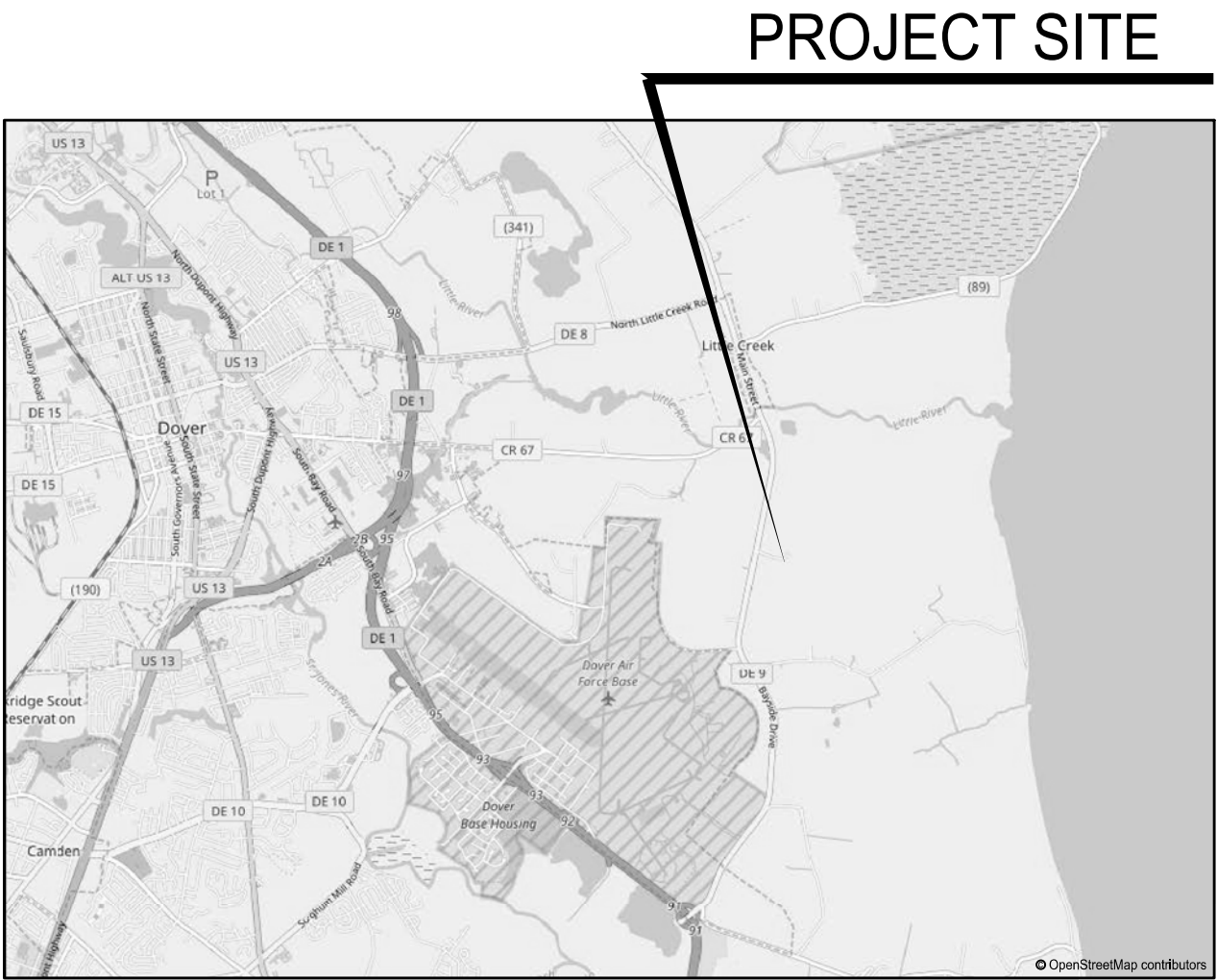
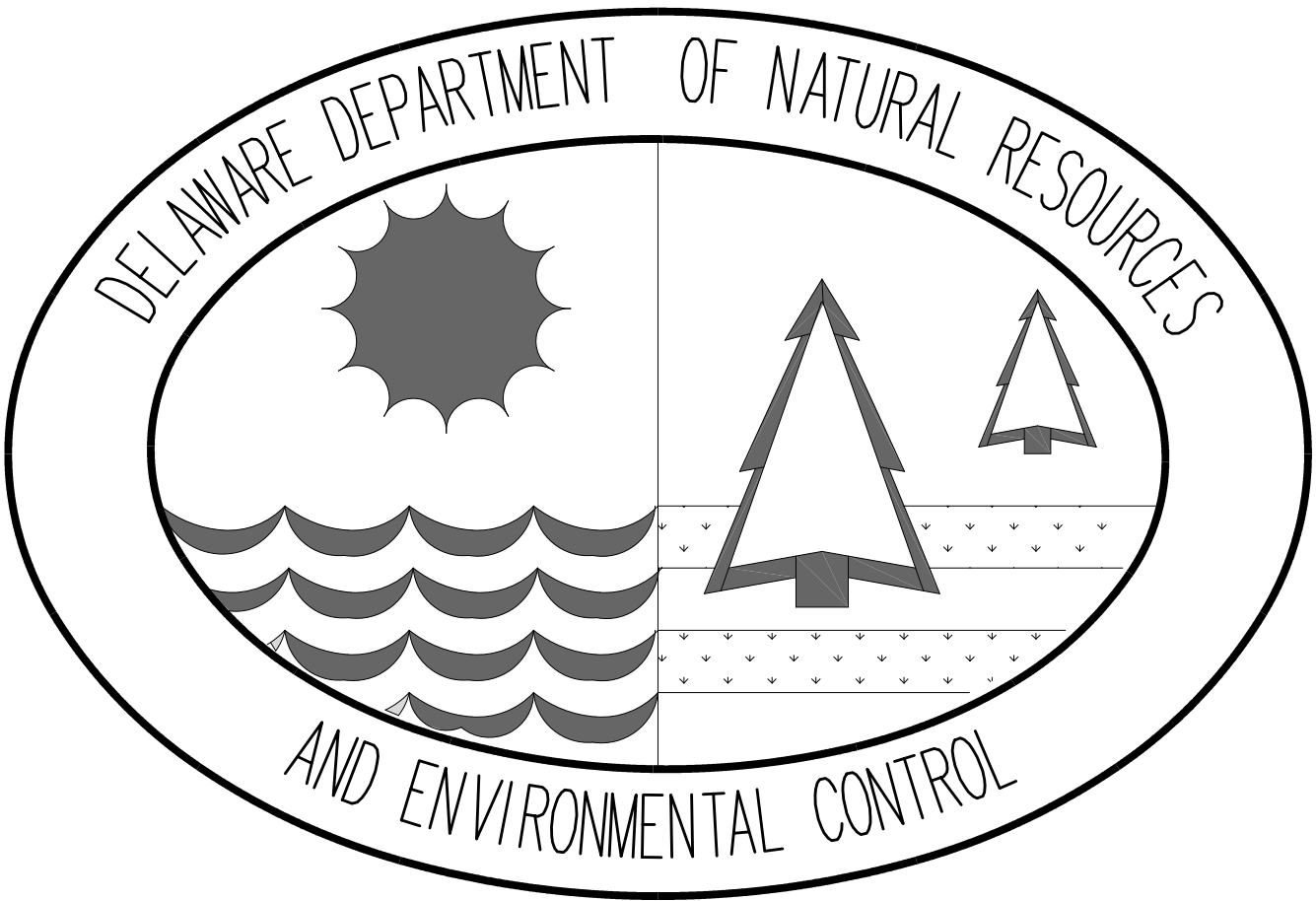


STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL  
DIVISION OF FISH & WILDLIFE

Delaware Bayshore Byway  
LITTLE CREEK BOARDWALK AND  
WILDLIFE OBSERVATION TOWER

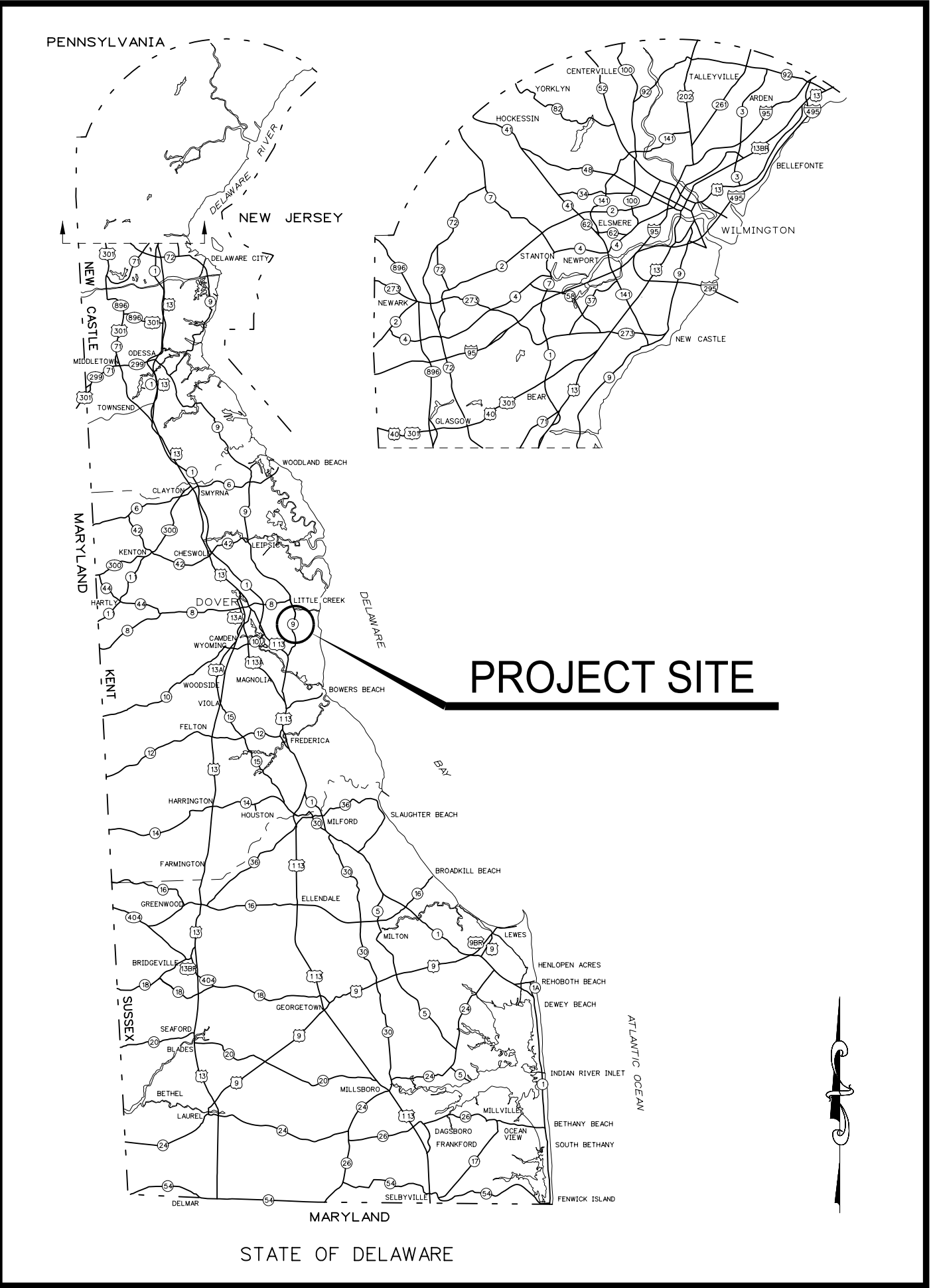
CONTRACT NO. FW-2-15  
FINAL PLANS  
DECEMBER 1, 2017



SITE MAP

INDEX OF SHEETS

SHEET NO.:	TITLE
C-1	GENERAL NOTES & CLEARING DETAIL
C-2	CONSTRUCTION PLAN BASE BID
C-3	PARKING LOT ADD/ALTERNATE NO. 1 & 2
C-4	CONSTRUCTION DETAILS
C-5	CONSTRUCTION DETAILS ADD/ALTERNATE NO. 1
C-6	STANDARD FISH AND WILDLIFE TACKBOARD LARGE (3'X6' CABINET) VERSION
C-7	DEMOLITION PLAN
C-8	BOARDWALK PROFILE
A-1	OBSERVATION TOWER PLAN
A-2	OBSERVATION TOWER ELEVATIONS
A-3	STAIR PLAN & SECTIONS
A-4	RAILING ELEVATION & DETAILS
S-1	STRUCTURAL COVER SHEET
S-2	STRUCTURAL GENERAL NOTES
S-3	STRUCTURAL SCHEDULES
S-4	BOARDWALK FOUNDATION PLAN SHEET1
S-5	BOARDWALK FOUNDATION PLAN SHEET2
S-6	OBSERVATION TOWER PLANS
S-7	OBSERVATION TOWER SECTIONS
S-8	OBSERVATION TOWER SECTIONS AND DETAILS
ES-1	EROSION AND SEDIMENT CONTROL PLAN
ES-2 TO ES-3	EROSION AND SEDIMENT CONTROL DETAILS



LOCATION MAP

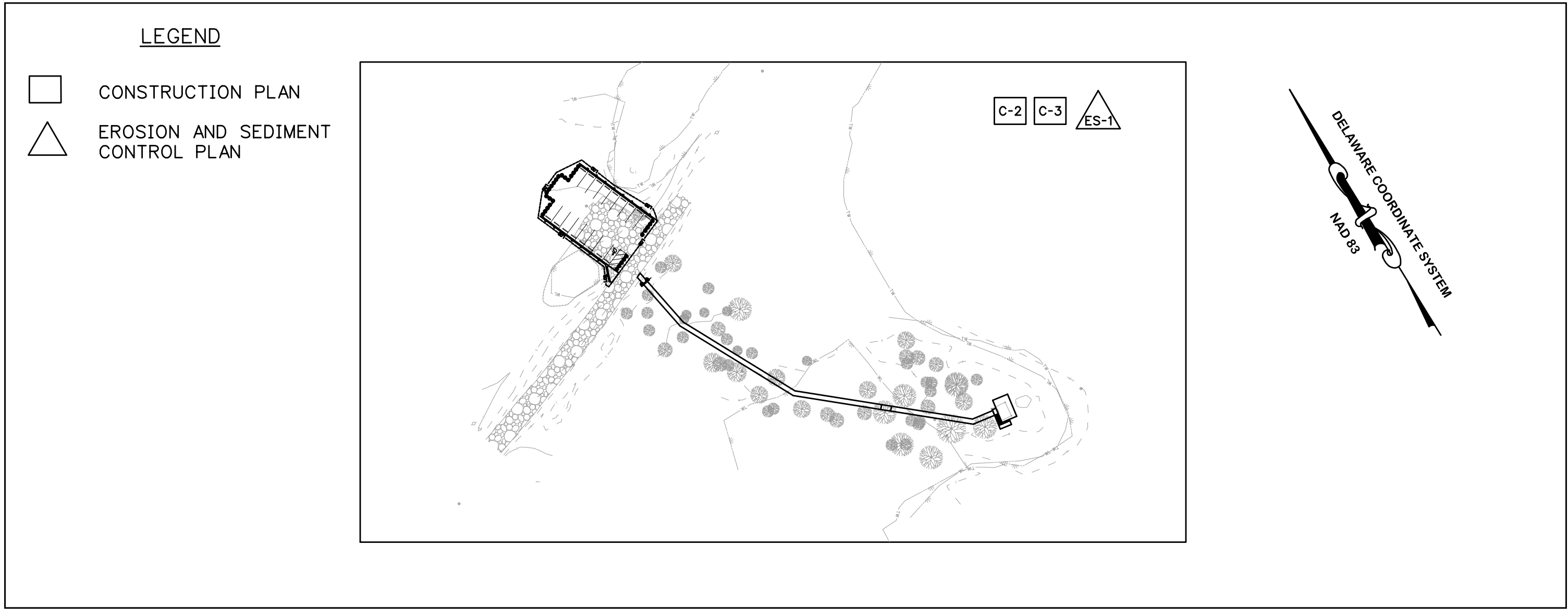
OWNER INFORMATION

OWNER: STATE OF DELAWARE  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901

PROPERTY ADDRESS: BAYSIDE DRIVE  
DOVER, DELAWARE 19901

TAX PARCEL #: 2-00-07900-01-0300-0001

DESIGNER/APPLICANT: RK&K  
700 E. PRATT STREET, SUITE 500  
BALTIMORE, MARYLAND 21202



SHEET INDEX  
SCALE: 1"=100'

PREPARED BY  
THE CONSULTING FIRM OF

**RK&K** RUMMEL, KLEPPER & KAHL, LLP  
CONSULTING ENGINEERS  
700 E. PRATT STREET, SUITE 500  
BALTIMORE, MD 21202

*Nancy R. Bergman*  
DIRECTOR

12/1/2017  
DATE



PREPARED FOR:  
DELAWARE DIVISION OF FISH & WILDLIFE  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901  
PHONE: 302-739-9231  
FAX: (302) 739-7026


DATE: DECEMBER 1, 2017

2/12/2018 9:51:40 AM  
\\balsrv05.v2015.15010\_dnr\FW\Little Creek Observation Tower\Cadd\Contract\Plans\gn01\_1.ctb

- 



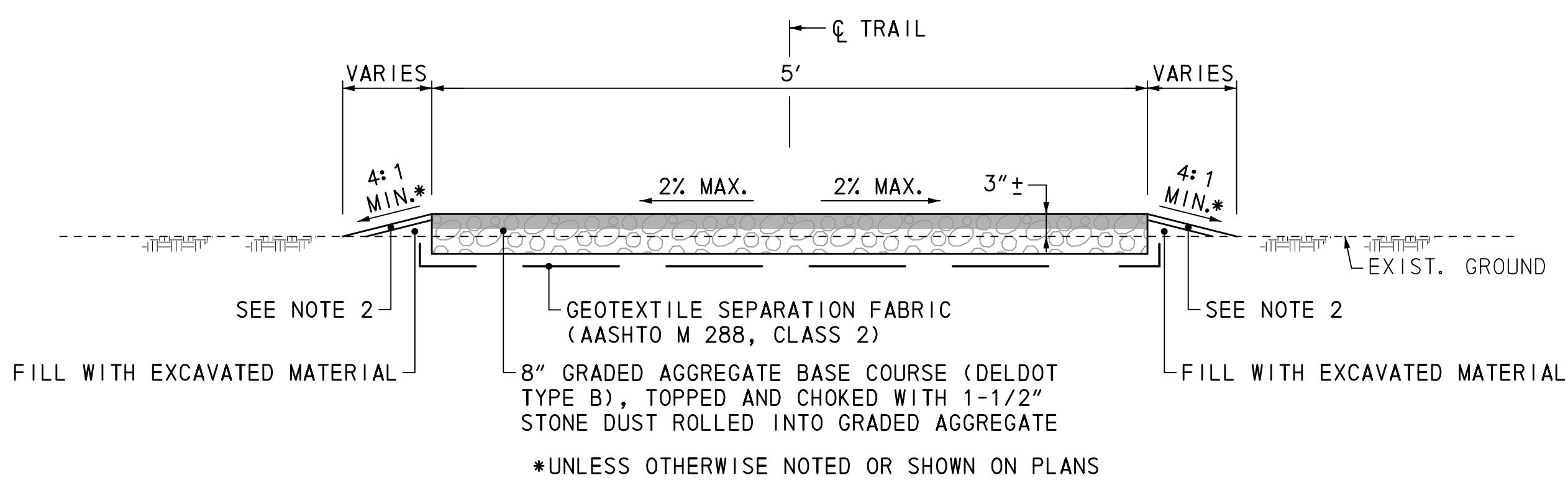
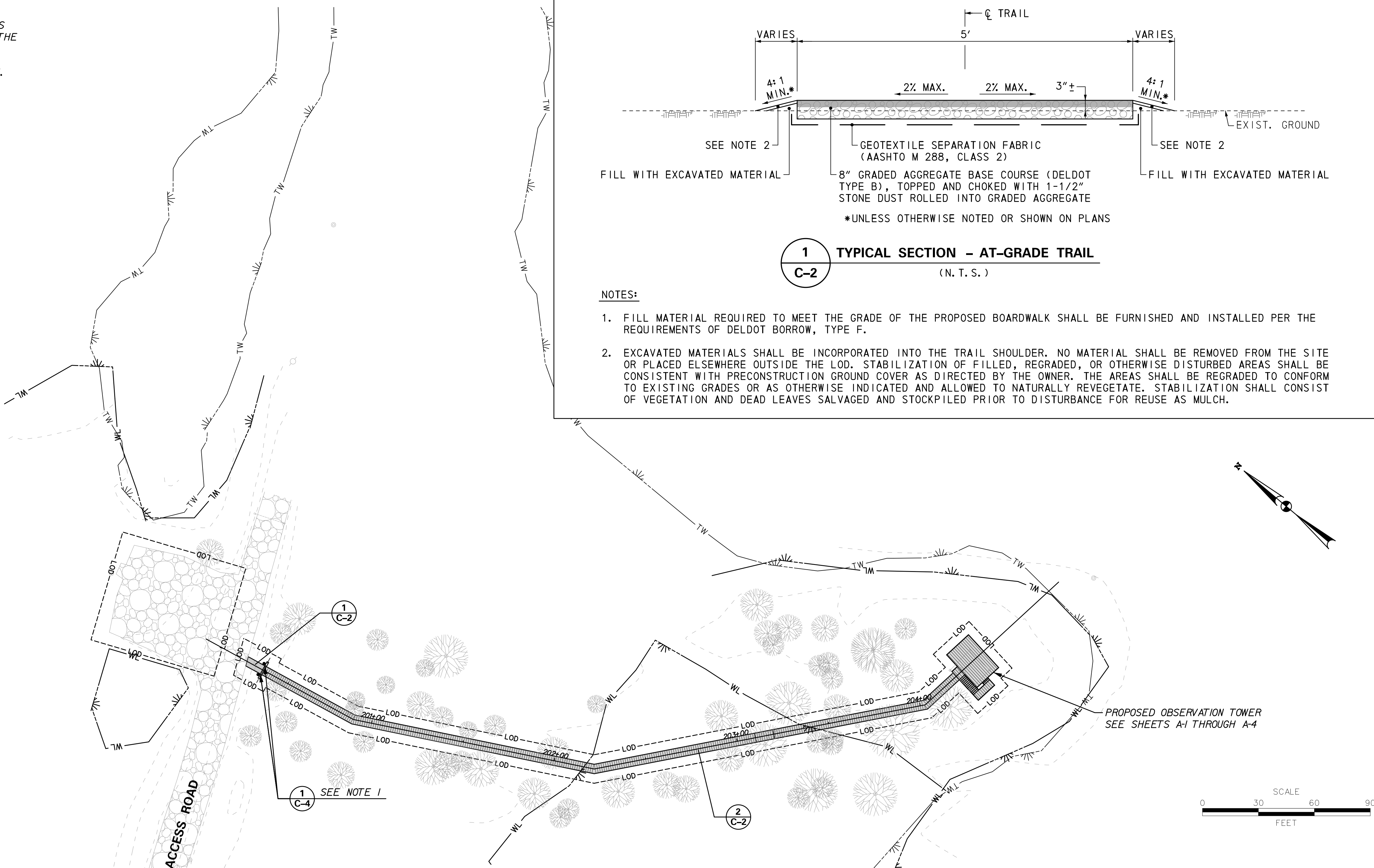
1. IN AREAS WHERE TREES AND/OR SHRUBS WILL BE OVERHANGING OR ENCROACHING ON THE BOARDWALK AND VIEWING AREA, PRUNING MAY BE NECESSARY TO ACHIEVE A VERTICAL AND/OR HORIZONTAL CLEAR SPACE AS SHOWN ON THE DETAIL ON THIS SHEET. THE CONTRACTOR SHALL PRUNE EXISTING TREE AND SHRUB BRANCHES IN ACCORDANCE WITH THE INTERNATIONAL SOCIETY OF ARBORCULTURE (I.S.A.) STANDARDS. THE INTENT OF THIS WORK IS TO NOT REMOVE LARGE TREES. THE OWNER WILL IDENTIFY AND CLEARLY MARK ALL TREES TO BE REMOVED.
2. CLEARING OPERATIONS SHALL NOT INCLUDE GRUBBING. CLEARED VEGETATION SHALL BE CUT FLUSH WITH THE GROUND AND THERE SHALL BE NO DISTURBANCE OF THE ROOT MAT.
3. ALL MATERIAL RESULTING FROM PRUNING AND REMOVAL OF TREES, SHRUBS, AND OTHER VEGETATION SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR.
4. ALL TREE REMOVAL AND PRUNING NECESSARY FOR CONSTRUCTION, AS DIRECTED BY THE OWNER, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
5. THE LIMITS OF CLEARING AND DISTURBANCE SHOWN ARE NOT INTENDED TO RESTRICT OR OBSTRUCT PROPER PRUNING PROCEDURES IN ACCORDANCE WITH THE STANDARDS REFERENCED IN NOTE 1.
6. WITHIN THE LIMIT OF THE BOARDWALK AND VIEWING AREA, THE CONTRACTOR SHALL REMOVE LARGE SHRUBS AND YOUNG TREES WITHIN THE CLEARING LIMITS TO ELIMINATE POTENTIAL FIRE HAZARD.

	<b>DELAWARE BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER</b>		<b>DATE:</b> _____ DATE: 7/14/17 DESCRIPTION: 50% SUBMITTAL	<b>BY:</b> _____ BY: _____
	<b>GENERAL NOTES &amp; CLEARING DETAIL</b>		11/2/17 ISSUED FOR PERMIT 12/1/17 ISSUED FOR BID	_____ _____ _____
	<b>DESIGNED BY:</b> _____ RKK		_____	
	<b>DRAWN BY:</b> _____ RKK		_____	
	<b>BUILDING NO.:</b> _____ N/A		_____	
<b>DATE:</b> _____ DECEMBER 1, 2017		_____		
<b>SCALE:</b> _____ NOT TO SCALE		_____		
<b>SHEET NO.:</b> _____ C-1		_____		
<b>DFW PROJECT #:</b> _____ FW-2-15		_____		
<b>CONTRACT #:</b> _____ FW-2-15		_____		

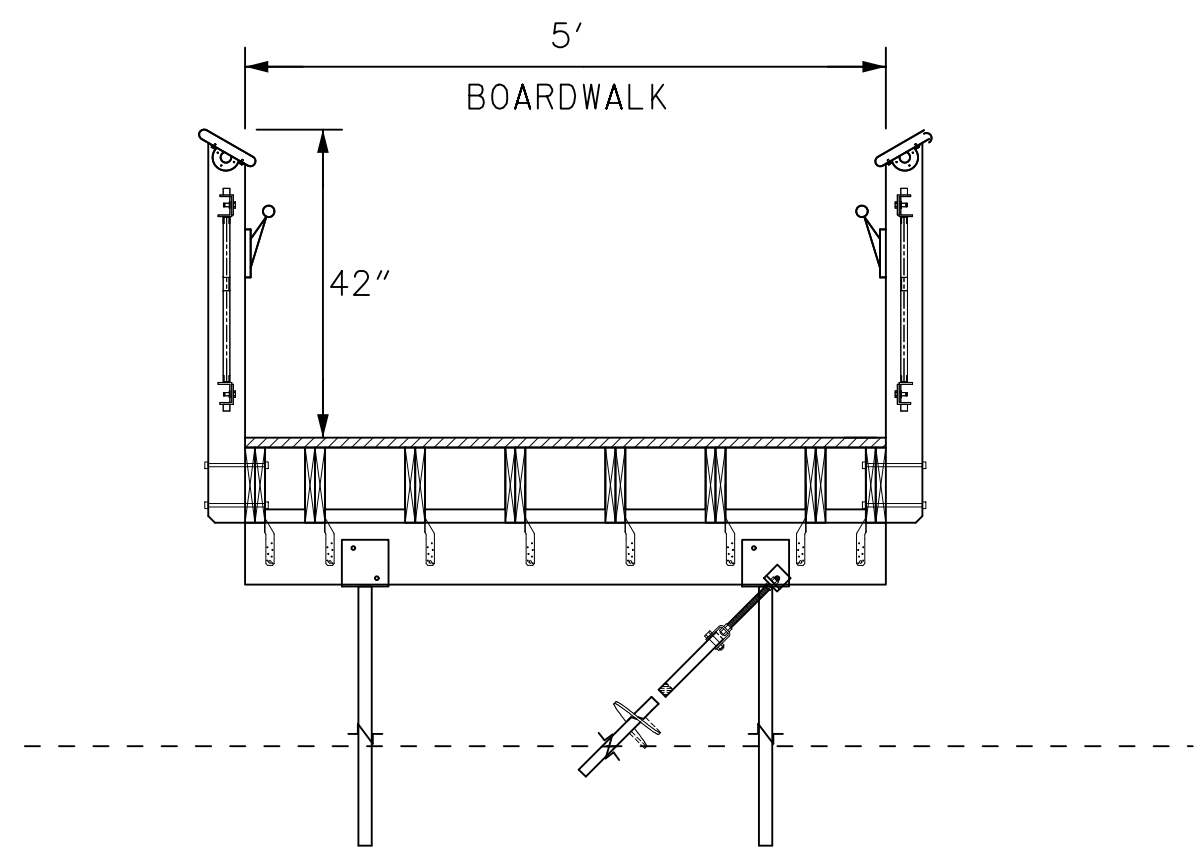


2/12/2018 4:36:59 PM \\bosrv05\15015\2015\15010\_dnr\ref\W\TASK 3 - Little Creek Observation Tower\Cadd\Contract\Plans\cp01\_1.ctb

- NOTES:**
- BOLLARDS PER DETAIL 1 ON SHEET C-4. THE INTENT OF THE BOLLARDS IS TO KEEP MOTORIZED VEHICLES AND MAINTENANCE EQUIPMENT OFF THE BOARDWALK AND VIEWING STRUCTURE.
  - THE ENTIRE PROJECT AREA IS WITHIN THE FEMA 100-YEAR FLOODPLAIN.



- NOTES:**
- FILL MATERIAL REQUIRED TO MEET THE GRADE OF THE PROPOSED BOARDWALK SHALL BE FURNISHED AND INSTALLED PER THE REQUIREMENTS OF DELDOT BORROW, TYPE F.
  - EXCAVATED MATERIALS SHALL BE INCORPORATED INTO THE TRAIL SHOULDER. NO MATERIAL SHALL BE REMOVED FROM THE SITE OR PLACED ELSEWHERE OUTSIDE THE LOD. STABILIZATION OF FILLED, REGRADED, OR OTHERWISE DISTURBED AREAS SHALL BE CONSISTENT WITH PRECONSTRUCTION GROUND COVER AS DIRECTED BY THE OWNER. THE AREAS SHALL BE REGRADED TO CONFORM TO EXISTING GRADES OR AS OTHERWISE INDICATED AND ALLOWED TO NATURALLY REVEGETATE. STABILIZATION SHALL CONSIST OF VEGETATION AND DEAD LEAVES SALVAGED AND STOCKPILED PRIOR TO DISTURBANCE FOR REUSE AS MULCH.



LEGEND	
<b>CONSTRUCTION</b>	
	FULL DEPTH PROPOSED TRAIL/ PARKING LOT
	PROPOSED BOARDWALK & VIEWING AREA
	RK&K DELINEATED WETLAND BOUNDARY
	TIDAL WETLAND LINE
	SOIL BORING
	DECIDUOUS TREE 6\"/>
	WL - TIDAL WETLAND BOUNDARY
	TW - TIDAL WETLAND LINE
	SOIL BORING
	DECIDUOUS TREE 6\"/>

## OWNER INFORMATION & MISCELLANEOUS NOTES

OWNER: STATE OF DELAWARE  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901

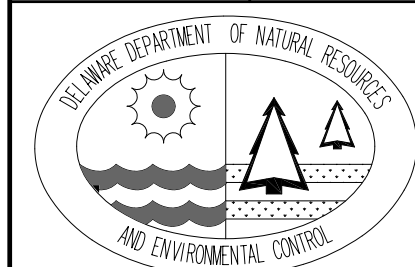
PROPERTY ADDRESS: BAYSIDE DRIVE  
DOVER, DELAWARE 19901

TAX PARCEL #: 2-00-07900-01-0300-0001

DESIGNER/APPLICANT: RK&K  
700 E. PRATT STREET, SUITE 500  
BALTIMORE, MARYLAND 21202

- THERE ARE NO WATER MAINS OR FIRE HYDRANTS ON OR ADJACENT TO THE PROPERTY.
- THE MAXIMUM HEIGHT OF THE STRUCTURE IS 42 INCHES ABOVE THE DECK.
- THE PROPOSED BUILDING CONSTRUCTION IS TYPE 5.

## DELAWARE BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER CONSTRUCTION PLAN BASE BID



DESIGNED BY: RKK

DRAWN BY: RKK

BUILDING NO.: N/A

DATE: DECEMBER 1, 2017

SCALE: 1" = 30'

SHEET NO.: C-2

DFW PROJECT #: FW-2-15

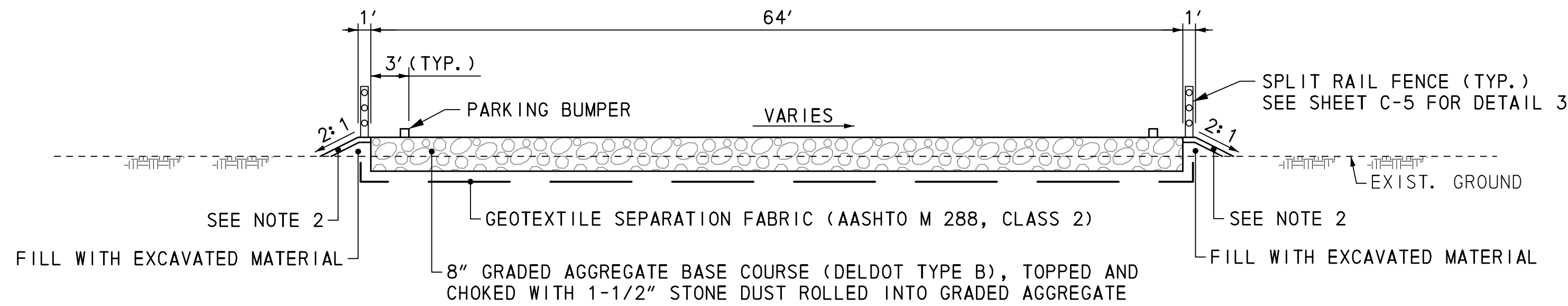
CONTRACT #: FW-2-15

DATE: 7/14/17 50% SUBMITTAL  
11/2/17 ISSUED FOR PERMIT  
12/1/17 ISSUED FOR BID

DESCRIPTION:

BY:

2/13/2018 11:47:37 AM \\boserv05\v2015\2015\15010\_dnr\ref\W\TASK 3 - Little Creek Observation Tower\Cadd\Contract\Plans\cp02\_lct.dgn



AA  
C-3  
TYPICAL SECTION - PARKING LOT

NOTES:

1. FILL MATERIAL REQUIRED TO MEET THE GRADE OF THE PROPOSED PARKING SHALL BE FURNISHED AND INSTALLED PER THE REQUIREMENTS OF DELDOT BORROW, TYPE F.
2. STABILIZATION SHALL CONSIST OF VEGETATION AND DEAD LEAVES SALVAGED AND STOCKPILED PRIOR TO DISTURBANCE FOR REUSE AS MULCH.

COORDINATE LIST			
POINT NO.	NORTHING	EASTING	ELEVATION
1	420172.88	651963.58	6.1
2	420180.88	651981.91	5.9
3	420190.05	651977.91	5.8
4	420199.65	651999.91	5.6
5	420190.48	652003.91	5.7
6	420198.48	652022.24	5.5
7	420111.41	652060.24	MEET EXIST.
8	420085.81	652001.58	MEET EXIST.
9	420081.01	651990.58	MEET EXIST.
10	420082.85	651989.78	7.2
11	420096.93	651994.55	7.2

NOTES:

1. THE ENTIRE PROJECT AREA IS WITHIN THE FEMA 100-YEAR FLOODPLAIN.

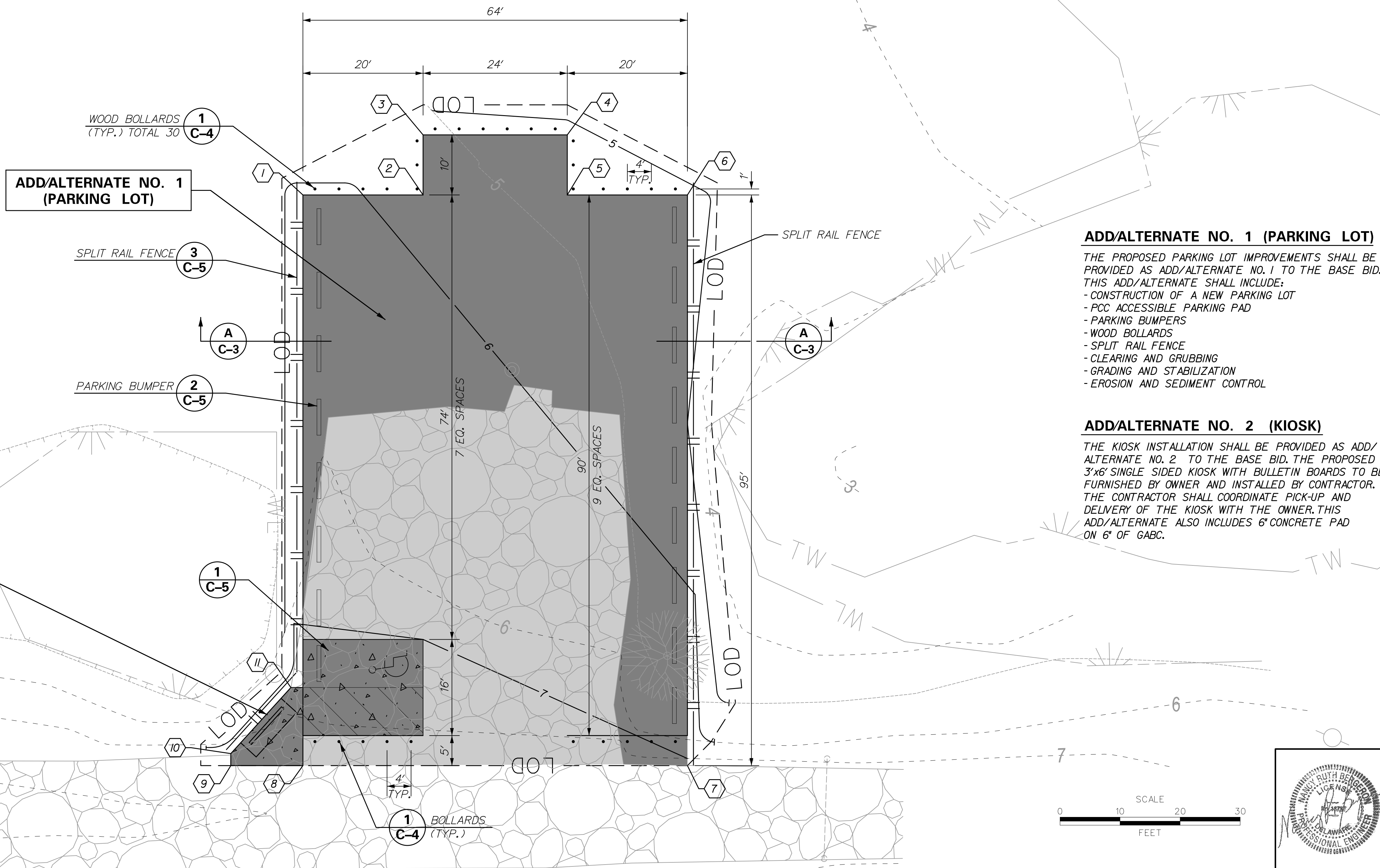
LEGEND

CONSTRUCTION

- |  |   |  |                      |
|--|---|--|----------------------|
|  | VARIABLE DEPTH GRADED AGGREGATE BASE COURSE (DELDOT TYPE B) TOPPED & CHOKED WITH 1-1/2" STONE DUST ROLLED INTO GRADED AGGREGATE |  | LIMIT OF DISTURBANCE |
|  | FULL DEPTH PROPOSED TRAIL/ PARKING LOT  |  | SIGNS                |
|  | PROPOSED BOARDWALK & VIEWING AREA   |  | BOLLARD              |
|  | PROPOSED P.C.C. PARKING PAD   |  |                      |

EXISTING SYMBOLS

- |  |                                  |  |                              |
|--|----------------------------------|--|------------------------------|
|  | CONTOUR LINE                     |  | DECIDUOUS TREE 6" AND LARGER |
|  | RK&K DELINEATED WETLAND BOUNDARY |  | GRAVEL PARKING LOT           |
|  | TIDAL WETLAND LINE               |  |                              |



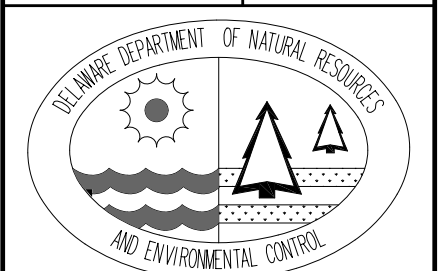
ADD/ALTERNATE NO. 1 (PARKING LOT)

- THE PROPOSED PARKING LOT IMPROVEMENTS SHALL BE PROVIDED AS ADD/ALTERNATE NO. 1 TO THE BASE BID. THIS ADD/ALTERNATE SHALL INCLUDE:
- CONSTRUCTION OF A NEW PARKING LOT
  - PCC ACCESSIBLE PARKING PAD
  - PARKING BUMPERS
  - WOOD BOLLARDS
  - SPLIT RAIL FENCE
  - CLEARING AND GRUBBING
  - GRADING AND STABILIZATION
  - EROSION AND SEDIMENT CONTROL

ADD/ALTERNATE NO. 2 (KIOSK)

- THE KIOSK INSTALLATION SHALL BE PROVIDED AS ADD/ALTERNATE NO. 2 TO THE BASE BID. THE PROPOSED 3'x6' SINGLE SIDED KIOSK WITH BULLETIN BOARDS TO BE FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR. THE CONTRACTOR SHALL COORDINATE PICK-UP AND DELIVERY OF THE KIOSK WITH THE OWNER. THIS ADD/ALTERNATE ALSO INCLUDES 6" CONCRETE PAD ON 6" OF GABC.

DELAWARE BAYSHORE BYWAY  
LITTLE CREEK BOARDWALK AND  
WILDLIFE OBSERVATION TOWER  
PARKING LOT  
ADD/ALTERNATE NO. 1 & 2



DESIGNED BY:

RKK

DRAWN BY:

RKK

BUILDING NO.:

N/A

DATE:

DECEMBER 1, 2017

SCALE:

1" = 10'

SHEET NO.:

C-3

DFW PROJECT #:

FW-2-15

CONTRACT #:

FW-2-15

DATE: DESCRIPTION: BY:

DATE: DESCRIPTION: BY:

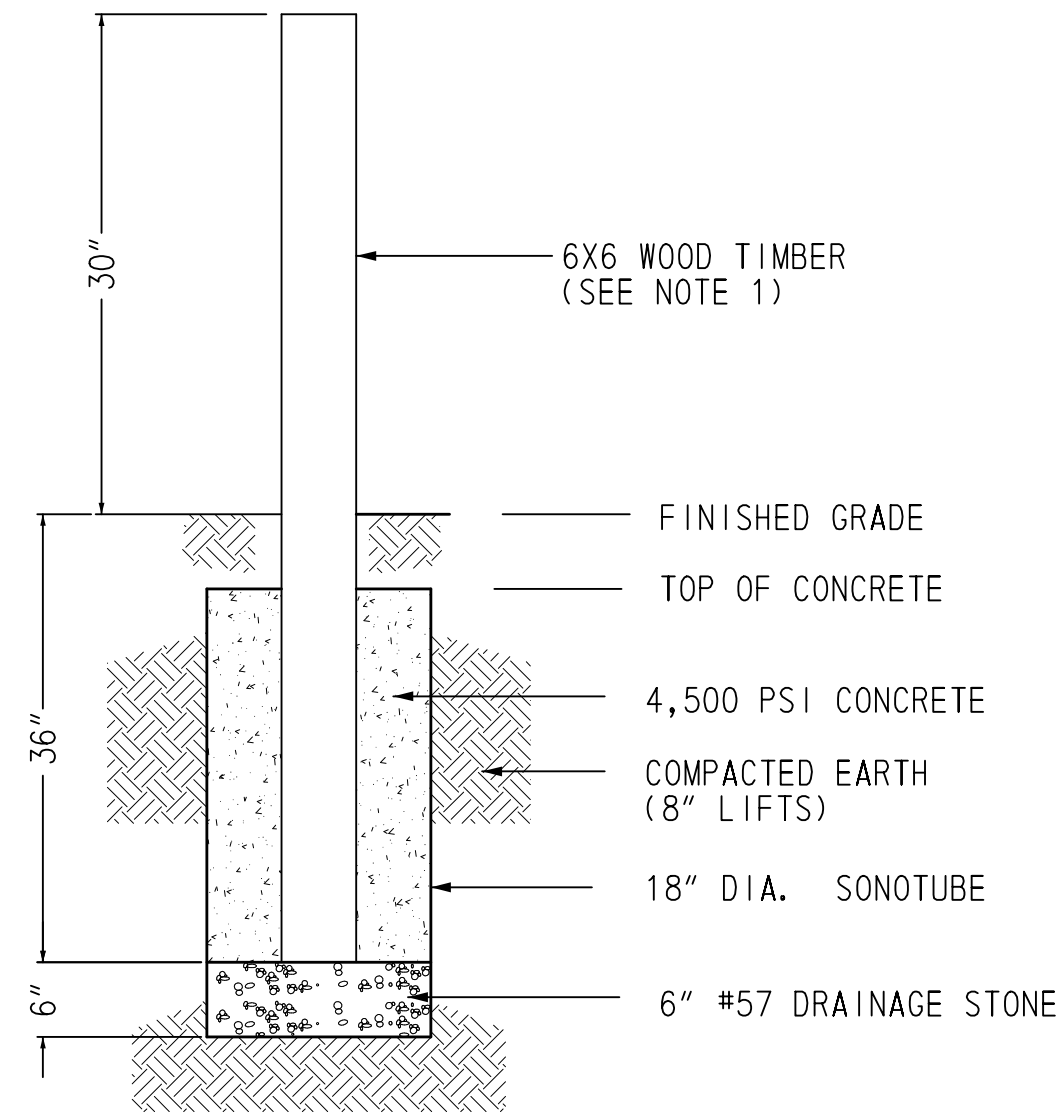
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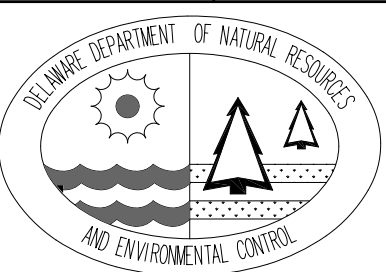
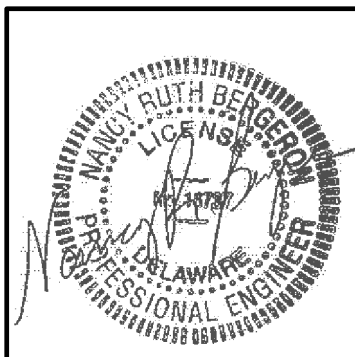


SECTION

FIXED BOLLARD

BOLLARD NOTE:

1. WOOD TIMBER SHALL BE PRESSURE TREATED WOOD WITH A WATERBORNE PRESERVATIVE TREATMENT MEETING THE REQUIREMENTS OF THE APWA USE CATEGORY FOR UC4A, GROUND CONTACT GENERAL USE.



DESIGNED BY:

RKK

DRAWN BY:

RKK

BUILDING NO.:

N/A

DATE: \_\_\_\_\_

DECEMBER 1, 2011

SCALE: \_\_\_\_\_

NOT TO SCALE

SHEET NO.:

C4

C-4

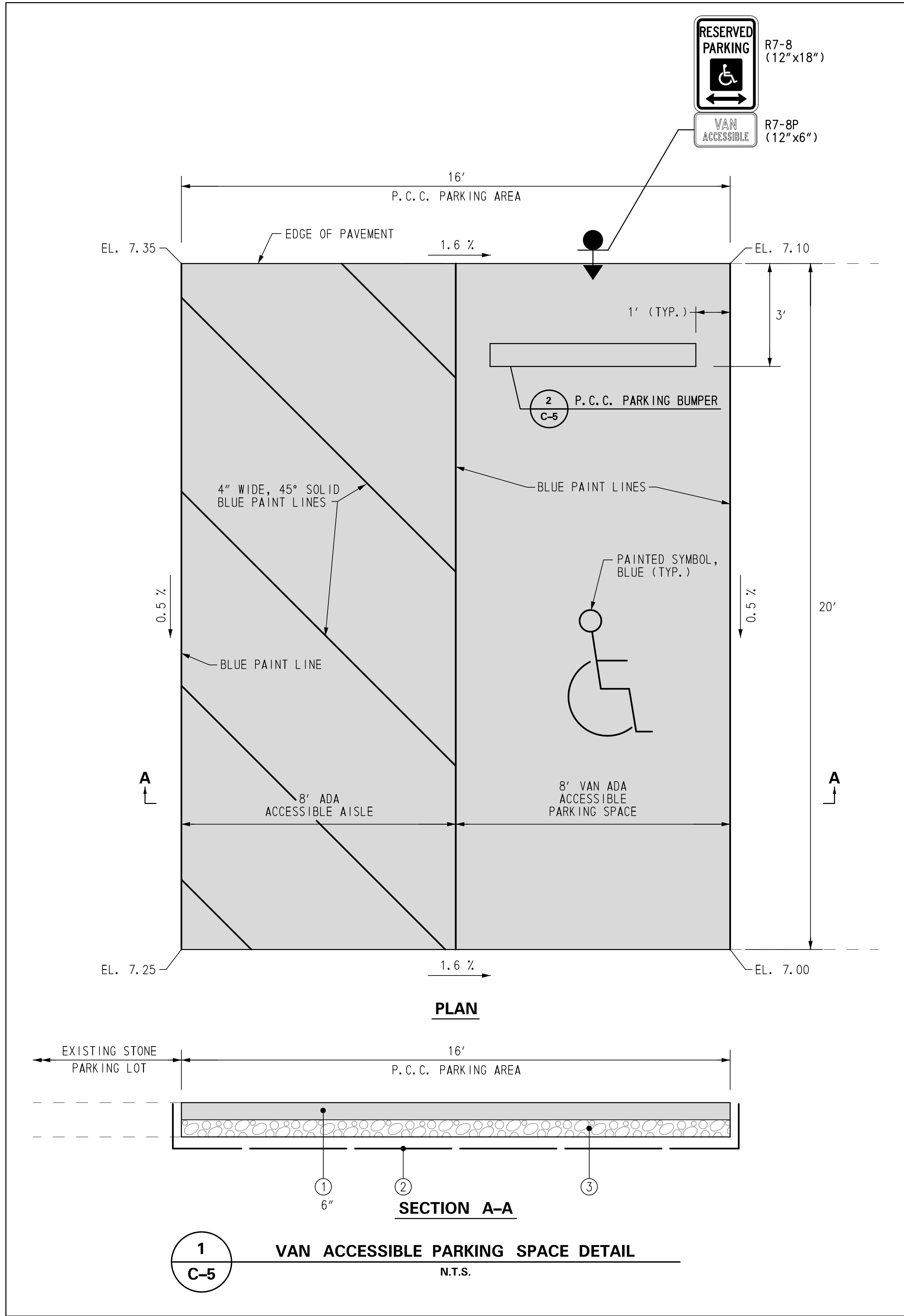
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-2-15

CONTRACT #:

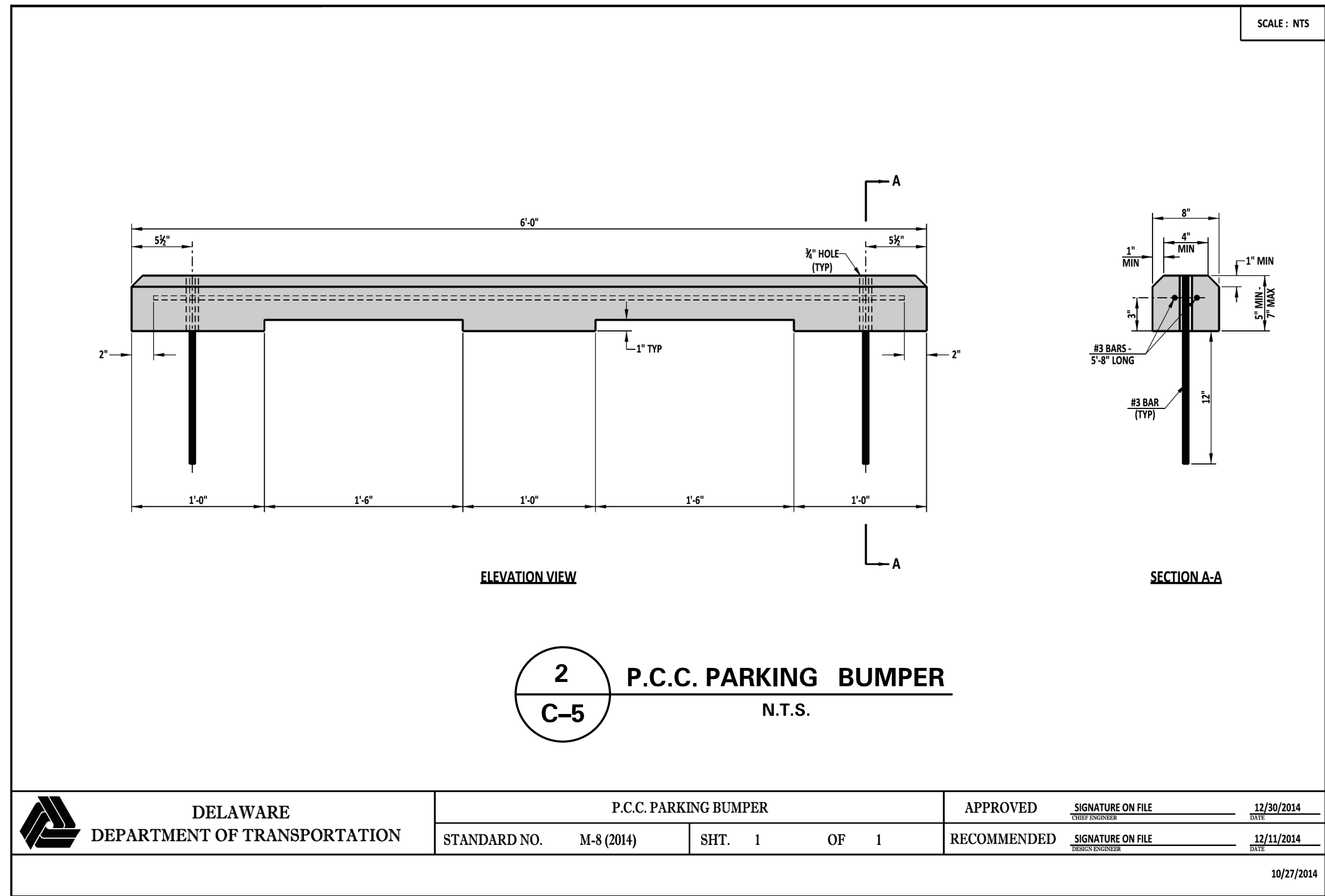
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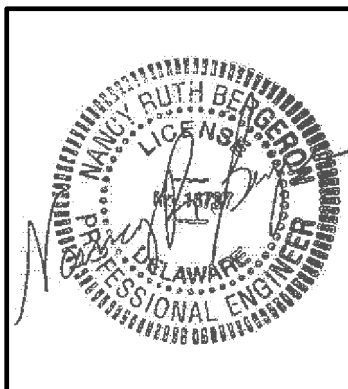
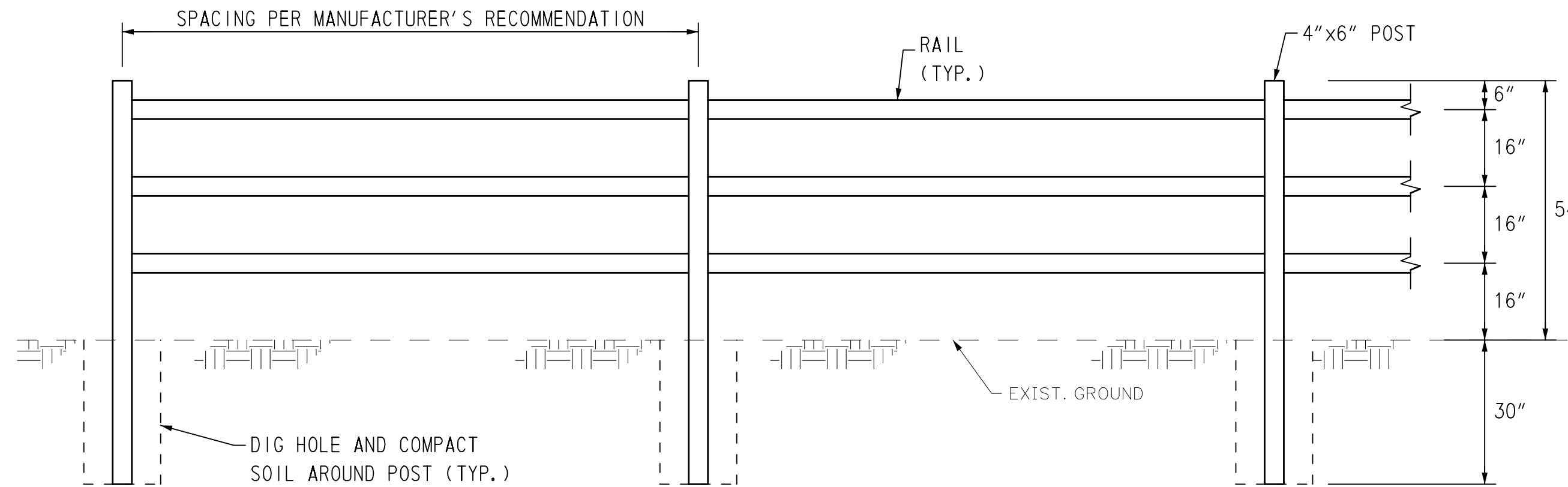
**LEGEND**

- ① DELDOT CLASS A CONCRETE. CONCRETE SHALL BE 4500 PSI.
- ② GEOTEXTILE SEPARATION FABRIC (AASHTO M 288, CLASS 2)
- ③ 6" GRADED AGGREGATE BASE COURSE

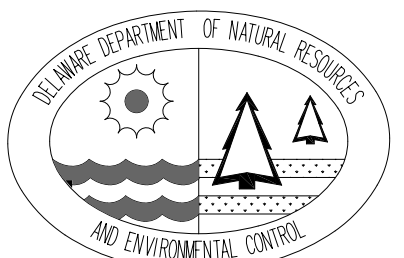


**SPLIT RAIL FENCE NOTES:**

- 1. SPLIT RAIL FENCE SHALL BE A 3 RAIL SYSTEM.
- 2. ALL WOOD SHALL BE PRESSURE TREATED WOOD WITH A WATERBORNE PRESERVATIVE TREATMENT MEETING THE REQUIREMENTS OF THE APWA USE CATEGORY FOR UC4A, GROUND CONTACT GENERAL USE.
- 3. POST DIMENSIONS SHALL BE APPROXIMATELY 4"x6"x84".
- 4. RAILS SHALL BE TRIANGULAR WITH AN AVERAGE GIRTH OF 12-13".
- 5. POSTS SHALL BE EMBEDDED 30". THE HOLE SHALL BE BACKFILLED WITH THE ORIGINAL SOIL AND FIRMLY COMPACTED AROUND THE POST.



**DELAWARE BAYSHORE BYWAY  
LITTLE CREEK BOARDWALK AND  
WILDLIFE OBSERVATION TOWER  
CONSTRUCTION DETAILS  
ADD/ALTERNATE NO.1**

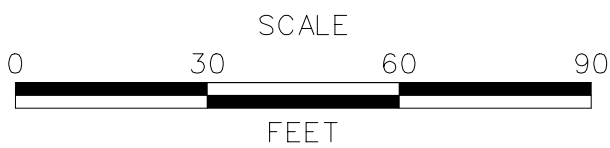


DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	DECEMBER 1, 2017
SCALE:	NOT TO SCALE
SHEET NO.:	C-5
DFW PROJECT #:	FW-2-15
CONTRACT #:	FW-2-15

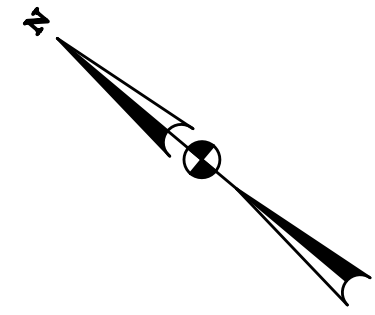
DATE:	DESCRIPTION:	BY:
7/14/17	50% SUBMITTAL	
11/2/17	ISSUED FOR PERMIT	
12/1/17	ISSUED FOR BID	



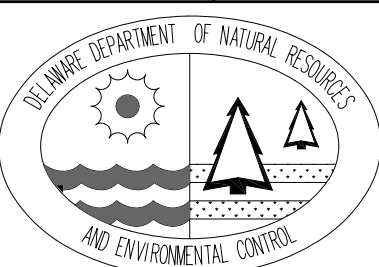




1. THE CONTRACTOR SHALL DISASSEMBLE/REMOVE THE EXISTING TIMBER BOARDWALK.
2. TIMBER PILES SUPPORTING THE BOARDWALK SHALL BE CUT FLUSH WITH THE EXISTING GROUND.
3. TIMBER PILES IN CONFLICT WITH HELICAL ANCHORS SHALL BE REMOVED.
4. PROTECTIVE MATTING SHALL BE PLACED TO MINIMIZE DISTURBANCE TO EXISTING GROUND.
5. DISMANTLE/REMOVE EXISTING STEEL TOWER.
6. EXISTING TOWER FOUNDATIONS SHALL BE REMOVED.
7. ALL BOARDWALK AND TOWER MATERIALS DISMANTLED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.



# DEMOLITION PLAN



RKK

RKK

N/A

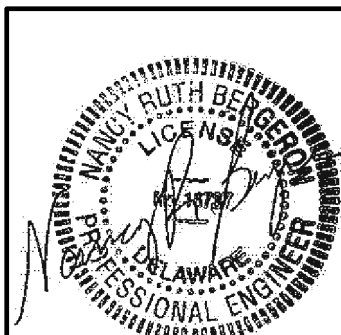
DECEMBER 1, 2017

$$1'' = 30'$$

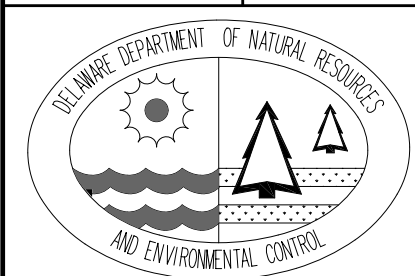
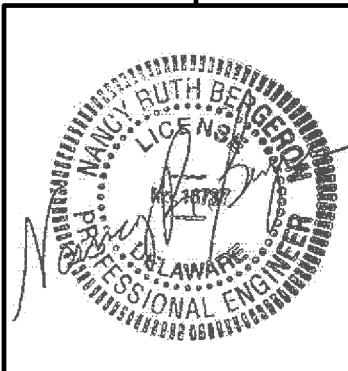
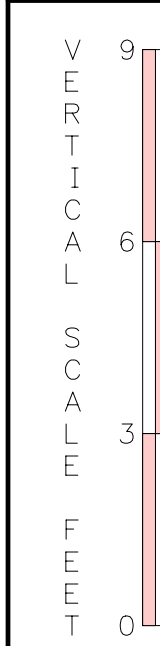
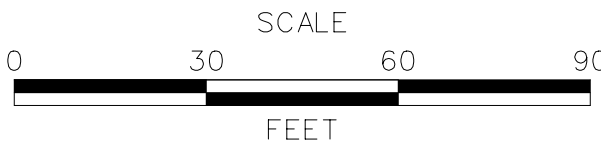
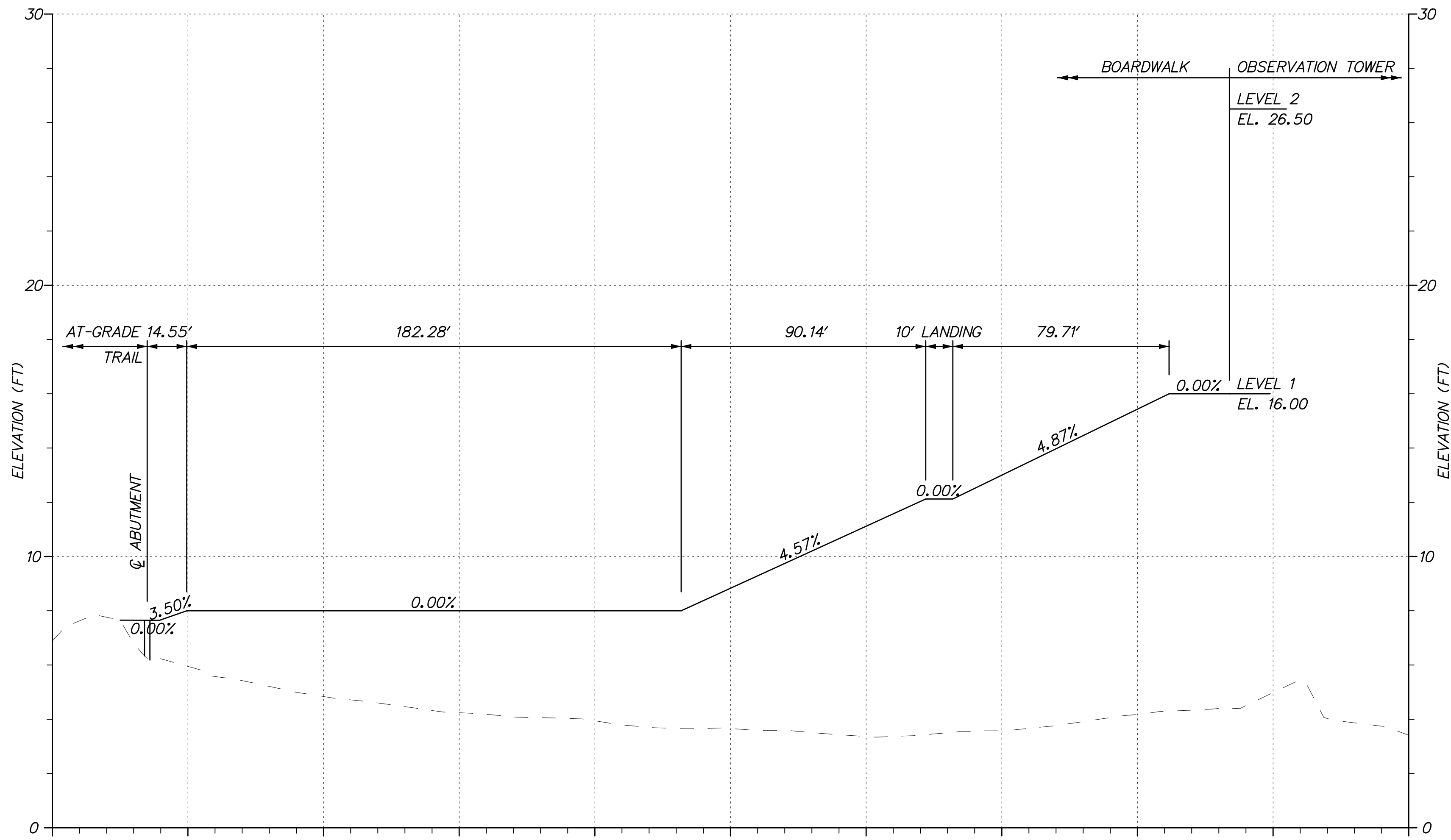
C-7

FW-2-15

FW-2-15







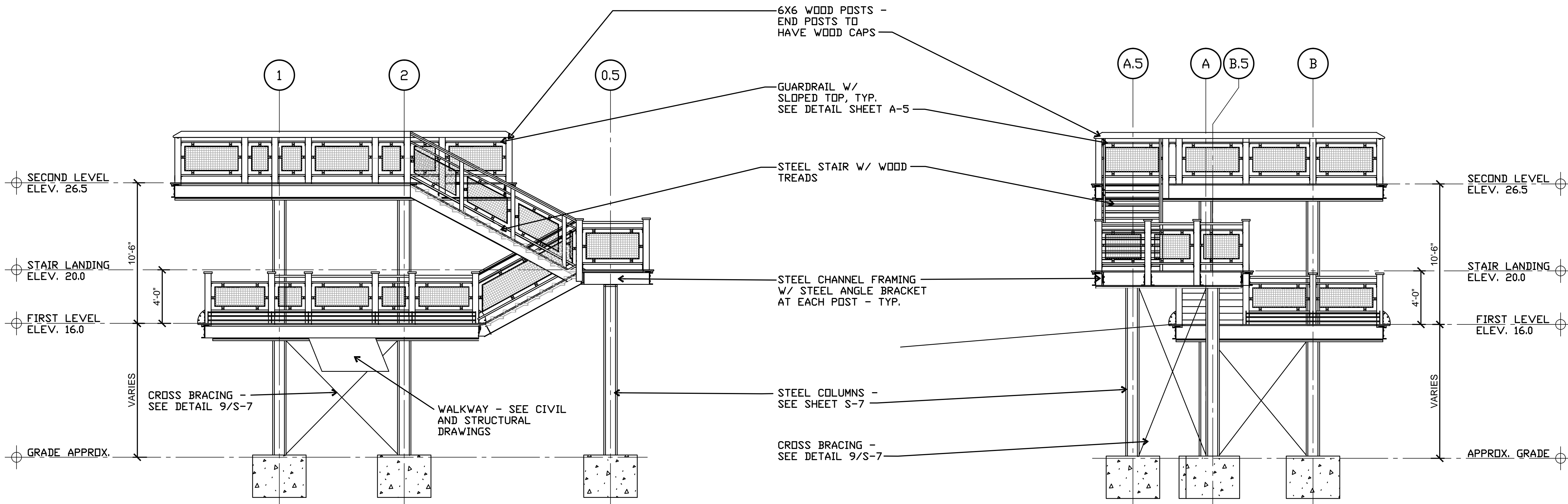
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DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	DECEMBER 1, 2017
SCALE:	1" = 30'
SHEET NO.:	C-8
DFW PROJECT #:	FW-2-15
CONTRACT #:	FW-2-15

DELAWARE BAYSHORE BYWAY  
LITTLE CREEK BOARDWALK AND  
WILDLIFE OBSERVATION TOWER  
BOARDWALK PROFILE

DATE:	DESCRIPTION:	BY:
7/14/17	50% SUBMITTAL	
11/2/17	ISSUED FOR PERMIT	
12/1/17	ISSUED FOR BID	

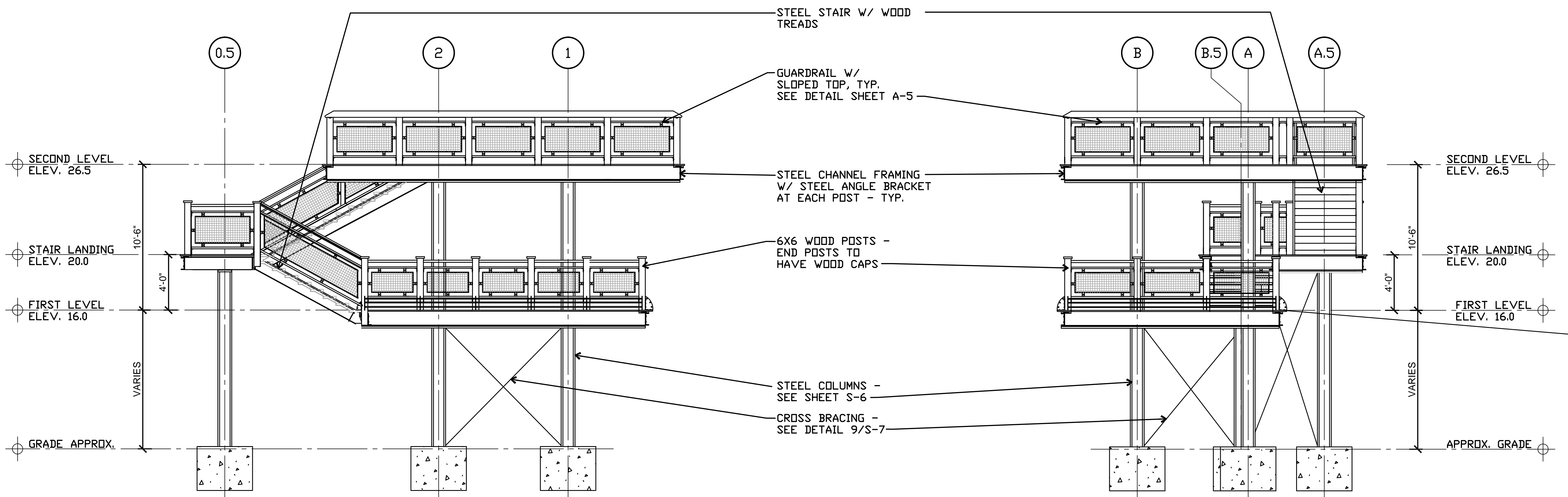






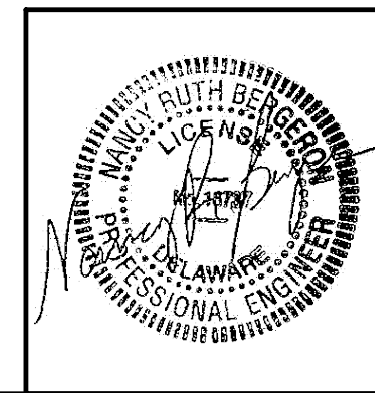
1 West Elevation  
1/4"=1'-0"

2 South Elevation  
1/4"=1'-0"

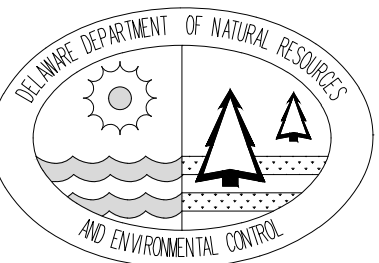


3 East Elevation  
1/4"=1'-0"

4 North Elevation  
1/4"=1'-0"



# DELAWARE BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER



DESIGNED BY:

RKK

DRAWN BY:

RKK

BUILDING NO.:

N/A

DATE: \_\_\_\_\_

DECEMBER 1, 20

SCALE: \_\_\_\_\_

AS NOTED

SHEET NO.:

A 2

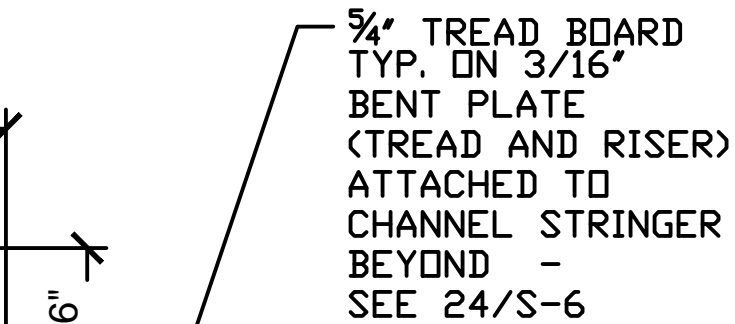
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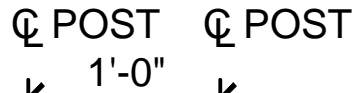
DFW PROJECT #:

FW-2-15

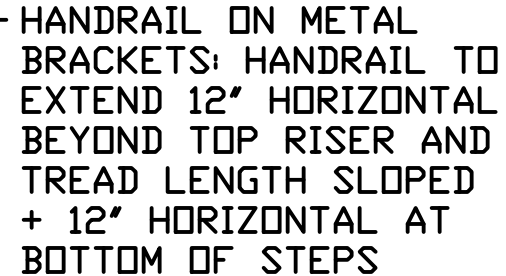
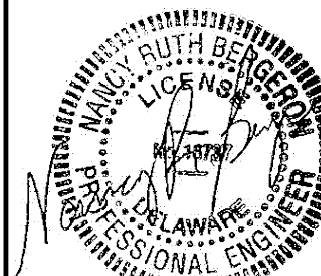
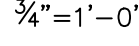
CONTRACT #:

FW-2-15


$$1\cancel{\frac{1}{2}}'' = 1'-0''$$

$$1\cancel{\frac{1}{2}}'' = 1'-0''$$


1" = 1'-0"


$$1/2'' = 1' - 0''$$


RKK

RKK

---

N/A

DECEMBER 1, 2017

AS NOTED

A-3

FW-2-15

FW-2-15

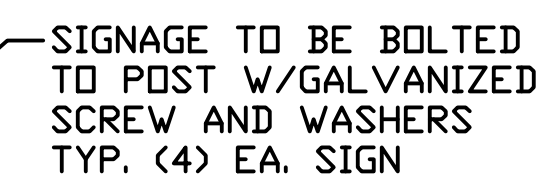
7/14/2017	50% SUBMITTAL
11/2/2017	ISSUED FOR PERMIT
12/1/2017	ISSUED FOR BID

## STAIR PLAN & SECTIONS

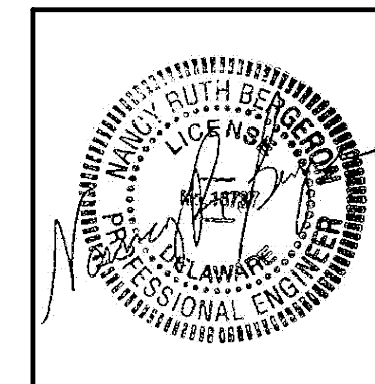





2 Railing Section Detail  
3"=1'-0"



6"X6" Accessible Sign  
@ Entrance at Lower Level



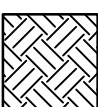

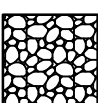


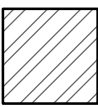
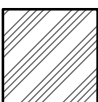
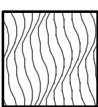


	BY:
DESCRIPTION:	
DATE:	50% SUBMITTAL
7/14/2017	ISSUED FOR PERMIT
11/2/2017	ISSUED FOR BID
12/1/2017	
DELWARE BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER	
RAILING ELEVATIONS & DETAILS	
	
DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	DECEMBER 1, 2017
SCALE:	AS NOTED
SHEET NO.:	A-4
DFW PROJECT #:	FW-2-15
CONTRACT #:	FW-2-15

## ABBREVIATIONS

AF	ABOVE FINISHED FLOOR	GALV	GALVANIZED	PT	POINT
ADD	ADDENDUM	GA	GAUGE	PCF	POUNDS PER CUBIC FOOT
ADD'L	ADDITIONAL	GEN	GENERAL	PSF	POUNDS PER SQUARE FOOT
ADJ	ADJACENT	GT	GIRDER TRUSS	PSI	POUNDS PER SQUARE INCH
ALT	ALTERNATE	GR	GRADE	P/C	PRECAST CONCRETE
APPROX	APPROXIMATE	GB	GRADE BEAM	PREFAB	PREFABRICATED
ARCH	ARCHITECTURAL	GND	GROUND	PT	PRESSURE TREATED
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL	GYP BD	GYPSUM BOARD	PL	PROPERTY LINE
		HDW	HARDWARE		
BM	BEAM	HS	HAUNCHED SLAB	RAD	RADIUS
BRG, BRNG	BEARING	HS	HEADED STUD	REF	REFER OR REFERENCE
BP	BEARING PLATE	HT	HEIGHT	RCP	REFLECTED CEILING PLAN
BW	BEARING WALL	HP	HIGH POINT	REINF	REINFORCING
BTWN	BETWEEN	HB	HOIST BEAM	REBAR	REINFORCING BAR
BLKG	BLOCKING	HK	HOOK	REQ'D	REQUIRED
BS	BOTH SIDES	HORIZ	HORIZONTAL	RW	RETAINING WALL
BOT	BOTTOM	HEF	HORIZONTAL EACH FACE	RD	ROOF DRAIN
B.O.	BOTTOM OF	HIF	HORIZONTAL INSIDE FACE	RR	ROOF RAFTER
BLDG	BUILDING	HOF	HORIZONTAL OUTSIDE FACE	RM	ROOM
		HR	HOUR	RO	ROUGH OPENING
CANT	CANTILEVER	HSKP	HOUSEKEEPING		
CANT LE	CANTILEVER LEFT END			SCHED	SCHEDULE
CANT RE	CANTILEVER RIGHT END	INT	INTERIOR	SECT	SECTION
CIP	CAST IN PLACE	IBC	INTERNATIONAL BUILDING CODE	SIM	SIMILAR
CTR	CENTER			SOG	SLAB ON GRADE
CL	CENTER LINE			SSF	SOLID SURFACE
CTD	CENTERED	JT	JOINT	SPCG	SPACING
CLR	CLEAR			SPEC	SPECIFICATION
COL	COLUMN	k	KIPS (1000lbs)	SQ	SQUARE
CONC	CONCRETE	KSF	KIPS PER SQUARE FOOT	SS	STAINLESS STEEL
CC	CONCRETE COLUMN	KO	KNOCK-OUT	SD	STANDARD
CMU	CONCRETE MASONRY UNIT			SBC	STANDARD BUILDING CODE
CONN	CONNECTION	L	ANGLE	STL	STEEL
CJ	CONSTRUCTION JOINT	LBS	POUNDS	SF	STEPPED FOOTING
CONST	CONSTRUCTION	LW	LIGHT WEIGHT CONCRETE	STIFF	STIFFENER
CONT	CONTINUOUS	LL	LIVE LOAD	STIR	STIRRUP
CJ	CONTROL JOINT	LOC	LOCATION	STRUC	STRUCTURAL
COORD	COORDINATE	LG	LONG	SO	STRUCTURAL OPENING
CW	CURTAIN WALL	LLH	LONG LEG HORIZONTAL	SDL	SUPERIMPOSED DEAD LOAD
		LLV	LONG LEG VERTICAL	SYM	SYMMETRICAL
		LP	LOW POINT		
DL	DEAD LOAD			THK	THICK, THICKNESS
DJ	DEFLECTION JOINT	MANUF	MANUFACTURER	TS	THICKENED SLAB
D	DEPTH, DEEP	MAS	MASONRY	TSF	THICKENED SLAB FOOTING
DTL	DETAIL	MO	MASONRY OPENING	T	TOP
DIA, Ø	DIAMETER	MAT'L	MATERIAL	T&B	TOP & BOTTOM
DIM	DIMENSION	MAX	MAXIMUM	T.O.	TOP OF
DBL	DOUBLE	MECH	MECHANICAL	T.O.B.	TOP OF BEAM
DWLS	DOWELS	MEP	MECHANICAL, ELECTRICAL, PLUMBING	T.O.C.	TOP OF CONCRETE
DN	DOWN	MEMB	MEMBRANE	T.O.CB.	TOP OF CURB
DWG	DRAWING	MTL	METAL	T.O.F.	TOP OF FOOTING
DWGS	DRAWINGS	MIN	MINIMUM	T.O.P.	TOP OF PARAPET
		MISC	MISCELLANEOUS	T.O.S.	TOP OF SLAB
EA	EACH			T.O.STL.	TOP OF STEEL
EF	EACH FACE	NS	NEAR SIDE	T.O.W.	TOP OF WALL
EW	EACH WAY	NOM	NOMINAL	TDS	TURNED DOWN SLAB
EWEF	EACH WAY EACH FACE	NBL	NON-BEARING LINTEL	TN	TRENCH DRAIN
EOS	EDGE OF SLAB	NBMH	NON-BEARING METAL HEADER	TYP.	TYPICAL
EL	ELEVATION	NBWH	NON-BEARING WOOD HEADER		
ELEV	ELEVATOR	NW	NORMAL WEIGHT CONCRETE	UNO	UNLESS NOTED OTHERWISE
EQ	EQUAL	N/A	NOT AVAILABLE		
EQUIP	EQUIPMENT	NIC	NOT IN CONTRACT	VAR	VARIES
EXIST	EXISTING	NTS	NOT TO SCALE	VERT	VERTICAL
EXP BLT	EXPANSION BOLT				
EJ	EXPANSION JOINT	o/c	ON CENTER	WWF	WELDED WIRE FABRIC
EXT	EXTERIOR	OPNG	OPENING	WF	WIDE FLANGE
EIFS	EXTERIOR INSULATION FINISH SYSTEM	OPP	OPPOSITE	W	WIDTH, WDE
		OH	OPPOSITE HAND	WL	WIND LOAD
FIN	FINISH	OD	OUTSIDE DIAMETER	w/	WITH
FF	FINISH FLOOR	OSF	OUTSIDE FACE	w/o	WITHOUT
FLR	FLOOR			PTD	PAINTED
FD	FLOOR DRAIN	PR	PAIR	PENT	PENTHOUSE
FT	FOOT	PL	PLATE	PLUMB	PLUMBING
FDN	FOUNDATION	PLYWD	PLYWOOD		
FRM	FRAMING				

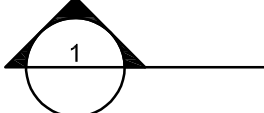

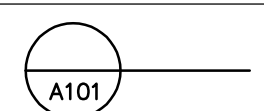
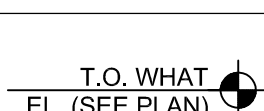
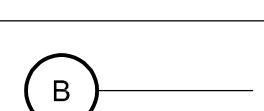
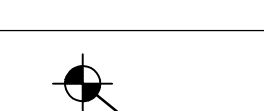
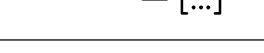
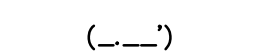
## MATERIAL & SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONCRETE/ PRECAST CONCRETE		FULL/RIGID MOMENT CONNECTION – BEAM TO BEAM OR BEAM TO COLUMN AS SHOWN ON PLAN – PROVIDE FULL CAPACITY OF BEAM IN ADDITION TO FULL DEPTH SHEAR CONNECTION, U.N.O.
	COMPACTED EARTH / SITEWORK		CRIPPLE POINT IN STEEL MEMBER - SEE TYPICAL DETAIL FOR ADDITIONAL INFORMATION.
	CRUSHED STONE		SLAB/ DECK CONSTRUCTION TAG – SEE SCHEDULE ON DRAWING FOR ADDITIONAL INFORMATION
	GROUT		
	STEEL		
	PLYWOOD SHEATHING/ DECKING		
	WOOD		

## DRAWING LIST

		REVISIONS					
DRAWING NUMBER	DRAWING TITLE / DESCRIPTION	50% REVIEW SET	ISSUED FOR PERMIT	ISSUED FOR BID			
S-1	STRUCTURAL COVER SHEET	●	●	●			
S-2	STRUCTURAL GENERAL NOTES	●	●	●			
S-3	STRUCTURAL SCHEDULES	●	●	●			
S-4	BOARDWALK FOUNDATION PLAN - SHEET 1	●	●	●			
S-5	BOARDWALK FOUNDATION PLAN - SHEET 2	●	●	●			
S-6	OBSERVATION TOWER PLANS	●	●	●			
S-7	OBSERVATION TOWER SECTIONS	●	●	●			
S-8	OBSERVATION TOWER SECTIONS & DETAILS	●	●	●			

## ANNOTATION SYMBOLS

SYMBOL	DESCRIPTION
	SECTION MARK
	BUILDING ELEVATION
	DETAIL/ ENLARGED PLAN CALLOUT
	LEVEL DESIGNATION
	STRUCTURAL GRID DESIGNATION
	SPOT ELEVATION LOCATION
	TOP OF FOOTING ELEVATION
	TOP OF PIER ELEVATION



BY:	
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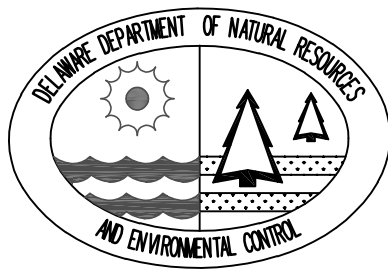
DATE:                      DESCRIPTION:

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7.14.2017 50% SUBMITTAL  
11.2.2017 ISSUED FOR PERMIT  
12.1.2017 ISSUED FOR BID

# DELAWARE'S BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER

# STRUCTURAL COVER SHEET



DESIGNED BY:

P2STRENG

DRAWN BY:

P2STRENG

BUILDING NO.:

N/A

DATE: DECEMBER 1, 2017

SCALE:

SHEET NO.:

S-1

DFW PROJECT #:

CONTRACT #:



1/20/2017 8:11:33 AM  
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OVERALL PROJECT REQUIREMENTS	
NOTES	
1	ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL DRAWINGS AND SPECIFICATIONS CONTAINED HEREIN.
2	ALL WORK RELATED TO THE STAGING, CONSTRUCTION PRACTICES, AND SAFETY OF THE PROJECTS WORKERS AND PROPERTY SHALL BE CONSIDERED MEANS AND METHODS AND SHALL BE COMPLETED BY THE CONTRACTOR IN ACCORDANCE WITH STANDARD INDUSTRY PRACTICE AND ALL CODES AND STANDARDS. VISITS TO THE SITE MADE BY THE ENGINEER ARE FOR THE REVIEW OF THE STRUCTURAL WORK FOR GENERAL CONFORMANCE WITH THE DRAWINGS AND SPECIFICATIONS AND ARE NOT FOR THE REVIEW OF CONTRACTOR RESPONSIBILITIES, INCLUDING BUT NOT LIMITED TO PROJECT SAFETY AND MEANS AND METHODS OF CONSTRUCTION.
3	ALL DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE, AS WELL AS ALL REFERENCED STANDARDS CONTAINED THEREIN.
4	EVALUATION AND COMPLIANCE WITH LOADING RESTRICTIONS FOR MEANS AND METHODS OF CONSTRUCTION AS WELL AS STAGING FOR OTHER TRADES ARE THE RESPONSIBILITY OF THE CONTRACTOR.
5	ALL WORK SHALL BE INSPECTED IN ACCORDANCE WITH CHAPTER 17 OF THE REFERENCED BUILDING CODE. SUBMIT ALL REPORTS TO THE ENGINEER OF RECORD FOR REVIEW. AT THE COMPLETION OF THE PROJECT, THE SPECIAL INSPECTION REPORT SHALL BE COMPLETED, SIGNED BY THE SPECIAL INSPECTOR, AND SUBMITTED TO THE ENGINEER OF RECORD FOR RECORD PURPOSES.
6	SCALING OF DRAWINGS TO DETERMINE DIMENSIONS OF ELEMENTS IS NOT PERMITTED.
7	STRUCTURAL DRAWINGS SHALL NOT BE REPRODUCED TO CREATE SHOP DRAWINGS OR SHORING DOCUMENTATION WITHOUT THE EXPRESS WRITTEN CONSENT OF MACINTOSH ENGINEERING.
8	ALL HORIZONTAL AND VERTICAL DIMENSIONS CONTAINED ON THE STRUCTURAL DRAWINGS WERE DEVELOPED BY OTHER DISCIPLINES FOR THE PURPOSE OF THIS PROJECT. ANY DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHOULD BE COORDINATED WITH THE OTHER DISCIPLINE DRAWINGS.
9	THE STRUCTURAL DOCUMENTS ARE TO BE USED IN COORDINATION WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS AS WELL AS THOSE OF ALL OTHER DISCIPLINES. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE DESIGN TEAM PRIOR TO THE COMMENCEMENT OF WORK.
10	ALL REQUESTED CHANGES IN WORK BY THE CONTRACTOR ARE SUBJECT TO THE APPROVAL OF THE DESIGN TEAM AND OWNER AND ARE CONSIDERED TO BE COMPLETED AT NO ADDITIONAL COST UNLESS SPECIFICALLY APPROVED. APPROVAL OF REQUESTED CHANGES DOES NOT CONSTITUTE APPROVAL OF AN INCREASE IN PROJECT COSTS.

SHOP DRAWING REQUIREMENTS	
NOTES	
1	SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS FOR THIS THE PROJECT:
1.1	CONCRETE MIX DESIGNS INCLUDING ALL LABORATORY TESTING, MATERIALS, ETC.
1.2	REINFORCING SHOP DRAWINGS
1.3	ANCHOR BOLT AND CONCRETE EMBEDDED ASSEMBLIES
1.4	STEEL FRAMING
1.5	HELICAL PILE ANCHORS

FOUNDATIONS	
NOTES	
1	PERFORM ALL FOUNDATION PREPARATION, EXCAVATION, PLACEMENT OF STRUCTURAL FILL AND / OR SOIL IMPROVEMENT WORK IN STRICT ACCORDANCE WITH THE GEOTECHNIAL EVALUATION AS PREPARED BY GEO-TECHNOLOGY ASSOCIATES (PROJECT NO. 170072, DATED FEBRUARY 28, 2017)
2	BOTTOM OF ALL FOOTINGS SUBJECTED TO FREEZE THAW CONDITIONS SHALL BE A MINIMUM 32 INCHES BELOW FINISH GRADE OR TOP OF SLAB ELEVATION WHICHEVER IS LOWER.
3	ALL STEEL HELICAL PILES SHALL BE AS SPECIFIED IN THE GEOTECHNICAL REPORT AND SHALL BE CAPABLE OF SAFELY SUPPORTING 20kips DOWNWARD & 10kips UPLIFT.
4	PIILING CONTRACTOR SHALL HAVE A MINIMUM OF 5 YEARS OF EXPERIENCE INSTALLING AND MONITORING THE SPECIFIED PILE TYPE.

STEEL	
NOTES	
1	ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE. ALL STRUCTURAL STEEL SHALL BE ASTM A588 GRADE 50 WEATHERING STEEL, CORTEN OR EQUAL TO BE APPROVED BY THE OWNER AND ENGINEER.
2	ORIENT ALL MILL CAMBER UPWARD DURING FABRICATION AND ERECTION.
3	ALL BOLTS USED FOR THE ANCHORAGE TO CONCRETE AS SPECIFIED ON THE DRAWINGS SHALL CONFORM TO ASTM F1554.
4	ALL CONNECTIONS SHALL BE BOLTED WITH A MINIMUM OF 3/4" A325N HIGH STRENGTH BOLTS OR WELDED AS DESIGNED BY THE STEEL FABRICATOR.
5	PROVIDE FULL DEPTH DOUBLE ANGLE CONNECTIONS ON ALL GIRDER AND BEAM CONNECTIONS TO COLUMNS. BOLTS SHALL BE AT 3-INCH O/C VERT.
6	FABRICATOR SHALL ADHERE TO ALL OSHA FEDERAL REGISTER STANDARDS SECTION 1926.777 WITH REGARD TO CONNECTION DESIGN.
7	ALL TENSION CONTROLLED BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1852 AND F2280.
8	ALL BRACE CONNECTIONS SHALL BE BOLTED WITH A MINIMUM OF 3/4 DIAMETER A325-SC HIGH STRENGTH BOLTS OR WELDED.
9	ALL STEEL WELDING RODS SHALL BE E70XX FOR STEEL CONNECTIONS
10	SUBMIT ALL STEEL SHOP DRAWINGS FOR REVIEW PRIOR TO ANY FABRICATION. SUBMIT CALCULATIONS FOR ALL BRACE CONNECTIONS TO COLUMNS (CALCULATIONS NEED NOT BE SIGNED AND SEALED)

CONCRETE	
NOTES	
1	ALL CONCRETE SHALL BE READY-MIX AND PROPORTIONED ON THE BASIS OF LABORATORY TRIAL MIXTURE OR FIELD TEST DATA OR BOTH ACCORDING TO ACI301. DESIGN MIXTURES SHALL MEET THE REQUIREMENTS BELOW:
1.1	FOOTINGS AND FOUNDATION WALLS
	COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS MINIMUM.
	EXPOSURE CATEGORY: F2
2	ALL CONCRETE EXPOSED TO EXTERIOR CONDITIONS SHALL HAVE CHARACTERISTICS IN ACCORDANCE WITH ACI BUILDING CODE (ACI 318) AND THE 2015 INTERNATIONAL BUILDING CODE
3	CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF DESIGN MIXTURES FOR EACH APPLICATION/LOCATION USED IN CONSTRUCTION AS NOTED ABOVE AND ON THE DRAWINGS.
4	ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITIONS OF THE ACI BUILDING CODE (ACI 318), THE ACI DETAILING MANUAL (SP-66), AND THE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301).
5	ALL REINFORCING STEEL SHALL BE MANUFACTURED FROM HIGH STRENGTH BILLET STEEL CONFORMING TO ASTM DESIGNATION A615 GRADE 60. LAP ALL BARS MINIMUM 48 BAR DIAMETERS UNLESS OTHERWISE NOTED.
6	CONCRETE SHALL ACHIEVE A MINIMUM OF 70 PERCENT OF THE DESIGN STRENGTH PRIOR TO STEEL ERECTION. WRITTEN CONFIRMATION OF THIS STRENGTH SHOULD BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO THE COMMENCEMENT OF STEEL ERECTION.
7	SHOP DRAWINGS FOR CONCRETE MIX DESIGNS SHALL INCLUDE THE FOLLOWING INFORMATION:
7.1	MIXTURE IDENTIFICATION BY APPLICATION/LOCATION
7.2	SPECIFIED COMPRESSIVE STRENGTH, f'c, THAT IS APPLICABLE FOR THE APPLICATION
7.3	SPECIFIED EXPOSURE CLASS
7.4	DOCUMENTATION OF STRENGTH TEST RECORDS OF SIMILAR CLASS OF CONCRETE USED TO ESTABLISH STANDARD DEVIATION IN ACCORDANCE WITH ACI 318, WHEN TEST RECORDS EXIST
7.5	REQUIRED AVERAGE COMPRESSIVE STRENGTH, f'CR, FOR EACH CLASS OF CONCRETE
7.6	DOCUMENTATION OF REQUIRED AVERAGE COMPRESSIVE STRENGTH, f'CR, USED AS THE BASIS FOR SELECTION OF CONCRETE PROPORTIONS
7.7	INTENDED PLACEMENT METHOD
7.8	SLUMP OR SLUMP FLOW
7.9	AIR CONTENT
7.10	DRY AND WET DENSITY
7.11	W/C RATIO
7.12	DOCUMENTATION SUPPORTING OTHER SPECIFIED REQUIREMENTS OF CONCRETE MIXTURES
7.13	NOMINAL MAXIMUM AGGREGATE SIZE OR SIZE NUMBER
7.14	TYPE AND INFORMATION ABOUT THE INGREDIENT MATERIALS PROPOSED FOR USE.
8	CONCRETE TESTING SHALL CONFORM TO THE FOLLOWING:
8.1	SAMPLES SHALL BE TAKEN AT LEAST ONCE PER DAY AND ONCE FOR EACH 50cy OR 5000sf OF PLACED CONCRETE
8.2	TAKE SLUMP, AIR, TEMPERATURE FOR EACH CONCRETE CYLINDER SET TAKEN
8.3	CYLINDER TESTS SHALL BE AS FOLLOWS:
8.3.1	TEST ONE SET OF TWO CYLINDERS AT 7 DAYS
8.3.2	TEST ONE SET OF TWO CYLINDERS AT 28 DAYS
8.3.3	TEST ONE SET OF TWO CYLINDERS AT 56 DAYS

TIMBER	
NOTES	
1	ALL STRUCTURAL TIMBER FRAMING, WALLS, BLOCKING, ETC SHALL BE HEM FIR #2 MINIMUM, STRESS GRADE LUMBER OR APPROVED EQUAL.
2	ALL STRUCTURAL TIMBER FRAMING SHALL HAVE THE FOLLOWING MINIMUM ALLOWABLE PROPERTIES – Fb = 850 PSI, Fv = 150 PSI, E = 1,300,000 PSI
3	ALL STRUCTURAL TIMBER MUST BE STAMPED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION'S "CONSTRUCTION MANUAL".
4	ALL STRUCTURAL TIMBER MUST BE STAMPED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION'S "CONSTRUCTION MANUAL".
5	ALL TIMBER AND TIMBER CONSTRUCTION SHALL COMPLY WITH LATEST EDITIONS OF THE FOLLOWING STANDARDS:
5.1	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION: TIMBER CONSTRUCTION MANUAL.
5.2	NATIONAL FOREST PRODUCTS ASSOCIATION: NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION.
5.3	AMERICAN WOOD-PRESERVERS ASSOCIATION STANDARDS.
5.4	NATIONAL LUMBER MANUFACTURERS ASSOCIATION: NATIONAL DESIGN SPECIFICATION FOR STRESS-GRADE LUMBER AND ITS FASTENINGS.
6	ALL TIMBER CONNECTIONS SHALL BE MADE USING PREFABRICATED CONNECTORS. TOE-NAILING IS NOT PERMITTED AS THE FINAL CONNECTION UNLESS OTHERWISE APPROVED BY THE ENGINEER. SUBMIT MANUFACTURER'S DATA FOR REVIEW. FASTENERS SHALL BE AS MANUFACTURED BY SIMPSON STRONGTIE OR APPROVED EQUAL.
7	PROVIDE MINIMUM CONTINUOUS SOLID BLOCKING OR CROSS-BRIDGING LINES AT 8'-0" O/C MAX SPACING FOR ALL WOOD JOISTS AND WOOD RAFTERS
8	PROVIDE A MINIMUM OF ONE LINE OF BLOCKING OR CROSS BRIDGING FOR ALL SPANS.
9	TREATED LUMBER SHALL BE PROVIDED AT ALL LOCATIONS WHERE LUMBER IS IN CONTACT WITH CONCRETE AND MASONRY FOUNDATION WALLS OR AT EXTERIOR OF BUILDING.



DELAWARE'S BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER	DATE:	DESCRIPTION:	BY:
	7.14.2017 50% SUBMITTAL		PJP
	11.2.2017 ISSUED FOR PERMIT		
	12.1.2017 ISSUED FOR BID		
STRUCTURAL GENERAL NOTES			
<div>DESIGNED BY: P2STRENG</div> <div>DRAWN BY: P2STRENG</div> <div>BUILDING NO.: N/A</div> <div>DATE: DECEMBER 1, 2017</div> <div>SCALE:</div> <div>SHEET NO.: S-2</div> <div>DFW PROJECT #: FW-2-15</div> <div>CONTRACT #: FW-2-15</div>			




<b>DESIGN LOAD SCHEDULE</b> (ALL LOADS SHOWN ARE IN POUNDS PER SQ. FT.)					
COMPONENT \ AREA					
	BOARDWALK	OBS. TOWER			
WOOD FRAMING	5	5			
DECKING	5	5			
STEEL & JOIST	.	10			
TOTAL DEAD LOAD	10	20			
TOTAL LIVE LOAD	100	100			
TOTAL LOAD	110	120			

WIND LOAD			
ITEM	SYMBOL	VALUE	REFERENCE
BASIC ULTIMATE WIND SPEED	$V_{BS-ULT}$	115 mph	FIGURE 1609
BASIC ALLOWABLE WIND SPEED	$V_{BS-ALL}$	90 mph	FIGURE 1609
RISK CATEGORY		III	TABLE 1604.5
WIND EXPOSURE CATEGORY	-	D	SECTION 1603.4
INTERNAL PRESSURE COEFF.	GCPI	---	FIGURE 6-5 (ASCE 7)
SEISMIC LOAD			
ITEM	SYMBOL	VALUE	REFERENCE
SITE CLASS	-	D	SECTION 1615.1.1
MAPPED SPECTRAL RESPONSE ACCELERATION	$S_S$	0.129	FIGURE 1615(1)
MAPPED SPECTRAL RESPONSE ACCELERATION (1- SECOND RESPONSE)	$S_1$	0.050	FIGURE 1615(2)
DESIGN SPECTRAL RESPONSE ACCELERATION	$S_{DS}$	0.138	SECTION 1615.1.3
DESIGN SPECTRAL RESPONSE ACCELERATION (1- SECOND RESPONSE)	$S_{D1}$	0.080	SECTION 1615.1.3
RISK CATEGORY	-	III	SECTION 1615.2
SEISMIC DESIGN CATEGORY	-	B	TABLE 1610.3
SEISMIC IMPORTANCE FACTOR	$I_E$	1.25	TABLE 1604.5
DESIGN BASE SHEAR	-	41 kips	SECTION 1617.4
ANALYSIS PROCEDURE	-	EQUIVALENT LATERAL FORCE	SECTION 1617
BASIC STRUCTURAL SYSTEM	-	STEEL FRAME SYSTEM	TABLE 1617.6.2
BASIC SEISMIC-FORCE-RESISTING SYSTEM	-	CENTRICALLY BRACED FRAME	TABLE 1617.6.2
SEISMIC RESPONSE COEF.	$C_s$	0.057	TABLE 1617.6.2
RESPONSE MOD. FACTOR	R	3	TABLE 1617.6.2

SNOW LOAD DESIGN SCHEDULE			
2015 INTERNATIONAL BUILDING CODE			
ITEM	SYMBOL	VALUE	REFERENCE
GROUND SNOW LOAD	$P_g$	25	FIGURE 1609.2
SNOW EXPOSURE FACTOR	$C_e$	1.0	TABLE 7.3 (ASCE-7)
SNOW LOAD IMPORTANCE FACTOR	$I$	1.1	TABLE 7.4 (ASCE-7)
THERMAL FACTOR	$C_t$	1.2	TABLE 7.3 (ASCE-7)
FLAT-ROOF SNOW LOAD	$P_f$	25	SECTION 7.3 (ASCE-7)


COLUMN SCHEDULE				
MARK	SIZE	BASE PLATE (A36)	A.B. (F1554)	NOTES
SC1	W10X39	1-1/4"x16"x1'-4"	(4) 1"Ø (G50)	
-	-	-	-	
-	-	-	-	
-	-	-	-	

TOWER AND BOARDWALK DECK CONSTRUCTION SCHEDULE							
TYPE	SECTION	CONCRETE (UNIT / REQST)	DECK	REINFORCING	ADDITIONAL NOTES	DESCRIPTION	
S1			4x6 SOUTHERN YELLOW PINE WOOD BEAMING (PRESSURE TREATED)			SLAB TYPE DK1: 3/4 x 6 SOUTHERN YELLOW PINE WOOD BEAMING (PRESSURE TREATED)	

PILE DESIGN LOADS KIPS/PILE (SERVICE)			
CONDITION	ABUTMENT	BOARDWALK	VIEWING AREA
VERTICAL PILE - COMPRESSION	8.2	8.2	25
VERTICAL PILE - TENSION (DUE TO UPLIFT)	—	4.5	10
BATTERED PILE - TENSION OR COMPRESSION	—	8.9	—

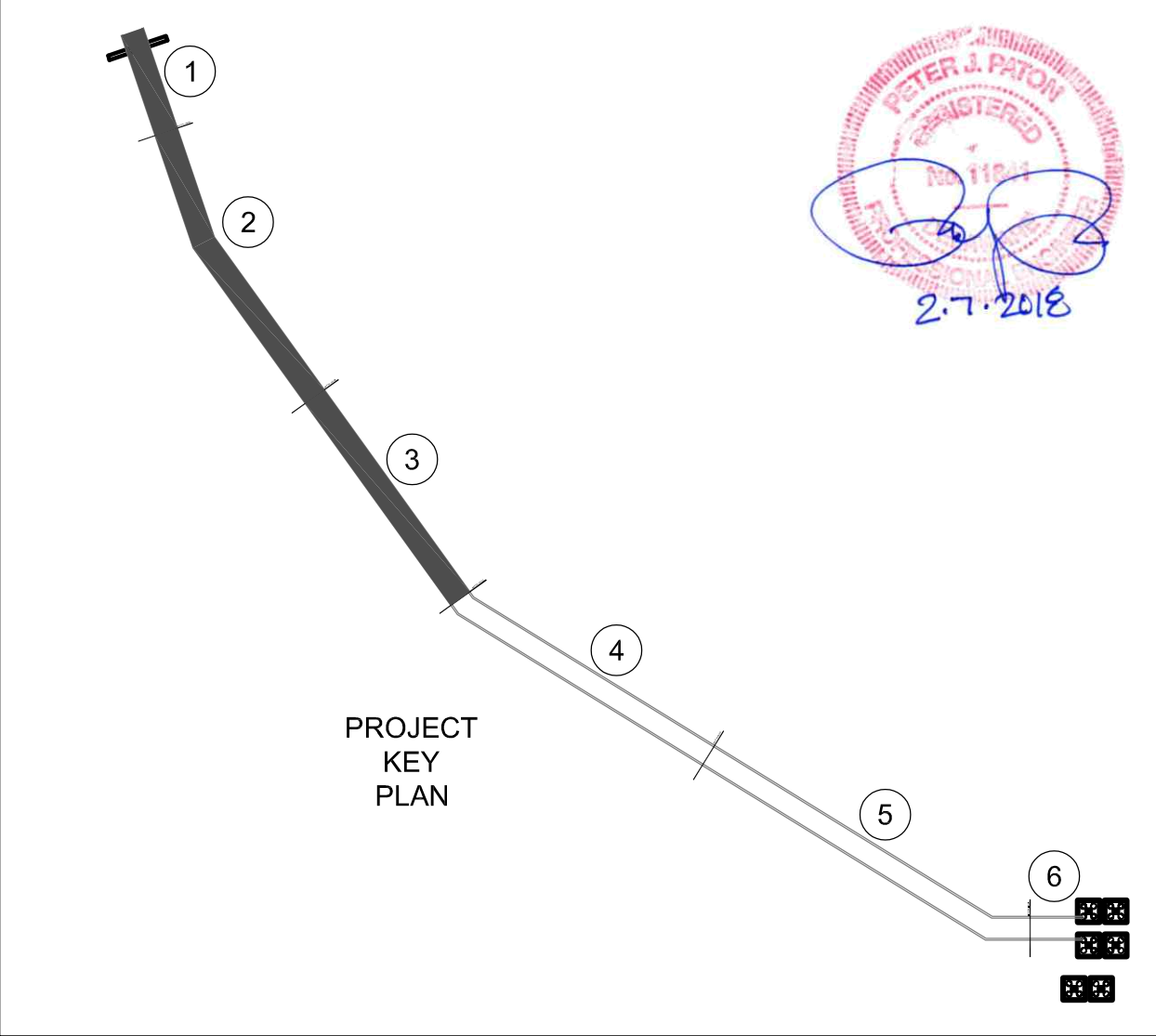
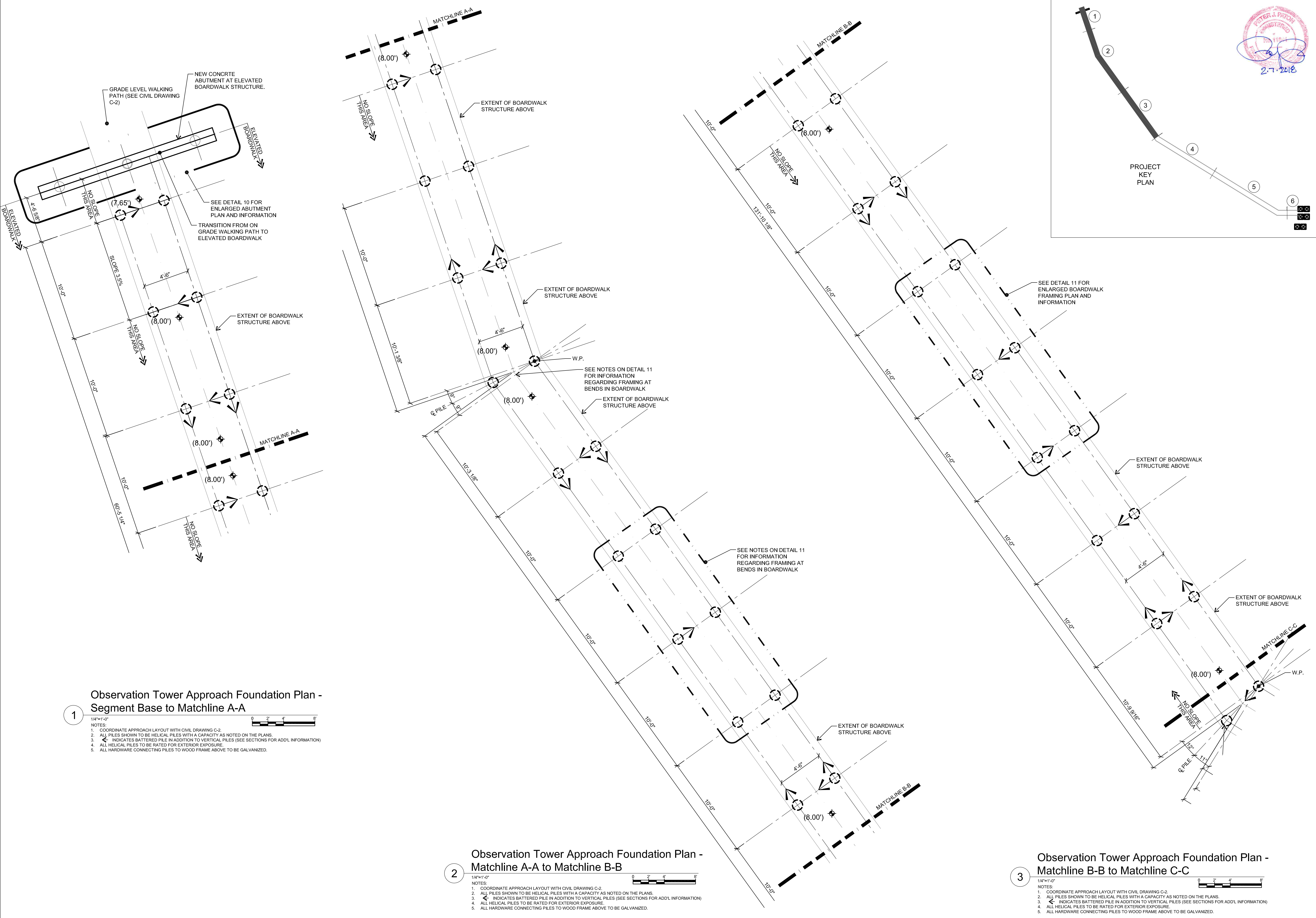
NOTE: BATTERED PILE LOADS HAVE BEEN RESOLVED TO ACT ALONG THE SHAFT OF THE PILE AT 2V:1H BATTER. LATERAL PILE LOADS ACT AT THE PILE CAP ELEVATION.



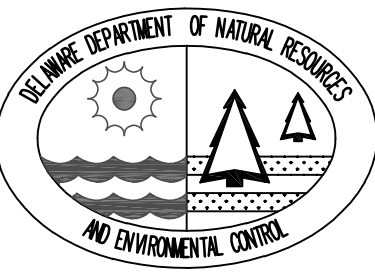
	<b>DELAWARE'S BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER</b>		<b>DATE:</b>	<b>DESCRIPTION:</b>	<b>BY:</b>
			7.14.2017 50% SUBMITTAL		PJP
			11.2.2017 ISSUED FOR PERMIT		
			12.1.2017 ISSUED FOR BID		
		<b>STRUCTURAL SCHEDULES</b>			
DESIGNED BY: P2STRENG					
DRAWN BY: P2STRENG					
BUILDING NO.: N/A					
DATE: DECEMBER 1, 2017					
SCALE: 					
SHEET NO.: <b>S-3</b>					
DFW PROJECT #: FW-2-15					
CONTRACT #: FW-2-15					



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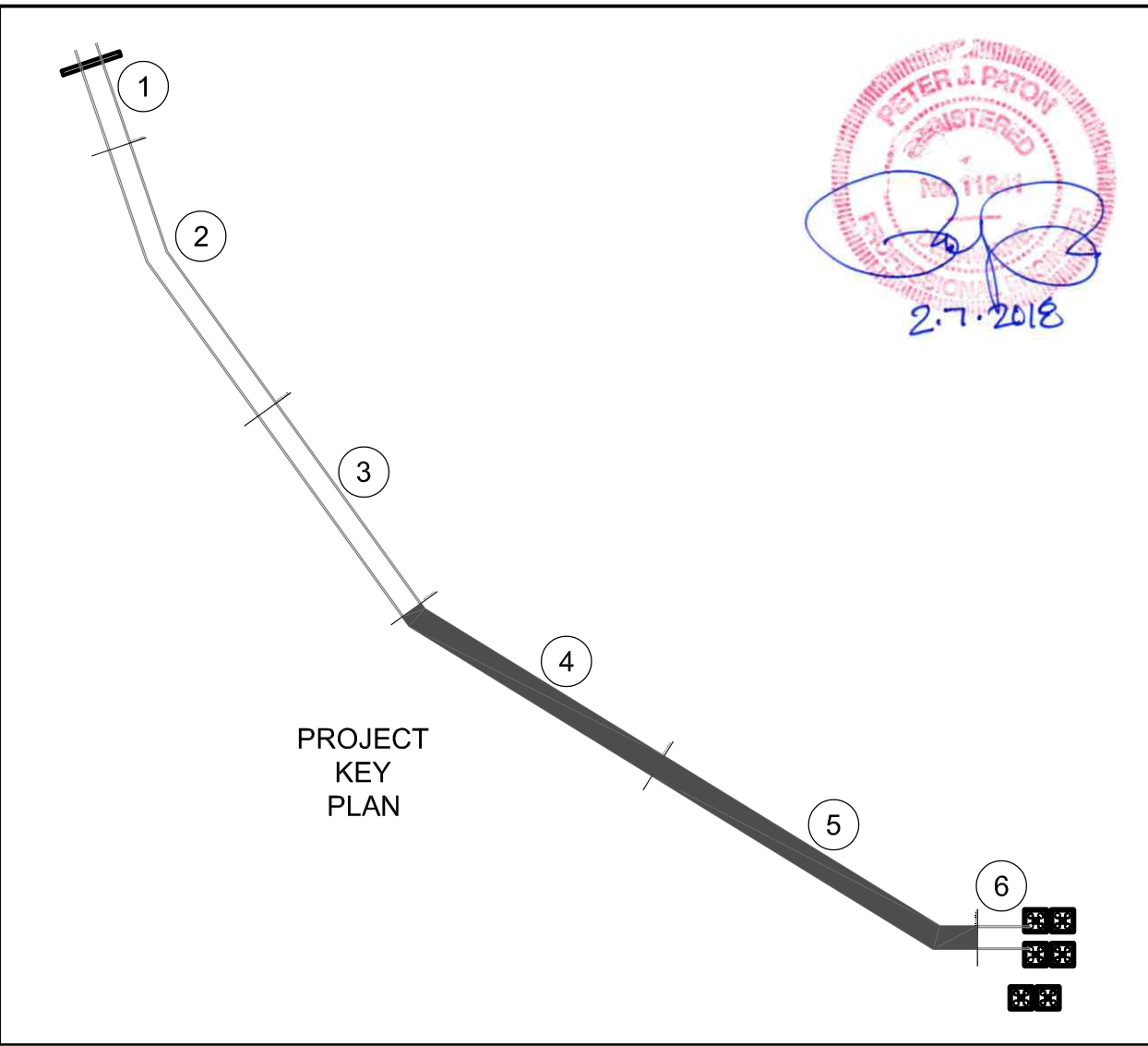
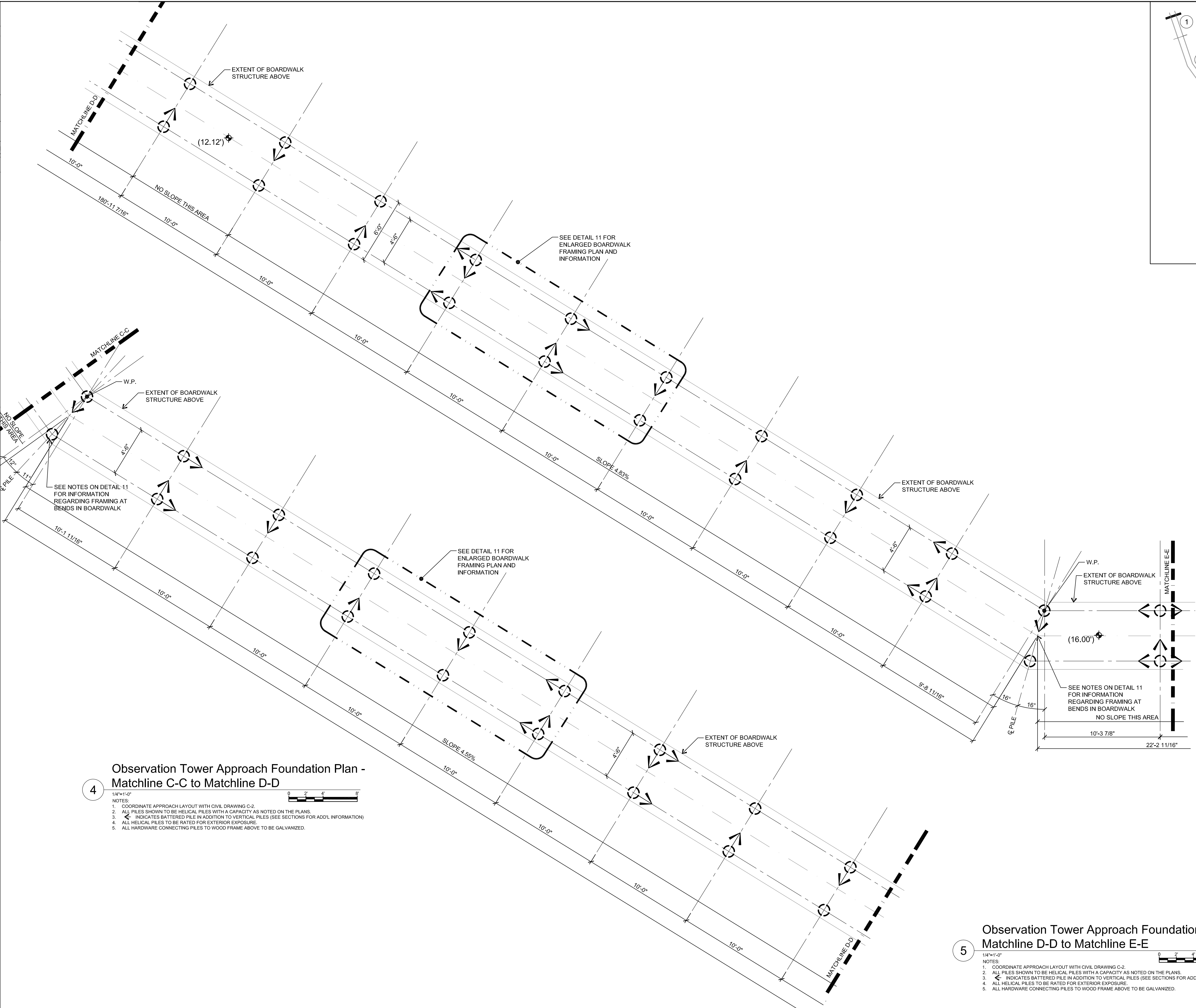


PETER J. PATON  
REGISTERED  
2-7-2018

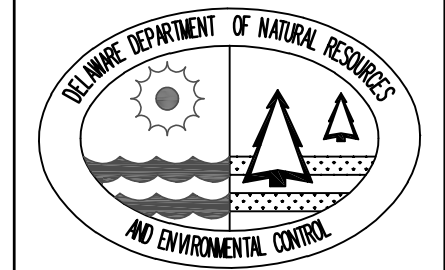
BY:	PJP
DATE:	7.14.2017 50% SUBMITTAL
DESCRIPTION:	11.2.2017 ISSUED FOR PERMIT
	12.1.2017 ISSUED FOR BID
DELAWARE'S BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER BOARDWALK FOUNDATION PLAN SHEET 1	
	
DESIGNED BY:	P2STRENG
DRAWN BY:	P2STRENG
BUILDING NO.:	N/A
DATE:	DECEMBER 1, 2017
SCALE:	
SHEET NO.:	S-4
DFW PROJECT #:	FW-2-15
CONTRACT #:	FW-2-15




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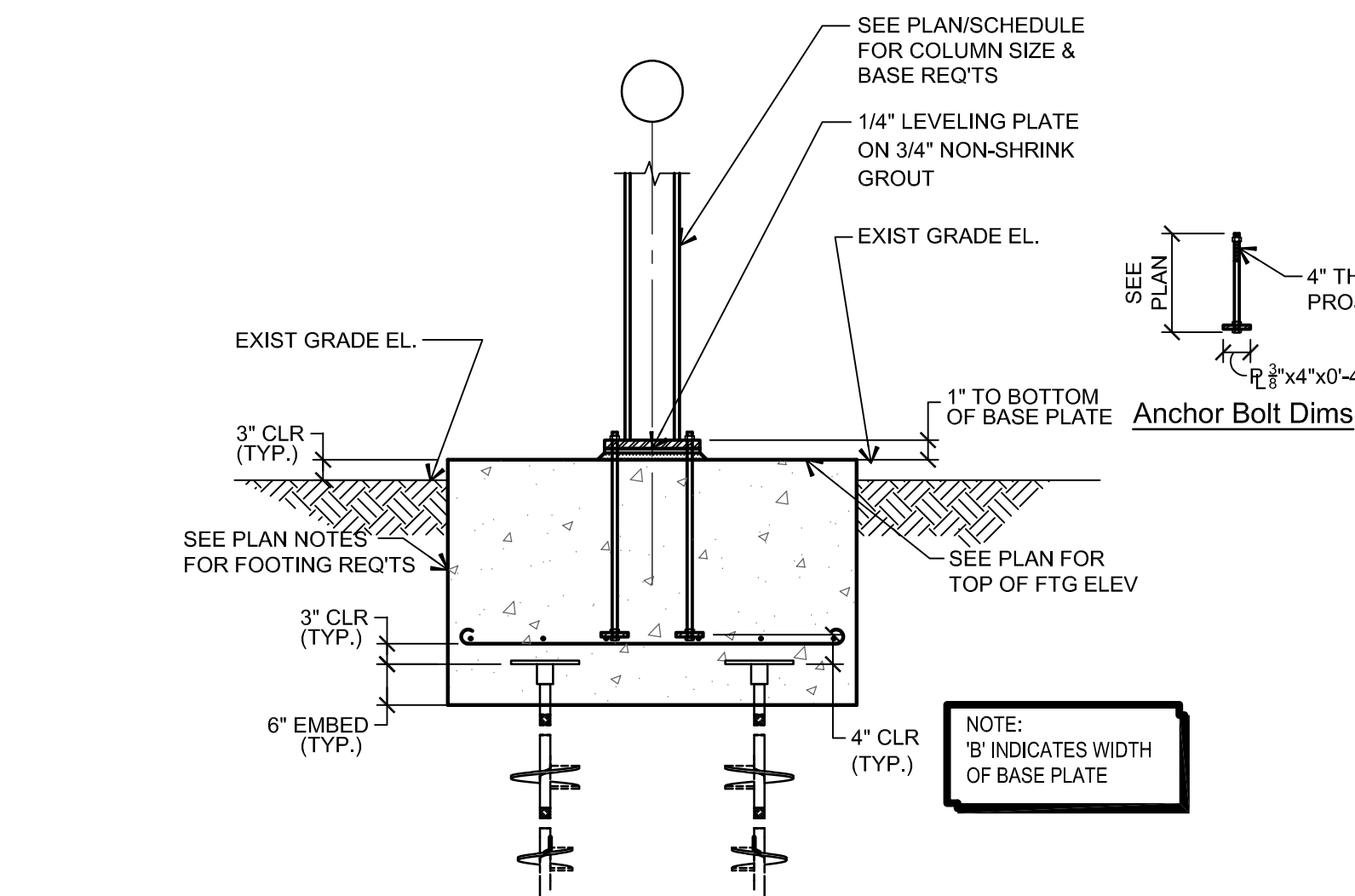
DELAWARE'S BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER BOARDWALK FOUNDATION PLAN SHEET 2	DATE: 7.14.2017 50% SUBMITTAL 11.2.2017 ISSUED FOR PERMIT 12.1.2017 ISSUED FOR BID	BY: PJP
	DESCRIPTION:	
	DESIGNED BY: P2STRENG DRAWN BY: P2STRENG BUILDING NO.: N/A DATE: DECEMBER 1, 2017 SCALE:	
	SHEET NO.: S-5 DFW PROJECT #: FW-2-15 CONTRACT #: FW-2-15	



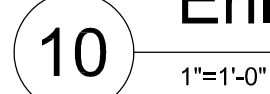


	<b>DESIGNED BY:</b> P2STRENG	
	<b>DRAWN BY:</b> P2STRENG	
	<b>BUILDING NO.:</b> N/A	
	<b>DATE:</b> DECEMBER 1, 2017	
	<b>SCALE:</b> 	
<b>SHEET NO.:</b> <h1>S-6</h1>		
<b>DFW PROJECT #:</b> FW-2-15		
<b>CONTRACT #:</b> FW-2-15		

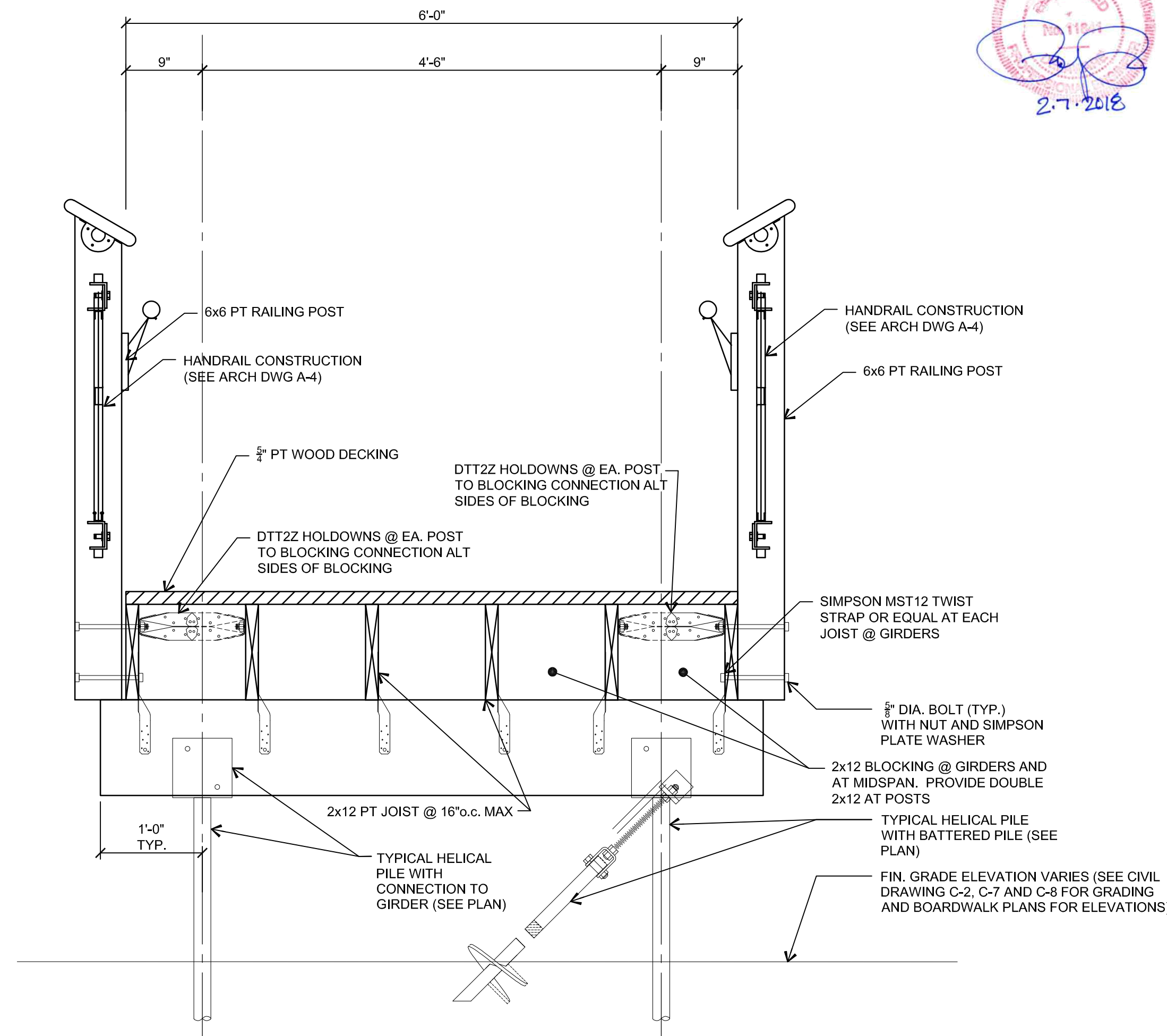




26 1/2"=1'-0"


$$1'' = 1' - 0''$$


- 1/4"=1'-0"
- NOTES:
1. COORDINATE ALL DIMENSIONS WITH PLANS
  2. SEE PLAN FOR ALL BEAM AND COLUMN SIZES.
  3. [...] INDICATES TENSION AND/OR COMPRESSION BRACE FORCE IN KIPS.  $\frac{1}{2}$  STRESS INCREASE IS NOT PERMITTED.
  4. ALL BOLTS TO BE SLIP CRITICAL BOLTS UNLESS NOTED OTHERWISE.
  5. SEE PLAN FOR COLUMN ORIENTATION
  6. ALL STEEL TO BE ASTM A588 WEATHERING STEEL.
  7. ALL BOLTS TO BE GALVANIZED TENSION CONTROLLED BOLTS.
  8. GRADE TO SLOPE AWAY FROM TOP OF FOUNDATIONS MAX 3:1 SLOPE.
- 0 2' 4'



1"=1'-0"

NOTES:


1. COORDINATE ALL RAILING FINISHES, PROFILES, ETC WITH ARCHITECTURAL DRAWINGS (DRAWING A-4)

A horizontal graphic scale bar with alternating black and white segments. It is marked with '0' at the left end, '1'' at the first full segment end, and '2'' at the right end.

1/2"=1'-0"

NOTES:

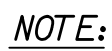
1. FOR BENDS IN BOARDWALK AND JOIST SPANS > 10'-0" PROVIDE (3) 2x12 GIRDER @ BEND AND ADJACENT GIRDER
2. PROVIDE DOUBLE JOISTS AT ALL BENDS IN BOARDWALK AND SPANS > 10'-0:

	DELAWARE'S BAYSHORE BYWAY LITTLE CREEK BOARDWALK AND WILDLIFE OBSERVATION TOWER		DATE:	DESCRIPTION:	BY:
			7.14.2017 50% SUBMITTAL		PJP
			11.2.2017 ISSUED FOR PERMIT		
			12.1.2017 ISSUED FOR BID		
		OBSERVATION TOWER SECTIONS			









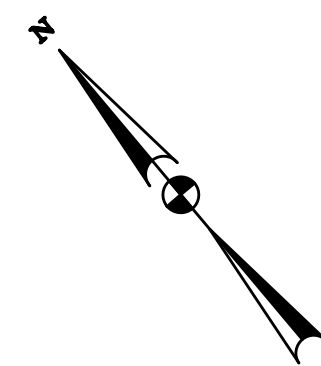
GENERAL SEQUENCE OF CONSTRUCTION:

- OWNER'S CERTIFICATION

I, \_\_\_\_\_, HEREBY CERTIFY THAT ALL LAND CLEARING, CONSTRUCTION AND DEVELOPMENT SHALL BE PURSUANT TO THE APPROVED PLAN AND RESPONSIBLE PERSONS INVOLVED WILL HAVE A CERTIFICATE OF TRAINING FROM THE DEPARTMENT OF NATURAL RESOURCES (DNREC). DNREC PERSONNEL SHALL HAVE THE RIGHT TO CONDUCT ON-SITE INSPECTIONS.

DATE \_\_\_\_\_

*SIGNATURE*



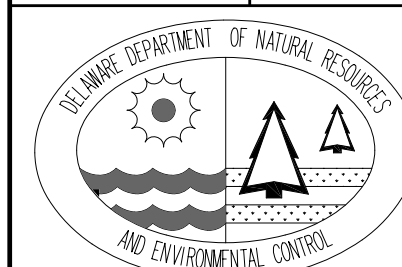
## EROSION & SEDIMENT CONTROL DEVICES



- - -9- - - CONTOUR LINE



**DELAWARE BAYSHORE BYWAY  
LITTLE CREEK BOARDWALK AND  
WILDLIFE OBSERVATION TOWER**



DESIGNED BY:

RKK

DRAWN BY:

RKK

BUILDING NO.:

N/A

DATE: \_\_\_\_\_

DECEMBER 1, 2017

SCALE:

$$1'' = 30'$$

SHEET NO.:

SHEET NO..

ES-1

DFW PROJECT #:


FW-2-15

CONTRACT #:

FW-2-15







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 spots and littering is strictly prohibited. Recycle bins shall be placed near the construction trailer.

f. If fertilizer 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, pipes 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-3.6.1 Sheet 4 of 5



Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control

Notes (cont.)

e. Contact information for reporting spills through the DNREC 24-Hour Toll Free Number shall be prominently posted.

6. Education

a. Best management practices for construction site pollution control shall be a part of regular progress meetings.

b. Information regarding waste management, equipment maintenance and spill prevention shall be prominently posted in the construction trailer.

CONTACT INFORMATION


DNREC 24-Hour Toll Free Number800-662-8802

DNREC Solid & Hazardous Waste Branch302-739-9403

Source: Adapted from USEPA Pub. 840-B-92-002

Symbol:

Detail No. DE-ESC-3.6.1 Sheet 5 of 5



Standard Detail & Specifications

Sensitive Area Protection

Drip line

Protective device

Limit of disturbance

Proposed grading

5'

Min.

\*5' min. setback applies to all sensitive areas covered by this specification.

Location of Sensitive Area Protection

Drip line

Snow fence

Board fence

Plastic fence


Cord fence

Methods of Sensitive Area Protection

Source: Adapted from VA ESC Handbook

Symbol: SAP

Detail No. DE-ESC-3.7.2 Sheet 1 of 3  
Date: 03/13



Standard Detail & Specifications

Sensitive Area Protection

Construction Notes:

Fencing shall be installed at the extents of all sensitive areas. For trees, the fencing shall be installed outside the dripline (mature canopy) and at no time within 5 feet of the trunk. Personnel must be instructed to honor protective devices. The devices described are suggested only, and are not intended to exclude the use of other devices which will protect the trees to be retained. If silt fence is to be used for demarcation purposes, appropriate signage shall be provided a minimum of every 20 feet denoting the area as a sensitive area protection zone.

Materials:

1. Snow Fence - Standard 40-inch high snow fence shall be placed at the limits of clearing or construction on standard steel posts set 6 feet apart.

2. Board Fence - Board fencing consisting of 4-inch square posts set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing with a minimum of two horizontal boards between posts. For tree protection, if it is not practical to erect a fence at the drip line, construct a triangular fence nearer the trunk. The limits of clearing will still be located at the drip line, since the root zone within the drip line will still require protection.

3. Plastic Fencing - 40-inch high "international orange" plastic (polyethylene) web fencing secured to conventional metal "T" or "U" posts driven to a minimum depth of 18 inches on 6-foot minimum centers shall be installed at the limits of clearing. The fence should have the following minimum physical qualities:

a. Tensile yield:Average 2,000 lbs. per 4-foot width (ASTM D638)

b. Ultimate tensile yield:Average 2,900 lbs. per 4-foot width (ASTM D638)


c. Elongation at break (%):Greater than 1000% (ASTM D638)

d. Chemical resistance:Inert to most chemicals and acids

Source: Adapted from VA ESC Handbook

Symbol: SAP

Detail No. DE-ESC-3.7.2 Sheet 2 of 3  
Date: 03/13



Standard Detail & Specifications

Sensitive Area Protection

4. Cord Fence - Posts with a minimum size of 2 inches square or 2 inches in diameter set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing with two rows of cord 1/4-inch or thicker at least 2 feet apart running between posts with strips of colored surveyor's flagging tied securely to the string at intervals no greater than 3 feet.

5. Earth Berms - Temporary earth berms shall be constructed according to specifications for a Temporary Earth Dike with the base of the berm on the sensitive area side located along the limits of clearing. Earth berms may not be used for this purpose if their presence will conflict with drainage patterns.

6. Trunk Armoring (Tree Protection Only) - As a last resort, a tree trunk can be armored with burlap wrapping and 2-inch studs wired vertically no more than 2 inches apart to a height of 5 feet encircling the trunk. If this alternative is used, the root zone within the drip line will still require protection. Nothing should ever be nailed to a tree.

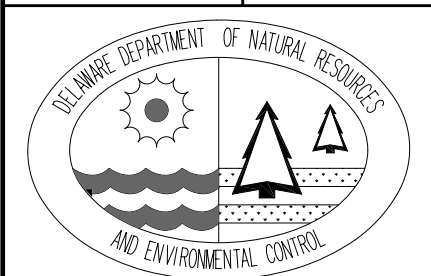
Maintenance:

Fencing and armoring devices shall be in place before any excavation or grading is begun, shall be kept in good repair for the duration of construction activities, and shall be the last items removed during the final cleanup after the completion of the project.

Source: Adapted from VA ESC Handbook

Symbol: SAP

Detail No. DE-ESC-3.7.2 Sheet 3 of 3  
Date: 03/13



DESIGNED BY:RKK

DRAWN BY:RKK

BUILDING NO.:N/A

DATE:DECEMBER 1, 2017

SCALE:NOT TO SCALE

SHEET NO.:ES-3

DFW PROJECT #:FW-2-15

CONTRACT #:FW-2-15

DELAWARE BAYSHORE BYWAY  
LITTLE CREEK BOARDWALK AND  
WILDLIFE OBSERVATION TOWER

EROSION AND SEDIMENT CONTROL DETAILS

DATE:7/14/1750% SUBMITTAL  
11/2/17ISSUED FOR PERMIT  
12/1/17ISSUED FOR BID

DESCRIPTION:

BY: