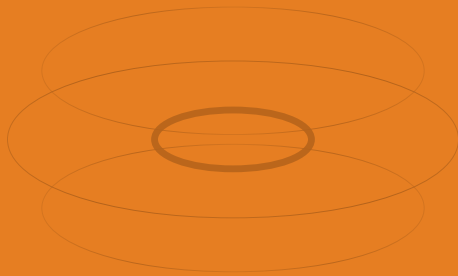


OWNER

Site Preparation, Clearing and Earthwork

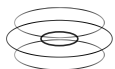


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TORUS

[REDACTED], [REDACTED] County, [REDACTED]

ISSUE SUMMARY AND APPROVAL

This page records each issue of SPC-SPC-002. The preparer, reviewer and approver sign for each revision.

Rev.	Date	Issue purpose	Description
A	2026-09-29	Issued for Review	First issue

Contributors

Rev.	Discipline	Prepared by	Reviewed by	Approved by
A	Specifications			

SECTION PC-SPC-002
SITE PREPARATION, CLEARING AND EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:

1. Locating and protecting existing underground and overhead facilities through OKIE811, including the 24 in trunkline of (the receiving pipeline operator).
2. Installation, maintenance and removal of temporary erosion and sediment controls under CIV-RPT-002, Stormwater Pollution Prevention Plan.
3. Clearing and grubbing of the 2.41 acre lease tract (350 ft x 300 ft) and the access road corridor (about 600 ft long, 20 ft top width, HOLD H-05).
4. Topsoil stripping and stockpiling.
5. Site grading, including cut, fill, embankment and subgrade preparation for pads, the access road, internal roads R-1 to R-7 of MEC-DWG-001, Plot Plan, and foundations, to the lines and grades of CIV-CAL-001, Earthwork and Grading, and CIV-DWG-003, Grading and Drainage Plan.
6. Treatment of the expansive clay subgrade by moisture conditioning, a select fill cap and, where directed, lime or cement stabilization.
7. Structural excavation and backfill for foundations, and trench excavation and backfill for conduit and cable.
8. Dewatering of excavations, field and laboratory soil testing, final grading, topsoil replacement, seeding and restoration.

B. Related sections: SPC-SPC-001, General Requirements; SPC-SPC-003, Cast-in-Place Concrete; SPC-SPC-005, Aggregate Surfacing, Roads and Fencing; SPC-SPC-006, Piping Fabrication and Installation (pipe trench excavation, bedding, padding and backfill).

C. Work by others:

1. The geotechnical investigation and report, by the Owner (HOLD H-07). The criteria of this section are provisional until that report is issued; the EOR will confirm or revise them by change.
2. Preparation of the SWPPP and filing of the construction stormwater notice of intent, by the Owner. The permitting authority is HOLD H-17: the EPA Region 6 Construction General Permit if the station is an oil and gas facility under jurisdiction, otherwise the OKR10 general permit. The SWPPP is written to satisfy both. The Contractor shall be the operator for day-to-day SWPPP implementation and shall co-sign as the applicable permit requires.

1.02 REFERENCES

A. Standards:

1. ASTM D698, Laboratory Compaction Characteristics of Soil Using Standard Effort; ASTM D1557, Modified Effort.
2. ASTM D6938, In-Place Density and Water Content by Nuclear Methods; ASTM D1556, Density by the Sand-Cone Method; ASTM D2216, Water Content.
3. ASTM D4318, Atterberg Limits; ASTM D2487, Unified Soil Classification System; ASTM D6913 and D1140, Particle Size and Fines Content.
4. ASTM D4546, One-Dimensional Swell; ASTM D4829, Expansion Index.
5. Department of Transportation (), Standard Specifications for Highway Construction, current edition, earthwork, erosion control and stabilized subgrade sections.
6. 29 CFR 1926 Subpart P, Excavations; 29 CFR 1926.600(a)(6) and 1926.1408, work near overhead power lines.
7. Underground Facilities Damage Prevention Act, 63 O.S. Section 142.1 et seq.
8. EPA Region 6 Construction General Permit, or OPDES general permit OKR10, as set by HOLD H-17. Until H-17 is released, the more stringent requirement of the two shall apply.

B. Project documents: GEN-RPT-002, Design Decisions Register; GEN-DB-001, Basis of Design; MEC-DWG-001, Plot Plan; CIV-RPT-001, Civil Design Criteria and Site Description; CIV-DWG-002, Overall Site Plan; CIV-CAL-001, Earthwork and Grading; CIV-CAL-002, Hydrology and Drainage; CIV-CAL-003, Access and Internal Roads; CIV-DWG-003, Grading and Drainage Plan; CIV-DWG-004, Civil Sections and Details; CIV-RPT-002, Stormwater Pollution Prevention Plan; STR-DWG-001 to STR-DWG-006, Foundation Drawings; REG-RPT-002, Permit and Approvals Matrix; REG-RPT-003, Environmental Desktop Review; CON-RPT-003, Construction HSE Plan.

1.03 DEFINITIONS

- A. Unclassified excavation: all excavation regardless of material, except rock.
- B. Rock: material that cannot be excavated by a single-shank ripper on a track dozer of at least 300 hp in good condition, or by a 50,000 lb class excavator with a rock bucket, at 10 CY/h or more; and boulders over 1 CY. Weathered sandstone that can be ripped is not rock. The Owner's Inspector and the Contractor shall classify rock jointly before it is removed.
- C. Unsuitable material: soil classified CH with a plasticity index over 35, OH, OL or PT; soil with more than 3 % organics by weight; frozen material; debris; soil that cannot be compacted to the criteria after moisture conditioning; and subgrade that fails proof-rolling after two reworking attempts.
- D. Select fill: low-plasticity granular or clayey fill, classified SC, CL, GC or GM, with a liquid limit of 40 or less, a plasticity index of 8 to 20, 100 % passing 2 in, 20 to 60 % passing the No. 200 sieve,

and no organics. Structural fill is fill under foundations, pads and roads, and shall meet the select fill criteria.

E. General fill: on-site CL soil free of organics and debris, with rock fragments under 4 in, used outside structural areas.

F. MDD and OMC: maximum dry density and optimum moisture content from the specified Proctor test.

1.04 SUBMITTALS

A. The Contractor shall submit the items in Table 1-1.

Table 1-1: Submittal Schedule

No.	Submittal	Timing	Action
002-01	OKIE811 ticket numbers, positive-response log and locate verification plan, including potholing locations on the trunkline	Before any ground disturbance	Owner review
002-02	SWPPP implementation schedule, erosion control installation drawings, and the name of the qualified SWPPP inspector	7 days before mobilization	Owner approval
002-03	Earthwork plan: equipment, haul routes, stockpile locations, cut and fill sequence, moisture conditioning method	14 days before earthwork	Owner and EOR review
002-04	Source and test data for imported select fill: Atterberg limits, gradation, Proctor (D698) and swell (D4546), one set per source and per 2,000 CY	14 days before the first delivery	EOR approval
002-05	Testing laboratory name and accreditation (AASHTO re:source or equivalent) for the tests listed	14 days before earthwork	Owner approval
002-06	Nuclear gauge license, calibration and operator certification	Before the first test	Owner review
002-07	Dewatering plan and discharge locations	Before excavation below groundwater	Owner review
002-08	Protective system design by a registered professional engineer where 29 CFR 1926.652 requires one (excavations over 20 ft deep, none expected)	Before excavation	Owner approval
002-09	Lime or cement stabilization mix design, where ordered: additive content by laboratory test to reach a plasticity index of 15 or less and swell of 1 % or less	14 days before stabilization	EOR approval
002-10	Daily earthwork test reports	Within 24 hours of the test	Owner review
002-11	Seed mix certification, seeding rates and fertilizer	14 days before seeding	Owner approval

1.05 QUALITY ASSURANCE

- A. Soil testing shall be performed by a laboratory accredited for each test, with nuclear gauge operators certified and licensed.
- B. A competent person, as defined by 29 CFR 1926.650, shall be on site whenever excavations are open.
- C. A qualified SWPPP inspector shall perform the inspections required by the applicable permit.
- D. Hold and witness points are listed in 3.12 and compiled in SPC-SPC-019.

1.06 MEASUREMENT AND PAYMENT

- A. Pay items are listed in Table 1-2. Locates, potholing, excavation protective systems, dust control and dewatering are incidental to these items.

Table 1-2: Earthwork Pay Items

Pay item	Unit	Measurement and inclusions	Exclusions
02.01 Clearing and grubbing	Acre	Plan area within the approved clearing limits, including disposal	Clearing outside the limits
02.02 Topsoil strip and stockpile	CY	Cross-sections before and after stripping; includes stockpile maintenance and later replacement	
02.03 Unclassified excavation and embankment	CY	Excavation in place by average end area between the stripped surface and design subgrade. Embankment, compaction, structural excavation and backfill for foundations, moisture conditioning, dewatering, testing and the select fill cap shown on the drawings are included	Rock; undercut
02.04 Undercut and replace unsuitable subgrade	CY	In-place volume removed below design subgrade, measured under HP-02-05; includes replacement with select fill and compaction	Undercut caused by the Contractor's failure to protect the subgrade
02.05 Rock excavation	CY	In-place volume of rock measured under HP-02-05, to a pay limit of 6 in below subgrade	Rock in the pipe trench (pay item 06.05)
02.06 Stormwater controls	Lump sum	Install, inspect, maintain, repair and remove. Paid 40 % on installation, 40 % monthly pro rata, and 20 % on final stabilization and removal	
02.07 Final grading, seeding and restoration	Acre	Plan area seeded and accepted	
02.08 Lime or cement subgrade stabilization	SY	Plan area stabilized to the ordered depth, measured under HP-02-05; includes additive, mixing, compaction and testing	

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. On-site materials: stripped topsoil for reuse, and CL general fill where it meets the criteria of 1.03.
- B. Imported select fill shall meet 1.03 D from a source approved under submittal 002-04. It is Contractor-furnished.

2.02 STABILIZATION ADDITIVES

- A. Lime shall be hydrated lime or quicklime meeting the stabilization section. Cement shall be ASTM C150 Type I/II. Additives shall be furnished only when ordered under pay item 02.08.

2.03 EROSION CONTROL AND SEEDING MATERIALS

- A. Silt fence shall be woven geotextile at least 36 in wide, with a grab tensile strength of 120 lb or more and an apparent opening size of No. 30 or finer.
- B. Other erosion control materials shall be wattles; rock check dams of Type I riprap or 3 to 6 in clean stone; a stabilized construction entrance of 3 to 6 in stone, 8 in thick and at least 50 ft long; and biodegradable straw or coconut erosion control blanket.
- C. Seed shall be a native warm-season mix acceptable to the landowner and consistent with the permanent seeding mix for County (TBV), with a wheat or rye cool-season cover crop when seeded between October 1 and March 1.
- D. Geotextile for separation, where directed, shall meet SPC-SPC-005.

PART 3 EXECUTION

3.01 LOCATES AND PROTECTION OF EXISTING FACILITIES

- A. The Contractor shall submit an OKIE811 locate request at least 48 hours, excluding weekends and holidays, before excavation, covering the whole tract, the access road and the outlet lateral corridor, and shall renew tickets before they expire.
- B. Ground disturbance shall not begin until every notified operator has responded and its marks are visible. All marks shall be photographed.
- C. The trunkline shall be exposed by hand or vacuum excavation, with the receiving pipeline operator's representative present, at the tie-in location and wherever Contractor work (road, drainage, outlet lateral, fence or equipment crossing) comes within 25 ft of it (HOLD H-04). Depth of cover and horizontal location shall be recorded to 0.1 ft.
- D. The right-of-way limits shall be marked with high-visibility fence or flagged lath at no more than 50 ft spacing along the north side of the work. No stockpile, spoil, parking or equipment storage shall be placed in the right-of-way.

- E. Heavy equipment shall cross the trunkline only at a designated crossing with engineered protection (timber mats or an air bridge) approved by the receiving pipeline operator, and only where a crossing cannot be avoided. The Contractor shall plan the work to avoid crossings; the outlet lateral excavation shall be worked from the south side.
- F. Clearances to overhead power lines shall be kept under 29 CFR 1926.1408 for cranes and 29 CFR 1926.600(a)(6) for other equipment, with goal-post warning structures at crossings.

3.02 EROSION AND SEDIMENT CONTROL

- A. Perimeter controls (silt fence or wattles on the downslope sides), the stabilized construction entrance at the county road, and inlet and outlet protection shall be installed before clearing, under
CIV-RPT-002.
- B. Controls shall be inspected at the frequency of the applicable permit (at least every 7 calendar days, or every 14 days and within 24 hours of a qualifying storm, as the SWPPP selects; TBV against the permit set by HOLD H-17) and after any storm that produces runoff. Deficiencies shall be repaired within 24 hours or before the next storm.
- C. Sediment shall be removed when it reaches one-third of the silt fence height.
- D. Disturbed areas where work has stopped for 14 days or more shall be stabilized within 14 days with temporary seed or mulch, or sooner if the applicable permit requires.
- E. The SWPPP, inspection reports and permit shall be kept on site. Dust shall be controlled by water truck so that no visible dust crosses the property line.

3.03 CLEARING, GRUBBING AND TOPSOIL

- A. Clearing shall be confined to the limits of
CIV-DWG-002. Trees marked by the Owner shall be preserved.
- B. Stumps and roots over 1 in diameter shall be grubbed to 18 in below subgrade in structural areas and to 6 in below finished grade elsewhere.
- C. Cleared vegetation shall be removed from the site or chipped and spread outside the fence where the landowner agrees. Burning shall require Owner approval and a county burn permit, and shall not occur during a burn ban.
- D. Topsoil shall be stripped to the depth encountered (6 in average assumed, measured by cross-sections before and after stripping) and stockpiled at the location shown, no more than 6 ft high, with side slopes no steeper than 3H:1V, perimeter silt fence, and temporary seed if the stockpile stays in place more than 14 days.

3.04 SUBGRADE PREPARATION

- A. After stripping, cut areas shall be excavated to subgrade. In fill areas the exposed surface shall be scarified to 8 in, moisture conditioned and compacted to 3.06.

- B. The subgrade under pads, roads, crane pads, buildings and equipment foundations shall be proof-rolled with a fully loaded tandem-axle dump truck of at least 25 tons gross, or a rubber-tired roller of at least 20 tons, in two passes at right angles at walking speed, witnessed by the Owner's Inspector (WP-02-03).
- C. Rutting, pumping or visible deflection of more than 1 in identifies a soft area. It shall be reworked once by scarifying, drying and recompacting. If it fails again, it shall be undercut to firm soil (typically 12 to 24 in) and replaced with select fill or stabilized under pay items 02.04 and 02.08, as the Owner's Inspector directs with EOR concurrence.
- D. The site is assumed to be Permian red-bed lean clay of moderate expansion potential (HOLD H-07). Unless the geotechnical report states otherwise:
 - 1. A select fill cap at least 24 in deep, extending 3 ft beyond the edges, shall be placed under all building slabs and on-grade foundations, because select fill of low plasticity limits the heave transmitted to the slab.
 - 2. On-site clay in structural areas shall be placed at 0 to +4 % of OMC, wet of optimum, because clay compacted dry of optimum swells more when it later takes on water.
 - 3. Where the report identifies a plasticity index over 25 or a potential vertical rise over 1 in, the top 8 in of subgrade under roads and pads shall be lime stabilized under pay item 02.08 at the content set by the mix design (submittal 002-09).
 - 4. The prepared subgrade shall not be allowed to dry out or pond. Moisture shall be maintained until the subgrade is covered, and re-tested if it is exposed for more than 72 hours.

3.05 FILL PLACEMENT

- A. Fill shall be placed in horizontal loose lifts no thicker than 8 in, 6 in for hand-operated compactors, and 4 in within 3 ft of foundation walls, conduits and buried piping outside the pipe trench zone.
- B. Fill shall be placed only on accepted proof-rolled subgrade or on previous lifts that have passed density and moisture tests.
- C. Fill shall not be placed on frozen ground or contain frozen material. Earthwork shall stop when the soil temperature at 2 in depth is below 32 °F or when rain prevents moisture control.
- D. Fill and cut slopes shall be no steeper than 3H:1V unless shown otherwise. Fill slopes shall be overbuilt and trimmed. Fill against existing slopes steeper than 5H:1V shall be benched, with benches at least 8 ft wide.

3.06 COMPACTION

- A. Fill and subgrade shall be compacted to the criteria of Table 3-1. On-site clay under roads is compacted to 95 %, not a higher value, because compacting an expansive clay to a high density increases its swell pressure; the structural capacity of the road comes from the aggregate section of SPC-SPC-005.

Table 3-1: Compaction Criteria

Area	Material	Minimum compaction, % of MDD (ASTM D698)	Moisture window from OMC
Structural fill under building slabs and equipment foundations	Select fill	98	-1 to +3 %
Pad, yard and crane pad subgrade, top 12 in	On-site CL	95	0 to +4 %
Pad, yard and crane pad subgrade, top 12 in	Select fill	98	-1 to +3 %
Road subgrade, access road and internal roads, top 12 in	On-site CL	95	0 to +4 %
Road subgrade, access road and internal roads, top 12 in	Select fill	98	-1 to +3 %
General site fill below the top 12 in	General fill	95	0 to +4 %
Embankment slopes and non-structural areas	General fill	90	-2 to +4 %
Foundation excavation backfill	Select fill or on-site CL	95	0 to +3 %
Conduit trench backfill above the sand bedding	On-site CL	95 under roads and pads; 90 elsewhere	0 to +4 %
Lime-stabilized subgrade	Treated CL	95 (Proctor on treated material)	0 to +3 %

3.07 STRUCTURAL EXCAVATION AND FOUNDATION SUBGRADES

- A. Foundations shall be excavated to the lines and grades of STR-DWG-001 to STR-DWG-006, with a minimum depth of 18 in below finished grade, which is below the 12 in frost depth.
- B. Loosened material shall be removed and the final 3 in cleaned by hand. Bearing surfaces shall be free of water, mud and frozen soil.
- C. Each bearing surface shall be inspected and released by the Owner's Inspector, and by the geotechnical engineer where the report requires, before reinforcing steel is placed (HP-02-04). The allowable bearing pressure is 2,000 psf, provisional (HOLD H-07). Soft or unsuitable material found at bearing level shall be over-excavated and replaced with lean concrete of 2,000 psi or with select fill compacted to 98 %, as directed.
- D. Drilled piers, where the drawings show them, shall be excavated, cleaned and inspected under SPC-SPC-003.

3.08 EXCAVATION SAFETY

- A. All excavations shall comply with 29 CFR 1926 Subpart P. The competent person shall inspect excavations daily, after rain, and after any event that increases the hazard.

- B. Soil shall be treated as Type C for sloping and benching unless the competent person classifies it otherwise by test, because red-bed clays fissure as they dry.
- C. Spoil shall be set back at least 2 ft from the edge. Trenches 4 ft deep or more shall have a means of egress within 25 ft of lateral travel.
- D. The atmosphere shall be tested in any excavation near live gas, which includes every excavation near the trunkline and every excavation after gas-in, and in any excavation deeper than 4 ft where a hazardous atmosphere could exist.

3.09 DEWATERING

- A. Excavations shall be kept free of water during foundation construction, pipe installation and backfill, with groundwater held at least 12 in below the bottom of the excavation.
- B. Water shall be discharged through a sediment filter bag or sediment trap onto a stabilized, vegetated area of the tract. No water shall be discharged to waters, wetlands or the right-of-way, and a turbid discharge leaving the site shall be stopped at once.
- C. Hydrostatic test water is governed by SPC-SPC-011.

3.10 GRADING TOLERANCES

- A. Grading shall meet the tolerances of Table 3-2.

Table 3-2: Grading Tolerances

Item	Tolerance
Subgrade under roads and pads	+0.00 ft, -0.10 ft from design subgrade elevation
Finished grade, unsurfaced areas	±0.10 ft, with positive drainage to ditches and no ponding
Pad subgrade surface	Within 0.05 ft under a 10 ft straightedge
Ditch flow line	±0.05 ft, with no reverse grade
Grade away from buildings and foundations	At least 2 % for 10 ft

3.11 RESTORATION

- A. Topsoil shall be replaced at least 4 in thick on all disturbed unsurfaced areas and slopes.
- B. Seed shall be applied within 14 days of final grading at the approved rates, and mulched with straw at 2 tons/acre, crimped, or covered with blanket on slopes steeper than 4H:1V and in ditches.
- C. Final stabilization shall be uniform perennial vegetative cover of at least 70 % density over all unpaved disturbed areas, or the value of the applicable permit if different (HOLD H-17). The Contractor shall maintain and reseed until it is achieved, then remove the temporary controls and support the Owner's notice of termination.

3.12 FIELD QUALITY CONTROL

A. Testing shall be performed at not less than the frequencies of Table 3-3.

Table 3-3: Minimum Testing Frequencies

Test	Minimum frequency	Standard
Classification of each fill source	1 per source, plus 1 per 2,000 CY placed and on any visible change of material	D6913 or D1140, D4318, D2487
Proctor	1 per soil type per source, plus 1 per 5,000 CY	D698
Swell of select fill and of subgrade under buildings	1 per source and 1 per building footprint	D4546
Density and moisture, pads, yard and crane pads	1 per 2,500 ft ² per lift, at least 3 per lift per pad	D6938
Density and moisture, roads	1 per 150 ft of road per lift, at least 3 per lift	D6938
Structural fill under foundations	1 per 500 ft ² per lift, at least 2 per foundation per lift	D6938
Foundation and trench backfill	1 per 100 ft of trench per lift; 1 per foundation per 2 lifts	D6938
Nuclear gauge correlation	1 sand cone per 20 nuclear tests and at each new material	D1556
Lime or cement stabilization	Spread rate by pan or tarp method 1 per 5,000 ft ² ; plasticity index of treated soil 1 per 10,000 ft ² ; depth every 250 ft	field density test method

B. A lift that fails a test shall be reworked and retested. The area represented by the failed test, extending half-way to the adjacent passing tests, shall not be accepted until it passes. After two consecutive failures in the same area, the Contractor shall change its method (lift thickness, equipment or moisture) and notify the Owner.

C. The hold and witness points in Table 3-4 apply.

Table 3-4: Hold and Witness Points

ID	Activity	C	O	E	W	Record
HP-02-01	Locates complete, trunkline potholed and marked and right-of-way flagged before ground disturbance within 25 ft of the trunkline	P	H	-	H	QF-02-01 locate and pothole record
HP-02-02	Perimeter controls and construction entrance installed before clearing	P	H	-	-	QF-02-02 SWPPP inspection report
WP-02-03	Proof-rolling of subgrade under pads, roads, crane pads and foundation areas	P	W	-	-	QF-02-03 proof-roll record
HP-02-04	Foundation bearing surface inspection before reinforcing steel is placed	P	H	R	-	QF-02-04 subgrade release

ID	Activity	C	O	E	W	Record
HP-02-05	Undercut or stabilization quantity measured before backfill (pay items 02.04, 02.05, 02.08)	P	H	-	-	QF-02-05 measurement sheet
WP-02-06	Rock classification (pay item 02.05)	P	W	-	-	QF-02-05
HP-02-07	Final grading and stabilization accepted before earthwork equipment demobilizes	P	H	R	-	QF-02-06 final grading survey
WP-02-08	Weekly SWPPP inspection by the Contractor, with Owner surveillance	P	S	-	-	SWPPP inspection log

3.13 ACCEPTANCE

A. Earthwork is accepted when it meets Table 3-5.

Table 3-5: Acceptance Criteria

Parameter	Criterion	Method
Compaction	Every test meets Table 3-1	ASTM D6938 with sand-cone correlation
Moisture	Within the window of Table 3-1 when tested	ASTM D6938 or D2216
Proof-roll	Rutting or deflection of 1 in or less	Visual, measured with a straightedge
Select fill	Liquid limit 40 or less; plasticity index 8 to 20; 20 to 60 % passing No. 200; swell 1 % or less under 100 psf surcharge	D4318, D1140, D4546
Subgrade elevation	Within Table 3-2	Survey
Drainage	No ponding on graded surfaces 24 hours after rain	Visual
Stabilization	70 % uniform perennial cover, or the permit value (HOLD H-17)	Visual, photo record
Existing facilities	No damage	Inspection

END OF SECTION