



State of Delaware
Department of Natural Resources and Environmental Control
Delaware Division of Parks and Recreation
89 Kings Highway
Dover, Delaware 19901

Date: August 21, 2017, 1:00 PM

Reference: **Delaware Department of Natural Resources and Environmental Control
Division of Parks and Recreation.
Fork Branch Nature Preserves Trail
Contract No. 2017-FBNP-100
Mandatory Pre-Bid Meeting**

Location: Office of Design and Development
89 Kings Highway, Dover DE 19901
Attn: Cindy A. Todd, RLA.

Introductions:

Project: Fork Branch Nature Preserves Trail
Project Manager: Julio Seneus
Construction Manager: Pierce Thompson
Design Engineer: PPD

ADMINISTRATIVE:

Sign-In Sheet: Please make sure to fill out the sign in sheet, otherwise you will not be considered in attendance and will not be permitted to submit a bid.

Questions during Bidding: All questions shall be submitted via email to julio.seneus@state.de.us. Last Day for Questions shall be September 5, 2017 (1:00 PM) any questions received after this time will not be addressed. Questions will be answered via Addendum. Phone calls will not be replied to.

Bonds: Bid bond is required and is required to be submitted with your bid. Bond forms were included in the bid package Performance and Payroll bonds will be required for the work. Bond forms will be required upon notice of award of the contract, along with a certificate of insurance.

Wages/Payroll: Prevailing wage and payroll reporting are applicable to this project. The project determination is Highway Construction.

Bids Due: Due September 12, 2017, 1:00 PM Local Time. Any bid received after the stated time will be returned unopened. Bids accepted by overnight mail, or in person at DNREC – Division of Parks and Recreation, 89 Kings Highway, Dover DE 19901.

Sealed Bids shall be addressed to the following address:

"DNREC CONTRACT NO. 2017-FBNP-100 SEALED BID – DO NOT OPEN".

Dept. of Natural Resources & Environmental Control
Division of Parks and Recreation
Office of Design and Development
89 Kings Highway, Dover DE 19901
Attn: Cindy A. Todd, RLA. Phone Number: 302-739-9210

Bids will be opened and read aloud in the auditorium.

Sub-Contractors: A completed list of sub-contractors shall be submitted with your Bid. Reminder to name only one subcontractor for each of the following trades (these are also listed in the project book):

- Traffic Control
- Paving
- Bridge/Boardwalk & Helical Anchor
- Carpenter

On-Site Superintendent: The contractor shall designate a superintendent who shall be on site for the duration of the project.

Completion of Work:

- Notice of Contract Award: Within thirty (30) days of receipt and acceptance of qualified low bid.
- Purchase Order Issuance: The issuance of a State of Delaware purchase order is contingent upon the successful Contractor submitting bonds on State-approved forms, signed contracts and insurance certificates to the State of Delaware within 20 days of Notice of Award. A purchase order will be issued in approximately thirty days after these items have been submitted to the State of Delaware.
- On-Site Mobilization: Upon receipt of State of Delaware purchase order.
- Substantial Completion: The work shall be completed 3 months from on-site start of work.
- Completion of Punch List: 21 days from date of substantial completion.

Permits: Copies of the secured environmental permits are going to be provided. The contractor shall strictly adhere to ALL requirements and limitations stipulated in the permits.

- Archeological Sensitive area, and Parks's Archeologist is going to be on-site to review excavated materials.
- Stabilize the side slopes of the trail with the top soil and vegetation.

Shop Drawings: All shop drawings and Source of Supply documents will be submitted electronically to the project file sharing site. The awarded contractor shall be provided access to the site. The contractor will designate a point of contact for access. The project team will have 10 days to review and respond to all shop drawings and Source of Supply documents. Please consider this when making submissions and scheduling the work.

Successful Bidder will be expected to enter into a Standard A101-2007 Agreement between Owner and Contractor

SCOPE OF WORK:

Base Bid: Construct the stone dust parking and trail. Overlay the entrance with asphalt.

Add/Alternate No.:

- **Alternate 1** – Consist of installing 1.5-inches stone dust as noted in the typical section along the entire length of the trail, excluding the parking lot and the entrance road.
- **Alternate 2** - Consist of constructing a segment of stone dust trail from Station 17+00 to Station 37+00 using the Typical Stone Dust Trail Section noted on plansheet C-03.

Allowances:

- **Allowance No.:** None

Unit Prices: There are a total of 8 Items that Unit Prices are requested:

- Undercut Excavation
- Helical Anchors
- Silt Fence (Locations other than shown on the plan)

FIELD WALK:

F:\odd\ODD PROJECT FILES\Fork Branch Trail\3 Construction\2 Bid Process\1 Pre-Bid Conference

Questions

1. Could we get the sign in sheet for the pre bid for Fork Branch trail project?
The Sign-in sheet is enclosed for your use.
2. Can the equipment to construct the 5-foot trail be wider than the actual width of trail? If so, how wide can it be?
The construction equipment must be able to fit within the Limit of disturbance (LOD) while constructing the 5-foot trail. No trees outside of the footprint of the trail can be impacted during the construction. This project is located in a Nature Preserve and the contractor must implement tree protection during the construction of the project.
3. The notation regarding performance bond state the project bond must be issued for the duration of 2 years, is it for maintenance or warranty?
The contractor must provide 2 years of warranty post the completion of the project as noted in the Specification Document.

-
4. Can the plans specified the number trees with a diameter of 6-inch less which are slated for removal?
The number of saplings or trees with diameter of 6-inch less cannot be noted/provided on the plans, but the centerline of the trail is laid out using flagging and the contractor is encouraged to visit the project site.
 5. Since the trail is 5-foot wide, what size equipment can be brought to construct the trail?
See the answer to questions #2 for your use.
 6. Can the bridge/boardwalk be utilized to carry construction materials to complete the project?
The proposed boardwalks are not designed to withstand heavy loads, and the proposed boardwalks cannot be utilized to construct the trail.
 7. Does the project has to be completed within the allotted time noted in the Bid Specifications, or can a timeline be provided to complete the project?
The contractor should strive to complete the trail within the allotted timeline noted in the Bid Specification.
 8. Can the helical anchors be by Ideal Group or approved equal?
The helical anchors can be by A.B. Chance or approved equal, and the shop drawings for the helical anchors must be submitted to Parks for review and concurrence.
 9. Is there an approved entrance plans for this project for the area of the entrance slated for asphalt overlay?
The contractor must obtain an entrance permit to overlay the apron of the entrance with asphalt, and the Maintenance of Traffic (MOT) to overlay the entrance is going to be noted on the permit. Also, the contractor must include the MOT cost to the base bid submittal.
 10. With the discussion at the prebid meeting regarding the archaeological review and potential for work stoppage in the event that the contractor uncovers anything requiring further review for preservation, the following question arises. How will the contractor be compensated in the event that archaeological review requires further assessment before proceeding? Such as: Per diem, Remobilization fee, alternate entrance to work zone?
A remobilization fee can be explored if an alternate entrance to the work site cannot be configured.
 11. What is the width of the culvert crossing already installed by DelDOT? In review of the plans and entrance drive details, it appears that it might not meet the width required per the plans.

The entrance pipe was installed by DelDOT, and the length of the existing pipe is approximately 20-foot. A pipe extension should be included in the cost of the entrance overlay to ensure that the entrance is 24-foot wide.

12. The plans indicate a very minimal limit of disturbance due to the sensitivity of the site, there is specialty equipment with high floatation tires which meet the minimal ground disturbance requirements, however this type of equipment requires turn zones. Will the state consider a plan modification to have observation areas/rest areas off the main trail that could be used as turnabout or passing zones during construction?

Parks does not intend to add turn-around or passing zones as part of this project. The proposed trail is a loop system, and the contractor is encouraged to develop a good sequence of construction.

13. There appears to be conflicts within the plans regarding the LOD limits, scaled plans show 10 feet wide limit of disturbance, five feet on each side of the trail centerline; typical stone dust trail section detail shows LOD at the edge of the one foot wide shoulder for a total of 7 feet wide, 3 1/2 feet on each side of the trail centerline but it also indicates an area five feet wide from the edge of the trail on each side which would be 15 feet wide limit of disturbance. Please clarify what the 5 feet on each side of the trail represents and the correct limit of disturbance areas.

As noted in the typical section, the proposed trail is 5-foot wide with 1-foot LOD on both sides of the trail. The 5-foot dimensions shown both sides of trail are for graphical representation and for the possible location of directional signs. No works shall occur beyond the LOD lines.

14. The narrow limits of disturbance does not allow for equipment passing each other or turning around, this greatly restricts the productivity of the work with small equipment and material handling equipment is limited to 2 tons of stone per load due to bridge loading limits. Not including any possible weather delays or restrictions for archaeological delays, we anticipate under the best of circumstances this project would be completed within 180 days but more realistically should allow for between 240 to 270 days. Will the state consider revising the project time allowance given these factors?

See the answer to questions #7 for your use.

15. On Monday when I walked the rest of the path I found trash and tires along the path. How will you what to deal with that.

Trash removal is going to occur by Parks' staffs.

16. I would like to request that the Ideal Group be added as source for the Helical Piles. You can go to their web page to get any information that you would need.

See the answer to questions #8 for your use.

17. I had a question on the WT8x33.5 pier. How is it attached to the pile cap?

Please refer to detail (5/S1.2) the response to your question.

SPECIFICATIONS:

Specification Section 004113, Bid Form: The Bid Form was revised to include Alternate 1 and Alternate 2 to the Specifications.

Specification Section 012300, Alternates: Alternate 1 and Alternate 2 were added to the Specifications.

DRAWINGS:

Drawing C-02: This plansheet was revised to show the added Boardwalk #2 with the length of 100-foot

Drawing C-03: The Stone Dust Trail Typical Section was revised to show a raised pavement box in order to reduce the amount of soil excavation. Also, the detail for the ADA concrete parking was added to the plansheet.

Drawing C-09 and C-10: Notes were removed from the Project Notes, and the detail (2/S1.2) was revived.

General: Remove and replace the plans set with the enclosed plans set.

NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100

BID FORM

For Bids Due: September 12, 2017 at 1:00 PM To: Dept. of Natural Resources and Environmental Control
Division of Parks and Recreation
Office of Design and Development
89 Kings Highway, Dover DE 19901

Name of Bidder: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____
(A copy of Bidder's Delaware Business License must be attached to this form.)

(Other License Nos.): _____

Phone Number: () _____ Fax Number: () _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____

(\$)

01. Identify the total cost allocated in the bid for the boardwalks.

\$ _____

(\$)

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**NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100**

BID FORM

ALTERNATES

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An “ADD” or “DEDUCT” amount is indicated by the crossed out part that does not apply.

DEDUCT ALTERNATE No. 1: Deduct stone dust installation on trail only. Entrance road and parking lot stone dust is not

Deduct:

(\$ _____)

DEDUCT ALTERNATE No. 2: Deduct trail from Boardwalk 03 to Boardwalk 04 (STA 17+00 to STA 38+00). Boardwalks 03 and 04 are not to be included in this alternate.

Deduct:

(\$ _____)

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NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100

BID FORM

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

		DEDUCT	ADD
UNIT PRICE No. 1:	100 LF Silt Fence	\$ _____	\$ _____
UNIT PRICE No. 2	Helical Anchor – Type 1 (1 Helix)	\$ _____	\$ _____

(Estimated Quantity of Helical Anchors to be included in Base Bid is 1,800 LF)

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NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for thirty (30) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within _____ calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's/General Partner's /Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____

(Seal)

By: _____
(Authorized Signature)

(Title)

Date: _____

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Affidavit(s) of Employee Drug Testing Program
Bid Security
(Others as Required by Project Manual)

BID FORM

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NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100

BID FORM

SUBCONTRACTOR LSIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the *Owner*, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.**

Subcontractor Category	Subcontractor	Address (City & State)	Subcontractors tax payer ID # or Delaware Business license #
1. Sitework	<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
2. Helical Anchor Installer	<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>
3. Carpentry	<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>

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NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100

BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date to the Office of Design and Development, Division of Parks and Recreation.

All the terms and conditions of the New Trail System at Fork Branch Nature Preserve have been thoroughly examined and are understood.

NAME OF BIDDER

AUTHORIZED REPRESENTATIVE
(TYPED):

AUTHORIZED REPRESENTATIVE
(SIGNATURE):

TITLE:

ADDRESS OF BIDDER:

E-MAIL:

PHONE NUMBER:

Sworn to and Subscribed before me this _____ day of _____ of
20_____.

My commission expires _____.

NOTARY PUBLIC _____

THIS PAGE MUST BE SIGNED AND NOTORIZED FOR YOUR BID TO BE CONSIDERED.

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NEW TRAIL SYSTEM
FORK BRANCH NATURE PRESERVE
KENTON ROAD, DOVER DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2017-FBNP-100

**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

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SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.**

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.**

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.**
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.**

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.**
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.**
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.**
- C. Execute accepted alternates under the same conditions as other work of the Contract.**
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.**

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Deduct Alternate 1: Deduct stone dust installation on trail only.

- 1. State the amount to be deducted from the Base Bid to not install the stone dust on the trail. Entrance road and parking lot stone dust is not to be included with this alternate.***
- 2. Base Bid includes stone dust as specified on the trail.***

B. Alternate 2: Deduct trail from Boardwalk 03 to Boardwalk 04 (STA 17+00 to STA 38+00). Boardwalks 03 and 04 are not to be included in this alternate.

- 1. State the amount to be deducted from to the Base Bid the trail from Boardwalk 03 to Boardwalk 04 (STA 17+00 to STA 38+00). Boardwalks 03 and 04 are not to be included in this alternate.***
- 2. Base Bid includes construction of the trail from Boardwalk 02 to Boardwalk 03.***

END OF SECTION 012300

CENTRAL DISTRICT PERMIT FOR ENTRANCE CONSTRUCTION



PERMIT NO.: 220725 AREA: 8 ADC #: 29c5 DATE: 12/1/2015

Type of Access: Special Maintenance Road Name: Dover Kenton Road

Issue To (Owner): DNREC, State of DE C/o Julio Seneus Phone No.: (302) 739-3718

Address: 89 Kings Highway; Dover, DE 19901

Type of Security Furnished: N/A Amount (150% of cost): N/A

Estimated Construction Cost: N/A

DESCRIPTION OF CONSTRUCTION

Permit to entrance for **Fork Branch Trail** Subdivision along Dover Kenton Road

Entrance Location: On east side of Dover Kenton Rd approx. 400 feet south of West Denneys Road.

Permit Expires: 31 December 2016

Tax Parcel I.D. #: ED 05 06600 01 0701

Description of Work:

DNREC is granted permission through special legislative funding to supply pipe for this entrance location. Per the legislation this pipe will be installed by DelDOT and funds will be supplied through DNREC to reimburse DELDOT all costs associated with the installation. Pipe size will be determined in the field.

Contact the DelDOT Permits Inspector 72 hours prior to commencing construction at (302) 760-2624. The applicant and contractor shall meet with the DelDOT inspector on site prior to commencement of work. All streets and roads shall be kept clear and clean of all dirt, mud and debris at all times.

This permit will be rescinded if the permittee does not comply with the requirements specified by this permit.

It is hereby agreed by the owner of the property affected, and all heirs, assigns, and/or successors in interest, that all construction covered by this permit shall be performed in accordance with the approved construction plan and the current Standard Specifications published by the Department of Transportation. The plan and specifications are incorporated herein by reference, and made part of this permit. Work is to begin within 90 days of the date of this permit, and it is to be completed on or before the above completion date. Requests for an extension of this permit shall be submitted in writing to the Permit Section 30 days prior to expiration.

The owner agrees not to sell, lease, or change the use of the property to significantly alter the flow and/or volume of traffic and/or drainage as determined within the sole discretion of the Division, and/or transfer his/her interest in the property without obtaining a new permit from the Division of Maintenance & Operations. Such failure automatically voids this permit.

The holder of this permit shall indemnify and save harmless the Division of Maintenance & Operations and its officers, employees, and/or agents from suits and damages arising from, or on account of the above described construction herein permitted on State rights-of-way, or the Division's acceptance thereof consistent with Section 107.14 of the Standard Specifications and all amendments thereto, incorporated herein by reference.

Traffic control and utility alterations shall be in accordance with current The Division of Maintenance & Operations "Traffic Controls for Streets and Highway Construction Manual" and the "Utilities Policy and Procedure Manual," incorporated herein by reference.

Permittee shall call the Division of Maintenance & Operations Permit Section, (Canal District: 326-4679, Central District: 760-2433, South District: 853-1342) and Miss Utility (1-800-282-8555) prior to any construction on State rights-of-way.

The Division of Maintenance & Operations may require revisions to the approved plans as required by field conditions.

The permittee shall request the Division of Maintenance & Operations make final inspection of the construction when work is completed, and all work must be completed to the satisfaction of said Division of Maintenance & Operations.

This permit shall be wholly conditional upon the satisfactory completion of all provisions set forth herein. If, upon expiration of this permit, work is incomplete or not performed according to the aforesaid plan and specifications, and no extension is applied for and issued, this permit shall become null and void for all legal purposes and the entrance shall be considered illegal with reference to 17 Del. C. §146.

Original On File

Authorized Representative of
Division of Maintenance & Operations

Original On File

Property Owner Signature



STATE OF DELAWARE
Architectural Accessibility Board
540 S. DuPont Highway, Suite 1
Dover, Delaware 19901

July 17, 2017

Mr. Kevin Rychlicki
DNREC
89 Kings Highway
Dover, DE 19901

RE: New Trail at Fork Branch Nature Preserve
Case No. 17094

Dear Mr. Rychlicki:

State of Delaware's Architectural Accessibility Board (AAB) met on Thursday, July 13, 2017, at which time your submission for the above referenced project was reviewed. Based on your plans and drawings your submission was unanimously approved.

The AAB's review and approval is not intended to assume any responsibility or liability for this project. Please know that there may be items pertaining to various codes, or other regulations, that may not have been addressed. You, however, are responsible for ensuring full compliance with all applicable accessibility codes, standards and/or other requirements. You are advised that potential changes to this project's design may have a direct affect on accessibility, and this should be considered prior to any changes or revisions to these drawings. Likewise, errors could also occur when the actual construction deviates from the approved design.

If you have any questions regarding this letter, please contact me at (302) 739-5644.

Very truly yours,
Original On File

Jennifer Lieber
Chief Administrator, AAB

cc: Board Members



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

**OFFICE OF THE
DIRECTOR**

**Phone: (302) 739-9910
Fax: (302) 739-6157**

December 20, 2016

Mr. David Bartoo
DNREC-Division of Parks and Recreation
89 King's Highway
Dover, De 19901

Re: DPR 2016 Fork Branch Trail, Segment 1 of 2, TP 2-05-06600-01-0700-00001

Dear Mr. Bartoo,

Thank you for allowing Species Conservation and Research Program Biologists, Holly Niederriter, Bill McAvoy and Chase McLean, to join DNREC-DPR Parks staff, Eileen Butler, Chris Bennett and yourself, at the site of the proposed Fork Branch Nature Trail, Segment 1. We appreciate the opportunity to walk the proposed alignment on the ground. Our biologists are comfortable with segment 1 of the alignment and have no recommendations to alter its location. Given the high ecological value of the habitat on site, we do recommend taking measures to minimize impacts where possible, such as by minimizing the width of the trail throughout the project area.

Also, Ms. Niederriter and Mr. McAvoy request the opportunity to visit the portion of the parcel that encompasses Segment 2 to survey for rare amphibian, reptile and plant species in the early spring, 2017. Please contact me to coordinate a site visit for that portion of the parcel.

Sincerely,
Original On File

Kate Fleming
Wildlife Biologist/Environmental Review Coordinator
(302) 735-8658; fax: (302) 653-3431; Kate.Fleming@state.de.us

***We Bring You Delaware's Great Outdoors
through Science and Service***

Find us on Facebook <http://www.facebook.com/DelawareFishWildlife>



WETLANDS & SUBAQUEOUS
LANDS SECTION

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

TELEPHONE (302) 739-9943
FACSIMILE (302) 739-6304

July 21, 2016

DNREC Division of Parks and Recreation
c/o David Bartoo
89 King's Highway
Dover, DE 19901

RE: EX-290/16 – Regulatory Review Letter
Trail Construction
Fork Branch Trail
Fork Branch Nature Preserve
Adjacent to Kenton Road,
Dover, Kent County, Delaware

Project title: FY16 Recreational Trails, Re-
Programmed Funding
State contract: T201630005
Federal Contract: NRT-2016(30)
Item: CR 4 Fork Branch Trail Construction

Dear Mr. Bartoo:

Thank you for contacting the Wetlands and Subaqueous Lands Section about the new construction of the Fork Branch Trail located in the Fork Branch Nature Preserve, adjacent to Kenton Road, Dover, Kent County, Delaware. The site location map that you provided is attached, depicting the yellow and black rectangles and burgundy line as the proposed project areas (Map 1).

The proposed work involves developing a new 1.75 mile pedestrian trail and parking area. There are four waterway crossings in the trail design that will be free-spanned with helical anchors on the uplands.

It is acknowledged that the maintenance described herein has no work to be performed in subaqueous lands or State-regulated wetlands. Therefore, the Wetlands and Subaqueous Lands Section concurs that the work does not require a permit as stated by The Subaqueous Lands Act (7 Del. C., §7205) or The Wetlands Act (7 Del. C. §6604).

According to the National Wetlands Inventory, there are areas of the project that could fall under the jurisdiction of the U.S. Army Corps of Engineers (Army CEO) as wetlands. Any activities taking place in an area delineated as tidal or non-tidal wetlands according to the criteria used by the U.S. Army Corps of Engineers would require prior approval and authorization from the Army COE.

If you have any questions, please contact this office at (302) 739-9943.

Sincerely,

Original On File

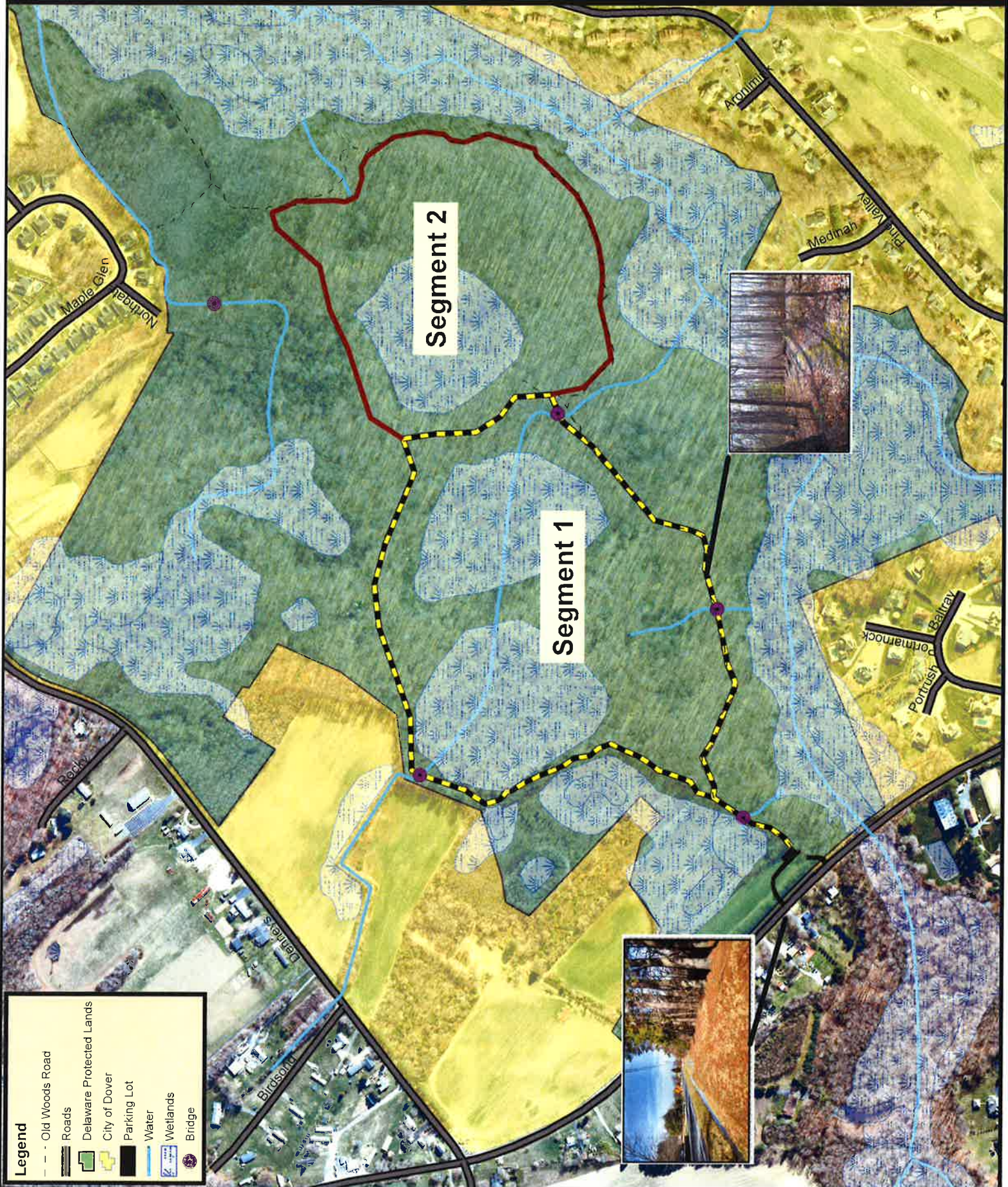
Julie R. Molina
Environmental Scientist
Wetlands and Subaqueous Lands Section

Enclosures: Map 1

Delaware's good nature depends on you!

Fork Branch Nature Preserve Proposed Trail System

0 250 500 1,000 1,500 2,000 2,500 Feet





State of Delaware
Historical and Cultural Affairs

21 The Green
Dover, DE 19901-3611

Phone: (302) 736.7400

Fax: (302) 739.5660

10/6/2015

ER: 2015.02.09.08

John P. McCarthy, RPA
Cultural Preservation Specialist
DNREC - State Parks and Recreation
152 S. State Street
Dover, DE 19901

Proposed Parking Lot and Trail Segment FB1, Fork Branch Nature Preserve, East Dover Hundred, Kent County, Delaware

We have reviewed the report titled: *A Phase I Intensive Archaeological Survey of the Proposed Parking Lot and Trail Segment FB1, Fork Branch Nature Preserve, East Dover Hundred, Kent County, Delaware.* by Dr. James Gibb, and found it to be acceptable for the SHPO Research Center. As we understand it, the proposed construction for the trail and parking facilities has the potential to impact Site 7K-C-435. The archaeological testing probed the integrity of data that may be impacted by the proposed construction. Dr. Gibb found there was not enough research potential in the small section of Site 7K-C-435 to be eligible for the National Register of Historic Places under criterion D. While we concur with the consultant on this point, we stress that this finding does not address the rest of the site, and does not change the National Register status of the site as a whole.

To conclude, we find the undertaking will have a no adverse effect on Site 7K-C-435, as it will not impact an area with significant archaeological deposits. If there will be additional construction planned in the future, we recommend further testing to define the boundaries of the archaeological sites on this parcel.

If you have any questions at this time, I can be reached at: 302-736-7407, or at: craig.lukezic@state.de.us.

Sincerely,

Craig Lukezic, Archaeologist

Cc Gwen Davis, Deputy SHPO, Delaware Division of Historical and Cultural Affairs



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

OFFICE OF THE
DIRECTOR

Phone: (302) 739-9910
Fax: (302) 739-6157

September 20, 2016

Mr. David Bartoo
DNREC-Division of Parks and Recreation
89 King's Highway
Dover, De 19901

Re: DPR 2016 Fork Branch Trail, Segment 1 of 2

Dear Mr. Bartoo,

Thank you for contacting the Species Conservation and Research Program about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project, which we understand includes only Trail segment 1 of 2. Please contact us again once project details regarding Segment 2 and other activities are available.

A review of our database indicates that the following state rare or federally listed plants, animals or natural communities occur at this project site:

Scientific Name	Common Name	Taxon	State Rank	State Status	SGCN Tier	Federal Status
<i>Ambystoma maculatum</i>	Spotted Salamander	Amphibian	S2		2	

State Rank: **S1**- extremely rare within the state (typically 5 or fewer occurrences); **S2**- very rare within the state (6 to 20 occurrences); **S3**-rare to uncommon in Delaware, **B** - Breeding; **N** - Nonbreeding; **SX**-Extirpated or presumed extirpated from the state. All historical locations and/or potential habitat have been surveyed; **SH**- Historically known, but not verified for an extended period (usually 15+ years); there are expectations that the species may be rediscovered.

State Status: **E** – endangered, i.e. designated by the Delaware Division of Fish and Wildlife as seriously threatened with extinction in the state pursuant to State of Delaware Code (7 Del. §601 *et seq.*) and implementing regulation (Title 7, 3900, 16.0 Endangered Species) ; n/a-plants are not included in Title 7.

Federal Status: **E** – endangered, i.e. designated by the U.S. Fish and Wildlife Service as being in danger of extinction throughout its range; **T** – threatened, i.e. designated by USFWS as being likely to become endangered in the foreseeable future throughout all or a significant portion of its range; **C**-candidate – Taxa for which the U.S. Fish and Wildlife Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. NOAA Managed Candidate:

SGCN Tiers: **Tier 1** Species of Greatest Conservation Need (SGCN) are those that are most in need of conservation action on order to sustain or restore their populations. They are the focus of the Delaware Wildlife Action Plan (DEWAP), which is based on analyzing threats to their populations and their habitats, and on developing conservation actions to eliminate, minimize or compensate for these threats. **Tier 2** SGCN are also in need of conservation action, although not with the urgency of Tier 1

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species. Their distribution across the landscape will help determine where DEWAP conservation actions will be implemented on the ground. **n/a**-plants are not addressed in DEWAP.

RARE SPECIES ON SITE

Spotted Salamander (Ambystoma maculatum)

This species occurs in moist, deciduous or mixed deciduous/coniferous woodlands with adequate wetlands for breeding, such as coastal plain ponds. Eggs are laid in masses underwater in the late winter and early spring. Larva hatch in about four to seven weeks and then transform into sub-adults within two to three months after hatching. Sub-adults will disperse from the breeding pool and live underground for 2-5 years until reaching maturity. Availability of fishless breeding pools and adequate upland forested buffers (several hundred meters) around those pools is critical for the survival of this species.

OTHER SPECIES/HABITAT CONSIDERATIONS

Broad Winged Hawk (Buteo platynerus):

Although we do not have any current records of nesting in this area, this species and its nest has been documented within the project area historically, and the intact forest provides suitable habitat for this species (contiguous blocks of hardwood to mixed hardwood/coniferous forest, often associated with a waterway). This species exhibits some territorial fidelity and while it may not reuse the same specific nest site each year, pairs will most often rebuild in the vicinity, within their established territory. The broad-winged hawk does not typically tolerate human disturbance, such as major changes in land use. Evaluating earlier aerial imagery indicates that this forested block has experienced little, if any, wide-scale disturbance, increasing the probability that this species continues to use this area. Surveys during the late spring and early summer breeding season can confirm the use of this site by this state-endangered raptor. Any activities should be conducted outside of the period during which this species may be present: April 1 – August 30.

Hérons and Bald Eagles

The main reach of Fork Branch is currently occupied by a large Great Blue Heron rookery and a historical bald eagle territory. These rookeries and the eagles are very sensitive to intrusion and changes in land condition and may move unexpectedly in any year. Currently, the heron rookery is located outside of the project area and the eagle nest has not been documented in this area for the last three years. We do not anticipate the heron rookery to shift into the project site. However, following an evaluation of the aerial imagery of the sites, several locations appear to be mature enough to potentially support a bald eagle nest. We recommend that DPR consider that the bald eagles may establish a new nest within the project area that could affect the project alignment and/or timeline. If a nest is documented within the project area, please contact me (302-735-8658, Kate.Fleming@state.de.us) for further guidance. Bald eagles are federally protected by the Bald and Golden Eagle Protection Act and the presence of a nest could affect your scope of work.

Northern mannagrass (Glyceria laxa)

This state-rare plant has been documented within the project parcel. However, this grass occurs on the floodplain along the creek, well out of range of the trail. Based on the existing alignment provided in the review request, it does not appear this species will be affected by the project.

Coastal Plain Seasonal Ponds and Associated Forested Uplands

There are Coastal Plain Seasonal Ponds mapped just to the east of the Segment 2 trail. Coastal Plain Seasonal Ponds are designated as Habitats of Conservation Concern because they are rare within the state and have the potential to harbor a high diversity of Species of Greatest Conservation Need. In particular, this wetland type provides breeding habitat for a variety of animals, often supports a unique assemblage of plants, and a high diversity of species, many of which are considered rare. The ecological integrity of a seasonal pond wetland is maintained by fluctuating levels of groundwater and by the flooding and drying cycles that are critical for the diversity of plant species that form the habitat in the pond.

Upland forest buffers around these seasonal ponds not only protect water quality, but provide critical habitat for amphibians and reptiles that are dependent on the wetland for breeding. The *Partners for Amphibian and Reptile Conservation* publication "*Habitat Management Guidelines for Amphibian and Reptiles of the Northeastern United States*" (Mitchell et al 2006¹) states that ponds will lose their amphibian and reptile populations if the supporting uplands are not also protected. Salamanders spend most of their life cycle in the forest surrounding these seasonal pond wetlands, only using the wetland during brief breeding and developmental periods early in the spring before the wetland dries out for the summer and fall. In a summary paper reviewing 40 studies of amphibian terrestrial movements, it was documented that salamanders travel between 117 and 268 meters from the edge of the primary wetland (Semlitsch and Bodie 2003²) into surrounding forest habitat.

Key Wildlife Habitat/Habitats of Conservation Concern

The forest on this property is mapped as Key Wildlife Habitat in the Delaware Wildlife Action Plan (DEWAP - <http://www.dnrec.delaware.gov/fw/dwap/Pages/default.aspx>) because it is part of a large forest block that can support an array of plant and animal species.

CONCERNS AND RECOMMENDATIONS

Hydrological Impacts

This project site lies within a State Nature Preserve along Maidstone Branch, upstream of Fork Branch. The project description and Environmental Resources Screening Checklist indicate that the existing grade will be altered in some areas as a result of new trail construction, leading to a potential change in the area's hydrology. We recommend that no component of this project leads to a change in water quality in Maidstone Branch or creates additional sedimentation into Maidstone Branch or Fork Branch. Additionally, care should be taken to ensure the hydrological system maintaining the Coastal Plain Seasonal Ponds found within the project parcel remain intact and unaltered.

User Impacts

This new trail will contribute to increased use of the Nature Preserve. We recommend that use be limited to foot traffic only, in efforts to reduce or eliminate the effects of human intrusion and increased

¹ Mitchell, J.C., A.R. Breisch and K.A. Buhlmann. 2003 Habitat Management Guidelines For Amphibians and Reptiles of the Northeastern United States. Partners in Amphibian and Reptile Conservation, Technical Publication HMG-3, Montgomery, Alabama. 108 pgs.

² Semlitsch, R.D. and J.R. Bodie. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. Conservation Biology 17:5.

use on the wildlife resources and plants inhabiting this site. Salamanders that attempt to cross the trail could be crushed by cyclists on bicycles and motorized vehicles. We also recommend that DPR consider the inclusion and installation of bollards or other barriers to prevent access to motorized vehicles.

In association with increased human use, greater access will provide the unintended opportunity for the public to enter sensitive areas off-trail. We recommend that DPR include educational signage along the entire alignment to inform the public to remain on the established pathway. In particular, we also recommend that DPR consider the installation of a physical barrier (post/rail fence or other) near the portions of the alignment that approach steep slopes to prevent human entry and degradation of those slopes and the sensitive habitats they support.

Once the trail has been established, monitoring would be prudent to ensure that trail users are not leaving the footprint of the trail.

Construction Activities

We recommend that the width of the trail is kept to a minimum to reduce disturbance to the sensitive habitat known to exist at this site. Also we recommend keeping the canopy as closed as possible to minimize the potential habitat fragmentation created by the construction of the trail.

Any matting used for stabilization should be bio-degradable. Additionally, our plant biologist, Bill McAvoy would like an opportunity to review the list of plants to be used for stabilization activities. We ask that a list of plants (including scientific names) is provided to Mr. McAvoy for his review and guidance. He can be contacted at 302-735-8668 or William.McAvoy@state.de.us.

SITE VISIT REQUEST

Our Division scientists have some knowledge of this site and knowing that rare species and sensitive habitats have been documented in this Nature Preserve, we request the opportunity to walk the alignment to determine what natural resources will be affected by the proposed activity. Our biologists have extensive knowledge of the flora and fauna of the state and can provide guidance to minimize impacts to the sensitive habitats as they relate to the alignment if necessary.

Please contact me at (302) 735-8658 or at Kate.Fleming@state.de.us if a site visit will be granted.

STATE NATURAL HERITAGE SITE

Because state-rare species are present, this project is within a State Natural Heritage Site. State Natural Heritage Sites and Delaware National Estuarine Research Reserves are identified as "Designated Critical Resource Waters" by the Army Corps of Engineers (ACOE), and as such are subject to the restrictions and limitations imposed through Nationwide Permit General Condition No. 22. A copy of this letter should be included in any permit application or pre-construction notification submitted to the Army Corps of Engineers for activities on this property.

If you propose to use Nationwide Permit No. 3, 13, 18, 29, 39 or 42 the State of Delaware has denied 401 Water Quality Certification (WQC) and Coastal Zone Federal Consistency Concurrence (CZM) for these Nationwide Permits in Designated Critical Resource Waters. In order to use any of these six Nationwide Permits at this site you must apply for a project-specific Water Quality Certification (WQC) and Coastal Consistency Determination (CZM) from the appropriate offices at DNREC. To obtain the application materials and for all information regarding WQC, contact DNREC's Wetlands and

Subaqueous Lands Section at 302/739-9943. For information pertaining to CZM, contact DNREC's Coastal Programs at 302/739-9283.

If you propose to use Nationwide Permit No. 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, or 44, this Designated Critical Resource Water designation may require you to obtain authorization through some other nationwide or general permit, or an individual permit from the Army Corps of Engineers. You should review the Nationwide Permit General Conditions and Regional Conditions for Delaware (see, in particular, Nationwide Permit General Condition No. 19) to determine what notification requirements or restrictions might be applicable for your activity. Please contact the Army Corps of Engineers at 215/656-6728 if you have questions or require additional information regarding the Nationwide Permit Program.

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,
Original On File

Kate Fleming
Wildlife Biologist/Environmental Review Coordinator
(302) 735-8658; fax: (302) 653-3431; Kate.Fleming@state.de.us

ATTENDANCE SHEET

CONSTRUCTION PROGRESS MEETING – CONTRACT NO.: 2017-FBNP-100

NAME: Fork Branch Nature Preserve Proposed Trail System

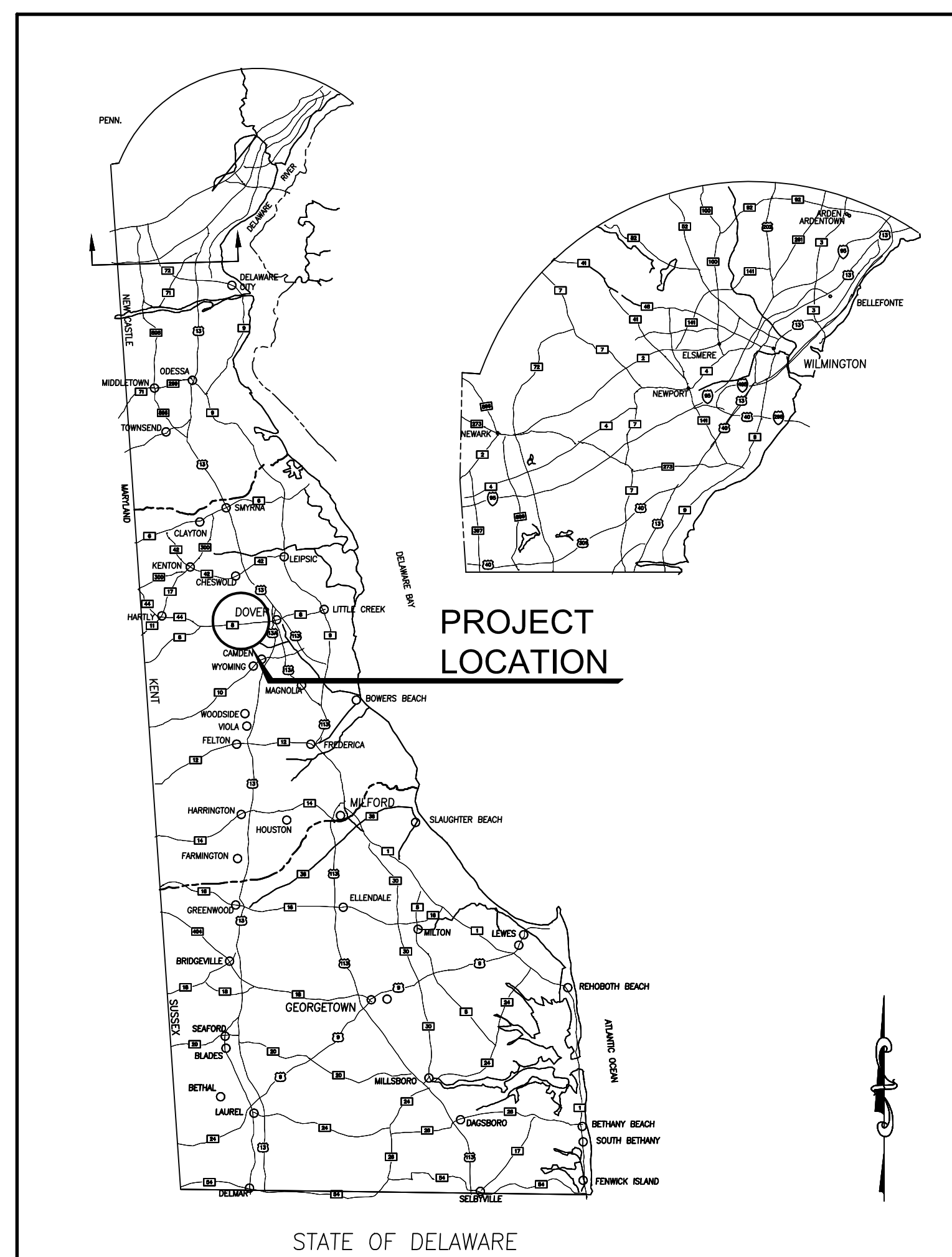
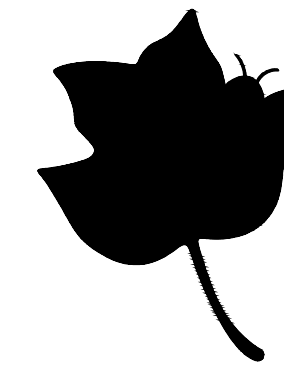
DATE: August 21, 2017 at 2:00 – 3:00 PM

NAME	AGENCY/COMPANY	TELEPHONE	EMAIL
Cindy Todd	DNREC	302-739-9210	Cindy.Todd@state.de.us
Julio Seneus	DNREC	302-739-9211	Julio.seneus@state.de.us
Kevin Rychlicki	DNREC	302-739-9212	Kevin.rychlicki@state.de.us
Mike Holt for Jim Deptula	Gearse & Lynch, Inc.	302-736-3031	jdeptula@geosyn.com estimator2@keistconstructionco.com
Rob Solloway	Kent	302-653-6469	
ED BUSH	EPB ASSOCIATES, INC	302-475-7301	epbush@aol.com
DEBBIE DAVIS (GC)	CHESAPEAKE TURF LLC	410-341-4363	debbie@chesapeake-turf.com
LEE Dixon	Dixon Contracting Inc	302-653-4623	DixonConde@aol.com
David Wilson	L. WILSON MASONRY INC	302-398-8240	lwilson@wilsonmasonrycompany.com
Cameron Russell	JJID Inc.	302-836-0414	crussell@jjid.com
DONNA FAHEY	MUMFORD & MILLER	302-378-7736	PERONY@mumfordandmiller.com
Brian Havens	Grass Builders	1916 392 6243	Lisae@GBLINK.net
KEITH JACOBI	DIXIE CONSTRUCTION CO	302-858-5007	KEITH@DIXIECONST.COM
Kurt Anglin	Anglin Construction	302-521-3939	KAnglin@AnglinConstruction.com
SEVART ANGLIN	ANGLIN CONSTRUCTION	502-834-7444	SANGLIN@ANGLINCONSTRUCTION.COM
Tony Esposito	GeoTech	302-353-9769	Tony@GOGEO TECH.COM
Danny Carrow	Carrow Construction	302-275-7592	danny.carrow@carrowconstruction.com

Fork Branch Nature Preserves Trail

08/21/2017

KENTON ROAD, DOVER, DE 19904

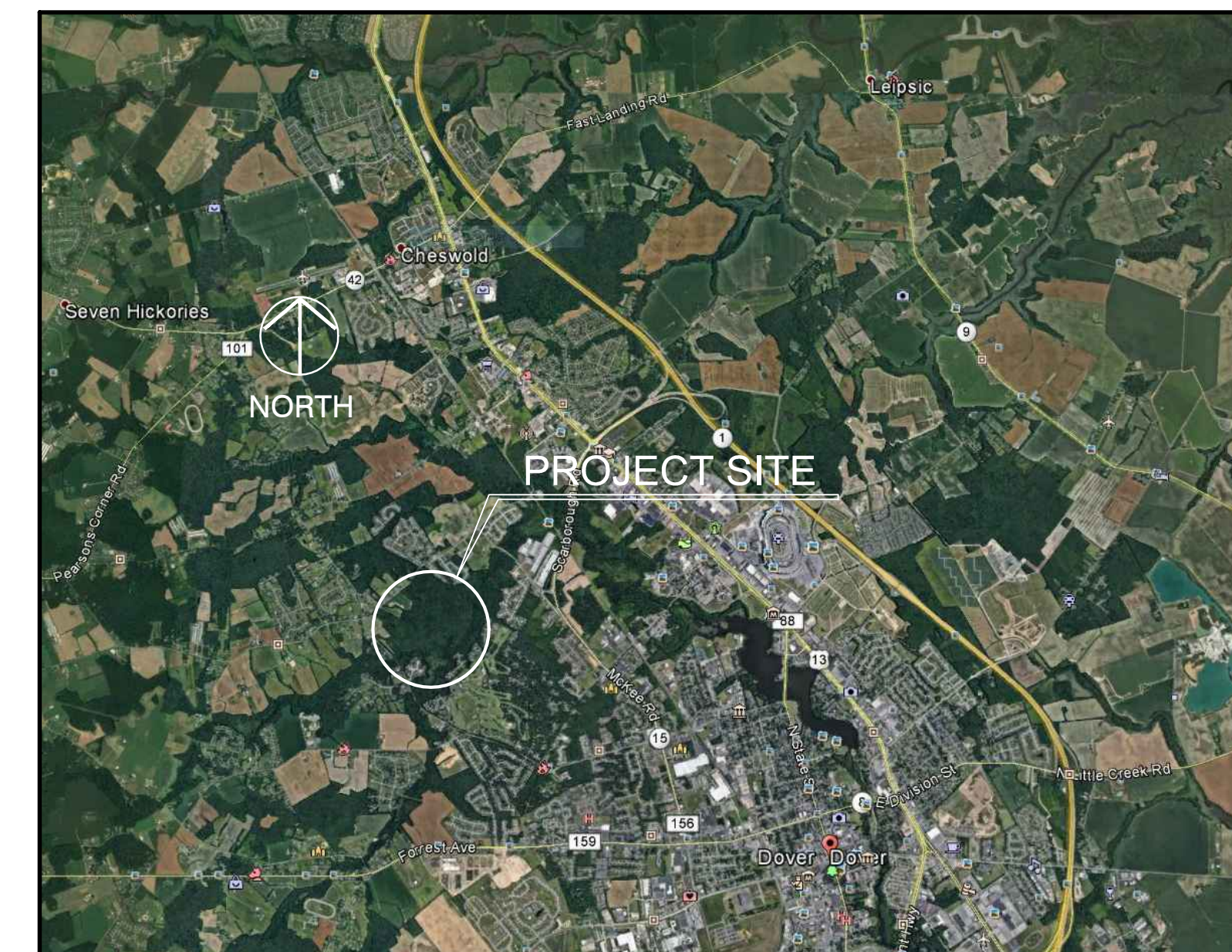
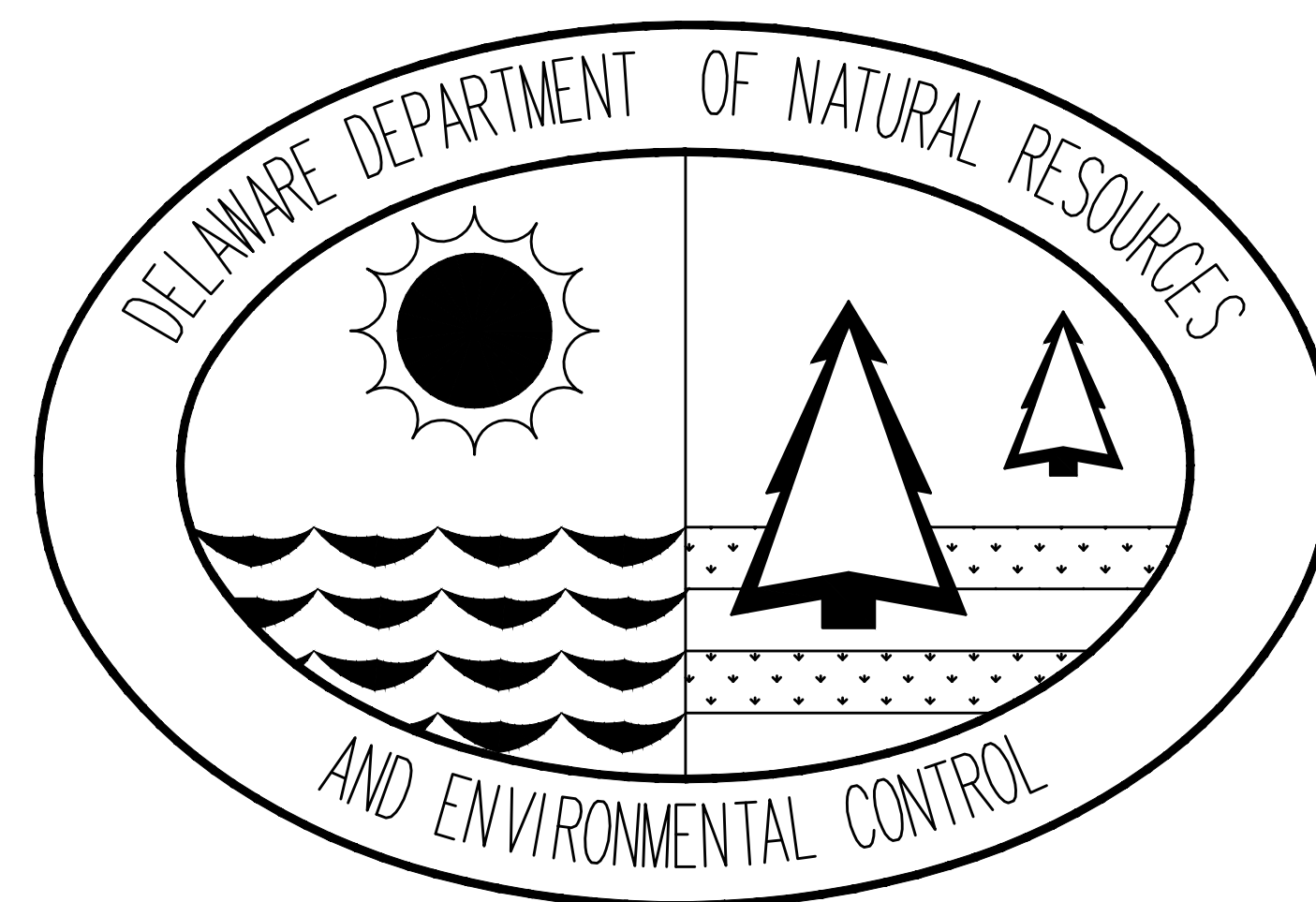


LOCATION MAP

CONTRACT NO.: 2017-FBNP-100

AUGUST 8, 2017

ISSUED FOR BID



SITE MAP

INDEX OF SHEETS FOR CONTRACT NO.
2017-FBNP-100

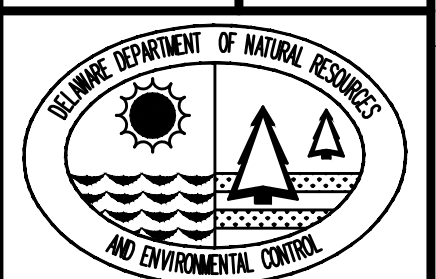
SHEET NO.	TITLE
G-01	COVER SHEET
G-02	GENERAL NOTES, ABBREVIATIONS & SYMBOLS
C-01	PROPOSED TRAIL SYSTEM
C-02	SITE PLAN
C-03	TRAIL & PARKING LOT SECTIONS AND DETAILS
C-04	SITE ALIGNMENT & GRADING
C-05	SITE ALIGNMENT & GRADING
C-06	SITE ALIGNMENT & GRADING
C-07	SITE ALIGNMENT & GRADING
C-08	SITE ALIGNMENT & GRADING
C-09	BOARDWALK PLAN
C-10	BOARDWALK PLAN

PARKS PROJECT NO. FBNP-1

[illegible]

FORK BRANCH NATURE PRESERVE

COVER SHEET



DESIGNED BY:

O.D.D.

DRAWN BY:

O.D.D.

BUILDING NO.:

N/A

DATE: _____

DATE: 08\08\2011

SCALE:

N.T.S.

SHEET NO.

G-01

PARKS PROJECT #:

FBNP-1

CONTRACT #:

2017-FBNP-100

General Notes

1. The boundary lines portrayed hereon have been established based solely on physical evidence discovered in the field in conjunction with determinations derived from source of title and adjacent deed record information.
2. Delaware regulations prohibit the burial of construction demolition debris, including trees and stumps on construction sites. Any solid waste found during excavation must be removed and properly discarded.
3. All handicapped parking demarcation, stalls, and building accessible routes shall comply with the “Americans with Disabilities Act”.
4. This drawing does not include necessary component for construction safety. All construction must be done in compliance with the occupational safety and health act of 1970 and all rules and regulations thereto appurtenant.
5. All materials and workmanship within the State of Delaware right-of-way shall be in accordance with current State of Delaware department of transportation standard specifications for road and bridge construction, Supplemental specifications, standard construction details, special provisions and design guidance memorandums.
6. The limit of disturbance shall be as shown on the plans. The contractor shall not work or trespass outside of the limit of disturbance as shown on the plans unless otherwise approved by the owner.

7. Approved covers to prevent material from leaving the trucks must be installed over all loaded trucks hauling borrow, excavated materials, and/or fine aggregates to or from the project site over state maintained roads the trucks shall be fully covered and the covers shall be tied on the rear and both sides to prevent material from leaving the truck during hauling.

8. In case of conflict between the "manufacturer's recommendations" for an approved material and the governing "contract specifications" for the material, the more restrictive of the two shall prevail unless otherwise directed by the owner.

9. All construction access shall use the stabilized construction entrances. Construction, maintenance, cleaning, re-compacting, removal and replacement of the base course materials for the stabilized, construction entrance shall be in accordance with the approved sediment and stormwater management plan as directed by the certified construction reviewer and the owner. The contractor is responsible for cleaning the road at the construction entrance at the end of each working day.

10. Staging areas:
Proper erosion and sediment control measures as determined by the owner shall be installed in all staging areas. All areas used by the contractor for staging operations shall be fully restored by the contractor upon completion of the project. If the staging area is paved, it shall be restored to its original condition. If the staging area is unpaved, it shall be re-graded, topsoiled, seeded and mulched in accordance with the Delaware erosion and sediment control handbook, current version (hereafter known as the handbook), to the satisfaction of the owner. The seed shall adhere to

the specifications of permanent seed mix #5 as noted in the handbook. All costs associated with restoration of the staging area shall be at the contractor's expense if the owner determines that a satisfactory stand of grass does not exist at the time of final inspection, all costs associated with reestablishing a satisfactory stand of grass shall be at the contractor's expense.

12. The contractor shall provide necessary restroom facilities for workers during construction.
13. All existing drainage systems shown are to remain operational unless denoted for abandonment.
14. The slopes of the trail and pedestrian bridge shall be constructed in accordance with the plans; however in no case shall the maximum slope in the direction of travel exceed 5% at any location.
15. All work in and directly adjacent to wetlands shall be performed in accordance with permit conditions.
16. Stone shall be placed on the appropriate geogrid or geosynthetic and compacted accordingly. A vibratory plate compactor in both directions is best for compaction of the final layer of GABC that will be in direct contact with the bottom of the block units. There should be no visible movement of the material once compacted and the base shall be smooth when completed.
17. Open graded base materials must be free of fines. Contractor shall take care not to track soil onto the roadway.
18. Temporary soil stockpile area; location to be determined during the pre-construction meeting. Knowledgeable

Clearing

- Clear all vegetation and trees with a DBH of less than 8" and areas of brush within the 5'-wide Stone Dust Trail alignment, the Temporary Laydown & Turnaround areas, Haul Road and all areas to be graded. These locations are to be verified in the field by DNREC' Parks staffs. All removal efforts shall be in accordance with specifications and State standards.
- In no case shall clearing take place beyond the established width of the trail, or beyond those working limits or clearing limits shown on the plans, unless approved, in writing, by the Parks Staffs.
- The area within the footprint of the trail which is covered with tree leaves, pine cones, wild grass and other vegetation shall be cut to a maximum depth of 3 inches below original ground surface. The organic materials and the vegetation covering the ground shall be removed and re-installed on the both side slopes of the trail.
- The entire length of the project shall be cleared and grubbed to the limits and requirements specified. Clearing and grubbing shall include removal of all trees, stumps, roots and any objectionable matter resting on or protruding through the surface of the original ground, except for those items designated to remain.

Root Protection During Excavation & Grading

- Protect all tree roots within the tree's dripline. If tree roots are encountered during excavation for path, roots shall be cut with pruner or saw. Roots shall not be pulled out by excavator or other equipment. Do not disturb roots within 5 feet of tree trunk. Root disturbance shall be limited to 25% of the root zone. No construction materials or equipment shall be stored within the dripline of trees to remain.

Project Notes


1. All work shall be in accordance with applicable state and local building codes and all other governing agencies and regulations.
2. Contractor shall verify all conditions and dimensions in the field prior to commencement of the work. Verify layout in relation to property, benchmarks, and other fixed conditions. Report discrepancies to the Architect immediately upon discovery.
3. Notify Engineer/Architect of discrepancies regarding the Contract Documents or design intent immediately upon discovery. Contractor shall be responsible for obtaining clarification prior to proceeding with the work or related work.
4. Contractor shall obtain all required building licenses.
5. Contractor shall remove all rubbish and debris from the site during course of project, and dispose of legally off-site.
6. Contractor shall perform all cutting, patching and protection required to complete the work indicated on the Contract Documents.
7. Contractor shall provide all inspections and tests required by state and local authorities including. Refer to individual drawings and specifications for additional testing requirements.
8. Unless indicated otherwise in Specifications, products and manufacturers are noted to establish the type and quality of materials to be provided. Contractor may submit proposed substitutions to the Engineer/Architect for review, per Section 016000 Product Requirements. Contractor shall include costs associated with proposed substitution, including redesign, and alteration of adjacent work to accept substitution.
9. Install all equipment and materials per manufacturer's instructions and recommendations unless specifically otherwise indicated, or where local codes and regulations take precedence.
10. Contractor shall provide supervision while any subcontractors or workers are on the job site and shall supervise and direct all work.


11. Contractor shall be solely responsible for all construction means, methods, techniques, sequences, procedures, site safety, and coordinating the work of all trades under the contract.


12. No products containing asbestos or other hazardous materials shall be installed on this project or used during the construction of the project. It shall be the responsibility of the Contractor to certify to the Owner that this requirement has been met. Subcontractors shall verify to the Contractor that no asbestos or other hazardous products are used in their work.


13. Delegated Design: When professional design services or certifications related to pre-manufactured structures, systems, materials, or equipment are required by these documents, the Architect/Engineer will specify performance and design criteria that such services must satisfy. The Contractor shall cause such services and certifications to be provided by properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, Shop Drawings, and other related submittals. The Owner and Architect/Engineer shall be entitled to rely upon the accuracy and completeness of those delegated services. The Architect/Engineer will review submittals only for the limited purpose of checking for

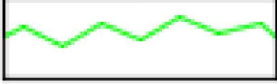
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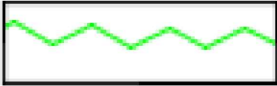
 PROPOSED STONE DUST PARKING AREA


 GRADED AGGREGATE BASE COURSE

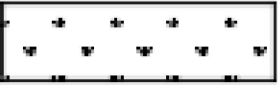
 . LOD . LIMIT OF DISTURBANCE


 SF SILT FENCE (SEE SHEET C-03)


 WOODS LINE (EXISTING)


 WOODS LINE (PROPOSED)

 ROW EXISTING RIGHT-OF-WAY LINE

 WETLANDS

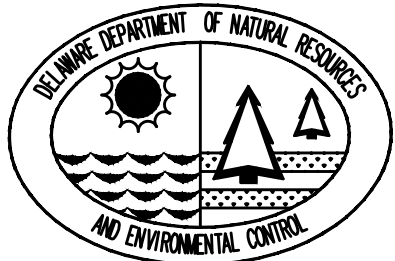
 FILTER STRIP (SEE SHEET C-04)

 + 4.28 EXISTING SPOT ELEVATION

 + 4.34 PROPOSED SPOT ELEVATION

FORK BRANCH NATURE PRESERVE

GENERAL NOTES, ABBREVIATIONS & SYMBOLS

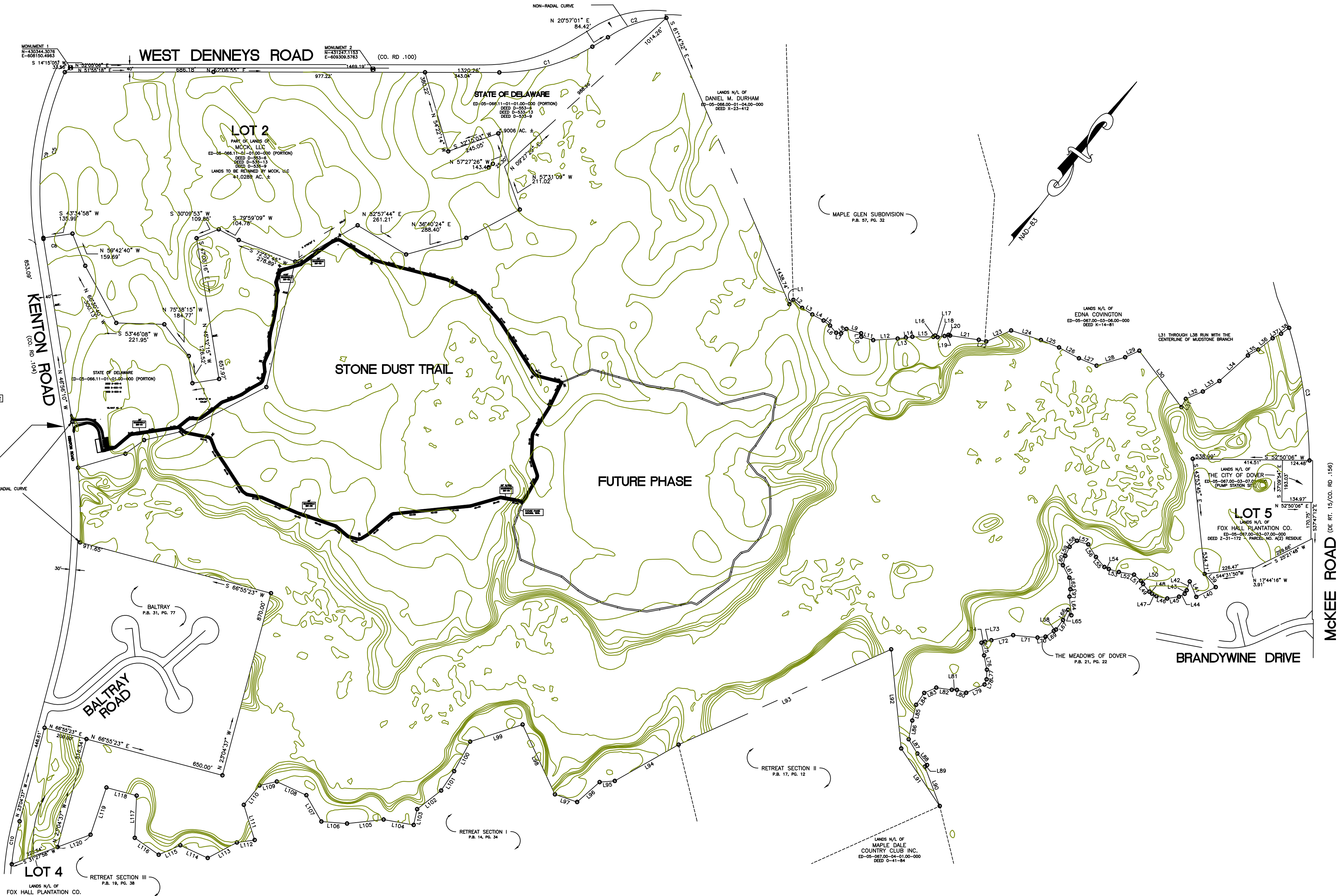


DESIGNED BY:	O.D.D.
DRAWN BY:	O.D.D.
BUILDING NO.:	N/A
DATE:	08\08\2017
SCALE:	N.T.S.
SHEET NO.:	G-02
PARKS PROJECT #:	FBNP-1
CONTRACT #:	2017-FBNP-100

DATE:	DESCRIPTION:	BY:	
		BY:	
DATE:	DESCRIPTION:		

LINE	BEARING	DISTANCE
L1	N04°10'00"E	27.00
L2	S89°08'43"E	55.70
L3	N85°08'43"E	55.70
L4	N85°23'24"E	59.16
L5	S89°52'23"E	38.20
L6	S79°54'38"E	43.60
L7	N08°28'16"E	22.39
L8	N1°50'21"E	32.08
L9	N89°33'07"E	69.93
L10	S42°30'07"E	15.87
L11	N85°47'58"E	56.87
L12	N48°21'52"E	113.39
L13	N48°07'10"E	38.32
L14	N43°02'19"E	30.27
L15	N52°24'17"E	37.05
L16	N1°54'46"E	10.00
L17	N84°19'24"E	14.42
L18	N41°32'02"E	31.65
L19	N55°42'07"E	19.41
L20	N78°38'33"E	18.52
L21	N60°13'47"E	133.72
L22	N85°27'39"E	35.98
L23	N20°06'54"E	126.03
L24	N89°47'50"E	143.95
L25	N74°52'41"E	90.79
L26	N80°31'26"E	104.68
L27	N74°30'24"E	86.16
L28	N30°37'11"E	137.51
L29	N27°13'11"E	71.72
L30	S74°48'10"E	305.00
L31	N09°42'03"W	43.05
L32	N08°42'30"E	86.29
L33	N10°31'18"E	90.27
L34	N10°14'47"E	177.00
L35	N21°53'10"E	55.04
L36	N1°43'38"E	44.24
L37	N0°28'07"E	44.00
L38	N16°34'14"E	46.39
L39	S78°12'00"E	79.24
L40	S28°21'18"W	100.42
L41	N61°19'34"W	71.82
L42	S19°00'22"E	42.93
L43	S02°41'40"E	107.07
L44	S20°09'44"W	28.83
L45	S47°11'36"W	55.10
L46	S46°29'50"W	51.24
L47	S73°49'38"W	22.68
L48	S88°41'36"W	16.26
L49	N7°16'17"W	44.76
L50	N27°01'40"E	18.86
L51	N86°53'44"W	42.14
L52	S62°17'14"W	71.11
L53	S65°43'37"W	48.09
L54	S77°17'46"W	22.66
L55	N27°09'30"W	60.80
L56	N86°37'36"W	67.75
L57	S70°01'36"W	54.48
L58	S12°21'07"W	44.09
L59	S17°00'10"E	46.16
L60	S24°08'00"E	44.60
L61	S64°59'34"E	64.07
L62	S47°01'47"E	53.80
L63	S31°07'53"E	33.90
L64	S43°50'31"E	80.19
L65	N68°47'35"W	29.53
L66	S11°34'58"E	52.59
L67	S00°00'24"E	54.55
L68	S21°20'07"W	12.32
L69	S1°00'37"W	46.37
L70	S46°03'11"W	37.42
L71	S52°28'36"W	112.70
L72	S38°50'13"W	103.49
L73	S39°09'56"W	29.29
L74	S37°44'34"W	12.85
L75	S49°35'41"E	39.63
L76	S49°18'15"E	69.97
L77	S32°50'10"E	44.53
L78	S18°35'03"E	25.87
L79	S07°43'34"W	94.39
L80	S66°54'38"W	43.00
L81	S55°01'34"W	44.10
L82	S59°23'58"W	71.73
L83	S28°16'48"W	68.87
L84	S02°29'05"E	65.98
L85	S23°58'47"E	54.99
L86	S27°23'57"E	87.85
L87	S88°38'08"E	77.22
L88	S78°14'18"E	69.65
L89	S16°14'38"W	12.43
L90	S28°42'37"E	154.53
L91	N71°47'37"W	320.00
L92	N43°47'37"W	460.00
L93	S27°50'27"W	1075.93
L94	S22°22'54"W	338.67
L95	S47°43'30"W	70.05
L96	S10°27'15"W	139.01
L97	S71°08'30"W	108.17
L98	N62°52'18"W	355.29
L99	S33°59'34"W	254.48
L100	S08°32'01"E	155.00
L101	S04°18'11"E	107.49
L102	S14°17'27"W	40.49
L103	S20°11'00"E	75.00
L104	S62°10'33"W	140.90
L105	S47°49'39"W	169.98
L106	S50°29'30"W	118.50
L107	N87°46'37"W	140.00
L108	S74°48'37"W	150.38
L109	S39°17'55"W	81.80
L110	S00°47'26"W	115.00
L111	S00°00'24"E	120.00
L112	S47°56'08"W	82.53
L113	S20°00'30"W	152.64
L114	S70°44'41"W	139.28
L115	S28°38'38"W	109.01
L116	S87°21'27"W	135.02
L117	N30°32'54"W	195.00
L118	S88°08'30"W	144.12
L119	S10°22'18"E	230.00
L120	S31°27'56"W	182.60

CURVE	RADIUS	LENGTH	CHORD	BEARING
C1	678.10'	430.98'	443.40'	N36°17'58"E
C2	496.24'	288.10'	284.12'	N33°35'16"E
C3	2231.85'	621.03'	619.03'	S46°42'32"E
C4	2874.79'	559.51'	558.63'	N41°45'14"W
C5	1392.39'	782.20'	776.76'	N37°44'24"W
C6	2874.79'	544.74'	544.53'	N39°54'47"E
C7	2874.79'	214.77'	214.71'	N49°11'21"W
C8	1392.39'	5.11'	5.11'	N48°05'19"W
C9	1392.39'	782.09'	771.80'	N30°38'05"W
C10	1245.20'	201.44'	201.22'	N27°43'08"W



NOTES

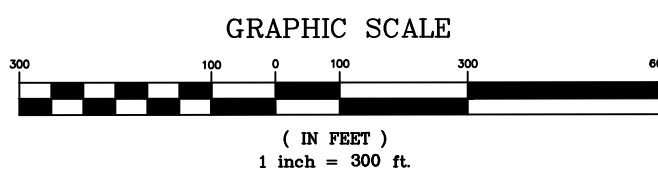
- THIS PLAN IS NOT THE RESULT OF A RECENT FIELD SURVEY BUT IS A COMPILATION OF THE FOLLOWING PLANS:
 - SURVEY AS PREPARED BY EARL D. SMITH, INC. DATED 6-12-89 ENTITLED "LANDS TO BE CONVEYED TO MCKEY LIMITED PARTNERSHIP" (REV. 8-15-89).
 - SURVEY AS PREPARED BY DAVIS, ROWE & FREDEL, INC. DATED 2-10-00 ENTITLED "SURVEY OF THE LANDS OF EDNA CONINGTON".
 - SURVEY AS PREPARED BY SCOTT ENGINEERS, INC. DATED 5-28-03 ENTITLED "MINOR SUBDIVISION PLAN FOR DR. J. MC CLEMENTS C/O MCKEY L.P.".
 - SURVEY AS PREPARED BY EARL D. SMITH, INC. DATED 7-15-03 ENTITLED "TOPOGRAPHIC SURVEY - LANDS OF FOX HALL PLANTATION CO.".
 - PROPOSED SUBDIVISION PLAN AS PREPARED BY BECKER MORAN GROUP DATED 7-17-03 ENTITLED "NORTH GATE VILLAGE PROPOSED SUBDIVISION".
 - PLAN AS PREPARED BY EARL D. SMITH, INC. DATED 9-2-03 (REVISED 10-14-03) ENTITLED "MINOR LOT LINE ADJUSTMENT PLAN - LANDS OF MCKEY, L.L.C. & FOX HALL PLANTATION CO." AND RECORDED IN AND FOR THE RECORDER OF DEEDS OFFICE, KENT COUNTY, DELAWARE ON 11-25-03 IN PLOT BOOK 69, PAGE 92.
- THE PURPOSE OF THIS PLAN IS TO ROTATE THE NORTH AZIMUTH BASED UPON NORTH AMERICAN DATUM 1983 (NAD-83) AS ACQUIRED AND PROVIDED BY D.N.R.E.C. (D.N.R.E.C. PROJECT NO. 21-4-0313 ACQUIRED NOV. 10, 2003).
- CENTER LINE OF TRAIL TO BE CLEARLY DELINEATED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION.

DATA COLUMN

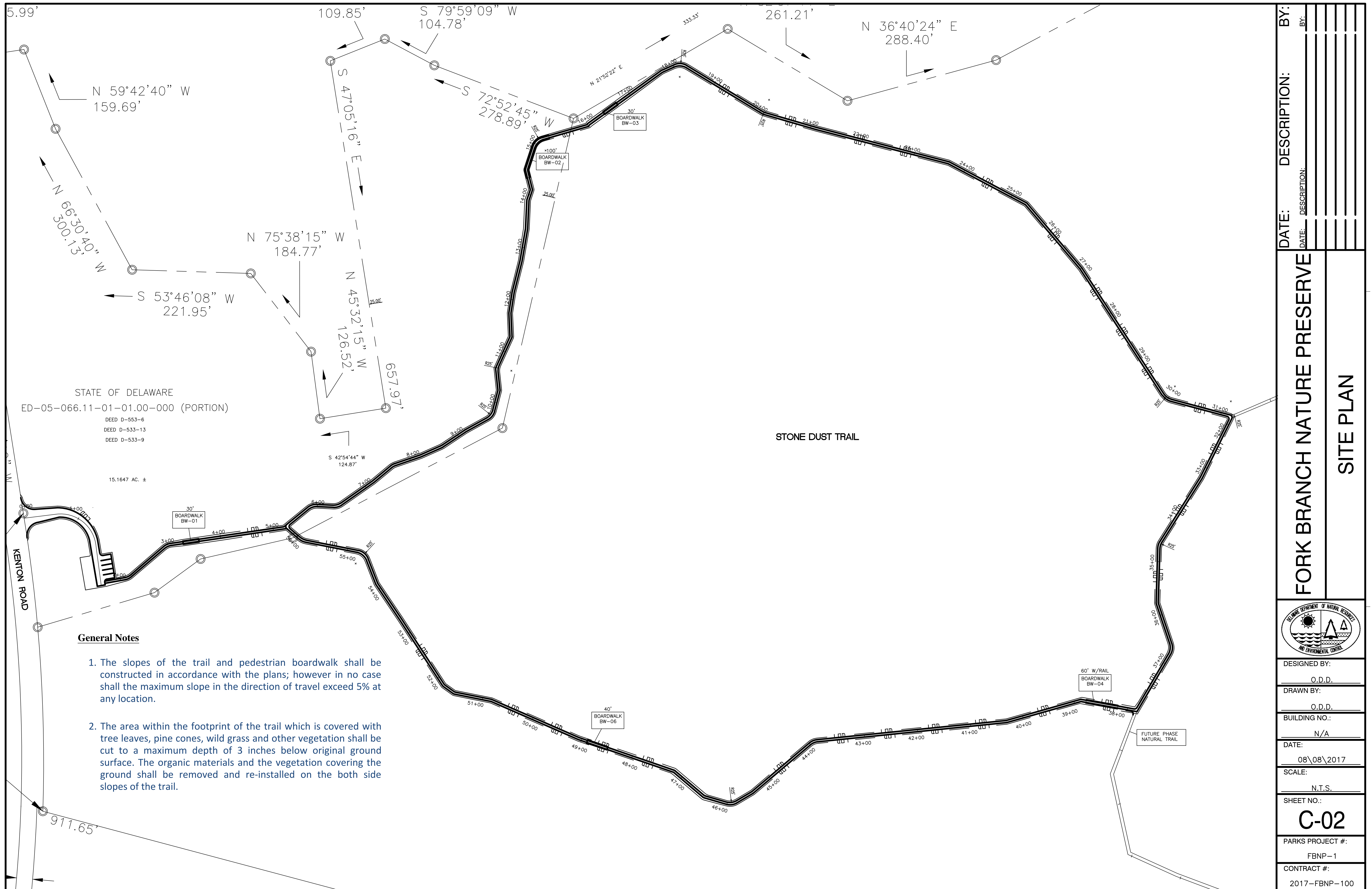
TAX PARCEL NO. - AS NOTED
PRESENT ZONING:
PRESENT USE:
PLAN PURPOSE:

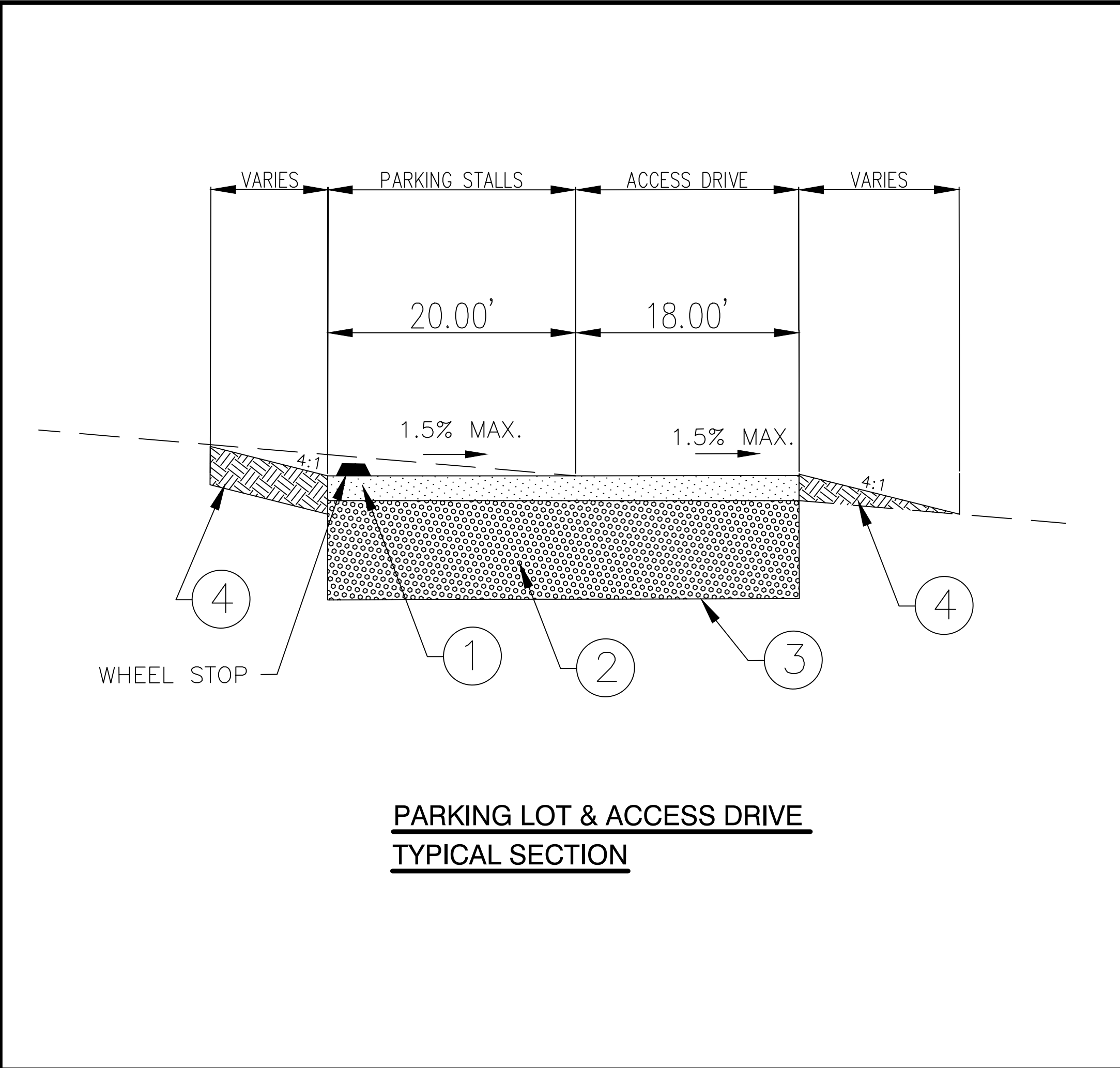
EXISTING AREA : 298.0992 AC. ±
PROPOSED LOT 1 AREA : 15.1647 AC. ±
PROPOSED LOT 2 AREA : 41.0289 AC. ±
PROPOSED LOT 3 AREA : 5.9006 AC. ±
RESIDUAL AREA : 236.0050 AC. ±
RESIDUAL ROAD FRONTAGE (KENTON ROAD) : 184.934' ±

RM-1 & R-20
VICINITY
TO CREATE SAME NUMBER OF PARCELS
AS PRESENT LOT 2 TO THE STATE OF
DELAWARE

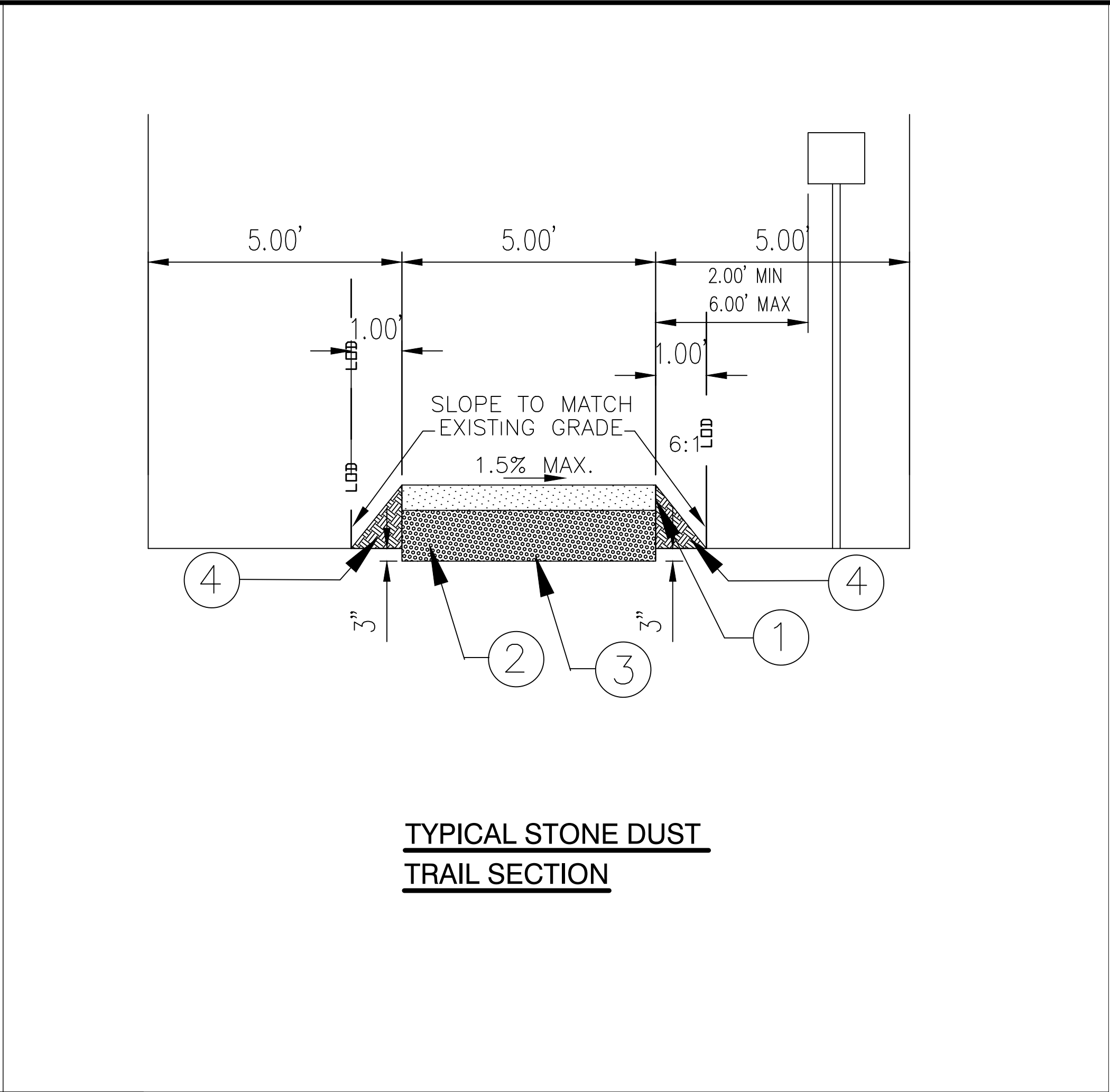


DATE:	DESCRIPTION:	BY:
DATE:	DESCRIPTION:	BY:
FORK BRANCH NATURE PRESERVE		
PROPOSED TRAIL SYSTEM		
DESIGNED BY: O.D.D.		
DRAWN BY: O.D.D.		
BUILDING NO.: N/A		
DATE: 08\08\2017		
SCALE: 1" = 300'-0"		
SHEET NO.: C-01		
PARKS PROJECT #: FBNP-1		
CONTRACT #: 2017-FBNP-100		

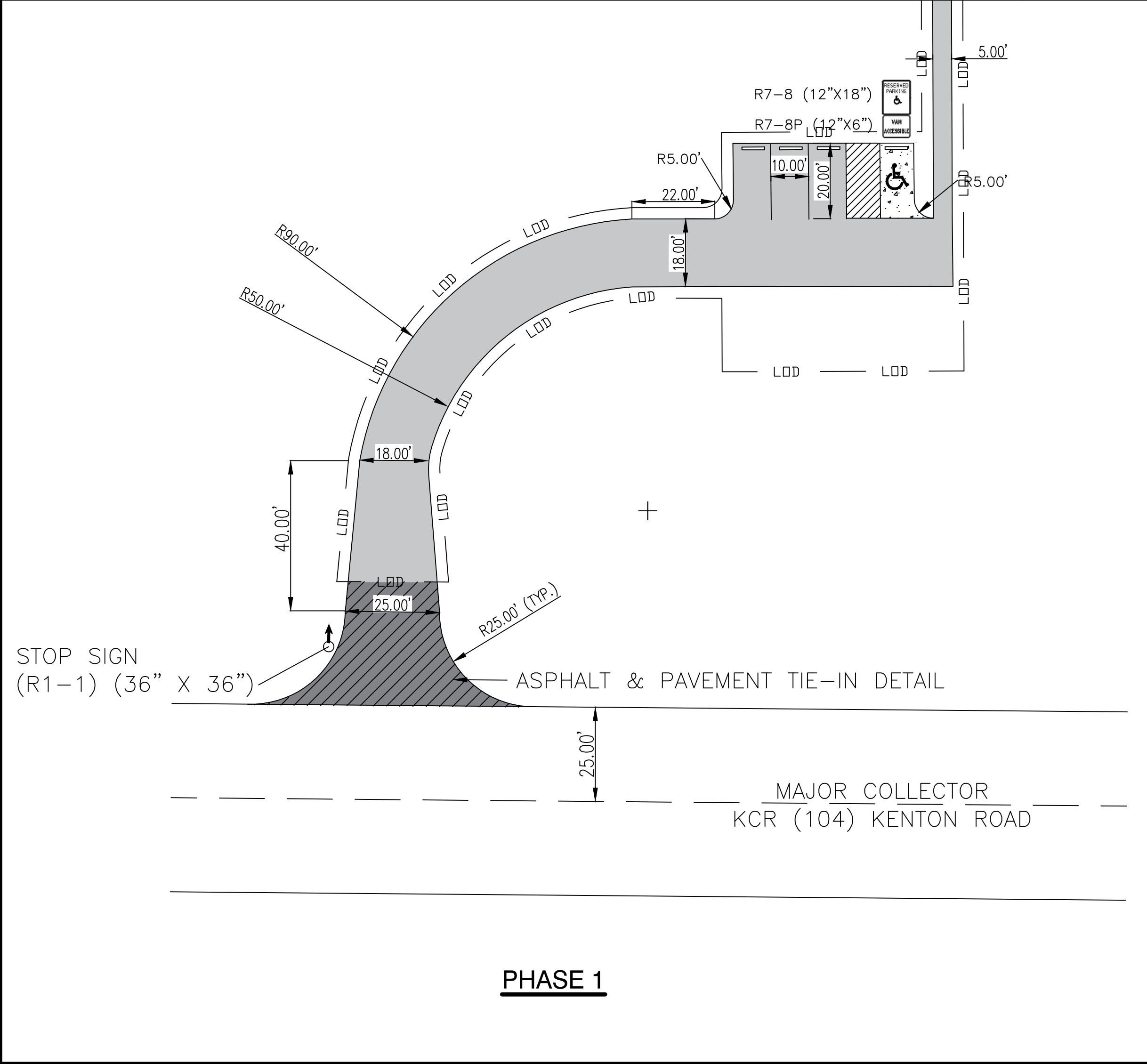




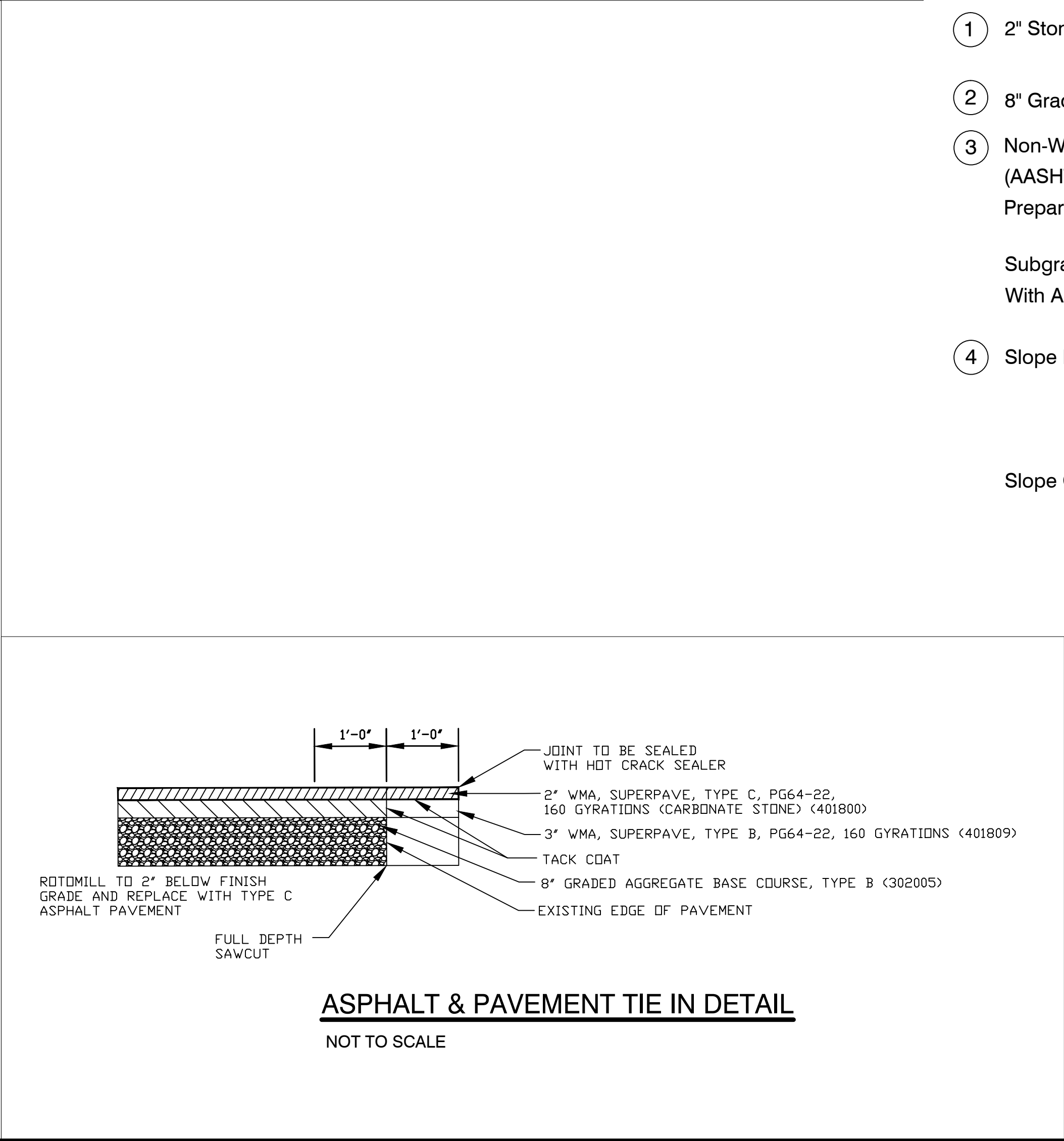
**PARKING LOT & ACCESS DRIVE
TYPICAL SECTION**



**TYPICAL STONE DUST
TRAIL SECTION**



PHASE 1



**ASPHALT & PAVEMENT TIE IN DETAIL
NOT TO SCALE**

LEGEND

TRAIL TYPICAL SECTION

1

1.5" Stone Dust (AASHTO #10)

2

6" Graded Aggregate Base Course (GABC), Type B, (ITEM 302005)

3

Non-Woven Geotextile Separation Fabric (AASHTO M 288, Class 2 - Mirafi 140n, Or Equivalent) Between Prepared Subgrade And Graded Aggregate Base Course

4

Slope Less Than 4:1
Fill With Excavated Material
Permanent Seeding
Mulch
Slope Greater Than 4:1
Fill With Excavated Material
Permanent Seeding
Stabilization Matting

Subgrade Shall Be Leveled and Compacted Via Minimum Two Passes With A Walk-Behind, Double Drum Roller - Vibratory Compactor

The area within the footprint of the trail which is covered with tree leaves, pine cones, wild grass and other vegetation shall be cut to a maximum depth of 3 inches below original ground surface. The organic materials and the vegetation covering the ground shall be removed and re-installed on the both side slopes of the trail

PARKING LOT TYPICAL SECTION & ENTRANCE DETAIL

1

2" Stone Dust (AASHTO #10)

2

8" Graded Aggregate Base Course (GABC), Type B, (ITEM 302005)

3

Non-Woven Geotextile Separation Fabric (AASHTO M 288, Class 2 - Mirafi 140n, Or Equivalent) Between Prepared Subgrade And Graded Aggregate Base Course

4

Slope Less Than 4:1
Fill With Excavated Material
Permanent Seeding
Mulch
Slope Greater Than 4:1
Fill With Excavated Material
Permanent Seeding
Stabilization Matting

Subgrade Shall Be Leveled And Compacted Via Minimum Two Passes With A Walk-Behind, Double Drum Roller - Vibratory Compactor

4" (MIN.) CONCRETE

6" (MIN.) GABC

PCC CONCRETE PARKING (705001)

GABC, TYPE B, (ITEM 302005)

CONCRETE PARKING DETAIL

NOT TO SCALE

DATE:

DESCRIPTION:

BY:

DATE:

DESCRIPTION:

BY:

FORK BRANCH NATURE PRESERVE

TRAIL & PARKING LOT SECTIONS AND DETAILS

DESIGNED BY:

O.D.D.

DRAWN BY:

O.D.D.

BUILDING NO.:

N/A

DATE:

08\08\2017

SCALE:

N.T.S.

SHEET NO.:

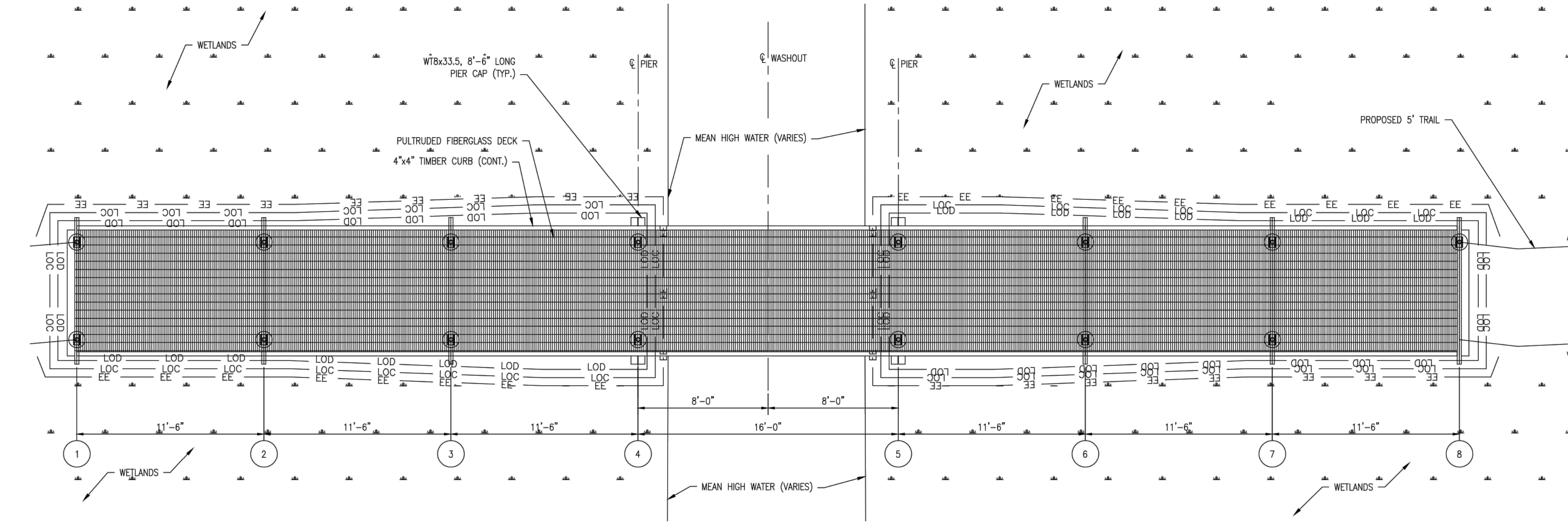
C-03

PARKS PROJECT #:

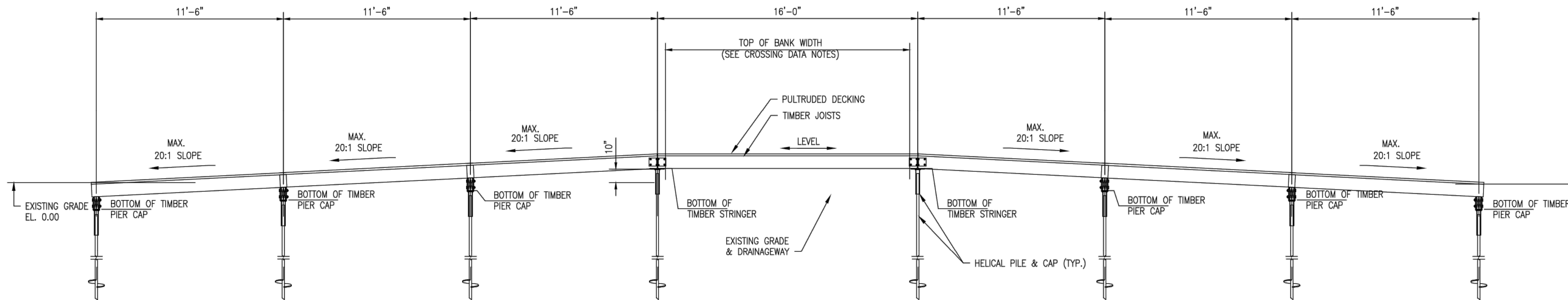
FBNP-1

CONTRACT #:

2017-FBNP-100

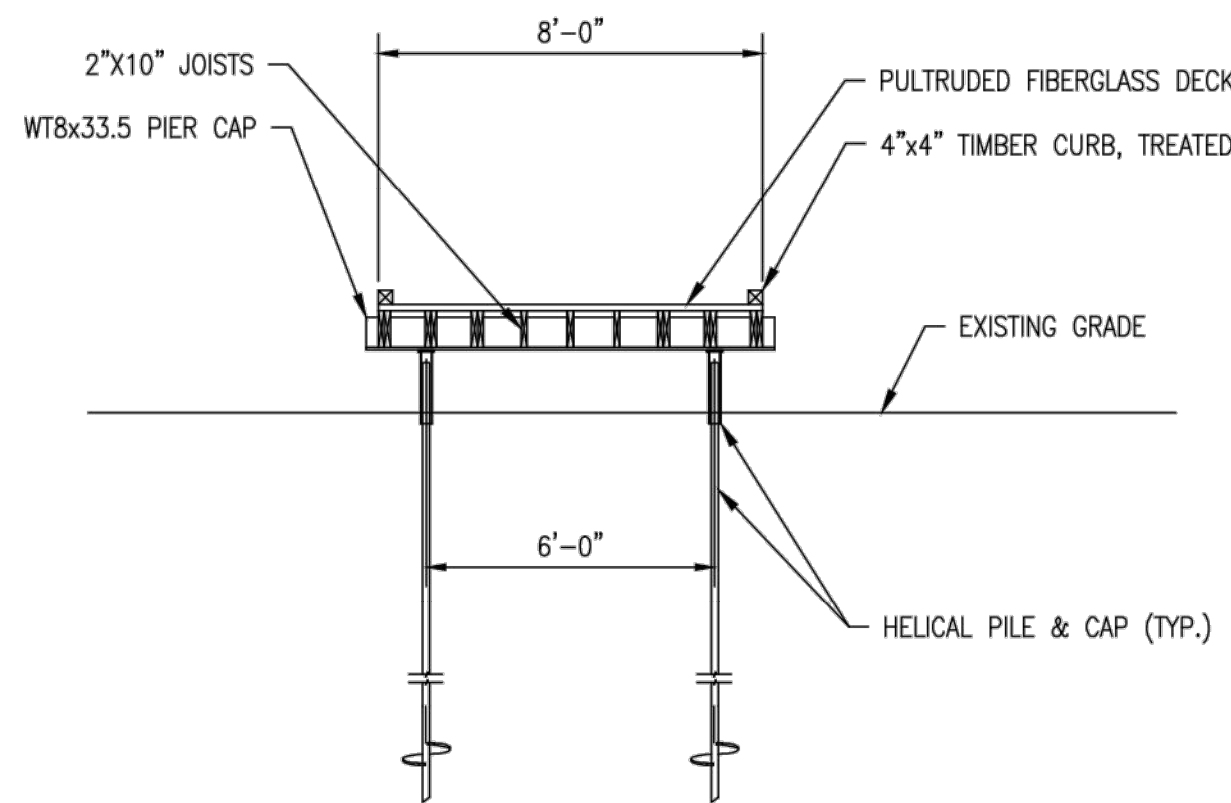


TRAIL BOARDWALK PLAN
SCALE: 1/4" = 1'-0"



TRAIL BOARDWALK ELEVATION
SCALE: 1/4" = 1'-0"

NOTE:
EXISTING GRADE ELEVATION IS ASSUMED.
ELEVATIONS NOTED THUS (*) BASED ON PULTRUDED
DECK WITH 1 1/2 INCHES OVERALL THICKNESS.
CONTRACTOR TO ADJUST ELEVATION ACCORDINGLY BASED
ON ACTUAL THICKNESS OF DECK.



TRAIL BOARDWALK SECTION
SCALE: 1/4" = 1'-0"

Fork Branch Trail Boardwalk Number	Length of Structure
Boardwalk BW- 01	30'
Boardwalk BW- 02	100'
Boardwalk BW- 03	30'
Boardwalk BW- 04	60'
Boardwalk BW- 06	40'

Note: The length of the boardwalk structures can be adjusted in field at the discretion of the design engineer and Parks field staffs.

PROJECT NOTES

LOADS:

LIVE LOAD – 90 PSF PEDESTRIAN LOAD.
H-5 VEHICLE LOADING (10,000 LBS TOTAL VEHICLE LOAD)

MATERIAL:

TIMBER:
STRUCTURAL MEMBERS SHALL BE SOUTHERN YELLOW PINE, NO. 2 OR BETTER. ALL TIMBER MEMBERS SHALL BE TREATED WITH CHROMATED COPPER ARSENATE (CCA) WITH A MINIMUM RETENTION OF 2.5 LBS/FT³.

FIELD TREATMENT OF HOLES AND CUTS IN TIMBER JOISTS SHALL CONSIST OF AN APPLICATION OF A COPPER NAPHTHENATE SOLUTION WITH A MINIMUM OF 2% COPPER METAL IN ACCORDANCE WITH AWPA STANDARD P9. METHOD OF APPLICATION FOR ALL CUTS, HOLES AND INJURIES OF THE SURFACE OF TREATED LUMBER SHALL CONSIST OF BRUSHING, SPRAYING, DIPPING, SOAKING OR COATING. CARE SHALL BE TAKEN TO ASSURE THAT ALL INJURIES, SUCH AS ABRASIONS NAIL AND SPIKE HOLES, ARE THOROUGHLY SATURATED WITH THE FIELD-TREATING SOLUTION.

DECKING:
INDIVIDUAL DECKING PANELS SHALL BE ORIENTED WITH MAIN BARS TRANSVERSE TO THE JOISTS, AND SPAN THE FULL WIDTH OF THE BOARDWALK WITH NO JOINTS. DECKING MATERIAL SHALL CONSIST OF PULTRUDED HIGH LOAD CAPACITY FIBERGLASS GRATING AS MANUFACTURED BY STRONGWELL CORPORATION, OR APPROVED EQUAL, WITH THE FOLLOWING CHARACTERISTICS:

- LIVE LOAD DEFLECTION:
- <0.033 INCHES WITH A 4000 LB/FT LINE LOAD OVER 12 INCH SPAN.
- <0.033 INCHES WITH A 4000 LB/SQ.FT UNIFORM LOAD OVER 12 INCH SPAN.
- RATE OF BURN – ASTM D 635.
- FLAME SPREAD RATING OF 25 OR LESS IN ACCORDANCE WITH ASTM E-84.
- VISUAL QUALITY – ASTM D4385.
- MANUFACTURER – ISO-9001:2008 CERTIFIED.
- SURFACE WEAR INDEX – LESS THAN 1.0 PER ASTM D4060.
- MODULUS OF ELASTICITY (E) – 3,790,000 PSI, MINIMUM.
- THICKNESS – 1 1/2 INCHES, MINIMUM.
- SPACING BETWEEN GRATING – 1/2 INCH MAXIMUM.

FASTENERS;
ALL PULTRUDED DECKING CLAMPS AND SCREWS SHALL BE TYPE 316L STAINLESS STEEL. INSTALL 2 CLIPS AT EACH SUPPORT WITH A MINIMUM OF 4 CLIPS PER PANEL, INSTALLED IN ACCORDANCE WITH THE DECK MANUFACTURER'S REQUIREMENTS.

TIMBER FASTENERS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A – 153.

STEEL FASTENERS SHALL CONFORM TO ASTM A325, GALVANIZED.

HELICAL ANCHORS:
HELICAL ANCHORS SHALL BE BY A.B. CHANCE. HELICAL ANCHORS SHALL BE INSTALLED TO OBTAIN A MINIMUM ULTIMATE BEARING CAPACITY OF 10 KIPS WITH A FACTOR OF SAFETY OF 2.0. ALLOWABLE BEARING CAPACITY = 5 KIPS.

HELICAL ANCHORS SHALL BE INSTALLED TO A MINIMUM ULTIMATE CAPACITY OF 10 KIPS, AS DETERMINED BY TORQUE VALUE READINGS DURING INSTALLATION. TORQUE VALVE READINGS SHALL BE USED IN CONJUNCTION WITH APPLICABLE TABLES AND/OR CHARTS PROVIDED BY CHANCE ANCHOR AND SHALL TAKE INTO ACCOUNT THE SOIL TYPE AND CONDITIONS.

BEARING ANCHORS SHALL BE INSTALLED A MINIMUM OF 4'-0" AS MEASURED FROM THE UPPER MOST HELIX AND THE FINAL GRADE. DIAGONAL ANCHORS SHALL BE THE SAME LENGTH AND CONFIGURATION AS BEARING ANCHORS AND SHALL BE INSTALLED A MINIMUM DEPTH OF 4'-0" AS MEASURED FROM THE UPPERMOST HELIX AND THE FINAL GRADE.

STURCTURAL STEEL:
ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED AFTER SHOP FABRICATION IN ACCORDANCE WITH ASTM A123.

STEEL SHALL CONFORM TO THE FOLLOWING:

- ROLLED SHAPES – ASTM A992, GR. 50.

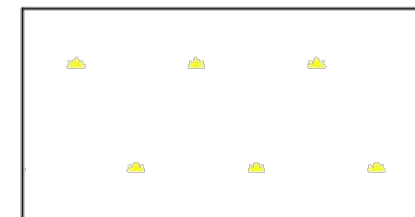
EROSION & SEDIMENT CONTROL NOTES

1. THE CONSTRUCTION SITE SHALL BE PROTECTED FROM EROSION BY THE EXCLUSIVE USE OF EROSION EELS (EE).
2. ALL CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE AT THE CONCLUSION OF EACH WORK DAY.
3. NO TRESPASSING OF THE CONTRACTOR'S PERSONNEL OR EQUIPMENT SHALL BE ALLOWED BEYOND THE LIMIT OF CONSTRUCTION (LOC)
4. ALL DISTURBED AREAS SHALL BE STABILIZED WITH A MINIMUM OF 4 INCHES OF GRAVEL.
5. THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM THE GRAVEL TRAILS AS DIRECTED BY THE ENGINEER.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK DATED 03/2013, AND ALL APPLICABLE DETAILS INCLUDING, BUT NOT LIMITED TO, THE STANDARD AND SPECIFICATIONS FOR CONSTRUCTION SITE WASTE MANAGEMENT & SPILL CONTROL.
7. NO WORK, EQUIPMENT, MATERIALS, OR PERSONNEL ARE ALLOWED IN THE WATER WAY OR ADJACENT WETLANDS.
8. NO STRUCTURES ARE ALLOWED WITHIN STATE OR USACE JURISDICTIONAL WATERS.

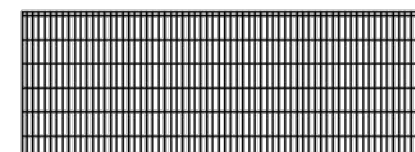
LEGEND

EROSION EEL — EE — EE —
LIMIT OF CONSTRUCTION — LOC — LOC —
LIMIT OF DISTURBANCE — LOD — LOD —

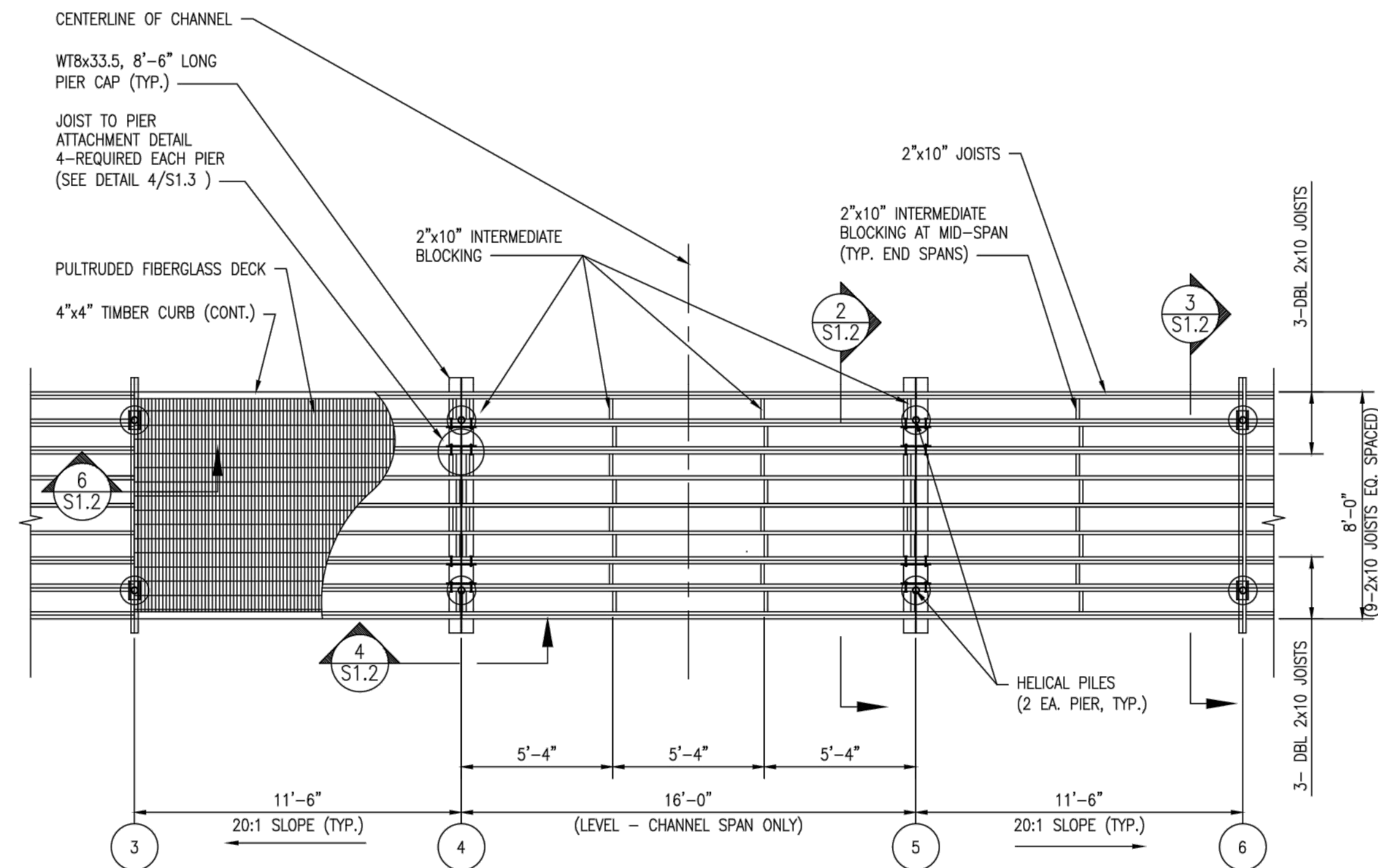
WETLANDS



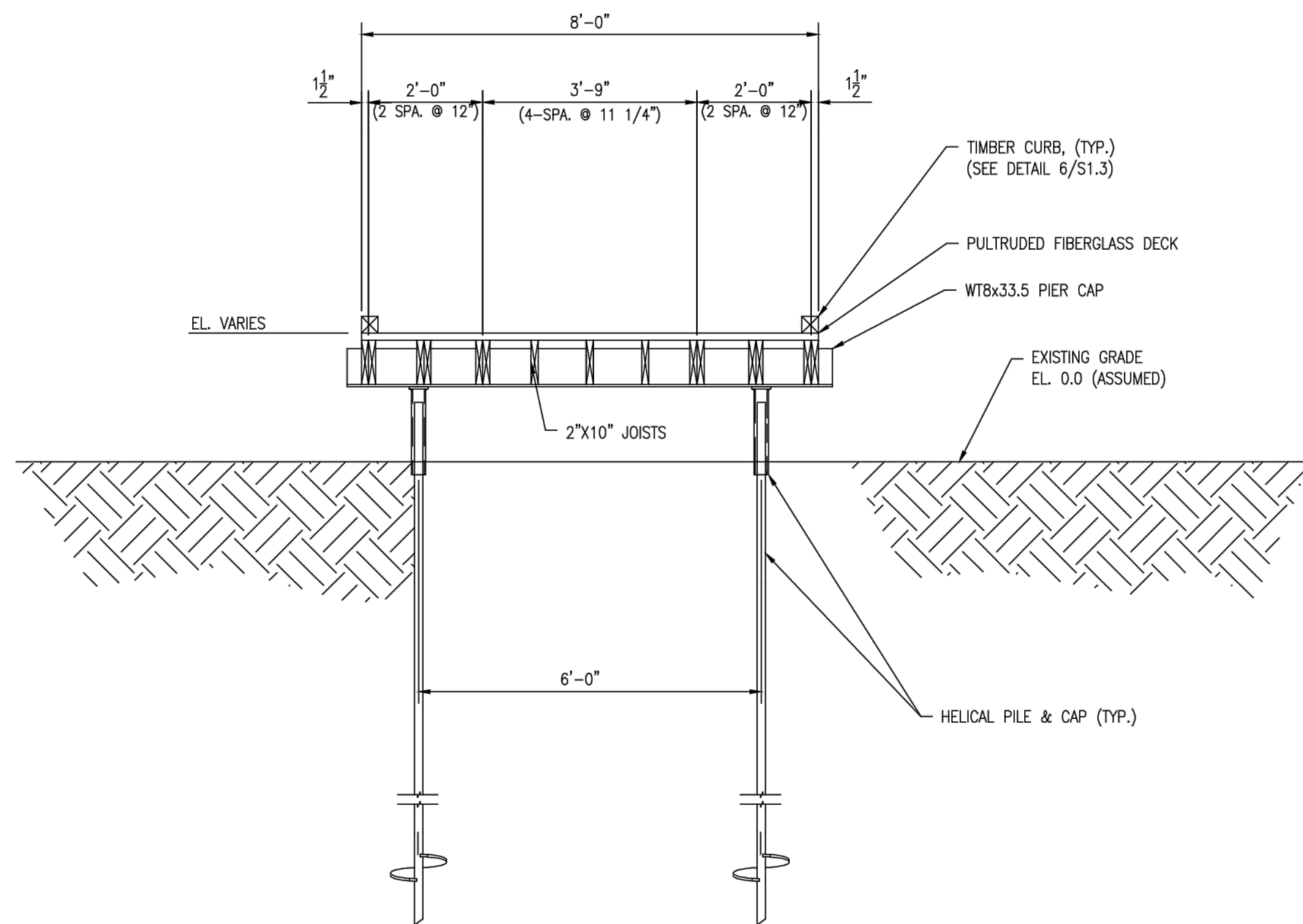
PULTRUDED FIBERGLASS DECK



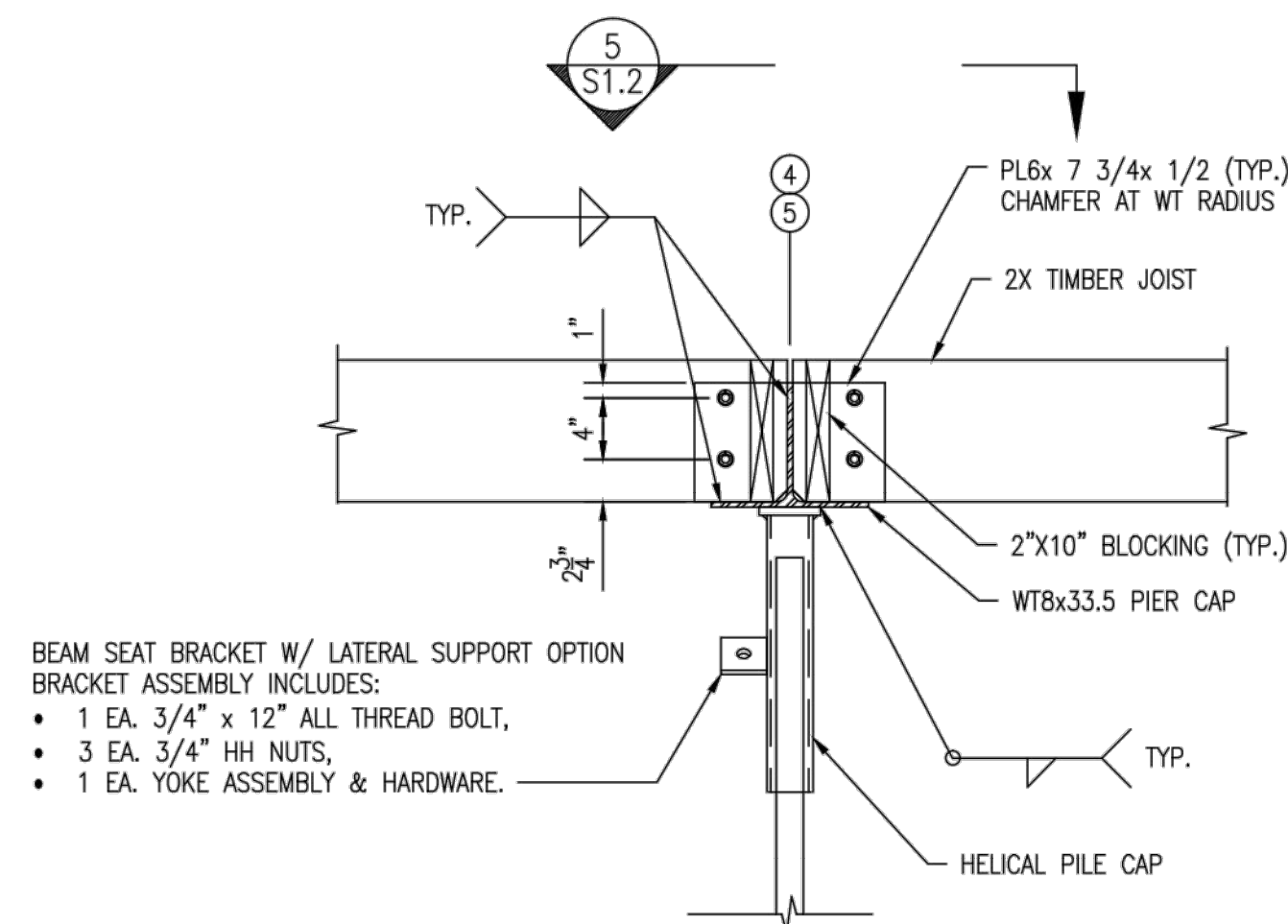
BY:	DATE:	DESCRIPTION:	DATE:	DESCRIPTION:
BY:	DATE:	DESCRIPTION:	DATE:	DESCRIPTION:
FORK BRANCH NATURE PRESERVE				
BOARDWALK PLAN				
DESIGNED BY: O.D.D.				
DRAWN BY: O.D.D.				
BUILDING NO.: N/A				
DATE: 08\08\2017				
SCALE: 1"=30'-0"				
SHEET NO.: C-9				
PARKS PROJECT #: FBNP-1				
CONTRACT #: 2017-FBNP-100				



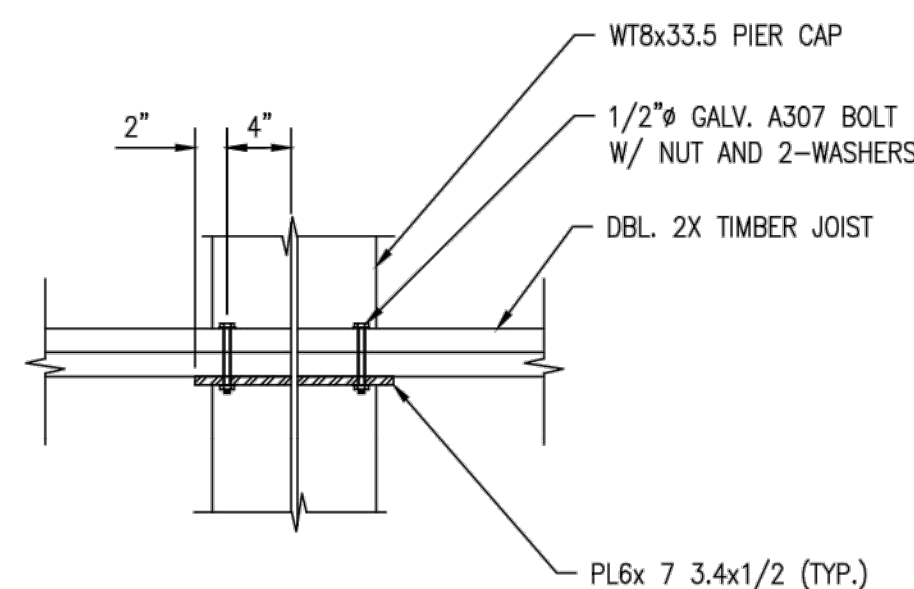
1 BOARDWALK FRAMING PLAN
SCALE: 1/4" = 1'-0"



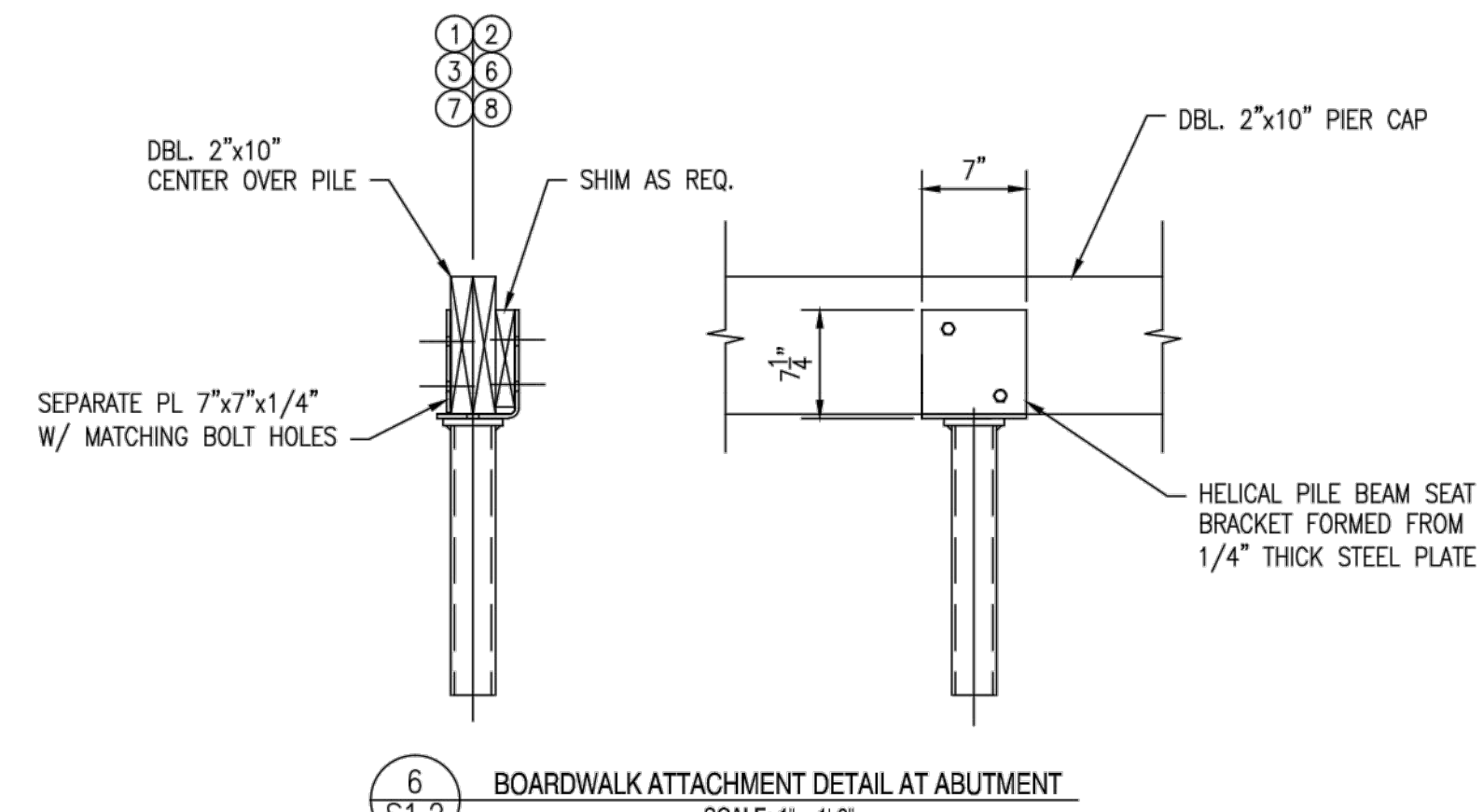
2 PIER 4 & 5 ELEVATION
SCALE: 1/2" = 1'-0"



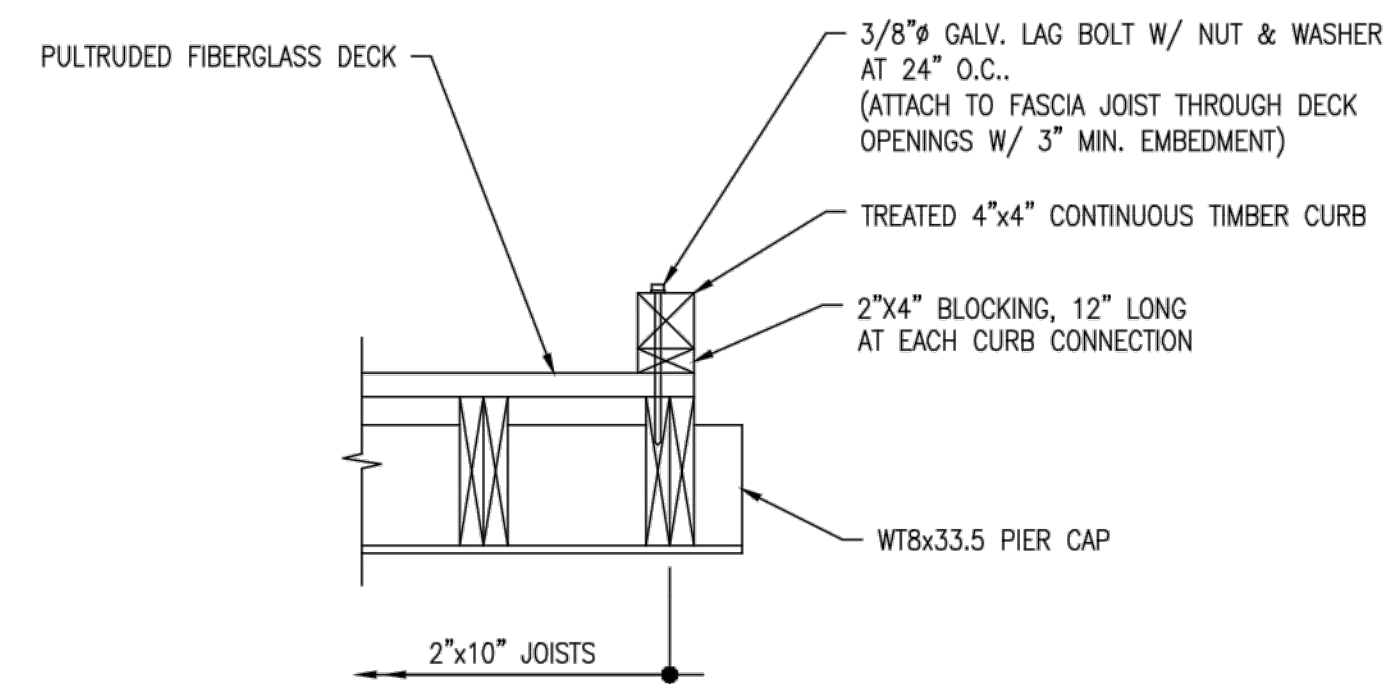
4 STEEL PIER CAP DETAIL
SCALE: 1" = 1'-0"



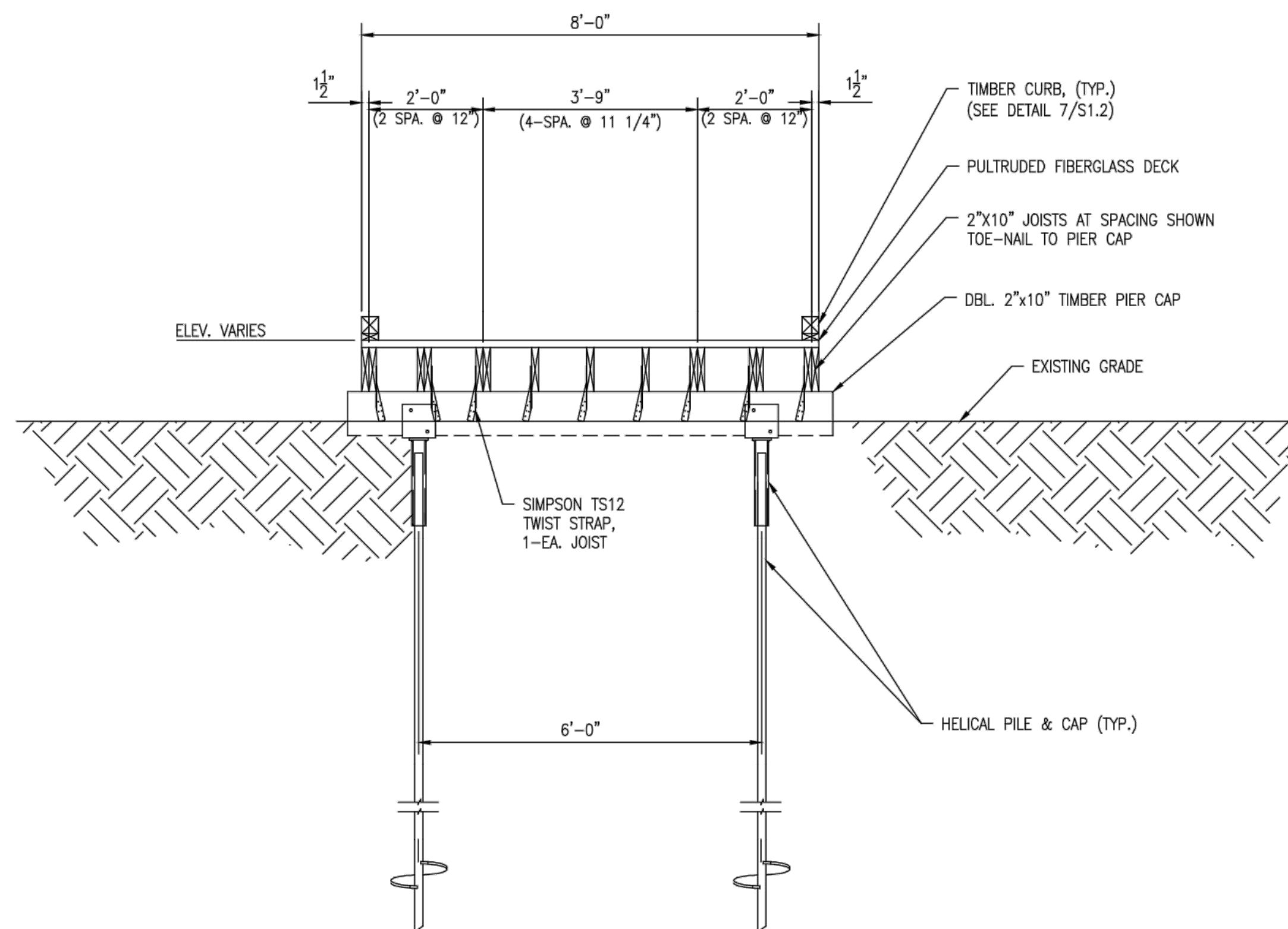
5 PIER CAP PLAN VIEW
SCALE: 1" = 1'-0"



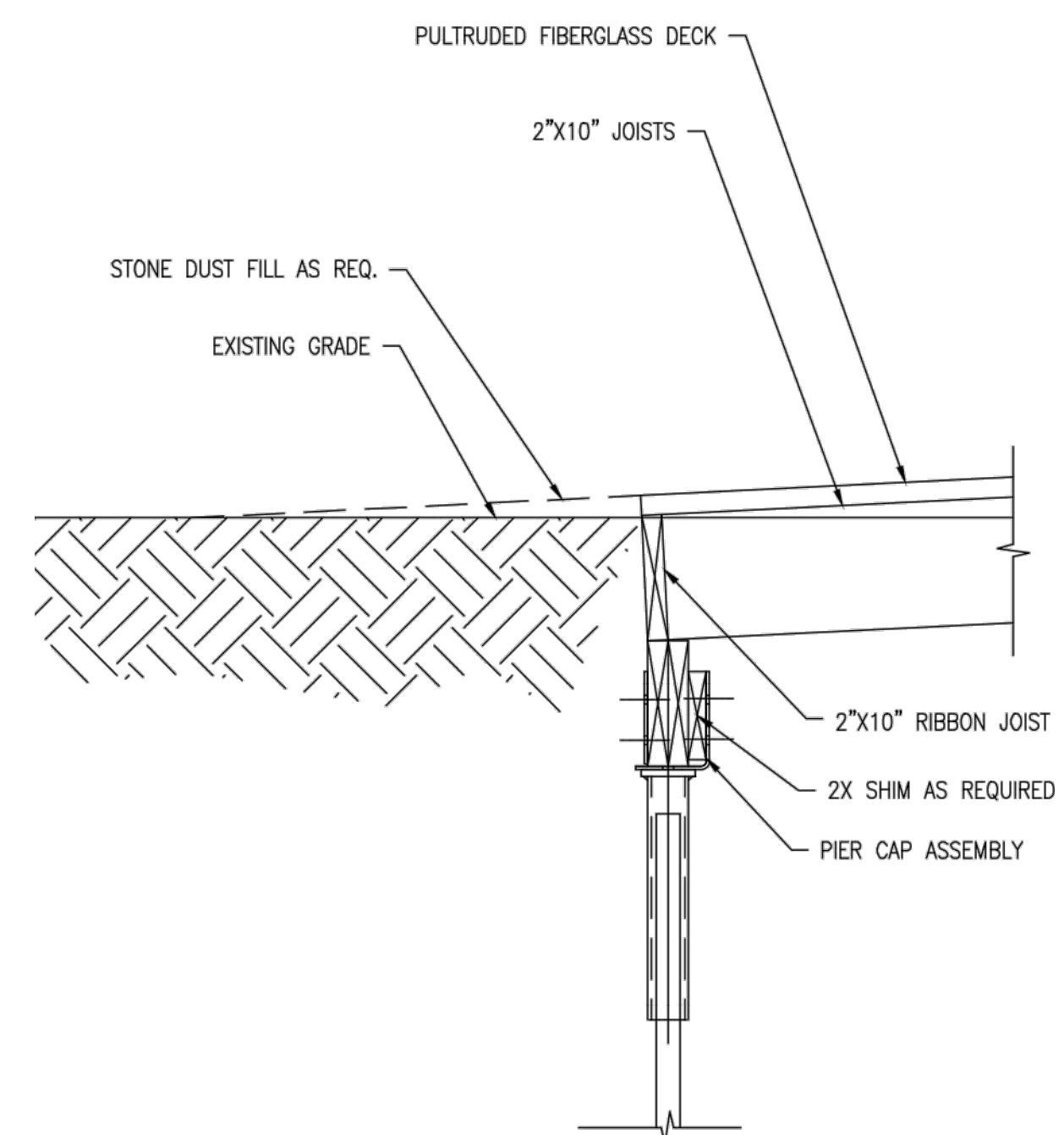
6 BOARDWALK ATTACHMENT DETAIL AT ABUTMENT
SCALE: 1" = 1'-0"



7 TIMBER CURB DETAIL
SCALE: 1" = 1'-0"



3 TYPICAL PIER ELEVATION
SCALE: 1/2" = 1'-0"



8 TYPICAL BOARDWALK TERMINATION
SCALE: 1" = 1'-0"

FORK BRANCH NATURE PRESERVE

BOARDWALK PLAN



DESIGNED BY:

O.D.D.

DRAWN BY:

O.D.D.

BUILDING NO.:

N/A

DATE:

08\08\2017

SCALE:

1" = 30'-0"

SHEET NO.:

C-10

PARKS PROJECT #:

FBNP-1

CONTRACT #:

2017-FBNP-100

DATE: DESCRIPTION: BY:

DATE: DESCRIPTION: BY:

DATE: DESCRIPTION: BY:

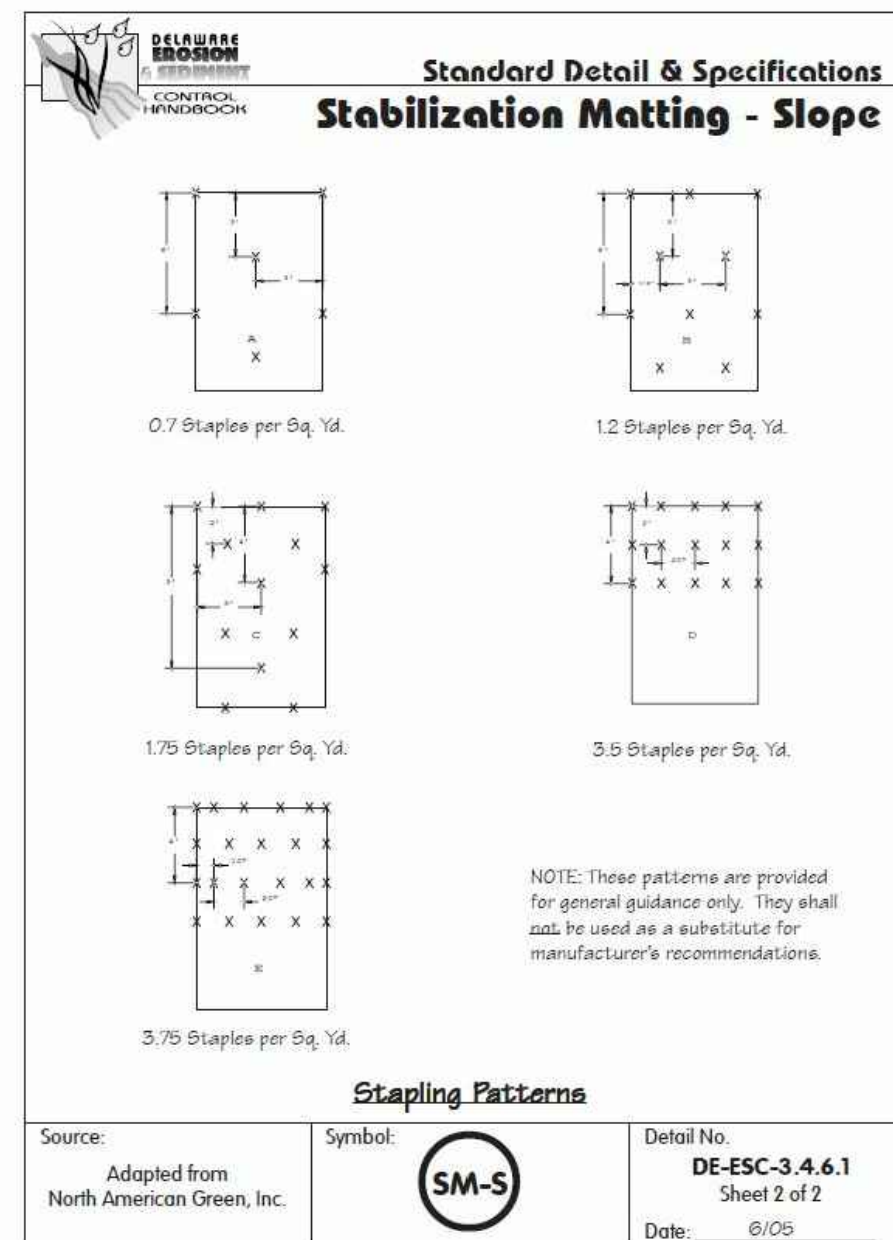
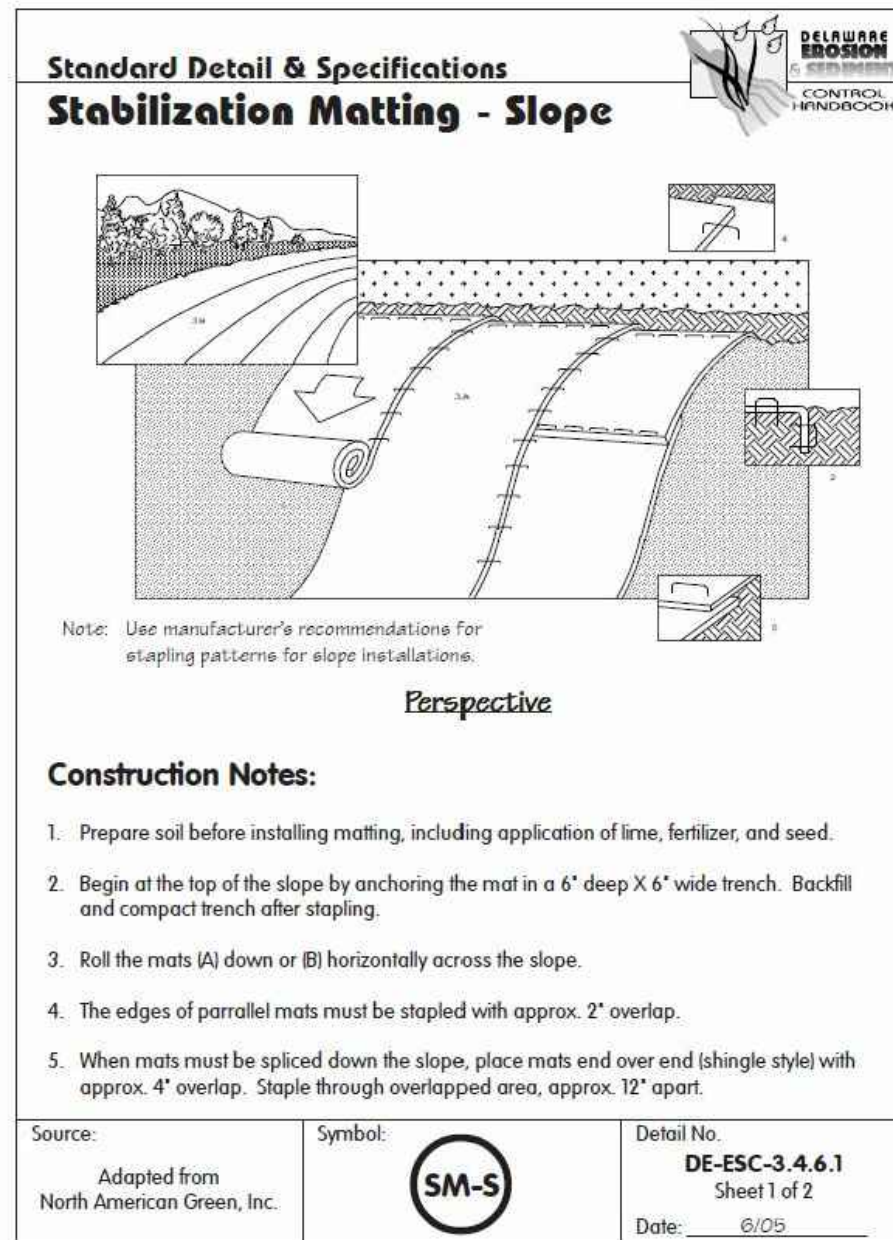
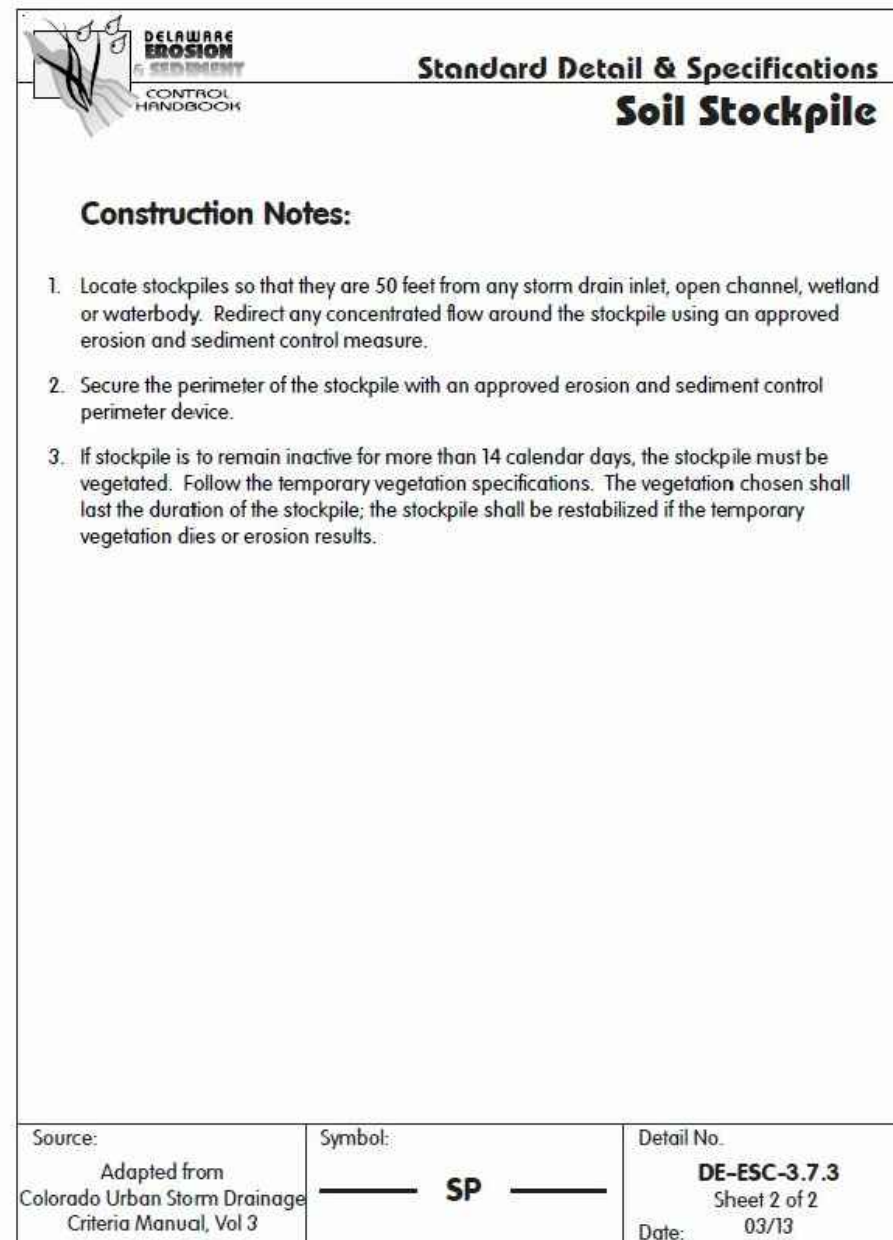
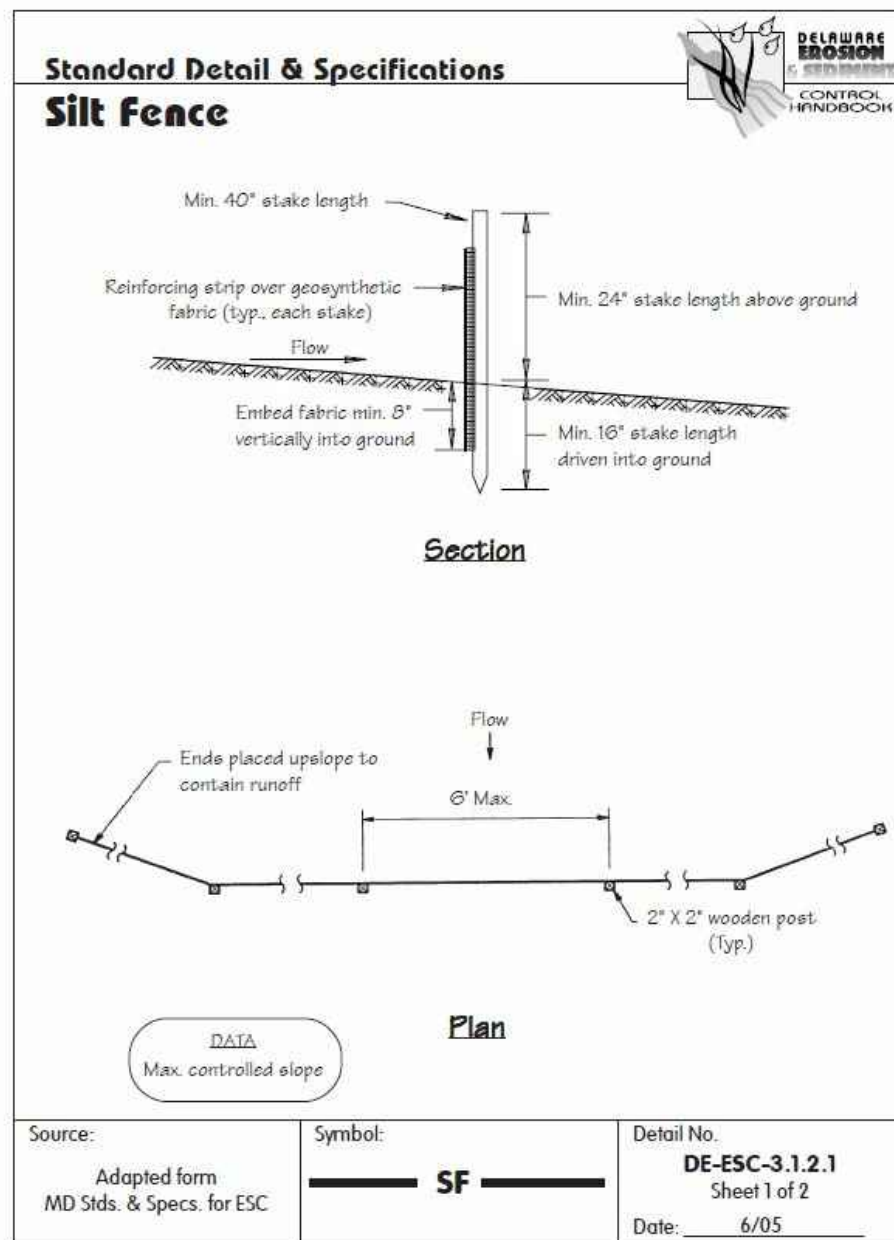
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DATE: DESCRIPTION: BY:



Standard Detail & Specifications

Vegetative Stabilization

TEMPORARY SEEDING BY DATE, DEPTHS AND DATES

Mix #	Species*	Seeding Rate	Optimum Seeding Dates * * = Southern Hemisphere, * = Northern Hemisphere										Planting Depth†
			Landscape Plants					Grasses					
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
	Certified Seed	lb/acre	10/1000 26.1*	4	4	4	4	4	4	4	4	4	
1	Wetland	125	4	4	4	4	4	4	4	4	4	4	1-2 inches 2-4" sandy soils
2	Grass	125	4	4	4	4	4	4	4	4	4	4	1-2 inches 2-4" sandy soils
3	Rye	125	4	4	4	4	4	4	4	4	4	4	1-2 inches 1-2" sandy soils
4	Perennial Ryegrass	125	4	4	4	4	4	4	4	4	4	4	0.5 inches 1-2" sandy soils
5	Annual Ryegrass	125	4	4	4	4	4	4	4	4	4	4	0.5 inches 1-2" sandy soils
6	Winter Wheat	125	4	4	4	4	4	4	4	4	4	4	1-2 inches 1-2" sandy soils
7	Grass Millet	30 PLS	0.7	0	0	0	0	0	0	0	0	0	0.5 inches 1-2" sandy soils
8	Pearl Millet	20 PLS	0.5	0	0	0	0	0	0	0	0	0	0.5 inches 1-2" sandy soils

1. Winter seeding requires 3 tons per acre of straw mulch for proper stabilization.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Application on slopes 3:1 or less.
4. 75% (percent) per acre of Annual Legumes may be added to 1/2 the seeding rate of any of the above species.
5. Use varieties currently recommended for Delaware. Contact a County Extension Office for information.
6. Warm season grasses such as Millet or Weeping Lovegrass may be used between 5/1 and 9/1 if desired. Seed at 3-5 lbs. per acre. Good on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

Source:

Symbol:

Detail No.


Delaware ESC Handbook

DE-ESC-3.4.3


Sheet 1 of 4

Date:

12/03

 DELAURO ESCOBEDO ENGINEERING & CONSTRUCTION INCORPORATED			<h1>Standard Detail & Specifications</h1> <h2>Vegetative Stabilization</h2>										
PERMANENT SEEDING AND SEEDING DATES													
Seeding Mixtures		Seeding Rate	Optimum Seeding Dates 1. Cool Season Perennial 2. Warm Season Perennial										Remarks
Mix or Certified Seed			Cool Season 1					Warm Season 2					
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	
1	Wild Grained Sods	0.04	0.02	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	Good erosion control 1/2 inch of wetter soils Larger areas very difficult to establish
1	Wild Fescue	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	Good erosion control 1/2 inch of wetter soils Good results over long term
1	Seeding Cyngrilla	0.1	0.25										Good erosion control 1/2 inch of wetter soils Good results over long term
1	Sheep Fescue	0.3	0.69										Good erosion control 1/2 inch of wetter soils Good results over long term
1	Common Labrador	0.3	0.69										Good erosion control 1/2 inch of wetter soils Good results over long term
1	Common Labradors or Perennial Ryegrass	0.6	1.18										Good erosion control 1/2 inch of wetter soils Good results over long term
1	Perennial Ryegrass or Perennial Ryegrass	0.6	1.18										Good erosion control 1/2 inch of wetter soils Good results over long term
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**DELAWARE
ESC
HANDBOOK**

CONTRACT
SPECIFICATIONS

Standard Detail & Specifications

Vegetative Stabilization


Construction Notes:

1. Site Preparation
 - a. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.
 - b. Final grading and shaping is not necessary for temporary seedings.
2. Seeded Preparation

It is important to prepare a good seedbed to insure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform and free of large clods, rocks, and other objectionable material. The soil surface should not be compacted or crusted.
3. Soil Amendments
 - a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.
 - b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soils.
4. Seeding
 - a. For **temporary stabilization**, select a mixture from **Sheet 1**. For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions.
 - b. Apply seed uniformly with a broadcast seeder, drill, catpucker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.
 - c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or catpucker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding should be done immediately and without interruption.
5. Mulching

All mulching shall be done in accordance with detail **DE-ESC-3.4.5**

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 4 of 4 Date: 12/03

Standard Detail & Specifications		
Construction Site Waste Mgt & Spill Control		
Notes:		
The Construction Site Pollution Prevention Plan should include the following elements:		
1. Material inventory		
Document the storage and use of the following materials:		
<ul style="list-style-type: none">a. Concreteb. Deliquentsc. Paints (enamel and latex)d. Cleaning solventse. Pesticidesf. Wood scrapsg. Fertilizersh. Petroleum based products		
2. Good housekeeping practices		
<ul style="list-style-type: none">a. Store only enough product required to do the job.b. All materials shall be stored in a neat, orderly manner in their original labeled containers and covered.c. Substances shall not be mixed.d. When possible, all of a product shall be used up prior to disposal of the container.e. Manufacturers' instructions for disposal shall be strictly adhered to.f. The site foreman shall designate someone to inspect all BMP's daily.		
3. Waste management practices		
<ul style="list-style-type: none">a. All waste materials shall be collected and stored in securely lidended dumpsters in a location that does not drain to a waterbody.b. Waste materials shall be salvaged and/or recycled whenever possible.c. The dumpsters shall be emptied a minimum of twice per week, or more if necessary. The licensed trash hauler will be responsible for removing all dumpsters.		
Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 3 of 5
		Date: 03/13

Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control

Notes (cont.)

- d. Trash shall be disposed of in accordance with all applicable Delaware laws.
- e. Trash cans shall be placed at all lunch stops and littering is strictly prohibited. Recycling bins shall be placed near the construction trailer.
- f. Hentzler bags can not be stored in a weather-proof location, they shall be kept on a pallet and covered with plastic sheeting which is overlapped and anchored.


4. Equipment maintenance practices

- a. If possible, equipment should be taken to off-site commercial facilities for washing and maintenance.
- b. If performed on-site, vehicles shall be washed with high-pressure water spray without detergents in an area contained by an impervious berm.
- c. Drip pans shall be used for all equipment maintenance.
- d. Equipment shall be inspected for leaks on a daily basis.
- e. Washout from concrete trucks shall be disposed of in a temporary pit for hardening and proper disposal.
- f. Fuel nozzles shall be equipped with automatic shut-off valves.
- g. All used products such as oil, antifreeze, solvents and tires shall be disposed of in accordance with manufacturers' recommendations and local, state and federal laws and regulations.

5. Spill prevention practices


- a. Potential spill areas shall be identified and contained in covered areas with no connection to the storm drain system.
- b. Warning signs shall be posted in hazardous material storage areas.
- c. Preventive maintenance shall be performed on all tanks, valves, pumps, and other equipment as necessary.
- d. Low or non-toxic substances shall be prioritized for use.

Source: Adapted from USEPA Pub. 840-B-92-002	Symbol:	Detail No. DE-ESC-3.1 Sheet 4 of 5 Date: 03/13
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<p>Standard Detail & Specifications</p> <p>Construction Site Waste Mgt & Spill Control</p> <p>Notes (cont.)</p> <p>e. Contact information for reporting spills through the DNREC 24-Hour Toll Free Number shall be prominently posted.</p> <p>6. Education</p> <p>a. Best management practices for construction site pollution control shall be a part of regular progress meetings.</p> <p>b. Information regarding waste management, equipment maintenance and spill prevention shall be prominently posted in the construction trailer.</p>		 <p>CALTRANS TRANSPORTATION CONSTRUCTION DIVISION</p>
<p align="center">CONTACT INFORMATION</p>		
<p>DNREC 24-Hour Toll Free Number</p>		<p>800-462-8802</p>
<p>DNREC Solid & Hazardous Waste Branch</p>		<p>302-739-9403</p>
<p>Source:</p> <p>Adapted from USEPA Pub. 840-B-92-002</p>	<p>Symbol:</p>	<p>Detail No.</p> <p>DE-ESC-3.6.1</p> <p>Sheet 5 of 5</p> <p>Date: 03/15</p>

Standard Detail & Specifications

Mulching



I. Materials and Amounts

- Stow-* Stow should be ureolized small grain stow applied at the rate of 1-1/2 to 2 tons per acre, or 75 pounds two bales per 1,000 square feet. Mulch materials should be relatively free of weeds and stalks, and free of noxious weeds such as, Rhus, johnsongrass, and quagras. Spread mulch uniformly by hand or machine. The volume of stow and spread mulch, divide area into approximately 1,000 square feet sections, and place 70-90 pounds two bales of mulch in each section.
- Wood chips* - Apply at the rate of approximately 6 tons per acre or 375 pounds per 1,000 square feet when available and when feasible. These are particularly well suited for utility and road rights-of-way. If wood chips are used, increase the application rate of nitrogen fertilizer by 20 pounds of N per acre (200 pounds of 10-10-10 or 48 pounds of 20-0-0 per acre).
- Hydraulically applied mulch* - The following conditions apply to a hydraulically applied mulch:
 - Definitions:
 - A wood fiber mulch that consist of specially prepared wood that has been processed to a uniform shape, is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment, and consists of a minimum of 70% pine or recycled wood fiber combined with 30% paper fiber and additives.
 - Bleached fiber mulch that consist of any hydraulic mulch that contains greater than 50% paper fiber. The paper component must consist of specially prepared paper that has been processed to a uniform fibrous state and is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment.
 - A banded fiber matrix (BFM) consists of long strand, specially prepared wood fibers that have been processed to a uniform state held together by a water resistant bonding agent. BFM mulch contain no paper (cellulose) mulch but may contain small percentages of synthetic fibers to enhance performance.
 - Refer to **Table 2-A** for conditions and limitations of use for each of the above categories of hydraulic mulch.
 - All components of the hydraulically applied mulches shall be pre-packaged by the manufacturer to assure material performance. Field mixing of the mulch components is acceptable, but must be done per manufacturer's recommendations to ensure the proper results.
 - Hydraulic mulches shall be applied at a stable seed rate and an manufacturer's recommended rates.
 - Increased rates may be necessary based on site conditions.
- Hydraulically applied mulches and additives shall be mixed according to manufacturers' recommendations.
- Material within this category shall only be used when hydraulically applied mulch has been specifically approved for use on the approved Seedling and Stormwater Plan, or supplemental approval from the plan administrator approval has been obtained in writing for a specific area.

Source:	Symbol:	Detail No.
Delaware EDC Handbook & Filtrac® International		DE-ESC-3.4.5 Sheet of 3 Date: 09/13

INTERNATIONAL
BROTHERHOOD OF
TEAMSTERS
UNITED BROTHERHOOD OF
CARPENTERS
AND JOINERS OF
AMERICA
INTERNATIONAL UNION OF
MARINE AND
SHIPBUILDING
WORKERS OF
AMERICA

Standard Detail & Specifications Mulching

v. Application:

- Apply product to geotechnically stable areas that have been designed and constructed to divert runoff away from the face of the slope.
- Do not apply to saturated soils, or if precipitation is anticipated within 24-48 hours.
- During the spring (March 1 to May 1) and fall (September 1 to November 30) seasons, hydraulic mulches may be applied in a one-step process where all components are mixed together in the tank truck loads. It is recommended that the mulch be applied in opposing directions to achieve optimum soil coverage.
- During the summer (June 1 to July 31) and winter (December 1 to February 28) seasons, the following two-step process is required:

Step One: Mix and apply seed and soil amendments with a small amount of mulch for visual tracking.

Step Two: Mix and apply mulch at manufacturers recommended rates over freshly seeded mulch. Apply mulch on opposing directions to achieve optimum soil coverage.

• Minimum curing temperature is 40°F (4°C). The best results and more rapid gains are achieved at temperatures exceeding 80°F (25°C). Curing times may be accelerated in high temperature, low humidity conditions on dry soils.

- v. Recommended application rates are for informational purposes only. Conformance with this standard and specification shall be performance-based and requires **100% soil coverage**. Any areas with bare soil shall be treated until full coverage is achieved.

2. Composition:

ERT-1000 is locally applied with a pneumatic blower so that a 1" compact blanket uniformly covers the soil with **100% coverage**. This application can be used with seed to promote germination by applying the mulch directly into the freshly blown seed. The compact blanket performs best on slopes less than 2:1 and requires no mulch anchoring.

2. Anchoring mulch:

Mulch must be anchored immediately to minimize loss by wind or water. This may be done by one of the following methods, depending upon size of area, erosion hazard, and cost:

- Crimping: A crimper is a tractor drawn implement designed to punch and anchor mulch into the top two (2) inches of soil. This practice offers maximum erosion control but is limited to faster slopes where equipment can operate safely. On sloping land, crimping should be done on the contour whenever possible.

3. Tracking - Tracking is the process of cutting mulch trowsally into the slope using a bulldozer or other equipment. Some contractors use a tracked crawler dozer with a 3' dozer and shaper and then follow down the slope with the mulch tracks running across the slope.

4. Liquid mulch binders:

Applications of liquid mulch binders should be heavier at creases, in valleys, and at other areas of banks and other erosion-prone areas. The liquid mulch binder should be applied so there is a uniform application of binders. The use of synthetic binders is the preferred method of mulch binding and should be applied at the rates recommended by the manufacturer.

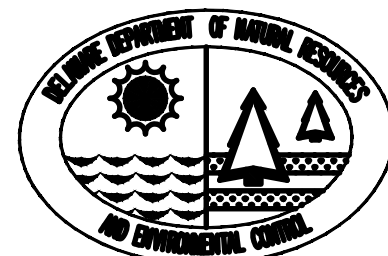
5. Paper or Fiber mulch binders:

These mulch binders are made of wood cellulose fiber. The wood cellulose fiber should be mixed with water, and the mixture shall contain a composition of 50 lbs. of wood cellulose fiber per 100 gallons.

6. Netting:

Synthetic or organic netting may be used to secure storm mulch. Install and secure according to the manufacturers recommendations.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filloscan® International		DE-ESC-3.4.5 Sheet 2 of 3
		Date: 03/13

[illegible]DESIGNED BY:
ODD

DRAWN BY: ODD

BUILDING NO.: N/A

DATE: 08/08/2017

SCALE:

N/A

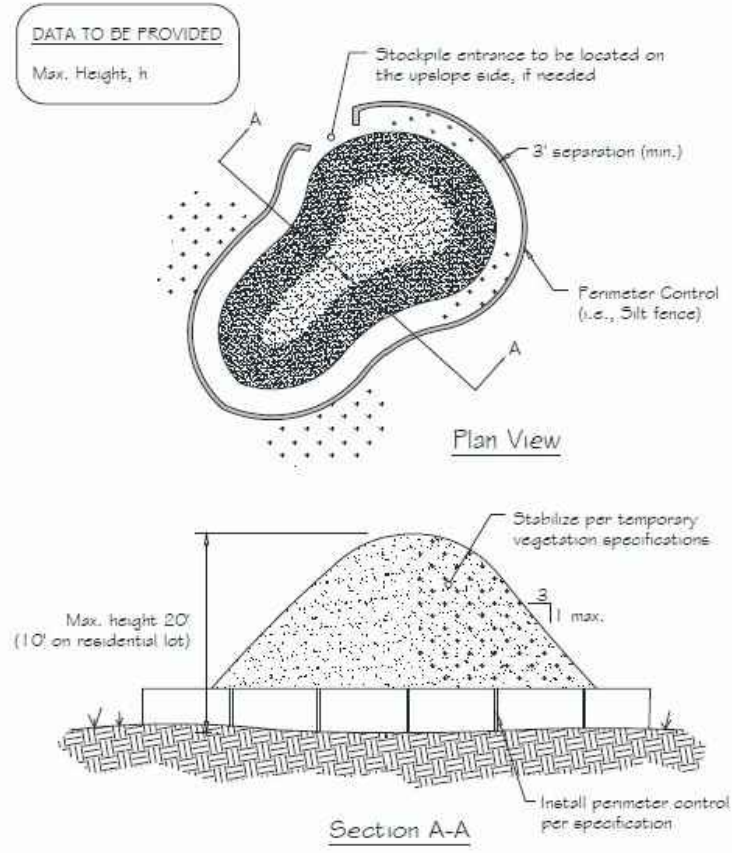
SHEET NO.:

ES-1

PARKS PROJECT #

CONTRACT #:

Standard Detail & Specifications
Soil Stockpile



Source: Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3

Symbol: **SP**

Detail No: **DE-ESC-3.7.3**
Sheet 1 of 2
Date: 03/13

Standard Detail & Specifications
Soil Stockpile



Construction Notes:

1. Locate stockpiles so that they are 50 feet from any storm drain inlet, open channel, wetland or waterbody. Redirect any concentrated flow around the stockpile using an approved erosion and sediment control measure.
2. Secure the perimeter of the stockpile with an approved erosion and sediment control perimeter device.
3. If stockpile is to remain inactive for more than 14 calendar days, the stockpile must be vegetated. Follow the temporary vegetation specifications. The vegetation chosen shall last the duration of the stockpile, the stockpile shall be restabilized if the temporary vegetation dies or erosion results.

Source: Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3

Symbol: **SP**

Detail No: **DE-ESC-3.7.3**
Sheet 2 of 2
Date: 03/13

Standard Detail & Specifications
Dust Control



Temporary Methods:

1. Mulches - See **DE-ESC-3.4.5**, Standard Detail and Specifications for Mulching.
2. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
3. Adhesives - Use on mineral soils only (not effective on muck soils). Keep traffic off these areas. The following table may be used for general guidance.

Type of Emulsion	Water Dilution	Type of Nozzle	Apply Gd./Ac.
Latex emulsion	12.5:1	Fine spray	235
Resin-in-water emulsion	4:1	Fine spray	300
Acrylic emulsion (non-traffic)	7:1	Coarse spray	450
Acrylic emulsion (traffic)	3.5:1	Coarse spray	350

4. Tillage - For emergency temporary treatment, scarify the soil surface to prevent or reduce the amount of blowing dust until a more appropriate solution can be implemented. Begin the tillage operation on the windward side of the site using a chisel-type plow for best results.
5. Sprinkling - Sprinkle site with water until the surface is moist. Repeat as needed.
6. Calcium Chloride - Apply as flakes or granular material with a spreader at a rate that will keep the soil surface moist. Re-apply as necessary.
7. Barriers - Place barriers such as solid board fences, snow fences, hay bales, etc. at right angles to the prevailing air currents at intervals of approx. 10X their height.

Permanent Methods:

1. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
2. Stone - Apply layer of crushed stone or coarse gravel to protect soil surface.

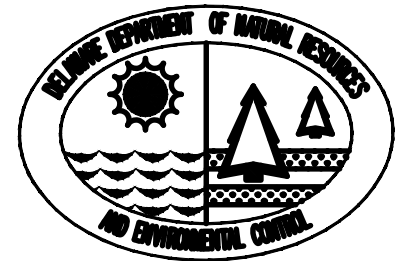
Source: Adapted from VA ESC Handbook

Symbol:

Detail No: **DE-ESC-3.4.8**
Sheet 1 of 1
Date: 12/03

FORK BRANCH NATURE PRESERVE

EROSION & SEDIMENT CONTROL HANDBOOK



DESIGNED BY:
ODD

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ODD

BUILDING NO.:
N/A

DATE:
08/08/2017

SCALE:
N/A

SHEET NO.:
ES-2

PARKS PROJECT #:

CONTRACT #:

BY:

DESCRIPTION:

DATE: