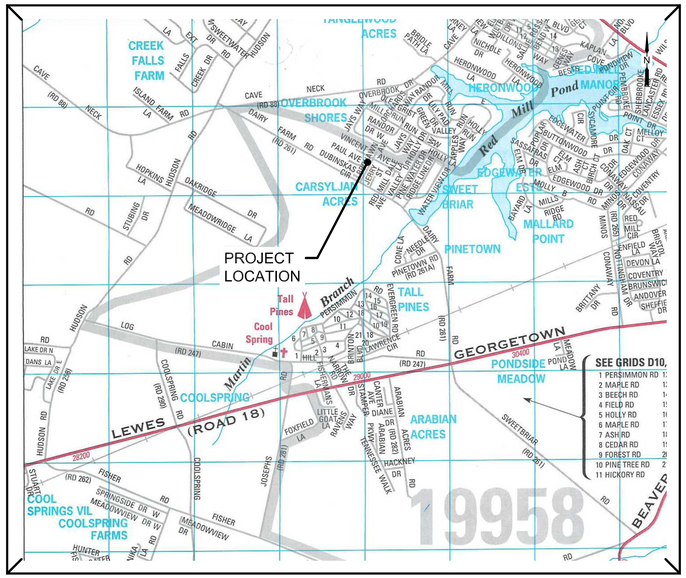
CARSYLJAN ACRES

DRAINAGE IMPROVEMENTS and ROAD REHABILTATION PROJECT

RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE



LOCATION MAP

SHEET INDEX

SHEET NO.	TITLE
1	COVER SHEET
2	OVERALL SITE PLAN
3	PAUL AVE PLAN - PROFILE PLAN
4	W. VINCENT AVE PLAN - PROFILE PLAN
5	E. VINCENT AVE. PLAN-PROFILE PLAN
6	BROHAWN AVE. PLAN - PROFILE PLAN
7	DALE LANE PLAN - PROFILE PLAN
8	CONSTRUCTION DETAILS AND NOTES
9	CONSTRUCTION DETAILS AND NOTES
10	ESC PLAN 1
11	ESC PLAN 2
12	ESC DETAILS
13	ESC DETAILS
14	MOT PLAN

PERMITTEE CERTIFICATION:

I, THE UNDERSIGNED, CERTIFY THAT ALL LAND CLEARING AND CONSTRUCTION SHALL BE DONE PURSUANT TO THE APPROVED PLAN AND THAT RESPONSIBILE PERSONNEL (I.E., BLUE CARD HOLDER) INVOLVED IN THE LAND DISTURBANCE WILL HAVE A CERTIFICATION OF TRAINING PRIOR TO INITIATION OF THE PROJECT, AT A DNREC SPONSORED OR APPROVED TRAINING COURSE FOR THE CONTROL OF EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION. IN ADDITION, I GRANT THE DEPARTMENT OR DELEGATED INSPECTION AGENCY THE RIGHT TO CONDUCT ON-SITE INSPECTIONS, AND I UNDERSTAND MY RESPONSIBILITIES UNDER THE NPDES CONSTRUCTION GENERAL PERMIT.

NAME _____ TITLE _____

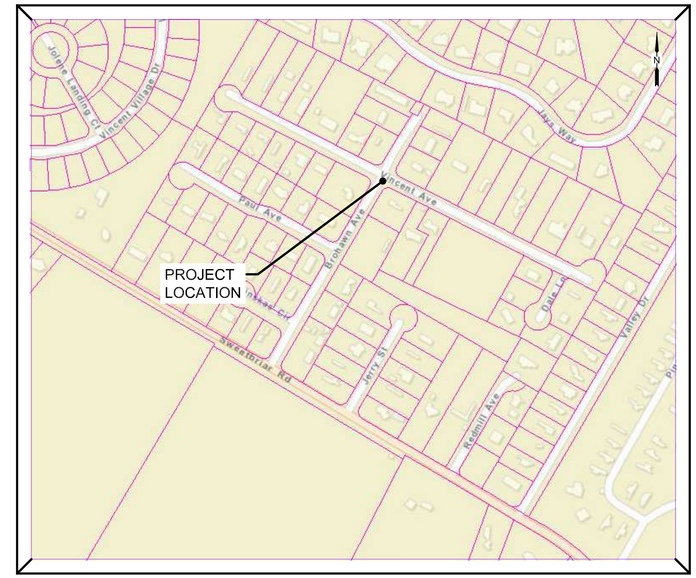
SIGNATURE _____ DATE _____

LEGEND

EXISTING	PROPOSED
BUILDING	BUILDING
BRIDGE	BRIDGE
BOTTOM WIDTH LEFT	BOTTOM WIDTH LEFT
BOTTOM WIDTH RIGHT	BOTTOM WIDTH RIGHT
CENTERLINE DITCH	CENTERLINE DITCH
CENTERLINE DITCH STATION MAJOR (0+00)	CENTERLINE DITCH STATION MAJOR (0+00)
CENTERLINE DITCH STATION MINOR (0+50)	CENTERLINE DITCH STATION MINOR (0+50)
CENTERLINE ROAD	CONTOUR MAJOR (10)
CONTOUR MAJOR (10)	CONTOUR MINOR (10)
CONTOUR MINOR (10)	CONCRETE
CONCRETE	EASEMENT
EASEMENT	EDGE OF PAVEMENT
EDGE OF PAVEMENT	EDGE OF GRAVEL
EDGE OF GRAVEL	FENCELINE
FENCELINE	GEOMORPHOLOGY FEATURE
GEOMORPHOLOGY FEATURE	GRADE PROFILE
HYDROLOGIC DRAINAGE AREA	HYDROLOGIC DRAINAGE AREA
HYDROLOGIC SOIL TYPE	HYDROLOGIC DRAINAGE AREA HATCH
HYDROLOGIC SOIL GROUP	HYDROLOGIC DRAINAGE AREA LANDUSE
HYDROLOGIC TIME OF CONCENTRATION	HYDROLOGIC TIME OF CONCENTRATION
MAILBOX	NORMAL WATER SURFACE ELEVATION
MARSHLINE	RIPRAP
ORDINARY HIGH WATER	SIDEWALK
PROPERTY LINE	SIGN
RAILROAD TRACKS	STORMWATER PIPE
RIPRAP	STORMWATER STRUCTURE
SHEETPILE	TAX DITCH RIGHT-OF-WAY
SIDEWALK	TAX DITCH SPECIAL RIGHT-OF-WAY
SIGN	TOP OF BANK LEFT
STORMWATER PIPE	TOP OF BANK RIGHT
STORMWATER STRUCTURE	TREE
TAX DITCH RIGHT-OF-WAY	TEXT
TAX DITCH SPECIAL RIGHT-OF-WAY	WATERSHED DRAINAGE AREA
TOP OF BANK RIGHT	WOODSLINE
TOP OF BANK LEFT	ESTIMATED CUT
TREE	ESTIMATED FILL
TEXT	COMPOST LOG
UTILITY: COMMUNICATION CABLE — COMM —	LIMIT OF DISTURBANCE — LOD — LOD —
UTILITY: OVERHEAD WIRE — OH — OH — OH —	TEMPORARY CONSTRUCTION - EASEMENT — TCE — TCE —
UTILITY POLE	SILT FENCE — SF — SF — SF —
UTILITY: ELECTRIC — E — E —	SUPER SILT FENCE — SSF — SSF —
UTILITY: GAS — GAS —	PLANTING AREA
UTILITY: SANITARY SEWER — S — S —	SEEDING AREA
UTILITY: WATER — W — W —	
WATERSHED DRAINAGE AREA	
WETLAND	
WOODSLINE	

MISCELLANEOUS

MATCHLINE
SOIL BORING
CROSS-SECTION X - 1 X - 1



LOCATION MAP

LICENSED PROFESSIONAL CERTIFICATION:

I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF DELAWARE, THAT THE INFORMATION SHOWN HEREON HAS BEEN PREPARED UNDER MY SUPERVISION AND TO THE BEST OF MY KNOWLEDGE COMPLIES WITH THE APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES.

NAME _____ TITLE _____

SIGNATURE _____ DATE _____

REVISIONS

DATE	DESCRIPTION

Sussex conservation district

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
Division of Watershed Stewardship
Drainage Program
Dover Office
89 Kings Highway Phone:(302) 739 - 9921 Dover DE, 19901 Fax: (302) 739 - 6724
Georgetown Office
21309 Berlin Rd. Unit 6 Phone:(302) 855 - 1930 Georgetown DE, 19947 Fax:(302) 855 - 7059

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
COVERSHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 1 of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP, 21-131,\Other DWGS\Carsyljan Acres OC-bidset final\6.1.21.dwg Layout:COVERSHEET 1 User: james.elliott Plot time: 09-09-21 @ 12:40pm

DEMO NOTES:

A. REMOVE EXISTING CULVERT AND PATCH ROAD ACCORDING TO DELDOT ROAD PATCH STANDARD

B. REMOVE EXISTING CULVERT AND CB AND REPLACE AS SHOWN IN PLAN

PLAN MAP

1" = 60'

0' 30' 60' 120' 180'

SCALE: 1" = 60'

REVISIONS

DATE	DESCRIPTION
4/26/21	DNREC COMMENTS
5/10/21	DELDOT COMMENTS
	DELDOT COMMENTS

Sussex Conservation District

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

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Dover DE, 19901 Fax: (302) 739 - 6724

Georgetown Office
21389 Iotlin Rd, Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 857 - 7089

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

CARSYLJAN ACRES

DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131

OVERALL SITE PLAN

RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021

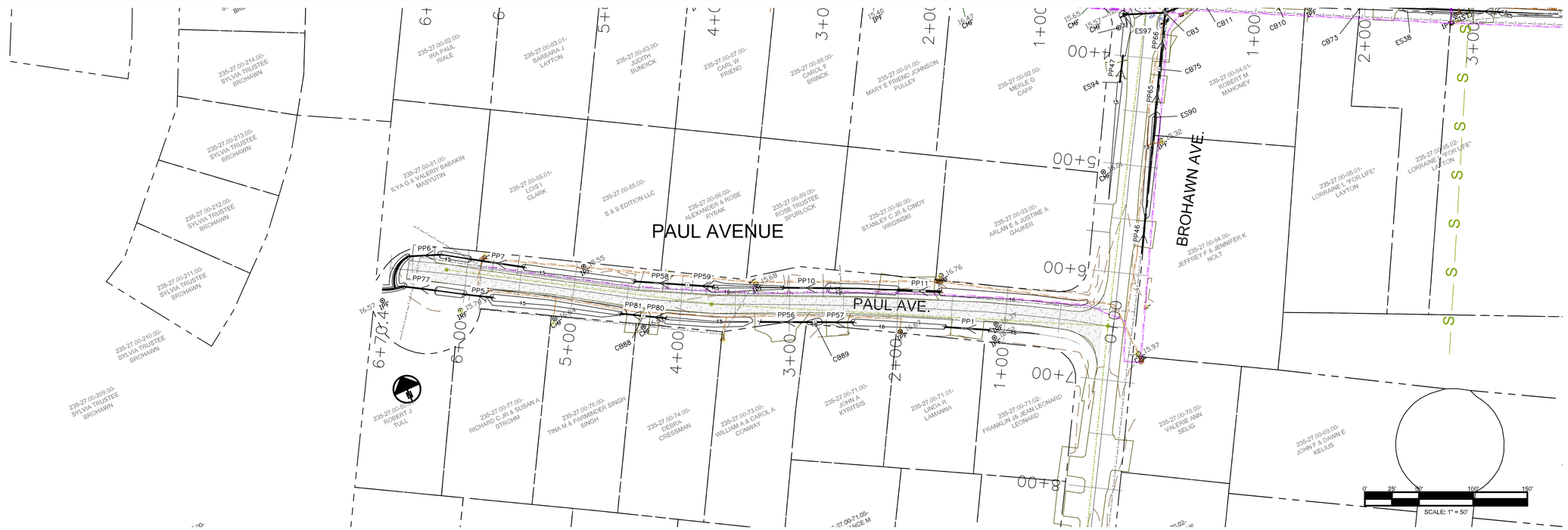
Designed: - JLE - AR

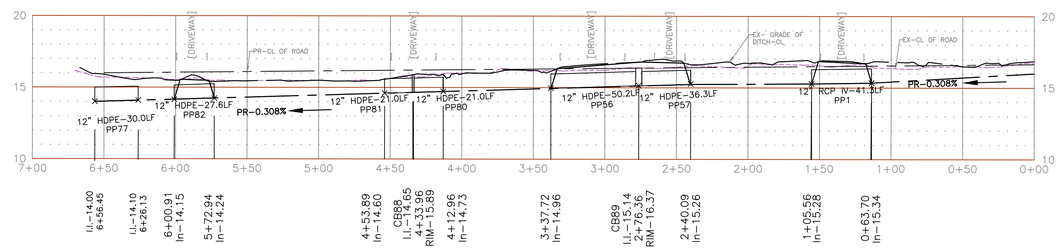
Planned: - KW -

Drawn: - JLE -

Sheet No. 2 of 14

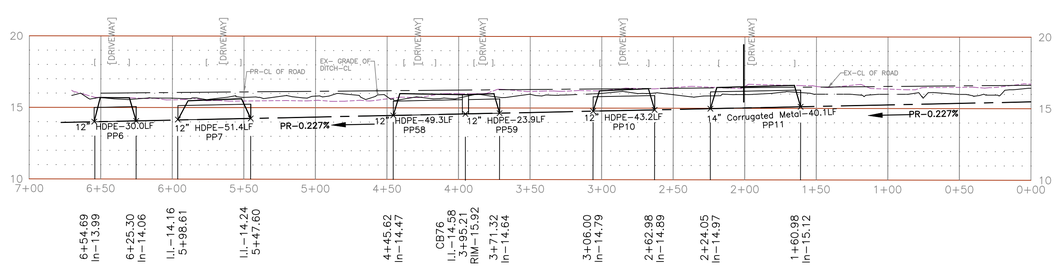
File Location: G:\Equipment Section\Projects\CARSYLLIAN ACRES - JORDAN DRAINAGE IMP_21-131,\Other DWGS\Carsylljan Acres OC-deldot final 6.1.21.dwg Layout:OVERALL SITE 2 User: james.elliott Plot time: 09-09-21 @ 12:40pm





PAUL AVE. LEFT- PROFILE

SCALE: H: 1"=50' / V:1"=5'



PAUL AVE. RIGHT- PROFILE

SCALE: H: 1"=50' / V:1"=5'

CONSTRUCTION NOTES:

1. ROAD PATCH PER DELDOT STANDARD INCLUDED IN PLAN
2. CONTRACTOR SHALL TEST PIT IN VARIOUS LOCATIONS TO VERIFY ADEQUATE UTILITY SEPARATION EXIST.
3. STAGING AREA IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. ALL DRIVEWAYS SHALL BE REPLACED AND REPAIRED IN KIND. COORDINATE ACCESS WITH PROPERTY OWNERS.
5. ALL MAILBOXES SHALL BE RELOCATED/REPLACED AS NEEDED. COORDINATE WITH PROPERTY OWNERS.
6. THE PR-CL OF ROAD IS AN ESTIMATED GRADE PER DELDOT GUIDANCE.
7. A PRE-PAVING SITE MEETING IS REQUIRED WITH DELDOT REP. PRIOR TO PAVING OF ROADS
8. PAVING THICKNESS PER TYPICAL DELDOT SECTION AND DELDOT REP. GUIDANCE.
9. ALL PAVED AREAS SHALL BE SAWCUT AT THE POINT WHERE IT MEETS EXISTING PAVEMENT. PROVIDE A SMOOTH TRANSITION AND STRAIGHT JOINT.
10. EXISTING MANHOLE RIMS SHALL BE ADJUSTED IN ELEVATION TO ESTABLISH ACCEPTABLE TRANSITIONS PER DLEDOT GUIDANCE.

PROPOSED OVERLAY AREA

SCALE: 1" = 50'

REVISIONS

DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

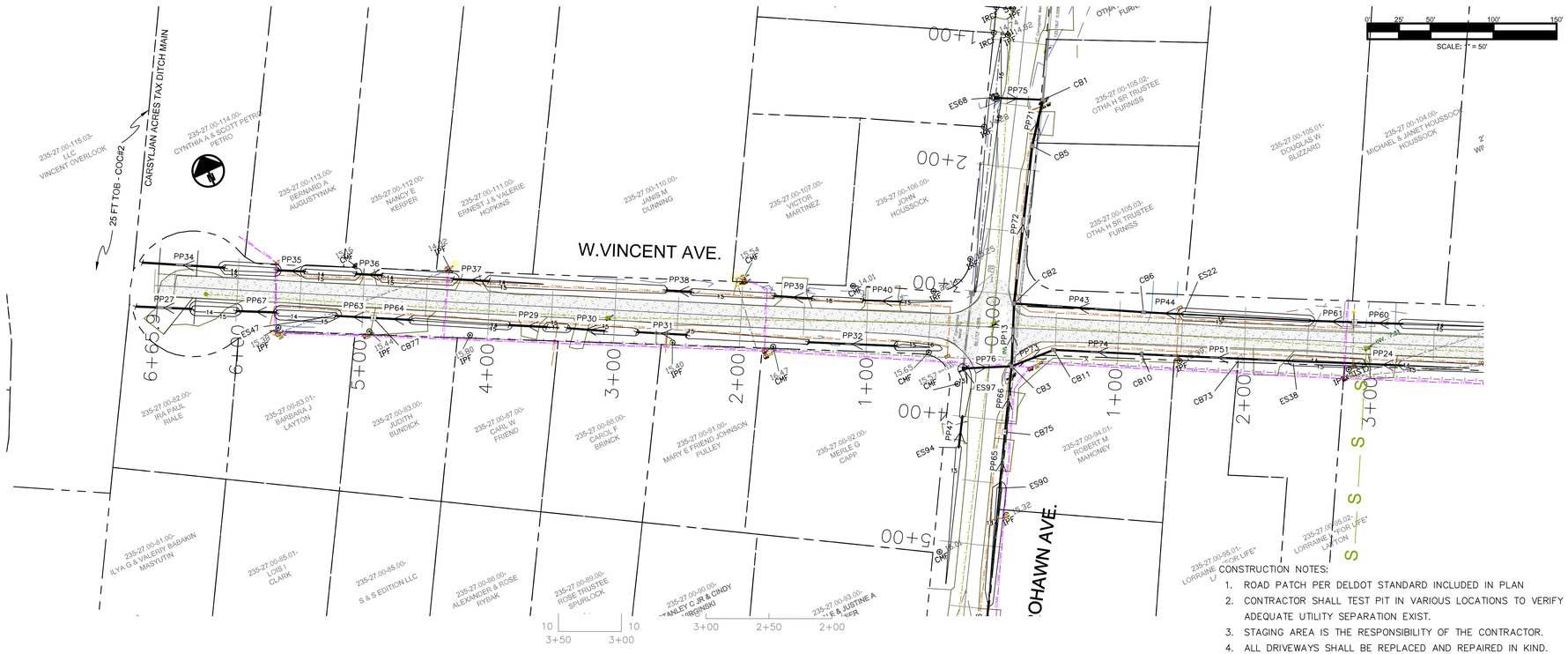
Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

Georgetown Office
21399 Iberlin Rd, Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
PAUL AVE. PLAN / PROFILE SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: JLE AR
Planned: KW
Drawn: JLE
Sheet No. 3 of 14



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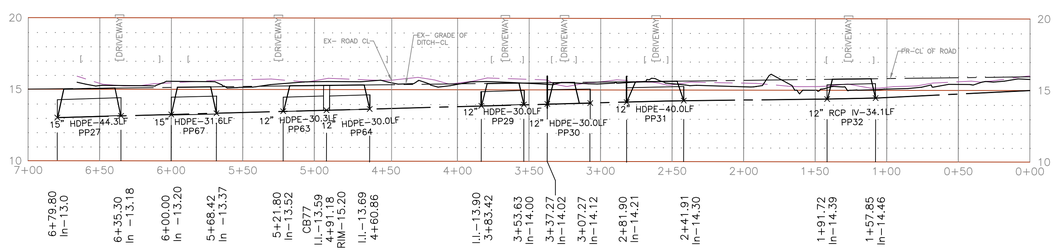
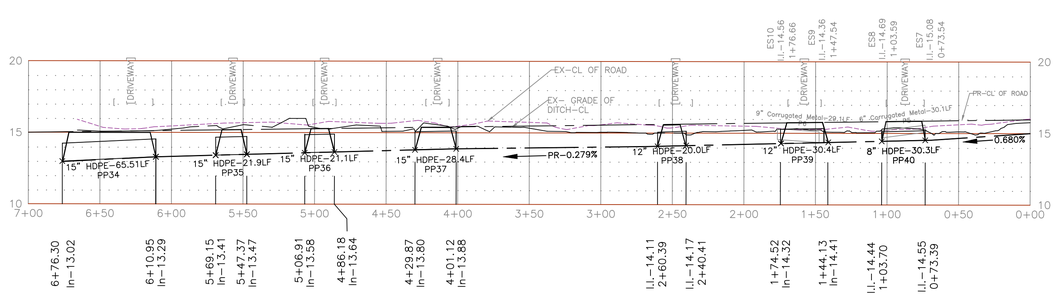
PROPOSED OVERLAY AREA



W. VINCENT AVE. LEFT-PROFILE

SCALE: H: 1"=50' / V:1"=5'



W. VINCENT AVE. RIGHT-PROFILE

SCALE: H: 1"=50' / V:1"=5'

SCALE: 1" = 50'

REVISIONS	
DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

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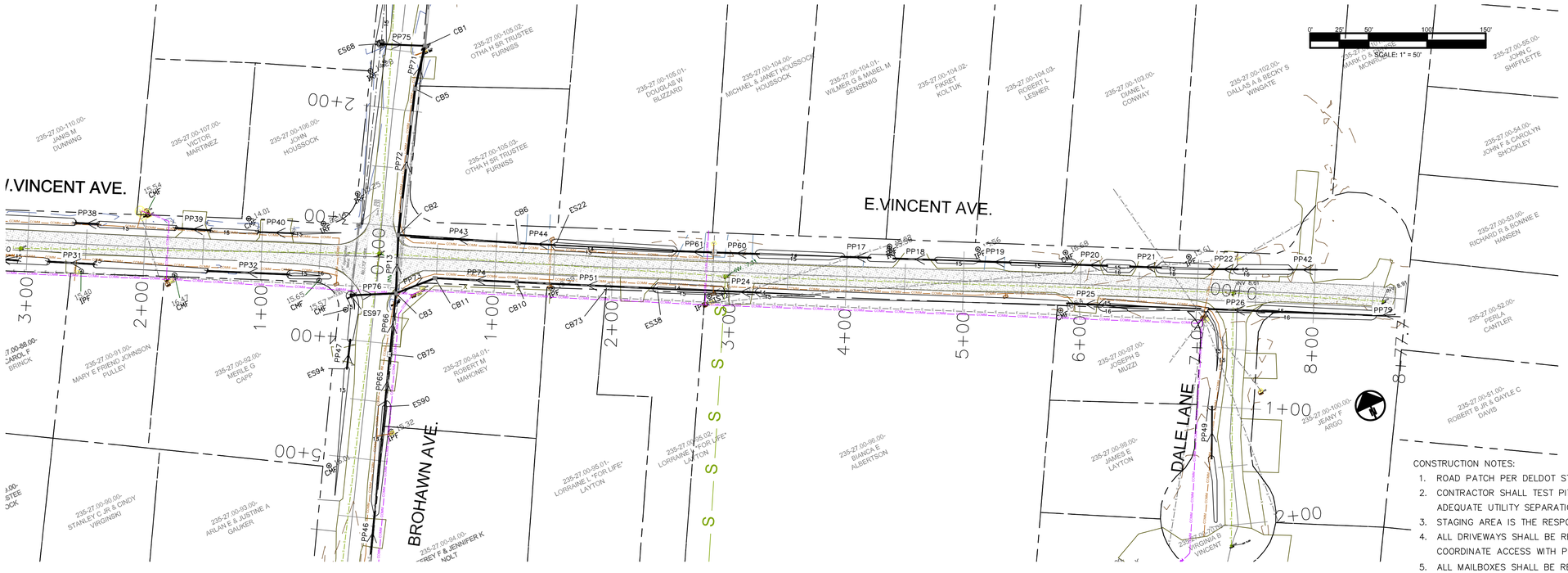
CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
W. VINCENT AVE. PLAN / PROFILE SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 4 of 14

File Location: G:\Equipment Section\Projects\CARSYLJIAN ACRES - JORDAN DRAINAGE IMP, 21-131,\Other DWGS\Carsyljan Acres OC-deldot final 6.1.21.dwg Layout:W. VINCENT AVE PLAN PROFILE 4 User: james.elliott Plot time: 09-09-21 @ 12:40pm



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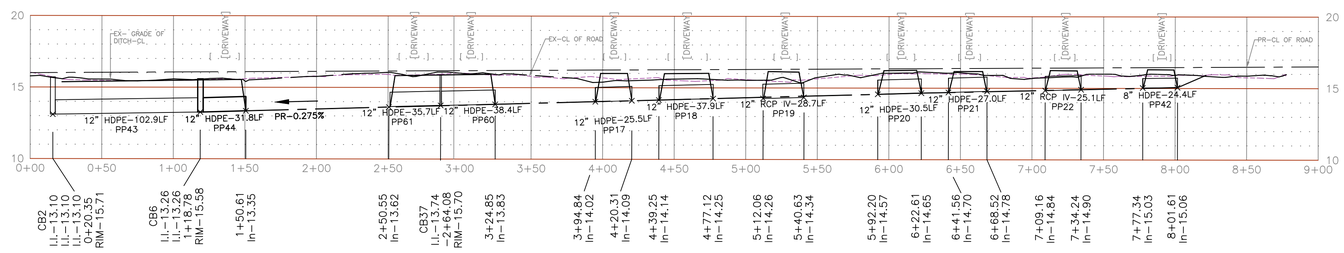
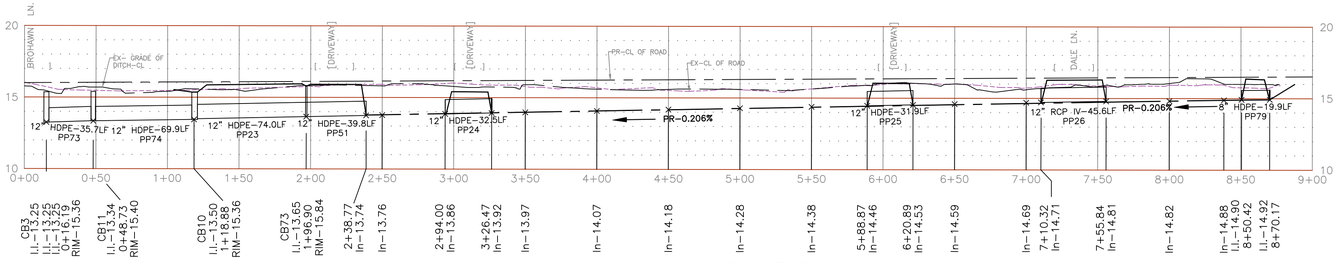


E. VINCENT AVE. LEFT- PROFILE



E. E.VINCENT AVE. RIGHT- PROFILE

SCALE: 1" = 50'

DATE	DESCRIPTION	REVISIONS

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

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21309 Berlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
E. VINCENT AVE. PLAN / PROFILE SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 5 of 14

File Location: G:\Equipment Section\Projects\CARSYLJIAN ACRES - JORDAN DRAINAGE IMP. 21-131,\Other DWGS\Carsyljan Acres OC-deldot final 6.1.21.dwg Layout:E. VINCENT PLAN PROFILE 5 User: james.elliott Plot time: 09-09-21 @ 12:40pm

CONSTRUCTION NOTES:

1. ROAD PATCH PER DELDOT STANDARD INCLUDED IN PLAN
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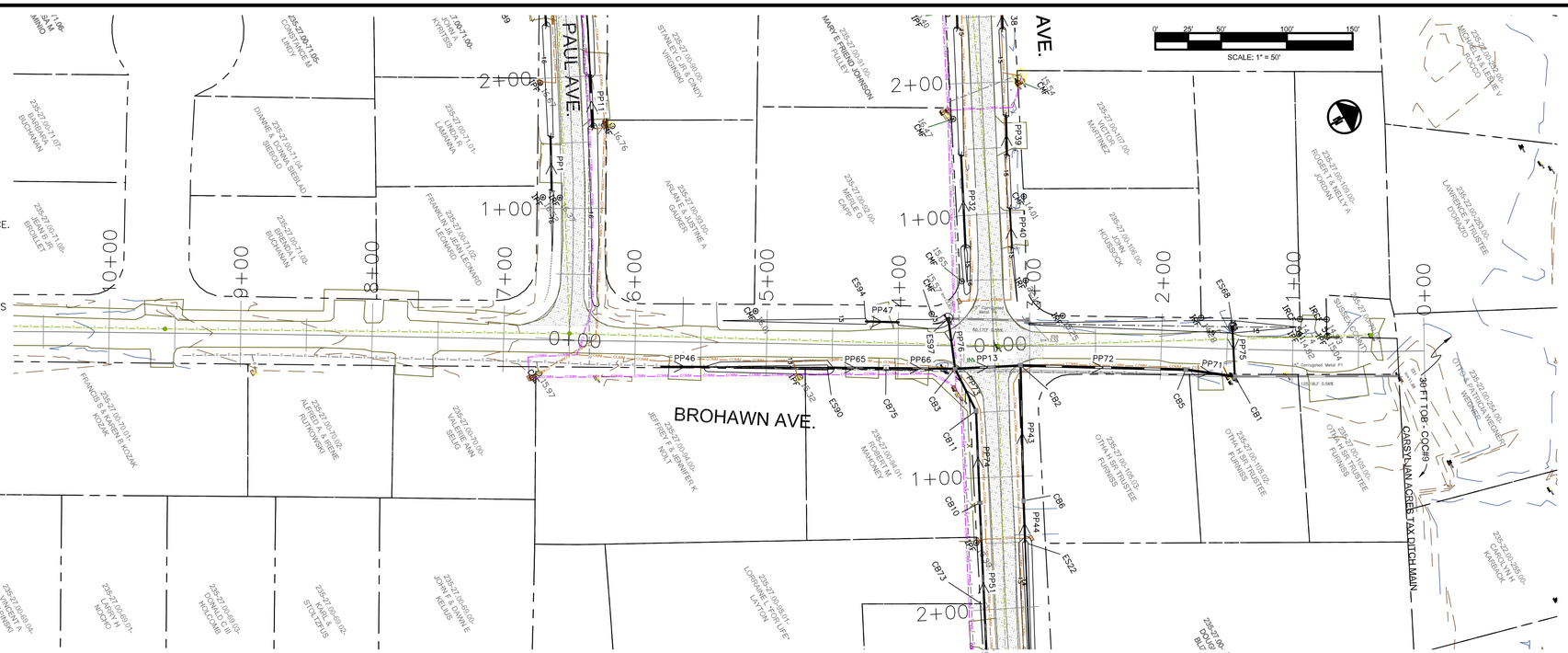
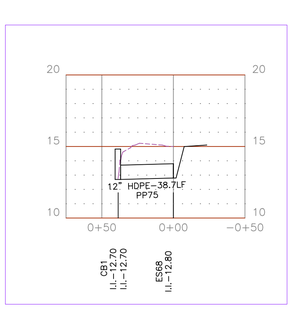
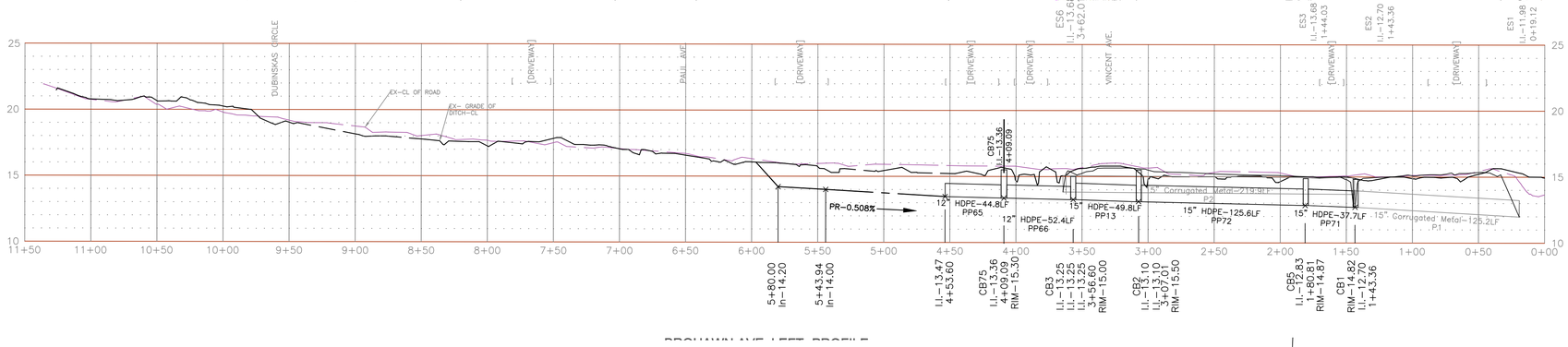
10. EXISTING MANHOLE RIMS SHALL BE ADJUSTED IN ELEVATION TO ESTABLISH ACCEPTABLE TRANSITIONS PER DLEDOT GUIDANCE.
11. REMOVE EXISTING 15" CMP FROM BROHAWN/W. VINCENT AVE. INTERSECTION.

PROPOSED OVERLAY AREA

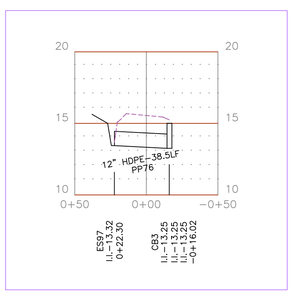




PP75 PROFILE
SCALE: H 1"=50' V 1"=5'



BROHAWN AVE. LEFT- PROFILE



PP76 PROFILE
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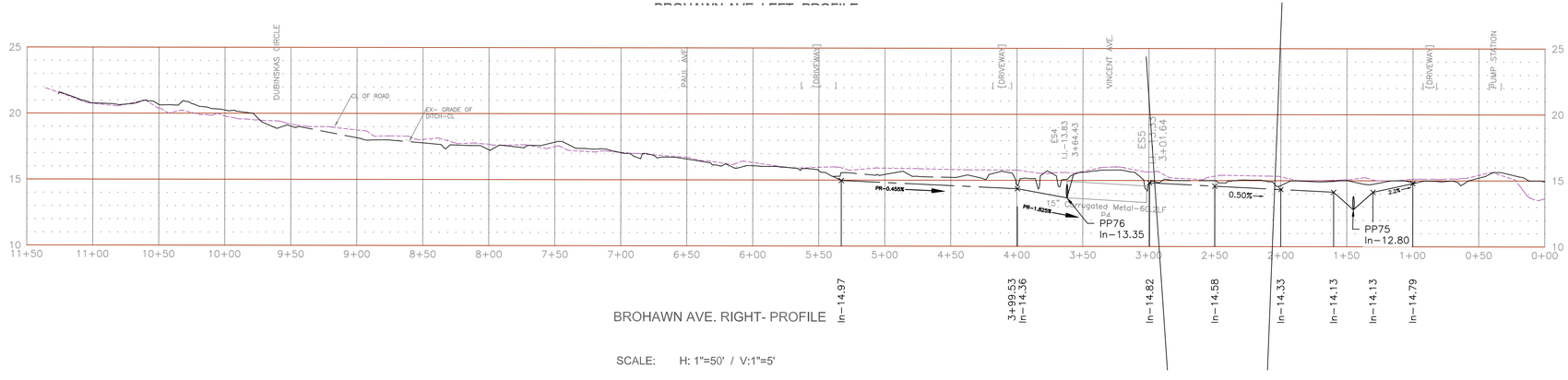

BROHAWN AVE. RIGHT- PROFILE

SCALE: H: 1"=50' / V:1"=5'

SCALE: 1" = 50'

REVISIONS

DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

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CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
BROHAWN AVE. PLAN / PROFILE SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

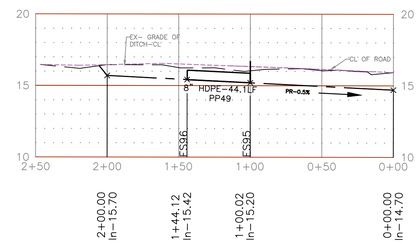
Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 6 of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP, 21-131.\Other DWGS\Carsyljan Acres OC-deldot final 6.1.21.dwg Layout:BROHAWN AVE. PLAN PROFILE 6 User: james.elliott Plot time: 09-09-21 @ 12:40pm

PIPE SCHEDULE						
NAME	UP INVERT (FT)	DOWN INVERT (FT)	LENGTH (FT)	SLOPE (%)	MATERIAL	SIZE (IN)
PP1	15.34	15.28	41.32	0.21	RCP IV	12.0
PP5	14.24	14.15	27.57	0.20	HDPE	12.0
PP6	14.06	13.99	33.97	0.19	HDPE	12.0
PP7	14.24	14.16	35.01	0.34	HDPE	12.0
PP10	14.89	14.79	43.21	0.18	HDPE	12.0
PP11	15.12	14.97	40.1	0.36	CMP	14X9
PP13	13.25	13.10	49.8	0.25	HDPE	15.0
PP17	14.09	14.02	25.47	0.61	HDPE	12.0
PP18	14.25	14.14	37.88	0.21	HDPE	12.0
PP19	14.34	14.26	28.68	0.20	HDPE	12.0
PP20	14.65	14.57	30.51	0.37	HDPE	12.0
PP21	14.78	14.70	26.96	0.19	HDPE	12.0
PP22	14.90	14.84	25.09	0.19	RCP IV	12.0
PP23	13.65	13.50	74.0	0.20	HDPE	12.0
PP24	13.92	13.86	32.47	0.20	HDPE	12.0
PP25	14.53	14.46	31.93	0.33	HDPE	12.0
PP26	14.81	14.71	45.64	0.21	RCP IV	12.0
PP27	13.18	13.00	44.3	0.24	HDPE	15.0
PP29	14.00	13.90	30.0	0.33	HDPE	12.0
PP30	14.12	14.02	30.0	0.33	HDPE	12.0
PP31	14.30	14.21	40.0	0.22	HDPE	12.0
PP32	14.46	14.39	34.06	0.25	RCP IV	12.0
PP34	13.29	13.02	65.50	0.48	HDPE	15.0
PP35	13.47	13.41	21.90	0.25	HDPE	15.0
PP36	13.64	13.58	21.07	0.19	HDPE	15.0
PP37	13.88	13.80	28.40	0.20	HDPE	15.0
PP38	14.17	14.11	20.0	0.31	HDPE	12.0
PP39	14.41	14.32	30.4	0.29	HDPE	12.0
PP40	14.55	14.44	30.3	0.37	HDPE	8.0
PP42	15.06	15.03	24.37	0.25	HDPE	8.0
PP43	13.26	13.10	103.0	0.16	HDPE	12.0
PP44	13.35	13.26	31.8	0.30	HDPE	12.0
PP46	14.20	14.00	36.05	0.28	HDPE	12.0
PP47	14.48	14.36	25.46	0.39	HDPE	12.0
PP49	15.42	15.20	44.10	0.5	HDPE	8.0
PP51	13.74	13.69	39.8	0.13	HDPE	12.0
PP56	15.14	14.96	50.2	0.29	HDPE	12.0
PP57	15.26	15.14	36.3	0.33	HDPE	12.0
PP58	14.58	14.47	49.3	0.22	HDPE	12.0
PP59	14.64	14.58	23.9	0.25	HDPE	12.0
PP51	13.74	13.65	120.2	0.3	HDPE	12.0
PP60	13.83	13.74	38.4	0.23	HDPE	12.0
PP61	13.74	13.62	35.7	0.23	HDPE	12.0
PP63	13.59	13.52	30.3	0.23	HDPE	12.0
PP64	13.69	13.59	30.0	0.33	HDPE	12.0
PP65	13.47	13.36	44.8	0.25	HDPE	12.0
PP66	13.36	13.25	52.6	0.25	HDPE	12.0
PP67	13.37	13.20	31.6	0.53	HDPE	15.0
PP71	12.83	12.70	37.7	0.34	HDPE	15.0
PP72	13.10	12.83	125.6	0.21	HDPE	15.0
PP73	13.34	13.10	35.7	0.67	HDPE	12.0
PP74	13.50	13.34	69.9	0.23	HDPE	12.0
PP75	12.80	12.70	37.17	0.27	HDPE	12.0

NOTES:

- ALL HDPE PIPE SHALL HAVE WATER TIGHT CONNECTIONS PER DEDOT STD. SPEC. 601.3.4
  ASTM D3212 MUST BE STAMPED ON PIPE

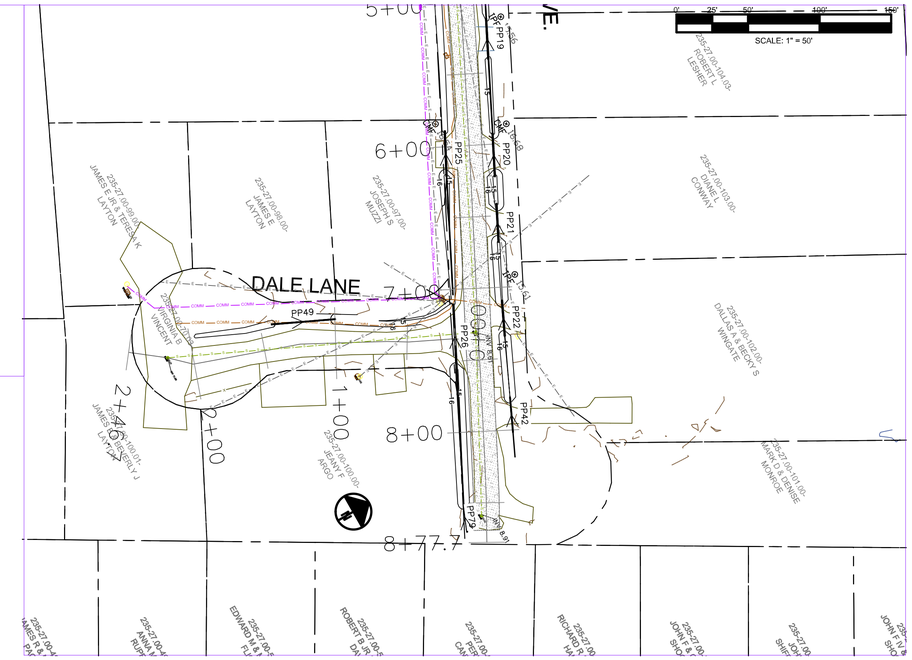


DALE LANE RIGHT- PROFILE

SCALE: H: 1"=50' / V:1"=5'

CONSTRUCTION NOTES:

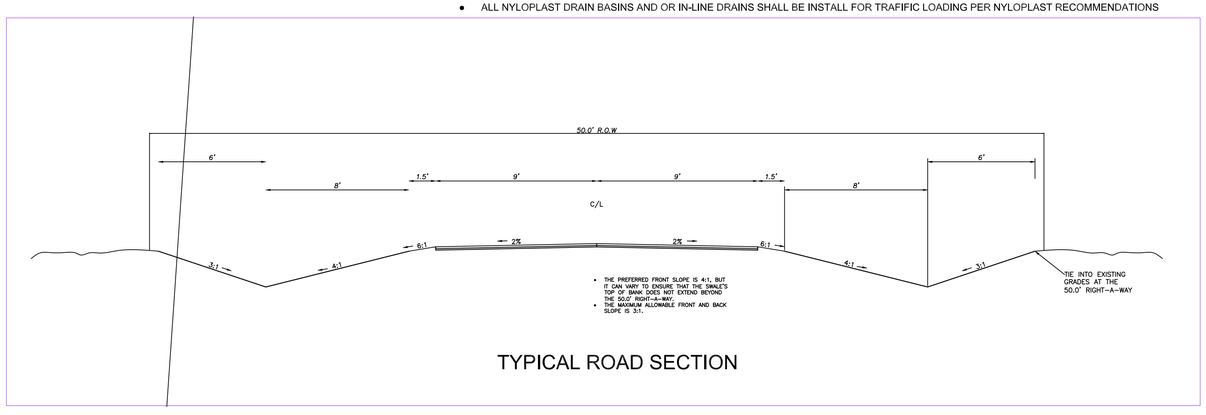
- ROAD PATCH PER DELDOT STANDARD INCLUDED IN PLAN
- CONTRACTOR SHALL TEST PIT IN VARIOUS LOCATIONS TO VERIFY ADEQUATE UTILITY SEPARATION EXIST.
- STAGING AREA IS THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL DRIVEWAYS SHALL BE REPLACED AND REPAIRED IN KIND. COORDINATE ACCESS WITH PROPERTY OWNERS.
- ALL MAILBOXES SHALL BE RELOCATED/REPLACED AS NEEDED. COORDINATE WITH PROPERTY OWNERS.



STRUCTURE SCHEDULE								
NAME	NORTHING	EASTING	RIM ELEV(FT)	INVERT-IN ELEV(FT) (1)	INVERT-IN ELEV(FT) (2)	INVERT-IN ELEV(FT) (3)	INVERT-OUT ELEV(FT)	TYPE
CB1	274282.04	709495.49	14.82	12.70	N/A	N/A	12.70	DELDOT 34X24 INLET BOX
CB2	274148.74	709414.55	15.50	13.10	13.10	13.10	13.10	DELDOT 34X24 INLET BOX
CB3	274093.49	709381.00	15.00	13.25	13.25	13.25	13.25	DELDOT 34X18 INLET BOX
CB5	274252.22	709472.48	14.87	12.83	N/A	N/A	12.83	DelDOT 34X24 INLET BOX
CB6	274095.70	709498.02	15.58	13.26	13.26	N/A	13.26	DELDOT 34X18 INLET BOX
CB10	274065.95	709482.85	15.36	13.50	N/A	N/A	13.50	DELDOT 34X18 INLET BOX
CB11	274098.15	709420.75	15.40	13.34	N/A	N/A	13.34	DelDOT 34X24 INLET BOX
CB37	274018.86	709646.96	15.70	13.74	N/A	N/A	13.37	NYLOPLAST 18" INLINE DRAIN
CB66	273974.60	708971.74	16.70	15.14	N/A	N/A	15.14	NYLOPLAST 18" INLINE DRAIN
CB73	274030.32	709552.47	15.84	13.65	N/A	N/A	13.65	NYLOPLAST 18" INLINE DRAIN
CB75	274054.92	709358.61	15.30	13.36	N/A	N/A	13.36	NYLOPLAST 18" INLINE DRAIN
CB76	274054.62	708879.26	15.92	14.58	N/A	N/A	14.58	NYLOPLAST 18" INLINE DRAIN
CB77	274345.45	708940.63	15.20	13.61	N/A	N/A	13.61	NYLOPLAST 18" INLINE DRAIN
CB88	274045.58	708830.25	15.89	14.65	N/A	N/A	14.65	NYLOPLAST 18" INLINE DRAIN
CB89	273974.59	708971.74	16.37	15.14	N/A	N/A	15.41	NYLOPLAST 18" INLINE DRAIN
ES22	274080.99	709526.26	N/A	N/A	N/A	N/A	13.35	FES
ES38	274011.20	709589.83	N/A	N/A	N/A	N/A	13.40	FES
ES68	274299.76	709461.11	N/A	N/A	N/A	N/A	12.80	FES
ES90	274016.20	709336.12	N/A	N/A	N/A	N/A	13.47	FES
ES97	274114.58	709349.41	N/A	N/A	N/A	N/A	12.69	FES

NOTES

- ALL DELDOT 34X18 INLET BOXES SHALL HAVE A TYPE A COVER SLAB W/ TYPE 1 GRATE
- ALL NYLOPLAST DRAIN BASINS AND OR IN-LINE DRAINS SHALL BE INSTALL FOR TRAFIFIC LOADING PER NYLOPLAST RECOMMENDATIONS



TYPICAL ROAD SECTION

REVISIONS

DATE	DESCRIPTION

Sussex conservation district

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

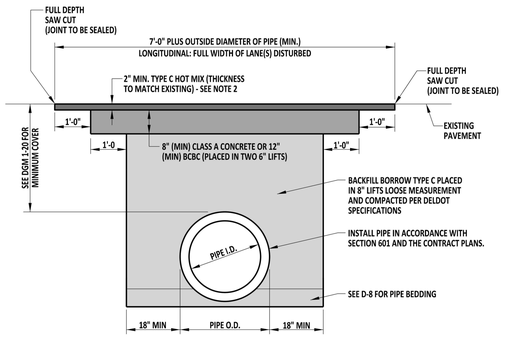
Georgetown Office
21309 Berlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
BROHAWN AVE. PLAN / PROFILE SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

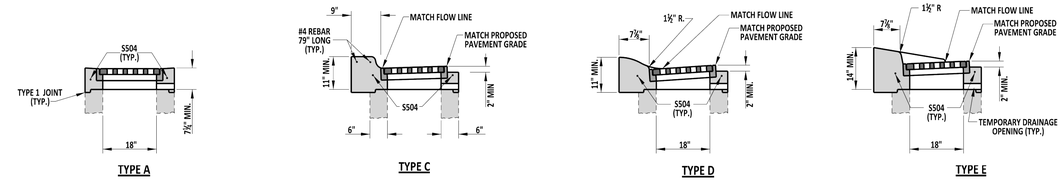
Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 7 of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP, 21-131,\Other DWGS\Carsyljan Acres OC-deldot final 6.1.21.dwg Layout:DALE LN PLAN PROFILE 7 User: james.elliott Plot time: 09-09-21 @ 12:40pm

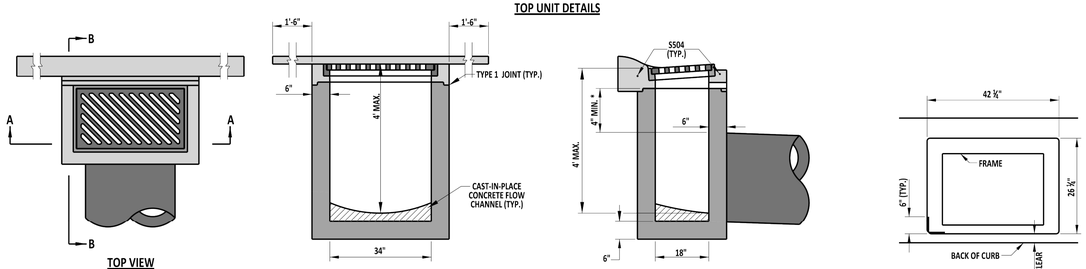


PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

SCALE : NTS



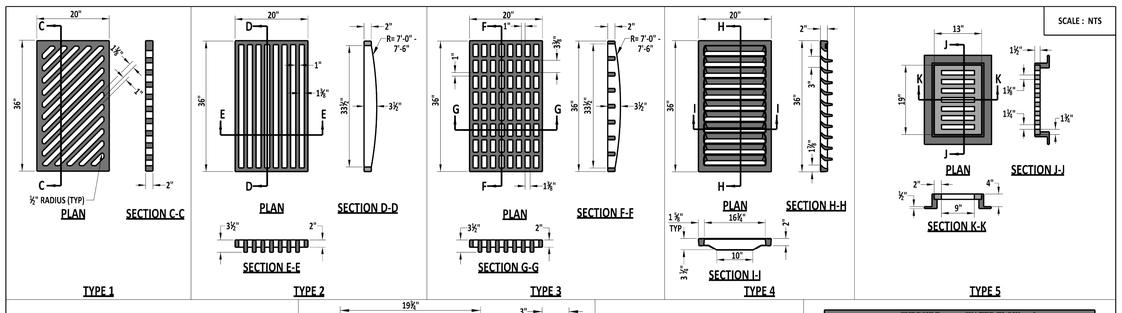
TOP UNIT DETAILS

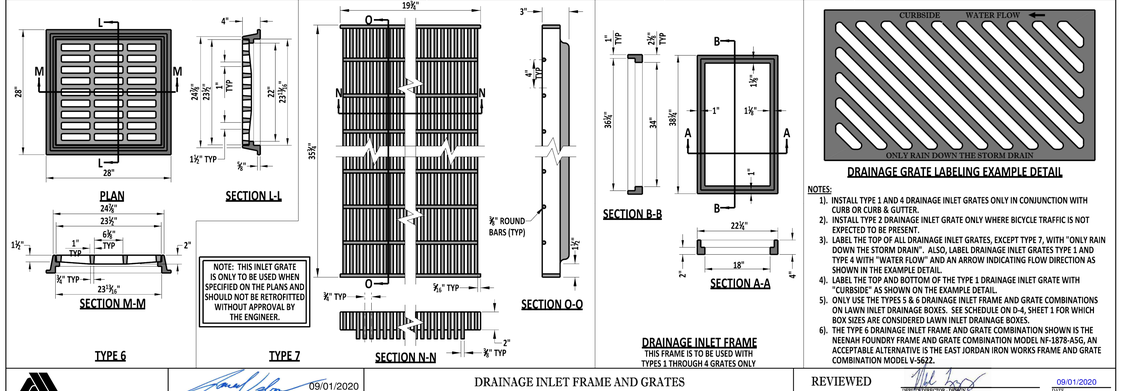


NOTES:
1). REFER TO PREVIOUS SHEETS FOR REINFORCEMENT REQUIREMENTS.
2). THE HEIGHT OF THIS INLET IS LIMITED TO 4' MAXIMUM, THEREFORE STEPS WILL NOT BE REQUIRED AND SHOULD NOT BE INSTALLED ON THIS INLET.
3). REFER TO DETAIL D-5, SHEET 3 OF 9 FOR INLET TOP UNIT APPLICATION.

DelDOT	09/01/2020 PROGRAMMING SUPPORT DATE RECOMMENDED	34" x 18" DRAINAGE INLET	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. D-5 (2020) SHT. 7 OF 9	APPROVED CHIEF ENGINEER 09/01/2020 DATE

SCALE : NTS





NOTES:
1). INSTALL TYPE 1 AND 4 DRAINAGE INLET GRATES ONLY IN CONJUNCTION WITH CURB OR CURB & GUTTER.
2). INSTALL TYPE 2 DRAINAGE INLET GRATE ONLY WHERE BICYCLE TRAFFIC IS NOT EXPECTED TO BE PRESENT.
3). LABEL THE TOP OF ALL DRAINAGE INLET GRATES, EXCEPT TYPE 7, WITH "ONLY RAIN DOWN THE STORM DRAIN". ALSO, LABEL DRAINAGE INLET GRATES TYPE 1 AND TYPE 4 WITH "WATER FLOW" AND AN ARROW INDICATING FLOW DIRECTION AS SHOWN IN THE EXAMPLE DETAIL.
4). LABEL THE TOP AND BOTTOM OF THE TYPE 1 DRAINAGE INLET GRATE WITH "CURBSIDE" AS SHOWN ON THE EXAMPLE DETAIL.
5). ONLY USE THE TYPES 5 & 6 DRAINAGE INLET FRAME AND GRATE COMBINATIONS ON LAWN INLET DRAINAGE BOXES. SEE SCHEDULE ON D-4, SHEET 1 FOR WHICH BOX SIZES ARE CONSIDERED LAWN INLET DRAINAGE BOXES.
6). THE TYPE 6 DRAINAGE INLET FRAME AND GRATE COMBINATION SHOWN IS THE NEENAH FOUNDRY FRAME AND GRATE COMBINATION MODEL NF-1878-A5G, AN ACCEPTABLE ALTERNATIVE IS THE EAST JORDAN IRON WORKS FRAME AND GRATE COMBINATION MODEL V-5622.

DelDOT	09/01/2020 PROGRAMMING SUPPORT DATE RECOMMENDED	DRAINAGE INLET FRAME AND GRATES	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. D-5 (2020) SHT. 2 OF 9	APPROVED CHIEF ENGINEER 09/01/2020 DATE

08/20/2020

REVISIONS

DATE	DESCRIPTION

Sussex conservation district

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
Division of Watershed Stewardship
Drainage Program
Dover Office
89 Kings Highway Phone:(302) 739 - 9921 Fax: (302) 739 - 6724
Dover DE, 19901
Georgetown Office
21309 Iberlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059

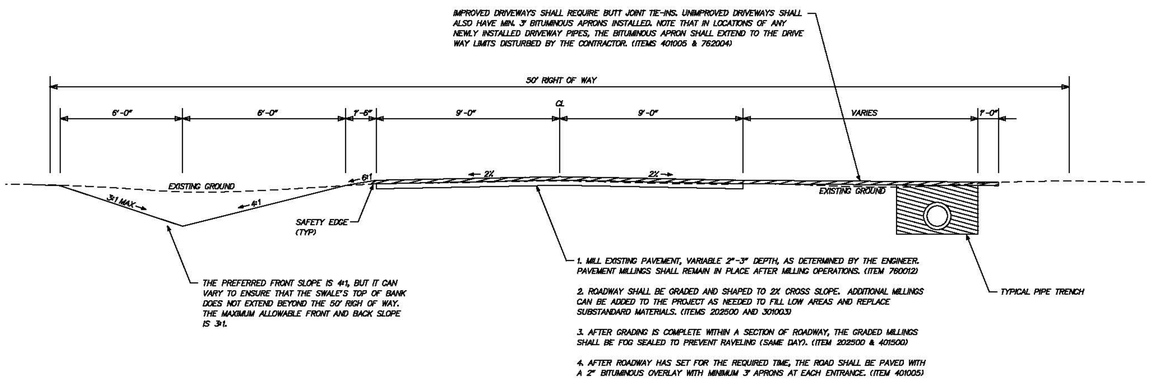
DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
CONSTRUCTION DETAILS SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

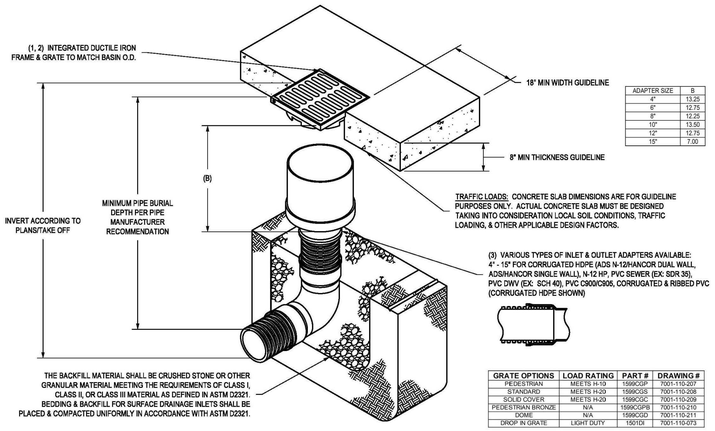
Date: 3/26/2021
Designed: JLE AR
Planned: KW
Drawn: JLE
Sheet No. 8 of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP. 21-131,\Other DWGS\Carsyljan Acres OC-sbkitt final 6.1.21.dwg Layout:CONSTRUCTION DETAILS AND NOTES 8 User: james.elliott Plot time: 09-09-21 @ 12:41pm

CARSYLJAN ACRES - TYPICAL SECTION



NYLOPLAST 15" INLINE DRAIN: 2715AG _ _ X



ADAPTER SIZE	B
4"	13.25
6"	12.75
8"	12.25
10"	13.50
12"	12.75
15"	7.00

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1599CGP	7001-110-207
STANDARD	MEETS H-20	1599CGS	7001-110-208
SOLID COVER	MEETS H-20	1599CGC	7001-110-209
PEDESTRIAN BRONZE	N/A	1599CGPB	7001-110-210
DOME	N/A	1599CGD	7001-110-211
DROP IN GRATE	LIGHT DUTY	1501DI	7001-110-073

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
4 - DIMENSIONS ARE FOR REFERENCE ONLY. ACTUAL DIMENSIONS MAY VARY.
5 - DIMENSIONS ARE IN INCHES
6 - SEE DRAWING NO. 7001-110-275 FOR ADS N-12 & HANCOR DUAL WALL BELL INFORMATION & DRAWING NO. 7001-110-384 FOR N-12 HP BELL INFORMATION.

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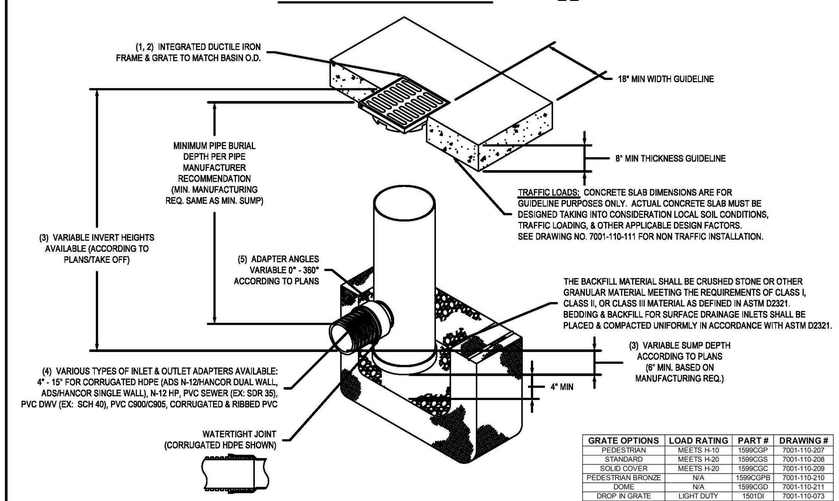
DRAWN BY EBC
DATE 04-03-06
REVISED BY NMH
DATE 03-15-18
DWG SIZE A
MATERIAL
PROJECT NO./NAME
SCALE 1:20 SHEET 1 OF 1

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE
15 IN INLINE DRAIN QUICK SPEC INSTALLATION DETAIL
DWG NO. 7003-110-026 REV E

NYLOPLAST 15" DRAIN BASIN: 2815AG _ _ X



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1599CGP	7001-110-207
STANDARD	MEETS H-20	1599CGS	7001-110-208
SOLID COVER	MEETS H-20	1599CGC	7001-110-209
PEDESTRIAN BRONZE	N/A	1599CGPB	7001-110-210
DOME	N/A	1599CGD	7001-110-211
DROP IN GRATE	LIGHT DUTY	1501DI	7001-110-073

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

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DATE 03-30-06
REVISED BY NMH
DATE 03-14-16
DWG SIZE A
MATERIAL
PROJECT NO./NAME
SCALE 1:25 SHEET 1 OF 1

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE
15 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-190 REV E

REVISIONS

DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
Division of Watershed Stewardship
Drainage Program
Dover Office
89 Kings Highway Dover DE, 19901 Phone:(302) 739 - 9921 Fax: (302) 739 - 6724
Georgetown Office
21389 Berlin Rd. Unit 6 Georgetown DE, 19947 Phone:(302) 855 - 1930 Fax:(302) 677 - 7059
Sussex conservation district

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
CONSTRUCTION DETAILS SHEET
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 9 of 14

- LOD - @ 3.0 ACRES
- SM-C - NAG S150BN
- DRIVEWAY CULVERT ROP - 5' W X 5' L X 18" THICK

A ROP 5'W X 9'L X 18" THICK

REVISIONS

DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

Georgetown Office
21389 Deffin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 857 - 7050

CARSYLJAN ACRES

DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131

ESC PLAN

RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021

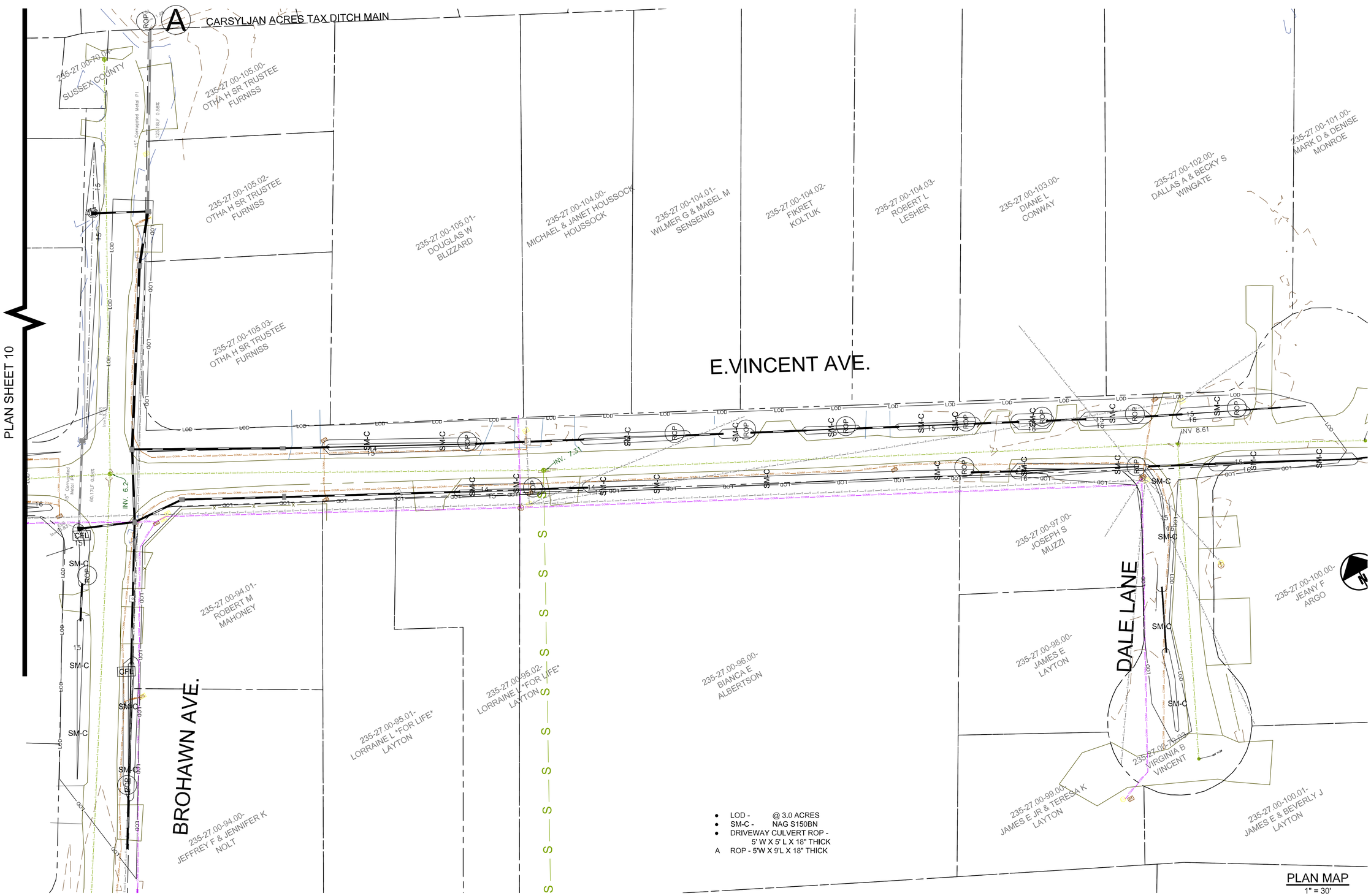
Designed: - JLE - AR

Planned: - KW -

Drawn: - JLE -

Sheet No. 10 of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP, 21-131,\Other DWGS\Carsyljan Acres OC-bidot final 6.1.21.dwg Layout:ESC PLAN 10 User: james.elliott Plot time: 09-09-21 @ 12:41pm



- LOD - @ 3.0 ACRES
- SM-C - NAG S150BN
- DRIVEWAY CULVERT ROP - 5' W X 5' L X 18" THICK

A ROP - 5'W X 9'L X 18" THICK

REVISIONS

DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

Georgetown Office
21389 Berlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 857 - 7059

CARSYLJAN ACRES

DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131

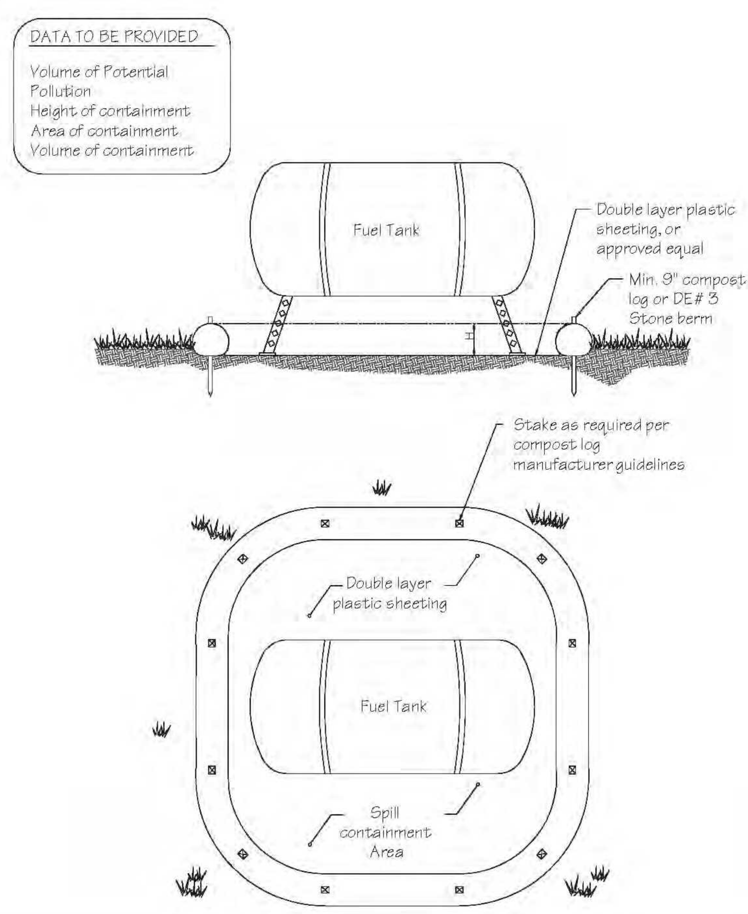
ESC PLAN

RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 11 of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP, 21-131,\Other DWGS\Carsyljan Acres OC-twilcot final 6.1.21.dwg Layout:ESC 11 User: james.elliott Plot time: 09-09-21 @ 12:41pm

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control



Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.1 Sheet 1 of 5 Effective FEB 2019

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Pollution Prevention – Spill Prevention

1. Fueling should only take place in signed designated areas, away from downstream drainage facilities and watercourses.
2. Fueling must be with nozzles equipped with automatic shut-off to control drips. Do not top off.
3. Protect the areas where equipment or vehicles are being repaired, maintained, fueled or parked from storm water run-on and runoff.
4. Use barriers such as berms to prevent storm water run-on and runoff, and to contain spills.
5. Place a "Fueling Area" sign next to each fueling area.
6. Store hazardous materials such as fuel, solvents, oil and chemicals in secondary containment.
7. Inspect vehicles and equipment for leaks on each day of use. Repair fluid and oil leaks immediately.
8. Absorbent spill clean-up materials and spill kits must be available in fueling areas and on fuel trucks.
9. If fueling is to take place at night, make sure the fueling area is sufficiently illuminated.
10. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.

CLEAN UP SPILLS

1. If it is safe to do so, immediately contain and clean up any chemical and/or hazardous material spills.
2. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.
3. Do not bury spills or wash them down with water.

LEAKS AND DRIPS

1. Use drip pans or absorbent pads at all times. Place under and around leaky equipment.
2. Do not allow oil, grease, fuel or chemicals to drip onto the ground.
3. Have spill kits and clean up material on-site.
4. Repair leaky equipment promptly or remove problem vehicles and equipment from the site. Clean up contaminated soil immediately.
5. Store contaminated waste in sealed containers constructed of suitable material. Label these containers properly.
6. Clean up all spills and leaks. Promptly dispose of waste and spent clean up materials.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.1 Sheet 2 of 5 Effective FEB 2019

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:
   a. Concrete
   b. Detergents
   c. Paints (enamel and latex)
   d. Cleaning solvents
   e. Pesticides
   f. Wood scraps
   g. Fertilizers
   h. Petroleum based products
2. **Good housekeeping practices**
   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 BMPs daily.
3. **Waste management practices**
   a. All waste materials shall be collected and stored in securely lidded 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 is responsible for cleaning out dumpsters.

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 3 of 5 Effective FEB 2019

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:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 4 of 5 Effective FEB 2019

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.

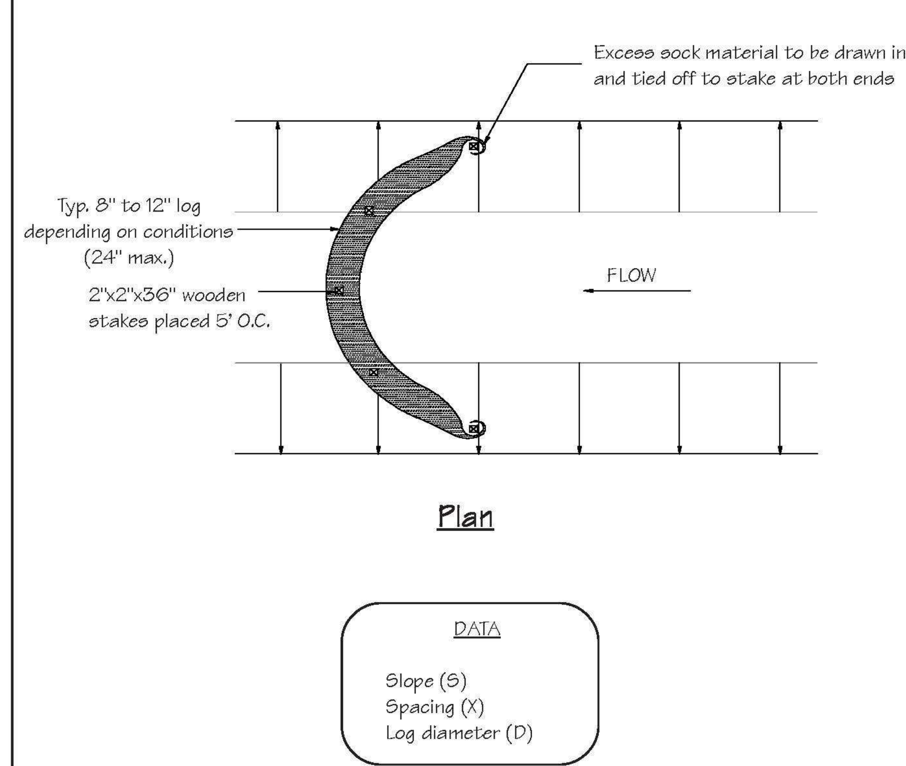
6. **Education**
   a. Best management practices for construction site pollution control shall be a part of regular progress meetings.
   b. Information regarding waste management, equipment maintenance and spill prevention shall be prominently posted in the construction trailer.

CONTACT INFORMATION

DNREC 24-Hour Toll Free Number	**800-662-8802**
DNREC Solid & Hazardous Waste Management Section	**302-739-9403**

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 5 of 5 Effective FEB 2019

Standard Detail & Specifications
Compost Log Check Dam



Source:	Symbol:	Detail No.
Adapted from FILTREXX Technologies	CCD	DE-ESC-3.3.6.2 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Compost Log Check Dam

Construction Notes:

1. Swales and channels shall be prepared in accordance with the construction specifications described in the **Standards and Specifications for Temporary Berm, Temporary Swale, Vegetated Channel**, or **Diversions**.
2. The check dam shall be constructed of compost filter log. The compost filter log shall be placed so that it extends across the full width of the channel.
3. The top of the check dam shall be constructed so that the center is approximately 6" lower than the outer edges, forming a weir that the water can flow across. The ends of the compost filter log shall wrap upslope to prevent end cutting.
4. The maximum height of the check dam at the center of the weir must not exceed two (2) feet.
5. Maximum spacing between dams should be the distance in the channel where the toe of the upstream dam is at the same elevation as the top of the downstream dam. (See **Standard & Specifications for Check Dams** for design chart.)

Source:	Symbol:	Detail No.
Adapted from FILTREXX Technologies	CCD	DE-ESC-3.3.6.2 Sheet 2 of 2 Effective FEB 2019

SEQUENCE OF CONSTRUCTION

1. NOTIFY THE SCD AND DNREC DRAINAGE SECTION IN WRITING AT LEAST FIVE (5) DAYS PRIOR TO START OF CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING. FAILURE TO DO SO CONSTITUTES A VIOLATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLAN.
2. PRIOR TO ANY CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES OR GRADING, A PRE-CONSTRUCTION MEETING MUST BE SCHEDULED AND CONDUCTED WITH THE AGENCY CONSTRUCTION SITE REVIEWER. THE LANDOWNER/DEVELOPER, CONTRACTOR, AND CERTIFIED CONSTRUCTION REVIEWER ARE REQUIRED TO BE IN ATTENDANCE AT THE PRE-CONSTRUCTION MEETING; THE DESIGNER IS RECOMMENDED TO ATTEND.
3. ESTABLISH STABILIZED CONSTRUCTION ENTRANCE AND SOIL STOCKPILE AREA (IF NECESSARY) REFER TO STANDARD DETAIL.
4. ESTABLISH E&S CONTROLS INCLUDING, BUT NOT LIMITED TO, INLET PROTECTION, COMPOST FILTER LOGS, AND CHANNEL MATTING, ETC. IN PREPARATION OF AGENCY CONSTRUCTION SITE REVIEWER REVIEW/APPROVAL.
5. BEGIN CLEARING, GRUBBING AND DEMOLITION OF EXISTING CULVERTS AS SHOWN ON THE PLAN.
6. INSTALL PAUL AVE. OUTFALL SWALE TO TAX DITCH FIRST. CONSTRUCT SWALES AND DRVEWAY CULVERTS IN A DOWNSTREAM TO UPSTREAM MANNER TOPSOILING, STABILIZING, AND MATTING THE SWALES AS YOU GO ALONG.
7. DEMO EXISTING BROHAWN AVE. OUTFALL CULVERT AND STRUCTURES.
8. INSTALL BROHAWN AVE OUTFALL CULVERTS AND STRUCTURES FROM CB1 TO ES 22, ES38, AND CB4. PROCEED AFTER THESE CULVERTS AND STRUCTURES HAVE BEEN INSTALL TO THE E. VINCENT AVE IMPROVEMENTS WORKING IN A DOWNSTREAM TO UPSTREAM FASHION PROVIDING POSITIVE DRAINAGE.
9. INSTALL DALE LANE'S SWALE AND CONNECT TO E.VNCENT AVE. SWALE NETWORK.
10. INSTALL W. VINCENT AVE. OUTFALL CULVERTS TO THE TAX DITCH. PROCEED WITH THE W. VINCENT AVE. IMPROVEMENTS WORKING IN A DOWNSTREAM TO UPSTREAM FASHION PROVIDING POSITIVE DRAIAGE.
11. FINISH THE REMAINDER OF THE BROHAWN AVE DRAINAGE IMPROVEMENTS UP TO PAUL AVE. PER THE PLAN.
12. ALL SWALES SHALL BE TOPSOILED, STABILIZED AND MATTED ONCE COMPLETED; AS YOU GO ALONG.
13. PROVIDE FINISH PAVING COAT ON ANY ROAD AND DRIVEWAY CROSSING PER THE DELDOT STANDARD.
14. REQUEST FINAL SITE INSPECTION BY DNREC AND OR SCD PRIOR TO THE COMPLETION OF THE PROJECT.

REVISIONS

DATE	DESCRIPTION

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
Division of Watershed Stewardship
Drainage Program
Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724
Georgetown Office
21309 Berlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059
Sussex Conservation District

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, #21-131
ESC DETAILS AND NOTES
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 12 of 14

Standard Detail & Specifications
Topsoiling

Construction Notes:

1. **Site Preparation** (Where Topsoil is to be added)

   Note: When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, waterways and sediment basins.

   a. Grading - Grades on the areas to be topsoiled which have been previously established shall be maintained.

   b. Liming - Where the topsoil is either highly acid or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet). Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

   c. Tilling - After the areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade shall be loosened by discing or by scarifying to a depth of a least 3 inches to permit bonding of the topsoil to the subsoil. Pack by passing a bulldozer up and down over the entire surface area of the slope to create horizontal erosion check slots to prevent topsoil from sliding down the slope.

2. **Topsoil Material and Application**

   Note: Topsoil salvaged from the existing site may often be used but it should meet the same standards as set forth in these specifications. The depth of topsoil to be salvaged shall be no more than the depth described as a representative profile for that particular soil type as described in the soil survey published by USDA-SCS in cooperation with Delaware Agricultural Experimental Station.

Source:	Symbol:	Detail No.
USDA - NRCS		DE-ESC-3.4.1 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Topsoiling

Construction Notes (cont.)

a. Materials - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand or other soil as approved by an agronomist or soil scientist. It shall not have a mixture of contrasting textured subsoil and contain no more than 5 percent by volume of cinders, stones, slag, coarse fragment, gravel, sticks, roots, trash or other extraneous materials larger than 1-1/2 inches in diameter. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistles, or others as specified. All topsoil shall be tested by a reputable laboratory for organic matter content, pH and soluble salts. A pH of 6.0 to 7.5 and an organic content of not less than 1.5 percent by weight is required. If pH value is less than 6.0 lime shall be applied and incorporated with the topsoil to adjust the pH to 6.5 or higher. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Note: No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed to permit dissipation of toxic materials.

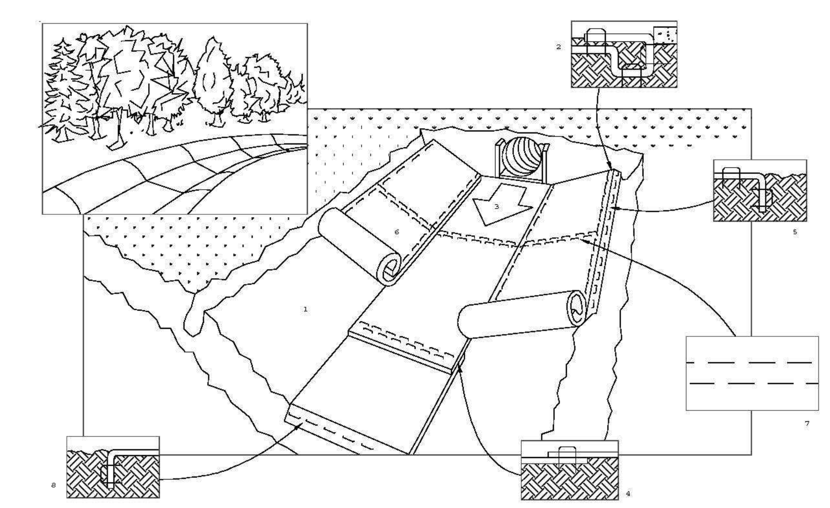
b. Grading - The topsoil shall be uniformly distributed and compacted to a minimum of four (4) inches. Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Note: Topsoil substitutes or amendments as approved by a qualified agronomist or soil scientist, may be used in lieu of natural topsoil. Compost material used to improve the percentage of organic matter shall be provided by a certified supplier.

Compost amendments that are intended to meet specific post-construction stormwater management goals shall further meet the requirements of **Appendix 3.06.2 Post Construction Stormwater Management BMP Standards and Specifications, Section 14.0 Soil Amendments.**

Source:	Symbol:	Detail No.
USDA - NRCS		DE-ESC-3.4.1 Sheet 2 of 2 Effective FEB 2019

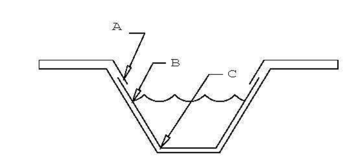
Standard Detail & Specifications
Stabilization Matting - Channel



Perspective

CRITICAL POINTS

A. Overlaps and seams
B. Projected waterline
C. Channel bottom/side slope vertices



Note: Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.

Use manufacturer's recommendations for stapling patterns for channel installations.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	DE-ESC-3.4.6.2 Sheet 1 of 3 Effective FEB 2019

Standard Detail & Specifications
Stabilization Matting - Channel

Construction Notes:

1. Prepare soil before installing matting, including application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the mat in a 6" deep X 6" wide trench. Backfill and compact the trench after stapling.
3. Roll center mat in direction of water flow on bottom of channel.
4. Place mats end over end (shingle style) with a 6" overlap, use a double row of staggered staples 4" apart to secure mats.
5. Full Length edge of mats at top of side slopes must be anchored in 6" deep X 6" wide trench; backfill and compact the trench after stapling.
6. Mats on side slopes must be overlapped 4" over the center mat and stapled.
7. In high flow channel applications, a staple check slot is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over entire width of the channel. Place a second row 4" below the first row in a staggered pattern.
8. The terminal end of the mats must be anchored in a 6" X 6" wide trench. Backfill and compact the trench after stapling.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	DE-ESC-3.4.6.2 Sheet 2 of 3 Effective FEB 2019

Standard Detail & Specifications
Vegetative Stabilization

TEMPORARY SEEDING BY RATES, DEPTHS AND DATES

Mix #	Species[6]	Seeding Rate		Optimum Seeding Dates[1] O = Optimum Planting Period; A = Acceptable Planting Period							Planting Depth[3]
				Coastal Plain			Piedmont			All	
	Certified Seed	lb/Ac[5]	lb/1000 sq.ft.	2/1-4/30	[2] 5/1-8/14	8/15-10/31	3/1-4/30	[2] 5/1-7/31	8/1-10/31	10/31-2/1	
1	Barley	125	4	O	A	O	O	A	O		1-2 inches 2-3" sandy soils
2	Oats	125	4	O	A	A	O	A	A		1-2 inches 2-3" sandy soils
3	Rye	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils
4	Perennial Ryegrass	125	4	O	A	O	O	A	O		0.5 inches 1-2" sandy soils
5	Annual Ryegrass	125	4	O	A	O	O	A	O	A	0.5 inches 1-2" sandy soils
6	Winter Wheat	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils
7	Foxtail Millet	30 PLS	0.7		O			O			0.5 inches 1-2" sandy soils
8	Pearl Millet	20 PLS	0.5		O			O			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. Applicable on slopes 3:1 or less.
4. Fifty pounds per acre of Annual Lespedeza 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".

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 1 of 4 Effective FEB 2019

Standard Detail & Specifications
Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES

Seeding Mixtures		Seeding Rate[1]		Optimum Seeding Dates[2] O = Optimum Planting Period A = Acceptable Planting Period							Remarks
Mix No.	Certified Seed[3]			Coastal Plain			Piedmont			All[4]	
	Well Drained Soils	lb/Ac	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-4/30	5/1-7/31	8/1-10/31	10/31-2/1	
1	Tall Fescue Weeping Lovegrass	140 10	3.2 0.23	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Lovegrass very difficult to mow; Germinates only in hot weather
2	Deertongue Sheep Fescue Common Lespedeza[5] Inoculated	30 30 15	0.69 0.69 0.35	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Good wildlife cover and food
3	Tall Fescue (Turf-type) **or** Strong Creeping Red Fescue **or** Perennial Ryegrass **plus** Flatpea[5]	50 50 50 15	1.15 1.15 1.15 0.34	O	A	O	O	A	O	Add 100 lbs./ac. Winter Rye	Good erosion control mix Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.
4	Strong Creeping Red Fescue Kentucky Bluegrass Perennial Ryegrass **or** Redtop **plus** White Clover[5]	100 70 15 5 3	2.3 1.61 0.35 0.11 0.07	O	A	O	O	A	O	Add 100 lbs./ac. Winter Rye	Suitable waterway mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.
5	Switchgrass[6,7] **or** Coastal Panicgrass Big Bluestem Little Bluestem Indian Grass	10 10 5 5 5	0.23 0.23 0.11 0.11 0.1		O			O			Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance. N fertilizer discouraged - weeds
6	Tall Fescue (turf-type) (Blend of 3 cultivars)	150	3.5	O	A	O	O	A	O		Managed filter strip for nutrient uptake.
7	Tall Fescue Ky. Bluegrass (Blend) Perennial Ryegrass	150 20 20	3.5 0.46 0.46	O	A	O	O	A	O		Three cultivars of Kentucky Bluegrass. Traffic tolerant.
8	Big Bluestem[7] Indian Grass[7] Little Bluestem[7] Creeping Red Fescue **plus one of:** Partridge Pea Bush Clover Wild Indigo Showy Tick-Trefoil	10 10 8 30 5 3 3 2	0.23 0.23 0.18 0.69 0.11 0.07 0.07 0.05	O	A		O	A			All species are native. Indian Grass and Bluestem have fluffy seeds. Plant with a specialized native seed drill. Creeping Red Fescue will provide erosion protection while the warm season grasses get established.

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 2 of 4 Effective FEB 2019

Standard Detail & Specifications
Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES (cont.)

Seeding Mixtures		Seeding Rate[1]		Optimum Seeding Dates[2] O = Optimum Planting Period A = Acceptable Planting Period							Remarks
Mix No.	Certified Seed[3]			Coastal Plain			Piedmont			All[4]	
	Poorly Drained Soils	lb/Ac	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-4/30	5/1-7/31	8/1-10/31	10/31-2/1	
9	Redtop Creeping Bentgrass Sheep Fescue Rough Bluegrass	75 35 30 45	1.72 0.8 0.69 1	O	A	O	O	A	O	Add 100 lbs./ac. Winter Rye	Quick stabilization of disturbed sites and waterways
10	Reed Canarygrass[6]	10	0.23	A		O	A		O		Good erosion control, wildlife cover and wetland revegetation.
	Residential Lawns										
11	Tall Fescue Perennial Ryegrass Kentucky Bluegrass Blend	100 25 30	2.3 0.57 0.69	O	A	O	O	A	O		High value, high maintenance, light traffic, irrigation necessary. Well drained soils, full sun.
12	Tall Fescue Perennial Ryegrass Sheep Fescue	100 25 25	2.3 0.57 0.57	O	A	O	O	A	O		Moderate value, low maintenance, traffic tolerant
13	Creeping Red Fescue Chewings Fescue Rough Bluegrass Kentucky Bluegrass	50 50 20 20	1.15 1.15 0.4 0.4	O	A	O	O	A	O		Shade tolerant, moderate traffic tolerance, moderate maintenance.
14	Creeping Red Fescue Rough Bluegrass **or** Chewings Fescue	50 90	1.15 2.1	O	A	O	O	A	O		Shade tolerant, moisture tolerant.
15	K-31 Tall Fescue	150	3.5	O	A	O	O	A	O		Monoculture, but performs well alone in lawns. Discouraged.

1. When hydroseeding is the chosen method of application, the total rate of seed should be increased by 25%.
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.
3. All seed shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Section 1, Chapter 24, Title 3 of the Delaware Code.
4. Cool season species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
5. All leguminous seed must be inoculated.
6. Warm season grass mix and Reed Canary Grass cannot be mowed more than 4 times per year.
7. Warm season grasses require a soil temperature of at least 50 degrees in order to germinate, and will remain dormant until then.

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 3 of 4 Effective FEB 2019

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. Seedbed 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. Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.
   b. Apply seed uniformly with a broadcast seeder, drill, cultipacker 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 cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall 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 Effective FEB 2019

REVISIONS

DATE	DESCRIPTION

Sussex conservation district

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

Georgetown Office
21309 Berlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131
ESC DETAILS AND NOTES
RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. 13 of 14

SUBDIVISOIN MANUAL

TEMPORARY TRAFFICE CONTROL NOTES

1. All temporary traffic control and temporary traffic control devices shall be in accordance with: the contract documents, the latest version of the Delaware Manual on Uniform Traffic Control Devices (hereinafter referred to as the "Delaware MUTCD"), current State of Delaware Department of Transportation Standard Specifications for Road and Bridge Construction, and Supplemental Specifications, including all revisions as of the date of the entrance permit approval.
2. The Department reserves the right to stop the Contractor's operations, IF, in the opinion of the Department's Representative, the Contractor's operations are not in compliance with the Delaware MUTCD, the specifications or the plans or if the Contractor's operations are deemed unsafe.
3. The Contractor shall be responsible for notifying the local 911 center, local schools and DelDOT Community Relations of all roads and lanes to be closed a minimum of seven (7) calendar days before the closure.
4. The Contractor shall be responsible for ensuring that the Transportation Management Center is notified each and every day when work is being performed in State right–of–way. The Contractor shall identify the type of work, any lane(s) or shoulder(s) closed, the length of time for work, when the lane restrictions are in place and when lane restrictions are lifted, contact person/phone number and State Inspector. The Transportation Management Center can be reached at (302) 659–4600.
5. When side roads intersect the work zone, additional traffic control devices shall be erected including permanent warning signs.
6. All storage of equipment and material shall comply with the Delaware MUTCD, Section 6G.21.
7. The Contractor is responsible for the maintenance of existing pavement within the project limits for the duration of the contract or as directed by the Engineer.
8. Typical Applications per the Delaware MUTCD shall be incorporated to achieve required temporary traffic control and safety requirements. This project is subject to the following Typical Applications unless directed otherwise by the DelDOT District Safety Officer: Typical Application 10: "Work on XXXX (TA–XX)", etc.
9. Within the mainline work area, permanent advance warning signs with the legends ROAD WORK AHEAD shall be installed in advance of the work area in both directions.
10. An END ROAD WORK sign shall be located 500 feet downstream from the work area.
11. On intersecting roadways within the project limits, a ROAD WORK AHEAD sign shall be placed at a distance not less than 500 feet in advance of the work area.
12. All permanent advance warning signs shall be ground mounted on two NCHRP–350 or MASH approved breakaway posts and shall be mounted in compliance with the Delaware MUTCD. Permanent advance warning signs shall be mounted at a height of 7 feet, measured from the roadway to the bottom of the sign. The use of skid mounted sign supports is not allowed unless the Contractor can demonstrate that a utility conflict exists, which shall be verified by the District Safety Officer; or concrete medians prevent the installation of the permanent advance warning signs in the appropriate location.
13. The use of millings and graded aggregate base course (GABC) in the travel way, temporary travel way, high volume entrances and access ramp for the purpose of providing a temporary roadway surface, pothole repair, tapered edge for utilities, butt joints, and longitudinal drop–offs (milling and paving operations) is prohibited unless it is otherwise designated to be used in the contract plans. Use cold patch, bituminous concrete, bituminous concrete wedge, or taper mill, as noted in the contract documents or approved by the engineer. Millings or GABC shall be used at the following locations where access to a business, residence, or edge drop off needs to be maintained unless otherwise noted in the plans or directed by the engineer to use bituminous concrete or cold patch. All millings and GABC will be rolled and compacted to help prevent the material from unravelling in the following areas:
    - Driveways
    - Entrances
    - Low volume access ramps (identified in the contract documents)
    - Edge drop–offs adjacent to live roadway (lanes and shoulder) and the proposed road construction
    - Edge of roadway drop–off

    The base course material shall be placed at no greater than the slope specified in the Delaware MUTCD, Table 6G–1 and shall be compacted. Vertical differences shall be corrected in accordance with the Delaware MUTCD, Table 6G–1.
14. Access to all residence within the project area shall be maintained unless otherwised directed by the engineer.
15. The contractor shall provide all affected property owners 48 hours prior to starting construction. The notice shall include scope of work, work hours, and estimated start and stop dates for scope of work.
16. At the end of the day and before traffic is returned, the contractor shall correct all vertical differences in accordance with table 5G–1 of the Delaware MUTCD.
17. All flaggers shall comply with chapter 6E of the Delaware MUTCD.
18. All persons working within the State ROW shall wear a minimum of an ANSI saftery vest meeting or exceeding the ANSI 107–2004 requirements as specified in the Delaware MUTCD.
19. The contractor is responsible for the maintenance of the existing pavement within the project area for the duration of hte contract or as directed by the engineer.

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REVISIONS

DATE	DESCRIPTION

Sussex conservation district

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Division of Watershed Stewardship
Drainage Program

Dover Office
89 Kings Highway Phone:(302) 739 - 9921
Dover DE, 19901 Fax: (302) 739 - 6724

Georgetown Office
21309 Berlin Rd. Unit 6 Phone:(302) 855 - 1930
Georgetown DE, 19947 Fax:(302) 677 - 7059

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

CARSYLJAN ACRES
DRAINAGE IMPROVEMENTS and ROAD REHABILITATION RPJECT, # 21-131

RED MILL POND / DELAWARE BAY WATERSHED
SUSSEX COUNTY, DELAWARE

Date: 3/26/2021
Designed: - JLE - AR
Planned: - KW -
Drawn: - JLE -
Sheet No. of 14

File Location: G:\Equipment Section\Projects\CARSYLJAN ACRES - JORDAN DRAINAGE IMP, 21-131,\Other DWGS\Carsyljan Acres OC-delkot final 6.1.21.dwg Layout:ESC NOTES AND MOT 14 User: james.elliott Plot time: 09-09-21 @ 12:41pm