

**U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING**

**SUBJECT: UPDATE ON THE EXPLORATORY
STUDIES FACILITY PROGRAM**

PRESENTER: DAN McKENZIE

**PRESENTER'S TITLE
AND ORGANIZATION: ESF PROJECT ENGINEER
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
LAS VEGAS, NEVADA**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-1863**

**LAS VEGAS, NEVADA
OCTOBER 19-20, 1993**

**Exploratory Studies Facility
Current Activities and
FY94 Planned Work**

Current Activities

Design:

- **Nearing completion of Packages 1B (surface facilities; north portal) and 2A (conveyor/electrical/transportation)**
- **Continuing design of Packages 1C; 1D; (surface facilities, north portal); 2B; (north ramp design analyses); and, 2C (north ramp, surface to Topopah Spring level (TSL))**
- **90% Design Review for Package 2A was held in late July-early August**
- **90% Design Review of Package 2B is scheduled to start November 30, 1993**
- **90% Design Review of Package 2C is scheduled to start February 21, 1994**
- **Expect to start design activities on Package 8A (main TSL drift) in January, and Package 8B (north ramp extension) in February**

Current Activities

(Continued)

Construction:

- **Completed excavation of the 60 m starter tunnel slightly ahead of schedule (September 9, 1993)**
- **Currently excavating the first test alcove, located 43 m into the starter tunnel**
 - **Alcove #1 is to be 20-25 m long when complete**
- **Constructing the 69kV power system to the north portal pad area**
 - **Power should be available in late-December 1993**

TBM Procurement

TBM Procurement

**The contract for the first TBM was awarded
on May 27, 1993, to**

**Construction and Tunneling Services, Inc. (CTS)
1609 South Central Avenue, Suite H
Kent, Washington 98032**

CTS president: Bruce Moulton

General Information on CTS TBM

Gripper Shield TBM - Model 760

Turning radius	500 ft
Weight	800 tons
Length	220 ft (without mapping cars)
Name plate power:	3,800 horsepower

Current Activities

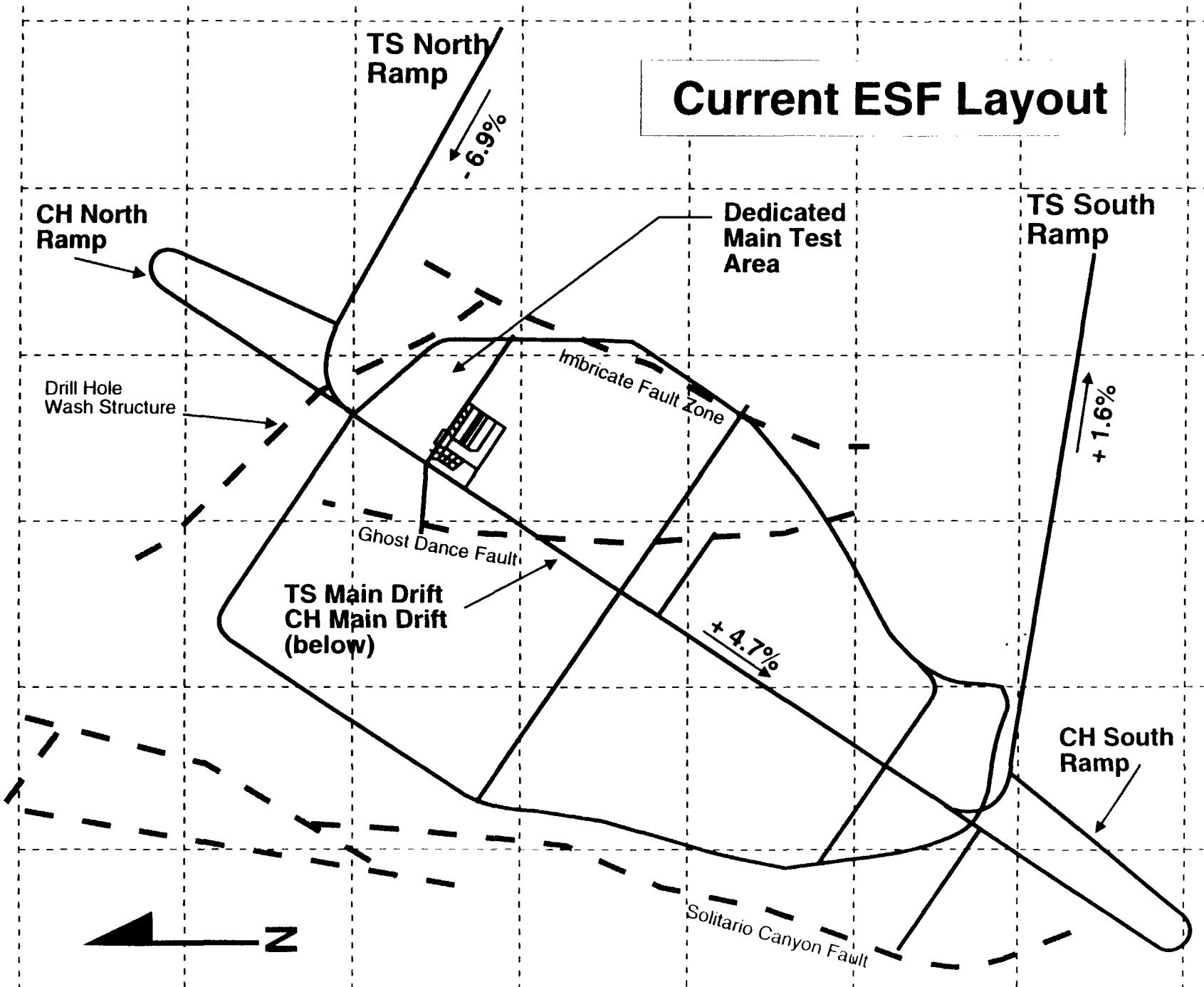
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TBM procurement:

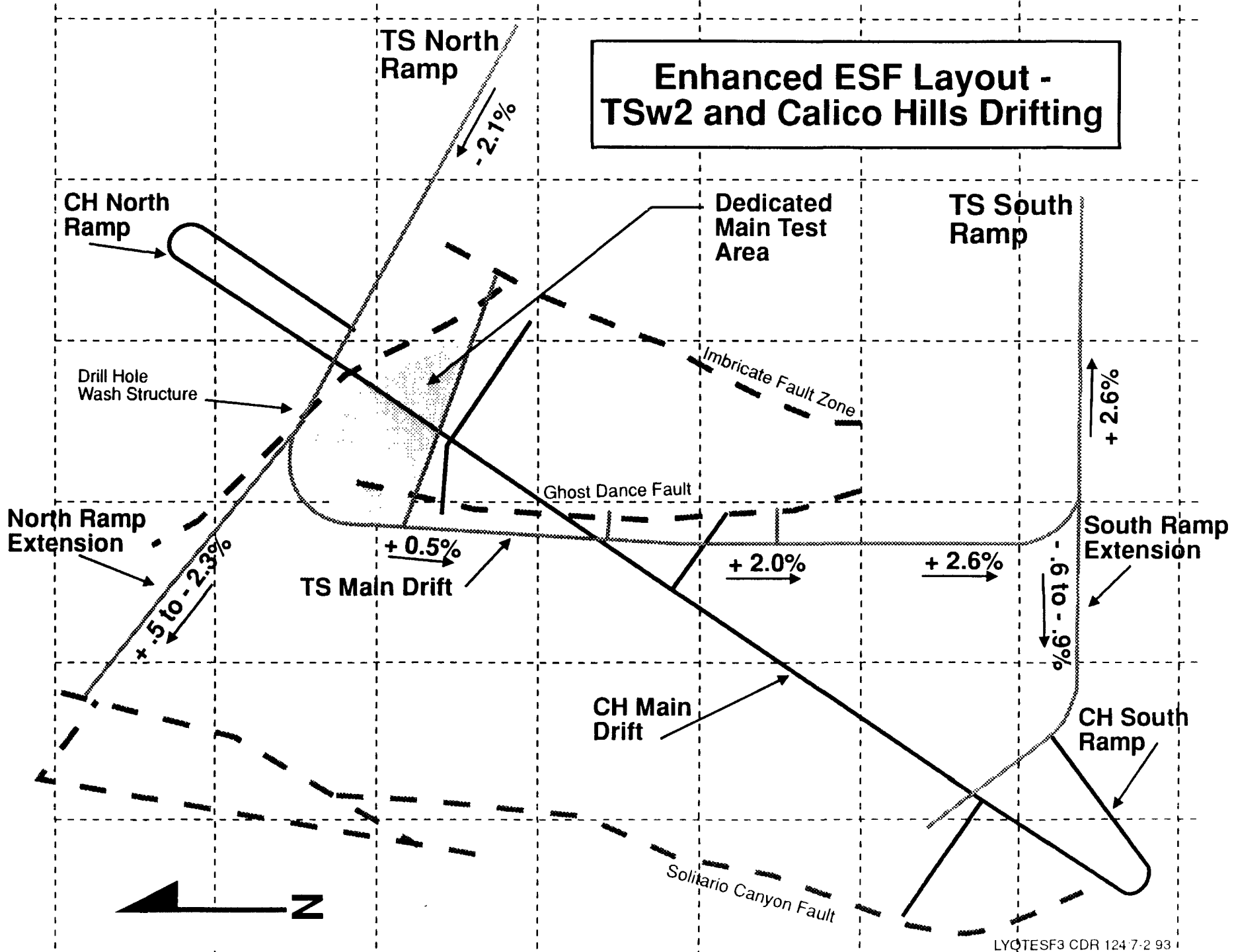
- **Procurement is moving smoothly**
 - **All dates for delivery of information to CTS have been met**
- **Expect delivery at the north portal pad in early April 1994**
- **Expect TBM start-up in August 1994**
- **Budget analysis ongoing**

Status of Proposed ESF Changes

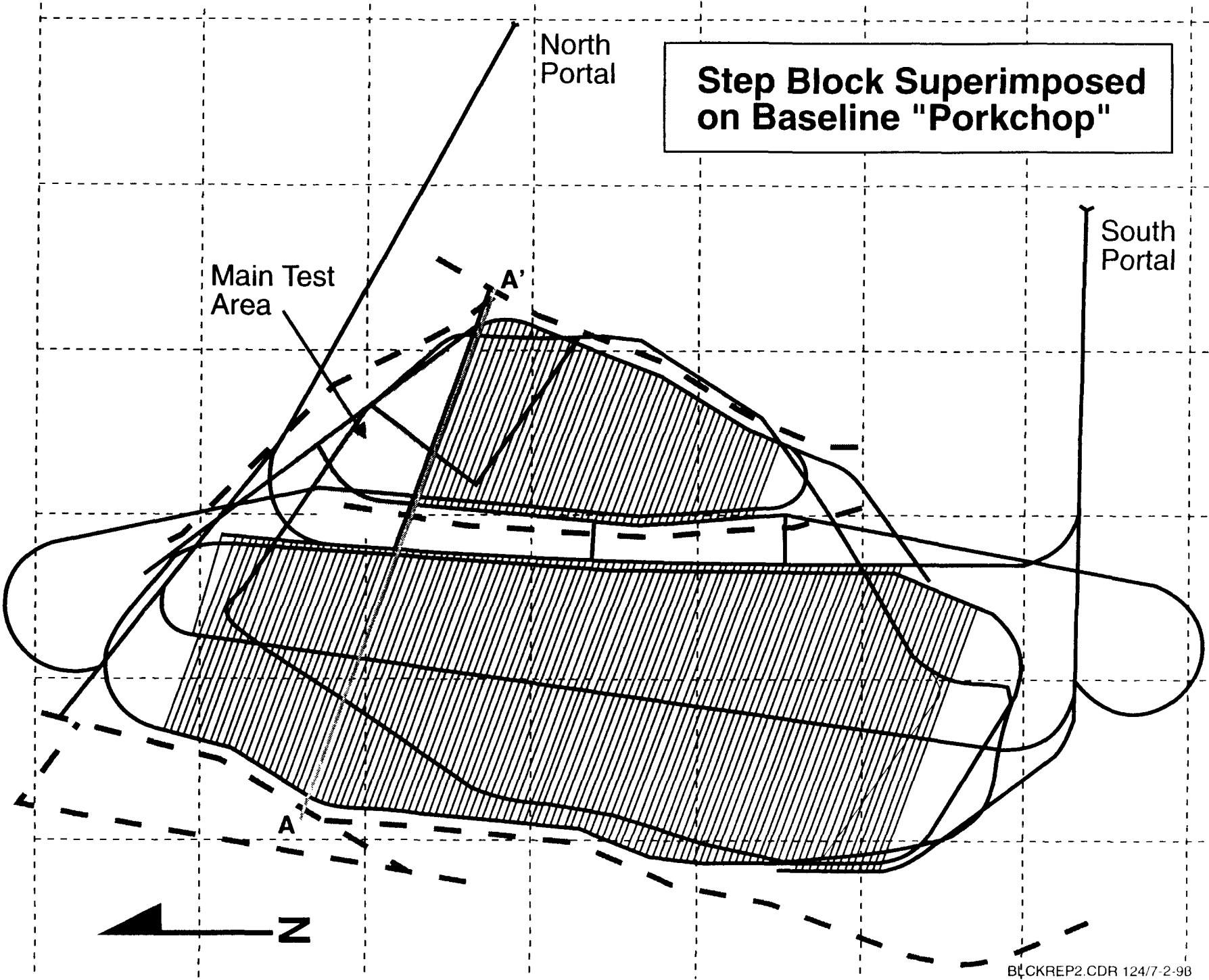
Current ESF Layout



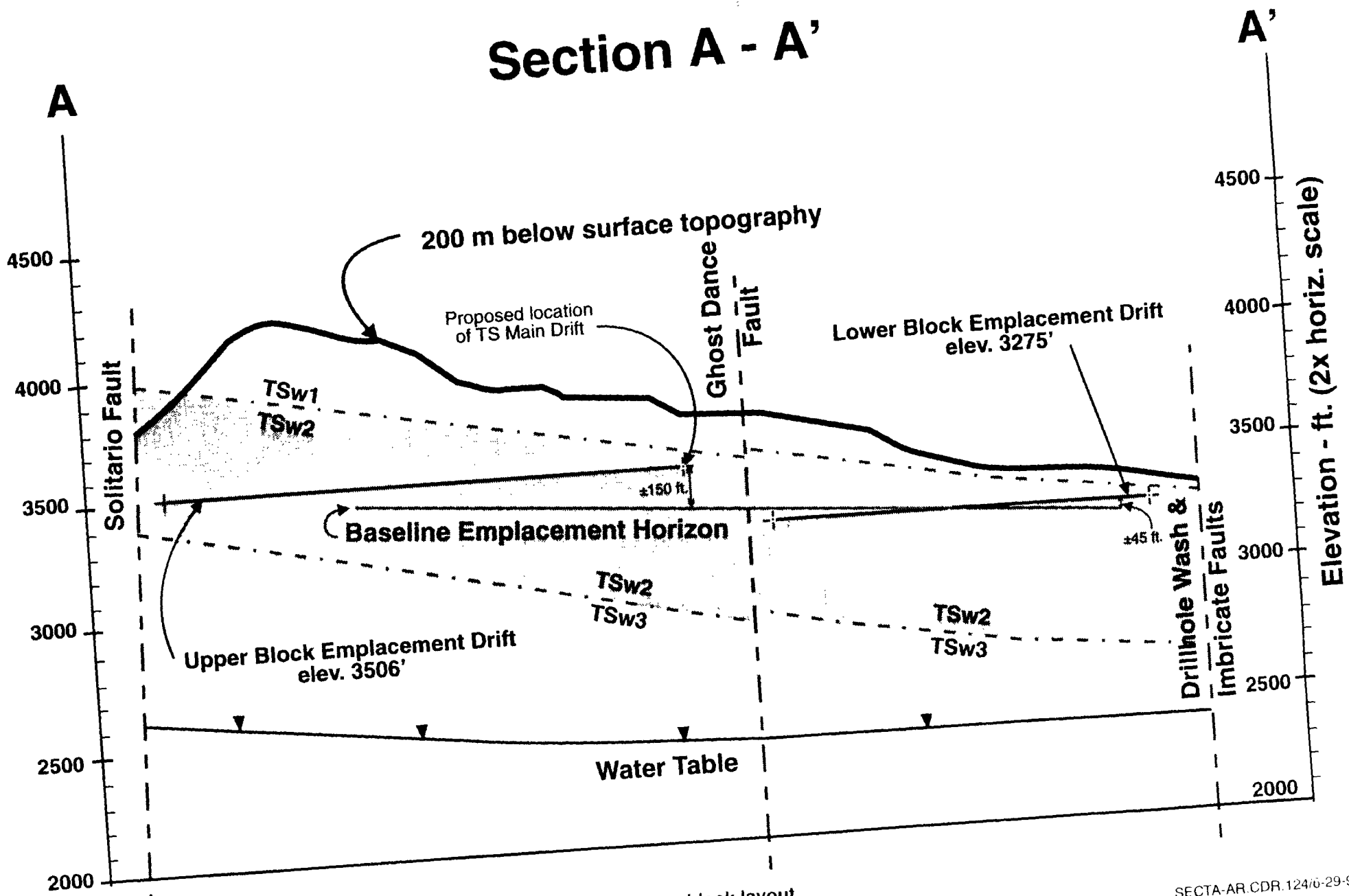
Enhanced ESF Layout - TSw2 and Calico Hills Drifting



Step Block Superimposed on Baseline "Porkchop"



Section A - A'



Note: Plane of section cuts through lowest emplacement drift in step-block layout.

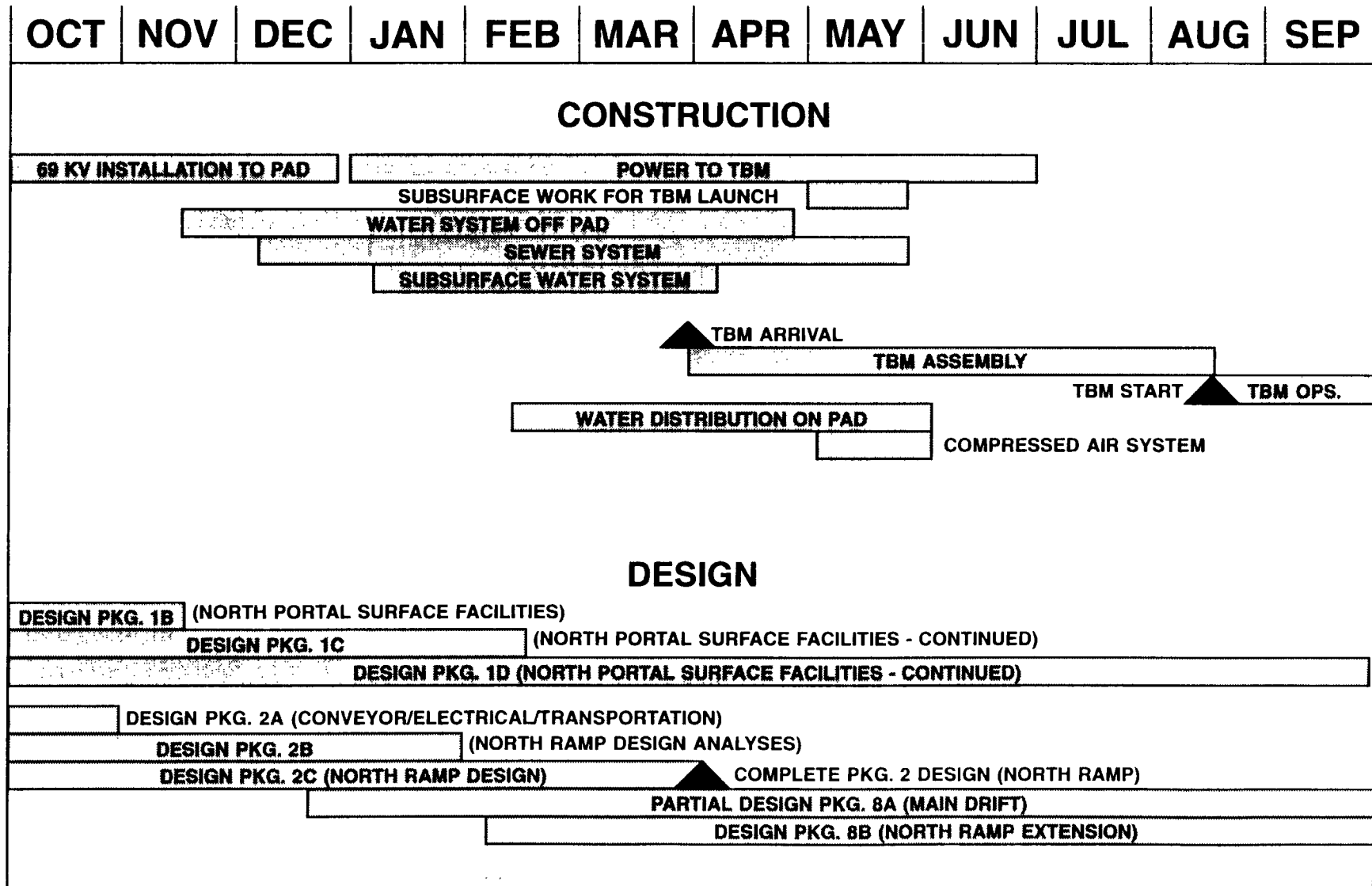
Status of Proposed ESF Enhancements

- **Design Analysis describing the proposed changes has been prepared and reviewed internally**
- **The Design Analysis has undergone technical review**
- **The change is now in the Change Control System**
- **If approved by the Change Control Board, it will result in a change to the Baseline ESF/Repository configuration described in the Project Technical Baseline**

TBM Startup Schedule

- **Early April 1994: TBM final shipment arrives; final assembly begins**
- **August 1994: TBM begins limited operation with first three cars**
- **First quarter FY95: install mapping platform and last two cars; continue limited operation**
- **Start of second quarter FY95: begin full TBM operation**
- **TBM schedule contingent on funding**

FY94 ESF SCHEDULE



NRC August 20, 1993, Letter

- **The letter expressed concerns regarding the ESF design and design control process**
- **These concerns were primarily a result of the recent DOE QA audit of M&O ESF design activities**

Information Requested by NRC

- **Rationale for proceeding with design activities while deficiencies are being corrected**
- **A detailed corrective action plan**
- **The date when a controlled baseline ESF design, integrated with the repository, will be formally submitted to NRC for review**
- **A detailed plan for submittal of timely information to NRC regarding ESF design changes that could impact testing or waste isolation**

Response to Letter

- **There is no reason to stop the ESF design or construction activities**
 - **Each identified deficiency has been carefully examined**
 - **Public safety is not being compromised**
 - **Timely corrective action will assure that ESF design products are not compromised**
 - **A detailed plan for process improvement has been developed and is being implemented**
 - **This plan has been formally communicated to the NRC on-site representative and formally transmitted to the NRC**

Response to Letter

(Continued)

- **A DOE-NRC management meeting was held on September 17, 1993, to clarify concerns**
- **A DOE-NRC technical exchange was held on October 4-5, 1993, to discuss these and other ESF topics**
- **The formal DOE response will be transmitted to NRC by November 18, 1993, (as requested by NRC)**

Backup Information

Design Package Contents

Package 1A: (completed by Raytheon in early FY93)

- **Site preparation of and access road to the north portal area**
- **Site preparation of the topsoil storage area, a portion of the muck storage area, and the access road to these areas**
- **Selected utilities**
- **TBM starter tunnel**
- **TBM procurement specification**

Design Package Contents

Package 1B: (started by M&O early FY93)

- **Finish grading and paving for north portal pad and access road**
- **H-road upgrade plans and profiles**
- **Subsurface wastewater pond**
- **Changehouse building**
- **Shop building**
- **North Portal Power Distribution and Grounding Plan**

Design Package Contents

Package 1C: (started by M&O early FY93)

- **North portal pad electrical switchgear**
- **Compressed air system**
- **Standby power**
- **Muck storage area**
- **Conveyor maintenance access road**
- **138kV substation pad**
- **Facility monitoring and control system**

Design Package Contents

Package 1D: (started by M&O early FY93)

- **Warehouse building**
- **Operations building**
- **Covered storage**
- **Site lighting**
- **Fuel storage system**

Design Package Contents

IDS: (started by M&O early FY93)

- **Subsurface safety and alarm system**
- **Design of centralized computer and data acquisition system (DAS)**

Design Package Contents

Package 2A

- **Conveyor/electrical/transportation**

Package 2B

- **Underground Studies**
 - **Excavation Methods Study**
 - **Muck Storage Study**
 - **Ground Support Systems Analysis**
 - **Alcove Location Analysis**
 - **Rock Mass Classification and Ground Support Study**
- **Mechanical Studies**
 - **Fire Hazards and Fire Protection Analyses**
 - **Utilities Analysis**
 - **Ventilation Study**

Design Package Contents

- **Electrical Studies**
 - **Fire Detection Analysis**
 - **Electric Load Study**
 - **Grounding System Analysis**
 - **Control System Analysis and Specifications**
 - **Relay Coordination Study**
- **Ventilation system procurement**
 - **Ventilation system procurement specifications**
- **Rail haulage**
 - **Rail Haulage Track and Roadway Study**
 - **Rail haulage procurement specifications**

Design Package Contents

- **Mapping platform**
 - **Mapping platform specification**
- **Electrical procurement specification**
 - **Subsurface comm system specifications**
 - **Monitoring and alarm system specifications**
- **Concrete/structural steel**
 - **Concrete and structural steel design, conveyor system**
- **Title III support**

Design Package Contents

Package 2C

- **Underground design**
 - Rail system
 - Ground control, mining
 - Excavation layouts/muck handling
 - Blast design
 - Revision of existing specifications
 - Rock mass classification and ground support criteria
 - Alcoves/bays
 - Utility arrangements

- **Ventilation system procurement specifications**
 - Vent system installation specifications
 - Vent system drawings

Design Package Contents

- **SS conveyor system procurement specifications**
 - **SS conveyor installation specifications**
- **Utilities**
 - **Waste-water collection**
 - **Waste-water distribution study**
 - **Fire protection system specifications**
 - **Fire detection system specifications**
 - **Compressed air system specifications**
- **Mechanical equipment specification**
- **Surface/SS power/lighting/grounding**
 - **Surface power/lighting/grounding**
 - **Subsurface power/lighting/grounding**
 - **Electrical equipment installation specifications**

Design Package Contents

- **Concrete/structural steel**
 - **Miscellaneous concrete and steel, surface**
 - **Miscellaneous concrete and steel, subsurface**
- **Instrumentation/controls**
 - **Surface instrumentation and controls**
 - **Subsurface instrumentation and controls**
- **Title III support**

Design Package Contents

Package 8A - Main TSL Drift

Package 8B - North Ramp Extension

- **Underground design**
 - **Rail system**
 - **Ground control, mining**
 - **Excavation layouts/muck handling**
 - **Blast design**
 - **Revision of existing specifications**
 - **Rock-mass classification and ground-support criteria**
 - **Alcoves/bays**
 - **Utility arrangements**
- **Ventilation system procurement specifications**
 - **Vent system installation specifications**
 - **Vent system drawings**

Design Package Contents

- **SS conveyor system procurement specifications**
 - **SS conveyor installation specifications**
- **Utilities:**
 - **Waste-water collection**
 - **Waste-water distribution study**
 - **Fire protection system specifications**
 - **Fire detection system specifications**
 - **Compressed air system specifications**
- **Mechanical equipment specification**
- **Surface/SS power/lighting/grounding**
 - **Subsurface power/lighting/grounding**
 - **Electrical equipment installation specification**

Design Package Contents

- **Concrete/structural steel**
 - **Miscellaneous concrete and steel, subsurface**
- **Instrumentation/controls**
 - **Subsurface instrumentation and controls**
- **Title III support**