

SECTION \_\_\_\_\_

SPECIFICATION FOR TERRE ARCH™ 48  
**US Patent No. US 7,798,747 B1**

TERRE HILL STORMWATER SYSTEMS'  
A Division of Terre Hill Concrete Products  
PO Box 10, TERRE HILL, PA 17581  
TEL.: (717) 445-3100 FAX: (717) 445-0242.  
www.terrestorm.com

PART 1-GENERAL

1.1 DESCRIPTION

- A. This work shall consist of manufacturing, delivering to the job site, and, where specified, installing the **Terre Arch™ US Patent No. 7,798,747 B1**, the Terre Arch 48 is a precast concrete modular three (3) arched underground stormwater detention or recharge structure at each location as shown on the contract plans. Each Terre Arch 48 unit has three (3) connected precast concrete arches having a total of not less than 158.8 ft<sup>2</sup>, having nominal dimensions of 56" x 7' 11" x 19' 11". The height of each Terre Arch48 unit shall not exceed 56 inches. Each Terre Arch48 unit shall have a surface point loading equivalent to a HS-20 loading rate without cover. This product is produced by Terre Hill Concrete Products under the name "Terre Arch™". All rights are reserved.(**Terre Arch™ US Patent No. 7,798,747 B1**)
- B. Precast concrete influent and effluent distribution structure (Distribution Box) shall be provided as shown on the plans. Each distribution structure shall be 4' x 19'11" x 56" and shall be HS-20 rated, without cover Each Distribution Box shown to have an access cover shown to provide a minimum of 24 inches clear opening. This opening shall allow visual inspection and confined space entry into the **Terre Arch™ US Patent No. 7,798,747 B1** Manhole frame and cover shall be East Jordan or Quirin manufactured from gray iron conforming to ASTM A48 Class 35B.
- C. **Terre Arch™ US Patent No. 7,798,747 B1** is designed to manage stormwater runoff. As a subsurface infiltration system, **Terre Arch™ US Patent No. 7,798,747 B1** retains stormwater and allows infiltration into the soil. As a subsurface detention system, **Terre Arch™ US Patent No. 7,798,747 B1** detains and allows for the metered flow of stormwater runoff to an outfall.
- D. **Terre Arch™ US Patent No. 7,798,747 B1** shall have openings in the sidewalls, where required, to allow for lateral water movement and equalization.
- E. **Terre Arch™ US Patent No. 7,798,747 B1** shall have at least two (2) orifices near the top of the structure for equalization of air pressure to provide equal water flow into each arch.
- F. **Terre Arch™ US Patent No. 7,798,747 B1** shall have at least two (2) orifices near springer valley to drain water from above the arches.

1.2 SUBMITTALS

- A. Shop drawings shall be submitted as described in Division 1 – General Requirements.

## 1.3 REFERENCES

- A. ASTM International ( ASTM ):
  - A-48 Specification for Gray Iron Castings
  - C-32 Specification for Sewer and Manhole Brick
  - C-270 Specification for Mortar for Unit Masonry
  - C-478 Specification for Precast Reinforced Concrete Manhole Sections
  - C-913 Standard Specification for Precast Concrete Water and Wastewater Structures
- US Patent No. US 7,798,747 B1 "Stormwater Capture Module"
- Federal Specifications ( FS ):
  - FS-SS-S-210 Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints

## 1.4 MANUFACTURERS

- A. The products furnished by named manufacturers are specified as a standard of quality and performance.
- B. The manufacture of the concrete structure shall be performed at a precast production facility certified by the National Precast Concrete Association (NPCA).
- C. The manufacturer of the **Terre Arch™ US Patent No. 7,798,747 B1** shall be licensed to produce and or sell the entire device or any components thereof by Terre Hill Concrete Products of Terre Hill Pennsylvania 717-445-3100.

## PART 2- PRODUCTS

### 2.1 MATERIALS AND DESIGN

- A. The **Terre Arch™ US Patent No. 7,798,747 B1** structure shall be designed for HS-20 traffic loading, and existing soil pressure, ground water pressure and buoyancy. The materials and structural design shall be per ASTM C-478 and ASTM C-913; and shall have a minimum compressive strength of 5000 psi.
- B. The access cover shall be designed for HS-20 traffic loading and shall provide a minimum of 24 inches clear opening. Manhole frame and cover shall be East Jordan or Quirin manufactured from gray iron conforming to ASTM A48 Class 35B. The cover shall contain the Terre Arch™ logo as approved by Terre Hill Concrete Products.
- C. Butyl mastic sealant for joints shall conform to ASTM C-990.
- D. Pipe openings shall be sized to accept pipes of the specified sizes and shall be sealed with hydraulic cement conforming to ASTM C-595M.

### 2.2 PERFORMANCE

### VOLUMES- DIMENSIONS- CAPACITIES

- A. **Terre Arch 48 US Patent No. 7,798,747 B1** capacities are as follows:

|   |           |
|---|-----------|
| 1. Structure with stone to top of buttress (56"):             | 542 cu ft |
| 2. Structure with 6" base & stone to top of buttress (56")    | 574 cu ft |
| 3. Structure with 6" base & 6" cover on top of buttress (56") | 606 cu ft |

## PART 3-INSTALLATION

### 3.1 WORK

A. This section includes directions for the installation of **Terre Arch™ US Patent No. 7,798,747 B1**

#### 1. SUBMITTALS

- A. Manufacturer's product data on **Terre Arch™ US Patent No. 7,798,747 B1** shall contain:
  - 1. Dimensions of Terre Arch™
  - 2. Volumes-Capacities-Dimensions of Terre Arch™
  - 3. HS-20 traffic load rating without cover
- B. Shop drawings showing materials of construction by ASTM reference and grade.

### 3.2 PRODUCTS

#### 1. GENERAL

- A. Precast concrete **Terre Arch™ US Patent No. 7,798,747 B1** shall be used where specified on drawings or required by owner, engineer or governing body

#### 2. PRECAST CONCRETE TERRE ARCH™

- A. **Terre Arch™ US Patent No. 7,798,747 B1** shall be manufactured in a NPCA certified plant.
- B. **Terre Arch™ US Patent No. 7,798,747 B1** shall conform to the shapes and dimensions shown on the drawings and as as specified by Terre Hill Stormwater Systems
- C. Design loads shall consist of dead load, live load, impact load and loads due to soil pressure ground water table and pressure and any other load on the **Terre Arch™ US Patent No. 7,798,747 B1**. Live loads shall be HS-20.
- D. The access cover shall be designed for HS-20 traffic loading and shall provide a minimum of 24 inches clear opening. Manhole frame and cover shall be East Jordan or Quirin manufactured from gray iron conforming to ASTM 48 Class 35B.

### 3.3 EXCAVATION / INSTALLATION

#### 1.EARTHWORK

- A. The Contractor shall prepare excavation large enough to accommodate the **Terre Arch™ US Patent No. 7,798,747 B1** and to permit grouting, sealing, backfilling of 6 inch cover and 12 inch around perimeter of the installation. Additional installation specifications may be required, depending on soil and site conditions
- B. Retention / Recharge: The Contractor shall prepare a 6 inch AASHTO #57 crushed rock stone base, graded to leveled shown on the plans, soil erosion material as shown on the plans; **Terre Arch™ US Patent No. 7,798,747 B1** shall be placed directly on top of subbase, and where shown on top of the soil erosion material.
- C. Detention : The contractor shall pour in place a 4 inch thick bi-axially post-tensioned floor; **Terre Arch™ US Patent No. 7,798,747 B1** shall be placed directly on top of floor and shall be grouted and sealed to provide a structure for containment of water in accordance with the specifications for the installation.

### 3.4 INSTALLATION

- A. Openings or “knockouts” in precast concrete **Terre Arch™ US Patent No. 7,798,747 B1** and distribution structure shall be located as shown on the drawings and shall be sized sufficiently to permit passage of the largest dimension of pipe and/or flange