



Rocky Mountain
Remediation Services, L.L.C
... protecting the environment

Fernald Silo 3 Project

Site Preparation Package

~~RMR-0445-0058-00B~~

February 25, 2000



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4 **1.0 INTRODUCTION**
5

6 Fluor Daniel Fernald (FDF) has contracted Rocky Mountain Remediation Services (RMRS) to
7 design, construct, start-up, operate, maintain, shutdown, and dismantle the retrieval and treatment
8 system for remediating the Silo 3 waste. The site preparation design package provides the design
9 documents necessary to prepare the Silo 3 project site for the facilities and infrastructure required
10 to perform the remediation effort in a safe and compliant manner.
11

12
13 **2.0 PURPOSE**
14

15 The purpose of the Site Preparation Package is to convey the requirements for site development
16 and preparation for facilities associated with the Silo 3 Project. Concepts presented herein have
17 been developed into the final design drawings, specifications, and calculations for this Site
18 Preparation Package.
19

20 This document is not intended to restate the design basis or safety basis requirements for the site
21 preparation activities, which have been presented in other documents, but rather to provide a
22 description of the physical facilities and their impact on the existing site characteristics.
23

24
25 **3.0 DESCRIPTION OF THE WORK**
26

27 The facilities associated with the Silo 3 Project are generally depicted on drawing 52-3002, Site
28 Plan (See Attachment B). Following is a brief description of these facilities:
29

- 30 • Site Preparation, Clearing and Fencing. The design has minimized the amount clearing
31 required around the Silo 3 facilities. The areas to be cleared will be noticeably marked, and an
32 excavation/penetration permit will be acquired prior to the start of clearing and removal of
33 underground lines. Disturbed soil will be managed as radiologically contaminated until it is
34 proven to be otherwise. Construction and operations access control will be provided by the
35 use of high density polyethylene fencing material, orange for construction fencing and yellow
36 for radiological boundaries, or metal fencing with appropriate signs. Construction waste is
37 further discussed in the Waste Management Plan. Areas between facilities will be maintained
38 as walks or driveways or reseeded. An existing, inactive, underground utilities duct bank in
39 the vicinity of the Silos will be removed to make room for the building and gantry
40 foundations.
41
- 42 • New Treatment Facility. The treatment facility will house the conveyance, treatment, and
43 packaging systems associated with the Envirobond treatment system. The facility will be a



1 steel framed structure with a tensioned PVC coated polyester fabric membrane exterior
2 covering, as manufactured by RUBB Building Systems. Within the facility, a secondary fabric
3 will be supported from the structure to provide containment for an Airborne Radioactivity
4 Area (ARA) for both treatment and process re-work. Manufacturer's data on the RUBB
5 structure is shown in Attachment D.

6
7 The facility foundation system (Attachment B, Drawings 52-3210, 52-3211 and 52-3212) will
8 provide structural support for the building and equipment as well as provide containment of
9 potential spills. The foundation system will be a shallow continuous footing with strip walls
10 and required isolated equipment footings. Bounding each ARA is the interior fabric, a
11 containment curb, and a sump system. Liquids from any spills occurring in these areas will be
12 collected in the sump and pumped into the process water tank for future process use. Any
13 spills requiring wash down will be washed into the sump outside the ARA and then pumped
14 by portable pump into containers, analyzed, and disposed or treated appropriately.

- 15
16 • Treatment Facility Check Point. The check point facility and a restroom trailer will be located
17 adjacent to the treatment facility. The check point facility will house the shift supervisor's
18 office and the change room. Access to Silo 3 facilities will be controlled at this facility. This
19 facility will be a temporary, portable trailer, delivered to site and anchored in place in
20 accordance with site requirements. Typical manufacturer's drawings are shown in Attachment
21 E. The restroom trailer will have a self-contained sewage tank that requires routine emptying.
22 The trailer will be equipped with a domestic water supply.

- 23
24 • Silo Gantry and Containment House. To access the silo for waste retrieval, a fixed gantry will
25 be constructed over Silo 3 to support the retrieval manipulator. The silo gantry will be a
26 structural steel box truss with an enclosed containment house for the retrieval system.
27 Primary access to the containment house will be via a stair tower on the northwest support. A
28 4-ton hoist will be located on the southeast tower for lifting equipment and accessories.

29
30 The foundation for the gantry structure (Attachment B, Drawings 52-3110 and 52-3111) will
31 be a shallow mat footing with pedestals for connection to structural steel.

- 32
33 • HVAC Area (Attachment B, Drawing 52-3400 and 52-3113). The HVAC Area will be
34 located south of the treatment facility. This concrete slab will be constructed to allow
35 placement and maintenance of HVAC trains. An exhaust stack, supported by the retrieval
36 pipe bridge, will be located on the northwest corner of the HVAC slab.
37
38 • Interim Storage Area (Attachment B, Drawings 52-3013 and 52-3014). The Interim Storage
39 Area (ISA) will be located east of 2nd Street and west of the new infrastructure road. This
40 area will be used to stage treated waste while it is analyzed for waste acceptance criteria and
41 prior to turnover to Fluor Fernald. The ISA will be a concrete slab-on-grade, designed for a
42 service life of 20 years. The pad will include (approximately) 42,000 sq. ft. of slab area, and
43 will be designed for a 52,000 pound capacity dual-wheeled pneumatic tire lift truck with 120



1 psi tire inflation pressure.

2
3 Although the slab area crosses into existing drainage basin D (Attachment B, Drawings 52-
4 3004 and 52-3016), storm water from the ISA slab will be collected within existing drainage
5 basin C and discharged to the retention basin north of the infrastructure road. No
6 modifications to other storm water basins are expected.

7
8 The ISA will include a domestic water outlet (Attachment B, Drawing 52-3020) and lighting
9 (Attachment B, Drawing 54-3060) to the requirements of OSHA 1926.56. Each new lighting
10 pole will be equipped with 480V sodium lighting (or equal) and 120V outlets. The existing
11 radon monitor T-28 will be relocated as shown on the drawings. Existing power poles in the
12 area will be removed and overhead circuits rerouted as needed.

- 13
- 14 • Equipment Laydown Area (Attachment B, Drawing 52-3004). The equipment laydown area
15 will be located west of the silos, across the infrastructure road. This area will be graded, and
16 with its gravel base, will be used for temporary material storage for construction and
17 operations. A diesel fuel storage tank with built-in double containment will be adjacent to the
18 laydown area. Vehicles will access the tank by entering the laydown area (off the
19 infrastructure road).
 - 20
 - 21 • Project Support Area. The project support area will be adjacent to the laydown area. This
22 area includes the office trailer and the rad/IH trailer. The office and rad/IH trailers will be
23 temporary, portable trailers delivered to site and anchored in place in accordance with site
24 requirements. Typical manufacturer's drawings are shown in Attachment E.
 - 25
 - 26 • Lunch Trailer. A lunch trailer will be located outside of the Controlled Area, south of the
27 existing change facilities. This facility will be a temporary, portable trailer delivered to site and
28 anchored in place in accordance with site requirements. Typical manufacturer's drawings are
29 shown in Attachment E.
- 30
31

32 4.0 INTERFACE WITH SITE UTILITIES

33

34 The Silo 3 Project site work will tie-in to existing FEMP site utilities as outlined below.

- 35
- 36 • Electrical Power. Electrical power will be obtained from a new 1000 kVA transformer
37 located west of Silo 4. Existing underground conduits extending from the transformer pad
38 will be utilized to provide primary power feeds to facilities on either side of the infrastructure
39 road to avoid disturbing the newly constructed roadway. Lighting and power circuits for the
40 new ISA will be provided overhead from existing transformer SE 817. The new lunch trailer
41 will be fed from a 50 kVA transformer near existing pole WP 064.
- 42
43



- 1 • Communication and Alarm Systems. The fire alarm system will be interfaced via phone lines
2 to the Fernald Central Alarm Center and Fire Department Dispatch Center. Existing voice
3 alarm and evacuation systems will be interfaced from the control units in the Vitrification Pilot
4 Plant (VTPP). This interface will be at an existing junction box on pole WP 006 via an
5 existing cable from the VTPP that is terminated in the junction box.
6
- 7 • Phone lines. Phone lines will be provided to project facilities as required to support
8 operations of the retrieval and treatment process. Phone lines for the fire alarm system and
9 general use are available via a 25 pair phone cable at pole WP 006.
10
- 11 • Domestic and Fire Water. Existing fire water and domestic water lines will be extended
12 underground to the Silo 3 project facilities. Both water lines will be installed in a common
13 trench while maintaining required separation. The fire water underground pipeline will extend
14 to a point outside the treatment facility at the southeast corner. The domestic water
15 underground pipeline will extend to the restroom trailer.
16

17 5.0 PRE-OPERATIONAL ENVIRONMENTAL CONTROL PLAN

18
19 Attachment A of this document includes the Pre-Operational Environmental Control Plan. This
20 plan provides the waste management, dust control and erosion control requirements for site
21 construction for the Silo 3 Project.
22

23 6.0 LIST OF DRAWINGS

24
25 Attachment B contains the following drawing, which depict the site preparation design for the
26 Silo 3 Project:
27

- 28 • 52-3002 - Civil Site Plan
- 29 • 52-3003 - Storm Sewer Plan and Profile
- 30 • 52-3004 - Grading and Drainage Plan
- 31 • 52-3012 - Erosion Control Plan
- 32 • 52-3013 - ISA Pavement Plan and Sections
- 33 • 52-3014 - ISA-Pavement Details
- 34 • 52-3016 - Sub-Basin Drainage Map
- 35 • 52-3020 - Underground Utilities Plan
- 36 • 52-3110 - Silo Gantry Foundation Plan
- 37 • 52-3111 - Silo Gantry Foundation Sections & Details
- 38 • 32-3113 - Pipe Rack Foundation Plan
- 39 • 52-3210 - Treatment Building Foundation Plan
- 40 • 52-3211 - Treatment Building Concrete Sections & Details
- 41 • 52-3212 - Treatment Building Typical Sections & Details
- 42 • 52-3400 - HVAC Foundation Plan and Sections



- 1 • 54-3060 – Electrical Site Plan Lighting
2
3

4 **7.0 LIST OF SPECIFICATIONS**
5

6 Attachment C contains the following specification, which provide technical requirements for site
7 preparation construction for the Silo 3 Project:
8

- 9 • 02001 - Site Work General Provisions
10 • 02210 - Earthwork/Grading
11 • 02220 - Excavating and Backfilling for Foundations and Structures
12 • 02223 - Vegetative Layer
13 • 02485 - Soil Erosion and Sedimentation Control
14 • 02900 - Seeding
15
16

17 **8.0 PORTABLE STRUCTURES INFORMATION**
18

- 19 • Attachments D and E provide typical manufacturers' data for the RUBB structure and
20 portable trailers, respectively. Complete manufacturers' literature will be obtained when the
21 units are procured.

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ATTACHMENT A

Pre-Operational Environmental Control Plan

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FERNALD SILO 3 PROJECT

Pre-Operational Environmental Control Plan RMR-0445-0060-00B

February 25, 2000



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 Appendix A Erosion and Stormwater Control Features Details

 Appendix B Control of Fugitive Emission Daily Records

 Appendix C Off-Hours Dust Control Procedure

 Appendix D Material Segregation and Containerization Criteria

 Appendix E Estimated Amounts of Each Type of Waste Stream

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LIST OF ACRONYMS

ACL	Administrative Control Level
BAT	Best Available Technology
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CM	Construction Manager
CWA	Contractors' Work Area
DOE	Department of Energy
DPC	Designated Primary Contact
EM	Environmental Management
FDF	Fluor Daniel Fernald
FEMP	Fernald Environmental Management Project
ISA	Interim Storage Area
MSDS	Material Safety Data Sheet
MSCC	Material Segregation and Containerization Criteria
MTL	Material Tracking Location
NAAQS	National Ambient Air Quality Standards
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transport
OEPA	Ohio Environmental protection Agency
OSDF	On-Site Disposal Facility
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
PECP	Pre-Operational Environmental Control Plan
RMRS	Rocky Mountain Remediation Services, L.L.C.
RQ	Reportable Quantity
STD	Standard
SWA	Subcontractor Work Area
SWMEC	Surface-Water Management and Erosion Controls
SWMECP	Surface-Water Management and Erosion Control Plan
TBD	To Be Determined
TSF	Treatment and Stabilization Facility
WAC	Waste Acceptance Criteria
WSA	Waste Storage Area

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1
2 **1.0 PURPOSE**
3

4 This Pre-Operational Environmental Control Plan (PECP) provides details of the methods and
5 materials that RMRS and its subcontractors will use during the site preparation and construction
6 phase of the Silo 3 Project to control erosion, stormwater, fugitive dust, contaminated soil,
7 construction waste and minimize the impact of these activities on the environment. This plan
8 covers the construction of the Interim Storage Area, the Silo 3 Retrieval Facility and the
9 Treatment Facility at the U.S. Department of Energy (DOE) FEMP site, Fernald, Ohio. These
10 areas are shown in RMRS Silo 3 Project Drawing Number 52-3002. The Silo 3 Project PECP
11 contains the following plans:
12

- 13 • Erosion and Stormwater Control: Descriptions of the methods and materials that will be used
14 to prevent erosion of soil either by wind or surface water in the process or project work area
15 and to reduce sediment loading in the stormwater. Descriptions of the methods, materials
16 and existing site features that will be used to capture and control stormwater.
- 17 • Fugitive Dust Control: Descriptions of the methods and materials that will be used to
18 suppress and minimize the creation and dispersion of dust.
- 19 • Waste Management: Description of the methods that will be used to manage waste and debris
20 generated during site preparation and construction.
21

22 In Section 2.0 of the Silo 3 Project PECP the Erosion and Stormwater Control Plan is described;
23 in Section 3.0 the Fugitive Dust Control Plan and in Section 4.0 the Waste Management Plan.
24 Section 5.0 lists the references that have been used. These three plans comprise the key elements
25 of the RMRS Pre-Operational Environmental Control Plan for the Silo 3 Project.
26

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1 **2.0 EROSION AND STORMWATER CONTROL PLAN**

2
3 Section 2.0 describes the RMRS Erosion and Stormwater Control Plan that will be used during
4 the pre-operational phase of the Silo 3 Project including erosion control practices and surface
5 water management that will be followed and implemented. This Plan addresses surface-water
6 management and erosion control practices throughout the construction of the Interim Storage
7 Area (ISA) and the Silo 3 Retrieval Facility and the Treatment Facilities, consistent with
8 drawings and technical specifications detailed in the Site Preparation Package (RMR-0445-
9 0058).

10
11 **2.0 Functional Requirement of the Plan**

12
13 The functional requirement of this Erosion and Stormwater Control Plan will satisfy the criteria
14 outlined below:

- 15
16
- 17 • Routing surface-water to designated locations where it can be appropriately managed
 - 18 • Protecting Infrastructure Road, 2nd Street, Silo 3 and ISA construction areas from damage
19 caused by precipitation and storm water run-on and run-off
 - 20 • Discharging of surface-water into existing watercourses will be in accordance with
21 applicable Ohio Department of Natural Resources (ONDR), Ohio Environmental Protection
22 Agency (OEPA) and Department of Energy (DOE) directives and requirements
 - 23 • Segregating clean area run-off from potentially contaminated area run-off. Contaminated
24 stormwater will not be discharged with "clean" stormwater.

25
26 Functional requirements will be met by constructing the run-on/run-off control feature outlined
27 below. Erosion control feature will be installed prior to any disturbance of soil in work areas.
28 RMRS Silo 3 Project Drawing Number 52-3012 illustrates the location and limits of the control
29 features.

30 These include, but are not limited to, the following nine control features:

- 31
- 32 • Installation of silt fences on the down slope sides of the construction areas
 - 33 • Construction of sediment traps as required
 - 34 • Installation of silt fences below sump discharges where applicable
 - 35 • Installation of temporary culverts along roads next to construction site as required
 - 36 • Installation of check dams in drainage channels and swales as required
 - 37 • Installation of additional permanent riprap as required
 - 38 • Construction of necessary drainage channels as shown in Drawing number 52-3012
 - 39 • Maintenance, repair or replacement of existing surface water and erosion control features as
40 required
 - 41 • Excavations, which are expected to be inactive for 45 days or more, will be stabilized within
42 7 days of their final use
 - 43 • Dewatering
- 44

1 The type and location of erosion control features will be subject to adjustment depending on field
2 conditions. As described in RMRS Technical Specification 02485, RMRS will routinely inspect
3 and evaluate the effectiveness of, and need for maintenance of the control measures that are in
4 place.

5 6 **2.2 Run-On/Run-Off Control Structural Practices**

7
8 Process design and operation will minimize the potential for generation of contaminated
9 stormwater, including any run-on and run-off. A description of the construction, inspection and
10 maintenance of the run-on/run-off control feature is presented in this section. These features
11 may include, but will not be limited to:

- 12
- 13 • drainage channels and swales
- 14 • check dams
- 15 • culverts
- 16 • silt fences
- 17 • diversions.

18
19 Any repairs to the erosion and stormwater control measures will be corrected by RMRS within
20 24 hours of the problem being discovered. Areas of excavation, and all erosion control measures
21 will be inspected by RMRS to verify that they are installed in accordance with RMRS Technical
22 Specification 02485, and are still functioning properly. An inspection checklist will be developed
23 by RMRS in support of the inspection schedule. Disturbed areas will also be inspected for
24 evidence of excessive erosion or siltation. These inspections will occur, at a minimum, at the
25 following frequency:

- 26
- 27 • weekly for general inspections
- 28 • daily after each rain event exceeding 0.5 inches at the site
- 29 • at least once per day during prolonged rainfall events at the site.

30
31 Inspections will be documented in the RMRS Daily Activity Report at the Silo 3 Project site.
32 These records will be made available to FDF for review upon request. This inspection frequency
33 is in addition to any specific requirements identified in the 'Inspection and Maintenance'
34 requirements for each control measure below.

35 36 **2.2.1 Temporary Drainage Channels and Swales**

37
38 Where applicable, temporary drainage channel and swales will be constructed between control
39 points on predefined lines and grades. Temporary drainage channels and swales will be
40 stabilized in accordance with the RMRS Technical Specification Number 02485, *Soil Erosion*
41 *and Sedimentation Control*.

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1
2 **Inspection and Maintenance**

3
4 Drainage channels and swales will be inspected by RMRS in accordance with the following, as a
5 minimum:

- 6
7 • Temporary drainage channels and swales will be inspected according to the criteria stipulated
8 in Section 2.2. Repairs to drainage channels will be made promptly.
9 • Drainage channels and swales shall be kept clear of debris at all times.
10 • The protective lining vegetation or erosion-resistant materials will be maintained as built to
11 prevent undermining, scour, or deterioration
12 • Silt fence placement requirements.

13
14 **2.2.2 Check Dams**

15
16 Where applicable, check dams will be incorporated to enhance water quality benefits by
17 maximizing the detention time within the swale and to increase channel stability by decreasing
18 flow velocities.

19
20 Check dams will be installed in accordance with the requirements of Ohio Department of Natural
21 Resources, "Rainwater and Land Development" Manual, and RMRS Technical Specification
22 02485 at the necessary spacing.

23
24 Check dams will be constructed of 4-inch to 8-inch diameter stone to a height of 2-feet over the
25 entire channel width. The top of the check dam will be constructed so that the center is
26 approximately 6 inches lower than the outer edges, so that water will flow across the center and
27 not around the ends. The maximum height of the check dam at the center of the weir will not
28 exceed 3 feet. A detail of the check dam is provided in Appendix A.

29
30 **Inspection and Maintenance**

31
32 Check Dams will be inspected by RMRS in accordance with the following, as a minimum:

- 33
34 • Check dams will be inspected according to the criteria stipulated in Section 2.2
35 • Check dams will be maintained as constructed
36 • Frequent inspections will be made to ensure that the structures have not been damaged by
37 high-energy flows.

38
39 **2.2.3 Road Culverts**

40
41 Culverts will be installed according to Ohio Department of Transport (ODOT) requirements. Fill
42 material will be placed and compacted around and over culverts to provide adequate coverage for
43 vehicular traffic.
44
45
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1 **Inspection and Maintenance**

2
3 Culverts will be inspected by RMRS according to the following, as a minimum:

- 4
5 • Culverts will be inspected according to the criteria stipulated in Section 2.2
6 • Culverts will be inspected periodically to ensure that they are clear of debris and not
7 damaged. Sediment and debris that have been deposited and trapped will be removed and
8 stockpiled in the designated RMRS work area.
9 • Appropriate equipment will be available to keep culverts relatively free of sediment and
10 debris.

11
12 **2.2.4 Riprap**

13
14 Where required, properly sized riprap will be placed in the designated work area. Type "D"
15 riprap will be installed in the temporary drainage channel as check dams at appropriate locations.

16
17 **Inspection and Maintenance**

18
19 Riprap will be inspected by RMRS according to the following, as a minimum:

- 20
21 • Riprap will be inspected according to the criteria stipulated in Section 2.2
22 • Riprap will be periodically inspected to determine if high flows have caused scour beneath
23 the riprap or dislodged any of the stone. If repairs are needed, RMRS will ensure that those
24 repairs are accomplished within the same workday of their discovery.

25
26 **2.2.5 Silt Fences**

27
28 Silt fences will be installed in accordance with ODNR requirements and RMRS Technical
29 Specification 02485. Silt fences will be constructed before up slope land disturbance begins.
30 Silt fences will be installed as close to the contours as possible so that water will not concentrate
31 at low points in the fence. Silt fences will be installed on the down slope side of disturbed area,
32 perpendicular to where run-off occurs as sheet flow or where flow through small rill can be
33 converted to sheet flow. RMRS will use appropriate equipment and personnel to install the silt
34 fence at locations shown on RMRS Silo 3 Project Drawing Number 52-3012. The silt fence will
35 be placed in a trench cut to a minimum of 9 inches deep, staked and back filled accordingly. The
36 height of the silt fence will be a minimum of 16 inches above the original ground surface. To
37 prevent water being ponded by the silt fence and flowing around its ends, each end will be
38 constructed up slope so that the ends are at a higher elevation. Seams between sections of silt
39 fencing will be overlapped with the end stakes of each section wrapped together before driving
40 into the ground. Breaks and overlaps will be installed as necessary to allow equipment access to
41 the construction area. Silt fences will remain in place until the disturbed area has been stabilized.

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1 Inspection and Maintenance

2
3 Proper applications of silt fencing will allow the intercepted run-off to pass as diffused flow
4 through the geotextile. If diffused flow does not occur, the layout of the silt fence will be
5 changed, accumulated sediment will be removed and other practices will be implemented.

6
7 Silt fences will be inspected and maintained by RMRS according to the following, as a
8 minimum:

- 9
- 10 • Silt fences will be inspected and maintained according to the criteria stipulated in Section 2.2
 - 11 • Appropriate equipment will be available to maintain silt fencing. Sediment and debris that
12 have been deposited and trapped will be removed from the silt fence will be relocated and
13 stockpiled in the designated RMRS work area.

14
15 Inspection and repair activities will be documented in the RMRS Daily Activity Report and
16 available for review by FDF.

17 18 2.2.6 Temporary Diversions

19
20 If required by changing site conditions, RMRS will construct temporary diversions. Earthen
21 material cut out for the channel will be used to build the berm on the opposite side. The
22 temporary diversion will be similar to the one shown in Appendix A. Check dams will be
23 installed to slow the flow velocity.

24 25 Inspection and Maintenance

26
27 RMRS will regularly inspect and maintain any constructed temporary diversions as follows, as a
28 minimum:

- 29
- 30 • Temporary diversions will be inspected according to the criteria stipulated in Section 2.2
 - 31 • Repair damage and removed deposits or sediment from the diversion
 - 32 • Re-stabilize as needed
 - 33 • Check for points of scour or bank failure, rubbish or channel construction, rodent holes,
34 breaching or settling of the berm, excessive wear for pedestrian traffic and construction
35 traffic on a regular schedule.

36
37 Inspection and repair activities will be documented in the RMRS Daily Activity Report and
38 available for review by FDF.

39 40 2.2.7 Run-On/Run-Off Control - Non-Structural Practices

41 42 2.2.7.1 Temporary Seeding and Mulching

43
44 Temporary seeding and mulching will be used during Silo 3 Project construction activities as
45 required to stabilize disturbed areas. Seed mixes according to RMRS Technical Specification
46 02900, *Seeding* as approved by FDF for use at FEMP will be spread by hydraulic methods to

1 provide temporary soil stabilization. Seed mixes will vary depending on the season that sowing
2 is required and in accordance with RMRS Technical Specification 02900, *Seeding*. The
3 application rates for seeds and related materials will be in accordance with RMRS Technical
4 Specification 02900. Temporary seeding will be performed in all areas, which are expected to be
5 inactive for 45 days or more, within 7 days after the last activity. This includes areas disturbed
6 by construction and other Silo 3 Project activities. Forty-five calendar days will be the
7 maximum time that a stockpile can be left in an exposed condition without stabilization. RMRS
8 will be responsible for maintaining controls on the stockpile until final acceptance or disposition.

9
10 Areas to be seeded will generally be free of debris, rock, root material, and other objects that
11 may impede soil preparation and seeding activities. It is recognized that repeat cultivation may
12 be necessary where equipment used for hauling and spreading has compacted sub-grades. The
13 seedbed will be tracked as required or disked by existing soil conditions. (Lime and fertilizer
14 may be added, in accordance with RMRS Technical Specification 02900 to establish temporary
15 stands of vegetation.)

16
17 Coir matting, in preference to other matting, will be used to stabilize easily eroded area such as
18 channels and steep slopes while vegetation is becoming established. RMRS will determine the
19 location of these areas in the field in accordance with RMRS Technical Specifications 02900 and
20 02485. RMRS will be responsible for watering this area and any fugitive dust control
21 requirements until vegetation is established.

22
23 If after three weeks seeding and vegetation has not become well established in any specific area,
24 the area will be re-seeded and mulched. Areas requiring re-seeding will be prepared in the same
25 manner as the original installation. RMRS will inspect vegetated areas after each significant
26 rainfall event greater than 0.5 inches until a dense stand of grass is established. Documentation
27 of inspections in the form of filed note entries will be provided to FDF.

28 29 **2.2.7.2 Permanent Seeding and Mulching**

30
31 Permanent seeding is required for disturbed areas as defined in RMRS Technical Specification
32 02900. Permanent seeding will also be applied by RMRS if an area has been idle for more than
33 one year. A disk, tracked vehicle (dozer) or other implement will be used to reduce soil
34 compaction and allow maximum infiltration in areas that are finely graded and required
35 permanent seeding such as the completed, drainage channel and other disturbed area. Seed and
36 fertilizer mix will be applied by hydraulic methods. Seeding and mulching will be installed in
37 accordance with the requirements identified in the RMRS Silo 3 Project Technical Specification
38 02900.

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3.0 FUGITIVE DUST CONTROL PLAN

This Fugitive Dust Control Plan describes the methodology that will be used by RMRS for controlling fugitive dust emissions and ensuring compliance with the required standards and site specific limits for the Silo 3 Project. RMRS will proactively suppress dust releases from field activities by applying Best Available Technology (BAT) dust control materials and/or implementing BAT work practices either at the beginning and during field activities. RMRS will use FDF, RM-0047, *Fugitive Dust Control Requirements*, as the appropriate site-specific definition of BAT for fugitive dust control together with OAC 3745-17-07 and OAC 3745-17-08, BAT to minimize the creation and dispersion of fugitive dust.

3.1 Site-Specific Limits

RMRS will apply the following Site-Specific Limits:

- Visible particulate emission from any paved roadway or paved parking area should not exceed one minute during any sixty-minute observation period.
- Visible particulate emissions from any unpaved roadway, unpaved parking area, project field activities, or wind erosion from storage piles should not exceed three minutes during any sixty-minute observation period.

Qualified RMRS personnel using 40 CFR Part 60 Appendix A, Method 22 "Visual Determination of Fugitive Emission from Material Sources and Smoke Emissions for Flares will verify compliance with these limits." FDF will provide "Method 22" training to qualify RMRS personnel.

3.2 Suppression Equipment

Due to the radiological issues associated with working on the Silo 3 Project, RMRS intends to use dedicated equipment for their radiological work zones to avoid potential decontamination requirements. If required by site conditions, RMRS may, after decontamination and radiological scanning, switch equipment and systems between areas. The proposed equipment list to suppress dust releases includes, but is not limited to, the following:

- Motor Grader
- Backhoe
- Miscellaneous Hand tools (shovels, brooms)
- Miscellaneous Pumps and Hoses
- Skid Steer Loader with Broom Attachment (for road crossing only if water flushing and hand wet brooming is ineffective)
- Water Wagon
- Smooth Drum Roller

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3.3 Methods and Materials

At the beginning of each day and periodically throughout that day, project personnel will tour the Silo 3 Project site, applying BAT Fugitive Dust Controls and/or other work practices to identify control and thereby minimize dust generation. Before fugitive dust emissions are visible, BAT fugitive dust controls and/or work practices will be implemented or increased. If the visible limit is exceeded, i.e., visible particulate emissions from any paved roadway or paved parking area exceeding one minute during any sixty-minute observation period or visible particulate emissions from any unpaved roadway, unpaved parking area, project field activities, or wind erosion from storage piles exceeding three minutes duration during any sixty-minute period, then mechanical dust generating activities must cease immediately. An increase of BAT dust controls and/or work practices will be instigated or increased to bring the fugitive emission, as a minimum, below the visible limit during the dust generating activities. Additionally, BAT dust controls and/or work practices will be implemented at the end of each day in order to minimize the occurrences of off-hours dust alert. Specific materials and methods may include the following:

- Water
- Crusting agents such as Pine Sap Emulsion® or equivalent (as approved by FDF)
- Plastic Sheeting or Tarps
- Revegetation Materials.

3.4 Work Practices

RMRS and FDF will continuously monitor project field activities for visible emissions. RMRS will be responsible for implementing, directing and coordinating BAT work practices to monitor project field activities for visible emissions. Specific work practices may include the following:

- Effective "Wheel Washing" prior to entering the paved area and/or as required by contamination control
- Application of dust suppression materials (mainly water) to active work areas or other areas where dust is likely to be generated
- Before the end of shift, sealing off (by rolling, grading or compacting) work areas stockpiles, working piles, etc. where fugitive emissions are likely to occur if not sealed
- During dry conditions or as needed initiating dust control prior to start of shift and during lunch break
- Wet sweep, blade or otherwise remove any clods, clumps, tracks, or other deposits of soil of mud from paved roadways and parking area, applying appropriate dust control measures to suppress the generation of visible dust that may result from the removal process
- Using alternative routing for hauling of materials
- Changing method of excavation when feasible including reducing the rate of excavation
- Maintaining roadway shoulders
- Minimizing unnecessary traffic
- Adhering to site specific speed limits of 15 mph on paved surfaces and 10 mph on unpaved and if necessary, further reduce the speed of equipment and haul/other site vehicles

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- 1 • Applying water or other appropriate dust suppression agents to material being transported
- 2 and cover truck beds when material is still likely to become airborne
- 3 • Utilizing load covers during periods of equipment movement, regardless of truck being
- 4 empty or full
- 5 • Minimizing configuration of material being hauled (i.e., place less material in haul vehicle)
- 6 • Minimizing drop height during loading and unloading
- 7 • If practical, cover small storage piles with tarps or plastic sheeting
- 8 • For extended periods of planned inactivity, vegetate as a last resort, if protective cover or
- 9 periodic application of surfactants or crusting agents prove ineffective
- 10 • Repair or resurface roadways/parking areas as needed or use an alternative road surface as a
- 11 last resort.

12
13 **3.5 Implementation of the Fugitive Dust Control Plan**

14
15 RMRS will be responsible for implementing, directing and coordinating the Silo 3 Project
16 Fugitive Dust Control Plan. RMRS will communicate the information contained in this plan to
17 their workforce through a pre-task briefing and through other periodic briefings as required.
18 These briefings will be documented. Those workers who will have specific dust suppression
19 duties will be briefed to the special record keeping requirements of this task.

20
21 RMRS responsibilities include, but are not limited to the following:

- 22 • Briefing field personnel
- 23 • Monitoring for visible emissions
- 24 • Directing of BAT suppression activities
- 25 • Receiving opacity monitoring information from FDF personnel
- 26 • Coordinating maintenance and repair of equipment and systems components
- 27 • Directing of alternative work practices when required
- 28 • Overseeing the record keeping process and maintaining permanent records
- 29 • Stopping field activities if fugitive dust limits are exceeded and coordinating the restart
- 30 of the activity with FDF personnel after corrective measure have been implemented. Site
- 31 Specific Limits are defined in Section 3.1 of the Pre-Operational Environmental Control
- 32 Plan.

33
34
35 **3.6 Monitoring**

36
37 All personnel, who have been briefed on this plan, will report suspected fugitive dust emissions
38 to the appropriate RMRS personnel who will then direct the implementation of BAT work
39 practices and fugitive dust control. As outlined in Section 3.4, RMRS will, together with FDF
40 personnel, regularly monitor field conditions for visible dust emission. RMRS will also
41 communicate with FDF personnel regarding information gathered for the FDF Opacity
42 Monitoring activities. When required, BAT material will be applied and BAT work practices
43 will be implemented to limit fugitive dust emissions.

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1 **3.7 Record Keeping**

2
3 The record keeping process will begin with the RMRS Silo 3 Project Field Supervisors/
4 Managers, who will brief those workers applying BAT materials pursuant to the required record
5 keeping. The form to be filled out can be found in Appendix B. Appropriate personnel will
6 complete these forms. Completed forms will be part of the Silo 3 Project Daily Activity Report
7 and will be filed in the permanent project files and transmitted to FDF when requested.
8 Additional blank copies of the forms will be kept in the cabs of the equipment and in the field
9 trailer. Completed forms will be turned over to the RMRS Silo 3 Project Field Supervisors on a
10 daily basis. Forms will be reviewed for completeness and incomplete forms will be returned to
11 the appropriate individual for corrections. Failure of an individual to consistently produce
12 complete and accurate records will result in disciplinary action.

13
14 **3.8 Off-Hours Fugitive Dust Alert Notification**

15
16 A "Dust Alert" is defined as when excessive or visible dust emanates from anywhere within the
17 Contract Work Area during non-working periods. "Non-Work" periods are defined as hours
18 when neither RMRS nor any subcontractor is performing Silo 3 construction activities on site.
19 However, the FEMP remains staffed by FDF Security personnel twenty-four (24) hours per day.
20 RMRS or FDF will have Silo 3 Project trained personnel on-call during non-work periods, seven
21 (7) days per week (including holidays) to respond to any off-hours fugitive dust alert. These
22 personnel are not trained to implement fugitive dust controls. Therefore, if visible dust is
23 observed within the Work Area during project non-work periods, FDF will notify RMRS. Dust
24 suppression will begin within two (2) hours of notification by FDF.

25
26 **3.8.1 Notification Procedure**

27
28 During a Dust Alert, FDF will refer to the "Off-Hours Dust Alert Schedule" that will be provided
29 by RMRS prior to initiation of construction activities. If FDF cannot contact the RMRS
30 Designated Primary Contact (DPC) within a reasonable time frame, an attempt to reach the
31 designated alternative contact will be made. Similarly, if the alternative cannot be expeditiously
32 contacted, the second alternative will be contacted. In the unlikely event that all three of these
33 individuals cannot be reached, FDF will attempt to contact any other person identified on the
34 RMRS approved contact list.

35
36 Upon receiving notification from FDF, the RMRS DPC will then contact qualified personnel, as
37 appropriate, to respond to the Dust Alert. The RMRS DPC must verify that those responding to
38 the "Off-Hours Dust Alert" are able to gain access to a controlled area if required. Only those
39 personnel who meet the appropriate training and medical requirements for this work should be
40 contacted. The RMRS DPC, as well as those personnel contacted, will go to the site to direct the
41 work and implement the necessary corrective actions. Due to the nature of dust suppression
42 being defined as a Limited Scope Work, RMRS is not required to have the Site Health and
43 Safety Officer respond to these Dust Alerts. FDF will provide any necessary safety coverage.
44 The proposed RMRS internal Off-Hour Dust Control Procedure is attached as Appendix C of
45 this plan.

16
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1 **3.8.2 RMRS Site Response**

2
3 RMRS personnel will utilize adequate BAT dust control methods to bring any fugitive dust
4 emissions to below the Site-Specific Limit during dust generating activities. Designated RMRS
5 personnel will not leave the Silo 3 Project site without concurrence from FDF that sufficient
6 controls are in place or until FDF has signed the Dust Alert Work Order included in Appendix C.
7

8 **3.8.3 Schedule and Contacts**

9
10 The Off-Hours Dust Alert Schedule and Contact List will be provided to FDF prior to the start of
11 RMRS Silo 3 Project construction activities.
12
13
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4.0 WASTE MANAGEMENT PLAN

The purpose of the Waste Management Plan is to describe the materials and methodology RMRS will use to support safe construction including careful removal and disposition of relevant waste materials. Management of secondary wastes generated as a result of the Silo 3 Project construction activities will be consistent with FDF site procedures and applicable regulatory drivers.

4.1 Waste Types

It is expected that RMRS construction activities will generate three main groups of secondary waste materials, i.e., clean construction debris, radiologically contaminated construction debris and excavated soil. Smaller quantities of additional solid waste, e.g., personnel protection equipment, wood, and potentially some drums are anticipated. Clean construction debris is material which as a result of construction has been brought onto the Silo 3 Project site by RMRS or is created by construction activities, and has been surveyed or characterized and released by FDF as non-radioactive and non-hazardous waste. Radiological contaminated construction debris is material that has been contaminated during construction by whatever means inside the Controlled Area. Excess excavated soil will be generated as a consequence of earthwork, particularly from the construction of the ISA pad.

There is also the potential that RMRS will encounter some unknown debris during soil excavation. This material may be manufactured objects or natural solid waste. These items will be dealt with on an item by item basis at the time of discovery. FDF will be responsible for characterizing and approving the ultimate disposition of this material.

RMRS will manage all excavated soil per FDF guidance as stated herein.

- Waste oils, engine coolants, hydraulic fluids and other lubricants from the servicing of equipment have not been identified as a "waste stream" as these items will not be stored on the site. Vehicle and construction equipment maintenance will be done off-site. On-site failure of equipment or vehicles will be managed on an item by item basis following approval by FDF and in accordance with FDF ACR-007, *Waste Material Handling Criteria for Construction Projects*. Any accident spill of these materials will be subject to FDF spill notification requirements. RMRS will conduct weekly inspections of fuel storage tanks and equipment.
- Any chemicals brought on-site by RMRS or its subcontractors will be approved in advance by FDF. When RMRS requires liquids (such as paints, thinners, caulks etc.) Material Safety Data Sheets (MSDS) will be submitted to FDF for each item at least 10 calendar days prior to their usage on-site. FDF ACR-007 lists those items which are prohibited from being brought onto FEMP.

An estimate of the amount of each type of waste stream is given in Table 4-1.

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1 **4.2 Waste Minimization**

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2
3 RMRS will make every effort to minimize waste generation by limiting the amount of material
4 that enters the Controlled Area whenever possible. Material wrapping and packaging will be
5 minimized on-site by requesting that suppliers provide material with as little packaging as
6 possible. Where feasible assembly of equipment modules will be done off-site. Pre-job planning
7 will be used to ensure that the number of tools identified and the equipment needed to complete
8 the job are minimized. RMRS will not bring any hazardous materials into the Controlled Area
9 unless absolutely necessary and only with the prior approval of FDF. RMRS does not intend to
10 do any vehicle or equipment maintenance on-site. This does not rule out any
11 emergency/breakdown maintenance that may be required. RMRS will contact FDF for
12 guidelines on on-site controls and waste disposition for any emergency vehicle maintenance
13 activities on a case by case basis.

14
15 It is expected that only small quantities of "hazardous" materials (e.g., pipe sealants, concrete
16 sealants, marking paints, caulking materials) will be required for the Silo 3 Project construction
17 activities. To minimize the amount of this type of waste, only that quantity which is required to
18 complete the job will be brought on-site.

19
20 **4.3 Construction Debris Management**

21
22 RMRS will set aside construction debris generated in predetermined locations and install
23 controlled boundaries to define each area as well as limit access to them. FDF Radiological
24 Control will survey the debris and determine if it meets the free-release criteria specified by FDF
25 Site Procedure RP-0009, *Radiological Requirements for the Release of Materials at the FEMP*.
26 FDF will be responsible for determining whether waste generated by RMRS is either
27 radiologically contaminated, hazardous or clean construction waste. The waste will be
28 segregated by RMRS based on their determination.

29
30 Construction wastes such as fencing will be cleaned of soils awaiting radiological survey to
31 ensure that it meets the free-release criteria.

32
33 Construction debris that does not meet the free-release criteria for the site will be segregated and
34 containerized into waste streams. RMRS and FDF project personnel will be briefed on the waste
35 segregation and size-reduction criteria for the Silo 3 Project prior to mobilization. The estimated
36 volume of secondary waste from construction activities, underground material, soft waste and
37 caulking/sealants is estimated to be no greater than 62yd³. The estimated amount of each waste
38 type is given in the table in Appendix E.

39
40 FDF will arrange for the delivery and pickup of containers of contaminated construction debris
41 only. FDF personnel will track the volume of contaminated waste generated by the Silo 3
42 Project construction activities. RMRS will be responsible for minimizing the amount of
43 "free-releasable" waste, tracking the total volume generated and for its final off-site disposition.
44

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FDF will be responsible for the appropriate disposition of unused chemicals and any empty chemical containers. FDF will provide RMRS with technical direction on the temporary storage of these materials. 2839

4.4 Soil Management

During site preparation, particularly construction of the ISA pad, RMRS has estimated that they will generate approximately 1,650 yd³ of 'cut' volume and 290 yd³ of 'raw fill' soil. The 'cut' volume will be monitored and dispositioned as excess waste according to FDF requirements. The soil staging area is identified on Silo 3 Project Drawing Number 52-3002. Erosion controls will be installed in accordance with RMRS Technical Specification 02485 prior to placement of soil in the staging area. The soil pile will be maintained in accordance with RMRS Technical Specification 02210. Earthwork and related activities will not be performed during unfavorable weather conditions, e.g., rain, snow or high winds. Soil management will comply with the Silo 3 Project Health and Safety Plan, the Erosion and Stormwater Control Plan and the Fugitive Dust Control Plan. Excess soil will be dispositioned as soon as practical post excavation. Transportation of the soil to the OSDF will be the responsibility of FDF. The OSDF subcontractor will transport the soil as soon as practical. The schedule for transportation of the soil will be dependent upon the OSDF availability and the OSDF subcontractor's transportation schedules. It is expected that transportation of the excess soil to the OSDF will be completed within 45 days of completing excavation.

Previously gathered data from the FEMP Infrastructure Project indicates that soil in the area of the proposed Silo 3 Project meets the Waste Acceptance Criteria (WAC) for the On-site Disposal Facility. RMRS will report the final volume of excess soil generated to FDF at the end of each normal working day.

Should additional sampling and characterization or real-time readings of the soil conducted during excavation indicate that the soil might exceed the FEMP WAC, it must be managed in one of two manners:

- **Option 1:**

In the event that additional sampling indicates RCRA characteristic waste in the area, RMRS or its subcontractors will place the suspected waste in boxes. FDF will provide delivery and pickup of the boxes and will track the volume of soil excavated. RMRS will be responsible for ensuring that the weight restriction of the boxes is not exceeded. FDF will provide a scale for these activities. If RCRA characteristic waste is identified, none of the associated soil will be used as fill.

- **Option 2:**

In the event that additional sampling and characterization or real-time readings indicates elevated levels of Total Uranium and/or Technetium-99 are present in the soil, i.e., the soil exceeds the FEMP WAC, RMRS will transport all such soil to a temporary working stockpile. RMRS will lay down geotextile and install silt fence around the pile. RMRS will report to FDF the volumes of soil transported to this temporary-working stockpile. Above-WAC soil will not be used as fill.

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1
2 If either Option 1 or 2 has to be exercised, FDF will demarcate the area to be excavated and
3 transported or boxed. FDF will establish Material Tracking Locations (MTLs) and provide
4 RMRS with a site map indicating where these MTLs are located. FDF will be responsible for
5 tracking this soil by MTL including the volumes reported by RMRS.
6

7 To minimize erosion, RMRS will supply a plastic tarp or similar barrier to cover the soil while it
8 is awaiting radiological survey to minimize erosion. Material, which is wet, muddy or covered
9 with snow or ice, cannot be properly surveyed for unrestricted release. Any cleaning required to
10 facilitate the survey will be done by RMRS. An additional barrier may be placed on the ground
11 underneath the waste material if deemed necessary by RMRS or FDF. FDF Radiological
12 Control will determine if any additional precautions are necessary depending on the physical and
13 radiological conditions of the laydown area.
14

15 RMRS will segregate the generated waste materials and protect them from the weather as
16 necessary in accordance with RMRS Technical Specification 02485. If necessary, precautionary
17 measures against spillage such as the installation of berms will be actioned in the field by
18 RMRS. Surface water will be directed away from any stockpile site to minimize erosion
19 deterioration. Stormwater run-off controls will be provided to prevent sediment from leaving
20 any stockpile area. Perimeters to each stockpile will have proper sediment controls and any
21 other run-off controls considered appropriate for the prevailing field conditions. RMRS will be
22 responsible for maintaining controls in these areas until final acceptance or disposition has been
23 determined; including controlling any dust emissions and grading needed on a daily basis.
24

25 4.5 Unknown Debris Management

26
27 During excavation, RMRS may encounter debris previously buried underground e.g., conduit,
28 piping, concrete. Prior to beginning earthwork, RMRS will determine the location of all existing
29 underground utilities in the areas of work and take the necessary action. In the event that
30 unknown debris is unearthed RMRS will stop work and notify FDF immediately of any non-soil
31 debris requiring special handling or disposition. Unexpected debris will be managed in
32 accordance with FDF Safe Work Plan requirements (ACR-002). RMRS will develop a Safe
33 Work Plan for handling unknown debris that will include the criteria that must be met prior to
34 resumption of excavation. FDF will arrange for container delivery, debris characterization and
35 any sampling tasks that may be required and ultimate transportation of the container to the
36 appropriate facility. FDF will track the volume of such debris.
37

38 4.6 Waste Container Management

39
40 FDF will provide the appropriate waste containers for the various waste categories identified in
41 the Waste Management Plan. RMRS will use the Material Segregation and Containerization
42 (MSCC) form, Attachment D, to identify categories of waste and as their basis for
43 containerization activities. These containers will include, but are not limited to, the following:
44

- 45 • Large metal boxes
- 46 • ISO containers
- 47 • Small metal boxes

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- 1 • 55-gallon drums with lids
- 2 • Roll-off boxes
- 3 • Dumpsters.

4
5 Waste containers staged inside the Controlled Area will be lockable and will be kept locked
6 unless authorized loading is taking place. FDF Radiological Control will be present to survey
7 waste prior to authorized loading operations. Unfilled waste containers will be secured when no
8 loading is in progress to prevent the addition of unknown materials. FDF will provide and
9 maintain the lock and key to clean waste containers.

10
11 RMRS will notify FDF at least two (2) working days prior to needing waste containers. FDF
12 will deliver empty containers and pallets to the RMRS container staging area. FDF will dispose
13 of full containers placed in this area by RMRS.

14
15 Designated RMRS personnel will be responsible for supervising container operations, including
16 inspection of empty containers on receipt and waste loading activities. They will have the
17 responsibility to ensure that containers, boxes and drums are filled such that the interior volume
18 is as efficiently and compactly loaded as practical either up to the maximum gross weight limit
19 of that container or until full by volume.

20
21 Containers will be checked for free liquid prior to loading. Ice is considered a free liquid.
22 Containers will be weather protected, particularly when the lid is not secured, to prevent entry of
23 snow and rain.

24
25 Clean construction waste will be surveyed and loaded into dumpsters provided by RMRS or its
26 subcontractors on a daily basis to prevent an excessive amount of material from piling up near
27 the container staging area. These dumpsters will remain locked when no loading is taking place.

28
29 FDF will visibly inspect full containers prior to final securing of their lids and container
30 disposition.

31
32 RMRS will follow the requirements of FDF ACR-007, *Waste Material Handling Criteria for*
33 *Construction Projects*, Rev. 2 (June 1998).

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1 **5.0 REFERENCES**

- 2
- 3 1. FDF, *Stormwater Pollution Prevention Plan*, PL-3088, Rev. 0, Fernald Environmental
4 Management Project, Fernald, OH (October 1999).
- 5
- 6 2. Ohio Environmental Protection Agency, Chapter 3745-17-08 of the Ohio Administrative
7 Code, *Restriction of Emission of Fugitive Dust*, (July 1997).
- 8
- 9 3. RMRS, TS-02900, Technical Specification, *Seeding* (December 1998).
- 10
- 11 4. FDF, *Waste Material Handling Criteria for Construction Projects*, ACR-007, Rev. 2
12 Fernald Environmental Management Project, Fernald, OH (June 1998).
- 13
- 14 5. FDF, *Fugitive Dust Control Requirements*, RM-0047, Rev. 0 (August 1997).
- 15
- 16 6. 40 CFR Part 60 Appendix A, Method 22, *Visual Determination of Fugitive Emission for*
17 *Material Sources and Smoke Emissions for Flares*
- 18
- 19 7. ACR-002, FDF Administrative Contractor Requirements, *Contract Safe Work Plan*
20 *Format Requirements*, Rev. 2 (November 1994).
- 21
- 22 8. Fernald Silo 3 Project, *Site Preparation Package*, RMR-0445-0058 (February 2000).
- 23
- 24 9. FDF RP-0009, *Radiological Requirements for the Release of Materials at the FEMP*.
- 25
- 26 10. RMRS Technical Specification, 02485, *Soil Erosion and Sedimentation Control*.
- 27
- 28
- 29

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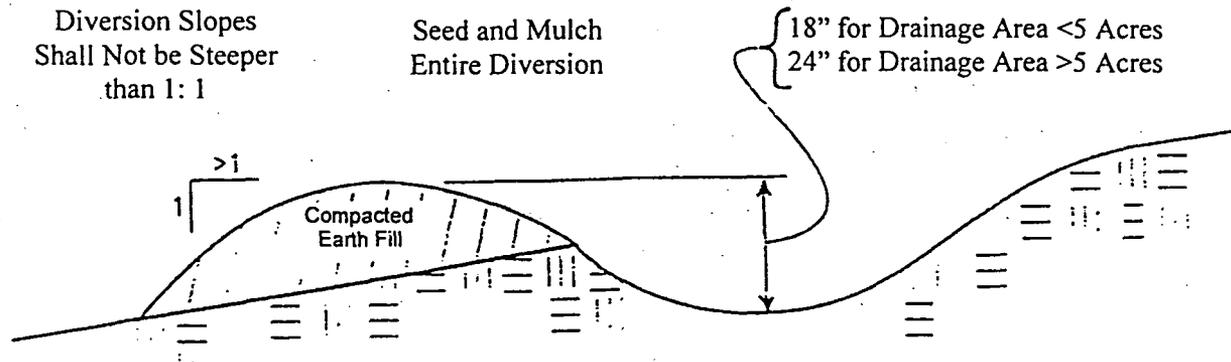
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Appendix A
Erosion and Stormwater Control
Features Details

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Temporary Diversion



1. Diversion shall be compacted by traversing with tracked earth-moving equipment.
2. Diversions shall not be breached or lowered to allow construction traffic to cross; instead, the top width may be made wider and side slopes made flatter than specified above.
3. Diversions shall be stabilized with vegetation and check dams or the following treatments:

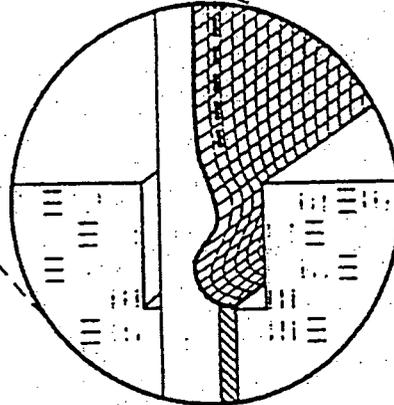
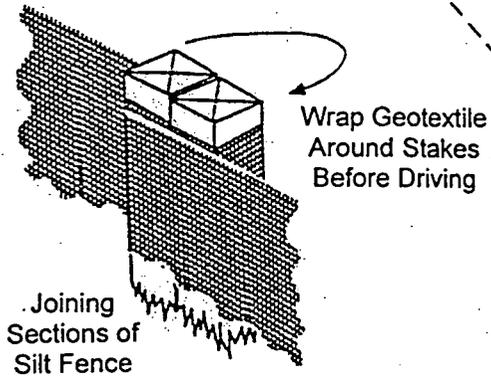
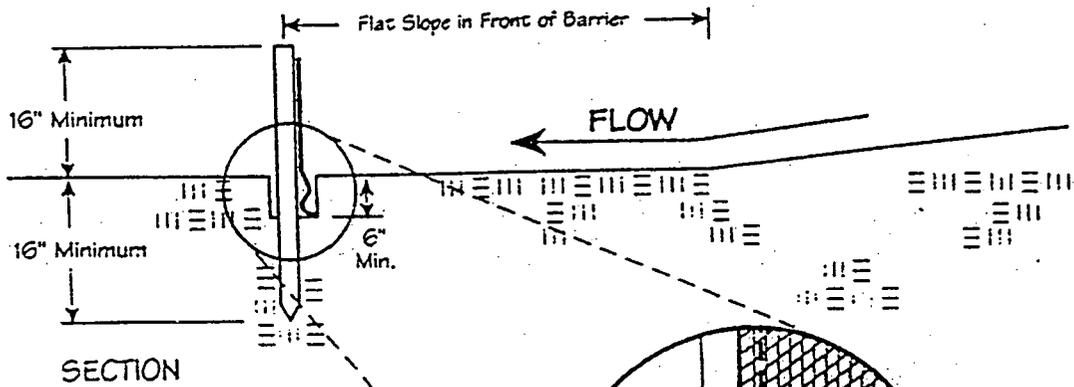
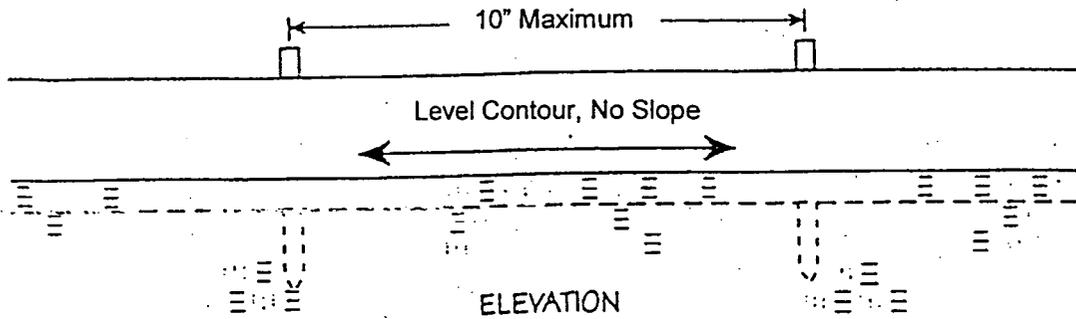
Temporary Diversion Stabilization Treatment			
Diversion Slope	<2 ac.	2 – 5 ac.	5 – 10 ac.
0 – 3%	Seed and Straw	Seed and Straw	Seed and Straw
3 – 5%	Seed and Straw	Seed and Straw	Matting
5 – 8%	Seed and Straw	Matting	Matting
8 – 20%	Seed and Straw	Matting	Engineered

Note: Diversions with steeper slopes or greater drainage areas are beyond the scope of this standard and must be designed for stability. Seed, straw and matting used shall meet the *Specifications for Temporary Seeding, Mulching and Matting*.

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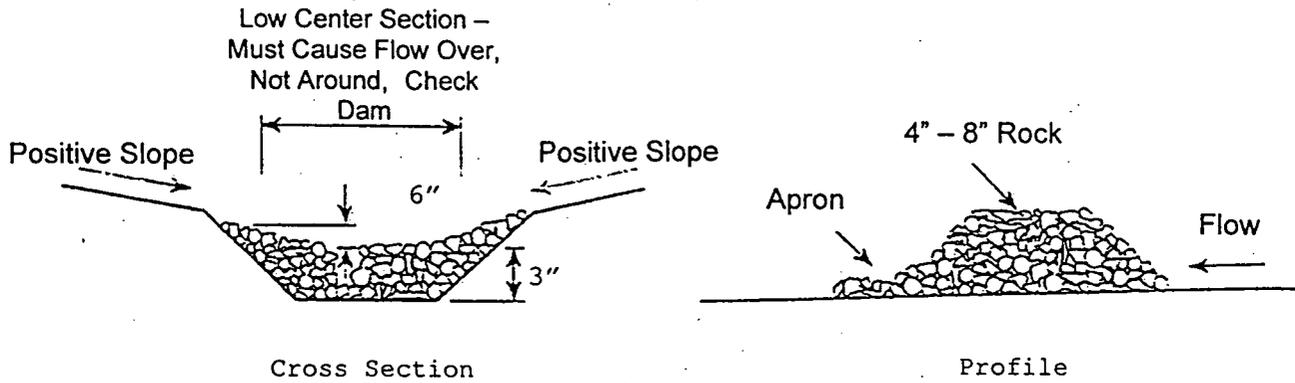
Silt Fence



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Specifications for Check Dam



1. The check dam shall be constructed of 4-8 inch diameter stone, placed so that it completely covers the width of the channel.
2. The top of the check dam shall be constructed so that the center is approximately 6 inches lower than the outer edges, so water will flow across the center and not around the ends.
3. The maximum height of the check dam at the center of the weir shall not exceed three feet.
4. Spacing between dams shall be as shown in the plans or by the following table:

Check Dam Spacing				
Dam Height (feet)	Channel Slope			
	<5%	5 – 10%	10 – 15%	15 – 20%
1	65 ft.	30 ft.	20 ft.	15 ft.
2	130 ft.	65 ft.	40 ft.	30 ft.
3	200 ft.	100 ft.	65 ft.	50 ft.

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Appendix B
Control of Fugitive Emissions
Daily Records

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Appendix C
RMRS Off-Hour Dust Control Procedure

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RMRS

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RMRS OFF-HOUR DUST CONTROL PROCEDURE

ISA/Silo 3 Construction

1. RMRS personnel or their subcontractors with responsibilities for the Off-Hour Dust Control Coverage will retain a copy of the Off-Hour Dust Alert Schedule and a RMRS Employee Contact Sheet, both at the FDF Site Office and in their vehicle or home, i.e., the schedule and contact sheet should be readily available at all reasonable times.
2. RMRS personnel or their subcontractors working on Silo 3 Project construction activities are responsible for being aware of their duties and responsibilities regarding Off-Hour Dust Control.
3. If a scheduling conflict arises, personal or otherwise, the affected person is responsible for making the required revisions to the Off-Hour Dust Alert Schedule to ensure adequate personnel coverage is maintained at all times. The responsible person within RMRS or his designee must approve all revisions to this schedule. A copy of the modified schedule must be distributed to all affected RMRS and FDF personnel no later than the Thursday before the affected week in the schedule.
4. Each week, RMRS will designate one person as the qualified water wagon operator and one person as the sprinkler system operator. The RMRS Designated Primary Contact (DPC) and the designated operators must be fully trained and medically cleared to operate in a Controlled Area.
5. When RMRS is notified by FDF that Off-Hour Dust Control is required, the RMRS DPC or his equivalent will contact the designated operators and coordinate the implementation of this dust control procedure, as detailed in approved Fugitive Dust Control Plan.
6. If either of the designated operators have not responded within 15 minutes of initial attempts to contact them, alternative operators will be contacted until available operators can be found. These operators must also be fully trained and medically cleared to operate in a Controlled Area.
7. It is the responsibility of the RMRS DPC to keep the designated FDF Management Contact informed of all efforts to contact operators and to give details concerning their estimated arrival times at the Silo 3 Project site.
8. Once on-site, the RMRS DPC and operators, together with the designated FDF contact will implement the Emergency Dust Control measures including, but not necessarily limited to, the preparation of a Safe Work Plan and the Fugitive Dust Control Plan.

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9. The RMRS DPC is responsible for documenting RMRS' efforts, including contacts and response times and communication the same to FDF and RMRS' Silo 3 Project Management. The Off-Hour Dust Alert Work Order must be filled out by RMRS and countersigned by the designated FDF representative prior to RMRS leaving the Silo 3 Project site. Note: Off-Hours Dust Control is an additive unit pay item to the RMRS Silo 3 Project contract and must be properly documents for payment.

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Off-Hours Dust Alert WORK ORDER

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Date of Response: _____

Time of First Contact by FDF: _____

Management Person Responding: _____

Operators/Laborers Contacted

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Operators/Laborers Responding

_____	_____	_____
-------	-------	-------

Time Manager on Site: _____

Time Operator/Laborer on Site: _____

Time Suppression Activities End: _____

Total Elapsed Site Time: _____

Description of Situation Causing Alert:

Suppression Material and Equipment Utilized (including quantities):

Describe Area Treated (attach sketch if necessary):

By: Rocky Mountain Remediation Services, L.L.C.

Concurrence of Response Completion by FDF

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Appendix D
Material Segregation and
Containerization Criteria

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= 2839

Appendix E
Estimated Amounts of Each Type of Waste Stream

000043

= 2839

Table 4.1
ESTIMATE OF WASTE DURING CONSTRUCTION

Waste Type	Estimated Volume (yd³)
Soft Waste	13
Construction Debris	16
Soil	1,650
Caulking, sealers	3
Underground Debris	30

000044

2839

Site Preparation
Design Drawings

000045

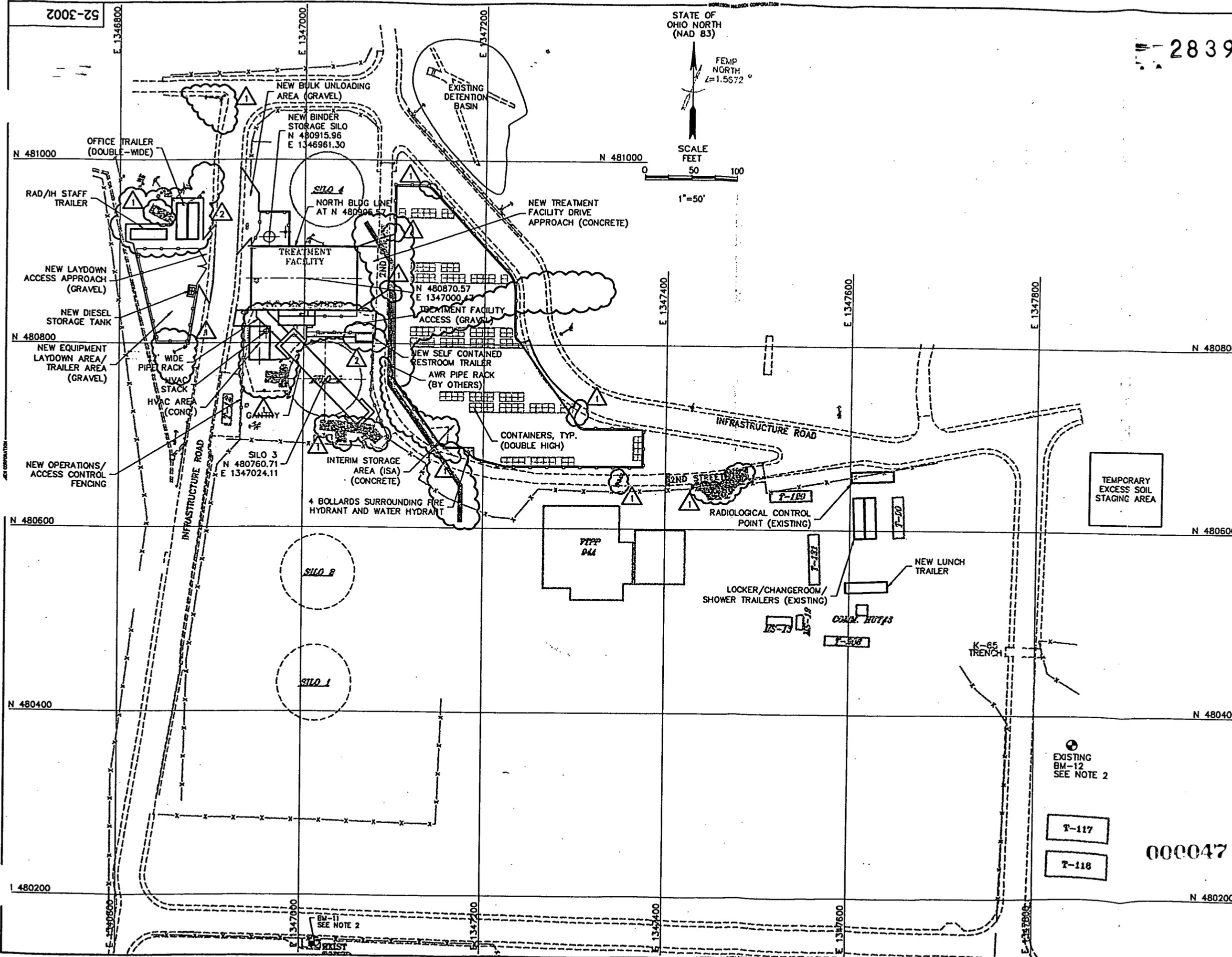


- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

ATTACHMENT B

Site Preparation Package Design Drawings

000046



REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL

NOTES

- REMOVE EXISTING FENCING AS REQUIRED FOR CONSTRUCTION. PROPOSED FENCING SHOWN IS FOR OPERATIONS ACCESS CONTROL.
- CONTROL MONUMENTS:
 BM-11 - N 480149.27, E 1347017.97, ELEV. 569.91 FT.
 BM-12 - N 480369.05, E 1347841.96, ELEV. 578.70 FT.
- REVISION CLOUDS ARE MARKED SHOWING THE REVISION NUMBER IN WHICH CHANGES ARE MADE.

NOT FOR CONSTRUCTION

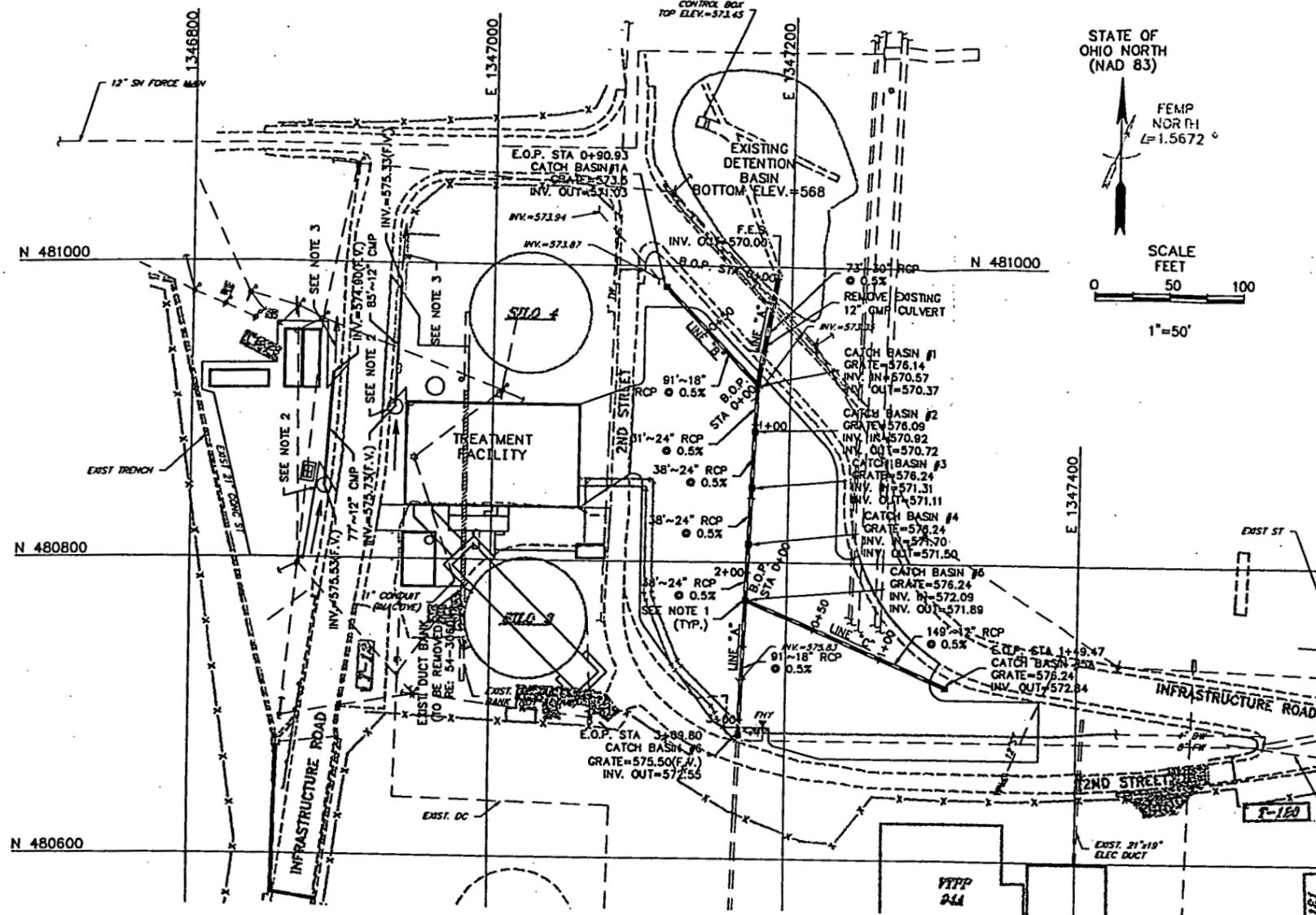
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1	02/18/00	MOCK	MFV	REVISED TECHNICAL BASELINE
0	01/27/00	MOCK	MFV	TECHNICAL BASELINE
C	11/30/99	MOCK	MFV	50% SITE PREP. DESIGN PACKAGE
B	09/23/99	TOC	CAB	PHAR DESIGN PACKAGE
A	06/28/99	TOC	CAB	CONCEPTUAL DESIGN PACKAGE

SILO 3 PROJECT FDF - FEMP CIVIL SITE PLAN

MORRISON KNUDSEN CORPORATION
10822 W. Teller Drive, Littleton CO 80127 Tel. (303) 948-4000

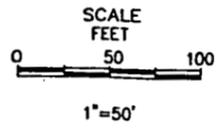


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DESIGNED: CAB	DATE: 0/15/99
CHECKED: MFV	DATE: 01/16/00
VERIFIED:	DATE:
APPROVED:	DATE:
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DRAWING NUMBER: 52-3002	REV 2



STATE OF OHIO NORTH (NAD 83)

FEMP NORTH
E=1.5672



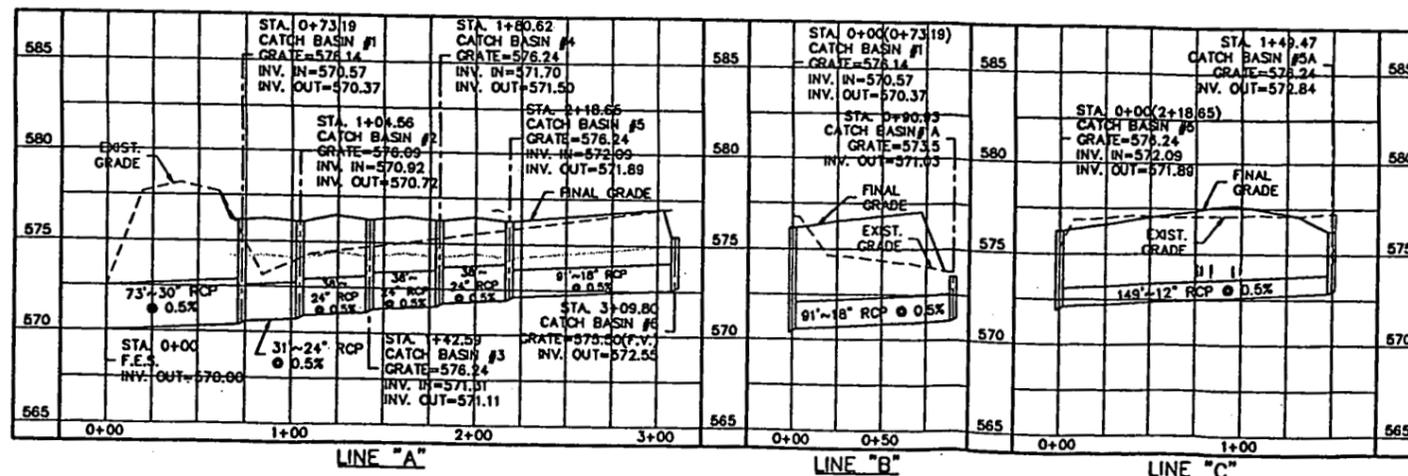
STORM SEWER SYSTEM COORDINATES				
NODE	LINE	STA.	*NORTHING	*EASTING
F.E.S.	A	0+00	480991.92	1347190.40
CB #1	A/B	0+73.19/0+00	480919.79	1347178.03
CB #1A	B	0+90.93	480985.62	1347115.31
CB #2	A	1+04.56	480888.44	1347176.78
CB #3	A	1+42.59	480850.44	1347175.27
CB #4	A	1+80.62	480812.44	1347173.75
CB #5	A/C	2+18.65/0+00	480774.44	1347172.23
CB #5A	C	1+49.47	480716.64	1347310.07
CB #6	A	3+09.80	480683.37	1347168.60

*COORDINATES PROVIDED ARE TO END OF PIPE (F.E.S.) OR CENTER OF INLET

REFERENCE DRAWINGS	
DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL
54-3060	ELECTRICAL - SITE PLAN LIGHTING

- NOTES**
- FOR CATCH BASINS WITHIN THE ISA PAD, RE: SPECIFICATIONS FOR INSTALLATION CRITERIA. FOR CATCH BASINS OUTSIDE THE ISA PAD, RE: OHIO DEPARTMENT OF TRANSPORTATION STANDARD DETAIL CB-1.1M FOR INSTALLATION (TYPE 2-2B).
 - CULVERT INLET AREAS ARE TO BE REGRADED TO ENHANCE RUNOFF COLLECTION.
 - CULVERT DISCHARGE WEST OF THE INFRASTRUCTURE ROAD DRAINS TO THE NORTH, THEN TURNING WEST. CULVERT DISCHARGE EAST OF THE INFRASTRUCTURE ROAD DRAINS TO THE NORTH, THEN TURNING EAST.

STORM SEWER PLAN



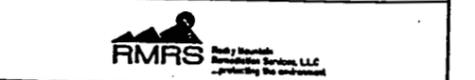
STORM SEWER PROFILE

000048

REV	DATE	BY	DESCRIPTION
B	02/25/00	MCK	INCORPORATE FDF REVIEW COMMENTS
A	02/18/00	MCK/MFW	100% SITE PREP. DESIGN PACKAGE

SILO 3 PROJECT
FDF - FEMP
STORM SEWER PLAN AND PROFILE

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000



SCALE: 1" = 50'	DATE: 1/24/00
DRAWN: MCK	DATE: 1/24/00
DESIGNED: MCK	DATE: 2/10/00
CHECKED: MFW	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 523003.dwg	
DRAWING NUMBER:	

52-3003 REV B

LEGEND

- EXISTING INTERMEDIATE CONTOUR (LABELED WHERE APPROPRIATE FOR CLARITY)
- 570- EXISTING INDEX CONTOUR
- +578.10 EXISTING SPOT ELEVATION
- +78.48 PROPOSED SPOT ELEVATION (FINAL GRADE)
- +78.34GR PROPOSED SPOT ELEVATION (GRATE ELEVATION)
- +77.15(F.V.) PROPOSED SPOT ELEVATION (FIELD VERIFY)

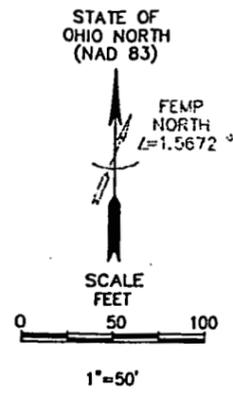
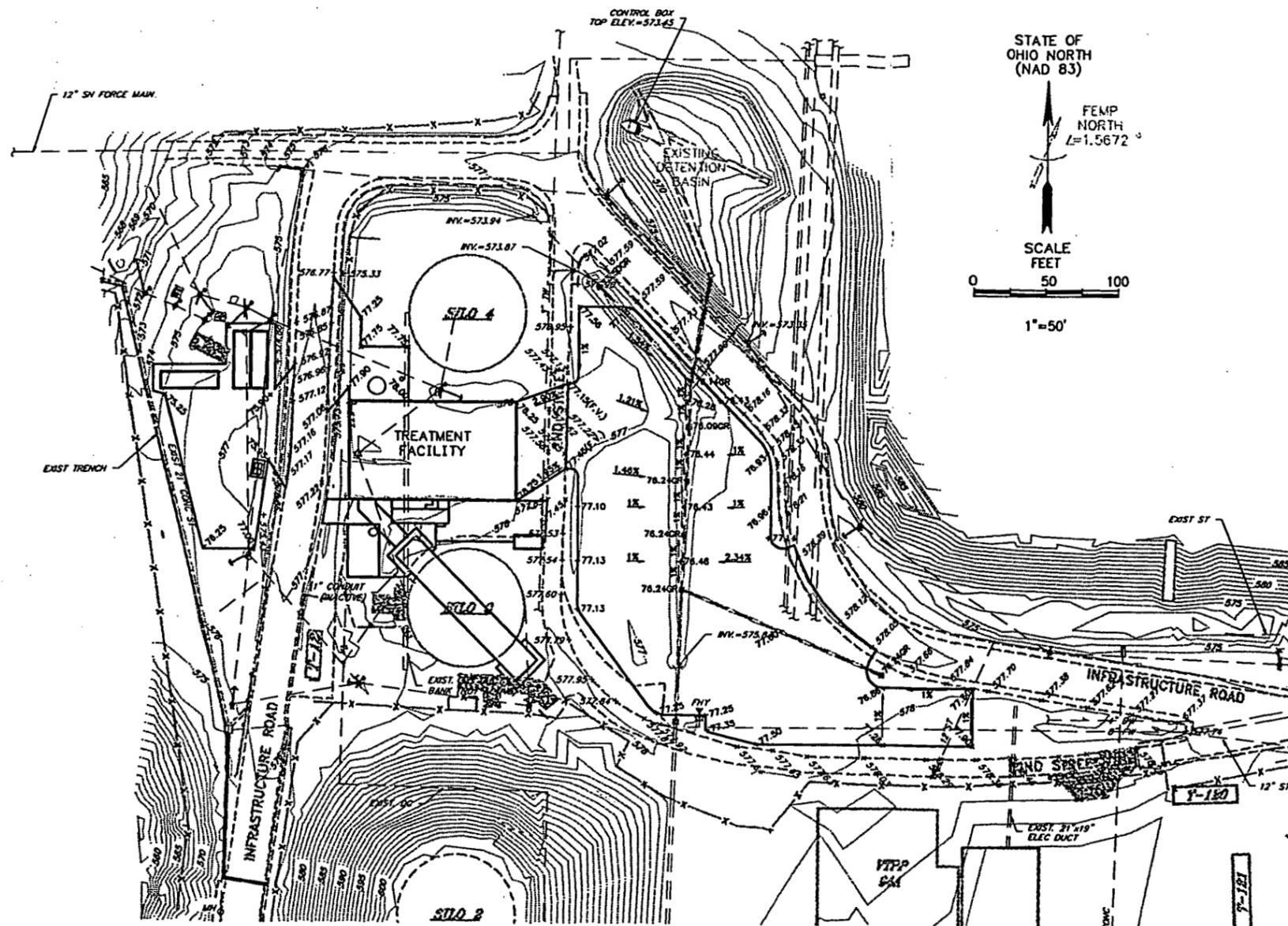
REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL
52-3002	CIVIL SITE PLAN

NOTES

1. PROPOSED AND EXISTING SPOT ELEVATIONS REPRESENT FINAL GRADE UNLESS NOTED OTHERWISE.
2. SURFACE RUNOFF FROM THE INFRASTRUCTURE ROAD AND 2ND STREET WILL DRAIN TO THE ISA PAD, WHERE IT WILL BE COLLECTED BY THE PROPOSED CATCH BASINS.
3. FINAL GRADE SLOPES WITHIN THE ISA AREA VARY IN ORDER TO MATCH EXISTING ELEVATIONS AND TO FACILITATE DRAINAGE FLOWS.

2839



REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	MCX		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	MCX/MFW		100% SITE PREP. DESIGN PACKAGE
A	11/30/99	MCX/MFW		50% SITE PREP. DESIGN PACKAGE

SILO 3 PROJECT
FDF - FEMP

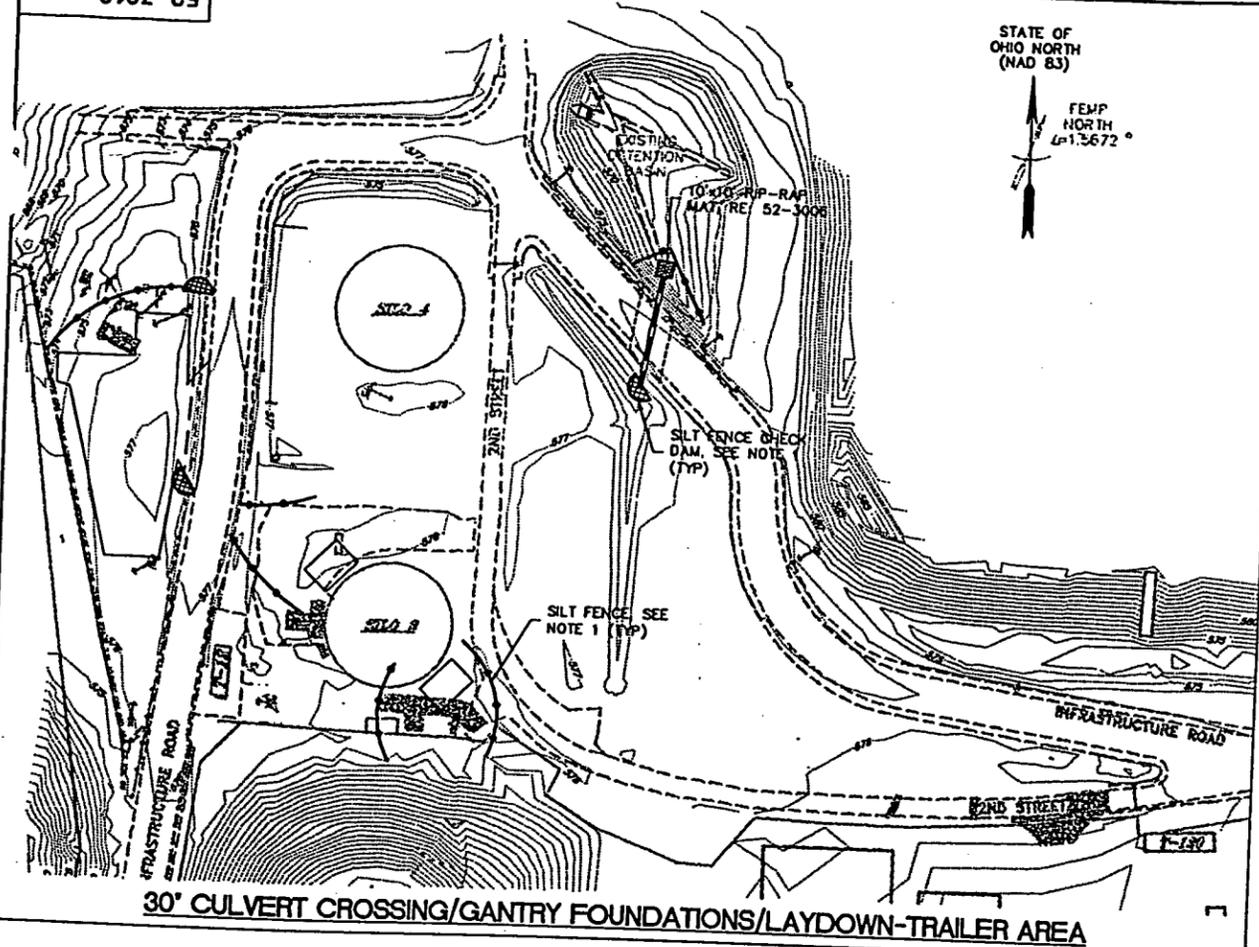
GRADING AND
DRAINAGE PLAN

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000

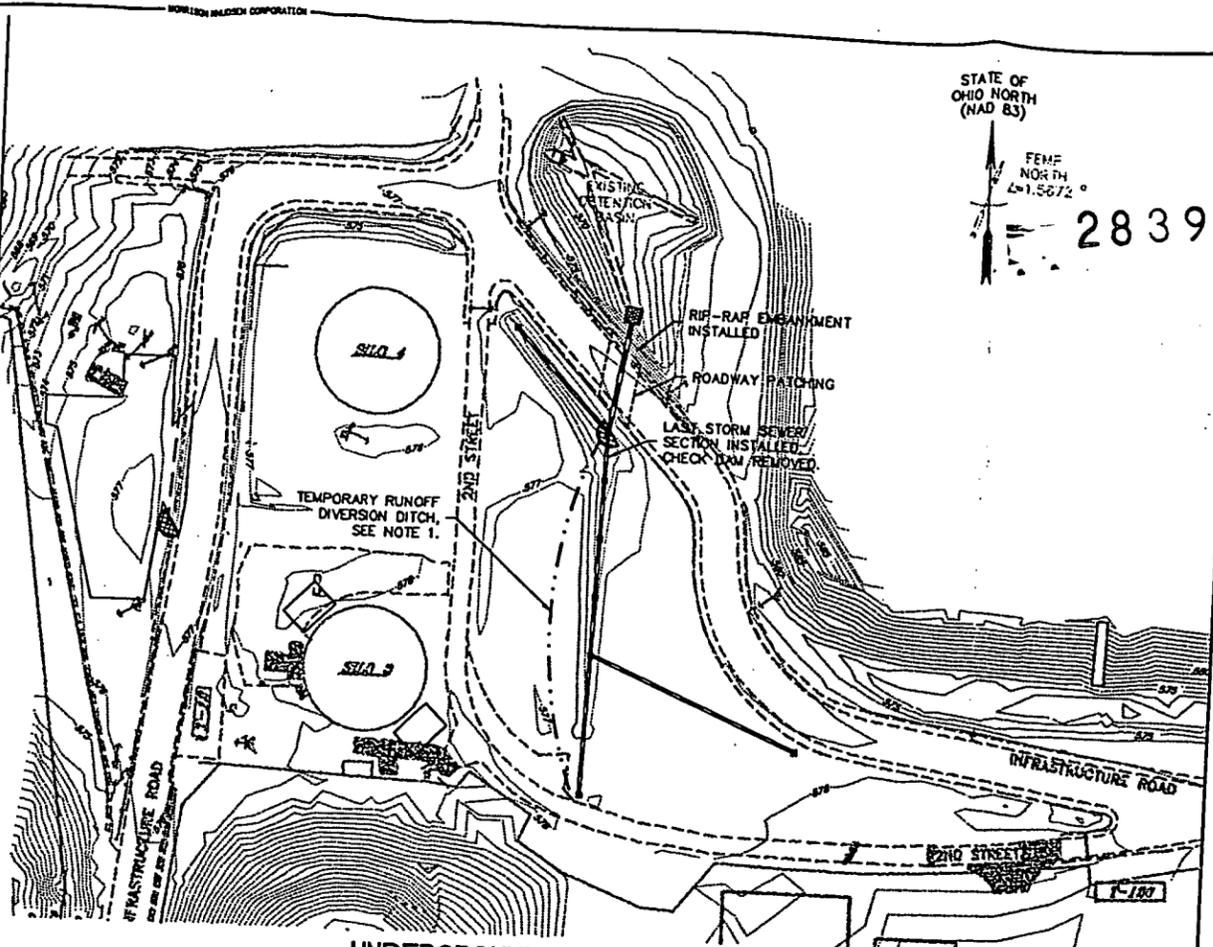


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DESIGNED: MCX	DATE: 11/18/99
CHECKED: MFW	DATE: 11/29/99
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 523004.dwg	
0-LEVEL (V/M):	
DRAWING NUMBER: 52-3004	REV C

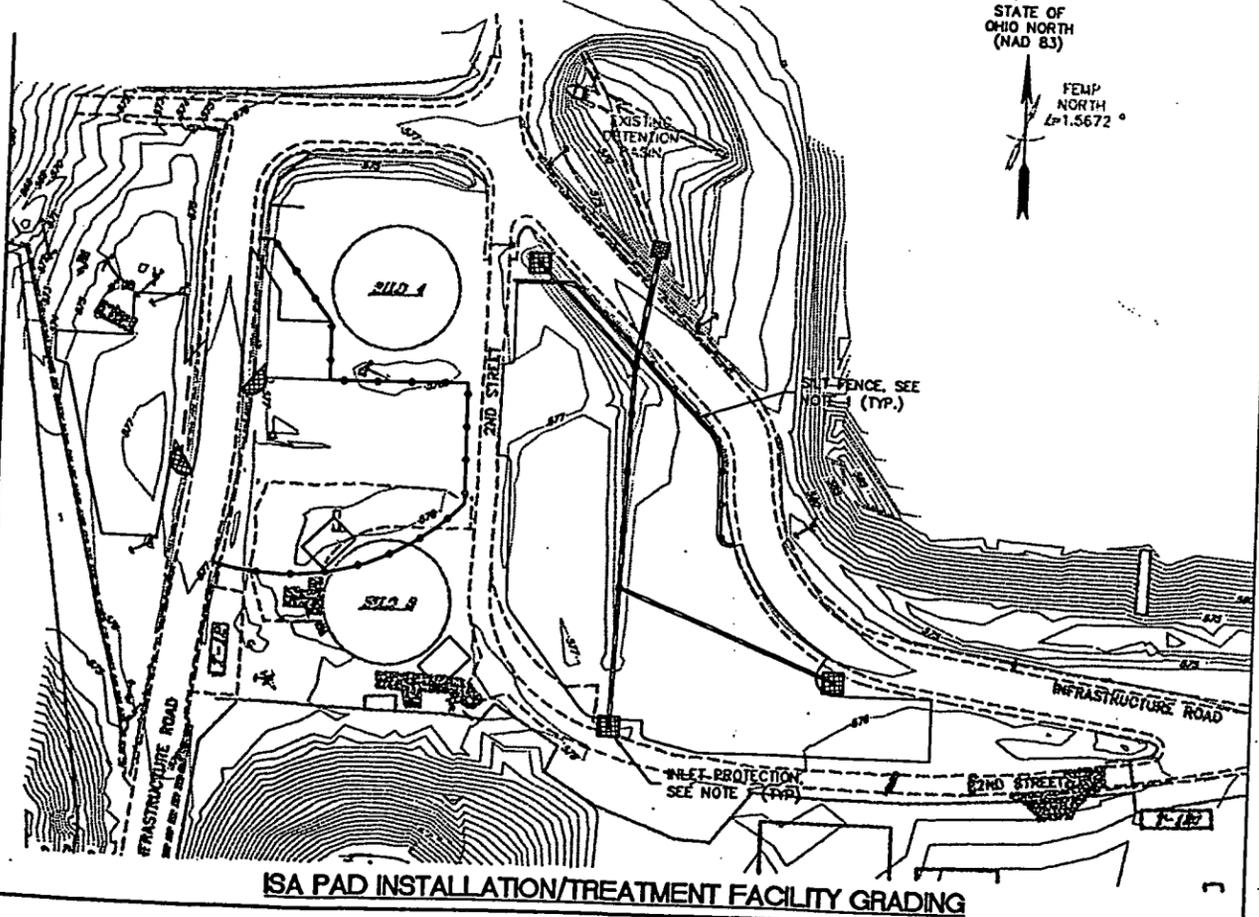
000049



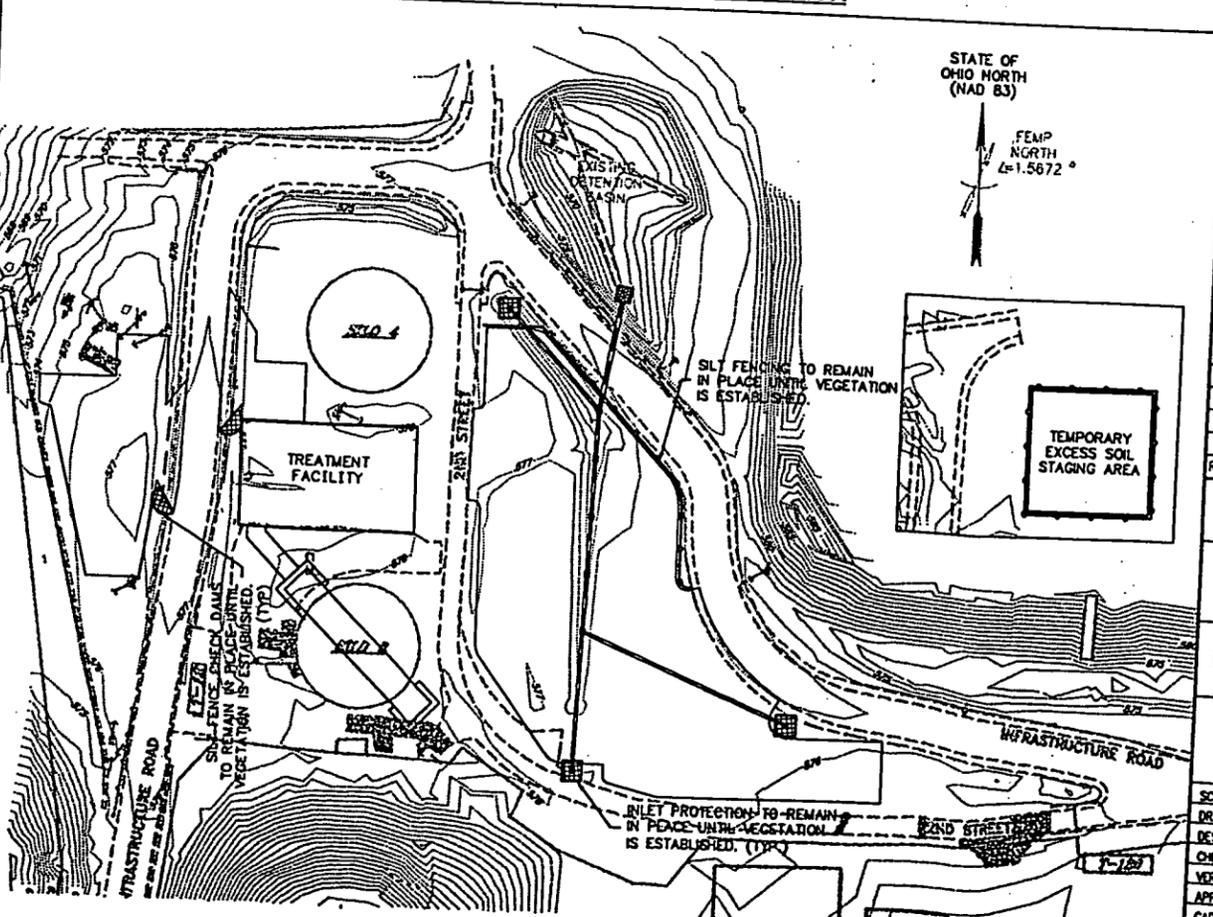
30' CULVERT CROSSING/GANTRY FOUNDATIONS/LAYDOWN-TRAILER AREA



UNDERGROUND UTILITY INSTALLATION



ISA PAD INSTALLATION/TREATMENT FACILITY GRADING



FACILITY CONSTRUCTION

REFERENCE DRAWINGS	
DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL
52-3002	CIVIL SITE PLAN
52-3003	STORM SEWER PLAN AND PROFILE
52-3004	GRADING AND DRAINAGE PLAN

NOTES

1. RE: "RAINWATER AND LAND DEVELOPMENT", OHIO'S STANDARDS FOR STORMWATER MANAGEMENT, CONR-LAND DEVELOPMENT AND URBAN STREAM PROTECTION FOR INLET PROTECTION, DITCH CHECK, DIVERSION DITCH, AND SILT FENCE INSTALLATION DETAILS.

000050

REV	DATE	BY	DESCRIPTION
C	02/25/00	MCK	INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	MCK/MFW	100% SITE PREP. DESIGN PACKAGE
A	01/30/99	MCK/MFW	50% SITE PREP. DESIGN PACKAGE

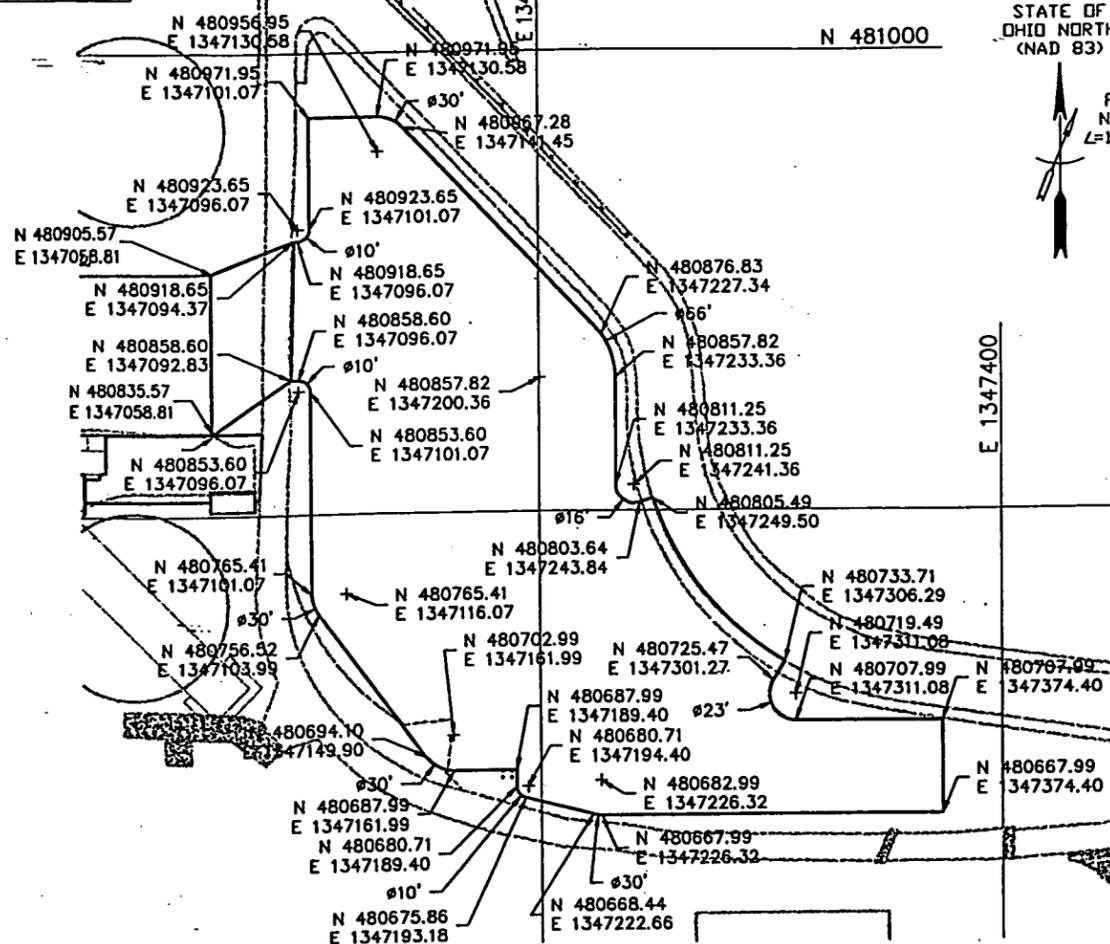
SILO 3 PROJECT
FDF - FEMP
EROSION CONTROL
PLAN

MORRISON KNUDSEN CORPORATION
 10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000

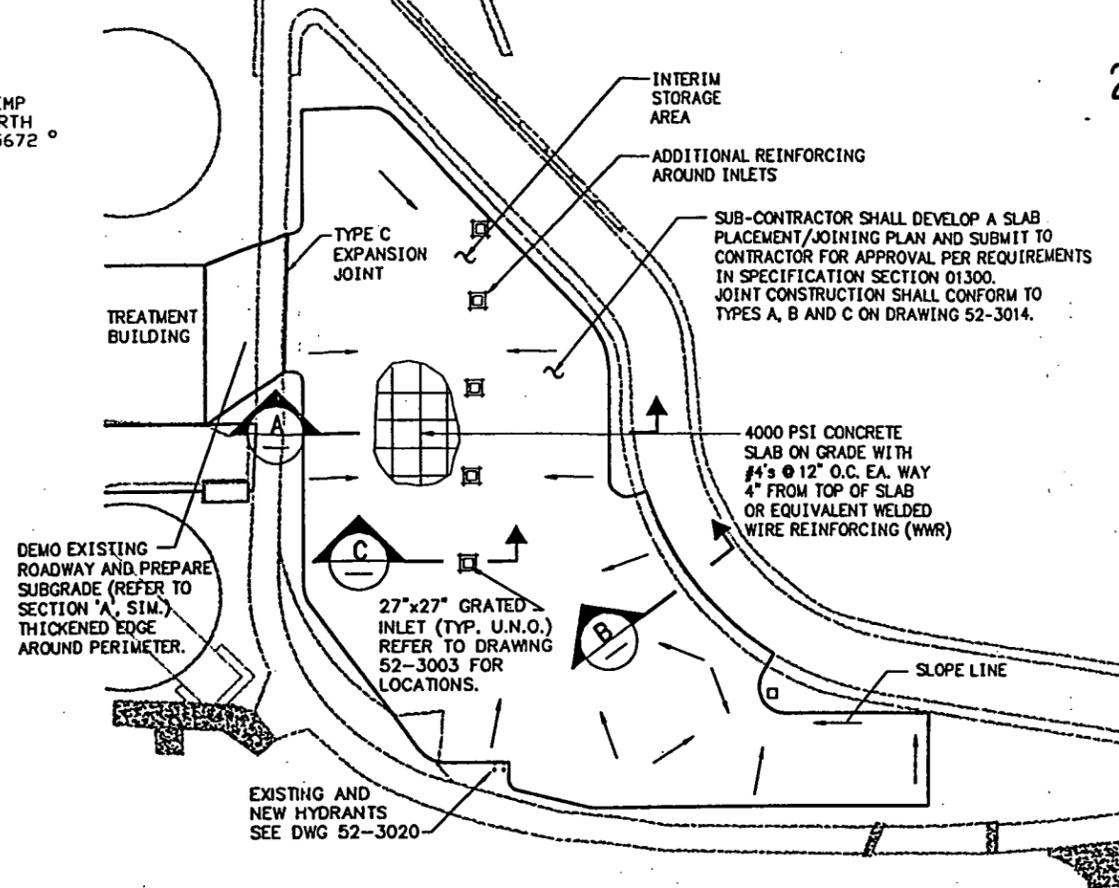
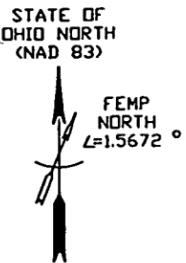
RMRS Morrison Knudsen Corporation
 Representing the contractor

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DESIGNED: MCK	DATE: 11/18/99
CHECKED: MFW	DATE: 11/29/99
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 523012.dwg	
Q-LEVEL (Y/N):	
DRAWING NUMBER: 52-3012	REV C

52-3013



ISA SLAB HORIZONTAL CONTROL PLAN

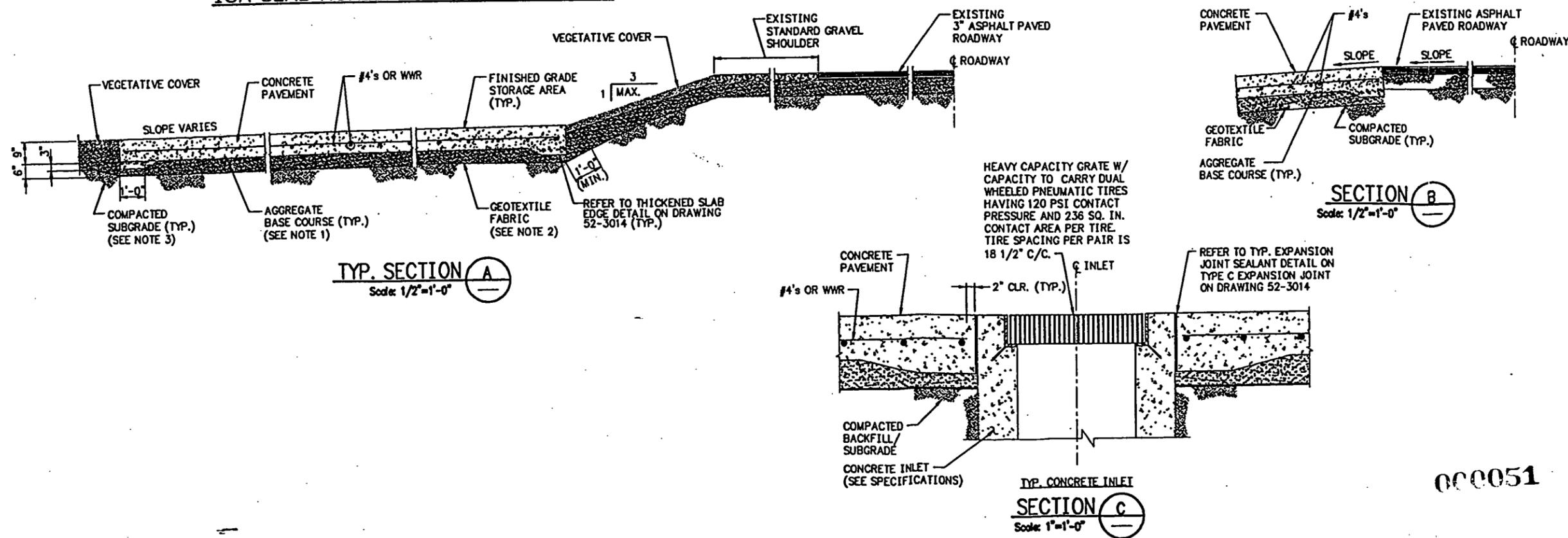


ISA SLAB PLAN
(REFER TO DWG. 52-3004 FOR TOP OF SLAB ELEVATIONS.)

2839

REFERENCE DRAWINGS	
DRAWING NO.	TITLE
52-3014	ISA PAVEMENT DETAILS
52-3003	STORM SEWER PLAN & PROFILE
52-3020	UNDERGROUND UTILITIES PLAN
52-3004	GRADING & DRAINAGE PLAN

- NOTES**
1. AGGREGATE BASE COURSE SHALL CONFORM TO OHIO DEPARTMENT OF TRANSPORTATION, ODOT, ITEM 304.
 2. GEOTEXTILE FABRIC SHALL CONFORM TO ODOT ITEM 712.09, TYPE B.
 3. SUBGRADE SHALL BE EXCAVATED A MINIMUM OF 6" AND THE SURFACE COMPACTED TO 95% MODIFIED PROCTOR.



TYP. SECTION A
Scale: 1/2"=1'-0"

SECTION B
Scale: 1/2"=1'-0"

TYP. CONCRETE INLET
SECTION C
Scale: 1"=1'-0"

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	JW		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	JW	MJ	100% SITE PREPARATION PACKAGE
A	11/30/99			50% SITE PREPARATION PACKAGE

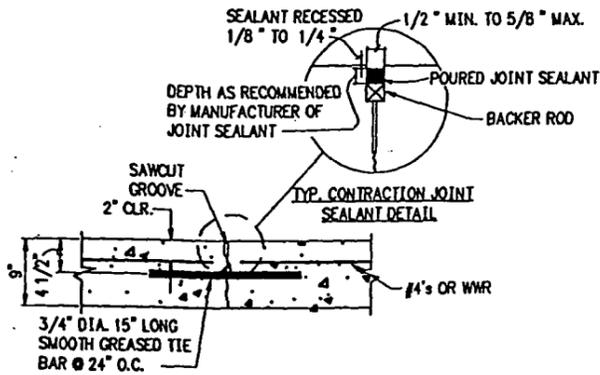
SILLO 3 PROJECT
FDF - FEMP
ISA - PAVEMENT
PLAN & SECTIONS

MORRISON KNUDSEN CORPORATION
 10022 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000

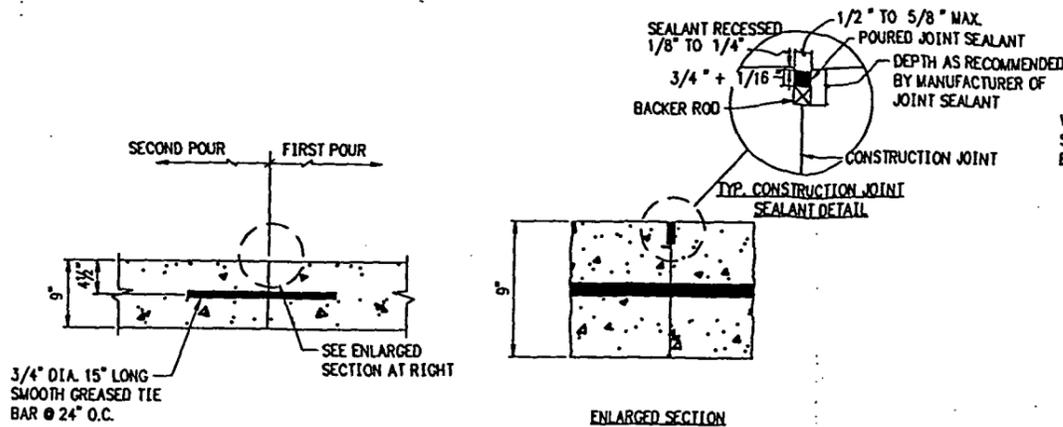


SCALE: 1" = 40' U.N.O.	DATE: 11/03/99
DRAWN: B.POLADSKY	DATE: 11/03/99
DESIGNED: J. WEBBER	DATE: 2/14/00
CHECKED: M. JURGENMEYER	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
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0-LEVEL (TYP.):	
DRAWING NUMBER: 52-3013	REV C

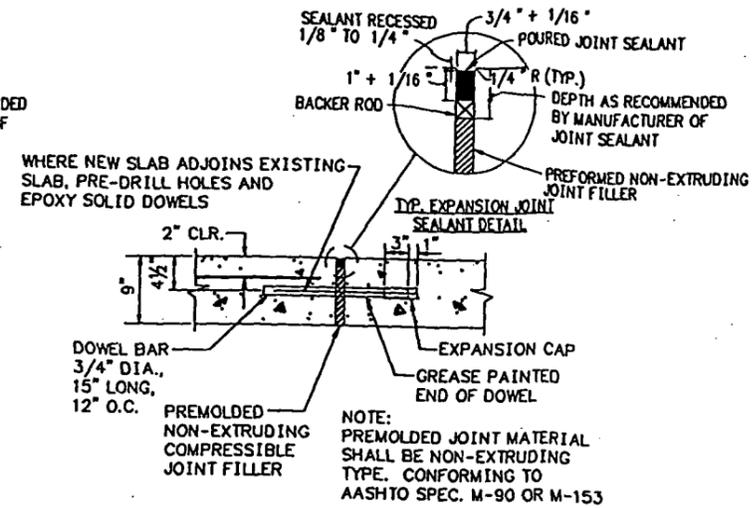
000051



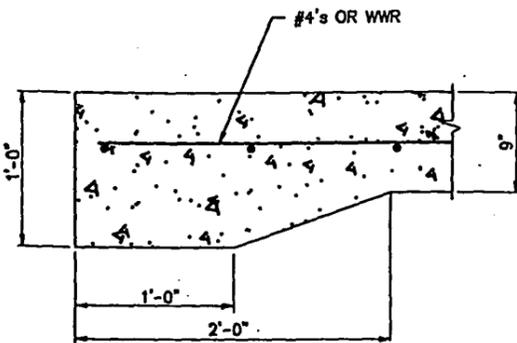
TYPE (A) CONTRACTION JOINT
NOT TO SCALE



TYPE (B) LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS
NOT TO SCALE



TYPE (C) EXPANSION JOINT
NOT TO SCALE



THICKENED SLAB EDGE DETAIL
NOT TO SCALE

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3013	ISA PAVEMENT PLAN AND SECTIONS

NOTES

1. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

2839

LEGEND

WWR - WELDED WIRE REINFORCING

REV	DATE	BY	DESCRIPTION
C	02/25/00	JW	INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	JW MJ	100% SITE PREPARATION PACKAGE
A	01/30/99	JW	50% SITE PREPARATION PACKAGE

SILO 3 PROJECT
FDF - FEMP

ISA
PAVEMENT DETAILS

MORRISON KNUDSEN CORPORATION
10822 W. Tolar Drive, Littleton CO 80127 Tel. (303) 948-4000



SCALE: AS NOTED	
DRAWN: B. POLADSKY	DATE: 11/18/99
DESIGNED: J. WEBBER	DATE: 11/03/99
CHECKED: M. WURGENMEYER	DATE: 2/14/00
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 523014.dwg	
0-LEVEL (1/11)	

DRAWING NUMBER: 52-3014 REV C

100052

CONTROL BOX
TOP ELEV.=573.45

MORRISON KNUDSEN CORPORATION

STATE OF OHIO NORTH
(NAD 83)

FEMP
NORTH
L=1.5672

SCALE
FEET
0 40 80
1"=40'

BASIN	AREA (AC)	CN	Tc	DESIGN POINT	PEAK FLOW (CFS) FOR 24 HOUR RUNOFF					
					2YR	5YR	10YR	25YR	50YR	100YR
B1	0.732	74	0.75	1	0	1	1	1	1	1
B2	0.132	75	0.10	2	0	0	0	0	1	1
B3	0.075	98	0.10	3	0	0	0	1	1	1
B4	0.081	88	0.10	4	0	0	0	0	0	1
B5	0.044	69	0.10	5	0	0	0	0	0	0
B6	0.335	66	0.20	6	0	0	0	1	1	1
B7	0.483	55	0.30	7	0	0	0	0	0	1
C1	0.163	81	0.10	8	1	1	1	1	1	1
C2	0.135	95	0.10	9	1	1	1	1	1	1
C3	0.144	94	0.10	10	1	1	1	1	1	1
C4	0.155	93	0.10	11	1	1	1	1	1	1
C5	0.467	94	0.10	12	2	2	3	3	3	4
C6	0.246	89	0.10	13	1	1	1	1	2	2
D1	0.193	68	0.20	14	0	0	0	0	0	1

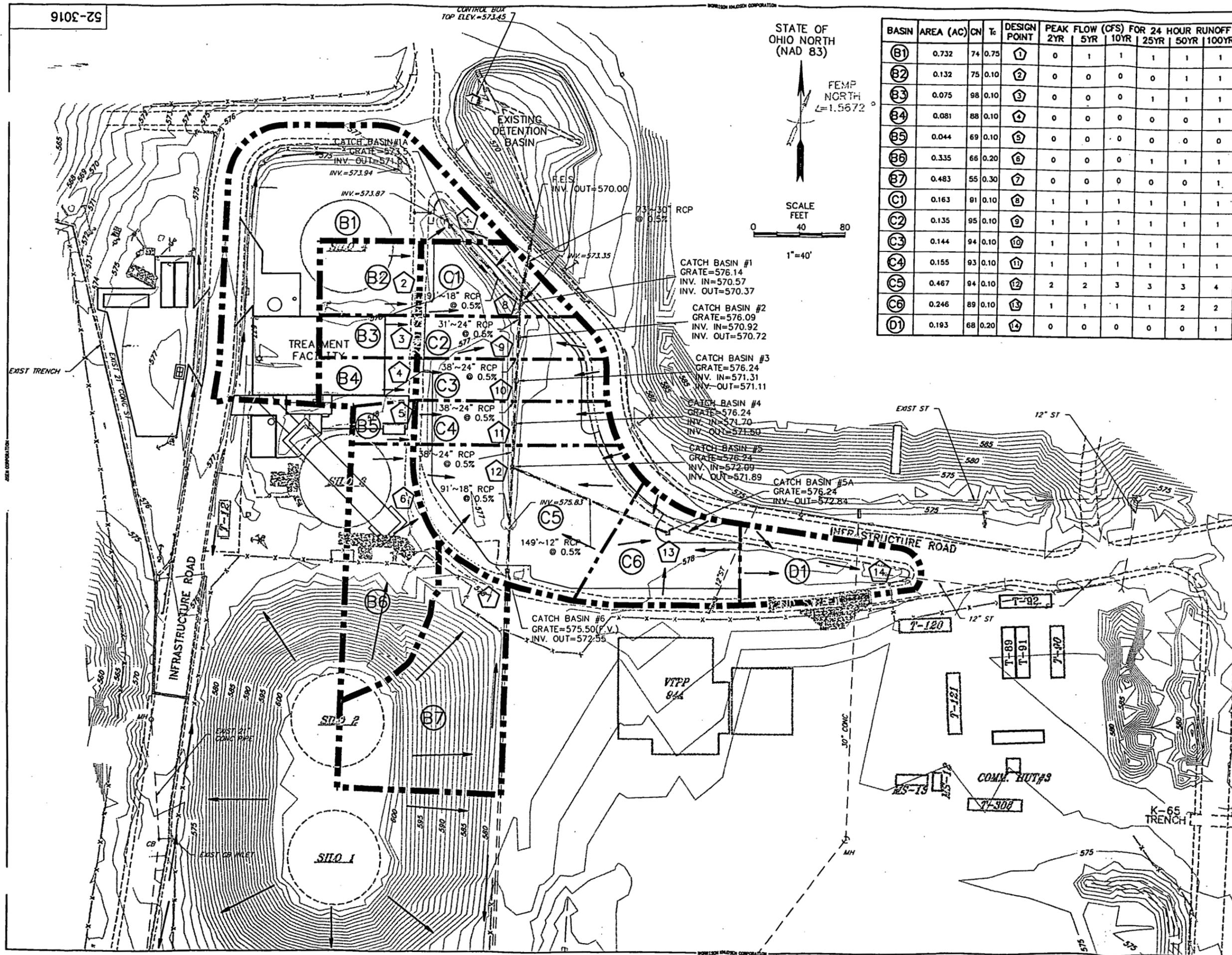
REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL
52-3002	CIVIL SITE PLAN
52-3004	GRADING AND DRAINAGE PLAN

NOTES

1. SUB-BASIN BOUNDARIES/FLOW ROUTINGS HAVE BEEN TAKEN FROM TELEFAX INFORMATION PROVIDED BY FDF.

2839



000053

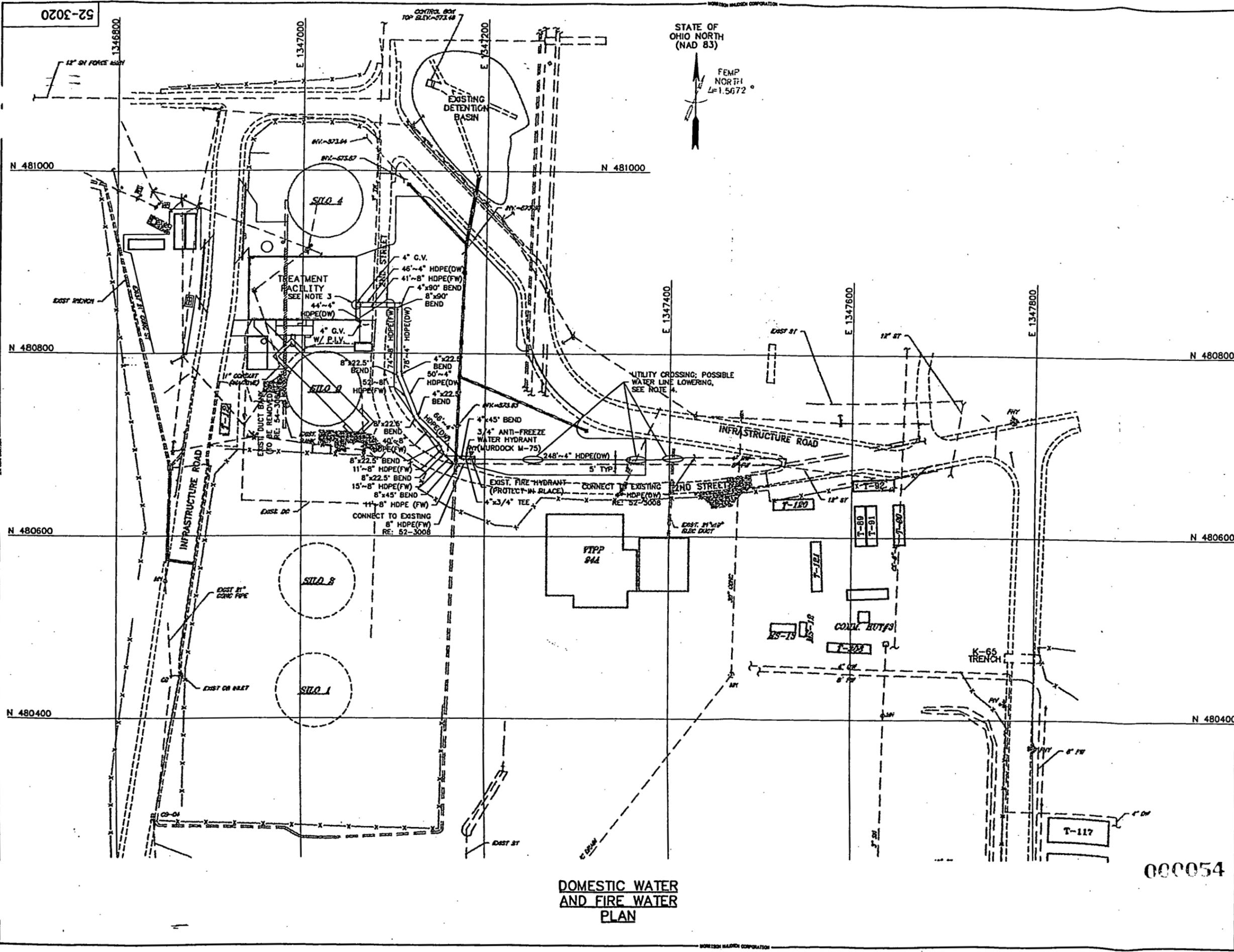
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C	02/25/00	MCK		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	MCK/MFW		100% SITE PREP. DESIGN PACKAGE
A	01/30/99	MCK/MFW		50% SITE PREP. DESIGN PACKAGE

SILO 3 PROJECT
FDF - FEMP
SUB-BASIN DRAINAGE
MAP

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000

SCALE: 1" = 40'	DATE: 11/16/99
DRAWN: MCK	DATE: 11/16/99
DESIGNED: MCK	DATE: 11/29/99
CHECKED: MFW	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 523016.dwg	
Q-LEVEL (Y/N):	
DRAWING NUMBER: 52-3016	REV C

52-3020



**DOMESTIC WATER
AND FIRE WATER
PLAN**

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL
52-3008	WATERLINE TIE-IN LOCATIONS
54-3060	ELECTRICAL - SITE PLAN LIGHTING

NOTES

1. REFERENCE "ELECTRICAL - SITE PLAN LIGHTING" (SHT 54-3060) FOR PROPOSED ELECTRICAL UNDERGROUND AND ABOVE GROUND UTILITIES.
2. PROVIDED WATERLINE PIPE LENGTHS ARE TO INTERSECTIONS OF PIPE RUNS.
3. THE FIRE WATER AND DOMESTIC WATER LINES ARE TO BE CAPPED AND MARKED WITH WOOD POSTS PLACED AT THE PIPE ENDS, EXTENDING TO A MINIMUM OF 2' ABOVE GROUND FOR FUTURE TIE-IN TO THE TREATMENT FACILITY. THE FIRE WATER LINE IS TO BE CAPPED AT 5' FROM THE TREATMENT FACILITY. THE DOMESTIC WATER LINE IS TO BE CAPPED AT THE TREATMENT FACILITY GATE VALVE (RE: SECTION 3/SHEET 52-3008) AND CAPPED AT THE NEW SELF-CONTAINED BATHROOM TRAILER.
4. EXTENSION OF THE DOMESTIC WATER LINE IS TO MATCH VERTICAL PLACEMENT OF THE EXISTING FIRE WATER LINE.
5. REFER TO SPECIFICATION SECTION 15020 FOR HDPE SPECIFICATIONS.

2839

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	MCK	MCK	INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	MCK	MFW	100% SITE PREP. DESIGN PACKAGE
A	11/30/99	MCK	MFW	50% SITE PREP. DESIGN PACKAGE

**SILLO 3 PROJECT
FDF - FEMP**

UNDERGROUND UTILITIES PLAN

MORRISON KNUDSEN CORPORATION
10822 W. Teller Drive, Littleton CO 80127 Tel. (303) 946-4000



SCALE: 1" = 50'	DATE: 11/16/99
DRAWN: MCK	DATE: 11/16/99
DESIGNED: MCK	DATE: 11/29/99
CHECKED: MFW	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 523020.dwg	
C-LEVEL (Y/M):	
DRAWING NUMBER:	REV

52-3020

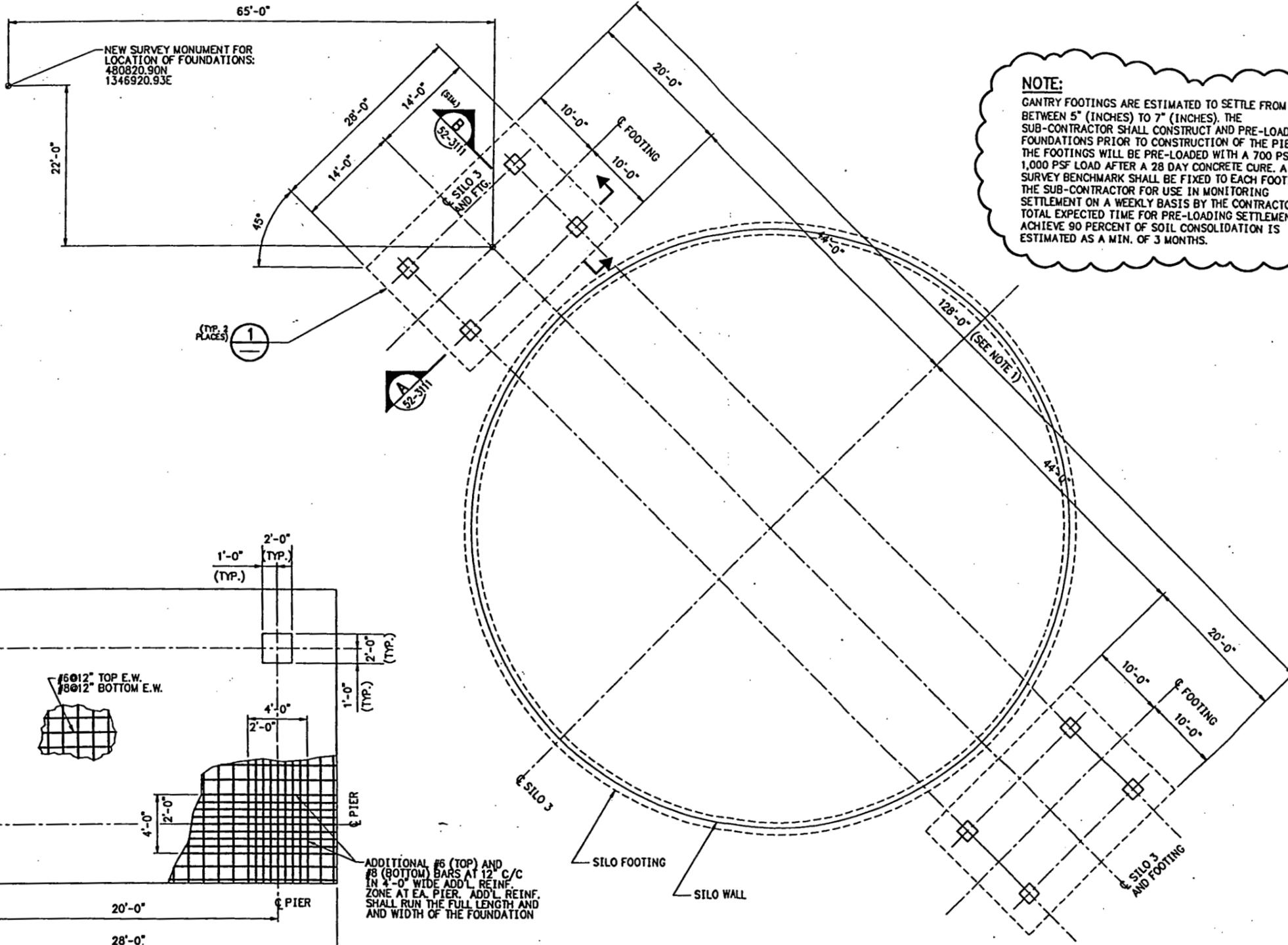
C

000054

52-3110

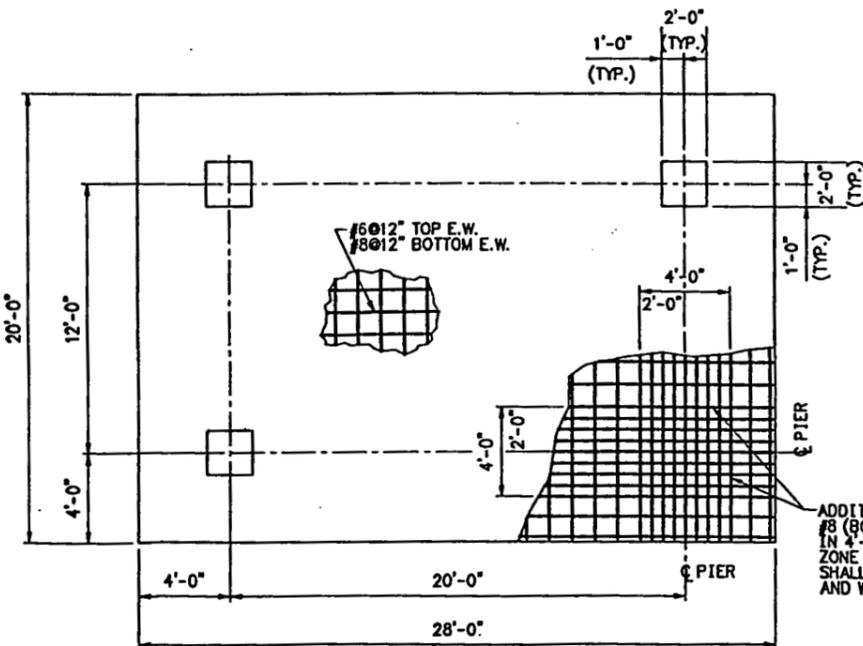
STATE OF OHIO NORTH
(NAD 83)

FEMP
NORTH
L=1.5672



NOTE:
GANTRY FOOTINGS ARE ESTIMATED TO SETTLE FROM BETWEEN 5" (INCHES) TO 7" (INCHES). THE SUB-CONTRACTOR SHALL CONSTRUCT AND PRE-LOAD FOUNDATIONS PRIOR TO CONSTRUCTION OF THE PIERS. THE FOOTINGS WILL BE PRE-LOADED WITH A 700 PSF TO 1,000 PSF LOAD AFTER A 28 DAY CONCRETE CURE. A SURVEY BENCHMARK SHALL BE FIXED TO EACH FOOTING BY THE SUB-CONTRACTOR FOR USE IN MONITORING SETTLEMENT ON A WEEKLY BASIS BY THE CONTRACTOR. TOTAL EXPECTED TIME FOR PRE-LOADING SETTLEMENT TO ACHIEVE 90 PERCENT OF SOIL CONSOLIDATION IS ESTIMATED AS A MIN. OF 3 MONTHS.

(TYP. 3 PLACES)
1



ADDITIONAL #6 (TOP) AND #8 (BOTTOM) BARS AT 12" C/C IN 4'-0" WIDE ADD'L REINF. ZONE AT EA. PIER. ADD'L REINF. SHALL RUN THE FULL LENGTH AND WIDTH OF THE FOUNDATION

DETAIL 1
SCALE: 1/4"=1'-0"

FOUNDATION PLAN
SCALE: 1/8"=1'-0"

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3111	SILO GANTRY FOUNDATION SECT. & DET.

NOTES

1. ALL FOUNDATIONS TO BE LOCATED BY SURVEY.
2. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

2839

000055

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	JW		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	JW	MJ	100% SITE PREPARATION PACKAGE
A	01/30/99			50% SITE PREPARATION PACKAGE

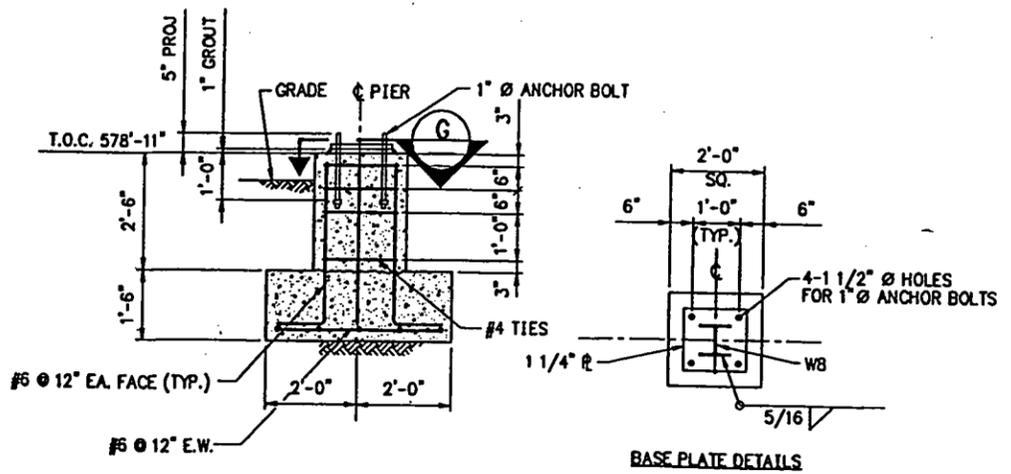
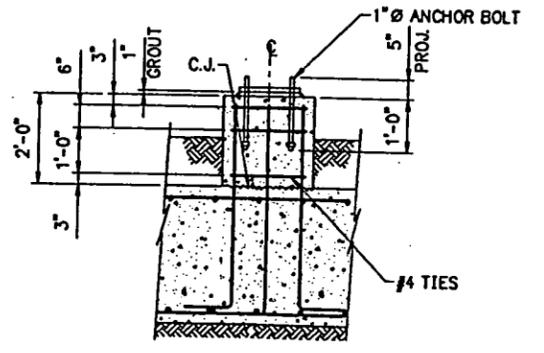
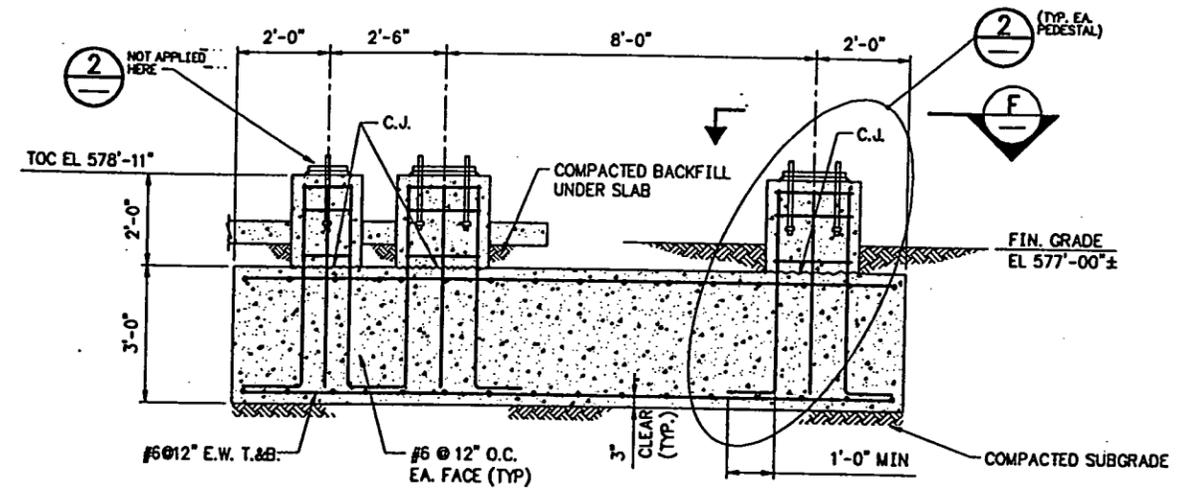
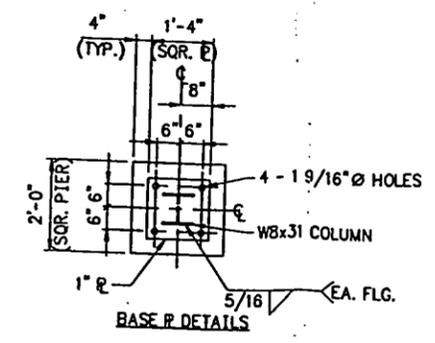
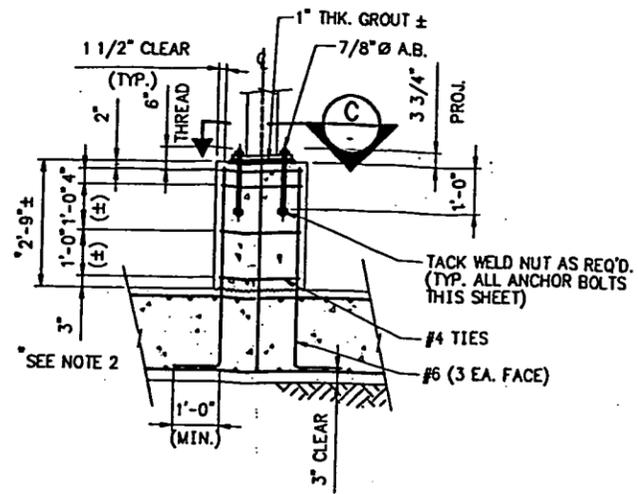
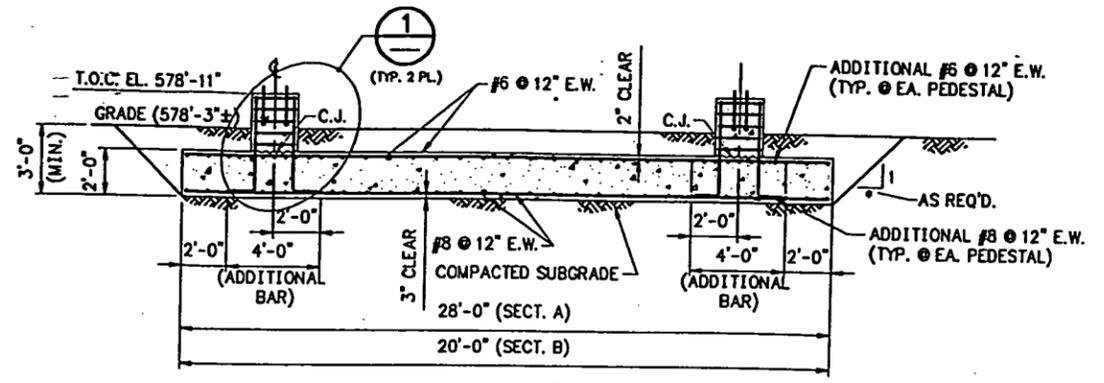
SILO 3 PROJECT
FDF - FEMP

SILO GANTRY
FOUNDATION PLAN

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000

RMRS Rocky Mountain Remediation Services, LLC
Protecting the Environment

SCALE: AS SHOWN	DATE: 11/18/99
DRAWN: B.POLADSKY	DATE: 11/18/99
DESIGNED: J. WEBBER	DATE: 2/14/00
CHECKED: M. JURGENMEYER	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 52-3110.dwg	
Q-LEVEL (Y/N):	
DRAWING NUMBER: 52-3110	REV C



REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3113	PIPE RACK FOUNDATION PLAN
52-3110	SILO GANTRY FOUNDATION PLAN

NOTES

1. COMPACT SUBGRADE TO 95% MODIFIED PROCTOR, TYP. AT ALL FOUNDATIONS THIS SHEET.
2. PIER HEIGHT TO BE DETERMINED AFTER PRE-LOADING PER NOTE ON DWG. 52-3110.
3. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

LEGEND

C.J. - CONSTRUCTION JOINT: ROUGHENED SURFACE OF 1/4" MIN. AMPLITUDE

2839

000056

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	JW		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	JW	MJ	100% SITE PREPARATION PACKAGE
A	11/30/99			50% SITE PREPARATION PACKAGE

SILO 3 PROJECT
FDF - FEMP
SILO GANTRY
FOUNDATION SECTIONS & DETAILS

MORRISON KNUDSEN CORPORATION
10822 W. Teller Drive, Littleton CO 80127 Tel. (303) 948-4000



SCALE: 3/16" = 1'-0"	DATE: 11/18/99
DRAWN: B. POLADSKY	DATE: 11/18/99
DESIGNED: J. WEBBER	DATE: 2/14/00
CHECKED: M. JURGENMEYER	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 52-3111.dwg	
Q-LEVEL (Y/N):	
DRAWING NUMBER: 52-3111	REV C

0123-29

STATE OF OHIO NORTH (NAD 83)

FEMP NORTH L=1.5672°

NOTE:

THE SUB-CONTRACTOR SHALL CONSTRUCT AND PRE-LOAD THE BINDER SILO FOUNDATION, INCLUDING PEDESTAL, PRIOR TO INSTALLATION OF THE BINDER SILO. THE FOUNDATION WILL BE PRE-LOADED WITH A 1,100 PSF TO 1,400 PSF LOAD AFTER A 28 DAY CONCRETE CURE. A SURVEY BENCHMARK SHALL BE FIXED TO THE FOUNDATION BY THE SUB-CONTRACTOR FOR USE IN MONITORING SETTLEMENT ON A WEEKLY BASIS BY THE CONTRACTOR. TOTAL EXPECTED TIME FOR PRE-LOADING SETTLEMENT TO ACHIEVE 90 PERCENT OF SOIL CONSOLIDATION IS ESTIMATED AS A MIN. OF 3 MONTHS.

HOLD

FOR AREA PLAN SEE DRAWING 52-3216

NOTE:
ALL EQUIPMENT FOUNDATIONS ARE ON HOLD PENDING VENDOR INFORMATION

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3211	TREATMENT BLDG. CONCRETE SECTIONS & DETAILS
52-3212	TREATMENT BLDG. TYPICAL SECTIONS AND DETAILS
52-3013	ISA - PAVEMENT PLAN & SECTIONS

NOTES

1. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

2839

LEGEND

--- INDICATES CHANGE IN FLOOR GRADE FROM LEVEL TO SLOPING

000058

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	MJ		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	MJ	JW	100% SITE PREPARATION PACKAGE
A	01/30/99			50% SITE PREPARATION PACKAGE

**SILO 3 PROJECT
FDF - FEMP**

**TREATMENT BUILDING
FOUNDATION PLAN**

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000

RMRS
Randy Morrison
Remediation Services, LLC
-protecting the environment-

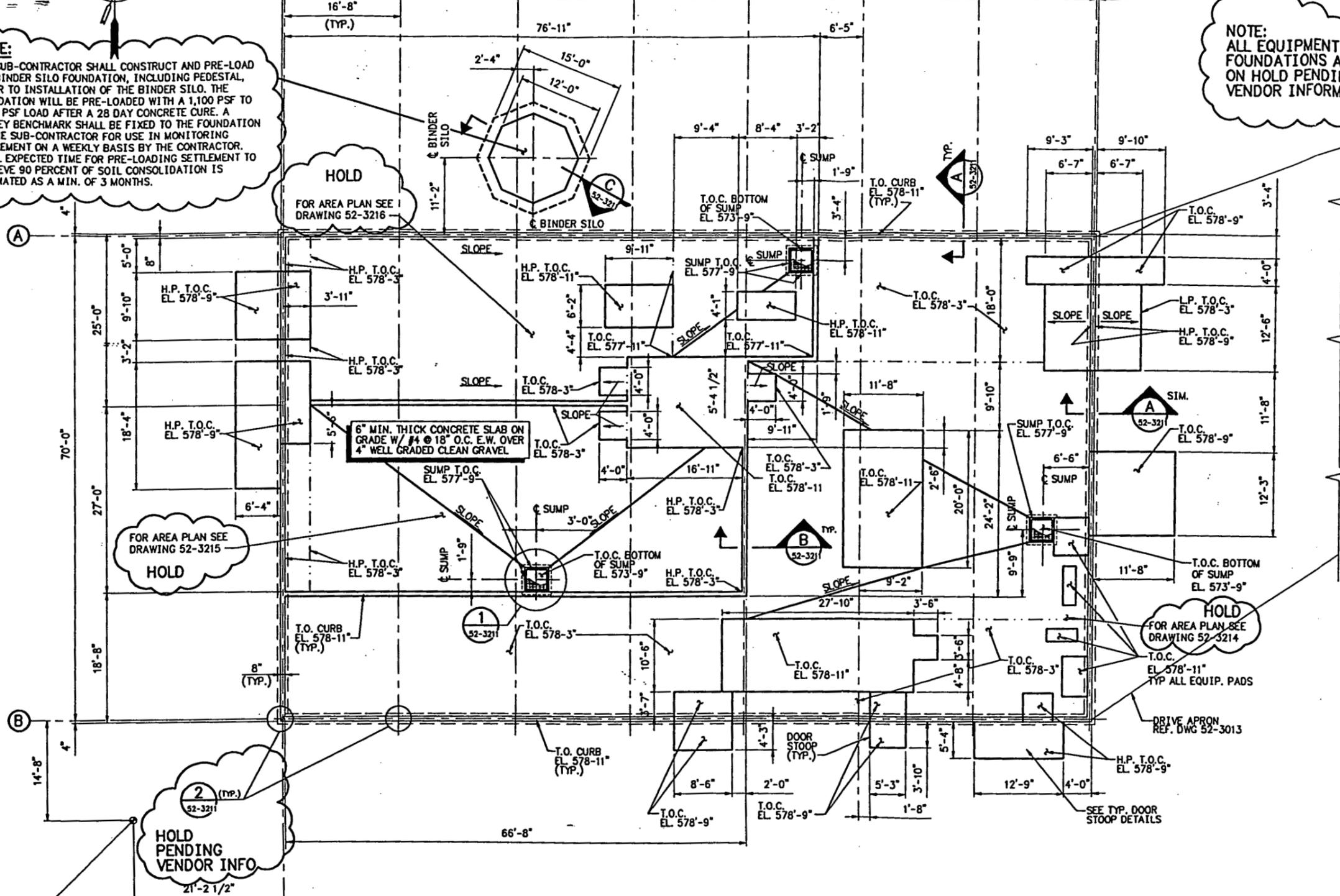
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DESIGNED: J. WEBBER	DATE: 02/14/00
CHECKED: M. JURGENMEYER	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 52-3210.DWG	
Q-LEVEL (Y/N):	
DRAWING NUMBER:	

52-3210

REV C

PLOTTED BY:

1 2 3 4 5 6 7 8
16'-8" (TYP.) 76'-11" 116'-8" 6'-5" 4"



FOUNDATION PLAN

1/8"=1'-0"

NEW SURVEY MONUMENT FOR LOCATION OF FOUNDATIONS:
480820.90N
1346920.93E

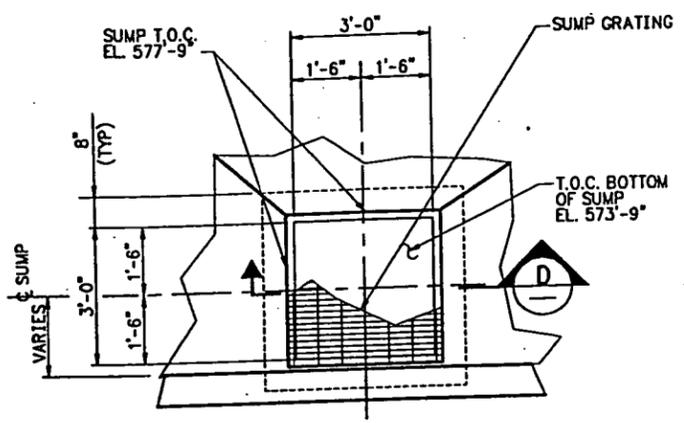
REFERENCE DRAWINGS	
DRAWING NO.	TITLE
52-3210	TREATMENT BLDG. FOUNDATION PLAN
52-3013	ISA PAVEMENT PLAN & SECTIONS

NOTES

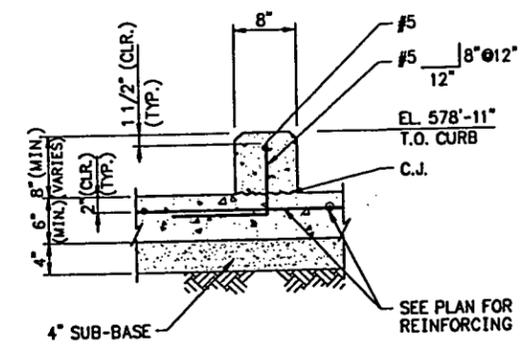
1. WATERSTOP: PRE-FORMED RUBBER HYDROPHILIC WATERSTOP WITH ADHESIVE AND ACCESSORIES. SUBCONTRACTOR SHALL SUBMIT SPECIFICATIONS TO CONTRACTOR FOR APPROVAL PRIOR TO CONCRETE INSTALLATION.
2. PIER HEIGHT TO BE DETERMINED AFTER PRE-LOADING PER NOTE ON DWG. 52-3210.
3. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

LEGEND 2839

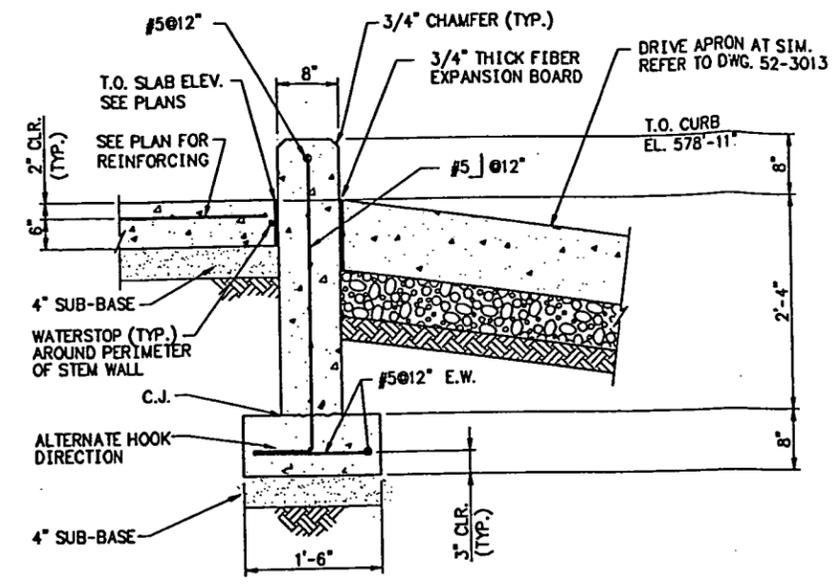
C.J. - CONSTRUCTION JOINT: ROUGHENED SURFACE OF 1/4" MIN. AMPLITUDE



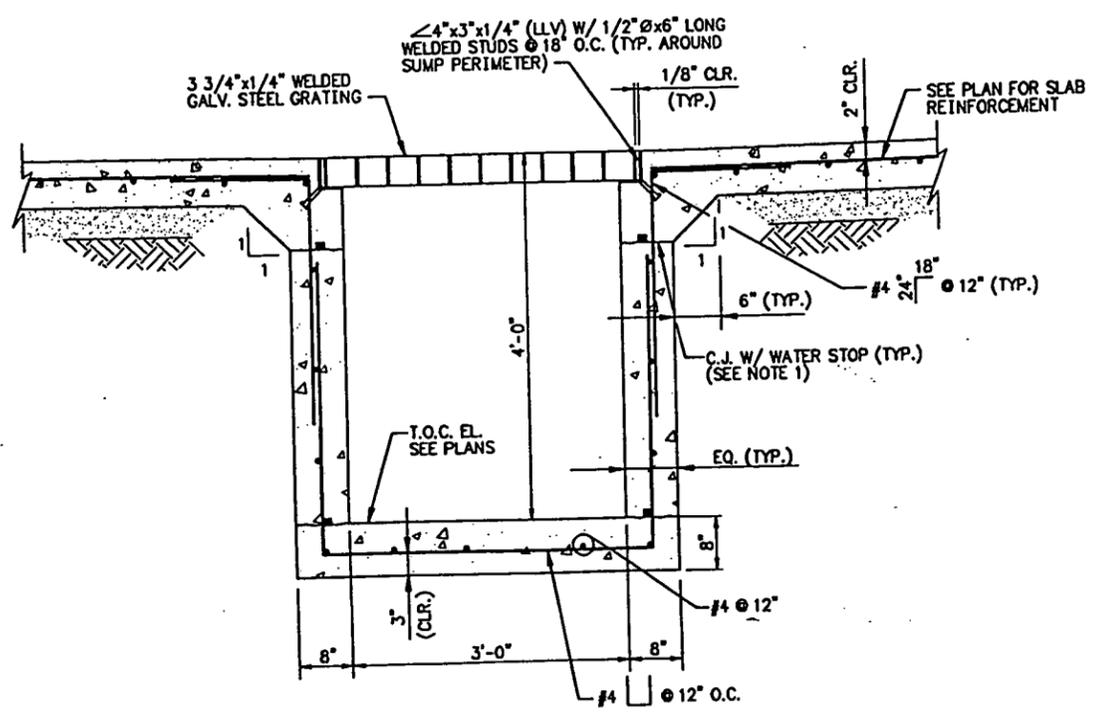
DETAIL 1
SCALE: 1/2"=1'-0" 52-3210



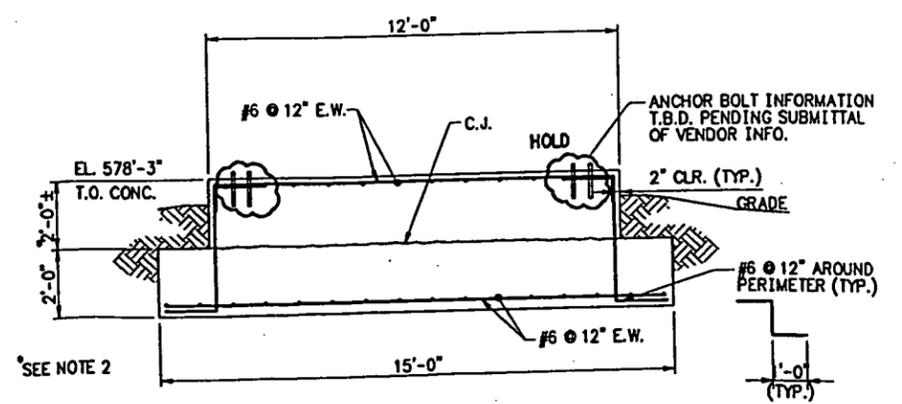
SECTION B
SCALE: 1"=1'-0" 52-3210



SECTION A
SCALE: 1"=1'-0" 52-3210



SECTION D
SCALE: 1"=1'-0" 52-3210



SECTION C
SCALE: 3/8"=1'-0" 52-3210

000059

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	JW		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	JW	MJ	100% SITE PREPARATION PACKAGE
A	11/30/99			50% SITE PREPARATION PACKAGE

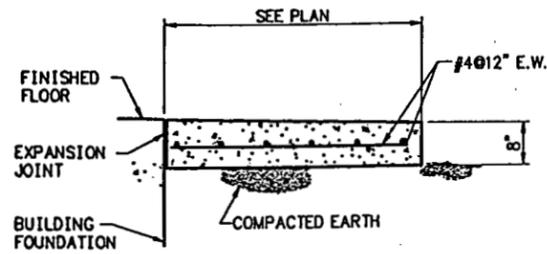
SILO 3 PROJECT
FDF - FEMP

TREATMENT BUILDING
CONCRETE SECTIONS & DETAILS

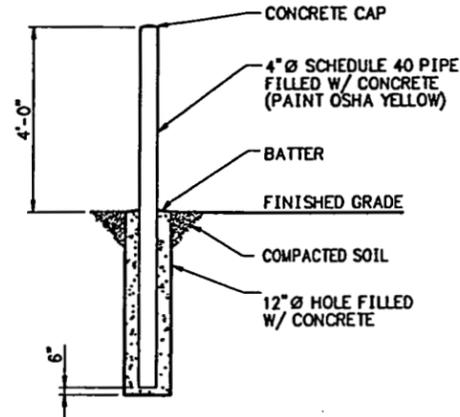
MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000



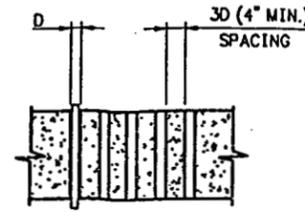
SCALE: AS SHOWN	DATE: 11/22/99
DRAWN: B.POLADSKY	DATE: 11/18/99
DESIGNED: J. WEBBER	DATE: 2/14/00
CHECKED: M. JURGENMEYER	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 52-3211.DWG	
0-LEVEL (Y/N):	
DRAWING NUMBER: 52-3211	REV C



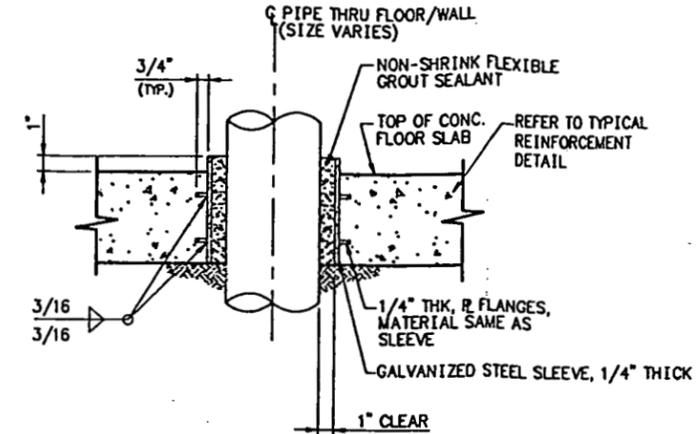
DOOR STOOP DETAILS



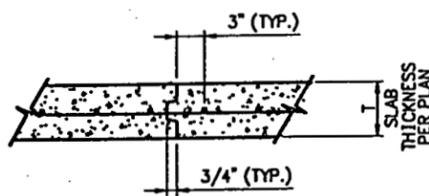
PIPE BOLLARD



PIPING THRU SLAB OR WALL

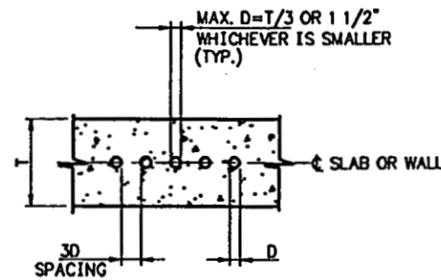


FLOOR/WALL SLEEVE DETAIL

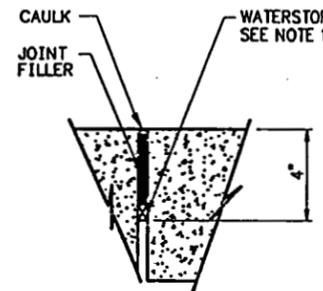


NOTE:
REINFORCING TO BE CONTINUOUS THRU JOINT.
LAP SPICES MAY BE USED AT JOINT.

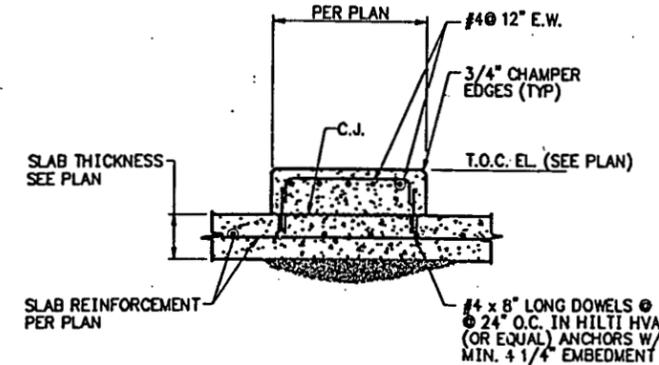
NO WHEELED TRAFFIC



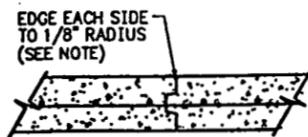
CONDUIT IN SLAB OR WALL



TYP. EXPANSION JOINT



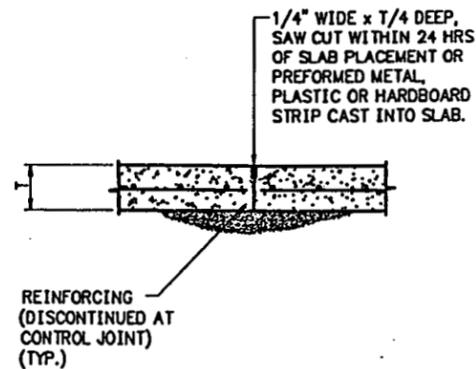
EQUIPMENT PAD DETAIL
(FOR PADS PLACED AFTER CONCRETE IS SET)



NOTE:
ALTERNATE TO RADIUS EDGE; FINISH JOINT TIGHT TO FORM OR ADJACENT SLAB, SAWCUT LATER TO DEPTH T/4, FILL JOINT TO WITHIN 2" OF TOP SURFACE OF SLAB WITH SAND AND FINISH FILLING JOINT WITH SEMI-RIGID EPOXY OF 100% SOLIDS AND MIN. SHORE HARDNESS D50, FLUSH WITH TO TOP OF SLAB.

WHEELED TRAFFIC

KEYED CONSTRUCTION JOINT SLAB ON GRADE



(SLAB-ON-GRADE)
CONTROL JOINT

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3210	TREATMENT BLDG. FOUNDATION PLAN

NOTES

1. WATERSTOP: PRE-FORMED RUBBER HYDROPHILIC WATERSTOP SUCH AS ADEKA ULTRA SEAL KM14MM WITH P-201 ADHESIVE AND ACCESSORIES, OR CONTRACTOR APPROVED EQUIVALENT.
2. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

2839

LEGEND

C.J. - CONSTRUCTION JOINT: ROUGHENED SURFACE OF 1/4" MIN. AMPLITUDE

000050

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	MJ		INCORPORATE FDF REVIEW COMMENTS
B	02/18/00	MJ	JW	100% SITE PREPARATION PACKAGE
A	01/30/99			50% SITE PREPARATION PACKAGE

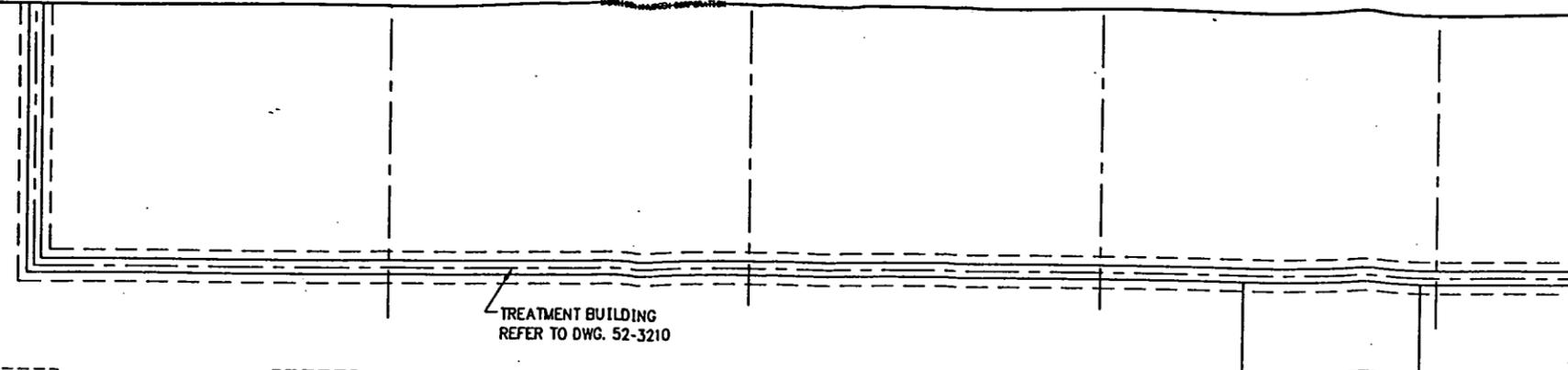
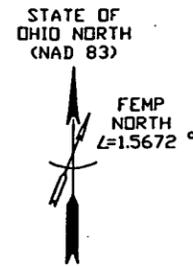
SILO 3 PROJECT
FDF - FEMP

TREATMENT BUILDING
TYPICAL SECTIONS & DETAILS

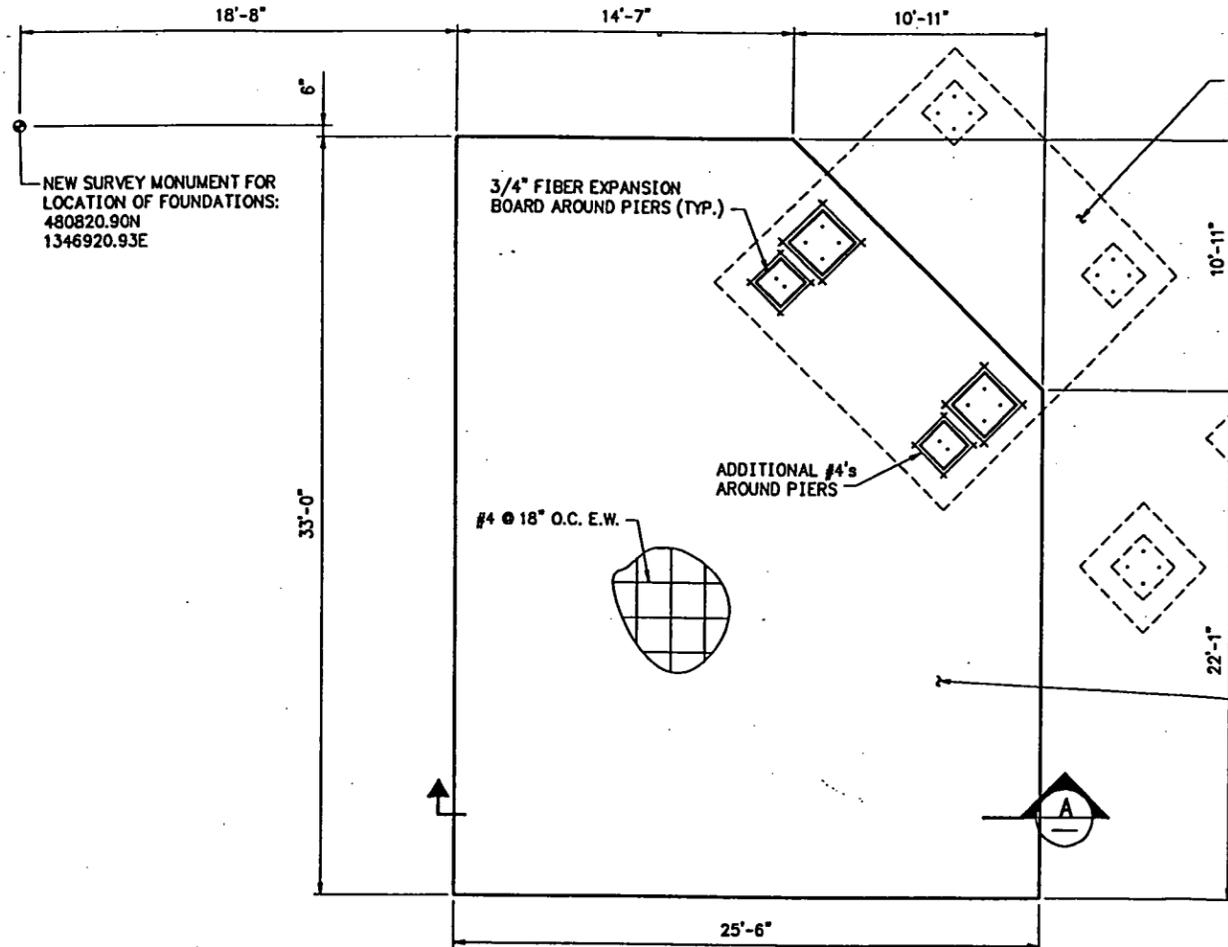
MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 948-4000



SCALE	AS SHOWN
DRAWN	B.POLADSKY/STEWART
DATE	11/22/99
DESIGNED	J. WEBBER
DATE	11/18/99
CHECKED	M. JURGENMEYER
DATE	2/14/00
VERIFIED	
DATE	
APPROVED	
DATE	
CADD FILE NAME	52-3212.dwg
Q-LEVEL (Y/N)	
DRAWING NUMBER	52-3212
REV	C



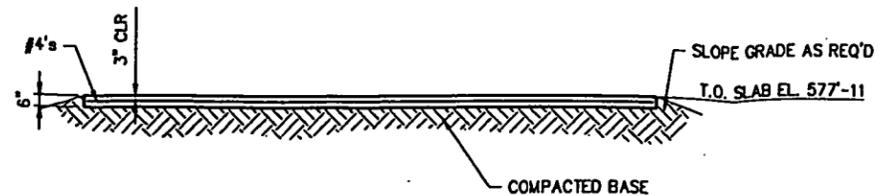
TREATMENT BUILDING
REFER TO DWG. 52-3210



PIPE RACK FOUNDATION
REFER TO DWG. 52-3113

ADDITIONAL #4's
AROUND PIERS

SUBCONTRACTOR TO DEVELOP A SLAB PLACEMENT/JOINING PLAN
AND SUBMIT TO CONTRACTOR FOR APPROVAL. JOINT CONSTRUCTION
SHALL CONFORM TO TYPES A, B & C ON DWG. 52-3014



SECTION A
1/4"=1'-0"

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3113	PIPE RACK FOUNDATION PLAN
52-3014	ISA PAVEMENT DETAILS
52-3210	TREATMENT BLDG. FDN. PLAN

NOTES

1. ALL FOUNDATIONS TO BE LOCATED BY SURVEY.
2. ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI.

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000061

REV	DATE	BY	CHKD	DESCRIPTION
B	02/25/00	MJ		INCORPORATE FDF REVIEW COMMENTS
A	02/18/00	MJ	JW	100% SITE PREPARATION PACKAGE

SILO 3 PROJECT
FDF - FEMP

HVAC FOUNDATION
PLAN & SECTIONS

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 946-4000



SCALE: 1/4"=1'-0"	DATE: 02/14/00
DRAWN: B.POLADSKY	DATE: 02/14/00
DESIGNED: M.JURGEMEYER	DATE: 2/14/00
CHECKED: J.WEBBER	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 52-3400.dwg	
0-LEVEL (Y/N):	
DRAWING NUMBER:	

52-3400

REV B

REFERENCE DRAWINGS	
DRAWING NO.	TITLE
54-3061	ELECTRICAL MISCELLANEOUS DETAILS
54-3062	ELEC POLE DETAILS LP-1, LP-2, LP-3, LP-4
54-3063	ELEC POLE DETAILS NP-1, 2, 3, 4, 5, 6
54-3064	ELEC POLE DETAILS WP #047, #069, #070
54-3066	ELEC LUNCH AREA PLAN & ONE LINE DIAG

- NOTES**
- ALL NEW WOOD POLES (NP-X) SHALL BE 45' CLASS 2.
 - WP #050 AND WP #051 ARE TO BE REMOVED. CABLES ARE TO BE RELOCATED TO NP-4, NP-5, NP-6 AND WP #006. RADON MONITOR TO BE RELOCATED TO LP-3.
 - EXISTING 32" ELECTRICAL DUCT BANK APPROXIMATELY 3' BELOW GRADE. DUCT BANK HAS BEEN ABANDONED AND IS TO BE CUT AND REMOVED AS SHOWN. SEE NOTES 4 & 5 BELOW.
 - FIELD TO LOCATE SILO FOUNDATION. REMOVE EXISTING ELECTRICAL DUCT BANK (REF NOTE 3) STARTING 5'-0" FROM SILO FOUNDATION TO 5'-0" PAST NEW TREATMENT FACILITY FOUNDATION (REF NOTE 5).
 - REMOVE EXISTING ELECTRICAL DUCT BANK (REF NOTE 3) TO A POINT 5'-0" PAST THE NEW TREATMENT FACILITY FOUNDATION STARTING @ 5'-0" FROM SILO 3 FOUNDATION (REF NOTE 3).
 - END OF EXISTING ELECTRICAL DUCT BANK. INSTALL 90° ELBOWS TO NEW 4" x 4" CONCRETE PULL BOX AND EXTEND (2) 4" AND (3) 3" CONDUITS INTO NEW TREATMENT FACILITY. SEE NOTE 11.
 - POWER FOR SERVICE AREA, TRAILERS, ETC. PROVIDED BY A 150KVA, 480V-208/120V TRANSFORMER AND ASSOCIATED PANELBOARD AT THIS LOCATION.
 - REMOVE OVERHEAD 120VAC CABLE FROM POLE WP #006 TO LEVEL DEVICE ON SILO 3.
 - NEW GUY NOT TO BE INSTALLED IN BASIN.
 - MINIMUM HEIGHT OF NEW OR REINSTALLED CABLES IS 16'-6".
 - BEFORE TRENCHING LOCATE ALL EXISTING BURIED UTILITIES INCLUDING A DECANT LINE IN THIS AREA.

LEGEND

—	NEW LIGHTING AND POWER CIRCUITS
- - - -	NEW CABLE FOR EXISTING CIRCUITS FROM WP #051, LP-4 & WP #053 (LP-5)
- - - -	EXISTING CABLE AND CIRCUITS REINSTALLED FROM WP #050 & WP #051.
- - - -	NEW UNDERGROUND DUCT BANK
- - - -	EXISTING UNDERGROUND DUCT BANK

REV	DATE	BY	CHKD	DESCRIPTION
C	02/25/00	EP	DL	INCORPORATED FDF REVIEW COMMENTS
B	02/18/00	EP	DL	100% SITE PREP PACKAGE
A	01/30/99	EP	DL	50% SITE PREP PACKAGE

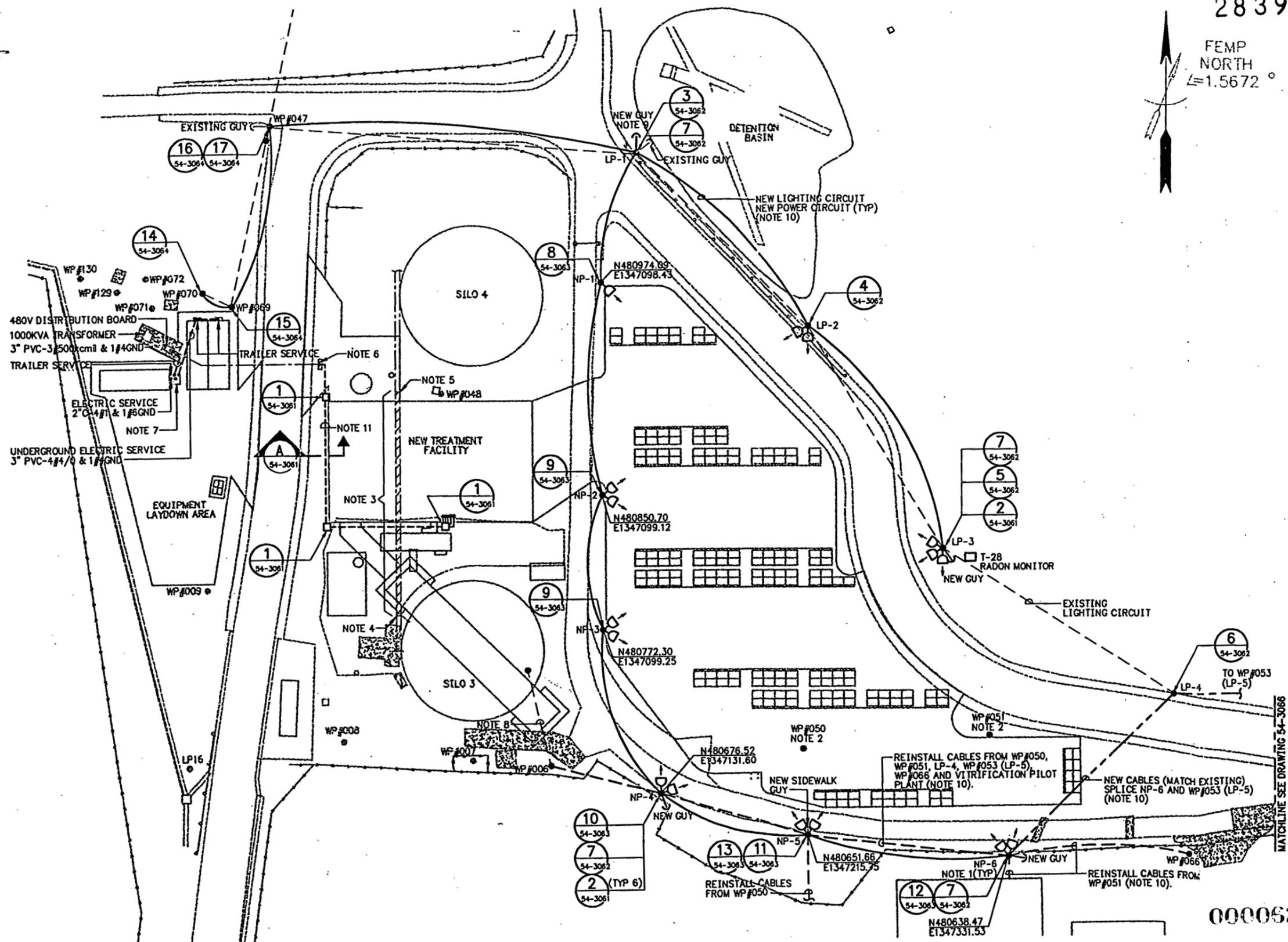
**SILO 3 PROJECT
FDF - FEMP
ELECTRICAL - SITE PLAN
LIGHTING**

MORRISON KNUDSEN CORPORATION
10822 W. Toller Drive, Littleton CO 80127 Tel. (303) 946-6000

RMRS Responsible Management & Reporting Services, LLC
...protecting the environment

SCALE: 1" = 30'	DATE: 11/11/99
DRAWN: G. URBAN	DATE: 11/10/99
DESIGNED: F. PICKER	DATE: 11/29/99
CHECKED: D. LATNE	DATE:
VERIFIED:	DATE:
APPROVED:	DATE:
CADD FILE NAME: 543060.dwg	
Q-LEVEL (Y/M):	
DRAWING NUMBER:	REV

54-3060 C



000052

MATCHLINE SEE DRAWING 54-3066



- 1
- 2
- 3
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- 9
- 10
- 11
- 12
- 13
- 14
- 15

ATTACHMENT C

Site Preparation Package Technical Specs

RMRS Silo 3 Specification Cover Sheet

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No. of Pages 5	Date 2/25/00	Description Site Work General Provisions
Section No. 02001	Q-Level SPC	RMRS Specification No. (if applicable) N/A
Revision B	Originating Co. MK	Originator D. Kalenits
Equipment No(s)	Description	
N/A		

Check Required Approvals

✓	Title	Signature	Date
<input type="checkbox"/>	Project Engineer		
<input type="checkbox"/>	Lead Project Engineer		
<input type="checkbox"/>	Verifier		
<input type="checkbox"/>	Quality Assurance Lead		
<input type="checkbox"/>	Construction Manager		
<input type="checkbox"/>	Safety Basis Lead		
<input type="checkbox"/>	Health and Safety Manager		
<input type="checkbox"/>	Project Manager		

000065

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SECTION 02001

SITE WORK GENERAL PROVISIONS

TABLE OF CONTENTS

PART 1 GENERAL	1
1.1 SECTION INCLUDES	1
1.2 SITE PROCEDURES	1
1.3 REFERENCES	1
1.4 ACCURACY OF DATA	2
1.5 EXISTING UTILITY PROPERTIES AND SERVICE	3
1.6 EXISTING IMPROVEMENTS	3
1.7 INSPECTION AND TESTS	3
1.8 UNFAVORABLE WEATHER CONDITIONS	3
PART 2 PRODUCTS	3
NOT USED	3
PART 3 EXECUTION	4
NOT USED	4

000066



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SECTION 02001

SITE WORK GENERAL PROVISIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. The general provisions for site work specified herein are a part of all other Sections under division 2 and the Contract for this Work and apply to each of these Sections.

1.2 SITE PROCEDURES

RMRS L.L.C. ("the Contractor") will obtain the site permits required to perform work at the Fernald Environmental Management Project (FEMP). Terms, conditions, and requirements for performing work at the FEMP site are detailed in the Subcontractor's Statement of Work.

All reports, certifications, test and inspection results, and other documentation required by specification or contract shall be submitted to RMRS Management.

The Subcontractor shall notify RMRS site management of changes to conditions or requirements that hinder or prevent the completion of the Subcontractor's scope of work. All communication with FEMP site management shall be made through RMRS.

1.3 REFERENCES

- A. All work and materials shall be in accordance with applicable State of Ohio and United States Environmental Protection Agency (EPA) regulations, Department of Energy (DOE), Fernald Environmental Management Project (FEMP) Policies, as well as all other state and local laws and utility laws, rules, and regulations. Nothing in the Contract Documents shall be construed to permit work not conforming to the above.
- B. If there is any conflict between the above referenced codes and standards and Drawings or Specifications, the codes and standards shall govern, except when the Specifications or Drawings call for material or construction of better quality than is

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required by the above codes and standards; then the provisions of Specifications or Drawings shall take precedence over the requirements of said codes and standards. The Subcontractor shall furnish without extra charge any additional material and labor when required to comply with these codes and standards, even though the work is not mentioned in the Specifications or shown on the Drawings.

C. Additional Section References

RM-0021, Safety Performance Requirements Manual

RM-0445-0021, Fernald Silo 3 Project-Specific Health and Safety Plan

RM-0445-0060, Fernald Silo 3 Project Pre-Operational Environmental Control Plan

RM-0445-0019, Fernald Silo 3 Project Quality Assurance Project Plan

1.4 ACCURACY OF DATA

- A. Information obtained by the Contractor regarding site conditions, subsurface information, groundwater elevations, existing construction of site facilities, as applicable, and similar data will be available for inspection upon request.
- B. Some obstructions may not be shown. Bidders are advised to carefully inspect the existing site before preparing their proposals. Removal and replacement of minor obstructions shall be anticipated and accomplished, even though not shown or specifically mentioned.
- C. Site data given herein and on the Drawings are subject to the provisions of Contract General Conditions, and their absolute accuracy cannot be guaranteed. Exact locations, distances, elevations, and similar data shall be finally governed by field conditions and the directions of the Contractor.
- D. The Subcontractor further acknowledges that they have satisfied themselves as to the character, quality, and quantity of surface and subsurface materials to be encountered from their inspection of the site and from reviewing available records of exploratory work furnished by the Contractor or included in these Documents. Failure by the Subcontractor to become knowledgeable with the physical conditions of the site and all the available information will not relieve the Subcontractor from responsibility for properly estimating the difficulty or cost of successfully performing the work.

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1.5 EXISTING UTILITY PROPERTIES AND SERVICE

- A. The Subcontractor shall be provided with the locations and depths (elevation) of all existing railway, telephone, power, gas, water and other utility systems. The Subcontractor shall protect these utilities and services as necessary or as shown on drawings, permits, or other documentation.

1.6 EXISTING IMPROVEMENTS

- A. Except as specified in other Sections, the Subcontractor shall relocate, reconstruct, replace or repair, or cause to be relocated, reconstructed, replaced or repaired, at its own expense, all existing utilities, fences, services, and other structures or improvements of whatever nature that are in the line of construction or which may be damaged, removed, disrupted, or otherwise disturbed by the Subcontractor, whether indicated on the Drawings or not, and the Subcontractor shall connect or cause to be connected such utilities to existing systems and leave all in the workable and operating condition, at the Subcontractor's own expense.
- B. The Subcontractor shall, at its own expense, construct or cause to be constructed temporary utilities and fences to maintain continuous service to surrounding areas and facilities, as applicable.

1.7 INSPECTION AND TESTS

- A. The Subcontractor shall perform such inspections and tests as defined in subsequent Specifications.
- B. Tests performed by the Contractor will be paid for by the Contractor.

1.8 UNFAVORABLE WEATHER CONDITIONS

- A. Earthwork and related activities shall not be performed during unfavorable weather conditions. When work is interrupted by rain, snow, high winds, or other unfavorable weather conditions, the Subcontractor shall consult with the Contractor prior to resuming work.

PART 2 PRODUCTS

NOT USED



Rocky Mountain
Remediation Services, L.L.C.
... protecting the environment

Site Work General Provisions
Spec. Section: 02001
Revision: B

PART 3 EXECUTION

2839

NOT USED

-END OF SECTION-

RMRS Silo 3 Specification Cover Sheet

2839

No. of Pages 12	Date 2/25/00	Description Earthwork/Grading
Section No. 02210	Q-Level SPC	RMRS Specification No. (if applicable) N/A
Revision B	Originating Co. MK	Originator D. Kalenits
Equipment No(s)	Description	
N/A		

Check Required Approvals

✓	Title	Signature	Date
<input type="checkbox"/>	Project Engineer		
<input type="checkbox"/>	Lead Project Engineer		
<input type="checkbox"/>	Verifier		
<input type="checkbox"/>	Quality Assurance Lead		
<input type="checkbox"/>	Construction Manager		
<input type="checkbox"/>	Safety Basis Lead		
<input type="checkbox"/>	Health and Safety Manager		
<input type="checkbox"/>	Project Manager		



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SECTION 02210

EARTHWORK/GRADING

TABLE OF CONTENTS

PART 1 GENERAL..... 1

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SECTION 02210

EARTHWORK/GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section covers the general requirements of earthwork construction relative to the construction of the site preparation general site grading, underground piping construction, roadway construction and paving construction.
- B. The work includes furnishing of all equipment, labor, materials and supplies to complete the work to the lines and grades shown on the Project Drawings.

1.2 RELATED SECTIONS

- A. Section 02001 – Site Work General Provisions
- B. Section 02005 – Surveying Services
- C. Section 02935 – Seeding
- D. Section 02485 – Soil Erosion And Sedimentation Control

1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. ASTM - American Society for Testing and Materials
 - ASTM D422 - (1963; R 1990) Particle-Size Analysis of Soils
 - ASTM D698 - (1991) Laboratory Compaction Characteristics of Soil Using Standard Effort
 - ASTM D1556 - (1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - ASTM D2167 - (1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method

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ASTM D2216 - (1992) Laboratory Determination of Water (Moisture) Content of Soil, and Rock

ASTM D2487 - (1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D2922 - (1991) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

ASTM D3017 - (1988; R 1993) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

ASTM D4318 - (1993) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.4 DEFINITIONS

- A. **Suitable Materials:** Suitable materials classify as GW, GP, GC, GM, SW, SP, SC, SM, CL, CH, ML and MH according to ASTM D 2487. Material which classifies as CH shall not be used as fill beneath structures or paved roads consisting of concrete or asphaltic concrete. Bedrock materials which have been altered to soil-like characteristics which classify according to ASTM D 2487 as the above materials shall be considered suitable. Non-cohesive materials identified as GW, GP, GM, SW, or SP are not suitable for use as fill in berms.
- B. **Unsuitable Materials:** Unsuitable materials include all materials that are not defined in Article 1.4A, Suitable Materials. In addition, unsuitable materials are materials that classify as Pt, OL, or OH according to ASTM D 2487. Unsuitable materials also include all material that contains debris, refuse, roots, organic matter, frozen material, stone having a maximum dimension larger than 3 inches in any dimension, or other materials that are determined by the Contractor as unsuitable for providing a stable subgrade or stable foundation. Frozen material/frozen subgrade shall be defined as soil with a temperature less than 32°F when measured with a thermometer, and containing visible ice crystals or clods of frozen soil larger than 4 inches in diameter. Frozen material/frozen subgrade may be reworked to become suitable material by melting ice crystals or breaking down frozen clods. Otherwise, suitable material which has excess moisture content shall not be classified as unsuitable material unless it cannot be dried by manipulation, aeration, or blending with other materials as determined by the Contractor.
- C. **Random Fill:** Random fill for containment berms shall classify as GC, SC, SM, CL, CH, ML and MH according to ASTM D 2487. Bedrock materials which have been altered to soil-like characteristics which classify according to ASTM D 2487 as the above materials shall be considered suitable.

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- D. **Select Granular Material:** Select granular material shall consist of well-graded sand; gravel; crushed gravel; crushed stone or crushed slag composed of hard, tough, and durable particles; and shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing a 1-inch sieve. In addition, select granular material shall classify as GW, GW-GM, GW-GC, GP, GP-GM, GP-GC, SW, SW-SM, SW-SC, SP, SP-SM, or SP-SC according to ASTM D 2487. The maximum allowable aggregate size shall be $\frac{3}{4}$ inches or the maximum size recommended by the pipe manufacturer, whichever is smaller.
- E. **Initial Backfill Material:** Initial backfill shall consist of select granular material or suitable materials free from cobbles 3 inches or larger in any dimension, or free from cobbles, gravel, or stone of such size as recommended by the pipe manufacturer, whichever is smaller.
- F. **Cohesionless and Cohesive Materials:** Cohesionless materials include materials classified as GW, GP, SW, and SP according to ASTM D 2487. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.
- G. **Pavements:** Pavements shall include all roads, walk areas, graveled surfaces, or any other type of surfaced area for driving or walking.
- H. **Degree of Compaction:** Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 698.

1.5 SUBMITTALS

Test reports and analyses certifying that suitable materials proposed for use at the project site conform to the specified requirements shall be conducted in accordance with Article 1.4, Definitions and Article 3.5, Field Testing Control.

1.6 GENERAL PROCEDURES

- A. Subcontractor shall survey and lay out work in accordance with Section 02005.

1.7 WEATHER CONDITIONS

- A. At the Contractor's discretion, cut and fill materials may not be placed, spread, or compacted during adverse weather conditions. Subcontractor shall schedule work activities to minimize potential weather interruptions so that work areas will have minimum exposure to adverse weather conditions. In the event interruptions occur, no additional compensation will be provided for delay or material drying time. When the work is interrupted by adverse weather, fill operations shall not be resumed without prior Contractor approval.



1.8 PROJECT/SITE CONDITIONS

- A. Perform work in accordance with Section 02001, Site Work General Provisions, the Subcontractor's Statement of Work, and drawings, procedures, and other documents provided by the Contractor.

PART 2 PRODUCTS

2.1 BORROW MATERIAL

- A. Soil required for fills in excess of suitable material produced by the excavations within the grading limits shall be excavated from an area designated by the Contractor.

PART 3 EXECUTION

3.1 GENERAL EXCAVATION REQUIREMENTS

- A. Excavation of every description, regardless of material encountered, within the grading limits of the Project shall be performed to the lines and grades indicated on Drawings including removal of existing culverts. Suitable excavated material shall be transported to and placed in fill areas within the limits of the Work. Unsuitable material encountered within the limits of the Work shall be excavated below the grade indicated and replaced with suitable material as discussed in subsequent paragraphs. Unsuitable material shall be placed in a location approved by the Contractor.
- B. Subgrade: Following excavation, the upper 6 inches of the subgrade shall be sampled at a minimum frequency of once per ½ acre to identify subgrade materials as either suitable or unsuitable. Where unsuitable materials are encountered, four additional samples shall be collected surrounding the unsuitable material to define the areal extent of unsuitable subgrade material. Visual examination by the Contractor of the subgrade may also be used to identify unsuitable soil areas. If suitable material is present, it shall be tilled to a depth of 6 inches and compacted. If unsuitable material is encountered, it shall be excavated, replaced with suitable material, and compacted as directed by the Contractor.
- C. Trench Excavation: During excavation, material suitable for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to one-half the depth of the excavation, but in no instance closer than 2 feet. Excavated material not required or not suitable for backfill shall be placed as directed by the Contractor. Grading shall be done as necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain stability of the bottom and sides of the excavation. Unauthorized over-excavation shall



be backfilled in accordance with Article 3.3, General Backfill Requirements, and Article 3.4, Compaction, at the expense of the Subcontractor. The trench shall be excavated to the dimensions as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped and of such width as recommended in the manufacturer's installation manual. Trench walls more than 4 feet high shall be shored, cut back to a stable slope, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave in. Trench walls which are cut back shall be excavated to at least the angle of repose of the soil. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The trench width below the top of pipe shall not exceed 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter (I.D.) and shall not exceed 36 inches plus pipe outside diameter for sizes larger than 24 inches I.D.

1. **Bottom Preparation:** Trench bottoms shall be over excavated to allow installation of granular bedding, as detailed on the Drawings. Trench bottoms shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Stones of 3 inches or greater in any dimension or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.
2. **Removal of Unsuitable or Unstable Material:** Where unsuitable or otherwise suitable material is encountered that is too wet to properly support appurtenant structures, as determined by the Contractor, such material shall be removed to the depth directed and replaced to the proper grade with suitable material as described in Article 1.4A., Suitable Materials. Select granular material shall be provided to replace unsuitable material. When removal of unsuitable or unstable material is required due to the fault or neglect of the Subcontractor in his performance of the work, the resulting material shall be excavated and replaced at the expense of the Subcontractor.
3. **Excavation for Appurtenances:** Excavation for manholes, catch-basins, or similar structures shall be sufficient to leave at least 24 inches clear between the outer structure surfaces and the face of the excavation or support members. Rock shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated, as shown or as directed. Loose disintegrated rock and thin strata shall be removed. Removal of unsuitable material shall be as specified above. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.
4. **Jacking, Boring, and Tunneling:** Unless otherwise indicated, excavation shall be by open cut, except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Contractor, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections.



5. Interim Piles: Separate differing materials with dividers, or stockpile apart to prevent mixing. Direct surface water away from stockpile site to prevent erosion or deterioration of materials. Provide storm water runoff controls at pile to prevent sediment from leaving stockpile area.
6. Forty-five (45) calendar days shall be the maximum time that a stockpile can be left in an exposed condition without stabilization. Stockpiles that are expected to be inactive for a period of 45 calendar days or more, as determined by the Contractor, shall be stabilized within seven (7) calendar days after last activity. Stockpiles shall be stabilized by means of a crusting agent, as specified in this section. Slopes on pile shall not exceed 2:1 in steepness and shall be less than 15 feet in height. Pile shall be shaped with a drainage pitch of at least 2% on all areas. The perimeter of the pile shall have proper sediment controls (i.e., silt fence). The subcontractors are responsible for maintaining the controls on the piles until final acceptance or disposition.
7. Stockpiles: Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. Adequate drainage shall be provided for the stockpiles and surrounding areas by means of ditches, dikes, or other Contractor-approved methods. The ground surface at stockpile locations shall be cleared and grubbed. Excavated suitable and unsuitable materials shall be separately stockpiled. Stockpiles of suitable materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Subcontractor fails to protect the stockpiles, and any material becomes unsuitable, such material shall be removed and replaced with suitable material from approved sources at the expense of the Subcontractor.
8. Dewatering: Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built or the pipe to be installed therein is completed. Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practical without damaging adjacent property. The Subcontractor shall perform work in accordance with Contract Documents to dispose of all water generated during dewatering activities. The Subcontractor shall be responsible for all damage incurred to the drainage facilities as a result of dewatering operations. All pipe or conduits shall be left clean and free of sediment.
9. Excavations shall be sloped to sumps and/or graded to drain to ditches or channels discharging to a sediment basin, sediment trap, or other locations as directed by the Contractor. Excavations are to be kept free of standing water.
10. As excavation progresses, excavated depressions in the excavated area to be used as temporary sumps. Water accumulated in sumps shall be pumped, via portable



sump pump system and flexible hose, to the nearest ditch or channel discharging to the sediment basin or sediment trap upon approval of the Contractor.

- D. Excavation Beneath Paved Areas: Excavation under areas to be paved shall extend to the bottom of the aggregate base. After the required excavation has been completed, the exposed surface shall be scarified, brought to optimum moisture content and compacted to 95 percent of maximum density.

3.2 USE OF EXCAVATED MATERIALS

- A. Suitable material removed from required excavation under this Section shall be used in the formation of sub-grades, slopes, backfill, and for such other purposes as directed. No excavated material shall be wasted without the authorization of the Contractor. Material authorized to be wasted shall be disposed of as directed and in a manner that will not obstruct the flow characteristics of any stream or impair the efficiency or appearance of any structure. No excavated material shall be deposited at any time in a manner that may endanger a partly finished structure by direct pressure by overloading banks contiguous to the operations, or that may in any other way be detrimental to the completed work.

3.3 GENERAL BACKFILL REQUIREMENTS

- A. All vegetation, such as roots, brush, heavy sods, heavy growth of grass, and all decayed vegetable matter, rubbish, and other unsuitable material within the area upon which fill is to be placed, shall be stripped or otherwise removed before the fill is started. In no case shall unsuitable material remain in or under the fill area. Stumps, logs, and roots more than 1½ inches in diameter shall be excavated and removed to a depth not less than 18 inches below the original ground surface. Sloped ground surfaces steeper than 1 vertical to 4 horizontal on which fill is to be placed shall be plowed, stepped, or broken up, as directed, in such manner that the fill material will bond with the existing surface. Prepared surfaces on which compacted fill is to be placed shall be wetted or dried as may be required to obtain the specified moisture content and density.
- B. Trench Backfill: Backfill material shall consist of suitable material, select granular material, or initial backfill material, as required. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand-operated machine compactors, and 8 inches loose thickness for compaction with heavy compaction equipment, unless otherwise specified. The moisture content of cohesive soil shall be between 1 percent below and 3 percent above optimum moisture when compacted. Cohesionless soils shall be compacted at a moisture content as required to facilitate compaction without bulking. Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 2 feet above the top of pipe prior to performing the required pressure tests. Joints shall be left uncovered during the pressure test. The trench shall not be backfilled completely until all specified tests are performed.



1. **Replacement of Unsuitable Material:** Unsuitable material removed from the bottom of the trench or excavation shall be replaced with random fill placed in layers not exceeding 6 inches loose thickness.
 2. **Bedding:** Bedding shall conform to the details shown on the Drawings and specified below. Material shall be deposited in 6-inch loose layers and compacted with approved methods to at least 95 percent maximum density. Care shall be taken to ensure thorough compaction of the fill under the pipe haunches. Bedding shall consist of select granular materials.
 3. **Initial Backfill:** Initial backfill shall be placed in 6-inch loose thickness layers and compacted to at least 95 percent of maximum density within moisture content ranges as specified in Article 3.4, Compaction. Initial backfill material shall be placed and compacted with approved tampers to a height of at least 1 foot above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.
 4. **Final Backfill:** The remainder of the trench shall be filled with suitable material placed in loose thickness layers a maximum of 8 inches and compacted according to Article 3.4D, Piping.
- C. **Prepared Subgrade:** Suitable materials shall be used in bringing fills and backfills to the lines and grades indicated and for replacing unsuitable materials. Suitable materials shall be placed in horizontal layers not exceeding 8 inches in loose thickness, or 6 inches when hand-operated compactors are used. After placing, each layer shall be plowed, disked, or otherwise broken up; moistened or aerated as necessary; and thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved; underground utility systems have been inspected, tested, and approved; forms removed; and the excavation cleaned of trash and debris. Backfill shall be brought to indicated finish grade. Backfill shall not be placed in wet or frozen areas. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation walls than a distance equal to the height of backfill above the top of each footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes to avoid damage. Backfill shall not be placed against foundation walls prior to seven days after completion of the walls. As far as practical, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.



3.4 COMPACTION

- A. Compaction shall be accomplished by means specified and to the following densities for various parts of the work. Deficiencies in construction shall be corrected by the Subcontractor at no additional cost to the Contractor.
- B. Prepared Subgrade: the prepared subgrade shall be constructed to the lines and grades shown on the drawings. This material shall be compacted to a density of at least 95% of the maximum density determined by ASTM D 698. Moisture content shall be between 2% below and 2% above optimum moisture content when compacted.
- C. Beneath Structures: Each layer of cohesive fill shall be compacted to at least 95 percent of maximum density as defined in Article 1.4.H., Degree of Compaction. Cohesionless fill shall be compacted to at least 97 percent of maximum density as defined in Article 1.4.I. - Degree of Compaction.
- D. Piping: Fill above piping that is located beneath structures shall be compacted to at least 95% of maximum density as defined by ASTM D698.

3.5 FIELD TESTING CONTROL

- A. Sampling and Testing: All quality control sampling and testing shall be performed by the Subcontractor in accordance with Subcontractor's Statement of Work, and as specified herein.
- B. Moisture-Density Determinations: Tests for determining maximum density and optimum moisture shall be performed by the Subcontractor in accordance with ASTM D 698. Samples shall be representative of the materials to be placed. An optimum moisture-density curve shall be obtained for each principal type of material or combination of materials encountered or used. Results of these tests shall be the basis of control for compaction. A copy of these tests shall be furnished to the Contractor.
- C. Density Control: To ensure placement of materials within the limits of densities specified, Subcontractor shall adequately control his compaction operations by tests made in accordance with any of the following methods: ASTM D 1556, ASTM D 2167, or ASTM D 2922 and ASTM D 3017.
 - 1. Areas to Receive Pavement: Areas to receive pavement shall be tested at the frequency of one test per 1,500 square yards per lift of fill material.
 - 2. Piping: Areas beneath and above piping shall be tested at the frequency of one test per 250 lineal feet of pipe installation for each lift of fill or bedding material placed.



3.6 FINISHED EXCAVATION, FILLS, AND BERMS

- A. All areas covered by the Project, including excavated and filled sections and adjacent transition areas, shall be uniformly smooth graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes. Degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations, except as otherwise specified. The finished surface shall be not more than 0.1 foot above or below the established grade or approved cross section and shall be free of depressed areas where water would pond. All ditches shall be finished to drain readily. The surface of berms or excavated areas for road construction or other areas to be paved on which a base course or pavement is to be placed shall not vary more than 0.05 foot from the established grade and approved cross section.
- B. Stabilization of disturbed areas by interim seeding or by use of a crusting agent shall be performed at completion of excavation or which are planned to be left idle for more than forty-five (45) days shall be stabilized within seven (7) days after the last activity. Soils shall be stabilized by one of the following methods as directed by the Contractor :
 - 1. Crusting agents shall be applied in accordance with manufacturer's recommendations as specified in this Section.
 - 2. Interim seeding shall be applied as specified in Section 02900.
- C. Forty-five (45) calendar days shall be the maximum time that a stockpile can be left in an exposed condition without stabilization. Stockpiles that are expected to be inactive for a period of 45 calendar days or more, as determined by the Contractor, shall be stabilized within seven (7) calendar days after last activity. Stockpiles shall be stabilized by means of a crusting agent.

3.7 PROTECTION

- A. During construction, berms and excavations shall be kept shaped and drained. Ditches and drains along the subgrade shall be maintained in a manner to drain effectively at all times. Where ruts occur in the berms, the subgrade shall be brought to grade, reshaped if required, and recompact. Newly graded areas shall be protected from traffic or erosion, and any settlement or washing away that may occur from any cause prior to acceptance shall be repaired and grades reestablished to the required elevations and slopes. All work shall be conducted in accordance with the environmental protection requirements of the Contract.
- B. Protection of Existing Service Lines and Utilities Structures: Existing utility lines that are shown on the Drawings, or the locations of which are made known to the Subcontractor prior to excavation that are to be retained, as well as utility lines constructed during excavation operations, shall be protected from damage during excavation and backfilling, and if damaged, shall be repaired by the Subcontractor at



their expense. In the event that the Subcontractor damages any existing utility lines that are not shown, or the locations of which are not made known to the Subcontractor, report thereof shall be made immediately to the Contractor. If determined that repairs are to be made by the Subcontractor, such repairs will be made at no additional cost to the Owner. When utility lines that are to be removed or relocated are encountered within the area of operations, the Subcontractor shall notify the Contractor in ample time to prevent interruption of the service.

3.8 ADJUSTMENT OF EXISTING STRUCTURES

- A. All manholes, valve boxes, or inlets of any nature within the project that do not conform to the new finish grade in either surfaced or unsurfaced areas shall be adjusted to the new finish grade. Where inlets, manholes, or valve boxes fall within a surfaced or unpaved roadway or parking, the existing frames and cover shall be removed and replaced with a heavy-duty frame and cover. The structure shall be adjusted as needed to fit the new conditions. All structures shall be of a type suitable for the intended use and shall conform to the requirements of the applicable section of these Specifications.

END OF SECTION

RMRS Silo 3 Specification Cover Sheet

No. of Pages 9	Date 2/25/00	Description Excavating and Backfilling for Foundations and Structures
Section No. 02220	Q-Level SPC	RMRS Specification No. (if applicable) N/A
Revision B	Originating Co. MK	Originator D. Kalenits
Equipment No(s)		Description
N/A		

Check Required Approvals

<input checked="" type="checkbox"/>	Title	Signature	Date
<input type="checkbox"/>	Project Engineer		
<input type="checkbox"/>	Lead Project Engineer		
<input type="checkbox"/>	Verifier		
<input type="checkbox"/>	Quality Assurance Lead		
<input type="checkbox"/>	Construction Manager		
<input type="checkbox"/>	Safety Basis Lead		
<input type="checkbox"/>	Health and Safety Manager		
<input type="checkbox"/>	Project Manager		

SECTION 02220

EXCAVATING & BACKFILLING FOR FOUNDATION & STRUCTURES

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SECTION 02220

EXCAVATING & BACKFILLING FOR FOUNDATION & STRUCTURES

PART 1 GENERAL

1.1 DESCRIPTION

- A. Provide all excavating, backfilling and compacting of soil for foundations and structures in accordance with this specification section and other Contract Documents.

1.2 RELATED SECTIONS

- A. Section 02001 – Site Work General Provisions
- B. Section 02210 - Earthwork/Grading
- C. Section 03300 - Cast-in-Place Concrete
- D. Section 02485 – Soil Erosion And Sedimentation Control

1.3 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. ASTM D698 - Test Methods for Laboratory Compaction Characteristics of Soil Using Method Effort
 - 2. ASTM D2216 - Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
 - 3. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 4. ASTM D3017 - Test Methods for Moisture Content of Soil by Nuclear Methods
 - 5. ASTM D4318
- B. OSHA - Occupational Safety and Health Administration, U.S. Department of Labor.
 - 1. 10 CFR Part 1910 - General Industry Standards

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2. 10 CFR Part 1926 - Construction Industry Standards

1.4 QUALITY ASSURANCE

- A. Comply with all applicable federal, state and local codes, ordinances and regulations, and site requirements.
- B. Comply with all applicable OSHA regulations, including 10 CFR Part 1910 - General Industry Standards and 10 CFR Part 1926 - Construction Industry Standards.
- C. The Contractor will determine by observation and test reviewing the quality of work and materials during excavating and backfilling operations. The Contractor will judge the suitability of bearing material at excavated levels, acceptability of backfill material, and the correct placement, and compaction of fill and backfill to specified densities. Any work found unsatisfactory shall be corrected.
- D. Field Tests: The following field tests shall be performed at the rate of one for every 200 cubic yards or at least once per shift when fill is being placed.
 - 1. Field in-place Nuclear density tests shall be performed per ASTM D 2922.
 - 2. Field in-place Moisture content determination shall be performed per ASTM D 698.
- E. Laboratory testing of soil samples shall be performed at the rate of one for every 250 cubic yards or any part thereof.
 - 1. Perform laboratory compaction test per ASTM D698.
 - 2. Perform moisture content test per ASTM D2216.
- F. Re-Testing: For all tests that fail to meet the requirements for density and/or moisture as specified herein, the Subcontractor shall, at no change in Contract Amount, provide additional compaction or other-work as required to meet specifications. Subcontractor shall bear the cost of all re-testing, including additional cost of testing incurred by the Contractor.
- G. Test Locations: Shall not serve as a guaranteed indication that all compacted areas meet the minimum requirements, but it shall be the Subcontractor's responsibility that all the soils be compacted to at least the minimum requirements.

1.5 SUBMITTALS

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- A. The Subcontractor will be responsible for the preparation of the following documents and will make these documents available to the Contractor.
1. Report and certification of soils, washed rock, crushed stone and/or rounded gravel.
 2. Test reports on soils, washed rock, crushed stone and/or rounded gravel.
 3. Optimum moisture-maximum density curve for each different material.
 4. Field density/moisture test reports.
- B. Test Reports: Shall contain the following information:
1. Project identification and name.
 2. Date of test.
 3. Name of Subcontractor
 4. Name of individual performing test(s).
 5. Location of test on Project Site.
 6. Results of tests including wet and dry density, percentage of moisture and percentage of compaction.

1.6 PROJECT/SITE CONDITIONS

- A. Perform work in accordance with Section 02001, Site Work General Provisions, the Subcontractor's Statement of Work, and drawings, procedures, and other documents provided by the Contractor.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fill Materials: All materials used as fill shall be competent soils free of clay, topsoil, organics, vegetation, debris, waste, frozen materials or any other deleterious materials. Materials may come from on-site excavations, or borrow areas designated by the Contractor. All materials used shall be approved, in advance, by the Contractor. Provide current soils tests of all imported materials and submit test results for approval by the Contractor prior to delivery of materials to the Project Site.

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PART 3 EXECUTION

3.1 EXCAVATION

- A. Comply with all OSHA regulations, including those for excavation and trenching, site permits and safe work plans. Excavate according to grades and elevations indicated on the Project Drawings.
- B. Excavate according to grade and elevations indicated on the Project Drawings.
 - 1. Excavation shall include all materials encountered regardless of the nature thereof, as required to complete the Project to the grades and elevations indicated on the Drawings.
- C. Stability of Excavations: Comply with all applicable OSHA regulations, as well as site permits and safe work plans.
- D. Dewatering: Prevent surface water, subsurface water and ground water from flowing into the excavations and flooding the Project Site and surrounding areas.
 - 1. Do not allow water to accumulate in excavations.
 - 2. Remove water from excavations to prevent softening of foundation bottoms and soils changes detrimental to the stability of foundations.
 - 3. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
 - 4. Excavations shall be sloped to sumps and/or graded to drain to ditches or channels discharging to a sediment basin, sediment trap, or other locations as directed by the Contractor. Excavations are to be kept free of standing water.
 - 5. As excavation progresses, excavated depressions in the excavated area to be used as temporary sumps. Water accumulated in sumps shall be pumped, via portable sump pump system and flexible hose, to the nearest ditch or channel discharging to the sediment basin or sediment trap upon approval of the Contractor.
 - 6. Convey water removed from excavations and rain water to collection areas or run-off areas.
 - 7. Provide and maintain temporary drainage ditches and other diversions outside the excavation limits for each structure.

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8. Provide and maintain silt control for water removed from excavations, diverted rain water and any other drainage which leaves the Project Site.
 9. Do not use trench excavations or site utilities as temporary drainage ditches.
- E. Excavating Under and Adjacent to Foundations: Obtain Contractor's approval before excavating under foundations or within a 45 degree slope from horizontal plane at bottom of foundations. Stability of all foundations must be ensured by means directed by the Contractor.
- F. Material Storage: During excavation, stockpile excavated materials classified as suitable fill or backfill material in an orderly manner a sufficient distance from the edges of the excavation to avoid overloading, and to prevent slides or cave-ins.
1. Material Stockpiles
 - A. Separate differing materials with dividers, or stockpile apart to prevent mixing
 - B. Direct surface water away from stockpile site to prevent erosion or deterioration of materials; and
 - C. Provide storm water runoff controls at pile to prevent sediment from leaving stockpile area.
 - D. Forty-five (45) calendar days shall be the maximum time that a stockpile can be left in an exposed condition without stabilization. Stockpiles that are expected to be inactive for a period of 45 calendar days or more, as determined by the Contractor, shall be stabilized within seven (7) calendar days after last activity. Stockpiles shall be stabilized by means of a crusting agent, as specified in this section. Slopes on piles shall not exceed 2:1 in steepness and shall be less than 15 feet in height. Pile shall be shaped with a drainage pitch of at least 2 percent on all areas. The perimeter of the pile shall have proper sediment controls (i.e., silt fence). The Subcontractor is responsible for maintaining the controls on the piles until final acceptance or disposition.
 2. Location designated by Contractor.
 3. Pile excavated material in such a manner as to keep surface drainage of adjoining areas unobstructed.
 4. Place, grade and shape stockpiles for proper drainage.
- G. Excavation for Structures: Conform to the elevations and dimensions shown on the Drawings, within a tolerance of plus or minus 1/10 foot, extending a sufficient distance from foundation to permit placing and removal of concrete form work, installation of services, other construction required and inspection.
1. In excavating for foundations, take care not to disturb bottom of excavations.



2. Trim excavation bottoms to required lines and grades to leave a solid undisturbed base to receive concrete.
 3. Remove rocks, boulders, portions of abandoned structures, abandoned utilities and other hard obstructions to a depth of at least 6 inches below the specified excavation level and fill with approved fill material.
- H. **Excess Materials:** Excavated material not required or not suitable for fill/backfill materials shall be disposed of per the Contractor's instruction.
- I. **Cold Weather Protection:** Protect excavation bottoms from freezing when the atmospheric temperature is less than 35 degrees F.
- J. **Seasonal Limits:** Do not deposit, spread or compact fill material when it is frozen or thawing, or during unfavorable weather conditions. When the work in progress is interrupted by heavy rain or freezing weather, fill operations shall not be resumed until the Contractor inspects the fill, verifies that the condition of the previously placed fill is acceptable, and the moisture content and density of the previously placed fill is as specified.
- K. **Notification for Inspection of Excavation:** Upon completion of excavation work and prior to commencing any work thereon, immediately notify the Contractor in order that soil types and conditions can be observed. Contractor shall observe and approve adequacy of base of excavation. If it is determined that soils conditions exist which require larger or deeper excavation than indicated on Drawings, notify the Contractor in writing of the necessary changes.

3.2 BACKFILLING

- A. Comply with all OSHA regulations, including those for excavation and trenching, site permits and safe work plans.
- B. **Prior to trench Backfill Placement:** Backfill excavations as promptly as the work permits, but not until completion of the following:
 1. Acceptance by Contractor of all construction below finished grade.
 2. Inspection, testing, approval and recording locations of underground utilities.
 3. Removal of concrete form work.
 4. Removal of shoring and bracing, and backfill of voids with satisfactory materials.
 5. Removal of trash and debris.

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6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
7. Concrete shall have attained at least 80 percent of its specified 28 day compressive strength before commencing backfilling and compacting operations.

C. Fill and Backfill - General:

1. Scarify and compact exposed surfaces before placing fill material. Remove unsuitable soil and replace it with approved material.
2. Place fill and backfill material in maximum 6 inch layers. Each layer shall be moistened as required and compacted with mechanical tampers or heavy compaction equipment.
3. Place backfill materials evenly adjacent to structures, to required elevations.
 - a. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each layer.
 - b. Place backfill in such a manner as to prevent damage to adjacent structures.
4. Compaction methods or equipment that produce horizontal or vertical earth pressures which may cause excessive displacement or overturning, or may damage structures, shall not be used.

3.3 COMPACTION

A. Compaction Requirements: Maximum dry density and optimum moisture shall be determined using Standard Proctor, ASTM D698. Minimum requirements for compaction of all fill and backfill materials shall be:

1. In-place Relative Density: 95 percent of maximum dry density.
2. In-place Moisture Content: ± 2 percent of optimum moisture.

B. Compaction Tests:

1. Will be performed by Contractor using in-place density test per ASTM D 1556 or ASTM D2922.
2. Notification: Subcontractor shall give Contractor at least 24 hours advance notice of time required for inspecting and testing services.

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3. Compaction of fill and backfill material shall be tested at locations to be selected by Contractor.
 - a. At a minimum, perform field density/moisture test for each 200 cubic yards of backfill or fill placed with at least one test per shift per ASTM D 2992 and ASTM D 698, respectively.
 4. For all tests which fail to meet specifications for relative density and/or moisture, backfill material shall be removed, relaid and re-compacted, at Subcontractor's expense, until compacted material meets specifications. Subcontractor shall bear the cost of all re-testing, including cost of additional testing incurred by the Contractor.
- C. Jetting or ponding shall not be allowed.
- D. Compaction equipment: Use sheepsfoot compactor.
1. Materials which cannot be compacted with the specified compaction equipment shall be compacted with handheld compactors in 6-inch lifts to a density equal to the density achieved by the specified compaction equipment and methods. Compaction of each layer shall proceed in a systematic, orderly and continuous manner.

3.4 MAINTENANCE

- A. Protection of Graded Areas: Protect graded areas from traffic and erosion, and keep free of trash and debris. Repair and re-establish grades in settled, eroded and rutted area to the specified tolerances.

3.5 CLEANING

- A. At all times keep the premises free from accumulation of waste materials or rubbish caused by employees or the Work.
 1. Maintain all work area, material storage areas and maintenance areas in a clean and safe condition at all times.
 2. Promptly remove and dispose of excess materials, litter and debris. Leave all areas in a neat and clean condition. Accumulation of excess materials, litter and debris during execution of the work will not be permitted.

END OF SECTION

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SECTION 02223

VEGETATIVE LAYER

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Vegetative Layer

Section 02223

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section covers requirements for constructing the vegetative layer.
- B. The work includes furnishing of all equipment, labor, materials and supplies to complete the work to the lines and grades shown on the Project Drawings and to the requirements specified herein.

1.2 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. ASTM - American Society For Testing And Materials
 - ASTM D422 - Particle-Size Analysis of Soils
 - ASTM D2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - ASTM D4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- C. USDA - United States Department of Agriculture
 - Soil Survey Methods Manual, Soil Survey Investigation Report No. 42

1.3 RELATED SECTIONS

- A. Section 02001 – Site Work General Provisions
- B. Section 02005 - Surveying Services
- C. Section 02935 - Seeding

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1.4 EQUIPMENT

- A. Equipment and compaction procedures shall be approved by the Contractor.

1.5 SUBMITTALS

- A. The following items shall be submitted:
1. Drawings
 - a. Finished Grades
 - b. Cross-sections of finished grades.
 - c. As-Built Survey (Article 3.5 of this Specification)
 2. Reports:
 - a. Soil testing shall include analyses of the following:
 - (1) Soil pH (vegetative layer soil)
 - (2) Soil conductivity (vegetative layer soil)
 - (3) Sodium absorption ratio (vegetative layer soil)
 - (4) Organic content (vegetative layer soil)
 - (5) Nitrogen, phosphorous, and potassium levels (vegetative layer soil)

PART 2 PRODUCTS

2.1 SUITABLE VEGETATIVE LAYER MATERIAL

- A. Suitable vegetative layer material is defined as material that is reasonably free of clay lumps, objectionable weeds, litter, brush, matted roots, toxic substances, or any material that might be harmful to plant growth or be a hindrance to grading, planting, or maintenance operations. Vegetative layer materials shall consist of soils which classify as SM, SC, SC-SM, ML, CL or CL-ML in accordance with ASTM D2487. Vegetative layer material shall not contain particles which exceed 1 inch in any dimension. In addition, the Subcontractor shall amend the vegetative layer material to meet the following criteria:
1. Soil pH shall be between 6.5 and 8.5
 2. Organic content shall be between 0.75 and 1.0 percent by weight in the upper 6 inches of soil
 3. Soil conductivity shall be less than 4m Mhos/cm
 4. Sodium adsorption ratio shall be less than 15.

2.2 PROCUREMENT OF BORROW MATERIAL

- A. Subcontractor shall obtain required vegetative layer borrow materials from sources designated by the Contractor. Subcontractor shall comply with all federal, state, local and site requirements for excavation and reclamation of borrow sources.

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PART 3 EXECUTION

3.1 PLACEMENT OF VEGETATIVE LAYER

- A. **General Requirements:** The vegetative layer shall be placed at the locations and to the lines and grades shown on the Project Drawings.

- B. **Vegetative Layer Placement:** Vegetative layer material shall be uniformly distributed over the designated areas and evenly spread to a minimum thickness of 6 inches. Spreading shall be performed to allow planting to proceed with little additional soil preparation or tillage. The surface resulting from the placement of this layer shall meet the finish surface requirements in Article 3.3. Vegetative layer material shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to proper grading or the proposed planting. Previously constructed random fill grades shall be repaired, if necessary, so that the vegetative layer is placed to conform to the cross-sections indicated on the Drawings upon completion of placement. Vegetative layer soil shall be disked, scarified, or plowed to a depth of 6 inches prior to seeding. Organic matter shall be incorporated into the upper 6 inches of the vegetative layer. Reference Section 02935 Vegetative Species for acceptable organic materials to be incorporated into the vegetative layer soil. There shall be no specific compaction requirements for the vegetative soil layer except that the vegetative soil layer shall be compacted with one pass of the placement equipment.

3.2 TESTS AND CONTROL

- A. **Sampling and Testing:** Quality control sampling and testing shall be performed by the Subcontractor as specified herein.
 - 1. **Classification Determinations:** Representative samples of soil material proposed for use in vegetative layers shall be obtained for each principal type of material or combination of materials. Samples shall be tested for Atterberg limits and grain size determination (sieve analysis) in accordance with ASTM D4318, and ASTM D422, respectively. Soil classification shall be in accordance with ASTM D2487. Classification testing shall be done at a rate of one test per 2,000 cubic yards of borrow material for the vegetative layer.

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3.3 FINISHED GRADES

- A. All areas, including filled sections and adjacent transition areas, shall be uniformly smooth graded. The completed surface shall be reasonably smooth and be free from irregular surface changes. The degree of finish shall be that ordinarily obtained from either blade grader or scraper operations, except as otherwise specified. The completed surface shall be not more than 0.2 foot above the established grade or approved cross-section and shall be free of depressed areas where water would pond. No minus tolerances in completed thickness of the vegetative layer shall be permitted. All areas shall be graded to drain readily.

3.4 PROTECTION

- A. Where ruts occur in the completed fill, the fill shall be brought to grade, reshaped if required, and recompact prior to the placing of additional fill. Storage or stockpiling of material on completed fill will not be permitted.

3.5 AS-BUILT SURVEY

- A. Subcontractor shall complete an as-built survey of the top of the vegetative layer. All survey data shall be submitted to the Contractor for approval prior to construction of any permanent features above the vegetative layer. Reference Section 02005 Surveying Services for requirements.

END OF SECTION

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SECTION 02485

SOIL EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.1 SUMMARY

- A. The Subcontractor shall furnish all labor, material, equipment, tools and appurtenances required to minimize soil erosion and to provide sediment control.

1.2 RELATED SECTIONS

- A. Section 02001 – Site Work General Provisions
- B. Section 02210 - Earthwork/Grading
- C. Section 02900 - Seeding

1.3 REFERENCE STANDARDS AND PUBLICATIONS

- A. Guidelines for erosion and sediment control, planning and implementation, USEPA.

1.4 QUALITY ASSURANCE PROGRAM

- A. Subcontractor shall inspect and evaluate the effectiveness of, and the need for maintenance of, the control measures. Any repairs to the erosion and sediment control measures shall be corrected within 24 hours of problem discovery. Inspections shall occur, at a minimum, at the following frequencies by a qualified representative of the Contractor:
 - 1. Weekly;
 - 2. Daily after each rain even exceeding 0.5 inches at the Fernald Environmental Management Project (FEMP).
 - 3. At least daily during prolonged rainfall events at the FEMP.
- B. All inspections shall be conducted and documented in accordance with this Section. The Contractor shall maintain a copy of the inspection records on site with the original submitted as specified in this Section.



- C. The inspection report shall summarize the scope of the inspection, name of the inspector(s) inspection date, observations relating to the implementation of the erosion and sediment control measures, frequency; duration, destination of pumping ponded water, estimated quantity of ponded water and corrective action measures, if any are required. The report shall indicate if any areas are not in compliance or contain a certification that control measures are effective and in compliance with the Section.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fill: Fill required for soil erosion and sedimentation control and temporary drainage shall conform to requirements specified in Section 02210 - Earthwork/Grading.
- B. Other Materials: Submittals may be requested by the Contractor for other materials used for soil erosion and sedimentation control. These submittals shall include the manufacturer's product data indicating the material description and performance data for the intended function. The Subcontractor may use materials for soil erosion and sedimentation control which are not specified herein provided they meet the requirements of the State of Ohio, Construction and Material Specifications.
- C. Stakes: Stakes used with staples to fasten the matting. Stakes shall be a minimum of 18 inches in height and 2 inches by 2 inches or more in depth and width and made from hardwood. Use 50 stakes per matting panel facing upstream at a 45° angle.
- D. Silt Fence: Materials shall be as specified in ODNR's Rainwater and Land Development and the construction drawings.
- E. Dumped Rock Fill: Dumped rock fill used for channel protection shall meet the requirements of *ODOT Item 601.07* for type specified on drawings.
- F. Non-woven geotechnical fabric used as a separator beneath dumped rock fill shall conform to *ODOT Item 712.09*, Type B.
- G. Erosion Control Blankets (Matting): The matting shall be made from 100% commercial grade Coir yarn (spun from coconut fibers) containing approximately 45% Lignin, 55% cellulose. The erosion control blanket shall be 100% biodegradable with a maximum service life expectancy of 10 years for use on slopes of 1:1 or greater and where shown on the drawings. The blanket sha;; have



the following physical properties.

1. Material Content
 - a. Coir Yarn: 100 percent; containing 45% Lignin, 55% Cellulose (approx.)
2. Physical Specifications (Roll)
 - a. Weight: 83.6 lbs; 22.7 oz/sq. yd (approx).
 - b. Average Mesh: 0.4" x 0.5"
 - c. Open Area: 38% (approx)
 - d. Tensile Strength: 1350 lb/ft x 626 lb/ft – Fabric
55 lb dry, 49 lb wet – Yarn
 - e. Elongation: 34% x 38% - Fabric
29% dry, 35% wet - Yarn
- H. Staples: Staples and wood stakes used to fasten the matting. Staples shall be made from 0.3 m (12-inch) lengths of No. 8 gage steel wire bent into narrow "U" shape with the ends of the staples approximately 25 mm (1 inch) apart. For clay, shale, and other heavy soils, a 75 mm (3 inch) steel staple, at least 9 gage with points approximately 25 mm (1 inch) apart will be used as may be required by the Engineer.
- I. Seed and mulching materials shall be as specified in *Section 02900*.
- J. Crusting agent shall be as approved by the Contractor and shall meet the following requirements:
 1. The dust suppression/crusting agent shall be a pine sap emulsion comprised of 100% organic emulsion produced from naturally occurring resins (pine sap). The dust suppression/crusting agent must provide dust suppression and surface stability for exposed soils, both disturbed and undisturbed soils. The dust suppression/crusting agent shall be compatible with application via a hydro seeder, and must not require intense cleaning of equipment after application. Once cured, the dust suppression/crusting agent shall be non-tracking (i.e., will not stick to boots or tires).
 2. The dust suppression/crusting agent shall not have hazardous characteristics or ignitability, corrosivity, reactivity, or toxicity as defined in *40 CFR 261* for a hazardous waste in either its pre-applied or cured states.
 3. The dust suppression/crusting agent shall have a flash point greater than 200° F. The dust suppression/crusting agent shall be neither a flammable nor combustible liquid per DOT definition. The dust suppression/crusting agent must not be susceptible to significant deterioration from exposure to the elements, including sunlight.



4. Seeding shall be in accordance with *Section 02900*.

Similar products may be substituted with the Contractor's prior approval. See *ACR-001* for all submittal general requirements and procedures.

PART 3 EXECUTION

3.1 FIELD CONDITIONS

A. Silt Fences

1. Install in accordance with ODNR and manufacturer's recommendations. Place at locations shown on drawings prior to start of earthwork.
2. Silt fence shall be constructed before up slope land disturbance begins.
3. All silt fence shall be placed as close to the contour as possible so that water will not concentrate as low points in the fence and so that small swales or depressions which may carry small concentrated flows to the silt fence are dissipated along its lengths.
4. To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed up slope so that the ends are at a higher elevation.
5. The minimum height of the silt fence shall be a 16 inches above the original ground surface.
6. Seams between section of silt fence shall be overlapped with the end staked of each section wrapped together before driving into the ground.

B. Erosion Control Blankets (Matting)

1. Install in accordance with ODNR and manufacturer's recommendations. All blankets shall be properly anchored with wire staples and wood stakes in patterns and sizes recommended by manufacturer. Bury edges in 6 inches deep trench, rake area smooth, and seed.
2. Erosion control blanket shall be used on all slopes steeper than 4H:1V and at all ditch inverts, to a ditch depth of 1 foot.

C. Check Dam

1. The check dam shall be constructed of 4-8 inch diameter stone, place so that it completely covers the width of the channel.
2. The top of the check dam shall be constructed so that the center is approximately 6 inches lower than the outer edges, so water will flow across the center and not around the ends.
3. The maximum height of the check dam at the center of the weir shall not



- exceed 3 feet.
4. Spacing between dams shall be as shown on the drawings or as directed by the Contractor.

D. Dumped Rock Fill

1. Place and maintain dumped rock fill material for rock channel protection as indicated on the Contract Drawings and in accordance with *ODOT Item 610.07* and *601.08*.

E. Crusting Agent

1. The material shall be applied at the rate recommended by the manufacturer or as directed by the Contractor. Reapply as necessary to inhibit erosion and dust.

3.2 ADJUSTING

- A. Sediment shall be removed and temporarily placed onto the bank of the channel, ditch, or trap to dewater and, when necessary, for sampling. Excavation, sampling, and disposal of sediment shall be as specified in *Section 02200* and consistent with site regulations and Section 02001 – Site Work General Provisions.
- B. Remove accumulated sediment, debris, and obstructions as necessary from the ditches and the channels as directed by the Contractor. In no case shall sediment reduce the available depth in the ditches and channels to less than one-third the depth shown on the Construction Drawings.
- C. Remove accumulated sediment from the sediment trap before available depth is reduced to one-half its designed depth.
- D. Removal of Temporary Erosion Control Facilities.
 1. Erosion control facilities shall be removed at the direction of the Contractor after the disturbed areas are stabilized and established with grass or other measures approved by the Contractor.

3.3 GENERAL

- A. **Limiting Surface Erosion:** The Contractor has the authority to limit the surface area of erodible material exposed by clearing and grubbing, and to direct immediate permanent or temporary sediment control measures to prevent the transport of sediment. This includes, but is not limited to, the construction of berms, dikes, dams, ditches, sediment collection pits or basins, and the use of temporary seeding, mulches, matting, stone, riprap or other control devices as necessary to control erosion and the transport of sediment.
- B. **Timing for Installation of Sediment Control Devices:** The Subcontractor shall install all necessary sediment control devices prior to the start of any land disturbance. Soil erosion and sediment control facilities shall be adapted and/or expanded as construction proceeds to meet the requirements specified herein.
- C. **Restrictions on Pumping of Silt Laden Water:** Sediment-laden water shall not be pumped from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto. Sediment-laden water shall be discharged into settling basins located away from water courses so that only clear water enters the water course after the silt has settled out in the settling basin.
- D. **Stockpiling of Excavated Soil:** Excavated soil shall not be stockpiled adjacent to water courses in a manner that will cause sedimentation of the water course.

3.4 CONTROL OF WATER

- A. The Subcontractor shall maintain and operate adequate surface and subsurface drainage methods approved by the Contractor to keep the construction site dry, side slopes and bottom of excavations stable, and away from temporary stockpiles so as to prevent the saturation and degradation of the areas in accordance with this Specification and to the satisfaction of the Contractor. Surface water shall be controlled so that the stability of excavated and constructed slopes or bottom is not adversely affected by water, erosion is prevented, and flooding of excavations or damage to structures does not occur. Surface and rain water must be intercepted and drained away from excavations. Surface water shall not pond on subgrades, in excavations or on stockpiles.



3.5 APPLICATION OF VEGETATIVE LAYER SOIL AND SEEDING

- A. The Subcontractor shall apply vegetative layer soil and seeding during temporary soil erosion and sedimentation control, and as part of the final cover in accordance with Section 02900 - Seeding. The Subcontractor shall keep seeded areas mowed and in good condition, reseeding all seeded areas if and when necessary until a good, healthy, uniform growth is established over the entire area seeded, and shall maintain all seeded areas in an approved condition until final acceptance. When newly graded subgrade areas cannot be covered with vegetative layer soil and seeded because of season or weather conditions and will remain exposed for more than 30 days, the Subcontractor shall protect those areas against erosion and washouts by whatever means necessary such as straw applied with a hydromulch overspray, wood chips or by other contractor-approved measures. Prior to application of topsoil, any such materials applied for erosion control shall be thoroughly incorporated into the subgrade by discing. Vegetative layer soil containing excessive moisture, frost or in otherwise unworkable condition shall be stockpiled until it is suitable for spreading. Vegetative layer soil shall be placed on all non-paved disturbed areas and spread to a finished thickness as specified using equipment which will avoid excessive compaction. Vegetative layer soil required for temporary soil erosion control shall be placed and spread to a finished thickness of 4 inches. After vegetative layer soil has been spread, all large stiff clods, rocks, roots or other foreign matter shall be cleared and disposed of, as specified or approved, so that the finished surface will be acceptable for subsequent seeding.

3.6 FINAL ACCEPTANCE

- A. The Subcontractor shall care for the seeded areas including keeping the grass cut until final acceptance by the Contractor as specified in Section 02900 - Seeding. Acceptance of the seeded areas will be based upon a satisfactory stand of grass. At any time prior to acceptance of work performed by the Subcontractor, areas which have been seeded which fail for any reason to produce a satisfactory growth of grass after a suitable period of time has elapsed shall be regraded (if necessary), fertilized and reseeded in the same manner as specified for the original work at the direction of the Contractor. Grading, seeding and fertilizing areas which fail to produce a satisfactory growth of grass shall be replaced at the expense of the Subcontractor.

END OF SECTION

RMRS Silo 3 Specification Cover Sheet

No. of Pages 9	Date 2/25/00	Description Seeding
Section No. 02900	Q-Level SPC	RMRS Specification No. (if applicable) N/A
Revision B	Originating Co. MK	Originator D. Kalenits
Equipment No(s)	Description	
N/A		

Check Required Approvals

<input checked="" type="checkbox"/>	Title	Signature	Date
<input type="checkbox"/>	Project Engineer		
<input type="checkbox"/>	Lead Project Engineer		
<input type="checkbox"/>	Verifier		
<input type="checkbox"/>	Quality Assurance Lead		
<input type="checkbox"/>	Construction Manager		
<input type="checkbox"/>	Safety Basis Lead		
<input type="checkbox"/>	Health and Safety Manager		
<input type="checkbox"/>	Project Manager		



SECTION 02900

SEEDING

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SECTION 02900

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Soil preparation.
- B. Interim seeding.
- C. Permanent seeding.
- D. Summer seeding.
- E. Application of fertilizer.
- F. Application of mulch and mulch binder.
- G. Application of crusting agent.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02001 – Site Work General Provisions
- B. Section 02270 - Erosion and Sediment Control.

1.3 REFERENCES

- A. State of Ohio, Department of Natural Resources (ODNR): Rainwater and Land Development, Ohio's Standard for Storm Water Management, Land Development, and Urban Stream Protection - 1996.
- B. Title 40, Code of Federal Regulations (CFR), Part 161, Identification and Listing of Hazardous Waste.
- C. Sitewide Excavation Plan.



- D. Land Use Authority, Master Plot, Overall Plan.

1.4 SUBMITTALS

- A. Provide submittals as required in Part 6. Unless specified otherwise, submittals shall be made to the Contractor for review and approval.
- B. Submit the following within thirty (30) calendar days from Notice to Proceed:
1. Proposed seed mixes and application rates for seed, mulch, mulch binder, and fertilizers.
 2. Manufacturer's product data and recommended methods of application for seed, mulches, mulch binder, and fertilizer. Product data for fertilizer shall also include chemical analysis including uranium analysis to assure there is no resultant or derived uranium from fertilizer use.
 3. Material Safety Data Sheet (MSDS) for fertilizer and mulch binder.
- C. Provide a plan showing seeding type by area (interim or permanent) and a written statement of proposed changes to seed mix and application rate of seed mix and/or associated materials (i.e., fertilizer, mulch, and mulch binder) a minimum of ten (10) calendar days before seeding. Choice of seeding type shall follow the Land Use Authority, Master Plot, Overall Plan and other pertinent project information according to when areas will be redisturbed.
- D. Submit certificate of compliance for the following within fifteen (15) calendar days before the seeding. Do not sow seed until the Contractor has reviewed and approved the certificates.
1. Certificate stating seed mixture, guaranteed percentages of purity, weed content, germination of seed, name of seller, the test date for the seed, and the net weight and date of shipment;
 2. Manufacturer's certificate stating the available nutrients contained in the proposed fertilizer;
 3. Manufacturer's certificate stating the wood cellulose mulch meets the requirements of this Section; and
 4. Manufacturer's certificate stating the mulch binder meets the requirements of this Section.



1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver containerized materials in uniform packages bearing the name of the manufacturer, the net weight and a statement of content. Deliver containerized materials to the site in original, properly labeled, unopened, clean containers each showing the manufacturer's guaranteed analysis conforming to applicable regulations and standards.
- B. Store materials in a dry area in a manner to prevent physical damage from the elements.

1.6 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental Health and Safety, and Training requirements shall be as specified in Section 02001 – Site Work General Provisions.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Furnish seed labeled in accordance with the U.S. Department of Agriculture (USDA) Rules and Regulations under the Federal Seed Act and applicable seed laws. Furnish seed in sealed bags or containers bearing the date of expiration. Do not use seed after its expiration date. Each variety of seed shall: have a purity of not less than 90 percent, have a percentage of germination not less than 80 percent, have a weed to seed content of not more than 0.75 percent and contain no noxious weeds. The above percentages are by weight.
- B. For interim seeding, the seed mixture shall be:
 - 1. Perennial Rye - 60 pounds pls/acre
- C. For permanent seeding, the seed mixture shall be at least (all measures are pounds pls/acre):

	April 15 – May 31	October 1 – April 14
1. Canada Wild Rye	2	3
2. Little Bluestem	2	3
3. Big Bluestem	3	4
4. Indian Grass	2	3
5. Switch Grass	½	1
6. Side Oats Gramma	½	1
7. Live Oats	20	25



- D. For summer (June - September) seeding, the seeding mixture shall be:
 - 1. Buckwheat 60 pounds pls/acre. The planting of buckwheat during the summer season will be followed by either interim or permanent seeding during the next seeding window.

- E. Obtain water from on-site sources as approved by the Contractor.

- F. Fertilizer:
 - 1. Use fertilizer that is dry or liquid commercial grade fertilizer, uniform in composition that meets the requirements of all State and Federal regulations and standards of the Association of Agricultural Chemists.
 - 2. Fertilizer for interim seeding shall be VCOTE 34-4-14 as manufactured by George W. Hill or equal.

- F. Furnish mulch meeting the following requirements:
 - 1. Mulch shall be straw or wood cellulose fiber, free of clay, stone, foreign substances, and reasonably free of weeds.
 - 2. Furnish straw that does not contain sticks larger than 1/4-inch diameter or other materials that may prevent matting down during application. Use straw that is free from mold and other objectionable material and in an air-dry condition suitable for placing with mulch blower equipment or other equipment as approved by the Contractor. Straw shall be generally 6 inches or more in length.
 - 3. Mulch applied by hydrospraying shall be a wood cellulose processed into a uniform fibrous physical state. Use wood cellulose fiber containing a green dye that will provide for easy visual inspection for uniformity of slurry spread. The wood cellulose fiber including dye, shall contain no growth or germination inhibiting properties. The wood cellulose fiber shall be manufactured in such a manner that, after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous material. When sprayed on the ground, the material shall allow absorption and percolation of moisture. The wood cellulose fiber shall meet the following requirements:

<u>Item</u>	<u>Specification Limit</u>
Particle Length	0.375 inch (maximum)
Particle Thickness	0.047 inch (maximum)



PH	4.0 to 8.5
Ash Content	1.6 percent (maximum)
Water Holding Capacity (based on fiber dry weight)	500 percent (minimum)

- G. Mulch binder agent shall be as approved by the Contractor and shall meet the following requirements:
 1. The mulch binder shall be a pine sap emulsion comprised of a 100% organic emulsion produced from naturally occurring resins (pine sap) and be nontoxic to plants. The mulch binder shall not be comprised of chloride, lingosulfonate, petroleum, or asphaltic type emulsions. The mulch binder shall be compatible with application via a hydro seeder, and must not require intense cleaning of equipment after application. Once cured, the mulch binder shall be non-tracking (i.e., will not stick to boots or tires).
 2. The mulch binder shall not have hazardous characteristics of ignitability, corrosivity, reactivity, or toxicity as defined in 40 CFR Part 261, Subpart C, for a hazardous waste in either its pre-applied or cured states.
 3. The mulch binder shall have a flash point greater than 200°F. The mulch binder shall be neither a flammable nor combustible liquid per DOT definition. The mulch binder must not be susceptible to significant deterioration from exposure to the elements, including sunlight.
 4. The pine sap emulsion shall be provided in concentrated solution and prepared so that it will not change in transportation or storage.

- H. Erosion Control Blanket and Crusting Agent shall be in accordance with Section 02485.

2.2 EQUIPMENT

- A. Provide equipment of size and type to perform work specified in this Section.

PART 3 EXECUTION

3.1 GENERAL

- A. Maintain existing drainage patterns or as indicated on the project-specific drawings. Retill areas compacted by construction.
- B. Protect finished graded areas from damage by vehicular or pedestrian traffic and erosion.



- C. Use the following criteria to prepare temporary and interim cover seedbeds when chemical fertilizer will be incorporated:
- D. Disc to a minimum depth of 6 inches with an offset disc followed by harrowing or other implements until a smooth, reasonably firm but friable seedbed is provided. A smooth seedbed shall be defined as prepared soils containing no clods greater than 1.5 inches in any dimension within 1.5 inches of the top surface of the prepared soil, unless otherwise directed by the Contractor. Should the disc not penetrate the required 6 inches, chisel or rip to a depth of 6 to 8 inches on maximum 16-inch centers prior to discing. The Contractor will conduct periodic inspections of finished seedbed preparation. Seeding operations will be delayed if seedbed preparation is unsatisfactory. Use the following criteria to prepare interim or permanent cover seedbeds when soil amendments will be incorporated:
- E. Repeat cultivation in areas where equipment used for hauling and spreading has compacted subgrade.
- F. Stabilization of disturbed areas by seeding or by use of a crusting agent shall be performed at completion of excavation or within seven (7) calendar days of knowing a disturbed area will be idle for more than forty-five (45) calendar days, whichever is sooner.
- G. Interim seeding is required for disturbed areas and soil piles which are scheduled to or may be further disturbed within two (2) years, but do not have significant potential of spreading contamination.
- H. Permanent seeding is required for disturbed areas and soil piles which will not be disturbed for more than two (2) years.
- I. Disturbed areas and soil piles which are scheduled to be significantly disturbed within two (2) years, are destined for the On-Site Disposal Facility (OSDF), and/or need effective erosion control immediately, are to be stabilized with use of a crusting agent.

3.2 APPLICATION

- A. Seeding seasons are:
 - 1. For interim seeding, October 15 through May 15.
 - 2. For permanent seeding, April 15 through May 31, and October 1 through February 28, each with a corresponding application rate.
 - 3. Seeding that must be done outside of the above seeding seasons shall be completed with the summer seeding mixture specified in this Section. Application of summer seeding shall be followed during the next seeding



season by the application of either interim or permanent seeding, as appropriate, in accordance with the general execution requirements specified in this Section.

- B. Apply fertilizer, seed, mulch, and mulch binder to disturbed areas and areas excavated and graded in this Contract requiring seeding unless otherwise indicated or directed by the Contractor. All seeding seasons and all application rates for seed and related materials are subject to adjustment as directed or approved by the Contractor.
- C. Application of Fertilizer:
1. Apply fertilizer at a uniform rate of 1 pound per 1000 square feet.
 2. Disc fertilizer thoroughly into upper 6 inches.
- D. Sequence of application of seeding mixture, mulch and mulch binder.
1. Apply seed mixture at the minimum rate as specified in this Section. Seeding shall be done by hydroseeding, broadcasting, or by drilling to a depth of 1/4 inch followed by cultipacking. When hydroseeding, the mixture tank shall be cleaned prior to use to ensure remnant seed is not introduced to the proposed seed mixture.
 2. Do not seed areas in excess of that which can be mulched within 24 hours.
 3. Apply mulch within 24 hours of seeding.
 4. Spread straw mulch in a uniformly thick layer.
 5. Apply water with a fine spray immediately after each area has been straw mulched. Wet soil at approximately a rate of 120 gallons per 1,000 square feet.
 6. Apply mulch binder at the rate specified in this Section.
- E. Spread straw mulch, either by hand or by blowing method, at the rate of 2 air-dried tons per acre. During June through September, increase straw mulch application rate to 3 air-dried tons per acre. Application of straw mulch by the blowing method is exempt from the dust control requirements.
- F. Apply sprayed wood cellulose fiber at a net dry weight of 2,000 pounds per acre. Mix the wood cellulose fiber with water at a ratio of 50 pounds of wood cellulose fiber per 100 gallons of water.
- G. Maintain mulching material in place with a pine sap emulsion binder. Apply mulch binder according to manufacturer's directions. Unless specified otherwise by the manufacturer, dilute concentrated pine sap emulsion to ratio of four (4) parts water to one (1) part concentrate. Apply diluted pine emulsion at a rate of 2,500 gallons per acre.



3.3 MAINTENANCE

- A. Maintain the seeded areas in satisfactory condition until acceptance of the seeding by the Contractor. Maintenance of the seeded areas includes repairing eroded areas, revegetating when necessary, watering and mowing (if applicable). A satisfactory condition of the vegetated area is defined as follows:
 - 1. An area shall have a predominant stand of the seeded vegetation.
 - 2. Within 3 weeks, germination must occur over 95 percent of the area with no single bare area greater than 3 square feet.
 - 3. Within 3 months, 95 percent of the area must be covered with mature vegetation.
- B. Areas that fail to meet these requirements shall be repaired or reseeded as necessary to produce an acceptable stand of vegetation, as specified in this Section. Areas that become bare during June through September shall be reseeded with the summer seeding mix specified in this Section.
- C. Maintain areas applied with a crusting agent to ensure proper erosion control. The crusting agent shall be reapplied to eroded and bare areas as necessary.

3.4 WARRANTY

- A. Seeded areas shall be subject to a warranty period of not less than 12 months from initial establishment of vegetation over 100 percent of the seeded areas.
- B. At the end of the warranty period, the Contractor will perform an inspection upon written request by the Subcontractor. Seeded areas not demonstrating satisfactory condition of vegetation as specified herein, shall be repaired, reseeded and maintained to meet all requirements as specified herein at the Subcontractor's expense.

3.5 ACCEPTANCE

- A. The seeded areas shall be accepted at the end of the warranty period if a satisfactory condition exists as defined in this Section.
- B. After all disturbed areas are stabilized and all necessary corrective work has been completed, the Contractor will certify in writing the final acceptance of the seeded areas.

END OF SECTION

2839

Rubb Building Manufacture's
Data

000118

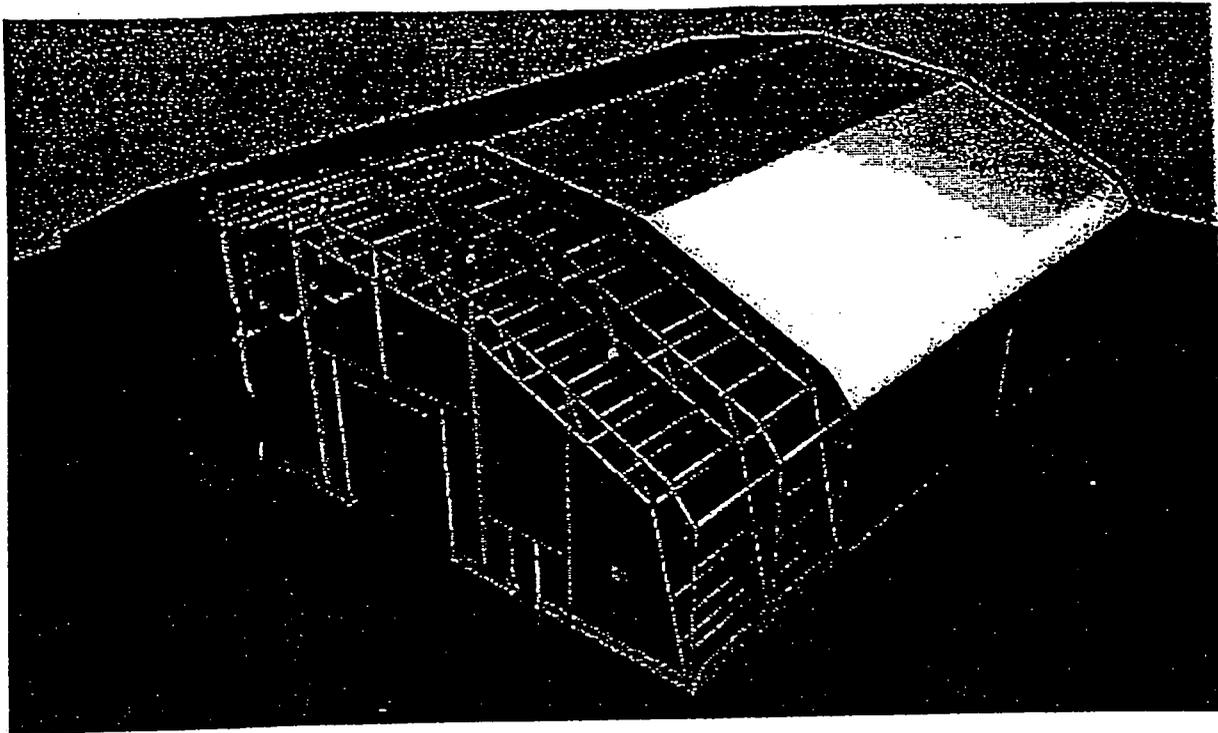


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ATTACHMENT D

RUBB Building Manufacturer's Data

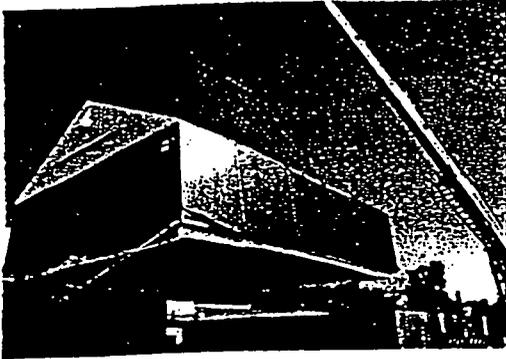
000119



000120

9/11/98

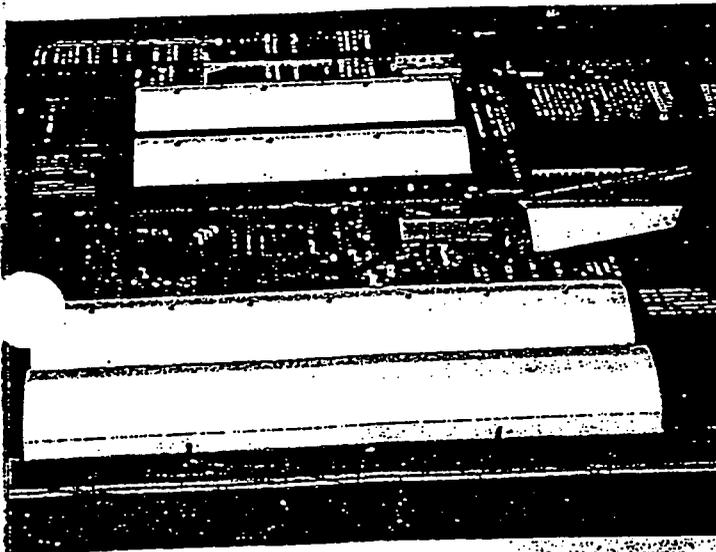
THA double skin shelter used for nuclear site decontamination work.



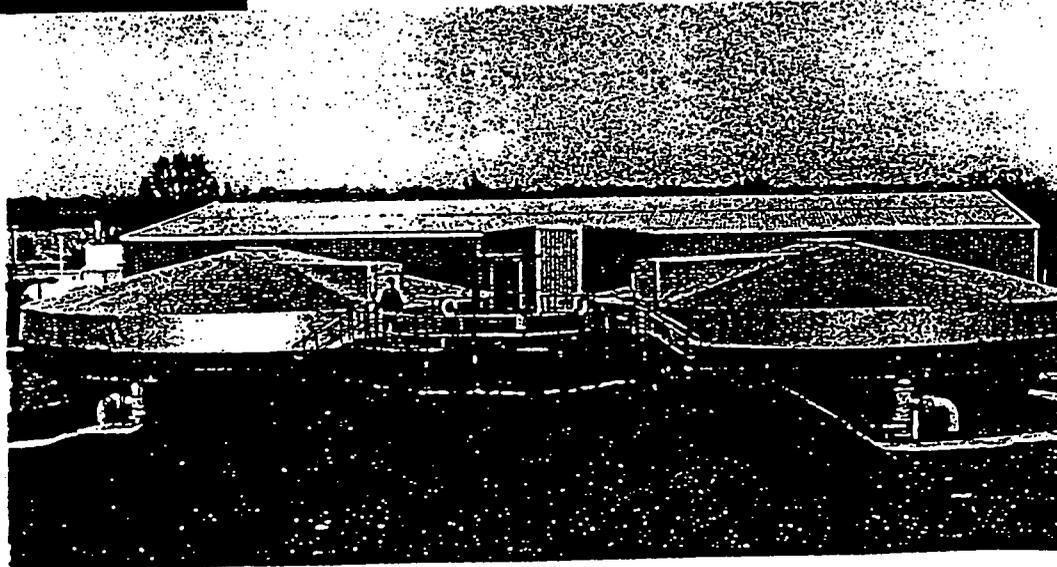
Rubb is providing covers of various types to prevent airborne dust and odor pollution, also to prevent algae growth by blocking out sunlight.

Rubb is providing tank covers with access for many water utilities. Also sealed structures for asbestos demolition companies. Rubb structures can also be effectively sealed to provide a 'negative' pressure environment.

Once a site has been cleaned up the shelter can be used elsewhere. Covers can be readily decontaminated or disposed of if necessary.



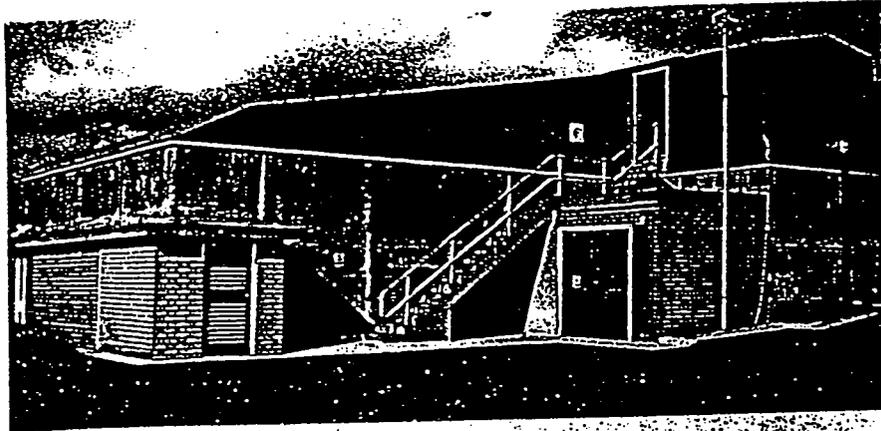
US Superfund site at Fernald, Ohio uses Rubb storage buildings to house chemical waste. The two buildings were erected in only 30 days.



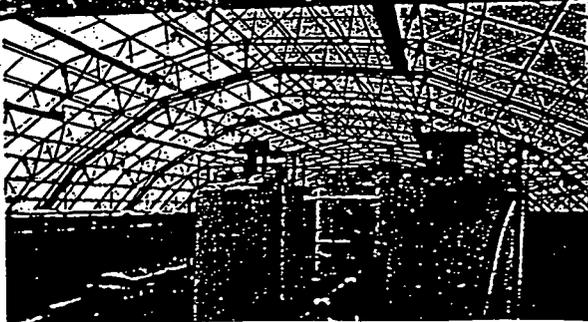
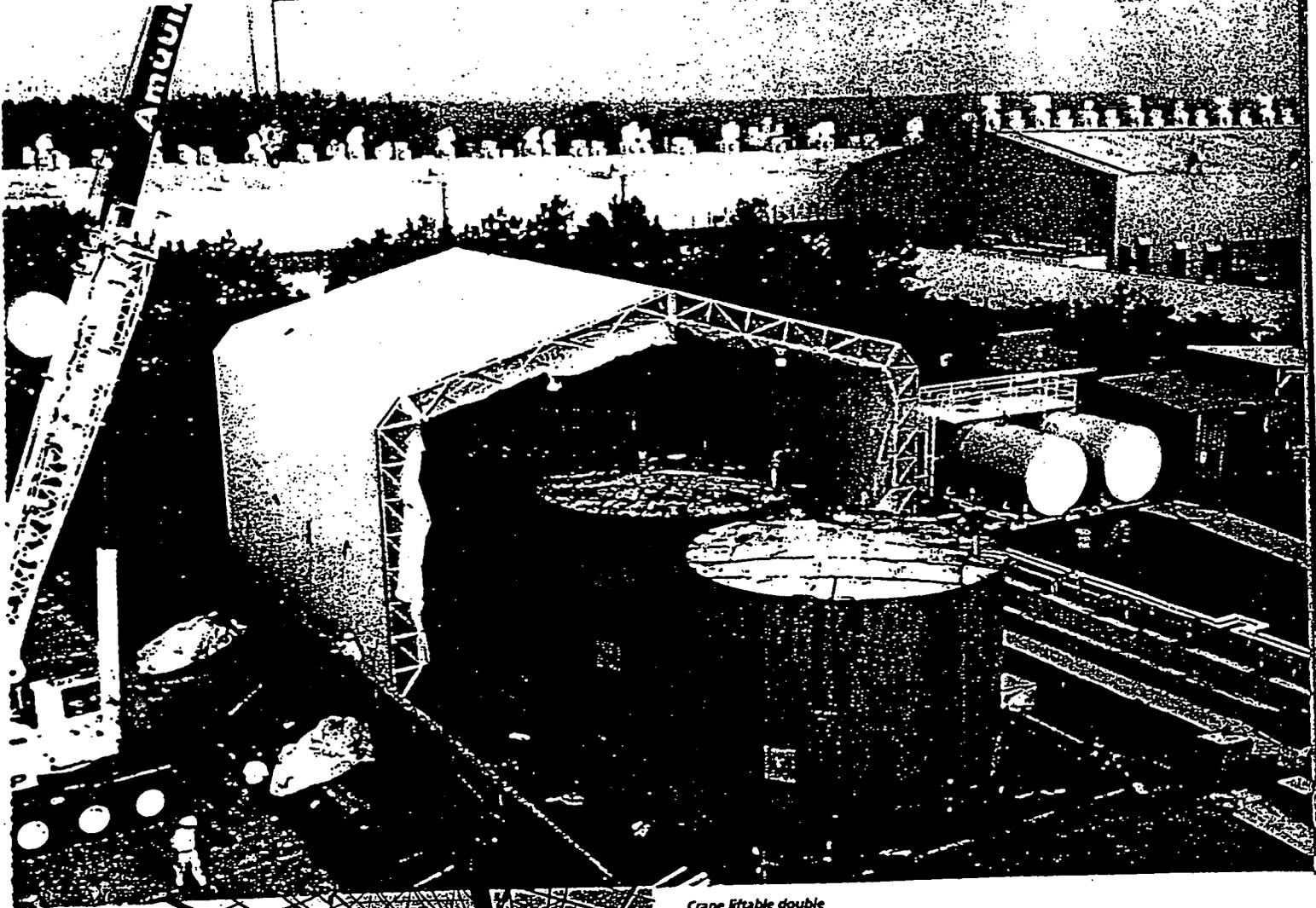
Tank covers designed to blend in with site and provide easy maintenance access.

000121

2839



Rubb cover over existing open tanks prevents algae growth by restricting daylight and chemical treatments were substantially reduced.



Crane liftable double skin structure for decontamination of chemical tanks, USA.

Whole site cover for soil reclamation plant

000122

2839

Typical Portable Trailer
Data

000123



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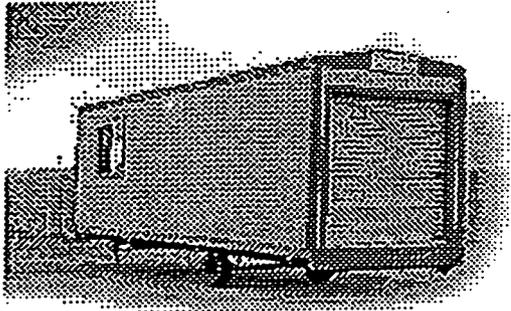
ATTACHMENT E

Typical Portable Trailer Data

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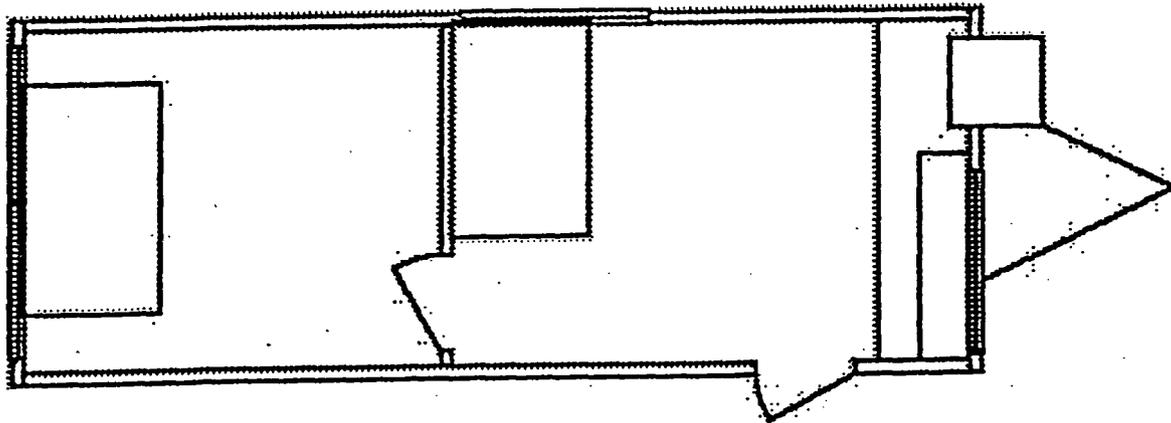
STRV-828

Office & Storage Combo



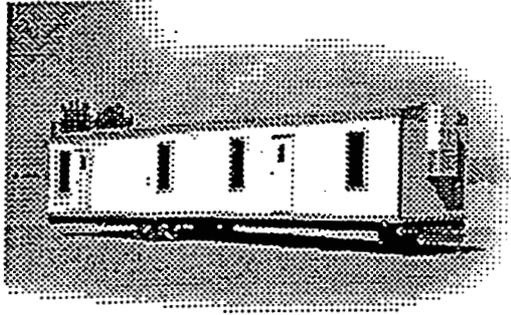
- Wood or metal exterior
- Built-in desk with two-drawer file cabinet
- Overhead shelf
- 36"x48" plan table
- Thru-wall A/C heat in office area
- 8' x 28'

Floorplan



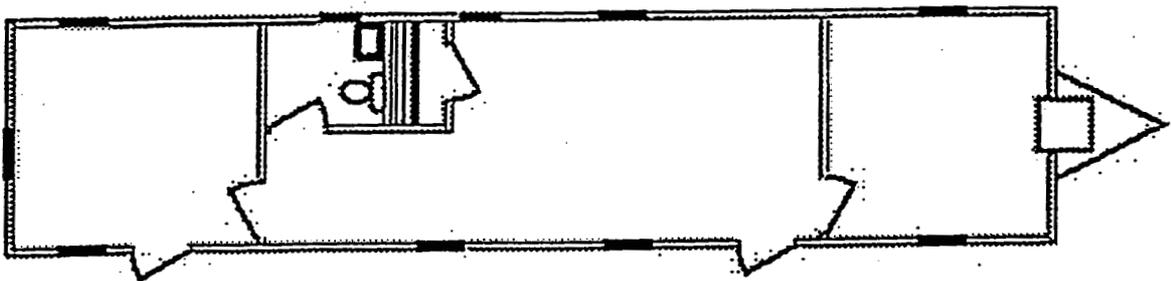
SNGL-1256

Three Office Model



- 12'x12' private office (2)
- 12'x32' general office
- Handicap-equipped half-bath (optional)
- Central A/C system with heat
- 12' x 56'

Floorplan



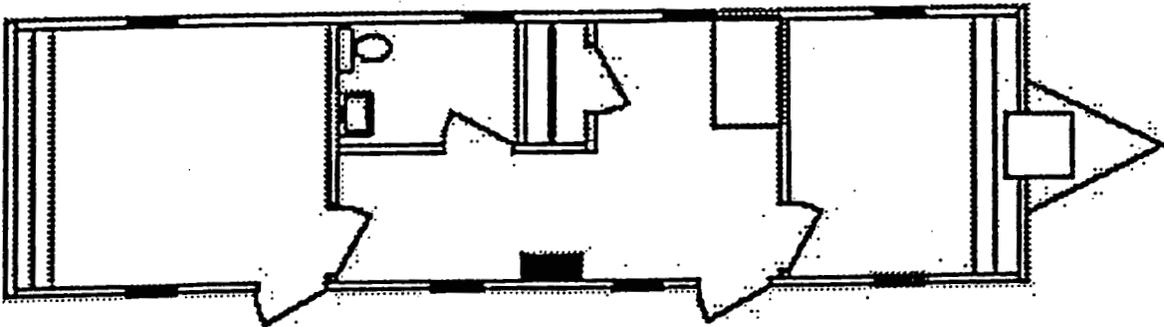
SNGL-1044

Three Office Model



- 10'x13' private office
- 10'x10' private office
- 10'x21' general office
- Full width desks with file cabinets
- Full width overhead shelves
- 36"x48" Plan table
- Handicap-equipped half-bath (optional)
- Central A/C system with heat
- 10' x 44'

Floorplan



2839

Typical Portable Trailer
Data

000128

62100
2838

RESPONSES TO INFORMAL OHIO EPA COMMENTS ON
DRAFT SILO 3 PROJECT SITE PREPARATION PACKAGE

4	OEPA General Comment	The document does not specify sealing of concrete though it discusses sealants in the waste management section. All concrete surfaces should be sealed in order to hopefully decrease decontamination requirements.	The concrete floor of the treatment facility will be sealed to prevent contamination and facilitate decontamination. The ISA pad is planned only for storage of solid material. This pad, and other foundations are not expected to be subject to significant contamination and therefore will not be sealed.
5	OEPA Section 2.1, pg 2, line 9	All disturbed areas must be seeded within seven days of knowing they will be idle for 45 days or more.	This requirement has been incorporated into the plan, as well as the appropriate construction specifications
6	OEPA Section 2.2.2.2	Include removal of accumulated sediment from behind check dams as a maintenance requirement	This requirement has been incorporated into the Specification 02485, "Soil Erosion and Sedimentation Control", as well as into the Environmental Control Plan
7	OEPA Section 2.2.5.1	As stated previously, see other approved documents for proper silt fence installation methods. Of special note is the importance of installing silt fences along contours.	A detailed erosion control specification (Specification 02485, "Soil Erosion and Sedimentation Control"), including methods for installation of silt fence has been included in the package. This specification was developed based upon specifications previously approved by OEPA and specifically includes the requirement to install silt fence along contours to the extent practical.
8	OEPA Section 2.3	As stated previously, see other approved documents for proper seeding specifications. Details needed include seed mixture, seed rate, mulch rate, success criteria, etc.	A detailed seeding specification (Specification 02900, "Seeding") has been included in the package. This specification was developed based upon specifications previously approved by OEPA.
9	OEPA Section 3.3, line 20	OEPA suggests adding "or as needed" as times when field activities will be monitored for visible emissions. Field conditions and activities should be constantly monitored for emissions	Comment incorporated as recommended
10	OEPA Section 4.2	Replace all references "FEMP Burial Cell" with OSDF.	Comment incorporated as recommended

62100

RESPONSES TO INFORMAL OHIO EPA COMMENTS ON
DRAFT SILO 3 PROJECT SITE PREPARATION PACKAGE

11	OEPA	Section 4.2	Additional detail is required regarding excess soil/debris management. Information on expected quantities generated, location of generation, available WAC data to support below WAC conclusion, time frame for transport from stockpile to the OSDF, and figure detailing excavation areas and stockpile areas.	Additional detail regarding expected quantities generated, location of excess soil, basis of the below WAC conclusion, time frame for transport from stockpile to the OSDF has been added. In addition, the proposed location of the interim soil staging area is now reflected on drawing 52-3002
12	OEPA	Drawing 52-3012	The use of hay bales should be removed. Silt fence is not shown as installed along the contours.	The use of hay bales has been removed. Silt fence is now shown installed along contours to the extent practical.
13	OEPA	Drawing 52-3111	No load calculations are provided but it would seem the foundation supports for the gantry should be more substantial than presented.	The load calculations for the gantry supports have been reviewed by RMRS and verified to be adequate. These and other structural calculations will be independently verified by FDF.
14	OEPA	Drawing 52-3210	It is not clear if the entire foundation has a concrete berm or just the contamination area. In order to ensure any spills are contained within the structure the entire foundation should be bermed. Additionally a separate sump should be installed for the area outside the contamination area.	As illustrated on drawing 52-3210, the entire treatment facility foundation has a concrete berm. The facility foundation is designed such that the treatment (contamination) area, the rework area, and the remainder of facility each drain to a separate sump.

RESPONSES TO INFORMAL OHIO EPA COMMENTS ON
DRAFT SILO 3 PROJECT SITE PREPARATION PACKAGE

131000

DOCUMENT NUMBER AND TITLE: DRAFT 50% SITE PREPARATION PACKAGE			
ITEM NO.	REVIEWER NAME	PAGE NO. /PARAGRAPH	COMMENT
1	OEPA	General Comment	The document needs to be thoroughly proofread. Numerous errors make the document difficult to read.
2	OEPA	General Comment	Obviously the storage pad as proposed will not be acceptable for a future replacement to the Plant 1 Pad. The lack of curbing and other controls will limit its future usefulness.
3	OEPA	General Comment	Ohio EPA would expect that a substantial amount of additional details will be added prior to the next submittal. We would recommend reviewing previously approved submittals by the Soils Project for proper detail regarding storm water controls and monitoring, seeding, stabilization, dust control, silt fence installation, stockpile management, waste management, etc.
			<p>The Site Preparation Package has undergone a thorough technical editing and proofreading process.</p> <p>The storage pad is being constructed for interim storage of stabilized Silo 3 material pending shipment to the disposal facility. It is not intended as a replacement for the Plant 1 Pad. Since the pad is proposed only for storage of material with no free liquids, secondary containment (curbing, etc.) is not required so long as the containers are protected from contact with accumulated precipitation (OAC 3745-55-75(C)).</p> <p>The proposed design of the pad will protect the containers of stabilized Silo 3 material from contact with accumulated precipitation. Storm water runoff from the pad will drain to the existing collection system.</p> <p>The Site preparation package now includes additional detail regarding the issues referenced in OEPA's comment. Specifically, the package now includes the construction specifications related to erosion and sediment control, seeding, and soil management. In addition, the Pre-operational Environmental Control plan includes detailed dust control and waste management plans. Plans and specifications previously approved by OEPA for projects such as Soil and Water projects activities, were specifically utilized as guidance, and in many cases incorporated verbatim into the plans and specifications for the Silo 3 Site Preparation package.</p>