be the last minute of the business day of that station; or (2) an entry in ink on the Receipt for Certified Mail showing the time of mailing and the initials of the postal employee receiving the item and making the entry, with appropriate written verification of such entry from the post office station of mailing, in which case the time of mailing shall be the time shown in the entry. If the postmark on the original Receipt for Certified Mail does not show a date, the bid shall not be considered.

8. Withdrawal of Bids. Bids may be withdrawn by written or telegraphic request received from bidders prior to the time set for opening of bids.

9. Public Opening of Bids. Bids will be publicly opened at the time set for opening in the invitation for bids. Their content will be made public for the information of bidders and others interested, who may be present either in person or by representative.

10. Award of Contract. (a) Award of contract will be made to that responsible bidder whose bid, conforming to the invitation for bids, is most advantageous to the Government, price and other factors considered.

(b) The Government may, when in its interest, reject any or all bids or waive any informality in bids received.

(c) The Government may accept any item or combination of items of a bid, unless precluded by the invitation for bids or the bidder includes in his bid a restrictive limitation.

11. Contract and Bonds. The bidder whose bid is accepted will, within the time established in the bid, enter into a written contract with the Government and, if required, furnish performance and payment bonds on Government standard forms in the amounts indicated in the invitation for bids or the specifications.

SPECIAL INSTRUCTION TO BIDDERS - PART I

1. Award of Contract. (a) No bid will be considered unless all items in the bid schedule are priced, and only one contract will be awarded unless otherwise stated in the invitation.

(b) The contract will be awarded based on the total bid, corrected if necessary, for errors in price extensions and/or additions. In case of error in extension of price, the unit price will govern.

(c) The contract will be awarded to that responsible offeror, whose offer conforming to the solicitation will be most advantageous to the Government, price and other factors considered. Other factors which will be considered are immediate availability of repair parts and maintenance service.

2. Specifications. Specifications referred to herein shall include all revisions and amendments in effect on the date of issuance of the invitation for bids. Information as to where these specifications may be obtained can be acquired from the office issuing the invitation.

3. Records. Records of the site investigations and soil mechanics testing report may be reviewed by prospective bidders by contacting the office issuing this invitation.

4. Late Bids and Modifications or Withdrawals. Clause 7, Late Bids and Modifications or Withdrawals, Instructions to Bidders, SF-22, June 1964 Edition, is deleted and replaced by the following:

Late Bids and Modifications or Withdrawals

(This paragraph applies to all advertised solicitations. In the case of Department of Defense negotiated solicitations, it shall also apply to late offers and modifications (other than the normal revisions of offers by selected offerors during the usual conduct of negotiations with such offerors) but not to withdrawal of offers. Unless otherwise provided, this paragraph does not apply to negotiated solicitations issued by civilian agencies.)

(a) Bids and modifications or withdrawals thereof received at the office designated in the invitation for bids after the exact time set for opening of bids will not be considered unless: (1) They are received before award is made; and either (2) they are sent by registered mail, or by certified mail for which an official dated post office stamp (postmark) on the original Receipt for Certified Mail has been obtained and it is determined by the Government that the late receipt was due solely to delay in the mails for which the bidder was not responsible; or (3) if submitted by mail (or by telegram if authorized), it is determined by the Government that the late receipt was due solely to mishandling by the Government after receipt at the Government installation: Provided, that timely receipt at such installation is established upon examination of an appropriate date or time stamp (if any) of such (if

readily available) within the control of such installation or of the post office serving it. However, a modification which makes the terms of the otherwise successful bid more favorable to the Government will be considered at any time it is received and may thereafter be accepted.

(b) Bidders using certified mail are cautioned to obtain a receipt for Certified Mail showing a legible, dated postmark and to retain such receipt against the chance that it will be required as evidence that a late bid was timely mailed.

(c) The time of mailing of late bids submitted by registered or certified mail shall be deemed to be the last minute of the date shown in the postmark on the registered mail receipt or registered mail wrapper or on the Receipt for Certified Mail unless the bidder furnishes evidence from the post office station of mailing which establishes an earlier time. In the case of certified mail, the only acceptable evidence is as follows: (1) Where the Receipt for Certified Mail identifies the post office station of mailing, evidence furnished by the bidder which establishes that the business day of that station ended at an earlier time, in which case the time of mailing shall be deemed to be the last minute of the business day of that station; or (2) an entry in ink on the Receipt for Certified Mail showing the time of mailing and the initials of the postal employee receiving the item and making the entry, with appropriate written verification of such entry from the post office station of mailing, in which case the time of mailing shall be the time shown in the entry. If the postmark on the original Receipt for Certified Mail does not show a date, the bid shall not be considered.

5. Notice of Total Small Business Set-Aside. (a) Restriction. Bids or proposals under this procurement are solicited from small business concerns only and this procurement is to be awarded only to one or more small business concerns. This action is based on a determination by the Contracting Officer, alone or in conjunction with a representative of the Small Business Administration, that it is in the interest of maintaining or mobilizing the Nation's full productive capacity, in the interest of war or national defense programs, or in the interest of assuring that a fair proportion of Government procurement is placed with small business concerns. Bids or proposals received from firms which are not small business concerns shall be considered nonresponsive.

SPECIAL INSTRUCTIONS TO BIDDERS - PART II

Reference is made in paragraph 9, Materials and Workmanship, Standard Form 23-A, General Provisions:

- (1) Bidders will be required to submit with their bid, a brochure, descriptive literature and other specifications as to the make, model and other data and information as stated in the Items of Work and Construction Details for Bid Item 1, 1100 gpm, 634 ft. TDH Vertical Turbine Pump, and Item 2, 275 Continuous hp Diesel Engine.
- (2) Bidders will be required to provide a full and complete statement as to availability of repair parts and maintenance Service.

SPECIAL NOTICE TO BIDDERS

All prospective bidders for proposed construction activities, are advised of the Soil Conservation Services' Safety and Health Standards. These requirements will be administered from the Construction Safety Standards, published by the United States Department of Interior, Bureau of Reclamation.

Contractors who receive awards for construction contracts will be required to comply with Safety and Health Standards, including installation of required Safety devices on their equipment. Any questions as to whether a certain requirement of the manual is applicable, should be directed to the Contracting Officer. Copies of the Construction Safety Standards may be obtained from:

U. S. Department of the Interior
Bureau of Reclamation
Attn: Code D-841
Building 67, Denver Federal Center
Denver, Colorado 80225

Cost for this manual is \$2.40, payment should accompany your request for a copy of this manual.

UNITED STATES DEPARTMENT OF AGRICULTURE

NOTICE OF REQUIREMENT FOR CERTIFICATION
OF NONSEGREGATED FACILITIES

Bidders and offerors are cautioned as follows: By signing this bid or offer, the bidder or offeror will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder or offeror does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. The certification also provides that he will not maintain such segregated facilities. Failure of a bidder or offeror to agree to the Certification of Nonsegregated Facilities will render his bid or offer nonresponsive to the terms of solicitations involving awards of contracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause.

UNITED STATES DEPARTMENT OF AGRICULTURE

CERTIFICATION OF NONSEGREGATED FACILITIES

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT
FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R.7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

STANDARD FORM 21
DECEMBER 1963 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.401

BID FORM
(CONSTRUCTION CONTRACT)

REFERENCE

INVITATION NO.
SCS-15-SD-70

DATE OF INVITATION
May 1, 1970

Read the Instructions to Bidders (Standard Form 22)
This form to be submitted in

NAME AND LOCATION OF PROJECT

Randall Resource Conservation and
Development Project
Charles Mix County, South Dakota

NAME OF BIDDER (Type or print)

U. S. Department of Agriculture
Soil Conservation Service

TO: Contracting Officer
Soil Conservation Service
239 Wisconsin, S.W.
Huron, South Dakota 57350

(Date)

In compliance with the above-dated invitation for bids, the undersigned hereby proposes to perform all work for Constructing intake works for pumping plant, installing buried irrigation pipeline, installing turbine pumps and diesel engines, constructing pumping plant building.

in strict accordance with the General Provisions (Standard Form 23-A), Labor Standards Provisions Applicable to Contracts in Excess of \$2,000 (Standard Form 19-A), specifications, schedules, drawings, and conditions, for the following amount(s)

TOTAL PRICE BID:

The undersigned agrees that, upon written acceptance of this bid, mailed or otherwise furnished within calendar days (60 calendar days unless a different period be inserted by the bidder) after the date of opening of bids, he will within 10 calendar days (unless a longer period is allowed) after receipt of the prescribed forms, execute Standard Form 23, Construction Contract, and give performance and payment bonds on Government standard forms with good and sufficient surety.

The undersigned agrees, if awarded the contract, to commence the work within seventy (70) calendar days after the date of receipt of notice to proceed, and to complete the work within one hundred sixty-one (161) calendar days after the date of receipt of notice to proceed.

RECEIPT OF AMENDMENTS: The undersigned acknowledges receipt of the following amendments of the invitation for bids, drawings, and/or specifications, etc.: (Give number and date of each):

The representations and certifications on the accompanying STANDARD FORM 19-B are made a part of this bid.

ENCLOSED IS BID GUARANTEE, CONSISTING OF

IN THE AMOUNT OF

NAME OF BIDDER (Type or print)

FULL NAME OF ALL PARTNERS (Type or print)

BUSINESS ADDRESS (Type or print) (Include "ZIP Code")

BY (Signature in ink Type or print name under signature)

TITLE (Type or print)

DIRECTIONS FOR SUBMITTING BIDS: Envelopes containing bids, guarantee, etc., must be sealed, marked, and addressed as follows:

Contracting Officer
Soil Conservation Service
239 Wisconsin, S.W.
P. O. Box 1357, Huron, South Dakota 57350
Invitation for Bids No. SCS-15-SD-70
For Opening June 4, 1970, at 2:00 P.M., C.D.T.

CAUTION—Bids should not be qualified by exceptions to the bidding conditions.

REPRESENTATIONS
AND CERTIFICATIONS
(Construction Contract)
(For use with SF 19 and 21)

OFFEROR'S (Enter name No. 6) at (SF 1-12.21)

NAME AND ADDRESS OF BIDDER (No., Street, City, State, and ZIP Code)

DATE OF BID

In negotiated procurements, "bid" and "bidder" shall be construed to mean "offer" and "offeror."
The bidder makes the following representations and certifications as a part of the bid identified above. (Check appropriate boxes.)

1. SMALL BUSINESS

He ☐ is, ☐ is not, a small business concern. (For this purpose, a small business concern is a business, including its affiliates, which (a) is independently owned and operated, (b) is not dominant in the field of operation in which it is bidding on Government contracts, and (c) had average annual receipts for the preceding 3 fiscal years not exceeding \$7,500,000. For additional information see governing regulations of the Small Business Administration.)

2. CONTINGENT FEE

(a) He ☐ has, ☐ has not, employed or retained any company or person (other than a full-time bona fide employee working solely for the bidder) to solicit or secure this contract, and (b) he ☐ has, ☐ has not, paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for the bidder) any fee, commission, percentage or brokerage fee, contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (a) and (b) above as requested by the Contracting Officer. (For interpretation of the representation, including the term "bona fide employee," see Code of Federal Regulations, Title 41, Subpart 1-1.5.)

3. TYPE OF ORGANIZATION

He operates as an ☐ individual, ☐ partnership, ☐ joint venture, ☐ corporation, incorporated in State of _____

4. INDEPENDENT PRICE DETERMINATION

(a) By submission of this bid, each bidder certifies, and in the case of a joint bid each party thereto certifies as to his own organization, that in connection with this procurement:

(1) The prices in this bid have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, in the case of a bid, or prior to award, in the case of a proposal, directly or indirectly to any other bidder or to any competitor, and

(3) No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition.

(b) Each person signing this bid certifies that:

(i) He is the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein and that he has not participated, and will not participate, in any action contrary to (a)(1) through (a)(3) above; or

(ii) He is not the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein but that he has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (a)(1) through (a)(3) above, and as their agent does hereby so certify; and (iii) he has not participated, and will not participate, in any action contrary to (a)(1) through (a)(3) above.

(c) This certification is not applicable to a foreign bidder submitting a bid for a contract which requires performance or delivery outside the United States, its possessions, and Puerto Rico.

(d) A bid will not be considered for award where (a)(1), (a)(3), or (b) above, has been deleted or modified. Where (a)(2) above, has been deleted or modified, the bid will not be considered for award unless the bidder furnishes with the bid a signed statement which sets forth in detail the circumstances of the disclosure and the head of the agency, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

THE FOLLOWING NEED BE CHECKED ONLY IF BID EXCEEDS \$10,000 IN AMOUNT.

5. EQUAL OPPORTUNITY

He ☐ has, ☐ has not, participated in a previous contract or subcontract subject to the Equal Opportunity Clause herein, the clause originally contained in Section 301 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114; he ☐ has, ☐ has not, filed all required compliance reports; and representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with contracts or subcontracts which are exempt from the clause.)

6. PARENT COMPANY AND EMPLOYER IDENTIFICATION NUMBER

Each bidder shall furnish the following information by filling in the appropriate blocks:

(a) Is the Bidder owned or controlled by a parent company as described below? ☐ Yes ☐ No. (For the purpose of this bid, a parent company is defined as one which either owns or controls the activities and basic business policies of the bidder. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting rights in that company. To control another company, such ownership is not required; if another company is able to formulate, determine, or veto basic business policy decisions of the bidder, such other company is considered the parent company of the bidder. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.)

(b) If the answer to (a) above, is "Yes," bidder shall insert in the space below the name and main office address of the parent company.

NAME OF PARENT COMPANY

MAIN OFFICE ADDRESS (No., Street, City, State, and ZIP Code)

(c) Bidder shall insert in the applicable space below, if he has no parent company, his own Employer's Identification Number (E.I. No.) (Federal Social Security Number used on Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941), or, if he has a parent company, the E.I. No. of his parent company.

EMPLOYER
IDENTIFICATION NUMBER OF

PARENT COMPANY

BIDDER

NOTE—Bids must set forth full, accurate, and complete information as required by this invitation for bids (including attachments). The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

RANDALL RC&D PROJECT
South Dakota

PROPOSAL NO. 66
(Platte Creek Irrigation Pumping Plant)

BID SCHEDULE

Item No.	Work or Material	Spec.	Quantity	Unit	Unit Price	Amount
1.	1100 gpm, 634 ft. TDH, Vertical Turbine Pump with right angle drive	403	3	ea	\$ _____	\$ _____
2.	275 continuous hp. diesel engine	403	3	ea	\$ _____	\$ _____
3.	Excavation, Common, Intake Pipe Trench	21	10,153	c.yd	\$ _____	\$ _____
4.	Earth Fill, Class A, Intake Works	23	12,551	c.yd	\$ _____	\$ _____
5.	30" dia., 0.168" thick C.M. Manifold	51	1	ea	\$ _____	\$ _____
6.	Riser, 36" dia., 0.168" thick C. M. Pipe with 30" dia., 0.168" thick C. M. Pipe Tee	51	3	ea	\$ _____	\$ _____
7.	C. M. Pipe, 36" dia., 0.109" thick	51	90	ft	\$ _____	\$ _____
8.	C. M. Pipe, 30" dia., 0.109" thick	51	172	ft	\$ _____	\$ _____
9.	Concrete, Class 4000	31	22.9	c.yd	\$ _____	\$ _____
10.	Steel Reinforcement for Concrete	34	913	lb	\$ _____	\$ _____
11.	Welded Wire Fabric	34	824	sq.ft	\$ _____	\$ _____
12.	Trash Guard Grating	81	1	ea		\$ _____
13.	Steel pipe, 14" dia., 0.179" thick	52	1,56	ft	\$ _____	\$ _____
14.	Steel Pipe, 14" dia., 0.134" thick	52	1,420	ft	\$ _____	\$ _____
15.	Steel Pipe, 14" dia., 0.104" thick	52	3,807	ft	\$ _____	\$ _____
16.	Steel Pipe, 8" dia., 0.104" thick	52	146	ft	\$ _____	\$ _____

Randall RC&D Project

Proposal No. 88

BID SCHEDULE (Continued)

Item No.	Work or Material	Spec	Quantity	Unit	Unit Price	Amount
17.	Asbestos-Cement Pipe, 12" dia., Class 100 pressure pipe	407	2,601	ft	\$ _____	\$ _____
18.	Asbestos-Cement Pipe, 10" dia., Class 100 Pressure Pipe	407	2,392	ft	\$ _____	\$ _____
19.	Asbestos-Cement Pipe, 8" dia., Class 100 Pressure Pipe	407	1,013	ft	\$ _____	\$ _____
20.	Combination Air Relief Valves (6 required)	404		Lump Sum		\$ _____
21.	Silent Check Valve (3 required)	404		ea	\$ _____	\$ _____
22.	Pressure Relief Valves and Pressure Gage (3 valves, 1 gage required)	404		Lump Sum		\$ _____
23.	Field Outlet Valves (5 required)	404		Lump Sum		\$ _____
24.	Water Meters (5 required)	404		Lump Sum		\$ _____
25.	Plastic Pipe, 2" dia.	405	287	ft	\$ _____	\$ _____
26.	Steel Fuel Tank	81		Lump Sum		\$ _____
27.	Fuel tank valve, well (1 required)	404		Lump Sum		\$ _____
28.	Drain Valves (4 required)	404		Lump Sum		\$ _____
29.	Anode, Zinc (3 required)	406		Lump Sum		\$ _____
30.	Building	83		Lump Sum		\$ _____
Total					\$ _____	

GENERAL PROVISIONS

(Construction Contract)

1. DEFINITIONS

(a) The term "head of the agency" or "Secretary" as used herein means the Secretary, the Under Secretary, any Assistant Secretary, or any other head or assistant head of the executive or military department or other Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the head of the agency or the Secretary.

(b) The term "Contracting Officer" as used herein means the person executing this contract on behalf of the Government and includes a duly appointed successor or authorized representative.

2. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the work a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy either in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at his own risk and expense. The Contracting Officer shall furnish from time to time such detail drawings and other information as he may consider necessary, unless otherwise provided.

3. CHANGES

The Contracting Officer may, at any time, by written order, and without notice to the sureties, make changes in the drawings and/or specifications of this contract if within its general scope. If such changes cause an increase or decrease in the Contractor's cost of, or time required for, performance of the contract, an equitable adjustment shall be made and the contract modified in writing accordingly. Any claim of the Contractor for adjustment under this clause must be asserted in writing within 30 days from the date of receipt by the Contractor of the notification of change unless the Contracting Officer grants a further period of time before the date of final payment under the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause 6 of these General Provisions; but nothing provided in this clause shall excuse the Contractor from proceeding with the prosecution of the work as changed. Except as otherwise provided in this contract, no charge for any extra work or material will be allowed.

4. CHANGED CONDITIONS

The Contractor shall promptly, and before such conditions are disturbed, notify the Contracting Officer in writing of: (a) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (b) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The Contracting Officer shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of this contract, an equitable adjustment shall be made and the contract modified in writing accordingly. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given notice as above required; or

unless the Contracting Officer grants a further period of time before the date of final payment under the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause 6 of these General Provisions.

5. TERMINATION FOR DEFAULT--DAMAGES FOR DELAY--TIME EXTENSIONS

(a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within such time, the Government may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Government may take over the work and prosecute the same to completion, by contract or otherwise, and may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. Whether or not the Contractor's right to proceed with the work is terminated, he and his sureties shall be liable for any damage to the Government resulting from his refusal or failure to complete the work within the specified time.

(b) If fixed and agreed liquidated damages are provided in the contract and if the Government so terminates the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If fixed and agreed liquidated damages are provided in the contract and if the Government does not so terminate the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until the work is completed or accepted.

(d) The Contractor's right to proceed shall not be so terminated nor the Contractor charged with resulting damage if:

(1) The delay in the completion of the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, acts of the public enemy, acts of the Government in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers; and

(2) The Contractor, within 10 days from the beginning of any such delay (unless the Contracting Officer grants a further period of time before the date of final payment under the contract), notifies the Contracting Officer in writing of the causes of delay.

The Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in his judgment, the findings of fact justify such an extension, and his findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in Clause 6 of these General Provisions.

(e) If, after notice of termination of the Contractor's right to proceed under the provisions of this clause, it is determined for any reason that the Contractor was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for convenience of the Government, be

the same as if the notice of termination had been issued pursuant to such clause. If, in the foregoing circumstances, this contract does not contain a clause providing for termination for convenience of the Government, the contract shall be equitably adjusted to compensate for such termination and the contract modified accordingly; failure to agree to any such adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

(f) The rights and remedies of the Government provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

6. DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the head of the agency involved. The decision of the head of the agency or his duly authorized representative for the determination of such appeals shall be final and conclusive. This provision shall not be pleaded in any suit involving a question of fact arising under this contract as limiting judicial review of any such decision to cases where fraud by such official or his representative or board is alleged; *Provided, however*, that any such decision shall be final and conclusive unless the same is fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of his appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This Disputes clause does not preclude consideration of questions of law in connection with decisions provided for in paragraph (a) above. Nothing in this contract, however, shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

7. PAYMENTS TO CONTRACTOR

(a) The Government will pay the contract price as herein-after provided.

(b) The Government will make progress payments monthly as the work proceeds, or at more frequent intervals as determined by the Contracting Officer, on estimates approved by the Contracting Officer. If requested by the Contracting Officer, the Contractor shall furnish a breakdown of the total contract price showing the amount included therein for each principal category of the work, in such detail as requested, to provide a basis for determining progress payments. In the preparation of estimates the Contracting Officer, at his discretion, may authorize material delivered on the site and preparatory work done to be taken into consideration. Material delivered to the Contractor at locations other than the site may also be taken into consideration (1) if such consideration is specifically authorized by the contract and (2) if the Contractor furnishes satisfactory evidence that he has acquired title to such material and that it will be utilized on the work covered by this contract.

(c) In making such progress payments, there shall be retained 10 percent of the estimated amount until final completion and acceptance of the contract work. However, if the Contracting Officer, at any time after 50 percent of the work has been completed, finds that satisfactory progress is being made, he may authorize any of the remaining progress payments to be made in full. Also, whenever the work is substantially complete, the Contracting Officer, if he considers the amount retained to be in excess of the amount adequate for the protection of the Government, at his discretion, may release to the Contractor all or a portion of such excess amount. Furthermore, on completion and acceptance of each separate building, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made therefor without retention of a percentage.

(d) All material and work covered by progress payments made shall thereupon become the sole property of the Government, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work, or as waiving the right of the Government to require the fulfillment of all of the terms of the contract.

(e) Upon completion and acceptance of all work, the amount due the Contractor under this contract shall be paid upon the presentation of a properly executed voucher and after the Contractor shall have furnished the Government with a release, if required, of all claims against the Government arising by virtue of this contract, other than claims in stated amounts as may be specifically excepted by the Contractor from the operation of the release. If the Contractor's claim to amounts payable under the contract has been assigned under the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), a release may also be required of the assignee.

8. ASSIGNMENT OF CLAIMS

(a) Pursuant to the provisions of the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), if this contract provides for payments aggregating \$1,000 or more, claims for moneys due or to become due the Contractor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned and reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. Unless otherwise provided in this contract, payments to an assignee of any moneys due or to become due under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or setoff. (The preceding sentence applies only if this contract is made in time of war or national emergency as defined in said Act; and is with the Department of Defense, the General Services Administration, the Atomic Energy Commission, the National Aeronautics and Space Administration, the Federal Aviation Agency, or any other department or agency of the United States designated by the President pursuant to Clause 4 of the proviso of section 1 of the Assignment of Claims Act of 1940, as amended by the Act of May 15, 1951, 65 Stat. 41.)

(b) In no event shall copies of this contract or of any plans, specifications, or other similar documents relating to work under this contract, if marked "Top Secret," "Secret," or "Confidential," be furnished to any assignee of any claim arising under this contract or to any other person not entitled to receive the same. However, a copy of any part or all of this contract so marked may be furnished, or any information contained therein may be disclosed, to such assignee upon the prior written authorization of the Contracting Officer.

9. MATERIAL AND WORKMANSHIP

(a) Unless otherwise specifically provided in this contract, all equipment, material, and articles incorporated in the work covered by this contract are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in this contract, reference to any equipment, material, article, or patented process, by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, at his option, use any equipment, material, article, or process which, in the judgment of the Contracting Officer, is equal to that named. The Contractor shall furnish to the Contracting Officer for his approval the name of the manufacturer, the model number, and other identifying data and information respecting the performance, capacity, nature, and rating of the machinery and mechanical and other equipment which the Contractor contemplates incorporating in the work. When required by this contract or when called for by the Contracting Officer, the Contractor shall furnish the Contracting Officer for approval full information concerning the material or articles which he contemplates incorporating in the work. When so directed, samples shall

be submitted for approval at the Contractor's expense, with all shipping charges prepaid. Machinery, equipment, material, and articles installed or used without required approval shall be at the risk of subsequent rejection.

(b) All work under this contract shall be performed in a skillful and workmanlike manner. The Contracting Officer may, in writing, require the Contractor to remove from the work any employee the Contracting Officer deems incompetent, careless, or otherwise objectionable.

10. INSPECTION AND ACCEPTANCE

(a) Except as otherwise provided in this contract, inspection and test by the Government of material and workmanship required by this contract shall be made at reasonable times and at the site of the work, unless the Contracting Officer determines that such inspection or test of material which is to be incorporated in the work shall be made at the place of production, manufacture, or shipment of such material. To the extent specified by the Contracting Officer at the time of determining to make off-site inspection or test, such inspection or test shall be conclusive as to whether the material involved conforms to the contract requirements. Such off-site inspection or test shall not relieve the Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the Government after acceptance of the completed work under the terms of paragraph (f) of this clause, except as hereinabove provided.

(b) The Contractor shall, without charge, replace any material or correct any workmanship found by the Government not to conform to the contract requirements, unless in the public interest the Government consents to accept such material or workmanship with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(c) If the Contractor does not promptly replace rejected material or correct rejected workmanship, the Government (1) may, by contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor, or (2) may terminate the Contractor's right to proceed in accordance with Clause 5 of these General Provisions.

(d) The Contractor shall furnish promptly, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspection and test as may be required by the Contracting Officer. All inspection and test by the Government shall be performed in such manner as not unnecessarily to delay the work. Special, full size, and performance tests shall be performed as described in this contract. The Contractor shall be charged with any additional cost of inspection when material and workmanship are not ready at the time specified by the Contractor for its inspection.

(e) Should it be considered necessary or advisable by the Government at any time before acceptance of the entire work, to make an examination of work already completed, by removing or tearing out same, the Contractor shall, on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional services involved in such examination and reconstruction and, if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time.

(f) Unless otherwise provided in this contract, acceptance by the Government shall be made as promptly as practicable after completion and inspection of all work required by this contract. Acceptance shall be final and conclusive except as regards latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Government's rights under any warranty or guarantee.

11. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall give his personal superintendence to the work or have a competent foreman or superintendent, satisfactory to the Contracting Officer, on the work at all times during progress, with authority to act for him.

12. PERMITS AND RESPONSIBILITIES

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State, and municipal laws, codes, and regulations, in connection with the prosecution of the work. He shall be similarly responsible for all damages to persons or property that occur as a result of his fault or negligence. He shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. He shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire construction work, except for any completed unit of construction thereof which theretofore may have been accepted.

13. CONDITIONS AFFECTING THE WORK

The Contractor shall be responsible for having taken steps reasonably necessary to ascertain the nature and location of the work, and the general and local conditions which can affect the work or the cost thereof. Any failure by the Contractor to do so will not relieve him from responsibility for successfully performing the work without additional expense to the Government. The Government assumes no responsibility for any understanding or representations concerning conditions made by any of its officers or agents prior to the execution of this contract, unless such understanding or representations by the Government are expressly stated in the contract.

14. OTHER CONTRACTS

The Government may undertake or award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors and Government employees and carefully fit his own work to such additional work as may be directed by the Contracting Officer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor or by Government employees.

15. PATENT INDEMNITY

Except as otherwise provided, the Contractor agrees to indemnify the Government and its officers, agents, and employees against liability, including costs and expenses, for infringement upon any Letters Patent of the United States (except Letters Patent issued upon an application which is now or may hereafter be, for reasons of national security, ordered by the Government to be kept secret or otherwise withheld from issue) arising out of the performance of this contract or out of the use or disposal by or for the account of the Government of supplies furnished or construction work performed hereunder.

16. ADDITIONAL BOND SECURITY

If any surety upon any bond furnished in connection with this contract becomes unacceptable to the Government, or if any such surety fails to furnish reports as to his financial condition from time to time as requested by the Government, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the Government and of persons supplying labor or materials in the prosecution of the work contemplated by this contract.

17. COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

18. OFFICIALS NOT TO BENEFIT

No member of Congress or resident Commissioner shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

10. BUY AMERICAN

(a) Agreement. In accordance with the Buy American Act (41 U.S.C. 101-104) and Executive Order 10522, December 17, 1954 (3 CFR Supp.), the Contractor agrees that only domestic construction material will be used (by the Contractor, subcontractors, materialmen, and suppliers) in the performance of this contract, except for nondomestic material listed in the contract.

(b) Domestic construction material. "Construction material" means any article, material, or supply brought to the construction site for incorporation in the building or work. An unmanufactured construction material is a "domestic construction material" if it has been mined or produced in the United States. A manufactured construction material is a "domestic construction material" if it has been manufactured in the United States and if the cost of its components which have been mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. "Component" means any article, material, or supply directly incorporated in a construction material.

(c) Domestic component. A component shall be considered to have been "mined, produced, or manufactured in the United States" (regardless of its source in fact) if the article, material, or supply in which it is incorporated was manufactured in the United States and the component is of a class or kind determined by the Government to be not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

20. CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

21. EQUAL OPPORTUNITY CLAUSE

(The following clause is applicable unless this contract is exempt under the rules and regulations of the President's Committee on Equal Employment Opportunity (41 CFR, Chapter 60). Exemptions include contracts and subcontracts (i) not exceeding \$10,000, (ii) not exceeding \$100,000 for standard commercial supplies or raw materials, and (iii) under which work is performed outside the United States and no recruitment of workers within the United States is involved.)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under this nondiscrimination clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(e) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. *The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

*Unless otherwise provided, the Equal Opportunity Clause is not required to be inserted in subcontracts below the second tier except for subcontracts involving the performance of "construction work" at the "site of construction" (as those terms are defined in the Committee's rules and regulations) in which case the clause must be inserted in all such subcontracts. Subcontracts may incorporate by reference the Equal Opportunity Clause.

22. UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

SPECIAL PROVISIONS

1. LAND RIGHTS

(a) Adequate land rights needed in order to perform the work under this contract have been acquired by or on behalf of the Government. The right to enter, remove, or otherwise make use of adjacent property, roads, utility lines, fences, and other improvements not included within the land rights provided shall be the sole responsibility of the Contractor.

(b) Where ingress and egress is not defined on the drawings, the Contracting Officer shall designate the right-of-way to be used.

2. RECORDS OF TEST PITS AND BORINGS

The Government does not represent that the available records show completely the existing conditions and does not guarantee any interpretation of these records. The Contractor assumes all responsibility for deductions and conclusions as to the nature of rock and other materials to be excavated, the difficulties of making and maintaining the required excavations and of doing other work affected by the geology of the site of the work, and for the final preparation of the foundations for the spillway, dikes and other structures.

3. MATERIALS TO BE FURNISHED BY THE CONTRACTOR

(a) Unless otherwise specified in this contract, the Contractor shall furnish all materials required for the completion of the contract.

(b) Unless otherwise waived in writing by the Contracting Officer, the Contractor shall furnish the Government with certifications dated and signed by the manufacturer and/or supplier to the effect that the items listed therein meet the requirements of this contract. Such certifications shall be furnished prior to the use of the material in any part of the construction and shall identify the project on which the material is to be used.

4. WATER

Unless otherwise specified in this contract, the Contractor shall provide and maintain at his own expense an adequate supply of water suitable for construction purposes.

5. SAFETY AND HEALTH

The contractor shall comply with the safety and health standards in the manual Construction Safety Standards published by the United States Department of the Interior, Bureau of Reclamation, in effect on the date of the issuance of the Invitation for Bids, with the following modifications:

- (a) Subsection 9.6 is applicable to equipment used on clearing operations for all contracts regardless of the aggregate amount of the contract.
- (b) Rollover protection devices shall be of such design and application as approved by the manufacturer of the prime mover.
- (c) Reference to the Bureau of Reclamation shall be interpreted as reference to the Soil Conservation Service.

6. LIGHTING REQUIREMENTS

When work is carried on between the hours of sunset and sunrise, the construction areas shall be adequately lighted to provide safe working conditions while work is in progress. The lighting plan shall be acceptable to the Contracting Officer.

7. WORKWEEK - CONSTRUCTION SCHEDULE

(a) The Contractor shall, prior to commencement of work, submit to the Contracting Officer, in writing for approval, the hours and days in which he proposes to carry on the work. The Contractor shall, within 10 days following the commencement of work, prepare and submit to the Contracting Officer for approval a construction schedule showing the order in which the Contractor proposes to carry on the work indicating the periods during which he will perform work on each item listed in the bid schedule. If the Contractor fails to submit the construction schedule within the time herein specified or fails to submit a revised construction schedule within the time specified by the Contracting Officer, the Contracting Officer may withhold approval of progress payment estimates and/or take such other actions as provided in the contract until such time as the Contractor submits the required construction schedule.

(b) If, in the opinion of the Contracting Officer, the Contractor falls behind the construction schedule, the Contractor shall take such steps as may be necessary to improve his progress and the Contracting Officer may require him to either increase the number of shifts, days or hours of work, or the amount of construction plant, or all of them, and to submit for approval such revised construction schedule as may be deemed necessary to show the manner in which the agreed rate of progress will be regained, all without additional cost to the Government.

(c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for determination by the Contracting Officer that the Contractor is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part thereof, in accordance with Clause 5 of the General Provisions.

8. SUBCONTRACTORS

(a) Work shall not be subcontracted in whole or in part without the prior written approval of the Contracting Officer. The request shall be in writing with the name of the proposed subcontractor and a description of the work to be done.

(b) If at any time the Contracting Officer determines that any subcontractor is incompetent or undesirable, he shall notify the Contractor accordingly and the Contractor shall take immediate steps for cancellation of the subcontract.

(c) Subcontracting by subcontractors shall be subject to the above requirements.

(d) Nothing contained in this contract shall create any contractual relationship between any subcontractor and the Government.

9. SURVEYS

(a) Unless otherwise stated in the Invitation for Bids, only the basic staking shall be done by the Government. If the Government does the staking, the Contractor shall notify the Contracting Officer in advance of any staking required in order that such work can be properly scheduled.

(b) Bench marks shall be preserved by the Contractor, and in the case of their destruction or removal by him or his employees they shall be replaced by the Government at the Contractor's expense.

(c) Survey stakes destroyed or removed by the carelessness of the Contractor or his employees shall be replaced by the Government at the Contractor's expense. Stakes removed or destroyed in the due course of the work shall be replaced by the Government without cost to the Contractor.

(d) If the Contractor finds any errors or omissions in the layout as given by survey points or staking, he shall immediately inform the Contracting Officer in writing.

10. CLEANUP WORK

(a) During construction the Contractor shall keep the work site, areas adjacent to the work site and access roads in an orderly condition, free and clear from debris and discarded materials. Care shall be taken to prevent spillage when hauling is being done. Any spillage or debris resulting from the Contractor's operations shall be immediately removed.

(b) Upon completion of the work the Contractor shall remove from the work site, areas adjacent to the work site, and access roads: all plant, buildings, debris, unused materials, concrete forms and other material belonging to him or used under his direction during the construction. He shall grade all access roads, other than public, removing wheel tracks and smoothing up such roads.

11. WEATHER

(a) The Contracting Officer may order suspension of the work in whole or in part, due to weather or effects of weather, for such time as he considers it unfavorable for satisfactory prosecution of the work.

(b) When the Contracting Officer orders suspension under (a) of this clause, the contract completion date shall be extended a full calendar day for each calendar day during suspension of the work if:

(1) All work is suspended except minor items as may be designated in this contract (work of any emergency, protective or maintenance nature may be performed at any time);

(2) The hours lost in any one workday of the authorized workweek through suspension equal one-half or more of the hours of an authorized workday.

(c) If the Contracting Officer orders suspension of work as provided in (b) of this clause and the hours lost in the workday immediately preceding a nonworkday equal one-half or more of the hours in an authorized workday, the contract completion date shall be extended a full calendar day for each nonworkday during suspension of the work.

(d) When the Contracting Officer orders any suspension of the work under this clause, the Contractor shall not be entitled to any cost or damages resulting from such suspension.

(e) When the contract completion date is extended under this clause, the contract shall be modified in writing accordingly.

12. NONCOMPLIANCE WITH CONTRACT REQUIREMENTS

(a) The Contracting Officer may order suspension of the work in whole or in part for such time as he deems necessary because of the failure of the Contractor to comply with any of the requirements of this contract, and the contract completion date shall not be extended on account of any such suspension of the work.

(b) When the Contracting Officer orders any suspension of the work under (a) of this clause, the Contractor shall not be entitled to any costs or damages resulting from such suspension.

(c) The rights and remedies of the Government provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

13. QUANTITY VARIATIONS

(a) Where the quantity of work shown for an item in the bid schedule, including any modification thereof, is estimated, no adjustment of the contract price nor of the performance time shall be made for overruns or underruns which are within 25 percent of the estimated quantity of any such items.

(b) For overruns of more than 25 percent, the Contracting Officer shall re-estimate the quantity for the item, establish an equitable contract price for the overrun of more than 25 percent, adjust contract performance time equitably, and modify the contract in writing accordingly; this clause to thereafter be applicable to the total re-estimated item quantity.

(c) For underruns of more than 25 percent, the Contracting Officer shall determine the quantity for the item, establish an equitable contract price therefor, adjust contract performance time equitably, and modify the contract in writing accordingly.

14. ACTUAL DAMAGES

If the work, or any part thereof, is not completed within the time agreed upon in this contract or any extension thereof, the Contractor shall be liable for actual damages resulting from this failure to complete the work within the specified time. The Government shall have the right to deduct from and retain out of moneys which may be then due or which may become due and payable to the Contractor, the amount of such actual damages; and if the amount so retained by the Government is insufficient to pay in full such actual damages, the Contractor shall pay to the Government the amount necessary to effect payment in full of such actual damages.

15. HOLIDAYS

No. Sunday work will be performed. Monday, September 7, Wednesday, November 11, and Thursday, November 26, are considered as legal holidays. The contractor will observe these days and no work will be performed.

16. MINOR ITEMS OF WORK

The following bid items are designated as minor items of work. These items may be performed without charge to performance time during periods when all other work is suspended if such items are excepted in the suspend work order:

Item No.	12	Trash Guard Grating
	20	Combination Air Relief Valves
	21	Silent Check Valve
	22	Pressure Relief Valves and Pressure Gage
	23	Field Outlet Valves
	24	Water Meters
	30	Building

17. QUANTITIES OF WORK AND MATERIALS

The quantities listed in the bid schedule on which unit prices are requested are estimates only. See clause titled "Quantity Variations" of these Special Provisions.

18. WAGE RATES

(a) Pursuant to the provisions of the Davis-Bacon Act, as amended (40 U.S.C. 276a through 276-7), the Secretary of Labor has hereby determined that the wage rates and fringe benefits payments listed herein are prevailing for the described classes of labor and shall be the minimums to be paid under this contract by the contractors and any subcontractors on the work.

(b) While the wage rates shown in the wage determination are the minimum hourly rates required to be paid during the life of the contract, it is the responsibility of bidders to inform themselves as to the local labor conditions such as the length of workday and workweek, overtime compensation, health and welfare contributions, labor supply, and prospective changes or adjustments in the local wages. The contractor shall abide by and conform to all applicable laws, executive orders, rules, regulations, and orders of Federal agencies authorized to pass upon and determine wage rates. No increase in contract price shall be allowed or authorized on account of payment of wage rates in excess of those listed herein.

and main distribution pipeline

DIVISION NO.
 PJ-10, 514
 DATE OF DECISION
 4-8-70
 REVISION
 8-7-70
 ALPHEUS DE JESUS JR.

12-50. D.M.-2-3 (2-2)

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BASIC HOURLY RATES	FRINGE BENEFITS PAYMENTS				OTHER
	H & V	PERSONS	VACATION	APP. TR.	
\$3.20					
2.60					
2.40					
2.50					
3.00					
3.15					
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2.30					
3.10					
2.90					
2.60					
2.60					
2.20					
1.30					
3.50					
3.00					

POWER EQUIPMENT OPERATORS (CONT'D)

- Crusher (incl. those with integral screening plant)
- Curb Machine
- Fireram (boiler and retort)
- Front End Loader, $\frac{1}{2}$ cu. yds. or less
- Front End Loader, $\frac{1}{2}$ cu. yds. to $\frac{3}{4}$ cu. yds.
- Front End Loader, over $\frac{3}{4}$ cu. yds.
- Mechanic, heavy duty
- Mechanic, helper
- Mechanic, maintenance
- Motor Grader, (finish)
- Motor Grader, (rough)
- Oilier and Greaser
- Roller, self-propelled (hot mix)
- Roller, self-propelled (other)
- Roller, sleepfoot or 50 ton pneumatic
- Scrapers
- Spreader (materials)
- Stationary Plant
- Tractor (crawler or pneumatic)
- Tractor, farm type w/attachments (including loader)
- Tractor - Pusher
- Traveling Plant (stabilisation).
- Traveling Plant, helper
- Trenching Machine
- Wagon Drill (including air-track-tracdrill, etc.)

TRUCK DRIVERS:

Euclid or Dupont
Truck Crane
Truck Driver, single axle
Truck Driver, tandem or semitrailer

VELDEN:

Welder, certified
Welder, general

12-50. MAX.-2-3 (1-2)

(1-2)

BASIC HOURLY RATES	FRINGE BENEFITS PAYMENTS				
	H & V	PENSIONS	VACATION	APP. TR.	OTHERS
\$3.10					
3.10					
3.10					
2.70					
2.70					
2.20					
2.20					
2.20					
2.50					
3.10					
3.00					
3.55					
3.00					
2.30					
3.05					
2.30					
2.30					
3.15					
2.25					
3.20					
2.60					
2.30					
2.90					
3.15					
3.00					
3.20					
2.60					
3.55					
2.60					
3.20					
3.20					
3.05					
2.60					
2.95					
3.20					
3.20					
2.30					
3.20					
3.50					

Concrete Finisher
Form Builder
Form Setter
Painter
Piledriver (leadman)

LABORERS:

Air Tool Operator
Common
Landscape Workers
Form Builder Helpers
Manhole Builder
Pipelayer (concrete and clay)
Powderman (blaster)

LOWER EQUIPMENT OPERATORS.

Asphalt Distributor
Asphalt Distributor Helper
Asphalt Paving Machine
Asphalt Paving Machine Helper
Asphalt Plant Helper
Asphalt Plant, Stationary
and Traveling
Auger Operator (truck type)
Automatic Fine Grader Operator
Beginner Operator (1 yr or less
experience as Power Equipment Op.)
Broom, self-propelled
Bulldozer, 80 h.p. or less
Bulldozer, over 80 h.p.
Bullfloat Machine
Concrete Batch Plant
Concrete Mixer
Concrete Paver
Concrete Paving Cure Machine
Concrete Paving Finishing Machine
Concrete Paving Form Grader
Concrete Paving Joint Machine
Concrete Paving Joint Sealer
Concrete Paving Saw
Concrete Paving Spreader
Concrete Paving Subgrader
Conveyor
Cranes, Derricks, Draglines, Piledrivers,
Backhoes & Shovels, 14 cu. yd. or less
Cranes, Derricks, Draglines, Piledrivers,
Backhoes & Shovels, over 14 cu. yd.

19. CHANGES AND CHANGED CONDITIONS

Clause 3, Changes, and Clause 4, Changed Conditions, General Provisions, SF-23A, June 1964 Edition, are deleted and replaced by the following:

"3. CHANGES

(a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make any change in the work within the general scope of the contract, including but not limited to changes:

(i) in the specifications (including drawings and designs);

(ii) in the method or manner of performance of the work;

(iii) in the Government-furnished facilities, equipment, materials, services, or site; or

(iv) directing acceleration in the performance of the work.

(b) Any other written order or an oral order (which terms as used in this paragraph (b) shall include direction, instruction, interpretation, or determination) from the Contracting Officer, which causes any such change, shall be treated as a change order under this clause, provided that the Contractor gives the Contracting Officer written notice stating the date, circumstances, and source of the order and that the Contractor regards the order as a change order.

(c) Except as herein provided, no order, statement, or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment hereunder.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the contract modified in writing accordingly: Provided, however, That except for claims based on defective specifications, no claim for any change under (b) above shall be allowed for any costs incurred more than 20 days before the

Contractor gives written notice as therein required: And provided further, That in the case of defective specifications for which the Government is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with such defective specifications.

(e) If the Contractor intends to assert a claim for an equitable adjustment under this clause, he must, within 30 days after receipt of a written change order under (a) above or the furnishing of a written notice under (b) above, submit to the Contracting Officer a written statement setting forth the general nature and monetary extent of such claim, unless this period is extended by the Government. The statement or claim hereunder may be included in the notice under (b) above.

(f) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

"4. DIFFERING SITE CONDITIONS

(a) The Contractor shall promptly, and before such conditions are disturbed, notify the Contracting Officer in writing of: (1) Subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, or an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The Contracting Officer shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, and equitable adjustment shall be made and the contract modified in writing accordingly.

(b) No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above; provided, however, the time prescribed therefor may be extended by the Government.

(c) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract."

20. EQUAL OPPORTUNITY

(a) Clause 21, regarding "Equal Opportunity" in the attached General Provisions, Standard Form 23-A, June 1964 Edition, is amended by deleting references to the President's Committee on Equal Employment Opportunity, Executive Order No. 10925 of March 6, 1961, as amended, and Section 303 of Executive Order No. 10925 of March 6, 1961, as amended; and substituting therefor the Secretary of Labor, Executive Order No. 11246 of September 24, 1965, and Section 204 of Executive Order No. 11246 of September 24, 1965, respectively.

(b) In accordance with regulations of the Secretary of Labor, the rules, regulations, orders, instructions, designations, and other directions referred to in Section 403(b) of Executive Order No. 11246, remain in effect and, where applicable, shall be observed in the performance of this contract until revoked or superseded by appropriate authority.

21. BUY AMERICAN

Clause 19, Buy American, General Provisions, Standard Form 23-A, June 1964 Edition, is deleted and replaced by the following:

"19. BUY AMERICAN

(a) Agreement. In accordance with the Buy American Act (41 U.S.C. 10a-10d), and Executive Order 10582, December 17, 1954 (3CFR, 1954-58 Comp., p. 230), as amended by Executive Order 11051, September 27, 1962 (3 CFR, 1959-63 Comp., p. 635), the Contractor agrees that only domestic construction material will be used (by the Contractor, subcontractors, materialmen, and suppliers) in the performance of this contract, except for nondomestic material listed in the contract.

(b) Domestic construction material. "Construction material" means any article, material, or supply brought to the construction site for incorporation in the building or work. An unmanufactured construction material is a "domestic construction material" if it has been mined or produced in the United States. A manufactured construction material is a "domestic construction material" if it has been manufactured in the United States and if the cost of its components which have been mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. "Component" means any article, material, or supply directly incorporated in a construction material.

(c) Domestic component. A component shall be considered to have been "mined, produced, or manufactured in the United States" (regardless of its source in fact) if the article, material, or supply in which it is incorporated was manufactured in the United States and the component is of a class or kind determined by the Government to be not mined, produced, or manufactured in the United States in sufficient and reasonable available commercial quantities and of a satisfactory quality.

22. SUSPENSION OF WORK

The following clause is to be added as Clause 23 to the General Provisions, Standard Form 23-A, June 1964 Edition:

"23. SUSPENSION OF WORK

(a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as he may determine to be appropriate for the convenience of the Government.

(b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted by an act of the Contracting Officer in the administration of this contract, or by his failure to act within the time specified in this contract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract shall be modified accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent (1) that performance would have been so suspended, delayed or interrupted by any other cause, including the fault or negligence of the Contractor, or (2) for which an equitable adjustment is provided for or excluded under any other provision of this contract.

(c) No claim under this clause shall be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the contract."

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4. Put your address in the "RETURN TO" Space on the reverse side. Please to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check boxes for additional services requested.	
1. ☒ Show to whom delivered, date, and addressee's address.	2. ☐ Restricted Delivery (Extra charge)
3. Article Addressed to:	4. Article Number
PLATTE CREEK IRRIGATION ASSOC BOX 87 PLATTE SD 57369	P 694 057 322 ps of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED .
5. Signature -- Addressee	8. Addressee's Address (ONLY if requested and fee paid)
X	
6. Signature -- Agent	
7. Date of Delivery	
02-04-91	

PS Form 3811 Apr. 1989

U.S.G.P.O. 1993 233 815

DOMESTIC RETURN RECEIPT

South Dakota

GREAT FACES. GREAT PLACES

DEPARTMENT OF WATER & NATURAL RESOURCES
400 Foss Building
525 East Capitol
Pierre, South Dakota 57501-3151

February 6, 1991

1610-3

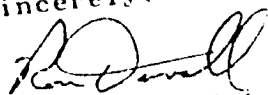
Bruce Wynia
Platte Creek Irrigation Assoc.
Box 87
Platte, SD 57369

Dear Mr. Wynia:

I am writing to acknowledge receipt of your 1990 irrigation questionnaire for Water Right No. 1610-3. You may disregard the February 1, 1991, Notice of failure to submit the 1990 irrigation questionnaire. With receipt of the questionnaire, your name has been deleted from the February Water Management Board meeting agenda.

If you have any questions, please contact Genny McMath, at (605) 773-3352.

Sincerely,



Ron Duvall, Natural Resources Engineer IV
Water Rights Division



1611 3

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

PLATTE CREEK IRRIGATION ASSOC
BOX 87
PLATTE SD 57369

NOTICE

RE: Violation of Requirement to Submit 1991 Irrigation Questionnaire

Our records indicate that the 1991 Irrigation Questionnaire has not been submitted for Permit No(s) 1610-3. The request for the Questionnaire was dated October 18, 1991. The Water Management Board has directed that owners of water permits who have not submitted the 1991 Irrigation Questionnaire be given notice of hearing to determine if any Board action is to be taken concerning the violation.

The hearing will be held at 9:15 am, March 4, 1992, in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol, Pierre SD, and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to SDCL 1-26. Following the hearing, the Water Management Board can:

1. Amend Permit No(s) 1610-3 to require the Irrigation Water Use Questionnaire to be submitted each year;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the questionnaire(s) is(are) received in this office before the March 4th hearing date, your name will be deleted from the Board agenda.

Very truly yours,

Ron Duvall, Natural Resources Engineer IV
Water Rights Division
605 773-3352



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

February 13, 1992

1610-3

Bruce Wynia
Platte Creek Irrigation
RR #2 Box 87
Platte, SD 57369

Dear Mr. Wynia:

I am writing to acknowledge receipt of your 1991 irrigation questionnaire for Water Right No. 1610-3. You may disregard the January 27, 1992, Notice of failure to submit the 1991 irrigation questionnaire. The questionnaire was received prior to the Water Management Board meeting and your name was deleted from the agenda.

If you have any questions, please contact me at (605) 773-3352.

Sincerely,

Genny McMath
Natural Resources Analyst
Water Rights Division

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

3. Article Addressed to:

PLATTE CREEK IRRIGATION ASSOC
BOX 87
PLATTE, SD 57369

5. Signature (Addressee)

6. Signature (Agent)

PS Form 3811, November 1990 * U.S. GPO: 1991-287-066

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

4a. Article Number

P 906-357 204

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

01-30-92

8. Addressee's Address (Only if requested and fee is paid)

DOMESTIC RETURN RECEIPT



1610-3

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

January 29, 1993

NOTICE

TO: PLATTE CREEK IRRIGATION ASSOC
BOX 87
PLATTE SD 57369

FROM: Ron Duvall, Natural Resources Engineer IV
for JOHN HATCH, Chief Engineer
Water Rights Division

RE: Violation of Requirement to Submit 1992 Irrigation Questionnaire

Our records indicate that the 1992 Irrigation Questionnaire has not been submitted for Permit No(s) 1610-3. The request for the Questionnaire was dated October 16, 1992. The Water Management Board has directed that owners of water permits who have not submitted the 1992 Irrigation Questionnaire be given notice of hearing to determine if any Board action is to be taken concerning the violation.

The hearing will be held at 9:30 am, March 3, 1993, in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol, Pierre SD, and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to SDCL 1-26. Following the hearing, the Water Management Board can:

1. Amend Permit No(s) 1610-3 to require the Irrigation Water Use Questionnaire to be submitted each year;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law. Prior to February 22, 1993, contact the Water Rights Division, 523 E Capitol, Pierre SD 57501-3181 (605 773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.

NOTE: If the questionnaire(s) is(are) received in this office before the March 3rd hearing date, your name will be deleted from the Board agenda.

ed on the reverse side? SENDER: • Complete items 1 and/or 2 for additional services. • Complete items 3, and 4a & b. • Print your name and address on the reverse of this form so that we can return this card to you. • Attach this form to the front of the mailpiece, or on the back if space does not permit. • Write "Return Receipt Requested" on the mailpiece below the article number. • The Return Receipt will show to whom the article was delivered and the date delivered.	I also wish to receive the following services (for an extra fee): 1. ☐ Addressee's Address 2. ☐ Restricted Delivery Consult postmaster for fee.
	3. Article Addressed to: <u>1610-3</u> PLATTE CREEK IRRIGATION ASSOC BOX 87 PLATTE SD 57369
5. Signature (Addressee) <u>[Signature]</u> 6. Signature (Agent) <u>[Signature]</u>	8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.



1610-3

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

February 22, 1993

334-3
1610-3

Bruce Wynia
Platte Creek Irrigation
Box 87
Platte, SD 57369

Dear Mr. Wynia:

I am writing to acknowledge receipt of your 1992 irrigation questionnaire for Water Right No. 1610-3 and also the 1992 irrigation questionnaire for Water Right No. 334-3 (C F Wynia). These questionnaires were completed following our February 2, 1993 telephone conversation.

You may disregard the January 29, 1993, Notice of Violation of the Requirement to Submit the 1992 Irrigation Questionnaire. The questionnaires were received in our office prior to the Water Management Board meeting, your names have been deleted from the agenda.

As you requested, future irrigation questionnaires for Water Right No. 334-3 (C F Wynia) will be sent directly to you. If you have any questions, please contact me.

Sincerely,

Genny McMath
Natural Resources Analyst
Water Rights Division
(605) 773-3352

STATE OF SOUTH DAKOTA

REISSUED WATER LICENSE NO. 1610-3

(1) The Platte Creek Irrigation Association, Inc. of Platte, SD 57369 was issued Water License No. 1610-3, April 30, 1974 for a water right to appropriate 7.45 cubic feet of water per second from the Missouri River, Charles Mix County, South Dakota for irrigation purposes. Water License No. 1610-3, with a priority date of August 20, 1968 was issued to the applicant for diversion of water with construction of the described water supply system completed and the application to beneficial use of said water completed.

A review of the original water license and inspection report found an error in the legal description of the diversion point. The diversion point was referenced from the **NW corner of Section 9** and should have been referenced to the **NW corner of Section 10, T98N, R69W**. The map and the advertisement notice reflect the diversion point to be located in the NW 1/4 SW 1/4 of Section 10, T98N, R69W. Water License No. 1610-3 is being reissued to correct the error. The remaining portions of the original license are not altered by reissuance of the license.

(2) It is certified that the Platte Creek Irrigation Association, Inc., has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 7.45 cubic feet of water per second for beneficial use. The location of the diversion point is 3300'S and 850'E of the NW corner of Section 10, T98N, R69W (NW 1/4 SW 1/4 Section 10).

(3) Platte Creek Irrigation Association, Inc. has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate the following land: **all in T98N, R69W**

Section 3	
NW 1/4	156 acres
NE 1/4	59 acres
SW 1/4	37 acres

Section 4	
SW 1/4	70 acres
NE 1/4	158 acres
SE 1/4	140 acres

Total of 620 acres

(4) Pursuant to South Dakota Water Law 46-5-30.1 the Platte Creek Irrigation Association, Inc., % Bruce Wynia of RR #2 Box 87, Platte, SD 57369 the holder and/or owner of Water Right No. 1610-3 is issued a license to appropriate water, the right to use 7.45 cubic feet of water per second from the Missouri River with a priority date of August 20, 1968 from the location specified in (2) of this license. The water to be conducted to and upon lands specified in (3) of this license for the purpose of irrigation. This license is subject to any limitations or qualifications listed in Water Permit No. 1610-3 and subject to South Dakota State Law.



JOHN HATCH, Chief Engineer
Water Rights Division
Department of Environment and Natural Resources

SEP 6 1995

date



1610-3

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

SEP 6 1995

Bruce Wynia
Platte Creek Irrigation Association, Inc.
RR 2 Box 87
Platte, SD 57369

Dear Mr. Wynia:

Enclosed is your Reissued Water License No. 1610-3. The license has been reissued to correct an error in the legal description of the diversion point. Reissuance of the license does not alter the remaining portions of the original license.

As long as you beneficially use the water for the purpose it was appropriated, South Dakota Water Law states that you have a continuing right to use the water.

If you have any questions concerning the reissued license, please contact us.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Program
(605)773-3352

gm
enclosure



**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov



October 27, 2014

334-3
1610-3

Bruce Wynia
Platte Creek Irrigation Association
35967 282nd St
Platte SD 57369 6423

Dear Mr. Wynia:

Enclosed is a "Notice" dated October 17, 2014 concerning the 2014 irrigation questionnaires.

The notice was originally mailed to 28089 Wynia Ranch Rd, Platte SD. The post office notified us that your address has changed and I will update our records accordingly.

If you have any questions, please contact me.

Sincerely,

Genny McMath
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

enclosures