MAYOR
Lynn Barbee

TOWN COUNCIL
Jay Healy, Mayor Pro Tem
Joe Benson
Mike Hoffer
Deb LeCompte

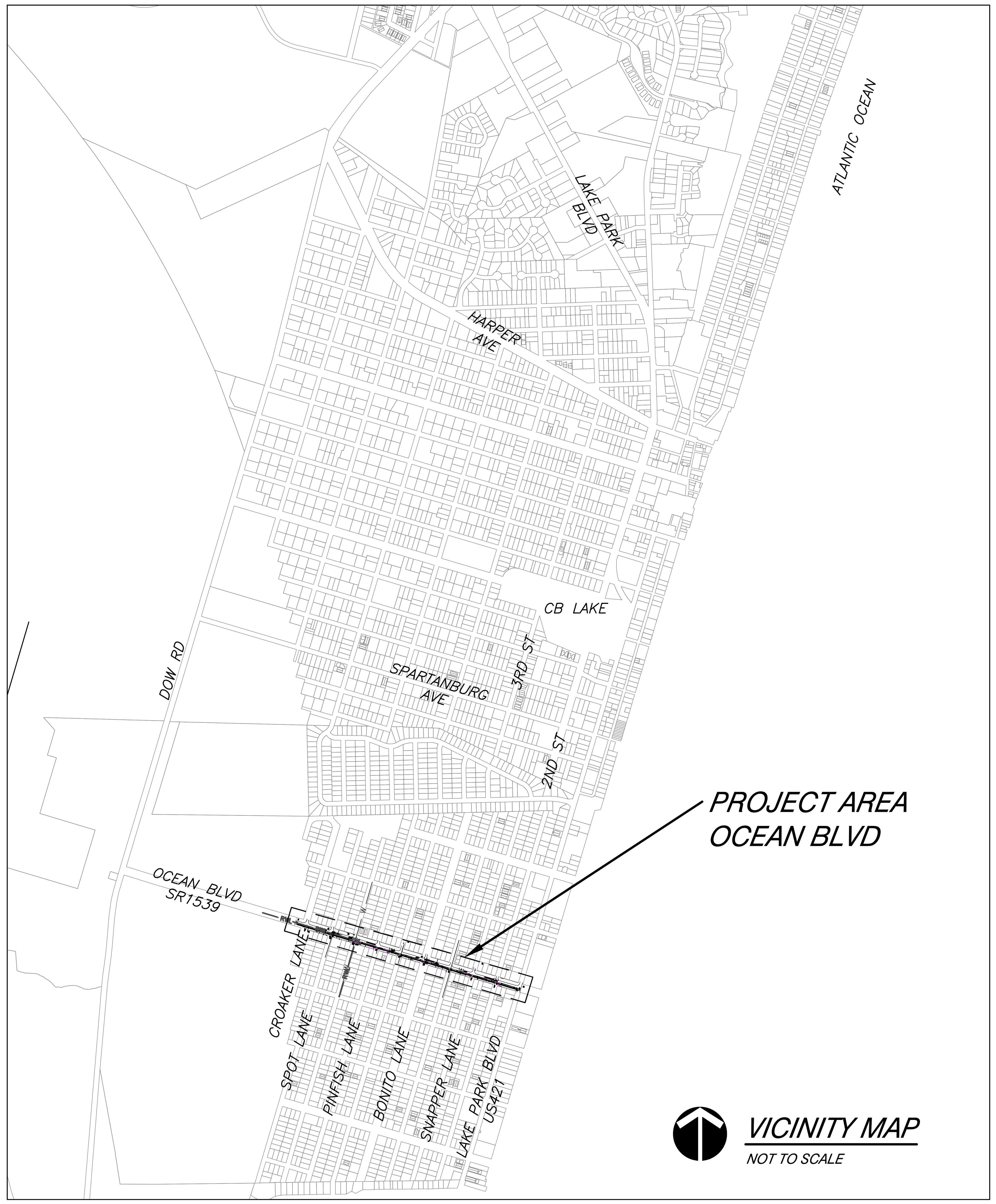
TOWN MANAGER
Bruce Oakley

OCEAN BOULEVARD SIDEWALKS

ES PROJECT No. 202235

JULY, 2024

SHEET #	DESCRIPTION
T1	TITLE SHEET
EX-1	OCEAN BOULEVARD SIDEWALKS EXISTING STORM DRAIN
EX-2	OCEAN BOULEVARD SIDEWALKS EXISTING STORM DRAIN
EX-3	OCEAN BOULEVARD SIDEWALKS EXISTING STORM DRAIN
SD-1	OCEAN BOULEVARD SIDEWALKS STORM DRAIN
SD-2	OCEAN BOULEVARD SIDEWALKS STORM DRAIN
SW-1	OCEAN BOULEVARD SIDEWALKS
SW-2	OCEAN BOULEVARD SIDEWALKS
D-1	CIVIL DETAILS
D-2	CIVIL DETAILS
D-3	CIVIL DETAILS
D-4	CIVIL DETAILS
D-4	EROSION CONTROL DETAILS



GENERAL NOTES:

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE OFFICE OF STATE CONSTRUCTION, DEPARTMENT OF INSURANCE, NCDOT, NCDENR, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL GUIDELINES. ALL UTILITY CONSTRUCTION SHALL COMPLY WITH APPLICABLE LOCAL JURISDICTIONAL STANDINGS AND SPECIFICATIONS.

2. EXISTING SURVEY INFORMATION INCLUDING TOPOGRAPHIC INFORMATION PROVIDED BY GREENBROOK SURVEYING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE, AND ENGINEER, IN WRITING, OF ANY DISCREPANCIES OR CONFLICTS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING, COORDINATING AND PAYMENT FOR ALL NECESSARY LOCATING SERVICES INCLUDING INDEPENDENT LOCATING SERVICES, THE CONTRACTOR SHALL HAVE ALL EXISTING UTILITIES LOCATED AT LEAST 48 HOURS PRIOR TO BEGINNING DEMOLITION, EXCAVATION OR ANY OTHER FORM OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE, IN WRITING, OF ANY DISCREPANCIES OR CONFLICTS.

4. ALL SUB-SURFACE UTILITIES IDENTIFIED ON THE CONSTRUCTION DOCUMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATION BASED ON SURVEY INFORMATION GATHERED FROM TOWN STAFF, FIELD INSPECTION AND/OR ANY OTHER APPLICABLE RECORD DRAWINGS WHICH MAY BE AVAILABLE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES OR CONFLICTS, IN WRITING. FOR CONNECTIONS USING TAPPING SLEEVES AND VALVES, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE PIPE SIZE AND MATERIAL.

5. EXISTING IMPROVEMENTS DAMAGED OR DESTROYED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED OR REPLACED TO ORIGINAL CONDITION AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND COORDINATING PERMITS, INSPECTIONS, CERTIFICATIONS AND OTHER REQUIREMENTS NECESSARY TO COMPLETE THE PROJECT.

7. THE CONTRACTOR SHALL MAINTAIN "AS-BUILT" DRAWINGS TO RECORD THE ACTUAL LOCATIONS OF ALL PIPING PRIOR TO CONCEALMENT. DRAWINGS SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE AT EACH MONTHLY PROGRESS MEETING, OR AS REQUESTED THROUGHOUT THE PROJECT FOR RECORD KEEPING.

8. IF DEPARTURES FROM THE PROJECT DRAWINGS OR SPECIFICATIONS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEPARTURES AND REASONS THEREOF SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE NOT FOR CONSTRUCTION. NO DEPARTURES FROM THE CONTRACT DOCUMENTS SHALL BE MADE WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE OWNER'S REPRESENTATIVE.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS AND RUBBISH CAUSED BY THE CONTRACTOR. ALL DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE ON A DAILY BASIS.

10. THE ENGINEER AND/OR OWNER DISCLAIM ANY ROLE IN THE CONSTRUCTION MEANS AND/OR METHODS ASSOCIATED WITH THE PROJECT AS SET FORTH IN THESE PLANS.

11. ALL LOCATIONS ARE APPROXIMATE. ENGINEER'S DRAWINGS WILL IDENTIFY SOME KNOWN UTILITIES AND STRUCTURES. OTHERS MAY BE INSTALLED IN LOCATIONS NOT SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING NC ONE-CALL AND LOCATING ALL EXISTING UTILITIES AND ANY DROP/LATERALS TO INDIVIDUAL SERVICES.

12. ALL WORK TO REMAIN WITHIN ROAD RIGHTS-OF-WAY AND EASEMENTS AS SHOWN ON PLANS.

13. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EASEMENT BOUNDARIES.

14. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION OF EITHER 10 FEET HORIZONTALLY OR 18 INCHES VERTICALLY BETWEEN THE EXISTING WATER MAINS AND ANY EXISTING SEWER MAINS OR THE PROPOSED MAIN SHALL BE OF DUCTILE IRON PIPE.

15. THE CONTRACTOR SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF ONE FOOT BETWEEN THE PROPOSED SEWER MAINS AND STORM SEWERS OR THE PROPOSED SEWER MAINS SHALL BE OF DUCTILE IRON PIPE.

16. THE CONTRACTOR SHALL MAINTAIN A MINIMUM COVER OF THREE FEET UNLESS DUCTILE IRON PIPE IS USED, UNLESS NOTED OTHERWISE.

17. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL FOR PUBLIC SAFETY DURING CONSTRUCTION AS PER NCDOT AND OSHA REQUIREMENTS.

18. EROSION CONTROL MEASURES DETAILED IN THESE DOCUMENTS ARE MINIMUM REQUIREMENTS. THIS IN NO WAY ALLEVIATES THE CONTRACTOR OF THIS PORTION OF THE CONTRACT. ALL AREAS WILL HAVE SILT FENCE OR OTHER EROSION CONTROL METHODS IMPLEMENTED IN AREAS OF CONCENTRATED FLOW SO AS TO NOT ALLOW ANY MATERIAL TO LEAVE THE SITE. IMMEDIATELY AFTER BACKFILLING AND GRADING WORK IS COMPLETED, BUT NO LONGER THAN (14) FOURTEEN DAYS THE CONTRACTOR WILL SEED AND MULCH ACCORDING TO THE SEEDING SCHEDULE ON THE DETAIL SHEET AND THE CONSTRUCTION SPECIFICATIONS.

19. ALL BENDS AND TEE SECTIONS SHALL BE DUCTILE IRON AND MECHANICAL JOINT AND RESTRAINED WITH MEGA-LUG FITTINGS AND ONE PIPE JOINT ON EACH SIDE WITH PIPE JOINT RESTRAINING SYSTEM.

20. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY ASPHALT OR CONCRETE DAMAGED DURING THE CONSTRUCTION PROJECT.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THE CONSTRUCTION LAYDOWN AREA, PERIMETER FENCE, AND SAFETY FENCE. FENCE ALL PUBLIC WALKWAYS WITH SIGNAGE SHOWING ALTERNATE PATH. FENCE WITH DETOUR SIGNAGE SHALL BE COORDINATED WITH THE TOWN OF CAROLINA BEACH.

22. PERMANENT SEEDING SHALL BE INCLUDED FOR THE DISTURBED AREAS.

23. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF CAROLINA BEACH FOR THE REMOVAL OF ANY LANDSCAPE VEGETATION IN THE PROJECT AREA OF THE SIDEWALK OR DRAINAGE PIPE.

24. THE CONTRACTOR SHALL INSTALL AND CONSTRUCT THE PROJECT WITH A SEQUENCE SUCH THAT NO TRENCH OR SECTION OF ROADWAY SHALL BE LEFT OPEN WITH ONLY STONE BASE FOR MORE THAN TWO MONTHS.

25. THE CONTRACTOR SHALL INSTALL STONE BASE FOR LOCAL TRAFFIC WITH NECESSARY MAINTENANCE AND REPAIR INCLUDED IN THE BASE PRICE OF THE ROADWAY OR DRIVEWAY REPAIRS. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL AND KEEPING THE STREETS BROOM SWEPTED CLEAN OF STONE AND SOIL IN ALL AREAS AFFECTED BY THE PROJECT.

26. ANY CLOSURE OF STREETS WILL BE INSTALLED BY THE CONTRACTOR AND SET FOR LOCAL TRAFFIC ACCESS ONLY. THE CONTRACTOR MUST MAINTAIN OR COORDINATE ACCESS FOR ALL PROPERTY OWNERS ALONG THE PROJECT AREA.

27. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL FOR PUBLIC SAFETY DURING CONSTRUCTION AS PER NCDOT AND OSHA REQUIREMENTS.

28. TRAFFIC CONTROL PLANS AND SEQUENCE SHALL BE SUBMITTED FOR APPROVAL TO THE TOWN. PER THE ABOVE, LOCAL TRAFFIC MUST BE MAINTAINED AND NECESSARY MEASURES MADE TO PROVIDE ACCESS TO DRIVEWAYS ALONG THE ROADWAY, TRAIL, AND UTILITY PROJECT.

CONSTRUCTION SEQUENCE:

1. CLEAR ALL AREAS NECESSARY TO CONSTRUCT TEMPORARY EROSION CONTROL DEVICES FOR THE PROJECT IN ORDER TO CONTAIN ALL RUNOFF DUE TO CONSTRUCTION.
2. INSTALL ALL EROSION CONTROL DEVICES (ROCK CHECK DAMS, OUTLET PROTECTION FOR PIPES, SILT FENCES, DROP INLET PROTECTION, ETC.)
3. CLEAR AND GRUB AS NECESSARY.
4. COMPLETE GRADING AND APPLY PERMANENT SEEDING. TEMPORARY SEEDING INSTALLED IN AREAS SCHEDULED FOR ADDITIONAL UTILITY OR SIDEWALK WORK.
5. ALL EROSION CONTROL DEVICES TO BE MAINTAINED UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
6. AFTER ALL PERMANENT SEEDING HAS BEEN ESTABLISHED, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AND RESEED ALL DISTURBED AREAS.
7. STRAW AND ASPHALT TACK SHALL BE APPLIED TO ALL CUT AND FILL SLOPES 3:1 OR GREATER. JUTE NETTING INSTALLED AS NEEDED.
8. TEMPORARY SEEDING TO BE APPLIED ON ALL DENUDED AREAS WITHIN 14 DAYS.

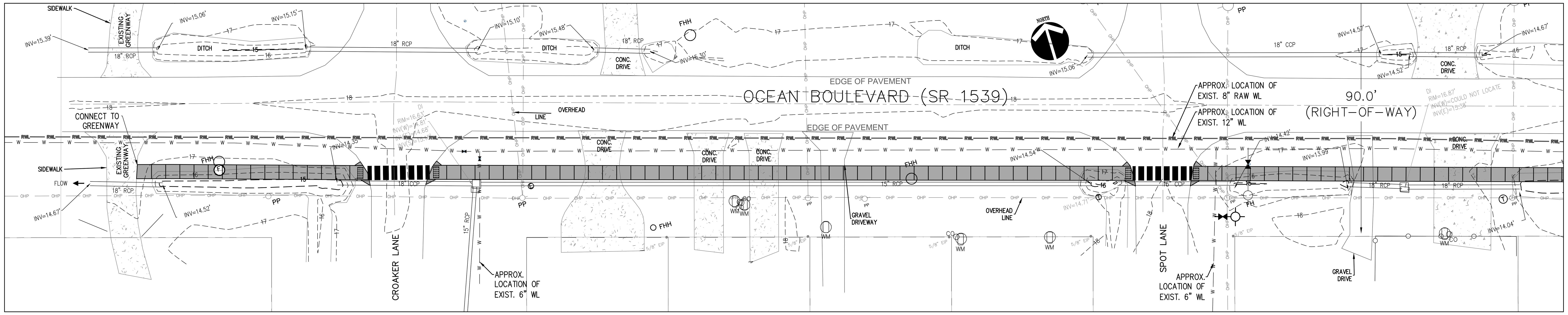
ES ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

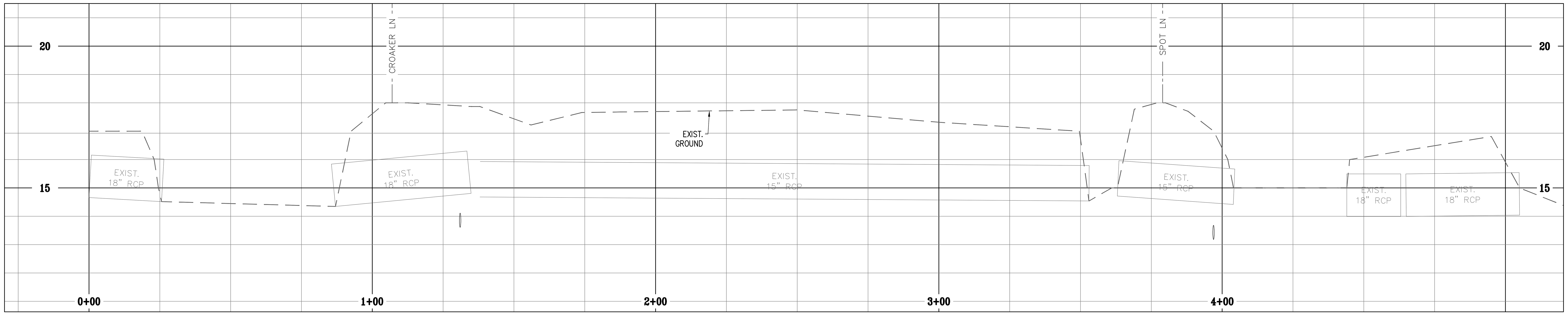
8-5-2024

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL BRIAN G. COX

by:

FINAL DWGS FOR CONSTRUCTION





8-5-2024

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BRIAN G. COX

ENGINEERING SERVICES, P.A.

CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT: TOWN OF CAROLINA BEACH, NORTH CAROLINA
OWNER: TOWN OF CAROLINA BEACH
TITLE: OCEAN BOULEVARD SIDEWALKS EXISTING STORM DRAIN

SCALE	DRWN. BY	PROJECT NO.	DRAWING NUMBER
AS NOTED	TAL	202235	EX-1
DATE 07/29/24	CHKD. BY BGC		

DATE	BY	REV.	DESCRIPTION

FINAL DWGS
FOR
CONSTRUCTION

20 0 20 60
SCALE IN FEET

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

8-5-2024
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29114 BRIAN G. COX

PROJECT	TOWN OF CAROLINA BEACH, NORTH CAROLINA
OWNER	TOWN OF CAROLINA BEACH
TITLE	OCEAN BOULEVARD SIDEWALKS EXISTING STORM DRAIN

SCALE	AS NOTED	DRWN. BY	TAL	PROJECT NO.	DRAWING NUMBER
DATE	07/29/24	CHKD. BY	BGC	202235	EX-2

DATE	BY	REV.	DESCRIPTION

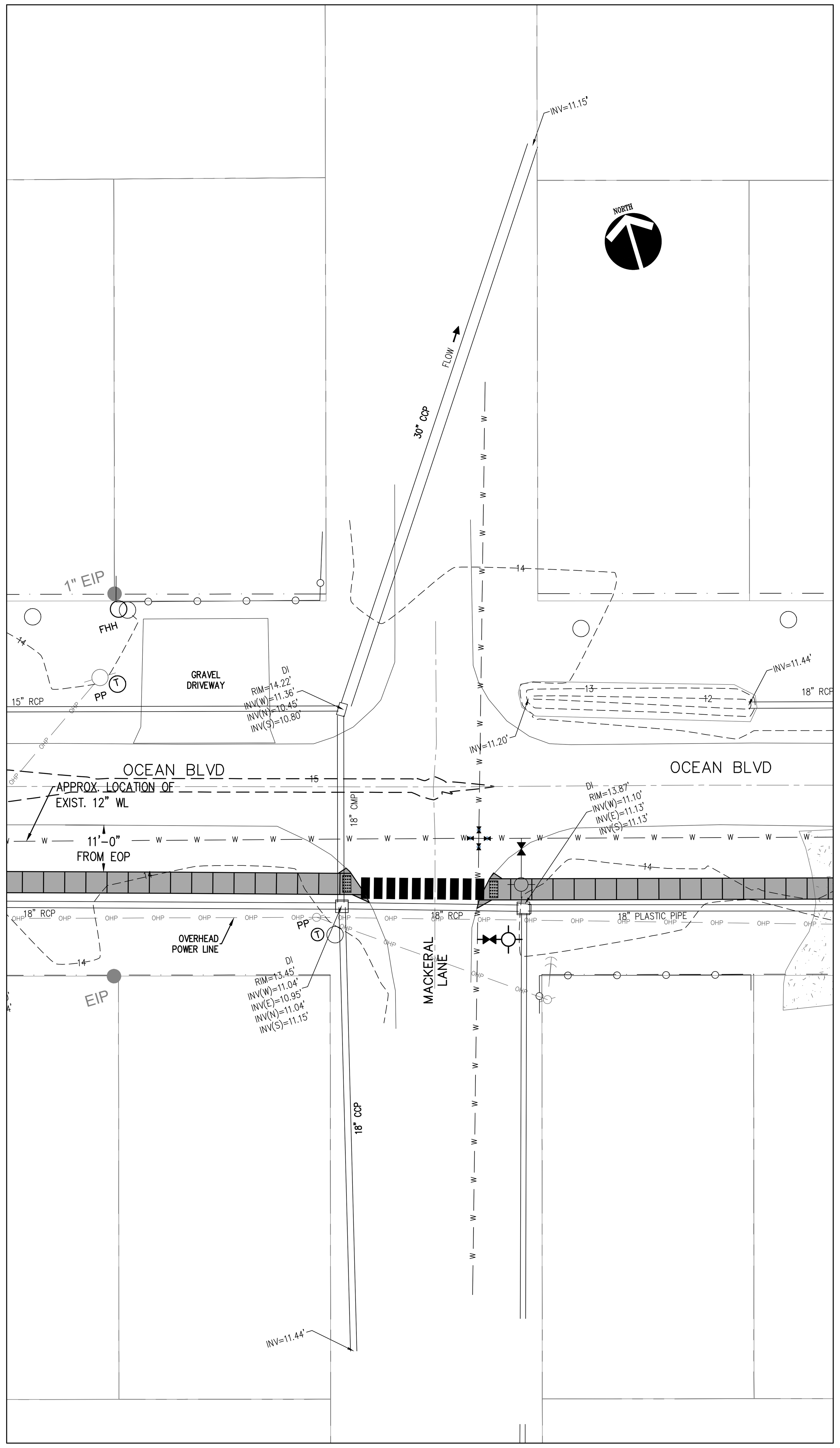
FINAL DWGS
FOR
CONSTRUCTION

8-5-2024
NORTH CAROLINA
PROFESSIONAL
SEAL
ENGINEER
BRIAN G. COX

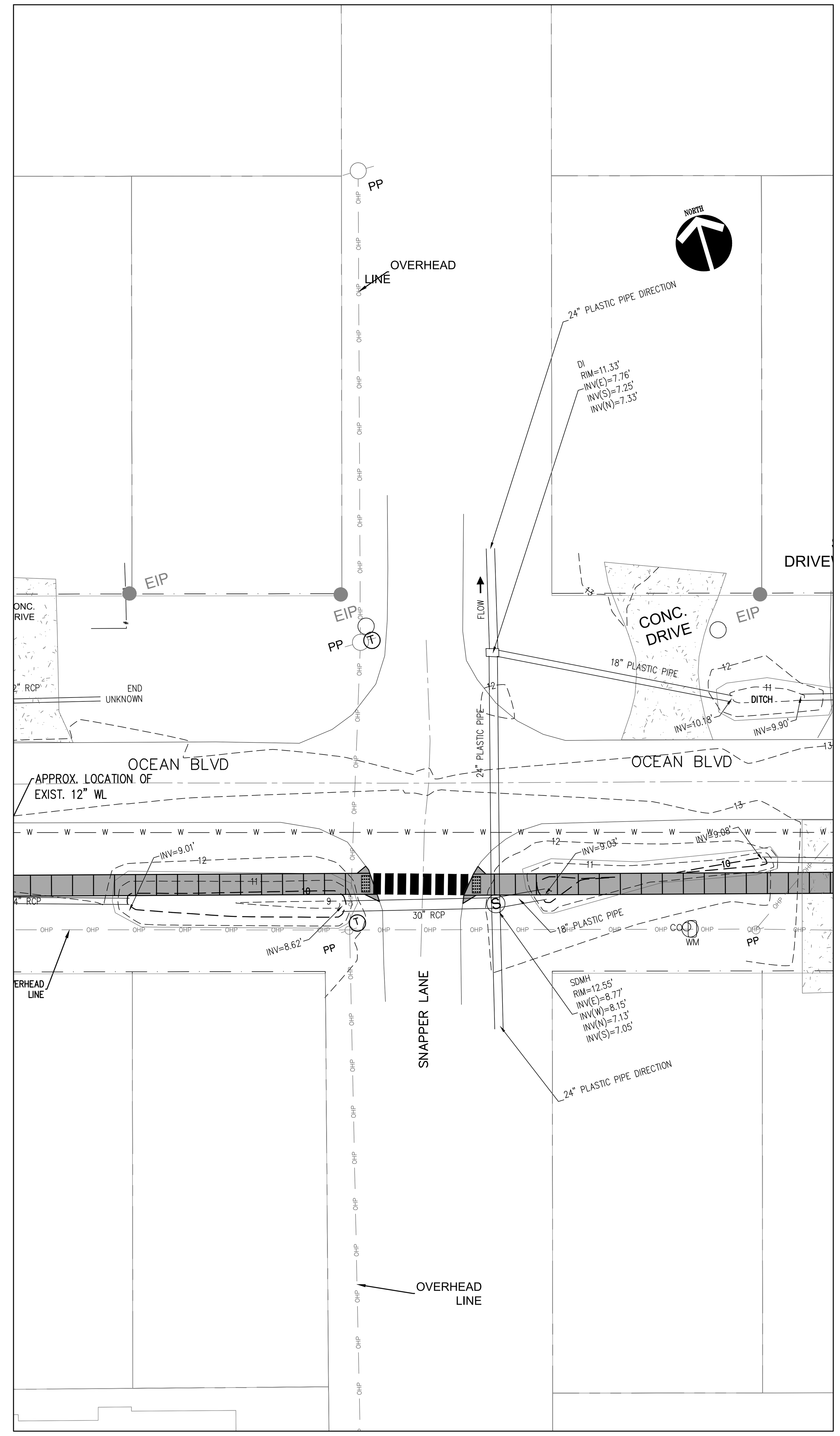
ES ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT	TOWN OF CAROLINA BEACH, NORTH CAROLINA			
OWNER	TOWN OF CAROLINA BEACH			
TITLE	OCEAN BOULEVARD SIDEWALKS EXISTING STORM DRAIN			
SCALE AS NOTED	DRWN. BY TAL	PROJECT NO. 202235	DRAWING NUMBER EX-3	
DATE 07/29/24	CHKD. BY BGC			
DATE	BY	REV.	DESCRIPTION	

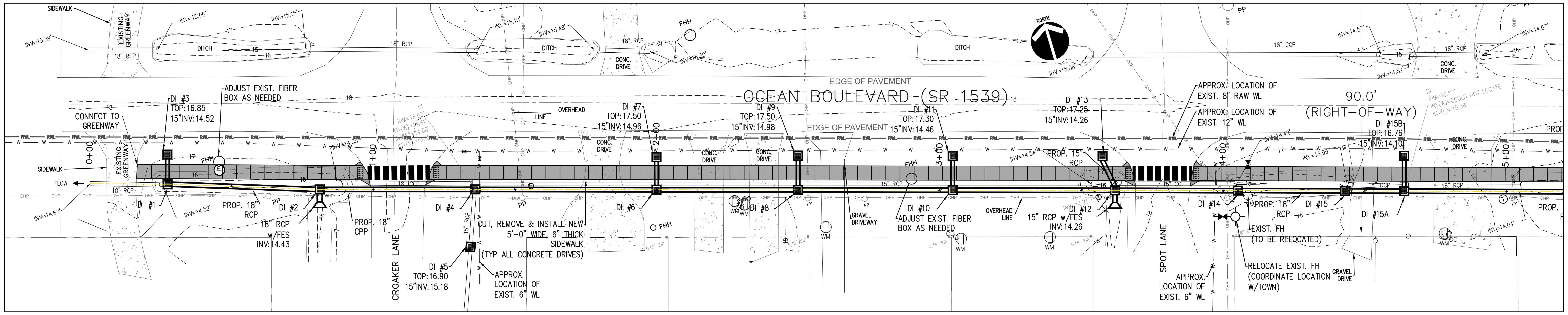
20 0 20 60
SCALE IN FEET

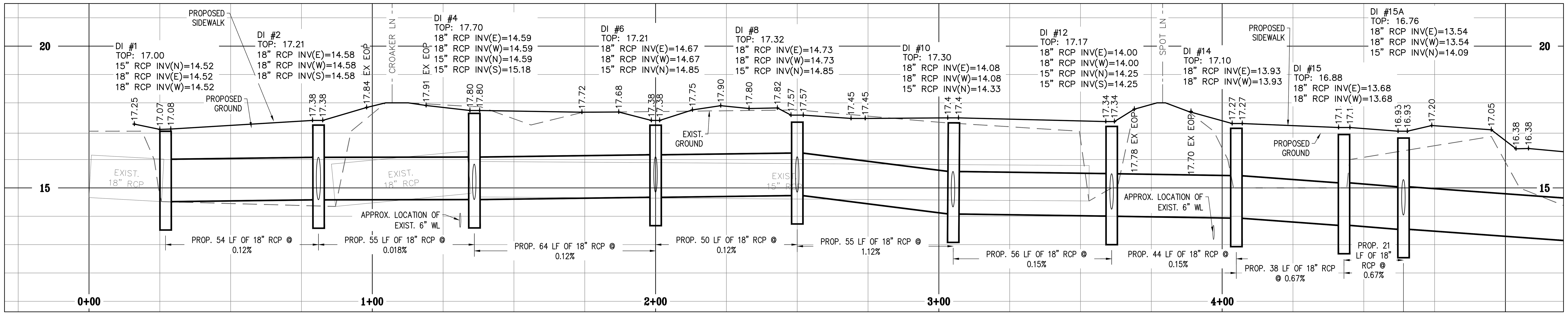


MACKEREL LANE
SCALE: 1"=20'-0"



SNAPPER LANE
SCALE: 1"=20'-0"





DROP INLET INFO

DI	SIZE
1	2'-2" X 3'-0"
2	3'-0" X 3'-0"
3	2'-2" X 3'-0"
4	2'-2" X 3'-0"
5 (IN TOWN R/W)	2'-2" X 3'-0"
6	2'-2" X 3'-0"
7	2'-2" X 3'-0"
8	2'-2" X 3'-0"
9	2'-2" X 3'-0"
10	2'-2" X 3'-0"
11	2'-2" X 3'-0"
12	2'-2" X 3'-0"
13	2'-2" X 3'-0"
14	2'-2" X 3'-0"
15	2'-2" X 3'-0"
15A	2'-2" X 3'-0"
15B	2'-2" X 3'-0"
16	2'-2" X 3'-0"
17	2'-2" X 3'-0"
18	2'-2" X 3'-0"
19	2'-2" X 3'-0"
19A	2'-2" X 3'-0"
20	2'-2" X 3'-0"
21	2'-2" X 3'-0"
22	2'-2" X 3'-0"
23	2'-2" X 3'-0"
24	2'-2" X 3'-0"
25	2'-2" X 3'-0"
25A	2'-2" X 3'-0"
26	3'-0" X 3'-0"
27	2'-2" X 3'-0"
28	2'-2" X 3'-0"
29	2'-2" X 3'-0"
29A	2'-2" X 3'-0"
30	2'-2" X 3'-0"
31	2'-2" X 3'-0"
31A	2'-2" X 3'-0"
31B	2'-2" X 3'-0"
31C	2'-2" X 3'-0"

LEGEND
- WM WATER METER
- CO SEWER CLEANOUT
- FHH FIBEROPTIC HAND HOLE
- POWER POLE
- T TELEPHONE PEDESTAL
- E ELECTRICAL PEDESTAL

8-5-2024

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL BRIAN G. COX

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT	TOWN OF CAROLINA BEACH, NORTH CAROLINA
OWNER	TOWN OF CAROLINA BEACH
TITLE	OCEAN BOULEVARD SIDEWALKS STORM DRAIN
SCALE	AS NOTED
DRWN. BY	TAL
DATE	07/29/24
CHKD. BY	BGC
PROJECT NO.	202235
DRAWING NUMBER	SD-1

DATE	BY	REV.	DESCRIPTION

FINAL DWGS FOR CONSTRUCTION

SCALE IN FEET: 20 0 20 60

FINAL DWGS FOR CONSTRUCTION

8-5-2024

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — BRIAN G. COX

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT	TOWN OF CAROLINA BEACH, NORTH CAROLINA
OWNER	TOWN OF CAROLINA BEACH
TITLE	**OCEAN BOULEVARD SIDEWALKS STORM DRAIN**
SCALE	AS NOTED
DATE	07/29/24
DRWN. BY	TAL
CHKD. BY	BGC
PROJECT NO.	202235
DRAWING NUMBER	SD-2

DATE	BY	REV.	DESCRIPTION

CONTRACTOR NOTE:
DROP INLETS ON THE SOUTH SIDE OF THE SIDEWALK CAN BE NON-TRAFFIC RATED BOXES.

LEGEND
- WATER METER
- SEWER CLEANOUT
- FHH FIBEROPTIC HAND HOLE
- POWER POLE
- TELEPHONE PEDESTAL
- ELECTRICAL PEDESTAL

DROP INLET INFO

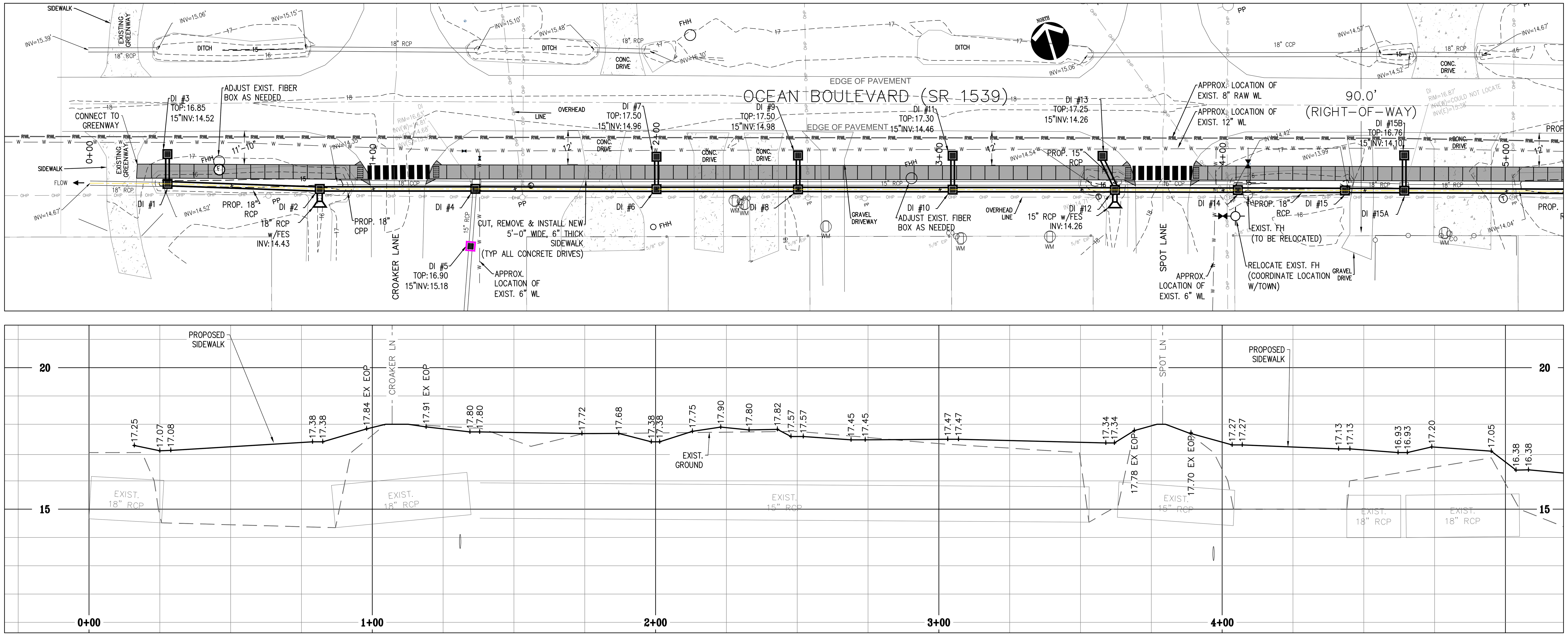
DI	SIZE
32	2'-2" X 3'-0"
32A	2'-2" X 3'-0"
33	2'-2" X 3'-0"
33A	2'-2" X 3'-0"
34	2'-2" X 3'-0"
35	2'-2" X 3'-0"
35A	2'-2" X 3'-0"
35B	2'-2" X 3'-0"
35C	2'-2" X 3'-0"
36	2'-2" X 3'-0"
36A	2'-2" X 3'-0"
37	2'-2" X 3'-0"
37A	2'-2" X 3'-0"

DROP INLET INFO

DI	SIZE
37B	2'-2" X 3'-0"
38	2'-2" X 3'-0"
39	2'-2" X 3'-0"
40	3'-0" X 3'-0"
41	2'-2" X 3'-0"
42	3'-0" X 3'-0"
43	3'-0" X 3'-0"
44	2'-2" X 3'-0"
45	3'-0" X 3'-0"
45A	2'-2" X 3'-0"
46	2'-2" X 3'-0"
47	3'-0" X 3'-0"

DROP INLET INFO

DI	SIZE
47A	2'-2" X 3'-0"
48	2'-2" X 3'-0"
49	3'-0" X 3'-0"
50	3'-0" X 3'-0"
51	2'-2" X 3'-0"
52	2'-2" X 3'-0"
53	2'-2" X 3'-0"
54	2'-2" X 3'-0"
55	2'-2" X 3'-0"
56	2'-2" X 3'-0"
57	2'-2" X 3'-0"
58	2'-2" X 3'-0"



8-5-2024

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL BRIAN G. COX

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT: TOWN OF CAROLINA BEACH, NORTH CAROLINA
OWNER: TOWN OF CAROLINA BEACH
TITLE: **OCEAN BOULEVARD SIDEWALKS**

SCALE	DRWN. BY	PROJECT NO.	DRAWING NUMBER
AS NOTED	TAL	202235	SW-1
DATE 07/29/24	CHKD. BY BGC		

DATE	BY	REV.	DESCRIPTION
12/4/23	BGC	1	REVISED PER ADDENDUM #1

FINAL DWGS
FOR CONSTRUCTION

20 0 20 60
SCALE IN FEET

CONTRACTOR NOTE:
CONTRACTOR IS RESPONSIBLE FOR COORDINATING EXISTING CONCRETE DRIVEWAY ELEVATIONS WITH PROPOSED SIDEWALK ELEVATIONS.

8-5-2024

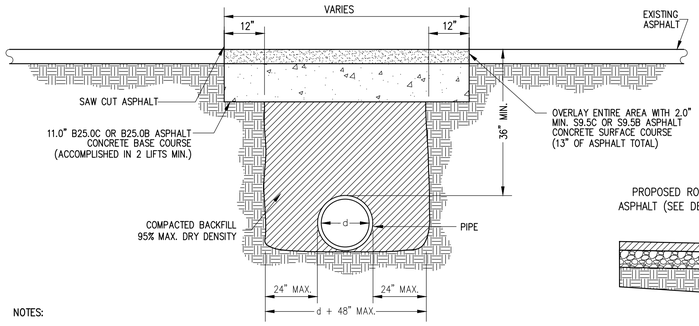
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL BRIAN G. COX

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT TOWN OF CAROLINA BEACH, NORTH CAROLINA
OWNER TOWN OF CAROLINA BEACH
TITLE **OCEAN BOULEVARD SIDEWALKS**

SCALE	DRWN. BY	PROJECT NO.	DRAWING NUMBER
AS NOTED	TAL	202235	SW-2
DATE 07/29/24	CHKD. BY BGC		

DATE	BY	REV.	DESCRIPTION
12/4/23	BGC	1	REVISED PER ADDENDUM #1



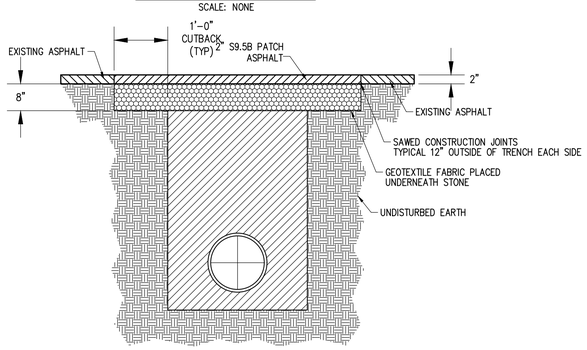
NOTES:

1. Minimum Density for all Asphalt Courses shall be 92%.
2. Asphalt Concrete Surface Course (ACSC) shall be placed and compacted in maximum of 1.5" lifts.
3. Asphalt Concrete Intermediate Course (ACIC) shall be placed and compacted in maximum of 4.0" lifts.
4. Asphalt Concrete Base Course (ACBC) shall be placed and compacted in maximum of 4.0" lifts.
5. Saw cut edges of cut to provide a smooth, even edge for the patch, and prevent damage to the existing asphalt which will remain in place.
6. Only half of the road width shall be opened at one time in order to maintain traffic. No trench shall be left open overnight.
7. Traffic Control shall be provided in accordance with the FHWA's MUTCD.
8. Backfill to be free of rocks, foreign material or frozen earth.
9. Backfill compacted to:
   a. 100% maximum dry density under roads, driveways, sidewalks or in areas where restrained joints are used.
   b. Density before disturbance or 95% maximum dry density, whichever is less, in NC DOT R/W (other than in areas mentioned above).
   c. Density before disturbance or 90% maximum dry density, whichever is less, in locations not covered above.
10. Backfill compacted in maximum of 8" lifts over pipe and maximum of 6" lifts around pipe.
11. Patches & Overlays:
    a. all Open Cuts in the travel lanes shall be paved at the end of each day.
    b. All Open Cuts shall be patched within 7 days of completion of that particular cut, unless the cut is in the travel lane.
    c. All Open Cuts shall be overlaid within 7 days of completion of all cuts required for the project.
    d. Where Open Cuts run across the Roadway Centerline, the Overlay shall be from the edge of pavement to the edge of pavement.
    e. Where Open Cuts do not cross the Roadway Centerline, the Overlay shall be from the edge of pavement to the roadway centerline, unless the roadway crown point would dictate otherwise.
12. All thermoplastic markings and reflectors shall be replaced per NCDOT requirements.

*Reference to density based on Standard Proctor as determined by AASHTO T99 (ASTM D-698).

TYPICAL NORTH CAROLINA STATE ROAD OPEN CUT & PATCH

SCALE: NONE

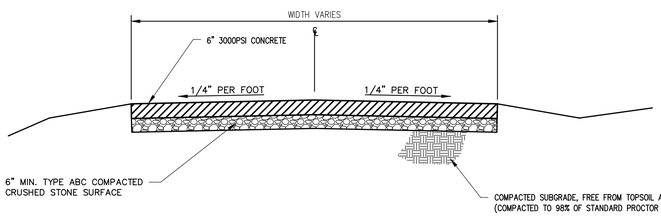


NOTES:

1. ASPHALT PATCH TO BE 2" S9.5B SURFACE COURSE ASPHALT ON 8" ABC STONE. ADDITIONAL BASE COARSE ASPHALT CAN BE USED IN LIEU OF THE ABC STONE AT A 2:1 RATIO.
2. DRY DENSITY BY MODIFIED PROCTOR TO BE 98% OF MAX. DRY DENSITY FOR ABC STONE.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LAYERS WITH WACKER TYPE TAMP, OR 18" LAYERS WITH APPROVED VIBRATORY SHEEP FOOT TAMP AND COMPACTION TESTED PER THE SPECIFICATIONS.
5. GEOTEXTILE FABRIC SHALL BE PROVIDED UNDERNEATH THE STONE WHEN PAVEMENT CUTS ARE REPAIRED.

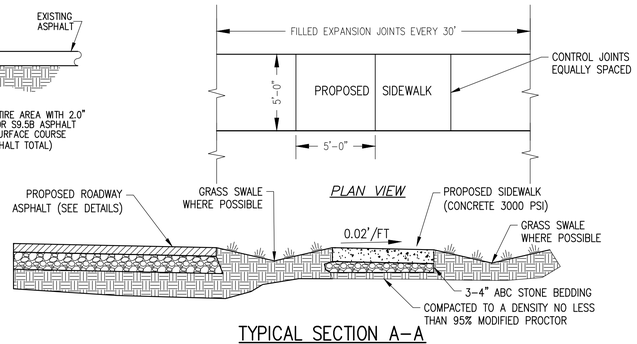
TYPICAL ASPHALT PATCH OVERLAY FOR TOWN STREETS

SCALE: NONE

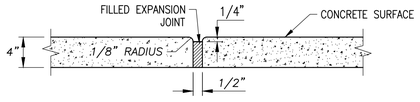


PROPOSED CONCRETE DRIVEWAY REPLACEMENT

SCALE: NONE



TYPICAL SECTION A-A

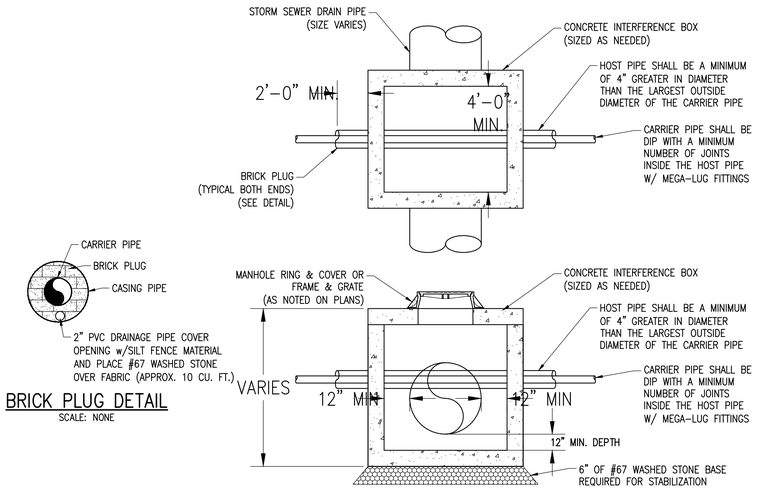


TRANSVERSE EXPANSION JOINT

NOTES:

1. CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK AND 6" THICK IS REQUIRED AT LOCATIONS OF DRIVEWAY CROSSINGS AND STREET INTERSECTIONS.
2. PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS.ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 30' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
3. JOINT MATERIAL TO COMPLY WITH CURRENT NCDOT STANDARDS.
4. CONCRETE FOR ALL SIDEWALKS (EXCEPT ANY PORTION CONTAINED WITHIN A DRIVEWAY APRON) SHALL BE CLASS "A" - 3000 PSI.
5. MINIMUM REPLACEMENT FOR REPAIRS IS A 5' X 5' PANEL.
6. MINIMUM GRADE FOR PROPER DRAINAGE IS 1% IN AT LEAST 1 DIRECTION. MAXIMUM CROSS SLOPE IS 2%. MAXIMUM LONGITUDINAL SLOPE IS 8.3%., 10% IF LIMITED BY EXISTING CONDITIONS, OR NO GREATER THAN THE SLOPE OF THE EXISTING ADJACENT ROAD. SLOPES SHALL MEET ADA REQUIREMENTS.

STANDARD CONCRETE SIDEWALK



NOTES:

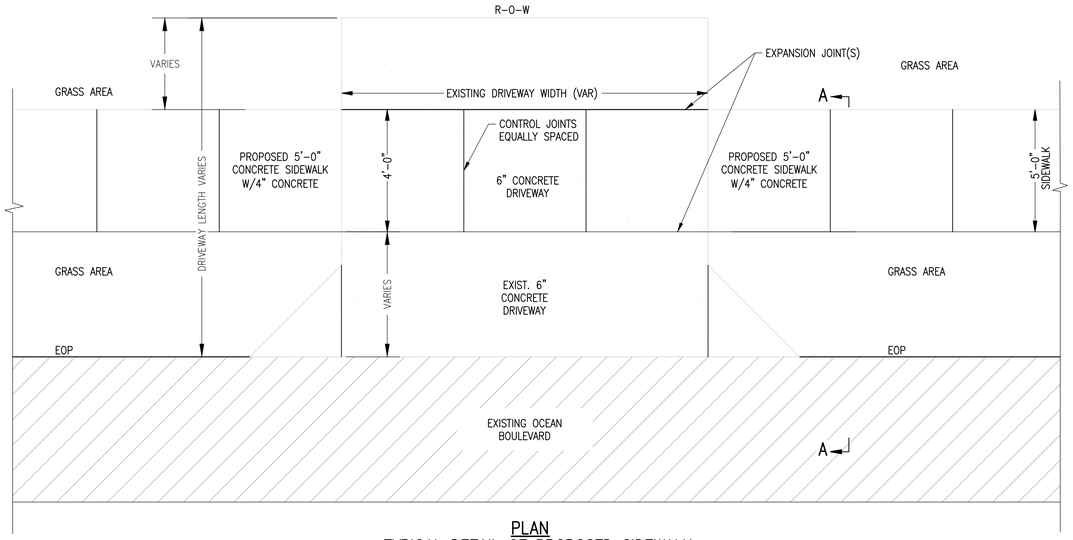
1. INTERFERENCE BOX SHALL BE PRECAST OR BLOCK, SIZED TO MEET CLEARANCES NOTED.
2. HOST PIPE SHALL BE STAINLESS 1/4" STEEL CASING, AND SHALL EXTEND A MINIMUM OF 2'-0" OUTSIDE THE INTERFERENCE BOX.
3. HOST PIPE SHALL BE A MINIMUM OF 4" IN DIAMETER LARGER THAN THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE.
4. METAL CENTERING SPIDERS SHALL BE PLACED, AT A MINIMUM, ONE PER FIVE FEET OF CARRIER PIPE.

TYPICAL INTERFERENCE BOX

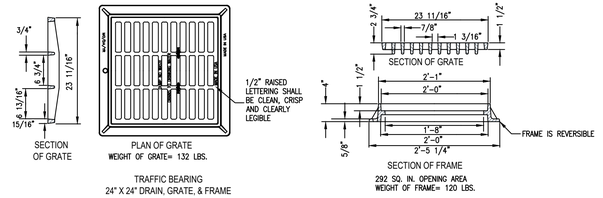
SCALE: NONE

BRICK PLUG DETAIL

SCALE: NONE



PLAN
TYPICAL DETAIL OF PROPOSED SIDEWALK

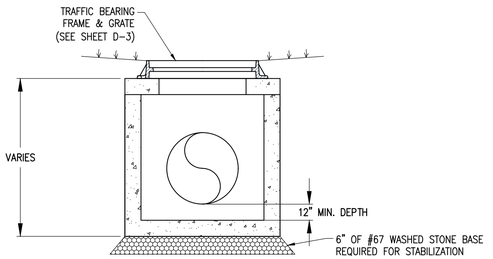


TRAFFIC BEARING PEDESTRIAN FRAME & GRATE

SCALE: NONE

CONTRACTOR NOTE

1. PEDESTRIAN GRATES SHALL BE INSTALLED WHERE THE DROP INLETS ARE LOCATED IN THE SIDEWALK CONCRETE.
2. ALL OTHER GRATES SHALL BE AS NOTED ON SHEET D-3 FOR TRAFFIC RATED BICYCLE FRIENDLY GRATES.



NOTES:

1. PRECAST CONCRETE CATCH BASINS CONFORMING TO ASTM A-615, GRADE 60 AND MEETS H-20 LOADING SHALL ONLY BE ACCEPTED.
2. ALL PIPE INVERTS SHALL BE SEALED WITH CEMENT MORTAR PER SPECIFICATIONS.
3. TRAFFIC BEARING PEDESTRIAN FRAME AND GRATES PER SPECIFICATIONS AND ENGINEER'S APPROVAL.
4. ALL LIFTING HOLES TO BE GROUTED AND LEFT SMOOTH WITH THE WALL SURFACE.
5. ALL LEAKS FOUND DURING INSPECTIONS SHALL BE SEALED FROM OUTSIDE.

CASTING NOTES

1. GRAY IRON CONFORMING TO ASTM A48 CL35B.
2. DUCTILE IRON CONFORMING TO ASTM A536 GRADE 80-55-06.
3. CASTINGS SHALL COME FROM A NCDOT APPROVED FOUNDRY.
4. TRAFFIC SERVICE CASTINGS SHALL MEET OR EXCEED THE LATEST STANDARDS OF AASHTO M306-XX. THE CASTING SHALL BE TESTED ON A SUITABLE AND CALIBRATED LOAD TESTING MACHINE AND THE CASTING SHALL HOLD A 40,000 POUND PROOF LOAD FOR ONE MINUTE WITHOUT EXPERIENCING ANY CRACKS OR DETRIMENTAL PERMANENT DEFORMATION. DUCTILE IRON CONFORMING TO ASTM A536 GRADE 80-55-06.

STANDARD AREA DRAIN

SCALE: NONE

FINAL DWGS FOR CONSTRUCTION

8-5-2024
NORTH CAROLINA PROFESSIONAL SEAL 049116 ENGINEER BRIAN G. COX

DATE	BY	REV.	DESCRIPTION

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT: OCEAN BOULEVARD SIDEWALK
OWNER: TOWN OF CAROLINA BEACH, NORTH CAROLINA
TITLE: CIVIL DETAILS

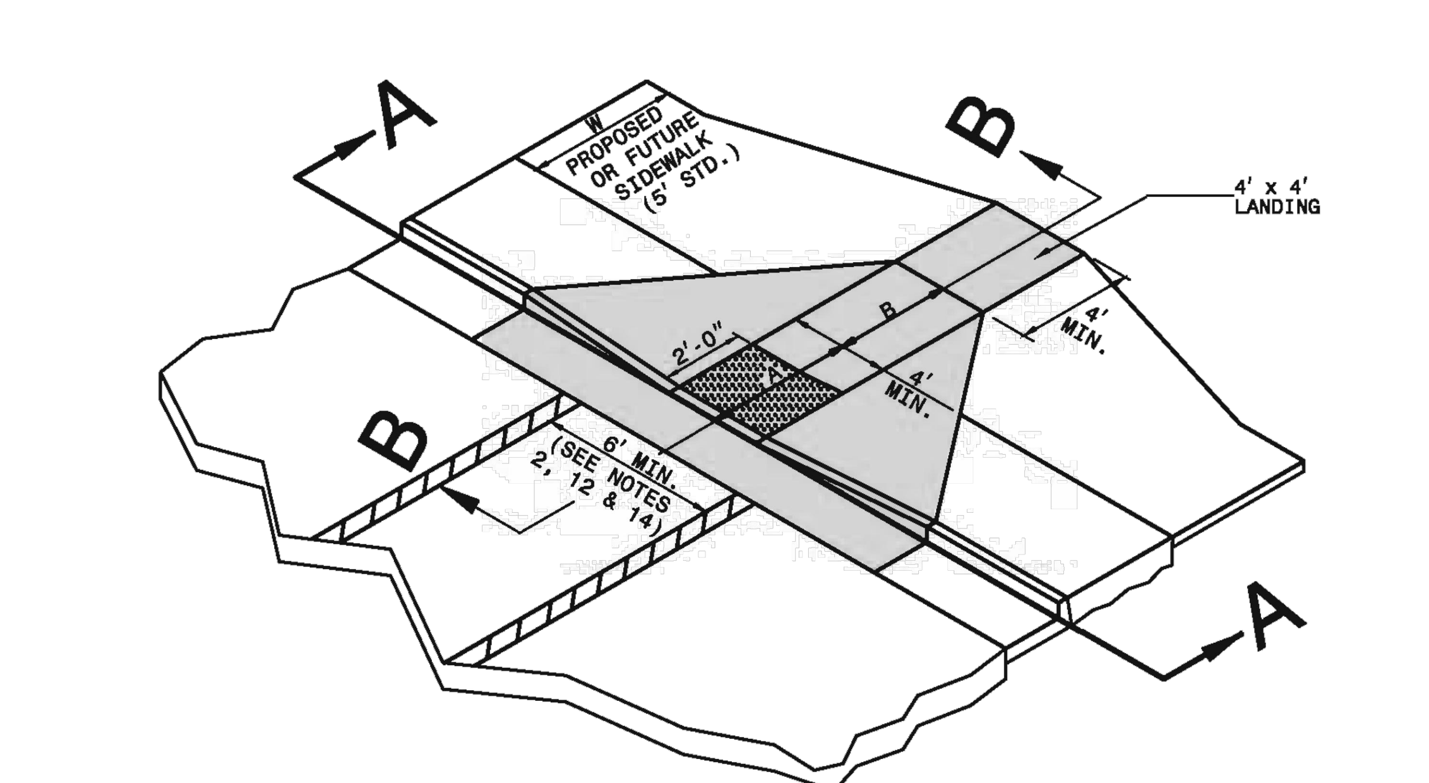
SCALE	DRWN. BY	PROJECT NO.	DRAWING NUMBER
AS NOTED	TAL	202235	D-1
DATE 07/29/24	CHKD. BY BGC		

CAD FILE

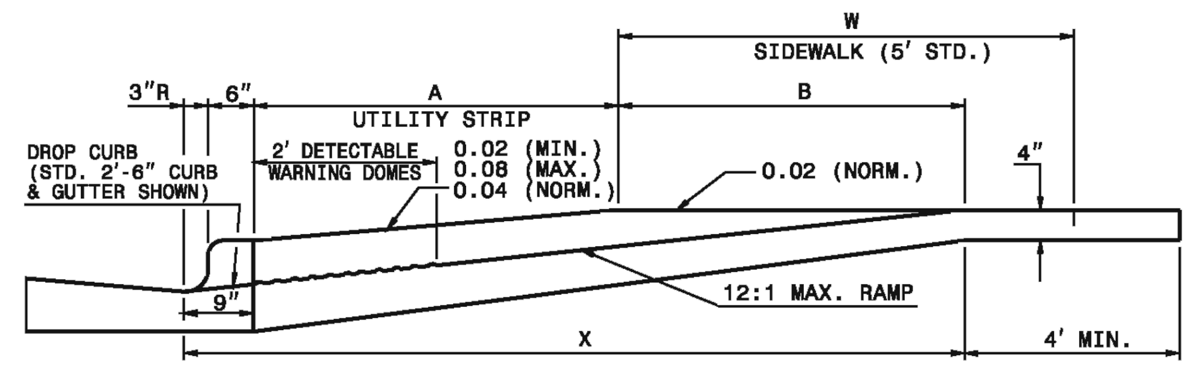
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

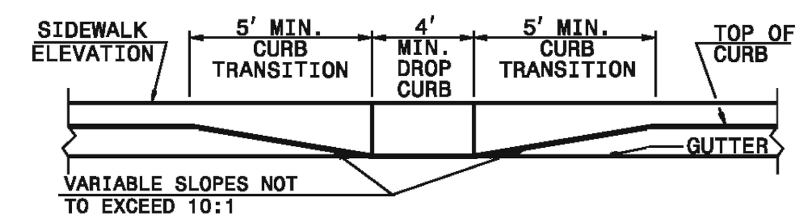
ENGLISH STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER



ISOMETRIC VIEW



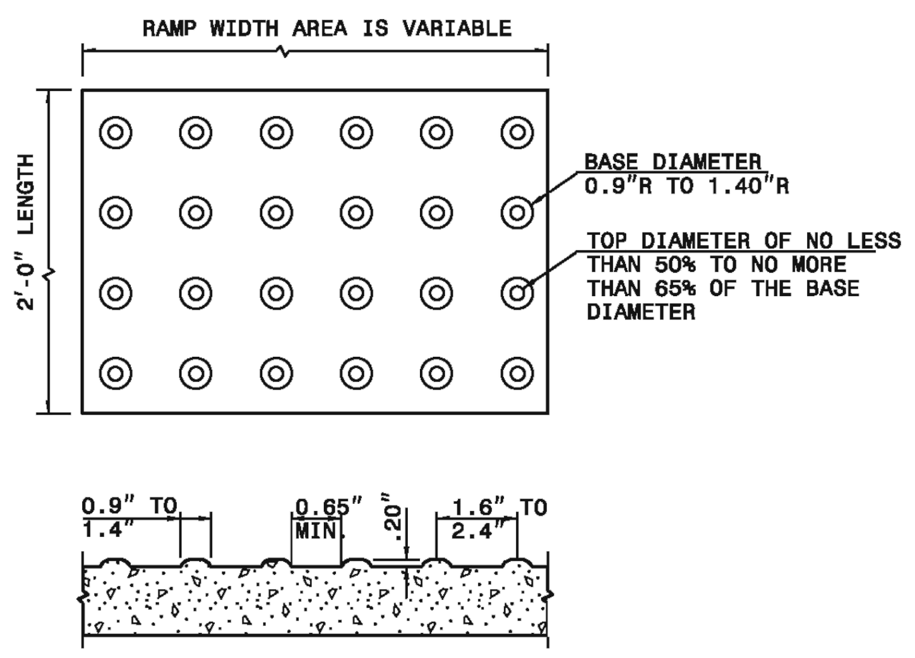
SECTION B-B



SECTION A-A

PAY LIMITS FOR CURB RAMP

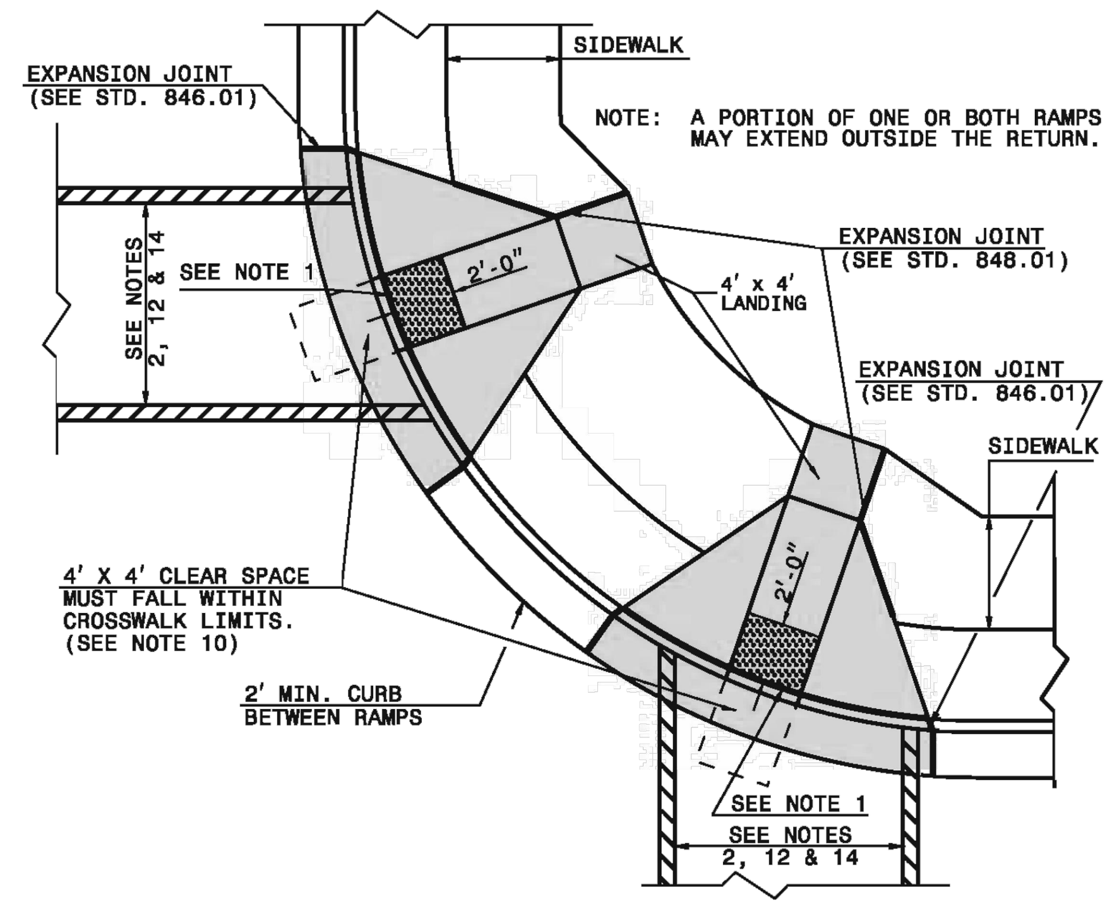
NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING DOMES

W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0'*
6'	0.0'	6.8'	6.8'	6.0'**
7'	0.0'	7.8'	7.3'	6.5'**
8'	0.0'	8.8'	7.3'	6.5'**
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



PLAN VIEW

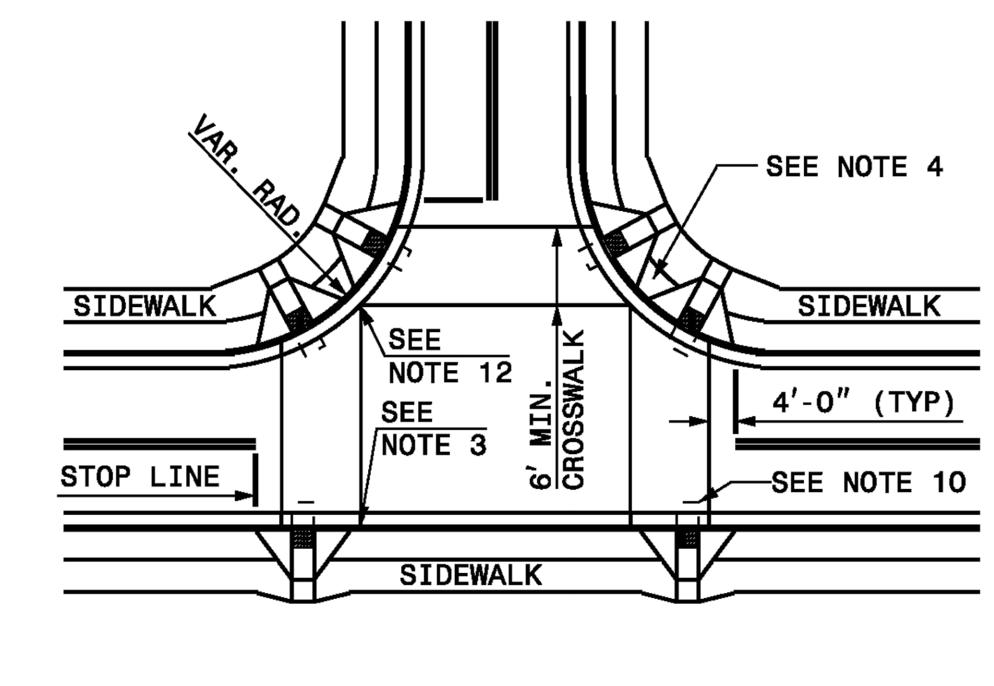
DUAL RAMPS
ANY RADII
(4' MIN. FLOOR WIDTH)

SHEET 1 OF 3
848.05

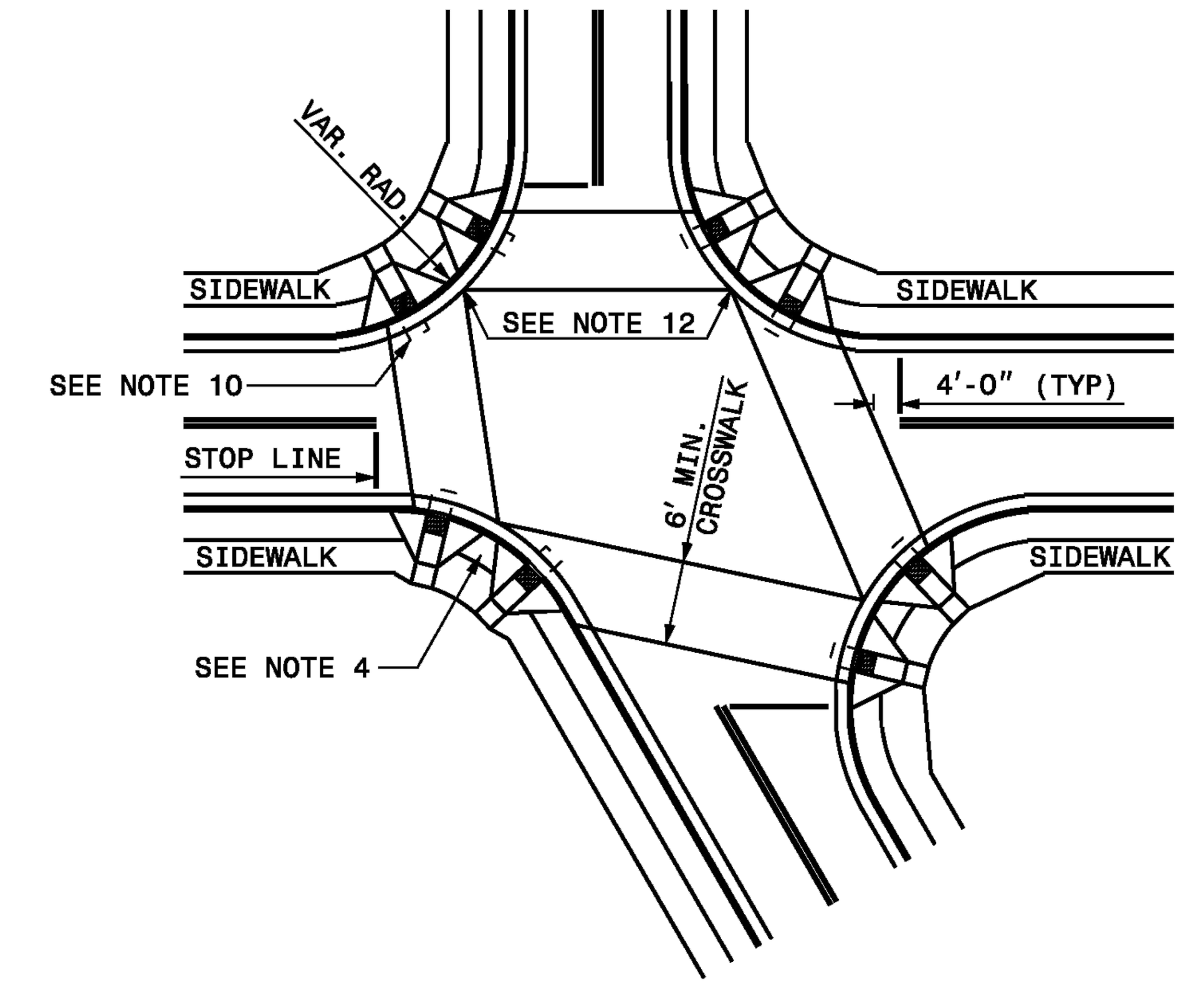
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER



DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS



DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ROADWAY PLAN SYMBOL
CR
FOR PROPOSED CURB RAMP

PROPOSED CURB RAMP W/ LANDING
PROPOSED OR FUTURE SIDEWALK

ALLOWABLE LOCATIONS
DUAL RAMP RADII...........ANY

SHEET 2 OF 3
848.05

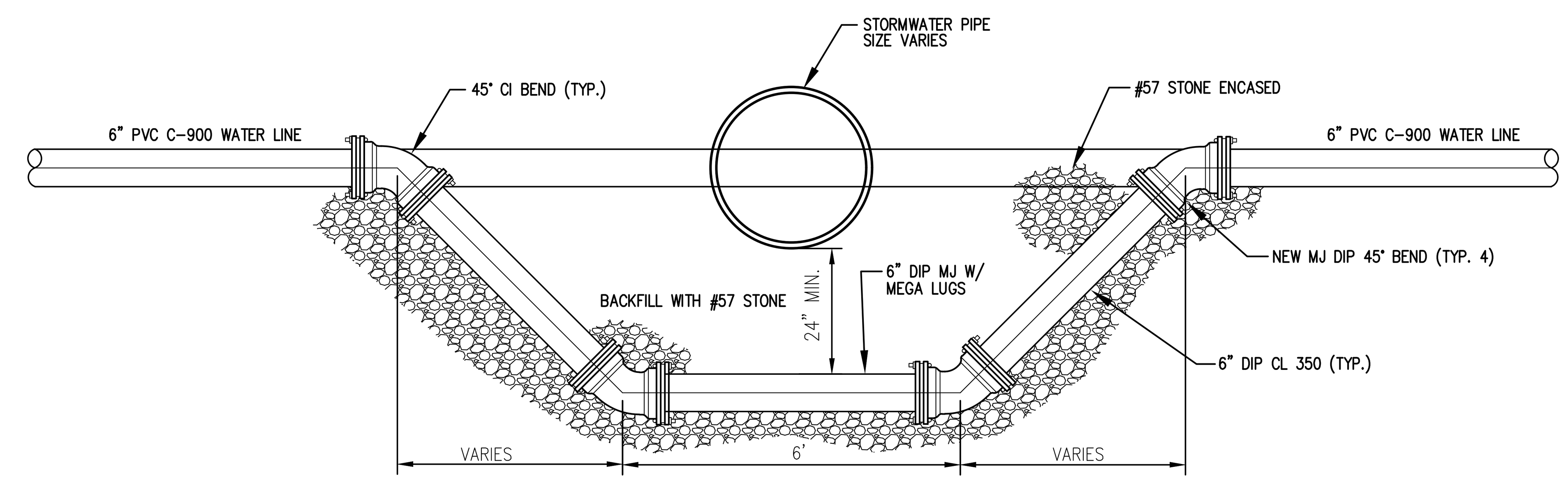
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
CURB RAMPS
NOTES

NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGHT THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

SHEET 3 OF 3
848.05



PIPE CROSSING DETAIL

NOT TO SCALE

FINAL DWGS
FOR
CONSTRUCTION

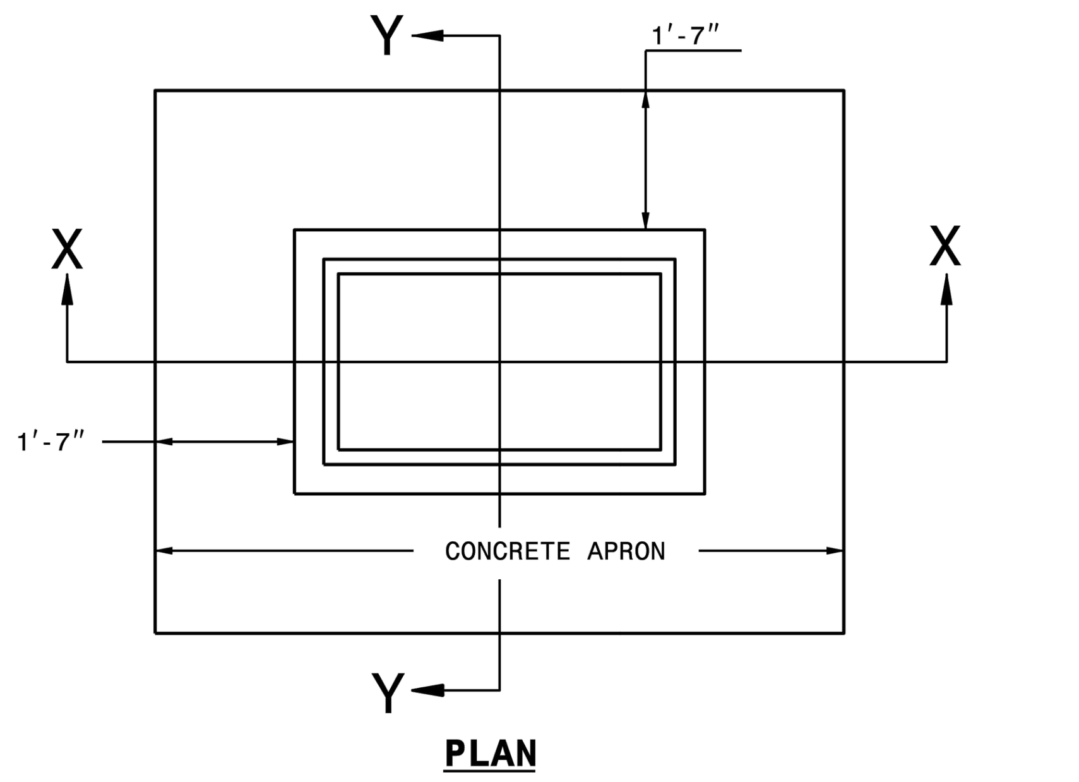
8-5-2024
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29414 BRIAN G. COX

DATE	BY	REV.	DESCRIPTION

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT OCEAN BOULEVARD SIDEWALK
OWNER TOWN OF CAROLINA BEACH, NORTH CAROLINA
TITLE **CIVIL DETAILS**

SCALE AS NOTED	DRWN. BY TAL	PROJECT NO. 202235	DRAWING NUMBER D-2
DATE 07/29/24	CHKD. BY BGC		



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

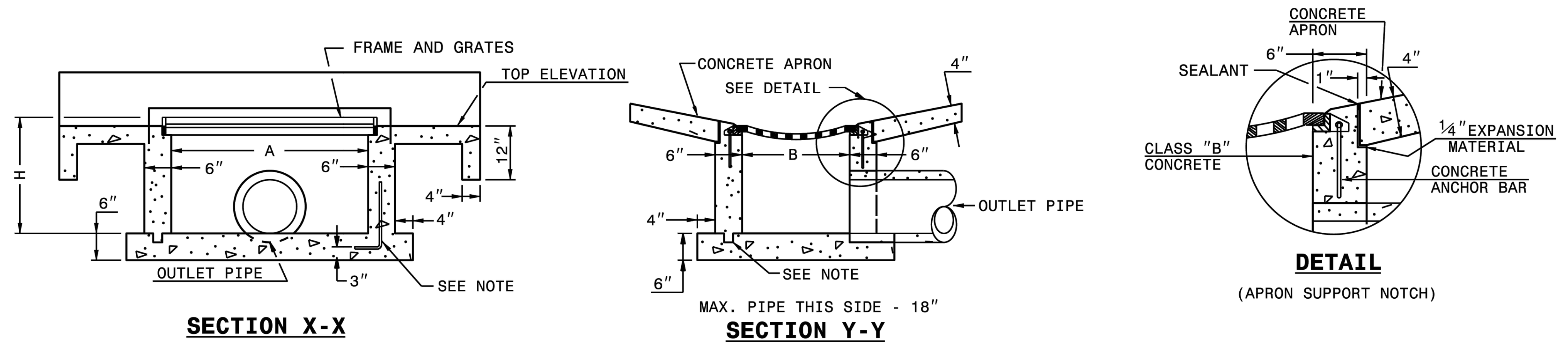
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET. STD. DWG. 840.45 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.

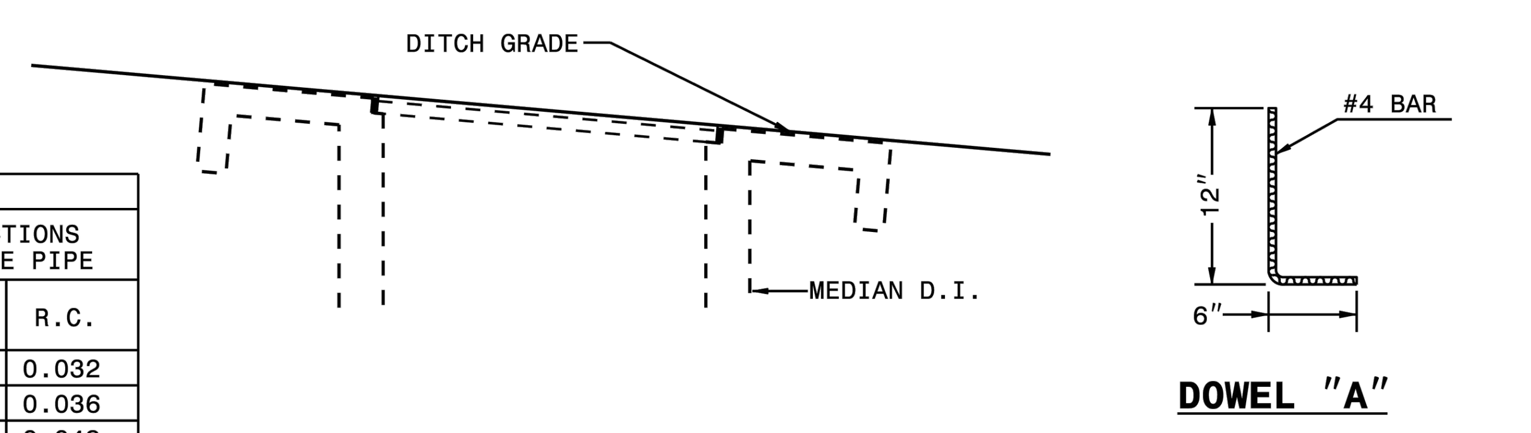
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.





MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET									
PIPE	SPAN	WIDTH	HEIGHT	CUBIC YARDS OF CONCRETE IN BOX				DEDUCTIONS FOR ONE PIPE	
D	A	B	H	BOTTOM SLAB	H PER FT. HT.	H MIN. TOTAL	TOTAL	C.S.	R.C.
12"	3'-8"	2'-0"	2'-6"	0.362	0.247	0.597	0.958	0.020	0.032
15"	3'-8"	2'-0"	2'-9"	0.362	0.247	0.659	1.021	0.023	0.036
18"	3'-8"	2'-0"	3'-0"	0.362	0.247	0.720	1.082	0.033	0.049
24"	3'-8"	2'-0"	3'-6"	0.362	0.247	0.865	1.227	0.059	0.085
30"	3'-8"	2'-0"	4'-0"	0.362	0.247	0.988	1.350	0.092	0.127
36"	3'-8"	2'-0"	4'-6"	0.362	0.247	1.112	1.474	0.132	0.178

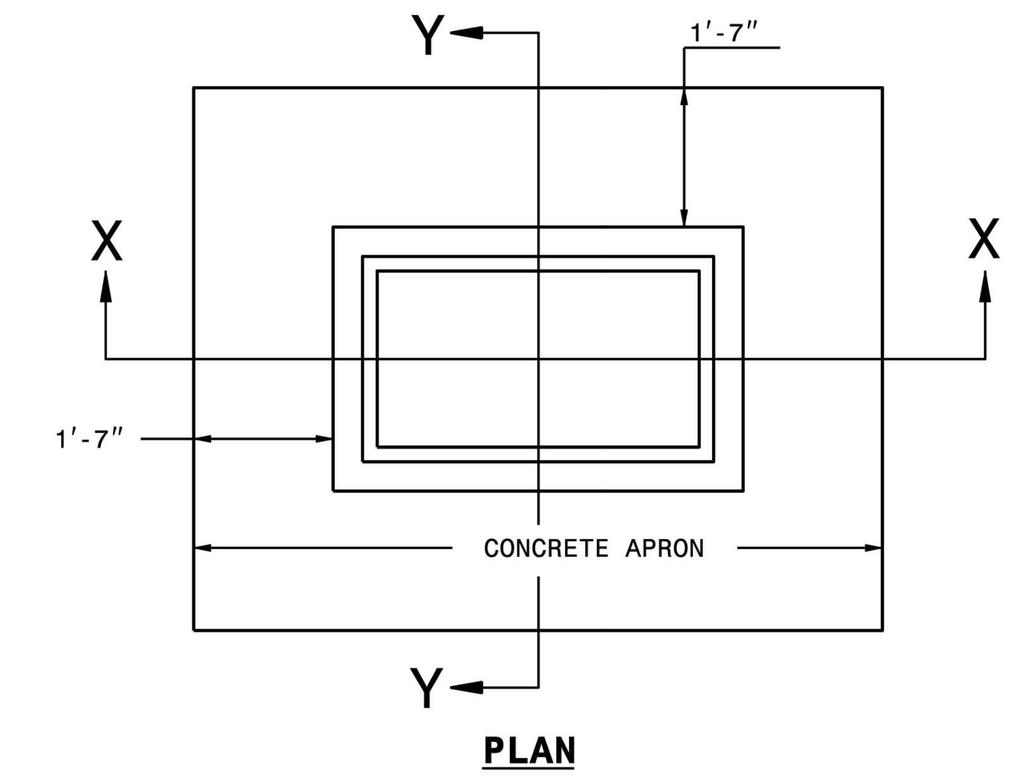
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'B'
12" THRU 36" PIPE

SHEET 1 OF 1

840.18



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

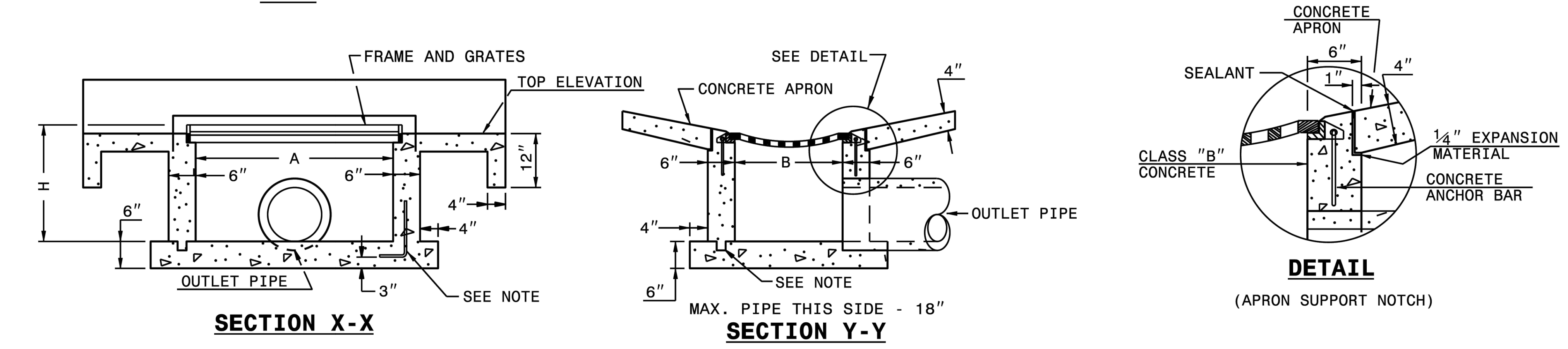
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12"-0". STD. DWG. 840.45 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.

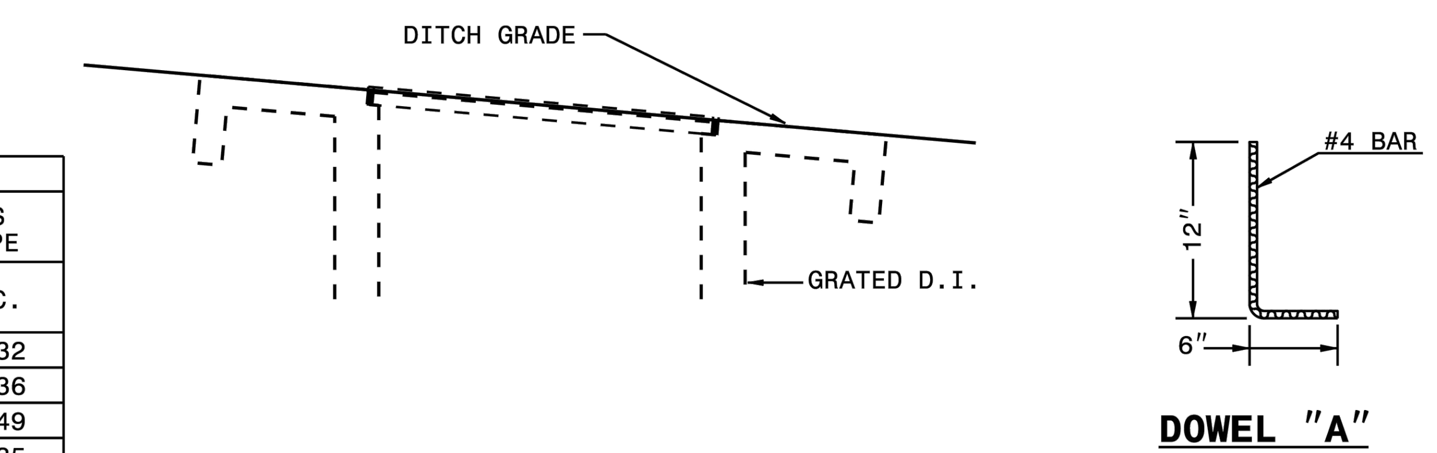
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.





MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET									
PIPE	SPAN	WIDTH	HEIGHT	CUBIC YARDS OF CONCRETE IN BOX				DEDUCTIONS FOR ONE PIPE	
D	A	B	H	BOTTOM SLAB	H PER FT. HT.	H MIN. TOTAL	TOTAL	C.S.	R.C.
12"	3'-8"	2'-0"	1'-8"	0.362	0.247	0.391	0.753	0.020	0.032
15"	3'-8"	2'-0"	1'-11"	0.362	0.247	0.453	0.815	0.023	0.036
18"	3'-8"	2'-0"	2'-2"	0.362	0.247	0.515	0.877	0.033	0.049
24"	3'-8"	2'-0"	2'-8"	0.362	0.247	0.659	1.021	0.059	0.085
30"	3'-8"	2'-0"	3'-2"	0.362	0.247	0.782	1.144	0.092	0.127
36"	3'-8"	2'-0"	3'-8"	0.362	0.247	0.906	1.268	0.132	0.178

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

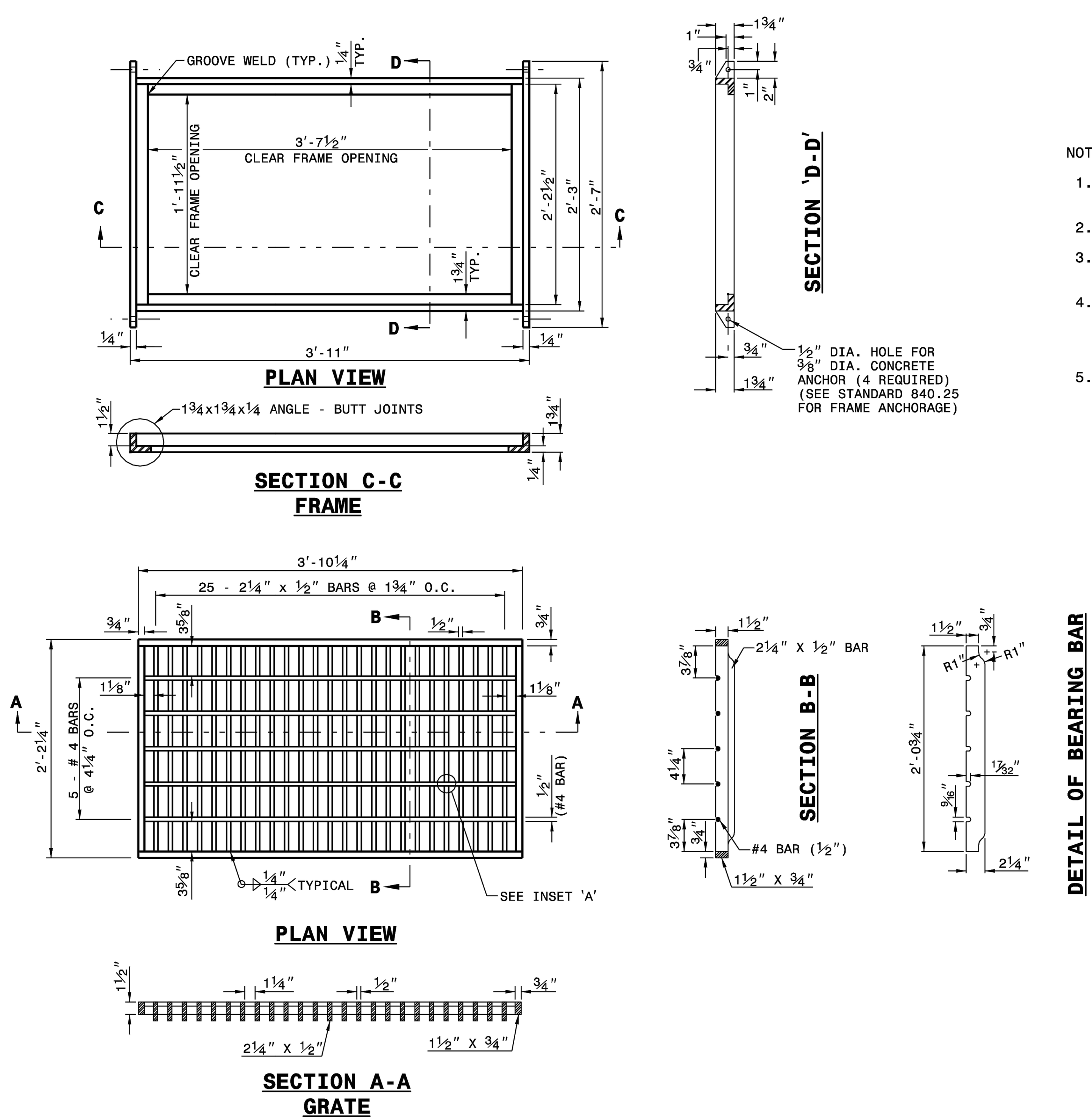
1-24

ROADWAY STANDARD DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'D'
12" THRU 36" PIPE

SHEET 1 OF 1

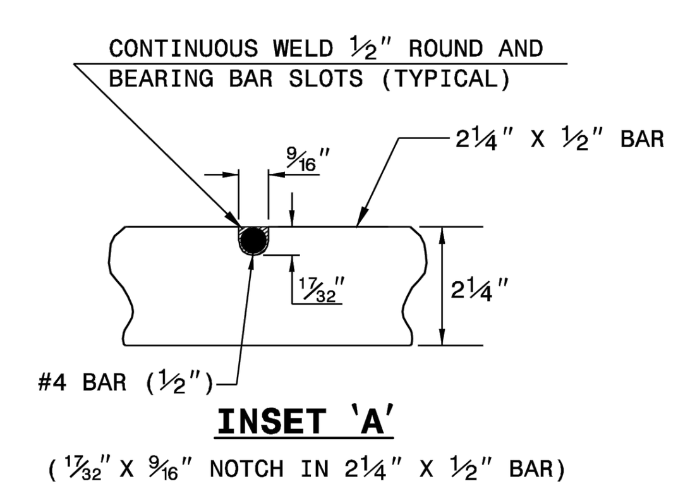
840.19

PROJECT REFERENCE NO.	SHEET NO.



NOTES:

1. HOT DIP GALVANIZE FRAME AND GRATE IN ACCORDANCE WITH ASTM DESIGNATION A-123 AND AASHTO M-111.
2. GRATE SHOULD MEET HS-20 LOADING.
3. PROVIDE STEEL CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A-36.
4. WELD IN ACCORDANCE WITH THE ANSI/AASHTO/AWS D1.5 WELDING CODE. SEAL WELD ALL CONNECTIONS ALONG TOP AND BOTTOM HORIZONTAL SEAMS OF CONNECTIONS IN ADDITION TO ANY REQUIRED STRUCTURAL WELDS.
5. SEE DETAIL DRAWING 840D25 FOR FRAME ANCHORAGE.



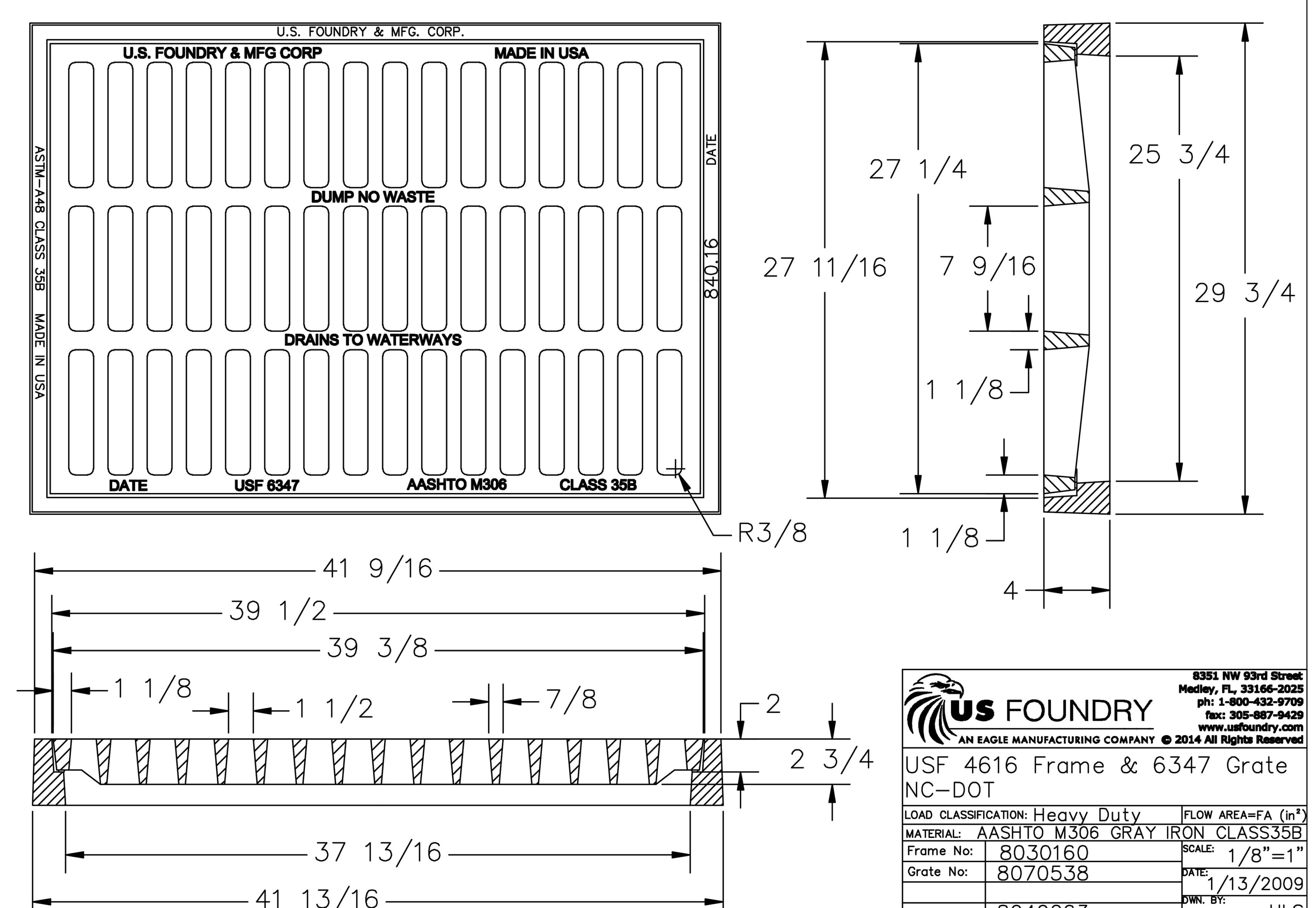
REVISED 10-10-02
FOR HS-20 LOADING

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

BICYCLE SAFE
STEEL GRATE AND FRAME

ORIGINAL BY: E.E. WARD DATE: 11-12-98
MODIFIED BY: E.E. WARD DATE: 10-10-02
CHECKED BY: DATE:
FILE SPEC.: /usr/stand/details/bicyclesafe.dgn

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF U.S. FOUNDRY & MANUFACTURING CORP. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF U.S. FOUNDRY & MANUFACTURING CORP. IS PROHIBITED. U.S. FOUNDRY & MANUFACTURING CORP. RESERVES THE RIGHT TO MAKE MODIFICATIONS TO DESIGN WITHOUT PRIOR NOTICE. DRAWING IS UNCONTROLLED WHEN PRINTED. WEIGHTS AND DIMENSIONS ARE PROVIDED FOR REFERENCE ONLY © 2014 US FOUNDRY AN EAGLE MANUFACTURING COMPANY



8351 NW 93rd Street
Medley, FL, 33166-2025
ph: 1-800-432-9709
fax: 305-887-9429
www.usfoundry.com

US FOUNDRY
AN EAGLE MANUFACTURING COMPANY © 2014 All Rights Reserved

USF 4616 Frame & 6347 Grate
NC-DOT

LOAD CLASSIFICATION:	Heavy Duty	FLOW AREA=FA (in^2)	
MATERIAL:	AASHTO M306 GRAY IRON CLASS35B		
Frame No:	8030160	SCALE:	1/8"=1"
Grate No:	8070538	DATE:	1/13/2009
Assembly No:	8040263	DWN. BY:	ULS
REV: 0	DATE:	REV BY:	QUOTE# 2401

FINAL DWGS
FOR
CONSTRUCTION

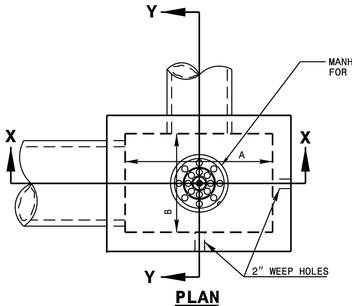
8-5-2024
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29414
BRIAN G. COX

DATE	BY	REV.	DESCRIPTION

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT OCEAN BOULEVARD SIDEWALK
OWNER TOWN OF CAROLINA BEACH, NORTH CAROLINA
TITLE **CIVIL DETAILS**

SCALE AS NOTED	DRWN. BY TAL	PROJECT NO.	DRAWING NUMBER
DATE 07/29/24	CHKD. BY BGC	202235	D-3



PLAN

NOTES: USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

USE #4 BAR DOWELS AT 12" CENTERS

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 16'-0". STD. DWG. 840.45 OR 840.46 CONTROLS MAX. DEPTH IF PRECAST BOX IS USED.

CONSTRUCT WITH PIPE CROWNS MATCHING.

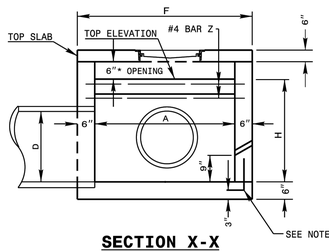
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

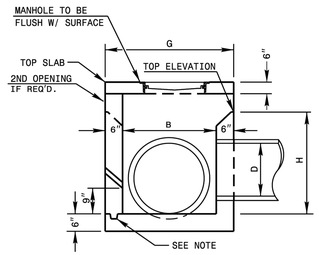
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

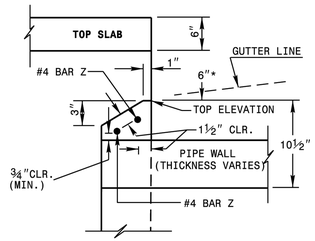
* INCREASE THE SIZE OF THE 6" OPENING TO 8" MAX., AS DIRECTED BY THE ENGINEER BY ADDING 2" TO THE WALL HIEGHT ABOVE THE TOP ELEVATION. ADJUST QUANTITIES ACCORDINGLY.



SECTION X-X



SECTION Y-Y



PART SECTION Y-Y

SHOWING DETAILS AT OPENING

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H)

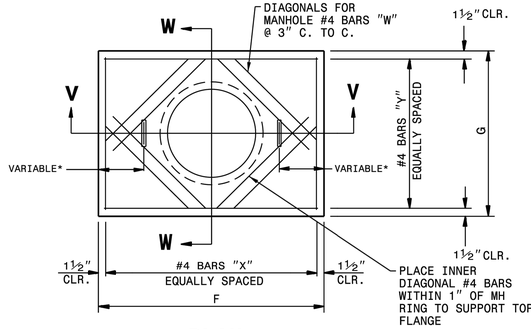
DIM'S OF BOX & PIPE				REINFORCING								TOP & BOT. SLAB DIMENSIONS		CU. YDS. CONC. IN BOX			TOTAL QUANTITIES BOX & SLABS		DEDUCTION ONE PIPE		DED. ONE 6" THROAT OPENING
				BARS - W		BARS - X		BARS - Y		BARS - Z											
PIPE	SPAN	WIDTH	HEIGHT	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	F	G	TOP SLAB	BOT. SLAB	WALL/FT. HT.	LBS. REINF.	YD^3 (MIN H)	C.S.	R.C.	YD^3
D	A	B	H																		
12"	3'-6"	2'-3"	1'-10"	8	3'-8"	4	3'-0"	6	4'-3"	2	4'-3"	4'-6"	3'-3"	0.207	0.271	0.250	47	1.046	0.015	0.032	0.046
15"	3'-6"	2'-3"	2'-1"	8	3'-8"	4	3'-0"	6	4'-3"	2	4'-3"	4'-6"	3'-3"	0.207	0.271	0.250	47	1.108	0.023	0.036	0.046
18"	4'-0"	2'-8"	2'-4"	8	5'-0"	5	3'-5"	7	4'-9"	2	4'-9"	5'-0"	3'-8"	0.275	0.340	0.284	61	1.379	0.033	0.049	0.053
24"	4'-0"	2'-8"	2'-10"	8	5'-0"	5	3'-5"	7	4'-9"	2	4'-9"	5'-0"	3'-8"	0.275	0.340	0.284	61	1.521	0.059	0.085	0.053
30"	4'-0"	3'-6"	3'-4"	8	6'-2"	5	4'-3"	9	4'-9"	2	4'-9"	5'-0"	4'-6"	0.353	0.417	0.315	77	1.916	0.092	0.127	0.053
36"	4'-6"	4'-0"	3'-10"	8	7'-7"	5	4'-9"	10	5'-3"	2	5'-3"	5'-6"	5'-0"	0.445	0.510	0.352	94	2.390	0.132	0.178	0.059
42"	5'-0"	4'-6"	4'-4"	8	9'-0"	5	5'-3"	12	5'-9"	2	5'-9"	6'-0"	5'-6"	0.547	0.611	0.389	119	2.914	0.180	0.243	0.066
48"	5'-0"	5'-0"	4'-10"	8	9'-8"	5	5'-9"	13	5'-9"	2	5'-9"	6'-0"	6'-0"	0.603	0.666	0.407	128	3.298	0.235	0.317	0.066

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

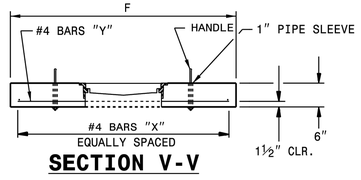
ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
(WITH MANHOLE)
12" THRU 48" PIPE

SHEET 1 OF 2
840.04

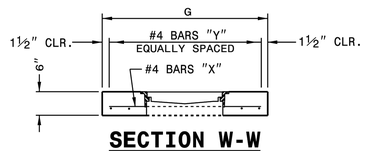


PLAN

PRECAST OR CAST IN PLACE TOP SLAB

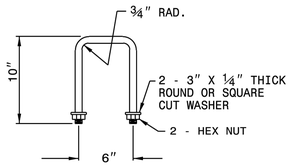


SECTION V-V

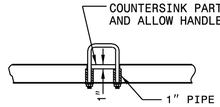


SECTION W-W

*PLACE HANDLES A MINIMUM 8" FROM OUTSIDE EDGE AND IN A MANNER TO AVOID REINFORCEMENT BARS AS DIRECTED BY THE ENGINEER

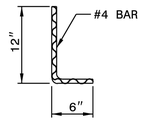


DETAIL OF HANDLE



PART SECTION

THRU COVER SHOWING HANDLE



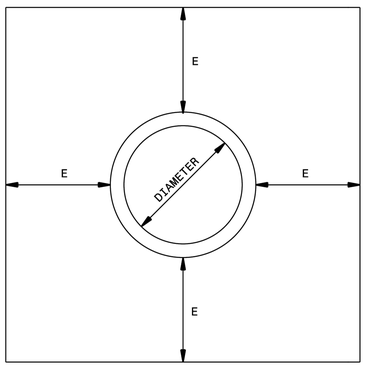
DOWEL

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

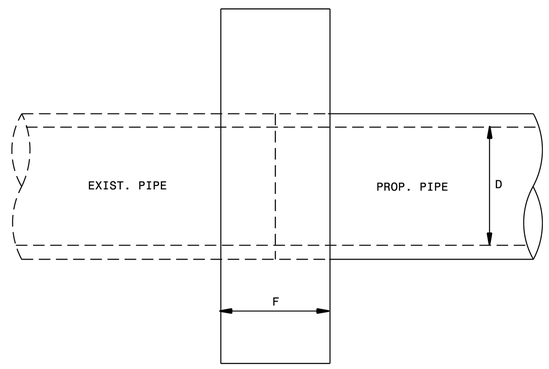
1-24

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
(WITH MANHOLE)
12" THRU 48" PIPE

SHEET 2 OF 2
840.04



ELEVATION



SIDE ELEVATION

GENERAL NOTES:

USE PIPE COLLAR FOR EXTENDING EXISTING CONCRETE PIPE CULVERTS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.

CONSTRUCT THE PIPE COLLAR WITH CLASS "B" OR BETTER CONCRETE.

OBSERVE ALL REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.

* USE 12 INCH DIAMETER VALUES FOR PIPE DIAMETERS LESS THAN 12 INCH.

D	E	F	CU. YD.
12"	12"	12"	0.3528
15"	12"	12"	0.3990
18"	12"	12"	0.4465
24"	12"	12"	0.5526
30"	12"	12"	0.6560
36"	12"	12"	0.7640
42"	12"	12"	0.8856
48"	12"	12"	1.0126
54"	18"	18"	2.5793
60"	18"	18"	2.8506
66"	18"	18"	3.1307
72"	18"	18"	3.4176

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840.72

FINAL DWGS
FOR CONSTRUCTION

8-5-2024
NORTH CAROLINA PROFESSIONAL SEAL 049181 ENGINEER BRIAN G. COX

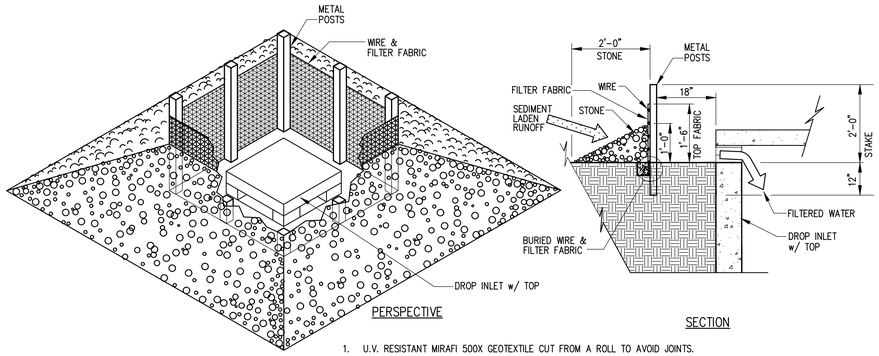
DATE	BY	REV.	DESCRIPTION

ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529-3600
PHONE: (919) 662-7272 NC C-1342

PROJECT: OCEAN BOULEVARD SIDEWALK
OWNER: TOWN OF CAROLINA BEACH, NORTH CAROLINA
TITLE: **CIVIL DETAILS**

SCALE	AS NOTED	DRWN. BY	TAL	PROJECT NO.	DRAWING NUMBER
DATE	07/29/24	CHKD. BY	BGC	202235	D-4

CAD FILE



PERSPECTIVE

SECTION

1. U.V. RESISTANT MIRAFI 500X GEOTEXTILE CUT FROM A ROLL TO AVOID JOINTS.
2. STAKES SHALL BE METAL POSTS WITH A MINIMUM LENGTH OF 3 FEET.
3. STAPLES SHALL BE HEAVY DUTY WIRE AT LEAST 1/2 INCH LONG.
4. METAL POSTS SHALL BE PLACED AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3 FEET APART & SECURELY DRIVEN INTO THE GROUND (MINIMUM OF 1 FOOT).
5. WIRE AND FABRIC SHALL BE BURIED IN TRENCH 4" DEEP AND WIDE OUTSIDE PERIMETER OF STAKES. TRENCH SHALL BE BACKFILLED AND SOIL COMPACTED OVER FABRIC.
6. #57 STONE SHALL BE PLACED 1' HIGH AROUND AROUND BOUNDARY AT A 2:1 SLOPE.

MAINTENANCE

INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. CLEAR THE MESH WIRE OF ANY DEBRIS OR OTHER OBJECTS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. REPLACE STONE AS NEEDED.

TEMPORARY SEDIMENT FILTER AT DROP INLET

NPDES Stormwater Discharge Permit for Construction Activities (NCGO1) NCDENR/Division of Energy, Mineral and Land Resources

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2011)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	**7 days**	**None**
High Quality Water (HQW) Zones	**7 days**	**None**
Slopes steeper than 3:1	**7 days**	**If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.**
Slopes 3:1 or flatter	**14 days**	**7 days for slopes greater than 50' in length.**
All other areas with slopes flatter than 4:1	**14 days**	**None, except for perimeters and HQW Zones.**

SEEDING MIXTURE

SPECIES	RATE (LB/ACRE)
TALL FESCUE	80
SERICEA LESPEDEZA	30
KOBE LESPEDEZA	10
PENSACOLA BAHIAGRASS	50

SEEDING NOTES

1. FROM SEPT. 1 – MAR. 1, USE UNSCARIFIED SERICEA SEED.
2. ON POORLY DRAINED SITES OMIT SERICEA AND INCREASE KOBE TO 30 LB/ACRE.
3. WHERE A NEAT APPEARANCE IS DESIRED, OMIT SERICEA AND INCREASE KOBE TO 40 LB/ACRE.

NURSE PLANTS

BETWEEN APR. 15 AND AUG. 15, ADD 10 LB/ACRE GERMAN MILLET OR 15 LB/ACRE SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 LB/ACRE RYE (GRAIN).

SEEDING DATES	BEST	POSSIBLE
EARLY SPRING	FEB. 15 – MAR. 20	FEB. 15 – APR. 30
FALL	SEPT. 1 – SEPT. 30	SEPT. 1 – OCT. 31

SOIL AMENDMENTS

APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS OR APPLY 3,000–5,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10–10–10 FERTILIZER.

MULCH

APPLY 4,000 LB/ACRE GRAIN STRAW OR EQUIVALENT COVER OR ANOTHER SUITABLE MULCHING MATERIAL. ANCHOR STRAW BY TACKING WITH ASPHALT NETTING,OR ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE

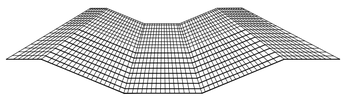
IF GROWTH IS LESS THAN FULLY ADEQUATE, REFERTILIZE IN THE SECOND YEAR, ACCORDING TO SOIL TESTS OR TOP DRESS WITH 500 LB/ACRE 10–10–10 FERTILIZER. MOW AS NEEDED WHEN SERICEA IS OMITTED FROM THE MIXTURE. RESEED, FERTILIZE, AND MULCH DAMAGED AREAS IMMEDIATELY.

PERMANENT SEEDING SCHEDULE (1CP)
SCALE: NONE

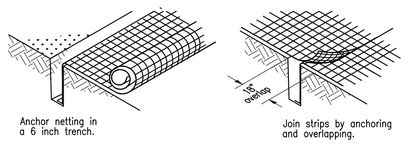
GROUNDCOVER DEADLINE NOTES:

1.) PURSUANT TO G.S. 113A(3): PROVISIONS FOR PERMANENT GROUNDCOVER SUFFICIENT TO RESTRAIN EROSION MUST BE ACCOMPLISHED FOR ALL DISTURBED AREAS WITHIN 14 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION.

2.) PURSUANT TO 15ANCAC 04B.0106(3): PROVISIONS FOR TEMPORARY GROUNDCOVER SUFFICIENT TO RESTRAIN EROSION MUST BE ACCOMPLISHED FOR ALL DISTURBED AREAS WITHIN 7 TO 14 WORKING DAYS FOLLOWING COMPLETION OF CONSTRUCTION.



In channels, roll out strips of netting parallel to the direction of flow and over the protective mulch.



Anchor netting in a 6 inch trench.

Join strips by anchoring and overlapping.

INSTALLATION OF NETTING AND MATTING

Products designed to control erosion should be installed in accordance with manufacturer's instructions. Any mat or blanket–type product used as a protective mulch should provide cover of at least 30% of the surface where it is applied. Installation is illustrated above.

1. Apply lime, fertilizer and seed before laying the net or mat. If open–weave netting is used, lime may be incorporated before installing the net and fertilizer and seed sprayed on afterward

2. Start laying the net from the top of the channel or slope and unroll it down the grade. ALLOW NETTING TO LAY LOOSELY ON THE SOIL BUT WITH–OUT WRINKLES––DO NOT STRETCH.

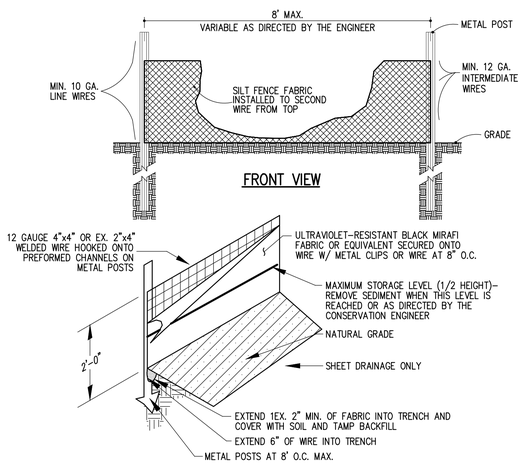
3. To secure the net, bury the upslope end in a slot or trench no less than 6 inches deep, cover with soil, and tamp firmly. Staple the net every 12 inches across the top end and every 3 feet around the edges and bottom. Where 2 strips of net are laid side by side, the adjacent edges should be overlapped 3 inches and stapled together. Each strip of netting should also be stapled down the center, every three feet. DO NOT STRETCH THE NET WHEN APPLYING STAPLES

4. To join two strips, cut a trench to anchor the end of the new net. Overlap the end of the previous roll 18 inches, as shown above, and staple every 12 inches just below the anchor slot.

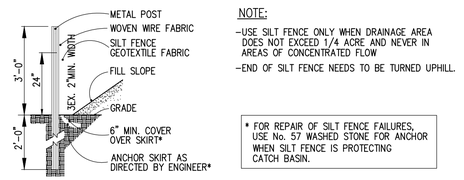
MAINTENANCE

Inspect all mulches periodically, and after rainstorms to check for rill erosion, dislocation, or failure. Where erosion is observed, apply additional mulch. If washout occurs, repair the slope grade, reseed, and reinstall mulch. Continue inspections untill vegetation is firmly established.

STRAW WITH NETTING FOR DITCHES



FRONT VIEW



SIDE VIEW

NOTE:

–USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW

–END OF SILT FENCE NEEDS TO BE TURNED UPHILL.

* FOR REPAIR OF SILT FENCE FAILURES, USE No. 57 WASHED STONE FOR ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.

GENERAL NOTE:

SILT FENCE TO BE USED ALONG THE DOWNSLOPE EDGE OF EXCAVATIONS WHERE CROSS SLOPES EXCEED 5%. SILT FENCE SHALL ALSO BE USED AS NECESSARY TO PREVENT SEDIMENTATION FROM SOIL STOCKPILES, EXCAVATION, OR STONE STOCKPILES.

MAINTENANCE

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

SILT FENCE DETAIL
SCALE: NONE

FINAL DWGS
FOR
CONSTRUCTION

8-5-2024
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BRIAN G. COX

DATE	BY	REV.	DESCRIPTION

ES ENGINEERING SERVICES, P.A.
CONSULTING ENGINEERS
1202 BENSON ROAD GARNER, NC 27529–3600
PHONE: (919) 662–7272 NC C–1342

PROJECT OCEAN BOULEVARD SIDEWALK
OWNER TOWN OF CAROLINA BEACH, NORTH CAROLINA
TITLE **EROSION CONTROL DETAILS**

SCALE	DRWN. BY	PROJECT NO.	DRAWING NUMBER
AS NOTED	TAL	202235	D–5
DATE 07/29/24	CHKD. BY BGC		

CAD FILE