

Date: 02/23/2024

Addendum No. 3

**For Project No. ENG2403729029
INDIANA DUNES STATE PARK – LWCF
DOUBLE VAULT TOILETS
1600 N 25 E, CHESTERTON, IN 46304**

ISSUED FROM: Engineering Division Dept. Natural Resources

ISSUE DATE: February 23, 2024

BID DATE: March 7, 2024

FOR AGENCY: Department of Natural Resources

The information contained in this Addendum shall become a part of the basic plans and specifications the same as if original incorporated therein. The original plans and specifications shall remain in their entirety, except as modified by this Addendum. The items herein shall supersede information in the specifications and on the plans.

ITEM No. 1: GENERAL

N/A

ITEM No. 2: CONSTRUCTION DRAWINGS

N/A

ITEM No. 3: SPECIFICATIONS

- A. MODIFIED – SECTION 03 45 38 – PRECAST DOUBLE VAULT TOILET:**
- a. On page 6, added specifications for 2' x 2' Orange Polyester Hatch Safety Net. Reference attached SECTION 03 45 38 for additional information.

END OF ADDENDUM

State Form 21208R4

DAPW-118

SECTION 03 45 38 - PRECAST DOUBLE VAULT TOILET

1.0 SCOPE

- A. This specification covers the prefabrication, on-site delivery, offloading, installation and placement of a precast double vault toilet as manufactured by Huffcutt, or approved equal. The basis of design is the Indiana DNR Goldeneye Double Vault Pit Toilet, as manufactured by Huffcutt, and as follows:
- B. Unit shall comply with all applicable Federal, State, and Local Codes, and authorities having jurisdiction, including the following:
1. 2010 ADA Standards for Accessible Design
 2. Indiana General Administration Rules (GAR)
 3. 2014 Indiana Building Code (IBC) with 2012 International Building Code
 4. 2014 Indiana Building Code Chapter 11 Accessibility with A117.1 Accessible and Usable Buildings and Facilities, 2009 Edition
 5. 2014 Indiana Fire Code (IFC)
 6. 2012 Indiana Plumbing Code (IPC)
 7. 2009 Indiana Electrical Code (IEC)
 8. 2014 Indiana Mechanical Code (IMC)
 9. 2010 Indiana Energy Conservation Code (IECC) with ASHRAE 90.1 2007
 10. Special Administrative Rules for Industrialized Building Systems and Mobile Structure Systems

2.0 SPECIFICATIONS

ASTM C33	Concrete Aggregates
ASTM C39	Method of Test for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Standard Specifications for Ready-Mixed Concrete
ASTM C143	Method of Test for Slump of Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by Pressure Method
ASTM C192	Method of Making a Curing Test Specimens in the Laboratory
ASTM C309	Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494	Standard Specifications for Chemical Admixtures for Concrete
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C979	Standard Specification for Pigments for Integrally Colored Concrete
ACI 211.1	Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete
ACI 306	Cold Weather Concreting
ACI 318	Building Code Requirements Structural Concrete and Commentary (Includes Errata)
PCI MNL 116	Quality Control for Plants and Production of Precast Prestressed Concrete Products

3.0 MANUFACTURER CRITERIA

The manufacturer supplying the requested precast concrete vault facility must meet the following:

- A. Manufacturer must provide stamped, engineered drawings for Owner review and approval prior to acceptance.
- B. Manufacturer shall provide a 20-year warranty on all concrete building components.
- C. Manufacturer must show four examples of designed precast concrete vault toilet facilities produced, installed, and in use as an example of their ability to perform on this contract.

4.0 DESIGN CRITERIA

The design criteria are to ensure that the vault toilet shall be professionally designed for the items below and provide protection from vandalism and other unforeseen hazards. Design criteria include 2014 IBC Code and 2000 NEC Code.

- A. Snow Load
- B. Wind Load
- C. Earthquake
- D. Floor Load
- E. Additional Design Standards and Permit Requirements
 1. The vault toilet is designed to meet the requirements of the American with Disabilities Act Requirements and the Uniform Federal Accessibility Standards as of the date of these specifications.
 2. The vault is an all-concrete design with a minimum 3/12 roof pitch.
 3. The vault shall have a minimum 4-inch wall, 4 ½ inch roof and 5-inch floor thickness.
 4. All wall to floor interior surface seems shall have a minimum 1-inch radius covering made of high strength grout.
 5. Permits required are as follows and shall be applied, paid for, and secured by the Indiana Registered manufacture vendor/Contractor:
 - a. Indiana Department of Homeland Security/Fire and Building Safety Division- Construction Design Release (CDR) for Industrialized Building Systems/Mobile Structures Permit.
 - b. Indiana Department of Homeland Security/Division of Fire and Building Safety State Form 37318 (Rev 15/1-12) Application for Construction Design Release Permit.

5.0 MATERIALS

- A. Concrete – General

The concrete mix design shall be designed to ACI 211.1 to produce concrete of good workability.

1. Concrete will contain a minimum of 675 pounds of cementitious material per cubic yard. Cement shall be a low alkali type I/II or III conforming to ASTM C-150.
2. Coarse aggregates used in the concrete mix design will conform to ASTM C33 with the designated size of coarse aggregate #67.
3. Minimum water/cement ratio shall not exceed .45.
4. Air-entraining admixtures will conform to ASTM C260. Water reducing admixtures will conform to ASTM C494, Type A.
5. If Self Compacting Concrete (SCC) is used, it must conform to ASTM C1611.

B. Colored Concrete

1. Color additives will conform to ASTM C979, A 12"x12"x1" color sample shall be available for IDNR approval.
2. The following will contain colored concrete:
 - a. Toilet building roof panels.
 - b. Building walls
 - c. Screen panels
3. The same brand and type of color additive shall be used throughout the manufacturing process.
4. All ingredients shall be weighed, and the mixing operation shall be adequate to ensure uniform dispersion of the color.

C. Cold Weather Concrete

1. Cold weather concrete placement shall be in accordance with ACI 306.
2. Concrete shall not be placed if ambient temperature is expected to be below 35 degrees F, during the curing period unless heat is readily available to maintain the surface temperature of the concrete at least 45 degrees F.
3. Materials containing frost or lumps of frozen materials may not be used.

D. Hot Weather Concrete

1. The temperature of the concrete shall not exceed 95 degrees F. at the time of placement. When the ambient reaches 90 degrees F. the concrete shall be protected with moist covering.

E. Concrete Reinforcement

1. All reinforcing steel will conform to ASTM A615. All welded wire fabric will conform to ASTM A185.
2. All Reinforcement shall be new, free of dirt, oil, paint, grease, loose mill scale and loose or thick rust when placed.
3. Details not shown on drawings or specified shall be to ACI318.
4. Steel reinforcement shall be centered in the cross-sectional area of the walls and will have at least 1 1/4" of cover on the under surface of the floor and roof.
5. The maximum allowable variation for center-center spacing of reinforcing steel shall be 1/2."
6. Full lengths of reinforcing steel shall be used when possible. When splices are necessary on long runs; splices shall be alternated from opposite sides of the

components for adjacent steel bars. Lap bars #4 or smaller a minimum of 12". Lap bars larger than #4 a minimum of 24 bar diameters.

7. Reinforcing bars shall be bent cold. No bars partially embedded in concrete shall be field bent unless approved by IDNR.
- F. Sealers and Curing Compounds
1. Curing compounds, if used, shall be colorless, complying with ASTM C309, type 1 or 1-D.
 2. Weatherproofing sealer for exterior of building shall be a clear water repellent penetrating sealer.
- G. Caulking, Grout, Adhesive and Sealer
1. Caulking service temperatures from -40 to +194 degrees Fahrenheit.
 2. Interior points shall be caulked with a paintable polyurethane sealant. Exterior shall be caulked with a non-paintable UV resistant silicone sealant – ADFAST ADSEAL 458-359 or approved equal, color sample shall be available for IDNR approval.
 3. Grout shall be a non-shrink type and shall be painted to match the color of surrounding concrete as nearly as possible.
 4. Cement base coating to be formulated with a very fine aggregate system built into bonding agent.
 5. Join concrete vault and concrete building using manufacturer's standard butyl adhesive.
- H. Paint
1. All paints and materials will conform to all Federal specifications or be similar "top-of-the-line-components." Paints shall not contain more than .06 percent by weight of lead.
- I. Grab bars
1. Grab bars shall be 18-gauge, type 304 stainless steel with 1-1/2" clearance. Grab bars will each be able to withstand 300-pound top loading.
- J. Toilet Paper Dispenser
1. Dispenser shall be constructed of 1/4" thick, type 304 stainless steel. Dispenser shall be capable of holding three (3) standard rolls of toilet paper. Toilet paper holder fastening system shall be able to withstand 300-pound top loading.
 - a. Provide hasp and padlock.
- K. Steel Doors
1. Doors shall be flush panel type 1-3/4" thick, minimum 16-gauge galvanized steel, top painted with DTM (DIRECT TO METAL) ALKYD.
 2. Door frames shall be knockdown or welded type, single rabbet, minimum 16-gauge prime coated steel top painted with DTM (DIRECT TO METAL) ALKYD, width to suit wall thickness. Three (3) rubber door silencers shall be provided on latch side of frame.

L. Door Hinges

1. Door hinges shall be 3 per door with dull chrome plating 4-1/2"x4-1/2", adjustable tension, automatic-closing and hold open for each door (Cal-Royal or approved equal).

M. Lockset

1. Lockset shall meet ANSI A156.2 Series 4000, Grade 1 cylindrical SFIC lockset as manufactured by Stanley Security Solutions, 93K Series or approved equal for exterior door.
2. Lever handle both inside and out and shall meet ADA requirements.
3. Either handle operates latch unless outside handle is locked by inside push-button.
4. Push-button will automatically release when inside lever handle is turned, or door is closed.
5. Emergency access from the outside with key.
6. Inside lever always active.
7. US26D finish.

N. Door Stop

1. Doorstop shall be a dome style stop meeting ANSI 156.16 and manufactured by Ives or approved equal.

O. Double Coat Hook

1. Coat hook shall be 304 stainless steel 16 gauge (1.5mm), formed construction with a satin finish and have 3/16"x7/8" nail in anchor. Upper hook will extend at least 2-1/2" inches from the wall at a height of 48". Lower hook will extend at least 1-1/4" from the wall at a height of 15" minimum from the floor.

P. Door Sweep

1. Door sweep shall be provided at the bottom of door and shall be an adjustable brush type.

Q. Wall Vent

1. Vent cover shall be 18-gauge 304 stainless steel painted with DTM (DIRECT TO METAL) and anchored into the concrete wall with high strength anti-rust tap con fasteners. The vent louvre frame and louvres shall be non-vision .1" extruded aluminum jet coat finish. Vent to come with insect screen. Cover to be recessed a minimum 3/4" on exterior walls with a 45-degree bevel. Interior to be flush mounted. Wall vent shall not protrude from the wall.

R. Windows and Vault Cleanout Cover

1. Screen Windows: Provide two 30"x12" vinyl windows per toilet.
 - a. Screens mesh size is to be U.S. Mesh Size 16 for all screens.
2. Cleanout Covers: Provide one steel cover per toilet.
3. Windows to have 3/4" recess with 45-degree bevel.
4. Windows and frames to have vandal resistant fasteners.

5. Plate for vault cleanout cover shall be ¼” thick diamond plate steel. Lid shall be hinged and configured so that it can be locked with a padlock. A gasket shall be provided across the entire width and length of the lid to provide an airtight seal.
 - a. Vault Access Hatch Locking: Manufacturer’s standard square key.
 - b. Provide 2' x 2' Orange Polyester Hatch Safety Net, as manufactured by US Netting or approved equal. Netting shall fill entire opening and have a strap width of 1” with a maximum mesh size of 6”. The net material shall consist of UV resistant polyester webbing with a minimum tensile strength of 3,800 lbs. System shall be rated for 500-pound load. Install with 304 stainless steel mounting brackets with manufacturer’s approved fasteners and accessories. Provide a 2-year warranty that covers defects.**

S. Riser

1. Riser will meet ADA and be a molded unit with heavy duty seat and lid, as manufactured by Romtec, Roseburg, OR approved equal. Riser shall be between 17” and 19” high and shall be a smooth surface and have high impact resistance at extremely cold temperatures. The color shall be white with safety bars consisting of on ¾” stainless steel bar centered in the riser.

T. Vent Stack

1. Vent stack to be a minimum 12 inches in diameter and a minimum 3 feet higher than the roof peak. Pipe shall be polyethylene plastic pip, 12” DR21, PE 3608 high density, black color, UV stabilized HDPE pipe manufactured by WL Plastics, 307-682-5554.

U. Signs

1. The vault toilet shall have a sign-UNISEX- provided for each unit.
2. Appropriate signage shall be installed to meet ADA-ABAAG standards. The required signs shall be mounted on the exterior wall of the vault toilet adjacent to the latch side of the door. Signs shall be attached and trimmed using a color matched Polyurethane sealant.
3. Signs shall be 6” x 9” made of Lexan polycarbonate plastic with standard white recreation symbols or text on a brown background.
4. Message “RESTROOM” shall be in raised grade 2 braille across the bottom of the sign.
5. An interior sign reading “PLEASE DO NOT PUT TRASH IN TOILETS. IT IS EXTREMELY DIFFICULT TO REMOVE-Thank you” shall be installed above each toilet riser.

V. Solar

1. Provide fully functional lighting system and as follows:
 - a. Exterior Lighting: One, surface mounted fixture (E-WMP Series or approved equal).
 - b. Interior Lighting: One, surface mounted interior fixture (WPTS70 RAB Lighting or approved equal) within each toilet room.

- c. 100W roof mounted solar panel (ACOPower or approved equal).
 - d. 12X12X6 Panel Enclosure (Hubbell-Wiegmann catalog # BN4121206CH or approved equal).
 - e. Sunlight-10 Lighting Controller (Morningstar Corporation or approved equal).
 - f. Battery (Duracell Ultra # DURA12-35C or approved equal).
2. Provide Solar for the following project locations. Reference site plans for specific projects under this bid package.

SCHEDULE:

DUNES

North Orchard - Solar

Picnic Playground - Solar

Tremont Shelter – Solar

City West - Solar

6.0 MANUFACTURE

A. Mixing and Delivery of Concrete

Mixing and delivery of concrete shall be in accordance with ASTM C94, section 10.6 through 10.9 with the following additions:

- a. Aggregate and water shall be adjusted to compensate for differences in the saturated surface-dry condition.
- b. Concrete shall be discharged as soon as possible after mixing is complete. This time shall not exceed 30 minutes.

B. Placing and Consolidating Concrete

Concrete shall be consolidated by the use of mechanical vibrators. Vibration shall be sufficient to accomplish compaction but not to the point that segregation occurs.

C. Finishing Concrete

1. Interior floor and exterior slabs shall be floated and troweled. A light broom finish shall be applied to the exterior slabs.
2. All exterior building walls and exterior screen walls shall be cast to simulate horizontal lap and board and batten texture.
3. All exterior surfaces of the roof panels shall be cast to simulate a shaker roof texture.

D. Cracks and Patching

1. Cracks in concrete components which are judged to affect the structural integrity of the building shall be rejected.
2. Small holes, depressions and air voids shall be patched with a suitable material. The patch will match the finish and texture of the surrounding surface.
3. Patching shall not be allowed on defective areas if the structural integrity of the building is affected.

E. Curing and Hardening Concrete

1. Concrete surfaces shall not be allowed to dry out from exposure to hot, dry weather during initial curing period.

7.0 FINISHING AND FABRICATION

A. Structural Joints

1. Wall components shall be joined together with two welded plate pairs at each joint. Each weld plate shall be 6" long and located one pair on the top quarter and one pair in the bottom quarter of the seam. Weld plates shall be anchored into the concrete panel and welded together with a continuous weld. The inside seams shall be a paintable caulk. The outside seams will use a caulk in a coordinating building color.
2. Walls and roof shall be joined with weld plates, 3"x6", at each building corner.
3. The joint between the floor slab and walls shall be joined with a grout mixture on the inside, a matched colored caulk on the outside and two weld plates 6" long per wall.
4. Or approved equal.

B. Painting/Staining

1. An appropriate curing time shall be allowed before paint is applied to concrete.
2. Some applications may require acid etching. A 30% solution of hydrochloric acid shall be used, flushed with water, and allowed to thoroughly air dry.
3. Painting shall not be done outside in cold, frosty, or damp weather.
4. Painting shall not be done outside in winter unless the temperature is 50 degrees F. or higher.
5. Painting shall not be done in dusty areas.
6. Schedule of finishes and colors
 - a. Inside concrete surfaces
 - I Interior floors shall be a high solid single-component chemical and urine resistant aliphatic moisture cure urethane, which meets ADA requirements for slip resistance.
 - II Interior walls and ceilings shall be 2 coats of a modified acrylic, water repellent penetrating stain, followed by 1 coat of clear sealer.
 - b. Metal surfaces both inside and out
 - I 2 coats of DTM (DIRECT TO METAL) ALKYD
 - c. Exterior concrete surfaces
 - I Exterior slab shall be 1 coat of clear sealer
 - II Exterior walls shall be 2 coats of water repellent penetrating stain in same color as the walls or roof followed by 1 coat of clear acrylic anti-graffiti sealer.
 - d. The roof color shall be a granite rock color with a cedar shake roof texture. The exterior walls shall be a rosewood color with horizontal lap siding on the bottom portion and the board and bat on the top portion.

8.0 TESTING

- A. The following tests shall be performed on concrete used in the manufacture of toilets. Testing will only be performed by qualified individuals who have been certified ACI Technician Grade 1. Sampling shall be in accordance with ASTM C172.
1. The slump of the concrete shall be performed on the first batch of concrete in accordance with ASTM C143. This slump shall be in the 3"-4" range. Slump may be increased using chemical admixtures provided that the concrete maintains same or lower water to cement ratio and does not exhibit segregation. Slump will never exceed 9".
 2. The air content of the concrete shall be checked per ASTM C231 on the first batch of concrete. The air content shall be in the range of 5.5% +/- 1%.
 3. The compressive strength of the cylinders shall be tested to ASTM C39. We will make one (1) cylinder for release, one (1) for 7 days and one (1) for 28 days. The release must be a minimum, strength of 2500 psi, the 7-day must be minimum of 4500 psi and the 28-day must be a minimum of 5000 psi.
 4. A copy of all test reports shall be available to the customer as soon as 28-day test results are available.

9.0 INSTALLATION

A. Scope of Work

Work specified under this Section includes excavation, backfill and placement of precast concrete vault toilet by the contractor.

B. Materials

1. Bedding material to be sand or 3/8" minus crushed or screened aggregate.

C. Location and Access to Site:

1. DNR will stake the approximate location (center of building) in accordance with the attached location site plan. Slight adjustments to the building location shall be made with the approval of the Property Manager and DNR Code Administrator to accommodate ADA access.
2. Bidders shall verify that access to the site is sufficient for truck delivery and operation of the crane to install the work in performance of the contract requirements.

D. Excavation and Elevation by the Contractor

1. Comply with all applicable OSHA Standards for excavation.
2. Excavate for the installation of the toilet vault to a depth that will allow the structure site to be free draining after installation is completed. The double vault toilet requires an excavated hole that is to the size required by the vault toilet manufacturer. The hole shall be excavated to a depth as required by the vault toilet manufacturer below finish grade. The depth shall include a 2" leveling course beneath the vault toilet. Stockpile topsoil in a separate pile at sites.
3. Finish floor elevation shall be 4 inches above natural grade measured within a 25-foot radius of the center of the building. The intention is that the finish floor elevation is

slightly higher to the surrounding grade for positive drainage away from the building. The finished floor elevation and final grading shall allow for ADA access.

E. Backfill and Compaction

1. Compact the natural ground at the bottom of the vault excavation with a minimum of three passes with a whacker-type mechanical compactor or equivalent approved by DNR Engineering field representative.
2. Install sand or aggregate bedding material for leveling course if needed. Compact leveling course with one pass with a whacker-type mechanical tamper. Grade leveling course so there shall be no high spots in the middle of the vault bottom. Compact with a second pass with a whacker.
3. Set vault in place and check for level or appropriate scope. Backfill around structure. Use excavated material for backfill except those rocks larger than six inches in maximum dimension shall not be placed within six inches of the exterior vault walls.
4. Fill, adjacent to the building entry, shall have excavated material placed in eight-inch loose lifts and compacted with a minimum of two passes with a whacker-type mechanical tamper.

F. Finish Grading and Concrete platform and accessible sidewalks

1. Spread excess excavated material from the vault around the structure. Intended final grade is flush with the top of the slab. Allow for placement of topsoil to reach the grade. Grade backfill away from the structure at maximum slope of five percent. Spread stockpiled topsoil as a final layer after rough grading is completed. Final mulched seeding is to be furnished and completed by the contractor.
2. Contractor is to furnish and install a 6' x 12' (to match the width of the building) concrete platform that is anchored to the vault with 8" steel pins 2' on center. Install a 6' wide sidewalk that meets all ADA requirements connecting the platform and asphalt or sidewalk (location as designated by the property). The concrete platform and accessible sidewalk shall be 4" thick and 4,000 psi strength with 6x6 10/10 WWF reinforcement with a 4" compacted aggregate subbase. Provide 18-inch turn down along edge of platform and joints between sidewalks and asphalt.

G. Work shall be performed in accordance with drawings and specifications prepared by IDNR Division of Engineering 402 W. Washington Street Rm W299 Indianapolis, IN 46204. Do not scale drawings.

H. Vault Toilet Riser and Accessories

1. Polyurethane caulk shall be applied between toilet riser flange and concrete floor before the toilet riser is installed.

I. Exhaust Pipe Installation

1. After exhaust pipe is installed, seal around pipe at top and underside of roof with polyurethane caulk. Seal around pipe at top of slab shall be accomplished by using polyurethane caulk.

J. Electrical Service

1. For project sites with electrical service, provide 120V light fixtures and conductors in grey PVC conduit to building mounted service disconnect. Tie into nearest electrical service with spare capacity. Complete all wiring connections and work to comply with the current electrical code for fully functional system.
2. Connect to site electrical service for the following project locations. Reference site plans for specific projects under this bid package.

SCHEDULE:

None

END OF SECTION