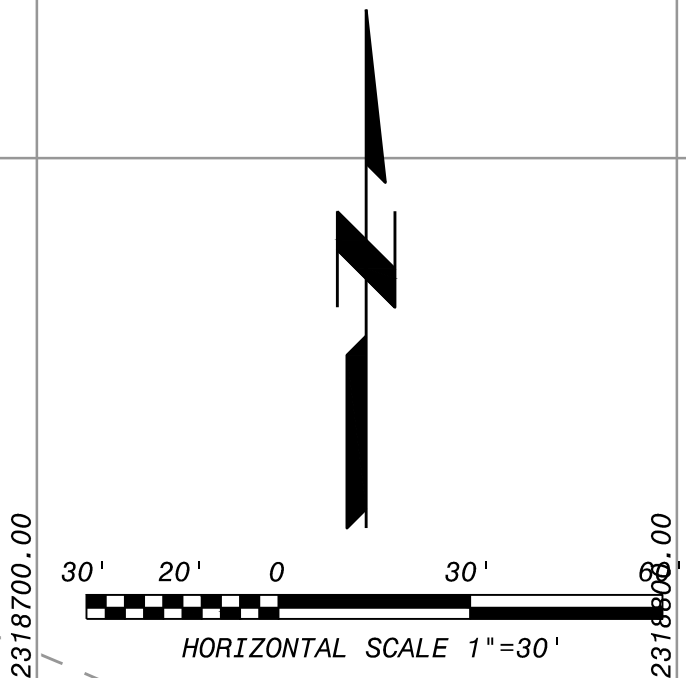






CAMA NORMAL HIGH WATER LINE, FLAGGED BY: ROBB MAIRS OF NCDENR - DIVISION OF COASTAL MANAGEMENT ON DECEMBER 14, 2006.

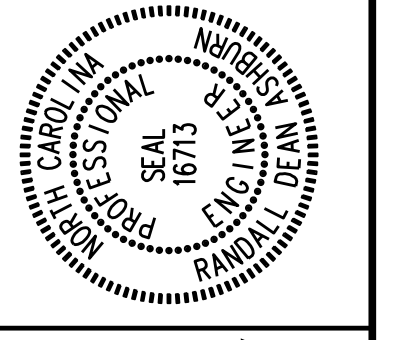


**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**APPROVED CONSTRUCTION PLAN**

Name	Date
Planning	_____
Traffic	_____
Fire	_____

- NOTES:**
1. CONTRACTOR TO ADJUST TREE PROTECTION AS NECESSARY TO PROTECT TREES DURING CONSTRUCTION.
  2. SEE C-02-401 FOR MANHOLE AND STORM DRAINAGE SCHEDULES.
  3. SEE DETAIL B SHEET C-503 FOR STANDARD MANHOLE DETAILS.
  4. COORDINATES FOR CENTERLINE OF COLUMN 7.1/C.1. SEE STRUCTURAL DWGS.
  5. COORDINATES FOR CENTERLINE OF COLUMN 7.1/H'. SEE STRUCTURAL DWGS.



**BLACK & VEATCH**  
Black & Veatch International Company  
Business License No. F-0794  
10715 David Taylor Drive, Suite 240  
Charlotte, North Carolina 28262

**CAPE FEAR PUBLIC UTILITY AUTHORITY**  
SWEENEY WATER TREATMENT PLANT  
GAC CONTACTORS ADDITION  
CIVIL  
SITE PLAN - NORTH AREA  
STAKING, GRADING, AND EROSION CONTROL

DESIGNED: HPK  
DETAILED: KTH  
CHECKED: \_\_\_\_\_  
APPROVED: \_\_\_\_\_  
DATE: 04/04/19

0 1/2 1  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

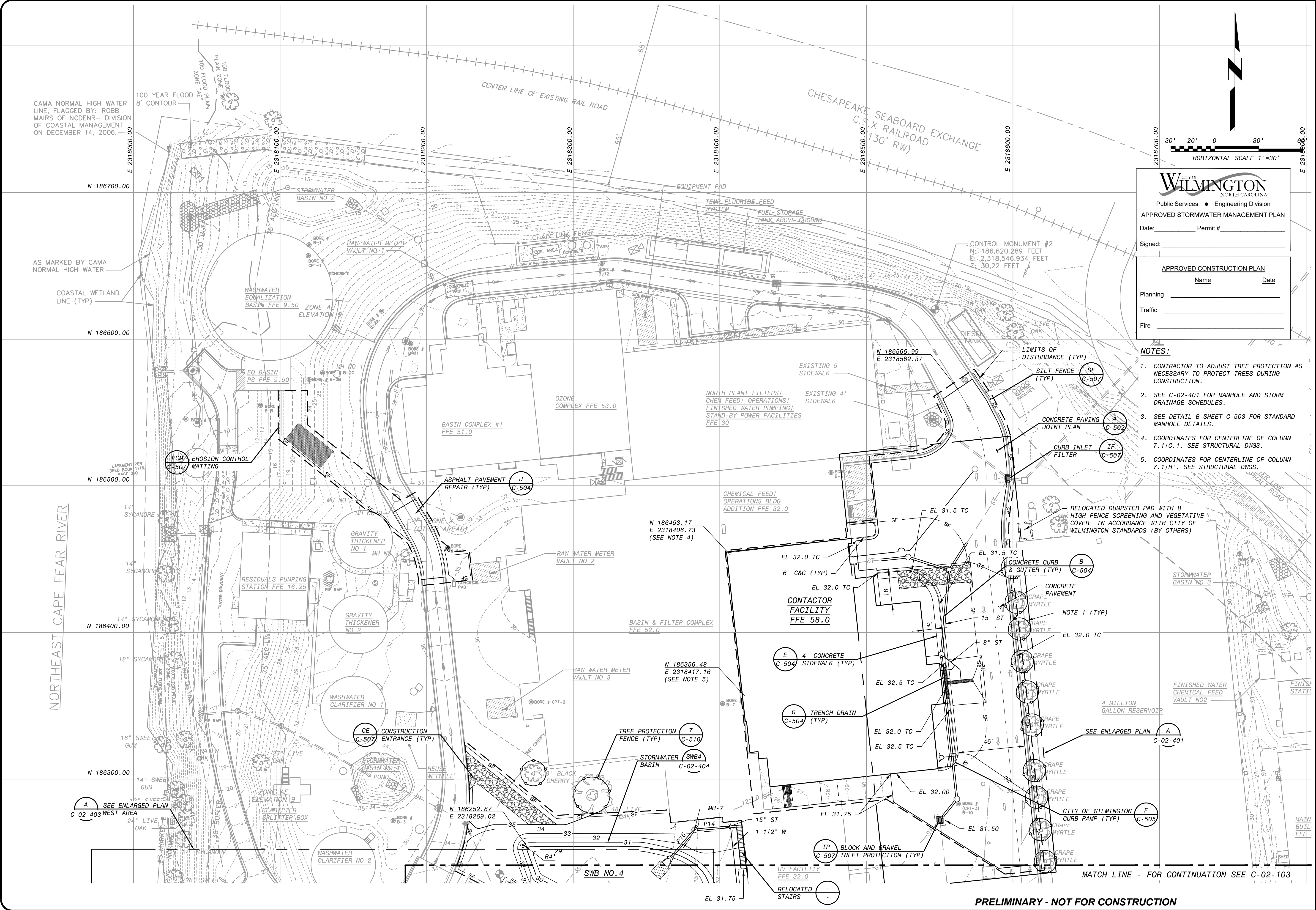
PROJECT NO.  
400096  
**C-02-102**  
SHEET  
20 OF 231

NORTHEAST CAPE FEAR RIVER

SEE ENLARGED PLAN C-02-403 WEST AREA

MATCH LINE - FOR CONTINUATION SEE C-02-103

**PRELIMINARY - NOT FOR CONSTRUCTION**

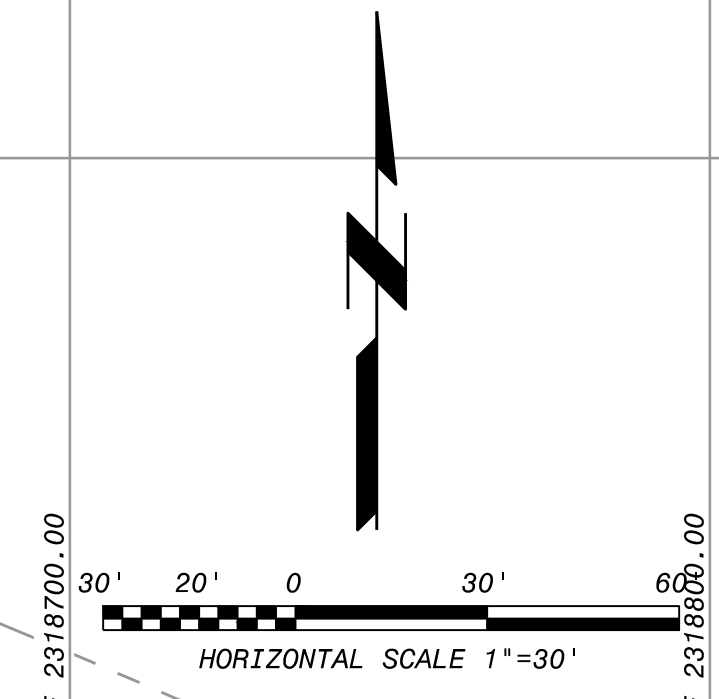








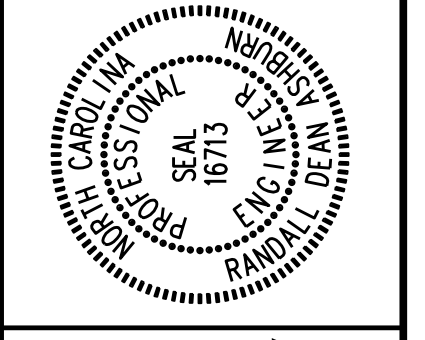
CAMA NORMAL HIGH WATER LINE, FLAGGED BY: ROBB MAIRS OF NCDENR - DIVISION OF COASTAL MANAGEMENT ON DECEMBER 14, 2006.



**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

**APPROVED CONSTRUCTION PLAN**

Name	Date
Planning	_____
Traffic	_____
Fire	_____



**BLACK & VEATCH**  
 Black & Veatch International Company  
 Business License No. F-0794  
 10715 David Taylor Drive, Suite 240  
 Charlotte, North Carolina 28262

**CAPE FEAR PUBLIC UTILITY AUTHORITY**  
**SWEENEY WATER TREATMENT PLANT**  
**GAC CONTACTORS ADDITION**

CIVIL  
 SITE PLAN - NORTH AREA  
 YARD PIPING

DESIGNED: HPK  
 DETAILED: KTH  
 CHECKED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_  
 DATE: 04/04/19

PROJECT NO.  
**400096**  
**C-02-104**  
 SHEET  
 22 OF 231



- NOTES:**
1. ROUTE 1" PE ALUM LINE TO DISCHARGE HEADER DOWNSTREAM OF FLOW METER AND INSTALL CHEM FEED DIFFUSER PIPE PER DETAIL F M-502.
  2. ALUM FEED ROOM IS ON UPPER LEVEL OF BUILDING. TIE TO ALUM FEED DISTRIBUTION AS INDICATED IN ALUM FEED PARTIAL SCHEMATIC ON DWG C-505 AND ROUTE 1" ALUM FEED LINE TO CFDB 1-1 EXITING FILTER PIPE GALLERY. PIPE SHALL BE ROUTED TO RAW WATER METER VAULT NO. 2 AS INDICATED AND THROUGH NEW CHEMICAL FEED DUCTBANK TO EQ PS AS SHOWN.

MATCH LINE - FOR CONTINUATION SEE C-02-105

**PRELIMINARY - NOT FOR CONSTRUCTION**

FD7000  
 07000

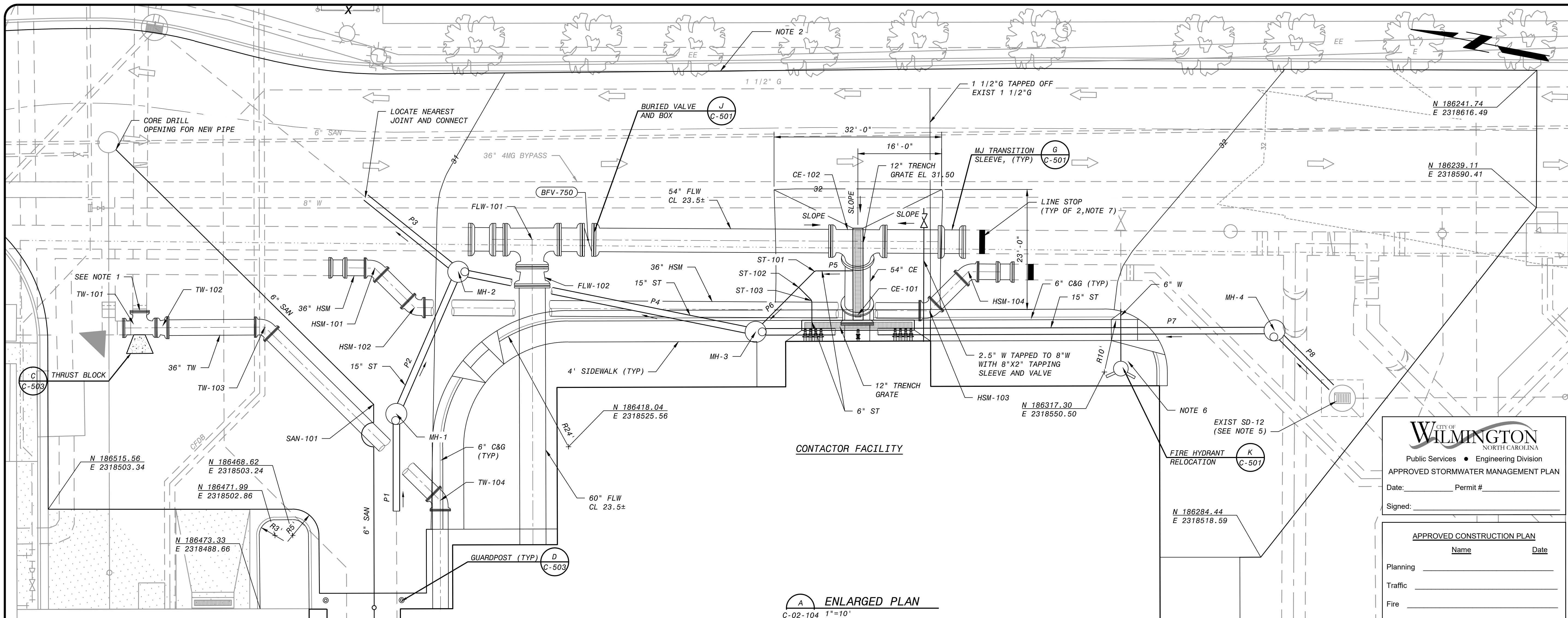
NO. BY CHK/APP  
 REVISIONS AND RECORD OF USE

DATE









**A ENLARGED PLAN**  
C-02-104 1"=10'

**FITTING SCHEDULE**

DESIGNATION	SERVICE	NORTH	EAST	FITTING	NOTES
CE-101	CONTACTOR EFFLUENT	186365.61	2318554.20	54" 45° VERT BEND	
CE-102	CONTACTOR EFFLUENT	186367.22	2318570.33	54" X 54" X 54" TEE	ROTATED
FLW-101	FILTERED WATER	186429.08	2318564.15	54" X 54" X 54" TEE	
FLW-102	FILTERED WATER	186428.32	2318557.09	60" X 54" INCREASER	
HSM-101	FINISHED WATER TRANSMISSION	186458.37	2318555.59	36" 45° HORIZ BEND	
HSM-102	FINISHED WATER TRANSMISSION	186450.03	2318548.91	36" 45° HORIZ BEND	
HSM-103	FINISHED WATER TRANSMISSION	186352.27	2318558.58	36" 45° HORIZ BEND	
HSM-104	FINISHED WATER TRANSMISSION	186345.63	2318566.77	36" 45° HORIZ BEND	
TW-101	CONTACTOR BACKWASH SUPPLY	186501.68	2318539.70	30" X 30" X 30" TEE	
TW-102	CONTACTOR BACKWASH SUPPLY	186497.49	2318540.05	36" X 30" INCREASER	
TW-103	CONTACTOR BACKWASH SUPPLY	186478.07	2318542.21	36" 45° HORIZ BEND	
TW-104	CONTACTOR BACKWASH SUPPLY	186441.31	2318512.80	36" 45° HORIZ BEND	
SAN-101	SANITARY	186455.87	2318529.72	6" 45° HORIZ BEND	
ST-101	STORM	186374.76	2318563.85	6" 45° HORIZ BEND	
ST-102	STORM	186377.52	2318560.34	6" X 6" X 6" TEE	

**STORM DRAINAGE STRUCTURE SCHEDULE**

DESIGNATION	TYPE	NORTH	EAST	TOP EL	INLET INV EL	OUTLET INV EL	NOTES
CB-1	CATCH BASIN	185953.75	2318620.87	32.30		(22") 29.79 (W) (22") 29.79 (W)	
CB-2	CATCH BASIN	185942.39	2318510.50	33.84	(22") 29.33 (E) (22") 29.33 (E)	(28") 29.23 (N)	
EXIST SD12	CATCH BASIN	186272.11	2318550.20	31.58	(10") 29.14 (SW) (15") 29.25 (S)	(15") 29.04 (NE)	EXISTING CB @ P8
ST-1	FLARED END SECTION	186113.95	2318384.03	30.49	(28") 28.20 (SE)		
ST-2	FLARED END SECTION	186246.68	2318366.91	31.28	(15") 29.00 (NE)		
ST-3	4' RISER BARREL	186155.30	2318327.82	31.00		(20") 26.00 (W)	

**MANHOLE SCHEDULE**

DESIGNATION	SERVICE	NORTH	EAST	TYPE	INVERT ELEVATION
MH-1	STORM WATER	186451.37	2318528.35	STD MH	15" INV IN 28.13 15" INV OUT 28.03
MH-2	STORM WATER	186442.45	2318556.56	STD MH	15" INV IN 27.10 15" INV IN 27.10 15" INV OUT 27.00
* MH-3	STORM WATER	186384.80	2318551.10	STD MH	15" INV IN 27.53 6" INV IN 27.53 15" INV OUT 27.43
MH-4	STORM WATER	186286.34	2318561.72	STD MH	15" INV IN 28.13 15" INV OUT 28.03
MH-5	STORM WATER	185993.21	2318505.32	STD MH	28" INV IN 29.05 28" INV OUT 28.95
MH-6	STORM WATER	186062.23	2318447.70	STD MH	28" INV IN 28.61 28" INV OUT 28.51
MH-7	STORM WATER	186265.35	2318382.88	STD MH	15" INV IN 29.33 15" INV OUT 29.25
** MH-8	STORM WATER	186125.80	2318157.25	STD MH	20" INV IN 24.50 18" INV OUT 24.50 18" INV OUT 24.50

\* BOTTOM OF MANHOLE NO.3 ELEVATION 24.43  
\*\* 12" CONCRETE BASE WITH #5'S @ 12" TOP AND BOTTOM AND DOGHOUSE STYLE MH. DEMOLISH 18" DIP INSIDE MH.

**NOTES:**

- REMOVE 30" ELBOW TO TRANSITION SLEEVE AND REPLACE WITH TEE AND NEW TRANSITION SLEEVE.
- SEE DWG C-02-102 AND C-02-103 FOR FULL EXTENTS OF CONCRETE PAVEMENT REPLACEMENT.
- REFERENCE ST PIPING AND MANHOLE SCHEDULE BELOW.
- REFERENCE PIPE FITTING SCHEDULE BELOW.
- CORE DRILL OPENING IN CATCH BASIN FOR P8 AND PLUG NORTH PIPE OPENING WITH CONCRETE AND GROUT.
- RELOCATED FH PER DETAIL K ON C-501.
- SEE SECTION 15100.
- ALL MANHOLE LIDS IN SIDEWALK AND PAVED AREAS SHALL BE FLUSH WITH FINISHED GRADE.

**STORM DRAINAGE PIPING SCHEDULE**

DESIGNATION	TYPE	APPROX LENGTH	INV EL IN	INV EL OUT	NOTES
P1	15" HDPE	17	29.00	28.13	
P2	15" RCP	26	28.03	27.10	
P3	15" RCP	21	27.00	26.89	
P4	15" RCP	54	27.43	27.10	
P5	6" RCP	8	28.20	27.97	
P6	6" RCP	16	27.97	27.53	
P7	15" RCP	95	28.03	27.53	
P8	15" RCP	15	29.04	28.13	
P9	22" RCP	109	29.79	29.33	
P10	22" RCP	109	29.79	29.33	
P11	28" RCP	46	29.23	29.05	
P12	28" RCP	85	28.95	28.61	
P13	28" RCP	79	28.51	28.20	
P14	15" RCP	30	29.67	29.33	
P15	15" RCP	23	29.25	29.00	
P16	20" RCP	169	26.00	24.50	

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

APPROVED CONSTRUCTION PLAN  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

**BLACK & VEATCH**  
Black & Veatch International Company  
Business License No. F-0794  
10715 David Taylor Drive, Suite 240  
Charlotte, North Carolina 28262

CAPE FEAR PUBLIC UTILITY AUTHORITY  
SWEENEY WATER TREATMENT PLANT  
GAC CONTACTORS ADDITION  
CIVIL  
ENLARGED SITE PLAN

DESIGNED: HPK  
DETAILED: KTH  
CHECKED: \_\_\_\_\_  
APPROVED: \_\_\_\_\_  
DATE: 04/04/19

0 1/2 1  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.  
400096  
C-02-401  
SHEET  
24 OF 231

PRELIMINARY - NOT FOR CONSTRUCTION



SWB NO. 4  
28

FLARED END SECTION  
(TYP)  
B  
C-507  
N 186113.95  
E 2318384.03

RIP RAP  
APRON (TYP)  
RA  
C-507

STORMWATER  
BASIN  
SWB4  
C-02-404

DUCTBANK & 8" W  
RELOCATION  
G  
C-505

18 X 28.5 RCP  
(NOTE 5, TYP)

LIMITS OF DISTURBANCE (TYP)  
N 186065.80  
E 2318451.22

18 X 28.5 RCP

N 186058.65  
E 2318444.17  
MH-6

7  
TREE PROTECTION  
FENCE (TYP)  
C-510

SILT FENCE  
(TYP)  
SF  
C-507

N 185991.18  
E 2318500.50

N 185995.24  
E 2318510.14  
MH-5

N 185955.60  
E 2318514.18

CONTROL MONUMENT  
N: 185,937.030 FEET  
E: 2,318,506.349 FEET  
7.73 44 FEET

N 185929.97  
E 2318517.06

BOTTOM OF  
DITCH EL. 34.30

PAVED DITCH  
B  
C-505

EXIST CONCRETE SWALE  
TO BE REGRADED

SILT FENCE  
(TYP)  
B  
C-505

IF  
CURB INLET  
FILTER  
C-507

CONCRETE CURB &  
GUTTER (TYP)  
B  
C-504

BOTTOM OF  
DITCH EL. 32.70

SQUARE CATCH  
BASIN (TYP)  
H  
C-501  
5' x 8' CB-1

8' x 6' CB-2

13.5" x 22" RCP  
(NOTE 5 & 6)

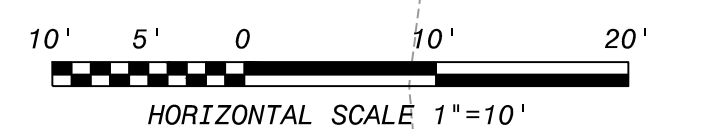
ASPHALT PAVEMENT  
REPAIR (TYP)  
J  
C-504

CITY OF  
WILMINGTON PARK  
301 5TH STREET NORTH  
PIN: 3118-85-4956

ZONE X  
(OTHER AREAS)

APPROVED CONSTRUCTION PLAN  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_  
CITY OF WILMINGTON NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

- NOTES:  
1. IF CONTRACTOR MUST REMOVE CHAINLINK FENCE TO INSTALL PIPE, TEMPORARY SECURITY FENCING SHALL BE INSTALLED UNTIL CHAIN LINK FENCE CAN BE REPLACED.  
2. SEE C-02-401 FOR MANHOLE AND STORM DRAINAGE SCHEDULES.  
3. SEE DETAIL B SHEET C-503 FOR STANDARD MANHOLE DETAILS.  
4. PROVIDE CURB TO MATCH SWALE CURB ON WEST SIDE OF CB-1. CURB TO BE PRECAST WITH SQUARE CATCH BASIN TOP SLAB.  
5. ARCH CONCRETE PIPE PER ASTM C506 WHERE INDICATED.  
6. IN ROADWAY AND PARKING AREAS, ALL ARCH PIPE SHALL HAVE A GRANULAR EMBEDMENT EXTENDING TO BOTTOM OF PAVEMENT COMPACTED BASE COURSE.  
7. 10' WIDE PERMANENT EASEMENT. CONTRACTOR SHALL PROVIDE TREE PROTECTION FENCE ALONG BOTH SIDES OF THE ENTIRE LENGTH OF THE EASEMENT.  
8. INSTALL 2"x8" TAPPING SLEEVE AND 2" TAPPING VALVE AND 2"x1 1/2" REDUCER.  
9. ROOT PRUNING ALONG EASEMENT IS REQUIRED TO MITIGATE IMPACTS TO TREES.  
10. ALL MANHOLES AND CATCH BASINS THROUGH THE CITY PARK IN EASEMENT SHALL CONTAIN BOLTED COVERS.



PRELIMINARY - NOT FOR CONSTRUCTION

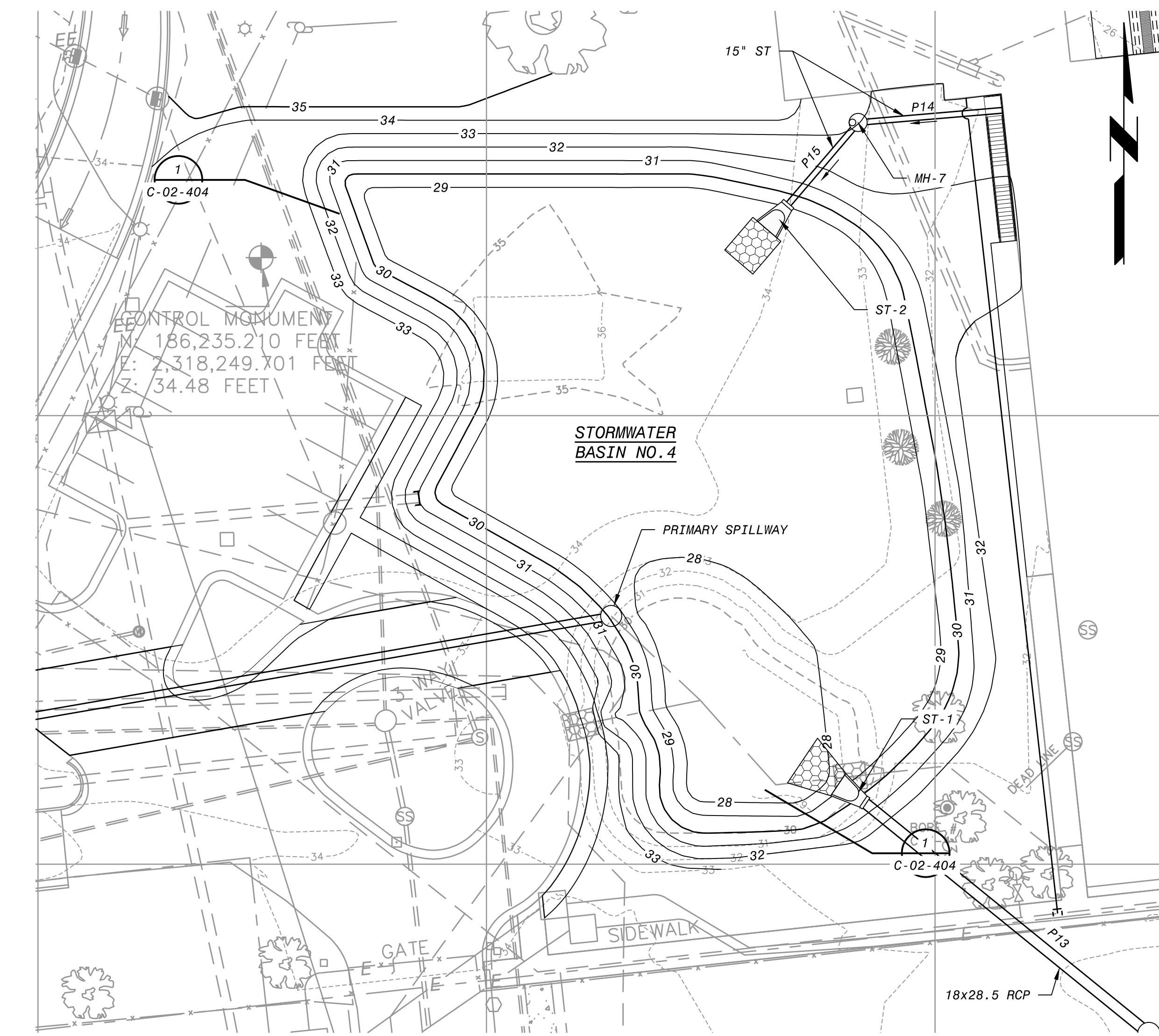
NO. BY CHK APP  
DATE  
REVISIONS AND RECORD OF USE  
BLACK & VEATCH  
Black & Veatch International Company  
Professional Engineer  
10715 David Taylor Drive, Suite 240  
Charlotte, North Carolina 28262  
CAPE FEAR PUBLIC UTILITY AUTHORITY  
SWEENEY WATER TREATMENT PLANT  
GAC CONTACTORS ADDITION  
CIVIL  
ENLARGED SITE PLAN  
DESIGNED: HPK  
DETAILED: KTH  
CHECKED:  
APPROVED:  
DATE: 04/04/19  
PROJECT NO.  
400096  
C-02-402  
SHEET  
25 OF 231



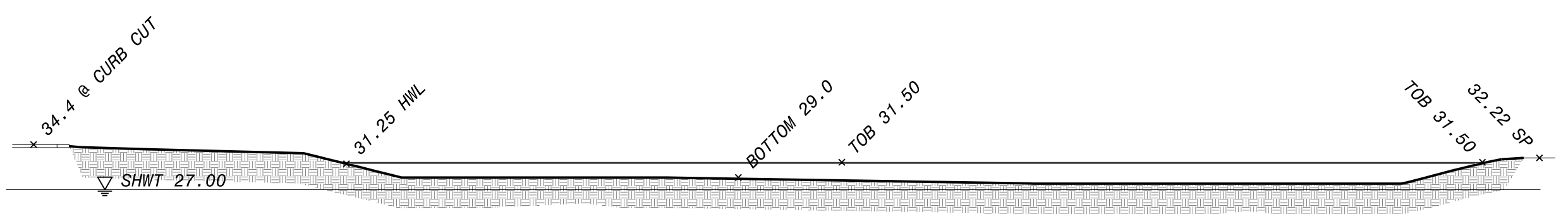




APPROVED CONSTRUCTION PLAN	
Name	Date
Planning _____	_____
Traffic _____	_____
Fire _____	_____



- NOTES:**
- BASIN SIDE SLOPES SHALL BE 3:1. REMOVE TEMPORARY LINE STOP AND CONNECT PIPING.
  - AN AUTOCAD FILE WITH STORM BASIN STAKING INFORMATION WILL BE PROVIDED DURING CONSTRUCTION.
  - REFERENCE PIPE FITTING SCHEDULE ON C-02-401.



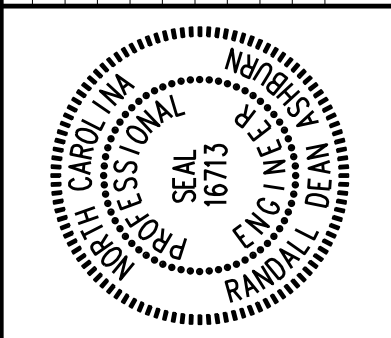
**MINIMUM RIP RAP APRON REQUIREMENTS**

OUTLET NO	CLASS	LENGTH (FT)	WIDTH (FT)	THICKNESS (IN)
BASIN 4 - ST-1	B	15'	VARIES ***	22"
BASIN 4 - ST-2	A	4'	4'	12"

**STORM BASIN TABLE**

BASIN ID	BOTTOM AREA	BOTTOM EL	PRIMARY SPILLWAY	
			SPILLWAY AREA	SPILLWAY/WEIR EL
4	9178.29 sq ft	28	RB*	31.00

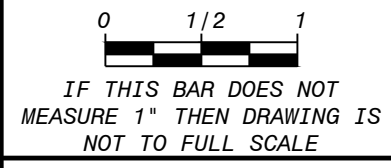
\* RISER BARREL, SEE DETAIL C ON C-505.  
 \*\*\* WIDTH VARIES, 6' AT OUTLET AND 17' AT END.



**BLACK & VEATCH**  
 Black & Veatch International Company  
 Business License No. F-0794  
 10715 David Taylor Drive, Suite 240  
 Charlotte, North Carolina 28262

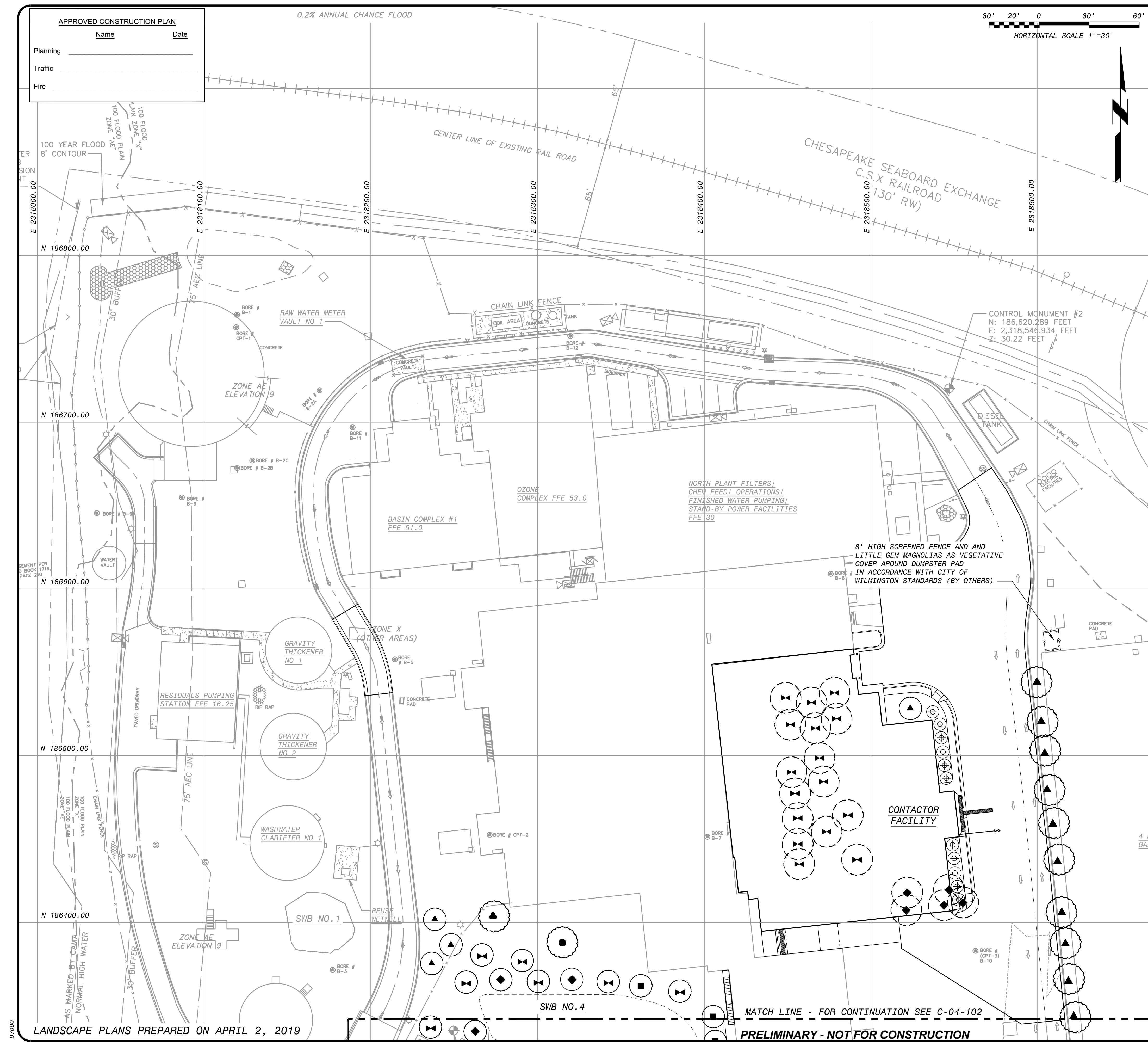
CAPE FEAR PUBLIC UTILITY AUTHORITY  
 SWEENEY WATER TREATMENT PLANT  
 GAC CONTACTORS ADDITION  
 CIVIL  
 STORM WATER BASINS

DESIGNED: HKP  
 DETAILED: KTH  
 CHECKED:  
 APPROVED:  
 DATE: 04/04/19



PROJECT NO.  
 400096  
**C-02-404**  
 SHEET  
 27 OF 231





**APPROVED CONSTRUCTION PLAN**

Name	Date
Planning	
Traffic	
Fire	



**SITE LANDSCAPE REQUIREMENTS**

**STREETYARD**  
 FACTOR: 25' MIN. 12.5' / MAX 37.5'  
 (.5 REQUIREMENT FOR SECONDARY STREET - COMPTON STREET)  
 1 TREE/600 SF - 6 SHRUBS/600 SF

**COMPTON STREET (SECONDARY ST)**  
 REQUIRED STREET YARD AREA - 887.5 SF (71 LF X 12.5)  
 PROVIDED STREETYARD AREA - 888 SF  
 TREES: 2 REQUIRED - 2 PROVIDED  
 SHRUBS: 9 REQUIRED - 77 PROVIDED

**NORTH SIXTH STREET (PRIMARY STREET)**  
 REQUIRED STREETYARD AREA - 13,700 SF (584 LF X 25)  
 PROVIDED STREETYARD AREA - 14,650 SF  
 TREES: 23 REQUIRED - 23 PROVIDED  
 SHRUBS: 137 REQUIRED - 144 PROVIDED

**PARKING LOT LANDSCAPING**  
 REQUIRED: 14% OF INTERIOR AREA SHALL BE LANDSCAPED  
 1 TREE / 216 SF - COMPLETE COVERAGE WITH GROUNDCOVER OR SHRUBS

INTERIOR AREA: 77,513 SF  
 REQUIRED LANDSCAPE AREA: 77,513 \* .14 = 10,851 SF  
 TREES: 50 REQUIRED (10,851/216) - 67 PROVIDED  
 SHRUB AREA: 10,581 SF REQUIRED - 15,005 SF PROVIDED

**TREE PLANTING**  
 REQUIRED: 15 TREES / DISTURBED ACRE

DISTURBED ACRES: 2  
 TREES REQUIRED: 2 X 15 = 30  
 CREDIT FOR PRESERVED/TRANSPLANTED TREES - 124 (SEE INVENTORY BELOW)  
 TREES REQUIRED FOR MITIGATION - 0 (SEE INVENTORY BELOW)  
 TOTAL TREES REQUIRED: 30 + 0 - 124 = 0 REQUIRED  
 TOTAL NEW TREES PROVIDED: 2

**EXISTING TREE INVENTORY**

**TREES TO BE PRESERVED**

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY	CREDIT
▲	LAGERSTROEMIA INDICA CRAPE MYRTLE	3" CAL.	14	14
●	QUERCUS VIRGINIANA LIVE OAK	48" CAL. 32" CAL. 30" CAL. 28" CAL. 25" CAL. 24" CAL. 21" CAL. 20" CAL. 16" CAL.	1 1 1 2 1 1 1 2 1	6 6 6 12 6 6 6 12 3
●	PRUNUS SEROTINA BLACK CHERRY	18" CAL.	1	4
<b>TOTAL CREDIT FOR RETAINED TREES - 81</b>				

**TREES TO BE REMOVED**

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY	CREDIT
NO TREES ARE REMOVED. ALL IMPACTED TREES ARE REPLANTED IN SAME LOCATION OR RELOCATED ON-SITE				
<b>TOTAL REPLACEMENT TREES - 0</b>				

**TREES TO BE RELOCATED**

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY	CREDIT
■	MAGNOLIA GRANDIFLORA 'ALTA' SOUTHERN MAGNOLIA	12' X 4'	6	6
◆	MAGNOLIA GRANDIFLORA 'LITTLE GEM' LITTLE GEM MAGNOLIA	8' X 3'	5	5
▼	CERCIS CANADENSIS EASTERN REDBUD	3" CAL.	16	16
▲	LAGERSTROEMIA INDICA CRAPE MYRTLE	3" CAL.	4	4
<b>TOTAL CREDIT FOR RELOCATED TREES - 31</b>				

**REMOVED AND REPLACED TREES (IN SAME LOCATION)**

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY	CREDIT
▲	LAGERSTROEMIA INDICA CRAPE MYRTLE	3" CAL.	11	11
■	MAGNOLIA GRANDIFLORA 'ALTA' SOUTHERN MAGNOLIA	12' X 4'	1	1
<b>TOTAL CREDIT FOR REMOVED AND REPLACED TREES - 12</b>				

**NOTES:**

1. PRIOR TO ANY CLEARING GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING SHALL BE PROVIDED FOR ALL PROTECTED TREES. PER CITY OF WILMINGTON LAND DEVELOPMENT CODE ARTICLE 8, SECTION 18-485, FENCING SHALL BE INSTALLED AROUND PRESERVED TREES AT A DISTANCE FROM THE TRUNK EQUAL TO TWELVE TIMES THE CALIPER. REFER TO DETAILS T&B, SHEET C-510. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS OR VEHICLES SHALL BE PERMITTED WITHIN THE TREE PROTECTION FENCING.
2. NO AREAS OF CONSERVATION RESOURCES ARE LOCATED WITHIN THE PARCEL.
3. REFER TO SHEET C-04-102 FOR PLANTING LEGENDS AND GENERAL NOTES.
4. PLANT COUNTS SHOWN IN LEGENDS ARE TOTALED FOR THE PROJECT.
5. LANDSCAPING FIRM SHALL DOCUMENT EXISTING PLANTINGS IN STAGING AREA. CONTRACTOR WILL REMOVE ALL TREES AND SHRUBS IN STAGING AREAS AS NEEDED AND REPLACE IN KIND TO RESTORE TO PRECONSTRUCTION CONDITIONS.

NO.	BY	CHK	APP	REVISIONS AND RECORD OF USE	DATE

**BLACK & VEATCH**

Black & Veatch International Company  
 Business License No. F-0794  
 10715 David Taylor Drive, Suite 240  
 Charlotte, North Carolina 28262

**CAPE FEAR PUBLIC UTILITY AUTHORITY**  
**SWEENEY WATER TREATMENT PLANT**  
**GAC CONTACTORS ADDITION**

PROJECT NO.  
 400096

**C-04-101**  
 SHEET  
 30 OF 231

DESIGNED: HPK  
 DETAILED: KTH  
 CHECKED:  
 APPROVED:  
 DATE: 04/04/19





DESIGNED: HPK  
 DETAILED: KTH  
 CHECKED:  
 APPROVED:  
 DATE: 04/04/19

APPROVED CONSTRUCTION PLAN

Name	Date
Planning	
Traffic	
Fire	

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.  
400096

C-04-102  
SHEET  
31 OF 231

CAPE FEAR PUBLIC UTILITY AUTHORITY  
 SWEENEY WATER TREATMENT PLANT  
 GAC CONTACTORS ADDITION

CIVIL  
 PLANTING PLAN - SOUTH

BLACK & VEATCH  
 Black & Veatch International Company  
 Business License No. F-0794  
 10715 David Taylor Drive, Suite 240  
 Charlotte, North Carolina 28262

NO. BY CHK APP  
 REVISIONS AND RECORD OF USE  
 DATE



I. GENERAL SITE PLANTING

THE OWNER SHALL HAVE A SOIL ANALYSIS MADE AFTER COMPLETION OF THE ROUGH GRADING. THE CONTRACTOR SHALL INCORPORATE ALL SOIL AMENDMENTS AND FERTILIZERS PRESCRIBED HEREIN. THE SOIL PREPARATION SPECIFIED BELOW SHALL BE ADJUSTED ACCORDING TO THE ANALYSIS, AFTER APPROVAL FROM ENGINEER.

A. WEED CONTROL FOR LAWN, SHRUB & GROUND COVER AREAS (EXCEPT SLOPES)

- 1. REMOVE ALL EXISTING WEEDS FROM SURFACE. REMOVE ALL ROOTS OF BERMUDA-JOHNSON GRASS, ETC. AND DISPOSE OF OFF SITE.
2. INSTALL IRRIGATION.
3. FERTILIZE ALL SHRUB GROUND COVER AREAS. APPLY 10 LBS. OF 16-20-0 COMMERCIAL FERTILIZER PER 1,000 sq.ft. OR AS DIRECTED BY SOILS REPORT.
4. WATER ALL SHRUB/GROUND COVER AREAS FOR THREE (3) WEEKS TO GERMINATE WEED SEEDS. APPLY WATER AT LOW RATE TO AVOID EROSION.
5. LICENSED APPLICATOR SHALL APPLY SYSTEMIC WEED KILLER TO ALL PLANTING AREAS PER MANUFACTURER'S SPECIFICATIONS.

B. SOIL PREPARATION & FINISH GRADING

- 1. ROUGH GRADE: SITE TO BE RECEIVED BY LANDSCAPE CONTRACTOR TO WITHIN 1/10 FOOT PLUS OR MINUS BY OWNER BASED UPON CIVIL ENGINEER'S GRADING PLAN.
2. FINISH GRADE: FINISH GRADING TO CONSIST OF GRADING, RAKING AND HAND WORK NECESSARY TO ACHIEVE DESIRED CONTOUR AND FLOW LINE PATTERNS, BASED UPON CIVIL ENGINEER'S PLANS, RESULTING IN EVENLY FINISHED SURFACES FREE OF DEBRIS AND LITTER.
3. SPREAD OVER ALL LAWN, SHRUB AND GROUND COVER AREAS, AMENDMENTS AND FERTILIZER PRESCRIBED IN SOILS REPORT. THOROUGHLY MIX INTO SOIL TO DEPTH TO OF 6" OR MORE AND FINE GRADE. SHAPE MOUNDS AS SHOWN ON PLANS. CONTRACTOR TO IMPORT SOIL NECESSARY TO ATTAIN DESIGN GRADES AND BERMS, ALL IMPORT SOIL SHALL BE FREE OF WEEDS, DEBRIS, AND HAVE BALANCED PH. SMOOTH AND EVEN GRADING WITHOUT DEPRESSIONS OR HIGH SPOTS TO PROVIDE SMOOTH AND EVEN SURFACES FOR PROPER DRAINAGE. FINAL GRADE SHALL BE 1" BELOW WALK/TOP OF CURB. REMOVE FROM THE SITE ALL STONES OVER 2" IN SIZE.

C. PLANTING

PLANT TREES, SHRUBS AND GROUND COVER AS CALLED FOR WHERE INDICATED ON PLANTING PLAN AND AS DETAILED ON PLANTING DETAIL SHEET.

SUBSTITUTIONS OF PLANTS WILL NOT BE ACCEPTED UNLESS APPROVED BY LANDSCAPE ARCHITECT.

- 1. ROUGH GRADE: SITE TO BE RECEIVED BY LANDSCAPE CONTRACTOR TO WITHIN 1/10 FOOT PLUS OR MINUS BY OWNER BASED UPON CIVIL ENGINEER'S GRADING PLAN.
2. FINISH GRADE: FINISH GRADING TO CONSIST OF GRADING, RAKING AND HAND WORK NECESSARY TO ACHIEVE DESIRED CONTOUR AND FLOW LINE PATTERNS, BASED UPON CIVIL ENGINEER'S PLANS, RESULTING IN EVENLY FINISHED SURFACES FREE OF DEBRIS AND LITTER.
3. SPREAD OVER ALL LAWN, SHRUB AND GROUND COVER AREAS, AMENDMENTS AND FERTILIZER PRESCRIBED IN SOILS REPORT. THOROUGHLY MIX INTO SOIL TO DEPTH TO OF 6" OR MORE AND FINE GRADE. SHAPE MOUNDS AS SHOWN ON PLANS. CONTRACTOR TO IMPORT SOIL NECESSARY TO ATTAIN DESIGN GRADES AND BERMS, ALL IMPORT SOIL SHALL BE FREE OF WEEDS, DEBRIS, AND HAVE BALANCED PH. SMOOTH AND EVEN GRADING WITHOUT DEPRESSIONS OR HIGH SPOTS TO PROVIDE SMOOTH AND EVEN SURFACES FOR PROPER DRAINAGE. FINAL GRADE SHALL BE 1" BELOW WALK/TOP OF CURB. REMOVE FROM THE SITE ALL STONES OVER 2" IN SIZE.
1. GROUND COVER - FLATS AND/OR CUTTINGS
ALL PLANT MATERIALS SPECIFIED AS ROOTED CUTTINGS OR FLAT STOCK ON PLANTING PLAN SHALL REMAIN IN THE FLATS UNTIL TIME OF TRANSPLANTING. THE FLAT SOIL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT SOIL DOES NOT FALL APART WHEN LIFTING PLANT FROM FLAT. GROUND COVER PLANTS SHALL NOT BE ALLOWED TO DRY OUT BEFORE OR WHILE BEING PLANTED. ROOTS SHALL NOT BE EXPOSED TO THE AIR EXCEPT WHILE ACTUALLY BEING PLANTED. WILTED PLANTS WILL NOT BE ACCEPTED. AT THE TIME OF PLANTING, THE SOIL AROUND EACH PLANT SHALL BE FIRMED SUFFICIENTLY TO FORCE OUT AIR POCKETS. PLANTS TO BE PLANTED IN TRIANGULAR SPACING AS SPECIFIED O.C. (ON CENTER). ALL CUTTINGS SHALL BE MINIMUM OF 6" LONG. INSTALL PLANTS IN 6"x6" PLANTING PITS. WATER IMMEDIATELY AFTER EACH PLANTING UNTIL ONE INCH OF WATER PENETRATION IS OBTAINED. CARE SHALL BE EXERCISED AT ALL TIMES TO PROTECT THE PLANTS AFTER PLANTING. ANY DAMAGE TO THE PLANTS BY TRAMPLING OR OTHER OPERATIONS OF THIS CONTRACT SHALL BE REPAIRED IMMEDIATELY.
2. SHRUB & TREES
PLANT ALL CONTAINER-GROWN PLANTS IN PLANTING PITS, TWO (2) TIMES WIDER AND TWO (2) TIMES DEEPER THAN THE CONTAINER, AS DIRECTED ON PLANTING DETAIL SHEET. THOROUGHLY MIX 1/3 ORGANIC BACKFILL (NITROLIZED REDWOOD SHAVINGS OR EQUAL) AND THE AMENDMENTS SPECIFIED IN THE SOILS ANALYSIS WITH THE SITE SOIL, PRIOR TO BACKFILLING OF PLANTING PITS. INSTALL PLANT TABLETS, PER THE MANUFACTURER'S INSTRUCTIONS AND AS DETAILED ON PLANTING DETAIL SHEET. CONTRACTOR SHALL CONSTRUCT BASINS AROUND ALL TREES NOT IN LAWN AREAS; BASINS SHALL NOT EXCEED TOP OF ROOT BALL CROWN.
3. TOP DRESSING
TOP DRESS ALL GROUND COVER AND SHRUB AREAS WITH 2" THICK LAYER OF OGC (ORGANIC GROUND COVER), TO BE SPECIFIED ON ALL PLANTING PLANS.
4. STAKING
STAKE ALL TREES AS DETAILED ON PLANTING DETAIL SHEET, C-510.

II. GENERAL NOTES

A. CLEAN-UP

- 1. AFTER ALL INSTALLATION OPERATIONS HAVE BEEN COMPLETED, REMOVE ALL RUBBISH, EXCESS SOIL, EMPTY PLANT CONTAINERS AND TRASH FROM THE SITE DAILY. ALL SCARS, RUTS OR OTHER MARKS IN THE AREA CAUSED BY THIS WORK SHALL BE REPAIRED AND THE GROUND LEFT IN A NEAT, ORDERLY CONDITION. LEAVE SITE IN BROOM-CLEAN CONDITION AT THE END OF EACH WORKING DAY. HOSE DOWN ALL PAVED AREAS, INCLUDING WALKS AND PATIOS, UPON COMPLETION OF WORK.

B. MAINTENANCE

- 1. THE CONTRACTOR SHALL MAINTAIN DURING INSTALLATION A SUFFICIENT NUMBER OF MEN AND ADEQUATE EQUIPMENT TO PERFORM THE WORK HEREIN SPECIFIED. PLANT MAINTENANCE WORK SHALL CONSIST OF APPLYING WATER, WEEDING, CARING OF PLANTS, INCLUDING GROUND COVERS, SHRUBS, VINES AND TREES, EDGING AND MOWING LAWN, FERTILIZING, CONTROL OF PESTS AND DISEASES, AND MAINTAINING WALKS FREE OF DEBRIS AND DIRT. UPON COMPLETION OF EACH AREA OF INSTALLATION, THE CONTRACTOR, LANDSCAPE ARCHITECT AND OWNER SHALL CONDUCT AN INSPECTION OF COMPLETED AREA, ALONG WITH THE OWNER'S MAINTENANCE REPRESENTATIVE. AT THIS TIME, A LIST OF CORRECTIONS, IF ANY, SHALL BE MADE WHICH ARE THE RESPONSIBILITY OF THE CONTRACTOR.
2. AFTER ALL WORK HAS BEEN COMPLETED, INSPECTED AND ACCEPTED, ALL AREAS WILL BE MAINTAINED FOR A PERIOD OF NINETY (90) CALENDAR DAYS OR AS LONG AS IS NECESSARY TO ESTABLISH THRIVING TREES, SHRUBS, TURF, AND GROUND COVER WITHOUT BARE SPOTS.
3. KEEP ALL AREAS WEED-FREE, ADEQUATELY WATERED, AND NEATLY CULTIVATED FOR THE NINETY (90) DAY PERIOD. REMOVE ALL DEBRIS FROM SITE AND KEEP THE ENTIRE SITE BROOM-CLEAN.
4. DAMAGE TO ANY PLANTED AREA SHALL BE REPAIRED IMMEDIATELY. DEPRESSIONS CAUSED BY VEHICLES OR FOOT TRAFFIC SHALL BE FILLED WITH TOPSOIL, LEVELED AND REPAIRED. EXTERMINATE GOPHERS, MOLES AND REPAIR DAMAGE.
5. THE PROJECT SHALL BE SO CARED FOR THAT A NEAT, CLEAN CONDITION WILL BE PRESENTED AT ALL TIMES TO THE SATISFACTION OF THE OWNER AND LANDSCAPE ARCHITECT. THE LANDSCAPE CONTRACTOR SHALL BE EXPECTED TO MAKE A MINIMUM OF ONE WEEKLY VISIT FOR MAINTENANCE PURPOSES.
6. AT THE END OF THE MAINTENANCE PERIOD, ALL AREAS THAT HAVE BEEN PLANTED SHALL BE FERTILIZED WITH COMMERCIAL FERTILIZER, ANALYSIS AND RATE OF APPLICATION SHALL BE PER THE SOILS REPORT.
7. THE CONTRACTOR SHALL REQUEST A FINAL SITE VISIT SEVEN (7) DAYS PRIOR TO THE END OF THE MAINTENANCE PERIOD. THIS REQUEST SHALL BE WRITTEN AND DIRECTED TO THE OWNER AND THE ENGINEER. UPON WRITTEN ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL BE RELIEVED OF ANY FURTHER MAINTENANCE.

C. GUARANTEE

ALL GROUND COVER, AND SHRUBS SHALL BE GUARANTEED TO LIVE AND GROW TO A PERIOD OF NINETY (90) DAYS AFTER INSTALLATION AND ACCEPTANCE BY THE OWNER. TREES SHALL BE GUARANTEED FOR ONE YEAR. ANY MATERIAL THAT FAILS TO GROW THROUGH THE SPECIFIED MAINTENANCE AND GUARANTEE PERIOD SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.

D. OBSERVATION

- 1. OBSERVATION VISITS SPECIFIED HEREIN SHALL BE MADE BY THE ENGINEER OR OWNER. THE CONTRACTOR SHALL REQUEST OBSERVATION AT LEAST TWO (2) WORKING DAYS IN ADVANCE OF THE TIME THAT THE OBSERVATION IS REQUIRED.
2. OBSERVATION VISITS ARE SUGGESTED FOR THE FOLLOWING PARTS OF THE WORK:
a. UPON COMPLETION OF GRADING AND SOIL CONDITIONING PRIOR TO PLANTING.
b. WHEN TREES ARE SPOTTED FOR PLANTING, BUT BEFORE PLANTING HOLES ARE EXCAVATED.
c. WRITTEN ACCEPTANCE OF THE PROJECT TO RELEASE THE CONTRACTOR FROM FURTHER MAINTENANCE SHALL OCCUR AFTER FINAL OBSERVATION WITH THE OWNER OR HIS REPRESENTATIVE AT THE END OF THE MAINTENANCE PERIOD.

E. VERIFICATION OF DIMENSIONS

- 1. ALL SCALED DIMENSIONS ARE APPROXIMATE. BEFORE PROCEEDING WITH ANY WORK, THE CONTRACTOR SHALL CAREFULLY CHECK AND VERIFY ALL DIMENSIONS QUANTITIES, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCY BETWEEN THE DRAWINGS AND/OR SPECIFICATIONS AND ACTUAL CONDITIONS. NO WORK SHALL BE DONE IN ANY AREA WHERE THERE IS SUCH A DISCREPANCY UNTIL APPROVAL FOR SAME HAS BEEN GIVEN BY THE ENGINEER.

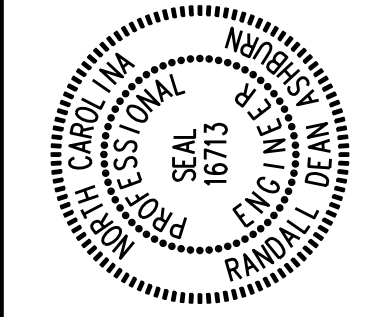
F. UTILITIES

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UNDERGROUND UTILITY LINES PRIOR TO ANY CONSTRUCTION, SO THAT PROPER PRECAUTIONS MAY BE TAKE NOT TO DAMAGE SUCH LINES AND PLANT LOCATIONS, PROMPTLY NOTIFY THE LANDSCAPE ARCHITECT WHO WILL ARRANGE FOR RELOCATIONS OF ONE OR THE OTHER. FAILURE TO FOLLOW THIS PROCEDURE PLACES UPON THE CONTRACTOR THE RESPONSIBILITY FOR, AT HIS OWN EXPENSE, MAKING ANY AND ALL REPAIRS FOR DAMAGES RESULTING FROM HIS WORK.

G. EXISTING TREES

- 1. CONTRACTOR IS TO INSURE THE PRESERVATION OF ANY EXISTING TREES ON THE SITE. DAMAGE OR LOSS OF THESE TREES WILL RESULT IN REPLACEMENT OF EQUAL SIZE OR OF A QUANTITY AS DETERMINED BY THE CITY'S LANDSCAPE ORDINANCE BY THE LANDSCAPE CONTRACTOR.
2. PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING SHALL BE INSTALLED AROUND PRESERVED TREES AT A DISTANCE FROM THE TRUNK EQUAL TO TWELVE TIMES THE CALIPER. REFER TO DETAIL 7 SHEET C-510.
3. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS OR VEHICLES SHALL BE PERMITTED WITHIN THE TREE PROTECTION FENCING.

Table with columns for NO. and DATE, and rows for REVISIONS AND RECORD OF USE.



BLACK & VEATCH logo and contact information: Black & Veatch International Company, Business License No. F-0794, 10715 David Taylor Drive, Suite 240, Charlotte, North Carolina 28262.

CAPE FEAR PUBLIC UTILITY AUTHORITY
SWEENEY WATER TREATMENT PLANT
GAC CONTACTORS ADDITION
CIVIL PLANTING SPECIFICATIONS

DESIGNED: HPK
DETAILED: KTH
CHECKED:
APPROVED:
DATE: 04/04/19

Graphic scale bar showing 0, 1/2, and 1 units. Text: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE.

PROJECT NO. 400096
C-04-103 SHEET 32 OF 231



**STANDARD DETAIL**

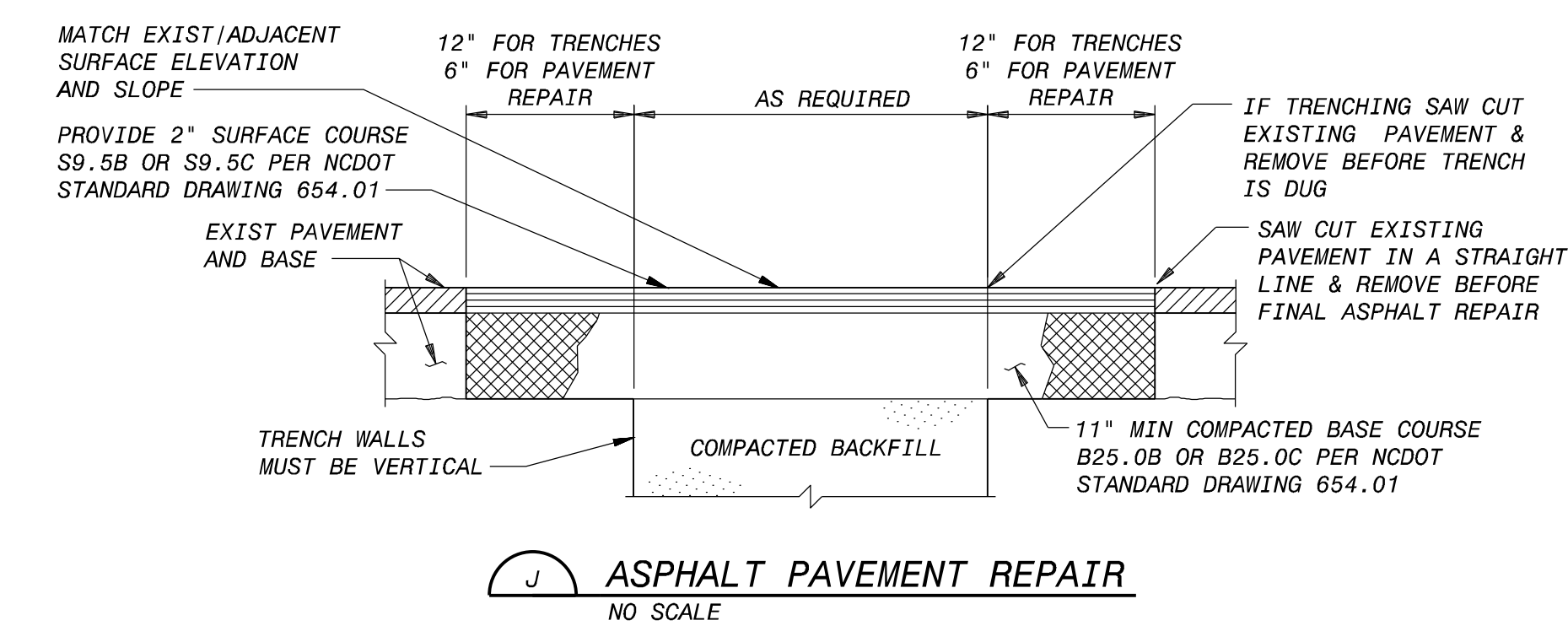
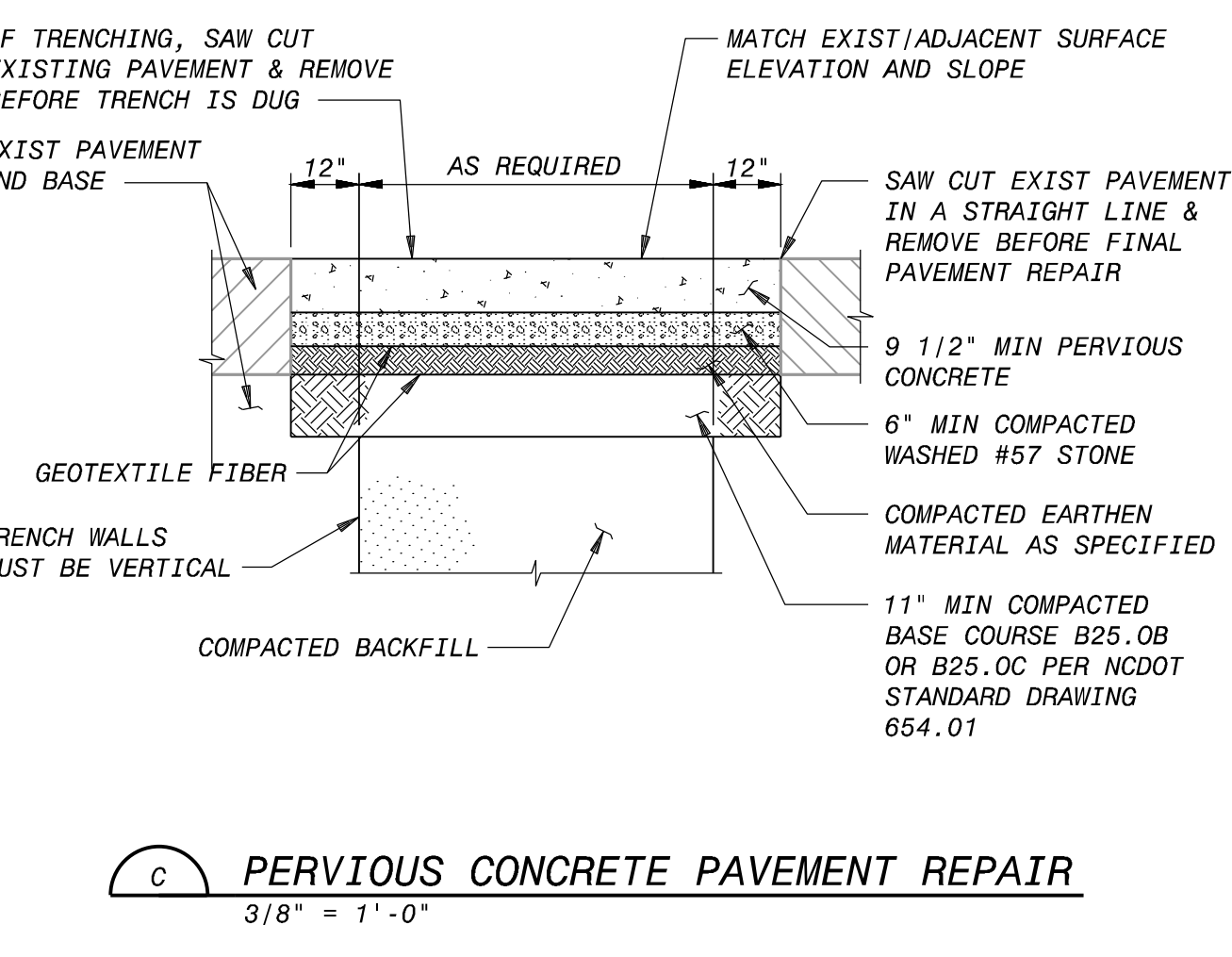
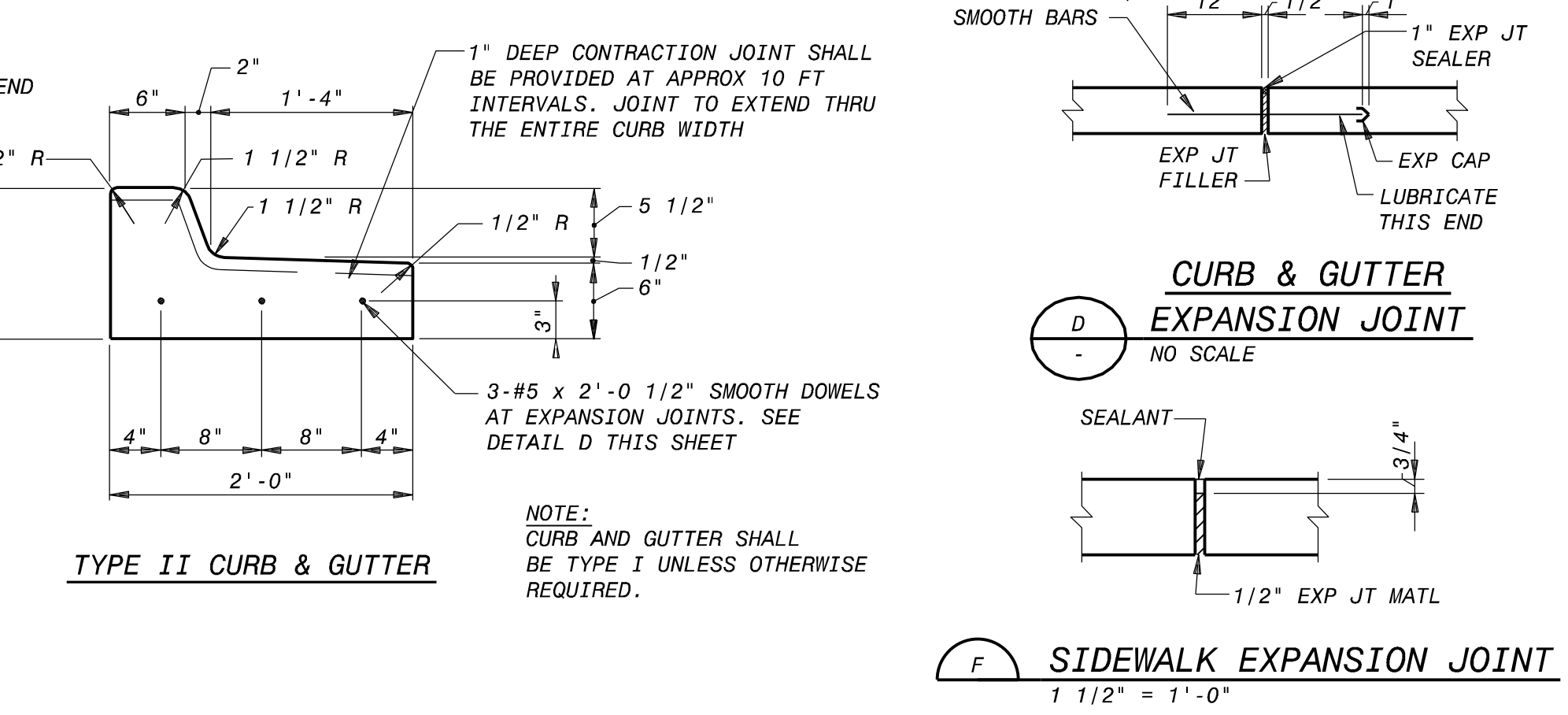
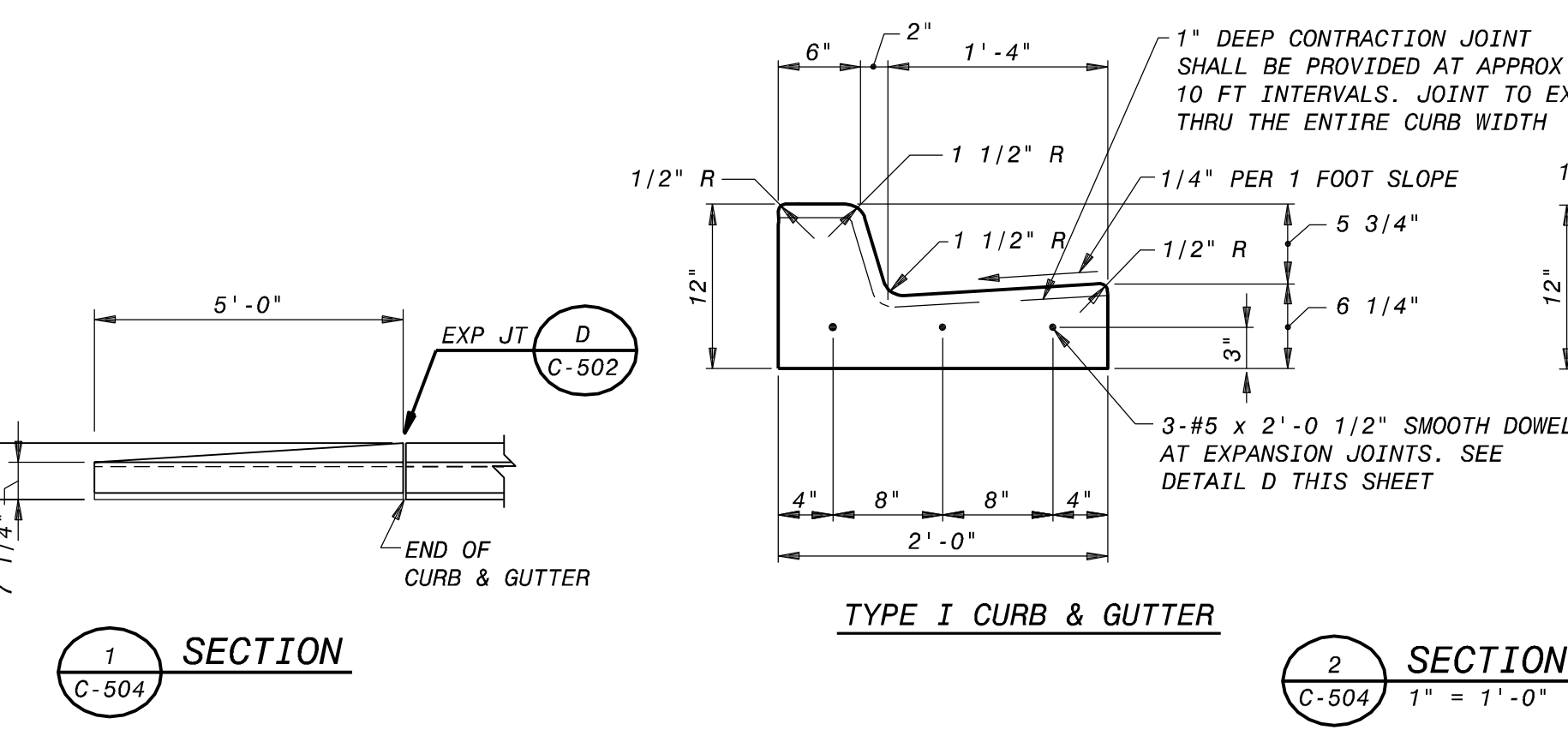
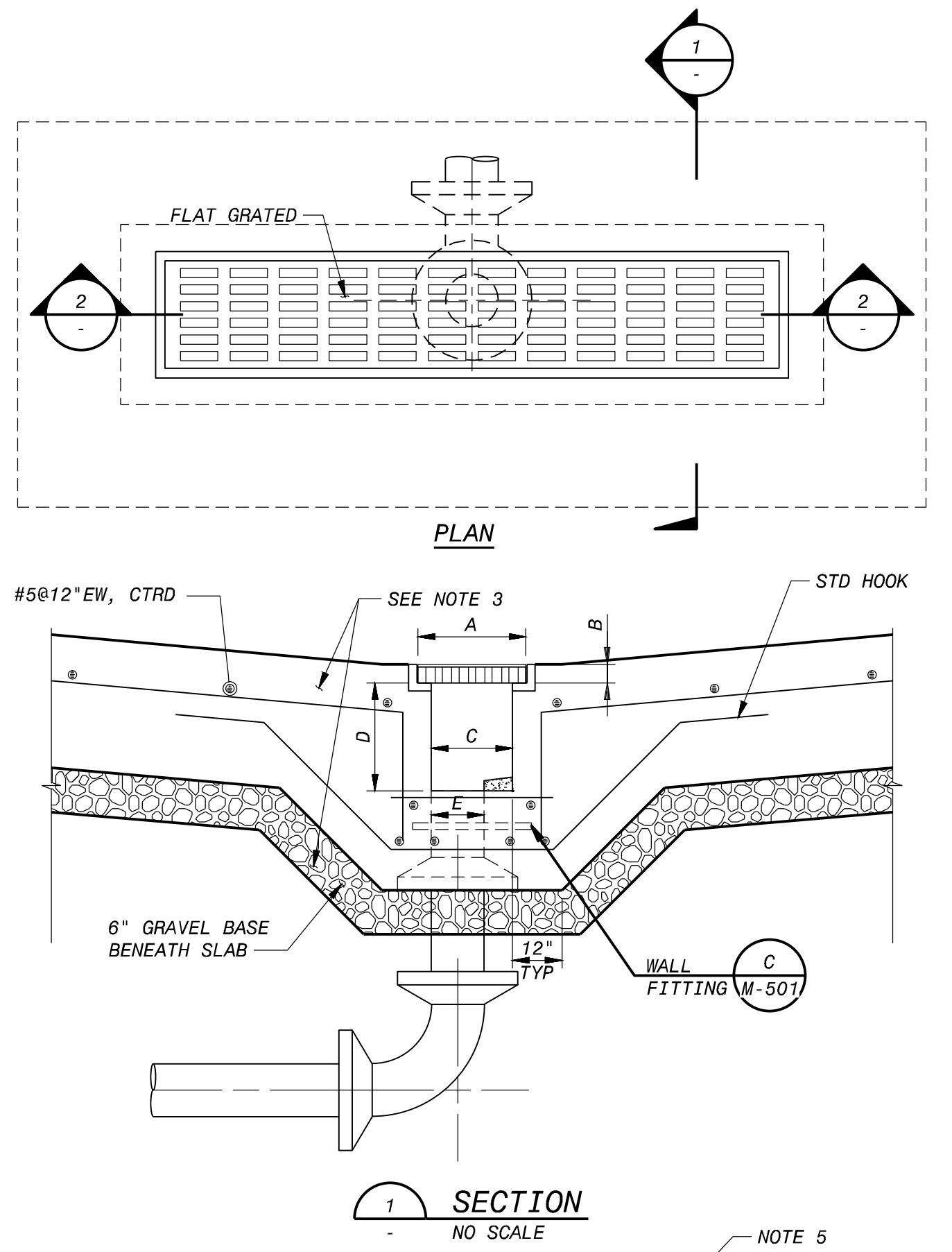
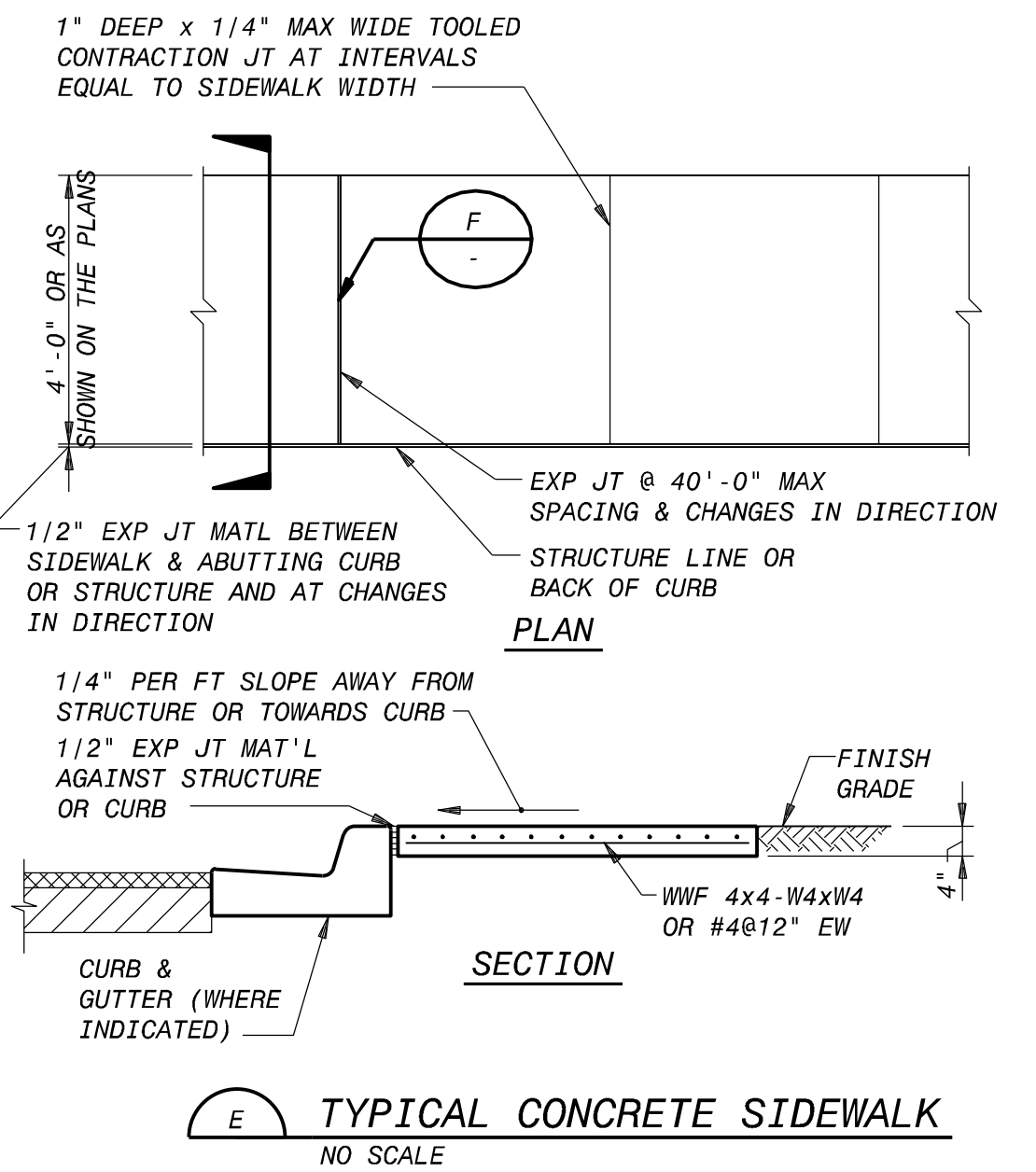
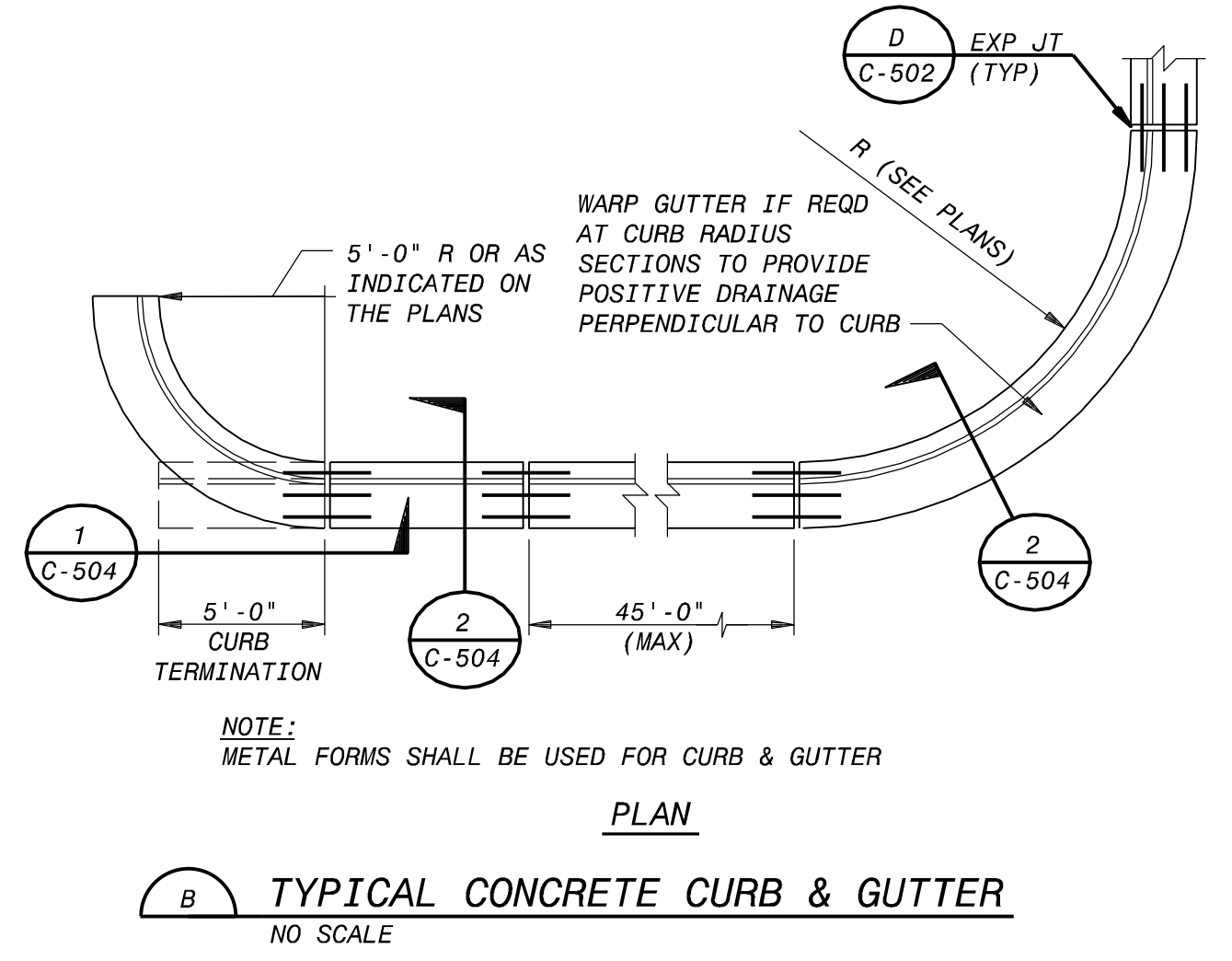
**SIDEWALK**

DATE: OCTOBER, 2010  
 DRAWN: PBJ/SR  
 CHECKED: DEC  
 SCALE: NOT TO SCALE

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 CITY OF WILMINGTON ENGINEERING  
 PO BOX 1810  
 WILMINGTON, N.C. 28402  
 (910) 341-7807

**SD 3-10**

**A CITY OF WILMINGTON SIDEWALK - SD 3-10**  
 NO SCALE



SECTION 1 NO SCALE

SECTION 2 NO SCALE

LOCATION	A	B	C	D	E	F	G	TOP OF GRATE	INV OUT
ROADWAY	14"	1 1/2"	12"	12"	6"	17'-7"	7'-5"	EL 31.50	EL 27.63
SIDEWALK	14"	1 1/2"	12"	12"	6"	21'-6"	2'-0"	EL 31.75	EL 27.85

NOTES:  
 1. NEENAH R-4990-DX TYPE A HEAVY DUTY TRENCH FRAME WITH GRATED COVER OR EQUAL RATED FOR H20 LOADING.  
 2. OUTLET PIPE LOCATION VARIES.  
 3. SECTIONS DEPICT PAVEMENT, REINFORCEMENT, AND FILL FOR ROADWAY LOCATION.  
 4. CONCRETE FILL. 1/8" PER FOOT SLOPE TOWARDS OUTLET. 2" MINIMUM.  
 5. CONTRACTOR TO PROVIDE ALUMINUM CHECKERED PLATE FOR TRENCH DRAIN IN SIDEWALK.

DESIGNED: JGC  
 DETAILED: KMC  
 CHECKED:  
 APPROVED:  
 DATE: 04/04/19

PROJECT NO. 400096

**C-504**  
 SHEET 35 OF 232

CAPE FEAR PUBLIC UTILITY AUTHORITY  
 SWEENEY WATER TREATMENT PLANT  
 GAC CONTACTORS ADDITION

CIVIL  
 MISCELLANEOUS YARD DETAILS

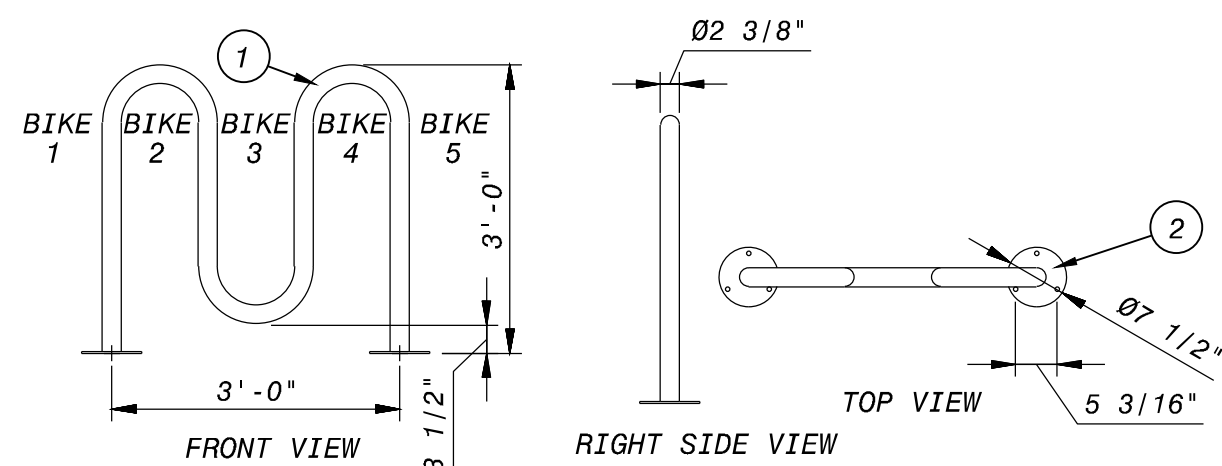
BLACK & VEATCH  
 Black & Veatch International Company  
 Business License No. F-0794  
 10715 David Taylor Drive, Suite 240  
 Charlotte, North Carolina 28262

NO. BY CHK PPK  
 REVISIONS AND RECORD OF USE  
 DATE

07900  
 CHE53522, 5/29/2019 8:45:59 AM  
 CHE53522

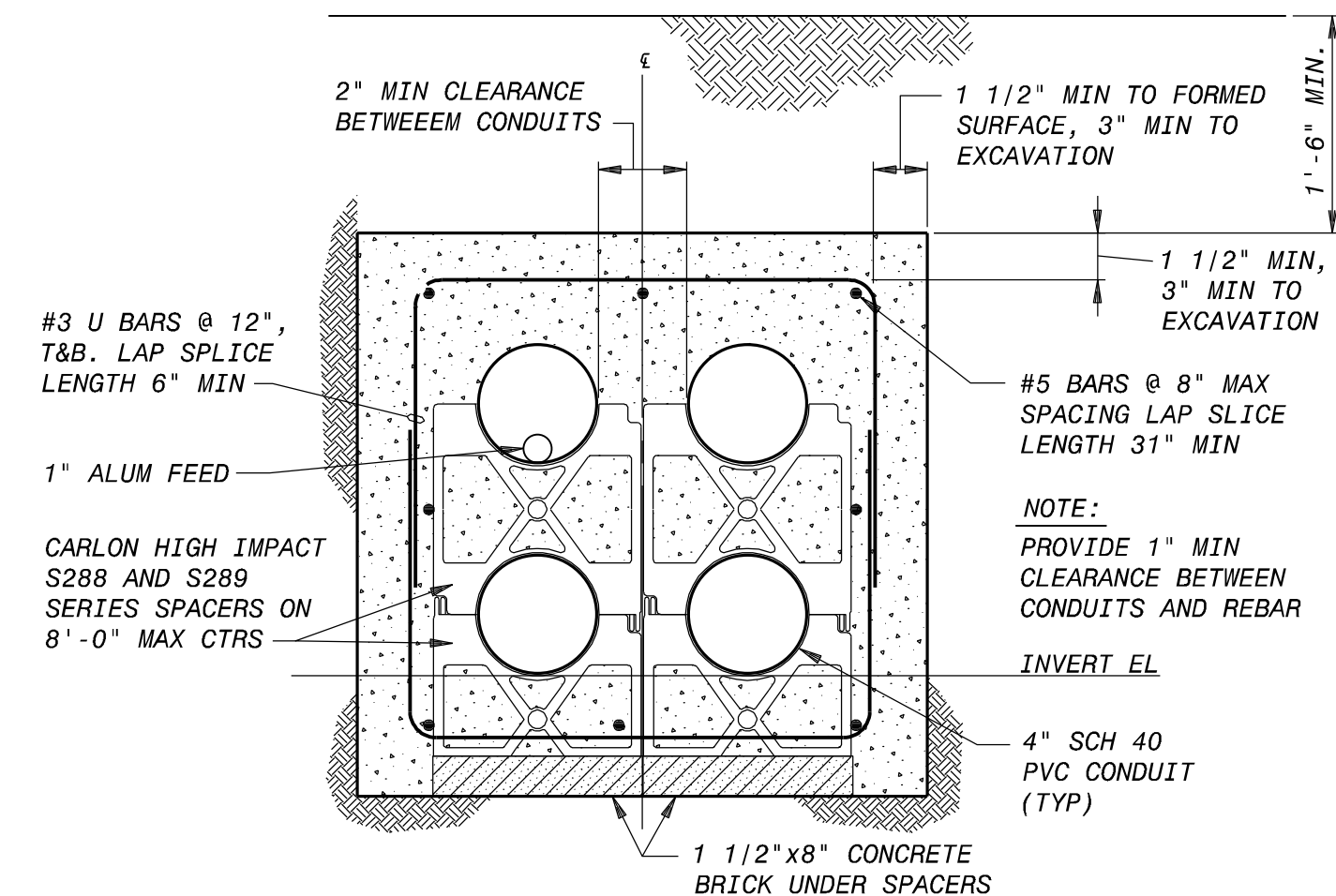
PRELIMINARY - NOT FOR CONSTRUCTION



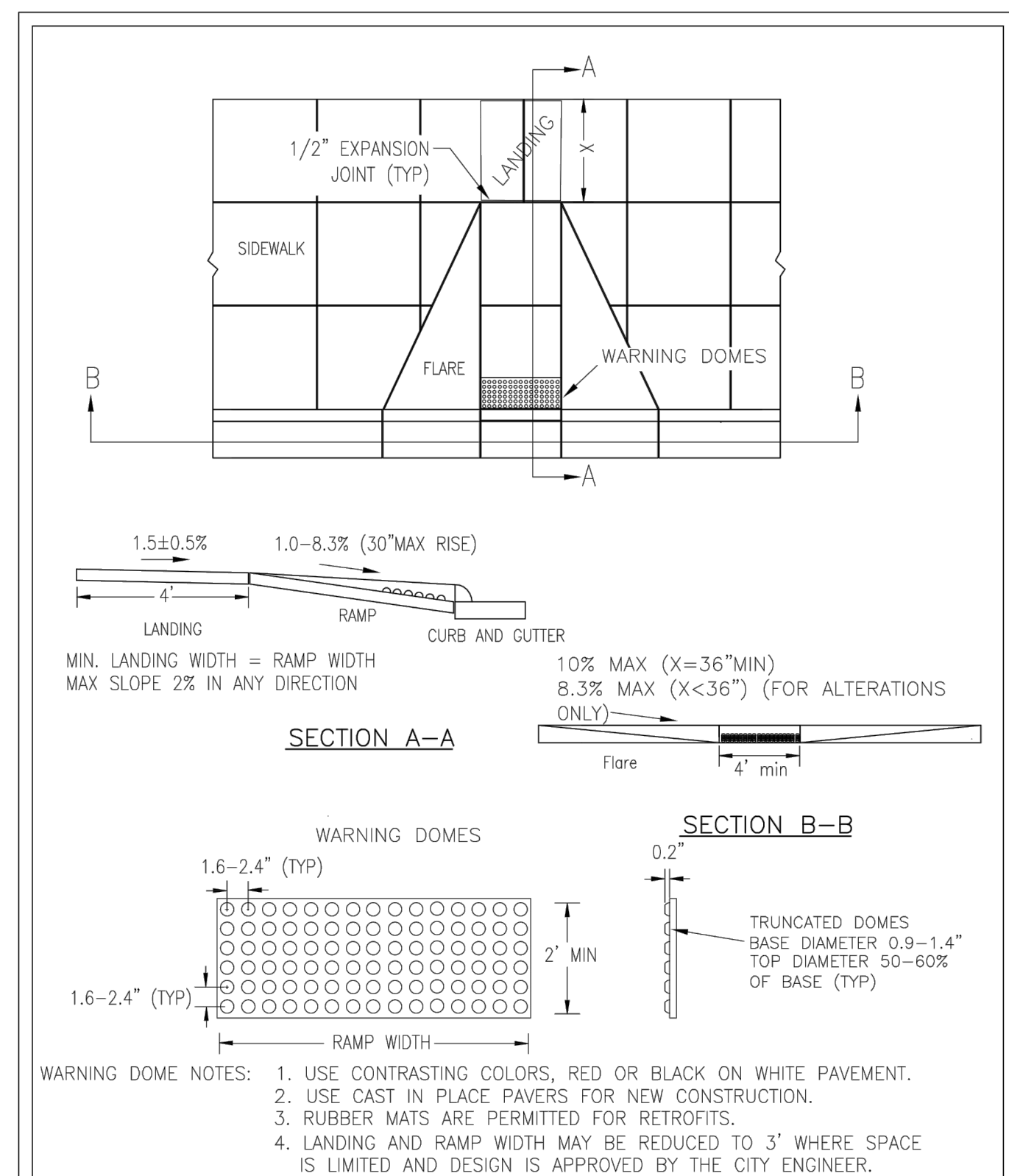


- NOTE:
- 1) TUBING SHALL BE 2" SCH40 316SS
  - 2) SURFACE PLATE SHALL BE 7.5" DIAMETER X 1/4" THICK, 316SS, WELDED TO TUBING.
  - 3) ANCHOR BOLTS SHALL BE 1/2" DIAMETER X 5" LENGTH, 316SS

**A BIKE RACK**  
NO SCALE

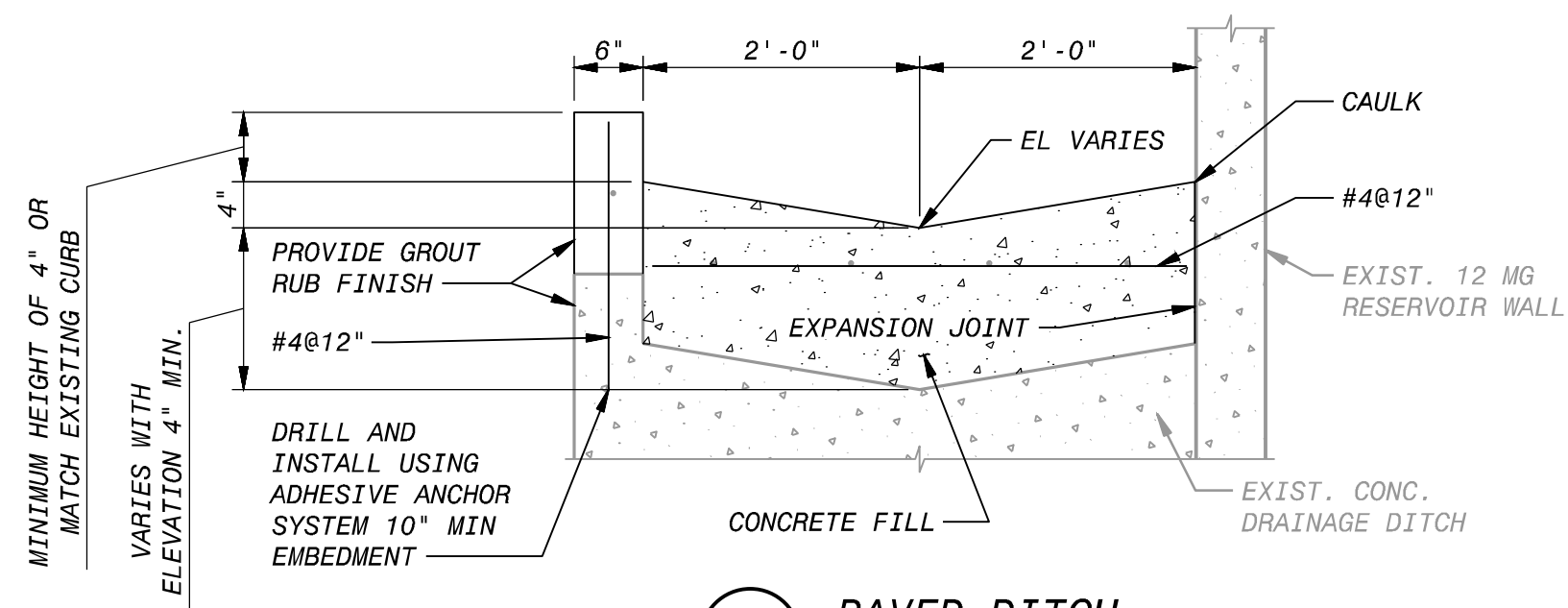


**D CHEMICAL FEED DUCTBANK SECTION**  
NO SCALE

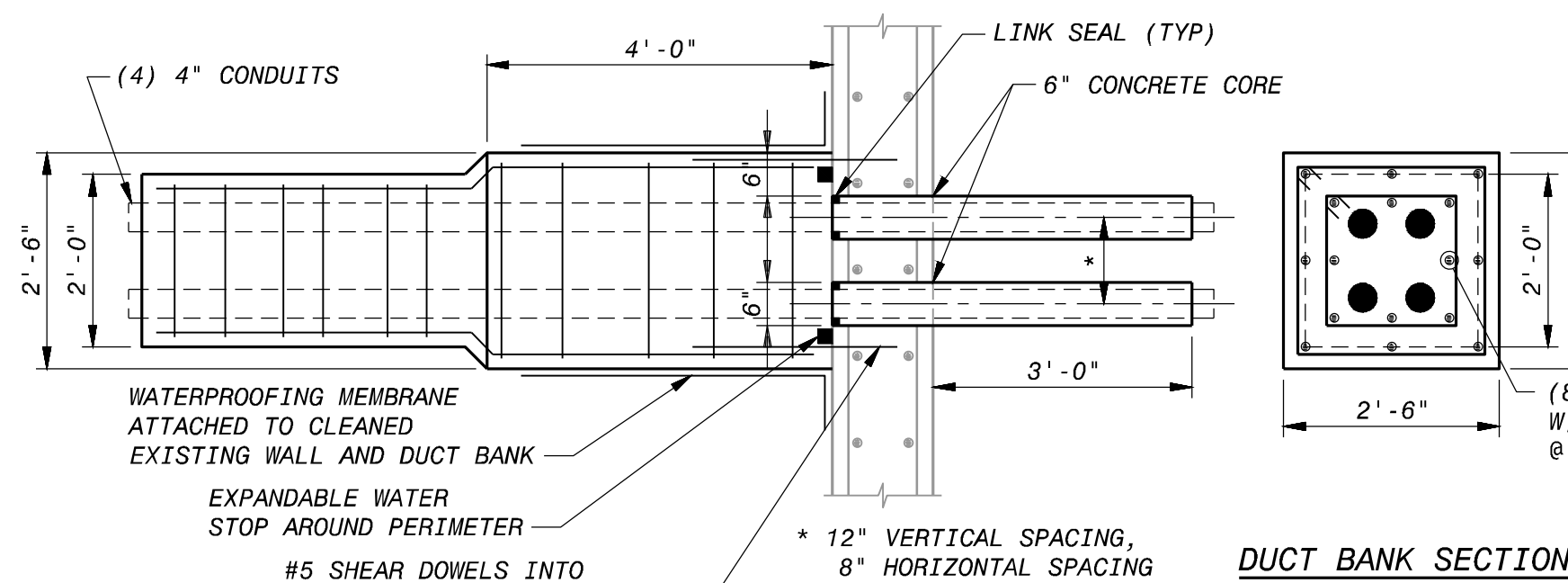


STANDARD DETAIL	
DATE: DECEMBER, 2010	<p>CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, N.C. 28402 (910) 341-7807</p>
DRAWN: PBJ/SJR	
CHECKED: DEC	
SCALE: NOT TO SCALE	
<b>PERPENDICULAR CURB RAMP ADJACENT TO WALKING SURFACE</b>	
SD 3-07	

**F CITY OF WILMINGTON CURB RAMP - SD 3-07**  
NO SCALE

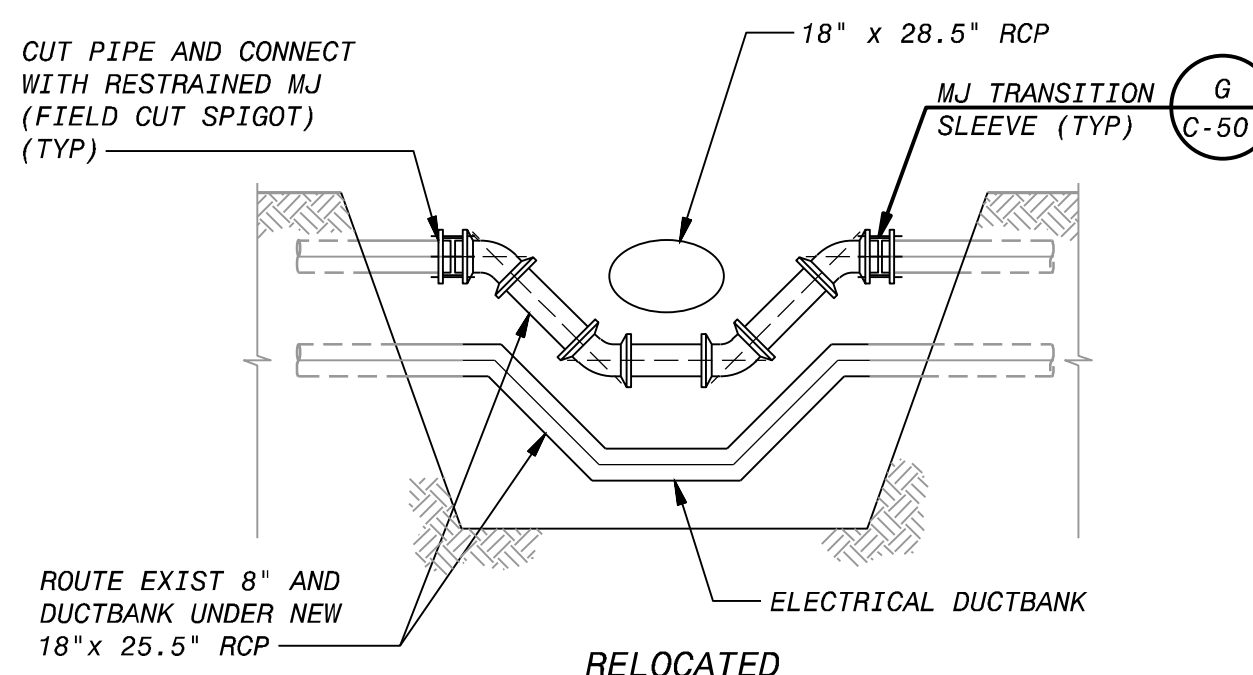
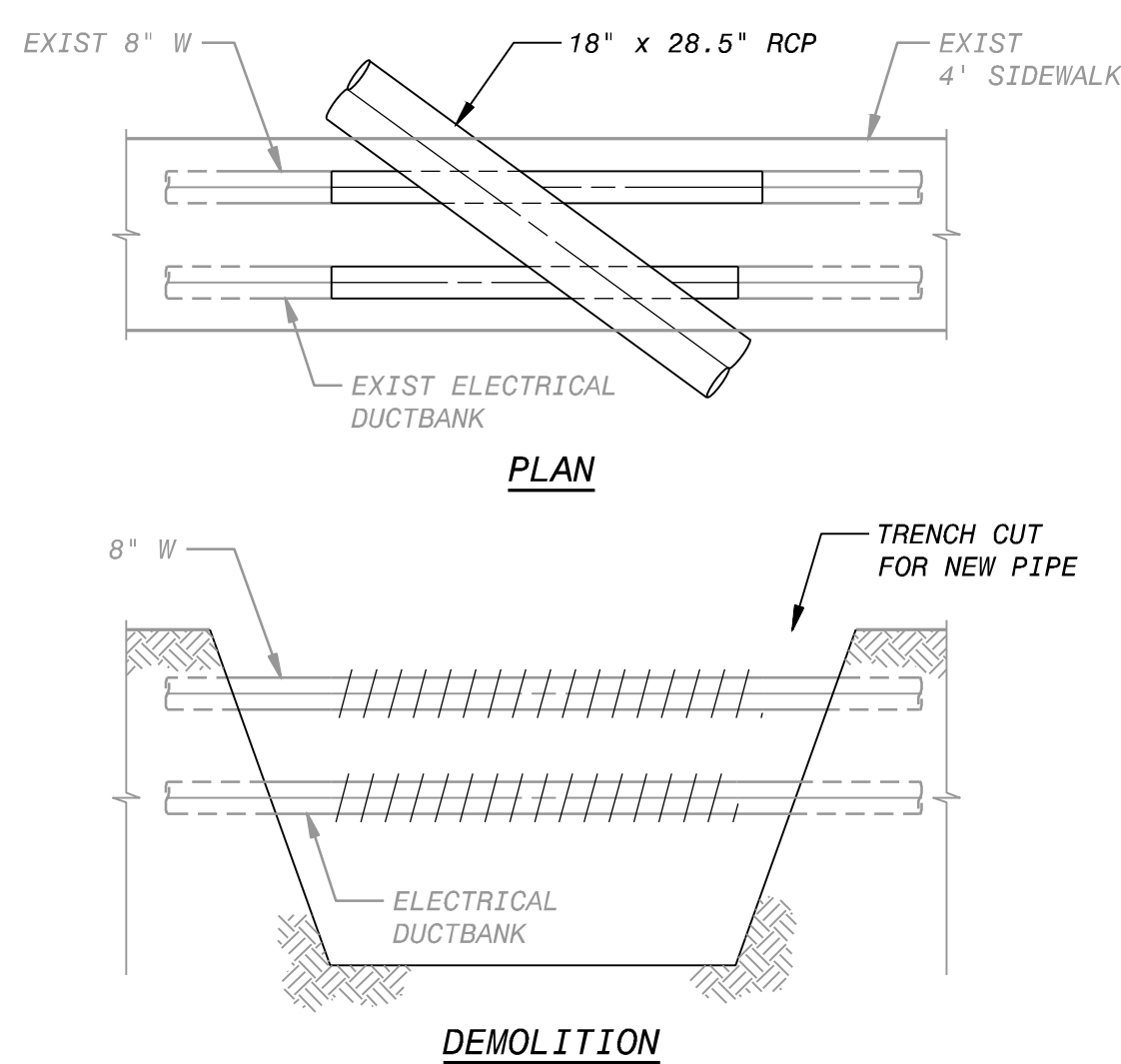


**B PAVED DITCH**  
3/4" = 1'-0"

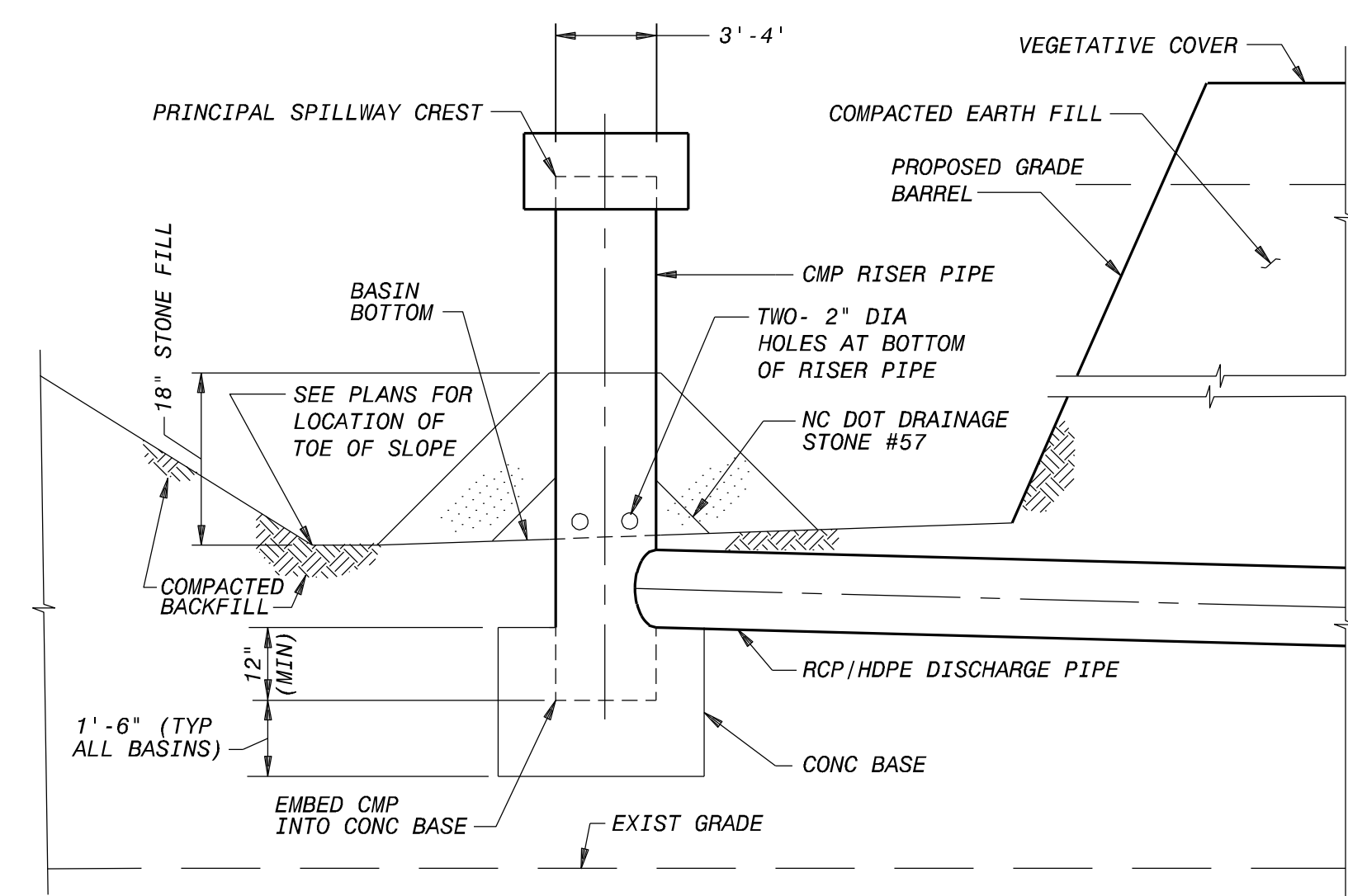


- NEW DUCT BANK CONSTRUCTION NOTES:**
1. CONTRACTOR SHALL MAP EXISTING REINFORCEMENT ON BOTH SIDES OF WALL TO AVOID DAMAGE TO THE REINFORCEMENT. ADJUST OF THE LOCATION OF THE CONDUIT MAY BE REQUIRED AND SHALL BE COORDINATED IN THE FIELD.
  2. GEOCOMPOSITE SHEET DRAIN SHALL BE CUT AWAY AND REPAIRED AS NECESSARY TO ALLOW NEW DUCT BANK TO FIT AGAINST EXISTING WALL OF EQUALIZATION BASIN PUMP ROOM.
  3. WATERPROOFING MEMBRANE SHALL BE INSTALLED BY A MANUFACTURER'S APPROVED INSTALLER. WATERPROOFING SYSTEM SHALL BE GCP APPLIED TECHNOLOGIES, BITUTHENE 4000 MEMBRANED. ALL MANUFACTURER'S REQUIREMENTS FOR INSTALLATION SHALL BE FOLLOWED.

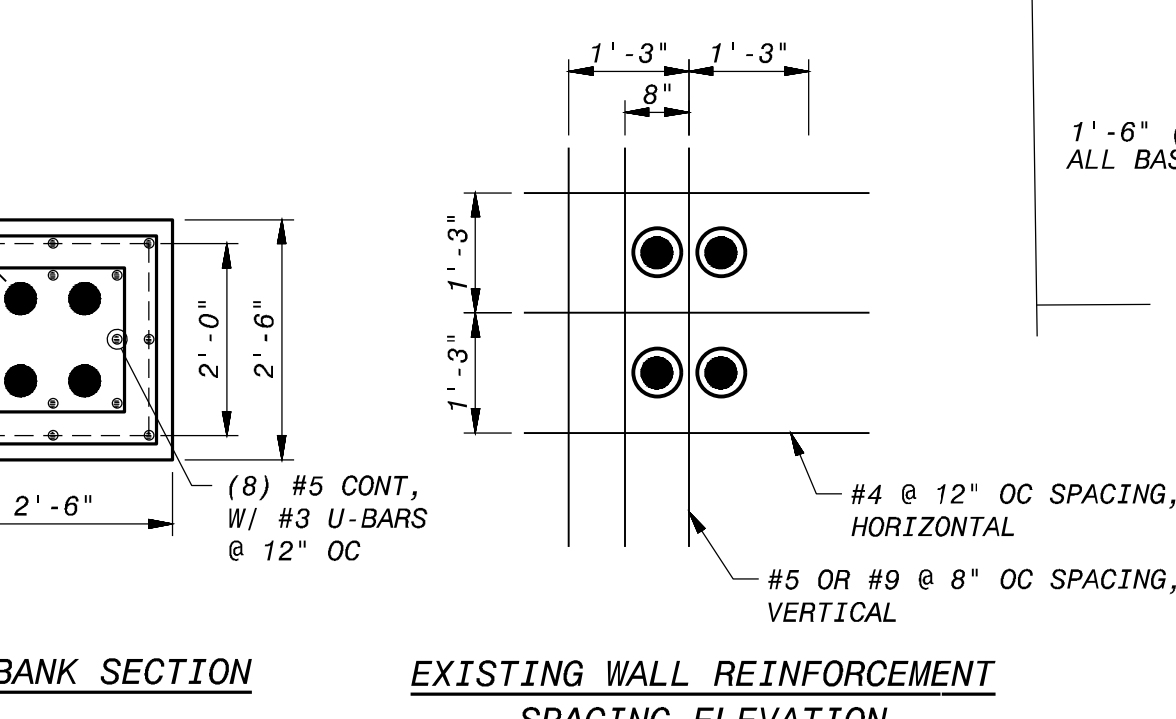
**E CHEMICAL DUCTBANK ENTRANCE IN AN EXISTING/PRECAST STRUCTURE**  
1/2" = 1'-0"



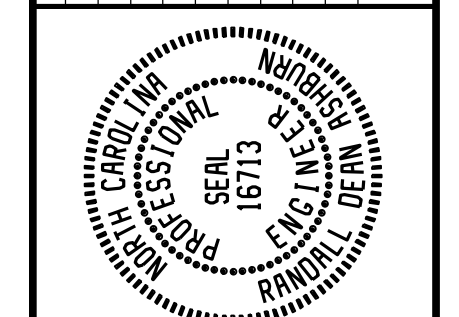
**G DUCTBANK AND 8" WATERLINE RELOCATION**  
NO SCALE



**C STORMWATER BASIN RISER BARREL**  
NO SCALE



**H PARTIAL ALUM FEED SCHEMATIC**  
NO SCALE



**BLACK & VEATCH**  
Black & Veatch International Company  
Business License No. F-0794  
10715 David Taylor Drive, Suite 240  
Charlotte, North Carolina 28262

CAPE FEAR PUBLIC UTILITY AUTHORITY  
SWEENEY WATER TREATMENT PLANT  
GAC CONTACTORS ADDITION  
CIVIL  
MISCELLANEOUS YARD DETAILS

DESIGNED: JGC
DETAILED: KMC
CHECKED:
APPROVED:
DATE: 04/04/19
PROJECT NO. 40096
<b>C-505</b>
SHEET 36 OF 232

PRELIMINARY - NOT FOR CONSTRUCTION