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# **Conceptual Design Report, "TWRS Privatization Phase I, Site Development and Roads, " Subproject W-505.**

**Gurdhian Singh**

Numatech Hanford Corporation, Richland, WA 99352

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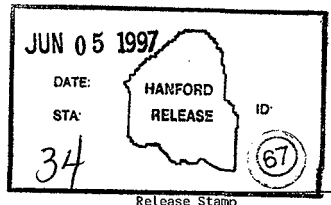
**Key Words:** CDR, Conceptual Design Report, roads, site, construction power, electrical, PC, privatization, TWRS, Private Contractor, W-505.

**Abstract:** This document includes Conceptual Design Report (CDR) for the site development, construction of new roads and improvements at existing road intersections, habitat mitigation, roadway lighting, and construction power needed for the construction of two Private Contractor (PC) Facilities. Approximately 50 hectare (124 acres) land parcel, east of the Grout Facility, is planned for the PC facilities.

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Release Approval Date



**Approved for Public Release**

# **Conceptual Design Report**

## **TWRS Privatization Phase I**

### **Site Development and Roads**

#### **Subproject W-505**

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the  
U.S. Department of Energy under Contract DE-AC06-96RL13200

**CONCEPTUAL DESIGN REPORT**  
**TWRS PRIVATIZATION PHASE I**  
**SITE DEVELOPMENT AND ROADS**  
**SUBPROJECT W-505**

**Prepared for**  
**Numatec Hanford Corporation**

**June 1997**

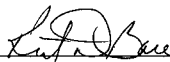
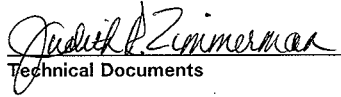
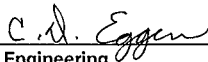

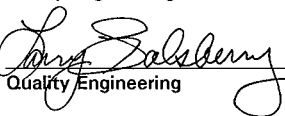

**Prepared by**  
**Fluor Daniel Northwest**  
**Richland, Washington**

**W505CDR**

**W505CDR**  
**CONCEPTUAL DESIGN REPORT**  
**FOR**  
**TWRS PRIVATIZATION PHASE I**  
**SITE DEVELOPMENT AND ROADS**  
**SUBPROJECT W-505**

**APPROVED**

**Fluor Daniel Northwest**

 Principal Lead Engineer	<u>6/5/97</u> Date	 Technical Documents	<u>6/5/97</u> Date
 Safety Engineering	<u>6/5/97</u> Date	 Environmental Engineering	<u>6/5/97</u> Date
 Quality Engineering	<u>6/5/97</u> Date	 Project Manager	<u>6/5/97</u> Date

**Numatec Hanford Corporation**

 Project Manager	<u>6/5/97</u> Date
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## ABBREVIATIONS

ACP	asphaltic concrete pavement
ACSR	aluminum conductor steel reinforced
CDR	conceptual design report
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
DRD	design requirements document
FDAS	Field Data Acquisition System
HAW	high-activity waste
HPT	Health Physics Technician
LAWs	low-activity wastes
NEPA	National Environmental Policy Act
NIC	not in contract
NOC	notice of construction
P2/WMin	pollution prevention/waste minimization
PCs	Privatization Contractors
PHMC	Project Hanford Management Contractor
PW	potable water
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
RL	Richland Operations Office (DOE)
RW	raw water
TWRS	Tank Waste Remediation System
WAC	Washington Administrative Code
WBS	work breakdown structure
WDOH	Washington State Department of Health
WSDOT	Washington State Department of Transportation



**CONCEPTUAL DESIGN REPORT**  
**TWRS PRIVATIZATION PHASE I**  
**SITE DEVELOPMENT AND ROADS**  
**SUBPROJECT W-505**

**I. INTRODUCTION**

---

Historically, the primary function of the 200 Areas facilities at the Hanford Site was to process nuclear material for defense purposes. This activity resulted in liquid radiological wastes that were stored in tank farms located in both the 200-East and 200-West Areas. High-activity waste (HAW) has been stored in large underground storage tanks at the Hanford Site since 1944; approximately 208 ML (55 Mgal) of waste are stored in 177 tanks. These caustic wastes consist of many different chemicals in the form of liquids, slurries, saltcakes, and sludges. In 1992, the Tank Waste Remediation System (TWRS) program was established to manage, retrieve, treat, immobilize, and dispose of these wastes in a safe, environmentally-sound, and cost-effective manner.

The U.S. Department of Energy (DOE), Richland Operations Office (RL) is pursuing a new business strategy of hiring private contractors to manage the retrieval, immobilization, and disposal of low-activity wastes (LAWs). Privatization strategy includes design, permitting, construction, operation and deactivation of equipment and facilities for treatment of tank wastes. The approach to privatization will be conducted in two phases. Phase I will be a proof-of-concept/commercial demonstration phase and includes supernatant pretreatment, LAW immobilization, and an optional HAW immobilization by two competing vendors.

Once proven on this relatively small scale, privatization will be expanded to Phase II, the full scale production phase, through a second competition to dispose of the remainder of the tank waste. Facilities will be sized so that all the

remaining wastes can be processed and immobilized on a schedule that will accommodate removing the waste from the single-shell tanks by year 2018 and the double-shell tanks by 2028.

The TWRS Privatization Infrastructure Project is a part of the first phase of the Privatization initiative and will develop a site to support the treatment of Hanford Site wastes. The Infrastructure Project consists of four subprojects that will provide key physical interfaces and services needed to support the Privatization mission.

Subproject W-505 is one of the four projects that make up the TWRS Privatization Infrastructure Project. The subprojects provide the infrastructure (except for sanitary sewer), the site improvements, and interfaces necessary to support the demonstration phase (Phase I) of TWRS Privatization. The subprojects are:

- W-503, "Electrical Power System"
- W-504, "Raw and Potable Water"
- W-505, "Site Development and Roads"
- W-506, "Liquid Effluent Transfer Systems"

Subproject W-505 will establish transportation routes to the selected site, construct roads, develop utility corridors, and provide PC construction power within the site (ref 1, 2, and 3)

In conjunction with preparation of the TWRS Request for Proposal (RFP) for the solicitation of Privatization Contractors (PCs), a location was selected for the Phase I facilities (ref 4). The selected area is east of the major 200-East Area road and rail network, and requires modifications and additions to existing transportation corridors. The area was previously developed and characterized for the grouted waste vault disposal site.

The cost estimate summary and conceptual project schedule are in Appendices C and D, respectively.

## **II. SUMMARY**

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Subproject W-505 will focus on the site preparations in support of subsequent utility and Privatization Contractor (PC) construction activities for the Phase I of the Tank Waste Remediation System (TWRS) Privatization Infrastructure Project. The work will include improvements to three street intersections, widening and asphalt overlays of over 2300 m of existing roadway, the construction of about 1800 m of new roadways, the removal of existing facilities, utilities and physical features for installations within new utility corridors, the relocation of approximately 170 000 m<sup>3</sup> of earthwork during the construction of new roads, and the remediation of over 35 hectares of natural habitat destroyed by the Privatization activities. In addition, there will be extensions of existing electrical power in support of the PC construction activities and for area lighting at street intersections.

Subproject W-505 is a fiscal year 1999 Line Item. Total estimated costs (TEC) of the project are \$4,420,000; other project costs (expense funded) are \$4,670,000. The total subproject cost (TPC) is \$9,090,000.

## **III. JUSTIFICATION**

---

Subproject W-505 will prepare a portion of the former Grout Vault disposal site for turnover to the PCs for the construction of mixed-waste treatment facilities.

The CDR describes the allocation of land, the transportation routes, and establishes utility and transfer feed/line corridors for the PCs. Utilizing a portion of the former Grout Vault disposal site provides the most cost effective and efficient means to satisfy the project milestones.

The subproject upgrades are required to support the TWRS Privatization contracts (ref 5 and 6). By supporting TWRS Privatization, subproject W-505 supports the Tri-Party Agreement milestones for site clean-up, processing, and disposal of tank wastes.

#### **IV. DESCRIPTION OF PROJECT SCOPE**

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##### **A. IMPROVEMENTS TO LAND (460)**

Various alternatives for site development were investigated in an engineering study (ref 7). The study integrated engineering studies for roads and rail system modifications, raw water (RW) and potable water (PW) service, liquid effluent transfer systems, and electric power to assure that all the systems fit together. The preferred method for providing construction power is identified in a letter report (ref 8). A Master Site Plan (ref 9) utilized the Site Development Engineering Study to ensure that Privatization is fully integrated with other projects on the site.

Subproject W-505 focuses on the general site development and installation of roads in support of the proposed PC activities. The site improvements will supply each PC with near equitable site conditions as reasonably and as physically possible.

The Integrated Development Plan describes the allocation of land to the PCs (see sketch ES-W505-C01. All sketches are shown in Appendix L). Equitable parcels of land, furnished with PW and RW, liquid effluent transfer, and electrical construction power services are highlighted on the figure. The boundaries for each parcel have been approximated using existing record drawings and aerial mapping information. The coordinates are shown for each corner of each parcel. The temporary use areas are also described for each PC, identifying the land allocated for their use during construction, i.e., for parking, laydown areas, etc.

The parcel size was increased over that required by the design requirements document (DRD) (ref 10) because of additional land requirements identified by the prospective PCs during the development of the conceptual design report (CDR).

#### Site Preparation

A large mound of soil left behind by the grout vault excavation operations is located near the center of the former grout disposal site (see sketch ES-W505-C02). The soil pile, commonly referred to as the Grout Vault spoil pile, is about  $170\,000\text{ m}^3$  ( $222,000\text{ yd}^3$ ) of excavated earth. It will be relocated to facilitate the land use needs of the PCs. Approximately  $10\,000\text{ m}^3$  ( $13,100\text{ yd}^3$ ) of soil will be used to construct embankments for the new roads. The remainder will be relocated to the northeast creating a 4% grade and providing a more suitable laydown area for the PC developing Parcel A.

The following roadways will be impacted by subproject W-505:

- **Route 4S/Canton Avenue Intersection** (see sketch ES-W505-C03)  
Access to the site from Route 4S will require improvements to the Route 4S and Canton Avenue intersection. Improvements include widening Route 4S to accommodate the addition of a 366 m (1,200-ft) acceleration lane for egress from Canton Avenue onto Route 4S to the east; a 357 m (1,170-ft) acceleration lane to the west and a 265 m (870-ft) left turn from the west off Route 4S. With these changes, there will be full channelized access to and from Canton Avenue to Route 4S. Roadway lighting for the intersection and the acceleration lanes will be added. An existing deceleration lane provides access for westbound Route 4S traffic to Canton Avenue. When this access is open, approximately 200 vehicles per day use this route to reach the east tank farms and Plutonium Uranium Extraction Facility (PUREX).

The addition of the acceleration lanes will widen the road from 8.6 m (28 ft) to 16 m (52 ft). A cross-section of the road is shown on sketch ES-W505-C04. After the addition of the extra lanes, the full 890 m length will be patched, cracks filled, a geotextile fabric placed and the entire surface covered with an asphaltic concrete pavement (ACP) overlay.

- **Canton Avenue from Route 4S to South PC Loop Road** (See Sketch ES-W505-C02)

Canton Avenue is a north/south roadway serving the 200-East Area tank farms, 242-A Evaporator, etc. Traffic is restricted from access to the Route 4S. To accept the increased two-way traffic and to accommodate safe access onto Route 4S, minor grading and widening of Canton Avenue, from Route 4S to the south PC Loop Road will be required (see sketch ES-W505-C05). The Canton Avenue pavement width will be widened from 6 m (20 ft) to 8.6 m (28 ft) and overlaid with ACP for about 600 m (1,970 ft) to the junction at the south PC Loop Road. Prior to overlaying the existing road, the surface will be patched and prelevelled and cracks 6 mm (1/4 in.) and wider will be filled. A geotextile fabric will be placed between the existing pavement and the ACP overlay.

- **PC Loop Road** (See Sketch ES-W505-C02)

Access from Canton Avenue to the PC Loop Road will require about 30 m (100 ft) of new road and provisions for a right turn lane off Canton Avenue. Additionally, one power pole will be replaced and some area lighting will be installed at the intersection (see sketch ES-W505-C06).

The PC Loop Road will be the main access road serving the PCs. The two-lane road will be designed for a speed of 35 mph. The total length of the PC Loop Road is 2860 m (9,380 ft) of which about

1000 m (3,300 ft) partially exists on the south leg of the loop. The finished roadway surface will consist of two 3.7 m (12-ft) wide paved lanes and 0.6 m (2-ft) wide paved shoulders (see sketch ES-W505-C07). Corners will have a 28 m (125-ft) centerline radius to accommodate the increased turning radius of semi-truck traffic.

The 1000 m of existing road surface is in fair condition but too narrow for the intended use. This paved surface will be widened 2.4 m (8 ft) on the north side to provide the 8.6 m (28-ft) finished roadway width. Crack filler and a geo-fabric will be applied prior to placing the ACP overlay (see sketch ES-W505-C08).

The remaining portion of the PC Loop Road, approximately 1860 m (6,000 ft), will be installed as shown on sketch ES-W505-C07. The finished profile grade will be elevated 300 to 600 mm (12 in. to 24 in.) above the existing ground using soil from the Grout Vault spoil pile. This is being done to provide positive street drainage and the necessary cover for the effluent transfer lines described in subproject W-506. The Grout Vault spoil pile will also be used for embankment construction for 216-A-29 ditch (Snows Canyon) and the northeast corner of the PC Loop Road.

- **Canton Avenue/North PC Loop Road Intersection** (See Sketch ES-W505-C09)

The intersection of the north PC Loop Road with Canton Avenue is typical of the other intersections. Very little restoration work is anticipated to Canton Avenue, except for the approach from the east. The existing ground to the east is lower than the existing grade of Canton Avenue and a 0.6 to 0.9 m (2 to 3 ft) high embankment will need to be constructed for approximately 30 m.

**Phased Construction Program**

The roadways will follow a phased-construction program to protect the new roads from the rough construction traffic around the PC sites and to minimize capital expenditures early in the project. Existing roads, the Route 4S and Canton Avenue intersection, Canton Avenue to the south PC Loop Road intersection, and the existing portion of the south PC Loop Road will be improved first to accommodate the high-traffic volumes anticipated during construction. In addition, approximately 720 m (2,360 ft) of the north PC Loop Road will be constructed from Canton Avenue to the east side of Snows Canyon. This is being done to provide the Parcel A PC reasonable access, commensurate with that provided for the Parcel B PC. The remaining roads will be utilized in their present condition during most of the construction period.

The alignment for the remaining portion of the PC Loop Road will be established and constructed to the height of the subbase. This activity consists of clearing/grubbing the surface, compacting the subgrade, placing the base course crushed rock over the prepared subgrade, compacting it, and applying a dust suppressant over the gravel roadbed. The gravel road surfaces will be constantly monitored throughout construction, with frequent regrading and compaction as necessary and again treated with a dust suppressant.

The locations where significant embankments or fill are required, i.e., 216-A-29 ditch (Snows Canyon), the northeast corner of the PC Loop Road and the ramp near the southeast grout vault area, etc., will be constructed to the line and grade up to the road subgrade or subbase as previously mentioned. The embankments will be constructed using compacted structural fill, utilizing the material from the Grout Vault spoil pile.



The connecting "inter-area" roads (roads marked not in contract [NIC]) will not be constructed at this time (see sketch ES-W505-C02). However, the north/south road, bordering the west side of the PC parcels, will be constructed to the subgrade elevation to accommodate the installation of the effluent transfer lines (subproject W-506). A substantial fill is required at this location leading into the grout vault area. Other interior roads required by the PCs will be constructed at their expense or existing unimproved roads will be used.

The construction sequence for the PC Looped Road will be as follows:

- Verify location of existing monuments and install any new control monumentation and benchmarks.
- Establish and stake utility and transfer/feed line corridor alignments.
- Clear and grub utility corridors.
- Stake road centerline.
- Scan for underground utilities.
- Issue excavation/backfill permits.
- Construct the roads to the subgrade elevations.
- Install utilities, i.e., PW, RW, effluent pipelines, substation telecommunication, and electrical lines.
- Apply herbicide to the subgrade.

- Cover with crushed-rock subbase, leveling course and ACP where applicable.
- Apply dust suppressant to gravel road surfaces.

The gravel roads will be maintained on an "as-needed" basis and will receive repeated applications of dust suppressant.

Areas disturbed by road construction and utility installations that are not covered by crushed rock will be stabilized with vegetation. Embankment slopes, the spoil pile removal area and the relocated spoil pile area will be hydro-seeded.

When the PCs construction work nears completion, the construction on the unfinished portion of the PC Loop Road will resume. Additional base rock will be added to the road foundation to repair any thinned-out areas in the new road base. *The leveling course will be laid, followed by the specified amount of ACP, applied and compacted to match the grade of the adjoining surfaces.* Edge and centerline striping will complete the roadwork installation.

### **Fencing**

Where roadways pass through the perimeter fence, the existing fabric and line posts will be removed to facilitate roadway construction. Gate posts and gates will be installed to maintain continuity of the fenced enclosure. The gates will be equipped with center stops and hardware suitable for locking.

Approximately 1100 m (3,600 ft) of new fencing will be installed along the southern grout vault perimeter fence. The 2.1 m (7-ft) high, chainlink fence will be installed midway between the existing perimeter fence and

the north side of the 216-A-37-1 and 216-A-37-2 cribs (see sketch ES-W505-C02). The fence will provide a catch point for wind blown, potentially rad-contaminated tumbleweeds and other debris.

Approximately 240 m (800 ft) of existing fence will be removed and relocated south as described in the transfer feed/line corridor work.

#### **Transfer Feed/Line Corridors**

DOE has committed to provide easement corridors for the PCs to construct waste transfer/feed pipelines between the AP Tank Farm and their facilities.

The proposed route for the transfer/feed line corridor will require a substantial amount of demolition work to clear a pathway for PCs to install waste transfer pipelines. The Grout Vault Complex is no longer an operating facility. However, the disassembly of portions of this facility are of concern to the future missions on this site. Project W-465, "Immobilized Low Activity Waste Interim Storage," will utilize the existing Grout Vault Complex to the greatest extent practicable.

The transfer/feed line corridors are shown on sketch ES-W505-C02, travelling along the north and south sides of the Grout Vault pit and coming together on the west side of the grout vaults. Both corridors come together run parallel with the south portion of Grout Drive, to the 241-AP Tank Farm. Clearing the pathway for the proposed transfer/feed line corridor will require the demolition and relocation of a few existing items and buildings. A few of the features to be removed or relocated are as follows:

1. Remove and relocate MO-392 (changeroom trailer).
2. Remove MO-041 (Multi-Purpose Facility) on the southeast corner of the Grout Vault Complex.

3. Remove and relocate the existing chainlink fence approximately 240 m (800 ft), 15 m (50 ft) south.
4. Remove and relocate perimeter lighting and power poles 21 m (70 ft) south.

In the process of constructing the transfer/feed pipelines, the PCs will demolish the following items:

1. Remove a portion of the grout vault transfer lines that cross to the grout vaults on the extreme east end of the facility.
2. Completely disassemble the existing sanitary sewer disposal system, by removing the septic tank, dose chamber, wet pits, etc., and demolish the drainfield.
3. Remove underground utility services to MO-041.
4. Remove all interfering existing underground and cables within the proposed transfer line corridor, i.e., electrical and telecommunication lines, cathodic protection systems, ground grids, etc.

When the new transfer lines are installed, all the disturbed utilities required to support the Grout Vault Complex, i.e., the mobile offices, will be restored by the projects having use for the facility. The exception will be the sanitary sewer system serving MO-282, MO-283, MO-284, and MO-997. The restoration of the sewer system will require a significant design effort. An allowance has been included in the estimate for the design and construction of this sewer system restoration activity and for the relocation of the MO-392 changeroom within the Grout Vault Complex.

### Habitat Mitigation

During final closure of the project W-058 NEPA process, DOE committed to a 1 to 3 ratio for the amount of habitat destroyed to amount of habitat to be reclaimed (or replanted). Since that initial negotiation, a graded approach has been established that sets the ratio of replacement contingent on the quality of the habitat destroyed. As for the former grout compound, the existing sagebrush habitat is classified as of the highest quality. The 1 to 3 ratio will apply. The requirement for sagebrush habitat mitigation is something DOE negotiated with the state and other interested parties, as something DOE will do when the habitat is destroyed in the process of doing work at Hanford (therefore, the cost for mitigation can only be charged to DOE).

Several hectares of mature sagebrush will be affected by the TWRS Phase I construction activities (see sketch ES-W505-C11). For the Infrastructure Projects (subprojects W-504, W-505, and W-506), it is anticipated that approximately 4 hectares (10 acres) of sagebrush habitat will be destroyed by the development and construction of the access roads and utility easements. From subproject W-503, another 1.9 hectares (4.7 acres) will be affected by the construction of the 230 kV substation, and 1 to 2 hectares (2.5 to 5 acres) will be affected by the construction of the 230 kV transmission line. This seems like a small amount, but considering the wildfire of 1984, much of the sagebrush habitat beyond about 360 m (1,200 ft) east of the former grout disposal compound, was destroyed. The subtotal for the sagebrush habitat that will be destroyed by Project Hanford Management Contractor (PHMC) Phase I construction activities is 7 to 8 hectares (17 to 20 acres).

Assuming that the entire Phase I compound is stripped in the process of the PCs building their facilities, the amount of habitat destroyed increases by another 16 hectares (40 acres) for the northern parcel (Parcel A) and 11 hectares (28 acres) for the southern parcel (Parcel B). The subtotal for

all the sagebrush habitat that will be destroyed by Phase I PC construction activities is 27 hectares (68 acres).

This results in a total of 35 hectares (87 acres) of sagebrush habitat destroyed by TWRS Phase I construction activities. The cost to mitigate the loss of 35 hectares of habitat destroyed by the construction of Phase I facilities will be \$1,920,000.

#### **Groundwater Monitoring Wells**

There are 21 groundwater and vadose zone monitoring wells within the former grout disposal compound. Eleven of the wells will be retained as active wells to support various monitoring programs (see sketch ES-W505-C02). The remaining 10 wells have been abandoned or will be abandoned in the near future.

The 11 wells for the monitoring programs are identified as Category 3 or Category 4 wells. Access to Category 3 and Category 4 wells will be required throughout Privatization Phase I and during construction activities.

During site planning and development, 4 of the 11 wells that are to remain in use were identified as wells that could be impacted by Privatization facility construction activities (wells E25-25, E25-32, E25-39, and E25-1000). They are identified as Category 4 wells in WHC-SD-WM-ES-398 (ref 11). Only a Category 4, priority 1 or 2 well will require replacement if the integrity/accessibility of the well cannot be assured. Well E25-32 is the only well identified as priority 1 and the well has a high probability of requiring replacement as it is situated at the center of Parcel A. Wells E25-25, E25-39, and E25-1000 are priority 2 wells.

With the amount of land provided each PC, being increased to approximately 22 hectares (55 acres) to support construction activities,

several wells previously identified as Category 3 are now classified as Category 4. Wells E25-30 and E25-44 are in the southern 22 hectare (Parcel B). Wells E25-29, E25-31, E25-37, and E25-38, and are in the transfer/feed corridors. These wells are on the perimeter of the utility corridor and should not obstruct construction activities.

## **B. UTILITIES (600)**

### **Raw Water and Potable Water**

RW and PW will be provided under subproject W-504.

### **Raw Water for Construction (subprojects W-503, W-504, W-505, and W-506)**

An existing standpipe on the southwest quadrant of the project site will provide RW for filling the water tanker trucks (see sketch ES-W505-C02). The unimproved dirt road leading to the standpipe will require a minimal amount of gravel, 75 to 100 mm (3 to 4 in.) compacted thickness, to stabilize the road surface. Over the duration of the construction, this road will require maintenance consisting of frequent grading and additional crushed rock applied to minimize rutting and degradation of the road base.

RW for PC construction activities will be provided under subproject W-504.

### **Construction Power and Street Lighting (See Sketches ES-W505-C03, ES-W505-C06, ES-W505-C09, and ES-W505-E10, and Reference Drawing H-13-000079)**

Construction power, of 4.7 megawatts per parcel, will be provided to the PC parcels at 13.8 kV from existing line C8-L5 with backup power available from line C8-L8. The power transformer and insulated feeder conductors at each PC parcel will be provided by the PC. The section of pole line C8-L6 running east from the intersection of Canton Avenue and 4th Streets past the grout facilities will be disconnected from line C8-L6

and connected to line C8-L5 via a new 3-pole, gang-operated switch. At the east end of the grout facilities, the existing line changes to 480 V and continues northeast and east to an air monitor location. The first three poles of the 480 V line will be replaced with larger poles and new poles will be installed to carry line C8-L5 to the PC parcels. The existing 13.8 kV line conductors will be removed and will be replaced with #4/0 AWG copper conductors to provide adequate capacity, with acceptable voltage drop, to the PC parcels.

Line C8-L8 will be extended from south of the 202-A Building to the vicinity of PC Parcel B. It will be placed on existing poles as far as Canton Avenue and then on new poles to the PC parcels. The line conductors will be replaced with 336.4 kcmil aluminum conductor steel reinforced (ACSR) conductors from the tap west of the 202-A Building east. The existing pole line carrying street- and fence-lighting conductors along the south side of the grout facilities will be removed to provide clearance for a new transfer/feedline corridor. Pole-mounted, manual gang-operated switches will be provided to permit transferring the PC parcels to line C8-L8 if an outage is experienced on line C8-L5.

A 900-kVAR capacitor bank will be installed on one of the poles near the PC parcels to reduce the voltage drop. Pole-mounted primary metering equipment will be provided at each PC parcel.

Power demand, energy consumption and reactive consumption will be metered. Metering class current transformers will be sized to the anticipated load and will have a rating factor of 3 at 30 °C. Signal wires for both energy and reactive consumption from the meter at each PC parcel will follow the pole line back to Field Data Acquisition System (FDAS) data logger 059 at 241-AW. Surge protection and induced voltage isolation for the signal wires will be provided.



The physical configuration of aerial equipment will conform to standards furnished by the DynCorp Electrical Utilities group.

Street lighting for the reconfigured intersection at Route 4S and Canton Avenue will be provided by installing seven new lighting fixtures mounted on new steel poles. The ballast in the existing lighting fixture over the perimeter gate will be replaced and the fixture will remain in place. The steel poles will be equipped with slip (breakaway) bases. Transformer E3199L will be replaced with a larger transformer to provide 480-V power for the new lighting fixtures.

At the intersection of Canton Avenue and the new road on the south side of the Grout facilities, a new pole will be installed to replace existing pole E1077 that is approximately on the centerline of the new road. A street-lighting fixture will be mounted on the new pole, and power will be run from transformer C6466L, which is located on pole E1075 two spans north of the new road. This lighting fixture will operate at 240 V.

At the intersection of Canton Avenue and the new road on the north side of the Grout facilities, a taller pole will be installed to replace existing pole E464 in order to provide adequate clearance over the new road. A new street-lighting fixture will be installed on the new pole and will be wired into the existing 2,400 V streetlight circuit that presently exists there.

#### **Liquid Effluent Transfer Lines**

Liquid effluent waste/transfer lines will be installed under subproject W-506.

**C. DEMOLITION (810)****Removal and Relocation of Power Poles**

At the intersection of the new road on the north side of the grout facilities and the 480-V air monitor line, one existing pole will be relocated/replaced to move it out of the path of the new road.

At the intersection of the new road on the north side of the Grout facilities and Canton Avenue, one existing pole will be replaced with a taller pole to provide adequate clearance over the new road and to provide adequate mounting height for the new street-lighting fixture.

At the intersection of the new road south of the grout facilities and Canton Avenue, one existing pole will be replaced with a taller pole to move it out of the path of the new road and to provide adequate mounting height for the new street-lighting fixture.

At the end of the existing 13.8 kV line north of the grout facilities, three existing poles will be removed and replaced to provide adequate support structures for the new, heavier line.

Three existing poles will be replaced along Canton Avenue south of AP Tank Farm to provide adequate clearance for the new 13.8 kV line.

Approximately 11 existing poles will be replaced along the south side of the Grout facilities to make way for a new transfer/feedline corridor.

At the intersection of Route 4S and Canton Avenue, one existing transformer will be removed and replaced with a new one with adequate capacity to supply the new street-lighting fixtures.

**D. OTHER PROJECT COSTS (900)**

*Scanning for underground utilities will be performed during the initial stages of definitive design. Once the routes for the roads and corridors are established, the roads and utility corridors will be scanned to determine the presence of detectable underground utilities. Unknown detected lines may require additional exploratory excavations, or potholing, to determine the origin of these lines.*

As part of subproject W-505, a plan was developed that identifies the work required to establish the environmental baseline for the TWRS Phase I Privatization site before construction begins. This Site Characterization Plan (ref 12) will be implemented to allow comparison of site conditions prior to, during, and after TWRS Phase I activities.

Administrative costs incurred to abandon and replace any ground monitoring wells impacted by TWRS Phase I activities will be funded by subproject W-505. It is anticipated that only well 299-E25-32 is in jeopardy of requiring replacement. The expense of drilling the replacement well, and abandoning the existing, is anticipated to be covered under the Hanford Site Groundwater Monitoring Program.

At the initiative of subproject W-505, a Data Quality Objectives (DQO) session was held with the Washington State Department of Ecology on the subject of a 216-A-29 ditch crossing. As the ditch is an inactive hazardous waste disposal unit that has been identified for closure under RCRA Part A permit (ref 15), any activity within the waste units boundary must be approved by the regulators. The DQO establishes the level of characterization that is to be performed in the vicinity of the embankment to verify prior sampling data. The performance and documentation of the elements of the DQO are part of subproject W-505.

**E. DESIGN COMPLIANCE**

The design and construction of subproject W-505 will comply with the codes and regulations listed in the project DRD.

## **V. METHODS OF PERFORMANCE**

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The methods of performance comply with the work breakdown structure (WBS) in Appendix A. The WBS indicates the major phases of work to be accomplished, i.e., engineering, construction, project management, and other project activities.

**A. ENGINEERING (WBS 1.0)**

**Definitive Design (WBS 1.1)**

The contracted engineer/constructor contractor will provide definitive design for subproject W-505.

**Engineering and Inspection (WBS 1.2)**

The contracted engineer/constructor contractor will provide engineering during construction, acceptance inspection, incorporate contractor as-build/vendor submittals into the Hanford system, oversee walkthroughs and preparation of open items and exception lists, and support contract closing documentation.

**B. PROCUREMENT (2.0)**

N/A

**C. CONSTRUCTION (WBS 3.0)**

**Force Account Construction (WBS 3.1)**

N/A

**Fixed-Price Construction (WBS 3.2)**

Construction work will be performed under fixed-price contracts managed and administered by the contracted engineer/constructor contractor.

**D. PROJECT MANAGEMENT WORK (WBS 4.0)**

The performance contractor is directly responsible to the PHMC for performing all activities associated with this subproject. The performance contractor will be responsible for the development of overall infrastructure project plans, strategy documents, management of design/construction/startup activities and related PHMC interface activities as well as engineering/technical support.

**E. OTHER PROJECT COSTS (WBS 5.0)**

**Project Definition (WBS 5.1)**

The performance contractor will provide electrical system integration including interface with the Integrated Product Teams (IPTs) and the Waste Integration Team (WIT), and preparation as well as maintenance of interface control documents (ICDs), and the DRD. Project definition also includes 230 kV system analysis to the BPA.

**Conceptual Design (WBS 5.2)**

The contracted engineer/constructor contractor will prepare a conceptual design report that will provide sufficient details for developing defensible cost estimates and a project schedule.

**Project Technical Support (WBS 5.3)**

The performance contractor will direct the resources necessary to perform the expense funded activities (other project costs) needed to implement subproject W-505.

- Support the conceptual phase of the project which included the generation of a DRD and a CDR.

- Preparation of an engineering evaluation.
- Performance of unreviewed safety question screening.
- Provide input for integrated schedule.
- Preparation of project management plan.
- Preparation of quality assurance plan.
- Preparation of the safety and environmental documentation.
- Provide design input and reviews from cognizant plant personnel for definitive design.
- Change control and records management support.
- Provide construction support, as required.
- Provide utilities support for system testing and startup including final tie-ins and operational testing.
- Provide the resources necessary to implement the Site Characterization Plan.
- Provide the resources necessary to support any groundwater monitoring well relocation required by the development of the Phase I site.
- Provide the resources necessary to support the DQO process in order to permit the construction of an embankment and utilities across the 216-A-29 ditch.

**Habitat Mitigation (WBS 5.4)**

Provide the resources necessary to implement the required habitat mitigation measures as required by RL. Develop mitigation plan, generate contract documents, award fixed-price contract for mitigation construction activities, monitor mitigation activities, and generate closeout report.

## **VI. REQUIREMENTS AND ASSESSMENTS**

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### **A. SAFEGUARDS AND SECURITY**

Parts of this project are within the 200-East Limited Security Area potentially requiring security clearance or security escorts. A safeguards and security plan will be provided in accordance with PHMC procedures. This plan will be in effect at the time of construction.

### **B. HEALTH AND SAFETY**

During the construction period, construction contractors will be required to take all reasonable precautions in their work to protect the health and safety of their employees, subcontractors, operation contractor, and DOE personnel.

All excavation work will be performed in accordance with the Washington Administrative Code (WAC), WAC-296-155, Part N, Excavation, Trenching, and Shoring."

The constructor will provide an advance schedule to the patrol and to the fire department. A minimum 24-hr advance notification of any excavation work disrupting any roadway or other services will be required.

Risks associated with construction activities are to be considered and mitigated to the extent practical. In this regard, applicable DOE standards and regulations will be complied with during construction to minimize these risks. A primary hazard is the risk of radioactive contamination and

*exposure associated with the disposal of radioactive contaminated soil from the pipe trench excavation, and exposure from existing waste transfer lines that are tied into or exposed by project excavation. The appropriate safety standards and procedures for removing, packaging, and disposing of contaminated soil and materials will be followed.*

**C. DECONTAMINATION AND DECOMMISSIONING**

Decontamination and decommissioning measures are not required for this subproject.

**D. PROVISIONS FOR FALLOUT SHELTERS**

Provisions for fallout shelters are not required for this project.

**E. MAINTENANCE AND OPERATION REQUIREMENTS**

The new fenceline installed to intercept wind-blown debris will be cleared off periodically.

The gravel road surfaces will require ongoing maintenance due to construction traffic. Repeated applications of base rock may be required to keep the surfaces uniform.

Grading the road surfaces, adding crushed rock, and applying a soil suppressant will be required to keep the road conditions in good shape.

**F. AUTOMATED DATA PROCESSING EQUIPMENT**

Electrical energy consumed by the PCs will be metered. Each meter installed will be connected to FDAS to monitor power usage. No other automated data processing equipment is required.



## **G. QUALITY ASSURANCE/SAFETY CLASSIFICATION**

### **1. Quality Assurance Activities**

Minimum project quality attributes are included in the project DRD and will be incorporated into the project specific Quality Assurance Program Plan (QAPP). The QAPP will indicate the project critical characteristics, corresponding safety classification assignments, and programmatic controlling documents. The specific technical and quality programmatic requirements, material certifications, qualification and certification of personnel, inspections, examinations and testing, and applicable quality assurance records will be established during definitive design and included in design documents. Specifications will require controls to exclude misrepresented products.

Independent design verification for subproject W-505 will not be required.

### **2. Safety Classification**

Safety classifications will be identified for those structures, systems, and components important to safety or environmental protection so that appropriate efforts will be placed on design, procurement, construction, testing, operation, maintenance, and modifications.

Safety classification criteria and methodology are defined in WHC-CM-4-46, "Non-Reactor Facility Safety Manual." Safety classifications are determined through analysis and consequences of failure based on information contained in the project DRD and safety analysis documents. The resulting safety classifications form the basis for the Hanford design and quality assurance requirements applied to the project. General Services is the highest level anticipated for any element of the proposed project.

**H. ENVIRONMENTAL COMPLIANCE**

The design and construction of subproject W-505 will comply with the following environmental regulations:

10 CFR 1021, "National Environmental Policy Act (NEPA)."

36 CFR 800, "Protection of Historical and Cultural Properties."

50 CFR 402, "Interagency Cooperation - Endangered Species Act."

DOE Order 5440.1E, "Compliance with the National Environmental Policy Act."

DOE Order 5484.1, "Environmental Protection, Safety, and Health Protection Information Reporting Requirements."

WAC-173-160, "Minimum Standards for Construction and Maintenance of Wells; Part Three, Resource Protection Wells."

WAC-246-247, "Radiation Protection-Air Emissions."

Adherence to these regulations ensures that the environmental impacts are understood and properly mitigated, that cultural sites and artifacts are identified and protected, that ecological reviews have been completed and mitigation activities identified, and that resource protection wells meet the requirements for new wells and for the abandonment of wells.

A cultural review of the Phase I Infrastructure development work area was performed and documented. The review determined that cultural sites and artifacts do not exist on the surface and are not expected to be found in the subsurface areas that will be excavated. If, however, artifacts or

cultural sites are uncovered or disturbed during excavation or grubbing, work must be halted until the find has been analyzed and properly mitigated.

The activities of constructing and upgrading roads and commissioning/decommissioning resource protection wells are not expected to be sources of toxic air pollutants or radioactive air emissions to the atmosphere. Therefore, air permits for these regulated air emissions are not required. If, however, surface or underground radioactive contamination is discovered during the activities, notification to the Washington State Department of Health (WDOH) will be required to ensure compliance with WAC-246-247. The WDOH may require a notice of construction (NOC) if underground radioactive material areas are discovered.

**I. PERMITS**

The WDOH may require a NOC if underground radioactive material areas are discovered during subproject W-505 activities.

**J. UNREVIEWED SAFETY QUESTION EVALUATION**

(See Appendix G).

**K. POLLUTION PREVENTION/WASTE MINIMIZATION**

Beginning January 1, 1997, all new projects having an estimated value at a General Plant Project level or higher and entering into conceptual design will utilize a checklist to document that pollution prevention/waste minimization (P2/WMin) has been considered in the development of the design package.

Through the use of a microcomputer program P2-EDGE (ref 14), a P2/WMin opportunities list was prepared for subproject W-505. The list

identifies those P2/WMin opportunities that are to be implemented and/or considered for further evaluation throughout the design and construction process.

A design checklist was developed during conceptual design that documents the evaluation of the items identified in the P2/WMin opportunities list for implementation and/or consideration. Sound engineering judgment based on experience was employed to determine those P2/WMin opportunities that will be implemented into the design and/or construction activities, and when. The P2/WMin opportunities list summary report and the design checklist are shown in Appendix K.

## **VII. IDENTIFICATION AND ANALYSIS OF UNCERTAINTIES**

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### **A. ROADS**

Access to the site will be provided from the north and south as shown in sketch ES-W505-C02.

#### **Traffic Volume**

It is uncertain if traffic congestion will result from the increase in traffic volume on the Hanford roads as a result of TWRS Privatization activities. Access to the site will be provided from the north and from the south as shown in sketch ES-W505-C02. Of particular concern is the impact of increased traffic at the Route 4S/Canton Avenue intersection.

As construction activities get underway, the traffic volume will increase significantly, gradually peaking out around the year 2003 and then decreasing as operations start to wind down by the year 2012. A scenario describing this cycle could go as follows (with numbers in reference to vehicles per day): Beginning in 1998, a modest increase will occur, possibly 50 to 100 vehicles. By the year 2003, the impact could range from 700 to 1,000 vehicles as construction of both PC sites is underway.

A peak traffic volume of 1,400 vehicles may be realized as construction is fully underway, extending for as long as 6 to 8 months. A decrease will follow as construction is completed.

The impact of the traffic congestion at the Route 4S/Canton Avenue intersection is increased by the poor sight distance resulting from the existing grades. The sight distance is inadequate when compared with the recommendations of WSDOT M 22-01 for the design of new highways (ref 20). The reference drawings indicate that the sight distance provided is approximately 104 m (340 ft). The recommended minimum sight distance of 160 m (525 ft) would require modifying the street profile by dropping the road grade by 2 ft to construct a 305 m (1,000 ft) vertical curve.

There are no accidents on the historical records that would suggest a safety concern exists with the Route 4S/Canton Avenue intersection configuration. However, current restrictions with the traffic leaving 200-East Area at this location recognizes that a problem does exist. Recent modifications that closed the perimeter fence gate prohibiting vehicles from accessing Route 4S, detouring traffic to the Baltimore intersection.

The planned improvements to the Route 4S/Canton Avenue intersection will ease some of burden created by the increased traffic volume. The PCs will be advised to direct their personnel to use alternate egress routes to help mitigate traffic congestion. For example, traffic leaving Parcel A, heading north on Canton Avenue to Route 11A, Route 2, and onto Route 4S may find that road less congested.

Added contingency to the construction costs for new roads and maintenance costs on the existing and temporary roads is advisable.

**Road Maintenance**

The remaining design life and surface condition of existing roads is an uncertainty because of the anticipated increase in traffic. Both personal vehicles and heavier transport vehicles in support of construction and future plant activities will have an impact on the existing road surfaces. Some of the existing 200-East Area interior roads should receive overdue maintenance. At a minimum, a crack-fill and chip seal surface treatment should be completed. Failure to perform this maintenance may result in added repair costs during the PC construction period, causing costly delays and inconveniences. Existing 200-East Area roads which are candidates for this minimal upgrade work are:

- The remaining section of Canton Avenue not undergoing widening, from south PC Loop intersection north to 4th Street and also continuing from the offset Canton Avenue north to gate 12.
- The small portion of 4th Street between the offset portions of Canton Avenue.
- The 4th Street Loop Road, providing access to the AP Tank Farm and Grout Drive.

**B. CONTAMINATED SOILS**

During soil excavations, it is uncertain if hazardous or radioactive contaminated soils may be encountered. If rerouting or realigning to avoid the contaminated site is impracticable, removal of the contaminated soil will be addressed on a case-by-case basis. Handling contaminated soils will have an adverse impact to the cost and schedule of the project.

The costs and schedule impacts will be governed by the level of contamination. The safety and procedural methods used in response to handling contaminated materials are determined by the source. What

additional resources will be required are impossible to predict. However, there are costs associated with the handling, packaging, and the burial costs, and the monitoring support from the Health Physics Technician (HPT). Schedule impacts may result from delays caused by special dress requirements, packaging excavated material, and coordinating the transportation of packaged waste using regulated vehicles, etc. The level of contamination will remain unknown until the excavation work begins or exploratory test pits are dug.

Prior to the CDR, Plant forces were contacted and those areas where the greatest potential for contamination occur were identified. These high potential areas will be sampled to ensure that the contaminated levels will not adversely impact the project. It is recommended that a nominal contingency be applied to the cost estimate for road construction work since the risk of contamination is low.

**C. TRANSFER FEED/LINE CORRIDOR**

The width of the transfer feed/line corridor traveling the distance between the 241-AP Tank Farm and the Grout Vault is assumed to be adequate for the placement of the PC transfer lines. An increased contingency allowance for relocating additional mobile offices and restoring the associated utilities outside this corridor has been applied.

**D. AREA REQUIREMENTS FOR SANITARY SEWER**

It is uncertain how much land will be required by each PC for sanitary sewer facilities. Each PC will provide for his own sanitary sewer treatment facilities. The area of land required to support such a facility is unknown. Should the two PCs choose to work together and construct a single facility to accommodate the combined workforce, it could be a substantial cost savings and minimize land requirements.

**E. SANITARY SEWER SYSTEM RESTORATION AND LOCATION**

The restoration of the sewer system will require a significant design effort. The septic tank and dose chamber can be relocated and reinstalled with minimal difficulty. If components become damaged during demolition activities, new components can be purchased. However, relocating the disposal point for the sewer effluent will be complicated. Once the disposal point is identified, the WDOH will qualify the site, i.e., physically inspect the site and classify the soils. The design proceeds with the route selection, determining pump and pump control requirements, and preparation of contract documents. The WDOH approves the final design by signing the permit for construction and the follow-up acceptance/inspection and operational testing. A cost allowance has been provided to support the design and construction for the sanitary sewer restorations.

**F. AREA REQUIREMENTS FOR STORMWATER CONTROL**

It is uncertain how much land will be required to provide for stormwater control on the PC sites and whether continued use of subsurface disposal systems will be allowed. No provisions have been made to collect and dispose of surface water run-off from snow melt or infrequent high-intensity rainfall. The individual PCs shall include the design and installation of stormwater fixtures as required to retain all run-off generated on their respective sites.

**G. RAILROAD SERVICES**

Railroad service will not be provided directly to the site. Rail access will be made available to the PCs via an existing railroad spur and siding located approximately 1 km west of the site, near the 2400-E Building. It is uncertain what an impact this will have to the site. PCs using the rail access will travel on 4th Street to Canton Avenue. These two roads and the turnout east of the 2400-E Building are not being upgraded. The



condition of these roads has not been evaluated. No resolution to this uncertainty is offered since the use of rail transportation is not being requested by the PCs.

#### **H. HABITAT MITIGATION**

It is uncertain if the current cost for habitat mitigation can be reduced based upon some recent findings. A Hanford Site Biological Resources Mitigation Strategy Plan has been drafted that indicates a 1:1 replacement ratio for destroyed natural habitat. This lower replacement ratio may be applied to the habitat destroyed as part of the Infrastructure Project construction activities. Should this rate be applied to Phase I activities, the cost for habitat mitigation may drop to \$350,000 (a cost savings of over \$700,000).

#### **I. GROUNDWATER MONITORING WELLS**

Well E25-32 provides an extensive historical database and the preservation of the well is most desirable. The well is near the center of Parcel A (see sketch ES-W505-C02). Any costs for well replacement are expected to be funded by the Hanford Groundwater Monitoring Program. The administrative costs for this replacement will be funded by subproject W-505 under other project costs.

Wells E25-29, E25-30, E25-31, E25-37, E25-38, and E25-44 (see sketch ES-W505-C02) were not identified in the engineering study as being impacted by Phase I activities. A determination has not been made whether or not any of the wells will be replaced or if they require decommissioning. It is anticipated that they will not require replacement as part of subproject W-505 as they are on the perimeter of the waste transfer/feed corridor.

**J. ELECTRICAL**

System demands that might change the amount of spare capacity available on the 13.8 kV distribution system between now and the beginning of construction of the PC facilities are not known at this time.

**K. OTHER PROJECTS**

Project W-465 will occupy facilities and utilities in and around the Grout Vault Complex. The extent of the impact that subproject W-505 will have on project W-465 cannot be fully evaluated because project W-465 is under development.

**VIII. REFERENCES**

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**A. DOCUMENTS**

1. Letter of Instruction No. 2, Subproject W-505, Tarik Choho (Numatec Hanford Corporation) to J. L. Henderson (Fluor Daniel Northwest), "TWRS Privatization Phase I Site Development and Roads," NHC-9750685, January 31, 1997.
2. Letter of Instruction No. 3, Subproject W-505, R. J. Parazin (Numatec Hanford Corporation) to B. C. Harmon (Fluor Daniel Northwest), "Tank Waste Remediation System Privatization Phase I Site Development and Roads - Land Use Change," NHC-9751884, March 3, 1997.
3. Letter of Instruction No. 4, Subproject W-505, R. J. Parazin (Numatec Hanford Corporation) to B. C. Harmon (Fluor Daniel Northwest), "Tank Waste Remediation System Privatization Phase I, Site Development and Roads - Land Use Change," NHC-9752733, March 28, 1997.

4. Site Evaluation Report, "Tank Waste Remediation System Privatization Phase I Site Evaluation Report," WHC-SD-WM-SE-023, Rev. 0A, prepared by Westinghouse Hanford Company, January 1996.
5. Contract, "TWRS Privatization Contract," British Nuclear Fuels Limited (BNFL), DE-AC06-96RL13308, 1996.
6. Contract, "TWRS Privatization Contract," Lockheed Martin Advanced Engineering Services (LMAES), DE-AC06-96RL13309, 1996.
7. Engineering Study, "TWRS Privatization Phase I, Site Development Engineering Study," WHC-SD-TWR-ES-003, Rev. 0, prepared by ICF Kaiser Hanford Company, September 1996.
8. Letter Report, "13.8 kV Construction Power for Phase I Privatization Facilities," prepared by ICF Kaiser Hanford Company, September 1996.
9. Master Site Plan, "TWRS Privatization Phase I, Master Site Plan," WHC-SD-TWR-DSD-001, Rev. 0, prepared by ICF Kaiser Hanford Company, September 1996.
10. Design Requirements Document, "TWRS Privatization Phase I Site Development Design Requirements Document," HNF-SD-WM-DRD-013, Rev. 1, prepared by Numatec Hanford Corporation, January 1997.
11. Engineering Study, "TWRS Privatization Phase I, Monitoring Wells," WHC-SD-WM-ES-398, Rev. 0, prepared by Westinghouse Hanford Company, September 1996.

12. Site Characterization Plan, "TWRS Phase I Privatization Site Environmental Baseline and Characterization Plan," HNF-SD-TWR-EV-001, Rev. A (Draft), prepared by Pacific Northwest National Laboratory and Numatec Hanford Company, February 1997.
13. RCRA, Part A, "Dangerous Waste Permit Application," DOE/RL-88-21, June 1994.
14. Microcomputer Program P2-EDGE, Version 2.0, "Pollution Prevention Environmental Design Guide for Engineers," Pacific Northwest National Laboratory, 1996.
15. Interface Control Document, "Interface Control Document for Land for Siting," WHC-SD-WM-ICD-037, Rev. 0, prepared by Westinghouse Hanford Company, January 1996.
17. **Code of Federal Regulations**
  - 10 CFR 1021, "National Environmental Policy Act Implementing Procedures."
  - 36 CFR 800, "Protection of Historical and Cultural Properties."
  - 50 CFR 402, "Interagency Cooperation - Endangered Species Act."
18. **U.S. Department of Energy Orders**
  - Order 5440.1E, "Compliance with the National Environmental Policy Act."
  - Order 5484.1, "Environmental Protection, Safety, and Health Protection Information Reporting Requirements."
  - Order 6430.1A, "General Design Criteria."

**19. Washington Administrative Codes**

WAC-173-160, "Minimum Standards For Construction And Maintenance of Wells, Part Three; Resource Protection Wells."

WAC-246-247, "Radiation Protection-Air Emissions."

WAC-296-155, "Safety Standards for Construction Work."

**20. Washington State Department of Transportation**

WSDOT M 22—01, "Design Manual."

**B. DRAWINGS**

H-2-76751, Sh. 1, Rev. 0	"Drawing List/Civil Site Plan"
H-2-77147, Sh. 1, Rev. 2	"Civil Site Plan"
H-2-77595, Sh. 1, Rev. 1	"Civil Run-On Control Site Plan"
H-2-77627, Sh. 1, Rev. 0	"Grout Facility Site Plan"
H-2-79694, Sh. 1, Rev. 0	"Civil Site Plan"
H-2-79695, Sh. 1, Rev. 1	"Civil Construction Road Excavation Plan"
H-2-79695, Sh. 2, Rev. 1	"Civil Construction Road Profile & Misc Details"
H-2-79812, Sh. 1, Rev. 1	"Civil Plan and Sect Grout Access Road Upgrade"
H-2-98408, Sh. 1, Rev. 2	"Civil Road Plan"
H-13-00079, Sh. 1 through 6	200 East Area Electrical Utilities Distribution Map

## **APPENDIX A**

### **Work Breakdown Structure**

WORK BREAKDOWN STRUCTURE

- 1.0 ENGINEERING
  - 1.1 Definitive Design (Contracted Engineer/Constructor Contractor)
  - 1.2 Engineering and Inspection (Contracted Engineer/Constructor Contractor)
- 2.0 PROCUREMENT (N/A)
- 3.0 CONSTRUCTION
  - 3.1 Force Account Construction (N/A)
  - 3.2 Fixed-Price Construction (Construction Contractor)
- 4.0 PROJECT MANAGEMENT (Performance Contractor)
- 5.0 OTHER PROJECT COSTS (Expense Funded)
  - 5.1 Project Definition (Performance Contractor)
  - 5.2 Conceptual Design (Contracted Engineer/Constructor Contractor)
  - 5.3 Project Technical Support (Performance Contractor)
  - 5.4 Habitat Mitigation (Performance Contractor)

**APPENDIX B**

**Budget Authorized/Budget Outlay Schedule**



**B-1**

HNF-SD-W505-CDR-001, Rev. 0

## APPENDIX C

### Cost Estimate Summary

FLUOR DANIEL NORTHWEST  
NUMATEC HANFORD INC.  
JOB NO. W-505/P2GPO9

TWRS PRIVATIZATION PHASE I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PROJECT COST SUMMARY

DATE 06/05/97

DESCRIPTION	MAN		CONTR					PHMC		TOTAL
	HOURS	COST	SALES TAX	OH&P	B&I	OH&P	ESCLAT	CONT	ADDERS	
	H	\$	%	%	%	%	%	%	%	\$
ENGINEERING	5889	561969	0.00%	0.00%	0.00%	0.00%	4.00%	15.96%	27.49%	861069
CONCEPTUAL DESIGN	0	118000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	118000
DEFINITIVE DESIGN	3606	226957	0.00%	0.00%	0.00%	0.00%	4.06%	20.00%	33.29%	377751
ENGINEERING AND INSPECTION	3283	217012	0.00%	0.00%	0.00%	0.00%	6.11%	20.00%	33.29%	368332
CONSTRUCTION FIXED PRICE	0	2380097	0.40%	0.00%	5.52%	5.55%	23.55%	13.70%	37.05%	3705172
CONSTRUCTION MANAGEMENT	0	600188	0.00%	0.00%	0.00%	0.00%	6.92%	22.52%	33.04%	1046275
CONSTRUCTION FIXED PRICE (INCLUDES MTRL, LABOR, EQUIP, ETC)	0	1779909	0.64%	0.00%	7.51%	6.17%	24.00%	7.70%		2730497
PROJECT MANAGEMENT	3302	249786	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%		249786
PROJECT MANAGEMENT	3302	249786	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%		249786
OTHER PROJECT COSTS	3803	1729599	0.00%	0.00%	0.00%	0.00%	5.69%	0.00%	0.00%	1828058
PROJECT DEFINITION	3803	1729599	0.00%	0.00%	0.00%	0.00%	5.69%	0.00%	0.00%	1828058
PROJECT TECHNICAL SUPPORT	2842	760047	0.00%	0.00%	0.00%	0.00%	6.13%	0.00%	0.00%	806651
HABITAT MITIGATION	0	1050000	0.00%	0.00%	5.00%	8.22%	20.00%	7.70%		1541996
SUB-TOTAL PROJECT COST	16836	\$6,731,498	0.17%	0.00%	2.77%	3.95%	16%	9.00%		\$9,092,324
ADJUSTED/ROUNDED										7,676
TOTAL PROJECT COST										\$9,100,000

TYPE OF ESTIMATE	CONCEPTUAL ESTIMATE	JUNE 5, 1997	REMARKS:
FDNW LEAD ESTIMATOR	ESTIMATING MANAGER		
PROJECT MANAGER			
CLIENT			

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FLUOR DANIEL NORTHWEST, INC.  
NUMATEC HANFORD CORP.  
JOB NO. W505/P2GFO9  
FILE NO. W505BAAS

\*\* TEST - INTERACTIVE ESTIMATING \*\*  
TWRS PRIVATIZATION PH I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PHMCR02 - WORK BREAKDOWN STRUCTURE (WBS) SUMMARY

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WBS	DESCRIPTION	ESTIMATE SUBTOTAL	ESCALATION % TOTAL	SUB TOTAL	CONTINGENCY % TOTAL	SUB TOTAL	SITE ALLOCATION	TOTAL DOLLARS		
110000	DEFINITIVE DESIGN	226957	4.06	9214	236171	20	47234	283405	94345	377751
120000	ENGINEERING AND INSPECTION	217012	6.12	13270	230282	20	46056	276339	91993	368332
SUBTOTAL 1 ENGINEERING		443969	5.06	22485	466454	20	93290	559745	186339	746084
325001	ROUTE 4S	203369	6.17	12547	215917	20	43183	259101	30847	289948
325002	SOUTH CANTON AVENUE	99615	6.17	6146	105761	20	21152	126913	15110	142023
325003	PC LOOP UPGRADE-SOUTH	173381	6.17	10697	184079	20	36815	220894	26299	247193
325004	PC LOOP	412710	6.17	25464	438174	20	87634	525809	62601	588410
325005	RELOCATE SPOIL PILE	335636	6.17	20708	356344	20	71268	427613	50910	478524
325006	FENCING	72075	6.17	4447	76522	20	15304	91827	10932	102759
325007	SOIL STABILIZATION	34243	6.17	2112	36356	20	7271	43627	5194	48821
325008	GROUT TRAILER RELOCATION/DEMO	623180	6.17	38450	661630	35	231570	893201	106342	999543
325101	RT 4S/CANTON AVE INTERSECTION	58560	6.17	3613	62173	20	12434	74608	8418	83026
325102	SOUTH CANTON AVE/PC LOOP ROAD	3129	6.17	193	3322	20	664	3986	474	4461
325103	NORTH CANTON AVE/PC LOOP ROAD	3658	6.17	225	3883	20	776	4660	554	5215
325104	NEW POWER LINES	286995	6.17	17707	304703	20	60940	365643	42140	407783
SUBTOTAL 325 W-505 FP CONSTRUCTION COST		2306555	6.17	142314	2448869	24	589018	3037888	359825	3397714
SUBTOTAL 3 CONSTRUCTION		2306555	6.17	142314	2448869	24	589018	3037888	359825	3397714
400000	PROJECT MANAGEMENT	249786	0.00	0	249786	10	24978	274764	0	274764
SUBTOTAL 4 PROJECT MANAGEMENT		249786	0.00	0	249786	10	24978	274764	0	274764
510000	PROJECT DEFINITION	1729599	0.00	0	1729599	6	98459	1828058	0	1828058
520000	CONCEPTUAL DESIGN	118000	0.00	0	118000	0	0	118000	0	118000
530000	PROJECT TECHNICAL SUPPORT	760047	0.00	0	760047	6	46604	806651	0	806651
540000	HABITAT MITIGATION	1321897	8.22	108659	1430557	20	286111	1716668	204381	1921050
SUBTOTAL 5 OTHER PROJECT COSTS		3929543	2.77	108659	4038203	11	431176	4469379	204381	4673761
PROJECT TOTAL		6,929,853	3.95	273,459	7,203,313	16	1,138,464	8,341,777	750,546	9,092,324

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FLUOR DANIEL NORTHWEST, INC.  
NUMATEC HANFORD CORP  
JOB NO. W505/P26F09  
FILE NO. W5058AA3

\*\* TEST - INTERACTIVE ESTIMATING \*\*  
TWRS PRIVATIZATION PHASE I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PHMCR03 - ESTIMATE BASIS SHEET

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1. ESTIMATE PURPOSE

CONCEPTUAL COST ESTIMATE: THIS ESTIMATE WILL BE USED TO ESTABLISH THE PROJECT BUDGET(BASELINE).

2. ESTIMATE TECHNICAL BASIS

- A. THIS ESTIMATE HAS BEEN PREPARED FOR THE W-505 PROJECT AS REQUESTED BY FDNW PROJECT MANAGEMENT AND NUMATEC HANFORD INC.  
B. A DESCRIPTION OF THE TECHNICAL SCOPE OF WORK MAY BE FOUND IN THE FOLLOWING REFERENCE DOCUMENTS:  
REQUEST FOR ESTIMATE DATED 3/20/97, CDR HNF-SD-W505-CDR-001 REVISION 0, DATED JUNE 1997.  
C. THIS ESTIMATE UTILIZES AN ESTIMATE WORK BREAKDOWN STRUCTURE WHICH INTERFACES WITH THE PROJECT WORK BREAKDOWN STRUCTURE AS PROVIDED BY PROJECT MANAGEMENT/PROJECT CONTROLS.

3. ESTIMATE METHODOLOGY

A. DIRECT COSTS:

A BOTTOMS-UP TECHNIQUE HAS BEEN UTILIZED IN THE PREPARATION OF THIS ESTIMATE.

- (1) CONSTRUCTION LABOR, MATERIAL AND EQUIPMENT UNITS HAVE BEEN ESTIMATED BASED UPON ONE OR MORE OF THE FOLLOWING STANDARD COMMERCIAL ESTIMATING RESOURCES, PUBLISHED ESTIMATING MANUALS/DATABASES: IN HOUSE DATABASES  
THE UNITS MAY HAVE BEEN FACTORED/ADJUSTED BY THE ESTIMATOR AS APPROPRIATE TO REFLECT INFLUENCES BY CONTRACT, WORK SITE, OR OTHER IDENTIFIED PROJECT OR SPECIAL CONDITIONS.

- (2) THE DIRECT COSTS FOR FLUOR DANIEL HANFORD & NUMATEC HANFORD CORP. HAVE BEEN PROVIDED TO FDNW PROJECT MANAGEMENT BY FDNW PROJECT MANAGEMENT FOR INCLUSION INTO THIS ESTIMATE.

B. DIRECT COST FACTORS

- (1) SALES TAX HAS BEEN APPLIED TO ALL MATERIALS AND EQUIPMENT PURCHASES AT 8%.  
(2) CONTRACT ADMINISTRATION FACTOR OF 19.9% HAS BEEN APPLIED TO THE DIRECT CONTRACT VALUE WHICH INCLUDES COSTS FOR BID PACKAGE PREPARATION, CONTRACT MANAGEMENT & ADMINISTRATION AND PROJECT MANAGEMENT & PLANNING SUPPORT.  
(3) A FACTOR OF 0.25% FOR HOME OFFICE ENGINEERING TO ALLOW FOR USAGE OF GOVERNMENT OWNED EQUIPMENT CONTROLLED BY DYNACORP.

C. INDIRECT COSTS

FIXED PRICE CONTRACTOR COSTS ARE UNIT PRICE AND THEY APPEAR IN THE SUBCONTRACT COLUMN AND INCLUDE CONTRACTOR'S

D. RATES

- (1) FLUOR DANIEL NORTHWEST LABOR RATES ARE BASED UPON THE FLUOR DANIEL FEDERAL OPERATIONS (FEDFO) DISCLOSURE STATEMENT. FOR ESTIMATING PURPOSES, AVERAGE RATES BY OPERATIONS CODE HAVE BEEN DEVELOPED BASED UPON RECENT COST HISTORY.

E. SITE ALLOCATIONS FACTORS

SITE ALLOCATION FACTORS ARE DEVELOPED AND PROVIDED BY FLUOR DANIEL HANFORD (FDH) FOR ESTIMATING USE.

- (1) GOVERNMENT FURNISHED SERVICES RATE IS APPLIED TO ALL COSTS TO LIQUIDATE GOVERNMENT FURNISHED SERVICES PROVIDED TO ENTERPRISE COMPANIES: 14% FOR FDNW.  
(2) HANFORD SITE G&A RATE OF 16.7% IS APPLIED TO ALL COSTS TO LIQUIDATE THE HANFORD GENERAL & ADMINISTRATIVE COSTS.  
(3) HANFORD SITE MPR RATE OF 7.0% IS APPLIED TO ALL PURCHASED MATERIAL AND 7.7% TO ALL PURCHASED SERVICES TO LIQUIDATE COST OF PROCUREMENT (INCLUDING RECEIVING).

FDNW APPLIES THE ABOVE FACTORS TO ESTIMATED COSTS AS FOLLOWS:

- (1) FDH GFS/G&A CM FACTOR: A COMPOSITE FACTOR OF 33.04% HAS BEEN APPLIED TO TOTAL FDNW FIXED PRICE CONSTRUCTION MANAGEMENT WHICH INCLUDES GOVERNMENT FURNISHED SERVICES (GFS) AND SITE G&A/FEE.  
(2) FDH CM RATE FP CONST FACTOR: A G&A/FEE RATE FACTOR OF 7.7% HAS BEEN APPLIED TO THE FDNW FIXED PRICE CONSTRUCTION CONTRACT VALUE.  
(3) FDH GFS/G&A LABOR FACTOR: A COMPOSITE FACTOR HAS BEEN APPLIED TO TOTAL FDNW LABOR COSTS AS FOLLOWS:  
AE/CM COSTS = 33.04%, FDNWS CONSTRUCTION MANAGEMENT LABOR = 33.04%.

4. ESCALATION

ESCALATION PERCENTAGES WERE CALCULATED FROM THE JANUARY 1997 UPDATE OF THE ECONOMIC ESCALATION PRICE CHANGE INDICES FOR DOE CONSTRUCTION PROJECTS AS PUBLISHED BY THE "OFFICE OF INFRASTRUCTURE ACQUISITION" FM-50.

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FLUOR DANIEL NORTHWEST, INC.  
NUMATEC HANFORD CORP  
JOB NO. W505/P2GF09  
FILE NO. W505BAA3

\*\* TEST - INTERACTIVE ESTIMATING \*\*  
TWRS PRIVATIZATION PHASE I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PHMCR03 - ESTIMATE BASIS SHEET

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5. CONTINGENCY

A. DEFINITION OF CONTINGENCY AS PROVIDED BY DOE:

"CONTINGENCY COVERS COSTS THAT MAY RESULT FROM INCOMPLETE DESIGN, UNFORESEEN AND UNPREDICTABLE CONDITIONS, OR UNCERTAINTIES WITHIN THE DEFINED PROJECT SCOPE. THE AMOUNT OF CONTINGENCY WILL DEPEND ON THE STATUS OF DESIGN, PROCUREMENT, AND CONSTRUCTION; AND THE COMPLEXITY AND UNCERTAINTIES OF THE COMPONENT PARTS OF THE PROJECT. CONTINGENCY IS NOT TO BE USED TO AVOID MAKING AN ACCURATE ASSESSMENT OF EXPECTED COST" (OFFICE OF WASTE MANAGEMENT (EM-30) COST AND SCHEDULE GUIDE.

6. METHODOLOGY

CONTINGENCY IS EVALUATED AT THE LOWEST WORK BREAKDOWN STRUCTURE (WBS) LEVEL WITHIN THE COST ESTIMATE DETAILS. IT IS SUMMARIZED AT UPPER WBS LEVELS AND REPORTED ON THE SUMMARY REPORTS.

7. ANALYSIS

AN ASSESSMENT OF DESIGN MATURITY, WORK COMPLEXITY AND PROJECT UNCERTAINTIES HAS BEEN PERFORMED. AN EXPLANATION OF THIS ASSESSMENT AND CONTINGENCY RATES WHICH HAVE BEEN ADDED TO THE COST OF WORK ARE AS FOLLOWS:

- WBS 1.1. A CONTINGENCY OF 20% HAS BEEN APPLIED DUE TO THE PRELIMINARY STAGE OF DESIGN AND UNCERTAINTY OF CONSTRUCTION SCHEDULE.  
WBS 1.2. A CONTINGENCY OF 20% HAS BEEN APPLIED BECAUSE THE PERCENTAGE USED WAS TAKEN OFF OF CONSTRUCTION DIRECT DOLLARS.  
SEE COMMENTS ON W.B.S. 32  
WBS 3.2. A CONTINGENCY OF 35% WAS USED ON GROUT TRAILER DUE TO UNKNOWN EXISTING SUBSURFACE CONDITIONS WITH A HIGH POSSIBILITY OF ENCOUNTERING CONTAMINATED SOIL. A 20% CONTINGENCY WAS APPLIED TO THE REMAINDER OF CONSTRUCTION TO GIVE CONSTRUCTION AN OVERALL CONTINGENCY OF 24%.  
WAS APPLIED AT THE CLIENTS REQUEST.  
WBS 4.0. A CONTINGENCY OF 10% WAS APPLIED TO OUTYEAR ACTIVITIES PER THE CLIENTS REQUEST.  
WBS 5.1. A CONTINGENCY OF 6% OVERALL WAS APPLIED TO OUTYEAR ACTIVITIES PER THE CLIENTS REQUEST.  
WBS 5.2. NO CONTINGENCY WAS APPLIED BECAUSE OF EXPENSE MONEY OF THIS FISCAL YEAR.  
WBS 5.3. A CONTINGENCY OF 6% OVERALL WAS APPLIED TO OUTYEAR ACTIVITIES PER THE CLIENTS REQUEST.  
WBS 5.4. A CONTINGENCY OF 20% WAS APPLIED BECAUSE THE AREAS THAT WILL BE DISTURBED IS NOT CLEARLY DEFINED AND THIS TECHNOLOGY OF RAISING NEW SAGEBRUSH IS SO EXPENSIVE, THE MORE AREA DISTURBED THE MORE MONEY IT WILL TAKE.

8. ROUNDING

THE PROJECT COST SUMMARY REPORT IS SUMMARIZED AND ADJUSTED/ROUNDED AS FOLLOWS:  
THE ESCALATED TOTAL COST COLUMN, CONTINGENCY TOTAL COLUMN AND TOTAL DOLLARS COLUMN SUB-TOTALS ARE SUMMARIZED BY CONSTRUCTION ACTIVITY.  
THE TOTAL PROJECT COSTS ARE ADJUSTED/ROUNDED TO THE NEAREST \$10,000/\$100,000.

9. REMARKS

PER THE DIRECTION OF THE CUSTOMER (NUMATEC HANFORD INC.) THE PROJECT SUMMARY SHEET WAS MODIFIED TO REFLECT DISTRIBUTION OF COSTS BY ACTIVITY (I.E. ENGINEERING, CONSTRUCTION, AND PROJECT MANAGEMENT).  
MAJOR ASSUMPTIONS WHICH HAVE BEEN MADE IN THE PREPARATION OF THIS ESTIMATE ARE AS FOLLOWS:  
A) ALL CONSTRUCTION WORK IS TO BE DONE BY FIXED PRICE CONTRACTOR.  
B) E&I WERE ESTIMATED AS A DIRECT PERCENTAGE OF CONSTRUCTION.  
C) FDNW PROJECT MANAGEMENT AND DEFINITIVE DESIGN WERE MANLOADED BY FDNW PROJECT MANAGEMENT.  
D) PORTIONS OF PROJECT W-505 MUST BE COMPLETED IN CONJUNCTION WITH THIS PROJECT.  
E) ALL NUMATEC COSTS WERE PROVIDED BY FDNW PROJECT MANAGEMENT AND NUMATEC HANFORD, INC.  
F) OTHER PROJECT COSTS FOR PRIOR YEARS (FY96 AND 97) ARE BASED ON ACTUAL EXPENDITURES, FY97 BUDGETS AND CURRENT ESTIMATES TO COMPLETE. FY98, 99, 00 AND 01 REFLECT THE LATEST INFORMATION FROM DESIGN REQUIREMENTS DOCUMENTS, STUDIES, AND PLANS COMPLETED TO DATE. COSTS PROVIDED FOR WBS 4.0, 5.1, 5.2, AND 5.3 ARE INCLUSIVE OF ESCALATION AND APPLICABLE TAXES PER NHC PROJECT MANAGEMENT. THE NUMATEC PROJECT MANAGERS' EXPERTISE AND EXPERIENCE WITH PREVIOUS PROJECTS, THE PREVIOUSLY COMPLETED LIFE CYCLE COST ESTIMATE, AND HISTORICAL DATA FROM PREVIOUSLY COMPLETED PROJECTS HAVE BEEN USED TO DERIVE THE ESTIMATED COSTS. DETAILED PLANNING FOR THESE ACTIVITIES WILL BE REFLECTED IN THE PHMC FY98 MULTIYEAR WORK PLAN.

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FLUOR DANIEL NORTHWEST, INC.  
NUMATEC HANFORD CORP  
JOB NO. W505/P26F09  
FILE NO. W505BAA3

\*\* IEST - INTERACTIVE ESTIMATING \*\*  
TWRS PRIVATIZATION PH I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PHMCROS - CONSTRUCTION MANAGEMENT/OTHER COST SUMMARY

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BY KLR/BPL/JJM

WBS	DESCRIPTION	ESTIMATE SUBTOTAL	CONSTRUCTION %	MANAGEMENT TOTAL	OTHER COSTS	SUB TOTAL	TOTAL
=====	=====	=====	=====	=====	=====	=====	=====
110000	DEFINITIVE DESIGN	226957	0.00	0	0	0	226957
120000	ENGINEERING AND INSPECTION	217012	0.00	0	0	0	217012
SUBTOTAL 1	ENGINEERING	443969		0	0	0	443969
325001	ROUTE 4S	169616	19.90	33753	0	33753	203369
325002	SOUTH CANTON AVENUE	83082	19.90	16533	0	16533	99615
325003	PC LOOP UPGRADE-SOUTH	144605	19.90	28776	0	28776	173381
325004	PC LOOP	344212	19.90	68498	0	68498	412710
325005	RELOCATE SPOIL PILE	279930	19.90	55706	0	55706	335636
325006	FENCING	60113	19.90	11962	0	11962	72075
325007	SOIL STABILIZATION	28560	19.90	5683	0	5683	34243
325008	GROUT TRAILER RELOCATION/DEMO	519750	19.90	103430	0	103430	623180
325101	RT 4S/CANTON AVE INTERSECTION	49349	18.67	9211	0	9211	58560
325102	SOUTH CANTON AVE/PC LOOP ROAD	2610	19.90	519	0	519	3129
325103	NORTH CANTON AVE/PC LOOP ROAD	3051	19.90	607	0	607	3658
325104	NEW POWER LINES	240886	19.14	46109	0	46109	286995
SUBTOTAL 325	W-505 FP CONSTRUCTION COST	1925764		380791	0	380791	2306555
SUBTOTAL 3	CONSTRUCTION	1925764		380791	0	380791	2306555
400000	PROJECT MANAGEMENT	249786	0.00	0	0	0	249786
SUBTOTAL 4	PROJECT MANAGEMENT	249786		0	0	0	249786
510000	PROJECT DEFINITION	1729599	0.00	0	0	0	1729599
520000	CONCEPTUAL DESIGN	118000	0.00	0	0	0	118000
530000	PROJECT TECHNICAL SUPPORT	760047	0.00	0	0	0	760047
540000	HABITAT MITIGATION	1102500	19.90	219397	0	219397	1321897
SUBTOTAL 5	OTHER PROJECT COSTS	3710146		219397	0	219397	3929543
=====							
PROJECT TOTAL		6,329,665		600,188	0	600,188	6,929,853

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FLUOR DANIEL NORTHWEST, INC.  
NUMATEC HANFORD CORP  
JOB NO. W505/P2GFO9  
FILE NO. W505BAA3

\*\* TEST - INTERACTIVE ESTIMATING \*\*  
TWR5 PRIVATIZATION PH I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PHMCR06 - SITE ALLOCATIONS BY WBS

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BY KLR/BPL/JJM

WBS	DESCRIPTION	ESTIMATE SUBTOTAL	DYN EQ.USAGE	FDH GFS/G&A CONST.MGMT	FDH MPR F.P./S.C.	FDH GFS/G&A LABOR	FDH MPR/G&A MATERIAL	SITE ALLOC SUBTOTAL
110000	DEFINITIVE DESIGN	226957	567	0	0	74986	0	75554
120000	ENGINEERING AND INSPECTION	217012	542	0	0	71700	0	72243
SUBTOTAL 1	ENGINEERING	443969	1109	0	0	146687	0	147797
325001	ROUTE 4S	169616	0	11152	13060	0	0	24212
325002	SOUTH CANTON AVENUE	83082	0	5462	6397	0	0	11859
325003	PC LOOP UPGRADE-SOUTH	144605	0	9507	11134	0	0	20642
325004	PC LOOP	344212	0	22631	26504	0	0	49136
325005	RELOCATE SPOIL PILE	279930	0	18405	21554	0	0	39959
325006	FENCING	60113	0	3952	4628	0	0	8581
325007	SOIL STABILIZATION	28560	0	1877	2199	0	0	4076
325008	GROUT TRAILER RELOCATION/DEHO	519750	0	34173	40020	0	0	74194
325101	RT 4S/CANTON AVE INTERSECTION	49349	0	3043	3564	0	0	6607
325102	SOUTH CANTON AVE/PC LOOP ROAD	2610	0	171	200	0	0	372
325103	NORTH CANTON AVE/PC LOOP ROAD	3051	0	200	234	0	0	435
325104	NEW POWER LINES	240886	0	15234	17841	0	0	33075
SUBTOTAL 325	W-505 FP CONSTRUCTION COST	1925764	0	125813	147341	0	0	273154
SUBTOTAL 3	CONSTRUCTION	1925764	0	125813	147341	0	0	273154
400000	PROJECT MANAGEMENT	249786	0	0	0	0	0	0
SUBTOTAL 4	PROJECT MANAGEMENT	249786	0	0	0	0	0	0
510000	PROJECT DEFINITION	1729599	0	0	0	0	0	0
520000	CONCEPTUAL DESIGN	118000	0	0	0	0	0	0
530000	PROJECT TECHNICAL SUPPORT	760047	0	0	0	0	0	0
540000	HABITAT MITIGATION	1102500	0	72488	84892	0	0	157381
SUBTOTAL 5	OTHER PROJECT COSTS	3710146	0	72488	84892	0	0	157381
PROJECT TOTAL		6,329,665	1,109	198,302	232,233	146,687	0	578,333

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FLUOR DANIEL NORTHWEST, INC.  
NUMATEC HANFORD CORP  
JOB NO. W505/P26F09  
FILE NO. W505BAAS

\*\* TEST - INTERACTIVE ESTIMATING \*\*  
TWRS PRIVATIZATION PH I SITE DEVELOPMENT & ROADS  
CONCEPTUAL ESTIMATE  
PHMCR07 - SITE ALLOCATION ESCALATION/CONTINGENCY REPORT

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BY KLR/BPL/JJH

WBS	DESCRIPTION	SITE ALLOC SUBTOTAL	ESCALATION % TOTAL	SUB TOTAL	CONTINGENCY % TOTAL	TOTAL DOLLARS	
=====	=====	=====	=====	=====	=====	=====	
110000	DEFINITIVE DESIGN	75554	4.06	3067	20	15724	94345
120000	ENGINEERING AND INSPECTION	72243	6.12	4417	20	15332	91993
SUBTOTAL 1	ENGINEERING	147797	5.06	7485	20	31056	186339
325001	ROUTE 4S	24212	6.17	1493	20	5141	30847
325002	SOUTH CANTON AVENUE	11859	6.17	731	20	2518	15110
325003	PC LOOP UPGRADE-SOUTH	20642	6.17	1273	20	4383	26299
325004	PC LOOP	49136	6.17	3031	20	10433	62601
325005	RELOCATE SPOIL PILE	39959	6.17	2465	20	8485	50910
325006	FENCING	8581	6.17	529	20	1822	10932
325007	SOIL STABILIZATION	4076	6.17	251	20	865	5194
325008	GROUT TRAILER RELOCATION/DEMO	74194	6.17	4577	35	27570	106342
325101	RT 4S/CANTON AVE INTERSECTION	6607	6.17	407	20	1403	8418
325102	SOUTH CANTON AVE/PC LOOP ROAD	372	6.17	22	20	79	474
325103	NORTH CANTON AVE/PC LOOP ROAD	435	6.17	26	20	92	554
325104	NEW POWER LINES	33075	6.17	2040	20	7023	42140
SUBTOTAL 325	W-505 FP CONSTRUCTION COST	273154	6.17	16853	24	69817	359825
SUBTOTAL 3	CONSTRUCTION	273154	6.17	16853	24	69817	359825
400000	PROJECT MANAGEMENT	0	0.00	0	0	0	0
SUBTOTAL 4	PROJECT MANAGEMENT	0	0.00	0	0	0	0
510000	PROJECT DEFINITION	0	0.00	0	0	0	0
520000	CONCEPTUAL DESIGN	0	0.00	0	0	0	0
530000	PROJECT TECHNICAL SUPPORT	0	0.00	0	0	0	0
540000	HABITAT MITIGATION	157381	8.22	12936	20	34063	204381
SUBTOTAL 5	OTHER PROJECT COSTS	157381	8.22	12936	20	34063	204381
=====							
PROJECT TOTAL		578,333	6.45	37,275	22	134,937	750,546

C-7

HNF-SD-W505-CDR-001, Rev. 0

STATEMENT OF WORK  
FOR  
PERFORMANCE CONTRACTOR - OTHER PROJECT COSTS

SUB-PROJECT W-505

TWRS Privatization Phase I - Site Development and Roads

I. OBJECTIVE

The PHMC performance contractor shall provide project support services to the U. S. Department of Energy, Richland Operations Office (RL) from the project's inception through completion of construction and project closeout. In addition to project management/project engineering covered by capital funding (FY 99 & 2000), are tasks are identified here within the scope of the performance contractor under the heading of Other Project Costs.

The objective of this Statement of Work is to further describe and delineate these tasks for this sub-project.

II. TASKS

A. Project Definition

Principally provides integration of the sub-project with the interfacing organizations established to implement the TWRS Phase I Privatization contract.

a. Systems Integration (FY 96, 97, 98, 99, 00)

1. Support Integrated Product Teams (IPTs) established per the Phase IA contract around KEY M&I/Privatization Contractor (PC) interfaces.
2. Support the Waste Integration Team (WIT) established per the Phase IA contract to direct the Phase I effort. Tasks include providing technical information, expertise, etc. necessary in contract negotiations and execution.
3. Maintenance/refinement and updating of Interface Control Documents (ICD), Interface Control Drawings, (ICDwgs), Design Requirement Documents (DRD) based upon IPT negotiations and the reconciliation/closure of ICD 'issues'.
4. Maintenance/revision of the TWRS Systems Engineering Functional Requirements Database (FRDB) through issuance of change Requests based upon IPT negotiations and the reconciliation of ICD 'issues'.

b. Master Site Plan (FY 96, 97, 98, 99, 00)

Through revision, maintain Master Site Plan (MSP), "TWRS Privatization Phase I, Master Site Plan, WHC-SD-TWR-DSD-001, which was developed in FY 97 as part of the Site Development Engineering Study. The Interface Control Drawings from related infrastructure sub-projects will be integrated in the MSP and maintained throughout design and construction of the Project.

c. Monitoring Well Decommissioning (FY 98, 99)

Develop, maintain and implement the Monitoring Well Decommissioning Plan WHC-SD-EN-AP-161, REV 0, to support Phase I site development through ECN # 708153. Existing monitoring wells in the vicinity of the PC sites no longer needed are to be decommissioned. Wells deemed essential to site monitoring whose integrity may be jeopardized by Privatization Contractor siting are to be replaced.

d. Site Characterization Plan/Data Collection Report (FY 97, 98)

The TWRS Phase I Privatization Site Environmental Baseline and Characterization Plan, HNF-SD-TWR-EV-001, Rev A, is an assessment and determination of the Phase I site and environmental data established using the Data Quality Objectives (DQO) process. Implementation of the Plan in FY 97 and into FY 98, will result in the Site Characterization Report which will document the needed environmental baseline data.

## B. Conceptual Design

The Conceptual Design Report for this project has been funded and will be completed in FY 97. A related Engineering Study and Design Requirements Document were funded and completed in FY 96.

## C. Project Technical Support

In prior year costs and FY 98, this task includes the project management, project control & reporting, administrative tasks and activities required to manage the project during the expense funded years prior to actual start of construction and during startup.

Activities include:

- Preparation and update of PBS
- MYWP Planning
- Project Management Plan
- Project reporting and performance monitoring and analysis
- Project Control and Cost/Schedule interfaces
- Establishment and maintenance of Change Control for the Project
- Input and Updates to FM-20 reviews
- Clerical Support as required
- Key Decision and Project Validation support

General Technical Support of activities required by the sub-project for the life of the project. Due to the tight schedule constraints, this task also

includes the preparation of Task Orders, Letters of Instruction, etc. for definitive design and other related tasks during FY 98 these other related tasks include:

- Technical leadership, monitoring and reporting
- Preparation of project documentation including Construction Project Data Sheets, Total Project Cost Estimates and Project Schedules
- Establish and maintain project files and provide for records management support for project data
- Prepare Letter of Instruction directing definitive design.
- Perform and direct all safety, environmental and permitting activities, reviews and technical issues related to the sub-project.
- Provide Radiation Protection Technician (HPT) support as required by the sub-project.
- Provide for startup activity support
- Provide for turnover of project to operating organization
- Provide for official project closeout activities

Specific Technical Support for activities directed by the Project Engineer include:

- Engineering Assessments due to Privatization contract changes
- Water and Electrical Utilities Engineering/Reviews
- Environmental Reviews
- Habitat Mitigation Plan and Support
- Snow's Canyon Utility Corridor DQO Sampling
- Utilities/ Site Infrastructure Design Review Support
- USQ and other Safety related support
- Utilities/Site Services Operations reviews and support as required
- ATP, OTP, ORR support as required
- Quality Assurance Planning and Implementation
- Safety Planning and Implementation
- Traffic Safety Assessments/Reviews
- Utilities Authorization Basis Review/Modification

Miscellaneous support includes multi-media/duplicating resources, supplies, computer software requirements and desktop support, travel and training as required by the sub-project.

## ENGINEERING STATEMENT OF WORK

PROJECT NO./TITLE : W-505, Site Development and Roads

WORK ORDER : E23392  
LE : Kirt D. Bare (Civil) & Keith Newhouse (Elec)  
PLE : David L. Fort  
PE : Brian C. Harmon

## PROJECT SCOPE:

Subproject W-505 is one of four projects that make up the TWRS privatization infrastructure project. This subproject will establish and develop transportation routes to the selected site and develop roads and utility corridors within this site. Other site improvements include relocating existing powerlines and fences, installing new fences, clearing corridors of existing buildings and other physical obstructions, etc., which will interfere with the proposed utility routes.

## RESPONSIBILITIES:

Engineering, Design/Drafting and Checking will be performed by individuals from FDNW. The A/I and Construction Management services will also be performed by FDNW.

## REFERENCES:

1. Conceptual Design Report, TWRS Privatization Phase I Site Development and Roads, Subproject W-505, HNF-SD-W505-CDR-001, Rev. 0.
2. Interface Control Document for Land for Siting, WHC-SD-WM-ICD-037, Rev. 0.
3. Engineering Study, TWRS Privatization Phase I, Site Development, WHC-SD-TWR-ES-003, Rev. 0.
4. Engineering Study, TWRS Privatization Phase I Roads and Rail System Modifications, WHC-SD-TWR-ES-004, Rev. 0.
5. TWRS Privatization Phase I Master Site Plan, WHC-SD-TWR-DSD-004, Rev. 0.
6. Design Requirements Document for TWRS Privatization Phase I Site Development, WHC-SD-WM-DRD-013, Rev. 1.
7. Letter Report, 13.8 KV Construction Power for Phase I Privatization Facilities, ICF Kaiser Hanford Co., Richland WA, by A.W. Adhikari.

## DELIVERABLES:

1. Civil Drawings (16 each).
2. Construction Specification: W-505-C1.

## CRITERIA DOCUMENTS:

1. TWRS Privatization Phase I Site Development Design Requirements Document, HNF-SD-WM-DRD-013, Rev. 1, by A.L. Shord, dated 01/20/97.
2. DOE 6430.1A - General Design Criteria.

## ASSUMPTIONS:

1. Grout Vault Facilities shall be abandoned. Existing buried utilities within the transfer/feed line corridor will be disconnected, i.e. sanitary sewer, electrical, HLAN, etc., and will not be restored.
2. The Route 4S/Canton Avenue intersection will not require major upgrade in the form of lowering the centerline profile to construct a 300 meter (1000 ft) vertical curve.
3. The portions of Canton Avenue and 4th Street north of the South PC Loop Road intersection will remain out scope.
4. There are no provisions for stormwater improvements.
5. There are no provisions for installing telecommunication services to the PC facilities with exception of those identified in subproject W-503.
6. There are no railroad services provided directly to the PCs site.
7. No contaminated soils are anticipated.
8. The existing groundwater monitoring test wells will not interfere with the PC site activities. Consequently, no replacement wells will have to be constructed.

## MILESTONES AND TARGET DATES:

The Definitive Design schedule is as follows:

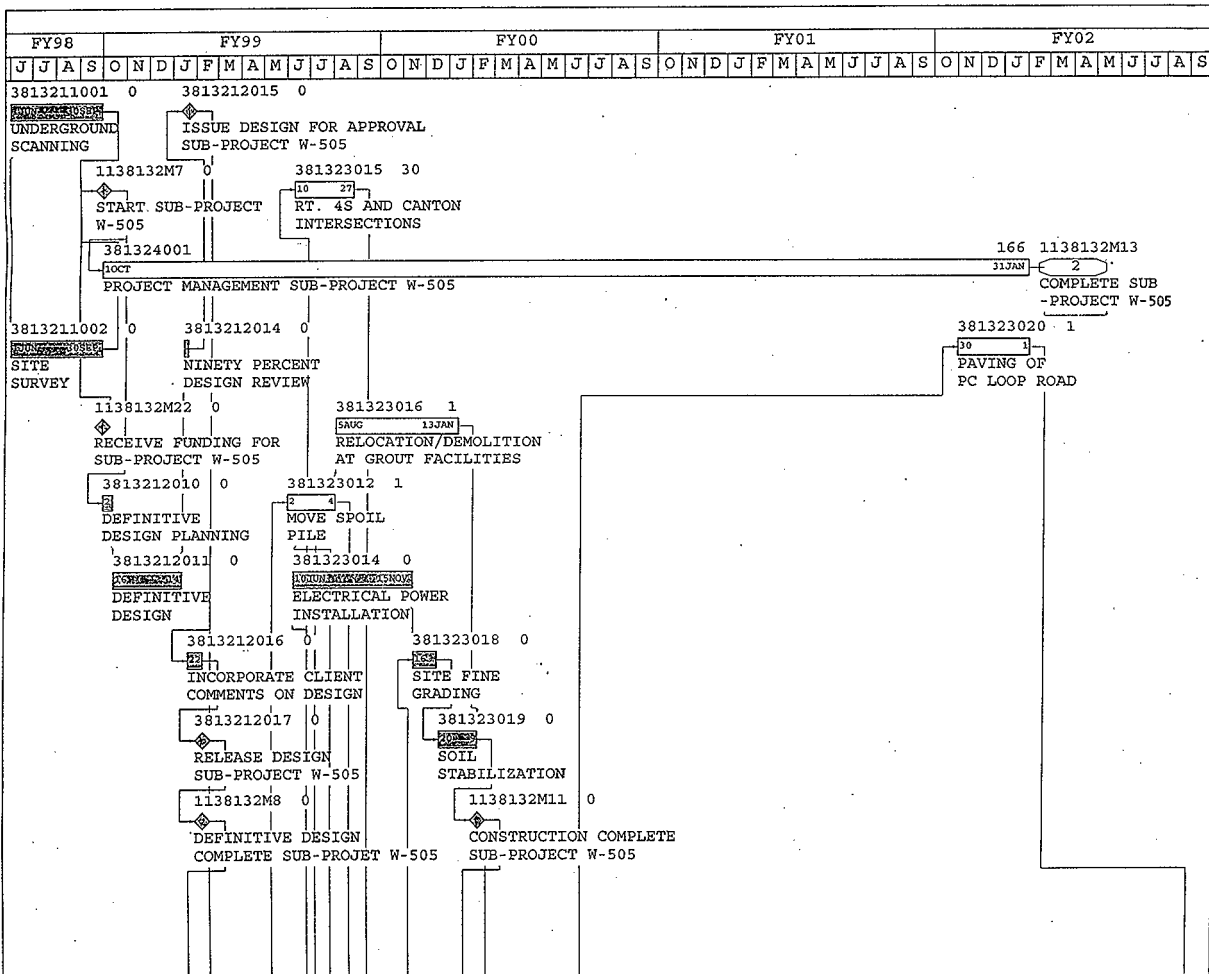
Definitive Design	Apr 1998-Aug 1998
Project Complete	Oct 1999

## RESTRAINTS:

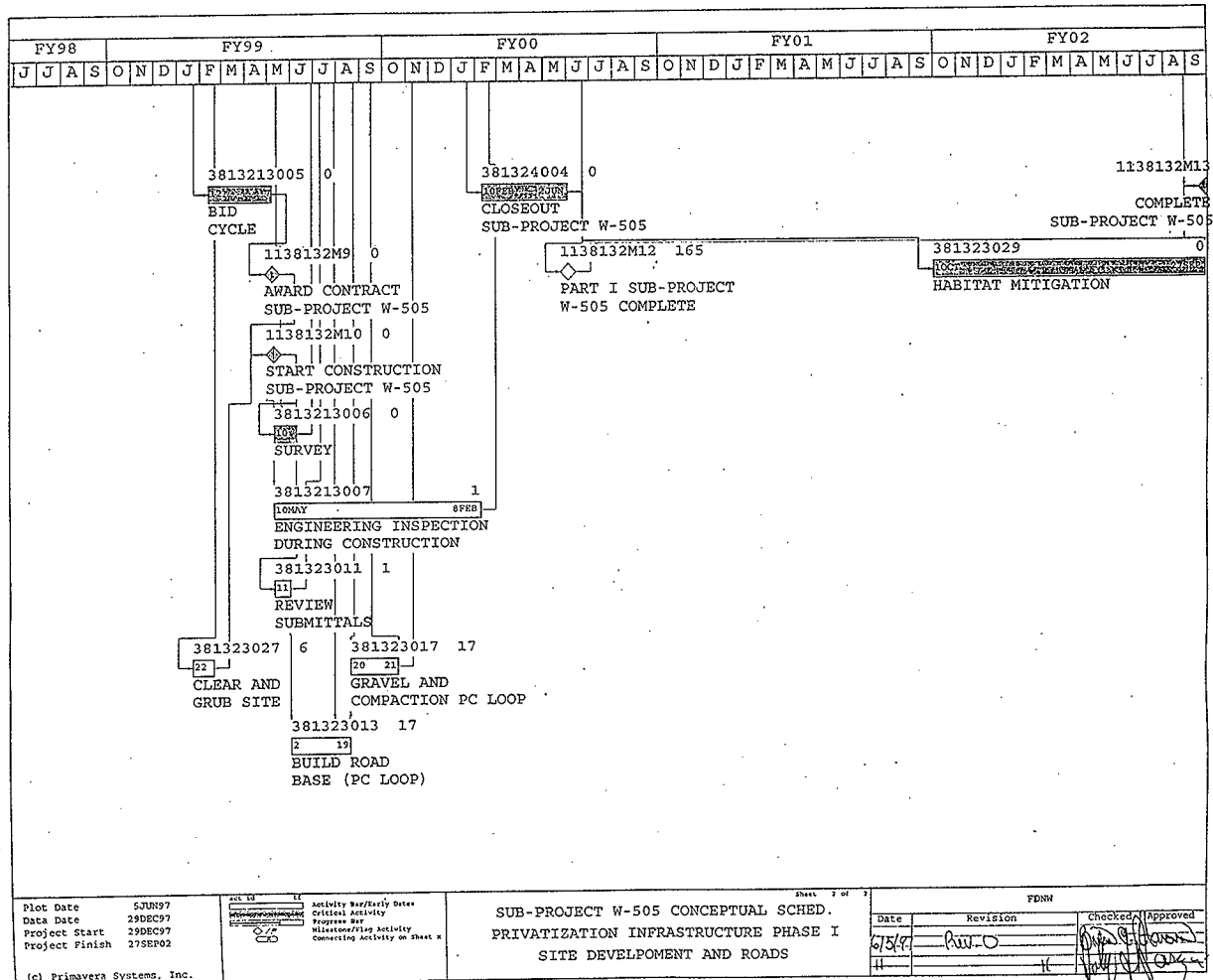
1. Survey and Scanning activities need to be accomplished before the definitive design can start. The schedule will be directly impacted upon a timely receipt the survey data.
2. Grout Vault Facilities shall have been abandoned. Existing buried utilities within the transfer/feed line corridor can be disconnected without adverse impacts to ongoing operations.

**APPENDIX D**

**Conceptual Project Schedule**







HNF-SD-W505-CDR-001, Rev. 0

**APPENDIX E**

**Outline Specification**

## OUTLINE SPECIFICATION

DIVISION 2 - SITEWORK**Section 02000 Clearing and Grubbing**

1. Clear and grub areas affected by excavation or embankment.

**Section 02200 Earthwork**

1. Excavation and Embankment (fill):
  - a. Structural fill (loop road and grout pit access road): 150 mm (6 in.) maximum aggregate size, compacted Method B, meeting WSDOT M 41-10, Section 2-03.
  - b. Common fill (laydown yard): 300 mm (12 in.) maximum loose lifts, 150 mm (6 in.) maximum aggregate size, optimum moisture, compact uniformly over full width by one pass of vibratory equipment.
2. Borrow material: Material from Grout Vault Stockpile (Structural fill).
3. Stabilization: Base course, WSDOT M 41-10.
4. Soil Compaction Testing (Structural fill only).

**Section 02235 Road Subgrade and Granular Base**

1. Base Course: WSDOT M 41-10.
2. Leveling Course: WSDOT M 41-10.
3. Material and Compaction Testing.

**Section 02512 Hot-Laid Asphaltic Concrete Pavement**

1. Asphalt Concrete Pavement: WSDOT M 41-10.
  - a. Asphalt: AR-4000-W
  - b. Aggregate: Class B
2. Material and Density Testing.
3. Geotextile Fabric - Petromat.

**Section 02831 Chain Link Fencing and Gates**

1. Fencing: 2.1 m (7 ft) total height, 2.1 m (7 ft) fabric, tension wire top and bottom.
2. Gates: Double swing or rolling, 10 m (32.8 ft) opening.
3. Concrete: 20 MPa (2500 psi) minimum strength at 28 days.

## Section 02900 Landscaping

1. Sagebrush mitigation.
2. Vegetation Stabilization (hydro seeding).

## DIVISION 16 - ELECTRICAL

### Section 16300 Medium Voltage Distribution

1. Wood Poles: Western red cedar, length as shown on Drawings.
2. Transformer: Pole-mounted, 10 kVA, 2400 V ac to 480 V ac, 1-phase, 2 to 2-1/2% taps above and below normal.
3. Capacitor Bank: Pole-mounted, 900 kVAR, rated for 13.8 kV line-to-line, 95 kV BIL.
4. Gang-operated Switch: Manual, pole-mounted, 3-pole, 15.5 kV.
5. Fused Cutout: 15 kV, pole-mounted, 200 ampere.
6. Lightning Arrestor: Distribution valve type, rated 15 kV, 95 kV BIL.
7. Street-Lighting Fixtures: Low pressure sodium, 180 watt, 480 V unless otherwise described in text of conceptual design report.
8. Service Drop Cable: 600 V, self-supporting, 2 insulated aluminum conductors with bare ACSR neutral, #6 AWG.
9. Current Transformer: Pole-mounted, 15 kV, 200 ampere.
10. Voltage Transformer: Pole-mounted, 13.8 kV-120 V ac.
11. Street-Light Pole: Steel, breakaway-type, in accordance with WSDOT Standard Plan J1-B, 40-foot mounting height, 16-foot mast arm.
12. Electrical Meter: Socket-type; transformer rated; 2-stator, 8-jaw killowatt-hour meter for 3-phase, 3-wire service; with pulse initiator to provide watt and VAR signals to FDAS.
13. Meter Socket: NEMA Type 3R, with 8-jaw socket and 7-pole test switch.
14. FDAS Signal Cable: 6-conductor, No. 14 AWG insulated, stranded copper with overall jacket. Suitable for use as aerial cable supported by messenger.

**APPENDIX F**

**Energy Conservation Report and Analysis**

(Waived per DOE Letter No. 96-WDD-154)

## **APPENDIX G**

### **Unreviewed Safety Question Evaluation**

**(Provided by Project Hanford Management Contractor)**

An Unreviewed Safety Question Screening/Determination has been completed based on the project Design Requirements Document and the Engineering Study. It was determined that the project is bounded by existing safety analyses and is within the current Authorization Basis. Therefore, a Preliminary Safety Evaluation is not required.

**PROJECT W-505  
CONCEPTUAL DESIGN  
UNREVIEWED SAFETY QUESTION**

An Unreviewed Safety Question (USQ) screening/determination was performed using the Project W-505 Design Requirements Document (reference 1) and the W-505 Engineering Study (reference 2). During performance of the USQ screening/determination, TF-97-0390, it was determined that the proposed activity of site preparation does not place the facility outside of that described in the current Tank Waste Remediation System (TWRS) Authorization Basis; Interim Safety Basis (WHC-SD-WM-ISB-001, Rev 0-M) and RL approved documentation referenced therein.

The location of the Privatization Sites was chosen because it adjoins the planned feed tanks (AP tank farm) and is of sufficient size for two competing vendors to carry out the demonstration of pretreating and immobilizing mixed waste. In preparing the sites for the vendors, Project W-505, is establishing site boundaries, moving non safety related structures (i.e. fences), performing road construction, and mitigating the loss of mature sage-steppe habitat destroyed by the development of site roads, electrical substation, and utility corridors. All of the proposed activities under Project W-505 are not mentioned in the current Authorization Basis and additionally have no impact on any safety analyses relied on for the safe operation of the facility. No further evaluation needs to be performed at this time per the outcome of the Unreviewed Safety Question screening/determination.

Prior to actual facility modification, the USQ screening/determination will need to be revisited and potentially revised. The reason for revisiting the USQ screening/determination is to ensure that the assumptions remain valid for any new Authorization Basis documentation that might exist at time of construction. Additional USQs might be required depending on Safety Analysis outcome for the Privatization Facilities. Subsequently, updates of Authorization Basis documentation may be required to assure accuracy of facility descriptions.

- References: (1) WHC-SD-WM-DRD-013, Rev. 1, *Design Requirements Document for TWRS Privatization Phase I Site Development*, January 21, 1997
- (2) WHC-SD-TWR-ES-003, Rev. 0, *TWRS Privatization Phase I Site Development Engineering Study*, September 30, 1996

**UNREVIEWED SAFETY QUESTION  
SCREENING/DETERMINATION FORM**  
(Per WHC-IP-0842)

Page 1 of 3

USQ Tracking No.  
TF-97-390

Rev. 0

AREA: ☒ East ☐ West ☐ General

Facility: ☐ 242-A ☐ DST ☐ SST ☐ LERF  
☐ Aging Waste ☒ Other Project 505

ECN No. PCA No.

Work Pkg No. \_\_\_\_\_ Other (Specify) Project W-505

TITLE: SITE DEVELOPMENT FOR TWRS PRIVATIZATION PHASE I

Description of the Proposed Activity/REPORTABLE OCCURRENCE or PIAB:

Project W-505 is in place to provide site development for the TWRS privatization sites. The proposed activity consists of 1) setting monuments that establish site boundaries, 2) preparation of utility corridors by relocating fences, removing structures, clearing and grubbing, 3) performing road construction, and 4) mitigating the loss of mature sage-steppe habitat destroyed by the development of site roads, electrical substation, and utility corridors.

Introduction:

In pursuing Hanford Site cleanup efforts, the U.S. Department of Energy (DOE) has decided to privatize the treatment and disposal of radioactive hazardous waste that is contained in Hanford's underground storage tanks. In the privatization effort, vendors, will design, permit, construct, operate, and deactivate their own equipment and facilities. The privatization activities have been divided into two phases. Phase I will demonstrate the effectiveness of the privatization via treatment of a small portion of Hanford's mixed waste (<13%). Once demonstrated, the rest of the waste will be treated and disposed of during Phase II.

Project W-505 is in place to prepare a portion of the former grout disposal site for turnover to the privatization contractors.

**Scope:**

This USQ screening/determination applies to project W-505 as it pertains to -  
1) setting monuments that establish site boundaries, 2) preparation of utility  
corridors by relocating fences, removing structures, clearing and grubbing, 3)  
performing road construction, and 4) mitigating the loss of mature sage-steppe habitat  
destroyed by the development of site roads, electrical substation, and utility  
corridors. Providing electricity and raw water to the sites are covered under separate  
USQ screening/determinations.

Authorization Basis:

DESH, 1997b, *Hanford Site Tank Farms Facilities Interim Safety Basis*, WHC-SD-WM-ISB-001, Rev. 0-M, Chapter 6, Duke Engineering and Services Hanford, Richland, Washington



UNREVIEWED SAFETY QUESTION SCREENING/DETERMINATION FORM (Continued)	Page 2 of 3 <hr/> USQ Tracking No. TF-97-0390 <hr/> Rev. 0
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Conclusion:

It has been determined that establishing site boundaries, moving non safety related structures (i.e. fences), performing road construction and mitigating the loss of mature sage-steppe habitat destroyed by the development of site roads, electrical substation, and utility corridors is within the Authorization Basis.

References

NHC, 1997, *Design Requirements Document for TWRS Privatization Phase I Site Development*, WHC-SD-WM-DRD-015, Rev. 0, Numatec Hanford Company, Richland Washington

WHC, 1996, *TWRS Privatization Phase I Site Development Engineering Study*", WHC-SD-TWR-ES-003, Rev 0, Westinghouse Hanford Company, Richland Washington

---

USQ Screening:

A. Does the PROPOSED ACTIVITY represent a change to the facility as described in the AUTHORIZATION BASIS?

☒ No    ☐ Yes    ☐ N/A

Basis:

The monuments establishing the TWRS privatization boundaries are to establish parcel size for construction and have no impact on the Authorization Basis. Road Construction and mitigating loss of mature sage-steppe habitat is not described in the Authorization Basis nor safety related and therefore does not change the facility as described in the Authorization Basis. The Authorization Basis does not describe the locations of the fences or structures that must be relocated. Relocating structures that are not related to safety (i.e. fences) does not change the facility as described in the Authorization Basis. The items being performed per project W-505 are not related to any SSCs of the facility. Therefore, the proposed activities do not change the facility as described in the Authorization Basis.

B. Does the PROPOSED ACTIVITY represent a change to procedures as described in the AUTHORIZATION BASIS?

☒ No    ☐ Yes    ☐ N/A

Basis:

The proposed activity does not represent a change to procedures as described in the Authorization Basis. No existing procedures will be modified as a result of the proposed activity.

**UNREVIEWED SAFETY QUESTION SCREENING/DETERMINATION FORM**  
 (Continued)

 USQ Tracking No.  
 TF-97-0390

Rev. 0

**C. Does the test or experiment represent a test or experiment not described in the AUTHORIZATION BASIS documentation?**
☒ No    ☐ Yes    ☐ N/A

Basis:

The proposed activity involves site preparation. No tests or experiments are involved.

**D. Does the PROPOSED ACTIVITY or REPORTABLE OCCURRENCE, impact:**

- OSRs or IOSRs?
- Approved IOSR Compliance Implementation Plan?

☒ No    ☐ Yes    ☐ N/A

Basis:

There are no OSRs/IOSRs impacted that involve 1) setting monuments that establish site boundaries, 2) preparation of utility corridors by relocating fences, removing structures, clearing and grubbing, 3) performing road construction, and 4) mitigating the loss of mature sage-steppe habitat destroyed by the development of site roads, electrical substation, and utility corridors. Therefore, the proposed activity does not impact OSRs, IOSRs, or compliance implementation plans.

**E. Does the REPORTABLE OCCURRENCE or PIAB involve analytical errors, omissions, and/or deficiencies in the AUTHORIZATION BASIS?**
☐ No    ☐ Yes    ☒ N/A

Basis:

The proposed activity does not involve a PIAB or Reportable Occurrence.

USQE No. 1 Matthew S. Tiffany

Print Name

USQE No. 2 Daniel J. Minter

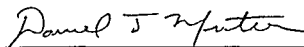
Print Name

Signature

Date

Signature

Date



4-17-97

## **APPENDIX H**

### **Economic Analysis and Life Cycle Cost Analysis**

(Waived per DOE Letter No. 96-WDD-154)

**APPENDIX I**

**Physically Handicapped Assessment**

(Waived per DOE Letter No. 96-WDD-154)

**APPENDIX J**

**Plant Forces Work Review**

F D H	Fluor Daniel Hanford, Inc. P.O. Box 1000, Richland, WA 99352-1000		Plant Forces Work Review No.	Date	Page
	<b>PLANT FORCES WORK REVIEW</b>		FDH-063-97	3/24/97	1 of 4
R E Q U E S T E R	Title TWRS PRIVATIZATION PHASE ONE		JCS Work Pkg or Project No. W-504, W-505, W-506	Area 200E	Bldg. No. N/A
	<u>Estimated Cost of Work:</u>				
	*1. Procured Material/Equipment .....			\$	318,000
	*2. Materials/Equipment Purchased for Shop Fabrication .....			\$	0
	*3. Job-Site Material .....			\$	1,140,000
	4. Shop Labor .....			\$	0
	5. Job-Site Labor .....			\$	1,761,000
	6. Other Costs (design, field inspection, and contingency allowance) .....			\$	2,465,000
	7. General Overhead (Labor Only) .....			\$	406,000
	*Include estimated fair value of material or equipment acquired on site			Total Job	\$ 6,090,000
Requester's Name and Phone No. <u>Brian C. Harmon, 373-6528</u>				Date <u>3/20/96</u>	
F D H	<u>Reviewed By:</u>				
	Area Work Review Agent <u>John Allison</u>			Date <u>3/21/97</u>	
	Company Work Review Agent <u>Gary Maxwell</u>			Date <u>3/24/97</u>	
D O E	The following determination has been made regarding applicability of the Davis-Bacon Act, as amended, to the work described above:				
	Applicable <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/>		Chairman <u>Original Signed by Alt. Paul Davis. 3/26/97</u>		
	Construction	Plant Forces	RL-Labor Standards Board	Date	

"Description of Work"Briefly state the reason for this work activity:

In collaboration with numerous parties, the U.S. Department of Energy (DOE) has decided to privatize the treatment and disposal of most of the radioactive hazardous waste contained in the underground storage tanks on the Hanford Site. In order to provide infrastructure to the new privatization site, a new 230 KV Substation, Raw and Sanitary water distribution systems, Site Development and Roads, and Liquid Effluent Systems must be extended from the existing Hanford infrastructure.

Project (W-504) is one of the four projects that will provide site development and infrastructure to the Privatization Site. All four conceptual design efforts are currently underway. This PFWR combines scope for three of the four projects. W-503 (FDH-053-97 attached) was submitted for a determination without the CWRAs knowledge of Projects W-504, 505, and 506. The other three projects are listed below:

W-504 ----- TWRS Privatization Phase I, Raw and Sanitary Water Service  
 W-505 ----- TWRS Privatization Phase I, Site Development and Roads  
 W-506 ----- TWRS Privatization Phase I, Liquid Effluent Systems

Job summary:

W-504 Grub, grade, install approximately 7,200' of 4" & 6" sanitary water line, 11,200' of 12" raw water line and appropriate valves.

F D R	Fluor Daniel Hanford, Inc. P.O. Box 1000, Richland, WA 99352-1000	Plant Forces Work Review No.	Page
	<b>PLANT FORCES WORK REVIEW</b> Continued	FDH-063-97	2 of 4

W-505 Grub, grade, install approximately 5,800' of new paved roadways, 5,200' of upgrades to existing roadway, and 3,000' of new power lines.

W-506 Grub, grade, install 7,500' of 2" & 6" effluent piping. 4,000' of excavation x 3' to 10' deep is required.

Discuss all programmatic or physically associated work planned, underway, or recently completed in the work area:

FDH-053-97 is directly associated with the aforementioned projects.

Describe entire work scope. Fully describe complete job scope using a stepped work flow format. Describe and estimate the cost of labor and material on foundations, structures, utility systems, or other construction type activity. Provide sketches or measurements for all work:

W-504:

<u>Estimated Cost of Work:</u>		
*1.	Procured Material/Equipment . . . . .	\$ 0
*2.	Materials/Equipment Purchased for Shop Fabrication . . . . .	\$ 0
*3.	Job-Site Material . . . . .	\$ 575,000
4.	Shop Labor . . . . .	\$ 0
5.	Job-Site Labor . . . . .	\$ 770,000
6.	Other Costs (design, field inspection, and contingency allowance) . . . . .	\$ 375,000
7.	General Overhead (Labor Only) . . . . .	\$ 145,000
<u>*Include estimated fair value of material or equipment acquired on site</u>		Total Job \$ 1,865,000

W-504 will extend the existing Hanford Site sanitary and raw water systems to the TWRS Privatization Site. The sanitary water line will be extended to provide potable water and the raw water line will be extended to provide untreated process & fire suppression water to the new site. Both new water lines will be looped for increased reliability.

1. Perform grubbing & grading activities on the proposed utility corridors. (approximately 25K)
2. Install approximately 7,200' x 4" & 6" sanitary water line. The new lines will be installed between 4' and 6' deep. The new lines will be installed with the appropriate valves to meet existing and proposed operational and fire protection requirements. (Approximately 440K)
3. Install approximately 11,200' x 12" raw water line. The new line will be installed between 4' and 6' deep. The new line will be installed with the appropriate valves to meet existing and proposed operational and fire protection requirements. (Approximately 840K)
4. Perform flushing and testing of the new water lines. (Approximately 25K)
5. Perform soil stabilization. (Approximately 15K)

Note: All sagebrush mitigation and re-vegetation activities will be performed under Project W-505 (Site Development and Roads).

F D H	Fluor Daniel Hanford, Inc. P.O. Box 1000, Richland, WA 99352-1000	Plant Forces Work Review No.	Page
	<b>PLANT FORCES WORK REVIEW</b> <b>Continued</b>	FDH-063-97	3 of 4

W-505:

<u>Estimated Cost of Work:</u>		
*1.	Procured Material/Equipment . . . . .	\$ 0
*2.	Materials/Equipment Purchased for Shop Fabrication . . . . .	\$ 0
*3.	Job-Site Material . . . . .	\$ 430,000
4.	Shop Labor . . . . .	\$ 0
5.	Job-Site Labor . . . . .	\$ 620,000
6.	Other Costs (design, field inspection, and contingency allowance) . . . . .	\$ 1,575,000
7.	General Overhead (Labor Only) . . . . .	\$ 110,000
<u>*Include estimated fair value of material or equipment acquired on site</u>		Total Job \$ 2,735,000

In order to provide infrastructure to the new privatization site, the site must be cleared and developed with roads, lighting, and temporary construction power.

This effort will develop the TWRS Privatization Site by extending the existing Hanford Site roads and electrical power (temporary construction service only) to the TWRS Privatization Site.

1. Perform grubbing & grading activities on the TWRS Privatization Phase I Site. (approximately 135K)
2. Install approximately 5,800' of new paved roadways. (Approximately 395K)
3. Install approximately 5,200' of upgrades to existing Hanford Site roadways. (Approximately 139K)
4. Install approximately 3,000' of new power lines. Approximately twelve poles will be removed or relocated and approximately fifteen new poles will be added. The new electrical service will provide security lighting and temporary construction power to the privatization contractors. (Approximately 220K)
5. Perform soil stabilization and re-vegetation activities at the Privatization Site. (Approximately 160,000)
6. Perform sagebrush mitigation per DOE-RL requirements. Approximately 95 acres of sagebrush habitat will be cleared as a part of TWRS Privatization Phase I. (Approximately 1,300K)



F D H	Fluor Daniel Hanford, Inc. P.O. Box 1000, Richland, WA 99352-1000	Plant Forces Work Review No.	Page
	<b>PLANT FORCES WORK REVIEW</b> <b>Continued</b>	FDH-063-97	4 of 4

W-506:

*1.	Procured Material/Equipment . . . . .	\$	318,000
*2.	Materials/Equipment Purchased for Shop Fabrication . . . . .	\$	0
*3.	Job-Site Material . . . . .	\$	135,000
4.	Shop Labor . . . . .	\$	0
5.	Job-Site Labor . . . . .	\$	371,000
6.	Other Costs (design, field inspection, and contingency allowance) . . . . .	\$	515,000
7.	General Overhead (Labor Only) . . . . .	\$	151,000
*Include estimated fair value of material or equipment acquired on site		Total Job	\$ 1,490,000

In order to accomplish this, a new pipeline system must be installed between the new privatization site and the existing 200 Area liquid effluent facilities. These new pipelines will provide the necessary means of transferring pre-treated liquid effluent from the new privatization contractors.

This effort will install a liquid effluent transfer system for the TWRS Privatization Site. The new effluent system will provide a reliable means of transferring radioactive, dangerous liquid effluent and non-radioactive, non-dangerous liquid effluent to the 200 Area liquid effluent facilities. Two separate pipelines must be installed to keep the different waste types from commingling.

1. Perform grubbing & grading activities on the proposed utility corridors. (Approximately 25K)
2. Install approximately 7,500' of liquid effluent pipeline with associated drain tanks & valves. The new pipelines will be sized between 2" and 6" in diameter and will be installed between 3' and 10' deep. Both pipelines (radioactive, dangerous & non-radioactive, non-dangerous) will be placed in the same trench for a significant portion of each run. Approximately 4,000 lineal feet of trenching will be required for this work. (Approximately 644K)
3. Install the necessary electronics and monitoring equipment for the new liquid effluent system. Data signals will be transmitted over the Hanford Site telecommunications system. (Approximately 115K)
4. Perform flushing and testing of the new effluent lines. (Approximately 30K)
5. Perform soil stabilization. (Approximately 10K)

Note: All sagebrush mitigation and re-vegetation activities will be performed under Project W-505 (Site Development and Roads).

**APPENDIX K**

**Pollution Prevention/Waste Minimization**

## P2-EDGE SUMMARY REPORT

## Project Information

Project: TWRS Privatization Phase I Site Development and Roads  
 Project Number: W-505  
 Project Manager: Tarik Choho  
 Address: 2440 Stevens Place, Room 1215  
 Phone: (509) 376-0590

Project Size: Line Item Project  
 Type of Project: New Construction  
 Design Phase:

P2-EDGE Analysis  
 origination date: 20 Mar 97

Evaluator Comments

Name: David Fort  
 Telephone number: (509) 376-4250

## Notes

Data is unfiltered.

## Opportunities that WILL BE CONSIDERED:

1.A.3	1.A.8	1.A.9	1.A.21	1.A.24	1.B.2	1.B.5	1.B.6	1.B.7
1.D.2	2.A.5	2.A.14	2.B.2	2.B.3	2.B.4	2.B.7	2.B.11	3.B.1
3.B.2	3.B.4	6.B.1	6.B.2	6.D.1	9.A.5	9.A.6	9.A.7	9.B.1
9.B.2	9.B.3	9.D.1	11.B.2	15.A.25	16.A.6	16.A.8	16.A.9	16.A.11

## Opportunities that WILL NOT BE CONSIDERED:

2.A.3	2.A.8	3.B.3
-------	-------	-------

## Opportunities that WILL BE IMPLEMENTED:

2.A.10
--------

## Opportunities that are NOT APPLICABLE:

1.A.1	1.A.2	1.A.4	1.A.5	1.A.6	1.A.7	1.A.10	1.A.11	1.A.12
1.A.13	1.A.14	1.A.15	1.A.16	1.A.17	1.A.18	1.A.19	1.A.20	1.A.22
1.A.23	1.A.25	1.A.26	1.A.27	1.A.28	1.A.29	1.A.30	1.B.1	1.B.3
1.B.4	1.B.8	1.B.9	1.B.10	1.B.11	1.B.12	1.B.13	1.C.1	1.D.1
1.D.3	2.A.1	2.A.2	2.A.4	2.A.6	2.A.7	2.A.9	2.A.11	2.A.12
2.A.13	2.A.15	2.A.16	2.B.1	2.B.5	2.B.6	2.B.8	2.B.9	2.B.10
2.B.12	2.B.13	2.C.1	2.C.2	2.D.1	2.D.2	3.A.1	4.A.1	4.B.1
4.B.2	5.A.1	5.A.2	5.B.1	5.B.2	5.C.1	6.B.3	7.A.1	7.A.2
7.B.1	7.B.2	7.B.3	7.B.4	8.A.1	8.A.2	8.A.3	8.B.1	8.B.2
9.A.1	9.A.2	9.A.3	9.A.4	9.A.8	9.A.9	9.A.10	9.A.11	10.A.1
10.A.2	10.A.3	10.A.4	10.B.1	10.C.1	10.D.1	11.A.1	11.A.2	11.A.3
11.A.4	11.A.5	11.A.6	11.A.7	11.A.8	11.A.9	11.A.10	11.A.11	11.A.12
11.A.13	11.A.14	11.A.15	11.A.16	11.A.17	11.A.18	11.A.19	11.A.20	11.A.21
11.A.22	11.A.23	11.A.24	11.A.25	11.A.26	11.A.27	11.B.1	11.B.3	11.C.1
11.D.1	12.A.1	12.A.2	12.A.3	12.B.1	12.B.2	12.B.3	12.B.4	12.B.5
12.B.6	13.A.1	13.A.2	13.A.3	13.A.4	13.A.5	13.A.6	13.A.7	13.A.8
13.A.9	13.A.10	13.A.11	13.A.12	13.A.13	13.A.14	13.A.15	13.A.16	13.A.17
13.A.18	13.A.19	13.A.20	13.A.21	13.A.22	13.A.23	13.B.1	13.B.2	13.B.3
13.B.4	13.B.5	13.C.1	13.C.2	13.D.1	13.D.2	13.D.3	14.A.1	15.A.1
15.A.2	15.A.3	15.A.4	15.A.5	15.A.6	15.A.7	15.A.8	15.A.9	15.A.10
15.A.11	15.A.12	15.A.13	15.A.14	15.A.15	15.A.16	15.A.17	15.A.18	15.A.19
15.A.20	15.A.21	15.A.22	15.A.23	15.A.24	15.A.26	15.A.27	15.A.28	15.B.1
15.B.2	15.B.3	15.B.4	15.B.5	15.B.6	15.C.1	15.D.1	16.A.1	16.A.2
16.A.3	16.A.4	16.A.5	16.A.7	16.A.10	16.B.1			

POLLUTION PREVENTION/WASTE MINIMIZATION OPPORTUNITIES  
DESIGN CHECKLIST  
Dated: 5-6-97

PROJECT NUMBER W-505PROJECT TITLE THRS PRIVATIZATION, PHASE I - SITE DEVELOPMENT & ROADSPROJECT CONTRACTOR NMCPROJECT MANAGER TARIK CHOHODESIGN CONTRACTOR FDNWDESIGN AGENT FDNWOpportunity Number 1.A.3

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Definitive design specifications will require minimum material requirements.Opportunity Number 1.A.8

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Definitive design will require dust mitigation practices.Opportunity Number 1.A.9

☐ Will Consider  
☐ Will Not Consider  
☒ Implemented  
☐ Not Applicable

Description: Conceptual design evaluated materials and selected a minimum number of appropriate materials to be used during definitive design.Opportunity Number 1.A.21

☐ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☒ Not Applicable

Description: Site grading and road construction does not lend itself to the use of precut or premanufactured materials.Opportunity Number 1.A.24

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 1.B.2

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Definitive design will consider requiring recycled materials as applicable.Opportunity Number 1.B.5

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: To be considered during procurement of equipment and materials.Opportunity Number 1.B.6

☐ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☒ Not Applicable

Description: Site grading and road construction typically does not use pre-packaged materials.Opportunity Number 1.B.7

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.

Opportunity Number 1.D.2

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Construction specifications will require appropriate containment.Opportunity Number 2.A.3

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Storm water runoff to bodies of water is not possible at the site.Opportunity Number 2.A.5

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Storm water runoff to bodies of water is not possible at the site.Opportunity Number 2.A.8

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Project site is an arid region. Unless watered, landscaping to reduce stormwater runoff will generally not survive.Opportunity Number 2.A.10

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Definitive design will define percolation areas as applicable.Opportunity Number 2.A.14

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Evaluation of shredding cleared vegetation for use as a mulch for the area being revegetated as part of sage brush habitat mitigation will be investigated during definitive design.Opportunity Number 2.B.2

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 2.B.3

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 2.B.4

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 2.B.7

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 2.B.11

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: This contract will only generate de-minimus quantities of wastewater.

Opportunity Number 3.8.1

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 3.8.2

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 3.8.3

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Transport to the batch plant more than 32 Km distant is not practical.Opportunity Number 3.8.4

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 6.B.1

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 6.B.2

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 6.D.1

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Anticipated quantity of waste wood is de-minimus and not practical to consider by itself.Opportunity Number 9.A.5

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 9.A.6

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: De-Minimus painting is required on this project.Opportunity Number 9.A.7

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 9.B.1

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: De-Minimus painting is required on this project.

Opportunity Number 9.B.2

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: De-Minimus painting is required on this project.Opportunity Number 9.B.3

☐ Will Consider  
☒ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: De-Minimus painting is required on this project.Opportunity Number 9.D.1

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 11.B.2

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 15.A.25

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 16.A.6

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.Opportunity Number 16.A.11

☒ Will Consider  
☐ Will Not Consider  
☐ Implemented  
☐ Not Applicable

Description: Will be considered during definitive design and implemented as appropriate in the construction specification/s.

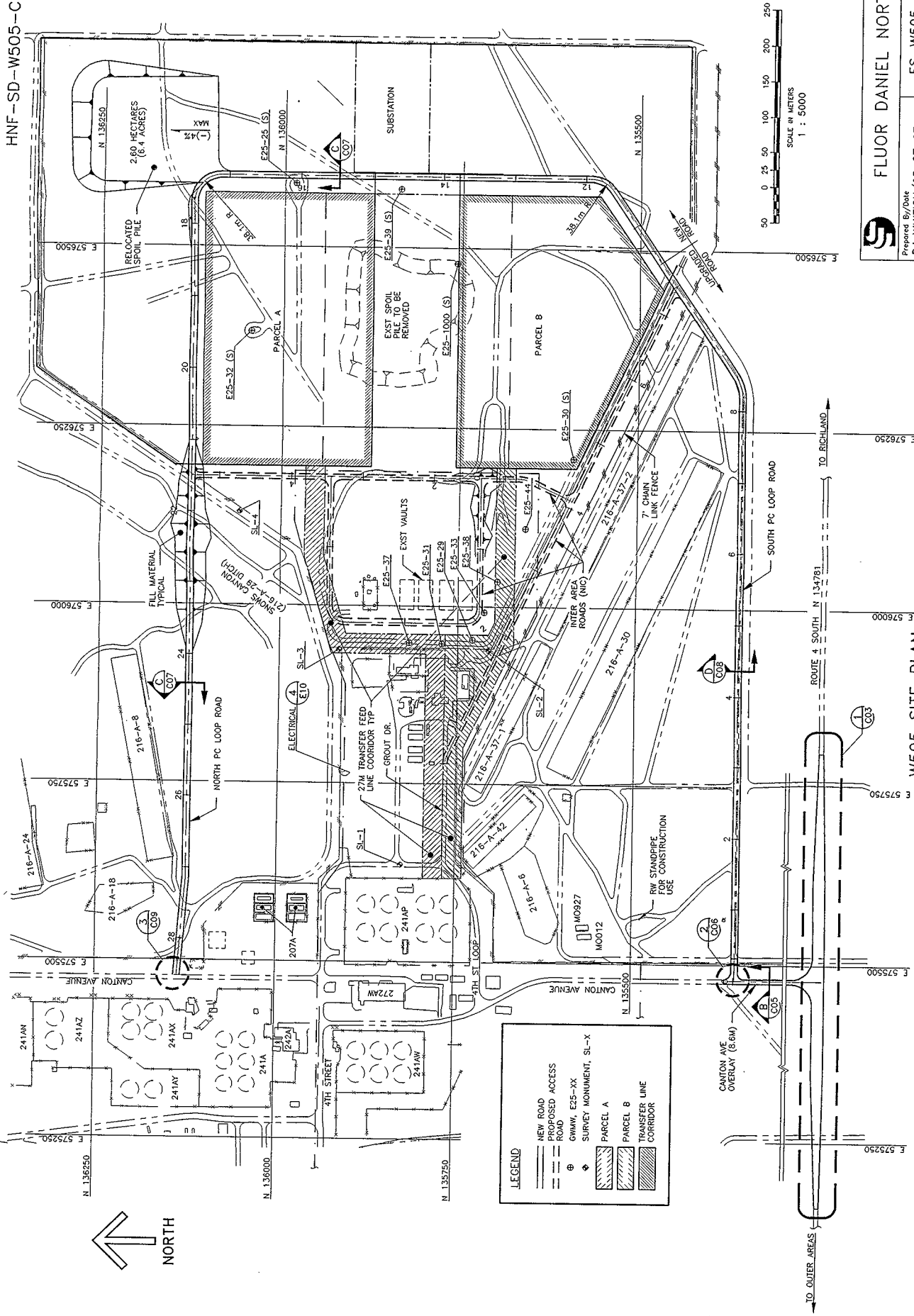
## APPENDIX L


### Sketches

ES-W505-C01	Integrated Site Plan
ES-W505-C02	Site Plan
ES-W505-C03	Rt 4S/Canton Ave Intersection
ES-W505-C04	Route 4S
ES-W505-C05	Canton Avenue
ES-W505-C06	Canton Ave/South PC Loop Rd
ES-W505-C07	North & East PC Loop Rd
ES-W505-C08	South PC Loop Rd
ES-W505-C09	Canton Ave/North PC Loop Rd
ES-W505-E10	Construction Power Site Plan
ES-W505-C11	Sagebrush Mitigation Site Plan








**FLUOR DANIEL NORTHWEST**

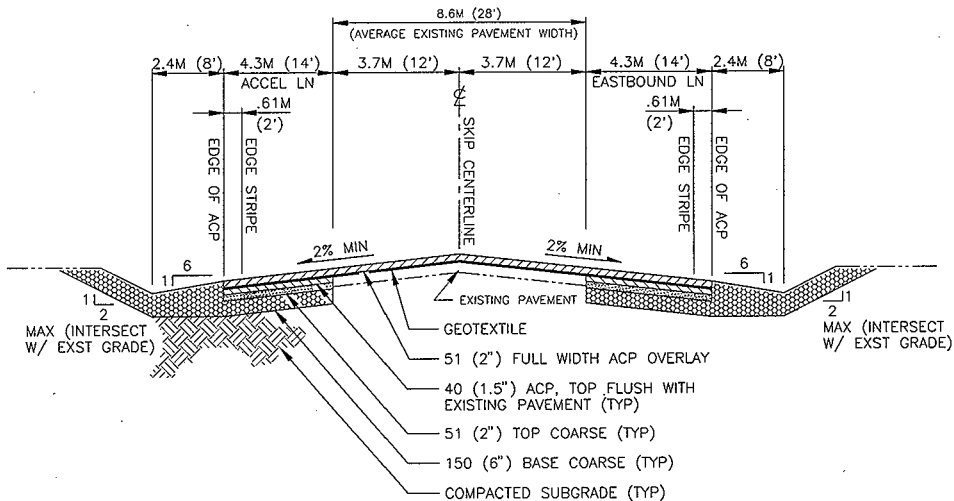
Prepared By/Date DJ WHITISH/05-07-97	ES-W505-C02	CAD FILE IW505C02
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W505 SITE PLAN

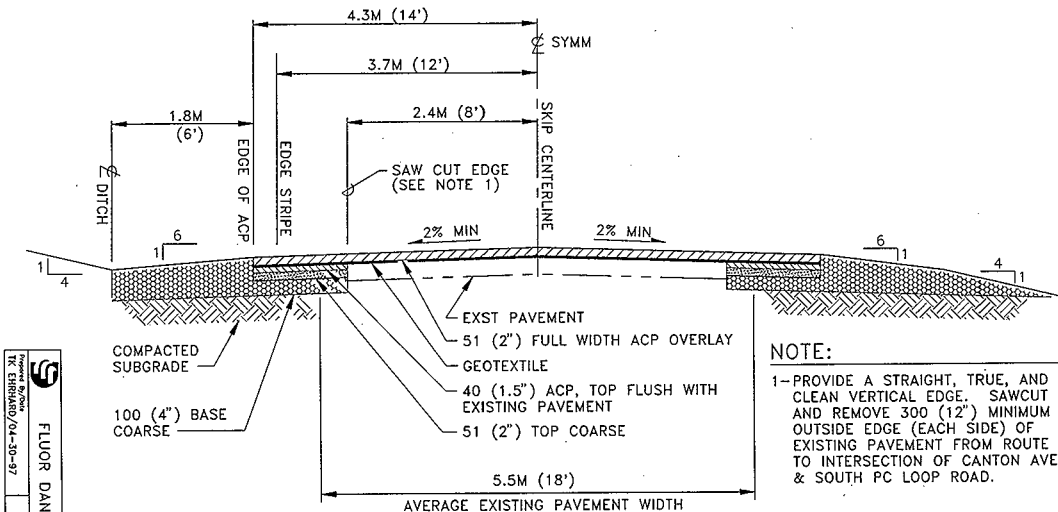


	PROJECT NO.	ES-W505-C04	DATE
	BY	ES-W505-C04	1/20/05
	CHKD BY		
	IN CHARGE		

FLUOR DANIEL NORTHWEST



A ROUTE 4S  
ES-W505-C03 SCALE: NONE

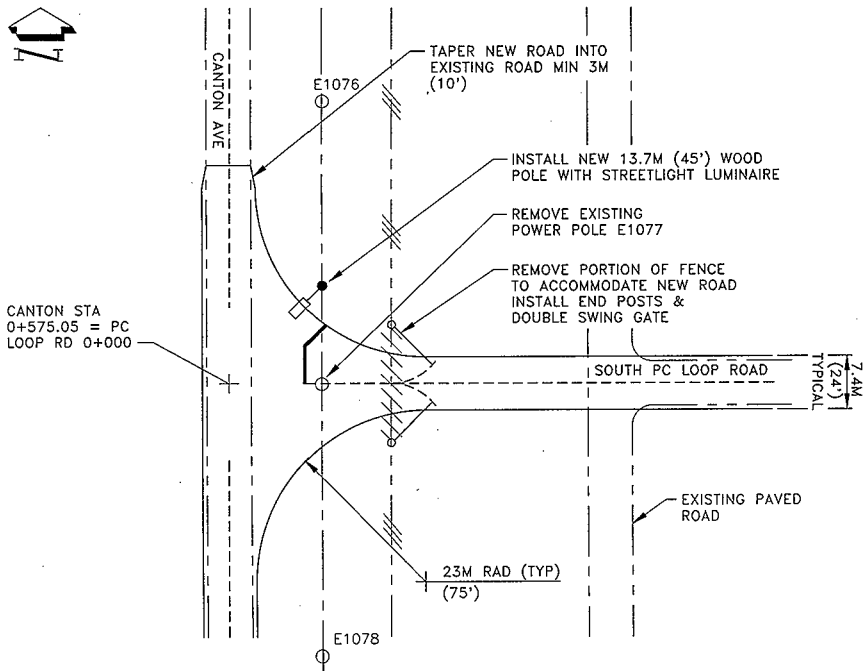


**NOTE:**

1--PROVIDE A STRAIGHT, TRUE, AND CLEAN VERTICAL EDGE. SAWCUT AND REMOVE 300 (12") MINIMUM OF OUTSIDE EDGE (EACH SIDE) OF EXISTING PAVEMENT FROM ROUTE 4S TO INTERSECTION OF CANTON AVENUE & SOUTH PC LOOP ROAD.

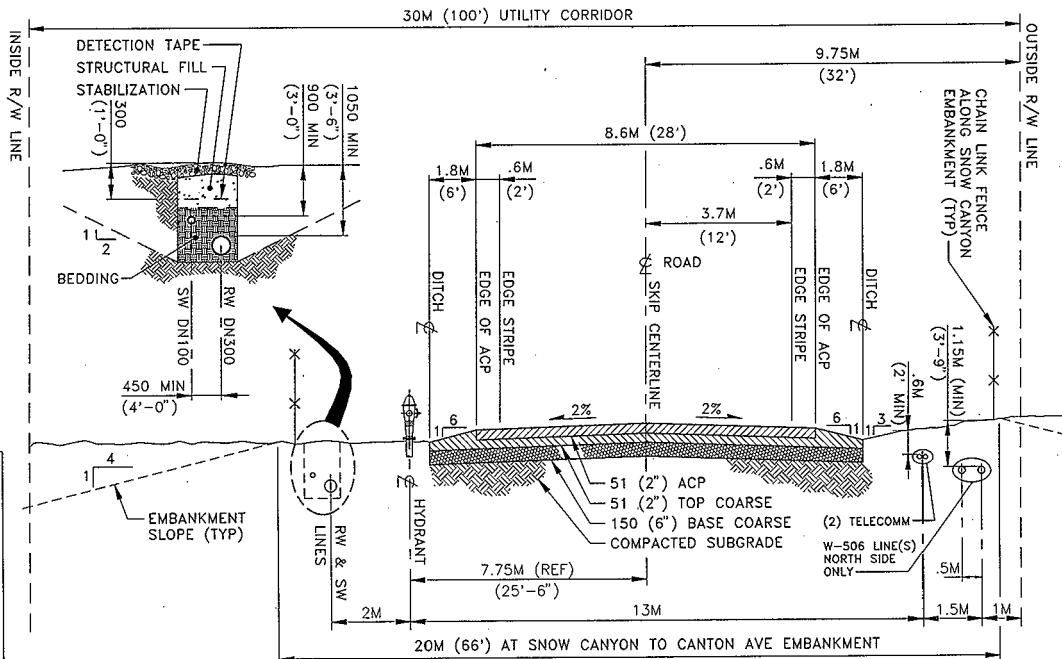
5	FLUOR DANIEL NORTHWEST
INVESTMENT	ES-W505-C05
INVESTMENT	INVESTMENT
INVESTMENT	INVESTMENT

**B CANTON AVENUE**  
ES-W505-C02 SCALE: NONE



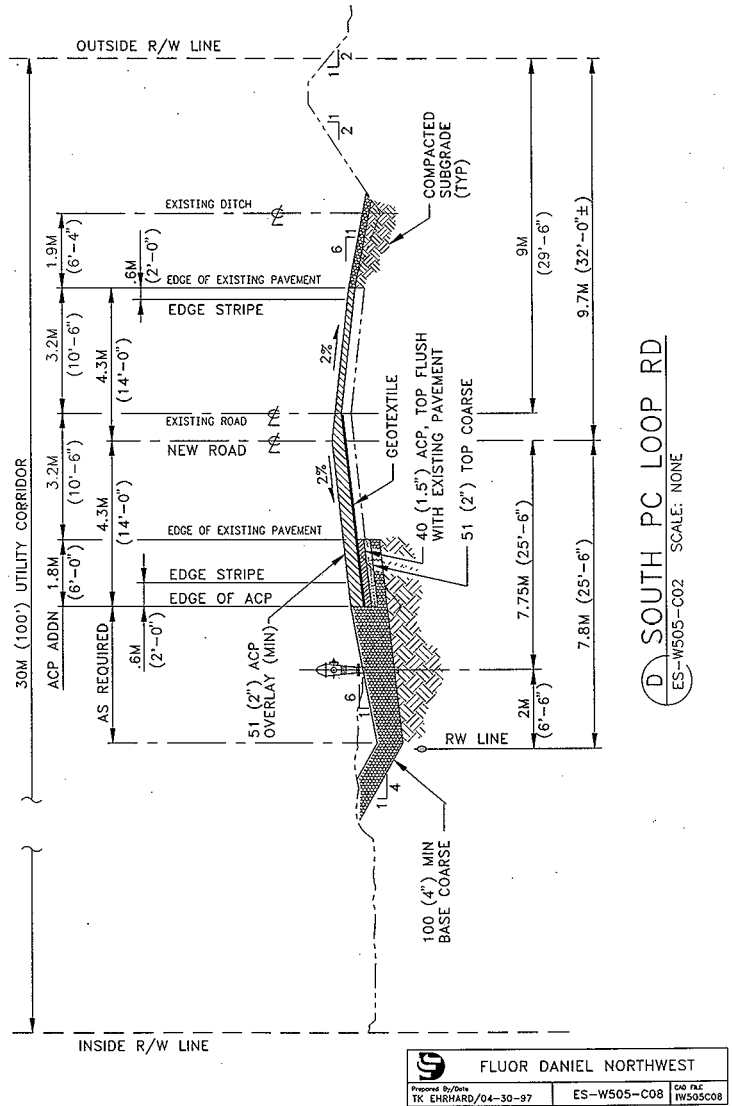
2 CANTON AVE/SOUTH PC LOOP RD  
ES-W505-C02 SCALE: NONE

	FLUOR DANIEL NORTHWEST		
<small>Project No. 104-30-97</small> <small>104-30-97</small>	ES-W505-C06	104-30-97	104-30-97

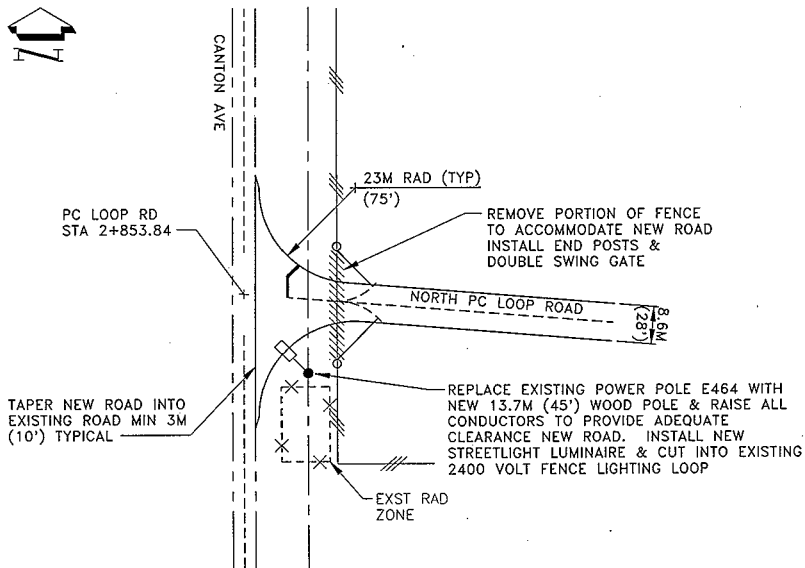


© NORTH & EAST PC LOOP RD  
ES-W505-C02 SCALE: NONE


5	FLUOR DANIEL NORTHWEST
Project Number	ES-W505-C07
File Number	W505C07
Revision	01/04-30-97

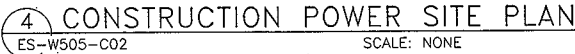


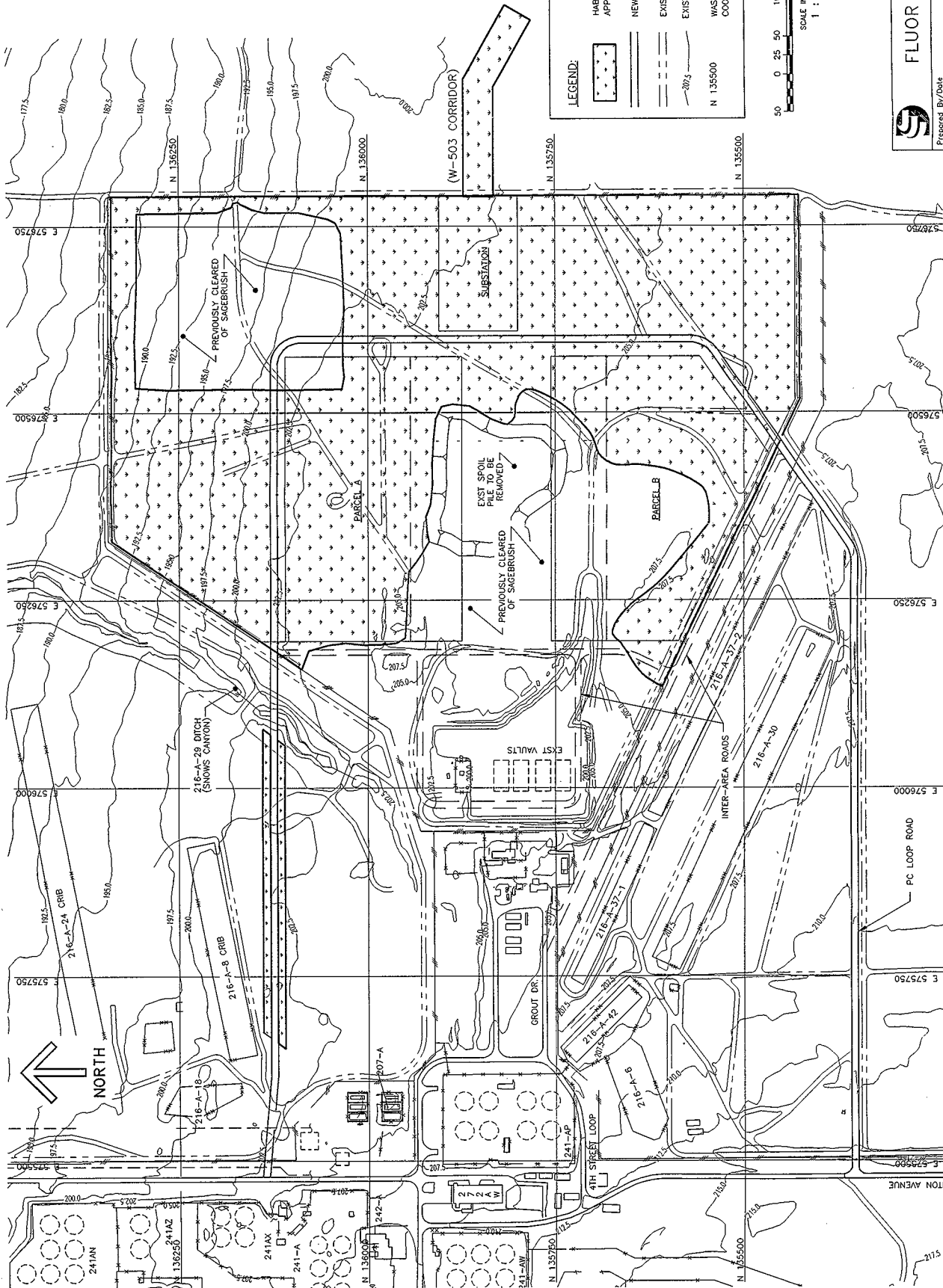




3 CANTON AVE/NORTH PC LOOP RD  
ES-W505-C02 SCALE: NONE

	FLUOR DANIEL NORTHWEST		
	PROJECT NO.	ES-W505-C02	DATE
	REVISION NO.	04-30-97	DATE
	DESIGNED BY	ES-W505-C02	DATE





FLUOR DANIEL NORTHWEST

Prepared By/Date DJ WHITISH/6-03-97	ES-W505-C11	CAD FILE IW50500
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L-11

## SAGEBRUSH MITIGATION SITE PLAN

# CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
Gurdhian Singh	Distribution	EDT 615905
Subject: HNF-SD-W505-CDR-001, Rev.0, Conceptual Design Report, "TWRS Privatization Phase I, Site Development and Roads," Subproject W-505		

## DISTRIBUTION

Name	Location	w/att	Name	Location	w/att
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### DOE RICHLAND

✱ T.R. Hoertkorn (3)	B4-55	X			
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### FLUOR DANIEL HANFORD

✱ A. M. Umek (1)	S7-40	X			
✱ S. K. Barnald (1)	B3-70	X			

### LOCKHEED MARTIN HANFORD CORP.

✱ H. L. Boston (1)	G3-21	X			
✱ J. B. Berry (1)	H6-37	X			
✱ R. W. Powell (1)	H5-03	X			
✱ W. T. Thompson (1)	G3-21	X			
✱ M. N. Islam (1)	S5-12	X			
✱ P. C. Miller (1)	R1-51	X			
✱ W. L. Adams (1)	S5-12	X			

### MACTEC

✱ R. L. Treat (1)	H5-03	X			
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### DYNCORP

✱ J. M. Hache (1)	S2-12	X			
✱ D. L. Ford (1)	S2-12	X			
✱ E. F. Yancey (1)	G3-07	X			
✱ E. C. Rogers (1)	S1-01	X			

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✱ R. J. Parazin (1)	H5-49	X			
✱ G. Singh (12)	H5-49	X			

### FLUOR DANIEL NORTHWEST

✱ B. C. Harmon (3)	G3-08	X			
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✱ CORRESPONDANCE CONTROL (1)	A1-03	X			
✱ Document Control (1)	G3-11	X			

✱ Advanced Distribution