



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

SECURITY AND CONTINUITY OF OPERATIONS

October 10, 2013

In reply refer to: NN-1

Richard van Dijk
Another Way BPA
PO Box 820152
Vancouver, WA 98682

FOIA #BPA-2013-01712-F

Dear Mr. van Dijk:

This is a partial release to your request for records that you made to the Bonneville Power Administration (BPA) under the Freedom of Information Act (FOIA), 5 U.S.C. 552.

You requested:

Provide a list of all work order numbers and their titles that are associated with the I-5 Reinforcement Project. For each work order provide the following:

Date of approval

Initial estimate

Revised estimates

Expenditures to date

Work orders that relate to survey and design work to include the following additional information:

The work order number

Full details of the scope of work

Name of contractor/vendor selected.

Date range for this request is January 2008 through date of this request.”

Response:

BPA is releasing the enclosed email in its entirety.

The financial documents that support the released email are under review and will be released once that review has been completed.

The vendor selected for much of the work done on the I-5 Corridor Reinforcement Transmission Project to date is: HDR, Inc., 1001 SW 5th Ave # 1800, Portland, OR 97204.

Also, under review are the documents involving the scopes of work. These will be undergoing an Exemption 4 review by the above vendor as required by the FOIA.

I appreciate the opportunity to assist you. Please contact Kim Winn, FOIA Specialist, at 503-230-5273 with any questions about this letter.

Sincerely,

/s/Christina J. Munro

Christina J. Munro

Freedom of Information Act/Privacy Act Officer

Enclosure: Email dated 10-03-2013

From: Korsness,Mark A (BPA) - TEP-TPP-3
Sent: Thursday, October 03, 2013 3:59 PM
To: Winn,Kim S (BPA) - NN-1
Subject: I-5 FOIA-BPA-2013-01714-F

We have one work order 231487 for NEPA and preliminary engineering.
Work order created Feb 2009 and began with \$14M
Early estimate is for \$19M.
2011 increased estimate to \$45M.
As of 9/23/2013 actuals are \$34.4M
This work order covers all work to date, including surveying.
Design and survey contracted out to HDR.

Thanks.....Mark

From: Korsness,Mark A (BPA) - TEP-TPP-3
Sent: Friday, September 20, 2013 10:51 AM
To: Korsness,Mark A (BPA) - TEP-TPP-3
Subject: FW: New FOIA Request

From: Winn,Kim S (BPA) - NN-1
Sent: Friday, September 20, 2013 10:49 AM
To: Korsness,Mark A (BPA) - TEP-TPP-3
Subject: New FOIA Request BPA-2013-01714-F

Dear Mark,

You have been designated as the Authorizing Official (AO) for the attached incoming FOIA request from Richard van Dijk. Your duties as an AO is to gather the requested documents.

Please have all documents to me no later than **Friday, October 11, 2013**, to meet our target response date of Friday, October 18, 2013. Thank you for your assistance!

Kim Winn
FOIA Specialist
x5273

From: Korsness,Mark A (BPA) - TEP-TPP-3
Sent: Friday, September 20, 2013 9:56 AM
To: Winn,Kim S (BPA) - NN-1
Subject: RE: New FOIA Request

me

From: Winn,Kim S (BPA) - NN-1
Sent: Friday, September 20, 2013 9:55 AM
To: Korsness,Mark A (BPA) - TEP-TPP-3

Subject: New FOIA Request

Can you help me identify the appropriate Authorizing Official for the attached request?



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

SECURITY AND CONTINUITY OF OPERATIONS

October 29, 2013

In reply refer to: NN-1

Richard van Dijk
Another Way BPA
PO Box 820152
Vancouver, WA 98682

FOIA #BPA-2013-01714-F

Dear Mr. van Dijk:

This is the final release to your request for records that you made to the Bonneville Power Administration (BPA) under the Freedom of Information Act (FOIA), 5 U.S.C. 552.

You requested:

Provide a list of all work order numbers and their titles that are associated with the I-5 Reinforcement Project. For each work order provide the following:

Date of approval

Initial estimate

Revised estimates

Expenditures to date

Work orders that relate to survey and design work to include the following additional information:

The work order number

Full details of the scope of work

Name of contractor/vendor selected.

Date range for this request is January 2008 through date of this request.”

Response:

BPA is releasing the responsive documents entitled “Estimate Reports” with certain information withheld pursuant to Exemption 5 of the FOIA.

Exemption 5 protects inter-agency and intra-agency memorandums, letters, and documents that include information and analysis still being developed, reviewed, and checked for accuracy by the agency, as well as opinions, recommendations, and advice concerning this information and analysis. These documents are pre-decisional and contain information that is exempt from release under the FOIA.

Documents related to the I-5 Corridor Reinforcement Project scope of work are released in their entirety.

Pursuant to 10 CFR 1004.8, if you are dissatisfied with this determination, or the adequacy of the search, you may appeal this FOIA response in writing within 30 calendar days of receipt of a final response letter. The appeal should be made to the Director, Office of Hearings and Appeals, HG-1, Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585-1615. The written appeal, including the envelope, must clearly indicate that a FOIA Appeal is being made.

I appreciate the opportunity to assist you. Please contact Kim Winn, FOIA Specialist, at 503-230-5273 with any questions about this letter.

Sincerely,

/s/Christina J. Munro

Christina J. Munro

Freedom of Information Act/Privacy Act Officer

Enclosure: Responsive documents

I-5 Corridor Reinforcement 500kV Transmission Line Project

Statement of Work: This project includes work to be done on BPA's (Bonneville Power Administration) proposed I-5 Corridor Reinforcement 500kV transmission line. The new line will be built to reliably integrate proposed new generation along the I-5 corridor. Construction will be of 500kV lattice steel towers with triple bundle conductor. There will also be some double circuit 230kV lattice steel construction with single conductor per phase. This will be needed to help make room for the new 500kV line in an existing corridor. There are several proposed routes identified for the new line, some of which use existing BPA right-of-way and others that require new right-of-way. The new line will be located between Castle Rock, Washington and Troutdale, Oregon. Improvements to existing access roads and development of new access roads will be required. The current scope of services includes the transmission line design, access road design, NEPA support, survey services as required, support of the right-of-way acquisition process, preparation of construction contract documents, design support during construction, and other incidental tasks as assigned. No substation related work is included within this statement of work.

The project work to be done includes: design a new 500kV transmission line from a new BPA substation located near Castle Rock, Washington to a new BPA substation located near Troutdale, Oregon, support NEPA development of the draft and final Environmental Impact Statement (EIS) for each of the options identified, design a proposed access road system to support the route, and provide all construction documents and drawings as well as a construction specification. The final line length will be approximately 70 miles but to support the NEPA process with all the identified options will require the partial design of approximately 240 miles of line.

The Owner's Engineer (HDR) will be responsible for the design of this project. Route selection will be the responsibility of BPA with design support from HDR. HDR will provide BPA a transmission design package using BPA standards and based on the scope of the project. HDR will be responsible for the identification of all equipment and materials needed for the construction of the project. Below is a more fully detailed general scope of work identifying HDR's design requirements.

This project will be divided into the following four (4) phases:

- **Phase I-A: Preliminary Engineering/NEPA Support (thru 7/1/2010)** - Preliminary routing, tower spotting, access road design, and field reviews of 48 segments totaling 240 miles in support of the NEPA process. Preliminary geotechnical investigations will be required and will be subcontracted by HDR. Surveying for this phase will be contracted directly through BPA.
- **Phase I-B: Preliminary Engineering/NEPA Support thru issue of Draft EIS (7/1/10 - 3/1/2011)** - Preliminary routing, tower spotting, access road design, and field reviews of two or three route options in support of the NEPA process through the Draft EIS stage.

Preliminary geotechnical investigations and surveying will be required and will be subcontracted by HDR.

- **Phase II: Draft EIS thru EIS Record of Decision (ROD)** - Routing, tower spotting, and access road design for NEPA support from the Draft EIS through the ROD. Geotechnical investigations and surveying will be required and will be subcontracted by HDR.
- **Phase III: Final Design** - Final design of the route selected in the ROD, including geotechnical investigations and surveying, which will be subcontracted by HDR.

There will be an initial Release for Phase I-A only. Modifications to that release will be issued for Phases I-B, II, and III. The initial release will include the Scope of Work in Phase Ia only for engineering and geotechnical services.

SCOPE OF WORK:

I-5 Corridor Reinforcement 500kV Line WO #00231487-06-TUAA

Transmission and Access Road Engineering

1. Phase I-A: Preliminary routing, tower spotting, access road design, and field reviews of 48 segments totaling 240 miles in support of the NEPA process thru July 1, 2010. Preliminary geotechnical investigations will be required and will be subcontracted by HDR. Surveying for this phase will be contracted directly through BPA.
 - 1.1. HDR will develop and maintain a project schedule using MS Project.
 - 1.2. HDR will participate in all required project meetings. This cost proposal assumes three (3) project meetings in the Vancouver BPA office attended by the HDR project manager and project engineer. Each meeting is assumed to require ten (10) hours per attendee, including travel. The access roads project manager and survey project manager will also attend the meetings, and are assumed to require 4 hours each per meeting.
 - 1.3. HDR will develop a PLS-CADD model for forty-eight (48) segments, totaling approximately 240 miles of corridors, and perform centerline and structure spotting on all segments.
 - 1.4. HDR will provide a review of existing access roads and conceptual access road design for all identified line route options as needed for the Draft EIS.
 - 1.5. HDR will perform a field review of the centerline, tower locations, and access roads for all corridors, totaling 240 miles.
 - 1.6. HDR will provide transmission line and access road information on all identified line route options as needed for the Draft EIS. Deliverables will include Landowner Parcel Mapbooks (116 sheets), Photomaps (240 sheets), and preliminary PLS-CADD plan and profile drawings (240 sheets). For each line route option, HDR will provide an access road summary which includes miles of proposed access road and miles of existing public and private roads requiring improvement. This information will be provided in a GIS format and a spreadsheet.
 - 1.7. HDR will provide required geotechnical services in support of the NEPA and design process. See attached Geotechnical Scope of Services, Phase I.

- 1.8. HDR will assist BPA in preparing and revising an opinion of probable constructed cost as required for the development of route options. HDR will provide structure and foundation quantities. BPA will prepare all detailed estimates.

Note: The Phase I-B, Phase II, and III Scopes of Work are described as they are understood at this time. They will be revised after completion of Phase I when the scope of the project is more defined.

2. Phase I-B: Preliminary routing, tower spotting, access road design, and field reviews of two or three route options totaling approximately 210 miles in support of the NEPA process from July 1, 2010 through the Draft EIS stage. Preliminary geotechnical investigations will be required and will be subcontracted by HDR. Surveying for this phase will be contracted directly through BPA.
 - 2.1. HDR will maintain a project schedule using MS Project.
 - 2.2. HDR will participate in all required project meetings. This cost proposal assumes three (3) project meetings in the Vancouver BPA office attended by the HDR project manager and project engineer. Each meeting is assumed to require ten (10) hours per attendee, including travel. The access roads project manager and survey project manager will also attend the meetings, and are assumed to require 4 hours each per meeting.
 - 2.3. HDR will utilize models developed in Phase I-A to develop PLS-CADD models for two (2) or three (3) route options, totaling approximately 210 miles of corridors.
 - 2.4. HDR will make design modifications to the route options, including tower locations and access roads based upon feedback from the BPA NEPA review process.
 - 2.5. HDR will perform a field review of any modifications to the centerline, tower locations, and access roads as necessary.
 - 2.6. Deliverables for this phase will be determined at a later date.
 - 2.7. No geotechnical services are required for this phase.
 - 2.8. HDR will prepare and revise survey requests as needed.
 - 2.9. HDR will assist BPA in preparing and revising an opinion of probable constructed cost as required for the development of route options. HDR will provide structure and foundation quantities. BPA will prepare all detailed estimates.
3. Phase II: Routing, tower spotting, and access road design for NEPA support from the Draft EIS through the EIS Record of Decision (ROD). Geotechnical investigations and surveying will be required.
 - 3.1. HDR will develop and maintain a project schedule using MS Project.
 - 3.2. HDR will participate in all required project meetings. This cost proposal assumes six (6) project meetings in the Vancouver BPA office attended by the HDR project manager and project engineer. Each meeting is assumed to require twenty-four (24) hours per attendee, including travel.
 - 3.3. HDR will provide preliminary design information on all line route options and 90% design information on a single preferred route as needed for the NEPA process performed by BPA.

- 3.4. HDR will provide transmission line and access road design information the preferred route as needed for the NEPA process performed by BPA. Deliverables will include Landowner Parcel Mapbooks (?? sheets), Photomaps (70 sheets), and preliminary PLS-CADD plan and profile drawings (70 sheets).
 - 3.5. HDR will provide preliminary access road design information on all line route options and 90% access road design information for a single preferred route for the NEPA process.
 - 3.6. HDR will prepare and revise survey requests as needed to support information gathering for both the NEPA process and for final design. See attached subcontractor Scope of Services.
 - 3.7. HDR will provide required geotechnical services in support of the NEPA process. See attached Geotechnical Scope of Services.
 - 3.8. HDR will provide engineering support for public involvement meetings once the Draft EIS is released or as needed. It is expected that six (6) public involvement meetings will be held. The cost proposal includes time and expenses for the HDR project manager and project engineer to attend these six (6) meetings. BPA will be responsible for all environmental and permitting support for the NEPA process.
 - 3.9. HDR will assist BPA in preparing and revising engineering cost estimates as required for the development of route options throughout the project. HDR will provide structure and foundation quantities. BPA will prepare all detailed estimates.
 - 3.10. BPA will perform all electrical effects studies and analysis required for the project. HDR will incorporate these electrical effects requirements into the structure and line design.
4. Phase III: Final design of the route selected in the ROD, including geotechnical investigations and surveying.
- 4.1. HDR will design and create a contract construction package consisting of a Construction Data Book, Plan & Profile maps, Photomaps, Material List, and a Specification for the construction of the approximately 70 mile line from the substation near Castle Rock to the substation near Troutdale on the route approved through the EIS process. The new line will be designed using BPA's existing design standards for 500kV self-supporting lattice steel towers with triple bundle conductor and ground wire.
 - 4.2. HDR will design the towers to accept fiber optic wire in the future but no fiber optic cable will be added to the new line during construction.
 - 4.3. HDR will provide a design for looping two existing fiber optic cables on the Longview-Chehalis No. 1 line into the new substation near Castle Rock. The new routes will be WECC compliant.
 - 4.4. HDR will re-configure BPA's Raver-Paul No. 1 and Paul-Allston No. 1 lines at a point approximately 2.5 miles from Paul substation to swap the position of the two lines to facilitate operation of the lines within WECC guidelines. This action will create a new crossing for the two lines.
 - 4.5. HDR will develop and maintain a project schedule using MS Project.
 - 4.6. HDR will develop a Step Plan for the completion of all aspects of this project and will coordinate line outages with the BPA Outage Office.
 - 4.7. HDR will participate in all required project meetings. This cost proposal assumes six (6) project meetings in the Vancouver BPA office attended by the HDR project

- manager and project engineer. Each meeting is assumed to require twenty-four (24) hours per attendee, including travel.
- 4.8. HDR will provide a final access road design for the EIS approved route.
 - 4.9. HDR will prepare and revise survey requests as needed to support information gathering for final design. See attached subcontractor Scope of Services.
 - 4.10. HDR will provide required geotechnical services in support of the final design process. See attached Geotechnical Scope of Services.
 - 4.11. HDR will utilize BPA standard footing designs (i.e. pressed plate, grillage, and concrete drilled piers) to specify tower foundations.
 - 4.12. HDR will design a new river crossing across the Columbia River and work with the Corps of Engineers and other agencies to meet requirements for tower siting, public involvement, and airway marking evaluation and design. All river crossing structures will be designed for a double circuit 500 kV configuration. It is assumed that four (4) new structures will be designed.
 - 4.13. BPA will perform all electrical effects studies and analysis required for the project. HDR will incorporate these electrical effects requirements into the structure and line design.
 - 4.14. HDR will assist BPA in preparing and revising engineering cost estimates as required for the development of route options throughout the project. HDR will provide structure and foundation quantities. BPA will prepare all detailed estimates.
 - 4.15. HDR will provide crossing permit information for utility crossings observed in the field but not recorded on existing BPA documents. This cost proposal includes the development of three (3) permits.
 - 4.16. HDR will provide a drawing package which will include Plan & Profile drawings, Tower List, Sag Tables, Phasing Diagram, One Line Diagram, Structure Details, Hardware Details, Site Data sheets, Structure Signs Location details, Overhead Ground wire, Counterpoise, Grounding details, Fiber Optic cable installation sheets, access road design drawings, and any special By-Line drawings.
 - 4.17. HDR will provide the final EIS approved route design in a PLS-CADD electronic file.
 - 4.18. HDR will provide material lists for required materials for the construction of the final approved EIS option. Material will be procured by a PC contractor.
 - 4.19. HDR will perform one (1) factory visit to the lattice tower supplier (assumed supplier location is Monterrey, Mexico) to perform witness testing. Attending this visit will be the project manager and project engineer.
 - 4.20. HDR will provide Construction Management and Construction Inspection services for a BPA approved PC contract. These services are not included in this cost proposal, and will be scoped and a priced proposal provided to BPA prior to construction.
 - 4.21. HDR will be available for construction support via telephone. Onsite construction support is not part of this scope. Two (2) trips for the project manager and project engineer have been included. One trip will be for the kickoff meeting/site visit and the other will be for the 90% review.
 - 4.22. HDR will complete As-Built corrections to transmission design drawings once construction is completed.

Project Target Dates:

- Final segments given to HDR 6/1/2010
- HDR submit deliverables for Phase I-A 7/1/2010

- Draft Environmental Impact Statement (EIS): 3/1/2011
- Published Final EIS: 3/1/2012
- Record of Decision (ROD): 5/1/2012
- Project completion: 12/1/2015

Work Order:

- **00231487-06** I-5 Corridor Reinforcement 500kV Transmission Line
- Additional work orders will be provided as they are established.

BPA Inspector Assigned:

- COTR – Brian Emery
- Project Manager – Mark Korsness

HDR Contract Design Services

Contract: 00044259

Release: 008

Task Structure

Task	Activity
1	PROJECT MANAGEMENT
2	PLANNING
3	ENVIRONMENT
4	GEOMATICS
5	REALTY
6	DESIGN
7	CONTRACT CONSTRUCTION
8	BPA FA (SITE WORK)
9	BPA FA (SWITCHBOARD SHOP WORK)
10	BPA FA (RETIREMENT)
11	BPA FA (ELECTRICAL WORK)

STATEMENT OF WORK FOR GEOTECHNICAL INVESTIGATION

BPA I5 CORRIDOR REINFORCEMENT 500 KV TRANSMISSION LINE

I. Background

The Bonneville Power Administration (BPA) is proposing to build a 500 kV power transmission line from the proposed Castle Rock Substation (near Castle Rock, Washington) to the Troutdale Substation (near Troutdale, Washington), approximately 70 miles. HDR Engineering, Inc. (HDR) will be responsible for design, survey, and geotechnical services required to complete the project through construction.

The line will be constructed using BPA standard single circuit 500 kV lattice tower structures. There are several proposed routes identified for the new line, some of which use existing BPA right-of-way and others that require new right-of-way. The final line length will be approximately 70 miles but to support the NEPA process with all the identified options will require the partial design of approximately 240 miles of line. Approximately one third of the proposed corridors utilize existing BPA right of way and will require analysis of 250-500 foot wide corridors. Approximately two thirds of the proposed corridors are new alignments and will require analysis of one (1) mile wide corridors. The new line will be located between Castle Rock, Washington and Troutdale, Oregon. Improvements to existing access roads and development of new access roads will be required.

Most of the western and southern segments of the proposed routes for this transmission line are on gently sloping terraces and agricultural areas with some rolling to rugged forested hills. The middle and eastern segments of the proposed routes traverse rolling to rugged forested hills. The southern segments traverse more densely populated residential areas. The routes include one (1) Columbia River crossing, which will likely require a tower(s) located in a shallow submerged rock island.

II. Objective

The geotechnical investigations for this project will be performed in the following three (3) phases.

Phase I

General Route Characterization and Geologic Hazard Assessment: Perform a Desktop Study including a literature review and photogeologic interpretation to characterize the general geologic conditions and hazards along the proposed corridors, totaling approximately 240 miles. Prepare a report that presents the results of the study. Provide the deliverable items described in Section V.

Phase II

Selected Route Reconnaissance: Perform surface reconnaissance of proposed tower locations along the preferred corridor, totaling approximately 70 miles. Prepare a report that presents the results of the surface reconnaissance. Provide the deliverable items described in Section V.

Phase III

Geotechnical Investigation: Perform subsurface explorations at selected tower sites on the final selected route, totaling approximately 70 miles. Perform subsurface explorations at the Columbia River crossing tower locations near the Troutdale Substation. Prepare a report that presents the results of the subsurface explorations and provides tower foundation recommendations. Provide the deliverable items described Section V.

III. HDR Responsibilities

Phase I - HDR will provide a Study Area Map (attached) and geo-referenced aerial photographs of the proposed corridors.

Phase II – HDR will provide a photomap along the proposed corridors which will include preliminary tower and access road locations and designations. Information on existing tower foundations and previous subsurface investigation is available from BPA.

Phase III – HDR will provide a photomap along the final route indicating final tower locations and designations. HDR will stake the center of all tower locations. Staked locations should be verified with the locations shown on the photomaps.

Permission to Enter Properties (PEP's) will be obtained by BPA and landowners will be contacted about the upcoming activities prior to commencement of Phase II and Phase III work.

IV. Tasks

Task 1A: Phase I – Literature Review

Perform a desktop literature review (no field investigations necessary) to characterize the general soil and geologic conditions along the proposed corridors utilizing publicly available data. Existing information regarding topographic, geologic, soil and groundwater conditions along the alignment will be obtained and reviewed. The review will address the types and distribution of soil and rock likely to be present along the alignment, and identify, on a preliminary basis, potential areas of concern such as landslides, shallow groundwater, soft soil, and/or hard rock near the ground surface that may impact the installation of tower footings and/or construction of access roads.

The information to be reviewed will include, but is not limited to, the following:

- USGS topographic maps,
- Published geologic reports,
- Published groundwater reports,
- Water well logs and reports,
- State Department of Transportation geotechnical reports for nearby projects, and
- Other pertinent information based on inquiries to local, state, and federal agencies.

Task 1B: Phase I – Photogeologic Interpretation

A photogeologic interpretation of the alignment will be made utilizing geo-referenced aerial photographs provided by HDR. The purpose of the photogeologic interpretation will be to refine the information developed in Task 1A and identify topographic and geologic features that could affect design and construction of the transmission line.

Task 2: Phase II - Surface Reconnaissance

Perform a surface reconnaissance of the proposed tower locations of the proposed corridors. Surface reconnaissance includes a field review of each proposed tower site and any available subsurface exposures along the route, such as cut slopes, gravel pits, and eroded stream banks/gullies. The surface reconnaissance will form the basis for the subsurface exploration plan in Task 3A.

Task 3A: Phase III – Subsurface Exploration Plan

Based on the surface reconnaissance and final tower locations, develop a test pit and soil boring exploration plan according to the test pit and soil boring protocol described below. Present the exploration plan to HDR for review and approval. Contact the active agricultural and residential landowners for permission to excavate test pits at the proposed locations. Coordinate with underground utility locators as needed to clear the proposed exploration sites.

Task 3B: Phase III - Subsurface Exploration (Test Pits)

Provide a tracked hydraulic excavator with operator and a field engineer/geologist to perform test pit explorations described below at selected tower locations. Test pits should extend to a depth of 12 feet or to refusal in rock or boulders. The Contractor shall excavate test pits at tower locations according to the following protocol:

- A. In soil conditions, one test pit per tower is generally adequate to characterize the subsurface conditions. Where generally similar subsurface conditions are anticipated over several miles, a representative test pit should be performed at a minimum of one tower location per line mile.
- B. Where rock is suspected, the initial test pit shall be excavated near a proposed tower leg location. If rock is encountered within 12 feet of the surface, additional test pits should be excavated at each of the remaining tower leg locations. If no rock is encountered in the initial test pit, the field engineer/geologist should determine the need for the number of supplemental test pits needed to characterize subsurface conditions at the tower site.
- C. In agricultural and residential areas, excavate representative test pits in accessible open areas adjacent to the proposed tower locations.
- D. Reference test pit numbers to tower number (line mile/tower number) and leg number according to the attached square tower design leg layout numbering system.

Provide a field engineer/geologist who will coordinate the test pit excavations, obtain representative photos of the test pits and spoil piles, and describe the subsurface conditions at each test pit in a test pit log. Each test pit log will include:

1. Test pit number, tower number (line mile/tower number), and tower leg number.
2. A field description of the materials encountered in accordance with the USCS soil classification system. Estimate size range of boulders where encountered. Bedrock descriptions shall include rock type, hardness, color, weathering, and fracture or joint spacing.
3. An estimation of the relative density of the granular materials (very loose to very dense) and the consistency of fine-grained soils (very soft to hard).
4. Notes regarding the reaction of the excavator or other information and observations provided by the operator.

5. Depth to groundwater if encountered. Note depth and extent of seepage.
6. Depths of any changes in material.
7. A sketch of the test pit. Each sketch will show the location of the test pit with respect to the tower center or leg, limits of the excavation, contacts denoting changes in material, groundwater or seepage level, and other pertinent features in the cross section such as rock outcrops or boulders.

Obtain representative soil samples only as needed to verify field classification of borderline soils. Backfill test pits. Restore ground to original grade and, in active agricultural areas, cover disturbed area with conserved topsoil. Place a 4 foot lath at each completed test pit. Mark lath with test pit number.

Task 3C: Phase III – Subsurface Exploration (Soil Borings)

Determine subsurface conditions at the selected tower locations, and at the proposed Columbia River crossing dead-end and suspension towers located just north of the Troutdale Substation. The investigations will include visual reconnaissance of surface conditions and a drilled boring at each selected tower. Perform subsurface geotechnical investigations as described below:

- A. Coordinate subsurface investigations with HDR.
- B. Locate the borings within 20 ft of the tower center stake and extend borings to a minimum depth of 25 feet. At Columbia River crossing dead-end and suspension towers, extend borings to a minimum depth of 100 ft, or at least 60 feet into rock.
- C. Advance borings, obtaining Standard Penetration Test (SPT) samples at 5 ft intervals. At Columbia River crossing structures, upon encountering refusal prior to reaching the estimated depth of 100 ft, advance the borings to a depth of 100 ft or 60 ft into bedrock (whichever occurs first) utilizing wire-line coring techniques. HQ-3 core is preferable.

Provide an experienced geologist or geotechnical engineer who will locate the borings, photograph rock core, and maintain a continuous log of the borings. Boring logs will include:

1. Boring number, tower number (line mile/tower number), and approximate top of hole elevation (tape and hand level survey is adequate). The center of the tower will be staked.
2. Type of drill and drilling techniques.
3. A field description of the materials encountered in accordance with the USCS soil classification system.
4. Notes regarding the reaction of the drill during drilling or other information and observations provided by the driller.
5. Depth to groundwater if encountered. Note depth and extent of wet areas or seepage.
6. Depths of any changes in soil/rock type or other conditions.
7. SPT sample depths, blow counts, and recovery.
8. Core run number, depth interval, percent recovery, and RQD (if appropriate).

9. Rock type, color, hardness, degree of weathering, fracture and joint spacing, inclination, width, filling, and texture (smooth or rough) of surface.
10. Retain core samples and have available upon request for HDR review.

Place a 4-foot tall lath at each completed boring location. Mark lath with boring designation.

Task 3D: Phase III – Foundation Recommendations

Evaluate the most suitable type of foundation at each tower location. Where deep foundations are required, perform the appropriate analyses required for site-specific foundation design. Provide the deliverable listed below.

V. Deliverables

Phase I. Desktop Study

- A. The results of the Phase I investigation will be provided in a Preliminary Corridor Characterization Report. Provide five (5) bound copies and one (1) electronic (PDF) copy of the report. The report will include:
 1. A preliminary description of the anticipated surface, soil, and geologic conditions along the corridors.
 2. Summary of conditions on strip maps of the alignment.
 3. The report will identify areas of potential concern and geologic hazards, such as landslide-prone areas, areas of shallow hard rock, poor (loose) soils, and shallow groundwater conditions that will require further evaluation as part of the Phase II surface reconnaissance.

Phase II. Surface Reconnaissance

- A. The results of the Phase II investigation will be provided in a Surface Reconnaissance Report. Provide five (5) bound copies and one (1) electronic (PDF format) copy of the report. The report will include:
 1. A brief description of the field procedure and equipment.
 2. A general description of the conditions encountered.
 3. A table containing a general site characterization for each tower location (example attached). Consecutive tower locations with similar site characterizations may be lumped together. Where rock is anticipated, provide estimated depth to rock at each tower leg, numbered according to the attached square tower design leg layout.
 4. Where towers are located at unsuitable sites, provide suggestions for alternate tower locations.
 5. Representative photographs of areas of concern.

Phase III. Subsurface Investigation

- A. The results of the Phase III investigation will be provided in a Geotechnical Investigation Report that presents the results of the subsurface explorations and provides foundation recommendations at each structure. Provide one unbound, ten bound copies, and one electronic (PDF format) of each report. Reports should include:
 1. A brief description of the field procedure and equipment.
 2. A table of exploration locations referenced to tower numbers and center/leg number.

3. Vicinity Map of project.
4. Maps showing exploration locations.
5. A general description of the conditions encountered.
6. A table containing a general site characterization for each tower location. Consecutive tower locations with similar site characterizations may be lumped together. Where rock is encountered or anticipated, provide depth to rock at each tower leg, numbered according to the attached square tower design leg layout.
7. Test pit logs and sketches.
8. Boring logs.
9. Representative photographs of the test pits.
10. Core photos.
11. Laboratory Test Results.
12. A table summarizing the foundation recommendations for each structure.
13. For deep foundations, provide site-specific graphs of vertical axial and uplift capacity versus depth.
14. For all drilled shaft locations, provide generalized generic or site specific subsurface profiles in graphical or tabular format that include parameters for lateral load analysis, including presumptive unit weight, phi, cohesion, presumptive pressure meters modulus, and alpha factor.
15. Where driven piles are recommended, provide the results of lateral load analyses.
16. Where liquefaction and lateral spread hazards occur, provide foundation alternatives that mitigate potential damage from these hazards.

B. A draft copy of the report for HDR review.

C. Weekly progress reports during the explorations which will be delivered to HDR by the end of the week following the reporting period. Progress reports will include a summary of work completed and a two week look ahead at upcoming work.

SCHEDULE

Phase I - Draft reports are due three (3) weeks from Notice to Proceed. Allow five (5) business days for HDR review. The final reports are due one (1) week after receipt of HDR comments.

Phase II – To be determined.

Phase III – To be determined.

- 1.5. Perform a field review of modifications to the centerline and/or tower locations as necessary.
- 1.6. Provide engineering support for BPA siting team as requested to address comments from and negotiations with landowners.
- 1.7. Provide engineering support for NEPA process as requested by BPA.

Substation Design

- 1.8. HDR will assess access roads to the substations, coordinate with geotechnical subconsultants, and perform conceptual grading and drainage designs for the alternate substation locations.
- 1.9. Provide engineering support to provide and optimize switchyard layouts in conjunction with transmission line routes, tower locations, site grading and drainage plans, and access road options/designs.
- 1.10. Generate switchyard plot plans and site plans for proposed switchyard options as directed by the project team.
- 1.11. Subcontract with geotechnical firm to provide core borings and test pits for geological and laboratory analysis of subsurface conditions at each of the four proposed switchyard sites. Evaluate geotechnical findings from a site preparation and switchyard constructability perspective for each site.

Access Road Design

- 1.12. HDR will make design modifications to the access roads as necessary, based upon LiDAR data and/or changes to tower locations.
- 1.13. HDR will perform a field review of modifications to the centerline and/or tower locations as necessary.
- 1.14. HDR will review routes in the office and in the field to identify critical areas that could be fatal flaws in deciding a preferred route.
- 1.15. Provide engineering support for BPA siting team as requested to address comments from and negotiations with landowners.
- 1.16. Provide engineering support for NEPA process as requested by BPA.

Surveying

Project Assumption: DEA, Inc will be an HDR Survey Subconsultant.

- 1.17. Work to support the selection of the Preferred Route and the NEPA process will include:
 - 1.17.1. Develop the best profile possible by Sept 15, 2011
 - 1.17.2. Complete LiDAR acquisition & LiDAR validation Surveys
 - 1.17.3. Complete special surveys in support of the Environmental Work
- 1.18. Work to support to meet the Design Schedule will include:
 - 1.18.1. Complete project control
 - 1.18.2. Support for the Access Road Program
 - 1.18.3. Complete Substations surveys
 - 1.18.4. Continue cadastral surveys on DNR and major land holder properties

Emery, Brian E - TED-TPP-2

From: Korsness, Mark A - TEP-TPP-3
Sent: Monday, June 27, 2011 10:57 AM
To: Emery, Brian E - TED-TPP-2; Jaramillo, Emmanuel - TEP-TPP-1
Cc: Marsh, Solomonn P - NSC-TPP-2
Subject: RE: DCN-I5-02, I-5 Reinforcement Project, Rel 008

Looks good to me. Approved.
Thanks.....Mark

From: Emery, Brian E - TED-TPP-2
Sent: Sunday, June 26, 2011 2:23 PM
To: Korsness, Mark A - TEP-TPP-3; Jaramillo, Emmanuel - TEP-TPP-1
Cc: Marsh, Solomonn P - NSC-TPP-2
Subject: FW: DCN-I5-02, I-5 Reinforcement Project, Rel 008

Hi Mark and Emmanuell!

Attached for your approval are two DCN's from HDR for the I-5 transmission line and substation project. Both of these DCN's modify the cost of their respective releases to support changing the survey contracts from BPA (current) control to HDR control. These DCN's include estimated costs by HDR and their subcontractors to complete required tasks through the end of FY '11.

If you approve the changes addressed on these two DCN's please send an email to me and Solomonn with your approval or print out the attached document and sign in the space provided at the bottom and return it to me. I will add my signature and pass it on to Solomonn for processing.

Please let me know if you have questions regarding these two DCN's or this approval request. Thanks!
Brian

From: Hereim, Scott A. [mailto:Scott.Hereim@hdrinc.com]
Sent: Wednesday, June 15, 2011 12:32 PM
To: Emery, Brian E - TED-TPP-2; Korsness, Mark A - TEP-TPP-3; Cochenour, William M - NSSV-TPP-2; Linson, Trudy W - NS-TPP-2; Marsh, Solomonn P - NSSV-TPP-2; Brown, Linda L - NSSV-TPP-2; Jaramillo, Emmanuel - TEP-TPP-1
Cc: Barnhart, Bill (Billings); Knudtson, Deborah; Parkins, Geoff; Moe, Donald; Custer, Claude; Grimstad, James
Subject: DCN-I5-02, I-5 Reinforcement Project, Rel 008

Brian,

Attached for your review and approval are two (2) DCN's for the next phase of the I-5 project, which includes design, survey, and geotech efforts for the line and substation through the end of FY2011 (9/30/11). As you know, there are two separate releases for the transmission line (Rel 008) and the substation (Rel 011). I have reviewed the transmission and substation costs with Mark Korsness.

Included with the transmission DCN is the SOW and budgetary estimate provided to Mark Korsness over the last few weeks. The budgetary estimate provided to Mark included the LIDAR survey work, which was already included in a previous MOD. Therefore, that amount was subtracted from the estimate to come up with the

6/27/2011

I-5 Corridor 500kV Transmission Line
HDR Scope of Work
January-September 2012

1. **Scope of Work:**

This phase includes finalizing the preliminary routing, tower spotting, access road design, geotechnical investigations, surveying, and field reviews of four (4) route options totaling about 270 miles in support of the NEPA process through May 2012. HDR assumes BPA will release the Draft EIS (DEIS) and make a determination on a preferred alternative at the beginning of June 2012. This phase also includes routing, tower spotting, access road design, geotechnical investigations, surveying, and field reviews on one (1) preferred route alternative (about 70 miles) in support of the NEPA process through September 2012.

This includes using LiDAR data and field work to refine preliminary designs and look for busts or need for significant changes, especially angle points and areas where problems could arise later (river crossings, steep terrain, constricted areas, areas near houses, areas in or near wetlands, significant roads, all substation options). Develop more detailed design on problem areas. Not necessarily producing all new photo maps and plan and profiles, etc. by October for all 270 miles, but more concentration on identifying and improving challenging or critical areas, so that once we have a preferred route later this year we can switch to concentrating on just the preferred route without major changes expected. Our efforts would then include detailed refinement over the following year to produce final photo maps, plan and profile etc. on just the preferred route to prepare for land acquisition and material ordering.

Preliminary geotechnical investigations, including desktop analysis and surface reconnaissance, will be required and will be subcontracted by HDR. No subsurface geotechnical investigations will be performed in this phase. Ground surveying will be required in this phase and will be subcontracted by HDR.

Project Management

- 1.1. HDR will maintain a project schedule using MS Project.
- 1.2. HDR will participate in all required project meetings. This cost proposal assumes four (4) project meetings in the Vancouver BPA office attended by the HDR project manager, and project engineer. Each meeting is assumed to require sixteen (16) hours per attendee, including travel. The access roads and survey project managers will also attend the meetings, and are assumed to require six (6) hours each per meeting.
- 1.3. Deliverables for this phase will be determined at a later date, but may include updated GIS data, PhotoMaps, and/or Plan & Profile drawings.

Transmission Design

- 1.4. HDR will finalize the preliminary design of PLS-CADD models for four (4) route options, totaling approximately 270 miles of corridors utilizing LiDAR survey data, imagery, video, and field review comments. This work will be completed with the release of the DEIS in June 2012.
- 1.5. HDR will begin detailed design on a single preferred route (about 70 miles) beginning in June 2012.
- 1.6. Perform field reviews of modifications to the centerline and/or tower locations as necessary.
- 1.7. Provide engineering support for BPA siting team as requested to address comments from and negotiations with landowners.

- 1.8. Provide engineering support for NEPA process as requested by BPA.

Access Road Design

- 1.9. HDR will continue developing preliminary designs of the access roads on all four (4) route options, based upon changes to tower locations, until June 2012.
- 1.10. HDR will begin detailed design of the access roads on a single preferred route beginning in June 2012.
- 1.11. HDR will perform field reviews of modifications to the centerline and/or tower locations as necessary.
- 1.12. Provide engineering support for BPA siting team as requested to address comments from and negotiations with landowners.
- 1.13. Provide engineering support for NEPA process as requested by BPA.

Surveying

- 1.14. Work to support the NEPA process through the DEIS release in June 2012 will include:
 - 1.14.1. Complete special surveys on all four (4) route options as necessary.
 - 1.14.2. Complete Lexington Substation boundary survey.
 - 1.14.3. Continue surveys on major crossings (highway, river, etc.) on all four (4) route options.
- 1.15. Work to support the NEPA process and Design Schedule from June 2012 through September 2012 will include:
 - 1.15.1. Complete project control.
 - 1.15.2. Continue cadastral surveys on the preferred route.
 - 1.15.3. Complete surveys on major crossings on the preferred route.
 - 1.15.4. Begin access road acquisition process.
 - 1.15.5. Begin L-Line surveys on the preferred route.

Geotechnical Investigations

- 1.16. HDR will utilize a geotechnical subcontractor to perform geotech services on all line route options until June 2012. Services will include finalizing the desktop analysis and performing surface reconnaissance as necessary to identify and mitigate for "fatal flaw" situations for tower locations and access roads from a geotech perspective.

Estimate Report

Estimate # LB-31702-1

Est # LB-31702-1

Facility CASTLE ROCK-TROUTDALE(SUNDIAL)
 Description NEPA AND PRELIMINARY ENGINEERING

Estimator Surratt, Laura
 Requestor Mark Korsness
 PRD #
 Request # 7350
 Est. Type Line
 Est. Level Budget
 Estimate Status Final
 Finalized Date 4/8/2011

Estimate Summary

FUNCTION	Contract		BPA		Misc	Contingency	Total
	Labor	Material	Labor	Material			
1 Project Management							
2 Planning							
3 Environmental							
4 Survey/Mapping/Photo&RS/GIS							
5 Land							
6 Design							
7 Construction - Contract							
Total				Ex 5			Ex 5
							\$45,016,258

PM Approval:

Date:

TPW Approval:

Date:

Comments

Ex 5

[

STRUCTURES - LATTICE STEEL
CONDUCTOR - 3- BUNTING
GROUND WIRE- 2-1/2" ADJACENT SUBSTATION
VOLTAGE - 500KV
TONS/MILE - 64.5
R/W 150

PROJECT MANAGER: MARK KORSNESS
PROJECT ENGINEER: JOHN GROVER

NOTES:

1. Level 5 node: 5336
2. ENVIRONMENTAL AND LAND COSTS INCLUDED
3. Rev 1 Change to budget level added dollars for refind scope.

<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Project Management Items

[
					Ex 5					
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Planning Items

[
					Ex 5					
]

Environmental Items

[
					Ex 5					
]

<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Survey/Mapping/Photo&RS/GIS Items

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Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Land Items

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Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Design Items

Ex 5

Construction - Contract Items

Ex 5

Estimate Report

Estimate # LB-31702-2

Est # LB-31702-2

Facility CASTLE ROCK-TROUTDALE(SUNDIAL)
 Description NEPA AND PRELIMINARY ENGINEERING_CMO

Estimator Surratt, Laura
 Requestor Mark Korsness
 PRD #
 Request # 7350
 Est. Type Line
 Est. Level Budget
 Estimate Status In Progress
 Finalized Date 6/1/2011

Estimate Summary

FUNCTION	Contract		BPA		Misc	Contingency	Total
	Labor	Material	Labor	Material			
1 Project Management							
2 Planning							
3 Environmental							
4 Survey/Mapping/Photo&RS/GIS							
5 Land							
6 Design							
7 Construction - Contract							
Total				Ex 5			Ex 5 \$45,016,360

PM Approval:

Date:

TPW Approval:

Date:

Comments

Ex 5

STRUCTURES - LATTICE STEEL
CONDUCTOR - 3- BUNTING
GROUND WIRE- 2-1/2" ADJACENT SUBSTATION
VOLTAGE - 500KV
TONS/MILE - 64.5
R/W 150

PROJECT MANAGER: MARK KORSNESS
PROJECT ENGINEER: JOHN GROVER

NOTES:

1. Level 5 node: 5336
2. ENVIRONMENTAL AND LAND COSTS INCLUDED
3. Rev 1 Change to budget level added dollars for refind scope.
4. Rev 2 Changed to CMO design.

<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Project Management Items

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Ex 5

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Planning Items

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Ex 5

]

Environmental Items

[

Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Survey/Mapping/Photo&RS/GIS Items

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Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Land Items

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Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Design Items

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Ex 5

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Construction - Contract Items

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Ex 5

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Estimate Report

Estimate # LX-31702-0

Est # LX-31702-0

Facility I-5 Corridor Reinforcement
 Description NEPA Estimate

Estimator Surratt, Laura
 Requestor MARK KORSNESS
 PRD #
 Request # 5288
 Est. Type Line
 Est. Level Preliminary
 Estimate Status Archive
 Finalized Date

Estimate Summary

FUNCTION	Contract		BPA		Misc	Contingency	Total
	Labor	Material	Labor	Material			
1 Project Management							
3 Environmental							
4 Geomatics							
5 Land							
6 Design							
11 Construction - BPA - Electrical Work							
Total				Ex 5			Ex 5
							\$19,025,509

PM Approval:

Date:

TPW Approval:

Date:

Comments

Ex 5

STRUCTURES - LATTICE STEEL
CONDUCTOR - 3- BUNTING
GROUND WIRE- 2-1/2" ADJACENT SUBSTATION
VOLTAGE - 500KV
TONS/MILE - 64.5
R/W 150

ENVIRONMENTAL AND LAND COSTS

INCLUDED

PROJECT MANAGER: MARK KORSNESS

PROJECT ENGINEER: JOHN GROVER

.5 DE'S & 4.1 SUSP'S/MILE(1150'DESIGN SPANS)
ROLLING MILE = (.85)LIGHT + (.15)STANDARD
LIGHT MILE = 4.1 338M+.375 338DS+.125 338D+15%
STANDARD MILE = 4.1 338A+.375 338DS+.125 338D+5%
1X20/JS-STRING ASSEMBLY.
40K DE 3X18/DE ASSEMBLY
4.0 SGL SUSP, .1 DBL SUSP, .5 DE INCL JS-STRING
ASSUMES NEW RIGHT-OF-WAY WITHOUT EXISTING ACCESS ROADS.
COSTS BASED ON > 35 MILES

INSULATORS 40K SUSP 2X20/V-STRING ASSEMBLY.

<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Geomatics Items

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Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Land Items

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Ex 5

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<i>ITEM #</i>	<i>ITEM DESCRIPTION</i>	<i>Task(s)</i>	<i>Quantity</i>	<i>Units</i>	<i>Cntgy %</i>	<i>Cntr MAT \$</i>	<i>Cntr LAB \$</i>	<i>Bpa MAT \$</i>	<i>Bpa LAB \$</i>	<i>Bpa MISC \$</i>
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Design Items

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Ex 5

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Construction - BPA - Electrical Work Items

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Ex 5

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