



United States
Department of
Agriculture

Forest
Service

Salmon-Challis
National Forest
Supervisor's Office

1206 S. Challis
Salmon, ID 83467
208 756-5100

File Code: 2540-1

Date: November 8, 2006

Roger Warner
Water Rights Supervisor
Idaho Department of Water Resources
900 N. Skyline Drive, Suite A
Idaho Falls, Idaho 83402-1718

RECEIVED

NOV 14 2006

Department of Water Resources
Eastern Region

Dear Roger:

This is in response to your request for additional information regarding our Application for Permit for a water right for a new well at the North Ranger District Office.

c. Information relative to the effect on existing water rights.

- i. Not applicable because we are not appropriating a spring or surface stream.
- ii. Enclosure 1 is a map showing existing and permitted wells within one-half mile of the proposed well.
- iii. No specific design or construction technique has been included in the well drilling or pump house design to reduce impacts on other water rights. Water conservation techniques such the installation of low flow volume toilets have been installed in the district office in the past to reduce water use. This new well will replace an existing spring development to provide potable water at the Ranger Station. Construction of the new well and pump house will not change consumptive water use at the station from historic levels. We do not believe that the new well will impact other water rights in the project area.

d. Information relative to sufficiency of water supply.

- i. Water requirements at the North Fork District office are anticipated to be 1200 gallons per day. This is based on an estimate of 400 gallons per day for each of the two residences (4 persons per dwelling at 100 gallons per person per day) and 400 gallons for the Ranger Station Office (20 persons in the office at 20 gallons per person per day). Peak use will likely occur between 6:00 a.m. and 10:00 a.m. when people would likely be showering and fixing breakfast at the residences and opening the office.

Annual use is estimated at 396,400 gallons per year. This is based on 800 gallons per day for the residences time 365 days and 400 gallons per day for the office times 261 work days per year. Daily consumptive use is not anticipated to vary appreciably during the year since irrigation of the lawns and pasture will be done with an irrigation source from the North Fork of the Salmon River.

- ii. The water bearing layer in this area is often found at the bedrock-alluvium interface. Below the alluvium the groundwater is found in fracture flow in bedrock. Based on the Well Drillers report (Enclosure 2) the water bearing strata for this well is fracture flow in bedrock. The well drillers have identified the bedrock material as basalt but the local geology is quartzite so the aquifer is likely quartzite bedrock.



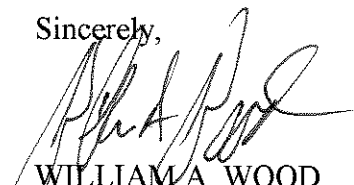
No additional information is available on the properties of this bedrock aquifer.

- e. Information relative to good faith, delay or speculative purposes of the applicant.
 - i. No information is being provided on deeds, leases or applications for rights-of-way because both the well site and the place of beneficial use are located on federal land.
 - ii. Other permits needed include approval of the well site and a drilling permit. Enclosure 3 is a copy of the Well Site Approval from Idaho Department of Environmental Quality. Enclosure 4 is the approved Application for Drilling Permit from Idaho Department of Water Resources.
- f. Information Relative to Financial Resources.
 - i. Enclosure 5 is a Funds Availability Certification Worksheet. This is an internal Forest Service document that the Forest submits to our Contracting Personnel as part of our request for contract action to ensure that funds are available for the proposed project. The Engineering estimate for this project was \$49,105. The firm fixed price contract was awarded at the bid price of \$64,436. Because of this price difference budget adjustments were made to ensure that adequate funds were available to cover the contract costs.
 - ii. Enclosure 6 is the Contracting Package for the new well at the North Fork District Office. Enclosure 7 is the Engineering Drawings for the well drilling contract. These two documents provide all the plans and specifications for the project. Details on the Engineers estimate for the project are included as an attachment to Enclosure 5.
- g. Information Relative to Conflict with the Local Public Interest.

The Salmon-Challis National Forest has contacted the Lemhi County Commissioners, Idaho Department of Fish and Game and the Idaho Department of Environmental Quality to obtain comments on the effects of the construction and operation of the proposed project. Enclosure 8 is a letter from the Idaho Department of Fish and Game that determines that this proposed well will not negatively impact fish or aquatic habitat. Enclosure 9 is a letter from the Lemhi County Commissioners that supports our need for this well and states that drilling of this well does not conflict with other interests of the county. It is our understanding that the required letter from the Idaho Department of Environmental Quality will be sent directly to your office once it has been reviewed in the State Office.

If you have any questions regarding this information please contact Betsy Rieffenberger at (208) 756-5108 or Susan Graves at (208) 756-5138. Betsy is our Forest Hydrologist and can answer questions relative to water rights. Susan is our Facilities Engineer and can answer questions specific to the project design or implementation.

Sincerely,



WILLIAM A. WOOD
Forest Supervisor

Enclosures

Enclosure 1

WATER USES within 1/2 mile of new well

R. 21E.

7 8
18 17

8 9

17 16 75-04169
75-10878

75-10241

75-10031

Century
Telephone

NEW
WELL

75-10032
75-07093

75-10295

75-10298

18 17

19 20

17 16

20 21

North Fork Ranger Station
Water uses within ½ mile of the new well.

Water Right Records

75-04169, a statutory claim in the name of the USDA Forest Service to divert 0.08 cfs from the North Fork of the Salmon River in the NWNW Sec 16 for 10 acres of irrigation. This has not been claimed in the SRBA.

75-07003, a license in the name of the USDA Forest Service to divert 0.112 cfs from a spring in the NESE of Sec 17 for use at the North Fork Ranger Station.

75-10031, decreed in the name of Bobby Jenkins to divert 0.06 cfs from a spring in the SWNW of Sec 16 for domestic and stockwater.

75-10032, an SRBA claim in the name of David Barton to divert 0.22 cfs from a spring in the NWNESW of Sec 16 for irrigation and stockwater.

75-10241, decreed to Nancy and Clifford Cummings to divert 0.04 cfs from a well in the SWNE of Sec 17 for domestic use. *There is a well drillers report for Cummins in the SENE Sec 17.*

75-10295, an SRBA claim by Kenneth Hill, Donald Harmon and Diane Hill to divert 0.04 cfs from a well in the NESESE of Sec 17 for commercial use.

75-10298, decreed to Kenneth Hill, Janet Gosack, Michael Gosack, Donald Harmon and Diane Hill to divert 0.04 cfs from a well in the NWSWSW of Sec 16 for domestic use. *Possible well drillers report.*

75-10878, decreed to Don and Marsha Prestwich to divert 0.06 cfs from a well in the NWNW Sec 16 for domestic use.

Well Drillers Reports apparently lacking a supporting water right application:

Century Telephone Company in the SENE Sec 17.

Map From IDWR Website



Enclosure 2

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

Office Use Only
Well ID No. _____
Inspected by _____
Twp _____ Rge _____ Sec _____
1/4 _____ 1/4 _____ 1/4 _____
Lat: _____ Long: _____

1. WELL TAG NO. D 0045279
DRILLING PERMIT NO. _____
Water Right or Injection Well No. _____

2. OWNER:
Name Salmon / Challis National Forest
Address 1406 S. Challis St
City Salmon State ID Zip 83467

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 24 North ☒ or South ☐
Rge. 21 East ☒ or West ☐
Sec. 17 NE 1/4 NE 1/4 SE 1/4
Gov't Lot _____
County Lemhi
Lat: _____ Long: _____
Address of Well Site North Fork City North Fork
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply. (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
<u>Benitec</u>	<u>0</u>	<u>25</u>	<u>72 bags</u>	<u>Reinforced</u>

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 100
Was drive shoe seal tested? ☐ Y ☐ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>8"</u>	<u>0</u>	<u>100</u>	<u>32</u>	<u>steel</u>	☒	☐	☒	☐
<u>6"</u>	<u>95</u>	<u>105</u>	<u>240</u>	<u>steel</u>	☐	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☐ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method _____

Screen Type & Method of Installation Standard steel

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>105</u>	<u>115</u>	<u>30</u>		<u>6"</u>	<u>SS</u>	☐	☒

10. FILTER PACK

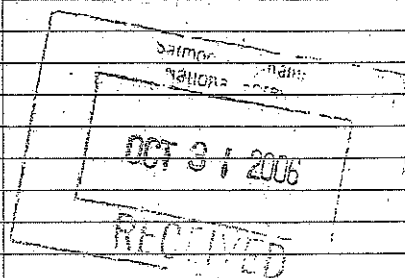
Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
19 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: _____

12. WELL TESTS:
☒ Pump ☐ Bailor ☒ Air ☐ Flowing Artesian
Yield gal./min. _____ Drawdown _____ Pumping Level _____ Time _____
Water Temp. 60°F Bottom hole temp. 60°F
Water Quality test or comments: good

13. LITHOLOGIC LOG: (Describe repairs or abandonment) Water
Depth first Water Encounter 105

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>12"</u>	<u>0</u>	<u>10</u>	<u>Br. Clay</u>		☒
<u>12"</u>	<u>10</u>	<u>15</u>	<u>Rock Basalt Cobbles</u>		☒
<u>12"</u>	<u>15</u>	<u>25</u>	<u>Basalt cobbles</u>		☒
<u>12"</u>	<u>25</u>	<u>65</u>	<u>Basalt</u>		
<u>8"</u>	<u>65</u>	<u>75</u>	<u>Basalt Br. clay</u>	☒	
<u>8"</u>	<u>75</u>	<u>100</u>	<u>Basalt</u>	☒	
<u>8"</u>	<u>100</u>	<u>115</u>	<u>Basalt + gravel</u>	☒	



Completed Depth 115 (Measurable)
Date: Started 10-5-06 Completed 10-10-06

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Company Name M. West Well Drilling Firm No. 313
Principal Driller Michael Brandon Date 10-24-06
and
Driller or Operator II _____ Date _____
Operator I _____ Date _____

Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II.

Enclosure 3



900 North Skyline Dr., Suite B • Idaho Falls, Idaho 83402-1718 • (206) 528-2650

Dirk Kempthorne, Governor
Toni Hardesty, Director

Susan Graves
Salmon/Challis National Forest
1206 S. Challis St.
Salmon ID, 83467

November 30, 2005

Re: Well Site Approval for USFS North Fork Administrative Site, Lemhi County, DEQ # 03-12-26
PWS# 7300088

Dear Ms. Graves:

We inspected the proposed well site for the domestic public water supply well for the USFS North Fork Administrative Site.

This well's location is not greater than 500ft. from any surface water sources, but is greater than 50ft. from any other potential sources of contamination (provided the area is fenced to exclude livestock). This proposed site is acceptable to this office provided the following conditions are met:

- 1) Maintain a 50-foot radius around the wellhead to exclude potential contamination sources.
- 2) A copy of the well driller's permit from the Department of Water Resources and a completed well log must be submitted to this office.
- 3) A complete water quality analysis including coliform bacteria, general mineral, general physical, inorganic and organic chemical constituents of the water produced by the well must be completed and be in compliance with the public drinking water standards. DEQ must approve the water quality test results before the well is placed into domestic service.
- 4) An MPA analysis must to be performed in the springtime during runoff to determine if the surface water from the irrigation ditch will influence the well. If as discussed, the water for irrigation is piped in a manner that surface water is not within 500ft of the well an MPA will not be required.

If you have any questions regarding this letter or if we can be of further assistance, please call me at (208) 528-2650.

Sincerely,

Carlin Feisthamel, P.E.
Water Quality Engineer
Idaho Falls Regional Office

c: Greg Eager, Regional Engineering Manager, DEQ-Idaho Falls

IFRO

32644

Enclosure 4

1/31/03

Drilling Permit No. _____

Drilling Permit I.D. Tag No. D0045279

Water Right Permit No. _____

Injection Permit No. _____

State of Idaho
Department of Water ResourcesAPPLICATION FOR DRILLING PERMIT
(FOR THE CONSTRUCTION OF A WELL)

1. Owner (please print): Salmon/Challis National Forest

2. Mailing Address: 1206 S. Challis St

City: Salmon State: ID Zip Code: 83467 Telephone: (208) 756-5100

3. Proposed Well Location: Twp. 24N, Rge. 21E, Sec. 17, NE 1/4 NE 1/4 SE 1/4;

Gov't Lot No. _____ County Lemhi Lat. _____ : _____ : _____ Long. _____ : _____ : _____

Street Address of Well Site North Fork City North Fork
Give at least name of road + Distance to Road or Landmark

Lot, block and subdivision _____

4. Proposed Use of Well:

☒ DOMESTIC: The use of water for homes, organization camps, public campgrounds, livestock and for any other purpose in connection therewith, including irrigation of up to 1/2 acre of land, if the total use is not in excess of 13,000 gpd; or any other uses, if the total use does not exceed a diversion rate of 0.04 cfs and a diversion volume of 2500 gpd.

Domestic does not include water for multiple ownership subdivisions, mobile home parks, commercial or business establishments, unless the use does not exceed a diversion rate of 0.04 cfs and a diversion volume of 2500 gpd.

NON-DOMESTIC: ☐ Irrigation ☐ Municipal ☐ Industrial
☐ Livestock ☐ Test ☐ Other _____
 Type _____ Number Hd. _____ (Describe)

☐ INJECTION☐ MONITORING: A well bore schematic and map is required for each blanket permit. No. of proposed wells: _____

5. Well Construction Information:

A. ☒ New well ☐ Modify ☐ ReplaceB. Proposed Casing Diameter 8" Proposed Maximum Depth 120'

C. Anticipated bottom hole temperature:

☒ 85 F or less ☐ 85 F to 212 F ☐ 212 F. or more
 (Cold Water Well) (Low Temp. Geo. Well) (Geothermal Well)

6. Construction Start Date: October 5, 20067. Anticipated Well Driller: Mountain Tree Drilling Driller's Lic. No. 543
NOTE: The actual well driller must be identified prior to drilling.8. Applicant's Signature: Michael Frandsen Date 10-4-06

Address (if different than owner): _____

City: _____ State: _____ Zip Code: _____ Telephone: _____

Title: _____
(Owner, Firm Representative, Other)

ACTION OF THE DEPARTMENT OF WATER RESOURCES

This Permit is

APPROVED

Date

October 4, 2006

If approved, this permit authorizes the construction or modification of a well subject to the following conditions. READ CAREFULLY!

GENERAL CONDITIONS:

1. This drilling permit is valid for two (2) months from the above approval date for the start of construction and is valid for one (1) year from the approval date for completion of the well unless an extension has been granted.
2. This permit does not constitute an approval of the District Health Department or the Idaho Department of Health and Welfare, which may be required before construction of the well. All wells must be drilled a minimum distance of 100 feet from a drain field. Domestic and Public Water Supply wells must be drilled a minimum of 50 feet and 100 feet respectively from a septic tank.
3. The well shall be constructed by a driller currently licensed in the State of Idaho who must maintain a copy of the drilling permit at the drilling site.
4. Approval of this drilling permit does not authorize trespass on the land of another party.
5. This permit does not constitute other local, county, state or federal approvals, which may be required for construction of a well.
6. This drilling permit does not represent a right to divert and use the water of the State of Idaho.
7. If a bottom hole temperature of 85 or greater is encountered, well construction shall cease and the well driller and the well owner shall contact the Department immediately.
8. Idaho Code, S 55-2201 - 55-2210 requires the applicant and/or his contractors to contact "Digline" (DigLine is a one-call center for utility notification) not less than 2 working days prior to the start of any excavation for this project. The "DigLine" Number for your area is 1-800-342-1585.
9. Please be advised that this drilling permit should be considered and treated as a preliminary permit. If you are in disagreement with this preliminary permit you have fourteen (14) days of the service date of this permit to petition the Department for reconsideration pursuant to Section 67-5243, Idaho Code.
10. The well tag for the drilling permit/start card shall be securely and permanently attached to the well casing through welding or by the use of four closed end domed stainless steel pop rivets. The tag attachment will be done at the time of completion of the well, and prior to removing the drill rig from the drill site.

SPECIFIC CONDITIONS:

Well can only be hooked up to one office or one household until a valid permit is obtained to do otherwise.

Signature of Authorized Department Representative

Title

Receipt No. E032287 Received by OK Fee \$75⁰⁰ Date 10/4/06

EXTENSION OF DRILLING PERMIT

Extension approved by _____ Approval Date _____

This extension expires: _____

Enclosure 5

Enclosure #5

FUNDS AVAILABILITY CERTIFICATION WORKSHEET

(For all Procurements \$5,000 or more)

TO: FUNDS CONTROL OFFICER				
Name of Requestor	Tony Beke		Phone	208-756-5101
Title	Forest Engineer		E-mail	tbeke
Signature		Date		
DESCRIPTION				
	Item	Service	Grant	Agreement
Check one:				
Brief Description	North Fork Well Drilling: The project includes, but is not limited to: Drilling a drinking water well to an approximate depth of 100 feet, trenching and all work necessary to hook up with existing water system. Including construction of new Pumphouse, installation of all plumbing appurtenances, installation of submersible pump and well accessories, installation of pipe and drains, connection to electrical supply and pump controls and all other work included in the specifications and plans.			
ATTACHMENTS				
	Work Plan	Procurement Request	Grant Proposal	Draft Agreement Operating Plan
Check all applicable				
ACCOUNTING DATA				
Job Code	Budget Object Code	Estimated Costs	Organization Code	
CM1107		\$ 50,000		
Total		<u>50,000</u>		

I certify that funds are available for obligation.

Signature	Title	Date
------------------	--------------	-------------

I certify that the budget object code is correct.

Signature	Title	Date
------------------	--------------	-------------

RQ Document Number (Attach RQ screen print)

Property Specialist's Signature Required, If Nonexpendable Property Is At Any Dollar Value.

Property Specialist Signature	Date
--------------------------------------	-------------

PROPERTY AVAILABLE	YES ☐	NO ☐
EXCESS	YES ☐	NO ☐
SENSITIVE	YES ☐	NO ☐

REQUEST FOR CONTRACT ACTION <i>(Reference FSH 6309.31)</i>		TO: ADMINISTRATIVE SERVICES		Date of Request
		Name and Address of Requesting Unit Salmon-Challis National Forest 50 Hwy 93 South Salmon, ID 83467		
PROJECT	Check the appropriate box ☒ construction of public works ☐ non-personal services ☐ Personal Property			
Name and Project Description The North Fork Well Drilling project includes, but is not limited to: • This item shall consist of the drilling new potable water well at the North Fork Ranger Station. • Hooking up the new water source to the existing water distribution system. • Construction of new Wood Framed Pumphouse. Work includes but is not limited to well drilling, trenching, connecting to existing water lines, connecting to existing tank/pump controls lines, connecting to existing electrical transformers, site grading, and construction of a well Pumphouse.				
LOCATION	State	County	Unit	
North Fork	Idaho	Lemhi	North Fork Ranger District	
Brief description of how project can be located by prospective bidders The project is located at the North Fork Ranger Station. Driving instructions are as follows: from Salmon, Idaho, proceed north on Highway 93 approximately 22 miles to North Fork, turn left (west) onto FS road 030 (Salmon River Road) proceed 500 ft, turn right (north) into the North Fork Ranger District Office Site.				
PROGRAM DATA	Available Appropriations Chargeable	Quarter Apportioned	Estimate of Cost (Confidential)	
	CMI113		50,000	
Recommended Contract Time	Desired Date for Starting Work	Pre-Bid Meeting or Tour Desired	Desired Date for Pre-Bid Mtg.	
30 Days	July 5, 2006	Yes	June 14 or 21	
Location of Pre-Bid Meeting North Fork Ranger Station, North Fork, Idaho.				
Person to Contact for Additional Information (Name)		Address		Telephone Number
Susan Graves/ Tony Beke		1206 South Challis St, Salmon, Idaho 83467		208-756-5100
Qualified Contracting Officers Representative (Name)		Address		Telephone Number
Jeff Parker (Insp) / Kehl Murray (COR)		same		208-756-5161 / 208-624-1153
ATTACHMENTS	☒ Schedule of Items, Pages <u>1</u>		☒ Specifications, Pages <u>106</u>	
☐ Supplementation Specifications, Pages		☒ Plans, Drawings and Maps (Including Itemized List), pages <u>8</u>		
☐ Form 7700-18 (For Roads, Trails and Bridges Only)		☐ List of Interested Prospective Bidders		
Other Attachments or Remarks				
SIGNATURE		TITLE		DATE

DISTRIBUTION

Original - Contracting Office Yellow - Technical S
 Pink - Budget Office Blue - Requesting Unit File

FS-6300-4(3-80)

North Fork Well Drilling
Engineer's Estimate
5/22/2006

ITEM NUMBER	DESCRIPTION	METHOD OF MEAS	UNIT	QUANTITY	PRICE	TOTAL
00118	Wood Frame Pumphouse	LSQ	LS	Lump Sum	14,500	14,500
02510-1	Pipeline, 2" High Density Polyethylene Plastic, 160 P.S.I. With Heat Fusion Joints, Including Trench	DQ	LF	75	40	3,000
02510-2	Daylight Drain	AQ	EA	1	500	500
02510-3	Concrete Thrust Blocks	AQ	EA	1	200	200
02510-4	Drainage Ditch	LSQ	Lump Sum	Lump Sum	750	750
02512	2" Poly Curb Valve and Box	AQ	EA	2	650	1,300
02523	Submersible Well Pump	LSQ	LS	Lump Sum	4,500	4,500
02525-1	Water Supply Wells: Moving Equipment to and From Well Site	LSQ	LS	Lump Sum	5,710	5,710
02525-2	Water Supply Wells: Drilling, 8-Inch Borehole to Receive an 8-Inch Well Casing	AQ	LF	42	60	2,520
02525-3	Water Supply Well: Drilling, 12-Inch Oversized Borehole to Receive an 8-inch Well Casing and Bentonite Grout Seal	AQ	LF	58	70	4,060
02525-4	Water Supply Wells: 8-Inch Steel Casing	AQ	LF	92	20	1,840
02525-5	Water Supply Wells: Bentonite Grout Seal	AQ	94# BAG	18	80	1,440
02525-6	Water Supply Wells: Well Screen	AQ	LF	10	90	900
02525-7	Water Supply Wells: Developing Well	DQ	HR	5	200	1,000
02525-8	Water Supply Wells: Testing Well	DQ	HR	6	250	1,500
260500	Electrical Distribution System	LSQ	LS	Lump Sum	4,800	4,800
312000	Imported Backfill - Special Bedding	AQ	CY	13	45	585
						-
						-
						-
	TOTAL:					\$ 49,105

00118 Lump Sum Pumphouse
02525 Lump Sum well drilling
260500 Lump Sum Electrical Distribution

Judy M 208-³¹³~~313~~-7022

Enclosure 6



United States
Department of
Agriculture

Forest
Service

Idawya
Service
Center

1405 Holipark Dr
Idaho Falls, ID 83401

ENCLOSURE #5

File Code: 6320

Date: August 3, 2006

Route To:

Subject: Purchase Order No. AG-02NV-P-06-0075, North Fork Well Drilling
North Fork Ranger District, Salmon-Challis National Forest

To: Piedmont Environmental Services
104 Big Bee Trail
Morrisville, NC 27560

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Your quote submitted in response to our Request for Quotation No. AG-02NV-S-06-0008 for the North Fork Well Drilling on the North Fork Ranger District, Salmon-Challis National Forest has been selected for award in the amount of \$64,436.25. It is now identified as Purchase Order No. AG-02NV-P-06-0075. Your copy of the Purchase Order is enclosed.

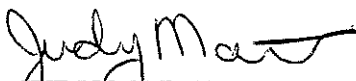
Enclosed are two copies of the Purchase Order. Please sign and return the yellow copy to this office. This Purchase Order requires written acceptance, as required in Simplified Acquisitions, within 10 days of receipt.

Please execute and mail the original Payment Bond within 10 calendar days after receipt of notification of award. You may provide an Alternative Payment Protection or an Irrevocable Letter of Credit in lieu of the Payment Bond. In completing the bond form, please carefully follow the instructions on the reverse side of the form.

After the bond has been accepted by the Contracting Officer, you will be advised regarding the prework meeting and the start work dates. This notice of award is not a notice to proceed with the work. Notice to proceed will be issued at a prework meeting to be held prior to your starting work.

A proposed work progress schedule will be required. Please prepare and submit along with your bond.

Kehl Murray, St. Anthony Work Center, St. Anthony, Idaho, is designated the Contracting Officer's Representative for administering this contract. Please deal directly with him on questions concerning the work. Kehl may be reached at (208) 624-1153.


JUDY MARTIN
Contracting Officer

Enclosures



DESIGNATION OF CONTRACTING OFFICER'S REPRESENTATIVE (COR) (REF. FSM 6309.11 and FSH 6309.32) TO: Kehl Murray	CONTRACT NO.	FILE CODE
	AG-02NV-P-06-0075	6320
	UNIT	
	North Fork Ranger District	
	PROJECT	
	North Fork Well Drilling	
	CONTRACTOR	
	Piedmont Environmental Services	

This is your designation as Contracting Officer's Representative to administer the above contract. Your major duties and responsibilities are contained in the Handbook of Contract Administration. You are delegated full authority under the contract except for the following actions which are reserved for the Contracting Officer:

1. Issue a Notice to Proceed to the Contractor.
2. Approve Change Orders and Amendments.
3. Take action to terminate the contract for default or Government convenience.
4. Make contract adjustments under the Differing Site Conditions clause.
5. Grant extensions of contract time.
6. Approve Assignment of Claims.
7. Make final decisions under the Disputes clause.
8. Make final acceptance under the contract.
9. Make final decisions under the Suspension of Work clause.
10. Make equitable adjustments.
11. Authorize change in amount of Payment Retention.
12. Approve subcontractors.
13. Approve payments.
14. Approve use and possession prior to completion.
15. Enforce the warranty provisions.

CONTRACTING OFFICER'S NAME (Print or Type)	SIGNATURE	DATE
JUDY MARTIN		8/3/06
CC: CONTRACTOR, FOREST, TECHNICAL AND DIVISION, CONTRACT FILES.		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

CONTRACT NO.

AG-02NV-P-06-0075

PROJECT:

North Fork Well Drilling

LOCATION:

North Fork Ranger District
Salmon-Challis National Forest

CONTRACTOR:

Piedmont Environmental Services
104 Big Bee Trail
Morrisville, NC 27560
919-461-8313

AWARDING OFFICE:

IDAWY Acquisition Service Center
1405 Hollipark Drive
Idaho Falls, ID 83401
208-557-5841



ORDER FOR SUPPLIES OR SERVICES

PAGE OF PAGES

1

2

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER 08/03/2006		2. CONTRACT NO. (If any)		6. SHIP TO:	
3. ORDER NO. AG-02NV-P-06-0075		4. REQUISITION/REFERENCE NO. 47499		a. NAME OF CONSIGNEE USDA FOREST SERVICE	
5. ISSUING OFFICE (Address correspondence to) USDA FS IDAWY ACQUISITION SERVICE CENTER 1405 HOLLIPARK DRIVE IDAHO FALLS ID 83401				b. STREET ADDRESS NORTH FORK RANGER DISTRICT PO BOX 780	
				c. CITY NORTH FORK	d. STATE ID
				e. ZIP CODE 83466	
7. TO:				f. SHIP VIA	
a. NAME OF CONTRACTOR PIEDMONT ENVIRONMTAL SCIEN					
b. COMPANY NAME				8. TYPE OF ORDER	
c. STREET ADDRESS 104 BIG BEE TRAIL 216153164 A				☒ a. PURCHASE ☐ b. DELIVERY REFERENCE YOUR: Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.	
d. CITY MORRISVILLE		e. STATE NC	f. ZIP CODE 27560		
9. ACCOUNTING AND APPROPRIATION DATA See Schedule				10. REQUISITIONING OFFICE USDA FS	

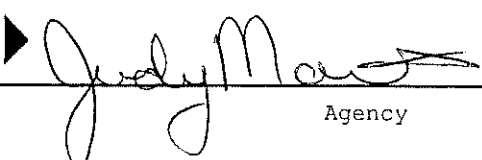
11. BUSINESS CLASSIFICATION (Check appropriate box(es))				12. F.O.B. POINT Destination	
☒ a. SMALL	☐ b. OTHER THAN SMALL	☐ c. DISADVANTAGED	☐ g. SERVICE-DISABLED		
☐ d. WOMEN-OWNED	☐ e. HUBZone	☐ f. EMERGING SMALL BUSINESS	☐ VETERAN-OWNED		

13. PLACE OF		14. GOVERNMENT B/L NO.		15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) 09/30/2006		16. DISCOUNT TERMS NET/30	
a. INSPECTION Destination	b. ACCEPTANCE Destination						

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	Tax ID Number: 21-6153164 DUNS Number: Not Available This Purchase Order for the North Fork Well Drilling is awarded in accordance with the attached specifications, drawings, and terms and conditions. Continued ...					

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT		19. GROSS SHIPPING WEIGHT		20. INVOICE NO.		17(h) TOTAL (Cont. pages)		
	21. MAIL INVOICE TO:								
	a. NAME USDA FS						\$64,436.25		
	b. STREET ADDRESS (or P.O. Box) IDAWY ACQUISITION SERVICE CENTER 1405 HOLLIPARK DRIVE								
c. CITY IDAHO FALLS						d. STATE ID	e. ZIP CODE 83401	\$64,436.25	17(i) GRAND TOTAL

22. UNITED STATES OF AMERICA BY (Signature) 		23. NAME (Typed) JUDY MARTIN TITLE: CONTRACTING/ORDERING OFFICER	
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**ORDER FOR SUPPLIES OR SERVICES
SCHEDULE - CONTINUATION**

PAGE OF PAGES

2

2

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER

CONTRACT NO.

ORDER NO.

08/03/2006

AG-02NV-P-06-0075

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY ORDERED (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)	QUANTITY ACCEPTED (G)
0001	N.Fork Well Drilling Product/Service Code: Y245 Product/Service Description: CONSTRUCT/WATER SUPPLY Accounting Info: 11.ZZ.ZZ.ZZZZZZ.0413.ZZ.ZZZZZZ.ZZ.ZZZ ZZZZZZ.2540.ZZ.CMII1306.ZZZZ Agency Code (2): 11 Program Code (9): ZZZZZZZZZ BOC: 2540 Sub BOC (2): ZZ Cost Org (7): ZZZZZZZ Job Code (8): CMII1306 Sub Cost Org (2): ZZ Budget Yr Start (2): ZZ Budget Yr End (2): ZZ Fund (6): ZZZZZZ Budget Org (7): 0413 Sub Budget Org (2): ZZ Report Category (4): ZZZZ Funded: \$7,089.00 Accounting Info: 11.ZZ.ZZ.ZZZZZZ.0413.ZZ.ZZZZZZ.ZZ.ZZZ ZZZZZZ.2540.ZZ.FMCP0906.ZZZZ Agency Code (2): 11 Program Code (9): ZZZZZZZZZ BOC: 2540 Sub BOC (2): ZZ Cost Org (7): ZZZZZZZ Job Code (8): FMCP0906 Sub Cost Org (2): ZZ Budget Yr Start (2): ZZ Budget Yr End (2): ZZ Fund (6): ZZZZZZ Budget Org (7): 0413 Sub Budget Org (2): ZZ Report Category (4): ZZZZ Funded: \$57,347.25 Total amount of award: \$64,436.25. The obligation for this award is shown in box 17(i).				64,436.25	

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE AG02NVP060075		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 01		3. EFFECTIVE DATE 07/07/2006		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (if applicable)	
6. ISSUED BY IDAWY Acquisition Service Center 1405 Hollipark Drive Idaho Falls, ID 83401		CODE		7. ADMINISTERED BY (if other than item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State, and ZIP Code)				(X)		9A. AMENDMENT OF SOLICITATION NO. AG-02NV-S-06-0008	
				☒		9B. DATED (SEE ITEM 11) 6/15/06	
				☐		10A. MODIFICATION OF CONTRACT/ORDER NO.	
				☐		10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

- ☒ The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted;

or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
☐	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
☐	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
☐	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible).

Solicitation No. AG-02NV-S-06-0008, North Fork Well Drilling, North Fork Ranger District, Salmon-Challis National Forest is amended as follows:

See Page 2 of 2

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Piedmont Environmental Sciences		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) JUDY MARTIN, Contracting Officer	
15B. CONTRACTOR/OFFEROR S. Harder-Harverson	15C. DATE SIGNED 7/09/2006	16B. UNITED STATES OF AMERICA Judy Martin	16C. DATE SIGNED 8/3/06
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

Amendment 01

Questions and Answers on the North Fork Well project are as follows:

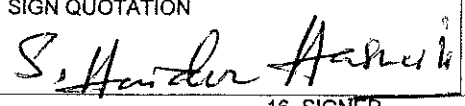
1. Q: Why is the PVC drop pipe glued rather than threaded?
A: It is not glued, requirements in Section 02523 Submersible Well Pump, 2.2 A 2: States that Pipe shall be supplied in pre-threaded 21 foot lengths.
2. Q: Why is there not a low water cutoff for the pump?
A: The specified pump, Grundfos 15SQ15C-290, has built-in protection for run dry and overload. Note 3 on Sheet 5 of the drawings describes how the controller for the probe from the existing well pump panel is to be bypassed.
3. Q: The supply line in and out of the pump house is 2" pipe, but all of the pipe inside the pumphouse is 1" line, is that an error?
A: No, the 1" piping was used to reduce costs of the appurtenances.
4. Q: The pipe assembly inside the pumphouse does not have any brackets or other methods of support.
A: The 2" GSP on each end of the assembly should provide enough support for the 18" height.
5. Q: There is no floor drain required in the pumphouse?
A: No, the foundation plan on Sheet 8 shows that the floor is to slope 1% towards the door to provide drainage from the inside of the building.
6. Q: Is there a heater in the pump house?
A: Yes, Sheet 5 of the drawings shows two 500 W utility heaters to be installed in the pumphouse. These heaters are to be included in Pay Item 260500 Electrical Distribution System.
7. Q: The ditch to be constructed above the well and pumphouse appears to pass through the trees, are they to be protected?
A: The ditch is required to protect the well from surface runoff at a minimum distance of 30 feet. The course can be adjusted on the ground to miss obstacles to the greatest extent possible to miss trees, as long as we maintain the 30 foot protection zone.
8. Q: Access is very difficult from all directions to get a drill rig and concrete trucks to the drill site. What are we expected to do to access the site and how much rehabilitation is required?
A: The site is currently being irrigated so that much wetter and taller grass conditions exist than what will be encountered when drilling takes place. There are two possible routes to the drill site. If simple excavation to level an access route is not sufficient, material from excavation work and material from the borrow source is available to build a more substantial access. This route will serve as a permanent service road for future access to the site, therefore no rehabilitation is required other than repairing damage due to negligence.

REQUEST FOR QUOTATION (THIS IS NOT AN ORDER)			THIS RFQ ☐ IS ☒ IS NOT A SMALL BUSINESS SET-ASIDE		PAGE OF PAGES 1 40		
1. REQUEST NO. AG-02NV-S-06-0008		2. DATE ISSUED 6/15/06		3. REQUISITION/PURCHASE REQUEST NO.		4. CERT. FOR NAT. DEF. UNDER BDSA REG. 2 ☐ AND/OR DMS REG. 1	
5a. ISSUED BY IDAWY Service Center, 1405 Hollipark Dr., Idaho Falls, Id 83401				6. DELIVER BY (Date) See Contract Time			
5b. FOR INFORMATION CALL (NO COLLECT CALLS)				7. DELIVERY ☒ FOB DESTINATION OTHER (See Schedule)			
NAME JUDY MARTIN		TELEPHONE NUMBER AREA CODE 208- NUMBER 557-5841		9. DESTINATION a. NAME OF CONSIGNEE Section C - Location & Description			
8. TO:				b. STREET ADDRESS			
a. NAME		b. COMPANY		c. CITY			
c. STREET ADDRESS				d. STATE e. ZIP CODE			
d. CITY		e. STATE		f. ZIP CODE			
10. PLEASE FURNISH QUOTATIONS TO THE ISSUING OFFICE IN BLOCK 5A ON OR BEFORE CLOSE OF BUSINESS 7/13/06 3:00 p.m. MST				IMPORTANT: This is a request for information, and quotations furnished are not offers. If you are unable to quote, please so indicate on this form and return it to the address in BLOCK 5A. This request does not commit the Government to pay any costs incurred in the preparation of the submission of this quotation or to contract for supplies or services. Supplies are of domestic origin unless otherwise indicated by quoter. Any representations and/or certifications attached to this Request for Quotations must be completed by the quoter.			

11. SCHEDULE (Include applicable Federal, State and local taxes)

ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
	NORTH FORK WELL DRILLING, North Fork Ranger District, Salmon-Challis National Forest, Lemhi County, Idaho.				
	Price Range - between \$25,000 and \$100,000.				
	This solicitation is being issued pursuant to the Small Business Competitive Demonstration Program				
PLEASE PLACE YOUR QUOTE IN SECTION B- SCHEDULE OF ITEMS					
12. DISCOUNT FOR PROMPT PAYMENT ☐		a. 10 CALENDAR DAYS (%) 0	b. 20 CALENDAR DAYS 0	c. 30 CALENDAR DAYS 0	d. CALENDAR DAYS NUMBER 0 PERCENTAGE 0

NOTE: Additional provisions and representations ☒ are ☐ are not attached.

13. NAME AND ADDRESS OF QUOTER			14. SIGNATURE OF PERSON AUTHORIZED TO SIGN QUOTATION		15. DATE OF QUOTATION	
a. NAME OF QUOTER PIEDMONT ENVIRONMENTAL SCIENCES					07/10/2006	
DUNS # 966926610 TIN # 216-15-3164						
b. STREET ADDRESS 104 Big bee Trail Morrisville			16. SIGNER		b. TELEPHONE	
c. COUNTY Wake			a. NAME (Type or print) SYED H. HASNAIN		AREA CODE 919	
d. CITY Morrisville			e. STATE NC		NUMBER 461-8313	
f. ZIP CODE 27560			c. TITLE (Type or Print) OWNER			

AG-02NV-S-06-0008

North Fork Well Drilling

Page 2 of 40

PART I--THE SCHEDULE**SECTION B--SUPPLIES OR SERVICES AND PRICES**

North Fork Well Drilling
 North Fork Ranger District
 Salmon-Challis National Forest
 Lemhi County, Idaho

B-1 - Schedule of Items**Item 1 - North Fork Well Drilling**

<u>ITEM NO.</u>	<u>Item Description</u>	<u>MM*</u>	<u>Estimated Quantity</u>	<u>Pay Unit</u>	<u>Unit Price</u>	<u>Amount</u>
00118	Wood Frame Pumphouse	LSQ	1	LS	\$27,000	27,000.00
02510-1	Water Distribution System: Pipeline, 2" HDPE 160 PSI with Heat Fusion Joints, including Trench.	DQ	75	LF	\$ 18.75.00	1406.25
02510-2	Water Distribution System: Daylight Drain.	AQ	1	EA	\$ 2400	\$ 2400.00
02510-3	Water Distribution System: Concrete Thrust Blocks.	AQ	1	EA	\$ 750.00	\$ 750.00
02510-4	Water Distribution System: Drainage Ditch	LSQ	1	LS	\$ 4700	\$4700.00
02512	Curb Valves and Boxes: 2"	AQ	2	EA	\$ 780	\$ 1560.00
02523	Submersible Well Pump	LSQ	1	LS	\$ 3100	\$ 3100.00
02525-1	Water Supply Wells: Moving Equipment to and from Well Site	LSQ	1	LS	\$ 7000	\$ 7000.00
02525-2	Water Supply Wells: Drilling, 8-inch Borehole to receive an 8-inch wWell Casing.	AQ	42	LF	\$ 42.00	\$ 1764.00
02525-3	Water Supply Wells: Drilling, 12-inch oversized Borehole to receive an 8-inch Well Casing and Bentonite Grout Seal	AQ	58	LF	\$ 50.00	\$ 2900.00
02525-4	Water Supply Wells: 8-inch Steel Casing	AQ	92	LF	\$ 21.00	\$ 1932.00
02525-5	Water Supply Wells: Bentonite Grout Seal	AQ	18	94 Lb Bag	\$ 38	\$ 684.00
02525-6	Water Supply Wells: Well Screen	AQ	10	LF	\$ 80.00	\$ 800.00
02525-7	Water Supply Wells: Developing Well	DQ	5	HR	\$ 100	\$ 500.00
02525-8	Water Supply Wells: Testing Well	DQ	6	HR	\$ 295.00	\$ 1770.00

AQ-02NV-S-06-0008

North Fork Well Drilling
Page 3 of 40

<u>ITEM NO.</u>	<u>Item Description</u>	<u>MM*</u>	<u>Estimated Quantity</u>	<u>Pay Unit</u>	<u>Unit Price</u>	<u>Amount</u>
260500	Electrical Distribution System	LSQ	1	LS	\$ 5,000	\$ 5,000.00
312000	Earthwork: Imported Backfill - Special Bedding	AQ	13	CY	\$ 90.00	\$ 1170.00
TOTAL AMOUNT						\$ 64,436.25

* Designated Method of Measurement:

DQ - Design Quantities, AQ - Actual Quantities,
LSQ - Lump Sum Quantities**B- 2:** Quote on all items. Only quotes to the nearest cent will be accepted.**B- 3 - Note:** Payment for bond premiums in accordance with FAR Clause 52.232-5, Payment Under Fixed-Price Construction Contracts, shall not be in addition to the contract price.

SECTION C--DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK**C- 1 - Project Description and Location****(a) Description of Work.**

The Contractor shall furnish the necessary personnel, materials, equipment, services, and facilities (except as otherwise specified), to perform the work as detailed on the drawings and as stated in the specifications.

The project includes, but is not limited to:

- The drilling of a new potable water well at the North Fork Ranger Station.
- Hooking up the new water source to the existing water distribution system.
- Construction of a new Wood Framed Pumphouse.

Work includes, but is not limited to, well drilling, trenching, connecting to existing water lines, disinfection of water system, connecting to existing tank/pump controls lines, connecting to existing electrical transformers, site grading, and construction of a well pumphouse.

(b) Project Location.

The project is located at the North Fork Ranger Station. Driving instructions are as follows: from Salmon, Idaho, proceed north on Highway 93 approximately 22 miles to North Fork, turn left (west) onto FS road 030 (Salmon River Road) proceed 500 ft, turn right (north) into the North Fork Ranger District Office Site. Well will be located in field to the north of the Administrative Site.

(c) Site Visit. (See Section L, FAR Clause 52.236-27)**(d) Start Work. It is estimated that work will begin on July 24, 2006. Contract time will run continuously.****(e) Period of Performance. (See Section F, FAR Clause 52.211-10.)****C- 2 - Government-Furnished Property - None****C- 3 - General Notes**

- a. All on-site work shall be completed within 30 days of commencement of work, unless otherwise agreed to in writing by the Contracting Officer.
- b. Permits: the Contractor shall be responsible for obtaining all necessary permits required for the Project, including the State Well Permit. The Forest Service will obtain water rights.
- c. No dumping of waste products or debris of any type shall be permitted. All wastes and debris shall be disposed at the County Landfill.
- d. At the time of Contract completion, all extra materials, supplies, debris, waste, and garbage shall be disposed in accordance with State of Idaho regulations. When moving out of the site, the Contractor shall restore the work areas as nearly as possible to original condition.

- e. No trees may be cut or trimmed without prior approval of Contracting Officer.
- f. No camping will be allowed at the project site.
- g. Depending on conditions, normal fire restrictions may apply to activities associated with this project.
- h. A fuel storage plan must be submitted if the Contractor elects to store or dispense fuel on the project site. Fuel storage areas must be approved by the CO, and approved fuel spill kit shall be on site at all times.

C -4 - Definitions

With regards to the Technical Specifications, the terms, Engineer, Authorized Representative of the Contracting Officer, and Contracting Officers Representative, shall mean the Contracting Officer's Representative or COR.

SECTION E--INSPECTION AND ACCEPTANCE**E- 1 - FAR 52.252-2 Clauses Incorporated by Reference (FEB 1998)**

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es): www.arnet.gov/far/

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

52.246-12 Inspection of Construction (AUG 1996)

SECTION F--DELIVERIES OR PERFORMANCE**F- 1 - FAR 52.252-2 Clauses Incorporated by Reference (FEB 1998)**

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es): www.arnet.gov/far/

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

52.242-14 Suspension of Work (APR 1984)

F- 2 - FAR 52.211-10 Commencement, Prosecution, and Completion of Work (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 30 calendar days after receipt of the Notice to Proceed. The time stated for completion shall include final cleanup of the premises.

F- 3 - FAR 52.236-1 Performance of Work by the Contractor (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least 25 percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

SECTION H--SPECIAL CONTRACT REQUIREMENTS**H- 1 - FAR 52.252-2 Clauses Incorporated by Reference (FEB 1998)**

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es): www.arnet.gov/far/ and the Agriculture Acquisition Regulations may be accessed at www.usda.gov/da/procure/agar/subchaph.html#11.

AGRICULTURE ACQUISITION REGULATION (48 CFR CHAPTER 4) CLAUSES

452.236-72 Use of Premises (NOV 1996)

H- 2 - Fire Control

(a) Contractor's Responsibility for Contractor-Caused Fires. The Contractor, whether or not directed by the Forest Service, shall immediately extinguish, without expense to the Government, all fires on or in the vicinity of the project which are caused by Contractor's employees, whether set directly or indirectly as a result of Contractor operations. The Contractor may be held liable for all damages and costs of additional labor, subsistence, equipment, supplies, and transportation resulting from fires set or caused by the Contractor's employees or resulting from contract operations.

(b) Other Fires. For the purpose of fighting forest fires on or in the vicinity of the project which are not caused by the Contractor or the Contractor's employees, the Contractor when requested by the Contracting Officer shall place the employees and equipment temporarily at the disposal of the Forest Service. Payment for such services will be made by the Government at not less than the current rate for fire-fighting services established by the Forest Service in the area concerned.

Any employees and equipment furnished will be relieved from fire fighting as soon as the Forest Service finds that it is practicable to employ other labor and equipment adequate for the protection of the area.

An equitable adjustment in contract time may be made for this period.

(c) Fire Protection Requirements - Fire Plan. At all times during closed fire season period, as specified by State law, the Contractor shall comply with each of the following provisions to the extent applicable to the Contractor's operation under the contract.

(1) Fire Tools. The Contractor will provide for each employee in the contract area at least one approved handtool of a type appropriate in the contract area, such as shovel, pulaski, or ax. Tools required and furnished under (2) and (4) below, shall count toward fulfillment of the above requirement. Where additional tools, beyond those required under (2) and (4) below, are to be provided, the Contractor shall seal such tools in one or more boxes painted red and marked "Tools for Fire Only." All tools required herein shall be kept sharp and in good serviceable condition and maintained at locations to be designated by the Forest Service.

(2) Fire Extinguishers and Tools on Mobile or Stationary Equipment. Each unit of powered equipment used in connection with this contract, including automobiles, trucks, tractors, etc., shall be equipped with serviceable tools and fire extinguishers as follows:

One - fire extinguisher, dry chemical type of not less than 2-1/2 pound capacity with 4 BC or higher rating.

One - shovel, round point #0 lady or equal.

One - ax, 2 pounds or over, 26-inch minimum length, or one pulaski.

One - water container (at least 1-gallon capacity), not required with stationary equipment.

(3) Spark Arresters. Each internal combustion engine shall be provided with a spark arrester or spark arresting device approved by the Forest Service. Exceptions where the Forest Service may approve mufflers, or other equipment in lieu of spark arresters qualified and rated under Forest Service Standard 5100-1a are: (a) small multiposition engines, such as chain saws, shall meet Society of Automotive Engineers J335b standards; (b) passenger-carrying vehicles and light trucks may have baffle-type mufflers with tail pipe; (c) heavy-duty trucks may have a vertical stack exhaust system and muffler, provided the exhaust stack extends above the cab of the vehicle. An exhaust-driven turbocharger is considered to be a satisfactory spark arrester. Internal combustion engine exhaust systems, arresters, and other devices must be properly installed and maintained.

(4) Powersaws. For each powersaw used in connection with this contract, the following will be provided:

One - shovel, round point #0 lady or equal. Shovel must be immediately available for use.

One - Fire extinguisher, containing not less than 8 ounces of extinguisher fluid, or a dry chemical powder-type of not less than 1-pound capacity. The extinguisher must be immediately accessible to the saw operator at all times.

Any fueling or refueling of a powersaw shall only be done in an area which has first been cleared or is free of all material capable of carrying fire; powersaw shall be moved at least 10 feet from place of fueling before starting.

(5) Blasting. Fuse or prima cord shall not be used unless authorized in writing by the COR with special precautions stated.

(6) Smoking. Smoking shall not be permitted within the contract area except on surfaced or dirt roads, at landings, within closed vehicles, in camps, or at other posted places, and shall never be allowed while working or traveling on foot.

(7) Storage of Petroleum and Other Highly Flammable Products. Gasoline, oil, grease, or other highly flammable material will be stored either in a separate building used exclusively for such storage, or at a site where all combustible debris and vegetation is cleared away within a radius of 25 feet. Fire extinguishers and/or sand barrels may be required at such locations specified by the Forest Service when unusually hazardous conditions exist.

(8) Debris Burning and Warming Fires. Burning permits will be required for all debris burning fires. Lunch and warming fires may be allowed in fireproofed areas during periods of low fire danger if and as specified in the fire plan. Such fires must not be left burning unattended.

(9) Precautions for Stoves. Stovepipes on all temporary buildings, trailers, and tents using wood burning stoves, will be equipped with roof jacks and serviceable spark arresters of mesh with openings no larger than 5/8 inch.

All stovepipes, inside and out, will not be closer than 2 feet from any wood or other flammable material or 1 foot if the combustible material is protected by a metal or asbestos shield.

(10) Welding. Welding or use of cutting torches will be permitted only in areas that have been cleared or are free of all material capable of carrying fire. Flammable debris and vegetation must be removed from within a minimum of 10 feet radius of all welding and cutting torch operations. A shovel and a 5-gallon standard backpack water container (filled) with handpump attached, shall be immediately available for use in the event of a fire start.

(11) Fire Plan. Prior to initiating work on the contract area, during the closed fire season period, a fire prevention and suppression plan will usually be prepared. The Contractor and the Forest Service will jointly prepare this plan. Such plan shall include a detailed list of men and equipment at the Contractor's disposal for implementing the plan. The fire plan shall also specify additional measures and/or special requirements, such as Hoot Owl restrictions, necessary during periods of critical fire weather conditions.

When Hoot Owl restrictions are invoked, the Forest Service may curtail or shut down all or portions of a Contractor's operations. The following requirements may be imposed:

(i) All high fire risk operations could be terminated at 1300 local time.

(ii) All burning could be stopped, including debris burning fires.

(iii) Patrolman may be required for a period of 2 hours after high fire risk operations and 1 hour after end of work shift. The Contractor shall provide the patrolman unless the contract is for equipment rental, in which case the Government will provide the patrolman.

(12) Pump and Trailer. Not required.

(13) Burning. Before starting any open burning, the Contractor shall comply with the following:

(i) Submit a burning plan, subject to approval by the Contracting Officer, designed to minimize the impact on air quality and to lessen any fire damage.

(ii) Obtain a burning permit from the District Ranger.

(iii) Use weather forecasts as far as possible in scheduling burning for more favorable dispersal of smoke.

(iv) Fuel shall be reasonably free of dirt and piled to facilitate rapid and complete combustion. Piles shall be tended during burning operations to maintain combustion and to eliminate unnecessary smudges. Piles shall be patrolled during off-work hours to avoid wildfires.

(v) Unless fire season controls dictate otherwise, burning shall be scheduled, as far as practicable, for the most favorable conditions during the burning period.

(vi) Under certain atmospheric conditions, smoke accumulations may become excessive and in these cases, the Regional Forester may, at his/her discretion, prohibit all open burning for definite periods within specific areas of the National Forest.

H- 3 - Cleaning Equipment

Prior to mobilization to the project site, clean all equipment at a location off the National Forest System lands. Clean equipment to remove all dirt, plant parts, and other material that could carry noxious weed seeds. Have the cleaning approved by the CO prior to entering and operating equipment within the National Forest. Cleaning service vehicles and vehicles used for transportation of personnel is not required.

H- 4 - Incidental Payment Items

The intent of the contract is to provide for the complete construction of the project described in the contract. Unless otherwise provided, the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies and perform all work required to complete the project in accordance with drawings, specifications, and provisions of the contract. Payment for contract work will be made only for and under those pay items included in the Schedule of Items. All other work and materials will be considered as incidental to and included in the payment for items shown.

H- 5 - Conformity With Drawings and Specifications

Unless working tolerances are specified, all work performed and materials furnished shall be in reasonably close conformity with lines, grades, cross sections, dimensions, and material requirements shown on the drawings, indicated in the specifications, or designated on the ground. "Reasonably close conformity" is compliance with reasonable and customary manufacturing and construction tolerances.

H- 6 - Local Material Sources

(a) Designated Sources--Sources of local materials will be designated on the drawings. The Government assumes responsibility for the quality and quantity of material in the source. The Contractor shall determine the equipment and work required to produce the specified product.

The Contractor shall utilize all suitable material in the source. The designation of source will include the rights of the Contractor to use certain area(s) for plant site, stockpiles, and haul roads. Any Contractor royalty payment requirements will be stated below.

When materials are subject to weight measurement, the weight/volume relationship used for determination of designed quantities will be shown on the Drawings.

Should the designated source, due to causes beyond the control of the Contractor, contain insufficient suitable material, the Government will provide another source with an equitable adjustment in accordance with the Differing Site Conditions and Changes clauses.

(b) Contractor-Furnished Sources--When the material sources are not designated as provided above or the Contractor elects not to use designated sources, the Contractor shall be responsible for providing the specified product with no adjustment in contract price, unless weight/volume relationship differences between designated source material and Contractor-furnished source material result in financial

disadvantage to the Government. Quality testing shall be the responsibility of the Contractor. Test results shall be furnished to the Contracting Officer.

H- 7 - Samples, Tests, Cited Specifications

Reference made in the contract to specifications, standards, or test methods adopted by AASHTO, ASTM, GSA, or other recognized National technical associations, shall mean specifications, standards, or test methods (including interim or tentative issues) which are in effect on the date of the solicitation.

H- 8 - Barricades, Warning Signs, and Other Devices

The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs, and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. Roads closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated during the hours of darkness. Suitable warning signs shall be provided to properly control and direct traffic.

The Contractor shall erect warning signs in advance to any place on the project where operations may interfere with the use of the road or trail by traffic and at all intermediate points where the new work crosses or coincides with an existing road or trail. All road barricades, warning signs, lights, temporary signals, flagmen and pilot car operators and equipment, and other protective devices, except for special devices, shall conform to Part VI of the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the Federal Highway Administration and applicable safety codes.

Necessary warning signs and guards shall be posted during blasting operations to safeguard the public.

H- 9 - Prewrite Conference

Prior to commencement of work, the Contracting Officer will arrange a meeting with the Contractor to discuss the contract terms and work performance requirements. Also at this meeting such things as work progress schedule and fire prevention and suppression plans shall be developed and established in writing.

PART II--CONTRACT CLAUSES**SECTION I--CONTRACT CLAUSES****I- 1 - FAR 52.252-2 Clauses Incorporated by Reference (FEB 1998)**

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

www.arnet.gov/far/

www.usda.gov/procurement/policy/agar.html

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

- 52.209-6 Protecting the Government's Interest when Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (JAN 2005)
- 52.211-18 Variation in Estimated Quantity (APR 1984)
- 52.219-14 Limitations on Subcontracting (DEC 1996)
- 52.222-3 Convict Labor (JUN 2003)
- 52.222-5 Davis Bacon Act – Secondary Site of Work (JUL 2005)
- 52.222-6 Davis-Bacon Act (JUL 2005)
- 52.222-7 Withholding of Funds (FEB 1988)
- 52.222-8 Payrolls and Basic Records (FEB 1988)
- 52.222-9 Apprentices and Trainees (JUL 2005)
- 52.222-10 Compliance with Copeland Act Requirements (FEB 1988)
- 52.222-11 Subcontracts (Labor Standards) (JUL 2005)
- 52.222-12 Contract Termination - Debarment (FEB 1988)
- 52.222-13 Compliance with Davis-Bacon and Related Act Regulations (FEB 1988)
- 52.222-14 Disputes Concerning Labor Standards (FEB 1988)
- 52.222-15 Certification of Eligibility (FEB 1988)
- 52.222-21 Prohibition of Segregated Facilities (FEB 1999)
- 52.222-26 Equal Opportunity (APR 2002)
- 52.222-27 Affirmative Action Compliance Requirements for Construction (FEB 1999)
- 52.222-35 Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001)
- 52.222-36 Affirmative Action for Workers with Disabilities (JUN 1998)
- 52.222-37 Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001)
- 52.223-3 Hazardous Material Identification and Material Safety Data (JAN 1997) Alternate I (JUL 1995)
- 52.223-5 Pollution Prevention and Right-to-Know Information (AUG 2003)
- 52.223-6 Drug-Free Workplace (MAY 2001)
- 52.224-1 Privacy Act Notification (APR 1984)
- 52.224-2 Privacy Act (APR 1984)
- 52.225-13 Restrictions on Certain Foreign Purchases (FEB 2006)
- 52.228-2 Additional Bond Security (OCT 1997)
- 52.228-11 Pledges of Assets (FEB 1992)
- 52.228-12 Prospective Subcontractor Requests for Bonds (OCT 1995)
- 52.228-14 Irrevocable Letter of Credit (DEC 1999)

- 52.232-5 Payments Under Fixed-Price Construction Contracts (SEP 2002)
- 52.232-23 Assignment of Claims (JAN 1986)
- 52.232-27 Prompt Payment for Construction Contracts (SEP 2005)
- 52.233-1 Disputes (JUL 2002) Alternate I (DEC 1991)
- 52.233-3 Protest After Award (AUG 1996)
- 52.233-4 Applicable Law for Breach of Contract Claim (OCT 2004)
- 52.236-2 Differing Site Conditions (APR 1984)
- 52.236-3 Site Investigation and Conditions Affecting the Work (APR 1984)
- 52.236-5 Material and Workmanship (APR 1984)
- 52.236-6 Superintendence by the Contractor (APR 1984)
- 52.236-8 Other Contracts (APR 1984)
- 52.236-9 Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements (APR 1984)
- 52.236-10 Operations and Storage Areas (APR 1984)
- 52.236-11 Use and Possession Prior to Completion (APR 1984)
- 52.236-12 Cleaning Up (APR 1984)
- 52.236-13 Accident Prevention (NOV 1991)
- 52.236-14 Availability and Use of Utility Services (APR 1984)
- 52.236-17 Layout of Work (APR 1984)
- 52.236-21 Specifications and Drawings for Construction (FEB 1997) Alternate I (APR 1984)
- 52.242-13 Bankruptcy (JUL 1995)
- 52.243-4 Changes (AUG 1987)
- 52.246-21 Warranty of Construction (MAR 1994)
- 52.249-1 Termination for Convenience of the Government (Fixed-Price) (Short Form) (APR 1984)
- 52.249-10 Default (Fixed-Price Construction) (APR 1984)
- 52.253-1 Computer Generated Forms (JAN 1991)

AGRICULTURE ACQUISITION REGULATION (48 CFR CHAPTER 4) CLAUSES

- 452.224-70 Confidentiality of Information (FEB 1988)
- 452.236-71 Prohibition Against the Use of Lead-Paint (NOV 1996)
- 452.236-73 Archeological or Historic Sites (FEB 1988)
- 452.236-74 Control of Erosion, Sedimentation and Pollution (NOV 1996)
- 452.236-76 Samples and Certificates (FEB 1988)

I- 2- FAR 52.204-7 Central Contractor Registration (OCT 2003)

(a) Definitions. As used in this clause-

"Central Contractor Registration (CCR) database" means the primary Government repository for Contractor information required for the conduct of business with the Government.

"Data Universal Numbering System (DUNS) number" means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

"Data Universal Numbering System +4 (DUNS+4) number" means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see the FAR at Subpart 32.11) for the same parent concern.

"Registered in the CCR database" means that-

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database; and

(2) The Government has validated all mandatory data fields and has marked the record "Active".

(b) (1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number-

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at <http://www.dnb.com>; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g) (1) (i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at <http://www.ccr.gov> or by calling 1-888-227-2423, or 269-961-5757.

I-3 - FAR 52.222-50 Combating Trafficking in Persons (APR 2006)

(a) *Definitions.* As used in this clause—

“Coercion” means—

(1) Threats of serious harm to or physical restraint against any person;

(2) Any scheme, plan, or pattern intended to cause a person to believe that failure to perform an act would result in serious harm to or physical restraint against any person; or

(3) The abuse or threatened abuse of the legal process.

“Commercial sex act” means any sex act on account of which anything of value is given to or received by any person.

“Debt bondage” means the status or condition of a debtor arising from a pledge by the debtor of his or her personal services or of those of a person under his or her control as a security for debt, if the value of those services as reasonably assessed is not applied toward the liquidation of the debt or the length and nature of those services are not respectively limited and defined.

“Employee” means an employee of a Contractor directly engaged in the performance of work under a Government contract, including all direct cost employees and any other Contractor employee who has other than a minimal impact or involvement in contract performance.

“Individual” means a Contractor that has no more than one employee including the Contractor.

“Involuntary servitude” includes a condition of servitude induced by means of—

(1) Any scheme, plan, or pattern intended to cause a person to believe that, if the person did not enter into or continue in such conditions, that person or another person would suffer serious harm or physical restraint; or

(2) The abuse or threatened abuse of the legal process.

“Severe forms of trafficking in persons” means—

(1) Sex trafficking in which a commercial sex act is induced by force, fraud, or coercion, or in which the person induced to perform such act has not attained 18 years of age; or

(2) The recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

“Sex trafficking” means the recruitment, harboring, transportation, provision, or obtaining of a person for the purpose of a commercial sex act.

(b) *Policy.* The United States Government has adopted a zero tolerance policy regarding Contractors and Contractor employees that engage in or support severe forms of trafficking in persons, procurement of commercial sex acts, or use of forced labor. During the performance of this contract, the Contractor shall ensure that its employees do not violate this policy.

(c) *Contractor requirements.* The Contractor, if other than an individual, shall establish policies and procedures for ensuring that its employees do not engage in or support severe forms of trafficking in persons, procure commercial sex acts, or use forced labor in the performance of this contract. At a minimum, the Contractor shall—

(1) Publish a statement notifying its employees of the United States Government's zero tolerance policy described in paragraph (b) of this clause and specifying the actions that will be taken against

employees for violations of this policy. Such actions may include, but are not limited to, removal from the contract, reduction in benefits, or termination of employment;

(2) Establish an awareness program to inform employees about—

(i) The Contractor's policy of ensuring that employees do not engage in severe forms of trafficking in persons, procure commercial sex acts, or use forced labor;

(ii) The actions that will be taken against employees for violation of such policy;

(iii) Regulations applying to conduct if performance of the contract is outside the U.S., including—

(A) All host country Government laws and regulations relating to severe forms of trafficking in persons, procurement of commercial sex acts, and use of forced labor; and

(B) All United States laws and regulations on severe forms of trafficking in persons, procurement of commercial sex acts, and use of forced labor which may apply to its employees' conduct in the host nation, including those laws for which jurisdiction is established by the Military Extraterritorial Jurisdiction Act of 2000 (18 U.S.C. 3261-3267), and 18 U.S.C 3271, Trafficking in Persons Offenses Committed by Persons Employed by or Accompanying the Federal Government Outside the United States;

(3) Provide all employees directly engaged in performance of the contract with a copy of the statement required by paragraph (c)(1) of this clause and obtain written agreement from the employee that the employee shall abide by the terms of the statement; and

(4) Take appropriate action, up to and including termination, against employees or subcontractors that violate the policy in paragraph (b) of this clause.

(d) *Notification.* The Contractor shall inform the contracting officer immediately of—

(1) Any information it receives from any source (including host country law enforcement) that alleges a contract employee has engaged in conduct that violates this policy; and

(2) Any actions taken against employees pursuant to this clause.

(e) *Remedies.* In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraphs (c) or (d) of this clause may render the Contractor subject to—

(1) Required removal of a Contractor employee or employees from the performance of the contract;

(2) Required subcontractor termination;

(3) Suspension of contract payments;

(4) Loss of award fee for the performance period in which the Government determined Contractor non-compliance;

(5) Termination of the contract for default, in accordance with the termination clause of this contract; or

(6) Suspension or debarment.

(f) *Subcontracts*. The Contractor shall include the substance of this clause, including this paragraph (f), in all subcontracts for the acquisition of services.

I- 4 - FAR 52.225-9 Buy American Act-Construction Materials (JAN 2005)

(a) *Definitions*. As used in this clause--

"Component" means any article, material, or supply incorporated directly into construction materials.

"Construction material" means an article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

"Cost of components" means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the end product (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the construction material.

"Domestic construction material" means--

(1) An unmanufactured construction material mined or produced in the United States; or

(2) A construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic.

"Foreign construction material" means a construction material other than a domestic construction material.

"United States" means the 50 States and the District of Columbia, and outlying areas.

(b) *Domestic preference*.

(1) This clause implements the Buy American Act (41 U.S.C. 10a - 10d) by providing a preference for domestic construction material. The Contractor shall use only domestic construction material in performing this contract, except as provided in paragraphs (b)(2) and (b)(3) of this clause.

(2) This requirement does not apply to the construction material or components listed by the Government as follows: None.

(3) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(2) of this clause if the Government determines that--

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the requirements of the Buy American Act is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) *Request for determination of inapplicability of the Buy American Act.*

(1) (i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(3) of this clause shall include adequate information for Government evaluation of the request, including--

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American Act applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting

Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(3)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American Act applies, use of foreign construction material is noncompliant with the Buy American Act.

(d) *Data*. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison			
<u>Construction Material Description</u>	<u>Unit of Measure</u>	<u>Quantity</u>	<u>Price (Dollars)*</u>
<i>Item 1:</i>			
Foreign construction material	_____	_____	_____
Domestic construction material	_____	_____	_____
<i>Item 2:</i>			
Foreign construction material	_____	_____	_____
Domestic construction material			
[List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.] [Include other applicable supporting information.] [* Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).]			

I-5 - FAR 52.228-13 Alternative Payment Protections (JUL 2000)

(a) The Contractor shall submit one of the following payment protections:

- (1) Payment Bond
- (2) Irrevocable Letter of Credit (ILC)
- (3) Money orders, drafts, cashier's checks, or certified checks.

(b) The amount of the payment protection shall be 100 percent of the contract price.

(c) The submission of the payment protection is required within 10 days of contract award.

(d) The payment protection shall provide protection for the full contract performance period plus a one-year period.

(e) Except for escrow agreements and payment bonds, which provide their own protection procedures, the Contracting Officer is authorized to access funds under the payment protection when it has been alleged

in writing by a supplier of labor or material that a nonpayment has occurred, and to withhold such funds pending resolution by administrative or judicial proceedings or mutual agreement of the parties.

(f) When a tripartite escrow agreement is used, the Contractor shall utilize only suppliers of labor and material that signed the escrow agreement.

I- 6 - AGAR 452.228-70 Alternative Forms of Security (NOV 1996)

If furnished as security, money orders, drafts, cashier's checks, or certified checks shall be drawn payable to: USDA Forest Service.

I- 7 - FAR 52.232-33 Payment by Electronic Funds Transfer--Central Contractor Registration (OCT 2003)

(a) Method of payment.

(1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term "EFT" refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either-

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Liability for uncompleted or erroneous transfers.

(1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for-

(i) Making a correct payment;

- (ii) Paying any prompt payment penalty due; and
- (iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and-

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(f) *EFT and prompt payment.* A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) *EFT and assignment of claims.* If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register separately in the CCR database and shall be paid by EFT in accordance with the terms of this clause. Notwithstanding any other requirement of this contract, payment to an ultimate recipient other than the Contractor, or a financial institution properly recognized under an assignment of claims pursuant to Subpart 32.8, is not permitted. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) *Liability for change of EFT information by financial agent.* The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(i) *Payment information.* The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

I- 8 - FAR 52.236-7 Permits and Responsibilities (NOV 1991)

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and

regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.

I- 9 - FAR 52.244-6 Subcontracts for Commercial Items and Commercial Components (FEB 2006)

(a) *Definitions.* As used in this clause--

"Commercial item" has the meaning contained in Federal Acquisition Regulation 2.101, Definitions.

"Subcontract" includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) (1) The Contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C.637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (APR 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212(a)).

(iv) 52.222-39, Notification of Employees Rights Concerning Payment of Dues or Fees (DEC 2004) (E.O. 13201). Flow down as required in accordance with paragraph (g) of FAR clause 52.222-39).

(v) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (FEB 2006) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631) (flow down required in accordance with paragraph (d) of FAR clause 52.247-64).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

I-10 - Order of Precedence--Construction

Any inconsistency in this solicitation or contract shall be resolved by giving precedence in the following order:

- (a) The Schedule (excluding the Specifications) (Sections A-H).
- (b) The representations and other instructions (Sections K and L).
- (c) Contract clauses (Section I).
- (d) Other Documents, Exhibits, and Attachments (Section J).
- (e) The Specifications.
- (f) Drawings.

I-11 - Landscape Preservation

(a) The Contractor shall confine operations to within the clearing limits or other areas designated in contract documents, and prevent the depositing of rocks, excavated materials, stumps, or other debris outside of these limits. Material, which falls outside of these limits, shall be retrieved, disposed of, or incorporated in the work as directed by the Contracting Officer.

(b) Operation shall be scheduled and conducted to minimize erosion of soils and to prevent silting and muddying of streams, rivers, irrigation systems, and impoundments (lakes, reservoirs, etc.).

Pollutants such as fuels, lubricants, bitumens, raw sewage, and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or manmade channels leading thereto. Wash water or waste water from concrete or aggregate operations shall not be allowed to enter live streams prior to treatment by filtration, settling, or other means sufficient to reduce the sediment content to not more than that of the stream into which it is discharged.

Mechanized equipment shall not be operated in live streams without written approval by the Contracting Officer.

PART III--LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS**SECTION J--LIST OF ATTACHMENTS**

J- 1 - Davis-Bacon Act: If this is a contract in excess of \$2,000, the Davis Bacon Act requires the Contractor to pay certain minimum wages and benefits to employees working under this contract. These required minimum wages are stated in the attached Wage Decision.

J- 2 - Wage Decision No. ID030017, with MODS. 18, Dated 01/27/06; Page(s) 28-34

J- 3 - Specification(s) – See separate attached document. The following specifications are a part of this solicitation and any resulting contract.

SECTION 00050 - NORTH FORK WELL DRILLING
SECTION 00118 - PUMPHOUSE
SECTION 02135 - WASTE MATERIAL DISPOSAL (LANDFILL)
SECTION 02510 - WATER DISTRIBUTION SYSTEM
SECTION 02512 - CURB VALVES AND BOXES
SECTION 02513 - PLUMBING APPURTENANCES
SECTION 02523 - SUBMERSIBLE WELL PUMPS
SECTION 02525 - WATER SUPPLY WELLS
SECTION 03300 - CONCRETE FOR MINOR STRUCTURES
SECTION 06179 - WOOD TRUSSES AND METAL ROOF PANELS
SECTION 06203 - CARPENTRY
SECTION 07204 - BUILDING INSULATION
SECTION 07900 - CAULKING AND SEALANTS
SECTION 08100 - METAL DOORS AND FRAMES
SECTION 08712 - FINISH HARDWARE
SECTION 09900 - PAINTING
SECTION 10200 - LOUVERS AND VENTS
SECTION 011250 - MEASUREMENT AND PAYMENT
SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL
SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS
SECTION 262726 - WIRING DEVICES
SECTION 312000 - EARTHWORK

J- 4 - Drawing(s) – See separate attached document. The following drawings are a part of this solicitation and any resulting contract.

	Sheet(s)
Title Sheet and Vicinity Map (Cover Sheet	1 of 8
Schedule of Items and Site Layout	2 of 8
Site Plan Close-up	3 of 8
Well Construction and Pump Installation Details	4 of 8
Electrical	5 of 8
Curb Valve, Trench, Daylight Drain, Thrust Block and Drainage Ditch Details	6 of 8
Well Pumphouse and Plumbing Appurtenances	7 of 8
Pumphouse Building Plan and Details	8 of 8

General Decision Number: ID030017 01/27/2006 ID17

State: Idaho

Construction Type: Heavy

Counties: Adams, Bear Lake, Benewah, Bingham, Blaine, Boise, Bonner, Bonneville, Boundary, Butte, Camas, Caribou, Cassia, Clark, Clearwater, Custer, Elmore, Franklin, Fremont, Gem, Gooding, Idaho, Jefferson, Jerome, Kootenai, Latah, Lemhi, Lewis, Lincoln, Madison, Minidoka, Nez Perce, Oneida, Owyhee, Payette, Power, Shoshone, Teton, Twin Falls, Valley and Washington Counties in Idaho.

HEAVY CONSTRUCTION PROJECTS

Superseeds General Decision ID020030001

Modification Number Publication Date

0	03/05/2004
1	06/18/2004
2	07/23/2004
3	08/06/2004
4	08/20/2004
5	10/01/2004
6	10/22/2004
7	01/21/2005
8	06/03/2005
9	06/10/2005
10	07/08/2005
11	08/12/2005
12	08/19/2005
13	08/26/2005
14	09/09/2005
15	09/16/2005
16	09/30/2005
17	11/18/2005
18	01/27/2006

CARP0001-010 06/01/2005

BENEWAH, BONNER, BOUNDARY, CLEARWATER, IDAHO (NORTH OF THE 46TH PARALLEL), KOOTENAI, LATAH, LEWIS, NEZ PERCE AND SHOSHONE COUNTIES

Rates Fringes

Carpenter (Including Cement
Form Work).....\$ 23.51 7.75

ZONE PAY:

ZONE 1	0-45 MILES	FREE
ZONE 2	46-65 MILES	\$2.00/PER HOUR
ZONE 3	66-100 MILES	\$3.00/PER HOUR

ZONE 4 OVER 100 MILES \$4.50/PER HOUR

DISPATCH POINTS:

PASCO (2819 W. SYLVESTER) or Main Post Office of established residence of employee.

SPOKANE (127 E. AUGUSTA AVE.) or Main Post Office of established residence of employee.

WENATCHEE (27 N. CHELAN) or Main Post Office of established residence of employee.

COEUR D' ALENE (1839 N. GOVERNMENT WAY) or Main Post Office of established residence of employee.

MOSCOW (302 N. JACKSON) or Main Post Office of established residence of employee.

* CARP0808-004 01/01/2006

ADAMS, BEAR LAKE, BINGHAM, BOISE, BUTTE, BONNEVILLE, CAMAS, CARIBOU, CASSIA, CLARK, CUSTER, ELMORE, FRANKLIN, FREMONT, GEM, GOODING, IDAHO (SOUTH OF THE 46TH PARALLEL), JEFFERSON, JEROME, LEMHI, LINCOLN, MADISON, MINIDOKA, ONEIDA, OWYHEE, PAYETTE, POWER, TETON, TWIN FALLS, VALLEY AND WASHINGTON COUNTIES

ZONE 1

Rates Fringes

Carpenter (Including Cement
Form Work).....\$ 23.01 7.61

Zone Differential (Add to Zone 1 rates):

Zone 2 - \$1.50

ELEC0073-007 07/01/2005

IDAHO (SOUTH OF THE 46TH PARALLEL) COUNTY

Rates Fringes

Cable splicer.....\$ 26.64 3%+11.73
Electrician.....\$ 24.22 3%+11.73-----
ELEC0073-008 07/01/2005

BENEWAH, BONNER, BOUNDARY, CLEARWATER, IDAHO(NORTH OF THE 46TH PARALLEL), KOOTENAI, LATAH, LEWIS, NEZ PERCE AND SHOSHONE COUNTIES

Rates Fringes

Cable Splicer.....\$ 26.64 3%+11.73
Electrician.....\$ 24.22 3%+11.73

* ELEC0291-007 01/01/2006

ADAMS, BOISE, ELMORE, GEM, PAYETTE, VALLEY AND WASHINGTON COUNTIES

	Rates	Fringes
Cable splicer.....	\$ 27.79	5%+7.90
Electrician.....	\$ 25.26	5%+7.90

ELEC0449-001 06/01/2005BEAR LAKE, BINGHAM, BONNEVILLE, BUTTE, CARIBOU, CLARK, CUSTER, FRANKLIN,
FREMONT, JEFFERSON, LEMHI, MADISON, ONEIDA, POWER AND TETON COUNTIES

	Rates	Fringes
Electrician.....	\$ 24.00	5%+\$8.50

ELEC0449-006 06/01/2005BLAINE, CAMAS, CASSIA, GOODING, JEROME, LINCOLN, MINIDOKA AND TWIN FALLS
COUNTIES

	Rates	Fringes
Electrician		
CONTRACTS \$500,00 AND UNDER..	\$ 19.05	5%+7.35
CONTRACTS OVER \$500,000.....	\$ 21.78	5%+7.65

ENGI0370-014 06/01/2005BENEWAH, BONNER, BOUNDARY, CLEARWATER, IDAHO (NORTH OF THE 46TH
PARALLEL), KOOTENAI, LATAH, LEWIS, NEZ PERCE AND SHOSHONE COUNTIESZONE 1: (Anyone working on HAZMAT jobs working with supplied air shall receive \$1.00 per hour
above classification)

	Rates	Fringes
Power equipment operator - bulldozer		
(D-6 & equivalent and over).....	\$ 23.87	7.87
(To D-6 or equivalent).....	\$ 23.27	7.87
Power equipment operator - crane		
25 TONS AND UNDER (ALL ATTACHMENTS INCLUDING CLAMSHELL, DRAGLINE).....	\$ 23.59	7.87
85 TONS AND OVER, AND ALL		

CLIMBING, OVERHEAD, RAIL AND TOWER.....	\$ 25.24	7.87
OVER 25 TONS UP TO AND INCLUDING 45 TONS (ALL ATTACHMENTS INCLUDING CLAMSHELL, DRAGLINE).....	\$ 23.87	7.87
OVER 45 TONS TO BUT NOT INCLUDING 85 TONS (ALL ATTACHMENTS INCLUDING CLAMSHELL, DRAGLINE).....	\$ 24.14	7.87
Power equipment operator - oiler.....	\$ 23.43	7.87
Power equipment operator - scraper (All, Rubber-Tired).....	\$ 23.87	7.87
(Multiple engine with three or scrapers).....	\$ 24.14	7.87

Zone Differential (Add to Zone 1 rate): Zone 2- \$2.00

BASE POINTS: Spokane, Moses Lake, Pasco, Washington; Lewiston, Idaho

Zone 1: Within 45 radius miles from the main post office

Zone 2: Outside 45 radius miles from the main post office

BOOM PAY: (All Cranes, including Tower)

180' to 250' \$.30 over scale

Over 250' \$.60 over scale

NOTE: In computing the length of the boom on Tower Cranes, they shall be measured from the base of the Tower to the point of the boom.

IRON0014-009 07/01/2005

ADAMS (REMAINDER OF COUNTY), IDAHO (SOUTH OF THE 46TH PARALLEL), LEMHI
(NORTHWEST CORNER), VALLEY (NORTHEASTERN 1/3) AND WASHINGTON
(NORTHWESTERN 1/2) COUNTIES

Rates	Fringes
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Ironworkers: Rebar, Structural, Fence Erector.....	\$ 27.42	13.89
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IRON0014-010 07/01/2005

BENEWAH, BONNER, BOUNDARY, CLEARWATER, IDAHO(NORTH OF THE 46TH
PARALLEL), KOOTENAI, LATAH, LEWIS, NEZ PERCE AND SHOSHONE

	Rates	Fringes
--	-------	---------

Ironworkers: Rebar, Structural, Fence Erector.....	\$ 27.42	13.89
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IRON0732-005 06/01/2005

ADAMS (EAST CORNER), BEAR LAKE, BINGHAM, BLAINE, BOISE, BUTTE, BONNEVILLE, CAMAS, CARIBOU, CASSIA, CLARK, CLUSTER, ELMORE, FRANKLIN, FREMONT, GEM, GOODING, JEFFERSON, JEROME, LINCOLM, LEMHI (REMAINDER OF COUNTY), MADISON, MINIDOKA, ONEIDA, OWYHEE, PAYETTE, POWER, TETON, TWIN FALLS, VALLEY (SOUTHEAST 2/3), AND WASHINGTON (SOUTHEAST 1/2) COUNTIES

	Rates	Fringes
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Ironworkers: Rebar, Structural, Fence Erector.....	\$ 21.55	10.99
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* LABO0155-003 01/01/2006

ADAMS, BEAR LAKE, BINGHAM, BLAINE, BOISE, BONNEVILLE, BUTTE, CAMAS, CARIBOU, CASSIA, CLARK, CUSTER, ELMORE, FRANKLIN, FREMONT, GEM, GOODING, IDAHO (SOUTH OF THE 46TH PARALLEL), JEFFERSON, JEROME, LEMHI, LINCOLN, MADISON, MINIDOKA, ONEIDA, OWYHEE, PAYETTE, POWER, TETON, TWIN FALLS, VALLEY AND WASHINGTON COUNTIES

ZONE 1 (Anyone working on HAZMAT jobs working with supplied air shall receive \$1.00 per hour above classification)

	Rates	Fringes
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Laborer: General/Cleanup.....	\$ 21.13	7.15
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If a project is located in more than one zone the lower zone rate shall apply

Zone Differential (Add to Zone 1 rate): Zone 2 - \$1.50

Zone 1: That area within the State of Idaho located within 30 miles on either side of I-84 from the Oregon-Idaho State Line on the West to the Intersection of I-84 and I-86 in Cassia County, then following I-86 to Pocatello, then following I-15 to Idaho Falls, then following State Highway #20 - 10 miles north to the intersection with Moody Road then following I-15 south from the city of Pocatello to a point 10 miles South of the Southern Boundary of Bannock County extended to the West.

Zone 2: The remaining area of that portion of the State of Idaho south of Parallel 46 (the Washington-Oregon State Line extended eastward to Montana) that is not included in Zone 1 as described above.

LABO0238-013 06/01/2005

BENEWAH, BONNER, BOUNDARY, CLEARWATER, IDAHO (NORTH OF THE 46TH

PARALLEL), KOOTENAI, LATAH, LEWIS, NEZ PERCE AND SHOSHONE COUNTIES

ZONE 1

	Rates	Fringes
Laborer: General/Cleanup.....	\$ 19.81	6.95
Zone Differential (Add to Zone 1 rates): Zone 2 - \$2.00		

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: 45 radius miles and over from the main post office

SUID2003-007 09/03/2003

	Rates	Fringes
Cement Mason/Finisher.....	\$ 20.22	7.98
Laborer: Tamper.....	\$ 8.00	2.84
Pipe layer.....	\$ 14.26	0.00
Power equipment operator - backhoe.....	\$ 18.96	4.42
Power Equipment Operator (Gradall).....	\$ 22.84	3.62
Power Equipment Operator (Loader).....	\$ 21.33	3.43
Power Equipment Operator Excavator.....	\$ 20.24	0.00
Truck Driver (6 Axle Dump).\$	24.70	3.90
Truck Driver, Dump.....	\$ 17.82	0.00
Truckdriver, Water Truck.....	\$ 20.89	4.06

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 00050 - NORTH FORK WELL DRILLING

PART 1 - GENERAL

- 1.1 This item shall consist of the drilling new potable water well at the North Fork Ranger Station and hooking up the new water source to the existing water distribution system. Work includes but is not limited to well drilling, connection to existing water lines, connection to existing tank/pump controls lines, connection to existing electrical transformers, and construction of a well Pumphouse.

The project is located at the Forest Service Administrative Site in North Fork, Idaho, 22 miles north of Salmon, Idaho. The site is accessible year around.

- 1.2 **Measurement and Payment** - Measurement and payment for contract work will be made only for and under those pay items included in the SCHEDULE OF ITEMS. All other work and materials will be considered as incidental to the pay items shown.
- 1.3 **All Submittals** - It will be the Contractor's responsibility to submit information on all items required with such promptness as to cause no delay in the work. Approvals must be obtained before starting work on parts of the project which involves the submittal. Contractor shall allow 10 calendar days for processing of submittals by the Government.
- A. Submit four copies of submittals and shop drawings to the Contracting Officer for approval on the items required herein. Literature which is not marked or otherwise designated to show the exact model and size that the contractor proposes to use will be returned by the Contracting Officer "without action." Circle or check items to be used on submittals. Highlighter pens may print black writing or may not show up at all when copied and should not be used. One copy of all submittals and shop drawings will be returned to the contractor. Information must be adequate to determine compliance with specifications.
- B. **Substitution** - Materials in the specifications may be followed by the words "or approved equal." In these cases, wherever the name or brand of a manufacturer's article is specified, it is used as a measure of quality and utility or a standard. If the Contractor prefers to use any other brand or manufacturer of same quality, appearance and utility to that specified, he shall request substitution as provided below, not less than 10 days before the planned installation of the item. The Contracting Officer will approve or disapprove the request for substitution and his decision shall be final. Unless substitutions are requested within the time stated above and as provided below, no deviation from the specifications will be allowed.

Requests for substitutions will only be considered if contractor submits the following:

1. Complete technical data including drawings, complete performance specifications, test data, samples and performance tests of the article proposed for substitution. Submit additional information if required by Contracting Officer. All items in the above information shall be circled, tagged, or marked in some way to indicate all deviations or differences which the proposed item differs from the originally specified item.
2. Similar data as above for item originally specified. All items shall be marked to identify where/how the proposed substitution will differ.
3. A statement by the Contractor that the proposed substitution is in full compliance with the contract documents, applicable codes, and laws; and that the Contractor takes on the responsibility for any effect upon related work in the project for any substitution and shall pay any additional costs generated by any substitutions.

1.4 **Related Work** - The work shall be in accordance with these specifications. The following is a list of the specifications that are included with this package.

SECTION 00050 - NORTH FORK WELL DRILLING
SECTION 00118 - PUMPHOUSE
SECTION 02135 - WASTE MATERIAL DISPOSAL (LANDFILL)
SECTION 02510 - WATER DISTRIBUTION SYSTEM
SECTION 02512 - CURB VALVES AND BOXES
SECTION 02513 - PLUMBING APPURTENANCES
SECTION 02523 - SUBMERSIBLE WELL PUMPS
SECTION 02525 - WATER SUPPLY WELLS
SECTION 03300 - CONCRETE FOR MINOR STRUCTURES
SECTION 06179 - WOOD TRUSSES AND METAL ROOF PANELS
SECTION 06203 - CARPENTRY
SECTION 07204 - BUILDING INSULATION
SECTION 07900 - CAULKING AND SEALANTS
SECTION 08100 - METAL DOORS AND FRAMES
SECTION 08712 - FINISH HARDWARE
SECTION 09900 - PAINTING
SECTION 10200 - LOUVERS AND VENTS
SECTION 011250 - MEASUREMENT AND PAYMENT
SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL
SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS and CABLES
SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS
SECTION 262726 - WIRING DEVICES
SECTION 312000 - EARTHWORK

END OF SECTION

April 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 00118 - PUMPHOUSE

PART 1 - GENERAL

- 1.1 This item shall consist of constructing a wood frame, insulated pumphouse including pump controls, and other plumbing appurtenances as shown on the drawings and specified herein.
- 1.2 **Measurement and Payment** - Measurement shall be lump sum for the "Wood Frame Pumphouse" complete and ready for use. This price and payment shall constitute full compensation for all labor, material, and equipment required to complete the pumphouse including pump controls, and other plumbing appurtenances as Shown on the Drawings and specified herein and include all work within 10 feet of the building footprint.
- 1.3 **Related Work** - The work shall be in accordance with the following subsidiary specifications. The subsidiary specifications are referred to in the text by the Section designation only.

Section 02513 – Plumbing Appurtenances
Section 03300 - Concrete for Minor Structures
Section 06179 - Wood Trusses and Metal Roof Panels
Section 06203 - Carpentry
Section 07204 - Building Insulation
Section 07900 – Caulking and Sealants
Section 08100 - Metal Doors and Frames
Section 08712 – Finish Hardware
Section 09900 - Painting
Section 10200 – Louvers and Vents
Section 312000 - Earthwork

PART 2 - PRODUCTS

PART 3 - EXECUTION

- 3.1 **All Products and Execution** - Shall be in accordance with the drawings and specifications covered in the related work.

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 02135 - WASTE MATERIAL DISPOSAL (LANDFILL)

PART 1 - GENERAL

- 1.1 This item shall consist of loading, handling, hauling, and disposal of excess materials and trash resulting from construction activities. The waste disposal site shall be off National Forest lands at the county landfill. The Contractor shall be responsible for all costs, royalties, arrangements, procurement, cleanup, and work associated with a waste disposal area.
- 1.2 **Measurement of Payment** - No separate measurement or payment will be made for disposal of waste material disposal, rather payment will be considered to be incidental to other items of work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

- 3.1 All unsuitable excavated material, oversize boulders, stumps, brush, slash, roots, and other vegetable refuse resulting from the clearing and grubbing operation along with other construction refuse shall be hauled to a disposal area designated by the Contracting Officer.
- 3.2 All trash and construction debris resulting from installation, demolition, and construction are the responsibility of the Contractor and shall be removed and disposed of legally at the county Landfill.

END OF SECTION

April 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 02510 - WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.1 Summary

- A. This Section shall consist of installing the following:
 - 1. Potable water distribution pipe and fittings.
 - 2. Concrete thrust blocks.
 - 3. Drains.
- B. This Section shall also include the flushing, testing and disinfection of waterlines.
- C. Related Sections include the following:
 - 1. Section 312000 "Earthwork"
 - 2. Section 02512 "Curb Valves and Boxes."
 - 3. Section 03300 "Concrete for Minor Structures"

1.2 Definitions

- A. GSP: Galvanized Steel Pipe
- B. HDPE: High Density Polyethylene plastic.
- C. PVC: Polyvinyl chloride plastic.

1.3 Submittals

- A. Product Data: For the following:
 - 1. Pipe and fittings.
 - 2. Drain and vent screens.
- B. Plan for dewatering, disposal of testing water, and disinfection of new and existing waterlines and tank.

1.4 Quality Assurance

- A. All work is to be completed according to applicable Federal, State and Local codes. This work includes, but is not limited to, materials, installation, testing and disinfection.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. NSF Compliance:
 - 1. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.5 Minimum System Requirements

- A. Unless otherwise noted, the minimum working pressure for piping and specialties shall be 160 psig.

1.6 Delivery, Storage and Handling

- A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- B. Protect stored piping from moisture and dirt. Elevate above grade.
- C. Protect flanges, fittings, and specialties from moisture and dirt.
- D. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 Project Conditions

- A. Government or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify the Contracting Officer not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without the Contracting Officer's written permission.
 - 3. Service interruption shall not exceed 8 hours.

1.8 Coordination

- A. Coordinate connection to existing water lines with Contracting Officer.

- B. Verify piping materials, sizes, entry locations and pressure requirements are compatible with connection point.
- C. Coordinate other utility impacts.

1.9 Measurement and Payment

- A. Payment will be as listed in the Schedule of Items for the following items:
 - 1. Pipeline and trench: Linear Feet of pipe of each type and size designated, including fittings, trench, connections to existing waterlines, and incidentals necessary to complete the item.
 - 2. Daylight Drains: Number of daylight drains, including excavation, galvanized steel pipe, fittings, screen, suction strainer, riprap, backfill and all work within 10 feet of the drain outlet, as shown on the Drawings.
 - 3. Concrete Thrust Blocks: Number of thrust blocks of each size designated on the Drawings.
 - 4. Drainage Ditch: Lump Sum for all work required to construct the drainage ditch as shown on the Drawings.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All waterlines, pipes, and fittings shall be new and unused, of the type, pressure rating or class, and size specified and as show on the drawings.

2.2 PIPES AND FITTINGS

- A. PVC: ASTM D 1785, Schedule 80; solvent-cemented joints.
 - 1. Solvent Cement: ASTM D 2564.
 - 2. Socket Fittings: PVC, Schedule 80, ASTM D 2467.
- B. HDPE:
 - 1. Pipe, AWWA C901:
 - a. Material Designation: PE 3408 resin
 - b. Material Classification: ASTM D1248
 - c. Minimum Cell Classification: ASTM D 3350, 345434C
 - d. Dimension Ratio and Minimum Pressure Rating: DR11, 160 psig
 - 2. Fittings:

- a. Molded HDPE Fittings: ASTM D 3350, PE 3408 resin, butt-fusion type, made to match HDPE pipe dimensions and class.
 - b. Insert Fittings: Not allowed.
 - c. Transition Fittings to non-HDPE Pipe: Approved by HDPE pipe manufacturer.
- 3. Pipe Larger than 2-inch Diameter: Provide in 40-foot lengths rather than in rolls.
- 4. Pipe and Fittings 4-inch Diameter and Larger: Conform to AWWA C906 in addition to above requirements.
- 5. Pipe Insulation: Urethane foam, 2-inch thick, wrapped around pipe.
 - a. Outer Jacket: 60-mil thick HDPE, ASTM D 3350, 345434C cell classification.
- C. Galvanized Steel: ASTM A53, Schedule 40, threaded ends meeting ASME B1.20.1.
 - 1. Fittings: Threaded, ASTM A 338.

2.3 PIPING SPECIALTIES

A. Flexible Connectors:

- 1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.
- 2. Ferrous Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

B. Daylight Drains and Drainage Ditches

- 1. Suction Strainer
 - a. Design: Galvanized (zinc plated), cold rolled, 16-gage steel strainer with threaded end to fit GSP drain pipe size.
 - b. Model: "SSS" Series, Round Hole Strainer, as manufactured by Campbell Manufacturing Inc., or an approved equal.
- 2. Insect Screens
 - a. For Daylight Drains: 4-mesh woven wire cloth, galvanized steel.
 - b. For Water Storage Tank and Spring Development Drains and Overflows: 24-mesh woven wire cloth, type 304 stainless steel standard grade, non-corrodible. To be secured to suction strainer using 2 pipe clamp as shown on the Drawings.
- 3. Riprap

- a. The stones be obtained from on-site excavated material or a borrow source designated by the Contracting Officer. Stones used shall be such that not more than 10 percent of the individual stones shall have a perimeter less than 6 inches in the smallest section. All of the stones shall have a volume less than a 1/4 cubic foot.
- b. The stones shall be sound, hard, durable and free from laminations, fractures, or other structural defects. They shall be of such quality that they will not disintegrate on exposure to water or weathering.

PART 3 - EXECUTION

3.1 TRENCHING, BEDDING, AND BACKFILL

- A. Refer to Section 312000 "Earthwork" for excavating, trenching, bedding, and backfilling.

3.2 PIPING INSTALLATION

- A. Construct the water system to the lines and grades shown or established in the field.
- B. Stake locations of waterlines as shown on the drawings. Waterline location shall be approved by the Contracting Officer before installation of waterline.
- C. All water line installation shall be graded to a minimum of 2% to drain.
- D. All pipe, fittings, and appurtenances shall be handled and installed in strict conformance to the manufacturer's recommendations.
- E. Drains, valves, and other regulating and controlling devices shall be installed in the line where called for on the drawings.
- F. The interior of all pipe, fittings, and other accessories shall be kept as free as possible from dirt and foreign matter at all times. Each piece of line as it is laid shall be cleaned of all debris. When the pipeline has become dirty on the inside during shipment or storage, it shall be swabbed out by drawing a damp swab through the line before placing in trench. Care shall be exercised to keep all joining surfaces clean. Any pipe with contaminated or damaged joining surfaces, which cannot be satisfactorily cleaned or repaired, shall be discarded. Under no circumstances shall pipe be installed in water, and no pipe shall be installed when trench conditions or the weather is unsuitable for such work. At all times when work is not in progress, all open ends of the pipe and fittings shall be securely closed to the satisfaction of the Contracting Officer so that no trench water, rodents, earth, or other substance will enter the pipe or fittings.
- G. Any section of pipe already installed and found to be defective shall be removed and replaced with new pipe at the Contractor's expense.

- H. Culvert and Irrigation Line Crossing: Where water line crosses a road culvert or irrigation lines, adjust grade of water line to provide a minimum of 12 inches of separation between the water line and culvert, maintaining slope of water line to drain.
- I. A minimum of 18 inch lateral separation shall be maintained between electric and water lines in the same trench.
- J. Bury piping with depth of cover over top at least 60 inches, with top at least 12 inches below level of maximum frost penetration.
- K. Install underground piping with restrained joints at horizontal and vertical changes in direction as indicated on the Drawings. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
- L. Thrust Blocks: Install as indicated on the Drawings.
 - 1. Size: 2 cubic feet, unless otherwise shown on the Drawings.
 - 2. Placement: Place and form to give the full required support to the pipe. Install so pipe can later be removed from trench without damage to the pipe or the thrust block.
- M. Cutting and Handling of Pipe
 - 1. Cutting of pipe for closure pieces or for other reasons shall be done in a neat manner by methods, which will not damage the pipe. The pipe and fittings shall be handled in such a manner as to insure delivery and final placement in good, undamaged condition. Particular care shall be exercised not to injure the pipe surfaces or coatings. Damaged pipe shall not be used in the work.
- N. Laying Pipe
 - 1. No pipe shall be placed in the trench until the Contracting Officer has approved the trench and bedding.
 - 2. Pipes shall be placed true to the lines and grades shown on the Drawings and as specified.
 - 3. Each section of the pipe shall rest upon the pipe bed for the full length of its barrel.
 - 4. Backfill the pipe a minimum of one-foot within 24 hours after installing the pipe in the trench, leaving the joints and one foot of pipe on each side of each joint exposed until testing is complete.
 - 5. When work is not in progress, securely close open ends of pipe and fittings.
 - 6. When high density polyethylene or solvent weld joint pipe is used, it shall be weaved in the trench to provide horizontal slack in the line for expansion and contraction.
 - 7. High density polyethylene pipe shall be allowed to cool to within 20°F of the shaded trench bottom temperature before backfilling.
 - 8. When pipes are installed in a structure or utility box, they shall be adequately supported.

9. Use proper fittings in order to follow the required line and grades.
10. When more than one pipeline is in the same trench, the pipes shall be separated by at least eight horizontal inches, or as shown on the Drawings.
11. Bends that result in joint tension or permanent pipe deformation are prohibited.

O. Pipe Alignment and Grade

1. Complete water system shall be constructed to drain by gravity to drains for seasonal shutdown. Waterlines shall be constructed to drain at a minimum grade of 2%. Waterlines not meeting this requirement shall be removed by the Contractor and replaced at no cost to the Government.
2. Pipelines may be relocated slightly, if necessary, to avoid existing obstacles. However, all lines shall be installed to slope towards drains as shown on the drawings.
3. Deflections from a straight line or grade, as required by vertical curves, horizontal curves, or offsets, shall not exceed the manufacturer's recommended maximum joint deflection or curvature for their pipe. If the alignment requires curvature or deflections in excess of these limitations, the Contractor shall provide special bends, standard fittings, or a sufficient number of shorter lengths of pipe to provide angular deflections at the joints within the limit set forth by the manufacturer.
4. Bends resulting in tension on joints will not be allowed.

P. Branch Connections

1. Branch connections to the main shall be made with tees.
2. Horizontal tees for waterline laterals shall not be permitted. The branch side of tees shall be up when drainage is toward the tee, and down when drainage is away from the tee.
3. Waterline tees shall be the same diameter as the largest pipe connected to the tee.

Q. Pipe Joints

1. Joints shall be made, using jointing materials and applied with the proper accessories, in accordance with the manufacturer's instructions. Completed joints shall be watertight, and capable of passing the required hydrostatic testing. If pipe and fittings are assembled with a lubricant, it must be nontoxic. Where connections are made between new construction and existing lines, the connections shall be made by using fittings to suit the actual conditions.
2. Threaded Joints:
 - a. Thread pipes with tapered pipe threads according to ASME B1.20.1, apply tape or joint compound, and apply wrench to fitting and valve ends into which pipes are being threaded.
 - b. Exposed threaded pipe joints on galvanized steel pipe shall be painted with mastic following the manufacturer's application procedures.

- c. Field cut ends shall be squared off by grinding or filing; ends shall be reamed with all chips and flakes removed.
- d. Field cut threads or machined joints shall be made with sharp tools to sharp finished ends.

3. HDPE Heat-Fusion Joints

- a. According to ASTM D 2657 and piping manufacturer's written instructions.
- b. The joining method shall be butt fusion method and shall be performed in accordance with the pipe manufacturer's recommendations. Butt fusion equipment used in the joining procedures shall be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to, temperature requirements, alignment, and fusion pressures.
- c. Personnel trained in butt fusion techniques by the manufacturer of the pipe, shall supervise or perform butt fusion operations.
- d. Butt fusion shall be performed between pipe ends or pipe ends and fitting and valve outlets, of like outside diameter and wall thickness, SDR or DR. Butt fusion joining between same diameters but unlike wall thickness shall not be permitted. Transitions between unlike wall thickness shall be made with a transition nipple (a short length of the heavier wall pipe with one end machined to the lighter wall) or by mechanical means.
- e. Branch connections to the main shall be made with polyethylene fittings, and butt fused.
- f. Bent Strap Test: On each day that butt fusions are to be made, perform a "Bent Strap Test." The first fusion of the day shall be a trial fusion. The trial fusion shall be allowed to cool completely, and then fusion test straps shall be cut out. The test strap shall be 12" (min) or 30 times the wall thickness in length with the fusion in the center, and 1" (min) or 1.5 times the wall thickness in width. Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.

4. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

- a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
- b. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.

5. Dissimilar Materials Piping Joints

- a. Polyethylene pipe and fittings may be joined to other materials by means of couplings designed for joining polyethylene pipe to another material. Couplings shall be fully pressure rated and fully thrust restrained such that

when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the coupling will cause the pipe to yield before the coupling disjoints.

- b. Use adapters compatible with both piping materials, outer diameters, and system working pressure.
- R. Install piping by directional boring, tunneling, jacking, or combination, under streets and other obstructions that cannot be disturbed.

3.3 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping, as shown on the Drawings.
- B. Wrap all buried, nonmetallic, nonperforated piping with tracer wire.
- C. Underground warning tapes and traced wire are specified in Section 312000 "Earthwork."

3.4 DAYLIGHT DRAINS

- A. Transition from water system piping to galvanized steel pipe 10-feet from atmospheric outlet of daylight drain.
- B. Install suction strainer and insect screens on the atmospheric outlet of daylight drains. Attach insect screens to pipe with stainless steel hose clamps.
- C. Minimum grade of slope of drain shall be 2%.
- D. Place riprap securely around outlet with a minimum 12" vertical air gap.

3.5 DRAINAGE DITCH

- A. Shall be constructed as Shown in on the Drawings.
- B. Shall be constructed across contours to collect possible surface flows and drain away from well development.
- C. Slope a minimum of 2 percent along flow line to drain.
- D. Be constructed a minimum of 30 feet away and uphill of the well development. And drain below the elevation of the well head.

3.6 HYDROSTATIC TESTING

A. General

1. The Contractor shall conduct pressure and leakage tests on all newly constructed portions of the water system, including water mains, service lines, fittings, valves, and hydrants. New waterlines that are extensions or modifications of an existing water system shall be tested at the test pressure specified here unless the Contracting Officer specifies another pressure. Pneumatic testing will not be allowed.
2. The contractor shall ensure that any appurtenance attached to the pipeline at the time of testing is rated to withstand the pressures that will exist during testing.
3. Conduct piping tests before joints are covered and after thrust blocks, if required, have hardened sufficiently. Joints shall remain uncovered until testing is completed satisfactorily.
4. The Contractor shall furnish the pump, pipe, gauge, measuring device, connections, and all other necessary equipment, and shall furnish the necessary personnel to conduct the tests. All equipment, gauges, and attachments shall be subject to approval by the Contracting Officer.
5. The Contracting Officer shall be present during the testing period.
6. Existing waterlines shall be tested in sections not to exceed 2,000 ft in length or a maximum pressure differential of 30 psi in the test section.
7. No paints, asphalts, tars, enamels, or other types of pipe compounds shall be used to eliminate leaks.

B. Pressure and Leakage Tests on new waterlines and appearances.

1. The test pressure shall:
 - a. Equal at least 125% of the normal working pressure at the highest elevation of the test but not exceed 160 psi at any point being tested.
 - b. Not exceed the thrust restraint design pressures.
 - c. Not vary by more than +/- 5 psi from the established test pressure.
 - d. Not exceed twice the rated pressure of valves when the test section includes closed valves.
 - e. Be not less than 100 psi for all piping within buildings.
2. Pressure Test Procedure
 - a. Equipment: The test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Contracting Officer.
 - b. Preparation: Fill pipeline 24 hours before testing. Use only potable water. Each valved section of pipeline shall be slowly filled with water and all air shall be expelled from the pipeline. Apply test pressure to stabilize system.
 - c. Pressurization:
 - 1) Increase pressure in 50-psig increments and inspect each joint between increments.

- 2) Hold at test pressure for 1 hour.
 - 3) Decrease to 0 psig.
 - 4) Slowly increase again to test pressure and hold for 1 more hour. If the test pressure cannot be sustained within ± 5 psi during this time, then the system will be determined to have leakage.
 - 5) Leakage shall be verified by the Contractor and the Contracting Officer.
 - 6) Locate and repair leaking joints with new materials and repeat test until leakage is within allowed limits. All visible leaks are to be repaired regardless of the amount of leakage.
- d. Examination: All exposed pipe, fittings, valves, and joints shall be carefully examined. Any cracked or defective pipe, fitting, or valve discovered shall be repaired or replaced by the Contractor at his own expense with new material and the test repeated until satisfactory to the Contracting Officer.
3. Results
- a. The Contractor shall furnish a written report to the Contracting Officer describing the results of each test. The report must identify the specific portions of the pipeline tested, the pressure, the duration of the tests, and the amount of leakage.

3.7 CLEANING AND DISINFECTION

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:
 - a. Preliminary Flushing: After the pressure and leakage testing has been completed, all water pipes shall be flushed thoroughly with the water pressure available. If no hydrants or other outlets are installed at the end of the waterline, an outlet shall be provided large enough to develop a velocity in the waterlines of at least 2.5 feet per second (see Table 1 for necessary flows). No site should be chosen for flushing unless it has been determined that drainage is adequate and no damage will result from any drainage.

TABLE 1
Required Flow in Gallons per Minute (GPM) to
provide 2.5 feet per second Flushing Velocity

Type of Pipe			
Nominal Pipe Size (inches)	HDPE (SDR 11)	PVC (160 psi)	Galv. Steel (Schedule 40)
1	7	9	7
1 ¼	11	15	12
1 ½	14	19	16
2	22	30	27
2 ½	-	44	38
3	49	64	58
3 ½	-	84	77
4	81	106	100
5	-	162	156
6	175	229	225
8	274	388	390
10	461	603	615
12	648	848	872

b. Requirement of Chlorination

- 1) Pipelines: After flushing, all new waterlines and repaired portions of, or extensions to, existing waterlines shall be disinfected by chlorination. Chlorination shall provide a minimum of 300 mg/l residual after 3 hours contact in the system. The entire system shall be filled with the disinfecting solution. All taps, hydrants, and other outlets shall be opened and left open until chlorine is noticeable by odor or testing in the water coming from each. Immediately close taps, hydrants, and other outlets. The chlorinated water shall be retained in the water lines for at least 3 hours.
- 2) Reservoirs Only: For large reservoirs and tanks where water is not going to be reused to disinfect connecting distribution lines, or where it is not economical to treat the entire contents, disinfection can be accomplished by swabbing or spraying the walls, floor, and ceiling with a chlorine solution containing 300 mg/l of available chlorine. A minimum of 3 hours shall elapse before the structure is flushed and returned to service.

c. Preparation of Disinfecting Mixture: Chlorine-bearing compounds used for disinfection shall comply with ANSI/NSF 60.

- 1) Calcium hypochlorite must be prepared as a water mixture for introduction into the waterlines. The powder should first be made into a paste and then thinned to either a 1 percent or 5.25 percent chlorine solution.

- 2) Sodium hypochlorite is already a water mixture.
- 3) Table 2 gives the amount of chlorine-bearing compound to mix to obtain either a 1 percent or 5.25 percent solution.
- 4) Table 3 gives the amount of a 1 percent or 5.25 percent solution required to obtain a 50 mg/l solution for various volumes.
- 5) Table 4 gives the volume of water contained in each 100 feet of pipe of various sizes.

TABLE 2

Amount of Chlorine-bearing Compound to Mix to Obtain a 1% or 5.25% Solution				
Product	1% Solution		5.25% Solution	
	Amount of Compound	Gallons of Water	Amount of Compound	Gallons of Water
Calcium Hypochlorite (65% Cl)	1 pound	7.67	1 pound	1.36
Sodium Hypochlorite (5.25% Cl)	1 gallon	4.25	1 gallon	0

TABLE 3

Amount of Chlorine-Water Solution Required to make 300 mg/l Chlorine Solution for Various Volumes		
Volume (Gallons)	5.25% Solution	1.00% Solution
100	9.12 cup	3.00 gal.
500	2.88 gal.	7.50 gal.
1,000	5.7 gal.	30.00 gal.
5,000	28.56 gal.	150.0 gal.
10,000	57.12 gal.	300.0 gal.

TABLE 4

Volume in Gallons per 100 feet of Pipe			
Nominal Pipe Size (inches)	Type of Pipe		
	HDPE (SDR 11)	PVC (160 psi)	Galv. Steel (Schedule 40)
1	4.6	5.8	4.5
1 1/4	7.3	9.6	7.8
1 1/2	9.6	12.6	10.6
2	15.0	19.6	17.4
2 1/2	-	28.8	24.9
3	32.6	42.6	38.4
3 1/2	-	55.6	51.4
4	53.8	70.4	66.1
5	-	107.5	103.9
6	116.7	152.6	150.1
8	182.8	258.6	259.9

10	307.2	401.8	409.6
12	432.2	565.2	581.4

- d. Method of Chlorine Application: The preferred method is to fill the water lines through the storage tank (for a distribution system) or the spring head box (for a supply system) with chlorinated water of the proper strength. The water shall then be released through the outlet lines to the remainder of the system and retained there for the required period of time. If either of these points of application is unavailable, chlorinated water of the proper strength may be added to the beginning of the pipeline extension, or to any valved section of the extension, through a corporation stop installed by the Contractor in the top of the pipe. Other methods may be approved by the Contracting Officer.
- e. Testing of Chlorine Residual: To ascertain the concentration, the chlorine residual shall be measured by the Contracting Officer in accordance with the procedures described in the current edition of "Standard Methods for the Examination of Water and Wastewater," or AWWA M12, or by using an appropriate high-range chlorine test kit
- f. Final Flushing and Testing: Following the retention period, as specified in this Section, all heavily chlorinated water shall be thoroughly flushed from the pipeline until the chlorine concentration in the water leaving any part of the line is no higher than 1 mg/l.
- g. Disposal:
 - 1) Heavily chlorinated water shall not be drained directly into streams, rivers, lakes or drainage ditches which lead to surface water.
 - 2) When emptying the lines or tank after the 3-hour period, whether the system has passed or failed, the chlorine solution shall be neutralized before being discharged. Neutralize system by adding sodium thiosulfate to the storage tank in accordance with Table 5 below. Let the sodium thiosulfate sit in the storage tank for 24-hours and then release the water from the tank and flush the system. Residual chlorine at the outlets shall be minimal.

TABLE 5
Amounts of Chemical Required to Neutralize Various Residual Chlorine Concentrations in 1,000 gallons of Water

Residual Chlorine Concentration mg/L	Pounds of Sodium Thiosulfate ($\text{Na}_2 \text{S}_2 \text{O}_3 - 5\text{H}_2\text{O}$)
1	0.012
2	0.024
10	0.12
50	0.60
300	3.60

- h. Bacteriological Examination: After the system has been disinfected as specified, but before the new water piping is put to use or connected to existing piping, the Contractor shall test the water for bacteriological contamination from representative points in the system as approved by the Contracting Officer. The coliform organisms shall be tested for presence/absence in accordance with State drinking water regulations. If coliform bacteria are present, testing shall be repeated in accordance with State drinking water regulations. If the report of this examination is unsatisfactory, the system shall be flushed and the disinfection procedure repeated until the results of bacteriological examinations are satisfactory.

END OF SECTION 02510

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 02512 - CURB VALVES AND BOXES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Curb Valves and Boxes.
- B. Related Sections include the following:
 - 1. Section 312000 "Earthwork"

1.2 QUALITY ASSURANCE

- A. All work is to be completed according to applicable Federal, State and Local codes.

1.3 MEASUREMENT AND PAYMENT

- A. Payment will be as listed for the following items:
 - 1. Curb Valves and Boxes: Number of valves of each type and size designated, including boxes, operating rods, lid keys and all work within five feet of the center of the valve box.

PART 2 - PRODUCTS

2.1 CURB VALVES AND BOXES

- A. Valves: Valves shall be the same nominal size as the line in which they are installed or as indicated on the Drawings.
 - 1. Valve Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and end matching curb valve. Furnish one valve operating wrench or shut-off rod with every five (or fraction thereof) curb boxes installed, as indicated on the Drawings.
 - a. Stationary Rods for Metal Valves: Steel, with adapter to fit valve, extend to within 12 inches of ground level.

- b. Valve Operating Extension for Poly Valves: Polyethylene or PVC, with adapter to fit valve, extend to within 4 inches of ground level.

2. Metal Valves

a. 3/4-Inch Through 2-Inch Valves:

- 1) Design: Minneapolis Top, Solid Tee Head, AWWA C 800.
- 2) Model: "Mark II Oriseal" Valve, Mueller H-10287, as manufactured by Mueller Company, or an approved equal.

b. Valves Larger than 2-Inches:

- 1) Design: AWWA C 509, NSF 61, gate valves with iron body, "O" ring stem seals, nonrising stem, with 2-inch square wrench nut head.
- 2) Ends: Threaded, flanged, hub, spigot, mechanical joint or other as appropriate for connection to line in which they are installed.
- 3) Model: Mueller A-2360, as manufactured by Mueller Company, or an approved equal.

3. Poly Valves

- a. NSF Approved (Potable water systems only)
- b. Valves 4-Inch and Larger: AWWA C906.
- c. Valves Smaller Than 4-inch: Similar quality to AWWA C906.
- d. Dimension Ratio and Pressure Rating: Same as pipe in which the valve is installed
- e. Model: Poly-Water Valves, as manufactured by Nordstrom Audco Inc., or an approved equal.

B. Curb Boxes:

- 1. Lids: Lockable, with pentagon-type bolt; labeled "WATER."
- 2. Pentagon Lid Keys: Furnish one key with every five (or fraction thereof) curb boxes installed.
- 3. Curb Boxes for Metal Valves:
 - a. For 3/4-Inch Through 2-Inch Valves: Extension type, Minneapolis pattern base. Models below as manufactured by Mueller Company or an approved equal.
 - 1) 3/4-Inch and 1-Inch Valves: Mueller H-10302.
 - 2) 1-1/4-Inch Through 2-Inch Valves: Mueller H-10304.
 - 3) Outside roadways, a galvanized pipe and threaded cap may be used in lieu of a commercial curb box, as indicated on the Drawings.

- b. For Valves Larger Than 2-Inches: Buffalo type, two piece, 5-1/4-Inch, Series 6855 as manufactured by Tyler Corporation, or an approved equal.
- 4. Curb Boxes for Poly Valves:
 - a. Design: Slider or screw type, Buffalo pattern.
 - b. For 1-Inch Valves: 2-1/2-Inch shaft, Series 200 or 250 Plastic Boxes, as manufactured by Bingham and Taylor or an approved equal.
 - c. For 2-Inch Through 6-Inch Valves: 5-1/4-Inch shaft, Series 500 Plastic Boxes, as manufactured by Bingham and Taylor or an approved equal.
- C. Gravel: Hard, durable, screened material, 1/4-inch to 1-inch in size, free of soil or clay lumps.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavating and backfilling for valves and boxes is specified in Section 312000 "Earthwork."

3.2 CURB VALVE AND BOX INSTALLATION

- A. Shall be installed per manufacturers installation instructions and as Shown on the Drawings.
- B. Crushed Gravel Bed: Under each valve, 12-inch minimum diameter, 12-inch minimum depth.
- C. Curb Box Position: Centered over valve bonnet, no part in contact with valve.
- D. Curb Box Lid: Flush with finished grade, unless indicated otherwise on the Drawings.

END OF SECTION 02512

April 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 02513 - PLUMBING APPURTENANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes piping, fittings, valves, gauges, hypochlorinators and other plumbing devices within utility buildings, utility boxes or at other designated locations.
- B. Related sections include the following:
 - 1. Section 00118 "Pumphouse."
 - 2. Section 260500 "Common Work Results for Electrical."

1.2 MEASUREMENT AND PAYMENT

- A. There will be no separate measurement or payment for work in this Section. Plumbing Appurtenances is considered incidental to Section 00118 "Pumphouse" as shown in the Schedule of Items:

1.3 SUBMITTALS

- 1. Water meters and accessories.
- 2. Pressure release valves
- 3. Ball valves
- 4. Check valves
- 5. Hose bib with vacuum breaker
- 6. Pressure gauge
- 7. Water hammer arrestor
- 8. Sample tap
- 9. Air release valves
- 10. Hypochlorinator and hypochlorinator accessories
- B. Operation and Maintenance Data: For specialties to include in emergency, operation, and maintenance manuals. Include the following:
 - 1. Water meters.
 - 2. Hypochlorinator and accessories

1.4 MINIMUM SYSTEM REQUIREMENTS

- A. Unless otherwise noted, the minimum working pressure for piping and specialties shall be 160 psig.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Handle water meters to avoid damage to exposed parts.

PART 2 - PRODUCTS

2.1 WATER METER

- A. Description: AWWA C700, displacement-type, low-lead bronze main case, NSF-61 certified. Register flow in gallons unless cubic feet are indicated.
- B. Model: 1" SR as manufactured by Sensus Metering Systems, or an approved equal.

2.2 BALL VALVE

- A. Description: Bronze, 400 psi.
- B. Model: B6000 as manufactured by Watts Regulator, or an approved equal.

2.3 GLOBE VALVE

- A. Description: Threaded, 150 psi, union bonnet, renewable composition disc with integral seat, with bronze body.
- B. Model: Powell Class 150 as manufactured by Wm. Powell Company, or No. 7, as manufactured by the Crane Company, Chicago, or an approved equal.

2.4 GATE VALVE

- A. Description: Bronze, solid wedge disc, 150 psi, non-rising stem, threaded ends, with screwed in bonnet.
- B. Model: Powell Gate Valve Class 150, as manufactured by Powell Company or No. 437, as manufactured by the Crane Company, or an approved equal.

2.5 HOSE BIBB

- A. Description: Rough brass finish, male inlet, 3/4-inch hose thread outlet.

- B. Model: Manufactured by Arrowhead Brass Products, Chicago Faucet Company, or an approved equal.
 - 1. Vacuum Breaker: Model #8A, as manufactured by Watts Regulator Company, or an approved equal.
 - 2. Hose: Provide 5-foot length of 3/4-inch plastic hose for connection to vacuum breaker.

2.6 CHECK VALVE

- A. Description: Bronze, AWWA C508, swing-check type with 125-psig working-pressure rating, threaded ends, screwed-in cap, renewable brass disc and resilient seat. Include interior coating according to AWWA C550 and ends to match piping.
- B. Model: Figure No. 578 as manufactured by Powell Company, or an approved equal.

2.7 UNION

- A. Description: Female type, malleable iron, 150 pound, with ground brass to iron seat.
- B. Model: Manufactured by Crane Company, or an approved equal.

2.8 PRESSURE GAUGE

- A. Description: 2-inch diameter or larger, 0 to 200 psi range, with brass movement, steel case and bottom mounting with NPS 0.25 threads. Include 1/4" ball valve for gauge isolation.
- B. Model: Ashcroft Model 1000 or 1005 as manufactured by Dresser Industries, or an approved equal

2.9 WATER HAMMER ARRESTOR

- A. Model: Series 15 as manufactured by Watts Regulator Company or an approved equal.

2.10 SAMPLE TAP

- A. Description: Brass, 1/2-inch hose bib with male inlet and smooth-nosed outlet.
- B. Model: P/N 301PE as manufactured by Arrowhead Brass, or an approved equal.

2.11 WYE-STRAINER

- A. Description: 125 psi minimum working pressure, semi-steel or bronze body with threaded ends, with brass plug in blow-off connection and removable stainless steel #20 mesh screen.
- B. Model: Style B or F, as manufactured by O. C. Keckley Company, or Model: P/N 777S, as manufactured by Watts Regulator Company, or an approved equal.

2.12 PIPE AND FITTINGS

- A. Galvanized Steel: ASTM A53, Schedule 40, threaded ends meeting ASME B1.20.1.
 - 1. Fittings: Threaded, ASTM A 338.

2.13 AIR RELEASE VALVE

- A. Model: No. 50 Air Vent Valve as manufactured by the APCO Valve and Primer Corporation, or an approved equal.

2.14 PRESSURE RELIEF VALVE

- A. Model: P/N 30L-Z1 as manufactured by Watts Regulator Company, or an approved equal.

2.15 HYPOCHLORINATOR

- A. Description: Positive displacement, volume proportional, **110 VAC**.
 - 1. Water Flow Capacity: 3/4 to 50 GPM
 - 2. Injection Ratio Range: 1:1000 to 1:10,000.
 - 3. Pressure Range: 15 to 125 psi.
 - 4. Injection Rate: As indicated on the Drawings.
- B. Model: P/N DD1000 "Andy" (w/ diodes), as manufactured by H.E. Anderson Company, or an approved equal.
 - 1. Include one diaphragm repair kit, Model #17032.
 - 2. Include two check valve repair kits, Model #06735.

2.16 HYPOCHLORINATOR ACCESSORIES

- A. Hypochlorite Solution Container

1. Description: Covered, semi-transparent polyethylene, chlorine resistant, suitable for use with potable water, of size indicated on the Drawings. Include fill-hole and cap. Provide one solution container per chlorinator installed.
2. Available Manufacturers (or an approved equal):
 - a. Liquid Metronics, Inc.
 - b. Dewco Water Equipment, Inc.
 - c. H.E. Anderson Company

B. Chlorine Test Kit

1. Description: Capable of determining free and total chlorine. The operating range shall be 0-0.7 ml/L for free chlorine, and 0-3.5 mg/L for total chlorine.
2. Provide one chlorine test kit per chlorinator installed.
3. Model: P/N CN-70 as manufactured and distributed by Hach Company, or an approved equal.

2.17 ELECTRICAL DISTRIBUTION SYSTEM

- A. According to Section 260500 "Common Work Results for Electrical."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install piping, fittings, valves, gauges, hypochlorinators and other plumbing devices within utility buildings, utility boxes or at other locations according to the manufacturer's written instructions and as indicated on the Drawings. Install so water can be drained from each appurtenance for maintenance of the system.

END OF SECTION 02513

MAY 2005

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 02523 - SUBMERSIBLE WELL PUMPS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes furnishing and installing a submersible well pump, the discharge pipe, a pitless adapter, and a sanitary well cap.

1.2 SUBMITTALS

- A. Product Data: Submit performance curves and rated capacities of selected well pumps and furnished specialties for each type and size of well pump indicated.
- B. Related Sections include the following:
 - 1. Section 260500 "Common Work Results for Electrical."

1.3 QUALITY ASSURANCE

- A. All work is to be completed according to applicable Federal, State and Local codes. This work includes, but is not limited to, materials, installation, testing and disinfection.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. NSF Compliance: Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.

1.4 MEASUREMENT AND PAYMENT

- A. Submersible Well Pump: Lump Sum for Submersible Well Pump including furnishing and installing the well pump, motor, check valve, pitless adapter, discharge pipe, sanitary well cap, operating and maintenance manuals and all incidentals necessary to complete this item.
- B. Submersible power cable, underground control cable, conduit and trenching will be paid for under Section 260500 "Common Work Results for Electrical."

PART 2 - PRODUCTS

2.1 SUBMERSIBLE PUMP AND MOTOR

1. Capacity: 15 GPM at 300 feet total dynamic head
 2. Rated Power: 1 ½ HP
 3. Model: 15SQ15C-290, as manufactured by Grundfos Pumps Corporation, or an approved equal.
- B. Motor: Capable of continuous operation under water, with protected submersible power cable.
- C. Impellers: Closed type and statically balanced. Securely fastened to the impeller shaft with splines, keys, taper bushings, locknuts, or setscrews.
1. Impeller Material: Stainless steel.
- D. Pump-to-Motor Coupling: Solid stainless steel, Capable of transmitting the total torque and thrust of the unit in either direction.

2.2 DISCHARGE PIPE

- A. PVC: ASTM D 1785, Schedule 80; threaded ends meeting ASME B1.20.1.
1. Fittings: PVC, threaded, Schedule 80, ASTM D 2464.
 2. Pipe shall be supplied in pre-threaded 21 foot lengths.

2.3 SANITARY WELL CAP

- A. Design: Vented, sanitary well seal, with holes for piping and cables, that fits on top of casing and is removable, waterproof and vermin proof. Sized to fit casing and electrical conduit, meeting the requirements of the "Minimum Standards for Well Construction" for the state in which the well exists and meeting the requirements of Water Systems Council PAS-97.
- B. Cap Cable Seals: Provided with well cap.
- C. Model: WTCC – Series, as manufactured by Maass Midwest Manufacturing, Inc., or an approved equal.
- D. Model: 8WPSM, as manufactured by Baker Manufacturing Co., or an approved equal.

2.4 PITLESS ADAPTER UNIT

- A. Design: PAS 97.
- B. The pitless adapter shall include 10 feet of water line beyond the well casing, as shown on the Drawings.

- C. Model: Monitor Sub-Compact Pitless Adapter 125BT, as manufactured by Baker Manufacturing Company, or an approved equal.

2.5 DISINFECTION CHEMICALS

- A. All chemicals used to disinfect the well or equipment shall meet ANSI/NSF 60.

2.6 OPERATION AND MAINTENANCE MANUAL

- A. The Contractor shall furnish three sets of instructions for operating and maintaining all mechanical and electrical equipment for the pump installation. The instructions shall include a complete diagram of the pump and plumbing details, an electrical wiring diagram with color coding indicated, parts lists, and all other drawings and instructions that are required to successfully operate the pump.

2.7 ELECTRICAL SUPPLY AND CONTROLS

- A. The power cable and all fittings shall be watertight at the pressure encountered in use. The cable shall be one continuous length and shall not contain any splices. The cable's jacket material must be oil- and water-resistant synthetic rubber, plastic, or other suitable protective material. The cable shall be of the size recommended by the manufacturer of the submersible pump and shall have a sufficient conductor area to meet the minimum requirement of the Insulated Power Cable Engineer's Association (IPCEA) code for operation in air.

PART 3 - EXECUTION

3.1 DISINFECTING EQUIPMENT

- A. Before installing any equipment or other components in the well, the Contractor shall disinfect the equipment by flushing with a 200 PPM chlorine solution.

3.2 SUBMERSIBLE PUMP INSTALLATION

- A. Install well pump at the depth indicated on the Drawings, according to HI 2.1-2.5. Provide access for periodic maintenance.
 - 1. Before lowering permanent pump into well, lower a dummy pump that is slightly longer and wider than permanent pump to determine that permanent pump can be installed. Correct alignment problems.
 - 2. Before lowering permanent pump into well, start pump to verify correct rotation.
 - 3. Securely tighten discharge piping joints.
 - 4. Support pump from pitless unit.

3.3 WATER LEVEL MEASUREMENT

- A. An air line, to be used for measuring the water level in the well, shall be permanently installed in the well. The air line shall include a pressure gauge, a method of applying air, and a check valve. The air line shall be securely fastened to the drop pipe and shall terminate three feet above the bottom end of the drop pipe.

3.4 ELECTRICAL SUPPLY AND CONTROLS

- A. Sufficient submarine cable shall be provided and installed as recommended, to connect the submersible pump to the control box. In the well, the cable shall be attached to the discharge pipe at intervals recommended by the manufacturer of the pump with non-corrosive metal bands. From the well head to the control box, the cable shall be installed in conduit of the size to handle the cable in conformance with the National Electrical Code.
- B. Installation shall conform to Section 260500 "Common Work Results for Electrical."

3.5 PITLESS ADAPTER

- A. A hole shall be cut in the casing of the appropriate size for installing the pitless adapter. The hole shall be cut by mechanical means. A cutting torch shall not be used.
- B. Field Testing of Pitless Adapter: The following procedure shall be used to field test the pitless adapter.
 - 1. Position a plumber's test plug just below the deepest joint to be tested, and then inflate to the required pressure.
 - 2. Position the sanitary well seal in the top of the well and tightened securely to form an airtight seal.
 - 3. Pressurize this isolated section of the casing or unit through the discharge fitting, or through a fitting in the sanitary well seal.
 - 4. A pressure of 5 to 7 pounds per square inch shall be applied and maintained, without the addition of more air, for 1 hour. While under pressure, all field connections shall be tested for leaks with soap foam.
 - 5. Any sign of leakage, either by loss of pressure or by the appearance of bubbles through the soap, shall be repaired and the adapter or unit shall be re-tested until the test is passed.
- C. Additional Testing
 - 1. Adapters and units that depend on rubber or plastic seals in the field connection shall also be tested under negative pressure conditions. A pressure of 10 to 14 inches of mercury vacuum shall be applied by the test apparatus and held for 1 hour. This test shall be monitored by a vacuum gauge. Leaks found in rubber or

plastic seals shall be repaired, and the adapter or unit shall be re-tested until the test is passed.

3.6 MECHANICAL AND ELECTRICAL TESTING

- A. Testing and operation of all mechanical and electrical equipment shall be done by the Contractor, in the presence of the Contracting Officer, to assure satisfactory operation of all components. The pump shall be operated for at least 1 hour to demonstrate that all equipment is functioning as specified.

3.7 DISINFECTING WELLS

- A. After the well is cleaned it shall be disinfected with a chlorine solution of such volume and strength so that a concentration of at least 100 ppm of chlorine, after mixing with the water in the well, shall be circulated to all parts of the well. The water in the well must be agitated to mix the solution thoroughly. In addition, surfaces of all components above the water level must be flushed or washed down with the sterilizing solution. The chlorine solution shall remain undisturbed in the well for a period of at least 12 hours, but not more than 24 hours.
- B. Introduction of Chlorine Solution to the Well: The method of introducing the chlorine into the well shall be one of the following as recommended by the ANSI/AWWA C654 and approved by the Contracting Officer:
 - 1. Calcium Hypochlorite - Dribble tablets of approximately 5-gram size down the casing vent and wait at least 30 minutes for the tablets to fall through the water and dissolve.
 - 2. Sodium Hypochlorite - Suspend a tube through the well casing vent so that it reaches the bottom of the well. Withdraw the tube as the sodium hypochlorite solution is pumped through the tube.
- C. Removing Disinfection Solution from the Well - After disinfection, the well shall be pumped for a minimum of 15 minutes beyond the time that a zero chlorine residual is first detected by the Contractor.

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 02525 - WATER SUPPLY WELLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Moving equipment to and from well site.
2. Drilled water supply well.
3. Providing and installing well casing, well screen and packer, and bentonite grout.
4. Perforating well casing.
5. Well development, testing, and disinfection.
6. Associated specialties.
7. Disposal of excavated material and site clean-up.

B. Related Sections include the following:

1. Section 02510 "Water Distribution System."
2. Section 260500 "Common Work Results for Electrical."

1.2 DEFINITIONS

A. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. PA: Polyamide (nylon) plastic.
3. PE: Polyethylene plastic.
4. PP: Polypropylene plastic.
5. PVC: Polyvinyl chloride plastic.

1.3 PERFORMANCE REQUIREMENTS

A. Minimum Tested Water Supply Well Performance Capacity: 10 gallons per minute.

1.4 SUBMITTALS

A. Product Data: Submit manufacturers literature and Material Safety Data Sheets for all materials proposed for use in the well construction, and for all mudding agents, foaming agents, or other chemicals for use in drilling, developing, and disinfecting the well.

- B. Project Record Documents: Record the following data for each water supply well:
 - 1. Casings: Material, diameter, thickness, weight per foot of length, and depth below grade.
 - 2. Screen: Material, construction, diameter, and opening size.
 - 3. Pumping Test: Static water level, maximum safe yield, and draw down at maximum yield.
 - 4. Log: Formation log indicating strata encountered.
 - 5. Alignment: Certification that well is aligned and plumb within specified tolerances.
- C. Field Quality-Control Reports: Describe substrata formations, water-bearing formations, water levels, laboratory water analysis, well-screen analysis, and performance test data.
- D. Operation and Maintenance Data: For each well pump to include in operation and maintenance manuals.
- E. Bentonite: Manufacturer's installation instructions.
- F. Water Disposal Plan: Plan for disposal of water used for testing and disinfection.

1.5 QUALITY ASSURANCE

- A. Well Driller Qualifications: An experienced water supply well driller licensed in the jurisdiction where project is located.
- B. AWWA Compliance: Comply with AWWA A100 for water supply wells.

1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Contracting Officer not less than two days in advance of proposed utility interruptions.
- B. Well Drilling Water: Provide water for drilling purposes. Water for well drilling shall be potable water and shall be hauled in tanks used only for potable water.

1.7 MEASUREMENT AND PAYMENT

- A. Payment will be as listed for the following items:

1. Moving Equipment to and from Well Site: Lump Sum for moving well drilling rig to and from each well site including set up, take down, complete cleanup of the site and disposal of all drilled or excavated materials off the site.
2. Well Drilling: Linear Feet of well of each size drilled.
3. Well Drilling, Oversize Borehole for Grout Seal: Linear Feet of oversized borehole drilled.
4. Well Casing: Linear Feet of permanent casing of each size installed, measured to nearest one-half foot without allowance for lap at joints.
5. Bentonite Grout: Number of 94-pound bags of bentonite grout used to make the grout, mixing the grout, and placing the grout.
6. Well Screen: Linear Feet of well screen of each size and type installed, including packer coupling, filter pack, and screen cap.
7. Developing Well: Number of hours utilized in development of the well. Time must be spent in performing actual well development.
8. Testing of Well: Number of hours utilized in testing of the well. Time must be spent performing actual continuous testing and will not include any time for interrupted runs of lesser magnitude or time spent installing, removing or repairing testing equipment.
9. Hauling and placement of Government provided material will be incidental to all other items in this Section.

PART 2 - PRODUCTS

2.1 WELL CASINGS

- A. Steel Casing: ASTM A53, Grade B or AWWA C200, single ply, steel pipe with threaded ends and threaded couplings for threaded joints. Steel casing 6-inch and larger diameter may be beveled plain end steel casing with welded joints. Steel casing shall have the diameter, minimum weight and wall thickness shown in Table 02525.1.

1. Threaded Ends: ANSI B1.20.1.

Table 02525.1 STEEL PIPE FOR WELL CASING					
Nominal Size (inches)	Diameter (inches)		Wall Thickness (inches)	Weight Per Foot (lb.)	
	Outside	Inside		Plain Ends (calculated)	With Threads & Couplings (nominal)
6	6.625	6.065	0.280	18.97	19.45
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14 OD	14.000	13.250	0.375	54.57	57.00
16 OD	16.000	15.250	0.375	62.58	65.30
18 OD	18.000	17.250	0.375	70.59	73.00
20 OD	20.000	19.250	0.375	78.60	81.00

- B. PVC Casing: ASTM F 480, NSF 14 and NSF 61, cell classification 12454B, SDR 17. Include NSF listing mark "NSF wc."

- 1. Ends and Fittings: Threaded; or bell-and-spigot pipe and couplings for solvent-cemented joints.

- C. Centralizers: Install centralizers at 60-foot intervals on casing that is to be grouted.

2.2 MUDDING AGENTS

- A. Mudding agents: NSF 60, commercial bentonite or another commercial mudding agent.
- B. Water: Potable.

2.3 GROUT

- A. Grouting Materials: A minimum of 50% extra material must be on site before beginning grouting operations.
- B. Neat Cement Grout: ASTM C150, Type V Portland cement. Use for 2-inch openings.
 - 1. Mix: Add 5 to 6 gallons of water per 94-pound bag of cement.
- C. Bentonite Grout: NSF 60. Use for openings larger than 4 inches.
 - 1. Mix: High-solids bentonite grout and water mixture with a minimum of 20 percent solids, mixed and placed according to manufacturer's written instructions.
 - 2. Conventional bentonite drilling clay and water mixtures will not be allowed.
- D. Water: Potable.

2.4 WATER WELL SCREENS

- A. Screen Material: Fabricated of ASTM A666, Type 304 stainless steel, welded; with continuous-slot, non-clogging, V-shaped openings that widen inwardly.
 - 1. Screen Couplings: Butt-type, stainless steel, coupling rings.
 - 2. Screen Fittings: Screen, with necessary fittings, bottom cap and well screen to casing seal.
 - 3. Screen Slot Size: 0.030 inches.
 - 4. Maximum Entrance Velocity: 0.1 fps.
 - 5. Model: W-90 Series, as manufactured by Johnson Screens, or an approved equal.
- B. Packer: Self-sealing, stainless steel, with a V-shaped, flexible neoprene ring and mounted on a heavy metal ring, capable of being threaded or welded to top of well screen.

2.5 FILTER PACK MATERIALS

- A. Coarse, uniformly graded filter sand, maximum 1/8 inch in diameter.
- B. Fine gravel, maximum 1/4 inch in diameter.

2.6 DEVELOPMENT AND DISINFECTION CHEMICALS

- A. Products used must meet NSF 60.
- B. Dispersants and Acid: Calgon or other glassy phosphates, such as tetrasodium pyrophosphate and sodium tripolyphosphate are approved for use in developing wells. For limestone aquifers, hydrochloric acid is also approved.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Test Hole Data: Review test hole analysis furnished by Government.

3.2 INSTALLATION

- A. If using mud-rotary method, excavate for mud pit or provide aboveground structure, acceptable to authorities having jurisdiction, to allow settlement of cuttings and circulation of drill fluids back to well without discharging to on-site waterways. Stockpile topsoil separately from other excavated material.
- B. Construct well as shown on the Drawings.
- C. Install permanent casing. Install first section of casing with hardened steel driving shoe of an OD slightly larger than casing couplings if threaded couplings are used.
 - 1. Set casing and liners round, plumb, and true to line.
 - 2. Join casing pipe as follows:
 - a. Ream ends of pipe and remove burrs.
 - b. Remove scale, slag, dirt, and debris from inside and outside casing before installation.
 - c. For Threaded Joints: Cut bevel in ends of casing pipe and make threaded joints.
 - d. For Welded Joints: Weld steel casing in accordance with AWWA C206, penetrate full thickness of pipe.
 - e. Clean and make solvent-cement joints.

3. Perforate casing in water bearing formation at location indicated by the Contracting Officer or as shown on the Drawings. Perforate casing using a method approved by the Contracting Officer.
- D. Install screen using "Pull-Back" method or other method as approved by the Contracting Officer.
1. Pull-Back Method: Lower the well screen inside the casing to the full depth of the well, then pull back or lift the casing a sufficient amount to expose the screen in the water-bearing stratum. When the casing has been pulled back to expose the full length of the screen in the water-bearing sand, final measurements shall be made. The top of the packer shall be within the casing from 9" to 15" above the bottom of the casing. After the screen has been installed and properly positioned, the seal shall be made sand-tight between the top of the screen and the inside of the well casing by seating the packer.
- E. Install grout seal. Mix grout and place continuously from the bottom up, to ensure filling of annular space in one operation. Do not perform other operations in well within 72 hours after grouting of casing. When quick-setting cement is used, this period may be reduced to 24 hours.
- F. Install permanent casing to a height of 18 inches above finished grade. Install sanitary well cap.
- G. Develop well to maximum yield per foot of drawdown.
1. Extract maximum practical quantity of sand, drill fluid, and other fine materials from water-bearing formation.
 2. Avoid settlement and disturbance of strata above water-bearing formation.
 3. Do not disturb sealing around well casings.
 4. Develop well using one of the following methods:
 - a. Required Well Yield < 10 GPM: Overpumping.
 - b. Required Well Yield > 10 GPM: Rotating high-velocity jetting combined with simultaneous pumping.
 5. Continue developing well until water contains no more than 2 ppm of sand by weight when pumped at maximum testing rate.

3.3 WELL ABANDONMENT

- A. In the event the Contracting Officer determines that a well should be abandoned, any remaining uncompleted contract items or projects thereof pertaining to that well will be canceled, in writing, without prejudice to either the Contractor or the Forest Service. Payment will be made for all items of work or portions thereof completed prior to notice of such cancellation. Any well which is abandoned in this manner shall be filled with concrete grout to protect the water-bearing formations against possible contamination.

1. Wells Relocated for Convenience of Contractor: Wells relocated for the convenience of the Contractor, after commencement of drilling operations, will not be considered as abandoned under this clause. All well holes left by relocation of the well sites shall be filled with concrete grout.
- B. Comply with AWWA A100 and well-abandonment procedures of authorities having jurisdiction. Fill and seal holes and casings and restore ground surface to finished grade.
- C. Additional Testing
 1. Adapters and units that depend on rubber or plastic seals in the field connection shall also be tested under negative pressure conditions. A pressure of 10 to 14 inches of mercury vacuum shall be applied by the test apparatus and held for 1 hour. This test shall be monitored by a vacuum gauge. Leaks found in rubber or plastic seals shall be repaired, and the adapter or unit shall be re-tested until the test is passed.

3.4 FIELD QUALITY CONTROL

- A. Plumbness and Alignment Testing: Comply with AWWA A100, Appendix D.
- B. Sampling: Take samples of substrata formation at 10-foot intervals and at changes in formation throughout entire depth of each water supply well. Carefully preserve samples on-site in heavy duty zip-lock plastic bags properly labeled for identification.
- C. Performance Testing: Conduct final pumping tests after well has been constructed, cleaned, and tested for plumbness and alignment.
 1. Arrange to conduct tests, with seven days' advance notice, after test pump and auxiliary equipment have been installed. Note water-level elevations referred to for each assigned datum in well.
 2. Provide discharge piping to conduct water to locations where disposal will not create a nuisance or endanger adjacent property. Comply with requirements of authorities having jurisdiction.
 3. Provide and maintain equipment of adequate size and type for measuring flow of water, such as weir box, orifice, or water meter.
 4. Test Pump: Variable capacity test pump with capacity equal to at least 50 GPM at pressure equal to drawdown in well, plus losses in pump columns and discharge pipes.
 5. Testing Procedure: The Contractor shall operate the test pumping unit at the wells at rates and durations specified by the Contracting Officer. The testing procedure shall be as follows:
 - a. Static Water Level: Record the water level in the well before pumping has started (static water level). Possible methods of determining depth are:

- 1) The electric sounder method.
 - 2) The wetted tape method.
 - 3) The air line method.
- b. Drawdown Test: Pump the well at a constant rate that produces drawdown. Take drawdown readings periodically until the water level is stabilized. Stabilized drawdown is achieved when there is no change of ground-water level in the well within a two hour period. If the water level does not stabilize, reduce the rate of pumping to a lower constant rate where the water level will stabilize. Record time and flow rate each time there is a change.
- 1) Measuring Depth: Record water level measurements to the nearest 1/4" or 0.02 feet. Record time of each reading to nearest 10 seconds. After starting the pump, measurement intervals shall be as follows:
 - a) First 5 Minutes: Every 30 seconds.
 - b) Next 55 Minutes: Every 5 minutes.
 - c) Next 2 Hours: Every 20 minutes.
 - d) Until End of Test: Every hour.
 - 2) Bailing (Alternative Drawdown Test): If the test procedure above is not possible due to the size or output of the well, a simpler testing procedure (bailing) is adequate to test a well that is to be pumped intermittently at low rates for domestic supply. When testing a well by bailing, the following measurements should be made:
 - a) Static water level in the well.
 - b) Volume of water held by the bailer.
 - c) Time of starting.
 - d) Number of bailers full of water pulled from the well in a given period of time. (Bailing should be done at a constant rate during each test.)
 - e) Depth to water while bailing.
- c. Pumping Duration
- 1) Continue pumping for at least 24 hours or until stabilized drawdown has continued for at least 6 hours at a constant rate equal to 1.5 times the desired discharge rate.
- d. Well Yield and Drawdown: Record the rate of pumping when drawdown stabilizes (maximum well yield), water level, and the amount of drawdown (difference between this water level and the static water level).
- e. Pumping at Design Rate: Change pumping rate to the discharge rate planned for the permanent pump installation and record drawdown when

water level stabilizes. This information is used for determining the depth of pump setting.

- f. Well Recovery: Immediately after test pumping has ended, observe and record time for the water level to return to static water level (recovery time). Record time of each reading to nearest 10 seconds. Measurements intervals shall be as follows:

- a) First 5 Minutes: Every 30 seconds.
- b) Next 55 Minutes: Every 5 minutes.
- c) Next 2 Hours: Every 20 minutes.
- d) Until Water Reaches Static Level: Every hour.

- 6. Remove sand, stones, and other foreign materials that may become deposited in well after completing final tests.

- 7. Electrical Power for Testing: If commercial power is not available at the job site, the Contractor shall be responsible for providing an adequate generator for pumping.

- D. Records and Reports: The Contractor shall keep a written record of all measurements taken. Prepare report and plot curves of drawdown and recovery rates. Include static water level and depth to water bearing strata. Include location, depth and type of each strata encountered during drilling. The report shall be delivered to the Contracting Officer within 15 days after completion of all work.

3.5 DISINFECTION

- A. Prior to beginning drilling and at least once each day, or more often if the Contracting Officer determines contamination has occurred, the Contractor shall disinfect the well drilling equipment by flushing it with a 500 PPM chlorine solution.
- B. Clean tested and developed water supply well of foreign substances. Swab casings using alkalis, if necessary, to remove foreign substances.
- C. Upon completion of drilling, testing and cleaning, disinfect water supply well according to AWWA A100 and AWWA C654.
 - 1. Disinfect well with a solution equal to 100 ppm chlorine, after mixing with the water in the well.
 - 2. Introduction of Chlorine Solution to the Well: The method of introducing the chlorine into the well shall be one of the following as recommended by AWWA C654 and approved by the Contracting Officer:

- a. Calcium Hypochlorite: Dribble tablets of approximately 5-gram size down the casing vent and wait at least 30 minutes for the tablets to fall through the water and dissolve.
- b. Sodium Hypochlorite: Suspend a tube through the well casing vent so that it reaches the bottom of the well. Withdraw the tube as the sodium hypochlorite solution is pumped through the tube.
3. The water in the well must be agitated to mix the solution thoroughly. Surfaces of all components above the water level must be flushed or washed down with the sterilizing solution.
4. The chlorine solution shall remain undisturbed in the well for a period of at least 12 hours, but not more than 24 hours.
5. Removing Disinfection Solution from the Well: After disinfection, the well shall be pumped for a minimum of 15 minutes beyond the time that a zero chlorine residual is first detected by the Contractor.

3.6 WATER ANALYSIS TESTING

- A. Water Analysis Testing: After disinfection is complete, make bacteriological, physical, and chemical analyses of water from the finished well and report the results. Make analyses according to requirements of authorities having jurisdiction.
 1. Bacteriological Testing: Duplicate water samples shall be taken by the Contractor not less than 30 minutes apart. These samples shall be tested for the presence of coliform by a laboratory licensed in the State for bacteriological testing.
 - a. Coliform Bacteria Absent: If samples are negative for the presence of coliform, no further chlorination is necessary.
 - b. Coliform Bacteria Present: If any of the samples are positive for the presence of coliform, repeat the well disinfection and bacteriological testing until two consecutive water samples show the absence of any coliform.

3.7 PROTECTION

- A. Water Quality Protection: Prevent well contamination, including undesirable physical and chemical characteristics.
- B. Mud-Rotary Drilling: Ensure that mud pit will not leak or overflow into streams or wetlands. When well is accepted, remove mud and solids in mud pit from Project site and restore site to finished grade.
- C. Contractor is responsible for any and all damage that may result from disposal of water during the operation.

- D. Provide casings, seals, sterilizing agents, and other materials to eliminate contamination; shut off contaminated water.
- E. Exercise care to prevent breakdown or collapse of strata overlaying that from which water is to be drawn.
- F. Protect water supply well to prevent tampering and introducing foreign matter. Retain temporary well cap until installation is complete.

3.8 CLEANUP

- A. Remove and dispose of excavated material on site as directed by the contracting officer and remove construction debris to the county landfill.
- B. Backfill mud pit with original excavated material.
- C. Leave site in as near a natural condition as possible.

END OF SECTION 02525

April 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 03300 - CONCRETE FOR MINOR STRUCTURES

PART 1 - GENERAL

- 1.1 This work shall consist of furnishing, placing, and finishing concrete in accordance with these specifications in the construction of all types of concrete structures and flat work to the lines, grades, and details shown on the drawings.
- 1.2 **Method of Measurement** - Measurement and payment of concrete will be considered incidental to Section 00118 "Pumphouse" and Section 02510 "Water Distribution System" Part -1, 1.9,A,3 "Concrete Thrust Blocks."
- 1.3 **Reference Specifications** - The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASTM A185	Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
ASTM A615	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A996	ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C143	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
AASHTO T27	Sieve Analysis of Fine and Coarse Aggregates

PART 2 - PRODUCTS

- 2.1 **Description** - Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, air entraining agent, and water mixed in proportions approved by the Contracting Officer. The concrete shall have a minimum compressive strength of 3000 psi at 28 days.

All concrete for the Pumphouse shall be "Class A" concrete, unless otherwise specified.

Cement Content	6.5 bags per cubic yard minimum
Coarse Aggregate Size Range	1-1/2-inch to No. 4 standard or 1-inch to No. 4 alternative
Maximum Water-Cement Ratio	5.5 gallons per bag of cement
Slump Range	2-inch to 4-inch for alternative aggregate
Required Entrained Air	4-percent to 6-percent
Approximate weight of aggregates per bag of cement*	140 lb. rounded FA or 155 lb. angular FA 330 lb. rounded CA or 305 lb. angular CA
*Aggregate weight given in saturated surface dry condition. (Specific gravity of aggregate to be approximately 2.65 and fineness modulus to be 2.75.)	

The amount of water to be added to the mix shall be reduced by the amount of any excess moisture content in the fine aggregate to obtain the net water content.

Weight proportioning by the Contractor will be required for all concrete. Unless otherwise permitted, the cement shall be packed in bags containing 94 pounds net weight. Batches shall be used which do not require fractional bags of cement, except when a half-bag mix is permitted. The fine and coarse aggregate shall be weighed separately.

- 2.2 **Cement** - The cement shall be Portland cement, Type I, or Type II, and shall comply with ASTM C150. When high early strength cement is required, or permitted, it shall comply with ASTM C150, Type III.

The cement shall be shipped in the original manufacturer's packages and shall be in good condition when inspected by the Contracting Officer. The name and brand of the manufacturer and the type shall be plainly indicated thereon.

The Contractor shall add an air entraining agent to Type I, Type II, or Type III Portland cement. The Contracting Officer shall approve in writing the air entraining agent as well as the measuring and mixing procedure used by the Contractor. The Contracting Officer may require the Contractor to furnish a sample of the air entraining agent for testing purposes. All air entraining agents used shall be delivered in sealed containers with the manufacturer's name and type plainly indicated thereon.

The cement must be protected from rain and moisture, and any cement damaged by moisture or failure to meet any of the requirements of ASTM specifications shall be rejected and immediately removed from the work. All broken bags shall be rejected. Cement stored by the Contractor for a period longer than 60-days shall be inspected by the Contracting Officer before used on the work.

- 2.3 **Fine Aggregate** - Fine aggregate shall consist of clean, hard, durable, uncoated grains of sand, and shall be washed when necessary to obtain conformity with these specifications. Fine aggregate shall be well graded and when tested by means of laboratory sieves according to AASHTO T27 shall conform to the following requirements:

Fine Aggregate Grading	
US Std. Sieve Size	Percent Passing by Weight
3/8-inch	100
No. 4 sieve	95-100
No. 16 sieve	50-85
No. 50 sieve	10-30
No. 100 sieve	2-10

Fine aggregate shall not have deleterious substances in excess of the following percentages:

Deleterious Substance	
Clay Lumps	1.0
Coal and Lignite	1.0
Material passing No. 200 sieve (AASHTO T11)	3.0
Other (such as shale, mica, alkali, coated grains, soft particles)	1.0

The above gradation represents the extreme limits which shall determine suitability for use from all sources of supply. The gradation from any one source shall be reasonably uniform and not subject to the extreme percentages of gradation specified above. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix, without approval of the Contracting Officer.

- 2.5 **Coarse Aggregate** - shall consist of gravel and be washed when necessary to obtain conformity with these specifications.

The maximum amounts of individual deleterious substances shall not exceed the following values:

Deleterious Substance Percentage by Weight	
Material passing No. 200 sieve	1.0
Coal	1.0
Clay Lumps	0.5
Thin or Elongated Pieces	15.0
Soft Fragments	2.0
Other (such as alkali coated, friable, shale, or laminated)	3.0

An elongated piece is one whose length is more than five times its average thickness.

The maximum amount of any combination of the deleterious substances, other than thin or elongated pieces listed above, shall not exceed five percent by weight.

Coarse aggregate shall be well graded, and unless otherwise provided in the supplemental specifications, shall conform to the following grading requirements when tested with laboratory sieves, according to AASHTO T27.

Coarse Aggregate - "Standard" Gradation	
<u>U.S. Standard Sieve Size</u>	<u>Percentage (%) by Weight Passing Sieves</u>
1-1/2 inch	95-100
3/4 inch	35-70
3/8 inch	10-30
No. 4	0-5

Coarse Aggregate - "Alternate" Gradation (For use in heavily reinforced walls and walls less than 8" thick)	
<u>Sieve Designation Square Openings</u>	<u>Passing Sieves</u>
1 inch	95-100
1/2 inch	25-60
No. 4	0-10
No. 8	0-5

If the alternate gradation for coarse aggregate is used, the Contractor must obtain prior approval in writing from the Contracting Officer.

- 2.6 If ready-mix concrete is to be used, a record of test results and a statement from the company certifying that their aggregate meets these specifications will be accepted, and no sample will be required.

Sampling and testing coarse aggregate shall be in accordance with the following methods of the AASHTO:

Sampling	AASHTO T2
Material-Passing No. 200 Sieve	AASHTO T11
Sieve Analysis	AASHTO T27
Organic Impurities	AASHTO T21

- 2.7 **Water** - Water shall be fresh, clean, and free from alkali (and other deleterious materials).
- 2.8 **Concrete Reinforcement** - All reinforcing steel shall be deformed steel bars conforming to ASTM A615, ASTM A616, and ASTM A617, minimum grade 40, unless otherwise shown on the drawings. Wire and wire mesh, when used as reinforcement in concrete, shall conform to ASTM A185.

2.9.1 Concrete Dry Mix (for Thrust Blocks):

1. Design: ASTM C 387, made using dry pre-portioned, blended and bagged mix.
2. Average 28-day Compressive Strength: 3000 psi
3. Product: Sakrete Concrete Mix, as manufactured by US Mix Products Company, or an approved equal.

PART 3 - EXECUTION

- 3.1 **Equipment** - All equipment, tools, and machinery used in doing the work shall be of approved design, shall be in good mechanical condition, and shall be maintained in a satisfactory working condition. The Contractor shall furnish sufficient equipment to (a) make a continuous pour between construction joints, and (b) place and consolidate each layer before the preceding layer has taken its initial set.
- A. Mixer - The mixer shall be of a batch type of the size and design approved by the Contrating Officer, which will insure a uniform distribution of the materials throughout the mass and shall have a rated capacity of not less than a one-bag batch. Where the quantity of concrete to be placed is small, the use of a half-bag mixer will be permitted. When large continuous pours are to be made, a second mixer should be either on the job or arrangements made so that it can be rapidly moved to the site of the work in case of a breakdown, insuring an uninterrupted pour.
- B. Batching Equipment - The equipment used for weighing materials shall provide convenient and positive means of determining the quantities in the batch of concrete, and means shall be provided for the addition or removal of small quantities of materials to obtain the exact weight of ingredients per batch. The device for measuring water shall show accurately the quantity in pounds or in gallons.
- 3.2 **Concrete Formwork** - Forms shall be clean inside, accurately set and properly secured. Forms shall be sufficiently tight and rigidly constructed to contain the concrete without leakage or distortion. Forms for concrete exposed as a finished surface shall have smooth faces with tight, flush joints. Forms shall be left in place until the concrete is safely self-supporting, and then shall be removed without damage to the concrete.
- 3.3 **Placing Reinforcing Steel** - Reinforcing bars and members shall be accurately shaped and placed, as indicated on the drawings. Bars shall overlap as shown on the drawings or a minimum of 24 diameters at all splices and be securely wired and shall be firmly held in place during the placing of the concrete by spacers, chairs, or other suitable supports. Extreme care shall be taken to embed steel in concrete not less than 1-1/2 inches from the finished concrete surface at any point, unless otherwise shown on the drawings.
- 3.4 **Job Mixing** - All concrete mixture shall be mixed for a period of not less than 1-1/2 minutes after all materials, including water, are in the mixer. During the period of mixing,

the mixer shall operate at the speed for which it was designed, but this speed shall be not less than 14 nor more than 20 revolutions per minute.

The entire contents of the mixer shall be removed from the drum before materials for the succeeding batch are placed therein. No mixer shall be operated above its rated capacity, and no mixer of a rated capacity of less than one bag shall be used, except as otherwise specified.

The first batch of concrete materials placed in the mixer shall contain a sufficient excess of cement, sand, and water to coat the inside of the drum without reducing the required mortar content of the mix. Upon the cessation of mixing for a considerable period, the mixer shall be thoroughly cleaned.

Concrete shall be mixed only in such quantities as are required for immediate use and shall be placed while fresh. Any concrete in which initial set has begun shall be wasted. Retempering of concrete will not be allowed.

Hand-mixing will not be permitted, except by written permission from the Contracting Officer.

- 3.5 **Ready-Mixed** - Ready-mixed concrete may be used, provided that the materials are handled, measured, and batched as specified and provided that the methods described below are complied with.

Delivery of concrete shall be so regulated that placing is at a continuous rate, unless delayed by the placing operations. The intervals between delivery of batches for a continuous pour shall not be so great as to allow the concrete already in place to partially harden, and in no case shall an interval exceed 30 minutes.

In the event ready-mixed concrete is used, the supplier shall furnish, with each truckload, a certificate showing:

Amount (by weight) - Cement in each load

Amount (by weight) - Fine aggregate in each load

Amount (by weight) - Coarse aggregate in each load

Amount (by weight) - Water in each load

Time of day cement was added to the aggregate and water.

These certificates shall be handed to the Contracting Officer or authorized representative on the job.

- 3.6 **Truck Mixing** - Truck mixers, unless otherwise authorized, shall be of the revolving drum type, watertight, and so constructed that the concrete can be mixed to insure a uniform distribution of materials throughout the mass and the discharging of concrete without segregation. All solid materials for the concrete shall be accurately measured by weight and charged into the drum at the proportioning plant. Except as subsequently provided, the truck mixer shall be equipped with a tank for carrying mixing water. Only the prescribed amount of water shall be placed in the tank, unless the tank is equipped with a device by which the quantity of water added can be readily verified.

The mixing water may be added directly to the batch, in which case a tank will not be required. Truck mixers may be required to be provided with means by which the mixing time can be readily verified by the Contracting Officer.

The maximum size of batch in truck mixers shall not exceed the maximum rated capacity of the mixer, as stated by the manufacturer and stamped in metal on the mixer. Each truck mixer shall be equipped with an approved device for registering the number of revolutions made by the drum during the interval between introduction of the cement and/or water into the drum and discharge of concrete from the mixer. The drum shall revolve continuously during the interval. The mixing speed of the drum shall not be less than four nor more than fifteen revolutions per minute.

The agitating speed of the drum shall be not less than two nor more than six revolutions per minute. Mixing shall commence immediately after the cement has been added to the water and aggregate, and shall continue at mixing speed for at least fifty revolutions of the drum. The drum shall revolve without interruption until the concrete has been discharged.

Concrete transported in a truck mixer or agitator shall be discharged at the job and placed in its final position in the forms within 1-1/2 hours after the introduction of the cement to the water and aggregate, except that in hot weather or under other conditions contributing to quick stiffening of the concrete (mix temperatures above 72° F.), the maximum allowable time shall be reduced to 45 minutes (by the Contracting Officer). The maximum volume of mixed concrete transported in an agitator shall be in accordance with the specified rating.

- 3.7 **Placing Concrete** - No concrete shall be deposited in the forms until all reinforcing steel, ducts, and anchorages have been placed and inspected by the Contracting Officer or authorized representative.

The Contractor shall notify the Contracting Officer a minimum of 24 hours prior to placing concrete.

Surfaces on which concrete is to be placed shall be thoroughly moistened with water immediately before placing concrete.

No concrete shall be placed in water. All standing water shall be removed prior to the placement of the concrete.

The placing of concrete shall start at the low point and shall proceed upgrade, unless otherwise permitted by the Contracting Officer.

All concrete shall be placed while fresh and before it has taken an initial set. Retempering any partially hardened concrete with additional water will not be permitted.

Mixed concrete, after being deposited, shall be consolidated (tamped and spaded or vibrated) until all voids are filled and free mortar appears on the surface. All concrete in walls greater than 18" in height shall be consolidated with suitable mechanical vibrators. Vibrating shall be supplemented by hand spading and adequate compaction to insure against any voids or honeycomb. The concrete shall be placed as nearly as possible in its final position and the use of vibrators for extensive shifting of the mass of fresh concrete will not be permitted. Fresh concrete shall not be permitted to fall from a height greater than six feet without the use of adjustable-length pipes or chutes.

The use of chutes will be allowed only when they are laid at such inclination as will permit the flow of concrete of such consistency as is required. The use of additional water in the concrete to promote free flow in chutes of low inclination will not be allowed.

No precipitation shall be allowed to fall on concrete surfaces (floors, roofs, sidewalks, driveways, etc.) until the concrete has set at least 24-hours.

- 3.8 **Finishing Concrete** - Ordinary surface finish shall be applied to all concrete surfaces either as a final finish or preparatory to a higher class finish. Ordinary surface finish, unless otherwise specified, shall be considered as a final finish. The ordinary surface finish shall begin by striking off the concrete to the proper grade for elevation and drainage, as shown on the drawings. The surface shall then be floated to bring a smooth blanket of mortar paste to the surface and cover all the coarse aggregate. Surfaces covered by form work shall have all fins removed and all holes and depressions cleaned and filled with grout. On surfaces which are to be buried underground or surfaces which are enclosed, the removal of fins and form marks and the rubbing of mortared surfaces to a uniform color and floating will not be required.

The following items, and those shown on the drawings, shall receive additional or special finishing:

Foundations - All concrete foundations above grade, and for a distance of 4" to 6" below finished grade, shall be dressed by either (a) covering with grout composed of a mixture of one part sand and one part cement, mixed to a cream-like consistency and brushed on while the foundation is still green, or (b) rub down with a wood trowel and water while still green to make an even sand finish appearance.

Floors - All concrete floors shall be steel troweled to a hard, smooth, even finish without trowel or chatter marks.

Sidewalks and Driveways - All concrete sidewalks and driveways shall be troweled as described under floors. The troweled surface shall be roughened with a soft broom to provide a non-slip light broom surface.

All edges shall be finished with an edging tool.

Expansion Joints - Expansion joints shall be placed as shown on the drawings. All edges shall be finished with an edging tool. The joint space shall be 3/8-inch minimum and shall be filled with asphalt impregnated fiberboard.

- 3.9 **Protection From Cold** - No concrete shall be placed when the ambient air temperature is below 35° F., unless permission to do so is given in writing by the Contracting Officer. In all cases, the Contractor shall insure that the air, or water as allowed in Section 03300, surrounding the fresh concrete, be kept at a temperature above 50° F. for a period of 5 days, or above 70° F. for three days, after the concrete is placed.

Sufficient heating apparatus, such as stoves, salamanders, or steam equipment, and fuel to furnish all required heat, shall be supplied. All water used for mixing concrete shall be heated to a temperature of at least 60° F., but not over 150° F. Aggregate shall be heated either by steam or by dry heat to a temperature of at least 60° F., but not over 150° F. The heating apparatus shall be such as to heat the mass uniformly and preclude the possibility of the occurrence of hot spots which will burn the material. The temperature of the mixed concrete shall be not less than 60° F., nor more than 100° F., at the time of placing in the forms.

The Contractor will not be allowed to use calcium chloride in the concrete.

- 3.10 **Removal of Water** - Water shall not be allowed to rise over concrete until the concrete has set at least 24 hours. No flowing water shall be permitted to contact the concrete until it has set for at least seven days. Any damage to concrete or connecting structures or item, caused by water entering or raising, shall be repaired by the Contractor at his expense.
- 3.11 **Curing** - The concrete shall be protected against frost and rapid drying, and kept moist for a curing period of at least six days after placing. Concrete, from which forms are removed within six days after placement, and flat work, shall be sprayed during the curing period, as frequently as conditions may require to prevent drying out.

Impervious curing compounds may be used in lieu of water-curing subject to written approval by the Contracting Officer. When used, all surfaces shall be given the required surface finish prior to

application of the impervious curing compound. During the surface finish process, the concrete shall be protected by the water-curing method.

The impervious curing compound shall meet all specification requirements of ASTM C309.

Note: Concrete which is to be lined with fiberglass shall not be treated with a curing compound which contains any wax. (Nonvolatile portions of Class A vehicles may contain wax. Nonvolatile portions of Class B vehicles are resin material.)

The rate of application shall be not less than one gallon of liquid coating per 200 square feet of concrete surface or as recommended by the manufacturer, and all concrete cured by this method shall receive two such applications of the curing compound.

The first coat shall be applied immediately after stripping of forms and acceptance of the concrete finish. If the surface is dry, the concrete shall be thoroughly wet with water and the curing compound applied just as the surface film of water disappears. The second application shall be applied after the first application has set. During curing operations, any unsprayed surfaces shall be kept wet with water.

The coating shall be protected against marring or traffic for a period of at least 6-days after application. When applied to sidewalks, curbs, or roadways, the coating shall not be walked on, no concrete buggies or wheelbarrows allowed to pass over it, nor shall it be otherwise disturbed. Any coating so marred or otherwise disturbed shall be given an additional coating. Should the coating be subjected continuously to injury, the Contracting Officer reserves the right to require the water-curing be applied.

- 3.12 Sampling and Testing: Each truck load, or portion thereof, of concrete delivered to the site shall have the following sampling and testing performed.
- A. At least one slump test in accordance with ASTM C143 with additional slump tests if any water or other materials are subsequently added or if initial test fails. All concrete placed which fails slump tests, is placed at contractor's risk and is subject to removal if cylinders made subsequently fail testing.
 - B. At least on air entrainment test with additional air entrainment test performed if any water or other materials are subsequently added or if initial test fails.
 - C. The temperature of the concrete batch shall be taken and recorded with the slump test results.
 - D. A minimum of 3 concrete cylinders shall be made and cured in accordance with ASTM C31 for any load failing slump testing. The first cylinder shall be tested in 7 days, the second cylinder shall be tested in 28 days. If either test fails, the third test shall be also tested in 28 days. Cylinder testing shall be in accordance with ASTM C39.

- E. A copy of the test results shall be submitted to the Contracting Officer.

3.13 Sakrete Concrete Installation

- A. Mixing Sakrete:
 - 1. Mix dry concrete and water thoroughly according to the manufacturer.
 - 2. Mixing Equipment: Mechanical mixer or wheel barrow.
 - 3. Place concrete while fresh; any concrete in which initial set has begun shall be wasted.
- B. Placing: Place the fresh concrete as shown on the drawings and work as necessary to remove the air pockets.

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 06179 - WOOD TRUSSES AND METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Wood roof trusses.
 - 2. Truss accessories.
 - 3. Preformed Metal Roofing
 - 4. Furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
- B. See Section 06203 "Rough Carpentry" for supplementary framing, materials, and permanent bracing requirements.

- 1.2 MEASUREMENT AND PAYMENT - There will be no separate measurement and payment made for work in this section. Work in this section will be considered incidental and included in payment for items listed in the Schedule of Items.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads indicated without exceeding TPI 1 deflection limits. Trusses, fasteners, and Metal roofing shall be designed to meet the most current International Building Code (IBC) and in accordance with the following minimum requirements below:
 - 1. Snow Load: 50 PSF
 - 2. Wind Load: 70 MPH, Exposure C, with uplift considerations.
 - a. Wind Prying shall be considered for roof panels and accessories with the following factors of safety:
 - 1) Single fastener in each connection 3.00
 - 2) Two or more fasteners in each connection 2.25
 - 3. Live Load: 20 PSF
 - 4. Seismic Loads: Per IBC 2003 Edition
 - 5. Span: 12 feet
 - 6. Thermal Loads: free movement of roof panels in response to temperature changes of 150 degrees F during the life of the structure.

1.3 SUBMITTALS

- A. Truss metal fasteners: For metal-plate connectors, metal-framing anchors, bolts, and fasteners indicated.
- B. Truss Shop Drawings: Show location, pitch, span, camber, configuration, and spacing for each type of truss required; species, sizes, and stress grades of lumber; splice details; type, size, material, finish, design values, orientation, and location and size of metal connector plates; and bearing details.
 - 1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Truss manufacturer shall be responsible for the design of all truss connecting hardware.
- C. Metal roof panels: Samples of roofing textures and colors from the full range of manufactures' roofing textures and colors.
 - 1. Submit one 8-inch long sample of panel, including clips.
 - 2. Submit two color chart samples for the approved roof texture.
- D. Performance Testing and Documentation:
 - 1. Metal roof system must be tested in accordance with Underwriters Laboratories, Inc. (UL) Test Method 580 "Tests for Uplift Resistance of Roof Assemblies".
 - 2. Metal roof system must be tested in accordance with ASTM E 1592-95 for negative loading when AISI specifications do not apply. Capacity for gauge, span or loading other than those tested may be determined by interpolating test values.
 - 3. Metal roof system must meet the air infiltration requirements of ASTM E 283-84 when tested with a 6.24 PSF pressure differential. The resulting air infiltration leakage rate will be a minimum of 18" LokSeam®-(.0143 cfm/sq. ft.)
 - 4. Metal roof system must meet the water penetration requirements of ASTM E 331-83 when tested with a 6.24 PSF pressure differential with no uncontrollable water leakage when five gallons per hour of water is sprayed per square foot.
- E. Warranties
 - 1. Metal roof system manufacturer shall submit a specimen copy of the warranty upon final acceptance of the project. Provide the following warranties.
 - a. Roof Finish: Covering bare metal against rupture, structural failure and perforation due to normal atmospheric corrosion exposure for a period of 20 years.
 - b. Weathertightness: The Contractor shall provide to the Contracting Officer, a Standard warranty signed by the roofing manufacturer of the Standing Seam Roof System for a period of ten (10) years from the Date of Substantial Completion, the roofing manufacturer WARRANTS to the Contracting Officer that the roofing manufacturer's furnished roof panels, flashing, and related items used to fasten the roof panels and flashing to the roof structure ("Roof System") will not allow intrusion of water from the exterior of the Roof System into the building envelope, when exposed to ordinary weather conditions and ordinary wear and usage. The Date of

Substantial Completion is the date that is certified by the Contracting Officer.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
- B. Grade and Species: Any species for truss chord and web members, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AFPA's "National Design Specifications for Wood Construction" and its "Supplement."

2.2 METAL CONNECTORS, FASTENERS, AND ANCHORS (Trusses)

- A. Metal Connector Plates: Fabricate connector plates to comply with TPI 1 from hot-dip galvanized steel sheet complying with ASTM A 653/A 653M, G60 coating designation; Designation SS, Grade 33, and not less than 0.036 inch thick.
 - 1. Fasteners: As required by manufacturer.
- B. Metal Framing Anchors: Provide framing anchors made from hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.
 - 1. Allowable Design Loads: Meet or exceed those indicated per manufacturer's published values determined from empirical data or by rational engineering analysis.

2.3 TRUSS FABRICATION

- A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

2.4 METAL ROOF PANELS

- A. LokSeam Series, Architectural standing seam metal roof system or an approved equal.
 - 1. Metal Roof System Profile: 1-3/4" inch high rib x 18 inch wide panel.
 - 2. Panel Style: Narrow rib, vertical leg, concealed fastener, positive snap lock standing seam, utilizing male and female rib configurations, with factory applied hot melt mastic in female rib.
 - 3. Gauge: (24 gauge) (UL90 rated - Underwriters Laboratories)
 - 4. Substrate: Galvalume® steel sheet, 0.5 ounces/square foot, minimum yield of 50,000 PSI.

5. Clip: 18 gauge UL-rated clip with two fasteners to structural (UL-90 rated - Underwriters Laboratories).
6. Texture: Smooth with striations
7. Color: Selected from metal roof system manufacturer's standard offering.

2.5 MISCELLANEOUS ROOFING MATERIALS

A. Fasteners:

1. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be designed to withstand specified design loads.
2. Use long life fasteners for all interior and exterior metal roof system applications.
3. Provide fasteners with a factory applied coating in a color to match metal roof system application.
4. Provide neoprene washers under heads of exposed fasteners.
5. Locate and space all exposed fasteners in a true vertical and horizontal alignment. Use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the neoprene washer.

B. Accessories:

1. Provide all components required per the metal roof system manufacturer's approved shop drawings for a complete metal roof system to include panels, panel clips, trim/flashing, fascias, ridge, closures, sealants, fillers and any other required items.
 - a. All outside closures will be fabricated from Galvalume Plus® or Pre-Painted Galvalume® sheet steel of the same gauge, finish and color as the panels or an approved equal.
 - b. All tape seal is to be a pressure sensitive, 100 percent solids, polyisobutylene compound sealing tape with a release paper backing. Provide permanently elastic, non-sagging, non-toxic, non-staining tape seal approved by the metal roof system manufacturer.
 - c. All joint sealant is to be a one-part elastomeric polyurethane sealant approved by the metal roof system manufacturer.

PART 3 - EXECUTION

3.1 TRUSS INSTALLATION

- A. Install and brace trusses according to TPI recommendations and as indicated. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- B. Anchor trusses securely at bearing points; use metal framing anchors. Install fasteners through each fastener hole in metal framing anchor according to manufacturer's fastening schedules and written instructions.

- C. Securely connect each truss ply required for forming built-up girder trusses. Anchor trusses to girder trusses as indicated.
- D. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- E. Install wood trusses within installation tolerances in TPI 1.
- F. Do not cut or remove truss members.
- G. Return wood trusses that are damaged or do not meet requirements to fabricator and replace with trusses that do meet requirements.

3.2 ROOFING INSTALLATION

- A. Install metal roof system so that it is weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
- B. Install metal roof system in accordance with manufacturer's instructions and shop drawings.
- C. Provide concealed anchors at all panel attachment locations.
- D. Install panels plumb, level and straight with seams and ribs parallel, conforming to design as indicated.
- E. Clean work in accordance with manufacturer's recommendations.
- F. Protect work against damage until final acceptance. Replace or repair to the satisfaction of the Contracting Officer's Representative, any work that becomes damaged prior to final acceptance.
- G. Touch up minor scratches and abrasions with touch up paint supplied by the metal roof system manufacturer.
- H. Do not allow panels or trim to come in contact with dissimilar metals such as copper, lead or graphite. Water run-off from these materials is also prohibited.

END OF SECTION 06179

April 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 06203 - CARPENTRY

PART 1 - GENERAL

- 1.1 **Description of Work** - Perform all work necessary or required for the construction of the project, as indicated on the drawings. Such work includes, but is not necessarily limited to, the finishing and installing of all rough and finish carpentry work, as shown and noted on the drawings and specified herein.
- 1.2 **Grade Marks** - All lumber and plywood shall be grade stamped.
- 1.3 **Measurement and Payment** - No separate payment will be made for work included under this section. Payment for this work will be included in the contract unit price for Section 00118 "Pumphouse."

PART 2 - PRODUCTS

- 2.1 **Materials** - All lumber shall be seasoned, surfaced four sides (S4S), except where shown rough-sawn on drawings, shall not exceed a moisture content of 19 percent for (A), (B), and (C) below and 15 percent for all others, and shall not be less than the following grades:
 - A. **Sill Plates** - Sill plates and any other framing in contact with concrete or masonry shall be foundation grade (Pressure Treated) lumber.
 - B. **Joists and Planks, Beams and Stringers, Posts and Timbers** - Douglas Fir No. 2 and better grade, as graded by the Western Wood Products Association or West Coast Lumber Inspection Bureau, or equal, unless otherwise SHOWN OTHERWISE ON THE DRAWINGS.
 - C. **Light Framing** - Douglas Fir, Standard and better grade, as graded by Western Wood Products Association or West Coast Lumber Inspection Bureau, or equal.
 - D. **Pressure Treated Framing** - FDN grade Douglas Fir as designated by American Wood Preservers Association or American Wood Preservers Bureau.
 - E. **Roof Sheathing and Exterior Wall Sheathing** - APA Rated sheathing of the span rating and panel thickness shown on the drawings and as graded by The Engineered Wood Association (formerly American Plywood Association). Use of the term

"plywood" on the drawings does not exclude the use of other panels with equivalent span ratings.

- F. **Interior Plywood Wall Sheathing** - CDX fir, interior type, with exterior glue, as graded by the American Plywood Association.
- G. **Trim and Moldings - Interior** - C select pine, as graded by the Western Wood Products Association.
- H. **Fiber-Cement Siding, Trim, Soffit, and Fascia** – Siding, trim, soffit, and fascia made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84. Material shall be pre-primed with standard exterior alkyd primer.
 - 1. **Product Data:** For each type of product indicated. Obtain type, color, texture, and pattern of siding, including related accessories, through one source from a single manufacturer and submit to Contracting Officer for approval.
 - 2. **Siding Panel Pattern:** 48-inch wide by 8-foot sheets with wood-grain texture and grooves 8 inches o.c.
 - 3. **Trim:** minimum 4-inch wide wood-grained
 - 4. **Soffit Panel Pattern:** wood-grained, non-vented soffit panels.
 - 5. **Elastomeric Joint Sealant:** Single-component neutral-curing silicone joint sealant complying with requirements in Section 07900 "Joint Sealants" for Use NT (non-traffic) and for Uses M, G, A, and, as applicable to joint substrates indicated, O joint substrates.
 - 6. **Fasteners:**
 - a. For fastening to wood, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1 inch (25 mm) into substrate.
 - b. For fastening fiber-cement siding, use hot-dip galvanized fasteners.
- I. **Building Felt** - Standard #30 felt shall be installed over roof sheathing under the metal roofing.
- J. **Building Wrap** - Air-retarder sheeting made from polyolefins; cross-laminated films, woven strands, or spun-bonded fibers; coated or uncoated; with or without perforations; and complying with ASTM E 1677, Type I.
 - 1. **Thickness:** Not less than 3 mils (0.08 mm).
 - 2. **Permeance:** Not less than 10 perms (575 ng/Pa x s x sq. m).
 - 3. **Flame-Spread Index:** 25 or less per ASTM E 84.
 - 4. **Allowable Exposure Time:** Not less than three months.
 - 5. **Building Wrap Tape:** Pressure-sensitive plastic tape recommended by building wrap manufacturer for sealing joints and penetrations in building wrap.

PART 3 - EXECUTION

3.1 General

- A. **Nailing** - Nailing shall conform with the requirements of the International Building Code, unless otherwise specified.
- B. **Building Wrap Application** - Cover wall sheathing with building wrap as indicated.
 - 1. Comply with manufacturer's written instructions.
 - 2. Cover upstanding flashing with 4-inch (102-mm) overlap.
 - 3. Seal seams, edges, and penetrations with tape.
 - 4. Extend into jambs of openings and seal corners with tape.

3.2 Rough Carpentry

- A. **General** - All framing shall be accurately cut and constructed plumb, straight, and true to lines and dimensions shown. No cutting and boring of joists and beams shall be done without permission from the Contracting Officer. Set joists and beams with crown edges up. Space studs 16" o.c., unless shown otherwise. Double studs at openings and triple studs at intersections of walls.
- B. **Roof Sheathing** - The roof sheathing shall be installed with the face grain laid perpendicular to the rafters, end joints staggered, and nailed at each crossing and end. Butted end joints shall occur only over bearing points.
- C. **Blocking and Bracing** - Blocking needed for bracing, edge support, and backing for miscellaneous accessories, grab bars, toilet paper dispensers, door stops, any needed to stabilize walls and other building elements, and other miscellaneous blocking shall be included as part of this work.
- D. **Treated Lumber** - All lumber placed in contact with earth or concrete shall be treated lumber.

3.3 Finish Carpentry

- A. **General** - Fabricate and install shelves, moldings, and all other interior and exterior trim in accordance with the drawings. Joints shall be closely fitted, butted, mitered, or housed, as shown or required to provide substantial construction and a neat, finished appearance and to conceal shrinkage. Exposed wood surfaces shall be without surface imperfections which cannot be concealed readily by paint finishes. Where applicable, use finishing nails set for puttying.
- B. **Wood Trim** - All wood trim shall be run from solid stock with housed joints. Trim shall be set plumb and securely nailed with all joints tightly fit with no gaps. No gaps in joints which would require putty or other fill will be allowed.

All trim shall be in single lengths. Running finish, such as base and moldings, shall be in commercial lengths and jointed only where solid fastenings can be made. Where end joints are required, miter joints shall be made.

- C. **Exterior siding, trim, soffit, and fascia** - General: Comply with siding manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. Seal butt joints at inside and outside corners and at trim locations.
 - 2. Install continuous metal flashing at horizontal panel joints with 3/16-inch (5-mm) expansion gap.
 - 3. Apply battens and corner trim as indicated.
 - 4. Conceal fasteners to greatest practical extent by countersinking and filling, by placing in grooves of siding pattern, or by concealing with applied trim or battens as detailed.
- D. **Interior Plywood Siding** - Install panels with edges over framing or blocking. Nail at 6 inches (150 mm) o.c. at panel perimeter and 12 inches (300 mm) o.c. at intermediate supports. Leave 1/16-inch (1.5-mm) gap between adjacent panels and 1/8-inch (3-mm) gap at perimeter and openings.
 - 1. Seal butt joints at inside and outside corners and at trim locations.
 - 2. Apply trim at corners and around openings.
 - 3. Conceal fasteners to greatest practical extent by countersinking and filling, by placing in grooves of siding pattern, or by concealing with applied trim or battens as detailed. Do not nail through overlapping pieces.
- E. **Finish:** Apply finish within two weeks of installation.

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 07204 - BUILDING INSULATION

PART 1 - GENERAL

- 1.1 **Scope** - Perform all work necessary or required to insulate the building as shown on the drawings and specified herein.
- 1.2 **Product Handling** - Materials shall be packaged and properly protected during delivery to the site. Delivered materials shall be kept in safe, dry storage. Materials shall be labeled for ready identification. Labels shall include name of manufacturer, name of material, "R" value and "K" value of the product.
- 1.3 **Measurement and Payment** - There will be no separate measurement or payment for work in this section. All work will be included in the lump sum quantity for Section 00118 "Pumphouse".
- 1.3 **Related Work** - The work shall be in accordance with the following subsidiary specifications. The subsidiary specifications are referred to in the text by the Section designation only.

Section 06203 Carpentry

PART II - MATERIALS

- 2.1 **Batts and Blankets** - All wall insulation shall be batt and blanket insulation and shall be fiberglass with foil-scrim-kraft facing on one side. Thermal resistance (R) values are as shown on the drawings.
- 2.2 **Loose Fill Insulation** - Loose fill insulation shall be fiberglass, cellulose, or an approved equal. Thermal resistance (R) values are as shown on the drawings. An approved vapor barrier as specified below is required if loose fill insulation is used in lieu of batt type insulation.
- 2.3 **Insulation Baffle** - Insulation baffles shall be installed between trusses where shown on the drawings.
- 2.4 **Rigid Insulation** - Rigid insulation shall be closed cell extruded polystyrene (XPS) polystyrene, suitable for below ground use, StyroFoam "Square Edge", or an approved equal. Insulation thickness shall be 2 inches for an R-10.
- 2.5 **Vapor Barrier** - Vapor barrier shall be a minimum 6 mil polyethylene sheet material. Vapor barrier is required where loose fill insulation is used in lieu of batt insulation.

- 2.6 Spray Foam Insulation shall be an expandable foam made to be applied in narrow openings.

PART III - EXECUTION

3.1 Installation

- A. Installation shall not start until the construction has progressed to the point that weather conditions and remaining construction operation will not damage or wet the insulation material.
- B. Exercise extreme care where an integral vapor barrier is specified to maintain the vapor barrier continuous over the entire surfaces. Repair and patch all tears in the vapor barrier.
- C. Fully insulate all small areas between closely spaced framing members.

3.2 Batts and Blankets

- A. Where pipes, conduits, etc., are located in spaces to receive insulation, place insulation between outer surface and the pipes, compressing the insulation slightly if necessary.
- B. Cut, fit, and overlap insulation and vapor barrier materials, around boxes, cabinets, and projections.
- C. End match neatly so that all ends fit snugly or overlap, so that no voids occur.
- D. At wood framing members, securely fasten flanges of insulation to sides of members, so that flanges are continuously tight against the members, with staples or nails approximately 6 inches on center.
- E. Do not fasten flanges of insulation to exposed face of framing members.
- F. Install foil-kraft facing toward the heated (interior) side of the wall.

3.3 Loose Fill Insulation

- A. Loose fill insulation shall be installed by pneumatic means or by pouring.
- B. The required R-value shall be as shown on the drawings and the density shall be uniform.

C. Vapor barrier shall be installed to the warm face of all ceiling joists prior to installation of gypsum board. Securely fasten vapor barrier with staples at 12 inch spacing and overlap all joints a minimum of 6 inches.

3.4 **Rigid Insulation** - Bond rigid insulation to the foundation walls with mastic or cement as recommended by the manufacturer.

Apply flashing to top of insulation per drawings. Seal below grade edges of flashing and flashing laps with mastic recommended by insulation manufacturer. Outside corner joints of flashing shall be mitered and sealed with a continuous soldered joint.

3.5 Spray foam insulation shall be applied in all small crevices and cracks where other insulation cannot be installed. (i.e. at door and window frames, utility penetrations into slabs or other uninsulated areas, closely spaced studs and other framing, etc.)

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 07900 - CAULKING AND SEALANTS

PART I - GENERAL

- 1.1 **Scope** - Completely seal with caulking compound all joints around frames and sills of doors, windows, flashing, and other openings in exterior walls, and all other joints or spaces noted on drawings or in these specifications to be caulked.
- 1.2 **Measurement and Payment** - There will be no separate measurement or payment for work in this section. All work will be included in the lump sum quantity for Section 00118 "Pumphouse".

PART II - PRODUCTS

- 2.1 Caulking compound shall be a paintable/stainable siliconized-latex caulking with a minimum 20 year warranty. Caulking shall match color of the substrate to which it is applied (i.e. siding, trim, etc.).
- 2.2 Backing strip shall be the maximum size recommended by the caulking manufacturer and shall be material manufactured for the purpose.

PART III - EXECUTION

- 3.1 Joints and spaces to be caulked shall be clean and free from dust and shall be dry. Joints shall be filled slightly concave. Caulk joints before final coat of paint or stain is applied to adjacent work. Where caulking will not be painted or stained, color shall match that of adjacent materials.

Caulking applied to spaces wider than 1/4" shall have a properly sized backing strip installed.

Apply compound with gun having proper size nozzle or with putty knife as required. Use sufficient pressure to fill all joints solid leaving a smooth continuous concave joint; superficial pointing of joints with a skin bead will not be accepted. Remove excess caulking and leave surfaces neat, smooth, and clean. Upon completion, caulking shall have a smooth, even finish. All caulked joints shall be watertight.

END OF SECTION

July 1994

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 08100 - METAL DOORS AND FRAMES

PART 1 - GENERAL

- 1.1 **Description** - Perform all work necessary or required for the construction of the project, as indicated on the drawings. Such work includes, but is not necessarily limited to, the providing and installing of all metal doors and metal door and window frames as shown on the drawings and specified herein.
- 1.2 Delivery, Storage, and Handling
- A. Delivery, storage, and handling of metal work shall be in a manner to prevent damage and deterioration.
 - B. Doors shall be stored upright, in a protected dry area, at least one inch off the ground or floor and at least 1/4 inch between individual pieces.
 - C. Special storage and handling requirements of the manufacturer shall be followed.
- 1.3 **Measurement and Payment** - No separate payment will be made for work included under this section. Payment for this work will be included in the contract unit price for Section 00118 "Pumphouse."

PART 2 - PRODUCTS

- 2.1 Door Frames
- A. All door frames shall be 14-gauge cold rolled steel of the size and design shown on the drawings.
 - B. Corners and connections may be welded with exposed welds ground flush and smooth. If welded, frames shall be delivered with spreader bar attached. Door Frames may be knock-down type with proper anchors as indicated below.
 - C. Anchors
 - 1. Three anchors shall be provided at each jamb.

2. Anchors for masonry walls shall be tee type. Anchors for wood frame walls shall be lock-in type wood stud anchors. They shall provide positive fastening to adjacent wall construction.
3. Metal clip angle shall be secured at bottom of each jamb member for anchoring to floor.

2.2 Doors

- A. All steel doors shall be flush style doors with face sheets of 16-gauge, cold rolled steel.
- B. Non-insulated cores shall be draft honeycomb laminated to inside of face sheets.
- C. Insulated doors shall have a foam core with a minimum R-value of 6.

2.3 Preparation for Finish Hardware

- A. Doors and frames shall be prepared at the factory for finish hardware which includes sinkage and cutouts for mortise and concealed hardware.
- B. Reinforcements shall be provided for both concealed and surface applied hardware.
 1. Reinforcements shall be drilled and tapped at shop using templates.
 2. Reinforcements shall be installed with concealed connections designed to develop full strength of reinforcements.

2.4 Finish

- A. Doors and frames shall be leveled and ground smooth.
- B. Shop coat of rust-inhibitive metal primer shall be applied. Primer shall be applied right after pretreatment is completed.

PART 3 - EXECUTION

3.1 Installation of Frames

- A. Frames shall be set to maintain scheduled dimensions, hold head level, and maintain jambs plumb and square.
- B. Anchorages and connections shall be rigidly secured to adjacent construction.
- C. Frame spreader bars shall be left intact until frames are set perfectly square and plumb and anchors are securely attached.

3.2 Installation of Doors

- A. Hardware shall be applied in accord with hardware manufacturer's templates and instructions.
- B. Operable parts shall be adjusted for correct function.
- C. All prefinished hardware shall be removed, tagged, boxed, and reinstalled after finish paint work is completed.

3.3 **Prime Coat Touchup** - Immediately after erection, areas where prime coat has been damaged shall be sanded smooth and touched up with same primer as applied at shop.

3.4 **Protection** - Installed metal work shall be protected against damage from other construction work.

END OF SECTION

April 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 08712 - FINISH HARDWARE

PART I - GENERAL

- 1.1 **Description** - Perform all work necessary and required for the proper installation and operation of all door hardware as shown on the drawings and specified herein.
- 1.2 **Product Handling** - All hardware shall be delivered in the manufacturer's original packages; each shall be individually packaged and carefully marked for its intended use. Each item shall be complete with necessary screws, bolts, keys, instructions and installation template, if necessary, for spotting mortising tools.
- 1.3 **Submittals** - All door locksets shall have installation, operation, and maintenance information.
- 1.4 **Measurement and Payment** - No separate payment will be made for work included under this section. Payment for this work will be included in the contract unit price for Section 00118 "Pumphouse."

PART II - PRODUCTS

2.1 **Materials**

- A. **Finish** - Dull chrome (US-26D) or, if Stainless steel, dull (US-32D) finish throughout for all locks, plates, lock trim, knob latches, and hinges.
- B. **Hinges** - Door hinges are to be wrought steel butt hinges, full mortise, regular weight, button tip, 1-1/2 pair of 4-1/2" x 4-1/2" butts for each 1-3/4" door.
- C. **Door Locks and Equipment** - Each entry door shall have a mortised deadbolt and a lever door set. All locks and equipment shall be as follows:
 - 1. **Deadbolt** - Yale model 8714 - Mortised type, operated by key from outside only, which will receive the Forest Service cylinder; similar and equal to Yale #314.
 - 2. **Door Latchset** - shall be Yale, heavy duty, privacy bedroom or bath lock with push button inside lock, model No. 5401LN, and P.B. lever design or an approved equal.

- D. Additional Hardware – non-locking doors shall be provided with Stanley #SP1055 Chain Bolt (6" length) for Head, and Stanley #SP1056 Foot Bolt (6" length) for Threshold.
- E. Threshold – 5" Saddle, Pemko #156A – mill finished aluminum.

PART III - EXECUTION

- 3.1 **Installation** – All hardware shall be installed per manufacturer's installation instructions and recommendations. Hardware shall be accurately and properly fitted. Exposed parts shall be then be removed until after painter's finishing is completed. All parts shall then be properly reinstalled. Fixed parts shall be securely fastened. Faces of mortised parts shall be fitted snug and flush, and operating parts shall move freely and smoothly without binding, sticking, and excessive clearance.
- 3.3 **Defective Work** - Hardware found to be defective in materials or installation shall be replaced, reworked, or otherwise made good.
 - A. The following shall be considered as defective materials:
 - 1. Unauthorized substitutes.
 - 2. Items delivered with missing, broken, damaged, or defaced parts.
 - 3. Items of incorrect function.
 - B. The following shall be considered as defective installations:
 - 1. Items broken, damaged, or defaced after delivery.
 - 2. Incomplete, misaligned, or incorrectly located items.

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 09900 - PAINTING

PART 1 - GENERAL

- 1.1 **Scope** - Perform all work necessary to supply and paint or stain where required on the drawings or in this specification.
- 1.2 **Product Handling** - All painting material shall be delivered to the site in the manufacturer's original containers with labels intact and seals unbroken. They shall be kept in a locked, well-ventilated storage place assigned for this purpose. Receiving, opening, and mixing of all paint materials shall be done in this room. Storage space shall be kept clean and neat. Oily rags shall be removed and disposed of each day, and all other necessary precautions shall be taken to avoid danger or fire.
- 1.3 **Environmental** - Surfaces shall be painted or stained only when they are free from moisture. No painting or staining shall be done when temperature is below 50 degrees F., except when specifically directed otherwise in writing by the Contracting Officer.
- 1.4 **Measurement and Payment** - No separate payment will be made for work included under this section. Payment for this work will be included in the contract unit price for Section 00118 "Pumphouse."

PART 2 - PRODUCTS

- 2.1 **Materials** - Material shall all be first quality products. The Benjamin Moore & Co. products listed are given to establish the type and quality of products to be used. Other products of equivalent quality may be submitted to the Contracting Officer for review and approval. Top line products of Pratt & Lambert, Sherwin-Williams, Fuller-O'Brien, Olympic, and Pittsburgh paints and stains are equivalent to those listed in this specification. Colors of Pumphouse building shall match closely to the colors on the North Fork Office Building. The contractor shall submit the proposed colors to the Contracting Officer for approval prior to ordering paint.

A. Exterior

1. Wood or Siding Surfaces - Painted: Soft gloss, 100% acrylic house paint; MoorGlo Latex House and Trim Paint, (max. spread rate - 500 sq. ft./gallon). Prime with exterior latex primer coat; Benjamin Moore Fresh

Start All Purpose Acrylic Primer, #023 (max. spread rate - 450 sq. ft./gallon).

2. Ferrous Metal (except metal siding): Soft gloss, alkyd modified, acrylic house paint; MoorGlo Latex House and Trim Paint, (max. spread rate - 500 sq. ft./gallon. Prime with alkyd base primer formulated to protect against rust and corrosion; Retardo Rust Inhibitive Paint, #163 (max. spread rate - 600 sq. ft./gallon.
3. Galvanized Iron and Polyutnyl Chloride Pipe - Painted: Soft gloss, alkyd modified, acrylic house paint; MoorGlo Latex House and Trim Paint, (max. spread rate - 500 sq. ft./gallon). Prime with vinyl-acrylic latex primer: IronClad Galvanized Metal Latex Primer, #155 max. spread rate - 600 sq. ft./gallon). No primer required on PVC pipe.

B. Interior

1. Woods, Metals, Plywood and Boards - Painted - Vinyl-Acrylic latex, satin finish, latex enamel; Regal AquaGlo, #333 (max. spread rate- 450 - sq. ft./gallon). Prime with Moore's Alkyd Enamel Underbody, #217 (max. spread rate - 600 sq. ft./gallon).

PART 3 - EXECUTION

3.1 Preparation of Surfaces

- A. Siding Surfaces to be painted shall be clean and free of dirt, dust and any other substance which might interfere with the functioning of the painting system. All surfaces to be painted shall be in proper condition to accept, and assure the proper adhesion and functioning of the particular painting system or coating specified.
- B. All steel and ferrous metal surfaces to be painted will be primed before installation. Bolts, welds and places where prime coat has been damaged shall be wire brushed to remove all loose paint, rust, and scale. Then apply one coat of ferrous metal primer.
- C. Wood surfaces shall be hand sandpapered and dusted clean. All knots, pitch pockets, or sappy portions shall be sealed with clear shellac or knot sealer. Putty all nail holes, cracks, etc., after first or prime coat. Do not seal wood surfaces to receive stain or natural finish. Do not sandpaper saw textured or resawn surfaces.
- D. Prime coats and finish coats of any one paint system shall be the products of the same manufacturer, except for manufacturer-applied factory or shop primed surfaces.

3.2 Workmanship and Application

- A. Paint shall be applied in accordance with the applicable specification and/or manufacturer's instructions.
 - B. Paints and finishing materials shall be free from skins, lumps, or any foreign matter, and kept well stirred while being applied.
 - C. Work shall be protected against spatters, stains, or soiling, and each type of finish shall be protected against similar defacement by other finish and shall be left clean.
 - D. Each coat of paint shall be evenly worked out and allowed to dry before any subsequent coat is applied or rubbing done.
 - E. Finish coats shall be the exact shades and textures selected.
 - F. The finish work shall be free from runs and sags, defective brushing, and clogging of lines or angles.
- 3.3 **Touching Up** - At the completion of other branches of the work, all painted and finished work shall be touched up and restored where damaged or defaced, and the entire work left free from blemished.

END OF SECTION

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 10200 - LOUVERS AND VENTS

PART 1 - GENERAL

- 1.1 **Description of Work** – Perform all work necessary for furnishing and installing ventilators as shown on the drawings and specified herein.
- 1.2 **Measurement and Payment** – No separate measurement shall be made for work under this section. Payment for work performed under this section shall be included in Section 00118 "Pumphouse."

PART 2 - PRODUCTS

- 2.1 Wall Vents
 - A. **Wall Ventilators** - Each wall ventilators shall be 4 inches deep, fabricated of 16 gauge galvanized steel. Unit shall be assembled completely by welding. Sizes shall be 18" tall by 24" wide unless otherwise Shown on the Drawings. An 18 x 24 mesh insect screen shall be installed on the inside face. All units shall be louver type 6784 as manufactured by the Airolite Company, Marietta, Ohio or an approved equal.
 - B. **Color** - Vent colors shall be selected by the Contracting Officer form a full range of manufacture's colors.

PART 3 - EXECUTION

- 3.1 **Installation** – Wall Vents shall be securely installed to the building, caulked around opening, and trimmed using same materials as siding manufacturer. Installation shall be in accordance with manufacturer's installation instructions and recommendations.

END OF SECTION

MAY 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 011250 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Measurement and payment for contract work will be made only for and under those pay items included in the Schedule of Items. All other work, labor, materials, equipment, and incidentals necessary to successfully complete the project will be considered as included in the payment for items shown. This section defines the method of measurements and basis of payment for work items listed in the Schedule of Items.
- B. When more than one class, size, type, thickness, etc. is specified in the Schedule of Items for any pay item, suffixes will be added to the item number to differentiate between the pay items.

1.2 DETERMINATION OF QUANTITIES

- A. The following measurements and calculations shall be used to determine contract quantities for payment.
 - 1. For individual construction items, longitudinal and lateral measurements for area computations shall be made horizontally or corrected to horizontal measurement unless otherwise specified. Measurements for geotextiles, netting and erosion control blankets shall be along slope lines.
 - 2. For excavation or embankment volumes, the average end area method shall be used to compute volumes. However, if in the judgment of the Contracting Officer (CO), the average end area method is impractical, measurement shall be made by volume in hauling vehicles or by other three-dimensional methods.
 - 3. For Structures, they shall be measured according to neat lines shown on the drawings or as altered by the CO, in writing, to fit field conditions.
 - 4. For items that are measured by the linear foot, such as pipe culverts, fencing, guardrail, piping, utilities, and underdrains, measurements shall be made parallel to the base or foundation upon which the structures are placed.
 - 5. For aggregates weighed for payment, the tonnage shall not be adjusted for moisture content, unless otherwise provided for.

6. For standard manufactured items (such as fence, wire, plates, rolled shapes, pipe conduits) identified by gauge, weight, section dimensions, and so forth, such identifications shall be considered the nominal weights or dimensions. Unless controlled by tolerances in cited specifications, manufacturer's tolerances shall be accepted.
- B. Earthwork Tolerances - Adjustments of horizontal or vertical alignment, within the tolerances specified in this contract, or shifts of balance points up to 100 feet shall be made by the contractor as necessary to produce the designed sections and to balance earthwork. Such adjustments shall not be considered as "Changes."

1.3 UNITS OF MEASUREMENT

- A. Payment shall be by units defined and determined according to U.S. Standard measure and by the following:
 1. Acre: Make longitudinal and transverse measurements for area computations horizontally.
 2. 50lb Bag: Measurement will be for the actual number of 50lb bags of standard bentonite grout.
 3. 94lb Bag: Measurement will be for the actual number of 94lb bags of standard cement or grout.
 4. Cubic Yard (CY): A measurement computed by one of the following methods:
 - a. Excavation, Embankment, or Borrow. The measurement computed by the average end area method from measurements made longitudinally along a centerline or reference line.
 - b. Material in Place or Stockpile. The measurement computed using the dimensions of the in-place material.
 - c. Material in the Delivery Vehicle. The measurement computed using measurements of material in the hauling vehicles at the point of delivery. Vehicles shall be loaded to at least their water level capacity. Leveling of the loads may be required when vehicles arrive at the delivery point.
 5. Each (EA): One complete unit, which may consist of one or more parts.
 6. Gallons (GAL): The quantity shall be measured by any of the following methods:
 - a. Measured volume in container.
 - b. Metered volume by approved metering system.
 - c. Commercially package volume.
 7. Hour (HR): Measurement will be for the actual number of hours (or fraction thereof) ordered by the Contracting Officer and performed by the contractor.

8. Linear Foot (LF): Measurement of work along its length from point-to-point; parallel to the base or foundation. Do not measure overlaps.
9. Lump Sum (LS): One complete unit.
10. Mile: Measured horizontally along the centerline of each roadway, approach, or ramp.
11. Pound (LB): For sacked or packaged material, measurement will be the net weight as packed by the manufacturer.
12. Square Foot (SF): Measured on a plane parallel to the surface being measured.
13. Square Yard (SY): Measured on a plane parallel to the surface being measured.
14. Ton: Measured as a short ton consisting of 2,000 pounds.

1.4 METHOD OF MEASUREMENT

- A. One of the following methods of measurement for determining final payment is designated on the Schedule of Items for each pay item:

1. **ACTUAL QUANTITIES (AQ)** - These quantities are determined from actual measurements of completed work.
2. **DESIGNED QUANTITIES (DQ)** - These quantities denote the final number or units to be paid for under the terms of the contract. They are based upon the original design data available prior to advertising the project. Original design data include the preliminary survey information, design assumptions, calculations, drawings, and the presentation in the contract. Changes in the number of units shown in the Schedule of Items may be authorized under any of the following conditions:
 - a. As a result of changes in the work authorized by the CO.
 - b. As a result of the CO determining that errors exist in the original design that cause a pay item quantity to change by 15 percent or more.
 - c. As a result of the Contractor submitting to the CO a written request showing evidence of errors in the original design that cause a pay item quantity to change by 15 percent or more. The evidence must be verifiable and consist of calculations, drawings, or other data that show how the designed quantity is believed to be in error.
3. **LUMP SUM QUANTITIES (LSQ)** - These quantities denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete the job. They shall not be measured.

4. STAKED QUANTITIES (SQ) - These quantities are determined from staked measurements prior to construction.
5. VEHICLE QUANTITIES (VQ) - These quantities are measured or weighed in hauling vehicles.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 011250

MAY 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 Summary

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Common electrical installation requirements.

1.2 Quality Assurance

- A. The installation shall conform to the 2005 Edition of the National Electrical Code (NFPA 70) and to the requirements specified herein.
- B. The Contractor shall perform all work necessary and required to accomplish the task as detailed on the drawings and discussed in the installation notes. All work shall be done by a state licensed electrician.

1.3 Coordination

- A. Coordinate electrical testing of electrical, mechanical, and architectural items, so equipment and systems that are functionally interdependent are tested to demonstrate successful interoperability.

1.4 Measurement and Payment

- A. The work in this section, including all incidentals in other electrical sections, shall be measured and paid for by the following method as shown in the Schedule of Items:
 1. Electrical Distribution System - Lump Sum including full compensation for all labor, materials, and incidentals necessary to complete the work as shown on the drawings including all wiring, trenching, bedding, backfill, and all other incidentals necessary for a functional system.

PART 2 - PRODUCTS

2.1 Products Referred to by Name

- A. The materials referred to by trade name, make, or catalog number on the drawings shall be regarded as establishing a minimum standard of quality; substitutions of equal or greater quality can be made by submitting a data sheet of the proposed substituted item to the Contracting Officer, for approval.

PART 3 - EXECUTION

3.1 Common Requirements for Electrical Installation

- A. Comply with NECA 1.
- B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- C. Right of Way: Give to piping systems installed at a required slope.

END OF SECTION 260500

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND
CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

1.2 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.3 MEASUREMENT AND PAYMENT

- A. No separate measurement or payment will be made for work specified in this section. All work will be included in other items listed in the Schedule of Items.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Copper Conductors: Comply with NEMA WC 70.
- B. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.
- C. Multiconductor Cable: Comply with NEMA WC 70 for Type RHW with ground wire.
- D. Insulation shall be "Sunlight Resistant" where exposed to direct sunlight.

2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Typical: Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Control Wiring: Solid or stranded for No. 10 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Power company provided and installed single conductors in contractor provided raceway.
- B. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- C. Class 1 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- B. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 FIELD QUALITY CONTROL

- A. Remove and replace malfunctioning or damaged units.

END OF SECTION 260519

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.2 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

1.3 MEASUREMENT AND PAYMENT

- A. No separate measurement or payment will be made for work specified in this section. All work will be included in other items listed in the Schedule of Items.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 10 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, as sized on the drawings minimum.
 - 1. Bury at least 24 inches (600 mm) below grade.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Connections to Ground Rods: Bolted connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits. Where not otherwise shown in the drawings size per NEC 250.122 minimum.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade, unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
 - 2. For the service grounding electrode system, install at least two rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- C. Grounding and Bonding for Piping:

1. Well Casing: Install copper grounding conductors from main service equipment, or grounding bus, to well casing routing through and bonding well pump panel with submersible pump circuit. Connect grounding conductor to casing, using a bolted lug connector.

END OF SECTION 260526

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.2 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RNC: Rigid nonmetallic conduit.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.4 MEASUREMENT AND PAYMENT

- A. No separate measurement or payment will be made for work specified in this section. All work will be included in other items listed in the Schedule of Items.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. IMC: ANSI C80.6.
- C. PVC-Coated Steel Conduit: PVC-coated IMC.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch (1 mm), minimum.

D. EMT: ANSI C80.3.

E. Fittings for Conduit (Including all Types), EMT: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Fittings for EMT: Steel or die-cast, set-screw or compression type.
2. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.

2.2 NONMETALLIC CONDUIT AND TUBING

A. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.

B. Fittings for RNC: NEMA TC 3; match to conduit or tubing type and material.

2.3 BOXES, ENCLOSURES, AND CABINETS

A. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit or IMC (EMT also allowed where UL listed raintight fittings are used and the raceway is 6-inch (150-mm) minimum above finished grade.
2. Underground Conduit: PVC coated or wrapped rigid steel conduit or IMC is required for the first 5-ft (1.5-m) beyond grade penetration at which point RNC, Type EPC-[40] [80]-PVC, direct buried may be substituted. 24-inch (600-mm) minimum burial depth unless otherwise indicated on the drawings.
3. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Minimum Raceway Size: 1/2-inch (16-mm) trade size.

C. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Complete raceway installation before starting conductor installation.
- C. Arrange stub-ups so curved portions of bends are not visible above the finished slab or grade.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
 - 1. Excavate trench bottom to provide firm and uniform support for conduit.
 - 2. Backfill material within 4" of the conduit shall pass through a 3/4 inch (20 mm) sieve. Backfill in the remainder of the trench shall be free of rocks larger than 4 inches (100 mm) in diameter.
 - 3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.
 - 4. Install with a maximum of four 90-degree bends or equivalent for each length of raceway and a maximum of 250 feet (75 m) wire length, or, with a maximum of two 90-degree bends or equivalent for each length of raceway and a maximum of 500 feet (150 m) wire length unless drawings show stricter requirements.
 - 5. Underground-Line Warning Tape: Install in each trench 6" below finished grade.

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Keep disturbed handholes and boxes level and plumb.
- B. Replace any unit support and compact to surrounding ground density if disturbed.
- C. Elevation: Set covers of other enclosures 1 inch (25 mm) above finished grade.

3.5 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.

1.2 DEFINITIONS

- A. GFCI: Ground-fault circuit interrupter.
- B. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.4 MEASUREMENT AND PAYMENT

- A. No separate measurement or payment will be made for work specified in this section. All work will be included in other items listed in the Schedule of Items.

PART 2 - PRODUCTS

2.1 GFCI RECEPTACLES

- A. General Description: Straight blade. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A: See the Drawings for acceptable products and manufacturers. Types to be coordinated with the drawings. Submittals from manufacturers not shown of equal or better products will be considered.

2.2 WALL PLATES

- A. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum.

2.3 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
 - 1. Wiring Devices Connected to Normal Power System: Black, brown, gray, ivory, or white, unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 - 2. Install wiring devices after all wall preparation is complete.
- C. Conductors:
 - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.

3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
4. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
5. Tighten unused terminal screws on the device.
6. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
7. GFCI receptacles:
 - a. Shall be installed non-feed-through

END OF SECTION 262726

May 2006

USDA FOREST SERVICE, R-4
NORTH FORK WELL DRILLING

SECTION 312000 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Excavating and backfilling for buildings and structures.
 - 2. Sub-surface drainage construction.
 - 3. Excavating and backfilling for utility trenches.

1.2 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
- B. Borrow or Select Borrow: Satisfactory soil material used for embankment, backfill, or fill construction that is either imported from off-site or excavated from designated locations at the site.
- C. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Contracting Officer. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Bulk Excavation: Excavations more than 10 feet (3m) in width and pits more than 30 feet (9m) in either length or width.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction of the Contracting Officer. Unauthorized excavation, as well as remedial work directed by Contracting Officer, shall be without additional compensation.
 - 4. Unclassified Excavation: Excavation to subgrade elevation and to lines and dimensions indicated regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
- D. Fill: Soil materials used to raise existing grades.
- E. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

- F. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, aggregate base, drainage fill, initial or subsequent backfill, or topsoil materials.
- G. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building.

1.3 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Government or others unless permitted in writing by Contracting Officer and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Contracting Officer not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Contracting Officer's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Coordinate with utility companies to shut off services if lines are active.

1.4 MEASUREMENT AND PAYMENT

- A. Except for Special Bedding, there will be no separate measurement or payment for work in this Section. Payment will be included in the contract unit price for items shown on the Schedule of Items.

Special Bedding for utility trenches - measured and payment will be the number of cubic yards of material excavated, processed, hauled and installed. The volume will be calculated using the trench configuration shown on the Drawings

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS, GENERAL

- A. Excavated material may be processed and used for backfill if the Contractor can show compliance with the material specified herein to the satisfaction of the Contracting Officer. If excavated material is not sufficient to meet requirements, Contractor shall import needed material.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

2.2 BACKFILL MATERIALS, UTILITY TRENCHES

A. Pipe Zone Material

1. Backfill material for electrical cable and all types of pipe, except ductile iron pipe and galvanized steel pipe, shall consist of soil, sand, or fine granular material free of $\frac{3}{4}$ inch or larger stones, and free of organic material.
2. Backfill material for all ductile iron or galvanized steel pipe shall consist of soil, sand, or rock smaller than two inches in largest dimension and free of organic material.
3. Frozen material will not be allowed.
4. Backfill material shall be trench-excavated material whenever it meets specification requirements. Whenever material meeting the requirements for pipe zone backfill is not readily available from trench excavation, the Contractor will be required to import pipe zone material from a designated or approved source. Imported pipe zone material shall be paid for as such.

B. Above-Pipe-Zone Material

1. Backfill material shall be free from brush, perishable material, trash, rocks, or boulders larger than 6 inches in greatest dimension, or frozen material.
2. Backfill material shall be trench-excavated material whenever it meets specification requirements. Whenever trench excavated material contains less than 10 percent of oversized material, the Contractor will be required to remove rocks larger than 6 inches from the trench excavated material at no additional compensation and utilize it as backfill material. If excavated material is not sufficient to meet requirements, Contractor shall import needed material.

C. Special Bedding – Imported

1. Special bedding material shall consist of rounded river gravel or crushed, free-draining material, meeting the following gradation, as determined by ASTM C 136 and ASTM C 117.

SPECIAL BEDDING GRADATION	
Sieve Designation Square Openings	Percentage by Weight Passing Sieve
1"	100
3/4"	90 – 100
1/2"	20 – 55
3/8"	0 – 15
No. 4	0 – 5

2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 LOCATION, ALIGNMENT AND GRADE

- A. The location of all structures and utilities shall be staked out and grades established by the Contractor. Locations and grades shall be approved by the Contracting Officer before excavation is started.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
 - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

- A. Do not use explosives.

3.4 EXCAVATION SUPPORT AND PROTECTION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and resisting soil and hydrostatic pressures and superimposed and construction loads.
- E. The contractor shall meet State General Safety Orders and the provisions of the Occupational Safety and Health Administration (OSHA) pertaining to excavation support and protection, including 29 CFR 1926 Subpart P.
- F. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

3.5 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Topsoil shall be removed from the area to be excavated and from the area where excavated material will be piled, prior to excavation. Topsoil shall be stored as specified below.
- C. Maintain the excavations to guard against and prevent injury to employees and the public. Provide adequate shoring and bracing as required by OSHA and other local governing regulations.
- D. Excavations left open at the end of the working day shall be fenced to protect the public.

3.6 EXCAVATION FOR STRUCTURES

- A. Excavate to required elevations and dimensions within tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. All trench excavation shall conform, as near as possible, to the lines and grades illustrated on the drawings.
- B. Classification of Excavation Material - Excavation will be unclassified as to materials and shall include all materials which are encountered in the required excavation. Any information that has been obtained by the USDA Forest Service concerning possible ground conditions is available at the Supervisor's Office for the Forest where the project is located to interested parties upon request.
- C. Unsatisfactory Material - During excavation, if material which does not meet the suitable backfill requirements (such as structurally unstable material, solid rock, oversized rock, angular or sharp rock), as determined by the Contracting Officer, is encountered at the grade line for the pipe or cable, the unsatisfactory material shall be removed to a minimum depth of 6 inches below the utility line.
- D. Trenching by Machine or by Hand - The use of trench digging machines will be permitted except in places where machines may cause damage to existing structures, utilities, or trees, in which case hand methods shall be employed. Machines shall be of the proper size to operate within the specified working limits. In areas being excavated by machine, any hand digging necessary to locate or cross utilities will not be paid for as hand trenching.
- E. Depth - Trench excavation shall provide a uniform (for all utilities) or gently changing (for all utilities except gravity flow sewer lines) flow line.
- F. Width of Trenches - The bottom width that will be used in arriving at pay quantities that are paid on the basis of volume shall be the design bottom width, as shown on the Schedule of Items, or as shown on the trench cross-section detail on the drawings. The width of trench allowed when computing excavation and/or backfill quantities shall be vertical lines for trenches less than 4 feet and for trenches greater than 4 feet shall be computed on 1/2 to 1 side slopes. In circumstances where trench sides will not stand or are not considered safe when sloped at 1/2 to 1, a slope will be determined in the field by the Contracting Officer for which pay quantities will be computed, and the slopes shall be laid back to the stable slope determined.
- G. The Contractor may excavate the trench narrower or wider than the design width shown on the drawings; however, the design width of the trench will be used to calculate the

number of cubic yards of all excavated volume and volume of imported material that is paid for by unit volume.

- H. Any over excavation (width) performed by the Contractor for his convenience shall be at his own expense.
- I. Alignment and Grade - The location of all pipelines and structures will be staked out and grades established by the Contractor and approved by the Contracting Officer before excavation is started. Any shifting or change from the indicated alignment and grade during construction must receive prior approval by the Contracting Officer in writing.

3.8 APPROVAL OF SUBGRADE

- A. Notify Contracting Officer when excavations have reached required depths and subgrade.
- B. If Contracting Officer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Contracting Officer.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Contracting Officer.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Contracting Officer.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile, borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
- B. Topsoil shall be kept separate from trench-excavated material by either stockpiling or by windrowing on the opposite side of the trench from which the trench excavated material will be placed. Topsoil will be reused after backfilling on those areas from which it came.

3.11 BACKFILL AROUND STRUCTURES

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for record documents.
 - 3. Inspecting and testing underground utilities and storage tanks.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place and compact fills and backfills adjacent to structures in such a manner as to prevent wedging action or eccentric lodging upon or against the structures.
- C. Place backfill in horizontal layers not more than 6 inches thick (loose measurement) with proper moisture content for the required degree of compaction. Flooding or puddling is not allowed. Compact each layer with a minimum of 6 complete passes with an approved mechanical compaction device.
- D. Do not place backfill against any concrete footings or structure without prior approval of the Contracting Officer and in no case less than 7 days after placement of concrete.
- E. Heavy equipment shall not be operated within four feet of any structure.
- F. Provide for anticipated settlement and shrinkage of the backfill and for the finished grades required.

3.12 UTILITY TRENCH BACKFILL

- A. Backfilling will be permitted only after all inspections of piping and/or cable have been performed and tests completed and the work to be covered has been approved by the Contracting Officer. Backfill which has been improperly placed and/or compacted shall be corrected by reopening the trench to the depth required to obtain proper compaction. Then the trench shall be refilled and compacted according to specifications.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.
- C. Backfill at Pipe Zone
 - 1. Any backfill in trench bottom where over excavation was performed by the Contractor for his convenience, shall be brought back to the pipe grade indicated at his own expense. If the trench bottom is prepared in wet conditions, special bedding shall be used if determined necessary by the Contracting Officer.

2. The bottom of trenches shall be accurately graded to provide uniform bearing and support for each section of the pipe along its entire length, except for portions of the pipe sections where it is necessary to excavate for pipe joints. Depressions for joints shall be made in accordance with the recommendations of the manufacturers for the particular joint used. The bedding shall be a minimum of 4 inches in depth under the pipe and be of either special bedding or pipe zone material as conditions dictate. Trench bottom preparation shall be such that when final placement of pipe has been made, pipe will be true to line and grade. All adjustment to line and grade shall be made by scraping away or filling in with pipe zone material or special bedding material, as conditions dictate, under the body of the pipe and not by wedging or blocking.
3. After pipe is placed as called for in applicable Sections governing the utilities being placed in the trench, pipe zone material shall be deposited in the trench uniformly on both sides of the pipe for the full width of the trench in 6-inch horizontal layers (loose measurement) and compacted from the bottom of the trench to a depth of 1 foot over the top of the pipe.
4. An exception to this is on water lines and sewer lines where the Contractor elects to hydrostatically pressure test the pipe. Joints, couplings, fittings, and valves shall then be left uncovered until after the pipe has been tested. After testing proves the pipe installation to be satisfactory, pipe zone material shall then be placed carefully and compacted around the joints, couplings, fittings, and valves to a depth of 1 foot above the pipe, after which the remainder of the trench shall be backfilled in accordance with Paragraph 3.6B. On gravity flow sewer lines, the Contractor may elect to pressure test the pipe with air. In this case, the entire trench is to be properly backfilled prior to the acceptance test.
5. Where electrical conduit is buried in the same trench as the waterline or sewer line, the backfill procedure for the conduit shall be performed as outlined in the preceding paragraphs. Location with respect to other utilities in a trench shall be as indicated on the trench cross-section detail as shown on the drawings.
6. When an electrical conduit is buried singly in a trench, or if only conduit is buried in a trench, the bedding shall be a minimum of 2 inches in depth under the conduit. After the conduit is placed, pipe zone material shall be deposited in the trench uniformly for the full width of the trench and compacted from the bottom of the trench to a depth of 4 inches over the top of the conduit.
7. Compaction in areas other than utilities under roads shall be completed by compacting each layer with a minimum of 3 complete passes with an approved mechanical compaction device.

D. Backfill Above-Pipe-Zone

1. When shown on the drawings as being required, marking tape shall be installed eight inches below the ground surface and shall run the full length of the trenches.
2. Backfill in trenches in areas other than under roadways and parking areas shall be placed in horizontal layers 12 inches thick or less (loose measurement). Each layers shall be compacted with a minimum of 3 passes with an approved mechanical compaction device.

3. Backfill in trenches under roadways and parking areas shall be maintained, wetted, or dried to optimum moisture for maximum compaction, placed in the trench in horizontal layers not to exceed 6 inches in thickness (loose measurement), and compacted to not less than 95 percent of maximum dry unit weight, as determined by AASHTO T 99, Method D, of ASTM D 698, Method D. Ascertain adequate compaction during the backfill operation by performing in-place density tests in accordance with one or more of the following standard test procedures: ASTM D 1556, D 2167, or D 2922, or AASHTO T 191, or T 205.

E. Special Bedding – Imported

1. Special bedding shall be placed, as directed by the Contracting Officer, in trenches, as necessary, to provide a minimum of 4 inches firm bedding on which to set the pipe in areas where relatively unstable conditions exist, due to seeping ground water or mud caused by ground water, or by water from any other source which cannot be diverted. After the material is placed in the trench, leveled, and consolidated, it shall be trimmed to proper sub grade and shaped to receive the pipe.

F. Imported Material

1. Any trench excavated material that can be transported less than 300 feet to other areas along the trench and used, in accordance with specifications, shall not be considered as imported material. When the Contractor is required to import material, it shall be from a designated or approved source.

G. Trenches in Embankments

1. When pipelines are to be placed in trenches excavated in embankments, the excavation of each trench shall be performed after the embankment has been constructed to an elevation at least 3 feet over the pipe or to finish grade, whichever is least.

3.13 FILL

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in 12" thick (loose measurements) layers to required elevations. Each layer shall be compacted with a minimum of 3 passes with an approved mechanical compaction device.

3.14 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 GRADING AND SURFACE FINISH

- A. General: All surfaces shall be restored to the required grade (usually original ground line), mounded over or smoothed off and left in a uniform and neat condition, to the satisfaction of the Contracting Officer. Surface drainage shall be diverted so that it will not flow along a trench. In areas where natural revegetation is designated (no planting to be done), the Contractor shall scarify all disturbed or compacted areas and right-of-ways such that the surface of the ground is loose to a depth of at least one inch. Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Protecting Graded Areas: Protect newly graded areas from traffic, freezing and erosion. Keep free of trash and debris.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.
- D. In paved areas, apply surface treatment as specified and shown on the drawings.

3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it in accordance with Section 02135.

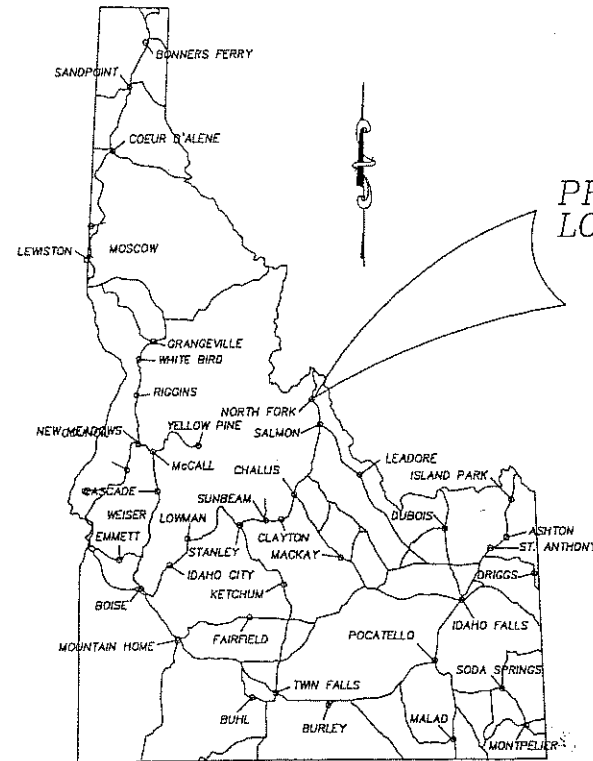
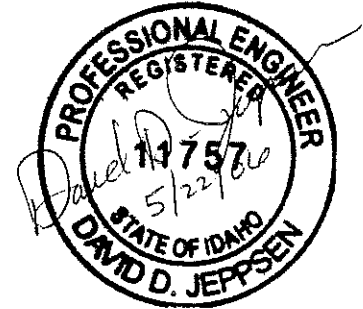
END OF SECTION 312000

May 2006

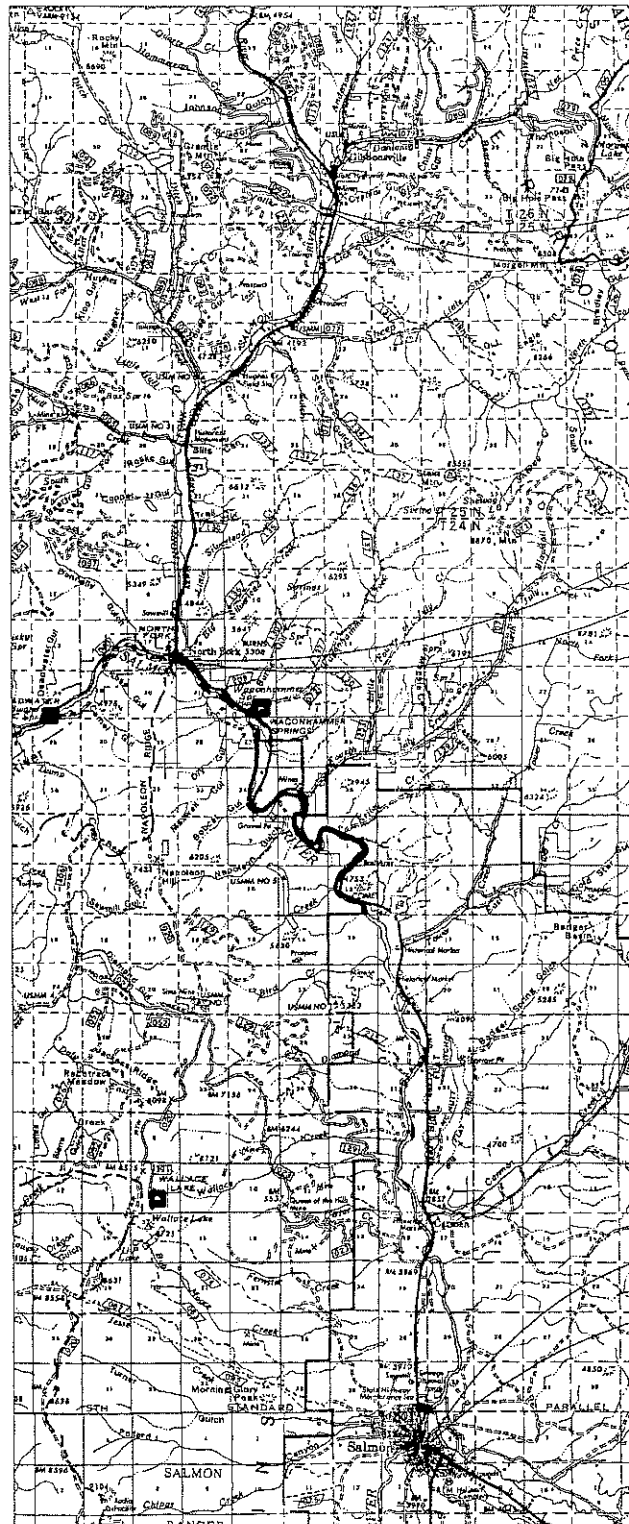
Enclosure 7

North Fork Well Drilling

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, REGION 4
SALMON-CHALLIS NATIONAL FOREST



IDAHO PROJECT LOCATION MAP
(NOT TO SCALE)



DRAWING INDEX

- BASE
- 1 - TITLE PAGE AND PROJECT DESCRIPTION
 - 2 - SCHEDULE OF ITEMS AND SITE LAYOUT
 - 3 - SITE PLAN CLOSE-UP
 - 4 - WELL CONSTRUCTION AND PUMP INSTALLATION DETAILS
 - 5 - ELECTRICAL
 - 6 - CURB VALVE, TRENCH, DAYLIGHT DRAIN, THRUST BLOCK AND DRAINAGE DITCH DETAILS
 - 7 - WELL PUMPHOUSE AND PLUMBING APPURTENANCES
 - 8 - PUMPHOUSE BUILDING PLAN & DETAILS

PROJECT DESCRIPTION

THE NORTH FORK RANGER STATION IS IN NEED OF A NEW WATER SOURCE. A WELL SHALL BE DRILLED IN THE PASTURE JUST BELOW THE UPPER PARKING LOT. NORTH FORK IS LOCATED IN LEMHI COUNTY, IDAHO.

FROM SALMON, ID: PROCEED NORTH ON HIGHWAY 93 APPROXIMATELY 22 MILES TO NORTH FORK, ID TURN LEFT (WEST) ONTO FS ROAD 030 (SALMON RIVER ROAD) PROCEED 500FT, TURN RIGHT (NORTH) INTO THE NORTH FORK RANGER DISTRICT OFFICE. THE PROJECT SITE IS ON THE NORTH END OF THE PARKING LOT.

THE PROJECT CONSISTS OF, BUT IS NOT LIMITED TO:

- CONSTRUCTING A NEW 8-INCH DIA. DRINKING WATER WELL TO AN APPROXIMATE DEPTH OF 100 FEET BELOW GROUND SURFACE.
- INSTALLING A SUBMERSIBLE PUMP AND ELECTRICAL SERVICE.
- ALL OTHER WORK NECESSARY TO CONNECT THE NEW WATER SOURCE TO THE EXISTING SYSTEM.

RECOMMENDED

Jonny Behe
FOREST ENGINEER

5/26/06
DATE

APPROVED

Joe Senn
DIRECTOR, ENGINEERING
Paula
FOREST SUPERVISOR

5/22/2006
DATE
5/26/06
DATE

SCHEDULE OF ITEMS

00118	Wood Frame Pumphouse	LSQ	LS	Lump Sum
02510-1	Pipeline, 2" High Density Polyethylene Plastic, 160 P.S.I. With Heat Fusion Joints,	DQ	LF	75
02510-2	Daylight Drain	AQ	EA	1
02510-3	Concrete Thrust Blocks	AQ	EA	1
02510-4	Drainage Ditch	LSQ	Lump Sum	Lump Sum
02512	2" Poly Curb Valve and Box	AQ	EA	2
02523	Submersible Well Pump	LSQ	LS	Lump Sum
02525-1	Water Supply Wells: Moving Equipment to and From Well Site	LSQ	LS	Lump Sum
02525-2	Water Supply Wells: Drilling, 8-Inch Borehole to Receive an 8-Inch Well Casing	AQ	LF	42
02525-3	Water Supply Well: Drilling, 12-Inch Oversized Borehole to Receive an 8-inch Well Casing	AQ	LF	58
02525-4	Water Supply Wells: 8-Inch Steel Casing	AQ	LF	92
02525-5	Water Supply Wells: Bentonite Grout Seal	AQ	94# BAG	18
02525-6	Water Supply Wells: Well Screen	AQ	LF	10
02525-7	Water Supply Wells: Developing Well	DQ	HR	5
02525-8	Water Supply Wells: Testing Well	DQ	HR	6
260500	Electrical Distribution System	LSQ	LS	Lump Sum
312000	Imported Backfill - Special Bedding	AQ	CY	13

NOTES:

- 1) CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR THE PROJECT, INCLUDING WELL PERMIT. THE FOREST SERVICE WILL OBTAIN WATER RIGHTS FOR THE WELL.
- 2) PRIME CONTRACTOR IS RESPONSIBLE FOR COORDINATING OPERATIONS OF SUBCONTRACTORS TO AVOID CONFLICTS OR DELAYS.
- 3) A FOREST SERVICE CONTRACTING OFFICER MUST BE PRESENT TO OBSERVE ALL DRILLING ACTIVITIES, INCLUDING WELL DEVELOPMENT AND TESTING. THE CONTRACTOR SHALL GIVE A MINIMUM OF 3 DAYS NOTICE PRIOR TO THE DESIRED START DATE OF DRILLING OPERATIONS TO ALLOW FOR SCHEDULING AND PLANNING.
- 4) WELL LOCATION TO BE STAKED BY FOREST SERVICE.
- 5) DRILL CUTTINGS SHALL BE DISPOSED OF ON SITE AS DIRECTED BY THE CONTRACTING OFFICER.
- 6) STORAGE OF MATERIALS AND EQUIPMENT SHALL BE CONFINED TO AREAS APPROVED BY THE CONTRACTING OFFICER.
- 7) FUEL STORAGE AREAS SHALL BE AT APPROVED LOCATIONS. AN APPROVED FUEL SPILL KIT SHALL BE ON SITE AT ALL TIMES.
- 8) CONTRACTOR SHALL PROVIDE ALL POTABLE WATER AND ELECTRIC POWER REQUIRED TO COMPLETE THE PROJECT.
- 9) NO SEPTIC TANKS OR DRAINFIELDS ARE KNOWN TO BE WITHIN 100 FT OF THE APPROXIMATE WELL LOCATION.

LEGEND:

- EXISTING IRRIGATION DITCH
- E

EXISTING ELECTRICAL LINE
- E

NEW ELECTRICAL LINE
- C

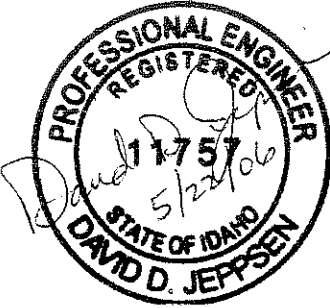
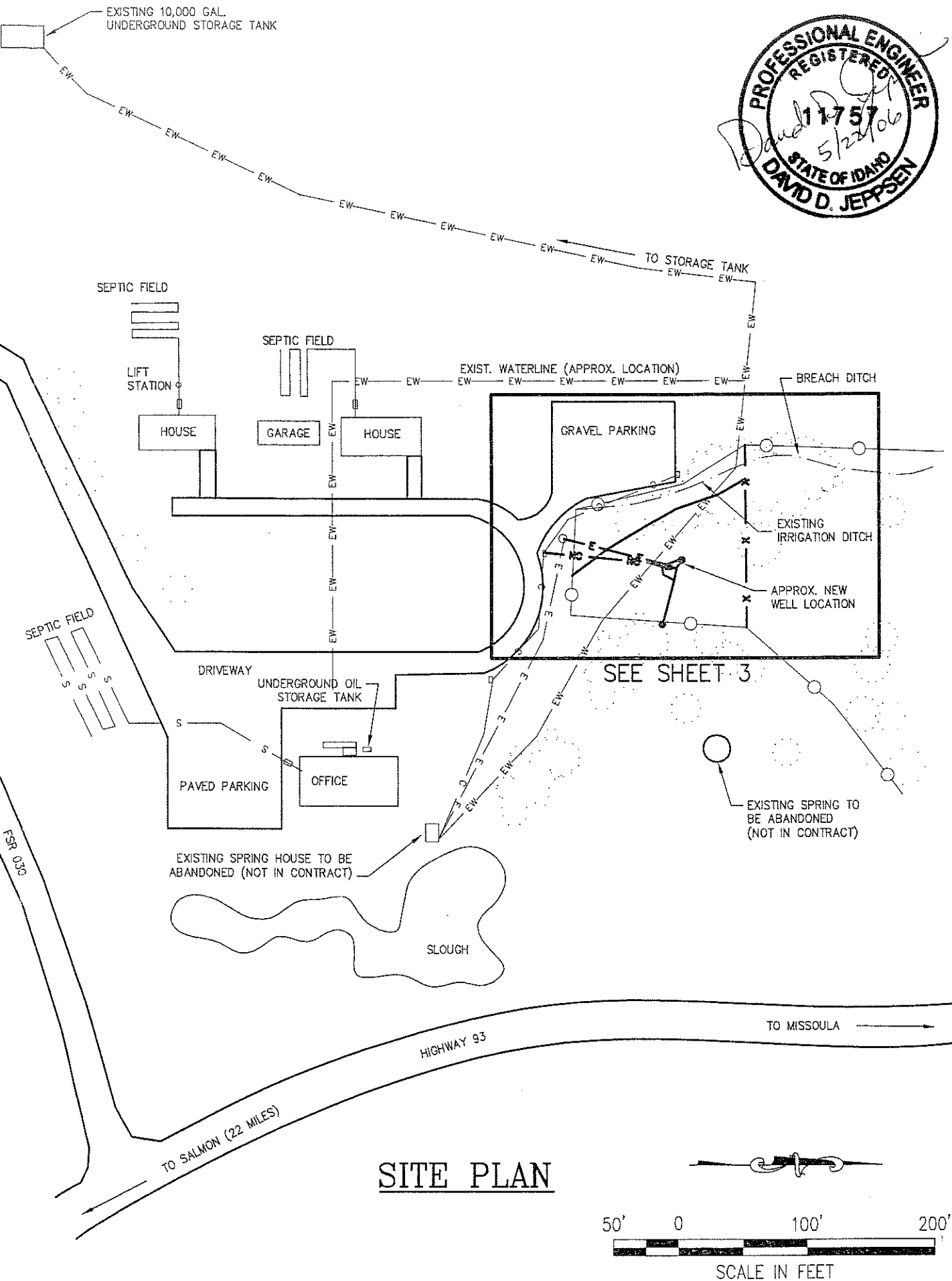
EXISTING PUMP CONTROL LINE
- NC

NEW PUMP CONTROL LINE
- EW

EXISTING WATER LINE
- W

NEW 2" HDPE WATER LINE
- EXISTING FENCE
- X

NEW FENCE
- NEW DRAINAGE DITCH
- TREES



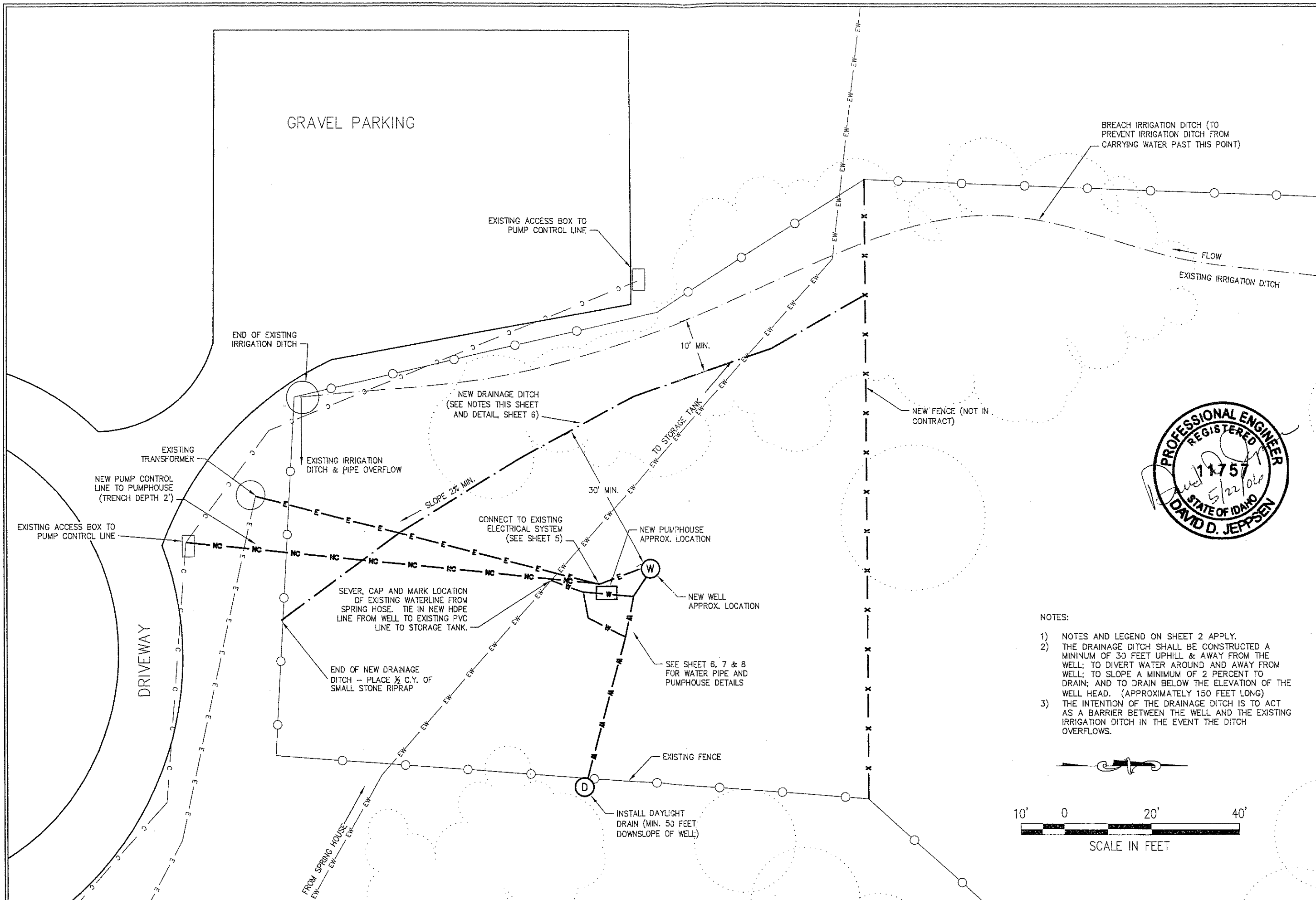
U. S. Department of Agriculture
FOREST SERVICE
Intermountain Region 4
SALMON-CHALLIS NATIONAL FOREST



DESIGN	BY: S. GRAVES CHECK: D. JEPSEN
DRAWING	BY: S. GRAVES CHECK: D. JEPSEN
APPROVED:	DATE 5/22/06

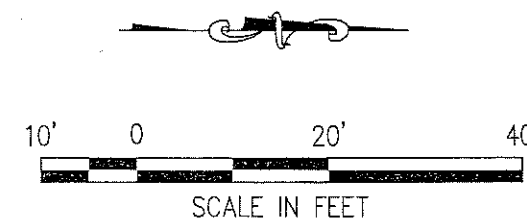
NORTH FORK WELL DRILLING
SCHEDULE OF ITEMS AND SITE LAYOUT

PROJECT No.	2
DRAWING	8
SHEET	2



NOTES:

- 1) NOTES AND LEGEND ON SHEET 2 APPLY.
- 2) THE DRAINAGE DITCH SHALL BE CONSTRUCTED A MINIMUM OF 30 FEET UPHILL & AWAY FROM THE WELL; TO DIVERT WATER AROUND AND AWAY FROM WELL; TO SLOPE A MINIMUM OF 2 PERCENT TO DRAIN; AND TO DRAIN BELOW THE ELEVATION OF THE WELL HEAD. (APPROXIMATELY 150 FEET LONG)
- 3) THE INTENTION OF THE DRAINAGE DITCH IS TO ACT AS A BARRIER BETWEEN THE WELL AND THE EXISTING IRRIGATION DITCH IN THE EVENT THE DITCH OVERFLOWS.





-
- Diagram illustrating the installation of a well pump system. The diagram shows a cross-section of the well casing and the surrounding ground. Key components and dimensions are labeled:
- EXISTING GROUND**: The surface level of the ground.
 - 24"**: Dimension indicating the height of the well casing above the existing ground.
 - 60" DEPTH**: Dimension indicating the depth of the well casing below the existing ground.
 - ELECTRICAL CONDUIT**: The conduit for the pump cable, shown entering the well casing.
 - 2" HDPE**: High-density polyethylene pipe, shown as a horizontal section of the conduit.
 - WELL PUMPHOUSE**: The structure housing the pump, shown on the left.
 - 1 1/4" PITLESS ADAPTER**: The adapter connecting the pump to the well casing.
 - SANITARY WELL CAP**: The cap on the top of the well casing.
 - PULL PIPE**: The pipe used to install the pump.
 - INSTALL PUMP SUBMERSIBLE CABLE**: The cable for the pump, shown entering the well casing.
 - INSTALL DROP PIPE 1 1/4" SCH 80 PVC**: The drop pipe, shown as a vertical section of the casing.
 - WELL CASING**: The main vertical pipe of the well.
 - INSTALL CHECK VALVE 2 FEET ABOVE PUMP**: The check valve, shown as a small circle on the drop pipe.
 - INSTALL SUBMERSIBLE WELL PUMP GRUNDFOS 15SQ15C-290, WITH INTAKE 2 FEET ABOVE TOP OF WELL SCREEN**: The pump unit, shown as a rectangular box at the bottom of the well casing.

Pump and System Curve

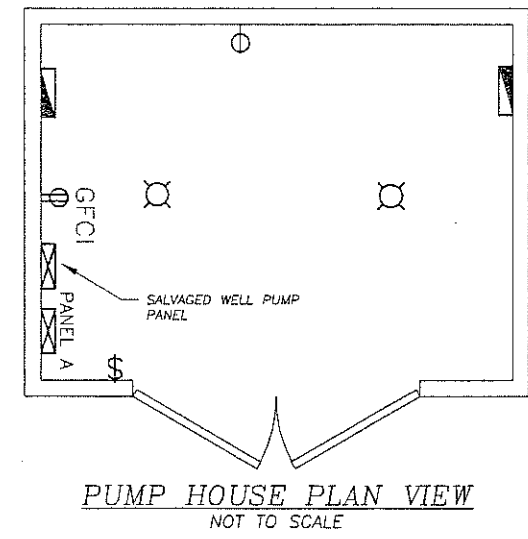
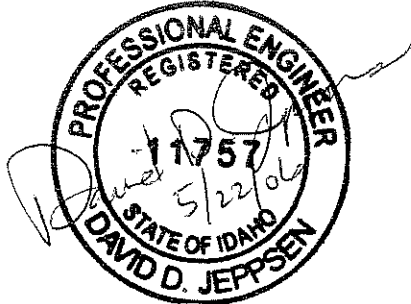
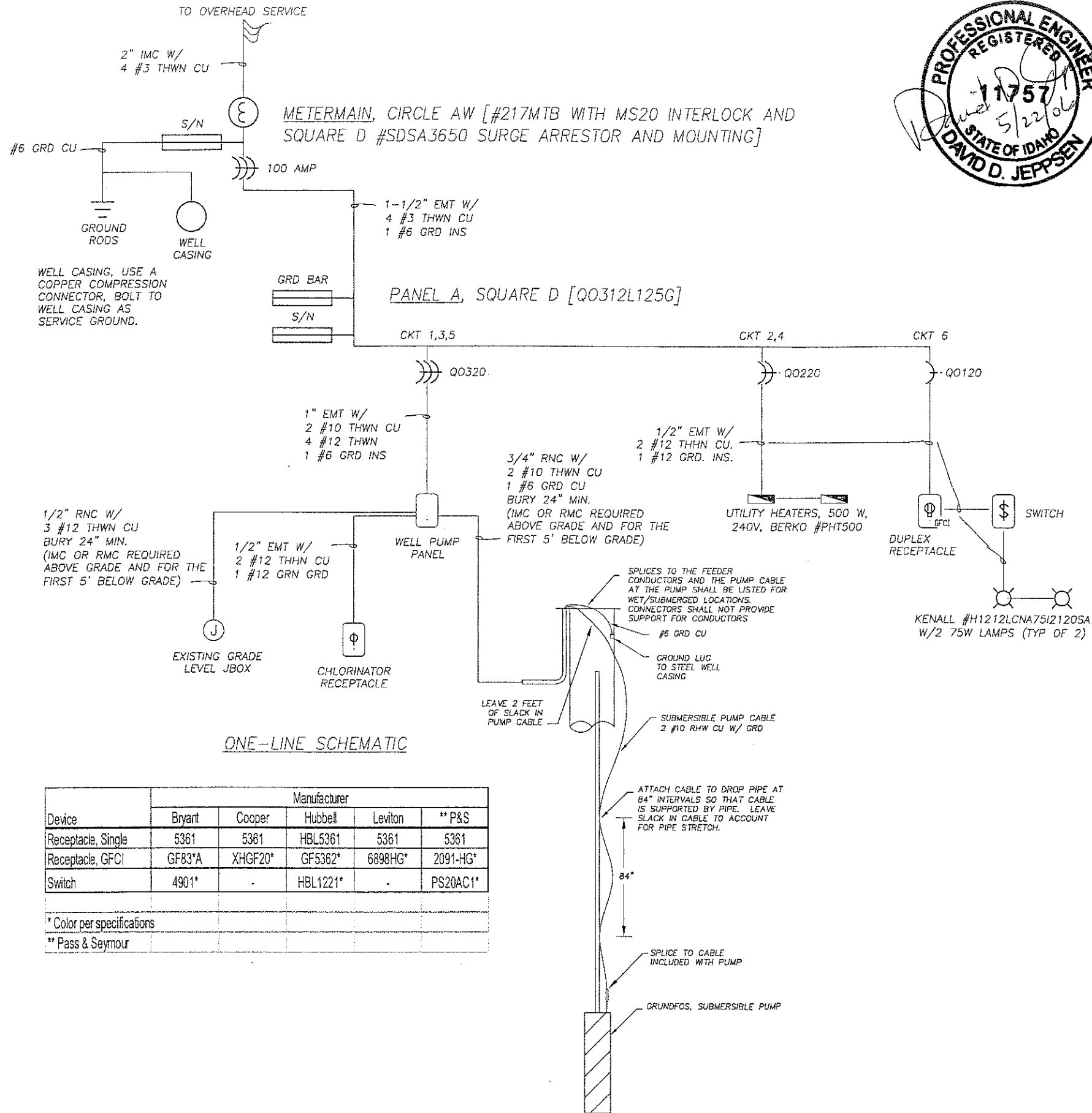
Flow (GPM)	System Head (Feet)	Pump Head (Feet)
0	280	-
5	280	460
10	285	400
15	290	290
20	300	140
25	320	-

WELL INSTALLATION NOTES:

-
- INSTALL SANITARY WELL CAP
- 10'
- 18"
- 6"
- 3"
- SLOPE 2%
- MOUND GOURT
- MOUND GOVERNMENT PROVIDED MATERIAL AROUND WELL HEAD (INCIDENTAL TO PAY ITEM 02525)
- EXISTING GROUND
- 60"
- BENTONITE GOURT SEAL
- 2" HDPE
- SLOPE 2%
- INSTALL 1 1/4" PITLESS ADAPTER
- TRANSITION FROM 1 1/4" PITLESS TO 2" HDPE
- 8" STEEL CASING
- 12" OVERSIZE BORE HOLE FOR GOURT SEAL. WITHDRAW OVERSIZED CASING IF USED.
- IMPERMEABLE LAYER (IF PRESENT)
- INSTALL CENTRALIZER AT 55' (IF POSSIBLE TO DRILL OPEN HOLE)
- 8" STEEL CASING
- 58'-0" MIN OR PENETRATE 5'-0" INTO CLAY OR BEDROCK SEE NOTE 5
- Head (Feet)
- GRUND

Diagram illustrating the components of a well casing and screen assembly:

- PACKER
- 6" STEEL RISER CASING SCH. 40 (Height: 9-15")
- END OF 8" STEEL CASING
- WATER BEARING STRATA
- 6" TELESCOPING STAINLESS STEEL WELL SCREEN
- 5' RISER
- 10'



INSTALLATION NOTES

1. THE CONTRACTOR SHALL COORDINATE WORK WITH IDAHO POWER FOR NEW SERVICE TO WELL AND REMOVAL OF EXISTING OVERHEAD ELECTRICAL SERVICE TO THE SPRING HOUSE.
2. INSTALL METERMAIN, PANEL "A", AND ALL CIRCUITS AS SHOWN.
3. REMOVE THE EXISTING WELL PUMP PANEL FROM THE SPRING HOUSE AND INSTALL IN THE NEW PUMP HOUSE. CONTROLS FOR THE STORAGE TANK SHALL BE REWIRED THE SAME AS CURRENTLY EXISTING WITH THE FOLLOWING EXCEPTION: PUMP HAS BUILT-IN PROTECTION FOR RUN DRY AND OVERLOAD. THE EXISTING WARRICK CONTROLLER (RELAY) FOR THE PROBES IN THE SPRING HOUSE WET WELL WHICH PROVIDED RUN DRY PROTECTION SHALL BE REMOVED FROM THE WELL PUMP PANEL, BYPASSING (EFFECTIVELY SHORTING THE RELAY CONTACT IF IT WERE REMAINING) THE RELAY CONTACT BY REWIRING DIRECTLY TO THE MAGNETIC CONTACTORS COIL. CORRECT CONTROL DIAGRAM EXISTING AT THE PANEL TO REFLECT CHANGE.
4. THE OTHER WARRICK CONTROLLER THAT IS CURRENTLY CONNECTED TO THE PROBES IN THE STORAGE TANK SHALL BE RECONNECTED TO THE SAME PROBES AS FOLLOWS IN THE NEW LOCATION: INSTALL NEW 1/2" RNC FROM THE EXISTING GRADE LEVEL JUNCTION BOX CONTAINING WELL PROBE CONDUCTORS SHOWN APPROXIMATELY ON SITE LAYOUT, SHEET 2, TO THE WELL CONTROL PANEL (RSC OR IMC REQUIRED ABOVE GRADE INCLUDING BELOW GRADE SWEEP). REROUTE PROBE CONDUCTORS HEADED TO THE SPRING HOUSE INTO THE NEW CONDUIT AND RECONNECT WARRICK CONTROLLER. REMOVE THE REST OF THE ABANDONED CONDUCTORS TO THE SPRING HOUSE AND ABANDON IN PLACE THE CONDUIT.
5. INSTALL THE SYSTEM AS SHOWN ON THIS DRAWING AND ACCORDING TO THE SPECIFICATIONS. CIRCUITS 1,3,5 WILL BE ROUTED THROUGH THE 3 POLE FUSED DISCONNECT BUILT IN TO THE WELL PUMP CONTROLS. THE 10 GAGE WIRES SHALL BE FROM CIRCUITS 1,3 FOR THE WELL PUMP. CIRCUIT 5 IS ROUTED AS CURRENTLY DONE THROUGH THE CONTACT IN THE MAGNETIC CONTACTOR TO PROVIDE POWER TO THE CHLORINATOR RECEPTACLE WHENEVER THE WELL PUMP IS RUNNING.
6. THE GROUNDING ELECTRODE CONDUCTOR TO THE WELL SHALL BE CONTINUOUS THROUGH AND BONDED TO THE WELL CONTROL PANEL. BOND TO WELL CASING AS SHOWN AND SUBMERSIBLE PUMP CABLE GROUND WITHIN WELL CASING.
7. INSTALL LIGHTING AND RECEPTACLE, CHLORINATOR RECEPTACLE, AND HEATER WITH CIRCUITS.

Device	Manufacturer				
	Bryant	Cooper	Hubbell	Leviton	**P&S
Receptacle, Single	5361	5361	HBL5361	5361	5361
Receptacle, GFCI	GF83*A	XHGF20*	GF5362*	6898HG*	2091-HG*
Switch	4901*	-	HBL1221*	-	PS20AC1*
* Color per specifications					
** Pass & Seymour					

PROJECT No. 5
DRAWING 1
SHEET 8

NORTH FORK WELL DRILLING
ELECTRICAL

BY: S. BROWN
CHECK: S. BROWN
DATE: 5/22/06

U.S. Department of Agriculture
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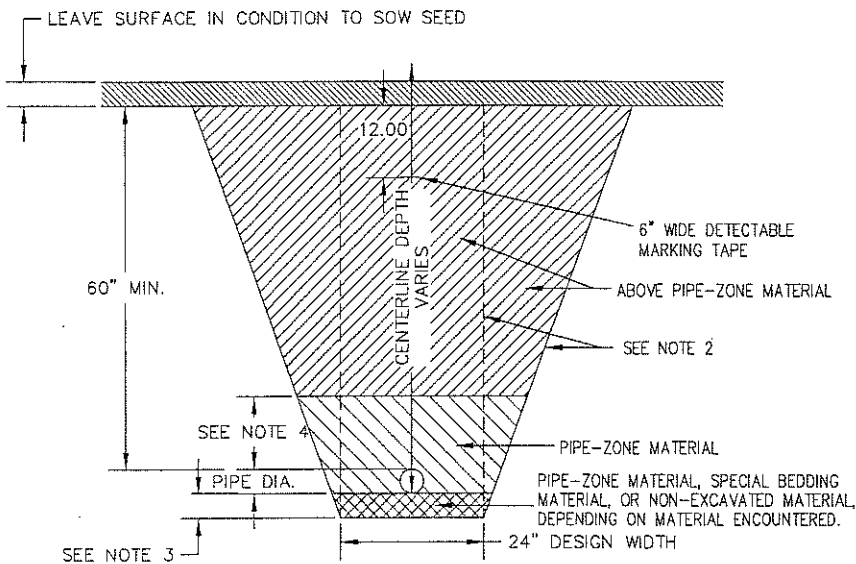
DAVID D. JEPPISEN
REGISTERED ENGINEER
STATE OF IDAHO
No. 11757
5/22/06

PIPE NOTES:

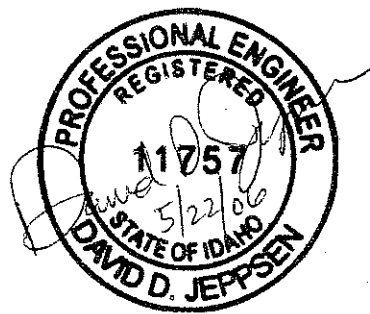
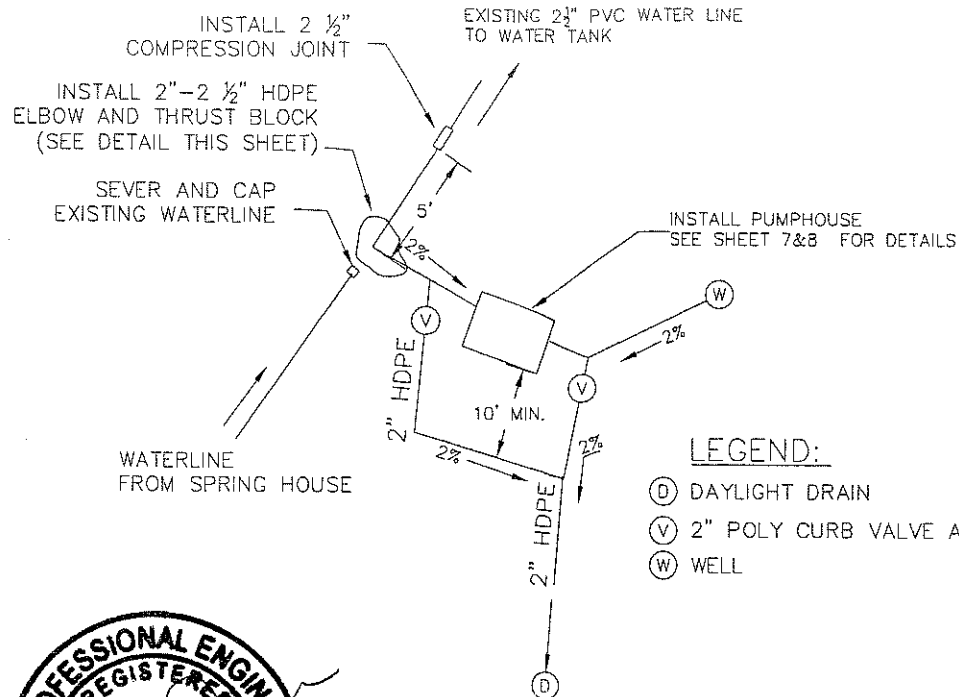
1. NEW WATER LINE SHALL BE INSTALLED A MINIMUM OF 60" BELOW GROUND SURFACE. ALL WATERLINES SHALL BE SLOPED A MINIMUM OF 2% TO DRAIN.
2. DRAIN SUPPLY LINE PRIOR TO SEVERING AND CAPPING.
3. NEW WATER LINE SHALL BE 2" HDPE. THIS PIPE SHALL BE CONNECTED TO A 2 1/2" PVC PIPE USING A COMPRESSION JOINT FOR THE CONNECTION OR IN A MANNER APPROVED IN WRITING BY THE CONTRACTING OFFICER. 6" MARKING TAPE SHALL BE INSTALLED WITH ALL NEW WATER LINES.
4. MINIMUM BENDING RADIUS FOR HDPE PIPE IS 30 TIMES THE NOMINAL PIPE DIAMETER (EXAMPLE 2" PIPE REQUIRES A 60" BENDING RADIUS).
5. TWO 2" HDPE VALVES AND ONE 2" DAYLIGHT DRAIN SHALL BE INSTALLED FOR SYSTEM DRAINING.
6. THIS DRAIN SHALL HAVE A #4 SCREEN AND SHALL BE CONNECTED TO THE HDPE LINE WITH A MINIMUM OF 10FT OF GALVANIZED STEEL PIPE.
7. ONE 2" HDPE TEE SHALL BE INSTALLED JUST ABOVE EACH VALVE LOCATION TO DRAIN THE TANK SUPPLY LINE.
8. INSTALL THE WATER SYSTEM IN ACCORDANCE TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS FOR PUBLIC DRINKING WATER SYSTEMS.

TRENCHING NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING THE LOCATION OF THE EXISTING UTILITY SERVICES.
2. WALLS SHALL BE VERTICAL FOR TRENCHES LESS THAN 5'-0" DEEP AT CENTERLINE. FOR DEPTHS GREATER THAN 5'-0", OR SOIL CONDITIONS THAT WARRANT GREATER STABILITY, THE WALLS SHALL BE LAID BACK OR SHORED UP TO MEET APPLICABLE SAFETY STANDARDS.
3. IF BOTTOM OF TRENCH IS UNSATISFACTORY BED MATERIAL, A MINIMUM OF 4" OF PIPE-ZONE MATERIAL OR IMPORTED SPECIAL BEDDING SHALL BE USED. IF SOIL IN THE TRENCH MEETS THE PIPE-ZONE MATERIAL SPECIFICATIONS, ADDITIONAL PIPE ZONE MATERIAL WILL NOT BE REQUIRED. SATISFACTORY PIPE ZONE GRAVEL WILL BE AVAILABLE TO THE CONTRACTOR AT THE VOTLER PIT. CONTRACTOR IS RESPONSIBLE FOR TRANSPORT OF MATERIAL AND ENSURING NO ROCK EXCEEDING 1" IN DIAMETER IS PLACED IN THE PIPE ZONE AREA.
4. REQUIRED DEPTH OF BEDDING VARIES WITH TYPE OF PIPE. SEE SPECIFICATIONS TO DETERMINE IF OTHER THAN 12" IS REQUIRED OVER TOP OF PIPE.
5. TRENCH SHALL BE KEPT FREE FROM WATER AND SHALL BE DEWATERED AS NECESSARY FOR COMPACTION.

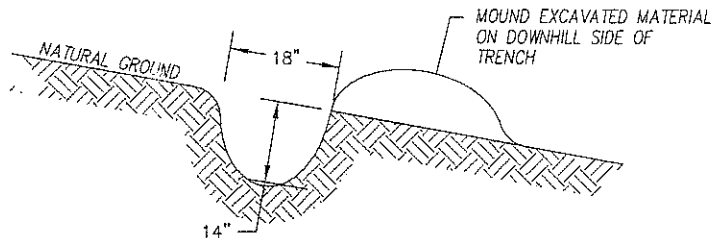


TRENCH CROSS SECTION
NOT TO SCALE

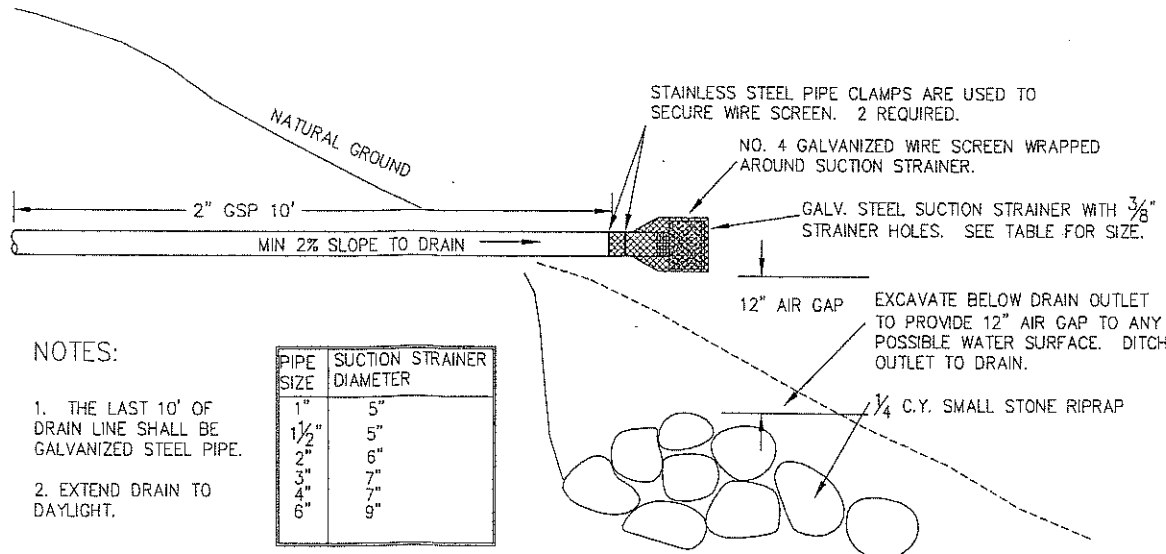


WELL, VALVES AND DRAIN

NOTE:
APPROXIMATELY 150 FEET OF TRENCH IS REQUIRED



DRAINAGE DITCH

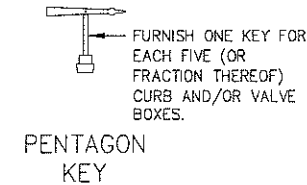
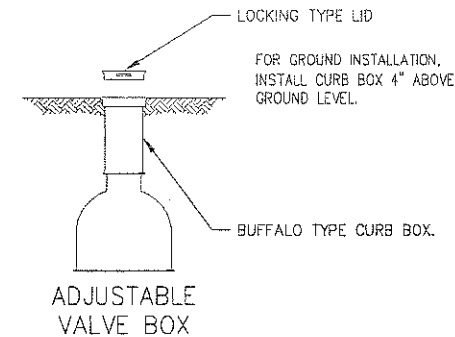
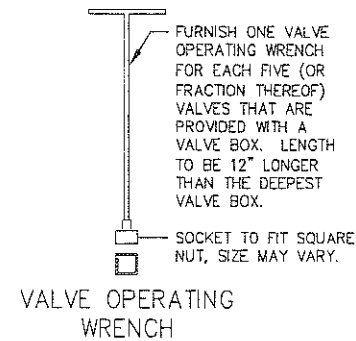
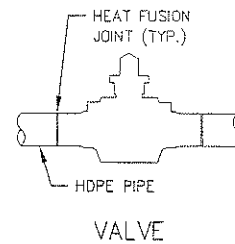


NOTES:

1. THE LAST 10' OF DRAIN LINE SHALL BE GALVANIZED STEEL PIPE.
2. EXTEND DRAIN TO DAYLIGHT.

PIPE SIZE	SUCTION STRAINER DIAMETER
1"	5"
1 1/2"	5"
2"	6"
3"	7"
4"	7"
6"	9"

DAYLIGHT DRAIN
WITH RODENT PROOF DRAIN OUTLET



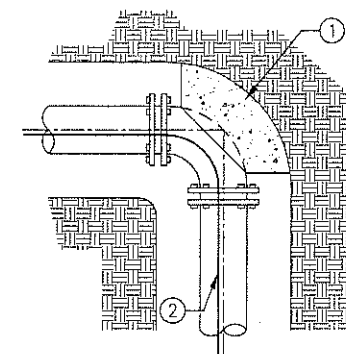
POLY VALVES AND CURB BOXES

THRUST BLOCK LEGEND:

- ① PROVIDE A MIN. 4 CUBIC FEET CONCRETE POURED AGAINST UNDISTURBED EARTH. THRUST BLOCK MUST HAVE A MINIMUM BEARING AREA OF 2 SQ. FT.
- ② NO. 12 COPPER FINDER WIRE (IF USING NON-METALLIC PIPE).

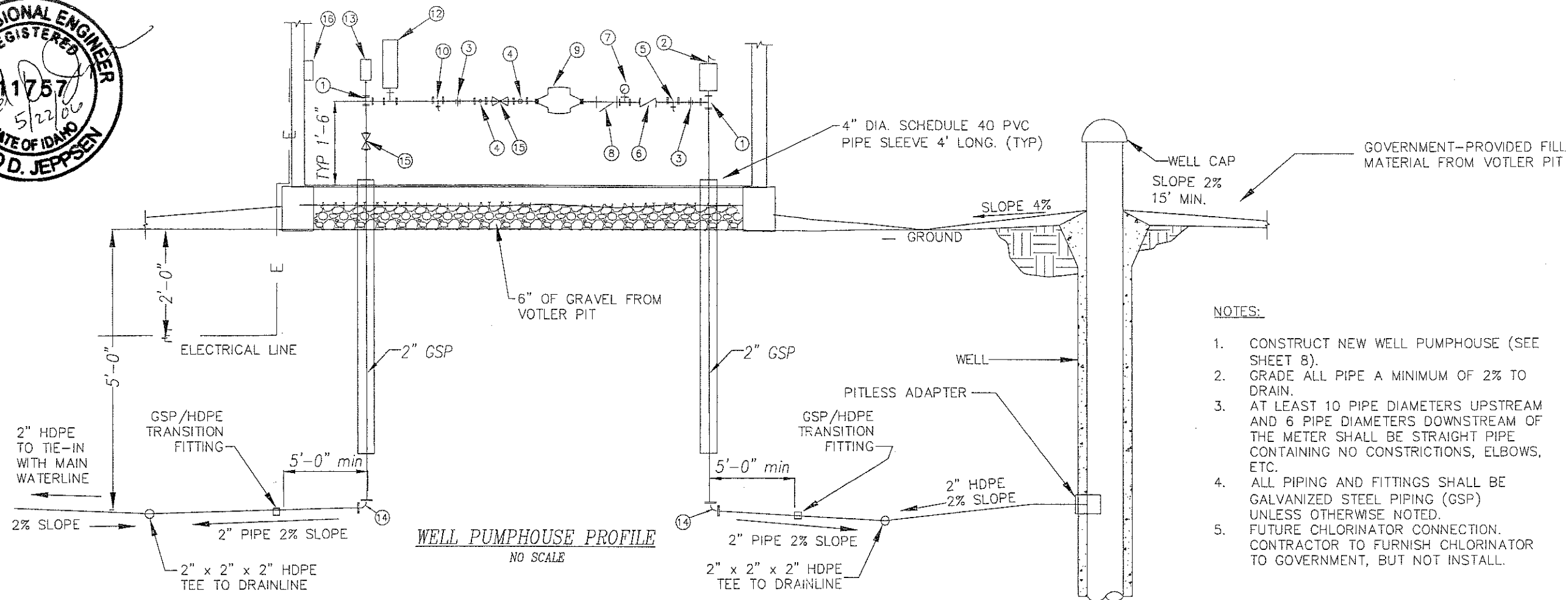
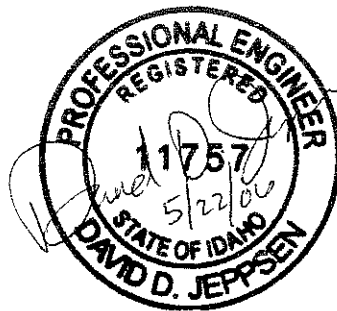
THRUST BLOCK NOTES:

1. ALL CONCRETE SHALL BE PLACED AGAINST UNDISTURBED EARTH.
2. PROVIDE 6 MIL. POLYPROPYLENE BETWEEN FITTINGS AND CONCRETE.
3. NOTIFY CONTRACTING OFFICER FOR ANY CONDITION OR PIPE SIZE NOT INDICATED.



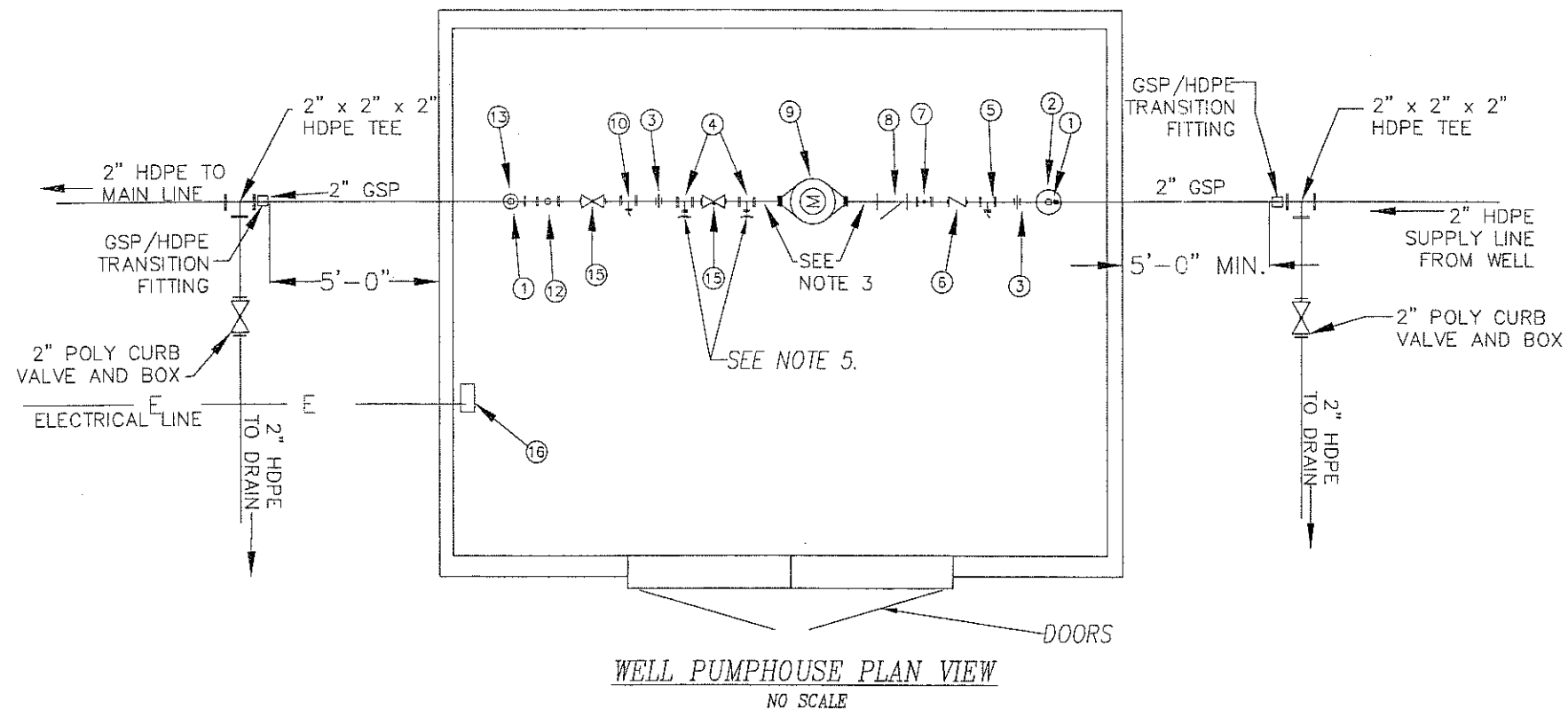
THRUST BLOCK
90° BEND DETAIL





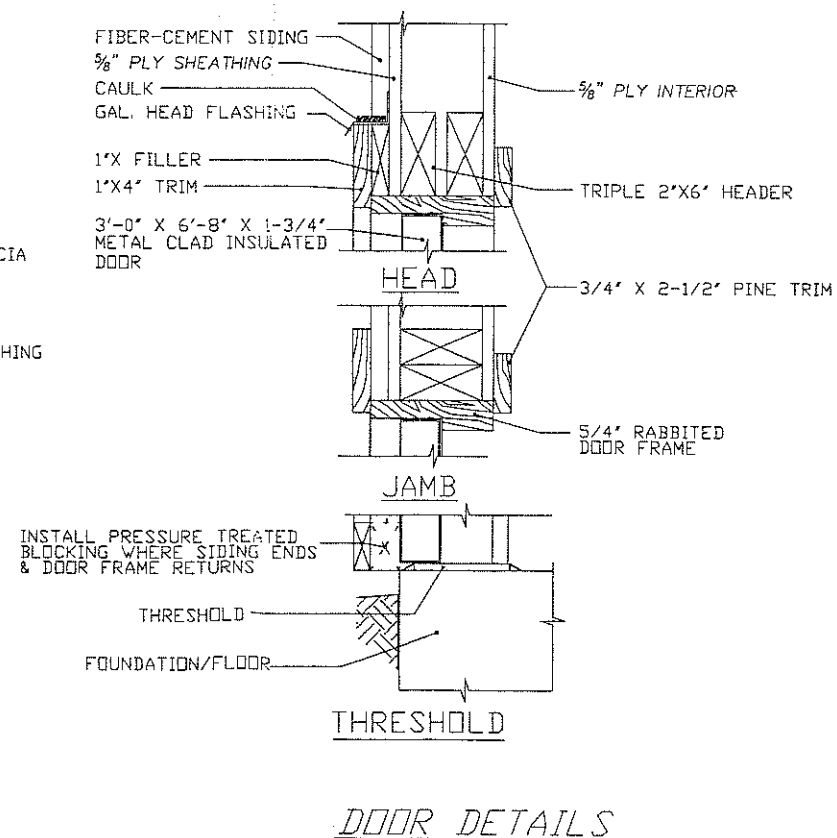
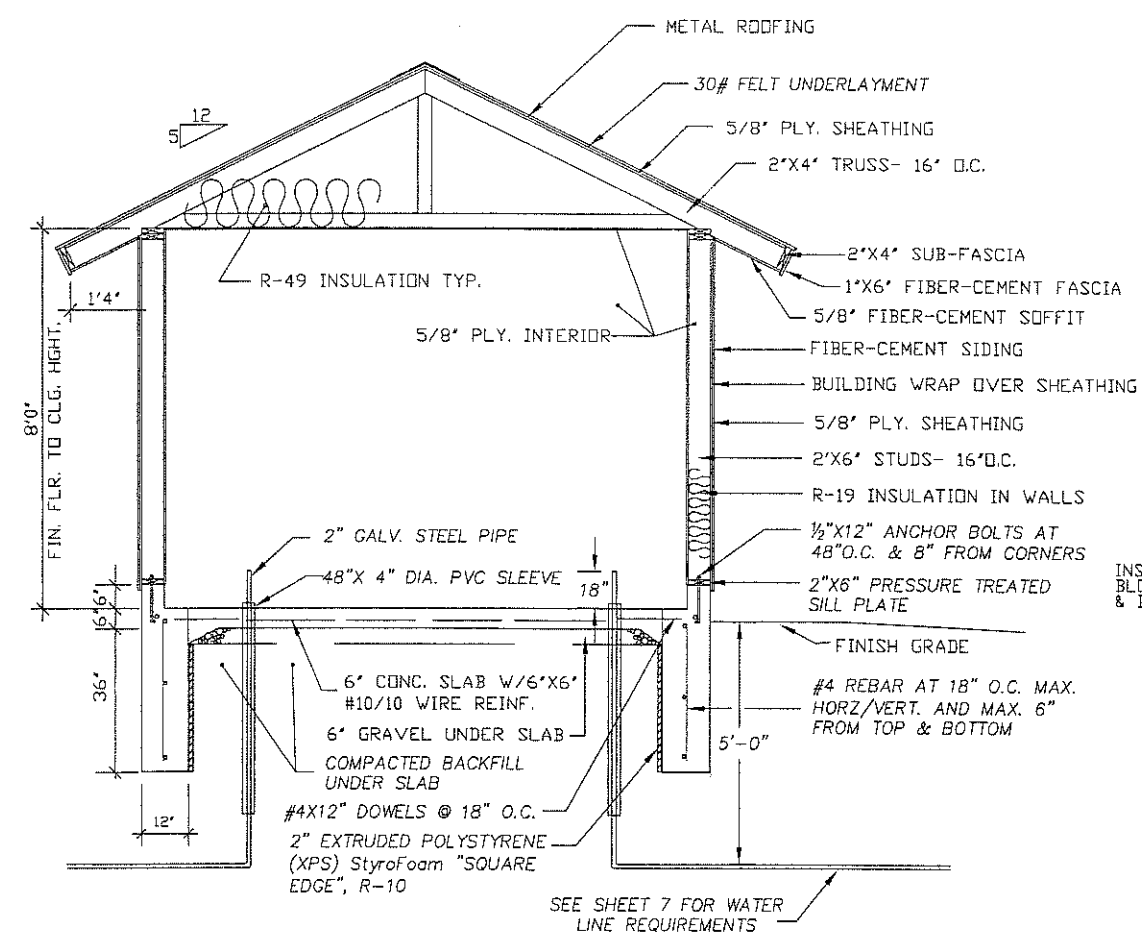
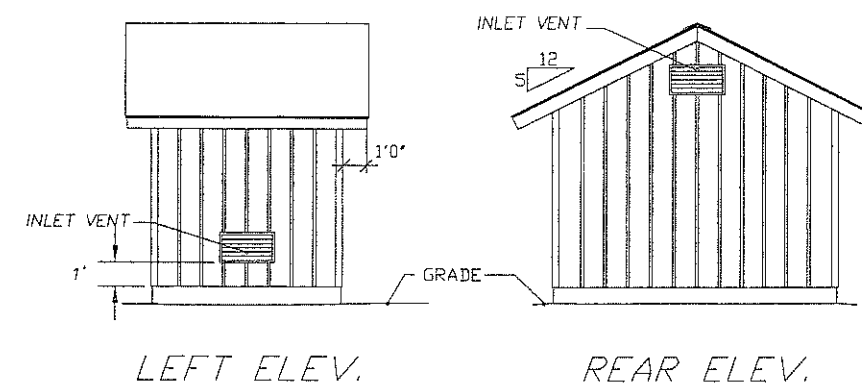
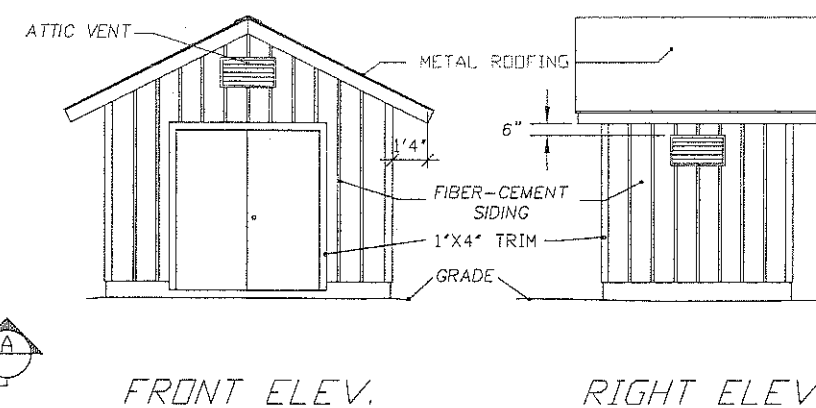
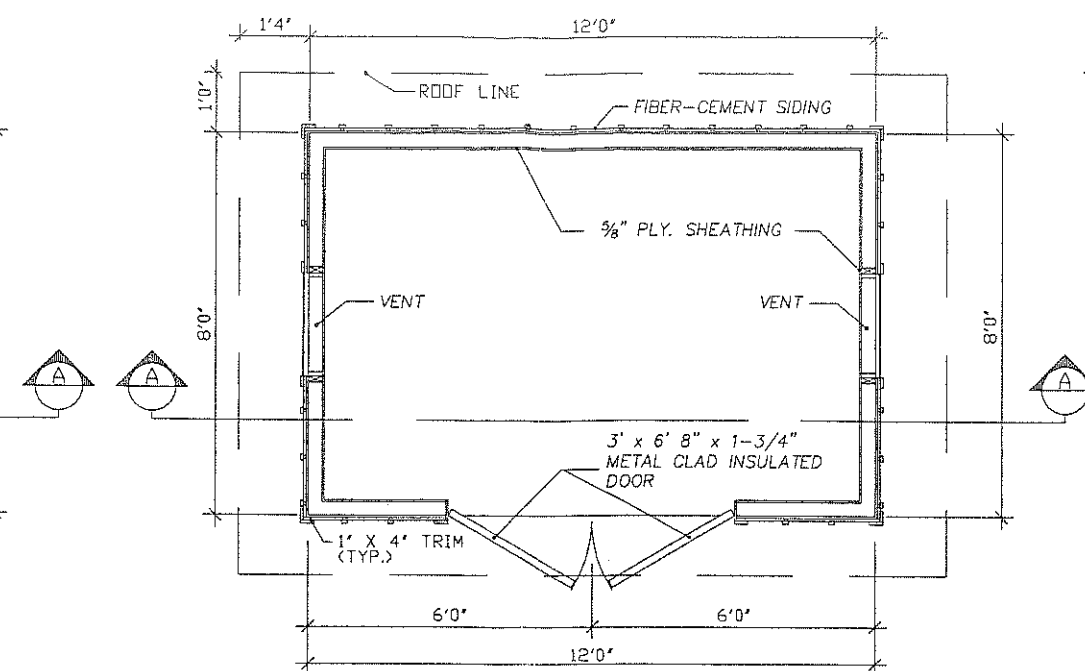
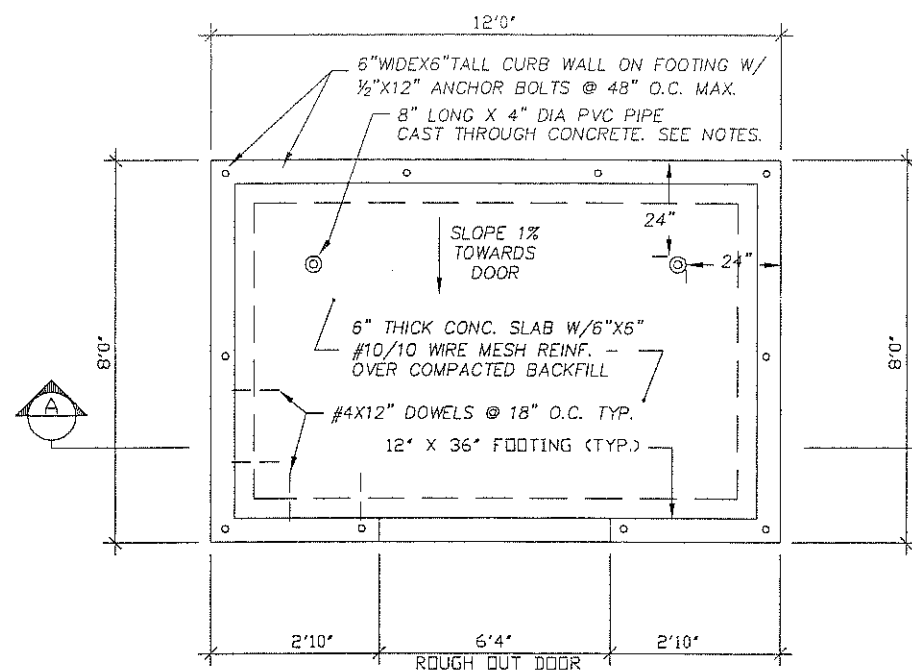
NOTES:

1. CONSTRUCT NEW WELL PUMPHOUSE (SEE SHEET 8).
2. GRADE ALL PIPE A MINIMUM OF 2% TO DRAIN.
3. AT LEAST 10 PIPE DIAMETERS UPSTREAM AND 6 PIPE DIAMETERS DOWNSTREAM OF THE METER SHALL BE STRAIGHT PIPE CONTAINING NO CONSTRICTIONS, ELBOWS, ETC.
4. ALL PIPING AND FITTINGS SHALL BE GALVANIZED STEEL PIPING (GSP) UNLESS OTHERWISE NOTED.
5. FUTURE CHLORINATOR CONNECTION. CONTRACTOR TO FURNISH CHLORINATOR TO GOVERNMENT, BUT NOT INSTALL.



BILL OF MATERIALS		
MARK	QNTY	DESCRIPTION
①	2	2" x 1" x 1" GALVANIZED TEE
②	1	AIR RELEASE VALVE
③	2	1" GALVANIZED UNION
④	2	1" x 1" x 1" CAPPED GALVANIZED TEE (IN HORIZONTAL POSITION)
⑤	1	1/2" SMOOTH NOSED SAMPLE TAP WITH TEE
⑥	1	1" CHECK VALVE
⑦	1	1"x1"x1" TEE WITH PRESSURE GAUGE AND 1/4" BALL VALVE
⑧	1	1" WYE STRAINER WITH 20 MESH STAINLESS STEEL SCREEN
⑨	1	1" WATER METER
⑩	1	3/4" HOSE BIBB WITH VACUUM BREAKER AND TEE
⑪	0	- NOT USED -
⑫	1	1 1/2" WATER HAMMER ARRESTOR WITH TEE
⑬	1	PRESSURE RELIEF VALVE
⑭	2	2" GALVANIZED ELBOW
⑮	2	1" BALL VALVE
⑯	1	APPROXIMATE LOCATION OF ELECTRICAL SERVICES. PLACE ELECTRICAL WORK AWAY FROM PLUMBING APPURTENANCES.





- NOTES:

1. INSTALL TWO 4"x48" LONG PIPE SLEEVES (SCH. 40 PVC) IN FLOOR FOR WATER LINES. STUB SLEEVE A 3" ABOVE FINISHED FLOOR.
2. SEE SHEET 7 FOR ADDITIONAL REQUIREMENTS FOR WATER LINE.
3. BUILDING SHALL BE PAINTED TO MATCH OFFICE BUILDING. COLORS SAMPLES SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO ORDERING.
4. TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH LOADINGS SPECIFIED IN SPECIFICATION SECTION 06179 "WOOD TRUSSES AND METAL ROOF PANELS"
5. DOOR HARDWARE SHALL BE AS SPECIFIED IN THE SPECIFICATION SECTION 08712 "FINISH HARDWARE".
6. BUILDING SLAB FINISHED FLOOR ELEVATION SHALL BE A MINIMUM OF 6-INCHES ABOVE EXTERIOR GRADE AROUND BUILDING.
7. FINAL GRADE AROUND BUILDING SHALL BE A MINUS 2 PERCENT AWAY FROM BUILDING FOR A MINIMUM DISTANCE OF 5 FEET, THEN A MAXIMUM OF 2H:1V CUT OR FILL SLOPE TO CATCH WITH EXISTING GROUND.

U. S. Department of Agriculture
FOREST SERVICE
Intermountain Region 4 Engineering



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APPROVED: 

NORTH FORK WELL DRILLING

PROJECT No.
DRAWING
SHEET
8 9 8