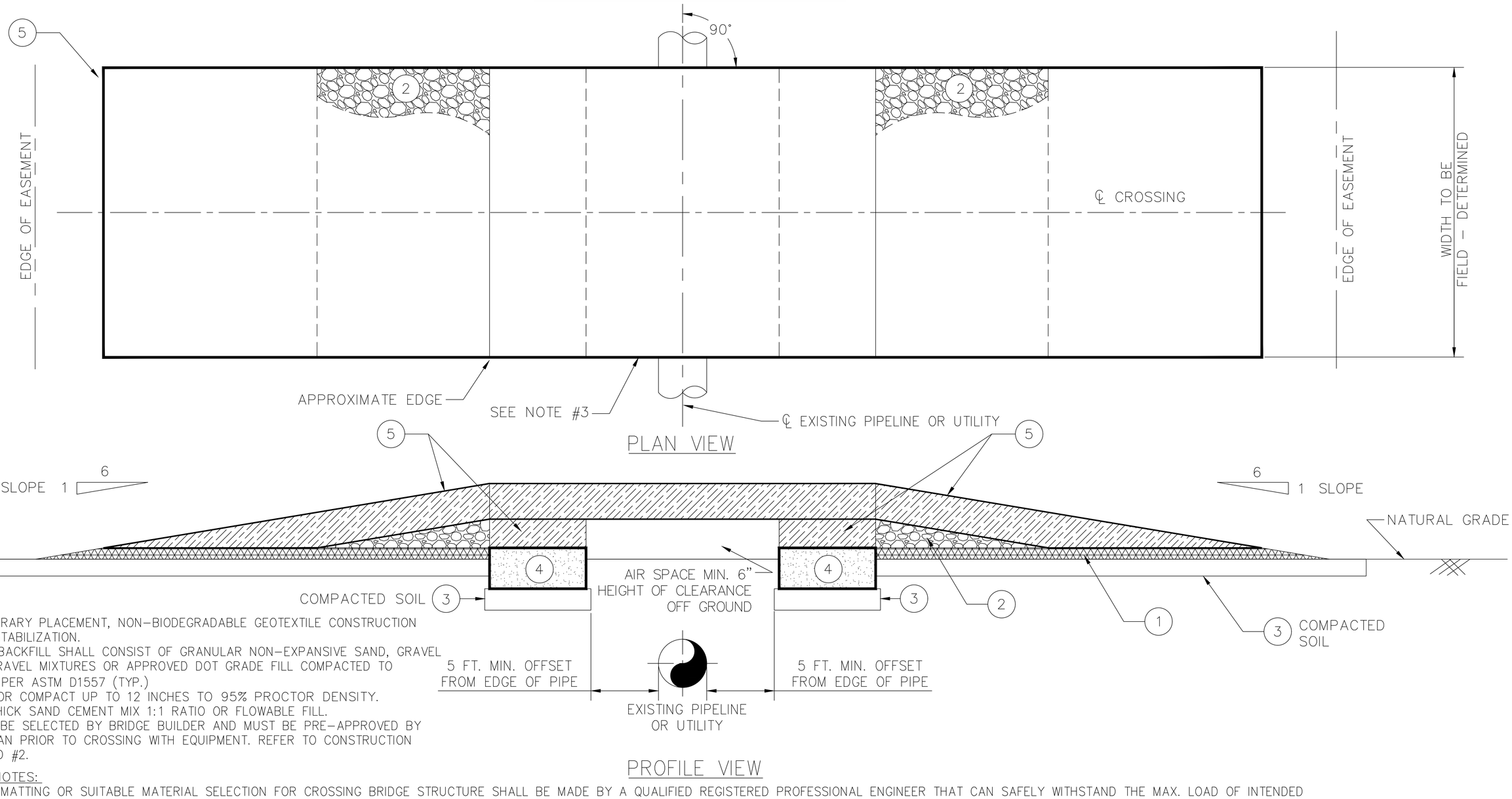
TYPICAL HAUL ROAD ALTERNATIVE



PLAN VIEW

PROFILE VIEW

LEGEND:

1. WOVEN TEMPORARY PLACEMENT, NON–BIODEGRADABLE GEOTEXTILE CONSTRUCTION FABRIC FOR STABILIZATION.
2. STRUCTURAL BACKFILL SHALL CONSIST OF GRANULAR NON–EXPANSIVE SAND, GRAVEL AND SAND–GRAVEL MIXTURES OR APPROVED DOT GRADE FILL COMPACTED TO MINIMUM 95% PER ASTM D1557 (TYP.)
3. PROOF ROLL OR COMPACT UP TO 12 INCHES TO 95% PROCTOR DENSITY.
4. 24–INCHES THICK SAND CEMENT MIX 1:1 RATIO OR FLOWABLE FILL.
5. MATERIAL TO BE SELECTED BY BRIDGE BUILDER AND MUST BE PRE–APPROVED BY KINDER MORGAN PRIOR TO CROSSING WITH EQUIPMENT. REFER TO CONSTRUCTION NOTES #1 AND #2.

CONSTRUCTION NOTES:

1. APPROPRIATE MATTING OR SUITABLE MATERIAL SELECTION FOR CROSSING BRIDGE STRUCTURE SHALL BE MADE BY A QUALIFIED REGISTERED PROFESSIONAL ENGINEER THAT CAN SAFELY WITHSTAND THE MAX. LOAD OF INTENDED CROSSING EQUIPMENT WITH A 2.0 MINIMUM FACTOR OF SAFETY.
2. BEFORE ANY OPERATION THAT MAY REQUIRE CROSSING OF EQUIPMENT BY OTHERS OVER KM PIPELINES, CROSSING PARTY OR THEIR DESIGNEE SHALL SUBMIT FOR APPROVAL A DETAILED STRUCTURAL ANALYSIS AND SUPPORT DOCUMENTATION PREPARED BY A LICENSED PROFESSIONAL ENGINEER UNLESS THIS REQUIREMENT IS WAIVED IN WRITING BY PIPELINE COMPANY PROJECT MANAGER OR ENGINEER. INCLUDE ALL APPROPRIATE EQUIPMENT AXLE LOADS AND CONFIGURATIONS FOR STRUCTURAL ANALYSIS SUCH AS SPACING AND LENGTH OF TRACKS OR WHEELS, WIDTH OF TRACK SHOES, OUTRIGGER PLACEMENTS, CENTER OF GRAVITY, AND ALL EQUIPMENT GROSS VEHICLE (FULLY LOADED) WEIGHTS. THE ANALYSIS MUST DEMONSTRATE THAT NO OVERSTRESS WILL OCCUR ON KM PIPELINES.
3. CONTRACTOR TO NOTIFY EXISTING PIPELINE/UTILITY COMPANY PRIOR TO INSTALLATION OF AIR BRIDGE CROSSING.
4. LENGTH OF RAMP TO VARY IN ACCORDANCE WITH CROSSING ANGLE TO PIPELINE. MINIMUM CROSSING ANGLE WITH RESPECT TO PIPELINE IS 45 DEGREES, IDEALLY A 90 DEGREE CROSSING.
5. VEHICLES OR EQUIPMENT USING CROSSINGS SHALL PROCEED SLOWLY AND WITH CAUTION TO MINIMIZE IMPACT LOADING AND REDUCTION ON DEPTH OF COVER OVER PIPE/UTILITY.
6. ON COMPLETION OF CONSTRUCTION, CONTRACTOR TO COMPLETELY REMOVE AIR BRIDGE AND RESTORE AREA TO THE SATISFACTION OF THE EXISTING PIPELINE/UTILITY COMPANY AND THE COMPANY'S INSPECTOR.
7. BRIDGE MATERIALS USED FOR CROSSING SHALL BE DESIGNED TO BE CAPABLE OF HANDLING THE MAX CROSSING LOAD WITHIN SAFE INDUSTRY–ALLOWABLE DEFLECTION LIMITS. IF, DURING EQUIPMENT CROSSING, BRIDGE DEFLECTION EXCEEDS OR APPEARS THAT IT WILL EXCEED THE AIR GAP BETWEEN GROUND SURFACE AND BRIDGE, CROSSING PARTY MUST HALT CROSSING EQUIPMENT AND PIPELINE/UTILITY COMPANY INSPECTOR MUST BE CONTACTED IMMEDIATELY BEFORE PROCEEDING. BRIDGE MAY NEED TO BE RE–DESIGNED IF SUCH DEFLECTION OCCURS.
8. IN LIEU OF COMPACTION AND PROOF ROLLING, A 4 – INCH THICK WOODEN MATS MAY BE USED ON OTHER SIDE OF THE PIPELINE IN CASE CERTAIN EQUIPMENT CANNOT CROSS THE PIPELINE DUE TO STRESS LIMITATIONS.
9. AIR BRIDGE CROSSINGS SHALL BE LOCATED IN WELL DRAINED AREAS THAT DO NOT EXPERIANCE STANDING WATER DUE TO RAINFALL
10. EXISTING SURFACE ELEVATIONS MUST BE MAINTAINED DURING ALL WEATHER CONDITIONS AND VEHICLES MUST NOT BE ALLOWED TO RUT OR STRAY FROM THE DESIGNATED CROSSING LOCATION

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
0	07–06–20	HT			

REVISIONS

KINDER MORGAN

TYPICAL AIR BRIDGE
FOR HEAVY EQUIPMENT CROSSING
HEAVY CROSSING – DESIGNED BRIDGE

Division:		Op. Area:	
State:		Co./Par.:	
Section:	Township:	Range:	
Drafter: MTL	Date: 11/2016	Project ID:	Type:
Chk'd:	Date:	Scale: NONE	
Appr:	Date:	Filename: TYP AIR BRIDGE	

TYP AIR BRIDGE 2 — Sheet: 1 of 1 — Rev. 0

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