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6.0 SPOIL DISPOSAL

6.1 INTRODUCTION

Spoil material will be distributed within the construction zone right-of-way (ROW) to the extent practical. This requires proper placement of the spoil material within the ROW using techniques to avoid or minimize environmental disturbance, such as vegetation impacts. If the spoil material cannot be completely distributed within the ROW, spoil disposal sites will be required. This section contains criteria and procedures for the selection and design of such a spoil disposal site. The criteria for site selection give preference to disposal on the construction zone, in depleted material sites, and in existing disposal sites. The criteria for design minimize impacts on the environment and adjacent facilities.

This section does not include criteria for solid waste disposal sites, which are included in the Environmental Information Supplement, Section 4 Waste Management. Solid waste is defined as wastes such as domestic refuse, scrap metal, dunnage, tires, plastics, cardboard; oil contaminated soil and sorbents as well as other construction debris. Spoil as defined and covered in this section relates to any organic, earth or rock material that has been excavated and has to be disposed of or stored for future use. Slash is considered as spoil.

Specific criteria and procedures that address field changes, field design practices, construction and material specifications, sample calculations or design examples are not included in this section.

Criteria and procedures for related elements of spoil disposal site design are found in:

- Section 5, Material Sites
- Section 7, Access Roads
- Section 10 , Clearing
- Section 11, Drainage and Erosion Control
- Section 12, Restoration
- Section 16, River, Stream and Wetland Crossings
- Section 21, Geotechnical/Geothermal Analysis

Impacts to adjacent facilities are covered throughout the Technical Information Supplement.

6.2 CODES AND CRITERIA

6.2.1 Codes

- Alaska Statutes, Title 16 – Fish and Game
- Alaska Statutes, Title 38 – Public Land

- Alaska Administrative Code, Title 18 – Environmental Conservation, Chapter 60, Solid Waste Management
- Alaska Administrative Code, Title 18 – Environmental Conservation, Chapter 70, Water Quality Standards
- Alaska Administrative Code, Title 6, Chapter 80 – Alaska Coastal Management Program, Chapter 85 – Guidelines for District Coastal Management Programs
- Alaska Statutes, Title 46, Chapter 40, Alaska Coastal Management Program
- Code of Federal Regulations, Title 18 – Conservation of Power and Water Resources
- Code of Federal Regulations, Title 23 – Highways
- Code of Federal Regulations, Title 43 – Public Lands: Interior
- Code of Federal Regulations, Title 50 – Wildlife and Fisheries
- Code of Federal Regulations, Title 30 – Mineral Resources
- Federal Water Pollution Control Act, Title II – Grants for Construction of Treatment Works, Section 208, Area-wide Waste Treatment Management
- Federal Water Pollution Control Act, Title III, Standards for Enforcement, Section 303, Water Quality Standards and Implementation Plans
- Federal Water Pollution Act, Section 404 as amended
- Public Law 94-580, Resource Conservation and Recovery Act of 1976
- Federal Right-of-Way (ROW) Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time
- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such is finalized

6.2.2 Criteria

These criteria will serve as the basis for the disposal of excess mineral and organic materials and the temporary storage of usable mineral and organic materials for restoration purposes within disposal sites or for use in other locations.

6.2.2.1 Volume Requirements

- The following referenced construction activities may result in materials requiring temporary storage or disposal:
- Construction zone grading and workpad placement (see Section 9)
- Clearing operations (see Section 10)
- Access road construction (see Section 7)

- Site grading (see Section 8)
- Pipe ditch excavation (see Section 13)
- Road crossing construction (see Section 15)
- River crossing construction (see Section 16)
- Mineral material site development (see Section 5)
- The quantities of the various materials requiring disposal will be determined using the methods presented in Section 4, Earthwork Estimate and Haul Analysis.

6.2.2.2 Location Criteria

For spoil disposal sites near TAPS floodplain facilities, hydraulic impact assessment will be based on the TAPS Pipeline Design Flood.

Disposal site locations will be selected with the intent to:

- Provide
 - Capacity to accommodate estimated volume in excess of target disposal and storage quantities by 20%.
 - Minimum haul distances by selecting sites on or as near as practical to the construction zone.
 - A 200-foot or greater buffer area, as determined on a site-specific basis when adjacent to TAPS facilities.
 - A 200-foot buffer area on slopes greater than 5 percent, which are adjacent to and upslope from other proposed or existing facilities.
 - A 100-foot buffer area on slopes less than 5 percent, which are adjacent to and upslope from other proposed or existing facilities.
 - Sites in areas where containment structures are not necessary, where practicable (i.e., containment provided by natural or man-made topographic features).
 - A 500-foot buffer area adjacent to surface streams, natural lakes, and Category A and B wetlands.
- Minimize the number of disposal sites to the extent practical on a sectional basis.
- Avoid
 - Designated wildlife habitats. Disposal site locations will conform to protection measures contained in Right-of-Way Stipulation 2.5.5.1, “Zones of Restricted Activities”.
 - Archeological sites
 - Areas near the middle to lower reaches of drainage areas which could block or divert drainage channels carrying moderate to large volumes of flow on a periodic basis

- Areas of unique vegetation including Category A and B wetlands and shrub riparian zones
- Avalanche zones
- Areas where disturbances will create terrain instability or unacceptable thermal degradation (See Sections 9, 11 and 21.)
- Areas with known mineral material potential
- Adverse visual impacts
- Maximize the use of
 - ROW construction zone
 - Material sites which have depleted portions
 - Existing disposal sites
 - Previously disturbed or sparsely vegetated areas

In selecting locations for spoil disposal sites, other design criteria that should be considered are: terrain stability (see Section 21), drainage and erosion control (see Section 11), restoration (see Section 12), access (see Section 7), and clearing (see Section 10).

6.2.2.3 Placement Criteria

Mineral materials which are not required or are not usable (according to respective specifications) for embankment construction, ditch backfill, restoration or other construction will be considered excess and will be disposed of as indicated below:

- Materials which are generated by construction zone grading or pipe ditch excavation and which are usable for restoration may be distributed over the construction zone ROW as described in Section 12.
- Materials from specific construction operations may be stockpiled for future use providing the materials meet the specifications for planned construction items and the quantities are sufficient to make stockpiling economically feasible. Otherwise these materials will be deposited in selected disposal sites outside the pipeline ROW or back-hauled for disposal within the construction zone as depicted by Figures 6-1 through 6-3.
- Materials generated by pipe ditch excavation (See Section 13), which do not meet the specifications for planned construction items will be disposed of by storage along the workpad (See Figures 6-1 through 6-3) or in selected off ROW disposal sites. Ice-rich materials or material with moisture content exceeding the liquid limit may be disposed of along the work-pad only if:
 - The true ground slope does not exceed 5%, or
 - Simple containment structures such as a silt fence or gravel berm can be economically used to control silt movement caused by excess water from any source (See Section 11).

- Disposal sites outside the pipeline ROW will:
 - Be sized and shaped to visually blend into the surrounding topography.
 - Provide containment of disposal piles to prevent off-site damage, utilizing existing terrain features where practical.
 - Be sized and shaped to maximize the depth and to minimize the area affected. For flat, open sites, maximum depth of disposal piles will be 10 feet. Where adjacent to the Dalton Highway the top level of any disposal shall be at least 2 feet lower than the highway surface and will be designed to not thermally impact the highway.

6.3 DESIGN PROCEDURES

6.3.1 Preliminary Site Selection

- Using the methods presented in Section 4, estimate the volume and location of excess materials requiring disposal.
- Estimate those portions of the materials requiring disposal that can be distributed over the construction zone. The remainder will require transfer to disposal sites.
- Select primary sites that will accommodate the additional material requiring disposal, using:
 - Aerial photography.
 - Topographic mapping.
 - Environmental Master Guide.
 - Route Soil Conditions.
 - Other available information.
- Select a sufficient number of alternate sites to provide for a contingency when:
 - Primary sites are unavailable when disposal is required.
 - Available data is insufficient.
 - Conflicting land use plans may occur.
 - Preliminary designs are revised.
 - No capacity is left at primary sites.

6.3.2 Field Reconnaissance

Upon completion of the preliminary site selection, conduct a reconnaissance of each primary and alternate site.

- Eliminate from further consideration any sites or portions of sites that do not satisfy the disposal site criteria (Section 6).
- Collect the following site specific data which will be used in the final design:
 - Topography
 - Site drainage
 - Subsurface conditions
 - Site access routes
 - Current land uses
 - Proximity to TAPS and other facilities
 - Vegetation
 - Visual impacts
 - Wildlife uses and habitats
 - Antiquities and cultural resources
- Prepare a report for each primary and alternate site which contains:
 - An evaluation of existing field conditions
 - An estimate of disposal site capacity
 - Recommendations for final site selection and design
 - Recommendations for amelioration of visual impacts

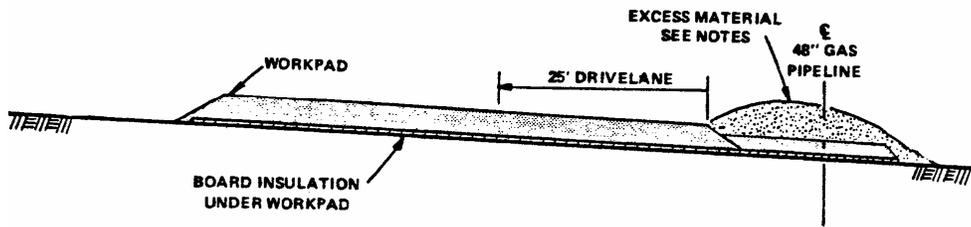
6.3.3 Final Site Selection

- Using the methods presented in Section 4 and the latest available design data, revise the preliminary estimates of the volume and location of the excess materials requiring disposal.
- Revise the preliminary estimates of the volume and location of materials requiring disposal that can be distributed over the construction zone.
- Revise the preliminary estimates of the volume, and location of materials requiring disposal that will require designated disposal sites.
- Select the sites that will accommodate the additional material requiring disposal, using:
 - The revised estimates of volume and location
 - The results of the preliminary site selection
 - The results and recommendations from the field reconnaissance

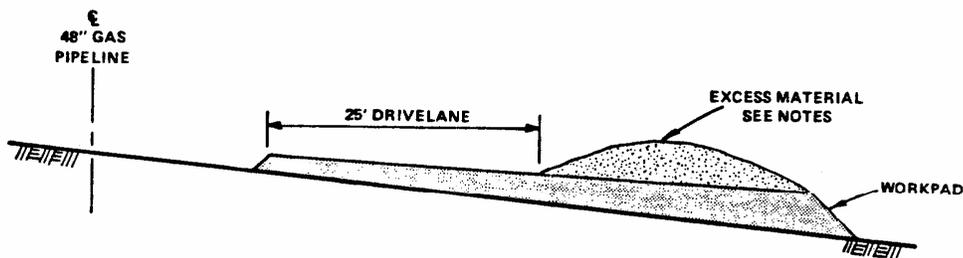
6.3.4 Final Site Design

- Base the final site design on the following:
 - Criteria contained in Section 6
 - Site-specific information gathered during field reconnaissance
 - Results of final site selection
 - Results of any stability analysis (see Section 21)
 - Provisions for staged site development
- Assess the site from a geotechnical perspective with particular attention to TAPS or other facilities using methods presented in Section 21.
- Determine site layout and material placement details
- Locate and design access roads using the methods presented in Section 7
- Select and design drainage structures and erosion and sediment control measures using the methods presented in Section 11
- Develop appropriate erosion and sediment control measures for each temporary stockpile using procedures outlined in Section 11
- Provide sufficient containment for the placed material as required to prevent off-site sediment damage, using in order of desirability
 - Existing terrain features
 - Containment berms. (see Section 11)
 - Other sediment control measures. (see Section 11)
- Select and design restoration measures using the methods presented in Section 12.
- Provide the documentation necessary to obtain agency permits as well as design drawings necessary for construction.
- In general, final design drawings will include:
 - Vicinity map
 - Access
 - Site-specific layout, showing staged development, as appropriate
 - Location of TAPS and other existing facilities
 - Typical sections and details
 - Restoration plan
 - Construction timing constraints
 - Subsurface conditions

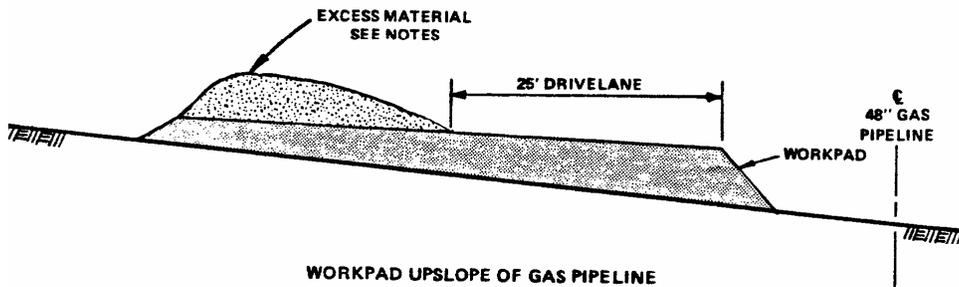
**CONSTRUCTION ZONE SPOIL DISPOSAL
 (TYPICAL AREAS FOR DISPOSAL)
 DITCH BACKFILL TO BE COMPLETE BEFORE EXCESS
 MATERIALS ARE BACK HAULED AND DEPOSITED**



TYPICAL DISPOSAL FOR THERMALLY - UNSTABLE AREAS



WORKPAD DOWNSLOPE OF GAS PIPELINE



WORKPAD UPSLOPE OF GAS PIPELINE

- NOTES:**
1. CONTAINMENT MAY BE REQUIRED FOR ICE - RICH MATERIALS WITH POTENTIAL TO FLOW WHEN THAWING.
 2. CONTAINMENT SYSTEM TO PASS MELT - WATER BUT RETAIN SILTS.
 3. LIMITS OF INSULATION BENEATH SPOIL WILL BE DETERMINED BY THERMAL CALCULATIONS.
 4. IF EXCAVATED MATERIAL IS ICE - RICH OR THE LIQUID LIMIT IS EXCEEDED, CONTAINMENT STRUCTURES WILL BE REQUIRED WHEN TRUE GROUND SLOPE EXCEEDS 5 %.

FIGURE 6-1

Figure 6-1 Workpad Upslope of Gas Pipeline

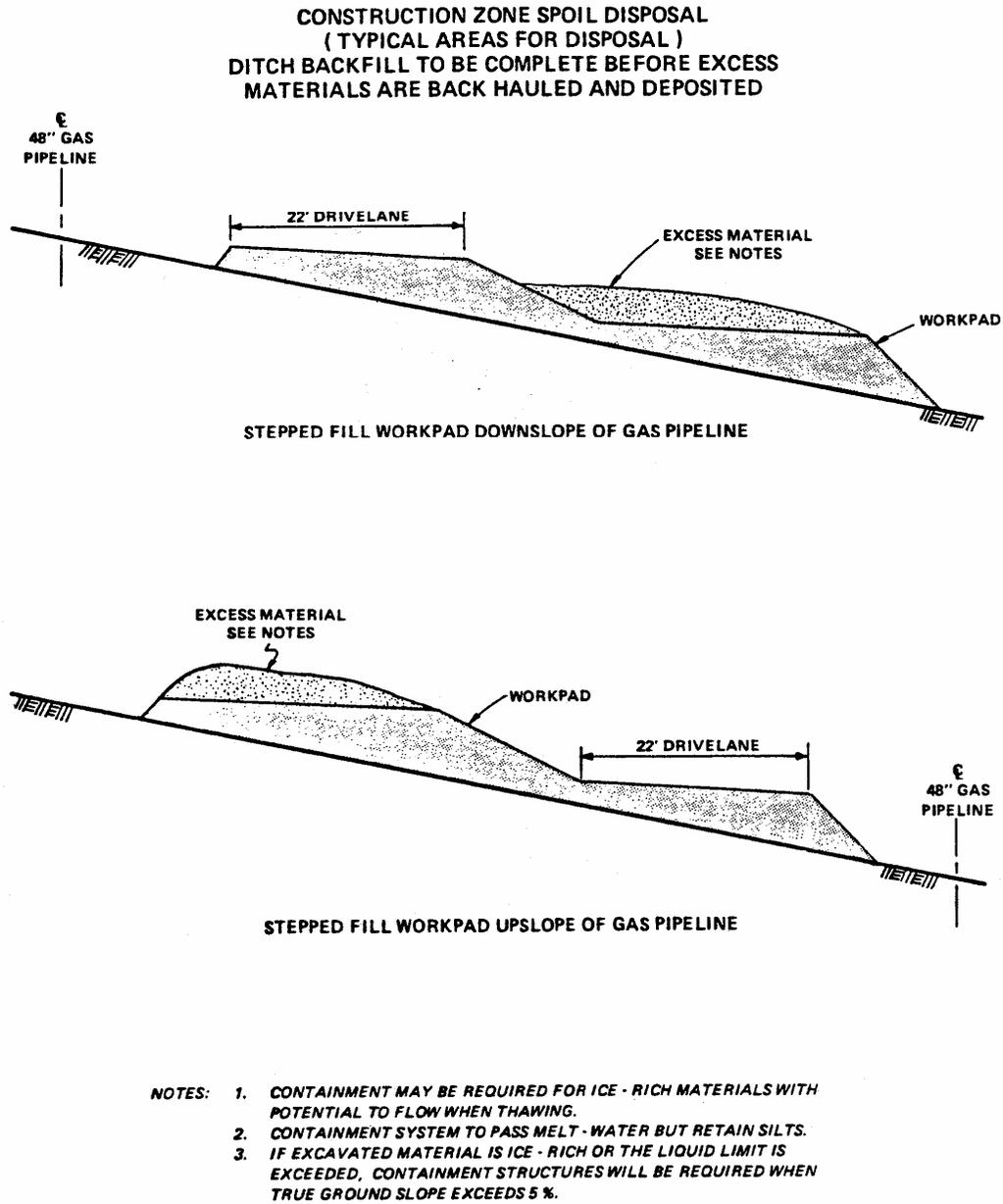


FIGURE 6-2

Figure 6-2 Stepped Fill Workpad Upslope of Gas Pipeline

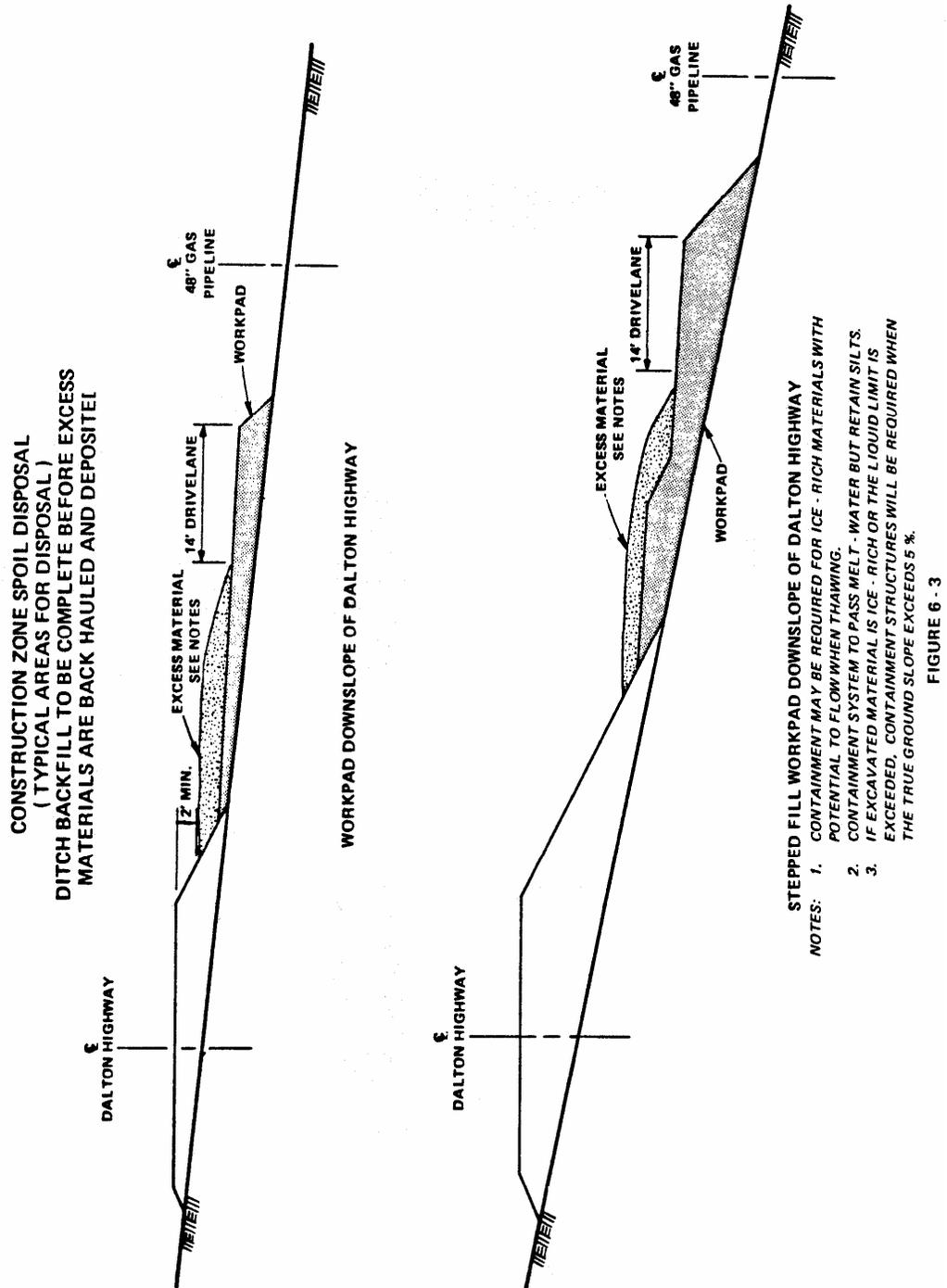


Figure 6-3 Stepped Fill Workpad Downslope of Dalton Highway