

1. Considered: FEB 3, 1981

PARTIAL
FUTURE USE
Water Right No. 4839-3

2. Name of Applicant CITY OF TYNDALL

3. Post Office Address CITY HALL 57066

4. Amount of Water Claimed 1.33(NEW) 4.31 FUTURE USE maximum acre feet

5. Source of Water Supply 160' WELL (PROPOSED)

6. Water to be used for MUN acres to be irrigated

7. County BON HOMME about 3W. 4 miles SOUTH of TYNDALL

8. PROOF OF PUBLICATION: Received ☒ 1-11-82 Not Received

APPLICATION: Approved 2/4/82 Subject to WT-F/U

Not Approved Action Deferred

PRIORITY

Dated Received 11-16-81 Application complete-yes no FEE N/A

Remarks

Corrected Application received Period of Annual Use

WATER
QUALITY N/A

Received yes no APPROVED/CONDITIONAL (Circle one)

WT-1 Description same as application-yes no Remarks

Disapproved Returned

Diversion Point S

APPROX. CENTER SEC. 21-T94N-
R60W

Land to be irrigated

WELL LOG

Driller NO LOG YET HAVE Licensed - yes no

Depth LOGS FROM S.D.GEO. SURVEY

Remarks

Water Right No. _____

MAP Map No. 4046-3 Map located in Water Right _____ Map file _____
Type of Map drawn Prepared by PE & SDGS

+++++

REVIEWED This Application was received within 30 days of the date received, accepted as complete, Number assigned and written up for advertisement before the Board on:

12-14--81

Dusty Westlund
(Signed)

+++++

PROTESTS Letters/Petitions in file - yes _____ no _____ Remarks _____

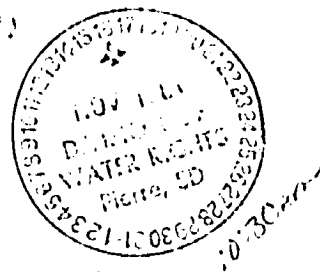
REMARKS Date
F.F. & C Final Decision, including F.F. & C. of Law were adopted _____

OF LAW, Date
FINAL Final Decision mailed to parties and/or parties notified that Final Decision was
DECISIONS adopted _____

ETC. Remarks _____

12-14-81

No. 4839-3
 Map No. 4045-3 Water Division No. 3 MISSOURI RIVER District
 Above for Office Use 10170101



APPLICATION FOR PERMIT To Appropriate Water within the State of South Dakota

Check one of the following:

Now ☒ Vested Right _____ Future Use ☒

Change in Diversion _____ Additional Diversion _____

Change in Acreage _____ Additional Acreage _____

1. Name of Applicant City of Tyndall Phone No. 650-589-3481Post Office Address City Hall Tyndall State South Dakota 57066
(Street, RR, or Box) (Town) (Zip Code)

If a corporation show date and place of incorporation _____

2. Method of accomplishing work (contract, employment of others, or by direct labor) contract3. Name of diversion work Tyndall City well4. Amount of water claimed (cubic feet per second) 5.64 1.33-NEW 4.31 cfs F/U5. Source of water supply Tyndall-Scotland sand and gravel6. Location of point of diversion Section 21, T94N, R60W, ALBION TownshipCounty Bon Homme7. Annual period or periods during which water is to be used daily8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) municipal

9. For irrigation use, Total number of acres to be irrigated _____

List below each forty acre subdivision, or lot, or fraction thereof and show number of acres to be irrigated in each.

Land Description	No. Acres Irr.
N/A	

Land Description	No. Acres Irr.
N/A	

Attach sheet if more space is needed

10. Time required to complete construction of water supply system one 5 years. Additional time required to complete application of water to the proposed beneficial use 4 years. Indiana's Register11. Choice of county newspaper for publication of Notice of Intent to Appropriate Water Tyndall

12. Principal Features of the Proposed Water Supply System.

A. Works proposed to divert water from its natural source.

B. Works proposed to transport water to place of use.

C. Works proposed to apply water to beneficial use.

Estimated Total Cost \$ 35,000

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map. (see instructions concerning preparation.)

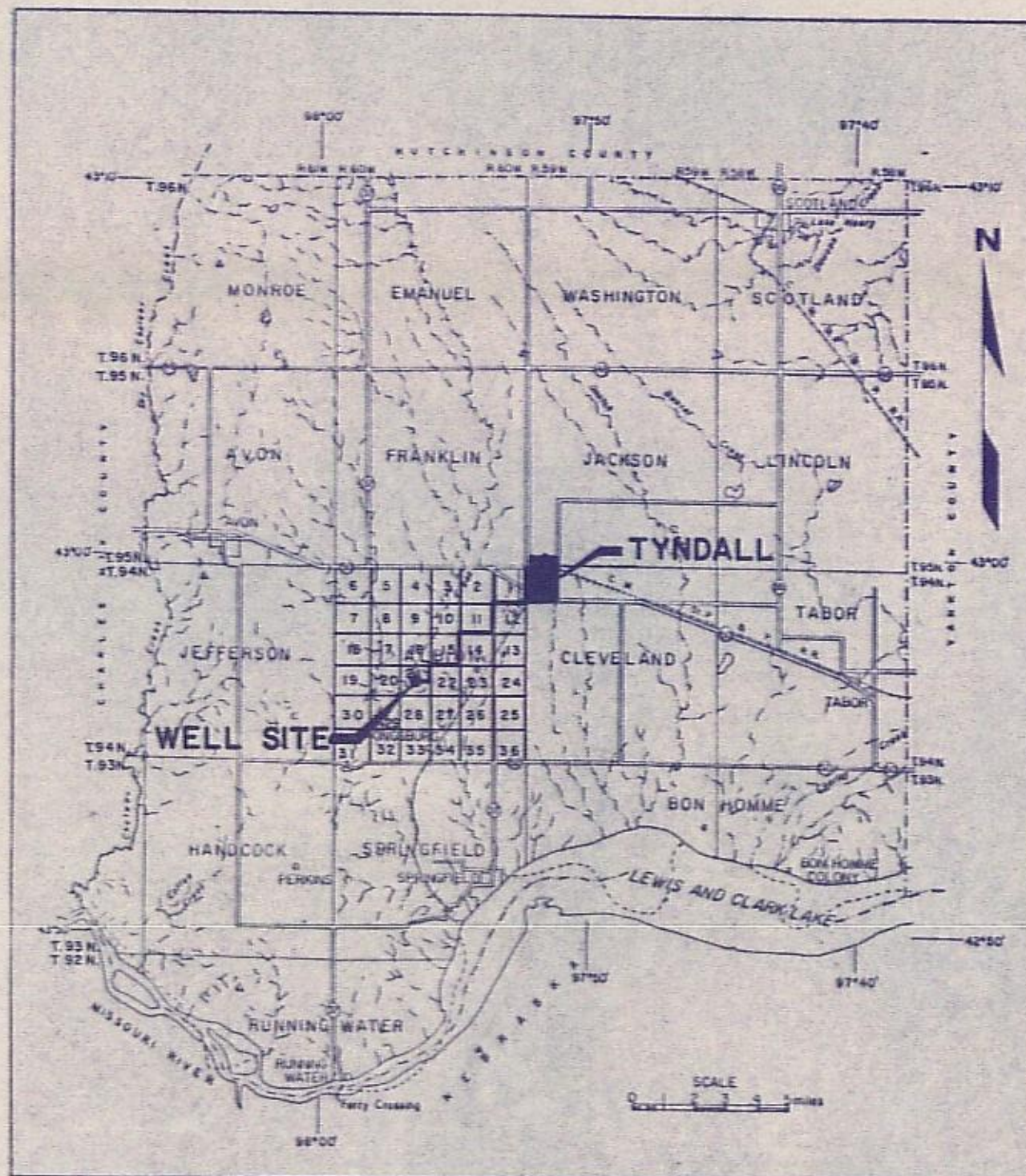
STATE OF SOUTH DAKOTA)
) ss.
 County of Bon Homme)I, Emil Jilek Mayor City of Tyndall if o applicant, certify that I have read the foregoing application and have examined the attached map and that the matters therein stated are true and that I intend, and am able to complete the necessary constructionSigned [Signature]Subscribed and sworn to before me this 13th day of November, 1981

Notary Public (or other qualified officer)

WATER SYSTEM IMPROVEMENTS

TYNDALL, SOUTH DAKOTA

1981



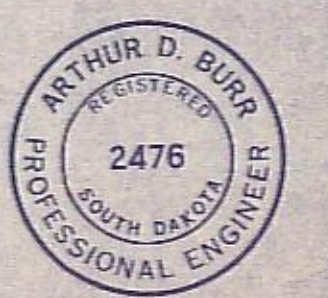
VICINITY MAP

INDEX	
DESCRIPTION	DWG. NO.
TITLE SHEET AND VICINITY MAP	1
LEGEND AND SITE PLAN	2
WELL NO. 4	3
PUMP HOUSE DETAIL	4
ELECTRICAL AND PLUMBING	5

I hereby state that this plan, specification was prepared by me or under my direct personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of South Dakota and that I am competent to prepare this document.

Arthur D. Burr
Arthur D. Burr, P.E.
Registration No. 2476

11/23/81
Date



DATE	REVISIONS

BENCH MARKS

M MUNICIPAL
E ENGINEERING
C CONSULTANTS, P.C.

Box 220
Sergeant Bluff, Iowa 51054
Phone 712-943-5055

TITLE SHEET AND VICINITY MAP

DRAWN ☒ CHECKED ☒ APPROVED ☒ DATE 11/23/81

DWG. NO.
1
JOB NO. 5101

Map #4045-3 Appl 4838-3

WATER RIGHT APPLICATION APPROVAL

The Water Management Board hereby approves Water Right Application No. 4839-3

CITY OF TYNDALL

(Applicant)

CITY HALL

(Post Office Address)

SOUTH DAKOTA 57066

(State)

With the following qualifications

The ~~well~~ well approved under this Permit will be located near domestic wells and other ~~wells~~ wells which may obtain water from the same aquifer. The ~~well~~ well owner, under this Permit, shall control his ~~withdrawals~~ withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in ~~wells~~ wells having prior water rights.

UNDER THE FUTURE USE PORTION OF THIS PERMIT, AT SUCH TIMES AS DEFINITE PLANS ARE MADE, SPECIFIC APPLICATIONS FOR ALL OR ANY PART OF THE WATER GRANTED UNDER THIS WITHDRAWAL MUST BE SUBMITTED PRIOR TO CONSTRUCTION OF FACILITIES.

THE FUTURE USE PORTION IS SUBJECT TO REVIEW BY THE WATER MANAGEMENT BOARD AS TO ACCOMPLISHMENTS THEREUNDER UPON EXPIRATION OF SEVEN (7) YEARS.

THE FUTURE USE PORTIONS OF THIS PERMIT IS APPROVED FOR GROUNDWATER LESS THAN 60 FEET D

Date of first receipt of application NOVEMBER 16, 1981

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

Date of receipt of corrected application _____, 19____

Approved FEBRUARY 4, 1982, Recorded in Book _____ Page _____

WATER RIGHT PERMIT NO. 4839-3

The Water Management Board hereby grants and issues this Water Right Permit No. 4839-3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as qualified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is NOVEMBER 16, 1981
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before AUGUST 4, 1982
3. The whole of said work is to be completed on or before FEBRUARY 4, 1983
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is FEBRUARY 4, 1983
5. The water appropriated shall be used for the purpose of MUNICIPAL USE

6. 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.

7. The amount of the appropriation herein granted shall not exceed 1.33 ACRE - 4.31 FUTURE USE cubic feet per second; neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for beneficial uses served, and if for irrigation purposes said appropriation must be limited to not more than 2 acre feet per acre per year and 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 used FOR MUNICIPAL PURPOSES

for irrigation on or before FEBRUARY 4, 1983; said water to be used during the following described

annual period: CONTINUOUSLY

Witness my hand this 18TH day of MARCH, 1982

THE WATER MANAGEMENT BOARD

By

John Hatch
Chief Engineer Water Rights

Certificate of Construction Issued _____, 19____

Water License Issued _____, 19____

Test Hole No. 28(Rotary)
Surface elevation: not measured
Depth to water: not measured

0-18 alluvium, fill
18-24 gravel
24-80 sand, fine
80-138 sand, coarse
138- Niobrara Formation

* * * * *

Test Hole No. 29
Surface elevation: not measured
Depth to water: 14 feet

0- 4 topsoil, fill
4- 9 gravel, clayey
9-12 sand, red, medium
12-70 sand, coarse to fine, saturated

* * * * *

Test Hole No. 30
Surface elevation: not measured
Depth to water: not measured

0- 1 topsoil, black
1-44 clay, brown
44-45 sand, fine

* * * * *

9. (Continued)

III. Well Specifications

(a) Hole and casing

Size of drill hole or excavation 31" , Depth 160 ft.

Type of casing steel
(wood, concrete, steel, etc.)

Size of casing 16" , Thickness of casing375"

Length of casing 120 ft. If collection gallery, length, size and depth of gallery

(b) Screens

Type of perforated screen Horiz. slot "Everdur"

Size of perforated screen 16" , 40 ft.
(diameter) (length)

Thickness of gravel pack 9" , length of gravel pack 130'

(c) Water Bearing Materials

Distance to water 25 ft. Character of water bearing materials fine
sand to fine gravel (Alluvium)

Thickness of water bearing material 143 ft.

(d) Pump and Motor

Type of pump vertical turbine
(centrifugal, propeller, mixed flow, etc.)

Name of pump Fairbanks Morse , size 500 g.p.m. @ 232' TDH

Kind of motor electric
(gasoline, electric, diesel, etc.)

Horsepower 40 , Name of Motor Fairbanks Motor

(e) Complete well

Capacity 500 gpm at drawdown of 30 ft. Estimated cost \$ 11,750

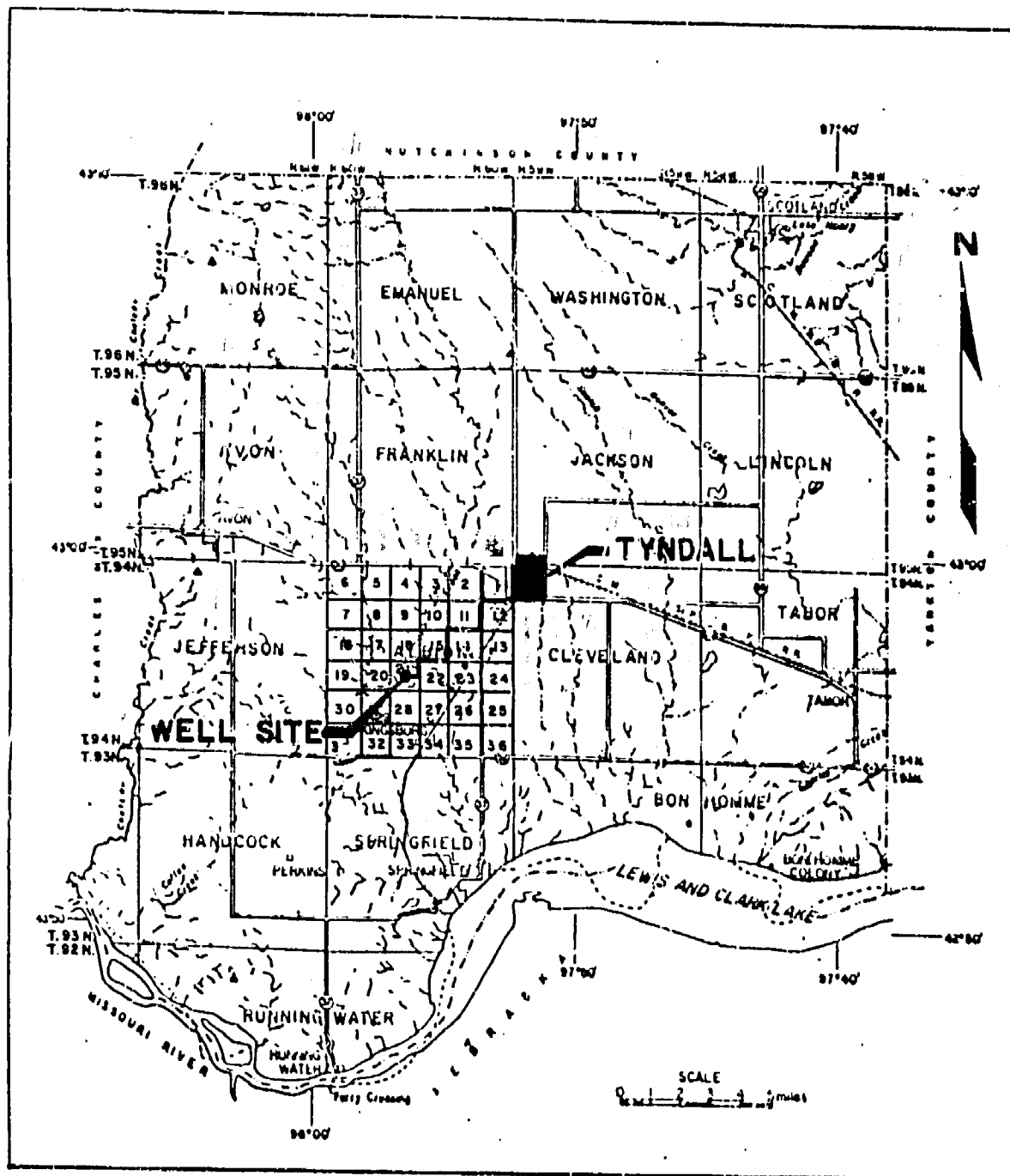
(f) Owner of land upon which well is located City of Tyndall
Name

Tyndall, S. Dak.

Address

(g) Distance to nearest existing wells

On same owner's property none rods. On property owned by others 40 rods



VICINITY MAP

Trap 9045-3

April 1935

Special Report 13

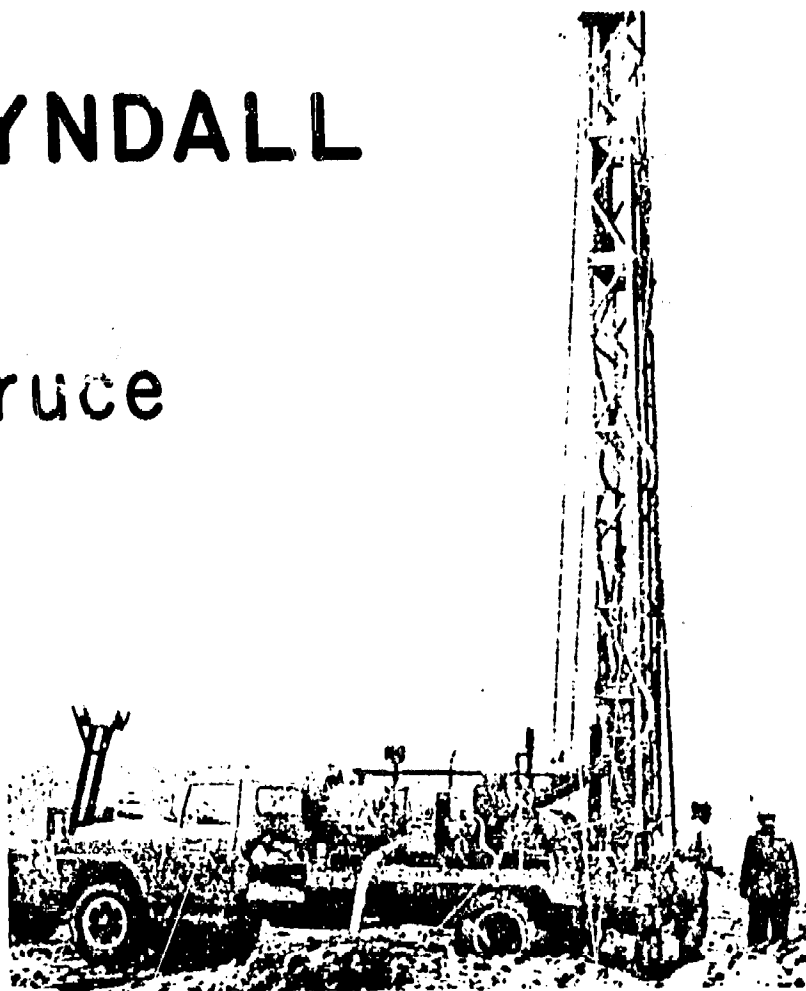
SHALLOW WATER SUPPLY

for the

CITY OF TYNDALL

by

Richard L. Bruce

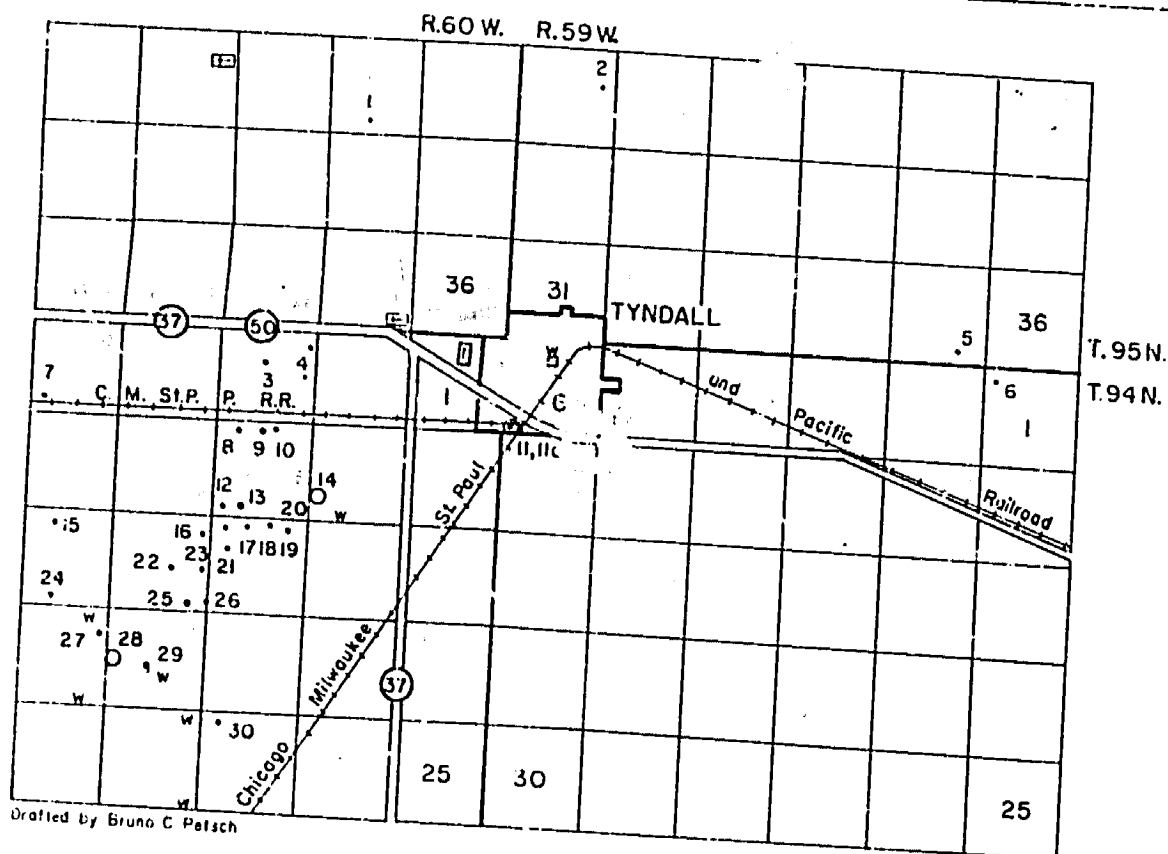


SOUTH DAKOTA GEOLOGICAL SURVEY

Allen F. Agnew, State Geologist

SCIENCE CENTER, UNIVERSITY
VERMILLION, SOUTH DAKOTA

March, 1962



Drafted by Bruno C. Pelsch

EXPLANATION

- Auger drill test hole
- Rotary drill test hole
- w Water sample
- u City wells

Figure 2. Data Map of Tyndall and Vicinity.
by
R. L. Bruce
1961

Publish first publication on or before December 30, 1981

NOTICE OF HEARING ON
APPLICATION TO APPROPRIATE WATER

Pierre, South Dakota 57501

December 14, 1981

Notice is hereby given that the City of Tyndall whose post office

address is City Hall, Tyndall, South Dakota, has made an application in accordance with the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8, 46-5-10 thru 46-5-22, 46-5-25, 46-5-38, 46-5-41; 46-6-3, 46-6-3.1, 46-6-5, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14 and Board Rules ARSD 52:01:01:01 thru 52:01:01:13; 52:01:01:21 thru 52:01:01:24 for a permit to appropriate for beneficial use 1.33 cubic feet of water per second of

and for Future Use 4.31 cubic feet per second of time
time /from groundwater through the Tyndall City Well,

the point(s) of diversion of which ~~xxx~~ (are) to be located in ~~xxx~~ Section 21, _____

T94N, R60W

of Section XXXXXX, Title XXXXXX, Range XXXXXX, Said water to used for the purpose of providing irrigation on portions of the following described land:

water supplies for the present and future use needs of the City of Tyn dall

This Application No. 4839-3 will be considered by the Water Management Board
at Meeting Room #1, Knapp Bldg. Pierre SD Church & Ill, upon the 3rd day of February, 1962

at 10 A. M. The Board is authorized to make a determination on this application at the hearing. All interested persons may appear and be heard. Any person who may be affected by a Board decision who desires to present evidence or cross-examine witnesses according to SDCL 1-26 may notify the Board in writing prior to the hearing or orally at the hearing.

This hearing is an adversary proceeding. Any person 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 at the hearing. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

Any handicapped person wishing to attend this hearing can contact the Water Rights Division, DWNR, Joe Foss Building, Pierre SD, prior to the hearing date for assistance to assure access to the hearing.

For the Water Management Board

BETTY WESTLUND, Water Rights Specialist

cc: applicant
WNR-806A-10/81 Notice of Intent to Appropriate Water
GROUNDWATER-FUTURE USE

No. 4839-3

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Bon Homme) ss.

I, Wayne L. Bartland hereby
certify that the annexed printed copy of Notice of Intent to Appropriate

Water was taken from the Tyndall Tidings & Register

A newspaper which during the whole time of publication of said notice
herein after stated, has been and is printed and published in the

City of Tyndall
County of Bon Homme and State of South Dakota;
that the said notice was published in said newspaper on the following
two dates:

Dec. 30, 1981

Jan. 6, 1982

(Signature)

Published
(Title)

1-7-82

(Date Signed)

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Water Management Board
Betty Westlund, Water Rights Specialist
cc: applicant

(Dec. 30 & Jan. 6)

Cost of Printing: 15.00 - 1.79
47 lines @ 23.6 + 80% x 1 (2nd wk)



Special Report 13

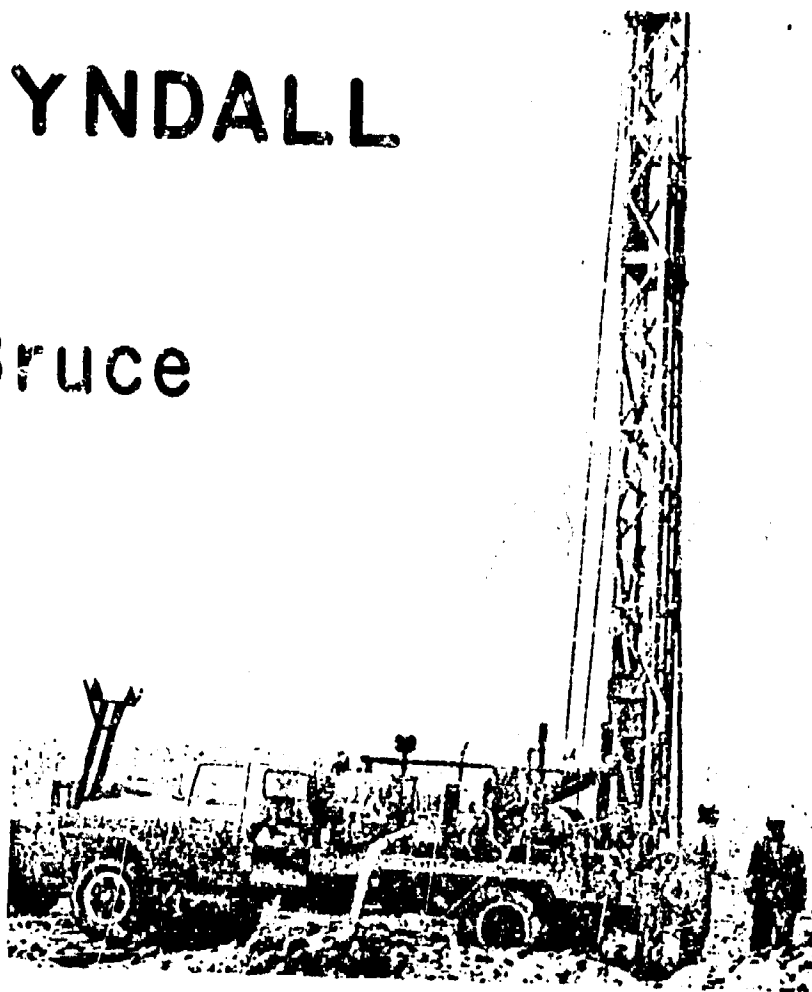
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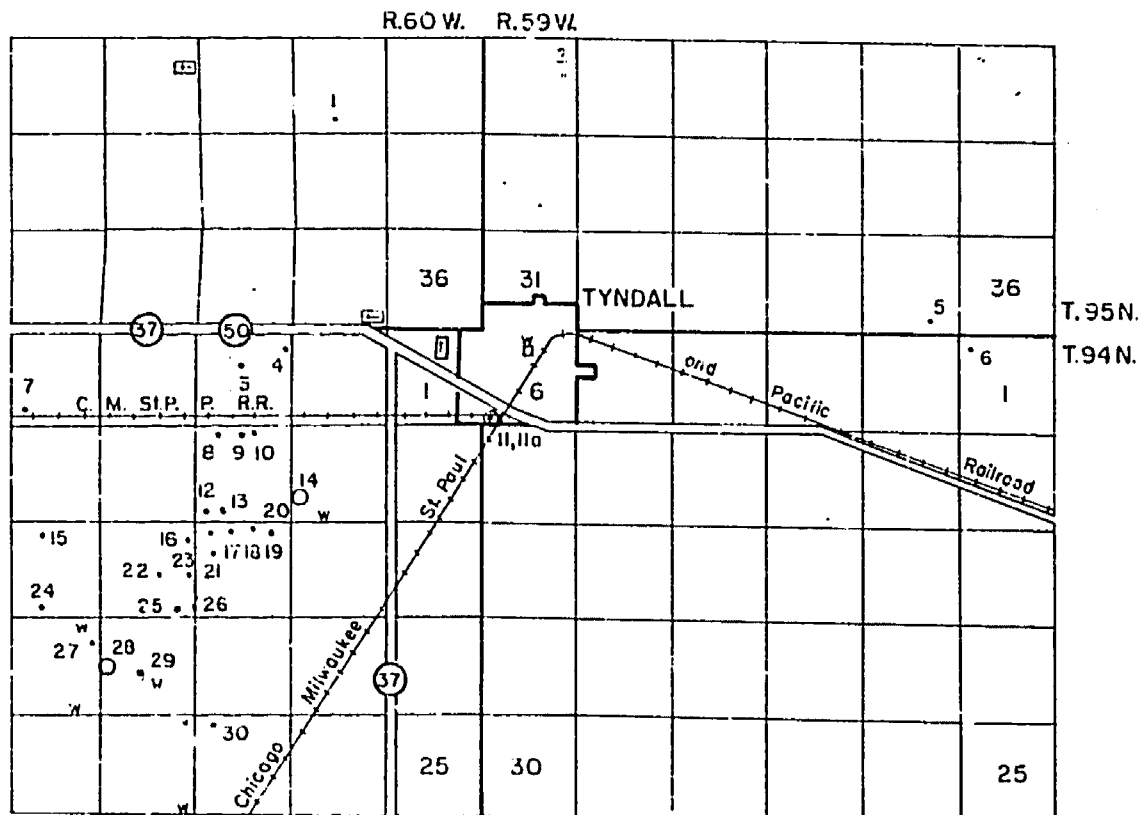


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Drafted by Bruno C. Pitsch

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- City wells

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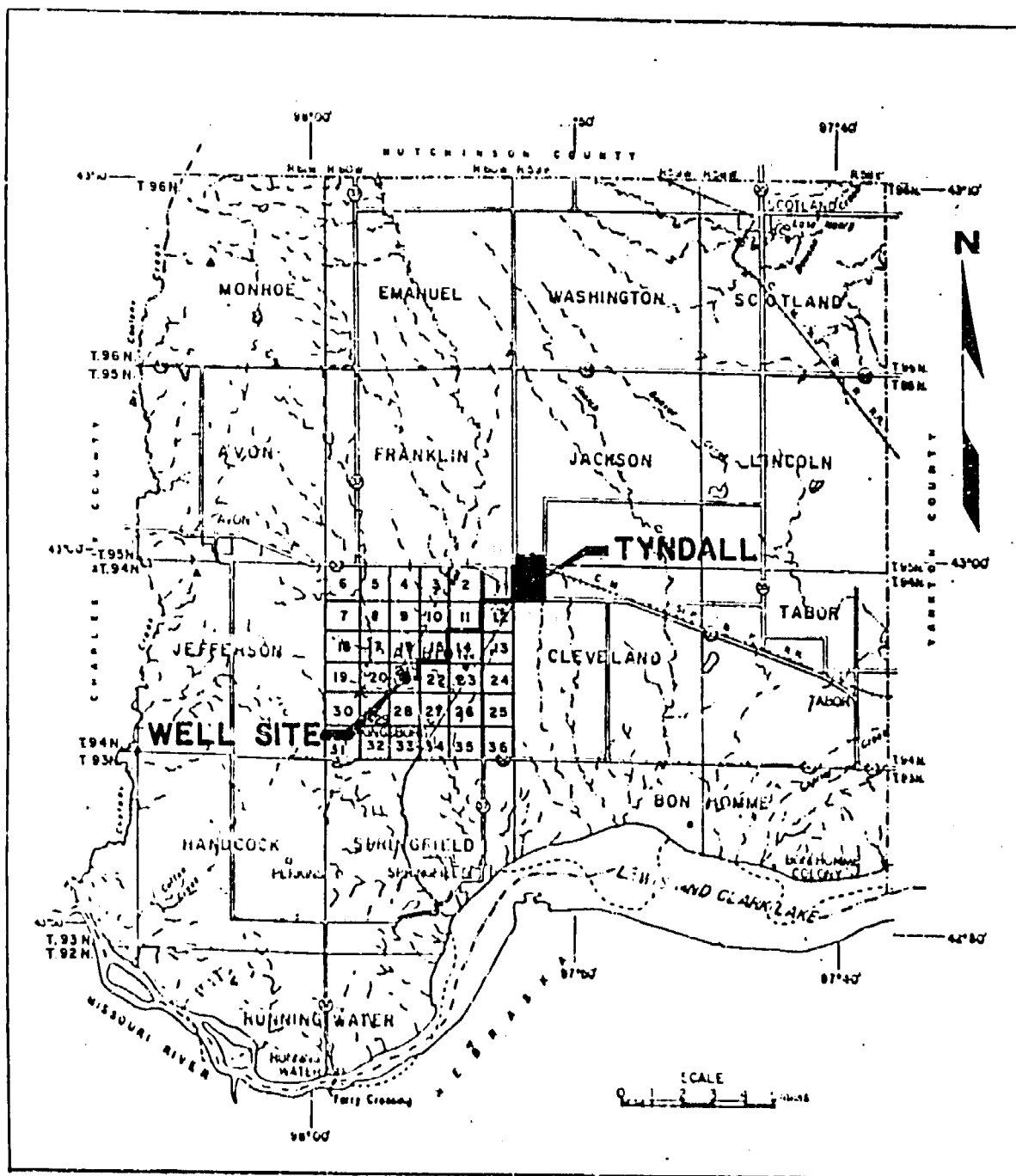
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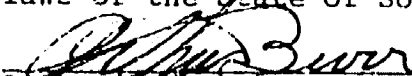
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VICINITY MAP

SPECIFICATIONS
FOR
WATER SYSTEM IMPROVEMENTS
TYNDALL, SOUTH DAKOTA

I hereby certify that these plans and specifications were prepared by me or under my direct personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of South Dakota.


Arthur D. Burr, P.E. & L.S.
Registration No. 2476

11/23/81

Date

Prepared by
MUNICIPAL ENGINEERING
CONSULTANTS, P.C.
Sergeant Bluff, Iowa

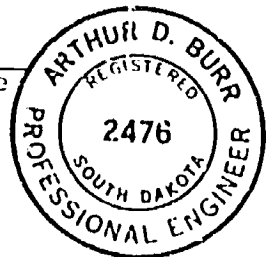


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PUMP HOUSE DETAIL	4
ELECTRICAL AND PLUMBING	5

INVITATION TO BIDDERS

Notice is hereby given that sealed bids will be received by the City Council, City of Tyndall, South Dakota 57066, at the City Hall until _____ p.m., local time, _____, at which time bids will be publicly opened and read aloud for furnishing only the labor and equipment necessary to perform all the work as follows:

Work includes all materials, labor, equipment and incidentals required to construct One (1) well complete with test hole, drill hole, well test, casing pipe, screen, well pump, including miscellaneous materials and equipment, controls, electrical work, piping, valves and clean-up.

Each bid must be accompanied by a certified check or draft in the amount of 5% of the total amount bid or a bid bond in the amount of 10% of the total amount of the bid per the laws of the State of South Dakota. In case the bid is accepted and the bidder fails to enter into an Agreement with the City, the amount of the certified check or bond shall be forfeited to the City as liquidated damages.

All bids shall be on the basis of cash payments for the work accomplished, payable within 30 days after final acceptance of the Work by the Owner.

The City Council reserves the right to reject any and all bids.

Bid forms for this work may be obtained upon application to the Engineer, Municipal Engineering Consultants, P.C., P.O. Box 220, Sergeant Bluff, Iowa 51054. Plans for the Work may be examined at the office of the Auditor, Tyndall, South Dakota or at the office of the Engineer, 400 4th Street, Sergeant Bluff, Iowa. Plans may be obtained by contacting the Engineer.

Published by the Authority of

Peggy Patterson, Auditor
City of Tyndall, SD 57066

INSTRUCTIONS TO BIDDEPS

WATER SYSTEM IMPROVEMENTS TYNDALL, SOUTH DAKOTA

INDEX

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03	METHOD OF BIDDING	09	AWARD OF CONTRACT
04	QUALIFICATIONS OF BIDDERS	10	PAYMENT
05	SUBMISSION OF BIDS	11	BOND
06	WITHDRAWAL OF BIDS		

01 DEFINITION OF TERMS

- a. "Owner", shall mean the City of Tyndall, South Dakota acting through the City Council.
- b. "Person" shall mean any individual, partnership, society, association, joint stock company, corporation, estate, receiver, trustee, assignee or referee, whether appointed by a court or otherwise, and any combination of individuals.
- c. "Bidder" shall mean any person who submits a proposal to furnish the work described in the Contract Documents.
- d. "Contractor" shall mean the person with whom the Owner may enter into contract for the execution of the work specified.
- e. "Subcontractor" shall mean the person supplying materials, labor, equipment and appurtenances for the work, such person having contractual relations with the Contractor but not with the Owner.
- f. "Engineer" shall mean MUNICIPAL ENGINEERING CONSULTANTS, P.C., Sergeant Bluff, Iowa.
- g. "Standard Drawings" shall mean construction detail drawings bound with these specifications.
- h. "Work" shall mean the work to be done and the equipment, supplies and materials to be furnished under the contract, unless some other meaning is indicated by the context.
- i. "Station", "Sta." shall mean one hundred (100) lineal feet measure.

02 CONTRACT DOCUMENTS

- a. Contract Documents, sometimes referred to as the "plans and specifications", shall mean and include the following parts as used herein:

05 SUBMISSION OF BIDS

- a. Submit bids in duplicate on proposal forms included herewith. Submit in a sealed envelope separate from bid security. Envelope shall bear return address of the bidder and shall be addressed as follows:

To:

Proposal for:

City Clerk
City of Tyndall
City Hall

Water System Improvements

Tyndall, South Dakota 57066

- b. Bids shall be signed by a legal authorized representative of the bidder.
- c. A bid will include the following signed and properly executed documents:
 - 1) Bid form
 - 2) Bid security
 - 3) Statement of Qualifications
 - 4) Non-collusion Affidavit

06 WITHDRAWAL OF BIDS

- a. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.
- b. If, within twenty-four (24) hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of his Bid, that Bidder may withdraw his Bid and the Bid Security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work.
- c. All Bids shall remain open for thirty (30) days after the day of the Bid opening, but Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

07 BID SECURITY

- a. Bid Security shall be made payable to Owner, in an amount of five percent (5%) of the Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond (on form attached if a form is prescribed)

- d) The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Supplementary Conditions, General Requirements or Drawings.
- e) The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Part and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

09 AWARD OF CONTRACT

- a. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, nonresponsive or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- b. In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid forms. It is Owner's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form but Owner may accept them in any order or combination.
- c. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the Supplementary Conditions. Operating costs, maintenance and considerations, performance data and guarantees of materials and equipment may also be considered by Owner.
- d. Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

PROPOSAL

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of South Dakota doing business as _____

_____. * To the City of Tyndall, Tyndall, South Dakota, (hereinafter called "Owner").

In compliance with your Invitation to Bidders, BIDDER hereby proposes to perform all WORK for the construction of Water System Improvements in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

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 this BID has been arrived at independently without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a time to be specified in the Instructions to Bidders and to fully complete the PROJECT within the specified calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of \$150.00 for each consecutive calendar day thereafter as provided in Agreement.

BIDDER acknowledges receipt of the following ADDENDUM:

*Insert "a corporation), "a partnership", or "an individual" as applicable.

BIDDER agrees to perform all work described in the CONTRACT DOCUMENTS for the following unit or lump sum prices:

SCHEDULE

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

CONTRACT 1 - WELLS AND TRANSMISSION MAIN

1. Work includes all materials, labor, equipment and incidentals required to construct well complete with test hole, drill hole, well test, casing pipe, screen, install existing well pump and motor, relocating chemical feed equipment, new pump house, manhole, including miscellaneous materials and equipment, electrical work, transmission piping, valves and clean-up.

	<u>Description</u>	<u>Unit</u>	<u>Est. Qty.</u>	<u>Unit Price</u>	<u>Extended Price</u>
1.1	Mobilization of Equipment	LS	XXXX	\$ XXXX	\$ _____
1.2	Drill Hole	LF	170	_____	_____
1.3	Casing Pipe				
	1.3.1 12"	LF	138	_____	_____
1.4	Test Set Up	LS	XXXX	XXXX	_____
1.5	Well Testing	Hrs	24	_____	_____
1.6	Screen	LF	30	_____	_____
1.7	Pressure Cement Grouting and Bentonite Seal	LF	XXXX	XXXX	_____
1.8	Install Well Pump & Motor	LS	XXXX	XXXX	_____
1.9	6" Discharge Pipe	LF	20	_____	_____
1.10	4" Gate Valves	Ea.	5	_____	_____
1.11	Connection to Existing System	Ea.	1	_____	_____
1.12	Pump House	LS	XXXX	XXXX	_____
1.13	Transmission Piping				
	1.13.1 8" pvc	LF	45	_____	_____

<u>Description</u>	<u>Unit</u>	<u>Est. Qnty.</u>	<u>Unit Price</u>	<u>Extended Price</u>
1.14 Manhole	Ea.	1	\$ _____	\$ _____
TOTAL BID:			\$ _____	

2. Unit Adjustment Prices: to adjust total contract amount for unforeseen conditions and changes in work directed by Engineer during construction:

<u>Item</u>	<u>Unit</u>	<u>Unit Adjustment Prices</u>
2.1 Stabilizing Material	CY	\$ _____
2.2 Rock Excavation	CY	Add _____
		Deduct _____
2.3 Rubble Excavation	CY	_____
2.4 Sheeting Left in Place	MFBM	_____
2.5 Concrete		
2.5.1 Class A	CY	_____
2.5.2 Class B	CY	_____
2.6 Reinforcing Steel or Wire Fabric	lb.	_____
2.7 Structural Steel	lb.	_____

3. The work will be started within ten (10) days after date set forth in written Notice to Proceed and will be completed within one hundred (100) consecutive calendar days.

Respectfully submitted,

Signature _____ Address _____

Title _____ Date _____

License Number (if applicable) _____

(SEAL - if BID is by a corporation)

Attest _____

SYNOPSIS OF EXPERIENCE RECORD

(This synopsis must accompany Proposal Form)

Name of Bidder _____

Business Address _____

Individual () Partnership () Corporation () (Check One)

Construction successfully completed within past five years similar in size, scope, and difficulty of construction to the work bid upon.

Name of Owner	Name of Project	Location of Project	Amount of Contract
1 _____	_____	_____	_____
2 _____	_____	_____	_____
3 _____	_____	_____	_____
4 _____	_____	_____	_____
5 _____	_____	_____	_____

Number of Contract Days
Allowed for Above
Projects

Actual Number of Days to
Complete Above Projects

1 _____	_____
2 _____	_____
3 _____	_____
4 _____	_____
5 _____	_____

(Signed) _____ Name of Company

(BY) _____

(TITLE) _____

Date _____

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)
County of _____)

_____, being first duly sworn, deposes and says that:

(1) he is _____ of _____,
(Title) (Firm)
the Bidder that has submitted the attached Bid.

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the Owner or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

Title

Subscribed and sworn to before
me this _____ day of _____,
19____.

Title

My commission expires _____

CONTRACT

THIS CONTRACT, made this ____ day of _____, 19____, by
and between _____,
hereinafter called "OWNER" and _____
_____ doing business as (an indi-
vidual), or (a partnership), or (a corporation) hereinafter called
"CONTRACTOR". WITNESSETH: That for and in consideration of the
payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of

2. The CONTRACTOR will furnish all of the materials, supplies,
tools, equipment, labor, and other services necessary for the con-
struction and completion of the PROJECT described herein.
3. The CONTRACTOR will commence the work required by the
CONTRACT DOCUMENTS within _____ calendar days after the date of the
NOTICE TO PROCEED and will complete the same within _____ calendar
days unless the period for completion is extended otherwise by the
CONTRACT DOCUMENTS.
4. The CONTRACTOR agrees to perform all of the WORK described
in the CONTRACT DOCUMENTS and comply with the terms therein for
the sum of \$ _____ or as shown in the Proposal.
5. The term "CONTRACT DOCUMENTS" means and includes the fol-
lowing:
 - A) Invitation to Bidders
 - B) Instructions to Bidders
 - C) Proposal
 - D) Bid Bond
 - E) General Conditions

- F) Special Conditions
- G) Bond
- H) Plans and specifications prepared by _____
_____ numbered _____
through _____, and dated _____,
- I) Addenda:
- No. _____, dated _____, 19____
- No. _____, dated _____, 19____
- No. _____, dated _____, 19____

6. Liquidated damages: OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not substantially complete within the time specified, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not substantially complete on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER One hundred fifty Dollars (\$150) for each day that expires after the time specified for substantial completion until the Work is substantially complete.

7. Payment Procedures: Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Application for Payment as recommended by ENGINEER, on or about the 10th day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in Paragraph 14.1 of the General Conditions.

Prior to Substantial Completion progress payments will be in an amount equal to:

100% of the Work completed, and

100% of materials and equipment not incorporated in the Work but delivered and suitable stored, less in each case the aggregate of payments previously made.

Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 100% of the Contract Price, less such amounts as determined in accordance with Paragraph 14.7 of the General Conditions.

Final Payment: Upon final completion and acceptance of the Work in accordance with Paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said Paragraph 14.13.

All moneys not paid when due hereunder shall bear interest at the maximum rate allowed by law at the place of the Project.

8. This Contract shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed or caused
to be executed by their duly authorized officials, this Contract
in (_____) each of which shall be deemed an original
of copies
on the date first above written.

CONTRACTOR:

OWNER:

BY _____

BY _____

Title

Mayor or Chairman

ATTEST:

ATTEST:

Title

Auditor

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)
a _____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)
hereinafter called Surety, are held and firmly bound unto _____

(Name of owner)

(Address of Owner)
hereinafter called OWNER, in the penal sum of _____

_____ Dollars, \$ { _____ }

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 19____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of which shall be deemed an original, this the _____ day of _____ 19____.

ATTEST:

(Principal) Secretary

(SEAL)

(Witness as to Principal)

(Address)

ATTEST:

(Surety) Secretary

(SEAL)

Witness as to Surety

(Address)

Principal

By _____ (S)

(Address)

Surety

By _____
Attorney-in-Fact

(Address)

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal,
(Corporation, Partnership or Individual)

(Corporation, Partnership or Individual)

and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto _____

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____ Dollars, \$(_____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____ 19_____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each
(number)
one of which shall be deemed an original, this the _____ day of _____
19 _____.

ATTEST:

Principal

(Principal Secretary)

[SEAL]

By _____ (s)

(Address)

Witness as to Principal

(Address)

Surety

ATTEST:

By _____

Attorney in Fact

Witness as to Surety

(Address)

(Address)

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

TO: _____

PROJECT: _____

WORK ITEMS: _____

The Owner has considered the Bid submitted by you for work on the above described project in response to its Invitation to Bid dated _____ and Instructions to Bidders.

You are hereby notified that your Bid has been accepted for items in the amount of \$ _____.

You are required by the Instructions to Bidders to execute the Agreement and furnish to the Owner the required Contractor's Performance and Payment Bonds within 15 days of the date on this Notice of Award. Certificates of Insurance must be furnished to the Owner prior to commencement of the work.

If you fail to execute said Agreement and to furnish said Bonds within 15 days from the date of this Notice of Award, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Security. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of _____, 19____

OWNER: _____

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE OF AWARD

Receipt of the above Notice of Award is hereby acknowledged:

CONTRACTOR: _____

BY: _____ DATE: _____

TITLE: _____

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GENERAL CONDITIONS

ARTICLE I—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement—The written agreement between OWNER and CONTRACTOR covering the Work to be performed, other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents.

Bid—The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds—Bid, performance and payment bonds and other instruments of security.

Change Order—A written order to CONTRACTOR signed by OWNER authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after the effective date of the Agreement.

Contract Documents—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S BID (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications, the Drawings as the same are more specifically identified in the Agreement, together with all Modifications issued after the execution of the Agreement.

Contract Price—The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement.

Contract Time—The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR—The person, firm or corporation with whom OWNER has entered into the Agreement.

day—A calendar day of twenty-four hours measured from midnight to the next midnight.

defective—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment.

Drawings—The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

effective date of the Agreement—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER—The person, firm or corporation named as such in the Agreement.

Field Order—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 10.2 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements—Section of Division 1 of the Specifications.

Modification—(a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Field Order. A modification may only be issued after the effective date of the Agreement.

Notice of Award—The written notice by OWNER to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform his obligation under the Contract Documents.

OWNER—The public body or authority, corporation, association, partnership, or individual with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Project—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Resident Project Representative—The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings—All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by CONTRACTOR, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by his definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it was intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Work—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the General Requirements) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the effective date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed; but in no event shall the Contract Time commence to run later than the thirtieth day after the day of Bid opening or the thirtieth day after the effective date of the Agreement. A Notice to Proceed may be given at any time within thirty days after the effective date of the Agreement.

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Drawings or Specifications, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6. Within ten days after the effective date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review and acceptance an estimated progress schedule indicating the starting and completion dates of the various stages of the Work, a preliminary schedule of Shop Drawing submissions, and a preliminary schedule of values of the Work.

2.7. Before any Work at the site is started CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the effective date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference will be held for review and acceptance of the schedules referred to in paragraph 2.6, to establish procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

ARTICLE 3—CONTRACT DOCUMENTS; INTENT AND REUSE

Intent:

3.1. The Contract Documents comprise the entire Agreement between OWNER and CONTRACTOR concerning the Work. They may be altered only by a Modification.

3.2. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, he shall report it to ENGINEER in writing at once and before proceeding with the Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Specifications or Drawings unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

3.3. It is the intent of the Specifications and Drawings to describe a complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the code of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code in effect at the time of opening of Bids (or, on the effective date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided for in paragraph 9.3.

3.4. The Contract Documents will be governed by the law of the place of the Project.

Reuse of Documents:

3.5. Neither CONTRACTOR nor any Subcontractor, manufacturer, fabricator, supplier or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the Lines upon which the Work is to be performed, rights-of-way for access thereto and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER's furnishing these lands or easements entitles him to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions—Investigations and Reports:

4.2. Reference is made to the Supplementary Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by ENGINEER in preparation of the Drawings and Specifications. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents.

Unforeseen Physical Conditions:

4.3. CONTRACTOR shall promptly notify OWNER and ENGINEER in writing of any subsurface or latent physical conditions at the site or in an existing structure differing materially from those indicated or referred to in the Contract Documents. ENGINEER will promptly review those conditions and advise OWNER in writing if further investigation or tests are necessary. Promptly thereafter, OWNER shall obtain the necessary additional investigations and tests and furnish copies to ENGINEER and CONTRACTOR. If ENGINEER finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by CONTRACTOR, a Change Order shall be issued incorporating the necessary revisions.

Reference Points:

4.4. OWNER shall provide engineering surveys for construction to establish reference points which in his judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for replace-

ment or relocation of such reference points by professionally qualified personnel.

ARTICLE 5—BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date of final payment, except as otherwise provided by law. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by the bidding documents or Supplementary Conditions and be executed by such Sureties as (i) are licensed to conduct business in the state where the Project is located, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the Surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of clauses (i) and (ii) of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which shall be acceptable to OWNER.

Contractor's Liability Insurance:

5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether such performance is by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (i) by any person as a

result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5.3.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and

5.3.6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All such insurance shall contain a provision that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and ENGINEER. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

Contractual Liability Insurance:

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance:

5.5. OWNER shall be responsible for purchasing and maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by law). This insurance shall include the interests of OWNER, CONTRACTOR and Subcontractors in the Work, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers,

architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 shall contain a provision that the coverage afforded will not be cancelled or materially changed until at least thirty days' prior written notice has been given to CONTRACTOR.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance as may be required by the Supplementary Conditions or by law. This insurance shall include the interests of OWNER, CONTRACTOR and Subcontractors in the Work.

5.8. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR or Subcontractors in the Work to the extent of any deductible amounts that are provided in the Supplementary Conditions. If CONTRACTOR wishes property insurance coverage within the limits of such amounts, CONTRACTOR may purchase and maintain it at his own expense.

5.9. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policy, OWNER shall, if possible, include such insurance, and the cost thereof shall be charged to CONTRACTOR by appropriate Change Order. Prior to commencement of the Work at the site, OWNER will in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

Waiver of Rights:

5.10. OWNER and CONTRACTOR waive all rights against each other and the Subcontractors and their agents and employees and against ENGINEER and separate contractors (if any) and their subcontractors' agents and employees, for damages caused by fire or other perils to the extent covered by insurance provided under paragraphs 5.6 and 5.7, inclusive, or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by OWNER as trustee. OWNER shall require similar written waivers by ENGINEER and from each separate contractor, and CONTRACTOR shall require similar written waivers from each Subcontractor (in accordance with paragraph 6.11 as applicable); each such waiver will be in favor of all other parties enumerated in this paragraph 5.10.

Receipt and Application of Proceeds:

5.11. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 shall be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.12. OWNER shall deposit in a separate account any

money so received, and he shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order.

5.12. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall upon the occurrence of an insured loss, give bond for the proper performance of his duties.

Acceptance of Insurance:

5.13. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER will notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the Contract Documents, CONTRACTOR will notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR will each provide to the other such additional information in respect of insurance provided by him as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

Partial Utilization—Property Insurance:

5.14. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto

and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Supplementary Conditions, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment.

6.6. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.

Equivalent Materials and Equipment:

6.7. Whenever materials or equipment are specified or described in the Drawings or Specifications by using the name of a proprietary item or the name of a particular manufacturer,

fabricator, supplier or distributor, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other manufacturers, fabricators, suppliers or distributors may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent to that named. The procedure for review by ENGINEER will be as set forth in paragraphs 6.7.1 and 6.7.2 below as supplemented in the General Requirements.

6.7.1. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. The application will state whether or not acceptance of the substitute for use in the Work will require a change in the Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered or installed without ENGINEER's prior written acceptance. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

6.7.2. ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Drawings or Specifications occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating any proposed substitute.

Concerning Subcontractors:

6.8. CONTRACTOR shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment),

whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. A Subcontractor or other person or organization identified in writing to OWNER and ENGINEER by CONTRACTOR prior to the Notice of Award and not objected to in writing by OWNER or ENGINEER prior to the Notice of Award will be deemed acceptable to OWNER and ENGINEER. Acceptance of any Subcontractor, other person or organization by OWNER or ENGINEER shall not constitute a waiver of any right of OWNER or ENGINEER to reject defective Work. If OWNER or ENGINEER after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by CONTRACTOR after the Notice of Award, CONTRACTOR shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. CONTRACTOR shall not be required to employ any Subcontractor, other person or organization against whom CONTRACTOR has reasonable objection.

6.9. CONTRACTOR shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that CONTRACTOR is responsible for the acts and omissions of persons directly employed by CONTRACTOR. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any Subcontractor or other person or organization having a direct contract with CONTRACTOR, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. OWNER or ENGINEER may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to CONTRACTOR on account of specific Work done.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.10. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 through 5.8.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any inven-

tion, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids. CONTRACTOR shall pay all charges of utility service companies for connections to the Work, and OWNER shall pay all charges of such companies for capital costs related thereto.

Laws and Regulations:

6.14. CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If CONTRACTOR observes that the Specifications or Drawings are at variance therewith, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the law of the place of the Project.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, Shop Drawings and samples at the site, in good order and annotated to show all changes made during the construction process. These shall be available to ENGINEER for examination and shall be delivered to ENGINEER for OWNER upon completion of the Work.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons who may be affected thereby,

6.20.2. all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and utilities when prosecution of the Work may affect them. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attribut-

able to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable.

6.21. CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby.

Shop Drawings and Samples:

6.23. After checking and verifying all field measurements, CONTRACTOR shall submit to ENGINEER for review and approval, in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8), five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which shall have been checked by and stamped with the approval of CONTRACTOR and identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and like information to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of CONTRACTOR, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

6.25. At the time of each submission, CONTRACTOR shall in writing call ENGINEER's attention to any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, sequences, techniques or pro-

cedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make any corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and resubmit new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisio is other than the corrections called for by ENGINEER on previous submittals. CONTRACTOR's stamp of approval on any Shop Drawing or sample shall constitute a representation to OWNER and ENGINEER that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that CONTRACTOR has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

6.27. Where a Shop Drawing or sample is required by the Specifications, no related Work shall be commenced until the submittal has been reviewed and approved by ENGINEER.

6.28. ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any deviations from the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to such deviation at the time of submission and ENGINEER has given written concurrence and approval to the specific deviation, nor shall any concurrence or approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and maintain the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by law, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including but not limited to attorneys' fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

6.31. In any and all claims against OWNER or ENGINEER or any of their agents or employees by any employee of

CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, his agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7—WORK BY OTHERS

7.1. OWNER may perform additional work related to the Project by himself, or have additional work performed by utility service companies, or let other direct contracts therefor which shall contain General Conditions similar to these. CONTRACTOR shall afford the utility service companies and the other contractors who are parties to such direct contracts (or OWNER, if OWNER is performing the additional work with OWNER's employees) reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.

7.2. If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor or utility service company (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any patent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. CONTRACTOR's failure so to report shall constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

7.3. CONTRACTOR shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected.

7.4. If the performance of additional work by other contractors or utility service companies or OWNER was not noted in the Contract Documents, written notice thereof shall be given to CONTRACTOR prior to starting any such additional work. If CONTRACTOR believes that the performance of such additional work by OWNER or others involves additional expense to CONTRACTOR or requires an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting performance of the Work which have been relied upon by ENGINEER in preparing the Drawings and Specifications.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.7.

8.6. In connection with OWNER's rights to request changes in the Work in accordance with Article 10, OWNER (especially in certain instances as provided in paragraph 10.4) is obligated to execute Change Orders.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the

progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

Clarifications and Interpretations:

9.3. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Rejecting Defective Work:

9.4. ENGINEER will have authority to disapprove or reject Work which is defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.5. In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.6. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.7. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14.

Project Representation:

9.8. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent him at the site who is not ENGINEER's agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

Decisions on Disagreements:

9.9. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and

other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work shall be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter shall be delivered by the claimant to ENGINEER and the other party to the Agreement within fifteen days of the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data. In his capacity as interpreter and judge ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.10. The rendering of a decision by ENGINEER pursuant to paragraph 9.9 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or at law in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.11. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the Work.

9.12. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used, to describe requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that ENGINEER shall have authority to supervise or direct performance of the Work or authority to undertake responsibility contrary to the provisions of paragraphs 9.13 or 9.14.

9.13. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

9.14. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractors, or of the agents or employees of any CONTRACTOR or Subcontractor, or of any other persons at the site or otherwise performing any of the Work.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a Change Order, CONTRACTOR shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 11 or Article 12 on the basis of a claim made by either party.

10.2. ENGINEER may authorize minor changes in the Work not involving an adjustment in the Contract Price or the Contract Time, which are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and shall be binding on OWNER, and also on CONTRACTOR who shall perform the change promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

10.3. Additional Work performed without authorization of a Change Order will not entitle CONTRACTOR to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency as provided in paragraph 6.22 and except as provided in paragraphs 10.2 and 13.9.

10.4. OWNER shall execute appropriate Change Orders prepared by ENGINEER covering changes in the Work which are required by OWNER, or required because of unforeseen physical conditions or emergencies, or because of uncovering Work found not to be defective, or as provided in paragraphs 11.9 or 11.10, or because of any other claim of CONTRACTOR for a change in the Contract Time or the Contract Price which is recommended by ENGINEER.

10.5. If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be CONTRACTOR's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. CONTRACTOR shall furnish proof of such adjustment to OWNER.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to

CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to OWNER and ENGINEER within fifteen days of the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain accurate cost data. All claims for adjustment in the Contract Price shall be determined by ENGINEER if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.9).

11.3.2. By mutual acceptance of a lump sum.

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a Contractor's Fee for overhead and profit (determined as provided in paragraph 11.6).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds, and all returns from sale of surplus material and equipment shall accrue to OWNER and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including, but not limited to, engineers, architects, testing laboratories, surveyors, lawyers and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by any governmental authority.

11.4.5.5. Deposits lost for causes other than CONTRACTOR's negligence, royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the execution of the Work, provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in his principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in subparagraph 11.4.1—all of which are to be considered administrative costs covered by the Contractor's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the

Contract Documents to purchase and maintain the same (except for additional Bonds and insurance required because of changes in the Work).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

Contractor's Fee:

11.6. The Contractor's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the Contractor's Fee shall be ten percent,

11.6.2.2. for costs incurred under paragraph 11.4.3, the Contractor's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall be ten percent, and

11.6.2.3. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5.

11.7. The amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost, will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

Adjustment of Unit Prices:

11.8. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.9. Where the quantity of Work with respect to any item that is covered by a unit price differs materially and significantly from the quantity of such Work indicated in the Contract Documents, an appropriate Change Order shall be issued on recommendation of ENGINEER to adjust the unit price.

Cash Allowances:

11.10. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors, manufacturers, fabricators, suppliers or distributors and for such sums within the limit of the allowances as may be acceptable to ENGINEER. Upon final payment, the Contract Price shall be adjusted as required and an appropriate Change Order issued. CONTRACTOR agrees that the original Contract Price includes such sums as CONTRACTOR deems proper for costs and profit on account of cash allowances. No demand for additional cost or profit in connection therewith will be valid.

ARTICLE 12- CHANGE OF THE CONTRACT TIME

12.1. The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to OWNER and ENGINEER within fifteen days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by ENGINEER if OWNER and CONTRACTOR cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional Work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

ARTICLE 13-WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspection and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If any law, ordinance, rule, regulation, code, or order of any public body having jurisdiction requires any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all other inspections, tests and approvals required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover such Work and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from his obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's re-

quest, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, without cost to OWNER and as specified by ENGINEER, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with nondefective Work.

One Year Correction Period:

13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with nondefective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by CONTRACTOR.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. In such case, if acceptance occurs prior to ENGINEER's recommendation

of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance occurs after such recommendation, an appropriate amount shall be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents (including any requirements of the progress schedule), OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising his rights under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise his rights under this paragraph. All direct and indirect costs of OWNER in exercising such rights shall be charged against CONTRACTOR in an amount verified by ENGINEER, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of work or others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights hereunder.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedules:

14.1. At least ten days prior to submitting the first Application for a progress payment, CONTRACTOR shall (except as otherwise specified in the General Requirements) submit to ENGINEER a progress schedule, a final schedule of Shop Drawing submission and where applicable a schedule of values of the Work. These schedules shall be satisfactory in form and substance to ENGINEER. The schedule of values shall include quantities and unit prices aggregating the Contract Price, and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by ENGINEER, it shall be incorporated into a form of Application for Payment acceptable to ENGINEER.

Application for Progress Payment:

14.2. At least ten days before each progress payment falls due (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents and also as ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to OWNER, as will establish OWNER's title to the material and equipment and protect OWNER's interest therein, including applicable insurance. Each subsequent Application for Payment shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied to discharge in full all of CONTRACTOR's obligations reflected in prior Applications for Payment. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. OWNER shall, within ten days of presentation to him of the Application for Payment with ENGINEER's recommendation pay CONTRACTOR the amount recommended.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the recommendation) and that CONTRACTOR is entitled to payment of the amount recommended.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work, or that the means, methods, techniques, sequences, and procedures of construction have been reviewed or that any examination has been made to ascertain how or for what purpose CONTRACTOR has used the moneys paid or to be paid to CONTRACTOR on account of the Contract Price, or that title to any Work, materials or equipment has passed to OWNER free and clear of any Liens.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations to OWNER. He may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2. written claims have been made against OWNER or Liens have been filed in connection with the Work,

14.7.3. the Contract Price has been reduced because of Modifications,

14.7.4. OWNER has been required to correct defective Work or complete the Work in accordance with paragraph 13.14,

14.7.5. of CONTRACTOR's unsatisfactory prosecution of the Work in accordance with the Contract Documents, or

14.7.6. CONTRACTOR's failure to make payment to Subcontractors, or for labor, materials or equipment.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall, in writing to OWNER and ENGINEER, certify that the entire Work is substantially complete and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving his reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will

prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which he may make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating his reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as he believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to his issuing the definitive certificate of Substantial Completion ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of completed portions of the Work may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any part of the Work which OWNER believes to be substantially complete and which may be so used without significant interference with construction of the other parts of the Work. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving his reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, ENGINEER will execute and deliver to OWNER and CONTRACTOR a certificate to that effect, fixing the date

of Substantial Completion as to that part of the Work, attaching thereto a tentative list of items to be completed or corrected before final payment. Prior to issuing a certificate of Substantial Completion as to part of the Work ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities and insurance for that part of the Work which shall become binding upon OWNER and CONTRACTOR at the time of issuing the definitive certificate of Substantial Completion as to that part of the Work unless OWNER and CONTRACTOR shall have otherwise agreed in writing and so informed ENGINEER. OWNER shall have the right to exclude CONTRACTOR from any part of the Work which ENGINEER has so certified to be substantially complete, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.10.2. In lieu of the issuance of a certificate of Substantial Completion as to part of the Work, OWNER may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately useable; provided that prior to any such takeover, OWNER and CONTRACTOR have agreed as to the division of responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

14.10.3. No occupancy of part of the Work or taking over of operations of a facility will be accomplished prior to compliance with the requirements of paragraph 5.14 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the Work is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such correction to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents and other documents—all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents and such other data and schedules as ENGINEER may reasonably require, together with complete and legally effective releases or

waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or his property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor, manufacturer, fabricator, supplier or distributor fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation—all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR has fulfilled all of his obligations under the Contract Documents, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing his recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, OWNER shall, within thirty days after receipt thereof pay CONTRACTOR the amount recommended by ENGINEER.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed thereof and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents

shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective Work by OWNER shall constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents.

Waiver of Claims.

14.16. The making and acceptance of final payment shall constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it shall not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which shall fix the date on which Work shall be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR is adjudged a bankrupt or insolvent,

15.2.2. if CONTRACTOR makes a general assignment for the benefit of creditors,

15.2.3. if a trustee or receiver is appointed for CONTRACTOR or for any of CONTRACTOR's property,

15.2.4. if CONTRACTOR files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws,

15.2.5. if CONTRACTOR repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment,

15.2.6. if CONTRACTOR repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment,

15.2.7. if CONTRACTOR disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction,

15.2.8. if CONTRACTOR disregards the authority of ENGINEER, or

15.2.9. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents,

OWNER may after giving CONTRACTOR and his Surety seven days' written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER shall be verified by ENGINEER and incorporated in a Change Order, but in finishing the Work OWNER shall not be required to obtain the lowest figure for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination shall not affect any rights of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses.

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of his obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16--ARBITRATION

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing arbitration law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.9 shall be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter shall be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.9; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but shall not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned.

16.3. Notice of the demand for arbitration shall be filed in writing with the other party to the Agreement and with the

American Arbitration Association, and a copy shall be sent to ENGINEER for information. The demand for arbitration shall be made within the thirty-day period specified in paragraph 16.2 where applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, his agents, employees or consultants) who is not a party to this Agreement unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration,

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C. §§10, 11).

ARTICLE 17--MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have

been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

17.2. When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to his person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.11, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph shall be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Agreement.

SUPPLEMENTARY CONDITIONS

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1-01 GENERAL CONDITIONS

- a. The General Conditions, Articles 1 through 17 inclusive are a part of this Contract and are incorporated herein.

1-02 RELATIONSHIP BETWEEN DOCUMENTS

- a. General Conditions are general in scope and may refer to conditions not encountered on the Work. The inapplicability of any portion of the General Conditions shall not be interpreted as affecting the validity of any other requirement. Supplementary Conditions and General Requirements have been prepared specifically for the project and may include additional requirements supplementing the requirements of the General Conditions. No precedence shall be implied from the location of a requirement and all shall be given equal weight in resolving conflicts.

1-03 SUPPLEMENTS

- a. The following supplements modify, change, delete from or add to the "General Conditions". Where any Article of the General Conditions is modified or any paragraph, subparagraph, or clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, paragraph, subparagraph, or clause shall remain in effect.

1-04 MODIFICATION OF ARTICLE 1 - DEFINITIONS

- a. Change definition of General Requirements to read:

"As set forth in Part II - SPECIFICATIONS , Section O - General Information & Requirements."
- b. Add the following definitions:

- 1) "Final Completion" - The date as determined by the Owner and Engineer when no further portion of the Work remains to be done, including all paperwork, and that all Work is acceptable under the Contract Documents. The Owner and Engineer shall then issue a Statement of Final Acceptance effective that date.
- 2) "Paperwork" - Items of an administrative nature, including, but not limited to, such items as payroll forms (if required), lien waivers, written documentation, etc., as required by the Contract Documents.
- 3) "Grantee" - As used in portions of these Contract Documents, shall have the same meaning as "Owner" defined in Article 3 of Section 00700--GENERAL CONDITIONS.

1-05 MODIFICATION OF ARTICLE 2 - PRELIMINARY MATTERS

- a. Revise the first sentence of Paragraph 2.2 to read as set forth as follows: Owner shall furnish to Contractor up to five copies of the Contract Documents as are reasonably necessary for the execution of the Work.

1-06 MODIFICATION OF ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

- a. Identification of reports discussed in Paragraph 4.2 is contained in SECTION 00200 - INFORMATION AVAILABLE TO BIDDERS - if such reports do, in fact, exist.

1-07 MODIFICATION OF ARTICLE 5 - BONDS AND INSURANCE

- a. Add to Paragraph 5.1 the following sentence: "Contractor's and/or sub-contractor's bonding agent will attach to Performance and Labor/Material Payment bonds a certification signed by him that said bonds are by a surety currently listed in Circular 570 (Amended) by the Audit Staff, Bureau of Accounts, U.S. Treasury Department.
- b. Minimum Liability Limits shall be as follows:

Workmen's Compensation - Statutory

Employer's Liability - \$500,000

Public Liability - Bodily Injury
Per Person - \$500,000
Aggregate - \$500,000

Public Liability - Property Damage:
Per occurrence - \$500,000

Automobile Liability:

- a) Bodily Injury:
Per Person - \$500,000
Per Occurrence - \$500,000
- b) Property Damage:
Per occurrence - \$500,000
Aggregate - \$500,000
- c) Combined Single Limit

All coverages shall include underground, explosion, and collapse insurance where applicable. Included in such insurance will be Contractual Liability coverage. A base policy with a lower limit and an umbrella policy to provide the \$500,000 limit will be acceptable.

- c. Add to Paragraph 5.3 the following: Before commencement of the work, the Contractor shall submit written evidence in the form of Insurance Certificates showing that he and all of his Subcontractors have obtained for the period of the Contract, full Comprehensive General and full Comprehensive Automobile Liability Insurance.

The Comprehensive General and Comprehensive Automobile Liability Insurance will include as Additional Insured: The OWNER, the ENGINEER and his consultants; and each of their officers, agents, and employees. The Automobile portion of this coverage shall include non-owned and hired vehicle insurance for the same limits of liability. In lieu of this "Additional Named Insured" provision, the Contractor may, at his option, provide an Owner's Protective Liability Insurance Policy in the name of the OWNER and will include as an "Additional Named Insured" or "Additional Interest" the ENGINEER and his consultants; and each of the above named and their officers, agents, and employees. The Automobile portion of this coverage shall include non-owned and hired vehicle insurance for the same limits of liability.

1-08 MODIFICATION OF ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

- a. Add to Paragraph 9.8 the following Limitations of Authority, Duties and Responsibilities of the Resident Project Representative:

9.8.1 The Resident Project Representative shall act under the direct supervision of the ENGINEER, shall be the ENGINEER's agent in all matters relating to on-site construction review of the Contractor's work, shall communicate only with the ENGINEER and the Contractor and shall communicate with sub-contractors only through the Contractor or his authorized superintendent. The OWNER shall communicate with the Resident Project Representative only through the ENGINEER.

9.8.2 The Resident Project Representative shall review and observe on-site construction activities of the Contractor relating to portions of the Project designed and specified by the ENGINEER as contained in the Construction Contract Documents.

9.8.3 Specifically omitted from the Resident Project Representative's duties are any review of the Contractor's safety precautions, or the means, methods, sequences, or procedures required for the Contractor to perform the work but not relating to the final or completed project. Omitted design or review services include but are not limited to shoring, scaffolding, underpinning, temporary retainment of excavations, and any erection methods and temporary bracing.

1-09 MODIFICATION OF ARTICLE 13 - WARRANTY AND GURANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

- a. Delete the word "Contractor" in Paragraph 13.5 and substitute the word "Engineer".

1-10 MODIFICATION OF ARTICLE 14 - PAYMENTS TO CONTRACTOR & COMPLETION

- a. Add to Article 14, Paragraph 14.7 the following:
- 1) The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any approved progress payment to such extent as may be necessary to protect the Owner from loss on account of:
 - 1.1 A reasonable doubt that the work can be completed for the balance then unpaid.
 - 1.2 Damage to another Contractor.
 - 1.3 Performance of work in violation of the terms and conditions of the Contract Documents.

- 2) Where work on unit price items is basically complete but lacks backfill, clean-up, testing, corrections ordered by the Engineer, etc. the Engineer will recommend the withholding of a percentage of those unit price items. This withholding will be as a result of the Contractor's non-compliance with the terms and conditions of the Specifications and will be in addition to any retainage shown in the Agreement. The Owner may then increase or decrease such withholding recommended by the Engineer for non-compliance by the Contractor with the Specifications.
- 3) When the above conditions for withholding are corrected to the satisfaction of the Owner and Engineer, payment shall be made for such amounts withheld on the next regularly scheduled progress payment submitted by the Contractor.
- 4) Progress payments will be submitted by the CONTRACTOR for work performed and/or materials stored on site (both subject to the provisions of the General Conditions) from the 20th of one month to the 20th of the succeeding month. Progress payments will be submitted to and received by the ENGINEER from the CONTRACTOR Not Later Than the 25th of each month for the preceding period covered by said application for progress payment.
- 5) If the Owner uses a portion of the Work prior to Substantial Completion of all the Work, or if the Owner uses and occupies the Work before acceptance, the Owner shall pay all amounts due under the Contract except double the amount the Engineer shall estimate necessary to complete the Work in accordance with the Contract Documents or one percent of the Contract price, whichever is greater; or in any event, not less than Three Hundred Dollars (\$300) and no interest shall be allowed thereon until thirty days after said Work has been fully completed.
- 6) Each progress payment will include an Affidavit from the Contractor stating that all previous progress payments received have been applied to discharge in full any and all of the Contractor's obligations reflected in prior applications for payment.

1-11 INCREASES OR DECREASES OF WORK

- a. The Owner reserves and shall have the right to make such changes from time to time in the plans, the character, or quantity of the Work as may be considered necessary or desirable to complete fully and acceptably the proposed construction in a satisfactory manner with funds available.

- b. Should any of the changes be made as provided herein, the Contractor shall perform the work as altered, increased or decreased at the unit prices bid and awarded.
- c. The above supercedes all other references to increases or decreases in quantities of work. The Contractor is hereby notified that the quantities shown in the Bid Form may be varied extensively.

1-12 CONFLICTS, ERRORS AND DISCREPANCIES

- a. In resolving conflicts, errors or discrepancies within the Contract Documents, the various elements will be given precedence in the following order:
 - 1) Agreement with Change Orders or Modifications.
 - 2) Special Conditions.
 - 3) Supplementary Conditions.
 - 4) General Conditions.
 - 5) Detailed Specifications.
 - 6) Drawings

1-13 LIENS

- a. Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens arising out of this Contract, or receipts in lieu thereof; and, if required in either case, an affidavit that so far as he has knowledge or information, the releases and receipts include all of the labor and materials for which a lien can be filed. But the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify the Owner against any claim by lien or otherwise. If any lien and/or claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such lien and/or claim, including all costs and attorneys' fees.

SPECIAL CONDITIONS

WATER SYSTEM IMPROVEMENTS TYNDALL, SOUTH DAKOTA

INDEX

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02	ORDER OF CONSTRUCTION	07	LINE AND GRADE
03	INTERRUPTIONS TO SERVICE	08	EMPLOYMENT PRACTICES
04	SERVICE FACILITIES	09	SPECIAL CONSTRUCTION PROCEDURES
05	STORAGE OF MATERIALS AND EQUIPMENT		

01 INTENT

- a. To supplement and clarify the parts of the specifications by outlining special conditions applicable to project.

02 ORDER OF CONSTRUCTION

- a. Provide Engineer with proposed schedule of construction showing dates of starting and completing various portions of work.
- b. Coordinate work with Owner and Engineer to assure orderly and expeditious progress of work.
- c. Contractor shall establish schedule of working hours for construction, subject to approval of Engineer.

03 INTERRUPTIONS TO SERVICE

- a. Existing utilities shall remain in substantially continuous operation during construction.
- b. Do work which will interrupt utility service only at times approved by Owner or Engineer. Hold interruption of service to a minimum.

04 SERVICE FACILITIES

- a. Water, electricity, compressed air, and other services shall be furnished by Contractor to meet his own requirements.

05 STORAGE OF MATERIALS AND EQUIPMENT

- a. Limited storage space for materials and equipment will be available in portions of right-of-way provided for construction.
- b. Storage areas shall be subject to approval of Owner or Engineer.

- c. Store materials and equipment in manner which will preserve their quality and fitness.

06 CONSTRUCTION FACILITIES BY CONTRACTOR

- a. Provide a telephone at which Contractor can be reached by Owner or Engineer at all times during the working day; provide liaison between telephone and construction personnel for expeditious handling of messages.
- b. Provide telephone numbers at which representatives of Contractor can be reached evenings, weekends and holidays.
- c. Provide suitable storage buildings necessary for proper storage of materials and equipment.
- d. Location of all construction facilities, including project construction plant and yard subject to approval by Engineer; remove all construction facilities upon completion of work.
- e. Provide and maintain suitable sanitary facilities for construction personnel for duration of work; remove upon completion of work.
- f. Provide fence, barricades and/or watchmen to prevent access of unauthorized persons to site where work is in progress.

07 LINE AND GRADE

- a. Construct to lines and grades shown on plans.
- b. Engineer will establish required bench marks and base lines.
- c. Engineer will perform detailed survey and staking for location, elevation and grade of construction.
- d. All detailed surveys and stake-outs shall be checked by Contractor; assume full responsibility for accuracy and correctness thereof.
- e. Contractor shall provide, without extra compensation, all men and necessary tools to make all test holes and exploration, at any time, for purpose of determining location of existing structures beneath ground surface which might conflict with work of Contractor.

- f. Contractor shall preserve all existing monuments and lot corners and reference points, stakes and bench marks set by Engineer. In case of destruction by Contractor's negligence or carelessness, he will be charged with resulting expense of replacement, and responsibility for any mistakes or loss of time caused thereby.

08 EMPLOYMENT PRACTICES

- a. Contractor, or his subcontractors, shall not employ any person whose physical or mental condition is such that his employment will endanger the health and safety of himself or others employed on the project.
- b. Contractor shall not commit any of the following employment practices and agrees to include the following clauses in any subcontracts:
- 1) To refuse to hire, employ or to discharge from employment any individual because of his race, color, religion or national origin.
 - 2) To discriminate against any individual in terms, conditions or privileges of employment because of his race, color, religion or national origin.
 - 3) To use any form of application for employment, or to make any inquiry in recruiting or advertising for employees which requests the race, color, religion or national origin of any individual.
 - 4) To discharge, expel, or otherwise discriminate against any individual because he has filed a complaint, testified or assisted in any proceeding under this section of the contract.
- c. No member, officer or employee of the Owner, or any of its designees or agents, no member of the governing body of the locality in which construction takes place and no other public official in such locality which exercises any functions or responsibilities with respect to work under these Contract Documents during his tenure or for one year thereafter, shall have any interest, direct or indirect, in any construction contract or sub-contract, or the proceeds thereof, for work to be performed in connection with the construction performed under these Contract Documents.
- d. The Contractor shall conform to applicable local, state, and federal laws and regulations, including, but not limited to, the following:

- 1) An Act Entitled, An Act, providing for the required payment of unemployment compensation contributions by contractors performing contracts for Public Corporations.
- 2) Be it Enacted by the Legislature of the State of South Dakota.
- 3) Section 1. Contracts of Public Corporations: Required Payment of Unemployment Compensation Contributions. "It shall be the duty of every Public Corporation as defined in Section 65.0701-1 SDC 1960 Supp., on entering into a contract for public improvement to provide in such contract that the contractor to whom the contract is awarded will pay the Employment Security Department of South Dakota, all contributions and interest due under the provisions of Section 17.0822 SDC 1960 Supp., on wages paid to individuals employed in performance of said contract."
- 4) Section 2. Contracts for Public Improvements: Final Settlement Withheld for Certificate of Employment Security Commissioner: "Before final payment can be made on any contract for public improvement awarded after July 1, 1961, the Public Corporation awarding the Contract shall require the Contractor to furnish a certificate from the Employment Security Department that all contributions and interest due to the Employment Security Department in the performance of such contract have been paid."

09 SPECIAL CONSTRUCTION PROCEDURES

- a. Contact Owner for location of existing valves and water mains.
- b. Before starting construction, confirm locations of existing water mains, gas mains, underground telephone cable and underground electrical cable, sewers and other utilities where conflicts may occur.
- c. Remove the chlorination equipment, fluoride equipment and unit heater in the existing pump house and install in new pump house. Include price of extra piping, wiring, and valves into price of pump house.
- d. All contractors are responsible for providing adequate drainage at all times to protect improvements and existing structures from damage due to rain.
- e. All special construction procedures and work outlined herein with exception of items listed in proposal are incidental to construction; include cost in unit prices for which work pertains.

- f. Procedures outlined above are not intended to fully cover all special procedures or emergencies which may arise during construction, but are offered as an aid to Contractor in planning work. Contractor will cooperate with Owner and Engineer to minimize inconvenience to adjacent property owners.

DETAILED SPECIFICATIONS

WATER SYSTEM IMPROVEMENTS
TYNDALL, SOUTH DAKOTA

PART 1 - GENERAL REQUIREMENTS

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1-02	STARTING & COMPLETION TIME	1-05	STANDARDS & CODES
1-03	INFORMATION FOR ENGINEER	1-06	MATERIAL TESTS

1-01 WORK INCLUDED

- a. Construct one well approximately 170 feet in depth; install existing submersible pump, piping, valves, including all materials, labor and equipment and miscellaneous work including clean-up as set out in Contract.

1-02 STARTING & COMPLETION TIME

- a. Start work within 10 calendar days after date set forth in written Notice to Proceed. It is anticipated that Notice to Proceed will be issued within 30 calendar days after date of approval. Complete work within 100 consecutive days.

1-03 INFORMATION FOR ENGINEER

- a. After Notice to Proceed, submit following information and drawings for Engineer's approval; submit 3 copies initially. Total number of approved copies required for distribution: 3 plus copies required by Contractor.
 - 1) Manufacturer's specifications and catalog data for controls, well casing, pipe, gravel and screen.
 - 2) Such other information as Engineer may request.
- b. Within 15 days after Notice to Proceed, provide construction schedule showing dates of starting and completing various portions of work including contract price breakdown for use in preparation of periodic estimates.

c. Provide 2 copies of following information:

- 1) Purchase orders and subcontracts without prices.
- 2) All material test reports.
- 3) Shipping papers for all materials.

1-04 SHOP DRAWINGS

- a. Intent of Engineer's review: to assist Contractor in interpreting specifications.
- b. Contractor's responsibility: to check drawings prior to submission for coordination between suppliers, subcontractors and for conformance with contract; do not submit without checking.
- c. Review shall not relieve Contractor of responsibility for errors or omissions in shop drawings and shall not relieve him of any responsibility assumed under contract.

1-05 STANDARDS & CODES

- a. Do work in accordance with best present day construction practices.
- b. Unless specifically noted to contrary, conform with and test in accordance with applicable sections of latest revisions of codes and standards of following:
 - 1) American Association of State Highway Officials (AASHO)
 - 2) American Concrete Institute (ACI)
 - 3) American National Standards Institute (ANSI)
 - 4) American Society for Testing & Materials (ASTM)
 - 5) American Society of Civil Engineers (ASCE)
 - 6) Federal Specifications (FS)
 - 7) National Fire Protection Associations' National Electrical Code (NEC)
 - 8) Manual of Accident Prevention in Construction by Associated General Contractors of America, Inc. (AGC)
 - 9) Occupational Safety & Health Act of 1970 (Public Law 91-596)

- 10) Safety Rules for Demolition by South Dakota Employment Safety Commission (SDESC)
- 11) Safety Rules for Excavation by South Dakota Employment Safety Commission (SDESC)
- 12) Standards & Codes of the State of South Dakota and applicable local standards & codes of the City.
- 13) Other standards and codes which may be applicable to acceptable standards of the industry for equipment and materials and installation under contract.

1-06 MATERIALS TESTS

- a. Employ testing laboratory approved by Engineer to show that construction and materials comply with specifications.
- b. Provide samples of materials required for laboratory tests and pay cost of all tests including transportation charges on samples.
- c. Incorporate no materials in work until laboratory tests have been furnished which show that materials comply with specifications.
- d. All materials subject to sampling, testing, inspection and rejection at site by Engineer.

PART 2 - PIPE EXCAVATION AND BACKFILL

INDEX

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2-01 GENERAL

- a. This part of the specifications includes excavation and backfill for underground piping.
- b. Protect all existing concrete paving, sidewalks, driveways, and curb and gutter in public right-of-way from damage during construction; if damage occurs, restore surfacing at no expense to City or private property owners.
- c. Pile excavated material suitable for backfill in an orderly manner sufficient distance back from edge of excavation to avoid slides or cave-ins; 2' minimum clear distance.
- d. Remove spoil not suitable for backfill; waste at disposal area designated by Engineer; removal is incidental to construction, include cost in unit price for sewer or water main construction.
- e. Where new work crosses existing utilities or utility services, excavate in advance of pipe laying; determine crossing arrangement including exact construction line and grade.
- f. Excavate in open cut under existing streets, utilities and structures except as noted on plans or as modified by Engineer.
- g. Reference to percent maximum density shall mean a soil density no less than the stated percent of maximum density for soil as determined by ASTM D698 Moisture-Density Relations of Soils using 5.5-lb. Rammer and 12" Drop. (Standard Proctor Method).
- h. Excavate all materials encountered to depth indicated or specified; comply with safety rules of S. D. Employment Safety Commission and State Bureau of Labor.

- i. Earth: all materials, not classified as rock or rubble, including clay, silt, sand, gravel, hardpan, disintegrated shale, debris, junk, brick, loose stones and boulders less than 1/3 CY in volume which can be removed by use of suitable excavating equipment.
- j. Rock: boulders larger than 1/3 CY in volume or solid deposits so firmly cemented together that they cannot be removed without continuous use of pneumatic tools or blasting.
 - 1) Removal of rock above ground is incidental to sewer or water main construction.
 - 2) Use pneumatic tools or blasting only with written approval of Engineer.
- k. Rubble: buried concrete foundations, beams, walls and other materials which require continuous use of pneumatic tools or blasting.
 - 1) Removal of rubble above ground is incidental to sewer or water main construction.
 - 2) Use pneumatic tools or blasting only with written approval of Engineer.

2-02 EXCAVATION FOR STRUCTURES

- a. Includes excavation for manholes, pumping station and other appurtenances.
- b. Excavate as required to firm, undisturbed soil; excavate last 4" by hand; if excavation is carried below bottom of foundations as shown on plans; fill with Class B concrete or pipe bedding material as directed by Engineer at no expense to Owner.
- c. Provide sheeting, shoring and bracing where required to hold walls of excavation or to protect existing structures or utilities.
- d. When unstable material is encountered which will not, in opinion of Engineer, provide suitable foundation, Engineer will authorize in writing and direct removal and replacement with granular bedding material; authorized overexcavation and backfill will be paid for as Stabilizing Material.

2-02 TRENCH EXCAVATION

- a. Keep width of trench as narrow as possible and still provide adequate room for backfill and jointing.

b. Keep sides of trench as nearly vertical as practicable; maintain vertical walls of excavation below top of pipe.

c. Bottom of water main trenches:

1) Hand shape to provide uniform bearing and support for full length of pipe barrel against undisturbed earth for at least 1/4 circumference.

2) Provide suitable bell holes at each pipe joint after bottom of trench has been graded.

3) Alternate to hand shaping trench bottom: at Contractor's option, excavate to full depth by machine; place 6" depth of pit run gravel or crushed rock on trench bottom to provide firm bearing for 1/4 circumference of pipe.

4) Remove large clods, stones, and other foreign material from bottom of trench.

d. When unstable material is encountered which may not provide a suitable foundation for pipe, remove and replace with stabilizing material.

1) Stabilizing material: sharp, clean crushed stone; comply with following gradation:

<u>Sieve</u>	<u>% Passing</u>
2 1/2"	100
2"	90-100
1 1/2"	35-70
1"	0-15
1/2"	0-5

2) Place pipe bedding on top of stabilizing material.

2-04 ROCK AND RUBBLE EXCAVATION

a. If trench bottom is extremely hard or is in rock or rubble where there is possibility of pipe being subjected to point contact:

1) Overexcavate trench bottom 6" minimum below grade.

2) Backfill overexcavation with pipe bedding material place pipe bedding material as shown on Standard Drawing.

- b. Use of explosives: submit detailed plans to City outlining all proposed blasting operations, locations, methods and use of mats and other safety measures.
 - 1) Obtain written approval from City before using explosives.
 - 2) Use thoroughly experienced demolition personnel.
- c. Dispose of excavated rock and rubble not suitable for backfill.

2-05 SHEETING, SHORING AND BRACING

- a. Construct sheeting, shoring and bracing where required to hold walls of excavation, to provide safety for workmen, to protect existing utilities or structures or to permit construction in the dry.
- b. Leave in place all sheeting below a level 2' over top of main.
- c. Leave sheeting and shoring in place 2' over top of main when removal might damage new pipe.
- d. Contractor may be required to install sheeting by regulatory agencies when not required by Owner or Engineer; in such case, Owner will only pay for sheeting left in place, as directed by Engineer.

2-06 DEWATERING

- a. Do all work in dry; provide for handling of water encountered during construction.
- b. Lay no pipe in or pour no concrete on excessively wet soil.
- c. Prevent surface water from flowing into excavation; remove water as it accumulates.
- d. Divert stream flow away from areas of construction.

2-07 BACKFILL FOR STRUCTURES

- a. Backfill after concrete or masonry has cured.
- b. Backfill with suitable material removed from excavation except where other backfill is specified; use no debris, frozen earth, large clods or stones.

- c. Backfill simultaneously on all sides of structure; save structure from damage at all times.
- d. Compact backfill at structures to density not less than specified for adjacent trench.

2-08 TRENCH BACKFILL

- a. Backfill trench immediately after location of connections and appurtenances have been recorded and testing has been completed.
- b. Use no large stones, large clods, organic matter, rubbish, frozen or unsuitable materials in backfill.
- c. Use compacted backfill for trenches at all locations.
 - 1) Trenches under and parallel to roads and drives, where near edge of trench is closer than 5' from edge, backfill with excavated material in layers not to exceed 6", moisten if required: compact to 95% maximum density.
 - 2) Trenches with near edge of trench more than 5' from road and drive backfill with excavated material in layers not to exceed 6", moisten if required: compact to 92% maximum density.
- d. New pipes below existing water, sewer, or other mains: backfill under existing water, sewer or other main with sand; compact to 95% maximum density; length of sand backfill at elevation of existing utility: equal to depth of excavation below utility.
- e. If removal of sheeting disturbs compacted backfill, recompact backfill to comply with specifications.

2-09 TUNNELING

- a. Obtain approval of Engineer for methods before starting work.
- b. Blow casing pipe full of sand after installation of water main.
- c. If voids occur around casing pipe, blow voids full of sand.
- d. Clean out pipe upon completion of work.
- e. Casing pipe tolerances:

- 1) Vertical: maintain 5' of cover or as shown on plans.
- 2) Horizontal: 2'.
- 3) Casing pipe not meeting required tolerances: blow full of sand, plug ends with concrete and abandon; provide new crossing as directed by Engineer at no cost to Owner.

2-10 EXISTING UTILITIES

- a. Locations of utility lines, mains, cables and appurtenances are in accordance with information provided by utility companies and from records of City; confirm locations of underground utilities by excavating ahead of work; Contractor fully responsible for damage to utilities during construction.
- b. Conflicting utilities not shown on plans, except services: notify Engineer immediately.
- c. Utility services are not generally shown on plans; protect services during construction.
 - 1) If gas services are in direct conflict with line and/or grade of new pipe, allow gas company to remove and replace service at no cost to Contractor; if Contractor wants other gas services removed, make own arrangements with gas company.
 - 2) Cut water services only if they conflict with line and grade of new work; if services are cut, use hose or other flexible connector to maintain service while new work is installed; reinstall permanent service; handling of services is incidental to construction.
 - 3) Maintain sanitary sewer services without damage; if services conflict with line and grade of new work, re-lay service as required; re-laying sewer service will be paid for as Extra Work; replacement of services because of breakage due to carelessness of Contractor or for his convenience is incidental to construction.
- d. Water main and sanitary sewer conflicts: notify Owner and Engineer immediately; provide all necessary shut-down, repair and relocation where conflicts occur; furnish labor, equipment, pipe and fittings; repair and relocation will be paid for as Extra Work; when broken due to carelessness, repair is incidental to construction.

- e. Utility lines, poles and appurtenances, except water mains and sewer lines, in direct conflict with line and grade of work will be relocated by utility company before or during construction at no expense to Contractor; Owner will advise utility companies of lines, poles and appurtenances to be moved after award of contract; cooperate with utility companies in relocation of lines, poles and appurtenances.
- f. Support and protect, by timbers or other means, all utility pipes, conduits, poles, wires or other apparatus not to be moved; protective measures subject to approval of Engineer.
- g. No utility or utility service will be moved to accommodate equipment, method of operation or for convenience of Contractor when utility or utility service does not conflict directly with line and grade of work; arrange with utility company for relocation with approval of new location by Owner and Engineer; relocation is incidental to construction.

2-11 TREE REMOVAL

- a. Remove trees only in conflict with alignment of sewer or water main trench, location of structure or as marked on plans; tunnel or hand excavate under roots of trees close to trench.
- b. Obtain written authorization from Engineer before removing any tree, except where marked on plans.
- c. Removal includes grubbing and removing stump and roots, removal from site, disposal of debris and backfilling.
- d. No compensation will be allowed for clearing or removing trees to provide access to work.
- e. Tree removal is incidental to construction; include cost in unit price for sewer or water main construction.

2-12 SURFACING REMOVAL

- a. Remove existing street, road, sidewalk and driveway surfacing, minimum of 1' outside edge of trench where open cut construction is specified; see plans for designation of street surfacing.
- 1) Remove on lines approximately parallel or perpendicular to centerline of trench.

2) Cut vertically and horizontally on straight lines.

b. Dispose of waste material at disposal area designated by Engineer.

2-13 SURFACE RESTORATION

a. Tillable agricultural ground, street rights-of-way and pastures: replace 1' of topsoil removed during excavation.

b. Replace damaged flowers, shrubbery and trees with new plantings of equal type and quality at no cost to Owner. Trees removed because of conflict with alignment of pipe shall not be replaced, except where shown on plans.

c. Grade tops of trenches to smooth, uniform lines without large lumps, clods or debris.

d. Dispose of all brush and rubbish as directed by Engineer.

e. Seed only as shown on plans or as directed by Engineer.

f. Seeding in street rights-of-way and pastures:

1) Seed entire area disturbed by construction operations; precede seeding with application of 15-15-15 fertilizer at rate of 20 lbs. per 1,000 SF; cultivate area 1½" deep and work with harrow within 24 hours before seeding; smooth surface and eliminate clods and lumps before seeding.

2) Seed at rate of 2 lbs. per 1,000 SF with the following mixture proportioned by weight:

	<u>Percent</u>
Bromegrass	60
Alfalfa	20
Red Clover	12
Alsike Clover	8

3) Add rye to seed mixture at rate of 1 bushel per acre if seeded between August 10 and September 15; add oats at rate of 1½ bushels per acre if seeded between March 1 and May 30.

4) Inoculate alfalfa and clover seed not more than 8 hours before sowing.

- 5) Seed in areas shown on plans or as directed by Engineer.
- g. Seeding in SDSHC right-of-way: prepare seed bed, apply fertilizer and prepare and sow seed at specified in ISHC 2601.04 SEEDING (1972); use seed mixture specified in 2001.04C.
- h. Seed between dates of August 10 and September 15 or between dates of March 1 and May 30.
- i. Re-install culverts; if culverts are damaged during construction, replace with new pipe of identical size and material at no cost to Owner.

2-14 SURFACE REPLACEMENT

- a. If construction disturbs or damages existing street surfaces or sidewalks, replace with new surface to match existing construction for type, size and surface texture.
- b. All surfacing replacement is incidental to construction; include cost in unit price for water main construction.

2-15 PAYMENT

- a. No separate payment will be made for work covered in this part of the specifications except as set forth below. All other items are incidental to construction. Contract unit prices shall include all costs for each item of work.
- b. Stabilizing Material, CY: Unit adjustment price includes additional trench excavation, dewatering, labor, materials, equipment, and incidentals for providing pipe bedding in place of unsuitable foundation materials where directed and authorized by Engineer; computed by average end area method within specified trench width limit, below trench bottom to full extra depth. Excludes pipe bedding shown on plans or Standard Drawings or specified which is incidental to water main construction.
- c. Rock Excavation, CY: Unit price includes extra cost of labor, materials, equipment, pipe bedding, removal and disposal and incidentals necessary to complete work required for rock excavation over cost of earth excavation when authorized by Engineer. Measurement will include authorized excavation to depth specified and will be computed by average end area method within following maximum width limits:

- 1) Outside diameter of pipe plus 12"; or 30", whichever is larger.
 - 2) One foot outside wall line of manhole.
- d. Rubble Excavation, CY: Unit price includes extra cost of labor, materials, equipment, pipe bedding, removal and disposal and incidentals necessary to complete work required for rubble excavation over cost of earth excavation when authorized by Engineer. Measurement will include authorized excavation to depth specified and will be computed by average end area method within following maximum width limits:
- 1) Outside diameter of pipe plus 12"; or 30", whichever is larger.
 - 2) One foot outside wall line of manhole.
- e. Tunneling, LF: Unit price includes crossing as shown on plans; includes furnishing and installing complete work including tunneling or augering pipe, concrete, flagmen, fence, warning lights, barricades, excavation, bedding, sheeting, augering pits unless otherwise specified, backfill and miscellaneous associated work. Length of crossing as shown on plans.
- f. Sheet piling Left in Place, MFBM: Unit price includes material cost only of sheet piling and shoring left in place as shown on plans or at Engineer's direction. Cost of transporting and installing is incidental to laying of pipe and shall not be included.
- g. Sand Backfill, CY: Unit price includes sand, materials, equipment, labor and incidentals for providing sand backfill, compacted to specified density, where shown on plans or as directed by Engineer; computed by average end area method within following limits:
- 1) Standard trench width times depth from bottom to 1' over top of sewer or water main plus area of upper portion of trench to 1' below grade backfilled with sand based on trench walls sloping 3 vertical: 1 horizontal where no sheet piling is used.
 - 2) Actual width between sheet piling times depth of trench.
 - 3) Excludes sand used to top of pipe in lieu of mechanical compaction of excavated material.

- h. Concrete Encasement, LF: Unit price includes cost of additional work, materials and handling required to encase sewer in concrete at locations as directed by Engineer. Excludes excavation, furnishing and installing pipe and appurtenances, backfill and other work for complete installation. Include these items in unit price bid for construction of sewer.
 - 1) Excludes Type VIII bedding shown on plans or in table in SEWER PIPE BEDDING REQUIREMENTS where encasement is used to develop sufficient load factor to support backfill load on buried sewer pipe.
- i. Tree removal; include cost of grubbing and removal unit price of pipe.

PART 3 -- PIPING AND APPURTENANCES

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3-01 GENERAL

- a. This part of the specifications includes piping and appurtenances for installation of piping and appurtenances.

3-02 PIPE

- a. Polyvinylchloride pipe (PVC): compounds must comply with requirements for Type I, Grade I (PVC 1120) of ASTM resin specification D-1784-68. Pipe must comply with ASTM D-2241-68 and CS-256-63 and bear nSf seal.
 - 1) Pipe shall have maximum SDR of 21 with pressure rating of 200 psi using a safety factor of 2.8.
 - 2) Pipe must contain following trademarks and/or insignia of intervals of not greater than 5' throughout entire length; nSf seal, nominal pipe size, manufacturer's name, trademark and code, type of material, pressure rating and applicable commercial or American Safety of Testing Material Standards.
 - 3) Joints conform to ASTM D3139.
- b. Inside piping: standard ASTM A53 Grade A, Schedule 40, seamless galvanized iron; 3" and smaller. 4" and larger use cast iron ANSI A21.6 or A21.8, Class 150.

3-03 FITTINGS

- a. Mechanical joint, ANSI A21.10, 150 psi pressure rating.
- b. Cap: Clow Corporation F-1040, or approved equal.

- c. Plug: Clow Corporation F-1035, or approved equal.
- d. Anchoring rods and eye bolts: 3/4"; Star Supply Company, or approved equal.

3-05 VALVES

- a. Gate valves: Mueller Co., A-2530-6, or approved equal; open counter clockwise.
- b. Tapping valves and sleeves: sleeve mechanical joint; 200 psi working pressure H-615; tapping valve with "O" ring seals, H-667, Mueller Co., or approved equal.
- c. Cutting-in valves and sleeves: Cut-in sleeve H-840; cut-in valves; H-862; Mueller Co., or approved equal.
- d. Cast iron, bronze mounted check valve 600 Series, silent check F-3074 Clow Corporation, or approved equal.

3-05 THRUST BLOCKS

- a. Provide concrete thrust blocks where piping changes direction or deadends.
- b. Carry thrust block to undisturbed edge of trench for bearing.
- c. Minimum thickness of thrust blocks: 18".
- d. Bearing area of thrust blocks, SF:

<u>Pipe Size</u> <u>(Inches)</u>	<u>90 Deg. Bend</u>	<u>45 Deg. Bend</u>	<u>Deadend</u>
6	6	3	4
8	11	6	8
10	17	9	12
12	24	13	17
14	33	18	23

- e. Refer to Standard Drawing for general arrangement of thrust blocks; place plywood between fittings and thrust blocks; do not plug end of fitting with concrete.

3-06 PIPE INSTALLATION

- a. Lay pipe in the dry; 5½' minimum earth cover except where directed otherwise by City; install water main and appurtenances in accordance with AWWA C600; locate water main back of curb line of existing or proposed pavement as shown on Standard Drawing. Use complete whole pipe lengths except for final connection piece.
- b. Clean pipe interior of foreign material before lowering into trench; keep clean at all times by securely closing open ends of pipe and fittings with watertight plug.
 - 1) Use minimum amount of gasket lubricant; apply to gasket only; do not apply to inside of bell.
- c. Place in trench in sound, undamaged condition; do not injure pipe coating or lining; use web slings, hoists or skids to install or move pipe; use of end hooks prohibited; do not drop or roll.
- d. Cut pipe in neat and workmanlike manner without damage to pipe; bevel cut ends of push-on type pipe.
 - 1) Completely coat damaged ends of cut pipe with bituminous sealer; use spray-on type sealer which will adhere to lining at any temperature; do not install pipe and fittings showing blisters or holes.
- e. Before installation, tap pipe lightly with light hammer to detect cracks; do not install defective, damaged, or unsound pipe.
- f. Deflect pipe joints as required in accordance with recommendations of pipe manufacturer except pipe deflection shall not exceed 3"; use suitable fittings where grade or alignment requires offsets of more than 1" per foot.
- g. Minimum horizontal separation from sewers: 10'.
 - 1) If conditions prevent 10' separation, minimum may be reduced by placing bottom of water main at least 18" above top of sewer.
 - 2) If impossible to obtain 18" clearance, remove and replace sewer with iron pipe.

h. Water main crossing sewers:

- 1) Minimum vertical clearance: bottom of water main at least 18" over top of sewer.
- 2) If clearances required above cannot be obtained, or if water main must pass under sewer: replace sewer with 20' length of iron pipe centered on water main; adequately support sewer line to prevent settling or breaking of water main or sewer.

i. Plug or cap and block all pipe ends or fittings left for future connections.

3-07 TFSTS

a. Water test all piping after installation in accordance with AWWA C600.

b. Hydrostatic test:

- 1) Test mains to at least 1.5 times working pressure at point of testing.
- 2) Test pressure shall not be less than 1.25 times the working pressure
- 3) Be at least a 2 hour duration.
- 4) Pressure should not vary by more than ± 5 psi.
- 5) Do not exceed twice the rated pressure of valves or hydrants.

c. Remove air completely from pipe, valves and hydrants. Contractor to install corporation cocks at high points to expel air. Close corporation cocks after successful test of main. Contractor to remove corporation cocks at his option.

d. Inspect all exposed piping, valves, hydrants, and joints during test. Repair or replace all fittings, valves and/or hydrants with new material until the tests are satisfactorily completed.

e. Leakage test:

- 1) Conduct after pressure test is successfully completed; maintain 100 psi pressure for 2 hours; measure water loss by pumping from drum or by similar means.
- 2) Maximum allowable leakage (L) in gallons per hour:

$$L = \frac{NDxP^{1/2}}{7,400}$$

N = number of joints in pipe section under test.

D = pipe diameter in inches.

P = average test pressure, psi.

- 3) Provide all test pumps, test plugs, pipe, and gauges, and make all required piping connections.
- 4) Examine trench for leakage during test; replace all defective pipe and fittings that do not pass leakage test at no cost to Owner, including cost of excavation and backfill; repeat test until requirements have been met.
- 5) Allowable Leakage per 1000 ft. of Pipeline* — gph

Nominal Pipe Diameter—in.

Avg. Test Pressure psi	2	3	4	6	8	10	12	14	16
450	0.32	0.48	0.64	0.95	1.27	1.59	1.91	2.25	2.55
400	0.30	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40
350	0.28	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25
300	0.26	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08
275	0.25	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99
250	0.24	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90
225	0.23	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80
200	0.21	0.32	0.43	0.64	0.85	1.06	1.28	1.49	1.70
175	0.20	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59
150	0.19	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47
125	0.17	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34
100	0.15	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20

*For pipe with 18-ft. nominal lengths. To obtain the recommended allowable leakage for pipe with 20-ft. nominal lengths, multiply the leakage calculated from table by 0.9. If the pipeline under test contains sections of various diameters, allowable leakage will be sum of computed leakage for each size.

3-08 APPURTENANCES

- a. Meter; range 0-1000 gpm with totalizer; Rockwell Water Development, or approved equal.
- b. Yard hydrant, 2" inlet and outlet, R-4720 self closing anti-freezing, Clow Corporation, or approved equal.

c. Precast concrete manholes:

- 1) Reinforced concrete pipe: ASTM C478, minimum wall thickness: 5".

3-09 DISINFECTION

- a. Disinfect and sample prior to placing main in service; AWWA 601.
- b. Disinfect by injecting a solution of calcium hypochlorite and water at slow rate to provide a minimum residual chlorine content of 50 ppm in water main; allow system to stand full of solution for 24 hours; use chlorine tablets with approval of City.
- c. Minimum free chlorine residual at pipe extremities: 10 ppm at end of test period; if requirement is not met, repeat disinfection procedure.
- d. Operate all valves and hydrants in new main to assure full disinfection; repeat test procedure if necessary.
- e. Thoroughly flush main after test until extremities indicate same chlorine residual as supply water.
- f. Five days after completion of disinfection, City will collect bacteriological sample(s) from new mains and send sample(s) to State Hygienic Laboratory for testing; sample(s) must test "SAFE"; if a sample tests "UNSATISFACTORY" or "UNSAFE", repeat disinfection procedure until sample tests "SAFE".

3-10 PAYMENT

- a. Yard hydrant, Ea.: Unit price includes furnishing and installing hydrant, furnishing and installing anchoring, tapping, concrete pad, thrust block, granular bedding, wood blocking, excavation and backfill and miscellaneous associated work.
- b. Connections to Existing System, Ea.: Unit price includes necessary isolation of existing water main, draining of main and dewatering, excavation, backfill and furnishing and installing piping, fittings, and appurtenances necessary for connection to existing water mains as shown on plans; does not include gate valves and valve manholes or boxes.
- c. Pipe in Place, LF: Unit price includes furnishing and installing pipe in open cut, fittings, and appurtenances except valves and hydrants, handling, laying, bedding and bedding material, excavation, backfill, sheeting and shoring and miscellaneous associated work.

- 1) Length will be measured along centerline of pipe with no deduction for valves or fittings except as noted on plans.
- d. Gate valves with box, Ea.: Unit price includes furnishing and installing valves, and appurtenances, valve boxes for valves shown on plans; does not include tapping valves and sleeves, cutting-in valves and sleeves or hydrant valves.
- e. Manhole, Ea.: Unit price includes cost of providing all labor and material to install precast manhole as shown on plans, include cover.

PART 4 - WELLS

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4-01 GENERAL

- a. Furnish all labor, materials and equipment to construct and test wells from the sand and gravel stratas at location shown on plans.
- b. Secure all necessary permits to construct and test well.
- c. Protect wells during construction from tampering or entrench or foreign material; cap and seal if left unattended before pump installation is complete.

4-02 DESIGN OF WELL

- a. General design of log of well assumed for bidding purposes is based on test hole. This log is not guaranteed correct for well, but represents best judgment as to probable formations to be encountered in drilling.
 - 1) Drill 7 7/8" pilot hole, recover soil samples for every 5' of depth.
 - 2) 3 samples are required: one to be sent to Johnson Well Screen, Co., one for Owner and one to be sent to S.D. Geological Survey in Pierre, South Dakota.
 - 3) The final length and opening size of screen will be determined after the analysis.
- b. Depths of formation based on assumed surface elevation of 00.0 feet.
- c. Source of expected supply: Sands and gravel.
- d. Grouting: as shown or as required by Engineer to provide positive seal against entrance of pollution.

- e. Verify character and depth of formation as drilling progresses.
- f. After verification, Engineer will instruct Contractor as to depth that each type of construction will be carried.

4-03 DRILLING PROCEDURES

- a. Construct drill hole with rotary drilling methods. Minimum diameter; as shown on plans. Larger diameter holes may be drilled with approval of Engineer; no additional compensation will be allowed.
- b. Drill hole to depth shown on plans which should be to bottom of water bearing strata.
- c. Place casing and screen.
- d. Fill void with specified gravel by volume. Calculated volume to actual volume should be within 5%.
 - 1) Depth of gravel should be checked prior to sealing pipe to assure gravel is above screen.
- e. Place grout and seal as shown on plans. Wait minimum of 3 days before proceeding with further operation.

4-04 CASING PIPE

- a. Final length and elevations: as directed by Engineer to conform with conditions encountered in drilling.
- b. Pipe material: black steel, AWWA A100-66 and ASTM A53:

<u>Size</u> <u>Inches</u>	<u>Minimum</u> <u>Thickness</u>	<u>Plainends</u> <u>lbs./ft.</u>
6	0.280	18.97
8	0.322	28.55
10	0.365	40.48
12	0.375	49.56

- 1) Weld connections and joints; use only qualified welders; submit proof to Engineer that welders are qualified under Section IX, Part A, of ASME Boiler and Pressure Vessel Code.

- 2) Install casing pipe to elevation designated and seal using center guides at minimum every 20'.
 - 3) Submersible pump discharge pipe below ground make watertight seal between discharge pipe and casing.
 - 4) Insure watertight seals for all pipes extending into well.
- c. Place casing pipe within specified tolerance and centered in drill hole.
 - d. Provide centerline guides on pump discharge pipe at bottom and 10' from bottom and at 20' spacing along casing.

4-05 GROUTING

a. Grout seal:

- 1) Grout annular space between casing pipe and drill hole for length as shown on plans. Use grout pump to place grout; provide sufficient grout to seal off undesirable water.
- 2) Grout: neat portland cement mixed with minimum quantity of water; consistency as required for proper placement.

CEMENT GROUT DATA

Based on Specific Gravity of Cement of 3.15

Density of Grout			Water Required		Volume of Grout per Sack Cement Cu. Ft.
Lb. per Gallon	Lb. per Cu. Ft.	Specific Gravity	% by Wt. of Cement	Gal. Per Sack Cement	
15.0	112.5	1.80	53.2	6.0	1.28
15.4	115.2	1.85	48.7	5.5	1.21
15.8	118.3	1.90	44.2	5.0	1.14

- d. Grout admixture: 3% by weight of portland cement, Bentonite, or approved equal, passing No. 325 sieve.
 - 1) Thoroughly hydrate admixture in water used to prepare grout before mixing with cement.
- e. Thoroughly mix grout; mixture, mixing methods and grout consistency subject to approval of Engineer.
- f. Grouting operation: submit proposed procedure for approval of Engineer.

- 1) Install casing, screen and gravel packing; close lower end; fill casing with water and cap casing watertight at top.
- 2) Pump clear water first until all drill mud has been removed.
- 3) Seal top of gravel pack as shown on plans and specified herein.
- 4) Force grout from bottom of space to be grouted toward ground surface.
- 5) Continuous operation in manner to insure filling entire annular space in one operation.
- 6) Allow 3 days for grout curing before installing pump column.

4-06 WELL SCREEN AND ACCESSORIES

- a. Provide well screen 5" in diameter, Watermark stainless steel, slot #40, Johnson Well Screen, or approved equal.
 - 1) Well screen to be provided with a bottom plate of the same material as the screen.
- b. Length shown on plans is for bidding purposes actual length and slot No. will be determined after pilot test hole and tests are made.
- c. Water level indicator: install $\frac{1}{2}$ " plastic tubing along discharge column complete with fittings, air pump and gauge. Extend tube to a point 2' above bottom of pump suction; terminate at top of pump pedestal; fasten to discharge piping at 20' centers.
- d. Pressure gauge: $\frac{1}{2}$ " face, graduated 0-100; United States gauge, or approved equal.

4-07 GRAVEL PACK

- a. Provide #2, Northern Sand and Gravel Co., Muscatine, Iowa, or approved equal. Gravel will be selected after test.
 - 1) Gravel pack shall be clean and washed gravel, minimum 95% siliceous material.
 - 2) Disinfect gravel pack with chlorine compounds immediately prior to placing in well or during placement. Use one pound of high test hypochlorite (TDH) of 70% available chlorine with each cubic yard of gravel.
 - 3) Gravel pack to be placed in one continuous operation at uniform rate through tremie pipe.

- b. Place gravel to within 1'-6" below of top blank pipe; minimum thickness around screen 2 inches, or as shown on plans.

4-08 PROTECTION OF SITE

- a. Construct cutting refuse pit adjacent to well; remove and dispose of debris from pit at location approved by Owner; backfill pit after construction.
- b. Keep site in neat condition.
- c. Restore site to original condition after completion of work.
 - 1) Save topsoil from disturbed areas; redistribute after construction; sow bluegrass mixture on disturbed areas at rate of 2 lbs. per 1,000 SF.
- d. Discharge water pumped during test to location approved by Owner. Maximum length expected 200'.

4-09 DRILLING EQUIPMENT AND PERSONNEL

- a. Provide equipment to drill hole round, straight and plumb.
- b. Equipment and method of construction as specified; conform to accepted practice of drilling wells.
- c. Provide experienced, competent foreman or driller to supervise drilling work on continuous basis.

4-10 RECORDS AND SAMPLES

- a. Log of drilling pilot hole and electric log:
 - 1) Keep accurate records; record depth of top and bottom of each stratum.
 - 2) Submit daily record to Engineer; show material encountered, work done each day, depths drilled, liner pipe placed, casing placed, grouting completed, water level in well, and other pertinent data requested by Engineer.
 - 3) File copies of Driller's log with S.D. Geological Survey, Owner and Engineer.
- b. Sample drill cuttings at 5' intervals and at each change in formation.

- 1) Discharge into container not holding other cuttings.
 - 2) Unwashed cuttings sufficient in size for Iowa Geological Survey; placed in plainly labeled containers furnished by Contractor.
- c. Measure depth from existing ground surface at well site. Set reference point to establish datum.
 - d. Final depth measurements for payment purposes made jointly by Contractor and Engineer and signed by both parties.
 - e. Measure and record each size of hole or type of construction as completed.
 - f. Record and graphic elevation at one hour intervals or less of pumping rate, pumping water level, drawdown and water recovery rate and levels.

4-11 ALIGNMENT

- a. Drill hole, liner pipes and casing: round, plumb and true to line.
- b. Maximum deviation from perpendicular: not to exceed deviation set forth in AWWA specification A100; check in presence of Engineer.
- c. Use dummy pipe section of three 12" wide rings attached to rigid spindle to check alignment to full depth of well; section must move freely through length of drill hole or casing being tested.
 - 1) Diameter: not more than $\frac{1}{4}$ " smaller than drill hole or casing being tested.
- d. Faulty alignment:
 - 1) Correct at no expense to Owner.
 - 2) If unable to correct, construct new well at point designated by Engineer; no payment will be made for defective well.

4-12 ABANDONMENT

- a. In event of failure to sink well to depth specified; fill well with concrete at top of highest rock formation; fill remainder with clay. No payment for abandoned well.
 - 1) Disinfect the material to be used for abandonment.

4-13 DEVELOPMENT

- a. Following completion of well, develop by surging and pumping to remove all mud used in drilling.
- b. Perform work prior to well test; continue development until water runs clear and continues clear after periods of stopping and starting pumping equipment.
- c. Pumping rate during development: Minimum 25 gpm; Maximum 40 gpm.
- d. Development incidental to well construction.

4-14 WELL TESTS

- a. Test pumping equipment: pump at adequate depth of setting; provide prime mover, fuel, lubricants, measuring and throttling devices and discharge piping to a point of discharge at location approved by Owner; provide own power.
- b. Pump capacity: not less than 600 gpm.
- c. Throttling device: control discharge between 5 and 600 gpm.
- d. Measuring devices:
 - 1) Electrical depth measuring device or air line, complete with gauge, hand pump and check valve, to measure water level in well.
 - 2) Provide discharge piping and wire box or other measuring device to accurately measure test pumping rate.
- e. Conduct test on continuous basis for 24 hours; no compensation for interruption for test resulting from equipment failure or errors of Contractor.
- f. Provide recordings and graphic evaluation of following, at intervals of 15 minutes or less for first 2 hours, then at intervals of one hour or less until conclusion of test pumping:
 - 1) Pumping rate.
 - 2) Pumping water level.
 - 3) Draw down.
- g. Observe and record water recovery level for 2 hours after test pumping is complete.
- h. Copy of yield-drawdown test records shall be submitted to Engineer.

4-15 DISINFECTION

- a. After completion of final well tests, clean well thoroughly and remove all foreign substances, including tools, timbers, ropes, cement, oil or grease, scum and debris.
- b. Swab casing pipe with alkalis to remove oil and grease.
- c. Wash down casing pipe above water level with 100 ppm available chlorine solution.
- d. Disinfect well with chlorine solution with sufficient chlorine to maintain a solution of not less than 50 ppm available chlorine for a minimum of 24 hours.
- e. After completion of disinfection, Contractor will collect bacteriological sample from well and submit to certified laboratory for analysis; sample must test "SAFE"; if sample tests "UNSATISFACTORY" or "UNSAFE", repeat disinfection procedure until sample tests "SAFE".
- f. Disinfect the clay seal and gravel pack material by providing 0.5 lbs of hypochlorite compound for every 1 cubic yard of material.

4-16 WATER QUALITY

- a. Owner will take samples as required to test for; alkalinity, calcium, chloride, color, copper, corrosivity, foaming agents, hardness, iron, magnesium, manganese, pH, potassium, odor, silica, specific conductance, sodium sulfate, filterable and non-filterable solids and zinc.
 - 1) Owner will make additional tests for arsenic, barium, cadmium, chromium, lead, mercury, nitrate (as N), selenium, silver, fluoride, radium -226, radium -228, and gross alpha. Contractor to furnish samples and bottles in quantities required for tests outlined above. Contractor to give sample to Owner for tests.
- b. Samples will be collected at the conclusion of yield-drawdown pumping procedure and examined by a certified laboratory.
- c. Analyze samples for pH, temperature and alkalinity, in field at time of collections.
- d. Submit reports of the analysis to the Engineer.

4-18 PAYMENT

- a. No separate payment will be made for work covered in this part of the specifications except as set forth below. Contract unit prices shall include all costs for each item of work.
- b. Mobilization of Equipment, LS: Lump sum price includes all costs of transporting drilling equipment and all necessary tools and apparatus to and from site, assembling and disassembling equipment and site cleanup upon completion of construction.
- c. Drill hole, LF: Unit price includes all labor, material, equipment, appurtenances and accessories to drill stated size hole and disinfection to develop well.
- d. Casing pipe, LF: Unit price includes all labor, material, and equipment to set stated size casing pipe in well to connect to pitless adaptor.
- e. Test Set Up, LS: Lump sum price includes all labor, material and equipment to furnish, install and dismantle test pump, measuring devices and incidentals to test well yield and drawdown.
- f. Well Testing, Hours: Unit price includes all labor, material and equipment to conduct test for well yield and drawdown. Time measured only while test equipment remains in continuous operation for entire duration of testing period.
- g. Screen, LF: Unit price includes all labor, material and equipment to set screen and gravel pack in well.
- h. Pressure Cement Grouting and Bentonite Seal, LS: Lump sum price includes all labor, material and equipment to transport all necessary apparatus to and from site assembling and disassembling equipment for grouting and sealing of well. If more than one set up is required, include cost of additional work in lump sum price.

PART 5 - WELL PUMPS

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5-03	PUMP	5-07	FIELD TESTS
5-04	DISCHARGE COLUMN	5-08	PAYMENT

5-01 GENERAL

- a. Furnish labor and materials to install existing turbine pump, Fairbanks Morse Co. Provide new motor and base.
- b. Furnish and install additional column pipe, all new electrical cable and accessories.

5-02 WELL DATA

- a. Observed static water level:
 - 1) Well No. 3: 50' below ground level.
- b. Assumed water level at 500 gpm pumping rate: below ground level.
 - 1) Well No. 3: 70' below ground level.

5-03 PUMP

- a. Turbine type pump, 6 bowls, 10" MC Fig. 6920 at 1770 rpm, Fairbanks Morse Co.
- b. Motor 40 hp, 1770 rpm under load, 220 volts, 3 phase induction motor.
- c. Base above ground discharge 8" discharge 8" column.

5-04 DISCHARGE COLUMN

- a. Provide 8" steel column: Schedule 40, ASTM A-53, Grade A, seamless, threaded ends; minimum wall thickness: 0.277"; add 20 feet to existing pump column.
 - 1) Maximum section length: 20' random.
 - 2) Ship with thread protectors.
 - 3) Threaded connection to bowl assembly and discharge head.
- b. Connections: recessed couplings; pipe threaded and couplings taper tapped with API threads.

- 1) Check tightness of factory placed couplings during installation; tighten any loose couplings.
- c. Provide space on alternate sections of pipe to center pump in casing and reduce whip action.
- d. Final setting depth determined by Engineer after well test is complete and evaluation made.
- e. Provide vertical check valve, Technocheck Style 5002, Class A, 250 psig or approved equal, immediately above pump bowl assembly, complete with necessary pipe couplings.

5-05 ACCESSORIES

- a. Water level indicator: install $\frac{1}{4}$ " plastic tubing along discharge column complete with check valve, fittings, air pump and gauge; extend tube to a point 2' above bottom of pump suction; terminate at top of pump pedestal; gauge in feet range 0-100 graduated in one.
- b. Pressure gauge: $4\frac{1}{2}$ " brass case, graduated in 2; range 0-100 psi; United States Gauge, or approved equal.
- c. Vent: minimum 2" diameter opening; terminate min. of 12" above top of pump house floor; turned down; screened with #20 mesh.
- d. Pump cable:
 - 1) 600 volts, minimum power cable size #6, Vulkene Oil-Well Pump Cable SI-58111, or approved equal.
 - 2) Three, single conductors, triplexed, dress around pump column and clamp as specified under Well Pump.
 - 3) No splices permitted.
 - 4) Connect cable to discharge pipe securely at 20' on center.
- e. Install between larger and smaller diameter pipes as shown on plans.
 - 1) Material: conform to pipe specified; wall thickness not to be less than that of larger diameter pipes.
 - 2) Weld connections and joints as specified for casing pipe.
- f. Furnish and install electrodes and relays to connect to control panel to prevent pump from pumping water below pump.

5-06 DISINFECTION

- a. Thoroughly clean oil and grease from exterior and interior of pump bowls, pump column and exterior of motor as pump is being installed.
- b. Dust all motor and pump parts with chlorine bearing compound when installing; use HTH, or approved equal.
- c. After installation of well pump column, introduce chlorine solution to well (50 ppm available chlorine) in sufficient volume to twice replace water in well; cover exterior and interior of pump column located above static level of well.
- d. Leave solution in well at least 24 hours before pump is placed in service; pump to waste until chlorine residual is less than 2 ppm.

5-07 FIELD TESTS

- a. Provide preliminary pump operation after installation for a period of not less than 50 hours to assure proper functioning or detect malfunctions.
- b. Tests will be made at rated head and capacity and at approximately 10% above and 10% below rated head.
- c. Test in accordance with standards of HI.
- d. Provide all necessary temporary discharge piping and metering equipment for tests subject to approval of Engineer.
- e. If guaranteed performance is not obtained in tests, make necessary adjustments and changes; notify Engineer that equipment is ready for another test. Additional tests at cost of Contractor. Owner will deduct cost of additional tests from payments due Contractor.

5-08 PAYMENT

- a. No separate payment will be made for work covered in this part of the specifications, except as set forth below. Include all costs for each item of work with unit price bid.
- b. Install well pump and motor, LS: Lump sum price includes furnishing all materials, labor and equipment necessary to install existing pump, motor, discharge column piping, new check valve, all new electrical cable, miscellaneous accessories, connection to discharge piping, excavation, backfill and associated work.
- c. Discharge pipe, LF: Unit price includes all labor and material to install discharge pipe as shown on plans.

PART 6 - STRUCTURAL CONCRETE AND REINFORCING STEEL

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6-06	MIXING, PLACING, PROTECTING & CURING		

6-01 GENERAL

- a. Includes all concrete work except concrete for street surface replacement.

6-02 CONCRETE MATERIALS

- a. Portland cement: ASTM C150, Type I.
- b. Aggregates: well graded, strong, durable minerals conforming with ASTM C33; coarse aggregate size 1" to No. 4 sieve.
- c. Storage:
 - 1) Cement: keep clean, dry and free from weather damage.
 - 2) Aggregates: stockpile each gradation separately on clean, non-contaminating surfaces.
- d. Water: clean and free from injurious materials.
- e. Admixtures:
 - 1) Plasticizing material: Pozzoloth by Master Builders Company, or approved equal; maintain cement content specified.
 - 2) Non-shrink: Enbeco by Master Builders Company or approved equal.

6-03 CONCRETE QUALITY

	<u>Class A</u>	<u>Class B</u>
a. Minimum compressive strength: Psi at 28 days	3,500	2,500
b. Water-cement ratio: gal. per sack, maximum, including water in aggregate.	5½	7½

- | | <u>Class A</u> | <u>Class B</u> |
|--|----------------|----------------|
| c. Cement content: sacks per CY,
minimum. | 5½ | 4½ |
| d. Admixtures: per manufacturer's recommendations. | | |
| e. Concrete mix: meet approval of Engineer. | | |
| f. Use Class A concrete unless shown or specified otherwise. | | |

6-04 REINFORCING STEEL

- a. Bars:
 - 1) Intermediate grade deformed billet or rail steel; ASTM A305 and A15 or A16.
 - 2) Bend cold to conform to required details.
 - 3) Remove scale, rust, dirt and other bond-impairing materials; space and tie in position before placing concrete.
 - 4) Lap bars 28 diameters, minimum.
- b. Mesh:
 - 1) Electrically welded wire fabric, ASTM A185.
 - 2) Size as specified: lap minimum of 6".
 - 3) Remove scale, rust, dirt and other bond-impairing materials, place securely where shown on plans.

6-05 FORMS

- a. Form all concrete, except where permitted otherwise.
- b. Use metal or plywood-lined forms for exposed surfaces; erect true to line and grade; brace and tie securely.
- c. Coat forms with non-staining mineral oil before placing reinforcing.
- d. Minimum stripping time: footings: 24 hours; walls: 2 days; self-supported slabs: 2 weeks.

6-06 MIXING, PLACING, PROTECTING AND CURING

- a. Provide accurate control for measuring materials.

- b. Mix until mass is homogeneous and uniform in color.
- c. Ready-mixed concrete: conform with specifications and with ASTM C94.
- d. Clean and dampen forms, reinforcing steel and embedded items: transfer concrete promptly from mixer to forms; thoroughly compact by tamping or vibrating.
- e. Prevent segregation during placing. Do not drop more than 5'-0".
- f. Place concrete continuously in each section until complete. Permit not more than 30 minutes between depositing adjacent layers of concrete within each section.
- g. Thoroughly compact, puddle and vibrate concrete into corners and around reinforcing and embedded items.
- h. Place sections of concrete in sequence which eliminates effect of shrinkage to greatest extent practicable.
- i. Cure with Masterkure by Master Builders Company, or approved equal, or keep continuously wet for 7 days; protect from sun, cold weather, running water, or mechanical injury.
- j. Maintain concrete temperature between 60 degrees F. and 90 degrees F. when placing and not less than 50 degrees F. for 72 hours after placing.
- k. Pour concrete slabs and footings on clean, undamaged membrane waterproofing.

6-07 FINISHING

- a. Patching:
 - 1) Chip out honeycomb to sound concrete.
 - 2) Fill with patching mortar, one part portland cement, 3 parts sand.
 - 3) Fill holes left by form ties with non-shrink grout to within 1" of surface; fill with patching mortar.
 - 4) Where existing concrete has been removed, patch uneven surfaces with patching mortar.
- b. Surfaces:
 - 1) Top of slabs: float to uniform finish with cork float; use edger on exposed edges.

6-08 VAFOR BARRIER

- a. Place beneath all poured concrete footings and slabs.
- b. Minimum thickness: 0.006"; minimum lap: 6".
- c. Waterproof polyethylene membrane, Vis Queen, Visking Company, or approved equal.

6-09 PAYMENT

- a. No separate payment will be made for work under this part except as noted below.
 - 1) If quantities of concrete and reinforcing steel are changed from those upon which bid is based, contract price shall be adjusted on basis of unit adjustment price set forth in Contractor's proposal.
 - 2) Unit adjustment price includes furnishing and installing reinforcing steel and includes all materials and labor for furnishing concrete, placing forms, finishing, expansion joints, curing, waterproofing, installation of embedded items and incidental work required in concrete construction.
 - 2.1 Reinforcing steel, lb.: computed from theoretical weights of various sizes and lengths of bars shown on fabricator's shop drawings and approved by Engineer.
 - 2.2 Concrete, CY: defined as volume contained within neat lines of foundation of structure shown on approved drawings or measured in field by Engineer. Includes pipe coverings, block-outs, etc., less than one CF in volume.

PART 7 - ELECTRICAL

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7-01 CHARACTERISTICS

- a. Power service: 240 volts, 3 phase, 60 cycle.
- b. Control voltage: 120 volts, single phase, 60 cycle, 2 wire, with one conductor grounded.

7-02 WORK INCLUDED

- a. Install conduit, wiring, controls, equipment and accessories as shown on plans, or specified herein.
 - 1) Conduit from meter to control panel; and install all wiring for new circuits.
 - 2) Provide and install power pole, guy and anchor.
- b. Power Company will provide and install lines, transformer and meter.

7-03 ELECTRICAL SERVICE

- a. Entrance cable and conduit from starter to motor: THW Conductor, rigid galvanized steel conduit with bitumastic coating; 36" earth cover.
- b. Power pole to starter; #1 insulated for direct bury, jacked nonmetallic sheathed cable.

7-04 WELL PUMP MOTOR STARTER

- a. Air circuit breaker: 3 pole, 3 trip, Square D Co., or approved equal.
- b. Starter: full voltage, non-reversing, single speed, one winding, 240 volts, 3 phase, 60 cycle operation; 3 overload relays, NEMA Size 1, Square D Co., or approved equal.
 - 1) Enclosure: NEMA 1 for starter, circuit breaker and control.
- c. Provide time delay relay to prevent motor starting after pump has been stopped.

7-05 CONTROLS

- a. Start and stop either existing pump or new pump from dropping or rising level in elevated storage tank. Normal operation tank level to start and stop pump selected by operator. Controls by Automatic System or approved equal.
- b. Elevated storage tank transmitter housed in NEMA 4 special insulated enclosure as shown; include thermostatically controlled freeze; condensation protection.
 - 1) Included shall be a Class 1700 solid state pulse duration transducer.
 - 2) Transducer consist of force balance mechanism operating linear differential transformer operate in conjunction with four (4) solid state plug in printed circuit boards.
- c. Provide motion transducer, linear output of -2.5 to +2.5 suppression up to 95% within transducer.
 - 1) Suppression outside transducer will not be allowed.
 - 2) Minimum, provide power supply module, an amplifier module, meter module, and transmitter module.
 - 3) Transmitter shall have over-all accuracy of $\pm 1\%$ of range selected after suppression.
- d. Control manufacturer shall furnish thermostatically controlled heater tape for protection of pressure line to be run between ground tank riser and transmitter pressure tap.
- e. Responsibility of installing contractor to furnish and connect the pressure tap between transmitter and ground tank riser.
- f. Furnished as part of well pump control panel, Autocon Class 9200 transceivers capable of receiving pump required signal and transmit pump running signal from two well pumps.
 - 1) Timer will prohibit well pump from re-starting when stopped until preset time has elapsed.
 - 2) Front panel mounted shall be oil tight hand-off-auto selector switch.

- g. The Contractor shall provide an auxiliary contact on the existing well pump starter and wire to the new well pump transceiver panel. The well pump fail signal will be shown when the well pump starter drops out and this signal will be transmitted back to the master control panel. Contacts for this function will be provided in the new well pump transceiver pump.
- h. If the units are to be outside, the enclosure should be NEMA 3 with a dead front cover. If the units are inside a pump house, the enclosure should be NEMA 12 construction.
- i. Chlorine and Fluoride will start and stop on signal from either well pump that is operating.

7-06 RACEWAYS

- a. Use for wiring to new equipment.
- b. Rigid conduit: standard steel, zinc coated inside and out, enamel coat inside, or standard aluminum conduit; sizes as required by NEC.
 - 1) Fittings:
 - 1.1 Steel conduit: ASTM A4700, A120 fittings protected by zinc coating.
 - 1.2 Aluminum conduit: pure cast aluminum fittings same quality as conduit.
 - 1.3 Conduit and fittings: Underwriters' approved.
 - 1.4 Minerallac hangers in accordance with NEC.
- c. Flexible conduit:
 - 1) Use only in short length between control panels.
 - 2) Steel, zinc coated, weatherproof flexible conduit.
 - 3) Use approved fittings designed for weatherproof flexible conduit.
 - 4) Parallel all flexible conduit with ground jumper not less than #8 AWG copper conductor securely bonded to adjacent appliance at each end.

d. Installation:

- 1) Install in accordance with NEC Article 346.
- 2) Surface mount conduit on clamp-backs and hold down with straps of appropriate size.
- 3) Conduit supports: horizontal runs at intervals not to exceed 7'; vertical runs at intervals not to exceed 8'; support other raceways in accordance with manufacturer's recommendations.
- 4) Seal conduit joints watertight on couplings and hub type fittings in manner approved by Engineer; apply red lead or zinc chromate paint where protective coating is damaged.
- 5) Cap ends of all conduits during construction with watertight seals.
- 6) Clean inside of all conduits by mechanical means before wires or cables are installed.
- 7) Cut through walls and floors, patch around raceway.
- 8) Align exposed conduit in runs parallel and perpendicular to walls, ceilings, and floors.
- 9) Avoid pockets in conduit runs; provide drain-offs for pockets where water might collect.

7-07 CONDUCTORS

- a. Materials: soft drawn copper, ASTM B3 or B33.
- b. Minimum conductor size: AWG #12, except for control wire.
 - 1) Use THW, heat and moisture resisting plastic insulation; 600 volts, solid conductor.
- c. Pull cables only in clean, dry raceways with pulling grips; lubricate with powdered soapstone.
- d. Splicing: permissible only in junction boxes.
- e. Use color coded wire for all control wires.
- f. Use solderless pressure type lugs, NEMA standard for electric power connections; make approved by Engineer.

- 1) Thoroughly clean lug and conductor, coat with suitable oxidation inhibiting compound.
- g. Insulation when necessary, for 600 volts or less; use 3/4" wide rubber splicing compound, ASTM D119 or 3/4" wide Scotch electrical tape #33, two layers, half lapped, cover with two layers of friction tape half lapped.

7-08 JUNCTION BOXES

- a. Provide and install weatherproof junction box at well; Appleton, RS, or approved equal.
- b. Provide and install other junction boxes as required.

7-09 PAYMENT

- a. No separate payment will be made for work covered under this part of the specifications. Include work in lump sum bid for which it pertains.

PART 8 - CARPENTRY

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8-02	LUMBER	8-05	ASPHALT SHINGLE ROOFING
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8-01 GENERAL

- a. Provide and install all materials to construct new pump house including all miscellaneous carpentry to provide for complete job.

8-02 LUMBER

- a. Moisture content: in accordance with National Lumber Manufacturers Association rules for dimension lumber; 19% for 1" lumber (air or kiln dried).
- b. Grade and trade mark: stamp on each piece of lumber or bundle.
- c. Quality: sound, thoroughly seasoned, well manufactured and free of warp that cannot be corrected in process of placing and securing.
- d. Dimension lumber: No. 2 Douglas Fir or Hemlock Fir; pieces must be straight.

8-03 ROUGH CARPENTRY

- a. Materials: As follows unless otherwise specified under specific items or shown otherwise on drawings.
- b. Lumber: Sound, thoroughly seasoned, dry, well manufactured, and free from warp that cannot be corrected in process of bridging or nailing. Any members exposed on exterior shall be clear and well dressed on exposed portion.
 - 1) Framing lumber: Douglas Fir, Hemlock Fir, construction grade. All dimension grade lumber is detailed to be 1½" thick x 3½", 5½", 7½", etc. Any stress graded lumber called for shall be so stamped.
 - 2) Grounds and Blocking: Douglas Fir, No. 2 common.

- 3) Redwood: All interior and exterior non-mill-work redwood to be "A" grade redwood.
 - 4) Preservative Treated: Federal Spec. TT-W-00571D "Wolmanized". Furring grounds, plates, bucks, nailers, sleepers, and stripping next to concrete, masonry, or plaster; .35 lbs. per cu. ft. Cants, blocking, curbs, plates, nailers, and grounds on roof; .55 lbs. per cu. ft. Flush coat field cuts with preservative.
- c. Plywood: All DFPA stamped. Thicknesses as noted on drawings.
- 1) Exterior, concealed: EXT-DFPA.A-C.
 - 2) Exterior, exposed: EXT-DFPA.M-D Overlay, exposed side or sides overlaid.
 - 3) Interior, concealed: INT-DFPA.B-D.
 - 4) Interior, exposed: INT-DFPA.A-B or A-A or EXT-DFPA-MDO. See drawings.
 - 5) Interior, underlayment: INT-DFPA. Underlayment.
- d. Wood Trusses:
- 1) Roof and floor trusses as shown on plans shall be Hydro-Air trusses as fabricated by Fleetwood Truss Systems, a licensed Hydro-Air Fabricator or approved equal.
 - 2) Construction:
 - 2.1 Roof Trusses shall be of 2" x 4"s with 2" x 6" top chord, 3:12 pitch, and truss shape shall conform to Fleetwood Type 1003.
 - 3) Loads:
 - 3.1 Roof Truss - Top Chord - 30 PSF - Live, 10 PSF dead; bottom chord - 10 PSF dead
Total truss load = 50 PSF. 15% increase allowable in live load capacity.
- e. Rough Hardware and Fastenings. All material for anchorage, straps, corner reinforcements, jamb anchors, mullion anchors, etc., supplied and installed by contractor. Bolt blocking to steel where required. Where nails are required for exposed exterior work, they shall be aluminum or approved non-rusting type. All nails in redwood, cedar, or cypress shall be hot dipped galvanized or aluminum.

f. Furring, Grounds, Blocking, and Bucks:

- 1) Furnish and install all wood blocking, plugs, strips, etc., required in securing finish work.
 - 2) Where required, set 2 inch wood bucks for openings. See details. Bucks must be set in plumb and true and securely wedged. Provide back anchors at 24 inches o.c. in masonry and concrete walls.
- g. All 2 x 4 studs shall be set at 16 inch centers. All top wall plates shall be double 2 x 4 overlapped at joints, butted at corners, intersections and ends with the stud walls fastened together securely as required. All sill plates shall be 2 x 4" and anchored securely to the foundation walls with anchor bolts as indicated on the plans. Contractor to insure that sill plate compresses the sill sealer and tightly seals the top of the foundation.
- h. Contractor shall do all work necessary to cover and protect from any damage all new wood, sub-sills, sills door and window jambs, and any other new carpentry work or materials. Any work damaged through neglect shall be made good by contractor at his expense.
- i. Contractor shall provide all temporary protection for existing walls, enclosures, runways, bracing, etc., required in execution of work.
- j. Framing lumber and other rough woodwork shall be properly framed, close fitting, accurately set to required line and levels, and rigidly secured in place.

8-04 FINISH CARPENTRY

a. Soffits:

- 1) 3/8" western Red Cedar Plywood.

b. Fascias and corner boards:

- 1) Fascias to be 1" x 8" Western Red Cedar with corner boards of 2" x 6" Western Red Cedar.

c. Siding:

- 1) Siding to be 1" x 10" Haida-Skirl Western Red Cedar siding with wavy edge.

- d. Install all exterior finish woods using galvanized nails spaced approximately according to manufacturer's recommendations.

8-05 ASPHALT SHINGLE ROOFING

- a. Includes materials and installation of roofing felt and shingles for new roof on pump house.
 - 1) 15 lb. asphalt roofing felt - 1 ply.
 - 2) 235 lb. per sq. asphalt shingles, self-sealing, 5" exposure, 2" headlap, by GAF or equal.
 - 3) Color - Obtain approval from Owner and Engineer.
 - 4) Nails - 1½" annularly grooved hot galvanized roofing nails with head 3/8" or larger.
- b. Apply 1 ply of 15 lb. asphalt felt using, 19 inch starter course along the eaves, cemented to drip cap, followed by a 36 inch sheet completely overlapping the starter course. Continued with 36 inch sheets each overlapping the preceding course by 3 inches. Tack with minimum number of nails. Both plies cemented at eaves.
- c. Asphalt shingle starter course firmly cemented at eaves.
- d. Proceed with shingle application according to manufacturer's instructions.

8-06 PAYMENT

- a. No separate payment will be made for work covered under this part of the specifications.
- b. Pump House, LS: Includes providing all labor and material to construct pump house; concrete, wood building, relocating chemical feed equipment, discharge lines for chemical feed, electrical wiring and controls and miscellaneous work.

PART 9 - HEATING AND VENTILATING

INDEX

9-01	GENERAL	9-04	VENTILATOR
9-02	UNIT HEATERS	9-05	LOUVERS
9-03	CHLORINE ROOM EXHAUST FAN	9-06	PAYMENT

9-01 GENERAL

- a. Work includes furnishing and installing unit heaters, and heating controls complete with accessories.

9-02 UNIT HEATERS

- a. UL approved, high capacity electric unit heaters, Emerson Chromalox, or approved equal, mount from ceiling as shown on plans.
 - 1) Two (2) 5 KW, 240 V, three phase. Install in main room of treatment plant.
 - 2) One (1), 4 KW, 240 V, three phase, furnish inside chlorine room as shown on plans.
 - 3) Provide thermostat in each unit heater.

9-03 CHLORINE ROOM EXHAUST FAN

- a. Provide power exhaust fan, floor mounted to furnish 1 air exchange per min.; Car-Mon Products, Inc. or approved equal.
 - 1) Model 9, Series CMD, 500 cfm, 3/4 hp, single phase, 120 V.
- b. Duct work fabricate from 20 gauge aluminum; groove, drive slip, picket slip or bar slips transverse joints; brace to prevent vibration.
 - 1) Fabricated bonds, 22 gauge, radius 1½ times duct width.

9-04 VENTILATOR

- a. Furnish and install spun aluminum intake ventilators, Loren Cook Co., Type TR, Catalog No. 12, or approved equal.
- b. Mount on outside wall of metal building. Provide aluminum inlet air ducts as shown on plans.

9-05 LOUVERS

- a. Furnish and install louvers where shown on plans, Loren Cook Co., Type L, relief unit 12, or approved equal.

9-06 PAYMENT

- a. No separate payment will be made for work covered under this part of the specifications. Include work in lump sum bid for which it pertains.

PART 10- EQUIPMENT INSTALLATION

INDEX

10-01	WORK INCLUDED	10-06	CLEANING
10-02	RECEIVING, TRANSPORTING AND STORING	10-07	LUBRICATION
		10-08	ADJUSTMENTS
10-03	ASSEMBLY AND ERECTION	10-09	INITIAL OPERATION
10-04	SUPPORTS AND FOUNDATIONS	10-10	PAYMENT
10-05	PROTECTION		

10-01 WORK INCLUDED

- a. Installation and erection of equipment specified.
- b. Receiving, transporting, unloading and storing of all equipment.
- c. Adjustments, lubrication and initial operation.
- d. Foundations for all equipment.
- e. Anchor bolts and sleeves for all equipment.

10-02 RECEIVING, TRANSPORTING AND STORING

- a. Receive all shipments of equipment at job site or local freight terminal.
- b. Transport as required and unload at job site.
- c. Store equipment in manner and location which will insure complete fitness for operation; protect from rust, corrosion, weathering and vandalism.
- d. Pay all demurrage or storage charges.

10-03 ASSEMBLY AND ERECTION

- a. Completely assemble all equipment shipped knocked down; furnish minor items such as nuts, bolts, washers, pins and pipe fittings necessary for assembly and operation.
- b. Erect and install ready for operation.
- c. Furnish anchor bolts not supplied with equipment.

10-04 SUPPORTS AND FOUNDATIONS

- a. Provide devices for rigidly supporting all equipment in accordance with recommendations of manufacturer.

- 1) Concrete pads for floor mounted equipment.
 - 2) Fabricated supports of steel sections, plates or rods for all hung equipment and bearing supports.
- b. Align and level all equipment; use shims as needed.
 - c. Grout under all equipment on concrete foundations with non-shrink cement grout as specified hereinbefore.

10-05 PROTECTION

- a. Structures:
 - 1) Use cribbing, shoring or planking to protect structures from moving-in damage.
 - 2) Repair any damage to structures or equipment after equipment is in place.
- b. Equipment:
 - 1) Protect against falling objects which might damage equipment installed before structure is completed.
 - 2) Provide pump intakes with temporary hardware cloth screens; remove at direction of Engineer.

10-06 CLEANING

- a. Clean equipment of all protective coatings.
- b. Remove all oil, grease and dirt from external surfaces prior to painting.

10-07 LUBRICATION

- a. Lubricate all moving parts in equipment in accordance with manufacturer's recommendations.
- b. Furnish lubricants.

10-08 ADJUSTMENTS

- a. Make any adjustments to equipment necessary to improve operation.
- b. Check pump clearances and adjust in accordance with recommendations of manufacturers.
- c. Add or replace pump packing as required.

10-09 INITIAL OPERATION

- a. Supervise initial operation of all equipment.
- b. Maintain all equipment until acceptance by Owner.

10-10 PAYMENT

- a. No separate payment will be made for work covered under this part of the specifications. Include work in lump sum bid for work set out in proposal.

HURON DRILLING INC. DRILLERS LOG

Tyndall, SD

PAGE NO.

City of Tyndall JOB NAME		Bon Homme County LOCATION	7-15-82 DATE	23 RIG NO.	Dennis Duvall FOREMAN
DEPTH	TIME	REMARKS			
10		0-2 Topsoil			
20		2-17 Yellow Clay			
30		17-20 Coarse Yellow Sand - No Good Rocks @ 17-19			
40		20-28 Fine Yellow Sand - No Good			
50		28-125 Fine & Medium Yellow Sand - No Good			
60		125-160 Fine & Medium Sand with Clay Mixed In - Fair			
70					
80		160-173 Medium & Coarse Sand - Good			
90					
100		22 Bags Bentonite			
110					
120					
130					
140					
150					
160					
170					
173	T.D.				

Tyndall, SD WELL REPORT

HURON
DRILLING CO.
Huron, S. D.

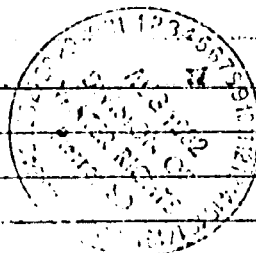
5003
City of Tyndall .. Bon Homme County .. July 22, 1982
OWNER .. DESCRIPTION .. DATE

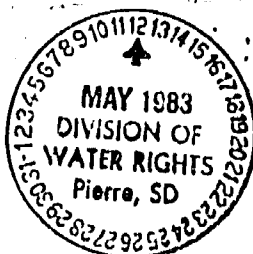
CASING LOG

Depth 173 ft.
Flows gpm 153 ft. 10" PVC Casing pipe to 153 ft.
Pumps gpm 20 160
Head ft. ft. 16" Johnson pipe to 173 ft.
Stainless Steel Screen .040 slot
20 ft. - 16" Johnson SS Screen 40 slot @ bottom pipe to ft.
Perforations ft. pipe to ft.

Pressure 154-173
3 Days 8,000 Eau Claire 3,000 Madison Gravel
Drilling Time
Rig No. 23 63 Bags Bentonite 30" Drag Bit 30" Rock Tub
Dennis Duvall Foreman

REMARKS



NOTICE OF COMPLETION OF WORKS AND/OR
APPLICATION OF WATER TO BENEFICIAL USEPost Office Tyndall, S. Dak.Date 5/10/83TO: Water Rights Commission
Joe Foss Building
Pierre, South Dakota 57501

Dear Sirs:

This is to inform you that I have completed the construction of the water diversion system and/or that I have put the water to beneficial use to maximum extent. It is going to be used, not exceeding the amounts as specified in Water Right No. 4839-3.

Water Right Permit No. 4839-3 states that the diversion system is to be constructed by City of Tyndall, and that the water is put to beneficial use by City of Tyndall.

The diversion system was completed on 5/10/83. Applying the water to beneficial use was completed on 5/10/83.

You may schedule an inspection so that the Certificate of Construction and/or the Water License may be issued, thus completing my acquisition of a water right.

Andrew T. Brown
(Signature)

 **Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

August 3, 1989

Joseph Dobesh, Mayor
City of Tyndall
PO Box 29
Tyndall SD 57066

Dear Mayor Dobesh:

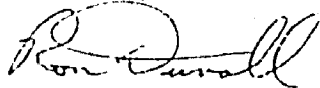
I am writing in regard to Future Use Water Permit No. 4839-3 held by the City of Tyndall. A copy of Permit No. 4839-3 is enclosed for your files.

Future Use Permit No. 4839-3 will be scheduled for review by the Water Management Board on September 27 or 28, 1989 pursuant to SDCL 46-5-38.1. Notice will be given of the hearing time and place. The purpose of this review is to determine if a reasonable need exists for keeping the permit. A fee will be charged if the Board allows the permit to remain in effect after the hearing. The fee assessed if the permit remains in effect will be \$82.50.

Please respond in writing by August 18, 1989 regarding the city's intentions for the future use permit. If the city plans to retain the permit, then your response should outline a reasonable need for retaining the permit for future use.

Please contact me if you have any questions.

Sincerely,



Ron Duvall
Natural Resources Engineer
605 773-3352

enc.



OUTH
Dakota Department of
Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

August 23, 1989

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

Joseph Dobesh, Mayor
City of Tyndall
Box 29
Tyndall SD 57066

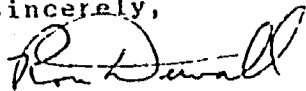
Dear Mayor Dobesh

Future Use Permit No. 4839-3 will be reviewed for progress in the development and future plans for use of the water reserved. The notice of this review has been sent to the Publisher of the Tyndall Tribune & Register printed at Tyndall. Please review this notice prior to publication and notify this office, if you have any corrections or questions.

BE SURE TO CONTACT THE ABOVE NEWSPAPERS IMMEDIATELY TO AUTHORIZE PUBLICATION OF THE NOTICE OF HEARING AND TO ARRANGE FOR PAYMENT. Early contact with the papers can eliminate delays. The publishers have been instructed to publish the notice once each week for two consecutive weeks with the last publication to occur at least twenty days before the board meeting. We must receive Proof of Publication before the future use review can be considered by the Water Management Board.

Enclosed is the city's check for \$82.50. The fee has been revised to \$57.50 based on the Chief Engineer's recommendation. Please do not remit the \$57.50 fee until after the hearing on September 27, 1989, assuming the Board allows the permit to remain in effect.

Sincerely,



RON DUVALL
Natural Resources Engineer
605 773-3352

enclosures



L

 **Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

August 23, 1989

Tyndall Tribune & Register
Box 520
Tyndall SD 57066

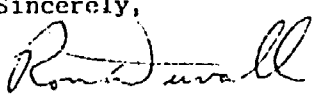
Dear Sir:

Enclosed is a Notice of Hearing to Review Future Use Water Permit No. 4839-3 to be published twice. Please publish the first notice on or before August 30, 1989 with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is the City of Tyndall, Box 29, Tyndall SD 57066.

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

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. The permit application cannot be considered by the Water Management Board until proof of publication has been received.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE	TO:	Water Rights Division
No. _____		523 E Capitol
		Pierre SD 57501-3181

Date _____

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

_____ Name	_____ Newspaper
---------------	--------------------



Instruction to Newspaper-Publish first publication of the following Notice on or before August 30, 1989 with 2nd publication 1 week later. The permit owner is responsible for payment.

NOTICE OF HEARING TO REVIEW FUTURE USE WATER PERMIT NO. 4839-3

Notice is hereby given that the Water Management Board will review Future Use Permit No. 4839-3 held by the City of Tyndall for progress made in the development of the water reserved by the Permit and future plans for development of the water reserved by Permit No. 4839-3. This permit was approved February 4, '82 to reserve 4.31 cubic feet of water per second from ground water less than 60 feet deep for diversion from section 21-T94N-R60W.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends that Permit No. 4839-3 REMAIN IN EFFECT because 1) the reserved water may be developed, 2) there is need for the reserved water 3) the proposed use will be a beneficial use and 4) it is in the public interest.

The Water Management Board will conduct the hearing to review Future Use Permit No. 4839-3 in Room 216, Joe Foss Building, 523 E Capitol, Pierre SD on September 27, 1989 at 8:45 am.

The recommendation of the Chief Engineer is not final or binding upon the Board and the Board is authorized to 1) allow the permit to remain in effect, 2) amend the permit by adding qualifications, 3) cancel the permit for no development or no planned future development, or 4) take no action after it reaches a conclusion based upon facts presented at the public hearing. Any interested person who may be affected by a Board decision and who intends to participate in the hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, must file a written petition with BOTH the permit owner and the Chief Engineer by September 15, 1989. The petition may be informal, but it must include a statement describing the petitioners interest in the future use permit, the reasons for petitioner's opposition to or support of continuing the future use permit, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained. The permit owner need not file a petition.

The hearing to review Future Use Permit No. 4839-3 will be conducted pursuant to the provisions of SDCL 46-1-14, 46-5-38.1, Board Rules ARSD 74:02:01 27 and contested case procedures contained in SDCL 1-26.

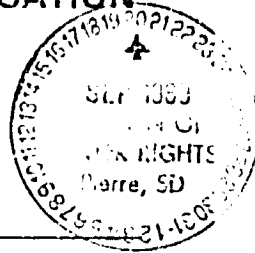
This hearing is an adversary proceeding. The permit owner or any person, after filing a petition, has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

Any person wishing a copy of the Chief Engineer's recommendation, further information on this permit or to assure access to the hearing by the handicapped can contact the Water Rights Division, DWRN, Joe Foss Building, Pierre SD 505 773-3352 for assistance prior to the hearing date. The time of the hearing will be automatically extended for at least 20 days upon written request of the permit owner or any person who has filed a petition to oppose or support continuance of the Future Use Permit. The request for extension must be filed with the Chief Engineer by September 15, 1989.

Public Notices

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
 County Ben Hur) ss.



I, Wayne L. Bertrand

certify that the attached printed Notice was taken

from the Tyndall Tribune & Register

A newspaper which during the whole time of publication of said notice herein after stated, has been and is printed and published in the City

of Tyndall

County of Ben Hur and State of South Dakota; that the said notice was published in said newspaper on the following two dates:

Aug 30, 1989

Sept. 6, 1989

Wayne L. Bertrand
 (Signature)

Publisher
 (Title)

9-6-89

(Date Signed)

Cost of Printing: 94 lines @ \$24.2 + 50% =
2 wks. to 61 - \$40.95

NOTICE OF HEARING TO REVIEW FUTURE USE WATER PERMIT NO. 4839-3

Notice is hereby given that the Water Management Board will review Future Use Permit No. 4839-3 held by the City of Tyndall for progress made in the development of the water reserved by the Permit and future plans for development of the water reserved by Permit No. 4839-3. This permit was approved February 4, 1982 to reserve 4.31 cubic feet of water per second from ground water less than 60 feet deep for diversion from section 21-T94N-R60W.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends that Permit No. 4839-3 REMAIN IN EFFECT because 1) the reserved water may be developed, 2) there is need for the reserved water 3) the proposed use will be a beneficial use and 4) it is in the public interest.

The Water Management Board will conduct the hearing to review Future Use Permit No. 4839-3 in Room 216, Joe Foss Building, 523 E. Capitol, Pierre SD on September 27, 1989 at 8:45 a.m.

The recommendation of the Chief Engineer is not final or binding upon the Board and the Board is authorized to 1) allow the permit to remain in effect, 2) amend the permit by adding qualifications, 3) cancel the permit for no development or no planned future development, or 4) take no action after it reaches a conclusion based upon facts presented at the public hearing. Any interested person who may be affected by a Board decision and who intends to participate in the hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, must file a written petition with BOTH the permit owner and the Chief Engineer by September 15, 1989. The petition may be informal, but it must include a statement describing the petitioner's interest in the future use permit, the reasons for petitioner's opposition to or support of continuing the future use permit, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained. The permit owner need not file a petition.

The hearing to review Future Use Permit No. 4839-3 will be conducted pursuant to the provisions of SDCL 46-1-14, 46-5-38.1, Board Rules ARSD 74:02:01:27 and contested case procedures contained in SDCL 1-28.

This hearing is an adversary proceeding. The permit owner or any person, after filing a petition, 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 State Supreme Court as provided by law.

Any person wishing a copy of the Chief Engineer's recommendation, further information on this permit or to assure access to the hearing by the handicapped can contact the Water Rights Division, DWRN, Joe Foss Building, Pierre, SD 605 773-3352 for assistance prior to the hearing date. The time of the hearing will be automatically extended for at least 20 days upon written request of the permit owner or any person who has filed a petition to oppose or support continuance of the Future Use Permit. The request for extension must be filed with the Chief Engineer by September 15, 1989.

(Aug. 30 & Sept. 6)

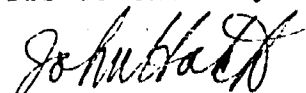
RECOMMENDATION OF CHIEF ENGINEER FOR FUTURE USE
WATER PERMIT NO. 4839-3, City of Tyndall

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Future Use Water Permit No. 4839-3, City of Tyndall, Box 29, Tyndall, SD.

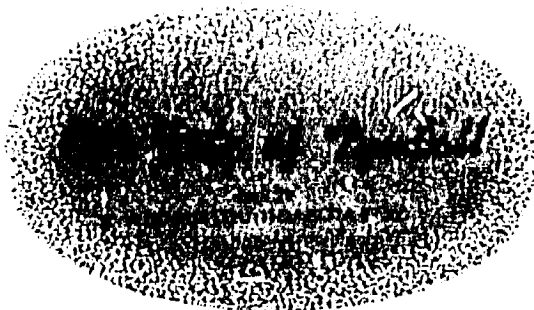
The Chief Engineer is recommending that Future Use Permit No. 4839-3 REMAIN IN EFFECT because 1) there is reasonable probability that there may be development of the water reserved under Permit No. 4839-3, 2) the City of Tyndall has demonstrated a reasonable need for the water reserved by Permit No. 4839-3, 3) the proposed use will be a beneficial use and 4) in the public interest, and that Permit No. 4839-3 be amended by adding the following qualifications:

1. That Permit No. 4839-3 reserves for future use 1872 acre-feet annually. The diversion rate of 4.31 cfs is deleted from Permit No. 4839-3.

And that maintaining the effectiveness of Future Use Permit No. 4839-3 is subject to payment of the \$57.50 fee pursuant to SDCL 46-2-13(2) within 60 days of notice to the City of Tyndall.


JOHN HATCH, Chief Engineer
August 14, 1989

NOTE: The maximum annual acre-feet of full-time pumping represented by 4.31 cubic feet per second (cfs) reserved by No. 4839-3 is 3120 acre-feet. Assuming that the total amount pumped annually would equal 60% of 3120, expected developed pumping of water reserved under Permit No. 4839-3 would be about 1872 acre-feet per year.



from the office of Joseph Dobesh, Mayor

August 15, 1989

SD Department of Water & Natural Resources
The Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dear Ron Duvall:

Please accept this letter as an application for reissue of the water permit presently held by the City of Tyndall #4839-3.

There is a reasonable need existing for the continuance of this water permit for the following reasons, to wit:

First, it is the primary source of water for domestic use for the City of Tyndall.

Second, no other adequate source exists.

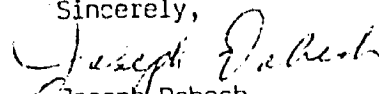
Third, It is necessary for the health and welfare of the residents and for fire protection.

Fourth, the City expended considerable funds in locating, developing and construction of the present source.

Fifth, It is essentially good water.

Sixth, the City use is growing annually and future development is presently being sought which will require substantial additional amounts of water than we are presently using.

Sincerely,


Joseph Dobesh
Mayor

enc. check \$82.50

Hospital - Auditorium - Carnegie Library - Parks - Swimming Pool - Schools

 **Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

October 16, 1989

NOTICE

TO: Joseph Dobash, Mayor
City of Tyndall
Box 29
Tyndall SD 57066

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352



SUBJECT: Deferral of Review of Future Use Water Permit No.
4839-3, City of Tyndall

On September 28, 1989, the Water Management Board deferred the review of Future Use Permit No. 4839-3 pending submission of additional information. The Board will consider limiting the City of Tyndall to two times the amount of permitted water actually put to beneficial use pursuant to Board Rule 74:02:01:24.01. Therefore, your annual water use records for the past 3 years with an estimated use for 1989 need to be submitted to the Division of Water Rights. The Board will use these records as a basis for determining the amount of water to be held in reserve for future use. For example, if 200 acre-feet of water is used annually under existing permit(s), then the future use permit may be limited to 400 acre-feet annually.

The pumping records need to be submitted to the Division of Water Rights by November 1, 1989 and then a hearing before the Board will be scheduled for December 6 or 7, 1989. Notice of the time and place of hearing will be given.

Please contact Ron Duvall, staff engineer, if you have any questions.

cc: John Haak, Assistant Attorney General
Robert Hajek, City Treasurer

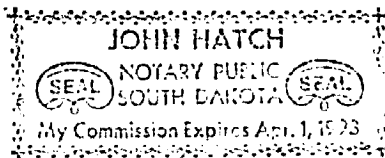


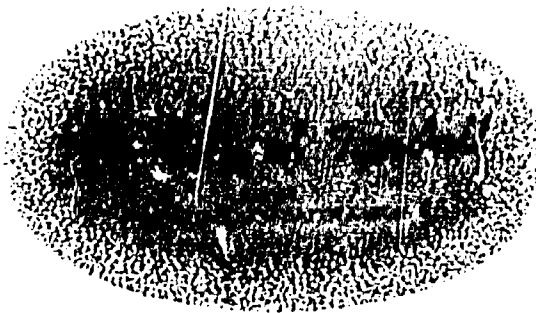
1

Karen Schlaak
KAREN SCHLAACK
Senior Secretary

Sworn to, before me, this 17th day of October, 1989.

John H. Hata
Notary Public





in the office of: _____

October 20, 1989

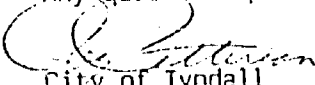


South Dakota Department of
Water & Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

Dear Mr. Hatch:

Received your letter requesting the City's water usage records. The annual water use records for the past three years are, yearly totals 1986-45,296,000 gals. 1987-49,814,000 gals. 1988-61,551,000 gals. 1989-66,792,000 gals. The water usage for the past two years is higher because of the dry years. If it should remain dry our usage will remain high.

Any questions please contact Peg Patterson, City Auditor 589-3481.


City of Tyndall
Peg Patterson
City Auditor

Hospital - Auditorium - Carnegie Library - Parks - Swimming Pool - Schools

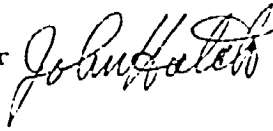
 **Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

November 14, 1989

NOTICE

TO: Joseph Dobesh, Mayor
City of Tyndall
Box 29
Tyndall SD 57066

FROM: John Hatch, Chief Engineer 
Water Rights Division
605 773-3352

SUBJECT: Reconsideration of Future Use Water Permit No. 4839-3,
City of Tyndall

On September 28, 1989, the Water Management Board deferred the review of Future Use Permit No. 4839-3 to review your annual water use pursuant to Board Rule 74:02:01:24.01. Pumping records for the past 3 years with an estimated use for 1989 have been received by the Division of Water Rights. The Chief Engineer's revised recommendation is enclosed.

The Board will reconsider Future Use Permit No. 4839-3 on December 6, 1989 at 1:30 pm in Room 216, Joe Foss Building, 523 E Capitol, Pierre SD. The agenda time is an estimate. The actual time of hearing may be later than 1:30 pm due to prior agenda items. Applicable provisions of the original notice of hearing published on August 30 & September 6, 1989 in the Tyndall Tribune and Register will still apply at this hearing.

cc: John Haak, Assistant Attorney General
Robert Hajek, City Treasurer

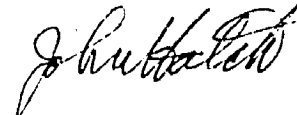
REVISED RECOMMENDATION OF CHIEF ENGINEER FOR FUTURE USE
WATER PERMIT NO. 4839-3, City of Tyndall

Pursuant to SDCL 46-2A-2, the following is the revised recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Future Use Water Permit No. 4839-3.

The Chief Engineer is recommending that Future Use Permit No. 4839-3 REMAIN in EFFECT because 1) there is reasonable probability that there may be development of the water reserved under Permit No. 4839-3, 2) the City of Tyndall has demonstrated a reasonable need for the water reserved by Permit No. 4839-3, 3) the proposed use will be a beneficial use and 4) it is in the public interest, and that Permit No. 4839-3 be amended by adding the following qualifications:

1. That Permit No. 4839-3 reserves for future use 410 acre-feet annually. The diversion rate of 4.13 cfs is deleted from Permit No. 4839-3.

And that maintaining the effectiveness of Future Use Permit No. 4839-3 is subject to payment of the \$27.50 fee pursuant to SDCL 46-2-13(2) within 60 days of notice to the City of Tyndall



JOHN HATCH, Chief Engineer
November 14, 1989

NOTE: The estimated water usage in 1989 by the City of Tyndall is 205 acre-feet (66,792,000 gallons). Doubling this annual use to 410 acre-feet is the recommended amount of water to be reserved by Permit No. 4839-3 pursuant to Board Rule 74:02:31:24.01.

CERTIFICATION

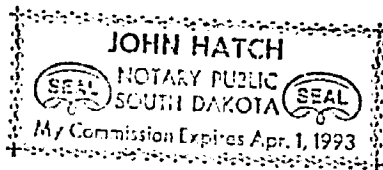
I hereby certify that on November 14, 1989 I have personally deposited with the U.S. Mail a postage prepaid envelopes containing a Notice for Deferral of Review of Future Use Water Permit No. 4839-3 addressed as stated on the notice with a copy of the notice sent to Robert Hajek, City Treasurer at the same address.

Karen Schlaak

KAREN SCHLAAK
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 15th day of November, 1989.



John Hatch
Notary Public

**SOUTH DAKOTA Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

December 12, 1989

NOTICE

Joseph Dobesh, Mayor
City of Tyndall
Box 29
Tyndall SD 57066

Dear Mayor Dobesh:

I am writing in response to action taken by the Water Management Board at the hearing on December 7, 1989 to review Future Use Permit No. 4839-3. The Board allowed the permit to remain in effect and amended Permit No. 4839-3 by adding the qualification on the enclosed "Attachment". The "Attachment" should be placed with the permit. Future Use Permit No. 4839-3 is again subject to review in seven years.

The fee for maintaining the effectiveness of Future Use Permit No. 4839-3 is \$27.50 pursuant to SDCL 46-2-13(2). Please remit the fee within 60 days.

Please contact us if you have any questions.

Very truly yours,



John Hatch, Chief Engineer
Water Rights Division
605 773-3352

enc.

cc: Robert Hajek, Treasurer

AMENDMENT TO FUTURE USE PERMIT NO. 4839-3

City of Tyndall

Pursuant to the December 7, 1989 Water Management Board hearing, Future Use Permit No. 4839-3 was allowed to remain in effect and amended by adding the following qualification:

- 1) That Permit No. 4839-3 reserves for future use 410 acre-feet annually. The diversion rate of 4.31 cfs is deleted from Permit No. 4839-3.

CERTIFICATION

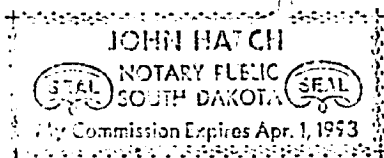
I hereby certify that on December 12, 1989 I have personally deposited with the U.S. Mail, postage prepaid envelopes containing a Notice and Attachment for Future Use Permit No. 4839-3 addressed as stated on the notice with a copy sent to the finance officer at the same address.

Karen Schlaak

KAREN SCHLAACK
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 14th day of December, 1989.



John Hatch
Notary Public

RECEIPT

Division of Water Rights

South Dakota Department of Water and Natural Resources

412028

Pierre, January 12, 1957

RECEIVED OF City of Tyndall, Box 29, Tyndall, SD 57066

the following amount in fees for services rendered as provided for by law:

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

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

Fee to retain Future Use Permit No. 4839-3 after period of seven years.

Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for Certified Copy of _____

Fee for Print Copy of Map _____

Fee for Certifying _____

Fee for _____

(Any Other Work Provided by Law)

Total

27 50

27 50

By

John H. Stetson

Chief Engineer

4839-3



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

March 20, 1990

4839-3

City of Tyndall
Joseph Dobesh, Mayor
Box 29
Tyndall, SD 57966

Dear Mayor Dobesh:

The inspection of your water use system and the inspection of the extent of the application of water to beneficial use, as developed under your Water Permit No. 4839-3 was completed in September, 1987. Your final water right document, the Water License, can now be issued.

Statutes require that we charge a \$50.00 fee for the inspection and issuance of the Water License. Upon receipt of the \$50.00 fee from you, Water Permit No. 4839-3 will be divided into No. 4839-3 (future use portion) and No. 4839A-3. No. 4839A-3 will be processed for licensing.

South Dakota Water Law 46-5-30.1 requires that a permit holder may not divert water until this \$50.00 license fee has been paid. Please contact us if you have any questions.

Sincerely,

GENNY MCMATH
Natural Resources Analyst
(605) 773-3352

NOTE: On check or money order, please specify your permit number. This will insure proper handling of the fee.

RECEIPT

Division of Water Rights

South Dakota Department of Water and Natural Resources

Pierre, March 27, 1936

RECEIVED OF City of Tyndall, Box 27, Tyndall, SD 57066

the following amount in fees for services rendered as provided for by law:

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

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

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

Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. Water Right No. 4839-3

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for Certified Copy of _____

Fee for Print Copy of Map _____

Fee for Certifying _____

Fee for _____

(Any Other Work Provided by Law)

Total

50 00

By [Signature]
Chief Engineer



4839-3

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

NOV 14 1994

4839A-3

4839B-3

Peg Patterson, Auditor
City of Tyndall
PO Box 29
Tyndall, SD 57066-0029

Dear Ms. Patterson:

Enclosed is Future Use Permit No. 4839A-3, Water Permit No. 4839B-3 and Water License No. 4839B-3.

Water Permit No. 4839-3 was divided and reissued as follows:

Future Use Permit No. 4839A-3 reserving 410 acre feet of water annually from groundwater located in Section 21, T94N, R60W; and

Water Permit No. 4839B-3 authorizing diversion of 1.33 cfs from groundwater (one 160' deep well) located in Section 21, T94N, R60W

Further documents or correspondence relevant to the city's future use permit will be referred to, or filed under, Future Use Permit No. 4839A-3.

As long as you beneficially use the water as stated in Water License No. 4839B-3, SD Water Laws provide that you have a continuing right to the use of the water.

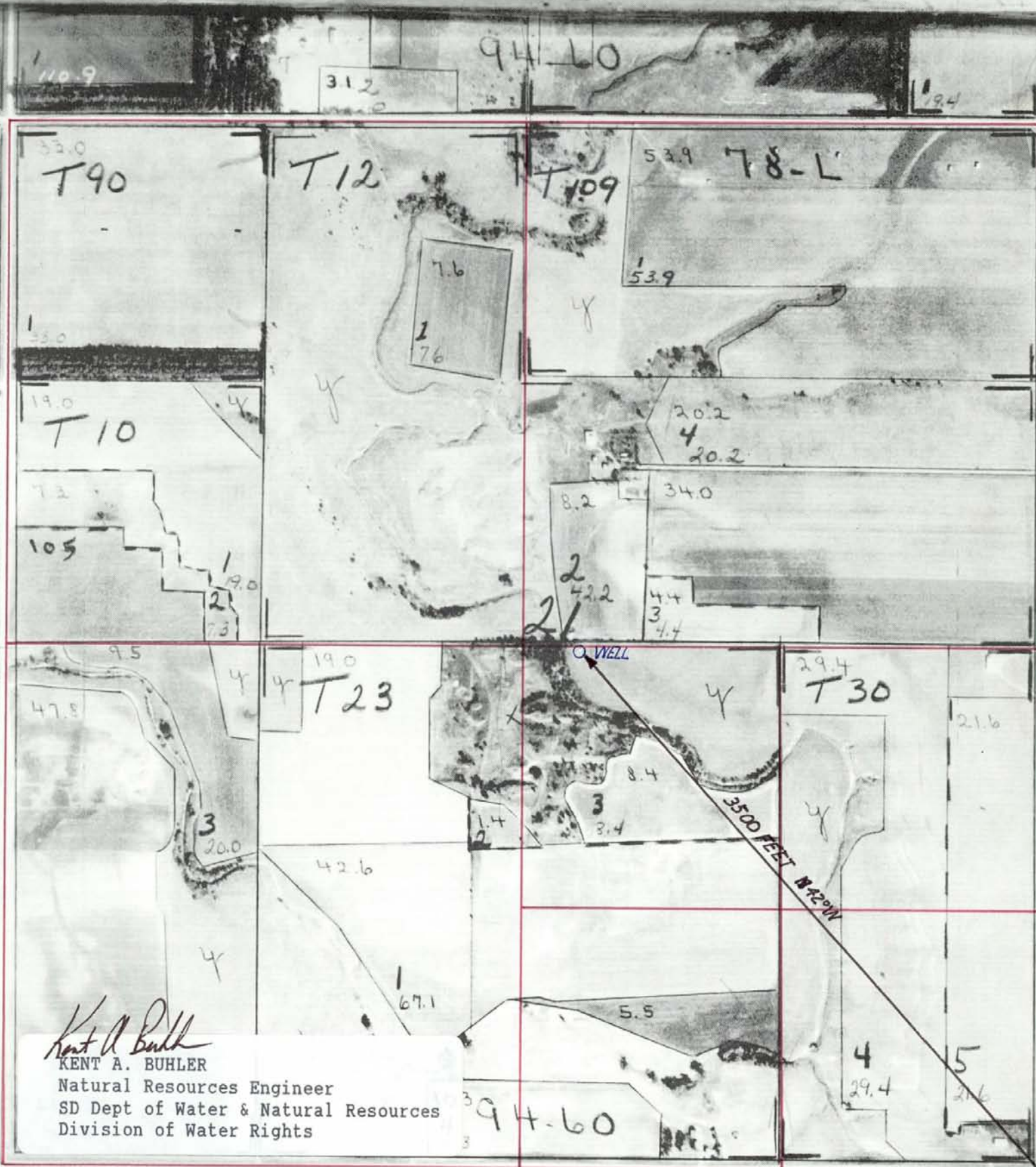
If you have any questions concerning the enclosed water permits and water license, please contact us.

Very truly yours,

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

enclosures

NOT TO SCALE



Kent A. Buhler

KENT A. BUHLER

Natural Resources Engineer

SD Dept of Water & Natural Resources

Division of Water Rights