



Material Specifications for Pipeline Protective Structures

- The following are minimum specifications for pipeline protective slab construction.
- Granular Fill shall consist of crushed stone, free of debris and organic matter and containing not more than 10% fines passing No. 200 sieve. Gradation shall be uniform and such that no more than 70% passes No. 4 sieve. Maximum size stone shall not exceed 1".
 - Portland Cement shall conform to ASTM C150, Type 1.
 - Concrete Aggregates shall be washed sand and gravel or clean crushed stone conforming to ASTM C33.
 - Water shall be fresh, clean and free from deleterious amounts of oil, acid, alkali, salts or organic matter.
 - Air-Entraining Admixtures shall conform to ASTM C260 and shall be used strictly in accordance with manufacturer's recommendations.
 - Cast-in-Place Concrete Mix Design shall conform to the following minimum requirements:
 - Minimum compressive strength at 28 days (f'c): 4000 psi
 - Entrained air content (by volume): 5% (+/-1%)
 - Maximum slump: 3
 - Deformed Reinforcing Bars shall be ASTM A615, Grade 60.
 - Supports for Reinforcing: Provide wire bar-type supports for reinforcing including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars in place. All devices shall be galvanized or plastic-coated.
 - Concrete Repair Compound: "Sikatop 122" as manufactured by Sika Corp., Lyndhurst, NJ or approved equivalent. Mix and apply in strict accordance with manufacturer's recommendations and instructions.
 - Bonding Agent: Two-component epoxy compound such as "Sikadur 32 Hi-Mod" as produced by Sika Corp. or approved equivalent.
 - Formwork: Design, erect, support and brace formwork to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure. Construct framework so concrete members and structures are of correct size, shape, alignment, elevation and position. Formwork shall be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
 - Form Ties shall be factory fabricated, adjustable length, designed to prevent form deflection and spalling of concrete surfaces upon removal. They should not be pulled completely out of the concrete. The ends of the ties after breaking shall be at least 1" inside the concrete surface. Provide form ties that will not leave holes larger than 1" in diameter in the concrete surface.
 - Reinforcing shall be in accordance with the ACI Detailing Manual, ACI 315-80 unless otherwise detailed or noted.
 - Reinforcing Bar Splices, if required, are to be fabricated to lap 30 bar diameters.
 - Company shall have the option, at its sole discretion, of obtaining a set of three concrete test cylinders for each 50 cubic yards of concrete cast or for each day's operations, whichever is the most frequent. Cylinders shall be identified so that it is apparent where the concrete occurs on the project from which the cylinders were cast. One cylinder of each set shall be tested seven days after retrieval and a second cylinder tested after attaining an age of 28 days. The third cylinder shall be held in reserve. Laboratory reports of the result of cylinder tests shall be submitted to the Engineer for his review on a regular and timely basis. Testing shall be accomplished by a qualified independent laboratory in accordance with the appropriate ASTM procedures and specifications. The contractor shall notify the laboratory 24 hours in advance of each placement of concrete in order that concrete tests may be scheduled.
 Note: Contractor is responsible for payment of all concrete testing costs and scheduling.
 - Cold Weather Placing: Comply with ACI 306.
 - Hot Weather Placing: Comply with ACI 305.
 - A plasticizing and water reducing admixture, such as Pozzolith 122-HE, as manufactured by Master Builders, Cleveland, Ohio, conforming to ASTM C494, may be added to the concrete to improve placement workability provided that water and fine aggregate content of the mix is adjusted appropriately and provided the specified minimum 28-day compressive strengths are maintained.
 - Convey and deposit concrete so as to avoid segregation. Vibrate and/or puddle concrete so as to thoroughly work it around reinforcement and into corners of forms. Patch tie holes, voids, stone pockets or other defective areas with grout immediately after removal of forms before concrete is thoroughly dry.
 - Curing: All concrete shall be cured in a manner that will prevent loss of moisture from the concrete surface and keep the concrete in a continuously moist condition for at least seven days.
 - Repair and Patching of Concrete: Areas where patching is required shall be cleaned of all dust, dirt, grease, laitance and loose or spalling concrete and be given a brush-applied coat of a bonding agent. The compound shall be mixed in accordance with the manufacturer's instructions. The patching mortar shall be freshly mixed and shall be composed of the same materials and proportions as were used for the original concrete, including the admixture, except that the coarse aggregate shall be omitted and fine aggregate substituted therefor. The placing of mortar shall begin immediately after the bonding compound is applied and shall be completed within the manufacturer's recommended time. The bonding compound must be sticky to the touch during placing of mortar. The patching shall be finished to match adjoining concrete and cured and protected as specified for concrete.
 - Repair of defective concrete, required patching and/or filling of holes shall be performed and completed as soon as possible. Exposed concrete shall be repaired immediately after stripping of forms. Concrete that will be concealed or against which earth will be placed must be repaired in time to allow backfilling operations to proceed as scheduled.

BACKFILL WITH CEMENT STABILIZED SAND - 1.5 SACKS PER CUBIC YARD (OPTIONAL)

CONCRETE PROTECTION SLAB REINFORCED WITH #6 BARS ON 12" CENTERS EACH WAY

*CARDBOARD GRADE BEAM FORMS
A PROTECTIVE COVER BOARD OF, HARDBOARD OR PLYWOOD SHOULD BE PLACED ON TOP OF SLAB VOID TO PREVENT PUNCTURE AND OTHER DAMAGE DURING CONSTRUCTION PROCESS.

* SUREVOID PRODUCTS, INC.
SLABVOID-HEAVY DUTY STRENGTH
WORKING LOAD OF 1500PSF
STANDARD LENGTH IS 5'-0" (NOM)
VOID DEPTH IS 6"
END CAPS REQUIRED

DESIGNED IN ACCORDANCE WITH TITLE 49-PART 192 MINIMUM FEDERAL SAFETY STANDARDS AND ASME GUIDE FOR GAS PIPING SYSTEMS, LATEST EDITION.

REV.	DESCRIPTION	DATE	DRAWN	ENGR	CHKD	REV.	DESCRIPTION	DATE	DRAWN	ENGR	CHKD

AFE	
JOB	
DWG. STATUS	
BY	
CHECKED	
DATE	
APPROVED	
BY	
DATE	
CONSTR.	
AS BUILT	



PROTECTIVE SLAB FOR EXISTING PIPELINES
STANDARD SCALE NONE
DWG. NO. STD-32-D3
SHEET NO.