



PILOT STUDY WORK PLAN

FOR

NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM

Prepared by:

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July 2011

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1. Introduction

This Work Plan has been prepared by EA Engineering, Science & Technology, Inc. (EA) and Daniel B. Stephens & Associates, Inc. (DBS&A) for work related to construction observation and operation of a pilot scale recharge basin project (basin project) and evaluation of operation of the Phelps Canal for the Nebraska Groundwater Recharge Feasibility Study. The Pilot Project collectively refers to the pilot scale operation of the Phelps Canal and the basin project. The work will be completed at the Phelps Recharge Site 8.7 (Phelps Site) located south of Overton, Nebraska.

1.1. Background and Purpose

The purpose of this project is to analyze the feasibility of groundwater recharge in the central Platte River for the Platte River Recovery Implementation Program (Program). This purpose of this Work Plan is to implement Phase II activities which include construction, operation, and evaluation of the pilot project and recommendations for full scale projects.

The Program decided to proceed with design of the pilot project at both the 7.7 and 8.7 sites during the review of the Design Memo. However, a lease agreement could not be obtained for the 7.7 Site. Therefore, only the 8.7 site is included in the Phase II activities.

1.2. Scope of Phase II Activities

The pilot project includes the following primary components:

- Construction of the earthen recharge basin
- Construction of the water delivery system
- Installation of instrumentation
- Construction phase engineering services and operational support
- Operation and maintenance of the basin project
- Collection of instrumentation data during the basin project
- Evaluation and reporting of the results

1.3. Study Schedule

The target date for beginning construction of the pilot project is 31 August 2011. The target operational period is from 7 October 2011 through 1 March 2012, while weather permits. Restoration of the site will be completed by 1 April 2012. A more detailed schedule is included in Appendix A.

2. Construction of the Earthen Recharge Basin

Construction of the earthen recharge basin includes earthwork activities such as stripping and salvaging topsoil, excavating and stockpiling subsoil, and final grading. The Program is contracting earthwork activities separate from other work on the basin project. Work to be completed by the earthwork contractor is described in Appendix B and an estimate of cost is included in Appendix D.

Construction activities also include the restoration of the site upon completion of the basin project to pre-construction conditions, including backfill of subsoil, replacement of topsoil and final grading.

3. Construction of the Water Delivery System

Construction of the water delivery system includes installation of above ground piping from the canal to the recharge basin, buried piping at the recharge basin and the stilling well, pump, connection of electrical service to the pump, valves, and flow meter. The Program is contracting with the Central Nebraska Public Power and Irrigation District (CNPPID) to install the temporary infrastructure needed to deliver water to the recharge basin. Work to be completed by CNPPID is described in Appendix C and an estimate of cost is included in Appendix D.

Upon completion of the basin project, the water delivery system will be removed by CNPPID and the site restored to preconstruction conditions. These activities include removal of above ground piping, pumps, valves, and flow meter. These activities also include removal of buried piping and stilling well, backfill piping trenches and final grading of these areas.

4. Installation of Instrumentation

EA and DBS&A will be installing additional instrumentation directly related to the basin project. Specific activities to be performed by EA and DBS&A include:

- One piezometer will be installed adjacent to the recharge basin to monitor mounding of the water table beneath the basin using similar techniques as previous monitoring wells (excluding laboratory analysis). The piezometer will only be screened in the alluvial sand and gravel formation. A continuous water level recorder will be installed in the piezometer. The casing elevation of the piezometer will be surveyed to determine the measuring point elevation. The piezometer will be installed in accordance with EA SOP No. 19 – Monitoring Well Installation, attached in Appendix F.
- Prepare a geologic log from information obtained during installation of the piezometer.
- One soil moisture array will be installed adjacent to the piezometer to monitor vertical movement of water through the vadose zone to the water table. A borehole will be drilled to install the soil moisture sensors. Starting above the water table, the soil moisture sensors will be placed on 5 foot intervals with the wires extending to the surface through the bore hole. Each sensor will be enveloped in a 2 foot layer of sand as shown in Appendix G. Between each sensor and sand envelope, the borehole will be sealed with bentonite chips and hydrated. Each of the sensor leads will be connected to a data logger.
- One rain gauge will be installed at the site to provide continuous measurement of rainfall, and will be connected to a data logger.
- One continuous water level recorder will be installed in the stilling well to record water levels in the basin.

Upon completion of the basin project, EA will remove the instrumentation to return the site to pre-existing conditions. Removal activities include the following:

- The rain gauge and water level recorders from the piezometer and stilling well will be removed and salvaged.
- The piezometer will be abandoned meeting regulatory requirements for well abandonment.
- The water level sensors from the soil moisture array will be difficult to remove since they will be directly buried. Where possible, the sensors will be pulled out and salvaged. If they sensor cannot be pulled out, the wire leads will be cut off at an approximate depth of 4 feet below final grade and abandoned in place.

5. Construction Phase Engineering Services and Operational Support

EA and DBS&A will be providing construction phase engineering services during construction of the earthen recharge basins and water delivery system. These activities include:

- Pre-construction survey including detailed topographic survey to determine quantities, construction staking, and establishment of on-site horizontal and vertical control.
- Post-construction survey to determine as-built quantities for unit price payment of earthwork contractor and measure as-built infiltration area.
- Post-restoration survey to verify that the site has been returned to pre-construction grades, if the EDO deems necessary.
- Review of submittals and contractor invoices.
- Determination of quantities for contractor payment.
- Address and resolve questions from the earthwork contractor and from CNPPID during construction activities.
- On-site observation during construction. Three site visits were assumed.
- Final site walk through with the contractor, CNPPID, and the Program at substantial completion.

EA and DBS&A will also be providing engineering support to the Program and CNPPID during operation of the basin project to answer questions and assist in resolving any operational issues that may arise.

6. Operation and Maintenance of the Pilot Project

The Program is contracting with the CNPPID operate the temporary infrastructure needed to deliver water to the recharge basin. These activities include:

- Daily site visits to observe the operation of the water delivery system and the recharge basin.
- Daily manual adjustment of flow rate using the flow control valve to maintain the water level in the basin close to the target water level and make sure that the water level does not exceed the maximum water level or fall below the minimum water level.

- Respond to any emergency conditions.
- Conduct necessary maintenance and repairs to keep the recharge project operating.
- Decide when the system should be shut down for the winter due to persistent freezing conditions and restarted in the spring.
- Shut down the system if water is not available in the canal at the 8.7 Site.
- Document operation and maintenance activities.
- Collect data for recharge from the canal.

7. Collection of Instrumentation Data during Pilot Project

The Program is contracting with EA and DBS&A to conduct monitoring and data collection from the instrumentation for the basin project and surrounding area. Specific activities to be performed by EA include:

- Download data on two week intervals for the following:
 - Instrumentation at the recharge site: piezometer, rain gauge, soil moisture sensor array, basin water levels, and flow meter
 - Water levels recorders in the six Program installed monitoring wells
 - Water levels in the four drains (prior to freezing conditions)
- Additional data will be collected from the following sources:
 - Water level recorders in Tri-Basin wells
 - Phelps canal operational data from CNPPID
 - Manual water level readings from staff gauges in drains from the Program.

The water level data will be collected following EA SOP No. 10 – Water Level and Well Depth Measurements, attached in Appendix E.

8. Evaluation and Reporting

The Program is contracting with EA and DBS&A to provide evaluation of data collected from the instrumentation during the pilot project and preparation of a summary report. Specific activities to be performed include:

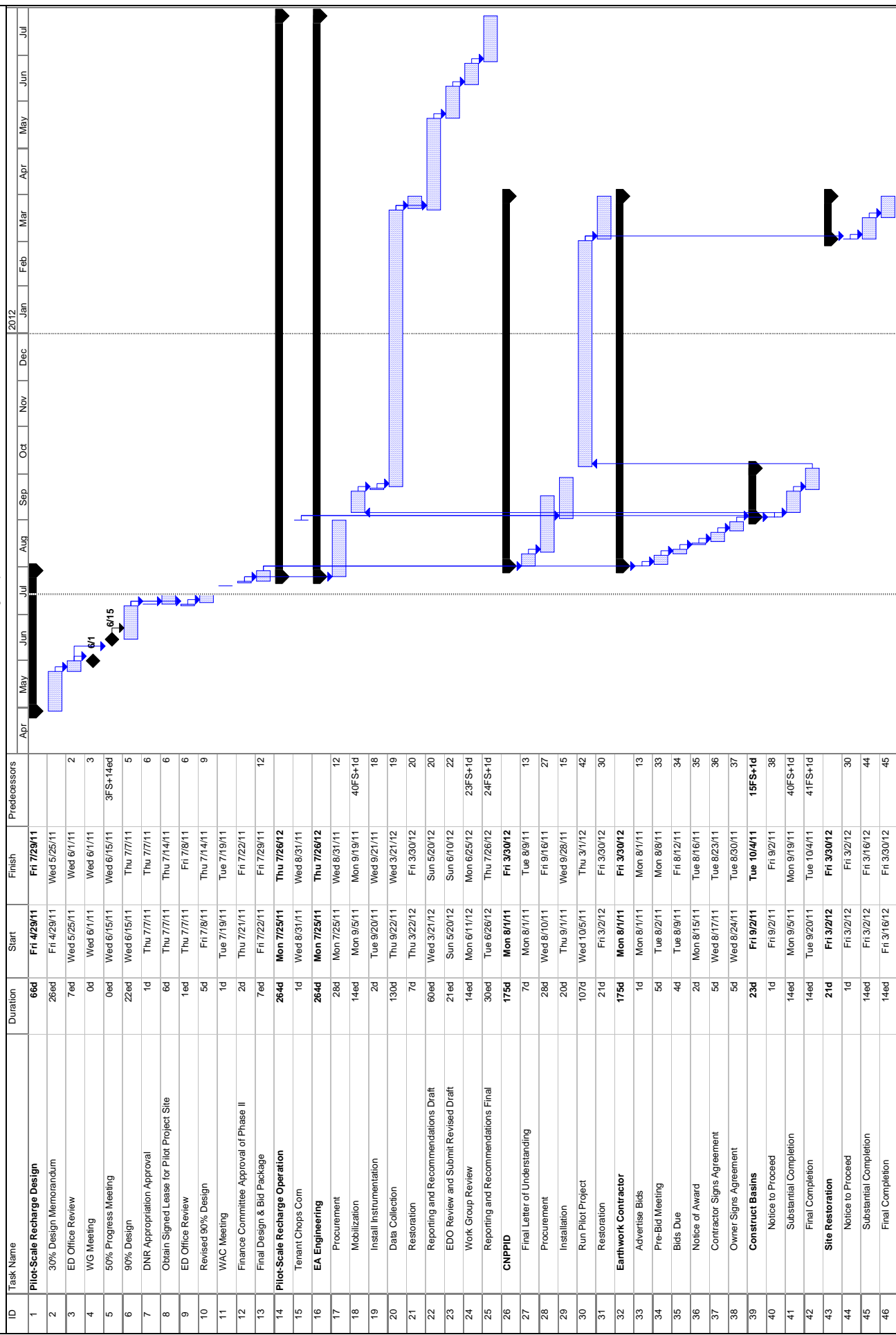
- Document the construction of the basin project.
- Document the pilot project operational information.
- Summarize the instrumentation data collected during the pilot project.
- Evaluate the recharge results of the basin project.
- Evaluate the recharge results of extended operation of the Phelps Canal.
- Provide recommendations on future recharge activities.

A Draft Report will be prepared for review and comment by the ED Office. Report comments will be addressed and incorporated into the Final Report

APPENDIX A

PILOT PROJECT SCHEDULE

PILOT PROJECT SCHEDULE
PRRIP - Nebraska Ground Water Recharge Project



Task

Progress

Milestone

Summary

Rolled Up Task

Rolled Up Milestone

Rolled Up Progress

Split

External Tasks

Project Summary

Group By Summary

Deadline

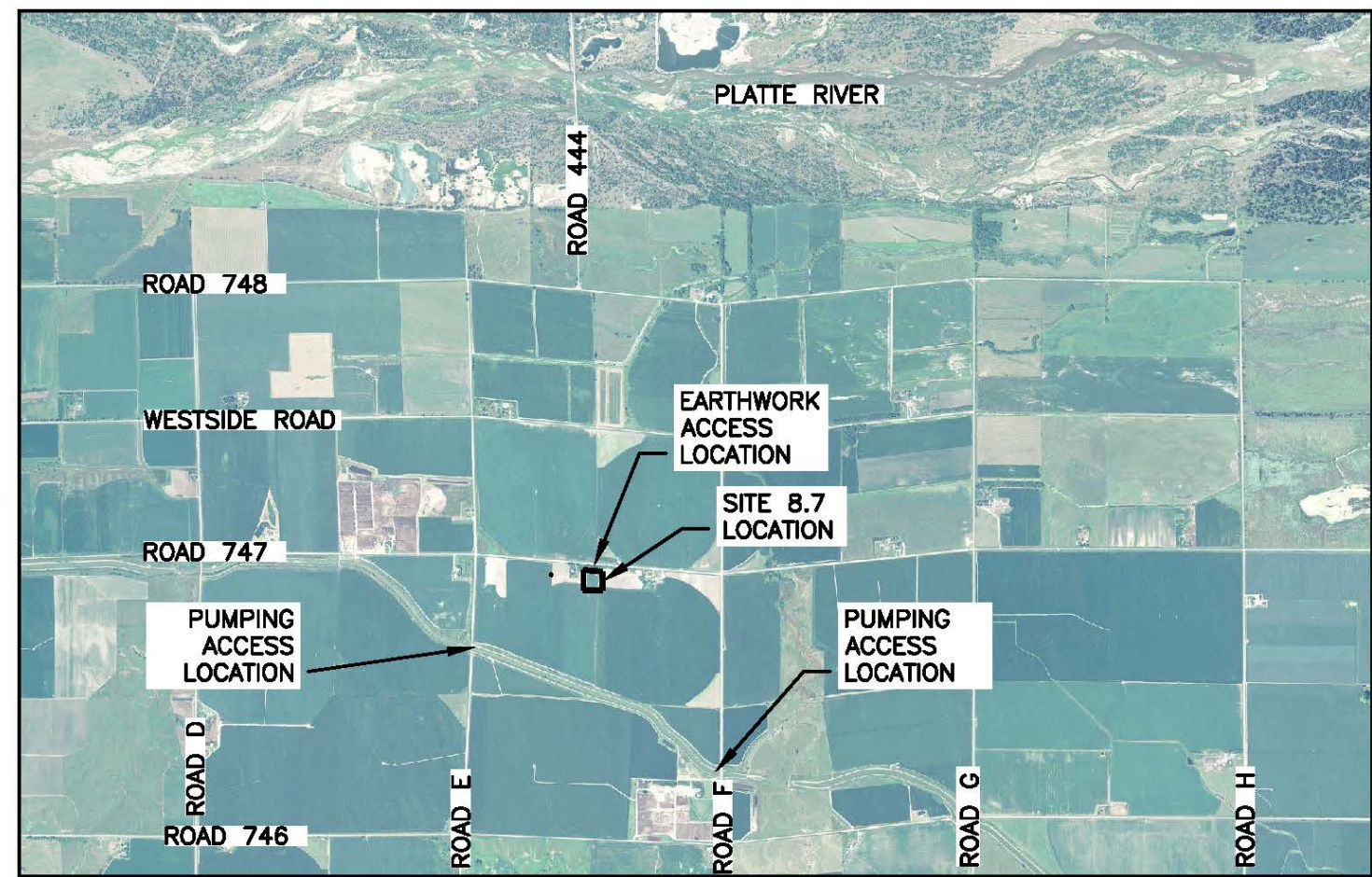
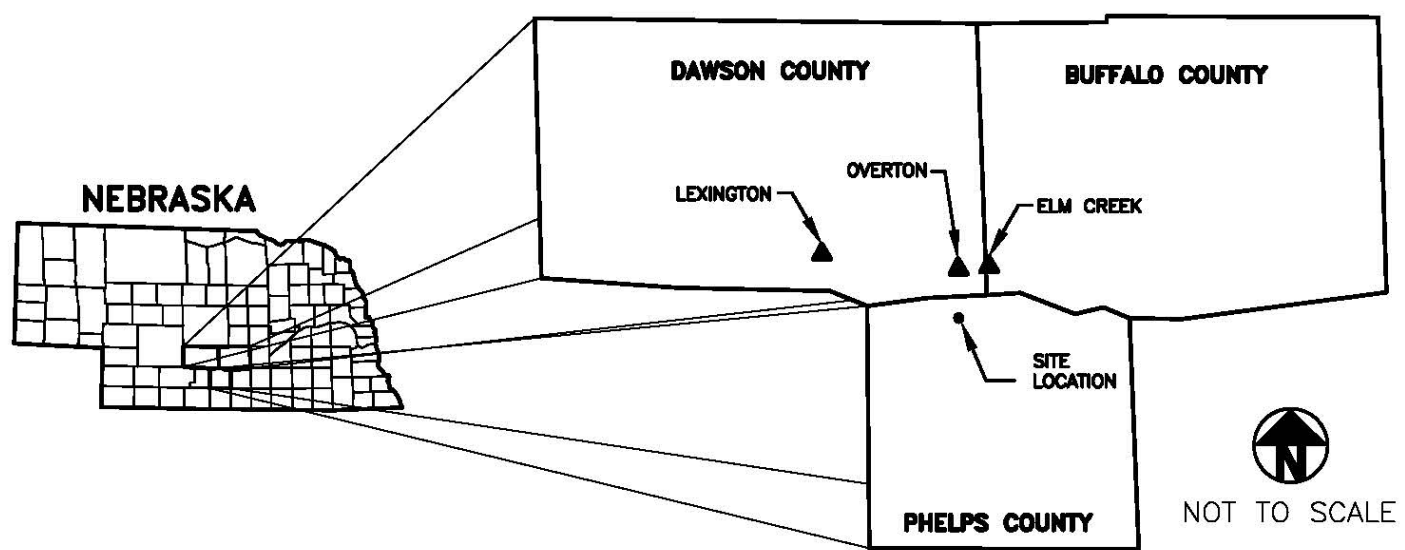
APPENDIX B

EARTHWORK BIDDING DOCUMENTS

PILOT-SCALE RECHARGE BASIN

NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM



SOURCE: 2009 FSA, DAWSON COUNTY

INDEX OF SHEETS		
FIGURE NUMBER	DRAWING NUMBER	SHEET TITLE
1	T-1	COVER SHEET
2	T-2	GENERAL NOTES
SCHEDULE A – WATER DELIVERY SYSTEM		
3	A-1	PLAN VIEW
4	A-2	DETAILS
5	A-3	PUMPING DETAILS
SCHEDULE B – EARTHWORK		
6	B-1	PLAN VIEW
7	B-2	BASIN PROFILE
8	B-3	STOCKPILE PROFILE & OVERFLOW DETAIL
9	B-4	RESTORATION PLAN

DIRECTIONS TO PILOT SITE 8.7:

FROM THE OVERTON INTERSTATE 80 INTERCHANGE (EXIT # 248), GO 1 MILE SOUTH ALONG ROAD 444 TO RD 748. THEN WEST 1/2 MILE TO ROAD E, THEN SOUTH 1 MILE TO ROAD 747 THEN EAST 1/2 MILE. BASIN SITE LOCATION IS ON SOUTH SIDE OF ROAD 747.

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PROJECT MGR. DJS

DESIGNED BY JRB

DRAWN BY CNS

CHECKED BY DJS

DATE JULY 2011

SCALE AS SHOWN

PROJECT NO. 1482201

FILE NAME -

DRAWING NO. T-1

FIGURE 1

COVER SHEET

PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

DRAWING NAME: F:\State & Local\Other\Platte River Recovery Program\Projects\1482201 - GW Recharge Study\T5-Pilot Design\Figures\90% design\General Notes.dwg
DATE:07/06/2011 TIME:15:19 DRAWN BY: cswanson



GENERAL NOTES:

1. CONTRACTORS SHALL NOT DAMAGE CORN OR ALFALFA CROPS.
2. CONSTRUCTION IN CROP LAND SHALL NOT BEGIN UNTIL CORN HAS BEEN REMOVED BY TENANT.
3. TENANT WILL REMOVE CORN FROM WORK AREA PRIOR TO MOBILIZATION.
4. IT IS CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE NEBRASKA "ONE CALL" SYSTEM REGARDING UTILITIES IN THE CONSTRUCTION SITE. DIGGER'S HOTLINE OF NEBRASKA 1-800-331-5666.
5. SCHEDULE A SHOWS WORK TO BE COMPLETED BY THE CENTRAL NEBRASKA PUBLIC POWER AND IRRIGATION DISTRICT (CNPPID) FOR THE WATER DELIVERY SYSTEM.
6. SCHEDULE B SHOWS WORK TO BE COMPLETED BY AN EARTHWORK CONTRACTOR TO CONSTRUCT THE EARTHEN BASIN.
7. EA ENGINEERING, SCIENCE, & TECHNOLOGY, INC. (EA.) WILL INSTALL PIEZOMETER, RAIN GAUGE, SOIL MOISTURE BORING AND SENSORS, WATER LEVEL TRANSDUCERS, AND DATA LOGGERS (EXCLUDING FLOW METER DATA LOGGER).
8. LOCATIONS ARE APPROXIMATE BASED ON LIDAR AND AERIAL PHOTOGRAPHS.
9. CONTRACTOR SHALL NOT DISTURB EXISTING FENCE.
10. EA WILL PLACE CONSTRUCTION STAKES.
11. ELEVATIONS SHOWN ARE FOR REFERENCE ONLY AND ARE BASED ON LIDAR. ACTUAL ELEVATIONS FOR CONSTRUCTION SHALL BE AS STAKED IN THE FIELD.
12. CONSTRUCTION LIMITS ARE AS SHOWN ON THE DRAWINGS.
13. TENANT IS KERRY BLYTHE.
14. PRESENCE OF UNDERGROUND UTILITIES IS UNKNOWN.

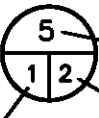
GENERAL SEQUENCE:

1. CORN REMOVED BY TENANT
2. CONSTRUCT BASIN (SCHEDULE B)
CONSTRUCT WATER DELIVERY SYSTEM (SCHEDULE A)
INSTALL INSTRUMENTATION (ENGINEER)
3. OPERATE WATER DELIVERY SYSTEM (SCHEDULE A)
4. DATA COLLECTION (ENGINEER)
5. RESTORATION (SCHEDULE A)
RESTORATION (SCHEDULE B)
6. RESTORATION (ENGINEER)

LEGEND:

-  B-1 PREVIOUS SOIL BORING LOCATION
-  MW-1 EXISTING MONITORING WELL

DETAIL DESCRIPTION

-  5 — DETAIL NUMBER
1 2 — SHEET NUMBER OF DETAIL
— SHEET WHERE DETAIL IS REFERENCED

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PLATE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

GENERAL NOTES

PROJECT MGR.

DJS

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T-2

FIGURE

2

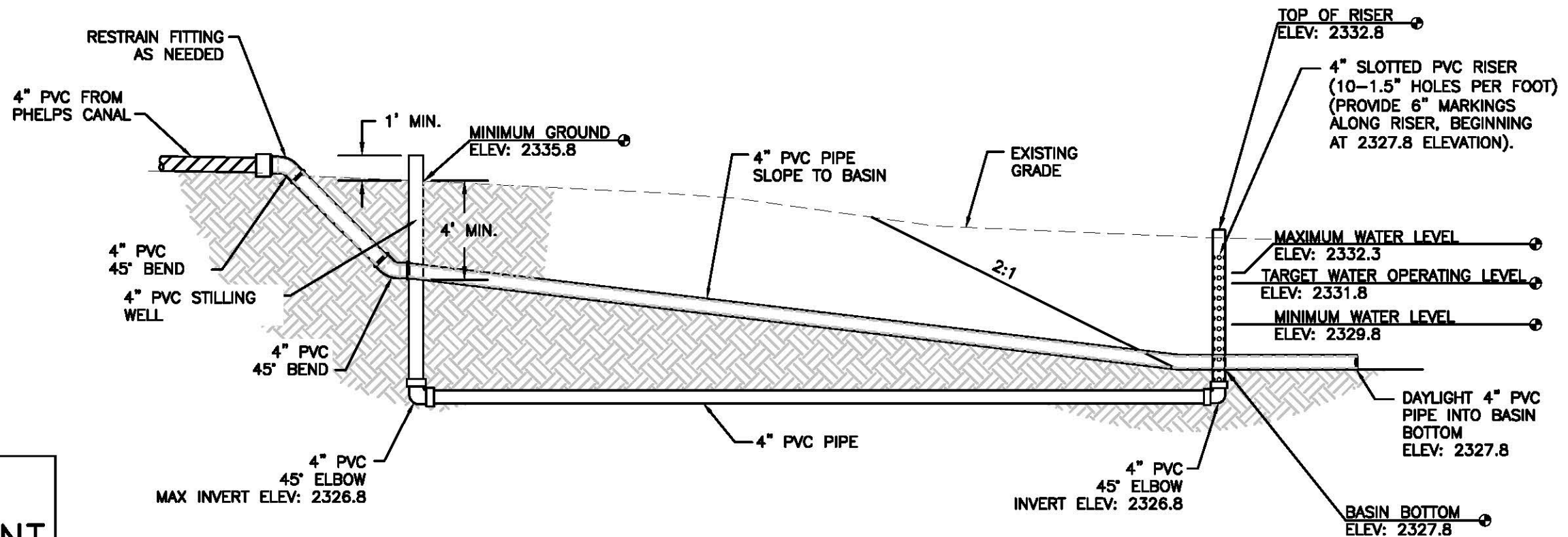
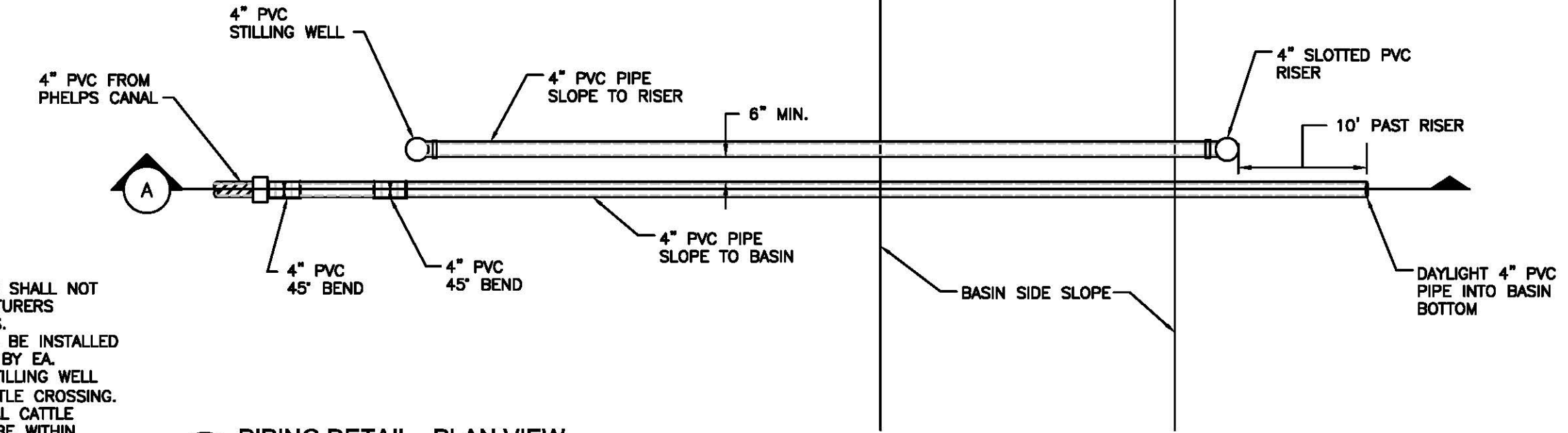
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NOTES:

1. PIPE DEFLECTIONS SHALL NOT EXCEED MANUFACTURERS RECOMMENDATIONS.
2. TRANSDUCER WILL BE INSTALLED IN STILLING WELL BY EA.
3. DO NOT PLACE STILLING WELL WITHIN 5' OF CATTLE CROSSING. NOTIFY EA IF FINAL CATTLE CROSSING IS TO BE WITHIN 5' OF STAKED LOCATION OF STILLING WELL, TO COORDINATE A NEW LOCATION OR MODIFICATIONS.



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PHELPS COUNTY, NEBRASKA

DETAILS

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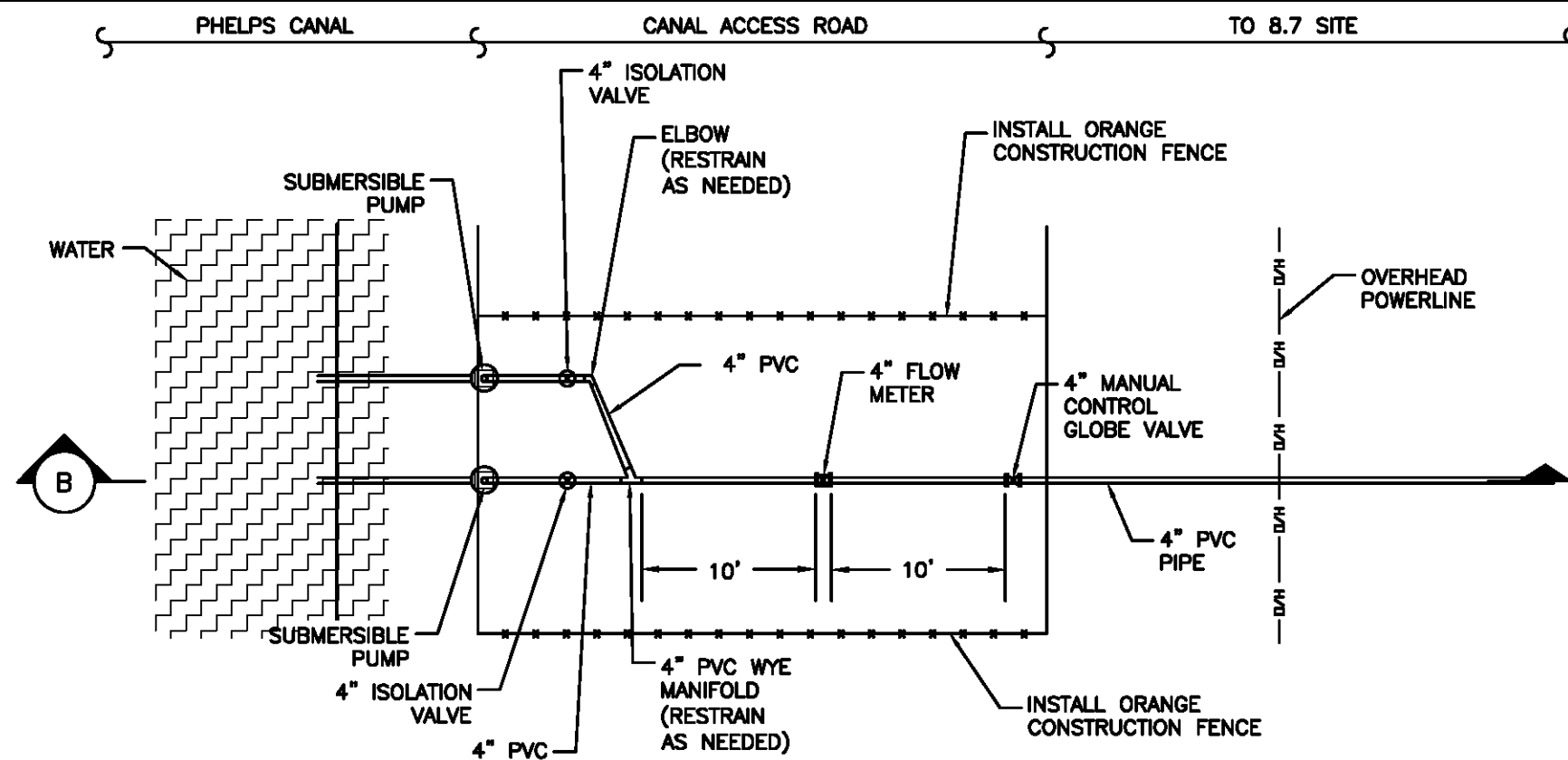
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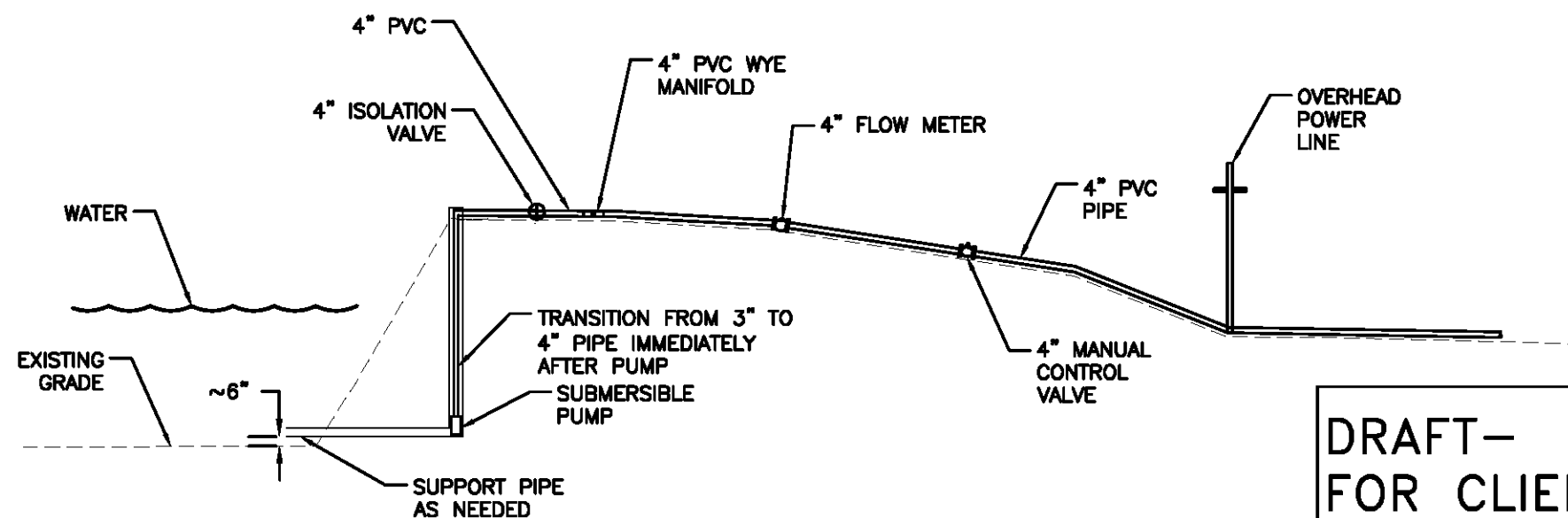
FILE NAME
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DRAWING NO.
A-2

FIGURE
4



2 PUMPING STATION AREA - PLAN VIEW
3 5 NO SCALE



B PUMPING STATION AREA - SIDE VIEW
NO SCALE

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INSTALLATION & RESTORATION NOTES:

1. CNPPID SHALL MAKE ELECTRICAL CONNECTIONS AND SERVICE FOR SUBMERSIBLE PUMPS IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.
2. CNPPID SHALL PROVIDE AND INSTALL FLOW METER AND DATA LOGGER IN ACCORDANCE WITH MANUFACTURES SPECIFICATIONS.
3. CNPPID SHALL CALIBRATE FLOW METER PER MANUFACTURES RECOMMENDATION.
4. CNPPID SHALL PROVIDE CABLE AND DOWNLOAD SOFTWARE TO EA.
5. CNPPID SHALL REMOVE PIPING, PUMPS, VALVES, FLOW METER, STILLING WELL, RISER, AND RESTORE SITE TO PRE-CONSTRUCTION CONDITIONS. UPON NOTIFICATION TO DO SO FROM PROGRAM.
6. PVC PIPE SHALL BE 4" SCHEDULE 40
7. PUMP SHALL BE SSE-3V-S2-20 AMERICAN MARSH PUMP
8. FLOW METER SHALL BE 4" M0300 BOLT-ON SADDLE METER WITH RC20-D DATA LOGGER/ TRANSMITTER, WITH SOFTWARE AND DOWNLOAD CABLE.
9. CNPPID SHALL COORDINATE WITH TENANT A MINIMUM OF 30 DAYS PRIOR TO MAKING ELECTRICAL CONNECTION/ MODIFICATIONS.
10. CNPPID SHALL COORDINATE WITH TENANT ON FINAL LOCATION OF CATTLE CROSSING AND 8" STEEL IRRIGATION PIPE PROTECTION.
11. PUMPING STATION AREA DETAILS SHOW GENERAL LAYOUT REQUIREMENTS.
12. CNPPID SHALL NOT LIMIT CANAL ROAD VEHICLE ACCESS ACROSS PUMP SITE. CNPPID SHALL SUBMIT A SHOP DRAWING TO EA FOR PROPOSED PUMP SITE CONSTRUCTION A MINIMUM OF 30 DAYS PRIOR TO CONSTRUCTION OF PUMP SITE, FOR REVIEW AND APPROVAL. ANY ABOVE GROUND PIPE AND APPURTENANCES SHALL BE PROTECTED FROM VEHICLE DAMAGE. ANY BELOW GROUND PIPE AND APPURTENANCES SHALL HAVE A MINIMUM OF 2' OF SOIL COVER WHERE VEHICLES WILL CROSS.

OPERATION NOTES:

1. OPERATE PUMPS CONTINUOUSLY TO MAINTAIN WATER ELEVATIONS AS SHOWN ON DRAWING A-2.
2. CNPPID SHALL INSPECT WATER DELIVERY SYSTEM DAILY AND MAINTAIN WATER LEVEL AS CLOSE AS POSSIBLE TO THE TARGET WATER OPERATING LEVEL.
3. INSPECT AND FIX PIPE LEAKS DAILY.
4. INSPECT WATER DEPTH AT BASIN AND ADJUST WATER FLOW DAILY.
5. DOCUMENT SNOW MELT EVENTS ON INSPECTION LOG PROVIDED BY EA.
6. OPERATE BOTH PUMPS AS NEEDED TO FILL THE BASIN AND MAINTAIN THE TARGET WATER OPERATING LEVEL.
7. INSPECT SILT FENCE AS REQUIRED IN STORM WATER POLLUTION PREVENTION PLAN AND NOTIFY PROGRAM IF ACTION IS REQUIRED BY OTHERS.

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HELPS COUNTY, NEBRASKA**

PUMPING DETAILS

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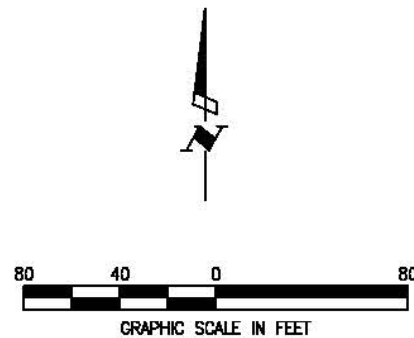
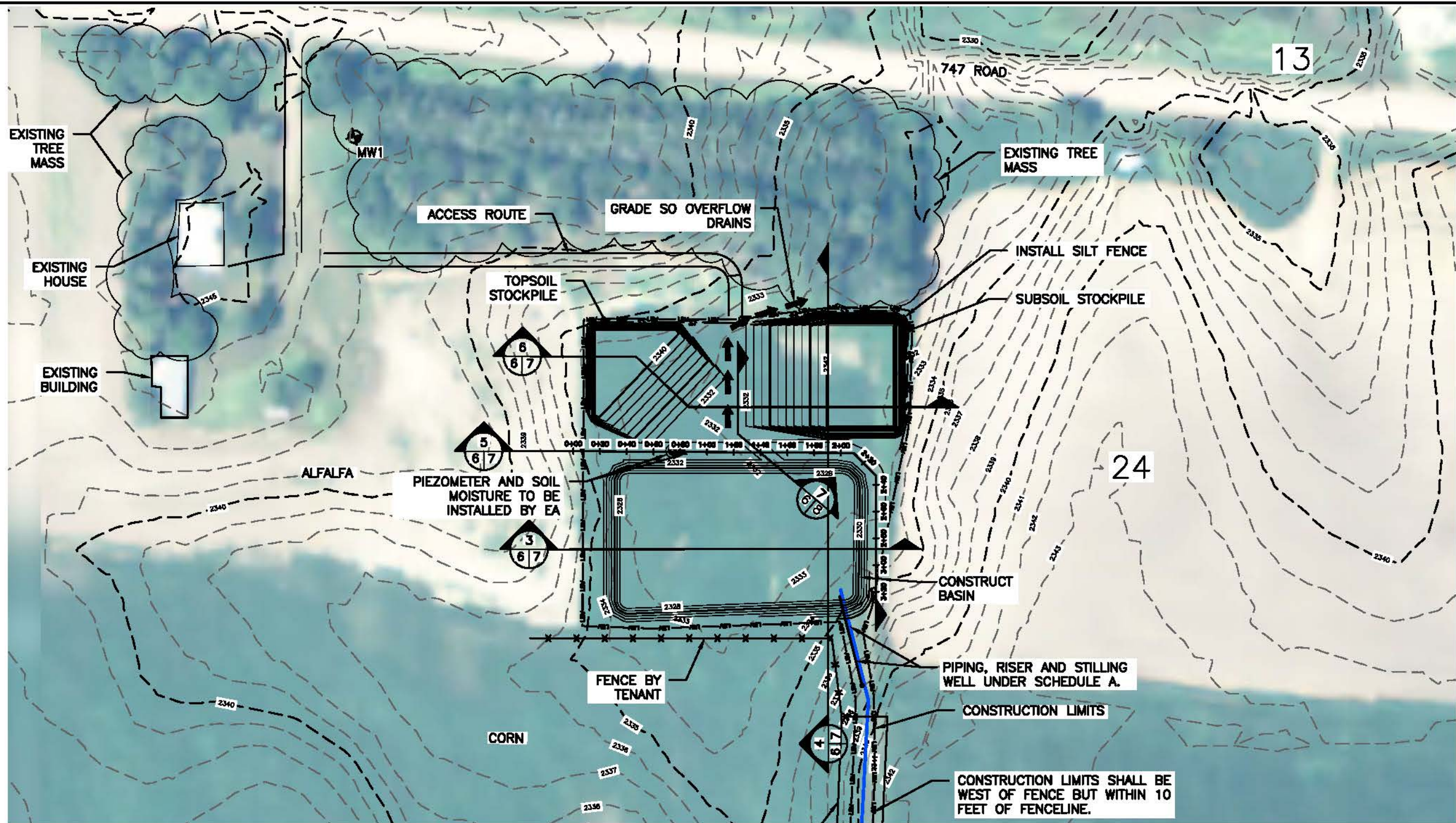
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FIGURE

5

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PLAN VIEW

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FIGURE
6

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FIGURE	7

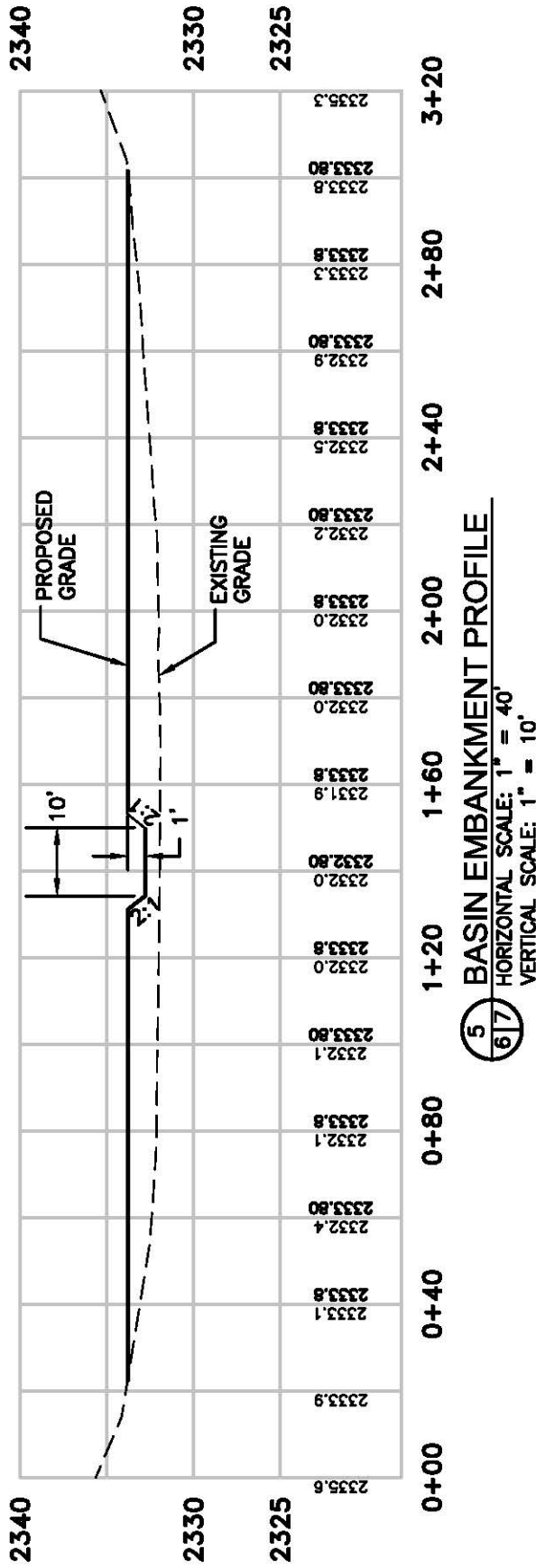
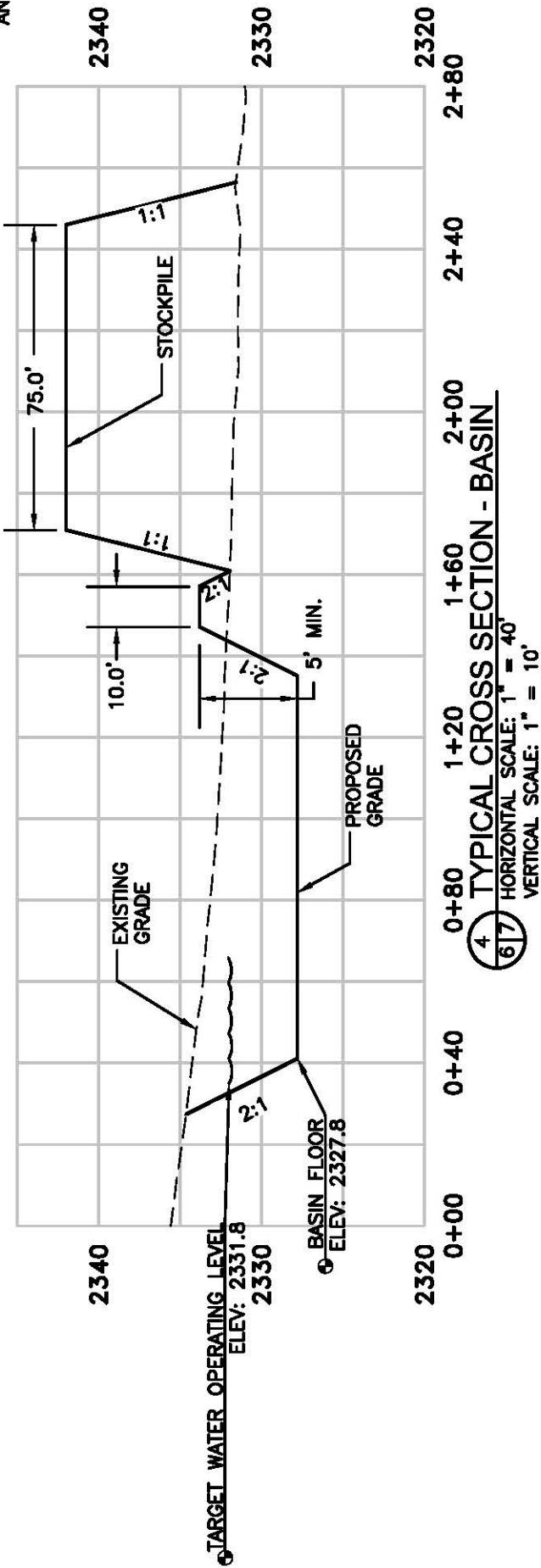
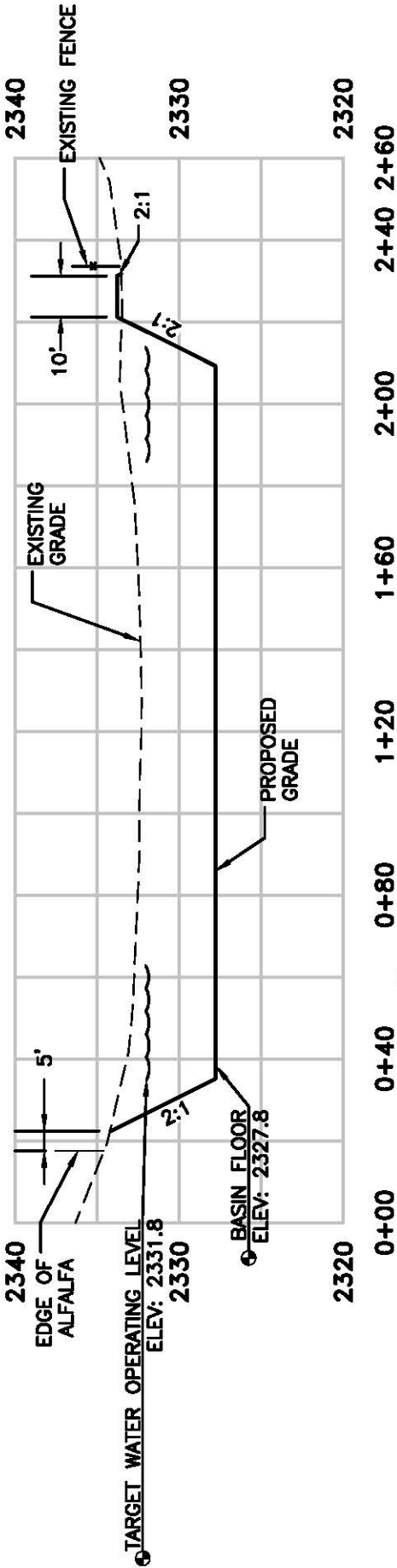


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PHELPS COUNTY, NEBRASKA

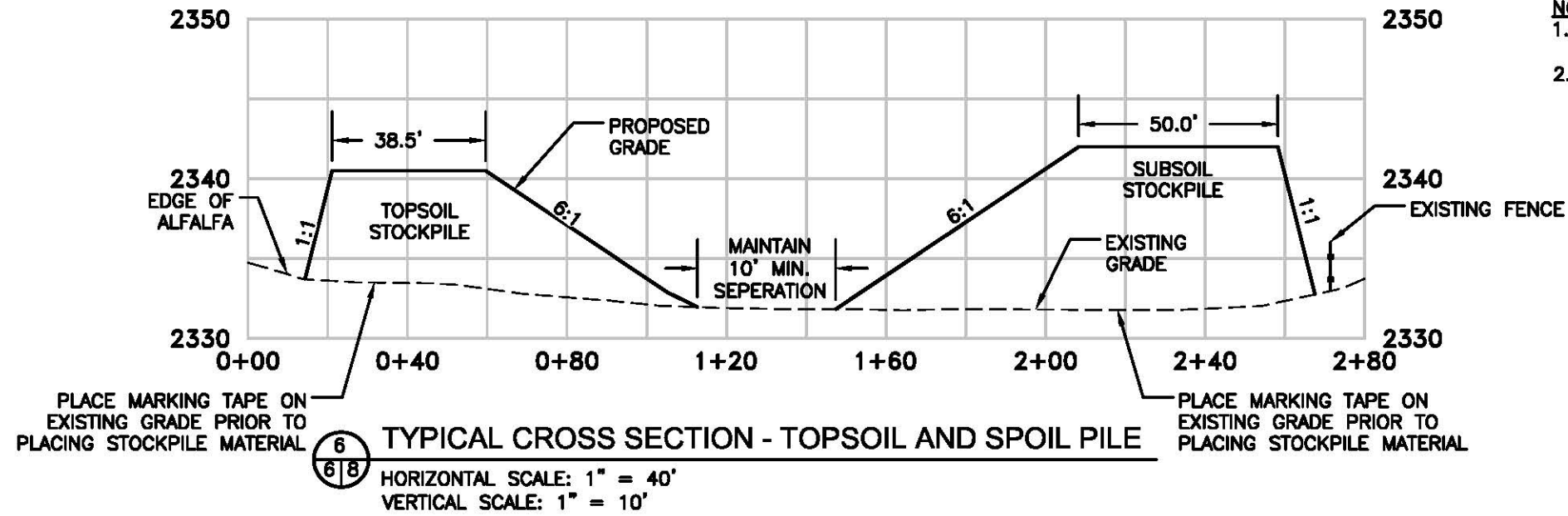
BASIN PROFILE

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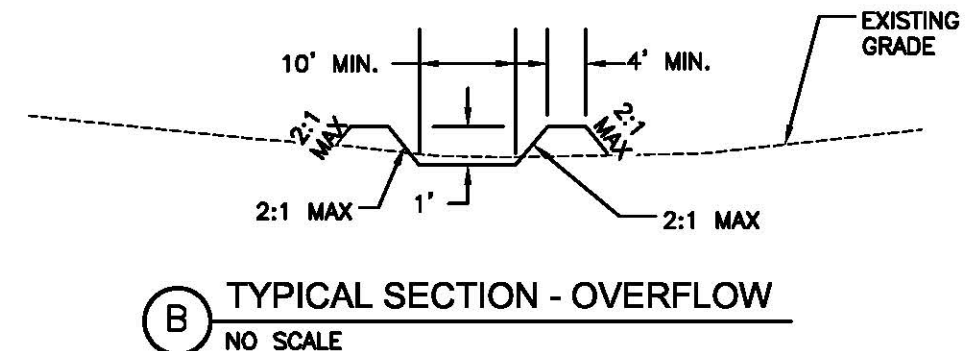
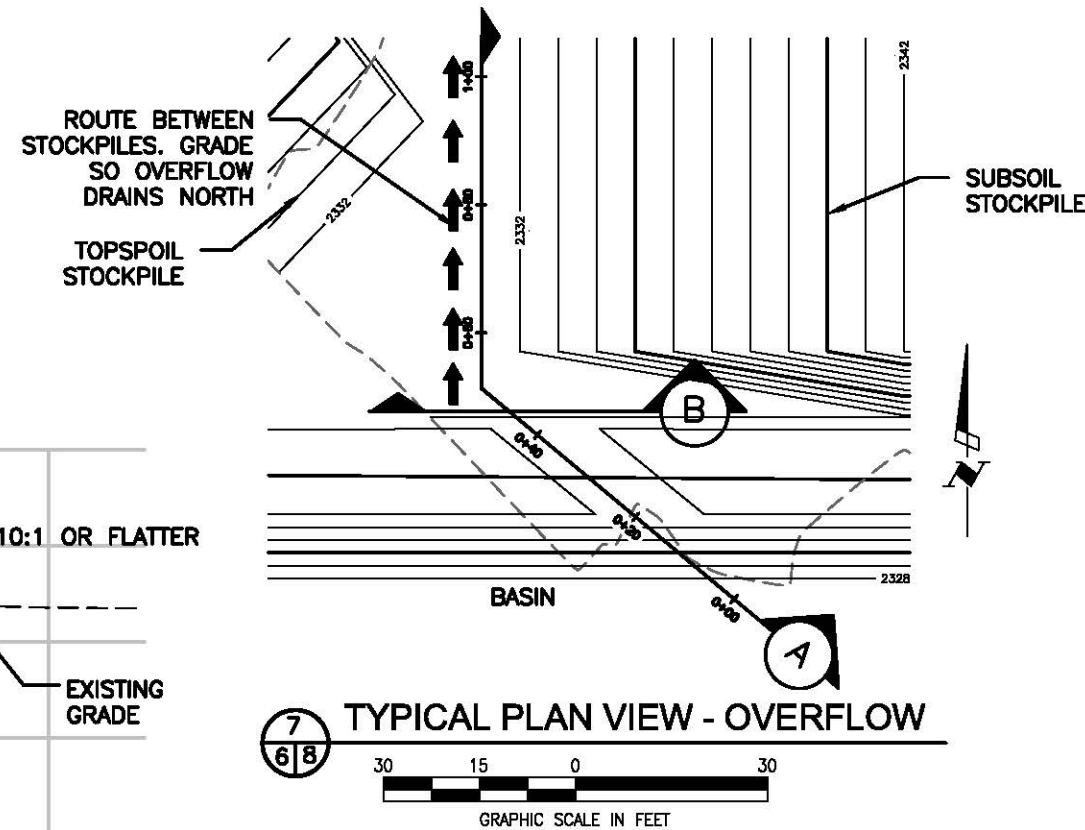
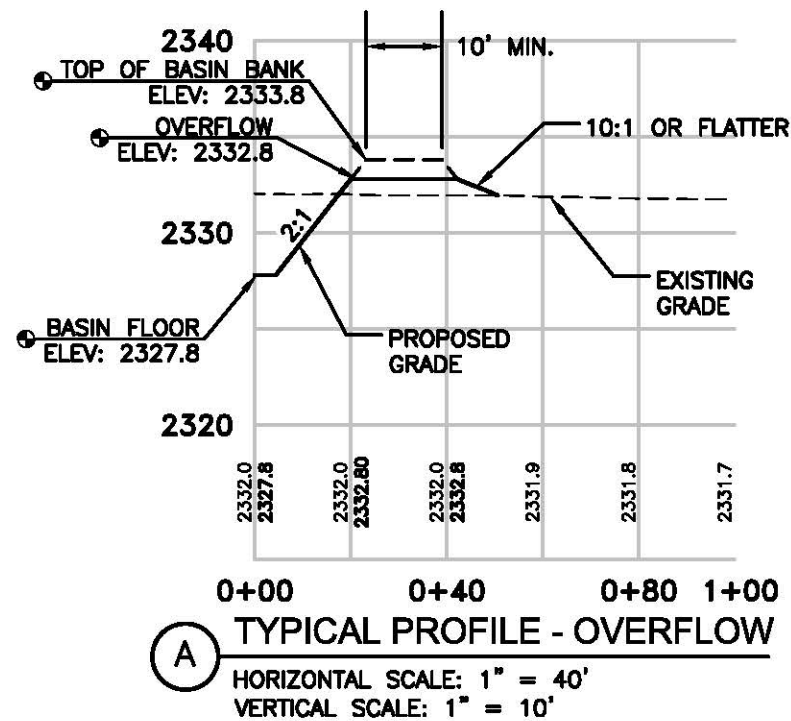
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DATE: 07/07/2011
TIME: 12:02
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- NOTES:
1. STOCKPILE SIZE ESTIMATED BASED ON FILL FACTOR OF 1:1 (CUT:FILL)
 2. SIZE AND DIMENSIONS ARE SHOWN TO ILLUSTRATE GENERAL SIZE AND SHAPE FOR STOCKPILES. CONTRACTOR SHALL SUBMIT SHOP DRAWING TO EA PRIOR TO CHANGING STOCKPILE GENERAL SIZE AND SHAPE.

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STOCKPILE PROFILE & OVERFLOW DETAIL

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SCALE
AS SHOWN

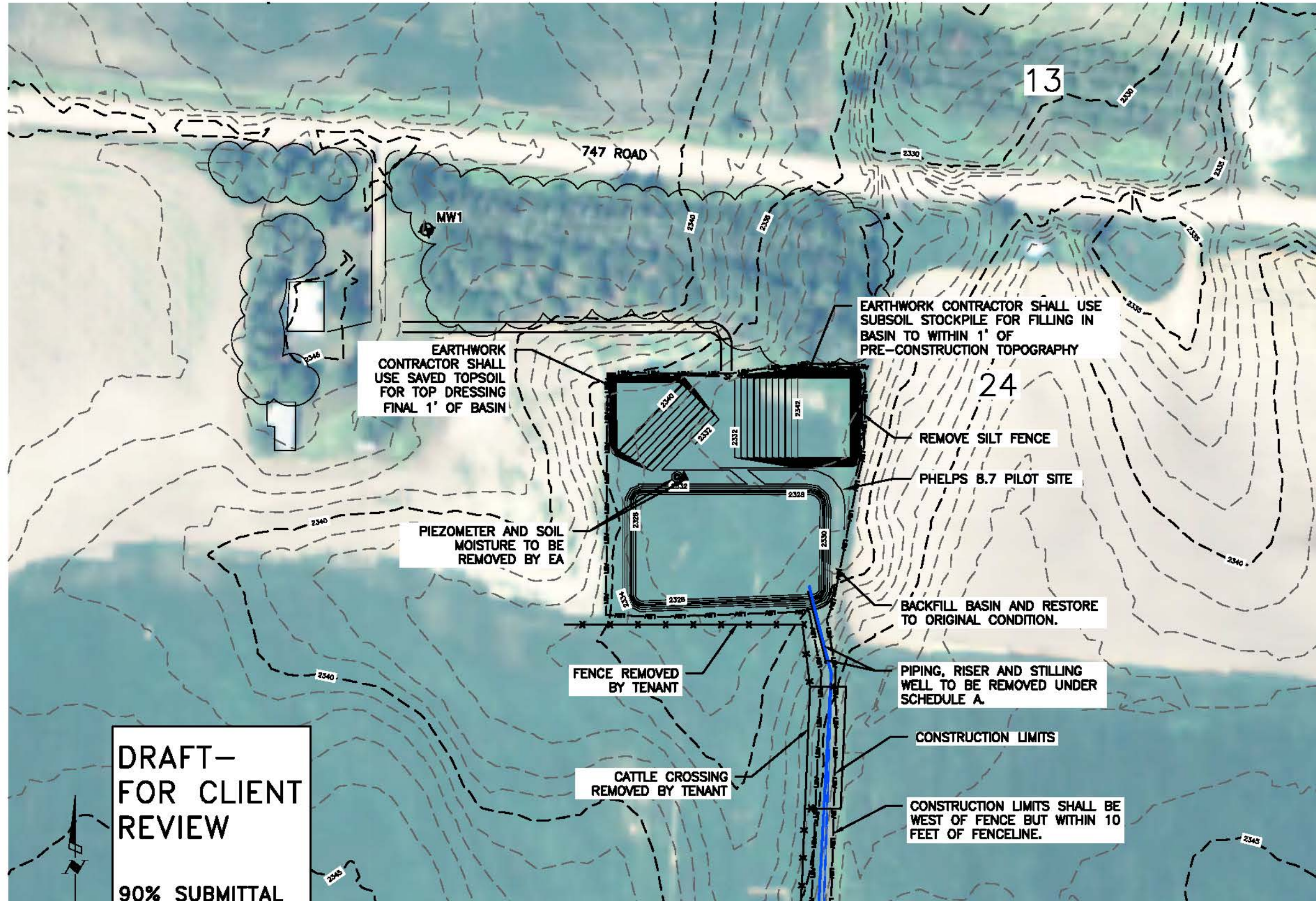
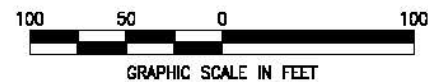
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B-3

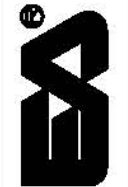
FIGURE

8

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DATE:07/06/2011 TIME:16:17 DRAWN BY: cswanson



AERIAL SOURCE: 2009 FSA, DAWSON COUNTY
LIDAR SOURCE: HEADWATERS CORPORATION,
PREPARED DATE 2/2/2010



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PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

RESTORATION PLAN

PROJECT MGR.
DJS

DESIGNED BY
JRB

DRAWN BY
CNS

CHECKED BY
DJS

DATE
JULY 2011

SCALE
AS SHOWN

PROJECT NO.
1482201

FILE NAME
-

DRAWING NO.
B-4

FIGURE

9

BIDDING DOCUMENTS – SCHEDULE B

for

**PILOT-SCALE RECHARGE BASIN PROJECT
PHELPS COUNTY, NEBRASKA**

Prepared for
Platte River Recovery Implementation Program (PRRIP)
Kearney, Nebraska



Prepared by
EA Engineering Science and Technology, Inc.
221 Sun Valley Blvd., Suite D
Lincoln, Nebraska 68528
(402) 476-3766

July 2011

EA Project Number 1482201
Plan Set No. _____

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DIVISION 00

PROCUREMENT REQUIREMENTS

ADVERTISEMENT FOR BIDS

The Nebraska Community Foundation, Inc. (Foundation) of Lincoln, Nebraska, representing all signatories to the Platte River Recovery Implementation Program (Program) will receive sealed bids for the Pilot-Scale Recharge Basin Project (Schedule B – Earthwork) in Phelps County, Nebraska. These activities are generally described as follows:

Construction of a temporary 0.5 acre pilot-scale recharge basin for operation by others from 5 October 2011 until 1 March 2012. Restore the basin area to pre-construction conditions following operation.

Sealed bids shall be received at the office of the Platte River Implementation Program located at the following address:

Platte River Recovery Implementation Program
4111 4th Avenue, Suite 6
Kearney, Nebraska 68845

All bids must be delivered to the Program Office no later than 3:00 PM Central Time on Friday, August 12, 2011. The bids will then be opened and read aloud at that time. All bids shall be submitted in accordance with and on the forms included in the Project Manual.

Contract Documents, including proposal bid forms, drawings and Project Manual, have been placed on file and may be examined at the Program Office. Electronic copies of the Contract Documents can be obtained by email from the Point of Contact identified below:

Jason Farnsworth
Headwaters Corporation
4111 4th Avenue, Suite 6
Kearney, Nebraska 68845
farnsworthj@headwaterscorp.com

A **PRE-BID CONFERENCE** will be held on Monday, August 8, 2011 at 10:30 AM and will be held at the project site. Project site location is shown on the construction drawings. Potential bidders must attend the pre-bid conference.

No bidder may withdraw its bid after the scheduled time of the bid opening. Bids are to remain open for 60 days after the bid opening.

The Program reserves the right to reject any and all bids or parts thereof, and to waive any irregularities of any bid. The Program also reserves the right to award the contract to such responsible bidders as may be determined by the Program.

Once the contract is awarded, the Program will issue two Notices to Proceed; one for constructing the recharge basin to conduct the pilot study and one for restoration to pre-construction conditions after the pilot study is completed. Issuance of a Notice to Proceed for restoration is contingent upon completion of the pilot study, but Notice to Proceed will not be later than 2 March 2012.

END OF SECTION 00010

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

1.0 DEFINED TERMS.

Terms used in these Instructions to Bidders which are defined in the General Conditions of the Construction Contract, have the meanings assigned to them in the General Conditions. The term "BIDDER" means one who submits a Bid directly to the OWNER, as distinct from a sub-BIDDER, who submits a bid to a BIDDER. The term "Successful BIDDER" means the lowest, qualified, responsible and responsive BIDDER to whom the OWNER (on the basis of the OWNER's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement for Bids, Instructions to Bidders, the Bid Form, Statement of Qualifications, Anticipated Subcontractors, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

In this section on "Instructions to Bidders", the term BIDDER is used to describe a prospective CONTRACTOR. When the term BIDDER is used, it refers to the company that could become the CONTRACTOR; therefore all requirements of the CONTRACTOR also pertain to the BIDDER, and vice versa.

The OWNER as defined in the General Conditions is the Nebraska Community Foundation, Inc. (FOUNDATION) of Lincoln, Nebraska representing all signatories to the Platte River Recovery Implementation Program (PROGRAM). For this construction contract, the OWNER shall be responsible for the financial aspects; the technical aspects of the construction contract will be the responsibility of the ENGINEER. The ENGINEER for the construction contract is defined as EA Engineering, Science and Technology, Inc.

2.0 COPIES OF BIDDING DOCUMENTS.

- 2.1 Complete sets of the Bidding Documents may be obtained as stated in the "Advertisement for Bids".
- 2.2 Complete sets of Bidding Documents must be used in preparing Bids. Neither the OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.3 OWNER and ENGINEER, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work, and do not confer a license or grant for any other use.

3.0 QUALIFICATIONS OF BIDDERS.

To demonstrate qualifications to perform the Work, each BIDDER must submit with the Bid (or within 48 hours of the Bid, if allowed by the Project Manual) written evidence, such as financial data, previous experience, record of performance on previous projects, equipment, information on their permanent place of business, and other such data as may be called for on the Statement of Qualifications contained in the Bidding Documents. If a BIDDER has not previously completed and submitted a PROGRAM Contractor Prequalification packet, each BIDDER must do so prior to submittal of a bid.

Prequalification packets are available on the PROGRAM's website (www.platteriverprogram.org).

Each BIDDER must be prepared to submit evidence of the BIDDER's qualifications to do business in Nebraska, prior to the Notice of Award.

4.0 LIST OF SUBCONTRACTORS.

Each BIDDER shall submit a list of subcontractors on the form included in the Project Manual with his Bid.

Prior to the award of Contract, the OWNER shall notify the BIDDER if the OWNER, after due investigation, has reasonable objection to any Subcontractor listed and does not accept him. Acceptance of any or all listed Subcontractors by the OWNER does not relieve the CONTRACTOR from any responsibility for its Subcontractors.

5.0 BIDDER INQUIRIES.

All questions regarding the Bid Documents shall be addressed to the ENGINEER in writing. No questions regarding the Bid Documents will be answered by phone. Inquiries shall be directed to:

Jason Byler, P.E.
EA Engineering, Science, and Technology, Inc.
221 Sun Valley Blvd., Suite D
Lincoln, Nebraska, 68528

All written questions shall be answered in writing and provided to all BIDDERS in possession of a bid package.

6.0 PRE-BID CONFERENCE AND SITE SHOWING.

To assist BIDDERS with the development of a bid price, the ENGINEER will conduct a Site Showing at the location of the construction project. **Attendance at the Site Showing is mandatory for the submission of a bid. Bids received from BIDDERS who did not attend the Site Showing will not be accepted. BIDDERS must be on time for the Site Showing, and must remain until such time that the Site Showing is completed.**

Interested BIDDERS shall meet for the Site Showing at the time and location stated in the Advertisement for Bids.

7.0 EXAMINATION OF CONTRACT DOCUMENTS AND SITE.

7.1 It is the responsibility of each BIDDER, before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local

conditions that may affect cost, progress, performance or furnishing of the Work, (c) consider federal, state and local laws and regulations that may affect cost, progress, performance or furnishing of the Work, (d) study and carefully correlate BIDDER's observations with the Contract Documents, and (e) notify ENGINEER of all conflicts, errors or discrepancies in the Contract Documents.

- 7.2 Information and data reflected in the Contract Documents, with respect to Underground Facilities at or contiguous to the site, is based upon information and data furnished to the ENGINEER by owners of such Underground Facilities or others, and the ENGINEER does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the Supplementary Conditions.
- 7.3 Provisions concerning responsibilities for the adequacy of data furnished to prospective BIDDERS on subsurface conditions, Underground Facilities and other physical conditions, and possible changes in the Contract Documents, due to differing conditions, appear in the General Conditions and Supplementary Conditions.
- 7.4 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and other lands designated for use by the CONTRACTOR in performing the Work, are identified in the Contract Documents. All additional lands, and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the CONTRACTOR.
- 7.5 The submission of a Bid will constitute an incontrovertible representation by the BIDDER that the BIDDER has complied with every requirement of this Article 7, and that without exception, the Bid is premised upon performing and furnishing the Work required by the Contract Documents, and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

8.0 INTERPRETATIONS AND ADDENDA.

- 8.1 All questions about the meaning or intent of the Contract Documents are to be directed to the ENGINEER. Interpretations or clarifications considered necessary by the ENGINEER in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by the ENGINEER as having received the Bidding Documents. Questions received within five days prior to the date for opening of Bids will normally not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 8.2 Addenda may also be issued to modify the Bidding Documents, as deemed advisable by the OWNER or ENGINEER.

9.0 BID SECURITY.

9.1 NOT REQUIRED.

10.0 CONTRACT TIME.

Due to the nature of the work, BIDDERS must be prepared to complete the work within the time frames contained in the Agreement and Special Provisions of the Bid Documents.

11.0 LIQUIDATED DAMAGES.

Provisions for liquidated damages are set forth in the Agreement.

12.0 SUBSTITUTE OR "OR-EQUAL" ITEMS.

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications. A substitute or "or-equal" item of material or equipment may be furnished or used by the CONTRACTOR, if acceptable to the ENGINEER. Application for such acceptance will not be considered by the ENGINEER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR, and consideration by the ENGINEER, is set forth in paragraph 6.05 of the General Conditions, and may be supplemented in the Supplementary Conditions.

13.0 SUBCONTRACTORS, SUPPLIERS, AND OTHERS.

13.1 If requested by the ENGINEER, the BIDDER shall provide information on the qualifications, experience and financial or other data of any Subcontractors proposed on this project. If ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, they may, before the Notice of Award is given, require the apparent Successful BIDDER to submit an acceptable substitute without an increase in Bid price. If apparent Successful BIDDER declines to make any such substitution, OWNER may award the contract to the next lowest BIDDER that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any BIDDER. Any Subcontractor, Supplier, or other person or organization listed and to whom the OWNER or ENGINEER does not make written objection prior to giving of the Notice of Award will be deemed acceptable to the OWNER and ENGINEER, subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.

13.2 No CONTRACTOR shall be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

14.0 BID FORM.

- 14.1 The Bid Form is included with the Bidding Documents; additional copies may be obtained from the ENGINEER. Bids must be submitted on the forms provided.
- 14.2 All blanks on the Bid Form must be completed in ink or by typewriter. The Bidder must include both unit prices and extended prices. In case of a difference between the unit price and the extended price, the unit price shall be used in computing the total amount of the bid. In case of a difference between the total bid price and the sum of the extended prices, the sum of the extended prices shall govern.
- 14.3 Bids by corporations must be executed in the corporate name by the president or vice president (or other corporate officer accompanied by evidence of authority to sign), and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- 14.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature, and the official address of the partnership must be shown below the signature.
- 14.5 All names must be typed or printed below the signature.
- 14.6 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- 14.7 The address, telephone and fax numbers for communications regarding the Bid must be shown.
- 14.8 Work included in each Bid Item is as covered in the discussion on Measurement and Payment in each applicable section of the Construction Specifications.

15.0 SUBMISSION OF BIDS.

Contractors shall submit sealed proposals to the Platte River Recovery Implementation Program Office located at the following address:

**Platte River Recovery Implementation Program
4111 4th Avenue, Suite 6
Kearney, Nebraska 68845.**

Bids will be placed in a sealed envelope marked “**Pilot-Scale Recharge Basin Project – Schedule B**” and must include the Contractors name, contact person, address and phone number clearly visible on the exterior of the envelope.

All bids must be submitted on the Bid Form provided in this document and accompanied by the Bid Security and other required documents. Bid Forms must include an original

signature(s). Unsigned Bid Forms or bids not provided on the Bid Form will be automatically rejected.

All bids must be delivered to the PROGRAM Office no later than the date and time shown in the Advertisement for Bids. Faxed bids will not be accepted.

16.0 MODIFICATION AND WITHDRAWAL OF BIDS.

Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed), and delivered to the place where Bids are to be submitted at any time prior to the time of opening of Bids, as called for in the Advertisement for Bids. No BIDDER may withdraw his Bid for a period as specified in the Advertisement for Bids after the date and hour set for the opening declared therein.

17.0 OPENING OF BIDS.

Bids will be opened and read aloud publicly. An abstract of the amounts of the Bids will be made available to BIDDERS within one week after the opening of Bids.

18.0 BIDS TO REMAIN SUBJECT TO ACCEPTANCE.

All bids will remain subject to acceptance for sixty days (60) after the day of the Bid Opening, but the OWNER may, in its sole discretion, release any Bid, and return the Bid Security prior to that date.

19.0 AWARD OF CONTRACT.

- 19.1 The PROGRAM reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time, or changes in the Work, to negotiate contract terms with the successful BIDDER, and to disregard all nonconforming, nonresponsive, unbalanced, or conditional Bids. Also, the PROGRAM reserves the right to reject the Bid of any BIDDER if the PROGRAM believes that it would not be in the best interest of the project to make an award to that BIDDER, whether because the Bid is not responsive or the BIDDER is unqualified, or of doubtful financial ability, or fails to meet any other pertinent standard or criteria established by the PROGRAM. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures, and the correct sum thereof, will be resolved in favor of the correct sum.
- 19.2 In evaluating Bids, the PROGRAM will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form, or prior to the Notice of Award.
- 19.3 PROGRAM may conduct such investigations as the OWNER deems necessary to assist in the evaluation of any Bid, and to establish the responsibility, qualifications and financial ability of BIDDERS, proposed Subcontractors,

Suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to the PROGRAM's satisfaction within the prescribed time. The PROGRAM may also use previous experience with the BIDDER in evaluating qualifications.

- 19.4 If the Contract is to be awarded, it will be awarded to the lowest responsible, responsive BIDDER, whose evaluation by the PROGRAM indicates to PROGRAM that the award will be in the best interests of the Project.

20.0 CONTRACT SECURITY.

NOT REQUIRED.

21.0 INSURANCE CERTIFICATES.

The successful BIDDER shall be required to furnish, with the executed Agreement, Insurance Certificates called for in the Supplementary Conditions.

22.0 SIGNING OF AGREEMENT.

When the PROGRAM gives a Notice of Award to the successful BIDDER, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within five (5) days thereafter, the CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to the PROGRAM with the required Bonds. Within five (5) days thereafter, the PROGRAM shall deliver one fully signed counterpart to the CONTRACTOR. No contract shall be considered as effective until it has been fully executed by all parties.

If the BIDDER to whom the Notice of Award is given does not properly execute the Agreement within the time allowed, the PROGRAM may withdraw the Notice of Award, and the BIDDER will forfeit his Bid Security.

Following the execution of the Contract by the OWNER and the CONTRACTOR, written Notice to Proceed with the Work shall be given by the PROGRAM to the CONTRACTOR. The Contract Time will commence to run with the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the effective date of the Agreement.

23.0 SALES AND USE TAXES.

The CONTRACTOR must pay all State Sales and Use Tax on materials and equipment to be incorporated in the Work.

24.0 RETAINAGE.

Provisions concerning retainage are set forth in the Agreement.

25.0 STATE LAWS AND REGULATIONS.

All applicable laws, ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

END OF SECTION

Project Identification: Pilot-Scale Recharge Basin Project (Schedule B).

This Bid is submitted to:

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
4111 4th Avenue, Suite 6
KEARNEY, NEBRASKA 68845

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with the OWNER, in the form included in the Contract Documents, to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price, and within the Contract Time indicated in this Bid, and in accordance with the other terms and conditions of the Contract Documents.
2. The BIDDER accepts all of the terms and conditions of the Advertisement for Bids, and Instructions to Bidders, including without limitation, those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for sixty (60) days after the day of the Bid Opening. The BIDDER will sign and submit the Agreement with the Construction Performance Bond and Payment Bond, and other documents required by the Bidding Requirements, within five (5) days after the date of the Notice of Award.
3. In submitting this BID, BIDDER represents, as more fully set forth in the Agreement, that:

- (a) BIDDER has examined copies of all the Bidding Documents, and of the following Addenda (receipt of all which is hereby acknowledged):

NUMBER

DATE

- (b) BIDDER has familiarized itself with the nature and extent of the Contract Documents, work, work site, locality, and all local conditions, regulations and permits, local laws or ordinances that in any manner may affect cost, progress, performance, or furnishing of the Work.
 - (c) BIDDER has given the ENGINEER written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents, and the written resolution thereof by the ENGINEER is acceptable to the BIDDER.
 - (d) This Bid is genuine and not made in the interest of, or on behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; the BIDDER has not directly or indirectly induced or solicited

any other BIDDER to submit a false or sham Bid; the BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and the BIDDER has not sought, by collusion, to obtain for itself any advantage over any other BIDDER or over the OWNER.

4. The BIDDER agrees to perform all the Work described in the Contract Documents and on the following Bid Schedule. The Method of Measurement and Payment shall be as stated in the applicable specifications.
5. The BIDDER hereby agrees to accept an award of a contract for the Bid Schedule as determined under Section 00 21 13 – Instructions to Bidders, paragraph 19.
6. The BIDDER agrees that the unit prices shall govern in checking the bid, and, should a discrepancy exist in the sum of extended prices and Total Amount of Bid after extensions are checked and corrections made, if any, the sum of extended prices shall be used in considering the award of this Contract.
7. The BIDDER will complete the Work for the following unit or lump sum prices(s):

Bid Schedule					
No.	Item	Unit	Estimated In Place Quantity	Unit Price	Total Estimated Price
1	Mobilization/ Demobilization	EA	2	\$ _____	\$ _____
2	Recharge Basin Excavation	CY	3800	\$ _____	\$ _____
3	Recharge Basin Restoration	CY	3800	\$ _____	\$ _____
Total					\$ _____

8. The BIDDER understands that the OWNER reserves the right to reject any or all bids or to waive any informality or technicality in any proposal in the interest of the OWNER. If an award is made, it will be made to the lowest bidder that is determined qualified and responsible at the sole discretion of the OWNER.
9. BIDDER agrees that the Work, Pilot-Scale Recharge Basin Project (Schedule B), will be substantially complete in accordance with paragraph 3.1 of the Agreement. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.
10. The following documents are attached to and made a condition of this bid:
 - (a) Required Bid Security in the form of _____.
11. Communications concerning this Bid shall be addressed to:

Contractor _____
Address _____
City/State/Zip _____
Phone _____
Fax _____
E-mail _____

12. The terms used in this Bid, which are defined in the General Conditions and Supplementary Conditions of the Construction Contract included as part of the Contract Documents, have the meanings assigned to them in the General Conditions and Supplementary Conditions.

SUBMITTED ON _____, 20____

BY _____
Name (Individual, Partnership, Corporation, or Joint Venture)

(State of Residency)

BY _____
(Name of Person Authorized to Sign) (Signature and Printed)

(Title)

Corporate Seal (If Applicable)

Attest _____
(Secretary)

Business Address: _____

Phone No.: _____ Fax No.: _____

License No.: _____

ANTICIPATED SUBCONTRACTORS

1. Type of Work to be Sublet _____

Approximate Dollar Amount of Subcontract \$ _____
Probable Subcontractor _____
Address _____
2. Type of Work to be Sublet _____

Approximate Dollar Amount of Subcontract \$ _____
Probable Subcontractor _____
Address _____
3. Type of Work to be Sublet _____
Approximate Dollar Amount of Subcontract \$ _____
Probable Subcontractor _____
Address _____

Statement of Qualifications: The CONTRACTOR shall submit a statement of the subcontractor's qualifications and shall obtain written permission from the OWNER prior to the actual subletting or assignment of any portion of the contract as per Section 6.06 of the General Conditions.

PREVIOUS EXPERIENCE OF BIDDER

SIMILAR PROJECTS COMPLETED (List at least three)

1. DATE _____ VALUE _____
Name of Project, Address, Type of Improvement _____

Name/Phone of Owner _____
Name/Phone of Engineer _____

2. DATE _____ VALUE _____
Name of Project, Address, Type of Improvement _____

Name/Phone of Owner _____
Name/Phone of Engineer _____

3. DATE _____ VALUE _____
Name of Project, Address, Type of Improvement _____

Name/Phone of Owner _____
Name/Phone of Engineer _____

SIMILAR PROJECTS UNDER CONTRACT (List at least one)

DATE _____ VALUE _____

Name of Project, Address, Type of Improvement _____

Name/Phone of Owner _____

Name/Phone of Engineer _____

END OF SECTION

DIVISION 00

CONTRACTING REQUIREMENTS

NOTICE OF AWARD

Dated _____

TO: _____

(BIDDER)

ADDRESS: _____

PROJECT: Pilot – Scale Recharge Basin Project (Schedule B)

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for the Schedule B work to include:

Construction of a temporary 0.5 acre pilot-scale recharge basin for operation by others from 5 October 2011 until 1 March 2012. Restore the basin area to pre-construction conditions following operation.

The Amount of your Contract is _____

Three copies of each of the proposed Contract Documents accompany this Notice of Award. Also included are three copies of the Contract Agreement.

You must comply with the following within five (5) days of the date of this Notice of Award:

1. Deliver to the ENGINEER three fully executed counterparts of the Agreement.
2. Deliver the required Insurance Certificates and Performance and Payment Bonds as specified in the Contract Documents.
3. (List other conditions) _____

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Within five (5) days after you comply with those conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

Please acknowledge your receipt of this notice in the space provided below and return a copy along with any and all future project correspondence to Headwaters Corporation, 4111 4th Avenue, Suite 6, Kearney, Nebraska 68845

By: Headwaters Corporation

(Owner's Authorized Representative)

Title

Receipt Acknowledged:

By: _____

Representative

Title

Date

THIS AGREEMENT is dated as of the _____ day of _____ in the year 2011, by and between the Nebraska Community Foundation, Inc. (hereinafter called OWNER) representing all signatories to the Platte River Recovery Implementation Program (PROGRAM), and _____ (hereinafter called CONTRACTOR). The following persons are authorized to represent the parties through this Agreement: Diane Wilson representing the OWNER, Dr. Jerry Kenny representing the PROGRAM; and _____ representing the CONTRACTOR.

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents for Schedule B. The Work is generally described as follows:

Construction of a temporary 0.5 acre pilot-scale recharge basin for operation by others from 5 October 2011 until 1 March 2012.
Restore the basin area to pre-construction conditions following operation.

ARTICLE 2. ENGINEER.

EA Engineering, Science, and Technology, Inc. will serve as the ENGINEER. The ENGINEER may in writing designate a representative(s) who shall carry out the ENGINEER's functions as set forth in the Contract Documents. In all cases as provided for in this Agreement, the powers, authorities, rights and responsibilities of the ENGINEER shall also extend to the ENGINEER's representative(s).

ARTICLE 3. CONTRACT TIME.

- 3.1 Substantial Completion. Substantial Completion of all recharge basin excavation Work is to be completed as soon as possible following issuance of the Notice to Proceed – Basin Excavation and removal of corn by tenant, and shall be completed no later than September 19, 2011 (assuming corn is removed from construction limits by August, 31 2011). Substantial Completion of all recharge basin restoration Work is to be completed as soon as possible following issuance of the Notice to Proceed – Basin Restoration and shall be completed no later than March 16, 2012. Notice to Proceed – Basin Restoration will be no later than March 2, 2012.
- 3.2 Final Completion. Final Completion of all recharge basin excavation work shall be completed no later than October 4, 2011. Final Completion of all recharge basin restoration work shall be completed no later than March 30, 2012.

- 3.3 In determining whether an extension of time will be granted, consideration will be given to unusual weather conditions that may delay the completion of the Work, providing the CONTRACTOR has notified the OWNER, in writing, that an extension of time is needed.
- 3.4 Liquidated Damages. The OWNER and CONTRACTOR recognize that time is of the essence of this Agreement, and that the OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed, in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the OWNER if the Work is not completed on time.

Accordingly, instead of requiring any such proof, the OWNER and CONTRACTOR agree that, as liquidated damages for delay, (but not as a penalty), the CONTRACTOR shall pay the OWNER \$500.00 for each calendar day that expires after the time specified in paragraph 3.1 for Substantial Completion, until the Work is substantially complete. After Substantial Completion, if the CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by the OWNER, the CONTRACTOR shall pay the OWNER \$500.00 for each calendar day that expires after the time specified in paragraph 3.1 for final completion and readiness for final payment of all work.

The provisions in Section 3.3 regarding declaration of weather shutdown and suspension of counting days shall apply to this section.

ARTICLE 4. CONTRACT PRICE.

The OWNER shall pay the CONTRACTOR for completion of the Work, in accordance with the Contract Documents according to the Bid, which is attached as an Exhibit. The total awarded sum is \$_____. The total price can vary due to the actual quantities of the unit price items installed, or due to Change Orders. Measurement and payment for bid items shall be per information provided in the applicable specifications.

ARTICLE 5. PAYMENT PROCEDURES.

The CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by the ENGINEER, as provided in the General Conditions.

- 5.1 A semi-final payment will be made only upon substantial completion of all work. Substantial completion shall have been achieved when, based upon the recommendation of the ENGINEER, all work required in the Contract Documents has been completed with the exception of minor corrections or adjustments.

The amount of the semi-final payment to be provided will be the balance of the amount remaining under the Contract minus two times the value of any items remaining to be corrected or adjusted as well as any amount necessary to satisfy any claims, liens or judgments against the CONTRACTOR which have not been suitably discharged.

Upon satisfactory completion of the corrections and/or adjustments, the PROGRAM shall, upon receipt of a requisition approved by the OWNER, promptly pay these items. The PROGRAM shall retain any funds as may be required to satisfy claims, liens and judgments against the CONTRACTOR arising in connection with of the project and which have not been suitably discharged.

Reduction of the balance of the amount due under the Contract, does not relieve the CONTRACTOR of the responsibility for corrective work or adjustments required during the guarantee period.

Prior to issuance of the semi-final payment, the CONTRACTOR shall furnish to the OWNER (on forms supplied in the Bidding Documents), a sworn statement that all materials, labor, equipment etc. that have been furnished performed or otherwise included under the Contract, have been paid for. In the event all CONTRACTOR costs have not been paid, the CONTRACTOR must provide a statement of the balance due to each and every supplier of labor, materials, equipment, etc.

If required by the OWNER, the CONTRACTOR shall provide similar statements from Subcontractors or suppliers, etc. to the same effect that they have paid for all labor, materials etc. furnished by them and used in connection with the Contract or a statement of any unpaid balances.

- 5.2 Final Payment will be made upon certification issued by the OWNER, in consultation with the ENGINEER, that all work has been completed in accordance with the Contract and upon proof that any claims, liens or judgments have been suitably discharged.

The PROGRAM shall make the final payment promptly upon receipt of a Certification of Final Completion from the ENGINEER, and signed by the CONTRACTOR and OWNER.

ARTICLE 6. CONTRACTOR'S REPRESENTATIVES

In order to induce the OWNER to enter into this Agreement, the CONTRACTOR makes the following representations:

- 6.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the Work.
- 6.2 CONTRACTOR has studied carefully all reports of investigations and tests of latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which were relied upon by ENGINEER in the preparation of the Drawings and Specifications and which have been identified in the Contract Documents.
- 6.3 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to above as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents; and no

additional examinations, investigations, tests, reports or similar data are or will be required by CONTRACTOR for such purposes.

- 6.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.
- 6.5 CONTRACTOR has carefully reviewed and checked all information and data shown or indicated on the Contract Documents, with respect to existing Underground Facilities at or contiguous to the site, and assumes responsibility for the accurate location of said Underground Facilities.
- 6.6 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents, and the written resolution thereof by the ENGINEER is acceptable to the CONTRACTOR.

ARTICLE 7. CONTRACT DOCUMENTS

The Contract Documents, which comprise the entire agreement between the OWNER and the CONTRACTOR concerning the Work, consists of the following:

- 7.1 This Agreement
- 7.2 Certificates of Substantial and Final Completion, Affidavit on Behalf of Contractor, and Final Waiver of Lien.
- 7.3 Notice of Award and Notice to Proceed.
- 7.4 Storm Water Pollution Prevention Plan
- 7.5 General Conditions and Supplementary Conditions to the General Conditions.
- 7.6 Division 01 - General Requirements, Division 31 – Earthwork, and Special Provisions
- 7.7 Drawings and Details.
 - Drawing Number T-1: Cover Sheet
 - Drawing Number T-2: General Notes
 - Drawing Number A-1: Plan View
 - Drawing Number A-2: Details
 - Drawing Number A-3: Pumping Details
 - Drawing Number B-1: Plan View
 - Drawing Number B-2: Basin Profile
 - Drawing Number B-3: Stockpile Profile & Overflow Detail
 - Drawing Number B-4: Restoration Plan
- 7.8 Addenda listed on the Bid forms.

7.9 Supplemental Sheets and Attachments

There are no other Supplemental Sheets and Attachments.

7.10 CONTRACTOR'S executed Bid forms.

7.11 Any Modification, including Change Orders, duly delivered after execution of Agreement.

There are no Contract Documents, other than those listed above, in this Article 7. The Contract Documents may only be amended, modified, or supplemented, as provided in Article 3 of the General Conditions.

The Contract Documents listed above are intended to be complementary and to describe and provide for a complete work. The CONTRACTOR will not take advantage of an apparent error or omission in the plans and specifications. If the CONTRACTOR discovers such an error or omission, he will immediately notify the ENGINEER. The ENGINEER will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Contract Documents.

ARTICLE 8. MISCELLANEOUS

8.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

8.2 No assignment by a party hereto of any rights under, or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically, but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

8.3 The OWNER and the CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

ARTICLE 9. OTHER PROVISIONS.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR, and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, 20__.

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

(CORPORATE SEAL)

Attest: _____

Attest: _____

Address for giving notices:

Address for giving notices:

License No. _____

Agent for service of process:

(If the CONTRACTOR is a corporation, attach evidence of authority to sign).

END OF SECTION

NOTICE TO PROCEED – BASIN EXCAVATION

TO: _____
(CONTRACTOR)

DATED: _____

ADDRESS: _____

PROJECT NAME: Pilot – Scale Recharge Basin Project

OWNER'S CONTRACT NO.: n/a

You are notified that the Contract Time under the above contract will commence to run on *****, 2011. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 of the Agreement, the dates of Substantial Completion (Basin Excavation) are September 19, 2011 (Basin Excavation), the dates of completion and readiness for final payment (for Basin Excavation) are October 4, 2011 (completion dates may be subject to need for weather shutdown).

Before you may start any Work at the site, you must (add requirements):

Headwaters Corporation

By: _____
(Owner's Authorized Representative)

(ENGINEER)

NOTICE TO PROCEED – BASIN RESTORATION

TO: _____
(CONTRACTOR)

DATED: _____

ADDRESS: _____

PROJECT NAME: Pilot – Scale Recharge Basin Project

OWNER'S CONTRACT NO.: n/a

You are notified that the Contract Time under the above contract will commence to run on *****, 2011. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 of the Agreement, the dates of Substantial Completion (Basin Restoration) are March 16, 2012 (Basin Restoration), the dates of completion and readiness for final payment (for Basin Restoration) are March 30, 2012 (completion dates may be subject to need for weather shutdown).

Before you may start any Work at the site, you must (add requirements):

Headwaters Corporation

By: _____
(Owner's Authorized Representative)

(ENGINEER)

SECTION 00 65 16 – CERTIFICATE OF SUBSTANTIAL COMPLETION

CERTIFICATE OF SUBSTANTIAL COMPLETION – BASIN EXCAVATION

Project: Pilot – Scale Recharge Basin Project (Schedule B)

CONTRACTOR: _____ ENGINEER: _____

Contract For: _____ Contract Date: _____

This Certificate of Substantial Completion applies to Schedule B (Basin Excavation) Work under the Contract Documents, or to the following specified parts thereof:

To: Nebraska Community Foundation, Inc. (OWNER)

And to: _____
CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on:

DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be complete or corrected by CONTRACTOR within _____ days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

RESPONSIBILITIES:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

SECTION 00 65 16 – CERTIFICATE OF SUBSTANTIAL COMPLETION

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____, 20____

(Engineer)

By _____
(Authorized Signature)

CONTRACTOR accepts this Certificate of Substantial Completion on _____, 20____

(Contractor)

By _____
(Authorized Signature)

OWNER accepts this Certificate of Substantial Completion on _____, 20____

Nebraska Community Foundation, Inc.

By _____

SECTION 00 65 16 – CERTIFICATE OF SUBSTANTIAL COMPLETION

CERTIFICATE OF SUBSTANTIAL COMPLETION – BASIN RESTORATION

Project: Pilot – Scale Recharge Basin Project (Schedule B)

CONTRACTOR: _____

ENGINEER: _____

Contract For: _____

Contract Date: _____

This Certificate of Substantial Completion applies to Schedule B (Basin Restoration) Work under the Contract Documents, or to the following specified parts thereof:

To: Nebraska Community Foundation, Inc. (OWNER)

And to: _____
CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on:

DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be complete or corrected by CONTRACTOR within _____ days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

RESPONSIBILITIES:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

SECTION 00 65 16 – CERTIFICATE OF SUBSTANTIAL COMPLETION

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____, 20____

(Engineer)

By _____
(Authorized Signature)

CONTRACTOR accepts this Certificate of Substantial Completion on _____, 20____

(Contractor)

By _____
(Authorized Signature)

OWNER accepts this Certificate of Substantial Completion on _____, 20____

Nebraska Community Foundation, Inc.

By _____

CERTIFICATE OF FINAL COMPLETION – BASIN EXCAVATION

Project: Pilot – Scale Recharge Basin Project (Schedule B)

CONTRACTOR: _____ ENGINEER: _____

Contract For: _____ Contract Date: _____

This Certificate of Final Completion applies to Schedule B (Basin Excavation) Work under the Contract Documents, or to the following specified parts thereof:

To: Nebraska Community Foundation, Inc. (Owner)

And To _____
(Contractor)

The Work to which this Certificate applies has been inspected by authorized representatives of the OWNER, CONTRACTOR, and ENGINEER, and that Work is hereby declared to be complete in accordance with the Contract Documents on:

(Date of Final Completion)

The Affidavit on Behalf of Contractor is attached to and made a part of this Certificate.

Executed by ENGINEER on _____, 20____

(Engineer)

By: _____
(Authorized Signature)

CONTRACTOR accepts this Certificate of Final Completion on _____, 20____

(Contractor)

By: _____

OWNER accepts this Certificate of Final Completion on _____, 20____

(Nebraska Community Foundation, Inc.)

By: _____

SECTION 00 65 16 – CERTIFICATE OF FINAL COMPLETION

CERTIFICATE OF FINAL COMPLETION – BASIN RESTORATION

Project: Pilot – Scale Recharge Basin Project (Schedule B)

CONTRACTOR: _____ ENGINEER: _____

Contract For: _____ Contract Date: _____

This Certificate of Final Completion applies to Schedule B (Basin Restoration) Work under the Contract Documents, or to the following specified parts thereof:

To: Nebraska Community Foundation, Inc. (Owner)

And To _____
(Contractor)

The Work to which this Certificate applies has been inspected by authorized representatives of the OWNER, CONTRACTOR, and ENGINEER, and that Work is hereby declared to be complete in accordance with the Contract Documents on:

(Date of Final Completion)

The Affidavit on Behalf of Contractor is attached to and made a part of this Certificate.

Executed by ENGINEER on _____, 20__

(Engineer)

By: _____
(Authorized Signature)

CONTRACTOR accepts this Certificate of Final Completion on _____, 20__

(Contractor)

By: _____

OWNER accepts this Certificate of Final Completion on _____, 20__

(Nebraska Community Foundation, Inc.)

By: _____

SECTION 00 65 19.13 – AFFIDAVIT ON BEHALF OF CONTRACTOR

AFFIDAVIT ON BEHALF OF CONTRACTOR

STATE OF _____

COUNTY _____

CITY _____

DATE _____

I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT ALL WORK HAS BEEN performed and materials supplied in strict accordance with the terms and conditions of the corresponding Contract Documents between NEBRASKA COMMUNITY FOUNDATION, INC., the OWNER, AND _____ THE CONTRACTOR, DATED _____ for the Pilot – Scale Recharge Basin Project (Schedule B).

And further declare that all bills, for materials, supplies, utilities and for all other things furnished or caused to be furnished by the above named CONTRACTOR and used in the execution of the above contract have been fully paid, and that there are no unpaid claims or demands of State Agencies, sub-contractors, material men, mechanics, laborers or any other resulting from or arising out of any work done or ordered to be done by said CONTRACTOR under the above identified contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the CONTRACTOR releases and forever discharges the OWNER from any and all obligations and liabilities arising by virtue of said contract and authorized changes between the parties hereto, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the OWNER, arising out of or in any way relating to said contract and authorized changes.

This statement is made for the purpose of inducing the OWNER to make FINAL PAYMENT under the terms of the Contract, relying on the truth and statement contained therein.

CONTRACTOR: _____ DATE: _____

ADDRESS _____ CITY _____ STATE _____ ZIP CODE _____

SIGNATURE AND PRINTED NAME _____

TITLE: _____

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____ DAY OF _____
20 _____ .

NOTARY PUBLIC _____
My Commission Expires: _____

FINAL WAIVER OF LIEN

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____ (Contractor) to furnish labor and/or materials for work, under a contract **DATED** _____ for the Pilot – Scale Recharge Basin Project (Schedule B) (Project) in Phelps County, STATE OF Nebraska of which the Nebraska Community Foundation, Inc. is the Owner.

NOW, THEREFORE, this _____ day of _____, 20____, for and in consideration of the sum of _____

Dollars paid simultaneously herewith (if any payment is due at this time), the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien rights to, or claim of lien with respect to and on said above described premises, and the improvements thereon, and on the monies or other considerations due to become due from the OWNER, on account of labor, services, material, fixtures, apparatus or machinery heretofore or which may hereafter be furnished by the undersigned to or for the above described premises by virtue of said contract.

_____(SEAL)
(Name of Sole Ownership, Corporation
Partnership)

Affix Corporate
Seal here

_____(SEAL)
(Signature of Authorized Representative)

Printed Name

Title

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by **ENGINEERS JOINT CONTRACT DOCUMENTS**

COMMITTEE

and Issued and Published

Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the NATIONAL
SOCIETY OF PROFESSIONAL ENGINEERS

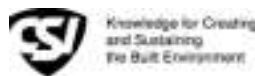
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These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*---The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*---The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*---Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

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

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*---The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*---The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*---A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*---A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*---The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*---The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*---The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*---The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 1 LOLA for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

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

19. *Engineer*---The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material--Source*, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* — An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*—K manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*—AW underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times

but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents, or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or

c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and
2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16. A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16. A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified

in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection

from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

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

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

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05. A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual

or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

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

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

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

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

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

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Draw-

ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17. C. 1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Sub contractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20. A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal

shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D. 1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and

properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07. A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall

promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18. A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

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

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

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

5. Supplemental costs including the following:

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

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

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

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

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

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01. A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 1 LOLA and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted

by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

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

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.1 1.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent

inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off against the amount recommended; or
- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals

that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

- a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
- b. consent of the surety, if any, to final payment;
- c. a list of all Claims against Owner that Contractor believes are unsettled; and
- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance

with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

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

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01. A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be

governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

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

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00 73 00 - SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the 2002 Edition of the Standard General Conditions of the Construction Contract Documents (Section 00700) as indicated below. All provisions, which are not so amended or supplemented, remain in full force and effect.

SC-1.01 Definitions

The terms used in these Supplementary Conditions are defined in the Standard General Conditions.

Add the following language at the end of the definition of "Agreement":

The definition of the word "Contract" is synonymous with the word "Agreement" and is used interchangeably in the Contract Documents.

Add the following language at the end of the definition of "Drawings":

The definition of the word "plans" is synonymous with the word "drawings" and is used interchangeably in the Contract Documents.

SC-2.01B Bonds and Insurance

Delete paragraph 2.01 B in its entirety.

SC-2.02 Copies of Documents

Amend the first sentence of paragraph 2.02 to read as follows:

OWNER shall furnish to CONTRACTOR up to five copies of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

SC-2.06 Preconstruction Conference

Add two new paragraphs immediately after paragraph 2.06 which read as follows:

A list of supervisory and responsible-in-charge personnel working on the project shall be provided by the CONTRACTOR for the Preconstruction Conference.

The CONTRACTOR shall also submit at least one name who will be the CONTRACTOR's representative to respond to emergency conditions. CONTRACTOR shall provide the ENGINEER with the representative's telephone number prior to commencement of construction.

SC-2.07 Initial Acceptance of Schedules

Delete the first sentence of 2.07A in its entirety and insert the following in its place:

Prior to the first application for payment, all schedules and documents identified in paragraph 2.05 shall be finalized and acceptable to the ENGINEER and OWNER. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to ENGINEER and OWNER.

SC-3.01 Contract Documents Intent:

Add the additional paragraphs to 3.01A:

The CONTRACTOR shall not take advantage of an apparent error or omission in the Contract Documents. If a discrepancy is discovered, the CONTRACTOR is to notify the ENGINEER for an interpretation and correction. The following will be the governing order for conflicts discrepancies:

1. Plans (Details over other plans)
2. Specifications (Divisions in order)

Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials, or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

SC-4.01A Availability of Lands

Delete paragraph 4.01A in its entirety and insert the following in its place:

The CONTRACTOR shall confine his construction operations to the immediate vicinity of the location shown on the drawings, and shall use due care in placing construction tools, equipment, excavated materials, and materials to be installed, and supplies, so as to cause the least possible damage to property and interference with traffic and property, and to stay within the OWNER's property or easements obtained for the project.

If it is necessary or desirable that the CONTRACTOR use land outside of the OWNER's easement, the CONTRACTOR shall obtain consent from the OWNER and tenant of the land. The CONTRACTOR shall not enter for materials delivery or occupy for any other purpose with men, tools, equipment, construction materials, or with materials excavated from the site, any private property outside the designated construction easement boundaries without written permission from the landowner.

SC-4.01B Availability of Lands

Delete paragraph 4.01B in its entirety.

SC-4.06 Hazardous Environmental Condition on Site

Delete Section 4.06 in its entirety.

SC-5.03A Certificates of Insurance

Certificates of insurance shall be conveyed to the OWNER.

SC-5.03B Certificates of Insurance

Delete paragraph 5.03B in its entirety.

SC-5.04 Contractor's Insurance

Amend the insurance requirements of Paragraph 5.04 by adding the following:

The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law or regulations:

1. Workers' Compensation under 5.04.A.1 and 5.04.A.2:
 - A. State Statutory
 - B. Applicable Federal (e.g. Longshoreman's) Statutory
 - C. Employer's Liability \$1,000,000
 - D. Workers Compensation Insurance shall include an "All States" endorsement.
2. Commercial General Liability under 5.04.A.3 - 5.04.A.5:
 - A. GENERAL AGGREGATE \$2,000,000
 - B. Products - Completed Operations (Aggregate) \$2,000,000
 - C. Bodily Injury and Property Damage
\$1,000,000 Each Occurrence
\$2,000,000 Annual Aggregate
 - D. Coverage will Include:
 1. Premises - Operations
 2. Operations of Independent Contractors
 3. Products and Completed Operations
 4. Contractual
 5. Personal Injury
 6. Broad Form Property Damage will include explosion, collapse and underground coverages where applicable.
 - E. Commercial General Liability Insurance may be satisfied by primary insurance or a combination of primary and excess or "umbrella" insurance. Primary occurrence limit cannot be less than \$2,000,000.
 - F. Include umbrella liability coverage for \$1,000,000 (may include with E above, if umbrella policy is used there).
3. Commercial Automobile Liability under 5.04.A.6 (include "all owned", "hired" and "non-owned"):

Bodily Injury:

<u>\$1,000,000</u>	Each Person
<u>\$1,000,000</u>	Each Occurrence

Property Damage:	
<u>\$1,000,000</u>	Each Occurrence

or a combined single limit of \$1,000,000.

4. Add a new paragraph at the end of Paragraph 5.04B.1 as follows:

The CONTRACTOR'S insurance coverage shall name the OWNER and ENGINEER as additional insured under Commercial General Liability, Automobile Liability, Excess or Umbrella policies.

In addition to being named as an additional insured on the above policies the CONTRACTOR shall purchase and maintain a separate \$1,000,000 protective liability policy covering OWNER and ENGINEER.

5. The Contractual Liability coverage required by 5.04.B.4 of the General Conditions shall provide for not less than the following limits:
- | | |
|--------------------|------------------|
| <u>\$1,000,000</u> | Each Occurrence |
| <u>\$2,000,000</u> | Annual Aggregate |

SC-5.04B.5 Cancellation Notice:

Amend paragraph 5.04B5 by deleting the words "thirty days" and replacing them with the words "45 days" and as so amended paragraph 5.04B5 remains in effect.

SC-5.04B Qualifications of Insurance Company

Add a new paragraph immediately after paragraph 5.04B7 which reads as follows:

5.04B.8. Without limiting any of the other obligations or liabilities of the CONTRACTOR, CONTRACTOR shall secure and maintain such insurance from an insurance company (or companies) licensed to write insurance in Nebraska, with minimum "A. M. Best Rating" of B+, VI, as will protect himself, his subcontractors, the OWNER and the ENGINEER and their respective agents and employees and ENGINEER'S Consultants from claims for bodily injury, death or property damage which may arise from operations and completed operations under this Agreement. Such coverage shall be written for claims arising out of all premises/operations, subcontracted operations, products/completed operations, and all liability assumed by the CONTRACTOR under any contract or agreement. CONTRACTOR shall not commence work until required insurance has been obtained and certificate of insurance, with binders or certified copies of insurance policies have been filed with the OWNER, ENGINEER and named Additional Insureds.

SC-5.05 Owner's Liability Insurance

Delete paragraph 5.05 in its entirety and insert the following in its place:

The CONTRACTOR shall obtain and pay the entire premium for Owners Protective Liability Coverage to protect the OWNER and ENGINEER for their liability against claims that may arise from operations under this Agreement.

SC-5.06 Property Insurance

Delete Paragraph 5.06A in its entirety and insert the following in its place:

1. CONTRACTOR shall purchase and maintain property insurance upon the work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in these Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - A. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
 - B. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, materials and equipment, and Work in transit and shall insure against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and other perils as may be specifically required by the Supplementary Conditions;
 - C. include expenses incurred in the repair or replacement of any insured property (including but not limited to the fees and charges of engineers and architects);
 - D. cover materials and equipment in transit for incorporation in the Work or stored at the site or at another location prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER; and
 - E. be endorsed to allow occupancy and partial utilization of the Work by OWNER;
 - F. include testing and start-up; and
 - G. be maintained in effect throughout the life of the Agreement unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 45-days written notice to each other additional insured to whom a certificate of insurance has been issued.
2. CONTRACTOR shall be responsible for any deductible or self-insured retention.
3. The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this paragraph 5.06A shall comply with the requirements of 5.06C. The qualifications of the insurance company shall comply with the requirements of 5.02A.

SC-5.06B&E Property Insurance

Delete paragraphs 5.06B and E in their entirety.

SC-5.07 Waiver of Rights

Delete Section 5.07 in its entirety.

SC-5.08 Receipt and Application of Insurance Proceeds

Delete Section 5.08 in its entirety.

SC-5.09 Acceptance of Insurance

Add the following paragraph at the end of Section 5.09:

Failure of the OWNER to object to the coverage of CONTRACTOR'S insurance within the time provided, shall not relieve CONTRACTOR from his obligation to provide insurance that complies with the contract documents.

SC-5.10 Partial Utilization

Delete Paragraph 5.10 in its entirety.

SC-6.04A Progress Schedule

Add the following Paragraph 3 to 6.04A:

3. CONTRACTOR shall submit to ENGINEER with each application for payment an updated progress schedule reflecting the amount of work completed and adjustments to future work. Such adjustments will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within any specified milestones and the Contract Time. No progress payment will be made to CONTRACTOR until the updated schedules are submitted to and acceptable to ENGINEER and OWNER. Review and acceptance of progress schedules by the ENGINEER will neither impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work, nor interfere with or relieve CONTRACTOR from CONTRACTOR'S full responsibility therefore. If the CONTRACTOR is behind schedule, he shall submit a plan for getting back on schedule.

SC-6.06B Subcontractors

Add the following paragraph at the end of Section 6.06B.

The Bidder to whom the Contract may be awarded shall submit to OWNER and ENGINEER a list of all proposed subcontractors, manufacturers and suppliers of principal items of equipment and materials, as detailed herein, within 5 days after the day of the Bid Opening, if requested by the ENGINEER. The list shall identify all proposed Subcontractors and which items of work, or components of the project, on which that Subcontractor will work. CONTRACTOR shall submit to

OWNER, upon request, a copy of all appropriate agreements between CONTRACTOR and its Subcontractors. Said agreements are to be provided to OWNER, who assumes no responsibility for the form and content of subcontract agreements.

Add a new paragraph H at the end of Section 6.06 which reads as follows:

Any subcontractor or material man entitled to the protection of a bond or other form of guarantee approved by the OWNER shall give notice of his right to that protection to the prime CONTRACTOR. Failure to give notice to a prime CONTRACTOR who has complied with subsections (e) and (f) of this article waives the subcontractor or material man's protection under the bond or guarantee and waives any right to a lien for materials or services provided.

- (a) The notice shall be given no later than sixty (60) days after the date on which services or materials are first furnished.
- (b) The notice shall be sent to the prime CONTRACTOR by certified mail or delivered to and receipted by the prime CONTRACTOR or his agent. Notice by certified mail is effective on the date the notice is mailed.
- (c) The notice shall be in writing and shall state that it is a notice of a right to protection under the bond or guarantee. The notice shall be signed by the subcontractor or material man and shall include the following information.
 - (i) The subcontractor or material man's name, address and phone number and the name of a contact person;
 - (ii) The name and address of the subcontractor's or material man's vendor; and
 - (iii) The type or description of the materials or services provided.
- (d) This section shall only apply where the prime CONTRACTOR's contract is for fifty thousand dollars (\$50,000) or more.
- (e) The prime CONTRACTOR shall post on the construction site a prominent sign stating that any subcontractor or material man shall give notice to the prime CONTRACTOR of a right to protection under the bond or guarantee and that failure to provide this notice shall waive the subcontractor or material man's protection under the bond or guarantee and shall waive any right to a lien for materials or services provided.
- (f) The OWNER or his agent shall provide written notice of the information required by this section in the project specifications.

Add a new paragraph I at the end of Section 6.06 which reads as follows:

By submitting a bid or proposal to the Contractor, every prospective subcontractor and materialman acknowledges that their sole claim for non-payment for Work performed on the Project shall be to assert a claim against the Labor and Materials Payment Bond in accordance with the terms of the Contract Documents and that all other claims against the Owner, the real property upon which the Project is located, or the owner of such property are expressly waived. This provision shall be effective notwithstanding the use of the term "lien" or other related terms within the Contract Documents or any other papers or forms utilized in connection with the Project.

Add a new paragraph J at the end of Section 6.06 which reads as follows:

Contractor shall take measures reasonably necessary to (1) inform all prospective subcontractors and materialmen of the provisions of Section 6.06 and obtain their consent thereto prior to the submission of any bid or proposal to the Contractor and (2) incorporate the terms and conditions of Section 6.06 into any agreement with such subcontractor or materialman.

SC-6.13 Safety and Protection

Add new paragraphs to the end of Section 6.13 as follows:

It is expressly understood by the parties to this Agreement that the CONTRACTOR is solely responsible for initiating, maintaining, and supervising safety precautions and programs in connection with the Work. The right of the OWNER and ENGINEER to observe or otherwise review the Work and operations shall not relieve the CONTRACTOR from any of his covenants and obligations hereunder. CONTRACTOR shall incorporate all safety requirements into his construction progress and work schedules including preconstruction and scheduled safety meetings, posted safety rules, tailgate meetings, and site inspections by safety and other inspectors employed by the CONTRACTOR.

The CONTRACTOR shall be responsible for and shall take necessary precautions and provide all material and equipment to protect, shore, brace, support and maintain all underground pipes, conduits, drains, sewers, water mains, gas mains, cables, etc., and other underground construction uncovered in the proximity, or otherwise affected by the construction work performed by him. All pavement, surfacing, driveways, curbs, walks, buildings, grass areas, trees, utility poles or guy wires damaged by the CONTRACTOR's operations in the performance of this work shall be repaired and/or replaced to the satisfaction of the OWNER, ENGINEER, and effected property owner at the CONTRACTOR's expense. The CONTRACTOR shall also be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property or facility, regardless of location or character, which may be caused by moving, hauling, or otherwise transporting equipment, materials, or men to and from the work or any part of site thereof; whether by him or his subcontractors. The CONTRACTOR shall make satisfactory and acceptable arrangements with owner of, or the agency or authority having jurisdiction over, the damaged property or facility concerning its repair or replacement or payment of costs incurred in connection with said damage.

The CONTRACTOR shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, the CONTRACTOR shall obtain approval from the governing party and shall, at his own expense, provide and maintain suitable and safe bridges, detours, and other temporary expedients for the accommodation of public and private drives before interfering with them. The provisions for temporary expedients will not be required when the CONTRACTOR has obtained permission from the owner and tenant of the private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point.

Safety provisions must be entirely adequate and meet with County or State and Federal regulations to protect the public on these streets and roads.

SC-6.18A Continuing the Work

Add the following to the end of this paragraph:

The provisions of this paragraph do not limit the right of the OWNER to order additions, deletions or revisions in the Work per the General Conditions including additions, deletions or revisions to the Work affected by the disputes or disagreements.

SC-6.20 Indemnification

Add a new paragraph immediately after paragraph 6.20A which reads as follows:

It is expressly understood and agreed that, while OWNER and ENGINEER may have the right under this Contract to observe or otherwise review the work, progress and operations of the CONTRACTOR, it is expressly understood and agreed that such observation shall not relieve the CONTRACTOR from any of its covenants and obligations hereunder. The CONTRACTOR shall be solely responsible and save the OWNER and ENGINEER and their consultants, agents and employees harmless from all suits, actions or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work, observing safety standards or regulations, or otherwise. This indemnification would include the use of unsafe or unacceptable materials in the construction or completion of the project, or the CONTRACTOR's failure to comply with any law, ordinance, or regulation, even though such act, omission, or work was done under the direct or indirect review of, or was observed by the OWNER or ENGINEER.

Add the following language at the end of paragraph 6.20B:

Nor shall the CONTRACTOR'S obligations under Section 6.20 be in any way limited by any insurance coverage which the CONTRACTOR may have or which may insure to his benefit.

Add the following language at the end of paragraph 6.20C:

If legal action shall be commenced to enforce the terms and provisions of this Agreement, the prevailing party shall be entitled to reasonable costs incurred as allowed by Nebraska law.

SC-7.02 Coordination

Delete Section 7.02 in its entirety.

SC-8.02 Replacement of Engineer

Add the following sentence to the end of Section 8.02:

Work shall stop and will not be resumed until the new ENGINEER is on site.

SC-9.03 Project Representative

Add a new paragraph after paragraph 9.03.A as follows:

B. The Resident Project Representative (RPR) is the Engineer's Agent at the site, and will act as directed by and under the supervision of the Engineer. RPR's dealings in matters pertaining to the CONTRACTOR's work in progress shall in general be with ENGINEER and CONTRACTOR, keeping the OWNER informed as necessary. RPR's dealings with subcontractors shall be through or with the full knowledge and approval of the CONTRACTOR.

RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
2. Exceed limitations of Engineer's authority as set forth in the General Conditions.
3. Undertake any of the responsibilities of CONTRACTOR, subcontractors, suppliers, or CONTRACTOR's superintendent.
4. Advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of CONTRACTOR's Work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding or assume control over safety precautions and programs in connection with the activities or operations of OWNER or CONTRACTOR.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by ENGINEER.
7. Accept Shop Drawings or Samples submittals from anyone other than the CONTRACTOR.
8. Authorize OWNER to occupy the Project in whole or part.

RPR may do the following:

1. Schedules. Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by the CONTRACTOR and consult with the ENGINEER concerning acceptability.
2. Conferences and Meetings. Attend meetings with the CONTRACTOR, such as Pre-Construction Conference, progress meetings, job conferences, and other project-related meetings, and prepare and circulate copies of minutes thereof.
3. Liaison. Serve as the ENGINEER'S liaison with the CONTRACTOR, working principally through the CONTRACTOR's superintendent, and assist in understanding the intent of the Contract Documents; and assist the ENGINEER in serving as the OWNER's liaison with the CONTRACTOR when the CONTRACTOR's operations affect the OWNER's on-site operations. assist in obtaining, from the OWNER, additional details or information, when required, for proper execution of the Work.

4. Shop Drawings. Receive and keep record of Shop Drawings, submittals and samples. Advise ENGINEER and CONTRACTOR of Work that may be commencing that does not have approved submittals.
5. Review of Work, Rejection of Defective Work, Inspections and Tests.
 - a. Conduct on-site observations of the Work in progress to assist the ENGINEER in determining if the Work is, in general, proceeding in accordance with the Contract Documents.
 - b. Report to the ENGINEER whenever the RPR believes that any Work is unsatisfactory, faulty, or defective, or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise the ENGINEER of Work that the RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection, or approval.
 - c. Verify that tests, equipment and systems start-up and operating and maintenance training are conducted in the presence of appropriate personnel, and that the CONTRACTOR maintains adequate records thereof, and observe, record and report to the ENGINEER appropriate details relative to the test procedures and start-ups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to the ENGINEER.
6. Interpretation of Contract Documents. Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed, and transmit, to the CONTRACTOR, clarifications and interpretations as issued by the ENGINEER.
7. Modifications. Consider and evaluate the CONTRACTOR's suggestions for modifications in Drawings or Specifications, and report with RPR's recommendations to the ENGINEER. Transmit to the CONTRACTOR decisions issued by the ENGINEER.
8. Records.
 - a. Maintain orderly files for correspondence, reports of job conferences, Shop Drawings and samples, re-productions of original Contract Documents, including all Work Directive Changes, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, the ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
 - b. Keep a diary or log book, recording the CONTRACTOR hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail, as in the case of observing test procedures; and send copies to the ENGINEER.

9. Reports.
 - a. Furnish the ENGINEER periodic reports, as required, on progress of the Work and of the CONTRACTOR's compliance with the progress schedule and schedule of Shop Drawing and sample submittals.
 - b. Consult with the ENGINEER, in advance of scheduled major tests, inspections or start of important phases of the Work.
 - c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from the CONTRACTOR and recommend to the ENGINEER Change Orders, Work Directive Changes, and Field Orders.
 - d. Report immediately to the ENGINEER and OWNER, upon the occurrence of any accident.

10. Payment Requests. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submission, and forward with recommendations to the ENGINEER, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the site, but not incorporated in the Work.

11. Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operating manuals, and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to the ENGINEER for review and forwarded to the OWNER prior to final payment for the Work.

12. Completion:
 - a. Before the ENGINEER issues a Certificate of Substantial Completion, submit to the CONTRACTOR a list of observed items requiring completion or correction.
 - b. Conduct final inspection in the company of the ENGINEER, OWNER, and CONTRACTOR, and prepare a final list of items to be completed or corrected.
 - c. Observe that all items on a final list have been completed or corrected, and make recommendations to the ENGINEER concerning acceptance.

SC-10.01A Changes in Work

Add the following paragraph at the end of Section 10.01A which reads as follows:

A Change Order or Written Amendment when executed, constitutes a modification to the Agreement and all provisions of the Agreement, except as modified by Written Amendment or Change Order, shall apply to said documents. The CONTRACTOR accepts a Written Amendment or Change Order as full compensation, both time and cost, for the additional work and any delays caused thereby.

SC-10.05 Claims

Add new paragraphs at the end of Section 10.05 which read as follows:

10.05.G. The CONTRACTOR agrees to make no claim for damages for delay in the performance of this contract caused by any act or failure act of the OWNER, ENGINEER or designated agents or representatives, whether such delays are avoidable or unavoidable that the CONTRACTOR agrees that such delays shall solely and fully be compensated for by an extension of time to complete performance of the work as provided herein. This includes any delays attributable to actions or lack of action by utility owners to locate or move their utilities.

10.05.H. Any claim for an increase or decrease in the Contract Price originated by a Subcontractor shall be evaluated by the CONTRACTOR. The CONTRACTOR shall determine the validity of said claim, and if the CONTRACTOR determines that said claim is valid, the CONTRACTOR shall so state in writing to the OWNER in accordance with all the requirements of the General Conditions.

SC-11.01 Cost of the Work

Delete paragraph 11.01 .A.5.c in its entirety and insert the following in its place:

11.01.A.5.c The cost for the use of all construction equipment and machinery and parts thereof whether owned by the CONTRACTOR or rented from others. The cost shall be calculated as follows and will include the costs of transportation, loading, unloading, assembly, dismantling and removal thereof for equipment involved only in the changed portion of the work covered under the cost of the Work method. Transportation, loading and assembly costs will not be included for equipment already on the site which is being used for other portions of the Work. The cost of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work. Hourly equipment and machinery rates shall be calculated from the latest edition of the Rental Rate Blue Book for Construction Equipment, and the Equipment List submitted according to GC-2.05 and GC-2.07, and as follows:

1. For working equipment, the hourly rate shall be the monthly rental rate divided by 176 hours per month plus the hourly operating cost.
2. For equipment on standby, the hourly rate shall be 50% of the monthly rental rate divided by 176 hours per month, and the hourly operating cost shall not be applied.
3. For specialized equipment rented for a short duration used for change order work or additional work not part of the scope of work bid, the equipment rental rates will be negotiated prior to the work being performed.
4. Equipment and machinery rates shall be provided and approved prior to commencing work. Blue Book rates shall apply without CONTRACTOR fee, per the General Conditions.

SC-11.01A5 Cost of Work

Add a new paragraph immediately after paragraph 11.01.A.5 which reads as follows:

11.01.A.5.i. For Force Account work (if any), if requested to be performed on a time and materials basis by the ENGINEER, shall be done using the approved rates for labor and equipment.

SC-11.03D Unit Price Work

Delete paragraph 11.03.D.1 and 2 in their entirety and insert the following in its place:

1. The quantity of a particular item of Unit Price Work performed by CONTRACTOR differs by more than 25% from the estimated quantity of such item indicated in the Agreement, and
2. the total cost of the particular individual item of Unit Price Work amounts to 10% or more of the Contract Price which is the total sum of all schedules (if any), and

SC-12.02 Contract Time Extension

Add the following language at the end of paragraph 12.02:

The CONTRACTOR shall schedule the work to be completed within the Contract Time stipulated in the Agreement including an allowance for time lost due to rain, snow, cold weather or other natural phenomenon. A natural phenomenon is defined as a weather event that prohibits work from progressing in a satisfactory manner. Such events will not constitute justification for an extension of the contract time unless agreed upon by the ENGINEER during the event, and the total of time lost to such events exceeds 5% of the contract time.

SC-12.04 Liquidated Damages

Add the following paragraph as item 12.04:

Provisions for liquidated damages are set forth in the Agreement. The liquidated damages identified therein include among the other costs to the OWNER, an amount for maintaining the necessary engineering forces engaged beyond the time identified in the Agreement for Substantial Completion. The liquidated damages will be deducted from the CONTRACTOR's progress estimates and/or final payment and the engineering fees shall be paid by the OWNER to the ENGINEER from the monies withheld.

SC-13.07 Correction Period

Add the following as paragraph 13.07.F.

All costs incurred by the OWNER for the inspection and documentation of warranty repairs shall be the responsibility of the CONTRACTOR. Such costs shall include, but are not limited to all fees and charges of inspectors, testing and testing personnel, engineers, and other professionals as determined by the ENGINEER. The costs incurred shall be deducted from monies due the CONTRACTOR.

Prior to commencing warranty repair work, the CONTRACTOR shall provide submittals to the ENGINEER detailing repair procedures for each separate type of repair, if requested by the ENGINEER.

SC-14.02 Application for Progress Payment

Add the following language at the end of paragraph 14.02.A as new items 4, 5 and 6:

4. Each application for progress payment shall be accompanied by the CONTRACTOR's updated Progress Schedule in accordance with Articles GC 6.04 and SC 6.04. The OWNER reserves the right to require submission of monthly certified payrolls from the CONTRACTOR.
5. The CONTRACTOR shall make his books and records relating to the items used for the determination of billings available for review by the Legislative Auditor and OWNER or his representatives. After resolution of any billing dispute where OWNER is due a refund, such refund shall be made to OWNER including interest. Interest shall be compounded monthly.
6. If the CONTRACTOR desires to receive payment for materials in storage for any assembly or lump sum bid item the CONTRACTOR shall provide a breakout of all materials and their actual costs for that item. This breakout shall be in spreadsheet or database form showing "period" and "to date" totals of materials in storage and materials incorporated into work. The CONTRACTOR shall attach invoices relating to the breakout to verify all materials being requested for payment under that item.

SC-14.02.A Applications for Payments

Add the following language at the end of paragraph 14.02.A.1:

Payments for materials in storage shall be based only upon the actual cost of the materials and equipment to CONTRACTOR and shall not include any overhead or profit. Bill of Sale, invoice or other document warranting clear title for materials in storage will be waived for the material in storage included in the first progress payment application. However, proof of payment and clear title must be submitted with Application No. 2 for all material included in Application No. 1. Without such documentation, amounts paid for materials in storage will be deducted from subsequent payments. Beginning with the second application, all requests for payment for materials in storage shall be accompanied by Bill of Sale, invoice or other document warranting clear title as required above.

SC-14.03 Contractor's Warranty of Title

Add the following at the end of paragraph 14.03:

Neither recommendation of any progress payment by ENGINEER nor payment by the OWNER to CONTRACTOR, nor any use or occupancy of the Work or any part thereof will release the CONTRACTOR from complying with the Contract Documents. Specifically the CONTRACTOR shall maintain in accordance with Article 5, property insurance on all Work, materials, and equipment whether incorporated in the project or not and whether included in an application for payment or not, for the full insurable value thereof. Passing title to OWNER for materials and equipment included in an application for payment does not relieve the CONTRACTOR of the

CONTRACTOR's obligation to provide insurance (including property insurance), as required in Article 5 of the General Conditions and these Supplementary Conditions. All insurance shall remain in effect as provided in Article 5.

SC-14.07 Final Payment

Delete 14.07.C and insert the following in its place:

If no claims or liens have been filed within a forty (40) day period after advertisement for completion and acceptance of the project, the retained percentage will be paid (final estimate) within sixty (60) days of the expiration thereof, provided contract closeout requirements have been completed. Should any liens or claims be filed, retainage equal to the amount of the lien or claim will be held until a satisfactory agreement is reached between the OWNER, CONTRACTOR, and CONTRACTOR'S surety.

SC-14.09 Waiver of Claims

Delete Section 14.09 in its entirety.

SC-15.03 Owner May Terminate

Add new paragraphs immediately after paragraph 15.03.B which read as follows:

15.03C. Termination for Acts of God or OWNER's Convenience.

1. Should an act of God result in substantial damage to all or a portion of the Work, or should the OWNER'S convenience necessitate termination, the OWNER shall have the option of terminating the Agreement. If the OWNER exercises the option to terminate, a Notice to Terminate so providing will be issued. Such Notice to Terminate may provide for the CONTRACTOR to perform any work deemed by the OWNER as necessary to put the project in satisfactory condition for the termination of all work. The CONTRACTOR shall be relieved of further responsibilities for damage to the

Work (excluding materials not already incorporated into the Work) which responsibilities are specified in the General Conditions, and will not be required to perform any further Work on the project other than that specified in the Notice of Termination.
2. When the ENGINEER determines that the Work specified in the Notice of Termination has been completed, the ENGINEER shall accept the project, and immediately upon such acceptance, the CONTRACTOR will not be required to perform any further Work thereon, and shall be relieved of his responsibility for injuries to persons or property.
3. After acceptance of the Work pursuant to the General Conditions, the CONTRACTOR will be paid for the Work done prior to termination. The OWNER will determine the value of the partially completed Work as follows: The CONTRACTOR will be paid for all Work to the date of the Notice of Termination in accordance with the General Conditions. This amount shall be computed by determining the percentage of the total contract Work completed prior to termination and multiplying that percentage against

the total contract amount. The amount to be paid shall not exceed the amounts previously paid or due the CONTRACTOR from the amounts retained. The CONTRACTOR shall not be entitled to his anticipated profits for the Work, which would have been performed, but for termination.

4. If the CONTRACTOR has placed an order, prior to such termination, for materials specially manufactured for the project, which materials are not suitable for use in other projects of the OWNER or sale to others in the ordinary course of the vendors' business, the CONTRACTOR will be paid the actual cost to the CONTRACTOR or the cancellation charges, if any, assessed by the vendor. The determination of whether the order shall be completed or canceled shall be made by the OWNER. Any material paid for shall become the property of the OWNER and the actual cost of the any further handling will be paid for by the OWNER.
5. No payment will be made to vendor for materials which have been damaged and are not acceptable for incorporation in the work in accordance with the requirements of the Agreement. The CONTRACTOR shall reimburse the OWNER for any amounts previously paid by the OWNER for such unacceptable material, and agrees that the OWNER may deduct the amount of such previous payments made by the OWNER from any monies due or which may become due the CONTRACTOR. If the OWNER has paid for acceptable materials not incorporated into the Work under the General Conditions, the OWNER will have the option of taking title to all or any portion of such materials or of receiving reimbursement from the CONTRACTOR for any amounts previously paid to the CONTRACTOR. The CONTRACTOR agrees to pay to the OWNER upon demand any amounts previously paid for such materials, and agrees that the OWNER may deduct the amount of such previous payments from any monies due or which become due the CONTRACTOR.

15.03D. CONTRACTOR's Responsibility on Receipt of Notice of Termination.

On receipt of a notice of termination from the OWNER, whether for default or convenience of the OWNER, the CONTRACTOR shall:

1. Stop all Work under the Agreement on the date of and to the extent specified in the Notice of Termination;
2. Place no further orders or subcontracts for materials, equipment or services except as may be necessary for completion of such portions of the work expressly excluded under the Notice of Termination;
3. Cancel or terminate all orders of subcontracts to the extent that they relate to the performance of Work covered by the Notice of Termination; and,
4. Comply with all other requirements of the OWNER as may be specified in the Notice of Termination.

15.03E. Subcontract Provision.

The CONTRACTOR shall insert in all subcontracts a provision that the Subcontractor shall stop all work on the date of or to the extent specified in a Notice of Termination from the

OWNER and shall require the Subcontractors to insert the same provision in their subcontracts.

15.03F. Duty To Notify Subcontractors.

The CONTRACTOR shall immediately, upon receipt, communicate any Notice of Termination issued by the OWNER to the affected Subcontractors and Sub-subcontractors.

SC-16 Dispute Resolution

Delete section in its entirety.

END OF SECTION

DIVISION 01

GENERAL REQUIREMENTS

SECTION 01 00 00
GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Project summary.
 - 2. Price and Payment Procedures.
 - 3. Administrative Requirements.
 - 4. Submittals.
 - 5. Quality Requirements.
 - 6. Execution Requirements.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes construction of an earthen basin as shown in Construction Drawings – Schedule B, then restoration of the site to pre-construction conditions following completion of the pilot-scale operation.
- B. Perform Work of Contract under a fixed unit price contract with Owner in accordance with Conditions of Contract.

1.3 WORK BY OTHERS

- A. Separate contracts include:
 - 1. Schedule A – Water Delivery System: Includes pumping, piping and stilling well for the pilot-scale project as shown in Construction Drawings – Schedule A.
 - 2. Instrumentation by ENGINEER: Includes 1 piezometer, soil moisture boring with sensors, and rain gauge.

1.4 CONTRACTOR'S USE OF PREMISES

- A. Limit use of premises to allow:
 - 1. Work by others.
 - 2. Work sequence to allow completion of work by others.

1.5 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application.
- B. Payment Period: Monthly.
- C. Allow for 30 days of ENGINEER review to conduct survey and verify measurement for payment before approval of invoice, after CONTRACTOR notifies ENGINEER of substantial completion of basin construction.

1.6 UNIT PRICES

- A. Unit Price Schedule: as shown on Bid Form.

1.7 FIELD ENGINEERING

- A. Owner will employ ENGINEER provide construction staking.

1.8 SUBMITTAL PROCEDURES

- A. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- B. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of completed Work.
- C. Revise and resubmit submittals as required; identify changes made since previous submittal.

1.9 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed for ENGINEER review.
- B. Submit revised schedules with each Application for Payment.

1.10 SUBMITTALS

Type	Number Submitted	Number Returned
Shop Drawings		

1.11 QUALITY CONTROL

- A. Verify grades and elevations meet construction specifications and final design elevations.

1.12 ACCESS ROADS

- A. Designated on-site routes may be used for construction traffic that does not disturb the existing vegetation.

1.13 BARRIERS AND FENCING

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.

1.14 POLLUTION AND ENVIRONMENTAL CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Provide dust control, erosion and sediment control, noise control, pest control and rodent control to allow for proper execution of the Work.
- C. Provide and install silt fence as shown on drawings.
- D. Repair silt fence and/or remove accumulated silt upon notification by ENGINEER that inspections by others have indicated action is required to maintain the silt fence as described in the Storm Water Pollution Prevention Plan and required by the Construction Storm Water General NPDES Permit Number NER110000.

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Clean and repair damage caused by installation or use of temporary work.

1.16 CLOSEOUT PROCEDURES

- A. Submit written certification Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for ENGINEER's inspection.
- B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.17 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.

1.18 PROTECTING INSTALLED CONSTRUCTION

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

DIVISION 31

EARTHWORK

SECTION 31 20 00

EARTH MOVING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes site excavation, grading, removal of topsoil and subsoil, earthfill, and compacting for activities involving construction of the recharge basin.

1.2 SUBMITTALS

- A. Shop Drawings: Provide shop drawings to ENGINEER for any proposed changes.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Mobilization and Demobilization:
 - 1. Basis of Measurement: By lump sum.
 - 2. Basis of Payment: Maximum of 1 for work associated required by this specification. This item includes of all materials, labor, and equipment to complete Work activities for mobilization and demobilization. The Work shall include, but not be limited to, obtaining of all permits (except the Construction Storm Water General NPDES Permit Number NER110000); moving onto the site of all equipment; repair of dirt/gravel access road; plan and shop drawing preparation; environmental control; temporary storm water pollution prevention; submittals.
- B. Excavating Soil Materials:
 - 1. Basis of Measurement: By cubic yard. Measurement for unit price earthwork quantities will be computed by field survey grid method and analysis using AutoCAD Civil 3D 2011 for work conducted in accordance with the Contract Documents. Survey and Measurement will be conducted by ENGINEER based on pre- and post- basin excavation surveys.
 - 2. Basis of Payment: Includes excavating to required elevations, loading and placing materials in stockpile. Over Excavating: Payment will not be made for over excavated work nor for replacement materials.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Topsoil: Top 1 foot of soil within limits of excavation and fill for recharge basin.
- B. Subsoil: Soil other than topsoil within the limits of excavation for recharge basin.

2.2 FILL MATERIALS

- A. Subsoil

2.3 MARKING TAPE

- A. Provide materials to identify original grade underneath stockpiles to be used as a visual marker during restoration.

PART 3 EXECUTION

3.1 CONSTRUCTION STAKING

- A. Construction stakes will be placed once by ENGINEER at no cost to CONTRACTOR. Final design elevations will be written on construction stakes.
- B. CONTRACTOR shall protect stakes after placement by ENGINEER. CONTRACTOR shall be responsible for costs to replace any stakes damaged by CONTRACTOR.

3.2 EXAMINATION AND PREPARATION

- A. Call Nebraska One Call Utility Locator service at 1-800-331-5666 not less than five working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- D. Maintain and protect existing utilities.
- E. Place marking tape on existing ground prior to placing of soil in stockpiles.
- F. Install silt fence in accordance with manufacturer's recommendations where shown on drawings prior to disturbing soil.

3.3 PROTECTION OF ADJACENT WORK

- A. Coordinate and protect other work being conducted at the site by others.
- B. Repair damage to adjacent work at no cost to owner.

3.4 TOPSOIL EXCAVATING

- A. Excavate topsoil and stockpile in area designated on site.

3.5 SUBSOIL EXCAVATING

- A. Excavate subsoil from marked areas required for excavation to final design elevations as marked on construction stakes.
- B. Correct unauthorized excavation at no cost to Owner.
- C. Stockpile subsoil in area designated on site.
- D. Upon completion of subsoil excavation, scarify the bottom of the recharge basin.

3.6 EARTHFILL

- A. Place fill material in continuous layers and compact in maximum 6 inch lifts with wheeled excavator or dozer.

3.7 FIELD QUALITY CONTROL

- A. CONTRACTOR shall verify grades and elevations prior to notifying ENGINEER of substantial completion of basin construction.

3.8 TOLERANCES

- A. Plus or minus 0.2 feet in elevation.

END OF SECTION

SECTION 31 22 19

FINISH GRADING AND RESTORATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes recharge basin backfill and restoration.
- B. Site shall be restored to pre-construction topography and conditions.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Mobilization and Demobilization:
 - 1. Basis of Measurement: By lump sum.
 - 2. Basis of Payment: Maximum of 1 for work associated required by this specification. This item includes of all materials, labor, and equipment to complete Work activities for mobilization and demobilization. The Work shall include, but not be limited to, obtaining of all permits (except the Construction Storm Water General NPDES Permit Number NER110000); moving onto the site of all equipment; repair of dirt/gravel access road; plan and shop drawing preparation; environmental control; temporary storm water pollution prevention; submittals.
- B. Backfill:
 - 1. Basis of Measurement: By cubic yard. Measurement for unit price earthwork quantities will be computed by field survey grid method and analysis using AutoCAD Civil 3D 2011 for work conducted in accordance with the Contract Documents. Survey and Measurement will be conducted by ENGINEER based on pre- and post- basin excavation surveys.
 - 2. Basis of Payment: Includes placing where required to restore site to preconstruction conditions and topography.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Topsoil: Top 1 foot of soil within limits of excavation and fill for recharge basin from topsoil stockpile.
- B. Subsoil: Soil other than topsoil within the limits of excavation for recharge basin from subsoil stockpile.

PART 3 EXECUTION

3.1 PROTECTION OF ADJACENT WORK

- A. As specified in Section 31 20 00 – Earthmoving.

3.2 BACKFILL AND GRADING

- A. Backfill basin with subsoil to 1 foot below final grade.
- B. Backfill final 1 foot of fill with topsoil.
- C. Do not excavate below marking tape placed under stockpiles.

3.3 FIELD QUALITY CONTROL

- A. CONTRACTOR shall verify grades and elevations meet pre-construction topography prior to backfilling with topsoil.
- B. CONTRACTOR shall verify final topography meets pre-construction topography prior to notifying ENGINEER of substantial completion of restoration.

3.4 TOLERANCES

- A. Top of finished grade: Plus or minus 0.2 feet in elevation.

END OF SECTION

SPECIAL PROVISIONS

SPECIAL PROVISIONS

These Special Provisions amend or supplement the Technical Specifications of the Construction Contract, and other provisions of the Contract Documents as may be indicated below. All Technical Specifications so referenced that are not so amended or supplemented remain in full force and effect.

1. DEFINITIONS AND PRINCIPLES

FOUNDATION

For the purpose of this Contract, FOUNDATION refers to the Nebraska Community Foundation, Inc. of Lincoln, Nebraska.

PROGRAM

For the purpose of this Contract, PROGRAM refers to the Platte River Recovery Implementation Program.

Engineer

For the purpose of this Contract, EA Engineering, Science and Technology, Inc. will serve as the Engineer. The Engineer may in writing designate a Resident Project Representative (RPR) who shall carry out the Engineer's functions as set forth in the Supplementary Conditions (00 73 00).

Contracting Officer

For the purpose of this Contract, the Executive Director of the PROGRAM will serve as the Contracting Officer. The Contracting Officer may designate, in writing, a representative(s) who shall carry out the Contracting Officer's functions as set forth below. In all cases as provided for in this document, the powers, authorities, rights and responsibilities of the Contracting Officer shall also extend to the Contracting Officer's designated representative(s). Reference to the Contracting Officer herein shall apply to the Contracting Officers designated representative if any.

The Contracting Officer will appoint a representative that will function as the coordinator between the CONTRACTOR and the PROGRAM.

The Contracting Officer shall assist the Engineer with the execution of the technical aspects of the project, to include inspection, and shall, supervise the administrative and other non-technical aspects of the Contract Documents.

The Contracting Officer shall have the authority to stop the work, or to require and direct the CONTRACTOR to properly comply with the Contract Documents. In the event of a dispute as to the intent of non-technical portions of the Contract Documents, the Contracting Officer shall have the right to correct any errors or

omissions at any time such corrections are necessary. In the case of any dispute or disagreement in regard to the drawings, specifications or other technical documents, the Contracting Officer, upon consultation with the Engineer, shall provide for amendments to the Contract Documents as required.

2. PROGRAM RIGHT TO DO WORK

The PROGRAM and/or its employees, agents or assigns shall be responsible for the following items related to the work

- Obtaining the Construction Storm Water General NPDES Permit Number NER110000
- Obtaining a lease from Tenant for work to be completed by CONTRACTOR

3. UNEMPLOYMENT AND WORKMEN'S COMPENSATION INSURANCE

Before issuing a Notice to Proceed, the CONTRACTOR and all subcontractors shall furnish proof of registration with the Employment Security Commission and the Workmen's Compensation Division as required by Nebraska Statutes.

A current letter obtained directly from the Employment Security Commission and the Workers Compensation Division shall be submitted as evidence of compliance with this requirement. Proof that the CONTRACTOR and all Subcontractors are still registered at the time of completion of construction shall be submitted prior to Final Acceptance of the Project.

4. PROJECT ACCESS

CONTRACTOR access the site is presented on the construction drawings. The CONTRACTOR shall be responsible to keep access roads graded and suitable for use by the CONTRACTOR and/or their Subcontractors as well as by the PROGRAM and/or its representatives.

In the event that the PROGRAM and/or their representatives discover equipment, appliances or tools that are leaking excessive petrochemical products (i.e., fuel, oil or other lubricants), the CONTRACTOR and/or their sub-contractors shall be instructed to remove the vehicle, equipment, appliance or tool with the leak until such time that the leak is repaired.

If access through the adjoining private properties becomes necessary, it must be done with extreme caution. The PROGRAM, on the information provided by the landowners, will mark known underground items such as septic systems, residential drainage and wells. The CONTRACTOR shall take every precaution to prevent damage to said properties and shall be held responsible for repairs to septic systems, drainage pipes or wells.

The CONTRACTOR shall be responsible for reviewing the site and informing themselves

fully regarding site peculiarities and limitations of space available.

5. STAGING AND STORAGE AREA

The primary staging area will be identified in the field by the Engineer.

The CONTRACTOR shall at all time keep their staging area clean and free of an accumulation of debris and rubbish. All areas used for storage or staging will be cleaned and restored within ten (10) days of completion of the project.

Between the dates of April 1 and May 10, or October 1 and November 15, heavy equipment will be moved from the river to an upland site behind a tree line at the end of each work day if such features are available. If not available, the equipment will be moved to the farthest extent feasible or to a position of cover at least 0.25 miles away from the channel.

6. REMOVAL OF MATERIALS

Unless a specific item or material is noted to remain the property of the PROGRAM's and/or the effected private property owners, or said item is specified as being owed by the CONTRACTOR, all items will be inspected by the Contracting Officer to determine to need to retain the item. If the material is designated as scrap, the CONTRACTOR will remove the item from site.

7. CONTROL OF PERSONS AND TRAFFIC ON SITE

The CONTRACTOR shall control the actions of its employees, agents or assigns, as well as its subcontractors and their employee, agents or assigns working on the site working and shall enforce all regulations.

The CONTRACTOR shall be responsible for traffic control on the public roadways as may be necessary to access the work site with trucks, equipment and/or materials.

The PROGRAM and NPPD retains the right to visit the site with other agencies and interested parties when needed. The PROGRAM will coordinate access with the CONTRACTOR and will access the site such that the work of the CONTRACTOR is not hindered or delayed.

8. PROTECTION OF PERSONS AND PROPERTY

The CONTRACTOR shall take special precautions to insure that adequate safety is provided to personnel at all times during construction operations.

Temporary items such as, but not limited to, staging, lifting and hoisting devices, excavation barricades, and safety and construction procedures necessary to complete the project shall be the responsibility of the CONTRACTOR and its subcontractors, and shall comply with all applicable codes and regulations. Nebraska Occupational Health and Safety Rules and Regulations shall be complied with in their entirety. It shall not be the responsibility of the

OWNER to determine if the CONTRACTOR, subcontractors or their representatives are in compliance with the aforementioned regulations.

9. CONSTRUCTION LIMITS

Construction limits for the Work are defined on the construction drawings. CONTRACTOR shall coordinate with OWNER to confirm construction limits associated with the work at each project site.

No other disturbance shall be allowed on private property unless specifically authorized. Care shall be taken to protect existing structures and fences. CONTRACTOR shall be liable for all damages to private property.

10. HOURS OF WORK

From December 15 to February 15 and within a 0.25 mile area around a known eagle roost, site activity should occur beginning one (1) hour after sunrise and finishing one hour (1) before sunset to minimize disturbance of the roost.

Between the dates April 1 and May 10, or October 1 and November 15, the CONTRACTOR will not begin work until one of the following requirements has been met each day: 1) The CONTRACTOR observes the airplane conducting whooping crane surveys during their daily basis fly-over the construction zone without circling back to verify a whooping crane sighting; or 2) it is at least one-half ($\frac{1}{2}$) hour after sunrise and the CONTRACTOR has confirmed there are no whooping cranes or large white birds in the construction zone; or 3) the Engineer has confirmed the lack of whooping cranes in the construction zone. If the CONTRACTOR has any suspicion or question as to whether or not a whooping crane is present, he will not start work until a positive identification can be made by the Engineer or the bird(s) leave by their own accord. The CONTRACTOR will contact the Engineer anytime he thinks there may be a whooping crane in the construction zone.

The PROGRAM conducts daily whooping crane surveys by flying an airplane up the river at an elevation of 750 ft. starting one-half ($\frac{1}{2}$) hour before sunrise. When the plane observes a white object they circle around to determine what it is. If it is a whooping crane on PROGRAM property they will notify the PROGRAM in order for the PROGRAM to confirm the sighting from the ground. If the plane continues to fly up the river, then there are likely not any whooping cranes in the area. The PROGRAM will provide the CONTRACTOR with the phone number of the whooping crane survey contractor.

If one contractor requires the service of another contractor beyond the standard working hours, the CONTRACTOR requiring the extra service shall be responsible for any costs associated with the other contractor working extra hours.

11. EXISTING UNDERGROUND UTILITIES

There are no utilities known to the PROGRAM (buried) in the work area.

The CONTRACTOR shall be responsible for contacting Diggers Hotline of Nebraska five

(5) days prior to the start of construction at (800) 331-5666, for the purpose of locating any underground utilities. Identification and location of utilities is the sole responsibility of the CONTRACTOR.

12. PRE-CONSTRUCTION MEETING

Within five (5) days of award of this Contract, the Contracting Officer shall arrange a meeting at the job site. This meeting shall include the CONTRACTOR in addition to the Engineer, Contracting Officer and all substantial subcontractors.

At the Pre-construction Meeting, each CONTRACTOR shall explain their anticipated procedures on site in detail and shall provide a progress schedule for review.

13. TIME OF COMPLETION AND SEQUENCE OF OPERATIONS

Time frames as contained in this section are the product of the Engineer's estimate. Reasonable adjustments in the time frames allowed for each component may be approved by the PROGRAM upon review of the CONTRACTOR's schedule for progression of work which is to be reviewed at the pre-construction meeting.

Work shall be completed As Soon As Possible but no later than the dates listed in the Agreement unless approved by the PROGRAM.

The final sequencing of construction items will be according to a schedule mutually agreed upon by all parties.

14. PROJECT LAYOUT AND CONTROLS

The PROGRAM is responsible for verification of CONTRACTOR's work against the Project Drawings and specifications.

15. CONTACTS

Administrative Point of Contact (Foundation):

Diane M. Wilson
Chief Financial and Administrative Officer
Nebraska Community Foundation
PO Box 83107
Lincoln, Nebraska 68501-3107
Phone: (402) 323-7330
Fax: (402) 323-7349
Email: dwilson@nebcommfound.org

Admin. Point of Contact (Program):

Dr. Jerry F. Kenny, Executive Director
Platte River Recovery Implementation Prog.
Headwaters Corporation
4111 4th Ave., Suite 6
Kearney, Nebraska 68845
Phone: (308) 237-5728
Fax: (308) 237-4651
Email: kennyj@headwaterscorp.com

Technical Point of Contact (Program):

Jason Farnsworth, Dir. Tech. Support Services
Platte River Recovery Implementation Prog.
Headwaters Corporation
4111 4th Ave., Suite 6
Kearney, Nebraska 68845
Phone: (308) 237-5728
Fax: (308) 237-4651
Email: farnsworthj@headwaterscorp.com

Media Point of Contact (Program):

Dr. Bridget Barron, Director of Outreach
Platte River Recovery Implementation Prog.
Headwaters Corporation
4111 4th Ave., Suite 6
Kearney, Nebraska 68845
Phone: (308) 237-5728
Fax: (308) 237-4651
Email: barronb@headwaterscorp.com

END OF SPECIAL PROVISIONS

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN
Pilot-Scale Recharge Basin Project

PROJECT NAME: Pilot-Scale Recharge Basin Project

NPDES AUTHORIZATION NUMBER:

PERMIT NUMBER: NER110000

PROJECT OWNER: Nebraska Community Foundation, Inc.

ADDRESS: PO Box 83107

CITY: Lincoln

STATE: Nebraska

ZIP: 68501

OWNER'S SITE CONTACT PERSON:

TITLE:

PHONE NUMBER:

FAX NUMBER:

MOBILE PHONE NO:

PAGER:

GENERAL DESCRIPTION OF THE PROJECT:
--

The existing site is a cultivated agricultural cropland. Therefore, endangered and threatened species and critical habitat are not anticipated to be influenced by the proposed construction activities. It is the intent of this project to construct a temporary recharge basin and soil stockpile between 1 September 2011 and restore the site to original conditions by 30 March 2012.

PROJECT LOCATION:

NW1/4 of Section 24, Township 8 North, Range 20 West, Phelps County, Nebraska

PROJECT DESIGN:

CONSULTANT'S NAME: Jason Byler, P.E.

COMPANY: EA Engineering, Science, and Technology

ADDRESS: 221 Sun Valley Blvd., Suite D

CITY: Lincoln

STATE: Nebraska

ZIP: 68528

PHONE NO: 402-476-3766

FAX NO: 402-476-7825

TYPE OF SOIL DISTURBING ACTIVITIES:

- | | |
|--|--|
| <input type="checkbox"/> Clearing and grubbing of existing vegetation
<input checked="" type="checkbox"/> Stripping of topsoil within construction limits
<input checked="" type="checkbox"/> Stockpiling and re-spreading topsoil
<input checked="" type="checkbox"/> Utility trench and backfill
<input type="checkbox"/> Preparing sub grade of streets and sidewalks
<input type="checkbox"/> Backfilling curbs and sidewalks | <input checked="" type="checkbox"/> Construction of sediment / stormwater basins
<input checked="" type="checkbox"/> Disposal areas for excess excavated material
<input type="checkbox"/> Borrow areas for fill materials
<input checked="" type="checkbox"/> Construction of compacted fill areas
<input type="checkbox"/> Excavation of foundations
<input type="checkbox"/> Other |
|--|--|

TOTAL SITE AREA: 1.2 Acres

ESTIMATED AREA DISTURBED BY THIS PROJECT: 1.2 Acres

RUNOFF COEFFICIENT BEFORE DEVELOPMENT: 75

RUNOFF COEFFICIENT AFTER DEVELOPMENT: 75

NAME OF RECEIVING STREAM: Platte River

DISTANCE FROM PROJECT OUTFALL TO RECEIVING WATER: 3.3 miles

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project PROJECT PLANNING AND DESIGN (cont.)

SEDIMENT & EROSION CONTROLS TO BE USED:

(To be used with the Erosion Control Plan drawing)

TEMPORARY CONTROLS:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Silt Fence | <input type="checkbox"/> Straw / Hay Bale Dike |
| <input type="checkbox"/> Silt Containment Berm | <input type="checkbox"/> Sedimentation Basin |
| <input type="checkbox"/> Diversion Berm or Swale | <input type="checkbox"/> Temporary Gravel Entrance |
| <input type="checkbox"/> Vegetative Buffers | <input type="checkbox"/> Other |

TEMPORARY STABILIZATION

- | | |
|--|-----------------------------------|
| <input type="checkbox"/> Temporary seeding | <input type="checkbox"/> Mulching |
| <input type="checkbox"/> Other | |

PERMANENT CONTROLS

- | | |
|--|--|
| <input type="checkbox"/> Diversion Berm | <input type="checkbox"/> Diversion Swale |
| <input type="checkbox"/> Rip-Rap or Paved Chute | <input type="checkbox"/> Rip-Rap Outlet Protection |
| <input type="checkbox"/> Rip-Rap Channel Lining | <input type="checkbox"/> Reinforced Sod Channel Lining |
| <input type="checkbox"/> Sod Channel Lining | <input type="checkbox"/> Concrete Trickle Channel |
| <input type="checkbox"/> Concrete channel Lining | <input type="checkbox"/> Vegetative Buffers |
| <input checked="" type="checkbox"/> Other | <input type="checkbox"/> Detention Basin |

PERMANENT STABILIZATION

- | | |
|---|--|
| <input type="checkbox"/> Seeding | <input type="checkbox"/> Pavement or Other Permanent Surface |
| <input type="checkbox"/> Hydro mulch | <input type="checkbox"/> Straw Mulch |
| <input checked="" type="checkbox"/> Other | |

GENERAL DESCRIPTION OF STORMWATER MANAGEMENT PLAN:

All soil disturbing activities performed by the contractor will be accomplished in such a manner as to prevent the loss of sediment from the construction site during rainfall events. To accomplish the contractor will install silt fences downgradient of disturbed areas to minimize the risk of silt, mud, or debris from leaving the construction site. Good housekeeping measures and diligent inspections and maintenance actions will be performed to ensure Best Management Practices and structural controls are effective.

Site will be restored to original conditions following completion of the pilot project.

GENERAL SEQUENCE OF CONSTRUCTION:

1. Post permit sign
2. Install Silt Fence
3. General excavation and backfill
4. Install pipe and pump
5. Operate Pilot
6. Restore site to original conditions

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

CONSTRUCTION PHASE

(To be completed by General Contractor and/or Owner)

GENERAL CONTRACTOR'S NAME:

ADDRESS:

CITY:

STATE:

ZIP:

PHONE NUMBER:

FAX NUMBER:

MOBILE PHONE NO:

PAGER:

CONTRACTOR'S SEDIMENT CONTROL CONTACT:

PHONE NUMBER:

FAX NUMBER:

MOBILE PHONE NO:

PAGER:

SUBCONTRACTORS: Check all land disturbance items for which subcontractors are to be used and attach a list of sub contractors.

- ☐ Grading
- ☐ Storm Sewers
- ☐ Paving
- ☐ Concrete Flat Work
- ☐ Sanitary Sewers
- ☐ Concrete Drainage Structures
- ☐ Curb & Gutter
- ☐ Sediment Controls
- ☐ Seeding & Mulching
- ☐ Water
- ☐ Electric
- ☐ Gas
- ☐ Blasting
- ☐ Other: _____

SEQUENCE OF CONSTRUCTION:

The General Contractor should complete the following sequence of construction for land disturbance activities.

ITEM:

SUBCONTRACTOR

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

GENERAL SEDIMENT CONTROL PRACTICES

1. EROSION AND SILTATION CONTROL SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION WORK AND BE MAINTAINED THROUGHOUT THE PROJECT UNTIL ACCEPTANCE OF THE WORK BY THE OWNER AND/OR CONTROLLING REGULATORY AGENCY AND ADEQUATE ROCKING OR VEGETATIVE GROWTH INSURES NO FURTHER EROSION OF THE SOIL.
2. ADDITIONAL SILTATION CONTROL MAY BE REQUIRED AS DEEMED NECESSARY BY FEDERAL, STATE OR LOCAL AUTHORITIES.
3. NO SLOPES SHALL BE GRADED STEEPER THAN 3:1 (HORIZONTAL: VERTICAL). UNLESS OTHERWISE NOTED.
4. SILTATION FENCES SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND FOR THE AMOUNT OF SEDIMENT WHICH HAS ACCUMULATED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/3 THE HEIGHT OF THE SILTATION FENCE.
5. STRAW BALES SHALL BE INSPECTED PERIODICALLY FOR DETERIORATION. BALES WHICH HAVE ROTTED OR FAILED SHALL BE REPLACED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 THE HEIGHT OF THE BALES.
6. IF CUT AND FILL OPERATIONS OCCUR DURING A SEASON NOT FAVORABLE FOR IMMEDIATE ESTABLISHMENT OF PERMANENT GROUND COVER, A FAST GERMINATING ANNUAL SUCH AS RYE GRASS OR SUDAN GRASSES SHALL BE UTILIZED TO RETARD EROSION, IF ADEQUATE STORMWATER DETENTION AND EROSION CONTROL DEVICES HAVE NOT BEEN ESTABLISHED.
7. PRACTICES ARE SHOWN ON THE PROJECT STORM WATER POLLUTION PREVENTION PLAN SHEET (NPDES 1 AND 2).

MAINTENANCE / INSPECTION PROCEDURES

The following maintenance and inspection practices will be required by the General Contractor to maintain sediment and erosion controls:

1. STRAW BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
2. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES.
3. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY.
4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. THEY MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE STRAW BALE BARRIER IS NO LONGER REQUIRED SHALL BE ADDRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
6. ALL EXPOSED SLOPES WHETHER TEMPORARY OR PERMANENT SHALL BE SEEDED PER SPECIFICATIONS IMMEDIATELY UPON COMPLETION.
7. ALL FLOW LINES OF DIVERSION DITCHES AND SWALES SHALL BE PROTECTED AS NEEDED.
8. THE CONTRACTOR WILL INSPECT ALL SPECIFIED AREAS AT LEAST ONCE EVERY 14 CALENDAR DAYS AND AFTER EACH RAINFALL EVENT OF 0.5 INCHES OR GREATER TO INSURE THAT THE INTEGRITY OF EACH PRACTICE IS INTACT. ANY DAMAGE NOTED WILL BE PROMPTLY REPAIRED TO ORIGINAL SPECIFICATIONS.
9. THE CONTRACTOR SHALL MAINTAIN A LOG BOOK OF INSPECTIONS, REPAIRS, OR REPLACEMENT OF SILTATION CONTROL BARRIERS. THE LOG SHALL BE DATED AND SIGNED AFTER EACH ENTRY AND THEN TURNED OVER TO THE NPPC PROJECT ENGINEER AT THE COMPLETION OF THE PROJECT.
10. ANY ADDITIONAL REQUIREMENTS LISTED IN THE GENERAL PERMIT.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

- Concrete
- Detergents
- Paints (enamel and latex)
- Tar
- Fertilizers
- Gravel and stone bedding material
- Concrete forming materials
- Wood
- Petroleum based products
- Masonry Products
- Cleaning Solvents
- Powdered Cement

SPILL PREVENTION / MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

GOOD HOUSEKEEPING

- * An effort will be made to store only enough product required to do the job.
- * All materials stored on site will be stored in a neat, orderly manner in their appropriate containers and under cover.
- * Products will be kept in their original containers with the original manufacturer's label.
- * Whenever possible, all of a product will be used up before disposing of the container.
- * The manufactures recommendations for proper use and disposal will be followed.
- * All vehicles kept on site will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage.
- * Petroleum products will be stored in tightly sealed containers that are clearly labeled.
- * The General Contractor is responsible for keeping mud cleaned from the adjoining street and parking area. Mud will be cleaned up on a daily basis if needed.
- * No fueling, servicing, maintenance, or repair of equipment or machinery may be done within fifty (50) feet of a defined drainage course.
- * The General Contractor will provide trash containers and regularly clean up solid waste such as scrap building or product material, material shipping waste, food containers, and cups.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

GOOD HOUSEKEEPING

(Continued)

- * The General Contractor will use designated toilets or provide portable toilets for proper disposal of sanitary sewerage.
- * Construction materials will be stored away from drainage courses or low lying areas.

HAZARDOUS PRODUCTS

- * All petroleum and hazardous materials stored on site will be stored in a neat, orderly manner in their appropriate containers and under cover. At anytime the contractor will not store more than 500 gallons of petroleum on site.
- * Drip pans or containment areas will be provided at petroleum and liquid storage tanks and containers.
- * Products will be kept in their original containers UNLESS they are not resealable.
- * The original manufacturer's labels and material safety sheets will be retained; they contain important product information.
- * Whenever possible, all of a product will be used up before disposing of the container. If surplus product must be disposed of, the manufactures' or local and State recommendations for proper use and disposal will be followed.

SPILL CONTROL PRACTICES

The following practices will be followed for spill prevention and cleanup:

- * The manufactures' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information & cleanup supplies.
- * Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite.
- * Spills will be cleaned up **immediately** after discovery.
- * Spills of fuels, paints, or hazardous materials will be immediately reported to the Owner. The Contractor will report spills to government agencies as necessary in accordance with all federal, state, and local regulations.
- * The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if another one occurs. A description of the spill, what caused it, and the cleanup measures will also be included.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

OWNER'S CERTIFICATION

I hereby certify, that I am or acting as the authorized agent of the owner of the property described in this plan, and that I assume full responsibility for the performance of the operation stated on this plan.

OWNER Nebraska Community Foundation, Inc.

By: _____ Title: **Owner**

Date: _____

GENERAL CONTRATOR'S CERTIFICATION

I hereby certify that I understand the requirement s stated in this plan, that I am responsible for completing the requirements set forth in the plan and that I am responsible for the performance of the subcontractors listed in the plan.

GENERAL CONTRACTOR

By: _____ Title: _____

Date: _____

SUBCONTRACTOR'S CERTIFICATION

I hereby certify that I understand the requirement s stated in this plan, that I am responsible for completing the requirements, which have been listed in the plan as being a part of my scope of work.

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

INSPECTION & MAINTENANCE REPORT

(To be filled out weekly or after each rainfall event)

PROJECT NAME: Pilot Scale Recharge Basin Project

PROJECT OWNER: Nebraska Community Foundation, Inc.

ADDRESS: PO Box 83107

CITY: Lincoln

STATE: NE

ZIP: 685001

INSPECTOR: _____

Date: _____

INSPECTOR'S COMMENTS:

DAYS SINCE LAST RAINFALL _____

AMOUNT OF LAST RAINFALL _____ **IN.**

INSPECTION ITEM	Yes or No	COMMENTS
Are the siltation control fences in good working order?		
Are the siltation control fence support stakes secure?		
Is there evidence of leaking under the fabric?		
Is there evidence of overtopping any siltation control fences?		
Is there evidence of siltation near culvert that crosses county roads?		
Is there evidence of siltation near on-site culvert inlets?		
Is there evidence of siltation into trenches?		

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN
Pilot-Scale Recharge Basin Project

Is there evidence of siltation into Detention Pond?		
Is mud being tracked onto the drop lot or access roads?		
Is there evidence of soil erosion within the project area?		
Were any spills reported? <i>(If yes explain)</i>		

MAINTENANCE REQUIRED:

TO BE PERFORMED BY: _____ on or BEFORE: _____

CHANGES REQUIRED TO THE SWPP:

REASON FOR CHANGE:

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature: _____

Date: _____

Note: Inspection forms are to be retained by CNPPID on-site for the duration of the project. Copies of inspection reports are to be submitted to the ENGINEER within 14 days of the inspection.

APPENDIX C

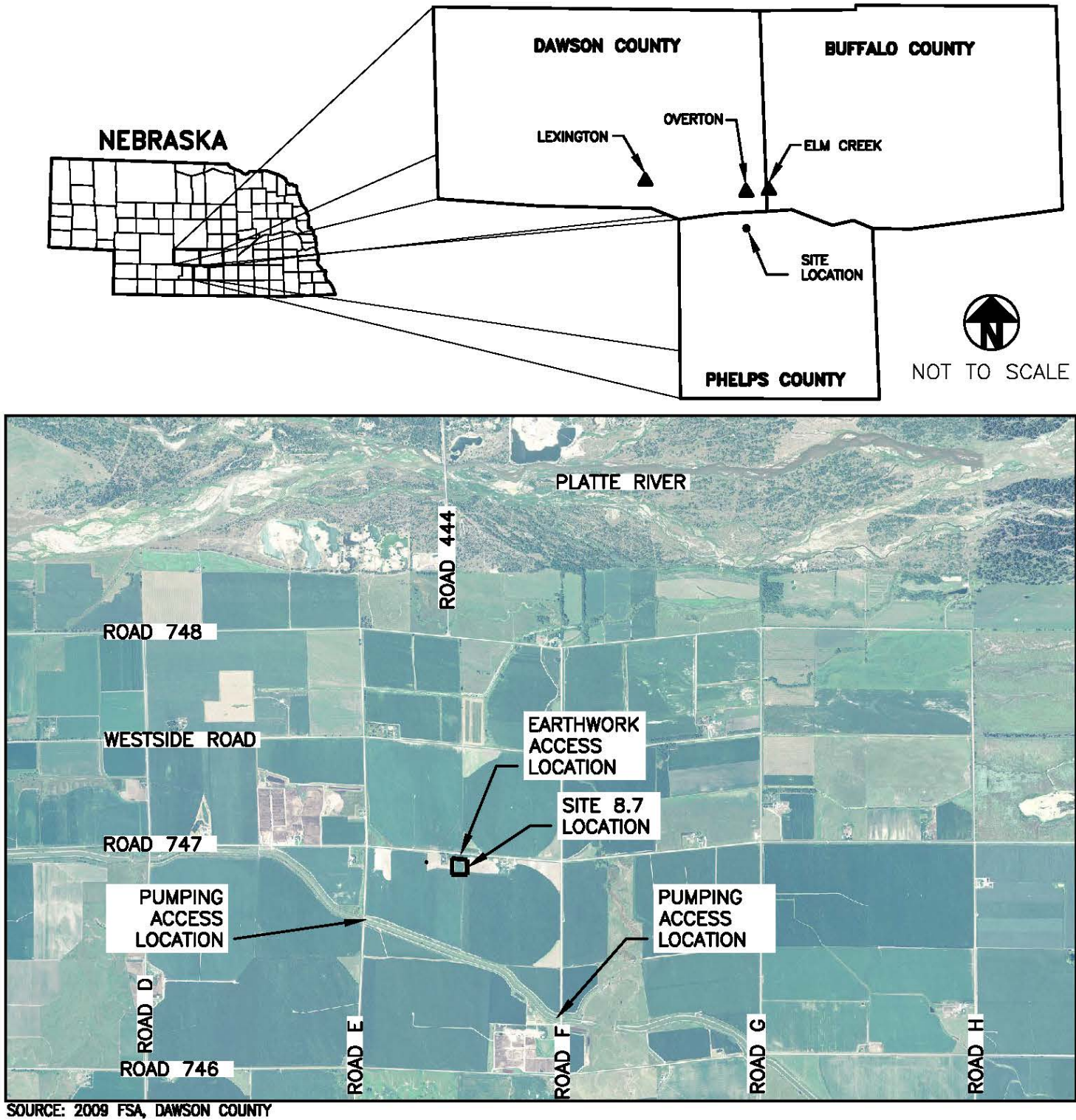
CNPPID CONSTRUCTION & OPERATION DOCUMENTS

DRAWING NAME: F:\State & Local\Other\Platte River Recovery Program\Projects\1482201 - GW Recharge Study\T5-Pilot Design\figures\90% design\Phelps-cover sheet.dwg
DATE:07/06/2011 TIME:15:14 DRAWN BY: cswanson

PILOT-SCALE RECHARGE BASIN

NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM



INDEX OF SHEETS		
FIGURE NUMBER	DRAWING NUMBER	SHEET TITLE
1	T-1	COVER SHEET
2	T-2	GENERAL NOTES
SCHEDULE A - WATER DELIVERY SYSTEM		
3	A-1	PLAN VIEW
4	A-2	DETAILS
5	A-3	PUMPING DETAILS
SCHEDULE B - EARTHWORK		
6	B-1	PLAN VIEW
7	B-2	BASIN PROFILE
8	B-3	STOCKPILE PROFILE & OVERFLOW DETAIL
9	B-4	RESTORATION PLAN

DIRECTIONS TO PILOT SITE 8.7:

FROM THE OVERTON INTERSTATE 80 INTERCHANGE (EXIT # 248), GO 1 MILE SOUTH ALONG ROAD 444 TO RD 748. THEN WEST 1/2 MILE TO ROAD E, THEN SOUTH 1 MILE TO ROAD 747 THEN EAST 1/2 MILE. BASIN SITE LOCATION IS ON SOUTH SIDE OF ROAD 747.

DRAFT-
FOR CLIENT
REVIEW

90% SUBMITTAL

PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

EA[®] ENGINEERING,
SCIENCE, AND
TECHNOLOGY

COVER SHEET

PROJECT MGR.
DJS

DESIGNED BY
JRB

DRAWN BY
CNS

CHECKED BY
DJS

DATE
JULY 2011

SCALE
AS SHOWN

PROJECT NO.
1482201

FILE NAME
-

DRAWING NO.
T-1

FIGURE

1

DRAWING NAME: F:\State & Local\Other\Platte River Recovery Program\Projects\1482201 - GW Recharge Study\T5-Pilot Design\Figures\90% design\General Notes.dwg
DATE:07/06/2011 TIME:15:19 DRAWN BY: cswanson



GENERAL NOTES:

1. CONTRACTORS SHALL NOT DAMAGE CORN OR ALFALFA CROPS.
2. CONSTRUCTION IN CROP LAND SHALL NOT BEGIN UNTIL CORN HAS BEEN REMOVED BY TENANT.
3. TENANT WILL REMOVE CORN FROM WORK AREA PRIOR TO MOBILIZATION.
4. IT IS CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE NEBRASKA "ONE CALL" SYSTEM REGARDING UTILITIES IN THE CONSTRUCTION SITE. DIGGER'S HOTLINE OF NEBRASKA 1-800-331-5666.
5. SCHEDULE A SHOWS WORK TO BE COMPLETED BY THE CENTRAL NEBRASKA PUBLIC POWER AND IRRIGATION DISTRICT (CNPPID) FOR THE WATER DELIVERY SYSTEM.
6. SCHEDULE B SHOWS WORK TO BE COMPLETED BY AN EARTHWORK CONTRACTOR TO CONSTRUCT THE EARTHEN BASIN.
7. EA ENGINEERING, SCIENCE, & TECHNOLOGY, INC. (EA.) WILL INSTALL PIEZOMETER, RAIN GAUGE, SOIL MOISTURE BORING AND SENSORS, WATER LEVEL TRANSDUCERS, AND DATA LOGGERS (EXCLUDING FLOW METER DATA LOGGER).
8. LOCATIONS ARE APPROXIMATE BASED ON LIDAR AND AERIAL PHOTOGRAPHS.
9. CONTRACTOR SHALL NOT DISTURB EXISTING FENCE.
10. EA WILL PLACE CONSTRUCTION STAKES.
11. ELEVATIONS SHOWN ARE FOR REFERENCE ONLY AND ARE BASED ON LIDAR. ACTUAL ELEVATIONS FOR CONSTRUCTION SHALL BE AS STAKED IN THE FIELD.
12. CONSTRUCTION LIMITS ARE AS SHOWN ON THE DRAWINGS.
13. TENANT IS KERRY BLYTHE.
14. PRESENCE OF UNDERGROUND UTILITIES IS UNKNOWN.

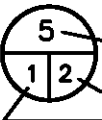
GENERAL SEQUENCE:

1. CORN REMOVED BY TENANT
2. CONSTRUCT BASIN (SCHEDULE B)
CONSTRUCT WATER DELIVERY SYSTEM (SCHEDULE A)
INSTALL INSTRUMENTATION (ENGINEER)
3. OPERATE WATER DELIVERY SYSTEM (SCHEDULE A)
4. DATA COLLECTION (ENGINEER)
5. RESTORATION (SCHEDULE A)
RESTORATION (SCHEDULE B)
6. RESTORATION (ENGINEER)

LEGEND:

-  B-1 PREVIOUS SOIL BORING LOCATION
-  MW-1 EXISTING MONITORING WELL

DETAIL DESCRIPTION

-  5 — DETAIL NUMBER
1 2 — SHEET NUMBER OF DETAIL
— SHEET WHERE DETAIL IS REFERENCED

DRAFT—
FOR CLIENT
REVIEW

90% SUBMITTAL

EA® EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY

PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

GENERAL NOTES

PROJECT MGR.

DJS

DESIGNED BY

JRB

DRAWN BY

CNS

CHECKED BY

DJS

DATE

JULY 2011

SCALE

AS SHOWN

PROJECT NO.

1482201

FILE NAME

-

DRAWING NO.

T-2

FIGURE

2

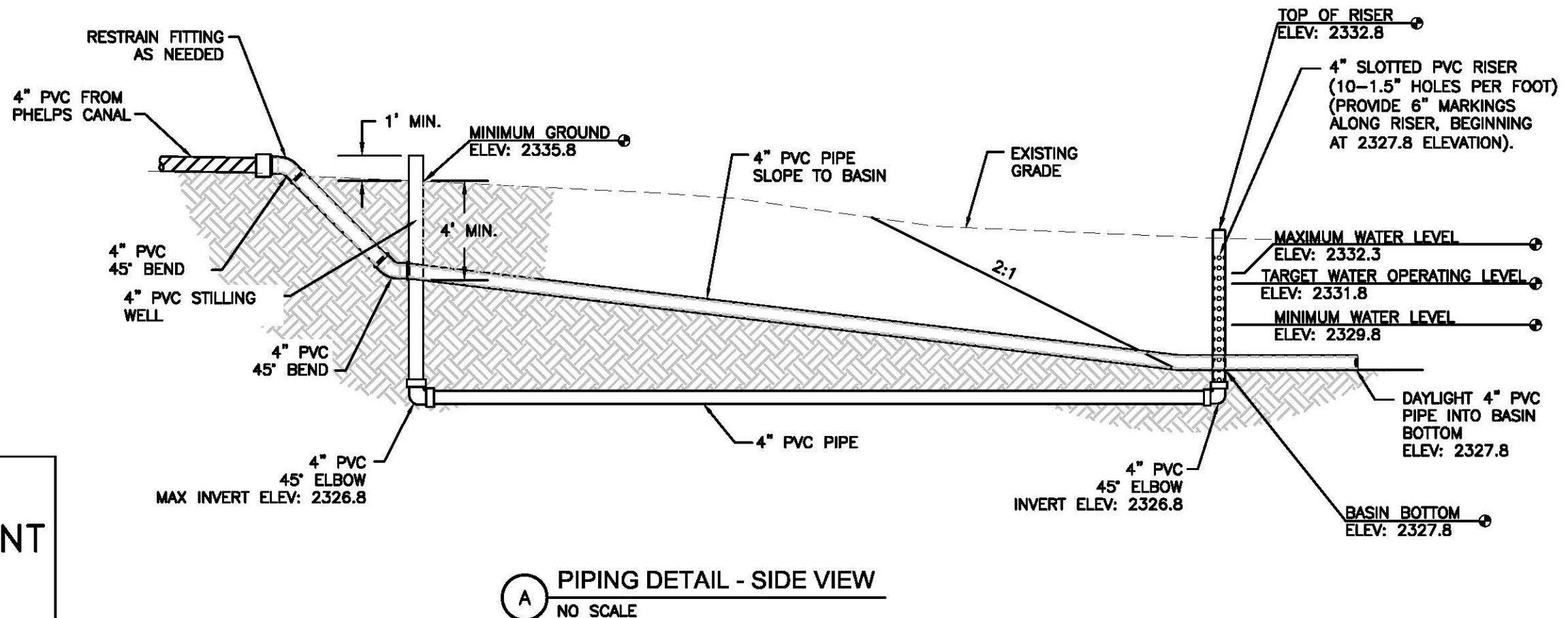
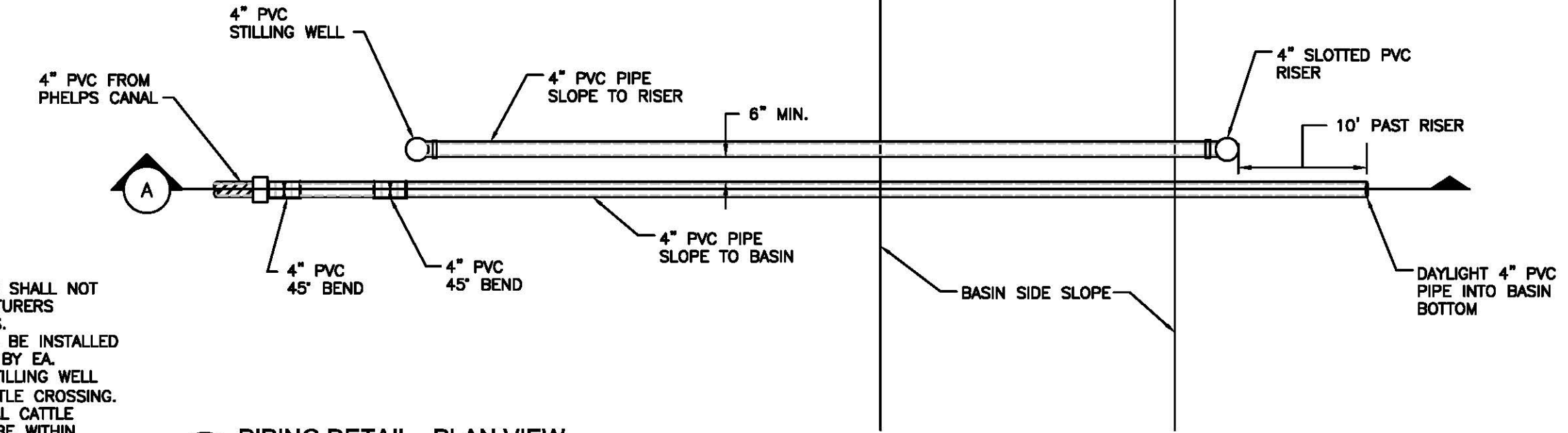
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DATE: 07/13/2011
DRAWN BY: cswanson

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FOR CLIENT
REVIEW

90% SUBMITTAL

NOTES:

1. PIPE DEFLECTIONS SHALL NOT EXCEED MANUFACTURERS RECOMMENDATIONS.
2. TRANSDUCER WILL BE INSTALLED IN STILLING WELL BY EA.
3. DO NOT PLACE STILLING WELL WITHIN 5' OF CATTLE CROSSING. NOTIFY EA IF FINAL CATTLE CROSSING IS TO BE WITHIN 5' OF STAKED LOCATION OF STILLING WELL, TO COORDINATE A NEW LOCATION OR MODIFICATIONS.



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NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

DETAILS

PROJECT MGR.

DESIGNED BY

DRAWN BY

CHECKED BY

DATE

SCALE

AS SHOWN

PROJECT NO.

FILE NAME

DRAWING NO.

FIGURE

4

A-2

-

1482201

JULY 2011

JULY 2011

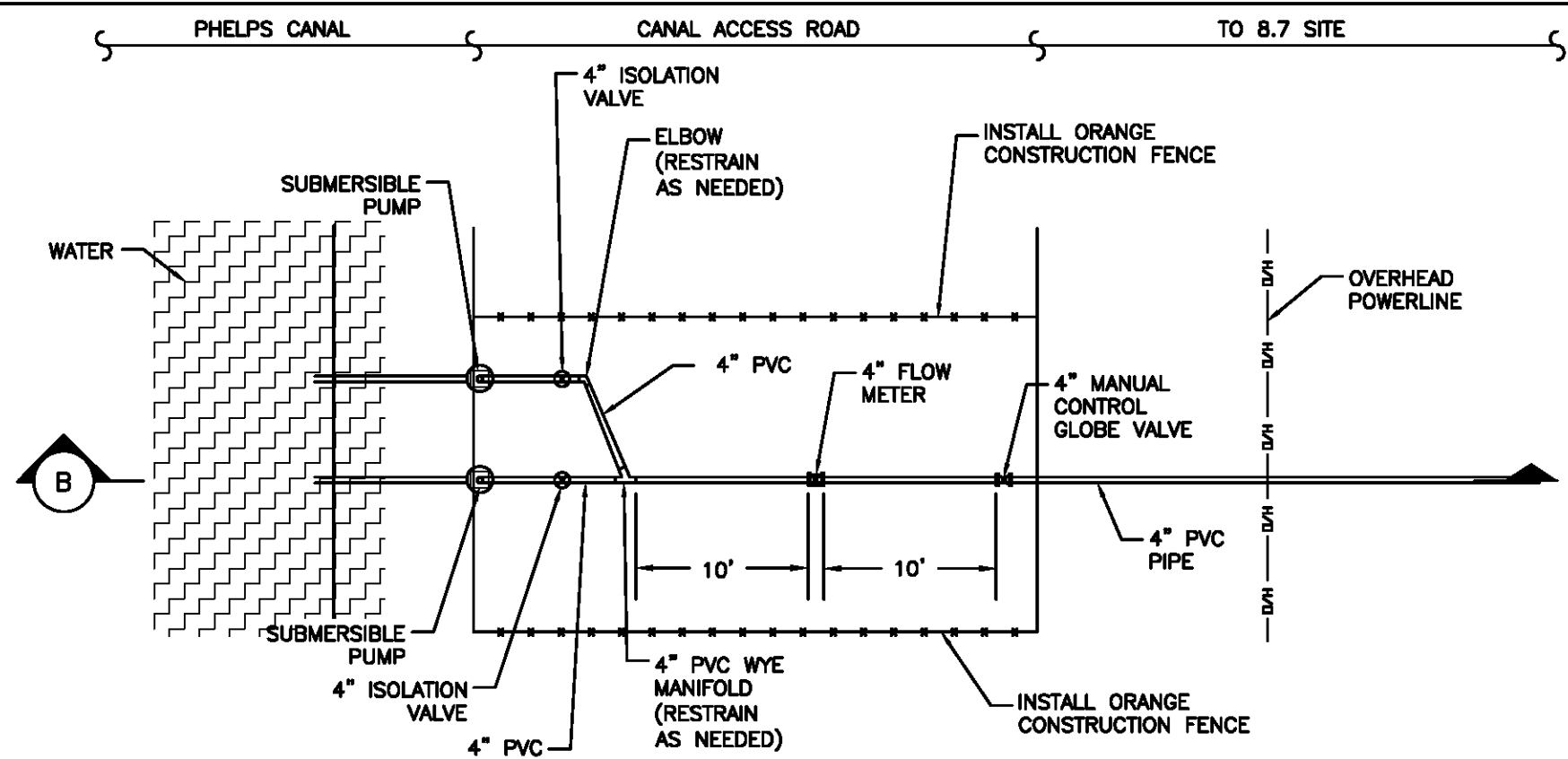
DJS

CNS

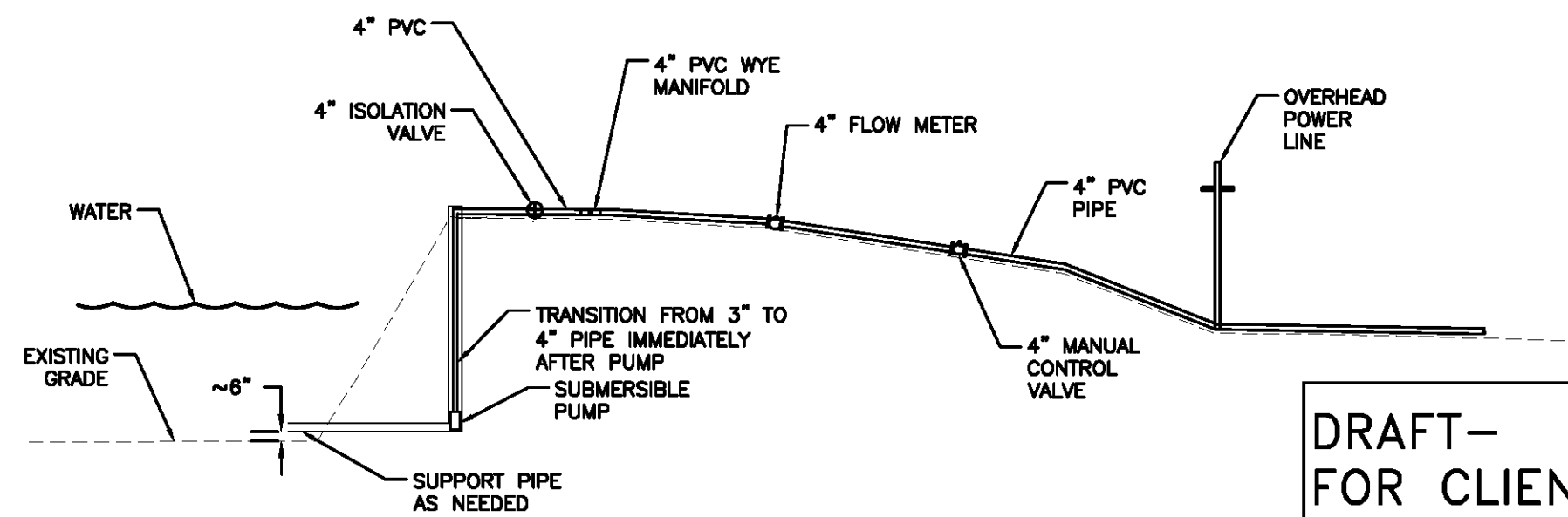
JRB

DJS

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DATE: 07/07/2011
TIME: 11:24
DRAWN BY: cswanson



2 PUMPING STATION AREA - PLAN VIEW
3/5 NO SCALE



B PUMPING STATION AREA - SIDE VIEW
NO SCALE

DRAFT-
FOR CLIENT
REVIEW

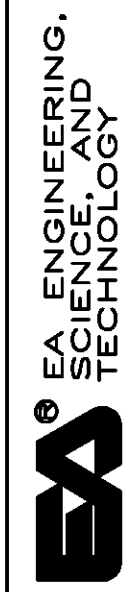
90% SUBMITTAL

INSTALLATION & RESTORATION NOTES:

1. CNPPID SHALL MAKE ELECTRICAL CONNECTIONS AND SERVICE FOR SUBMERSIBLE PUMPS IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.
2. CNPPID SHALL PROVIDE AND INSTALL FLOW METER AND DATA LOGGER IN ACCORDANCE WITH MANUFACTURES SPECIFICATIONS.
3. CNPPID SHALL CALIBRATE FLOW METER PER MANUFACTURES RECOMMENDATION.
4. CNPPID SHALL PROVIDE CABLE AND DOWNLOAD SOFTWARE TO EA.
5. CNPPID SHALL REMOVE PIPING, PUMPS, VALVES, FLOW METER, STILLING WELL, RISER, AND RESTORE SITE TO PRE-CONSTRUCTION CONDITIONS. UPON NOTIFICATION TO DO SO FROM PROGRAM.
6. PVC PIPE SHALL BE 4" SCHEDULE 40
7. PUMP SHALL BE SSE-3V-S2-20 AMERICAN MARSH PUMP
8. FLOW METER SHALL BE 4" M0300 BOLT-ON SADDLE METER WITH RC20-D DATA LOGGER/ TRANSMITTER, WITH SOFTWARE AND DOWNLOAD CABLE.
9. CNPPID SHALL COORDINATE WITH TENANT A MINIMUM OF 30 DAYS PRIOR TO MAKING ELECTRICAL CONNECTION/ MODIFICATIONS.
10. CNPPID SHALL COORDINATE WITH TENANT ON FINAL LOCATION OF CATTLE CROSSING AND 8" STEEL IRRIGATION PIPE PROTECTION.
11. PUMPING STATION AREA DETAILS SHOW GENERAL LAYOUT REQUIREMENTS.
12. CNPPID SHALL NOT LIMIT CANAL ROAD VEHICLE ACCESS ACROSS PUMP SITE. CNPPID SHALL SUBMIT A SHOP DRAWING TO EA FOR PROPOSED PUMP SITE CONSTRUCTION A MINIMUM OF 30 DAYS PRIOR TO CONSTRUCTION OF PUMP SITE, FOR REVIEW AND APPROVAL. ANY ABOVE GROUND PIPE AND APPURTENANCES SHALL BE PROTECTED FROM VEHICLE DAMAGE. ANY BELOW GROUND PIPE AND APPURTENANCES SHALL HAVE A MINIMUM OF 2' OF SOIL COVER WHERE VEHICLES WILL CROSS.

OPERATION NOTES:

1. OPERATE PUMPS CONTINUOUSLY TO MAINTAIN WATER ELEVATIONS AS SHOWN ON DRAWING A-2.
2. CNPPID SHALL INSPECT WATER DELIVERY SYSTEM DAILY AND MAINTAIN WATER LEVEL AS CLOSE AS POSSIBLE TO THE TARGET WATER OPERATING LEVEL.
3. INSPECT AND FIX PIPE LEAKS DAILY.
4. INSPECT WATER DEPTH AT BASIN AND ADJUST WATER FLOW DAILY.
5. DOCUMENT SNOW MELT EVENTS ON INSPECTION LOG PROVIDED BY EA.
6. OPERATE BOTH PUMPS AS NEEDED TO FILL THE BASIN AND MAINTAIN THE TARGET WATER OPERATING LEVEL.
7. INSPECT SILT FENCE AS REQUIRED IN STORM WATER POLLUTION PREVENTION PLAN AND NOTIFY PROGRAM IF ACTION IS REQUIRED BY OTHERS.

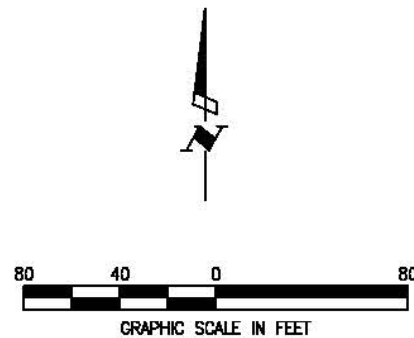
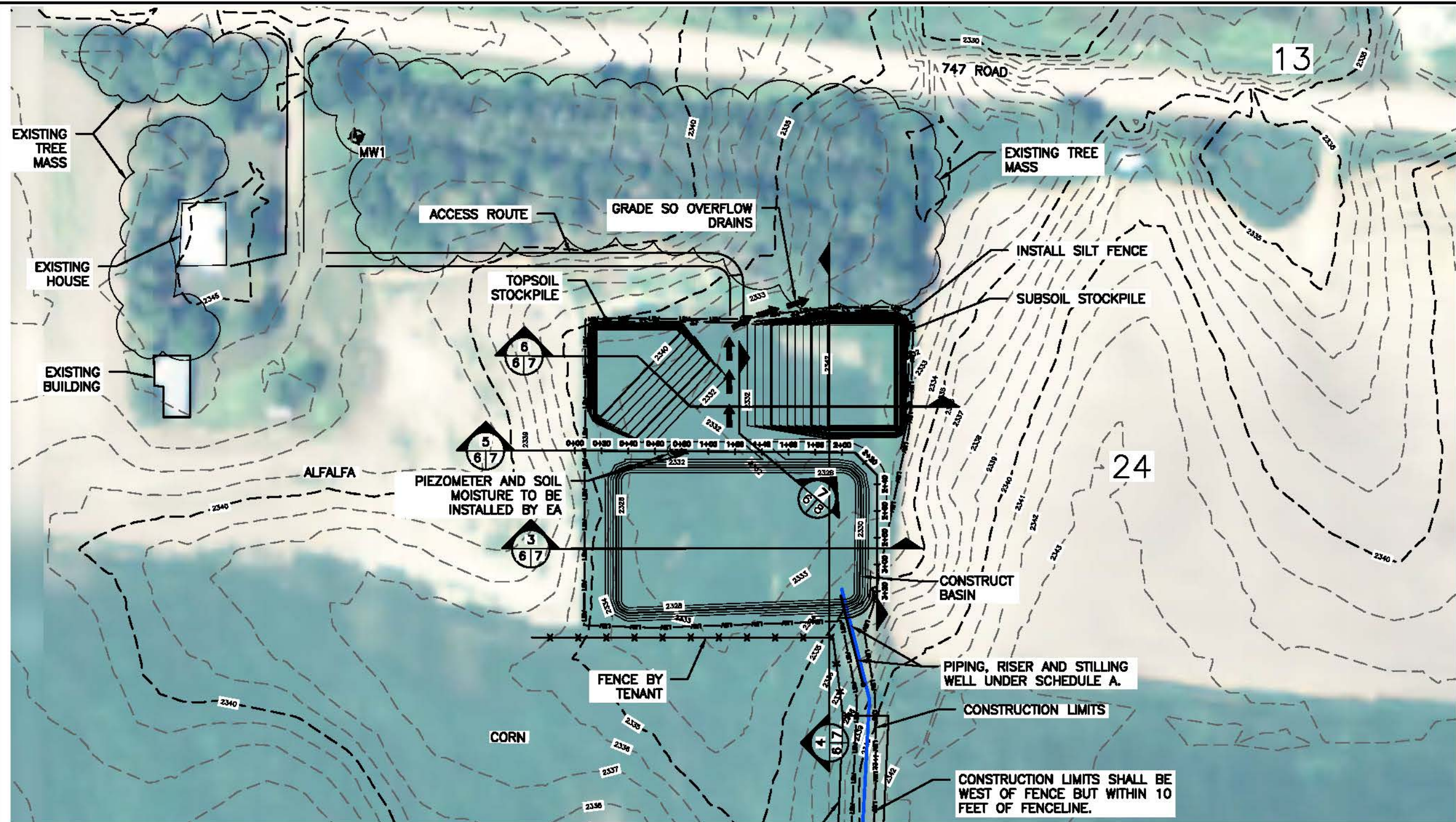


PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

PUMPING DETAILS

PROJECT MGR.	DESIGNED BY	DRAWN BY	CHECKED BY	DATE	SCALE	PROJECT NO.	FILE NAME	DRAWING NO.	FIGURE
DJS	JRB	CNS	DJS	JULY 2011	AS SHOWN	1482201	-	A-3	5

DRAWING NAME: F:\State & Local\Other\Platte River Recovery Program\Projects\1482201 - CW Recharge Study\T5-Pilot Design\figures\90% design\Phelps B.7 site plan-sch B.dwg
DATE:07/13/2011 TIME:13:36 DRAWN BY: cswanson



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REVIEW

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AERIAL SOURCE: 2009 FSA, DAWSON COUNTY
LIDAR SOURCE: HEADWATERS CORPORATION,
PREPARED DATE 2/2/2010

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PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

PLAN VIEW

PROJECT MGR.
DJS

DESIGNED BY
JRB

DRAWN BY
CNS

CHECKED BY
DJS

DATE
JULY 2011

SCALE
AS SHOWN

PROJECT NO.
1482201

FILE NAME
—

DRAWING NO.
B-1

FIGURE
6

PROJECT MGR.	DJS
DESIGNED BY	JRB
DRAWN BY	CNS
CHECKED BY	DJS
DATE	JULY 2011
SCALE	AS SHOWN
PROJECT NO.	1482201
FILE NAME	-
DRAWING NO.	B-2
FIGURE	7

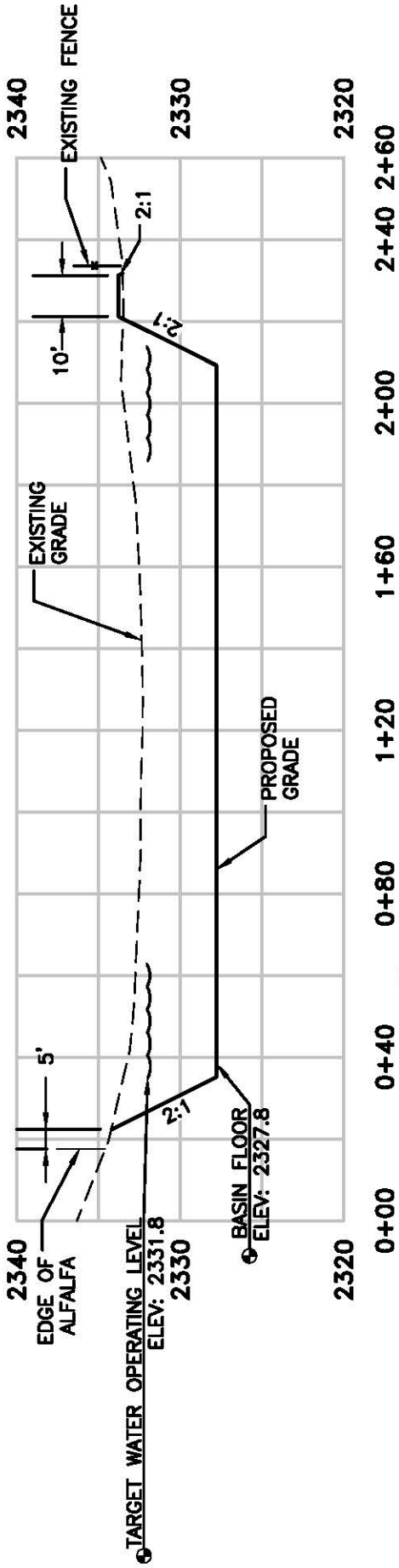


PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

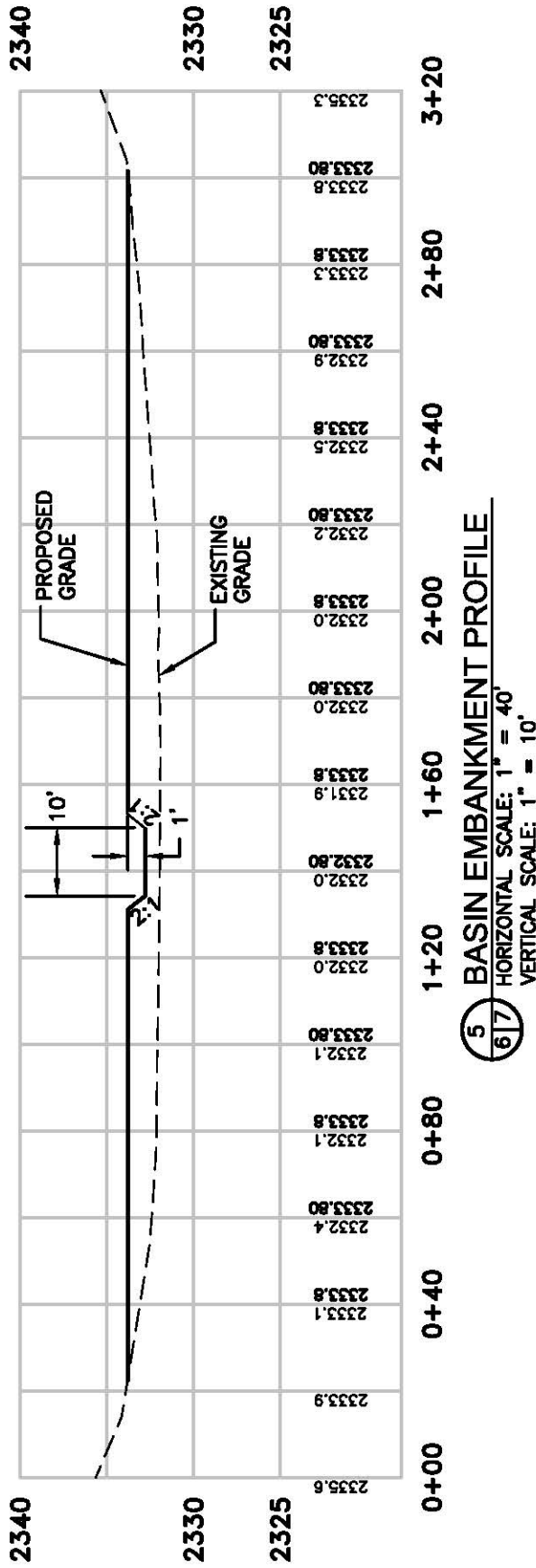
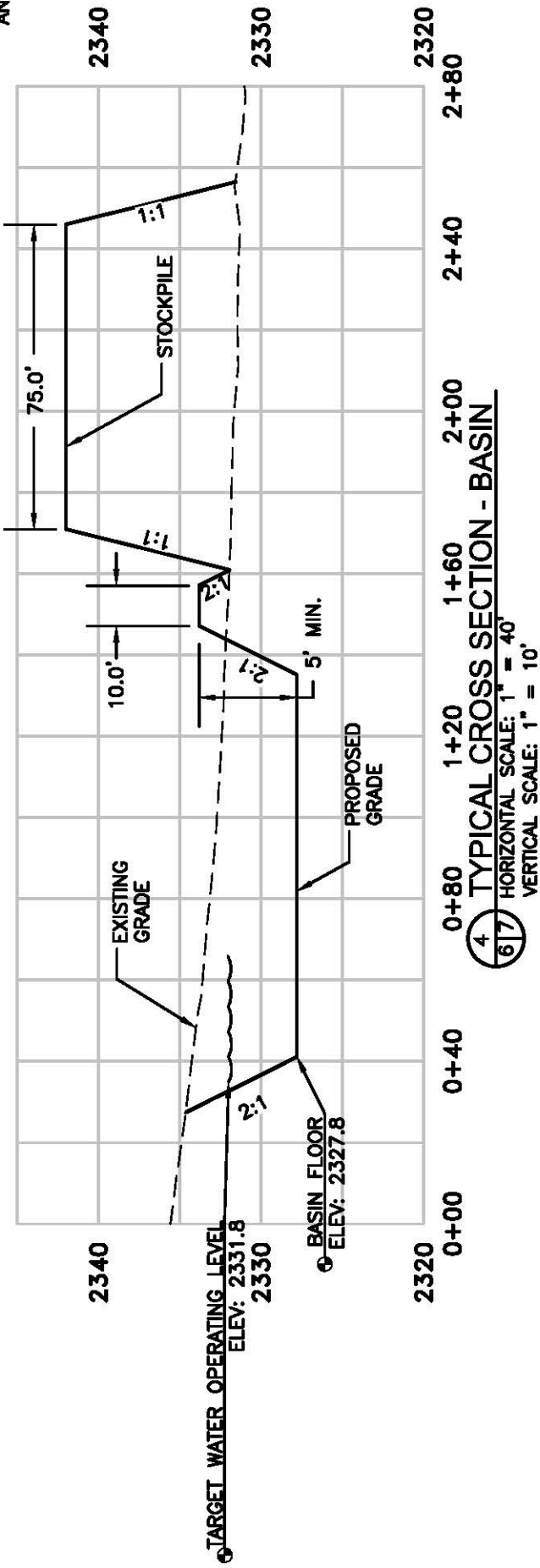
BASIN PROFILE

DRAFT-
FOR CLIENT
REVIEW

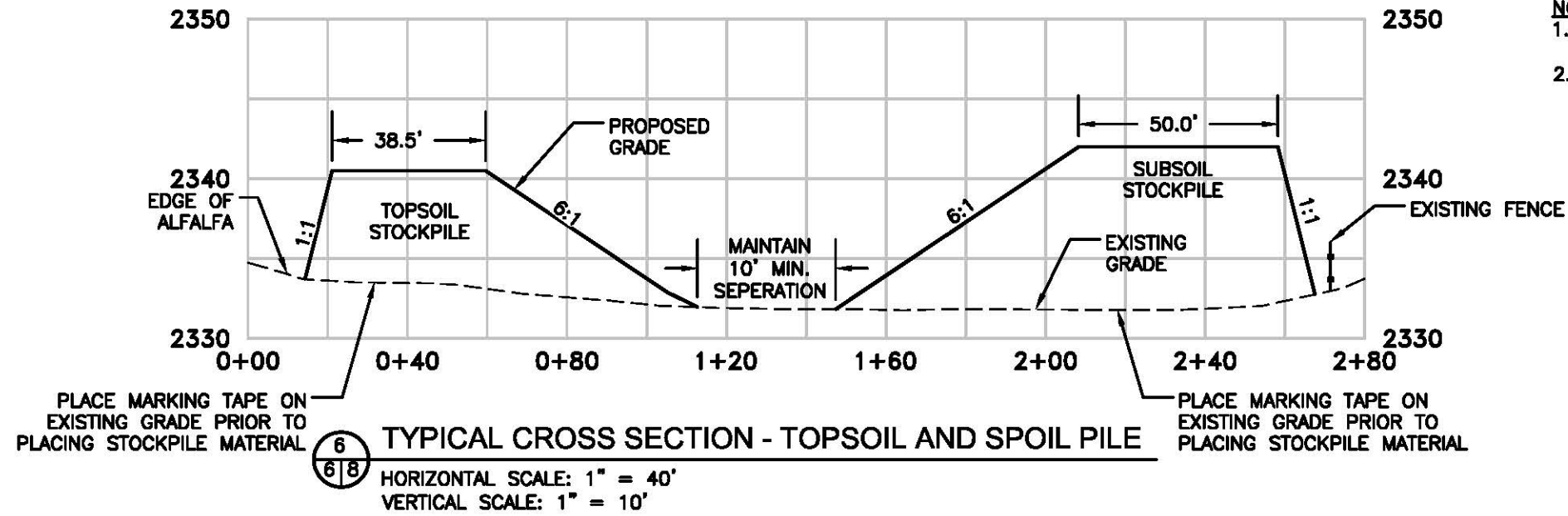
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NOTE:
1. STRIP TOP 1' OF SOIL WITHIN
EXCAVATION AND FILL AREAS OF BASIN
AND STOCKPILE AS TOPSOIL STOCKPILE.



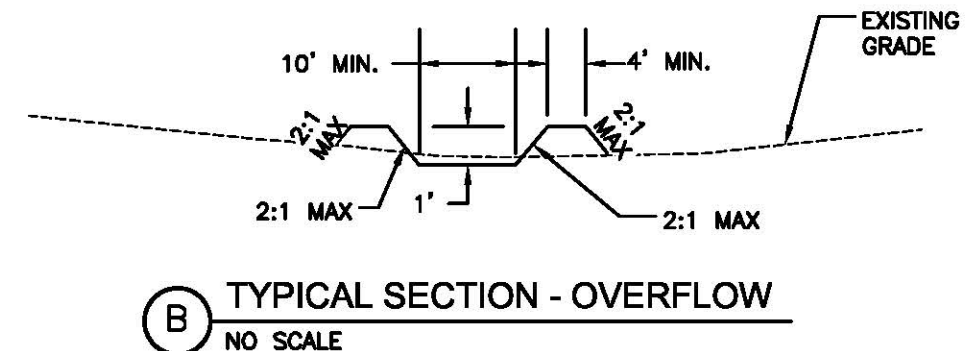
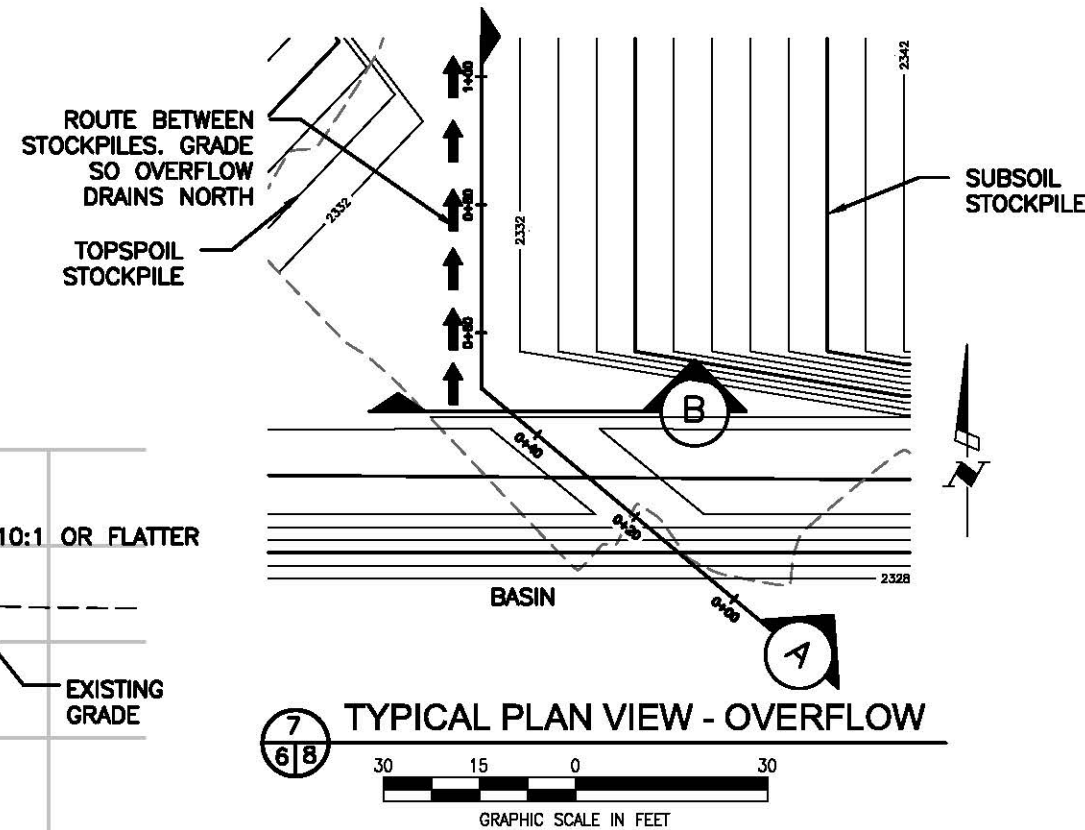
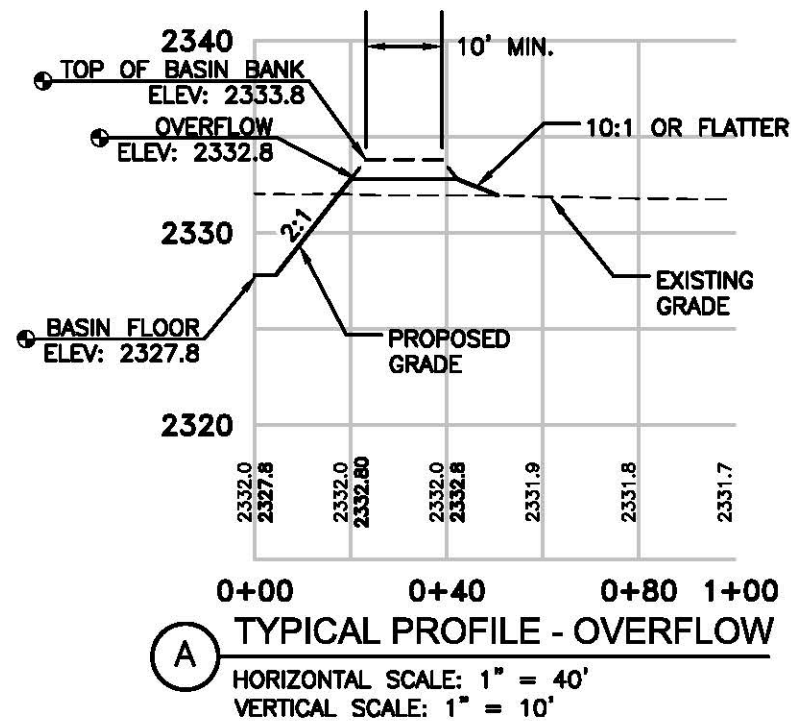
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DATE: 07/07/2011
TIME: 12:02
DRAWN BY: cswanson



- NOTES:**
1. STOCKPILE SIZE ESTIMATED BASED ON FILL FACTOR OF 1:1 (CUT:FILL)
 2. SIZE AND DIMENSIONS ARE SHOWN TO ILLUSTRATE GENERAL SIZE AND SHAPE FOR STOCKPILES. CONTRACTOR SHALL SUBMIT SHOP DRAWING TO EA PRIOR TO CHANGING STOCKPILE GENERAL SIZE AND SHAPE.

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REVIEW**

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**PILOT-SCALE RECHARGE BASIN
NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM**
PHELPS COUNTY, NEBRASKA

STOCKPILE PROFILE & OVERFLOW DETAIL

PROJECT MGR.
DJS

DESIGNED BY
JRB

DRAWN BY
CNS

CHECKED BY
DJS

DATE
JULY 2011

SCALE
AS SHOWN

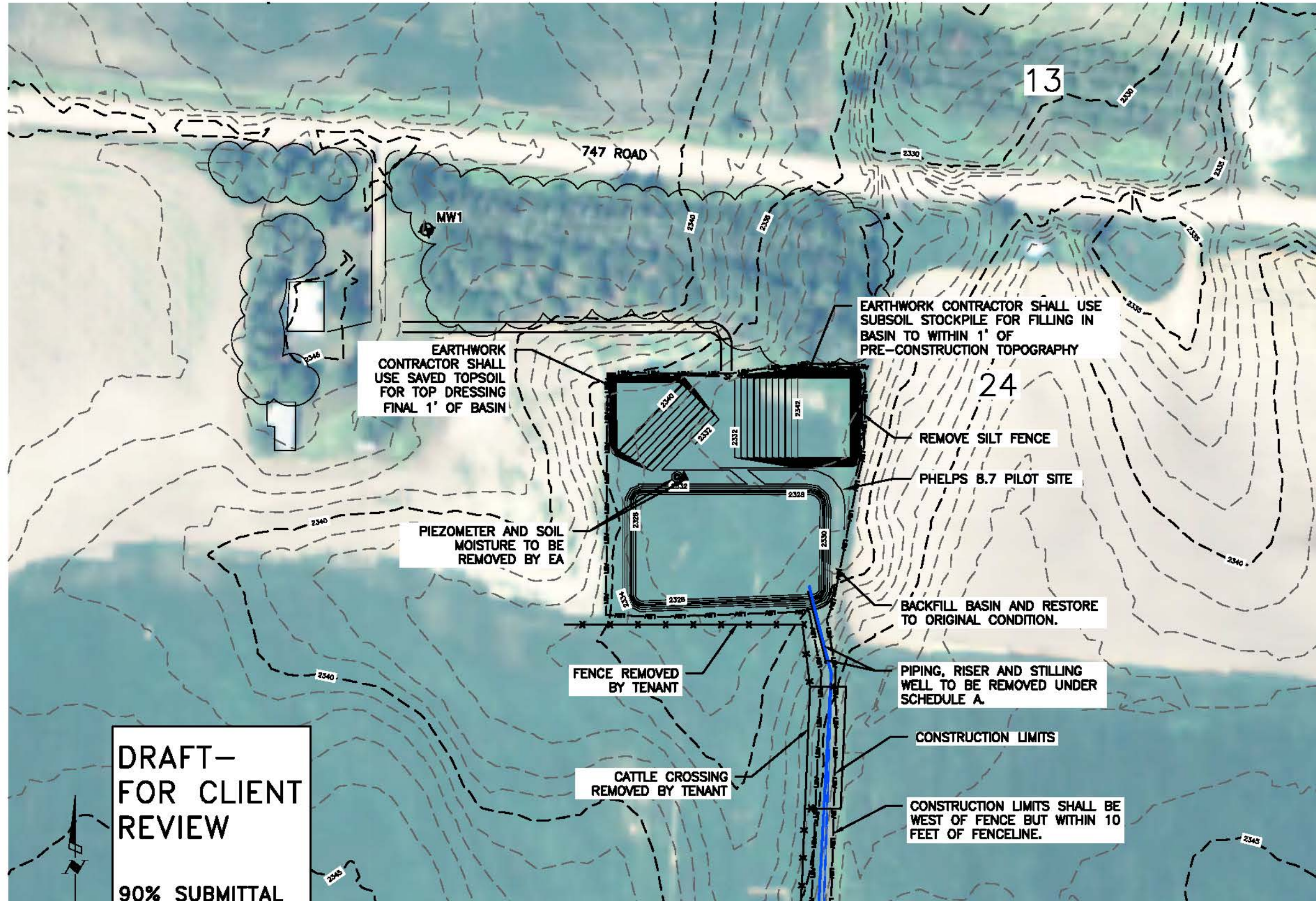
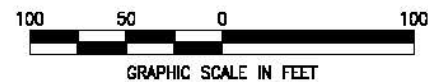
PROJECT NO.
1482201

DRAWING NO.
B-3

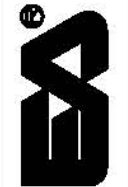
FIGURE

8

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DATE:07/06/2011 TIME:16:17 DRAWN BY: cswanson



AERIAL SOURCE: 2009 FSA, DAWSON COUNTY
LIDAR SOURCE: HEADWATERS CORPORATION,
PREPARED DATE 2/2/2010



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NEBRASKA GROUNDWATER RECHARGE FEASIBILITY STUDY
PLATE RIVER RECOVERY IMPLEMENTATION PROGRAM
PHELPS COUNTY, NEBRASKA

RESTORATION PLAN

PROJECT MGR.
DJS

DESIGNED BY
JRB

DRAWN BY
CNS

CHECKED BY
DJS

DATE
JULY 2011

SCALE
AS SHOWN

PROJECT NO.
1482201

FILE NAME
-

DRAWING NO.
B-4

FIGURE

9

SECTION 01 00 00
GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Project summary.
 - 2. Price and Payment Procedures.
 - 3. Administrative Requirements.
 - 4. Submittals.
 - 5. Quality Requirements.
 - 6. Execution Requirements.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes installation and operation of a water delivery system as shown in Construction Drawings – Schedule A, then restoration of the site to pre-construction conditions following completion of the pilot-scale operation.
- B. Perform Work of Contract under a time and materials with upset limit contract with Owner in accordance with Conditions of Contract.

1.3 WORK BY OTHERS

- A. Separate contracts include:
 - 1. Schedule B – Earthwork: Includes excavation, backfill and restoration of basin as shown in Construction Drawings – Schedule B.
 - 2. Instrumentation by ENGINEER: Includes 1 piezometer, soil moisture boring with sensors, and rain gauge.

1.4 CONTRACTOR'S USE OF PREMISES

- A. Limit use of premises to allow:
 - 1. Work by others.
 - 2. Work sequence to allow completion of work by others.

1.5 APPLICATIONS FOR PAYMENT

- A. In accordance with Letter of Understanding and Water Service Agreement between the Program and CNPPID.

1.6 FIELD ENGINEERING

- A. Owner will employ ENGINEER to provide construction staking.

1.7 SUBMITTAL PROCEDURES

- A. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- B. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of completed Work.
- C. Revise and resubmit submittals as required; identify changes made since previous submittal.

1.8 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed for ENGINEER review.
- B. Submit revised schedules with each Application for Payment.

1.9 SUBMITTALS

Type	Number Submitted	Number Returned
Shop Drawings		

1.10 QUALITY CONTROL

- A. Verify grades and elevations meet construction specifications and final design elevations.
- B. Verify water level in basin is within acceptable range listed on drawings.
- C. Optimize water delivery rate on a daily basis to maintain water level as close as possible to target water operating level.

1.11 ACCESS ROADS

- A. Designated on-site routes may be used for construction traffic that does not disturb the existing vegetation.

1.12 BARRIERS AND FENCING

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.

1.13 POLLUTION AND ENVIRONMENTAL CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

- B. Inspect silt fence in accordance with Storm Water Pollution Prevention Plan and notify ENGINEER if maintenance is required.

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Clean and repair damage caused by installation or use of temporary work.

1.15 CLOSEOUT PROCEDURES

- A. Submit written certification Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for ENGINEER's inspection.
- B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.16 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.

1.17 PROTECTING INSTALLED CONSTRUCTION

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN
Pilot-Scale Recharge Basin Project

PROJECT NAME: Pilot-Scale Recharge Basin Project

NPDES AUTHORIZATION NUMBER:

PERMIT NUMBER: NER110000

PROJECT OWNER: Nebraska Community Foundation, Inc.

ADDRESS: PO Box 83107

CITY: Lincoln

STATE: Nebraska

ZIP: 68501

OWNER'S SITE CONTACT PERSON:

TITLE:

PHONE NUMBER:

FAX NUMBER:

MOBILE PHONE NO:

PAGER:

GENERAL DESCRIPTION OF THE PROJECT:
--

The existing site is a cultivated agricultural cropland. Therefore, endangered and threatened species and critical habitat are not anticipated to be influenced by the proposed construction activities. It is the intent of this project to construct a temporary recharge basin and soil stockpile between 1 September 2011 and restore the site to original conditions by 30 March 2012.

PROJECT LOCATION:

NW1/4 of Section 24, Township 8 North, Range 20 West, Phelps County, Nebraska

PROJECT DESIGN:

CONSULTANT'S NAME: Jason Byler, P.E.

COMPANY: EA Engineering, Science, and Technology

ADDRESS: 221 Sun Valley Blvd., Suite D

CITY: Lincoln

STATE: Nebraska

ZIP: 68528

PHONE NO: 402-476-3766

FAX NO: 402-476-7825

TYPE OF SOIL DISTURBING ACTIVITIES:

- | | |
|--|--|
| <input type="checkbox"/> Clearing and grubbing of existing vegetation
<input checked="" type="checkbox"/> Stripping of topsoil within construction limits
<input checked="" type="checkbox"/> Stockpiling and re-spreading topsoil
<input checked="" type="checkbox"/> Utility trench and backfill
<input type="checkbox"/> Preparing sub grade of streets and sidewalks
<input type="checkbox"/> Backfilling curbs and sidewalks | <input checked="" type="checkbox"/> Construction of sediment / stormwater basins
<input checked="" type="checkbox"/> Disposal areas for excess excavated material
<input type="checkbox"/> Borrow areas for fill materials
<input checked="" type="checkbox"/> Construction of compacted fill areas
<input type="checkbox"/> Excavation of foundations
<input type="checkbox"/> Other |
|--|--|

TOTAL SITE AREA: 1.2 Acres

ESTIMATED AREA DISTURBED BY THIS PROJECT: 1.2 Acres

RUNOFF COEFFICIENT BEFORE DEVELOPMENT: 75

RUNOFF COEFFICIENT AFTER DEVELOPMENT: 75

NAME OF RECEIVING STREAM: Platte River

DISTANCE FROM PROJECT OUTFALL TO RECEIVING WATER: 3.3 miles

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project PROJECT PLANNING AND DESIGN (cont.)

SEDIMENT & EROSION CONTROLS TO BE USED:

(To be used with the Erosion Control Plan drawing)

TEMPORARY CONTROLS:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Silt Fence | <input type="checkbox"/> Straw / Hay Bale Dike |
| <input type="checkbox"/> Silt Containment Berm | <input type="checkbox"/> Sedimentation Basin |
| <input type="checkbox"/> Diversion Berm or Swale | <input type="checkbox"/> Temporary Gravel Entrance |
| <input type="checkbox"/> Vegetative Buffers | <input type="checkbox"/> Other |

TEMPORARY STABILIZATION

- | | |
|--|-----------------------------------|
| <input type="checkbox"/> Temporary seeding | <input type="checkbox"/> Mulching |
| <input type="checkbox"/> Other | |

PERMANENT CONTROLS

- | | |
|--|--|
| <input type="checkbox"/> Diversion Berm | <input type="checkbox"/> Diversion Swale |
| <input type="checkbox"/> Rip-Rap or Paved Chute | <input type="checkbox"/> Rip-Rap Outlet Protection |
| <input type="checkbox"/> Rip-Rap Channel Lining | <input type="checkbox"/> Reinforced Sod Channel Lining |
| <input type="checkbox"/> Sod Channel Lining | <input type="checkbox"/> Concrete Trickle Channel |
| <input type="checkbox"/> Concrete channel Lining | <input type="checkbox"/> Vegetative Buffers |
| <input checked="" type="checkbox"/> Other | <input type="checkbox"/> Detention Basin |

PERMANENT STABILIZATION

- | | |
|---|--|
| <input type="checkbox"/> Seeding | <input type="checkbox"/> Pavement or Other Permanent Surface |
| <input type="checkbox"/> Hydro mulch | <input type="checkbox"/> Straw Mulch |
| <input checked="" type="checkbox"/> Other | |

GENERAL DESCRIPTION OF STORMWATER MANAGEMENT PLAN:

All soil disturbing activities performed by the contractor will be accomplished in such a manner as to prevent the loss of sediment from the construction site during rainfall events. To accomplish the contractor will install silt fences downgradient of disturbed areas to minimize the risk of silt, mud, or debris from leaving the construction site. Good housekeeping measures and diligent inspections and maintenance actions will be performed to ensure Best Management Practices and structural controls are effective.

Site will be restored to original conditions following completion of the pilot project.

GENERAL SEQUENCE OF CONSTRUCTION:

1. Post permit sign
2. Install Silt Fence
3. General excavation and backfill
4. Install pipe and pump
5. Operate Pilot
6. Restore site to original conditions

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

CONSTRUCTION PHASE

(To be completed by General Contractor and/or Owner)

GENERAL CONTRACTOR'S NAME:

ADDRESS:

CITY:

STATE:

ZIP:

PHONE NUMBER:

FAX NUMBER:

MOBILE PHONE NO:

PAGER:

CONTRACTOR'S SEDIMENT CONTROL CONTACT:

PHONE NUMBER:

FAX NUMBER:

MOBILE PHONE NO:

PAGER:

SUBCONTRACTORS: Check all land disturbance items for which subcontractors are to be used and attach a list of sub contractors.

- ☐ Grading
- ☐ Storm Sewers
- ☐ Paving
- ☐ Concrete Flat Work
- ☐ Sanitary Sewers
- ☐ Concrete Drainage Structures
- ☐ Curb & Gutter
- ☐ Sediment Controls
- ☐ Seeding & Mulching
- ☐ Water
- ☐ Electric
- ☐ Gas
- ☐ Blasting
- ☐ Other: _____

SEQUENCE OF CONSTRUCTION:

The General Contractor should complete the following sequence of construction for land disturbance activities.

ITEM:

SUBCONTRACTOR

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

GENERAL SEDIMENT CONTROL PRACTICES

1. EROSION AND SILTATION CONTROL SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION WORK AND BE MAINTAINED THROUGHOUT THE PROJECT UNTIL ACCEPTANCE OF THE WORK BY THE OWNER AND/OR CONTROLLING REGULATORY AGENCY AND ADEQUATE ROCKING OR VEGETATIVE GROWTH INSURES NO FURTHER EROSION OF THE SOIL.
2. ADDITIONAL SILTATION CONTROL MAY BE REQUIRED AS DEEMED NECESSARY BY FEDERAL, STATE OR LOCAL AUTHORITIES.
3. NO SLOPES SHALL BE GRADED STEEPER THAN 3:1 (HORIZONTAL: VERTICAL). UNLESS OTHERWISE NOTED.
4. SILTATION FENCES SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND FOR THE AMOUNT OF SEDIMENT WHICH HAS ACCUMULATED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/3 THE HEIGHT OF THE SILTATION FENCE.
5. STRAW BALES SHALL BE INSPECTED PERIODICALLY FOR DETERIORATION. BALES WHICH HAVE ROTTED OR FAILED SHALL BE REPLACED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 THE HEIGHT OF THE BALES.
6. IF CUT AND FILL OPERATIONS OCCUR DURING A SEASON NOT FAVORABLE FOR IMMEDIATE ESTABLISHMENT OF PERMANENT GROUND COVER, A FAST GERMINATING ANNUAL SUCH AS RYE GRASS OR SUDAN GRASSES SHALL BE UTILIZED TO RETARD EROSION, IF ADEQUATE STORMWATER DETENTION AND EROSION CONTROL DEVICES HAVE NOT BEEN ESTABLISHED.
7. PRACTICES ARE SHOWN ON THE PROJECT STORM WATER POLLUTION PREVENTION PLAN SHEET (NPDES 1 AND 2).

MAINTENANCE / INSPECTION PROCEDURES

The following maintenance and inspection practices will be required by the General Contractor to maintain sediment and erosion controls:

1. STRAW BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
2. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES.
3. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY.
4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. THEY MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE STRAW BALE BARRIER IS NO LONGER REQUIRED SHALL BE ADDRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
6. ALL EXPOSED SLOPES WHETHER TEMPORARY OR PERMANENT SHALL BE SEEDED PER SPECIFICATIONS IMMEDIATELY UPON COMPLETION.
7. ALL FLOW LINES OF DIVERSION DITCHES AND SWALES SHALL BE PROTECTED AS NEEDED.
8. THE CONTRACTOR WILL INSPECT ALL SPECIFIED AREAS AT LEAST ONCE EVERY 14 CALENDAR DAYS AND AFTER EACH RAINFALL EVENT OF 0.5 INCHES OR GREATER TO INSURE THAT THE INTEGRITY OF EACH PRACTICE IS INTACT. ANY DAMAGE NOTED WILL BE PROMPTLY REPAIRED TO ORIGINAL SPECIFICATIONS.
9. THE CONTRACTOR SHALL MAINTAIN A LOG BOOK OF INSPECTIONS, REPAIRS, OR REPLACEMENT OF SILTATION CONTROL BARRIERS. THE LOG SHALL BE DATED AND SIGNED AFTER EACH ENTRY AND THEN TURNED OVER TO THE NPPC PROJECT ENGINEER AT THE COMPLETION OF THE PROJECT.
10. ANY ADDITIONAL REQUIREMENTS LISTED IN THE GENERAL PERMIT.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

- Concrete
- Detergents
- Paints (enamel and latex)
- Tar
- Fertilizers
- Gravel and stone bedding material
- Concrete forming materials
- Wood
- Petroleum based products
- Masonry Products
- Cleaning Solvents
- Powdered Cement

SPILL PREVENTION / MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

GOOD HOUSEKEEPING

- * An effort will be made to store only enough product required to do the job.
- * All materials stored on site will be stored in a neat, orderly manner in their appropriate containers and under cover.
- * Products will be kept in their original containers with the original manufacturer's label.
- * Whenever possible, all of a product will be used up before disposing of the container.
- * The manufactures recommendations for proper use and disposal will be followed.
- * All vehicles kept on site will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage.
- * Petroleum products will be stored in tightly sealed containers that are clearly labeled.
- * The General Contractor is responsible for keeping mud cleaned from the adjoining street and parking area. Mud will be cleaned up on a daily basis if needed.
- * No fueling, servicing, maintenance, or repair of equipment or machinery may be done within fifty (50) feet of a defined drainage course.
- * The General Contractor will provide trash containers and regularly clean up solid waste such as scrap building or product material, material shipping waste, food containers, and cups.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

GOOD HOUSEKEEPING

(Continued)

- * The General Contractor will use designated toilets or provide portable toilets for proper disposal of sanitary sewerage.
- * Construction materials will be stored away from drainage courses or low lying areas.

HAZARDOUS PRODUCTS

- * All petroleum and hazardous materials stored on site will be stored in a neat, orderly manner in their appropriate containers and under cover. At anytime the contractor will not store more than 500 gallons of petroleum on site.
- * Drip pans or containment areas will be provided at petroleum and liquid storage tanks and containers.
- * Products will be kept in their original containers UNLESS they are not resealable.
- * The original manufacturer's labels and material safety sheets will be retained; they contain important product information.
- * Whenever possible, all of a product will be used up before disposing of the container. If surplus product must be disposed of, the manufactures' or local and State recommendations for proper use and disposal will be followed.

SPILL CONTROL PRACTICES

The following practices will be followed for spill prevention and cleanup:

- * The manufactures' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information & cleanup supplies.
- * Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite.
- * Spills will be cleaned up **immediately** after discovery.
- * Spills of fuels, paints, or hazardous materials will be immediately reported to the Owner. The Contractor will report spills to government agencies as necessary in accordance with all federal, state, and local regulations.
- * The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if another one occurs. A description of the spill, what caused it, and the cleanup measures will also be included.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

OWNER'S CERTIFICATION

I hereby certify, that I am or acting as the authorized agent of the owner of the property described in this plan, and that I assume full responsibility for the performance of the operation stated on this plan.

OWNER Nebraska Community Foundation, Inc.

By: _____ Title: **Owner**

Date: _____

GENERAL CONTRATOR'S CERTIFICATION

I hereby certify that I understand the requirement s stated in this plan, that I am responsible for completing the requirements set forth in the plan and that I am responsible for the performance of the subcontractors listed in the plan.

GENERAL CONTRACTOR

By: _____ Title: _____

Date: _____

SUBCONTRACTOR'S CERTIFICATION

I hereby certify that I understand the requirement s stated in this plan, that I am responsible for completing the requirements, which have been listed in the plan as being a part of my scope of work.

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

SUBCONTRACTOR _____

By: _____ Title: _____

Date: _____

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pilot-Scale Recharge Basin Project

INSPECTION & MAINTENANCE REPORT

(To be filled out weekly or after each rainfall event)

PROJECT NAME: Pilot Scale Recharge Basin Project

PROJECT OWNER: Nebraska Community Foundation, Inc.

ADDRESS: PO Box 83107

CITY: Lincoln

STATE: NE

ZIP: 685001

INSPECTOR: _____

Date: _____

INSPECTOR'S COMMENTS:

DAYS SINCE LAST RAINFALL _____

AMOUNT OF LAST RAINFALL _____ **IN.**

INSPECTION ITEM	Yes or No	COMMENTS
Are the siltation control fences in good working order?		
Are the siltation control fence support stakes secure?		
Is there evidence of leaking under the fabric?		
Is there evidence of overtopping any siltation control fences?		
Is there evidence of siltation near culvert that crosses county roads?		
Is there evidence of siltation near on-site culvert inlets?		
Is there evidence of siltation into trenches?		

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN
Pilot-Scale Recharge Basin Project

Is there evidence of siltation into Detention Pond?		
Is mud being tracked onto the drop lot or access roads?		
Is there evidence of soil erosion within the project area?		
Were any spills reported? <i>(If yes explain)</i>		

MAINTENANCE REQUIRED:

TO BE PERFORMED BY: _____ on or BEFORE: _____

CHANGES REQUIRED TO THE SWPP:

REASON FOR CHANGE:

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature: _____

Date: _____

Note: Inspection forms are to be retained by CNPPID on-site for the duration of the project. Copies of inspection reports are to be submitted to the ENGINEER within 14 days of the inspection.

APPENDIX D

ENGINEER'S ESTIMATE OF COST – CNPPID AND EARTHWORK CONTRACTORS

Pilot-Scale Recharge Project
Nebraska Groundwater Recharge Feasibility Study
90% Design - Engineer's Estimate of Cost
Water Delivery System - CNPPID

Bid Item	COMPONENT DESCRIPTION	UNIT	ESTIMATED IN-PLACE		UNIT PRICE	SUBTOTAL	TOTAL	Recommended Bidding Unit	Comment
			QUANTITY	IN-PLACE					
1	Mobilization/Demobilization								
	Backhoe	LS	2		\$780.00	\$1,560.00	\$1,843.20	LS	1 Backhoe, 25 miles one way
	Orange Construction Fence	SF	240		\$1.18	\$283.20			
2	Canal Water Supply Piping & Stilling Well						\$14,593.76	LS	Engineer Estimate Engineer Estimate 2 technicians for 1 week
	Procurement of Supplies	hr	16		\$50.00	\$800.00			
	Installation - Supervisor	hr	10		\$75.00	\$750.00			
	Installation - Technicians	hr	80		\$50.00	\$4,000.00			
	Backhoe	day	1		\$247.50	\$247.50			
	4" PVC Above Ground Piping	LF	2900		\$1.05	\$3,043.26			Excludes any salvage cost savings
	Control Valve	ea	1		\$825.00	\$825.00			spears schedule 40 globe valve
	Data Logger for Flow Meter	ea	1		\$2,002.00	\$2,002.00			
	Isolation Valves	ea	2		\$693.00	\$1,386.00			spears schedule 40 ball valve
	Restraints	LS	1		\$550.00	\$550.00			
	Fittings	ea	10		\$16.50	\$165.00			
	Shipping	LS	1		\$550.00	\$550.00			
	Stilling Well	LS	1		\$275.00	\$275.00			
3	Canal Water Supply Pump & Electrical						\$3,400.00	LS	Rental for 2 pumps Install and Remove
	Pump	LS	2		\$700.00	\$1,400.00			
	Electrical	LS	2		\$1,000.00	\$2,000.00			
4	Water Delivery System Operation						\$16,187.29	LS	1 hr/day for up to 5 months 2 technicians, 8 hrs/month for up to 5 months 2 hrs/month for up to 5 months Engineer Estimate 2 hp, 1 pump continuous for up to 5 months assumes 1/2 IRS rate due to dual purpose trip from Holdrege
	Main Technician	hr	150		\$50.00	\$7,500.00			
	Maintenance/Repair	hr	80		\$50.00	\$4,000.00			
	Supervisor	hr	10		\$75.00	\$750.00			
	Miscellaneous Supplies	LS	1		\$500.00	\$500.00			
	Electrical Usage	Kw hr	5,371		\$0.087	\$467.29			
	Vehicle Usage	miles	10,800		\$0.28	\$2,970.00			
5	Water Delivery System Restoration						\$2,797.50	LS	2 technicians for 3 days
	Restoration - Supervisor	hr	2		\$75.00	\$150.00			
	Restoration - Technician	hr	48		\$50.00	\$2,400.00			
	Backhoe	day	1		\$247.50	\$247.50			
	Contingency	%	20				\$7,764.35		
	Total						\$46,586.11		

LS = Lump Sum, SF = Square Foot, hr = hour, LF = Linear Feet, ea = Each

Pilot-Scale Recharge Project
Nebraska Groundwater Recharge Feasibility Study
90% Design - Engineer's Estimate of Cost
EARTHWORK CONTRACTOR

Bid Item	COMPONENT DESCRIPTION	ESTIMATED			UNIT PRICE	SUBTOTAL	TOTAL	Recommended Bidding Unit	Comment
		UNIT	IN-PLACE QUANTITY						
1	Mobilization/Demobilization Equipment Mobilization/Demobilization Silt Fence	EA LF	2 550		\$858.00 \$0.95	\$1,716.00 \$522.50	\$2,238.50	LS	1 Dozer 30 miles 1 way
2	Recharge Basin Excavation Topsoil Excavation & Stockpile Subsoil Excavation & Stockpile	BCY BCY	1100 2700		\$3.19 \$3.19	\$3,509.00 \$8,613.00	\$12,122.00	BCY	200 HP Dozer, 150 ft haul average, sand and loam 200 HP Dozer, 150 ft haul average, sand and loam
3	Restoration Topsoil Excavation & Stockpile Subsoil Excavation & Stockpile Finish Grading	BCY BCY SY	1100 2700 4840		\$2.16 \$2.16 \$0.17	\$2,371.60 \$5,821.20 \$822.80	\$9,015.60	BCY	200 HP Dozer, 150 ft haul average, sand and loam 200 HP Dozer, 150 ft haul average, sand and loam Approximately 1 acre
	Contingency	%	5				\$1,168.81		
	Total						\$24,544.91		

BCY = Bank Cubic Yards, SY = Square Yards, LF = Linear Feet, EA = Each

APPENDIX E

EA SOP No. 10 – Water Level and Well Depth Measurements



Standard Operating Procedure No. 010 for Water Level and Well Depth Measurements

Prepared by

EA Engineering, Science, and Technology, Inc.
11019 McCormick Road
Hunt Valley, Maryland 21031

Revision 0
August 2007

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1. SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to delineate protocols for measuring water level and well depth. This procedure is applicable to the sampling of monitoring wells and must be performed prior to any activities which may disturb the water level, such as purging or aquifer testing.

2. MATERIALS

The following materials may be required:

Electric water level indicator (dipmeter) with cable measured at 0.01-ft increments OR weighted steel tape and chalk OR transducer and datalogger
Oil/water interface probe
Plastic sheeting
Photoionization detector or intrinsically safe flame ionization detector

3. PROCEDURE

3.1 PRELIMINARY STEPS

Locate the well and verify its position on the site map. Record whether positive identification was obtained, including the well number and any identifying marks or codes contained on the well casing or protective casing. Gain access to the top of the well casing.

Locate the permanent reference mark at the top of the casing. This reference point will be scribed, notched, or otherwise noted on the top of the casing. If no such marks are present, measure to the top of the highest point of the well casing and so note this fact in the field logbook. Determine from the records and record in the notebook the elevation of this point.

Record any observations and remarks regarding the completion characteristics and well condition, such as evidence of cracked casing or surface seals, security of the well (locked cap), and evidence of tampering.

Keep all equipment and supplies protected from gross contamination; use clean plastic sheeting. Keep the water level indicator probe in its protective case when not in use.

3.2 OPERATION

Sample the air in the well head for gross organic vapors by lifting the well cap only high enough for an organic vapor meter (photoionization detector or flame ionization detector) probe to be entered into the well casing. This will indicate the presence of gross volatile contaminants as well as indicating potential sampler exposure.

Remove cap. Allow well to vent for 60-90 seconds. Resample headspace. Record both readings. If the second reading is lower than the first, use the second reading to determine whether respiratory protection will be required during subsequent water level and well depth determinations, and sampling.

Note that all headspace sampling must be performed at arm's length and from the upwind side of the well if possible.

Refer to SOP Nos. 011, 023, or 024 as appropriate.

If non-aqueous phase liquid (NAPL) contamination is suspected¹, use an interface probe to determine the existence and thickness of NAPLs.

Open the probe housing, turn the probe on, and test the alarm. Slowly lower the probe into the well until the alarm sounds. A continuous alarm indicates a NAPL while an intermittent alarm indicates water. If a NAPL is detected, record the initial level (first alarm). Mark the spot by grasping the cable with the thumb and forefingers at the top of the casing. If a mark is present on the casing, use the mark as the reference point. If no mark is present, use the highest point on the casing as the reference point. Withdraw the cable sufficiently to record the depth.

Continue to slowly lower the probe until it passes into the water phase. Slowly retract the probe until the NAPL alarm sounds and record that level in the manner as described above.

Record the thickness of the light NAPL² (Section 3.3).

Continue to slowly lower the interface probe through the water column to check for the presence of dense NAPL.

Measure and record the thickness of the dense NAPL layer (if any) as described above.

Slowly raise the interface probe, recording the depth to each interface as the probe is withdrawn. If there is a discrepancy in depths, clean the probe sensors and re-check the depths.

NOTE: Air/liquid interface depth is more reliable if probe is lowered into liquid. NAPL/water depths are more accurate if probe is moved from water into NAPL.

Always lower and raise interface probe slowly to prevent undue mixing of media.

-
1. Interface probes will be used in all wells for first round sampling, regardless of site history. If no NAPLs are detected during the first round of sampling, this step may be omitted during subsequent sampling events **unless** conditions such as site history or headspace vapors would indicate otherwise.
 2. If NAPL is viscous, such as coal tar or weather bunker oil, several confirmation measurements should be made after decontamination of the probe to verify that the NAPL is not sticking to the probe and causing erroneous readings. One way to accomplish this would be to partially fill a 5-gal bucket with water and dip the probe to ensure that decontamination has effectively removed the NAPL.

Always perform NAPL check in wells installed in areas with suspected NAPL contamination. Always perform NAPL check if headspace test reveals presence of volatiles. Always perform NAPL check the first time a well is sampled. **If** a well has been sampled previously **and** no NAPLs were present **and** none of the preceding conditions are met, the NAPL check may be omitted.

If no NAPL is present, use an electronic water level detector as follows:

- Remove the water level indicator probe from the case, turn on the sounder, and test check the battery and sensitivity scale by pushing the red button. Adjust the sensitivity scale until you can hear the buzzer.
- Slowly lower the probe and cable into the well, allowing the cable reel to unwind. Continue lowering until the meter buzzes. Very slowly, raise and lower the probe until the point is reached where the meter **just** buzzes. Marking the spot by grasping the cable with the thumb and forefingers at the top of the casing. If a mark is present on the casing, use the mark as the reference point. If no mark is present, use the highest point on the casing as the reference point. Withdraw the cable and record the depth.

Alternatively use a steel tape with an attached weight if aquifer gradients are lower than 0.05 ft/ft. Due to the possibility of adding unknown contaminants from chalk colorants, only white chalk is permitted.

Rub chalk onto the first 1 ft of the steel tape and slowly lower the chalked end into the well until the weighted end is below the water surface. (A small splash can be heard when the weighted end hits the water surface.)

Using the method described above read and record the length from the steel tape.

Remove the steel tape. The chalk will be wet or absent where the tape was below the water surface. Locate, read, and record this length. Subtract wetted length from total length and record the difference. This is the depth to water table.

Transducers and dataloggers will be used where water level fluctuations over time are to be measured, such as tidal fluctuation studies (SOP No. 045) and aquifer (hydraulic) tests (SOP No. 033). Note that transducers are inappropriate for measuring well depth.

Slowly lower the transducer into the well until it is below the lowest possible piezometric level (typically 2-3 ft below the water table).

Tape the umbilical to the protective casing to prevent the transducer from falling further.

Attach the umbilical leads to the datalogger.

Turn datalogger on.

To measure the well depth, lower electric water level indicator probe or tape until slack is noted. Very slowly raise and lower the cable until the exact bottom of the well is “felt.” Measure (cable) or read the length (tape) and record the depth.

Note that if the electric water level indicator is used to determine depth of well, the offset distance between the tip of the probe and the electrode must be added to the reading to determine actual depth.

Withdraw the probe or tape. Decontaminate the probe(s) and cable(s).

3.3 DATA RECORDING AND MANIPULATION

Record the following computations:

- Date and time
- Weather
- Method of measurement
- Casing elevation
- NAPL surface elevation = casing elevation – depth to NAPL
- NAPL thickness = depth to bottom of NAPL – depth to top of NAPL
- Water level elevation = casing elevation – depth to water
- Well bottom elevation = casing elevation – depth to bottom (or read directly from tape).

Refer to SOP Nos. 005 and 016.

4. CALIBRATION

No calibration is needed.

5. PRECAUTIONS

Depending upon the device used, correction factors may be required for some measurements. Check instrument batteries prior to each use. Exercise care not to break the seals at the top of the electric water level indicator probe.

6. REFERENCES

- McAlary, T.A. and J.F. Barker. 1987. Volatilization Losses of Organics during Groundwater Sampling from Low Permeability Materials in Groundwater Monitoring Review. Fall.
- Thornhill, J.T. 1989. Accuracy of Depth to Groundwater Measurements in U.S. Environmental Protection Agency Superfund Groundwater Issue EPA/540/4-89/002.

APPENDIX F

EA SOP No. 19 - Monitoring Well Installation



Standard Operating Procedure No. 019 for Monitoring Well Installation

Prepared by

EA Engineering, Science, and Technology, Inc.
11019 McCormick Road
Hunt Valley, Maryland 21031

Revision 0
August 2007

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APPENDIX A: FIELD RECORD OF WELL DEVELOPMENT FORM	

1. SCOPE AND APPLICATION

The installation of monitoring wells is contingent upon the existing conditions at the project site. The purpose of this Standard Operating Procedure is to delineate the quality control measures required to ensure the accurate installation of monitoring wells. The applicable Work Plan should be consulted for specific installation instructions. The term “monitoring wells,” as used herein, is defined to denote any environmental sampling well. An example well log form is provided in Appendix A. Alternate, equivalent forms are acceptable.

2. MATERIALS

2.1 DRILLING EQUIPMENT

The following drilling equipment may be required:

- Appropriately sized drill adequately equipped with augers, bits, drill stem, etc.
- Steam cleaner and water obtained from approved source for decontaminating drilling equipment.
- Photoionization Detector: Microtip HL-200 (or equivalent)
- Water level indicator
- Weighted steel tape measure
- Lower explosive limit – oxygen monitor
- Steel drums for intrusion derived wastes (drill cuttings, contaminated personal protective equipment, decontamination solutions, etc.)
- Source of approved water
- Heavy plastic sheeting
- Sorbent pads and/or log.

2.2 WELL INSTALLATION MATERIALS¹

The following well installation materials may be required:

- Well screen:²
 - Polyvinyl chloride (PVC): JOHNSON (or equivalent); PVC 0.010 slot; Schedule 40; flush-threaded (leak-proof) joints; PVC complies with American Society for Testing and Materials (ASTM) D2665, ASTM D1784, and ASTM F480; free of ink markings; cleaned and prepackaged by manufacturer.
 - Stainless steel: JOHNSON (or equivalent); stainless steel 0.010 slot; 304 stainless steel³; ASTM F480 flush threads; cleaned, wrapped, and heat sealed by manufacturer.
- Riser pipe:
 - PVC: JOHNSON (or equivalent); STD; PVC; Schedule 40; flush-threaded (leak-proof) joints; PVC complies with ASTM D2665, ASTM D1784, and ASTM F480; free of ink markings; cleaned and prepackaged by manufacturer.
 - Stainless steel: JOHNSON (or equivalent); Schedule 5; 304 stainless steel; ASTM Type A312 material; 4-in. diameter; cleaned, wrapped, and heat sealed by manufacturer.
- Plugs/caps: JOHNSON (or equivalent); standard PVC or stainless steel.
- Filter pack: MORIE, 100 well gravel (or equivalent). NOTE: Final gradation may vary as a function of the gradation of the formation.²
- Fine Ottawa sand.
- Bentonite seal: BAROID, bentonite pellets (3/8-in. diameter)
- Cement: Type II Portland Cement (table below).

-
1. Technical information on all installed materials (screens, riser pipe, filter pack, bentonite, cement, etc.) and representative samples of the proposed filter pack, bentonite powder, and bentonite pellets will be supplied to the Project Manager.
 2. Well screen slot size and filter pack gradation will be determined from sieve analysis of aquifer materials. Screen and casing material type will be determined based on field tests of groundwater chemistry and contaminants.
 3. Unless the sum of Cl⁻, F⁻, and Br⁻ is >1,000 ppm, in which case Type 316 should be used.

Cement Type	Special Characteristics	Recommended Usage
I	No special properties	General use as grout mix or cement plug (if sulfates <250 ppm), surface pad.
IA	Air-entraining Type I (Note that air entrainment properties can be achieved by chemical admixtures)	Air entrainment gives cement greater freeze-thaw resistance. Recommended for surface pads.
II	Moderate sulfate resistance, low heat of hydration	General use as grout mix or cement plug where groundwater sulfate >250 ppm and <1,500 ppm, surface pad.
IIA	Air-entraining Type II	See Type IA.
III	High early strength, high heat of hydration	Elevated temperature can damage well casing and fracture grout/cement plugs. NOT RECOMMENDED.
IIIA	Air-entraining Type III	NOT RECOMMENDED.
IV	Low heat of hydration	General use as grout mix or cement plug preferred type for well abandonment to ensure intact grout/cement plug.
V	High Sulfate resistance	Use when groundwater sulfate levels >1,500 ppm.

- Bentonite powder: BAROID, Aquagel Gold Seal.
- Steel protective casing: BRAINARD-KILMAN (or equivalent) zinc-plated steel, lockable, painted.⁴
- Geotextile: MIRAFI (or equivalent); GTF 130; non-woven; 4 oz.
- Coarse (blanket) gravel: Crushed stone aggregate.
- Containers for purged water, as required.
- Submersible pump or bailer of appropriate capacity, and surge block sized to fit well.
- Hach DREL 2000 portable laboratory (or equivalent).
- Conductivity, pH, oxidation-reduction potential (ORP), turbidity, dissolved oxygen, and temperature meters.
- Electric well sounder and measuring tape.
- Portland Type II cement (see previous table).
- Steel Posts (pickets), painted (see footnote).

4. All painted components (protector casing, steel pickets) will be painted high-visibility orange and allowed to dry completely prior to being brought onsite.

2.3 DOCUMENTATION

The following document may be provided:

- Copy of appropriate Work Plan
- Copy of approved Health and Safety Plan
- Copies of well and excavation permits
- Boring log forms
- Well completion diagram form
- Well development form.

2.4 GEOLOGIST'S PERSONAL EQUIPMENT

The following equipment may be required for the geologist:

- 10X handlens
- Unified Soil classification System chart
- Munsell color chart
- Sieve set (Keck model SS-81 or equivalent)
- Personal protective equipment as required by the Health and Safety Plan.

3. PROCEDURE

3.1 MATERIALS APPROVAL

Water sources for drilling, grouting, sealing, filter placement, well installation, and equipment decontamination must be approved by the Project Manager prior to arrival of the drilling equipment. Information required for the water source includes: water source, manufacturer/owner, address and telephone number, type of treatment and filtration prior to tap, time of access, cost per gallon (if applicable), dates and results associated with all available chemical analyses over the past 2 years, and the name and address of the analytical laboratory (if applicable).

Pure sodium bentonite with no additives (bentonite) will be the only drilling fluid additive allowed, and its use must be approved by the Project Manager prior to the arrival of the drilling equipment. The information required for evaluation includes: brand name, manufacturer, manufacturer's address and telephone number, product description, and intended use for the product.

Granular Filter Pack material must be approved by the Project Manager prior to drilling. A 1-pint representative sample must be supplied to the Project Manager. Information required includes: lithology, grain size distribution, brand name, source, processing method, and slot size of intended screen.

Portland Type II cement will be used for grout (see previous table).

3.2 DRILLING

The objective of the selected drilling technique is to ensure that the drilling method provides representative data while minimizing subsurface contamination, cross-contamination of aquifers, and drilling costs. The preferred drilling method is with a hollow-stem auger. Other drilling methods⁵ are approved as conditions warrant, and will not require variances be issued by the U.S. Environmental Protection Agency. The method used at a specific site will be proposed in the work plan and evaluated by the Project Manager. Any drilling method not listed herein will require approval on a case by case basis by the U.S. Environmental Protection Agency.

A Site Geologist will be present during all well drilling and installation activities and will fully characterize all tasks performed in support of these activities into the monitoring well logbook. The Site Geologist will be responsible at only one operating rig for the logging of samples, monitoring of drilling operations, recording of water losses/gains and groundwater data, preparing the boring logs and well diagrams, and recording the well installation procedures of the rig. The Site Geologist will have onsite sufficient equipment in operable condition to perform efficiently his/her duties as outlined in the contractual documents. Items in the possession of each Site Geologist will include the approved Health and Safety Plan, this Standard Operating Procedure, a hand lens (10X), a standard color chart, grain-size chart, and a weighted (with steel or iron) steel tape long enough to measure the deepest well, heavy enough to reach that depth, and small enough to fit readily within the annulus between the well and drill casing. The Site Geologist will also have onsite, a water level measuring device, preferably electrical.

Only solid vegetable shortening (e.g., Crisco[®]) without flavoring or additives may be used on downhole drilling equipment. Additives containing either lead or copper will not be allowed. In addition, polychlorinated biphenyls will not be permitted in hydraulic fluids or other fluids used in the drilling rig, pumps, and field equipment/vehicles.

-
5. If the design depth of the well is <100 ft, open, hollow-stem augers will be used to drill the well unless “running sands” preclude the use of open augers. In that case, an inert “knockout” plug may be used in the bottom of the auger string. This plug will be driven out of the augers and left at the bottom of the hole when the well is installed.

If the design depth of the well is >100 ft, rotary drilling methods may be used to install wells. The following drill fluids and methods are approved in the order listed: (1) rotary drilling with water from an approved source as drilling fluid (clays from the formations will tend thicken the fluid and coat the walls of the borehole and this is acceptable); (2) rotary drilling with water as a fluid, advancing a temporary casing with the bit to maintain an open hole; and (3) mud rotary using water with additives as drill fluid. Due to the potential for aquifer contamination and plugging, mud rotary drilling is not recommended for monitoring wells. If, however, “running sands” are encountered and the aquifer is expected to have a relatively high flow rate, then mud rotary is considered an approved method. Pure sodium bentonite is the only approved additive. Mud rotary drilling must be halted at the last aquitard above the target aquifer. Casing must be set, all bentonite-bearing fluids flushed from the hole and drill rig, and drilling may be resumed using water only as the drill fluid until the target depth is reached.

Surface runoff or other fluids will not be allowed to enter any boring or well during or after drilling/construction.

Antifreeze used to keep equipment from freezing will not contain rust inhibitors and sealants. Antifreeze is prohibited in areas in contact with drilling fluid. The ground surface at the well site will be protected from possible coolant, fuel, and hydraulic fluid spills and/or leakage by placement of plastic sheeting with raised edges, draining into a lined catch basin large enough to contain spills and/or leakage from motors, radiators, or vehicle tanks. Sorbent pillows will be placed to catch obvious leaks from the drill rig. Sorbent logs may be used instead of, or in conjunction with, a lined catch basin to contain spills.

An accurate measurement of the water level will be made upon encountering water in the borehole and later upon stabilization. Levels will be periodically checked throughout the course of drilling. Any unusual change in the water level in the hole, such as a sudden rise of a few inches may indicate artesian pressure in a confined aquifer, will be the basis for cessation of drilling. The geologist will immediately contact the Project Manager⁶. Particular attention for such water level changes will be given after penetrating any clay or silt bed, regardless of thickness, which has the potential to act as a confining layer.

Anticipated depths of wells are given in well specific work plans. In case the previously defined criteria have not been met before the depth range for a given hole is reached, the geologist will stop the drilling and confer with the Project Manager. The current boring conditions (depth, nature of the stratigraphic unit, and water table depth) will be compared to those of other wells nearby to decide to continue drilling or to terminate and complete the well.

If the well is to be installed in the surficial aquifer, drilling will be terminated before penetrating the basal aquitard. The basal aquitard is defined as the first 2 ft-thick clay below the water table, or below 5 ft in the case of a shallow aquifer.

If the well is to be installed in a lower, confined aquifer:

- Penetrations of aquifers located lower than the water table aquifer will be limited to avoid cross-contamination.
- Placement of new upper confined aquifer wells will be initially limited to those areas where contamination has been confirmed.
- The location of upper confined aquifer wells will be based upon the findings of the water table aquifer investigation. Areas of known contamination will be targeted for installing upper confined aquifer wells for the purposes of delineating vertical contamination.

6. The contract technical oversight will also be contacted for guidance.

- Where possible, upper-confined aquifer wells will be located such that they afford triangulation with other wells within the same aquifer to allow for a determination of groundwater flow direction.
- Some upper-confined aquifer wells will be installed approximately 10-15 ft from water table wells to enable the accurate assessment of vertical hydraulic gradients. If the direction of groundwater flow is known, wells within a group will be located sidegradient of each other.
- The boring will be advanced until the base of the surficial aquifer is reached (Section 3.2).
- An outer, surface casing will be set 2-5 ft into the confining layer to minimize the potential for cross-contamination from the unconfined aquifer during drilling activities.
- The surface casing will be driven into the confining bed and grouted into place. Grout will be tremied into the annulus around the outside of the casing to within 5 ft of the ground surface. A grout plug at least 2 ft thick will be tremied into the bottom of the surface casing. The grout will be permitted to cure for 24 hours. All drilling fluids within the surface casing will then be removed, and the casing will be flushed with clean potable water.
- The drilling equipment will be decontaminated, a smaller bit or auger selected, and the hole will be continued through the grout plug into the confined aquifer.
- If deeper aquifers are to be screened, repeat preceding steps until total depth is reached.

If dense non-aqueous phase liquid (DNAPL) contamination is detected during drilling, the well will be terminated and completed at the base of the aquifer. Drilling will not continue through the confining unit.

Stainless steel screens will be used in DNAPL wells. Screen size selection will be according to criteria set forth in Section 3.4. The formation grain size will be multiplied by the higher factor (6) to determine filter pack grain size. This will ensure that the filter pack is sufficiently coarse to permit DNAPL to pass freely from the formation into the coarser filter pack, then into the open well (Cohen and Mercer 1993).

DNAPL sampling cups are prohibited. The well screen will be capped, and set 0.3 ft (0.5 ft max.) into the top of the confining bed and rest on the bottom of the hole or bentonite backfill (if used). No sand will be placed below the screen. The remainder of the well installation and completion will be accomplished according to Section 3.4.

3.3 LOGGING

All borings for monitoring wells will be logged by a geologist. Logs will be recorded in a field logbook and/or a boring log. If the information is recorded in a logbook, it will be transferred to Boring Log Forms on a daily basis. Field notes are to include, as a minimum:

- Boring number
- Material description (as discussed below)
- Weather conditions
- Evidence of contamination
- Water conditions (including measured water levels)
- Daily drilling footage and quantities (for billing purposes)
- Notations on man-placed materials
- Drilling method and borehole diameter
- Any deviations from established field plans
- Blow counts for standard penetration tests
- Core and split-spoon recoveries.

Material description for soil samples must include:

- Classification
- Unified Soil Classification symbol
- Secondary components and estimated percentages
- Color
- Plasticity
- Consistency
- Density
- Moisture content
- Texture/fabric/bedding and orientation
- Grain angularity
- Depositional environment and formation
- Incidental odors
- Photoionization detector reading(s)
- Staining.

Material description for rock samples must include:

- Classification
- Lithologic characteristics
- Bedding/banding characteristics
- Color
- Hardness
- Degree of cementation
- Texture
- Structure and orientation

- Degree of weathering
- Solution or void conditions
- Primary and secondary permeability
- Sample recovery
- Incidental odors
- Photoionization detector reading(s)
- Staining.

3.4 WELL CONSTRUCTION AND INSTALLATION

After the hole is drilled and logged, backfill hole as required for proper screen placement. The integrity of the aquitard will be restored by placing a bentonite plug of an appropriate thickness, either to the top of the aquitard (normal well installation) or to within 0.3 ft of the top of the aquitard (DNAPL well). Aquifer fill will be clean filter pack.

Normal screen placement for the water table (surficial) aquifer will be within 2 ft of the screen extending above the static water level. The bottom of the screen will rest no more than 6 in. from the bottom of the hole or backfill material, whichever is applicable.

NOTE: The end cap in DNAPL wells will rest on the bottom of the bottom of the hole, or bentonite backfill if applicable (Section 3.2).

Screen placement for a confined aquifer well will normally be at the top of the confined aquifer.

Screen lengths will not normally exceed 10 ft. If it appears advantageous in a given situation (e.g., to screen an entire aquifer which is thicker than 10 ft), approval must be sought on a case-by-case basis from the appropriate regulatory agency. Otherwise, wells will be screened as follows:

Thickness of Aquifer	Action
<10 ft	Screen entire aquifer
>10 ft <30 ft	Screen top 10 ft consider vertically nested well cluster
>30 ft	Install vertically nested well cluster

The installation of monitoring wells in uncased or partially cased holes will begin within 12 hours of completion of drilling, or if the hole is to be logged, within 12 hours of well logging, and within 48 hours for holes fully cased with temporary drill casings. Once installation has begun, work will continue until the well has been grouted and the drill casing has been removed.

Well screens, casings, and fittings will conform to National Sanitation Foundation Standard 14 or ASTM equivalent for potable water usage. These materials will bear the appropriate rating logo. If the logos are not present, a written statement from the manufacturer/supplier stating that the materials contain the appropriate rating must be obtained. Material used will be new and essentially chemically inert to the site environment.

Well screen and casing should be inert with respect to the groundwater; therefore, the selection of screen and casing material will be based on select field tests of aquifer chemistry and potential contaminants. The screen will be capped without sediment trap or DNAPL sampling cup, and lowered into the hole. The well casing will be pre-cut to extend 2-2.5 ft above ground surface. Prior to placement of the last piece of well casing, a notch or other permanent reference point will be cut, filed, or scribed into the top edge of the casing.

Screen slot size will be appropriately sized to retain 90-100 percent of the filter pack material, the size of which will be determined by sieve analysis of formational material (Section 3.4).

The tops of all well casing will be capped with covers composed of materials compatible with the products used in the well installation. Caps may either be vented, or a telescopic fit, constructed to preclude binding to the well casing caused by tightness of fit, unclean surfaces, or weather conditions. In either case, it should be secure enough to preclude the introduction of foreign material into the well, yet allow pressure equalization between the well and the atmosphere.

Filter pack material will be placed, lightly tamped, and leveled. Filter pack will extend from the bottom of the hole to a height of 1-2 ft above the top of the screen. The filter pack will be capped with a minimum of 1 ft of fine (Ottawa) sand to prevent the bentonite seal from infiltrating the filter pack. If the bentonite seal is placed as a slurry, a minimum of 2 ft of fine sand will be required.

If the hole is less than 20-ft deep, the filter pack may be poured into the annulus directly. If the hole is deeper than 20 ft, the filter pack must be tremied into place.

Granular filter packs will be chemically and texturally clean, inert, and siliceous.

Filter pack grain size will be based on formation grain-size analysis. The D30 (70 percent retained) sieve size multiplied by a factor of not less than 3 nor greater than 6 will be used to determine the appropriate grain size.

Calculations regarding filter pack volumes will be entered into the Field Logbook along with any discrepancies between calculated and actual volumes used. If a discrepancy of greater than 10 percent exists between calculated and actual volumes exists, an explanation for the discrepancy will also be entered in the Field Logbook.

Bentonite seals will be no less than 2-ft thick nor more than 5-ft thick as measured immediately after placement. The normal installation will include a 5-ft seal. Thinner seals may be used in special cases. The final depth to the top of the bentonite seal will be measured and recorded.

3.4.1 Grout

Grout used in construction will be composed by weight of:

- 20 parts cement (Portland cement, type II) (see previous table)
- 0.4-1 part (maximum) (2-5 percent) bentonite
- 8-gal (maximum) approved water per 94-lb bag of cement.

Neither additives nor borehole cuttings will be mixed with the grout. Bentonite will be added after the required amount of cement is mixed with the water.

All grout material will be combined in an aboveground container and mechanically blended to produce a thick, lump-free mixture. The mixed grout will be recirculated through the grout pump prior to placement. Grout placement will be performed using a commercially available grout pump and a rigid, side discharge tremie pipe.

The following will be noted in the Field Logbook: (1) calculations of predicted grout volumes; (2) exact amounts of cement, bentonite, and water used in mixing grout; (3) actual volume of grout placed in the hole; and (4) any discrepancies between calculated and actual volumes used. If a discrepancy of greater than 10 percent exists between calculated and actual volumes exists, an explanation for the discrepancy will also be entered in the Field Logbook.

Well protective casings will be installed around all monitoring wells on the following day as the initial grout placement around the well. Any annulus formed between the outside of the protective casing and the borehole will be filled to ground surface with cement.

The construction of each well will be depicted as built in a well construction diagram. The diagram will be attached to the boring log and will graphically denote:

- Screen location, length
- Joint location
- Granular filter pack
- Seal
- Grout
- Cave-in
- Centralizers
- Height of riser
- Protective casing detail.

3.5 MONITORING WELL COMPLETION

Assemble appropriate decontaminated lengths of pipe and screen. Make sure these are clean and free of grease, soil, and residue. Lower each section of pipe and screen into the borehole, one at a time, screwing each section securely into the section below it. No grease, lubricant, polytetrafluoroethylene tape, or glue may be used in joining the pipe and screen sections.

If a well extends below 50 ft, centralizers will be installed at 50 ft and every 50 ft thereafter except within screened interval and bentonite seal. Centralizer material will be PVC, polytetrafluoroethylene, or stainless steel. Determination of centralizer material will be based on the same criteria as screen and casing selection.

Cut the riser with a pipe cutter approximately 2-2.5 ft above grade. All pipe cuts **MUST** be square to ensure that the elevation between the highest and lowest point of the well casing is less than or equal to 0.02 ft. Notch, file, or otherwise permanently scribe a permanent reference point on the top of the casing.

Torches and saws may not be used to cut the riser. Care must be taken that all filings or trimmings cut from the reference point fall outside the riser rather than into the well. **Under no circumstances will a permanent marker or paint pencil be used to mark the reference point.**

In some locations, safety requirements may mandate that a well be flush-mounted with no stick-up. If a flush-mounted well is required at a given location, an internal pressure cap must be used instead of a vented cap to ensure that rainwater cannot pool around the wellhead and enter the well through the cap.

When the well is set to the bottom of the hole, temporarily place a cap on top of the pipe to keep the well interior clean.

Place the appropriate filter pack (Section 3.4). Monitor the rise annulus with a weighted tape to assure that bridging is not occurring.

After the pack is in place, wait 3-5 minutes for the material to settle, tamp and level a capped PVC pipe, and check its depth with weighted steel tape.

Add a 1-2 ft cap of fine-grained (Ottawa) sand to prevent infiltration of the filter pack by overlying bentonite seal. See Section 3.4 for guidance on appropriate thickness of fine sand layer.

Install the bentonite seal (2- to 5-ft thick) by dropping bentonite pellets into the hole gradually. If the well is deeper than 30 ft, a tremie pipe will be used to place either bentonite pellets or slurry. Tamp and level pellets. If the well is 30 ft, tamp with a capped PVC pipe, if >30 ft, tamping may be accomplished with the weighted end of the tape. In either case, check the depth to the top of the seal with a weighted tape as above.

If the bentonite pellets are of poor quality, they may have a tendency to hydrate and swell inside the tremie pipe and bridge. This situation may be solved by the following procedure:

1. Use a different brand of pellets. Different brands may have longer hydration times.

2. Freeze the pellets⁷. Note that this will require a longer wait time to allow proper hydration after the pellets thaw.
3. Place the bentonite seal as a slurry using a side-discharge tremie pipe as though installing grout. Note (Section 3.4) this will require that a minimum of 2 ft of fine sand be placed as a cap on top of the filter pack material.

Wait for the pellets to hydrate and swell. Hydration times will be determined by field test or by manufacturer's instructions. Normally this will be 30-60 minutes. Document the hydration time in the field notebook. If the pellets are above the water level in the hole, add several buckets of clean water to the boring. Document the amount of water added to the hole.

Mix an appropriate cement-bentonite slurry (Section 3.4). Be sure the mixture is thoroughly mixed and as thick as is practicable.

Lower a side discharge tremie pipe into the annulus to the level of the pellet seal.

Pump the grout slurry into the annulus while withdrawing the tremie pipe and temporary casing.

Stop the grout fill at 5 ft below the ground surface. Allow to cure for not less than 12 hours. If grout settles more than 6 in., add grout to bring level back up to within 5 ft of ground surface. Place approximately 2 ft of bentonite pellets (minimum 0.5 ft) in annulus. Seat the protective casing in the bentonite seal, allowing no more than 0.2 ft between the top of the well casing and the bottom of the protective casing cap. Fill inner annulus (between well casing and protective casing) with bentonite pellets to the level of the ground surface. Cover bentonite pellets with 1 ft of clean granular material (coarse sand or pea gravel filter pack). Fill the outer annulus (between the protective casing and the borehole) with neat cement. Allow the cement to mound above ground level and finish to slope away from the casing. Lock the cap.

— **OR** —

Continue the grout fill to the ground surface. Seat the protective casing in the grout, allowing no more than 0.2 ft between the top of the well casing and the bottom of the protective casing cap. Lock the cap.

— **AND** —

Allow the grout slurry to set overnight.

7. Bentonite pellets may be "flash-frozen" by brief immersion in liquid nitrogen (LN2). This can be accomplished by pouring LN2 over a small quantity (0.25-0.5 bucket) of pellets, allowing the LN2 to boil off, then pouring the pellets into the tremie pipe. **NOTE:** Use of LN2 is an additional jobsite hazard and must be addressed in the contractor's Health and Safety Plan. This contingency must be covered before drilling starts in order to avoid delays in well installation.

Fill the outer annulus (between the casing and the borehole) with neat cement. Allow the cement to mound above ground level and finish to slope away from the casing.

Slope the ground surface away from the casing for a distance of 2 ft, at a rate of no less than 1 in. in 2 ft. Surface this sloping pad with a geotextile mat covered by 3 in. of coarse gravel.

— OR —

Frame and pour a 4-ft square \times 6-in. thick (4 ft \times 4 ft \times 6 in.) concrete pad centered around the protective casing.

— AND —

Set pre-painted protective steel pickets (3 or 4) evenly around and 4 ft out from well. These pickets will be set into 2 ft deep holes, the holes will then be filled with concrete; and if the pickets are not capped, they will also be filled with concrete.

3.6 WELL DEVELOPMENT

Well development is the process by which drilling fluids, solids, and other mobile particulates within the vicinity of the newly installed monitoring well have been removed while restoring the aquifer hydraulic conductivity. Development corrects any damage to or clogging of the aquifer caused by drilling, increases the porosity of the aquifer in the vicinity of the well, and stabilizes the formation and filter pack sands around the well screen.

Well development will be initiated after 48 consecutive hours but no longer than 7 calendar days following grouting and/or placement of surface protection.

Two well development techniques, over pumping and surging, will be employed in tandem. Over pumping is simply pumping the well at a rate higher than recharge. Surging is the operation of a plunger up and down within the well casing similar to a piston in a cylinder.

3.6.1 Materials Required

The following materials will be required for well development:

- Well Development Form
- Boring Log and Well Completion Diagram for the well
- Submersible pump or bailer of appropriate capacity, and surge block
- Conductivity, pH, ORP, turbidity, dissolved oxygen, and temperature meters
- Electric well sounder and measuring tape
- Containers for purged water, if required.

3.6.2 Summary of Procedures and Data Requirements

Pump or bail the well to ensure that water flows into it, and to remove some of the fine materials from the well. Removal of a minimum of one equivalent volume is recommended at this point. The rate of removal should be high enough to stress the well by lowering the water level to approximately half its original level. If well recharge exceeds 15 gpm, the requirement to lower the head will be waived.

Slowly lower a close-fitting surge block into the well until it rests below the static water level, but above the screened interval. (NOTE: This latter is not required in the case of a light non-aqueous phase liquid well.)

Begin a gentle surging motion which will allow any material blocking the screen to break up, go into suspension, and move into the well. Continue surging for 5-10 minutes, remove surge block, and pump or bail the well, rapidly removing at least one equivalent volume.

Repeat previous step at successively lower levels within the well screen until the bottom of the well is reached. Note that development should always begin above, or at the top of, the screen and move progressively downward to prevent the surge block from becoming sand locked in the well casing. As development progresses, successive surging can be more vigorous and of longer duration as long as the amount of sediment in the screen is kept to a minimum.

Development is expected to take at least 2 hours in a small well installed in a clean sand, and may last several days in large wells, or in wells set in silts with low permeabilities.

Development will continue until little or no sediment can be pulled into the well, and target values for parameters listed below are met.

At a minimum, development will remove 3-5 well volumes of water. One development volume (DV) is defined as (1) equivalent volume, plus (1) the amount of fluid lost during drilling, plus (1) the volume of water used in filter pack placement.

1. Monitor water quality parameters before beginning development procedures, and after removing 2, 2.5, and 3 well volumes of water.
2. If these parameters have stabilized over the three readings, the well will be considered developed.
3. If the parameters have not stabilized after these three readings, continue pumping the well to develop, but stop surging. Monitor the stabilization parameters every half DV.
4. When the parameters have stabilized over three consecutive readings at half DV intervals, the well will be considered developed.

All water removed must be disposed of as directed by the Work Plan.

Record all data as required on a Well Development Record Form (Appendix A), which is made a part of the complete Well Record. These data include:

- Depths and dimensions of the well, casing, and screen obtained from the well diagram.
- Water losses and uses during drilling, obtained from the boring log for the well.
- Measurements of the following indicator parameters: turbidity, pH, conductivity, ORP potential, dissolved oxygen, and temperature.
- Target values for the indicator parameters listed above are as follows: pH – stabilize, conductivity – stabilize, ORP – stabilize, dissolved oxygen – stabilize, temperature – stabilize, turbidity – 5 nephelometric turbidity units or stabilize. A value is considered to have stabilized when three consecutive readings taken at half DV intervals are within 10 percent of each other.
- Notes on characteristics of the development water.
- Data on the equipment and technique used for development.
- Estimated recharge rate and rate/quantity of water removal during development.

4. MAINTENANCE

Not applicable.

5. PRECAUTIONS

Refer to the site-specific Health and Safety Plan for discussion of hazards and preventive measures during well development activities.

6. REFERENCES

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Nielsen, D.M. 1993. Correct Well Design Improves Monitoring, in *Environmental Protection*, Vol.4, No.7. July.

U.S. Army Toxic and Hazardous Materials Agency. 1987. Geotechnical Requirements for Drilling, Monitoring Wells, Data Acquisition and Reports. March.

U.S. Environmental Protection Agency. 1989. Groundwater Handbook.

Appendix A

Field Record of Well Development Form



FIELD RECORD OF WELL DEVELOPMENT

Project Name:	Project No:	Date:
EA Personnel:	Development Method:	
Weather/Temperature/Barometric Pressure:		Time:

Well No.:	Well Condition:
Well Diameter:	Measurement Reference:
Well Volume Calculations	
A. Depth To Water (ft):	D. Well Volume/ft:
B. Total Well Depth (ft):	E. Total Well Volume (gal)[C*D]:
C. Water Column Height (ft):	F. Five Well Volumes (gal):

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°F)						
Conductivity (µmhos/cm)						
Dissolved Oxygen						
Turbidity (NTU)						
ORP (mV)						
Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°F)						
Conductivity (µmhos/cm)						
Dissolved Oxygen						
Turbidity (NTU)						
ORP (mV)						
NOTE: NTU = Nephelometric turbidity unit. ORP = Oxidation-reduction potential.						

COMMENTS AND OBSERVATIONS: _____



FIELD RECORD OF WELL DEVELOPMENT

Project Name:	Project No:	Date:
EA Personnel:	Development Method:	
Weather/Temperature/Barometric Pressure:		Time:

Well No.:	Well Condition:
Well Diameter:	Measurement Reference:

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°F)						
Conductivity (µmhos/cm)						
Dissolved Oxygen						
Turbidity (NTU)						
ORP (mV)						

Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°F)						
Conductivity (µmhos/cm)						
Dissolved Oxygen						
Turbidity (NTU)						
ORP (mV)						

APPENDIX G

SOIL MOISTURE BORING DETAIL



EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC. SOIL MOISTURE BORING

Project Name/ Project Number: XXXXX.XX	Start Date: X-XX-XXXX	Completion Date: X-XX-XXXX
Well ID: XXXX-XXX	Drilling Method: X-XX-XXXX	Depth of Water (FT. TOC): X-XX-XXXX
Driller Name, Company and Registration #: XXXX XXXXX		
Geologist Name: XXXXX XXXXXXX		

