

YMP Site Closure

KHNP Training Program YMP Site Closure

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Outline

- I. Site Closure Requirements**

- II. Site Closure Plans**



Site Closure Requirements

- The Site closure requirements are based on NRC requirements in 10 CFR 63
- 10 CFR 63.2 Definitions
 - *Permanent closure* means final backfilling of the underground facility, if appropriate, and the sealing of shafts, ramps, and boreholes
- 10 CFR 63.53 License amendment for permanent closure
 - Defines the requirements for permanent closure and the information that is to be included in an amendment to the original operating license



Site Closure Requirements

- **10 CFR 63.21(b)(22)(vi)**
 - The SAR must include plans for permanent closure and plans for the decontamination or decontamination and dismantlement of surface facilities
- **10 CFR 63.21 (b)(24)**
 - A description of the controls that DOE will apply to restrict access and to regulate land use at the Yucca Mountain site and adjacent areas, including a conceptual design of monuments that would be used to identify the site after permanent closure



Summary of Requirements

- **Required Now**
 - License Application must contain closure plans
- **Required Later (approximately 100 years later)**
 - License must be amended to include specific closure information
 - Updated closure plans
 - Updated performance calculations
 - Description of post-closure monitoring
 - Description of land control, monuments and records preservation
 - Any new relevant information not included in the original license application



Summary of Requirements

- NRC recognized the fact that the original closure plans would not be up-to-date. They did not mandate final closure designs in the license application; they require the license to be amended with the final closure plans at the time of closure
- Currently, closure plans are not comprehensive



Summary of Requirements

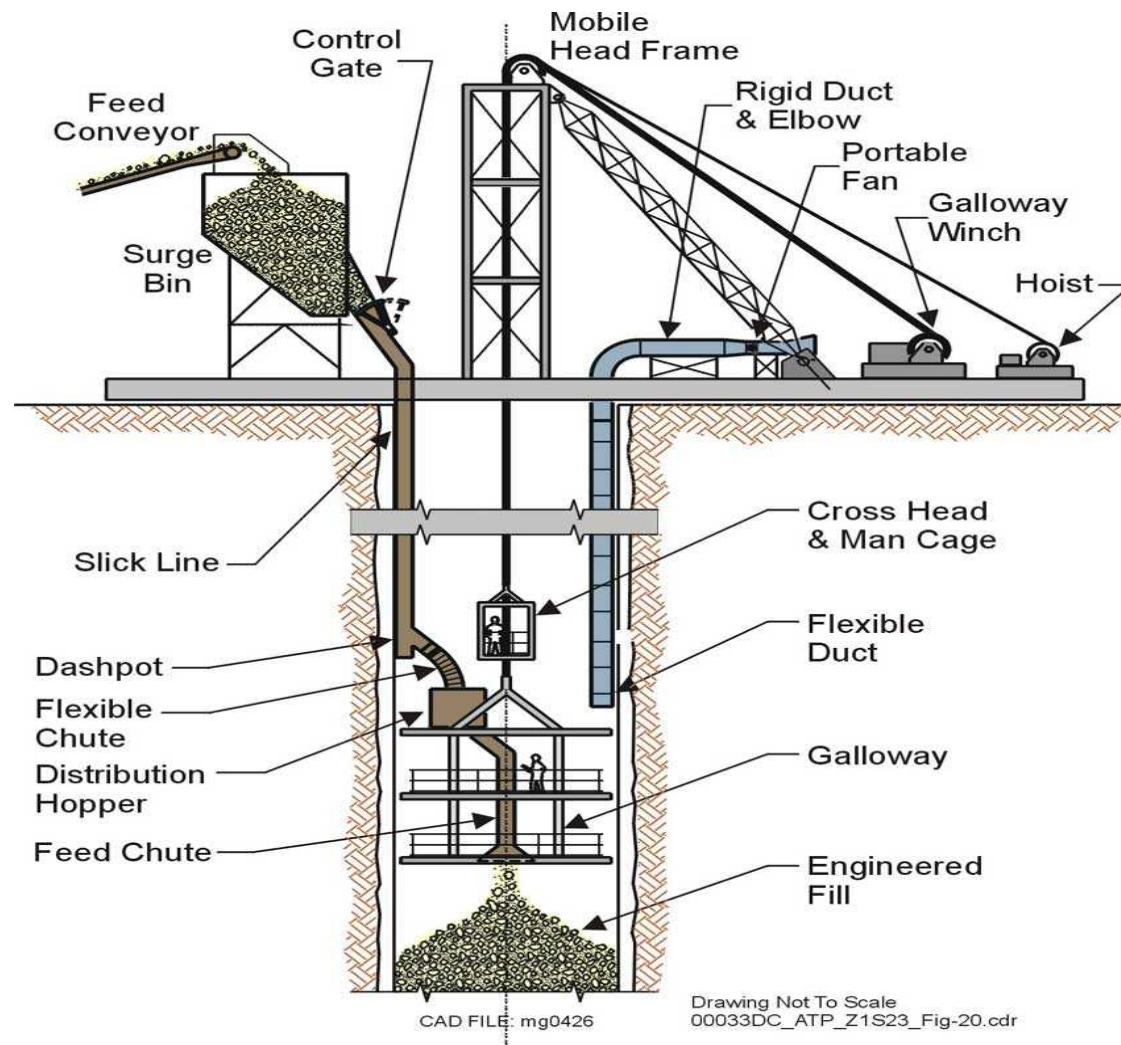
- **Closure Plans (10 CFR 61.51)**
 - Seal underground areas
 - D & D above ground facilities
 - Site is permanently marked, monitored and records archived



Closure Plans

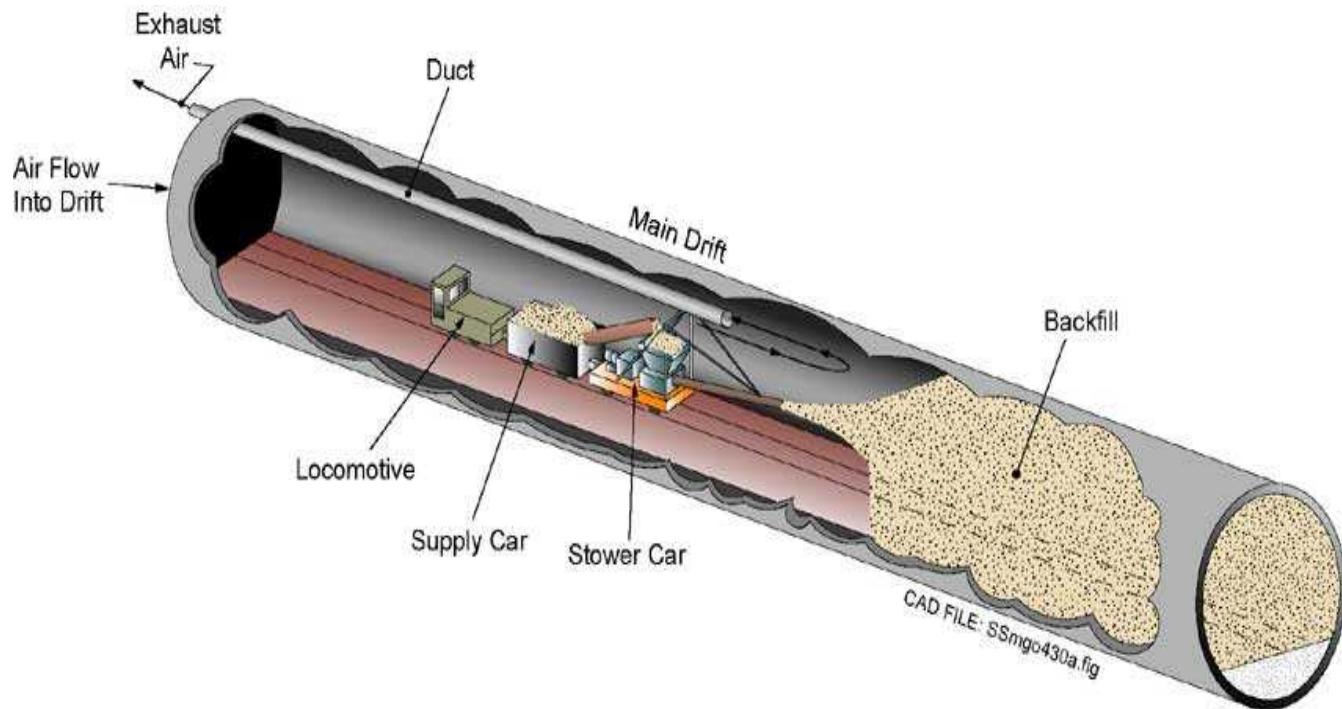
- **Underground areas are sealed**
 - Frank Hansen discussed the seal designs
 - After ventilation period, seals are installed
 - 76 years for high-temperature design
 - 125 – 300 years for low-temperature design
 - Plus 10-17 years to complete closure activities
 - Seals
 - North and South Ramps
 - Ventilation Shafts
 - Boreholes within the 400 m buffer around the perimeter

Ventilation Shafts



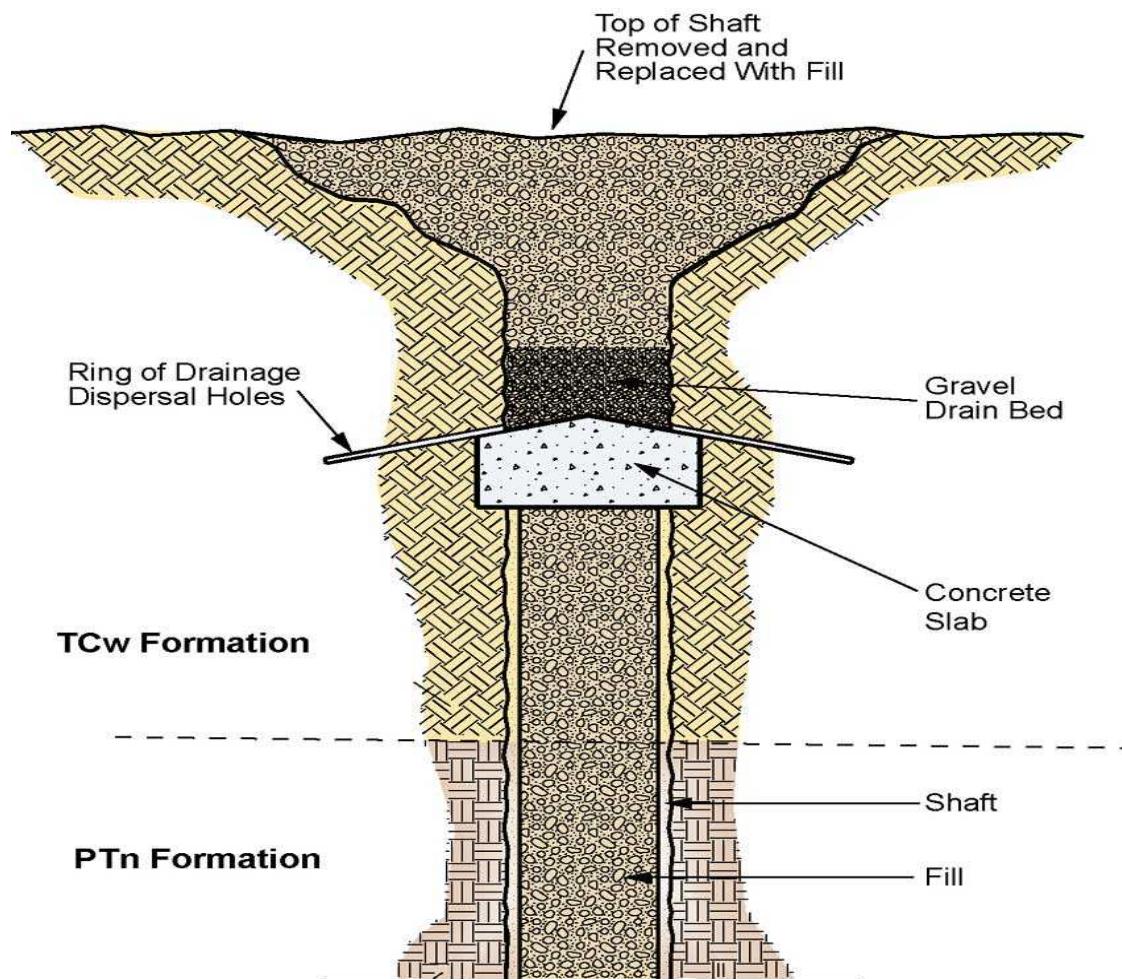


Ramps



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Boreholes



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Above Ground Structures

- **Above ground facilities are removed**
 - Above ground structures are designed to ease potential decontamination
 - Structures will be removed and land remediated to applicable standards



Passive Institutional Controls

- Site is permanently marked, monitored and records archived
- Permanent Markers
 - 10 CFR 63.51(a)(3)(i) Identification of the site and geologic repository operations area by monuments that have been designed, fabricated, and emplaced to be as permanent as is practicable



Permanent Markers

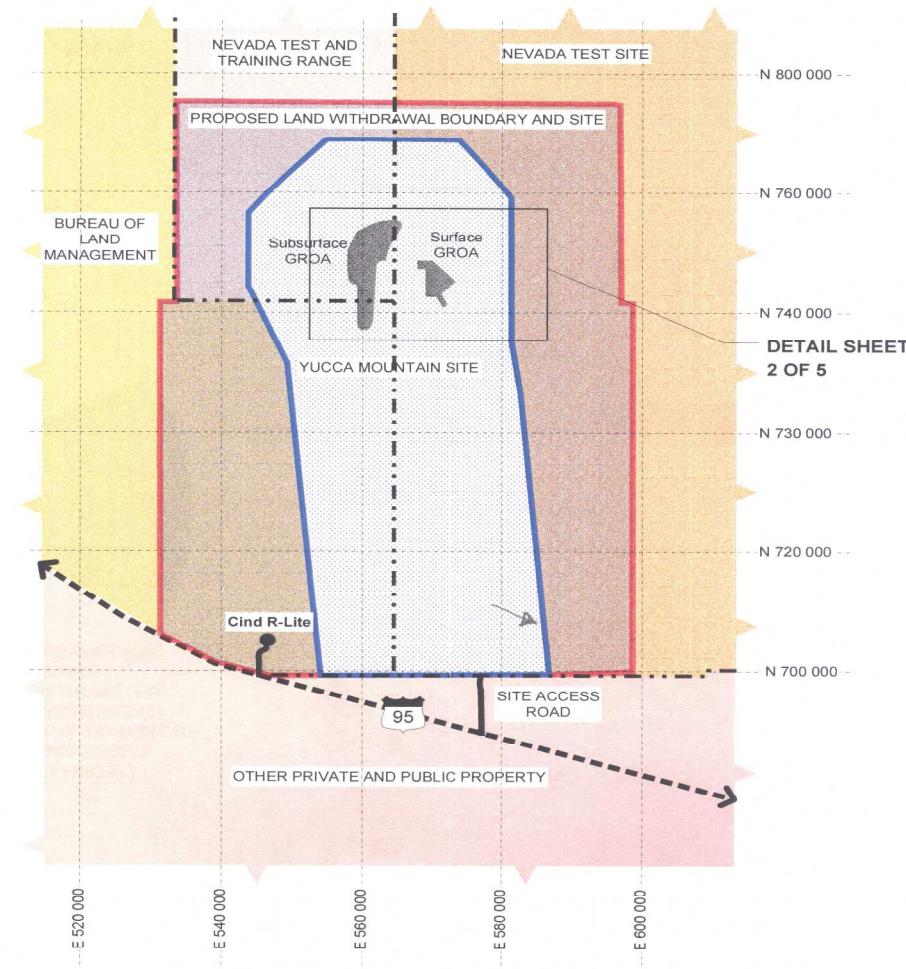
- **PM Design Requirements**
 - Permanent as practicable
 - Identify the GROA
- **The requirements do not mandate a message that the PM must convey or a time period that they must endure**



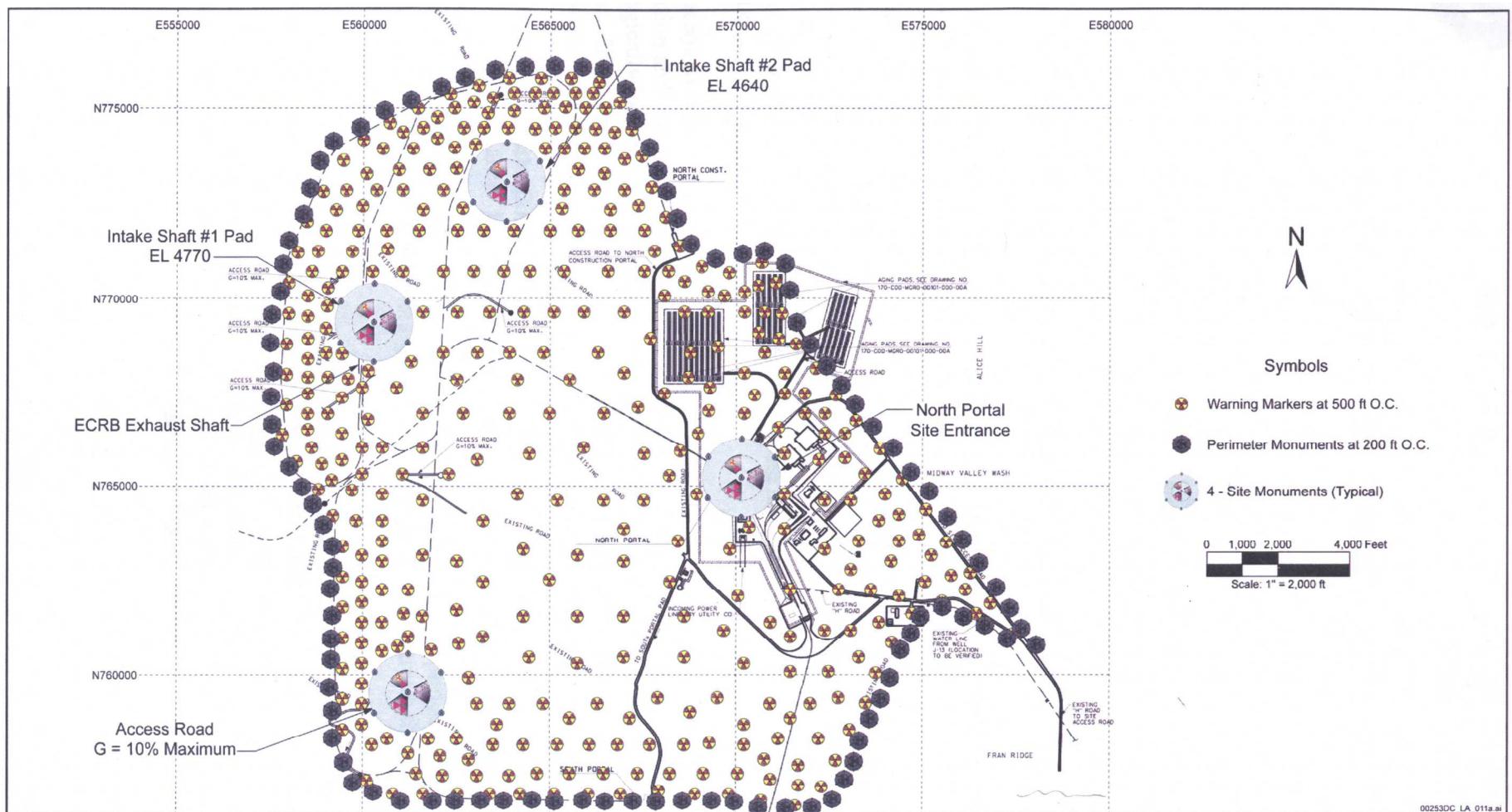
PM Conceptual Designs

- The YMP project does not have a final design for PM. There are several proposed design elements and concepts. The following describes some of these designs.
- Design elements
 - Intended to mark a boundary
 - Communicate the existence of the repository
 - Durable, cost-effective materials
 - Multiple components - redundancy
 - Low recycle value
 - Minimize surface disturbance
 - High visibility

PM Concepts

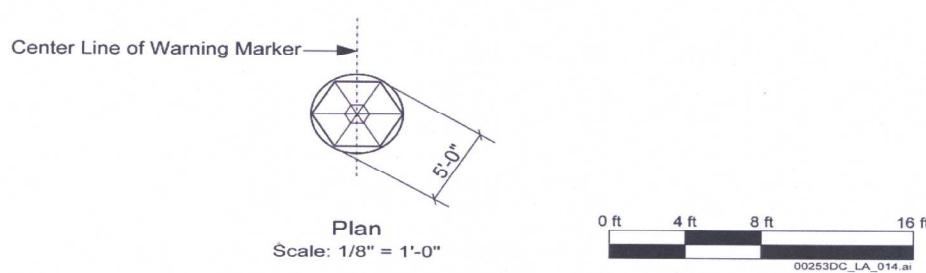
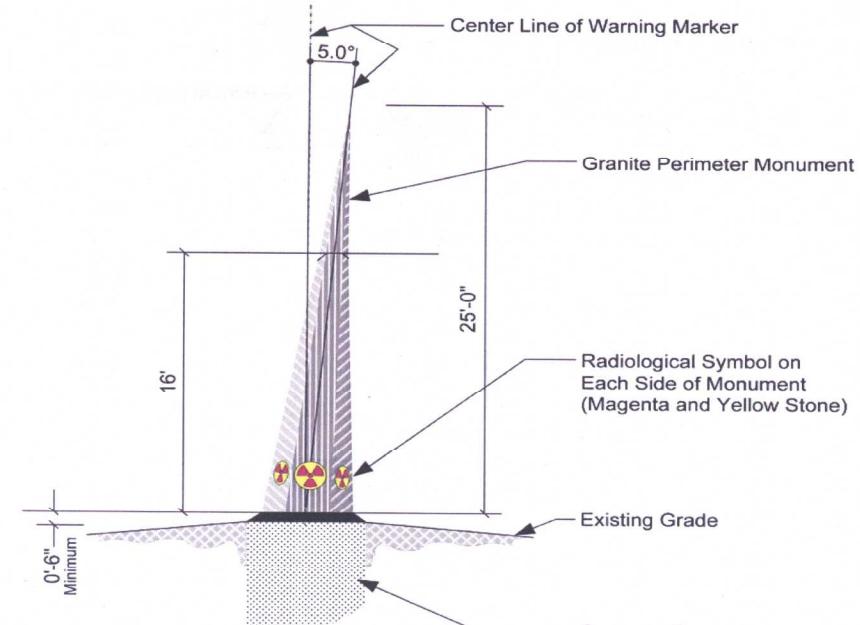


PM Concepts

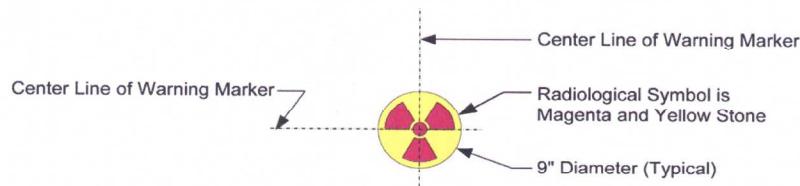




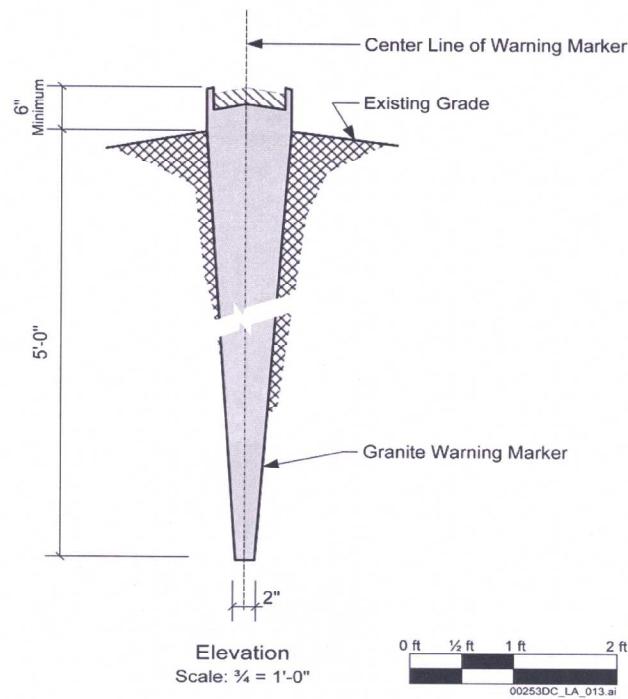
PM Concepts



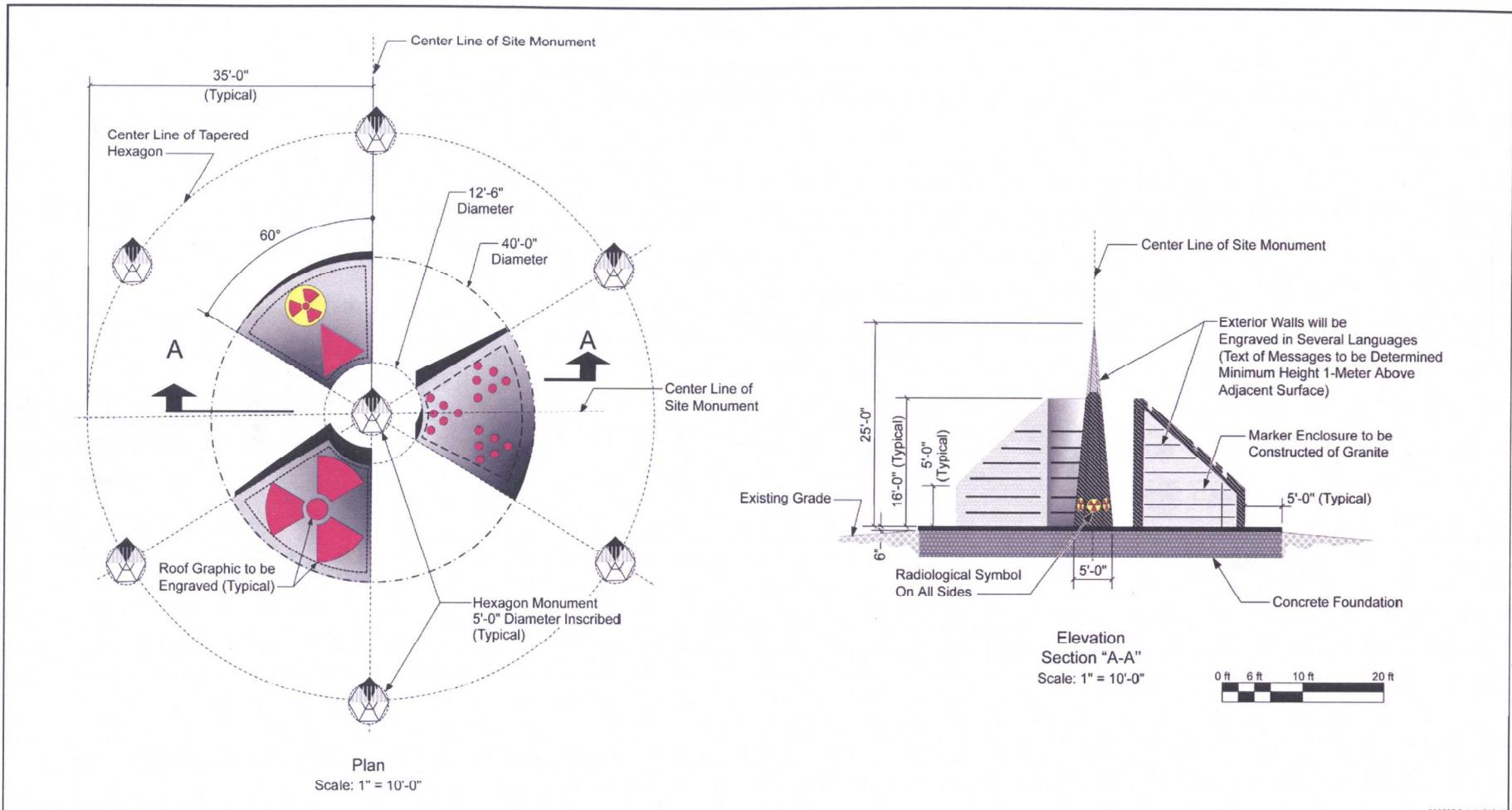
PM Concepts



Top View
Scale: $\frac{1}{4}$ = 1'-0"



PM Concepts



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Post-Closure Monitoring

- Monitoring topic previously discussed by Frank Hansen



Records Archival

- **10 CFR 63.51(3)(ii)**
 - Placement of records in the archives and land record systems of local, State, and Federal government agencies, and archives elsewhere in the world, that would be likely to be consulted by potential human intruders--such records to identify the location of the geologic repository operations area, including the underground facility, boreholes, shafts and ramps, and the boundaries of the site, and the nature and hazard of the waste;



Questions

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